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# 01 Vehicle Identification and VIN Decoder

## Vehicle identification number (VIN), decoding

Some of the information in this manual applies only to cars of a particular model year or range of years. For example, 2003 refers to the 2003 model year but does not necessarily match the calendar year in which the car was manufactured or sold. To be sure of the model year of a particular car, check the vehicle identification number (VIN) on the car.

The VIN is a unique sequence of 17 characters assigned by Audi to identify each individual car. When decoded, the VIN tells the country and year of manufacture; make, model and serial number; assembly plant and even some equipment specifications.

The Audi VIN is on a plate mounted on the top of the dashboard, on the driver's side where the number can be seen through the windshield. The 10th character is the model year code. Examples: W for 1998, X for 1999, Y for 2000, 1 for 2001, 2 for 2002, etc. The table below explains some of the codes in the VIN for 1998 - 2004 Audi A6 models covered by this manual.

**Sample VIN:** WAUDA24B1XN001612

| VIN position | Description | Decoding information | |
|---|---|---|---|
| 1 | Manufacturing country | T<br>W | Hungary<br>Germany |
| 2 | Manufacturer | A<br>R<br>U | Audi germany<br>Audi Hungary<br>quattro GmbH |
| 3 | Vehicle Type | U | Passenger vehicle |
| 4 | Series | | Varies with model year.<br>See BentleyPublishers.com for more information |
| 5 | Engine | | |
| 6 | Restraint system | | |
| 7-8 | Model | 4A<br>4B | A6 Avant<br>A6, allroad quattro, S6, RS6 |
| 9 | Check digit | | 0 - 9 or X, calculated by NHTSA |
| 10 | Model year | W<br>X<br>Y<br>1<br>2<br>3<br>4 | 1998<br>1999<br>2000<br>2001<br>2002<br>2003<br>2004 |
| 11 | Assembly plant | A<br>K<br>N | Ingolstadt<br>Karman-Rheine<br>Neckarsulm |
| 12-17 | Serial number | | Sequential production number for specific vehicle |

# 02 Product Familiarization


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## GENERAL

The information included in this section, based on introductory material for 1998 through 2004 Audi A6 vehicles sold in the USA and Canada, is intended to serve as a product familiarization guide.

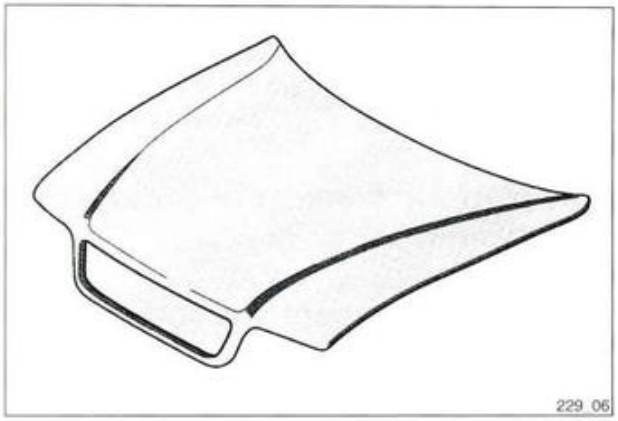
***CAUTION—***

- *The information in this section is subject to change. Use it as a general reference only. Check Audi factory repair information or the publisher's website at www.bentleypublishers.com for information that may supersede material in this section.*

The fifth generation Audi A6, referred to as the C5 platform, was introduced in 1998 and continued through 2004.

The Audi A6 combines the latest engineering expertise with a future-oriented automobile design. The primary goals were to increase body rigidity, reduce body weight, and improve crash properties. Despite being lighter, the body is 50% more rigid than its predecessor. This results in better driving dynamics and increased ride comfort.

The engine hood, window frame modules and side impact bars, for example, are manufactured using aluminum.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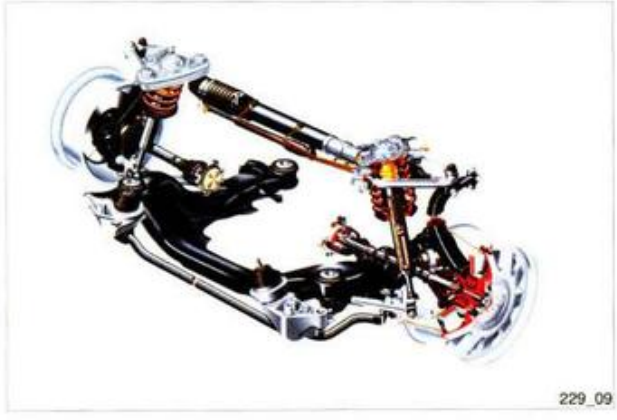
The aluminum engine hood is the first instance in which Audi used this material for a large exterior part on a high volume production vehicle. It is 36 percent lighter than a conventional engine hood, yet 20 percent more rigid.

The use of magnesium and aluminum components in the running gear such as the transmission housing, suspension components, brake calipers and wheels is another weight-reducing measure.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The four-link front suspension represents a breakthrough in handling and performance. Additionally, antilock brakes, electronic differential lock and traction control are combined to give the Audi A6 a standard of driving safety unrivalled in its class.

All A6 models feature a host of standard equipment features aimed at improving active and passive safety. Included are:

- ABS (antilock braking)
- EDL (electronic differential lock)
- EBD (electronic brake pressure distribution)
- ASR (antislip regulation)
- Ellipsoidal-principle headlights
- Electrically adjustable and heated outside mirrors
- Outside temperature display
- Driver and passenger airbags
- Side impact airbags for front
- Three-point automatic seat belts and head restraints for all seats
- Pyrotechnic seat-belt tensioners for front and rear seats

In addition, the A6 features extensive anti-theft measures:

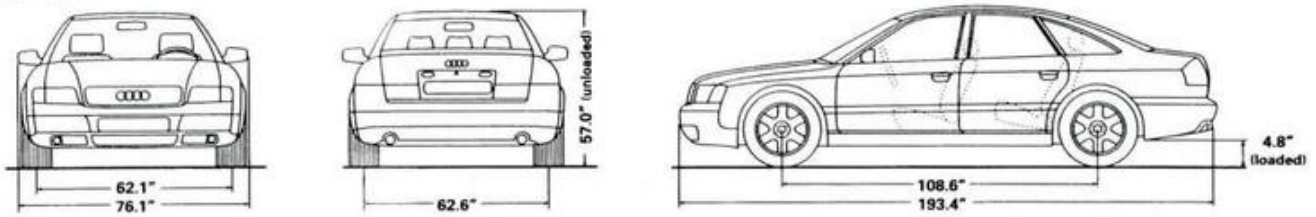
- Anti-theft alarm system with ultrasonic interior monitoring
- Button on inside of driver's door for central locking
- Break-in protection for door and luggage compartment locks (lock mechanism cannot be opened even if the car is broken into)
- Remote (keyless) central locking

The A6 was introduced with an all-new engine, the 2.8 liter, thirty-valve V6. This engine has variable intake manifold runners and variable camshaft timing. The engine delivers 200 hp and a peak torque of 207 lb-ft at 3200 rpm. An impressive feature of the 2.8 liter engine is that more than 188 lb-ft (91%) of torque is available at engine speeds between 2500 and 5000 rpm.

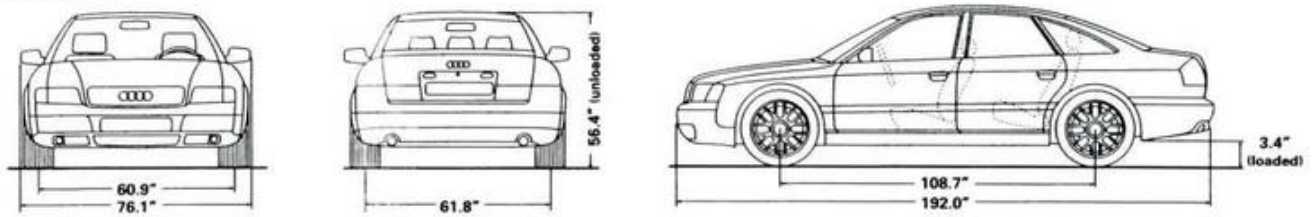
Additional engines were introduced throughout the production of the A6, including the 450 hp, 4.2 liter V8 used in the limited edition Audi RS6. See **1 Engine** for engine data.

## Body dimensions

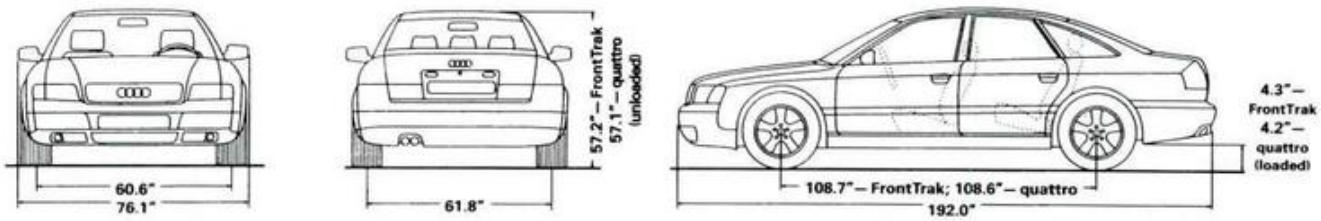
### A6 4.2



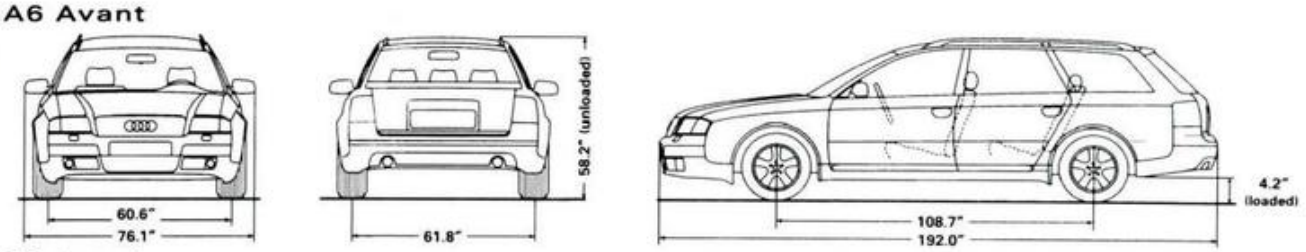

### A6 2.7 T



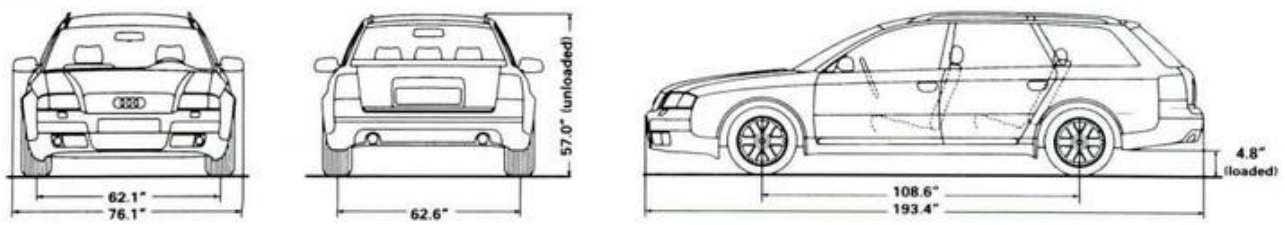

### A6 3.0



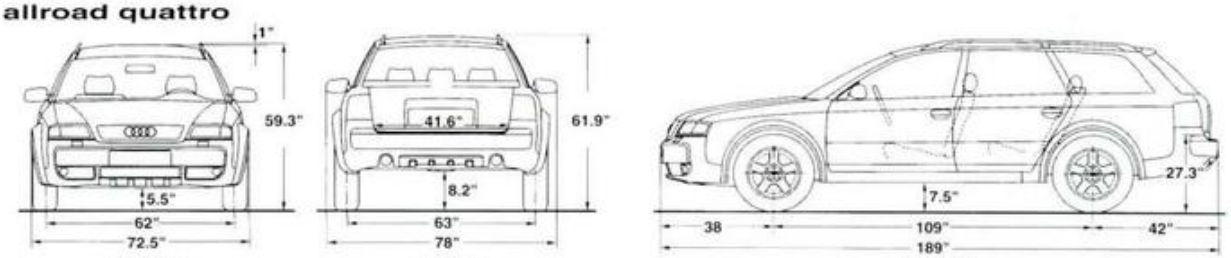

### A6 Avant




### S6 Avant




### allroad quattro




Level 1 Level 4 Level 3

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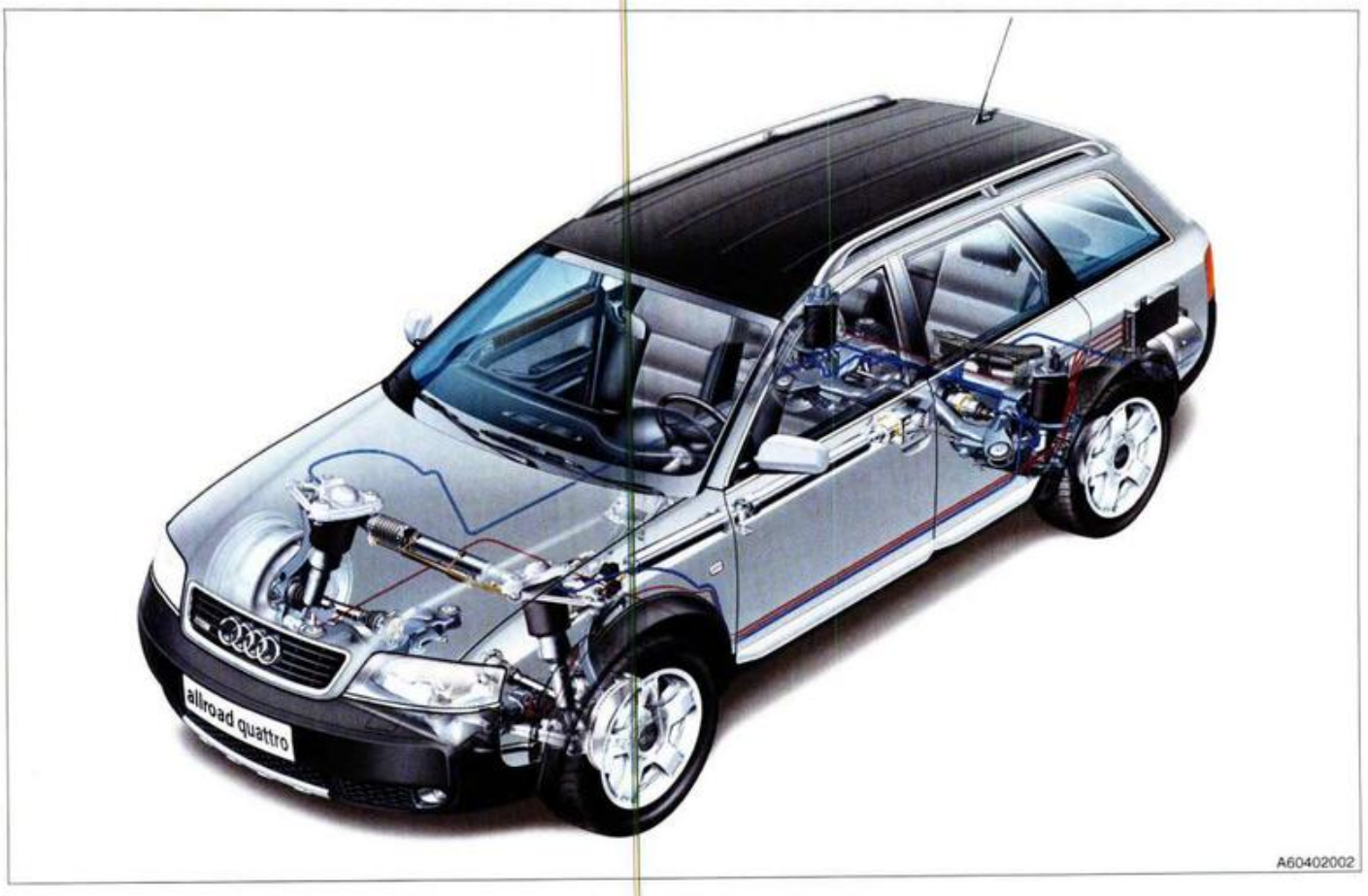



## allroad quattro

The allroad quattro, introduced in 2000, shares its platform with the second generation C5 A6 Avant (station wagon), although an advanced air suspension, larger wheels with all-terrain tires and flared and unpainted bumpers give it a distinct appearance and more overall flexibility over varying terrain. Audi's quattro (all-wheel drive) system is standard equipment.

The allroad quattro was not created by simply changing shock absorbers and springs to give an A6 more ground clearance. There are more than 1,100 new parts that make the allroad a true all-terrain vehicle.

The 4-level suspension system has two operating modes:

- Automatic mode adjusts vehicle height according to vehicle speed and needs no driver input.
- Manual mode allows driver to select vehicle height, depending on speed and terrain.

Other functional and visual modifications to the allroad quattro include:

- Larger exterior mirrors
- Front and rear underbody protection
- Matte paint finish on the bumpers, roof and door sills
- Redesigned headlights

## Audi RS6

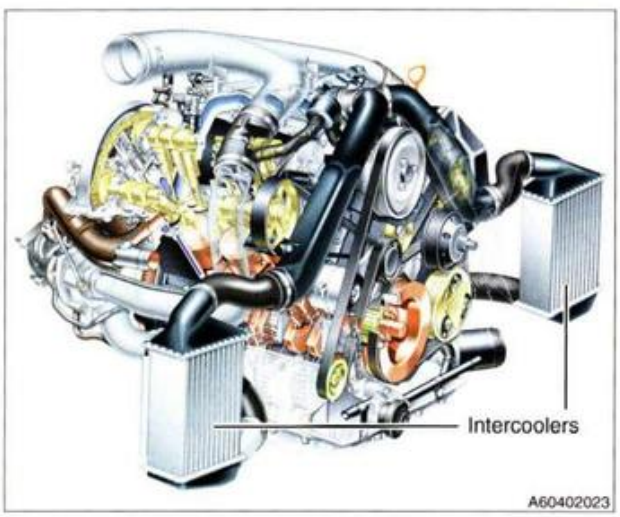
The Audi RS6, a limited production powerhouse, is the perfect synthesis of extraordinary power, practicality and poise. The company's most powerful model to date, the RS6 features an engine producing an amazing 450 horsepower at 6,500 revolutions per minute, making it a world-class luxury sedan with the heart of a sports car.

Tuned by quattro GmbH, the high-performance arm of Audi AG and well known for the remarkable RS4 model sold exclusively in Europe, the RS6 is the first vehicle quattro GmbH has produced for the North American market.

# 1 Engine

Both V6 and V8 engines were available for the A6. V6 power plants included a 2.7 liter biturbo engine and 2.8 liter and 3.0 liter normally-aspirated engines.

The three variants of the V8 engine all displace 4.2 liters, with power output ranging from 299 hp to 450 hp.



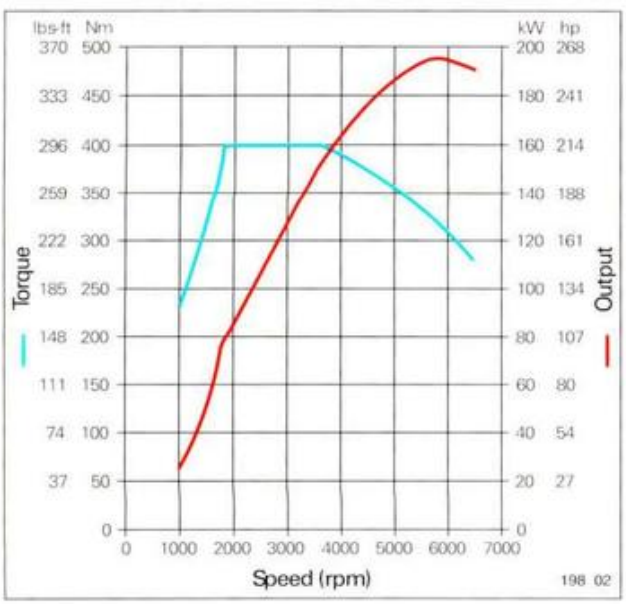

## V6 engines

### 2.7 liter V6 biturbo, engine codes APB, BEL

The 2.7 liter V6 biturbo engine, introduced in model year 2000, uses two small turbochargers, one fitted at each bank of cylinders. Due to their lower inertia, the dual turbochargers respond more quickly than a single larger unit.

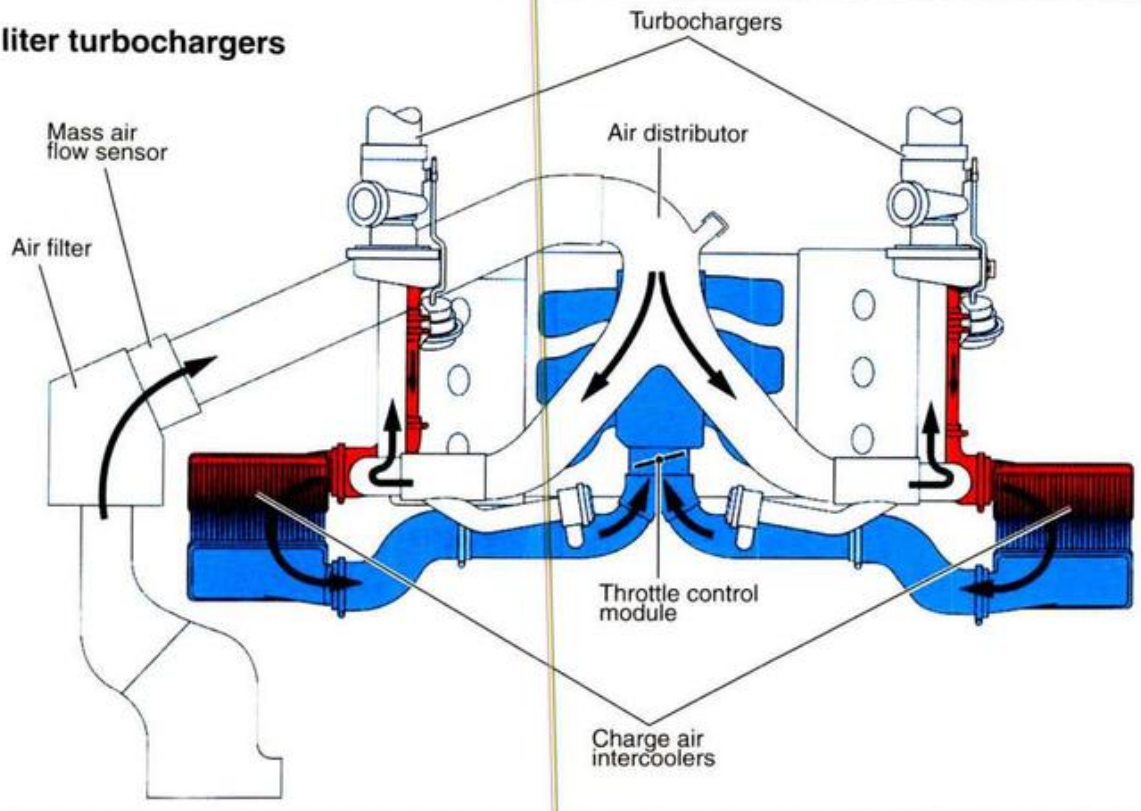
Each turbocharger has its own intercooler for more efficient cooling of the intake air.

| 2.7 liter engine, general specifications | |
|---|---|
| Engine codes | APB (2000 - 2003)<br>BEL (2003 - 2004) |
| Engine type | dual overhead belt and chain-driven camshafts, 30-valve V6 |
| Engine size | 2.7 liters / 163 cu. in. |
| Horsepower | |
| APB | 258 @ 5800 rpm |
| BEL | 250 @ 5800 rpm |
| Torque (lb-ft) | 258 @ 1800 - 4500 rpm |




2.7 liter engine horsepower and torque graph.

## 2.7 liter turbochargers



### 2.8 liter V6 engine, engine codes AHA, ATQ

The initial V6 offering was the 2.8 liter naturally-aspirated engine with the cylinder banks positioned 90° apart. Other features include 5 valves per cylinder, distributorless ignition and variable valve timing. Two variants of this engine were available.

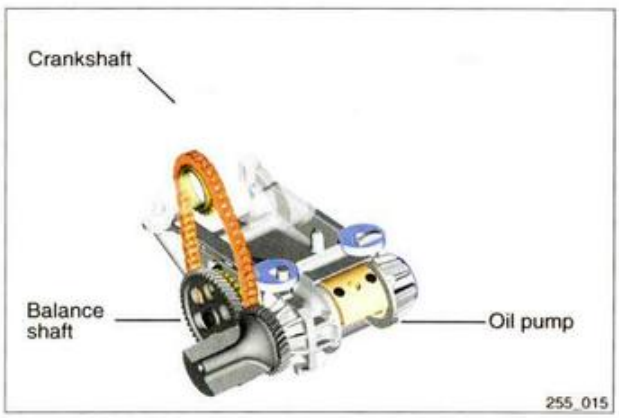
A redesigned combustion chamber and centrally-located spark plug are responsible for improving combustion efficiency, reducing fuel consumption and lowering exhaust emissions.

| 2.8 liter engine, general specifications | |
|---|---|
| Engine codes | AHA (1998 - 2000)<br>ATQ (2000 - 2001) |
| Engine type | dual overhead belt and chain-driven camshafts, 30-valve V6 |
| Engine size | 2.8 liters / 169 cu. in. |
| Horsepower | |
| AHA | 200 @ 6000 rpm |
| ATQ | 193 @ 6000 rpm |
| Torque (lb-ft) | |
| AHA | 207 @ 3200 rpm |
| ATQ | 207 @ 3200 rpm |

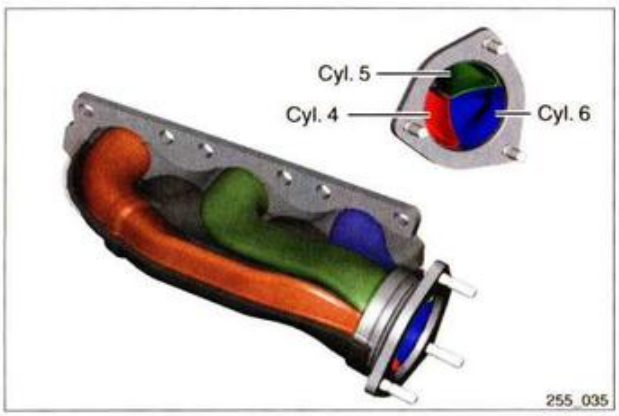
### 3.0 liter V6 engine, engine code AVK

The 3.0 liter V6, which replaced the 2.8 liter base engine in 2002, features:

- Aluminum cylinder block manufactured using patented Cosworth rollover casting process—a technique used for race car engines.
- Plastic two-position variable intake manifold reduces engine mass and provides torque over a broad range with maximum power available at high rpm.
- Dual overhead camshafts with continuously variable intake camshaft adjustment and two-position exhaust camshaft adjustment boost power output and torque and ensure compliance with exhaust emissions standards.
- Five-valve-per-cylinder technology ensures optimum flow of fuel-air mixture and exhaust gases to keep fuel consumption and exhaust emissions low.

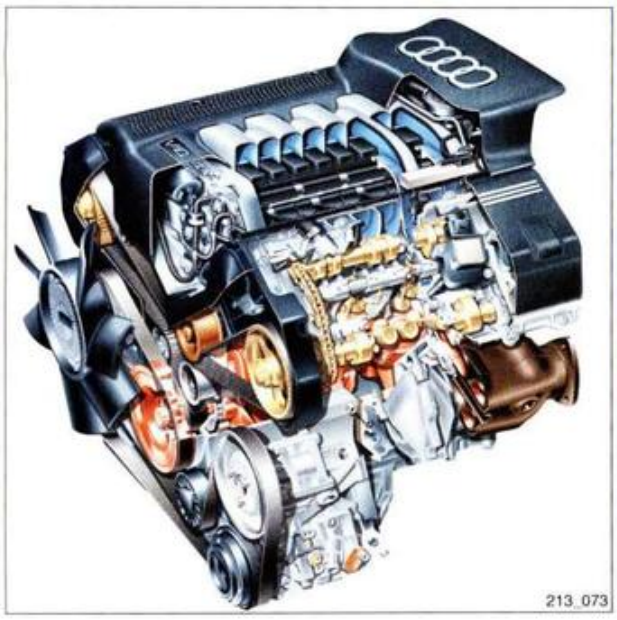



- Balance shaft integrated with oil pump into single module located underneath engine block in sump provides for exceptional running smoothness.
- Motronic ME 7.1.1 engine management system with "drive by wire" electronic throttle control for immediate response to driver input: Accelerator pedal movement is transmitted to the engine management system instantly and without loss.
- Mapped-characteristic ignition and solid-state spark distribution are exceptionally reliable and improve fuel mixture combustion.




- Tubular air-gap-insulated exhaust manifolds lower weight, improve noise pattern, quickly heat catalytic converters to light-off temperature, and reduce heat transfer to engine compartment.
- Cylinder-bank-selective oxygen sensing, with two pre-converters close to engine and two main catalytic converters farther back ensure long-term stability in exhaust emissions.
- Ultra-low emissions vehicle (ULEV) certification.

| 3.0 liter engine, general specifications | |
|---|---|
| Engine code | AVK (2002 - 2004) |
| Engine type | dual overhead belt-driven camshafts, 30-valve V6 |
| Engine size | 3.0 liters / 182 cu. in. |
| Horsepower | 220 @ 6300 rpm |
| Torque (lb-ft) | 221 @ 3200 rpm |




## V8 engines

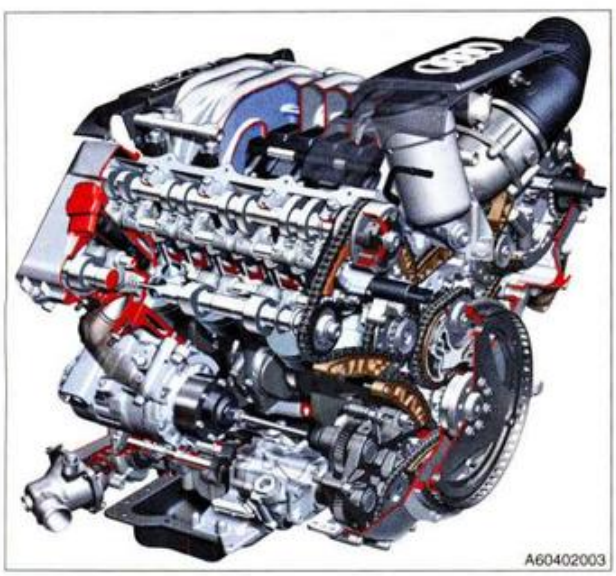
### V8 engines, engine codes ART, AWN, BBD

Starting in 1999, A6 models were optionally equipped with a normally aspirated V8 engine. Features of the 4.2 liter V8 5-valve engine include the following:

- Aluminum engine block with no cylinder liners
- Aluminum five-valve-per-cylinder head with roller rockers
- Belt-driven dual camshafts
- Three-stage variable intake manifold
- Bosch Motronic ME 7.1 engine management system with non-return fuel supply system
- Water-cooled 190-ampere generator
- Oil filter module with integrated oil cooler
- Meets Low-Emission Vehicle (LEV) exhaust emission standards
- Two hot film mass air flow sensors with integrated air temperature sensors
- One ignition coil with integrated output stage per cylinder, each mounted directly over the spark plug
- Two electronically controlled fuel pumps
- Two electric engine cooling fans

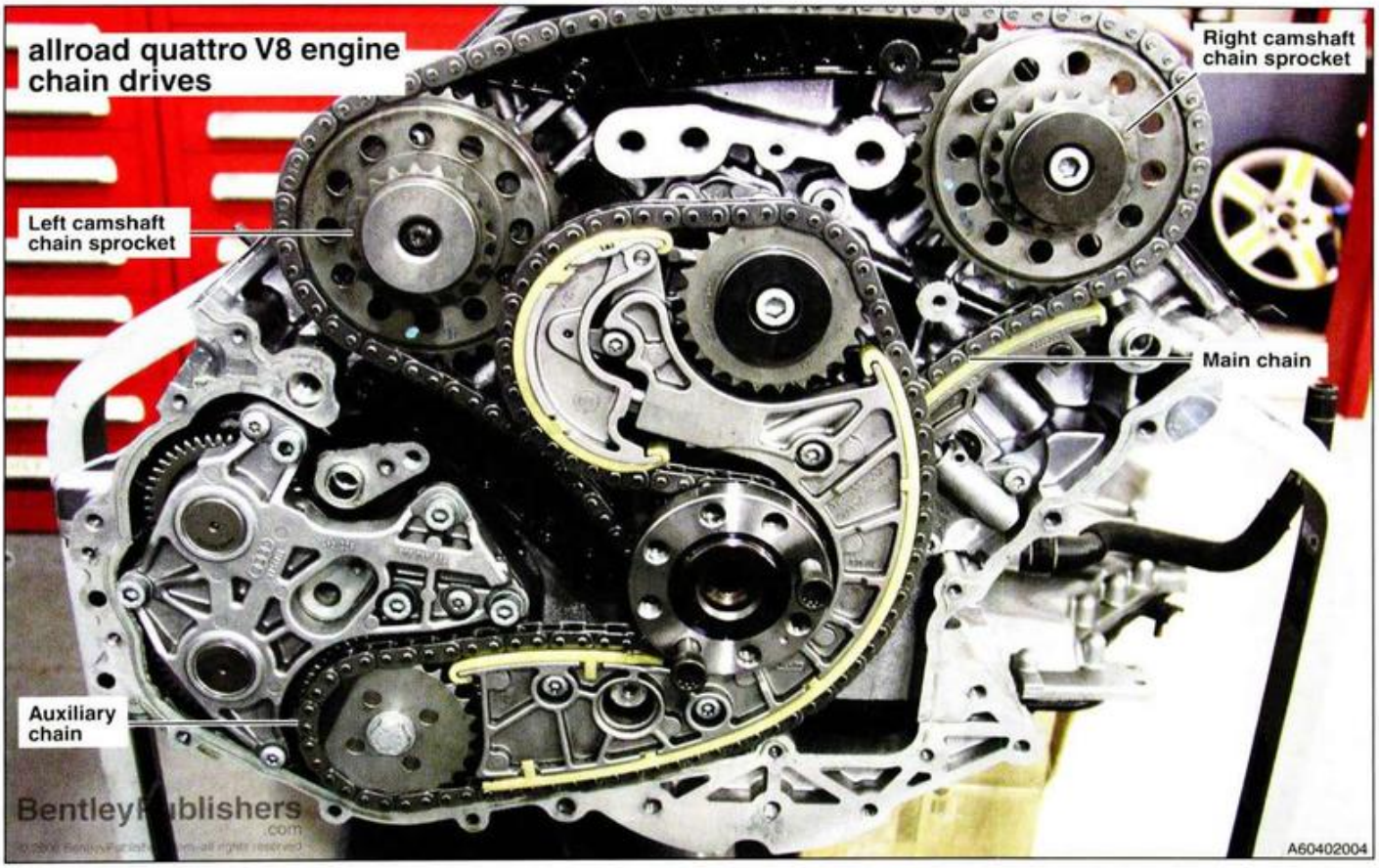
The base V8 engines (2 versions, engine codes ART and AWN) produce 299 hp. The Audi S6, introduced in 2002, was equipped with a 340 hp version of the 4.2 liter V8 (engine code BBD).

| V8 basic engines, general specifications | |
|---|---|
| Engine code | ART (1999 - 2001)<br>AWN (2002 - 2004)<br>BBD (2002 - 2004) |
| Engine type | dual overhead belt-driven camshafts, 40-valve V8 |
| Engine size | 4.2 liters / 255 cu. in. |
| Horsepower | |
| ART, AWN | 299 @ 6000 rpm |
| BBD | 340 @ 6000 |
| Torque (lb-ft) | |
| ART | 302 @ 3300 |
| AWN | 305 @ 3300 |
| BBD | 295 @ 3500 |

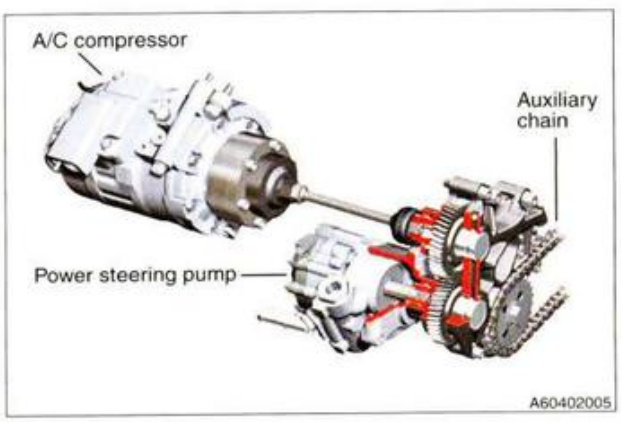



### allroad quattro V8 engine, *engine code BAS*

For 2003 allroad quattro models, a new 4.2 liter V8 engine was optional. Redesigned to fit into the slim engine compartment, this engine uses chain drive to operate the dual overhead camshafts. The single-row chain is on the clutch end of the engine, allowing the engine to be shortened by 52 mm (approx. 2 in).




Four chains are used to operate the camshafts and engine accessories. The main chain drives two intermediate shafts, one per cylinder bank. From each of these a short chain drives the two camshafts in each cylinder head. (Camshaft chains are not shown in illustration.)




The auxiliary chain, driven off a second crankshaft sprocket, operates engine accessories through driven sprockets or intermediate shafts:

- Oil pump
- Coolant pump
- Power steering pump
- A/C compressor

A two-stage variable intake manifold made from magnesium allows higher engine power output at higher speeds in addition to high low-end torque. Continuous camshaft timing control also contributes to increased performance over a wide range of engine speeds.

| V8 allroad quattro engine, general specifications | |
|---|---|
| Engine code | BAS |
| Engine type | dual overhead chain-driven camshafts, 40-valve V8 |
| Engine size | 4.2 liters / 255 cu. in. |
| Horsepower | 299 @ 6200 rpm |
| Torque (lb-ft) | 280 @ 2700 - 4600 rpm |

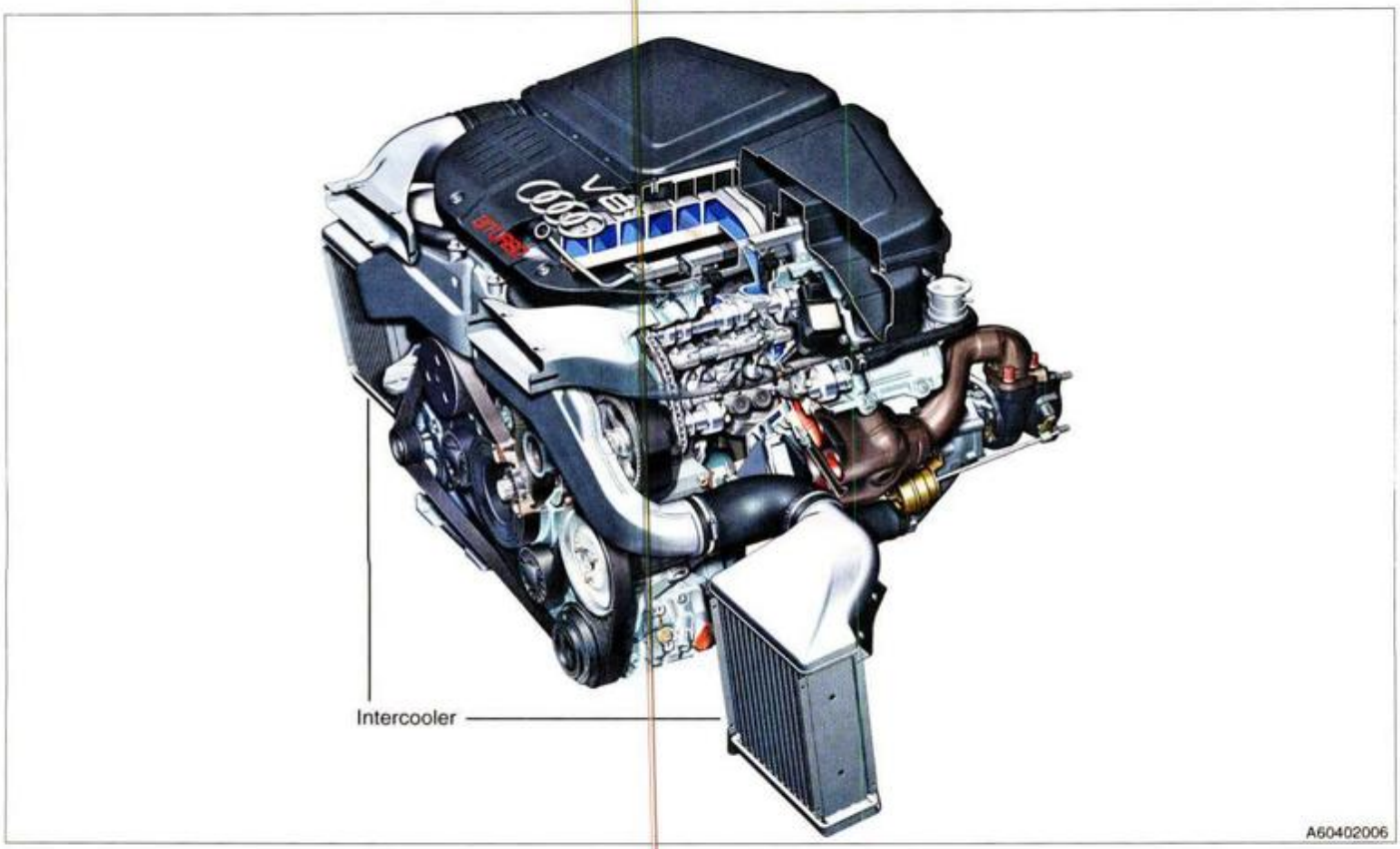
### RS6 biturbo V8 engine, engine code BCY

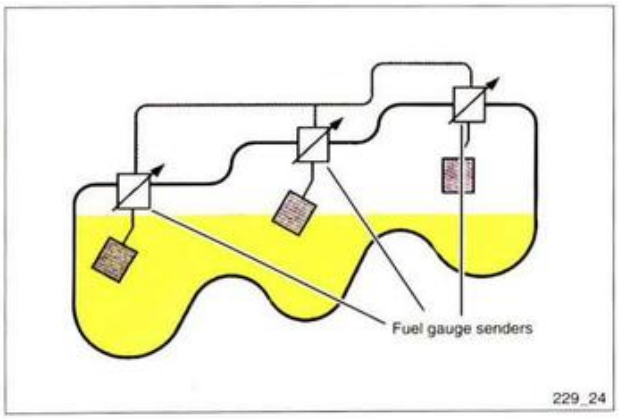
At the heart of the high performance RS6 model is the 4.2 liter V8 biturbo engine. Inspired by Audi's victorious LeMans-winning R8 racing car, this power plant makes the sleek RS6 among the fastest five-passenger sport sedans ever to enter the U.S. market, with a 0 - 60 mph time of just 4.6 seconds.

The V8 engine has twin turbochargers, one for each cylinder bank, to provide increased low-end torque, more power at the upper end and overall improved engine response. Electronically controlled waste gates and twin intercoolers optimize engine performance. An intercooler mated with each cylinder bank prevents loss of turbo pressure while cooling the intake air. This force-fed, temperature-optimized "breathing" results in minimal turbo lag and peak engine performance.

Engine architecture includes 90° cylinder banks, a lightweight aluminum block and five valves per cylinder—two of which are sodium-filled for maximum valve temperature control—that help feed and ventilate the cylinders faster, producing more torque and power with less fuel consumption and lower emissions.

| RS6 engine, general specifications | |
|---|---|
| Engine code | BCY |
| Engine type | dual overhead belt and chain-driven camshafts, 40-valve V8 |
| Engine size | 4.2 liters / 255 cu. in. |
| Horsepower | 450 @ 5700 - 6400 rpm |
| Torque (lb-ft) | 413 @ 1950 - 5600 rpm |






## 2 Engine Management

### Fuel tank

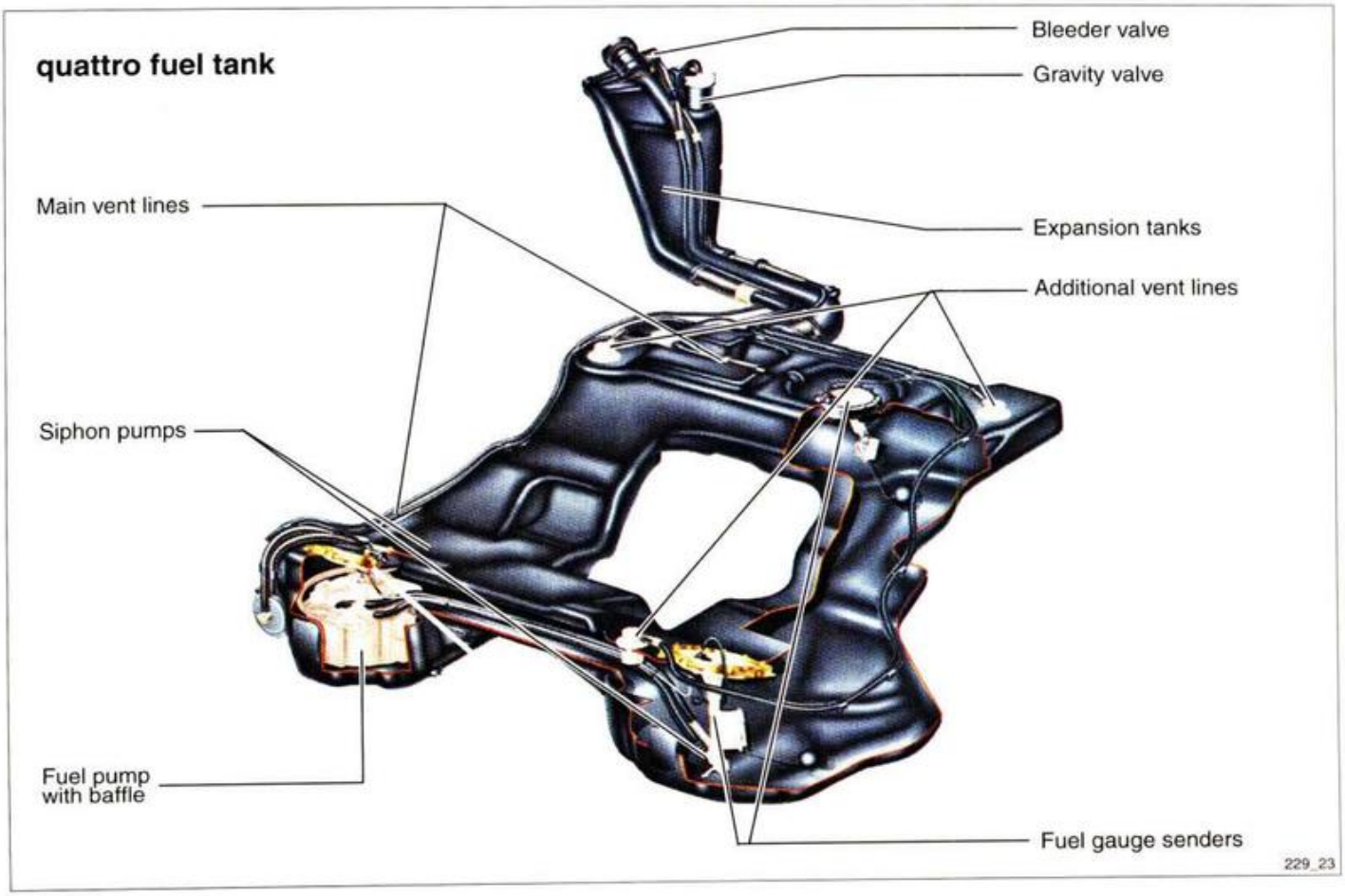
The fuel tank is plastic and placed near the rear axle for crash safety.

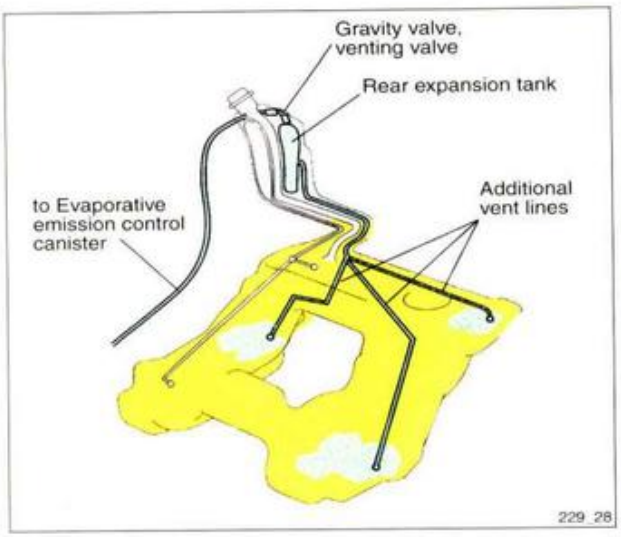
The unusual shape of the quattro fuel tank, a result of the quattro rear axle design, necessitates three separate fuel gauge senders. The senders are connected in series. Individual resistances of the senders are summed to a total resistance. A microprocessor in the instrument panel processes the fuel sender data and delivers precise fuel level information.

The fuel pump and its baffled enclosure are inside the fuel tank on the right. Two siphon pumps, driven by the fuel return feed fuel into the fuel pump baffle. Access to the fuel pump is through a cover under the rear seat cushion.

Fuel tank removal requires disassembly of the rear axle. The filler neck is a separate part from the fuel tank.

**quattro fuel tank**



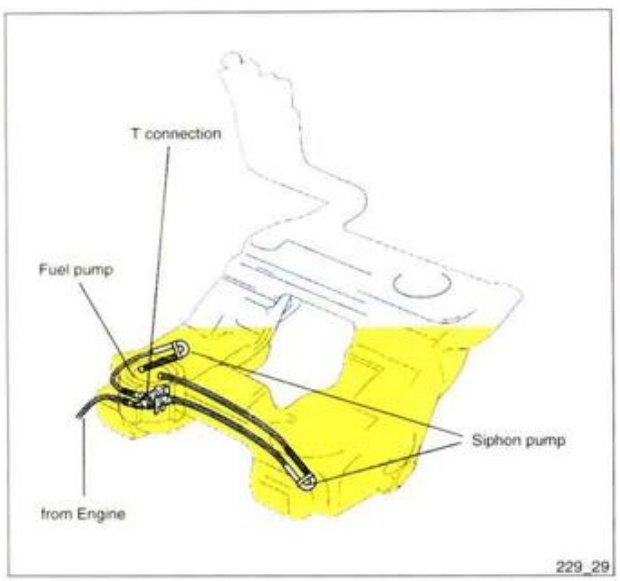



### Evaporative emissions control

The fuel tank evaporative emissions control components are two separate expansion tanks at the filer neck and a complex of fuel vent lines.

When the fuel tank is filled, air escapes through the two main vent lines into the front expansion tank at the filler neck.

When the fuel heats up due to an external cause, such as heat from the exhaust system or return fuel flow from the engine, the resulting fumes enter the rear expansion tank through the three auxiliary vent lines. Fumes are then fed to the evaporative emissions control canister (carbon canister) via the gravity valve and the venting valve.




### Fuel return system

Fuel returning from the engine flows through the return line to a T-fitting mounted on the fuel pump. From there the fuel is fed to the siphon pumps. If the return volume is excessive, the fuel backs up at the siphon pumps, increasing back-pressure in the return line, and in turn affecting the fuel pressure regulator.

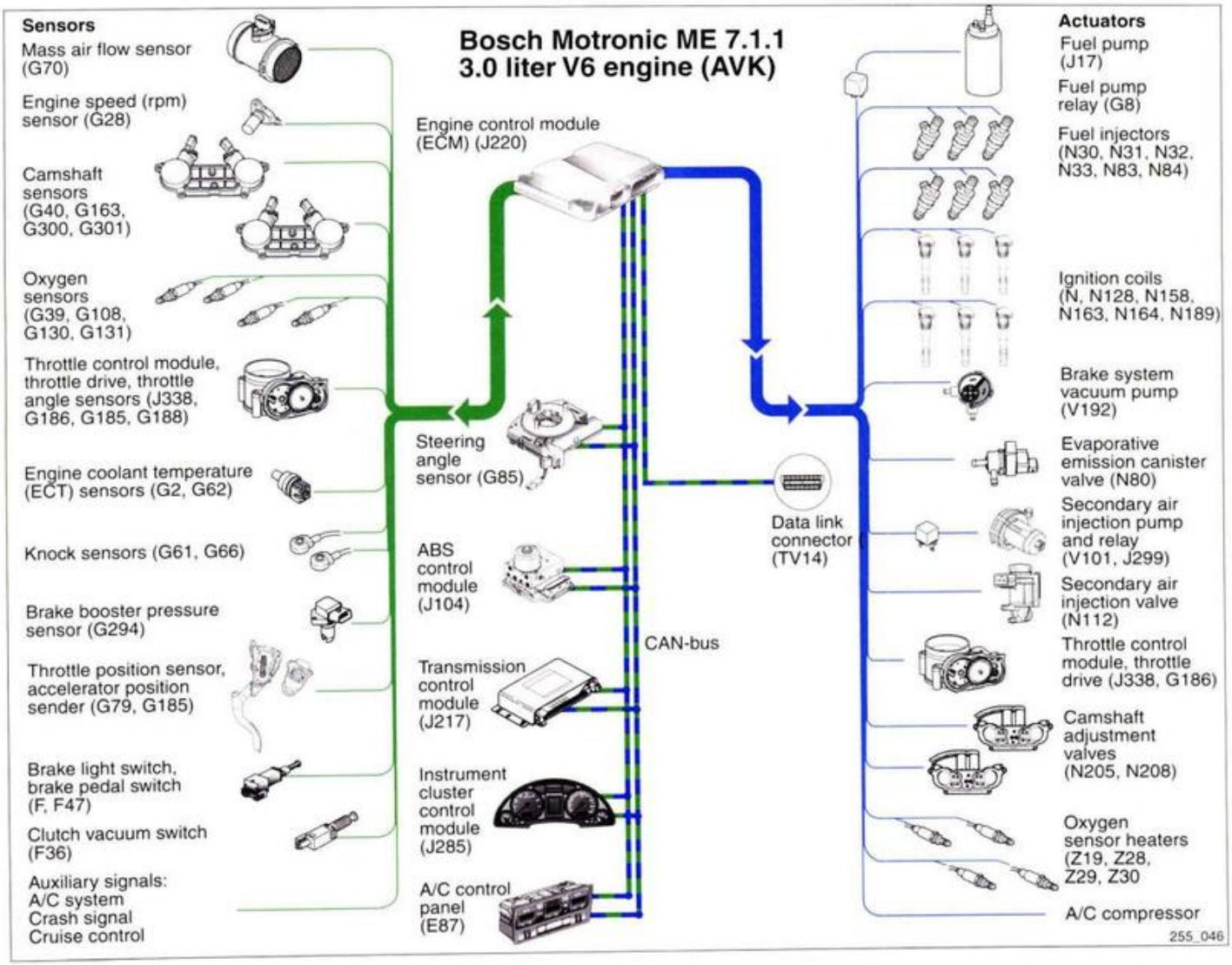
A pressure control valve in the T-fitting limits pressure in the fuel return line to a maximum of 14.5 psi (1 bar). When the valve opens, fuel flows directly into the fuel pump baffle.

### Motronic engine management

Bosch Motronic engine management systems in A6 cars combine fuel injection, ignition and on-board diagnostic capabilities. The Motronic engine control module (ECM) coordinates a variety of environmental sensors, drivetrain monitors and driver wishes to determine performance parameters for the engine. It also stores, for later access, diagnostic trouble codes (DTCs). Motronic systems are fully compliant with federal and state mandated second generation on-board diagnostic (OBD II) standards.

The first A6 models in 1998 (2.8 liter engine, engine code AHA) were fitted with Bosch Motronic engine management M5.9.2. The throttle valve in this system is operated via traditional throttle cable.

Starting with 2000 models, A6 models were fitted with Bosch Motronic ME 7 engine management which uses a new internal circuit design to calculate engine torque. The ECM receives relevant signal data from the input sensors and other sources and computes the required amount of engine torque needed based on pre-established priorities.

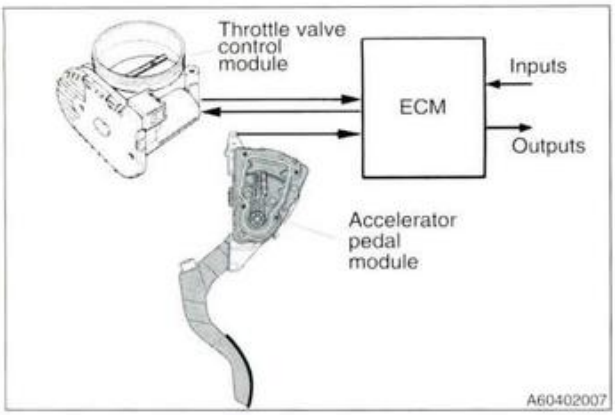



The ME 7 ECM obtains the calculated engine torque through precise coordination of the following output components:

- Throttle valve control module (throttle angle)
- Where applicable, turbo waste gate regulator solenoid valve (boost control)
- Fuel injectors (injection time and fuel cut-off)
- Power output stages with ignition coils (ignition timing)

***NOTE—***

- *Audi identifies electrical components by a letter and / or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parenthesis as an aid to electrical troubleshooting.*




With ME 7, instead of a throttle cable between the accelerator pedal and the throttle valve there is electronic throttle control with the following components:

- Throttle valve control module
- Accelerator pedal module

The electronic throttle valve control system is used to reduce and increase torque without adversely affecting exhaust emissions.

The ideal combination of throttle opening and charge pressure can be controlled for greatest efficiency. Under acceleration, throttle movement is programmed to best increase intake charge velocity. On deceleration, the throttle valve can be held open to reduce emissions.

### RS6 engine management

The Motronic adaptive engine management system controls turbo boost pressure, engine knock and exhaust-gas temperature for enhanced engine performance and efficiency.

The optimized dual-branch exhaust system with middle and rear mufflers, larger pipe sections and metal-base catalytic converters adds to performance and sound.

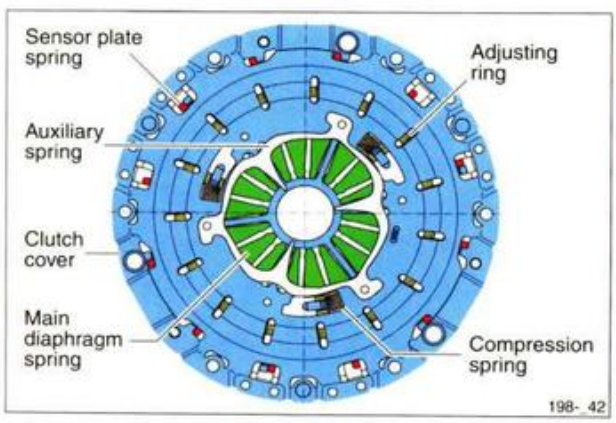
To save weight, the upper section of the air cleaner is made from a carbon fiber composite. A carbon-fiber cover over the front section of the engine adds to the striking under hood appearance.

## 3 Clutch and Transmission

### Self-adjusting clutch (SAC)

The 2.7 liter biturbo engine is equipped with the self-adjusting clutch (SAC).

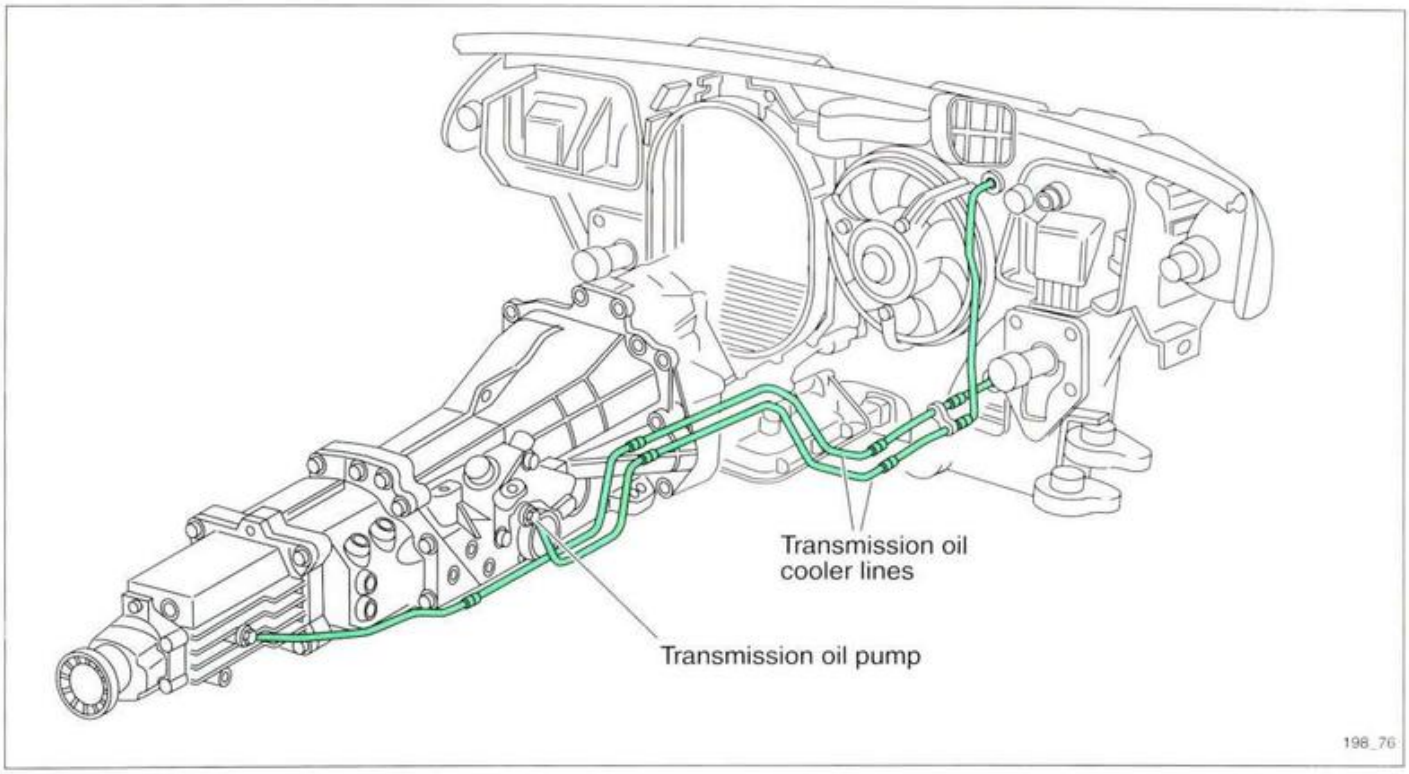
The SAC is designed to maintain consistent clutch action throughout the life of the clutch disc. If the clutch disc is replaced without pressure plate replacement, follow the correct procedure to reset the pressure plate adjusting ring. See **30 Clutch**.




### Manual transmission

A6 manual transmissions are all-wheel drive (quattro). Manual transmission applications are as follows:

- **5-speed (01A)**:
  2.8 liter V6 models, engine codes AHA, ATQ
- **6-speed (01E)**:
  2.7 liter biturbo V6, engine codes APB, BEL
  V8 models, engine codes ART, AWN, BBD
- For transmission identification and additional application information, see **03 Maintenance**.

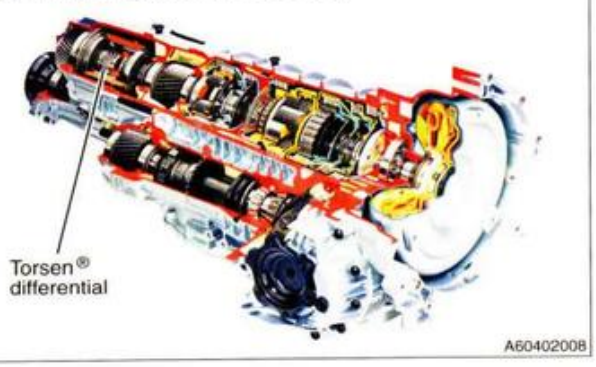



### Transmission oil cooling

The six speed manual transmission oil is cooled by circulating through a radiator heat exchanger.

## Automatic transmission

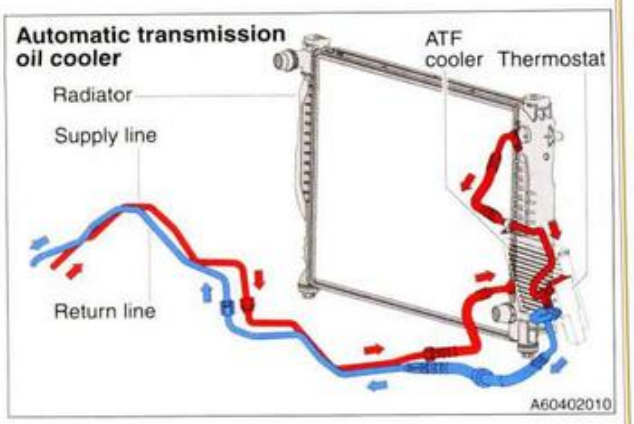
**01V automatic transmission**




### Automatic transmission versions

A6 automatic transmission applications are as follows:

- **5-speed front-wheel drive (01V)**:
  2.8 liter V6 models, engine codes AHA, ATQ
- **5-speed all-wheel drive (quattro) (01V)**:
  2.8 liter V6 models, engine codes AHA, ATQ
- **5-speed all-wheel drive (quattro) (01L)**:
  2.7 liter biturbo V6 engine (allroad quattro)
  V8 models
- **Multitronic® (continuously variable transmission or CVT) front-wheel drive (01J)**:
  3.0 liter V6, engine code AVK

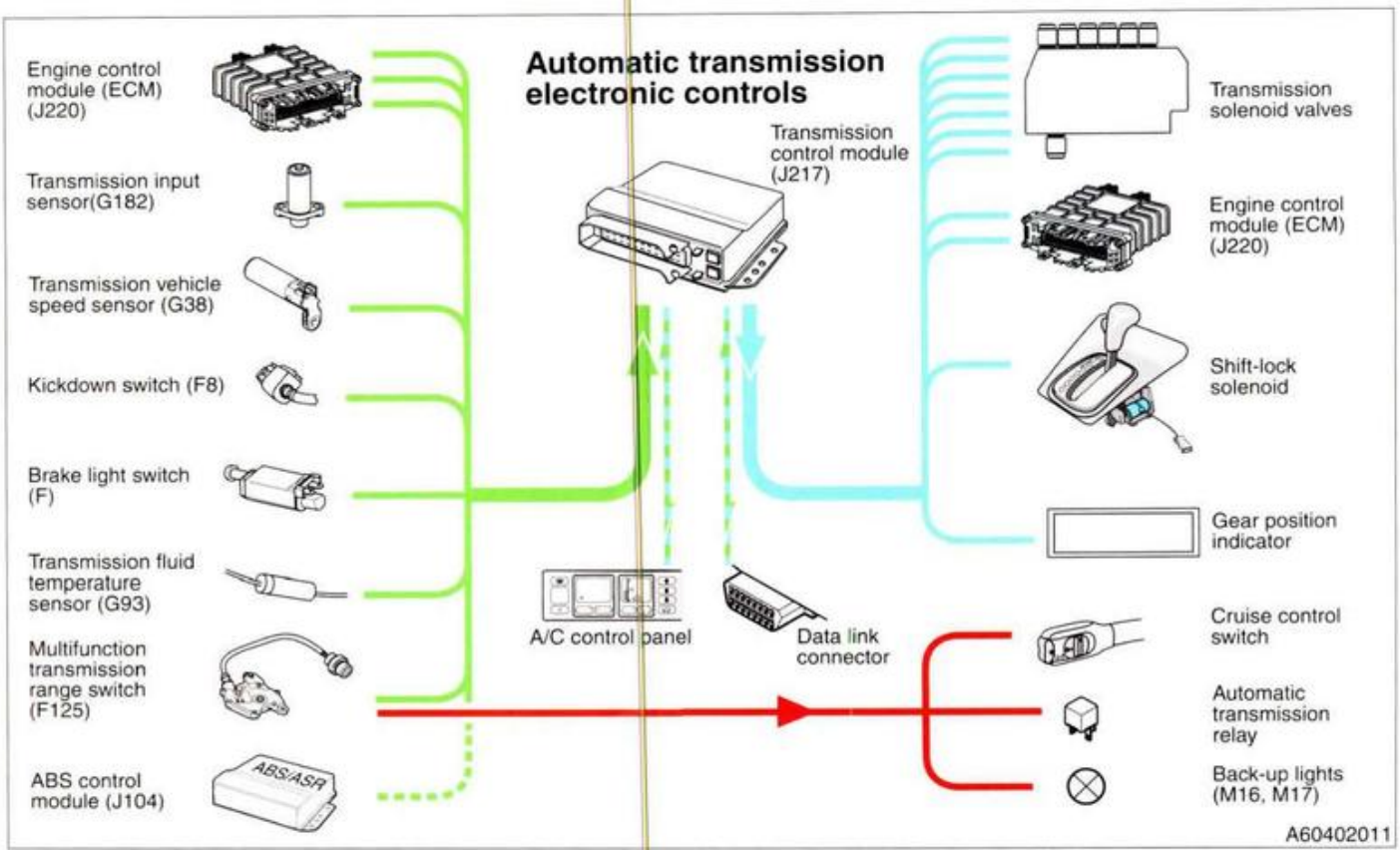



Thermostatically controlled ATF cooler in front of the engine radiator.

### Automatic transmission controls

The automatic transmission control module (J217) receives signals from a number of sensors. These signals are used to control when the transmission shifts and how the shift feels.

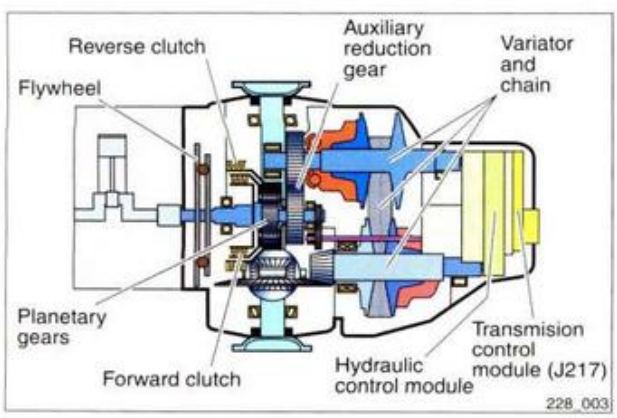
The on-board diagnostics system also monitors the transmission for faults and stores diagnostic trouble codes (DTCs) which can be accessed via the data link connector.




## Multitronic® (CVT) transmission

Models with 3.0 liter engine (engine code AVK) were available with the continuously variable transmission (CVT) known as the Multitronic®.

The key component of the Multitronic® transmission is the variator. It allows gear ratios to be adjusted continuously between the starting torque multiplication ratio and the final torque multiplication ratio. As a result, a suitable gear ratio is always available. The engine can operate within the optimum rpm range regardless of whether it is optimized for performance or fuel economy.



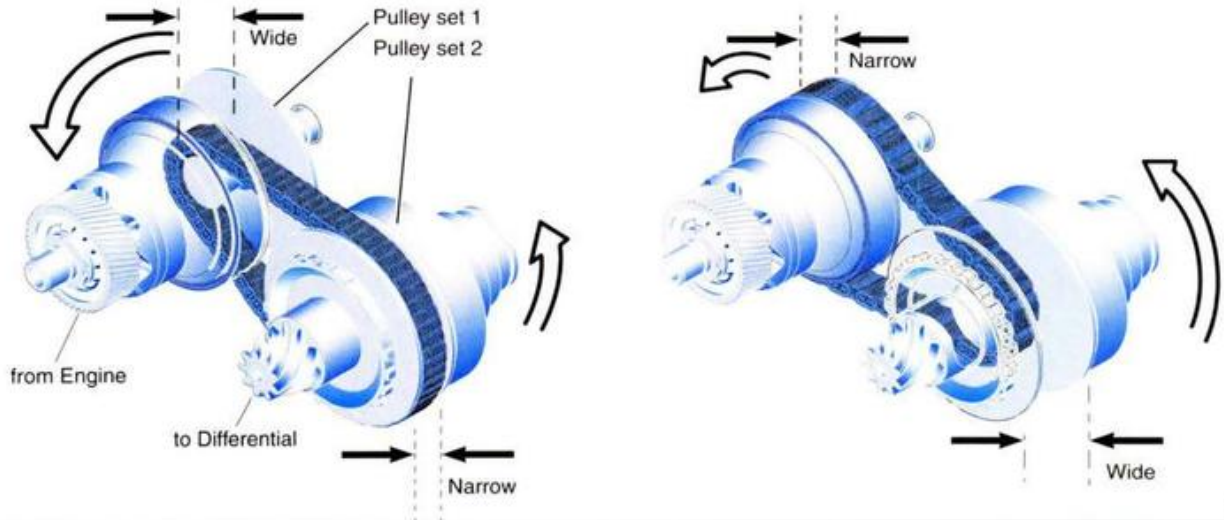
The variator has two tapered disc pairs as well as a special chain which runs in the V-shaped gap between the two tapered pulley pairs. The chain acts as a power transmission element.

- Pulley set 1 is driven by the engine through an auxiliary reduction gear step.
- Engine torque is transmitted via a special chain to pulley set 2 and from there to the final drive.

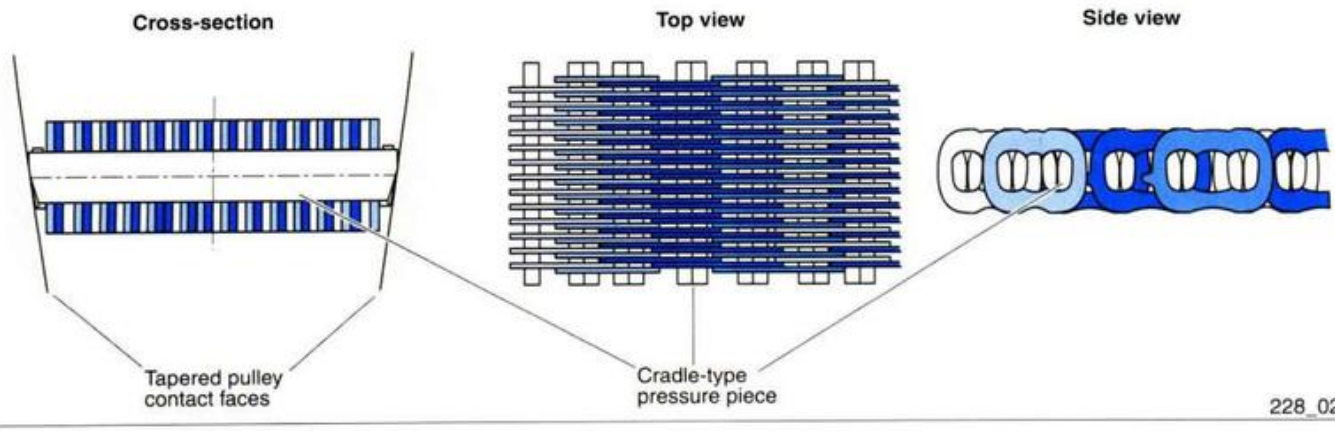
One of the tapered pulley halves in each pulley can be shifted on the shaft for variable adjustment of the chain track diameter and transmission ratio. The two sets of pulleys are adjusted simultaneously so that the chain is always taut and the disc contact pressure is sufficient for power transmission purposes.

Torque is transmitted by the frictional force between the ends of the cradle type pressure pieces and the contact faces of the tapered pulleys.

**Variator in starting torque ratio**




**CVT chain design**



## RS6 transmission

Emphasizing sports car-like driving, engineers specifically tuned a five-speed Tiptronic automatic transmission for the RS6. In Sport setting (gear selector in S position), gears are held longer on upshifts and downshifts are advanced to increase performance. Depending on the level of lateral acceleration, the transmission management system can even adjust to avoid undesirable shifts during cornering.

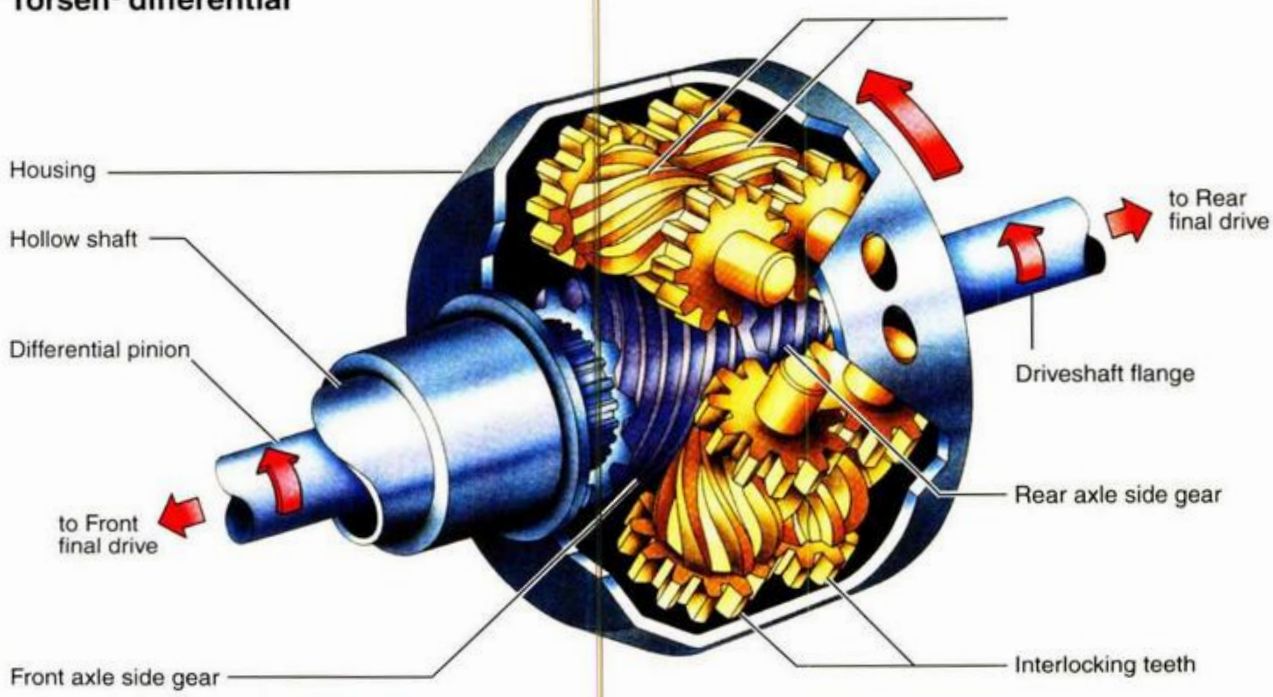
The RS6 driver can also operate the transmission manually in either of two ways: by briefly pressing the gear selector front or back in the Tiptronic shift gate, or via race-inspired shift paddles behind the steering wheel.

The specially tuned RS6 Tiptronic transmission also incorporates a Dynamic Shift Program (DSP) with hill detection capability. DSP automatically selects from more than 200 shift patterns to match driver characteristics with driving conditions, while hill detection capability prevents gear hunt on inclines.

## Torsen® differential

All-wheel drive (quattro) systems rely on a torque sensing (Torsen®) center differential to distribute power between the front and rear axles. This type of differential works without electrical connections or computer controls. There are no driver inputs. The Torsen differential is a sealed unit in the rear of either the manual or the automatic transmission housing.

**Torsen® differential**

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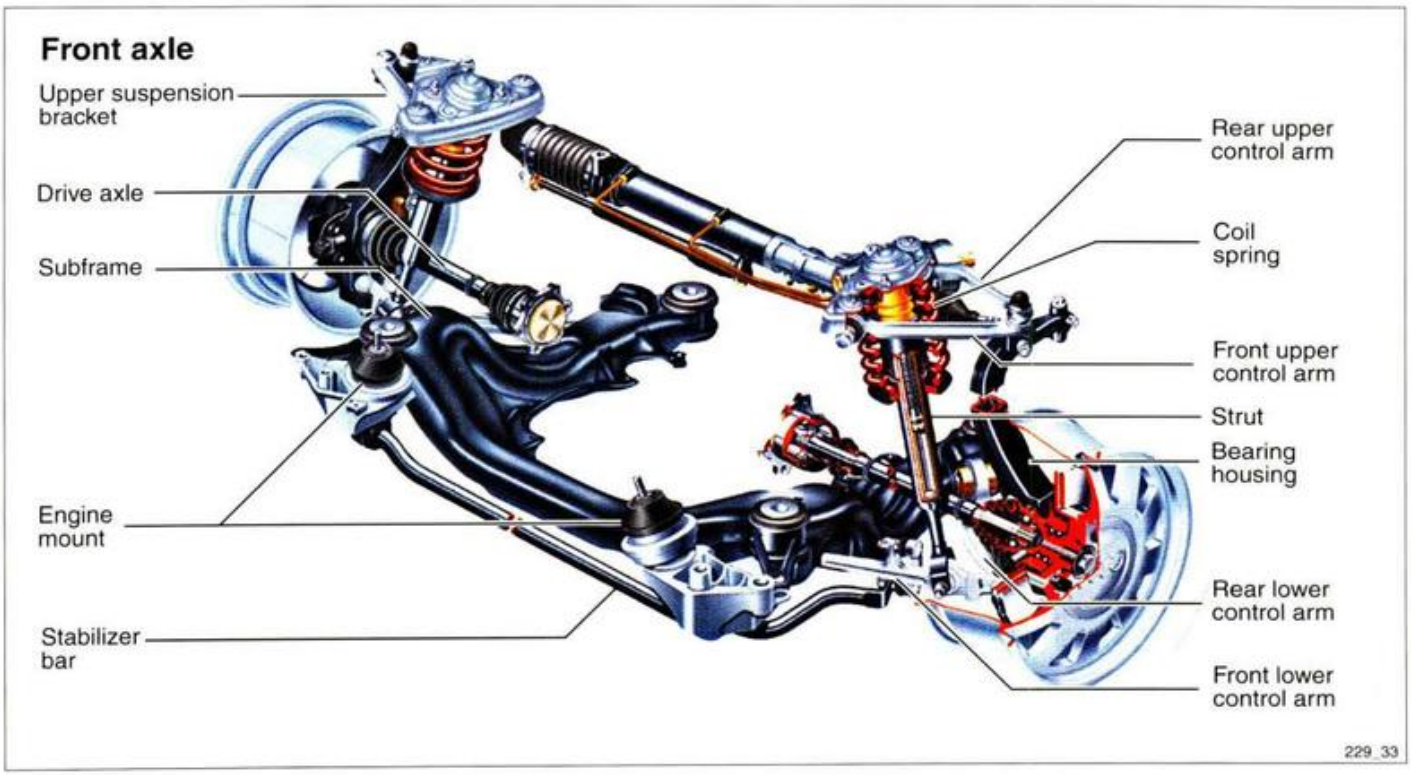



# 4 Suspension, Brakes and Steering

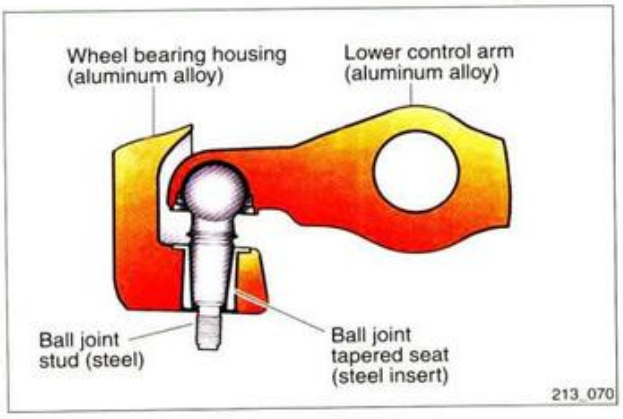
## Suspension

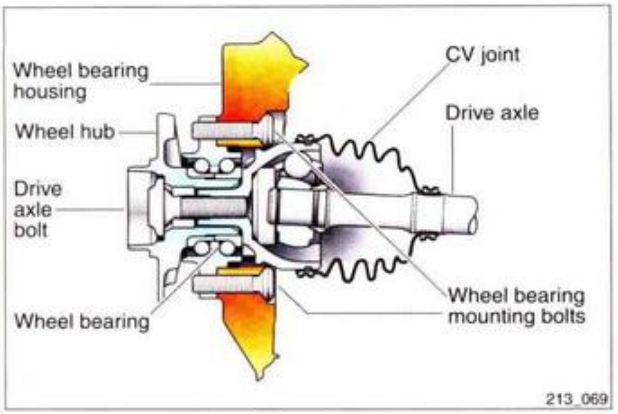
### Front suspension

A light and stable subframe rigidly holds the front axle components together and supports the front of the engine- transmission assembly.

In order to save weight, many suspension components, including front wheel bearing housing, wheel bearing assembly and wheel hub are made of light-weight aluminum (Al-Mg-Si) alloy.

Due to the softness of the aluminum alloy, tapered ball joint stud seats are reinforced with press-fit steel bushings.



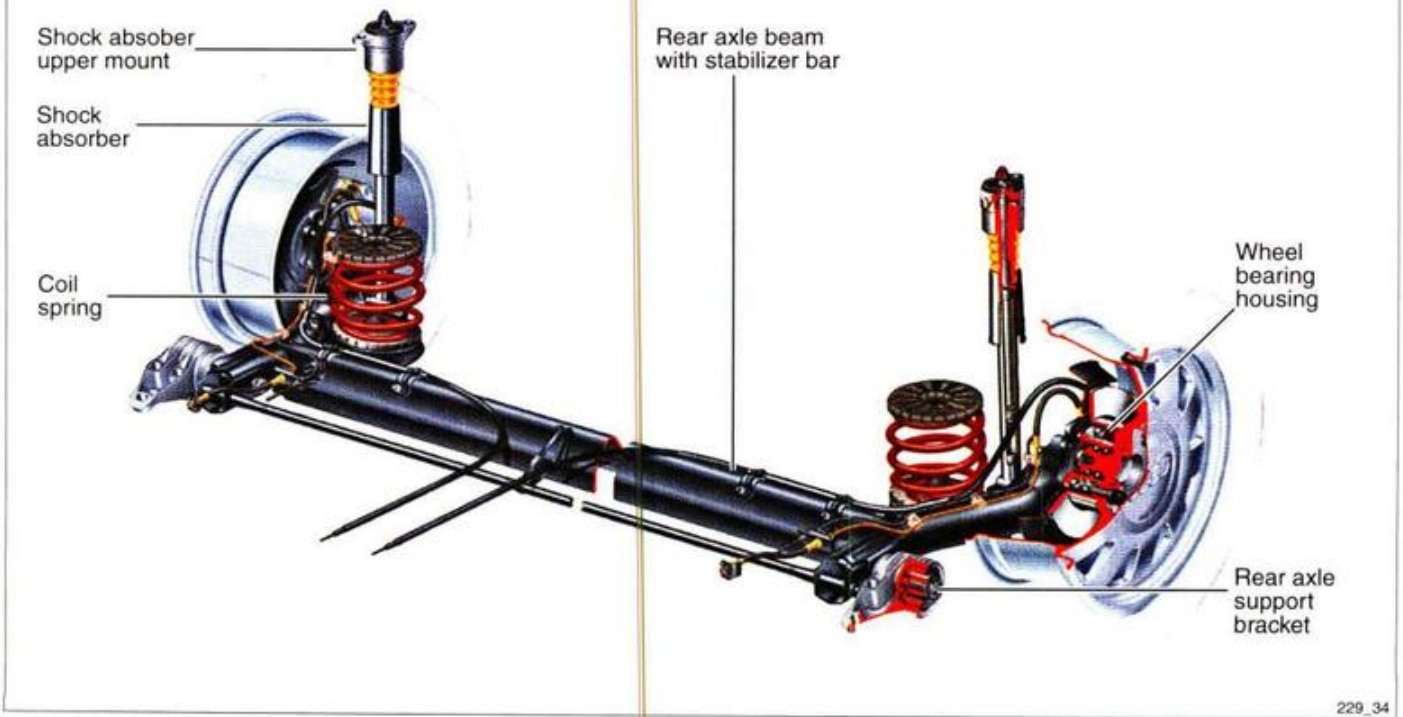


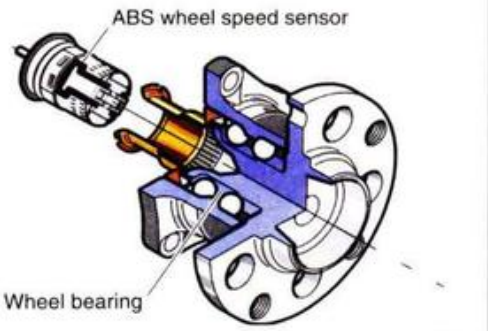

The front wheel bearing is bolted to the wheel bearing housing. This makes it possible to replace the wheel bearing without having to remove the wheel bearing housing or the drive axle.

### Rear suspension (front-wheel drive)

The front-wheel drive rear suspension is referred to as the compound-link axle. The support brackets with large rubber bushings are placed on the outside of the rear axle, thus reducing rocking of the assembly. The placement of the shock absorbers and coil springs allows a maximum cargo width of 39.4 inches (1 meter).

**Rear axle rear-wheel drive**






The double groove ball bearing wheel bearing and hub bolt as a unit to the fwd rear axle.

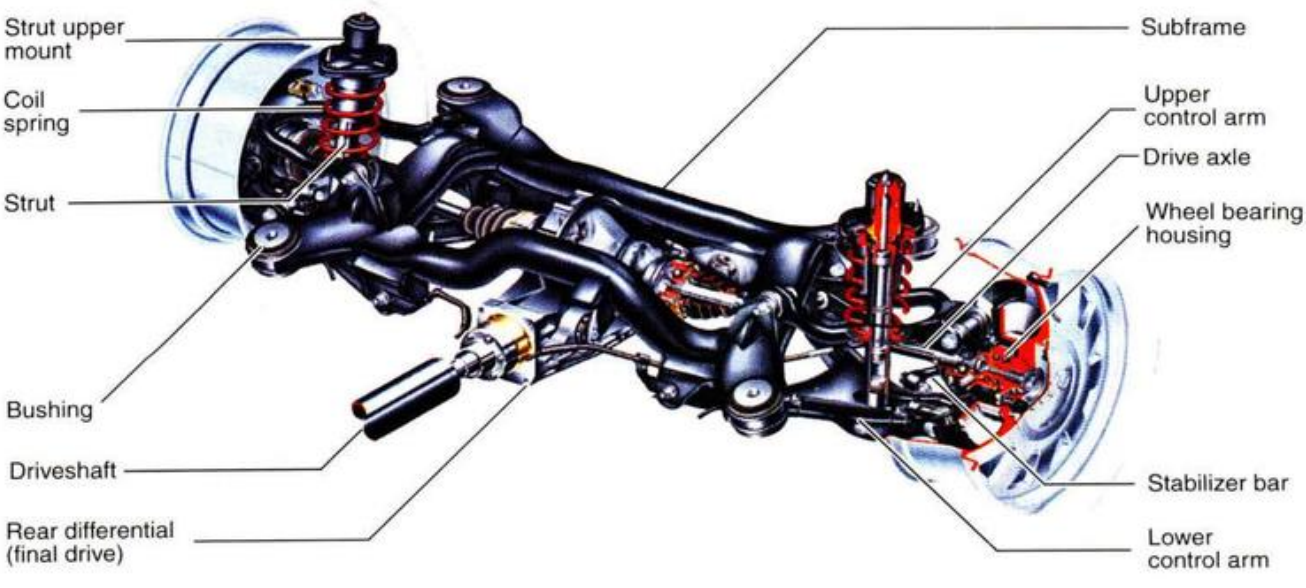
The ABS wheel speed sensor is in the center of the wheel bearing hub.

### Rear suspension (quattro)

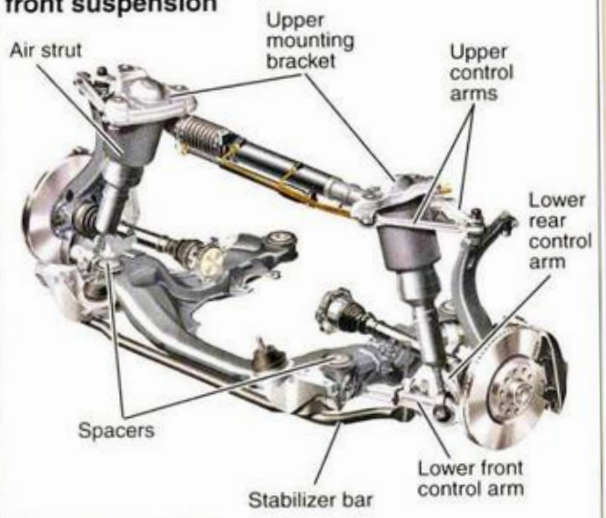
The all-wheel drive (quattro) rear suspension is referred to as double transverse link rear axle. Upper and lower transverse control arms are anchored to a tubular subframe.

- The placement of the struts allows a maximum cargo width of 39.4 inches (1 meter).
- The subframe is suspended from the body on rubber and metal bushings, providing good acoustical isolation for the passenger cabin.
- Wheel bearings are double grooved contact bearings.

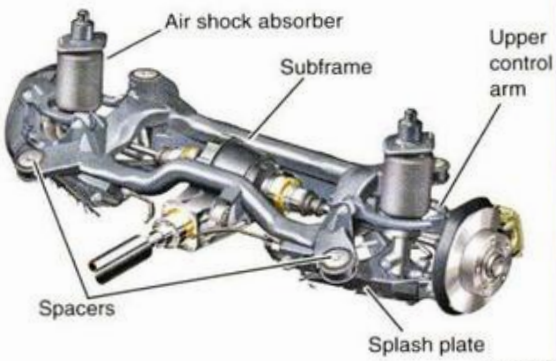
**Rear axle, quattro (all-wheel drive)**



**allroad quattro front suspension**




**Rear suspension**

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## allroad quattro air suspension

***CAUTION—***

- *Before jacking up or lifting allroad quattro vehicle, place the suspension in service mode. See* **allroad quattro "jack mode"** *in* **03 Maintenance**.

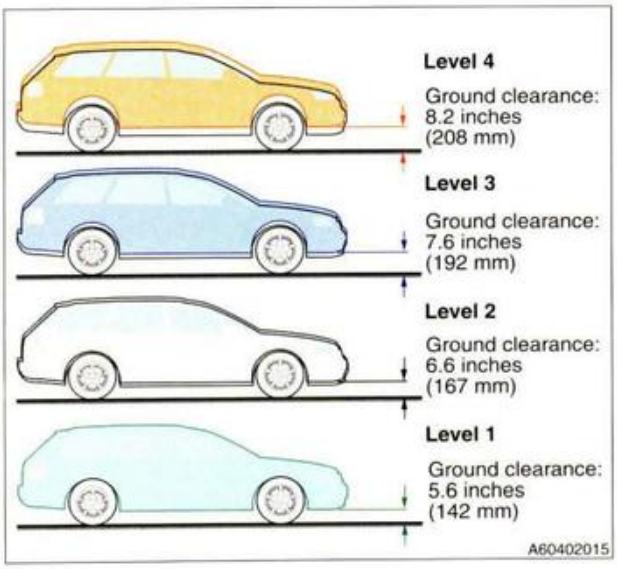
Although derived from A6 suspension, the allroad quattro suspension differs in a number of ways:

### Front suspension

- Subframe strengthened
- Drive axle cutouts deepened for additional suspension travel
- Suspension level sensor brackets welded to subframe
- Suspension strut eye lowered
- Suspension level sensor bracket and coupling rod moved further inboard for clearance reasons
- Rear lower control arm ball joint increased in size
- Rear upper control arm angle changed
- Upper suspension bracket modified to accommodate air struts
- Front subframe bushing spacers 25 mm (1 in) thick
- Front drive axle shafts redesigned due to changed suspension characteristics

### Rear suspension

- Upper control arm modified to accommodate air struts
- Upper control arm pivot point set higher to optimize wheel clearance
- Track rod made of aluminum for increased rigidity and improved tracking
- Splash plate under lower control arm to deflect debris away from brakes
- Stabilizer bar shape modified to make room for suspension air pump
- Rear drive axle shaft diameter increased
- Rear outer CV joints reinforced
- Driveshaft center bearing adapted to higher body



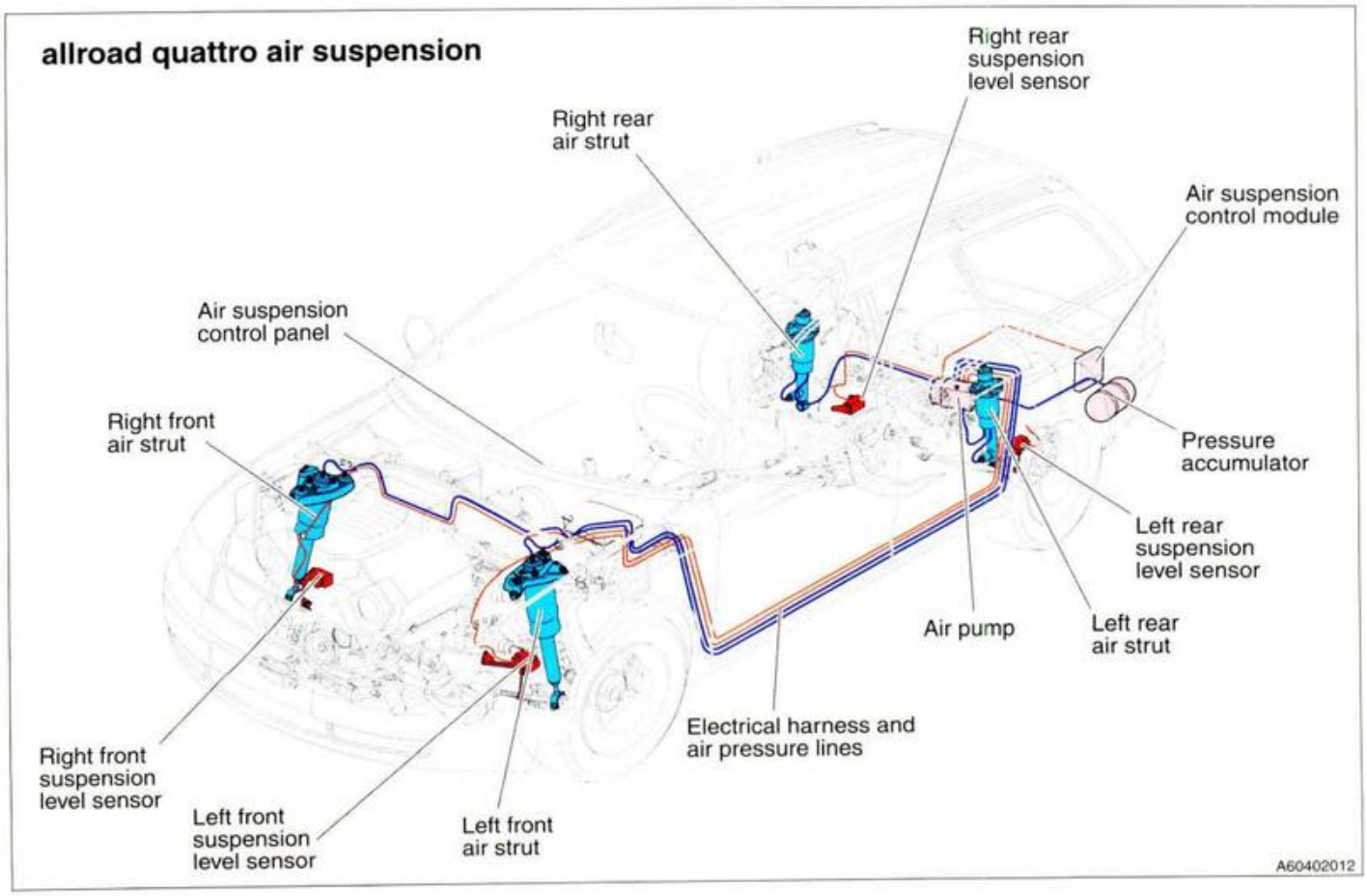

### Four-level air suspension

The allroad quattro four-level air suspension system alters ground clearance by 2.6 inches (66 mm) in four stages. Vehicle level is automatically controlled as a function of road speed. Automatic level control overrides manual settings.

The four-level air suspension system is composed of:

- Dashboard display
- Warning light
- Air springs
- Solenoid valves
- Pressure sensor
- Suspension level sensors
- Air compressor
- Temperature sensor
- Pressure accumulator

The air suspension system is designed for fast response and low noise.



## RS6 suspension

The RS6 suspension system, known as Dynamic Ride Control (DRC), uses diagonally connected, hydraulically dampened shock absorbers. By continually adjusting the hydraulic pressure at each shock absorber, DRC limits body roll and pitch during spirited driving.

DRC connects the shock absorbers at the opposite corners of the vehicle via a hydraulic system incorporating a central reservoir. During sharp cornering, as the hydraulic pressure on the shock absorber on the inside is reduced, hydraulic fluid is transferred through the reservoir to increase pressure to the diagonally linked shock absorber on the outside.

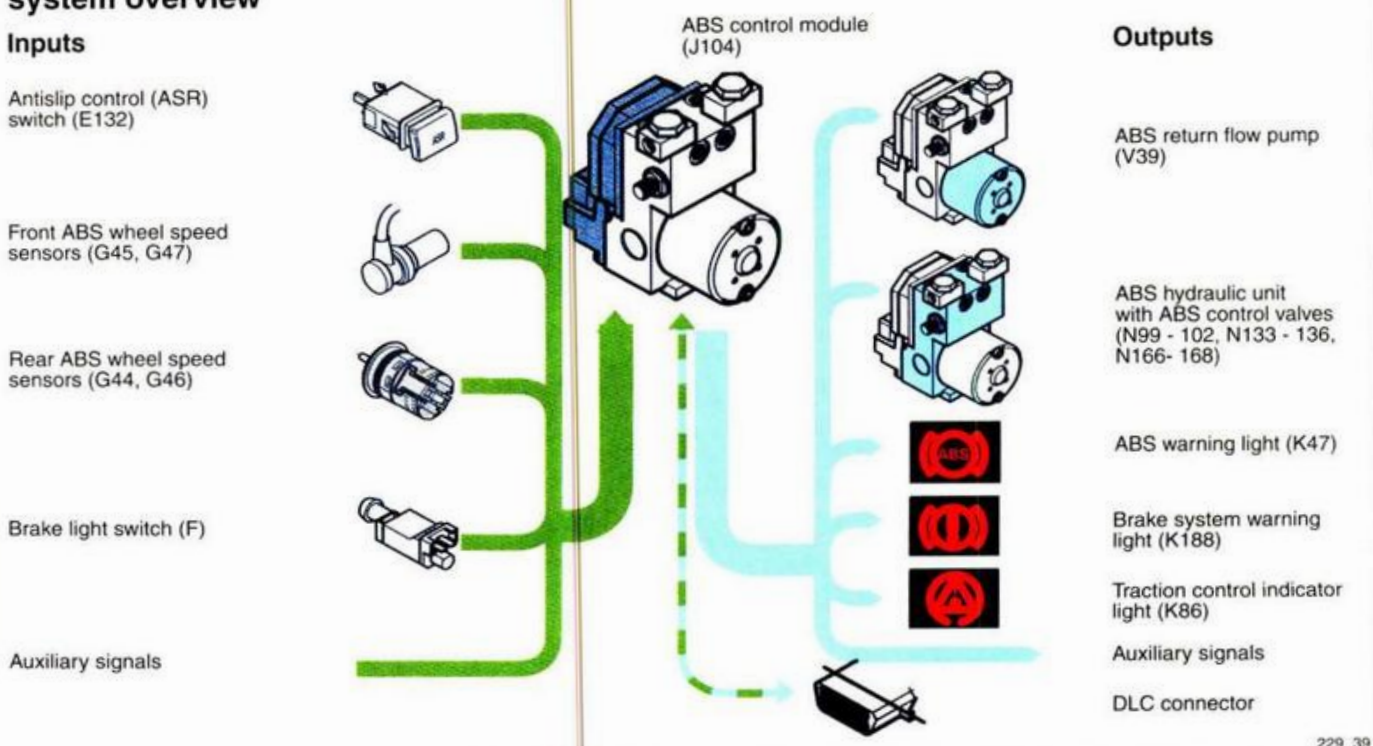
The central reservoir of the DRC also works to balance hydraulic pressure when front or rear shock absorbers are under pressure, such as during hard starts and stops. By effectively stiffening the suspension under pressure, DRC helps maintain the overall stability of the RS6.

## Antilock brakes (ABS)

A6 vehicles are equipped with antilock braking (ABS). ABS uses electronic control of brakes and throttle to prevent wheels from locking during hard braking, thus helping to increase vehicle directional control and decrease stopping distance.

Basic ABS is supplemented by software and hardware to achieve additional safety features. The electronic components have self-diagnostic capabilities.

### Bosch ABS / ASR 5.3 system overview



### Bosch ABS / ASR 5.3

Bosch ABS 5.3 includes the following vehicle stability refinements:

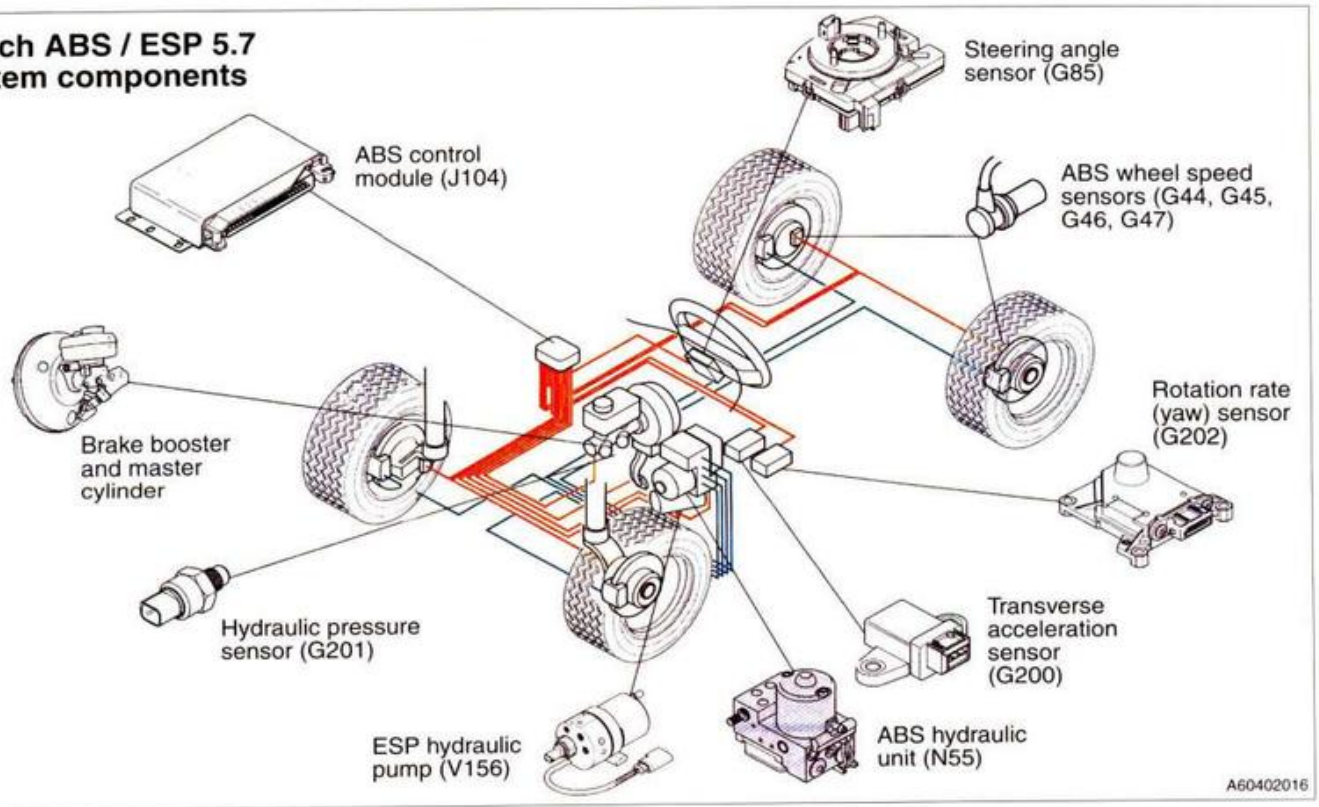
- **Electronic brake pressure distribution (EBD)**. ABS control module regulates brake pressure to eliminate rear wheel lock-up. EBD control ends as soon as ABS control is applied.
- **Electronic differential lock (EDL)**. As an aid to starting on a slick surface, EDL automatically brakes the spinning wheel and shunts driving torque to the wheel with traction. EDL controls slip up to 25 mph (40 kph) in a front-wheel drive vehicle and up to 50 mph (80 kph) in a quattro (all-wheel drive) vehicle.
- **Antislip regulation (ASR)**. On front-wheel drive vehicles, if driving wheels spin during acceleration, ASR regulates wheel spin by reducing engine torque. This is done through retarding ignition timing or cyclically shutting down fuel injectors. ASR is effective across the entire range of speed.

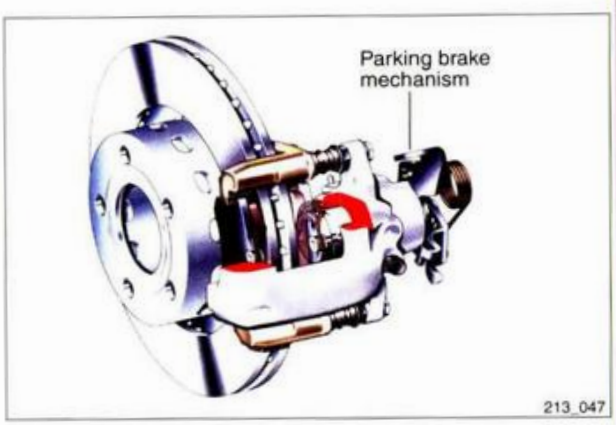
### Bosch ABS / ESP 5.7

Beginning in 2001, A6 models are equipped with ABS supplemented with electronic stability program (ESP). This traction control system uses acceleration sensors (rotation rate or yaw sensor and lateral acceleration sensor), steering angle sensor and hydraulic pump to maintain precise control of the vehicle under difficult traction conditions. ABS / ESP incorporates ABS / ASR features (EDL, EBD) in addition to:

- **Electronic brake control (EBC)**. This feature prevents driven wheels from locking (and skidding) due to engine braking.

**Bosch ABS / ESP 5.7 system components**






## Brakes

### Front brake calipers

The A6 has a diagonally partitioned dual circuit brake system with front and rear disc brakes. The front brake disks are ventilated.

Beginning with 2000 models, the high performance HP-2 front brake caliper was fitted (except allroad quattro and RS6). This caliper, partly made of aluminum, makes it possible to reduce the weight of the front axle by 4.9 lb (2.2 kg) despite the fact that the front discs are larger.

High performance Brembo front brakes are fitted to RS6 models.

There are four pads per caliper. A stainless steel central leaf spring allows brake pads to be changed with no special tools and without the need to remove the caliper.

To prevent contact corrosion between aluminum and steel components, the caliper carrier and outer (floating) caliper are coated with zinc-cobalt.

### Rear brake calipers

The aluminum rear brake caliper reduces weight by approximately 1.1 lb (0.5 kg) per side. The parking brake cable attaches to the rear caliper and operates the pads.

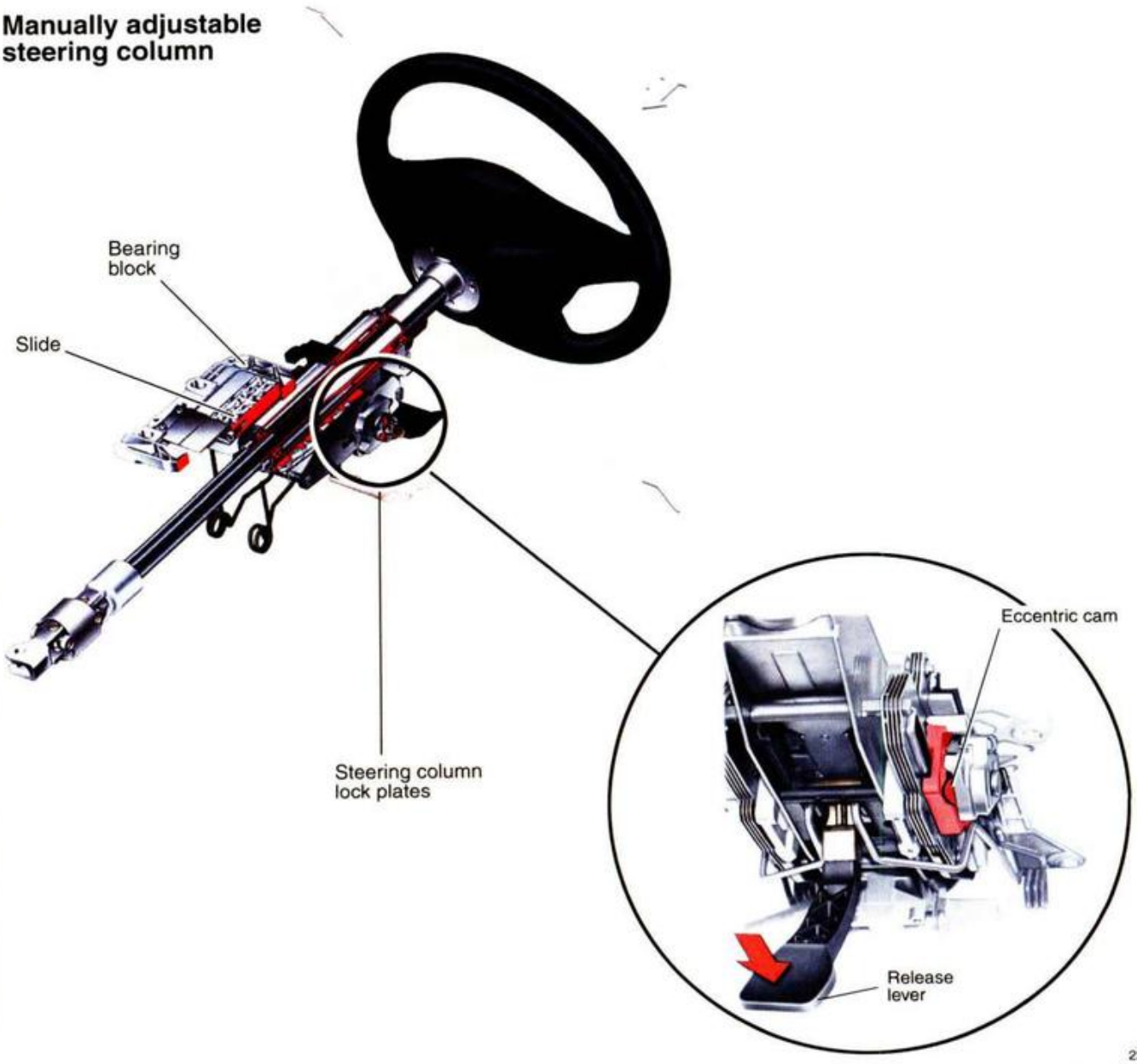
## Steering column

The manually adjustable steering column has a range in length of 2 inches (50 mm) and in height of 1.6 inches (40 mm). The steering column adjustment lock system consists of eight plates on either side of the steering shaft. Of these four are for length adjustment and four are for height adjustment. The lock plates have large surfaces, providing for good clamping and ease of use.

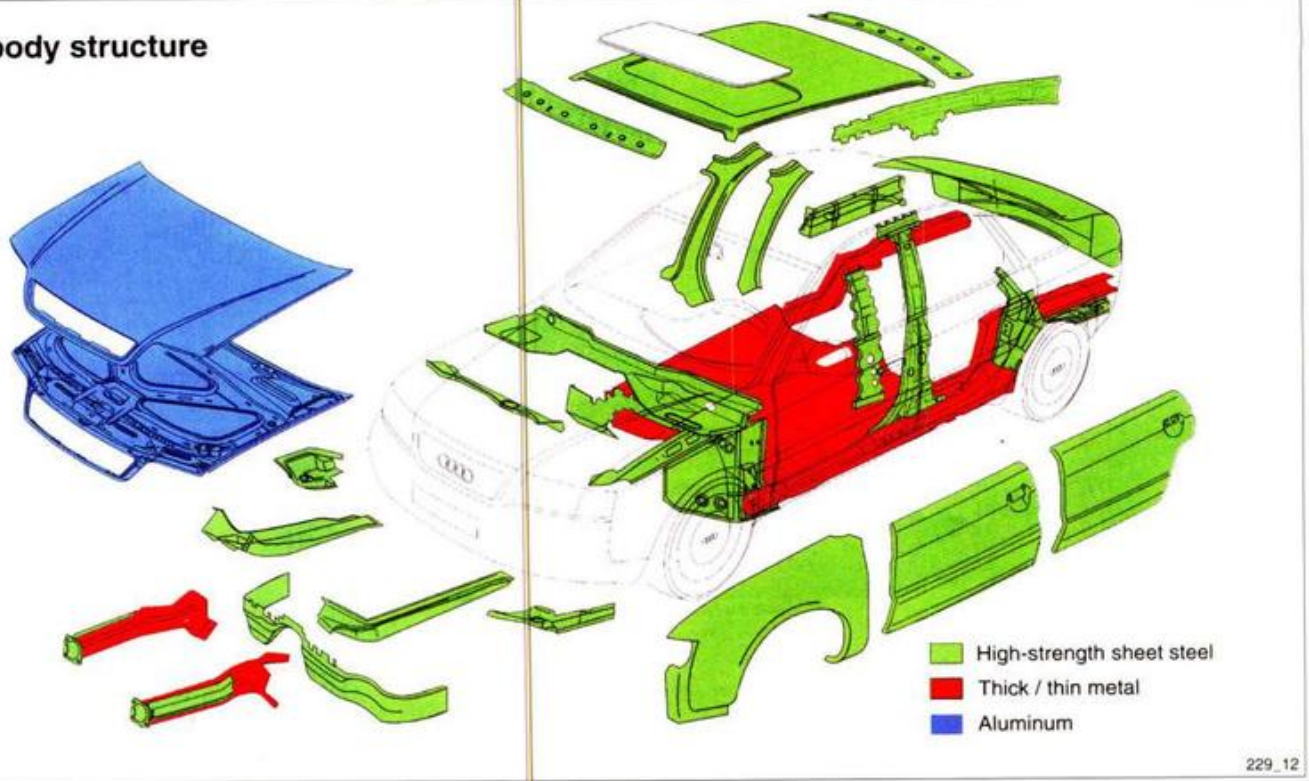
The magnesium slide and bearing block supporting the steering column are designed to collapse in case of an accident.

An electrically powered adjustable steering column is an available option with some models.

**Manually adjustable steering column**



**A6 body structure**




# 5 Body–Assembly
# 6 Body–Components and Accessories
# 7 Body–Interior Trim

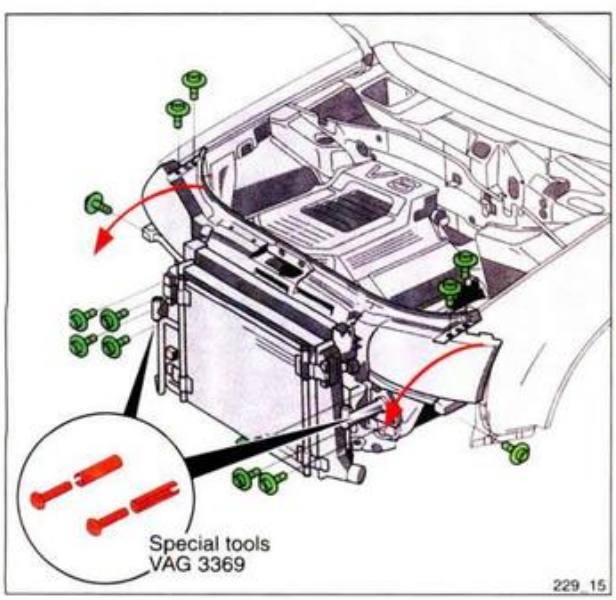
## Body structure

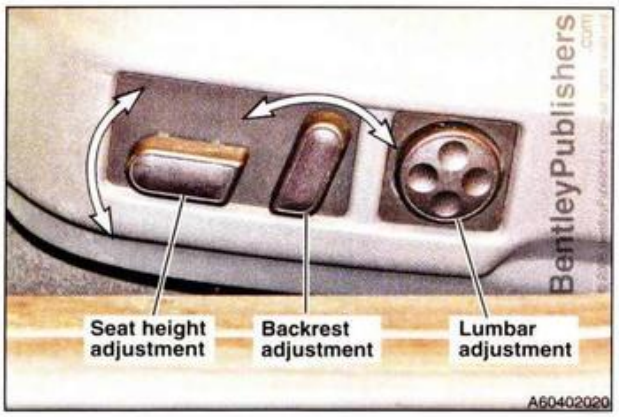
The A6 body sets high standards for crash safety and meets demands for lighter structure as well.

- Thin high-strength steel structure and sheet metal keeps down vehicle weight without reducing rigidity.
- Continuous laser welds connect the roof and side members, increasing the overall rigidity of the body.
- Aluminum, used in the engine hood, is as strong as steel when utilized correctly.
- Deformation elements in the front and rear insure that the body structure remains intact in minor accidents.

## Service position

About 2.8 inches (70 mm) of clearance is gained for working in the engine compartment by placing the front lock carrier (radiator support panel) in service position. Use special tools VAG 3369 to support lock carrier panel. See **50 Body–Front**.






## Seats

The power seat is adjusted with convenient self-explanatory button-levers on the side of the seat cushion.

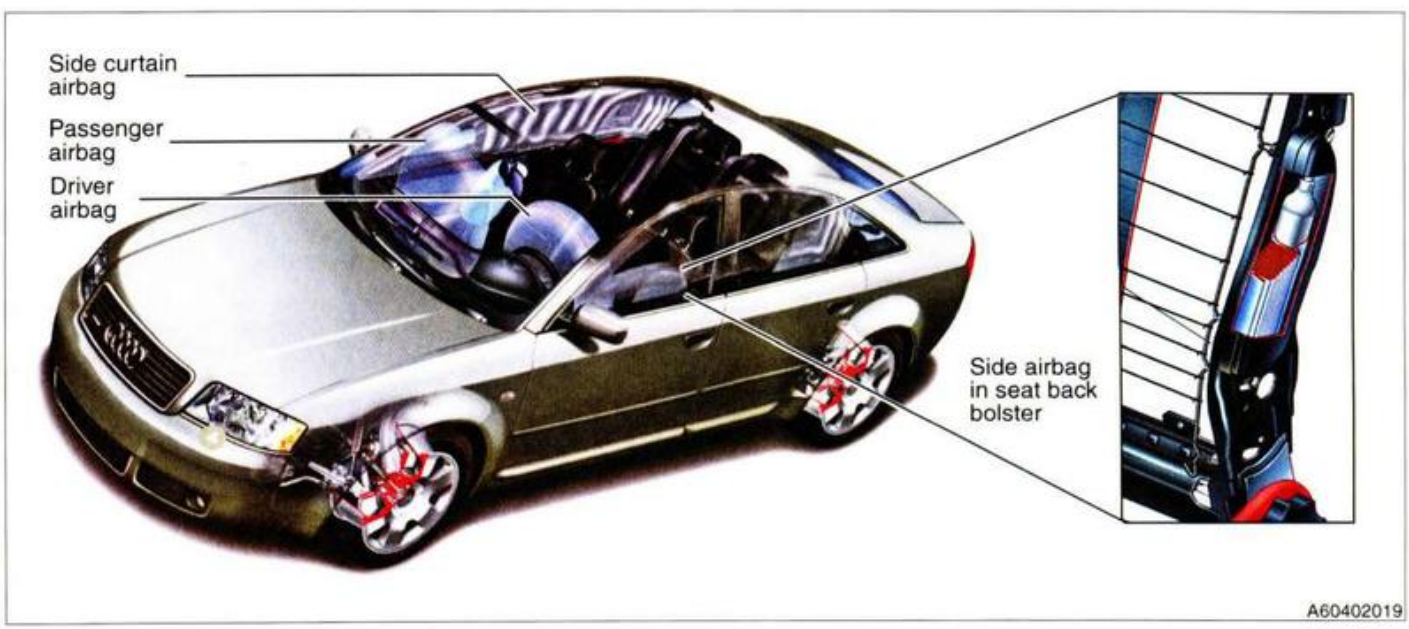
Automatic driver and passenger seat adjustment with memory function is an option. The system stores seat and outside rear-view mirror settings for three drivers.

The passenger side outside mirror swivels downward when the vehicle is in reverse, allowing a view of the right rear wheel and the curb.

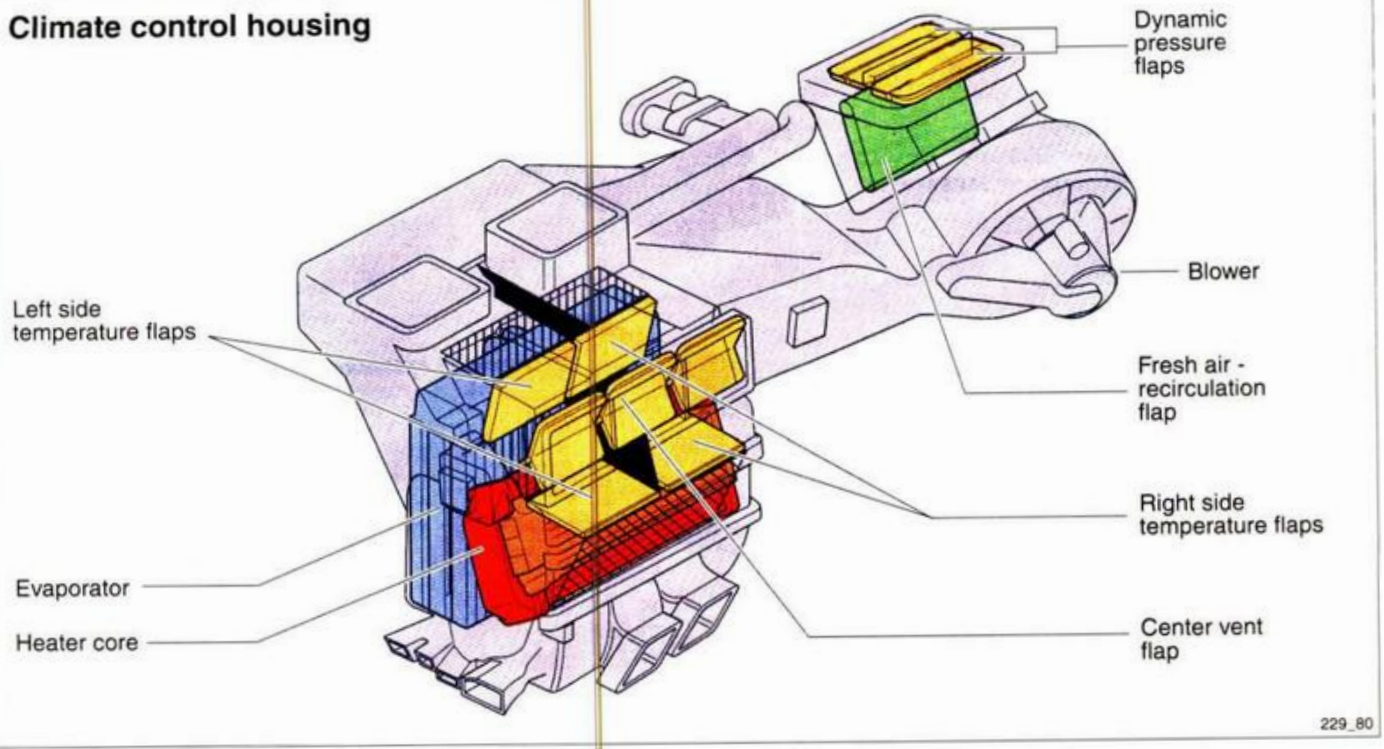
## Passenger safety

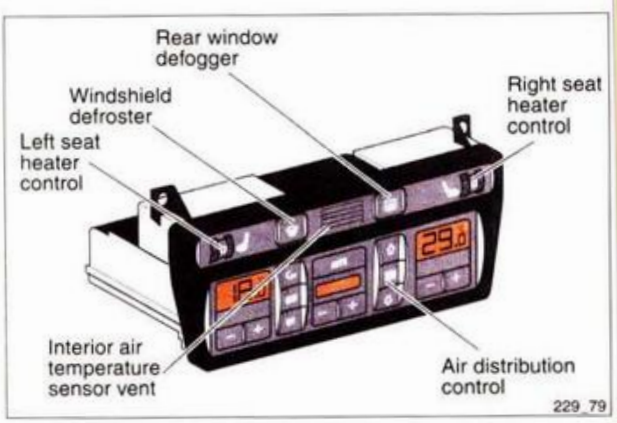
A6 passenger safety features include:

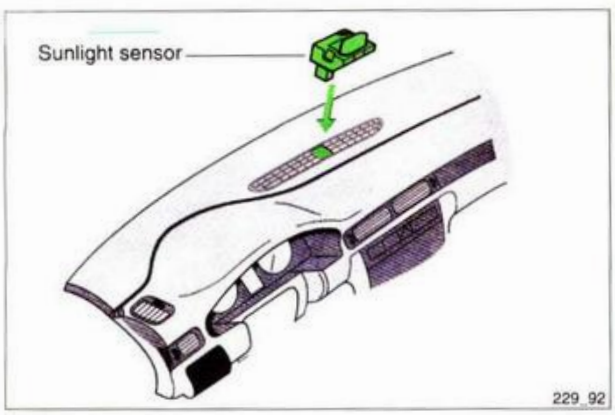
- Driver and passenger airbags
- Side (thorax) airbags in seat back bolsters
- Optional side curtain airbags
- Pyrotechnic seat belt retractor reels



**Climate control housing**




## 8 Heating and Air-conditioning

The climate control housing under the dashboard contains the evaporator, heater core (heat exchanger) and blower.

Electric motors operate heating and air-conditioning vent flaps:

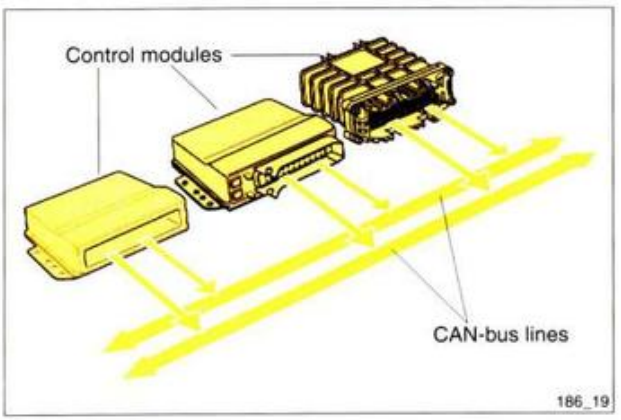
- Fresh air-recirculation flap is combined with the dynamic pressure flap.
- One temperature flap for each side of the passenger cabin.
- Three-part flap for the center vent and the foot well vents.

Climate control function is fully automatic, with separate temperature controls for left and right.

➢ The climate control panel on the dashboard features:

- Rear window heater and windshield defroster control integrated with control panel.
- Left and right side cabin temperature independently adjustable between 64° and 86°F (18° to 30°C).
- Interior air temperature vent and sensor integrated with panel.

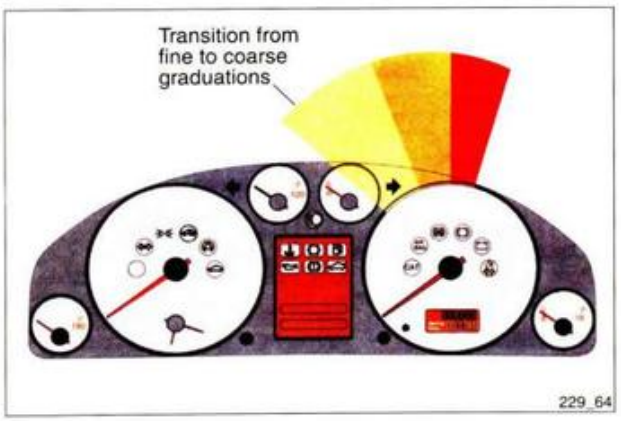
➢ The sunlight sensor, located in the top of the dashboard, detects which side of the vehicle the sunlight is coming from and signals the climate control system to heat or cool that side to compensate.




# 9 Electrical System

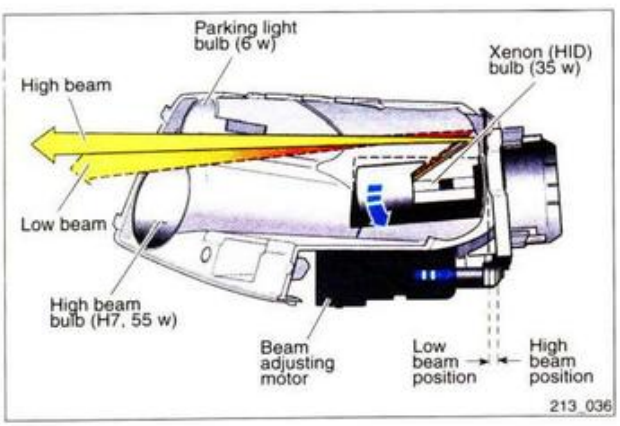
## CAN-bus

In response to the growing number of electronic modules and controls, later A6 models were equipped with bus data transfer systems. In these systems, digital signals are shared among the modules. The controller area network (CAN) bus is the most frequently used of these systems. See **9 Electrical System–General**.



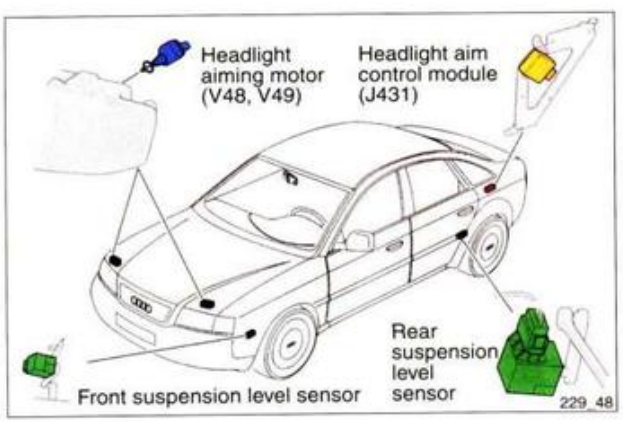

## Graduated speed display

Vehicle speed display in the instrument cluster is not proportional. The graduations are wider in the lower speed up to 50 mph (80 kph), making it easier to maintain a steady rate at speeds that are used most often.




## Xenon (HID) headlights

Optional high intensity discharge (HID) or xenon headlights are designed to use one xenon bulb for both high and low beam. An electric beam adjusting motor switches bulb position in relation to the reflector. An additional halogen (H7) high beam bulb provides long-range illumination and acts as a headlight flasher when the lights are not switched on.




Vehicles with xenon headlights are additionally equipped with a headlight cleaning system and an automatic headlight aiming system. The aiming system adapts headlight aim to vehicle load.

***NOTE—***

- *Headlight aim control module position depicted for models up to 2000. In 2000 - 2004 models, module is behind the glove compartment on a bracket.*

## Instrument cluster, dashboard and controls

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2. Engine oil temperature gauge
3. Tachometer with analog clock and warning lights
4. Engine coolant temperature gauge
5. Fuel gauge
6. Speedometer with warning lights
7. Voltmeter
8. Wiper and washer stalk switch
   Trip computer function switch
9. Storage compartment or
   ASR / ESP switch
10. Emergency flasher switch
11. Cup holder
12. Glove compartment lock
13. Passenger airbag
14. Light switch
15. Engine hood release lever
16. Instrument cluster dimmer
17. Horn button
    Driver airbag
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19. Concert radio
20. Climate control panel
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## GENERAL

This repair group explains the structure of this repair manual and details basic information regarding your vehicle and repair procedures for it. Included are service and maintenance procedures.

Carry out the maintenance work described in this repair group at the factory specified time or mileage interval shown in **Maintenance Schedules**. Following these intervals helps ensure safe and dependable operation.

The owner's manual, maintenance record and warranty booklet originally supplied with the vehicle contain maintenance schedules that apply to your Audi. Many of the maintenance procedures are necessary to maintain warranty protection.

Audi is constantly updating their recommended maintenance procedures and requirements. The information contained here may not include updates or revisions made by Audi since the publication of the documents supplied with the car. If there is any doubt about what procedures apply to a specific model or model year, or what intervals to follow, consult an authorized Audi dealer.

### How to use this manual

This manual is divided into 12 main sections, or partitions:

**0** General, Maintenance
**1** Engine
**2** Engine Management, Exhaust and Engine Electrical
**3** Clutch and Transmission
**4** Suspension, Brakes and Steering
**5** Body–Assembly
**6** Body–Components and Accessories
**7** Body–Interior Trim
**8** Heating and Air-conditioning
**9** Electrical System
**EWD** Electrical Wiring Diagrams
**OBD** On Board Diagnostics

A master listing of the 12 partitions and the corresponding specific repair groups can be found on the inside front cover.

Thumb tabs are used on the first page of each repair group to help locate the groups quickly. Page numbers throughout the manual are organized according to the repair group system. A comprehensive **Index** is at the end of the manual.

## Warnings, Cautions and Notes

Throughout this manual, there are numerous paragraphs with the headings **WARNING, CAUTION** or **NOTE**. These headings have different meanings.

***WARNING —***
- *Text under this heading warns of unsafe practices that are very likely to cause injury, either by direct threat to the person(s) doing the work or by increased risk of accident or mechanical failure while driving.*

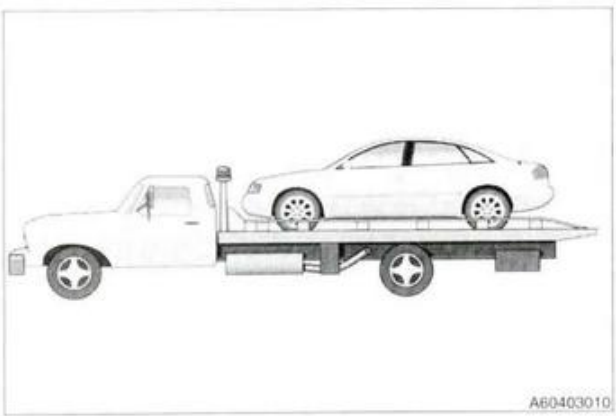
***CAUTION—***
- *Text under this heading also calls attention to important precautions to be observed during the repair work to help prevent accidentally damaging the car or its parts.*

***NOTE —***
- *A note contains information, tips, or pointers which help in doing a better job and completing it more easily.*

Read **WARNING, CAUTION** and **NOTE** headings before you begin repair work. See also **00 Warnings and Cautions**.

# Towing and Transport

## Vehicle transport and towing eyes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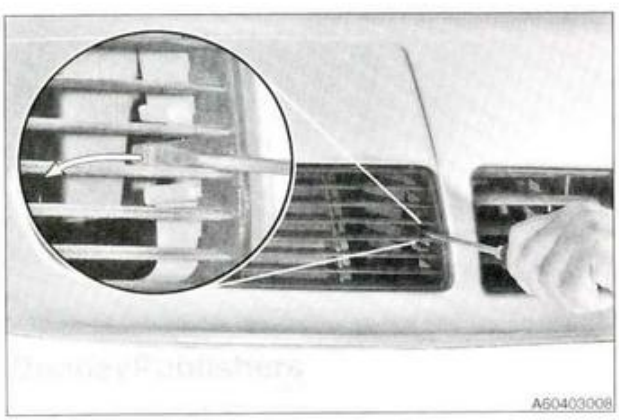
➢ The following information is to be used by a commercial flatbed tow truck operator who knows how to operate equipment safely. To prevent damage to the vehicle, read and understand all of the following information before proceeding.

***WARNING —***
- *Do not allow passengers to ride in a transported vehicle.*
- *To reduce the risk of accident and serious personal injury, stay within manufacturer's rated equipment capacities. Exceeding manufacturer's design specifications is dangerous.*

***CAUTION—***
- *To prevent damage to the vehicle, transport the Audi A6 with a flatbed carrier, not by towing.*
- *Do not use conventional sling-type equipment or wheel dollies.*
- *Improper attachment of vehicle to the flatbed carrier may cause damage to underbody components.*

Towing eye mounts are located at right front and right rear of the vehicle. A detachable towing eye is stored in the vehicle tool kit.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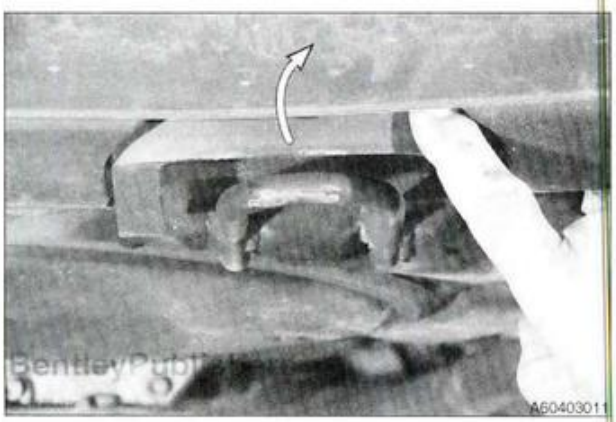
➢ Front towing eye mount: Insert screwdriver in lower right grille slot. Pry gently on lock tab (**arrow**), then pull grille off.

– Locate towing eye in tool kit.

➤ Thread towing eye (**arrow**) fully into mounting hole and tighten with wheel lug wrench (also from tool kit).

– After use, unscrew towing eye, return to vehicle tool kit, and stow tool kit in trunk.

– Reinstall cover.

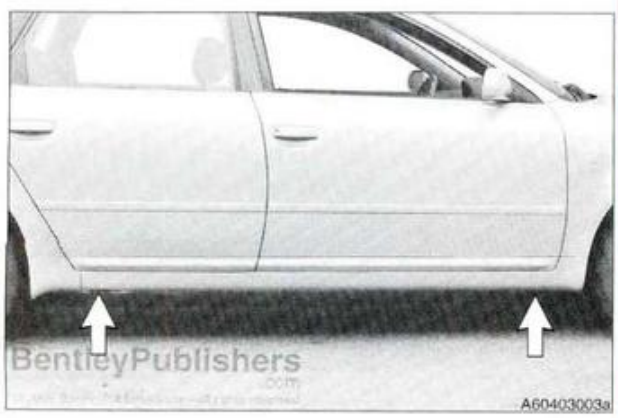



➤ Rear towing hook: Press cover up (**arrow**) to gain access to hook.

## Raising Vehicle

***CAUTION—***
- *Do not lift or jack the vehicle underneath the engine oil pan, transmission housing, front or rear axle or the body side members. This could lead to serious damage.*
- *To avoid damage to the underbody or chassis frame, insert a rubber pad between shop jack and lift points.*
- *Allroad quattro: To prevent damaging the shock absorbers when lifting the vehicle with a lift or jack, set the ride height selection to "jack mode". See* **allroad quattro "jack mode"** *in this repair group.*

### Raising car safely using car jack



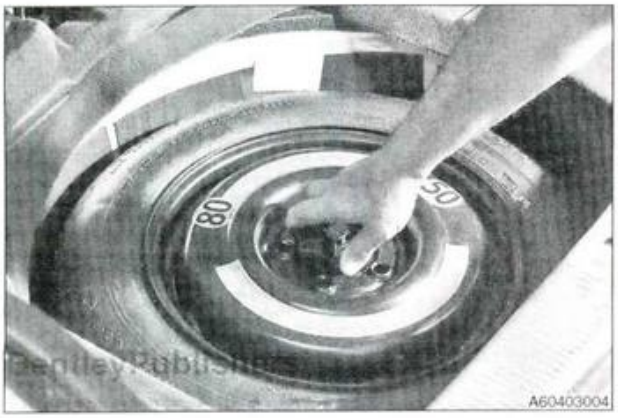

➤ Raise the car safely and avoid damage by using the jack supplied with the car and the front or rear side jacking lugs (**arrows**).

– Park car on flat, level surface. Use chocks to block wheel opposite to one being raised.

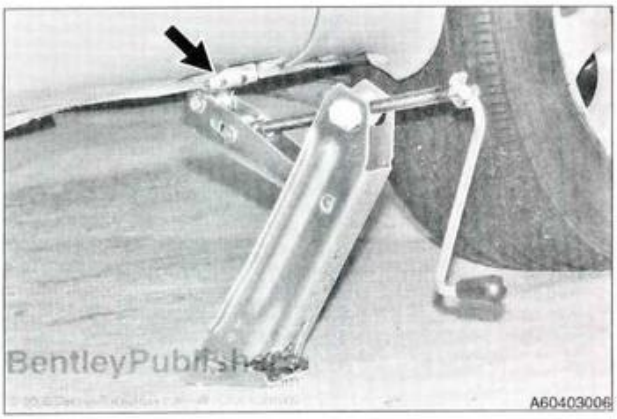
***WARNING—***
- *Do not rely on the transmission or the parking brake to keep the car from rolling.*

– If changing a tire, loosen lug bolts before raising car.

– Remove jack and jack handle from jack compartment in trunk.




- If changing a tire, remove large knurled nut at center of spare tire in trunk and lift spare out.




- Place jack in position and raise jack arm until jack claw fits under jacking lug (**arrow**) securely. Make sure jack is resting on flat, solid ground. Use a board or other support to provide a firm surface for jack, if necessary.

- Correct distance between jacking lug and wheel opening is as follows:
  - Audi A6 or S6 sedan; allroad quattro
    **A** = approx. 15 cm (6 in)
    **B** = approx. 15 cm (6 in)
  - Audi A6 or S6 Avant (station wagon)
    **A** = approx. 15 cm (6 in)
    **B** = approx. 25 cm (10 in)

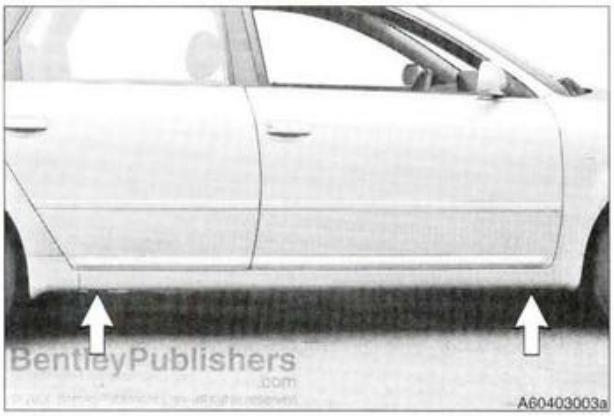
> ***WARNING*** —
> • *Watch the jack closely. Make sure it stays stable and does not shift or tilt.*

– Raise car slowly while constantly checking position of jack and car.

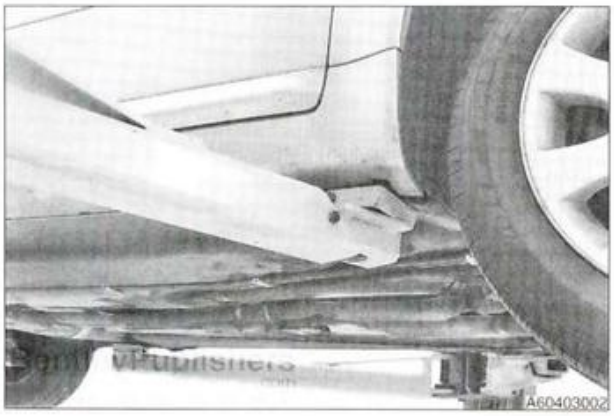
– Allroad quattro: See **allroad quattro "jack mode"** in this repair group.

## Raising car safely with lift

***WARNING*—**
- *Before driving a vehicle on a lift, confirm that vehicle weight does not exceed the allowable lifting capacity.*
- *Lift vehicle only at points indicated in order to avoid damaging vehicle floor pan and to prevent tipping.*
- *Do not start engine and engage a gear with vehicle lifted if any drive wheel has contact with the floor. There is danger of an accident due to possible vehicle movement.*
- *Exercise care while running the engine with the vehicle on a lift. Engine vibration and vehicle movement could cause the vehicle to slip off the lift.*
- *Before driving on a lift, be sure there is enough clearance under the vehicle so that it does not drag the lift arms. Pay particular attention to front spoilers and aprons.*
- *Observe the lift manufacturer's safety instructions and guidelines before raising vehicle.*

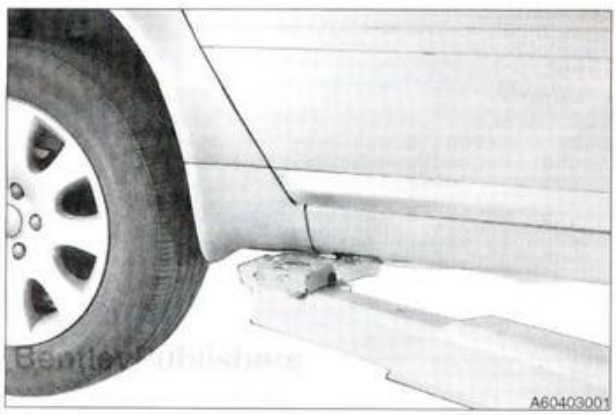



➤ Use correct jacking points (**arrows**) to lift car safely and avoid damage.

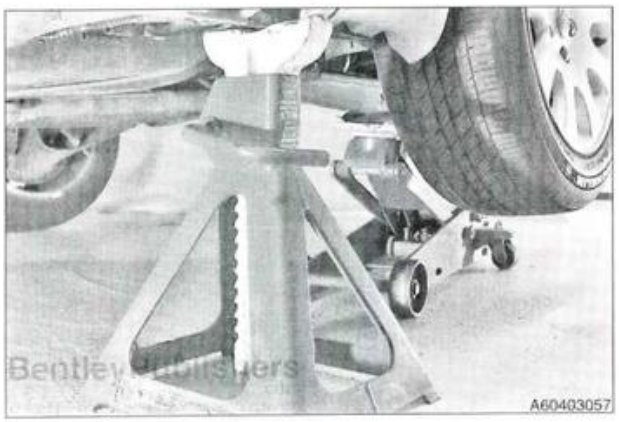



➤ Front lifting point at longitudinal reinforcement of floor pan at area marked for vehicle jack.

***CAUTION*—**
- *Do not raise vehicle at the vertical support on the rocker panel at front of vehicle.*




➤ Rear lifting point at vertical reinforcement of lower sill.




## Raising car safely using floor jack

– Park car on flat, level surface. Use chocks to block wheel opposite to one being raised.

> ***WARNING*** —
> • *Do not rely on the transmission or the parking brake to keep the car from rolling.*

– If changing a tire, loosen lug bolts before raising car.

### Raising front wheel

➢ Place floor jack under reinforced floor pan inboard of front jacking point.

– Place jack stand under front jacking point. Lower car slowly until it rests firmly on jack stand.

### Raising rear wheel

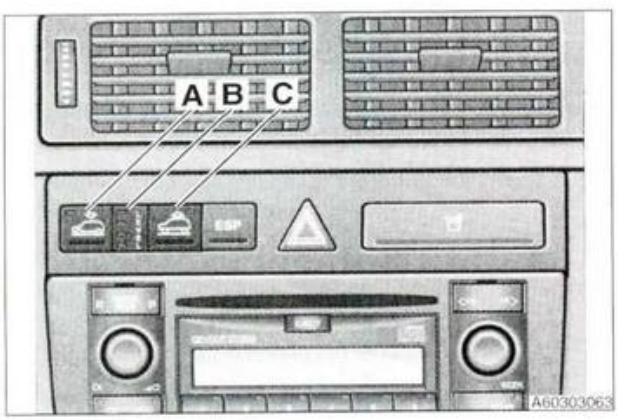
➢ Place floor jack under rear trailing arm.

– Place jack stand under rear jacking point. Lower car slowly until it rests firmly on jack stand.

## allroad quattro "jack mode"

Prior to jacking or lifting allroad quattro vehicle, set ride height control to "jack mode" to protect suspension shock absorbers and struts.

> ***WARNING*** —
> • *Make sure that no one is lying under the vehicle or has head or hands in the wheel housing while the ride height is changing.*




### Activating

➢ Before lifting vehicle with jack or lift:

- Switch ignition ON.
- Press ride height control buttons **A** and **C** in center dashboard for at least 5 seconds.
- When system is in "jack mode", LEDs on control buttons (**A** and **C**), yellow LED for manual mode on level indicator (**B**) and warning light for level control in instrument cluster all illuminate.

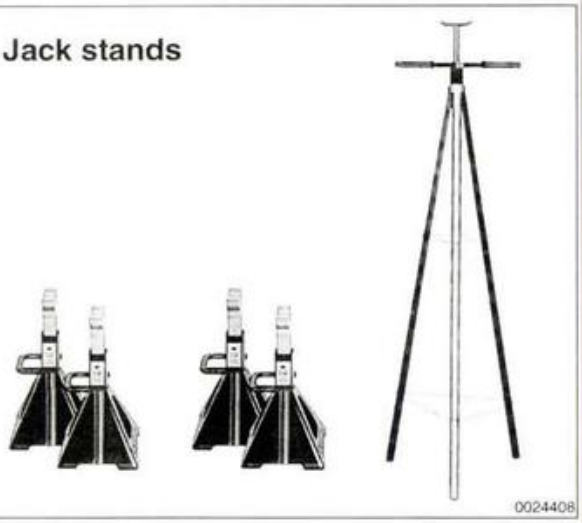
– Switch ignition OFF and lift or jack vehicle.

### Deactivating

– Press control buttons **1** and **3** for at least 5 seconds. Warning light in instrument cluster, LED for *manual mode and control* button LEDs turn OFF.

"Jack mode" is automatically deactivated when vehicle speed exceeds 3 mph (5 kph).

**Jack stands**

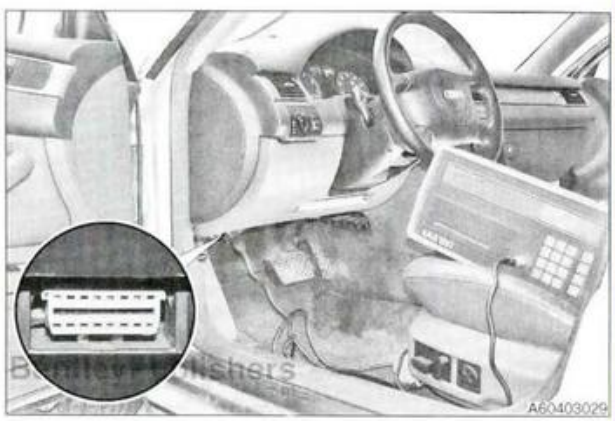



## Working under car safely

When working under the car, observe the following points as a matter of safety and good practice:

- Disconnect negative battery cable so that no one else can start vehicle. Let others know that you will be under vehicle.
- Place at least two jack stands under vehicle. A jack is a temporary lifting device. Do not use the jack alone to support vehicle while you are under it. Use positively locking jack stands that are designed for the purpose of supporting a vehicle.
- If you are using a lift, be sure that safety locks are engaged and that vehicle weight is resting on the locks, not the hydraulic system.
- Lower vehicle slowly until its weight is fully supported by jack stands or safety locks. Watch to make sure that jack stands do not tip or lean as vehicle settles on them, and that jack stands and lift arms are placed solidly and will not move.
- Check to make sure vehicle is stable before working under car.
- Observe all jacking precautions again when raising vehicle to remove jack stands.

***WARNING*—**
- *Use care when removing major (heavy) components from one end of the vehicle. The sudden change in weight and balance can cause vehicle to tip off lift or jack stands.*
- *Do not support vehicle at engine oil pan, transmission, fuel tank, or on front or rear axle. Serious damage may result.*




# Basic Service Information

## Diagnostic trouble codes (DTCs), accessing

Use Volkswagen / Audi diagnostic scan tool or equivalent to retrieve diagnostic trouble codes.

– Place transmission selector lever in PARK or NEUTRAL. Engage parking brake. Make sure ignition is OFF.

➤ Connect scan tool (VAG 1551 or equivalent) to data link connector (DLC, **inset**), located under left side dashboard, to left of steering column.

– Start engine and let idle.

– Follow scan tool instructions as they appear on scan tool screen.

– For more information, see **OBD On Board Diagnostics**.

## Service reminder indicator (SRI), resetting

When the time for a service is reached, the needed service appears in the trip odometer display when the ignition is switched ON. The display blinks for about 60 seconds after the engine is started:

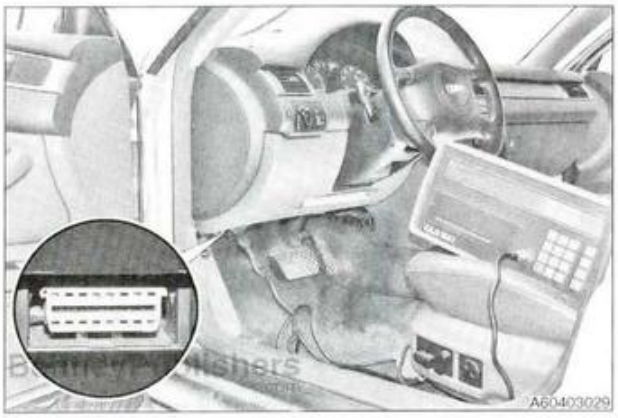
- Service OIL indicates that oil change service is due.
- Service INSP indicates that inspection service is due.

A service that is due is displayed 1,000 km (625 mi) or 10 days in advance.

Reset the SRI after each oil change or inspection service. The SRI can be reset in two different ways:

- Use the Volkswagen / Audi scan tool or equivalent.
- Use buttons on the instrument cluster.

### SRI, resetting using scan tool



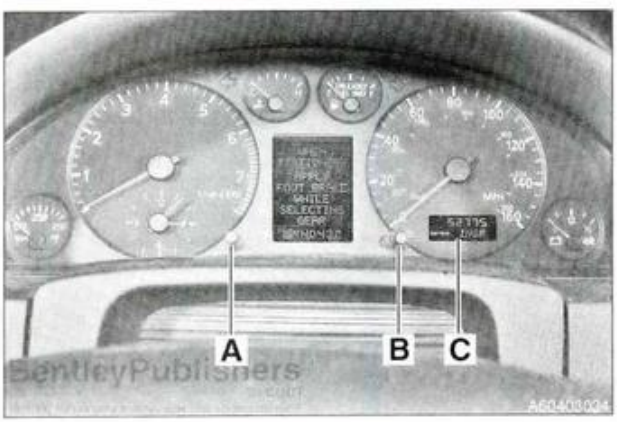

➤ Connect scan tool (VAG 1551 or equivalent) to data link connector (DLC, **inset**), located under left side dashboard, to left of steering column.

– Switch ignition ON.

– Follow scan tool instructions as they appear on scan tool screen.

### SRI, resetting with instrument cluster buttons

– Switch ignition OFF.




➤ Press and hold down trip odometer reset button (**B**).

– Switch ignition ON while keeping button depressed:
  - Service OIL appears in trip odometer display (**C**).
  - Release trip odometer reset button.

– Pull clock reset button (**A**) until Service OIL indicator is reset.
  - - - - appears in trip odometer display (**C**).

– Press trip odometer reset button (**B**) again to advance to next service event.
  - Release trip odometer reset button.
  - Service INSP appears in trip odometer display (**C**).

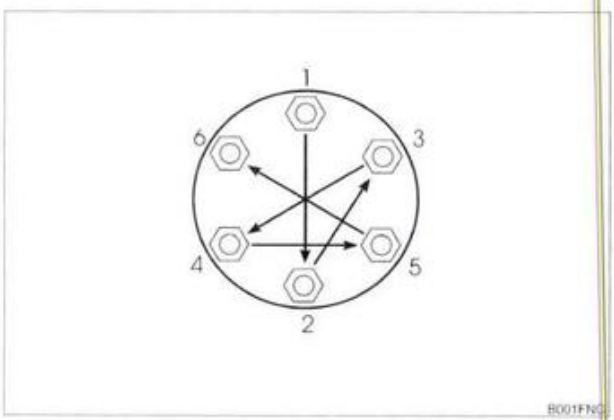
– Pull clock reset button (**A**) until Service INSP indicator is reset.
  - - - - appears in trip odometer display (**C**).

– Switch ignition OFF.

## Non-reusable fasteners

Many fasteners used on the cars covered by this manual must be replaced with new ones once they are removed. These include but are not limited to: bolts, nuts (self-locking, nylock, etc.), cotter pins, studs, brake fittings, roll pins, clips and washers. Use genuine Audi parts for this purpose.

Some bolts are designed to stretch during assembly and are permanently altered, rendering them unreliable once removed. These are known as torque-to-yield fasteners. Replace fasteners where instructed to do so. Failure to replace these fasteners could cause vehicle damage and personal injury. See an authorized Audi dealer for applications and ordering information.




## Tightening fasteners

Tighten fasteners gradually and evenly to avoid misalignment or over-stressing any one portion of the component. For components sealed with gaskets, this method helps to ensure that the gasket seals properly.

Where there are several fasteners, tighten them in a sequence alternating between opposite sides of the component. Repeat the sequence until all the bolts are evenly tightened to the proper specification.

For some repairs a specific tightening sequence is necessary, or a particular order of assembly is required. Such special conditions are noted in the text, and the necessary sequence is described or illustrated. Where no specific torque is listed, use **Table a** as a general guide for tightening fasteners.

***NOTE—***

- *Metric bolt classes or grades are marked on the bolt head.*
- *Do not confuse wrench size with bolt diameter.*

**Table a. Bolt tightening torques–general (in Nm)**

| Bolt diameter | Bolt class (according to DIN 267) | | | | | |
|---|---|---|---|---|---|---|
| | **5.6** | **5.8** | **6.8** | **8.8** | **10.9** | **12.9** |
| M5 | 2.5 | 3.5 | 4.5 | 6 | 8 | 10 |
| M6 | 4.5 | 6 | 7.5 | 10 | 14 | 17 |
| M8 | 11 | 15 | 18 | 24 | 34 | 40 |
| M10 | 23 | 30 | 36 | 47 | 66 | 79 |
| M12 | 39 | 52 | 62 | 82 | 115 | 140 |
| M14 | 62 | 82 | 98 | 130 | 180 | 220 |
| M16 | 94 | 126 | 150 | 200 | 280 | 340 |
| M18 | 130 | 174 | 210 | 280 | 390 | 470 |

***CAUTION—***

- **Table a** *is a general reference only. The values listed are not intended to be used as a substitute for torques specifically called out in the text.*

## Buying parts

Many of the maintenance and repair tasks in this manual call for the installation of new parts, or the use of new gaskets and other materials when reinstalling parts. In most cases, make sure needed parts are on hand before beginning the job. Read the introductory text and the complete procedure to determine which parts are needed.

For bigger jobs, partial disassembly and inspection are required to determine a complete parts list. Read the procedure carefully and, if necessary, make arrangements to get the necessary parts while your car is disassembled.

## Genuine Audi parts

Genuine replacement parts from an authorized Audi dealer are designed and manufactured to the same standards as the original parts. They are guaranteed to fit and work as intended by the engineers who designed the car.

Many independent repair shops make a point of using genuine Audi parts, even though they may at times be more expensive. They know the value of doing the job right with the right parts. Parts from other sources can be as good, particularly if manufactured by one of Audis original equipment suppliers, but it is often difficult to know.

Audi is constantly updating and improving their cars, often making improvements during a given model year. Audi may recommend a newer, improved part as a replacement, and your authorized dealer's parts department will know about it and provide it. The Audi parts organization is best equipped to deal with any Audi parts needs.

## Non-returnable parts

Some parts cannot be returned. The best example is electrical parts. Buy electrical parts carefully, and be as sure as possible that a replacement is needed, especially for expensive parts such as electronic control modules. It may be wise to let an authorized Audi dealer or other qualified shop confirm your diagnosis before replacing a non-returnable part.

## Audi service

Audi dealers are uniquely qualified to provide service for Audi cars. Their authorized relationship with the large Audi service organization means that they are constantly receiving special tools and equipment, together with the latest and most accurate repair information.

The Audi dealer's service technicians are highly trained and very capable. Authorized Audi dealers are committed to supporting the Audi product. On the other hand, there are many independent shops that specialize in Audi service and are capable of doing high quality repair work. Checking with other Audi owners for recommendations on service facilities is a good way to learn of reputable Audi shops in your area.

## Tools

Most maintenance can be accomplished with a small selection of the right tools. Tools range in quality from inexpensive junk, which may break at first use, to very expensive and well-made tools for the professional. The best tools for most do-it-yourself Audi owners lie somewhere in between.

Many reputable tool manufacturers offer good quality, moderately priced tools with a lifetime guarantee. These are your best buy. They cost a little more, but they are good quality tools that will do what is expected of them. Sears Craftsman® line is one such source of good quality tools.

Some of the repairs covered in this manual require the use of special tools, such as a custom puller or specialized electrical test

equipment. These special tools are called out in the text and can be purchased through an authorized Audi dealer. As an alternative, some special tools mentioned may be purchased from the following tool manufacturers and/or distributors:

Assenmacher Specialty Tools, Inc.
6440 Odell Place
Boulder, CO 80301
(800) 525-2943
www.asttool.com

Baum Tools Unlimited, Inc.
PO Box 5867
Sarasota, FL 34277
(800) 848-6657
www.baumtools.com

Equipment Solutions
P.O. Box 1450
Kenosha, WI 53141-1450
(800) 892-9650

Mac Tools
4635 Hilton Corporate Drive
Columbus, OH 43232
(800) 622-8665
www.mactools.com

Metalnerd
509 Crestview Drive, Suite B
Greensburg, PA, 15601 USA
(412) 601-4270
www.metalnerd.com

Ross-Tech
920 South Broad Street
Lansdale, PA 19446
215-361-8942
www.ross-tech.com

Samstag Sales
115 Main St. N., Suite 216
Carthage, TN 37030
(615) 735-3388
www.samstagsales.com

Shade Tree Software
4186 Culebra Ct.
Boulder, CO 80301
(303) 449-1664
(303) 940-2468
www.shadetreesoftware.com

Snap-On Technologies, Inc.
2801 80th St.
Kenosha, WI 53141-1410
(262) 656-5200
www.snapon.com

Zelenda Automotive, Inc.
66-02 Austin St.
Forest Hills, NY 11374
(888) 892-8348
www.zelenda.com

## IDENTIFICATION PLATES AND LABELS

### Information you need to know

**Model**. When ordering parts, it is important that you know the correct model designation for your car. Audi A6 models include the following:

- A6 and S6 (sedan)
- A6 and S6 Avant (station wagon)
- allroad quattro
- RS6

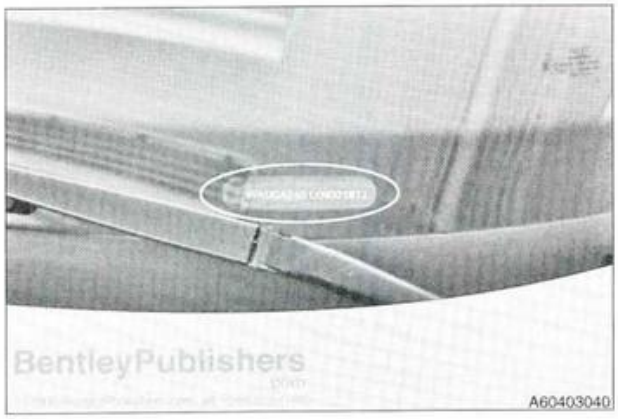
**Model year**. This is not necessarily the same as date of manufacture or date of sale. A 1999 model may have been manufactured in late 1998, and perhaps not sold until early 2000. It is still a 1999 model. Model years covered by this manual are 1998 to 2004.

**Date of manufacture**. This information may be necessary when ordering replacement parts or determining if any of the warranty recalls are applicable to your car. The label on the driver's door below the door latch specifies the month and year that the car was built.

**Vehicle identification number (VIN)**. This is a combination of letters and numbers that identify the particular car. See **Vehicle identification number (VIN)** in this repair group. Also see **01 Vehicle Identification and VIN Decoder**.

**Engine code**. Cars covered in this manual are powered by various V6 and V8 engines. For information on engine codes and engine applications, see **Engine identification** in this repair group.

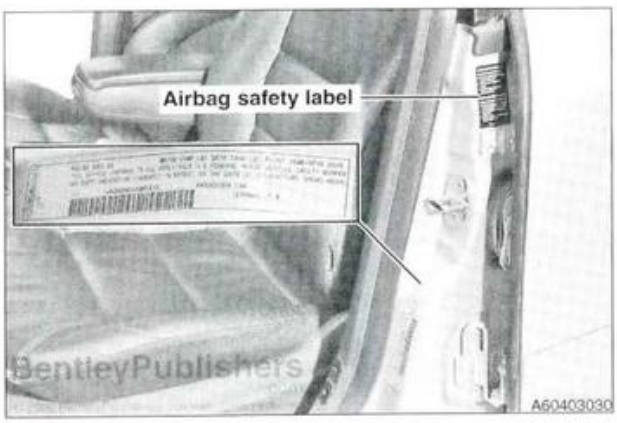
**Transmission code**. The transmission type with its identifying code may be important when buying clutch parts, seals, gaskets, and other transmission-related parts. For information on transmission codes and applications, see **02 Audi A6 Familiarization**. Transmission identification code plates are illustrated in **Transmission identification** in this repair group.




## Vehicle identification number (VIN)

Vehicle year, model and engine type, along with other pertinent data can be decoded from the vehicle identification number (VIN). Data plates and stickers containing the VIN are attached to the vehicle at several locations.

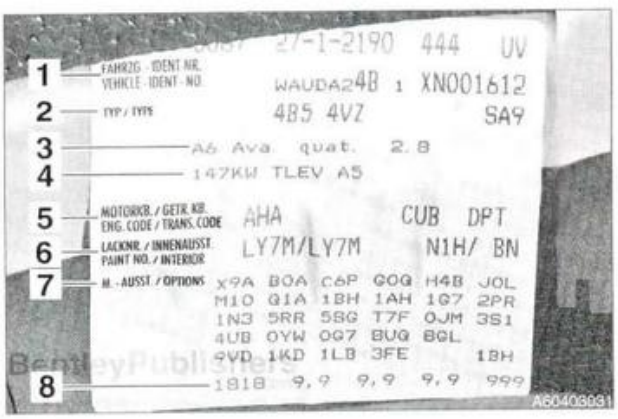
➤ United States federal law requires the VIN to be visible from outside the vehicle and at a standard location. A plate with the complete 17 digit VIN is attached to the padded dashboard at the base of the windshield. See **01 VIN Decoder** for detailed VIN decoding information.




Other VIN locations include:

- Stamped on engine compartment bulkhead.
- Stamped into body in rear floor area under rear seat. Access to this area requires lifting rear seat bottom (cushion).

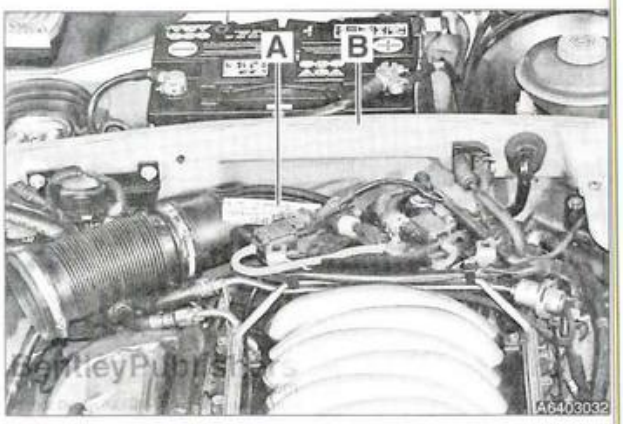
➤ B pillar certification sticker (**inset**) lists full VIN, vehicle weight ratings, production date and emission compliance certification. Airbag safety label is also attached to vehicle at this location.




## Data labels

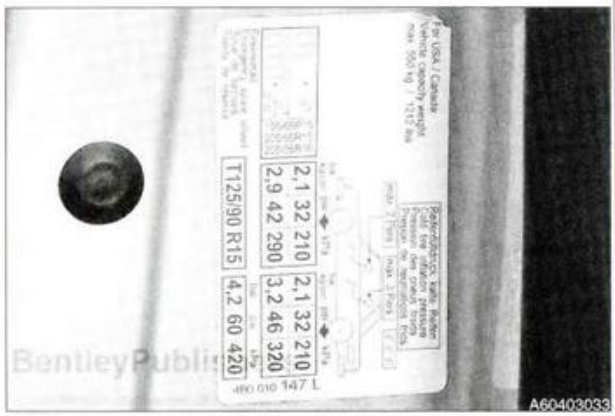
➤ Vehicle data sticker is located in the trunk in the spare tire well. The sticker contains the following vehicle information:

1. Vehicle identification number (VIN)
2. Production control number
3. Model identification number
4. Engine power, exhaust emissions classification, transmission type
5. Engine and transmission code letters
6. Paint code, interior code
7. Option codes (optional equipment identification numbers)
8. Curb weight, fuel consumption, $CO_2$ emissions




➤ Type plate (**A**) is affixed to plastic duct or other component at rear of engine compartment.

**B** is engine compartment bulkhead VIN stamping.




➤ Tire pressure inflation sticker is attached to B or C pillar. Recommended cold tire inflation pressures vary from car to car due to differing equipment levels. Usually, tire pressure information does not appear in the owner's manual.

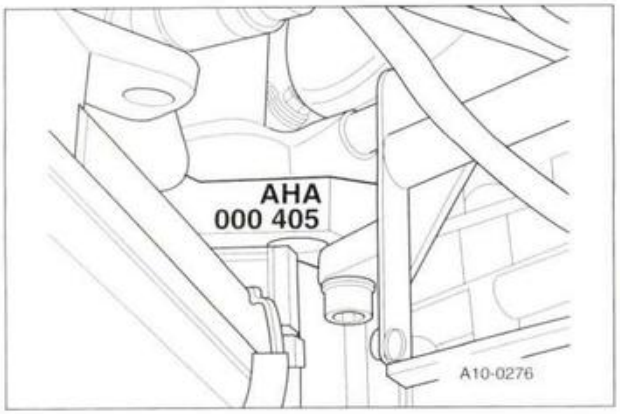
## Engine identification

An Audi engine is identified by a three letter code (example: AHA) followed by a 6-digit serial number. Engine code and engine serial number are located on the engine block. A sticker with engine code and serial number is often attached to the upper timing belt cover or cylinder head cover. In addition, engine code may be stamped on the cylinder head to allow for quick identification. Engine application information is in **Table b**.

| Engine type | Engine codes |
|---|---|
| V6 5-valves per cylinder | AHA, ATQ, APB, BEL, AVK |
| V8 5-valves per cylinder | ART, AWN, BBD, BAS, BCY |

**Table b. Engine applications and specifications**

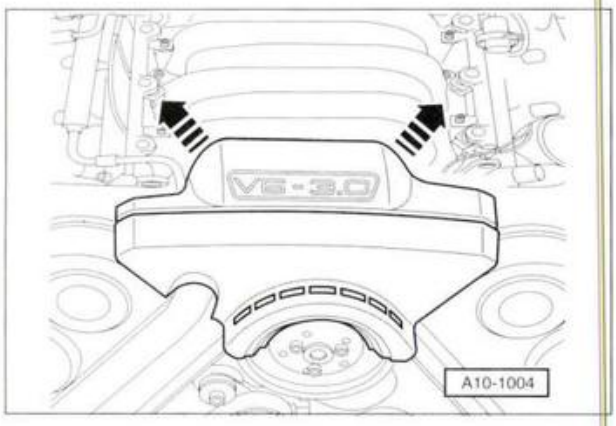
| Year model | Engine displacement, type | Engine code | Engine displacement in cc (cu in) | Power in kW @ rpm (hp @ rpm) | Torque in Nm @ rpm (ft-lb @ rpm) | Bore x stroke in mm (in) | Compression ratio | Engine management, emissions category |
|---|---|---|---|---|---|---|---|---|
| **V6 5-valves per cylinder** | | | | | | | | |
| 1998- 1999 A6 | 2.8 liter | AHA | 2771 (169) | 147 @ 6000 (200 @ 6000) | 280 @ 3200 (207 @ 3200) | 82.5 x 86.4 (3.25 x 3.40) | 10.1 : 1 | Motronic M5.9.2 |
| 2000 - 2001 A6 | | ATQ | 2771 (169) | 142 @ 6000 (193 @ 6000) | 280 @ 3200 (207 @ 3200) | 82.5 x 86.4 (3.25 x 3.40) | 9.9 : 1 | Motronic ME 7.1 |
| 2000 - 2003 A6, allroad quattro | 2.7 liter biturbo | APB | 2671 (163) | 187@ 5800 (254 @ 5800) | 350@ 1800- 4500 (258@ 1800 - 4500) | 81.0 x 86.4 (3.19 x 3.40) | 9.3 : 1 | Motronic ME 7.1 TLEV |
| 2003 - 2004 A6, allroad quattro | | BEL | 2671 (163) | 184 @ 5800 (250 @ 5800) | 350@ 1800- 4500 (258@ 1800 - 4500) | 81.0 x 86.4 (3.19 x 3.40) | 9.3 : 1 | Motronic ME 7.1 LEV |
| 2002 - 2004 A6 | 3.0 liter | AVK | 2976 (182) | 162 @ 6300 (220 @ 6300) | 300 Nm @ 3200 (221@ 3200) | 82.5 x 92.8 (3.25 x 3.65) | 10.5 : 1 | Motronic ME 7.1.1 ULEV |
| **V8 5-valves per cylinder** | | | | | | | | |
| 1999 - 2001 A6 | 4.2 liter | ART | 4172 (255) | 221 @ 6000 (299 @ 6000) | 410 @ 3300 (302 @ 3300) | 84.5 x 93.0 (3.33 x 3.66) | 11 : 1 | Motronic ME 7.1 |
| 2002 - 2004 A6 | | AWN | 4172 (255) | 228 @ 6000 (299 @ 6000) | 413 @ 3300 (305 @ 3300) | 84.5 x 93.0 (3.33 x 3.66) | | Motronic |
| 2002 - 2004 S6 | | BBD | 4172 (255) | 250 @ 6000 (340 @ 6000) | 400 @ 3500 (295 @ 3500) | 84.5 x 93.0 (3.33 x 3.66) | | Motronic |
| 2003 - 2004 allroad quattro | | BAS | 4163 (254) | 220 @ 6200 (299 @ 6200) | 380 @ 2600- 4700 (280 @ 2600- 4700) | 84.5 x 92.8 (3.33 x 3.65) | | Motronic ME 7.1.1 |
| 2003 - 2004 RS6 | 4.2 liter biturbo | BCY | 4172 (255) | 331 @ 5700 - 6400 (450 @ 5700 - 6400) | 560 @ 1950 - 5600 (413 @ 1950 - 5600) | 84.5 x 93.0 (3.33 x 3.66) | 9.3 : 1 | Motronic ME 7.1.1 |




### 2.7 liter and 2.8 liter V6 engine

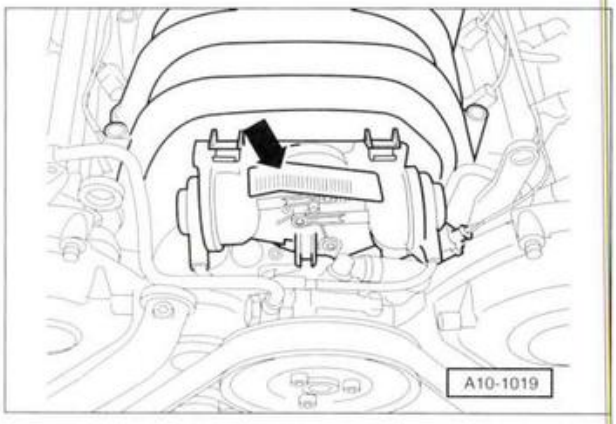
Engine codes AHA, ATQ, APB, BEL: Engine code letters and serial number are on flat surface of cylinder block in front of right cylinder head.

Engine code is also included on vehicle data sticker in trunk.

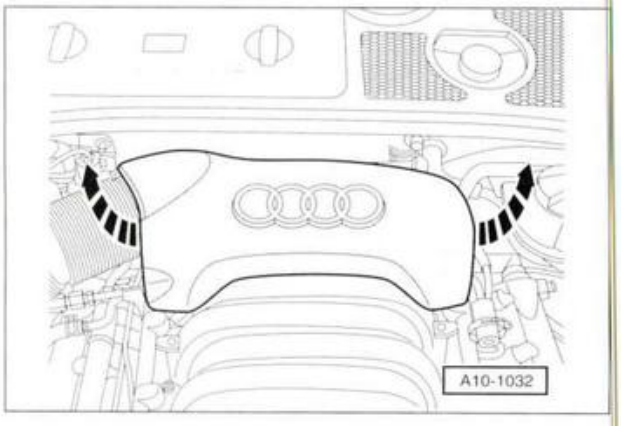



**3.0 liter V6 engine**

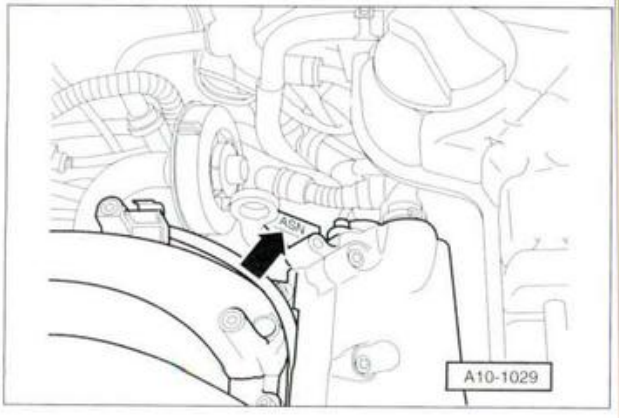
➤ To gain access to engine identification sticker, remove front engine cover by pulling up (**arrows**).




➤ Engine code AVK: Engine code, serial number and production number are on sticker (**arrow**) on vacuum diaphragm housing of intake manifold.

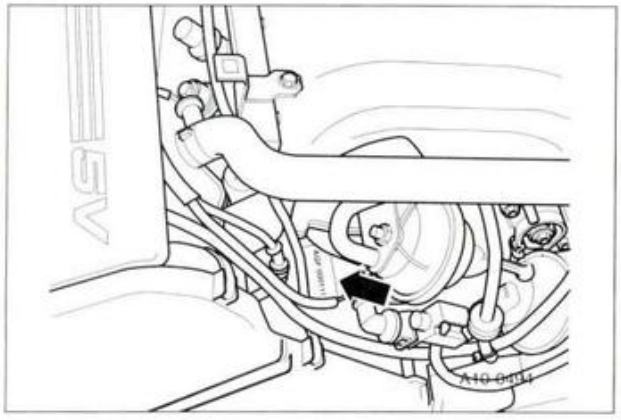



➤ If sticker is not present, remove rear engine cover by pulling up (**arrows**).




➤ Engine code AVK: Engine code and serial number are stamped on left rear of cylinder block (**arrow**).

Engine code is also included on vehicle data sticker in trunk.

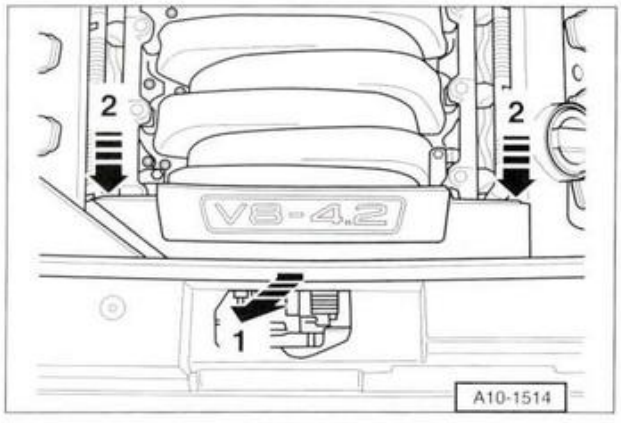



### 4.2 liter V8 engine (A6, S6)

➤ Engine codes ART, AWN, BBD: Engine code and serial number are on left side of cylinder block (**arrow**).

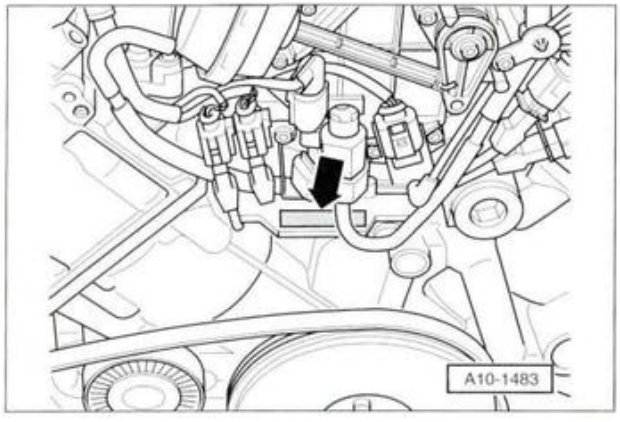
Engine number is also listed on label on belt cover.

Engine code is also included on vehicle data sticker in trunk.




### 4.2 liter V8 engine (allroad quattro)

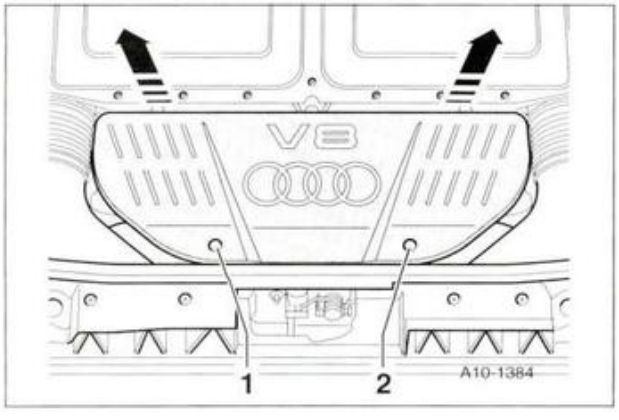
➤ To gain access to engine identification stamping, remove front engine cover by pulling up (**2**) and forward (**1**).




➤ Engine code BAS: Engine code and serial number are stamped on front top of cylinder block (**arrow**).

Engine code and serial number is also on a sticker on right cylinder head cover.

Engine code is also included on vehicle data sticker in trunk.




### 4.2 liter V8 engine (RS6)

➤ Remove front engine cover:

- Undo quick-release fasteners (**1**, **2**).

Engine code BCY: Engine code and serial number is on top of cylinder block (**arrow**).

An engine code and serial number sticker is on the right timing belt guard.

Engine code is also included on vehicle data sticker in trunk.

## Transmission identification

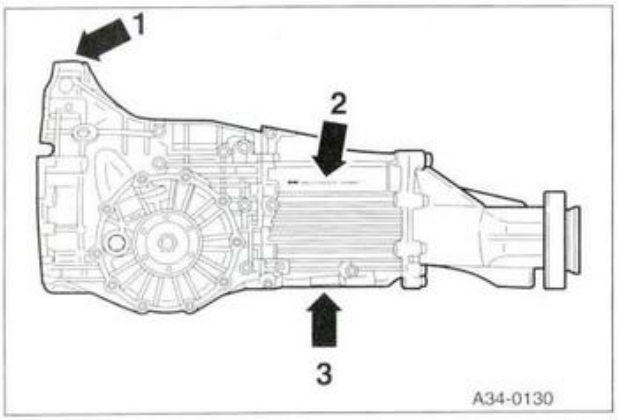
A6 models were equipped with one of five different transmission types. See **Table c**. Each transmission type comes in numerous versions, depending on engine type and front-wheel-drive (FWD) or all-wheel-drive (AWD) requirements. For transmission applications, specifications and lubricants, see **02 Product Familiarization**, **34 Manual Transmission**, **37 Automatic Transmission** or **39 Final Drive**.

| Table c. Transmission codes | |
|---|---|
| **Description T** | **ype** |
| 5-speed manual quattro (AWD) | 01A |
| 6-speed manual quattro (AWD) | 01E |
| 5-speed automatic with Tiptronic® control quattro (AWD) | 01L |
| 5-speed automatic with Tiptronic® control FWD or quattro | 01V |
| Multitronic® or continuously variable transmission (CVT) FWD | 01J |

Transmissions are identified by type, code, serial number, manufacturer identification code and build date:

- **Type** denotes a family of transmissions that have generally similar characteristics.
- **Code** is a specific group within the type and identifies individual traits such as gear ratios.
- **Serial number** is a multi-digit string such as 0019967.
- **Manufacturer identification code** may be a combination of letters and numbers.
- **Build date** is a five digit number such as 15079. The digits indicate day (15), month (07 = July) and year (9 = 1999) transmission was built.

Transmission identification plates containing some or all of this information are affixed to the transmission housing.

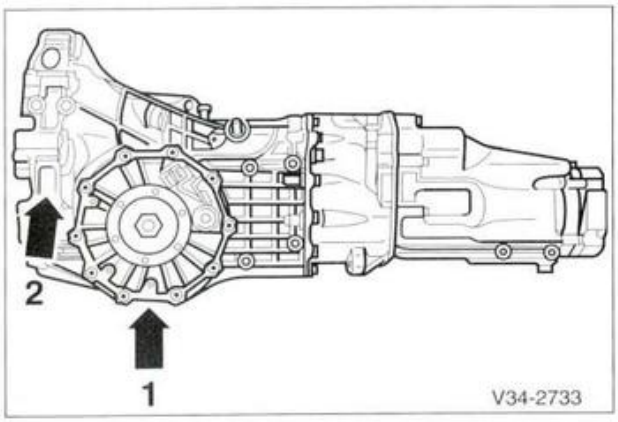



**5-speed manual transmission quattro (AWD)**

Transmission type 1A: Code, serial number and date of manufacture are on transmission as follows:

1. Top of bellhousing: Code letters and date of manufacture
2. Top of gear housing: Type and serial number
3. Bottom of gear housing: Code letters and date of manufacture

Transmission code letters are also included on vehicle data sticker in trunk.

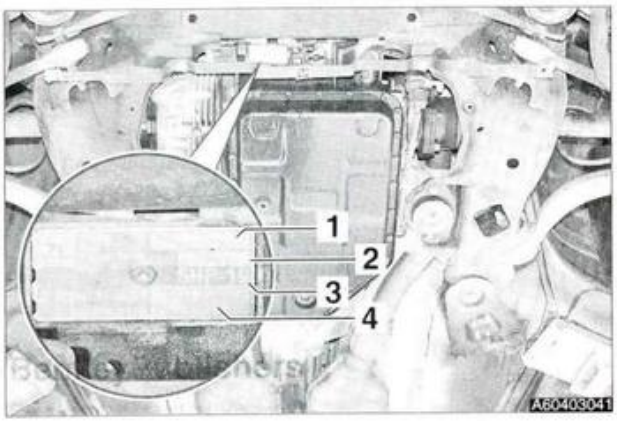



**6-speed manual transmission quattro (AWD)**

Transmission type 1E: Code, serial number and date of manufacture are on transmission as follows:

1. Bottom of front final drive housing: Code letters and serial number
2. Left side of bellhousing: Type and serial number

Transmission code letters are also included on vehicle data sticker in trunk.

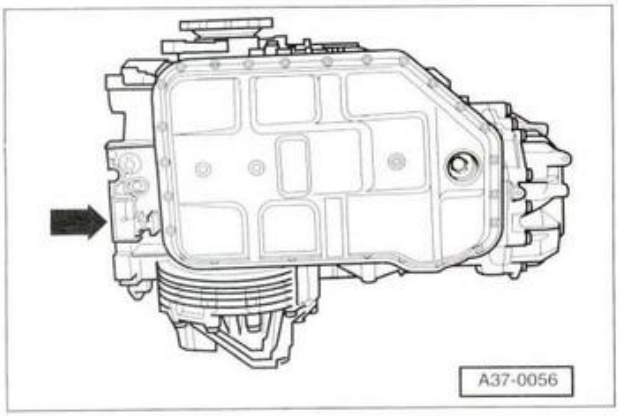



**5-speed automatic transmission quattro (AWD)**

Transmission type 01L: Identification plate (**inset**), on bottom of transmission at right front of transmission oil pan, contains information as follows:

1. Transmission serial number
2. Part list number
3. Manufacturer identification code
4. Code letters

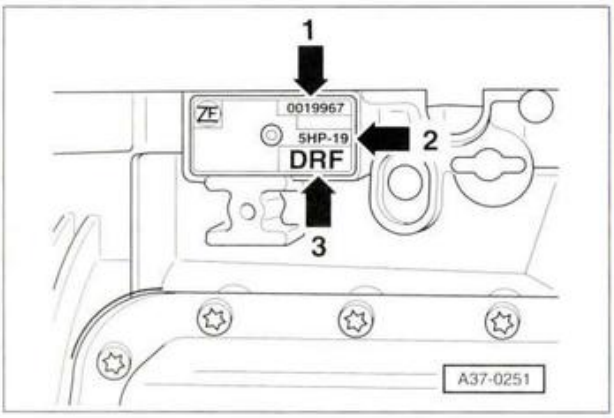
Transmission code letters are also included on vehicle data sticker in trunk.

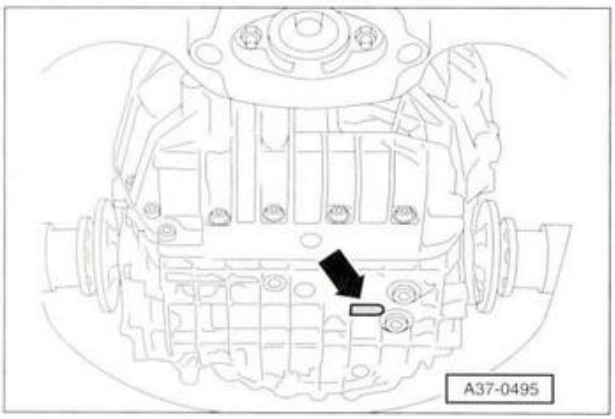



**5-speed automatic transmission FWD or quattro (AWD)**

Transmission type 01V: Identification plate (**arrow**) is on bottom of transmission at right front of transmission oil pan.

Another identification label (identical to the first one) is on the side of the transmission. It is not accessible when the transmission is installed.




➤ Transmission identification plate contains information as follows:

1. Transmission serial number
2. Manufacturer identification code
3. Code letters

Transmission code letters are also included on vehicle data sticker in trunk.

**Multitronic® (CVT) transmission FWD**

➤ Transmission type 01J: Identification plate (**arrow**) is on bottom of transmission.

Transmission code letters are also included on vehicle data sticker in trunk.

## Engine Compartment

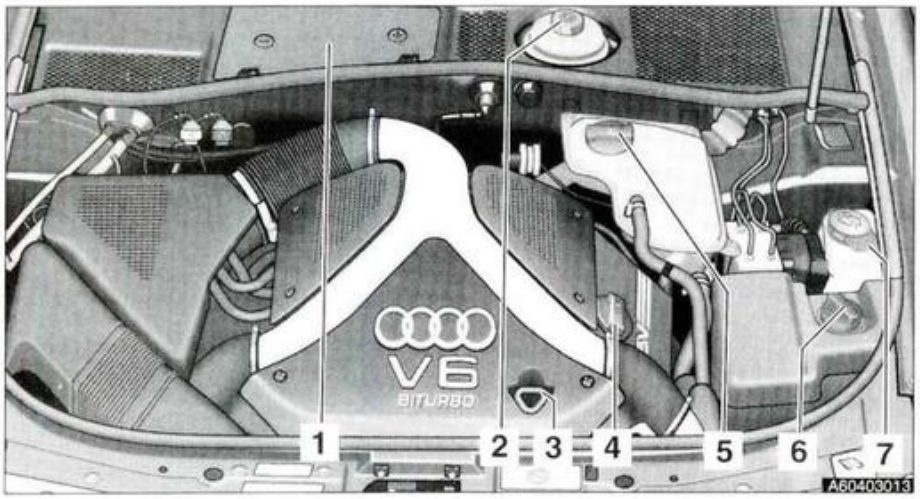
### Fluid leaks, visual inspection

Remove upper and lower engine covers as required and check engine compartment for signs of fluid leaks. Fluid leaks attract dust making them easier to spot. Many expensive repairs can be avoided by prompt repair of minor fluid leaks.

Visually inspect for oil and ATF leaks at engine and transmission. Also inspect cooling, fuel, heating and air-conditioning systems for leakage. Visually inspect hoses and hose connections for leaks, worn areas, porosity and brittleness. Also see **Fluid and exhaust leaks, visual inspection** in this repair group.

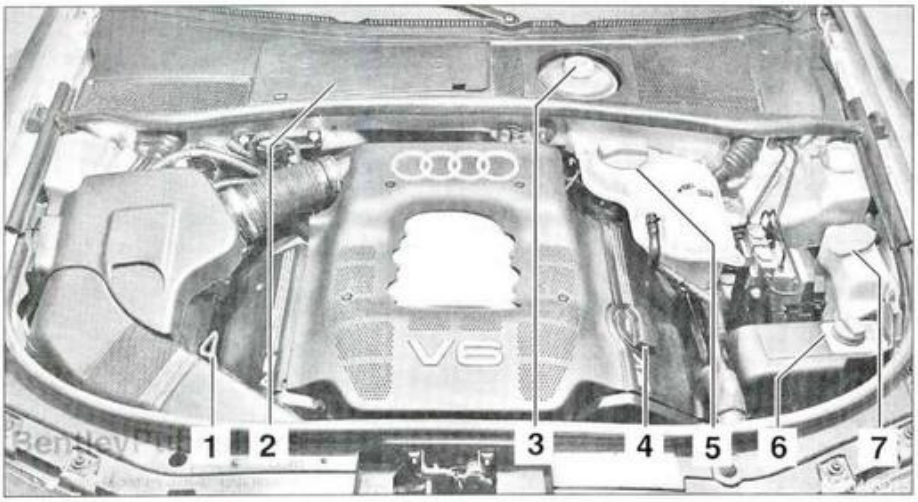
Check that fluid levels are between MIN and MAX marks.

The following illustrations show representative engine compartment layouts for the four major engine types. There may be minor differences among model years, such as engine cover configuration.



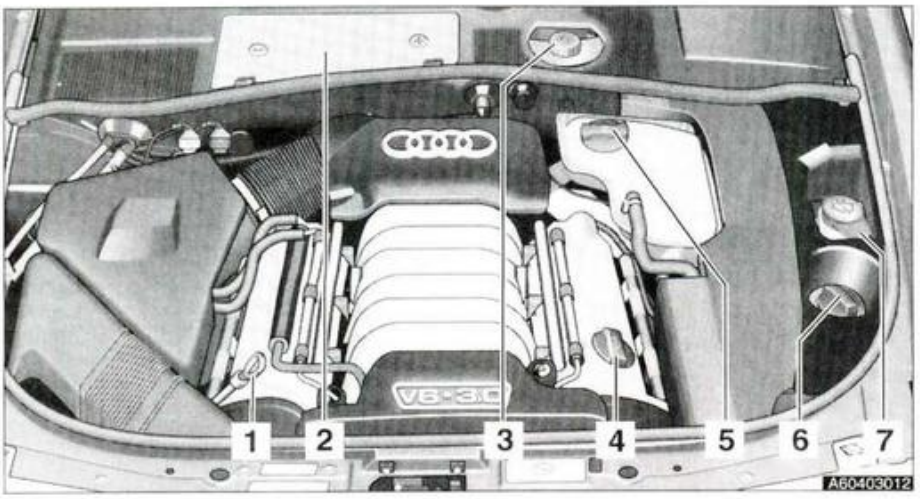

## 2.7 liter V6 biturbo engine compartment

1. Battery (under plastic cover)
2. Brake fluid reservoir
3. Engine oil dipstick
4. Engine oil filler cap
5. Coolant expansion reservoir
6. Power steering fluid reservoir
7. Washer fluid reservoir



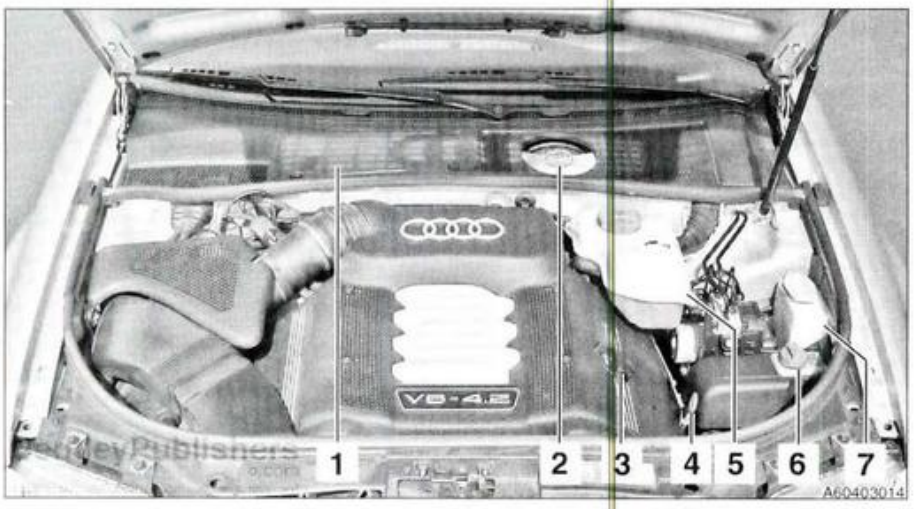

## 2.8 liter V6 engine compartment

1. Engine oil dipstick
2. Battery (under plastic cover)
3. Brake fluid reservoir
4. Engine oil filler cap
5. Coolant expansion reservoir
6. Power steering fluid reservoir
7. Washer fluid reservoir




## 3.0 liter V6 engine compartment

1. Engine oil dipstick
2. Battery (under plastic cover)
3. Brake fluid reservoir
4. Engine oil filler cap
5. Coolant expansion reservoir
6. Power steering fluid reservoir
7. Washer fluid reservoir



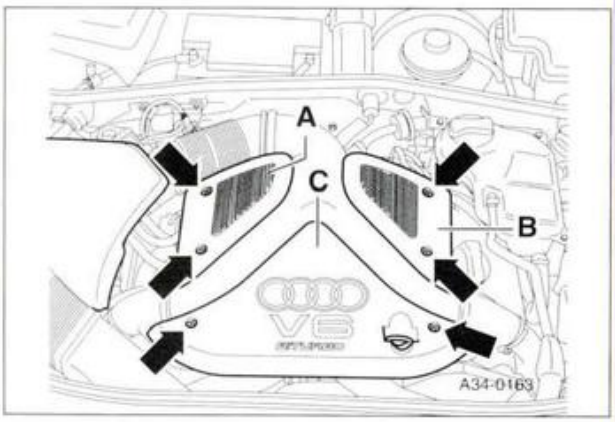

## 4.2 liter V8 engine compartment

1. **Battery (under plastic cover)**
2. **Brake fluid reservoir**
3. **Engine oil filler cap**
4. **Engine oil dipstick**
5. **Coolant expansion reservoir**
6. **Power steering fluid reservoir**
7. **Windshield washer fluid reservoir**

## Engine covers, removing

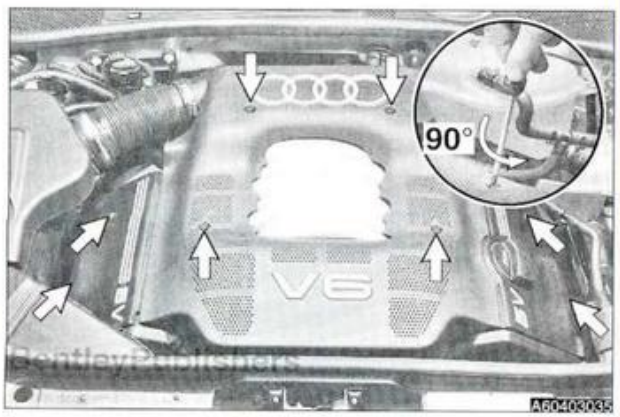
A6 and S6 models are equipped with a variety of plastic noise absorber panels in the engine compartment, both above and underneath the engine. Following are some of the common types and methods for removing them.

### Engine upper cover



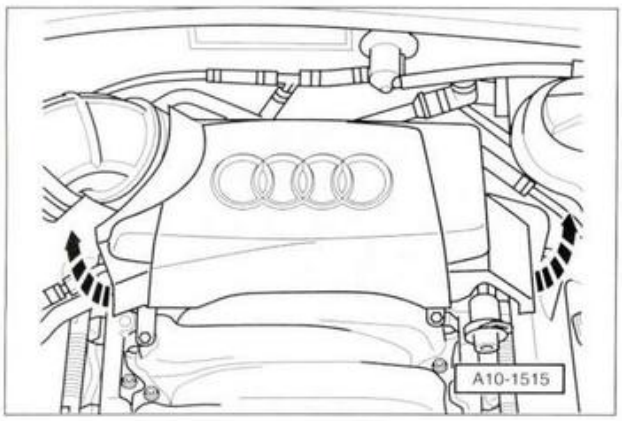

➤ 2.7 liter V6 engine top covers:

- Loosen 6 fasteners (**arrows**) by turning each 90°.
- Lift off covers **A**, **B** and **C**.



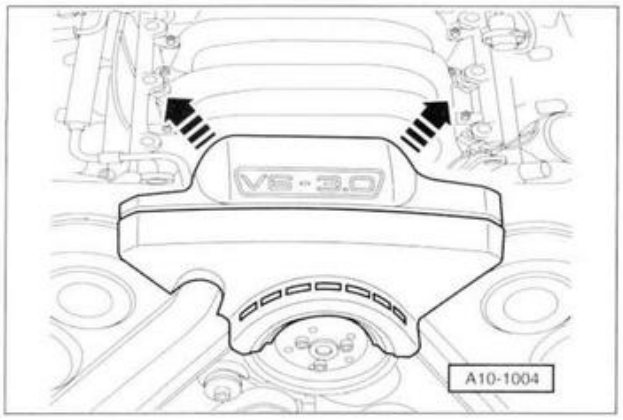

➤ 2.8 liter V6 engine top covers:

- Loosen 8 fasteners (**arrows**) by turning each 90°.
- Lift off top (center) cover, then cylinder head covers.



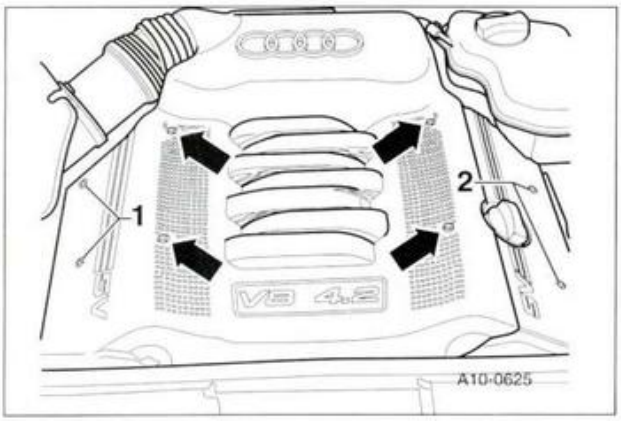

➤ 3.0 liter V6 rear engine cover:

- Lift cover at corners (**arrows**) and remove.



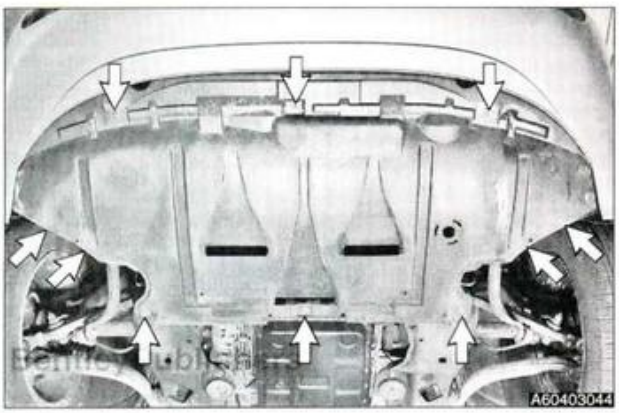

➤ 3.0 liter V6 front engine cover:

- Lift cover at corners (**arrows**) and remove.




➤ 4.2 liter V8 engine top cover:

- Remove air filter hose.
- Loosen 4 fasteners (**arrows**) and lift off cover.




**Engine lower cover (splash shield)**

➤ V6 models: Loosen or remove quick-release fasteners (**arrows**). Pull engine cover backward away from bumper cover to remove.

– V8 models are similar.

## Engine Oil

Lubricating oil for engines covered by this manual are required to meet quality and performance standards specified by Audi. These standards are sufficiently high so that, generally, only synthetic oils meet them.

Engine oils meeting specified performance standards are available from Audi and other sources.

Current specifications for engine oil are shown in **Table d**. If an oil container is not marked with appropriate specification(s), assume that the oil is not suitable. Use of oils other than those specified may cause engine damage.

| **Table d. Oil specifications** | |
|---|---|
| **Type:**<br>• American Petroleum Institute<br>• European industry standard | <br>API service SJ<br>ACEA A2 or ACEA A3 |
| **Viscosity grade:**<br>• New engine<br>• At oil change<br>• High temperature service (above 40°C or 100°F) | <br>SAE 0W30<br>SAE 5W30<br>SAE 5W40 |

Approximate refill capacities in **Table e** are listed by engine code. Engine application information is in **Table b** in this repair group.

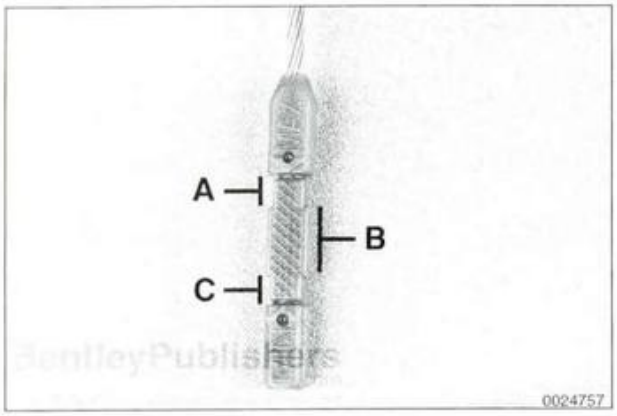
| **Table e. Oil capacities (approximate)** | |
|---|---|
| **Engine (engine code)** | **Oil capacity (includes oil filter) in liters (US qt)** |
| 2.7 liter V6 (A6, S6) (APB) | 6.5 (6.9) |
| 2.7 liter V6 (allroad quattro)(BEL) | 6.9 (7.3) |
| 2.8 liter V6 (AHA, ATQ) | 5.7 (6.0) |
| 3.0 liter V6 (AVK) | 6.4 (6.8) |
| 4.2 liter V8 (A6, S6, RS6) (ART, AWN, BBD, BCY) | 7.6 (8.0) |
| 4.2 liter V8 (allroad quattro)(BAS) | 8.5 (8.9) |

### Engine oil level, checking

It is normal for any engine to consume a small amount of oil. The rate of consumption depends on oil quality, viscosity, and operating conditions. Check oil level at every fuel filling and especially before starting out on a trip.

– Switch ignition OFF, then wait at least 3 minutes to allow oil to flow back into oil pan.

– Remove dipstick, wipe with a clean cloth and fully reinsert into tube.




➤ Remove dipstick again and read oil level:

- Oil at **MIN** (**C**). Top off oil. After topping off, level is correct when it is within normal area (**B**).
- Oil at **Normal** operating range (**B**). Oil does not have to be topped off, but can be as long as level does not exceed MAX mark (**A**).
- **MAX** mark (**A**). Do not top off.

> ***WARNING*** —
> - *Do not overfill engine oil. Overfilling can cause misfire diagnostic trouble codes (DTCs) to be stored in engine control module (ECM).*
> - *If engine oil level is above maximum mark, catalytic converter may be damaged.*

– When filling engine, note oil specification and capacity information in **Table d** and in **Table e** in this repair group.

## Engine oil and filter, changing

Procedures differ slightly by engine due to filter placement and design. 1999 A6 Quattro Avant with 2.8 liter V8 engine is illustrated.

– Warm car to normal operating temperature.

– Shut engine OFF and apply parking brake.

– Raise car and support safely. See **Raising Vehicle** in this repair group.

> ***WARNING*** —
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove engine lower cover. See **Engine covers, removing** in this repair group.

➤ Remove oil drain plug and allow oil to drain into waste oil pan.

> ***WARNING*** —
> - *Hot oil scalds. Wear protective clothing, gloves and eye protection.*
> - *Used oil is hazardous waste. Dispose of properly.*

– When oil has completely drained, reinstall drain plug with new gasket and tighten.

| **Tightening torque** | |
|---|---|
| Drain plug to oil pan (replace gasket) | 30 Nm (22 ft-lb) |

– Loosen and remove oil filter.

> ***WARNING*** —
> - *Dispose of oil filter as hazardous waste.*

– RS6 model: Remove front stabilizer bar to subframe mounting bolts for access to oil filter.

– When installing new filter:
  • Clean oil filter flange on engine.
  • Lightly lubricate rubber seal on new oil filter.
  • Thread filter on and tighten by hand.

– Fill engine with oil of correct viscosity and rating. See **Table d** in this repair group.
  • See **Table e** for approximate engine capacities.
  • To prevent overfilling, fill to approximately ½ liter (½ US qt) less than listed capacity. After vehicle is lowered and is sitting on a level area, start engine, allow to run until operating temperature is approximately 60°C (140°F) and switch OFF ignition. Wait approximately 3 minutes, check dipstick, then carefully fill to MAX mark.

– Start engine and inspect oil filter housing and drain plug area for leaks. Switch engine OFF.

– Install lower engine cover.

Engine oil may also be changed using an extraction system. This method involves siphoning oil out of engine through the dipstick tube. In some instances this can save considerable time. When using this type of device, follow the manufacturer's instructions.

## Cooling System

Cooling system maintenance consists of maintaining coolant level, checking coolant freezing point, and inspecting hoses. Coolant flushing is not part of Audi scheduled maintenance.

The coolant used in vehicles covered by this manual, called G12 and identified by its purple color, is phosphate and silicate free. Advantages of G12 over earlier types of coolant include improvements in corrosion protection, thermal stability, heat transfer and control, hard water tolerance and environmental protection.

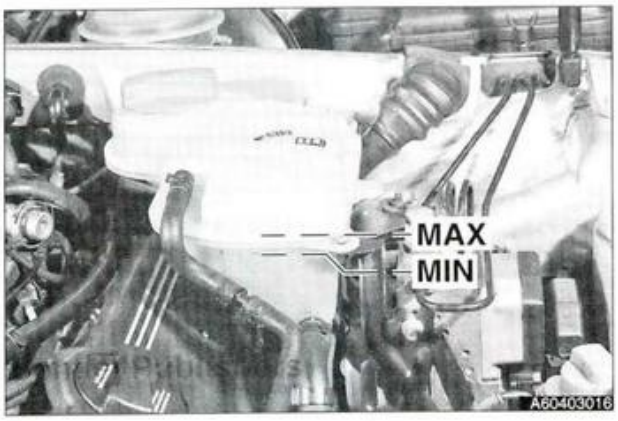
***WARNING —***
- *Hot coolant can scald. Do not work on cooling system until it has fully cooled.*
- *Use extreme care when draining and disposing of coolant. Coolant is poisonous and lethal. Children and pets are attracted to it because of its color, sweet smell and taste. See a doctor or veterinarian immediately if any amount is ingested.*

***CAUTION—***

- *Use Audi G12 original antifreeze or equivalent when filling cooling system. Use of other antifreeze types may be harmful to the cooling system. Do not use antifreeze containing phosphates.*
- *Do not mix green coolant (G11) with purple coolant (G12). Mixing can cause serious engine damage.*
- *Contamination of G12 with other colored coolants is identifiable by discoloration (brown, gray, etc.). This mixture may cause a foamy deposit to appear in the expansion tank and radiator. Drain and flush cooling system completely before refilling with the correct type of antifreeze.*
- *Make sure the cooling system is filled year-round with a mixture of 40% antifreeze minimum. The antifreeze mixture provides corrosion control and also raises the boiling point of the coolant.*
- *Do not use tap water in the cooling system. Use distilled water to mix antifreeze.*

**Table f. Cooling system capacities**

| Engine | Cooling system capacity in liters (US qt) |
|---|---|
| 2.7 liter V6 (APB, BEL) | 6.0 (6.3) |
| 2.8 liter V6 (AHA, ATQ) | 8.0 (8.5) |
| 3.0 liter V6 (AVK) | 8.0 (8.5) |
| 4.2 liter V8 (ART, AWN, BBD) | 9.0 (9.5) |
| 4.2 liter V8 biturbo (RS6) (BCY) | 12.0 (12.7) |




## Coolant level, checking

A translucent expansion tank on left side of engine compartment provides easy monitoring of coolant level without opening the system. Check coolant level when engine is cold because level rises as engine warms up. Make sure coolant level is between **MIN** and **MAX** marks.

## Coolant / antifreeze concentration, checking

Use a coolant hydrometer to determine antifreeze concentration.

| Coolant mixture recommendations | |
|---|---|
| **Concentration** | **Cold protection** |
| 50% antifreeze | -35°C (-31°F) |
| 60% antifreeze | -40°C (-40°F) |

Do not use a higher concentration of antifreeze than a 60% mixture, as the heat transfer quality of the coolant decreases with higher antifreeze concentrations.

## Cooling system hoses, inspecting

Inspect hoses by first checking that all connections are tight and dry. Coolant seepage indicates that either the hose clamp is loose, hose is damaged, or connection is dirty or corroded. Dried coolant has a chalky appearance.

Check hose condition by a visual and tactile inspection, making sure they are firm and springy. Replace hoses that exhibit conditions noted below.

- Leakage: Dripping, moisture, or seepage near clamps or connectors.
- Electromechanical degradation: Difficult to see, but detectable by squeezing hose and feeling for cracks, weak areas, and voids.
- Oil damage: Soft and spongy to touch, visible bulges and swelling.
- Abrasion damage: Wear, abrasion, or scuffing, often due to contact with components in engine compartment.
- Heat damage: Internal and external damage generally due to high underhood temperatures or overheating. Internal heat damage is often indicated by swelling with external damage marked by hardened and cracked areas.
- Ozone damage: Small, parallel cracks in outer layers, but without hardening. Due to exposure to atmospheric conditions.

When installing or reinstalling hoses, use clamps specified by Audi. Some clamp types do not allow for heat expansion and contraction and often leak when hot or cold.

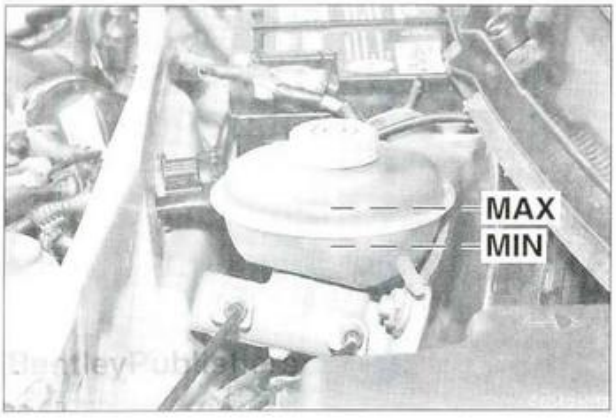
For additional cooling system information and repair procedures, see **19 Engine—Cooling System**.

# Brake Fluid

## Brake fluid level, checking

***WARNING*—**
- *Brake fluid is poisonous. Do not ingest brake fluid. Wash thoroughly with soap and water if brake fluid comes into contact with skin.*

***CAUTION*—**
- *Use only new, previously unopened brake fluid conforming to US Standard FMVSS 116 DOT 4.*
- *Do not let brake fluid come in contact with paint. Wash immediately with soap and water.*
- *Brake fluid absorbs moisture from the air. Store in an airtight container.*
- *Do not use DOT 5 (silicone) brake fluid.*
- *Do not fill brake fluid above* **MAX** *in fluid reservoir.*
- *Do not mix mineral oil products such as gasoline or engine oil with brake fluid. Mineral oil damages rubber seals in the brake system.*
- *Observe hazardous waste regulations when disposing brake fluid as a hazardous waste.*




Routine maintenance of the brake system includes maintaining an adequate level of brake fluid in reservoir.

➤ Check that fluid level in brake fluid reservoir at left rear of engine compartment is between **MIN** and **MAX** marks. Fluid level drops slightly as brake pad material wears.

➤ Audi specifies use of brake fluid that meets Department of Transportation (DOT) 4 Super specification in addition to Federal Motor Vehicle Safety Standard (FMVSS) 116 and Society of Automotive Engineers (SAE) standard J1703. DOT 4 Super is also known as DOT 4+. Brake fluid meeting this specification is also available in 30 and 50 liter containers for use in pressure bleeders.

| **Brake fluid specifications** | |
|---|---|
| Audi specification | DOT 4 Super (DOT 4+) |
| Minimum wet boiling point | 329°F (165°C) |
| Dry boiling point (exceeds) | 500°F (260°C) |

Additional service items include replacing brake fluid every 2 years, checking brake pads for wear, checking parking brake function and inspecting system for fluid leaks or other damage. See also:

- **Under Car Maintenance** in this repair group for pad inspection and brake system inspection.
- **46 Brakes–Mechanical** for brake pad and disc service.
- **47 Brakes–Hydraulic** for brake system bleeding and fluid change.

## Power Steering

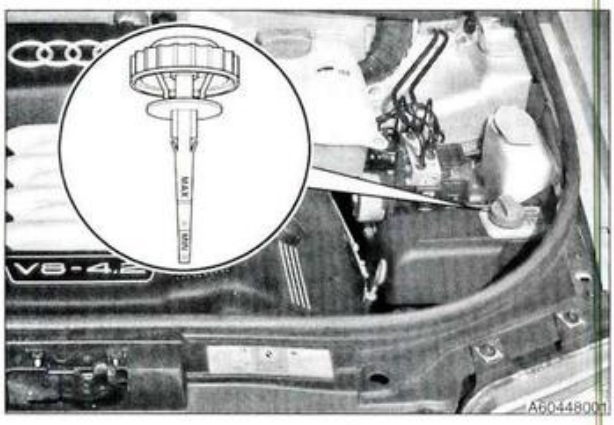
***CAUTION—***
- *Use only Audi hydraulic oil in the power steering system. Do not use ATF or other non-approved types of power steering fluid. If the wrong fluid is used, power steering components may fail.*
- *Do not reuse drained power steering fluid.*

| **Power steering fluid** | |
|---|---|
| Audi specification | G 002 000 |

### Power steering fluid level, checking

Power steering hydraulic fluid can be checked when either hot or cold.

– Cold power steering fluid: Do not start engine. Turn front wheels to straight-ahead position.




– Power steering fluid at operating temperature (over 50°C or 122°F): Start engine and steer front wheels to straight-ahead position.

➤ Remove power steering fluid reservoir filler cap (**inset**). Dipstick is attached to cap.

– Wipe dipstick with a clean lint-free shop cloth.

– Screw on cap hand tight and remove.

– Read level on stick:
  - If fluid is cold, correct level is ± 2 mm (± 0.08 in) of MIN mark
  - If fluid is at operating temperature, correct level is between MIN and MAX marks.

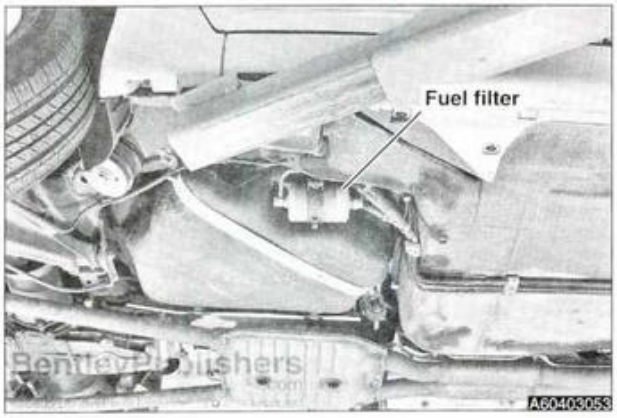
– If cold fluid level is more than 2 mm (0.08 in) above MIN mark, extract some fluid.

– If fluid level is more than 2 mm (0.08 in) below MIN mark, check power steering hydraulic system for leaks. It is not sufficient to top up with fluid.

## Fuel Filter

The fuel filter does not have a specified replacement interval. Replace it as conditions or the situation dictates.

***WARNING*** —
- *The fuel system is designed to retain pressure even when the ignition is OFF. When working with the fuel system, loosen the fuel lines slowly to allow residual fuel pressure to dissipate. Avoid spraying fuel. Use shop towels to capture leaking fuel.*
- *Before beginning work on the fuel system, place a fire extinguisher in the vicinity of the work area.*
- *Fuel is highly flammable. When working around fuel, do not disconnect wires that could cause electrical sparks. Do not smoke or work near heaters or other fire hazards.*
- *Wear eye protection and protective clothing to avoid injuries from contact with fuel.*
- *Unscrew the fuel tank cap to release pressure in the tank before working on fuel lines.*
- *Do not use a work light with an incandescent bulb near fuel. Fuel may spray on the hot bulb causing a fire.*
- *Make sure the work area is properly ventilated.*



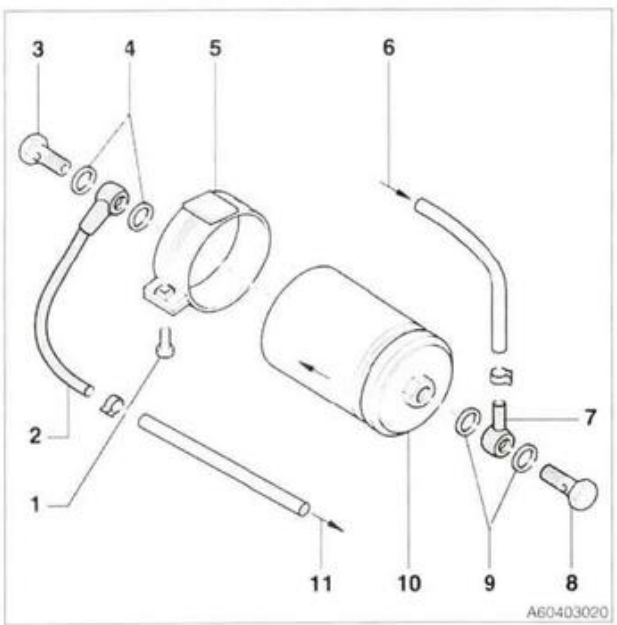

## Fuel filter, replacing

The illustration in this procedure applies to all V6 engines and V8 engines for A6, S6 and allroad quattro vehicles. Also see **Fuel filter, replacing (RS6)**.

➤ In vehicles covered by this procedure, the fuel filter is underneath the vehicle in front of the right rear wheel.

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times.*




➤ Fuel filter mounting and layout for V6 and V8 engines except V8 biturbo (RS6 models):

1. Clamping screw, tighten to 2 Nm (18 in-lb)
2. Fuel supply to engine
3. Banjo bolt, tighten to 23 Nm (17 ft-lb)
4. Sealing O-rings, replace
5. Fuel filter mounting bracket
6. Fuel line from fuel pump in tank
7. Fuel line flange
8. Banjo bolt, tighten to 23 Nm (17 ft-lb)
9. Sealing O-rings, replace
10. Fuel filter, underneath vehicle, in front of right rear wheel
11. Fuel supply to engine

– Before loosening fuel line banjo bolt, wrap a shop towel around connection.

– Counterhold fuel filter, then loosen banjo bolts.

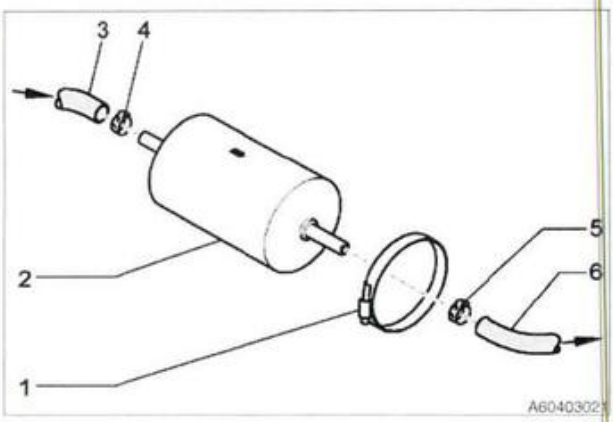
> ***CAUTION***—
> • *Place fuel-resistant container underneath work area to catch spilling fuel.*

– Remove fuel filter bracket clamping screw. Slide fuel filter out of clamp.

– When installing:
- Note that arrow on fuel filter shows direction of fuel flow.
- Use new sealing O-rings.
- Counterhold fuel filter when tightening banjo bolts.

| **Tightening torques** | |
|---|---|
| Fuel filter clamping screw | 2 Nm (18 in-lb) |
| Fuel line to fuel filter | 23 Nm (17 ft-lb) |

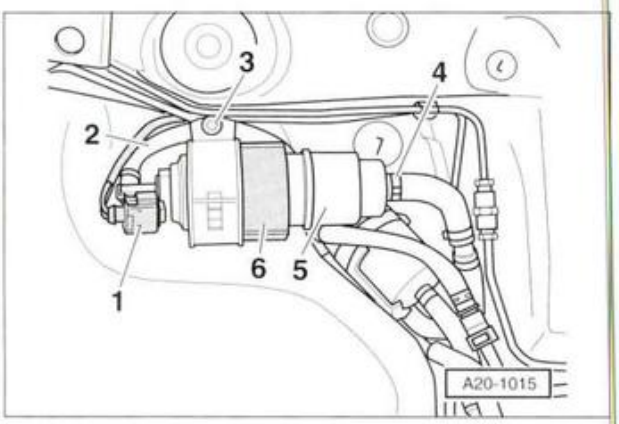
– Check for fuel leaks upon completion of repair.




## Fuel filter, replacing (RS6)

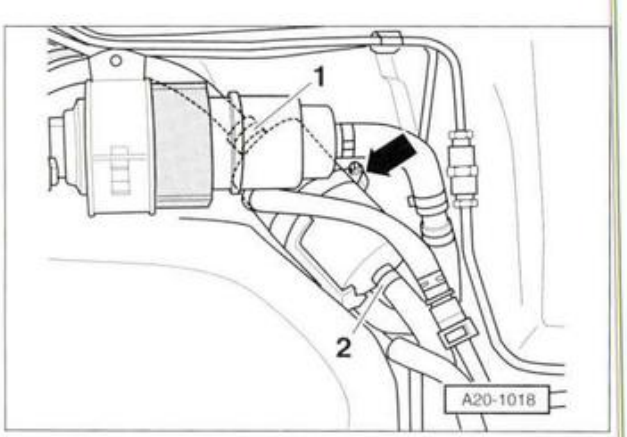
➤ Fuel filter mounting and layout for V8 biturbo engine (RS6 models).

1. Hose clamp
   - Attaches fuel filter to fuel tank
   - Tighten to 0.8 Nm (7 in-lb)
2. Fuel filter
   - Underneath vehicle, at right front of fuel tank, above fuel pump
3. Fuel line from fuel pump
4. Hose clamp
5. Hose clamp
6. Fuel supply line to engine




➤ Remove fuel pump mounting screw (**3**) and pull fuel pump downward. Do not disconnect fuel hoses (**2** and **4**) and fuel pump electrical connector (**1**).

– Before loosening fuel line clamps, wrap a shop towel around connection.




➤ Loosen hose clamps (**1** and **2**) and separate lines from fuel filter carefully.

> ***CAUTION—***
> - *Place fuel-resistant container underneath work area to catch spilling fuel.*

– Loosen hose clamp (**arrow**). Slide fuel filter out of clamp.

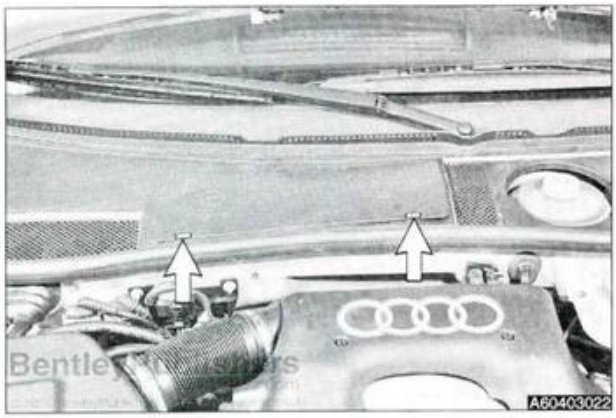
– When installing:
- Note that arrow on fuel filter shows direction of fuel flow.
- Use new hose clamps.

| **Tightening torques** | |
|---|---|
| Fuel filter mounting clamp | 0.8 Nm (7 in-lb) |
| Fuel pump mounting bracket | 1.2 Nm (11 in-lb) |

– Check for fuel leaks upon completion of repair.

## BATTERY SERVICE

The battery is in the plenum chamber, behind the engine.




➤ Open engine hood, release battery cover latches (**arrow**s) and flip cover up to gain access to battery.

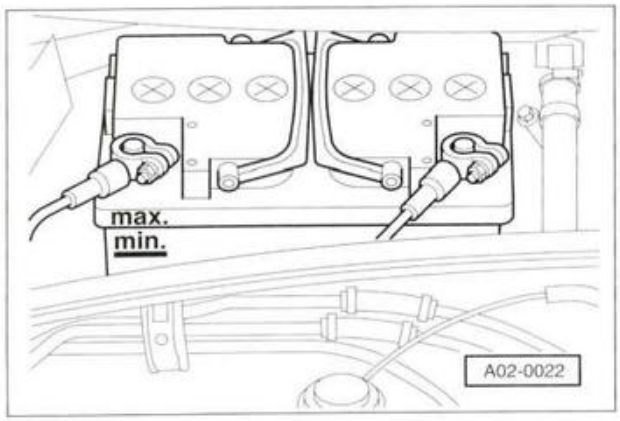
Routine maintenance of the battery consists of visual checks of battery hold-down bracket, cable clamps, and fluid (electrolyte) level.

Some batteries have a charge indicator (magic eye) on top that displays electrolyte level and charge condition.

- Green: Charge and electrolyte level are OK.
- Black: There is insufficient or no charge.
- Yellow or colorless: Electrolyte level is critically low. Top off with distilled water immediately.

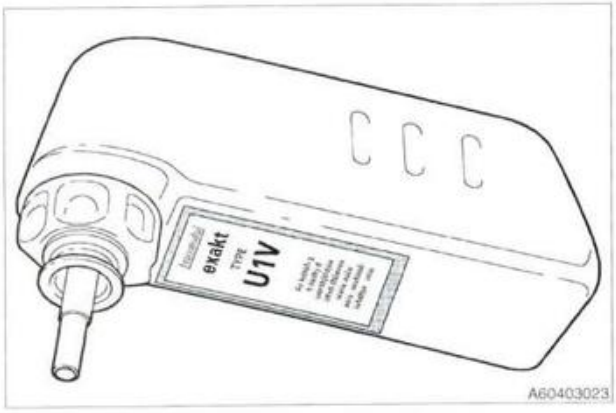
***NOTE —***

- *If the battery is more than 5 years old and the charge indicators are colorless, replace battery.*
- *Air bubbles that occur normally during battery charging or during vehicle operation may adversely affect charge indicator reading. To obtain an accurate reading, gently tap the charge indicator with a screwdriver handle to displace air bubbles that have formed.*
- *Maintenance-free batteries are equipped with sealing plugs with plastic foil.*
- *When replacing battery, use a replacement battery with central gas venting.*




➤ At high outside temperatures, check electrolyte level through translucent battery housing. Make sure electrolyte level is just above battery plates and separators.

- Remove filler caps to see battery plates. Make sure electrolyte level aligns with internal electrolyte level indicator (lip). This equates to external **min** and **max** markings on battery case.

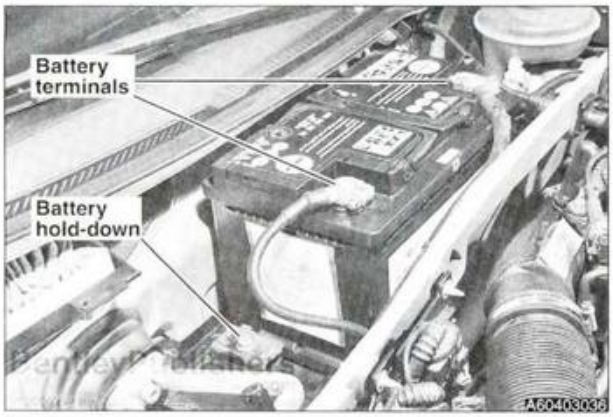



➤ For a battery with removable electrolyte caps:

- If electrolyte level is low, use battery filling bottle VAS 5045 or equivalent to replenish it.
- Add distilled water only. Distilled water prevents electrolyte impurities which cause self-discharging.
- Make sure battery cell caps are equipped with O-ring seals.

***CAUTION—***

- *Do not overfill battery. Overfilled batteries can boil over.*
- *Too little electrolyte reduces the service life of the battery.*
- *Extract excess electrolyte using a hydrometer.*
- *Dispose of electrolyte (sulfuric acid) as hazardous waste. Refer to local regulations pertaining to electrolyte disposal.*




During battery service, check the following:

- Battery securely bolted down.
- Battery terminal clamping bolts tight.

| Tightening torques | |
|---|---|
| Bolts, positive and negative cable clamps | 9 Nm (80 in-lb) |
| Bolt, battery hold-down bracket | 20 Nm (15 ft-lb) |

– Make sure battery vent hose is routed correctly.

See **27 Battery, Alternator, Starter** for battery testing and installation procedures.

### Battery notes

If the battery is disconnected and reconnected, reset or reinitialize the following systems or components:

- Clock
- Power window motor limit position (one-touch operation)
- Seat and outside rear view memory
- Heating and A/C automatic setting
- Radio

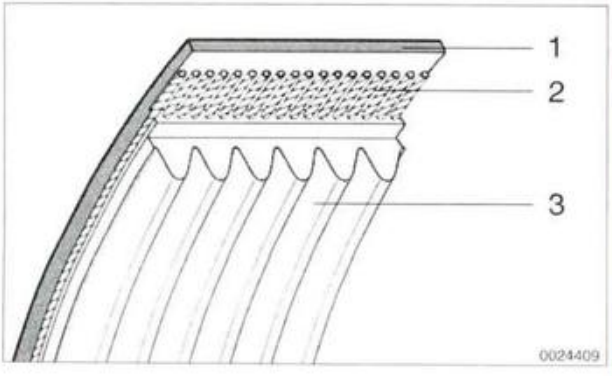
See **Battery reconnection notes** in **27 Battery, Alternator, Starter** for procedures necessary to reinitialize components.

## Engine Accessory Belt

The engine uses one multi-ribbed belt (serpentine belt) to drive engine accessories. Although belts of this design are known for their smooth running, high efficiency and long life, periodic inspection is required.

### Accessory belt, checking

– Remove upper and lower engine covers. See **Engine covers, removing** in this repair group.




Cross section of accessory belt.

1. Top layer, cover
2. Tension cords
3. Base material (substrata)

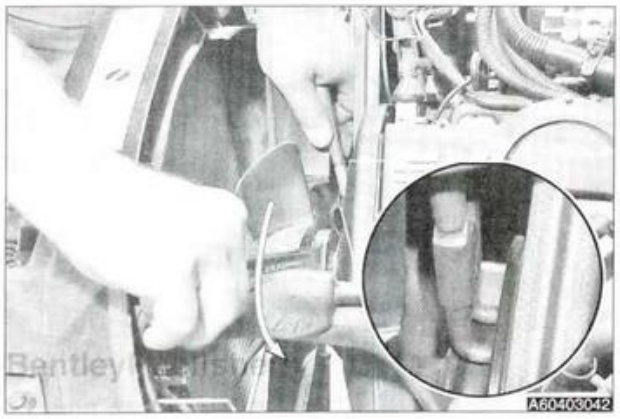
– Check belt periodically. Manually turn engine at vibration damper or pulley with a suitable wrench. Inspect belt from above or below for the following conditions:

- Splits, core fractures and cross section fractures.
- Separation between layers, especially between top cover and tension cord layers.
- Chunking or breaking of base or lower layer material.
- Fraying of tension cords.
- Flank (side) wear including flaking, fraying, chunking, glazing, hardening, and surface cracking.
- Oil and grease contamination.

– If any of above conditions exist, replace belt. Also, consult maintenance tables at end of this repair group for appropriate routine replacement intervals.

## Accessory belt, replacing (2.7 liter or 2.8 liter V6 engine)

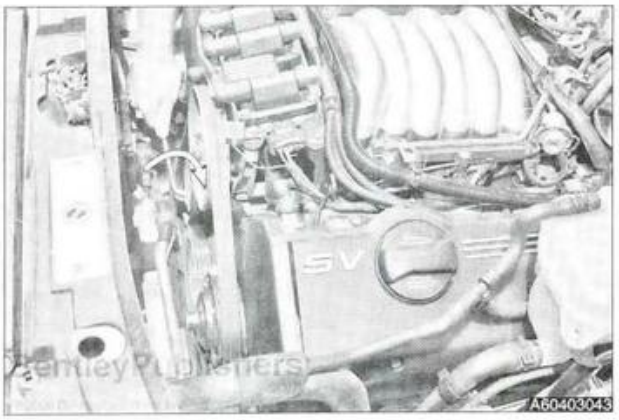
– Remove lower engine cover. See **Engine covers, removing** in this repair group.




➢ Use dual pin tool (Audi special tool 3212 or equivalent) (**inset**) to counterhold viscous fan pulley. Use 32 mm open end wrench (Audi special tool 3312) to loosen (**arrow**) viscous fan.

> ***CAUTION—***
> *• Viscous fan threads are left-handed. Turn clockwise to remove.*

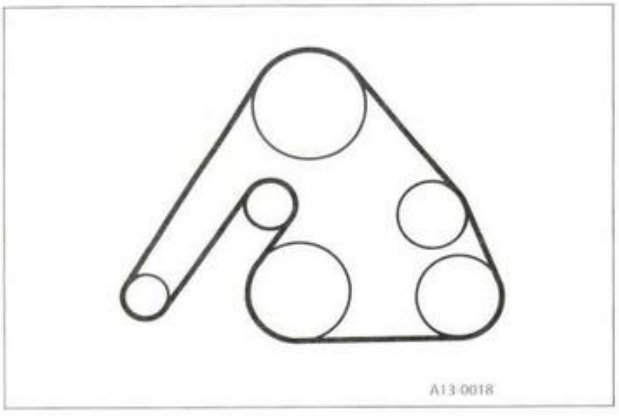
– Lift out viscous fan.




➢ Use 17 mm box wrench to rotate tensioner in direction of **arrow**. When hole in tensioner lines up with front engine cover, insert steel drift to lock tensioner in released mode.

– If belt is to be reused, such as for an emergency spare, mark direction of rotation prior to removal.

– Remove belt.




➢ When reinstalling belt:

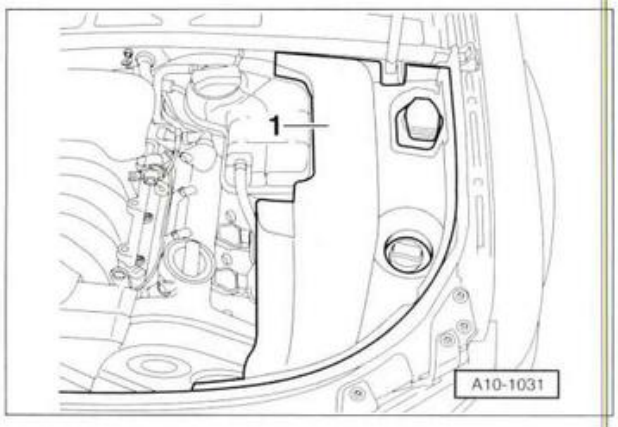
- Note correct belt routing as illustrated.
- If reusing belt, install in direction of rotation marked previously.
- Be sure belt is seated correctly in pulley grooves.
- Position belt on A/C compressor pulley last.

– Use 17 mm box wrench to release tension and remove steel locking drift.

– Reinstall viscous fan. Note that viscous fan threads are left-handed.

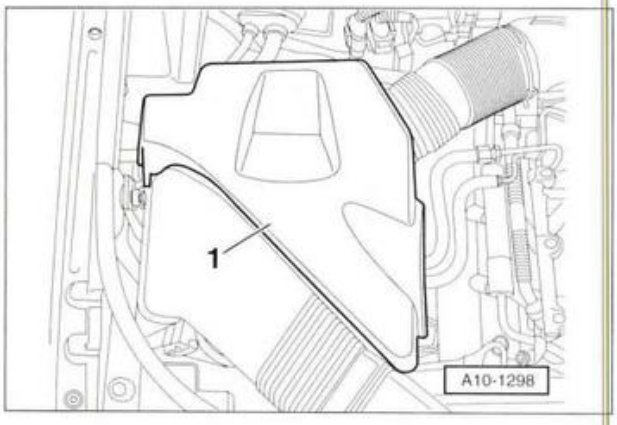
| **Tightening torque** | |
|---|---|
| Viscous fan to fan pulley: | |
| • Using 3312 open end wrench | 37 Nm (27 ft-lb) |
| • Without 3312 open end wrench | 70 Nm (52 ft-lb) |

– Run engine briefly to make sure belt routing is correct. Then reinstall engine covers.

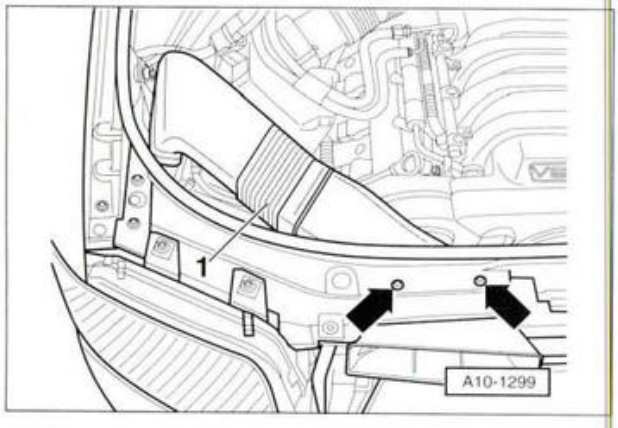



## Accessory belt, replacing (3.0 liter V6 engine)

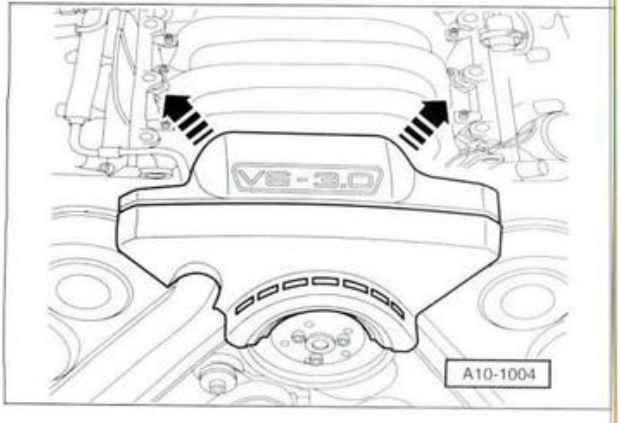
- Remove cover (**1**) in engine compartment (left side).



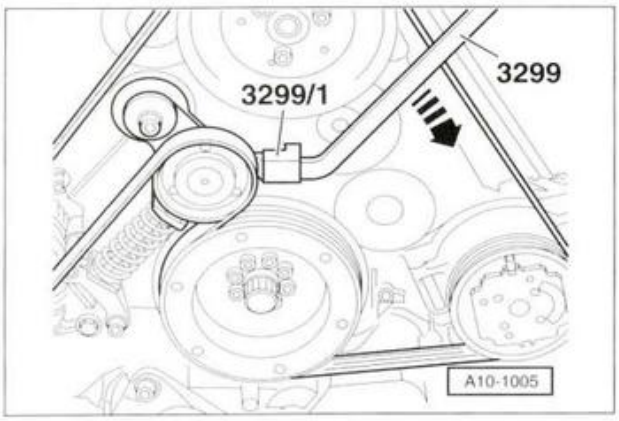

- Remove air filter housing cover (**1**) in engine compartment (right side).




- Remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).



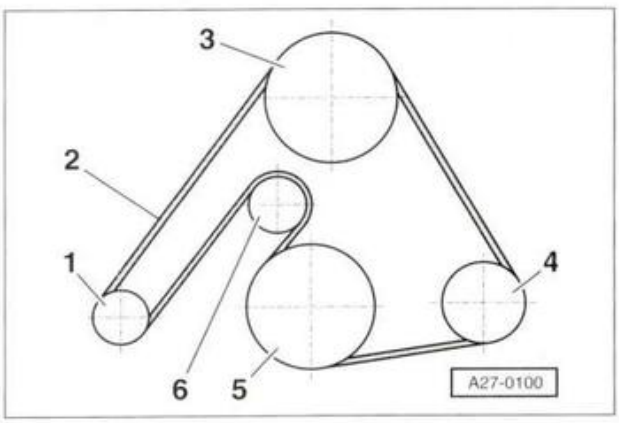

- Remove front engine cover (**arrows**).




➤ Use special tools 3299 and 3299/1 to swing belt tensioner in direction of **arrow** to release belt tension.

– If belt is to be reused, such as for an emergency spare, mark direction of rotation prior to removal.

– Remove belt from pulleys.

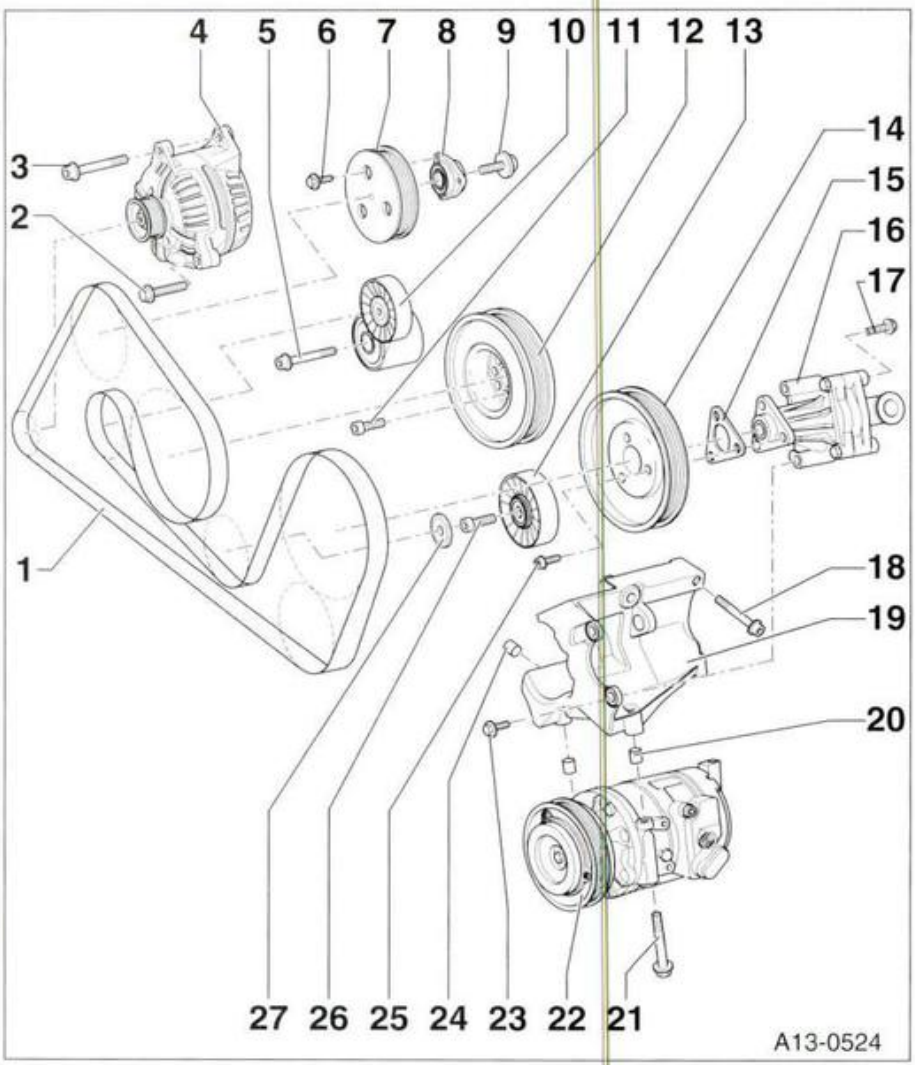



➤ When installing belt:

- First install belt on crankshaft pulley (**5**).
- Slide belt on tensioner (**6**) last.
- Note correct belt routing as illustrated.
- Be sure belt is seated correctly in pulley grooves.

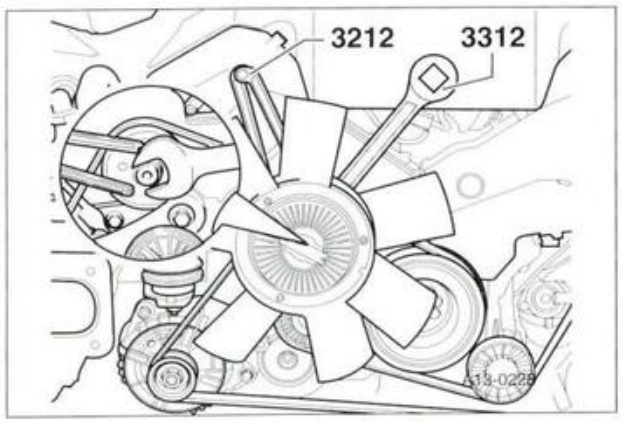
**1.** Alternator (generator)
**2.** Accessory belt
**3.** Power steering pump
**4.** A/C compressor
**5.** Crankshaft pulley
**6.** Tensioner

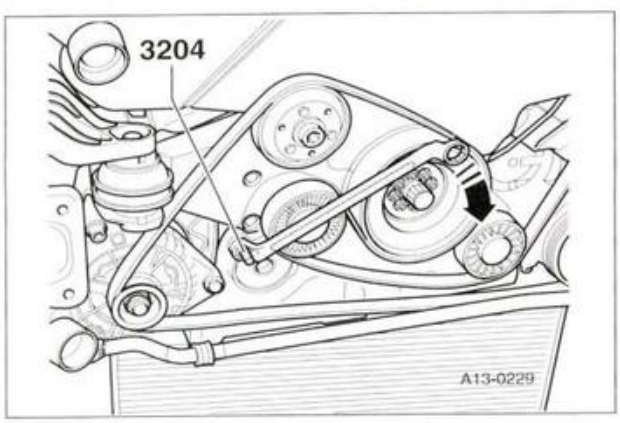
– Run engine briefly to make sure belt routing is correct. Then reinstall engine covers.




## Accessory belt and components (V8 engine, *not* allroad quattro)

1. **Engine accessory belt (serpentine belt), mark direction of rotation before removing**
2. **Alternator mounting bolt, 22 Nm (16 ft-lb)**
3. **Alternator mounting bolt, 45 Nm (33 ft-lb)**
4. **Alternator**
5. **Belt tensioner mounting bolt, 43 Nm (32 ft-lb)**
6. **Upper idler mounting bolt, 10 Nm (7 ft-lb)**
7. **Upper idler pulley**
8. **Upper idler bearing**
9. **Upper idler bearing mounting bolt**
   - Apply thread locking compound when installing. Tighten to 22 Nm (16 ft-lb).
10. **Belt tensioner**
    - Rotate clockwise with 19 mm wrench to release tension
11. **Vibration damper mounting bolt, 22 Nm (16 ft-lb)**
12. **Front pulley (vibration damper)**
13. **Lower idler pulley**
14. **Power steering pump pulley**
15. **Spacer (shim)**
16. **Power steering pump**
17. **Power steering pump mounting bolt**
    - 22 Nm (16 ft-lb)
18. **Power steering pump mounting bracket bolt, 40 Nm (30 ft-lb)**
19. **Power steering pump bracket**
20. **Dowel sleeve**
21. **A/C compressor mounting bolt, 22 Nm (16 ft-lb)**
22. **A/C compressor**
23. **Mounting bolt, 22 Nm (16 ft-lb)**
24. **Dowel sleeve**
25. **Power steering pump pulley mounting bolt, 22 Nm (16 ft-lb)**
26. **Lower tensioner pulley mounting bolt, 23 Nm (17 ft-lb)**
27. **Trim cover**




## Accessory belt, replacing (V8 engine, *not* allroad quattro)

To gain access to engine accessory belt (serpentine belt), remove front bumper cover and place lock carrier (radiator mounting frame in front of engine) in service position

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove lower engine cover. See **Engine covers, removing** in this repair group.

– Remove front bumper and bumper cover. See **63 Bumpers**.

– Place lock carrier in service position. See **50 Body-Front**.

➤ Remove mounting screws (**arrows**) for viscous fan outer housing. Remove housing.

– Remove electric fan.

➤ use Audi special tool 3212 (pin wrench) to counterhold viscous fan pulley. Use open end wrench (special tool 3312) to loosen viscous fan.

> ***CAUTION***—
> • *Viscous fan threads are left-handed. Turn clockwise to remove.*

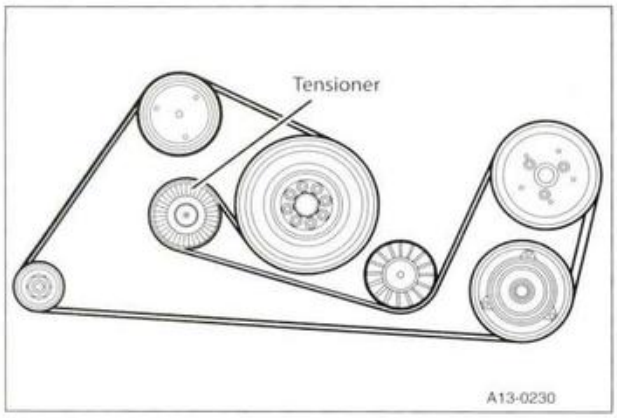
– Lift out viscous fan.

➤ Use 19 mm box wrench to rotate tensioner in direction of **arrow**. When hole in tensioner lines up with hole in front engine cover, insert steel drift (special tool 3204) to lock tensioner in released mode.

– If belt is to be reused, such as for an emergency spare, mark direction of rotation prior to removal.

– Remove belt.

*Engine Accessory Belt*




When reinstalling belt:

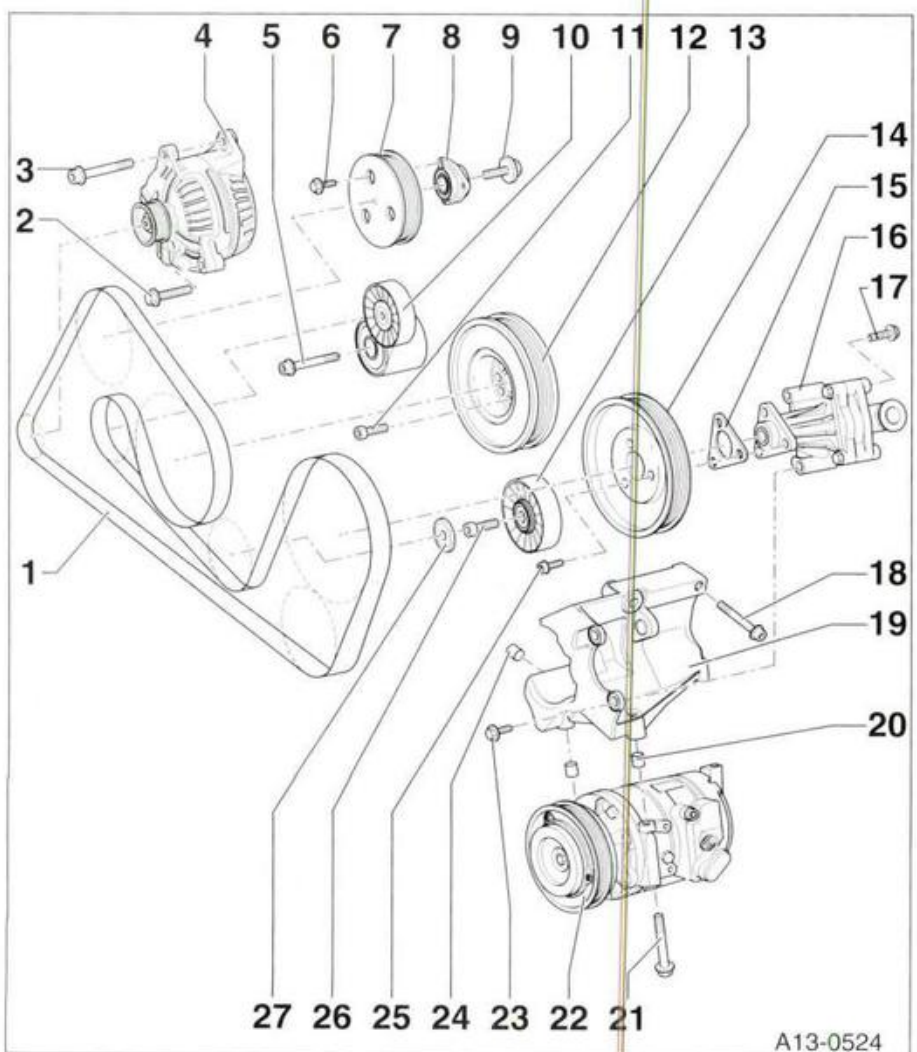
- Note correct belt routing in illustration.
- If reusing belt, install in direction of rotation marked previously.
- Be sure belt is seated correctly in pulley grooves.
- Place belt on vibration damper and idler pulleys first. Position belt on tensioner pulley last.

– Use 19 mm box wrench to release tension and remove steel drift.

– Reinstall viscous fan. Note that viscous fan threads are left-handed.

| Tightening torques | |
|---|---|
| Fan shroud to radiator | 10 Nm (7 ft-lb) |
| Viscous fan to fan pulley:<br>• Using 3312 open end wrench<br>• Without 3312 open end wrench | <br>37 Nm (27 ft-lb)<br>70 Nm (52 ft-lb) |

– Run engine briefly to make sure belt routing is correct. Then reinstall lock carrier, front bumper and engine covers.




## Alternator belt and components (V8 engine, allroad quattro)

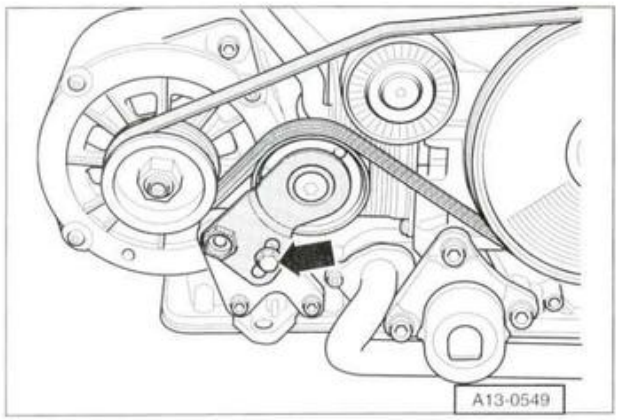
1. **Belt tensioner mounting bolt, 22 Nm (16 ft-lb)**
2. **Belt tensioner lock bolt, 22 Nm (16 ft-lb)**
3. **Belt tensioner**
4. **Alternator mounting bolt, 22 Nm (16 ft-lb)**
5. **Alternator**
6. **Alternator bracket mounting bolt, M8: 22 Nm (16 ft-lb), M10: 46 Nm (34 ft-lb)**
7. **Bushing**
8. **Alternator bracket**
9. **Idler pulley mounting bracket bolt, 10 Nm (7 ft-lb)**
10. **Idler pulley mounting bracket**
11. **Front pulley (vibration damper)**
12. **Vibration damper mounting bolt, bolt class 12.9, 42 Nm (31 ft-lb)**
13. **Idler pulley**
14. **Idler pulley mounting bolt, 22 Nm (16 ft-lb)**
15. **Trim cover**
16. **Alternator belt (serpentine belt), mark direction of rotation before removing**
17. **Threaded bushing**

## Alternator belt, removing and installing (V8 engine, allroad quattro)

To gain access to alternator accessory belt (serpentine belt), remove front bumper cover and place lock carrier (radiator mounting frame in front of engine) in service position.

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*



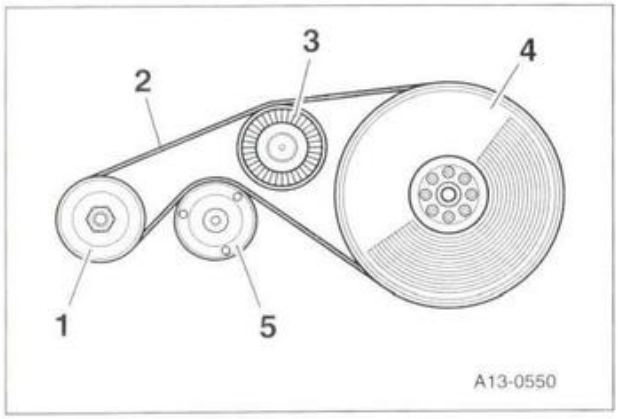

– Remove lower engine cover. See **Engine covers, removing** in this repair group.

– Remove front bumper and bumper cover. See **63 Bumpers**.

– Place lock carrier in service position. See **50 Body-Front**.

➤ Loosen tensioner lock bolt (**arrow**) and remove belt.

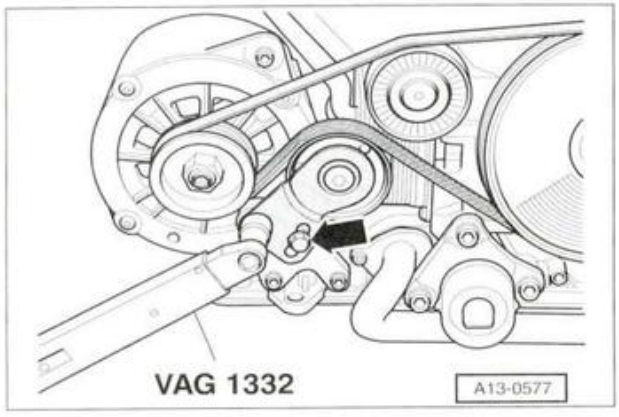
– If reusing belt, install in direction of rotation marked previously.




➤ Place belt over pulley in specified sequence:

1. Alternator
2. Belt
3. Idler pulley
4. Vibration damper
5. Tensioner pulley

– Be sure belt is seated correctly in pulley grooves.




➤ Use torque wrench (special tool VAG 1332 or equivalent) to rotate tensioner and pretension alternator belt. Then tighten tensioner lock bolt.

| Tightening torques | |
|---|---|
| Alternator belt pretension | 72 ± 2 Nm (54 ± 2 ft-lb) |
| Tensioner lock bolt | 22 Nm (16 ft-lb) |

– Run engine for a short time and make sure belt routing is correct.

– Reset belt pretension. Then reinstall lock carrier, front bumper and engine covers.

## TIMING BELT (TOOTHED BELT)

For timing belt replacement interval, see **Maintenance Schedules** in this repair group.

Timing belt replacement is covered in **13 Timing Belt, Engine Pulley, Rear Main Seal**.

***CAUTION—***
- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

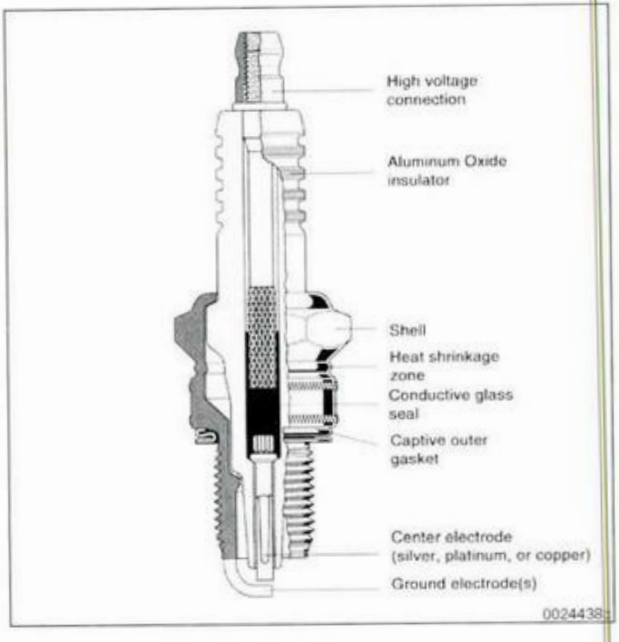
## SPARK PLUGS

Audi specifies spark plugs made by several different manufacturers. **Table g** is a listing of current spark plug recommendations. Engines are referred to by configuration (V6 or V8), displacement and engine code. For a listing of engine codes and applications, see **Table b** in this repair group.

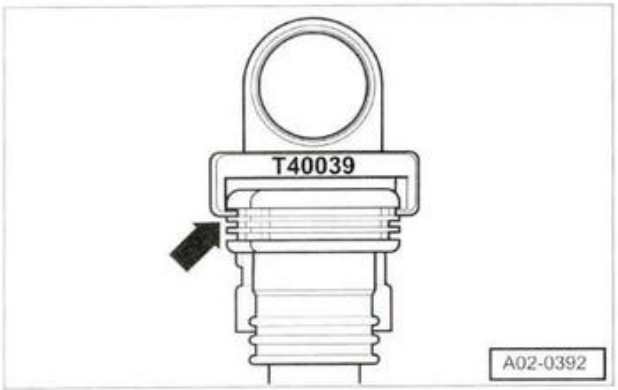
Because specifications and part numbers can change, check with an authorized Audi dealer parts department or aftermarket parts specialist for the latest application information.

### Spark plugs, replacing

– Remove upper engine cover. See **Engine covers, removing** in this repair group.



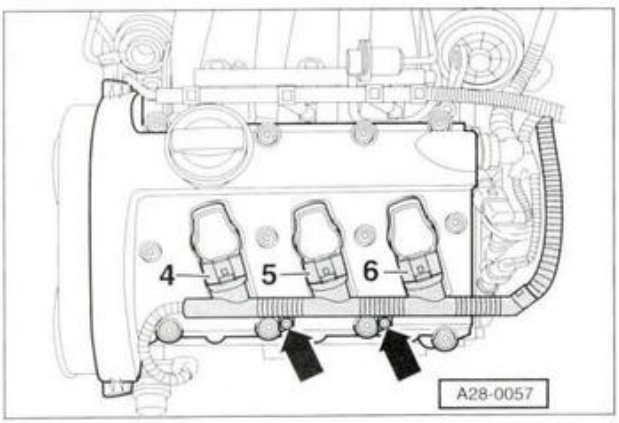
➤ Engine with spark plug wires: Use special plastic puller (stored under cylinder head plastic cover) to pull spark plug wire ends off spark plugs.




➤ Engine with coils over spark plugs: Attach special tool T40039 (puller) to uppermost thick rib (**arrow**) of each coil. Pull coils off spark plugs.

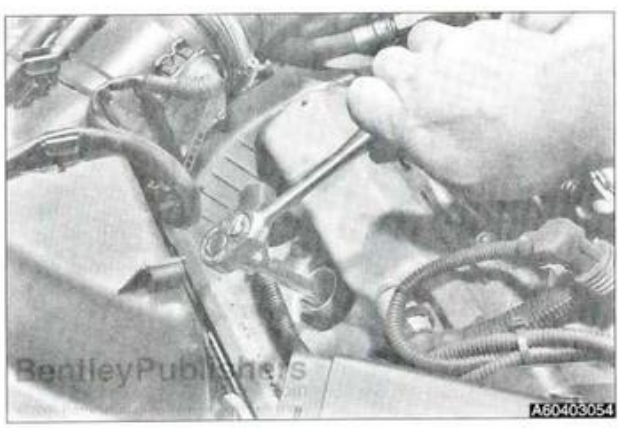
***CAUTION—***
*• Lower ribs of coil may be damaged if they are pried for removal.*

– If special coil removal tool is not available, use 2 screwdrivers to gently pry each coil off spark plug.




➤ Disconnect harness connectors (**4**, **5**, **6**) and pull all connectors out of ignition coils simultaneously.

– Pull coils out of spark plug holes and set aside.

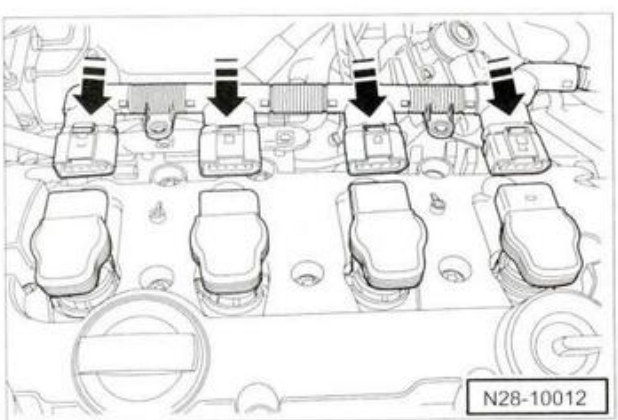



➤ Remove and install spark plugs with 16 mm or 5/8 inch spark plug socket (special tool 3122B or equivalent). See **Table g** for spark plug applications.

| **Tightening torque** | |
|---|---|
| Spark plug to cylinder head | 30 Nm (22 ft-lb) |

– Engine with spark plug wires: Reinstall wires on spark plugs. Press firmly for a positive connection.

– Engine with coils over spark plugs: Insert ignition coils loosely into spark plug shafts.




➤ Align ignition coils to connectors (**arrows**) and connect all connectors to ignition coils simultaneously.

– Align ignition coils to recesses in cylinder head cover.

– Press ignition coils evenly on spark plugs by hand.

– Install upper engine cover.

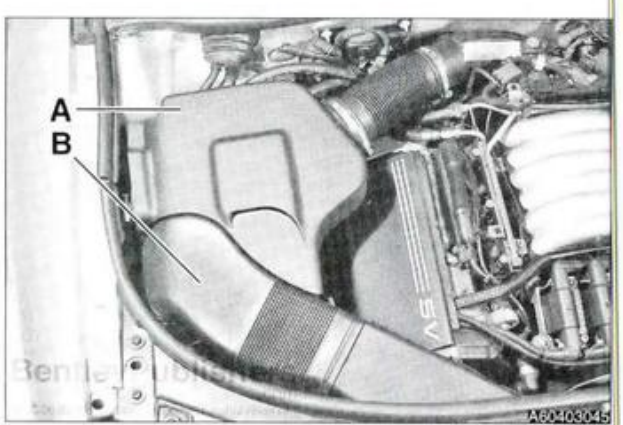
| Table g. Spark plug applications | | | |
|---|---|---|---|
| **Year, engine** | **Bosch spark plug** | **NGK spark plug** | **Gap**[1] |
| 1998 - 2001 V6 2.8 liter (AHA, ATQ) | F7LTCR, FGR7DQE0[2] | BKR6EKUB | AHA: 1.6 mm (0.064 in)<br>ATQ: 0.4 - 0.6 mm (0.016 - 0.024 in) |
| 2000 - 2002 V6 2.7 liter (APB) | - | BKR6ES | 0.8 mm (0.032 in) |
| 2002 - 2003 V6 2.7 liter (BEL) | FR7DPP222T | BKR6ES[3] | 0.8 mm (0.032 in) |
| 2004 V6 2.7 liter (BEL) | FR7DPP33 | BKR6ES | 0.8 mm (0.032 in) |
| 2002 - 2003 V6 3.0 liter (AVK) | FR7DPP332 | BKR6ES-11[4] | 1.1 mm (0.044 in) |
| 2004 V6 3.0 liter (AVK) | FR7DPP22U | BKR6ES-11 | 1.1 mm (0.044 in) |
| 2000 V8 (ART) | HGR7KQC | BKR6EKUB | 1.6 mm (0.064 in) |
| 2001 - 2003 V8 (AWN, BAS) | FGR7KQE | BKR6ES | Not adjustable |
| 2002 - 2004 V8 (BBD) | FGR6KQE | BKR6ES | Not adjustable |
| 2004 V8 (AWN, BBD, BAS) | FGR7KQE0 | BKR6ES | Not adjustable |
| 2003 - 2004 V8 biturbo (BCY) | - | BKR7E[3] | 0.8 mm (0.032 in) |

***Notes:***
1. Spark plugs gapped by the manufacturer during production; However, check gaps before installation.
2. Part numbers current at time of publication, but can change due to supersessions, etc.
3. -11 at end of part number indicates that spark plug is pregapped at factory to 1.1 mm (0.044 in).
4. Standard NGK spark plug listed. See NGK web site for additional listings.

## Air Filter

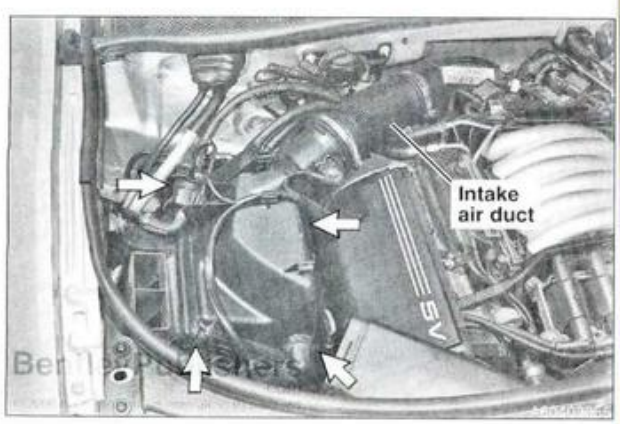
### Air filter element, replacing

The air filter housing is in the right front corner of the engine compartment. In the procedure that follows, 1999 2.8 liter V6 engine compartment is illustrated. Layout of other engine compartments is similar.




➤ Where applicable, pull up cover (**A**).

– Detach intake air duct (**2**).




➤ Unsnap air filter housing cover retaining clips (**arrows**) and swing cover to side. If necessary remove intake air duct.

– Remove old air filter element and discard.

– Clean air filter housing and install new filter element.

***NOTE —***

- *Make sure sealing surfaces on inner and outer parts of air filter housing are positioned flush and seated correctly.*

– Snap filter housing halves together using retaining clips.

# Under Car Maintenance

## Transmission and final drive oil

For transmission and final drive lubricant information see the following repair groups:

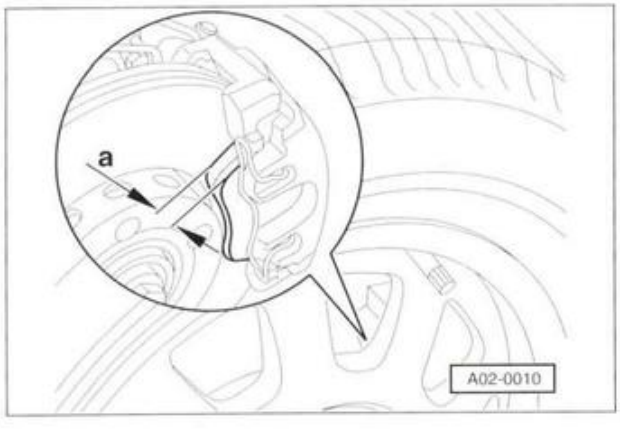
- **34 Manual Transmission**
- **37 Automatic Transmission**
- **39 Final Drive**

## Brake system, visual inspection

– Brake system items to check:

- Check power brake servo (booster) and brake master cylinder.
- Check ABS hydraulic unit.
- Check front and rear brake calipers, hoses and brake lines for leaks and damage.
- Inspect parking brake cables and handle for proper operation and damage.
- Check that brake hoses are not twisted.
- Check that brake hoses do not touch any part of the vehicle when steering is at full lock and suspension is at limits.
- Check hoses and lines for porosity, deterioration and chafing.
- Check brake connections and attachments for correct seating, leaks and corrosion.

Correct problems noted during the visual inspection immediately. For parking brake adjustment, see **46 Brakes–Mechanical**.



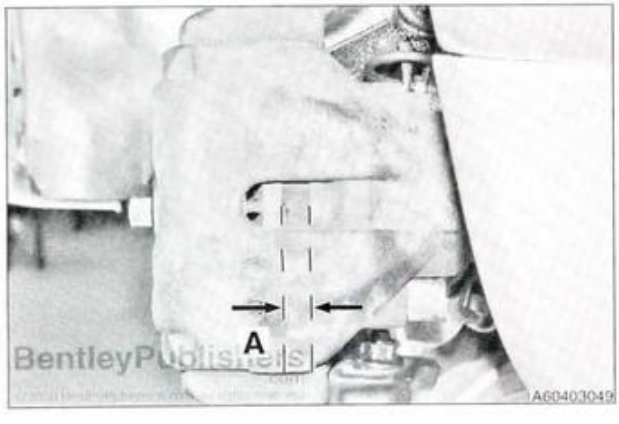

## Brake pads, checking

Periodic maintenance of the brake system includes inspection of front and rear brake pads for thickness.

Outer brake pad thickness can usually be estimated by looking through wheel openings. For inner brake pad thickness, use flashlight and mirror to inspect. If in doubt, remove wheel for more thorough inspection.

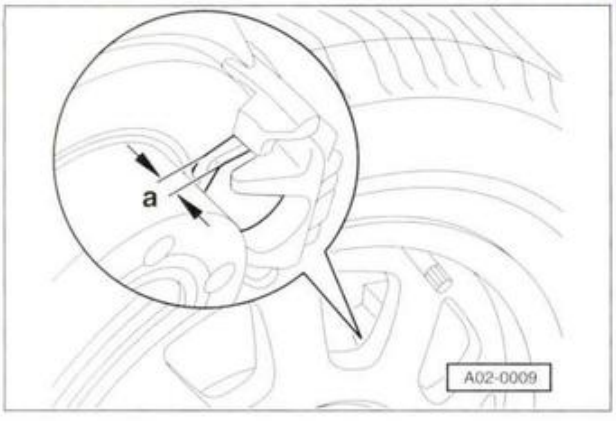
➤ Front disc brake outer pad.

| **Brake pad wear limit (incl. pad backing plate)** | |
|---|---|
| Minimum pad thickness (**a**) | 7 mm (0.28 in) |



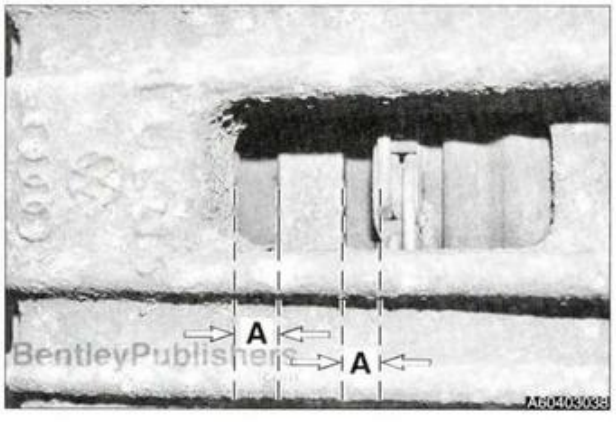

➤ With front wheel off, check inner front pad thickness (**A**) through caliper opening.

| **Brake pad wear limit (friction material only)** | |
|---|---|
| Minimum pad thickness (**A**)<br>• A6, S6, allroad quattro<br>• RS6 | <br>approx. 2 mm (0.08 in)<br>approx.3 mm (0.12 in) |




➤ Rear disk brake outer pad.

| Brake pad wear limit (incl. pad backing plate) | |
|---|---|
| Minimum pad thickness (**a**) | 7 mm (0.28 in) |




➤ With rear wheel off, check rear pad thickness (**A**) through rear caliper opening.

| Brake pad wear limit (friction material only) | |
|---|---|
| Minimum pad thickness (**A**)<br>• A6, S6, allroad quattro<br>• RS6 | <br>approx. 2 mm (0.08 in)<br>approx.3 mm (0.12 in) |

– Replace pads if they are below minimum thickness. See **46 Brakes–Mechanical**.

## Tire and wheel service

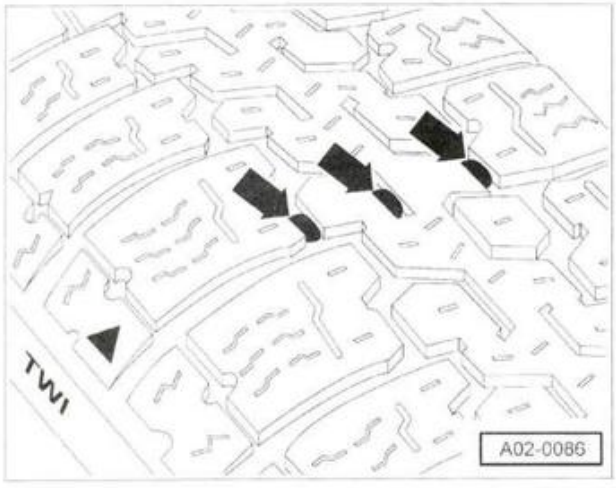
### Tire maintenance

Inspect tires at least as often as every maintenance service. Check tire pressures more often. Remember that tire pressures change with temperature changes. Check tire pressures when the tires are cold due to the normal pressure rise associated with heat generated by driving. Tire pressures vary among vehicles with different engine types and between different model years. Refer to data label on B or C pillar for proper inflation pressures. See **Identification Plates and Labels** at the beginning of this section. Be sure to also check spare tire pressure.

Replace dust caps on tire valves after checking tire pressures. If valve extensions are used (as on steel wheels and wheel covers), inspect extensions for damage and replace as required.

Tire inspection includes the following:

- Check tire tread surface and side walls for signs of damage. Remove foreign objects from tread.
- Check that tires are the same type, size, and tread pattern.
- Measure tread depth. If tread wear has exceeded minimum specification listed, replace tire.
- Check for scuffing, cupping, feathering, irregular tread wear, sidewall checking, dry rot, cuts and fractures.
- Also check rims (both steel and alloy) for damage.




Tires have tread wear indicators (TWI) spaced around the tire, perpendicular to the tread, at marked intervals (**arrows**). Note bold **TWI** lettering and location **triangle** on sidewall at location of TWI bands.

When the TWIs start to become visible, the tire is reaching the wear limit. When the tops of the tread wear indicators are even with the tread, replace the tire.

Some tire manufacturers use symbols in place of TWI lettering on sidewalls; however, TWI bands are still at that location on tire.

New summer and all-season tires generally have 10/32 of an inch tread depth while snow tires generally have 14/32 of an inch (tread depth is measured in 32nds of an inch). Tread depth can, however, vary considerably among different designs and manufacturers.

Specifications below are minimum as specified by vehicle and tire manufacturers. State, provincial, and local laws may specify a different tread depth minimum.

| **Tire wear limit** | |
|---|---|
| Tire tread depth, minimum remaining:<br>• Summer & all-season<br>• Snow | <br>1.6 mm (0.063 or 2/32 in)<br>4.0 mm (0.157 or 5/32 in) |

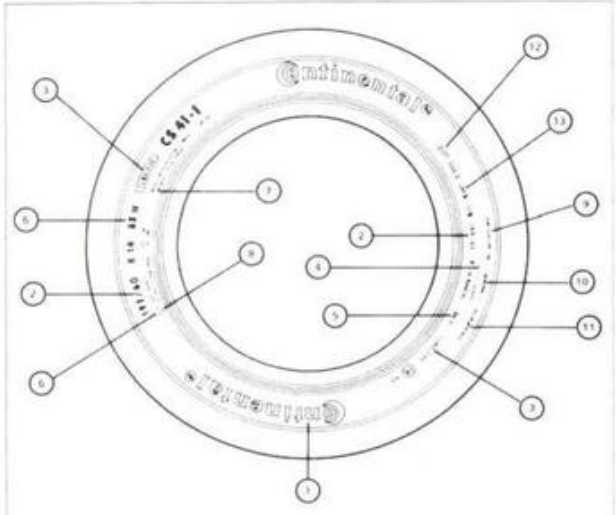
Snow tires (or winter tires) have a deep lug tread pattern. Be sure to use on all 4 wheels. They are not generally suitable for warm weather use and have different speed ratings.

Because winter tires improve vehicle handling on snow and ice, use them when temperatures below 45°F (7°C) are expected. Also, increase tire pressure by 3 psi (0.2 bar). Consult the tire manufacturer and owner's manual for additional information and applications.

If irregular wear patterns are identified, determine causes by checking wheel alignment (front and rear) and inspecting suspension for damage and worn components.

Vibrations felt through the steering wheel may be an indication of tire out of balance condition. This can shorten tire life, cause wear on steering and suspension components, and often results in an uncomfortable ride. Tire balancing is the usual solution.

Old tires (6 years or more) may experience internal tread separation and not function or perform as originally intended. Use such old tire with caution. Audi specifies replacement after this time period regardless of tread wear.



1. Manufacturers brand
2. Tire dimensions (size)
3. Type (tubeless)
4. Country of origin
5. Load index and speed rating
6. Load range (A, B, C)
7. Tread & sidewall ply and construction
8. Maximum cold inflation pressure
9. Treadwear index number
10. Traction index number (AA, A, B, C)
11. Temperature index number (A, B, C)
12. USA DOT compliant
13. Manufacturers production coding

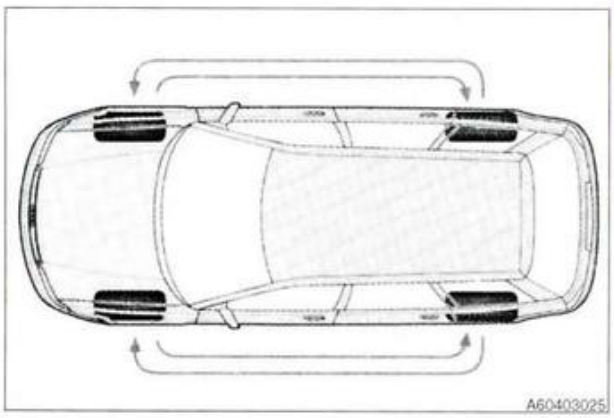
0024416

Overview of typical information found on tire sidewall that complies with United States Federal Motor Vehicle Safety Standard (FMVSS) 109.

When installing new tires, observe the following:

- Audi specifies that only radial tires be used.
- For safety reasons, replace tires in pairs and on the same axle. However, replacement of all tires at the same time is preferred.
- Balance new tires and fit rims (wheels) with new valve stems.
- New tires tend to be slippery and require a break-in period of at least 350 miles (560 km).

- Acquire new tires of the same size as originally installed. If you change sizes, be aware that gear ratios and speedometer readings will change.
- For safety reasons, install tires of the same type and tread pattern on a vehicle.
- On quattro (AWD) vehicles, be sure to use the same size tires on all four wheels.
- Do not use tires of a lesser speed rating or load range than originally installed.
- Rebalance wheel and tires as they accumulate mileage due to settling and wear.
- Make sure that wheel covers are installed correctly so as to not cut valve stems and extensions.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### Tire rotation

Rotate tires periodically for maximum service life and quiet running. Tire rotation also equalizes wear between tires. This keeps rolling circumference the same which is important to some vehicle systems, especially in quattro (AWD) models.

Audi specifies tire rotation at the first 5000 mile service and then defers to the tire manufacturers recommendations from that point on. These recommendations can vary slightly among manufacturers, but generally, rotation at 5000 to 7500 mile intervals results in optimal wear.

➤ Audi specifies that under most conditions, tires remain on the same side of vehicle when they are rotated (front to back).

### Wheel maintenance

Visually inspect steel and alloy wheels for damage such as dents and missing balance weights. Ensure that all wheel bolts are present and tight.

When removing and installing road wheels (alloy and steel), note the following points to be sure that wheels remain secure at all times:

- Tighten wheel bolts in crisscross pattern and to specified torque. Excessive torque can distort wheel bolt seat in wheel.
- When installing a wheel, do not torque down first wheel bolt immediately (for instance, with an impact wrench). This may prevent other bolts from centering the wheel properly when they are threaded in. The rim could then come loose, even though bolts have been tightened to specified torque.
- Do not apply grease or oil to wheel bolt threads.
- Before installing wheels, examine seats of wheel bolts and contact surfaces between rims and hubs for rust, corrosion and paint. Clean off these parts if necessary.

***WARNING*** —

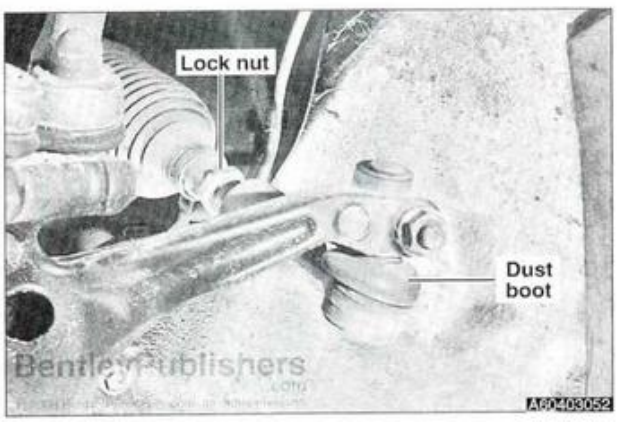
- *If the procedures above are not observed, wheel mountings can come loose and wheel bolt seats can become distorted. This distortion may be very slight and not visible to the naked eye. Even this slight distortion of wheel bolt seats can prevent rims from being held firmly and cause the wheels to come loose.*

## Suspension components, checking

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Check wear in front suspension components:
  • Move wheels and tie-rods and check for free play.
  • Any play indicates wear. Repair as necessary.




➤ Check tightness of tie-rod lock nut.

| Tightening torque | |
|---|---|
| Lock nut to tie-rod end | 40 Nm (30 ft lb) |

– Check dust boot for damage and correct installation.

– Inspect shock absorbers for excessive oil leakage past seals.

– Inspect coil springs for cracks and damage.

– Inspect front and rear suspension bushings for cracks or deterioration.

– Inspect front and rear inner and outer constant velocity (CV) joint boots for leakage, cuts and damage. Ensure that boots are correctly seated.

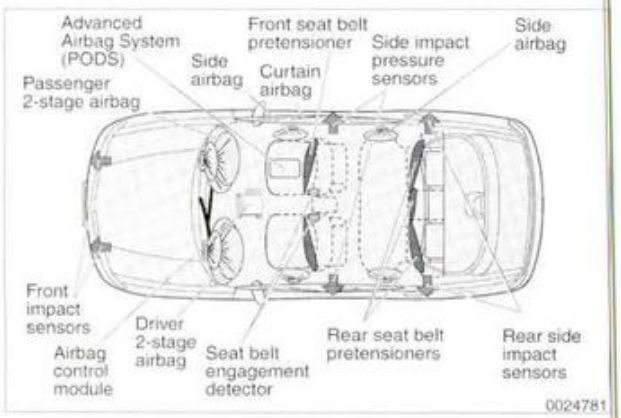
See **40 Front Suspension** and **42 Rear Suspension** for suspension component replacement.

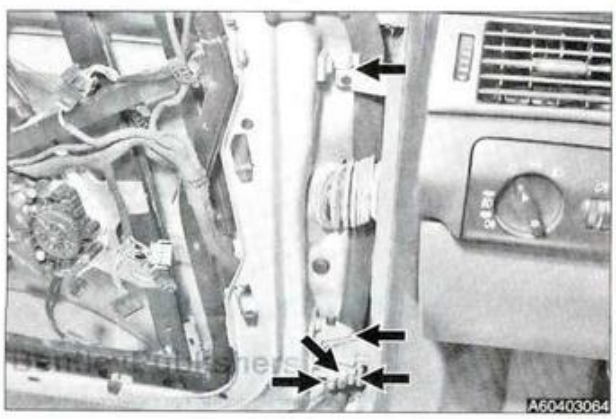
## Underbody visual inspection

– Inspect the following for leaks or damage:
  • Engine
  • Transmission (manual and automatic)
  • Fuel system
  • Cooling and heating systems
  • Brake system
  • Exhaust system

A small amount of dampness is considered normal in some cases, especially around axle and pulley seals since the leaking fluid helps the seal work properly. On the other hand, expensive repairs can be avoided by prompt repair of minor fluid leaks. Judgement and experience are required to distinguish among the different kinds of fluid leaks.

– Inspect underside of vehicle for damage caused by normal wear and tear or by driving over road debris. Whenever vehicle is raised on a lift, inspect underbody, wheel wells and sill or rocker panels for damage to underbody sealants and coatings. Also inspect after major repairs to vehicle systems.




– Repair damage or defects found. Only use wax-based or tar-based anti-corrosion compounds as specified. Do not use oil-based anti-corrosion sprays due to possible incompatibility with factory applied protection. Check with an authorized Audi dealer's parts department.

## Body and Interior Maintenance

### Airbags, visual inspection

Airbags are installed in several locations in passenger compartment:

- Driver and passenger side front airbags.
- Side airbags built into front seat backrests.
- Side curtain airbags.
- Side airbags built into rear seat backrest bolster (optional).

Inspect padded airbag covers on steering wheel and instrument panel for signs of external damage. Ensure that they are not covered over or have any objects attached to them such as stickers, etc.

Inspect seats front and rear. Do not use seat covers that obstruct or hinder proper deployment of side airbags.

Inspect covers along roof line for side curtain airbags for objects that may hinder proper deployment of side airbag.

Do not apply any chemical treatment to airbag unit covers. Clean with a dry or water moistened cloth only.

Observe airbag warning light in instrument cluster when starting vehicle. It should come on for a few seconds when engine is started, as an electronic systems self-test, and immediately go off and stay off. It should only illuminate during this self-test or if there is a system malfunction.

### Door check strap and hinges, lubricating

Lubricate door check strap and hinges at places indicated by **arrows** using G 000 150 lubricant.

## Door lock service

- Lock and unlock left and right front doors. Make sure lock buttons move up when unlocking and down when locking each door.
- Press lock buttons down on right front and rear doors and close doors. Make sure doors are locked.
- Make sure that lock button on driver door cannot be pressed down while door is open.
- Move child safety lever on each rear door lock down (in direction of arrow on door lock). Check to make sure that inside door lever is inoperative while lock button is in unlocked position.
- Lubricate lock cylinders using G 000 400 01 lubricant.

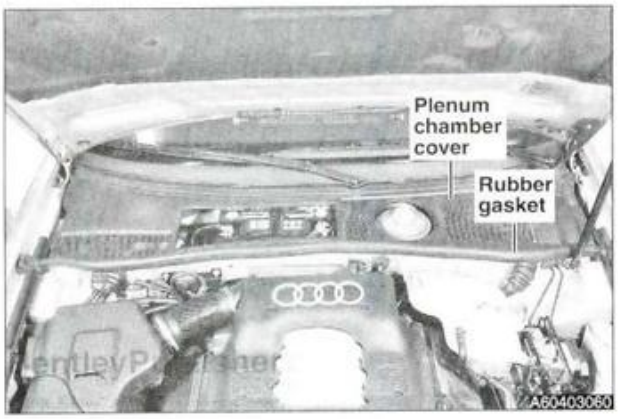
## Sunroof service

- Check sunroof for leaks.
- Clean guide rails, then spray with D 007 000 00 silicone lubricant.

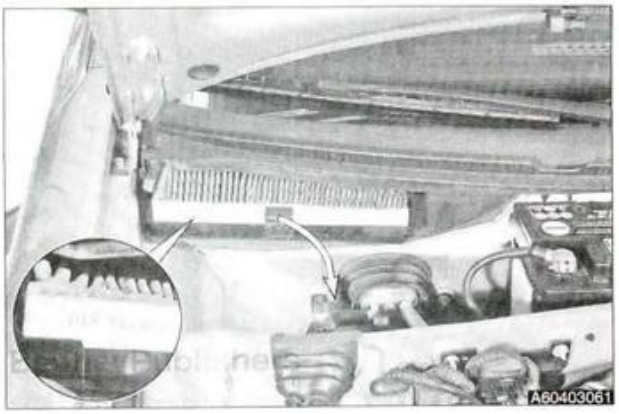
***CAUTION—***
*• Do not allow silicone spray lubricant to contact painted areas.*

## Dust and pollen filter element, replacing

The dust and pollen filter (interior ventilation microfilter) is in the plenum chamber on the right-side.




➤ Remove plenum chamber cover:
- Pull rubber gasket forward and off.
- Remove plenum chamber cover toward front.




➤ Working inside plenum chamber:
- Press filter retaining clip forward (**arrow**).
- Remove filter from housing by pulling forward and up.
- Insert new filter element with air flow arrow (**inset**) aligned correctly.

– Reinstall plenum chamber cover and rubber gasket.

***CAUTION—***
*• When installing, place the plenum chamber cover carefully into the water deflector below the windshield so that no water can run into the dust and pollen filter and the climate control system.*

## Interior motion detector, checking

Test function of ultra-sonic interior motion detector:

- Open door window approx. 10 cm (4 in).
- Lock vehicle to set alarm and activate interior monitoring.
- Wait 30 seconds until indicator light blinks steadily, approx. once every two seconds.
- Reach through window opening and place hand directly on sensor cover in center of head liner.
- If motion detector is OK, alarm is triggered.
- Unlock vehicle to switch alarm OFF.

## Windshield wiper blade, replacing

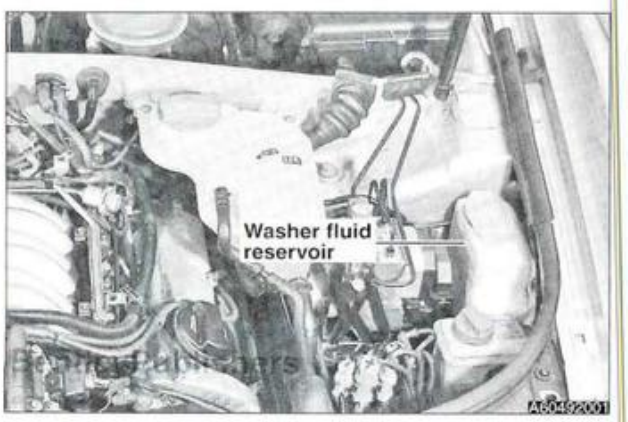
- Fold wiper arm away from windshield.

➤ Remove wiper blade:
- Rotate blade on arm approximately ¼ turn.
- Squeeze plastic retainer and slide blade off arm.

> ***CAUTION—***
> *• Do not allow wiper arm to snap back against windshield*

- Installation is reverse of removal.

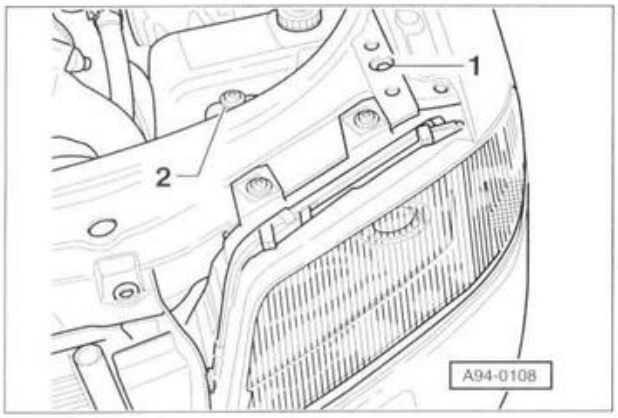
For windshield wiper troubleshooting or wiper arm replacement, see **92 Wiper and Washers**.




## Washer fluid, topping off

➤ Fill windshield washer reservoir.
- When adding windshield washer fluid, be sure freeze protection is adequate for your climate.
- Some windshield washer fluid brands are used as-is, straight from container. Some are in concentrate form and require mixing with water. Refer to product label for proper freeze protection levels.
- Most windshield washer fluids contain additives that help remove insect residue.

## Headlights, adjusting

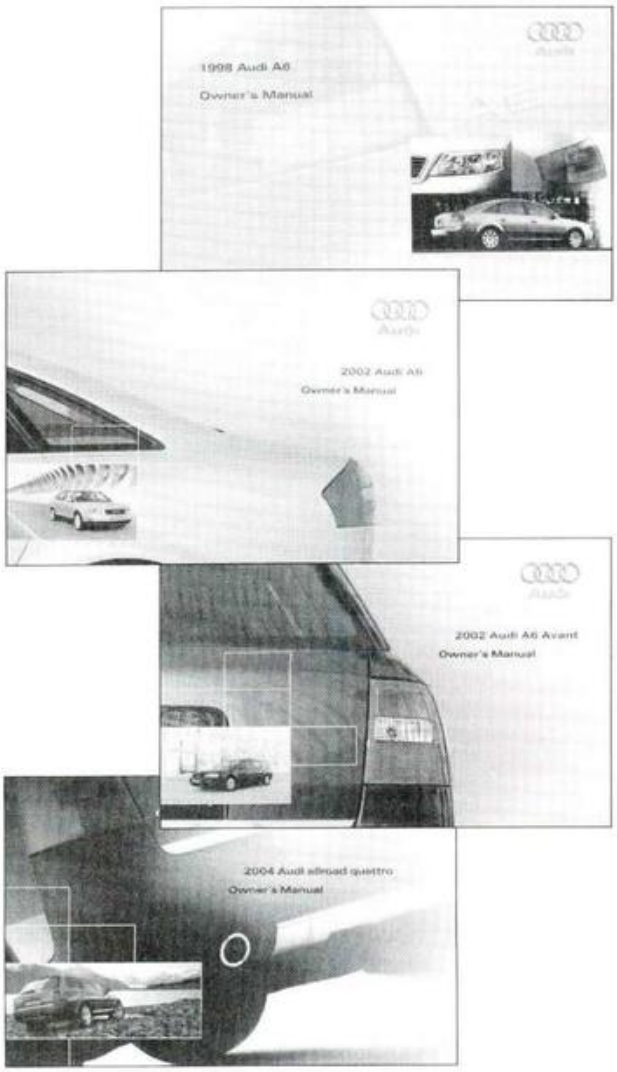



– For proper adjustment of headlights:
  - Tires inflated to correct pressures.
  - Vehicle on level surface.
  - Headlight lenses and reflectors clean and undamaged with correct type and wattage bulbs.
  - Vehicle loaded with approximately 75 Kg (165 lb) on driver's seat.
  - Vehicle at curb weight with tool kit, jack, spare tire, etc. and 90% fuel load. If fuel tank is not at least 90% full, add weight to compensate.

– Before manually adjusting xenon (HID) headlights, use VAG scan tool or equivalent to check DTC memory, then erase DTC memory.

➤ Left headlight:
  - Height adjustment screw (**1**).
  - Lateral and height adjustment screw (**2**).

– Right headlight adjustment is the reverse.




## MAINTENANCE SCHEDULES

Aside from keeping your Audi in the best possible condition, scheduled maintenance plays a role in maintaining full coverage under Audi's extensive warranties. If in doubt about terms and conditions of your vehicle warranty, consult an authorized Audi dealer.

Maintenance schedules list routine maintenance specified by Audi, as well as time and/or mileage intervals.

Audi continually updates maintenance schedules to suit changing conditions through the issuance of Maintenance Schedule Service Circulars. If in doubt about any of the requirements for your vehicle, consult an authorized Audi dealer.

Maintenance tables on the following pages are year specific.

Maintenance tables may only list service intervals through 100,000 miles (160,000 km). For continued service, repeat intervals listed for the first 100,000 (160,000 km) miles for remaining life of vehicle.

Routine maintenance operations within each engine group can vary depending on vehicle equipment level; not all operations apply to all vehicles.

***CAUTION—***
- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

*Maintenance Schedules*

## 1998 Maintenance Schedule

| 1.8T – A4 | Miles | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Kilometers | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 | 152 | 160 |
| V6 & V8 – A4, A6 & A8 | Miles | 7.5 | 15 | 22.5 | 30 | 37.5 | 45 | 52.5 | 60 | 67.5 | 75 | 82.5 | 90 | 97.5 | 105 | 112.5 | 120 | 127.5 | 135 | 142.5 | 150 |
| | Kilometers | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | 192 | 204 | 216 | 228 | 240 |
| Engine Oil – change | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Engine Filter – replace | | * | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Fluid Levels – check | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Auto-Shift Lock – check | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Manual Trans – check shift and clutch interlock | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Wheels – rotate* | | * | | | | | | | | | | | | | | | | | | | |
| Plenum Water Valve – clean** | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Service Reminder – reset | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Battery – check level | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Dust/Pollen Filter – replace | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Cooling System – check level | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| W/W System – check, add fluid | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Sliding Roof – clean, lubricate rails | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| ATF – replace*** | | | | | | | * | | | | | | * | | | | | | * | | |
| Transmission – check for leaks | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Trans Final Drive(s) – check lubricant | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Brake System – check | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Drive Shafts – check boots | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Wheels/Tires/Spare – check condition, pressure | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| OBD – check DTC memory | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Exterior Lights – check, adjust | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Door Hinge Mechanism – lubricate | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Roof Mechanism – lubricate**** | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| During Road Test | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| After Road Test | | | * | | * | | * | | * | | * | | * | | * | | * | | * | | * |
| Air Cleaner – replace | | | | | * | | | | * | | | | * | | | | * | | | | * |
| Front End – check dust seals, ball joints, tie rod ends | | | | | * | | | | * | | | | * | | | | * | | | | * |
| Brake Fluid – replace† | | | | | * | | | | * | | | | * | | | | * | | | | * |
| **1.8T** | | | | | | | | | | | | | | | | | | | | | |
| Spark Plugs – replace | | | | | | | * | | | | | | * | | | | | | * | | |
| V-Belt – replace | | | | | | | | | | | | | | | | | | | * | | |
| Ribbed Belt – replace | | | | | | | | | | | | | | | | | | | * | | |
| Timing Belt – replace | | | | | | | | | | | | | | | | | | | * | | |
| V6, V8 | | | | | | | | | | | | | | | | | | | | | |
| Spark Plugs – replace | | | | | * | | | | * | | | | * | | | | * | | | | * |
| Ribbed Belt – replace | | | | | | | | | | | | | * | | | | | | | | |
| Timing Belt – replace†† | | | | | | | | | | | | | * | | | | | | | | |

*First service only **A6 Wagon only ***Cabriolet, A6 Wagon only ****Cabriolet only
†Every 2 years, regardless of mileage ††Except Cabriolet

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

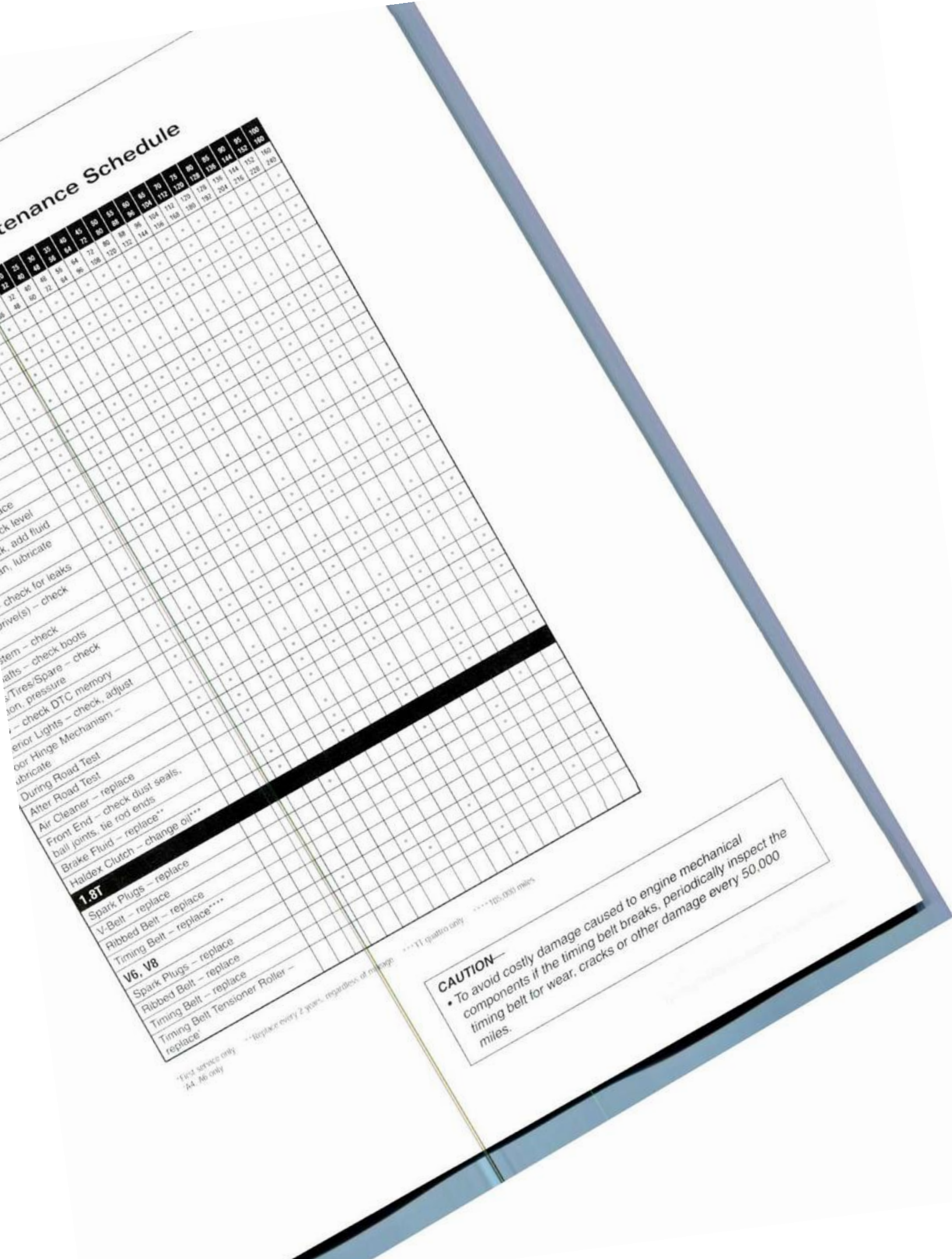
# 1999 Maintenance Sch

| V6 & V8 – A4, A6 & A8 | Miles | 7.5 | 15 | 22.5 | 30 | 37.5 | 45 | 52.5 | 60 | 67.5 | 75 | 82.5 | 90 | 97.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Kilometers | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 |
| Engine Oil – change | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Engine Filter – replace | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Fluid Levels – check | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Auto-Shift Lock – check | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Manual Trans – check shift and clutch interlock | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Wheels – rotate* | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Service Reminder – reset | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Battery – check level | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Dust/Pollen Filter – replace | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Cooling System – check level | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| W/W System – check, add fluid | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Sliding Roof – clean, lubricate rails | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Transmission – check for leaks | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Trans Final Drive(s) – check lubricant | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Brake System – check | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Drive Shafts – check boots | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Wheels/Tires/Spare – check condition, pressure | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| OBD – check DTC memory | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Exterior Lights – check, adjust | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Door Hinge Mechanism – lubricate | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| During Road Test | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| After Road Test | | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Air Cleaner – replace | | | | | | | | | | | | | | |
| Front End – check dust seals, ball joints, tie rod ends | | | | | | | | | | | | | | |
| Brake Fluid – replace** | | | | | | | | | | | | | | |
| **1.8T** | | | | | | | | | | | | | | |
| Spark Plugs – replace | | | | | | | | | | | | | | |
| V-Belt – replace | | | | | | | | | | | | | | |
| Ribbed Belt – replace | | | | | | | | | | | | | | |
| Timing Belt – replace*** | | | | | | | | | | | | | | |
| **V6, V8** | | | | | | | | | | | | | | |
| Spark Plugs – replace | | | | | | | | | | | | | | |
| Ribbed Belt – replace | | | | | | | | | | | | | | |
| Timing Belt – replace | | | | | | | | | | | | | | |
| Timing Belt Tensioner Roller – replace**** | | | | | | | | | | | | | | |

*First service only **Every 2 years, regardless of mileage ***105,000 miles ****A4, A6 only

**CAUTION—**

- To avoid costly damage caused to engine c components if the timing belt breaks timing belt for wear, cracks or c miles.



tenance Schedule

ace
ck level
k, add fluid
an, lubricate
check for leaks
rive(s) – check
tem – check
afts – check boots
Tires/Spare – check
ion, pressure
– check DTC memory
erior Lights – check, adjust
oor Hinge Mechanism –
ubricate
During Road Test
After Road Test
Air Cleaner – replace
Front End – check dust seals, ball joints, tie rod ends
Brake Fluid – replace**
Haldex Clutch – change oil***
1.8T
Spark Plugs – replace
V-Belt – replace
Ribbed Belt – replace
Timing Belt – replace****
V6, V8
Spark Plugs – replace
Ribbed Belt – replace
Timing Belt – replace
Timing Belt Tensioner Roller – replace*

*Fuel service only
A4, A6 only
**Replace every 2 years, regardless of mileage
***TT quattro only
****105,000 miles

**CAUTION—**

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

# 2001 Maintenance Schedule

| ALL MODELS — Miles / Kilometers | 5 / 8 | 10 / 16 | 20 / 32 | 30 / 48 | 40 / 64 | 50 / 80 | 60 / 96 | 70 / 112 | 80 / 128 | 90 / 144 | 100 / 160 | 105 / 170 | 110 / 180 | 120 / 192 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Engine Oil – change | • | • | • | • | • | • | • | • | • | • | • | | • | • |
| Engine Filter – replace | • | • | • | • | • | • | • | • | • | • | • | | • | • |
| Service Reminder – reset | • | • | • | • | • | • | • | • | • | • | • | | • | • |
| Wheels – rotate | • | | | | | | | | | | | a | | |
| Fluid Levels – check | • | • | • | • | • | • | • | • | • | • | • | d | • | • |
| Auto-Shift Lock – check | • | • | • | • | • | • | • | • | • | • | • | d | • | • |
| Brake System – check | • | • | • | • | • | • | • | • | • | • | • | i | • | • |
| Manual Trans – check shift and clutch interlock | • | • | • | • | • | • | • | • | • | • | • | t | • | • |
| Cooling System – check level | | • | • | • | • | • | • | • | • | • | • | i | • | • |
| Exhaust System – check | | • | • | • | • | • | • | • | • | • | • | o | • | • |
| OBD – check DTC memory | | • | • | • | • | • | • | • | • | • | • | n | • | • |
| Door Hinge Mechanism – lubricate | | • | • | • | • | • | • | • | • | • | • | a | • | • |
| Battery – check level | | • | • | • | • | • | • | • | • | • | • | l | • | • |
| W/W System – check, add fluid | | • | • | • | • | • | • | • | • | • | • | | • | • |
| Wheels/Tires/Spare – check condition, pressure | | • | • | • | • | • | • | • | • | • | • | s | • | • |
| Drive Shafts – check boots | | • | • | • | • | • | • | • | • | • | • | e | • | • |
| Road Test | | • | • | • | • | • | • | • | • | • | • | r | • | • |
| Lights – check | | • | • | • | • | • | • | • | • | • | • | v | • | • |
| Engine – check for leaks | | | • | | • | | • | | • | | • | i | | • |
| Front End – check dust seals, ball joints, tie rod ends | | | • | | • | | • | | • | | • | c | | • |
| Haldex Clutch – change oil & filter* | | | • | | • | | • | | • | | • | e | | • |
| Transmission – check for leaks | | | • | | • | | • | | • | | • | | | • |
| Trans Final Drive (man/auto) – check lubricant | | | • m | | • m a | | • m | | • m a | | • m | | | • m a |
| Dust/Pollen Filter – replace | | | • | | • | | • | | • | | • | | | • |
| Head Lights – adjust | | | • | | • | | • | | • | | • | | | • |
| Sliding Roof – clean, lubricate rails | | | • | | • | | • | | • | | • | | | • |
| Power Steering Fluid – check | | | | | • | | | | • | | | | | • |
| Air Cleaner – replace element | | | | | • | | | | • | | | | | • |
| Spark Plugs – replace | | | | | • | | | | • | | | | | • |
| Ribbed Belt – replace | | | | | | | | | • | | | | | |
| V-Belt – replace** | | | | | | | | | • | | | | | |
| Timing Belt – replace** | | | | | | | | | | | | | | • |
| Timing Belt – replace*** | | | | | | | | | | | | • | | |
| Timing Belt and Tensioner Roller – replace**** | | | | | | | | | | | | • | | |
| Brake Fluid – replace | every 2 years regardless of mileage | | | | | | | | | | | | | |

*TT quattro **1.8L Turbo ***2.7L V6 and 4.2L V8 ****2.8L V6

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

# 2002 Maintenance Schedule A6/S6/allroad

| Miles<br>Kilometers | 10<br>15 | 20<br>30 | 30<br>45 | 40<br>60 | 50<br>75 | 60<br>90 | 70<br>105 | 80<br>120 | 90<br>135 | 100<br>150 | 105<br>155 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Engine Oil – change | • | • | • | • | • | • | • | • | • | • | |
| Engine Oil Filter – replace | • | • | • | • | • | • | • | • | • | • | |
| Engine – check for leaks | | • | | • | | • | | • | | • | |
| Cooling System – check level, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Exhaust System – check for damage, leaks | • | • | • | • | • | • | • | • | • | • | |
| Engine OBD – check memory, purge | • | • | • | • | • | • | • | • | • | • | |
| Door Hinge Mechanisms – lubricate | • | • | • | • | • | • | • | • | • | • | |
| Battery – check electrolyte, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Wiper/Washer – check fluid, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Automatic Shift Lock – check | • | • | • | • | • | • | • | • | • | • | |
| Manual Transmission – check shift and interlock | • | • | • | • | • | • | • | • | • | • | |
| Tires and Spare – check condition, pressure | • | • | • | • | • | • | • | • | • | • | |
| Service Reminder Display – reset | • | • | • | • | • | • | • | • | • | • | |
| Brake System – check | • | • | • | • | • | • | • | • | • | • | |
| Drive Shaft Boots – check | • | • | • | • | • | • | • | • | • | • | |
| Road Test | • | • | • | • | • | • | • | • | • | • | |
| Lights – check | • | • | • | • | • | • | • | • | • | • | |
| Front Axle – check dust seals, ball joints, tie-rod ends | | • | | • | | • | | • | | • | |
| Automatic Transmission – check for leaks | | • | | • | | • | | • | | • | |
| Automatic Transmission Final Drive – check for leaks | | | | • | | | | • | | | |
| Manual Transmission – check for leaks | | • | | • | | • | | • | | • | |
| Manual Transmission Final Drive – check for leaks | | • | | • | | • | | • | | • | |
| Multitronic™ Transmission – change ATF | | | | • | | | | • | | | |
| Power Steering Fluid – check, add if necessary | | | | • | | | | • | | | |
| Dust and Pollen Filter – replace | | • | | • | | • | | • | | • | |
| Headlights – inspect, adjust if necessary | | • | | • | | • | | • | | • | |
| Sliding Roof – clean, lubricate rails | | • | | • | | • | | • | | • | |
| Air Cleaner – replace filter element | | | | • | | | | • | | | |
| Spark Plugs – replace | | | | • | | | | • | | | |
| Ribbed Belt – replace | | | | | | | | • | | | |
| Ribbed Belt – check** | | | | | | | | | | | • |
| Timing Belt – replace** *** | | | | | | | | | | | • |
| Timing Belt and Tensioner Roller – replace* | | | | | | | | | | | • |

Brake Fluid – replace every 2 years, regardless of mileage.

*2.7L **3.0L ***4.2L

W42AUMAINT2002A4S4A6S6 Printed October 2001

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

# 2003 Maintenance Schedule
# A6/S6/allroad

| Miles<br>Kilometers | 10<br>15 | 20<br>30 | 30<br>45 | 40<br>60 | 50<br>75 | 60<br>90 | 70<br>105 | 80<br>120 | 90<br>135 | 100<br>150 | 105<br>155 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Engine Oil – change | • | • | • | • | • | • | • | • | • | • | |
| Engine Oil Filter – replace | • | • | • | • | • | • | • | • | • | • | |
| Engine – check for leaks | | • | | • | | • | | • | | • | |
| Cooling System – check level, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Exhaust System – check for damage, leaks | • | • | • | • | • | • | • | • | • | • | |
| Engine OBD – check memory, purge | • | • | • | • | • | • | • | • | • | • | |
| Door Hinge Mechanisms – lubricate | • | • | • | • | • | • | • | • | • | • | |
| Battery – check electrolyte, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Wiper/Washer – check fluid, add if necessary | • | • | • | • | • | • | • | • | • | • | |
| Automatic Shift Lock – check | • | • | • | • | • | • | • | • | • | • | |
| Manual Transmission – check shift and interlock | • | • | • | • | • | • | • | • | • | • | |
| Tires and Spare – check condition, pressure | • | • | • | • | • | • | • | • | • | • | |
| Service Reminder Display – reset | • | • | • | • | • | • | • | • | • | • | |
| Brake System – check | • | • | • | • | • | • | • | • | • | • | |
| Drive Shaft Boots – check | • | • | • | • | • | • | • | • | • | • | |
| Road Test | • | • | • | • | • | • | • | • | • | • | |
| Lights – check | • | • | • | • | • | • | • | • | • | • | |
| Front Axle – check dust seals, ball joints, tie-rod ends | | • | | • | | • | | • | | • | |
| Automatic Transmission – check for leaks | | • | | • | | • | | • | | • | |
| Automatic Transmission Final Drive – check for leaks | | • | | • | | • | | • | | • | |
| Manual Transmission – check for leaks | | • | | • | | • | | • | | • | |
| Manual Transmission Final Drive – check for leaks | | • | | • | | • | | • | | • | |
| Multitronic™ Transmission – change ATF | | | | • | | | | • | | | |
| Power Steering Fluid – check, add if necessary | | | | • | | | | • | | | |
| Dust and Pollen Filter – replace | | • | | • | | • | | • | | • | |
| Headlights – inspect, adjust if necessary | | • | | • | | • | | • | | • | |
| Sliding Roof – clean, lubricate rails | | • | | • | | • | | • | | • | |
| Air Cleaner – replace filter element | | | | • | | | | • | | | |
| Spark Plugs – replace (except allroad 4.2L) | | | | • | | | | • | | | |
| Spark Plugs – replace (allroad 4.2L) | | | | | | • | | | | | |
| Ribbed Belt – replace | | | | | | | | • | | | |
| Ribbed Belt – check** | | | | | | | | | | | • |
| Timing Belt – replace** *** | | | | | | | | | | | • |
| Timing Belt and Tensioner Roller – replace* | | | | | | | | | | | • |

Brake Fluid – replace every 2 years, regardless of mileage. *2.7L **3.0L ***4.2L

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

# 2004 Maintenance Schedule A6/allroad

| Miles<br>Kilometers | 5<br>8 | 15<br>25 | 25<br>40 | 35<br>55 | 45<br>70 | 55<br>85 | 65<br>100 | 75<br>115 | 85<br>130 | 95<br>145 |
|---|---|---|---|---|---|---|---|---|---|---|
| Engine Oil – change oil and replace filter | • | • | • | • | • | • | • | • | • | • |
| Wiper/Washer/Headlight washer – check adjust. and function | • | • | • | • | • | • | • | • | • | • |
| Tires and Spare – check condition, pressure | • | • | • | • | • | • | • | • | • | • |
| Tires – rotate | • | | | | | | | | | |
| Service Reminder Display – reset | • | • | • | • | • | • | • | • | • | • |
| Road Test | • | • | • | • | • | • | • | • | • | • |
| Cooling System – check level, add if necessary | | • | | • | | • | | • | | • |
| Exhaust System – check for damage, leaks | | • | | • | | • | | • | | • |
| Engine OBD – check memory, purge | | • | | • | | • | | • | | • |
| Engine – check for leaks | | • | | • | | • | | • | | • |
| Battery – check electrolyte, add if necessary | | • | | • | | • | | • | | • |
| Dust and Pollen Filter – replace | | • | | • | | • | | • | | • |
| Automatic Transmission and Final Drive – check for leaks | | • | | • | | • | | • | | • |
| Manual Transmission and Final Drive – check for leaks | | • | | • | | • | | • | | • |
| Sunroof – clean, lubricate rails | | • | | • | | • | | • | | • |
| Front Axle – check dust seals, ball joints, tie rods, tie rod ends | | • | | • | | • | | • | | • |
| Tire Repair Set – check renewal date | | • | | • | | • | | • | | • |
| Lights – check | | • | | • | | • | | • | | • |
| Headlights – inspect, adjust if necessary | | • | | • | | • | | • | | • |
| Brake System – check | | • | | • | | • | | • | | • |
| Drive Shaft Boots – check | | • | | • | | • | | • | | • |
| Door Hinge Mechanisms – lubricate | | • | | • | | • | | • | | • |
| Spark Plugs – replace (except allroad 4.2L) | | | | • | | | | • | | |
| Spark Plugs – replace (allroad 4.2L) | | | | | | • | | | | |
| Multitronic™ Transmission – change ATF | | | | • | | | | • | | |
| Power Steering Fluid – check, add if necessary | | | | • | | | | • | | |
| Air Cleaner – clean housing, replace filter element | | | | • | | | | • | | |
| Ribbed Belt – replace (except 3.0) | | | | | | | | • | | |
| Ribbed Belt – check (3.0) | | | | | | | | • | | |
| Timing Belt – replace (3.0 and 4.2L) | | | | | | | | • | | |
| Timing Belt and tensioner – replace (2.7T) | | | | | | | | • | | |

Brake Fluid – replace every 2 years, regardless of mileage

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*

# 13 Timing Belt, Crankshaft Pulley, Rear Main Seal




GENERAL . . . . . 13-1

TIMING BELT . . . . . 13-1

Timing belt, removing . . . . . 13-2

Timing belt, installing . . . . . 13-4

FRONT CRANKSHAFT PULLEY . . . . . 13-6

Crankshaft pulley, removing and installing (2.7 liter or 2.8 liter V6 engine) . . . . . 13-6

Crankshaft pulley, removing and installing (3.0 liter V6 engine) . . . . . 13-7

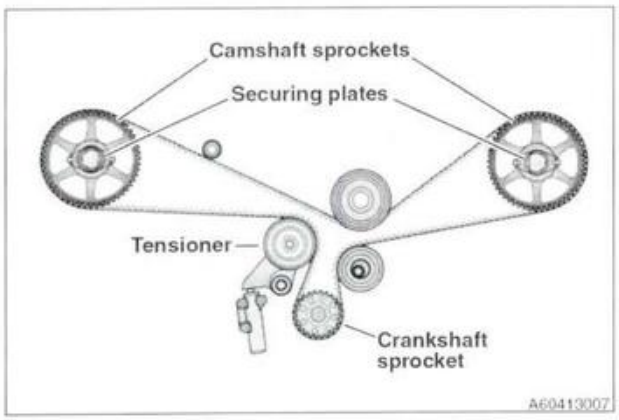
Crankshaft pulley, removing and installing (V8 engine) . . . . . 13-8

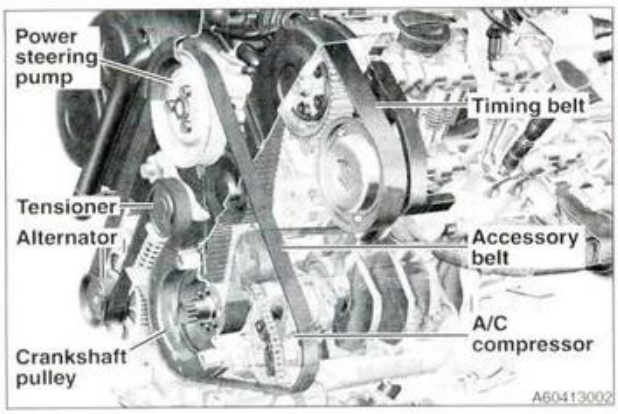
REAR MAIN SEAL . . . . . 13-8

Rear main seal, removing and installing (2.8 liter V6 engine) . . . . . 13-9

Rear main seal, removing and installing (2.7 liter or 3.0 liter V6 engine; V8 engine *not* allroad quattro) . . . . . 13-10

Rear main seal, removing and installing (V8 engine allroad quattro) . . . . . 13-13


## GENERAL

This repair group covers camshaft timing belt (toothed belt), front crankshaft pulley (vibration damper) and rear main (crankshaft) seal replacement.

Engine accessory belt service is covered in **03 Maintenance**.

## TIMING BELT

Teeth on the timing belt (or toothed belt) mesh with teeth on crankshaft and camshaft sprockets and maintain precise valve timing.

Each camshaft sprocket is pressed on the camshaft. When loosened, the sprocket spins freely on the camshaft. An oval securing plate is keyed to the camshaft. The sprocket is securely attached to the camshaft only when the securing plate is torqued.

Precise camshaft timing is achieved by lining up the oval securing plates on the camshaft ends with each other, using a special tool. Camshaft sprockets are then tightening in that position.

Prior to removing the timing belt, proceed as follows:

- Remove engine cooling fan and viscous clutch.
- Remove front bumper and place front lock carrier (radiator mounting frame in front of engine) in service position. See **50 Body–Front**.
- Remove accessory belt. See **03 Maintenance**.
- Remove accessory belt tensioner.
- Remove timing belt covers.
- Remove front crankshaft pulley. See **Crankshaft pulley, removing and installing (2.7 liter or 2.8 liter V6 engine)** in this repair group.

*Timing Belt*

***CAUTION—***

- *To avoid costly damage caused to engine mechanical components if the timing belt breaks, periodically inspect the timing belt for wear, cracks or other damage every 50,000 miles.*
- *When replacing the timing belt, be sure to use crankshaft locking pin and camshaft locking bar as described in the procedure.*
- *When the timing belt is off, any rotation of the camshafts or crankshaft may lead to valve damage.*

## Timing belt, removing

In the procedure that follows, timing belt replacement is described for 2.7 liter or 2.8 liter V6 engine. Timing belt replacement requires several special tools and procedures. Read the procedure through before starting the job.

– Raise car and support safely.

***WARNING —***

- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

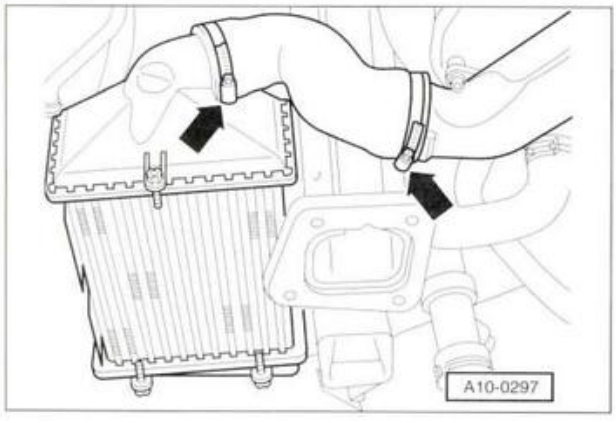
– Remove upper and lower engine covers. See **03 Maintenance**.

– Remove viscous fan and accessory belt. See **03 Maintenance**.

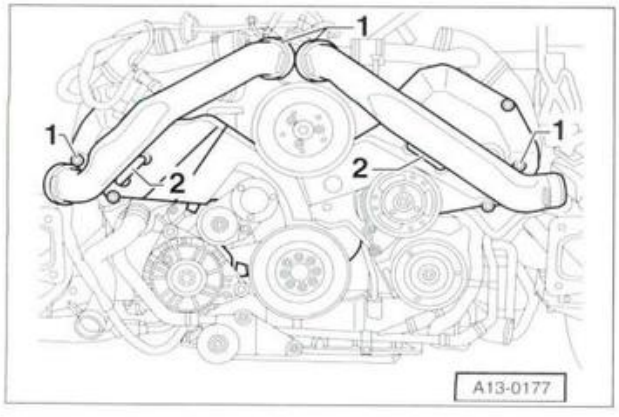
***NOTE —***

- *If belt is to be reused, mark direction of rotation prior to removal.*

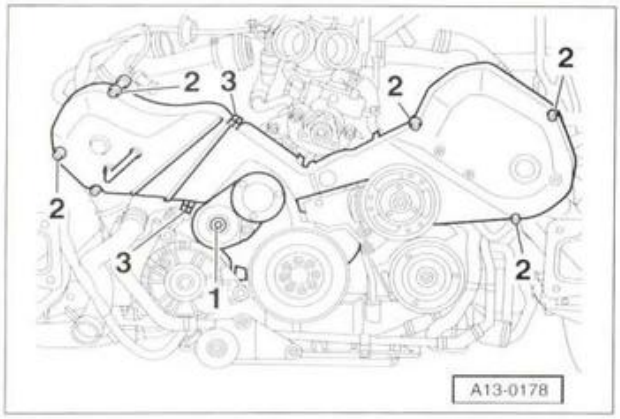
– Remove front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. See **50 Body–Front**.




➤ 2.7 liter turbo engine: Loosen hose clamps (**arrows**) and remove pressure hoses between intercoolers and turbo pressure lines on left and right sides.

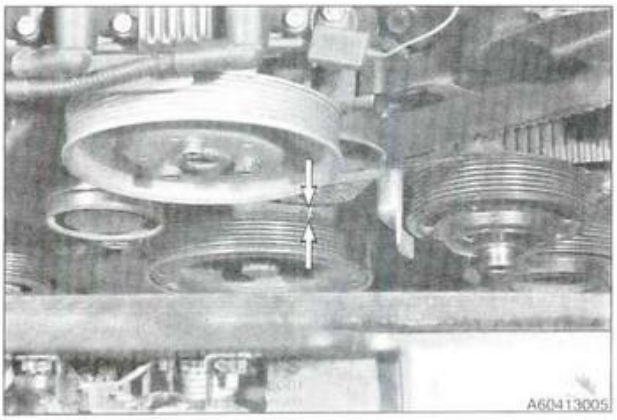



➤ 2.7 liter turbo engine: Remove turbo pressure lines (**1**). Note position of retaining strips (**2**).

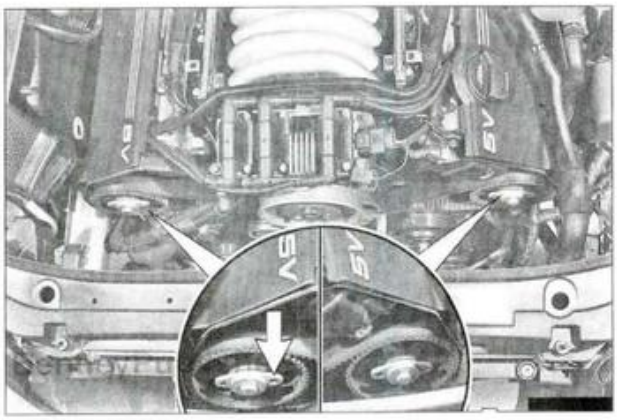



➤ Working at front of engine:

- Remove accessory belt tensioner (**1**).
- Unclip (**2**) timing belt covers on both sides and remove.
- Remove center timing belt cover (**3**).

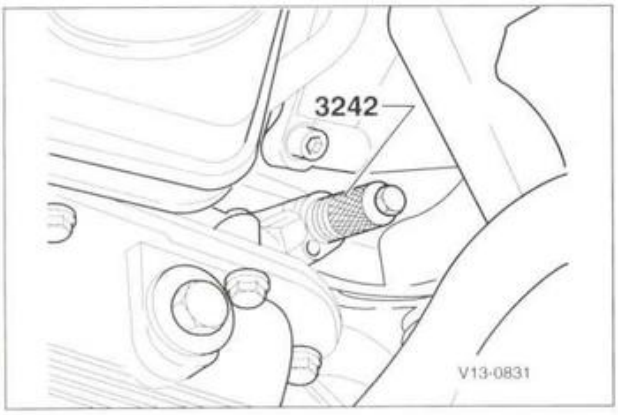



➤ Using wrench on crankshaft pulley, rotate crankshaft until marks (**arrows**) on crankshaft pulley and lower crankcase cover align. This is crankshaft top dead center (TDC).



➤ Check position of camshafts:

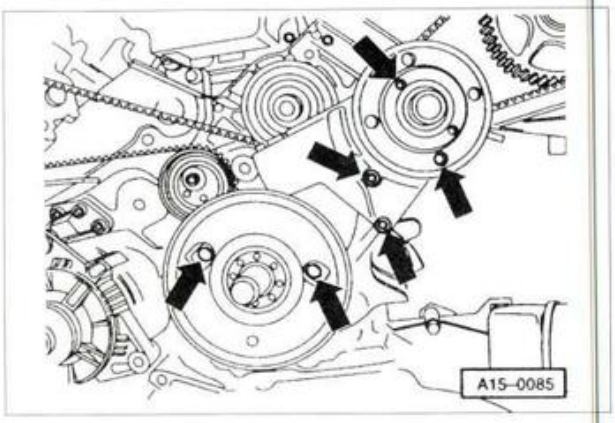
- Make sure larger holes (**arrows**) of oval securing plates on camshaft sprockets face each other.
- If not, turn crankshaft another full rotation until crankshaft pulley TDC marks line up and larger holes on securing plates face each other.




➤ Working underneath engine, above oil drain plug, remove sealing plug from left side of cylinder block and install special tool VAG 3242 (crankshaft locking pin) into opening. If necessary, rock crankshaft back and forth gently to facilitate insertion of lock tool.

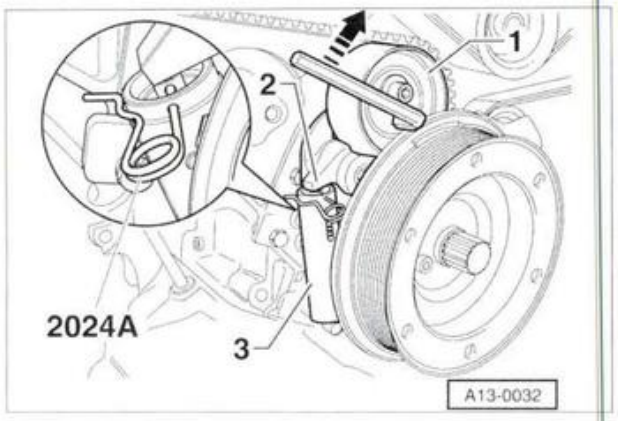
– Remove crankshaft pulley (vibration dampener). See **Crankshaft pulley, removing and installing (2.7 liter or 2.8 liter V6 engine)** in this repair group. Do not loosen or remove pulley center bolt.

*Timing Belt*




➤ Working at front of engine:

- Remove accessory belt idler mounting bolts (**top arrows**) and lift out idler pulley bracket.
- Remove timing belt cover bolts (**lower arrows**) and take off cover.




➤ Remove timing belt tensioner.

- Use 8 mm Allen wrench to rotate belt tensioner roller (**1**) clockwise (direction of broken **arrow**). Apply slow pressure to oil-dampened tensioner.
- When tensioning lever (**2**) compresses tensioner (**3**), insert pin with 2 mm diameter (VAG special tool 2024A or equivalent) into bore. This releases timing belt tension.

***NOTE —***

- *If belt is to be reused, mark direction of rotation prior to removal.*
- *Crankshaft pulley is shown installed.*

– Remove timing belt.

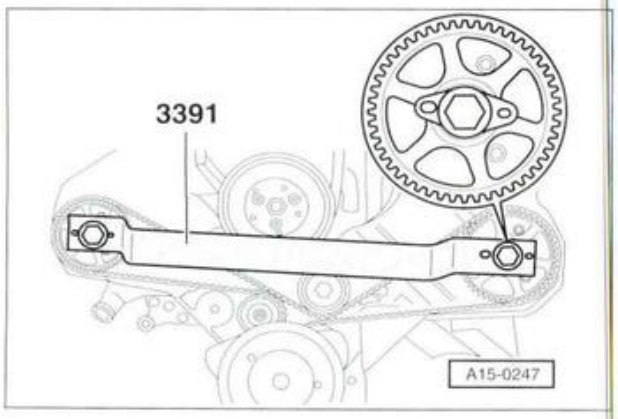
***CAUTION—***

- *Do not allow camshafts to rotate once timing belt is off.*

## Timing belt, installing

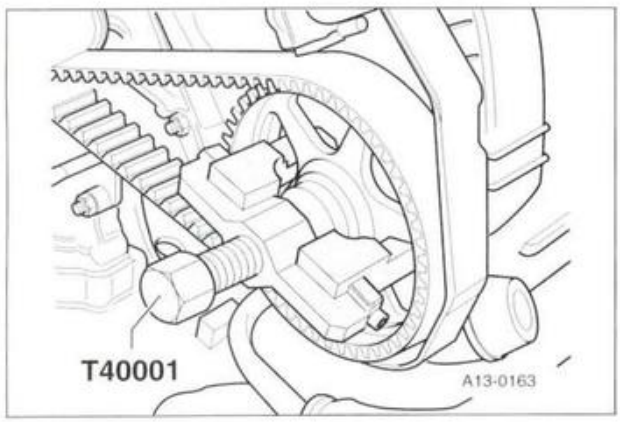
– Prior to reinstalling timing belt, spin timing belt tensioner and listen for worn bearing. Replace if necessary.

| **Tightening torque** | |
|---|---|
| Timing belt tensioner to crankcase | 20 Nm (15 ft-lb) |




➤ Working at camshafts:

- Install camshaft locking bar, special tool VAG 3391, into oval securing plates.
- Loosen camshaft sprocket bolts and back out approx. 5 turns.
- Remove camshaft locking bar.

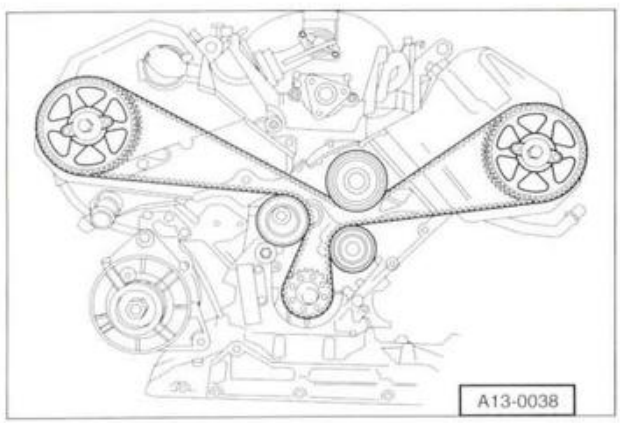



➤ Working at each camshaft:

- Remove camshaft sprocket bolt.
- Use puller VAG T40001 to pull off camshaft sprocket.
- Reinstall camshaft sprocket together with oval securing plate and hand-tighten.
- Make sure camshaft sprocket is just loose enough to be rotated but not so loose as to wobble on camshaft.

***NOTE —***

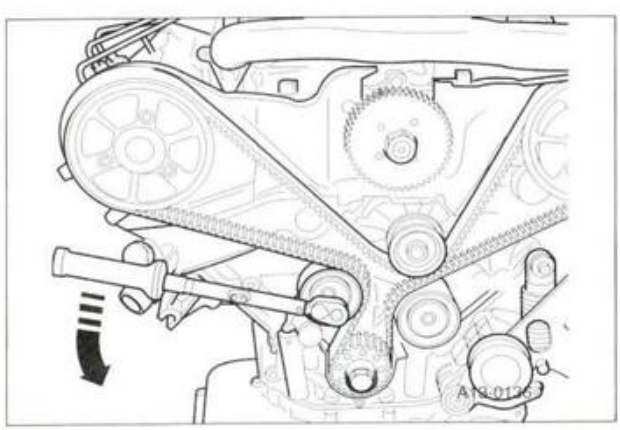
- *Once the camshaft sprocket bolt is loosened sufficiently, as an alternative to using puller VAG T40001, tap the sprocket gently with a soft-faced hammer to break free press fit at camshaft.*




➤ Install timing belt on all sprockets, as shown. If reusing belt, install in direction marked previously.

– Reinstall camshaft locking bar, special tool VAG 3391, into oval securing plates.

– Use 8 mm Allen wrench to back off timing belt tensioner, then remove tensioner locking pin. Release tensioner slowly.



➤ Pretension timing belt as follows: Using torque wrench with 8 mm Allen bit, apply 15 Nm (11 ft-lb) counterclockwise tension to belt (broken **arrow**). This ensures tensioner expands completely and engages timing belt correctly.

– Tighten camshaft sprocket bolts.

| **Tightening torque** | |
|---|---|
| Camshaft sprocket to camshaft | 55 Nm (40 ft-lb) |

– Remove camshaft locking bar and crankshaft locking pin.

– Remainder of installation is reverse of removal.

| **Tightening torques** | |
|---|---|
| Accessory belt idler to crankcase | 45 Nm (33 ft-lb) |
| Crankshaft pulley to timing belt sprocket | 25 Nm (18 ft-lb) |
| Timing belt tensioner element to bracket | 10 Nm (7 ft-lb) |

## FRONT CRANKSHAFT PULLEY

The front crankshaft pulley is also referred to as vibration damper or harmonic balancer. It is bolted to front of timing belt crankshaft sprocket.

**V6 models with 2.7 liter or 2.8 liter engine:** Remove lower engine cover, viscous fan and accessory belt to gain access to front pulley.

**V6 models with 3.0 liter engine:** Remove engine covers and front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. Remove accessory belt to gain access to engine pulley.

**V8 models:** Remove lower engine cover and front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. Remove viscous fan and accessory belt to gain access to engine pulley.

***CAUTION—***
- *Do not loosen or remove the timing belt sprocket mounting bolt in the center of the pulley.*

### Crankshaft pulley, removing and installing (2.7 liter or 2.8 liter V6 engine)

– Raise car and support safely.

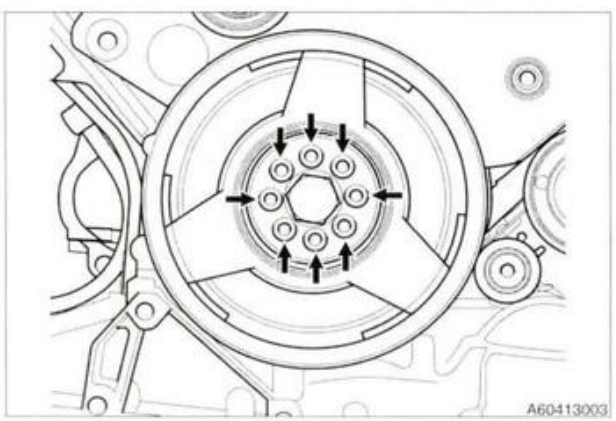
***WARNING—***
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove lower engine cover. See **03 Maintenance**.

– Remove viscous fan and accessory belt. See **03 Maintenance**.

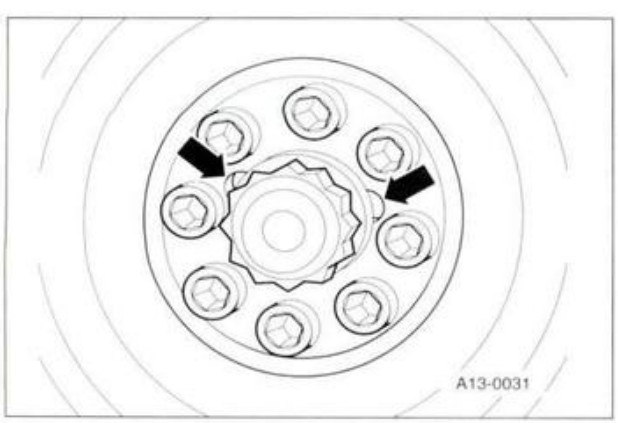
***NOTE—***
- *If belt is to be reused, mark direction of rotation prior to removal.*

➤ Remove pulley mounting bolts (**arrows**). Do not loosen or remove center bolt.




– Lift pulley off timing belt sprocket.

➤ When installing pulley, make sure notches (**arrows**) in pulley are aligned with locating lugs on timing belt sprocket.




| Tightening torque | |
|---|---|
| Crankshaft pulley to timing belt sprocket | 25 Nm (18 ft-lb) |

– Reinstall belt in direction of rotation marked previously. Reinstall viscous fan. See **03 Maintenance**.

– Run engine briefly to make sure belt routing is correct. Then reinstall engine cover.

## Crankshaft pulley, removing and installing (3.0 liter V6 engine)

– Raise car and support safely.

> ***WARNING***—
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

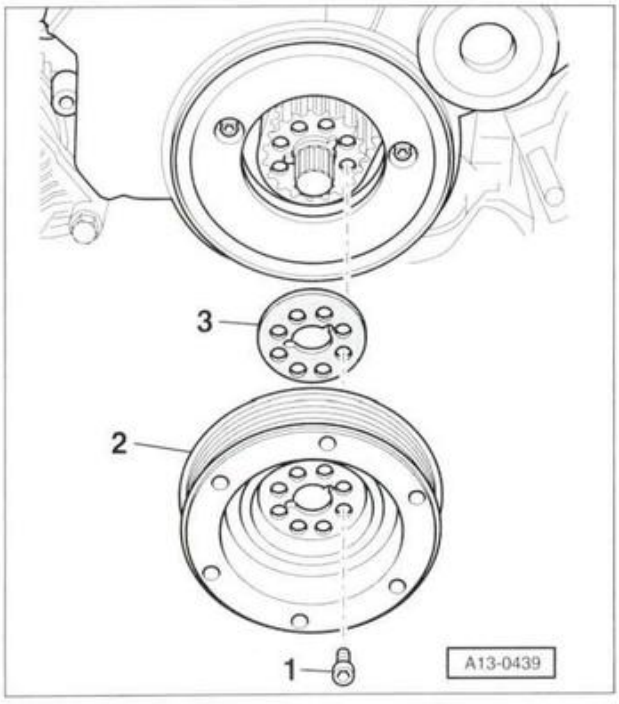
– Remove engine covers. See **03 Maintenance**.

– Remove front bumper cover and bumper. See **63 Bumpers**.

– Place lock carrier in service position. See **50 Body-Front**.

– Remove accessory belt. See **03 Maintenance**.

***NOTE***—
• *If belt is to be reused, mark direction of rotation prior to removal.*

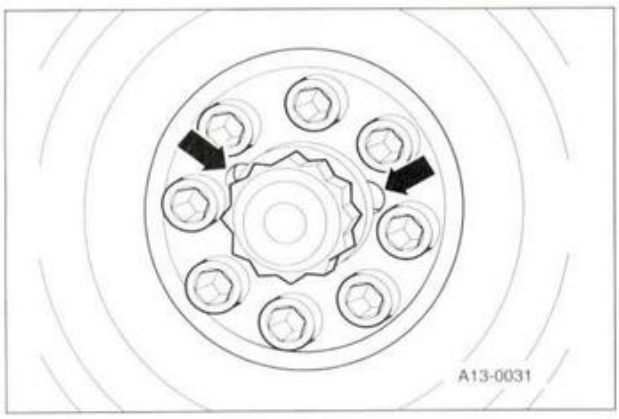



➤ Remove front pulley mounting bolts (**1**). Do not loosen or remove center bolt.

– Lift pulley (**2**) and thrust washer (**3**) off timing belt crankshaft sprocket.

***NOTE***—
• *Thrust washer is only installed on sprocket with part no. 06C 105 063. If sprocket part no. is 06C 105 063 B, do not install thrust washer.*

– When installing, make sure convex side of thrust washer rests against pulley.




➤ When installing pulley, make sure notches (**arrows**) in pulley are aligned with locating lugs on timing belt sprocket.

| **Tightening torque** | |
|---|---|
| Crankshaft pulley to timing belt sprocket | 25 Nm (18 ft-lb) |

– Reinstall belt in direction of rotation marked previously.

– Run engine briefly to make sure belt routing is correct. Then reinstall lock carrier, front bumper and engine covers.

## Crankshaft pulley, removing and installing (V8 engine)

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove lower engine cover. See **03 Maintenance**.

– Remove front bumper and bumper cover. See **63 Bumpers**.

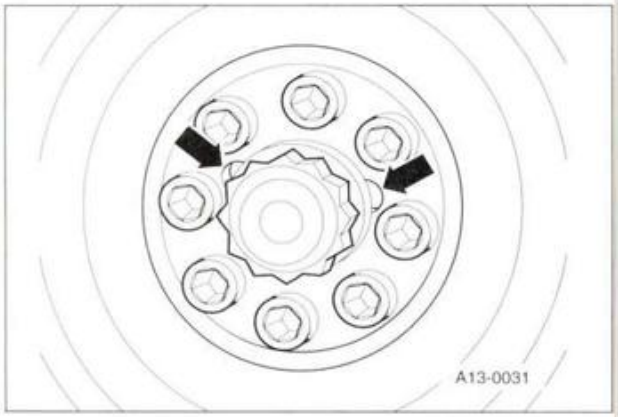
– Place lock carrier in service position. See **50 Body-Front**.

– Remove viscous fan (if equipped) and accessory belt. See **03 Maintenance**.

***NOTE*** —
• *If belt is to be reused, mark direction of rotation prior to removal.*

– Remove pulley mounting bolts. Do not loosen or remove center bolt.

– Lift pulley off timing belt sprocket or crankshaft.




➤ When installing pulley, make sure notches (**arrows**) in pulley are aligned with locating lugs on timing belt sprocket.

| **Tightening torque** | |
|---|---|
| Crankshaft pulley to timing belt sprocket (*not* allroad quattro) | 25 Nm (18 ft-lb) |
| Crankshaft pulley to crankshaft (allroad quattro V8, engine code BAS) | 42 Nm (31 ft-lb) |

– Reinstall belt in direction of rotation marked previously. Reinstall viscous fan (if equipped). See **03 Maintenance**.

– Run engine briefly to make sure belt routing is correct. Then reinstall lock carrier, front bumper and engine covers.

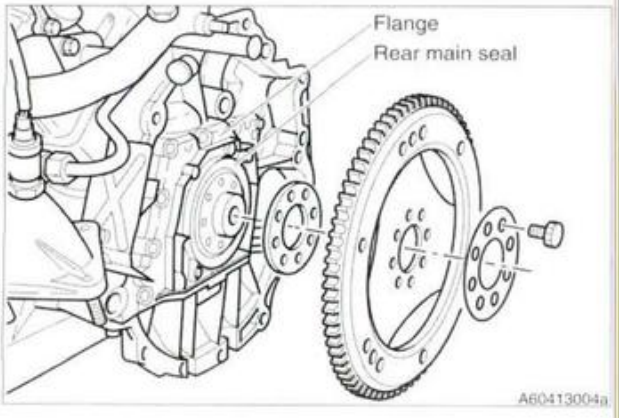
## Rear Main Seal

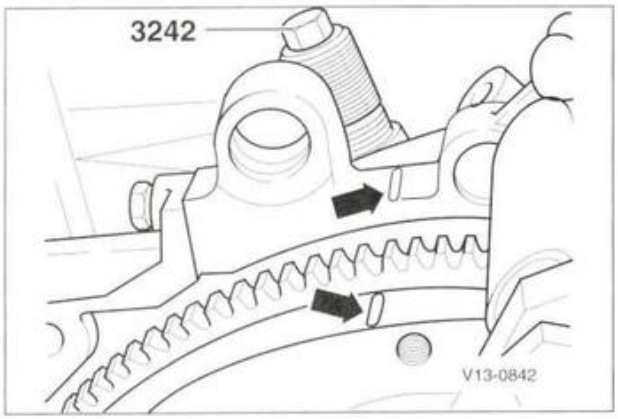
Oil drips at the engine-to-transmission seam are usually evidence of crankshaft rear main seal leak. The rear main seal is accessible after removal of transmission and dual-mass flywheel or torque plate.

**V6 models with 2.8 liter engine:** Replace seal by prying out of seal flange.

➤ **V6 models with 2.7 liter or 3.0 liter engine, V8 models *not* allroad quattro:** Audi recommends replacing rear main seal with seal flange. When removing flange, sealing of flange against oil pan gasket is disturbed. Remove upper oil pan and replace gasket if it is damaged.

**Allroad quattro models with V8 engine (engine code BAS):** Replace seal by prying out of timing chain cover.

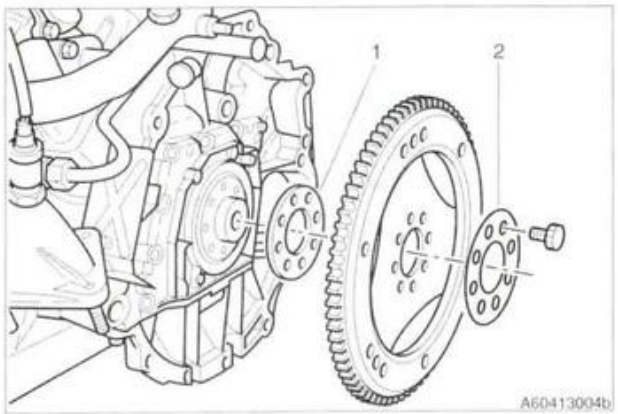




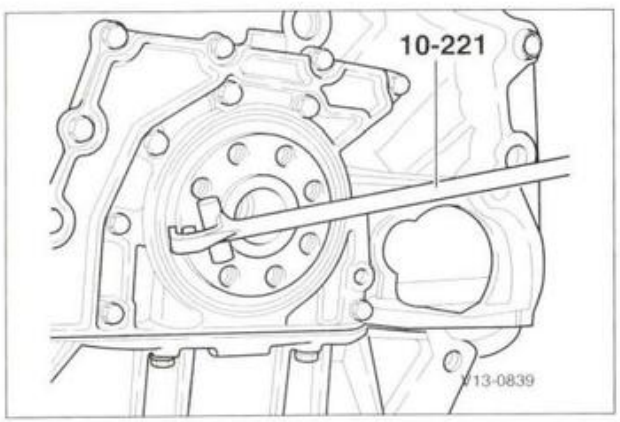

## Rear main seal, removing and installing (2.8 liter V6 engine)

➤ With transmission removed, set crankshaft at top dead center (TDC). Install special tool 3242 (crankshaft lock). Mark position of flywheel or torque plate opposite crankcase flange (**arrows**).

– Remove flywheel or torque plate and set aside. Discard mounting bolts.




➤ Automatic transmission: Mark positions of shim (**1**) and washer (**2**) in front of and behind torque plate as plate is removed.



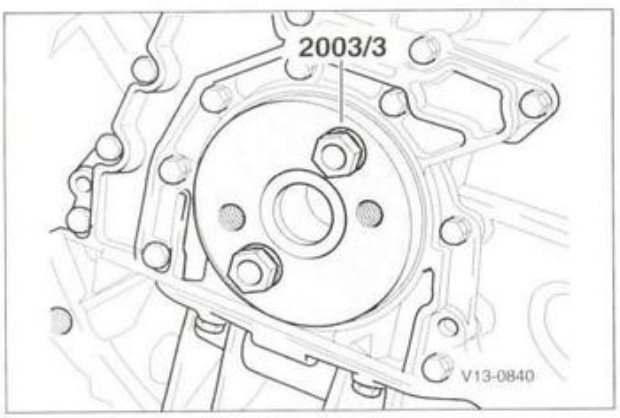

➤ Pry out rear main seal using special tool 10-221 or equivalent.

***CAUTION—***
*• Work carefully to avoid damaging aluminum seal flange or flywheel sealing surface.*

– Clean sealing surfaces.

– Install new seal over end of crankshaft. Use installation sleeve supplied with new seal.

***CAUTION—***
*• Do not lubricate seal lip or seal outer edge before installation.*

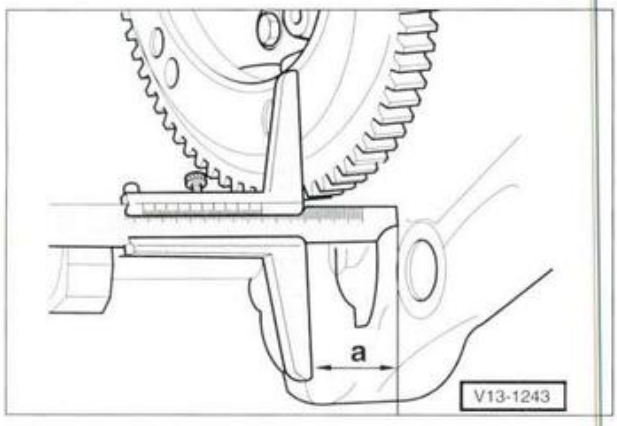



➤ Use special tool 2003 / 3 (seal installer) to press seal in up to stop. Use flywheel or torque plate installation bolts for pressing.

– Using new bolts, install flywheel or torque plate. Use previously made marks to line up with crankcase.

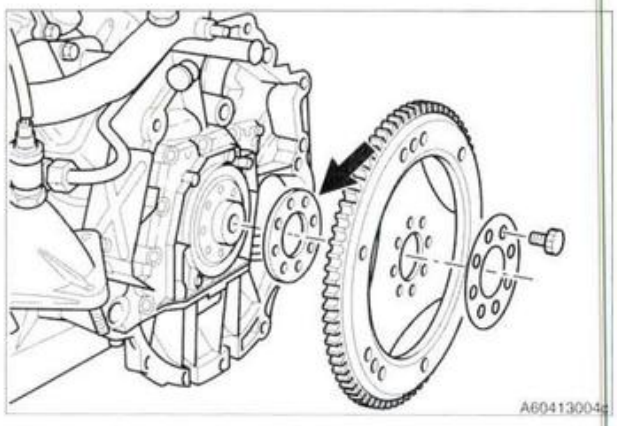
| **Tightening torque** | |
|---|---|
| Flywheel to crankshaft<br>• Stage 1<br>• Stage 2 | <br>60 Nm (44 ft-lb)<br>+½ turn (180°) |
| Torque plate to crankshaft<br>• Stage 1<br>• Stage 2 | <br>60 Nm (44 ft-lb)<br>+¼ turn (90°) |

*Rear Main Seal*




➤ After installing torque plate, measure torque plate offset (**a**) from crankcase bellhousing flange. Measure at three different spots and calculate average value.

| **Torque plate offset** | |
|---|---|
| **a** = offset of torque plate from engine block | approx. 12.3 mm (0.484 in) |



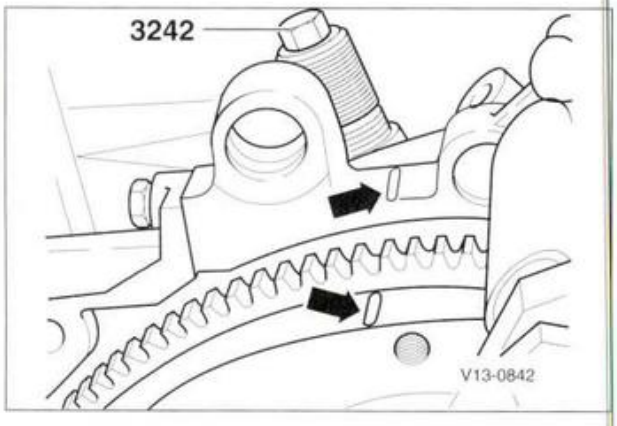

➤ If offset is incorrect, install different shim (**arrow**) between flywheel and crankshaft. Shim thickness is as follows:

- Part no. 054 105 30 = 3.00 mm (0.12 in)
- Part no. 054 105 20 = 4.00 mm (0.16 in)

– Remainder of installation is reverse of removal. Bear in mind:

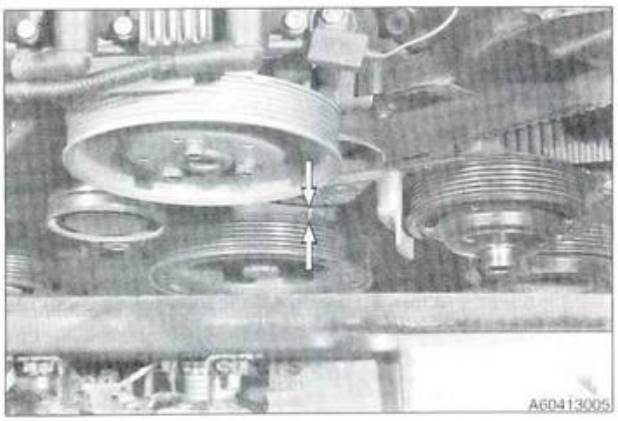
- Automatic transmission: Check ATF level and top off.
- Cooling system: Check coolant level and top off.
- Engine: Check oil level and top off.

## Rear main seal, removing and installing (2.7 liter or 3.0 liter V6 engine; V8 engine *not* allroad quattro)

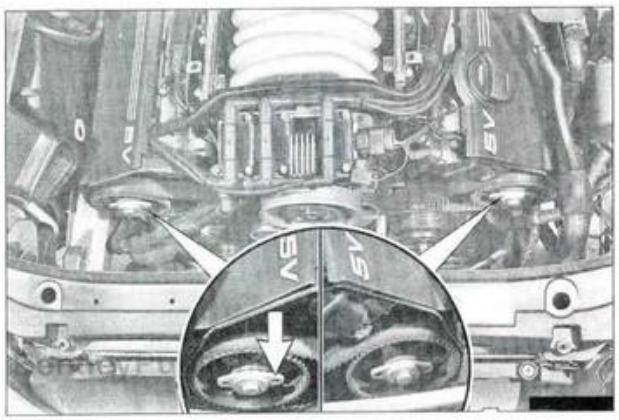



➤ With transmission removed, set crankshaft at top dead center (TDC). Install special tool 3242 (crankshaft lock). Mark position of flywheel or torque plate opposite crankcase flange (**arrows**).

– Manual transmission: Remove flywheel and set aside. Discard mounting bolts.

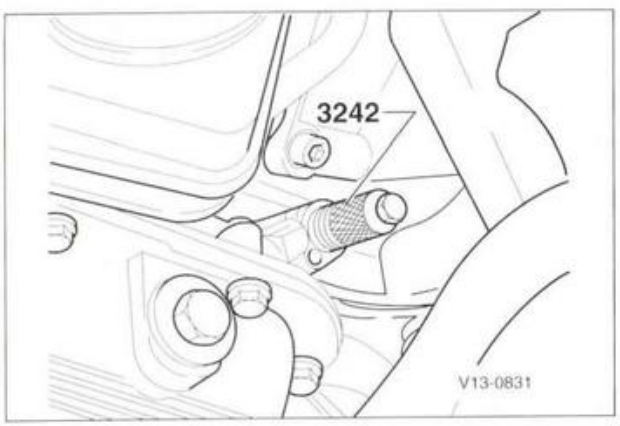



➤ Automatic transmission: Using wrench on crankshaft pulley, rotate crankshaft until marks (**arrows**) on crankshaft pulley and lower crankcase cover align. This is crankshaft top dead center (TDC).



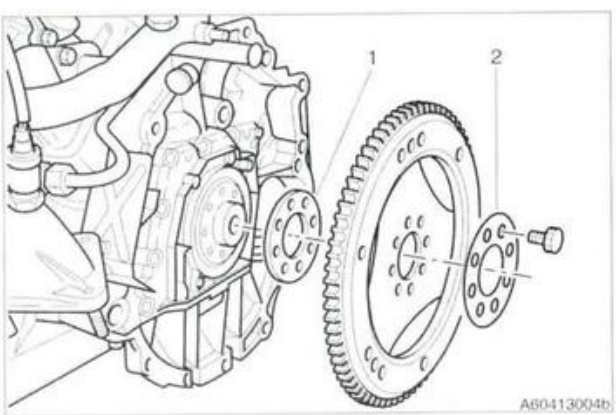
➤ Check position of camshafts:

- Make sure larger holes (**arrows**) of oval securing plates on camshaft sprockets face each other.
- If not, turn crankshaft another full rotation until crankshaft pulley TDC marks line up and larger holes on securing plates face each other.



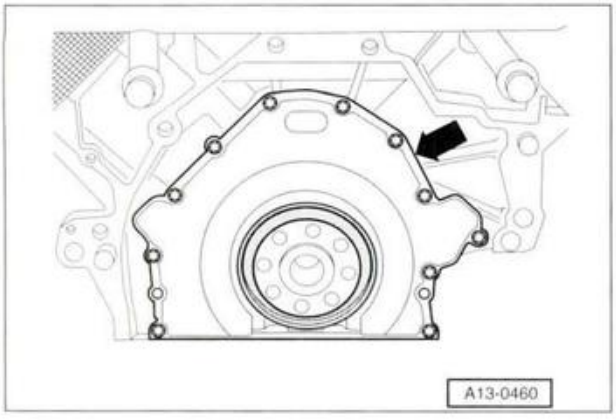

➤ Working underneath engine, above oil drain plug, remove sealing plug from left side of cylinder block and install special tool VAG 3242 (crankshaft locking pin) into opening. If necessary, rock crankshaft back and forth gently to facilitate insertion of lock tool.

– Remove torque plate mounting bolts and discard.



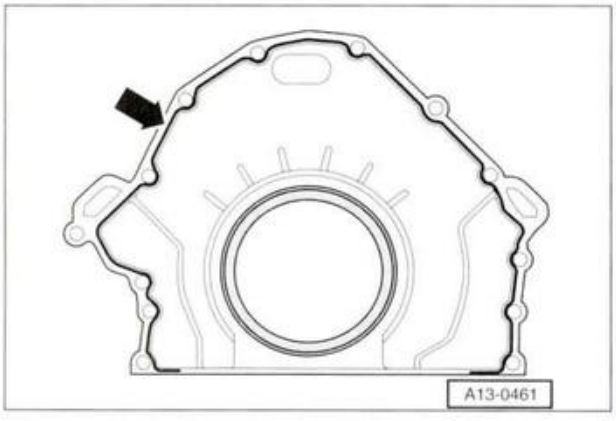

➤ Automatic transmission: Mark positions of shim (**1**) and washer (**2**) in front of and behind torque plate as plate is removed.

*Rear Main Seal*




➤ Remove seal flange (**arrow**) with seal. Separate carefully from oil pan gasket.

***CAUTION—***
- *If oil pan gasket is damaged during this procedure, remove oil pan and replace gasket.*

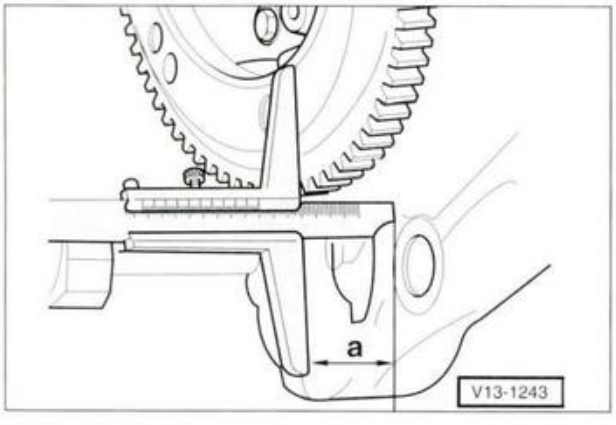



➤ Apply bead of silicone sealant approx. 1.5 mm (0.06 in) to sealing surface of new flange. Install new seal and seal flange over end of crankshaft. Use installation sleeve supplied with new seal.

***CAUTION—***
- *Be sure to install seal flange within 5 minutes after application of silicone sealant.*

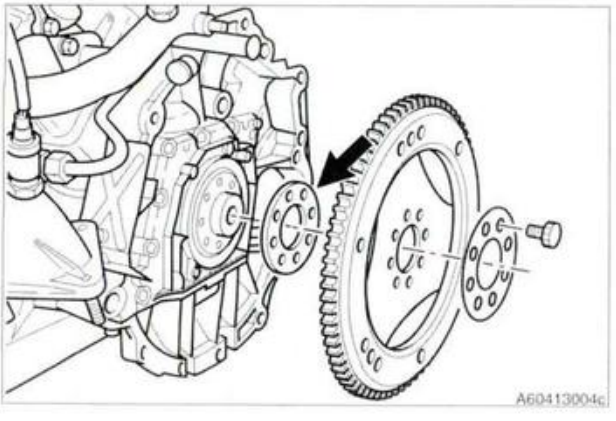
– Using new bolts, install flywheel or torque plate. Use previously made marks to line up with crankcase.

| **Tightening torque** | |
|---|---|
| Flywheel to crankshaft (use new bolts):<br>• Stage 1<br>• Stage 2 | <br>60 Nm (44 ft-lb)<br>+½ turn (180°) |
| Torque plate to crankshaft (use new bolts):<br>• Stage 1<br>• Stage 2 | <br>60 Nm (44 ft-lb)<br>+¼ turn (90°) |




➤ After installing torque plate, measure torque plate offset (**a**) from crankcase bellhousing flange. Measure at three different spots and calculate average value.

| **Torque plate offset** | |
|---|---|
| **a** = offset of torque plate from engine block | approx. 12.3 mm (0.484 in) |



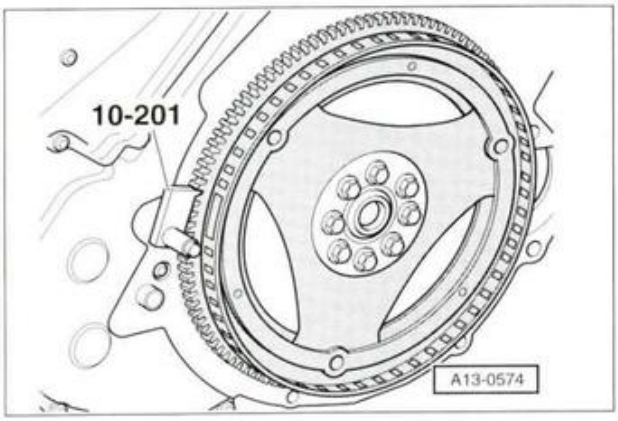

➤ If offset is incorrect, install different shim (**arrow**) between flywheel and crankshaft. Shim thickness is as follows:
- Part no. 054 105 30 = 3.00 mm (0.12 in)
- Part no. 054 105 20 = 4.00 mm (0.16 in)

– Remainder of installation is reverse of removal. Bear in mind:
- Automatic transmission: Check ATF level and top off.
- Cooling system: Check coolant level and top off.
- Engine: Check oil level and top off.

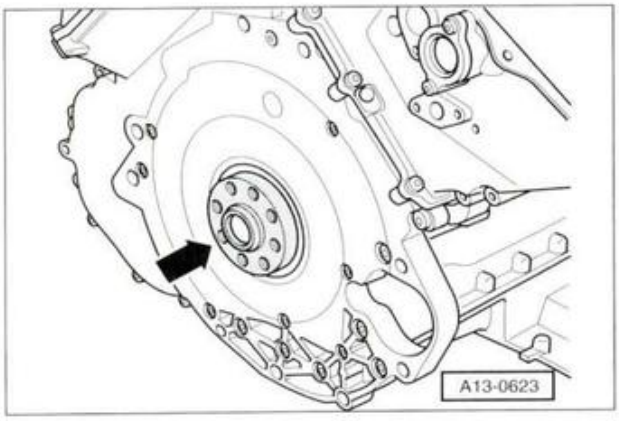
## Rear main seal, removing and installing (V8 engine allroad quattro)

– Raise car and support safely.

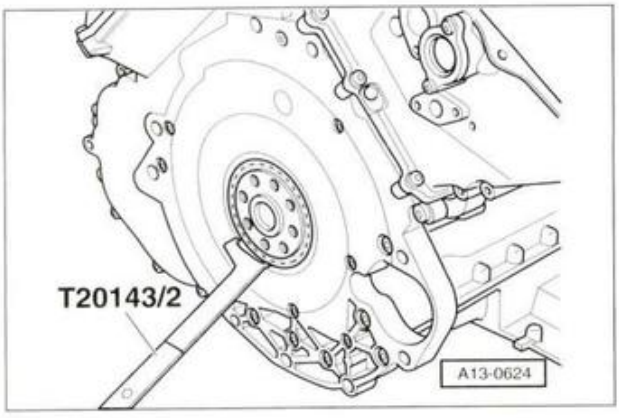
> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ With transmission removed, use special tool 10-201 to counterhold torque plate while loosening mounting bolts. Mark position of torque plate and washer for reinstallation. Set torque plate aside and discard bolts.

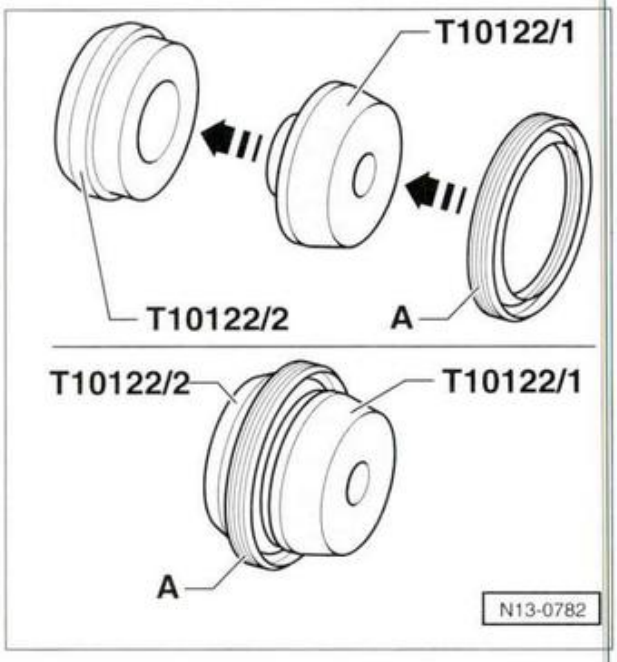



➤ Pull shim (**arrow**) off end of crankshaft. Mark its position for reinstallation.



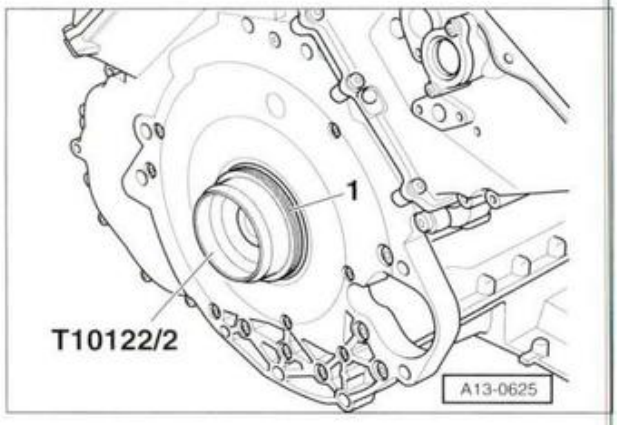

➤ Pry out seal using special prying tool T20143/2.

*Rear Main Seal*

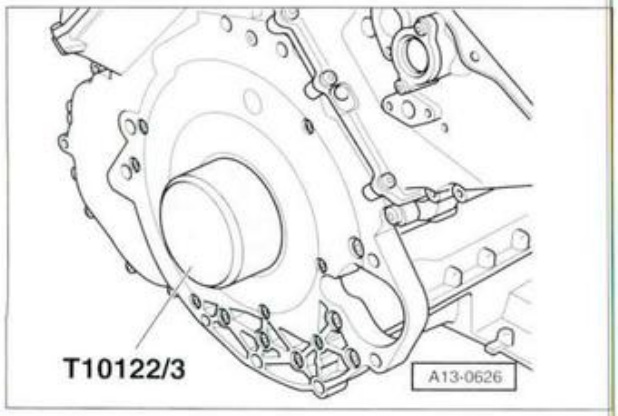



➤ Insert assembly sleeve T10122/1 on pull sleeve T10122/2. Slide new seal on pull sleeve.

– Remove assembly sleeve.




➤ Install pull sleeve with seal on end of crankshaft.




➤ Use special tool T10122/3 to press in seal evenly until it is flush with surface of cover. Remove pull sleeve.

– Reinstall torque plate, washer and shim according to marks made previously. Use new bolts.

| **Tightening torque** | |
|---|---|
| Torque plate to crankshaft (use new bolts):<br>• Stage 1<br>• Stage 2 | <br>30 Nm (22 ft-lb)<br>+ ¼ turn (90°) |

– Remainder of installation is reverse of removal. Bear in mind:

- Automatic transmission: Check ATF level and top off.
- Cooling system: Check coolant level and top off.
- Engine: Check oil level and top off.

# 15 Cylinder Head Cover




GENERAL . . . . . 15-1
Warnings and Cautions . . . . . 15-1
CYLINDER HEAD COVER (V6 MODELS) . . . . 15-2
Left cylinder head cover, removing and installing (2.7 liter or 2.8 liter engine) . . . . . 15-2
Right cylinder head cover, removing and installing (2.7 liter or 2.8 liter engine) . . . . . 15-4
Left cylinder head cover, removing and installing (3.0 liter engine) . . . . . 15-5
Right cylinder head cover, removing and installing (3.0 liter engine) . . . . . 15-7
CYLINDER HEAD COVER (V8 MODELS) . . . . 15-9
Left cylinder head cover, removing and installing (V8 models) . . . . . 15-9
Right cylinder head cover, removing and installing (V8 models) . . . . . 15-10


## GENERAL

This repair group contains information on cylinder head cover removal and installation.

If engine oil leaks are detected or if spark plug wells are filling with oil, remove the cylinder head cover and replace both the outer gasket and the inner spark plug well gasket.

### Warnings and Cautions

***WARNING***—

- *To avoid personal injury, be sure the engine is cold before beginning any procedure in this repair group.*
- *The fuel system is designed to retain pressure even when the ignition is OFF. When working with the fuel system, loosen the fuel lines slowly to allow residual fuel pressure to dissipate. Avoid spraying fuel. Use shop towels to capture leaking fuel.*
- *Before beginning work on the fuel system, place a fire extinguisher in the vicinity of the work area.*
- *Fuel is highly flammable. When working around fuel, do not disconnect wires that could cause electrical sparks. Do not smoke or work near heaters or other fire hazards.*
- *Wear eye protection and protective clothing to avoid injuries from contact with fuel.*
- *Unscrew the fuel tank cap to release pressure in the tank before working on fuel lines.*
- *Do not use a work light with an incandescent bulb near fuel. Fuel may spray on the hot bulb causing a fire.*
- *Make sure the work area is properly ventilated.*

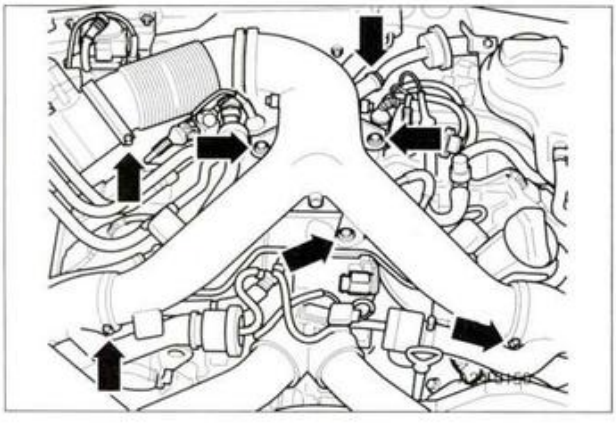
***CAUTION—***
- *When working on internal engine components, maintain absolute cleanliness.*
- *To prevent damage to vehicle body or paint, use protective body covers.*
- *Lay removed engine parts on a clean surface and cover immediately. Even small dirt particles can block oil passages.*
- *Place matching marks on harness connectors, hardware and other components for ease of assembly.*

## Cylinder Head Cover (V6 Models)

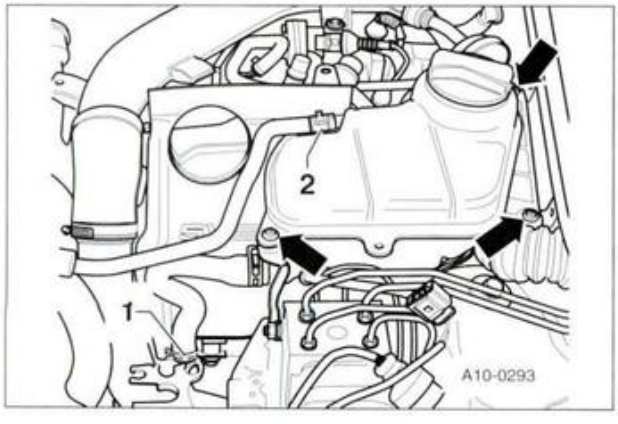
The illustrations in this section illustrate work on a 2000 A6 with 2.7 liter turbocharged engine. The procedures are similar on other models.

### Left cylinder head cover, removing and installing (2.7 liter or 2.8 liter engine)

– Remove top engine cover(s). See **03 Maintenance**.

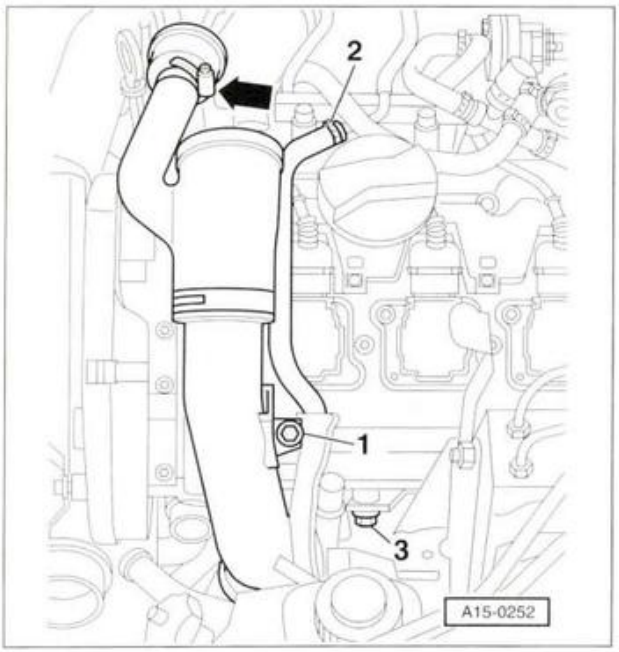


➢ Loosen or remove turbo ram air duct clamps and remove air duct mounting fasteners (**arrows**). Lift off air duct.

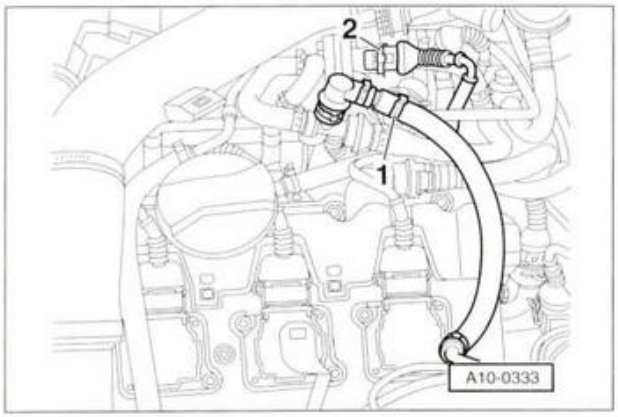



➢ Remove coolant reservoir mounting fasteners (**arrows**).
- Disconnect electrical connector from coolant level sensor at bottom of reservoir.
- Move reservoir aside. Leave coolant hoses connected.

– Remove cover panel from left cylinder head cover.



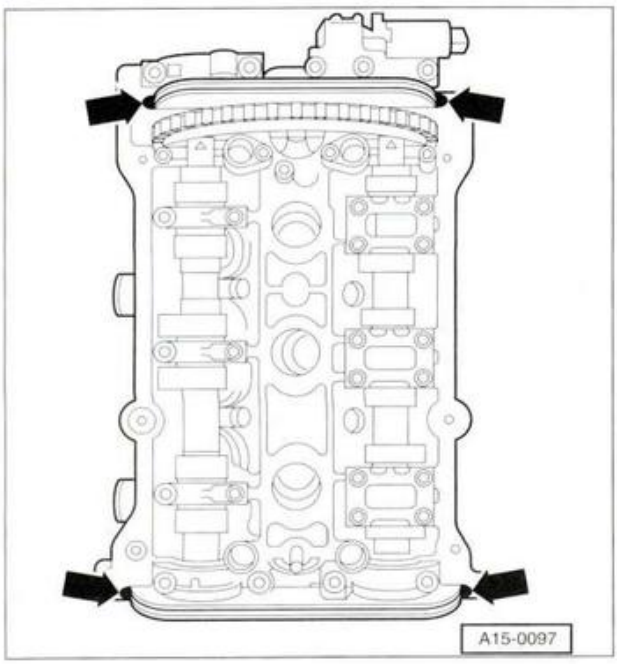

➤ Working at left side of engine:
- Loosen hose clamp (**arrow**).
- Remove intake line (**1**).
- Disconnect hose (**2**).
- Detach coolant line (**3**).
- Plug lower section of intake line.




➤ Working above left cylinder head cover:
- Disconnect crankcase breather (**1**) from cylinder head cover.
- Disconnect electrical connectors from ignition coils and remove coils. See **28 Ignition System**.

***NOTE*** —
- *2.8 liter engine: Remove spark plug wires.*

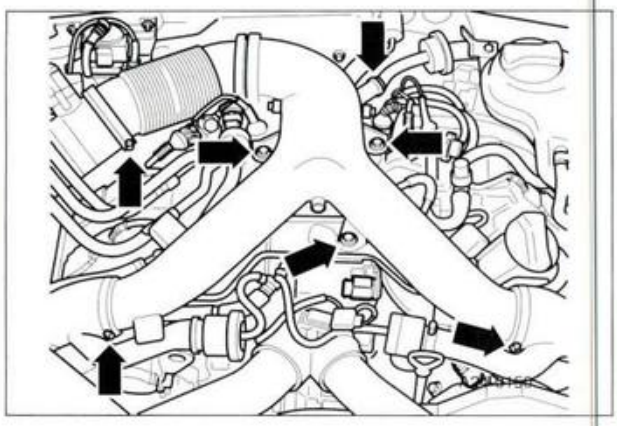
– Remove cylinder head cover.




➤ Installation is reverse of removal; note the following:
- Replace cylinder head cover gasket and spark plug well gasket.
- Seal end points of joints (**arrows**) between bearing caps and cylinder head. Apply small quantity of sealant (D 454 300 A2 or equivalent) at four end points.
- Tighten cylinder head cover fasteners in crisscross pattern, starting from middle fasteners.

| **Tightening torque** | |
|---|---|
| Cylinder head cover to cylinder head (M6) | 10 Nm (7 ft-lb) |

*Cylinder Head Cover (V6 Models)*

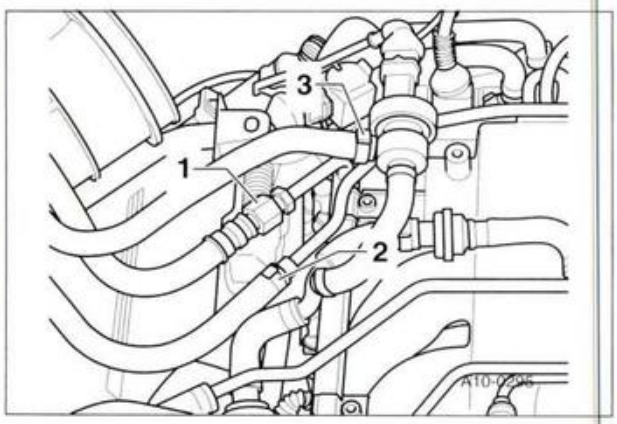


## Right cylinder head cover, removing and installing (2.7 liter or 2.8 liter engine)

– Remove top engine cover(s). See **03 Maintenance**.

– Remove cover above air filter housing.

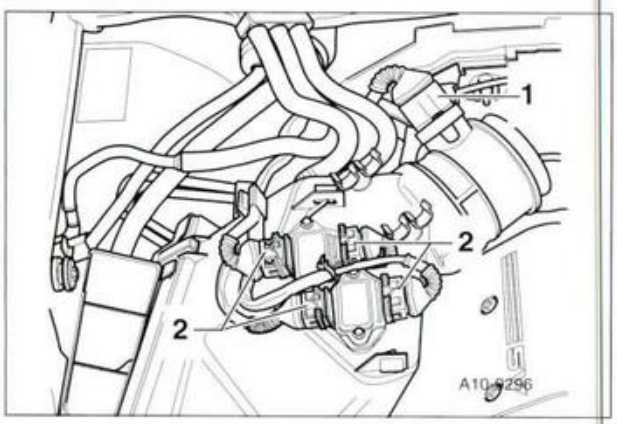
➤ Loosen or remove turbo ram air duct clamps and remove air duct mounting fasteners (**arrows**). Lift off air duct.




➤ Wrap shop towel around fuel connections, then disconnect fuel supply and return lines (**1** and **2**) and move fuel lines clear.

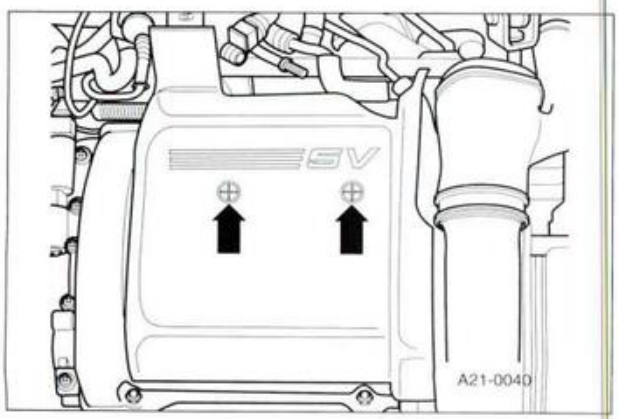
> ***WARNING*** —
> • *The fuel system is designed to retain pressure even when the ignition is OFF. When working with the fuel system, loosen the fuel lines slowly to allow residual fuel pressure to dissipate. Avoid spraying fuel. Use shop towels to capture leaking fuel.*

– Disconnect hose from fuel tank evaporative control (EVAP) valve (**3**).

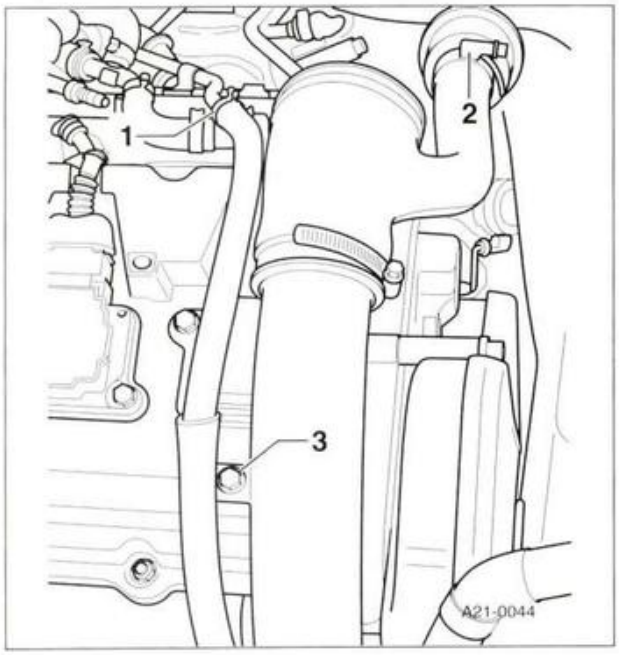



➤ Working at right side of engine:
- Disconnect electrical connector (**1**) from mass air flow sensor.
- Disconnect electrical connectors (**2**) from ignition output stages and move wiring clear.

– Remove air filter housing.



➤ Loosen fasteners (**arrows**) and remove cover panel from right cylinder head cover.




➤ Working at right side of engine:
- Disconnect hose (**1**).
- Loosen hose clamp (**2**).
- Detach upper section of intake line (**3**).
- Plug lower section of intake line.

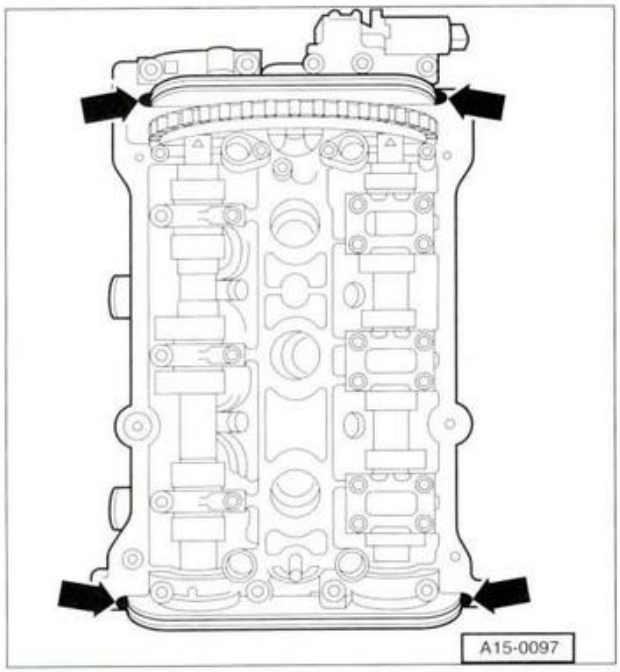
– Remove bolt securing timing belt guard from cylinder head cover.

– Disconnect electrical connectors from ignition coils and remove coils. See **28 Ignition System**.

***NOTE***—
- *2.8 liter engine: Remove spark plug wires.*

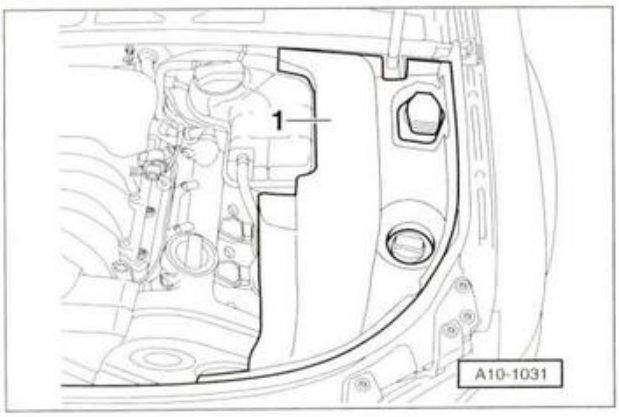
– Detach crankcase breather from cylinder head cover.

– Remove cylinder head cover.




➤ Installation is reverse of removal; note the following:
- Replace cylinder head cover gasket and spark plug well gasket.
- Seal end points of joints (**arrows**) between bearing caps and cylinder head. Apply small quantity of sealant (D 454 300 A2 or equivalent) at four end points.
- Tighten cylinder head cover fasteners in crisscross pattern, starting from middle fasteners.

| **Tightening torque** | |
|---|---|
| Cylinder head cover to cylinder head (M6) | 10 Nm (7 ft-lb) |

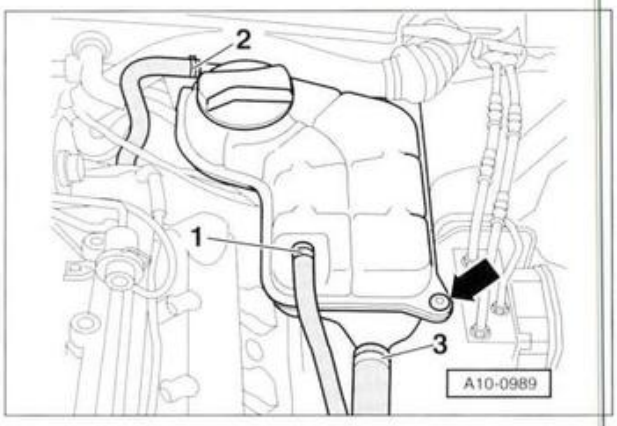



## Left cylinder head cover, removing and installing (3.0 liter engine)

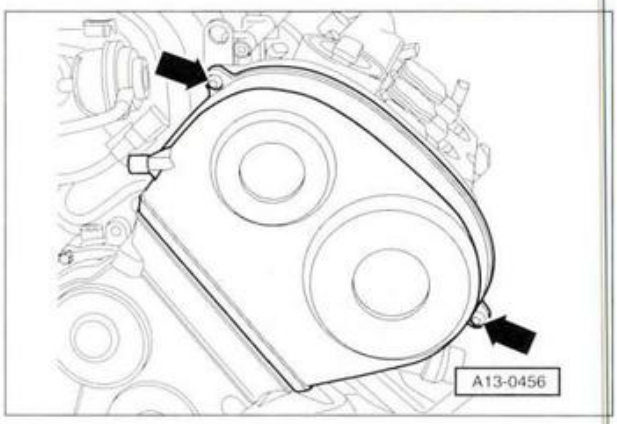
– Remove front and rear engine upper covers. See **03 Maintenance**.

➤ Remove cover (**1**) in engine compartment (left side).

*Cylinder Head Cover (V6 Models)*

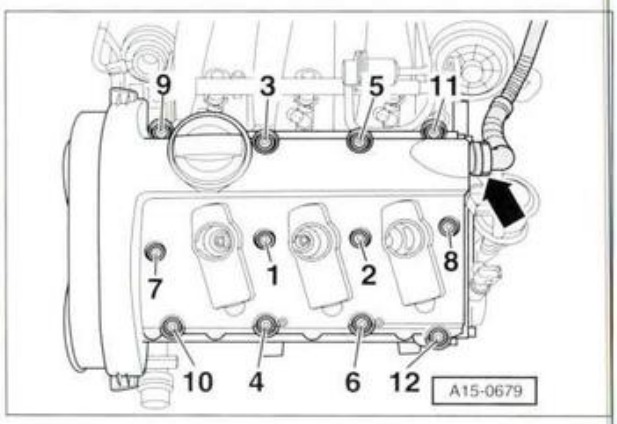



➤ Remove coolant reservoir mounting fastener (**arrow**).
- Disconnect electrical connector from coolant level sensor at bottom of reservoir.
- Move reservoir aside. Leave coolant hoses connected.




➤ Remove timing belt guard mounting fasteners (**arrows**) from left cylinder head cover.

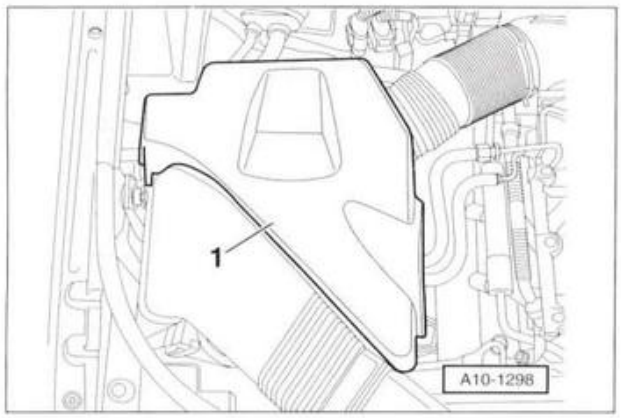
– Disconnect electrical connectors from ignition coils and remove coils. See **28 Ignition System**.




➤ Working above left cylinder head:
- Detach crankcase breather (**arrow**) from cylinder head cover.
- Unscrew cylinder head cover bolts in sequence, **12** to **1**.
- Remove cylinder head cover.

– Installation is reverse of removal; note the following:
- Replace cylinder head cover gasket and spark plug well gasket.
- Use new self-locking fasteners.
- Tighten cylinder head cover fasteners in sequence, **1** to **12**.

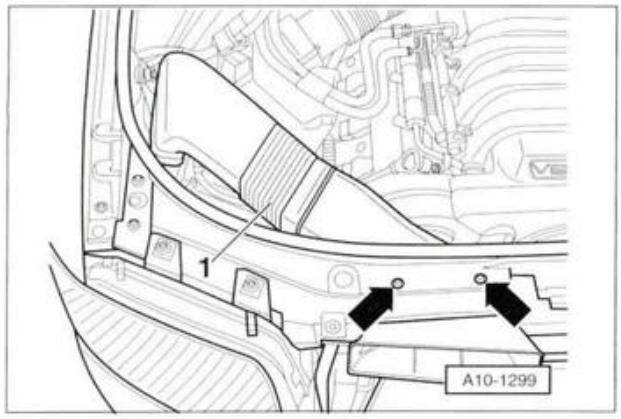
| **Tightening torques** | |
|---|---|
| Cylinder head cover to cylinder head (M6) (use new fasteners) | 10 Nm (7 ft-lb) |
| Timing belt guard to cylinder head cover (use new fasteners) | 6 Nm (53 in-lb) |



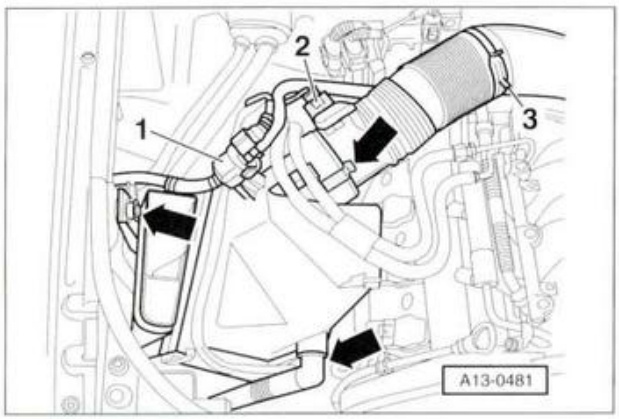

## Right cylinder head cover, removing and installing (3.0 liter engine)

– Remove front and rear engine upper cover(s). See **03 Maintenance**.

➢ Remove air filter housing cover (**1**) in engine compartment (right side).



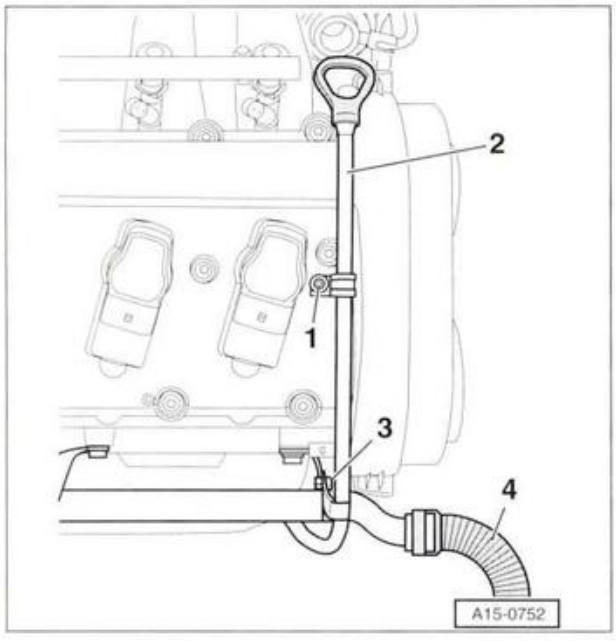

➢ Remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).



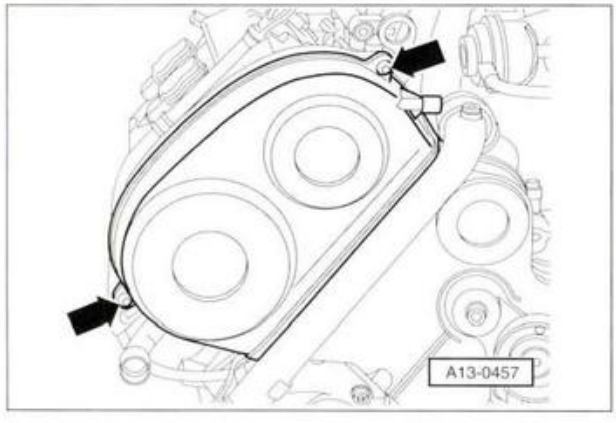

➢ Working in right side of engine compartment:

- Disconnect fuel tank evaporative control (EVAP) valve (**1**) at air filter housing.
- Disconnect electrical harness connector (**2**) at mass air flow (MAF) sensor.
- Remove engine intake air duct (**3**) together with MAF sensor.
- Unclip air filter housing clips (**arrows**). Lift air filter housing out.

## *Cylinder Head Cover (V6 Models)*

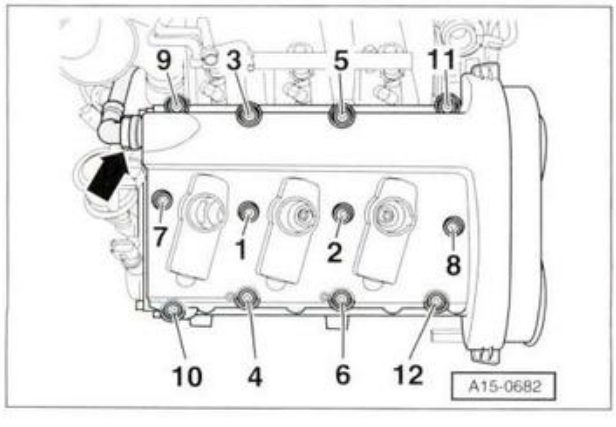



➤ Working above right cylinder head:
- Remove dipstick mounting bolts (**1** and **3**).
- Disconnect secondary air injector hose (**4**).
- Pull dipstick guide tube (**2**) out of oil pan. Swing forward for removal.




➤ Remove timing belt guard mounting fasteners (**arrows**) from right cylinder head cover.

– Disconnect electrical connectors from ignition coils and remove coils. See **28 Ignition System**.




➤ Working above right cylinder head:
- Detach crankcase breather (**arrow**) from cylinder head cover.
- Unscrew cylinder head cover bolts in sequence, **12** to **1**.
- Remove cylinder head cover.

– When reinstalling cylinder head cover, note the following:
- Replace cylinder head cover gasket and spark plug well gasket.
- Use new self-locking fasteners.
- Tighten cylinder head cover fasteners in sequence, **1** to **12**.

| **Tightening torques** | |
|---|---|
| Cylinder head cover to cylinder head (M6) (use new fasteners) | 10 Nm (7 ft-lb) |
| Timing belt guard to cylinder head cover (use new fasteners) | 6 Nm (53 in-lb) |

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove engine lower cover. See **03 Maintenance**.

– Replace dipstick guide tube O-ring gasket. Insert guide tube into oil pan, then secure fasteners to cylinder head cover.

| Tightening torque | |
|---|---|
| Dipstick guide tube to cylinder head cover | 10 Nm (7 ft-lb) |

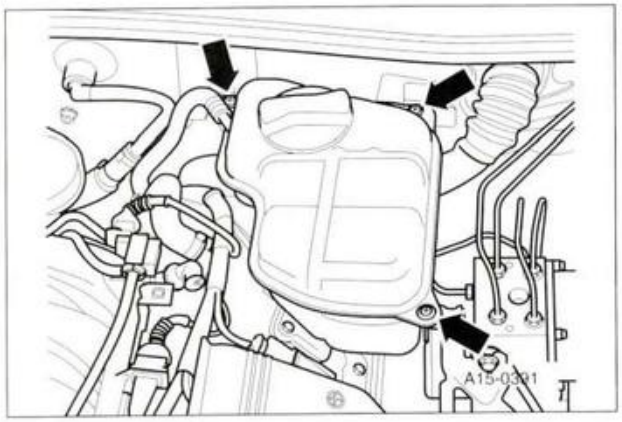
## Cylinder Head Cover (V8 Models)

The illustrations in this section illustrate work on a 2000 A6 with V8 engine. The procedures are similar on other normally aspirated V8 models.

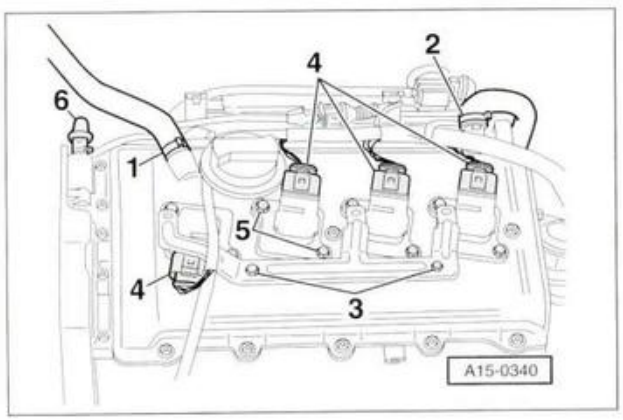
On the biturbo RS6 engine (engine code BCY), the left cylinder head cover can be removed with the engine installed. Right cylinder head cover removal, however, requires engine removal.

### Left cylinder head cover, removing and installing (V8 models)

– Remove top engine cover(s). See **03 Maintenance**.



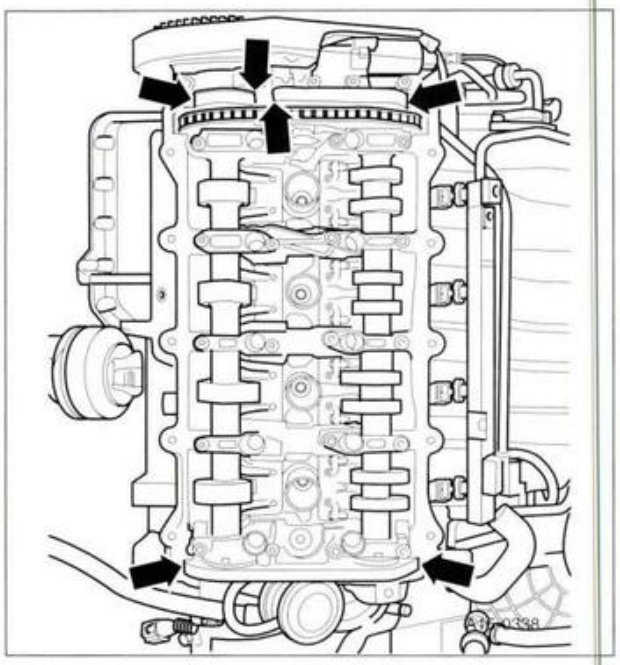

➤ Remove coolant reservoir mounting fasteners (**arrows**).
- Disconnect electrical connector from coolant level sensor at bottom of reservoir.
- Move reservoir aside. Leave coolant hoses connected.




➤ Working above left cylinder head:
- Detach breather hoses (**1** and **2**).
- Remove ignition coil bracket mounting bolts (**3**).
- Disconnect ignition coil connectors (**4**).
- Remove ignition coil mounting bolts (**5**) and remove coils.

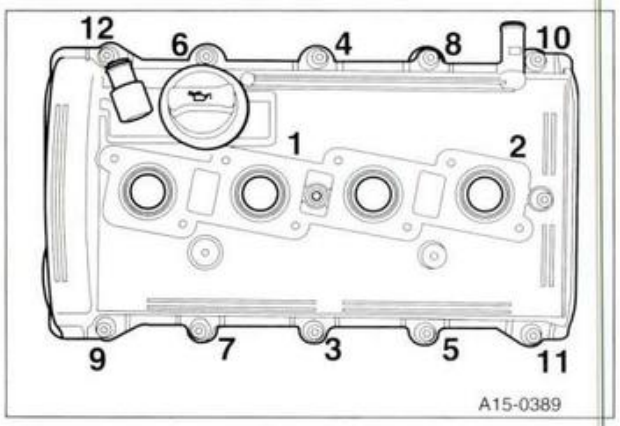
– Remove cylinder head cover.

*Cylinder Head Cover (V8 Models)*



➤ Installation is reverse of removal; note the following:

- Replace cylinder head cover gasket and spark plug well gasket.
- Apply small quantity of sealant (D 454 300 A2 or equivalent) to cylinder head cover sealing points (**arrows**).



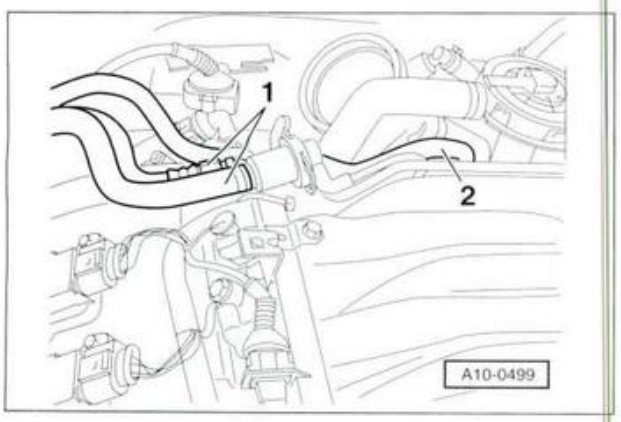

➤ Tighten cylinder head cover fasteners in sequence, **1** to **12**.

| **Tightening torques** | |
|---|---|
| Cylinder head cover to cylinder head | 10 Nm (7 ft-lb) |
| Ignition coil to cylinder head cover | 10 Nm (7 ft-lb) |

## Right cylinder head cover, removing and installing (V8 models)

– Remove top engine cover(s). See **03 Maintenance**.

– Remove intake air duct for air cleaner.

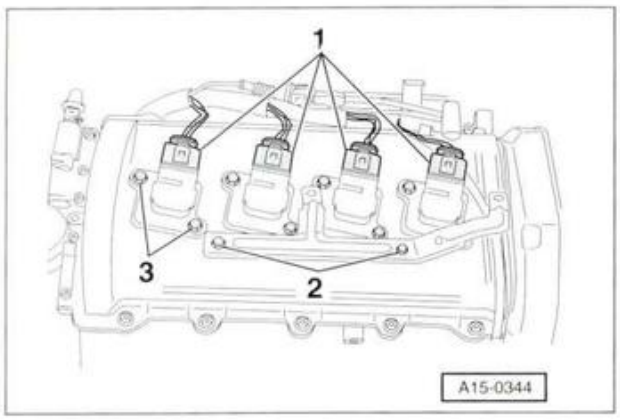



➤ Wrap a shop towel around fuel connections, then disconnect fuel supply and return lines (**1**) and move fuel lines clear.

***WARNING —***

- *The fuel system is designed to retain pressure even when the ignition is OFF. When working with the fuel system, loosen the fuel lines slowly to allow residual fuel pressure to dissipate. Avoid spraying fuel. Use shop towels to capture leaking fuel.*

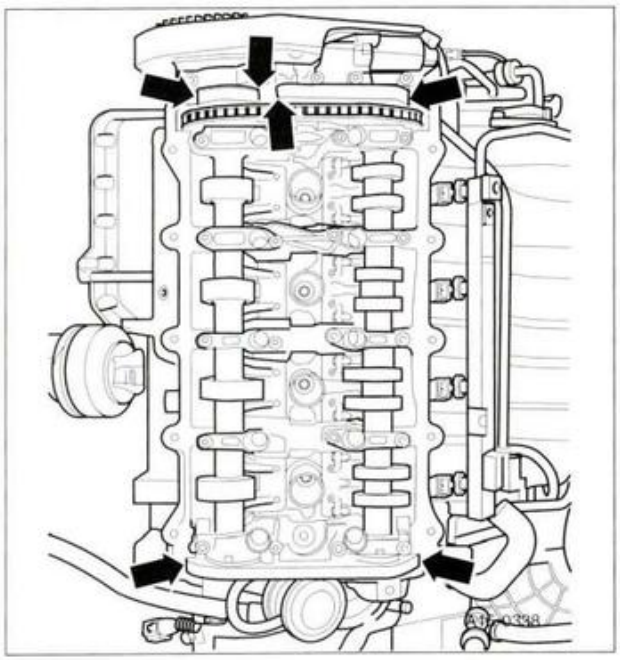
– Disconnect hose from fuel tank evaporative control (EVAP) valve (**2**).



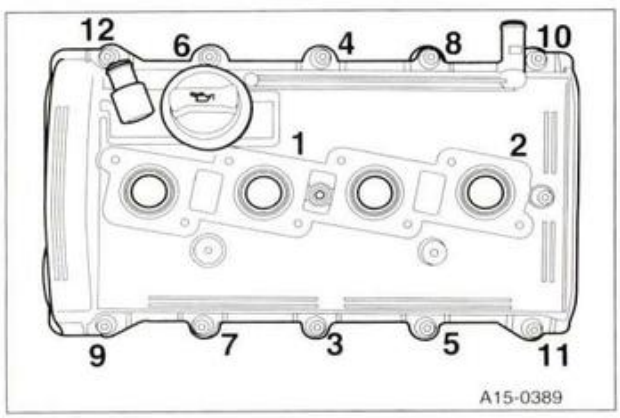

➤ Working above right cylinder head:
- Disconnect ignition coil connectors (**1**).
- Remove ignition coil bracket mounting bolts (**2**).
- Remove ignition coil mounting bolts (**3**) and remove coils.

– Disconnect crankcase breather hose.

– Remove cylinder head cover.



➤ Installation is reverse of removal; note the following:
- Replace cylinder head cover gasket and spark plug well gasket.
- Apply small quantity of sealant (D 454 300 A2 or equivalent) to cylinder head cover sealing points (**arrows**).




➤ Tighten cylinder head cover fasteners in sequence, **1** to **12**.

| **Tightening torques** | |
|---|---|
| Cylinder head cover to cylinder head | 10 Nm (7 ft-lb) |
| Ignition coil to cylinder head cover | 10 Nm (7 ft-lb) |

# 17 Engine–Lubrication System




GENERAL . . . . . 17-1

ENGINE OIL . . . . . 17-1

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Oil pressure and oil pressure switch, testing. . . . 17-2

LUBRICATION SYSTEM . . . . . 17-3

2.7 liter engine lubrication system . . . . . 17-3

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V8 engine lubrication system . . . . . 17-4

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TABLES

a. Oil specifications . . . . . 17-1

b. Oil capacities (approximate) . . . . . 17-1


## GENERAL

The repair group covers the A6 engine lubrication system.

## ENGINE OIL

Lubricating oil for engines covered by this manual are required to meet quality and performance standards specified by Audi. These standards are sufficiently high so that, generally, only synthetic oils meet them. Current specifications for engine oil are shown in **Table a**. For oil change procedures, see **03 Maintenance**.

| **Table a. Oil specifications** | |
|---|---|
| **Type:**<br>• American Petroleum Institute<br>• European industry standard | <br>API service SJ<br>ACEA A2 or ACEA A3 |
| **Viscosity grade:**<br>• New engine<br>• At oil change<br>• High temperature service (above 40°C or 100°F) | <br>SAE 0W30<br>SAE 5W30<br>SAE 5W40 |

Approximate refill capacities in **Table b** are listed by engine code. For engine application and code information, see **03 Maintenance**.

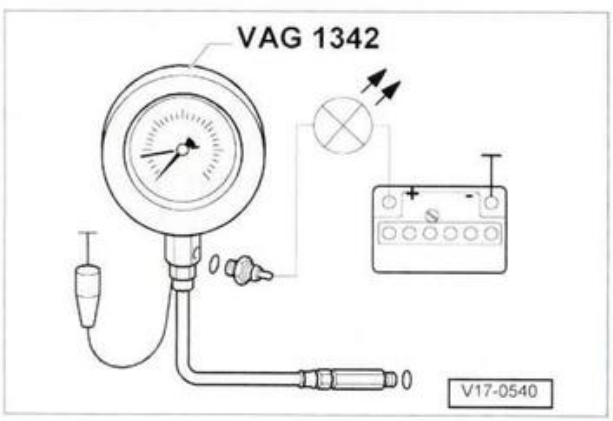
| **Table b. Oil capacities (approximate)** | |
|---|---|
| **Engine (engine code)** | **Oil capacity (includes oil filter) in liters (US qt)** |
| 2.7 liter V6 (A6, S6) (APB) | 6.5 (6.9) |
| 2.7 liter V6 (allroad quattro)(BEL) | 6.9 (7.3) |
| 2.8 liter V6 (AHA, ATQ) | 5.7 (6.0) |
| 3.0 liter V6 (AVK) | 6.4 (6.8) |

| Table b. Oil capacities (approximate) | |
|---|---|
| **Engine (engine code)** | **Oil capacity (includes oil filter) in liters (US qt)** |
| 4.2 liter V8 (A6, S6, RS6) (ART, AWN, BBD, BCY) | 7.6 (8.0) |
| 4.2 liter V8 (allroad quattro)(BAS) | 8.5 (8.9) |

***CAUTION—***
- *Lubricant specifications are subject to change. Consult your authorized dealer for the latest information regarding lubricant applications and specifications.*

## Oil Pressure

The oil pressure switch (F1) is in the oil pan at the base of the oil filter housing.




### Oil pressure and oil pressure switch, testing

Remove oil pressure switch and screw into oil pressure tester (special tool VAG 1324).

– Screw tester into oil pan in place of oil pressure switch.

– Connect brown wire of tester to ground.

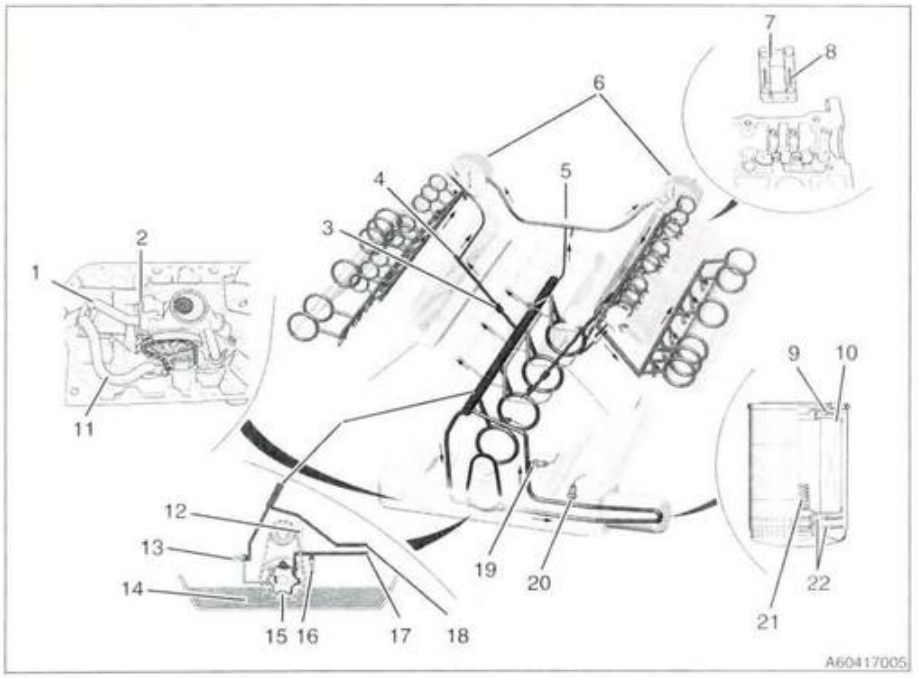
– Connect LED voltage tester (special tool VAG 1527B) to B+ (battery positive terminal) and to oil pressure switch.

– Start engine and gradually increase engine speed.
  - Make sure LED lights up at 1.2 - 1.6 bar (17.4 - 23.2 psi). If not, replace oil pressure switch.

– Warm up engine so that oil pressure is at least 80°C (176°F). Read off oil pressure at 2000 rpm and compare to specification.

| Oil pressure specification | |
|---|---|
| Oil pressure at 2000 rpm, oil at 80°C (176°F) | min 2.0 bar (29 psi) |

## LUBRICATION SYSTEM



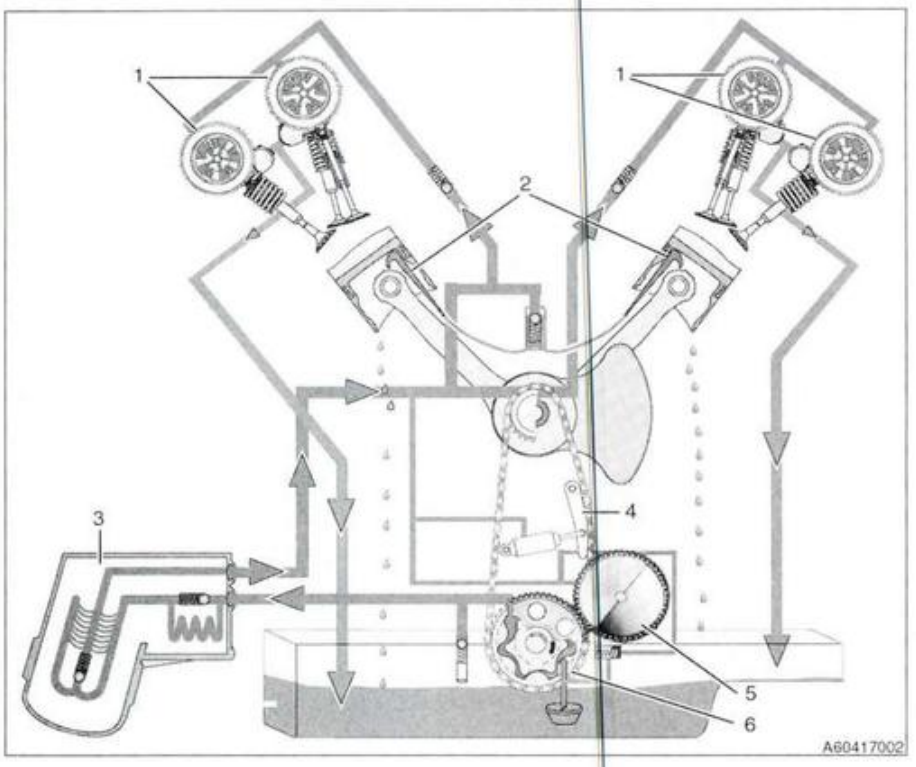

### 2.7 liter engine lubrication system

1. to Oil filter and oil cooler
2. Oil pressure relief valve
3. Oil retention valve
4. Restrictor
5. Oil distributor
6. Turbochargers
7. Camshaft bearing cap
8. Oil groove
9. Oil retention valve
10. Oil filter element
11. from Oil filter and oil cooler
12. Chain tensioner
13. Oil pressure control valve
14. Oil pickup filter
15. Duocentric oil pump
16. Oil pressure relief valve
17. to Oil filter and oil cooler
18. from Oil filter and oil cooler
19. Oil temperature sender
20. Oil pressure switch
21. Bypass valve
22. Bypass filter

***NOTE***—

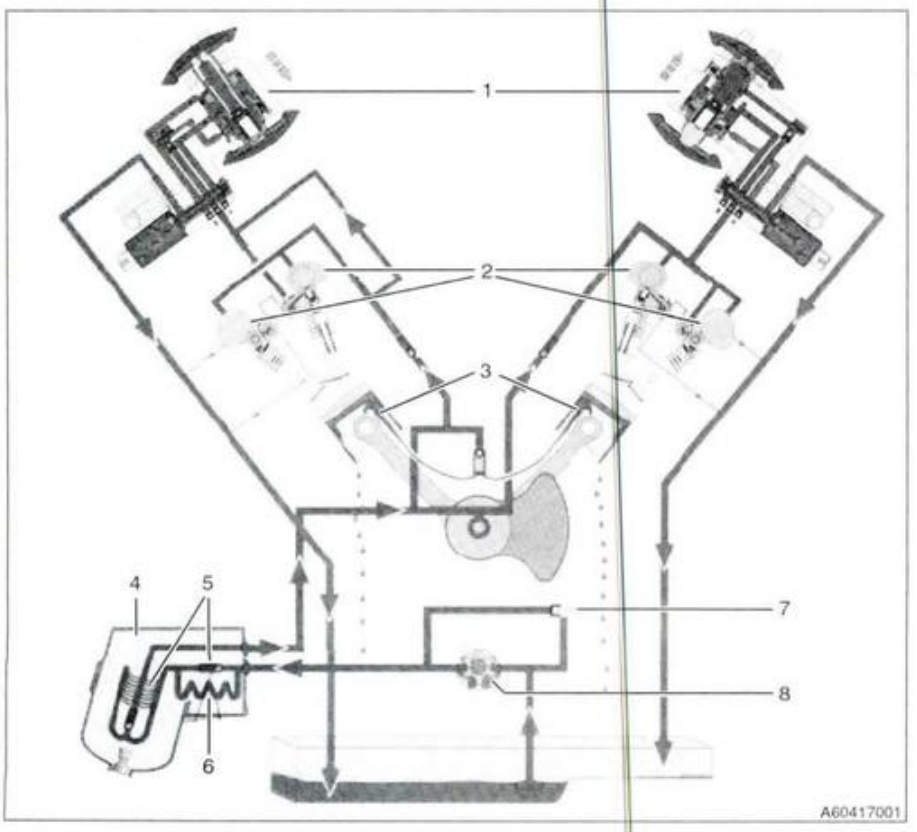
*• 2.8 liter engine lubrication system is similar.*

*Lubrication System*



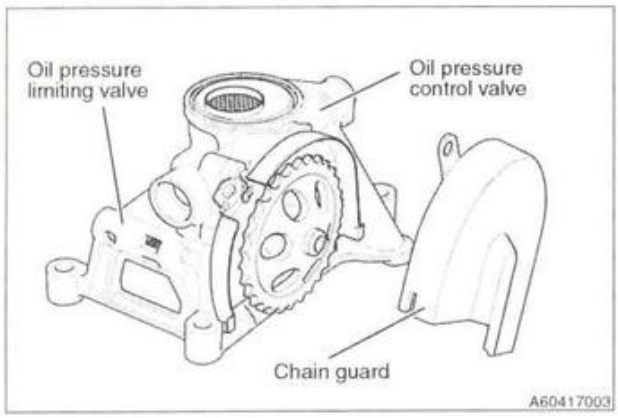

### 3.0 liter engine lubrication system

1. Camshaft bearing caps
2. Piston cooling jets
3. Oil filter housing
4. Oil pump drive chain tensioner
5. Balance shaft
   - Driven by oil pump gear
6. Duocentric oil pump




### V8 engine lubrication system

1. Variable camshaft timing assemblies
2. Camshafts
3. Piston cooling jets
4. Oil filter
5. Bypass valves
6. Oil cooler
7. Oil pressure control valve
8. Duocentric oil pump

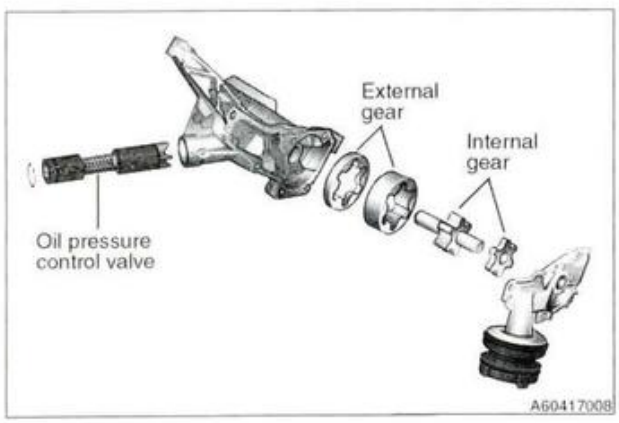



## Oil pump

V6 engine: Duocentric oil pump, chain-driven from the crankshaft, is attached to the bottom of the crankcase and projects into the oil sump. It is immersed completely in engine oil when oil level is correct. This prevents the pump from running dry.

This oil pump design, in combination with the extremely short intake path, assures that oil pressure builds up quickly, particularly during cold starts.

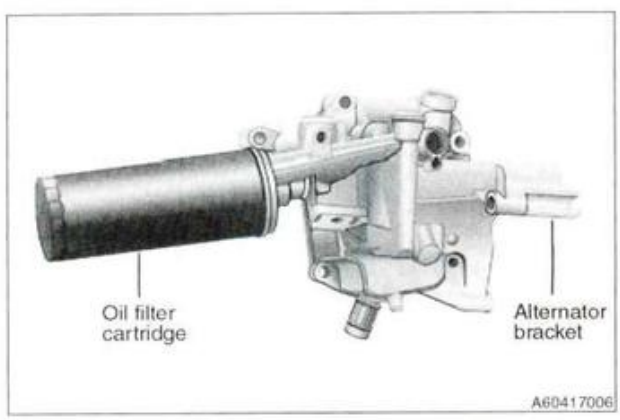
The sheet metal chain guard encapsulates the oil pump drive chain and sprocket and sharply reduces oil frothing.




V8 engine: Oil pump is similar in design and placement.

## Oil filter

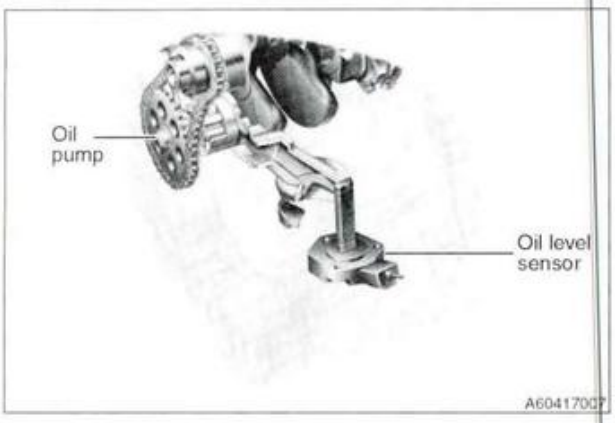
V6 engine: Oil filter unit contains oil retention valve, filter element, bypass filter and filter bypass valve. If filter element becomes clogged or if oil is too thick (high viscosity), bypass valve maintains engine lubrication.




V8 engine: Oil filter housing and function is similar to V6 engine, but for space reasons a filter cartridge is used instead of paper insert.

## Oil cooler

2.7 liter turbocharged engine: Oil cooler unit is integrated into the primary oil flow. The capacity and flow resistance are optimized to allow all the oil to flow through the cooler, unlike in the normally aspirated engine, where an oil bypass line is required.




## Oil level sensor

V8 engine: Oil level sensor functions as oil quality sensor as well. This allows oil service interval to be calculated. An oil level warning is displayed in the instrument cluster.

## Oil passages and valves

**Oil pressure control valve** is integrated in the oil pump housing. The oil diverted by the control valve is fed to the suction side of the pump, thus optimizing oil pump efficiency.

**Oil pressure limiting valve** is another internal pressure control valve which opens when oil pressure rises too high, as during a cold start.

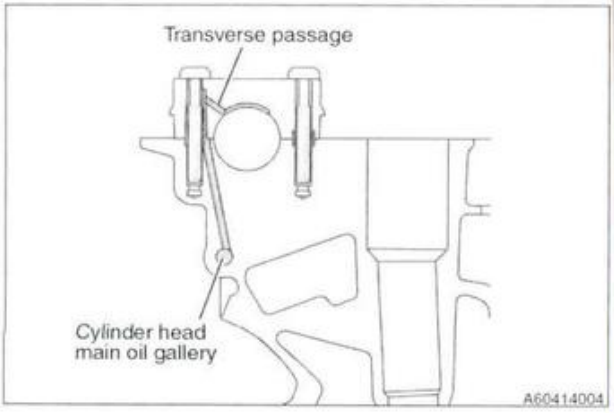
**Oil retention valves** prevent oil running out of the oil filter and the cylinder heads and back into the oil sump while the engine is not running.

**Oil passage restrictors** prevent oil flooding of the cylinder heads at high engine speeds.

**Control valve for piston cooling oil** opens once the oil pressure is above 26 psi (1.8 bar). This allows the low-viscosity engine oil to maintain high pressure. Also, at low engine speeds piston cooling is not necessary.

## Integrated oil supply

V6 engines installed in A6 models feature the integrated oil supply concept. Each camshaft bearing is supplied via a passage stemming from the cylinder head main oil gallery. The oil is fed along a bolt bore to a transverse passage. A lubrication groove distributes the oil throughout the camshaft bearing.



# 19 Engine–Cooling System

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Coolant and antifreeze . . . . . 19-1
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TABLE

a. Cooling system capacities . . . . . 19-1


## GENERAL

This repair group covers the engine cooling system.

See **87 Heating and Air-conditioning** for cooling system relay and fuse locations.

### Coolant and antifreeze

Cooling system capacity depends on a variety of options and configurations. If a repair procedure includes opening the sealed cooling system, make sure to fill and bleed the system after repairs. See **Cooling system draining, filling and bleeding** in this repair group.

**Table a. Cooling system capacities**

| Engine | Cooling system capacity in liters (US qt) |
|---|---|
| 2.7 liter V6 (APB, BEL) | 6.0 (6.3) |
| 2.8 liter V6 (AHA, ATQ) | 8.0 (8.5) |
| 3.0 liter V6 (AVK) | 8.0 (8.5) |
| 4.2 liter V8 (ART, AWN, BBD) | 9.0 (9.5) |
| 4.2 liter V8 biturbo (RS6) (BCY) | 12.0 (12.7) |

A60419048

The cooling system is factory filled with a lifetime coolant mixture of 50% silicate-free antifreeze and 50% water. If topping up or replacing coolant, use fresh antifreeze mixture. Audi recommends using G12 low-phosphate silicate-free coolant year-round. In an emergency, use clear water.

➤ Use a coolant hydrometer to determine antifreeze concentration.

| **Coolant mixture recommendations** | |
|---|---|
| **Concentration** | **Cold protection** |
| 50% antifreeze | -35°C (-31°F) |
| 60% antifreeze | -40°C (-40°F) |

Antifreeze concentration may also be tested with a refractometer, special tool T10007

Do not use a higher concentration of antifreeze than a 60% mixture, as the heat transfer quality of the coolant decreases with higher antifreeze concentrations.

Do not allow antifreeze concentration to drop below 40%.

## Warnings and Cautions

Observe the following warnings and cautions when working on the cooling system.

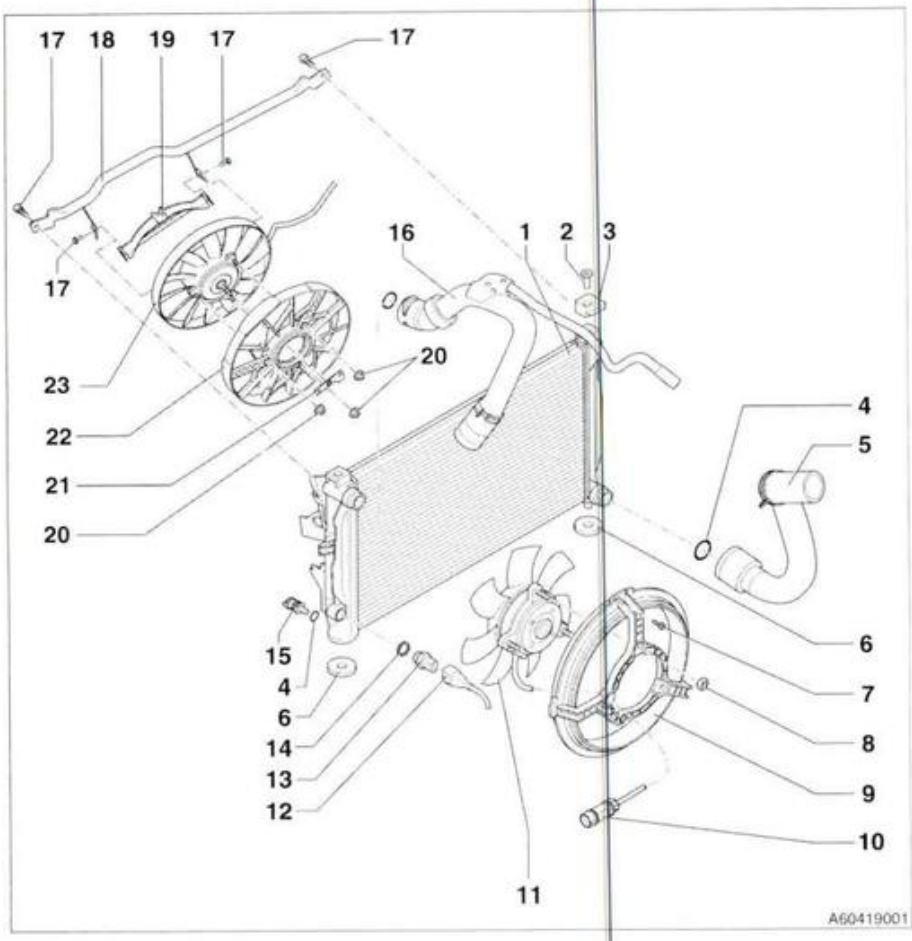
***WARNING*** —

- *At normal operating temperature the cooling system is pressurized. Allow the engine to cool thoroughly (a minimum of one hour), then cover the overflow tank pressure cap with a cloth and open carefully to relieve system pressure slowly.*
- *Releasing cooling system pressure lowers the boiling point of coolant and it may boil suddenly. Use heavy gloves and wear eye and face protection to guard against scalding.*
- *Use extreme care when draining and disposing of engine coolant. Coolant is poisonous and lethal to humans and pets. Pets are attracted to coolant because of its sweet smell and taste. Seek medical attention immediately if coolant is ingested.*

***CAUTION***—

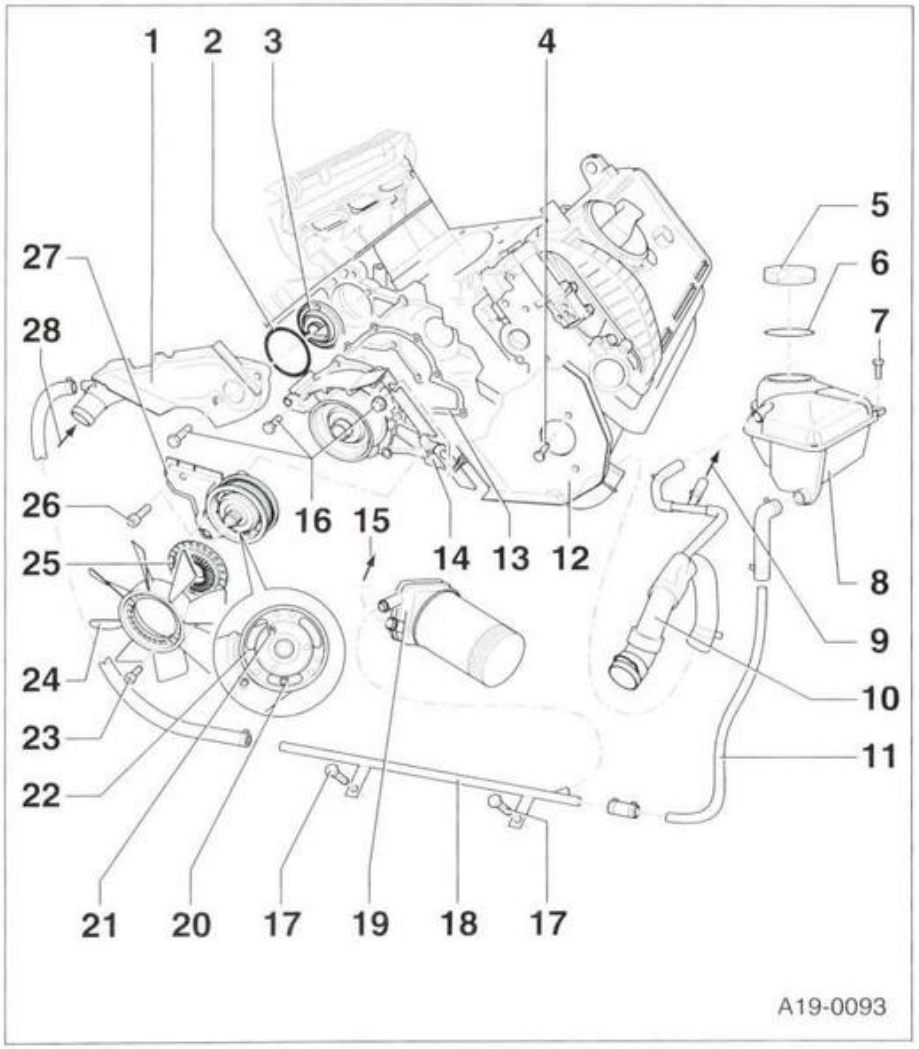
- *Replace sealing O-rings and gaskets when working on cooling system.*
- *When installing coolant hoses, make sure they are free of stress and do not come into contact with other components. Make sure arrows embossed on coolant pipes and coolant hoses face each other.*
- *Avoid adding cold water to the cooling system while the engine is hot or overheated. If it is necessary to add coolant to a hot system, do so only with the engine running and coolant pump turning.*
- *To avoid excess silicate gel precipitation in the cooling system and loss of cooling capacity, use Audi coolant G12 or equivalent silicate-free antifreeze.*
- *G12 coolant is red in color. Do not mix with other coolant types.*
- *If the fluid in the expansion tank is brown, G12 coolant has been mixed with another coolant. Flush cooling system and change coolant. See* **Cooling system draining, filling and bleeding** *in this repair group.*
- *Dispose of coolant in an environmentally safe manner.*
- *If oil enters the cooling system, flush with cleaning agent.*
- *Fill the cooling system year round with frost and corrosion protection additives included in approved coolant.*
- *Be sure to protect the engine against freezing to approx. -25°C (-13°F). In an arctic climate, protect to -35°C (-31°F).*
- *In summer, do not reduce antifreeze concentration below 40%.*
- *In extreme arctic conditions, do not increase the antifreeze concentration above 60%.*
- *Mix antifreeze with clean drinking water.*
- *If the radiator, heater core, cylinder head, cylinder head gasket or engine block is replaced, completely replace the engine coolant. Do not reuse old coolant.*
- *Prior to disconnecting the battery, read the battery disconnection precautions given in* **00 Warnings and Cautions**.

## 2.7 Liter Engine Cooling System




### Cooling system components on body (2.7 liter engine)

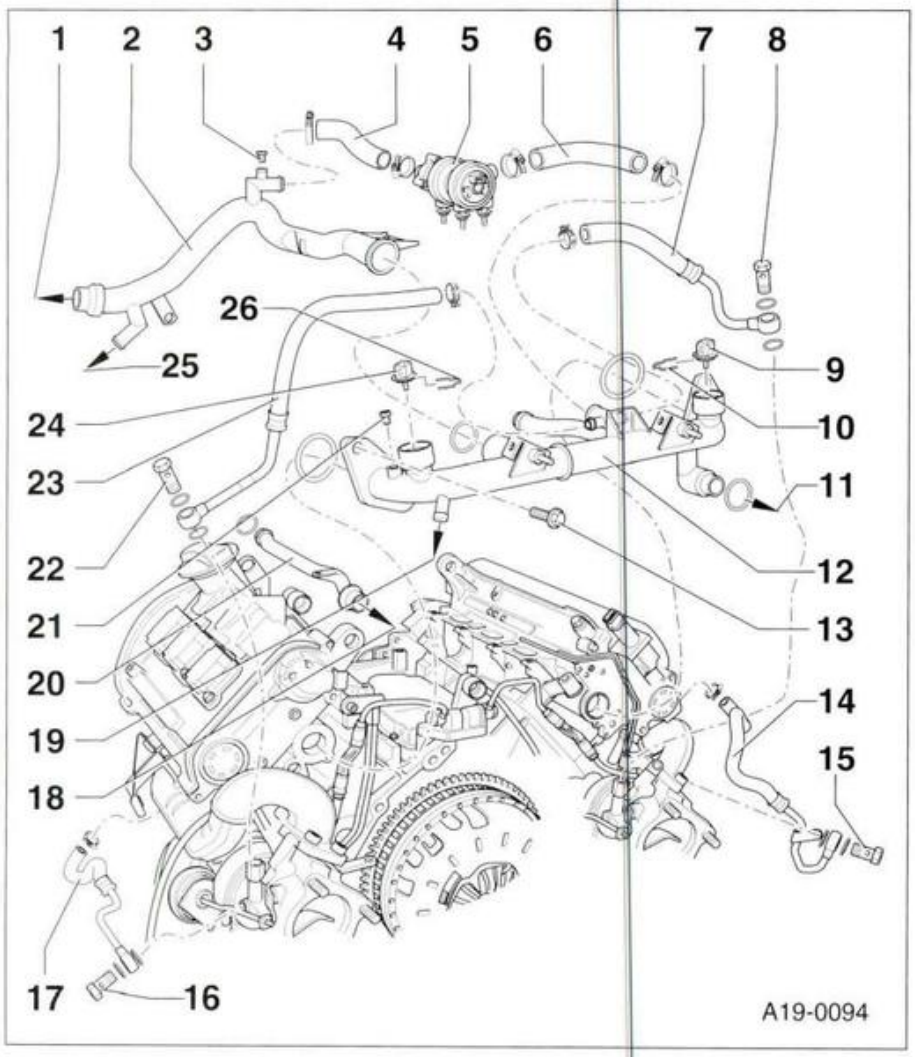
1. Radiator
2. Mounting clip
3. Rubber insulator
4. Sealing O-ring
5. Lower radiator hose
6. Rubber washer
7. Self-tapping screw
8. Nut, 10 Nm (7 ft-lb)
9. Fan shroud
10. 2-pin harness connector
11. Engine cooling fan (V7)
12. Fan switch 4-pin connector (F18)
13. Fan switch (F54), 35 Nm (26 ft-lb)
    - Stage 1 switching temperatures:
      on: 92° - 97°C (198° - 207°F)
      off: 84° - 91°C (183° - 196°F)
    - Stage 2 switching temperatures:
      on: 99° - 105°C (210° - 221°F)
      off: 91° - 98°C (196° - 208°F)
14. Sealing O-ring
15. Radiator drain screw, 10 Nm (7 ft-lb)
16. Upper radiator hose
17. Bolt, 5 Nm (44 in-lb)
18. Mounting bracket
19. Guard plate
20. Nut, 5 Nm (44 in-lb)
21. Bracket
22. Electric fan shroud
23. Electric cooling fan




## Cooling system components, front of engine (2.7 liter engine)

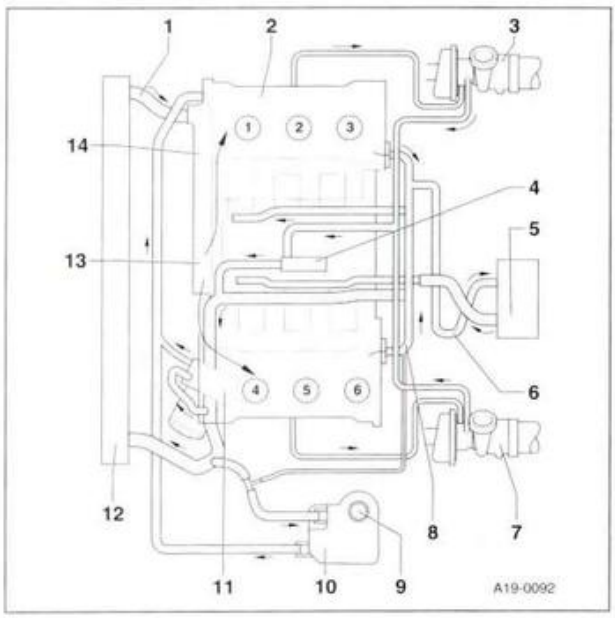
1. Thermostat cover and coolant duct
2. Sealing O-ring
3. Thermostat
   - Starts to open at 86°C (187°F)
4. Bolt, 10 Nm (7 ft-lb)
5. Filler cap, 1.4 - 1.6 bar (20 - 23 psi)
6. Sealing O-ring
7. Bolt, 10 Nm (7 ft-lb)
8. Coolant expansion tank
9. to Rear coolant line
10. Top radiator hose
11. Coolant line
12. Timing belt guard
13. Coolant pump gasket
14. Coolant pump
15. to Front coolant line
16. Bolt, 10 Nm (7 ft-lb)
17. Bolt, 25 Nm (18 ft-lb)
18. Lower coolant line
19. Oil cooler
20. Bolt, 25 Nm (18 ft-lb)
21. Bolt, 10 Nm (7 ft-lb)
22. Accessory belt pulley
23. Bolt, 10 Nm (7 ft-lb)
24. Viscous fan
25. Viscous fan clutch
    - Left-hand threads
    - 37 Nm (27 ft-lb) using special spanner 3312
26. Bolt, 25 Nm (18 ft-lb)
27. Viscous fan bracket
28. Lower radiator hose connection

*2.7 Liter Engine Cooling System*




## Cooling system components, rear of engine (2.7 liter engine)

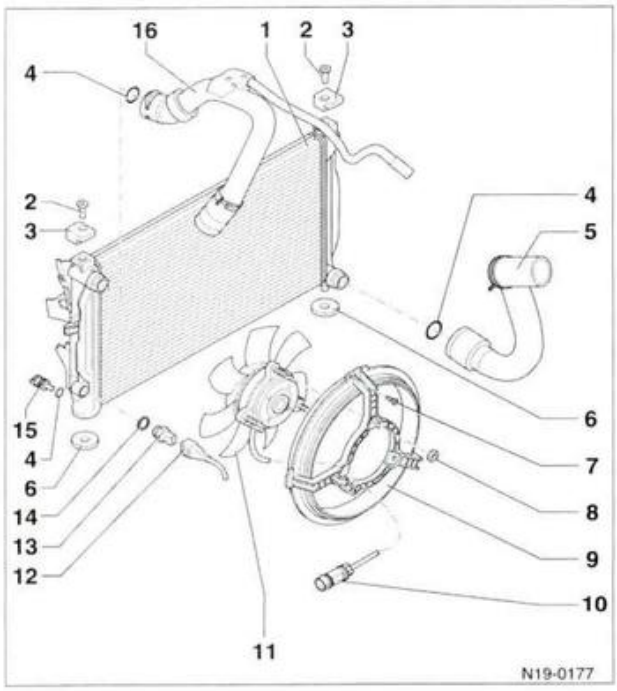
1. to Front coolant hose
2. Front coolant hose
3. Bleeder, 20 Nm (15 ft-lb)
4. Coolant line
5. Auxiliary coolant pump
6. Coolant hose
7. Right coolant line
8. Banjo bolt, 35 Nm (26 ft-lb)
   - Replace copper sealing O-rings
9. Engine coolant temperature (ECT) sensor (G62)
10. Retaining clip
11. to Heater core
12. Rear coolant line
13. Bolt, 10 Nm (7 ft-lb)
14. Right coolant line
15. Banjo bolt, 35 Nm (26 ft-lb)
    - Replace copper sealing O-rings
16. Banjo bolt, 35 Nm (26 ft-lb)
    - Replace copper sealing O-rings
17. Left coolant line
18. from Heater core
19. to Front coolant hose
20. Coolant line
21. Bleeder, 20 Nm (15 ft-lb)
22. Banjo bolt, 35 Nm (26 ft-lb)
    - Replace copper sealing O-rings
23. Left coolant line
24. Auxiliary coolant pump sensor, 2-pin
25. to Oil cooler
26. Retaining clip




### Coolant hose schematic (2.7 liter engine)

1. Lower radiator hose
2. Cylinder head and engine block
3. Right turbocharger
4. Auxiliary coolant pump
5. Heater core
6. to Heater core
7. Left turbocharger
8. Rear coolant line
9. Coolant expansion tank cap
10. Coolant expansion tank
11. Oil cooler
12. Radiator
13. Coolant pump
14. Thermostat cover and duct

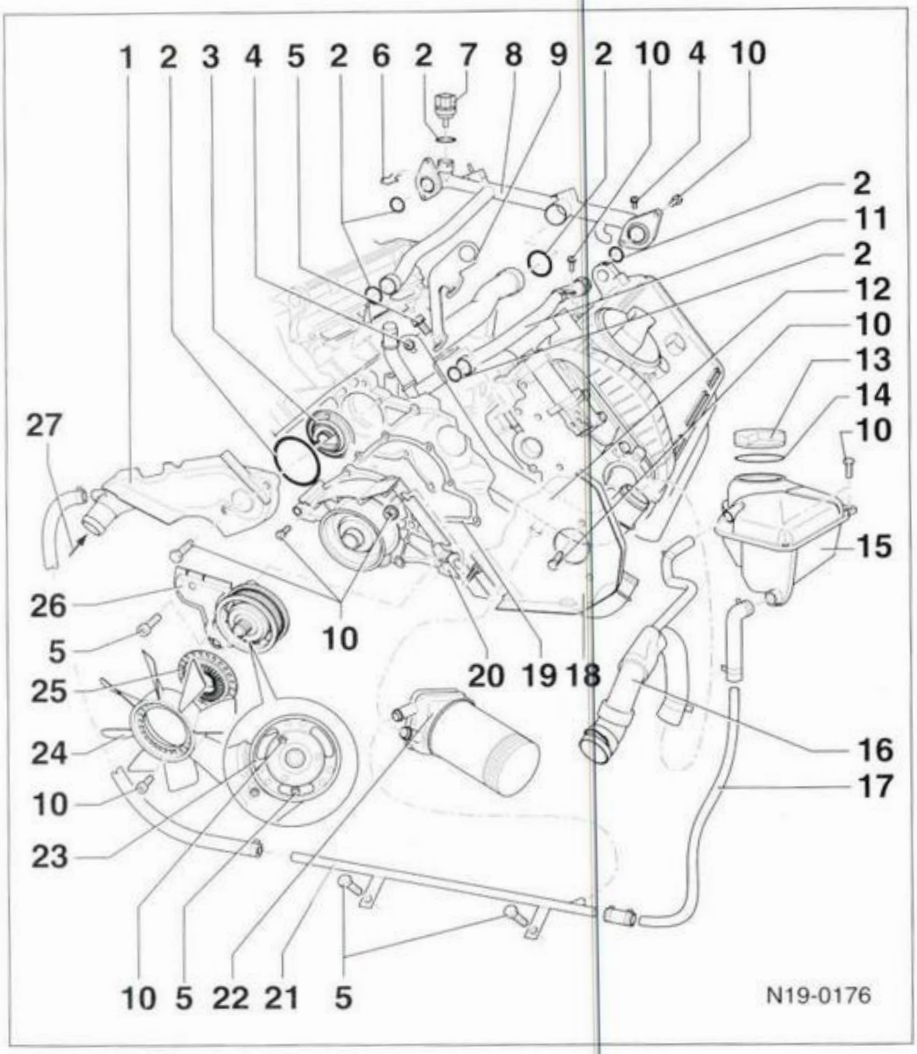
## 2.8 Liter Engine Cooling System




### Cooling system components on body (2.8 liter engine)

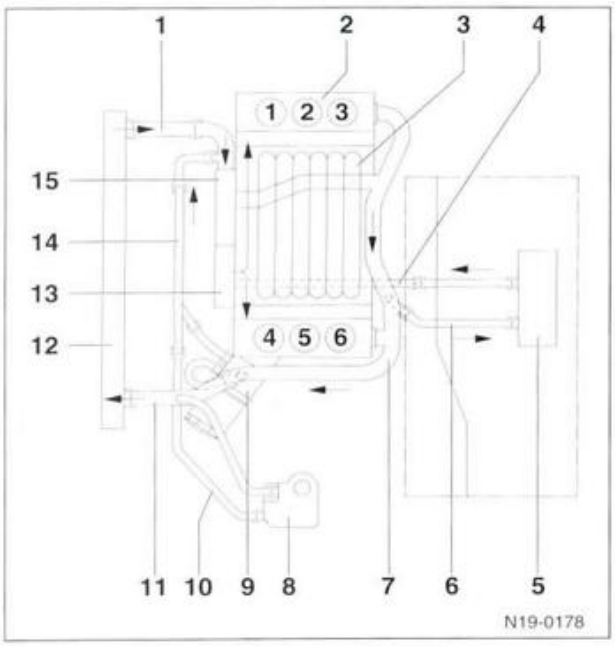
1. Radiator
2. Mounting clip
3. Rubber insulator
4. Sealing O-ring
5. Lower radiator hose
6. Rubber washer
7. Self-tapping screw
8. Nut, 10 Nm (7 ft-lb)
9. Fan shroud
10. 2-pin harness connector
11. Engine cooling fan (V7)
12. Fan switch 4-pin connector (F18)
13. 2-stage fan switch (F54), 35 Nm (26 ft-lb)
    - Stage 1 switching temperatures:
      on: 92° - 97°C (198° - 207°F)
      off: 84° - 91°C (183° - 196°F)
    - Stage 2 switching temperatures:
      on: 99° - 105°C (210° - 221°F)
      off: 91° - 98°C (196° - 208°F)
14. Sealing O-ring
15. Radiator drain screw, 10 Nm (7 ft-lb)
16. Upper radiator hose

*2.8 Liter Engine Cooling System*




## Cooling system components on engine (2.8 liter engine)

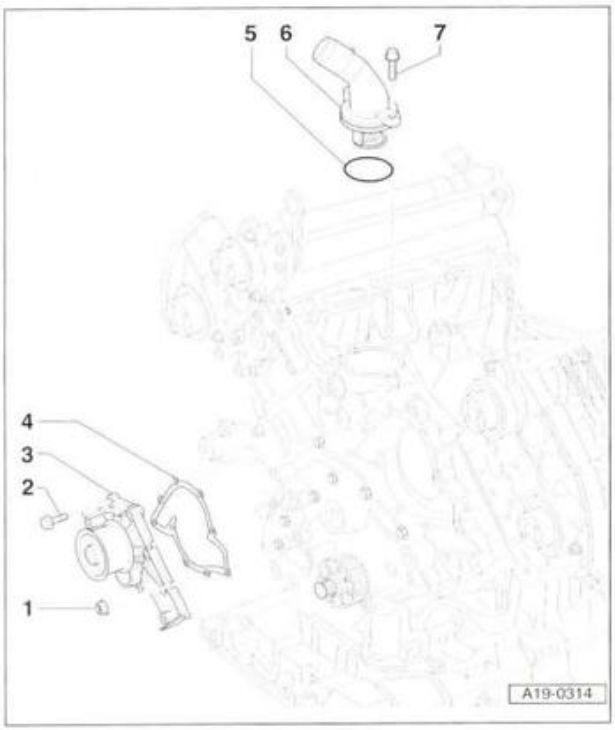
1. Thermostat cover and coolant duct
2. Sealing O-ring
3. Thermostat
   - Starts to open at 86°C (187°F)
   - Opening travel: min. 7 mm (¼ in)
4. Cooling system bleeder
5. Bolt, 25 Nm (18 ft-lb)
6. Retaining clip
7. Engine coolant temperature (ECT) sensor (G62)
8. Rear coolant distributor pipe
9. Engine lifting eye
10. Bolt, 10 Nm (7 ft-lb)
11. Coolant pipe
12. Front coolant pipe
13. Cooling expansion tank pressure cap
14. Sealing O-ring
15. Coolant expansion tank
16. Upper radiator hose
17. Coolant hose
18. Timing belt guard
19. Coolant pump gasket
20. Coolant pump
21. Lower coolant pipe
22. Oil cooler
23. Belt pulley
24. Viscous fan
25. Viscous fan clutch
    - Left-hand threads
    - 37 Nm (27 ft-lb) using special spanner, VAG 3312
26. Viscous fan bracket
27. Lower *radiator* hose connection




### Coolant hose schematic (2.8 liter engine)

1. Lower radiator hose
2. Cylinder head and engine block
3. Intake manifold
4. from Heater core
5. Heater core
6. to Heater core
7. Rear coolant pipe
8. Coolant expansion tank
9. Oil cooler
10. Coolant line
11. Upper radiator hose
12. Radiator
13. Coolant pump
14. Lower coolant pipe
15. Thermostat cover and duct

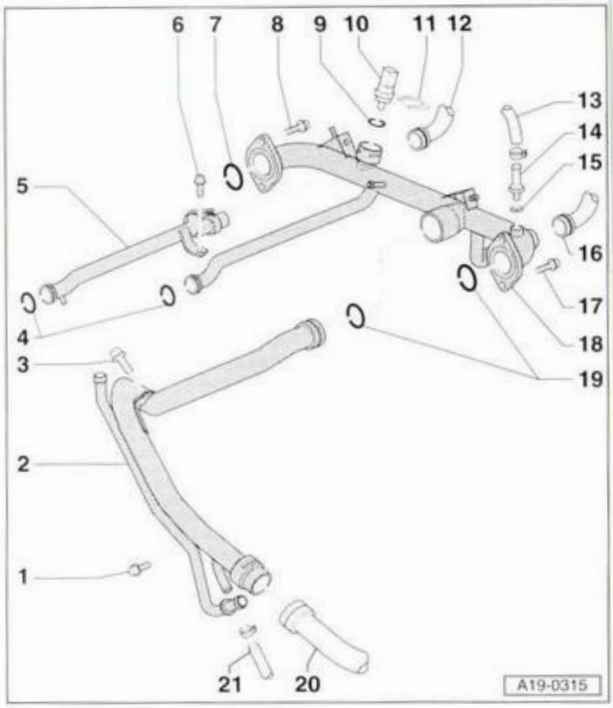
## 3.0 Liter Engine Cooling System




### Coolant pump and thermostat (3.0 liter engine)

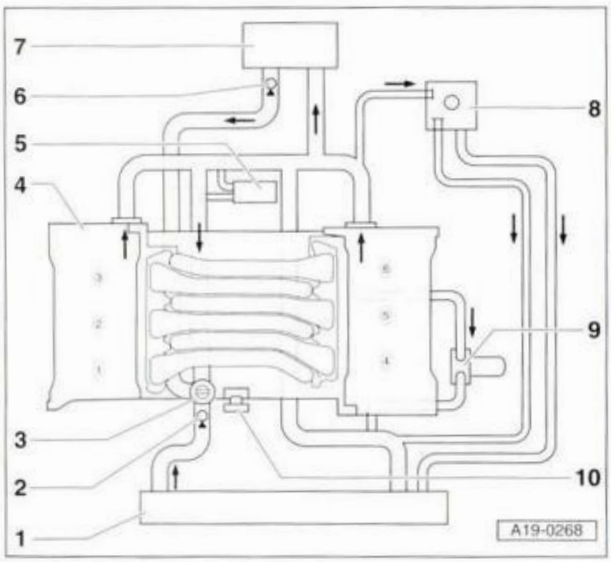
1. Nut, 10 Nm (7 ft-lb)
2. Bolt, 10 Nm (7 ft-lb)
3. Coolant pump
4. Coolant pump gasket
5. Sealing O-ring
6. Coolant thermostat integral with housing
7. Bolt, 10 Nm (7 ft-lb)

*3.0 Liter Engine Cooling System*



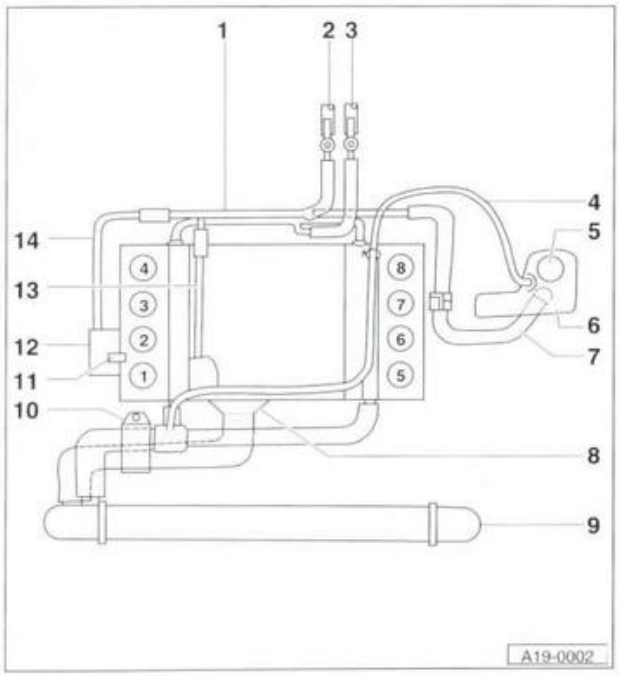

## Coolant hoses and pipes (3.0 liter engine)

1. Bolt, 10 Nm (7 ft-lb)
2. Front coolant pipe
3. Bolt, 22 Nm (16 ft-lb)
4. Sealing O-ring
5. Right coolant pipe
6. Bolt, 10 Nm (7 ft-lb)
7. Sealing O-ring
8. Bolt, 10 Nm (7 ft-lb)
9. Sealing O-ring
10. Engine coolant temperature (ETC) sensor (G2, G62)
11. Retaining clip
12. to Heater core
13. to Coolant expansion tank
14. Connector, 20 Nm (14 ft-lb)
15. Seal
16. to Heater core
17. Bolt, 10 Nm (7 ft-lb)
18. Rear coolant pipe
19. Sealing O-rings
20. Top radiator hose
21. to Oil cooler




## Coolant hose schematic (3.0 liter engine)

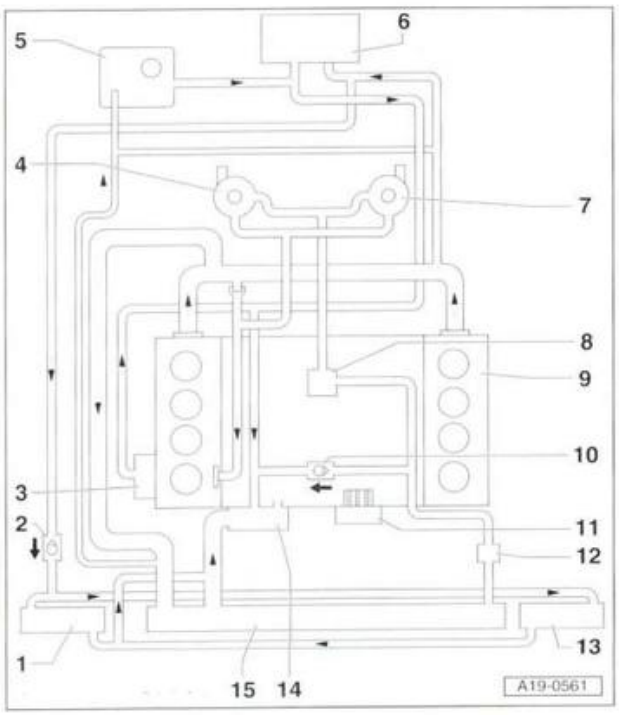
1. Radiator
2. Bleeder, 15 Nm (10 ft-lb)
3. Coolant thermostat
4. Cylinder head and engine block
5. Throttle valve control module (J338)
6. Bleeder hole
7. Heater core
8. Coolant expansion tank
9. Oil cooler
10. Coolant pump




## V8 Engine Cooling System

### Coolant hose schematic (4.2 liter engine, codes ART, AWN, BBD)

1. Rear coolant pipe
2. from Heater core (with bleeder valve)
3. to Heater core (with bleeder valve)
4. Return hose
5. Coolant expansion tank cap
6. Coolant expansion tank
7. Filler hose
8. Coolant thermostat
9. Radiator
10. Coolant hoses bracket
11. Coolant pipe between oil cooler and engine block
12. Oil cooler
13. Coolant pipe
14. Coolant pipe, to oil cooler




### Coolant hose schematic (4.2 liter RS6 biturbo engine, code BCY)

1. Right intercooler
2. Check valve
3. Oil filter
4. Right turbocharger
5. Coolant overflow tank
6. Heater core
7. Left turbocharger
8. After-run coolant pump (V51)
9. Engine
10. Check valve
11. Coolant pump
12. Coolant circulation valve
13. Left intercooler
14. Coolant thermostat
15. Radiator

## COOLING SYSTEM SERVICE

In the procedures that follow, the 2.8 liter V6 engine is illustrated. Other models are similar.

### Cooling system draining, filling and bleeding

> ***WARNING —***
> • *To avoid personal injury, be sure the engine is cold before opening the cooling system.*

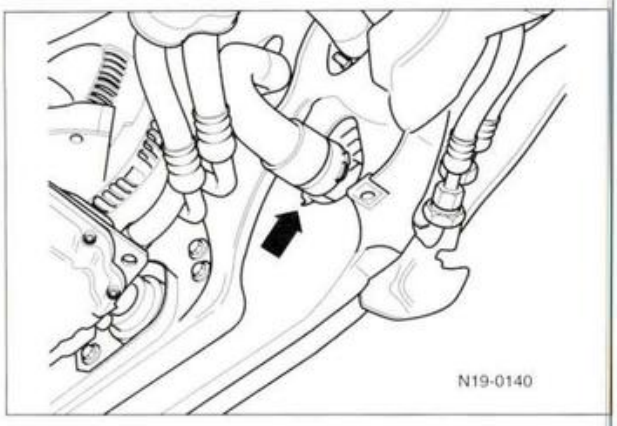
– Remove coolant expansion tank filler cap.

– Raise car and support safely.

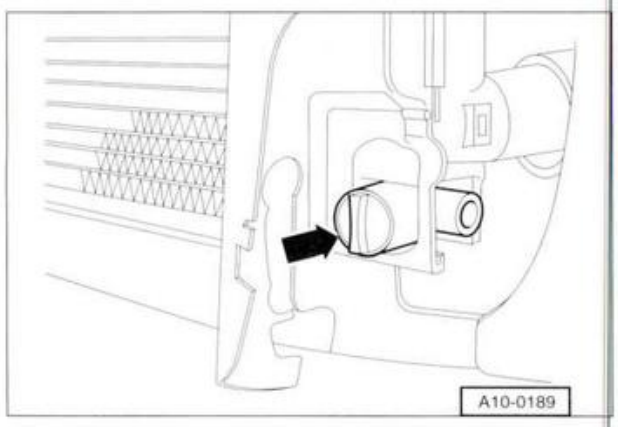
> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove lower engine cover (splash shield). See **03 Maintenance**.

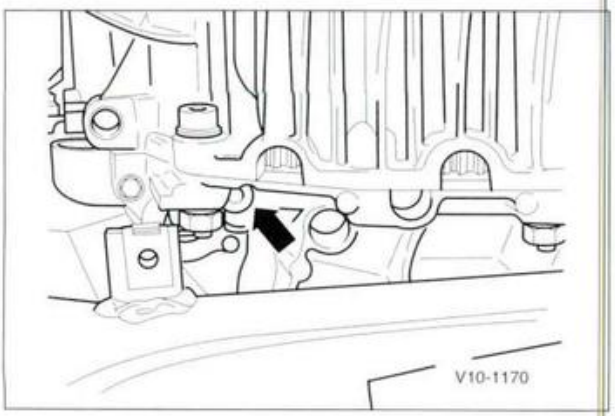
– Place 5 gallon pail underneath engine.




➤ Loosen hose clamp (**arrow**) at bottom radiator hose. Detach hose from radiator and allow coolant to drain into pail.




➤ If front bumper is off, turn drain tap (**arrow**) at left bottom of radiator (left side) counter-clockwise to drain coolant.

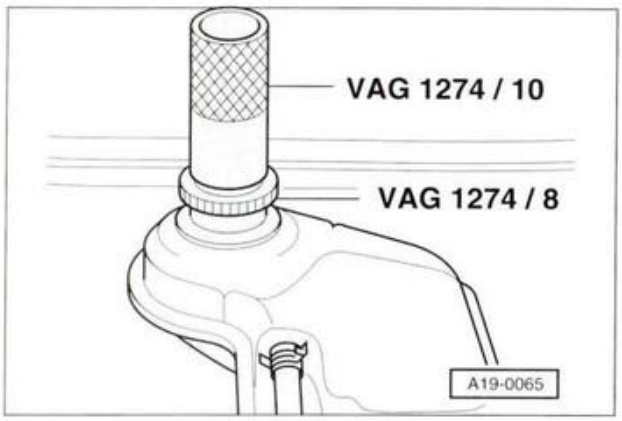



➤ Drain coolant from engine block at block drain screw (**arrow**).

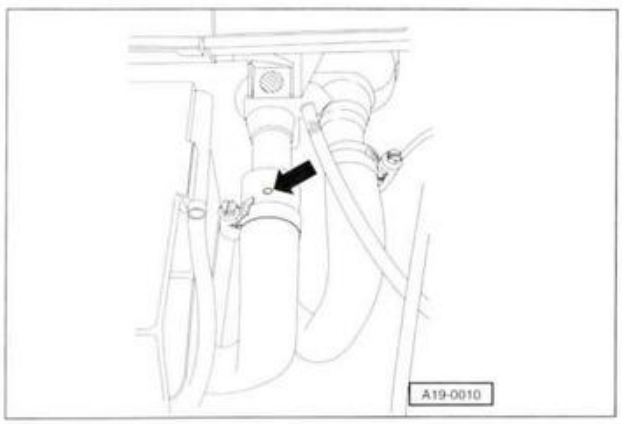
– Using new sealing O-ring, replace and tighten drain screw.

| Tightening torque | |
|---|---|
| Block drain screw to engine block | 20 Nm (15 ft-lb) |

– Reattach lower hose to radiator. Alternatively, shut off coolant drain tap on radiator.

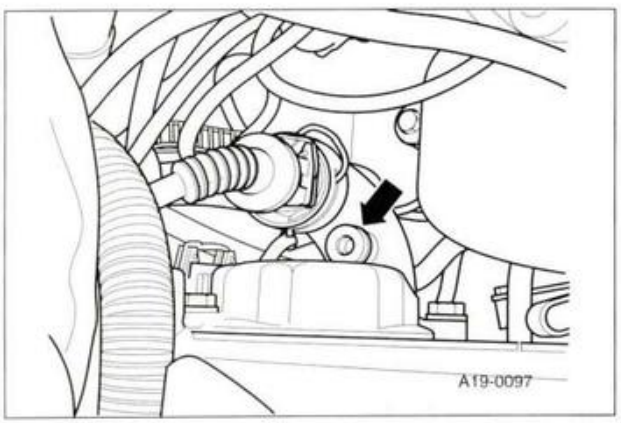



➤ Thread adapter (VAG 1274/8) to coolant expansion tank and insert extension (VAG 1274/10).




➤ Working at heater core coolant connection:

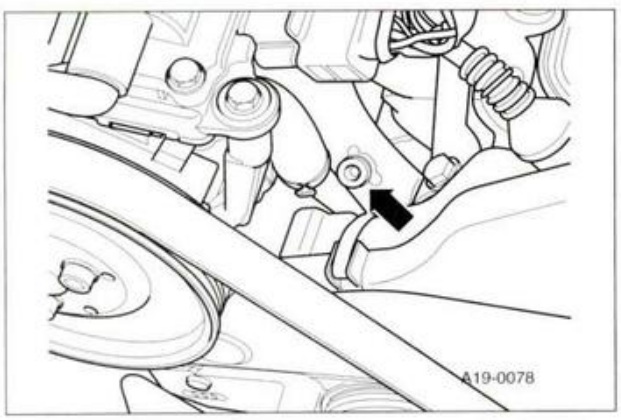
- Loosen coolant hose clamp at heater core
- Pull hose far enough so that bleeder hole (**arrow**) in coolant line is not covered by hose.
- Fill coolant at tank until it comes out at bleeder.
- Push coolant hose on connection and tighten clamp.




➤ Loosen bleeder screw on rear coolant line (**arrow**) below expansion tank.

- Fill coolant at tank until it comes out at bleeder.
- Tighten bleeder screw.

| **Tightening torque** | |
|---|---|
| Coolant bleeder screw | 20 Nm (15 ft-lb) |




➤ Loosen bleeder screw on front coolant line (**arrow**) between power steering pump and left cylinder head.

- Fill coolant at tank until it comes out at bleeder screw.
- Tighten bleeder screw.

| **Tightening torque** | |
|---|---|
| Coolant bleeder screw | 20 Nm (15 ft-lb) |

*Cooling System Service*

➤ Remove special tools from coolant expansion tank and fill coolant to MAX mark. Close filler cap on expansion tank.

– Set heater controls to maximum heat setting.

– Start engine and let it idle for about 10 minutes.
  - Maintain engine speed of about 2000 rpm for about 5 minutes.
  - Allow engine to run at idling speed until lower radiator hose becomes hot.

– Check coolant level and top off if necessary.

> ***WARNING —***
> - *When the engine is hot, the cooling system is under pressure. Releasing cooling system pressure lowers the boiling point of coolant and it may boil suddenly.*
> - *Cover the filler cap with a cloth and remove it carefully.*
> - *Use heavy gloves and wear eye and face protection to guard against scalding.*

| **Normal coolant level** | |
|---|---|
| Engine at operating temperature | MAX |
| Engine cold | between MIN and MAX |

## Radiator, removing and installing

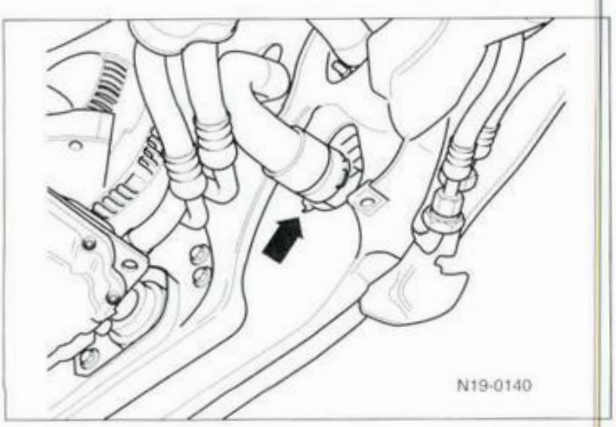
– Raise car and support safely.

> ***WARNING —***
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

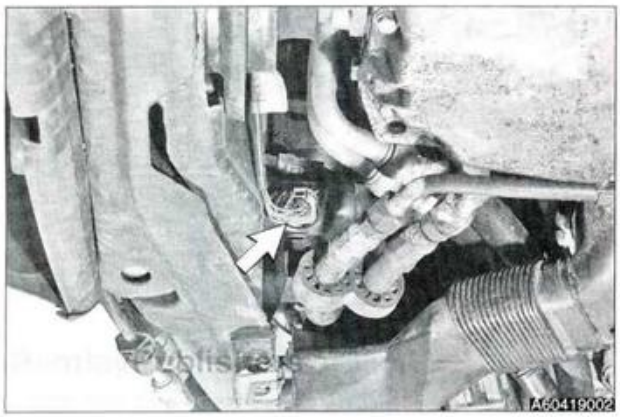
– Remove front bumper and bumper cover. See **63 Bumpers**.

– Drain coolant. See **Cooling system draining, filling and bleeding** in this repair group.

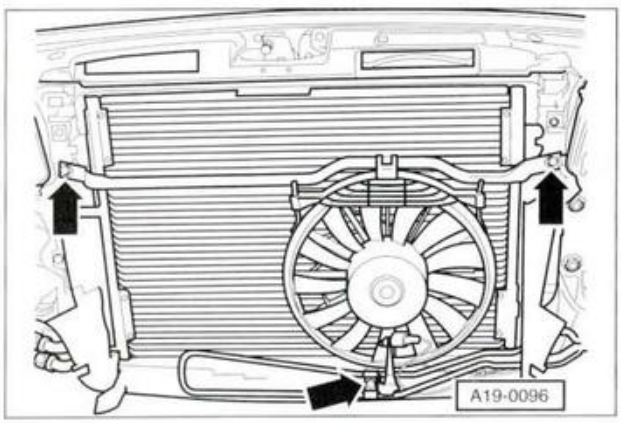
> ***WARNING —***
> - *To avoid personal injury, be sure the engine is cold before opening the cooling system.*




➤ Loosen hose clamps (**arrow**) and detach upper and lower hoses from radiator.



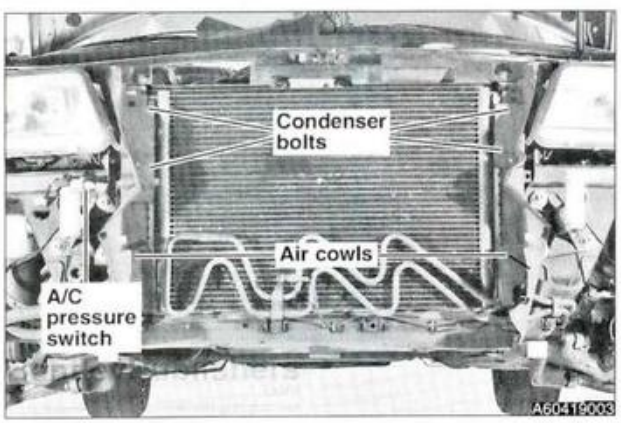

➤ Disconnect electric cooling fan switch connector (**arrow**) at bottom right of radiator.




➤ Working in front of radiator:

- Remove electric cooling fan mounting fasteners (**upper arrows**), if applicable.
- Detach power steering fluid cooler mounting screw (**lower arrow**).
- Use stiff wire to suspend these components in front of engine compartment.

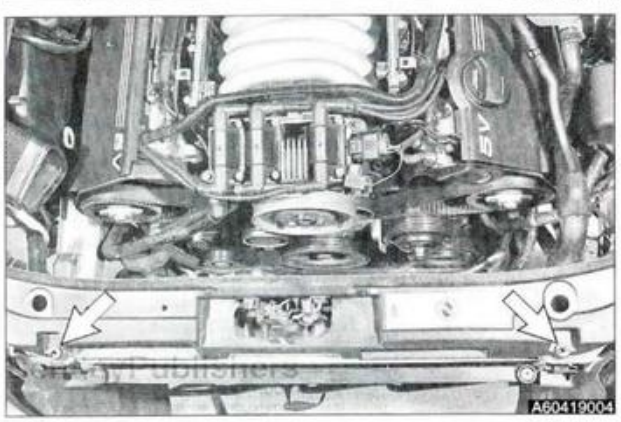
> ***CAUTION—***
> *• Do not kink steering fluid line.*
> *• Do not disconnect steering fluid line.*




➤ Working at A/C condenser:

- Detach air cowls from radiator on left and right sides.
- Remove condenser securing bolts (hidden by cowl in photo)
- Disconnect A/C pressure switch connector.
- Lift condenser out of bracket, turn sideways and secure with stiff wire.

> ***CAUTION—***
> *• Do not kink or stretch A/C refrigerant lines.*
> *• Do not disconnect refrigerant lines.*




➤ Use small screwdriver tip to release two radiator retaining pins (**arrows**).

– Tip radiator forward and out.

– Installation is reverse of removal.

| **Tightening torques** | |
|---|---|
| A/C condenser to radiator | 10 Nm (7 ft-lb) |
| Electric cooling fan to radiator | 10 Nm (7 ft-lb) |
| Power steering cooling line to radiator | 10 Nm (7 ft-lb) |

– After completing assembly, fill cooling system and bleed. See **Cooling system draining, filling and bleeding** in this repair group.

## Coolant pump, removing and installing

This procedure applies to engines with camshaft timing belt. The timing belt drives the coolant pump. When replacing the pump, mark both accessory belt and timing belt with direction of rotation before removal for correct reinstallation.

***CAUTION—***
*• Do not allow coolant to contaminate belts.*

– Raise car and support safely. Remove front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. See **50 Body–Front**.

***WARNING—***
*• Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove viscous fan and accessory belt. See **03 Maintenance**.

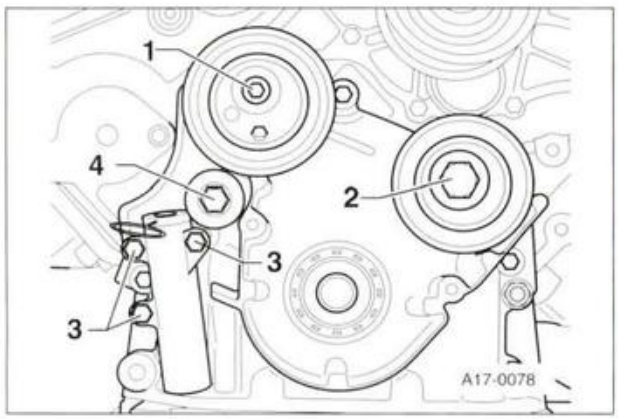
***NOTE—***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Remove timing belt. See **13 Timing Belt, Crankshaft Pulley, Rear Main Seal**.

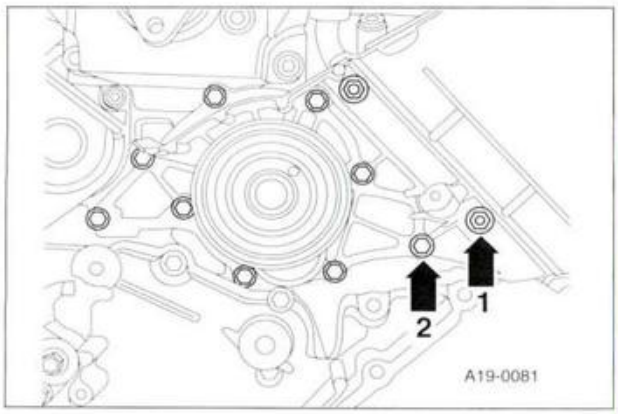
***NOTE—***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Drain coolant. See **Cooling system draining, filling and bleeding** in this repair group.

***WARNING—***
*• To avoid personal injury, be sure the engine is cold before opening the cooling system.*




➤ Working at front of engine, remove timing belt tensioner (**1**) and idler pulley (**2**).




➤ Working at coolant pump:
- Remove timing belt guard mounting nuts (**1**) (2 nuts).
- Remove coolant pump mounting bolts (**2**) (9 bolts).
- Remove coolant pump.

– Prior to installing new pump, clean gasket and sealant residue off sealing surface of engine block.

– Installation is reverse of removal. Use new coolant pump gasket.

| **Tightening torques** | |
|---|---|
| Timing belt guard to coolant pump | 10 Nm (7 ft-lb) |
| Timing belt idler to engine block | 40 Nm (28 ft-lb) |
| Timing belt tensioner to engine block | 20 Nm (14 ft-lb) |

## Coolant thermostat, removing and installing

Mark both accessory belt and timing belt with direction of rotation before removal for correct reinstallation.

***CAUTION—***
*• Do not allow coolant to contaminate belts.*

– Raise car and support safely.

***WARNING—***
*• Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. See **50 Body–Front**.

– Remove viscous fan and accessory belt. See **03 Maintenance**.

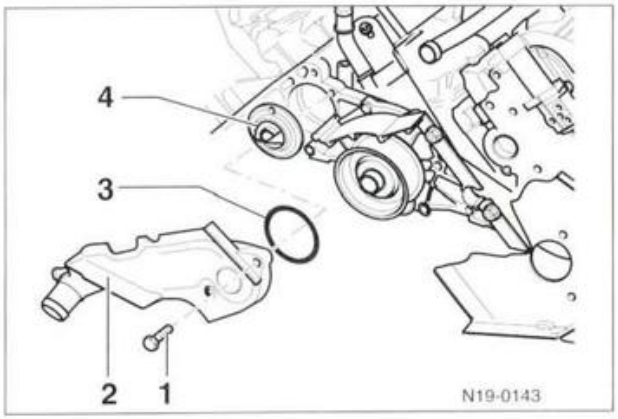
***NOTE—***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Remove timing belt. See **13 Timing Belt, Crankshaft Pulley, Rear Main Seal**.

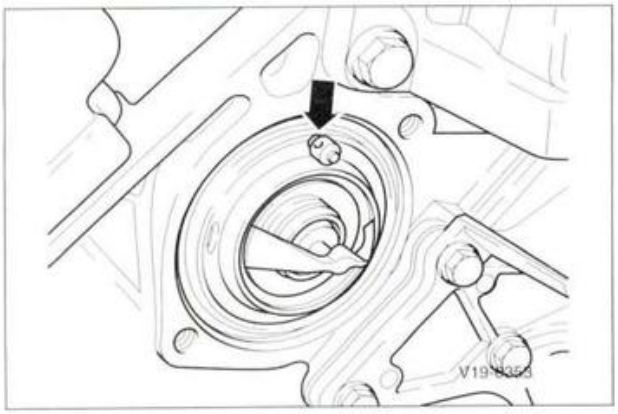
***NOTE—***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Drain coolant. See **Cooling system draining, filling and bleeding** in this repair group.

***WARNING—***
*• To avoid personal injury, be sure the engine is cold before opening the cooling system.*




➤ Remove thermostat cover mounting bolts (**1**) and remove thermostat (**4**).




➤ Installation is reverse of removal. Make sure of the following:
- Lubricate new thermostat sealing O-ring with coolant.
- Install thermostat with bleeder valve (**arrow**) at top.

| **Tightening torque** | |
|---|---|
| Thermostat cover to engine block | 10 Nm (7 ft-lb) |

– After completing assembly, fill cooling system and bleed. See **Cooling system draining, filling and bleeding** in this repair group.

## Coolant thermostat, removing and installing

Mark both accessory belt and timing belt with direction of rotation before removal for correct reinstallation.

***CAUTION—***
*• Do not allow coolant to contaminate belts.*

– Raise car and support safely.

***WARNING —***
*• Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove front bumper. Place lock carrier (radiator mounting frame in front of engine) in service position. See **50 Body–Front**.

– Remove viscous fan and accessory belt. See **03 Maintenance**.

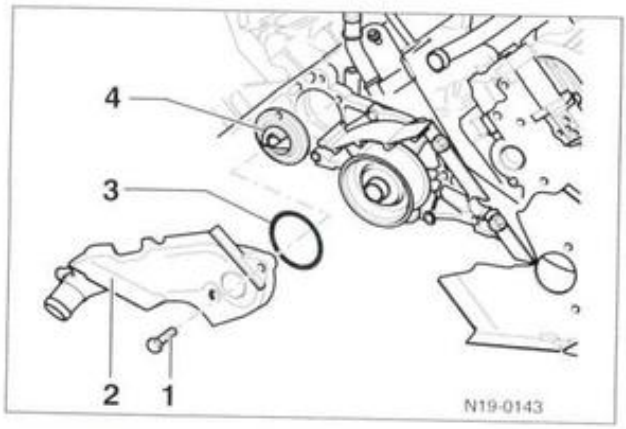
***NOTE —***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Remove timing belt. See **13 Timing Belt, Crankshaft Pulley, Rear Main Seal**.

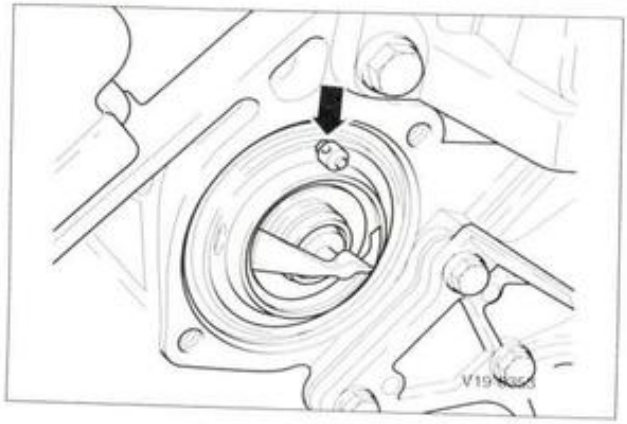
***NOTE —***
*• If belt is to be reused, mark direction of rotation prior to removal.*

– Drain coolant. See **Cooling system draining, filling and bleeding** in this repair group.

***WARNING —***
*• To avoid personal injury, be sure the engine is cold before opening the cooling system.*



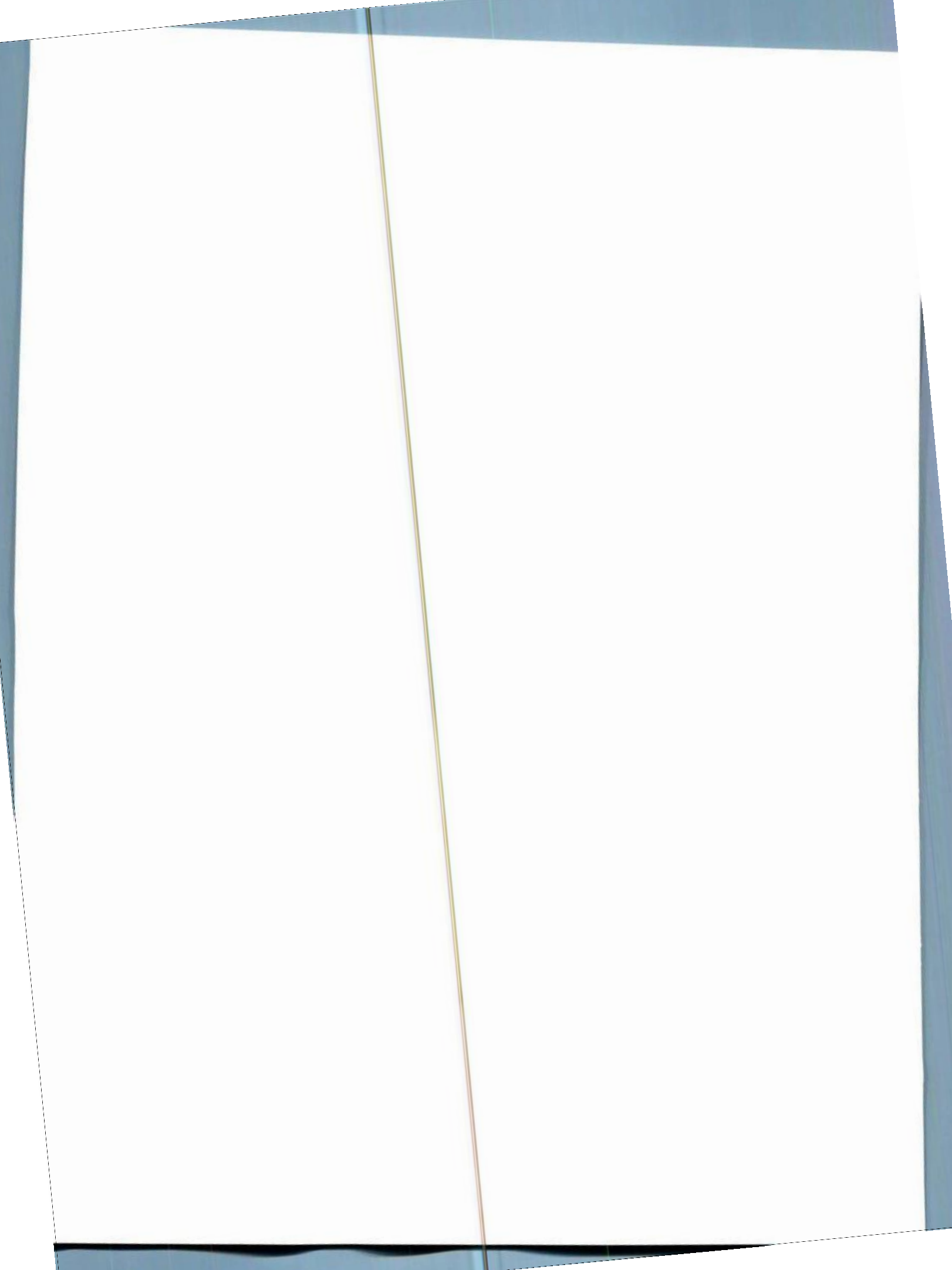

➤ Remove thermostat cover mounting bolts (**1**) and remove thermostat (**4**).



➤ Installation is reverse of removal. Make sure of the following:
- Lubricate new thermostat sealing O-ring with coolant.
- Install thermostat with bleeder valve (**arrow**) at top.

| Tightening torque | |
|---|---|
| Thermostat cover to engine block | 10 Nm (7 ft-lb) |

– After completing assembly, fill cooling system and bleed. See **Cooling system draining, filling and bleeding** in this repair group.



# 20 Fuel Storage and Supply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## GENERAL

This repair group covers repair information for the fuel pump and related fuel storage and supply components.

For additional information, see:

- **03 Maintenance** for fuel filter replacement
- **24 Fuel Injection**
- **OBD On-Board Diagnostics**

### Fuel tank capacity

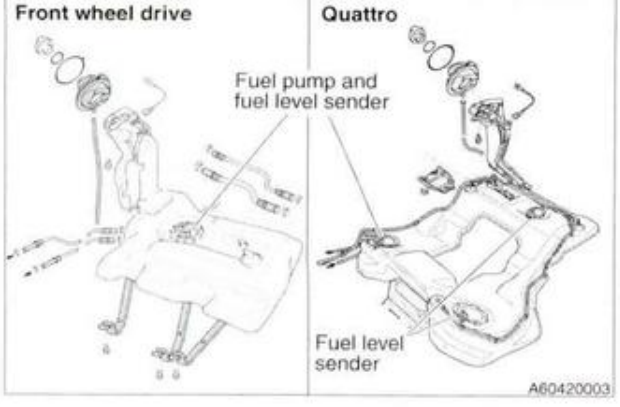
Audi A6 models vary in body style and running gear. This affects fuel tank capacity. The accompanying table gives approximate fuel capacity figures for most models.

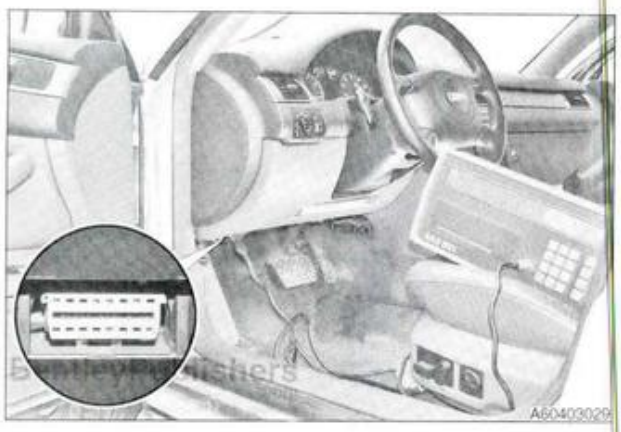
| Fuel tank capacity | |
|---|---|
| V6 engine, allroad quattro | 18.5 US gal (70 liters) |
| V8 engine (*not* allroad quattro) | 21.6 US gal (82 liters) |

### Fuel pump and fuel level sender(s)

**Front-wheel drive model**. Fuel pump and fuel level sender are combined in one unit in fuel tank.

**Quattro model**. There are three fuel level senders. Right fuel level sender and fuel pump are combined in one unit in fuel tank.






## On-Board Diagnostics

The fuel supply system is an integral part of the operation of the fuel injection system. Problems such as a no-start condition, hesitation, or stalling may be due to poor fuel delivery. The fuel pump itself is not directly monitored by on-board diagnostics, but the fuel pump relay is monitored.

In case of poor fuel delivery, the fuel injection system's attempt to adjust for the resultant lean running condition may exceed the system's ability to compensate. This stores diagnostic trouble codes (DTCs) in the engine control module (ECM) memory.

➤ Investigate suspected fuel pump problems with Volkswagen scan tool or equivalent plugged into to DLC plug (**inset**) under left side dashboard. See **OBD On-Board Diagnostics** for more information.

## Warnings and Cautions

Read the following warnings and cautions before starting work on your fuel system.

***WARNING —***

- *Disconnect negative (-) battery cable and cover terminal with insulated material when working on fuel related components.*
- *Gasoline is dangerous to your health. Wear suitable hand, skin and eye protection when working on fuel system. Do not breathe fuel vapors. Work in a well-ventilated area.*
- *Fuel and fuel vapors may leak during many operations described in this repair group. Do not smoke or create sparks. Be aware of pilot lights in gas operated equipment (heating systems, water heaters, etc.). Have an approved fire extinguisher handy.*
- *The fuel system is designed to maintain pressure in the system after the engine is turned off. Fuel is expelled under pressure when fuel lines are disconnected. This is a fire hazard, especially if the engine is warm. To prevent fuel from spraying, wrap a clean shop rag around fuel line fitting before loosening or disconnecting it.*
- *Exercise extreme caution when using spray-type cleaners on a warm engine. Observe all manufacturer recommendations.*
- *Prior to working on fuel-related components, unscrew the fuel filler cap to release pressure in the tank.*

***CAUTION—***

- *Cleanliness is essential when working on any part of the fuel system. Thoroughly clean fuel line unions and hose fittings before disconnecting them. Use only clean tools.*
- *Keep removed components clean. Seal or cover them with plastic or paper, especially if repair cannot be completed immediately. Seal open fuel supply and return lines to prevent contamination.*
- *When replacing parts, install only new, clean components. Replace seals and O-rings.*
- *Prior to disconnecting the battery, read the battery disconnection cautions in* **00 Warnings and Cautions**.
- *Before making any electrical tests with the ignition turned ON, disable the ignition system. Be sure the battery is disconnected when replacing components.*
- *To prevent damage to the ignition system or other DME components, including the engine control module (ECM), always connect and disconnect wires and test equipment with the ignition OFF.*
- *Only use digital multimeter for electrical tests.*

***NOTE—***

- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*

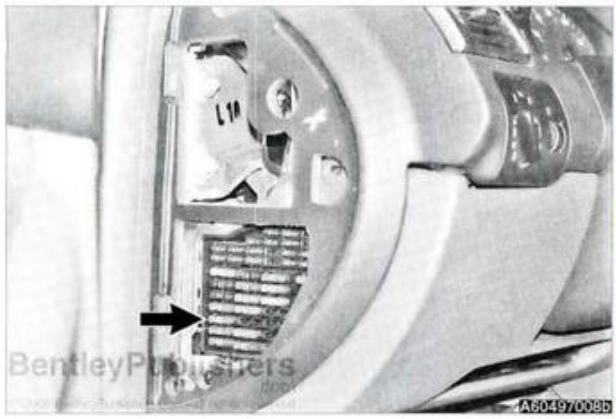
## Fuel Delivery Tests

The fuel pump delivers fuel at high pressure to the fuel injection system. During starting, the fuel pump runs as long as the ignition switch is in the START position and continues to run once the engine starts. If an electrical system fault interrupts power to the fuel pump, the engine does not run.

Checking fuel delivery is a fundamental part of troubleshooting and diagnosing the DME system. Fuel pressure directly influences fuel delivery. An accurate fuel pressure gauge is needed to make the tests.

There are three significant fuel delivery values to be measured:

- **Fuel delivery volume**—created by the fuel pump and affected by restrictions, such as clogged fuel filter.
- **Fuel pressure**—created by the fuel pump and maintained by the pressure regulator.
- **Residual pressure**—the pressure maintained in the closed system after the engine and fuel pump are shut off.

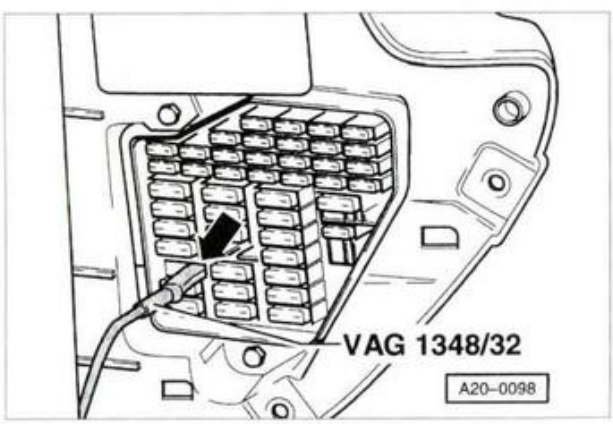



## Fuel pump power supply

The fuel pump is powered by fuse 28 (**arrow**) in fuse panel at left end of dashboard.

| Fuel pump fuse ratings | |
|---|---|
| 1998 - 2000 fuel pump | 15 A |
| 2001 - 2004 fuel pump | 20 A |

The fuel pump relay (**arrow**) is on micro central electric panel, under left side dashboard. See **97 Fuses, Relays, Component Locations** for additional information.




## Fuel pump, electrical testing

– Make sure battery has at least 12 volts charge.

– Visually check fuel pump fuse and relay. See **Fuel pump power supply** in this repair group.

Remove fuse 28 (**arrow**). Connect VAG1348/3A remote switch and VAG1348/32 adapter cable to opening for fuse 28. Connect other end of adapter to battery.

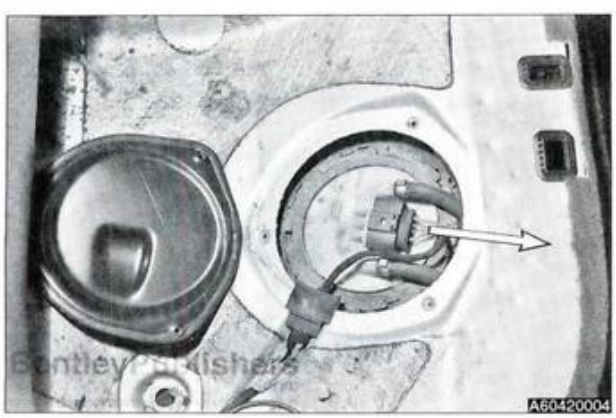
- Listen carefully for fuel pump to start running. If necessary, lift up rear seat bottom to hear fuel pump.

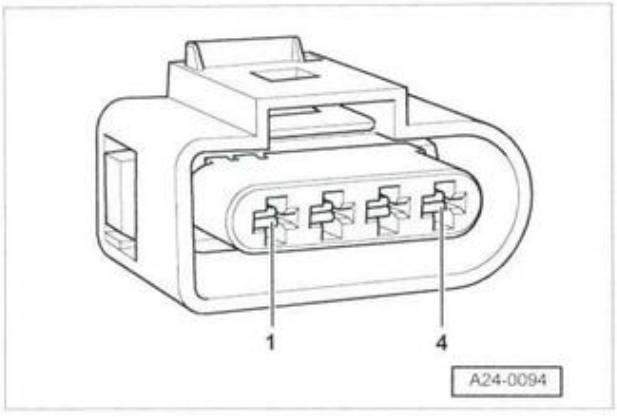
– Alternatively, crank engine and listen carefully for fuel pump to start running.

- Fuel pump runs quietly. If necessary, lift up rear seat bottom to hear fuel pump.

– If fuel pump does not run, remove rear seat bottom, see **72 Seats**.

Remove fuel pump cover. Pull off (**arrow**) fuel pump electrical connector.






➤ Connect digital multimeter across terminals **1** and **4** of harness connector.

– Crank engine and check voltage at fuel pump connector. If battery voltage (12 volts) is not present, locate and repair open circuit in wiring. See **EWD Electrical Wiring Diagrams**.

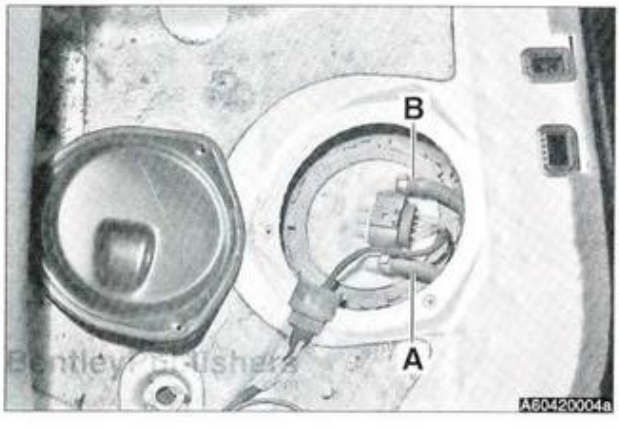
– If battery voltage is present, fuel pump power supply is OK. To continue, testing, see **Fuel pump wiring (in tank), checking** in this repair group.

## Relieving system fuel pressure

The fuel system retains fuel pressure in the system when the engine is OFF. To prevent fuel from spraying on a hot engine, relieve system fuel pressure before disconnecting fuel lines. One method is to tightly wrap a shop towel around fuel line fitting and loosen or disconnect the fitting.

## Fuel pump wiring (in tank), checking

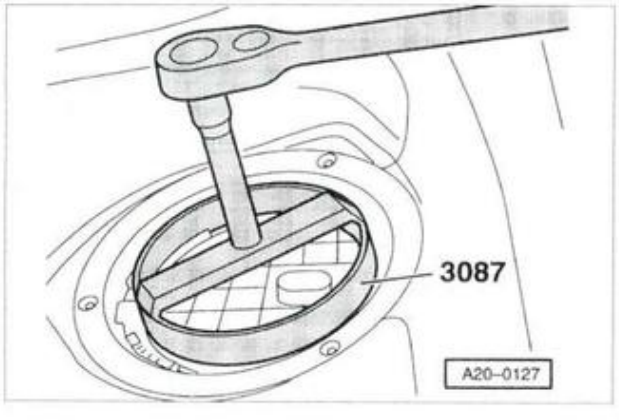
– Loosen fuel tank filler cap.




➤ Remove fuel pump cover. Mark fuel supply (**A**) and return (**B**) lines.

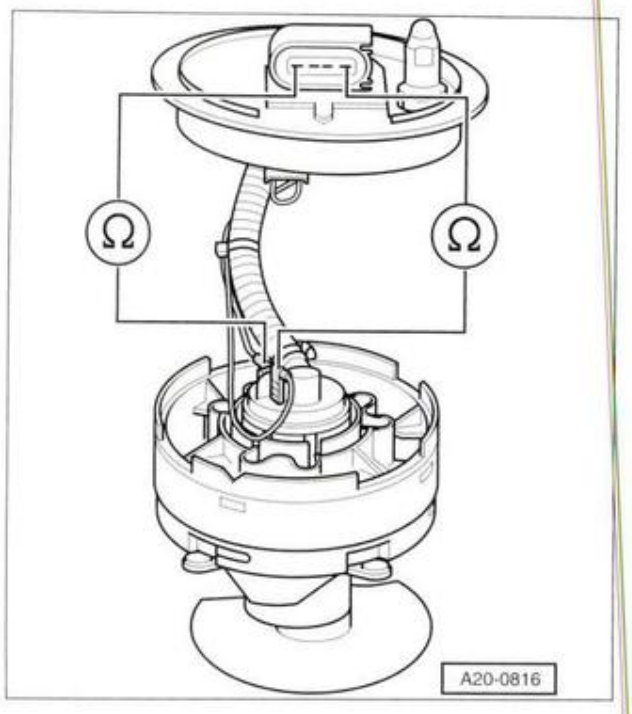
– Loosen or cut hose clamps and detach fuel lines from pump assembly.

> ***WARNING*** —
> • *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*




➤ Use special tool VAG 3217 (front-wheel drive model) or VAG 3087 (quattro model) to loosen and remove fuel tank plastic collar.

> ***WARNING*** —
> • *Open fuel tank cap only if the tank is below ¼ full. Otherwise large quantities of fuel escape.*




➤ Pull up fuel pump assembly flange *and make* sure electrical connections between flange and fuel pump are intact.

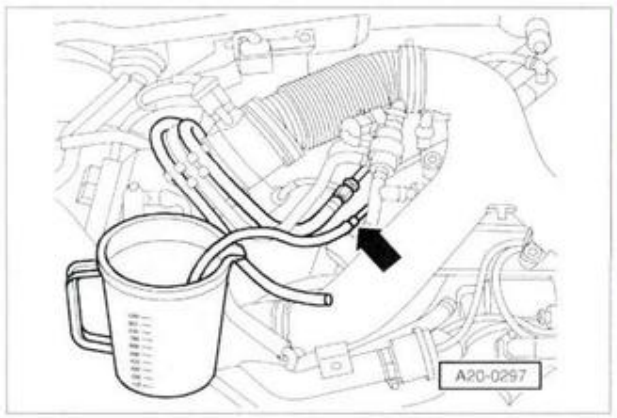
– Reattach fuel lines using new hose clamps.

## Fuel delivery volume, checking

– Make sure battery has at least 12 volts charge and fuel tank is at least ¼ full. Make sure fuel filter is not plugged. Fuel filter replacement is covered in **03 Maintenance**.

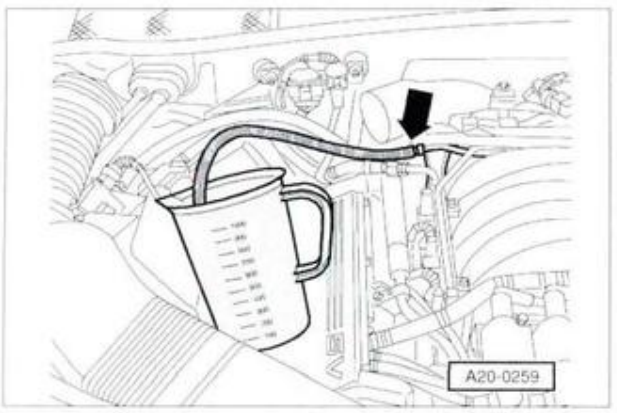
– Loosen fuel tank filler cap.

– Remove upper engine cover. See **03 Maintenance**.



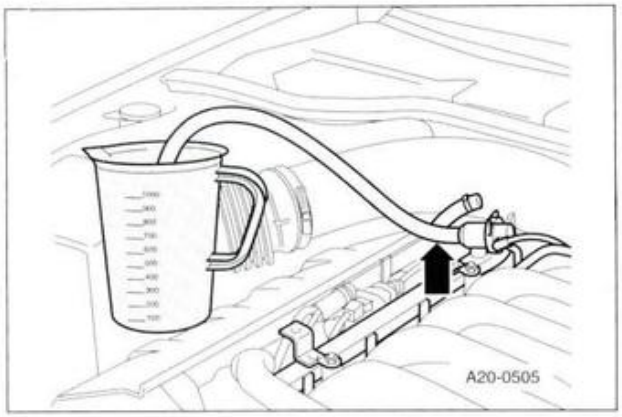

➤ 2.7 liter V6 turbo engine: Disconnect fuel return line from fuel rail. Connect test hose (**arrow**) and hold end of hose in measuring container.

> ***WARNING —***
> • *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*



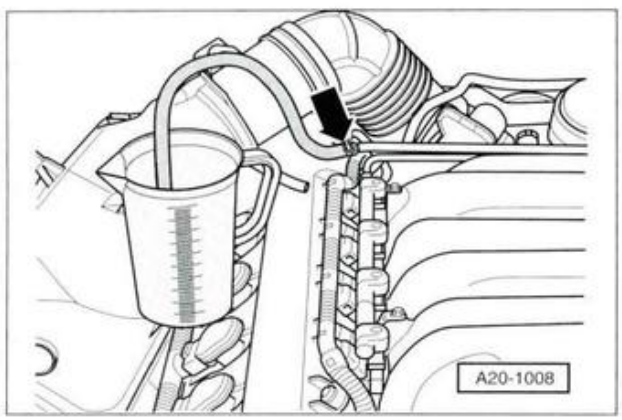

➤ 2.8 liter V6 engine: Disconnect fuel return line from fuel rail. Connect test hose (**arrow**) and hold end of hose in measuring container.

> ***WARNING —***
> • *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*



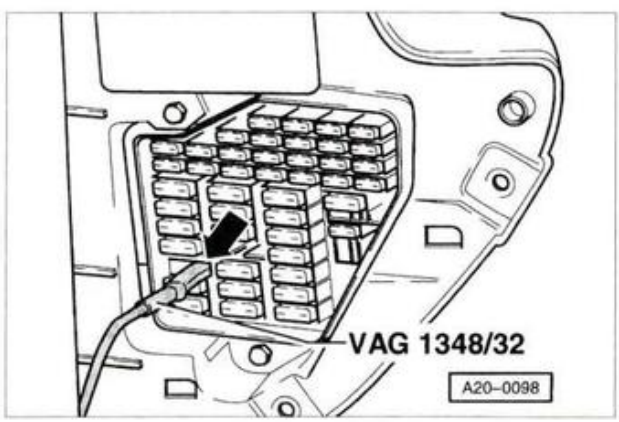

➤ V8 engine with timing belt: Disconnect fuel return line from fuel rail. Connect test hose (**arrow**) and hold end of hose in measuring container.

***WARNING*** —
- *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*



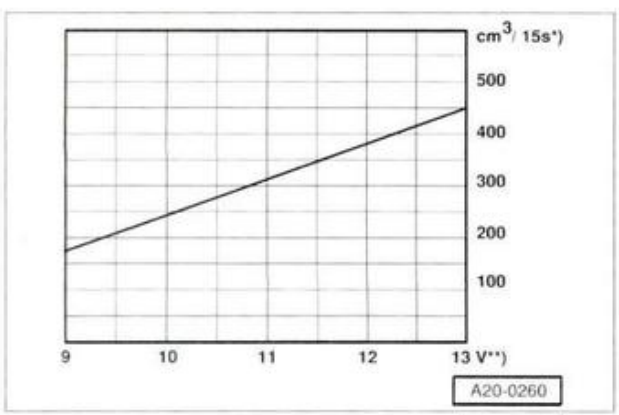

➤ V8 engine with non-return fuel loop: Disconnect fuel return line from fuel rail. Connect test hose (**arrow**) and hold end of hose in measuring container.

***WARNING*** —
- *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*




➤ Remove fuse 28 (**arrow**). Connect VAG1348/3A remote switch and VAG1348/32 adapter cable to opening for fuse 28. Connect other end of adapter to battery. Operate fuel pump in this manner for 15 seconds.

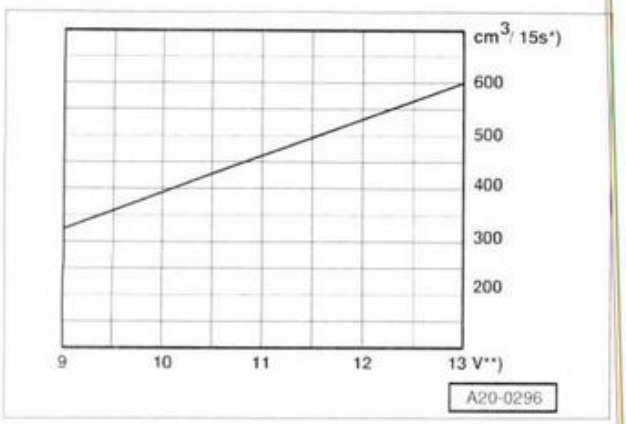
– Compare quantity of fuel delivered with correct quantity indicated in graphs below.




➤ 2.8 liter V6 engine: Fuel delivery plotted vs. battery voltage.
- Minimum delivery in milliliters / 15 seconds.
- Engine stationery during test.

| **Fuel delivery volume (battery @ 12 volts)** | |
|---|---|
| 2.8 liter V6 engine | approx. 375 ml (13 oz) / 15 sec |

*Fuel Delivery Tests*




➤ 2.7 liter V6 engine, V8 engine: Fuel delivery plotted vs. battery voltage.

- Minimum delivery in milliliters / 15 seconds.
- Engine stationery during test.

| Fuel delivery volume (battery @ 12 volts) | |
|---|---|
| 2.7 liter, 3.0 liter, V8 engine | approx. 525 ml (18 oz) / 15 sec |

– If fuel delivery volume is below specifications:

- Check for fuel line obstructions.
- Replace fuel pump.

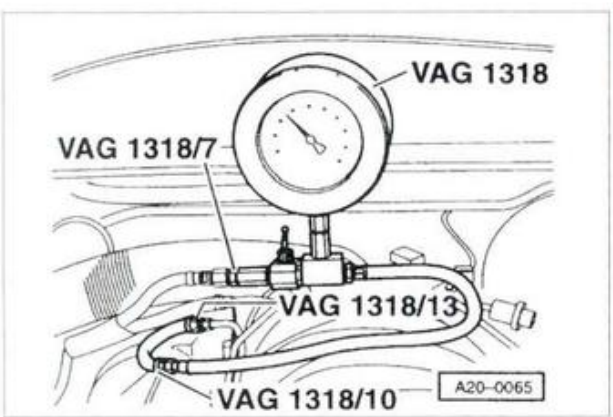
## Fuel pressure, checking

– Make sure battery has at least 12 volts charge and fuel tank is at least ¼ full. Make sure fuel filter is not plugged. Fuel filter replacement is covered in **03 Maintenance**.

– Loosen fuel tank filler cap.

– Remove upper engine cover. See **03 Maintenance**.

– Make sure fuel delivery volume is correct. See **Fuel delivery volume, checking** in this repair group.




➤ Connect fuel pressure tester (VAG 1318 or equivalent) between fuel supply line and fuel rail using adapters 1318/7, 1318/10 and 1318/13.

- Make sure VAG 1318 shut off valve is between fuel supply line and gauge.

***WARNING —***

- *Fuel will be expelled under pressure. Wrap a cloth around fuel line to absorb any leaking fuel.*

– Open pressure tester shut-off valve (lever parallel to direction of flow).

– Detach and plug vacuum line from fuel pressure regulator to intake manifold.

***CAUTION—***

- *During the following test, do not let the engine run unnecessarily with the vacuum hose removed, since the higher fuel pressure causes enrichment of the fuel air mixture. The richer mixture could exceed the oxygen sensor control limits and set a DTC.*

– Switch off electrical consumers (rear defrost, A/C, etc.).

– Start engine and allow it to idle. Measure fuel pressure.

***NOTE —***

- *If, during the pressure test, fuel leaks from the fuel pressure regulator vacuum connection, replace the regulator.*

| Fuel pressure specifications | |
|---|---|
| 2.7 liter biturbo V6, all V8 idling:<br>• Fuel pressure regulator vacuum line connected<br>• Fuel pressure regulator vacuum line disconnected | <br>approx. 3.5 bar (51 psi)<br>approx. 4.0 bar (58 psi) |
| 2.8 liter or 3.0 liter V6 idling:<br>• Fuel pressure regulator vacuum line connected<br>• Fuel pressure regulator vacuum line disconnected | <br>approx. 3.2 - 3.8 bar (46 - 55 psi)<br>approx. 3.8 - 4.2 bar (55 - 61 psi) |

– If specified value is not obtained, replace fuel pressure regulator and repeat pressure test.

– If specified value is still not attained, check the following and replace if necessary:
  • Fuel pump strainer in fuel tank
  • Fuel pump
  • Fuel filter
  • Fuel supply lines (check for damage or kinking)

– If specified value is exceeded, check return line for damage or kinking; replace if necessary.

– Reattach vacuum hose to fuel pressure regulator and check for fuel pressure drop when vacuum is applied.
  • Check that fuel pressure drops by about 0.5 bar (7 psi).

– If pressure does not change, proceed as follows:
  • Check vacuum line for leaks, cracks or damage.
  • Check vacuum line for obstruction; remove hose at fuel pressure regulator and blow into it.
  • If there is no leak and vacuum connection has no obstruction, replace fuel pressure regulator.

## Residual pressure, checking

– After fuel pressure test is finished, leave pressure gauge attached.

– Check residual pressure 10 minutes after shutting off engine.

| Residual pressure specifications | |
|---|---|
| Warm engine | approx. 3.0 bar (44 psi) |
| Cold engine<br>• 2.7 liter biturbo V6, all V8<br>• 2.8 liter or 3.0 liter V6 | <br>approx. 2.5 bar (36 psi)<br>approx. 2.2 bar (32 psi) |

***NOTE***—

*• The higher pressure with a warm engine, caused by fuel expansion, is normal.*

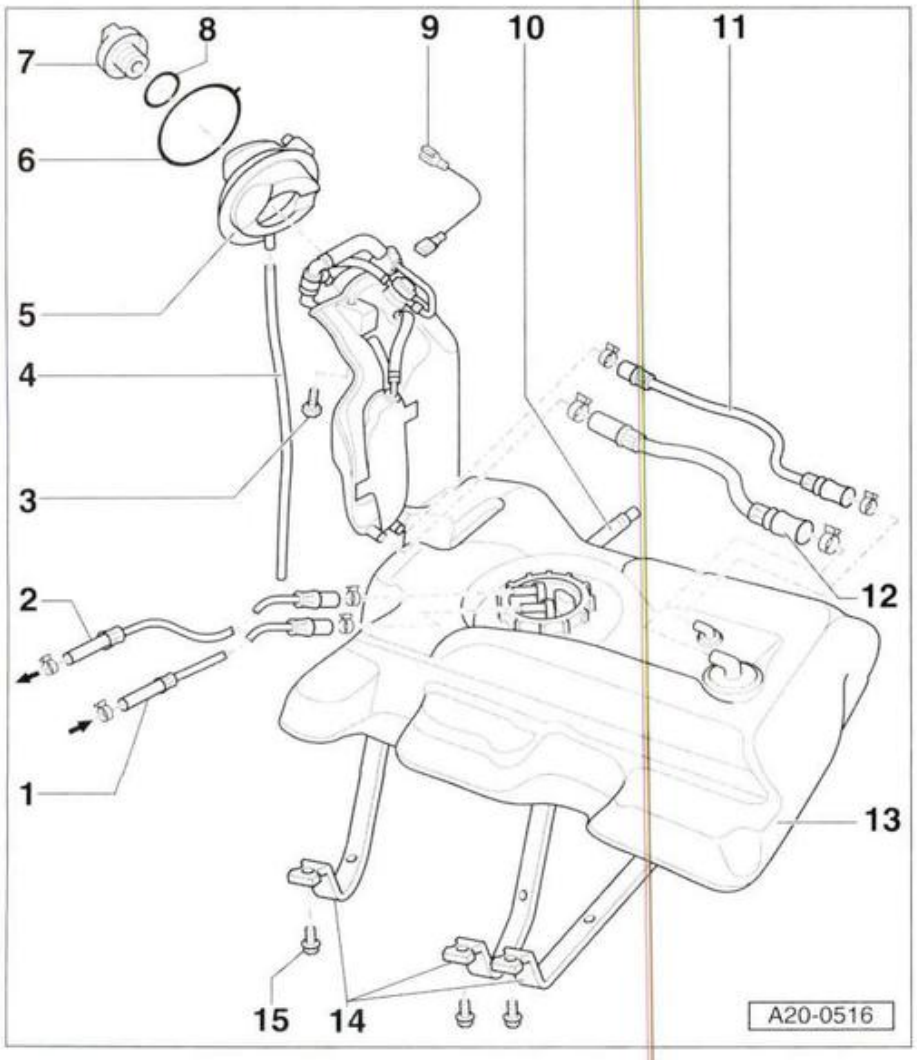
– If specified value is not attained:
  • Start engine and, after fuel pressure stabilizes, switch ignition OFF.
  • Close shut-off valve on VAG 1318 pressure tester.

– If residual pressure does not drop, check for the following:
  • Leak at connection between pressure gauge and fuel lines
  • Leak at fuel reservoir line
  • Fuel pump malfunctioning

– If the residual pressure drops excessively, check for the following:
  • Fuel pressure regulator malfunction
  • Injectors leaking
  • Pressure gauge leaking behind shut-off valve

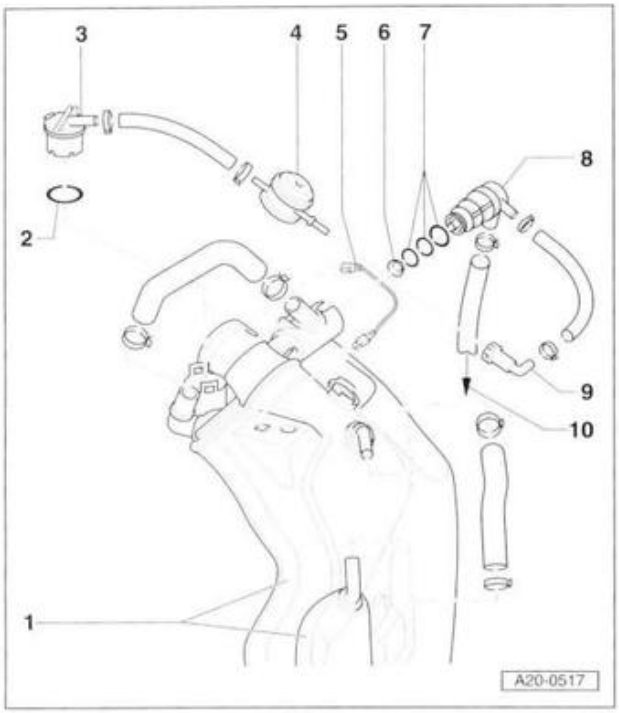
– To remove pressure gauge, close shut-off valve, loosen VAG 1318/7 adapter and drain excess fuel by opening shut-off valve into fuel-resistant container.

## Fuel System Components



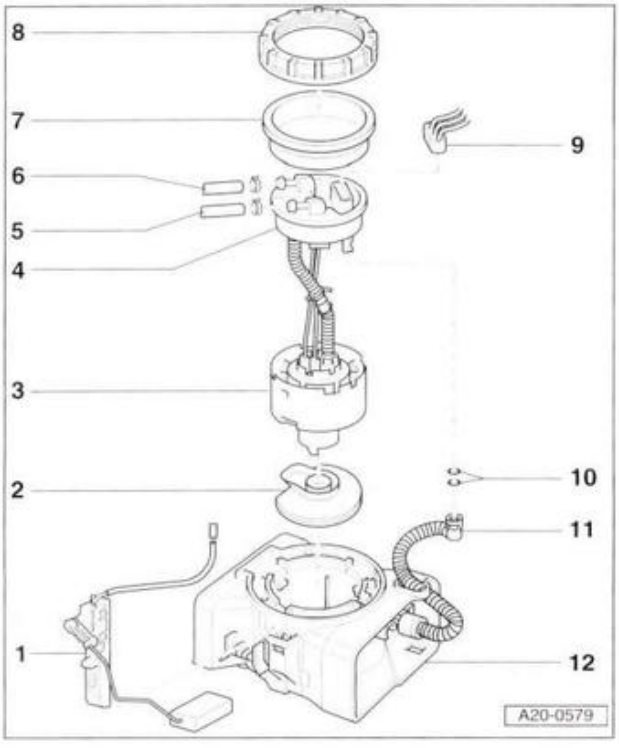

### Fuel tank components (front-wheel drive)

1. **Fuel return line**
2. **Fuel supply line**
3. **M8 x 35 mm bolt with washer**
   • Secures fuel tank filler neck and ground wire
4. **Overflow hose**
5. **Rubber cup**
6. **Retaining ring**
7. **Fuel tank filler cap**
8. **Seal**
9. **Filler neck ground wire**
   • Make sure wire end contacts bare metal of body
   • Resistance to ground approx. 0Ω
10. **Vent line**
11. **Vent line**
12. **Vent line**
13. **Fuel tank**
14. **Mounting straps**
15. **M8 x 28 mm bolt with washer**
   • 23 Nm (17 ft-lb)




## Fuel filler neck components (front-wheel drive)

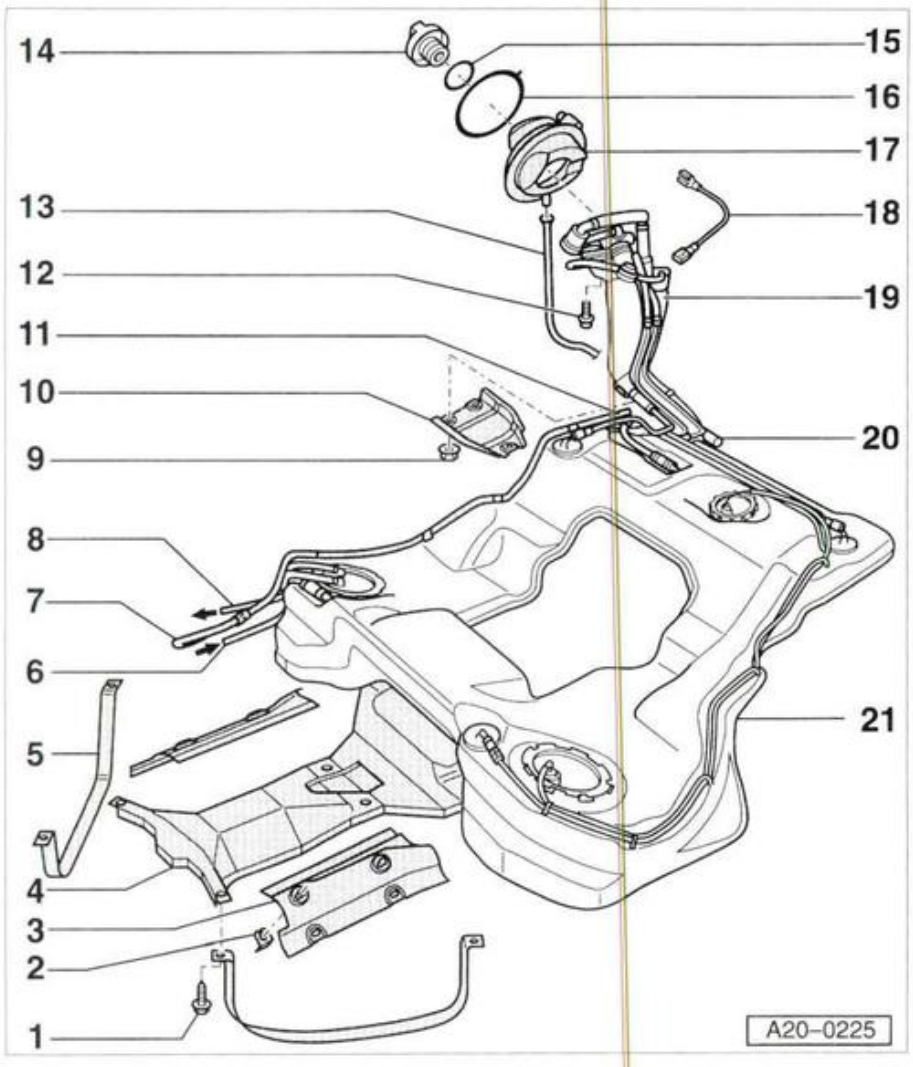
1. Filler neck and expansion tank
2. O-ring
3. Gravity valve
4. Tank protection valve
5. Filler neck ground wire
6. Sealing ring
7. O-ring
8. Vent valve
9. Hose coupling
10. to Fuel tank evaporative canister




## Fuel pump and fuel level sender components (front-wheel drive)

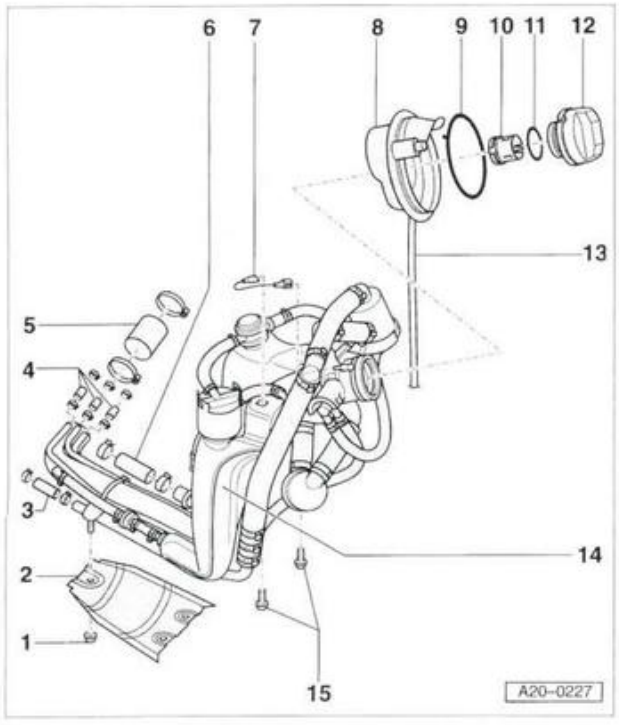
1. Fuel level sender
2. Fuel strainer
3. Fuel pump module
4. Fuel tank flange
5. Fuel return line
6. Fuel supply line
7. Rubber seal
8. Fuel tank flange collar nut
9. Harness connector
10. Sealing O-rings
11. Fuel return line
12. Accumulator housing

*Fuel System Components*



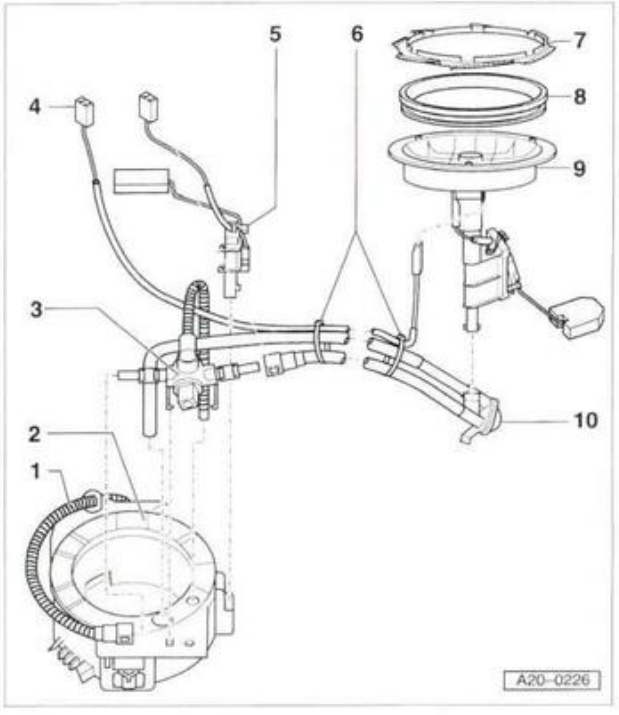

## Fuel tank components (V6 quattro, allroad quattro)

1. **M8 x 28 mm bolt with washer**
   - 23 Nm (17 ft-lb)
2. **Speed nut**
3. **Heat shield**
4. **Support bracket**
5. **Mounting strap**
6. **Fuel return line**
7. **Vent line**
   - to Fuel tank evaporative control canister valve (N80)
   - Remains attached when tank is removed
8. **Fuel supply line**
9. **Nut**
   - 2 Nm (18 in-lb)
10. **Filler neck heat shield**
11. **Vent line**
    - to Fuel tank evaporative control canister
    - Remains attached when tank is removed
12. **M8 x 28 mm bolt with washer**
    - 25 Nm (18 ft-lb)
    - Secures fuel tank filler neck and ground wire
13. **Overflow return hose**
14. **Fuel tank filler cap**
15. **Seal**
16. **Retaining ring**
17. **Rubber cup**
18. **Filler neck ground wire**
    - Make sure wire end contacts bare metal of body
    - Resistance to ground approx. 0Ω
19. **Filler neck and expansion tank**
20. **Vent line**
21. **Fuel tank**




## Fuel filler neck components (V6 quattro, allroad quattro)

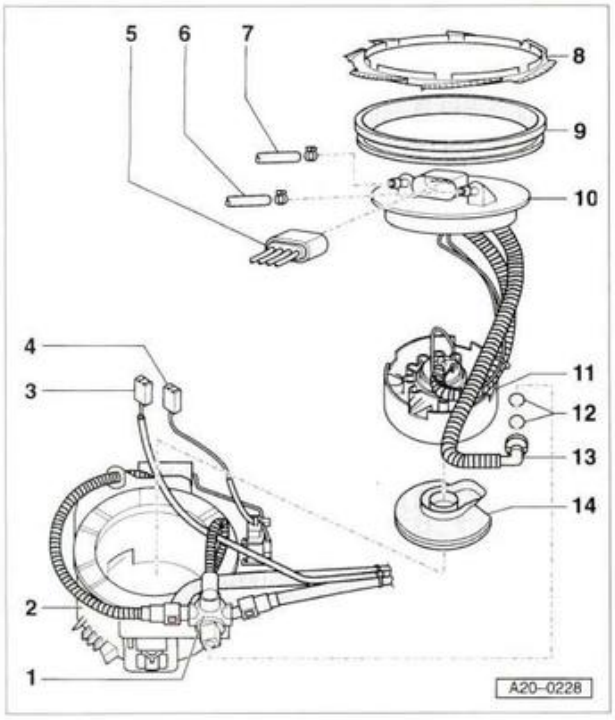
1. Nut, 2 Nm (18 in-lb)
2. Heat shield
3. Hose
4. Hose connections for vent lines
5. Hose connection
6. Hose connection for fuel tank vent
7. Ground connection
8. Rubber cup
9. Retaining ring
10. Seal insert
11. Seal
12. Fuel tank filler cap
13. Overflow return line
14. Filler neck and expansion tank
15. M8 x 30 mm bolt with washer, 23 Nm (17 ft-lb)




## Fuel level sender components (quattro)

1. Fuel supply line to accumulator
2. Accumulator
3. Fuel distributor
   - Attached to accumulator with 3 tabs
   - Push toward left to release
4. Left side fuel level sender wire
5. Right side fuel level sender (G)
   - Attached to accumulator with tabs
6. Wire ties
7. Fuel tank flange collar lock
8. Rubber seal
9. Fuel tank flange and left side fuel level sender (G169)
10. Suction jet pump

*Fuel System Components*




## Fuel pump components (quattro)

1. Fuel distributor
   - Attached to accumulator with 3 tabs
   - Push toward left to release
2. Accumulator
3. Left side fuel level sensor wire
4. Right side fuel level sensor wire
5. Harness connector
6. Fuel return line
7. Fuel supply line
8. Fuel tank flange collar lock
9. Rubber seal
10. Fuel tank flange
11. Fuel pump module (G6)
    - To remove:
      -Release fuel distributor
      -Disconnect return line from distributor
12. Sealing O-rings
13. Fuel return line
14. Fuel strainer

# 21 Turbocharger and Intercooler

GENERAL . . . . . 21-1
Turbocharger system . . . . . 21-1
Turbocharger cooling circuit . . . . . 21-2
Warnings and Cautions . . . . . 21-2

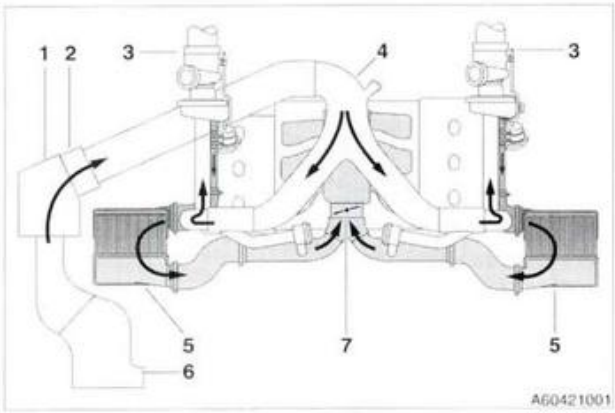


## GENERAL

This repair group provides basic turbocharger and intercooler information.

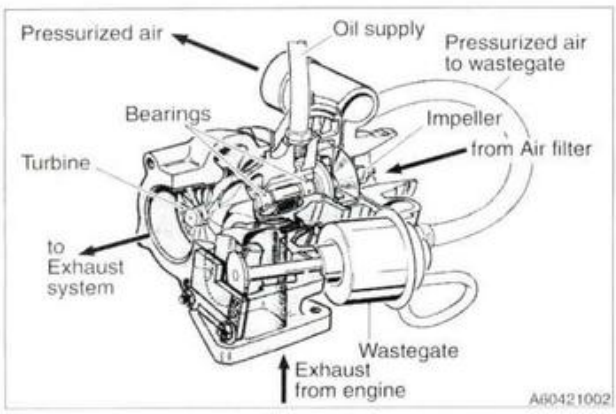
Turbocharger boost pressure is not adjustable and separate parts for the turbocharger are usually not available from Audi.

### Turbocharger system



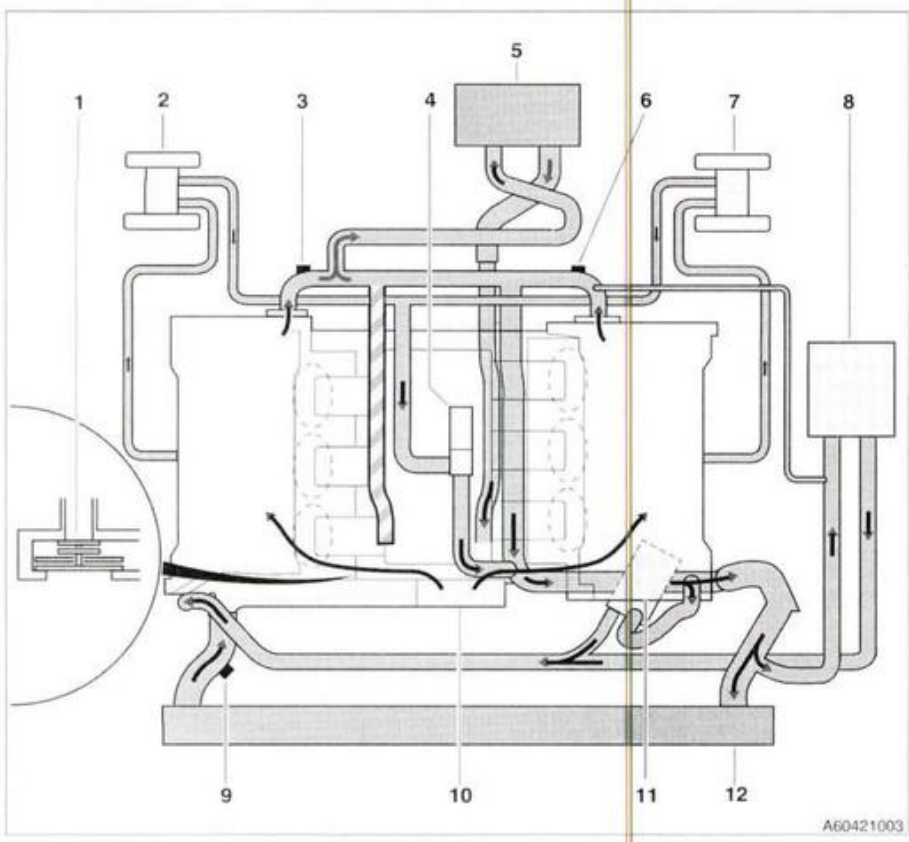

Major components of the turbocharger system in 2.7 liter biturbo V6 engine are as follows:

1. Air filter housing
2. Mass airflow sensor
3. Turbocharger
4. Air distributor
5. Charge air intercooler
6. Fresh air intake
7. Throttle valve control module



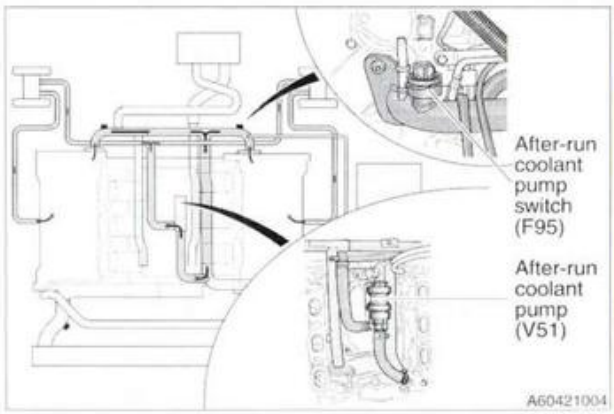

The exhaust-driven turbocharger turbine spins at very high speed and is precisely balanced. The turbine bearings are cooled and lubricated by engine oil with additional cooling supplied by a connection to the engine cooling system.

Turbo boost pressure is controlled by the wastegate bypass regulator valve operated by the engine control module (ECM). When boost pressure exceeds programmed values, the ECM opens the wastegate to bypass some of the exhaust gases around the turbine.




## Turbocharger cooling circuit

1. **Coolant thermostat**
2. **Right turbocharger**
3. **Engine coolant temperature (ECT) sensors (G2, G62)**
4. **After-run coolant pump (V51)**
5. **Heater core**
6. **After-run coolant pump switch (F95)**
7. **Left turbocharger**
8. **Coolant overflow reservoir**
9. **Coolant fan switch (F18, F54)**
10. **Coolant pump**
11. **Engine oil cooler**
12. **Radiator**




The electric after-run coolant pump (V51) keeps coolant from overheating under high thermal load.

The after-run pump is in the engine V-angle. The after-run function is activated only if the engine is not running. It cycles OFF after 10 minutes.

## Warnings and Cautions

***WARNING*** —
- *The turbocharger and related components operate at very high temperature. Prior to working on these components, allow the system to cool thoroughly.*

***CAUTION***—
- *To prevent dust and dirt contamination, cover turbocharger components with dust-free paper or seal them in plastic bags. Do not use cloth material. Avoid nearby use of compressed air.*
- *Do not move the car or work in dusty conditions while the turbocharger is open or removed.*
- *Make sure turbocharger air lines, hoses and connections are free of oil and grease before reinstalling. When reinstalling air connection O-rings, use water as an assembly lubricant.*

# 24 Fuel Injection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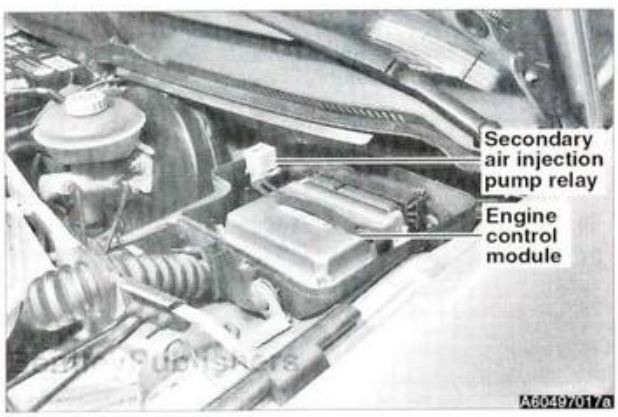



## GENERAL

This repair group covers basic engine management information.

See also the following:

- **03 Maintenance** for engine air filter and fuel filter replacement
- **20 Fuel Storage and Supply** for fuel pressure and delivery tests
- **26 Exhaust System for** oxygen sensor and secondary air injection information
- **28 Ignition** for ignition system repairs
- **OBD On-Board Diagnostics** for information on OBD II system and diagnostic trouble codes (DTCs)

### Engine management systems

The Motronic (or DME) engine management system uses an electronic engine control module (ECM) to control fuel injection and ignition functions. Audi A6 models are equipped with versions of the Motronic system.

*General*

**Bosch Motronic M5.9.2** is used in 1998 - 1999 A6 models with 2.8 liter V6 engine. The main features of the M5.9.2 system are:

- Cylinder sequential fuel injection (separate fuel mixture control for each cylinder)
- Electronically mapped ignition system
- Adaptive heated oxygen sensor control, two sensors per catalytic converter (4 in all)
- Camshaft sensors and variable exhaust camshaft timing
- Hot film mass air flow sensor with integral intake air temperature sensing
- Idle air control
- Adaptive fuel metering
- Adaptive throttle position sensor
- Adaptive ignition knock control
- Check Engine light (malfunction indicator light or MIL) for emissions related and catalytic converter damaging faults
- Secondary air injection
- Evaporative emissions control (EVAP) with fuel tank leak detection
- On-board diagnostics

**Bosch Motronic ME 7.1** is used in 1999 and later V8 models and 2000 and later V6 models. The major differences between Bosch ME 7.1 and Bosch M5.9.2 are:

- Electronic throttle control (EPC)
- Individual ignition coils at each cylinder (direct ignition)
- Turbocharger control (if equipped)
- Integrated cruise control
- A/C compressor control
- Control module communication using CAN-bus

**Bosch Motronic ME 7.1.1** is an upgrade over the older system.

Engine management systems and major features are summarized in **Table a**. ME 7.1 is shown schematically in **Bosch Motronic 7.1 sensors and actuators (2.7 liter turbo V6 engine)**

**Table a. Engine management system (Motronic) applications**

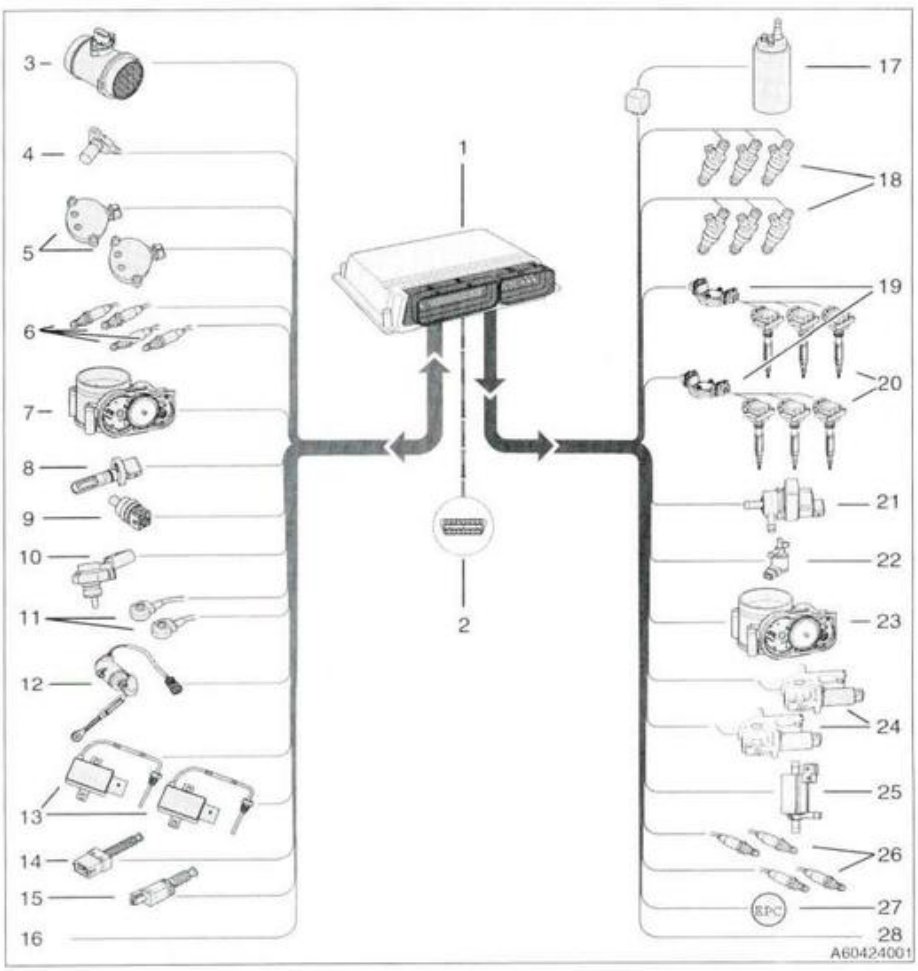
| Engine | Code | Year, model | Motronic version | Emissions category | Intake manifold tuning | Variable camshaft timing | Secondary air injection | Electronic throttle control (EPC) |
|---|---|---|---|---|---|---|---|---|
| 2.7 liter V6 biturbo | APB | 2000 - 2003 A6, allroad quattro | Motronic ME 7.1 | TLEV | Yes | Exhaust | Yes | Yes |
| | BEL | 2003 - 2004 A6, allroad quattro | Motronic ME 7.1 | LEV | Yes | Exhaust | Yes | Yes |
| 2.8 liter V6 | AHA | 1998 - 1999 A6 | Motronic M5.9.2 | TLEV | Yes | Exhaust | Yes | No |
| | ATQ | 2000 - 2002 A6 | Motronic ME 7.1 | LEV | Yes | Exhaust | Yes | Yes |
| 3.0 liter V6 | AVK | 2002 - 2004 A6 | Motronic ME 7.1.1 | ULEV | Yes | Intake Exhaust | Yes | Yes |

**Table a. Engine management system (Motronic) applications**

| Engine | Code | Year, model | Motronic version | Emissions category | Intake manifold tuning | Variable camshaft timing | Secondary air injection | Electronic throttle control (EPC) |
|---|---|---|---|---|---|---|---|---|
| 4.2 liter V8 | ART, AWN, BBD | 1999 - 2004 A6, S6 | Motronic ME 7.1 | LEV or TLEV | Yes | Yes | Yes | Yes |
| 4.2 liter V8 | BAS | 2003 - 2004 allroad quattro | Motronic ME 7.1.1 | LEV | Yes | Yes | Yes | Yes |
| 4.2 liter V8 biturbo | BCY | 2003 - 2004 RS6 | Motronic ME 7.1.1 | TLEV | No | Yes | Yes | Yes |

***NOTE*—**

- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*
- *Electronic throttle control (EPC) is also referred to as E-gas.*

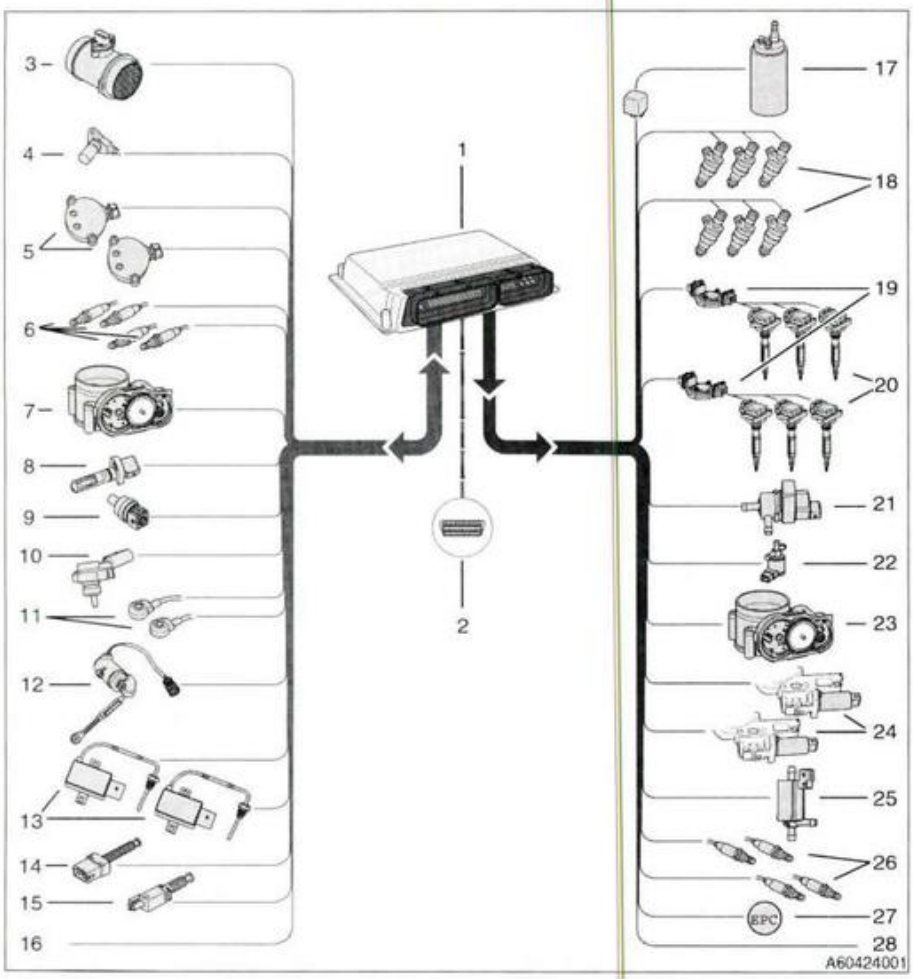



## Bosch Motronic 7.1 sensors and actuators (2.7 liter turbo V6 engine)

1. Engine control module (ECM)(J220)
2. DLC (OBD II) plug

### Sensors

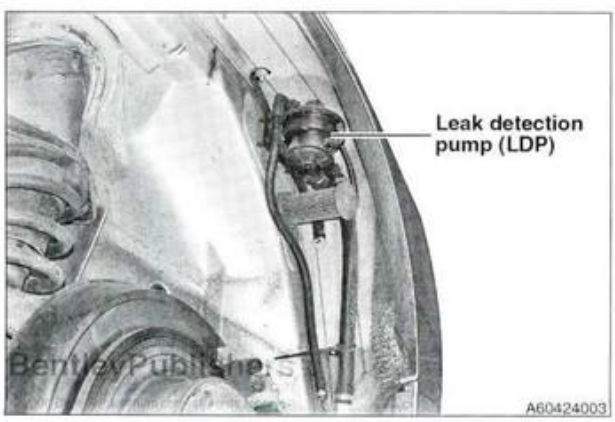
3. Mass airflow sensor (G70)
4. Engine speed sensor (G28)
5. Exhaust camshaft sensors (G40, G163)
6. Oxygen sensors (G39, G108, G130, G131)
7. Throttle valve control module (J338)
   Throttle angle sensors (G187, G188)
   Throttle drive (G186)
8. Intake air temperature sensor (G42)
9. Engine coolant temperature (ECT) sensor (G2, G62)
10. Charge air pressure sensor (G31)
11. Knock sensors (G61, G66)
12. Throttle position sensor (G79)
    Accelerator pedal position sender (G185)
13. Exhaust temperature sensors (G235, G236)
14. Brake light switch (F)
    Cruise control vacuum switch (F47)
15. Clutch vacuum switch (F36)
16. Auxiliary signals




## Bosch Motronic 7.1 sensors and actuators (2.7 liter turbo V6 engine) *(continued)*

### Actuators

17. Fuel pump (G6)
    Fuel pump relay (J17)
18. Fuel injectors (N30 - N33, N83 - N84)
19. Ignition power output stage (N122, N192)
20. Ignition coils (N, N128, N158, N163, N164, N189)
21. Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)
22. Wastegate bypass regulator (N75)
23. Throttle valve control module (J338)
    Throttle drive (G186)
24. Camshaft adjustment valves (N205, N208)
25. Turbocharger recirculating valve (N249)
26. Oxygen sensor heaters (Z19, Z28, Z29, Z30)
27. Electronic throttle (EPC) warning light (K132)
28. Auxiliary signals



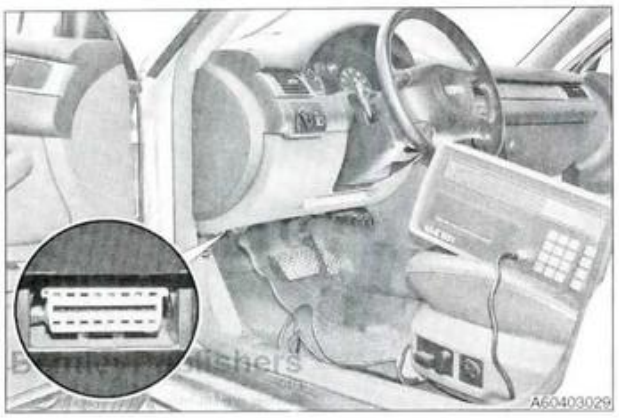

## Evaporative control system (EVAP)

The evaporative control system is designed to prevent fuel system evaporative losses from venting into the atmosphere. The evaporative system allows control and monitoring of evaporative losses by the on-board diagnostic (OBD II) software incorporated in the ECM.

The system includes:

- Carbon canister to store evaporated fuel.
- Plumbing to duct vapor from the fuel tank overflow reservoir to the carbon canister and from the canister to the intake manifold.
- Leak detection pump (LDP) (illustrated for 1998 2.8 liter A6) to monitor the integrity of the evaporative control system.

The fuel overflow reservoir and associated valves are in the rear of the right rear fender, behind the wheel housing liner. The leak detection pump is under the front of the same fender.




## On-board diagnostics

Most components and functions of the Motronic system are monitored by on-board diagnostics (OBD II) software in the engine control module (ECM). If faults and malfunctions are detected, one or more diagnostic trouble codes (DTCs) may be set.

➢ In case of an emissions related fault or malfunction considered catalyst-damaging, the Check Engine light (malfunction indicator light or MIL) or EPC light is illuminated.

➢ Access fault memory with VAG scan tool or equivalent plugged into the DLC plug (**inset**) under left side dashboard. See **OBD On-Board Diagnostics** for more information.

***NOTE***—

- *After engine management system tests or repairs, the ECM may recognize a malfunction and store a DTC. Therefore perform the following after ending tests and repairs:*
  *-Use VAG scan tool or equivalent to check DTC memory.*
  *-Erase DTC memory.*
  *-Reset or erase diagnostic data.*
  *-Generate readiness code.*
- *After engine management system tests or repairs, the engine may start, run for a short period and then cut out because the electronic anti-theft immobilizer disables the ECM. In such cases:*
  *-Use VAG scan tool or equivalent to check DTC memory.*
  *-Adapt ECM.*

## Warnings and Cautions

Read the following warnings and cautions before starting work on the fuel injection system.

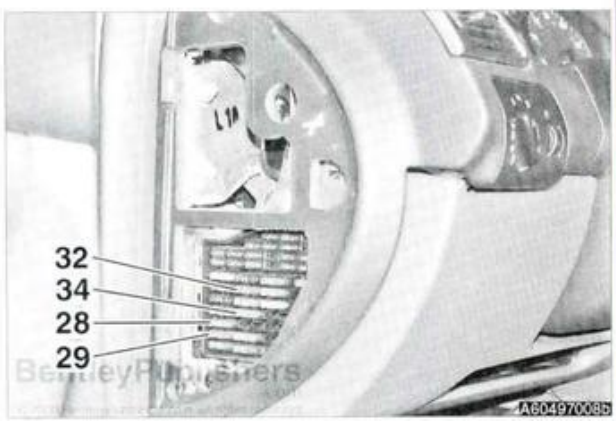
***WARNING***—

- *Disconnect negative (-) battery cable and cover terminal with insulated material when working on fuel related components.*
- *Gasoline is dangerous to your health. Wear suitable hand, skin and eye protection when working on the fuel system. Do not breathe fuel vapors. Work in a well-ventilated area.*
- *Do not smoke or create sparks around fuel. Be aware of pilot lights in gas operated equipment (heating systems, water heaters, etc.). Have an approved fire extinguisher handy.*
- *The fuel system is designed to maintain pressure in the system after the engine is turned off. Fuel is expelled under pressure when fuel lines are disconnected. This is a fire hazard, especially if the engine is warm. To prevent fuel from spraying, wrap a clean shop rag around fuel line fitting before loosening or disconnecting it.*
- *Exercise extreme caution when using spray-type cleaners on a warm engine. Observe all manufacturer recommendations.*
- *Prior to working on fuel-related components, unscrew the fuel filler cap to release pressure in the tank.*

***CAUTION—***
- *Cleanliness is essential when working on any part of the fuel system. Thoroughly clean fuel line unions and hose fittings before disconnecting them. Use only clean tools.*
- *Keep removed components clean. Seal or cover them with plastic or paper, especially if repair cannot be completed immediately. Seal open fuel supply and return lines to prevent contamination.*
- *When replacing parts, install only new, clean components. Replace seals and O-rings.*
- *Prior to disconnecting the battery, read the battery disconnection cautions in* **00 Warnings and Cautions**.
- *Before making any electrical tests with the ignition turned ON, disable the ignition system. Be sure the battery is disconnected when replacing components.*
- *To prevent damage to the ignition system or other electronic components, including the engine control module (ECM), always connect and disconnect wires and test equipment with the ignition OFF.*
- *Only use a digital multimeter for electrical tests.*

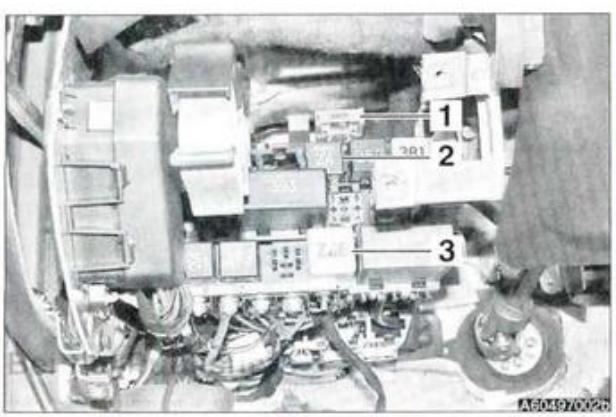
## Engine Management Fuses and Relays

To gain access to fuse and relay panels, see **97 Fuses, Relays, Component Locations**.




➤ Dashboard fuse panel:

- Fuse **28**: Fuel pump
  1998 - 2000: 15A
  2001 - 2004: 20A
- Fuse **29**: Engine control module (ECM)
  1998 - 2000: 30A
  2001 - 2004: 20A
- Fuse **32**: Engine control module (ECM) 20A
- Fuse **34**: Fuel injectors 15A




➤ Under left dashboard:

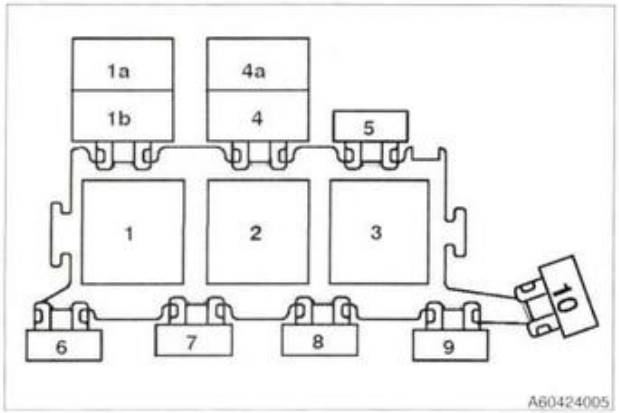
- 13-fold relay and fuse panel:

1. Secondary air pump fuse 50A
2. Starter interlock relay (J207), manual transmission
   Park / neutral position (PNP) relay (J226), multitronic (CVT) transmission

- Micro central electric panel:

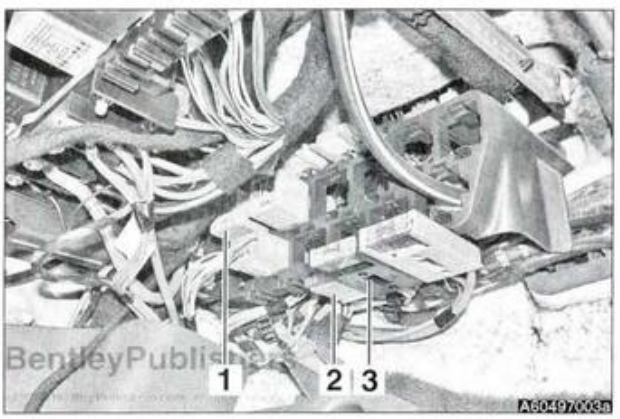
3. Fuel pump relay (J17)

***NOTE—***
- *1998 - 2000 models: Fuel pump relay also powers fuel injectors.*




➤ E-box, left rear engine compartment in plenum chamber:
- Fuse **5**: Engine control module (ECM) 15A
- Fuse **7**: Secondary air pump 40A
- Relay **1b**: Coolant circulation pump relay (J151)
- Relay **2**: Secondary air pump relay (J299)
- Relay **3**: Engine control module (ECM) relay (J271)

***NOTE***—
- *2004 3.0 liter V6 engine illustrated.*



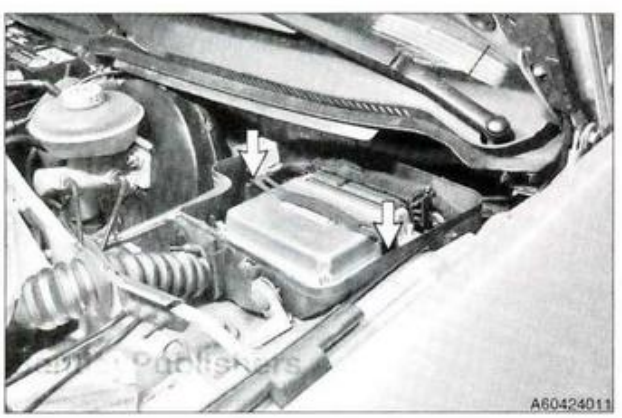

➤ 8-fold relay and fuse panel, under left dashboard:
1. Engine cooling fan relay (high speed)
2. Engine cooling fan control module fuse 5A
3. Engine cooling fan fuse 60A

## ENGINE CONTROL MODULE (ECM)

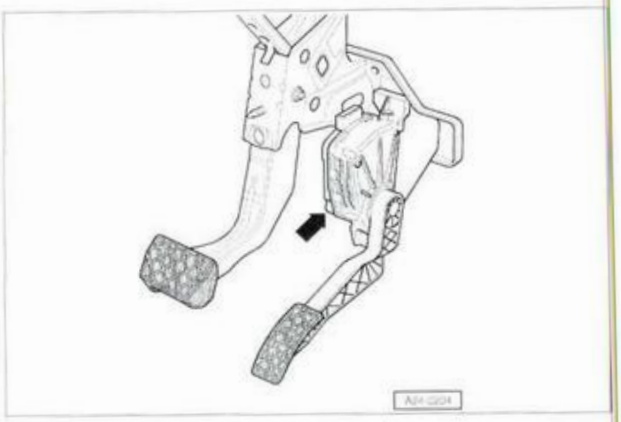
### ECM, accessing

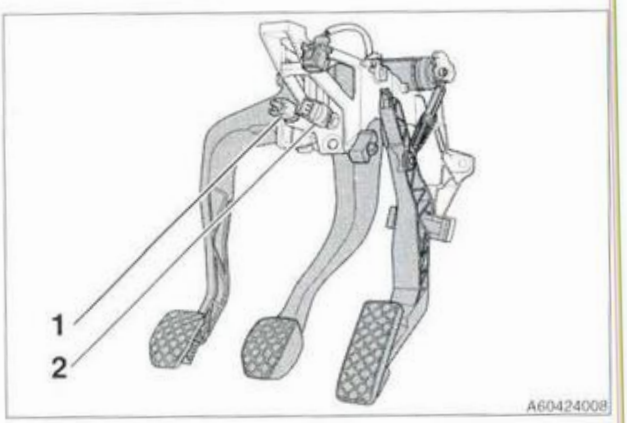
– Open engine hood and remove plenum chamber cover.

➤ Remove electronics box (E-box) cover retaining bolts (**arrows**). Lift off cover.




➤ Use small screwdriver to pry off ECM hold-down clip at sides (**arrows**).






## PEDAL SENSORS AND SWITCHES

### Accelerator pedal sensors

➤ Throttle position sensor (G79) and accelerator position sensor (G185) (**arrow**)

***NOTE***—

- *These components are shared by models with Bosch Motronic ME 7.1 and later (engine management with electronic throttle control or EPC).*

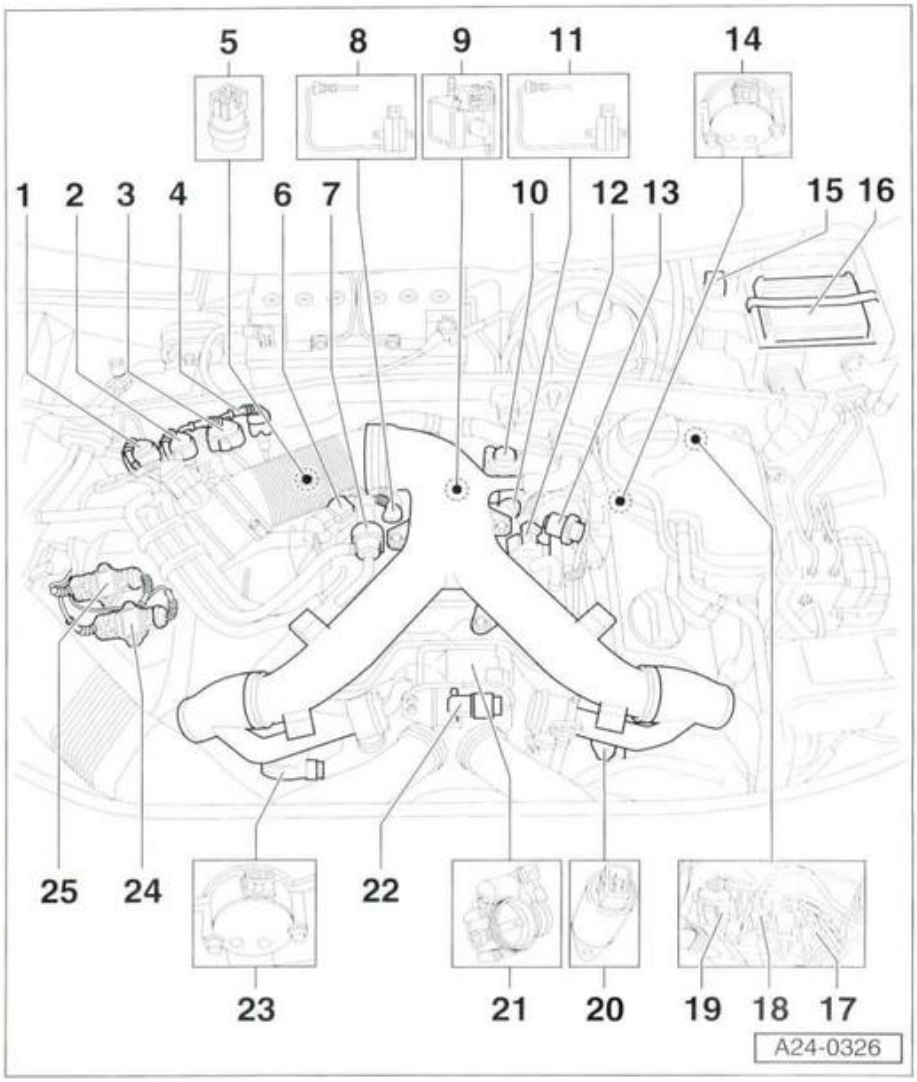
### Cruise control switches

➤ Pedal switches:

1. Clutch vacuum switch (F36)
2. Brake light switch (F)
   Cruise control vacuum switch (F47)

Cruise control stalk switch replacement is covered in **48 Steering**.

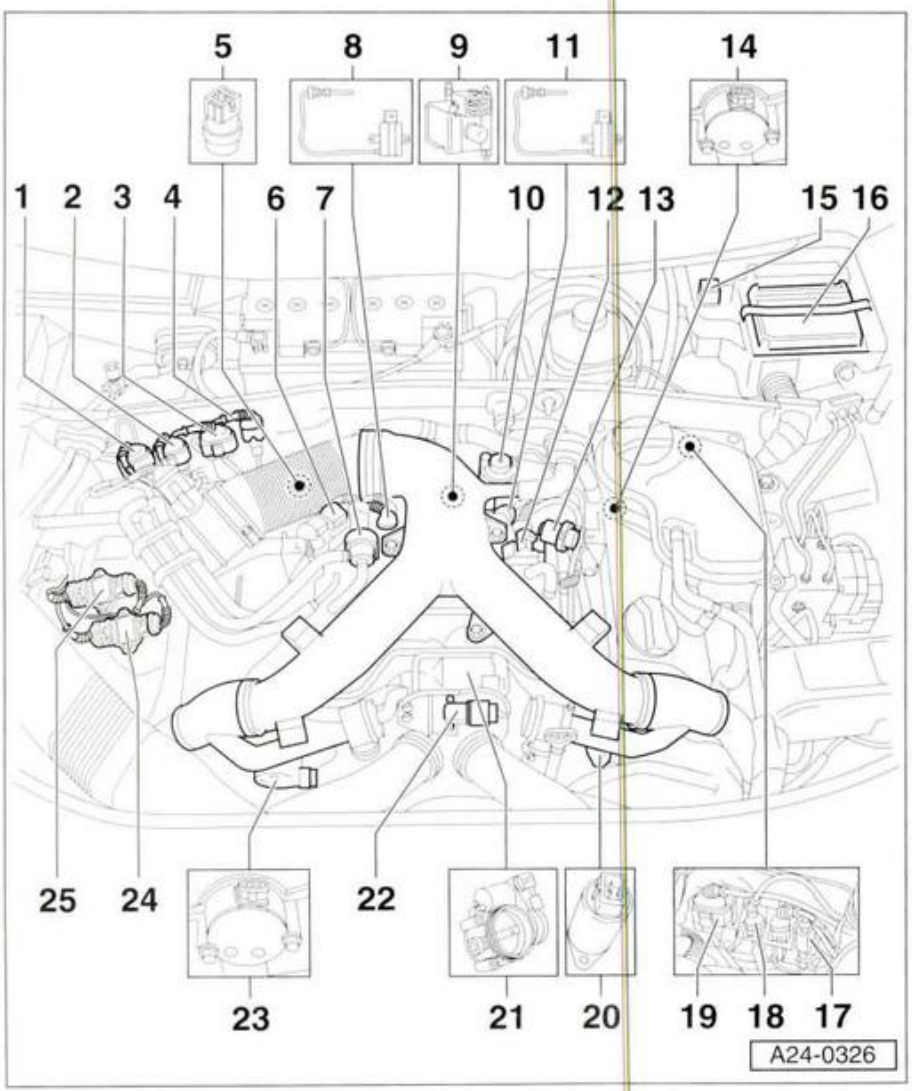
## 2.7 Liter Engine Management Components




### Engine compartment (2.7 liter turbo V6 engine)

1. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
   - 4-pin green
2. **Oxygen sensor harness connector**
   - Left bank oxygen sensor (G131) and heater (Z30) behind catalytic converter
   - 4-pin green
3. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter.
   - 4-pin black
4. **Right knock sensor (G61) harness connector**
   - 3-pin
5. **Engine coolant temperature (ECT) sensor (G62)**
   - On coolant pipe behind right cylinder bank
6. **Wastegate bypass regulator valve (N75)**
7. **Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**
8. **Exhaust temperature sensor, right (G235)**
   - Right rear of intake manifold
   - Automatic transmission: Ganged with left exhaust temperature sensor (G236) at this location
9. **Secondary air injection solenoid valve (N112)**
   - Only on vehicle with automatic transmission
10. **Secondary air injection pump motor (V101)**
    - Only on vehicle with automatic transmission
11. **Exhaust temperature sensor, left (G236)**
    - Left rear of intake manifold
    - Automatic transmission: Ganged with right exhaust temperature sensor (G235) at right rear of intake manifold

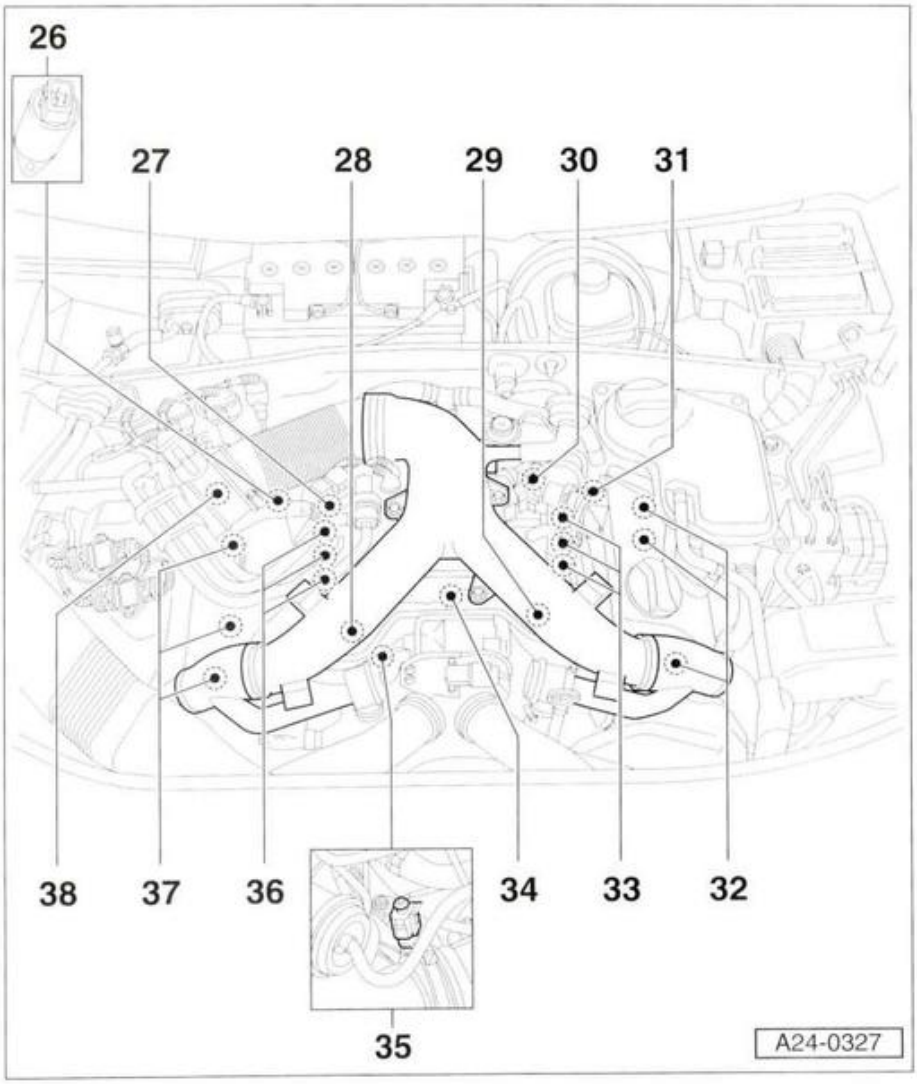
*2.7 Liter Engine Management Components*




## Engine compartment (2.7 liter turbo V6 engine)

*(continued)*

12. **Turbocharger recirculating valve (N249)**
13. **Fuel pressure regulator**
14. **Left camshaft sensor (G163)**
15. **Secondary air injection pump relay (J299)**
    - Only on vehicle with automatic transmission
16. **Engine control module (ECM) (J220)**
17. **Engine speed sensor harness connector**
    - 3-pin grey
18. **Left knock sensor (G66) harness connector**
    - 3-pin
19. **Oxygen sensor harness connector**
    - Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
    - 4-pin black
20. **Left camshaft adjustment valve (N208)**
21. **Throttle valve control module (J338)**
    - Throttle drive (G186)
    - Throttle valve angle sensors (G187, G188)
22. **Charge air pressure sensor (G31)**
    - In rubber elbow before throttle valve control module
23. **Right camshaft sensor (G40)**
24. **Left bank ignition coils power output stage (N192)**
25. **Right bank ignition coils power output stage (N122)**




**26. Right camshaft adjustment valve (N205)**

**27. Right bank oxygen sensor (G39) and heater (Z19)**

- In front of catalytic converter

**28. Knock sensor (G61)**

**29. Knock sensor (G66)**

**30. Engine speed sensor (G28)**

- In transmission bellhousing, above flywheel or torque plate

**31. Left bank oxygen sensor (G108) and heater (Z28)**

- In front of catalytic converter

**32. Left bank ignition coils (N163, N164, N189)**

**33. Left bank fuel injectors (N33, N83, N84)**

**34. Intake air temperature (IAT) sensor (G42)**

- Under front of intake manifold, near throttle valve control module

**35. Intake air temperature harness connector**

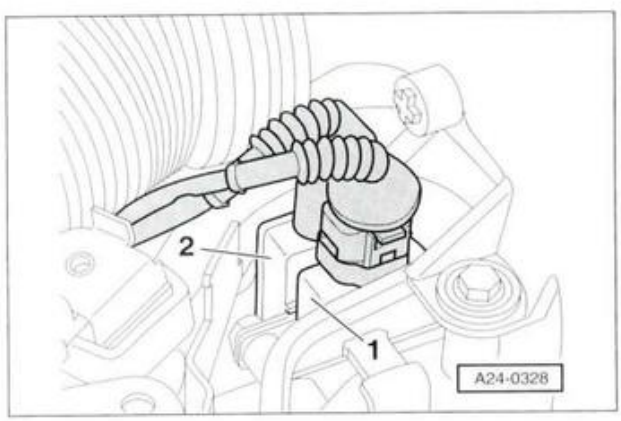
- 2-pin

**36. Right bank fuel injectors (N30 - N32)**

**37. Right bank ignition coils (N, N128, N158)**

**38. Mass airflow sensor (G70)**

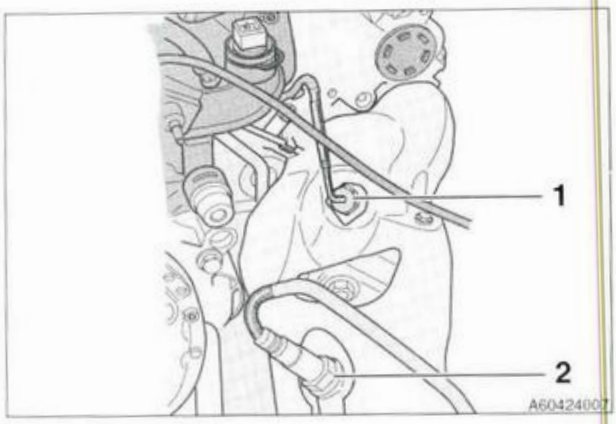
## Engine management component details (2.7 liter turbo V6 engine)




➤ 2.7 liter turbo V6 with automatic transmission: Exhaust temperature sensor modules ganged to right of intake manifold:

1. Right bank exhaust temperature sensor module (G235)
2. Left bank exhaust temperature sensor module (G236)

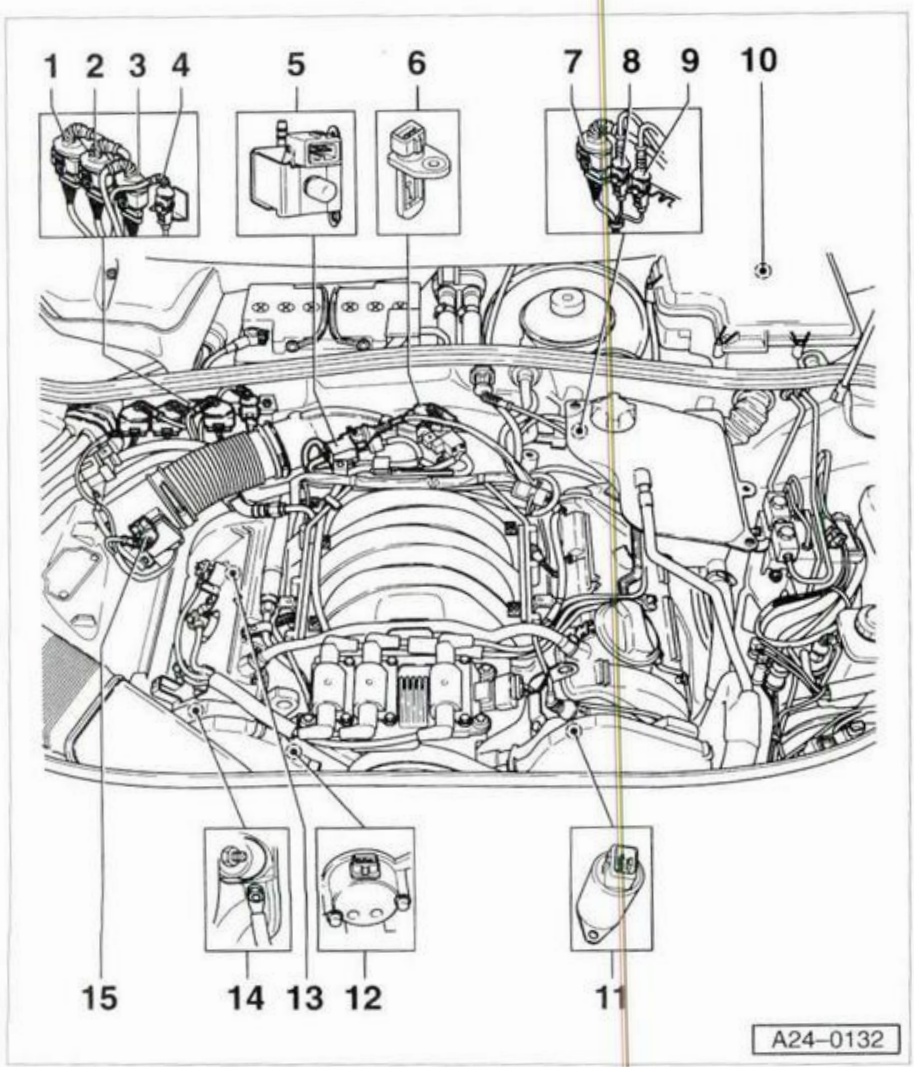
*2.8 Liter Engine Management Components*




➤ Exhaust manifold:

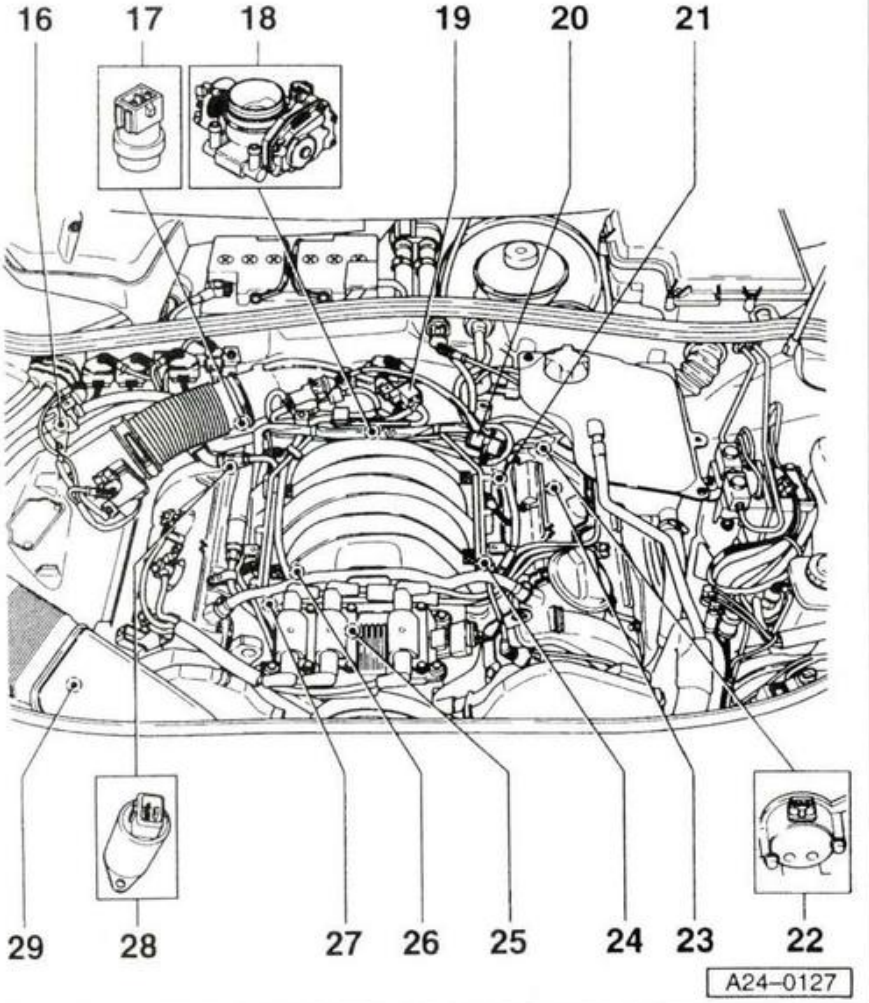
1. Exhaust temperature sensor
2. Oxygen sensor before catalytic converter

## 2.8 Liter Engine Management Components




### Engine compartment (2.8 liter V6 engine)

1. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
   - 4-pin green
2. **Oxygen sensor harness connector**
   - Left bank oxygen sensor (G131) and heater (Z30) behind catalytic converter
   - 4-pin green
3. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter.
   - 4-pin black
4. **Knock sensor (G61) harness connector**
5. **Secondary air injection solenoid valve (N112)**
6. **Intake air temperature (IAT) sensor (G42)**
7. **Oxygen sensor harness connector**
   - Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
   - 4-pin black
8. **Engine speed sensor harness connector**
   - 3-pin grey
9. **Left knock sensor (G66) harness connector**




**10. Electronics box (E-box)**
- Engine control module (ECM) (J220). See **ECM, accessing** in this repair group.
- Secondary air injection pump relay (J299). See **Engine Management Fuses and Relays** in this repair group.

**11. Left camshaft adjustment valve (N208)**

**12. Right camshaft sensor (G163)**

**13. Right bank oxygen sensor (G39) and heater (Z19)**
- In front of catalytic converter

**14. Ground cable**
- to Right engine mount

**15. Mass airflow sensor (G70)**

**16. Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**

**17. Engine coolant temperature (ECT) sensor (G62)**
- On coolant pipe behind right cylinder bank

**18. Throttle valve control module (J338)**
- Throttle drive (G186)
- Throttle plate angle sensor (G187)
- Throttle position sensor (G69)
- Closed throttle position switch (F60)

**19. Intake manifold tuning valve (change-over valve) (N156)**

**20. Fuel pressure regulator**

**21. Engine speed sensor (G28)**
- In transmission bellhousing, above flywheel or torque plate

**22. Left camshaft sensor (G40)**

**23. Left bank oxygen sensor (G108) and heater (Z28)**
- In front of catalytic converter

**24. Left knock sensor (G66)**

**25. Ignition coils and power output stage**

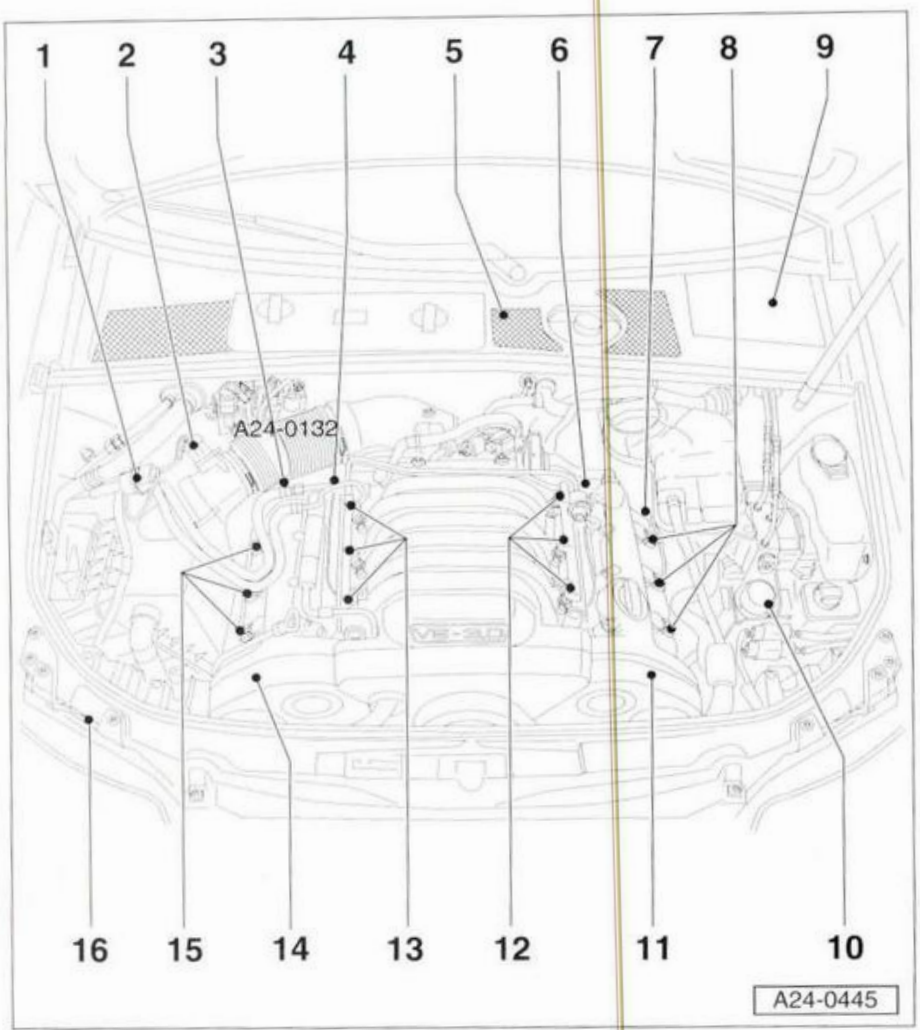
**26. Right knock sensor (G61)**

**27. Fuel injectors (N30 - N33, N83, N84)**

**28. Right camshaft adjustment valve (N205)**

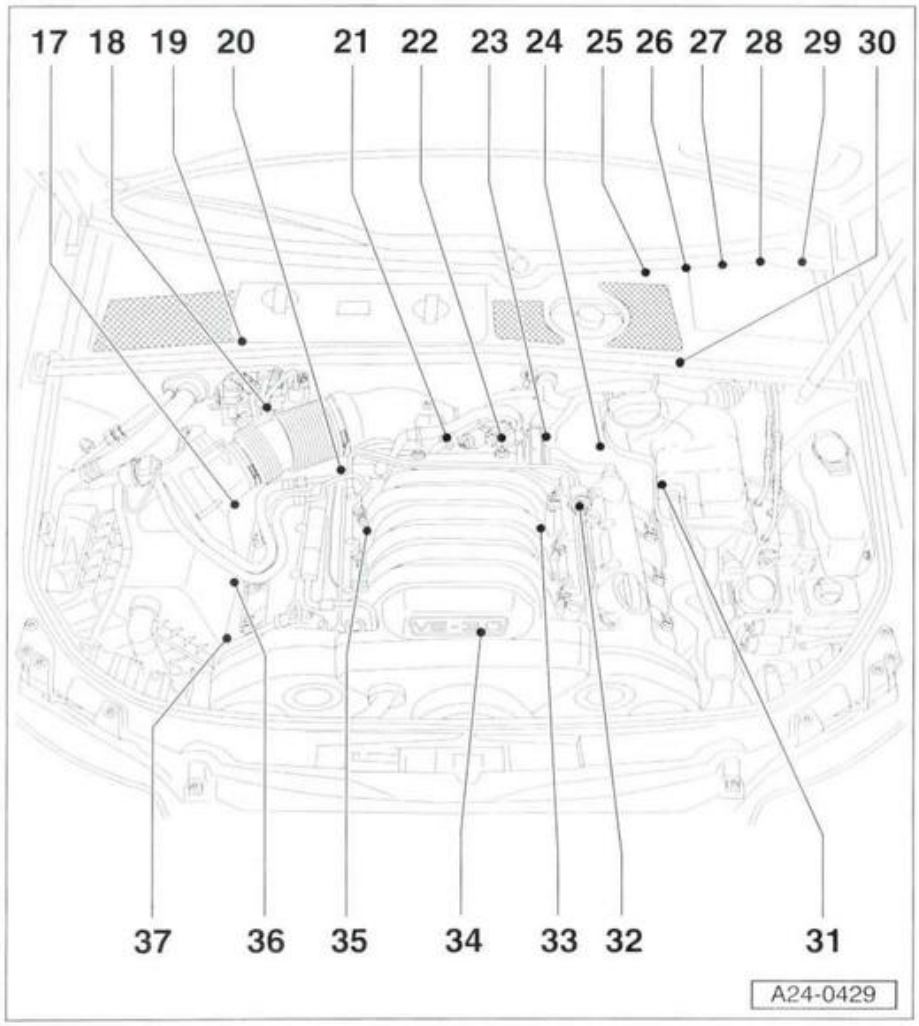
**29. Secondary air injection pump motor (V101)**

## 3.0 Liter Engine Management Components

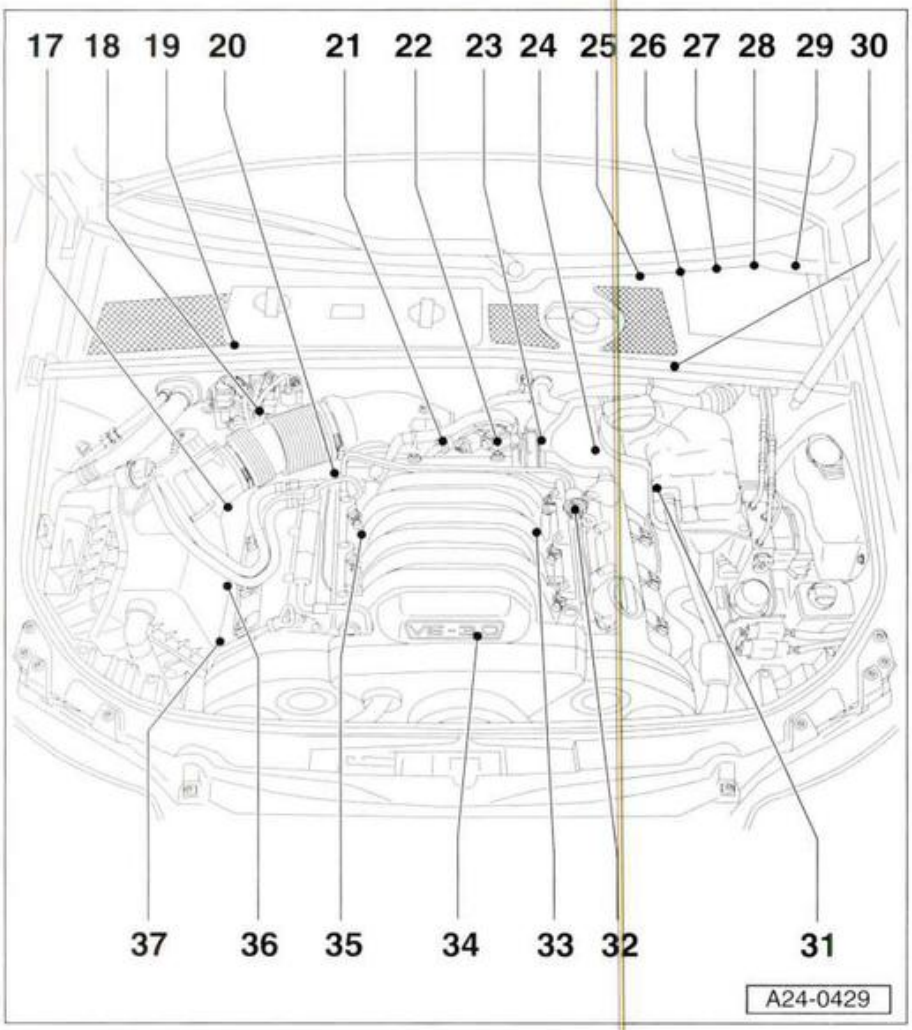



### Engine compartment (3.0 liter V6 engine)

1. **Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**
2. **Mass airflow sensor (G70)**
   - Includes intake air temperature (IAT) sensor (G42).
3. **Right exhaust camshaft sensor (G300)**
4. **Right intake camshaft sensor (G40)**
5. **Brake booster pressure sensor (G294)**
   - Automatic transmission vehicle
6. **Left intake camshaft sensor (G163)**
7. **Left exhaust camshaft sensor (G301)**
8. **Left bank ignition coils with power output stage (N292, N323, N324)**
9. **Electronics box (E-box)**
   - Engine control module (ECM) (J220). See **ECM, accessing** in this repair group.
   - Secondary air injection pump relay (J299). See **Engine Management Fuses and Relays** in this repair group.
   - Secondary air injection pump fuse (S130)
10. **Brake system vacuum pump (V192)**
11. **Left intake camshaft adjustment valve (N208), exhaust camshaft adjustment valve (N319)**
12. **Left bank fuel injectors (N33, N83, N84)**
13. **Right bank fuel injectors (N30 - N32)**
14. **Right intake camshaft adjustment valve (N205), exhaust camshaft adjustment valve (N318)**
15. **Right bank ignition coils with power output stage (N70, N127, N291)**
16. **Secondary air injection pump (V101)**




17. **Right bank oxygen sensor (G39) and heater (Z19)**
    - In front of catalytic converter
18. **Harness connectors**
    - Right rear engine compartment
    - See **Electrical connectors (3.0 liter V6 engine compartment)** in this repair group.
19. **Right bank oxygen sensor (G130) and heater (Z29)**
    - Behind catalytic converter
20. **Engine coolant temperature (ECT) sensor (G62)**
    - On coolant pipe behind right cylinder bank
21. **Throttle valve control module (J338)**
    - Throttle drive (G186)
    - Throttle plate angle sensors (G187, G188)
22. **Secondary air injection solenoid valve (N112)**
23. **Engine speed sensor (G28)**
24. **Harness connectors**
    - Left rear engine compartment, underneath coolant overflow tank
    - See **Electrical connectors (3.0 liter V6 engine compartment)** in this repair group.
25. **Accelerator pedal switches**
    - See **Pedal Sensors and Switches** in this repair group.
26. **Fuel pump relay (J17) under dashboard**
    - See **Engine Management Fuses and Relays** in this repair group.




## Engine compartment (3.0 liter V6 engine) *(continued)*

**27. Brake pedal switches**

- See **Pedal Sensors and Switches** in this repair group.

**28. Clutch pedal switch**

- See **Pedal Sensors and Switches** in this repair group.

**29. Instrument cluster warning lights**

- See **On-board diagnostics** in this repair group.

**30. Left bank oxygen sensor (G131) and heater (Z30)**

- Behind catalytic converter

**31. Left bank oxygen sensor (G108) and heater (Z28)**

- In front of catalytic converter

**32. Fuel pressure regulator**

**33. Left knock sensor (G66)**

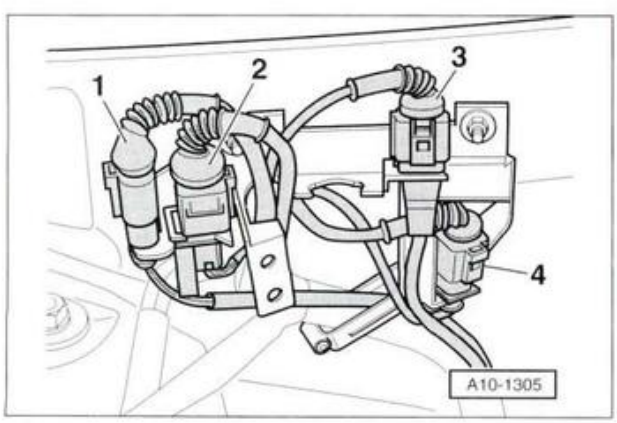
- Underneath intake manifold

**34. Intake manifold tuning valve (change-over valve) (N156)**

**35. Right knock sensor (G61)**

- Underneath intake manifold

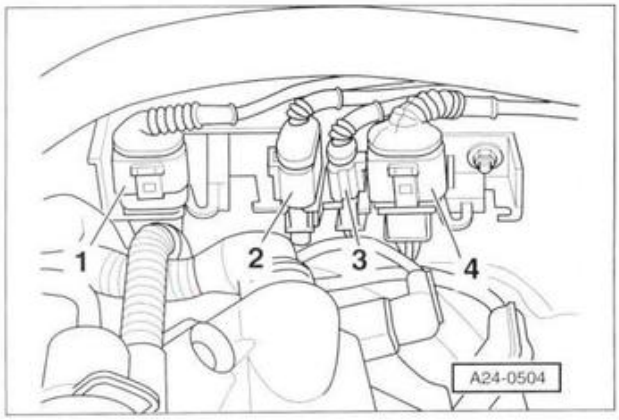
**36. Ground cable to right engine mount**




## Electrical connectors (3.0 liter V6 engine compartment)

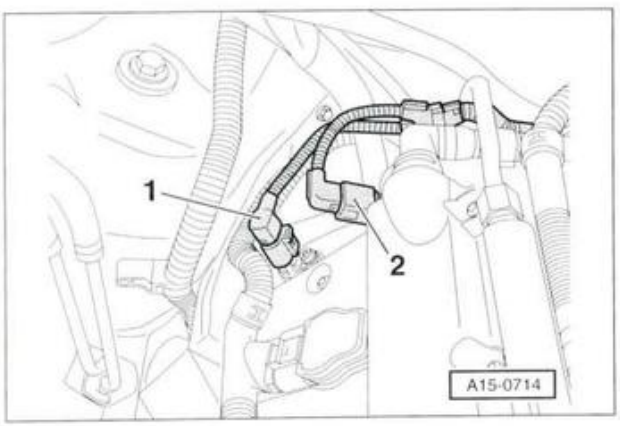
Right rear engine compartment:

1. 4-pin harness connector, green
   Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
2. 6-pin harness connector, black
   Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter
3. 3-pin harness connector, blue
   Knock sensor (G66)
4. 3-pin harness connector, black
   Terminal 50



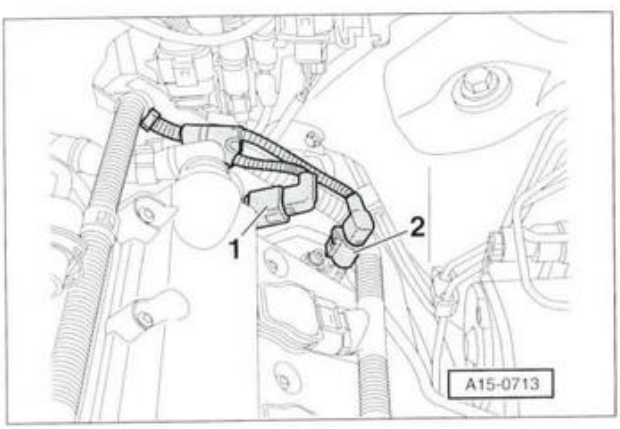

Left rear engine compartment, underneath coolant overflow tank:

1. 6-pin harness connector, black
   Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
2. 3-pin harness connector, grey
   Engine speed sensor (G28)
3. 3-pin harness connector, blue
   Knock sensor (G66)
4. 2-pin connector
   Right camshaft adjustment



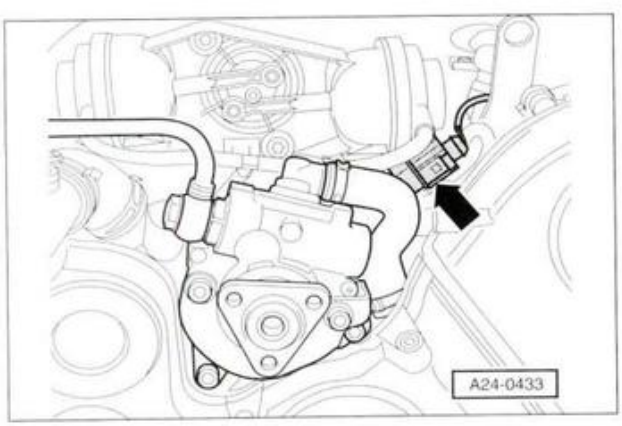

Rear of right cylinder head:

1. Exhaust camshaft sensor (G300) harness connector
2. Intake camshaft sensor (G40) harness connector



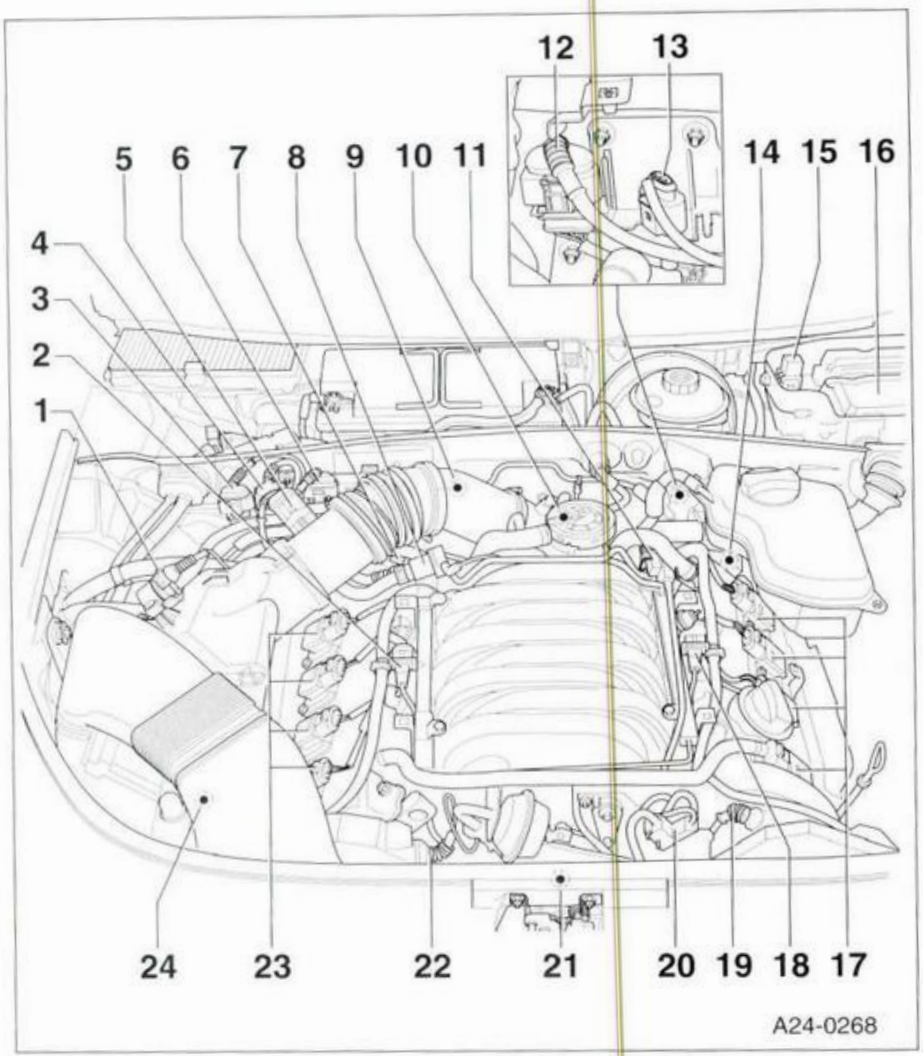

Rear of left cylinder head:

1. Intake camshaft sensor (G163) harness connector
2. Exhaust camshaft sensor (G301) harness connector




Intake manifold tuning valve (change-over valve) (N156) connector (**arrow**)

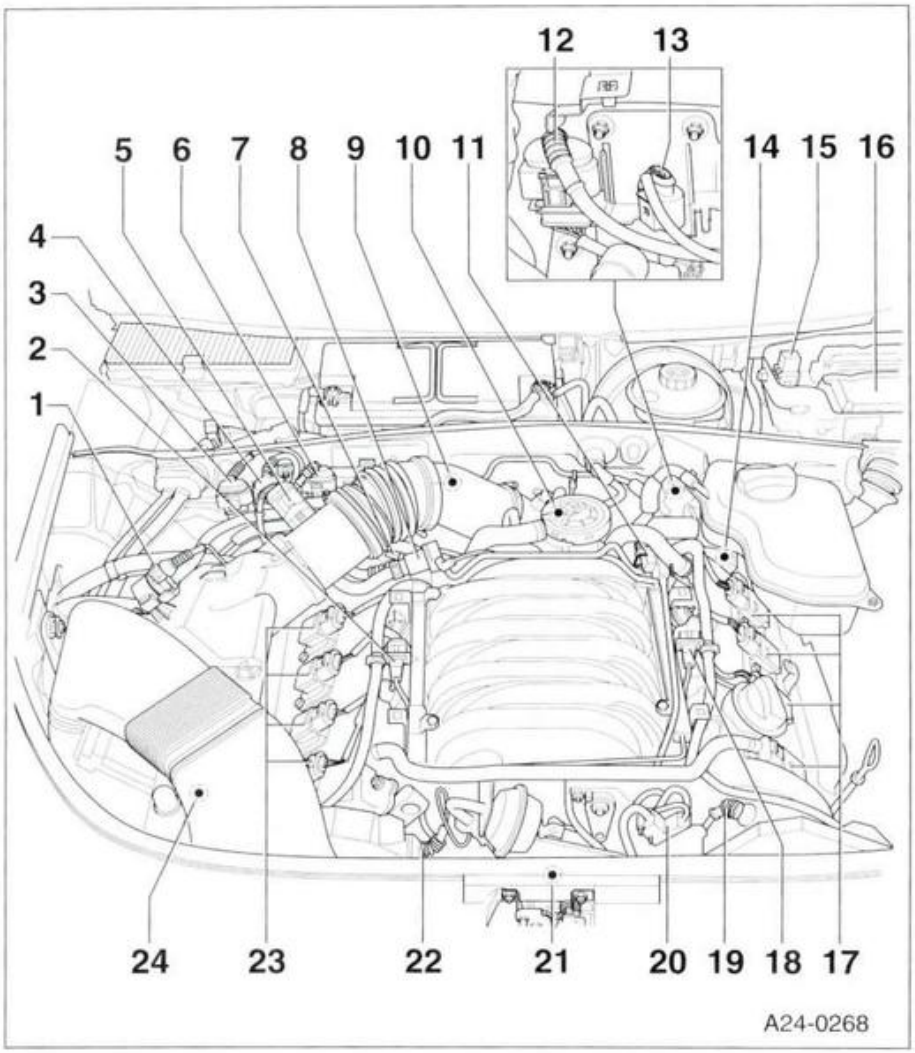
## V8 Engine Management Components (Engine Codes ART, AWN, BBD)




### Engine compartment (V8 engine, codes ART, AWN, BBD)

1. **Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**
2. **Right knock sensor (G61) harness connector**
   - 3-pin
3. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
   - 4-pin green
4. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G131) and heater (Z30) behind catalytic converter
   - 4-pin green
5. **Mass airflow sensor (G70)**
   - Includes intake air temperature (IAT) sensor (G42).
6. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G39) and heater (Z19) behind catalytic converter.
   - 4-pin
7. **Camshaft adjustment valve (N205)**
8. **Fuel pressure regulator**
9. **Engine coolant temperature (ECT) sensor (G62)**
   - On coolant pipe behind right cylinder bank

*V8 Engine Management Components (Engine Codes ART, AWN, BBD)*




**10. Throttle valve control module (J338)**
- Throttle drive (G186)
- Throttle plate angle sensors (G187, G188)

**11. Secondary air injection solenoid valve (N112)**

**12. Oxygen sensor harness connector**
- Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
- 4-pin

**13. Engine speed sensor (G28) harness connector**
- 3-pin

**14. Left camshaft sensor (G163)**

**15. Secondary air injection pump relay (J299)**
- E-box, left rear engine compartment in air plenum. See **Engine Management Fuses and Relays** in this repair group.

**16. Engine control module (ECM) (J220)**
- E-box, left rear engine compartment in air plenum. See **ECM, accessing** in this repair group.

**17. Left bank ignition coils with power output stages**

**18. Left knock sensor (G61) harness connector**
- 3-pin

**19. Left camshaft adjustment valve (N208)**

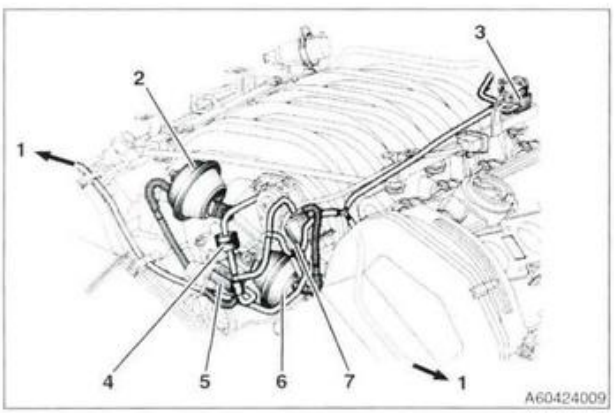
**20. Intake manifold tuning valve**

**21. Intake manifold tuning valve**

**22. Right camshaft sensor (G40)**

**23. Right bank ignition coils with power output stages**

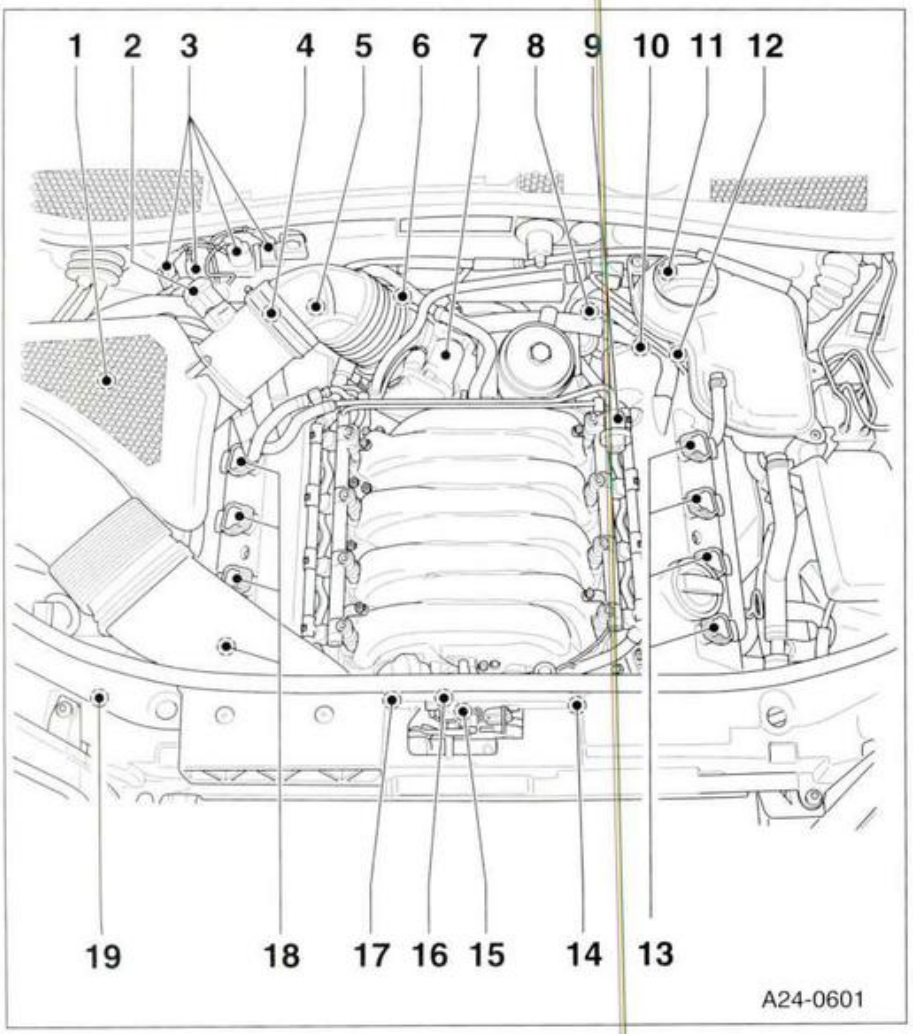
**24. Secondary air injection pump motor (V101)**
- Underneath engine, behind right corner of front bumper




Intake manifold tuning valve (change-over valve) actuation:

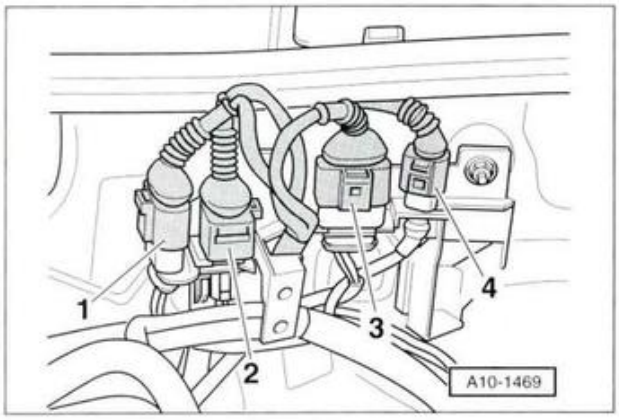
1. to Vacuum reservoir
2. Vacuum unit, stage 3
3. Secondary air injection solenoid (N112)
4. Check-valve
5. Intake manifold tuning valve *(N261)*
6. Vacuum unit, stage 2
7. Intake manifold tuning valve (N156)

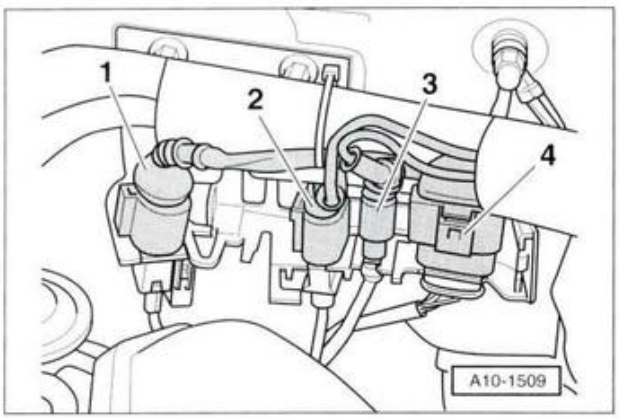
## V8 Engine Management Components (Engine Code BAS, allroad quattro)

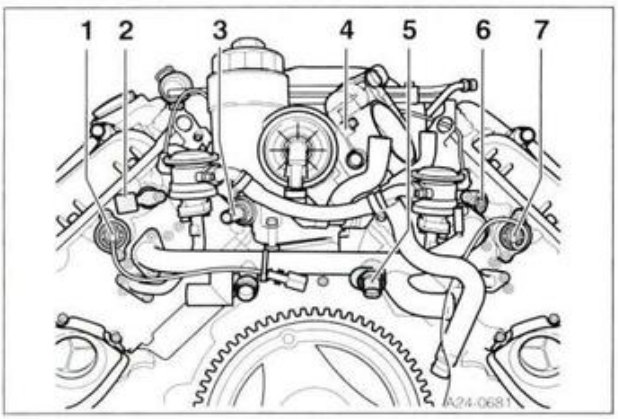


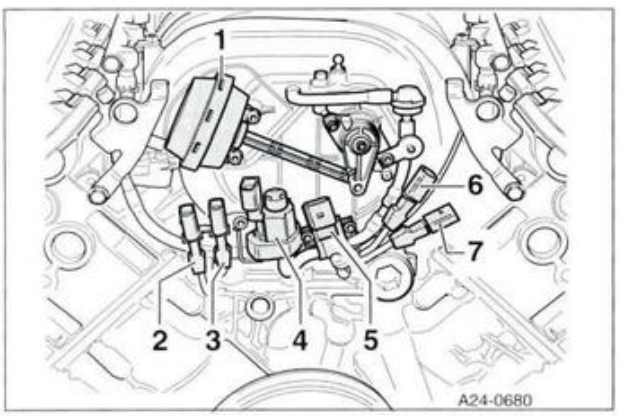

### Engine compartment (V8 engine, code BAS)

1. **Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**
2. **Mass airflow sensor (G70)**
   - Includes intake air temperature (IAT) sensor (G42).
3. **Right rear engine compartment harness connectors**
   - See **Engine management component details (V8 engine, code BAS)** in this repair group.
4. **Right camshaft adjustment valve (N205)**
5. **Right camshaft sensor (G40)**
6. **Engine coolant temperature (ECT) sensor (G62)**
7. **Throttle valve control module (J338)**
   - Throttle drive (G186)
   - Throttle plate angle sensors (G187, G188)
8. **Oil pressure switch (F1)**
9. **Fuel pressure regulator**
10. **Left camshaft sensor (G163)**
11. **Left rear engine compartment harness connectors**
    - See **Engine management component details (V8 engine, code BAS)** in this repair group.
12. **Left camshaft adjustment valve (N208)**
13. **Left bank ignition coils with power output stages**
14. **Left knock sensor (G198, G199) harness 3-pin connector**
15. **Secondary air injection solenoid valve (N112)**
16. **Intake manifold tuning valve (change-over valve) (N156)**
17. **Right knock sensor (G61, G66) harness 3-pin connector**
18. **Right bank ignition coils with power output stages**
19. **Secondary air injection pump motor (V101)**




## Engine management component details (V8 engine, code BAS)

Right rear engine compartment harness connectors:

1. 4-pin harness connector
   Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
2. 4-pin harness connector
   Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter
3. Starter and alternator connector
4. 4-pin harness connector, brown
   Left bank oxygen sensor (G131) and heater (Z30) behind catalytic converter

Left rear engine compartment harness connectors, behind coolant expansion tank:

1. 4-pin harness connector
   Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
2. 3-pin harness connector
   Engine speed sensor (G28)
3. 2-pin harness connector
   Left camshaft adjustment
4. 4-pin harness connector
   Left bank oxygen sensor (G131) and heater (Z30) behind catalytic converter

Rear of engine:

1. Left camshaft adjustment valve (N208)
2. Left camshaft sensor (G163)
3. Oil pressure switch (F1)
4. Throttle valve control module (J338)
5. Engine coolant temperature (ECT) sensor (G62)
6. Right camshaft sensor (G40)
7. Right camshaft adjustment valve (N205)

Front of engine:

1. Intake manifold tuning valve (change-over valve) vacuum unit
2. Knock sensor (G61)
3. Knock sensor (G66)
4. Intake manifold tuning valve (change-over valve) (N156)
5. Secondary air injection solenoid (N112)
6. Knock sensor (G198)
7. Knock sensor (G199)

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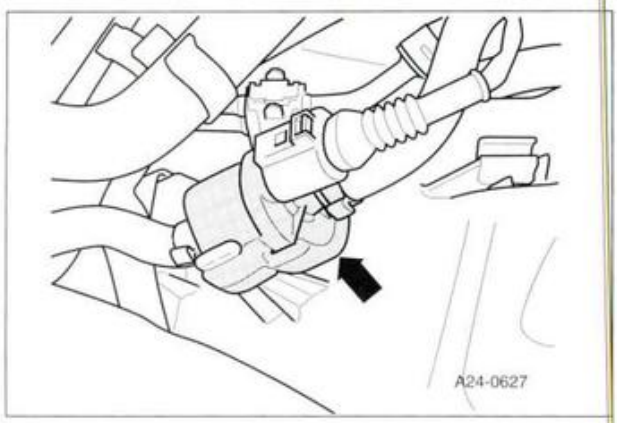
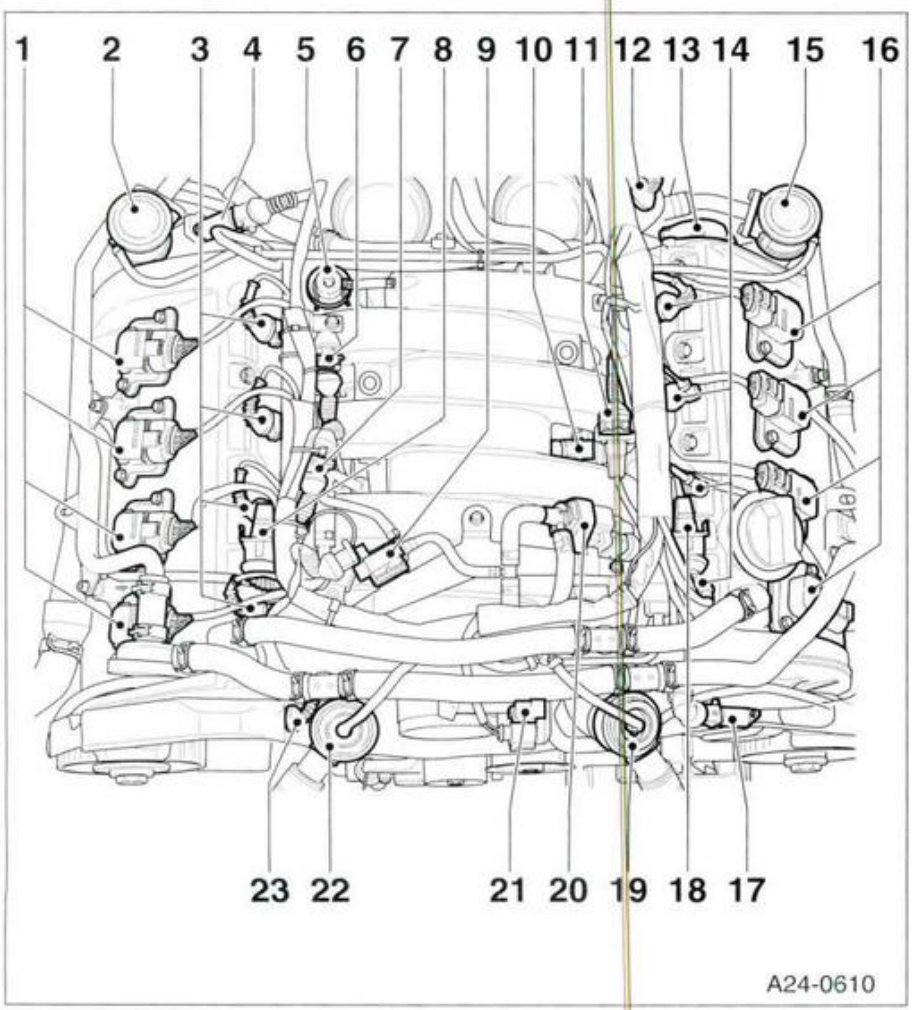
*V8 Engine Management Components (Engine Code BCY, RS6)*




➤ Fuel tank evaporative emission control (EVAP) canister purge regulator valve (N80) (**arrow**)

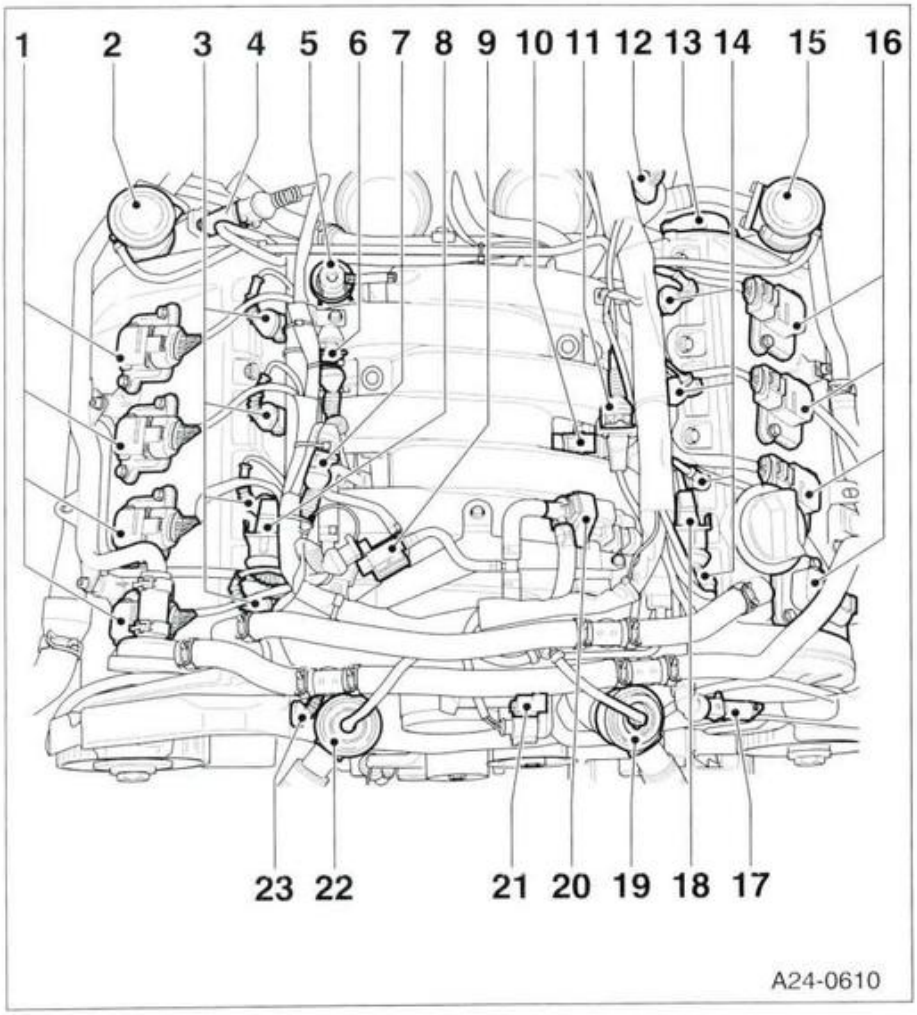
## V8 Engine Management Components (Engine Code BCY, RS6)




### Engine compartment (V8 engine, code BCY)

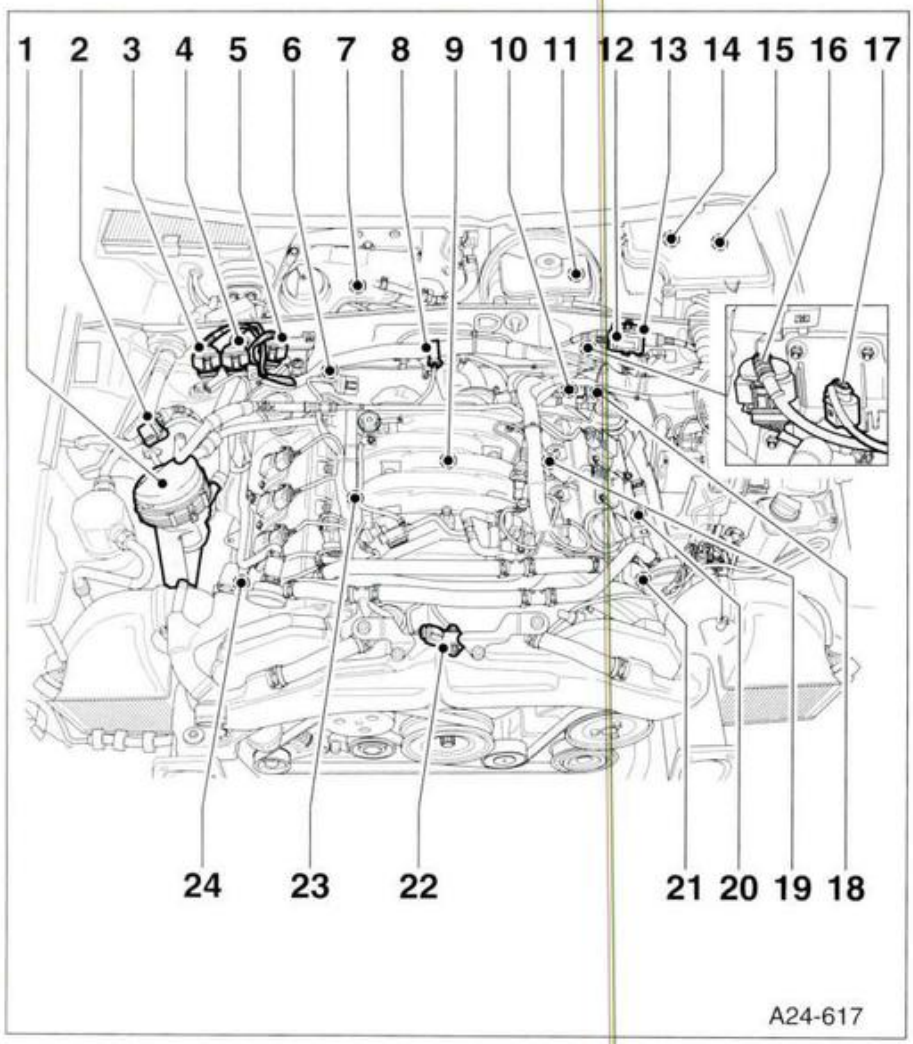
1. Right bank ignition coils with power output stages (N70, N127, N291, N292)
2. Right bank secondary air injection mechanical combination valve
3. Right bank fuel injectors (N30 - N33)
4. Right camshaft adjustment valve (N205)
5. Fuel pressure regulator
6. After-run coolant pump (V51) connector
7. Turbocharger recirculating valve (N249) connector
8. Knock sensor 1 (G61) connector
   - 3-pin
9. Secondary air injection solenoid (N112)
10. Intake air temperature (IAT) sensor (G42)
11. Knock sensor 3 (G198) connector
    - 3-pin
12. Engine coolant temperature (ECT) sensor (G62)
13. Left camshaft sensor (G163)
14. Left bank fuel injectors (N83 - N86)
15. Left bank secondary air injection mechanical combination valve
16. Left bank ignition coils with power output stages (N323 - N326)

*V8 Engine Management Components (Engine Code BCY, RS6)*




17. **Left camshaft adjustment valve (N208)**
18. **Knock sensor 2 (G66) connector**
    - 3-pin
19. **Left bank turbocharger recirculation valve (mechanical)**
20. **Turbocharger recirculation valve (N249)**
21. **Throttle valve control module (J338)**
    - Throttle drive (G186)
    - Throttle plate angle sensors (G187, G188)
22. **Right bank turbocharger recirculation valve (mechanical)**
23. **Right camshaft sensor (G40)**

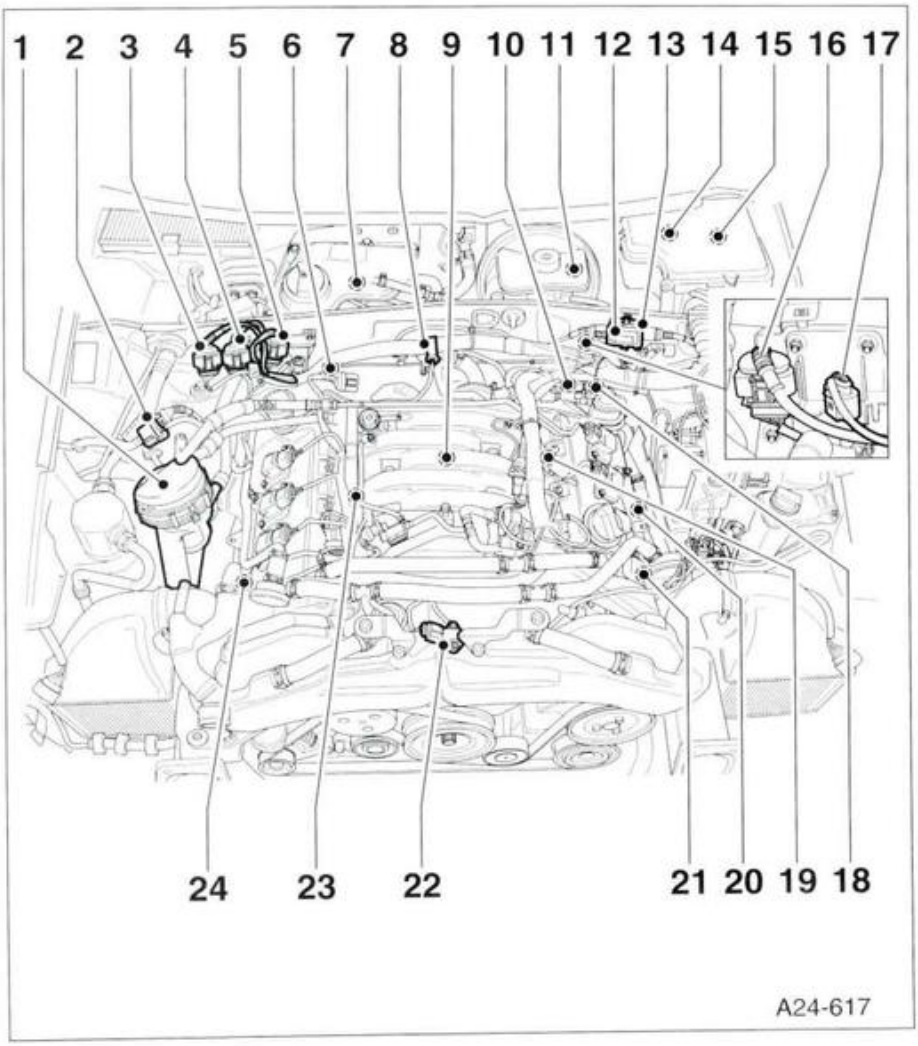
*V8 Engine Management Components (Engine Code BCY, RS6)*




## Additional engine compartment components (V8 engine, code BCY)

1. **Secondary air injection pump motor (V101)**
2. **Fuel tank evaporative control (EVAP) canister purge regulator valve (N80)**
3. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
   - 4-pin green
4. **Oxygen sensor harness connector**
   - Left bank oxygen sensor (G131) and heater (Z30) behind catalytic converter
   - 4-pin brown
5. **Oxygen sensor harness connector**
   - Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter.
   - 4-pin black
6. **Right bank oxygen sensor (G39) and heater (Z19)**
   - In front of catalytic converter
7. **Right bank oxygen sensor (G130) and heater (Z29)**
   - Behind catalytic converter
8. **Wastegate bypass regulator valve (N75)**
9. **After-run coolant pump (V51)**
10. **Left bank oxygen sensor (G108) and heater (Z30)**
    - In front of catalytic converter
11. **Left bank oxygen sensor (G131) and heater (Z30)**
    - Behind catalytic converter
12. **Right exhaust temperature sensor (G235)**
    - Brown
13. **Left exhaust temperature sensor (G236)**
    - Black
14. **Electronics box (E-box)**
    - Secondary air injection pump relay (J299)
    - Coolant circulation pump relay (J151). See **Engine Management Fuses and Relays** in this repair group.

*V8 Engine Management Components (Engine Code BCY, RS6)*




**15. Engine control module (ECM) (J220)**

- See **ECM, accessing** in this repair group.

**16. Oxygen sensor harness connector**

- Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
- 4-pin

**17. Engine speed sensor (G28) connector**

- 3-pin grey

**18. Engine speed sensor (G28)**

**19. Knock sensor 3 (G198)**

- Underneath intake manifold at cylinder 7 water jacket

**20. Knock sensor 2 (G66)**

- Underneath left exhaust manifold at cylinder 6 water jacket

**21. Left electrohydraulic engine mount solenoid (N145)**

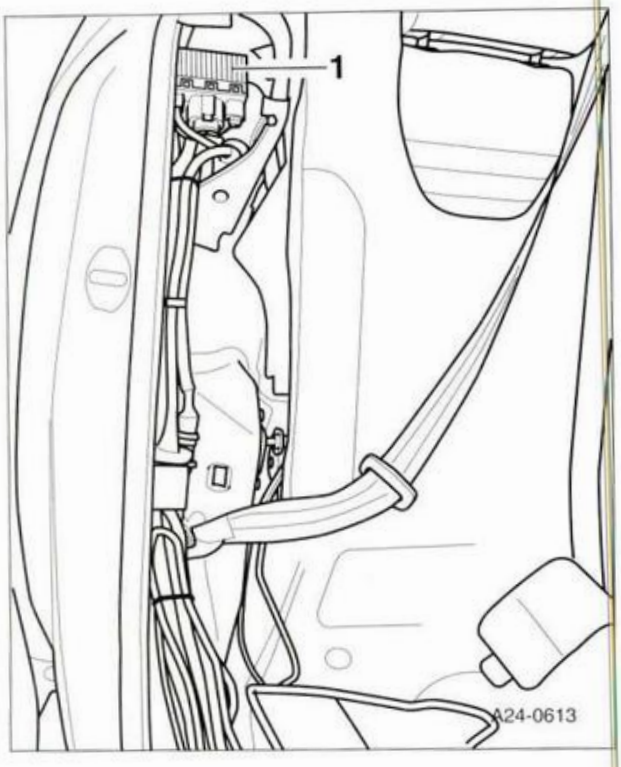
**22. Charge air pressure sensor (G31)**

**23. Knock sensor 1 (G61)**

- Underneath intake manifold between cylinders 2 and 3

**24. Right electrohydraulic engine mount solenoid (N144)**

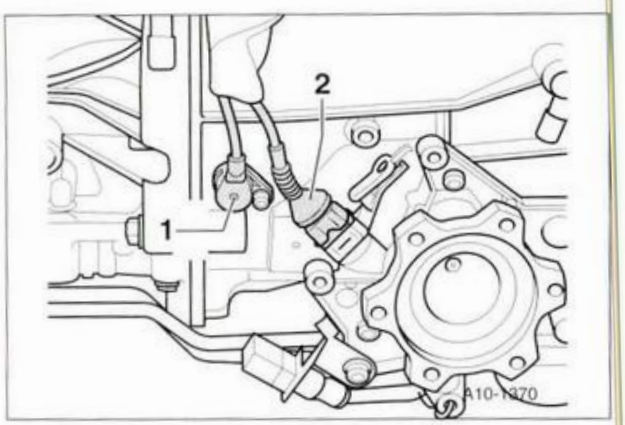
*V8 Engine Management Components (Engine Code BCY, RS6)*




## Engine management component details (V8 engine, code BCY)

➤ Fuel pump control module (J534) (**1**)

- Right rear of vehicle
- In a cavity on a level with C-pillar underneath cover next to rear seat backrest (at right rear seat belt reel)




➤ Engine speed sensor (G28) (**1**) and vehicle speed sensor (**2**)

# 26 Exhaust System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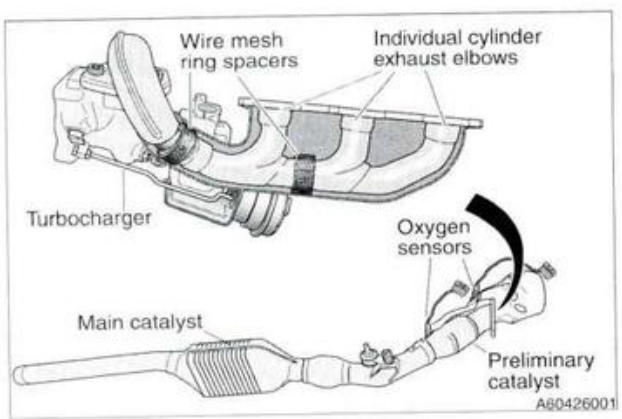
## GENERAL

This repair group covers muffler, catalytic converter and oxygen sensor replacement. Also included is a description of the secondary air injection system.

See **24 Fuel Injection** for engine management power supply fuse and relay locations.

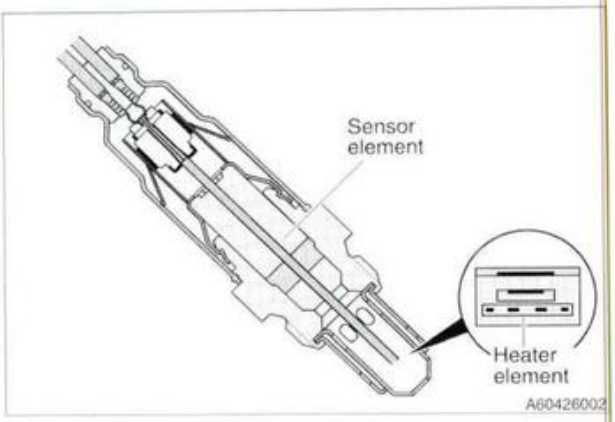
### Exhaust manifolds, catalytic converters and oxygen sensors




The 2.7 liter turbocharged engine exhaust manifolds are insulated double-walled elbows.This design leads to lower engine compartment temperature and quicker exhaust system *heat-up*.

In 2.7 liter, 3.0 liter, V8 allroad quattro and RS6 models, a preliminary catalytic converter is installed in the exhaust manifold just downstream of each turbocharger. This catalyst reaches operating temperature ("light-off") very quickly after a cold start. The main catalysts are further downstream, under the vehicle floor.

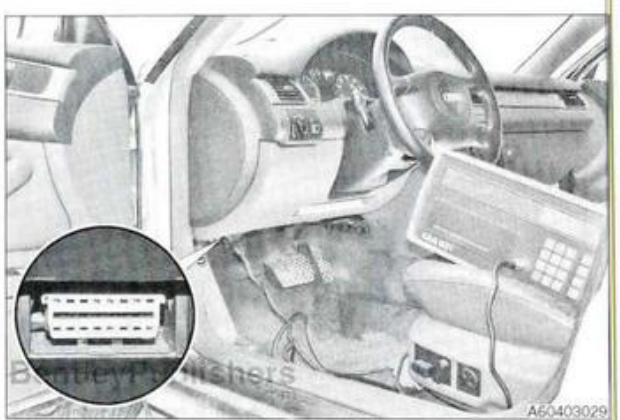
*General*




➤ Oxygen sensors are threaded into the exhaust system before and after the catalytic converters. In the interest of quicker warm-up, an oxygen sensor with planar design is used. Due to the flat design of the sensor and integration with the heater element, the sensor reaches operating temperature approximately 10 seconds after engine start-up.

## On-Board Diagnostics

Oxygen sensors and other components of the Motronic engine management system are monitored by on-board diagnostics (OBD II) software in the engine control module (ECM). If engine managements faults and malfunctions are detected, one or more diagnostic trouble codes (DTCs) are set.




➤ Access fault memory with Volkswagen scan tool or equivalent plugged into the DLC plug (**inset**) under left side dashboard. See **OBD On-Board Diagnostics** for more information.

## Warnings and Cautions

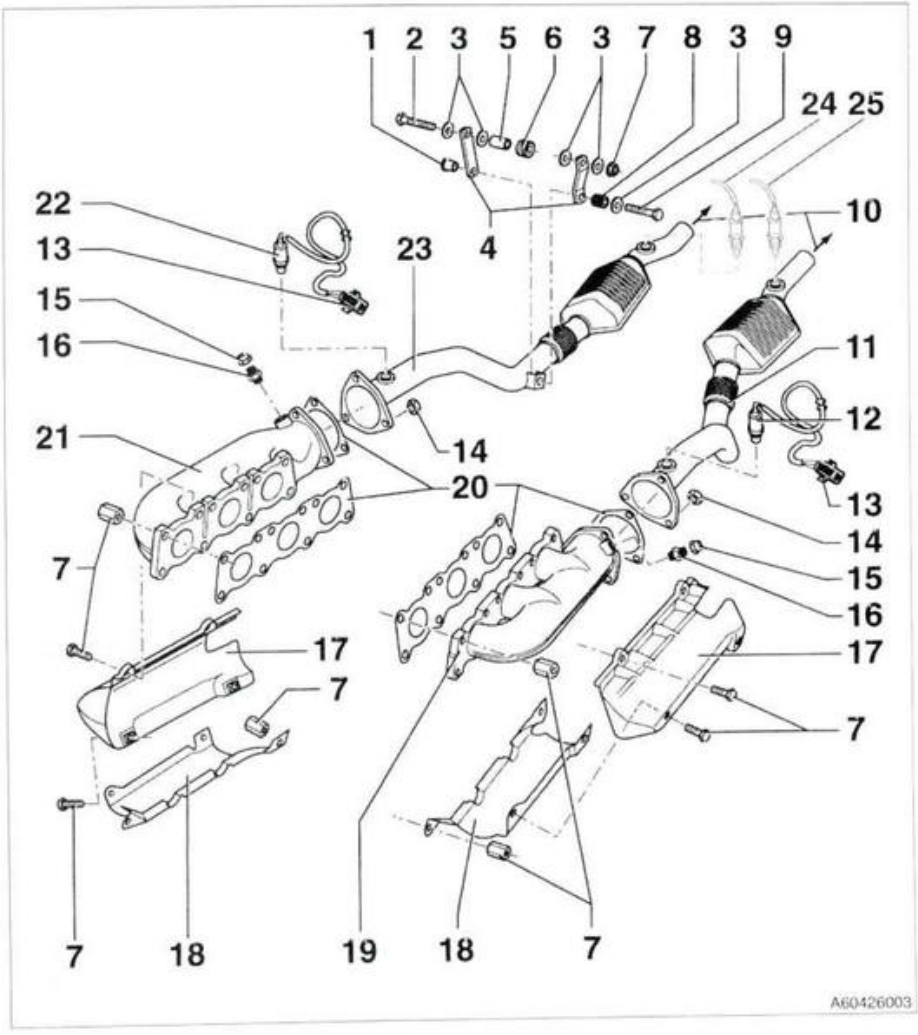
***WARNING***—

- *The exhaust system and catalytic converters operate at very high temperatures. Allow components to cool before servicing. Wear protective gloves to prevent burns. Do not use flammable chemicals near a hot catalytic converter.*
- *Exhaust gases are colorless, odorless and very toxic. Run the engine only in a well-ventilated area. Immediately repair any leaks in the exhaust system or structural damage to the car body that might allow exhaust gases to enter the passenger compartment.*
- *Corroded exhaust system components crumble easily and often have exposed sharp edges. To avoid injury, wear eye protection and heavy gloves when working with exhaust parts.*
- *Heat shields protect the car occupants, undercoating, and various other components from excessive heat. Damaged or missing shields, particularly those above the catalytic converter, increase interior temperatures and create a fire hazard. Repair or replace as necessary.*

***CAUTION***—

- *Do not continue to operate the starter if the engine fails to start promptly. Extended cranking may allow excess fuel to enter catalytic converter(s), creating a fire hazard and possibly damaging the converter(s).*
- *Do not drag or bang the oxygen sensors.*
- *Do not bend the flexible pipe connection in the front exhaust pipe more than 10°. Otherwise it can be damaged.*
- *When replacing exhaust parts, replace gaskets and fasteners.*

## EXHAUST SYSTEM DIAGRAMS



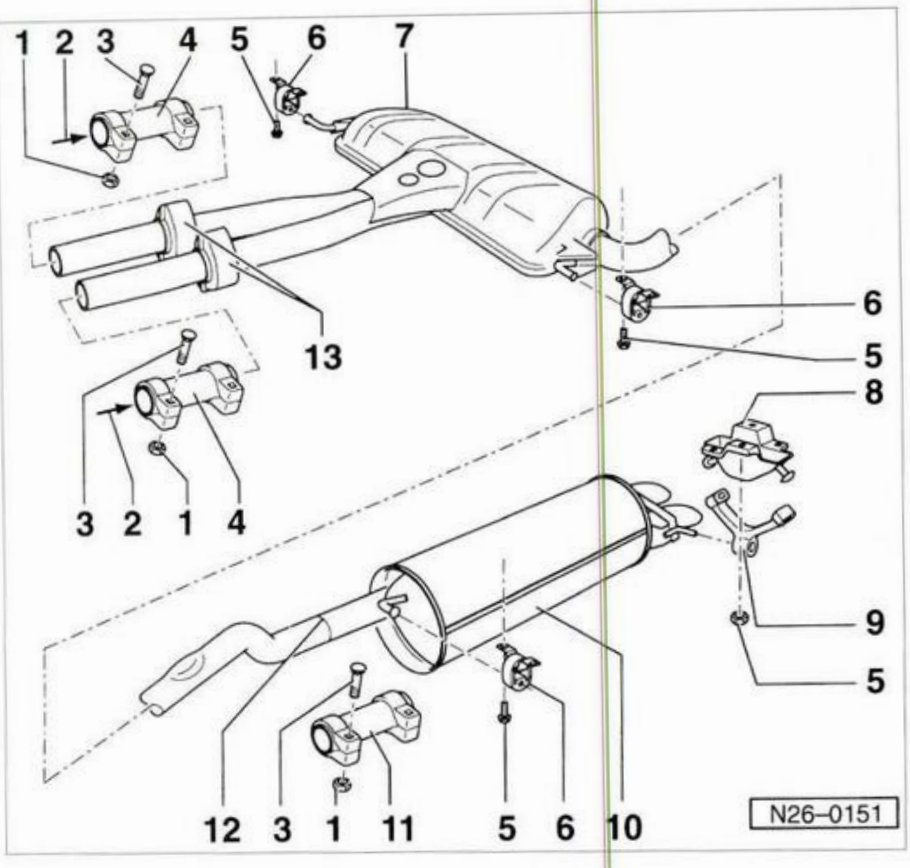

### 2.8 liter engine exhaust system components (front)

1. Spacer sleeve
2. Bolt
3. Washers
4. Bracket
5. Spacer bushing
6. Rubber bushing
7. Nut, 25 Nm (18 ft-lb)
8. Spring
9. Bolt, 25 Nm (18 ft-lb)
10. to Center muffler
11. Left front pipe witn catalytic converter
12. Left bank oxygen sensor (G108) and heater (Z28) in front of catalytic converter
13. Oxygen sensor harness connector
    - 4-pin black
14. Nut, 25 Nm (18 ft-lb)
15. Cap, 10 Nm (7 ft-lb)
16. Plug
17. Upper heat shield
18. Lower heat shield
19. Left exhaust manifold
20. Gaskets
21. Right exhaust manifold
22. Right bank oxygen sensor (G39) and heater (Z19) in front of catalytic converter
23. Right front pipe with catalytic converter
24. Right bank oxygen sensor (G130) and heater (Z29) behind catalytic converter
25. Left bank oxygen sensor (G131)and heater (Z30) behind catalytic converter

***NOTE —***

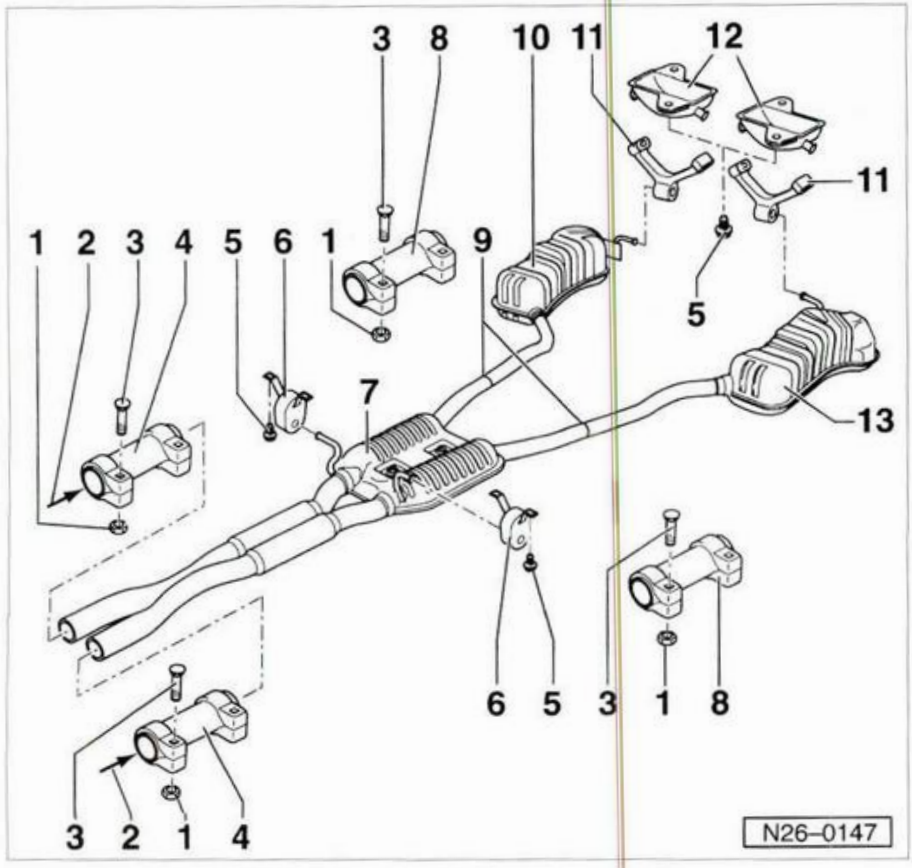
- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*

*Exhaust System Diagrams*



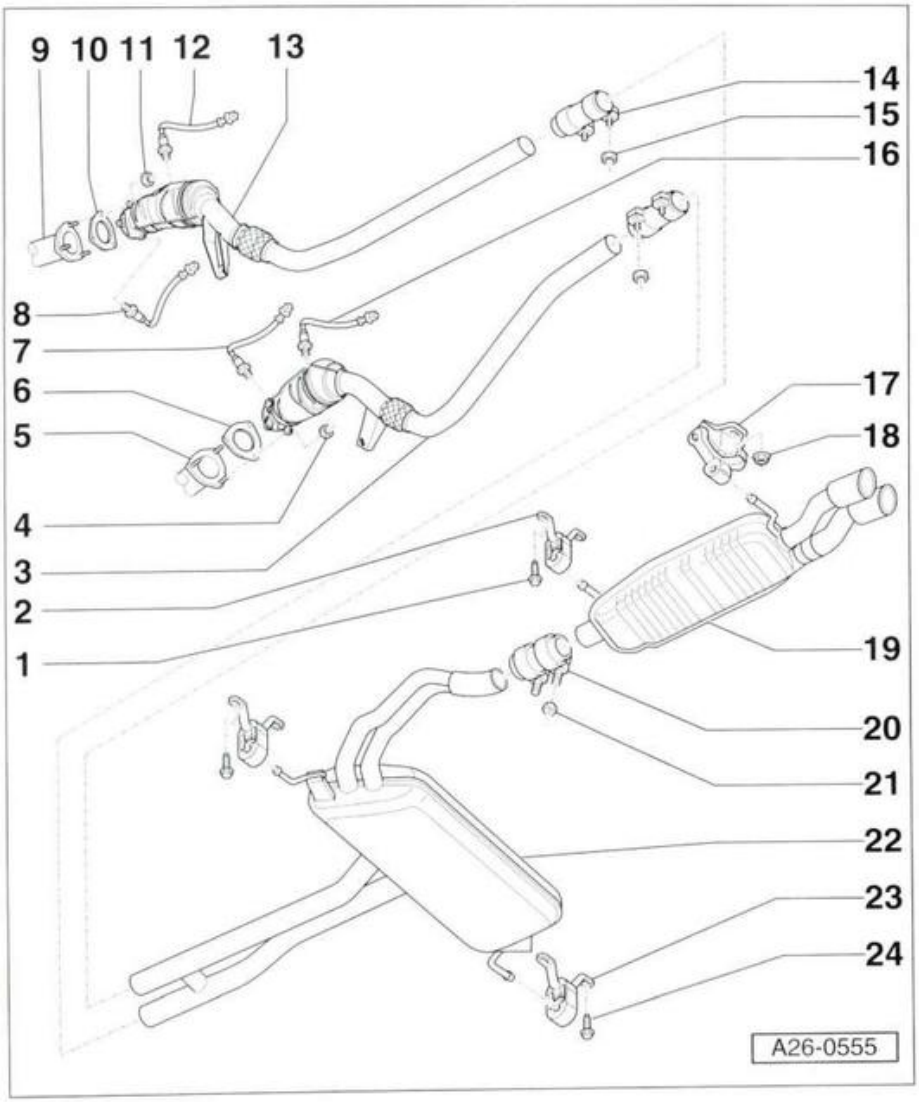

### 2.7 liter or 2.8 liter engine exhaust system components (rear, front-wheel drive)

1. Clamping nut, 40 Nm (30 ft-lb)
2. from Catalytic converter
3. Carriage bolt
4. Double clamp
5. Exhaust hanger mounting bolt, 25 Nm (18 ft-lb)
6. Exhaust hanger
7. Front muffler
8. Bracket
9. Exhaust hanger
10. Rear muffler
11. Double clamp
12. Cut pipe here
13. Resonators




### 2.7 liter or 2.8 liter engine, V8 engine (engine codes ART, AWD, BBD) exhaust system components (rear, quattro)

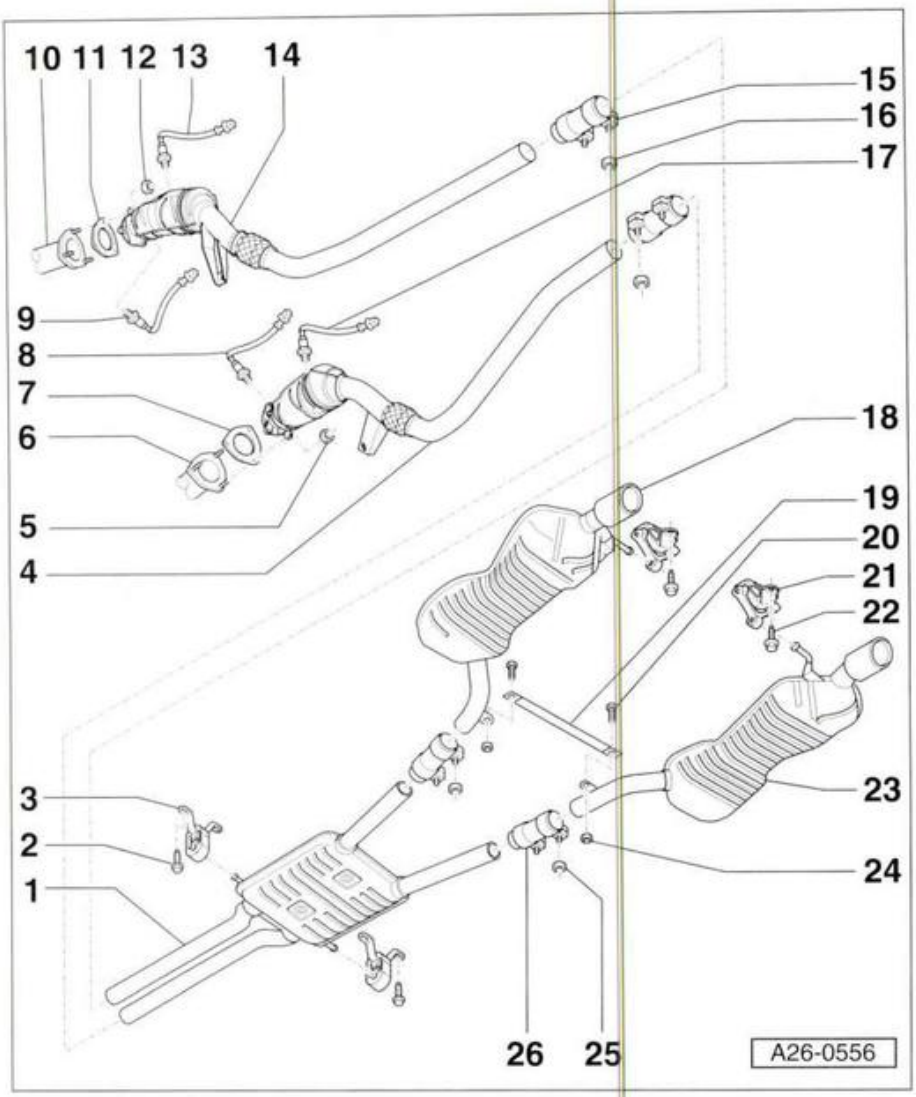
1. Clamping nut, 40 Nm (30 ft-lb)
2. from Catalytic converter
3. Carriage bolt
4. Double clamp
5. Exhaust hanger mounting bolt, 25 Nm (18 ft-lb)
6. Exhaust hanger
7. Front muffler
8. Double clamp
9. Cut pipe here
10. Right rear muffler
11. Exhaust hanger
12. Bracket
13. Left rear muffler




## 3.0 liter engine exhaust system components (front-wheel drive)

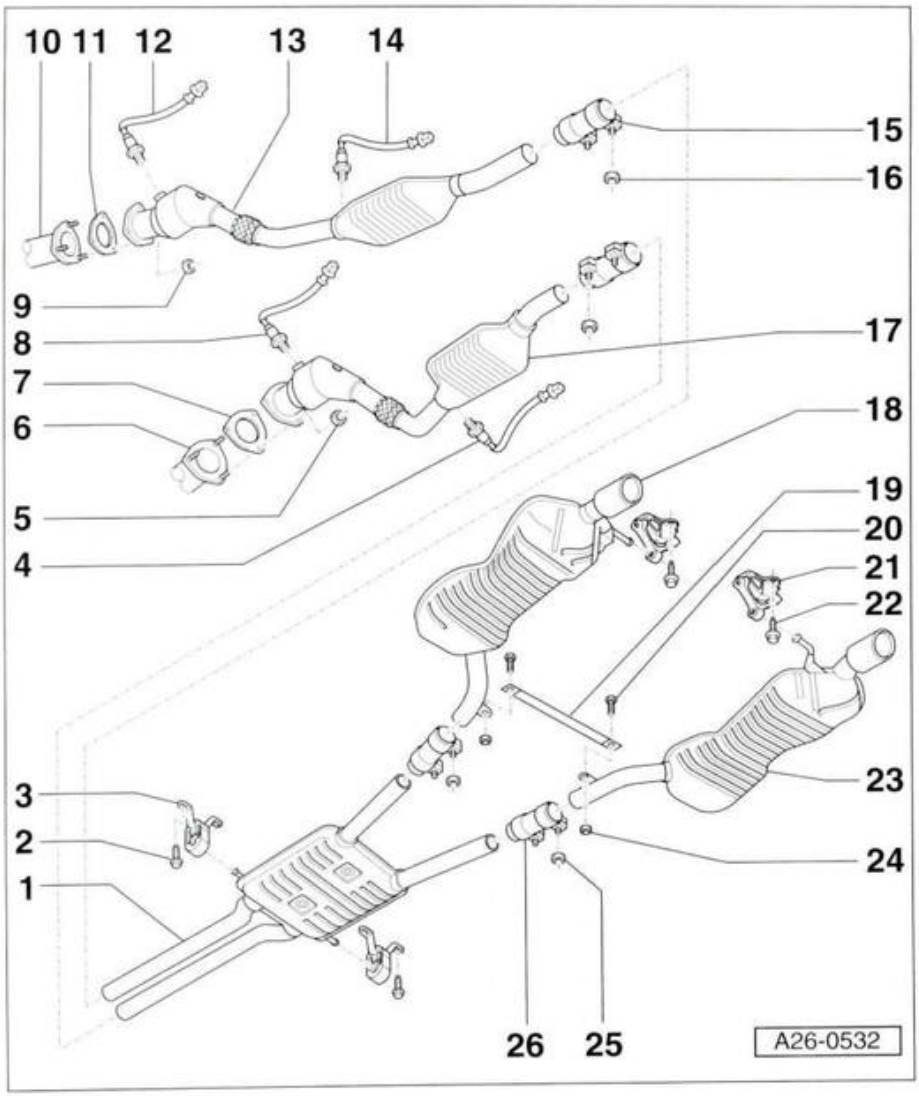
1. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
2. Exhaust hanger
3. Right front pipe with catalytic converter
4. Nut, 27 Nm (20 ft-lb)
5. Right exhaust manifold
6. Gasket
7. Right bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
8. Left bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
9. Left exhaust manifold
10. Gasket
11. Nut, 27 Nm (20 ft-lb)
12. Left bank oxygen sensor after catalytic converter
    - 55 Nm (40 ft-lb)
13. Left front pipe with catalytic converter
14. Double clamp
15. Nut, 40 Nm (30 ft-lb)
16. Right bank oxygen sensor after catalytic converter
17. Exhaust hanger
18. Nut, 18 Nm (13 ft-lb)
19. Rear muffler
20. Double clamp
21. Nut, 40 Nm (30 ft-lb)
22. Center muffler
23. Exhaust hanger
24. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)

*Exhaust System Diagrams*




## 3.0 liter engine exhaust system components (quattro)

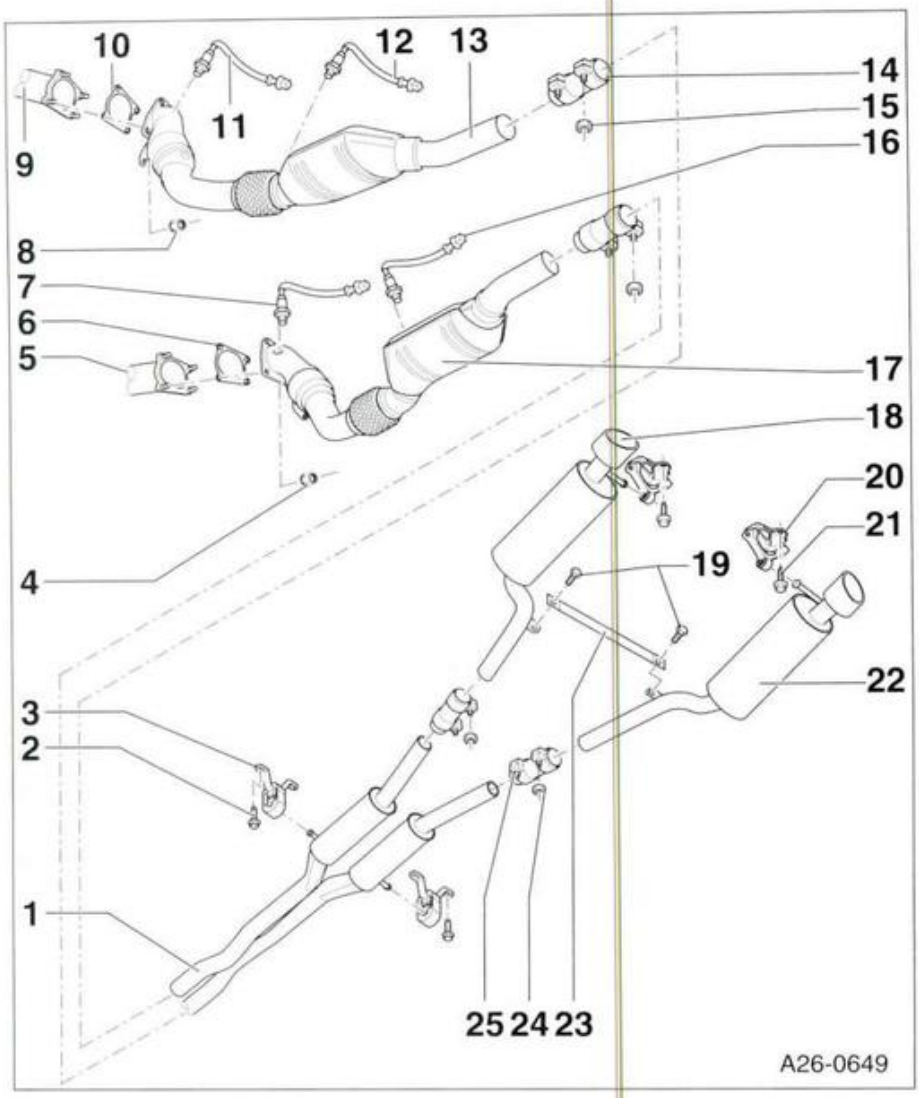
1. Center muffler
2. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
3. Exhaust hanger
4. Right front pipe with catalytic converter
5. Nut, 27 Nm (20 ft-lb)
6. Right exhaust manifold
7. Gasket
8. Right bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
9. Left bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
10. Left exhaust manifold
11. Gasket
12. Nut, 27 Nm (20 ft-lb)
13. Left bank oxygen sensor behind catalytic converter
    - 55 Nm (40 ft-lb)
14. Left front pipe with catalytic converter
15. Double clamp
16. Nut, 40 Nm (30 ft-lb)
17. Right bank oxygen sensor behind catalytic converter
18. Left rear muffler
19. Brace
20. Bolt
21. Exhaust hanger
22. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
23. Right rear muffler
24. Nut, 25 Nm (18 ft-lb)
25. Nut, 40 Nm (30 ft-lb)
26. Double clamp




## V-8 engine exhaust system components (allroad quattro, engine code BAS)

1. Center muffler
2. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
3. Exhaust hanger
4. Right bank oxygen sensor behind catalytic converter
   - 55 Nm (40 ft-lb)
5. Nut, 27 Nm (20 ft-lb)
6. Right exhaust manifold
7. Gasket
8. Right bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
9. Nut, 27 Nm (20 ft-lb)
10. Left exhaust manifold
11. Gasket
12. Left bank oxygen sensor before catalytic converter
    - 55 Nm (40 ft-lb)
13. Left front pipe with preliminary and main catalytic converters
14. Left bank oxygen sensor behind catalytic converter
    - 55 Nm (40 ft-lb)
15. Double clamp
16. Nut, 40 Nm (30 ft-lb)
17. Right front pipe with preliminary and main catalytic converters
18. Left rear muffler
19. Brace
20. Bolt
21. Exhaust hanger
22. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
23. Right rear muffler
24. Nut, 25 Nm (18 ft-lb)
25. Nut, 40 Nm (30 ft-lb)
26. Double clamp

*Exhaust System Diagrams*




## V-8 engine exhaust system components (RS6, engine code BCY)

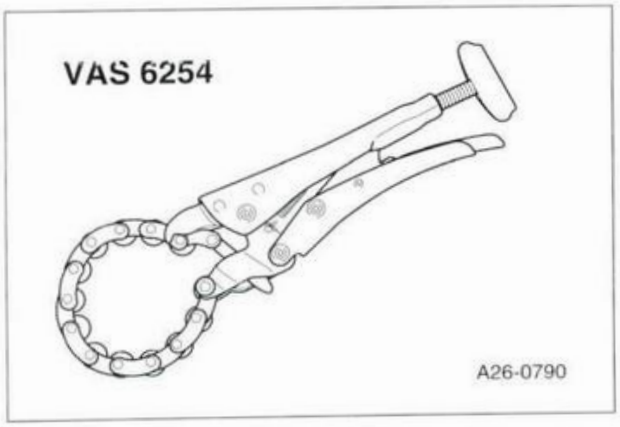
1. Center muffler
2. Exhaust hanger mounting bolt, 25 Nm (18 ft-lb)
3. Exhaust hanger
4. Nut, 50 Nm (37 ft-lb)
5. Right turbocharger
6. Gasket
7. Right bank oxygen sensor before catalytic converter
   - 55 Nm (40 ft-lb)
8. Nut, 50 Nm (37 ft-lb)
9. Left turbocharger
10. Gasket
11. Left bank oxygen sensor before catalytic converter
    - 55 Nm (40 ft-lb)
12. Left bank oxygen sensor behind catalytic converter
    - 55 Nm (40 ft-lb)
13. Left front pipe with preliminary and main catalytic converters
14. Double clamp
15. Nut, 40 Nm (30 ft-lb)
16. Right bank oxygen sensor behind catalytic converter
    - 55 Nm (40 ft-lb)
17. Right front pipe with preliminary and main catalytic converters
18. Left rear muffler
19. Bolt, 25 Nm (18 ft-lb)
20. Exhaust hanger
21. Exhaust hanger mounting bolt, 23 Nm (17 ft-lb)
22. Right rear muffler
23. Brace
24. Nut, 40 Nm (30 ft-lb)
25. Double clamp

## EXHAUST SYSTEM COMPONENT REPLACEMENT

The exhaust system is designed to be maintenance free, although regular inspection is warranted due to the harsh operating conditions. Under normal conditions, catalytic converters do not require replacement unless they are damaged.

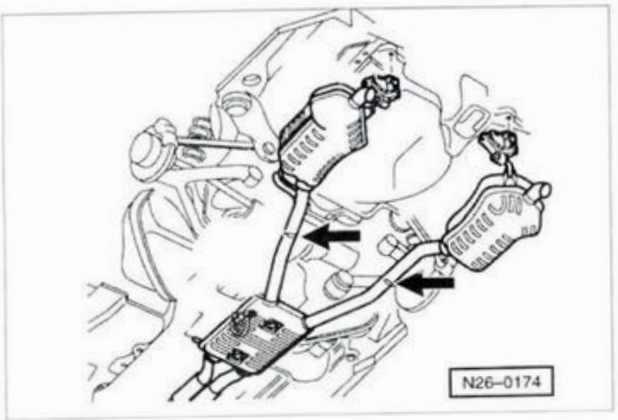
### Exhaust system, installation details

The exhaust systems on most of the vehicles covered by this manual are one-piece. One pipe starts at each exhaust manifold or turbocharger and incorporates preliminary catalytic converter (where equipped), main catalytic converter, mufflers and tailpipe.




– Liberally apply penetrating oil to exhaust system fasteners and wait several minutes before attempting removal.

➤ To replace damaged or rusted sections of the exhaust system, use special tool VAS 6254 or equivalent pipe cutter.

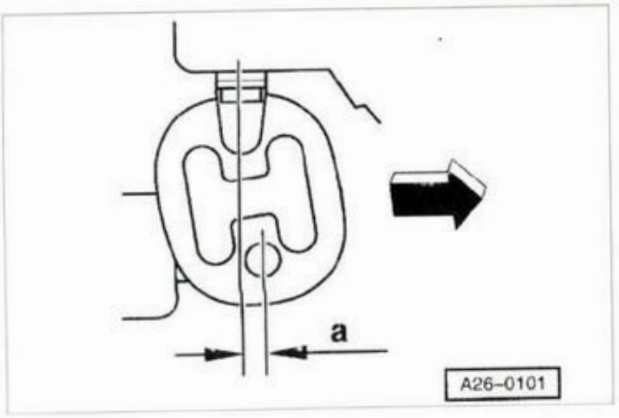



➤ Cut pipe at separation point (**arrows**) marked by depression around circumference.

– Attach new pipe to old section using double clamp.

– Use new fasteners, clamps, mounts and gaskets when replacing exhaust system components.

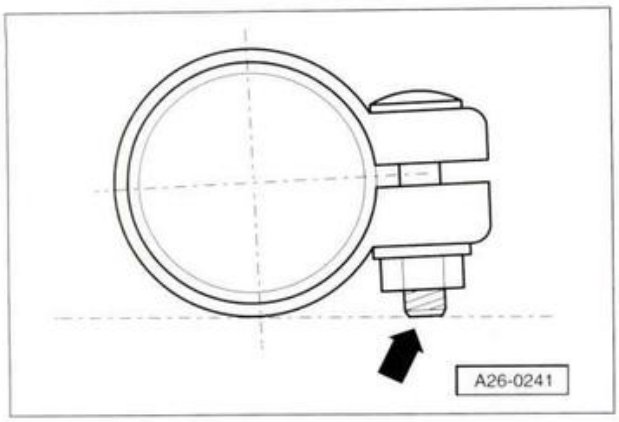
– Use high-temperature anti-seize compound on threaded fasteners to make future replacement easier.




➤ Before tightening clamps and fasteners, push exhaust system forward (in direction of vehicle motion, **arrow**) to preload exhaust hangers.

| **Exhaust hanger preload (in direction of vehicle motion)** | |
|---|---|
| Distance **a** | 5 - 11 mm (¼ - ¾ in) |

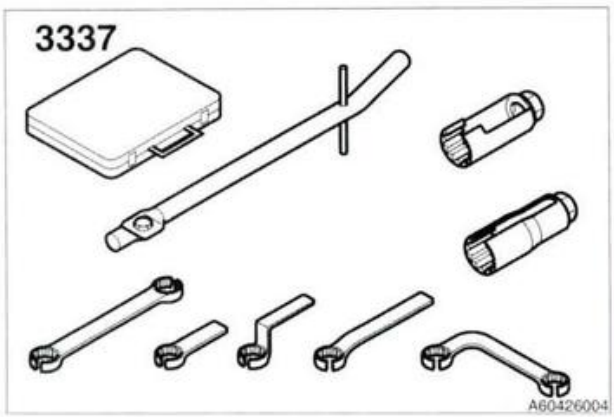
– Make sure exhaust system is not under stress and has sufficient clearance from body.




Make sure double clamp bolt threads point down (**arrow**). To prevent bolt threads from becoming snagged and damaged by road debris, make sure threads do not project below bottom edge of clamp.

| Tightening torque | |
|---|---|
| Double clamp pinch fastener | 40 Nm (30 ft-lb) |

## Oxygen sensor, replacing




Use special tool VAG 3337 or equivalent to remove and install oxygen sensor requires.

***CAUTION—***
- *When installing oxygen sensor be sure to use high temperature anti-seize compound that contains no silicone and is marked "safe for oxygen sensors" (VAG part no. G 052 112 A3).*
- *Do not allow anti-seize compound to contaminate oxygen sensor tip.*

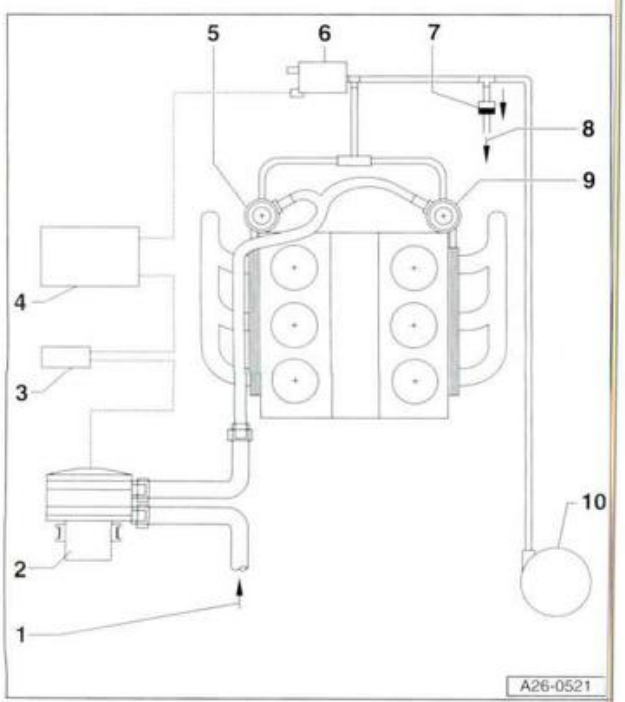
– To locate correct oxygen sensor harness connector, see engine compartment diagrams in **24 Fuel Injection**.

| Tightening torque | |
|---|---|
| Oxygen sensor to exhaust system | 55 Nm (40 ft-lb) |

## Secondary Air Injection

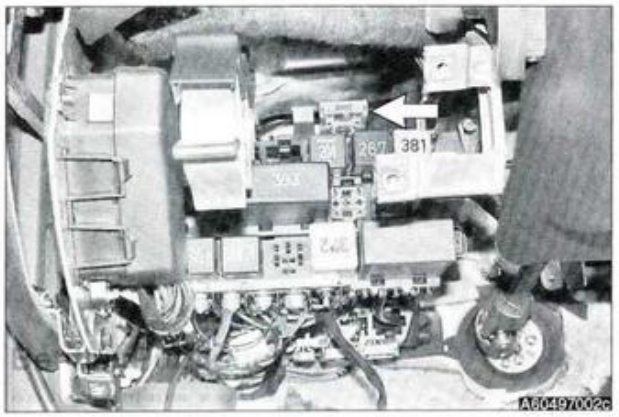
The secondary air system pumps ambient air into the exhaust stream after a cold engine start to reduce the warm-up time of the catalytic converters and to reduce HC and CO emissions. The engine control module (ECM) controls and monitors the secondary air injection system.

Secondary air injection is used in normally aspirated engines, and in turbocharged engines with automatic transmission.




### Secondary air injection system schematic

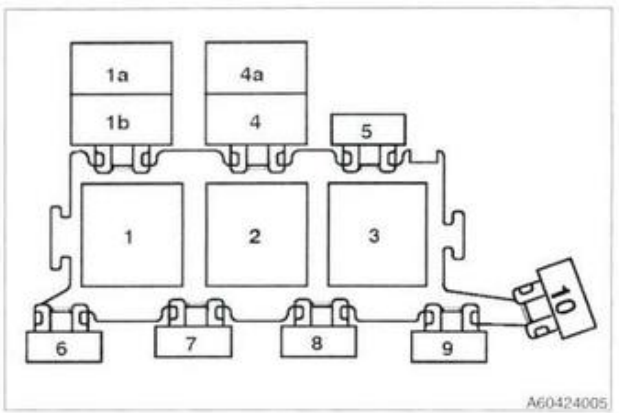
1. from Air filter housing
2. Secondary air injection pump (V101)
3. Secondary air injection pump relay (J299)
4. Engine control module (ECM) (J220)
5. Combination valve on right cylinder head
6. Secondary air injection solenoid (N112)
7. Check valve
8. to Intake manifold
9. Combination valve on left cylinder head
10. Vacuum reservoir




## Secondary air injection fuse and relay

Under left dashboard in 13-fold relay and fuse panel: Secondary air pump fuse 50A (**arrow**).

For access information, see **97 Fuses, Relays, Component Locations**.

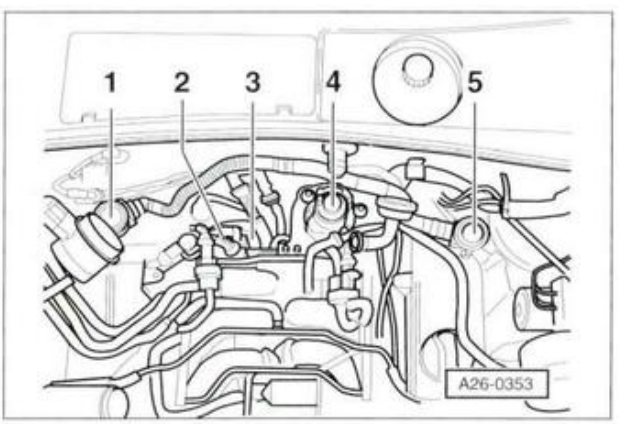



E-box, left rear engine compartment in plenum chamber:

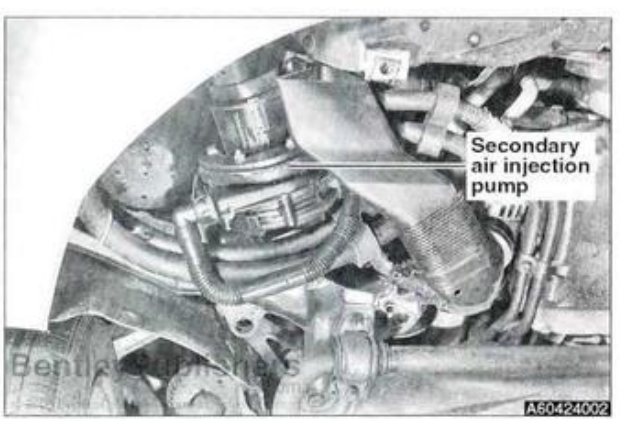
- Fuse **7**: Secondary air pump 40A fuse
- Relay **2**: Secondary air pump relay (J299)

## Secondary air injection pump (V101)

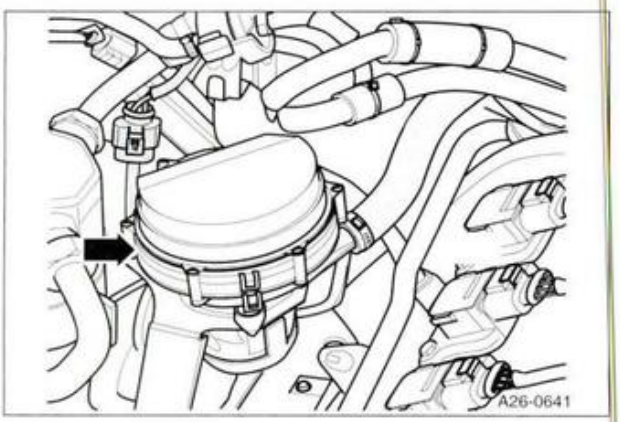
**2.7 liter V6 twin-turbo engine**: At left rear of intake manifold (**4**).




**2.8 liter V6, 3.0 liter V6, V8 engine(allroad quattro, engine code BAS)**: Underneath right front of engine, behind right end of front bumper.

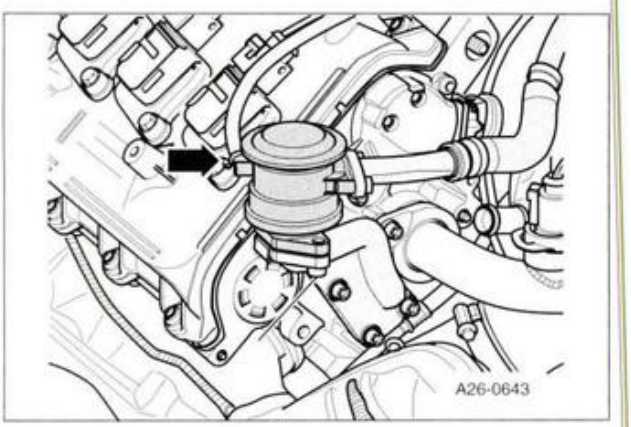



Bentley Publishers



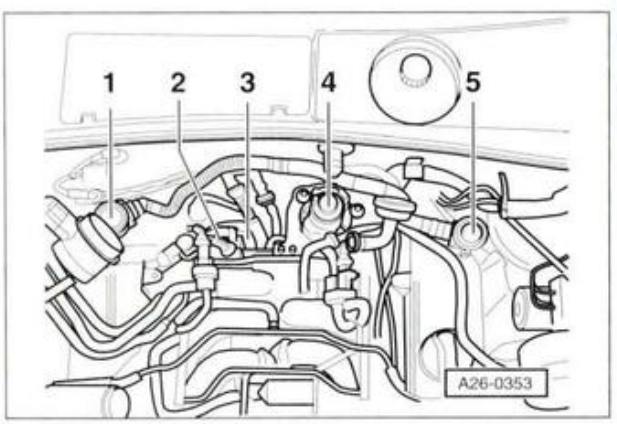

➤ **V8 twin-turbo engine (RS6, engine code BCY)**: Right rear engine compartment (**arrow**).

## Combination valve

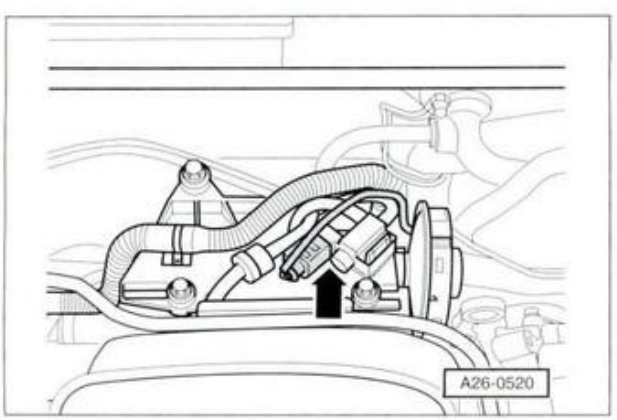



➤ **All engines**: Rear of cylinder head (**arrow**).

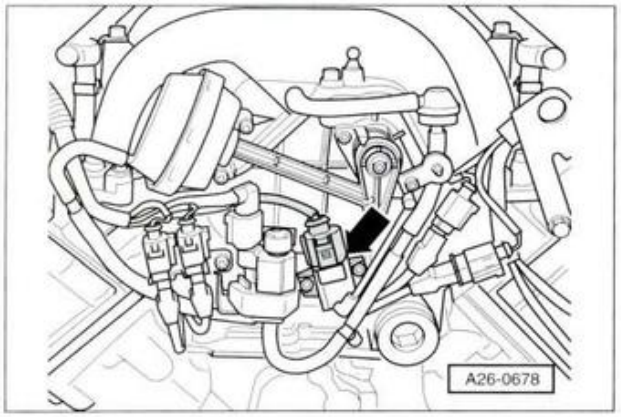
## Secondary air injection solenoid (N112)



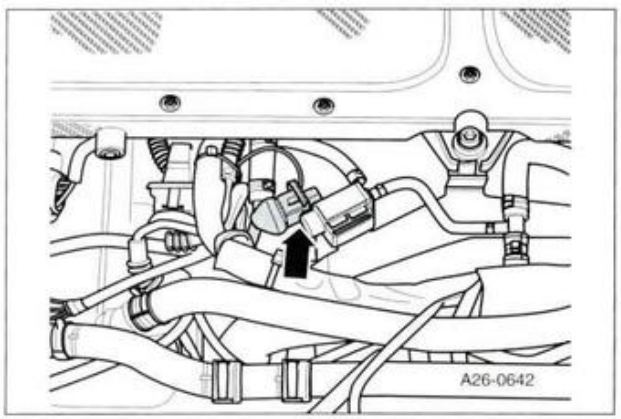

➤ **2.7 liter V6 twin-turbo engine**: At right rear of intake manifold (**3**).




➤ **3.0 liter V6 engine**: At engine compartment bulkhead behind engine (**arrow**).




➤ **V8 engine (allroad quattro, engine code BAS):** Underneath front engine cover, at front of intake manifold (**arrow**).




➤ **V8 engine (RS6, engine code BCY)**: Underneath front engine cover, at right front of intake manifold (**arrow**).

## Vacuum reservoir

**All engines**: Under left front wheel housing liner.

# 27 Battery, Alternator, Starter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## GENERAL

This repair group covers battery, alternator and starter service and repairs.

The alternator and starter are wired directly to the battery. To prevent accidental shorts that might blow a fuse or damage wires and electrical components, disconnect the negative (–) battery lead before working on the electrical system.

Various versions of alternators, starters, and batteries have been used in Audi A6 models. Replace components according to the original equipment specification. When in doubt, consult an authorized Audi parts department.

Also see the following:

- **03 Maintenance** for engine accessory belt replacement
- **9 Electrical System–General** for bus information and electrical diagnostics
- **EWD Electrical Wiring Diagrams** for battery, charging system and starter schematics

***NOTE***—

- *The alternator is identified as generator by the vehicle manufacturer.*

## Cruise control

Cruise control functions are controlled by the engine control module (ECM). The only serviceable cruise control components are the steering wheel, clutch and brake pedal switches and related wiring. See the following repair groups:

- **30 Clutch** for clutch pedal position switch
- **46 Brakes–Mechanical** for brake light switch
- **96 Interior Lights, Switches, Anti-theft** for steering column stalk switches

## Battery reconnection notes

In addition to battery / power supply warnings and cautions in this repair group and in **00 Warnings and Cautions,** observe the following whenever the battery is disconnected or accidentally discharged.

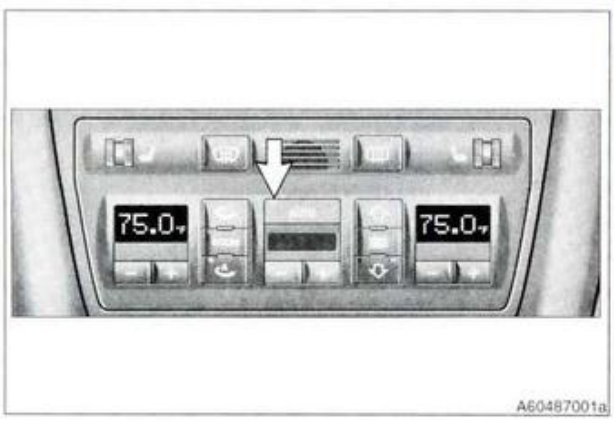
- Reset climate control.
- Reset clock.
- Reset radio presets.
- Disconnect and reconnect Audi Telematics (telephone) back-up battery.
- Reinitialize window regulator motors.

### Climate control, resetting

For climate control to operate in automatic mode, set to 75°F (23°C).

➤ Press AUTO button to select automatic operation. Indicator light (**arrow**) lights up.

– Press - or + buttons on each side to set temperature to 75°F (23°C).



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### Clock, resetting

– See owner's manual.

### Radio presets, resetting

– Prior to disconnecting battery, note down radio presets. To reset, see owner's manual.

### Telematics back-up battery, reconnecting

– On vehicle equipped with Audi Telematics by OnStar®, switch OFF emergency (back-up) battery for the Telematic control module prior to disconnecting vehicle battery.

– After reconnecting vehicle battery, switch emergency (back-up) battery ON.

### Window regulator motors, reinitializing

If the battery is disconnected, the window control module loses its memory of window current position and disables one-touch automatic up / down function. To restore one-touch operation:

- Switch ignition ON.
- Use window switches to raise windows to top.
- Operate each window switch in CLOSE direction for 1 second to reinitialize one-touch operation.
- Test each window by briefly pressing switch in OPEN direction. Make sure window opens fully.

## Troubleshooting

Tests for individual electrical system components are described under component headings in this repair group. **Table a** gives some general troubleshooting ideas.

**Table a. Battery, starter and alternator troubleshooting**

| Symptom | Probable cause | Corrective action |
|---|---|---|
| Engine does not crank. | Fault in immobilizer system. | Try another ignition key. If problem persists, contact your authorized dealer. |
| | Faulty automatic transmission range switch. | Check, and if necessary, replace automatic transmission range switch. |
| Engine cranks slowly or not at all, solenoid clicks when starter is operated. | Battery cables loose, dirty or corroded. | See **03 Maintenance** for battery service. |
| | Battery discharged. | Charge battery and test. Replace if necessary. |
| | Battery to body ground cable loose, dirty or corroded. | Inspect ground cable. Clean, tighten or replace if necessary. |
| | Poor connection at starter motor terminal 30. | Check connections, test for voltage at starter. Test for voltage at clutch switch or automatic transmission range switch. See **97 Fuses, Relays, Component Locations**. |
| | Starter motor or solenoid faulty. | Test starter. |
| Battery does not stay charged more than a few days. | Short circuit draining battery. | Test for excessive current drain with everything electrical off. |
| | Short driving trips and high electrical drain on charging system. | Evaluate driving style. Where possible, reduce electrical consumption when making short trips. |
| | Engine accessory belt loose, worn, damaged. | See **03 Maintenance** for belt service. |
| | Battery faulty. | Test battery and replace if necessary. |
| | Battery cables loose, dirty or corroded. | See **03 Maintenance** for battery service. |
| | Alternator faulty. | Test alternator and voltage regulator. |

## Warnings and Cautions

***WARNING***—

- *Wear goggles, rubber gloves, and a rubber apron when working around the battery and battery acid (electrolyte). Battery acid contains sulfuric acid and can cause skin irritation and burning.*
- *If battery acid is spilled on your skin or clothing, flush the area at once with large quantities of water. If electrolyte gets into your eyes, bathe them with large quantities of clean water for several minutes and call a physician.*
- *Allow a frozen battery to thaw before attempting to recharge it.*
- *Gases given off by the battery during charging are explosive. Do not smoke. Keep open flames away from the battery top, and prevent electrical sparks by turning off the battery charger before connecting or disconnecting it.*
- *If the battery begins gassing (boiling) violently when charging, reduce the charging rate immediately.*
- *Charge the battery in a well ventilated area.*
- *When removing the battery, disconnect negative (–) terminal first.*
- *Before beginning repairs on the electrical system:*
  *-Switch electrical consumers OFF.*
  *-Switch ignition OFF and remove ignition key.*

***CAUTION***—

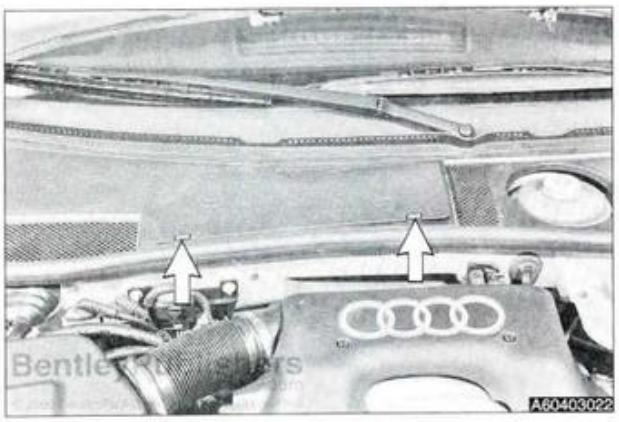
- *Do not disconnect the battery cables while the engine is running. The alternator will be damaged.*
- *Do not operate the alternator with its output terminal (B+ or 30) disconnected and the other terminals connected. Do not short, bridge, or ground any terminals of the charging system.*
- *Disconnect the negative (–) battery cable when working at or near the alternator. Battery voltage is always present at the rear of the alternator, even with ignition key OFF.*
- *Disconnect the negative (–) battery cable first and reconnect it last. Cover the battery post with an insulating material whenever the cable is removed.*
- *Disconnect the battery cables during battery charging. This prevents damage to the alternator and other solid-state components.*
- *Loosen battery cell caps before charging the battery but leave them on the battery to prevent battery acid splatter.*
- *Do not reverse battery terminals. Even a momentary wrong connection can damage the alternator or electrical components.*
- *Replace the battery if the case is cracked or leaking. Leaking electrolyte can damage the car. If electrolyte is spilled, clean the area with a solution of baking soda and water.*
- *Batteries are damaged by quick charging. Use quick charging as a last alternative when slow charging is not possible.*
- *Do not quick charge a totally discharged battery.*
- *Do not allow the battery charging rate to exceed 16.5 volts.*
- *Prior to disconnecting the battery, read the battery disconnection precautions in* **00 Warnings and Cautions**.

***CAUTION—***

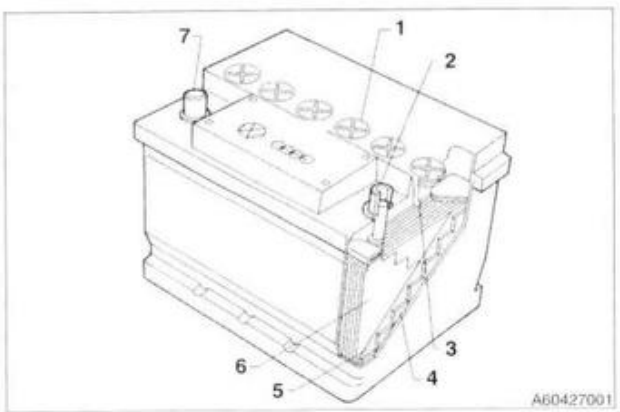
- *Do not store precision tools in same room where batteries are being charged. Tools may corrode due to chemical reactions.*
- *Only use a digital multimeter when testing automotive electrical components.*
- *Disconnecting the battery may erase the radio code and radio presets. Note radio code and stored stations and restore them after reconnecting the battery.*
- *On-board computer and clock stored settings may be lost when the battery is disconnected.*
- *Do not depend on the color of insulation to tell battery positive and negative cables apart. Label cables before removing.*
- *If a quick charger is used to charge the battery, disconnect the battery from vehicle electrical system and remove. This prevents damage to paint work and upholstery.*

## BATTERY

The battery is in the plenum chamber, behind the engine.




➤ Open engine hood, release battery cover latches (**arrow**s) and flip cover up to gain access to battery.




➤ Battery components:

1. Filler cap
2. Positive (B+) terminal
3. Electrolyte level indicator
4. Negative plate (grey)
5. Separator (insulator)
6. Positive plate (dark brown)
7. Negative (–) terminal

The six-cell, 12-volt lead-acid battery is rated in ampere / hours (Ah) and cold cranking amps (CCA). The Ah rating is determined by the average amount of current the battery can deliver over time without dropping below a specified voltage. The CCA rating is determined by the battery's ability to deliver starting current at 0°F (–18°C).

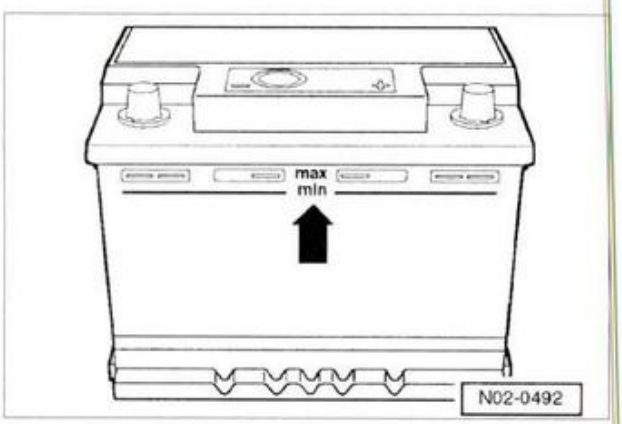
If the battery discharges when vehicle is not driven, there may be a constant drain or current draw causing it to discharge when ignition is OFF. Depending on the amount of draw and battery condition, a full discharge can happen overnight or it may take a few weeks. Although a small static drain on the battery is normal (example: clock or radio memory), a large drain such as a relay sticking on or

a faulty switch causes the battery to discharge quickly. Perform a static current draw test first when experiencing battery discharge. See **Static current draw, checking** in this repair group.

If current draw on the battery is not excessive but it still discharges, test the battery charge using open circuit or load voltage test. See **Open circuit voltage test** and **Load voltage, testing** in this repair group. Batteries with removable filler caps can also be tested by checking electrolyte specific gravity. See **Electrolyte specific gravity, testing** in this repair group. Inexpensive specific gravity testers are available at most auto supply stores.

Some vehicles are equipped with batteries that have a central gas venting system with anti-flash protection. The anti-flash protection consists of a small round fiberglass mat. Its purpose is to vent gases that form in the battery through a vent opening in the battery cover. Anti-flash protection is also installed to prevent ignition of flammable gases in the battery.

## Electrolyte level, checking




➤ Visually check battery electrolyte level on batteries with recognizable MAX and MIN markings (**arrow**).

– If there are no markings on battery housing, or if electrolyte level cannot be read, remove battery filler caps to view electrolyte level. Check that level is at same height as visible plastic peg.

– Top off each battery cell as necessary with distilled water using a battery filling bottle. Use a hydrometer to remove excess electrolyte.

***CAUTION—***
*• Use genuine Audi battery filler caps fitted with O-ring seals.*

***NOTE—***
*• Use of distilled water to fill battery cells prevents contamination of battery electrolyte and decreases the likelihood of self-discharge.*

## Battery residual voltage, checking

– Make sure vehicle is not started or driven for at least 2 hours before taking measurements.

– Make sure no loads are applied to battery for at least 2 hours before taking measurements.

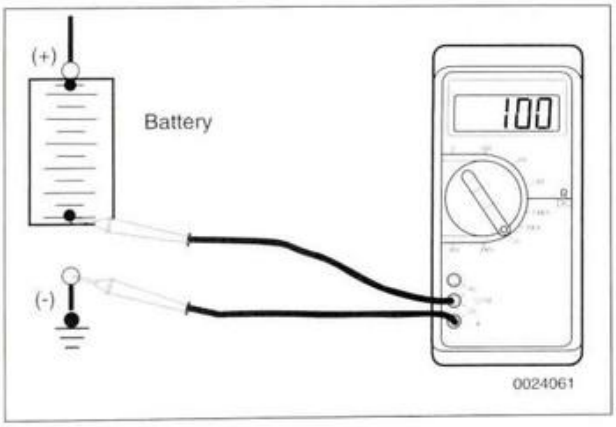
– Make sure battery is not charged for at least 2 hours before taking measurements.

– With ignition switched OFF, use digital multimeter to measure voltage between battery terminals.
  • If multimeter displays 12.5 volts or more, battery is OK.
  • If voltage is below 12.5 volts, continue with tests.

## Static current draw, checking

– Make sure ignition and all electrical accessories are switched OFF.

– Disconnect negative (–) cable from battery.




➤ Connect a digital ammeter between battery negative post and negative battery cable and measure current draw.

| Static current draw parameters | |
|---|---|
| Normal | 0 - 100 mA |
| Too high | > 500 mA |

– If current draw is 500 mA (0.5 amp) or higher, remove one fuse at a time until the current drops to a normal range. See **EWD Electrical Wiring Diagrams** to help locate wiring or component faults.

## Open circuit voltage test

– Load battery with 15 amps for one minute: Switch headlights ON with engine OFF.

– Turn headlights OFF and disconnect battery ground cable.

– Connect accurate digital voltmeter to battery posts and check battery voltage.

– See **Table b** for open-circuit voltage levels and state of charge.

| Table b. Open circuit voltage and battery charge | |
|---|---|
| **Open circuit voltage** | **State of charge** |
| 12.6 volts or more | Fully charged |
| 12.4 volts | 75% charged |
| 12.2 volts | 50% charged |
| 12.0 volts | 25% charged |
| 11.7 volts or less | Fully discharged |

The battery may be in satisfactory condition if open-circuit voltage is at least 12.5 volts.

– If open-circuit voltage is at 12.5 volts or above, but battery still lacks power for starting, perform a load voltage test to determine battery service condition. See **Load voltage, testing** in this repair group.

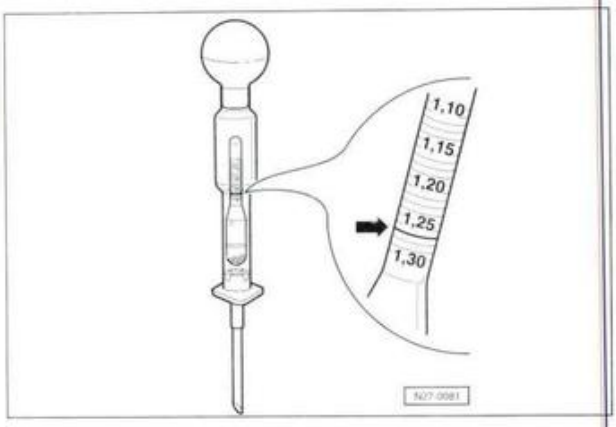
– If open-circuit voltage is below 12.5 volts, recharge battery. After charging, if battery still fails open circuit voltage test, replace it.

## Electrolyte specific gravity, testing

Checking the specific gravity of each battery cells can provide accurate information about the battery condition.

Test electrolyte specific gravity with a battery hydrometer. The hydrometer is a glass or plastic cylinder with a freely moving float inside. When electrolyte is drawn into the cylinder, the level to which the float sinks indicates the specific gravity of the electrolyte. The more dense the concentration of sulfuric acid in the electrolyte, the less the float sinks, resulting in a higher reading and indicating a higher state of charge.

Note that electrolyte temperature affects hydrometer reading. Check electrolyte temperature with a thermometer. Add 0.004 to hydrometer reading for every 6°C (10°F) that electrolyte is above




27°C (80°F). Subtract 0.004 from reading for every 6°C (10°F) that electrolyte is below 27°C (80°F).Make sure that battery electrolyte temperature is at least 10°C (50°F).

- Load battery with 15 amps for one minute: Switch headlights ON with engine OFF.
- Turn headlights OFF. Remove battery filler caps.
- Immerse hydrometer in a cell and extract sufficient electrolyte so that indicator floats free in electrolyte. Read specific gravity and compare to specifications in **Table c**.

| Table c. Specific gravity of battery electrolyte at 27°C (80°F) | |
|---|---|
| **Specific gravity** | **Charge condition** |
| 1.265 | Fully charged |
| 1.225 | 75% charged |
| 1.190 | 50% charged |
| 1.155 | 25% charged |
| 1.120 | Fully discharged |

- If the average specific gravity of the six cells is 1.225 or higher, the battery is in satisfactory condition.
- If the average specific gravity is 1.225 or higher, but the battery lacks power for starting, determine the battery's service condition with a load voltage test. See **Load voltage, testing** in this repair group.
- If electrolyte density is below 1.225, charge battery. After recharging, if specific gravity varies by more than 0.005 between any two cells, replace battery.
- Install filler caps with O-rings and wipe up spilled electrolyte.

## Load voltage, testing

A load voltage battery test is made by connecting a specific resistive load to the battery terminals and then measuring battery voltage.

- Make sure battery is fully charged and at room temperature.
- Disconnect negative (–) battery cable.
- Connect battery load tester and apply specified load (**Table d**, column 3) for 15 seconds and read off battery voltage (**Table d**, column 4). If voltage is below specification, or minimum voltage does not stay at a steady reading, replace battery.

| Table d. Battery load current and minimum voltage | | | |
|---|---|---|---|
| **Battery capacity (Ah)** | **Cold cranking amps (CCA)** | **Load current (amps)** | **Minimum voltage** |
| 36 Ah | 340 | 100 | 10.0 |
| 40 Ah-49 Ah | 220 | 200 | 9.2 |
| 50 Ah-60 Ah | 265-280 | 200 | 9.4 |
| 61 Ah-80 Ah | 300-380 | 300 | 9.0 |
| 81 Ah-110 Ah | 380-500 | 300 | 9.5 |

## Battery, charging

– Recharge a discharged battery using a battery charger. Read and follow the instructions provided by the battery charger's manufacturer.

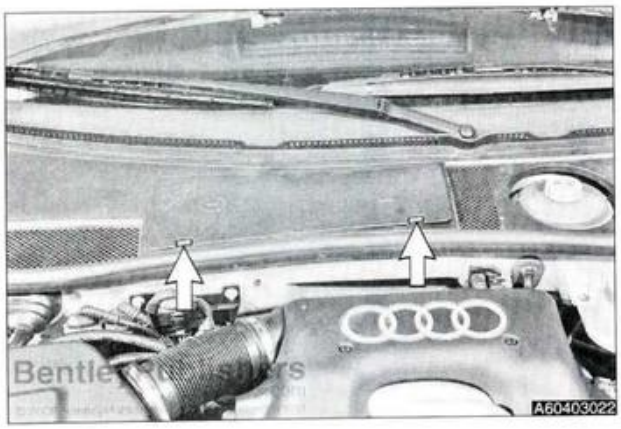
– Use slow-charging rate (10% of battery capacity) to prevent battery damage caused by overheating.

> ***CAUTION—***
> - *Prolonged battery charging evaporates the electrolyte to a level that can damage the battery.*
> - *Loosen battery cell caps before charging battery but leave them on battery to prevent battery acid splatter.*

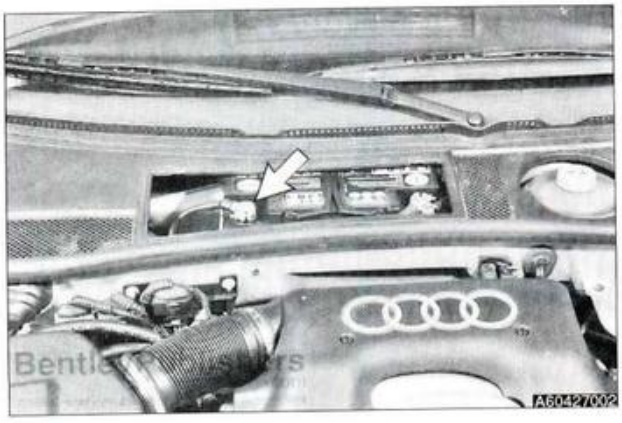
## Battery, disconnecting and connecting

Make sure the vehicle electrical system is protected by disconnecting the battery negative (–) terminal prior to working on any electrical system components.

> ***CAUTION—***
> - *Do not loosen or remove ground strap from body. Disconnect terminal from battery only.*




➢ Open engine hood, release battery cover latches (**arrows**) and flip cover up to gain access to battery.

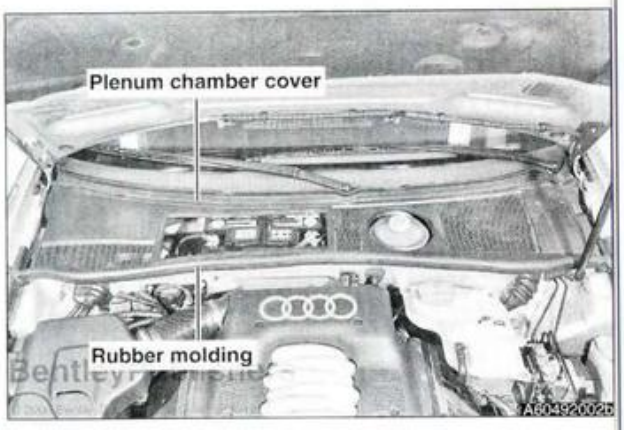


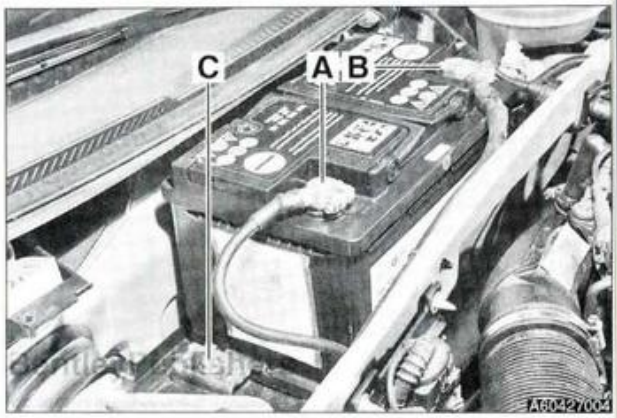

➢ Unbolt and disconnect battery negative (-) cable (**arrow**). Position cable to side where it cannot come in contact with battery negative (-) terminal.

– When reconnecting negative (-) battery terminal, make sure positive (+) terminal is connected first.

| **Tightening torque** | |
|---|---|
| Battery cable to battery (M6) | 9 Nm (80 in-lb) |

– After connecting battery terminal:
- Switch ignition ON, then OFF.
- Check for diagnostic trouble codes (DTCs) using VAG scan tool or equivalent.
- Reset electrical consumers. See **Battery reconnection notes** in this repair group.
- Check function of all electrical consumers.




## Battery, removing and installing

➤ Open engine hood and pull off rubber molding at engine compartment rear bulkhead. Pull plenum chamber cover forward and remove.

➤ Working at battery:

- Disconnect negative (-) cable (**A**).
- Disconnect positive (+) cable (**B**).
- Remove battery hold-down bracket bolt (**C**).
- Remove hold-down bracket and lift battery out.

> ***CAUTION—***
> *• Disconnect negative (-) cable first and reconnect it last.*

– Installation is reverse of removal. Secure battery firmly, but do not overtighten hold-down bracket bolt.

| **Tightening torque** | |
|---|---|
| Battery cable to battery (M6) | 9 Nm (80 in-lb) |
| Battery hold-down to plenum chamber (M8) | 15 Nm (11 ft-lb) |

– Make sure battery venting hoses (if present) are routed correctly to side.

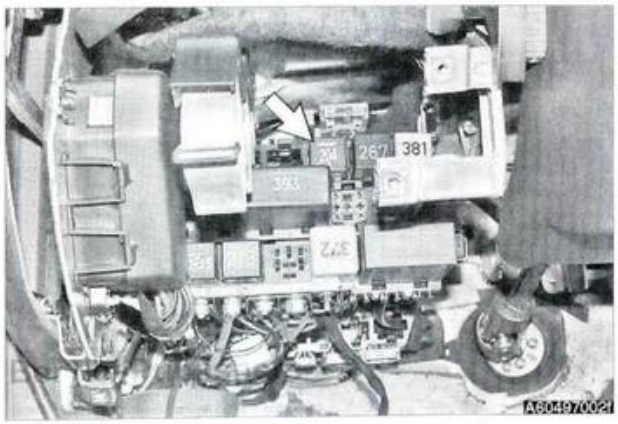
– After connecting battery terminals:

- Switch ignition ON, then OFF.
- Check for diagnostic trouble codes (DTCs) using VAG scan tool or equivalent.
- Reset electrical consumers. See **Battery reconnection notes** in this repair group.
- Check function of all electrical consumers.

# STARTER

## Starter troubleshooting

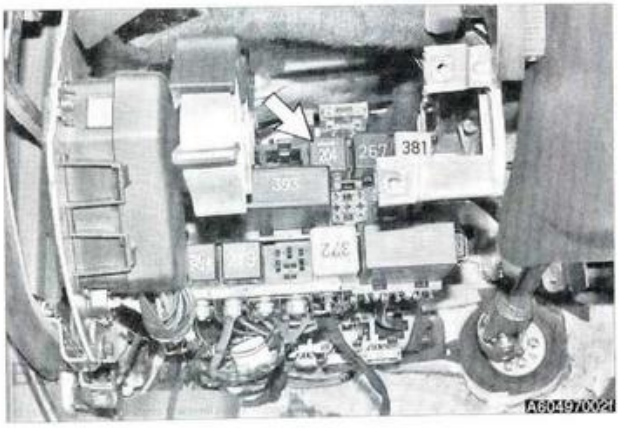
A factory-installed anti-theft immobilizer is used on Audi A6 models. This system prevents operation of the starter if a specially coded ignition key is not used. See **96 Interior Lights, Switches, Anti-theft**.




On manual transmission cars, the clutch pedal position switch (F194) operates via the starter interlock relay (J207) (**arrow**) in the 13-fold relay panel to prevent the starter from operating unless the clutch pedal is pushed fully to the floor. See the following for additional details:

- **30 Clutch** for clutch pedal position switch location
- **97 Fuses, Relays, Component Locations** for 13-fold relay panel access information

On automatic transmission cars, the transmission multifunction range switch (F125) signals the immobilizer to prevent the engine from starting in gear positions other than PARK or NEUTRAL.




In models with multitronic (CVT) transmission, the transmission multifunction range switch (F125) signals the park / neutral position (PNP) relay (J226) (**arrow**) in the 13-fold relay panel when the transmission is in PARK or NEUTRAL. The PNP relay then signals the electronic immobilizer to allow the starter to operate. See **97 Fuses, Relays, Component Locations** for 13-fold relay panel access information.

On back of starter, the large wire at terminal 30 is direct battery voltage. The smaller wire at terminal 50 operates the starter solenoid via ignition switch.

– If starter turns engine slowly when ignition is in START position:
  - Check battery state of charge. See **Load voltage, testing** in this repair group.
  - Inspect starter wires, terminals and ground connections for good contact. In particular, make sure ground connections between battery, body and engine are completely clean and tight.
  - If no faults are found, starter may be faulty.

– If starter fails to operate:
  - Check electronic anti-theft immobilizer. Try another ignition key. If no faults can be found, have the immobilizer system checked using VAG scan tool or equivalent.
  - Check clutch pedal operated starter interlock switch or transmission range switch (automatic transmission).

– Check for battery voltage at terminal 50 of starter motor with key in START position.
  - If voltage is not present, check wiring between ignition switch and starter terminal. Check immobilizer system and other inputs that disrupt input to starter. See **EWD Electrical Wiring Diagrams**.

– If voltage is present and no other visible wiring faults can be found, problem is most likely in starter motor.

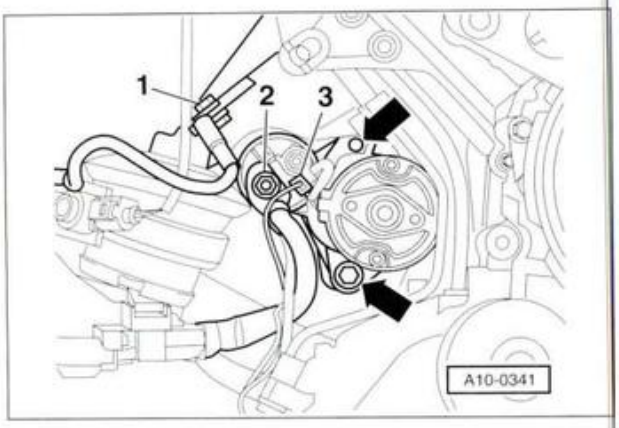
## Starter, removing and installing (V6 engine)

– Disconnect battery ground cable. See **Battery, disconnecting and connecting** in this repair group.

– 2.7 liter turbo engine: Remove alternator. See **Alternator, removing and installing** in this repair group.

– Raise car and support safely.

> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Working at back of starter motor under right cylinder bank:

- Disconnect ground cable (**1**) and starter and solenoid wires (**2**, **3**).
- Working at transmission side of bellhousing, remove starter mounting bolts (**arrows**).
- Lift out starter.

– Installation is reverse of removal.

| **Tightening torques** | |
|---|---|
| Starter to engine | 65 Nm (48 ft-lb) |
| Starter cable to terminal B+ on starter (M8) | 16 Nm (12 ft-lb) |

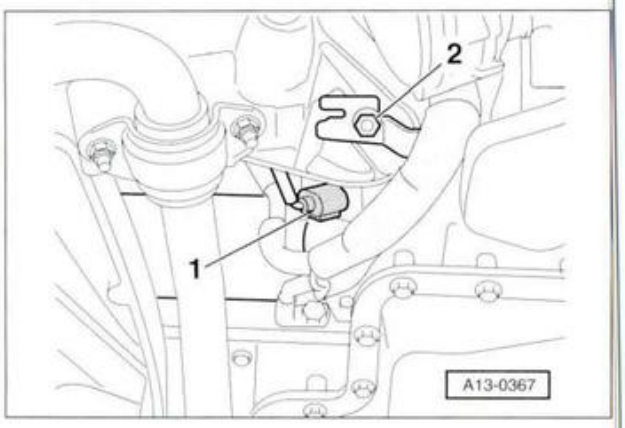
– After connecting battery terminals, reset electrical consumers. See **Battery reconnection notes** in this repair group.

## Starter, removing and installing (V8 engine)

– Disconnect battery ground cable. See **Battery, disconnecting and connecting** in this repair group.

– Raise car and support safely.

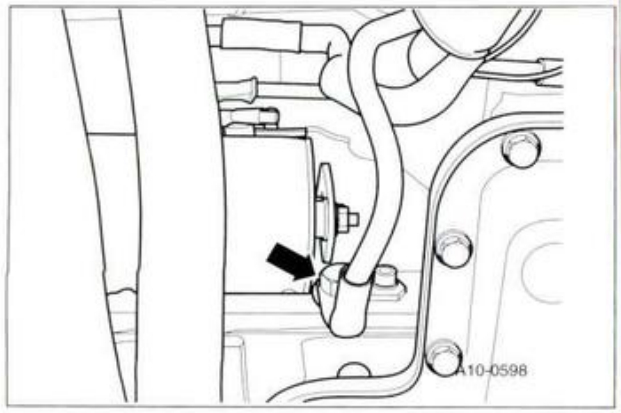
> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*



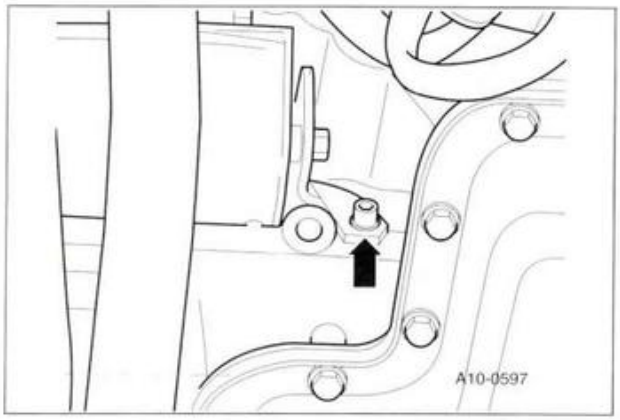

– Remove lower engine cover (splash shield). See **03 Maintenance**.

➤ Working at left engine mount:

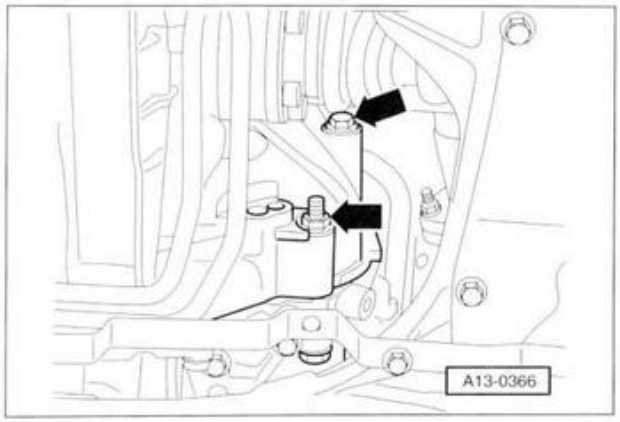
- Detach engine mount electrical connector (**1**)
- Detach cable retainer (**2**) from engine mount.




➤ Detach ground cable (**arrow**) at starter housing.




➤ Working at rear of starter motor:
- Remove starter bracket mounting bolt (**arrow**).
- Detach starter and solenoid wires.




➤ Remove starter mounting bolts (**arrows**).

– Lower starter while turning clockwise.

– Installation is reverse of removal.

| Tightening torques | |
|---|---|
| Cable retainer to engine mount | 22 Nm (16 ft-lb) |
| Starter to engine | 65 Nm (48 ft-lb) |
| Starter bracket to engine | 10 Nm (7 ft-lb) |
| Starter cable to terminal B+ on starter (M8) | 16 Nm (12 ft-lb) |

– After connecting battery terminals, reset electrical consumers. See **Battery reconnection notes** in this repair group.

## ALTERNATOR

### Charging system quick check

– Use a digital multimeter to measure voltage across the battery terminals with key OFF and then again with engine running. Compare results to **Table e**.

**Table e. Charging system quick check results**

| Condition | Battery voltage | Probable cause |
|---|---|---|
| Key OFF, engine not running | 12.6 | Battery and charging system normal |
| | <12.4 | Battery discharged |
| | | Battery faulty |
| | | Charging system faulty |
| Engine running | 13.5 - 14.5 | Charging system normal |
| | <13.2 | Battery discharged, requires charging |
| | | Charging system faulty |
| | > 14.8 | Charging system faulty |

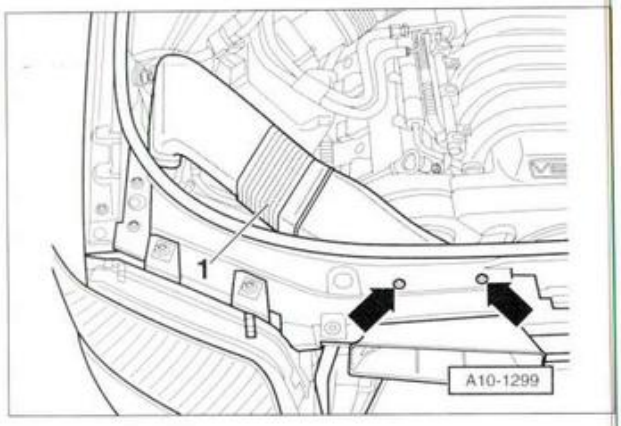
## Alternator, removing and installing

– Disconnect battery ground cable. See **Battery, disconnecting and connecting** in this repair group.

– Raise car and support safely.

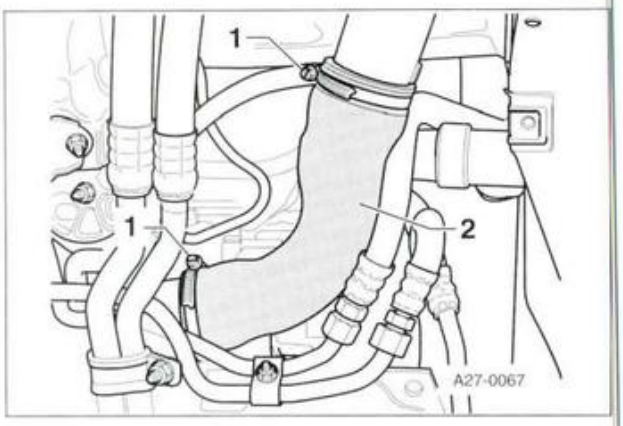
> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove lower engine cover (splash shield). See **03 Maintenance**.

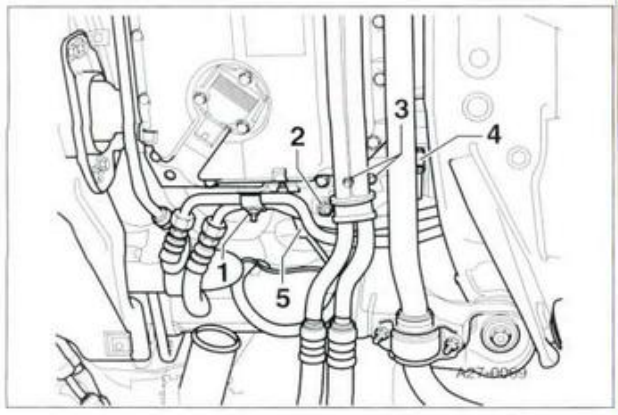



➤ Remove air cleaner duct mounting screws (**arrows**) at lock carrier. Remove air duct (**1**).

– Place lock carrier in service position. See **50 Body–Front**.

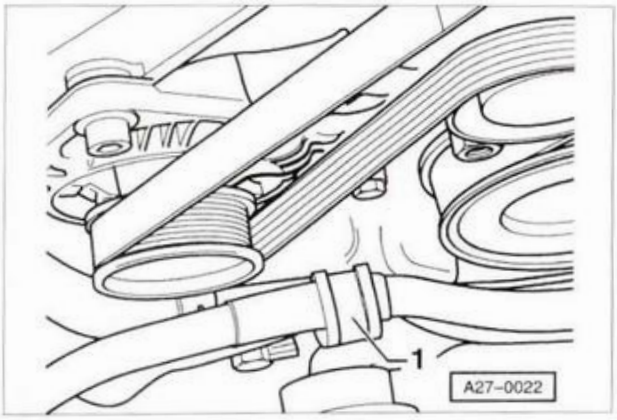



➤ 2.7 liter turbocharged engine: Loosen right intercooler hose clamps (**1**) and remove hose (**2**).

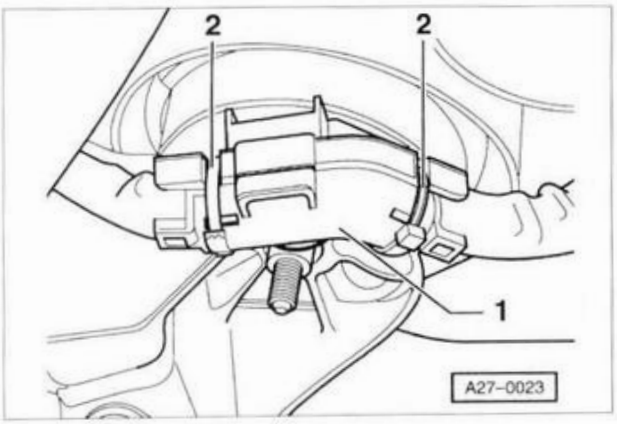



➤ Automatic transmission:

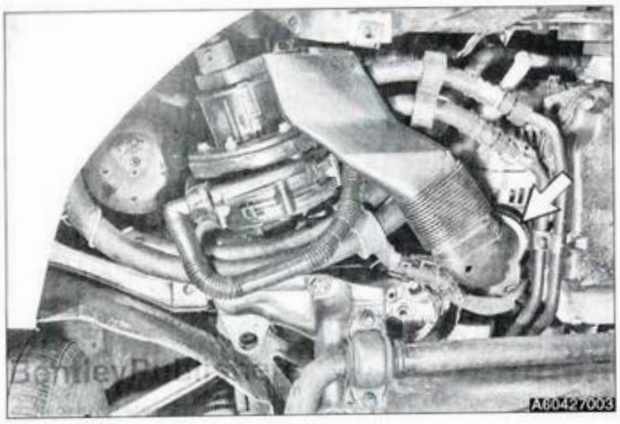
- Loosen ATF lines by loosening bolt (**1**).
- Loosen AC lines by loosening bolt (**2**).
- Remove line (**5**) by removing bolts (**3**) and hose clamp (**4**).



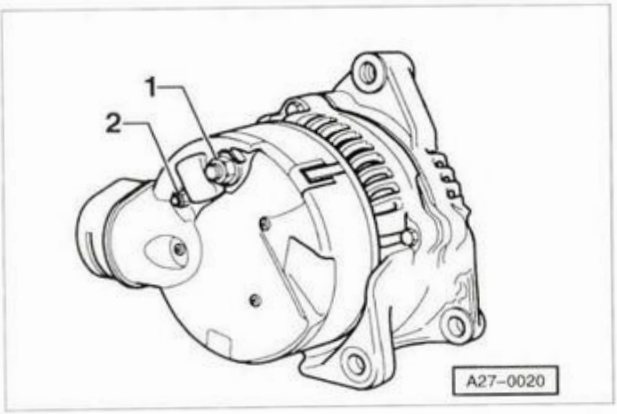

- Manual transmission: Remove A/C refrigerant lines mounting bracket (**1**) above torque arm.




- Cut wire-ties (**2**) and unlatch tabs.
- Unhook starter and alternator wires from bracket (**1**).
- Remove engine accessory belt. See **03 Maintenance**. If belt is to be reused, mark direction of rotation prior to removal.

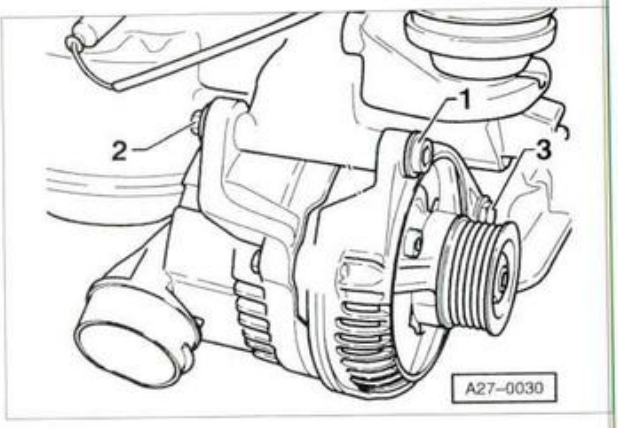



- Working under right front of engine, loosen clamp (**arrow**) and remove cooling air duct from alternator.




- Working at rear of alternator, detach connectors from alternator posts 30 / B+ and D+ (**1**, **2**).

*Alternator*




➤ Loosen and remove alternator mounting fasteners:
- Counterhold nut (**2**) to remove top bolt (**1**).
- Loosen and remove lower bolt (**3**).

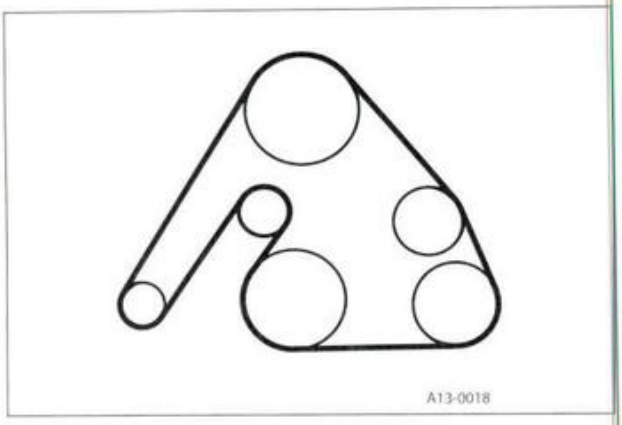
– Remove alternator from below, taking care to move A/C refrigerant lines and other hoses and wires aside very carefully.

***CAUTION—***
- *Do not bend or kink A/C refrigerant lines.*

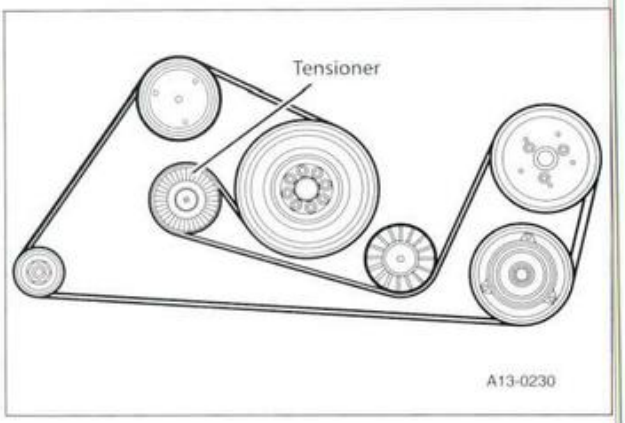
– Installation is reverse of removal.

| **Tightening torques** | |
|---|---|
| Alternator to engine block:<br>• Top bolt (M10)<br>• Lower bolt (M8) | <br>45 Nm (33 ft lb)<br>22 Nm (16 ft-lb) |
| Connector to alternator posts:<br>• 30 / B+<br>• D+ | <br>16 Nm (12 ft lb)<br>4 Nm (35 in-lb) |

– If reusing accessory belt, install in direction of rotation marked previously.




➤ V6 belt routing.




➤ V8 belt routing (*not* allroad quattro).

– Check belt ribs to make sure they fit pulleys correctly.

# 28 Ignition System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## GENERAL

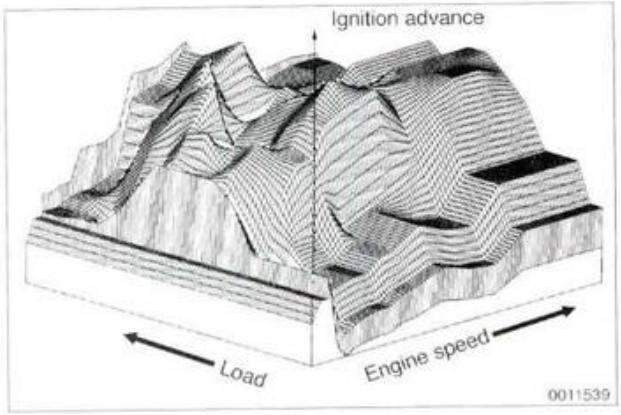
This repair group provides ignition system information.

See also:

- **03 Maintenance** for spark plug replacement
- **24 Fuel Injection** for Motronic system applications
- **96 Interior Lights, Switches, Anti-theft** for ignition switch replacement
- **EWD Electrical Wiring Diagrams**

### Ignition management

Audi A6 ignition is controlled by the Motronic engine management system, which also controls fuel injection and emission control functions.




Ignition timing is electronically mapped and not adjustable. A three-dimensional map similar to the illustration is stored in the Motronic engine control module (ECM).

In applying the map, the ECM computes ignition timing based on inputs from the following sensors, in order of importance:

- **Crankshaft position sensor** for timing reference point.
- **Mass airflow sensor** for engine load.
- **Camshaft sensors** for relative camshaft positions.
- **Knock sensors** to modify and correct ignition timing based on changing operating conditions.

## Ignition firing order

**V6 engine**: Cylinder 1 is at the right front of the engine, followed by cylinders 2 and 3. Cylinders 4, 5 and 6 are on the left side of the engine, from front to back.

**V8 engine**: Cylinder 1 is at the right front of the engine, followed by cylinders 2, 3 and 4. Cylinders 5, 6, 7 and 8 are on the left side of the engine, from front to back.

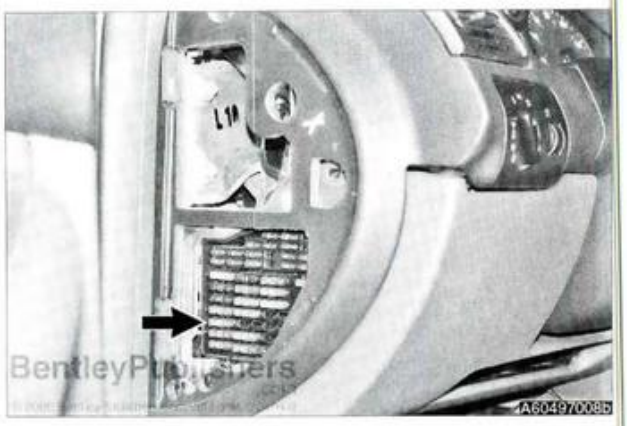
| Ignition firing order | |
|---|---|
| V6 engine | 1-4-3-6-2-5 |
| V8 engine | 1-5-4-8-6-3-7-2 |

## Disabling ignition system

The ignition system operates in a lethal voltage range and also contains sensitive electronic components. To guard against system damage, and for personal and general safety, carry out ignition system service and repair work carefully.

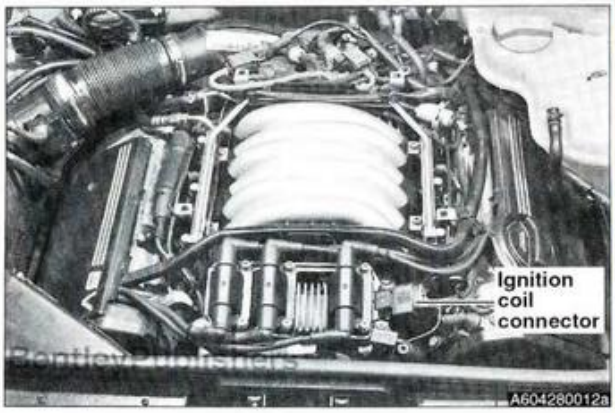
– If the engine must be cranked without starting:
  • Disable fuel system to prevent excess fuel from flooding cylinders.
  • Disable ignition system to prevent discharge of dangerously high voltage.

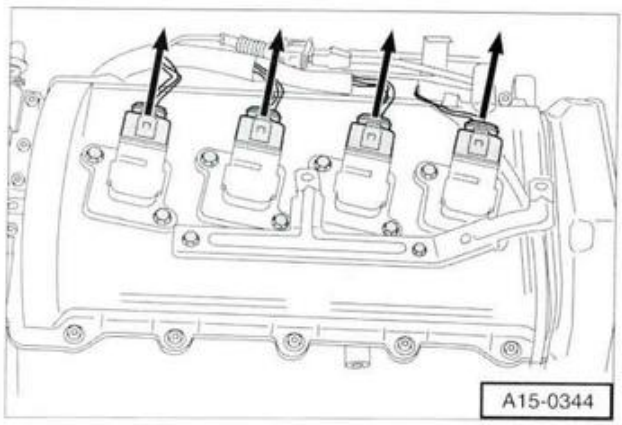
➤ Remove fuel pump fuse (fuse 28, **arrow**) in dashboard fuse panel.




– Remove engine upper cover(s). See **03 Maintenance**.

➤ **2.8 liter engine**: Disconnect ignition coil connector.



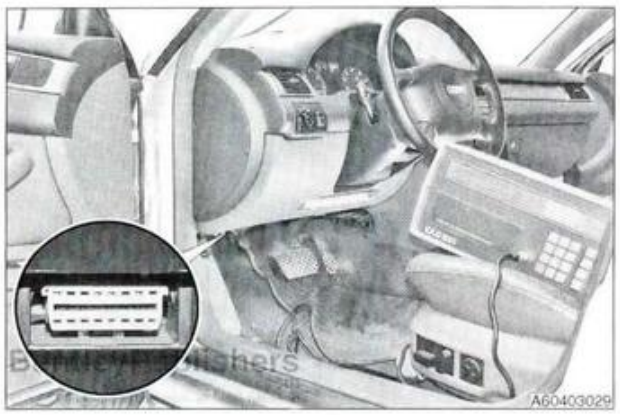



– **2.7 liter, 3.0 liter, V8 engines**: Pull off (**arrows**) each individual ignition coil connector.

## On-board diagnostics

Most components and functions of the Motronic system are monitored by on-board diagnostics (OBD II) software in the engine control module (ECM). If faults and malfunctions are detected, one or more diagnostic trouble codes (DTCs) may be set.

➢ In case of an emissions related fault or a malfunction considered catalyst-damaging, the Check Engine light (malfunction indicator light or MIL) or EPC light is illuminated.




➢ Access fault memory with VAG scan tool or equivalent plugged into the DLC plug (**inset**) under left side dashboard. See **OBD On-Board Diagnostics** for more information.

***NOTE***—

- *After engine management system tests or repairs, the ECM may recognize a malfunction and store a DTC. Therefore perform the following after ending tests and repairs:*
  *-Use VAG scan tool or equivalent to check DTC memory.*
  *-Erase DTC memory.*
  *-Reset or erase diagnostic data.*
  *-Generate readiness code.*
- *After engine management system tests or repairs, the engine may start, run for a short period and then cut out because the electronic anti-theft immobilizer disables the ECM. In such cases:*
  *-Use VAG scan tool or equivalent to check DTC memory.*
  *-Adapt ECM.*

## Warnings and Cautions

***WARNING —***
- *Do not touch or disconnect any cables from the coils while the engine is running or being cranked by the starter.*
- *The ignition system produces high voltages that can be fatal. Avoid contact with exposed terminals. Use extreme caution when working on a car with the ignition switched on or the engine running.*
- *Before operating the starter without starting the engine (for example when making a compression test) disable the ignition. See* **Disabling ignition system** *in this repair group.*

***CAUTION—***
- *Prior to disconnecting the battery, read the battery disconnection precautions given at the front of this manual.*
- *Use a high impedance digital multimeter for voltage and resistance tests.*
- *Use an LED test light in place of an incandescent-type test light.*
- *Do not attempt to disable the ignition by removing the coils from the spark plugs.*
- *Connect and disconnect the ECM, Motronic system wiring or test equipment leads only when the ignition is OFF.*
- *Switch multimeter functions or measurement ranges only with the test probes disconnected.*
- *Do not disconnect the battery while the engine is running.*

## IGNITION SYSTEM COMPONENTS

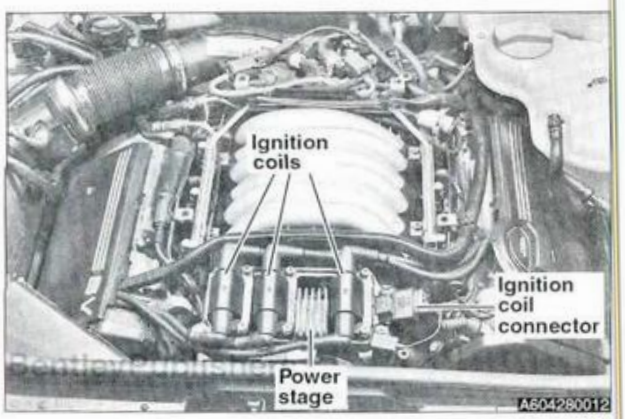
Engine management component location illustrations are in **24 Fuel Injection**. Components specifically associated with ignition are covered below.

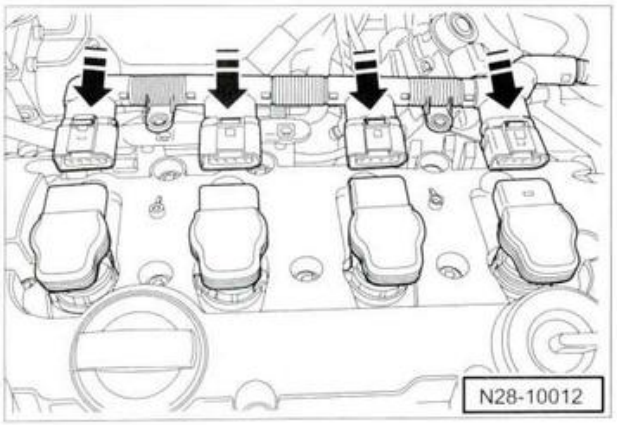
### Spark plugs

See **03 Maintenance** for spark plug applications and replacement procedure.

### Ignition coils

**2.8 liter engine**: Ignition coils and power stage are ganged at front of engine, under upper engine plastic cover. There is no distributor, distributor cap or ignition rotor.



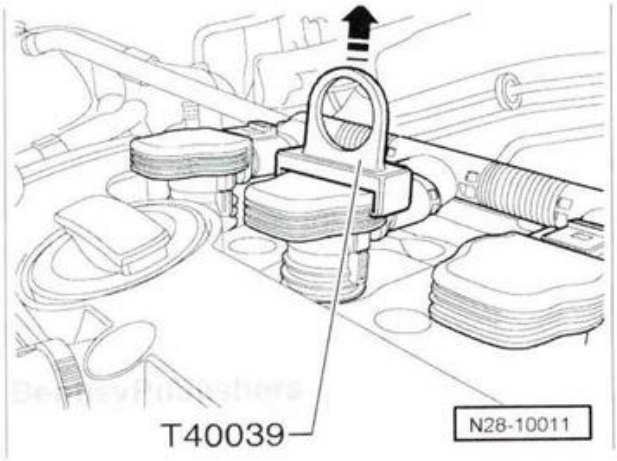



➤ **2.7 liter, 3.0 liter, V8 engines**: Each ignition coil is mounted above the corresponding spark plug. Ignition coil electrical connectors (**arrows**) are ganged for each cylinder bank.

**2.7 liter engine, code APB**: Power stages are separate components on air filter housing.

**2.7 liter engine, code BEL, 3.0 liter engine, V8 engines**: Power stages integrated with ignition coils.

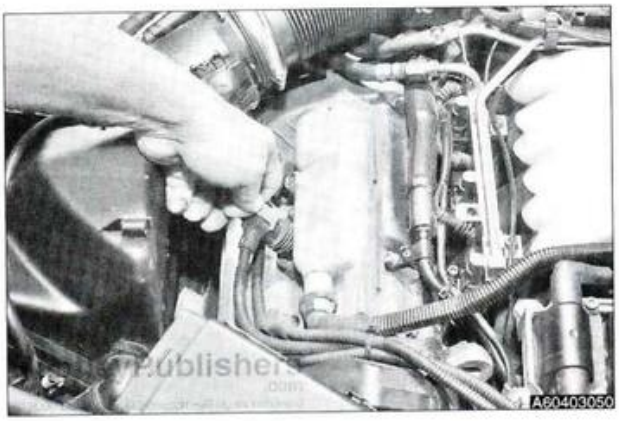
There is no distributor, distributor cap or ignition rotor.




➤ **2.7 liter, 3.0 liter, V8 engines**: To remove ignition coils, use Audi special tool **T40039**, pull all ignition coils out of spark plug shaft.

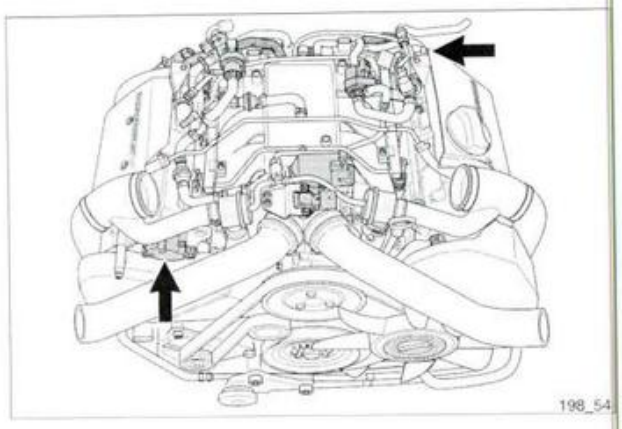
– Installation is reverse of removal.
- Insert all ignition coils loosely into spark plug shaft.
- Align ignition coils to the connectors and then connect all of the connectors onto ignition coils.
- Press ignition coils uniformly onto the spark plugs by hand (do not use an impact tool).

## Spark plug wires




➤ **2.8 liter engine**: Plug wires are routed from central coil pack to each spark plug.

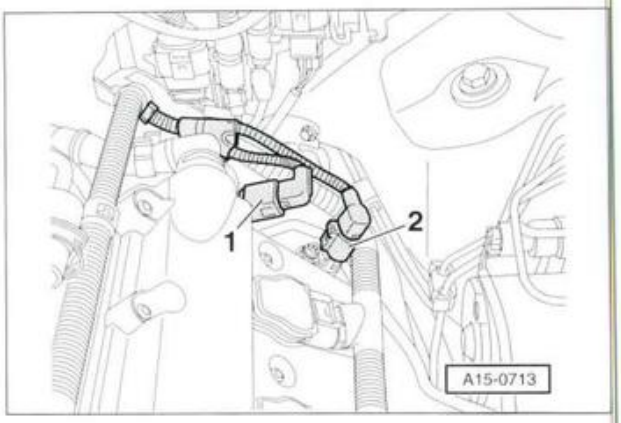
**2.7 liter, 3.0 liter, V8 engines**: Spark plug wire for each cylinder is integrated with corresponding ignition coil.




## Camshaft sensors

Camshaft sensors (**arrows**) on each camshaft detect camshaft position. This input is used by the ECM to determine when to fire each spark plug.

2.7 liter turbocharged V6 engine illustrated. Other engines are similar.

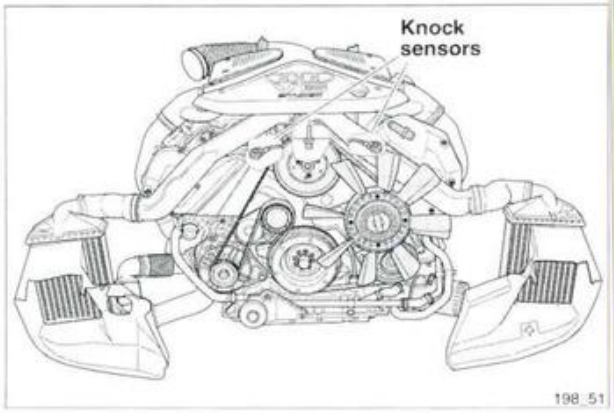



**3.0 liter engine**: Two camshaft sensors (**1**, **2**) per bank are used.

## Knock sensors

Two or three knock sensors monitor engine knock. The ECM uses signal from knock sensors to optimize ignition timing.

Knock sensors are located under the intake manifold. 2.7 liter turbocharged V6 engine is illustrated. Other engines are similar.



# 30 Clutch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## GENERAL

This repair group covers clutch hydraulic and mechanical repairs.

Service to the clutch assembly requires removal of the transmission from the vehicle. Special tools and equipment are required to remove the transmission, service the clutch, and bleed the clutch hydraulic system. See **34 Manual transmission** for transmission removal procedure.

### Self-adjusting clutch pressure plate

A6 models equipped with 2.7 liter V6 bi-turbo engine feature a Self-Adjusting Clutch (SAC) pressure plate. The SAC clutch pressure plate automatically compensates for clutch disc wear to provide consistent clutch pedal feel. See **Clutch pressure plate (SAC), resetting** in this repair group.

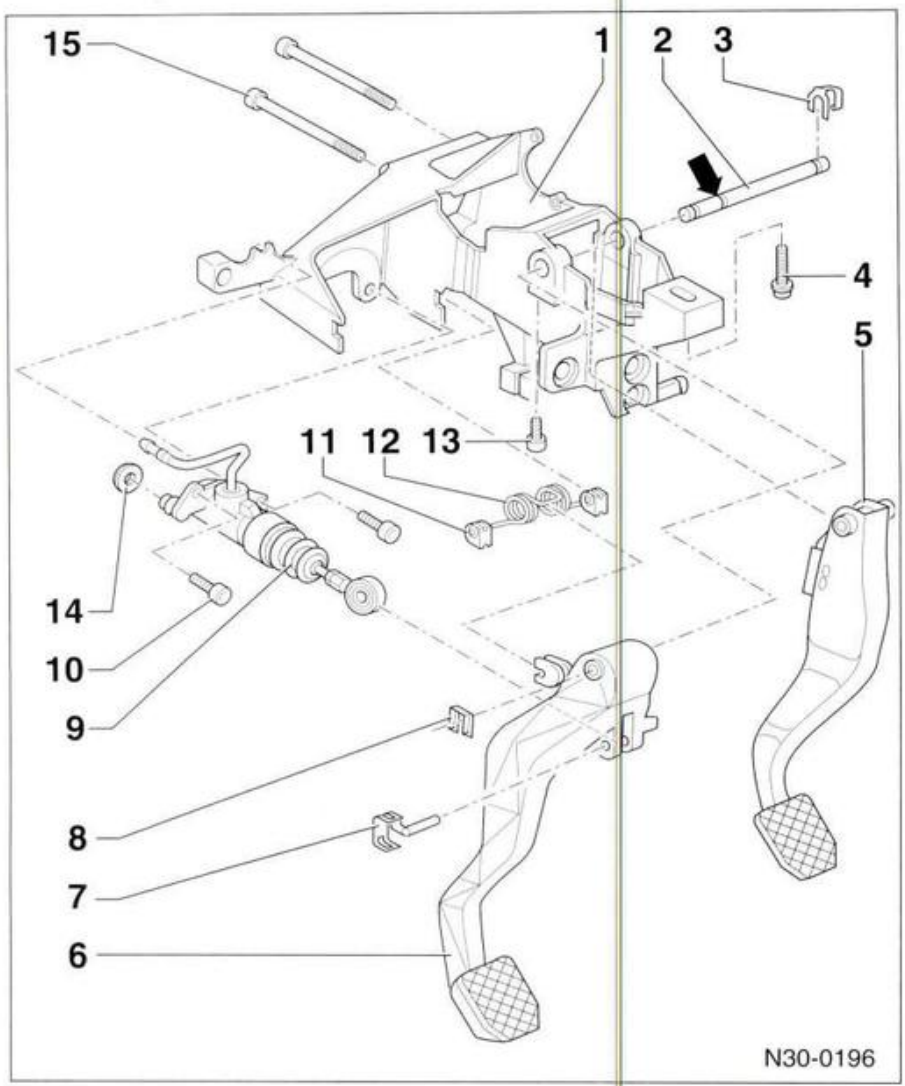
## CLUTCH PEDAL

The illustration on the following page shows clutch pedal assembly components for vehicles equipped with 5-speed and 6-speed manual transmissions. When servicing, replace self-locking nuts, circlips and gaskets

*NOTE—*

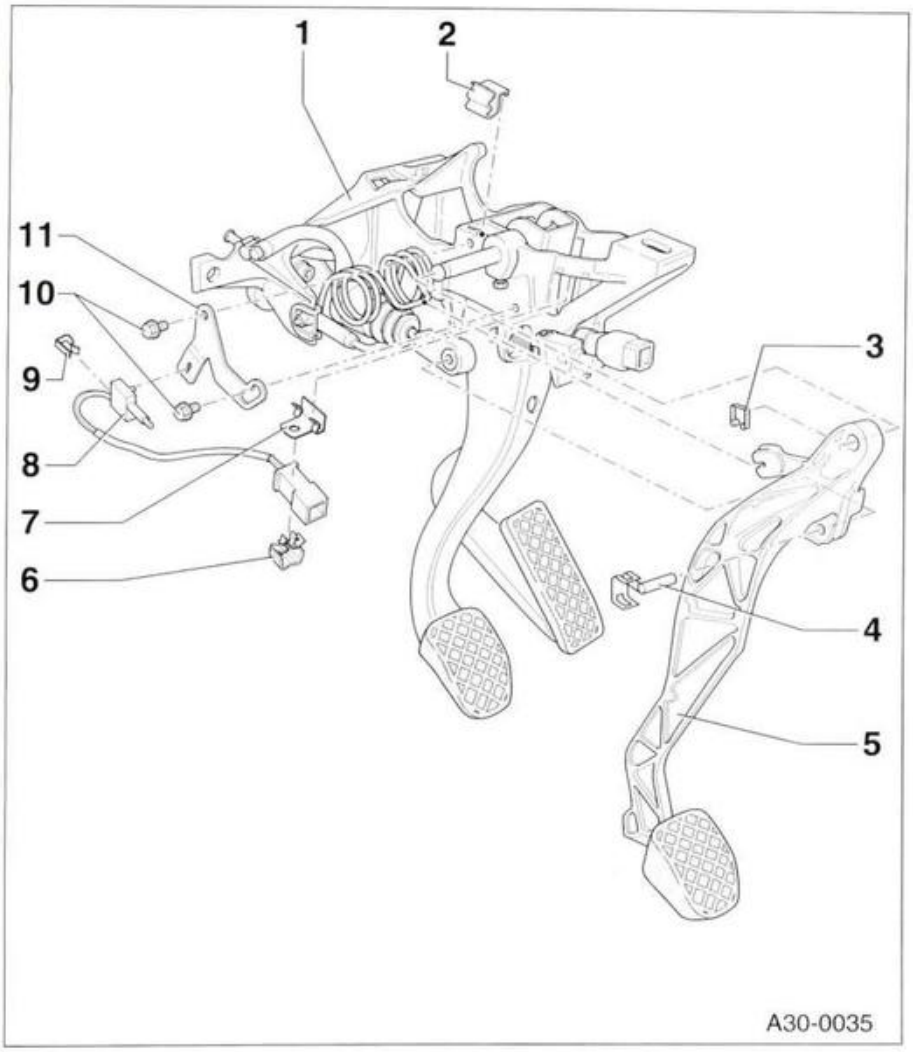
- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *Where appropriate, these electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*

*Clutch Pedal*



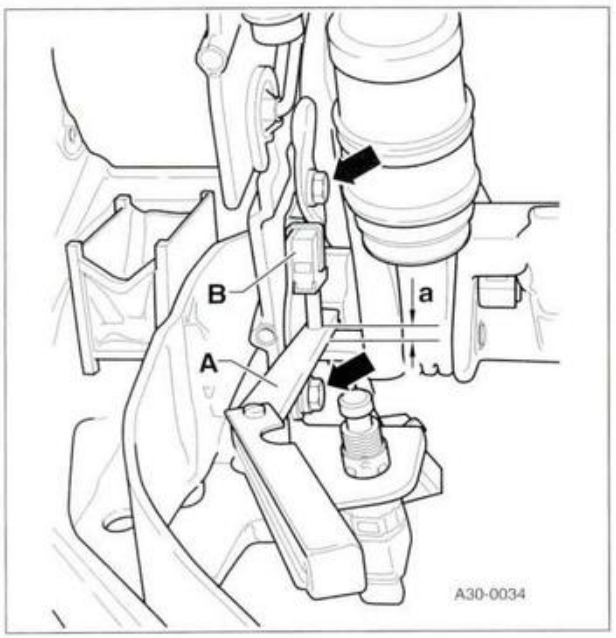

## Clutch pedal assembly

1. **Mounting bracket**
2. **Pivot pin**
   - For clutch and brake pedals
   - Install with groove (**arrow**) toward clutch pedal
3. **Locking clip**
4. **Bolt, 25 Nm (18.5 ft-lb)**
5. **Brake pedal**
6. **Clutch pedal**
7. **Pin**
   - Clip to clutch pedal
8. **Locking clip**
9. **Clutch master cylinder**
10. **Bolt, 20 Nm (15 ft-lb)**
11. **Spring mount**
    - Insert in mounting bracket with over-center spring
12. **Over-center spring**
13. **Bolt, 5 Nm (4 ft-lb)**
    - For clutch and brake pedal pivot pin
14. **Seal**
15. **Torx bolt, 25 Nm (18.5 ft-lb)**




## Clutch pedal position switch (F194)

1. **Mounting bracket**
2. **Cable bracket**
3. **Locking clip**
4. **Pin**
   - Clip onto clutch pedal
5. **Clutch pedal**
6. **Clip**
7. **Bracket for harness connector**
8. **Clutch pedal position switch (F194)**
   - See **Clutch pedal position switch, adjusting** in this repair group
9. **Clip**
10. **Screw and washer, 8 Nm (6 ft-lb)**
11. **Securing plate**




## Clutch pedal position switch (F194), adjusting

The clutch pedal position switch (F194) prevents the engine from starting unless the clutch pedal is depressed.

➤ Working above the clutch pedal, loosen 2 bolts (**arrows**).

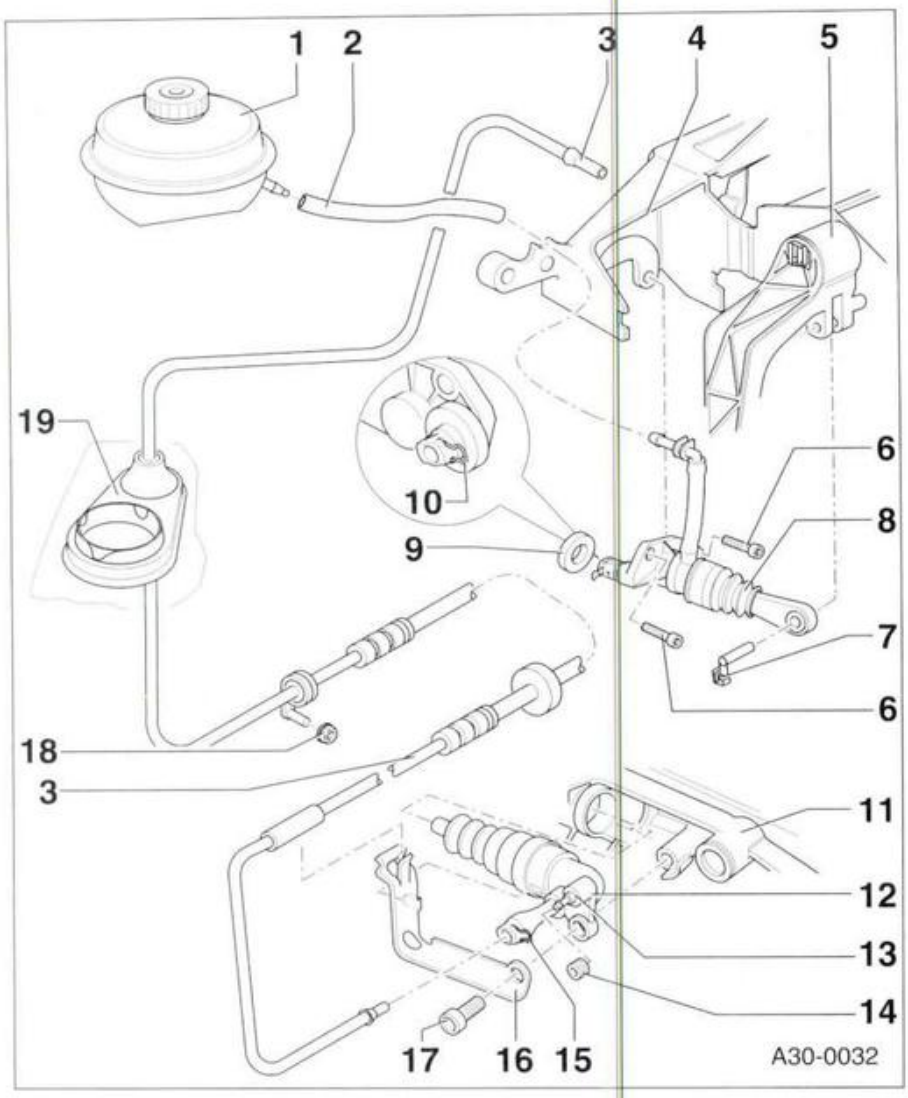
– Have assistant depress clutch pedal to stop.

– Place feeler gauge (**A**) with selected dimension **a** (3.2 ± 0.2 mm) between operating surface of clutch pedal and switch plunger.

– Swing switch (**B**) toward feeler gauge (**A**) and tighten two mounting bolts (**arrows**).

| **Tightening torque** | |
|---|---|
| Clutch pedal position switch mounting bracket to pedal assembly bracket | 8 Nm (6 ft-lb) |

## CLUTCH HYDRAULIC SYSTEM




### Clutch hydraulic components

1. **Brake fluid reservoir**
2. **Supply hose**
3. **Hose/pipe assembly**
4. **Mounting bracket**
5. **Clutch pedal**
6. **Bolt, 20 Nm (15 ft-lb)**
7. **Pin**
8. **Clutch master cylinder**
   - Do not operate after clutch pedal has been removed
9. **Seal**
10. **Retaining clip**
11. **Transmission**
12. **Clutch slave cylinder**
    - Do not operate after clutch pedal has been removed
    - Brake fluid must not be allowed to get onto the transmission
    - Lightly grease before installing
    - When installing push in until the securing bolt can be fitted.
13. **Bleeder valve/slave cylinder**
    - Tighten to 4.5 Nm (3.3 ft-lb)
    - A broken bleeder valve can be unscrewed with a 3 mm socket
14. **Dust cap**
15. **Retaining clip**
16. **Bracket**
    - Secured to transmission
17. **Bolt, 20 Nm (15 ft-lb)**
18. **Nut**
19. **Seal**

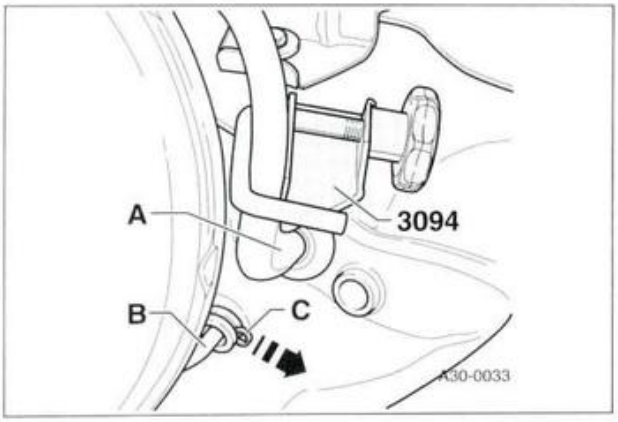
## Master cylinder, removing and installing

– Remove plenum chamber cover.

– Switch ignition OFF and disconnect battery ground (-) strap.

***NOTE*** —

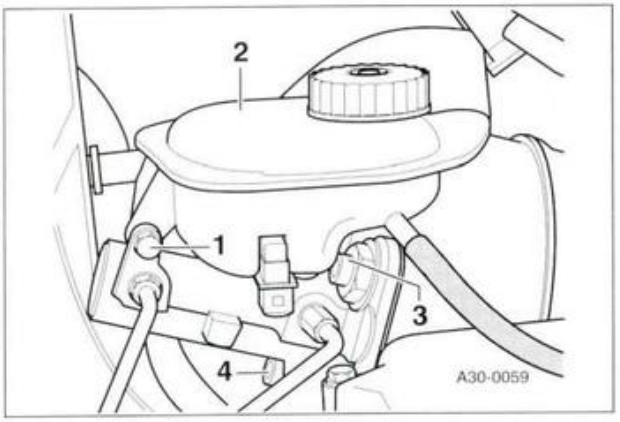
- *Make sure no brake fluid spills into the plenum chamber or on transmission.*
- *When working in footwell, protect carpet from brake fluid using rags.*




➤ Clamp supply hose (**A**) from brake fluid reservoir using special pinch tool 3094. Pull hose off master cylinder and plug hose.

– Remove supply hose grommet from bulkhead.

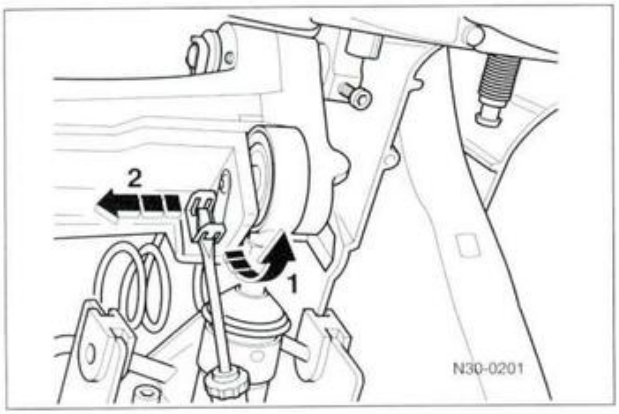
– Lever out retaining clip (**C**) using a screwdriver and pull pipe (**B**) out slightly.




➤ If equipped, remove bolt (**1**) and swing brake fluid container (**2**) to the right.

– Remove Torx bolts (**3** and **4**).

– Working under dash board, remove driver's storage compartment.

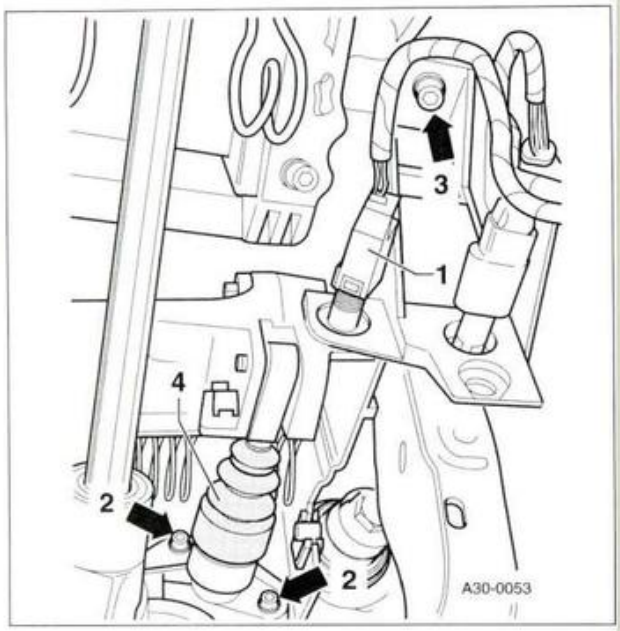



➤ Detach clutch pedal from master cylinder. To do this, unclip pin using a screwdriver (**1**) pull out pin (**2**). Carefully press clutch pedal off.

***NOTE*** —

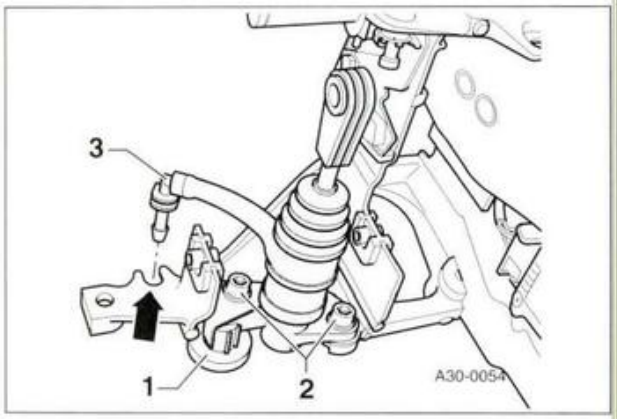
- *Make sure clutch pedal does not press switch (**1**) out of the retaining clip. This damages the thread of the switch and the switch will have to be replaced.*
- *Switch must not be installed more than once.*

*Clutch Hydraulic System*




➤ Remove bolts (**2**) for clutch master cylinder and for mounting bracket (**3**).

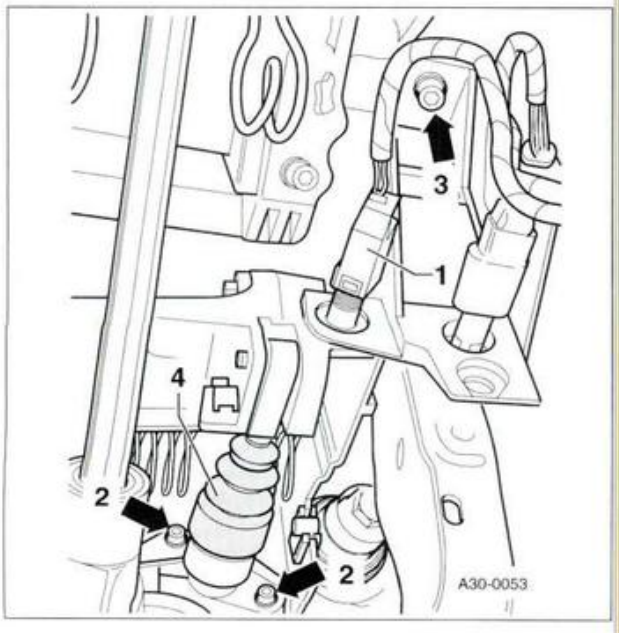
– Pull complete pedal assembly slightly to rear and remove clutch master cylinder (**4**).



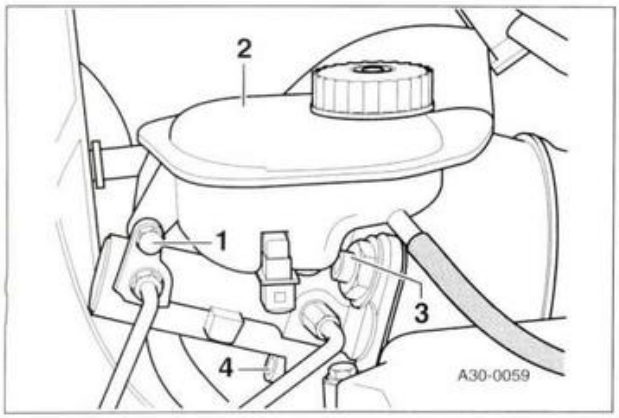

➤ To install, insert clutch master cylinder and tighten bolts (**2**). Make sure seal (**1**) with washer contacts mounting bracket at rear.

| **Tightening torque** | |
|---|---|
| Master cylinder to mounting bracket | 20 Nm (15 ft-lb) |

– Press connecting pipe (**3**) into recess (**B**) at mounting bracket.



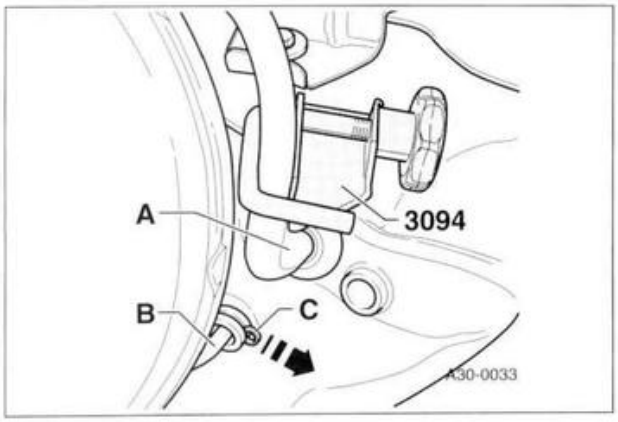

➤ Slide complete pedal assembly forward, insert bolt (**3**) and tighten by hand. At the same time, have an assistant guide pipe from plenum chamber into clutch master cylinder.




➤ Tighten mounting bolts for brake booster (**3** and **4**).

| **Tightening torque** | |
|---|---|
| Brake master cylinder to brake booster | 25 Nm (18.5 ft-lb) |

– Tighten mounting bolt for brake fluid container (**1**)



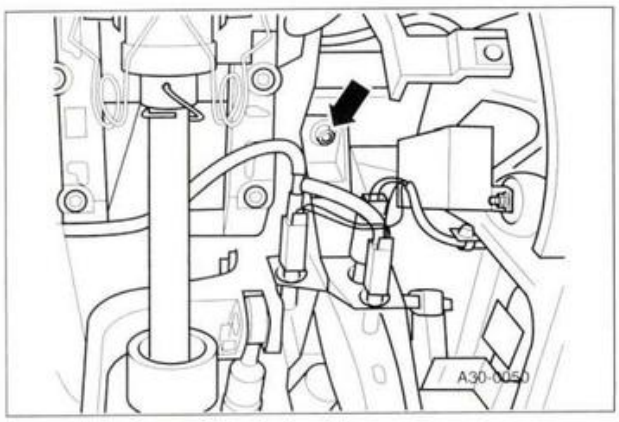

➤ Press in retaining clip (**C**) as far as it will go.

– Push pipe (**B**) into clutch master cylinder until it engages audibly.

– Insert supply hose rubber grommet into place on bulkhead.

– Push in supply hose (**A**) from brake fluid reservoir as far as it will go.

– Remove special tool 3094.



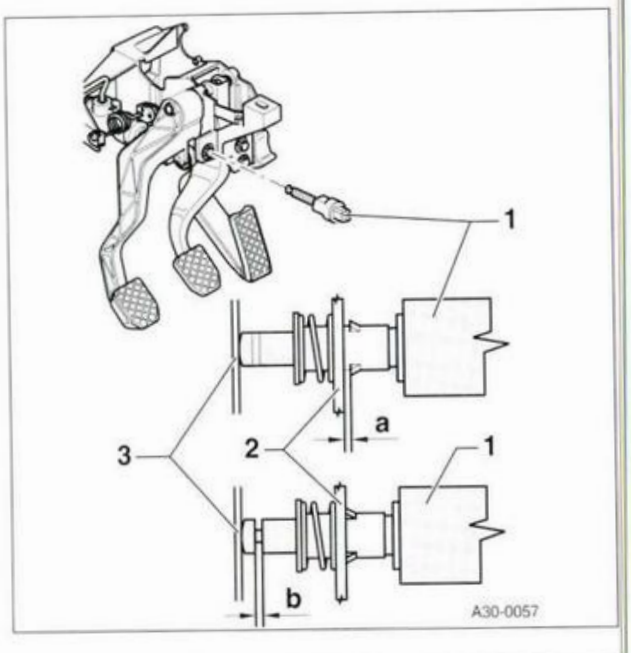

➤ Tighten pedal assembly bolt (**arrow**) to secure pedal assembly to dashboard carrier.

| **Tightening torque** | |
|---|---|
| Pedal assembly to dashboard carrier | 25 Nm (18.5 ft-lb) |

– Connect clutch master cylinder to clutch pedal. Engage bolt lock in clutch pedal.

– Bleed clutch system after installing clutch master cylinder. See **Clutch system, bleeding** in this repair group.

*Clutch Hydraulic System*



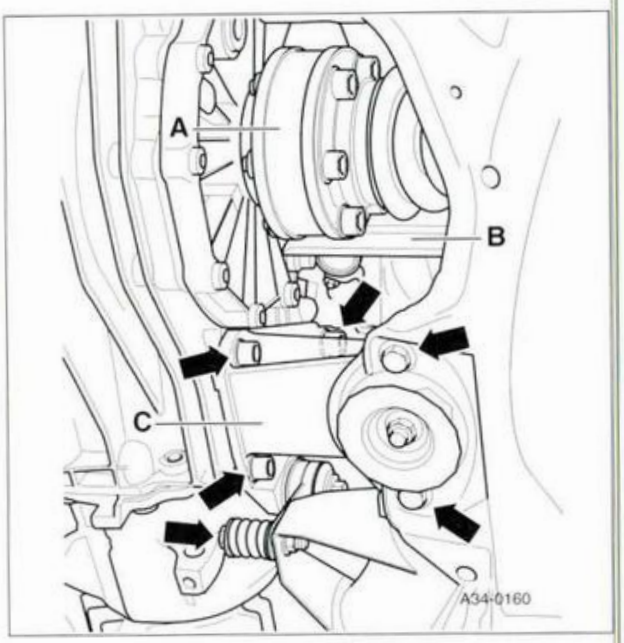

➤ Check adjustment of vent valve (**1**) above clutch pedal. Vent valve must contact clutch pedal (**3**) completely and must operate at full travel.

– Gap measurement **a** between retaining clip and mounting bracket may be a max. of 0.5 mm.

– To adjust, hold clamp and turn vent valve (**1**).

– Install driver's storage compartment.

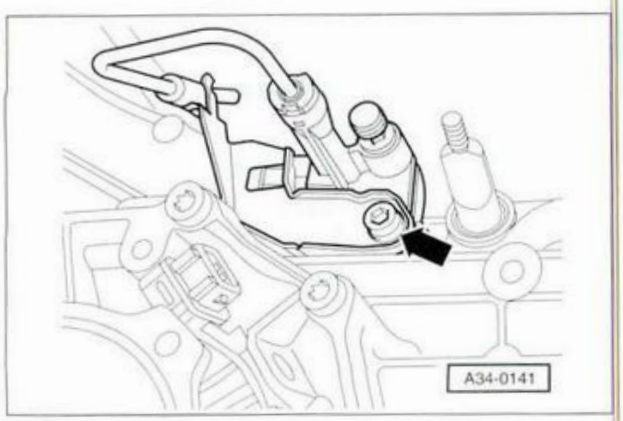
## Clutch slave cylinder, removing and installing




➤ To aid access, unbolt left drive axle (**A**) from transmission and move clear to one side.

– Remove heat shield (**B**) from transmission.

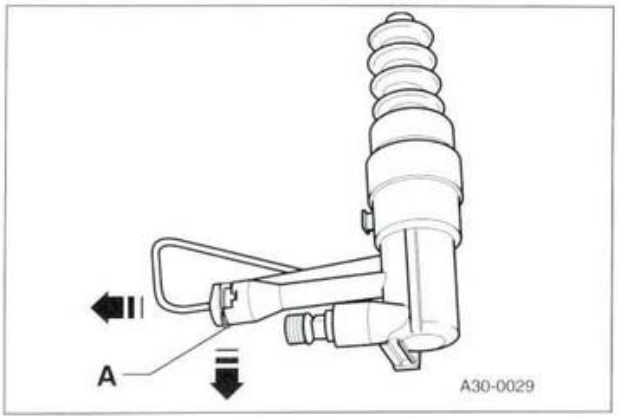
– If necessary, unscrew bolts (**arrows**) and remove left transmission support (**C**) together with transmission mounting.



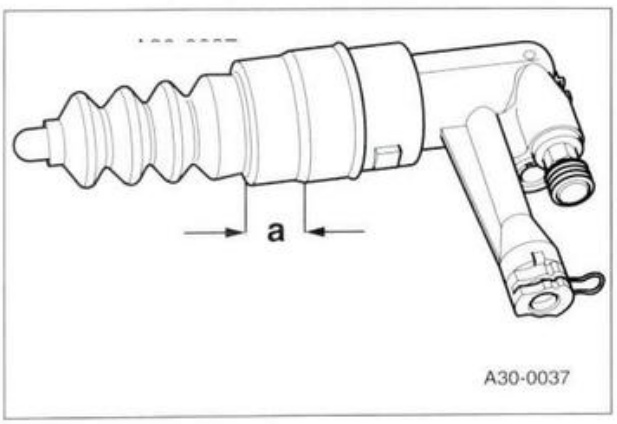

➤ Remove bolt (**arrow**) and take out slave cylinder from the rear.

***NOTE***—

- *Do not depress clutch pedal after removing slave cylinder.*
- *Do not allow brake fluid to come into contact with transmission. If necessary, clean transmission housing.*




➤ To disconnect pipe, first pry out retaining clip (**A**) with a screwdriver until it disengages audibly. The pipe can then be pulled out.

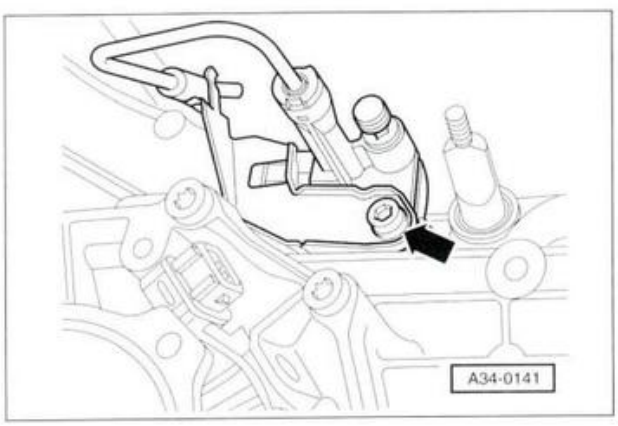



➤ Before mounting the slave cylinder into the transmission housing, coat area **a** of collar with lithium grease.

– Lightly coat tip of push rod using copper grease.

***NOTE***—

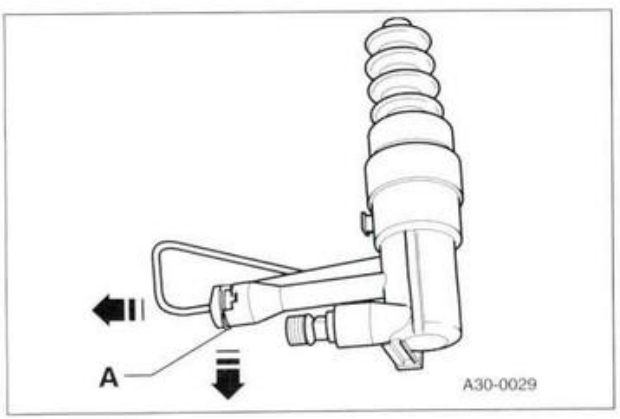
- *To aid installation, engage 6th gear (6-speed transmission) or 4th gear (5-speed transmission) before fitting slave cylinder.*
- *Pre-tension clutch slave cylinder far enough for the securing bolt to be easily inserted.*




➤ Insert clutch slave cylinder into mounting hole in transmission housing, keeping it in line with direction of operation of push rod, then tighten bolt (**arrow**).

***NOTE***—

- *If the clutch slave cylinder is inserted off-line there is a danger that the push rod will be guided past the clutch release lever.*
- *Always replace securing bolt.*




➤ To connect pipe to slave cylinder, press in retaining clip (**A**) as far as it will go. Push pipe into slave cylinder until it engages audibly.

– Reinstall drive axle and heat shield

– Reinstall transmission support and transmission mounting (if removed).

– Bleed clutch system. See **Clutch system, bleeding** in this repair group.

| Tightening torques | |
|---|---|
| Clutch slave cylinder to transmission | 20 Nm (15 ft-lb) |
| Heat shield for drive axle | 25 Nm (18.5 ft-lb) |
| Drive axle to drive flange:<br>• M8<br>• M10 | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Transmission support to transmission | 40 Nm (30 ft-lb) |
| Transmission mounting to subframe | 23 Nm (17 ft-lb) |

## Clutch system, bleeding

Clutch system bleeding require brake filler/bleeder unit (VAG1869 or equivalent).

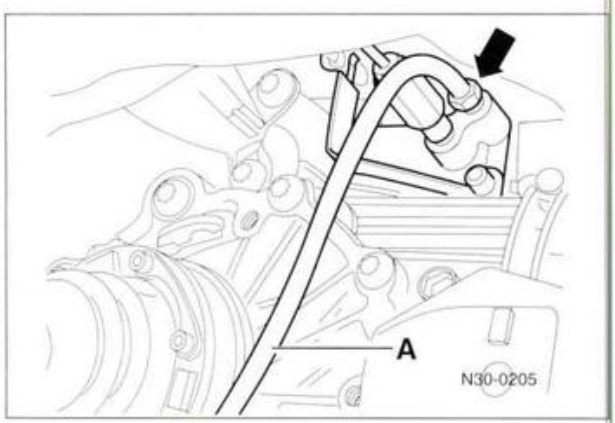
***NOTE —***

- *Open bleeder valve before switching on brake filler/bleeder unit.*
- *Make sure no brake fluid leaks onto transmission.*
- *Bleed clutch system after working on hydraulic clutch mechanism.*
- *Top off brake fluid reservoir to MAX before bleeding clutch system.*

– Pull clutch pedal back to rest position.

– Connect brake filler/bleeder unit (VAG 1869 or equivalent) but do not switch on yet.

Connect bleeder hose (**A**) to clutch slave cylinder (**arrow**) and open bleeder valve.




– Connect bleeder hose to pressure hose of collector bottle.

– Switch on brake filler/bleeder unit and bleed approx. 100 cc (3 oz) of brake fluid (do not exceed 2.5 bar positive pressure).

– Close bleeder valve.

| Tightening torque | |
|---|---|
| Bleeder valve to clutch slave cylinder | 4.5 Nm (3.3 ft-lb) |

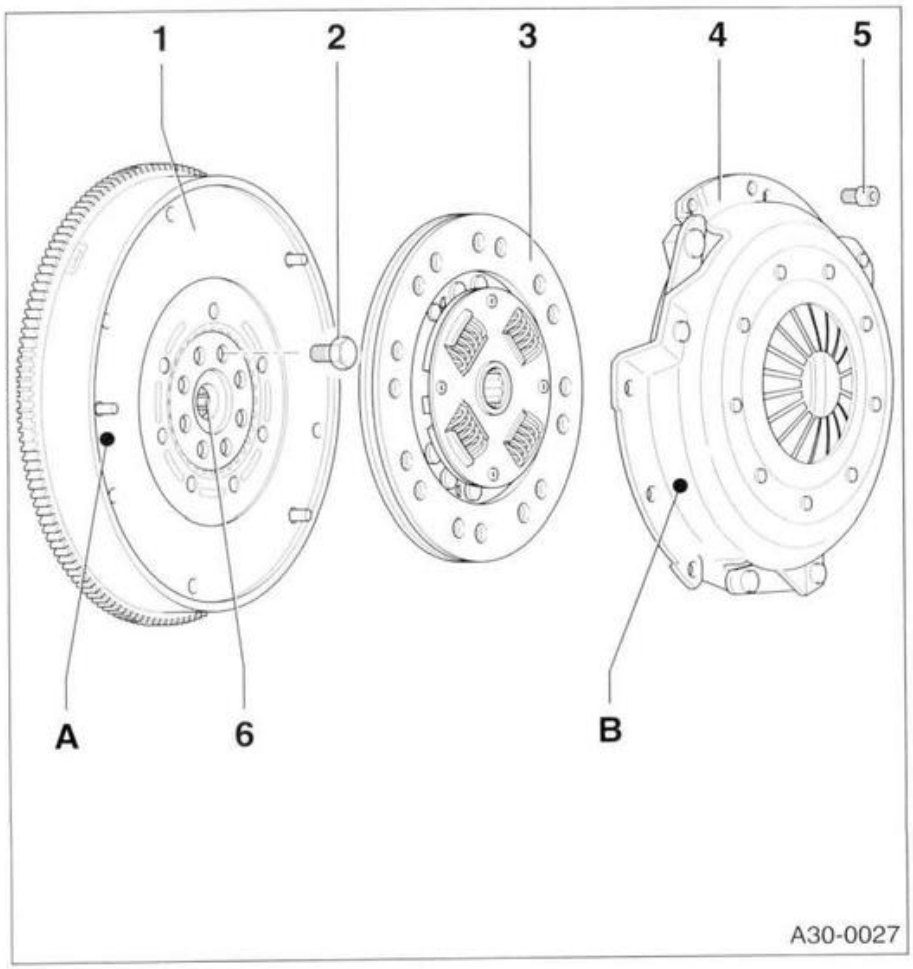
– Depress clutch pedal several times after completion of bleeding process.

– Bleed system again if necessary.

## CLUTCH ASSEMBLY

***NOTE***—

- *Clutch replacement requires transmission removal. See* **34 Manual Transmission**.
- *Replace clutch and pressure plate with damaged or loose rivets.*
- *Match clutch plate and pressure plate to engine application.*
- *Clean input shaft splines and hub splines. Remove corrosion and apply a very thin coating of grease (G 000 100 or equivalent) to the splines. Make sure hub moves freely on shaft. Remove excess grease.*
- *Pressure plate has anti-corrosion coating. Clean contact surface before installation.*
- *If clutch was burnt out, thoroughly clean bellhousing, flywheel and parts of the engine facing transmission.*



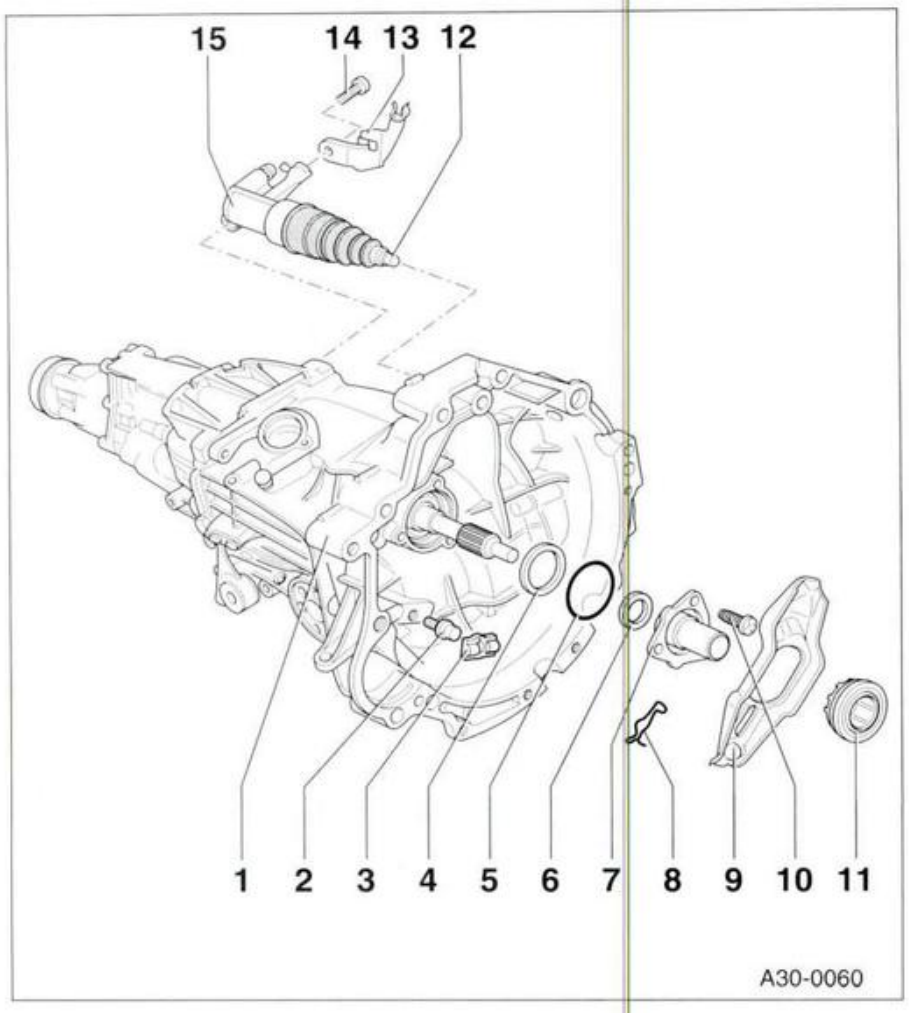

### Clutch components (5-speed)

1. **Flywheel**
   - Make sure centering pins are tightly seated
   - Contact surface for clutch lining must be free of scoring, oil and grease
2. **Bolt, 60 Nm (44 ft-lb) + 180° turn**
   - Always replace
3. **Clutch disc**
   - Install spring pack (coil springs) toward pressure plate. Clutch lining must make full contact with flywheel. Marking "Getriebeseite" (if provided) goes toward pressure plate.
   - Lightly grease splines
4. **Pressure plate**
   - Check ends of diaphragm spring
   - Check spring connection and rivets
5. **Bolt, 25 Nm (18 ft-lb)**
   - Loosen and tighten in stages and in diagonal sequence
6. **Needle roller bearing**

***NOTE***—

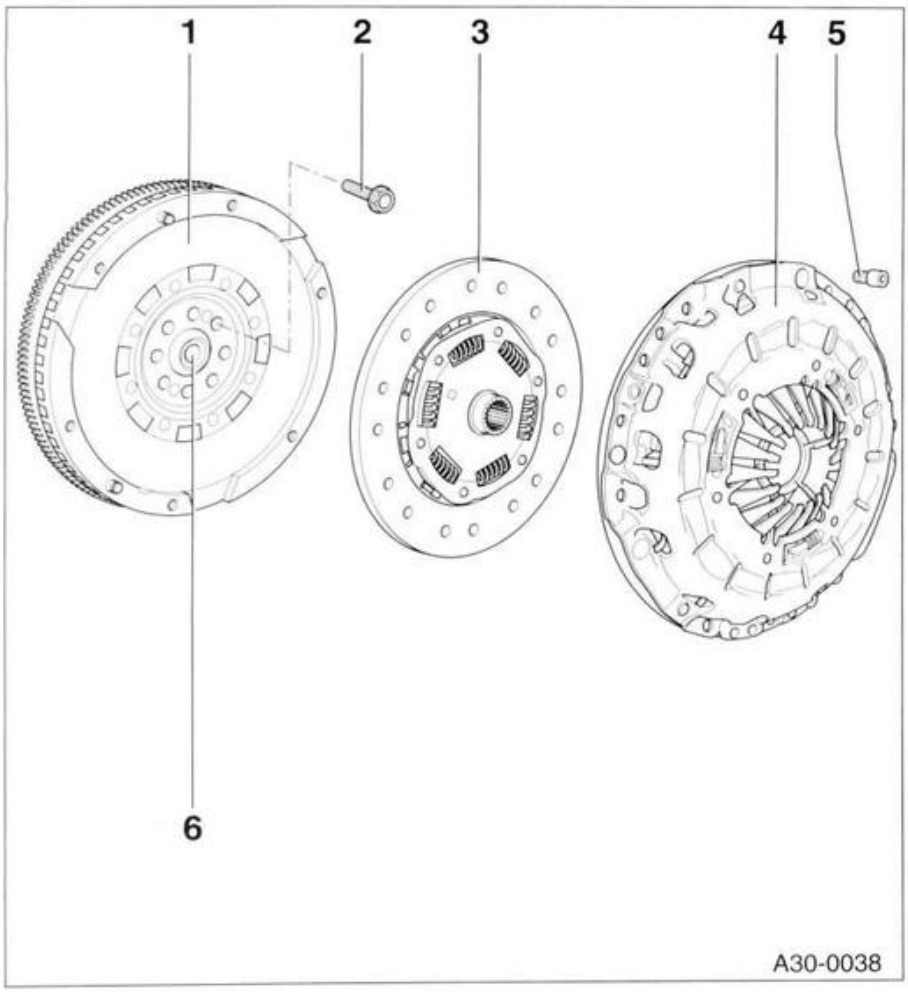
- *Mark (**A**) on flywheel must coincide with mark (**B**) on pressure plate.*

*Clutch Assembly*




## Clutch release mechanism (5-speed)

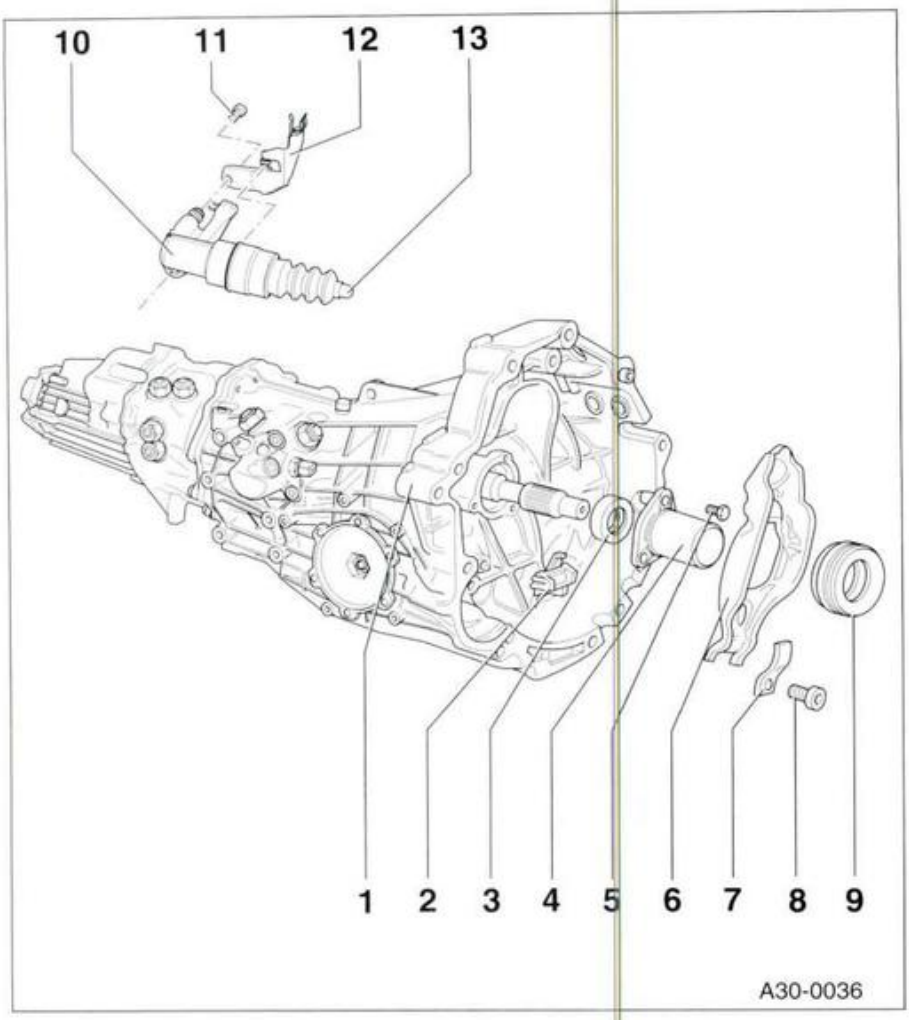
1. **Transmission**
2. **Ball stud**
   - Tighten to 25 Nm (18.5 ft-lb)
   - Lubricate with MoS2 grease
3. **Intermediate piece**
4. **Dished washer**
   - Smaller diameter (convex side) to guide sleeve
5. **O-ring**
   - Always replace
6. **Input shaft oil seal**
   - Pull out of guide sleeve with oil seal extractor lever VW 681
   - Drive to stop with fitting sleeve VW 192
7. **Guide sleeve**
   - Before removing and installing, cover input shaft splines with a shrink-fit hose to protect oil seal.
8. **Retaining spring**
   - Secure to clutch release lever
9. **Clutch release lever**
   - Before installing, coat contact surface of clutch slave cylinder plunger with a thin layer of copper grease.
10. **Self-locking bolt, 35 Nm (26 ft-lb)**
    - Always replace
11. **Release bearing**
    - Do not wash-out bearing, only wipe
    - Replace noisy bearing
    - Allow retaining tabs on release bearing to engage in release lever
12. **Plunger**
    - Grease end of plunger with copper grease.
13. **Bracket**
    - Secured to transmission along with slave cylinder
14. **Bolt, 20 Nm (15 ft-lb)**
    - Always replace
15. **Clutch slave cylinder**
    - Do not operate clutch pedal after removing
    - Pretension slave cylinder so mounting bolt can be inserted easily. See **Clutch slave cylinder (5-speed), removing and installing**.




## Clutch components (6-speed)

1. **Flywheel**
   - Dual mass flywheel only for 2.7 liter V6 bi-turbo engine
   - Make sure centering pins are tightly seated
   - Contact surface for clutch lining must be free of grooves, oil and grease
2. **Bolt**
   - Vehicle without dual-mass flywheel: tighten to 60 Nm (44 ft-lb) + 90°
   - Vehicle with dual-mass flywheel: tighten to 60 Nm (44 ft-lb) + 180°
   - Always replace
3. **Clutch plate**
   - Install with spring pack (coil springs) or the word "Getriebeseite" towards pressure plate and transmission
   - Do not grease
4. **SAC pressure plate**
   - See **Pressure plate, checking** in this repair group.
   - See **Adjusting ring in SAC clutch pressure plate, resetting** in this repair group.
   - See **Clutch with SAC pressure plate, removing and installing** in this repair group.
5. **Bolt, 22 Nm (16 ft-lb)**
   - Tighten gradually in diagonal sequence and in several stages
6. **Needle roller bearing**

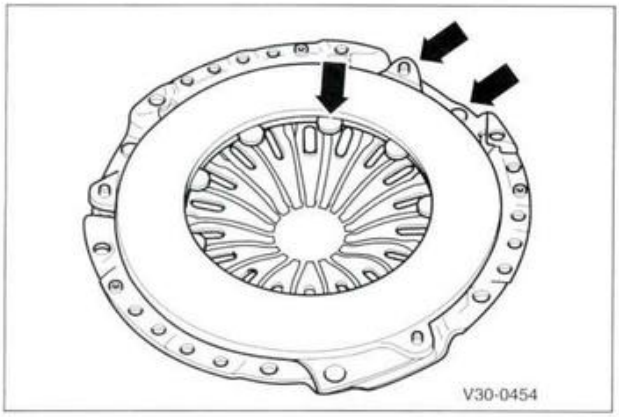
*Clutch Assembly*




## Clutch release mechanism (6-speed)

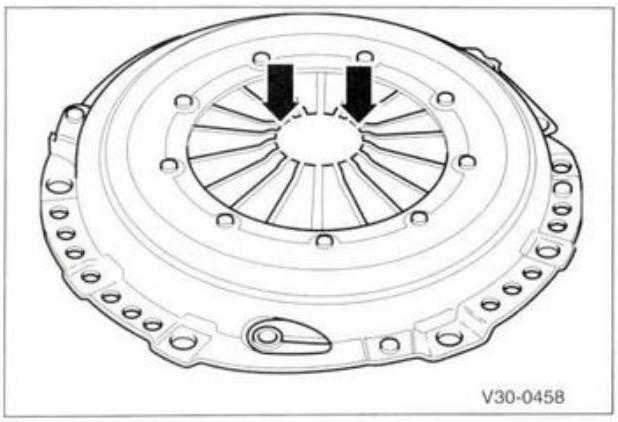
1. **Transmission**
2. **Intermediate piece**
   - Always replace
3. **Shaft seal**
   - Install depth (factory): 3.5 mm (0.14 in)
   - Install depth (repairs): 4.5 mm (0.18 in)
4. **Guide sleeve**
5. **Bolt, 15 Nm (11 ft-lb)**
6. **Clutch release lever**
   - Engage lever in lugs of intermediate piece
   - Coat contact surface of clutch slave cylinder push rod with a thin layer of copper grease
7. **Leaf spring**
8. **Bolt, 25 Nm (18.5 ft-lb)**
   - Always replace
9. **Release bearing**
   - Do not wash out, wipe clean only
   - Replace noisy bearings
   - Retainer lugs on release bearing must engage in release lever
10. **Clutch slave cylinder**
    - See **Clutch slave cylinder (6-speed), installing** in this repair group.
11. **Bolt, 20 Nm (15 ft-lb)**
    - Always replace
12. **Bracket for hose/pipe assembly**
    - Engage in clutch slave cylinder
13. **Push rod**
    - Coat tip of push rod with copper grease

## Clutch pressure plate, checking




➤ Check spring connection between pressure plate and cover for cracks and make sure rivets are tight.

– Replace clutch with damaged springs or loose rivets (**arrows**).



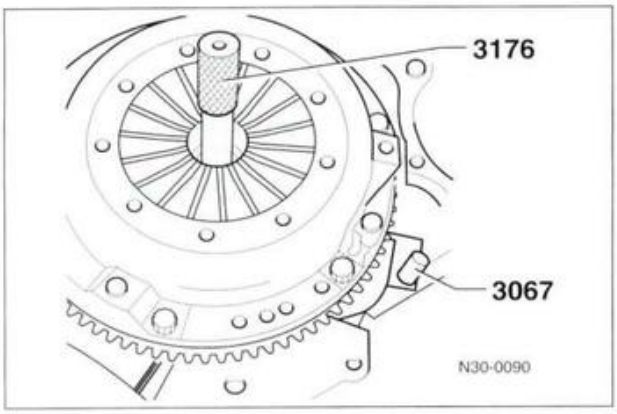

➤ Check ends of the diaphragm spring (**arrows**).

– Wear of diaphragm spring: up to ½ thickness of spring finger.

## Clutch, centering

***NOTE***—

- *Models with SAC pressure plate: If necessary, reset SAC pressure plate. See* **Clutch pressure plate (SAC), resetting** *in this repair group.*



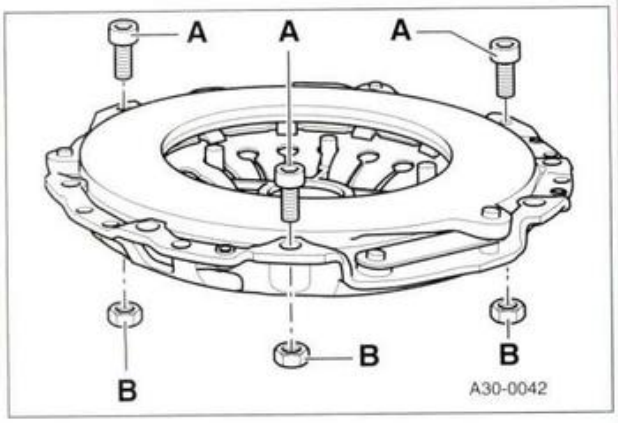

➤ Use clutch tool 3176 to center clutch disc. Use flywheel lock 3067 to remove and install pressure plate.

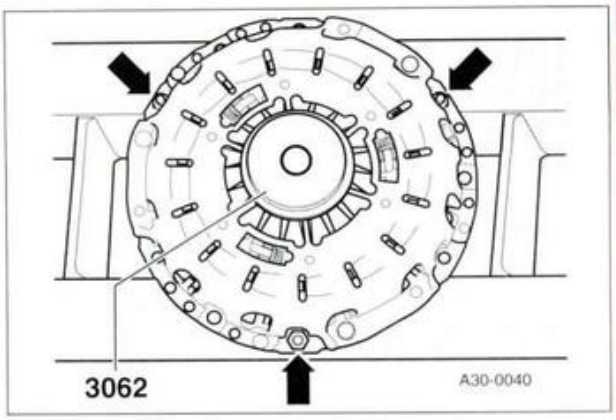
– Position clutch disc spring pack (coil springs) or marking "Getriebeseite" toward pressure plate and transmission.

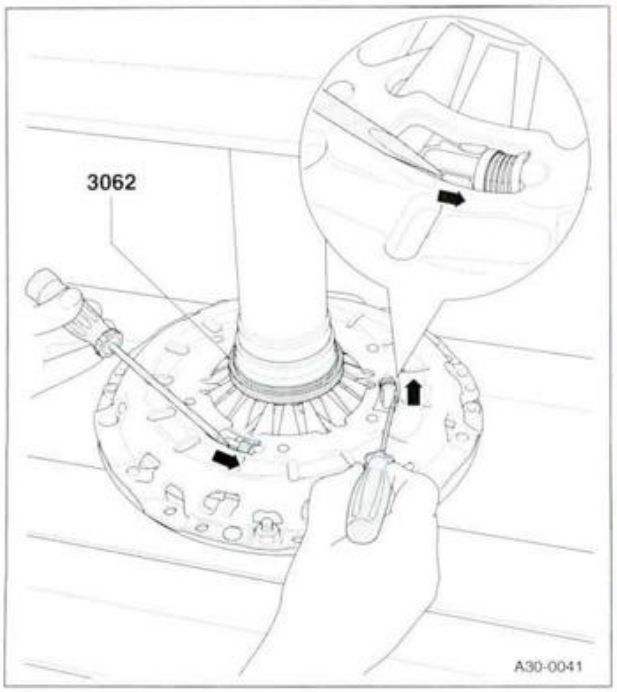
– Do not insert mounting bolts until clutch lining and contact surface of pressure plate make full contact with flywheel.

– Loosen and tighten bolts in small stages and in diagonal sequence.

| **Tightening torque** | |
|---|---|
| Clutch pressure plate to flywheel | 25 Nm (18 ft-lb) |
| Clutch pressure plate (SAC) to flywheel | 22 Nm (16 ft-lb) |




## Clutch pressure plate (SAC), resetting

***NOTE***—

- *When fitting a new clutch disc together with a used SAC pressure plate, the adjuster ring in the pressure plate has to be reset by turning it back as far as it will go. If this is not done, the SAC pressure plate will operate with reduced clamping force, which will cause clutch slip and excessive wear (especially of the clutch disc).*
- *If clutch disc is not being replaced, it is not necessary to reset the adjuster ring.*
- *New SAC pressure plates are pre set, and do not have to be reset.*

➤ Insert 3 securing bolts (**A**) into pressure plate mounting holes, 120° from each other (1/3 turn), as shown in illustration.

– Screw 3 nuts (**B**) (M8) on bolts (**A**) and tighten nuts slightly.

➤ Place SAC pressure plate on press so that only 3 bolt heads (**arrows**) make contact with press plate.

– Position special tool 3062 in center of pressure plate.

***NOTE***—

- *Do not use force when performing the following steps, otherwise the forks on the adjuster ring can break off.*

➤ Apply two screwdrivers to forks on adjuster ring. Compress pressure plate until it is just possible to move adjuster ring.

– Using two screwdrivers, turn back adjuster ring evenly in direction of **arrows** until it reaches stop.

– Hold adjuster ring against stop and release press so that adjuster ring is held in this position.

# 32 Torque Converter


GENERAL . . . . . 32-1
Torque converter description . . . . . 32-1
Torque converter identification . . . . . 32-2
TORQUE CONVERTER SERVICE . . . . . 32-2
Torque converter, removing and installing . . . . . 32-2
Torque converter, draining . . . . . 32-3
Torque converter oil seal, replacing . . . . . 32-3

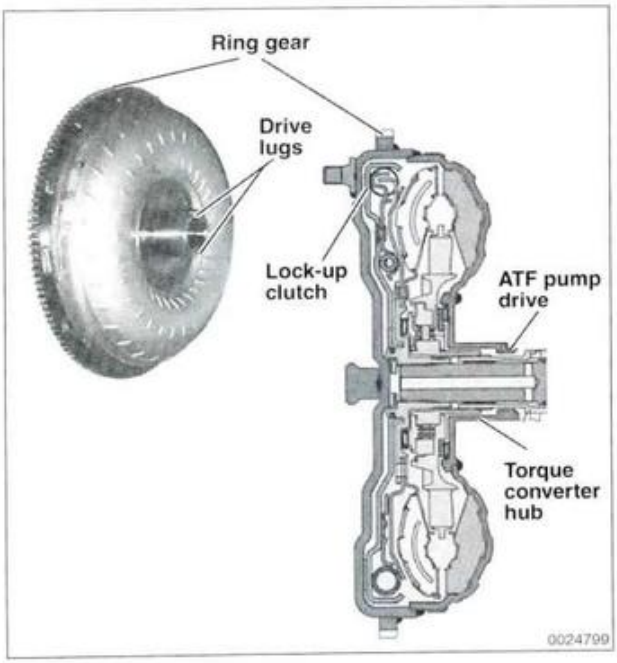



## GENERAL

This repair group covers description and service notes for automatic transmission torque converter. Torque converter service requires removal of the transmission from the vehicle using special tools and equipment. Automatic transmission removal is not covered in this manual.

For additional information, see:

- **37 Automatic Transmission**



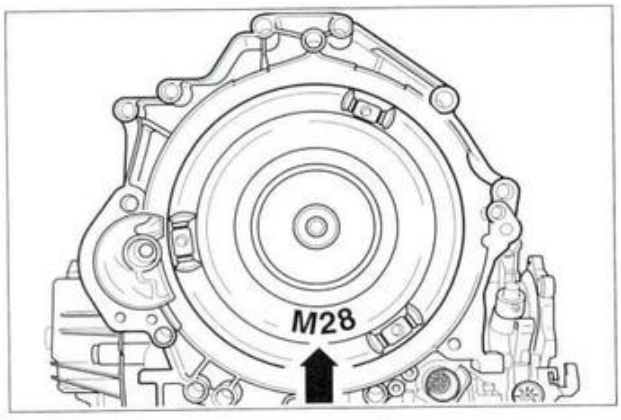

### Torque converter description

The torque converter is a fluid coupling device connecting the engine and the transmission. It is driven by a steel drive plate attached to the engine crankshaft. In addition to connecting the engine and transmission, the torque converter drives the automatic transmission fluid (ATF) pump within the transmission. The pump delivers ATF under pressure.

Torque converter sections are welded together and then balanced; no internal service is possible.

*NOTE —*

- *Torque converter with lock-up clutch illustrated. Not all models include this feature.*




### Torque converter identification

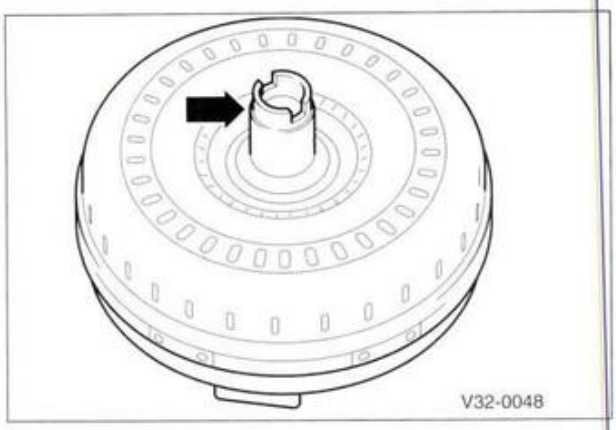
Different versions of the torque converter are installed depending on engine type. The torque converter is marked with a 3-digit application code on the side facing the engine. For application information, check with an authorized Audi dealer parts department.

## TORQUE CONVERTER SERVICE

### Torque converter, removing and installing

– With transmission separated from engine and out of vehicle, remove converter by firmly grasping and carefully pulling straight out.

***CAUTION—***
- *Be prepared to catch leaking ATF fluid.*

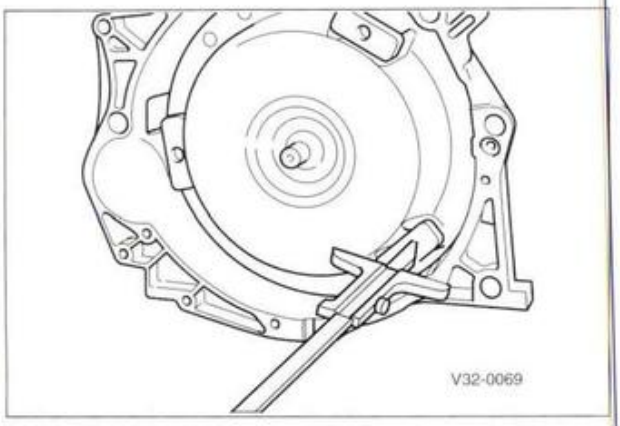



➤ Examine hub (**arrow**) of torque converter for excessive wear. Replace if damaged or faulty.

– Replace oil seal. See **Torque converter oil seal, replacing** in this repair group.

– Push torque converter hub through seal onto transmission shaft as far as first stop.

– Press torque converter into transmission bell housing while rotating it until recess in torque converter hub engages in ATF pump gear shaft and torque converter is felt to slip into place.



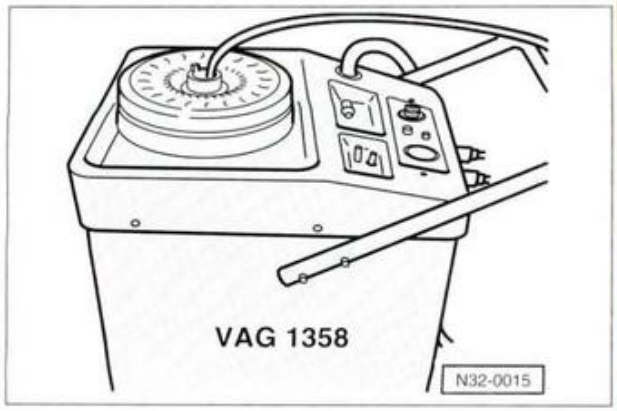

➤ When torque converter is correctly installed, the distance between the faces of the threaded holes on the torque converter and the contact face of the transmission bell housing is about 23 mm (0.9 in).

If the torque converter is not fully installed, this distance is about 11 mm (0.43 in).

***CAUTION—***
- *If the torque converter is not correctly installed, the ATF pump shaft will be destroyed when the transmission is connected to the engine.*

### Torque converter, draining

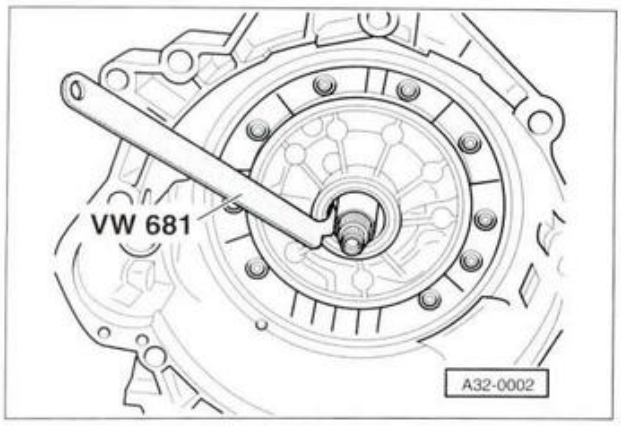
– If torque converter is contaminated by foreign particles, drain torque converter completely. Use VW special tool 1358, 1782 or equivalent.

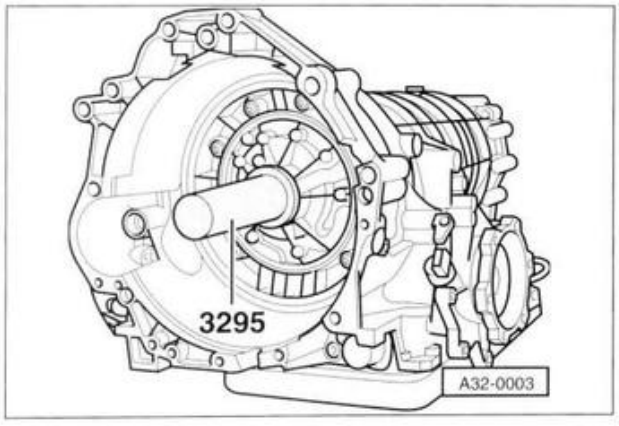


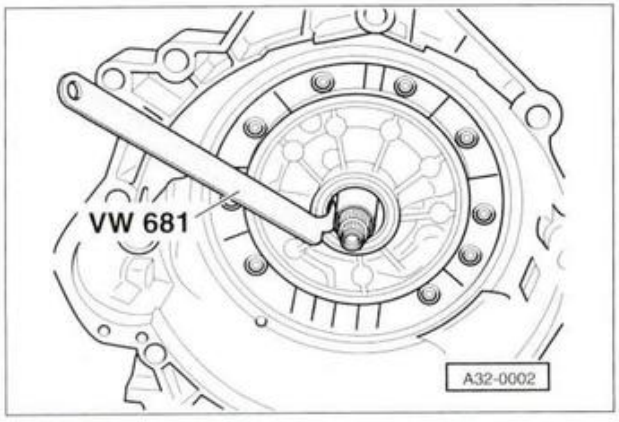

➤ Siphon ATF from torque converter. VAG 1358 A shown with adapter VAG 1358 A/1. Follow manufacturers instructions for operation.

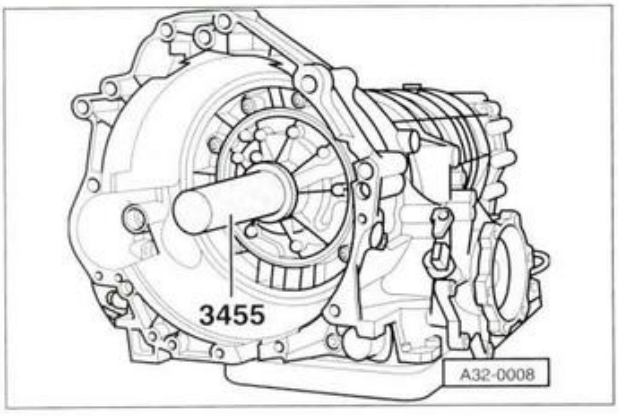
***NOTE—***
- *Be sure to allow sufficient time for fluid to drain from all internal passages of torque converter.*

To refill torque converter, see automatic transmission fluid filling instructions in **37 Automatic Transmission**.




## Torque converter oil seal, replacing

Torque converter oil seal is located in the transmission housing front cover at the transmission input shaft.

– With transmission separated from engine and out of vehicle, carefully pull out torque converter.

➤ Front drive models: Insert removal tool VW 681 or equivalent directly behind sealing lip of seal. Make sure contact ring directly behind seal is not damaged.

– Pry oil seal out of transmission housing. Use care to avoid gouging housing with tip of removal tool. Seal is destroyed during removal.

– Install contact ring. Replace contact ring if damaged

– Lightly lubricate outer circumference of seal and sealing lips with ATF.

***NOTE***—

- *Open side of seal points towards transmission.*

➤ Use drift 3295 to install seal as far as stop on drift.

– Install torque converter. See **Torque converter, removing and installing** in this repair group.

➤ All wheel drive models: Remove circlip in front of seal. Insert removal tool VW 681 or equivalent directly behind sealing lip of seal. Make sure wave washer directly behind seal is not damaged.

– Pry oil seal out of transmission housing. Use care to avoid gouging housing with tip of removal tool. Seal is destroyed during removal.

– Install wave washer. Replace washer if damaged.

– Lightly lubricate outer circumference of seal and sealing lips with ATF.

***NOTE***—

- *Open side of seal points towards transmission.*

➤ Use drift 3455 to install seal as far as stop on drift.

– Insert circlip. Make sure circlip is seated in bottom of groove.

– Install torque converter. See **Torque converter, removing and installing** in this repair group.

# 34 Manual Transmission


GENERAL . . . . . 34-1

TRANSMISSION OIL . . . . . 34-2
- Manual transmission oil . . . . . 34-2
- 5-speed manual transmission oil level . . . . . 34-2
- 6-speed manual transmission oil level . . . . . 34-3

GEAR SELECTOR SERVICE . . . . . 34-4
- Gear selector mechanism assembly (5-speed) . . . . . 34-5
- Gear selector mechanism (5-speed), removing and installing . . . . . 34-6
- Gear selector mechanism (5-speed), adjusting . 34-7
- Gear shift adjustment (5-speed), checking . . . . 34-9
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TRANSMISSION SERVICE . . . . . 34-15
- Transmission (5-speed), removing and installing . . . . . 34-15
- Transmission (6-speed), removing and installing . . . . . 34-22




## GENERAL

This repair group covers repair information for cable-operated gear shift mechanisms and removal and installation of the 5-speed or 6-speed manual transmission. Transaxle or transmission teardown, disassembly, or internal repairs are not covered.

For additional information, see the following:

- **03 Maintenance** for engine and transmission identification.
- **30 Clutch** for hydraulic and mechanical clutch repairs
- **40 Front Suspension** for drive axles
- **96 Interior Lights, Switches, Anti-theft** for back up light switch

A6 models were equipped with one of two different quattro (all-wheel drive) manual transmissions.

| Transmission | Type |
|---|---|
| 5-speed manual | 01A |
| 6-speed manual | 01E |

Transmissions are identified by type, code, serial number, manufacturer identification code and build date. Transmission identification plates containing some or all of this information are affixed to the transmission housing. See **03 Maintenance** for more information.

***CAUTION—***

- *To avoid damaging plastic interior trim, use a plastic prying tool or a screwdriver with the tip wrapped with masking tape.*

# Transmission and Final Drive Oil

## Manual transmission oil

Manual transmission gear box and final drive share a common oil supply. Checking oil level of transmission also checks oil level of final drive (differential).

To remove manual transmission filler plug, use either a 17 mm Allen wrench or a triple-square socket driver, special tool 3357. A combination tool with both 16 mm anti-tamper triple-square (XZN) and 17 mm Allen ends is available as MN2567.

Current specifications for manual transmission oil are shown in **Table a**. If oil container is not marked with appropriate specification, assume that the oil is not suitable.

| Table a. Manual transmission oil specifications | |
|---|---|
| Transmission types 01A, 01E | Synthetic oil SAE 75W90<br>VAG part no. G 005 000<br>or G 052 145 S2 |

***CAUTION—***
- *Part numbers for transmission lubricants are for reference only. Be sure to check with an authorized Audi parts department for the latest recommendations.*

Approximate refill capacities in **Table b** are listed by transmission type.

| Table b. Manual transmission oil capacities (approximate) | |
|---|---|
| **Transmission type** | **Oil capacity in liters (US qt)** |
| 01A (5-speed AWD) | 2.7 (2.8) |
| 01E (6-speed AWD)<br>• Transmission code EDU<br>• Transmission code EEY or EHS (allroad quattro) | <br>2.3 (2.4)<br>3.6 (3.8) |

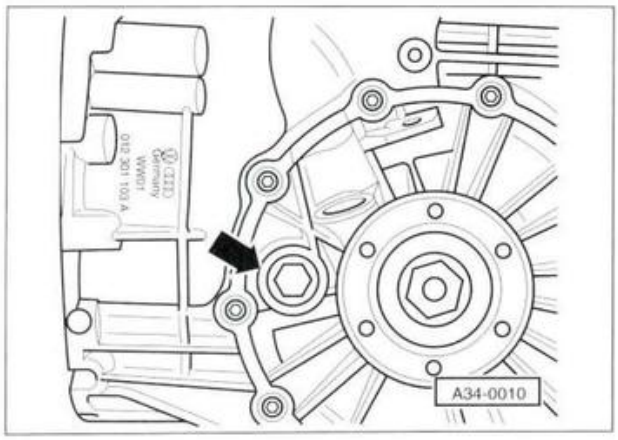
## 5-speed manual transmission oil level

Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside transmission pools toward rear, and level cannot be accurately determined.

### Checking level

– Raise vehicle and support safely.

***WARNING —***
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Oil filler plug (**arrow**) is on left of transmission below speedometer sender; it may be concealed by heat shield for drive axle. Depending on transmission version fitted, use either special tool 3357 or 17 mm Allen wrench to loosen and remove oil filler plug.

– Oil level is correct when transmission is filled up to lower edge of filler hole.

### Filling

– If oil is low:

- Place oil drain pan underneath transmission filler plug
- Top up transmission oil with SAE 75 W 90 (synthetic oil). Make sure oil is filled up to lower edge of filler hole.
- Allow excess oil to drip out.

– Screw in oil filler plug.

| Tightening torque | |
|---|---|
| Oil filler plug to transmission housing | 25 Nm (18 ft-lb) |

## 6-speed manual transmission oil level

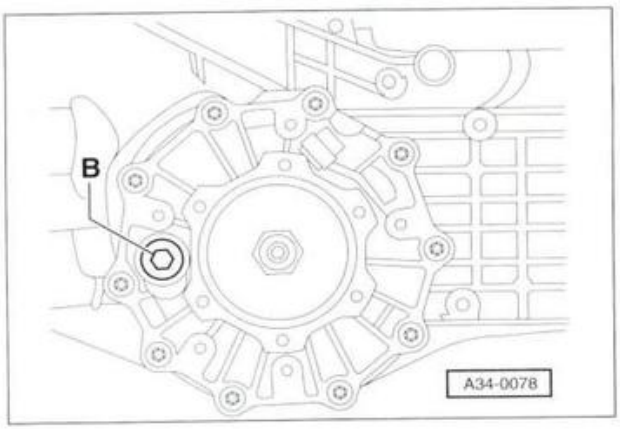
When checking 6-speed manual transmission oil level, use a piece of stiff wire (such as a coat-hanger) bent at right angle, as a dipstick.

Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside transmission pools toward rear, and level cannot be accurately determined.

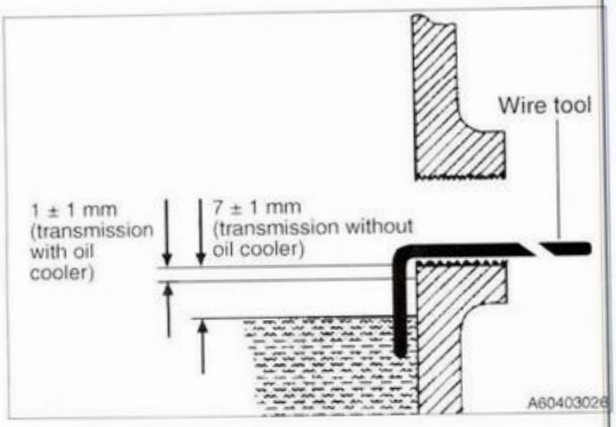
### Checking level

– Raise vehicle and support safely.

***WARNING*** —
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Oil filler plug (**B**) is on left, ahead of drive axle flange. Use either special tool 3357 or 17 mm Allen wrench to loosen and remove oil filler plug.




➤ Check transmission oil level using stiff wire hook inserted into fill hole.

| 6-speed manual transmission oil level guidelines | |
|---|---|
| Vehicle without transmission oil cooler | 7 ± 1 mm (¼ in) below fill hole opening |
| Vehicle with transmission oil cooler | 1 ± 1 mm (1/25 in) below fill hole opening |

### Filling

– If oil is low, top up transmission oil with SAE 75 W 90 (synthetic oil).

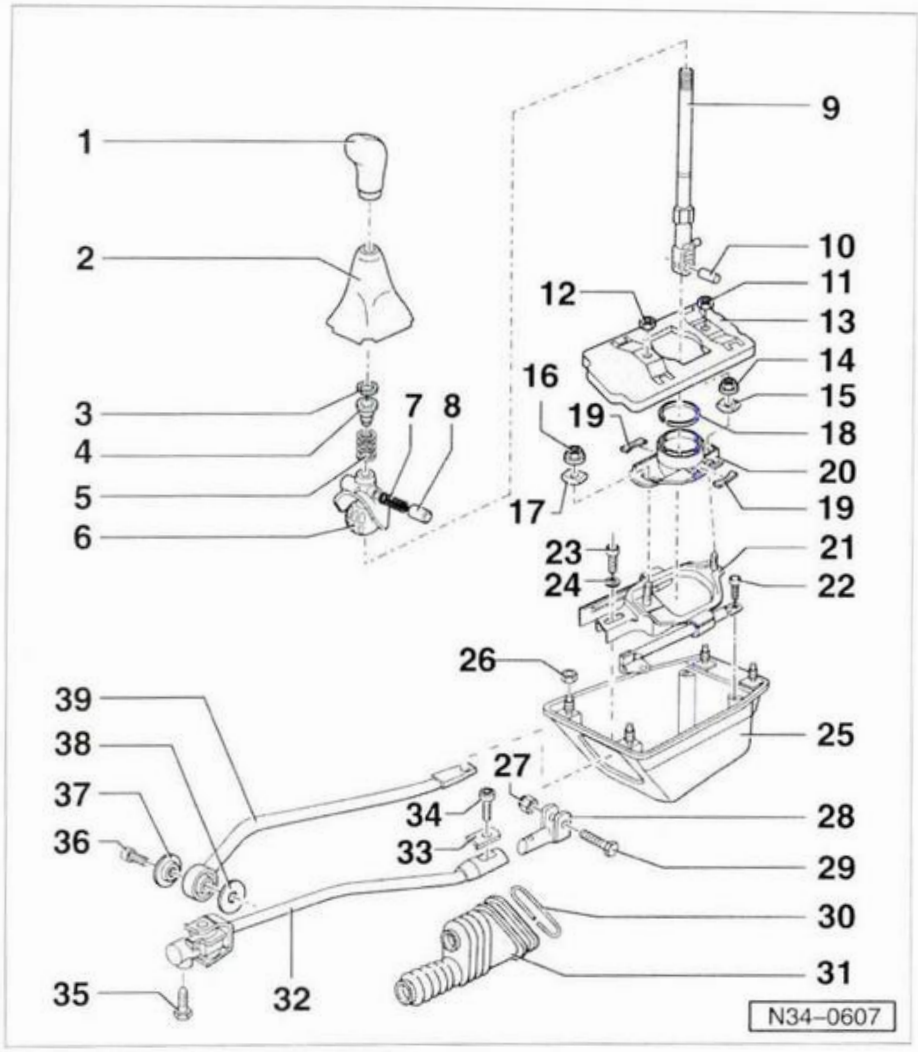
***CAUTION***—
- *Adhere strictly to the oil level guidelines. The transmission is very sensitive to overfilling.*

– Screw in oil filler plug.

| Tightening torque | |
|---|---|
| Oil filler plug to transmission housing | 40 Nm (30 ft-lb) |

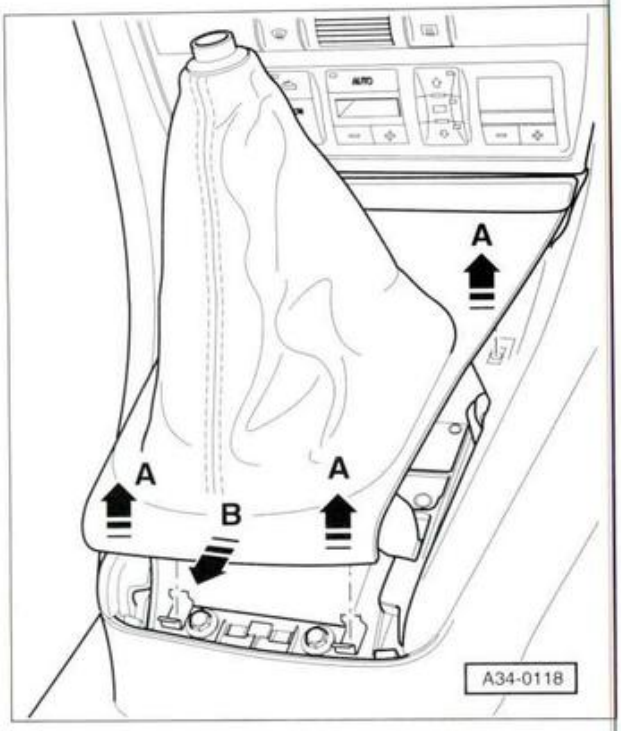
## Gear Selector Service

***NOTE***—
- *To remove the complete shift linkage, remove the exhaust system. See* **26 Exhaust System**.
- *To disassemble the shift linkage in the installation position, the shift mechanism housing must be lowered.*
- *Lubricate sliding surfaces with polycarbamide grease.*




## Gear selector mechanism (5-speed)

1. Shift knob
2. Shift boot
3. Circlip
4. Bushing
5. Compression spring
6. Ball stop
7. Compression spring
8. Bushing
9. Shift lever
10. Spacer tube
11. Nut, 8 Nm (ft-lb)
12. Nut, 8 Nm (ft-lb)
13. Cover
14. Nut, 10 Nm (7 ft-lb)
15. Connecting piece
16. Nut, 23 Nm (17 ft-lb)
17. Connecting piece
18. Circlip
19. Buffer
20. Ball housing (upper)
21. Ball housing (lower)
22. Bolt, 10 Nm (7 ft-lb)
23. Bolt, 23 Nm (17 ft-lb)
24. Washer
25. Shift mechanism housing
26. Nut, 10 Nm (7 ft-lb)
27. Nut, 10 Nm (7 ft-lb)
28. Shift fork
29. Bolt
30. Tensioning ring
31. Boot
32. Shift rod
33. Clamp
34. Bolt, 23 Nm (17 ft-lb)
35. Bolt, 23 Nm (17 ft-lb)
36. Bolt
37. Washer
38. Washer
39. Pivot rod




## Selector mechanism (5-speed), removing and installing

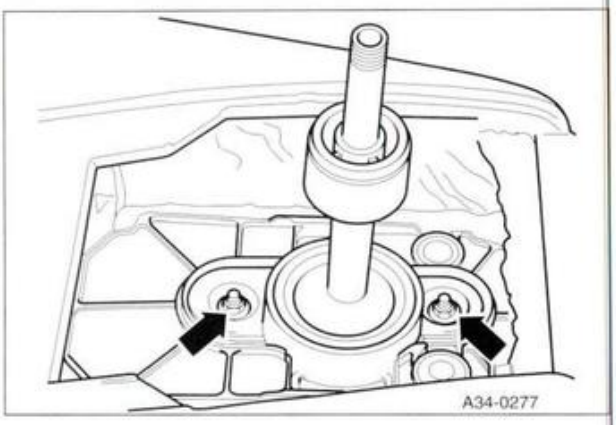
– Unscrew gear shift knob from shift rod.

***NOTE***—

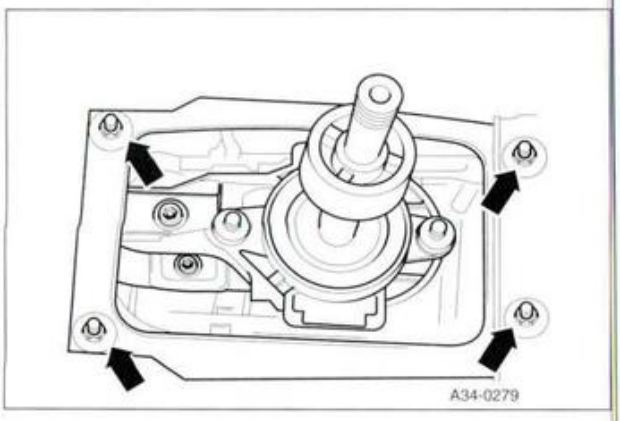
- *Cover on gear shift is removed together with cover for center console.*

➤ Use a plastic prying tool to lift up cover for center console slightly (**A**).

– Pull cover slightly toward rear (**B**) and lift off complete cover.



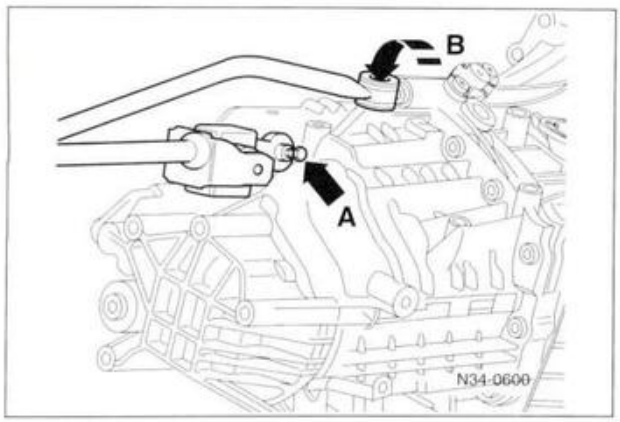

➤ Remove noise insulating cover for gear shift housing (**arrows**).




➤ Unscrew nuts securing gear shift housing (**arrows**).

– Separate exhaust system behind catalytic converter. If necessary remove front exhaust system.

– Remove driveshaft.




➤ Remove selector rod (**A**).

– Unscrew Allen bolt on push rod (**B**).

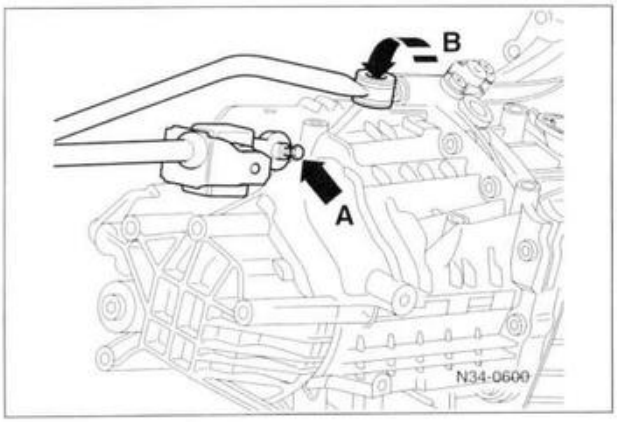
– Remove front heat shield above exhaust system.

– Swing gear shift housing with selector rod and push rod down and remove.

### Installing

– Install in reverse order.

– Push selector rod on so that the securing bolt fits in the recess in the selector shaft.



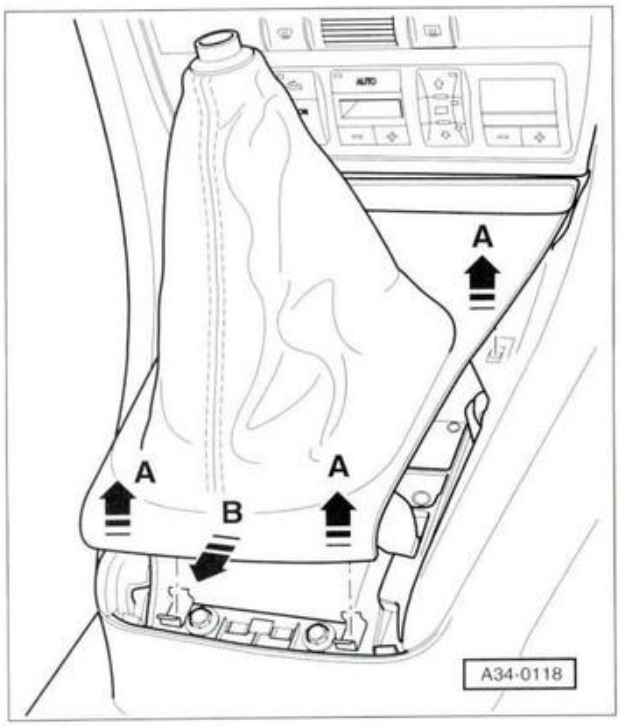

➤ Then secure selector rod (**A**) with bolt.

– Secure push rod to transmission (**B**) with bolt.

– Adjust gear selector mechanism. See **Gear selector mechanism (5-speed), adjusting** in this repair group.

– Install driveshaft and adjust. See **39 Differential and Final Drive**.

| Tightening torques | |
|---|---|
| Gear shift housing to body | 10 Nm (7 ft-lb) |
| Selector rod to transmission | 20 Nm (15 ft-lb) |
| Push rod to transmission | 40 Nm (30 ft-lb) |




## Gear selector mechanism (5-speed), adjusting

– Requirements:
- Components of selector mechanism and linkage must be in good condition.
- Selector mechanism must move freely.
- Transmission, clutch and clutch mechanism must be in good condition.
- Transmission in neutral.

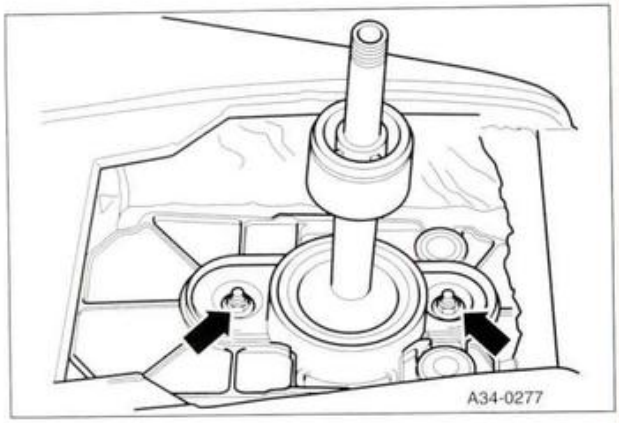
– Unscrew gear shift knob from gear shift.

***NOTE***—
- *Cover on gear shift is removed together with cover for center console.*

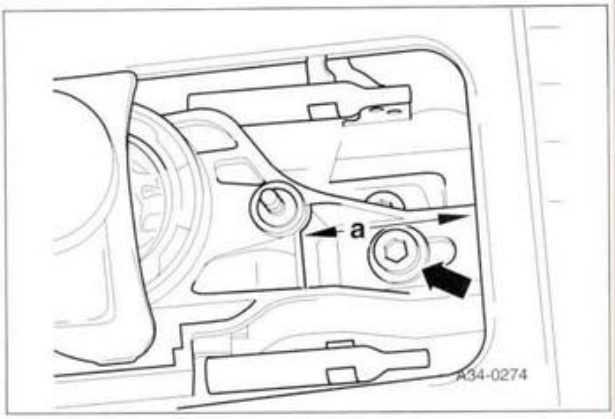
➤ Lift up cover for center console slightly (**A**).

– Pull cover slightly toward the rear (**B**) and then lift off complete cover.

*Gear Selector Service*



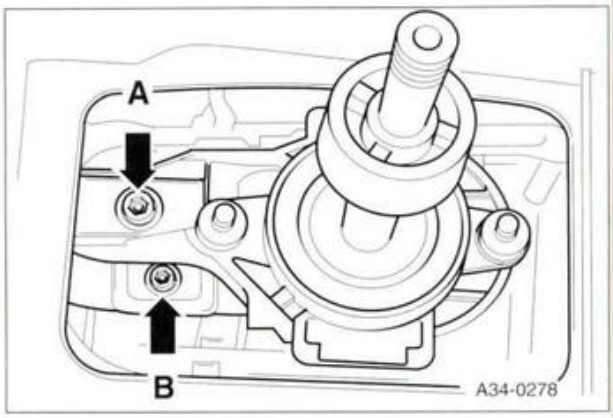

➤ Remove noise insulating cover for gear shift housing (**arrows**).



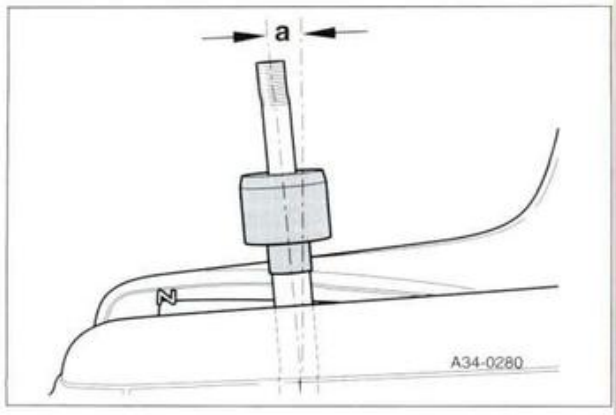

➤ Measure distance between body and rear push rod (in selector mechanism). Distance **a** should equal 41 mm.

– If this is not the case, adjust dimension a as follows:
- Loosen push rod bolt (**arrow**). Rear push rod (in selector mechanism) should move freely in both directions on slide.
- Set to distance **a** by moving rear push rod (in selector mechanism).
- Tighten push rod bolt.

| Tightening torque | |
|---|---|
| Push rod adjusting bolt | 25 Nm (18 ft-lb) |




➤ Loosen bolt for shift rod (**arrow**). Shift rod/shift mechanism must move freely.




➤ Align shift lever as follows:
- Shift lever vertical in direction of travel.
- Shift lever slightly inclined toward rear (**a**).

***NOTE***—
- *Shift lever is shown from the right side.*

– Hold shift lever in this position.

– Tighten bolt for shift rod.

| Tightening torque | |
|---|---|
| Shift rod adjusting bolt | 25 Nm (18 ft-lb) |

***NOTE —***

- *Make sure position of shift lever does not change when bolt is tightened.*

## Gear shift adjustment (5-speed), checking

Make sure gear shift lever rests in the 3rd/4th gear gate when transmission is in neutral.

– Operate clutch.

– Check that all gears can be engaged.

– Check operation of reverse gear lock:

- The gear shift should return by itself from the 5th/reverse gate into the 3rd/4th gate.
- It must not be possible to shift directly into reverse gear from 5th gear.
- It must only be possible to shift into reverse gear when shift lever starts in the neutral gate between 3rd/4th gears.

***NOTE —***

- *If only 5th gear and reverse gear cannot be engaged, check the 5th and reverse gear locking unit and replace if necessary.*

– Attach covers and gear shift knob.

## Selector mechanism (6-speed), removing and installing

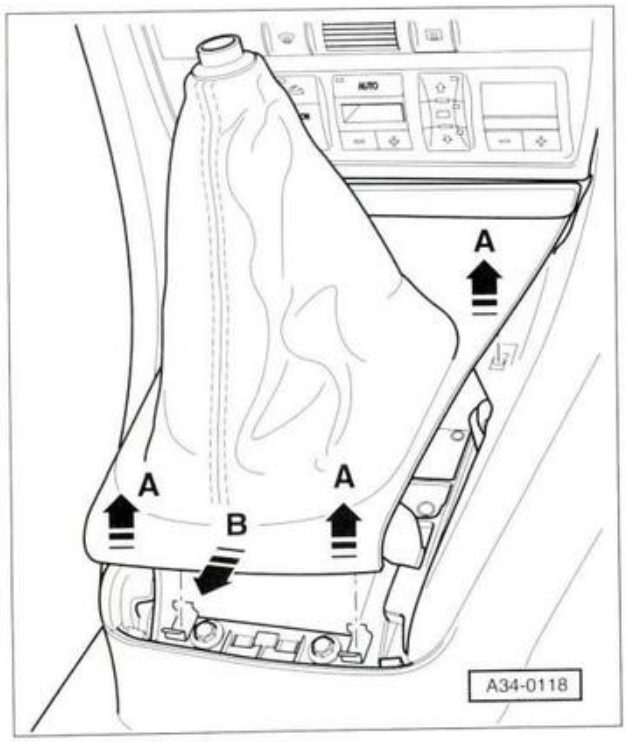
– Unscrew shift knob from lever.

***NOTE —***

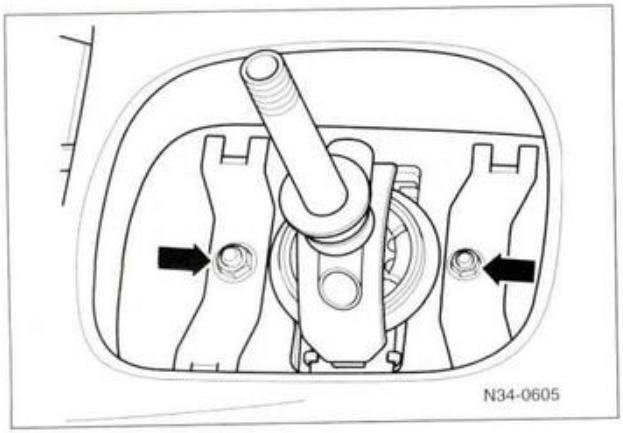
- *Shift cover is removed together with cover for center console.*

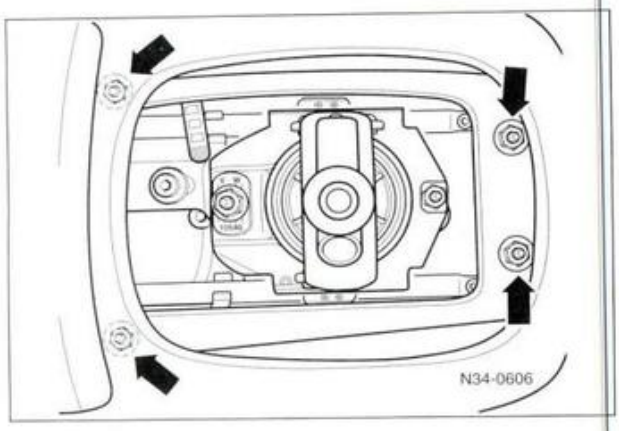
➤ Use a plastic prying tool to slightly lift cover for center console upward (**A**).

– Pull cover slightly back (**B**) and remove complete cover.

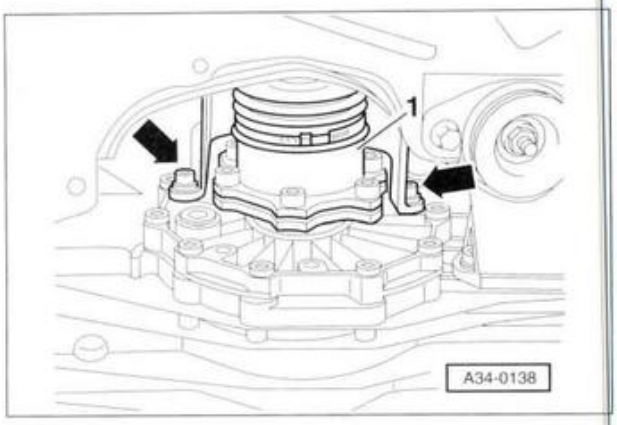



➤ Remove noise insulation for selector mechanism housing (**arrows**).






➤ Remove nuts securing selector mechanism housing (**arrows**).

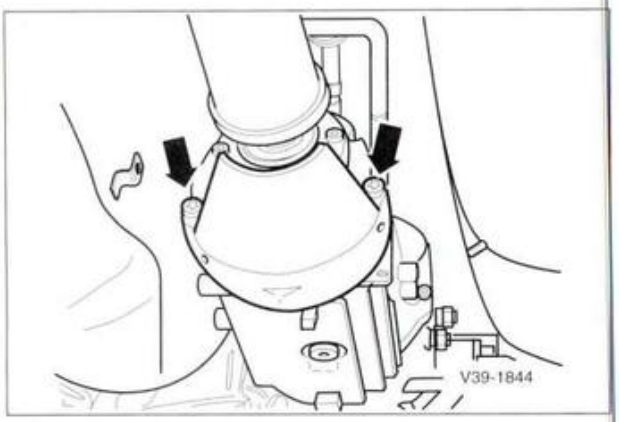



➤ Remove heat shield mounting nuts (**arrows**) for left inner drive axle joint.

– Detach left inner drive axle (**1**). Lift axle towards the front and tie up.

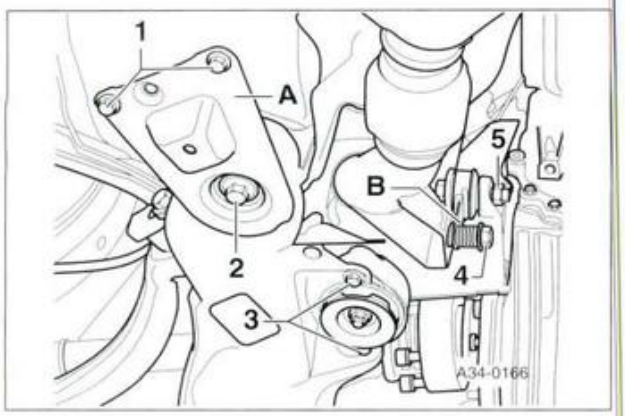
– Remove rear section of exhaust system (rearward of exhaust pipe clamps).

– Remove heat shield above driveshaft.

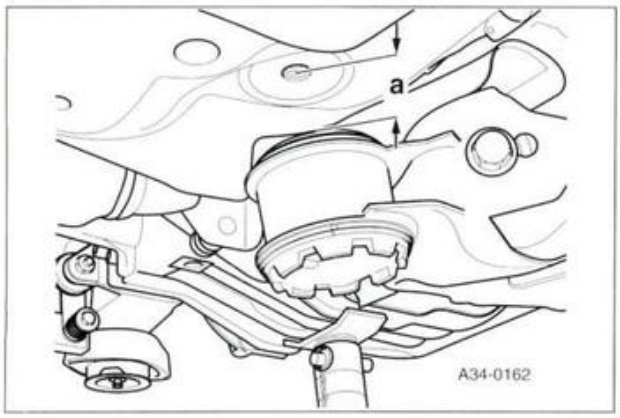



➤ Remove heat shield for driveshaft from differential (**arrows**).

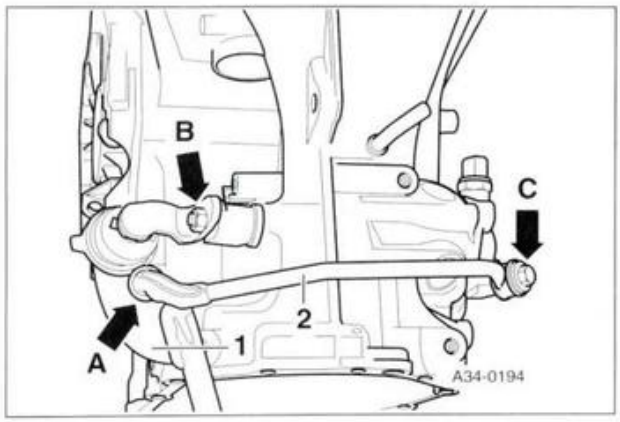
– Remove driveshaft.




➤ Unscrew bolts (**1** and **2**) on left and right.

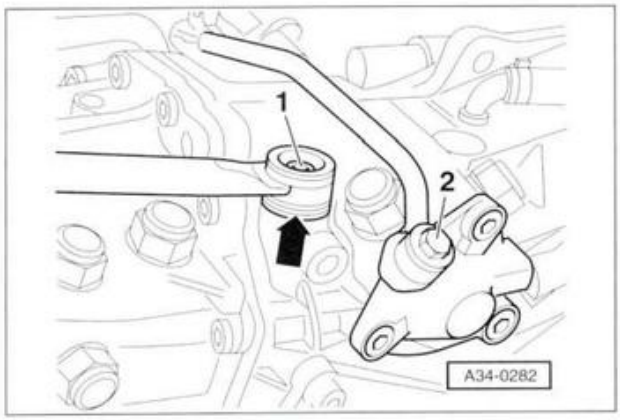



➤ Lower rear of subframe (distance **a**) a maximum of 50 mm (2 in).




➤ Do not pull ball head (**A**) of connecting rod (**2**) off shift rod (**1**). The ball head is destroyed when pulled off.

– Nut (**B**) and bolt (**C**) must be removed to remove shift rod.

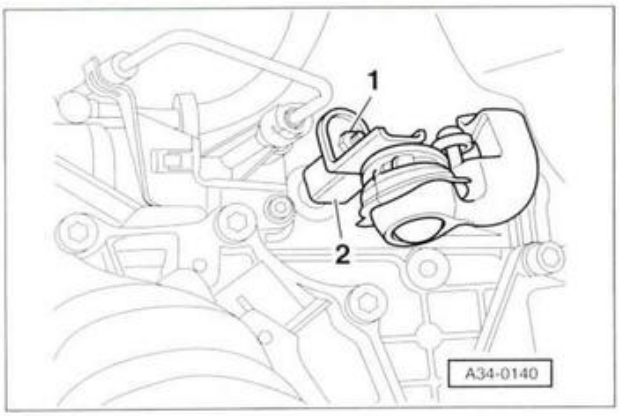



➤ Unbolt connecting rod (**2**) on right side of transmission.

– Remove bolt from push rod (**1**).

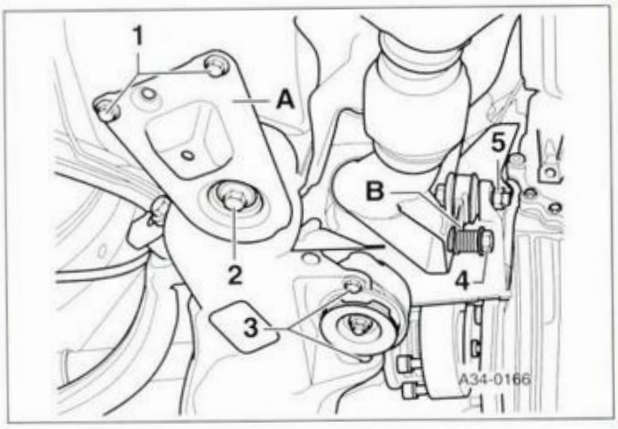
***NOTE***—

- *Reuse any washers installed between the pushrod and the transmission (**arrow**).*




➤ Unscrew nut (**1**) and pull selector rod lever (**2**) off transmission selector shaft.

– Swing gear shift housing with selector rod and push rod down and remove.




– Installation is carried out in reverse order. Note the following:
  - Bolt on driveshaft.
  - Adjust driveshaft.
  - Adjust gear selector mechanism.
  - Align exhaust system free of stress.

| **Tightening torques** | |
|---|---|
| Bolt (**1**) | 75 Nm (55 ft-lb) |
| Combination bolt (**2**) | 110 Nm (81 ft-lb) + 90° turn |
| Gear shift housing to body | 10 Nm (7 ft-lb) |
| Selector rod to transmission | 25 Nm (19 ft-lb) |
| Connecting rod to transmission | 25 Nm (19 ft-lb) |
| Push rod to transmission | 40 Nm (30 ft-lb) |
| Drive axle to drive flange:<br>• M8<br>• M10 | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Heat shield for drive axle | 25 Nm (19 ft-lb) |
| Clamp for exhaust pipe | 40 Nm (30 ft-lb) |

## Gear selector mechanism (6-speed), adjusting

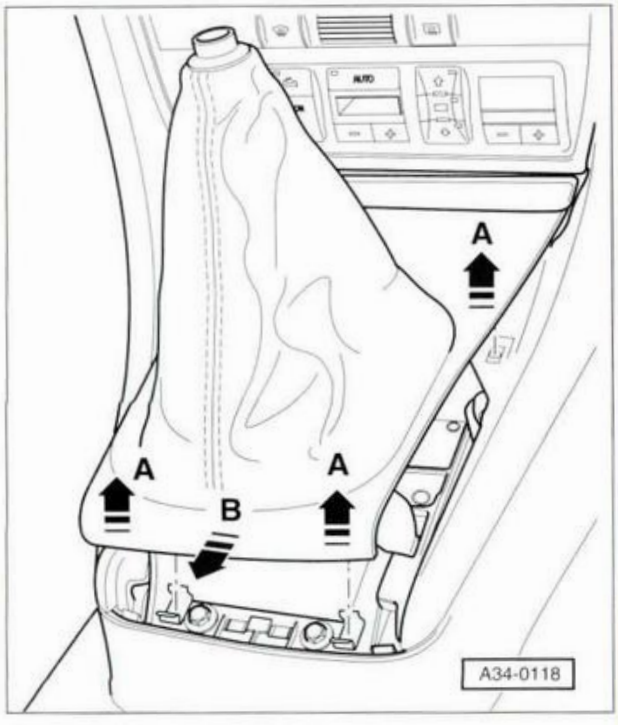
– Adjustment requirements:
  - Selector mechanism, operating and relay elements must be in good condition.
  - Selector mechanism must move freely.
  - Transmission, clutch and clutch mechanism must be in good condition.
  - Transmission in neutral.

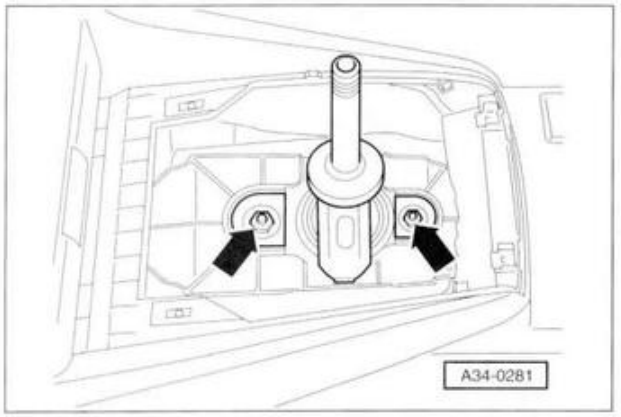
– Unscrew gear shift knob from gear shift.

***NOTE***—
- *Shift cover is removed together with the cover for center console.*

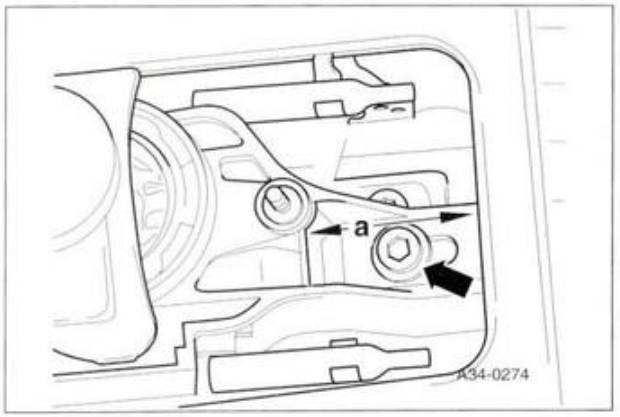
➤ Use a plastic prying tool to slightly lift cover for center console upward (**A**).

– Pull cover slightly back (**B**) and lift off complete cover.

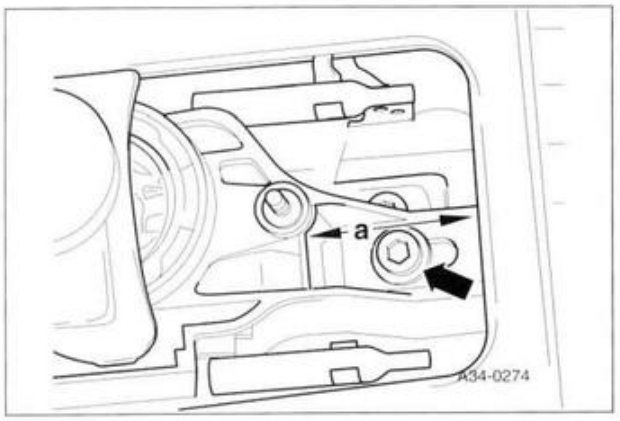





➤ Remove noise insulation for selector mechanism housing (**arrows**).




➤ Measure distance between body and rear push rod (in selector mechanism). Distance **a** should equal 43 mm. If not, continue with procedure.



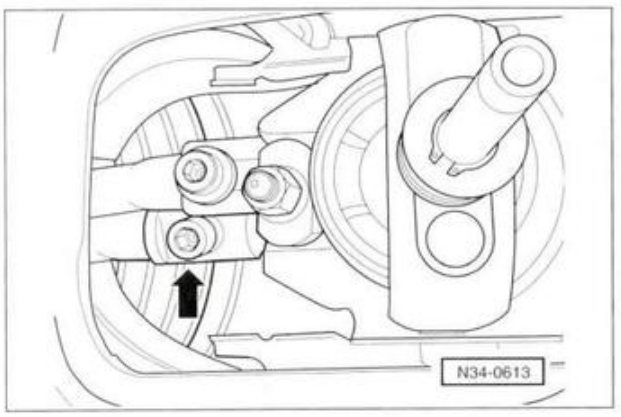

➤ Loosen bolt (**arrow**) for pivot rod.

- Rear pivot rod (in shift control mechanism) must move freely back and forth on sliding piece.

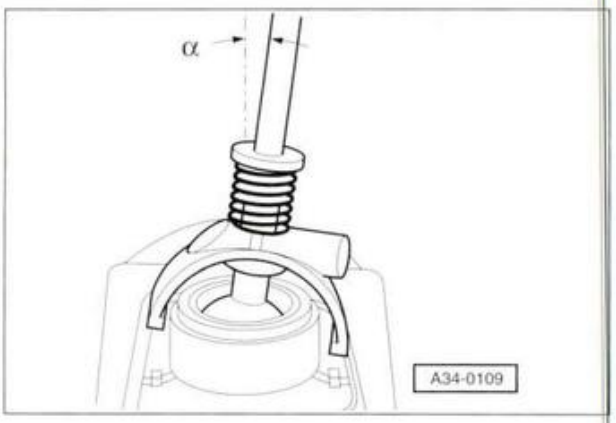
– Adjust measurement **a** by moving pivot rod rear (in shift control mechanism).

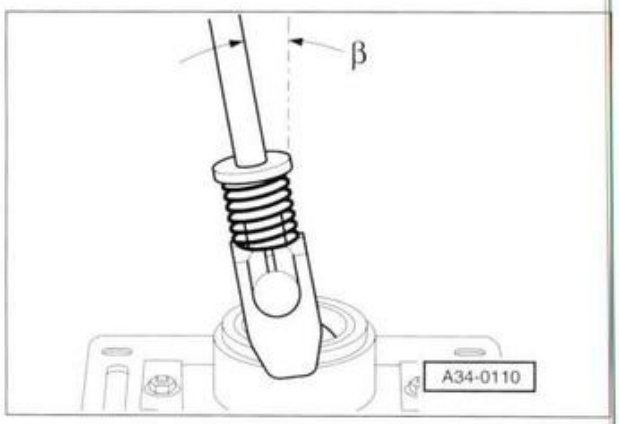
– Tighten bolt for pivot rod.

| **Tightening torque** | |
|---|---|
| Pivot rod adjustment bolt | 25 Nm (18 ft-lb) |




➤ Loosen bolt for selector rod (**arrow**). Connection between selector rod and selector mechanism should move freely.




**Adjust gear shift as follows:**

➤ Gear shift vertical, maximum inclination of 3° to right (**a**).

***NOTE —***

- *Illustration shows gear shift from behind (looking towards front of vehicle)*

➤ Gear shift inclined slightly backwards (approx. 7°).

***NOTE —***

- *Illustration shows gear shift from the right.*

– Hold gear shift in this position.

– Tighten selector rod bolt.

| **Tightening torque** | |
|---|---|
| Selector rod adjustment bolt | 25 Nm (18 ft-lb) |

***NOTE —***

- *Gear shift must remain in the same position while bolt is being tightened.*

## Gear shift adjustment (6-speed), checking

– Gear shift lever must rest in the 3rd / 4th gear gate when transmission is in neutral.

– Check operation of 1st and 2nd gear stop.

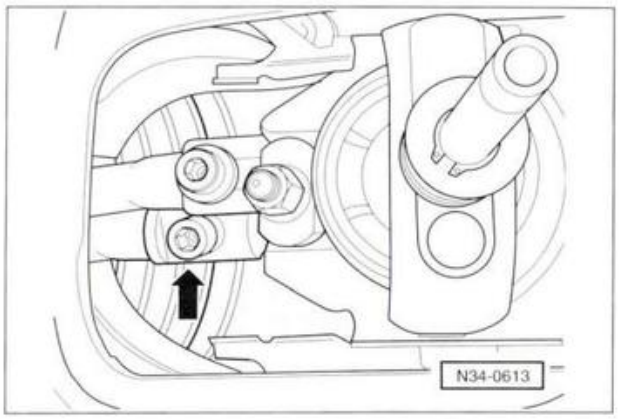
– Engage 2nd gear and push gear shift to the left against the stop.

– Reduce pressure on gear shift until it moves back to pressure point.
  - Spring-back measured at gear shift handle: 3-5 mm.

– Check that all gears can be engaged.

– Check operation of reverse gear lock.
  - It should only be possible to engage reverse gear after pressing the gear shift down to overcome the reverse gear lock.
  - It must be possible to move the gear shift, without pushing and without force, forwards from the reverse gear lock to the 3rd/4th gear plane.

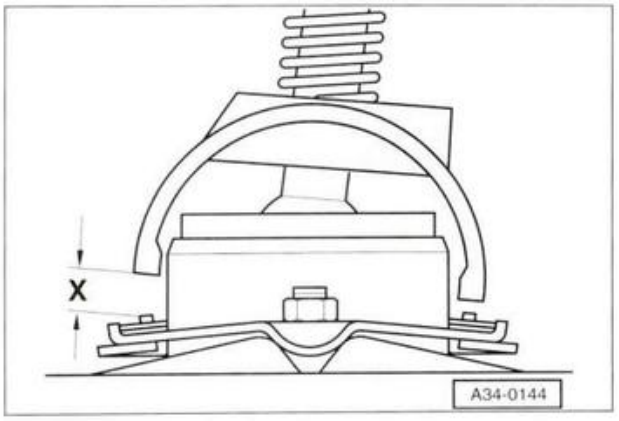
– If the gear shift setting is incorrect, continue with procedure.




➤ Loosen bolt for selector rod (**arrow**).

***NOTE***—

- *The angle of forward / backward inclination of the gear shift must not be changed while the following adjustments are being made.*




➤ Move gear shift to the left or to the right until distance **x** is 8.5 mm (0.33 in).

– Hold gear shift in this position.

– Tighten selector rod bolt.

– Check gear shift setting again.

– Fit covers and gear shift knob.

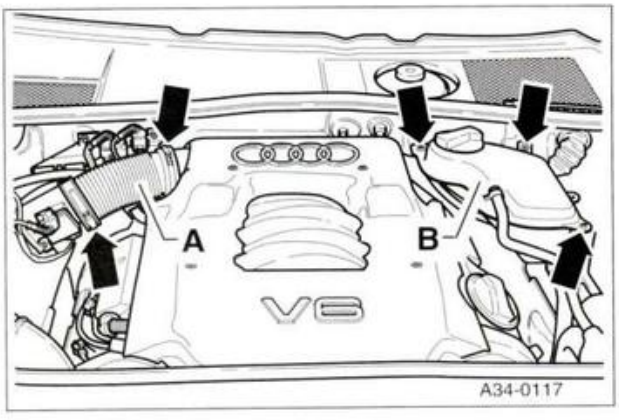
| Tightening torque | |
|---|---|
| Selector rod to selector fork | 25 Nm (18 ft-lb) |

## TRANSMISSION SERVICE

### Transmission (5-speed), removing and installing

– Special tools:
- Transmission jack V.A.G 1383 A
- Transmission support 3282
- Adjustment plate 3282/10
- Assembling appliance 3139
- Wrench set for oxygen sensors 3337
- Grease G 000 100

– Switch ignition OFF and disconnect battery ground (-) strap.

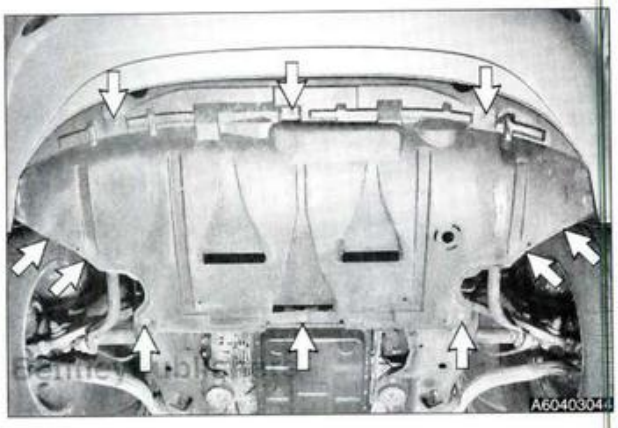



➤ Remove intake hose (**A**).

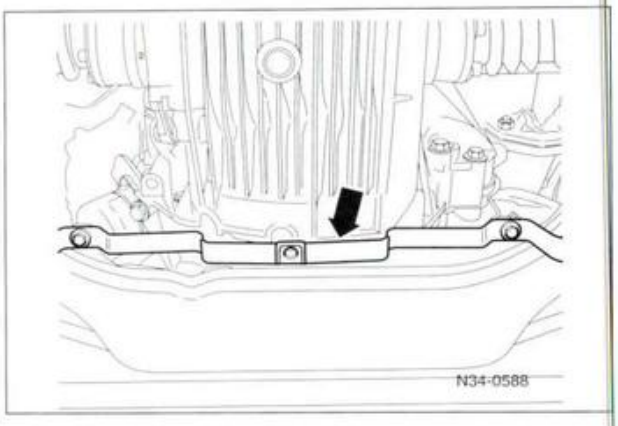
– Unbolt coolant system expansion tank (**B**) and lay to one side.

– Remove oxygen sensors on left and right exhaust pipes with special tool 3337 and move clear to the side.

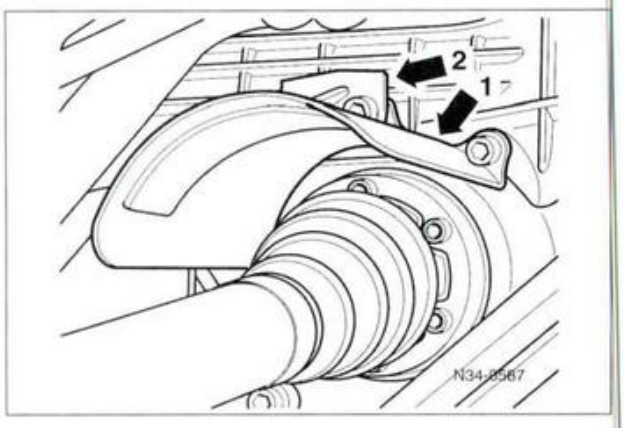
– Unscrew engine/transmission securing bolts accessible from above.




➤ Remove lower engine cover (**arrows**). See **03 Maintenance** for more information.

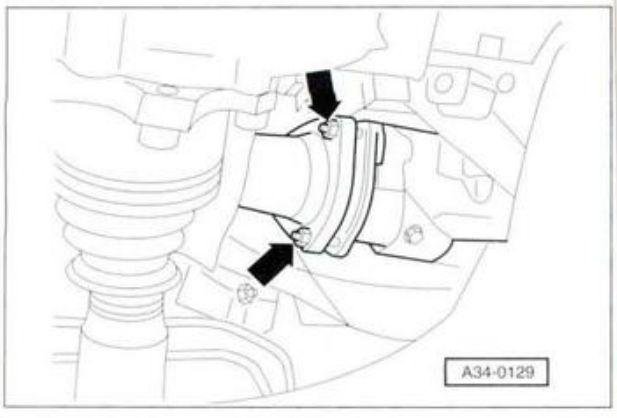



➤ Unbolt lower engine cover bracket (**arrow**).



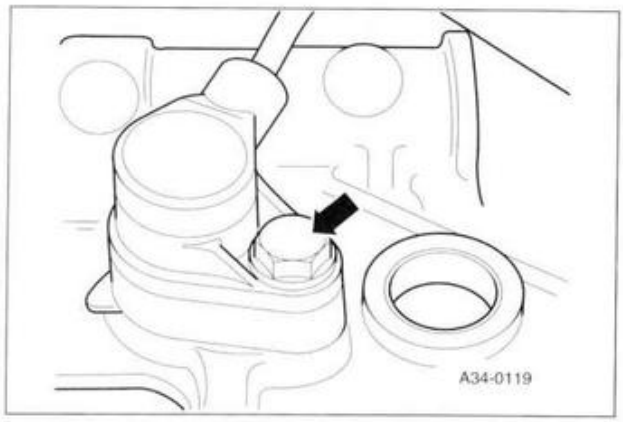

➤ Remove bolts (**1** and **2**) for heat shields above right axle shaft.

– Remove heat shield above left axle shaft.



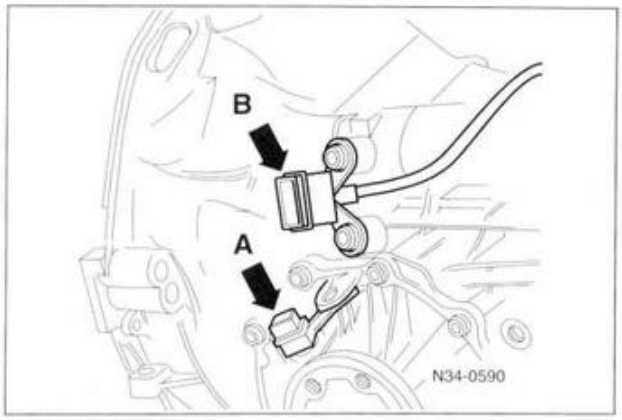

➤ Unbolt front exhaust pipes with catalytic converters from left and right exhaust manifolds (3 nuts on each side) (**arrows**).

– Remove clamping sleeves of exhaust system and remove catalytic converters together with exhaust pipe downward.



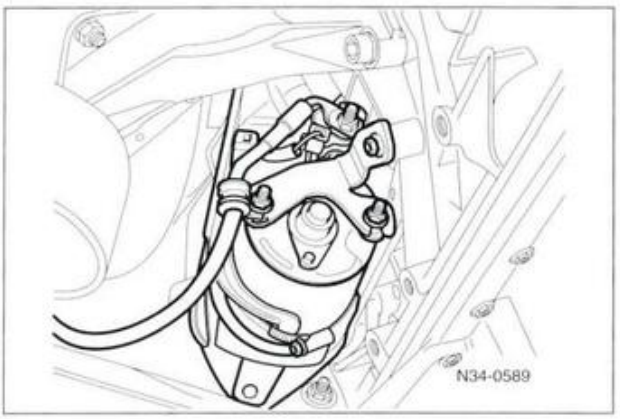

➤ Remove engine speed sender (G28) on left of transmission (**arrow**) and move clear to side.

– Remove drive axles from drive flanges and tie up as high as possible; do not damage protective coating.




➤ Pull connector off wheel speed sender (**A**).

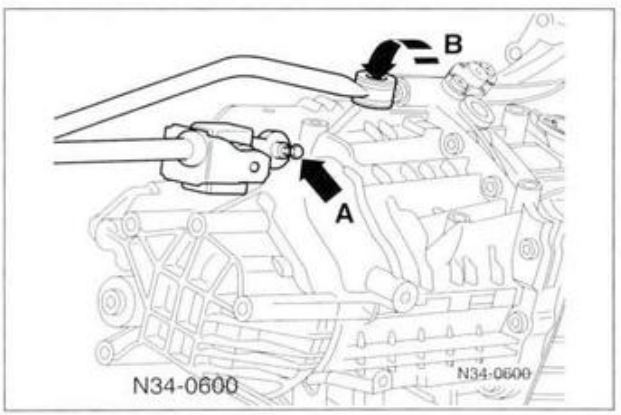
– Pull off back-up light connector (**B**). Disconnect all other electrical connections and ground wires from transmission and from the engine / transmission securing bolts.




➤ Unbolt starter from engine/transmission and secure as necessary.

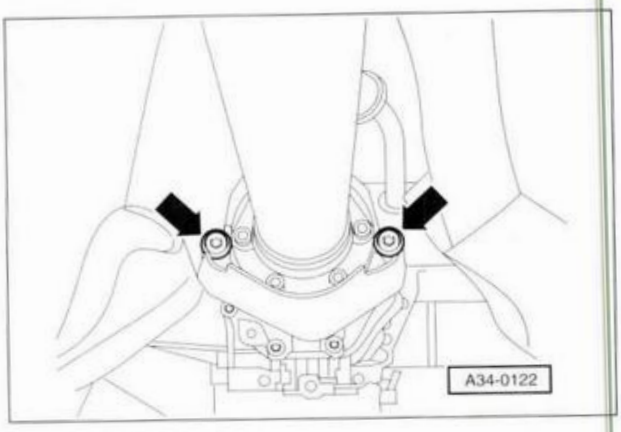
***NOTE***—

- *Starter cables do not have to be disconnected.*

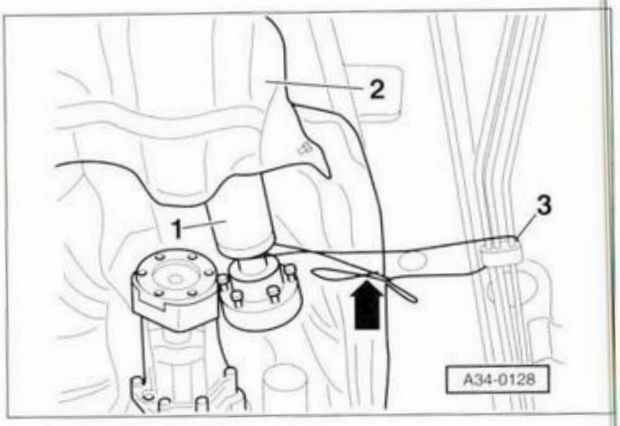



➤ Detach selector rod arrow (**A**).

– Unscrew Allen bolt out of push rod (**B**).

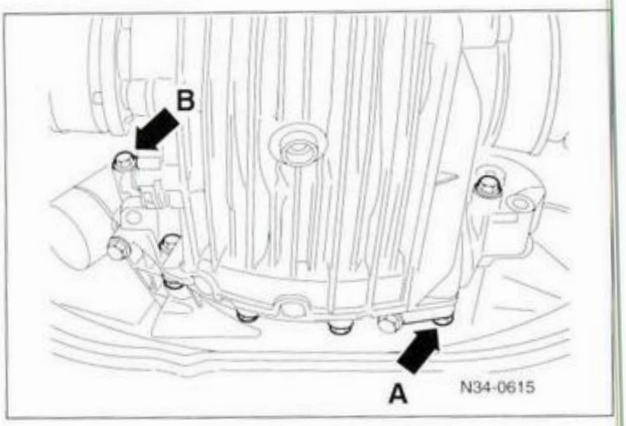



– Unbolt heat shield for driveshaft from differential cover (**arrows**).

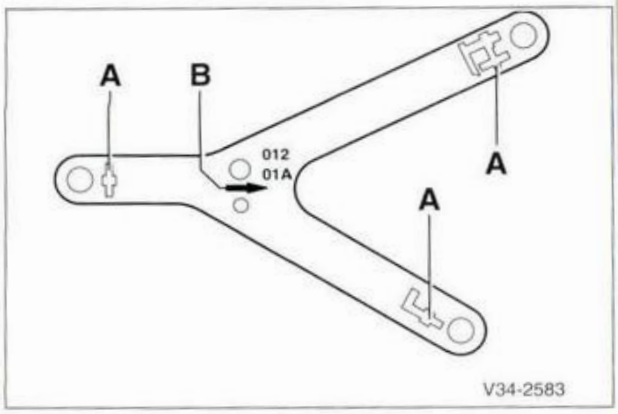



➤ Unbolt driveshaft (**1**) from transmission and rest it on heat shield (**2**).

– Secure driveshaft to fuel pipe bracket (**3**) with wire (**arrow**).




➤ Unscrew bottom engine / transmission securing bolts, except for bolts indicated by arrows (**A** and **B**).




➤ Set up transmission support 3282 for removing manual transmission 01A (all wheel drive) with adjustment plate 3282/10 and attach to transmission jack VAG 1383 A.

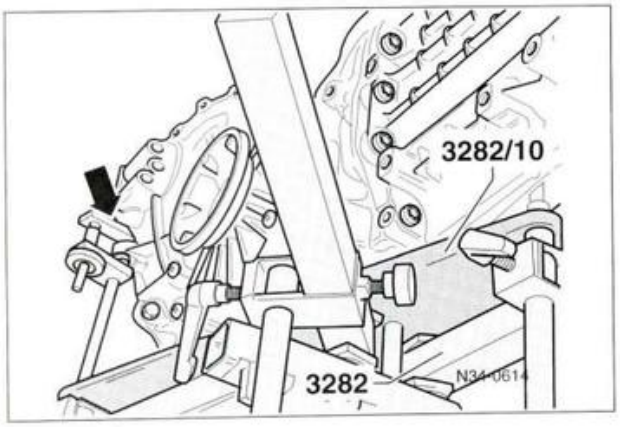
***NOTE*** —

- *Attachments (**A**) are shown; arrow (**B**) points in the direction of travel.*
- *Adjustment plate 3282/10 only fits in one position.*

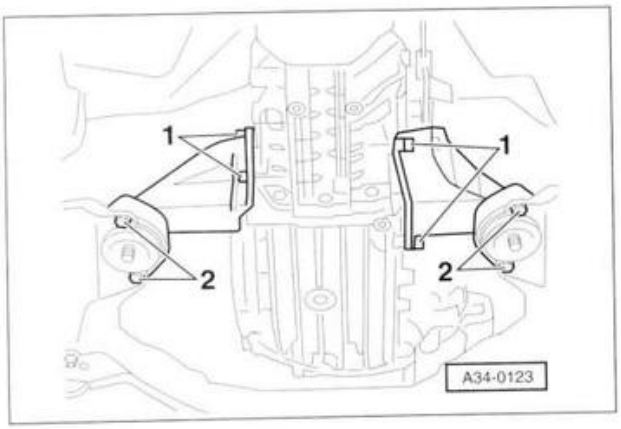
– Run transmission jack VAG 1383 A with transmission support 3282 in under the transmission and take up the weight of the transmission.

***NOTE***—

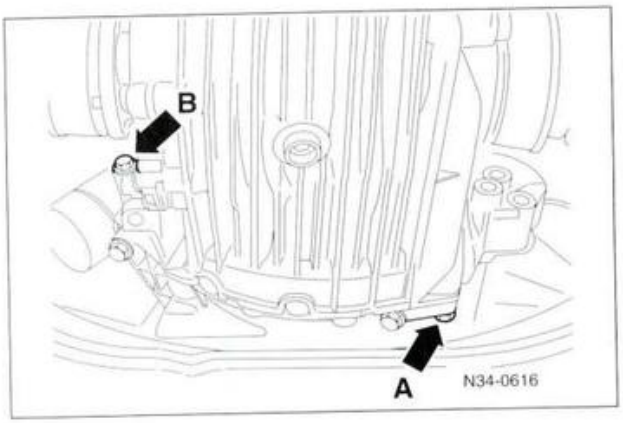
- *If the transmission lift 3282 is not available, the transmission can be removed and installed using transmission lift 1383A and universal mounts VAG1359/2.*




➤ Align adjustment plate parallel to transmission and lock safety support (**arrow**) on transmission.




➤ Unbolt right and left transmission supports complete with bonded rubber mountings from transmission and subframe (**1** and **2**).

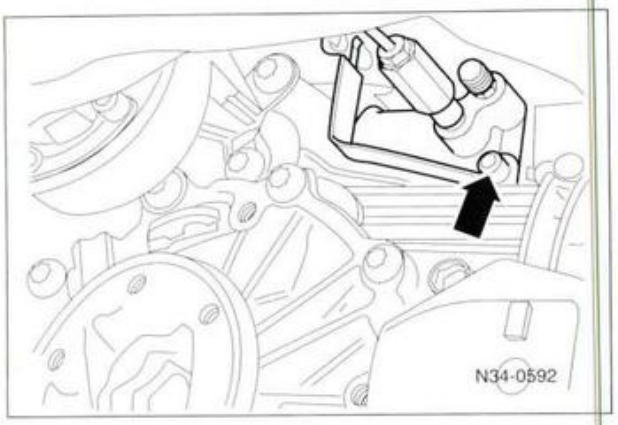



➤ Remove remaining engine / transmission securing bolts (**A** and **B**).

– Press transmission off dowel sleeves and lower carefully with transmission jack VAG 1383 A just far enough for access to clutch slave cylinder.

***NOTE***—

- *When lowering transmission ensure hydraulic pipe and hose to slave cylinder are not damaged.*




➤ Remove clutch slave cylinder (**arrow**) and secure with wire. Do not disconnect fluid lines.

***NOTE***—

- *Do not depress clutch pedal after detaching slave cylinder.*

– Lower transmission completely.

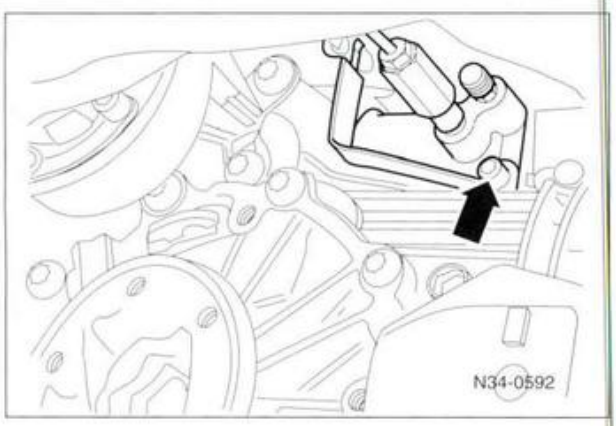
***NOTE***—

- *Remove carefully, watching for hoses, electrical wires or mechanical parts that might become snagged.*

### Installing

– Installation is reverse of removal. Remember to:

- Clean input shaft splines and (if reusing clutch disc) hub splines. Remove corrosion and apply only a very thin coating of grease G 000 100 to splines. Do not grease guide sleeve.
- Check clutch release bearing for wear. Replace if necessary.
- Coat slave cylinder push rod tip with thin layer of copper grease.
- Check whether dowel sleeves for aligning engine / transmission are fitted in cylinder block. Install if necessary.
- Use tap to clean threaded holes for mounting clutch slave cylinder to transmission and shift coupling to shift rod.
- Replace self-locking nuts.




➤ Lift transmission until clutch slave cylinder and fluid line bracket can be installed (**arrow**).

– Fit intermediate plate between transmission and engine on engine dowel sleeves.

– Ensure that intermediate plate is correctly positioned on engine.

– Install lower engine / transmission securing bolts and bolts for starter. Install starter.

– Before installing, use a tap to clean threads in transmission drive axle flange to remove traces of thread locking compound.

– Replace gaskets on axle shafts and on front of driveshaft.

– Bolt on drive axles and drive axle heat shields.

– Bolt on driveshaft heat shields and driveshaft.

– Align exhaust system so it is free of stress.

– Insert oxygen sensors and tighten.

– If equipped, install the engine speed sensor (G28).

– Check adjustment of shift and pivot rod and adjust if necessary.

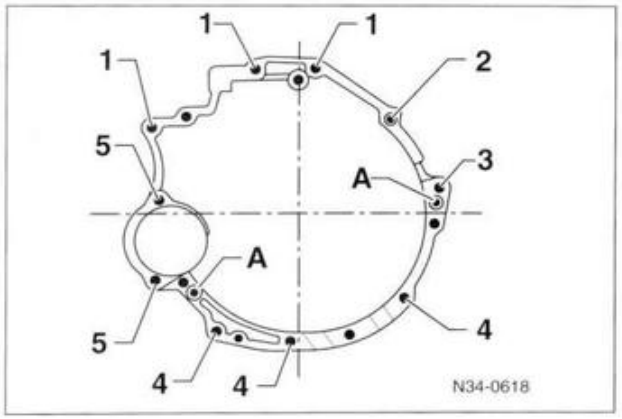
– Check oil level in transmission.

– After connecting battery, enter anti-theft code for radio.

– Close electric windows in front doors all the way to their top positions using electric switches. Then operate all electric window switches again for at least one second in the "close" direction to activate automatic one-touch function.

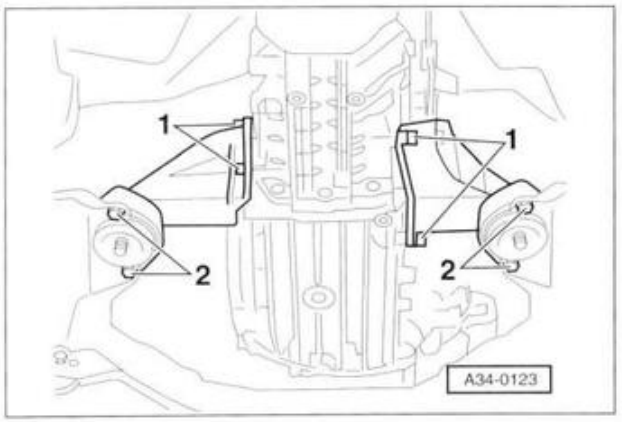
– Set clock to correct time.

### Tightening torques




➤ Transmission to engine (6-cylinder)

| Item No. | Bolt | Qty. | Torque |
|---|---|---|---|
| 1 | M 12 x 67 | 3 | 65 Nm (48 ft-lb) |
| 2 | M 12x 90 | 1 | 65 Nm (48 ft-lb) |
| 3 | M 12 x 80 | 1 | 65 Nm (48 ft-lb) |
| 4 | M 10 x 45 | 3 | 45 Nm (33 ft-lb) |
| 5 (lower) | M 10 x 135 | 1 | 45 Nm (33 ft-lb) |
| 5 (upper) | M 12 x 130 | 1 | 65 Nm (48 ft-lb) |
| **A** = centering sleeves | | | |



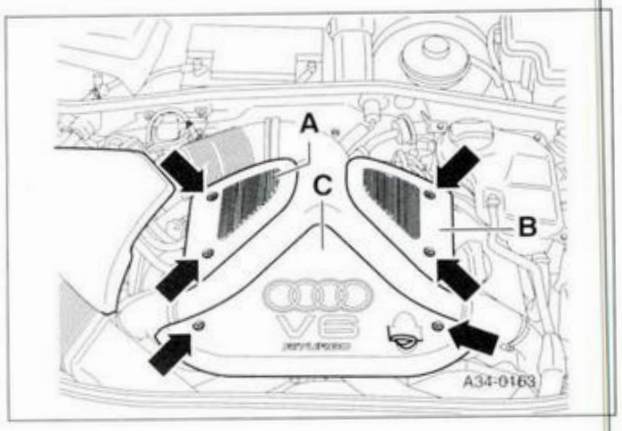

➤ Transmission / engine mounts

| Item No. | Bolt | Qty. | Torque |
|---|---|---|---|
| 1 | M 10 x 35 | 3 | 40 Nm (30 ft-lb) |
| 2 | M 8x 20 | 2 | 20 Nm (15 ft-lb) |

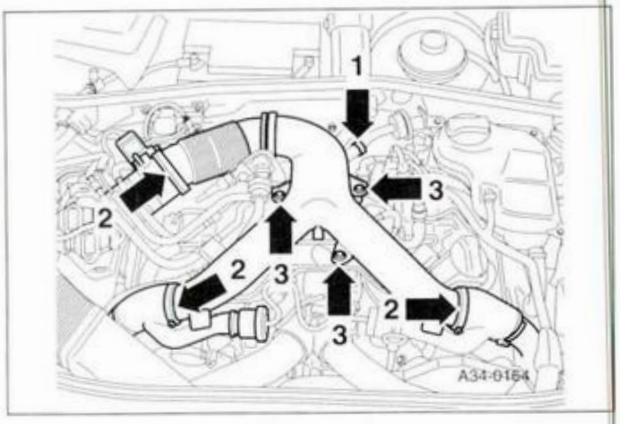
| Tightening torques | |
|---|---|
| Axle shaft heat shield to transmission | 23 Nm (17 ft-lb) |
| Bracket for noise insulation to body | 10 Nm (7 ft-lb) |
| Catalytic converter to mounts | 25 Nm (19 ft-lb) |
| Clamp for exhaust pipe | 40 Nm (30 ft-lb) |
| Clutch slave cylinder to transmission | 20 Nm (15 ft-lb) |
| Drive axle to transmission flange:<br>• M8<br>• M10 | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Driveshaft heat shield to differential cover | 25 Nm (19 ft-lb) |
| Driveshaft to transmission | 55 Nm (41 ft-lb) |
| Engine speed sender (G28) to block | 10 Nm (7 ft-lb) |
| Pushrod to transmission | 40 Nm (30 ft-lb) |
| Selector rod to transmission | 23 Nm (17 ft-lb) |

## Transmission (6-speed), removing and installing

– With ignition switched OFF and disconnect battery ground (-) strap.

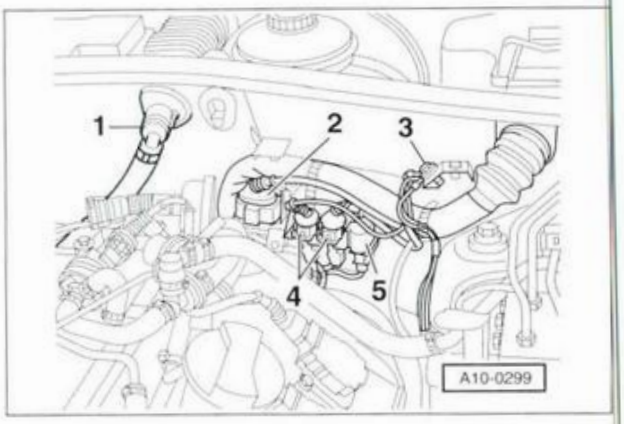



➤ Loosen bolts (**arrows**) and remove engine cover panels (**A**, **B**, and **C**). See **03 Maintenance** for more information.

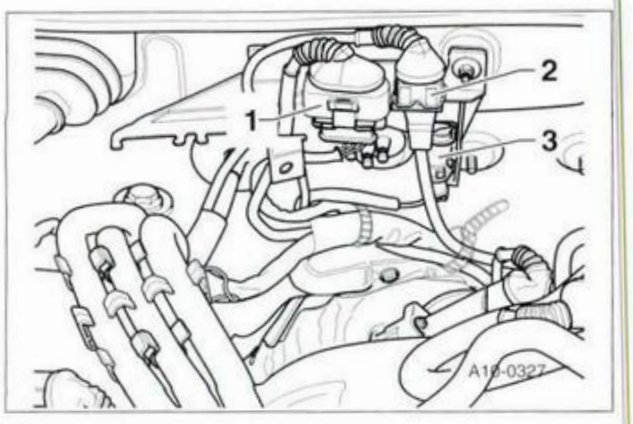



➤ Detach air intake duct. To do this, pull off retainer catch (**1**), loosen clamps (**2**) and unscrew bolts (**3**).

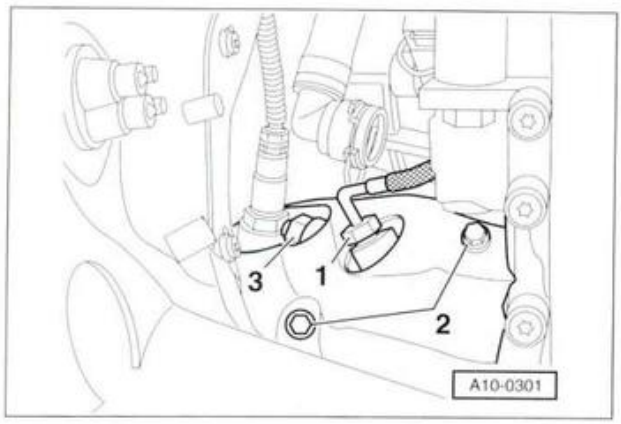
– Remove cooling system expansion reservoir and lay to one side.




➤ Unplug oxygen sensor connector on left (**2**) and move wire clear.



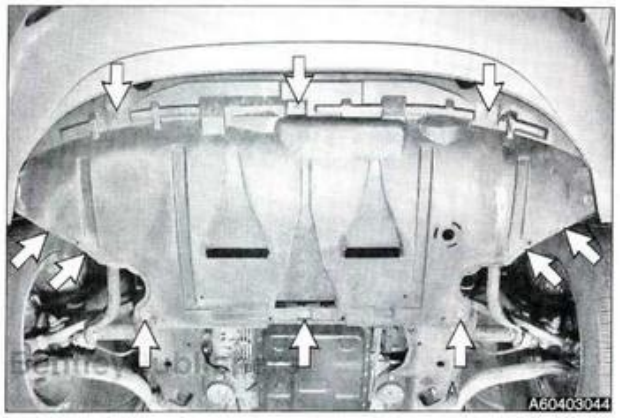

➤ Unplug oxygen sensor connector on right (**1**) and move wire clear.



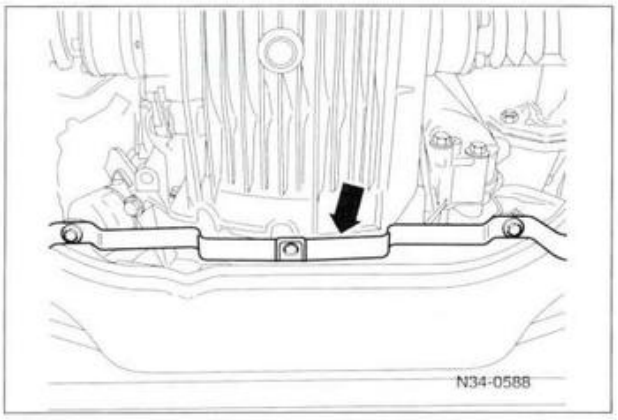

➤ Unscrew two bolts securing heat shield (**2**) on exhaust pipe (right and left).

– Unscrew nuts (**3**) on exhaust pipe (right and left).

– Unscrew engine / transmission mounting bolts accessible from above.




➤ Remove lower engine cover (**arrows**). See **03 Maintenance** for more information.




➤ Unbolt lower engine cover bracket (**arrow**).

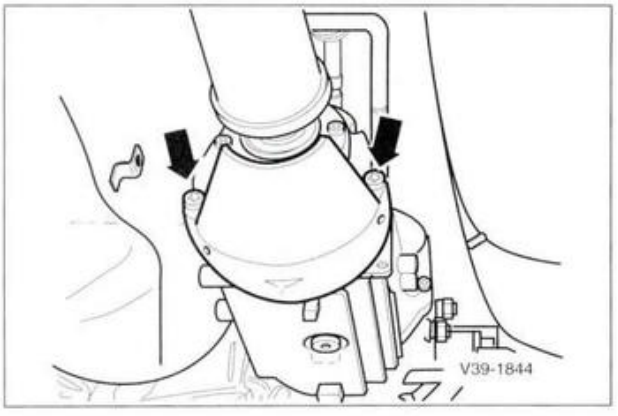
– Unbolt heat shields from transmission above left and right drive axles.

– Unbolt left and right drive axles from transmission, lift clear and tie aside.

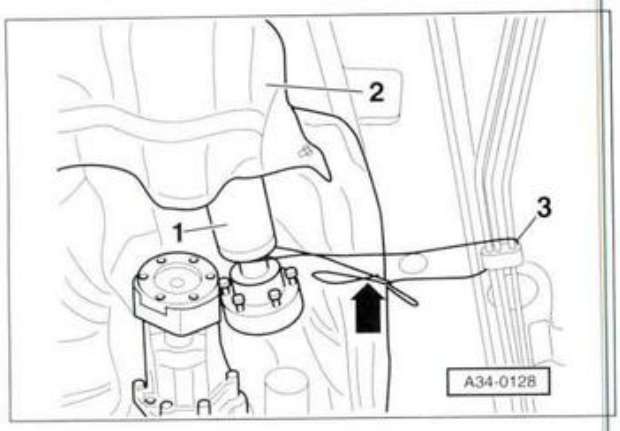
***NOTE***—

• *Take care not to damage protective coating on drive axles.*

– Loosen exhaust system clamps and push clamps towards rear.

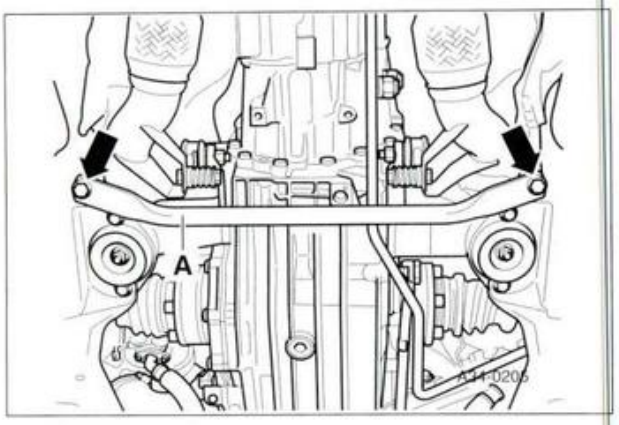



➤ Remove heat shield for driveshaft from cover for differential (**arrows**).

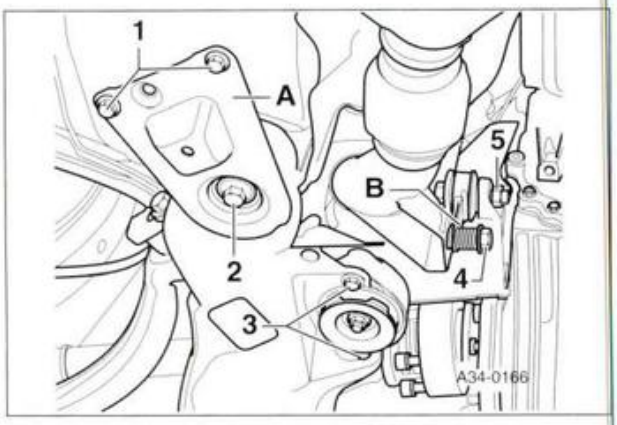



➤ Unbolt driveshaft (**1**) from transmission and rest it on heat shield (**2**).

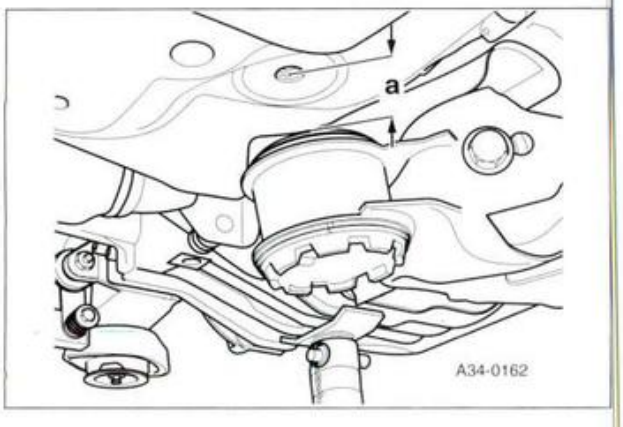
– Secure driveshaft to fuel pipe bracket (**3**) with wire (**arrow**).



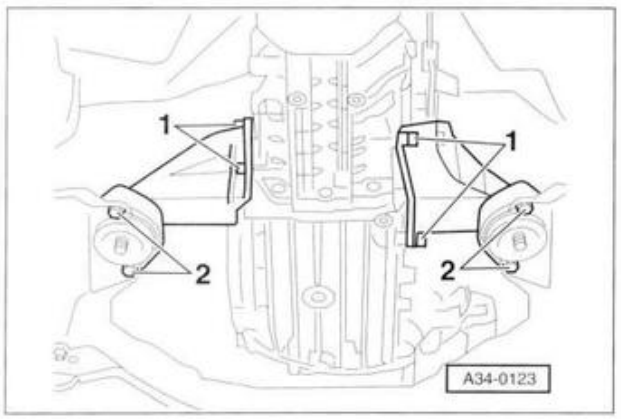

➤ Remove bolts (**arrows**) and remove transverse mount (**A**).



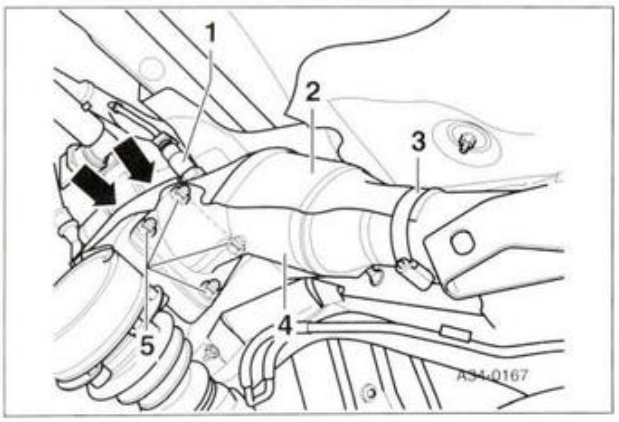

➤ Unscrew and remove bolts (**1** and **2**) on right and left and remove support (**A**).




➤ Lower rear of subframe (distance **a**) a maximum of 50 mm (2 in).




➤ Unscrew bolts (**1** and **2**) and remove side transmission mounts.



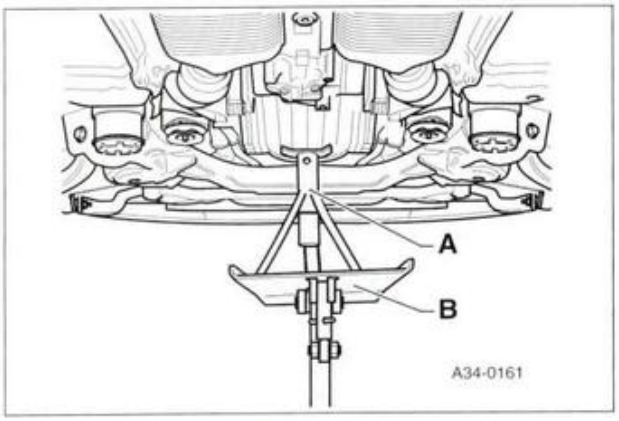

➤ Loosen clamp (**3**), lift heat shield (**2**) slightly and unscrew remaining nuts (**5**).

– Lift heat shield (**2**) and pull out front exhaust pipe together with catalytic converter (**4**).

– Note that oxygen sensor (**1**) and wire have to be guided through opening in heat shield (**2**).

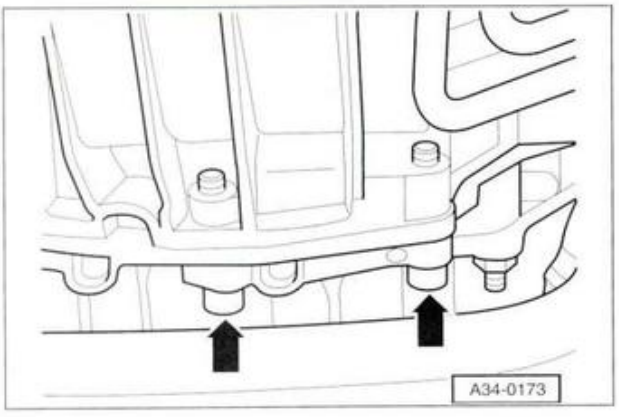
***NOTE***—

- *Avoid excessive bending of the flexible pipe connection at front exhaust pipe. The angle between the catalytic converter and the front exhaust pipe must not exceed 10°. Otherwise the flexible connection will be damaged.*




➤ Lift transmission to access two lower bolts securing engine to transmission.

- **A** - Axle stand
- **B** - VAG 1383A

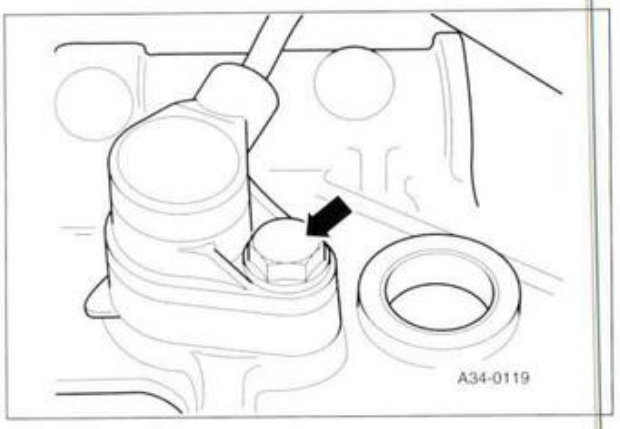



➤ Unscrew two bolts securing transmission to engine (**arrows**).

***NOTE***—

- *The two M10 x 60 Allen bolts must be replaced by new M10 x 55 bolts (part no. N 104 684 01) so that bolts (**arrows**) can be tightened to the correct torque after installing the transmission.*

– Lower transmission again slowly.




➤ Remove engine speed sender (G28) from left hand side of transmission (**arrow**) and place to one side.

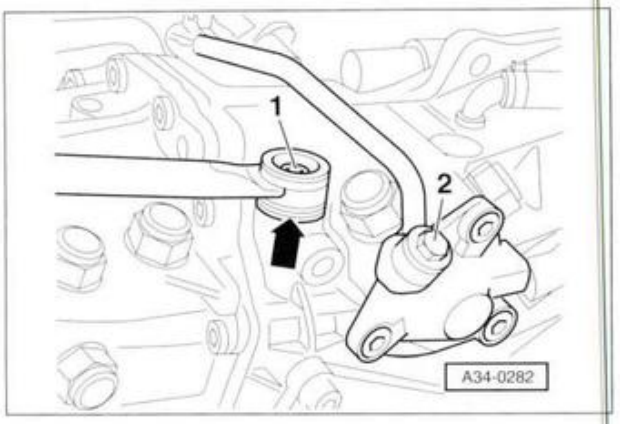
– Pull connector off speedometer sender.

– Pull back-up switch connector off.

– Unbolt starter and push it forward as far as it will go.

***NOTE***—

- *Do not disconnect starter cables.*

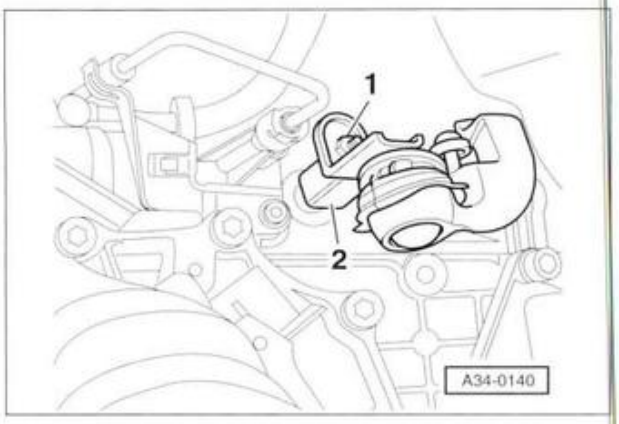



➤ Unbolt connecting rod (**2**) for selector rod on right side of transmission.

– Remove Allen bolt from push rod (**1**).

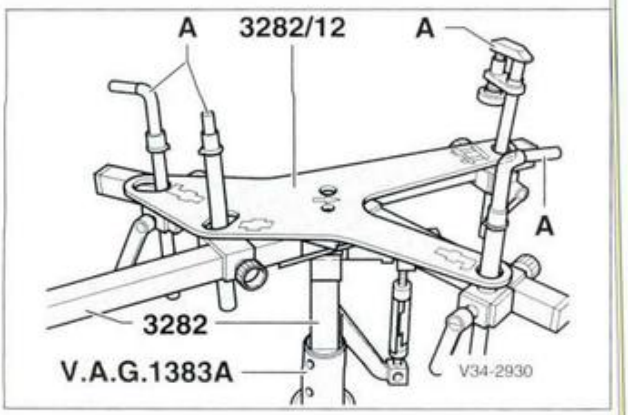
***NOTE***—

- *Reuse any washers installed between the pushrod and transmission (**arrow**).*




➤ Unscrew nut (**1**) and pull selector rod lever (**2**) off transmission selector shaft.

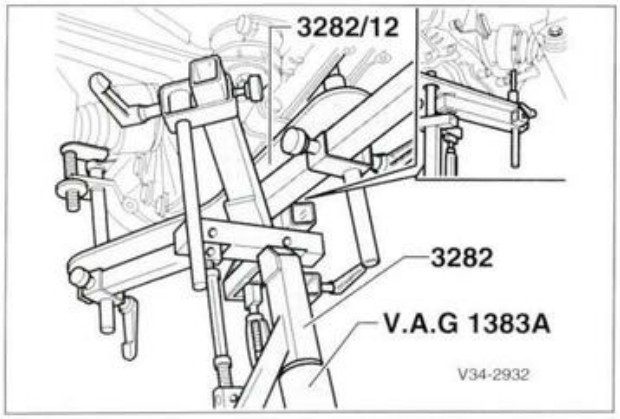
– Remove all connecting bolts for engine / transmission from below, except for one bolt for securing.

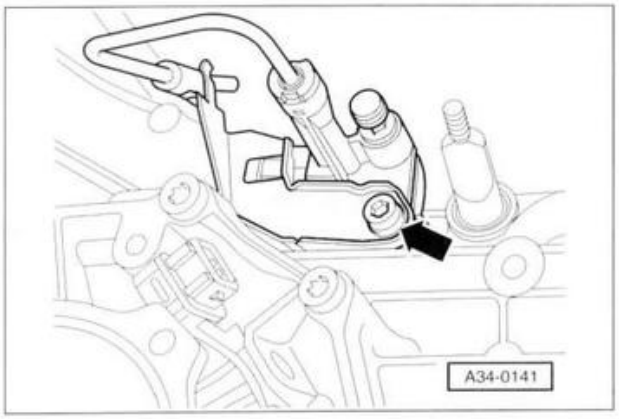


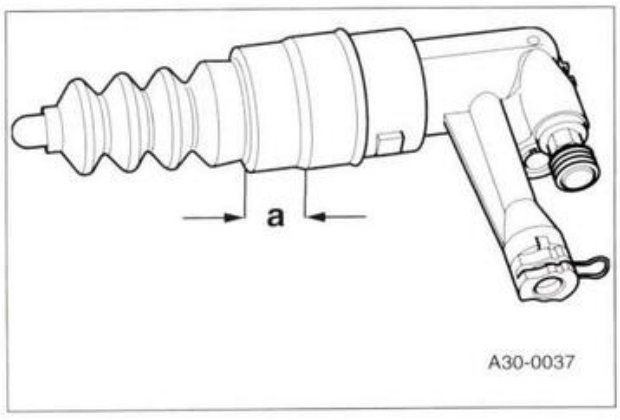

➤ Set up transmission support 3282 with adjustment plate 3282/12 for removal of manual transmission 01E (all-wheel drive) and place on transmission jack VAG 1383 A.

***NOTE***—

- *The positions for the attachments are shown (**A**).*
- *Adjustment plate 3282/12 can only be fitted in one position.*




➤ Support transmission with VAG 1383 and adapter 3282.

***NOTE***—

- *If adapter 3282 is not available, the transmission can be removed and installed using transmission jack VAG 1383 A.*

– Remove the last remaining engine / transmission securing bolt.

– Press transmission off dowel sleeves and lower carefully just far enough for access to the clutch slave cylinder.

***NOTE***—

- *When lowering transmission ensure hydraulic line to slave cylinder is not damaged.*

➤ Remove bolt (**arrow**) and take out slave cylinder from rear. Do not detach hydraulic line.

***NOTE***—

- *Do not depress clutch pedal after removing slave cylinder.*

– Lower transmission completely.

***NOTE***—

- *Remove carefully, watching for hoses, electrical wires or mechanical parts that might become snagged.*

– Installation is reverse of removal. Remember to:

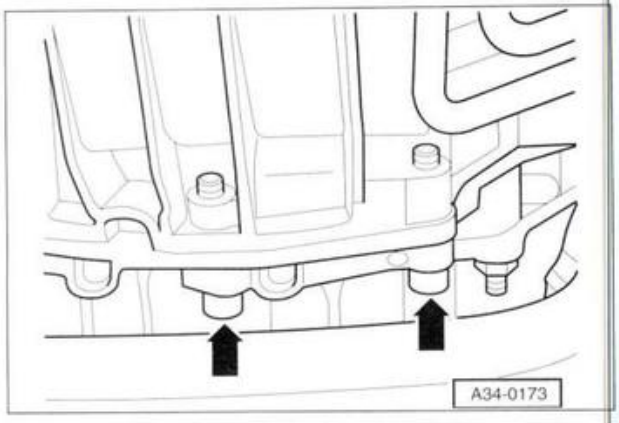
- Replace all seals and gaskets.
- Replace all self-locking nuts.
- Check whether dowel sleeves for aligning transmission with engine are in engine flange. Insert if necessary.
- Clean input shaft splines and (if reusing clutch disc) hub splines. Remove corrosion and apply only a very thin coating of grease G 000 100 to splines. Do not grease guide sleeve.

– Check clutch release bearing for wear and replace if necessary.

➤ Coat slave cylinder collar **a** with lithium grease before mounting to transmission housing.

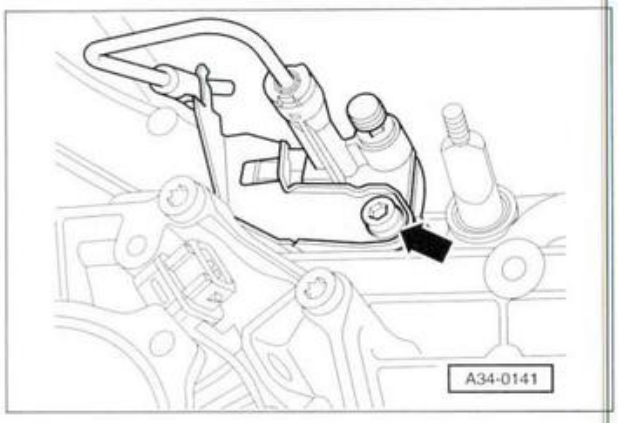
– Coat clutch slave cylinder push rod tip with thin layer of copper grease.

– On vehicle with V6 biturbo engine, fit intermediate plate on dowel sleeves of engine flange.




➤ Replace two M10 x 60 Allen bolts with new M10 x 55 bolts (part no. N 104 684 01) so that bolts (**arrows**) can be tightened to correct torque.

– Before installing transmission, tie electrical wiring off to one side so that it cannot be trapped between engine and transmission.




➤ Lift transmission until clutch slave cylinder and hydraulic line bracket can be installed (**arrow**).

– Align exhaust system so it is free of stress.

– Before installing, use a tap to clean threads in transmission drive axle flange to remove traces of thread locking compound.

– Replace gaskets on drive axles and on front of driveshaft.

– Bolt on drive axle heat shields and drive axles.

– Bolt on driveshaft heat shields and driveshaft.

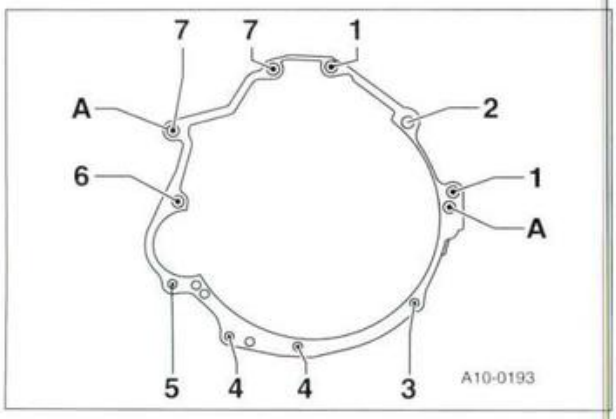
– Check adjustment of selector rod and push rod; readjust if necessary.

– Check oil level in transmission.

– Connect battery and enter anti-theft code for radio.

– Close windows fully using electric window switches. Hold window switches in the "close" position for at least one second to reactivate one-touch function.

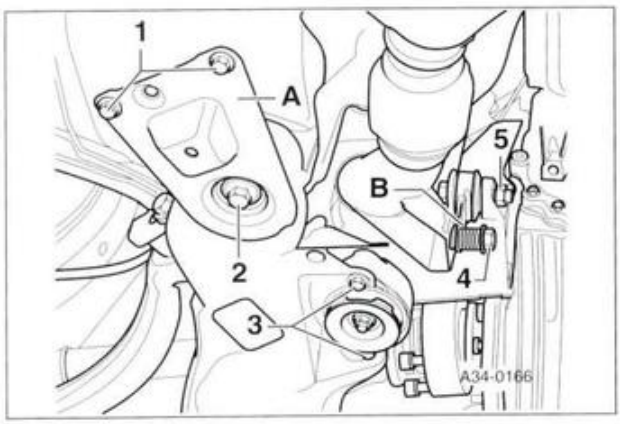
– Set clock to correct time.




➤ Vehicle with 6-cyl. biturbo engine

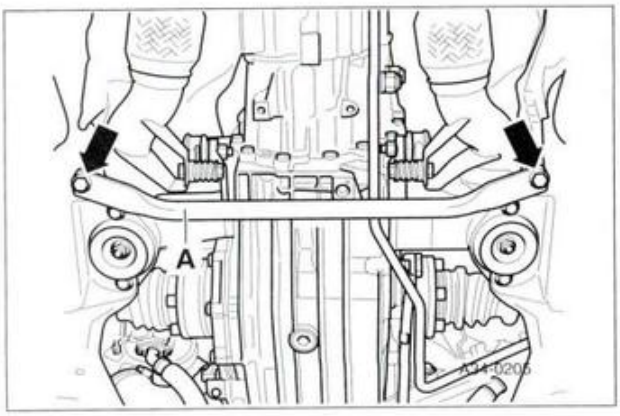
| Item No. | Bolt | Qty. | Torque |
|---|---|---|---|
| 1 | M 12 x 90 | 2 | 65 Nm (48 ft-lb) |
| 2 | M 12 x 100 | 1 | 65 Nm (48 ft-lb) |
| 3 | M 10 x 60 | 1 | 45 Nm (33 ft-lb) |
| 4 | M 10 x 60* | 2 | 45 Nm (33 ft-lb) |
| 5 | M 10 x 150 | 1 | 65 Nm (48 ft-lb) |
| 6 | M 12 x 130 | 1 | 65 Nm (48 ft-lb) |
| 7 | M 12 x 80 | 2 | 65 Nm (48 ft-lb) |
| * Replace two M10 x 60 bolts with new M10 x 55 bolts (part no. 104 684 01) to achieve correct torque specification. | | | |
| **A** = dowel sleeves for aligning | | | |

| Tightening torques | |
|---|---|
| Bracket for noise insulation to subframe | 10 Nm (7 ft-lb) |
| Catalytic converter to mounting lugs | 25 Nm (19 ft-lb) |
| Clamp for exhaust pipe | 40 Nm (30 ft-lb) |
| Clutch slave cylinder to transmission (always replace) | 20 Nm (15 ft-lb) |
| Connecting rod to transmission | 23 Nm (17 ft-lb) |
| Drive axle to drive flange:<br>• M8 40<br>• M10 70 | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Driveshaft to transmission (always replace) | 55 Nm (40 ft-lb) |
| Engine speed sender (G28) to block | 10 Nm (7 ft-lb) |
| Front exhaust pipe to turbocharger | 30 Nm (22 ft-lb) |
| Heat shield to differential cover | 25 Nm (19 ft-lb) |
| Heat shield to transmission | 25 Nm (19 ft-lb) |
| Heat shield to turbocharger / exhaust pipe | 10 Nm (7 ft-lb) |
| Push rod to transmission | 40 Nm (30 ft-lb) |
| Selector rod to transmission | 23 Nm (17 ft-lb) |
| Transmission support to transmission | 40 Nm (30 ft-lb) |




➤ Subframe to body

| Tightening torque | |
|---|---|
| Support (**A**) to body (**1**) | 75 Nm (55 ft-lb) |
| Subframe to body (**2**) (always replace) | 115 Nm (85 ft-lb)<br>+ 90° turn |
| Transmission mount to subframe (**3**) | 25 Nm (19 ft-lb) |




➤ For 6-cylinder biturbo engine only.

| Tightening torque | |
|---|---|
| Cross piece to subframe (always replace) (fit bolt from bottom upwards) | 40 Nm (30 ft-lb)<br>+ 90° |

# 37 Automatic Transmission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## GENERAL

This repair group covers external components and adjustments to A6 automatic transmissions. Special tools and equipment are required to remove the automatic transmission. Removal of the automatic transmission is outside the scope of this manual.

A6 models were equipped with one of three different automatic transmission versions, depending on engine type and front-wheel-drive (FWD) or all-wheel-drive (AWD) requirements.

**Table a. Automatic transmission codes**

| Description | Type |
|---|---|
| 5-speed automatic with Tiptronic® AWD | 01L |
| 5-speed automatic with Tiptronic® FWD or AWD | 01V |
| Multitronic® or continuously variable transmission (CVT) FWD | 01J |

Transmissions are identified by type, code, serial number, manufacturer identification code and build date. Transmission identification plates containing some or all of this information are affixed to the transmission housing.

For additional information on identifying engine and transmission, see **03 Maintenance**.

## Back-up light switch function

When automatic transmission is placed in reverse, multifunction transmission range switch (F125) switches back-up lights ON.

When CVT transmission is placed in reverse, transmission control module (J217) indicates gear position to park / neutral position (PNP) relay (J226). PNP relay then switches back-up lights ON.

For more information on back-up lights, see **96 Interior Lights, Switches, Anti-theft**.

# TRANSMISSION OIL

## Automatic transmission fluid (ATF)

Current specifications for ATF are shown in **Table b**. If fluid container is not marked with appropriate specification, assume that the oil is not suitable.

| **Table b. ATF specifications** | |
|---|---|
| Transmission types 01L, 01V | VAG ATF<br>part no. G 052 162 A2 |
| Transmission type 01J<br>(Multitronic®, continuously variable transmission or CVT) | CVT ATF<br>part no. G 052 180 A2 |

***CAUTION—***
- *ATF used in CVT transmission is different from fluid used in the conventional automatic transmission. Only use ATF specifically intended for CVT transmission.*

Approximate transmission refill capacities in **Table c** are listed by transmission type. Automatic transmission application information is in **Table a** in this repair group.

| **Table c. ATF capacities (approximate)** | | |
|---|---|---|
| | **Oil capacity in liters (US qt)** | |
| **Transmission type** | **New fill** | **Change** |
| 01L | 9.8 (10.4) | 3.5 - 4.0 (3.7 - 4.2) |
| 01V | 9.0 (9.5) | 3.5 - 4.0 (3.7 - 4.2) |
| 01J (CVT) | 7.5 (7.9) | - |

## ATF level

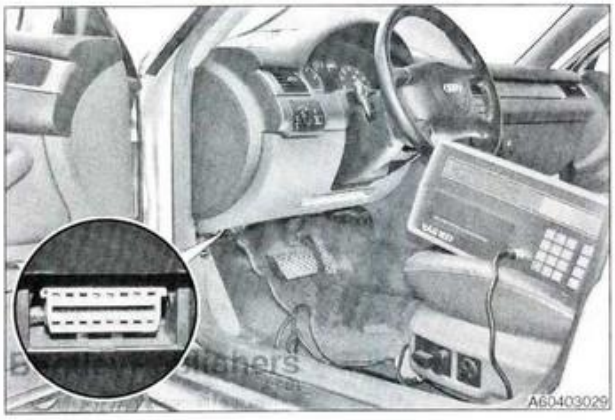
Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside transmission pools toward rear, and level cannot be accurately determined.

### Checking level

ATF level varies according to temperature as volume increases with a rise in temperature. Therefore, to check ATF level accurately, measure fluid temperature. ATF temperature may be measured using transmission control module on-board diagnostics connected to VAS 5051 or equivalent scan tool.

– Before starting an ATF level check, observe the following:
  - Electrical consumers OFF.
  - A/C system OFF.
  - Transmission not in emergency running ("limp home") mode.
  - ATF temperature not above approximately 30°C (86°F).
  - Vehicle level.

➤ Connect scan tool (VAG 1551 or equivalent) to data link connector (DLC, **inset**), located under driver's knee bar, to left of steering column.




– Start engine with transmission in PARK and read ATF temperature on scan tool.

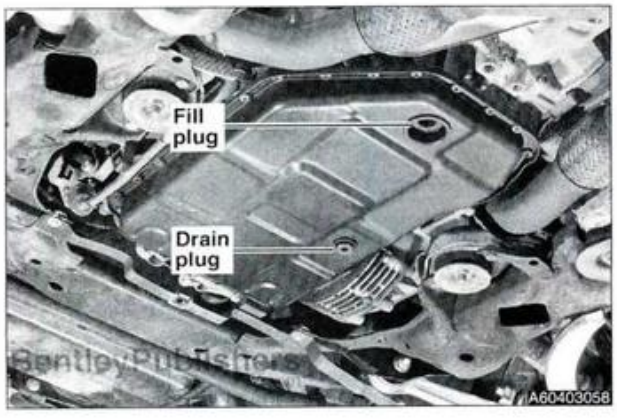
– Raise vehicle and support safely.

> ***WARNING —***
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Place oil drip pan underneath transmission.

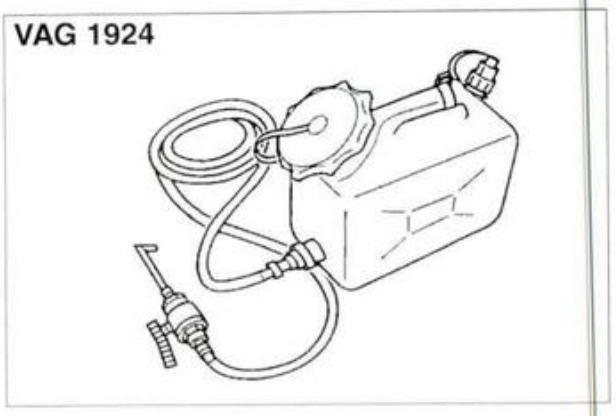
➤ Working underneath vehicle, remove transmission fill plug.

> ***WARNING —***
> - *Hot transmission oil can scald. Wear protective gloves and goggles.*



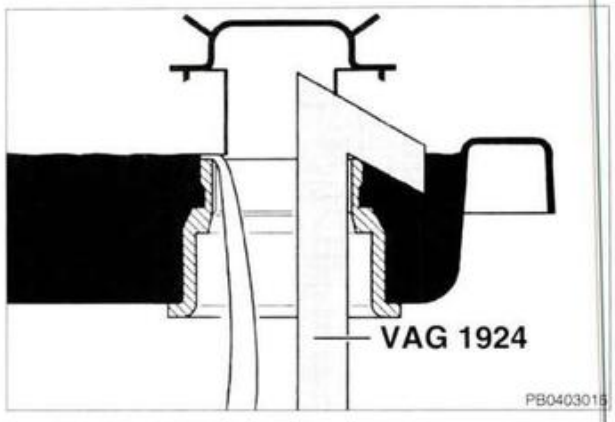

– ATF level is correct when a little ATF runs out at a temperature between 30°C (86°F) and 45°C (113°F).
  - For tropical climates, allow ATF to drip out until temperature rises to approx. 50°C (122°F).
  - If no ATF runs out when temperature reaches 40°C (104°F), add ATF.

*Transmission Oil*

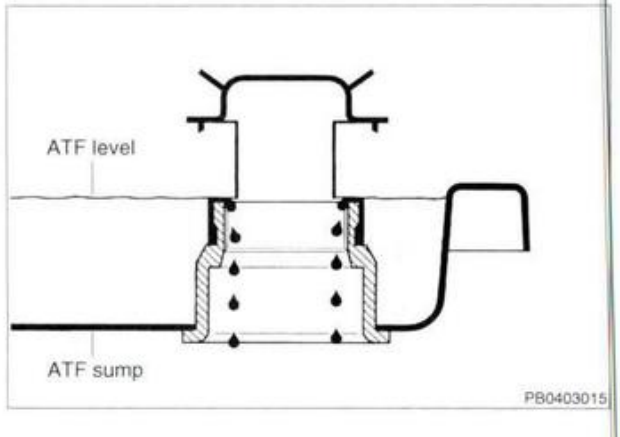



**Filling**

➤ Use fluid pump with shut-off valve such as VAG 1924 or equivalent to fill transmission.




➤ Insert filling hook of VAG 1924 into opening of ATF guard cap in filler.




➤ Add ATF until ATF flows from plug opening.

– Replace filler plug. Use new gasket.

| Tightening torque | |
|---|---|
| ATF filler plug to ATF sump (use new gasket) | 80 Nm (59 ft-lb) |

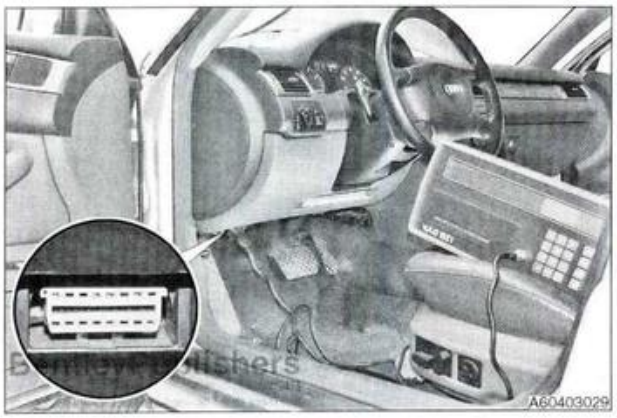
## CVT ATF level

> ***CAUTION—***
> • *ATF used in 01J CVT (Multitronic®) transmission is different from fluid used in the conventional automatic transmission. Only use ATF specifically intended for CVT transmission,*

Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside transmission pools toward rear, and level cannot be accurately determined.

### Checking level

ATF level varies according to temperature as volume increases with a rise in temperature. Therefore, to check ATF level accurately, measure fluid temperature. ATF temperature may be measured using transmission control module on-board diagnostics connected to VAS 5051 or equivalent scan tool.




– Before starting an ATF level check, observe the following:
  • Electrical consumers OFF.
  • A/C system OFF.
  • Transmission not in emergency running ("limp home") mode.
  • ATF temperature not above approximately 30°C (86°F).
  • Vehicle level.

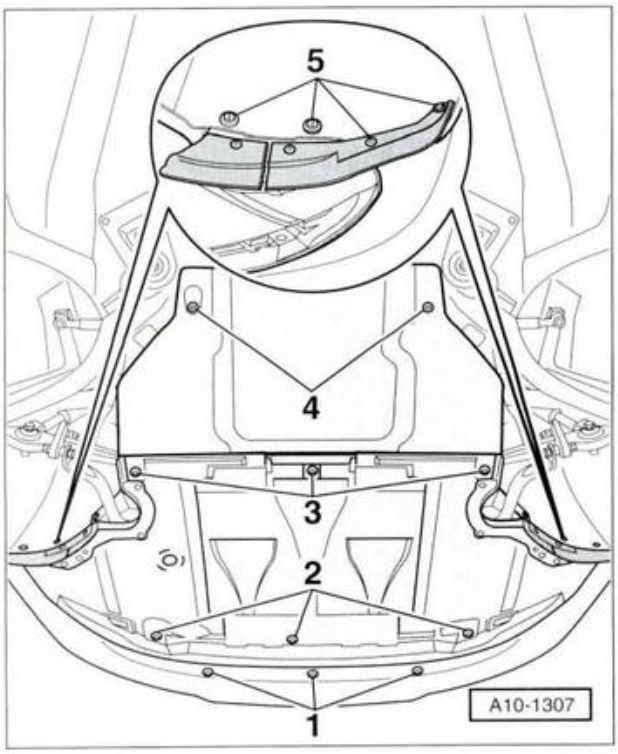
➤ Connect scan tool (VAG 1551 or equivalent) to data link connector (DLC, **inset**), located under driver's knee bar, to left of steering column.

– Start engine with transmission in PARK and read ATF temperature on scan tool.

– With engine idling, depress brake pedal and shift through selector lever positions (P, R, N, D). Leave selector in each position approx. 2 seconds.

– Raise vehicle and support safely.

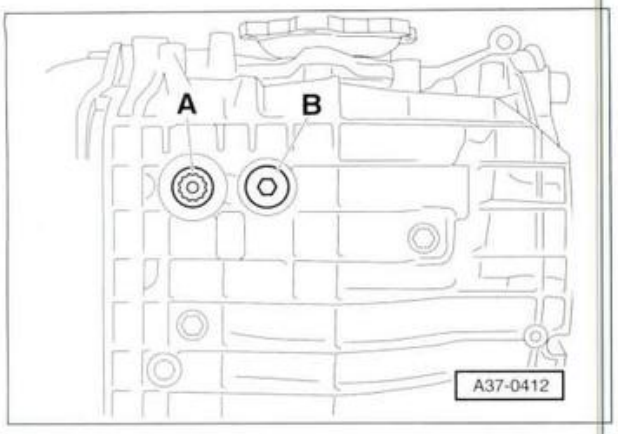
> ***WARNING—***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Working underneath vehicle, loosen transmission splash shield mounting fasteners (**3**, **4**). Remove splash shield.

– Place oil drip pan underneath transmission.

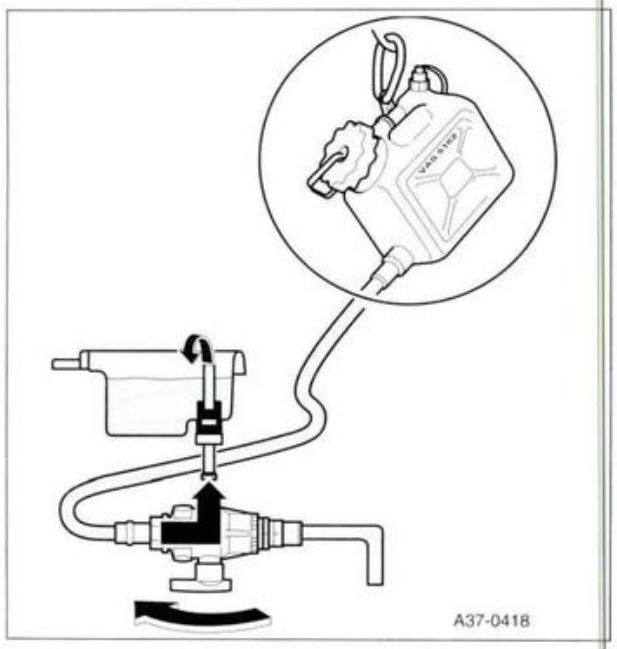
*Transmission Oil*




➤ Remove transmission filler plug (**B**).

> ***WARNING —***
> • *Hot transmission oil can scald. Wear protective gloves and goggles.*

– ATF level is correct when a little ATF runs out at a temperature between 35°C (95°F) and 45°C (113°F).
  • For tropical climates, allow ATF to drip out until temperature rises to approx. 50°C (122°F).
  • If no ATF runs out when temperature reaches 40°C (104°F), add ATF.




### Filling

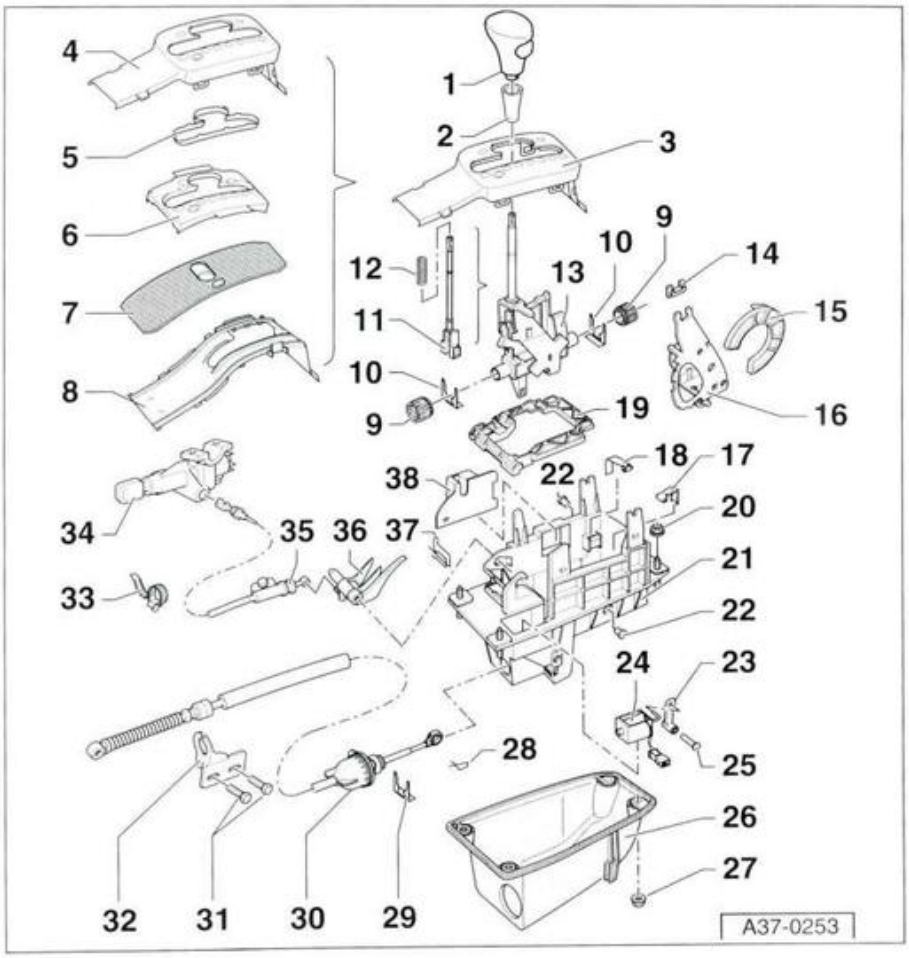
➤ Use fluid pump with shut-off valve such as VAS 5162 or equivalent to fill transmission.

– Add ATF until ATF flows from plug opening.

– Replace filler plug. Use new gasket.

| Tightening torque | |
|---|---|
| ATF filler plug to ATF sump (CVT) | 20 Nm (15 ft-lb) |

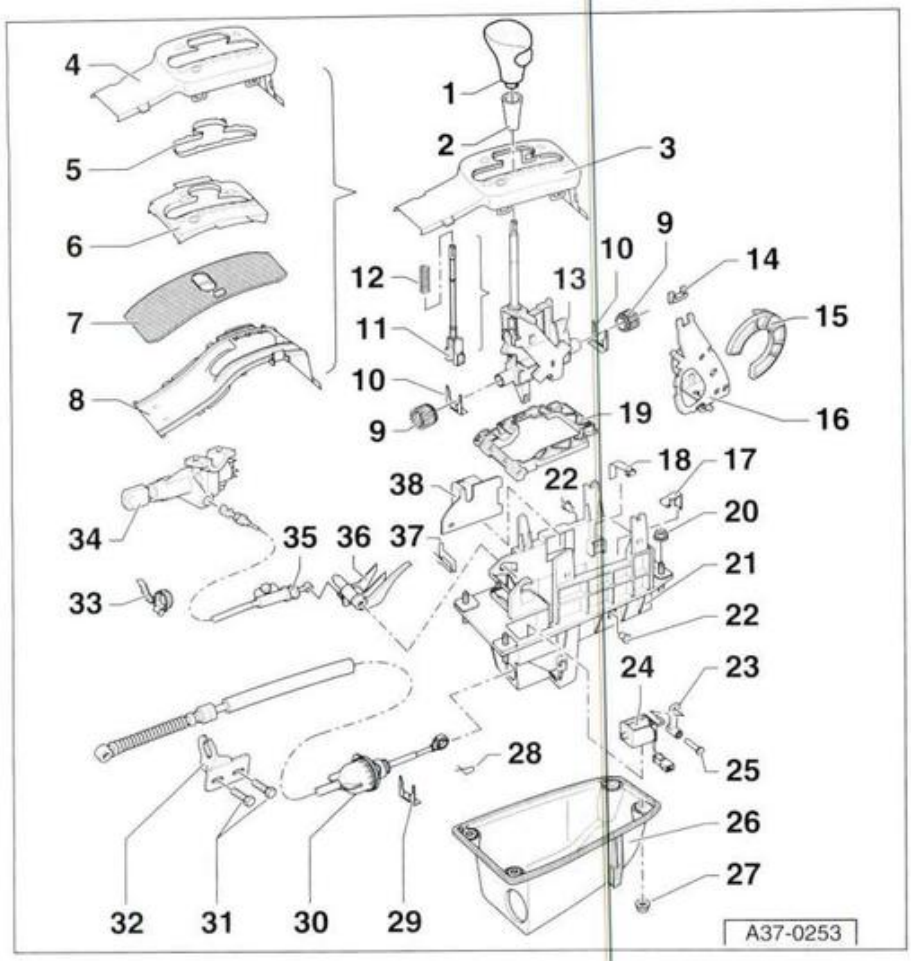
## Shift Mechanism and Components




### Shift mechanism assembly

1. **Gear selector handle**
   - See **Gear selector handle, removing and installing** in this repair group
2. **Sleeve**
   - Engages into grip for selector handle
3. **Cover**
   - With transmission range display, display for shift lock and Tiptronic
4. **Cover**
5. **Trim piece**
6. **Symbol panel**
   - Circuit board with integrated Tiptronic switch (F189)
7. **Slide cover**
8. **Guide**
9. **Mounting bushing**
10. **Locking clip**
    - Install with angled ends pointing toward inside of mounting bracket.
11. **Pull rod**
12. **Spring**
13. **Selector lever**
14. **Stop buffer**
15. **Detent**
16. **Cable lever**
17. **Spring clip with roller**
18. **Spring clip with roller**
19. **Frame**
    - Clip onto mounting bracket
    - Ribbed side must point up
20. **Nut, 10 Nm (7 ft lb)**
21. **Mounting bracket**
22. **Fulcrum pin**
23. **Locking pawl**
24. **Shift lock solenoid switch (N110)**
25. **Fulcrum pin**
26. **Cover**
    - With seal for mounting bracket
27. **Nut, 10 Nm (7 ft lb)**
28. **Securing clip**
    - Install with angled end forward

*Shift Mechanism and Components*




## Shift mechanism assembly *(continued)*

**29. Locking plate**

- Install with angled end toward inside of mounting bracket

**30. Selector lever cable**

- Do not bend or kink. Lightly lubricate cable eye and ball socket before installing.
- Replace selector cable if rubber sleeves are damaged.
- Make sure rubber sleeves on transmission side are not twisted.

**31. Bolt, 23 Nm (17 ft lb)**

**32. Support bracket**

**33. Cable tie**

**34. Ignition / starter switch**

**35. Ignition interlock cable**

- Do not kink

**36. Locking lever**

- For ignition key removal lock

**37. Securing spring**

**38. Mounting bracket**

***NOTE—***

- *Lubricate bearings and sliding parts with lubricant (part no. G 052 142 A2 or equivalent).*

## Shift mechanism, checking

– Without stepping on brake, place selector lever in **P** and switch ignition **ON**:

- The shift lever is locked and cannot be moved from **P** (the shift lock solenoid switch locks the selector lever).

– With brake pedal depressed:

- The shift lock solenoid releases the selector lever. Selecting a driving range must be possible without binding or snagging with the button in the handle depressed.

– Move selector lever slowly from **P** to **R**, **N**, **D**, **4**, **3**, **2** and check whether the driving range positions in instrument cluster display match the console shift lever display.

– Without stepping on brake, place shift lever in **N** with ignition **ON**:

- The shift lever is locked and cannot be moved from **N** with button in lever pressed (the shift lock solenoid switch locks the shift lever).

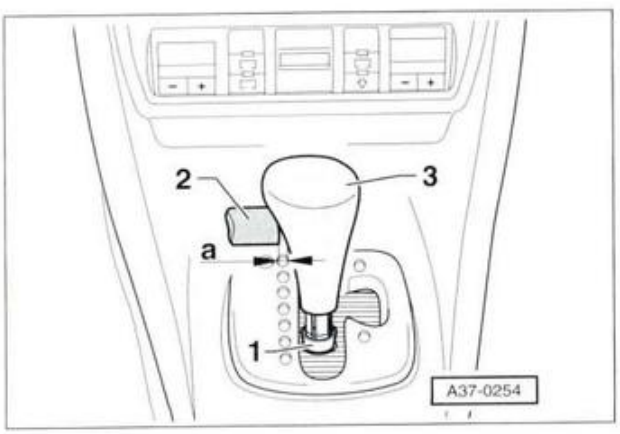
– With brake pedal depressed:
  • The shift lock solenoid releases the shift lever. Selecting a driving range must be possible without binding or snagging with the button in the handle depressed.

– With selector lever in **D**, ignition and light switched **ON**.
  • Move selector lever out of driving range **D** into Tiptronic gate.
  • Illumination of **D** symbol on the cover of the shift mechanism must dim and the **+** and **-** symbols must light up.

– Start engine and let idle. Engage parking brake and depress brake pedal:
  • Sift lever position indicator in instrument cluster must change during shifting into Tiptronic-gate from **PRND432** to **54321**.

***NOTE***—
- *It must not be possible to operate the starter motor in driving ranges* **2**, **3**, **4**, **D** *and* **R**.
- *For right hand drive (RHD) vehicles, the starter should only be able to be operated with selector lever in* **P** *and* **N** *with locking button in selector lever handle released.*
- *During vehicle speeds above 5 kph (3 mph) and shifting into* **N**, *the shift lock solenoid must not engage and lock the selector lever. The selector lever can be shifted into a driving range.*
- *When driving slower than 2 kph (1.2 mph) (the car is almost stopped) and shifting into* **N**, *the shift lock solenoid must only engage after about 1 second. The selector lever can only be shifted out of* **N** *when the brake pedal is depressed.*

## Selector lever handle, removing and installing




➤ Move selector lever to position **3**.

– Push sleeve (**1**) down to stop.

– Pull button (**2**) out of selector lever handle (**3**) to stop and pull handle upward to remove (dimension **a** = 3 mm).

– To replace handle, move selector lever to position **3**.

– Carefully pull button (**2**) out of handle (**3**) to stop.

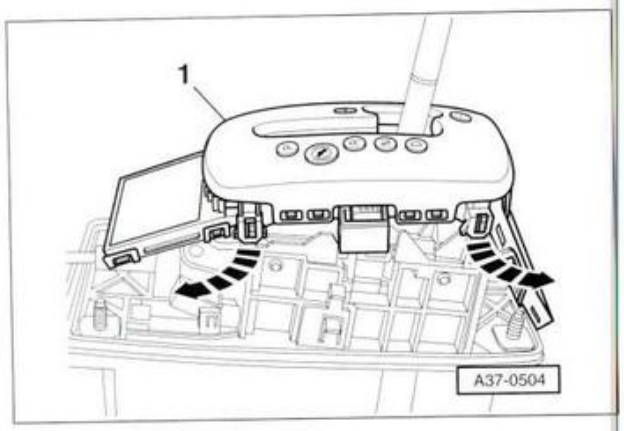
– With knob extended, attach handle in driving direction on selector lever to stop.

– Turn handle (**3**) until knob (**2**) is pointing to driver. This causes handle to engage into groove of selector lever.

– Make sure handle engages into circular groove of selector lever.

– Push in knob in handle.

– Pull up sleeve (**1**) until it engages in handle.




## Shift mechanism cover, removing and installing

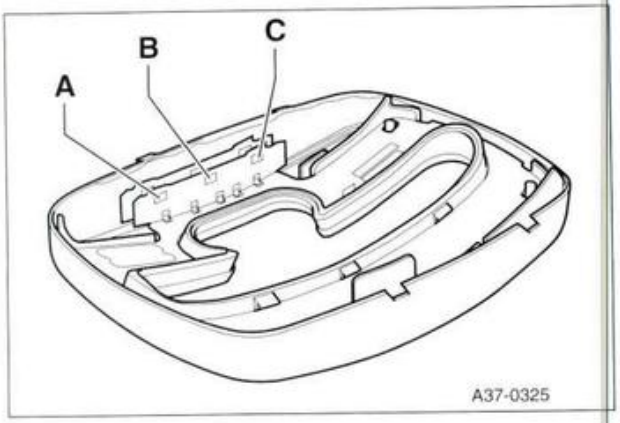
– Remove center console. See **70 Interior Trim**.

– Remove selector lever handle. See **Selector lever handle, removing and installing** in this repair group.

➤ Release 4 retaining clips (**arrows**) and lift of cover (**1**) with guide.

– Unplug connector at side of guide.

– Installation is reverse of removal.

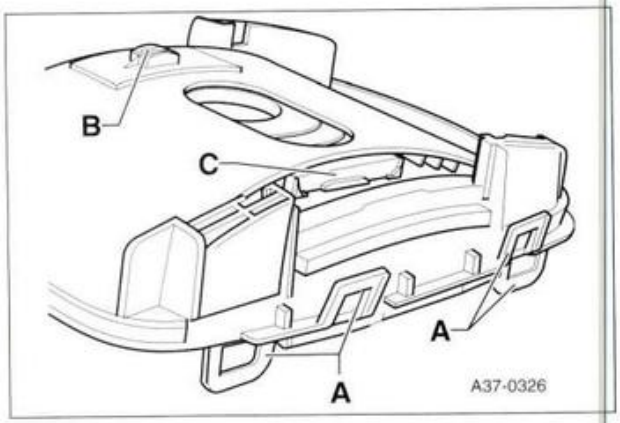



## Tiptronic switch (F189), checking

The Tiptronic switch is integrated in the printed circuit of the symbol insert located in the cover of the shift mechanism. See **Tiptronic switch (F189), removing and installing** in this repair group.

It consists of three Hall sensors (**A**, **B** and **C**) that are triggered by a magnet on the slide cover.

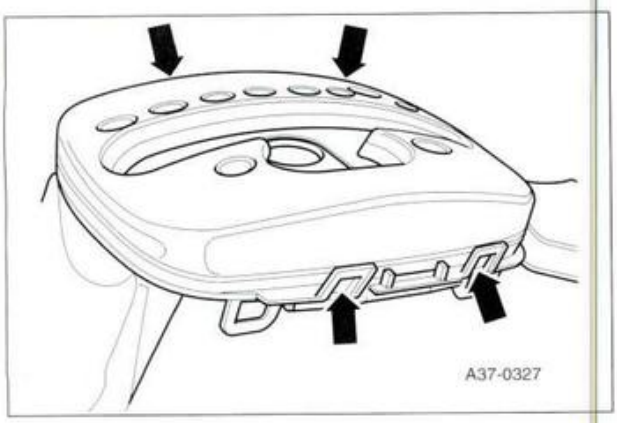
- **A** - Sensor for downshift
- **B** - Sensor for Tiptronic recognition
- **C** - Sensor for upshift




➤ In case of malfunction first check whether the magnet on slide cover (**C**) is properly mounted. If necessary replace slide cover.

– Check wiring at Tiptronic switch.

– Check steering wheel buttons and their wiring connections.




## Tiptronic switch (F189), removing and installing

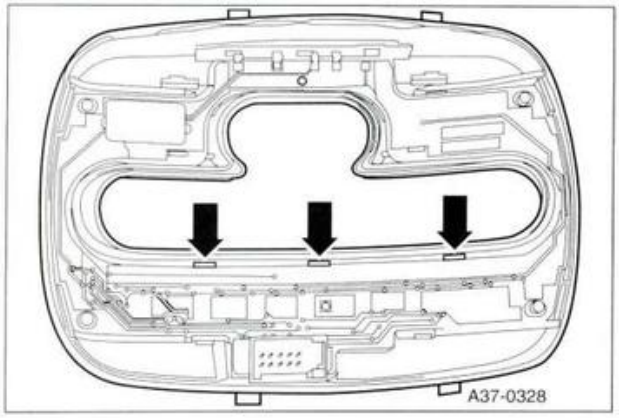
– Remove center console and extension. See **70 Interior Trim**.

– Remove handle for selector lever. See **Selector lever handle, removing and installing** in this repair group.

➤ Carefully disengage 4 clips (**arrows**) and remove cover upward.

***NOTE***—

- *If clips are damaged or broken, replace the applicable components.*




➤ Lift out printed circuit board with small screwdriver over 3 clips (**arrows**).

– Remove printed circuit board with integrated Tiptronic switch.

***NOTE***—
- *If the printed circuit board is glued into the cover, replace the complete cover with printed circuit board.*

– To install switch, insert printed circuit board with integrated Tiptronic switch into cover of shift mechanism.

– Carefully snap printed circuit board into cover.

***NOTE***—
- *The 3 clips (**arrows**) must engage visibly above the printed circuit board.*

– Place cover on guide of sliding cover and snap clips in place.

– Install handle for selector lever.

– Install center console and extension.

## Shift mechanism, removing and installing

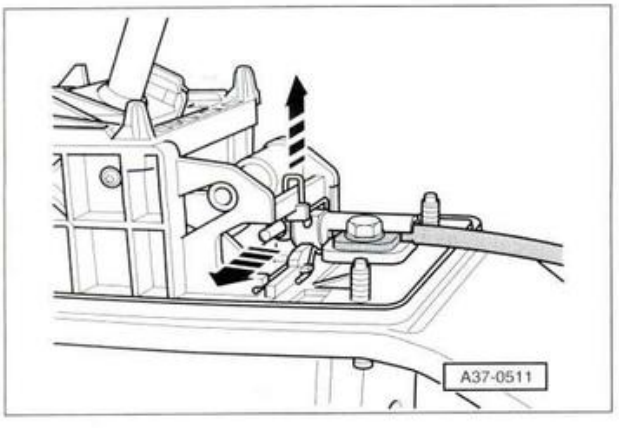
***NOTE***—
- *Shift mechanism procedure shown is for FWD models. AWD models are similar.*

– Place shift selector lever in **PARK**.

– Remove selector lever handle. See **Selector lever handle, removing and installing** in this repair group.

– Remove shift mechanism cover. See **Shift mechanism cover, removing and installing** in this repair group.

– Disconnect electrical harness connector for shift lock solenoid.

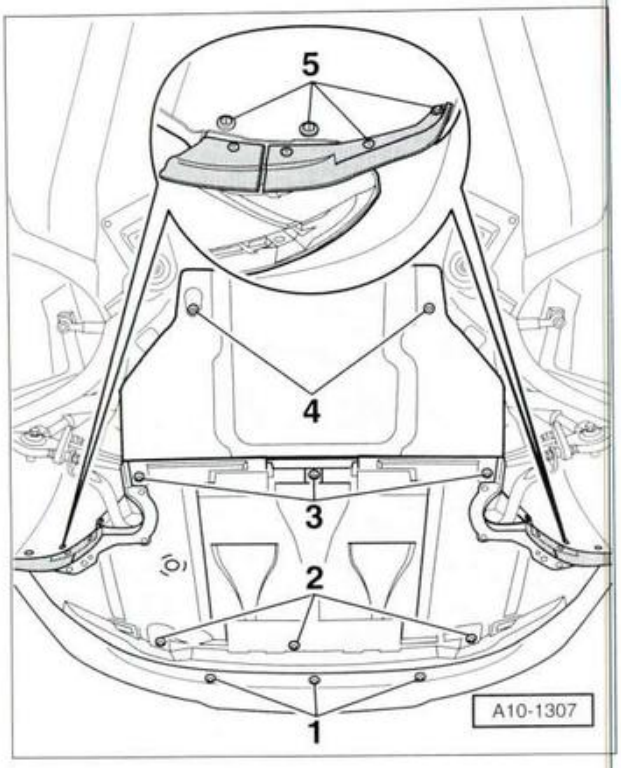



➤ Unhook locking cable (**arrows**).

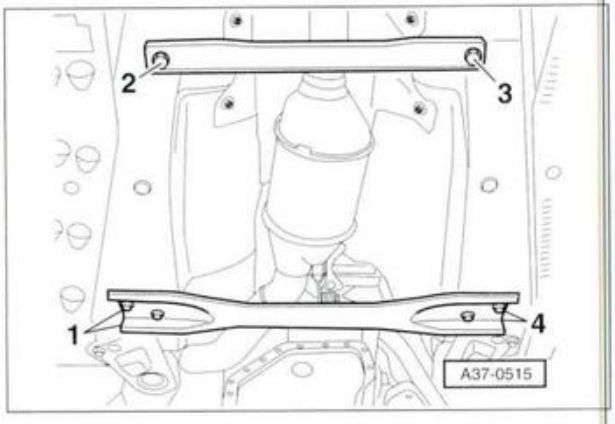
– Raise vehicle and safely support

***WARNING***—
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

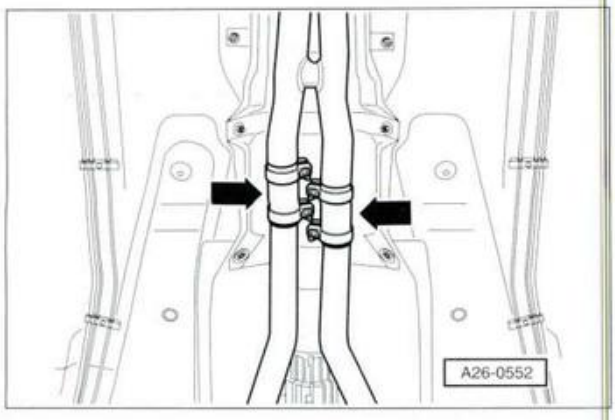
*Shift Mechanism and Components*




➤ Loosen mounting parts (**3** and **4**) and remove rear part of lower engine cover.




➤ Remove bolts (**1** to **4**) at both floor crossmembers (if applicable).



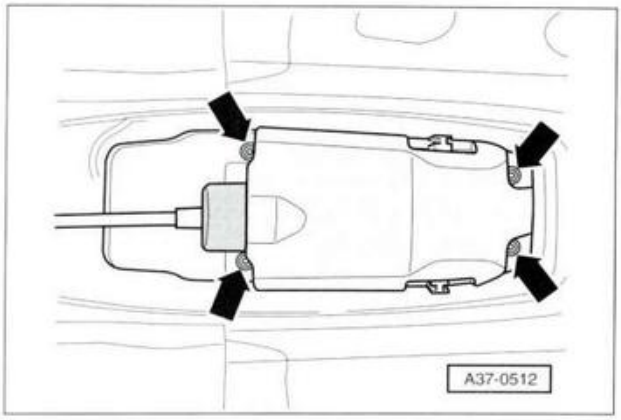

➤ Disconnect exhaust system at double clamps (**arrows**).

***NOTE***—

- *Flex joint in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.*

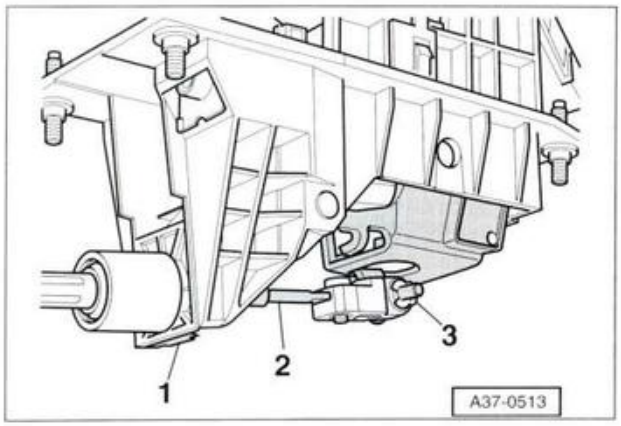
– Remove heat shield for exhaust system beneath shift mechanism.

– AWD models: Disconnect driveshaft from transmission and support from body using stiff wire.




➤ Remove lower cover from shift mechanism (**arrows**).

– Remove selector lever cable boot from cover and slide back.



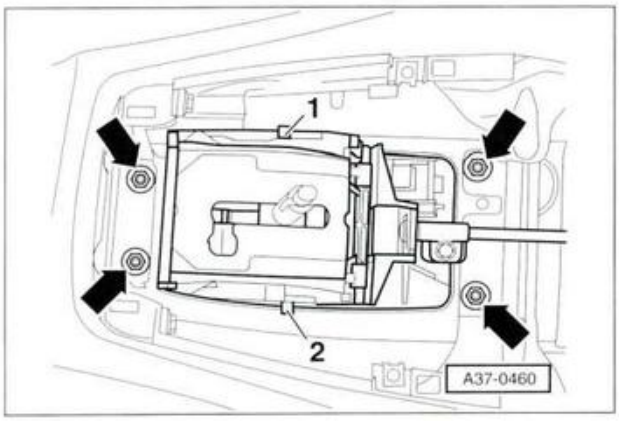

➤ Remove securing plate (**1**) for selector lever cable on shift mechanism downward.

– Remove locking clamp (**3**) from pin.

– Remove selector lever cable (**2**) from pin.

***NOTE***—

- *Do not bend or kink selector lever cable.*




➤ Working from above: Remove nuts (**arrows**) securing mechanism.

– With an assistant supporting shift mechanism from below, press retaining clips (**1** and **2**) inward and shift mechanism downward at the same time.

– Pull out selector lever cable at the same time, so that it does not bend. Remove shift mechanism.

– Installation is reverse of removal. Remember to:

- Install selector lever cable. See **Selector lever cable, removing and installing** in this repair group.
- Install interlock cable. See **Ignition interlock cable, removing and installing** in this repair group.
- Install exhaust system so that it is free from stress.

| **Tightening torques** | |
|---|---|
| Shift mechanism to body (replace nuts) | 10 Nm (7 ft-lb) |
| Bottom cover to shift mechanism | 10 Nm (7 ft-lb) |
| Floor crossmember to body<br>• M8<br>• M10 | <br>22 Nm (16 ft-lb)<br>45 Nm (33 ft-lb) |

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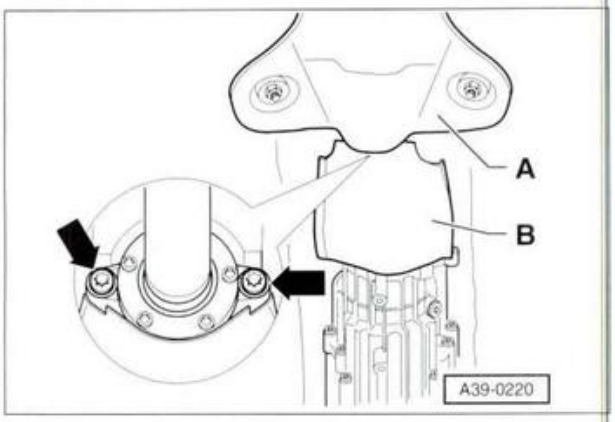
## Selector lever cable, removing and installing

– Shift selector lever to **P**.

– Raise vehicle and safely support.

> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Disconnect front exhaust system with catalytic converters from rear exhaust system and hang up with wire.

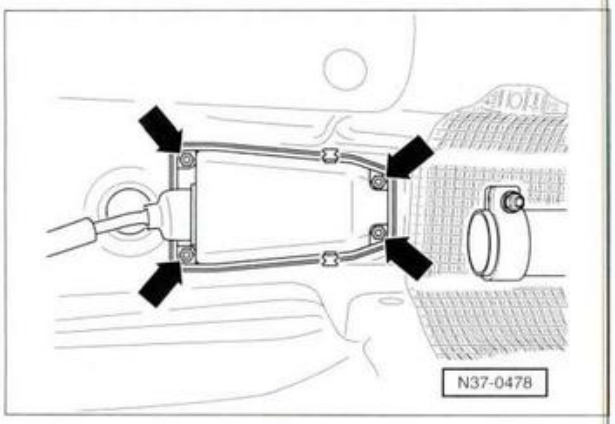



➤ Remove heat shield (**A**) above driveshaft.

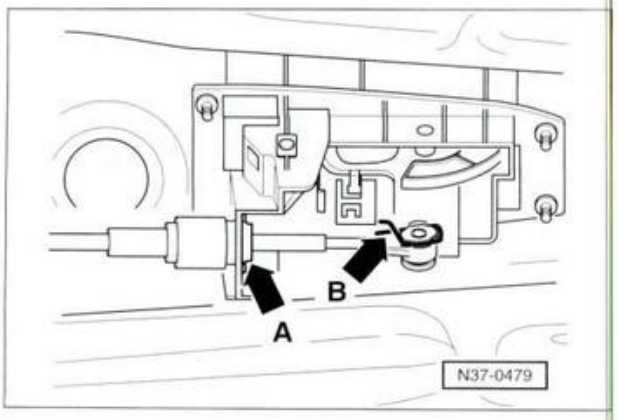
– Remove heat shield (**B**) for driveshaft from differential cover (**arrows**).

– Disconnect driveshaft at transmission and support or hang up with wire.

– Remove rubber sleeve of selector lever cable and push it back.



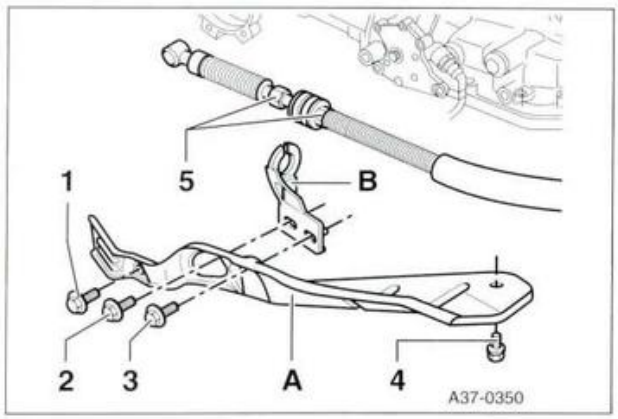

➤ Remove lower cover from mounting bracket (**arrows**).



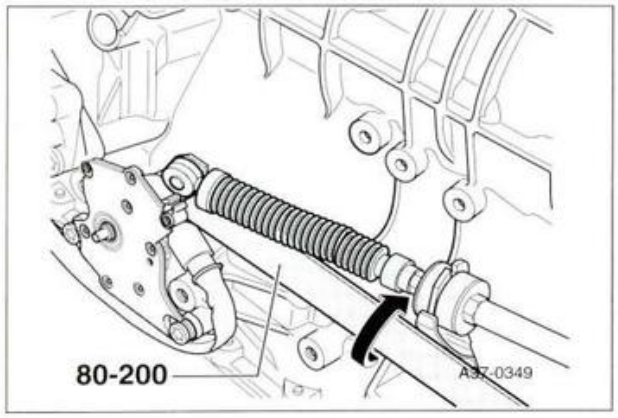

➤ Press together ends of spring clip (**B**) and remove.

– Pull out lock plate (**A**) for selector lever cable at mounting bracket downward.

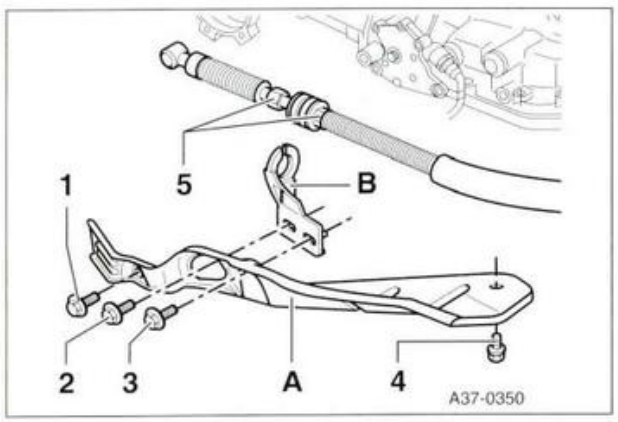
– Remove selector lever cable from selector lever.




➤ Remove bolts (**1**, **3** and **4**) and remove heat shield (**A**) for selector lever cable.




➤ Pry off selector lever cable with special tool 80-200 (or equivalent) from lever and selector shaft (**arrow**)




➤ Remove bracket (**B**) from transmission.

– Remove bracket (**B**) from selector lever cable by removing nuts (**5**).

– Pull out selector lever cable from mounting bracket without kinking cable.

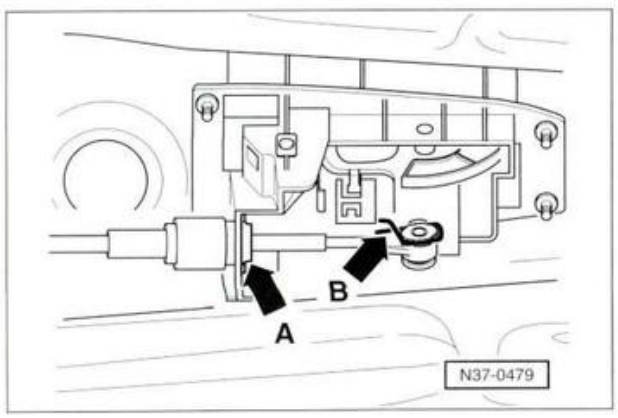
– To install, move selector lever, lever and selector shaft in position **P** (parking lock must engage).

***NOTE*** —

- *Slightly lubricate eye and socket before installing.*
- *Do not bend or kink selector lever cable.*

– Guide selector lever cable into mounting bracket.

– Attach selector lever cable to selector lever.



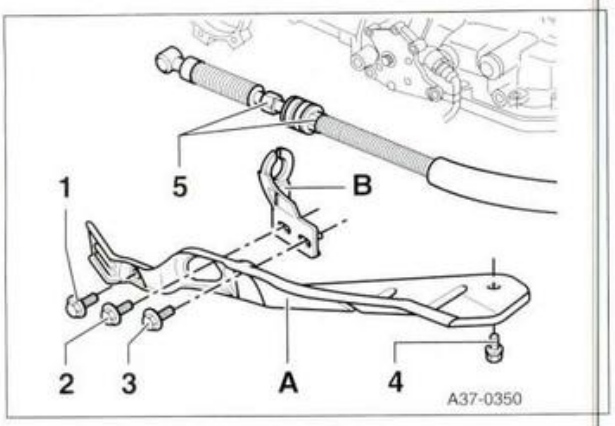

➤ Press ends of spring clamp (**B**) together and secure selector lever cable.

– Install lock plate (**A**) for selector lever cable at mounting bracket.

***NOTE*** —

- *Angled ends of lock plate must point toward end of selector lever cable.*

*Shift Mechanism and Components*

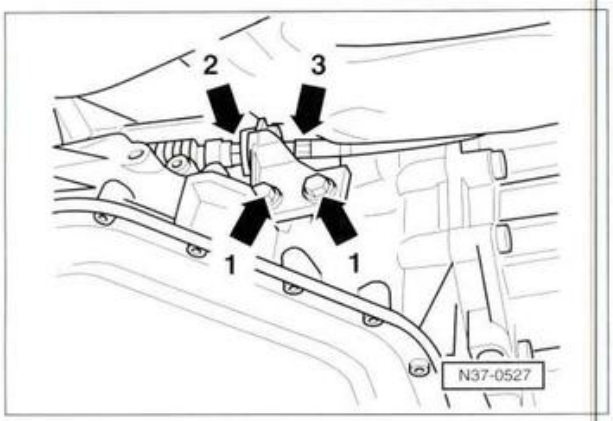



➤ Attach selector lever cable hand-tight to bracket (**B**).

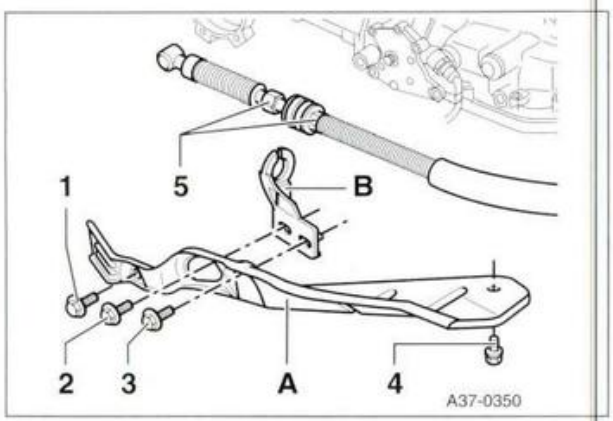
– Attach bracket (**B**) hand-tight to transmission.

– Attach selector lever cable to lever and selector shaft.

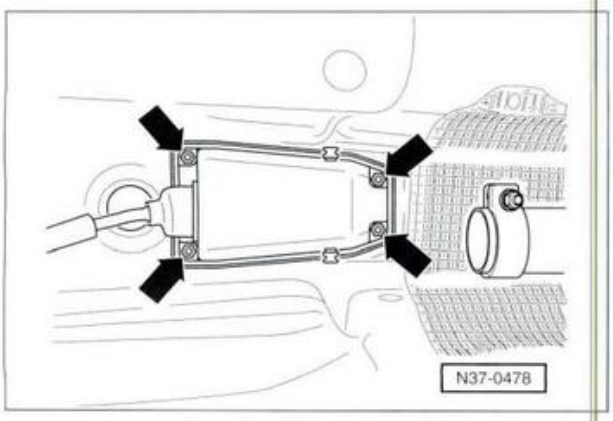
– Straighten selector lever cable in bracket (**B**).




➤ Tighten bracket to transmission (**1**) and selector lever cable to bracket (**2**) with proper torque. Counterhold at hex head (**3**).




➤ Install heat shield (**A**).




➤ Tighten mounting bracket to body.

– Check adjustment of selector lever cable. See **Selector lever cable, checking and adjusting** in this repair group.

– Reconnect driveshaft to transmission flange.

– Reconnect front and rear exhaust systems.

| Tightening torques | |
|---|---|
| Bracket to transmission | 23 Nm (17 ft-lb) |
| Heat shield to transmission (M6) | 9 Nm (80 in-lb) |
| Heat shield to transmission (M8) | 23 Nm (17 ft-lb) |
| Mounting bracket to body | 10 Nm (7ft lb) |
| Selector lever cable to bracket | 12 Nm (9 ft-lb) |
| Selector lever mechanism to body | 8 Nm (71 in-lb) |

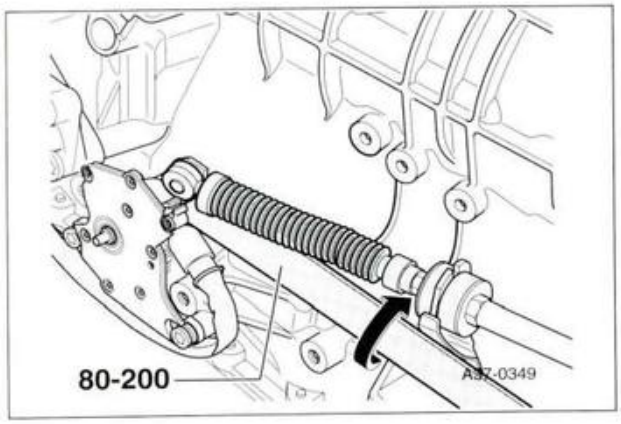
## Selector lever cable, checking and adjusting

– Shift selector lever to **P**.

– Raise vehicle and safely support.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove heat shield at selector lever cable.




➤ Pry off selector lever cable using lever 80-200 (or equivalent) from lever and selector shaft (**arrow**).

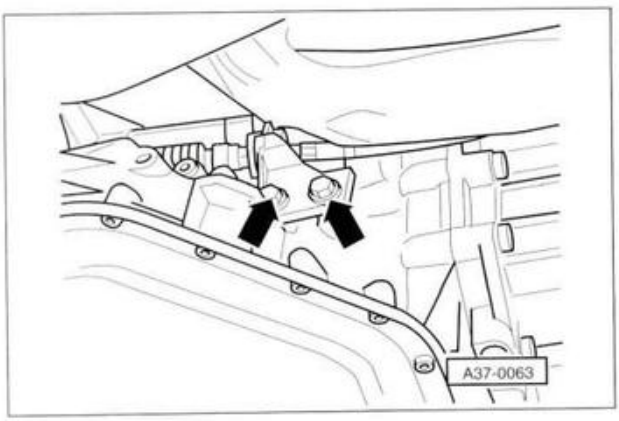
– Move selector lever from **P** to **2**.
  • Shift mechanism and selector lever cable must move easily. If necessary replace selector lever cable or repair shift mechanism.

– Shift selector lever to **P**.
  • When moving shift lever and selector shaft to **P**, parking lock must engage. Both front wheels must not turn in one direction.
  • It must be possible to attach selector lever cable to lever /selector shaft, otherwise adjust selector lever cable.

### Adjusting

Selector lever cable must be separated from lever/selector shaft.

– Shift selector lever to **P**.
  • When lever/selector shaft are moved to **P**, the parking lock must be engaged and the front wheels must not turn in one direction.




➤ Loosen nuts (**arrow**) for bracket on transmission.

***NOTE*** —
• *For illustration purpose the heat shield is not shown.*

– Attach selector lever cable on lever/selector shaft.

| Tightening torques | |
|---|---|
| Bracket to transmission | 23 Nm (17 ft-lb) |
| Heat shield to transmission (M6) | 9 Nm (80 in-lb) |
| Heat shield to transmission (M8) | 23 Nm (17 ft-lb) |
| Mounting bracket to body | 10 Nm (7ft lb) |
| Selector lever cable to bracket | 12 Nm (9 ft-lb) |
| Selector lever mechanism to body | 8 Nm (71 in-lb) |

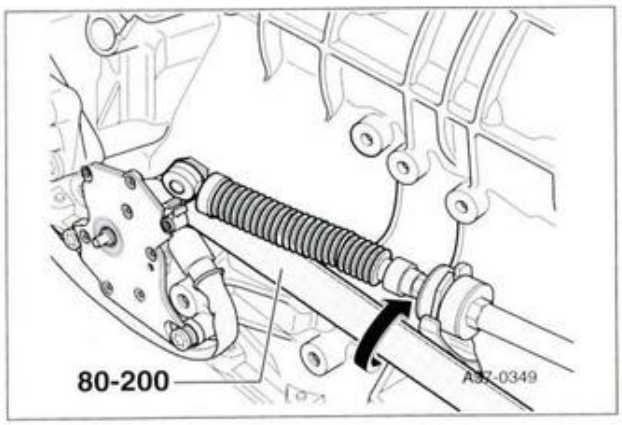
## Selector lever cable, checking and adjusting

– Shift selector lever to **P**.

– Raise vehicle and safely support.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove heat shield at selector lever cable.




➤ Pry off selector lever cable using lever 80-200 (or equivalent) from lever and selector shaft (**arrow**).

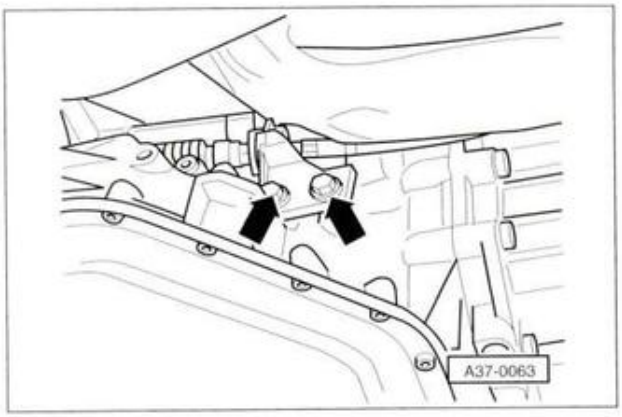
– Move selector lever from **P** to **2**.
  • Shift mechanism and selector lever cable must move easily. If necessary replace selector lever cable or repair shift mechanism.

– Shift selector lever to **P**.
  • When moving shift lever and selector shaft to **P**, parking lock must engage. Both front wheels must not turn in one direction.
  • It must be possible to attach selector lever cable to lever /selector shaft, otherwise adjust selector lever cable.

### Adjusting

Selector lever cable must be separated from lever/selector shaft.

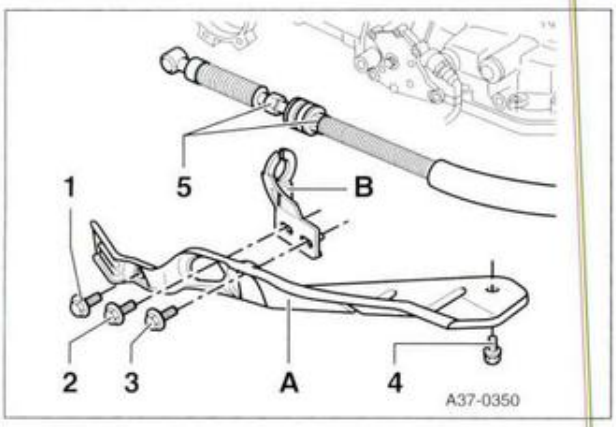
– Shift selector lever to **P**.
  • When lever/selector shaft are moved to **P**, the parking lock must be engaged and the front wheels must not turn in one direction.




➤ Loosen nuts (**arrow**) for bracket on transmission.

***NOTE*** —
• *For illustration purpose the heat shield is not shown.*

– Attach selector lever cable on lever/selector shaft.




➤ Straighten selector lever cable at bracket (**B**).

– Install heat shield (**A**).

– Tighten bolts (**2** and **3**) at bracket.

– Check shift mechanism. See **Shift mechanism, checking** in this repair group.

| **Tightening torques** | |
|---|---|
| Bracket to transmission | 23 Nm (17 ft-lb) |
| Heat shield to transmission (M6) | 9 Nm (80 in-lb) |
| Heat shield to transmission (M8) | 23 Nm (17 ft-lb) |
| Selector lever cable to bracket | 12 Nm (9 ft-lb) |
| Selector lever mechanism to body | 8 Nm (71 in-lb) |

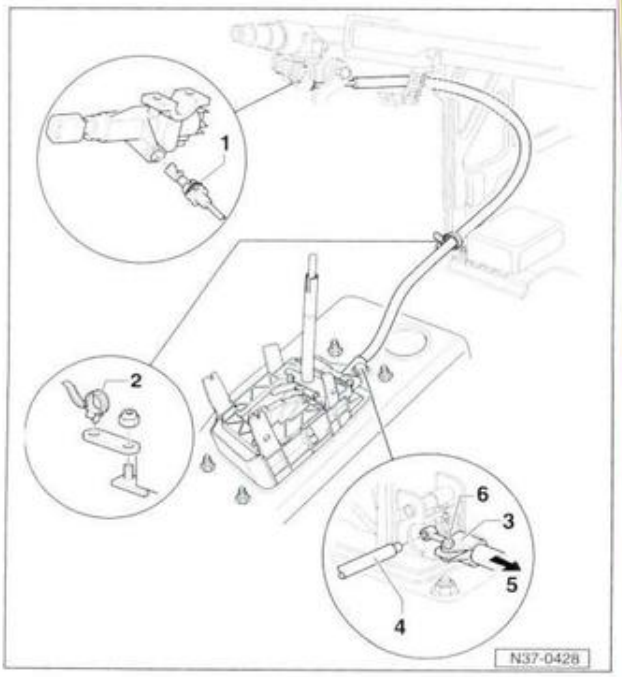
## Ignition interlock, checking

The ignition interlock prevents or allows the key and shift mechanism to move depending on their respective positions. Follow the steps below to check the ignition interlock.

– Turn ignition key **ON** then depress brake pedal and hold:
  - Shifting from **P** must be possible without "snagging" when button on shift lever is depressed.
  - Removing the ignition key must not be possible in any driving position except in **P**.

– Move shift lever to **P**.
  - It must be possible to turn Ignition key **OFF** without binding.

– Remove ignition key.
  - It must not be possible to move shift lever from **P**.




## Ignition interlock cable, removing and installing

### Removing

– Shift selector lever to **2**.

– Obtain radio anti-theft code.

– Disconnect battery ground connection.

– Remove handle for selector lever. See ***Selector* lever handle, removing and installing** in this repair group.

– Remove front center console. See **70 Interior Trim**.

– Remove steering wheel. See **48 Steering**.

– Turn ignition key **ON**.

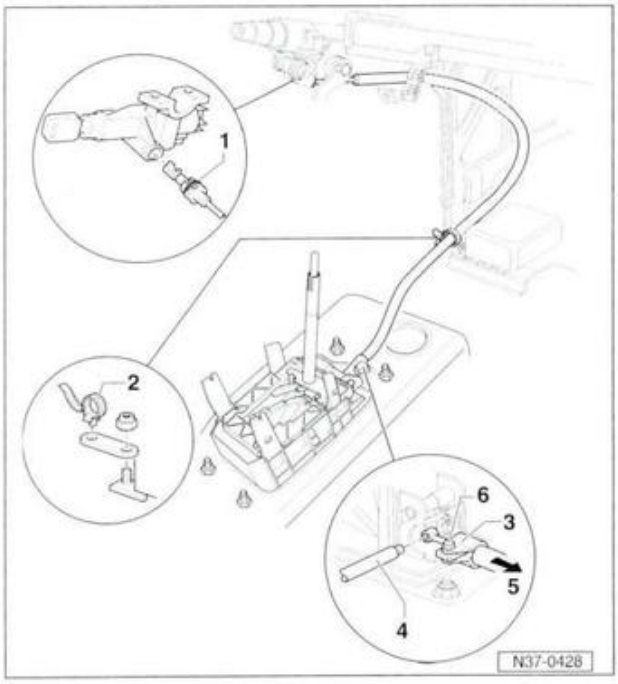
– Shift selector lever to **P**.

– Lift clip for retainer (**1**) and pull out interlock cable from ignition/starter switch.

– Remove cover with gate (selector lever actuation).

– Unclip interlock cable from securing spring at mounting bracket while slightly lifting securing spring.

– Free cable from cable tie (**2**) and remove.




### Installing

– Route interlock cable without kinks.

– Turn ignition key **ON**.

– Insert cable in ignition/starter switch.

– Check locking device (**1**) for proper engagement.

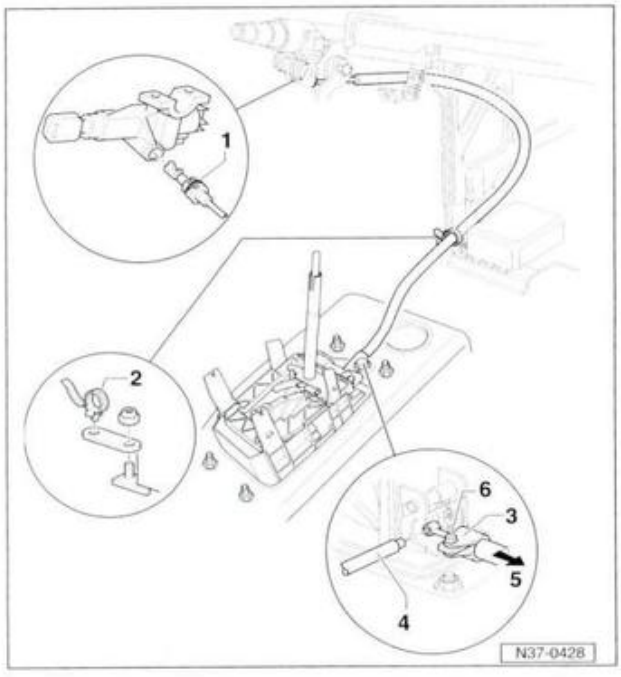
– Attach lock cable with cable tie (**2**) to airbag sensor.

– Turn ignition key **OFF**.

– Shift selector lever to **P**.

– Clip in cable in securing spring of mounting bracket.

– Insert cable bracket (**3**) in shift mechanism and cable eye in lever for cable.




### Adjusting

– Shift selector lever to **P**.

– Loosen bolt (**6**).

– Clamp (**3**) must be movable by hand in direction of arrow (**5**).

– Move steering column to lowest position.

– Insert gauge 3352 A (**4**) between lever for interlock cable and cable eye.

– Pull cable in direction of arrow (**5**) and tighten bolt (**6**).

| **Tightening torque** | |
|---|---|
| Interlock cable clamp bolt | 10 Nm (7 ft lb) |

– Remove adjustment gauge.

– Check ignition key lock after every adjustment of interlock cable. See **Ignition key lock, checking** in this repair group.

– Install steering wheel.

– Install front center console.

– Install handle for selector lever.

– Reconnect battery ground cable.

– For vehicles with theft-protected radio, reactivate code.

## Transmission Oil Pan and Components

### Transmission oil pan, removing and installing

– Drain automatic transmission fluid (ATF). See **03 Maintenance**.

– Loosen bolts for transmission oil pan in diagonal sequence.

– Remove oil pan.

***NOTE*** —

- *Clean magnet in oil pan (4 magnets). Check that magnets have complete contact with oil pan.*

– Installation is in reverse order of removal. Note the following:

- Replace seals.
- Tighten bolts for oil pan in several steps.
- Refill transmission with ATF.

| **Tightening torques** | |
|---|---|
| Drain plug to oil pan | 12 Nm (9 ft-lb) |
| Oil pan to transmission (tighten diagonally) | 10 Nm (7 ft-lb) |

### ATF screen, removing and installing

– Remove transmission oil pan. See **Transmission oil pan, removing and installing** in this repair group.

➤ Remove 2 bolts for ATF screen (**arrow**).

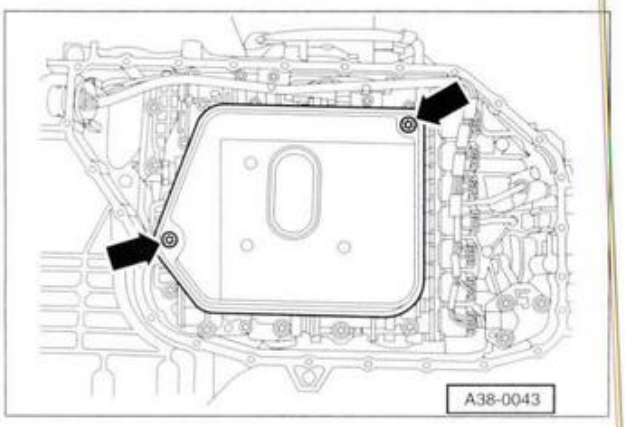
– Remove ATF screen from valve body.

– Apply thin coat of petroleum jelly to intake side of screen gasket.

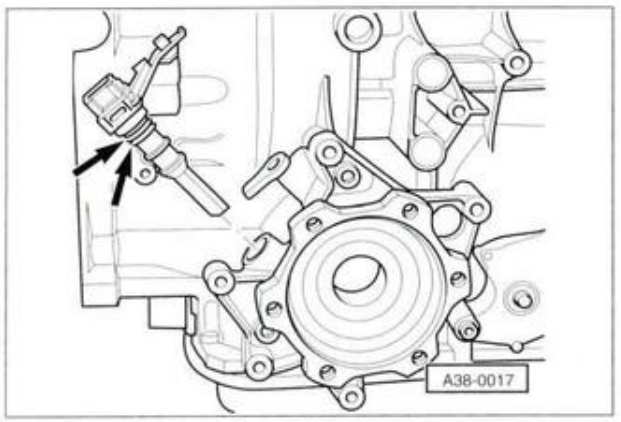
– Install ATF screen.

– Install oil pan.

– Refill transmission with ATF.




| **Tightening torques** | |
|---|---|
| ATF screen to valve body | 5 Nm (44 in-lb) |
| Drain plug to oil pan | 12 Nm (9 ft-lb) |
| Oil pan to transmission (tighten diagonally) | 10 Nm (7 ft-lb) |

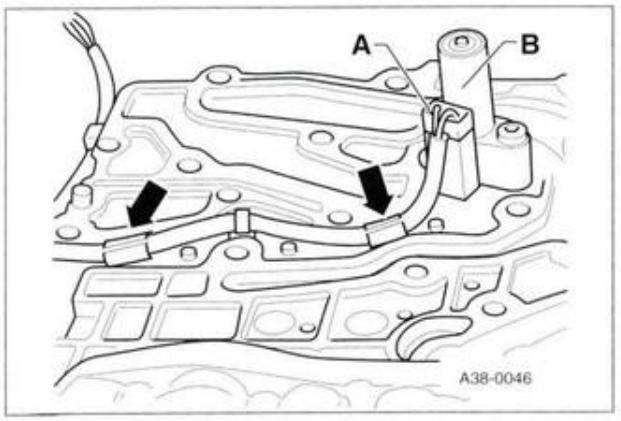



## Vehicle speed sensor (G22), removing and installing

➢ Working at transmission, remove connector for vehicle speed sensor (G22).

– Press down clamp for sensor, turn and remove it.

– Installation is reverse of removal. Note the following:
- Replace both O-rings for sensor (**arrow**).
- Apply thin coat of petroleum jelly to O-rings.
- Insert sensor and snap clamp in place.



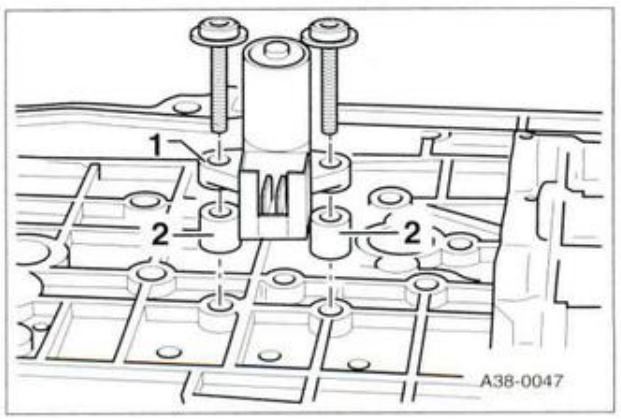

## Transmission rpm sensor (G182), removing and installing

***NOTE***—
- *Do not reuse a sensor that was dropped (the permanent magnet breaks).*

– Remove valve body.

➢ Disconnect connector (**A**) on back-side of valve body.

– Remove rpm sensor (G182) (**B**) at valve body.




➢ Install rpm sensor (**1**) using spacers (**2**) (length 8.7 mm).

– Reattach electrical connector.

– Install valve body.

***NOTE***—
- *The sensor side with the connector terminals points toward the valve body.*

– Refill transmission with ATF.

| **Tightening torques** | |
|---|---|
| ATF drain plug to oil pan | 12 Nm (9 ft-lb) |
| ATF screen to valve body | 5 Nm (44 in-lb) |
| Oil pan to transmission (tighten diagonally) | 10 Nm (7 ft-lb) |
| Transmission rpm sensor to valve body | 5 Nm (44 in-lb) |
| Valve body to transmission (tighten from inside-out) | 8 Nm (71 in-lb) |

# 39 Final Drive, Driveshaft


GENERAL . . . . . 39-1

FINAL DRIVE . . . . . 39-1
- Final drive oil . . . . . 39-1
- Front final drive oil level . . . . . 39-2
- Rear final drive oil level . . . . . 39-3

DRIVESHAFT . . . . . 39-4
- Driveshaft assembly . . . . . 39-4
- Driveshaft, removing and installing . . . . . 39-4
- Driveshaft, adjusting . . . . . 39-6
- Radial run-out, measuring . . . . . 39-9

TABLES

a. Final drive oil specifications . . . . . 39-2
b. Final drive oil capacities (approximate) . . . . . 39-2




## GENERAL

This repair group covers front and rear final drive oil service, and driveshaft removal and adjustment.

***CAUTION***—
- *Do not bend driveshaft universal joint beyond 25°. Joint may be damaged.*
- *Store and move driveshaft fully extended.*
- *Driveshaft cannot be repaired, only adjusted.*
- *If removing one side of driveshaft, support from body with wire.*
- *Match mark parts before removal. Install parts in previously marked position to maintain driveshaft balance. Imbalance can result in damage to bearings, vibration and noise.*
- *Before replacing driveshaft because of noise / vibrations, check adjustment. See* **Driveshaft, adjusting** *in this repair group.*
- *When disconnecting driveshaft from rear final drive, do not reinstall balance washer between shim and bolt head.*

## FINAL DRIVE

### Final drive oil

In manual transmission models, the front, center and rear final drives (differentials) are filled with the same oil as the transmission gearbox. In automatic models, the final drive housing(s) are filled with a different oil than ATF.

Current specifications for final drive oil are shown in **Table a**. If oil container is not marked with appropriate specification, assume that the oil is not suitable.

| Table a. Final drive oil specifications | |
|---|---|
| Manual transmission models | Synthetic oil SAE 75W-90<br>Audi part no. G 005 000 |
| Automatic transmission models | Synthetic oil SAE 75W-90<br>Audi part no. G 052 145 S2 |

Approximate refill capacities for final drive units are listed in **Table b**.

| Table b. Final drive oil capacities (approximate) | | | |
|---|---|---|---|
| | | Oil capacity in liters (US qt) | |
| **Transmission type** | **Final drive location (type)** | **New fill** | **Change** |
| Manual | Front wheel drive | Filled with transmission | |
| | Quattro (AWD):<br>• Front final drive<br>• Center final drive<br>• Rear final drive, 01R, 01H | <br>Filled with transmission<br>Filled with transmission<br>1.5 (1.6) | |
| Automatic 01L | Quattro (AWD):<br>• Front final drive<br>• Center final drive<br>• Rear final drive, 01R | <br>1.3 (1.4)<br>0.88 (0.93)<br>1.5 (1.6) | |
| Automatic 01V | Front wheel drive | 0.8 (0.85) | |
| | Quattro (AWD):<br>• Front and center final drive<br>• Rear final drive, 01R | <br>0.8 (0.85)<br>1.9 (2.01) | <br>0.75 (0.8) |
| Multitronic (CVT) 01J | Front wheel drive | 1.3 (1.4) | |

## Front final drive oil level

Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside final drive housing pools toward rear, and level cannot be accurately determined.

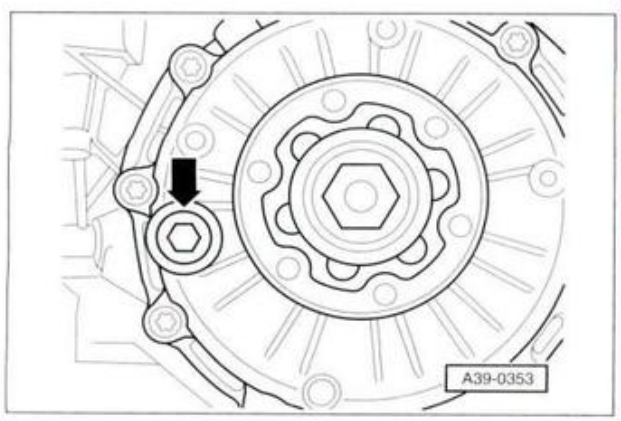
### Checking level

– Perform short test drive to increase gear oil temperature to approx. 60°C (140°F).

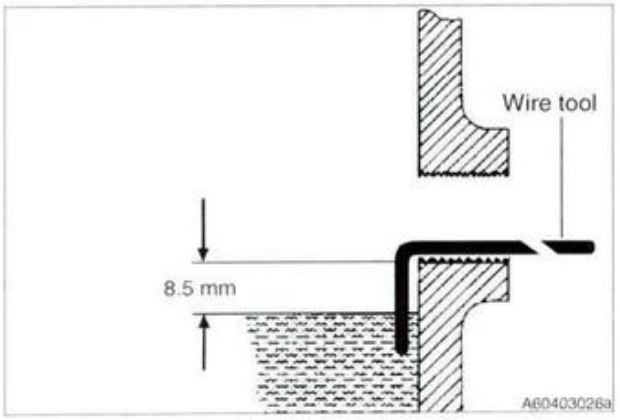
– Switch engine OFF and allow gear oil to settle for 5 minutes.

– Raise vehicle and support safely.

***WARNING*** —
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Unscrew oil filler plug (**arrow**).




➤ Check final drive oil level using stiff wire hook inserted into fill hole.

| Final drive oil level | |
|---|---|
| Measure with bent wire | 8.5 mm (⅓ in) below fill hole opening |

### Filling

– If oil level is low, top up final drive with SAE 75W-90 (synthetic oil).

***CAUTION***—
- *Adhere strictly to the oil level guidelines. The final drive is very sensitive to overfilling.*

– If gear oil level is at lower edge of oil filler hole, extract 0.2 liters (7 oz) to correct oil level.

– Screw in new oil filler plug.

| Tightening torque | |
|---|---|
| Oil filler plug to front final drive housing (use new bolt) | 20 Nm (15 ft-lb) |

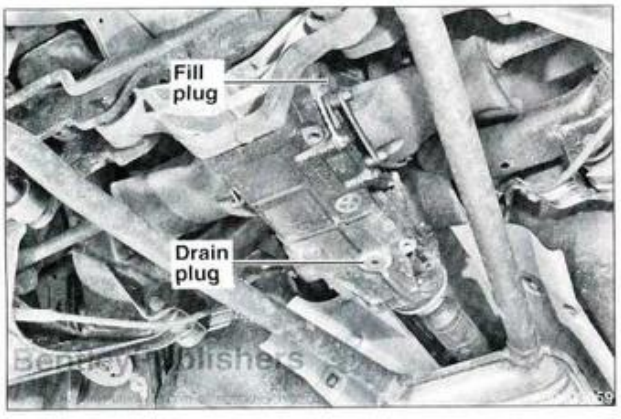
## Rear final drive oil level

Make sure vehicle is level during this operation. If front of vehicle is higher than rear, such as when driven up on ramps, oil inside final drive housing pools toward rear, and level cannot be accurately determined.

### Checking level

– Raise vehicle and support safely.

***WARNING***—
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Use 17 mm Allen wrench to loosen oil fill plug to check rear final drive oil.

– Remove fill plug. Oil level is correct when final drive is filled up to lower edge of filler hole.

### Filling

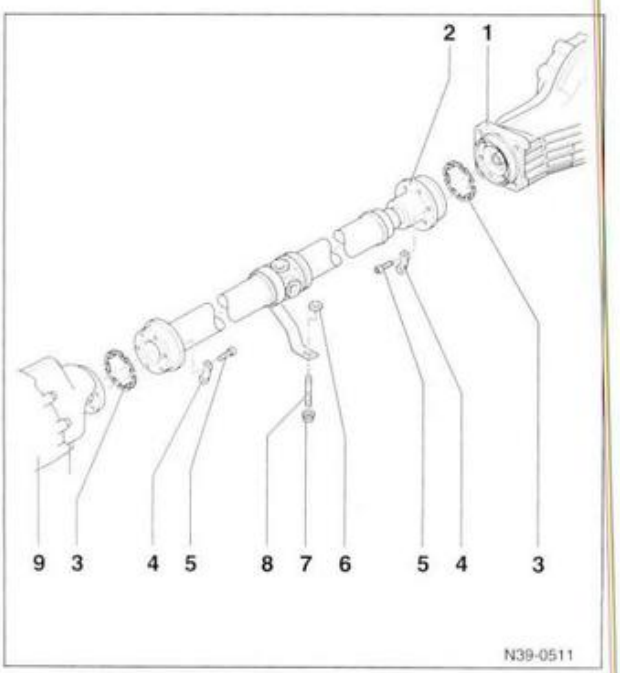
– To top up oil:
  - Place oil drain pan underneath final drive fill plug
  - Manual transmission: Top up final drive with SAE 75W-90 (synthetic oil), part no. G 005 000.
  - Automatic transmission: Top up final drive with SAE 75W-90 (synthetic oil), part no. G 052 145 S2.
  - Make sure oil is filled up to lower edge of filler hole. Final drive oil capacity is in **Table b**.
  - Allow excess oil to drip out.

– Screw in oil fill plug.

| Tightening torque | |
|---|---|
| Oil fill plug to rear final drive housing | 35 Nm (26 ft-lb) |

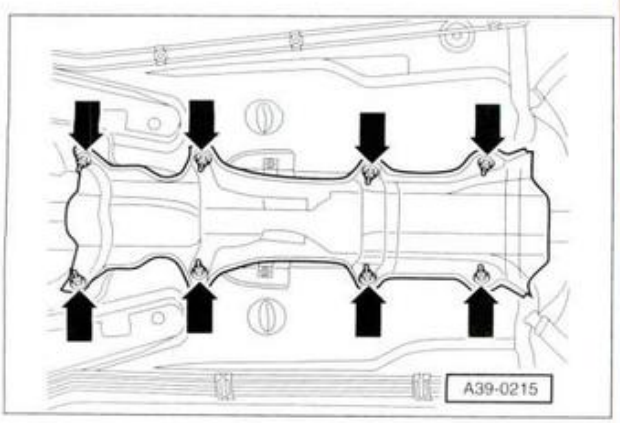
## DRIVESHAFT

### Driveshaft assembly




1. Rear final drive
2. Drive shaft
3. Gasket
   - Always replace
4. Backing plate
5. Bolt, 55 Nm (41 ft-lb)
   - Always replace
6. Adjustment shim
7. Nut, 25 Nm (18 ft-lb)
8. Stud bolt, 10 Nm (7 ft-lb)
9. Transmission

### Driveshaft, removing and installing



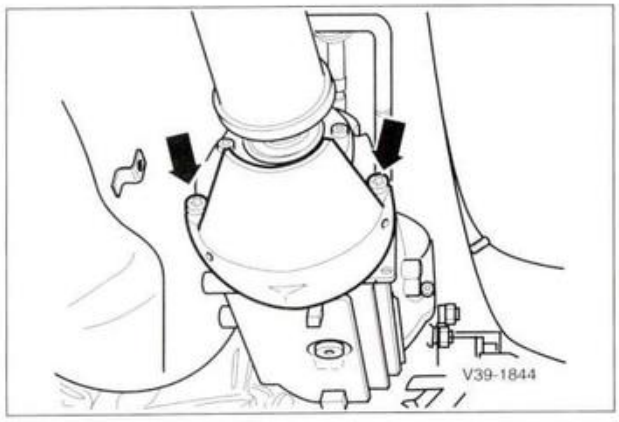

***NOTE—***

- *Observe driveshaft cautions at the beginning of this repair group.*

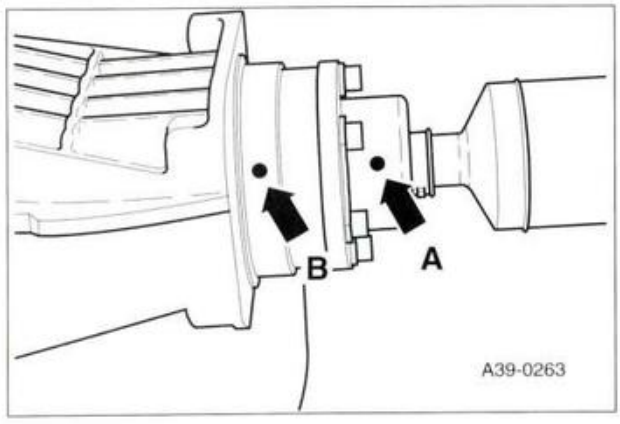
– Remove crossmember below exhaust system (if installed).

– Remove rear part of exhaust system behind clamping sleeve(s).

➤ Remove heat shields for driveshaft from body (**arrows**).



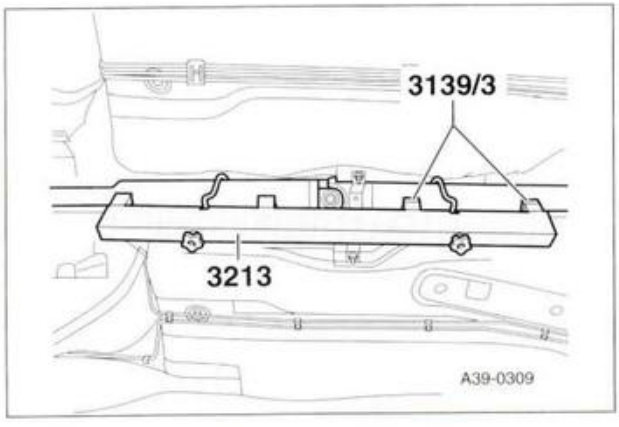

➤ Remove heat shield for driveshaft from differential cover (**arrows**).




➤ Check for factory marking on driveshaft and at flange/driveshaft at rear final drive. If not found, mark location of driveshaft flange (**A**) to rear final drive (**B**).

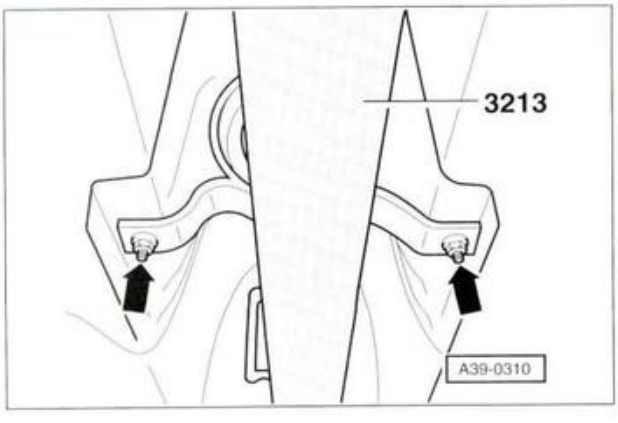
– Remove three upper mounting bolts from each drive shaft constant velocity joint.

***CAUTION—***
- *Do not remove driveshaft before installing VAG 3139 alignment fixture.*



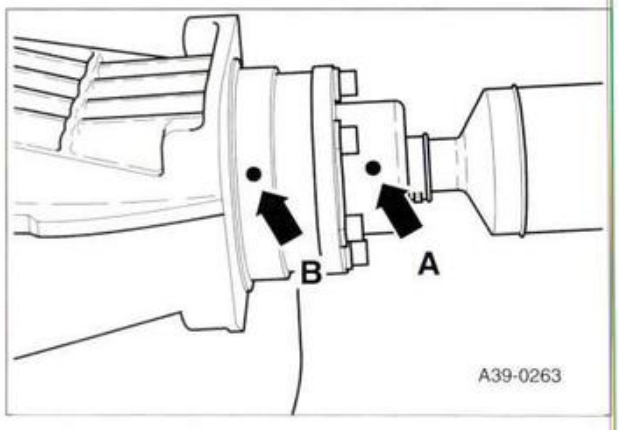

➤ Attach special tool VAG 3139 alignment fixture with 3139/3 spacers and tighten plastic nuts.

– Remove remaining three mounting bolts at front and rear constant velocity joints.




➤ Remove nuts (**arrows**) for intermediate bearing and remove driveshaft with alignment fixture.

***NOTE—***
- *Only store and move driveshaft in fully extended (horizontal) position.*




➤ Installation is reverse of removal. Note the following:

- For proper balance, drive shaft flanges (**A**) and rear final drive (**B**) must be installed so that factory marks (or marks made previously) are aligned.
- If new drive shaft is installed and factory marks on rear final drive flange are no longer visible, check and mark radial run-out at flange and align marks on drive shaft to new mark on flange. See **Radial run-out, measuring** in this repair group.
- Replace gaskets on drive flanges (remove protective film and attach gasket to drive flanges).
- After disconnecting driveshaft from rear final drive, do not reinstall additional balance washer (thick washer) between shim and bolt (if equipped).
- Clean thread bores in flanges before installing driveshaft.
- Always replace drive shaft bolts.

– Adjust drive shaft. See **Driveshaft, adjusting** in this repair group.

– Install exhaust system so it is free of stress.

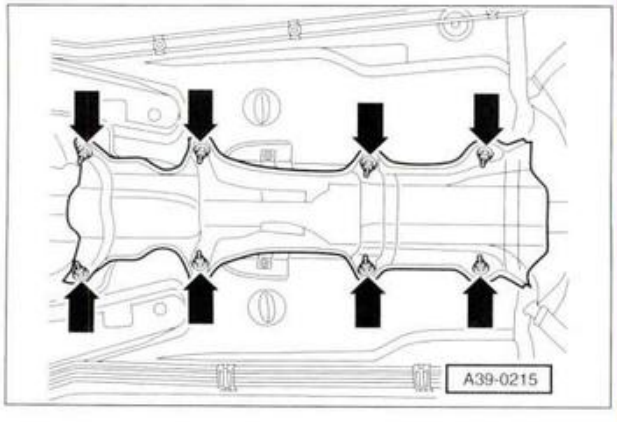
| **Tightening torques** | |
|---|---|
| Driveshaft to manual transmission | 55 Nm (41 ft-lb) |
| Driveshaft to rear final drive | 55 Nm (41 ft-lb) |
| Front crossmember to body | 25 Nm (18 ft-lb) |
| Heat shield to differential | 25 Nm (18 ft-lb) |
| Intermediate bearing to body | 25 Nm (18 ft-lb) |
| Nuts for clamping sleeve | 40 Nm (30 ft-lb) |

## Driveshaft, adjusting

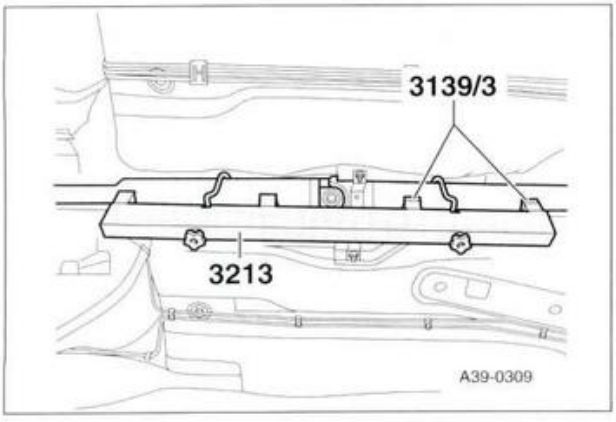
Driveshaft adjustments must be made precisely. A poorly adjusted drive shaft is usually the cause of vibrations and humming noises.

– Remove crossmember below exhaust system (if installed).

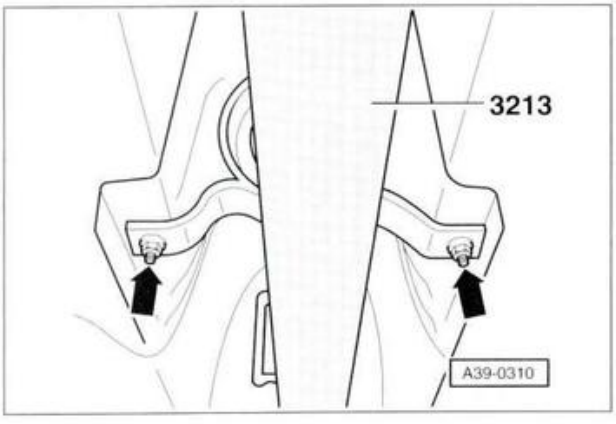
– Remove rear part of exhaust system behind clamping sleeve(s).




➤ Remove heat shields for driveshaft from body (**arrows**).



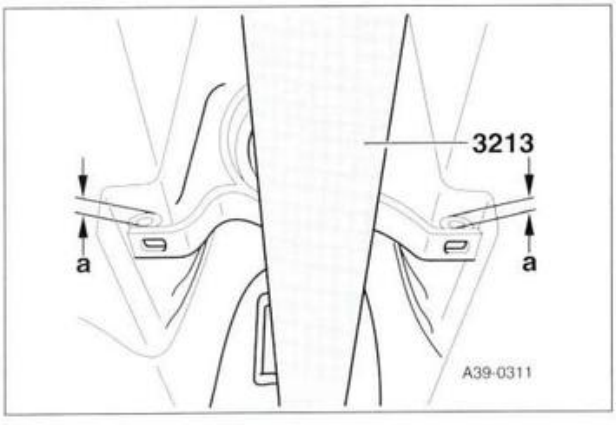

➤ Attach special tool VAG 3213 alignment fixture with 3139/3 spacers and tighten plastic nuts.




➤ Remove nuts (**arrows**) for intermediate bearing.

***NOTE***—

- *Do not remove stud bolt.*

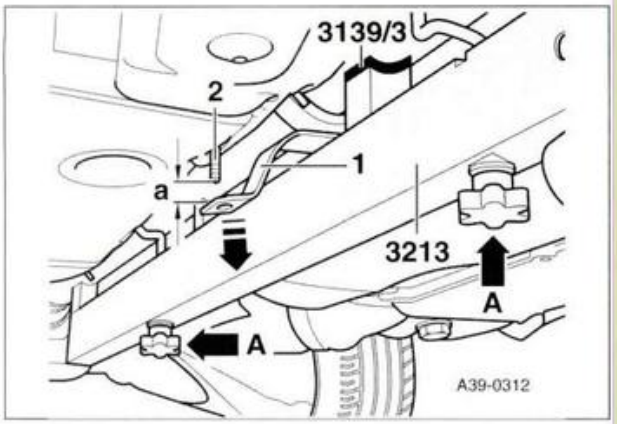



➤ Align intermediate bearing of drive shaft so that distance **a** (left side) is equal to distance **a** (right side).

– Measure distance a to determine adjustment shims according to table below.

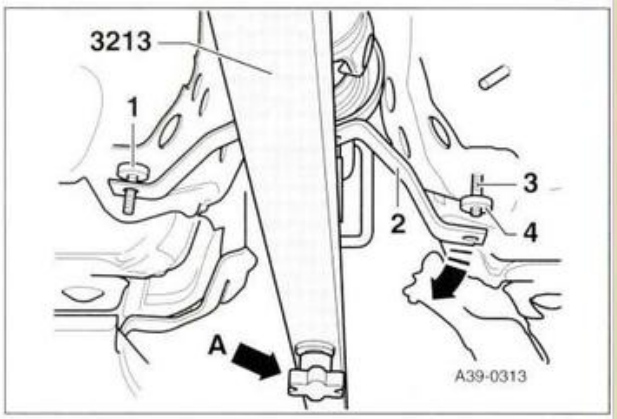
| **Available adjustment shims** | |
|---|---|
| **Distance a (mm)** | **Shim thickness (mm)** |
| 0 ... 3.0 | - |
| 3.1 ... 5.0 | 2 |
| 5.1 ... 7.0 | 4 |
| 7.1 ... 9.0 | 6 |
| 9.1 ... 11.0 | 8 |
| 11.1 ... 13.0 | 10 |

*Driveshaft*




➢ Install adjustment shims as follows:

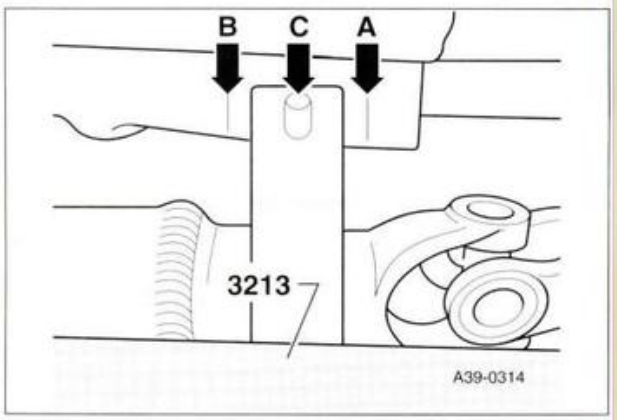
- Loosen plastic nuts of alignment fixture (**A**) far enough so that bracket for intermediate bearing (**1**) has some clearance (measurement **a**) to stud (**2**).




➢ Insert appropriate adjustment shim (**1**) and swing bracket for intermediate bearing (**2**) to other side.

– Place second adjustment shim (**4**) onto stud (**3**).

– Now tighten both plastic nuts of alignment fixture (**A**) again.




➢ To center driveshaft, slide drive shaft with alignment fixture toward rear to stop and mark location of intermediate bearing (**A**).

– Slide drive shaft with alignment fixture toward front to stop and mark location of intermediate bearing (**B**).

– Center drive shaft so that intermediate bearing (**C**) is centered between markings (**A** and **B**).

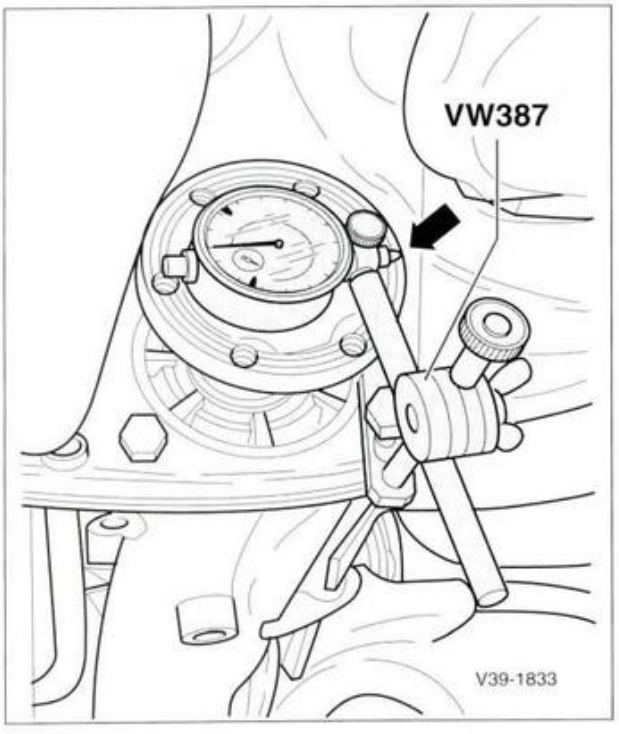
– Tighten intermediate bearing in centered position.

– Remove mounting fixture.

– Remainder of installation is reverse of removal.

– Install exhaust system free of stress.

| **Tightening torque** | |
|---|---|
| Front crossmember to body | 25 Nm (18 ft-lb) |
| Intermediate bearing to body | 25 Nm (18 ft-lb) |
| Nuts for clamping sleeve | 40 Nm (30 ft-lb) |




## Radial run-out, measuring

***NOTE***—

- *Measure radial run-out if rear final drive flange is removed. Make new marks and remove old marks.*
- *Mark location of largest radial run-out if new driveshaft is installed and marks on final drive flange are no longer visible.*
- *Align new mark with mark on driveshaft.*

➤ Attach special tool VAG VW387 dial gauge holder with dial indicator to connection between crossmember and final drive.

– Set dial indicator onto ground diameter of drive shaft flange (**arrow**) and set to 0 with 1 mm preload.

– Turn differential gear via both rear wheels (left and right flanges) at the same time in one direction until drive flange/driveshaft flange has made on complete revolution.

– Mark largest radial run-out on outer edge of flange (equivalent to largest distance from turning axis).

– Remove old mark on flange.

– Installing driveshaft. Match mark on driveshaft to mark on flange. See **Driveshaft, removing and installing** in this repair group.

# 40 Front Suspension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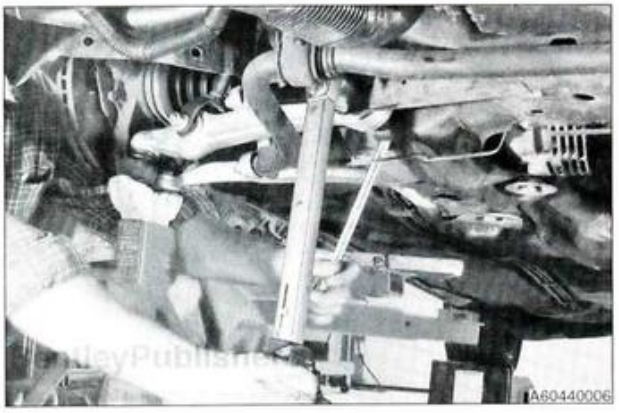
## GENERAL

This section covers repairs to the front suspension and related components. Also see:

- **42 Rear Suspension** for rear suspension servicing and repair information
- **44 Wheels, Tires, Wheel Alignment** for wheel alignment specifications

Special tools, equipment and procedures are required for most front suspension repair and component replacement. On suspension components with bonded rubber bushings, tighten fasteners with vehicle at curb weight position. See **Curb weight position** in this repair group.

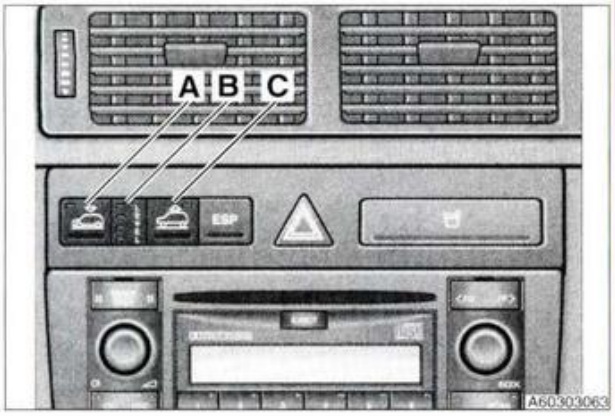
Wheel alignment is almost always disturbed when suspension components are removed or replaced. Plan on a wheel alignment after suspension repairs.




### Curb weight position

Bonded rubber bushings can only be flexed to a limited extent. Place suspension under load (curb weight position) before tightening suspension arms with bonded rubber bushings.

In this illustration jack stands and wheel ramps are used to place vehicle at curb weight position. Then tighten suspension arms with bonded rubber bushings to torque specification.




## allroad quattro "jack mode"

Prior to jacking or lifting allroad quattro vehicle, set ride height control to "jack mode" to protect suspension shock absorbers and struts.

***WARNING*** —
- *Make sure that no one is lying under the vehicle or has head or hands in the wheel housing while the ride height is changing.*

### Activating

Before lifting vehicle with jack or lift:

- Switch ignition ON.
- Press ride height control buttons **A** and **C** in center dashboard for at least 5 seconds.
- When system is in "jack mode", LEDs on control buttons (**A** and **C**), yellow LED for manual mode on level indicator (**B**) and warning light for level control in instrument cluster all illuminate.

– Switch ignition OFF and lift or jack vehicle.

### Deactivating

– Press control buttons **A** and **C** for at least 5 seconds. Warning light in instrument cluster, LED for manual mode and control button LEDs turn OFF.

"Jack mode" is automatically deactivated when vehicle speed exceeds 3 mph (5 kph).

## Warnings and Cautions

***WARNING*** —
- *Most fasteners are designed to be used only once and become unreliable and may fail when used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips, cotter pins, self-locking nuts and bolts. For replacements, use new parts.*
- *Do not reinstall bolts and nuts coated with undercoating wax. Clean the threads with a suitable solvent before installing.*
- *Replace rusted or corroded bolts, nuts and washers even if not specifically indicated.*
- *Do not attempt to straighten or weld suspension struts, wheel bearing housings, control arms or any other wheel locating or load bearing components of the front suspension.*

***CAUTION***—
- *To avoid wheel bearing damage, do not move vehicle without drive axle(s). If vehicle needs to be moved, install an outer joint in place of the drive axle. Tighten outer joint to 115 Nm (85 ft-lb) for M14 bolt or 190 Nm (140 ft-lb) for M16 bolt.*
- *Bonded rubber bushings may only be flexed to a limited extent. See* **Curb weight position** *in this repair group.*
- *Before performing suspension work on allroad quattro, see* **allroad quattro "jack mode"** *in this repair group.*

## FRONT STRUT ASSEMBLY

### Front suspension strut, removing and installing

– Working in engine compartment, remove battery cover and plenum cover. See **03 Maintenance**.

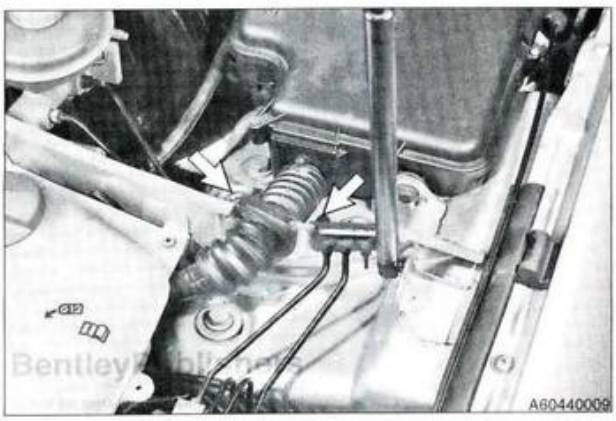
– Remove hubcap. For alloy wheels, pull off center cap (use pulling hook in vehicle tools).

– Raise car and support safely.

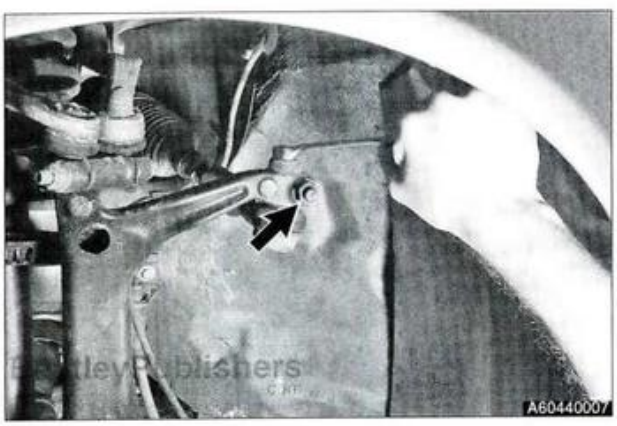
> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove front wheels.

***NOTE*** —
- *Vehicle with headlight vertical aim control: Disconnect vehicle height sensor arm from control arm.*
- *In order not to damage lower control arm ball joints, use engine / transmission jack VAG1383-A or equivalent to brace control arms.*



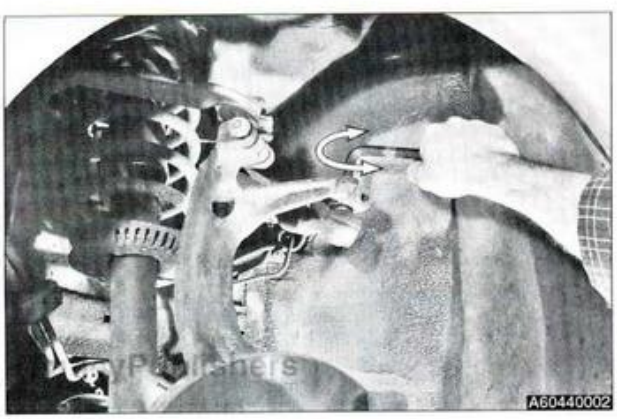

➤ Working in plenum chamber, remove rubber grommets (**arrows**) to gain access to strut upper mounting nuts. Use socket on long extension to remove nuts.




> ***CAUTION***—
> • *Do not bend or damage brake lines.*

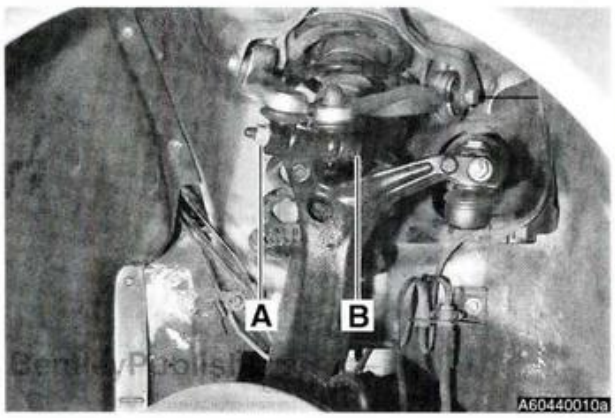
– Working under car, pull ABS wheel speed sensor harness out of bracket on brake caliper. Be careful not to damage brake lines.

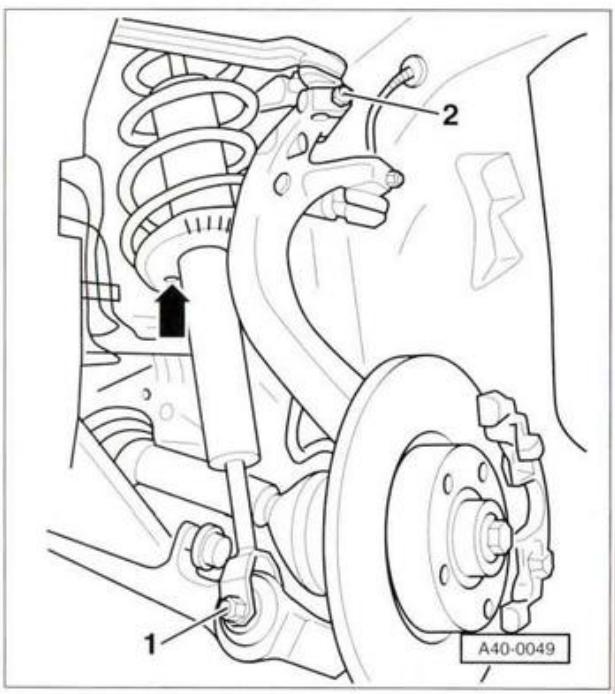
➤ Working at tie rod end:
- Remove nut on tie rod end pinch bolt (**arrow**) and remove bolt.
- Remove bolt from top of tie rod end.




➤ Using 8 mm Allen key, work tie rod end shaft back and forth to release tie rod from wheel bearing carrier.

*Front Strut Assembly*



➤ Remove nut (**A**) on front and rear upper control arm pinch bolt and remove pinch bolt (**B**).

– Release upper front and rear control arm outer ends from wheel bearing carrier.

> ***CAUTION—***
> *• Do not use chisel or similar tool to widen slits in wheel bearing housing.*

– Remove nut from lower rear control arm ball joint. Using a suitable ball joint puller, pop control arm end out of wheel bearing carrier. Be careful not to damage CV boot.

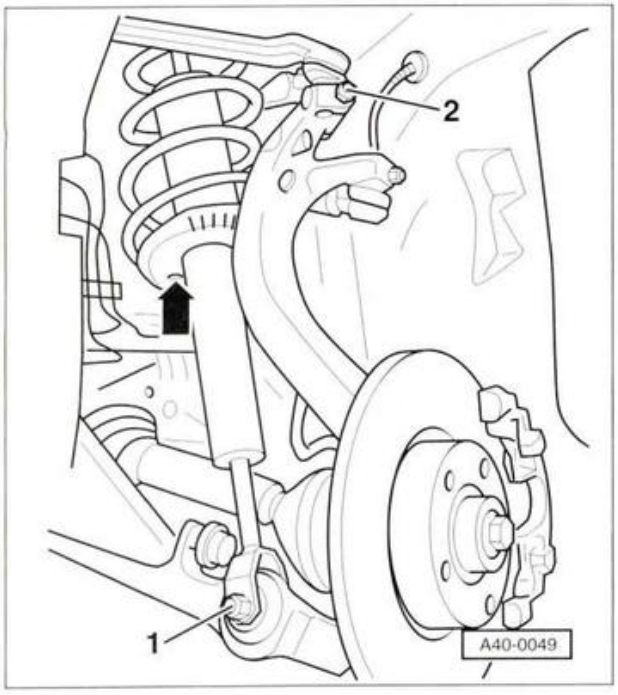
***NOTE—***

*• If reusing control arm, put collar nut back on flush with ball joint stud to protect threads before attaching puller.*

➤ Remove suspension strut lower mount bolt (**1**) and disengage strut from lower front control arm.

➤ Using a suitable lever arm, pry down on wheel bearing carrier and remove suspension strut upper mount from upper suspension bracket.

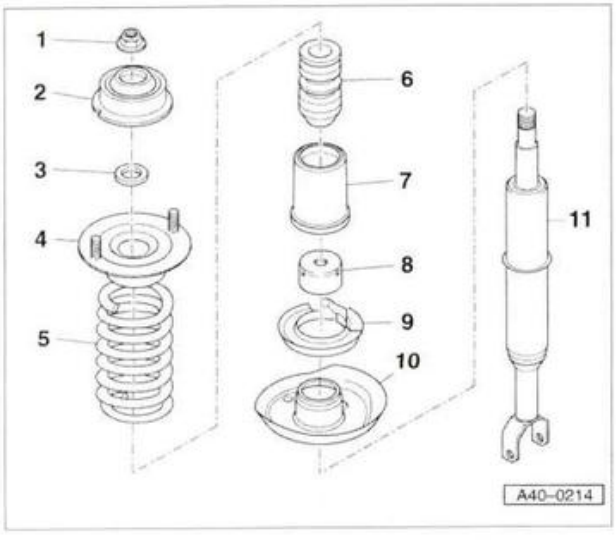
– Disassemble strut and coil spring, replacing components as needed. See **Front strut assembly components** and **Front strut assembly details** in this repair group.




Installation is reverse of removal. Remember to:

- Position suspension strut so that hole (**arrow**) in spring seat faces middle of vehicle. See **Front strut assembly details** in this repair group.
- Guide suspension strut upper mount into position in upper suspension bracket. Install upper mount nuts from above in plenum chamber. Install rubber grommets and plenum chamber cover.
- Bolt suspension strut to lower front control arm. Tighten bolt (**1**) in curb weight position. See **Curb weight position** in this repair group.
- Insert upper control arm ball joints in wheel bearing housing and press down as far as possible. Install new pinch bolt and tighten nut (**2**).
- Reattach lower rear control arm to wheel bearing housing. Use 4 mm Allen wrench to counterhold ball joint stud, if necessary.
- Insert ABS wheel speed sensor harness into bracket on brake caliper.
- Mount wheel and tighten.

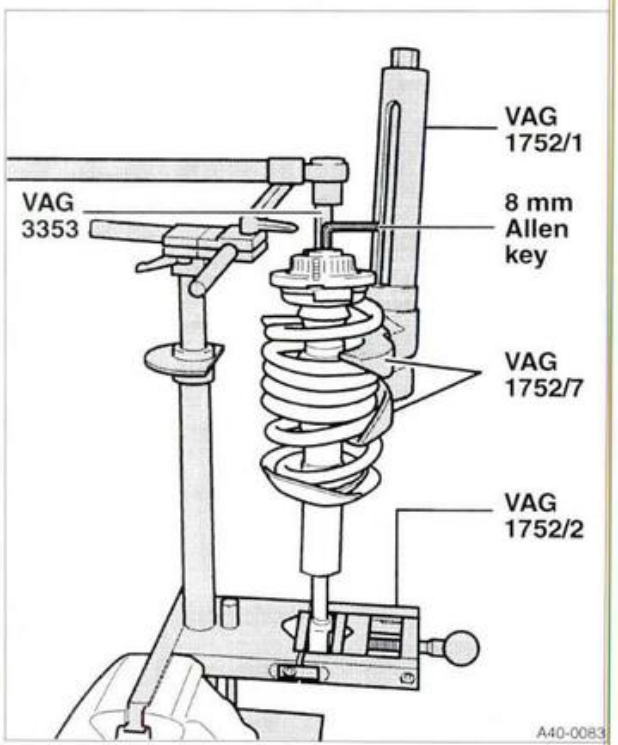
| **Tightening torques** | |
|---|---|
| Lower rear control arm to wheel bearing housing | 100 Nm (74 ft-lb) |
| Suspension strut upper mount to upper suspension bracket | 20 Nm (15 ft-lb) |
| Suspension strut to lower front control arm | 90 Nm (66 ft-lb) |
| Upper control arm to wheel bearing housing | 40 Nm (30 ft-lb) |
| Wheel to wheel bearing hub | 120 Nm (89 ft-lb) |

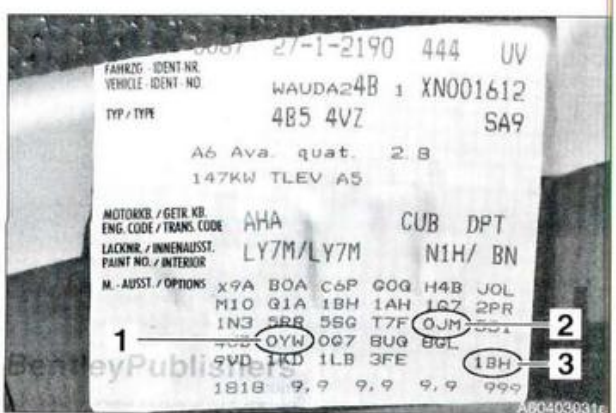



## Front strut assembly components

1. Nut, 60 Nm (44 ft-lb)
   - Remove using special tool 3353.
   - Replace.
2. Upper strut mount
3. Washer
4. Upper spring seat: See **Front strut assembly details** in this repair group.
5. Coil spring
   - Inspect surface for pitting and damage.
   - Match color code when replacing. Check vehicle data sticker. See **Front strut assembly details** in this repair group.
6. Bump stop: Insert in upper spring seat.
7. Dust sleeve
8. Protective cap
9. Lower spring buffer
   - Not in all vehicles.
10. Lower spring seat: See **Front strut assembly details** in this repair group.
11. Strut: Match with spring. Check vehicle data sticker. See **Front strut assembly details** in this repair group.

*Front Strut Assembly*




## Front strut assembly details

Special tools, including a coil spring compressor, a special socket and a spring seat angle adjusting gauge, are needed for front strut disassembly and reassembly.

***WARNING —***

- *Do not attempt to disassemble the struts without a spring compressor designed specifically for this job.*
- *Make sure the spring compressor grabs the spring fully and securely before compressing it.*

➤ VAG special socket 3353 used in conjunction with Allen key for removing upper strut nut.

➤ VAG special tools needed for safely compressing coil spring, loosening upper mount and replacing strut.

➤ Vehicle data sticker in spare tire well:

1. Rear axle designation
2. Front axle designation
3. Suspension code

Match to strut and coil spring codes found in Audi parts data.

See **44 Wheels, Tires, Alignment** for more information about suspension codes.

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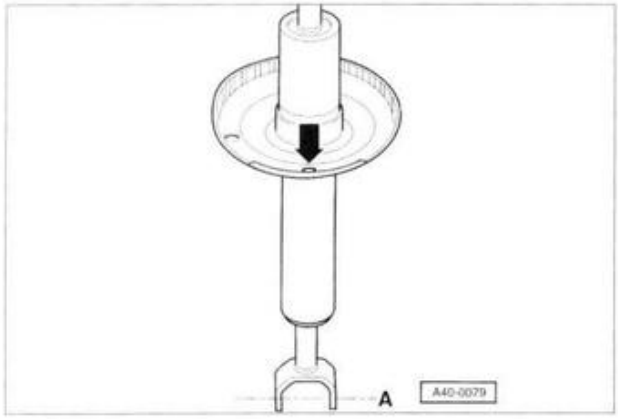
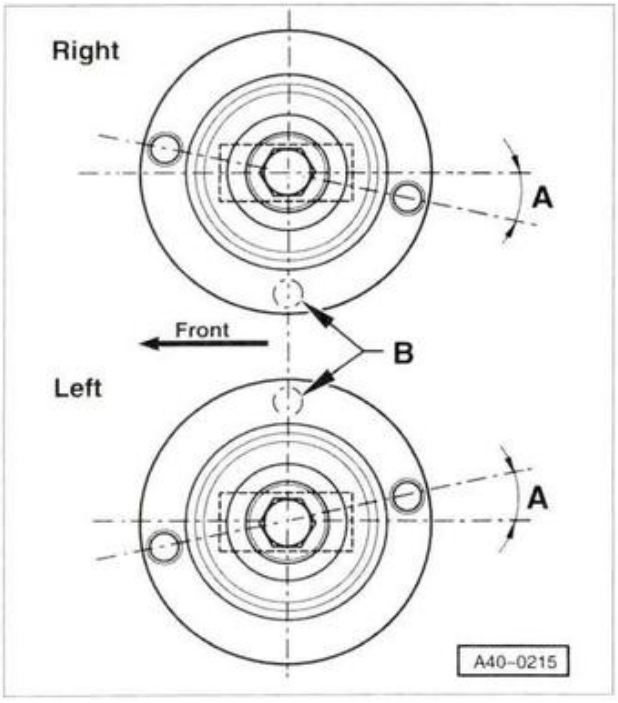
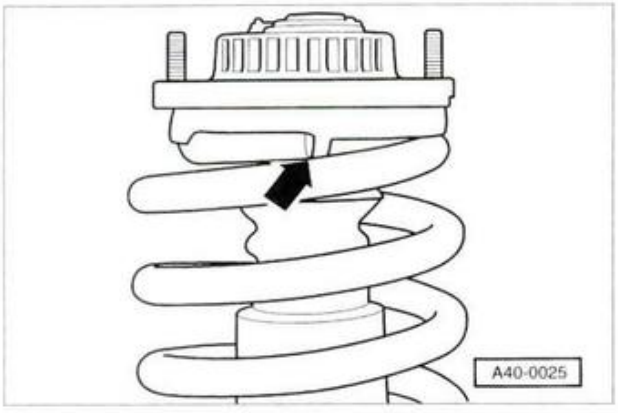



➤ Installed position of lower spring seat: Make sure hole (**arrow**) in seat is at right angles (90° ± 2°) to axis of lower mounting fork (**A**).



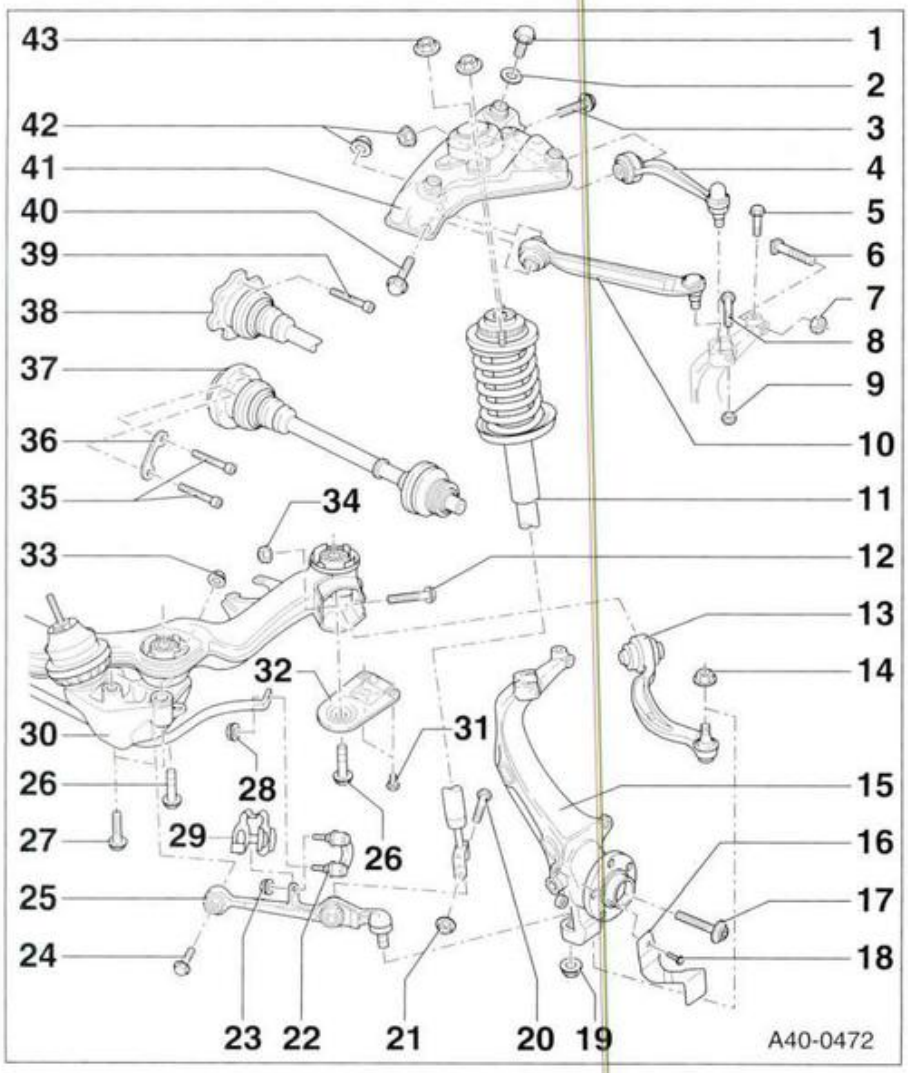

➤ Installation of spring seats:

- Studs in upper spring seats are rotated 11° (**A**) to axis of strut lower mounting fork.
- Holes (**B**) in lower spring seat face middle of vehicle.



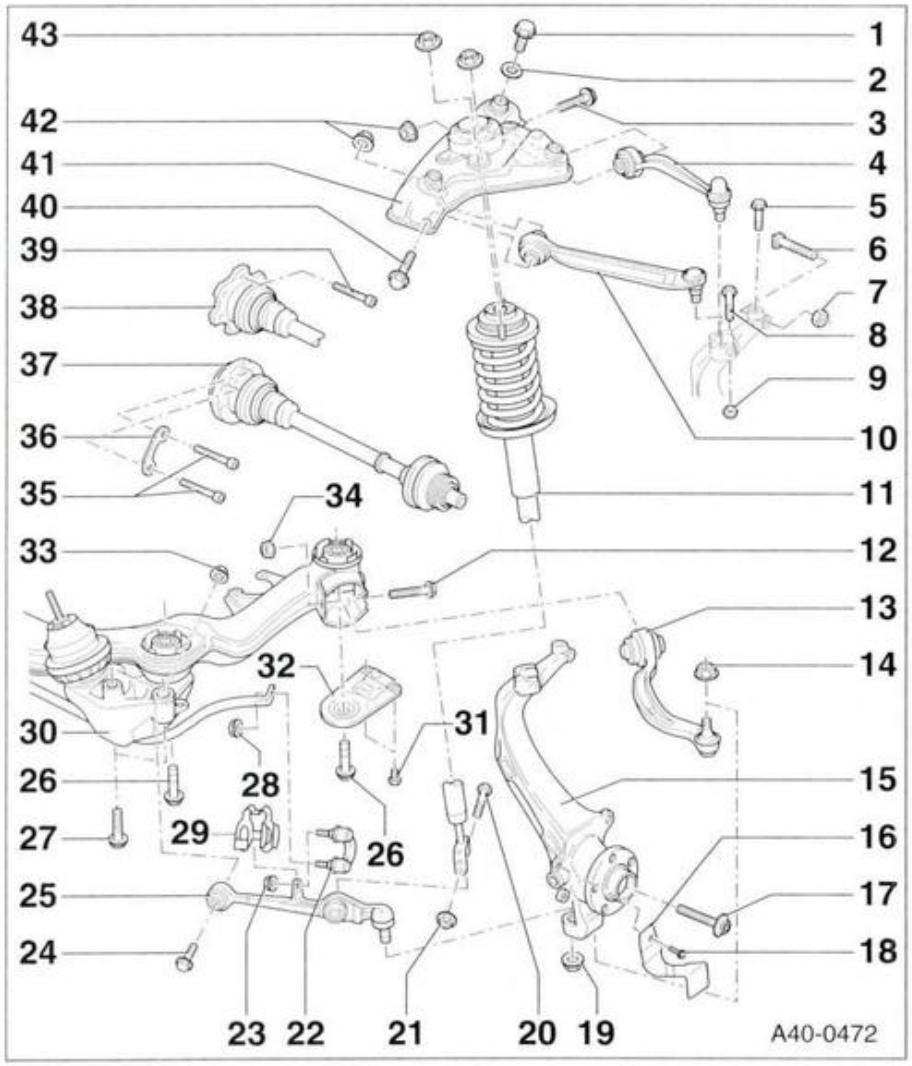

➤ Upper coil spring seat: Make sure upper end of spring (**arrow**) rests against upper spring seat stop.

## FRONT SUSPENSION ARMS




### Front suspension components

1. **Bolt M10, 75 Nm (55 ft-lb)**
2. **Washer**
3. **Bolt M10 x 62 mm**
   - Replace.
   - Load suspension when tightening. See **Curb weight position** in this repair group.
4. **Upper rear control arm**
   - Replace bushing
5. **Bolt, 5 Nm (4 ft-lb)**
6. **Bolt**
7. **Self-locking nut**
   - Replace.
   - 50 Nm (37 ft-lb) for steel wheel bearing housing
   - 45 Nm (33 ft-lb) for aluminium wheel bearing housing
8. **Bolt M10 x 100**
9. **Self-locking nut, 40 Nm (30 ft-lb)**
   - Replace.
10. **Upper front control arm**
    - Can be removed together with mounting bracket
11. **Suspension strut**
12. **Bolt M12 x 1.5 x 120 mm**
    - Replace after disassembly.
    - Load suspension when tightening. See **Curb weight position** in this repair group.
13. **Lower rear control arm**
    - Replace arm if fluid-filled bushing is leaky
    - Replace.
14. **Self-locking nut**
    - *100 Nm (74 ft-lb)* for steel wheel bearing housing
    - 110 Nm (81 ft-lb) for aluminium wheel bearing housing
15. **Wheel bearing housing**
16. **Backing plate**




## Front suspension components *(continued)*

**17. Outer CV joint bolt, M14 or M16**

- Replace.
- Tighten in 2 stages. See **Front drive axle, removing and installing** in this repair group.

**18. Bolt, 10 Nm (7 ft-lb)**

**19. Self-locking nut**

- 100 Nm (74 ft-lb) for steel wheel bearing housing.
- 120 Nm (89 ft-lb) for aluminium wheel bearing housing.
- Replace.

**20. Bolt M12 x 1.5 x 85 mm**

**21. Self-locking nut, 90 Nm (66 ft-lb)**

- Replace.

**22. Stabilizer bar link**

- Arrow points in direction of travel.

**23. Self-locking nut**

- Replace after disassembly.
- 40 Nm (30 ft-lb) plus additional 90° (¼ turn).
- Nut has ribs on the bottom, replace with same.

**24. Bolt M12 x 1.5 x 100 mm**

- Replace.
- Load suspension when tightening. See **Curb weight position** in this repair group.

**25. Lower front control arm**

**26. Bolt M12 x 1.5 x 110**

- 110 Nm (81 ft-lb) plus additional 90° (¼ turn).
- Replace.

**27. Bolt, 75 Nm (55 ft-lb)**

- M10 X 70 mm
- Replace.

**28. Self-locking ribbed nut**

- 100 Nm (74 ft-lb).
- Replace.

**29. Clip**

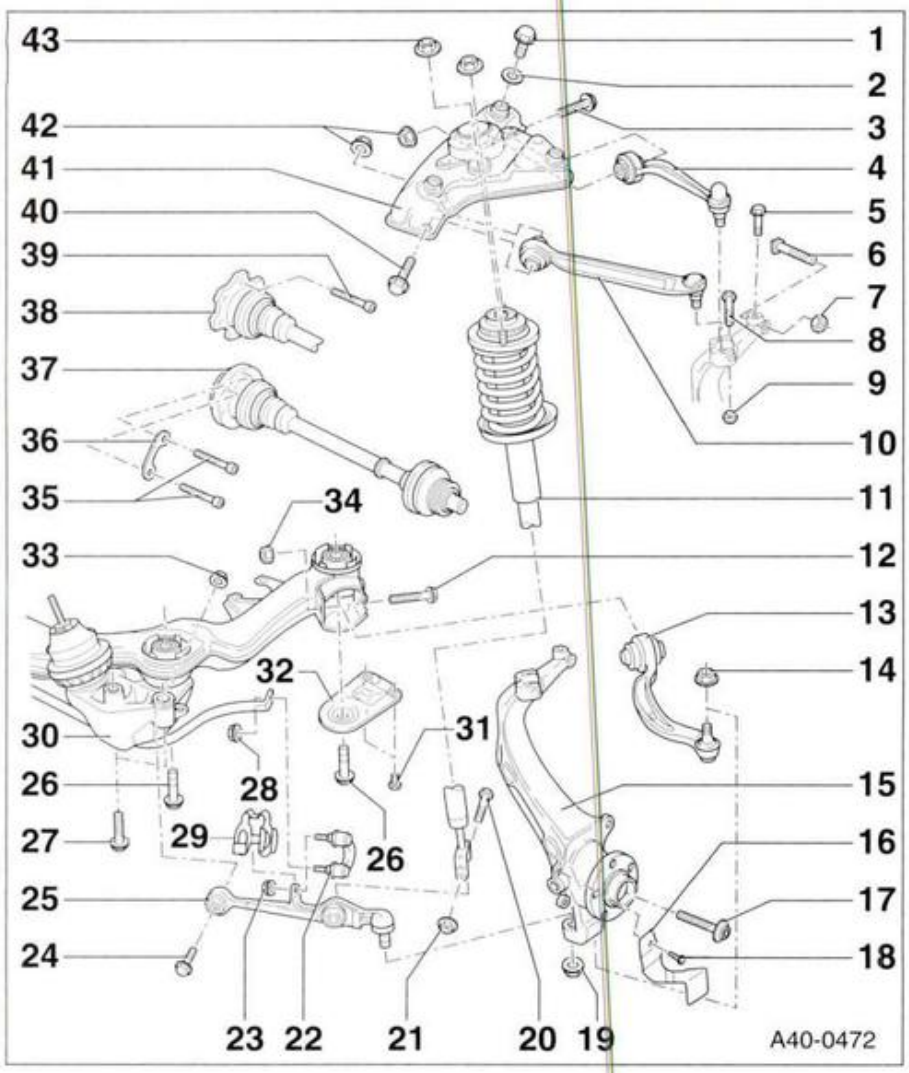
- Inserted in lower front control arm.
- Replace.

**30. Subframe**

**31. Bolt, 25 Nm (18 ft-lb)**

- Replace.

*Front Suspension Arms*




## Front suspension components *(continued)*

**32. Subframe support**

**33. Self-locking nut**

- 70 Nm (52 ft-lb) plus additional 180° (½ turn).
- Replace.

**34. Self-locking nut**

- 70 Nm (52 ft-lb) plus additional 180° (½ turn).
- Replace.

**35. Bolt**

- Vehicle with inner CV joint.
- M8 X 48: 40 Nm (30 ft-lb).
- M10 X 48: 70 Nm (52 ft-lb).

**36. Backing plate**

**37. Drive axle**

- See **Front drive axle, removing and installing** in this repair group.

**38. Drive axle with triple roller joint**

**39. Bolt, 70 Nm (52 ft-lb)**

- Vehicle with triple roller joint.
- M10 X 20 mm. Bolt M10 x 62
- Replace.
- Load suspension when tightening. See **Curb weight position** in this repair group.

**40. Bolt M10 x 62**

- Always replace after removal.

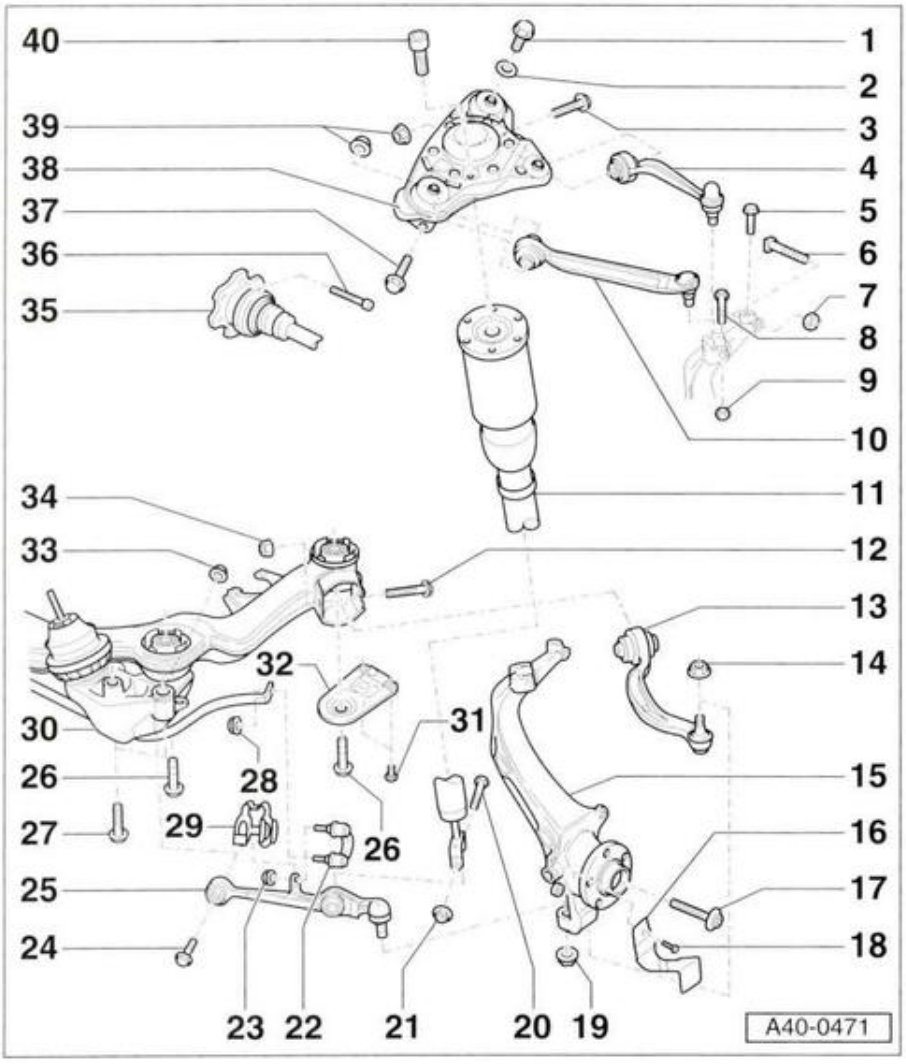
**41. Suspension upper mounting bracket**

**42. Self-locking nut**

- 50 Nm (37 ft-lb) plus additional 90° (¼ turn).
- Always replace after removal.

**43. Self-locking nut with flange, 20 Nm (20 ft-lb)**

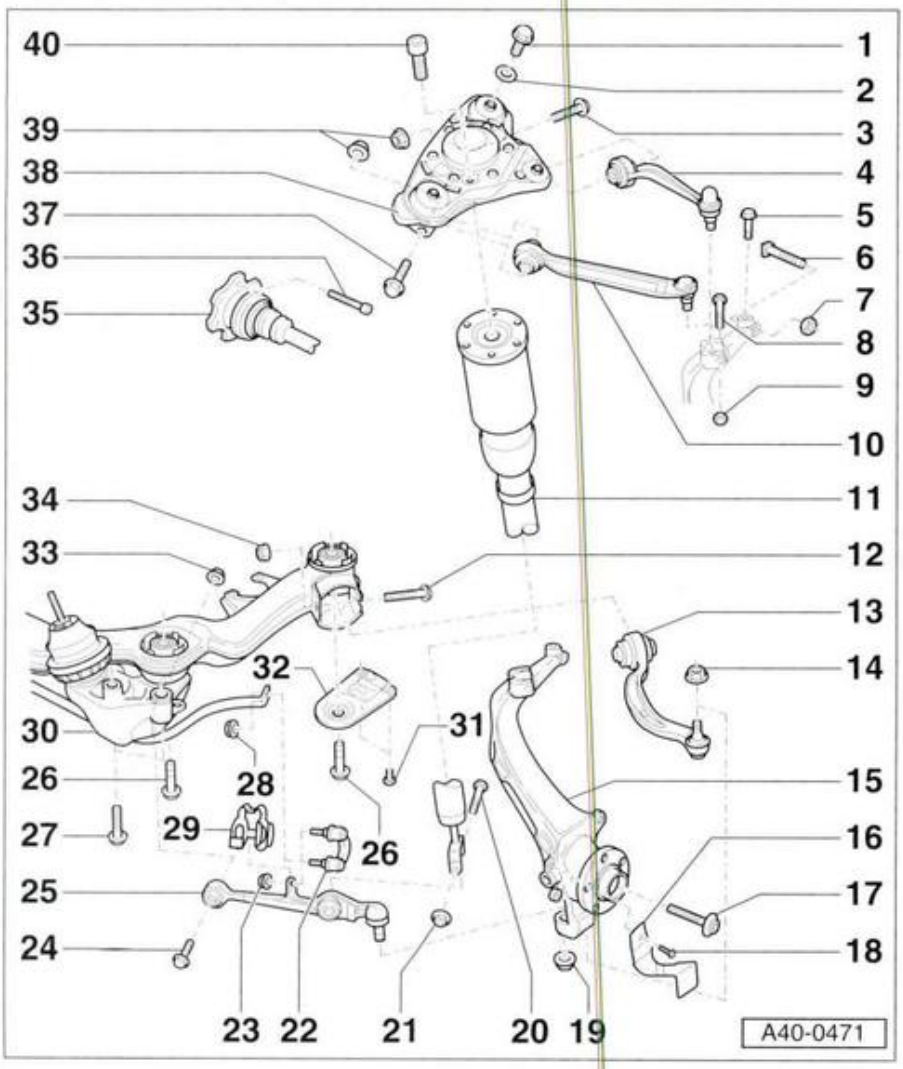
- Replace after disassembly.




## Front suspension components, allroad quattro

1. **Bolt**
   - 45 Nm (33 ft-lb) plus additional 55°
   - Replace.
2. **Washer**
3. **Bolt, M10 x 62 mm**
   - Replace.
   - Load suspension when tightening. See **Curb weight position** in this repair group.
4. **Upper rear control arm**
5. **Bolt, 5 Nm (4 ft-lb)**
6. **Bolt**
7. **Self-locking nut, 50 Nm (37 ft-lb)**
   - Replace.
8. **Bolt M10 x 100 mm**
9. **Self-locking nut, 40 Nm (30 ft-lb)**
   - Replace.
10. **Upper front control arm**
11. **Suspension strut**
12. **Bolt M12 x 1.5 x 120**
    - 90 Nm (66 ft-lb) plus additional 90°
    - Replace.
    - Load suspension when tightening. See **Curb weight position** in this repair group.
13. **Lower rear control arm**
14. **Self-locking nut, 110 Nm (81 ft-lb)**
    - Replace.
15. **Wheel bearing housing**
16. **Backing plate**
17. **Outer CV joint bolt, M16**
    - Replace.
    - Tighten in 2 stages. See **Front drive axle, removing and installing** in this repair group.
18. **Bolt,10 Nm (7 ft-lb)**
19. **Self-locking nut, 110 Nm (81ft-lb)**
    - Replace.
20. **Bolt M12 x 1.5 x 85 mm**
21. **Self-locking nut, 90 Nm (66 ft-lb)**
    - Replace.
22. **Stabilizer bar link**
    - Arrow points in direction of travel

*Front Suspension Arms*




## Front suspension components, allroad quattro *(continued)*

**23. Self-locking ribbed nut**
- Replace after disassembly
- 40 Nm (30 ft-lb) plus additional 90°

**24. Bolt M12 x 1.5 x 100 mm**
- Replace.
- Load suspension when tightening. See **Curb weight position** in this repair group.

**25. Lower front control arm**

**26. M12 x 1.5 x 140 mm**
- 110 Nm (81 ft-lb) plus 90°
- Replace.

**27. Bolt, 70 Nm (52 ft-lb)**
- M10 X 70 mm
- Replace.

**28. Self-locking nut, 60 Nm (44 ft-lb)**
- Replace.

**29. Clip in lower front control arm**
- Replace.

**30. Subframe**

**31. Bolt, 25 Nm (18 ft-lb)**

**32. Support for subframe**

**33. Self-locking nut**
- 80 Nm (59 ft-lb) plus additional 90°
- Replace.

**34. Self-locking nut**
- 90 Nm (66 ft-lb) plus additional 90°
- Replace.

**35. Drive axle with triple roller joint**

**36. Bolt M10 X 20 mm**
- 70 Nm (52 ft-lb)

**37. Bolt M10 x 62 mm**
- Replace.
- Load suspension when tightening. See **Curb weight position** in this repair group.

**38. Suspension upper mounting bracket**
- Replace.

**39. Self-locking nut**
- 50 Nm (37 ft-lb) plus additional 90°
- Replace.

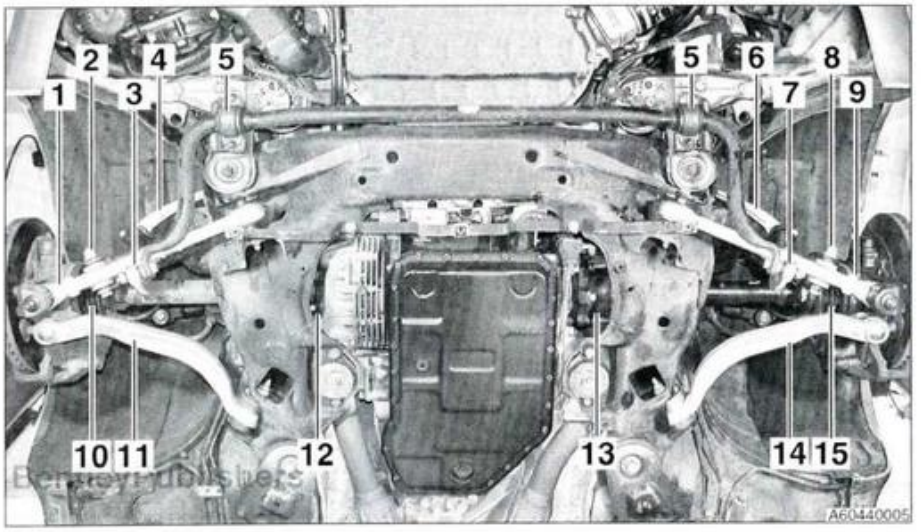
**40. Bolt, 23 Nm (17 ft-lb)**
- Replace.

## Front suspension control arms

Suspension arms are available separately or as a kit. Included in kit are:

- Upper front control arms
- Upper rear control arms
- Stabilizer bar links
- Lower rear control arms
- Lower front control arms
- Mounting hardware

See **Front suspension components** diagrams in this repair group for suspension arm locations and torque specifications.




## Suspension arm components

1. **Lower front control arm (right)**
2. **Lower strut mount (right)**
3. **Stabilizer bar link (right)**
4. **Upper rear control arm (right)**
5. **Stabilizer bar mounting bracket**
6. **Upper rear control arm (left)**
7. **Stabilizer bar link (left)**
8. **Lower strut mount (left)**
9. **Lower front control arm (left)**
10. **Outer CV boot (right)**
11. **Lower rear control arm (right)**
12. **Axle flange (right)**
13. **Axle flange (left)**
14. **Lower rear control arm (left)**
15. **Outer CV boot (left)**

# FRONT STABILIZER BAR

## Front stabilizer bar, removing and installing

– Raise car and support safely.

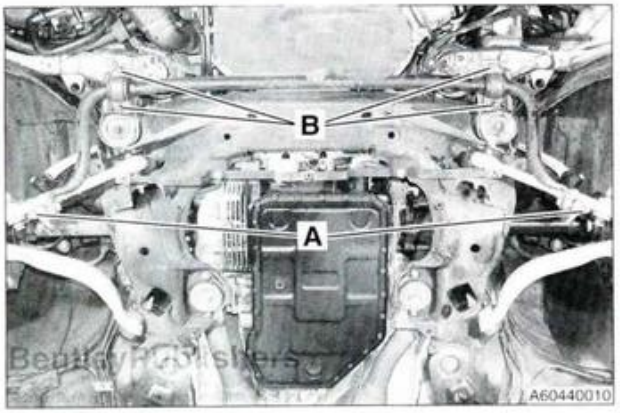
> ***WARNING*** —
> - *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove engine lower cover. See **03 Maintenance**.

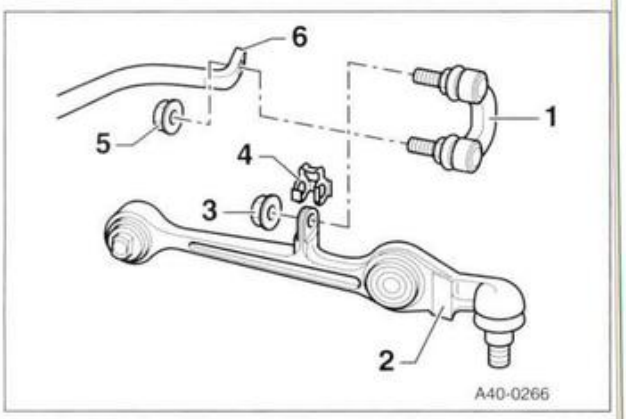
Remove stabilizer link nut (**A**).

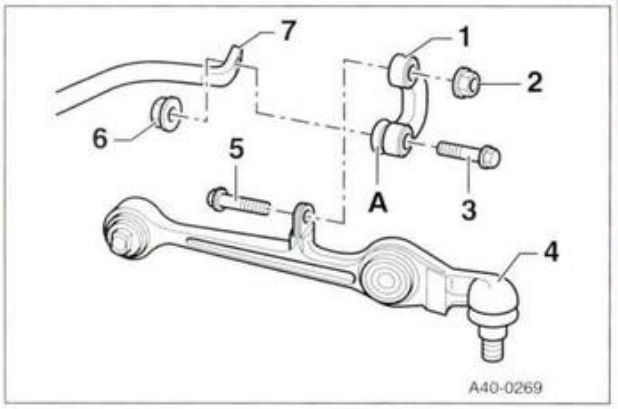
– Remove stabilizer link from bar.

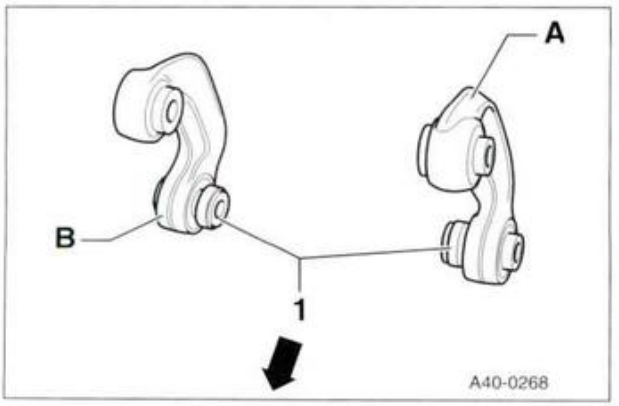
– Unscrew mounting bracket nuts (**B**) and remove stabilizer.



*Front Stabilizer Bar*




– Installation is reverse of removal. Remember to:
  - Match stabilizer bar to suspension version.
  - Mount bushing and stabilizer bar without grease.
  - Attach stabilizer bar links. See **Front stabilizer bar links** in this repair group.

| Tightening torque | |
|---|---|
| Stabilizer bar bracket to chassis (replace nuts) | 25 Nm (18 ft-lb) |

## Front stabilizer bar links

From model year 1999, stabilizer bar link with bonded rubber bushings replaces unit with ball joints.

### Link with ball joint

1. Link with ball joint
2. Lower front control arm
3. Self-locking nut, 40 Nm (30 ft-lb) plus additional 90°
4. Clip
5. Self-locking nut, 100 Nm (74 ft-lb)
6. Stabilizer bar

### Link with bonded rubber bushings

1. Link with rubber bushing (rubber bushing (**A**) with pressed-on spacer is bolted to stabilizer)
2. Self-locking nut, 40 Nm (30 ft-lb) plus additional 90° turn
3. Bolt
4. Lower front control arm
5. Bolt
6. Self-locking nut, 60 Nm (44 ft-lb)
7. Stabilizer bar

➤ Link (**A**) for left side of vehicle

– Link (**B**) for right side of vehicle

– Arrow on link points in direction of travel.

– Place fixed spacer (**1**) on stabilizer.

***CAUTION—***
- *To avoid damage, bonded rubber bushings may only be flexed to a limited extent. Tighten suspension bushing bolts with vehicle in curb weight position. See* **Curb weight position** *in this repair group.*

## FRONT DRIVE AXLES

### Front drive axle, removing and installing

– Remove hubcap. For alloy wheels pull off center cap (use pulling hook in vehicle tools).

– With vehicle standing on its wheels, loosen outer CV joint bolt a maximum of 90° turn.

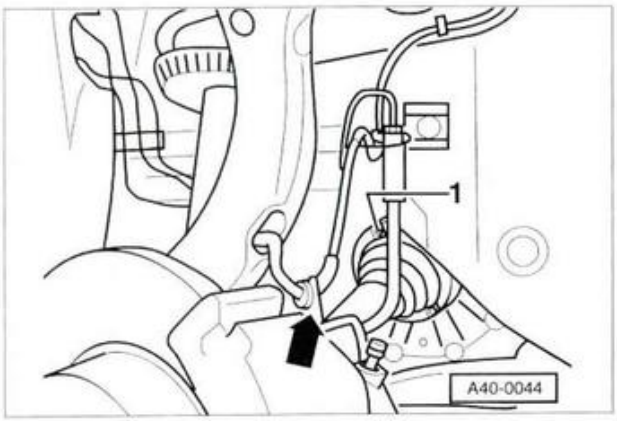
– Raise car and support safely.

> ***WARNING —***
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove wheel.

– Thread in all five wheel bolts again.

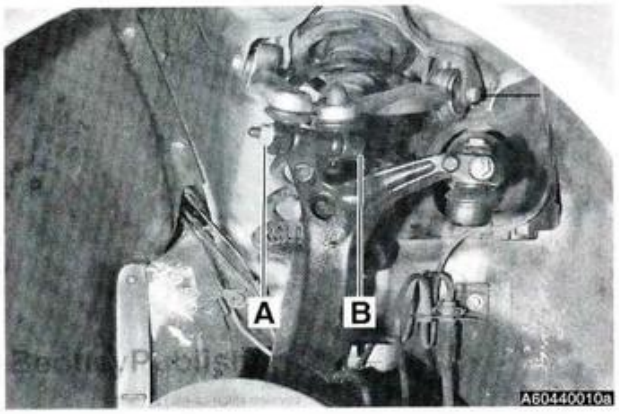
– With assistant operating brake, remove outer CV bolt.




➤ Unscrew drive axle bolts (**1**) from transmission flange.

– Pull ABS wheel speed sensor harness out of bracket on brake caliper (**arrow**).

– Pull ABS wheel speed sensor slightly out of wheel bearing housing.




➤ Remove nut (**A**) on front and rear upper control arm pinch bolt and remove pinch bolt (**B**).

– Release upper front and rear control arm outer ends from wheel bearing carrier

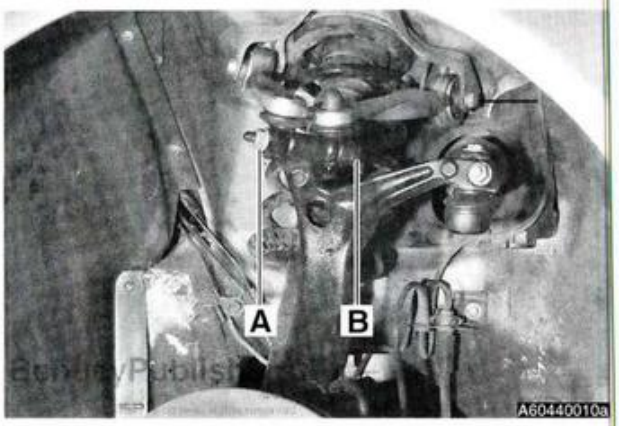
> ***CAUTION—***
> • *Do not use chisel or similar tool to widen slits in wheel bearing housing.*
> • *Do not remove bolts for outer tie rod end. Wheel alignment may change.*

– Swing wheel bearing carrier away from suspension strut.

– Work outer CV joint out of wheel bearing hub and remove drive axle.

– Repair or replace drive axle as necessary. For axle boot replacement procedure, see **CV joint boot, replacing** in this repair group.

– When installing, insert outer CV joint into wheel bearing hub first.




➤ Insert upper control arm ball joints in wheel bearing housing and press down as far as possible. Install new pinch bolt (**B**) and tighten nut (**A**).

– Bolt drive axle to transmission flange.

| Tightening torques | |
|---|---|
| Drive axle to transmission flange:<br>• M8 bolt<br>• M10 bolt | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Upper control arms to wheel bearing housing | 40 Nm (30 ft-lb) |

– Press ABS wheel speed sensor into wheel bearing housing and insert harness into bracket on brake caliper.

– With an assistant operating brake, tighten outer CV joint bolt to initial tightening torque.

***CAUTION—***
- *Do not allow vehicle to contact the ground when initially tightening outer CV joint bolt.*

| Tightening torques | |
|---|---|
| Drive axle to bearing hub (initial torque)<br>• M14 bolt<br>• M16 bolt | <br>115 Nm (85 ft-lb)<br>180 Nm (133 ft-lb) |

– Mount wheel and tighten.

| Tightening torque | |
|---|---|
| Wheel lugs to wheel bearing hub | 120 Nm (89 ft-lb) |

– Tighten bolt for drive axle to final tightening torque with vehicle standing on its wheels.

| Tightening torques | |
|---|---|
| Drive axle to bearing hub (final torque)<br>• M14 bolt<br>• M16 bolt | <br>115 Nm (85 ft-lb) + 180°<br>180 Nm (133 ft-lb) + 180° |

## CV joint boot, replacing

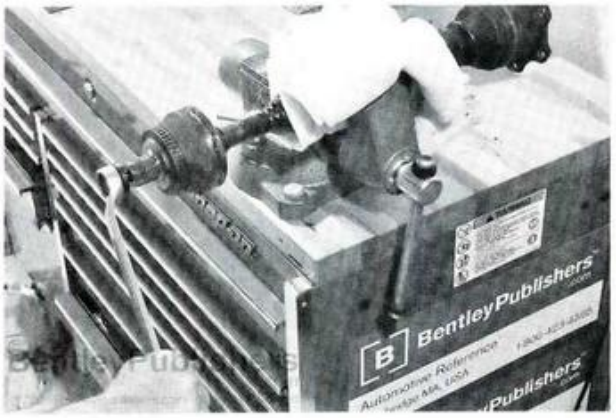
When replacing CV joint boot, use a complete repair kit including new boot, clamping bands, special lubricant and axle circlip.

If CV joints are worn or defective, a complete rebuilt axle shaft is available from an authorized Audi dealer.

– Remove drive axle. See **Front drive axle, removing and installing** in this repair group.

– Place drive axle on workbench in a padded vise.

– Cut off old boot clamps and remove boot.




➤ Screw old outer CV joint bolt into end of drive axle until CV joint pops free of axle circlip.

– Remove CV joint and clean old grease off joints and shaft.

– Inspect CV joint for galling, pitting and other signs of physical damage.

***NOTE***—

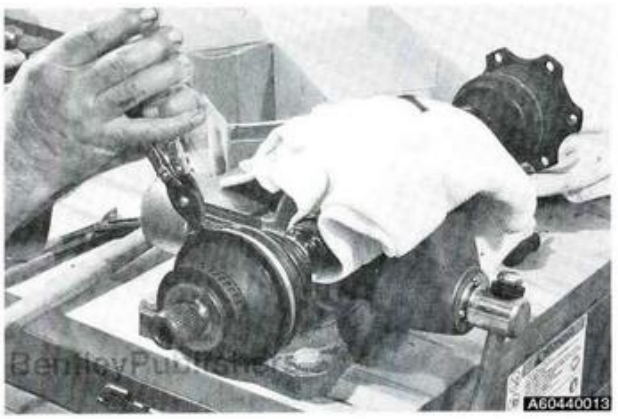
- *Polished surfaces or visible ball tracks alone are not necessarily cause for replacement. Discoloration due to overheating indicates lack of lubricant and the need for a new CV joint.*

➤ Snap new circlip into groove on end of axle shaft.

– Slide new small clamping band, CV boot and large clamping band on axle shaft.

– Apply special lubricant from CV boot repair kit to CV joint.

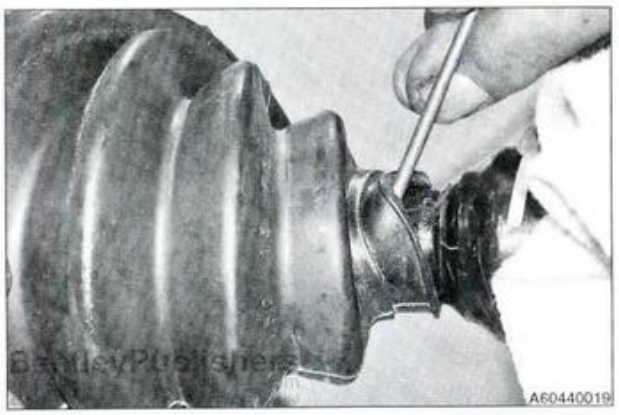
– While supporting axle shaft, press inner hub of CV joint on shaft. Make sure circlip snaps securely in place. Use a rubber mallet to drive joint on axle shaft, if necessary.




➤ Work large end of CV boot into place on joint. Use band clamp pliers to secure boot clamp.

***NOTE***—

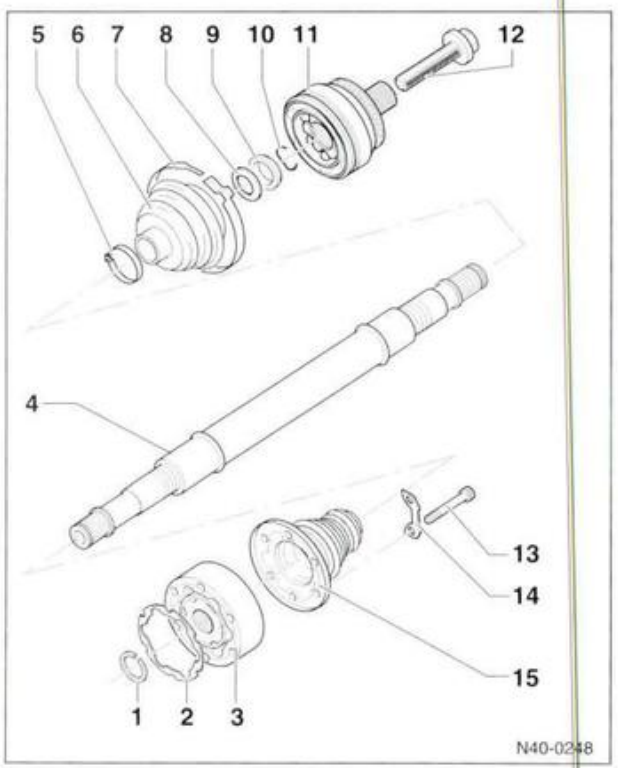
- *Make sure seal beading of boot fits in grooves on CV joint and axle shaft.*




➤ Swivel CV joint as far as it will go, thus compressing axle boot. Use a small screwdriver to "burp" excess air from boot. Be careful not to damage boot.

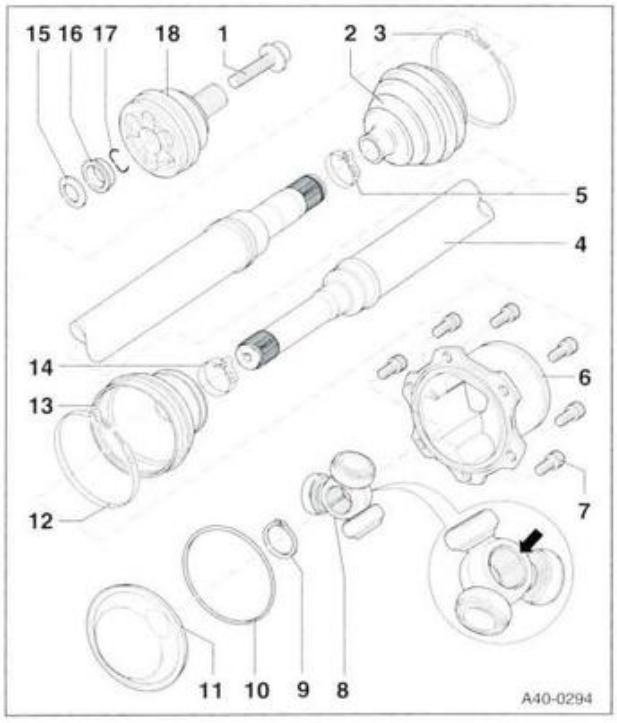
– Position small end of CV boot in place and tighten small clamping band over boot end.

– Reinstall drive axle using new axle bolt.



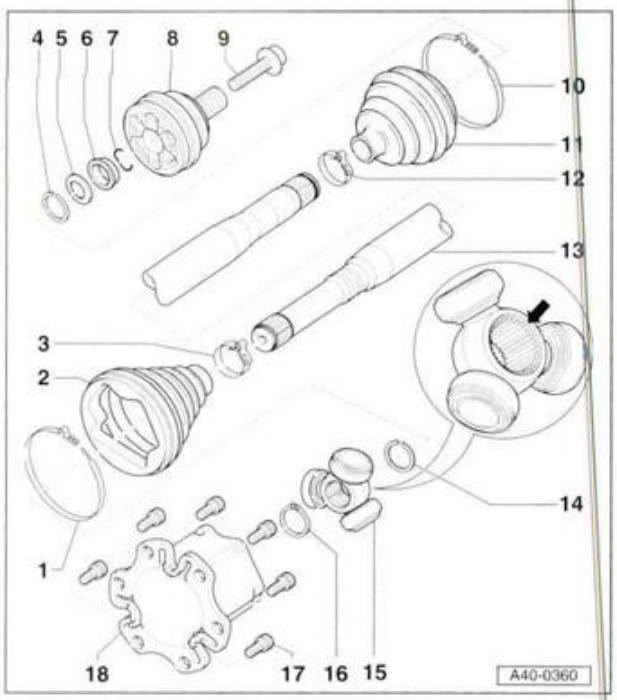

## Front drive axle assembly with inner CV joint

1. Circlip
   - Replace.
2. Gasket
   - Replace.
3. Inner CV joint
   - Outside diameter is 100 mm or 108 mm (3.94 in or 4.24 in), depending on engine/transmission combination.
   - Replace only as complete unit.
4. Drive axle shaft
5. Clamp
   - Replace.
6. CV boot
   - Check for tears and scuffing.
   - Before tightening small end clamp, "burp" CV boot.
7. Clamp
   - Replace.
8. Dished washer
   - Large diameter (concave side) rests against thrust washer.
9. Thrust washer
10. Circlip
    - Replace.
    - Insert in groove on shaft.
11. Outer CV joint
    - Replace only as complete unit.
    - Drive on shaft until circlip snaps into place.
12. Bolt
    - Replace.
    - M14 bolt: 115 Nm (85 ft-lb) plus additional 180° (½ turn).
    - M16 bolt: 190 Nm (140 ft-lb) plus additional 180° (½ turn).
13. Bolt
    - M8 x 48 mm: 40 Nm (30 ft-lb).
    - M10 x 48 mm: 70 Nm (52 ft-lb).
14. Reinforcing plate
15. Inner CV joint boot.
    - Check for tears and scuffing.
    - Spread D 454 300 A2 or equivalent sealer on sealing surface before mounting on CV joint.




## Front drive axle assembly with inner triple roller joint (AAR 2900)

1. Bolt
   - Replace.
   - M16 bolt: 190 Nm (140 ft-lb) plus an additional 180° (½ turn).
2. Outer CV boot
   - Check for tears and scuffing.
   - Before tightening small end hose clamp, "burp" boot.
3. Clamp (matched to boot)
   - Replace.
4. Drive axle
5. Clamp (matched to boot).
   - Replace.
6. Housing
7. Socket-head bolt
   - M 10 x 20 mm: 70 Nm (52 ft-lb).
8. Triple roller
   - Chamfer (**arrow**) faces splines of drive axle.
9. Circlip
   - Replace.
   - Insert in groove on shaft.
10. Sealing ring
    - Replace with new seal supplied in repair kit.
11. Cover
    - Replace.
12. Clamp (matched to boot)
    - Replace.
13. Boot for triple roller joint
14. Clamp
    - Replace.
15. Dished washer
16. Spacer ring (plastic)
17. Circlip
    - Replace.
    - Insert in ring groove of shaft before installation.
18. Outer CV joint
    - Replace only as complete unit.
    - Drive on shaft until circlip snaps in.




## Front drive axle assembly inner triple roller joint (AAR 3300i)

1. Clamp (matched to boot)
   - Replace.
2. CV boot for triple roller joint
3. Clamp
   - Replace.
4. Circlip
5. Dished washer
6. Spacer ring (plastic)
7. Circlip
   - Replace.
   - Insert in ring groove of shaft before installation.
8. Outer CV joint
   - Replace only as complete unit
   - Drive on shaft until circlip snaps in.
9. Bolt
   - Replace.
   - M16 bolt: 190 Nm (140 ft-lb) plus additional 180° (½ turn).
10. Clamp (matched to boot)
    - Replace.
11. CV boot for outer CV joint
    - Check for tears and scuffing.
    - Before tightening small end clamp, "burp" CV boot.
12. Clamp
    - Replace.
13. Drive axle
14. Circlip
15. Triple roller connection
    - Chamfer (**arrow**) faces splines of drive axle.
16. Circlip
    - Replace.
    - Insert in groove on shaft.
17. Socket-head bolt
    - M 10 x 20 mm; 70 Nm (52 ft-lb).
18. Housing

# 42 Rear Suspension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## GENERAL

This section covers repairs to the rear suspension and related components. Also see:

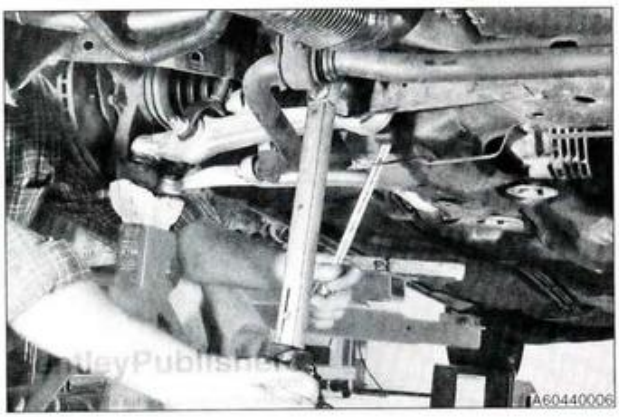
- **40 Front Suspension** for rear suspension servicing and repair information
- **44 Wheels, Tires, Wheel Alignment** for wheel alignment specifications

Special tools, equipment and procedures are required for most rear suspension repair and component replacement. On suspension components with bonded rubber bushings, tighten fasteners with vehicle at curb weight position. See **Curb weight position** in this repair group.

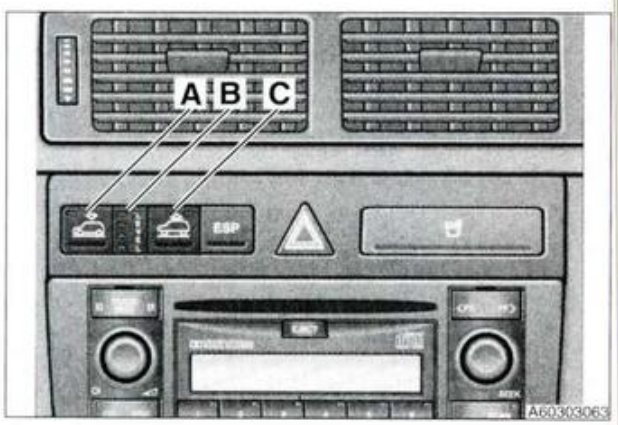
Wheel alignment is almost always disturbed when suspension components are removed or replaced. Plan on a wheel alignment after suspension repairs.

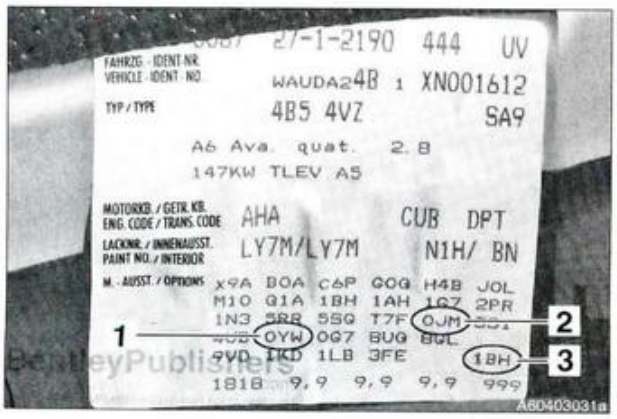
### Curb weight position

Bonded rubber bushings can only be flexed to a limited extent. Place suspension under load (curb weight position) before tightening suspension arms with bonded rubber bushings.




In this illustration jack stands and wheel ramps are used to place vehicle at curb weight position. Then tighten suspension arms with bonded rubber bushings to torque specification.




## allroad quattro "jack mode"

Prior to jacking or lifting allroad quattro vehicle, set ride height control to "jack mode" to protect suspension shock absorbers and struts.

> ***WARNING*** —
> • *Make sure that no one is lying under the vehicle or has head or hands in the wheel housing while the ride height is changing.*

### Activating

Before lifting vehicle with jack or lift:

- Switch ignition ON.
- Press ride height control buttons **A** and **C** in center dashboard for at least 5 seconds.
- When system is in "jack mode", LEDs on control buttons (**A** and **C**), yellow LED for manual mode on level indicator (**B**) and warning light for level control in instrument cluster all illuminate.

– Switch ignition OFF and lift or jack vehicle.

### Deactivating

– Press control buttons **1** and **3** for at least 5 seconds. Warning light in instrument cluster, LED for manual mode and control button LEDs turn OFF.

"Jack mode" is automatically deactivated when vehicle speed exceeds 3 mph (5 kph).

## Suspension codes (part numbers)

The spring/shock absorber combination installed in the vehicle is documented by part number on the vehicle data sticker. The vehicle data sticker is located in the spare tire well and in the service booklet.

Example of a vehicle data sticker.

1. Rear axle designation
2. Front axle designation
3. Suspension code

Match to strut and coil spring codes found in Audi parts data.

See **44 Wheels, Tires, Alignment** for more information about suspension codes.

## Warnings and Cautions

***WARNING*** —

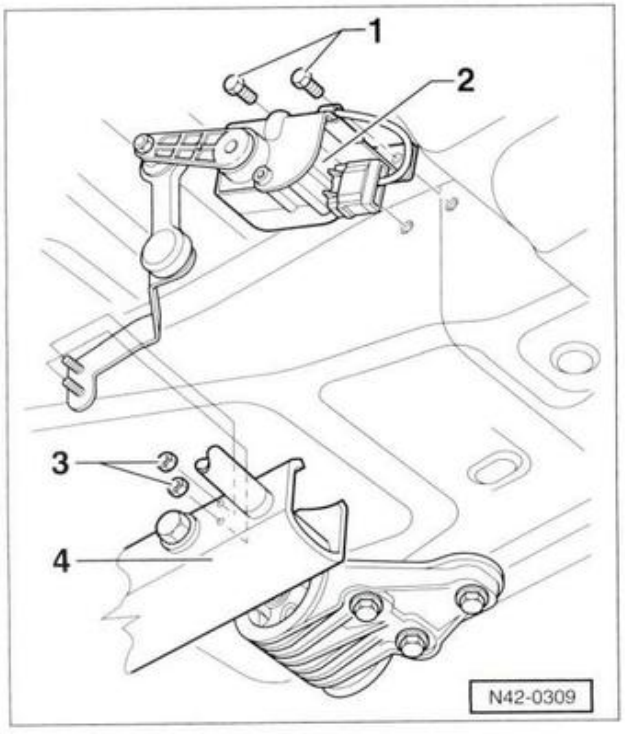
- *Most fasteners are designed to be used only once and become unreliable and may fail when used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips, cotter pins, self-locking nuts and bolts. For replacements, use new parts.*
- *Do not reinstall bolts and nuts coated with undercoating wax. Clean the threads with a suitable solvent before installing.*
- *Replace rusted or corroded bolts, nuts and washers even if not specifically indicated.*
- *Do not attempt to straighten or weld suspension struts, wheel bearing housings, control arms or any other wheel locating or load bearing components of the front suspension.*

***CAUTION*** —

- *To avoid wheel bearing damage, do not move vehicle without drive axle(s). If vehicle needs to be moved, install an outer joint in place of the drive axle. Tighten outer joint to 115 Nm (85 ft-lb) for M14 bolt or 190 Nm (140 ft-lb) for M16 bolt.*
- *Bonded rubber bushings may only be flexed to a limited extent. See* **Curb weight position** *in this repair group.*
- *Before performing suspension work on allroad quattro, see* **allroad quattro "jack mode"** *in this repair group.*

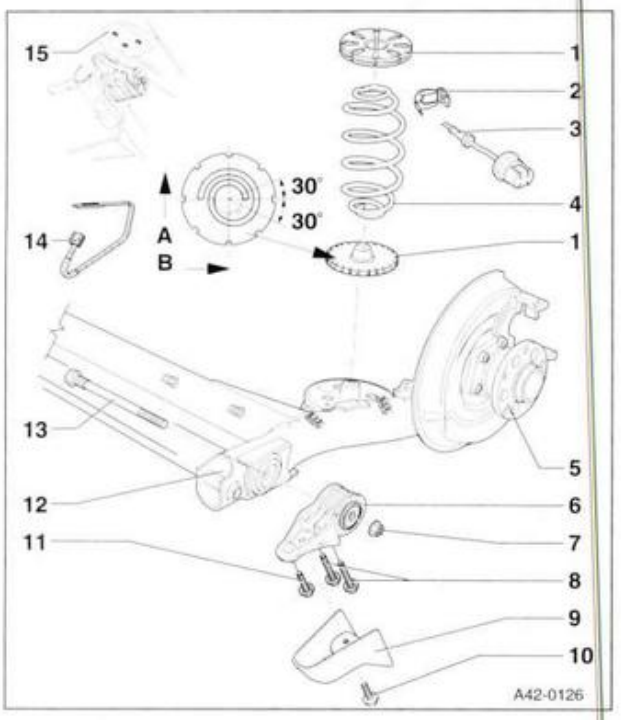
# Rear Suspension

## Vehicle level sensor (front-wheel drive)



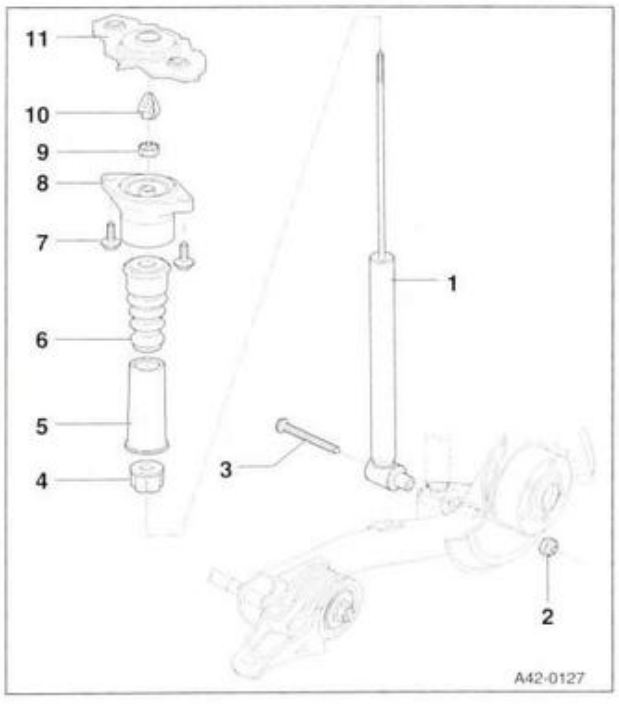

Vehicle with automatic headlight vertical aim control is equipped with vehicle level sensor.

1. Bolt
2. Left rear level control system sensor (G76)
   - Checked via on-board diagnostics (OBD).
   - Do not remove coupling link from ball head.
3. Self-locking nut, 10 Nm (7 ft-lb)
   - Replace
4. Rear axle beam



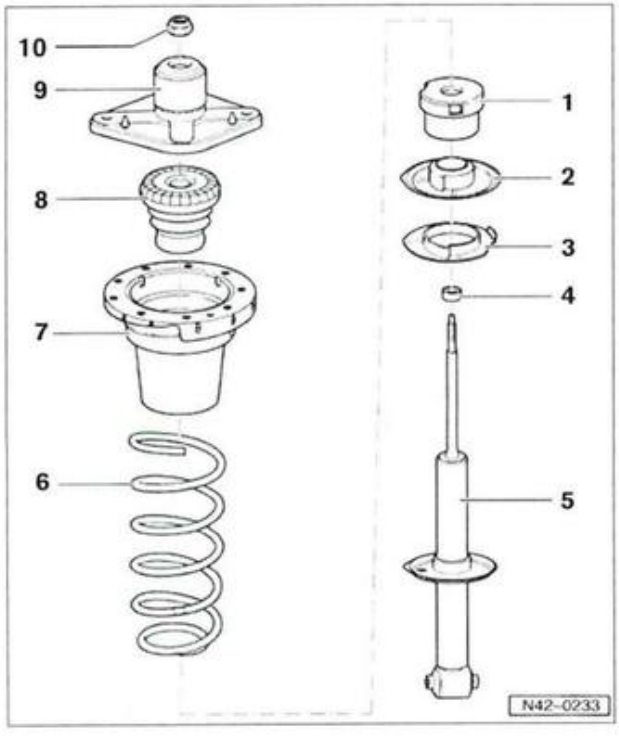

## Rear axle components (front-wheel drive)

1. Upper spring seat
2. ABS wheel speed sensor bracket
3. ABS wheel speed sensor
4. Coil spring
   - See **Shock absorber (front wheel drive), removing and installing** in this repair group
   - Make sure surface of spring coil is not damaged
   - Different types of springs are used for different applications
   - Make sure bottom end of coil spring rests in spring base as shown
   - (Arrow **A**) shows direction of travel
   - (Arrow **B**) points right
   - Bottom turns of spring have markings which must point backward during installation
5. Wheel bearing
   - When replacing, also replace ABS wheel speed sensor
6. Mounting bracket
   - After installation check settings and adjust, if necessary
   - Use special care when starting bolts
   - Do not mix cast and forged mounting brackets
7. Nut
   - Always replace
8. Bolt M12 x 1.5 x 90 mm
   - Always replace after disassembly
   - 110 Nm (81 ft-lb) plus additional 90°
9. Stone impact protection plate for mounting bracket
   - Only for rough terrain suspension
10. Bolt, 10 Nm
11. Bolt M12 x 1.5 x 60 mm
    - Always replace
    - Use special care when starting bolts
    - 110 Nm (81 ft-lb) plus additional 90°
12. Axle beam
13. Bolt M14 x 1.5 x 190 mm
    - 120 Nm (120 ft-lb) plus additional 90°
    - Always replace after disassembly
14. Retaining strap
15. Thread in side member
    - Use special care when starting bolts




## Shock absorber (front-wheel drive)

1. Gas-filled shock absorber
   - Individually replaceable
   - Shock absorbers vary with application.
   - Dispose of properly
   - Check shock absorber for leaks and noises
2. Nut
   - Always replace after disassembly
3. Bolt M10 x 90 mm
   - Always replace after disassembly
   - Only tighten when vehicle is standing on its wheels.
   - 50 Nm (37 ft-lb) plus an additional 90°
4. Protective cap
   - Press on until it stops
5. Protective tube
6. Stop buffer
7. Bolt, 45 Nm (33 ft-lb)
8. Shock absorber upper mount
9. Self-locking nut, 25 Nm (18 ft-lb)
   - Always replace after disassembly
10. Installation cap
    - Only for factory installation, not used for repairs.
11. Thread in wheel housing

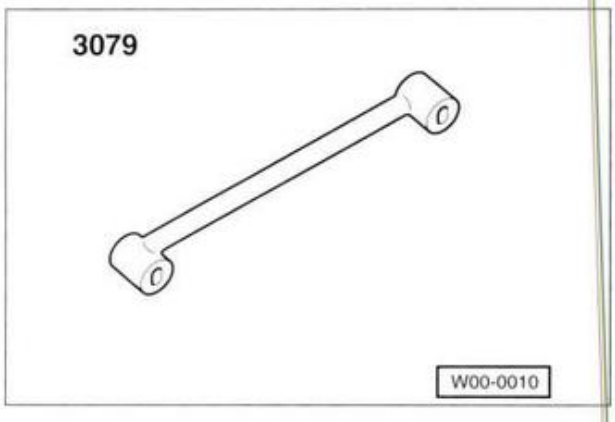



## Shock absorber (quattro)

1. Protective cap
   - Preinstalled on shock absorber
2. Rubber insert
   - Preinstalled on shock absorber
3. Spring seat
4. Spacer ring
   - The spacer ring is only present on "Bilstein" shock absorbers. Do not install on shock absorbers of a different make.
5. Gas shock absorber
   - individually replaceable
   - Disposal of properly.
   - Check shock absorber for leaks and noises.
6. Coil spring
   - Check for paint damage, repair if necessary
   - After installation, ends should lie in stop the rubber inserts.
7. Spring support with protective tube
   - Consists of two parts
8. Buffer stop
9. Shock absorber mount
   - Self-locking nuts, 27 Nm
   - Always replace

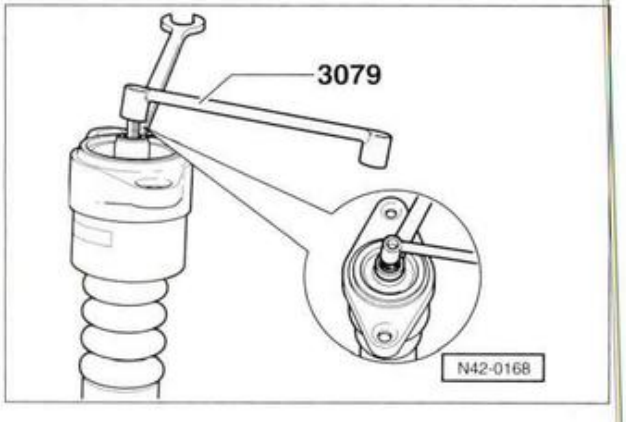
## Shock absorber (front-wheel drive), removing and installing

### Special tools and equipment

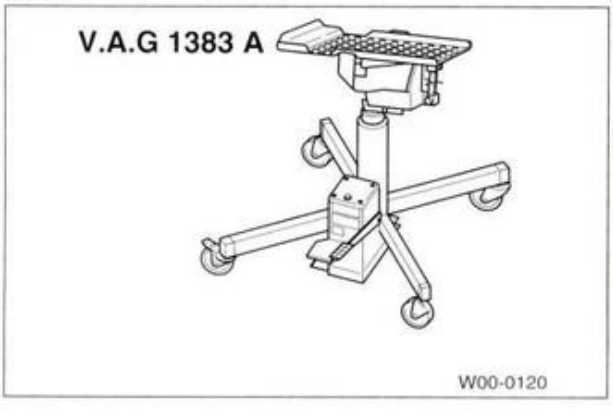



➤ 3079 counter hold tool

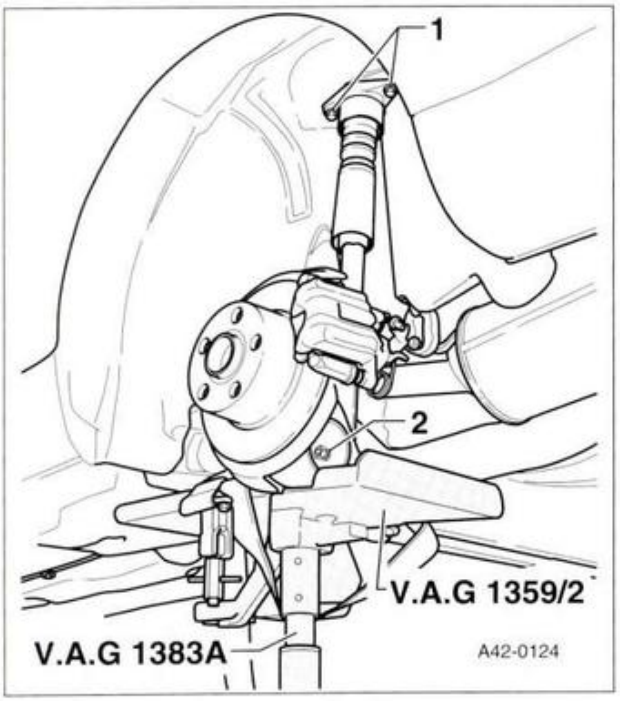
– Remove installation cap at top of shock absorber.




➤ If removing shock absorber from mount, use special tool 3079 to counterhold shock strut when removing upper nut.




➤ Use VAG 1383 A (engine and transmission jack) and VAG 1359/2 (support bracket) to support rear suspension arm.




### Removing

– Raise vehicle and support safely. Remove wheel.

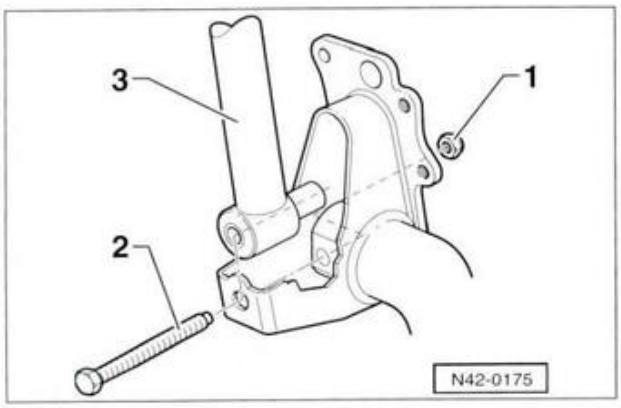
> ***WARNING —***
> *• Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Place engine/transmission jack underneath wheel bearing hub and raise to relieve coil spring tension.

➤ Remove bolt (**2**), and lower engine / transmission jack.

– With assistant pulling down rear axle, remove coil spring.

– Unscrew bolts (**1**) at top and remove shock absorber.




### Installing

– Insert shock absorber in body and tighten to 45 Nm (33 ft-lb).

– With assistant pulling down rear axle, install coil spring.

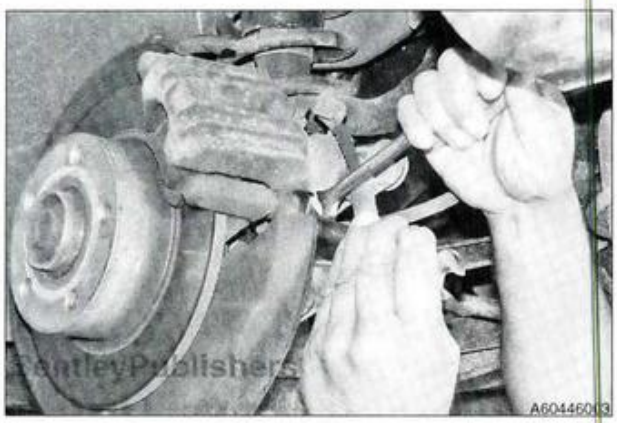
➤ Install lower shock absorber bushing to rear axle bolt.

> ***CAUTION—***
> *• Use new fasteners.*

1. Self-locking nut
2. Bolt
3. Shock absorber

– Tighten lower shock absorber to rear axle bolt with vehicle suspension loaded.

| **Tightening torque** | |
|---|---|
| Shock absorber to rear axle | 50 Nm (37 ft-lb) + 90° |



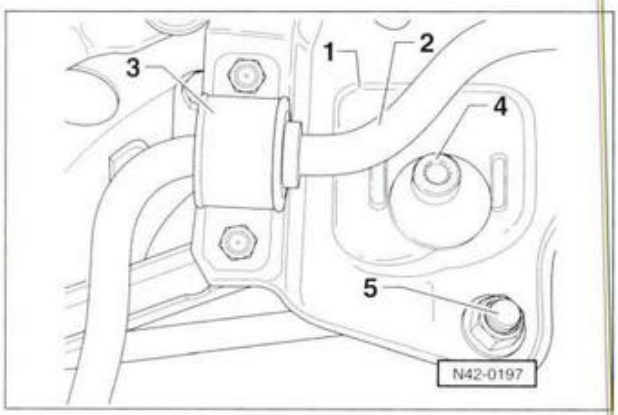

## Shock absorber (quattro), removing and installing

– Raise car and support safely. Remove rear wheel.

> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

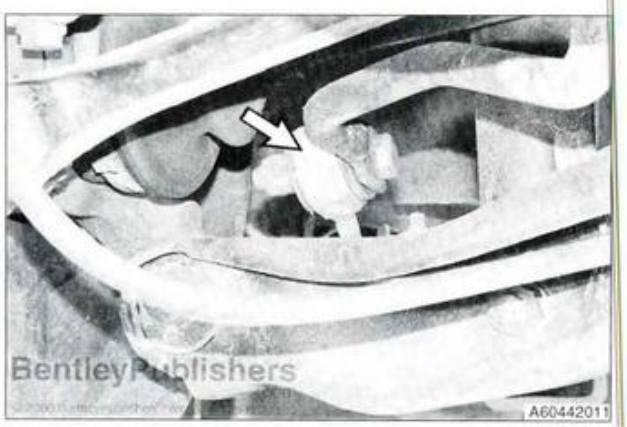
➤ Counterhold lower guide pin and remove self-locking bolt from brake caliper housing.

– Remove upper caliper guide bolt and hang caliper from chassis using stiff wire.

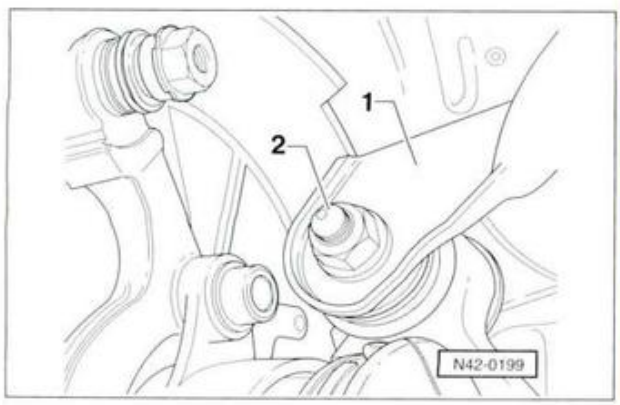



➤ Remove clamp (**3**) for stabilizer bar (**2**).

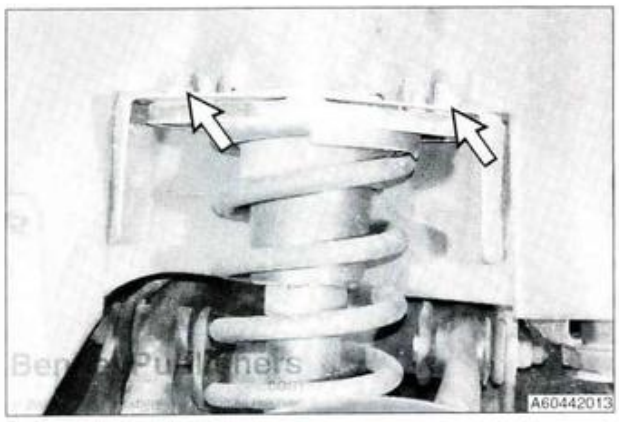
1. Axle beam
2. Eccentric bolt



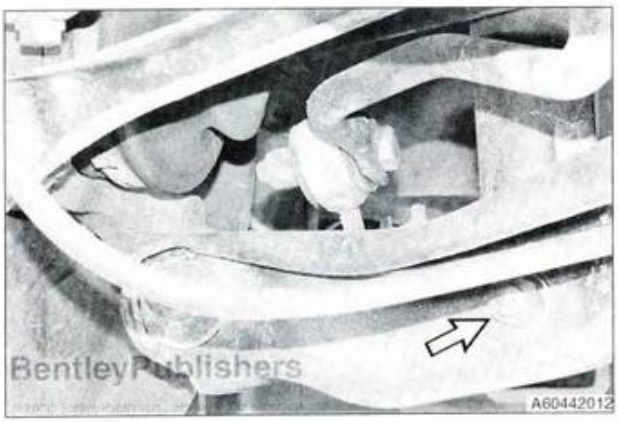

➤ Remove stabilizer bar link (**arrow**) at bar.




➤ Remove bolt (**2**) for link (**1**).




➤ Working in wheel well, remove upper shock absorber mounting bolts (**arrows**).




➤ Unscrew lower mounting bolt (**arrow**) for shock absorber and remove shock absorber.

– To remove shock absorber, pull wheel bearing housing down a little.

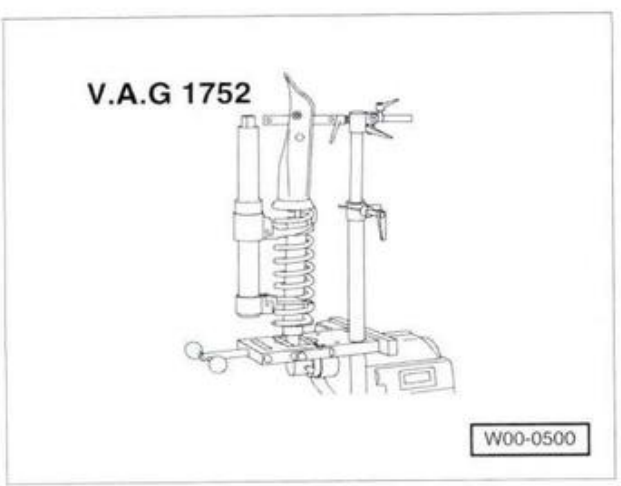
– Installation is reverse of removal. Remember to tighten suspension bolts with suspension loaded. See **Curb weight position** in this repair group.

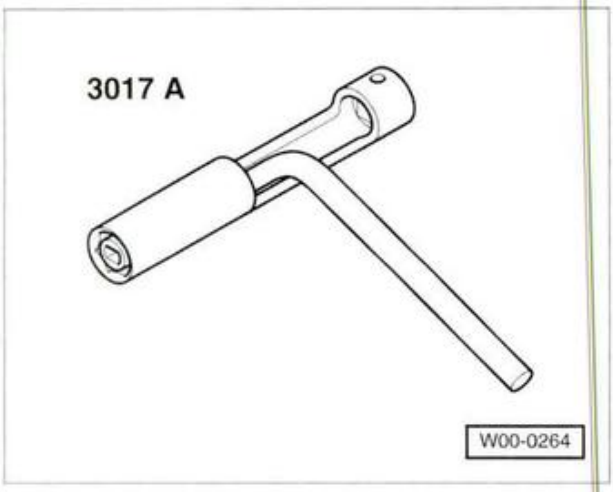
| **Tightening torques** | |
|---|---|
| Stabilizer bar clamp to axle beam | 25 Nm (18 ft-lb) |
| Coupling rod to stabilizer bar | 50 Nm (37 ft-lb) |
| Link to wheel bearing housing | 70 Nm (52 ft-lb) + 90° turn |
| Shock absorber to body | 45 Nm (33 ft-lb) |
| Shock absorber to link (always replace bolts) | 70 Nm (52 ft-lb) + 90° turn |
| Brake caliper to bracket (always replace bolts) | 30 Nm (22 ft-lb) |

## Shock absorber (quattro), disassembling and assembling

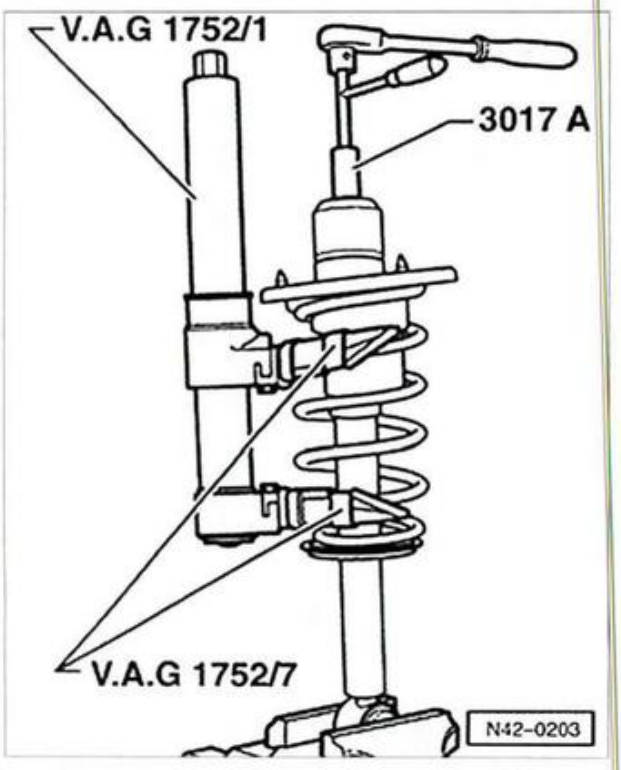
The following tools are required for this job:

➤ Spring compressor (Volkswagen spring compressor kit VAG 1752 or equivalent).






➤ Volkswagen special wrench 3017 A or equivalent.




**Disassembling**

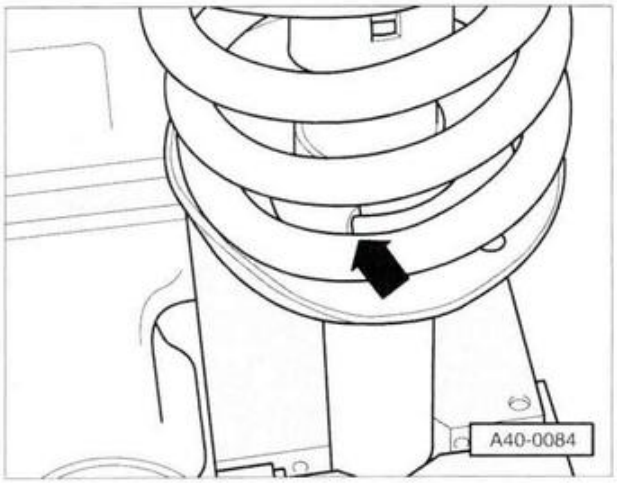
➤ Install spring compressor (VAG1752/1 or equivalent) onto coil spring.

***WARNING*** —
*• Make sure spring compressor jaws are fully seated in spring.*

– Pre-load coil spring using Spring Compressor VAG1752/1 far enough until top shock absorber mount is free.

– Remove nut from push rod using Volkswagen special wrench 3017 A or equivalent.

– Remove coil spring and individual parts from shock absorber.

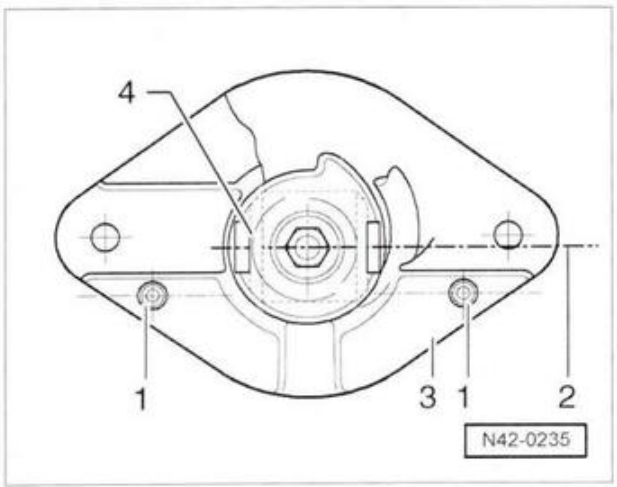



### Assembling

Installation is performed in the reverse order of removal, noting the following:

➤ Top and bottom ends of spring must rest against stop of spring support (**arrow**).

- Illustration shows lower spring end. Lower spring end must point toward center of vehicle.



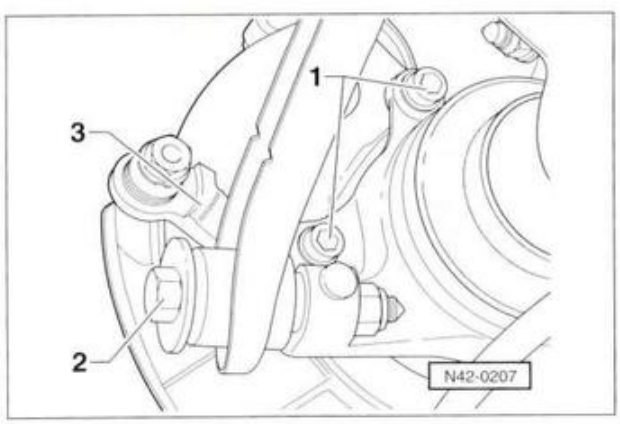

➤ Installed position of shock absorber mount (**3**):

- Mount bolts (**1**) must align with axis (**2**) of bottom shock absorber bushing (**4**).
- Mount bolts (**1**) face outside of vehicle.

## Stabilizer bar, removing and installing

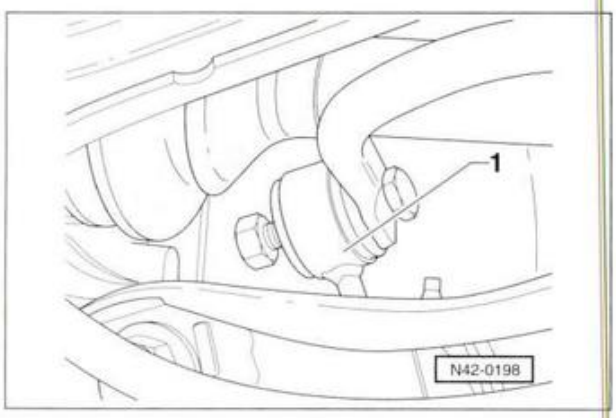
– Raise vehicle and support safely. Remove wheel.

> ***WARNING*** —
> - *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

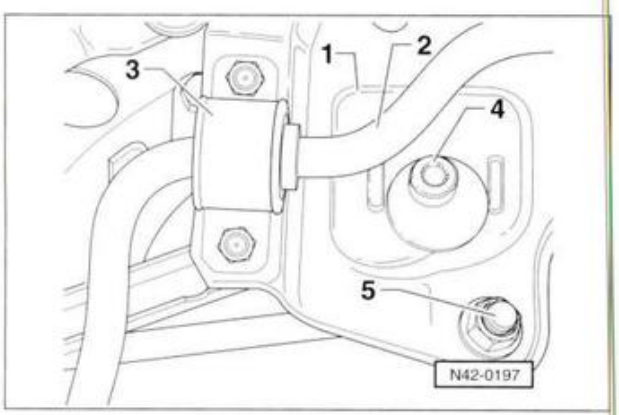



➤ Unscrew attachment screws (**1**) from brake caliper.

*Rear Suspension*

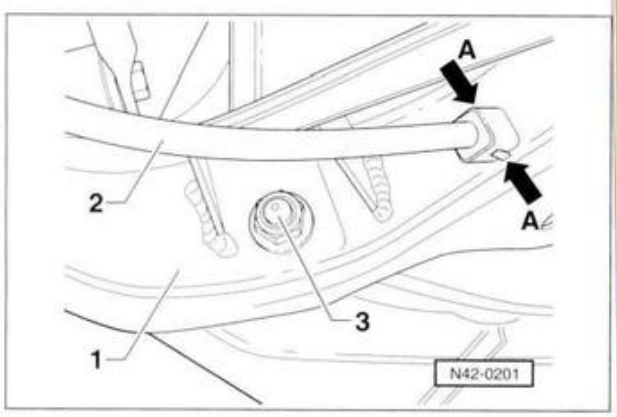



➤ Detach link (**1**) from stabilizer bar.




➤ Remove clamp (**3**) for stabilizer (**2**).

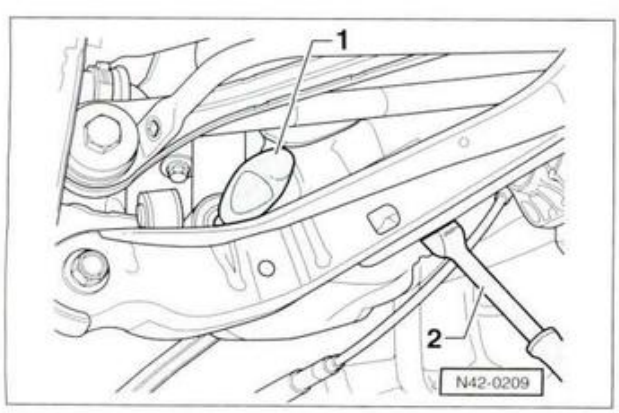
1. Axle beam
2. Eccentric bolt




➤ Unscrew bolt (**3**) for shock absorber at lower control arm.

- **1** Control arm
- **2** Parking brake cable
- **3** Bolt for shock absorber
- **A** Holding clip for parking brake cable

– Pull wheel bearing housing downward along with lower control arm.




➤ Push drift (**2**) or through hole of shock absorber bushing.

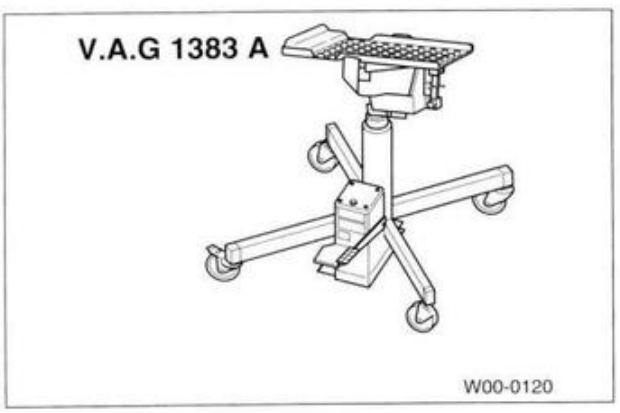
– Unscrew lower hex bolt for coupling link and remove stabilizer bar.

– Installation is reverse of removal.

| Tightening torques | |
|---|---|
| Shock absorber to control arm (use new bolts) | 70 Nm (52 ft-lb) + 90° |
| Coupling link to wheel bearing | 55 Nm (41 ft-lb |
| Coupling link to stabilizer | 50 Nm (37 ft-lb) |
| Stabilizer bar clamp to axle beam | 25 Nm (18 ft-lb) |
| Brake caliper to wheel bearing housing (steel) | 95 Nm (70 ft-lb) |
| Brake caliper to wheel bearing housing (aluminum) | 70 Nm (52 ft-lb) + 90° |

## REAR DRIVE AXLES

### Rear drive axle, removing and installing




➤ Use VAG 1383 A (engine and transmission jack) to support rear suspension arm during this procedure.

– With vehicle standing on its wheels, loosen axle collar bolt 90°.

***WARNING*** —
- *Vehicle must be standing on its wheels when loosening and tightening collar bolt.*
- *Only loosen collar bolt 90°; otherwise wheel bearing will be damaged*

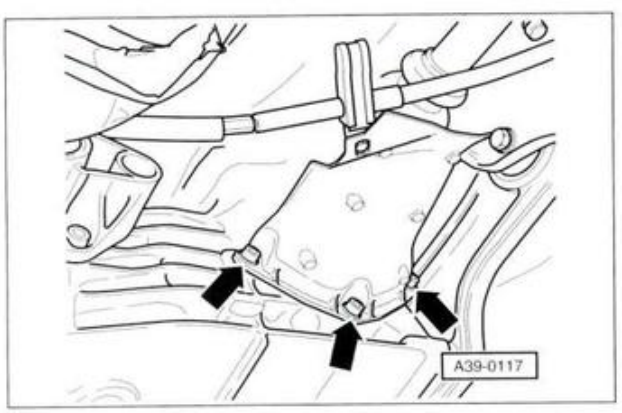
– Raise car and support safely.

***WARNING*** —
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove wheel.

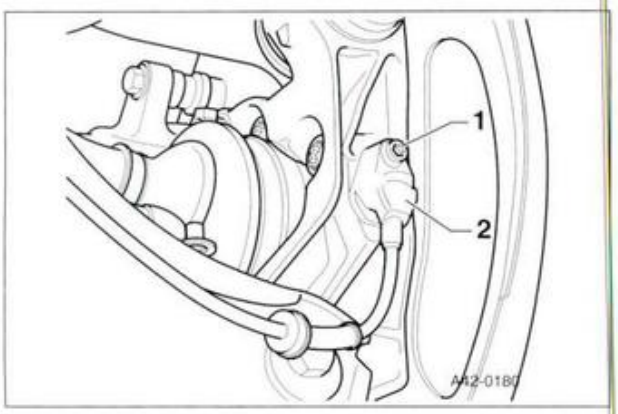
– Secure brake disc using wheel bolts.

– Remove bolt for drive axle.




➤ Remove heat shield for drive axle (**arrows**).

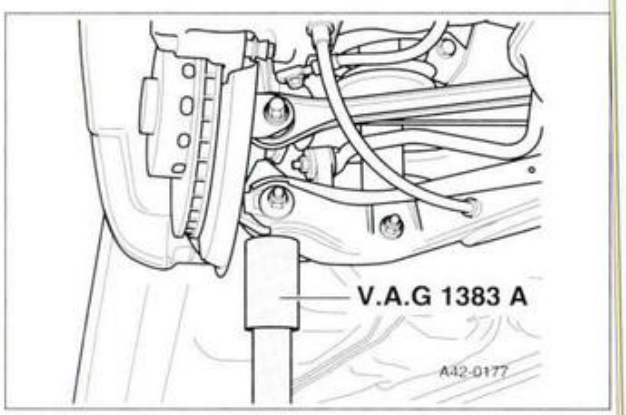
– Unscrew drive axle from differential flange.




➤ Remove Allen bolt (**1**).

– Remove ABS wheel speed sensor (**2**) from wheel bearing housing.

– Loosen exhaust system in back, and secure to body. See **26 Exhaust System**.




➤ Support lower control arm with VAG1383 A.

– Pound drive axle out of wheel hub with plastic hammer, if necessary.

– Remove drive axle.

– When installing, Place outer CV joint in wheel bearing hub. Install and tighten differential flange bolts.

– With an assistant operating the brake, install and tighten bolt for drive axle to initial tightening torque.

***CAUTION—***
- *Do not allow vehicle to contact the ground when initially tightening outer CV joint bolt.*

| **Tightening torques** | |
|---|---|
| Drive axle to bearing hub (initial torque)<br>• M14 (use new bolt)<br>• M16 (use new bolt) | <br>115 Nm (85 ft-lb)<br>190 Nm (140 ft-lb) |
| Drive axle to differential flange:<br>• M8<br>• M10 | <br>40 Nm (30 ft-lb)<br>70 Nm (52 ft-lb) |
| Heat shield to chassis | 25 Nm (18 ft-lb) |

– Mount wheel and lower vehicle to ground.

| **Tightening torque** | |
|---|---|
| Wheel lugs to wheel bearing hub | 120 Nm (89 ft-lb) |

– Tighten drive axle to final torque specification (initial specification plus an additional 180°).

| **Tightening torques** | |
|---|---|
| Drive axle to bearing hub (final torque)<br>• M14 bolt<br>• M16 bolt | <br>115 Nm (85 ft-lb) + 180°<br>190 Nm (140 ft-lb) + 180° |

# 44 Wheels, Tires, Alignment


GENERAL . . . . . 44-1

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WHEEL ALIGNMENT . . . . . 44-5

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c. Wheel alignment data–quattro (V8 engines) . . . . . 44-8

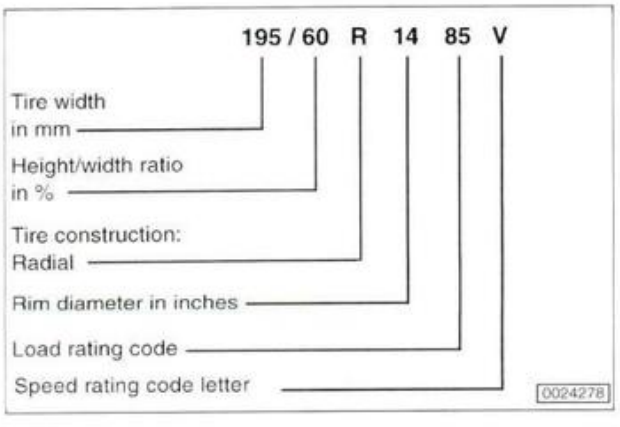
d. Wheel alignment data–allroad quattro . . . . . 44-9




## GENERAL

This section covers basic tire, wheel, and wheel alignment information. Also covered here are wheel alignment specifications to be used in conjunction with professional alignment tools and measuring equipment.

## WHEELS AND TIRES




➢ Wheels and tires approved by the manufacturer are matched to the vehicle and contribute largely to the road handling and driving characteristics. Replace tires with tires having the same specifications with regard to size, design, load carrying capacity, speed rating, tread pattern, tread depth, etc. This information can be found on the tire sidewall.

Audi recommends that tires be rotated front to rear, with the tires remaining on the same side of the vehicle. For tire rotation schedules and general tire and wheel service information, see **03 Maintenance**.

– When installing wheel bolts, they should be snugged down in a diagonal pattern and then tightened to final torque using the same pattern.

| Tightening torque | |
|---|---|
| Wheel bolt to wheel hub | 120 Nm (90 ft-lb) |

### Tire mounting

Models covered by this manual are equipped with alloy wheels. Use tire mounting equipment designed for use with alloy wheels to avoid damage to the wheel and tire.

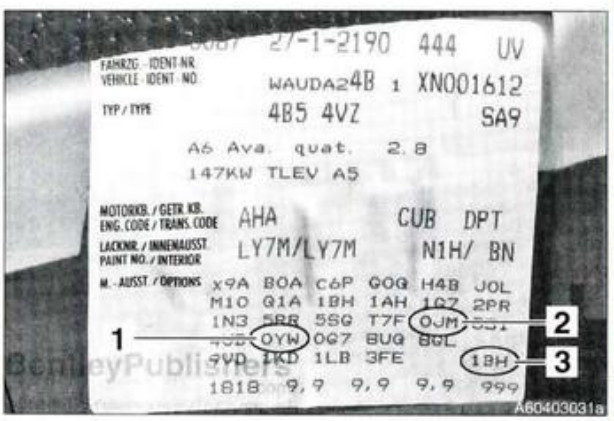
### Alloy wheel valve replacement

On some models with alloy wheels, metal valve stems are installed in place of the conventional rubber valve stems. Replace metal valve stem each time the tire is changed.

## Suspension codes (part numbers)

Various suspensions are offered as options. These are identified by part numbers

The suspension version installed is indicated by the factory weight code on the vehicle data sticker. The vehicle data sticker is located in the spare tire well and in the owner's manual.




Example of a vehicle data sticker.

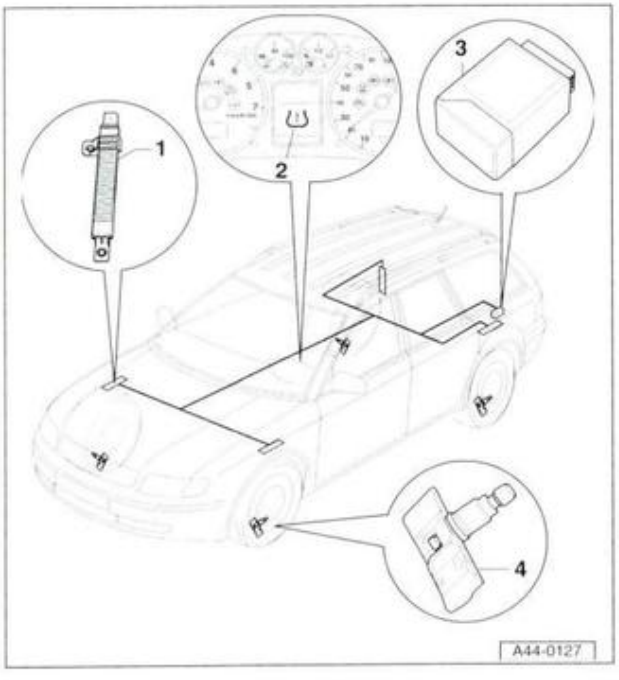
1. Rear axle designation
2. Front axle designation
3. Suspension code

The following table shows the meaning of the part numbers which are critical for wheel alignment. (In this example vehicle has USA suspension 1BH.)

- 1BA = standard suspension
- 1BE = sport suspension
- 1BP = rough terrain suspension 1 (curb weight position like 1BA, but with spring limitation)
- 1BT = rough terrain suspension 1= and slight reinforcement (about 7 mm raised position)
- 1BB = rough terrain suspension 2 (about 20 mm raised position)
- 1BG = suspension with level control system
- 1BC = special-purpose vehicles (fire department, medical emergency, police, etc.)
- 1BH = suspension for USA
- 1BD = Audi S6 sport suspension
- 1BJ = suspension for light armor
- 1BY = suspension for allroad (4-wheel air suspension)
- 1BV = sports suspension Audi RS6 quattro
- 2MC = sports suspension Audi RS6 quattro (sport suspension with variable shock absorber)
- 2ME = sports suspension Audi RS6 quattro (super sport suspension with shock absorber)

## Tire Pressure Monitoring System

Some models covered by this manual are equipped with a sophisticated tire pressure monitoring system. Transmitters in each wheel send tire pressure information to a control module located in the left rear of the trunk. If a loss of pressure is detected, a low pressure warning light is displayed on the instrument cluster.

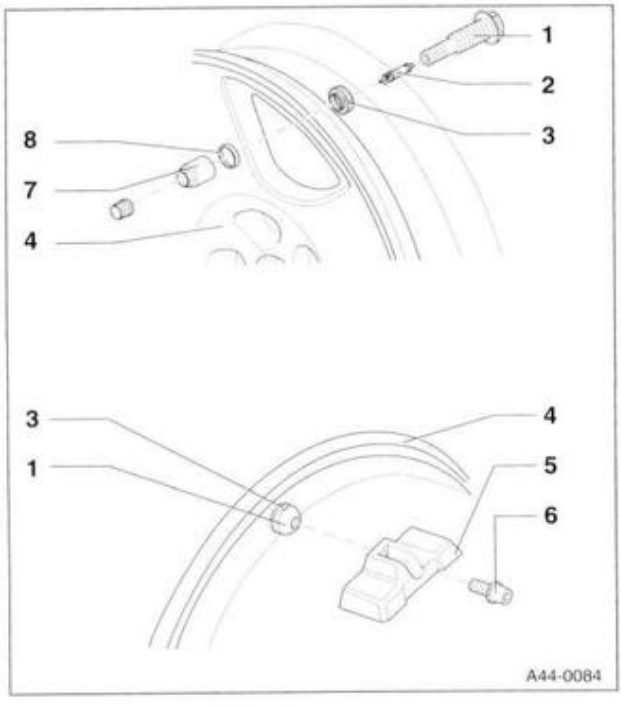



### Tire pressure monitoring components

1. Antenna (4x)
2. Display on instrument panel
3. Tire pressure monitoring control module (J502)
   - Left rear of trunk
4. Wheel electronics (4x)

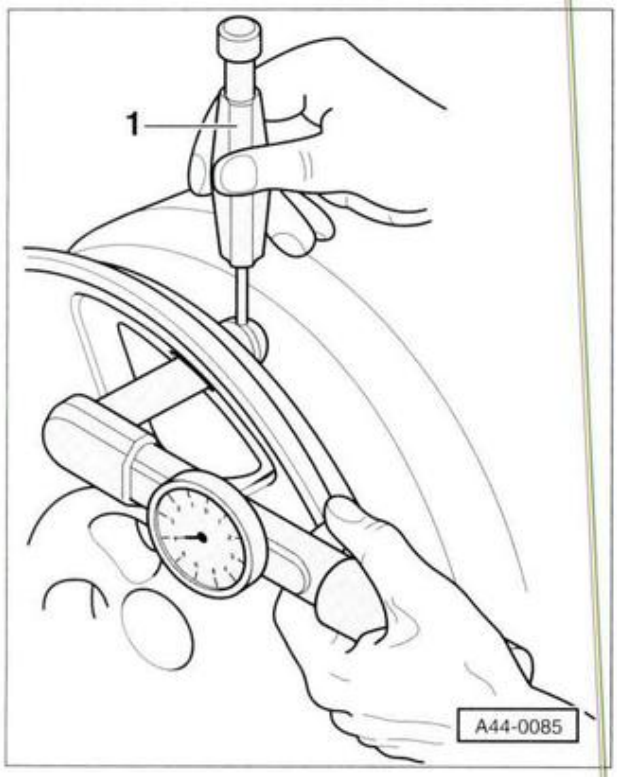
***NOTE —***

- *If self-locking bolt of the wheel electronics is loosened, replace it.*
- *For safety reasons, damaged wheel electronics or valves must be replaced.*
- *Do not clean wheel electronics using a pressure washer or strong pressurized air stream.*
- *After using tire sealing liquid, the wheel electronics must be replaced, since a possibility of an incorrect measurement exists due to deposits of the liquid at pressure sensor.*




### Wheels / tires, assembly overview

1. Metal valve body
   - Supplied complete
   - Replace valve insert at every tire change
2. Valve insert
3. Seal
4. Rim
5. Wheel electronics
   - Battery service life approx. 7 years
   - Remaining service life can be checked with diagnostic tool
   - Must be replaced as a complete unit
6. Micro encapsulated bolt (Torx T20), 4 Nm (3 ft-lb)
7. Union nut, 4 Nm (3 ft-lb)
8. Chamfered washer



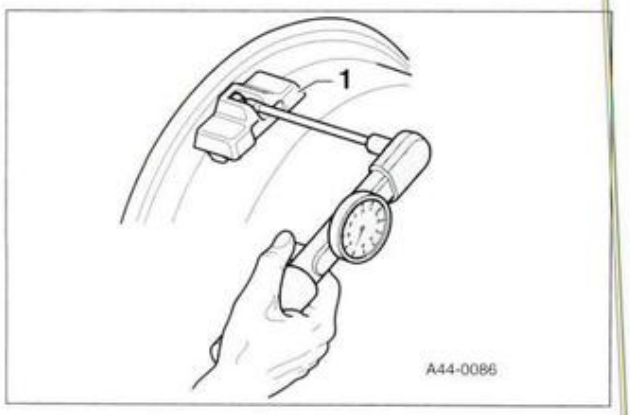

## Tire pressure wheel electronics, removing and installing

➤ Install metal valve with rubber seal through rim from inside.

– Set chamfered washer and union nut on outside and tighten by hand.

– Secure against turning, using retainer (**1**) (or 2 mm drill bit).

| Tightening torque | |
|---|---|
| Metal valve to rim | 4 Nm (3 ft-lb) |




➤ Press wheel electronics (**1**) into position and tighten with self-locking bolt at rear of valve.

| Tightening torque | |
|---|---|
| Wheel electronics to valve | 4 Nm (3 ft-lb) |

## Tire pressure reception antenna, removing and installing

The reception antennas are located behind the wheel housing liners.

– Turn ignition off.

– Remove wheel.

– Remove the wheel housing liner.

– Disconnect harness connector to antenna.

– Remove threaded connection of antenna to bracket.

– Remove antenna.

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### Tire pressure monitoring system, setting

After checking inflation pressures and properly inflating tires (including the spare), store the current tire pressures in the monitoring system.

- Switch ignition on and access the start menu from instrument cluster driver information display.
- Move selection arrow to **Set** by rotating turn / push knob.
- Press turn / push knob. Setting menu appears.
- Move selection arrow to **Tire pressure** by rotating the knob.
- Press turn / push knob. Submenu **Tire pressure** appears.
- Move selection arrow to **Store pressures!**.
- Press knob and turn. A check mark appears. System responds with **The current tire pressure will be saved**.
- Move selection arrow to **Back**.
- Press knob to leave tire pressure menu.

***NOTE***—

- *Reset the tire pressure monitoring system after every change in air pressure and after every wheel change.*

## WHEEL ALIGNMENT

Have alignment checked if:

- Vehicle not tracking properly
- Tires wearing unevenly
- Suspension damage suspected
- A repair may have altered the alignment

Accurate wheel alignment is best performed by your Audi dealer or a certified alignment shop. Always include both front and rear axles when checking alignment.

***NOTE***—

- *Do not align wheels until the vehicle has been driven 1000 - 2000 km (600 - 1200 mi), to allow coil springs to settle.*
- *Vehicle instability can be caused by the wheels having a residual imbalance and/or radial runout which is too great.*
- *Ensure proper attachment and adjustment of measuring equipment; pay attention to manufacturer's operating instructions.*
- *If appropriate, have manufacturer of wheel alignment equipment provide instruction.*
- *Wheel alignment platform and wheel alignment equipment / computer may start to deviate over the course of time from their original position / setting.*
- *Make sure wheel alignment platform and wheel alignment equipment and computer is inspected at least once a year*
- *Treat sensitive alignment equipment carefully and conscientiously.*

*Wheel Alignment*

| Table a. Wheel alignment data–front-wheel drive | | | | | |
|---|---|---|---|---|---|
| **Front axle** | **Suspension (1BA, 1BH, 1BP, 1BC)** | **Sport suspension (1BE)** | **Rough terrain suspension (1BB)** | **Rough terrain suspension (1BT)** | **Level control system (1BG)** |
| Camber | - 50' ± 25' | - 1° 05' ± 25' | - 35 ± 25' | - 45' ± 25' | - 50' ± 25' |
| Max permissible difference between sides | 30' | 30' | 30' | 30' | 30' |
| Toe per wheel (adjustment value in start position) | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' |
| Toe per wheel (control value in start position) | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' |
| Toe constant per wheel (setting) | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' |
| Toe constant per wheel (control value) | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' |
| Toe-out angle at 20° (The angle of the outside wheel is less by this amount. This may be indicated as negative on the alignment computer) | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' |
| **Rear axle** | | | | | |
| Camber Maximum permissible difference between sides | - 1° 30' ± 20' | - 1° 30' ± 20' | - 1° 30' ± 20' | - 1° 30' ± 20' | - 1° 30' ± 20' |
| Maximum permissible difference between sides | 30' | 30' | 30' | 30' | 30' |
| Overall toe | + 20' + 15' / - 10' | + 28 + 15' / - 10' | + 14 + 15' / - 10' | + 17 + 15' / - 10' | + 26 + 15' / - 10' |
| Maximum permissible deviation from longitudinal axis of vehicle | ± 15' | ± 15' | ± 15' | ± 15' | ± 15' |

**Table b. Wheel alignment data–quattro (V6 engines)**

| Front axle | Suspension (1BA, 1BH, 1BP, 1BC) | Sport suspension (1BE) | Rough terrain suspension (1BB) | Rough terrain suspension (1BR) | Rough terrain suspension (1BT, 1BJ) | Level control system (1BG) |
|---|---|---|---|---|---|---|
| Camber | - 50' ± 25' | - 1° 05' ± 25' | - 35 ± 25' | - 40' ± 25' | - 45' ± 25' | - 50' ± 25' |
| Max permissible difference between sides | 30' | 30' | 30' | 30' | 30' | 30' |
| Toe per wheel (adjustment value in start position) | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' |
| Toe per wheel (control value in start position) | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' |
| Toe constant per wheel (setting) | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' |
| Toe constant per wheel (control value) | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' |
| Toe-out angle at 20° (The angle of the outside wheel is less by this amount. This may be indicated as negative on the alignment computer) | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' |
| **Rear axle** | | | | | | |
| Camber | - 40' ± 30' | - 40' ± 30' | - 40' ± 30' | - 40' ± 30' | - 40' ± 30' | - 40' ± 30' |
| Maximum permissible difference between sides | 30' | 30' | 30' | 30' | 30' | 30' |
| Toe per wheel | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' |
| Maximum permissible deviation from longitudinal axis of vehicle | ± 10' | ± 10' | ± 10' | ± 10' | ± 10' | ± 10' |

| Table c. Wheel alignment data–quattro (V8 engines) | | | | | |
|---|---|---|---|---|---|
| **Front axle** | **Suspension (1BA, 1BH)** | **Sport suspension (1BE, 1BD)** | **Sport suspension (1BV, 2ME, 2MC)** | **Rough terrain suspension (1BR)** | **Level control system (1BG)** |
| Camber | - 1° ± 25' | - 1° 05' ± 25' | - 1° 20' ± 20' | - 50' ± 25' | - 1° ± 25' |
| Max permissible difference between sides | 30' | 30' | 30' | 30' | 30' |
| Toe per wheel (adjustment value in start position) | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' | + 10' ± 2' |
| Toe per wheel (control value in start position) | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' | + 10' ± 5' |
| Toe constant per wheel (setting) | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' | + 7' ± 2' |
| Toe constant per wheel (control value) | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' | + 7' ± 7' |
| Toe-out angle at 20° (The angle of the outside wheel is less by this amount. This may be indicated as negative on the alignment computer) | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' | - 1° 30' ± 30' |
| **Rear axle** | | | | | |
| Camber | - 60' ± 30' | - 60' ± 30' | - 60' ± 30' | - 60' ± 30' | - 1° 10' ± 30' |
| Maximum permissible difference between sides | 30' | 30' | 30' | 30' | 30' |
| Toe per wheel | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' | + 8' ± 5' |
| Maximum permissible deviation from longitudinal axis of vehicle | ± 10' | ± 10' | ± 10' | ± 10' | ± 10' |

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| Table d. Wheel alignment data–allroad quattro | |
|---|---|
| **Front axle** | **Suspension (1BY)** |
| Camber | - 1° ± 25' |
| Max permissible difference between sides | 30' |
| Toe per wheel (adjustment value in start position) | + 10' ± 2' |
| Toe per wheel (control value in start position) | + 10' ± 5' |
| Toe constant per wheel (setting) | + 7' ± 2' |
| Toe constant per wheel (control value) | + 7' ± 7' |
| Toe-out angle at 20°<br>(The angle of the outside wheel is less by this amount. This may be indicated as negative on the alignment computer) | - 1° 25' ± 30' |
| **Rear axle** | |
| Camber | - 60' ± 30' |
| Maximum permissible difference between sides | 30' |
| Toe per wheel | + 9' ± 4' |
| Permissible overall toe | + 18' ± 8' |
| Maximum permissible deviation from longitudinal axis of vehicle | ± 10' |

### Test requirements

- Check suspension, wheel bearing, steering and steering linkage for excessive play and damage.
- Tread depth difference of no more than 2 mm on tires per axle.
- Tires inflated to correct pressure.
- Vehicle in curb weight position.
- Fuel tank full.
- Spare tire and vehicle tools installed in appropriate position.
- Container for the windshield/headlight cleaning system is full.
- In vehicles with level control (1BG), switch on ignition before measurement, and wait until vehicle height control process is complete.
- For vehicles with 4-wheel air suspension (1BY), vehicle must be at normal level. Deactivate level control system. Be sure there is sufficient pressure in pressure reservoir. Press up and down buttons in operating unit for level control system simultaneously for more than 5 seconds until LED indicators light up. Indicator in instrument cluster will also light up.
- On vehicles with 4-wheel air suspension (1BY), check specified height between center of wheel and bottom edge of fender (Specification: 402 mm ± 5 mm).

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# 45 Antilock Brakes (ABS)


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## GENERAL

This repair group covers antilock brakes (ABS). For related information see:

- **46 Brakes–Mechanical**
- **47 Brakes–Hydraulic**

### Warnings and Cautions

***WARNING*** —

- *ABS is a vehicle safety system; appropriate knowledge and special equipment are necessary to work on the system.*
- *If ABS and brake system warning lights illuminate, the ABS system is compromised and wheels may lock up prematurely when braking.*
- *Bleed the ABS system after opening brake hydraulic system.*
- *If an ABS fault is detected by on-board diagnostics, the function of the brake system may be limited and there is a risk of accident.*

*General*

***WARNING***—

- *The ABS and brake system warning lights are not capable of monitoring all brake system functions; visual inspections are still required for the system.*
- *Do not use silicone-based brake fluids (DOT 5). This fluid is incompatible with the brake system and even the smallest trace can cause severe corrosion.*
- *Absolute cleanliness is required when working on the ABS system. Do not use any products that contain mineral oil such as oil, grease, etc.*
- *Carefully seal or cover opened components if repairs cannot be completed immediately. Sealing plugs are contained in factory supplied repair kit.*
- *Upon completion of repairs, road test the vehicle so that the ABS is felt to engage through the pulsing of the brake pedal.*
- *Do not reuse fasteners that are worn or deformed.*

***CAUTION***—

- *Before working on the ABS, switch ignition OFF and disconnect the battery ground (-) strap.*
- *For ABS / ESP system to work properly, make sure all four wheels are fitted with identical tires. Any differences in the rolling radius of the tires can cause faults.*
- *Keep brake fluid off painted surfaces; it removes paint.*
- *An illuminated ABS warning light indicates a fault in the system. Check the fault memory with an Audi scan tool or equivalent before disconnecting the battery.*
- *Brake fluid absorbs moisture from the surrounding air. Replace every two years. Use only new brake fluid that complies with Federal Motor Vehicle Safety Standards 116, DOT 4 Super or DOT 4 Plus.*
- *Before doing any electric welding to the vehicle, disconnect the ABS control module.*
- *Do not expose the ABS control module to high heat (as in a drying booth) for a prolonged period. The module may be exposed to a max. temperature of 95°C (203°F) for a short period and to a max. temperature of 85° C (185°F) for 2 hours.*
- *Do not let brake fluid enter wiring harness connectors.*
- *Obtain the anti-theft radio security code (if applicable) before interrupting power to the radio.*
- *On vehicles equipped with Audi Telematics by OnStar®, switch off the emergency (back-up) battery for the telematic/telephone control module prior to disconnecting vehicle battery.*
- *After reconnecting vehicle battery, re-code and check operation of anti-theft radio. Also check operation of clock and power windows according to Owner's manual.*
- *After reconnecting vehicle battery on vehicles equipped with Audi Telematics by OnStar®, switch on the emergency (back-up) battery for the telematic/telephone control module.*

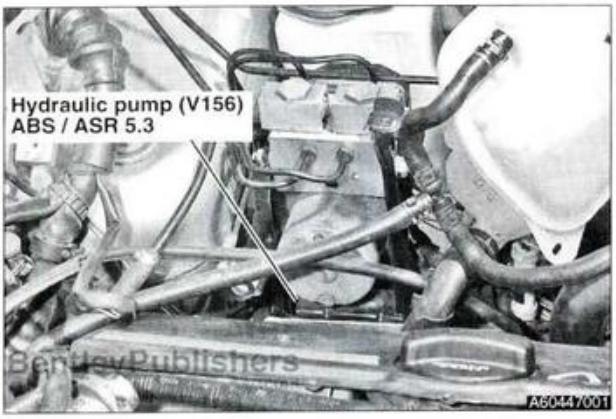
## Antilock brakes (ABS)

A6 vehicles are equipped with antilock braking (ABS). ABS uses electronic control of brakes and throttle to prevent wheels from locking during hard braking, thus helping to increase vehicle direction control and decrease stopping distance.

Basic ABS is supplemented by software and hardware to achieve additional safety features. The electronic components have self diagnostic capabilities.

In this repair group ABS versions are referred to simply as ABS unless a distinction is necessary.

### Bosch ABS / ASR 5.3

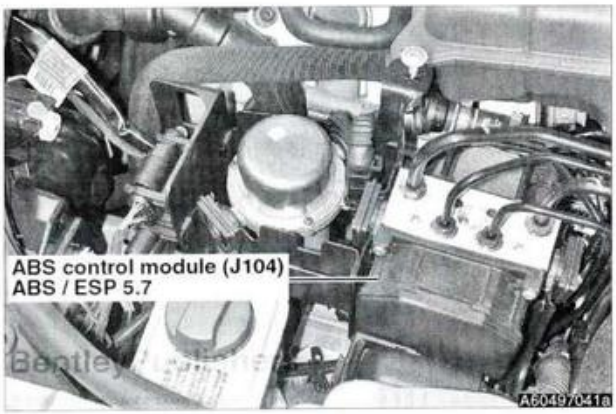



Bosch ABS 5.3 includes the following vehicle stability refinements:

- **Electronic brake pressure distribution (EBD)**. ABS control module regulates brake pressure to eliminate rear wheel lock-up. EBD control ends as soon as ABS control is applied.
- **Electronic differential lock (EDL)**. As an aid to starting on a slick surface, EDL automatically brakes the spinning wheel and shunts driving torque to the wheel with traction. EDL controls slip up to 25 mph (40 kph) in a front-wheel drive vehicle and up to 50 mph (80 kph) in a quattro (all-wheel drive) vehicle.
- **Antislip regulation (ASR)**. On front-wheel drive vehicle, if driving wheels spin during acceleration, ASR regulates wheel spin by reducing engine torque. This is done through retarding ignition timing or cyclically shutting down fuel injectors. ASR is effective across the entire range of speed.

> ***WARNING*** —
> - *Bleeding procedure for models with ABS / ASR 5.3 cannot be accomplished without VAG scan tool 1551 / 1552.*

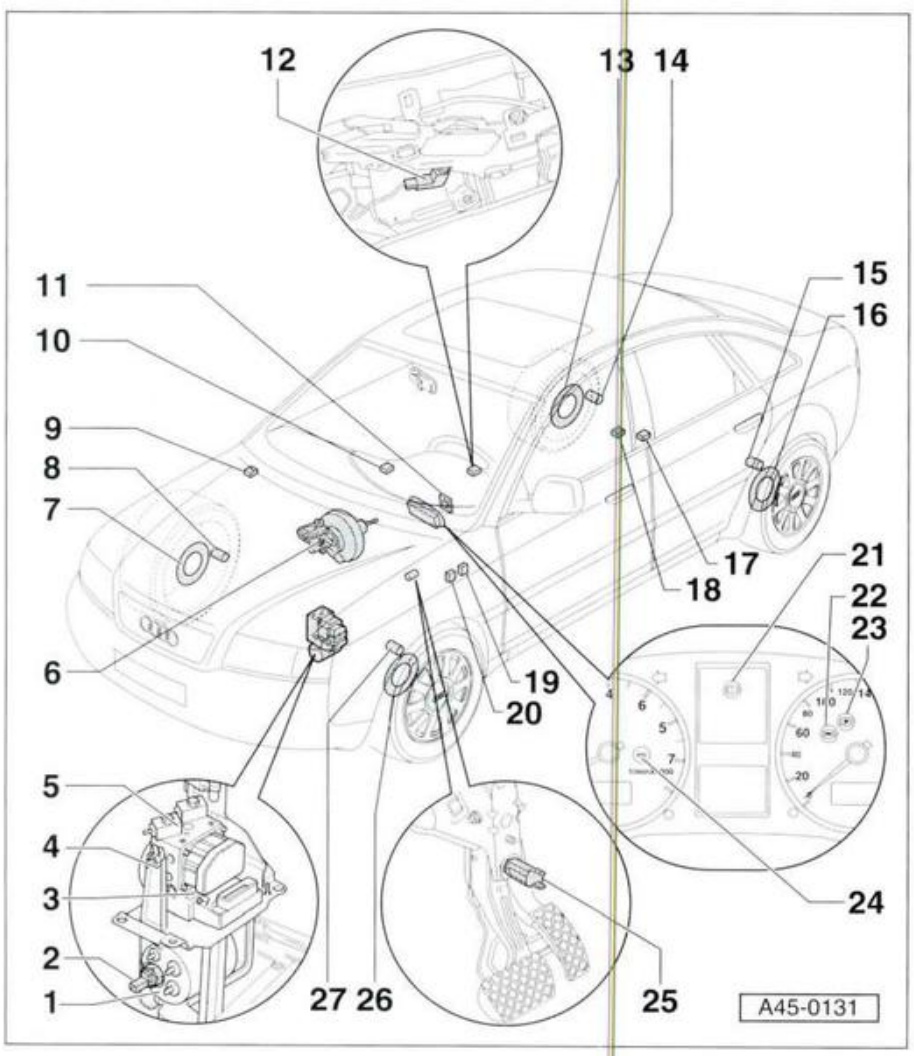
### Bosch ABS / ESP 5.7




Beginning in 2001, A6 models are equipped with ABS supplemented with electronic stability program (ESP). This traction control system uses acceleration sensors (rotation rate or yaw sensor and lateral acceleration sensor), steering angle sensor and and a hydraulic pump to maintain precise control of the vehicle under difficult traction conditions. ABS / ESP incorporates ABS / ASR features (EDL, EBD) in addition to:

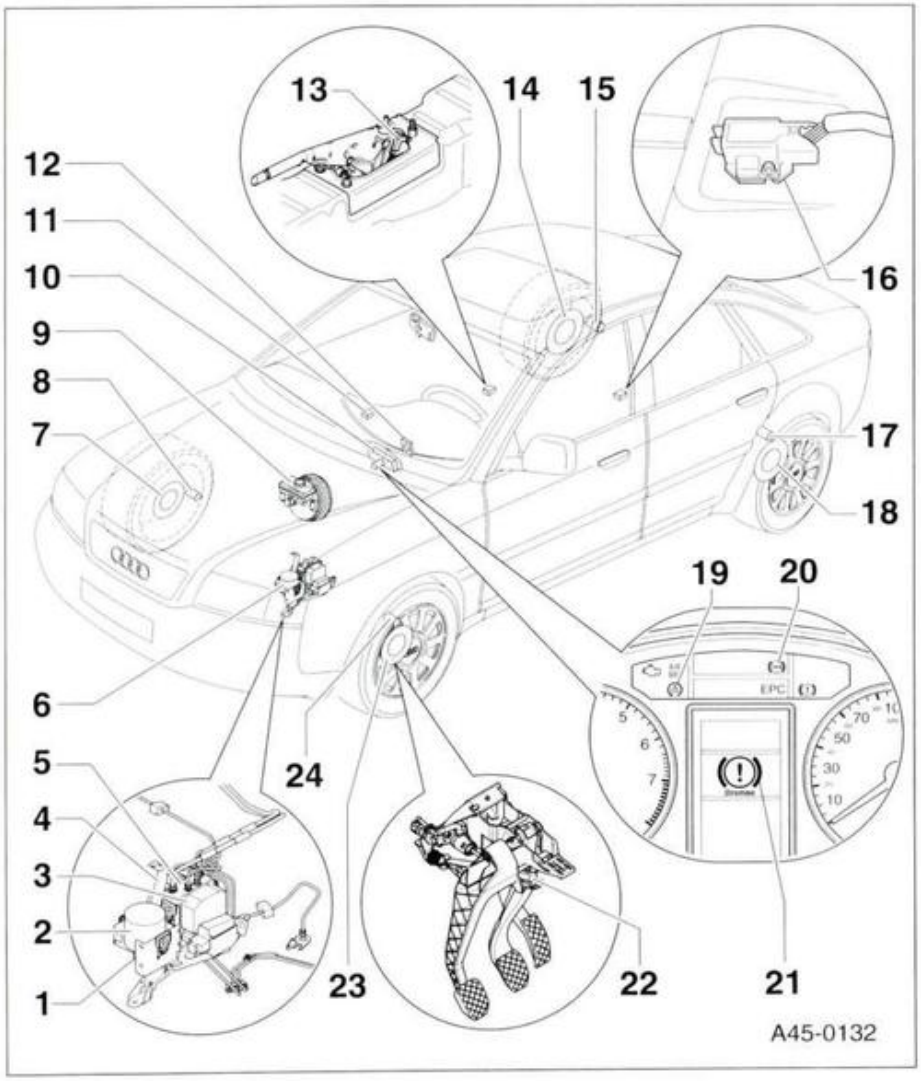
- **Electronic brake control (EBC)**. This feature prevents driven wheels from locking (and skidding) due to engine braking.

## ABS Components




### Bosch ABS / ASR 5.3

1. ASR traction control hydraulic pump (V156)
2. Brake pressure sensor 1 (G201) in ESP pump
3. ABS return flow pump relay (J105) for Bosch 5.3
4. ABS solenoid valve relay (J106)
5. ABS hydraulic unit (N55) and ABS hydraulic pump (V64)
6. Brake fluid level warning switch (F34)
7. Right front impulse wheel
8. Right front wheel speed sensor (G45)
9. ABS control module (J104) in passenger footwell
10. Anti-slip control switch (E132) on center console
11. Steering angle sensor (G85) in steering column
12. Parking brake warning light switch (F9) on parking brake lever assembly
13. Right rear impulse wheel
14. Right rear wheel speed sensor (G44)
15. Left rear wheel speed sensor (G46)
16. Left rear impulse wheel
17. Transverse acceleration sensor (G200)
18. Rotation rate sensor (G202)
19. ABS return flow pump relay (J105) on fuse box
20. ABS solenoid valve relay (J106)
21. Warning light for brake system (K118) in instrument cluster
22. ABS warning light (K47) in instrument cluster
23. *Parking brake* indicator lamp (K14) in instrument cluster
24. Traction control indicator light (K86) in instrument cluster
25. Brake light switch (F)
26. Left front impulse wheel
27. Left front wheel speed sensor (G47)



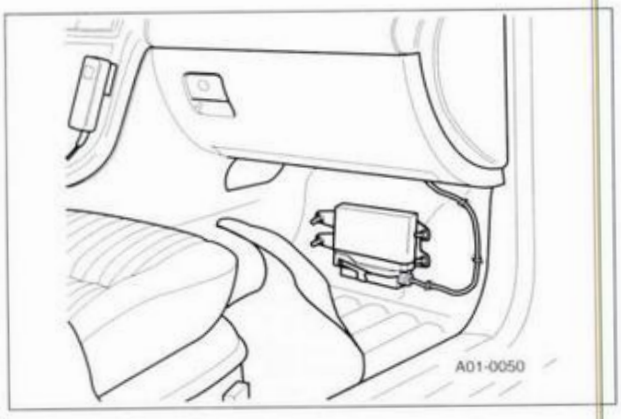

## Bosch ABS / ESP 5.7

1. Bracket for hydraulic control unit
2. Vacuum pump for brake servo (engines with automatic transmission)
3. ABS control module (J104)
4. ABS hydraulic unit (N55)
5. Brake pressure sensor 1 (G201) on hydraulic control unit
6. Tightening torque 20 Nm (15 ft-lb)
7. Right front impulse wheel
8. Right front wheel speed sensor (G45)
9. Brake fluid level warning switch (F34)
10. Instrument cluster
11. Anti-slip control switch (E132) on center console
12. Steering angle sensor (G85) for ESP in coil connector with slip ring on steering column
    - Test with VAS 5051
13. Parking brake warning light switch (F9) on parking brake lever assembly
14. Right rear impulse wheel
15. Right rear wheel speed sensor (G44)
16. Transverse acceleration sensor (G200) and rotation rate sensor (G202) underneath radio
17. Left rear wheel speed sensor (G46)
18. Left rear impulse wheel
19. Traction control indicator lamp (K86) in instrument cluster
20. ABS warning light (K47) in instrument cluster
21. Warning light for brake system (K118) in instrument cluster
22. Brake light switch (F)
23. Left front impulse wheel
24. Left front wheel speed sensor (G47)

## ABS Electrical Components

### ASR control module (J104) (Bosch 5.3), removing and installing

- For vehicles equipped with coded anti-theft radio, note radio code.
- Disconnect battery. See **00 Warnings and Cautions**.




➤ ASR control module (J104) is located under floor covering in front passenger footwell

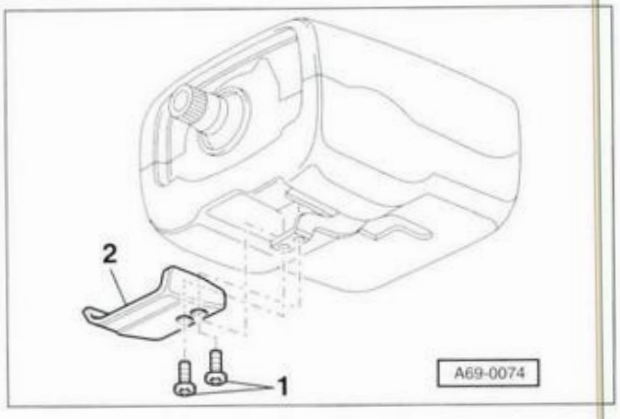
- Remove bottom right A-pillar trim. See **70 Interior Trim**.
- Loosen screws securing ASR control module (J104).
- Unplug connector from ASR control module (J104).
- Install new control module in reverse sequence.

| Tightening torque | |
|---|---|
| Control module to floor | 9 Nm (7 ft-lb) |

- Connect battery and enter radio code (if applicable).

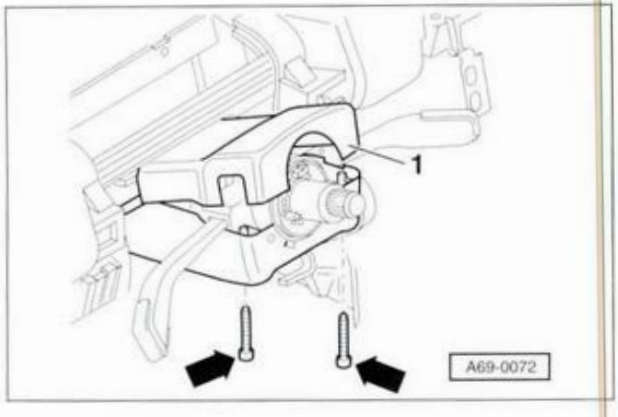
### Steering angle sensor (G85), removing and installing

- Set wheels to straight ahead position and remove driver's airbag unit and steering wheel. See **69 Seat Belts, Airbags**.
- Extend steering column out and tilt downward as far as it will go.




➤ Remove bolts (**1**).

- Remove grip (**2**).

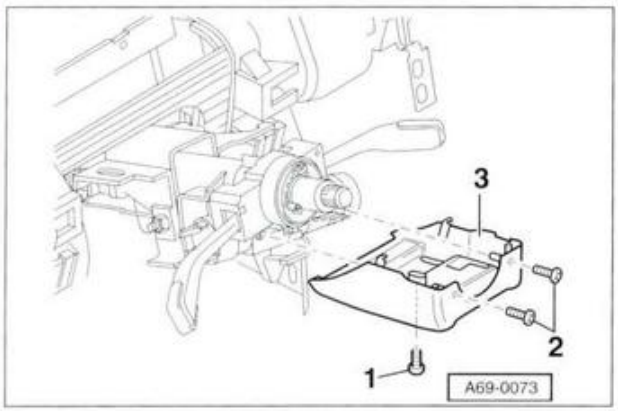



➤ Remove two Phillips-head screws (**arrows**) from column trim.

- Remove upper trim panel from steering column (**1**).

***NOTE —***

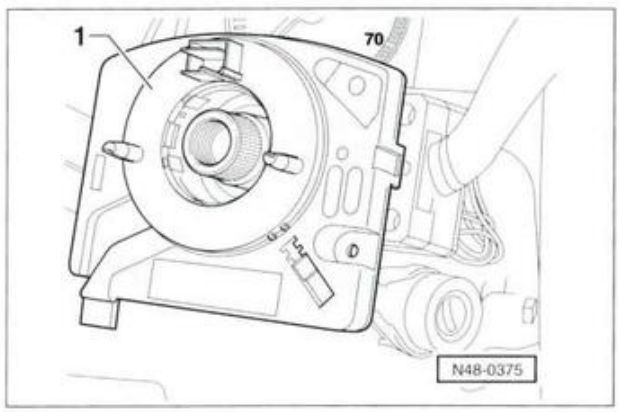
- *When installing, insert upper shell into hooks of lower shell, swivel downward and screw in place.*



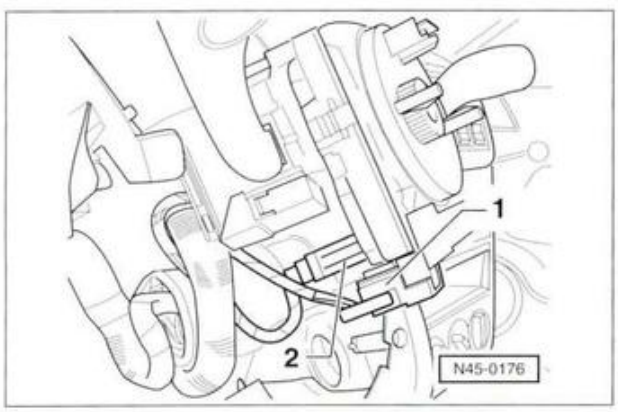

➤ Remove screws (**2**) from lower trim.

– Remove head bolt (**1**).

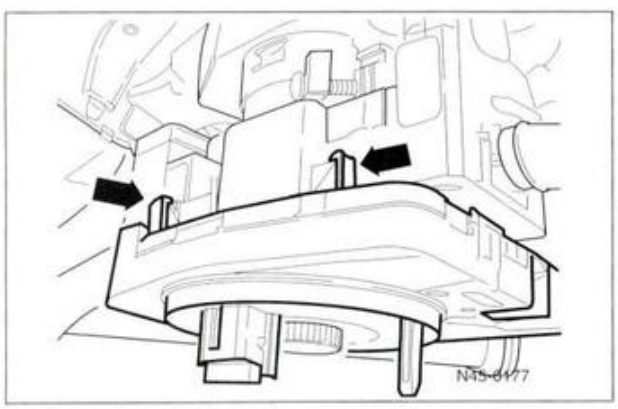
– Remove lower trim panel (**3**) from steering column.




➤ Steering angle sensor (G85) is installed in housing (**1**) together with coil spring.




➤ Remove connectors (**1** and **2**).




➤ Carefully lift hooks (**arrows**) and disconnect steering angle sensor.

– When installing the steering angle sensor (**G85**):
- Place in center position.
- Mount steering angle sensor until tabs engage.
- Remove transport protection (if applicable).

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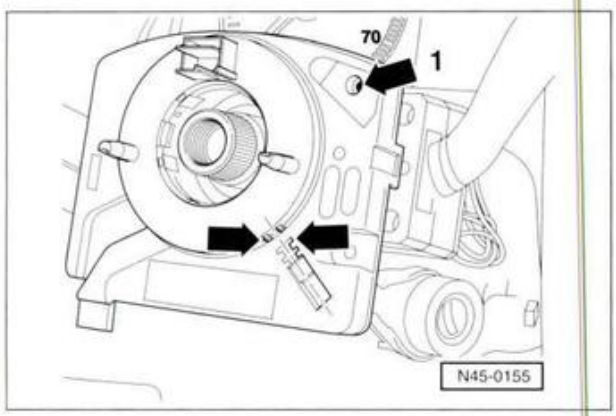



➤ Make sure yellow dot is visible in hole (arrow **1**) and alignment marks (**arrows**) align.

– The remainder of installation is reverse of removal. Remember to:
- Install airbag unit and steering wheel.
- Use Audi scan tool or equivalent to carry out basic setting of steering angle sensor (G85).

## Transverse acceleration sensor (G200) and Rotation rate sensor (G202) (Bosch 5.3), removing and installing

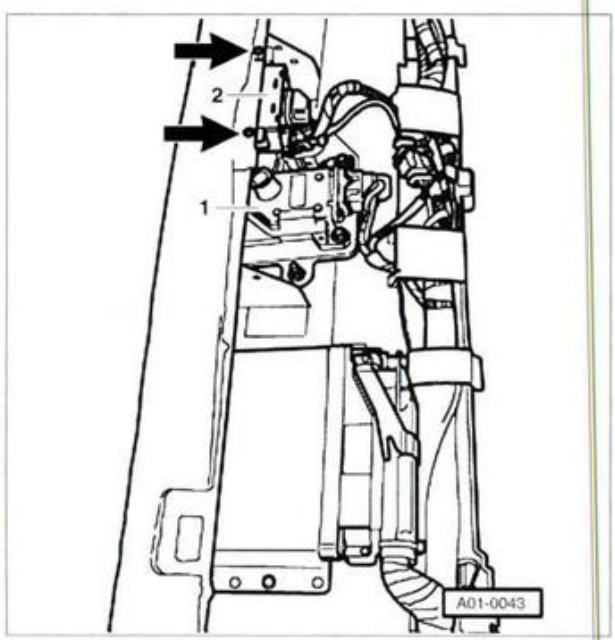
***NOTE—***
- *Rotation rate sensor (G202), also called yaw sensor, may be installed in housing with transverse acceleration sensor (G200).*

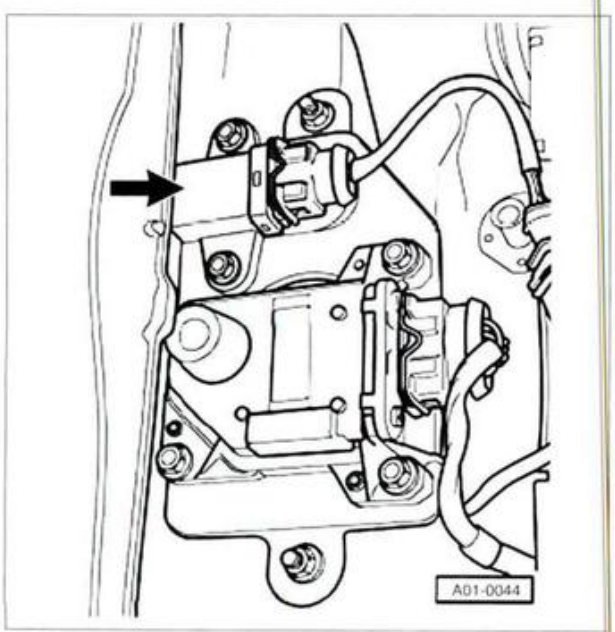
– For vehicles equipped with coded anti-theft radio, note radio code.

– Remove rear seat. See **72 Seats**.

➤ Rotation rate sensor (**1**)(G202) is located underneath the driver's seat. It measures the vehicle's rotation about the vertical axis (yaw rate).

– To remove transverse acceleration sensor (G200), first remove ultrasound sensor control module (**2**)(J347) mounting screws (**arrows**).



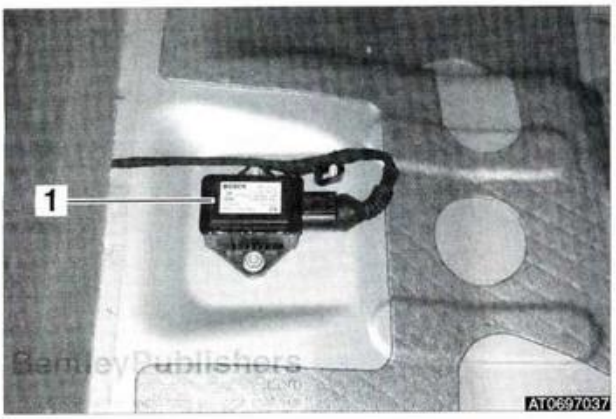




➤ Remove transverse acceleration sensor (G200) following removal of ultrasound sensors control module (J347).

***CAUTION—***
- *Sensor is sensitive to impact.*
- *If the sensor is dropped by mistake it may not work properly and must not be installed into vehicle. Do not use the sensor again.*

– The remainder of installation is reverse of removal:
- Install rear seat.
- Connect battery and enter radio code (if applicable).

## Transverse acceleration sensor (G200) and Rotation rate sensor (G202) (Bosch 5.7), removing and installing




➤ The rotation rate sensor (G202) and the sensor for transverse acceleration are located under the rear seat bench.

***NOTE***—

- *Rotation rate sensor (G202), also called yaw sensor, may be installed in housing with transverse acceleration sensor (G200).*

– For vehicles equipped with coded anti-theft radio, note radio code.

– Removing rear seat. See **72 Seats**.

– Disconnect connector for sensor.

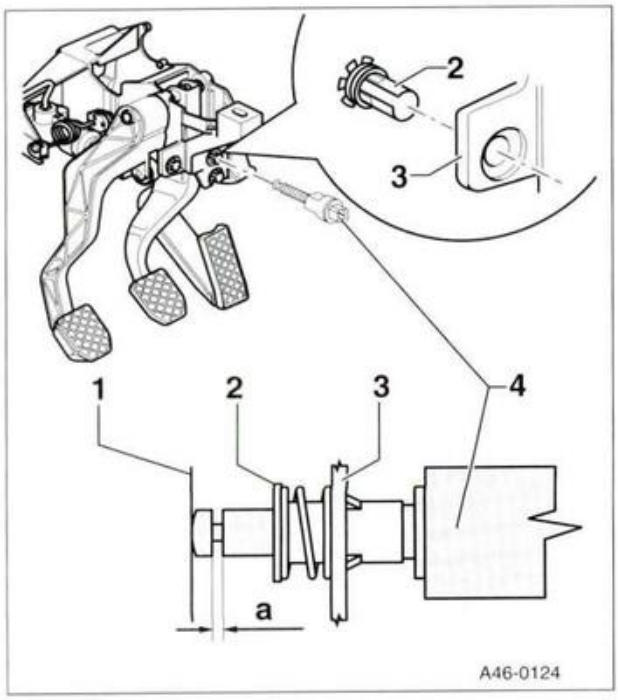
> ***CAUTION***—
> - *The sensor is sensitive to impact.*
> - *If the sensor is dropped by mistake it may not work properly and must not be installed into the vehicle. Do not use the sensor again.*

– The remaining installation steps are carried out in the reverse sequence:

- Install rear seat.
- Connect battery and enter radio code (if applicable).

## Brake light switch, removing and installing

### Brake light switch with rectangular housing




➤ Brake light switch with spring clip mount:

1. Brake pedal impact surface
2. Spring clip
3. Pedal bracket
4. Brake light switch (F)

– Press spring clip (**2**) into pedal bracket opposite direction of travel.

– Guide switch (**4**) into installed spring clip (**2**) and press/thread it in until stop.

– Check dimension **a** using feeler gauge and twist brake light switch to dimension **a** specification if necessary.

***NOTE***—

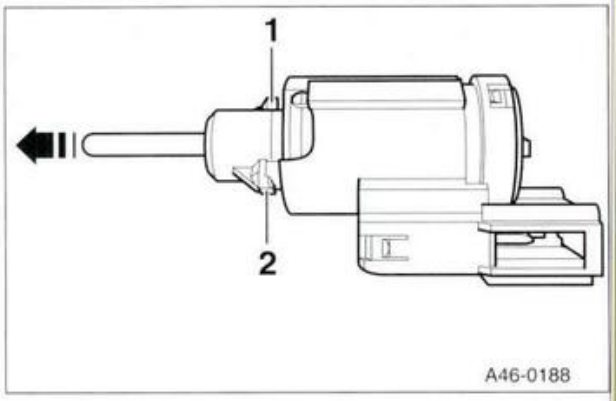
- *Dimension **a**: min. 0.5 mm to max. 1.2 mm (0.02 in to 0.05 in)*
- *To ensure a secure fit, the switch may only be installed once.*

### Brake light switch with round housing

– Remove driver's storage compartment.

– Unplug electrical connector on switch.

– Turn brake light switch 45° counter clockwise to remove.




➤ Installation is reverse of removal. Remember to:

- Pull out plunger of brake light switch as far as it will go (**arrow**).
- Insert switch into its mounting so that retaining tabs (**1** and **2**) engage in corresponding slots and secure with 45° turn.
- Do not press brake pedal while installing switch.
- Plunger in switch is adjusted automatically when switch is inserted.
- Press and release brake pedal to check brake light function.

***NOTE —***

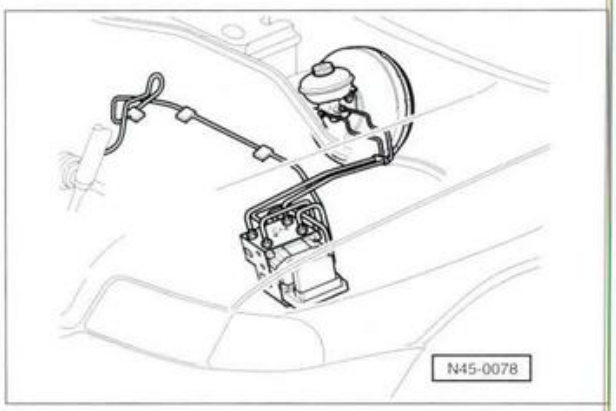
- *To ensure a secure fit, the switch may only be installed once.*

### Parking brake switch

The parking brake switch informs the ABS control module (J104) whether or not the parking brake is applied. This information is required because the parking brake influences ABS and traction control functions.

## ABS Hydraulic Components

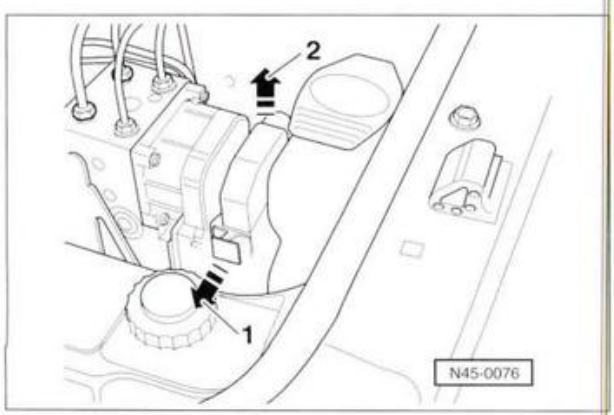
### ASR hydraulic control unit (Bosch 5.3), removing and installing




➤ The ASR hydraulic control unit is located on the left side of the engine compartment.

– Vehicles equipped with anti-theft radio, obtain radio code.

– Switch ignition OFF and disconnect battery. See **00 Warnings and Cautions**.




➤ Release connector from control module (**1**) and disconnect by lifting up (**2**).

– Connect bleeder bottle to bleeder screw on left front brake caliper and open bleeder screw.

– Insert brake pedal depressor between brake pedal and driver's seat. Depress brake pedal by at least 60 mm (2.4 in).

***NOTE —***

- *Do not remove brake pedal depressor until all brake lines have been reconnected to the hydraulic control unit.*

– Close left front bleeder screw.

***NOTE —***

- *Protect engine compartment from brake fluid spills.*

– Disconnect brake line connections at hydraulic control unit.

***CAUTION —***

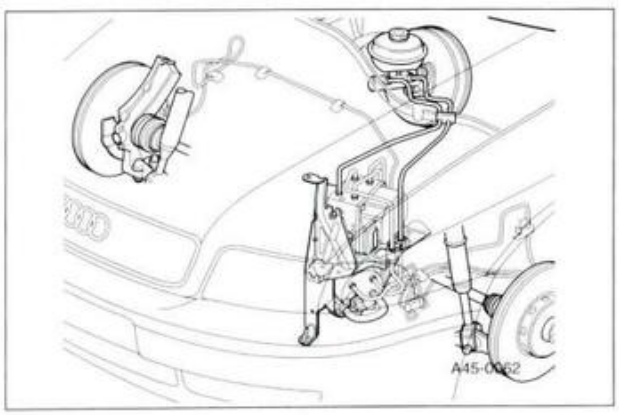
- *Do not bend brake lines.*

– Seal brake lines and threaded holes with plugs from repair kit (part no. 1H0 698 311 A).

– Remove nuts on hydraulic control unit bracket.

– Remove hydraulic control unit.

– When installing, pay particular attention to the following:
  • Only remove sealing plugs on new hydraulic control unit when corresponding brake line is about to be installed.
  • If sealing plugs are removed too early, brake fluid can escape. If this occurs, unit may not be sufficiently filled or adequately bled.
  • Bleed brake system. See **47 Brakes–Hydraulic**.
  • Reconnect battery and enter radio code.




## ASR hydraulic pump (Bosch 5.3), removing and installing

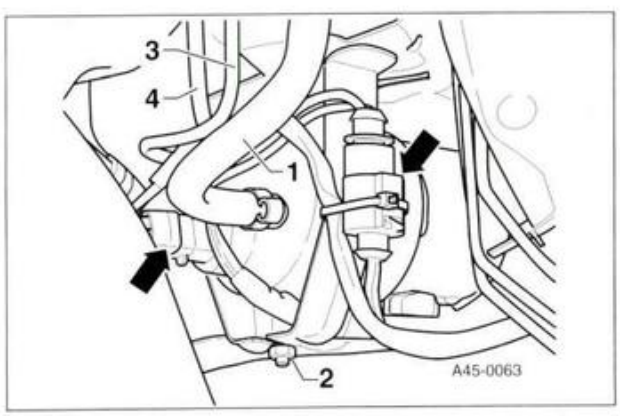
➤ The ASR hydraulic pump is located at left of engine compartment below hydraulic unit.

– Vehicles equipped with anti-theft radio, obtain radio code.

– Switch ignition OFF and disconnect battery. See **00 Warnings and Cautions**.

– Raise vehicle and support safely.

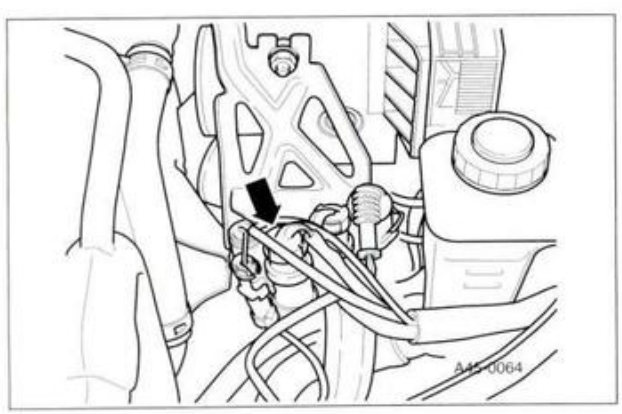
> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




– Remove left front wheel.

– Remove left front wheel housing liner.

➤ Detach electrical connectors at pump (see **arrows**).




➤ Unclip attachment strip for cable at bracket.

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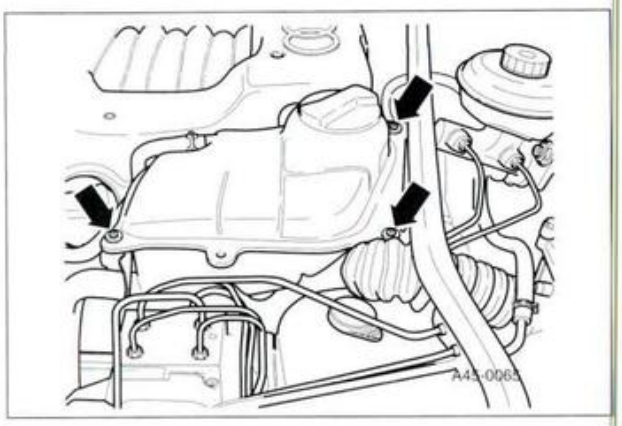
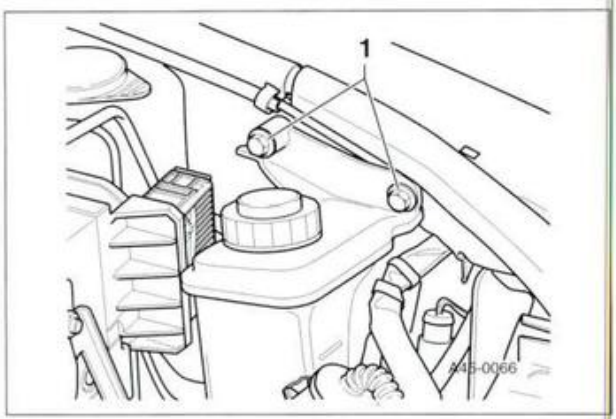
*ABS Hydraulic Components*



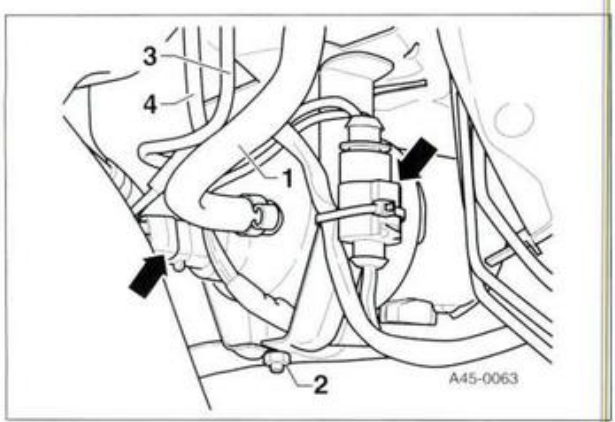

➤ Remove coolant expansion tank mounting bolts (**arrows**) and swing reservoir to side.




➤ Remove bolts (**1**) for hydraulic fluid reservoir and swing to side.

***NOTE***—

- *Protect engine compartment from brake fluid spills.*




➤ Disengage intake hose on hydraulic unit (**1**) and remove.

– Remove brake lines (**3** and **4**).

– Seal brake lines and threaded holes using plugs from repair kit (part no. 1H0 698 311 A).

– Unclip brake lines from holder.

– Remove nut (**2**).

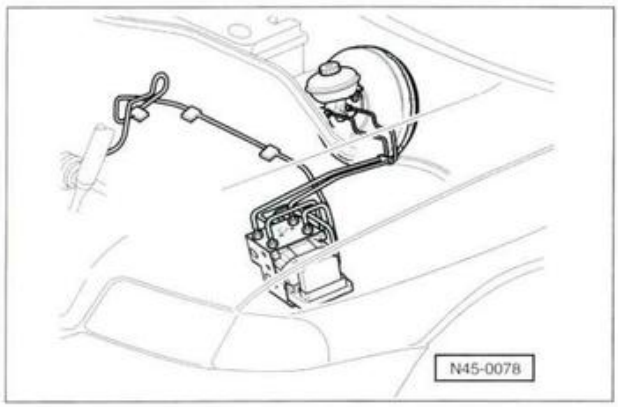
– Remove bolt from securing bracket.

– Working in engine compartment, lift bracket and hydraulic unit out.

– Pay special attention to the following on installation:

- Only remove sealing plugs on new hydraulic control unit when corresponding brake line is about to be installed. Otherwise, brake fluid will escape observe paint and corrosion protection measures.
- Bleed brake system. See **47 Brakes–Hydraulic**.
- Reconnect battery and enter radio code.

| **Tightening torque** | |
|---|---|
| Coolant expansion tank to chassis | 6 Nm (4 ft-lb) |
| Hydraulic fluid reservoir to chassis | 10 Nm (7 ft-lb) |

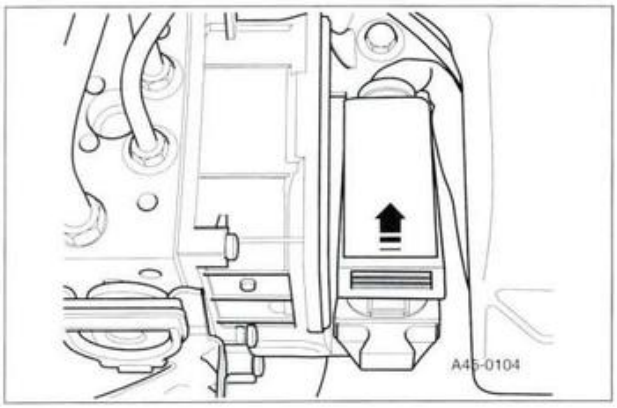



## ESP hydraulic control unit (Bosch 5.7), removing and installing

➤ The hydraulic control unit is installed on left side of engine compartment.

– For vehicles equipped with anti-theft radio, note radio code.

– Switch ignition OFF and disconnect battery. See **00 Warnings and Cautions**.




➤ Detach electrical connector from control module in direction of **arrow**.

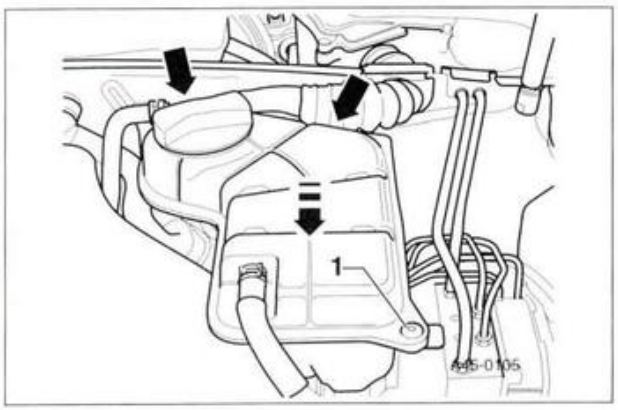
– Insert brake pedal depressor between brake pedal and driver's seat. Depress brake pedal by at least 60 mm (2.4 in).

***NOTE***—

- *The brake pedal depressor must remain in position until all the brake lines have been reconnected to the hydraulic unit.*
- *Protect the engine compartment from brake fluid spills.*

– Unscrew brake line connections on hydraulic unit.

***CAUTION***—
- *Do not bend brake lines.*

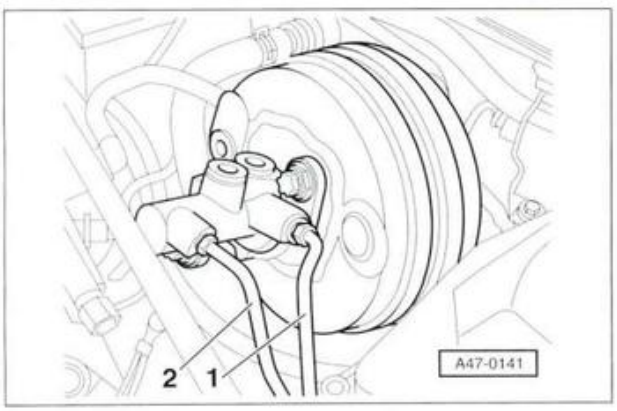



– Seal brake lines and threaded holes with plugs from repair kit (part no. 1H0 698 311 A).

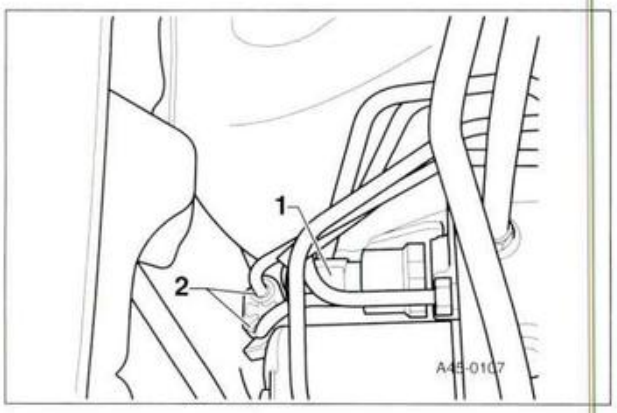
***NOTE***—

- *Protect the plenum chamber and engine compartment from brake fluid spills.*

➤ Remove bolt (**1**) and pull it out in the direction of **arrow**. Swing coolant expansion tank to side.




➤ Detach brake lines (**1** and **2**) from master cylinder and seal with dummy plugs from repair kit (part no. 1H0 698 311 A).




➤ Detach connectors (**1**) and unclip brake lines (**2**) from bracket.

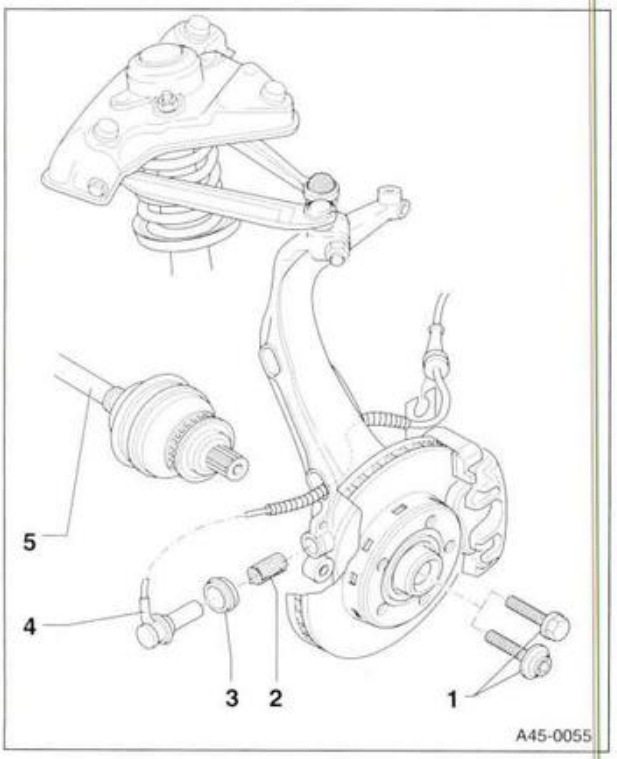
– Remove hydraulic control unit.

– When installing, pay particular attention to the following:
- Only remove sealing plugs on new hydraulic control unit when corresponding brake line is about to be installed.
- Bleed brake system. See **47 Brakes–Hydraulic**.
- Reconnect battery and enter radio code.

| Tightening torque | |
|---|---|
| Coolant expansion tank to chassis | 6 Nm (4 ft-lb) |

## ABS Wheel Speed Sensors

### ABS front axle components

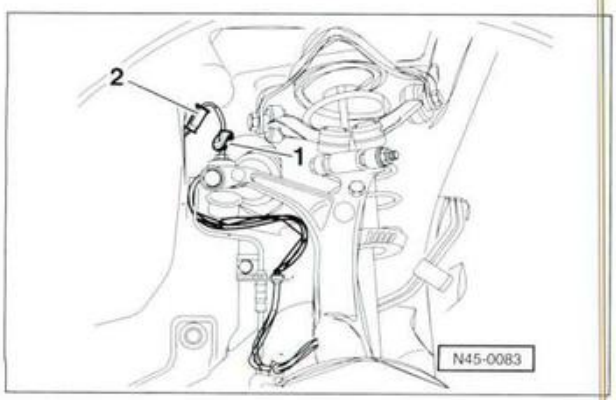



1. Drive axle bolt
   - Always replace
2. Clamping sleeve
   - Always replace
   - Before installing, grease hole in the wheel bearing housing with lubricating paste G 000 650
   - Push into wheel bearing housing up to stop
3. Sealing collar
4. ABS wheel speed sensor
   - Install drive axle before installing speed sensor
   - Push into clamping sleeve up to stop
5. Drive axle
   - Inspect impulse wheel for signs of dirt and damage
   - Replace outer CV joint if the impulse wheel is damaged

### ABS front wheel speed sensor, removing and installing

– Raise car and support safely.

> ***WARNING*** —
> - *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




– Remove wheel.

➤ Remove grommet (**1**) from the wheel housing.

– Disconnect ABS wheel speed sensor harness connector (**2**).

– Disconnect ABS wheel speed sensor wiring from retainers (**arrows**).

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– Remove ABS speed sensor from wheel bearing housing.

– When installing pay particular attention to the following points:
  • Replace clamping sleeve.
  • Before installing speed sensor, install sealing collar.
  • Connect ABS wheel speed sensor wiring and fasten grommets to retainers.
  • Turn wheels completely to left and right stop positions and check ABS wheel speed sensor wiring clearance.

## Front impulse wheel, checking

– Raise car and support safely.

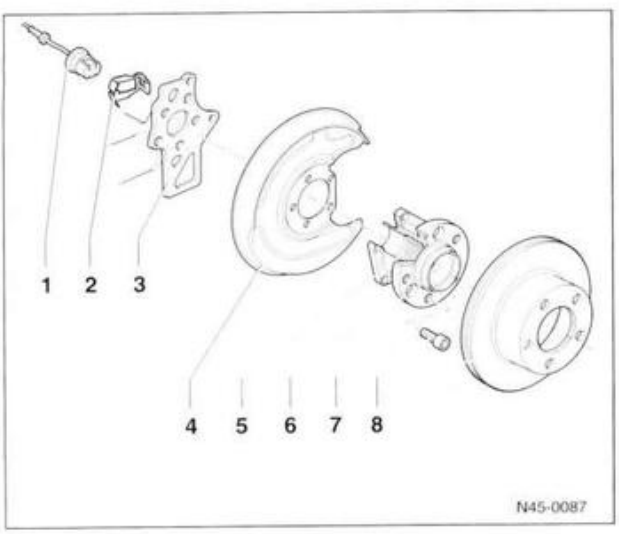
> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove wheel

– Remove ABS wheel speed sensor from wheel bearing housing.

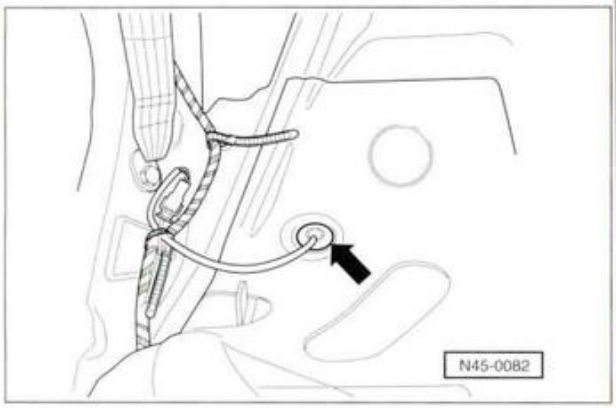
– Inspect impulse wheel for signs of damage or dirt.

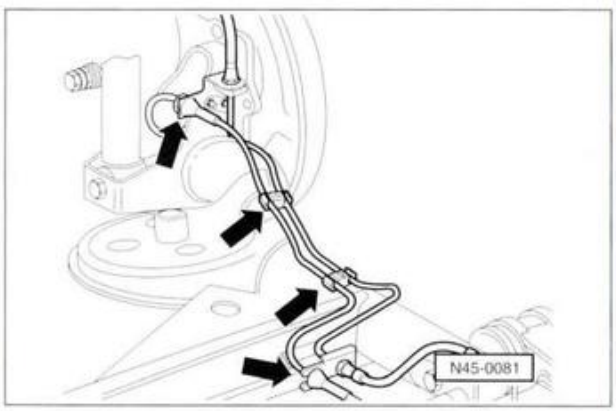
***NOTE*** —
• *If impulse wheel is damaged or dirty remove drive axle. If damaged, replace outer CV joint together with impulse wheel.*

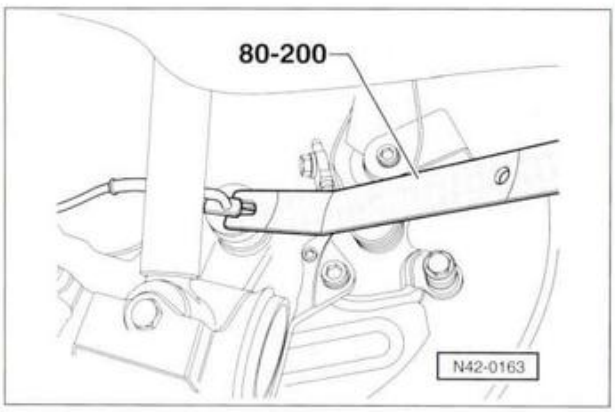



## ABS rear axle components (FWD)

1. ABS wheel speed sensor
   • Must be replaced when replacing new wheel bearing/hub unit
   • Always replace O-ring and lubricate with brake cylinder paste (part no. G 000 65)
2. Clip
3. Axle beam
4. Cover plate
5. ABS wheel speed sensor impulse wheel
   • If damaged or faulty replace with wheel bearing/hub unit
6. Wheel bearing/hub unit
7. Allen head bolt, 60 Nm (44 ft-lb)
8. Brake disc




## ABS rear wheel speed sensor (FWD), removing and installing

– Lift out rear seat bench.

➤ Disconnect ABS wheel speed sensor harness connector and push out grommet (**arrow**).

– Raise car and support safely.

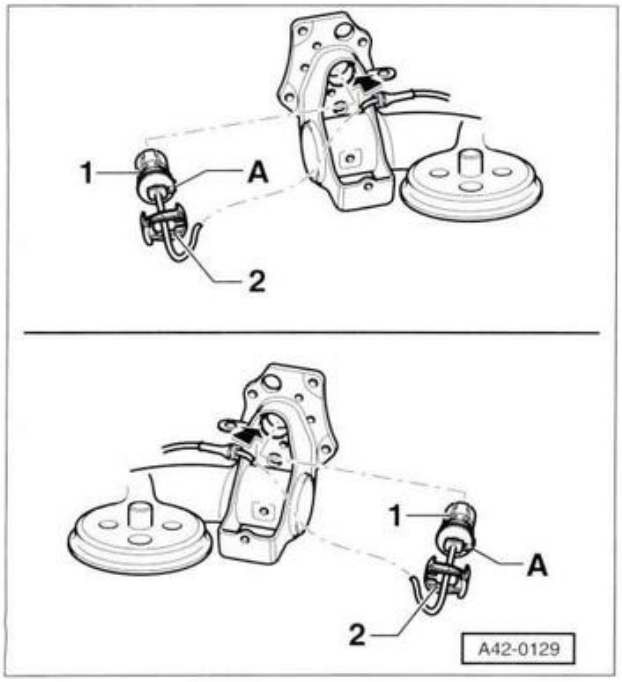
> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

➤ Disconnect ABS wheel speed sensor wiring from retainers (**arrows**).

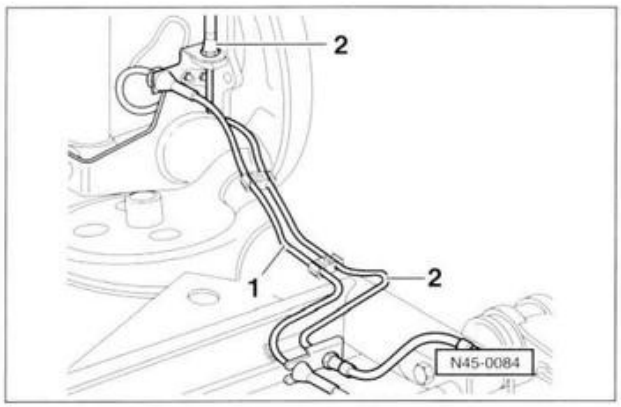
– Remove retainer for ABS wheel speed sensor.

➤ Pry ABS wheel speed sensor from wheel bearing/hub unit using 80-200 pry lever.

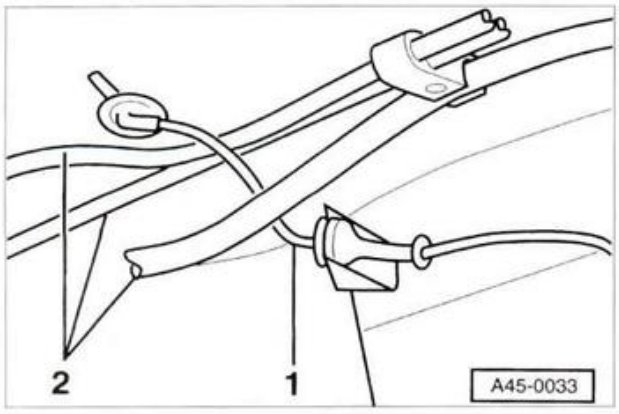
– Before inserting ABS wheel speed sensor, lubricate circumference of seal with brake cylinder paste.



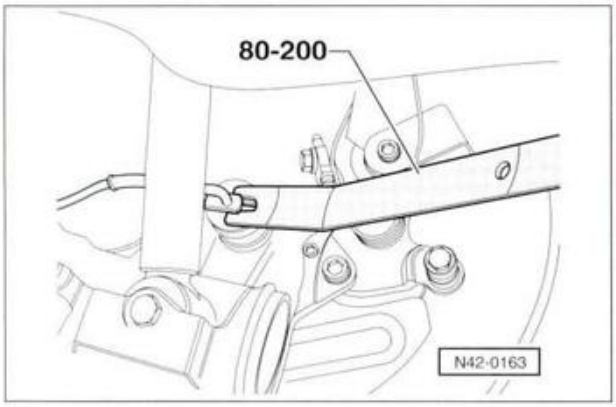

- Insert ABS wheel speed sensor (**1**) until stop.
  - Locating tab (**A**) faces front on left and rear on right.
  - Push ABS wheel speed sensor into wheel bearing housing by hand.
  - Insert retainer for ABS wheel speed sensor.

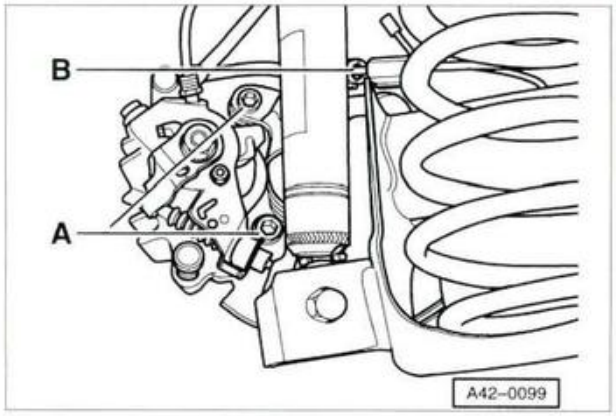


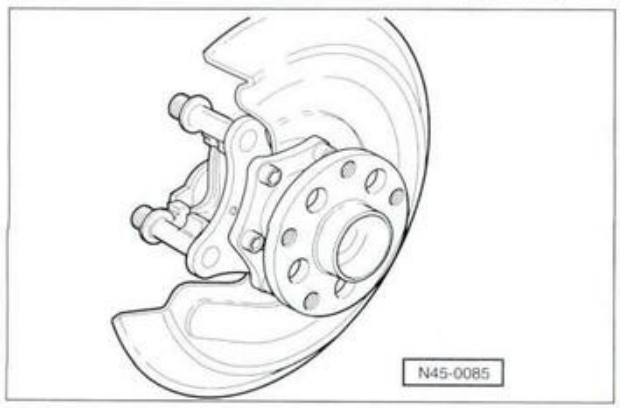

- Route ABS wheel speed sensor wiring (**1**) next to brake line (**2**) on both sides as shown.
  - On left side, maintain clearance of about 2 cm (0.8 in) between heat shield on the exhaust system and ABS wheel speed sensor wiring.




- On right side, ABS wheel speed sensor wire (**1**) must be routed between fuel lines (**2**).




## Rear impulse wheel (FWD), checking

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

➤ Remove retainer and pry ABS wheel speed sensor from wheel bearing/hub unit using 80-200 pry lever.

– Inspect impulse wheel for dirt and damage through mounting hole of wheel speed sensor.

– If impulse wheel is damaged or dirty, replace together with wheel bearing/hub unit.

– Install ABS wheel speed sensor.

## Rear impulse wheel (FWD), removing and installing

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove rear wheel.

➤ Remove caliper bolts (**A**) and use stiff wire to hang brake caliper.

– Remove retainer for ABS wheel speed sensor.

– Remove brake disc.

– Pry ABS wheel speed sensor from wheel bearing/hub unit using 80-200 pry lever.

➤ Remove wheel bearing/hub unit mounting bolts and remove wheel bearing/hub unit with backing plate.

– If impulse wheel is damaged or dirty, replace together with wheel bearing/hub unit.

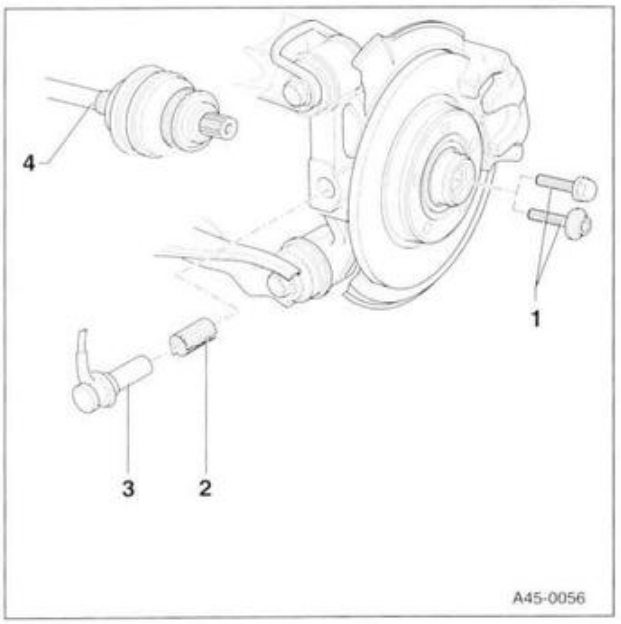
– Install new wheel bearing/hub unit and backing plate to axle beam and tighten.

– Reinstall brake disc.

– Mount brake caliper to axle beam and tighten.

– Install ABS wheel speed sensor.

| **Tightening torques** | |
|---|---|
| Brake caliper to axle | 95 Nm (70 ft-lb) |
| Wheel bearing/hub to axle beam | 60 Nm (44 ft-lb) |



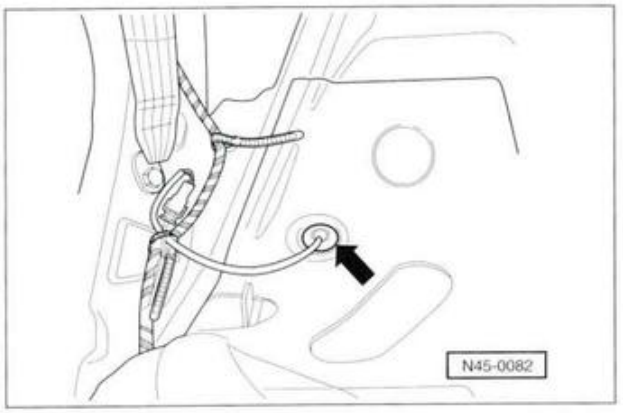

## ABS rear axle components (quattro)

1. Drive axle bolt
   - Always replace
2. Clamping sleeve
   - Always replace
   - Before installing coat hole in the wheel bearing housing with brake cylinder paste G 000 650
   - Push into wheel bearing housing up to stop
3. ABS wheel speed sensor
   - Push into clamping sleeve up to stop
4. Drive axle with ABS wheel speed sensor impulse wheel (all wheel drive)
   - Check for dirt and damage.
   - Replace with outer CV joint.
   - Outer CV joint is supplied with impulse wheel.

## ABS rear wheel speed sensor (quattro), removing and installing

– Switch ignition off.

– Lift out rear bench.




➤ Disconnect ABS wheel speed sensor harness connectors and push out grommet (**arrow**).

– Raise car and support safely.

> ***WARNING*** —
> - *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Pull ABS wheel speed sensor out of wheel bearing housing.

– Disconnect sensor wiring from retainers. Pull wiring downward together with grommet.

– When installing pay particular attention to the following:
  - Replace clamping sleeve.
  - Connect ABS wheel speed sensor wiring and snap grommets in retainers.

### Rear impulse wheel (quattro), checking

– Loosen wheel bolts.

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove wheel.

– Remove ABS wheel speed sensor out of wheel bearing housing.

– Check impulse wheel for damage or dirt.

***NOTE*** —
• *If impulse wheel is damaged or dirty, remove drive axle. If damaged, replace outer CV joint together with impulse wheel.*

# 46 Brakes–Mechanical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## GENERAL

This repair group covers mechanical brake components including front and rear brake pads, calipers, brake light switch and parking brake. For additional brake system information, see:

- **45 Antilock Brakes (ABS)** for ABS related components
- **47 Brakes–Hydraulic** for brake calipers, brake fluid bleeding

### Brake discs

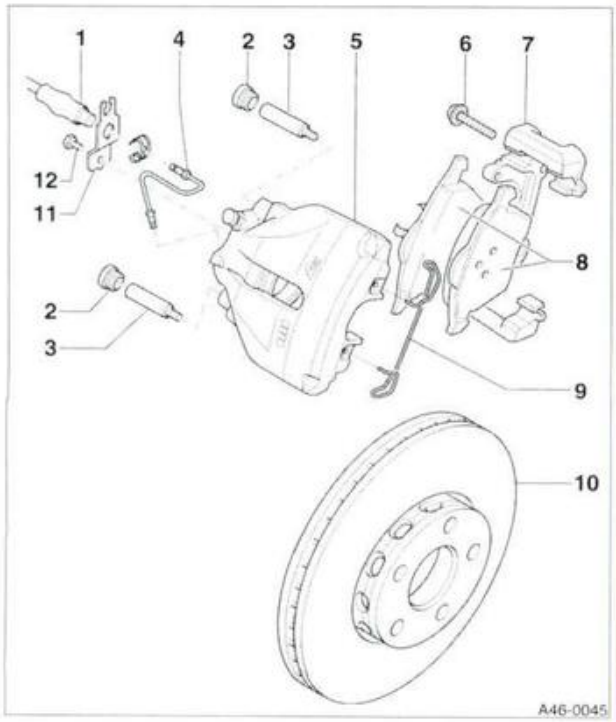
Inspect discs for cracks, scoring, glazing and warpage. Replace discs in pairs if either disc is worn below the minimum thickness or if any of the above listed defects are found. For brake disc specifications, see **Table a** and **Table b** in this repair group.

**Table a. Front brake caliper and disc specifications**

| Brake calipers | FN-3 (15") | FN-3 (16") | FNR-G60 | HP-2 (16") | Brembo (18") |
|---|---|---|---|---|---|
| Production number | 1LB, 1LE | 1LT, 1LF | 1LA, 1LG | 1LX, T7Z | 1LJ |
| Brake disc, vented | 288 mm | 312 mm | 321 mm | 321 mm | 365 mm |
| Brake disc, thickness | 25 mm | 25 mm | 30 mm | 30 mm | 34 mm |
| Brake disc, wear limit | 23 mm | 23 mm | 28 mm | 28 mm | 32 mm |
| Brake caliper piston | 57 mm | 57 mm | 60 mm | 42.8 mm | 28.32 mm |
| Pad thickness (w/out backing plate) | 14 mm | 14 mm | 14 mm | 14 mm | 11.4 mm |

*Front Brakes*

| Table b. Rear brake caliper and disc specifications | | | | |
|---|---|---|---|---|
| **Brake caliper (Lucas)** | **C 38** | **C 43 (16")** | **C 43 (16")** | **C 43 (16")** |
| Production Number | 1KD | 1KE | 1KE | 1KZ |
| Brake disc, not vented | 245 mm | 255 mm | | |
| Brake disc, vented | | | 269 mm | 355 mm |
| Brake disc, thickness | 10 mm | 10 mm | 22 mm | 22 mm |
| Brake disc, wear limit | 8 mm | 8 mm | 20 mm | 20 mm |
| Brake caliper, pistons | 38.1 / 36.0 mm | 42.8 / 40.8 mm | 42.8 / 40.8 mm | 43 / 41 mm |
| Pad thickness (w/out backing plate) | 12 mm | 12 mm | 12 mm | 12 mm |
| Wear limit (w/out backing plate) | 2 mm | 2 mm | 2 mm | 2 mm |




***NOTE***—

- *Minimum brake disc thickness is also stamped on disc hub.*

## Warnings and Cautions

***WARNING***—

- *If any of the brake warning lights illuminate while driving, check brake system immediately.*
- *Brake fluid is poisonous. Wear safety glasses when working with brake fluid, and wear rubber gloves to prevent brake fluid from entering the bloodstream through cuts or scratches. Do not siphon brake fluid by mouth.*
- *New brake pads require some breaking in. Allow for slightly longer stopping distances for the first 100 to 150 miles of city driving, and avoid hard stops.*
- *Perform brake work under clean conditions with careful attention to specifications and proper working procedures. If you lack the skills, the tools or a clean workplace for servicing the brake system, leave these repairs to an authorized Audi dealer or other qualified shop.*
- *After replacing brake components, depress the brake pedal firmly several times to seat the brakes in their normal operating position. Make sure the pedal is firm and at its normal height. If not, further work is required before driving vehicle.*

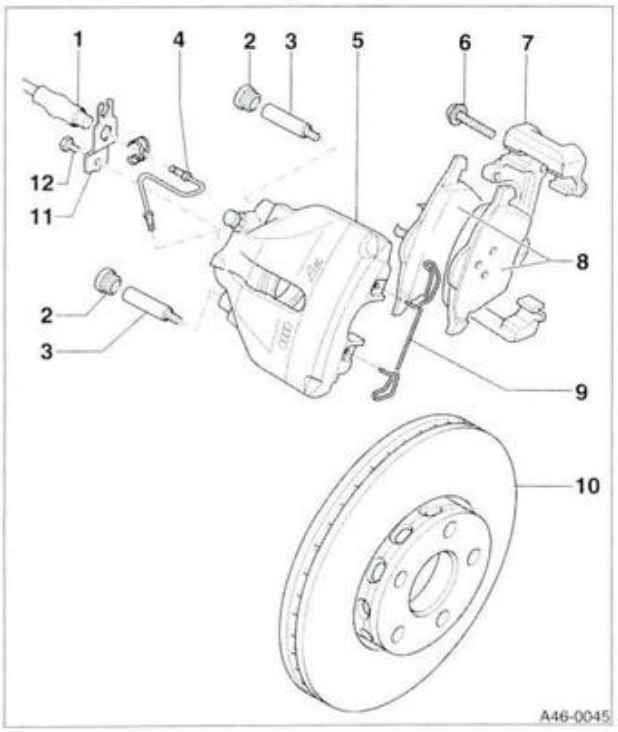
***CAUTION***—

- *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*

# Front Brakes

## Front brake assembly (FN-3)

1. Brake hose
   - Do not disconnect when removing brake pads
2. Protective cap
3. Guide bolt, 25 Nm (18 ft-lb)
4. Brake line, 15 Nm (11 ft-lb)
   - Attach to brake caliper.
   - Counterhold brake hose when attaching. Make sure hose is not twisted when installed.




5. Brake caliper
   - Check for free movement by moving from side to side.
   - Use alcohol to clean brake caliper thoroughly of grease and other contaminants before installing new brake pads.
6. Ribbed bolt, tightening torques:
   - M12 x 1.5 x 35, 130 Nm (96 ft-lb)
   - M14 x 1.5 x 35, 200 Nm (148 ft-lb)
   - Clean ribs if reusing. Use thread locking compound.
7. Brake pad carrier
   - Bolt to wheel bearing hub.
8. Brake pads
   - Replace front brake pads as a set.
   - Inner pad has retaining spring.
   - Inner pad (with spring) is marked with arrow pointing in direction of brake disc forward rotation when installed. Noise may result from incorrect installation.
   - Remove adhesive foil on outer brake pads before installing.
9. Retaining spring: Pay attention to correct installation position.
   - Insert in caliper holes.
   - Press retaining spring under pad carrier.

***WARNING*** —
- *If spring is improperly installed, brake caliper cannot adjust to compensate for wear on the outer brake pad. This causes brake pedal travel to increase.*

10. Brake disc
    - To replace brake disc, remove brake caliper and pad carrier.
    - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
11. Bracket
    - Bolt to brake caliper.
    - Make sure locating tab is seated in caliper.
12. Bolt, 10 Nm (7 ft-lb)

## Front brake pads (FN-3), removing and installing

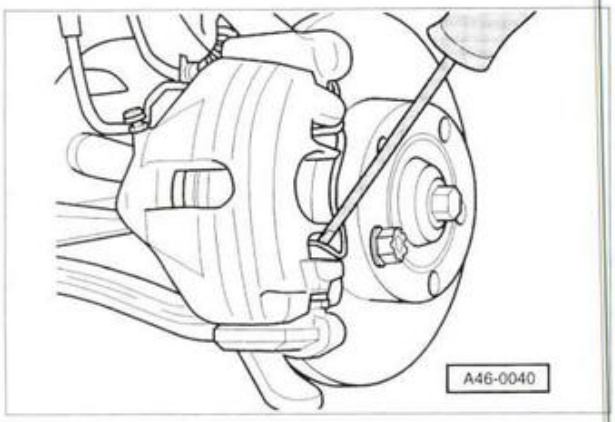
***NOTE*** —
- *If reusing brake pads or brake discs, mark them so they can be installed in their original positions to prevent uneven braking.*

– Raise car and support safely.

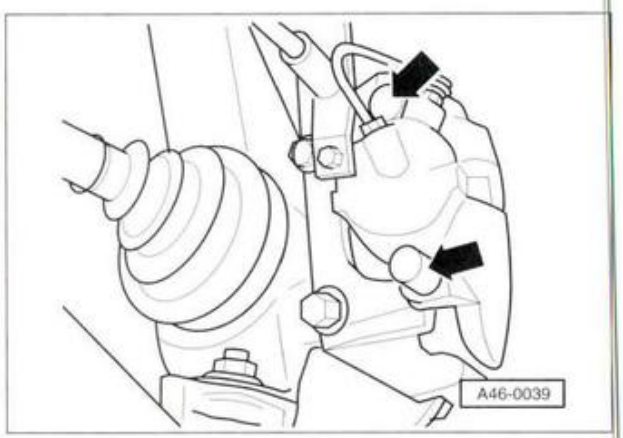
***WARNING*** —
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove front wheels.

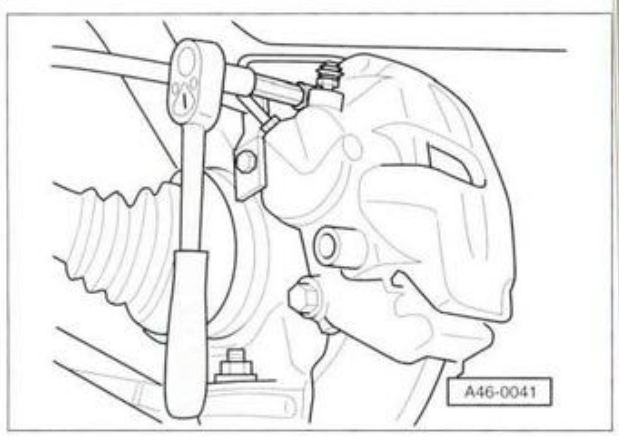
*Front Brakes*




➤ Using screwdriver, pry off brake pad retaining spring from brake caliper housing and remove.



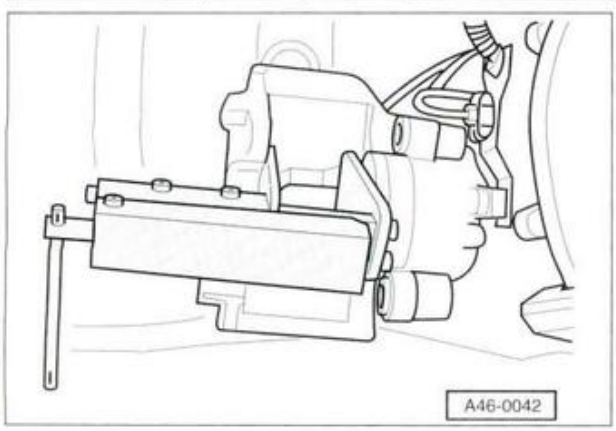

➤ Remove protective caps from caliper guide bolts.




➤ Remove both guide bolts from brake caliper.

– Remove brake caliper and hang from chassis using stiff wire. Do not allow caliper to hang from brake hose.

– Remove brake pads.



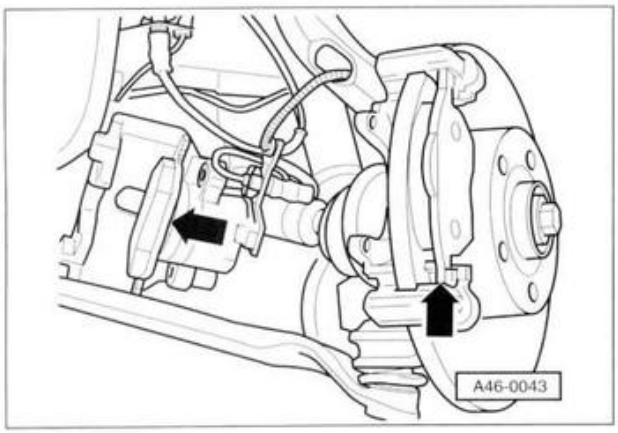

➤ Press piston back into caliper using resetting tool.

***CAUTION—***

- *Before pushing caliper pistons back into caliper, siphon off brake fluid out of brake fluid reservoir. Otherwise, fluid may overflow and cause paint damage.*

***NOTE—***

- *When siphoning brake fluid, use a bleeder bottle that is used exclusively for brake fluid.*




➤ Install complete brake repair kit. Insert brake pad with retaining spring in brake caliper housing. Make sure arrow on inner pad points in direction of forward rotation when installed. Noise may result from incorrect installation.

– Remove protective foil on backing plate of outer brake pad.

– Install outer brake pad on pad carrier.

– Install brake caliper housing in pad carrier using both guide bolts. Install both protective caps.

| Tightening torques | |
|---|---|
| Brake caliper to pad carrier | 25 Nm (18 ft-lb) |

– Install retaining spring in brake caliper.

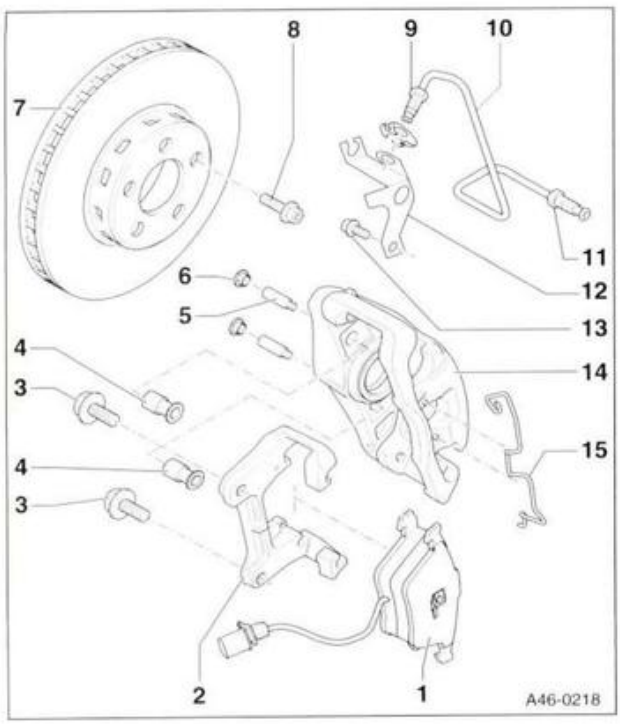
– Check caliper for freedom of movement.

– Install wheels.

| Tightening torques | |
|---|---|
| Wheel to hub | 120 Nm (89 ft-lb) |

– Check brake fluid and top off if necessary.

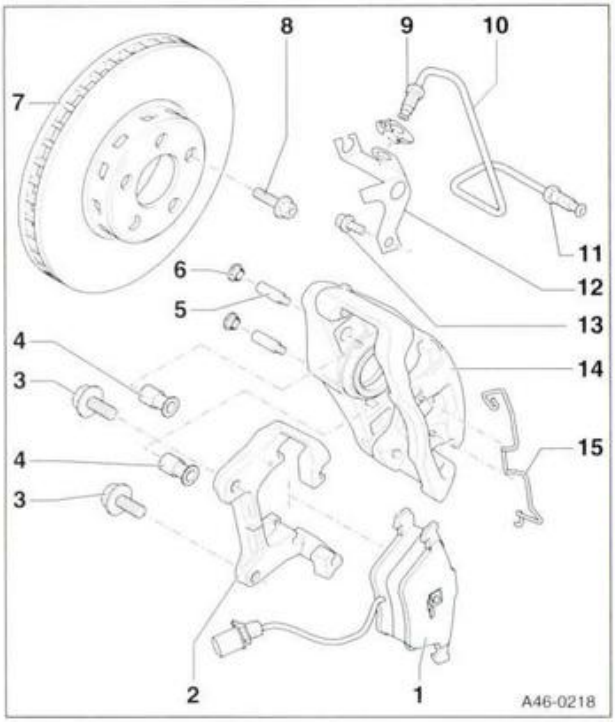
– Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.




## Front brake assembly (FNR-G60)

1. Brake pads
   - Replace front pads as a set.
   - Inner pad (with spring) has wear sensor and harness.
   - Outer brake pad provided with adhesive sheet on backing plate. Remove protective sheet before inserting pad.
2. Brake pad carrier
   - Bolt to wheel bearing housing.
3. M14 x 1.5 x 38 ribbed bolt, 200 Nm (148 ft-lb)
   - Clean ribs if reusing. Use thread locking compound.
4. Bushing
   - Insert into brake caliper housing.
5. Guide bolt, 30 Nm (22 ft-lb)
6. Protective cap
   - Attach wear sensor harness.
7. Brake disc
   - If worn, replace both on front as a set.
   - To replace brake disc, remove brake caliper and pad carrier.
   - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
8. Wheel bolts, 120 Nm (89 ft-lb)
9. Brake line connection to brake hose, 15 Nm (11 ft-lb)

*Front Brakes*




**10.** Brake line
- Attach to brake caliper.
- Counterhold brake hose when attaching. Make sure brake hose is not twisted when installed.
- Make sure tabs are properly seated in retainer grooves.

**11.** Brake line to brake caliper, 17 Nm (13 ft-lb)

**12.** Brake hose bracket
- Bolt to brake caliper housing.
- Attach brake line.
- Make sure locating tab is seated in caliper.

**13.** M8 x 16 bolt, 25 Nm (18 ft-lb)

**14.** Brake caliper
- Do not hang by brake hose. Secure to vehicle using wire. Do not twist hose.
- Use alcohol to clean brake caliper thoroughly of grease and other contaminants before installing new brake pads.

**15.** Retaining spring: Pay attention to correct installation position.
- Engage retaining spring to brake caliper and to outer pad.
- Press retaining spring under pad carrier after it is inserted in caliper holes.

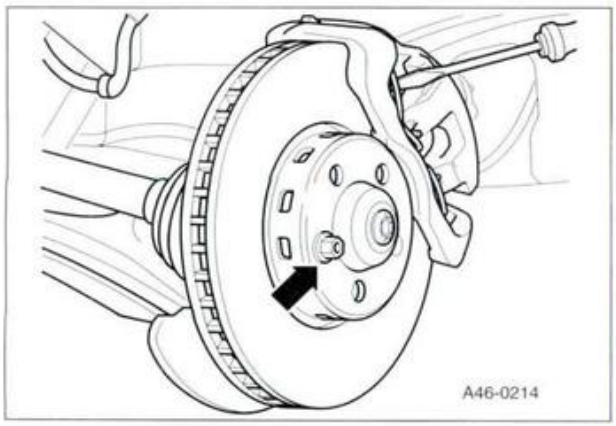
***WARNING—***
- *If spring is improperly installed, brake caliper cannot adjust to compensate for wear on the outer brake pad. This causes brake pedal travel to increase.*

## Front brake pads (FNR-G60), removing and installing

– Raise vehicle and support safely.

***WARNING—***
- *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

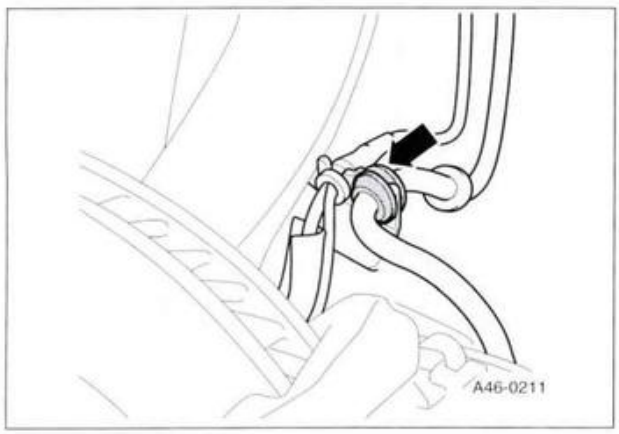
– Remove front wheels.



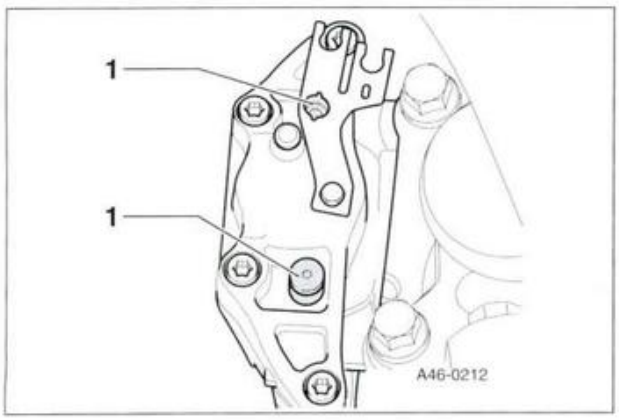

➤ Secure brake disc with a wheel bolt (**arrow**).

– Using screwdriver, pry off brake pad retaining spring from caliper and remove.

– Disconnect brake wear sensor connector. Using a screwdriver, release connector from holder turning connector by 90° at same time. Detach connector and pull upward to unhook wire.



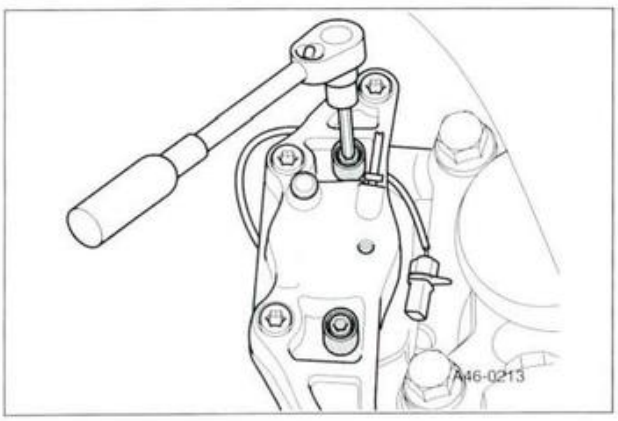

➤ Detach brake hose from bracket (**arrow**).




➤ Remove protective caps (**1**) from caliper guide bolts.

***NOTE***—

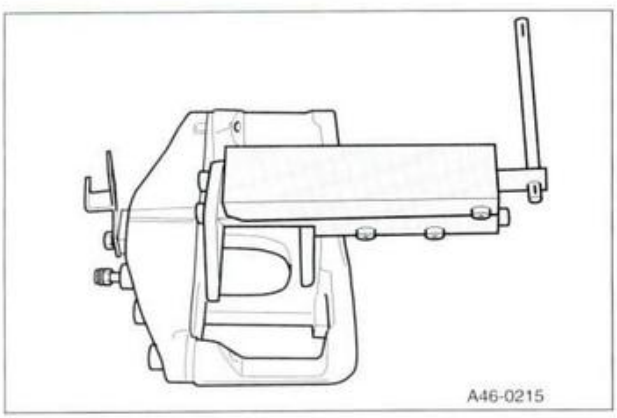
- *If necessary, remove brake hose bracket to gain access to upper guide bolt.*




➤ Unscrew both guide bolts and remove from brake caliper.

– Remove brake caliper and hang from chassis using stiff wire. Do not allow caliper to hang from brake hose.

– Remove brake pads.




➤ Press piston back into caliper using resetting tool.

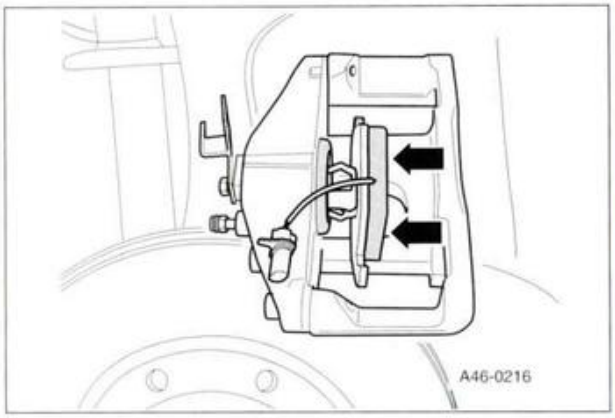
***CAUTION***—

- *Before pushing caliper pistons back into caliper, siphon off brake fluid out of brake fluid reservoir. Otherwise, fluid may overflow and cause paint damage.*

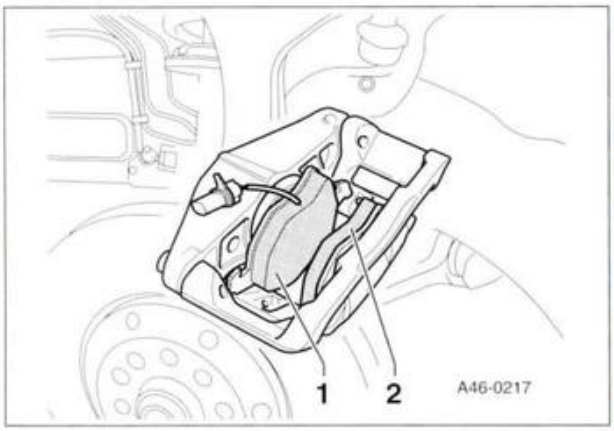
***NOTE***—

- *When siphoning brake fluid, use a bleeder bottle that is used exclusively for brake fluid.*

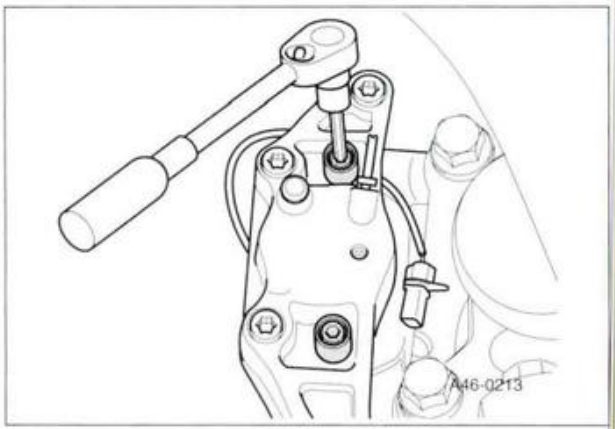
*Front Brakes*




➤ Install complete brake repair kit. Insert inner brake pad with retaining spring and wear sensor into brake caliper piston (**arrows**).




➤ Install outer brake pad (**2**) on brake caliper.




➤ Place caliper over brake pads and secure to pad carrier with guide bolts. Install protective caps.

| **Tightening torques** | |
|---|---|
| Brake caliper to pad carrier | 25 Nm (18 ft-lb) |

– Make sure brake hose is not twisted when installed.

– Insert retaining spring into brake caliper housing. Pay attention to correct installation position.
  - Insert in both holes of brake caliper housing.
  - Press retaining spring under pad carrier after it is inserted in both holes.

> ***WARNING —***
> - *If spring is improperly installed, brake caliper cannot adjust to compensate for wear on the outer brake pad. This causes brake pedal travel to increase.*

– Reconnect brake pad sensor and attach sensor harness to bracket.

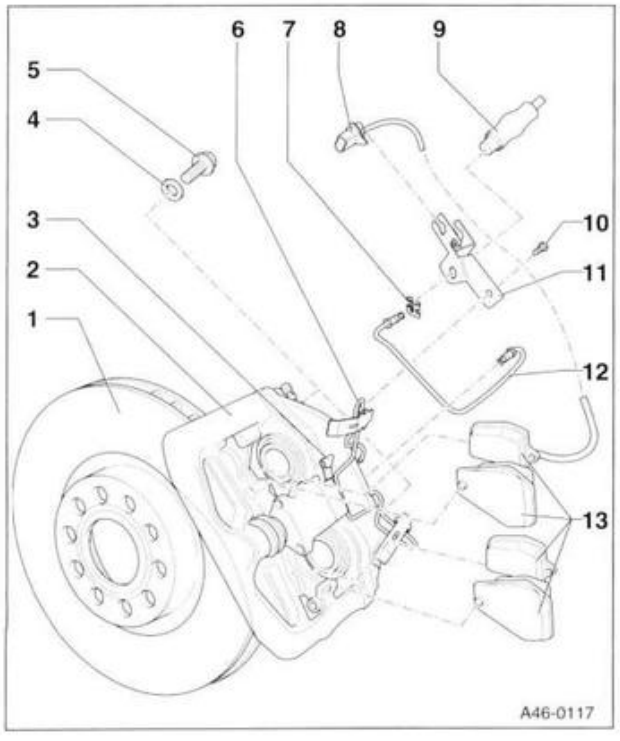
– Check caliper for freedom of movement.

– Install wheels.

| **Tightening torques** | |
|---|---|
| Wheel to hub | 120 Nm (89 ft-lb) |

– Check brake fluid and top off if necessary.

– Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.




## Front brake assembly, allroad (HP-2)

1. Brake disc
   - Check wear limit
   - To replace brake disc, remove brake caliper and pad carrier.
   - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
2. Brake caliper
   - If repair work is necessary, do not hang by brake hose. Secure to vehicle using wire
3. Pad sensor harness retainer
4. Ribbed washer
5. Ribbed bolt, 190 Nm (140 ft-lb)
   - Clean ribs if reusing. Use thread locking compound.
6. Retaining spring
   - Slide to side (not removable)
7. Spring clip
8. Pad wear sensor harness connector
9. Brake hose
   - Do not disconnect when removing brake pads
10. Bolt, 25 Nm (18 ft-lb)
11. Pad sensor connector and brake hose bracket
    - Bolt to brake caliper housing.
    - Make sure locating tab is seated in caliper.
    - Insert pad sensor harness connector.
12. Brake line, 15 Nm (11 ft-lb)
13. Brake pads
    - Replace front brake pads as a set.
    - Pads are different on left and right sides.
    - Once wear limit is reached (limit: 3 mm or ⅛ in), warning light in instrument cluster illuminates.
    - Remove adhesive foil from backing plates on outer brake pads before installing.

## Front brake pads, allroad (HP-2), removing and installing

***NOTE***—

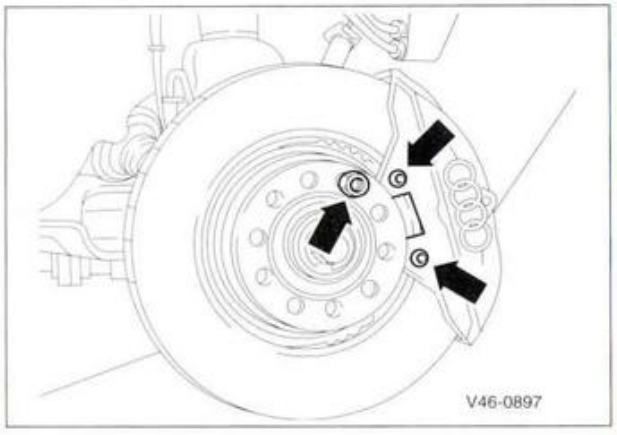
- *If reusing brake pads or brake discs, mark them so they can be installed in their original positions to prevent uneven braking.*

– Raise vehicle and support safely.

***WARNING***—

- *Make sure the car is stable and well supported at all times. A floor jack is not adequate support.*

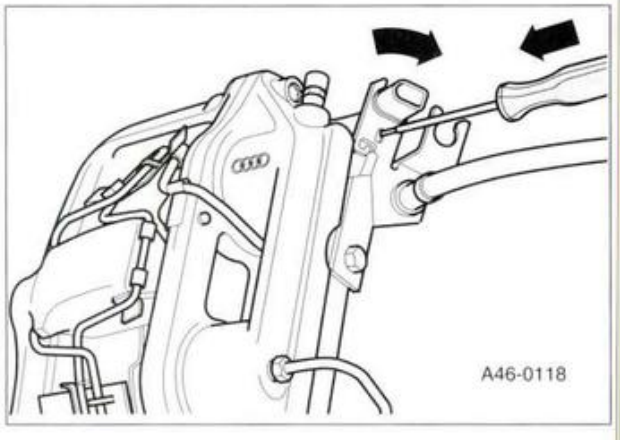
*Front Brakes*



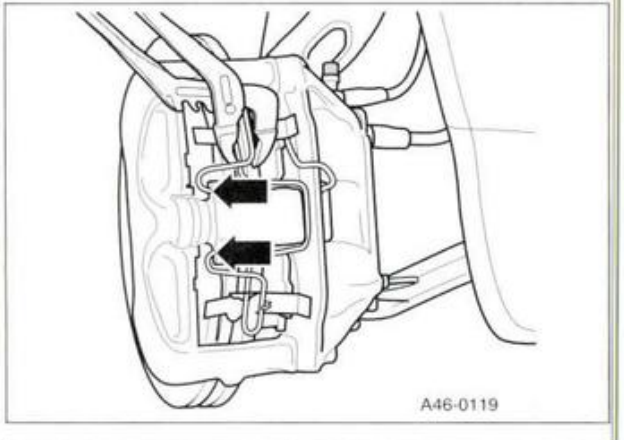

– Remove front wheels.

➢ Secure brake disc using a wheel bolt.

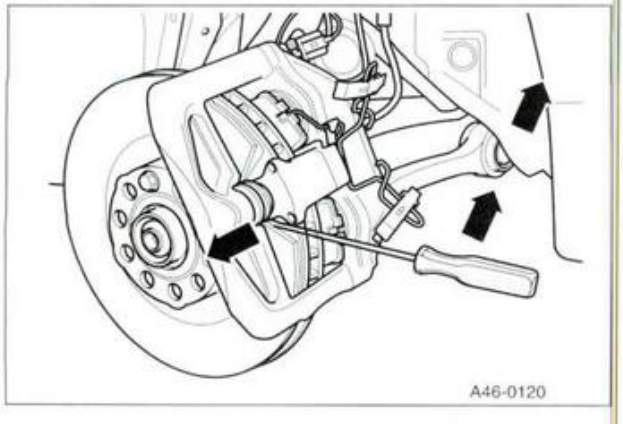
– Disconnect brake pad wear sensor connector.




➢ Disengage connector from bracket using a screwdriver and simultaneously turn connector 90°. Lift connector up and out and disengage wire.




➢ Use pliers to press upper and lower spring tensioner out of locking mechanism (**arrows**). Slide spring aside.



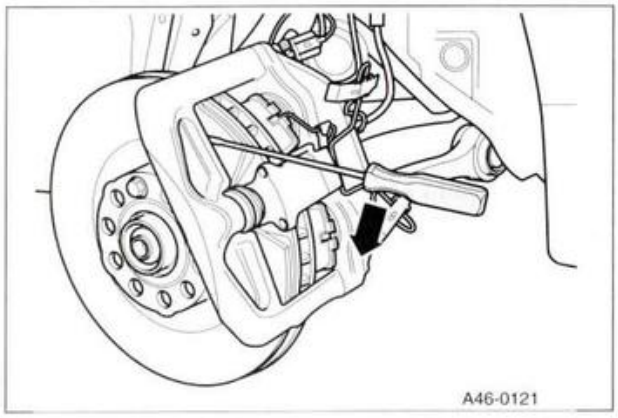

➢ Press piston back into brake caliper housing. To do this, slide floating frame using a screwdriver as shown and press powerfully outward.

***CAUTION—***

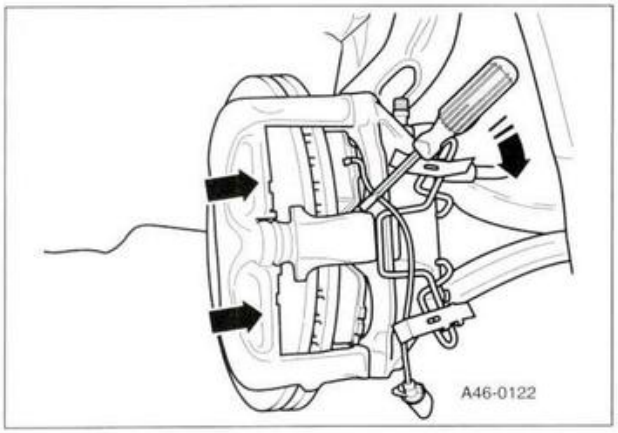
- *Before pushing caliper pistons back into caliper, siphon off brake fluid out of brake fluid reservoir. Otherwise, fluid may overflow and cause paint damage.*

***NOTE—***

- *When siphoning brake fluid, use a bleeder bottle that is used exclusively for brake fluid.*



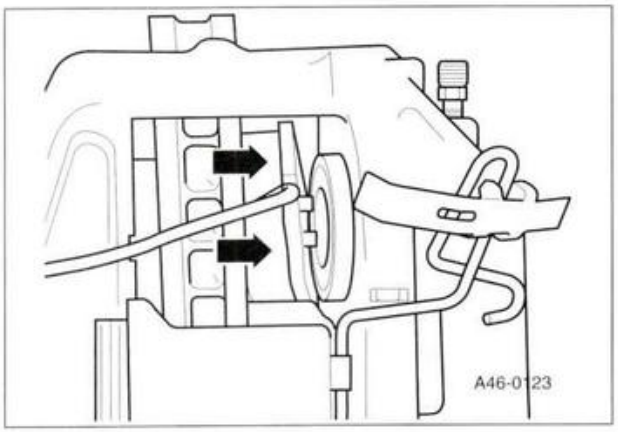

➤ Use screwdriver to press outer brake pads off brake caliper.




➤ Press floating frame firmly in direction of **arrow** until stop.

– Pry inner brake pads out of caliper pistons. Remove brake caliper housing.

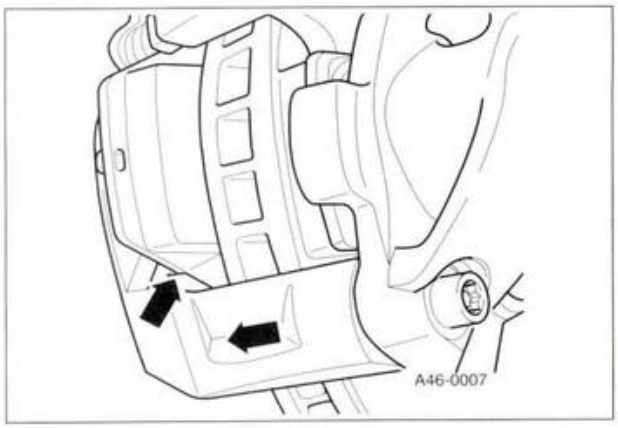
– Use alcohol to clean brake caliper thoroughly of grease and other contaminants before installing new brake pads.




➤ Insert complete brake repair kit. Insert inner brake pads in caliper piston.

***CAUTION***—
- *Do not damage protective piston boots when installing brake pads.*

***NOTE***—
- *Make sure protrusions on backing plates are securely fitted in brake pistons.*




➤ Press floating frame outward until stop.

– Remove protective foil on backing plates of outer brake pads.

– Make sure protrusions on pad backing plates are securely fitted in floating frame.

– Check caliper for freedom of movement.

– Remove wheel bolt from wheel hub.

– Install wheels.

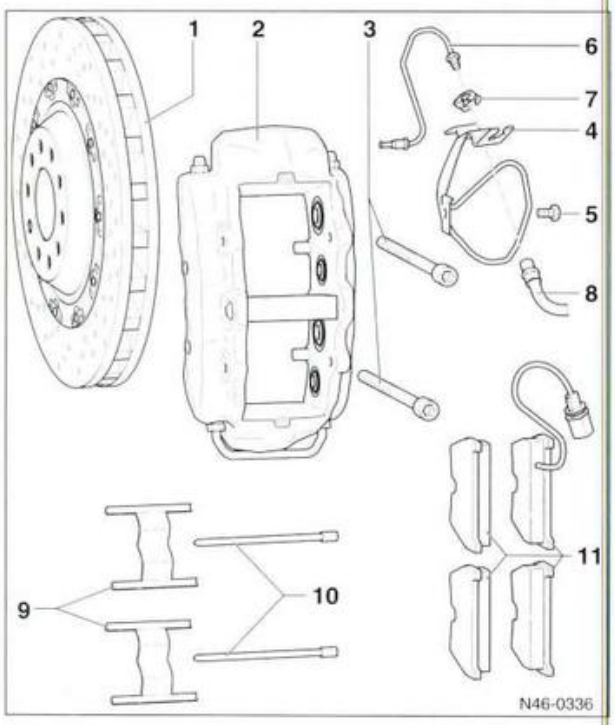
| Tightening torque | |
|---|---|
| Wheel to wheel hub | 120 Nm (89 ft-lb) |

***NOTE***—

- *When installing wheels, make sure rim flange does not rest on brake caliper. This could push brake pads out of position.*

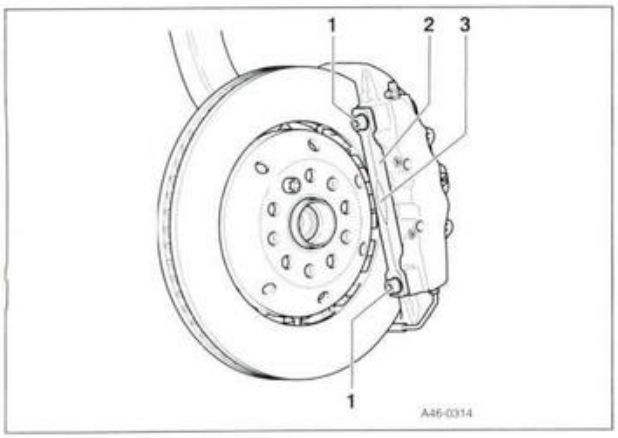
– Check brake fluid and top off if necessary.

– Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.




## Front brake assembly, RS6 (Brembo)

1. Brake disc
   - Internally ventilated brake disc diameter: 365 mm
   - Brake disc thickness: 34 mm
   - Wear limit: 32 mm
   - Replace front brake pads as a set.
   - To replace brake disc, remove brake caliper and pad carrier.
   - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
2. Brake caliper
   - See **Damper bracket, installing** in this repair group.
   - Do not disconnect brake hose when changing brake disc.
3. Replace Allen bolts, 110 Nm (81 ft-lb)
4. Brake hose bracket
   - Bolt to brake caliper housing.
   - Make sure locating tab is seated in caliper.
5. Bolt, 25 Nm (18 ft-lb)
6. Brake line, 15 Nm (11 ft-lb)
   - Attach to brake caliper.
   - Counterhold brake hose when attaching. Make sure brake hose is not twisted when installed.
   - Make sure tabs are properly seated in retainer grooves.
7. Spring clip
8. Brake hose
   - Do not disconnect brake hose when changing brake disc.
9. Pad retaining springs
10. Pad retaining pins
11. Brake pads
    - With wear sensor.
    - Check thickness.




## Damper bracket, installing, RS6

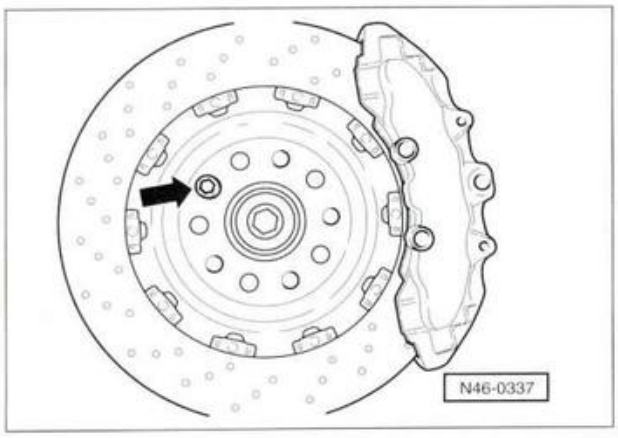
When installing damper bracket, check for damage to the surface and paint black if necessary.

Install both damper brackets so the mounting points on brakes make full contact with the contour of damper bracket.

***NOTE***—

- *The notch on the damper bracket faces toward wheel rim.*

1. Allen bolt M8 x 25, 25 Nm (18 ft-lb)
   - Apply thread locking compound when installing.
2. Damper bracket (note different versions).
3. Notch on damper bracket faces toward wheel rim.



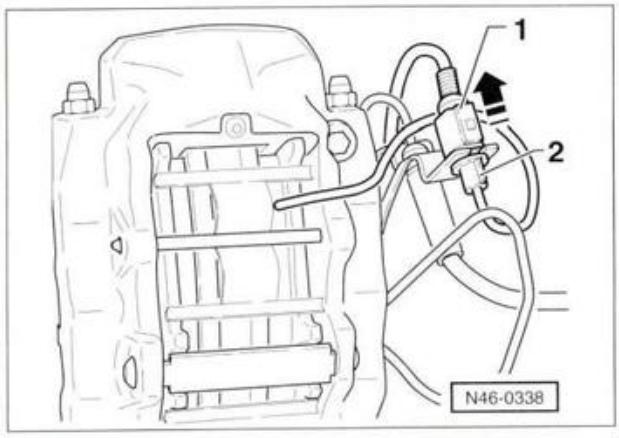

## Front brake pads, RS6 (Brembo), removing and installing

– Raise vehicle and support safely.

> ***WARNING***—
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

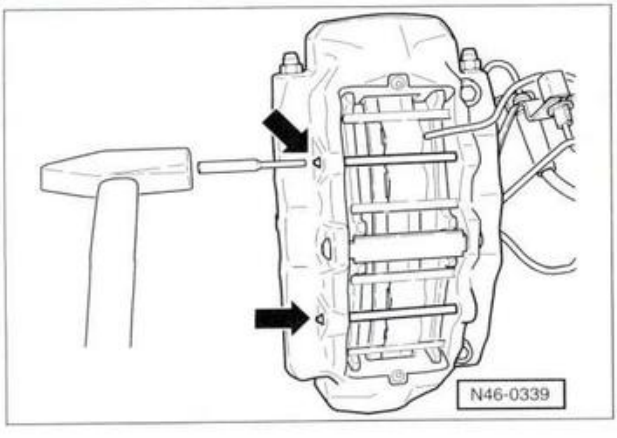
– Remove front wheels.

➤ Secure brake disc with a wheel bolt.



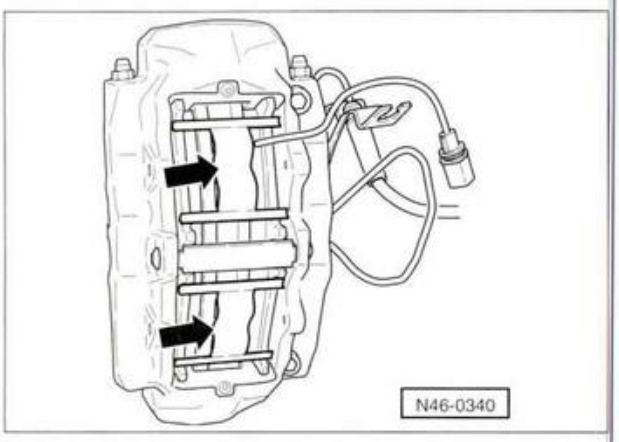

➤ Detach connector (**1**) from brake pad wear sensor.

– Slightly lift up positioning tag on lower part of connector (**2**) and then turn it through 90°. Remove lower half of connector out of holder.




➤ Drive out pad retaining pins (**arrows**).

*Front Brakes*




➤ Remove retaining springs (**arrows**).

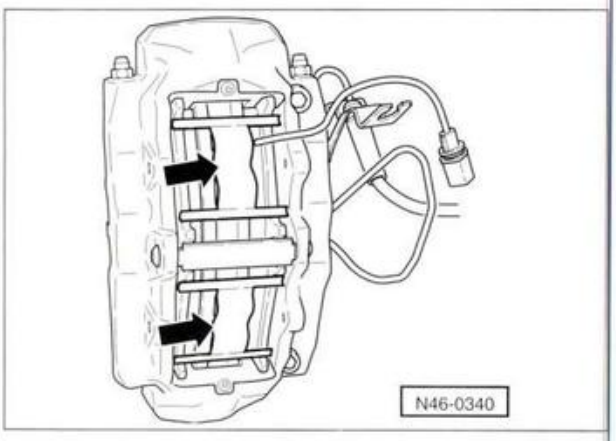
– Slide brake pads out of brake caliper.

– Press pistons back into caliper housing using resetting tool.

***CAUTION—***
*• Before pushing caliper pistons back into caliper, siphon off brake fluid out of brake fluid reservoir. Otherwise, fluid may overflow and cause paint damage.*

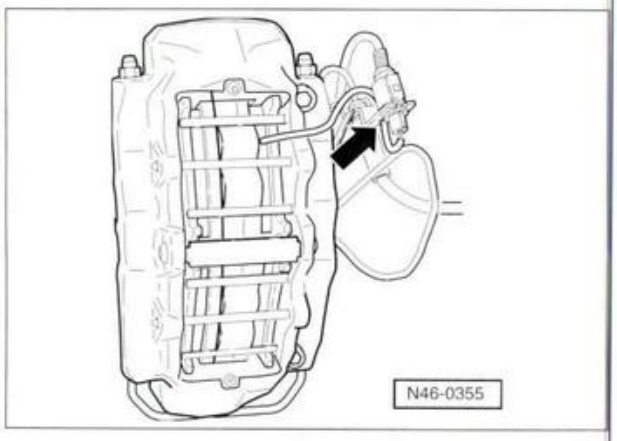
***NOTE—***
*• When siphoning brake fluid, use a bleeder bottle that is used exclusively for brake fluid.*

– Insert complete brake repair kit. Insert brake pads into brake caliper housing.




***NOTE—***
*• The brake pads are directional. Note markings.*

➤ Install retaining springs (**arrows**). Press retaining springs downward and drive in pad retaining pins to stop.




➤ Insert brake pad sensor connector and harness (**arrow**) into bracket at brake caliper. Plug in brake pad sensor connector.

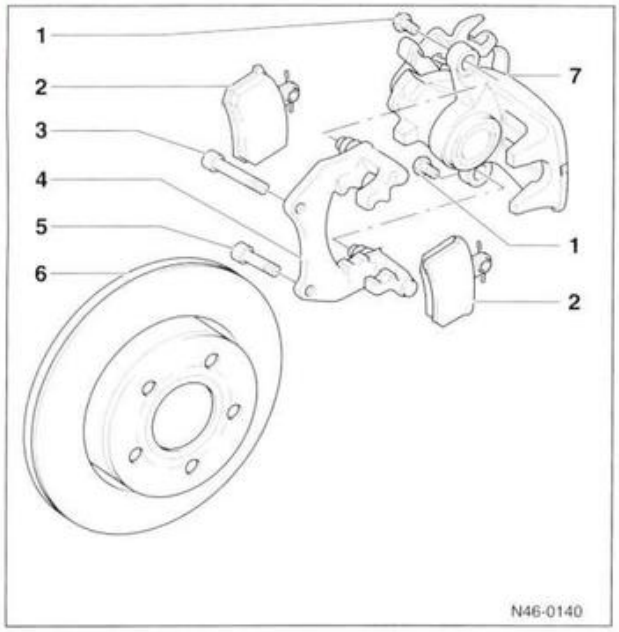
– Check caliper for freedom of movement.

– Install wheels.

| **Tightening torque** | |
|---|---|
| Wheel to hub | 120 Nm (89 ft-lb) |

– Check brake fluid and top off if necessary.

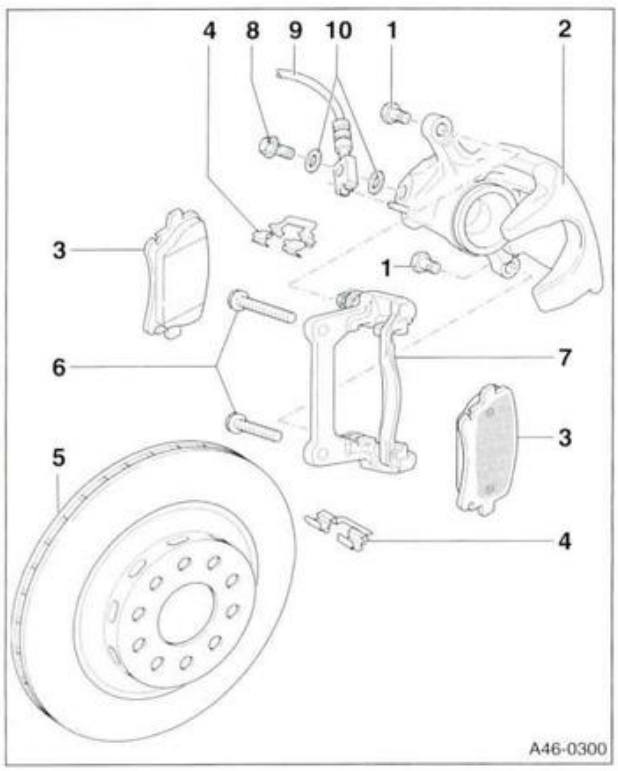
– Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.




## Rear Brakes

### Rear brake assembly, quattro

1. Replace self-locking guide bolt, 35 Nm (26 ft-lb)
   - When loosening and tightening, counterhold guide pin.
2. Brake pads. Replace as a set.
3. Ribbed bolt, 95 Nm (70 ft-lb)
4. Pad carrier with guide bolts and protective cap
   - Supplied with sufficient grease on guide bolts.
   - If protective caps or guide bolts are damaged, install repair kit. Use grease packet supplied to lubricate guide bolts.
5. Ribbed bolt, 95 Nm (70 ft-lb)
6. Brake disc. Replace as a set.
   - To replace brake disc, remove brake caliper and pad carrier.
   - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
7. Brake caliper
   - Do not disconnect brake hose when changing brake pads.
   - Brake hose to brake caliper, 45 Nm (33 ft-lb).
   - Make sure brake hose is not twisted when installed.




### Rear brake assembly, front-wheel drive

1. Replace self-locking guide bolt, 35 Nm (26 ft-lb)
   - When loosening and tightening, counterhold guide pin
2. Brake caliper
   - Unbolt caliper when changing brake pads.
   - Make sure brake hose is not twisted when installed.
3. Brake pads. Replace as a set.
   - Do not disconnect brake hose when changing brake pads.
4. Pad retaining spring
   - Always replace when changing pads.
5. Brake disc. Replace as a set.
   - To replace brake disc, remove brake caliper and pad carrier.
   - Lightly coat contact surfaces between brake disc and wheel bearing hub with polycarbamide grease (VAG part no.G 052 142 A2).
   - Check degree of wear (wear limit)
6. Replace M10 x 1.25 x 20 Allen bolts, 70 Nm (52 ft-lb) plus 90°
7. Pad carrier with guide pin and protective cap
   - Supplied as replacement part assembled with sufficient quantities of grease on guide bolts.
   - If protective caps or guide bolts are damaged, install repair kit. Use grease packet supplied to lubricate guide bolts.
8. Banjo bolt, 40 Nm (30 ft-lb)
9. Brake line with banjo union
   - Make sure brake hose is not twisted when installed.
   - Unbolt from pad carrier when changing pads.
10. Seals

## Rear brake pads and discs, removing and installing

***NOTE***—

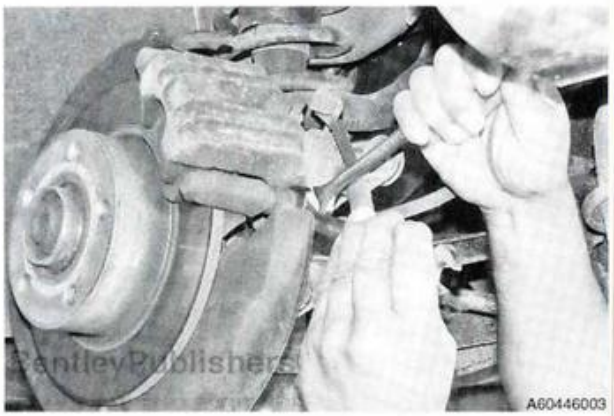
- *If reusing brake pads or brake discs, mark them so they can be installed in their original positions to prevent uneven braking.*

In the following procedure, a 1999 Avant quattro is illustrated. Rear brake pad replacement on a front wheel-drive model is similar.

– Raise vehicle and support safely.

> ***WARNING***—
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

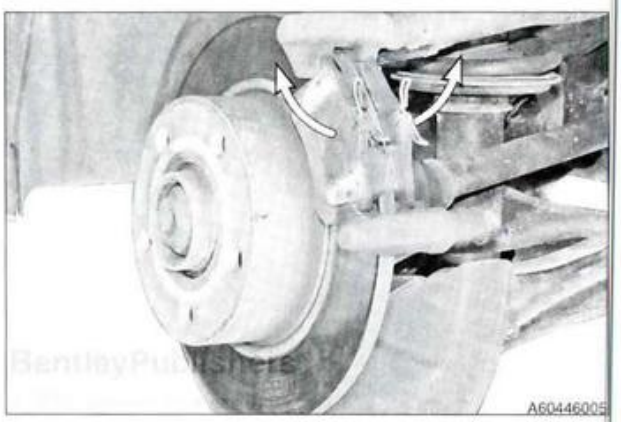
– Remove rear wheels.




➢ Counterhold lower guide pin and remove self-locking bolt from brake caliper housing.

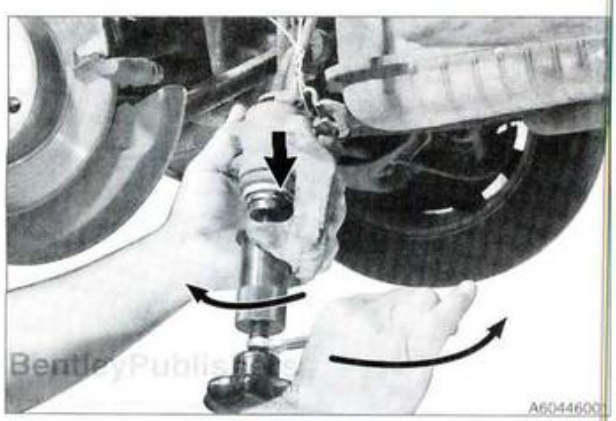
- If necessary, detach parking brake cable to remove lower guide bolt.
- Similarly, remove upper caliper guide bolt.

– Remove brake caliper and support from chassis using stiff wire. Do not let caliper hang on hose.




➢ Slide brake pads out of brake pad carrier (**arrows**).

– Use alcohol to clean brake caliper thoroughly of grease and other contaminants before installing new brake pads.



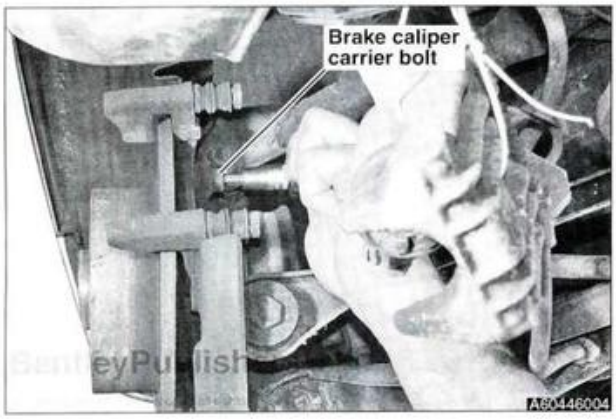
➢ Use VAG special tool 3272 or equivalent to screw caliper piston inward as far as it will go.

- Make sure tab on tool fits caliper piston slot (**arrow**).
- Rotate threaded spindle clockwise and knurled section counterclockwise.

> ***CAUTION***—
> - *Before pushing caliper pistons back into caliper, siphon off brake fluid out of brake fluid reservoir. Otherwise, fluid may overflow and cause paint damage.*

***NOTE***—

- *When siphoning brake fluid, use a bleeder bottle that is used exclusively for brake fluid.*




➤ If brake disc is worn, replace both on rear as a set:

- Prior to removing disc, remove brake pad carrier mounting bolts and lift off pad carrier.
- Remove brake disc. Prior to installing new disc, lubricate contact surfaces between disc and wheel hub with polycarbamide grease (VAG part no. G 052 142 A2).
- Use new pad carrier bolts with thread-locking compound.

| Tightening torque | |
|---|---|
| Pad carrier to hub (use new bolts)<br>• quattro, M10 x 1.25 x 20 Allen bolt<br>• Front-wheel drive, ribbed bolt | <br>95 Nm (70 ft-lb)<br>70 Nm (52 ft-lb) + 90° |

– Install complete brake repair kit. Remove protective foil on brake pad backing plates. Insert brake pads.

– Reinstall brake caliper using new self-locking bolts included in repair kit.

| Tightening torque | |
|---|---|
| Brake caliper to pad carrier | 35 Nm (26 ft-lb) |

– Check caliper for freedom of movement.

– Install wheels.

| Tightening torque | |
|---|---|
| Wheel to hub | 120 Nm (89 ft-lb) |

– Check brake fluid and top off if necessary.

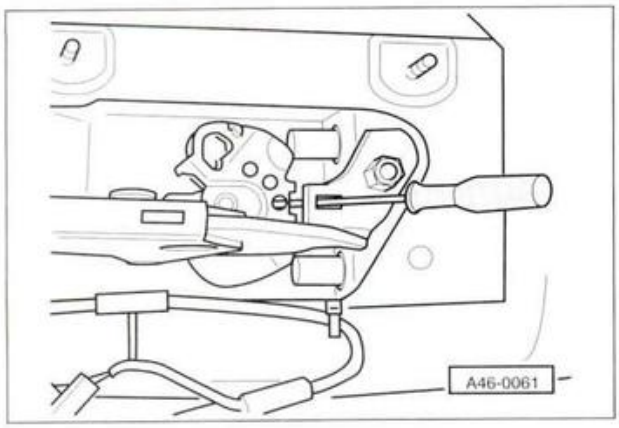
– Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.

## PARKING BRAKE

### Parking brake, adjusting

Because the rear brakes are automatically self-adjusting, readjusting the parking brake is usually not necessary. Adjustment is only necessary after replacing parking brake cables, rear brake calipers, rear brake pads or rear brake discs.

Bleed brakes, if necessary, prior to adjusting parking brake. See **47 Brakes–Hydraulic**.



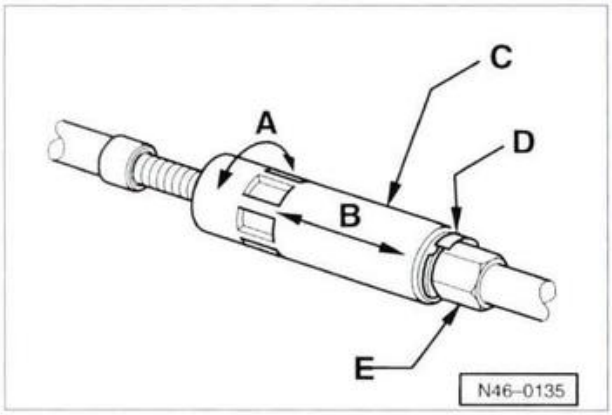

– Depress brake pedal firmly.

– Make sure parking brake lever is released.

– Remove rear air vent from center console.

➤ Remove any plastic components on parking brake cable compensator and discard.

*Parking brake*




– Use screwdriver to prevent compensator from turning (center console removed in illustration).

***NOTE***—

- *quattro: parking brake cable adjusting components are located in front of rear lower control arms.*
- *Front-wheel drive: parking brake cable adjusting components are located in the tunnel on the underside of vehicle.*

➤ Remove locking component (**D**).

– Counterhold hex (**E**) using 13 mm open end wrench and turn adjusting nut (**C**) in until stop.

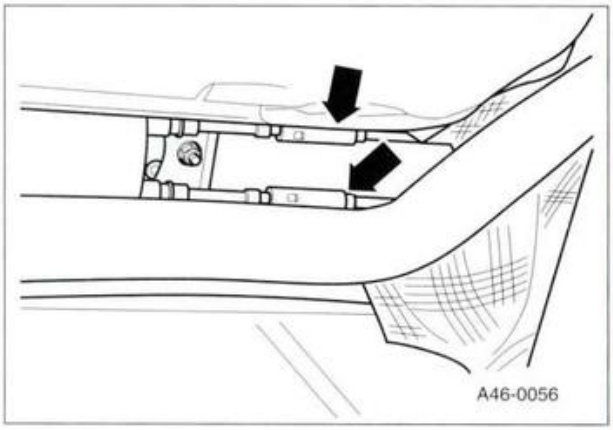
– Slide cable adjuster (**B**) together.

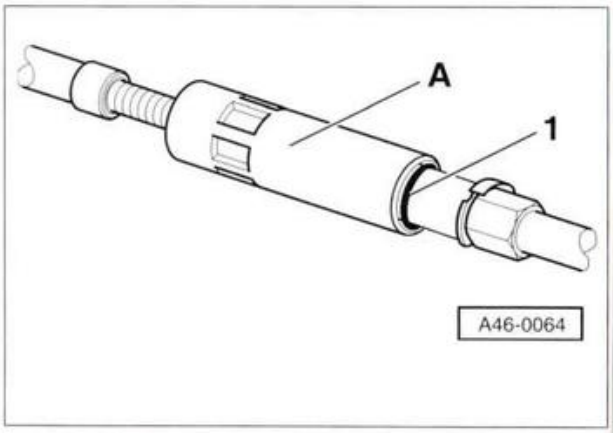
– Unscrew adjusting nut until slot for locking component is visible.

– Install locking component.

➤ Pull both cable sleeve adjusters apart simultaneously until cables are tensioned. Lever must not lift off at brake caliper during this process.

– Remove screwdriver from compensator and apply parking brake firmly 3 times.

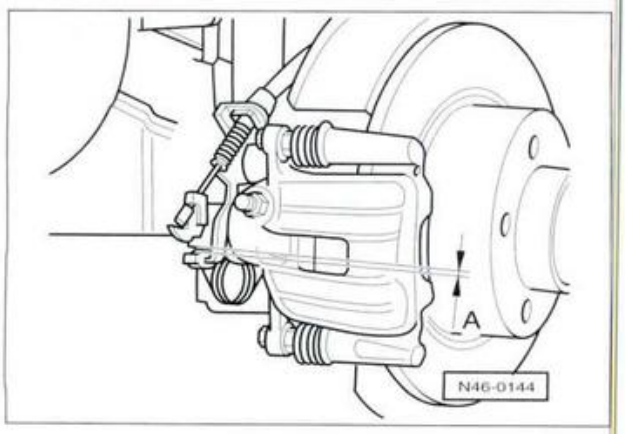



***NOTE***—

- *Colored O-ring (**1**) must not be visible following successful installation. This ensures that the parking brake cable adjustment mechanism is sufficiently protected against dirt and water spray.*

➤ Check parking brake tension and adjust fine adjustment (**A**) in or out, if necessary.

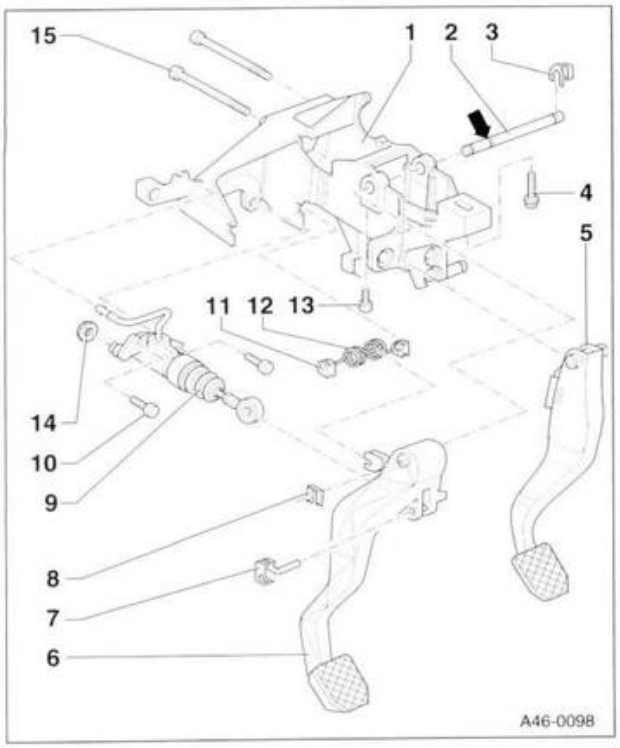



➤ Turn adjustment until lever lifts slightly from brake caliper.

– Note dimension (**A**). Gap should be visible, but not be wider than 1.5 mm (0.06 in).

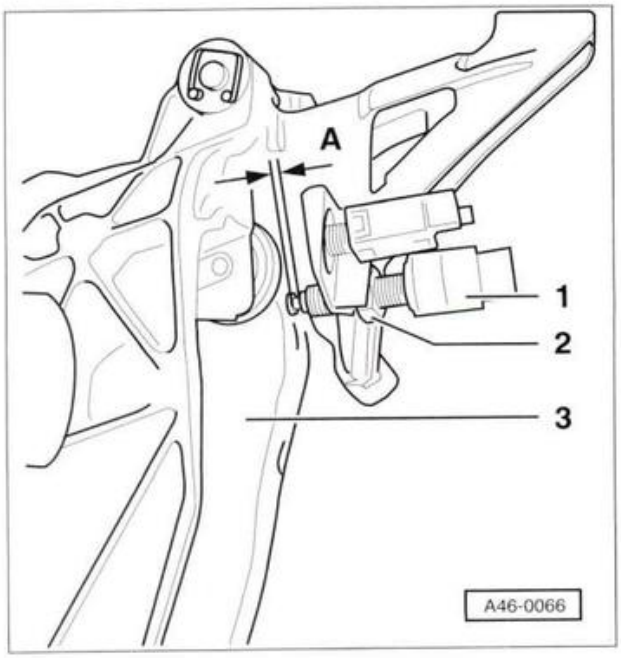
## BRAKE LIGHT SWITCH

***CAUTION—***
- *Make sure brake pedal travel is not restricted by thick floor mats.*




### Brake pedal assembly

1. Bracket
2. Pivot pin for clutch and brake pedals
   - Installation position: Groove (**arrow**) faces clutch pedal
3. Locking clip
4. Allen bolt, 25 Nm (18 ft-lb)
5. Brake pedal
6. Clutch pedal
7. Pin
8. Locking clip
9. Clutch master cylinder
10. Allen bolt, 20 Nm (15 ft-lb)
11. Mount
    - Install in mounting bracket with over-center spring.
12. Over-center spring
    - Remove and install together with clutch pedal.
13. Socket-head bolt, 5 Nm (4 ft-lb)
    - Secures pivot pin for clutch and brake pedal.
14. Seal
    - Do not remove from plastic master cylinder.
15. Torx bolt, 25 Nm (18 ft-lb)




### Brake light switch, adjusting

***NOTE—***
- *Before adjusting, make sure pedal cluster is bolted tightly to brake booster and instrument panel carrier.*

#### Threaded brake light switch

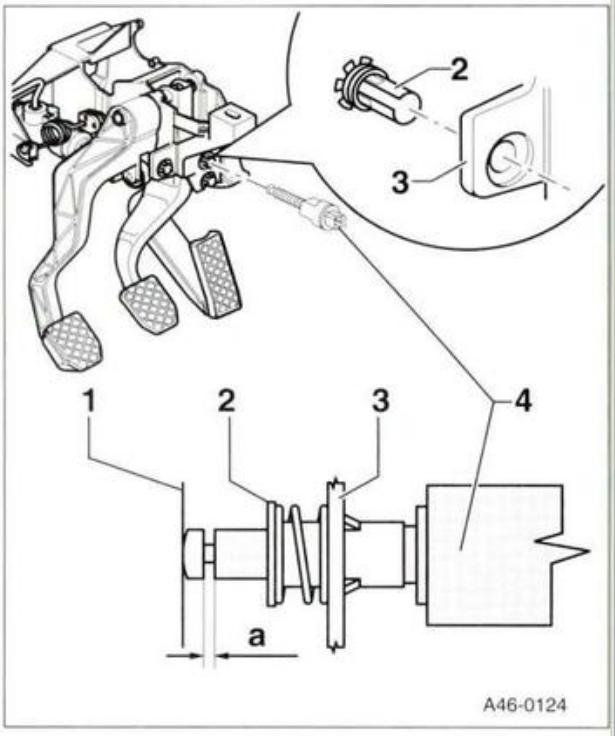
1. Brake light switch
2. Nut, M12 x 1.5
3. Brake pedal

***NOTE—***
- *A spring washer (not shown in illustration) is installed between nut (**2**) and pedal bracket.*

– Turn brake light switch to adjust inward or outward as necessary to obtain dimension **A** = 0.1 - 0.5 mm (0.004 - 0.02 in). Lock in place with nut and tighten nut to 4.5 Nm (3 ft-lb).

– Check dimension **A** again after tightening nut.

*Brake Light Switch*




### Spring-clip mounted brake light switch

1. Brake pedal contact surface
2. Spring clip (insert in pedal bracket from rear)
3. Pedal bracket
4. Brake light switch (F)
   - Dimension **a**: max. 0.7 mm (0.28 in)

***NOTE***—

- *In order to fit tightly, do not install switch more than once.*

### Adjusting switch

– Guide switch (**4**) into installed clip (**2**) and press in until stop.

***NOTE***—

- *Do not apply pressure to brake pedal.*
- *Turn back switch if necessary. Observe dimension* **a**.

# 47 Brakes–Hydraulic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## GENERAL

This repair group covers brake bleeding and replacement procedures for the master cylinder, brake booster and vacuum pump. For additional brake system information, see:

- **03 Maintenance** for brake fluid level check
- **45 Antilock Brakes (ABS)** for ABS related components
- **46 Brakes–Mechanical** for brake pads, discs and parking brake

Models covered by this manual are equipped with power assisted four-wheel disc brakes. A vacuum brake booster provides power assistance to a dual-circuit master cylinder.

### Troubleshooting

Brake performance is mainly affected by three factors:

- Level and condition of brake fluid
- Brake system's ability to create and maintain hydraulic pressure
- Condition of friction components

– Air in brake fluid makes brake pedal feel spongy during braking or will increase brake pedal force required to stop. Fluid contaminated by moisture or dirt can corrode components. Inspect brake fluid. If fluid is dirty or murky, or over two years old, flush and replace it.

– Visually check hydraulic system, starting at master cylinder. To check function of master cylinder:

- Hold brake pedal down hard with car stopped and engine running. Make sure pedal feels and stays solid.
- If pedal slowly falls to floor, either brake master cylinder is leaking internally, or fluid is escaping from other points.
- If no leaks can be found, brake master cylinder is faulty; replace it.

- Check all brake fluid lines and couplings for leaks, kinks, chafing or corrosion.
- Check brake booster by pumping brake pedal approximately 10 times with engine off. Hold pedal down and start engine. Pedal should fall slightly. If not, before suspecting a faulty brake booster:
  - Check for visible faults in vacuum ducting.
  - Check brake booster vacuum pump (if applicable).
  - Check one-way check valve at hose connection on vacuum booster.

## Warnings and Cautions

***WARNING*—**

- *If any of the brake warning lights illuminate while driving, check brake system immediately.*
- *Brake fluid is poisonous. Wear safety glasses when working with brake fluid, and wear rubber gloves to prevent brake fluid from entering the bloodstream through cuts or scratches. Do not siphon brake fluid by mouth.*
- *Perform brake work under clean conditions with careful attention to specifications and proper working procedures. If you lack the skills, the tools or a clean workplace for servicing the brake system, leave these repairs to an authorized Audi dealer or other qualified shop.*
- *After replacing brake components, depress the brake pedal firmly several times to seat the brakes in their normal operating position. Make sure the pedal is firm and at its normal height. If not, further work is required before driving vehicle.*
- *Do not mix mineral oil products such as gasoline or engine oil with brake fluid. Mineral oil damages rubber seals in the brake system.*
- *Use only new brake fluid conforming to US standard FMVSS 116 DOT 4. Genuine VW / Audi brake fluid conforms to this specification.*
- *Observe hazardous waste regulations when disposing brake fluid as a hazardous waste.*
- *Do not use DOT 5 (silicone) brake fluid.*

***CAUTION*—**

- *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*
- *Brake fluid is hygroscopic (absorbs moisture from the air). Store in an airtight container.*
- *Do not fill brake fluid above* **MAX** *in fluid reservoir.*
- *During final road test, perform at least one ABS-controlled braking operation. Make sure appropriate pulsations are felt at the brake pedal.*

## Bleeding Brakes

Brake fluid absorbs moisture from the atmosphere and so is said to be *hygroscopic*. If moisture content of brake fluid is too high, corrosion inside brake system may result. The boiling point of brake fluid is also considerably lowered, resulting in the possible vaporization of brake fluid and reduction in braking force under some conditions.

Brake fluid is also used as the operating fluid for the hydraulic clutch on vehicles with a manual transmission. Fluid is drawn into clutch master cylinder via a small fitting in upper part of reservoir. In case of a hydraulic clutch leak, fluid loss will only be to the level of the fitting. This retains an adequate reserve for the brake system.

Audi specifies use of brake fluid that meets Department of Transportation (DOT) 4 Super specification in addition to Federal Motor Vehicle Safety Standard (FMVSS) 116 and Society of Automotive Engineers (SAE) standard J1703. DOT 4 Super is also known as DOT 4+. Brake fluid meeting this specification is also available in 30 and 50 liter containers for use in pressure bleeders.

| **Brake fluid specifications** | |
|---|---|
| Audi specification | DOT 4 Super (DOT 4+) |
| Minimum wet boiling point | 329°F (165°C) |
| Dry boiling point | exceeds 500°F (260°C) |

Bleeding brakes is usually done for one of two reasons: either to replace old brake fluid as part of routine maintenance or to expel trapped air in the system that resulted from opening the brake hydraulic system during repairs.

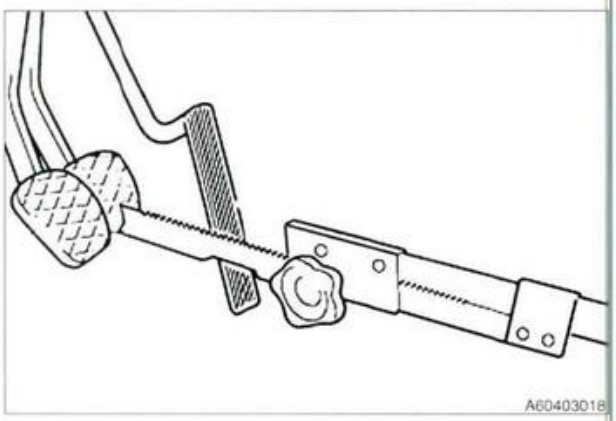
When adding or replacing brake fluid, add new brake fluid from an unopened container. If you are certain no air was introduced into the master cylinder or ABS hydraulic unit, bleed brakes at the calipers using a pressure bleeder.

Because the hydraulic clutch and the brake system share a common fluid and reservoir, be sure to bleed the clutch hydraulic system when replacing the brake fluid.

### Tools and techniques

To bleed brakes, use special tool VAS 5234 or equivalent pressure bleeder.

*Bleeding Brakes*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A brake pedal prop is also needed for this procedure.

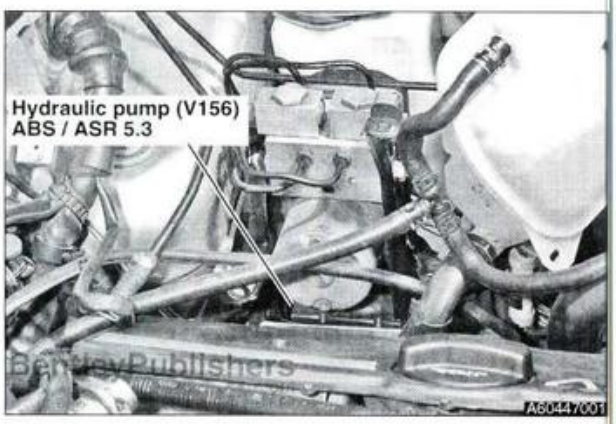
***WARNING***—
- *The ABS system uses electronic controls and a sophisticated hydraulic unit. Once air enters the hydraulic unit, it cannot be removed using traditional bleeding methods. For this reason, pressure bleed the brakes using VAS 5234 or equivalent pressure bleeder.*
- *When flushing brake fluid from the system, use extreme care to not let the brake fluid reservoir run dry. If air enters the hydraulic unit, use the VAG 1551 or VAG 1552 scan tool and service tester to bleed the brake system before the vehicle is driven.*

The design of the ABS hydraulic unit requires that brakes be bleed in the following (non-traditional) order:

- Right front
- Left front
- Right rear
- Left rear

## ABS versions

For effective brake fluid flushing and bleeding, identify the version of Bosch ABS system installed in vehicle. Bleeding procedure for the two systems differs.



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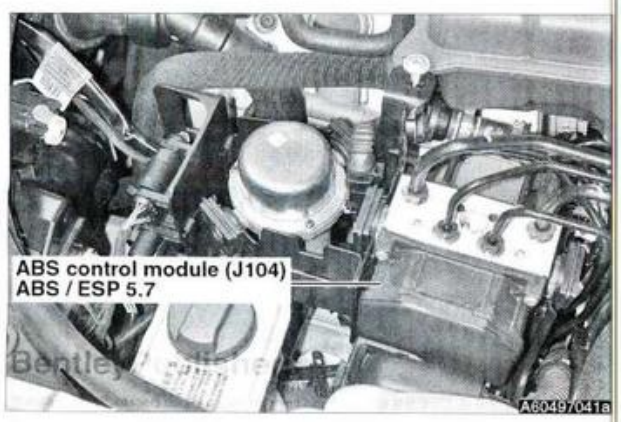
**Bosch ABS / ASR 5.3**. System is equipped with hydraulic pump (V156), located under ABS hydraulic unit, left side engine compartment. ABS control module (J104) is separate unit under floor covering in right footwell.

***WARNING***—
- *Bleeding procedure for models with ABS / ASR 5.3 cannot be accomplished without VAG 1551 or VAG 1552.*



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**Bosch ABS / ESP 5.7** ABS control module (J104) is combined with ABS hydraulic unit, left side engine compartment. There is no separate hydraulic pump.

## Brake fluid, bleeding or replacing, Bosch ABS / ASR 5.3

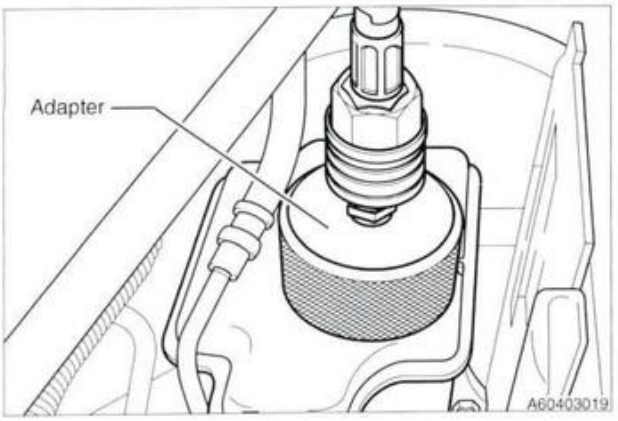
In this procedure, brake calipers are first bled using the pressure bleeder. Then the ABS / ASR hydraulic pump is bled using the VAG 1551 or VAG 1552 scan tool. The scan tool activates the hydraulic pump for 10 seconds.

> ***WARNING***—
> - *Bleeding procedure for models with ABS / ASR 5.3 cannot be accomplished without VAG 1551 or VAG 1552.*
> - *Do not allow the brake fluid reservoir to run completely dry at any time during this procedure.*

– Unscrew brake fluid reservoir cap and siphon out as much brake fluid as possible from fluid reservoir.

> ***WARNING***—
> - *Brake fluid is poisonous. Do not siphon fluid by mouth.*

> ***CAUTION***—
> - *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*



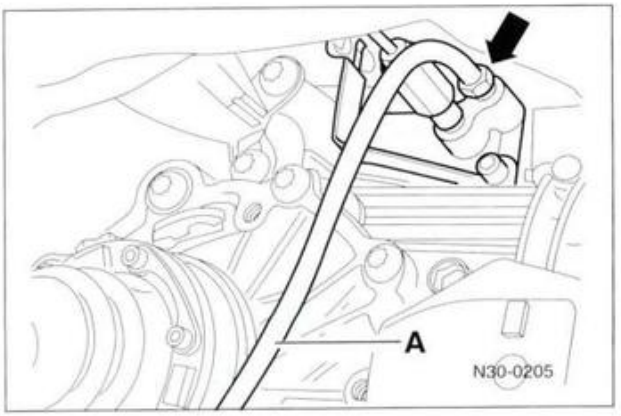

➤ Screw brake bleeder adapter to reservoir. Connect brake bleeder pressure hose to adapter.

***NOTE***—
- *At least 2 bar (29 psi) of pressure is needed to bleed the ABS hydraulic unit.*

– Install brake pedal prop between driver seat and brake pedal and apply tension.

– Raise car and support safely.

> ***WARNING***—
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

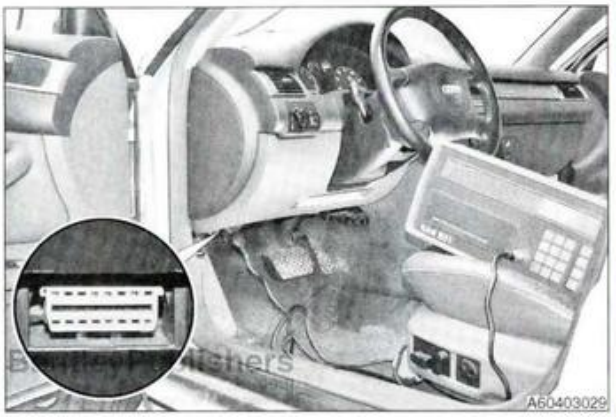



➤ Manual transmission vehicle: Remove clutch slave cylinder bleeder screw cap. Attach brake fluid collecting bottle hose to bleeder screw (**arrow**). Open bleeder and allow approx. 100 cc (4 oz) of fluid to flow out. Close bleeder and reinstall cap.

– Working at each brake caliper, attach brake fluid collecting bottle bleeder hose to bleeder screw. Follow this sequence for bleeding:
- Right front
- Left front
- Right rear
- Left rear

– Open bleeder and allow approx. 250 cc (10 oz) of fluid to flow out of each caliper. Tighten bleeder screws and reinstall caps.

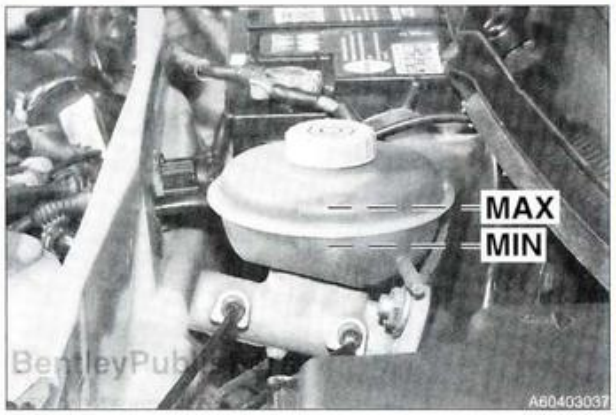
*Bleeding Brakes*




➤ Connect VAG 1551 or VAG 1552 scan tool to data link connector (DLC, **inset**), located under left side dashboard, to left of steering column.

– Perform brake bleeding sequence using scan tool.

– Remove brake bleeding apparatus and pedal prop.




➤ Check brake fluid level and top off if necessary.

– Check brake pedal pressure and free play.

| Brake pedal free play | |
|---|---|
| Maximum pedal play | ⅓ of pedal travel |

– Manual transmission vehicle: Check clutch operation and clutch pedal free play.

## Brake fluid, bleeding or replacing, Bosch ABS / ESP 5.7

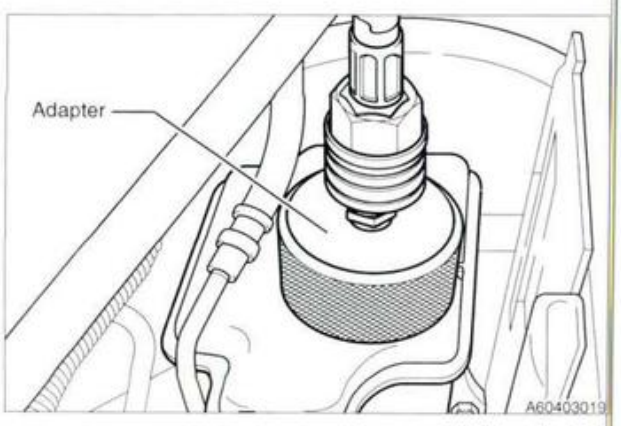
Unlike Bosch ABS / ASR version 5.3, ABS / ESP version 5.7 does not incorporate hydraulic pump for traction control (V156). It is not necessary to bleed the system with VAG 1551 or VAG 1552 scan tool unless air enters the ABS hydraulic unit.

***WARNING***—
- *Do not allow the brake fluid reservoir to run completely dry at any time during this procedure.*

– Unscrew brake fluid reservoir cap and siphon out as much brake fluid as possible from fluid reservoir.

***WARNING***—
- *Brake fluid is poisonous. Do not siphon fluid by mouth.*

***CAUTION***—
- *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*



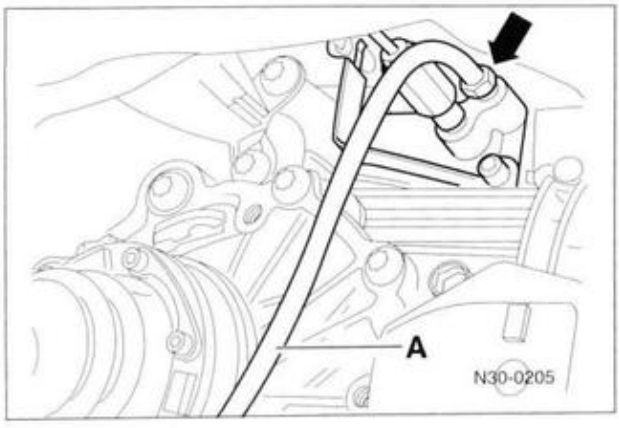

➤ Screw brake bleeder adapter to reservoir. Connect brake bleeder pressure hose to adapter.

***NOTE***—
- *At least 2 bar (29 psi) of pressure is needed to bleed the ABS hydraulic unit.*

– Install brake pedal prop between driver seat and brake pedal and apply tension.

– Raise car and support safely.

> ***WARNING —***
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*




➤ Manual transmission vehicle: Remove clutch slave cylinder bleeder screw cap. Attach brake fluid collecting bottle hose to bleeder screw (**arrow**). Open bleeder and allow approx. 100 cc (4 oz) of fluid to flow out. Tighten bleeder and reinstall cap.

– Working at each brake caliper, attach brake fluid collecting bottle bleeder hose to bleeder screw. Follow this sequence for bleeding:
  • Right front
  • Left front
  • Right rear
  • Left rear

– Open bleeder and allow approx. 250 cc (10 oz) of fluid to flow out of each caliper. Tighten bleeders and reinstall caps.

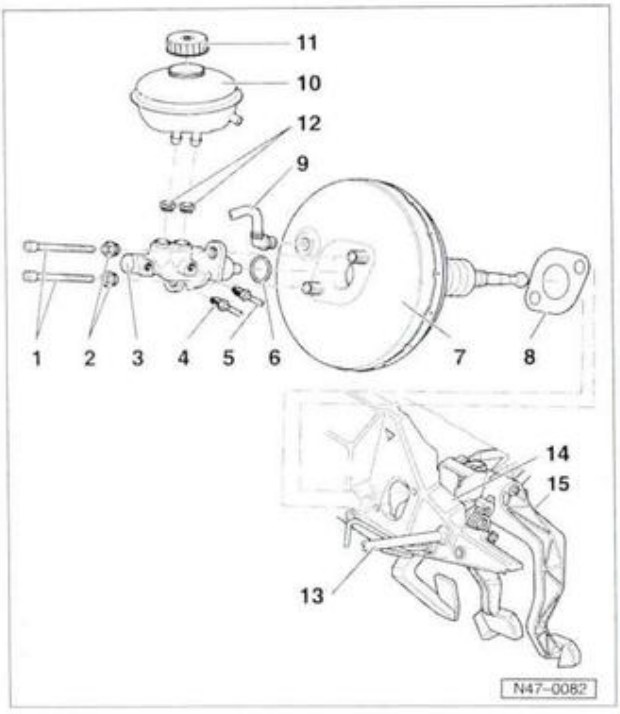
– Remove brake bleeding apparatus and pedal prop.

➤ Check brake fluid level and top off if necessary.

– Check brake pedal pressure and free play.

| **Brake pedal free play** | |
|---|---|
| Maximum pedal play | ⅓ of pedal travel |

– Manual transmission vehicle: Check clutch operation and clutch pedal free play.



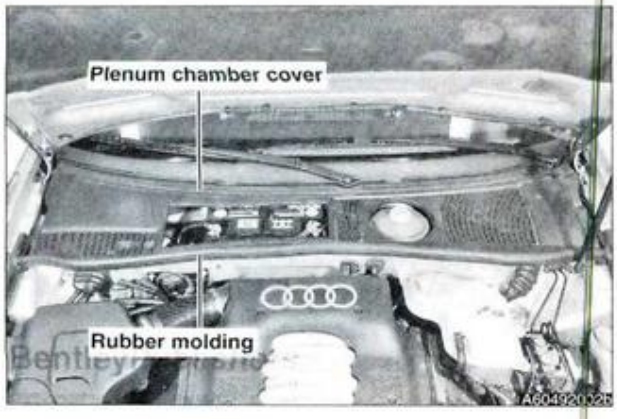

## Brake Master Cylinder and Booster

### Brake master cylinder and booster assembly

1. T45 Torx, 25 Nm (18 ft-lb)
2. Self-locking nut, 49 Nm (36 ft-lb)
3. Brake master cylinder
4. Brake line, 15 Nm (11 ft-lb)
   - to ABS hydraulic unit
5. Brake line, 15 Nm (11 ft-lb)
   - to ABS hydraulic unit
6. Seal
   - Replace
7. Brake booster
8. Gasket
9. Vacuum hose (with check valve)
   - Insert in brake booster
10. Brake fluid reservoir
11. Cap
12. Sealing plugs
13. Fluid supply hose
    - to Clutch master cylinder
14. Bulkhead
15. Pedal cluster

### Brake master cylinder, removing and installing

***WARNING***—
- *The ABS system uses electronic controls and a sophisticated hydraulic unit. Once air enters the hydraulic unit, it cannot be removed using traditional bleeding methods. For this reason, pressure bleed the brakes using VAS 5234 or equivalent pressure bleeder.*
- *When bleeding brake system, use extreme care to not let the brake fluid reservoir run dry. If air enters the hydraulic unit, use the VAG 1551 or VAG 1552 scan tool and service tester to bleed the brake system before the vehicle is driven.*
- *Do not disassemble the brake master cylinder. It is not serviceable.*

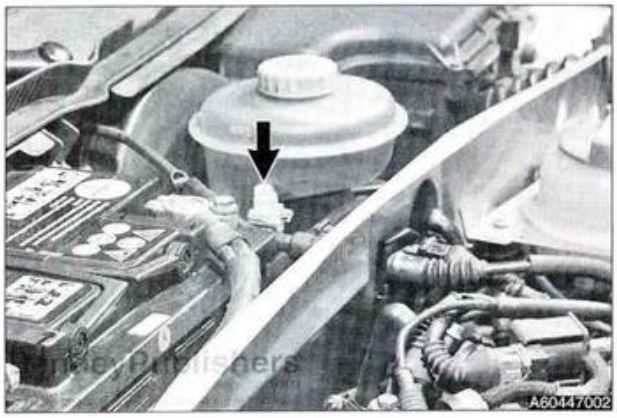



➤ Pull off rubber molding at engine compartment rear bulkhead. Pull plenum chamber cover forward and remove.

– Unscrew brake fluid reservoir cap and siphon out as much brake fluid as possible from fluid reservoir.

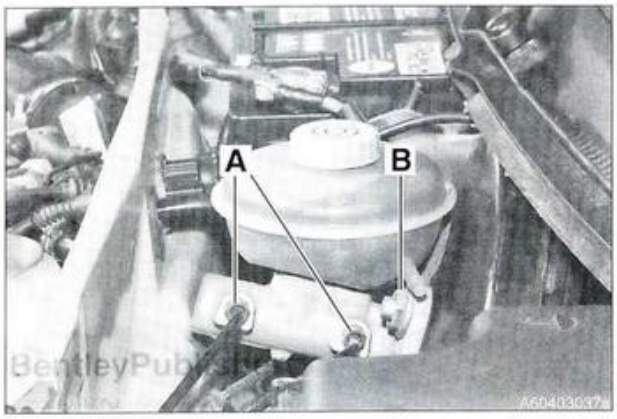
***WARNING***—
- *Brake fluid is poisonous. Do not siphon fluid by mouth.*

***CAUTION***—
- *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*



– Manual transmission vehicle: Disconnect clutch master cylinder supply hose and seal with plug.

➤ Disconnect brake fluid level warning switch harness connector (**arrow**).




➤ Working below brake fluid reservoir:

- Disconnect brake lines (**A**) at brake master cylinder. Immediately seal brake lines and plug brake fluid ports.
- Remove brake master cylinder M16 mounting nuts (**B**).

– Carefully remove brake master cylinder from brake booster.

– When installing, pay particular attention to the following points:

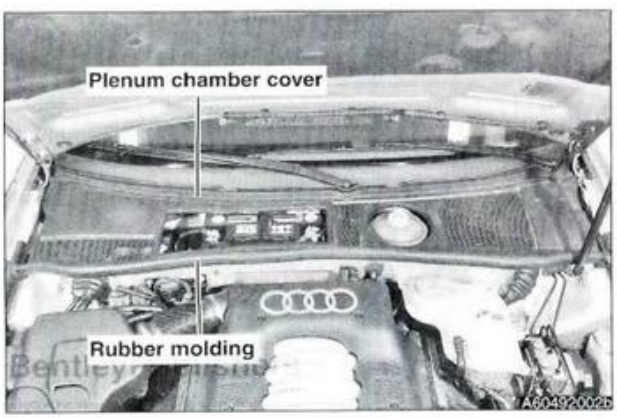
- When installing brake master cylinder on brake booster, make sure pushrod is correctly located in brake master cylinder.
- Apply slight pressure to brake pedal to move pushrod toward brake master cylinder; this makes it easier to guide brake master cylinder onto pushrod.

– Flush and bleed brake system. See **Bleeding Brakes** in this repair group.

## Brake booster, removing and installing

***WARNING*** —

- *The ABS system uses electronic controls and a sophisticated hydraulic unit. Once air enters the hydraulic unit, it cannot be removed using traditional bleeding methods. For this reason, pressure bleed the brakes using VAS 5234 or equivalent pressure bleeder.*
- *When bleeding brake system, use extreme care to not let the brake fluid reservoir run dry. If air enters the hydraulic unit, use the VAG 1551 or VAG 1552 scan tool and service tester to bleed the brake system before the vehicle is driven.*




➤ Pull off rubber molding at engine compartment rear bulkhead. Pull plenum chamber cover forward and remove.

– Unscrew brake fluid reservoir cap and siphon out as much brake fluid as possible from fluid reservoir.

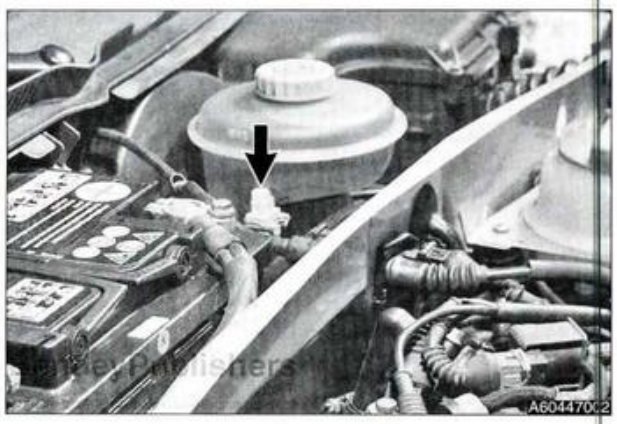
***WARNING*** —

- *Brake fluid is poisonous. Do not siphon fluid by mouth.*

***CAUTION*** —

- *Brake fluid damages paint. Immediately wipe up any brake fluid that spills on the vehicle and rinse area with water.*

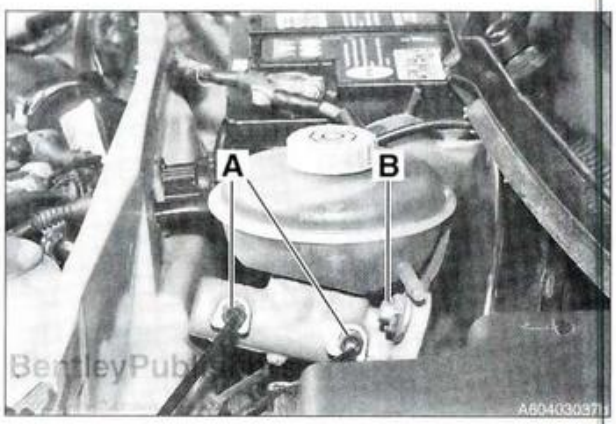
*Brake Master Cylinder and Booster*



– Manual transmission vehicle: Disconnect clutch master cylinder supply hose and seal with plug.

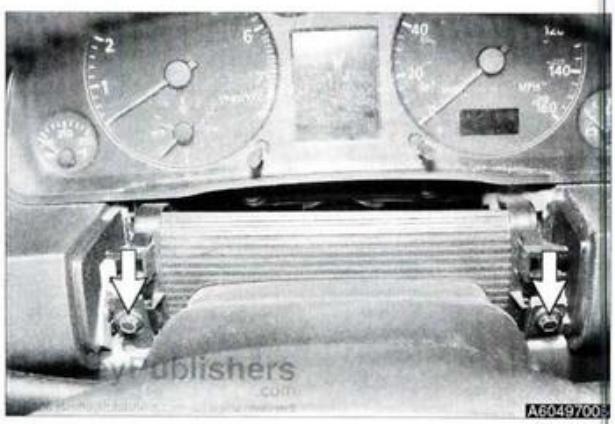
➢ Disconnect brake fluid level warning switch harness connector (**arrow**).

– Disconnect brake booster vacuum hose.



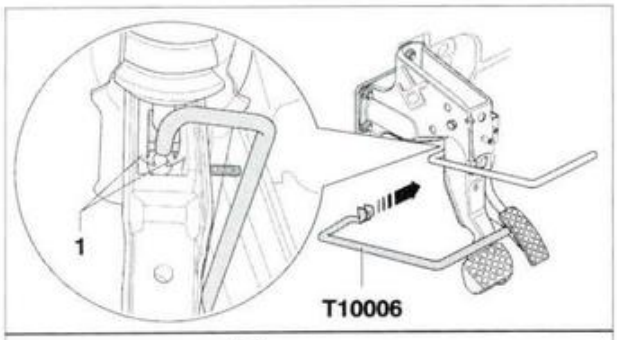

➢ Working below brake fluid reservoir:

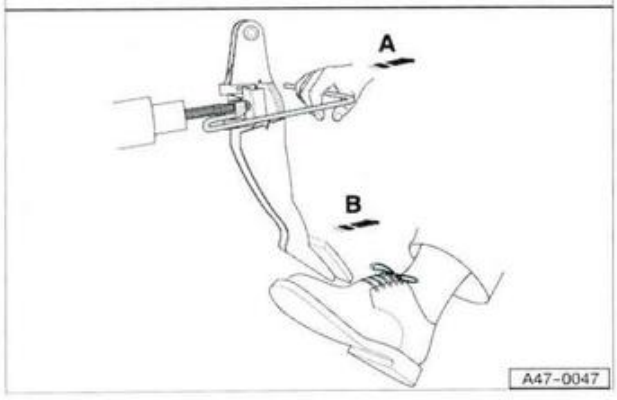
- Disconnect brake lines (**A**) at brake master cylinder. Immediately seal brake lines and plug brake fluid ports.
- Remove Torx T45 bolts (**B**) mounting master cylinder and booster assembly to bulkhead.



➢ Working in passenger compartment, tilt steering column down and pull off trim under instrument cluster. Remove steering column trim panel fasteners (**arrows**).

➢ Remove lower trim fasteners (**arrows**) and pull down trim panels under steering column to gain access to pedal cluster.



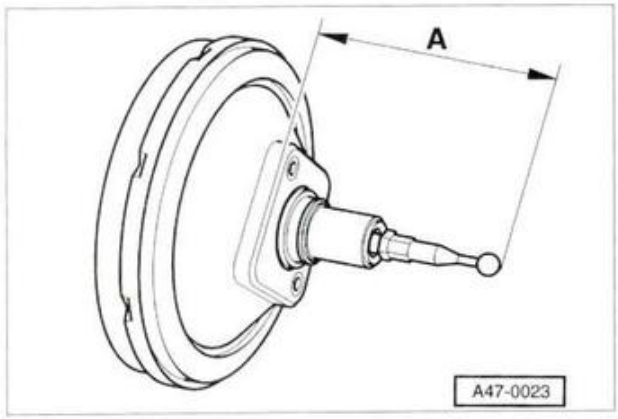




– Working under dashboard above pedals, remove brake light switch.

➤ Insert disengaging tool (VAG special tool T10006) between brake pedal and ball head of brake booster pushrod (**1**).

- Pull back on tool and brake pedal simultaneously (**2**).
- Hold brake pedal securely. Pry retaining tabs from ball head by pulling lightly on tool (**arrow A**).
- Keep tension on tool so that retaining tabs do not reengage.
- Pull brake pedal from ball head (**arrow B**).

– Remove brake master cylinder and booster from plenum chamber.




➤ Prior to installation, check and reset brake booster pushrod length.

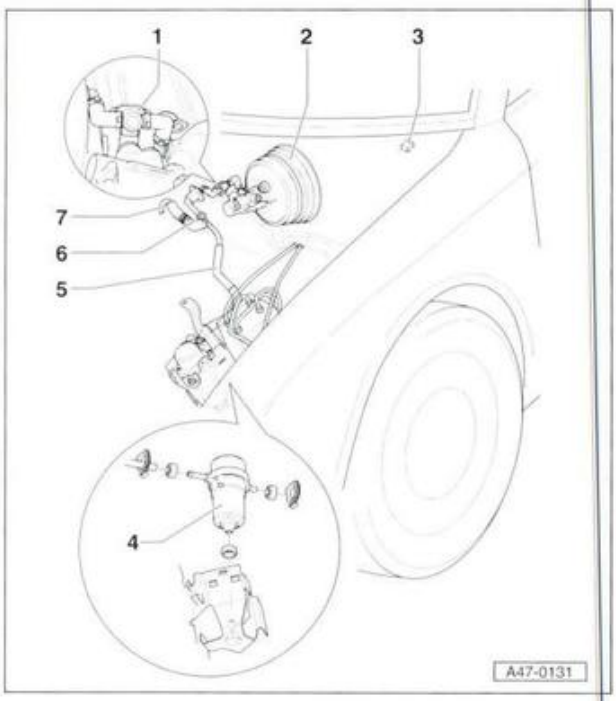
| **Brake booster pushrod length** | |
|---|---|
| Measurement **A**: | |
| • Left hand drive (LHD) vehicle | 159 ± 0.5 mm (6.26 ± 0.02 in) |
| • Right hand drive (RHD) vehicle | 173.2 ± 0.5 mm (6.82 ± 0.02 in) |

***NOTE***—

- *When measuring, make sure ball head is at right angle to surface of brake booster.*
- *Measure from end of ball head to metal base of booster, not to gasket.*

– Installation is reverse of removal. Pay particular attention to the following points:

- Reinstall and adjust brake light switch and brake and clutch pedal cruise control vent valve switches.
- Flush and bleed brake system. See **Bleeding Brakes** in this repair group.



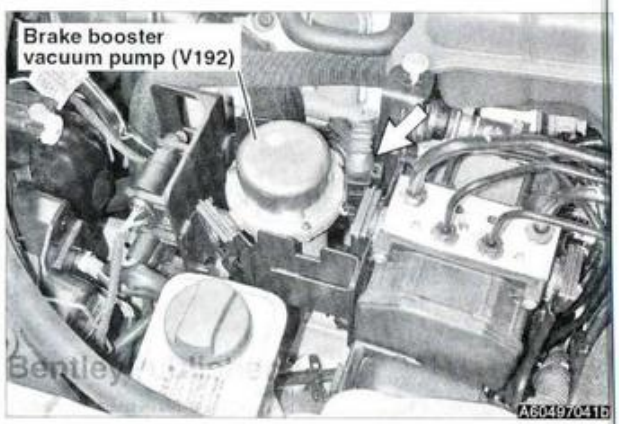

## Brake booster vacuum pump assembly

In 3.0 liter V6 models and all V8 models, an electric brake booster vacuum pump is used to supplement intake manifold vacuum.

1. Pressure sensor (G 294)
2. Brake booster
3. Brake booster vacuum pump relay (J569)
4. Brake booster vacuum pump (V192)
5. Vacuum hose
6. Check valve
7. Vacuum hose
   - Connects to engine

## Brake booster vacuum pump (V192), removing and installing

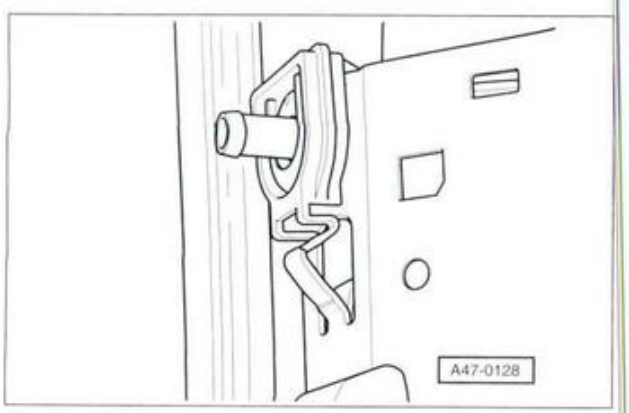
If problems with vacuum supply to brake booster are encountered, determine cause by means of a vacuum pump function test and leak test. If a malfunction is found, replace pump.




– Remove protective cover.

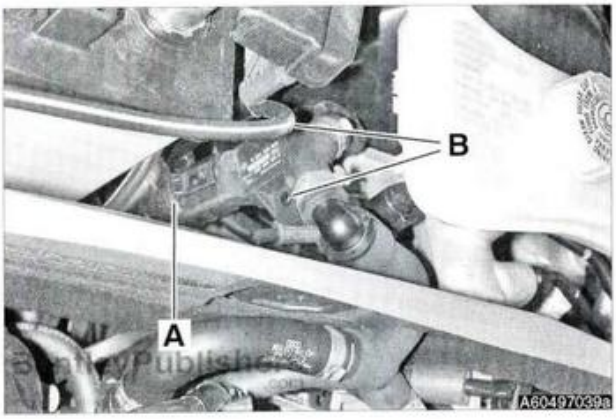
➤ Unplug electrical connector (**arrow**).

– Detach vacuum hose from pump.




➤ Press clip out of retainer by hand and lift out electric vacuum pump from above.

– Installation is reverse of removal.




## Brake booster vacuum pump pressure sensor (G294), removing and installing

– Remove plenum chamber cover.

➢ Working to left of battery:

- Pull pressure sensor electrical connector (**A**) downward to disconnect.
- Remove sensor mounting screws (**B**) and remove sensor.

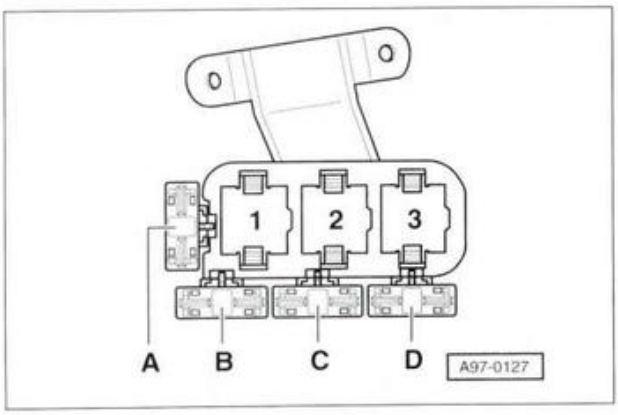
***NOTE***—

- *The sensor may also be attached by means of clips.*

– Installation is reverse of removal.

## Brake booster vacuum pump relay (J569), removing and installing

➢ Brake booster vacuum pump relay is in position **1** in central carrier relay panel under left side of dashboard. See **97 Fuses, Relays, Component Location**.



# 48 Steering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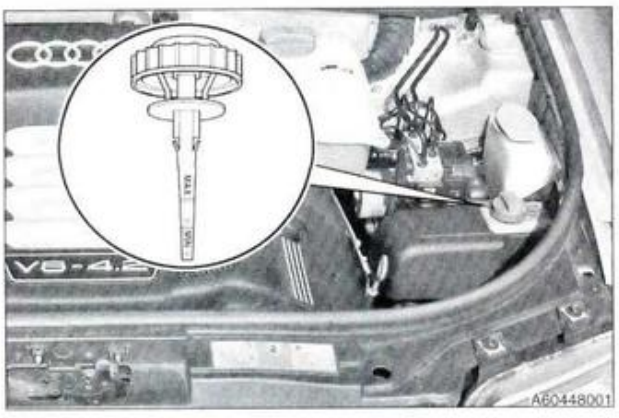
## GENERAL

This repair group includes a description of the steering system, an overview of steering column and steering system components and steering wheel removal. For more information, see:

- **45 Antilock Brakes (ABS)** for steering angle sensor removal
- **69 Seat Belts, Airbags** for airbag procedures

### Power steering fluid




➤ Working in engine compartment, unscrew power steering reservoir cap and wipe off dipstick.

– Fully close and reopen cap. Check level on dipstick. See **03 Maintenance** for more information.

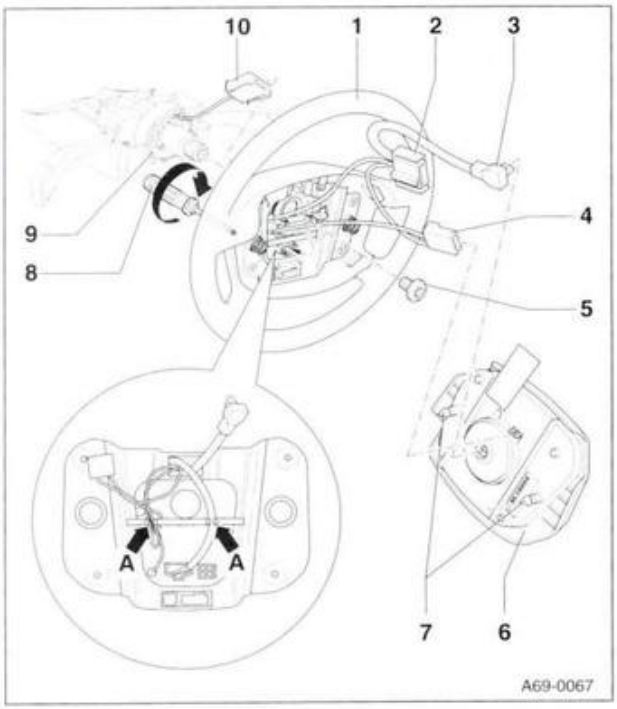
| **Power steering fluid** | |
|---|---|
| Capacity | 0.85L (0.89qt) |
| Type | Hydraulic oil<br>G002 000<br>G002 012 |

***CAUTION—***
*• Do not use automatic transmission fluid (ATF).*

## Warnings

***WARNING —***

- *Do not remove or repair airbag unit unless you have proper training, qualifications and tools to do the work safely.*
- *Disconnect battery ground strap before performing any work on the airbag system. No waiting time is required after disconnecting the battery. When connecting airbag system to a voltage source, no one should be in the vehicle interior.*
- *Before handling (touching) the airbag unit, the technician must be electrostatically discharged. This is accomplished by touching grounded metal like e.g. water pipes, heating pipes or metal carriers.*
- *Always install airbag units in the vehicle, as soon as they are removed from the packaging.*
- *If installation work is interrupted, immediately return the airbag unit to its original packaging.*
- *Do not leave an airbag unit unattended.*
- *Once removed, lay the airbag down with impact absorbing pad facing up.*
- *Do not install airbag units that have fallen onto a hard surface, or which have signs of damage.*
- *Airbag units that have not ignited must be returned in original packaging for proper recycling/disposal. Contact your supplier or the manufacturer for more information.*
- *Ignited airbag units can be disposed of with industrial waste.*



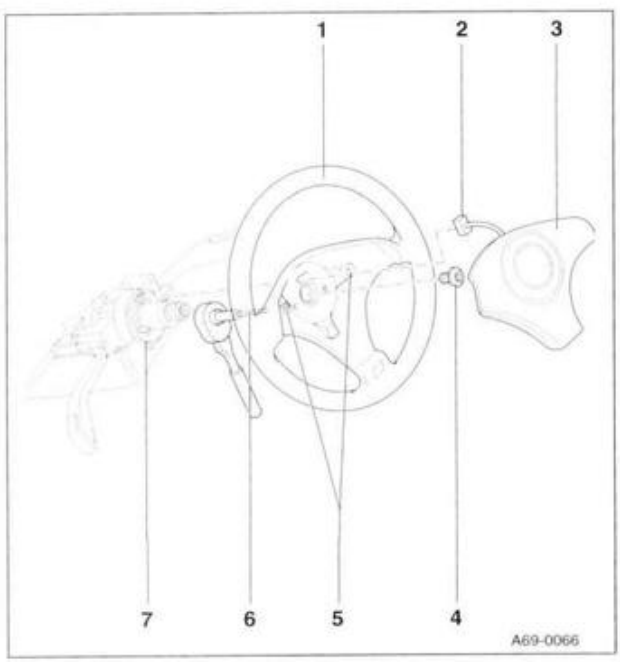

## Steering Wheel and Column

### Steering wheel, removing and installing

- Remove airbag unit. See **69 Seat Belts, Airbags**.
- Put steering wheel in center position (wheels straight ahead).
- Remove bolt (**5**).
- Disconnect connectors (**2**) and (**10**) and remove wheel.
- When installing, attach steering wheel in center position (wheels straight ahead).
- Attach electrical connectors (**2**) and (**10**). Make sure you hear plugs completely engage.
- Replace bolt (**5**) and tighten.

| **Tightening torque** | |
|---|---|
| Steering wheel to steering column | 50 Nm (37 ft-lb) |

- Install airbag unit.

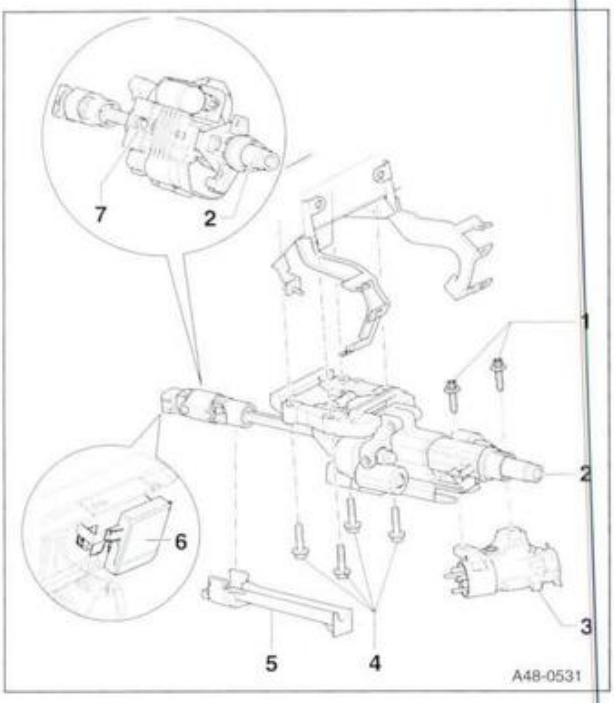



### Sport steering wheel, removing and installing

- Remove airbag unit. See **69 Seat Belts, Airbags**.
- Put steering wheel in center position (wheels straight ahead).
- Remove bolt (**4**) and remove wheel.
- When installing, attach steering wheel in center position (wheels straight ahead).
- Replace bolt (**4**) and tighten.

| **Tightening torque** | |
|---|---|
| Steering wheel to steering column | 50 Nm (37 ft-lb) |

- Install airbag unit.




## Steering column assembly (electrically adjustable)

The steering column is only available as a complete unit.

1. Shear bolt, 20 Nm (15 ft-lb)
2. Steering column
3. Ignition/starter switch
4. Bolt, 22 Nm (16 ft-lb)
5. Bracket (used for transport)
6. Steering column height adjustment control module (J352)
   - No self-diagnosis capability.
   - Sliding spline between upper and lower steering column must not be separated under any circumstances.
   - Sliding over a range in excess of 5 cm can lead to steering column damage.
7. Tolerance adjusting screw, 22 Nm (16 ft-lb)
   - Provided with electrically adjustable steering column
   - Tighten 4 bolts for attaching steering column to dashboard brace to torque, before tightening tolerance adjusting screw.
   - Do not apply force to steering column or steering wheel while tightening tolerance adjusting screw.

## Steering column stalk switch, removing and installing

***WARNING*** —
- *Before removing steering wheel, place wheels in straight-ahead position.*
- *Observe safety precautions for working on airbags. See* **69 Seat Belts, Airbags**.
- *If these procedures are not observed, the airbag system may not function properly during vehicle operation.*

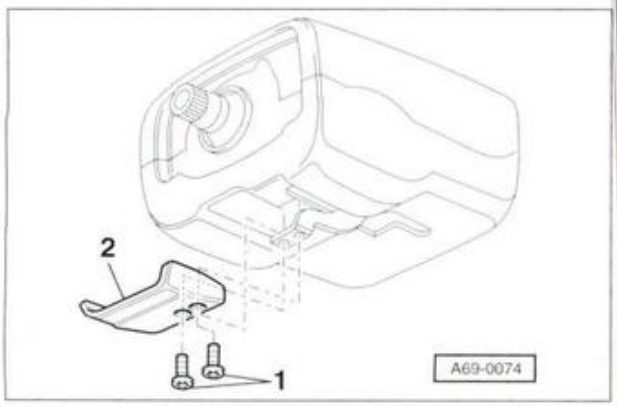
– Remove airbag unit. See **69 Seat Belts, Airbags**.

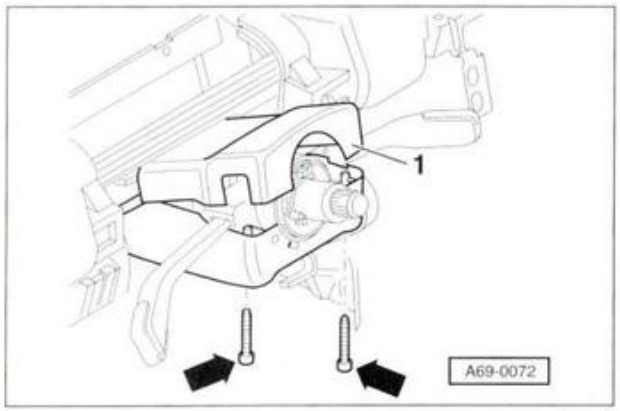
– Remove steering wheel. See **Steering Wheel, removing and installing** in this repair group.

– Remove steering angle sensor in vehicles with Electronic Stabilization Program (ESP). See **45 Antilock Brakes** for more information.

➤ Remove bolt (**1**).

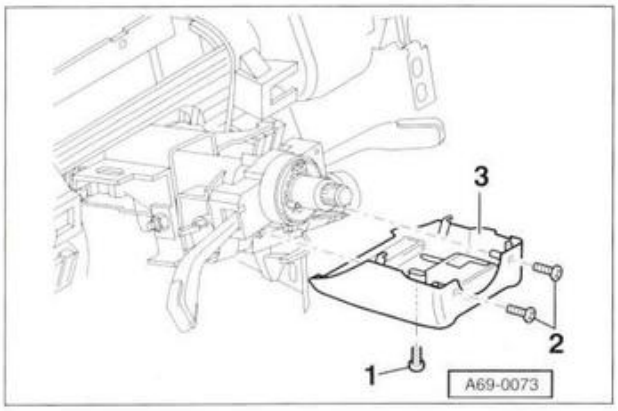
– Remove handle (**2**).






➤ Remove two Phillips head screws (**arrows**).

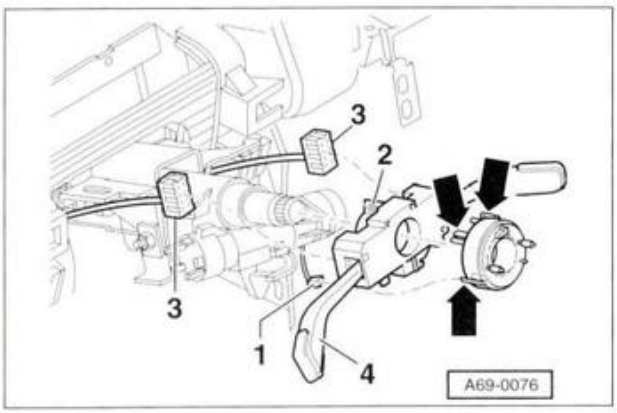
– Remove upper steering column trim (**1**).




➤ Remove bolts (**2**).

– Remove bolt (**1**).

– Remove lower steering column trim (**3**).




➤ Disconnect connector (**1**).

– Loosen bolt (**2**).

– Disconnect connector (**3**).

– Remove steering column stalk switch (**4**).

## Steering column, removing and installing

The steering column is only available as a complete unit. Servicing is not possible.

***WARNING*** —
- *Before removing steering wheel, place wheels in straight-ahead position.*
- *Observe safety precautions for working on airbags. See* **69 Seat Belts, Airbags**.
- *If these procedures are not observed, the airbag system may not function properly during vehicle operation.*

*Steering Wheel and Column*

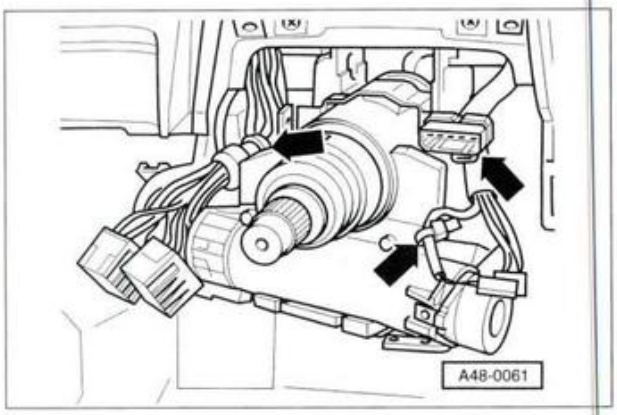
– Remove airbag unit. See **69 Seat Belts, Airbags**.

– Remove steering wheel. See **Steering Wheel, removing and installing** in this repair group.

– Remove steering angle sensor in vehicles with Electronic Stabilization Program (ESP). See **45 Antilock Brakes** for more information.

– Remove steering column stalk switch. See Steering column stalk switch, removing and installing in this repair group.

– Disengage steering column adjustment.

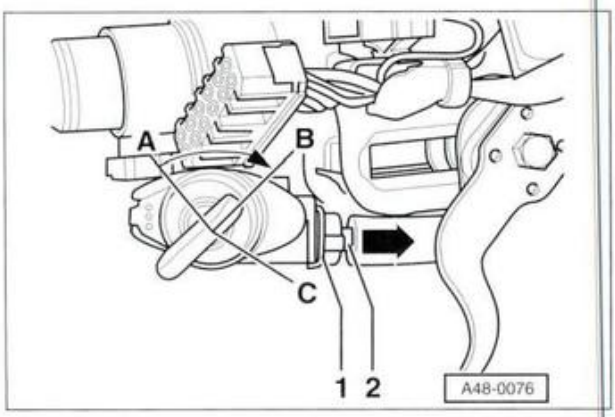



➤ Release cable ties and connectors located at steering column.

***NOTE***—

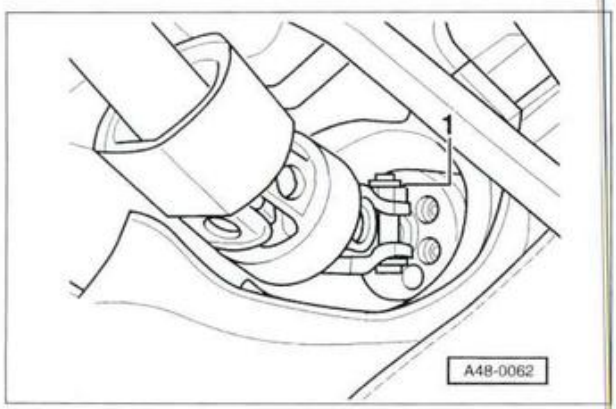
- *For vehicles with automatic transmission, locking cable must be disengaged.*

– Place selector lever in PARK position.




➤ Switch ignition ON (position **B**).

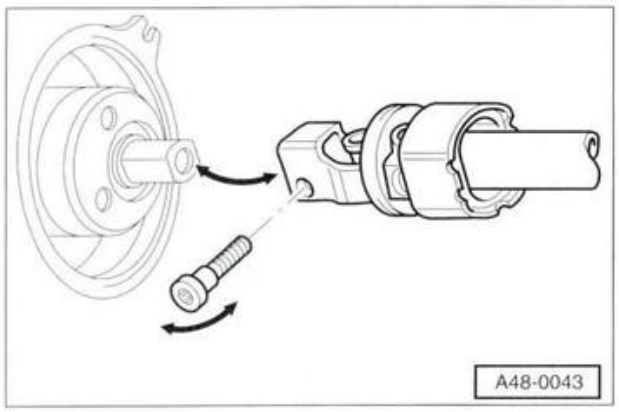
– Lift locking lever (**1**) slightly and pull shift interlock cable (**2**) from ignition lock housing.



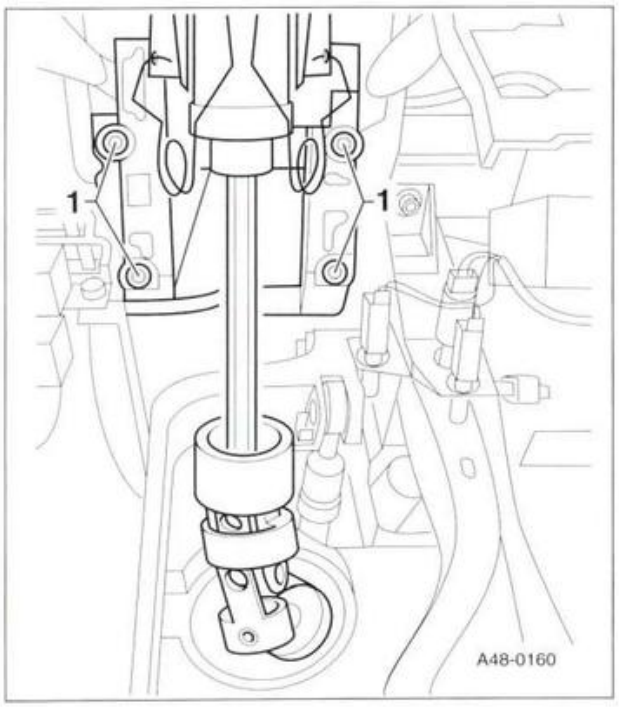

➤ Working at base of steering column, remove nut (**1**) at steering shaft universal joint.

– Rotate eccentric pinch bolt (Torx T50) clockwise to relieve tension, then remove bolt.

– Disengage steering column adjustment.




➤ Swing universal joint to side.



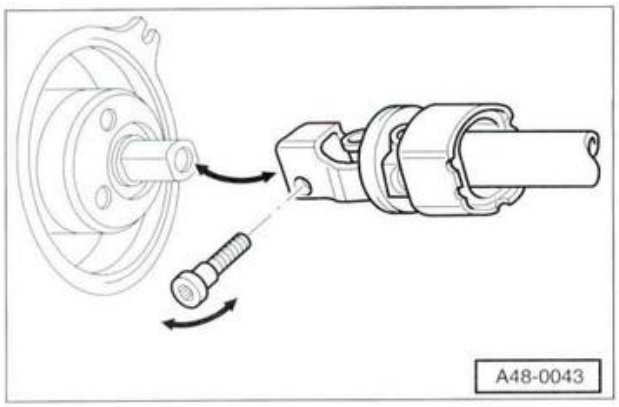

➤ Remove Allen bolts (**1**) for steering column and remove steering column.

– Check steering column for damage.

**Installing**

– Attach steering column to dashboard brace using 4 Allen bolts (**1**).

– Disengage steering column adjustment.



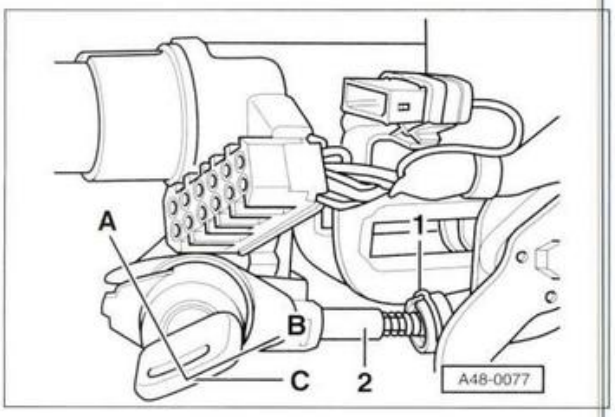

➤ Attach steering shaft universal joint to steering rack pinion gear.

– Insert pinch bolt (Torx T50) through lower part and pretension counterclockwise. Insert nut and tighten to 30 Nm (22 ft-lb).

| **Tightening torque** | |
|---|---|
| Steering shaft pinch bolt to steering gear | 30 Nm (22 ft-lb) |

***NOTE***—

- *For vehicles with automatic transmission, engage shift interlock cable.*




➤ Switch ignition key to ON (position **B**).

– Place selector lever in PARK.

– Insert shift interlock cable (**2**) in ignition lock housing. Make sure locking bracket (**1**) engages.

**Shift interlock function check:**

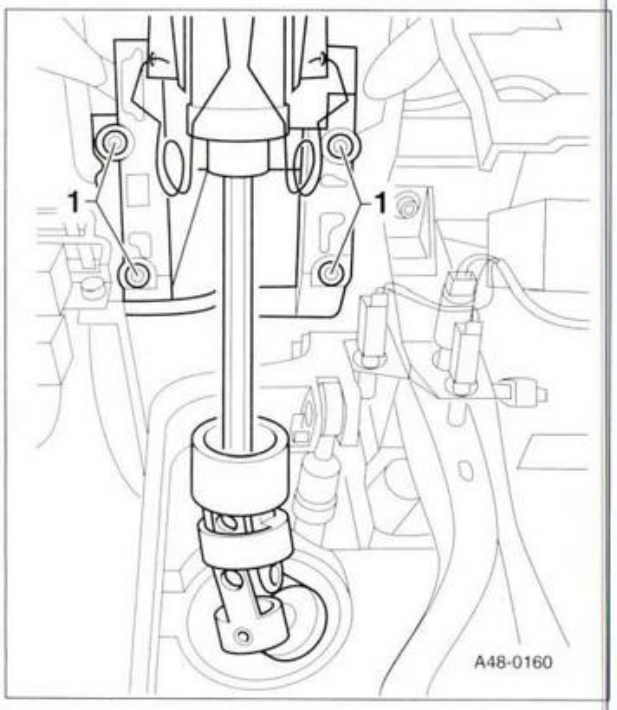
The ignition interlock prevents or allows the key and shift mechanism to move depending on their respective positions. Follow the steps below to check the ignition interlock.

– Turn ignition key **ON** then depress brake pedal and hold:
  - Shifting from **P** must be possible without "snagging" when button on shift lever is depressed.
  - Removing the ignition key must not be possible in any driving position except in **P**.

– Move shift lever to **P**.
  - It must be possible to turn Ignition key **OFF** without binding.

– Remove ignition key.
  - It must not be possible to move shift lever from **P**.

– To continue with procedure, install and position steering column stalk trim so that gaps in trim are uniform.




➤ Tighten socket head bolts (**1**) for steering column.

| Tightening torque | |
|---|---|
| Steering column bracket to dashboard brace | 25 Nm (18 ft-lb) |

**Vehicles with electrically adjustable steering column:**

– Tighten tolerance adjusting screw.

– Connect wiring of servo motors.

– Use cable tie to attach wires to steering column.

**All vehicles (continued)**

– Install steering column trim.

– Install steering wheel.

– Install airbag module.

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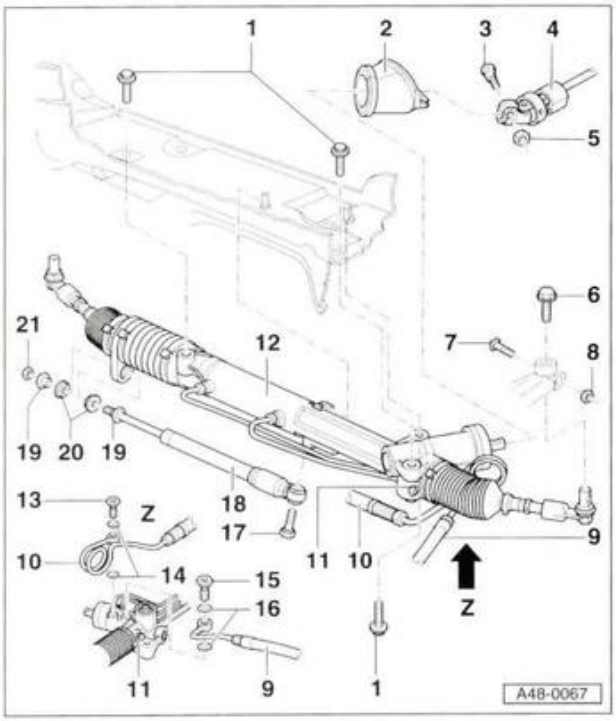
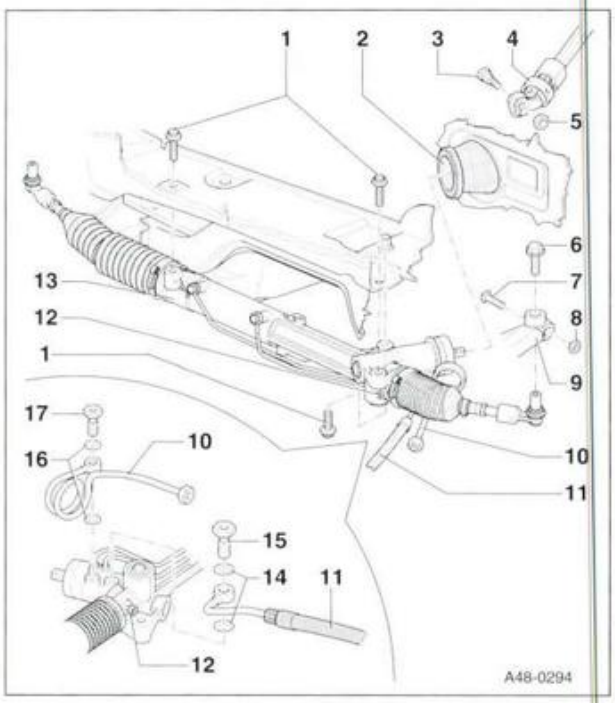
## STEERING RACK

### Power steering rack components (1998 models)




1. Bolt, 67 Nm (49 ft-lb)
2. Boot seal
   - Check for tears and scuffing
3. Eccentric pinch bolt, Torx T50
   - To release tension, turn clockwise
   - To tension, turn counterclockwise
4. Steering column
5. Self-locking nut, 30 Nm (22 ft-lb)
   - Always replace
6. Screw and washer assembly, 7 Nm (5 ft-lb)
   - For adjusting toe-in
7. Bolt
8. Self-locking nut, 45 Nm (33 ft-lb)
   - Always replace
9. Return hose
10. Expansion hose
11. Cylinder bolt, 13 Nm (10 ft-lb)
    - Locking screw for centering steering
12. Power steering rack with tie rods
13. Banjo bolt, 40 Nm (30 ft-lb)
    - With integrated check-valve
14. Seal
    - Always replace
15. Banjo bolt, 47 Nm (35 ft-lb)
16. Seal
    - Always replace
17. Bolt, 35 Nm (26 ft-lb)
18. Steering damper
    - V6 models only
19. Socket
20. Rubber bushing
    - Two-piece
21. Nut, tighten to 10 Nm (7 ft-lb)
    - To loosen and tighten, counterhold hex on steering damper piston rod




## Power steering rack components (1999 - 2004)

1. Bolt, 67 Nm (49 ft-lb)
2. Boot seal
   - Check for tears and scuffing
3. Eccentric pinch bolt, Torx T50
   - To release tension, turn clockwise
   - To tension, turn counterclockwise
4. Steering column
5. Self-locking nut, 30 Nm (22 ft-lb)
   - Always replace
6. Screw and washer assembly, 7 Nm (5 ft-lb)
   - For adjusting toe-in
7. Bolt
8. Self-locking nut, 45 Nm (33 ft-lb)
   - Always replace
9. Steering knuckle from wheel bearing housing
10. Pressure line, 40 Nm (30 ft-lb)
11. Return hose
    - Note installation position at steering rack
12. Cylinder bolt, 13 Nm (10 ft-lb)
    - Locking screw for centering steering
13. Power steering rack with tie rods
14. Seal
    - Always replace
15. Banjo bolt, 47 Nm (35 ft-lb)
16. Seal
    - Always replace
17. Banjo bolt, 40 Nm (30 ft-lb)
    - With integrated check-valve

## Tie rod, removing and installing

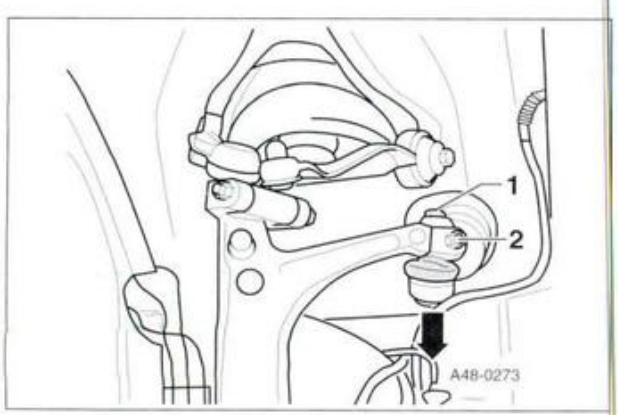
***NOTE —***

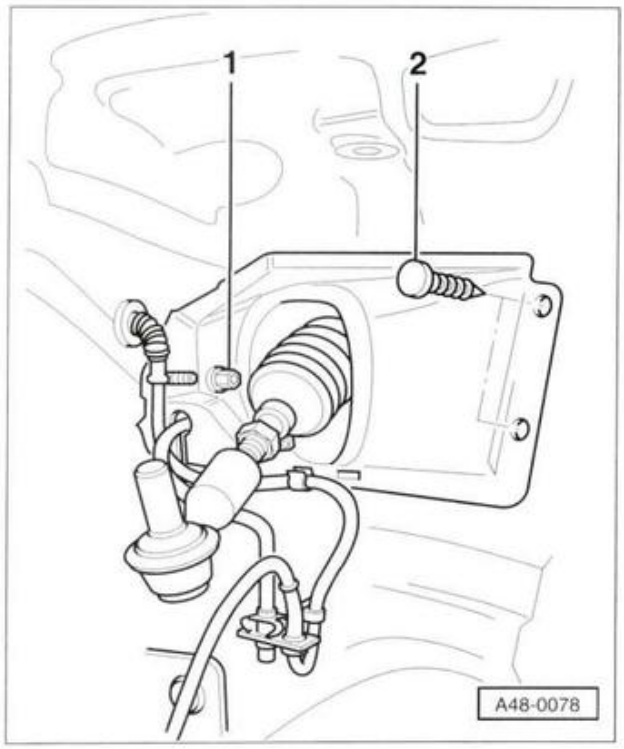
- *Left and right tie rods are identical.*
- *Tie rod can be removed and installed with steering rack installed.*

– Remove front wheel.

➤ Remove upper bolt (**1**) and pinch bolt (**2**).

– Detach tie rod from steering knuckle.





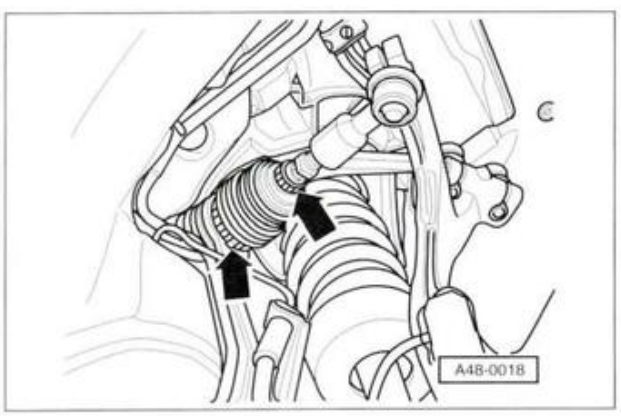

➤ Unscrew plastic nut (**1**).

– Pry out clip (**2**).

– Remove cover for tie rod.

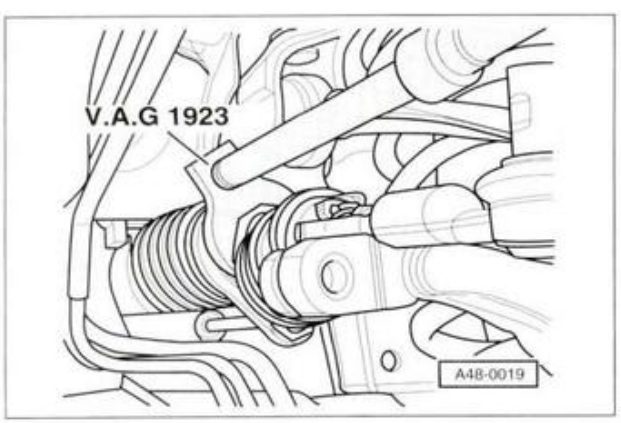
***NOTE***—

- *Shown without wheel bearing housing and strut for the sake of illustration.*




➤ Cut rack boot clamps.

– Pull boot as far toward outside as possible.




➤ Remove tie rod using special tool VAG 1923 (or equivalent).

– Replace boot or tie rod depending on extent of damage.

– Attach tie rod to to steering rack.

| **Tightening torque** | |
|---|---|
| Tie rod to steering rack | 100 Nm (74 ft-lb) |

– When installing boot:
- Smaller diameter of boot snaps into groove at tie rod.
- Do not twist boot.
- Replace boot clamps.

– Check alignment.

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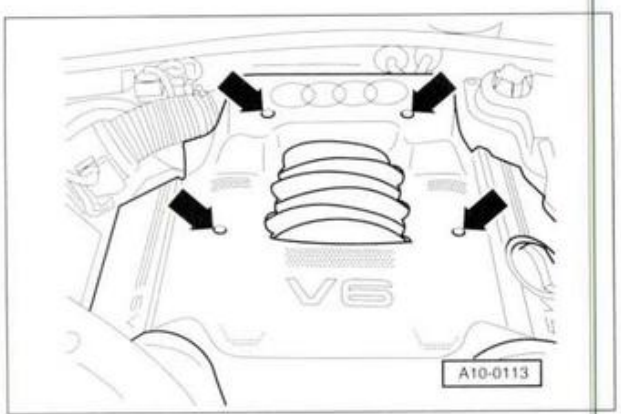
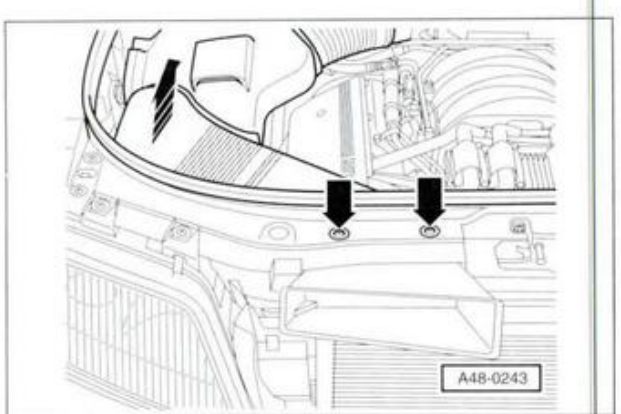
## STEERING PUMP

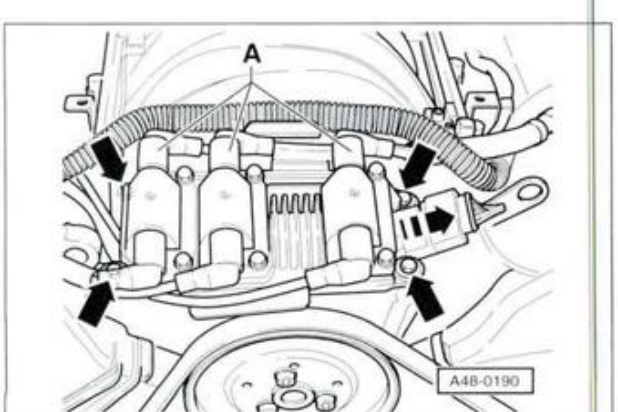
### Power steering pump (2.8 liter engine), removing and installing




➤ Unclip upper engine cover and remove.




➤ Remove bolts (**arrows**) for air filter duct housing at front of lock carrier and lift air duct out.

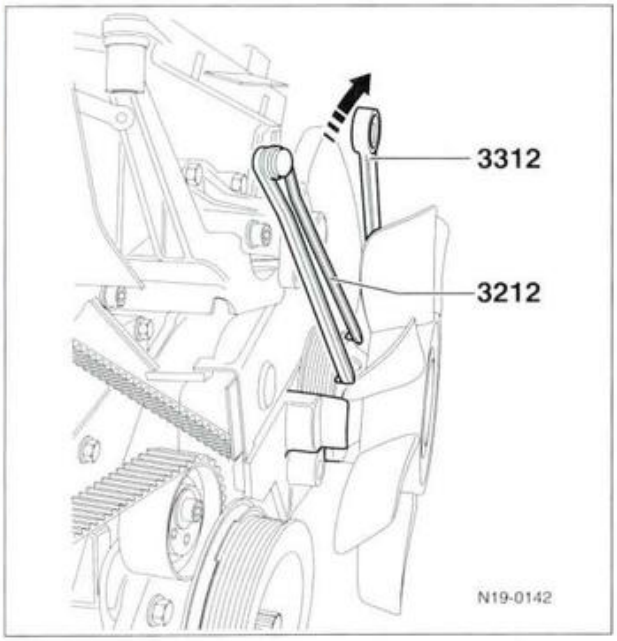



➤ Disconnect 5-pin connector from ignition coils.

– Disconnect three rear connectors (**A**) from ignition coils.

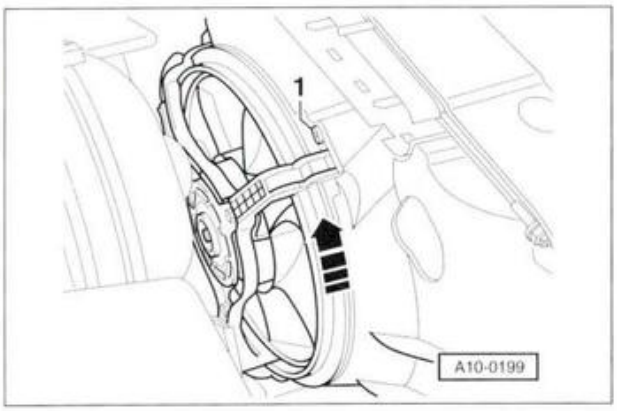
– Remove 4 mounting bolts (**arrows**).

– Swing ignition coil bracket toward rear.




➤ Counterhold pulley for viscous fan using VAG 3212 spanner and remove viscous fan using VAG 3312 open-end spanner (left hand thread).

– Lift viscous fan up and out.



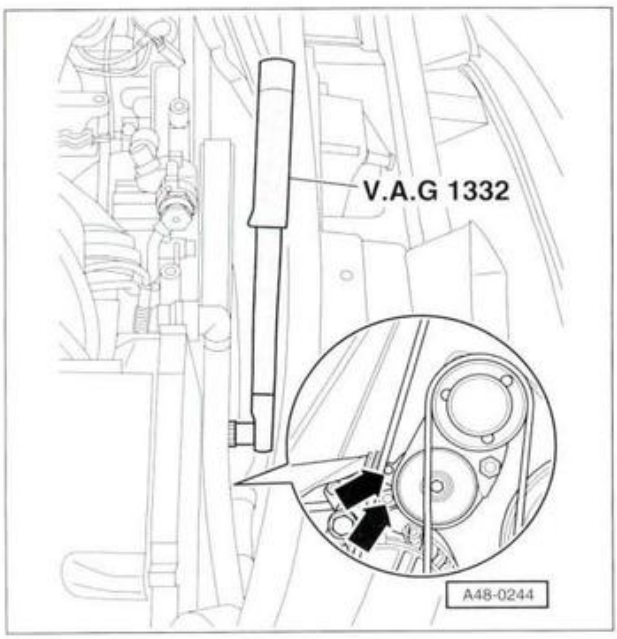

➤ Remove electric fan by first removing bolt (**1**).

– Release electric fan harness clips on viscous fan air guide.

– Rotate electric fan slightly in direction of (**arrow**) and place fan aside to right.

***NOTE*** —

- *Before removing engine accessory belt, mark direction of rotation with chalk or felt-tip marker.*

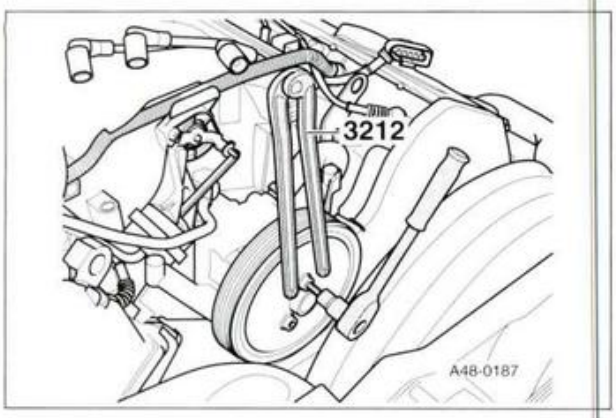



➤ Turn belt tensioner toward right using a long torque wrench and 17 mm socket insert.

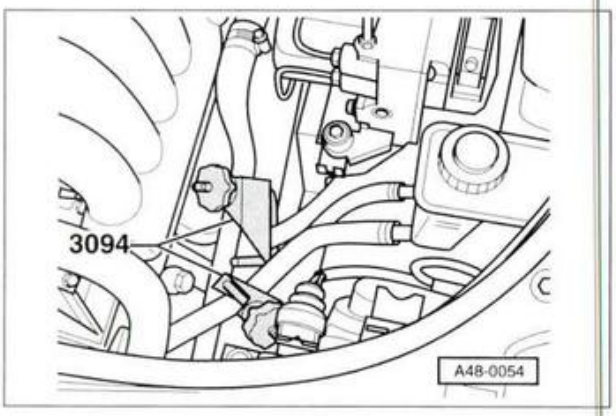
– When both bores align (**arrows**), secure using VAG 3204 drift (or equivalent).

– Remove accessory belt from belt pulley.

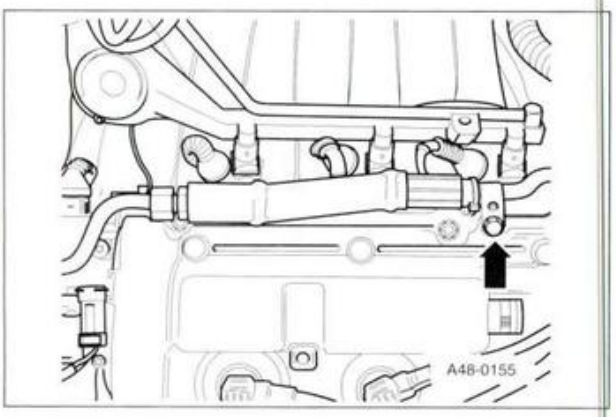
*Steering Pump*



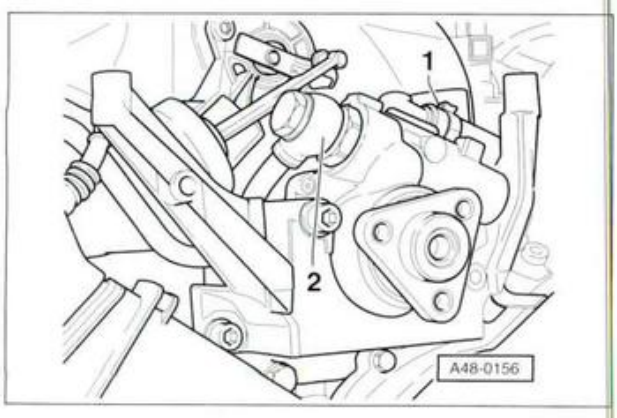

➤ Unbolt belt pulley for power steering pump. Counterhold with VAG 3212 spanner.




➤ Pinch off intake line and return line using 3094 hose clamps.




➤ Remove expansion hose bracket bolts (**arrow**) on cylinder head.

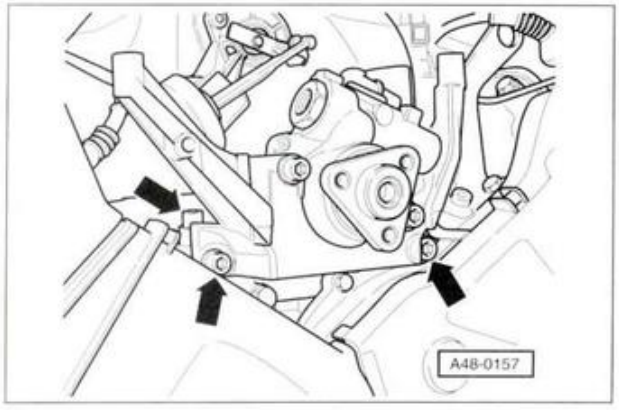



➤ Open clamp (**1**) and remove fluid supply hose.

– Unbolt expansion hose (**2**).

***NOTE***—

• *Be prepared to catch dripping fluid.*

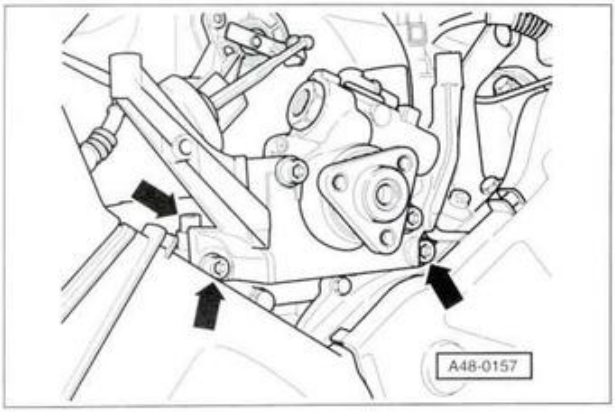



➤ Unbolt power steering pump bracket and remove pump together with bracket.

– Unbolt power steering pump from bracket.

– When installing, pay particular attention to the following points:
  • Before installing a new pump, fill intake side with hydraulic fluid and turn pump by hand until fluid comes out the pump side.
  • Clean any spilled fluid in engine compartment.

| Tightening torque | |
|---|---|
| Power steering pump to bracket | 22 Nm (16 ft-lb) |

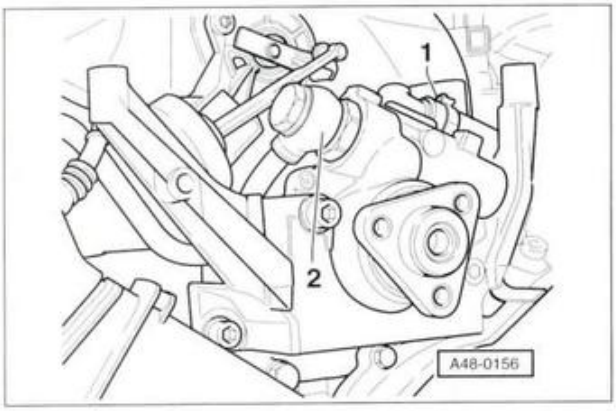



➤ Install pump together with bracket.

– First tighten front two bolts, and then rear two bolts to 22 Nm (16 ft-lb).

– Install new seals on banjo fitting.

| Tightening torque | |
|---|---|
| Power steering pump bracket to engine | 22 Nm (16 ft-lb) |



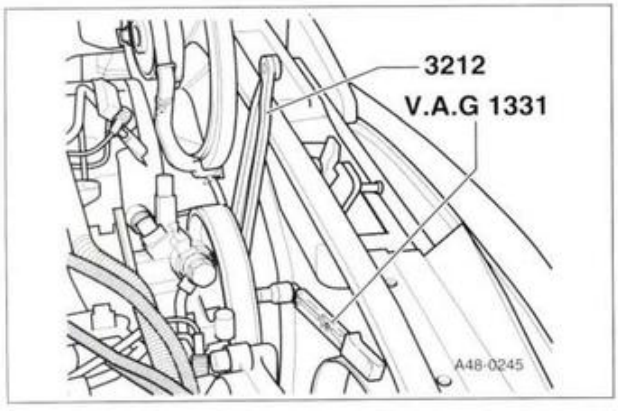

➤ Tighten banjo fitting for expansion hose (**2**).

– Bolt line for expansion hose to cylinder head and tighten to 6 Nm (6 ft-lb).

– Install intake hose (**1**) with marking **P** facing toward pump

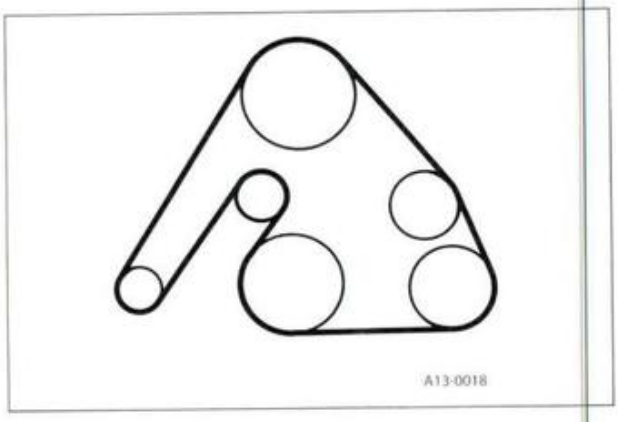
– Remove VAG 3094 hose clamps.

| Tightening torques | |
|---|---|
| Power steering fluid supply line to pump | 47 Nm (35 ft-lb) |
| Steering fluid clamp to cylinder head | 6 Nm (4.5 ft-lb) |




➤ Tighten Allen bolts for power steering pump belt pulley.

| Tightening torques | |
|---|---|
| Steering pump pulley to steering pump | 22 Nm (16 ft-lb) |




➤ First install ribbed belt onto crankshaft pulley and idler wheel. Push belt onto tensioning roller last.

***NOTE***—

- *Note previously marked direction of rotation of belt and be sure that it is seated correctly on pulley.*

– Remove VAG 3204 drift.

– First install electric fan and then viscous fan.

| **Tightening torques** | |
|---|---|
| Viscous fan with VAG 3312 wrench | 37 Nm (27 ft-lb) |
| Viscous fan without VAG 3312 wrench | 70 Nm (52 ft-lb) |

– Fill and bleed steering system.

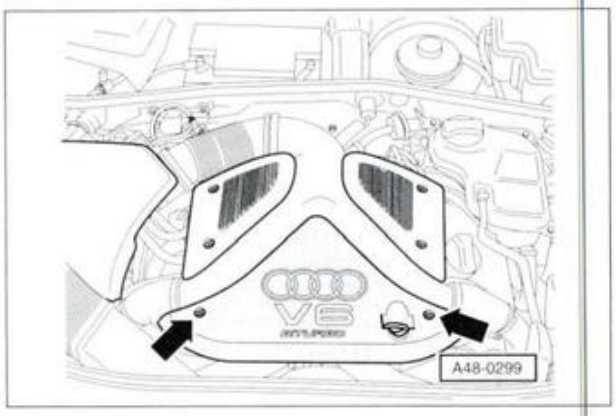
– Check steering system for leaks.

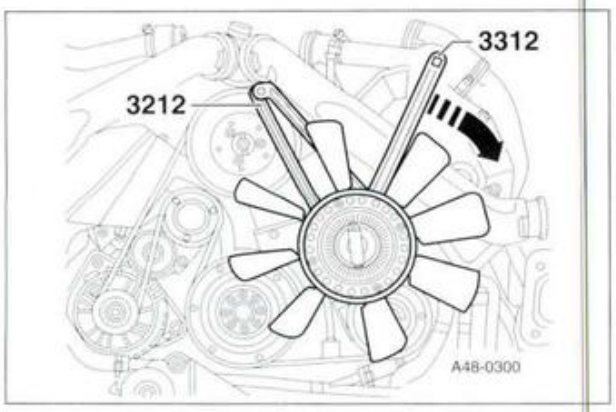
## Power steering pump (2.7 liter biturbo engine), removing and installing

– Remove front bumper. See **63 Bumpers**.

– Bring front lock carrier into service position. See **50 Body–Front**.

➤ Remove bolts (**arrows**) and remove front engine cover.




➤ Counterhold viscous fan pulley using VAG 3212 spanner wrench and remove viscous fan using VAG 3312 open-end wrench.

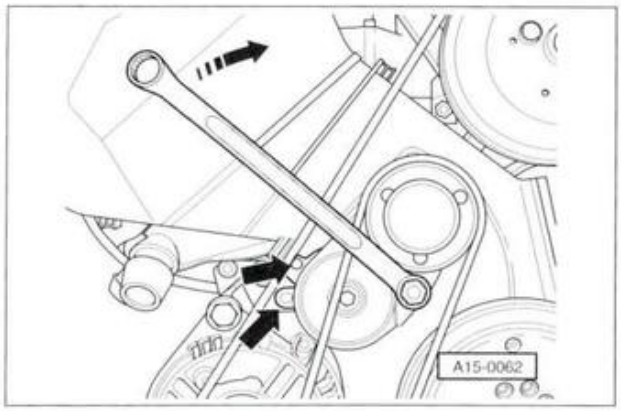
***NOTE***—

- *The viscous fan has a left-hand thread. Unbolt in direction of* **arrow**.

– Lift viscous fan up and out.

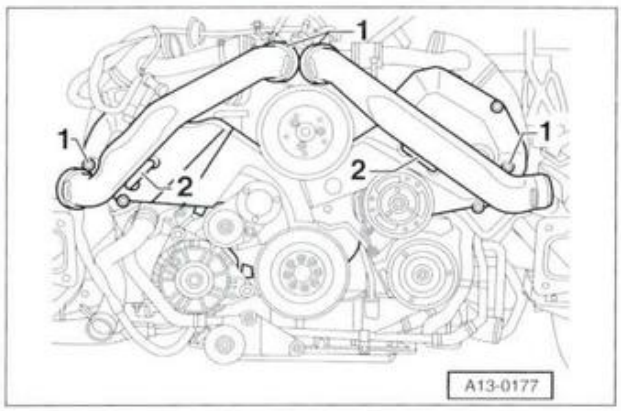
***NOTE***—

- *Before removing engine accessory belt, mark direction of rotation with chalk or felt-tip marker.*




➤ To loosen accessory belt, turn tensioner clockwise using 17 mm box wrench until two holes are aligned (**arrows**). Lock in position using VAG 3204 drift.

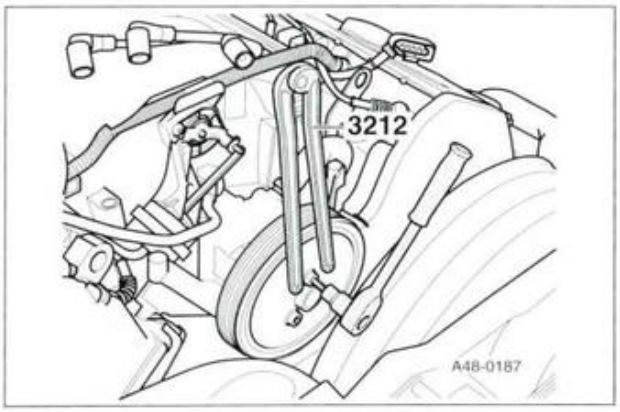
– Remove accessory belt from belt pulley.



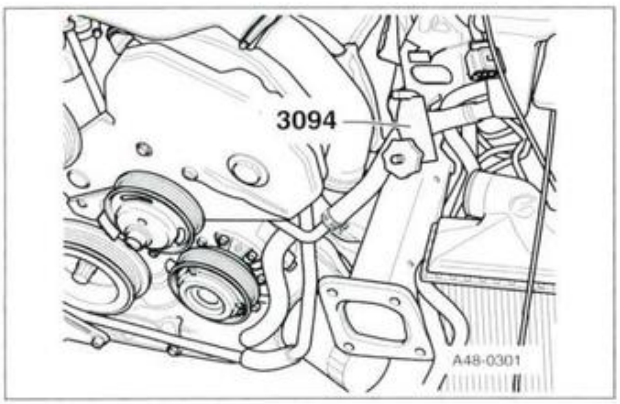

➤ Remove turbo pressure duct mounting bolts (**1**). Remove ducts.

***NOTE***—

• *Pay attention to retaining strips (**2**).*

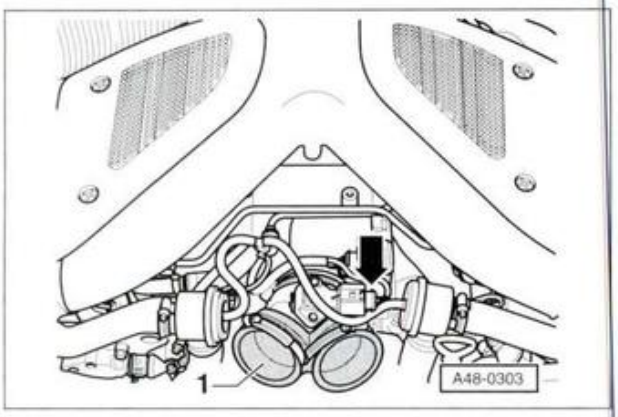



➤ Unbolt belt pulley for power steering pump. Counterhold with VAG 3212 spanner.



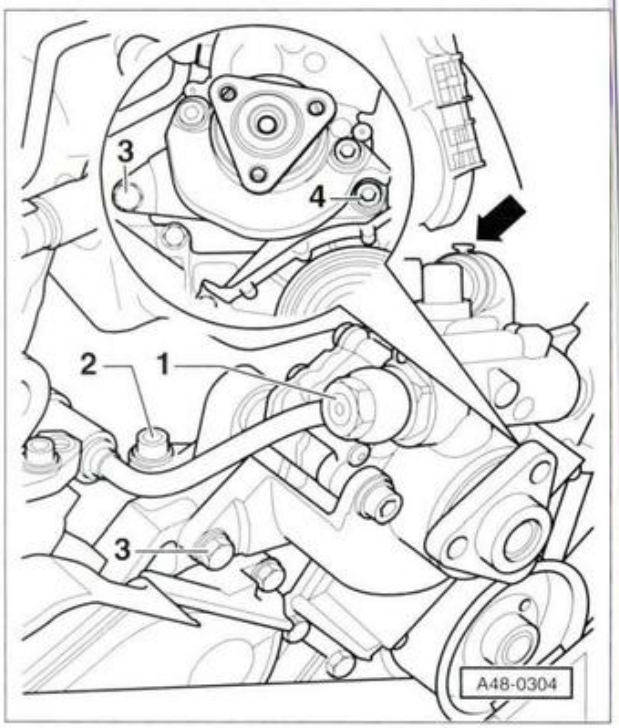

➤ Pinch off intake line using VAG 3094 hose clamp.

*Steering Pump*




➤ Disconnect harness connector at charge air pressure sensor (G31) (**arrow**).

– Remove rubber shroud (**1**).




➤ Open clamp (**arrow**) and disconnect intake hose from pump.

– Unbolt pressure line (**1**).

– Remove power steering pump bracket fasteners (**2**, **3** and **4**).

– Remove pump together with bracket.

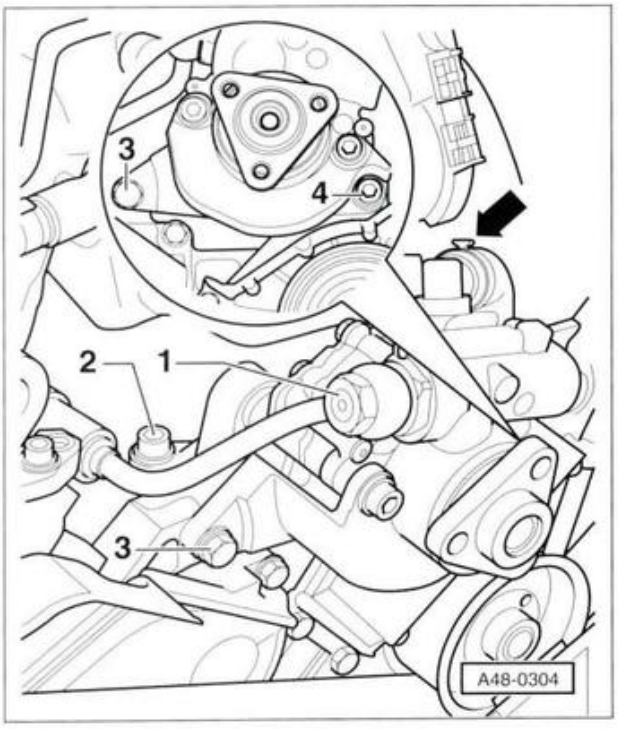
– Unbolt power steering pump from bracket.

– When installing, pay particular attention to the following points:
  • Before installing a new pump, fill intake side with hydraulic fluid and turn pump by hand until fluid comes out the pump side.
  • Clean any areas in engine compartment covered with fluid.

– Bolt pump to bracket.

– Tighten front two bolts first, and then rear two bolts.

| **Tightening torque** | |
|---|---|
| Power steering pump to bracket | 22 Nm (16 ft-lb) |




➤ Install pump together with bracket.

– Install new seals on banjo bolt.

– Tighten banjo bolt for pressure line (**1**) to 50 Nm (37 ft-lb).

| **Tightening torques** | |
|---|---|
| Power steering fluid supply line to pump | 50 Nm (37 ft-lb) |

– Install intake hose (align mark **P** with flash on pump).

– Remove VAG 3094 hose clamps.

– Tighten Allen bolts for power steering pump belt pulley.

| **Tightening torques** | |
|---|---|
| Power steering pulley to steering pump | 22 Nm (16 ft-lb) |

– Install viscous fan.

| **Tightening torques** | |
|---|---|
| Viscous fan with VAG 3312 wrench | 37 Nm (27 ft-lb) |
| Viscous fan without VAG 3312 wrench | 70 Nm (52 ft-lb) |

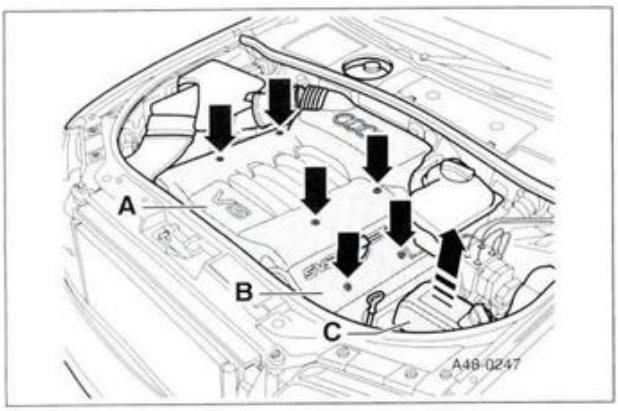
– Install lock carrier. See **03 Maintenance**.

– Install bumper. See **63 Bumpers**.

– Fill and bleed steering system.

– Check steering system for leaks.

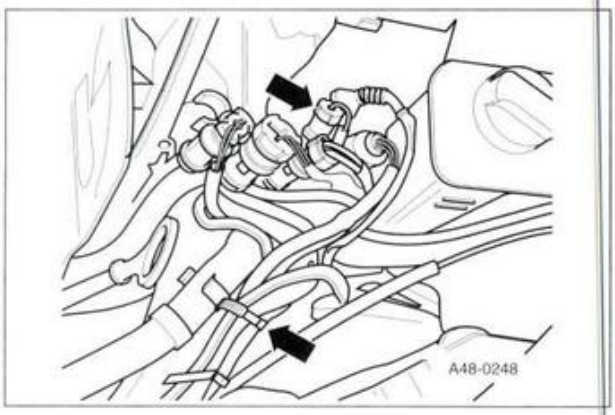
## Power steering pump (3.0 liter engine), removing and installing




➤ Remove bolts (**arrows**) and remove engine covers (**A**) and (**B**).

– Remove cover (**C**) from power steering fluid reservoir.

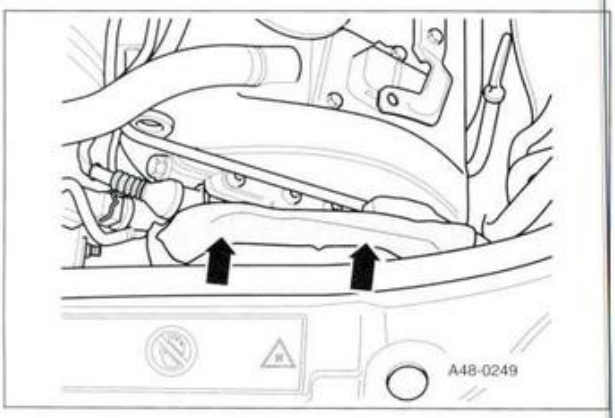
*Steering Pump*



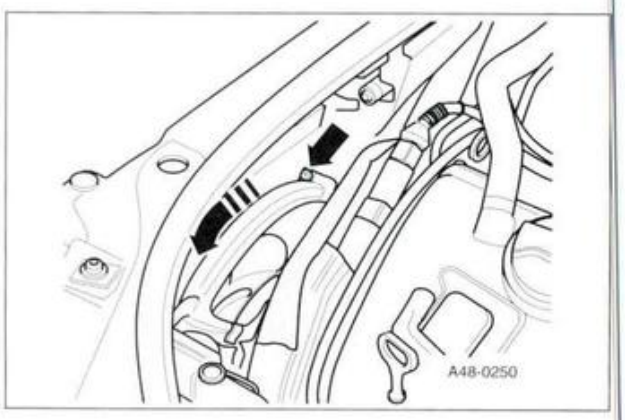

➢ Disconnect for A/C clutch green connector (upper **arrow**) and remove lower part of connector from bracket.

– Open wire tie (lower **arrow**) on line to A/C compressor and let line hang free.

– Remove right timing belt cover.



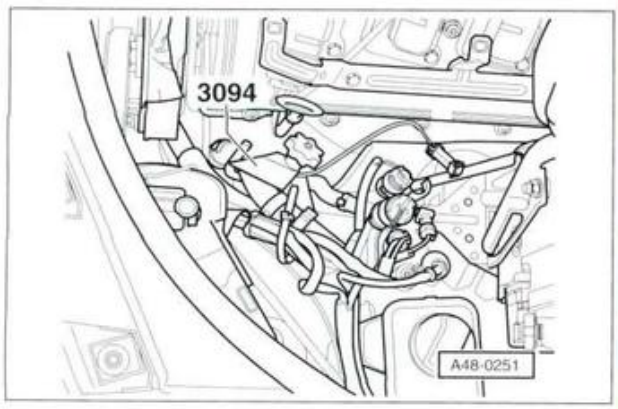

➢ Cover sharp corners of shroud with tape.



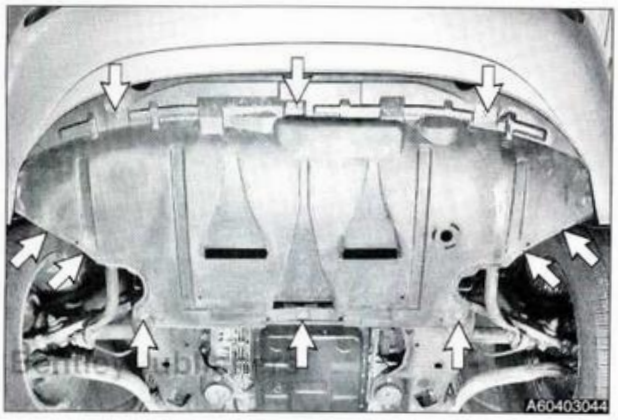

➢ Remove electric engine cooling fan by removing bolt (solid **arrow**).

– Pull sealing lip away from front end slightly in area near electric fan.

– Rotate electric fan slightly in direction of **arrow** and place fan to side.



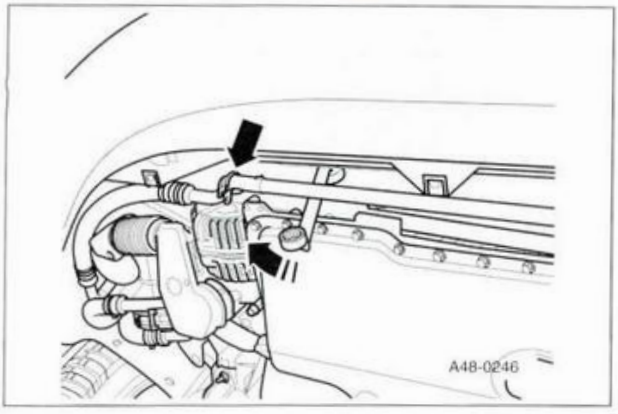

➢ Pinch off supply line using VAG 3094 hose clamp.




➤ Remove engine lower cover.

***NOTE***—

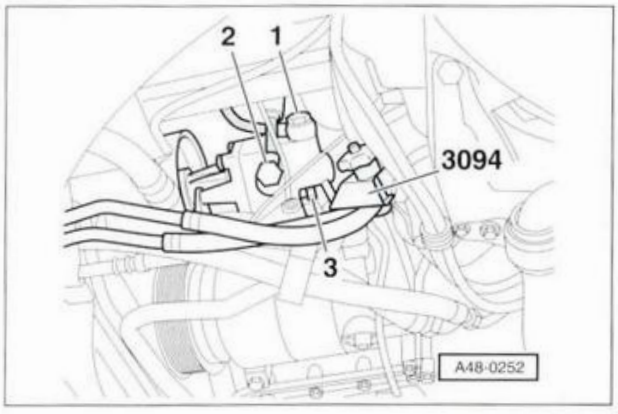
- *Before removing engine accessory belt, mark direction of rotation with chalk or felt-tip marker.*




➤ Remove clamp from refrigerant line.

– Move tensioner in direction of **arrow** to release tension on accessory belt.

– Remove accessory belt and release tensioning roller.



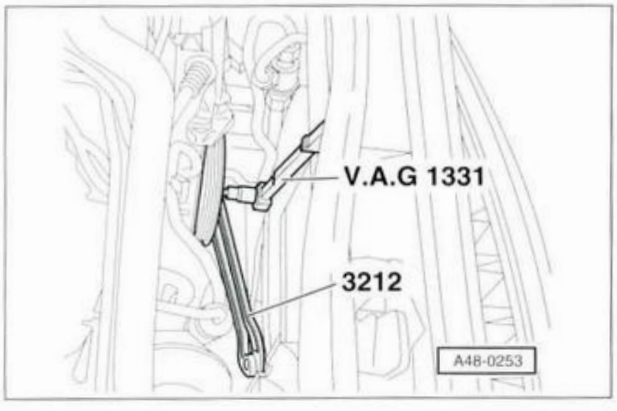

➤ Pinch off return lines using VAG 3094 hose clamp.

– Place pan underneath vehicle to collect steering fluid.

– Unbolt expansion hose (**1**) and intake hose (**2**) from pump.

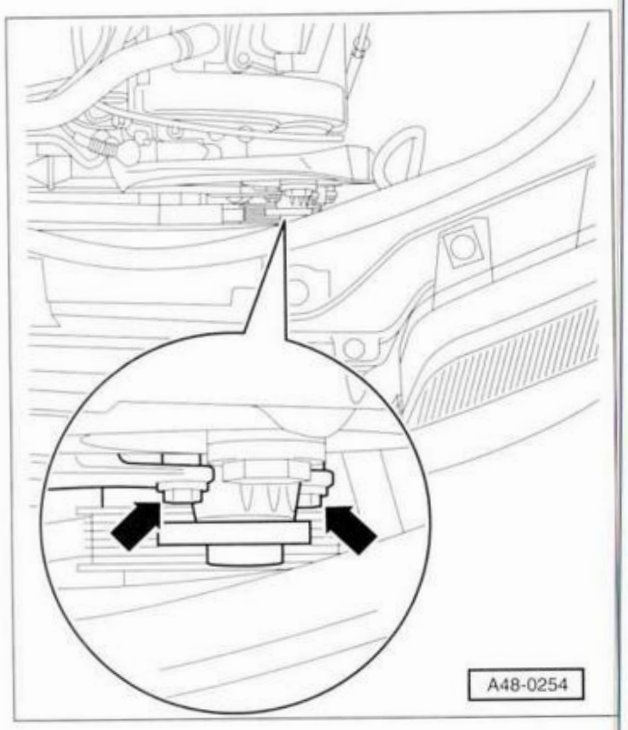
– Seal connection holes using plugs.

– Remove bolt (**3**) for power steering pump and bracket.




➤ Unbolt belt pulley for power steering pump. Counterhold with VAG 3212 spanner.

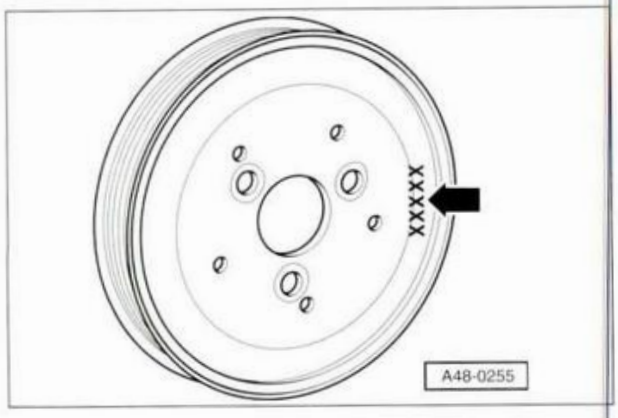
*Steering Pump*



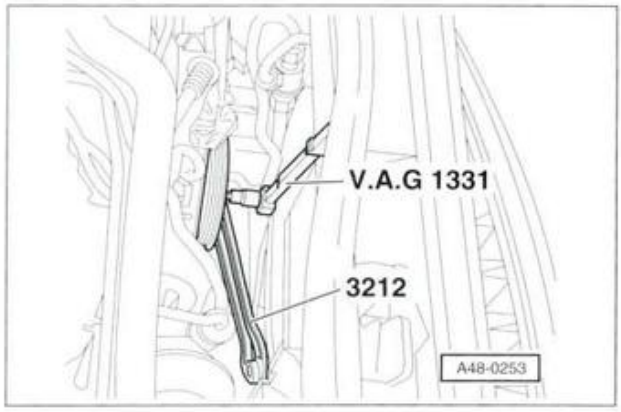

➤ Remove pump mounting bolts (**arrows**). Remove pump downward and out.

– When installing, pay particular attention to the following points:
- Before installing a new pump, fill intake side with steering fluid and turn pump by hand until fluid comes out the pump side.
- Clean areas in engine compartment contaminated with fluid.
- Return expansion and intake hose to installed position.
- Place pump in bracket from below and hand-tighten all three bolts.
- Install expansion and intake hoses with new seals, but do not tighten all the way.

– Tighten two front bolts (**arrows**).

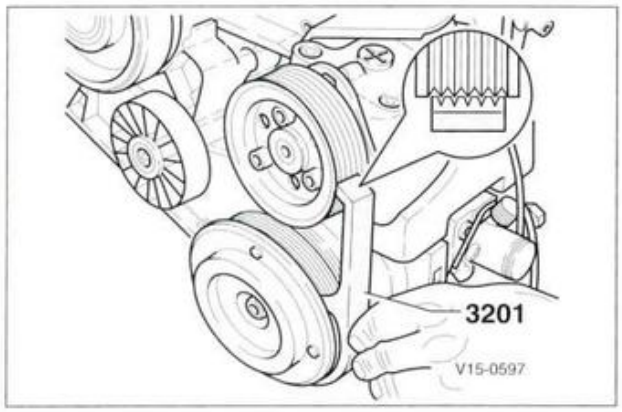



➤ When installing belt pulley, note that front of pulley is marked "front".




– Bolt on belt pulley for power steering pump. Counterhold with VAG 3212 spanner wrench.

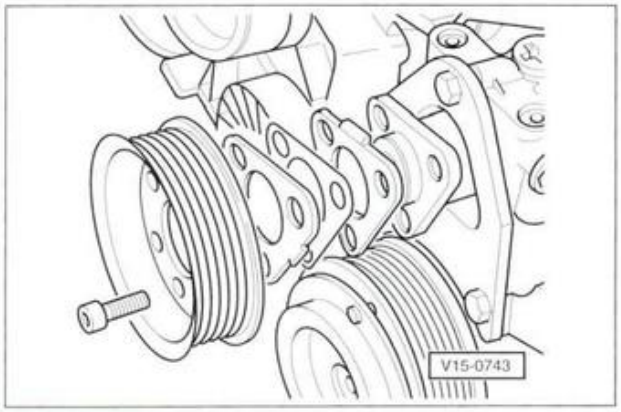
**Check and adjust pulley alignment**



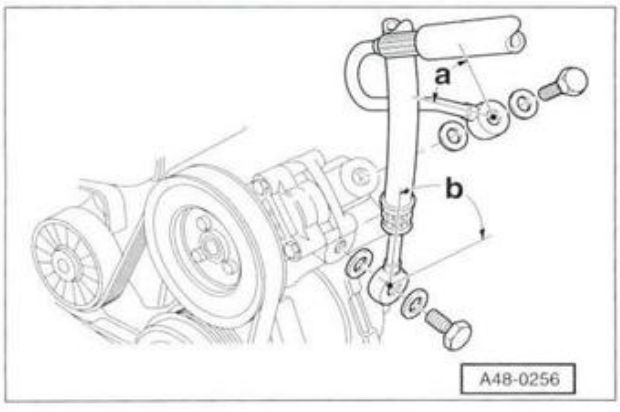

➤ Install VAG 3201 level on A/C compressor pulley.

– Pulley for power steering pump must align with pulley for A/C compressor.

– If the two pulleys do not align, unbolt pulley for power steering pump.



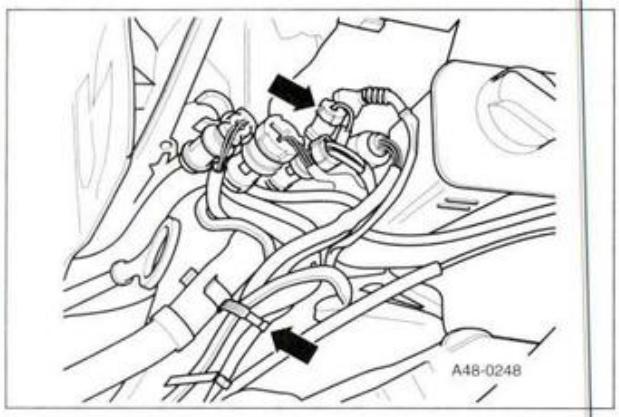

➤ Use shims (available as replacement parts) to adjust pulley with A/C pulley and steering pump pulley until it aligns.



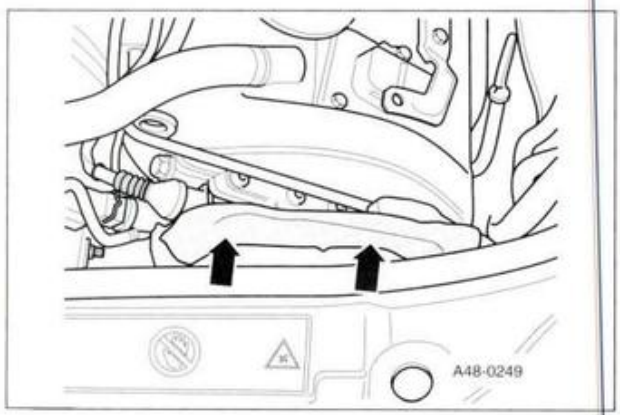

➤ Note installation position of expansion hose. Angle **a** is approximately 57°.

– Align expansion hose and tighten.

– Install electric cooling fan.

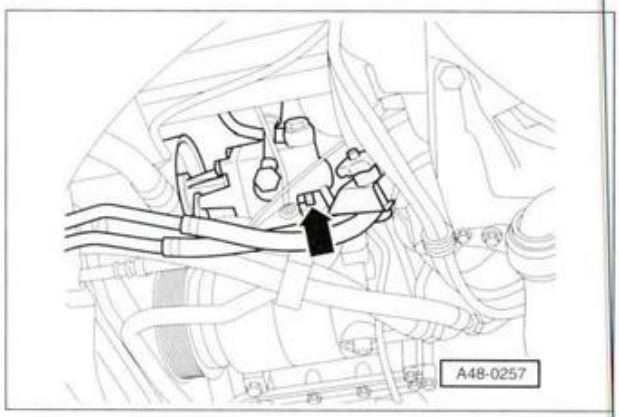



➤ Connect A/C harness and replace wire ties.

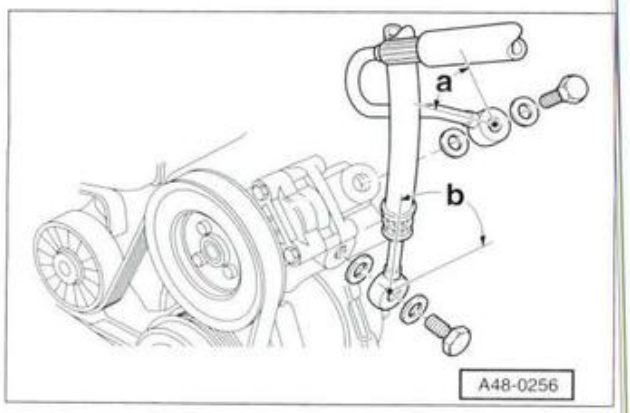



➤ Remove adhesive tape (installed earlier).

– Install covers for timing belt, power steering fluid reservoir and engine.



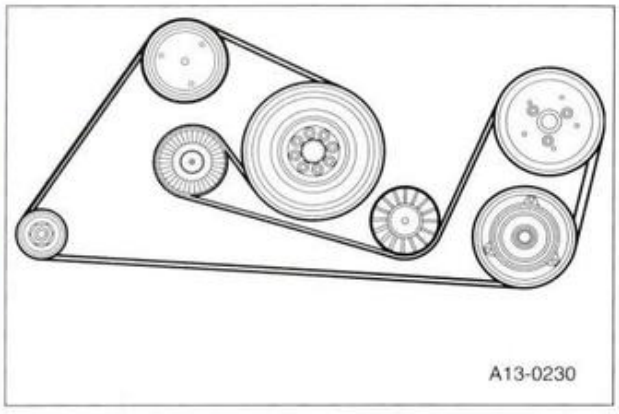

➤ Tighten rear bolt on power steering pump.




➤ Note installation position of intake line. Angle **b** is approximately 90°.

– Align intake line and tighten.

– Remove VAG 3094 hose clamps.

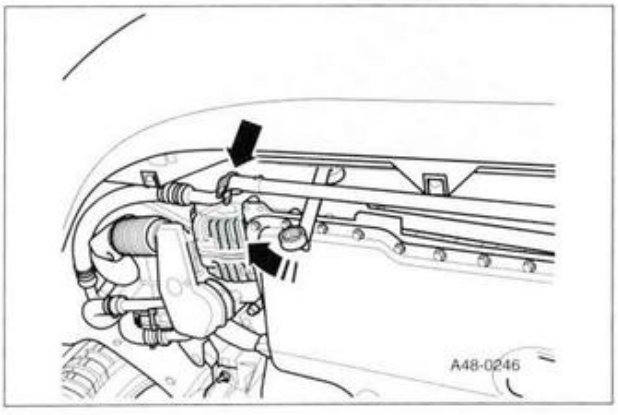



**Install accessory belt**

➢ First install engine accessory belt onto crankshaft pulley and idler wheel. Push belt onto tensioning roller last.

***NOTE*** —

- *Note previously marked direction of rotation of belt and be sure that it is seated correctly on pulley.*



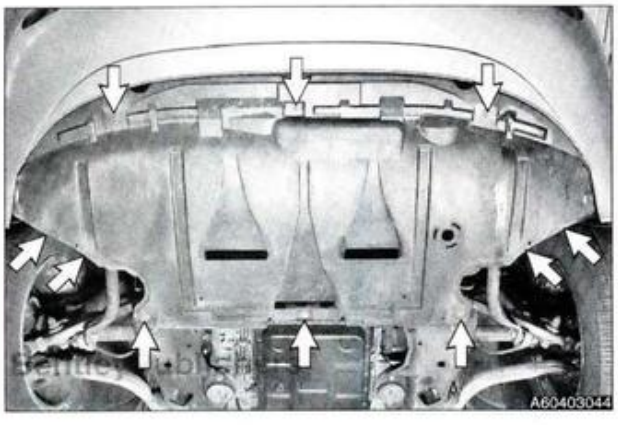

➢ Swing tensioner in direction of dashed **arrow**.

– Position accessory belt and release tensioning roller.

– Install refrigerant line clamp.

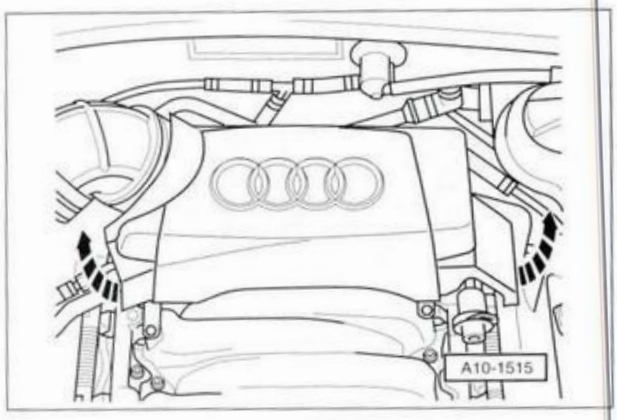
– Fill and bleed steering system.

– Check steering system for leaks.



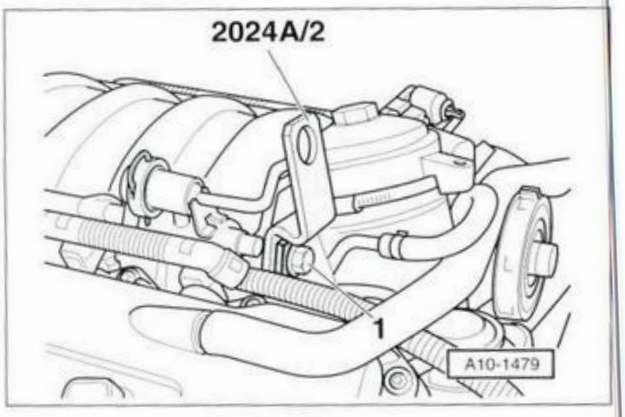

➢ Install engine lower cover.

## Power steering pump (allroad quattro V8), removing and installing



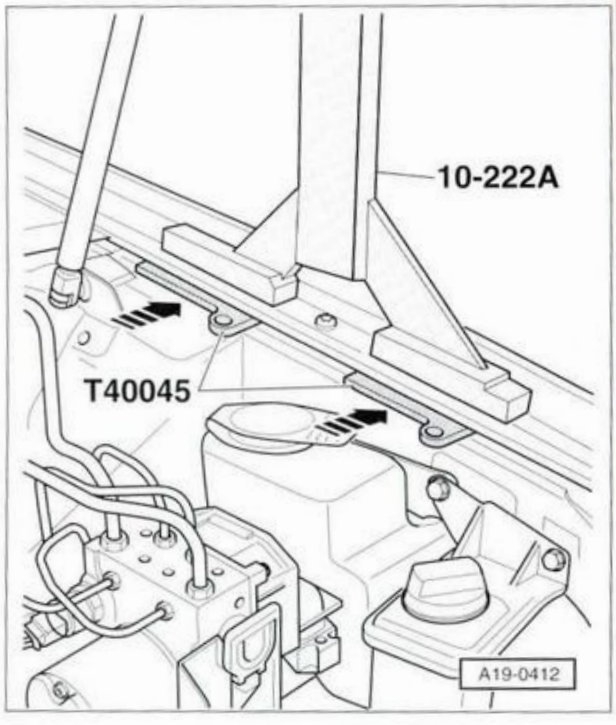

➤ Remove rear engine cover (**arrows**).

– Extract power steering hydraulic fluid from reservoir using VAG 1358 A or VAG 1782.

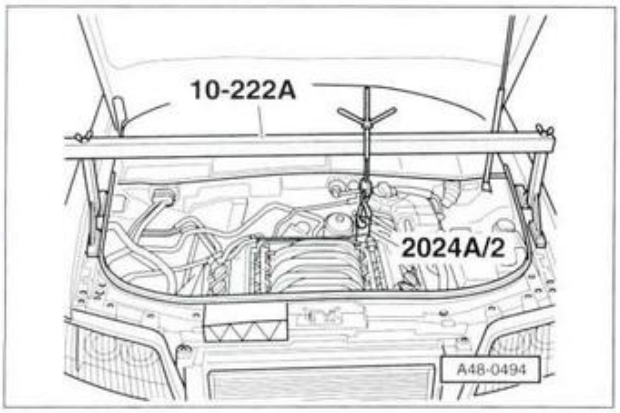



➤ Attach plate 2024 A/2 to rear left engine lifting eye. Screw out bolt at plate and replace with bolt M10 x 15 mm with packing plate.

– Remove rubber seal at wing mounting flanges.




➤ To stop support bar from damaging edges of wing, insert special tool T40045 on either side between wing mounting flange and splash panel beneath.

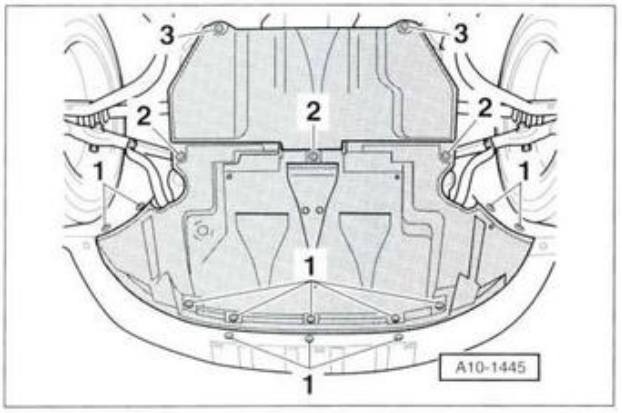



➤ Position support bar VAG 10-222 A on wing mounting flanges.

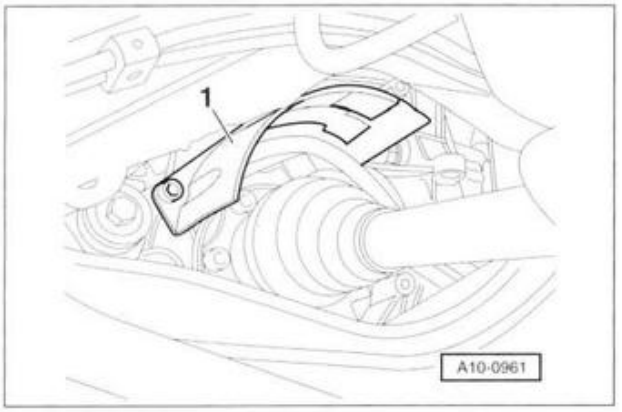
– Engage plate 2024 A/2 at spindle of support bar.

– Slightly pretension engine with spindle of support bar, but do not lift.

– Remove left front wheel.



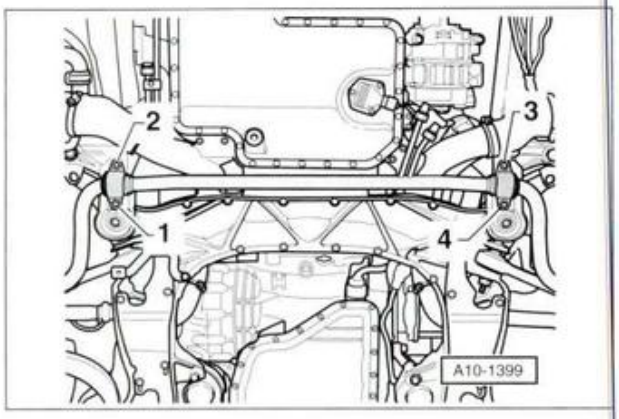

➤ Unfasten quick-release fasteners (**1**, **2** and **3**) and detach lower engine cover (2 sections).



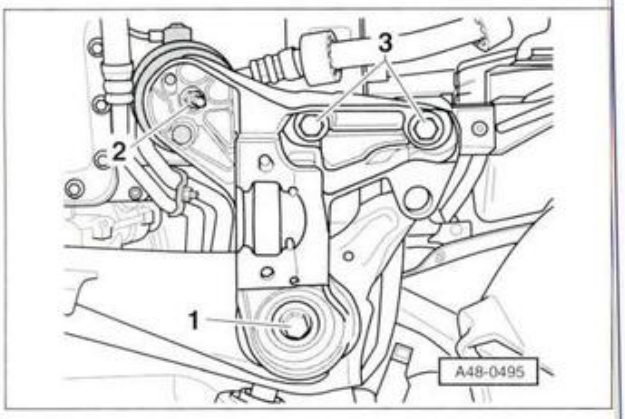

➤ Remove heat shield (**1**) for drive axle on left.

– Remove left drive axle. See **40 Front Suspension**.

*Steering Pump*

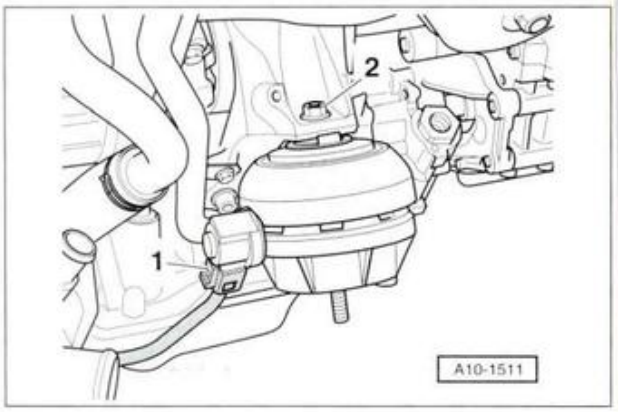



➤ Unscrew nuts (**1** - **4**) for stabilizer bar mounting on left and right.




➤ Unscrew nuts (**3**).

– Remove bolts (**1** and **2**) and detach engine mount bracket.

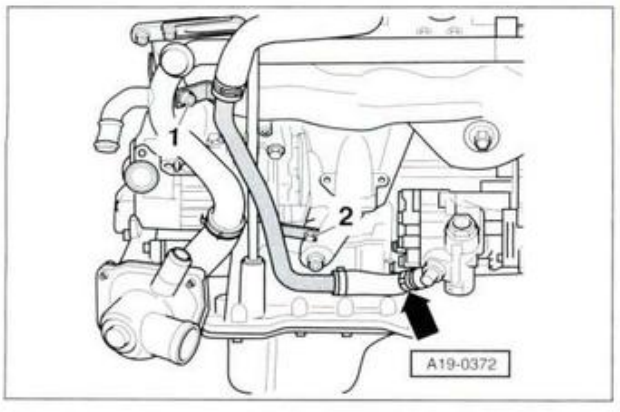



➤ Disconnect connector (**1**) at left engine mounting.

– Unscrew nut (**2**) and detach engine mounting.

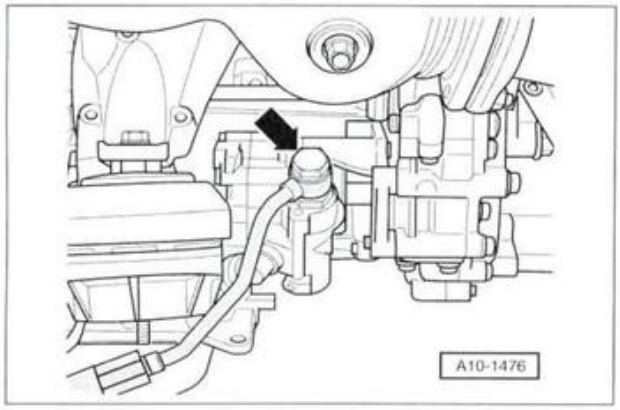
***NOTE***—

• *Illustration shows engine removed.*




➤ Remove bolts (**1** and **2**).

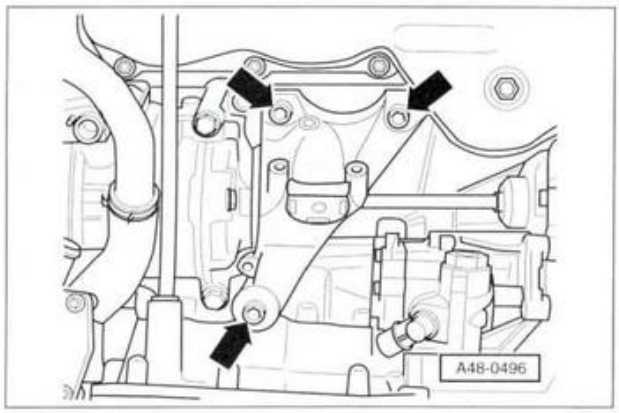
– Remove return line from power steering pump (**arrow**).



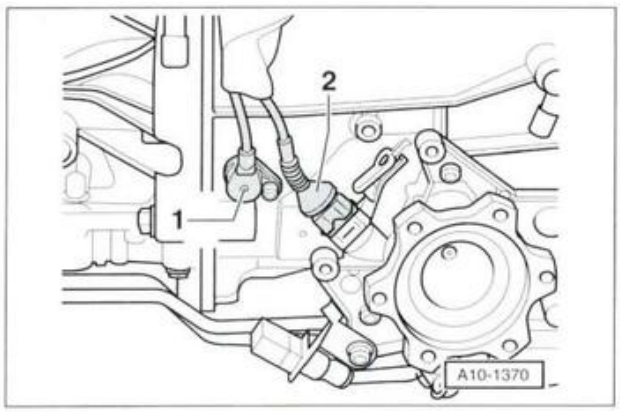

➤ Remove hydraulic pressure line banjo bolt (**arrow**) at power steering pump.

– Set aside hydraulic pressure line.

***NOTE***—
- *Be prepared to catch dripping steering fluid*

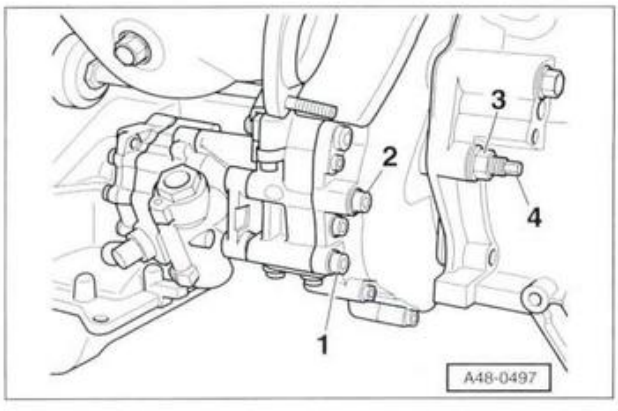



➤ Remove left engine support (**arrows**).




➤ Disconnect connector (**2**) at speedometer vehicle speed sensor (G22).

***NOTE***—
- *Ignore item 1.*




➤ Loosen lock nut (**3**) by several turns.

– Screw out as far as possible stud bolt (**4**).

– Screw out bolts (**1**) and (**2**) and detach power steering pump.

– Pay particular attention to the following on installation:
  • In engine compartment, clean areas contaminated with fluid.
  • Before installing new power steering pump, pour in hydraulic fluid on intake end and crank by hand until fluid emerges on discharge end.
  • Replace O-ring on drive shaft of power steering pump.
  • Replace oil seals.
  • Secure all hose connections with standard hose clamps.

– Install engine bracket and screw on subframe.

– Install stabilizer bar.

– Install drive axle.

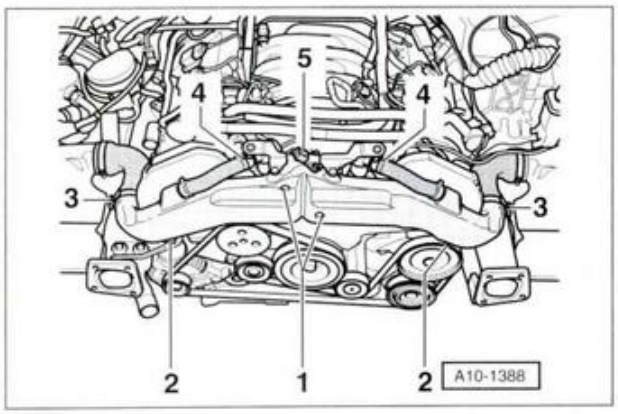
– Fill and bleed power steering system.

– Check power steering system for leaks.

| **Tightening torques** | |
|---|---|
| Power steering pump to engine | 22 Nm (16 ft-lb) |
| Stud bolt to power steering pump | 40 Nm (30 ft-lb) |
| Lock nut to stud bolt | 65 Nm (48 ft-lb) |
| Engine support to cylinder block | 42 Nm (31 ft-lb) |
| Hydraulic pressure line to pump | 47 Nm (31 ft-lb) |
| Return line to:<br>• engine support<br>• coolant pipe | <br>10 Nm (7 ft-lb)<br>10 Nm (7 ft-lb) |
| Engine mounting to:<br>• engine support<br>• engine bracket | <br>23 Nm (17 ft-lb)<br>23 Nm (17 ft-lb) |
| Drive axle heat shield to transmission | 23 Nm (17 ft-lb) |

## Power steering pump (RS6 engine), removing and installing

– Bring front lock carrier into service position. See **50 Body–Front**.

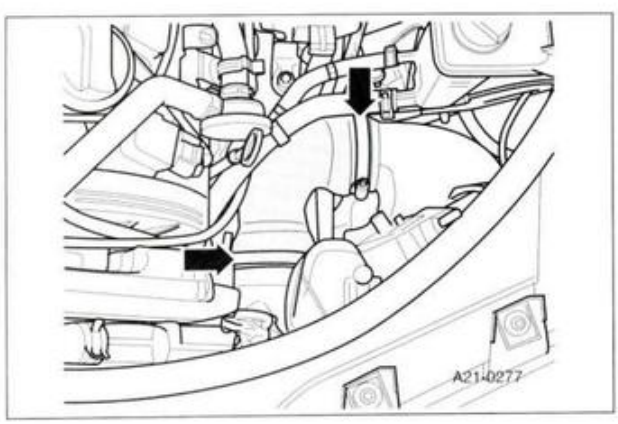



➤ Disconnect connector (**5**) at charge air pressure sensor (G31).

– Unfasten hose clamps (**3**) and (**4**).

– Detach hoses at air recirculation valves.

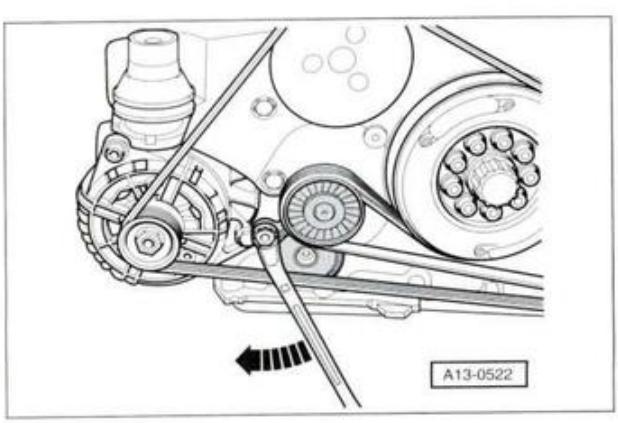
– Screw out bolts (**1** and **2**) and detach air line.




➤ Remove air hose (**arrows**).

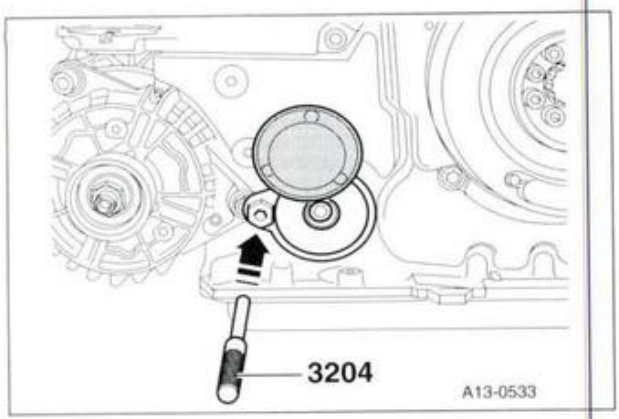
***NOTE***—

- *Before removing engine accessory belt, mark direction of rotation with chalk or felt-tip marker.*



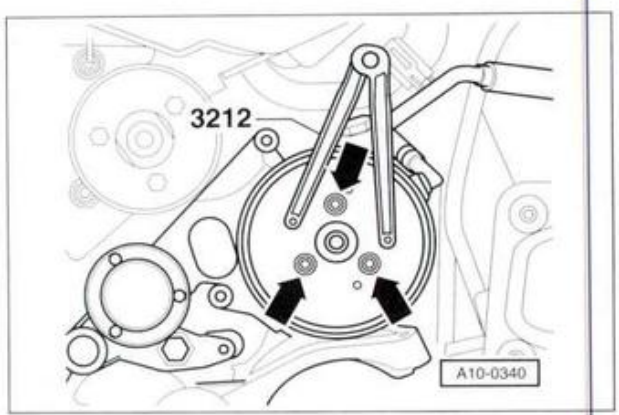

➤ To loosen accessory belt swing tensioner in direction of **arrow**.

*Steering Pump*

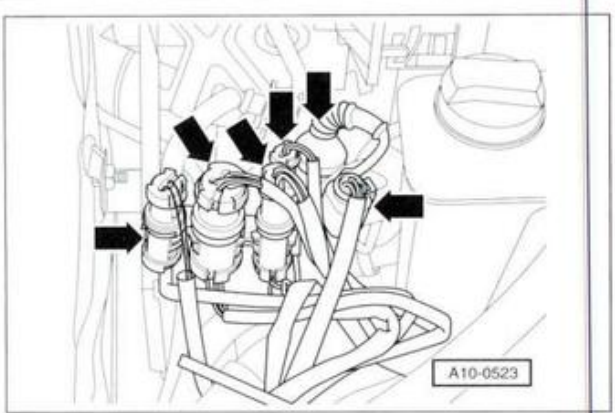



➤ Insert VAG 3204 drift into locating holes (**arrow**) to lock tensioner.

– Detach accessory belt from power steering pump pulley.

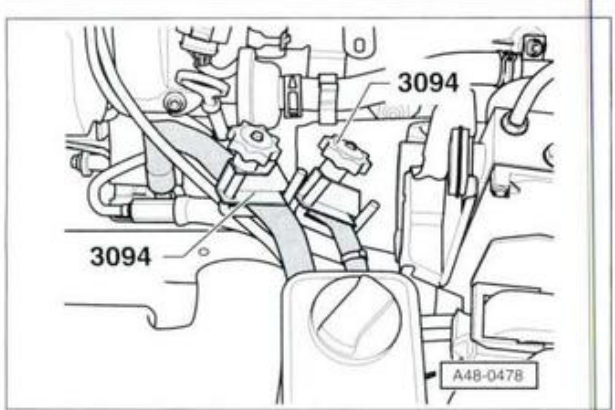



➤ Remove bolts (**arrows**) from power steering pump pulley. Counterhold with VAG 3212 spanner when loosening and tightening bolts.




➤ Take connectors (**arrows**) out of holder.

– Remove holder for connectors.




➤ Use VAG 3094 hose clamps to pinch off hydraulic hoses.

***NOTE —***

*• Be prepared to catch dripping steering fluid.*

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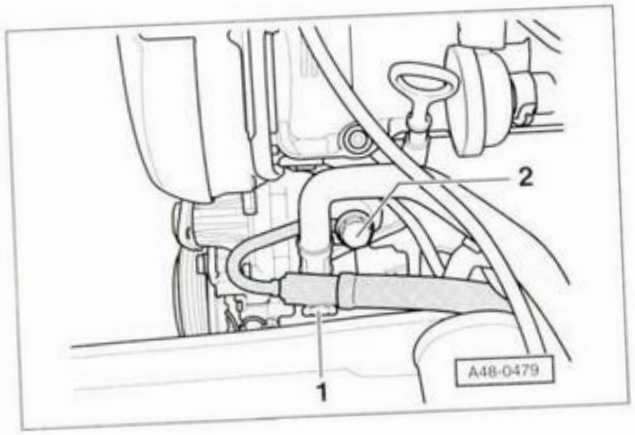
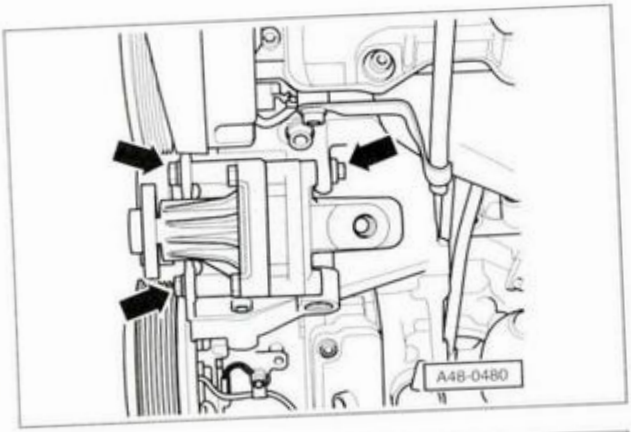


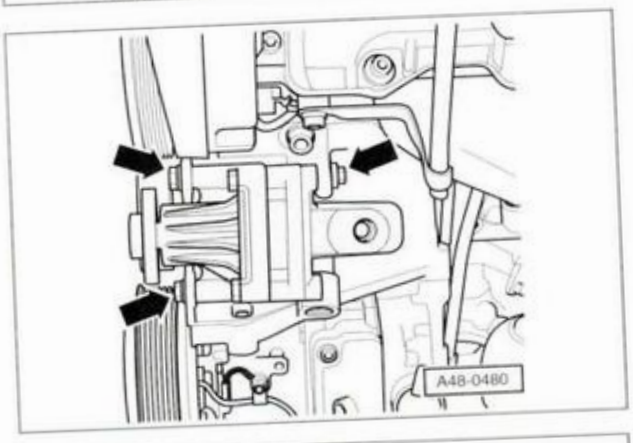

➤ Disconnect intake hose (**1**) and expansion hose (**2**) at power steering pump.




➤ Remove bolts (**arrows**).

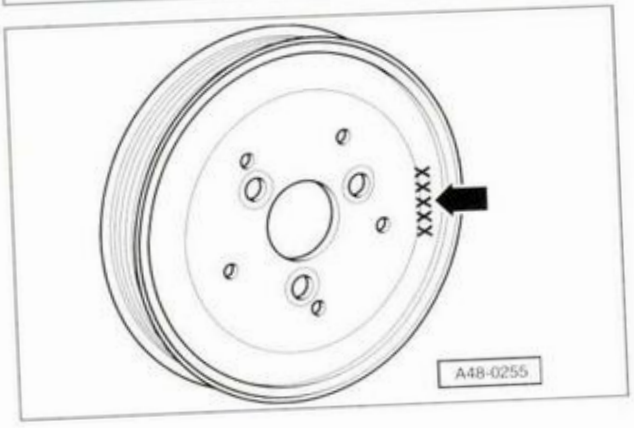
– Take out power steering pump.

– Pay particular attention to the following on installation:
  - Before installing a new pump, fill intake side with hydraulic fluid and turn pump by hand until fluid comes out the pump side.
  - Clean any areas in engine compartment contaminated with fluid.
  - Return expansion hose and suction hose to installed position.
  - Replace oil seals and O-rings.
  - Secure all hose connections with standard hose clamps.




➤ Place pump in bracket and screw in all three bolts (**arrows**).

– Install expansion and intake hoses with new seals, but do not tighten all the way.




➤ Front of the belt pulley is marked "front".

# 50 Body–Front


GENERAL . . . . . 50-1

FRONT LOCK CARRIER . . . . . 50-1

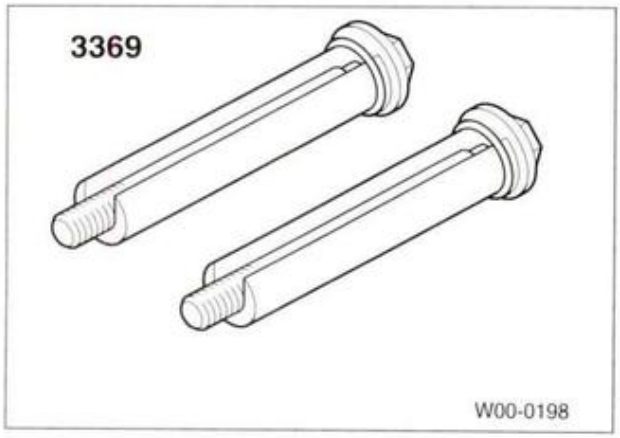
Front lock carrier assembly . . . . . 50-1

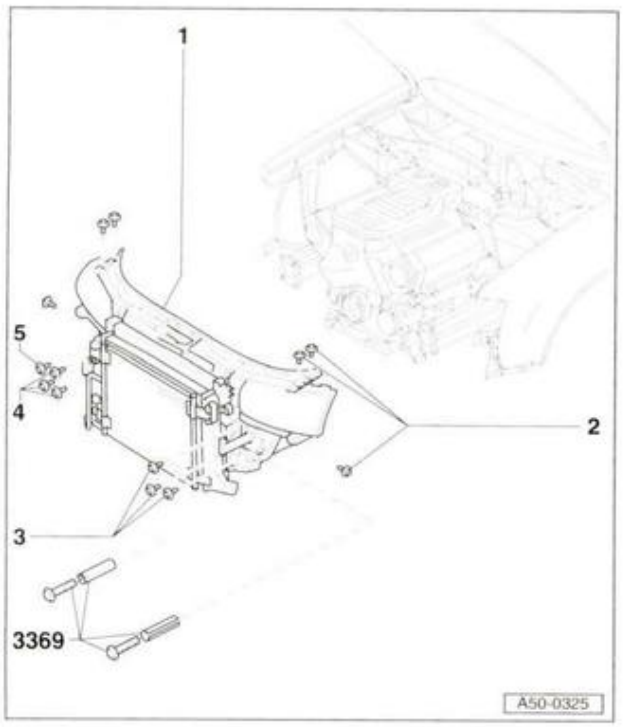
Front lock carrier service position . . . . . 50-2

FRONT FENDER . . . . . 50-4

Front fender end plate, removing and installing . 50-4

Front fender, removing and installing . . . . . 50-4


## GENERAL

This repair group covers the front lock carrier and front fenders. The lock carrier can be moved to a convenient service position for accessing components located in the front of the engine compartment.

For additional information see:

- **03 Maintenance** for lower engine cover removal.
- **63 Bumpers** for bumper and bumper cover removal.

## FRONT LOCK CARRIER

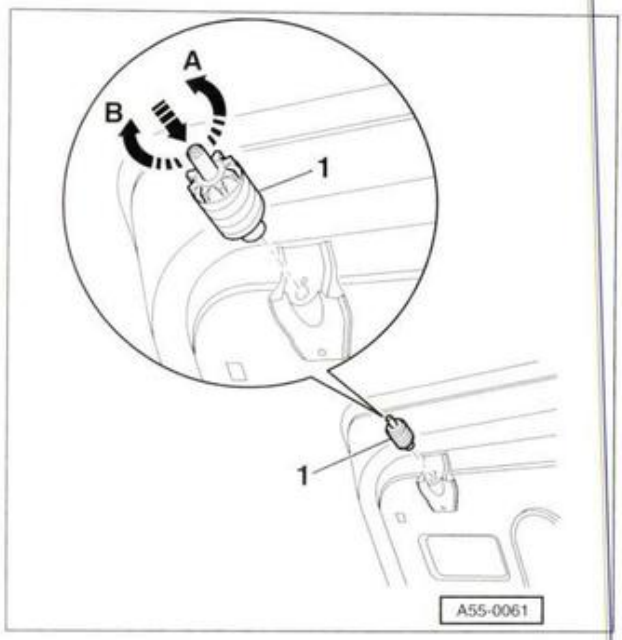
The radiator support frame in front of the engine is referred to as the front lock carrier.

A number of repair procedures require that the lock carrier be unbolted from the frame and moved forward into service position. It is then supported on special tools 3369 (or equivalent).

Remove engine covers as needed to free up and gain access to lock carrier fasteners.

### Front lock carrier assembly

1. Lock carrier
2. Torx bolts
   - 10 Nm (7 ft-lb)
3. Bolt and washer assembly
   - 50 Nm (37 ft-lb)
4. Bolt and washer assembly
   - 50 Nm (37 ft-lb)
5. Bolt and washer assembly
   - Remove bolts and install special tools 3369
   - 50 Nm (37 ft-lb)




## Trunk lid stops, adjusting

- Open trunk lid.
- Press in stop buffer spring pin in direction of arrow using Phillips-head screwdriver.
- Lock spring pin by turning counterclockwise (arrow **A**).
- Screw in stop buffer (**1**) until fully home.
- Unscrew stop buffer again in stages.
- Adjust so that lid stops make light contact with rear sill trim when trunk lid is closed.
- Unlock spring pin by turning clockwise (arrow **B**).

## Trunk lid striker plate, adjusting

- Loosen striker plate nuts. Retighten nuts until finger-tight (striker plate should still be movable).
- Carefully close trunk lid until flush with rear side panels.
- Carefully open trunk lid and tighten striker plate nuts.

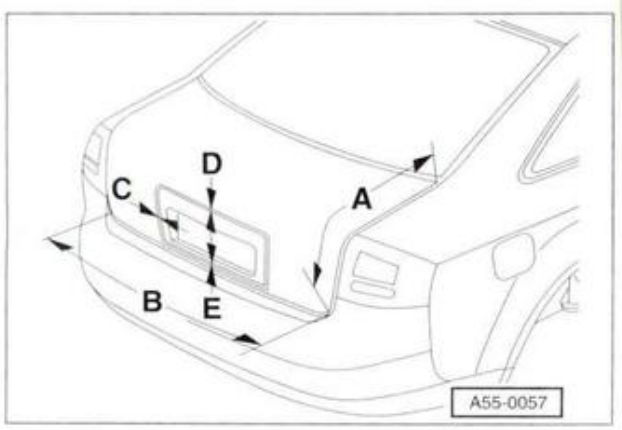
| Tightening torque | |
|---|---|
| Trunk lid striker plate to body | 8 Nm (71 in-lb) |

## Trunk lid gap dimensions

***NOTE —***

*• Use 3371 (or equivalent) adjustment gauge to check trunk lid gap.*

| Trunk lid gap dimensions | |
|---|---|
| **Dimension** | **Specification** |
| **A** | 3 +1/-0 mm (0.118 +0.039/-0 in) |
| **B** | 5 +1/-0 mm (0.197 +0.039/-0 in) |
| **C** | 1.5 ± 0.3 mm (0.059 ± 0.012 in) |
| **D** | Flush with trunk lid |
| **E** | 1.5 -0.5/+0 mm (0.059 -0.019/+0 in) |

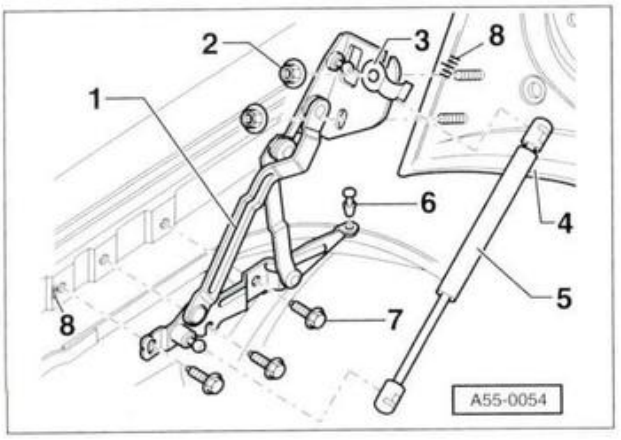


## Trunk lid hinge, removing and installing

Have an assistant support the lid during hinge removal.

– Unclip trunk lid hinge cover from top of hinge and remove.

– If necessary, remove trunk lid gas strut. See **Trunk lid strut, removing and installing** in this repair group.




➤ Loosen top nuts (**2**) on hinge at trunk lid.

– Remove bottom nuts on hinge at trunk lid.

– Lift trunk lid off hinge and support.

– Remove left and right bolts (**7**) on hinge at body.

– Loosen, but do not remove center bolt on hinge at body.

– Remove hinge (**1**).

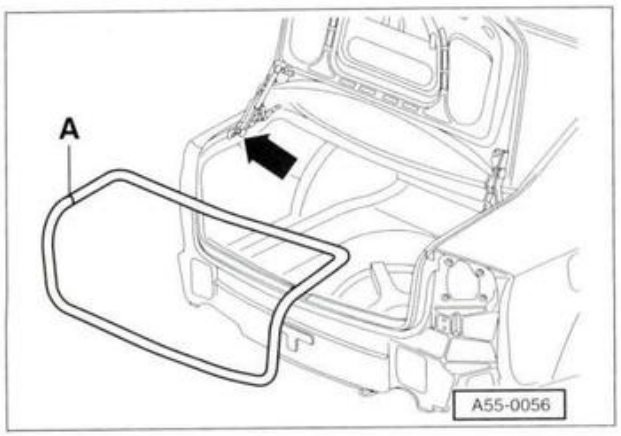
– When reinstalling hinge and trunk lid check trunk lid gap. See **Trunk lid, removing and installing** in this repair group.

***NOTE***—

*• For easier adjustment of the trunk lid hinge, use graduations (**8**) marked on the hinge and the trunk lid.*

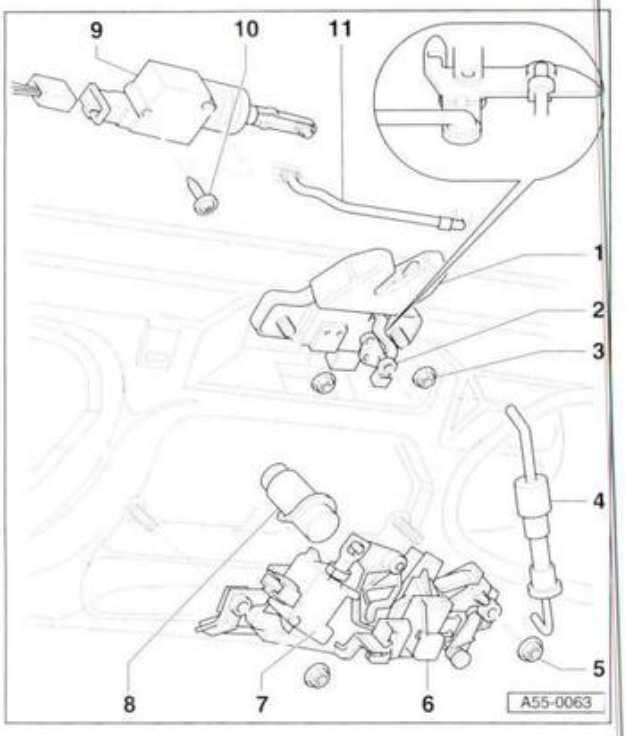
| **Tightening torques** | |
|---|---|
| Trunk lid hinge to body | 21 Nm (15 ft-lb) |
| Trunk lid hinge to trunk lid | 21 Nm (15 ft-lb) |

## Trunk lid seal, installing



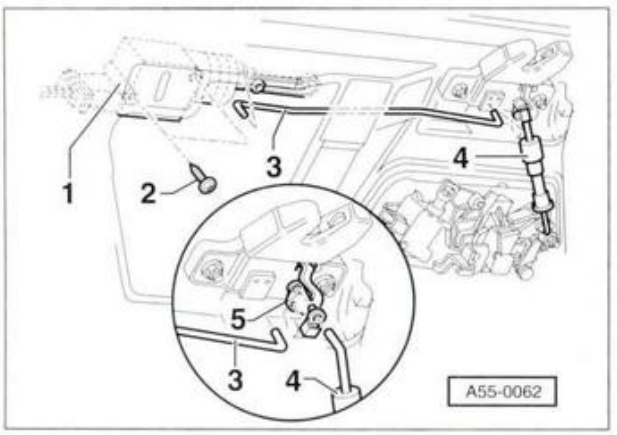

➤ Align butt joint (**A**) of the trunk lid seal with the ball socket of the left hinge (**arrow**).

– Press seal into place.




## Trunk lid lock, removing and installing

1. Trunk lid lock
   - To remove, swing out hinge arm (**2**) from operating rod (**4**) and unhook from trunk lid lock.
   - Remove nuts (**3**) and remove trunk lid lock.
2. Hinge arm
   - After installing trunk lid lock, swing it over operating rod.
3. Nuts, 8 Nm (71 in-lb)
4. Operating rod
5. Nut, 8 Nm (71 in-lb)
6. Handle mechanism
   - To remove, remove trunk lid trim.
   - Unclip operating rod (**4**) from handle mechanism.
   - Unscrew nuts (**5**) and remove handle mechanism.
7. Trunk lid lock actuator
8. Lock cylinder
   - Remove release handle.
   - Remove operating rod.
   - Remove lock cylinder out of handle mechanism.
9. Trunk lid lock motor
10. Screws (2x)
11. Operating rod




## Trunk lid lock motor, removing and installing

– Remove trunk lid lining.

➤ Unclip operating rod (**3**).

– Remove screws (**2**) (2x).

– Disconnect harness connector from motor (**1**).

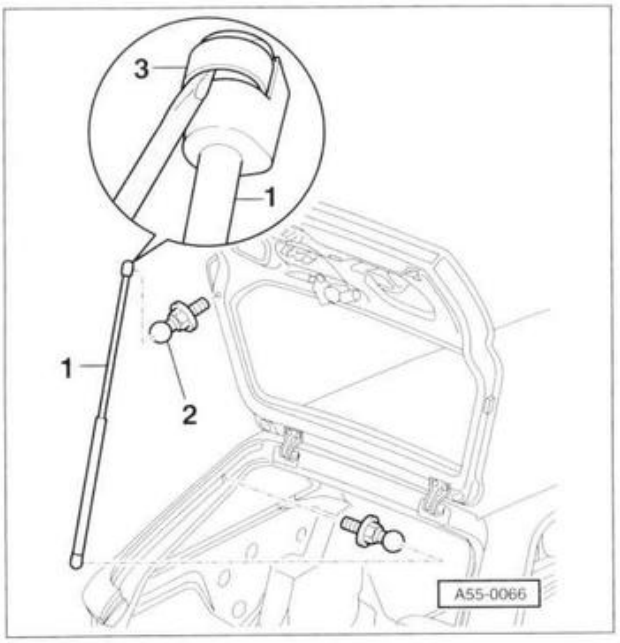
– Installation is reverse of removal.

***NOTE***—

- *Do not unclip operating rod* (**4**) *from fulcrum lever* (**5**).
- *Make sure the harness connector is connected to the motor before installation.*

## TAILGATE (AVANT)

### Tailgate, removing and installing




– Remove tailgate trim. See **70 Interior Trim**.

– Disconnect or remove harness connectors and hoses for tailgate lock and rear window washer.

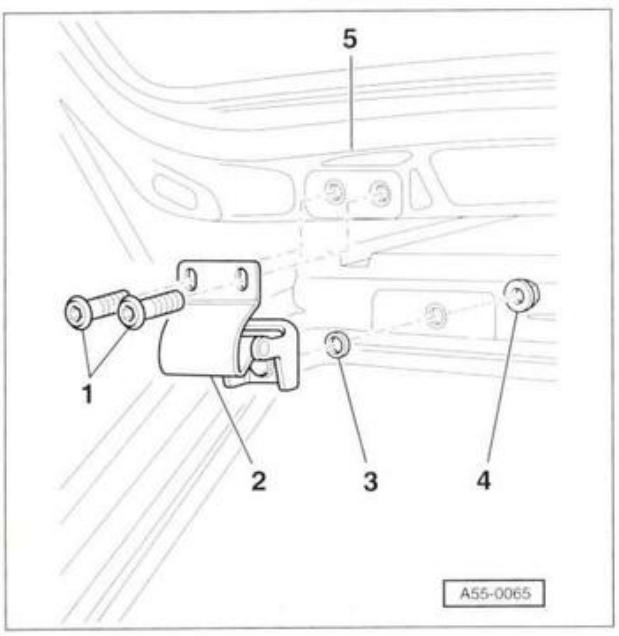
– Prop up and secure tailgate in open position.

➤ Using screwdriver, lift upper strut retaining spring (**3**) as shown and remove gas strut (**1**) from upper ball stud (**2**).

– Lift lower strut retaining spring slightly and pull gas strut (**1**) off lower ball stud.

***NOTE*** —

- *Before removing tailgate, mark position of hinges to maintain tailgate alignment.*
- *Have an assistant support the tailgate during removal.*




➤ Remove bolts (**1**) from hinges (**2**) and remove tailgate.

– To reinstall, align hinges to tailgate using marks made previously and fasten hinges.

– Install tube end of strut towards body.

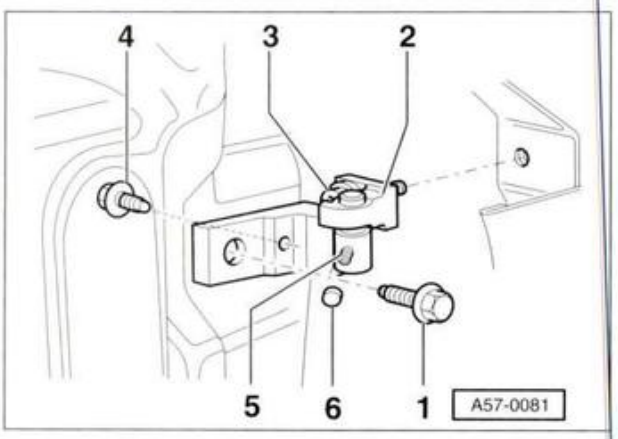
– Press gas strut onto ball stud so that it engages in position.

– Adjust tailgate alignment (if necessary). See **Tailgate, adjusting** in this repair group.

| **Tightening torque** | |
|---|---|
| Ball stud to tailgate and body | 15 Nm (11 ft-lb) |
| Hinge bolts to tailgate | 21 Nm (15 ft-lb) |

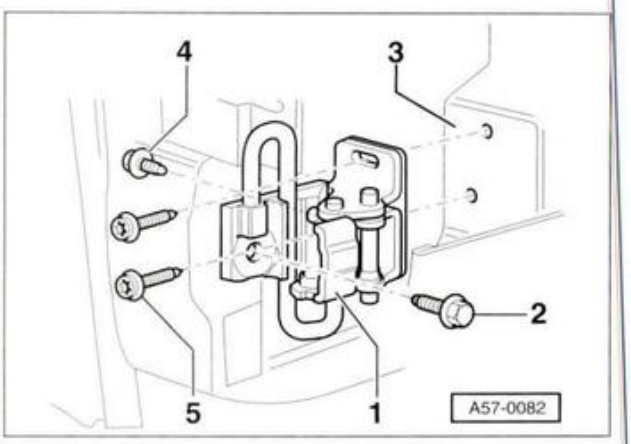
## 57-2 Doors and Locks

*Doors*



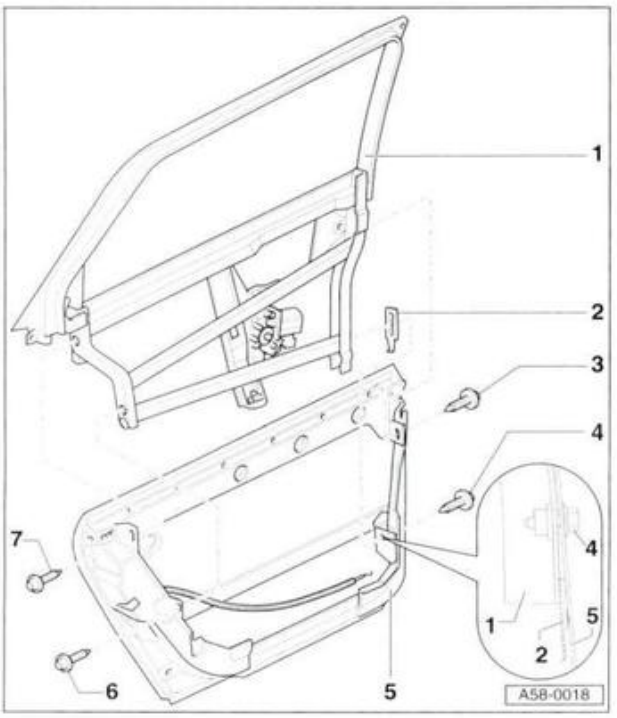

### Front door upper hinge

1. Bolt, 30 Nm (22 ft-lb)
   - Install from inside vehicle
2. Upper door hinge
3. Torx bolt 30 Nm (22 ft-lb)
4. Bolt 30 Nm (22 ft-lb)
   - Install from inside vehicle
5. Stud, 23 Nm (17 ft-lb)
6. Cap




### Front door lower hinge

1. Lower door hinge
2. Bolt, 30 Nm (22 ft-lb)
3. Front door
4. Bolt, 30 Nm (22 ft-lb)
5. Torx bolt 30 Nm (22 ft-lb)




### Rear door assembly

1. Door component carrier
2. Adjusting plate
3. Bolt w/washer assembly, 30 Nm (22 ft lb)
4. Bolt w/washer assembly, 30 Nm (22 ft lb)
5. Rear door
6. Bolt w/washer assembly, 30 Nm (22 ft lb)
7. Bolt w/washer assembly, 30 Nm (22 ft lb)

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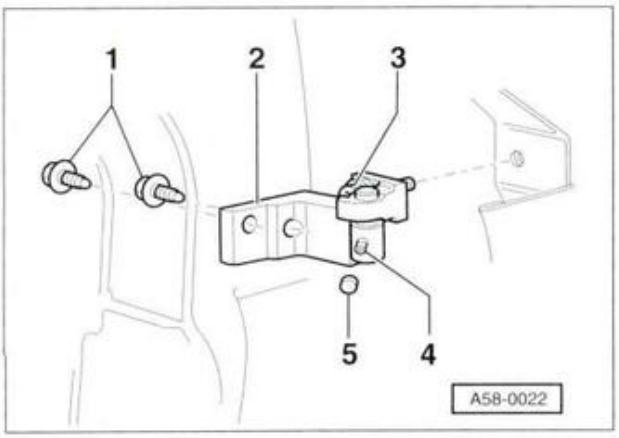
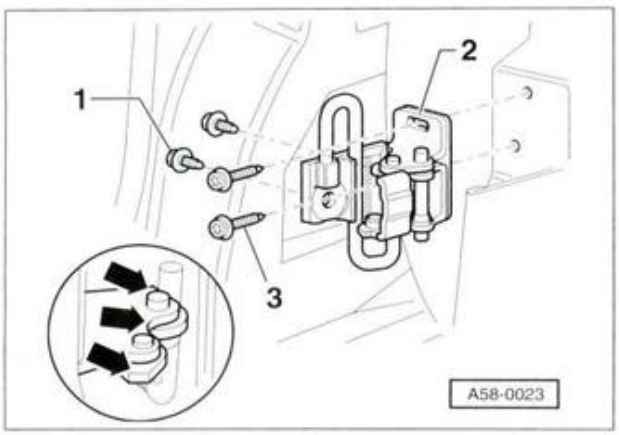



### Rear door upper hinge

1. Bolt, 30 Nm (22 ft-lb)
2. Upper door hinge
3. Torx bolt, 30 Nm (22 ft-lb)
4. Stud, 23 Nm (17 ft-lb)
5. Cap




### Rear door lower hinge

1. Bolt, 30 Nm (22 ft-lb)
2. Lower door hinge
3. Torx bolt, 30 Nm (22 ft-lb)

***NOTE —***

- *Lubrication points indicated by **arrows**.*

## Door, removing and installing

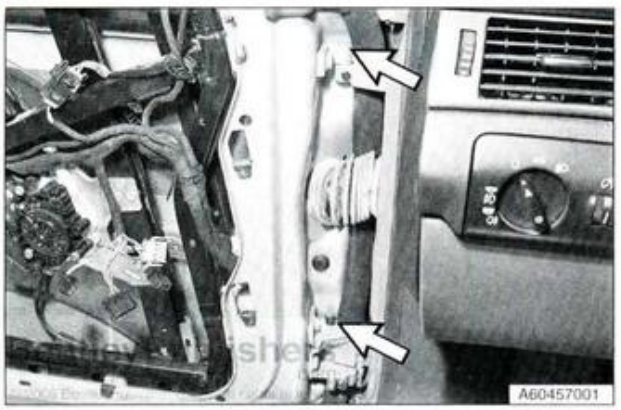
***NOTE —***

- *Front door removal described, rear door is similar*
- *To remove component carrier without removing door, see* **Door component carrier, removing and installing** *in this repair group.*

– Remove bottom section of A-pillar trim. See **70 Interior Trim**.

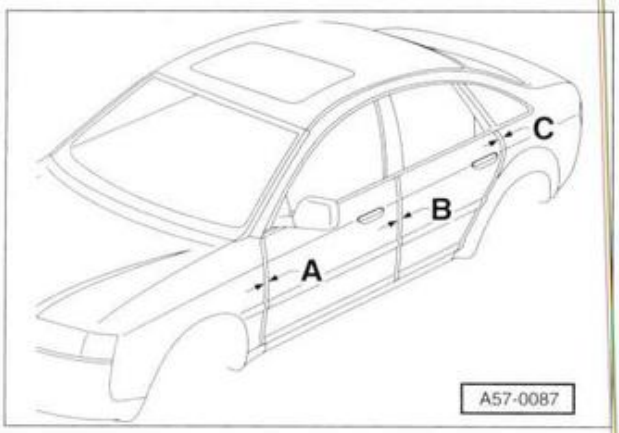
– Disconnect harness connectors at connection point on A-pillar.

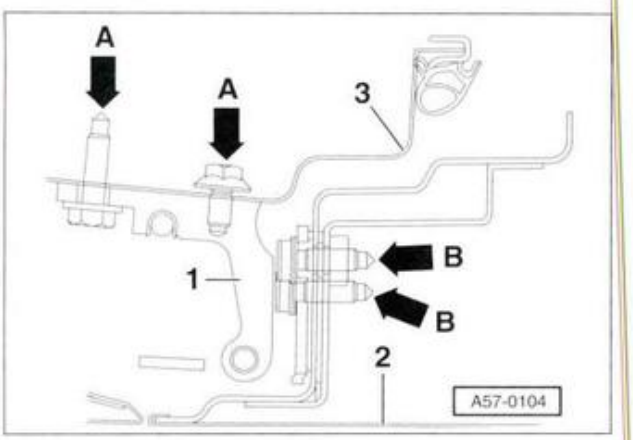
– Unclip rubber boot between front door and A-pillar and pull wiring harness out from A-pillar.

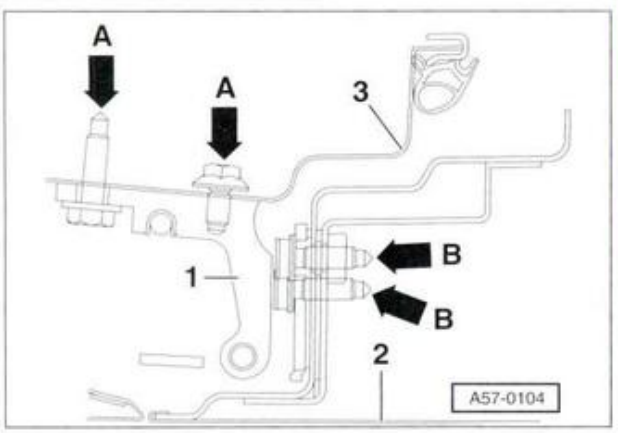


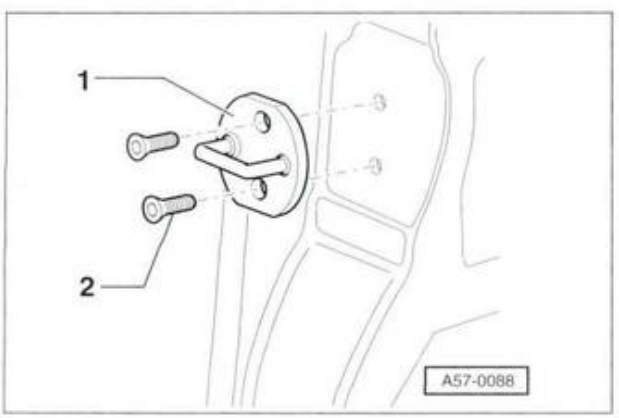

➤ Remove Torx bolts securing upper and lower hinges to door and remove door with door component carrier.

– Installation is reverse of removal. Remember to check door adjustment. See **Door gap, adjusting** in this repair group.




## Door gap, adjusting

***NOTE***—

- *First adjust rear door (if necessary).*
- *Check gap dimensions using 3371 adjustment gauge (or equivalent).*

| Door gap dimensions | |
|---|---|
| **Dimension** | **Specification** |
| **A** | 3 +1/-0 mm (0.118 +0.039/-0 in) |
| **B** | 4.5 ± 0.5 mm (0.177 0.019 in) |
| **C** | 3.5 ± 0.5 mm (0.138 0.019 in) |

### Adjusting door longitudinally

1. Door hinge
2. A-pillar
3. Door

– Adjust door longitudinally by loosening hinge bolts on (**A**) at upper and/or lower door hinge and moving door in elongated holes in hinge on A-pillar.

***NOTE***—

- *Lower door hinge shown.*

### Adjusting door flush with contour of body

Adjust door inward or outward by loosening upper and/or lower door hinge bolts (**B**) and moving door within elongated holes in hinge.

– Adjust the rear end of door by altering the position of the striker plate inward or outward.

| Tightening torque | |
|---|---|
| Door hinge to A-pillar | 30 Nm (22 ft-lb) |
| Door hinge to door | 30 Nm (22 ft-lb) |

### Adjusting door at striker plate

Use this adjustment only to align door inward or outward, not vertically.

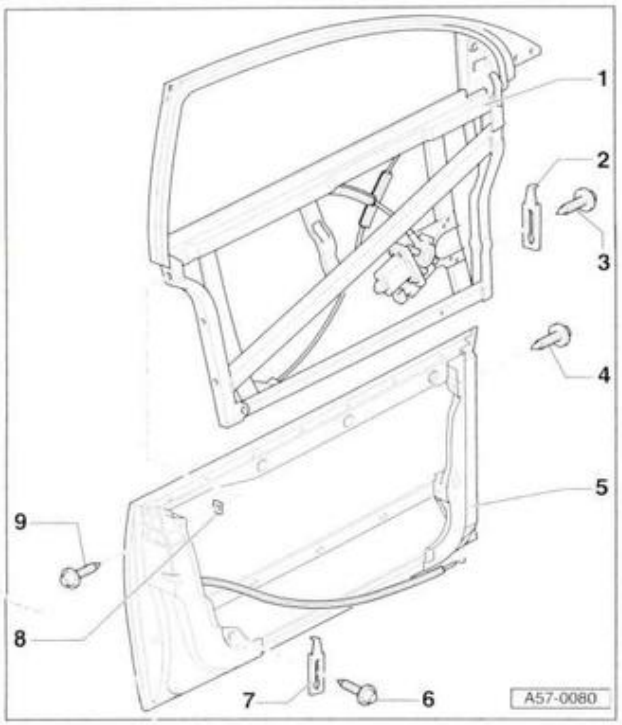
– Loosen bolts (**2**) and move striker plate (**1**) until door shell is flush with contour of body.

| Tightening torque | |
|---|---|
| Striker plate bolts to body | 20 Nm (15 ft-lb) |

## Door component carrier, removing and installing

***NOTE***—

- *Front door shown, rear door is similar.*
- *Door can be removed without removing component carrier. See* **Door, removing and installing** *in this repair group.*
- *Before removing component carrier, mark position with felt-tip pen.*




– Remove door trim panel. See **70 Interior trim**.

– Disconnect harness connector and unclip harness from door component carrier.

➤ Remove component carrier mounting bolts (**3**, **9**, **6**, and **4**). Lift component carrier upward and out of door.

– Before installing component carrier, check door adjustment. See **Door gap, adjusting** in this repair group.

– Insert component carrier into door and align with marks made previously.

– Secure carrier loosely with bolts (**3**, **4**, **6** and **9**) and adjusting plate (**2** and **7**).

– Shut door and check adjustments. See **Door component carrier, adjusting** in this repair group.

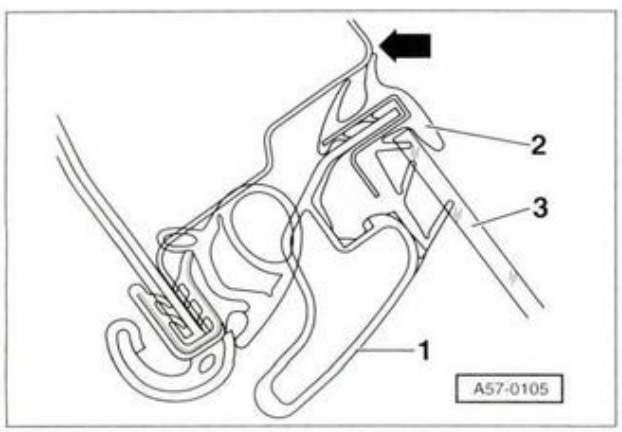
– When adjustment is correct, tighten component carrier to door in specified sequence (**3**, **9**, **6**, **4**).

| **Tightening torque** | |
|---|---|
| Door component carrier to door | 30 Nm (22 ft-lb) |

## Door component carrier, adjusting

– If reinstalling door, adjust door first. See **Door gap, adjusting** in this repair group.

– Remove door trim panel. See **70 Interior Trim**.




➤ Align door component carrier by altering position of adjusting plate at bottom of door. Make sure sealing lip (**2**) conforms to contour of A-pillar and roof frame.

– Adjust door component carrier height.

– If height adjustment is correct, loosen securing bolts at bottom of door component carrier and press carrier (**1**) in toward center of vehicle.

– Push carrier in slightly further to compress rubber seal.

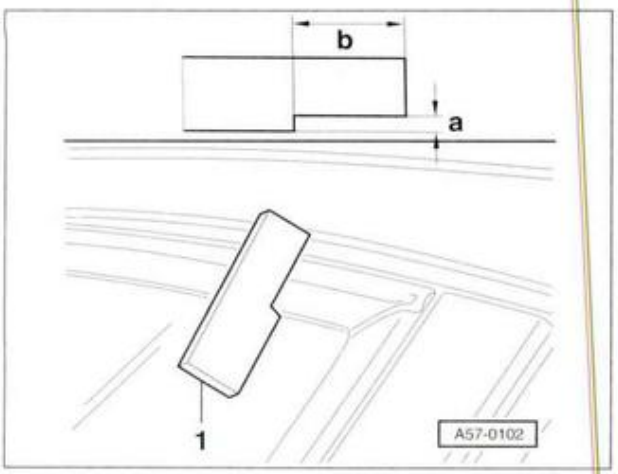
– Position adjusting plate at B-pillar as necessary.

– Tighten lower securing bolts to 30 Nm (22 ft-lb).

***NOTE***—

- *Item* **3** *is the door glass.*

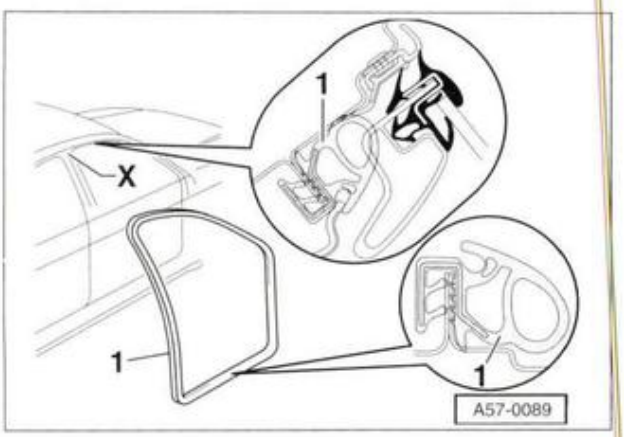
*Door Locks*




➤ Check adjustment using shop-made distance gauge.

– Make a distance gauge according to dimensions given below using suitable material (e.g. plastic or wood):
  • Dimension a = 3.7 mm (0.146 in)
  • Dimension b = 28.2 mm (1.110 in)

– If door component carrier is correctly adjusted, gauge should contact door window and roof trim molding when applied at a point approx. 100 mm (3.94 in) from B-pillar.




## Door seal, removing and installing

– Remove trim panels at top and bottom of A and B-pillars together with sill trim panel. See **70 Interior Trim**.

– Pull door seal off door flange.

➤ To install, place end of door seal PVC lip onto flange at marking **X** (5 mm, or 0.197 in) near B-pillar.

– Press door seal (**1**) onto door flange all around door opening.

***NOTE***—
• *Front door shown, rear door is similar.*

# Door Locks

## Central locking service notes

– Lock actuators in the doors are integrated in the lock and have 2 electric motors.

– Lock actuators cannot be replaced separately.

– The first electric motor locks the door and the second locks the interior door mechanism.

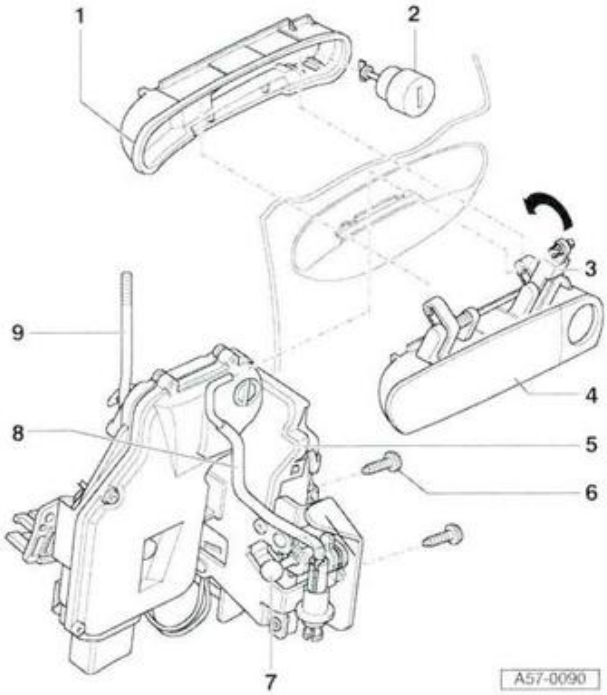
– Locked doors can only be opened electrically from inside the car.

– Lock actuators for the fuel filler flap and rear lid each have one electric motor, and can be replaced separately.

– After an accident that activates an airbag, the control module for central locking will unlock any active door locks.

– The control module for central locking is located in a protective box beneath the driver's seat and carpet.

  See **96 Interior Lights, Switches, Anti-theft** for locations of central locking and anti-theft alarm components.




## Door handle and door lock assembly

1. Door handle mount
2. Lock cylinder
3. Fulcrum lever
4. Door handle
5. Door lock
6. Bolt (M8), 20 Nm (15 ft-lb)
7. Locating pin
8. Operating rod
9. Operating rod (door lock)

## Door lock, removing and installing

– Remove door trim panel. See **70 Interior Trim**.

– Run door window up to top position.

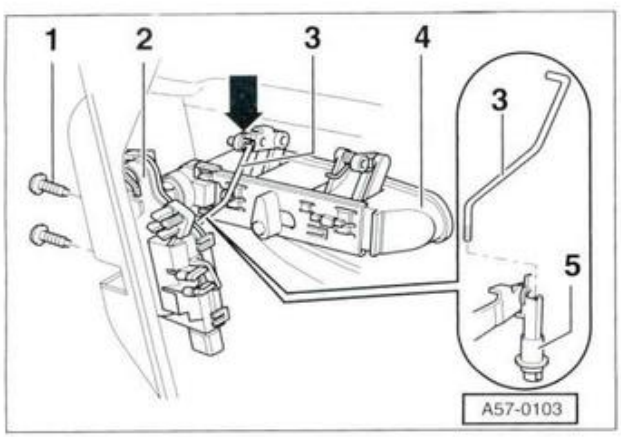
– Disconnect harness connector for central locking at door lock.

➤ Disengage operating rod (**3**).

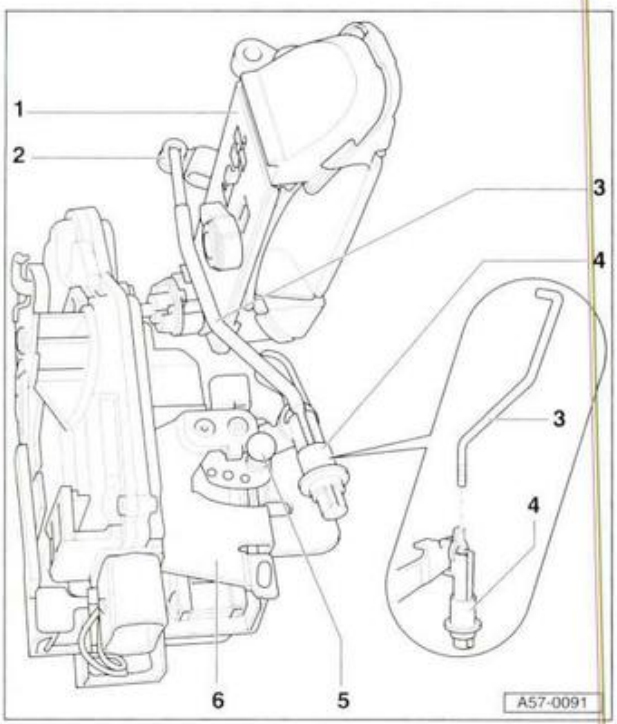
– Remove combination bolts (**1**) and remove door lock (**2**) in downward direction, between door component carrier and front door shell.

– Installation is reverse of removal. Note the following:

- When reinstalling door lock, disengage operating rod (**3**) at fulcrum lever clip (**arrow**).
- When installing new door lock, disengage operating rod (**3**) at sliding sleeve (**5**).



*Door Locks*




## Door handle, removing and installing

1. Door handle
2. Clip
3. Operating rod
4. Sliding sleeve
5. Locating pin
6. Door lock

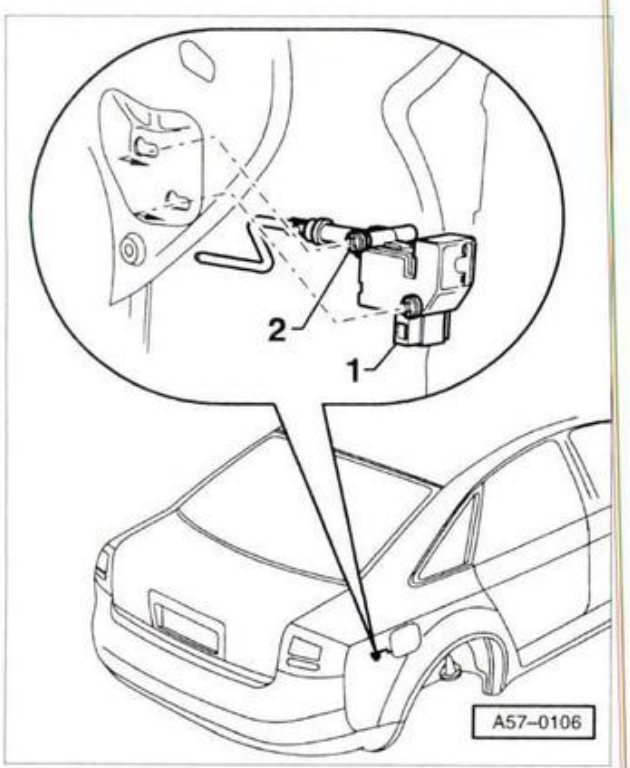
– Remove door trim panel. See **70 Interior Trim**.

– Run door window up to top position.

– Disengage operating rod at clip (**2**).

– Remove door handle.

– Installation is reverse of removal. Remember to:
  - Attach operating rod to handle at clip (**2**).
  - If installing new door lock, insert operating rod (**3**) and pull out locating pin (**5**) (if equipped).
  - Push up sliding sleeve (**4**) to lock operating rod (**3**) in place.




## Fuel flap lock actuator, removing and installing

– Disconnect filler flap lock actuator harness connector.

➤ Loosen screws (**2**). Push back lock actuator (**1**) and remove

– Installation is reverse of removal.

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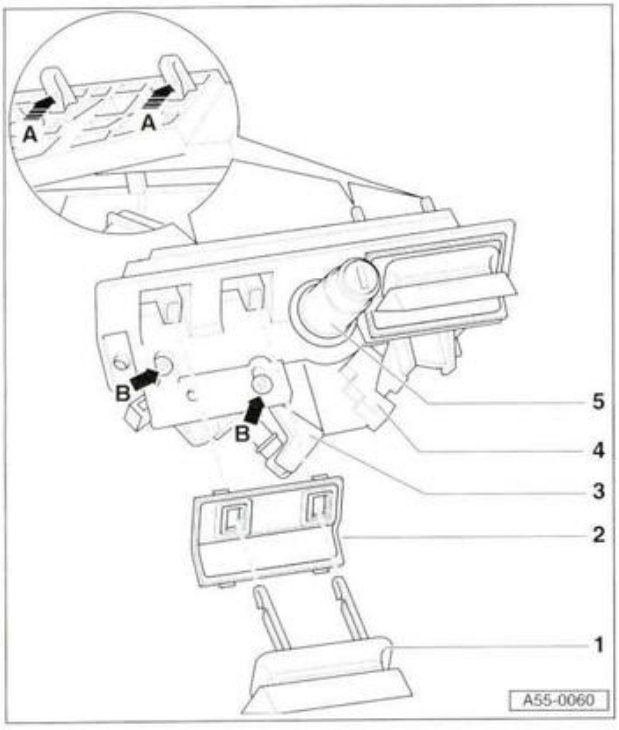



## Rear lid lock actuator, removing and installing

1. Release handle
2. Seal
3. Lock actuator
4. Handle mechanism
5. Lock cylinder

– Remove tailgate / trunk lid trim. See **70 Interior Trim**.

– Remove lock. See **55 Hoods and Lids**.

– Using screwdriver, press in and disengage locating hooks on left release handle (**1**) in direction of arrow (**A**).

– Pull left release handle (**1**) downward out of handle mechanism (**4**).

– Remove Phillips-head screws (**B**) and remove lock actuator.

– Installation is reverse of removal.

# 60 Sunroof


**GENERAL** . . . . . 60-1
Function . . . . . 60-1
Sunroof motor and switch, accessing . . . . . 60-1
Sunroof emergency closing. . . . . 60-2
**SUNROOF SERVICE** . . . . . 60-2
Wind deflector, removing and installing . . . . . 60-2
Sunroof panel, removing and installing . . . . . 60-4
Sunroof trim, removing and installing . . . . . 60-4
Sunroof panel, adjusting . . . . . 60-5
Sunroof panel seal, replacing . . . . . 60-6
Sunroof motor, setting zero position . . . . . 60-6
Sunroof guide plate, setting zero position . . . . . 60-6
Sunroof drain hoses, cleaning . . . . . 60-7

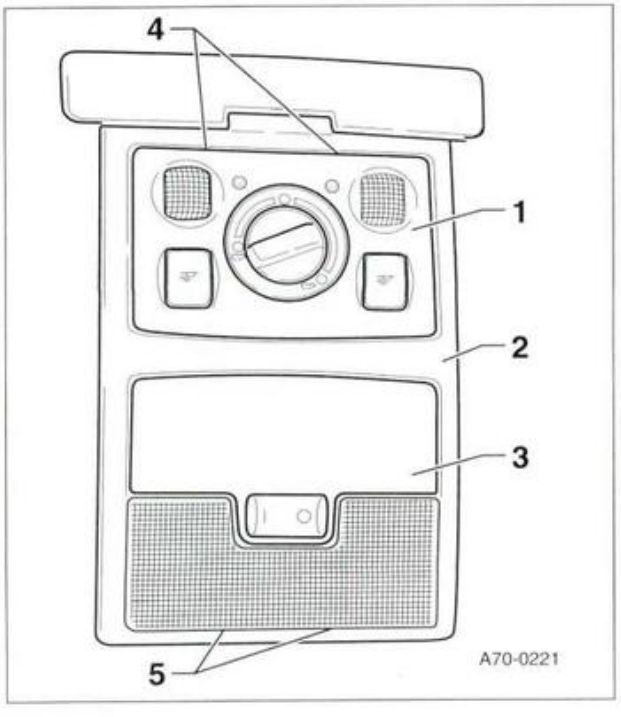

## GENERAL

This repair group covers sunroof repair and adjustment procedures including sunroof drain hose maintenance. The power sunroof is a two-way design that tilts open or slides back in the roof.

### Function

The sunroof is opened and closed by switching the ignition ON and turning the rotary sunroof switch to the desired position. Push the rotary switch to tilt the sunroof up, and pull to return it to closed position.

The sunroof can also be opened or closed after turning the ignition OFF, and before opening either front door. Should the sunroof electronics malfunction or the vehicle lose battery power, the sunroof can be closed manually. See **Sunroof emergency closing** in this repair group.




### Sunroof motor and switch, accessing

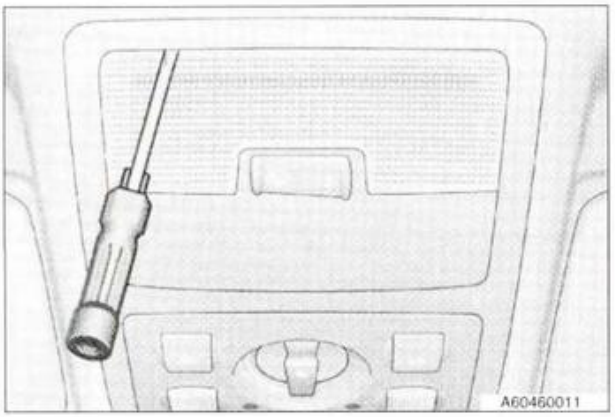
To access the sunroof motor or rotary switch for testing or service, remove the switch panel from the headliner.

➤ To access the rotary switch, use a plastic prying tool to pry cover off switch panel (**1**) at front of panel (**4**) and remove switch.

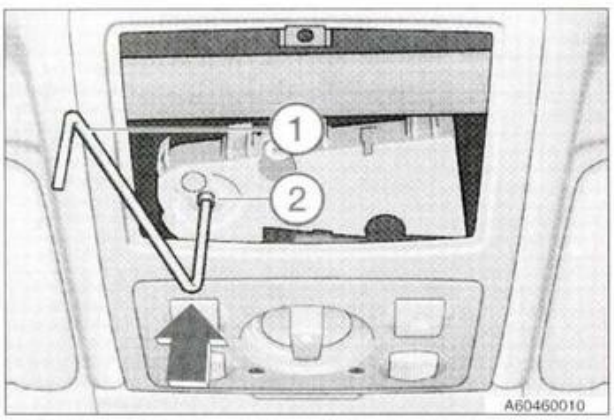
– To access sunroof motor, use a plastic prying tool to pry cover off interior light (**3**) at back of panel (**5**).

## Sunroof emergency closing

If the sunroof will not close electrically, it can be closed manually. An emergency closing tool can be found on the inside of the fuse panel cover.



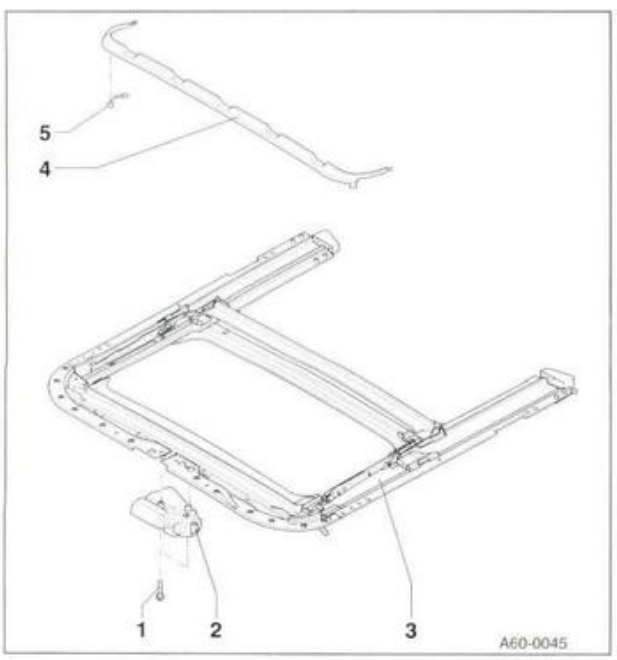

➤ Using a screwdriver (included in vehicle tool kit), carefully pry interior light housing from switch panel.




➤ Insert Allen end of closing tool (**1**) into socket on sunroof motor (**2**) as far as it will go. Crank sunroof closed.

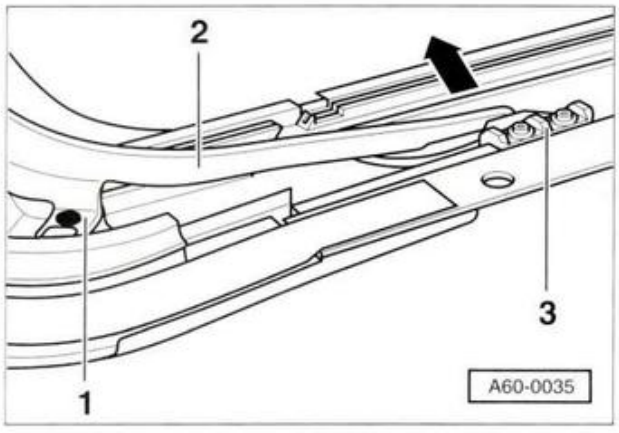
# SUNROOF SERVICE

## Wind deflector, removing and installing



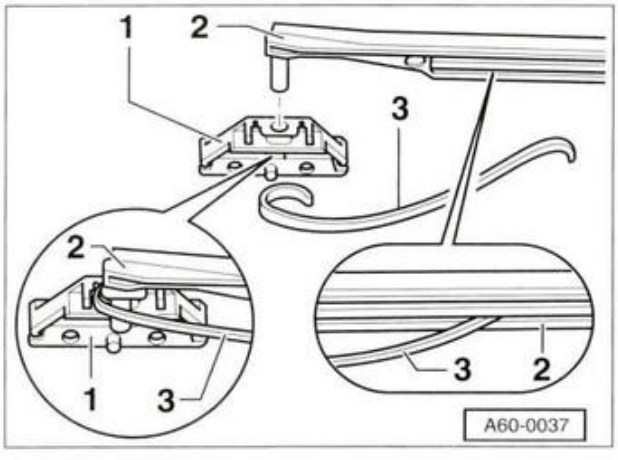

1. Screw w/washer
2. Sunroof motor
3. Frame
4. Wind deflector
5. Wind defector spring

– Slide back sunroof panel to fully open.



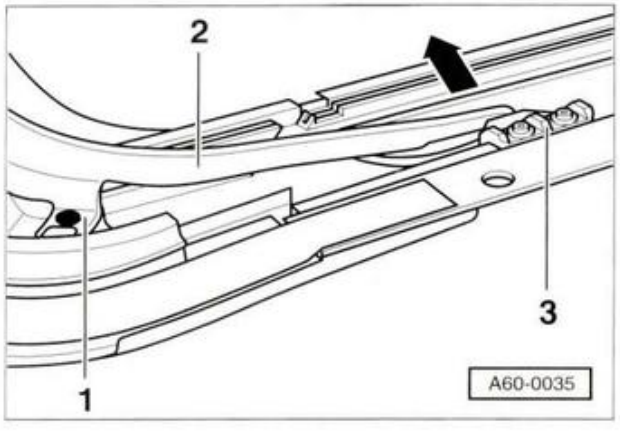

➤ Press wind deflector (**2**) out of holder (**3**) in direction of arrow.

– Pull wind deflector backward and out of roof cut-out.




➤ Install wind deflector by hooking spring (**3**) onto retaining pin (**2**).

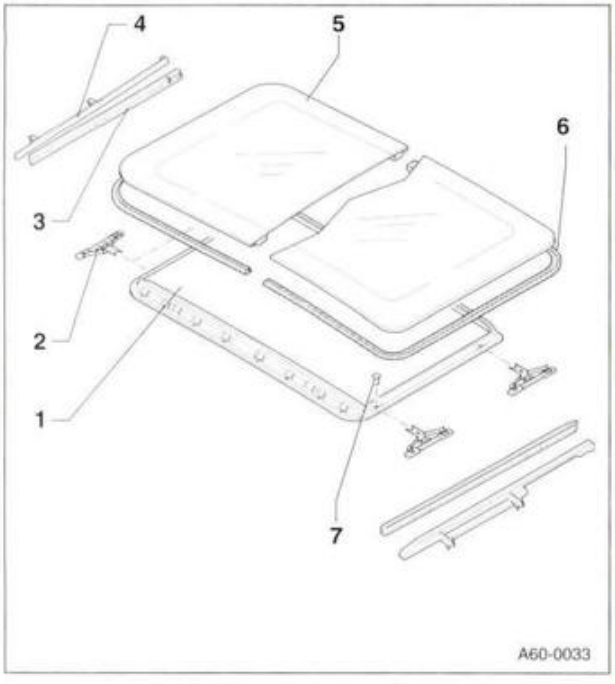
– Insert other end of spring into groove of wind deflector.

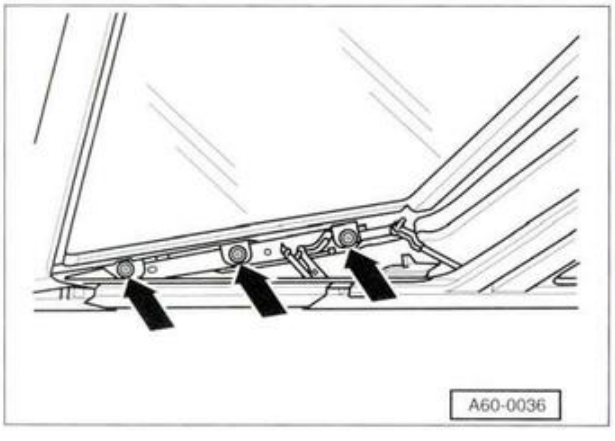


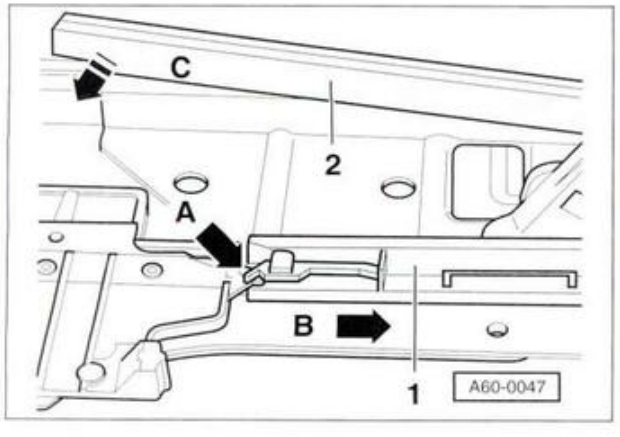

➤ Push stop (**1**) of wind deflector (**2**) forward below roof cut-out.

– Insert retaining pin of wind deflector into holder (**3**).

– On opposite side, push deflector in toward center of vehicle and lock other retaining pin into holder.




## Sunroof panel, removing and installing

1. Sliding headliner
2. Sliding headliner spring
3. Lower trim
4. Upper trim
5. Sunroof panel
6. Sunroof panel sleeve
7. Countersunk screw

– Remove sliding headliner by removing screws (**7**) and front and rear.

– Push front spring (**2**) forward and rear spring backward off sliding headliner and remove springs.

– Pull sliding headliner sideways out of opposite guide rail and lift out.

– Open sunroof to tilt position.

– Remove trim on left and right sides. See **Sunroof trim, removing and installing** in this repair group.

➤ Unscrew Torx bolts (T25) on both sides and lift panel out from top.

– Installation is reverse of removal. Remember to:

- Make sure sunroof motor and sunroof guide plate are set to zero position. See **Sunroof motor, setting zero position**and **Sunroof guide plate, setting zero position** in this repair group.
- Adjust sunroof panel height (if necessary). See **Sunroof, adjusting** in this repair group.

| **Tightening torque** | |
|---|---|
| Sunroof fasteners to sunroof panel | 4.5 + 0.5 / -0 Nm<br>(40 + 4.4 / -0 in-lb) |

## Sunroof trim, removing and installing

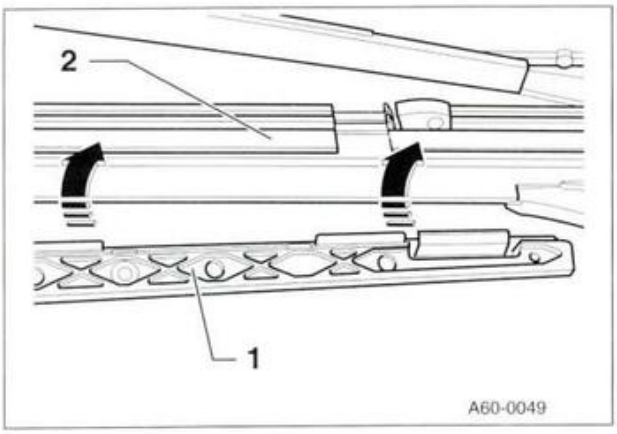
– Open sunroof to tilt position.

– Push sliding headliner fully back.

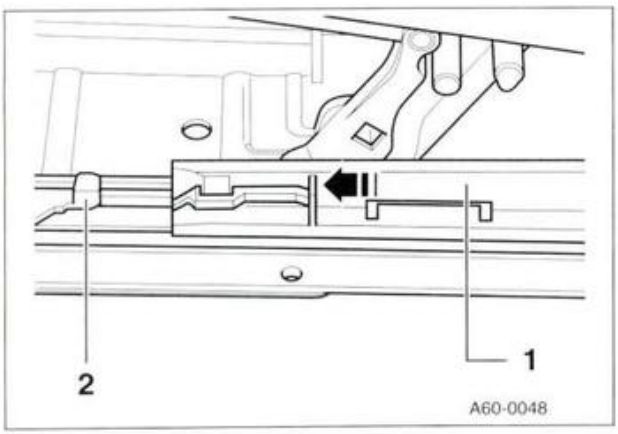
➤ Unclip lower trim (**1**) at rear in direction of arrow (**A**) and slide it forward (**B**).

– Pull lower trim off guide rail toward center of vehicle.

– Unclip upper trim (**2**) at front and center in direction of dashed **arrow**.




➤ To install, press lower trim (**1**) onto upper edge (**arrows**) of guide rail (**2**).




➤ Press lower trim (**1**) backward in direction of **arrow** until locating hook locks into actuator (**2**).

– Press upper trim into guide plate.

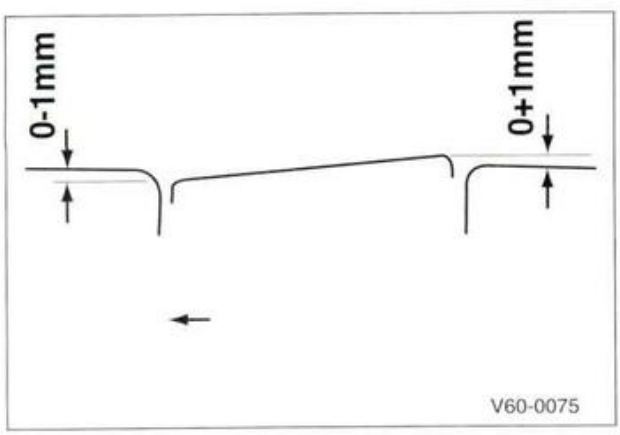
## Sunroof panel, adjusting

– To avoid wind noise, adjust sunroof panel at front and rear as shown.

– Check height adjustment at points where rounded corners merge with straight parts of roof cut-out at front and rear.

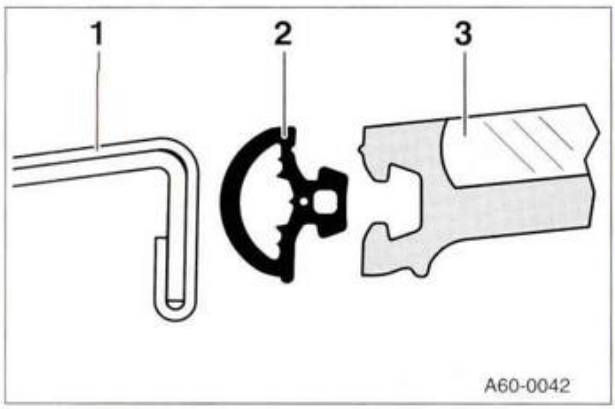
***NOTE***—

• *Lower arrow points toward front.*




➤ Sunroof panel should not be higher than the roof at any point at the front or lower than the roof at any point at the rear.

– Run sunroof from open position (i.e, not tilted open) to closed position and adjust according to specifications.




## Sunroof panel seal, replacing

– Remove sunroof panel. See **Sunroof panel, removing and installing** in this repair group.

➤ Pull seal (**2**) out of sunroof panel (**3**).

– Press new seal into sunroof panel, starting from center of rear edge of panel.

– To aid installation, lubricate edge of sunroof panel with soapy water.

## Sunroof motor, setting zero position

Set sunroof motor zero position before installing motor in frame.

– With sunroof motor removed, attach electrical harness connector to motor and move rotary control to fully closed position.

Sunroof winds to zero position and cuts out automatically.

– Install motor in this position with sunroof closed.

## Sunroof guide plate, setting zero position

Set guide plate zero position before installing sunroof panel. Guide plate zero position can be checked using a pocket mirror and a flashlight, with the sunroof panel installed.

### Checking zero position

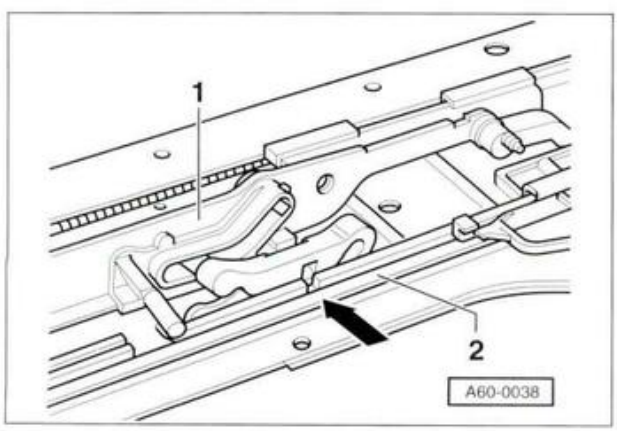
– Remove sunroof trim. See **Sunroof trim, removing and installing** in this repair group.

– Run sunroof panel back and then into closed position.

– Push sliding headliner fully back.

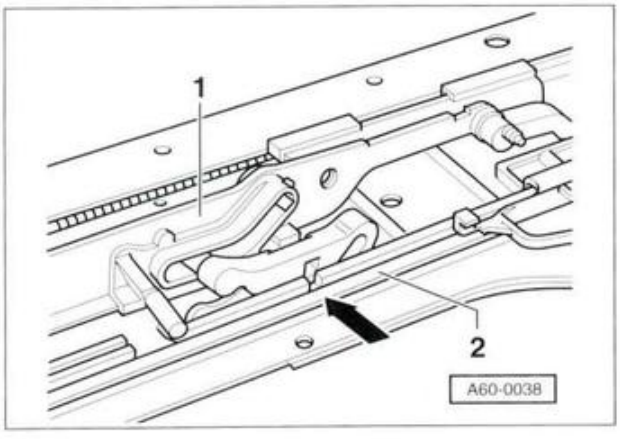
– Shine flashlight on sunroof panel and visually check zero position from the side.

➤ Guide plate zero position is correctly set if the square hole in the tilt mechanism of the guide plate (**1**) is aligned with the recess (**arrow**) in the guide rail (**2**).



### Setting zero position

- Remove sunroof panel. See **Sunroof panel, removing and installing** in this repair group.
- Remove sunroof motor.
- Remove sunroof trim. See **Sunroof trim, removing and installing** in this repair group.
- Slide guide plates (**1**) on both sides from rear to front.

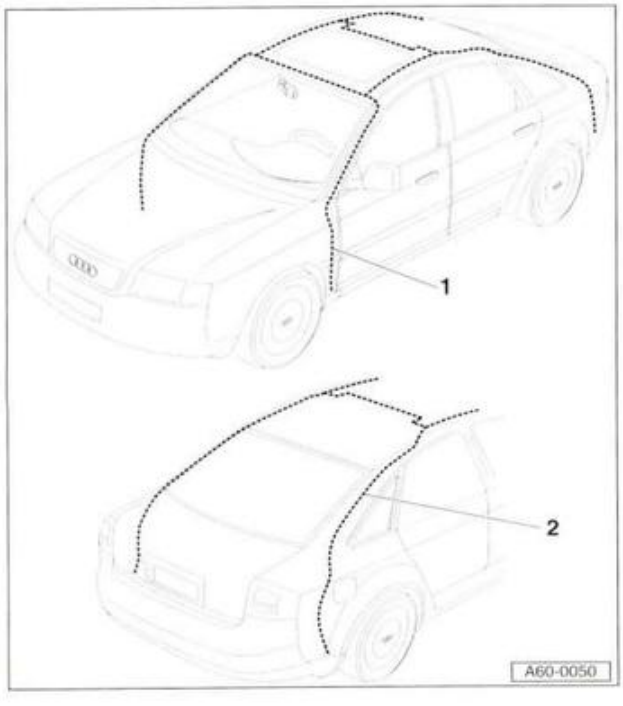



- Align square hole in tilt mechanism of guide plate (**1**) with recess (**arrow**) in guide rail (**2**) for sliding headliner.

  This is zero position.
- Reinstall sunroof motor.
- Reinstall sunroof panel and trim.

## Sunroof drain hoses, cleaning

Sunroof drain hoses should be checked periodically. Blocked drain hoses can allow water to enter the interior of the vehicle. To clean drain hoses a long cable is needed. An old speedometer inner cable, approx. 2300 mm (90 in) long will work for this.




- Front water drain hoses (**1**) are routed in the A-pillars and exit between the door and A-pillar. Cleaning is performed from sunroof cut-out.
- Rear water drain hoses (**2**) are routed in the C-pillars and exit behind the bumper cover at side. Remove bumper cover and clean from the lower end of hose. See **63 Bumpers** for more information.

# 63 Bumpers


GENERAL . . . . . 63-1

FRONT BUMPER . . . . . 63-1

Front bumper assembly . . . . . 63-1

Front bumper, removing and installing . . . . . 63-2

Front bumper impact absorber, removing and installing . . . . . 63-2

REAR BUMPER . . . . . 63-3

Rear bumper assembly . . . . . 63-3

Rear bumper cover, removing and installing . . . 63-3

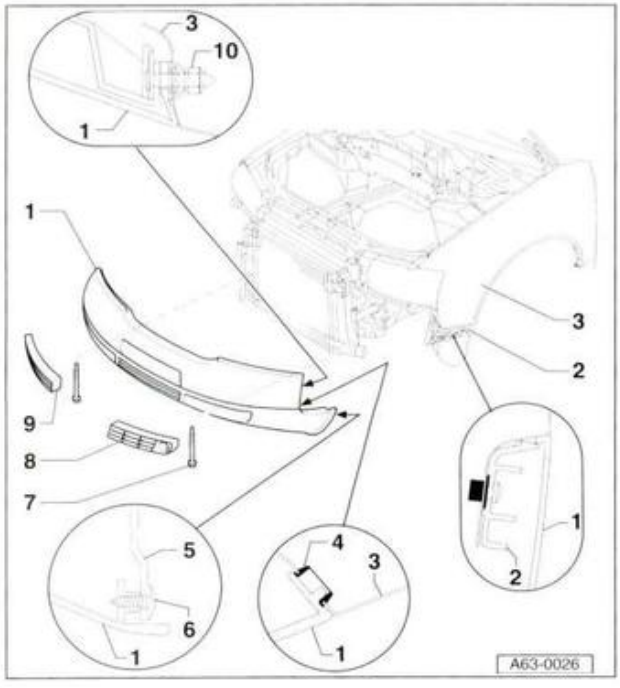
Rear crossmember, removing and installing . . . 63-4


## GENERAL

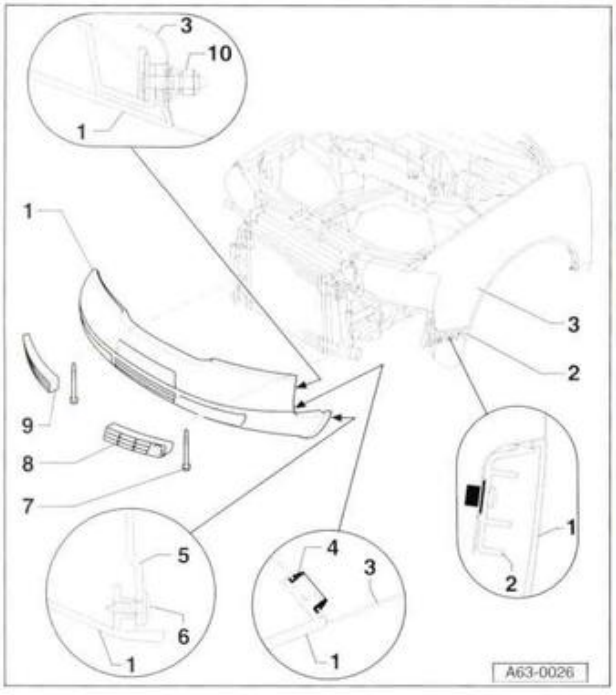
This repair group covers removal and installation of the front and rear bumper components. The bumpers consist of a bumper cover and crossmember bolted to impact absorbers. The front bumper must be removed to extend the lock carrier assembly (radiator support) into service position. See **50 Body–Front** for more information.

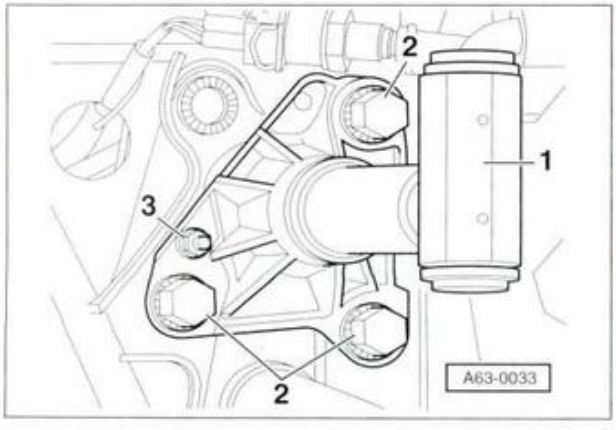
## FRONT BUMPER

### Front bumper assembly




1. Bumper cover
2. Guide
3. Fender
4. Clip
   - Bumper cover tab (**1**) must latch into clip (**4**)
5. Wheelhousing liner
6. Screw w/washer
7. Bolt, 23 Nm (17 ft-lb)
8. Air inlet grill
9. Air inlet grill
10. Flanged nut, 6 Nm (53 in-lb)




## Front bumper, removing and installing

***NOTE***—

- *Bumper cover is removed along with crossmember.*

– Remove front tires.

– Loosen fasteners securing front half of wheelhousing liners to bumper.

– Remove screw w/washer (**6**) from wheelhousing liner (**5**).

➤ Unscrew flanged nuts (**10**) inside wheelhousing on both sides.

– Remove bolts (**7**) and remove bumper cover together with crossmember toward front.

***NOTE***—

- *Before installing the bumper, make sure expanding clips are in place on fenders.*
- *Make sure bumper cover tabs latch into clips on fenders.*

– To install, align bumper cover onto impact absorbers.

– Latch bumper cover (**1**) into guide (**2**).

– Tighten flanged nuts (**10**) in wheelhousing.

– Tighten bolt (**7**) holding bumper cover to impact absorber.

| **Tightening torque** | |
|---|---|
| Bumper cover to inner fender | 6 Nm (53 in-lb) |
| Bumper cover to impact absorber | 23 Nm (17 ft-lb) |

## Front bumper impact absorber, removing and installing

– Remove bumper. See **Bumper, removing and installing** in this repair group.

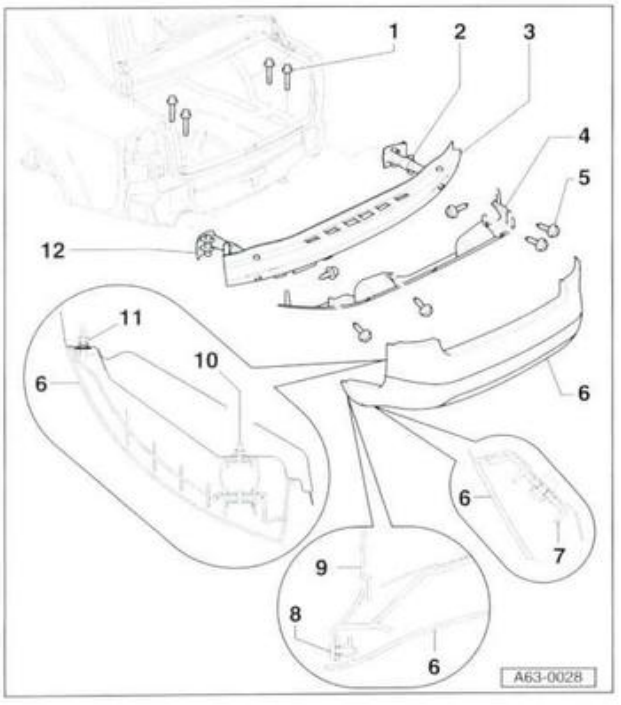
➤ Remove bolts (**2**) from impact absorber.

– Remove nut (**3**) and remove impact absorber.

– Installation is reverse of removal.

| **Tightening torques** | |
|---|---|
| Impact absorber retaining nut | 4 Nm (35 in-lb) |
| Impact absorber to body | 50 Nm (37 ft-lb) |

## REAR BUMPER




### Rear bumper assembly

1. Bolt w/washer, 23 Nm (17 ft-lb)
2. Impact absorber
3. Crossmember
4. Lower back panel
5. Self-tapping screw
6. Bumper cover
7. Guide
8. Screw w/washer
9. Wheelhousing liner
10. Flanged nut (2x), 6 Nm (53 in-lb)
11. Flanged nut (2x), 6 Nm (53 in-lb)
12. Seal

### Rear bumper cover, removing and installing

***NOTE***—

- *Bumper cover is removed independent of crossmember.*

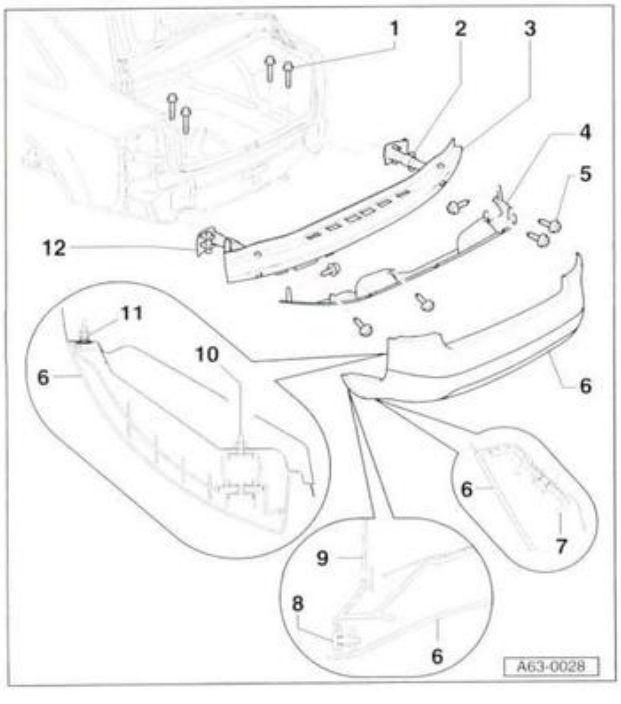
– Partially remove luggage compartment trim to expose bumper cover fasteners. See **70 Interior Trim**.

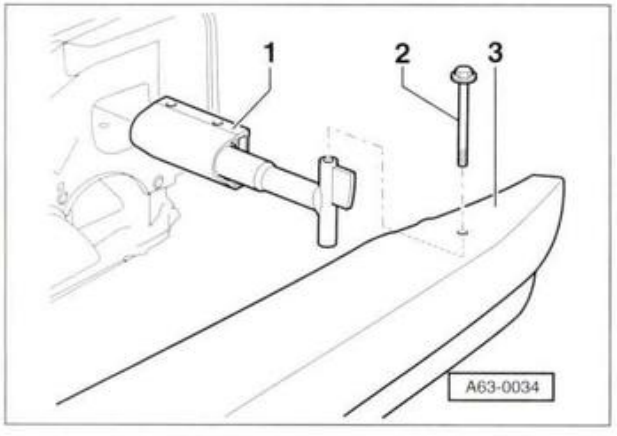
➤ Unscrew flanged nuts (**10**) accessible through luggage compartment.

– Remove flanged nuts (**11**) accessible through trunk under taillight.

– Remove rear bumper cover.

– Installation is reverse of removal.






## Rear crossmember, removing and installing

– Remove bumper cover. See **Rear bumper cover, removing and installing** in this repair group.

➤ Remove bolt w/washer (**2**) from each impact absorber (**1**) and remove crossmember (**3**).

– Installation is reverse of removal.

| **Tightening torque** | |
|---|---|
| Crossmember to impact absorber | 23 Nm (17 ft-lb) |

# 64 Door Windows


GENERAL . . . . . 64-1
Window motor reinitializing . . . . . 64-1
Warnings and Cautions . . . . . 64-1
DOOR WINDOW GLASS SERVICE . . . . . 64-2
Front door window assembly . . . . . 64-2
Front window regulator, removing and installing. 64-2
Front door window, removing and installing . . . . 64-2
Rear door window assembly . . . . . 64-3
Rear window regulator, removing and installing . 64-3
Rear door window, removing and installing . . . . 64-3
WINDOW MOTOR SERVICE . . . . . 64-4
Window motor, removing and installing . . . . . 64-4


## GENERAL

This repair group covers replacement of door glass, window regulator and power window motor. Replacing the windshield or rear glass requires special glue and tools and is not covered.

For additional information see:

- **57 Doors and Locks** for door component carrier
- **70 Interior Trim** for interior door panel
- **96 Interior Lights, Switches, Anti-theft** for door window switches

### Window motor reinitializing

If the battery is disconnected, the window control module loses its memory of window current position and disables one-touch automatic up / down function. To restore one-touch operation:

– Switch ignition ON.

– Use window switches to raise windows to top.

– Operate each window switch in CLOSE direction for 1 second to reinitialize one-touch operation.

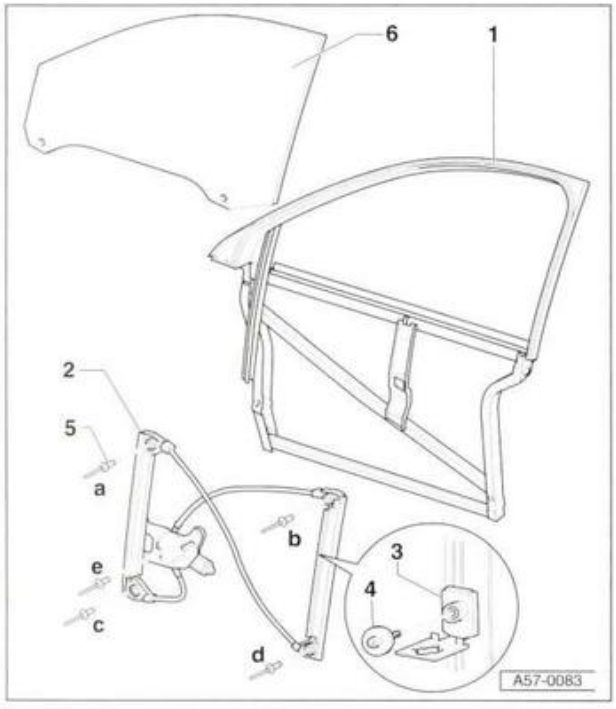
### Warnings and Cautions

***WARNING***—

- *When working on door window, disconnect the harness connector to the window regulator to prevent pinching fingers in the moving window mechanism.*
- *Wear hand and eye protection when working with broken glass.*
- *If a window is broken, vacuum all of the glass bits out of the door cavity. Use a blunt screwdriver to clean out any remaining glass pieces from the window guide.*

***CAUTION***—

- *To avoid damaging interior trim, use a plastic prying tool or a screwdriver with the tip wrapped with masking tape.*




## Door Window Glass Service

### Front door window assembly

1. Door component carrier
2. Window regulator
3. Mount
4. Torx bolt, 4.5 Nm (40 in-lb)
5. Pop rivet (**a**, **b**, **c**, **d** = 4.8 mm, **e** = 6.0 mm)
6. Door window

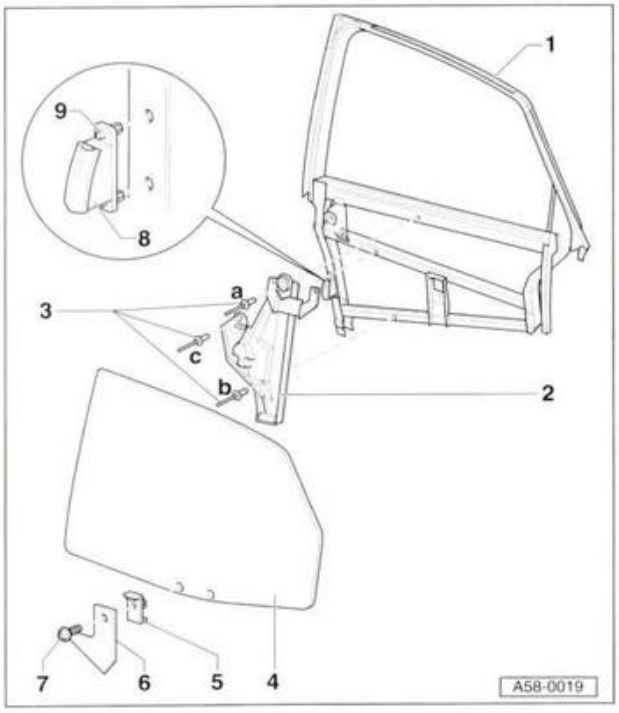
### Front window regulator, removing and installing

- Remove door trim. See **70 Interior Trim**.
- Remove door component carrier. See **57 Doors and Locks**.
- Drill heads off pop rivets (**5**), knock out rivet stems and detach window regulator.
- Shake door component carrier so that pop rivet stems fall out.
- To install, fasten rivets (**5**) in order (**a**, **b**, **c**, **d** and **e**) using pop rivet pliers (note different rivet diameters).

### Front door window, removing and installing

- Run window down to bottom position.
- Remove door trim. See **70 Interior Trim**.
- Remove door component carrier. See **57 Doors and Locks**.
- Mark longitudinal position of window at both mounts (**3**) using felt-tip pen.
- Remove clamp bolts (**4**) and lift window out of mount (**3**).
- To install original window, insert window into window regulator and align with marks made previously.
- Tighten clamp bolts (**4**).
- To install a new window, insert window into guide and push it back toward B-pillar as far as it will go.
- Move window upward as far as stop using window regulator without bolt (**4**).
- Close mount (**3**) and tighten clamp bolts (**4**).

| **Tightening torque** | |
|---|---|
| Front window clamp bolt to mount | 4.5 Nm (40 in-lb) |




## Rear door window assembly

1. Door component carrier
2. Window regulator
3. Pop rivet (**a** = 4.8 mm, **b** and **c** = 6.0 mm)
4. Door window
5. Locating bracket
6. Carrier
7. Bolt, 2.5 Nm (22 in-lb)
8. Buffer
   - After inserting, press in clamping pin (**9**)
9. Clamping pin

## Rear window regulator, removing and installing

– Remove door trim. See **70 Interior Trim**.

– Remove door component carrier. See **57 Doors and Locks**.

– Drill heads off pop rivets (**5**), knock out rivet stems and detach window regulator.

– Shake door component carrier so that pop rivet stems fall out.

– To install, install rivets (**5**) in order (**a**, **b**, and **c**) using pop rivet pliers (note different rivets diameters).

## Rear door window, removing and installing

– Run window down to bottom position.

– Remove door trim. See **70 Interior Trim**.

– Remove door component carrier. See **57 Doors and Locks**.

– Mark position of window in vertical and longitudinal directions at mount using felt-tip pen.

– Remove clamp bolt (**7**) and lift window out of carrier (**6**).

– To install original window, insert window into window regulator and align with marks made previously.

– Tighten clamp bolt (**7**).

– To install a new window, insert window into guide and push it forward toward B-pillar.

– Make sure sealing lips of window channel strip are not pressed downward.

– Run window up to top stop using window regulator without installing clamp bolt (**7**).

– Tighten bolt clamp bolt (**7**).

| **Tightening torque** | |
|---|---|
| Rear window clamp bolt to mount | 2.5 Nm (22 in-lb) |

## WINDOW MOTOR SERVICE

Front window motor removal shown. Rear window motor removal is similar.

### Window motor, removing and installing

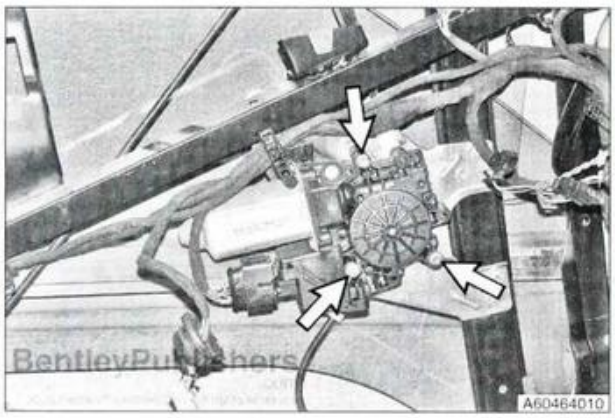
– Remove door trim. See **70 Interior Trim**.

– Disconnect electrical connector from window motor.

➤ Remove bolts (**arrows**) and remove window motor.

– Installation is reverse of removal. Note the following:
- Window regulator motor can be installed or removed with motor and window in any position.
- After installing motor and wiring, turn ignition ON and OFF.
- Intitalize window motor. See **Window motor initializing** in this repair group.

| Tightening torques | |
|---|---|
| Window regulator motor to bracket | 6.5 Nm (58 in-lb) |



# 66 Body–Exterior Equipment


GENERAL . . . . . 66-1

WHEEL HOUSING LINERS . . . . . 66-1

Front wheel housing liner assembly . . . . . 66-1

Front wheel housing liner, removing and installing . . . . . 66-2

Rear wheel housing liner assembly . . . . . 66-2

Rear wheel housing liner, removing and installing . . . . . 66-3

EXTERIOR REAR VIEW MIRROR . . . . . 66-3

Exterior rear view mirror, components and service . . . . . 66-3

Exterior mirror housing, replacing . . . . . 66-4

Power mirror motor, replacing . . . . . 66-4

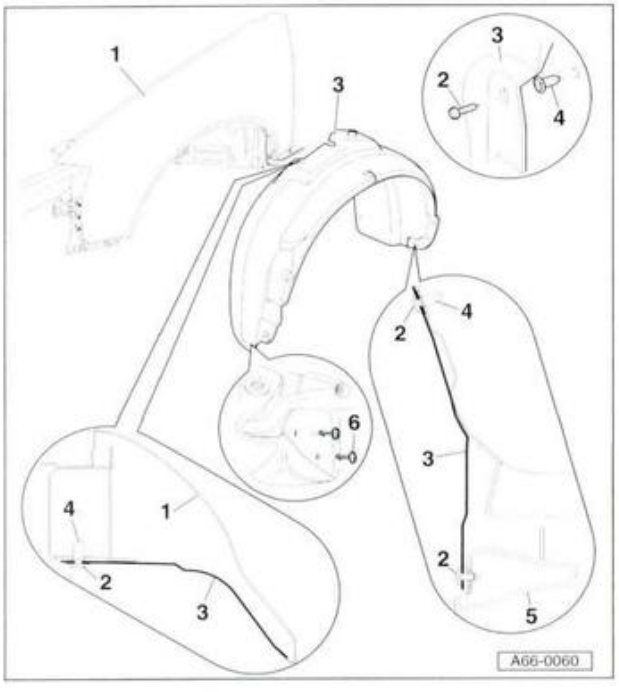

## GENERAL

This repair group covers wheel housing liners and outside rear view mirrors. For related information see the following repair groups:

- **63 Bumpers**
- **94 Exterior Lights**

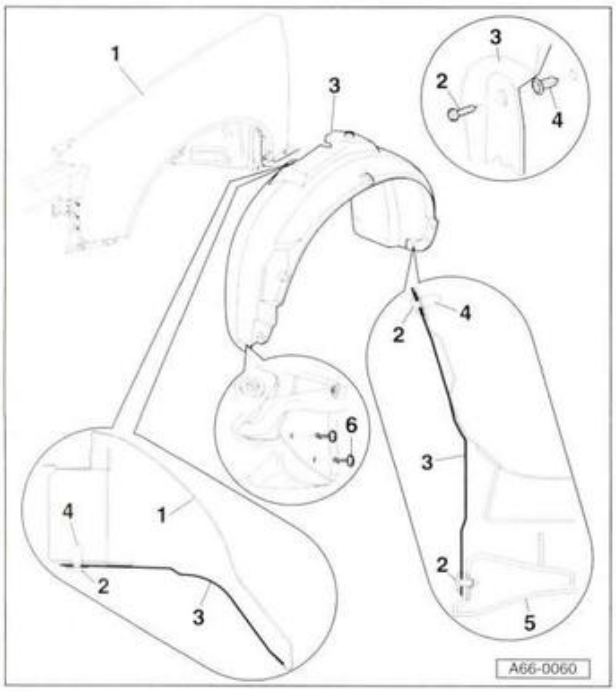
## WHEEL HOUSING LINERS

### Front wheel housing liner assembly




1. Fender
2. Torx bolt (T25), 1.5 Nm (13 in-lb)
3. Wheel housing liner, front
4. Expanding nuts (13x)
5. Sill panel trim

*Wheel Housing Liners*




## Front wheel housing liner, removing and installing

– Raise car and support safely. Remove wheel.

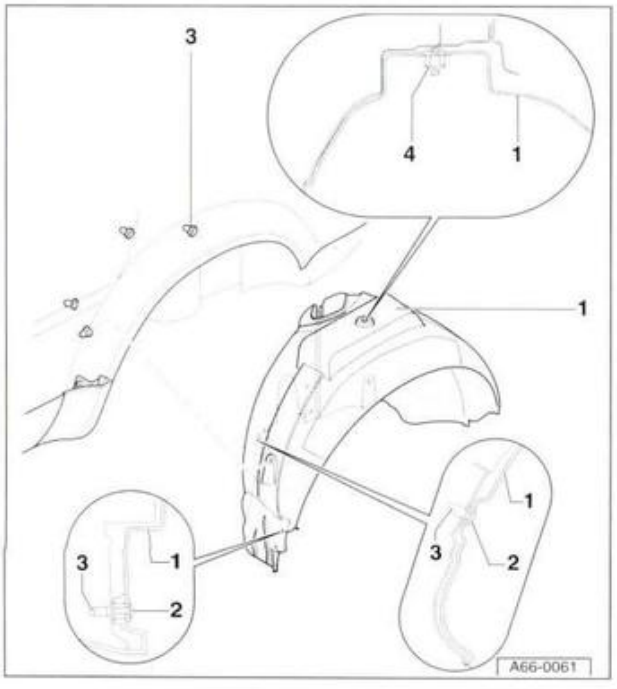
> ***WARNING*** —
> • *Make sure care is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Release expanding fasteners (**6**).

– Remove Torx bolts (**2**) (3x).

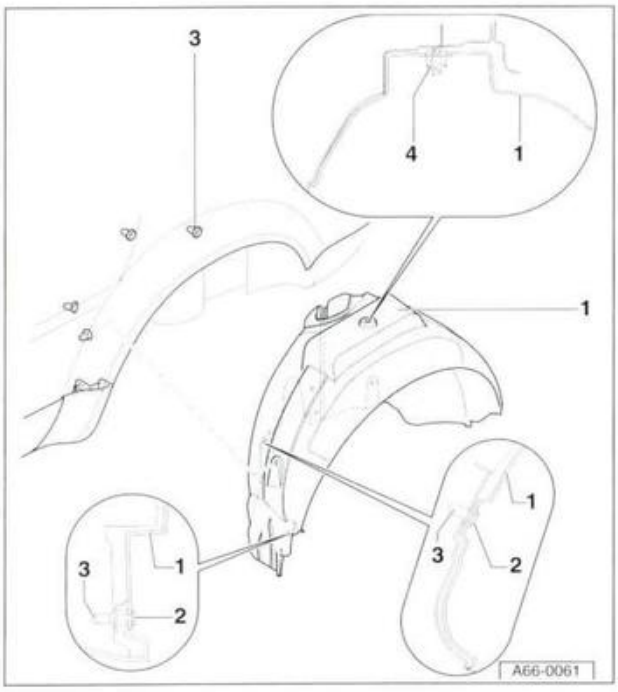
– Disengage wheel housing liner from fender and pull out in downward direction.

– Installation is reverse of removal.




## Rear wheel housing liner assembly

1. Rear wheel housing liner
2. Self-tapping screw, 1.5 Nm (13 in-lb)
3. Expanding nut
4. Cap nut, 1.5 Nm (13 in-lb)




## Rear wheel housing liner, removing and installing

– Raise car and support safely. Remove wheel.

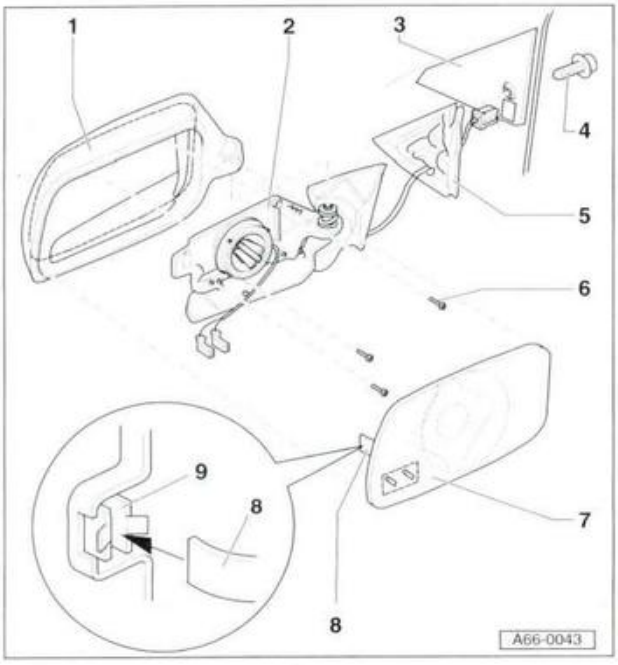
> ***WARNING*** —
> • *Make sure care is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove screws (**2**) and cap nut (**4**).

– Pull wheel housing liner out in downward direction and remove.

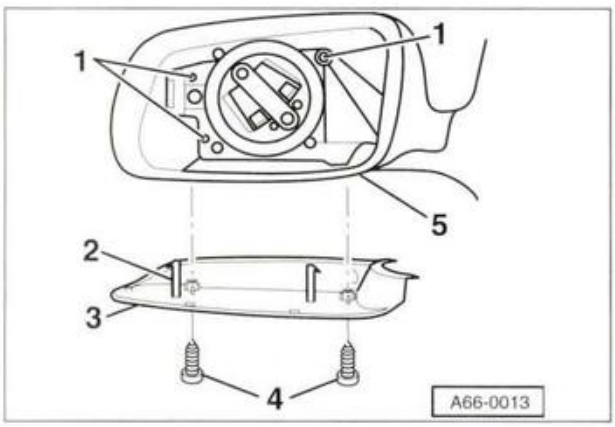
– Installation is reverse of removal.

# Exterior Rear View Mirror




## Exterior rear view mirror components and service

1. Mirror housing
   - Can be removed from door without disassembling complete rear view mirror.
2. Mirror motor
   - Before removing, disassemble rear view mirror from door
   - Carefully pry off mirror glass and disconnect harness connectors for mirror heater. Unscrew Phillips head screws (**6**) and remove motor unit from mirror housing (**1**).
   - On vehicles with seat memory, remove door trim panel before disassembling mirror motor.
3. Door component carrier
4. Socket-head screw, 12 Nm (9 ft-lb)
5. Seal
6. Phillips head screw, 1 Nm (9 in-lb)
7. Mirror glass
   - Use special tool 80-200 lever to unclip mirror glass
   - Protect mirror housing from damage by applying fabric reinforced adhesive tape at top and bottom of housing
   - Press off mirror glass, first at bottom then at top.
   - To install, insert mirror glass into guide stud and friction finger into friction spring and press on.
   - Press only on center of mirror (always use protective gloves).
8. Friction finger
   - When installing mirror glass, friction finger (**8**) must be inserted into friction spring (**9**) in housing
9. Friction spring




## Exterior mirror housing, replacing

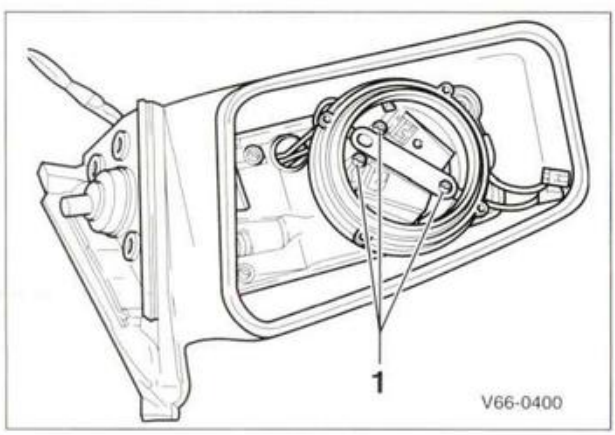
– Remove mirror glass. See **Exterior rear view mirror components and service** in this repair group.

➤ Remove screws (**4**).

– Press back locking lugs (**2**) and detach cover (**3**) downward.

– Remove screws (**1**) at mirror motor.

– Lift off housing (**5**) upward.




## Power mirror motor, replacing

– Disconnect battery negative (-) cable.

– Remove mirror glass. See **Exterior rear view mirror components and service** in this repair group.

➤ Remove screws (**1**).

– Remove mirror motor harness connectors (if equipped).

***NOTE —***

- *If mirror motor has soldered wiring, electric leads must be separated individually directly at the housing.*

– Install wiring in connector housing supplied with replacement part.

***NOTE —***

- *Note configuration of wiring on old motor. See* **EWD Electrical Wiring Diagrams**.

# 69 Seat Belts, Airbags


**GENERAL** ..... 69-1
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- Rear side airbags ..... 69-1
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- Driver's front airbag, removing and installing ..... 69-11
- Passenger front airbag, removing and installing ..... 69-12


## GENERAL

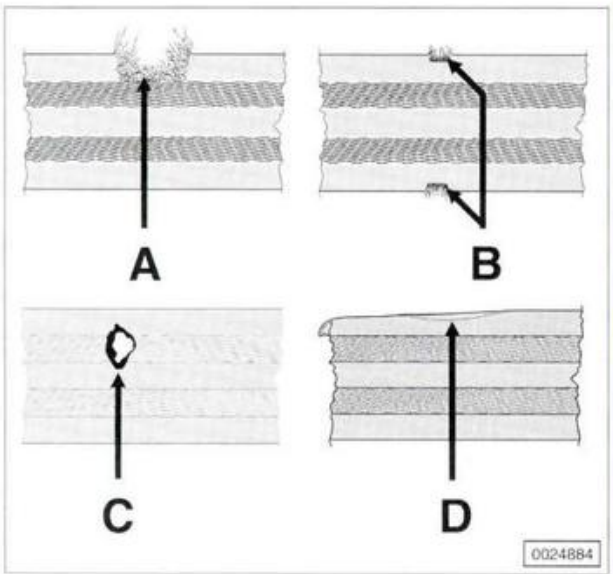
This repair group covers emergency tensioning (pyrotechnic) seat belt assemblies and airbag system components. It does not cover airbag system or pyrotechnic seat belt fault diagnosis or repair. Service and repair to these systems requires special test equipment, knowledge and training and should only be carried out by and authorized Audi Dealer. Before starting repairs involving these systems, always read and observe all warnings, cautions and notes in this repair group.

### Child seat anchors

Vehicle manufactures are required to have an anchorage point installed in vehicles to facilitate installation of a tether strap for child seats. Lower anchorages were originally designated as "**ISOFIX**" points. Lower anchor points in combination with upper tether anchor points are known as "**L**ower **A**nchor and **T**ether for **CH**ildren" or simply "**LATCH**" points. For information regarding proper installation of child seats booster seats, infant seats, and restraints, always consult vehicle owner's manual or authorized Audi dealer.

### Rear side airbags

If special situations require, your dealer can disconnect the rear side airbags upon request. For more information, see your owner's manual or authorized Audi dealer.




## Seat belt inspection

Seat belts should periodically be checked for proper operation, wear and damage. Check points include visual and operational inspection of the following:

- Belt webbing.
- Automatic retraction (stop function).
- Belt latch mechanisms.
- Guide stop and seat belt locking tongue
- Anchoring points and components.

> ***WARNING*** —
> • *After an accident, be sure to inspect seatbelts carefully and replace damaged ones.*

### Belt webbing

– Pull belt webbing completely off automatic belt retractor.

– Check belt webbing for soiling and wash with mild soap and water solution as needed. Avoid harsh chemical solutions.

➤ Inspect webbing for damage.

**A.** Webbing cut, torn or chafed.

**B.** Webbing loops on belt edges torn.

**C.** Burned spots from cigarettes or other sources.

**D.** One side of belt edge deformed, or area of belt edge is wavy or rolled over.

– **A**, **B** - If noted in a post-accident inspection, replace complete belt assembly and height adjuster where applicable.

– **A**, **B**, **C**, **D**, - If noted during routine inspection and vehicle has not been involved in an accident, replace damaged parts as needed.

### Automatic retraction (stop function)

Once activated, pyrotechnic seat belts will not retract. These units are no longer functional and require replacement.

The automatic belt retractor has two locking functions triggered by either occupant or vehicle movement.

– Function 1 (occupant movement): Locking is triggered by rapid unrolling of belt from automatic belt retractor reel (belt extraction acceleration).

- To check, pull belt out of automatic belt retractor with firm jerk. Seat belt should lock while being pulled out. If not, replace seat belt and belt latch.

***NOTE*** —

- *If problems are noted during function test 1, check mounting/installation position of automatic retractor. Incorrect installation position can influence operation.*

### Automatic retraction (stop function) continued

– Function 2 (vehicle movement): Locking function triggered by a change in vehicle movement (vehicle-dependent locking function).
  - To check, securely fasten belt and drive vehicle on a clear, level, even surface to a speed of 12 mph (20 kph).
  - Apply brake pedal fully in a panic-style application.
  - Seat belt should lock as vehicle suddenly stops while braking. If not, replace seat belt and belt latch.

> ***WARNING —***
> *• For safety reasons, perform road test in an area without traffic, pedestrians, or obstacles such as curbs, light and sign poles, or parked vehicles.*

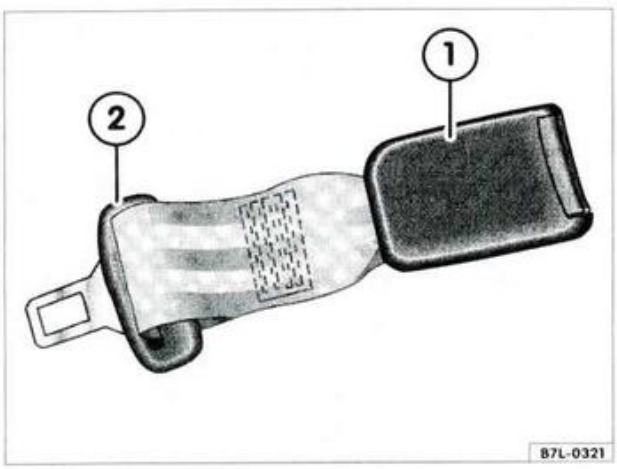
### Belt latch mechanisms

– Inspect seat belt latch for cracks and fractures.
  - If damaged, replace seat belt and belt latch.

– Check operation of seat belt tongue into latch by inserting until an audible engagement is heard. Pull seat belt webbing forcefully to be sure of proper engagement in lock mechanism.
  - Repeat test at least five (5) times. If seat belt fails to engage even once, replace seat belt and belt latch.

– Check release operation by pressing release button with finger while seat belt is in a relaxed state. Locking tongue must spring out of seat belt lock completely and without assistance.
  - Repeat test at least five (5) times. If seat belt fails to release even once, replace seat belt and belt latch.

> ***WARNING —***
> *• Do not lubricate seat belt tongue, buttons, or release mechanisms to repair noises or stiffness.*



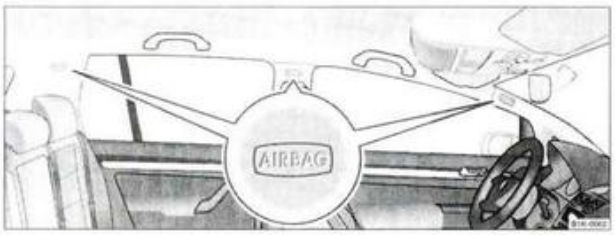

➤ Inspect seat belt extender (if equipped) lock tongue (**2**) and belt latch mechanisms (**1**) for the same conditions found with seat belt latch mechanisms and seat belt lock tongue.

### Guides and seat belt lock tongue

– Inspect all plastic coated seat belt guides and plastic coating on seat belt lock tongue. Check for deformation, cracking, tearing and wear.
  - If damaged, replace seat belt and belt latch.

### Anchoring points and components

– Visually inspect and functionally test lock strap, height adjuster and anchor points on seats, pillars, and floor. Check for deformation, secure and correct mounting, and proper operation.
  - If damage is found at components, replace seat belt and belt latch.
  - If damage is found on anchoring points, replace components as required.
  - If damage is found from general wear and not due to accident, replace only damaged component(s).



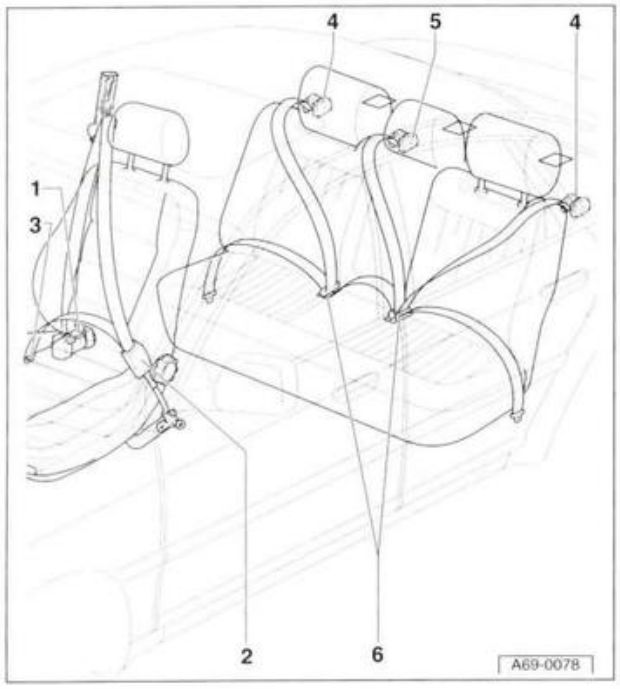

## Warnings

In addition to the warnings listed below, watch for airbag identification tags at various locations around the vehicle interior. The number and placement of tags varies with vehicle equipment.

***WARNING—***

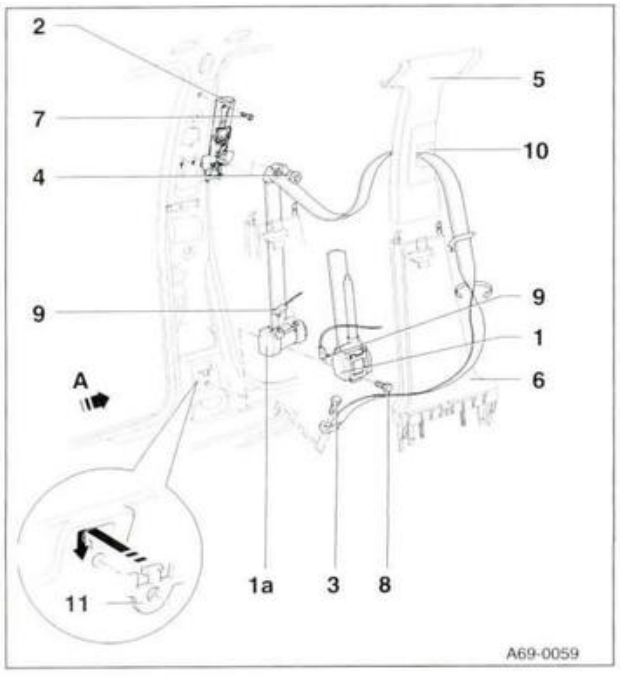
- *Always disconnect the battery ground (-) strap before starting to work on airbag or pyrotechnic seat belt systems. Work can begin immediately after disconnecting battery. No waiting time is needed.*
- *Never let anyone sit in passenger compartment when the airbag or seat belt system is being worked on, especially when either system is being connected to a power source or the battery.*
- *Never test, remove, repair or install airbag units or pyrotechnic seat belts or work on either system unless you have proper training, qualifications and tools to do the work safely and correctly.*
- *Always discharge static electricity from your body before handling or even touching an airbag unit. Place your hands on a suitable metal object that is grounded such as a water or heating pipe or metal frame.*
- *Never use impact wrenches to remove airbag or pyrotechnic seat belt tensioners.*
- *Always install airbag unit immediately after removing it from its shipping container.*
- *If installation work is interrupted, immediately return airbag unit to its original packaging.*
- *Never leave an airbag unit unattended. If work is interrupted, always return airbag unit to original packaging or shipping container.*
- *Never place airbag unit on a workbench or other surface with the side that points towards inside of passenger compartment facing down. If airbag unit should deploy, it can cause personal injury. Always make sure that the side of the airbag unit that faces passenger compartment faces up.*
- *Never install airbag or pyrotechnic seat belt units that have dropped onto a hard surface, or which have signs of damage.*
- *Never open or attempt to repair airbag or seat belt tensioner components; always use new parts (danger of injury).*
- *Always replace airbag and seat belt tensioner units which have experienced mechanical damage (dents, cracks).*
- *Always put airbag units that have not deployed or have not completely deployed in original airbag shipping container and mark outside of container so that others will know that there is still a possibility of airbag deployment.*
- *Always store and handle airbag units according to all applicable legal requirements.*
- *Seat belt pyrotechnic ignition charge does not have an expiration date, i.e. it has an infinite shelf life and is maintenance free.*
- *Never treat a pyrotechnic seat belt tensioner unit with grease, spray lubricants, cleaning products or similar products.*
- *Do not expose pyrotechnic seat belt tensioner or airbag units to temperatures above 212°F (100°C) even for a few seconds.*
- *Airbag and pyrotechnic seat belt tensioner storage and transportation are covered under several explosive substance laws. Always be aware and observant of applicable regulations.*

# SEAT BELTS




## Component overview

1. 3-point seat belt with belt height adjuster and belt tensioner
2. Attachment point for belt latch
3. Outer floor panel attachment point
4. 3-point seat belts, rear left and right
5. 3-point seat belts, rear center
6. Center floor panel attachment points




## Front seat belt, removing and installing

1. Belt tensioner
2. Belt height adjuster
3. Bolt, 55 Nm (41 ft-lb)
4. Shouldered nut, 55 Nm (41 ft-lb)
5. Upper B-pillar trim
6. Lower B-pillar trim
7. Bolt, 23 Nm (17 ft-lb)
8. Bolt, 55 Nm (41 ft-lb)
9. Belt tensioner connector
10. Button for height adjuster
11. Anti-twist tab

### Removing three-point seat belt

– Disconnect battery negative (-) cable.

– Remove sill trim. See **70 Interior Trim**.

– Remove lower belt bolt (**3**).

– Remove upper B-pillar trim (**5**) and lower B-pillar trim (**6**). See **70 Interior Trim**.

– Remove shouldered nut (**4**).

– Disconnect connector (**9**) at belt tensioner.

– Remove bolt (**8**).

– Lift belt tensioner (**1** or **1a**) out of tab (**11**).

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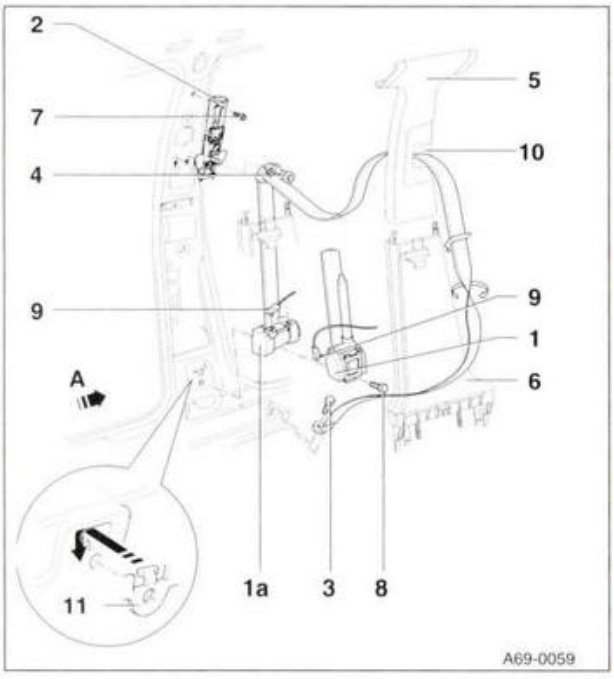



**Installing 3-point seat belt:**

➤ Insert belt tensioner (**1** or **1a**) in anti-twist element, as shown in magnified view (**11**).

– Install webbing with a 180° turn (**arrow**) as shown in illustration.

***NOTE***—

- *Arrow (**A**) points in direction of travel.*

– Remainder of installation is reverse of removal. After installing, make sure 3-point seat belt is not impeded. Check belt-fastened sensor (if equipped) using VAS 5051 or equivalent.

**Removing belt height adjuster**

– Remove upper B-pillar trim (**5**). See **70 Interior Trim**.

– Remove shouldered nut (**4**) and bolt (**7**).

– Lift out belt height adjuster (**2**).

– Installation is reverse of removal. Check that:

- Belt operates properly after installing trim.
- Height adjuster engages audibly in each of 5 possible positions (including top position).
- Height adjustment fitting returns by itself to up position after being pressed.
- After tightening shouldered nut, guide fitting automatically settles in correct direction.

***NOTE***—

- *Do not press button (**10**) when installing.*

## Belt latch, removing and installing

– Remove seat. See **72 Seats**.

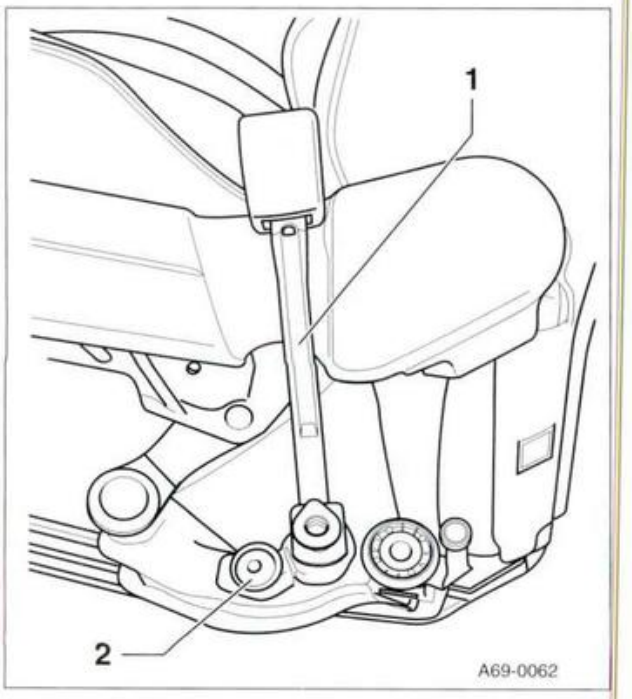
➤ Remove bolt (**2**) from belt latch (**1**).

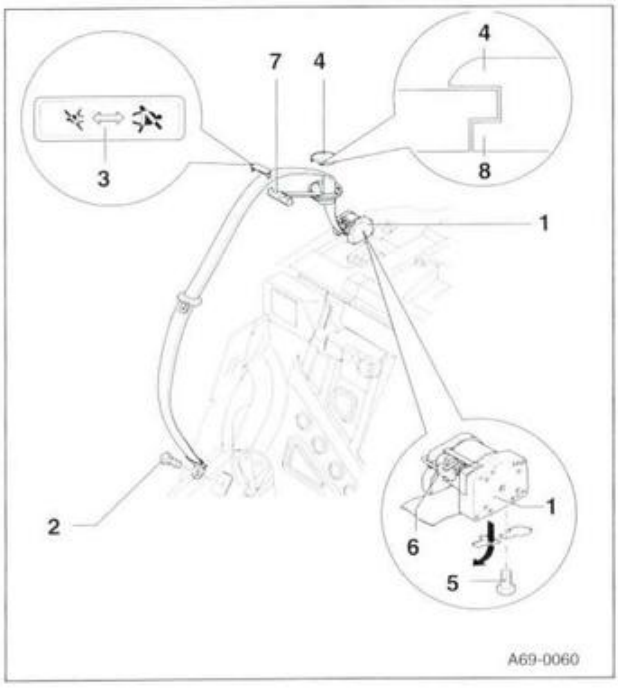
– Installation is reverse of removal.

***NOTE***—

- *It is possible that seat occupation recognition and seat belt fastened sensor have been installed between VIN 4BWN 024500 and 4BWN 033300 that are without function.*
- *When replacing a seat belt latch on vehicles in the above mentioned VIN range, install a belt latch without a "belt fastened" detector.*
- *On vehicles with a "belt fastened" detector and belt latch switch (only on drivers side, in models for some countries), remove wires from red connector housing.*

| Tightening torque | |
|---|---|
| Lower belt latch bolt | 24 Nm (18 ft-lb) |






## Rear seat belt, removing and installing

1. Belt tensioner
2. Bolt, 55 Nm (41 ft-lb)
3. Belt guide trim
   - Large symbol must always face center of vehicle.
4. Belt adjuster trim
5. Bolt, 55 Nm (41 ft-lb)
6. Belt tensioner connector
7. Belt adjuster
8. Tab

– Remove rear seat bench. See **72 Seats**.

– Remove bolt (**2**).

– Unclip belt guide trim (**3**).

– Pry off belt adjuster trim (**4**) on left and right at tab (**8**).

– Remove rear shelf (with folding backrest). See **70 Interior Trim**.

– Disconnect connector (**6**) at belt tensioner.

– Open cover for luggage compartment side trim.

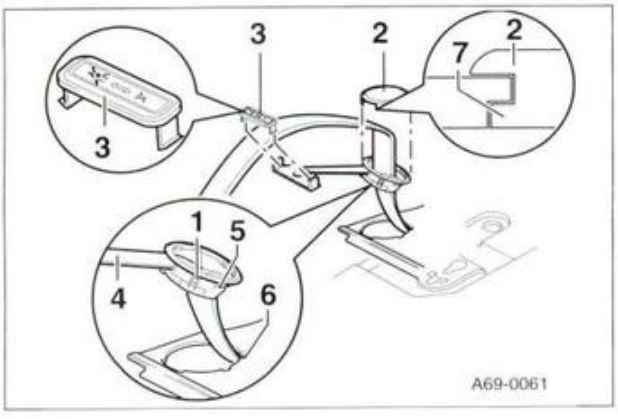
– Vehicles with CD player and / or subwoofer or similar: Remove trunk / tailgate side trim. See **70 Interior Trim**.

– Remove bolt (**5**).

– Installation is reverse of removal. Check belt-fastened sensor (if equipped) using VAS 5051 or equivalent.

## Rear seat belt adjuster, removing

The rear shelf does not have to be taken out in order to remove the rear seat belt adjuster.



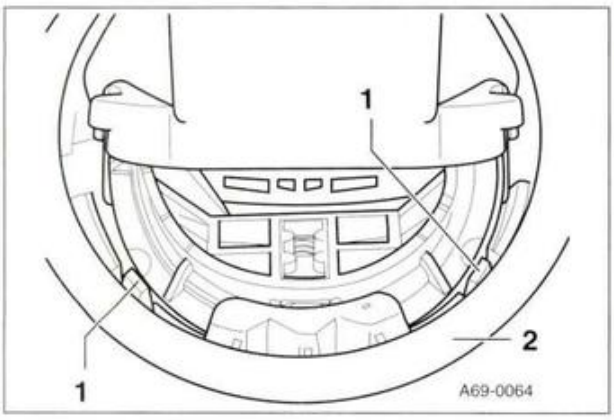

➤ Unfasten lower attachment point of rear 3-point seat belt. See **Rear seat belt, removing and installing** in this repair group.

– Unclip belt guide trim (**3**).

– Pry off belt adjuster trim (**2**) on left and right at tab (**7**).

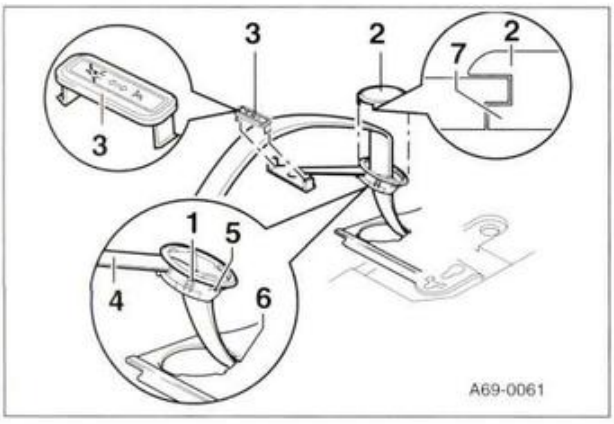
– Raise arm of belt adjuster (**4**) with webbing.

*Seat Belts*




➤ Use screwdriver to press retainer tabs (**1**) inward and at the same time pull belt adjuster (**2**) upward.

– Pull webbing through belt adjuster (**2**).

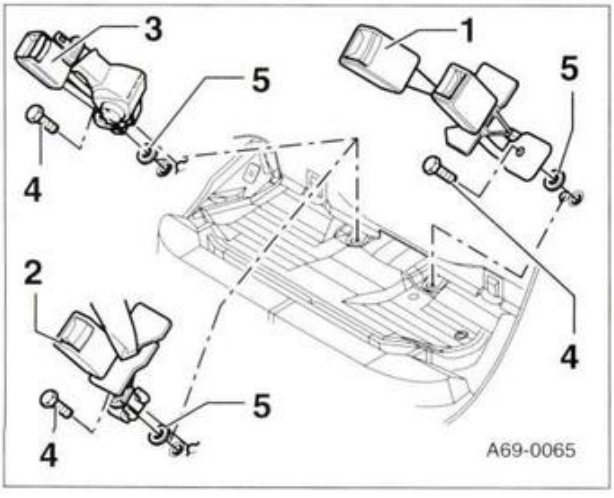



➤ To install, make sure retainers (**1**) engage properly.

– Make sure rear stud engages in recess (**6**).

– Locating element (**5**) must face center of vehicle.

| Tightening torque | |
|---|---|
| Rear belt lower bolt to body | 55 Nm (41 ft-lb) |




## Rear belt floor panel attachment points

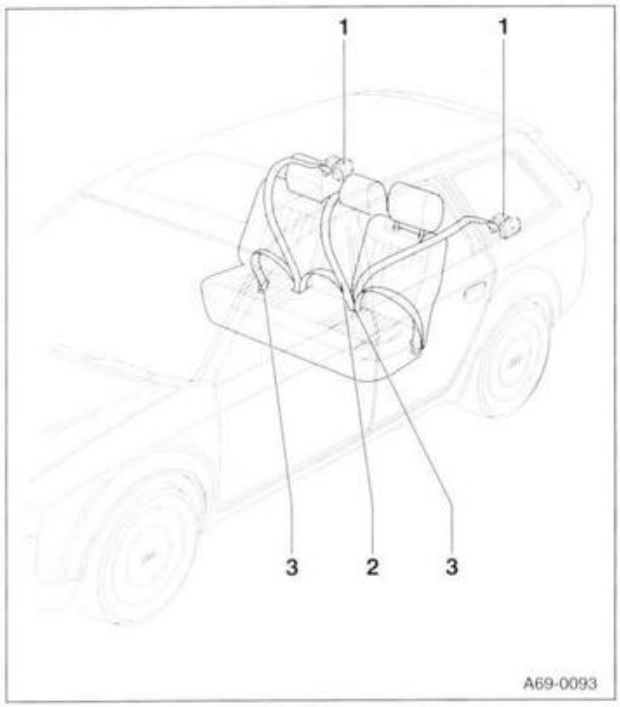
1. Latch
2. Lap belt
3. Lap belt with retractor
4. Bolt, 55 Nm (41 ft-lb)
   - Use OEM bolts.
5. Seal
   - Always replace

– Remove rear seat bench. See **72 Seats**.

– Remove bolt (**4**).

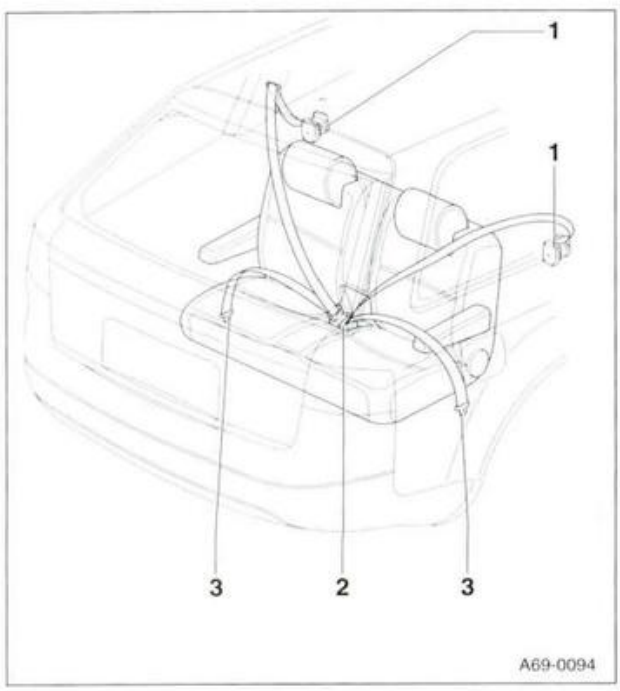
– When installing, make sure latch and/or lap belt engage(s) in anti-twist projections.

– Narrow side of latch and/or lap belt must face in direction of travel.



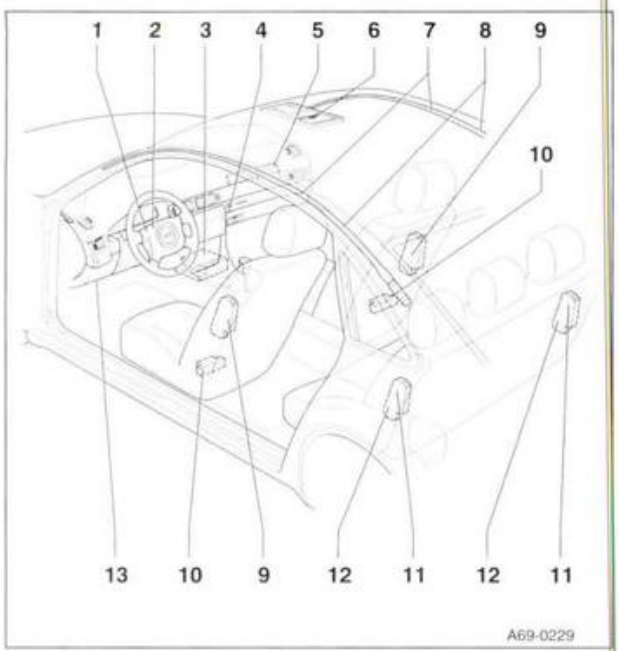

**Rear seat belt attachment points (Avant)**

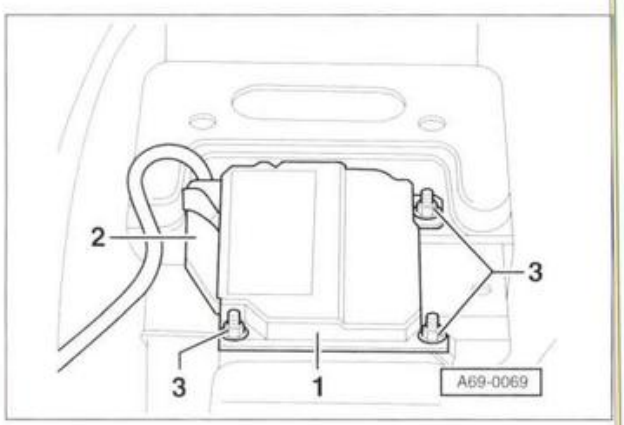
1. 3-point seat belts, rear left and right (Avant)
2. 3-point seat belt, rear center
3. Center floor panel attachment points

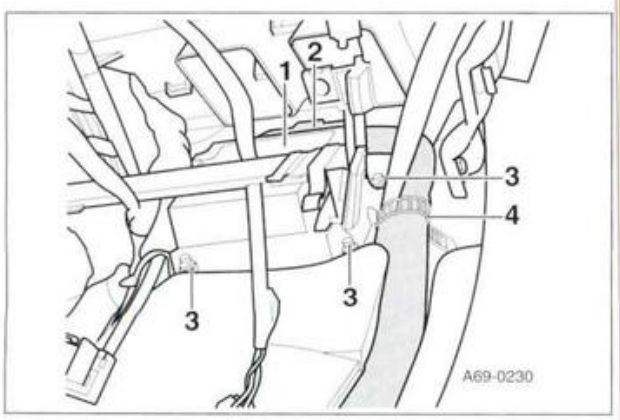



**Rear seat belt attachment points (children's bench)**

1. Rear 3-point seat belts for children's bench
2. Center rear attachment point for children's bench
3. Outer rear attachment points




# AIRBAGS

## Airbag components

1. Airbag unit - drivers side
2. Airbag unit drivers side (sport steering wheel)
3. Airbag control module
4. Not applicable for USA/Canada
5. Passenger airbag unit
6. Not applicable for USA/Canada
7. Side curtain airbag, Sedan
8. Side curtain airbag, Avant
9. Front side airbag
10. Lateral acceleration sensor
11. Rear side airbag (folding backrest)
12. Rear side airbag (fixed backrest)
13. Data link connector (DLC)

## Airbag control module (J234), removing and installing

– Disconnect battery negative (-) cable.

– Remove front section of center console. See **70 Interior Trim**.

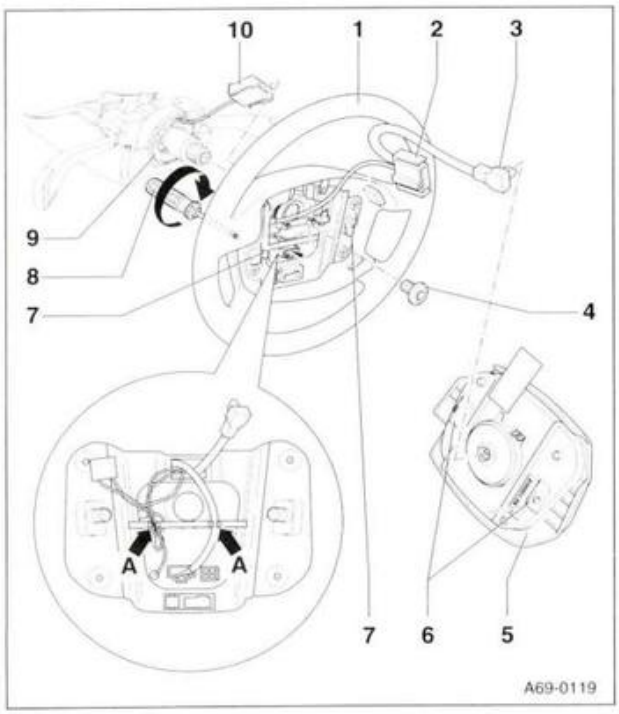
– Remove connecting pieces for air ducts to rear left and right footwell vents.

➢ Through production date August 1999:
- Release retainer on connector (**2**).
- Pull connector (**2**) out of control module (**1**).
- Remove nuts (**3**).
- Remove control module

➢ From production date September 1999 on:
- Open cable ties (**4**).
- Remove nuts (**3**).
- Pull out control module (**1**).
- Release retainer on connector (**2**).
- Pull connector (**2**) out of control module (**1**).
- Remove control module

– Installation is reverse of removal. Note the following:
- If control module is replaced, it must be coded.
- If airbag warning light remains on, erase DTC memory using VAS 5051 or equivalent.

| Tightening torque | |
|---|---|
| Airbag control module (J234) to body | 6 Nm (53 in-lb) |




## Driver's front airbag, removing and installing

1. Steering wheel
2. Connector for self-canceling ring
3. Connector for airbag unit
4. Bolt (always replace)
   - Allen head, 60 Nm (44 ft-lb)
   - Hex head, 70 Nm (52 ft-lb)
5. Airbag unit
6. Threaded inserts
7. Torx bolts T30 (if equipped), 7 Nm (62 in-lb)
8. Torx wrench T30
9. Self-canceling ring with slip ring
10. Connector for heated steering wheel

– Disconnect battery negative (-) cable.

– Release steering column adjuster. Extend steering column out and upward as far as possible.

– Move steering wheel so that hub and spokes are vertical.

– Release one Torx bolt (**7**).

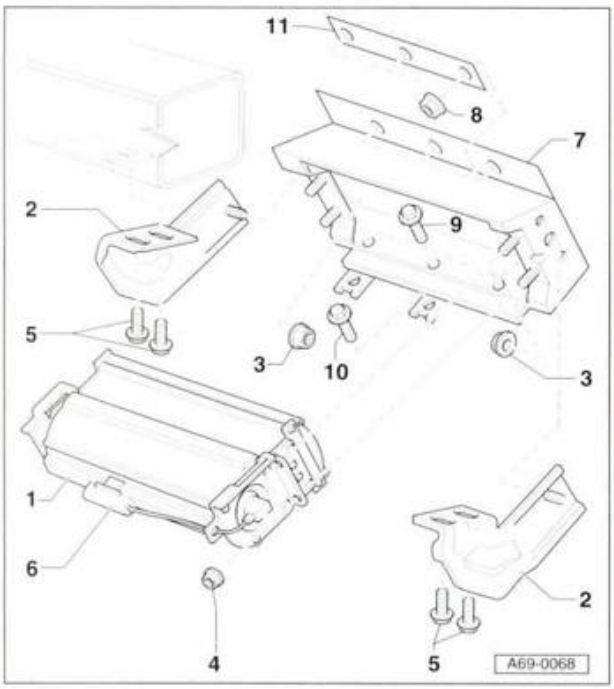
– Move steering wheel back 1/2 turn and release second Torx bolt (**7**).

– Release electrical connectors from airbag unit.

– Lay airbag down with padded side facing upward.

– Installation is reverse of removal. Remember to:
  - Make sure electrical connectors fully (audibly) engage.
  - Reset vehicle equipment (radio, clock, power windows) as per owner's manual.
  - Re-connect battery and switch ignition ON.
  - If airbag warning light remains on, erase DTC memory using VAS 5051 or equivalent.

***WARNING*** —
*• Make sure no one is in vehicle when reconnecting battery.*




## Passenger front airbag, removing and installing

1. Passenger front airbag unit
2. Support
   - Must be replaced if airbag has triggered
3. Nut (2x), 18 Nm (13 ft-lb)
   - Must be replaced if airbag has triggered
4. Nut (4x), 9 Nm (80 in-lb)
   - Must be replaced if airbag has triggered
5. Bolts (4x), 9 Nm (80 in-lb)
   - Must be replaced if airbag has triggered
6. Connector
7. Frame for airbag unit
   - Must be replaced if airbag has triggered
8. Nut (3x), 4.5 Nm (40 in-lb)
9. Bolts (3x), 4.5 Nm (40 in-lb)
10. Bolt (1x), 4.5 Nm (40 in-lb)
11. Backing plate

– Disconnect battery negative (-) cable.

– Remove glove box. See **70 Interior Trim**.

– Disconnect electrical connector (**6**). See **Disconnecting passenger airbag connector** in this repair group.

> ***WARNING*** —
> • *Never disconnect red 2-pin connector on front side of airbag.*

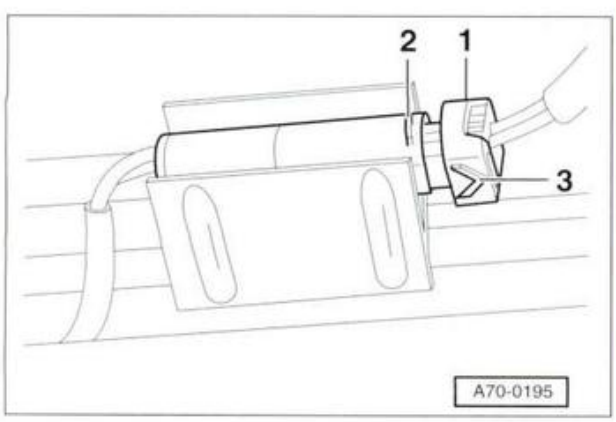
– Remove nuts (**4**) and remove airbag unit.

– Set down airbag unit with padded side facing upward.

– Installation is reverse of removal. Remember to:
  - Make sure electrical connectors fully (audibly) engage.
  - Reset vehicle equipment (radio, clock, power windows) as per owner's manual.
  - Reconnect battery and switch ignition ON.
  - If airbag warning light remains on, erase DTC memory using VAS 5051 or equivalent.

> ***WARNING*** —
> • *Make sure no one is in vehicle when reconnecting battery.*

### Disconnecting passenger airbag connector




➤ Use screwdriver to lift connector (**1**) for front passenger side airbag over retainer tab (**2**) and pull off connector in direction of (**3**).

# 70 Interior Trim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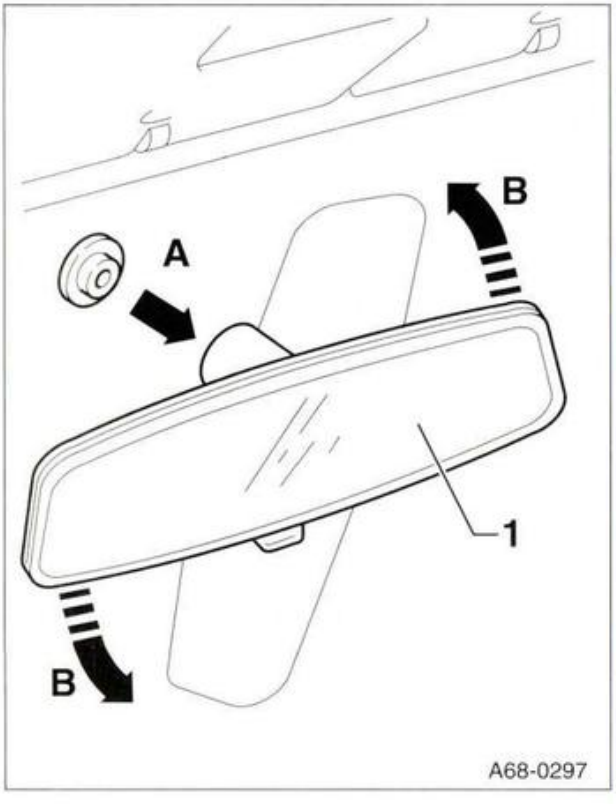
## GENERAL

This repair group covers interior equipment and trim panels, including center console removal. For interior lights and accessories see **96 Interior Lights, Switches, Anti-theft**.

***WARNING*** —

- *Cars covered by this manual are equipped with airbags. When servicing these components, disconnect the negative (-) battery terminal. See* **69 Seat Belts, Airbags**.



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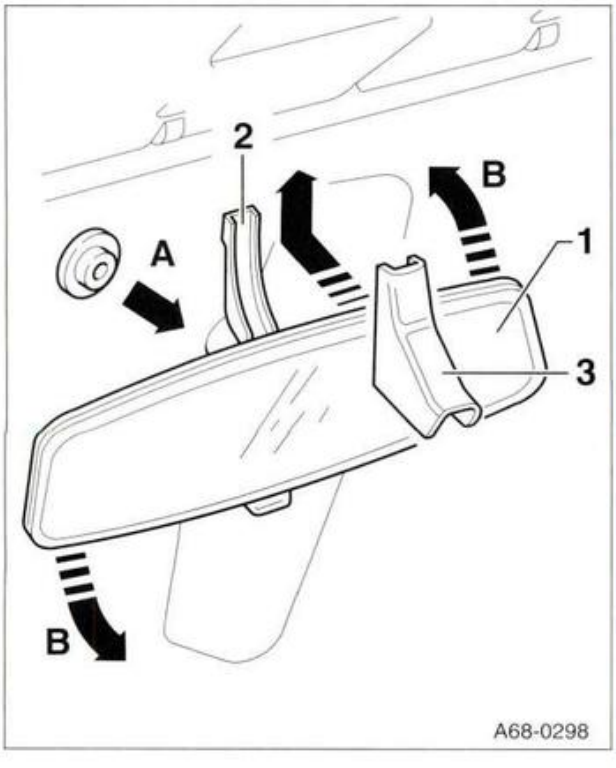


A68-0298

***CAUTION—***
- *Prior to disconnecting the battery, acquire radio anti-theft code.*
- *Read the battery disconnection cautions in* **00 Warnings and Cautions**.

## INTERIOR REAR VIEW MIRROR

### Interior rear view mirror, removing and replacing

➤ Rotate mirror (**1**) 60° to 90° in direction of arrows (**B**) until locking spring releases and remove mirror.

– To install, place mirror at an angle of 60° to 90° to attachment and turn until locking spring clicks in place.

### Interior rear view mirror (automatic dimming), removing and replacing

➤ Unclip cable channel cover (**3**).

– Remove electrical connector from retainer and disconnect.

– Rotate mirror (**1**) 60° to 90° in direction of arrows (**B**) until locking spring releases and remove mirror.

***CAUTION—***
- *Do not use cable channel (2) to turn mirror.*

– To install, place mirror at an angle of 60° to 90° to attachment and turn until locking spring clicks in place.

– Reconnect electrical connector. Place connector in retainer and attach channel cover (**3**).

## Storage Compartments, Covers and Trim

### Steering column trim, removing and installing

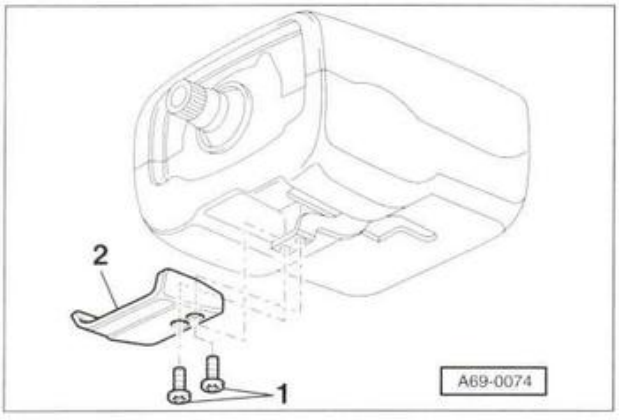
– Disconnect battery negative (-) cable.

– Remove driver's airbag. See **69 Seat Belts, Airbags**.

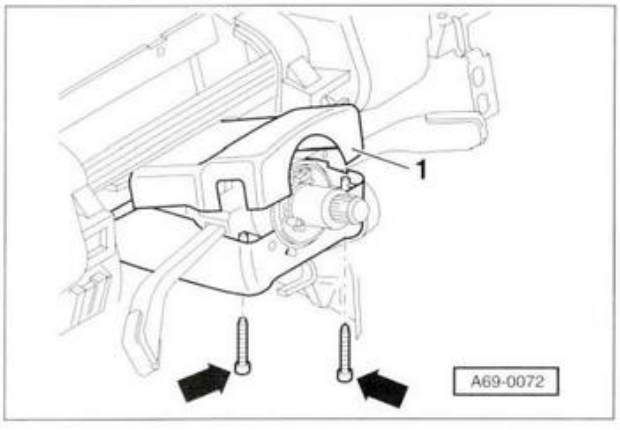
– Remove steering wheel. See **48 Steering**.

– Extend steering column out and down.

➤ Remove screws (**1**) and remove grip (**2**).



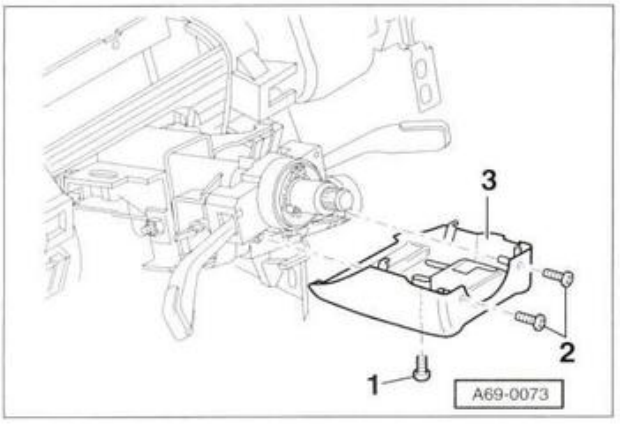

➤ Remove two screws (**arrows**) and remove upper trim piece.

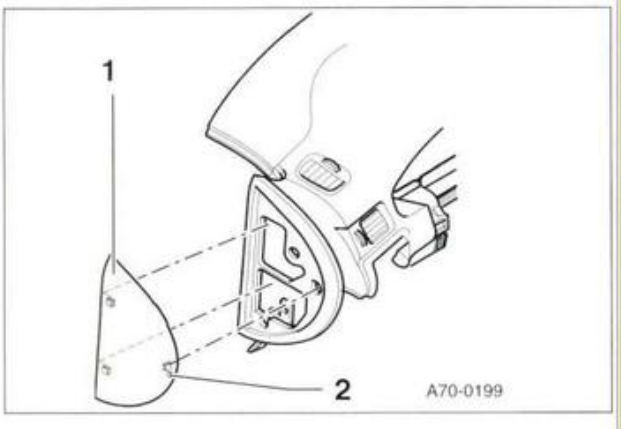



➤ Remove screws (**2**) and bolt (**1**). Remove lower trim piece.

– To install, replace lower section first.

– Insert upper section into hooks on lower section, swivel downward and secure.

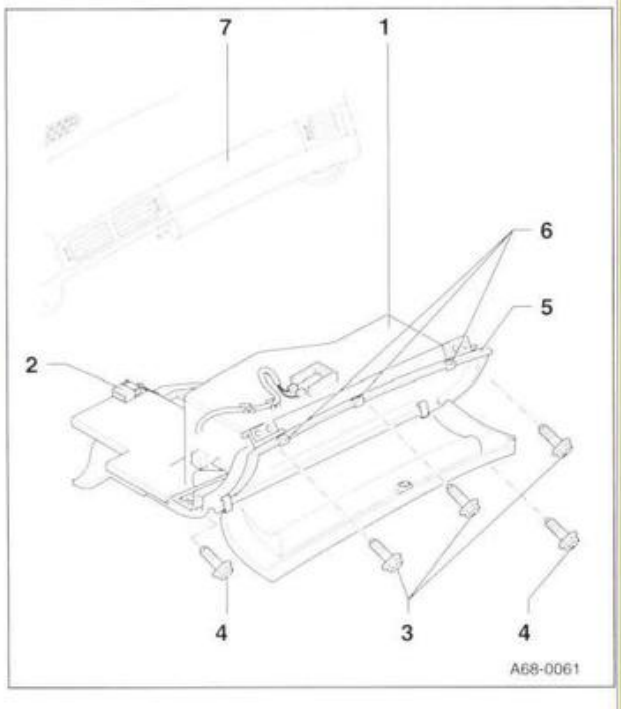





## Dashboard end trim, removing and installing

Use a plastic prying tool or screwdriver with tip wrapped with tape to unclip left or right side panel end trim.

– To install insert trim toward front and clip back firmly in place.




## Glove compartment, removing and installing

1. Glove box
2. Connector
3. Bolts (3x)
4. Bolts (2x)
5. Strip
6. Rubber studs
7. Dash board

– Open glove box lid and remove bolts (**3**).

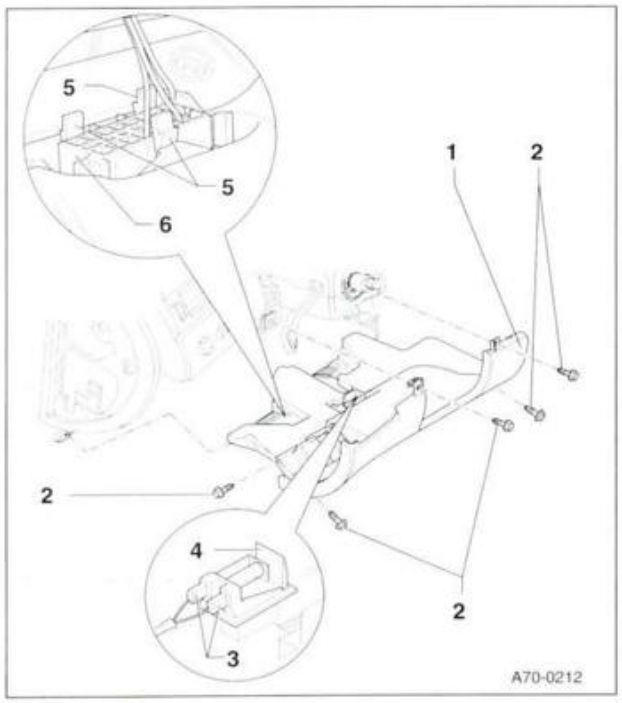
– Remove bolts (**4**).

– Remove glove box downward.

– Disconnect electrical connector (**2**).

– To install, position strip (**5**) with rubber studs (**6**) against dash board (**7**) from underneath and install glove box.

## Driver's storage compartment, removing and installing




1. Driver's storage compartment
2. Bolts (5x)
3. Connector
4. Footwell light
5. Tabs
6. Data link connector (DLC)

– Pull out dashboard molding to rear.

***NOTE***—

• *Steering wheel shown removed for clarity.*

– Unclip instrument panel end trim on drivers side. See **Instrument panel end trim, removing and installing** in this repair group.

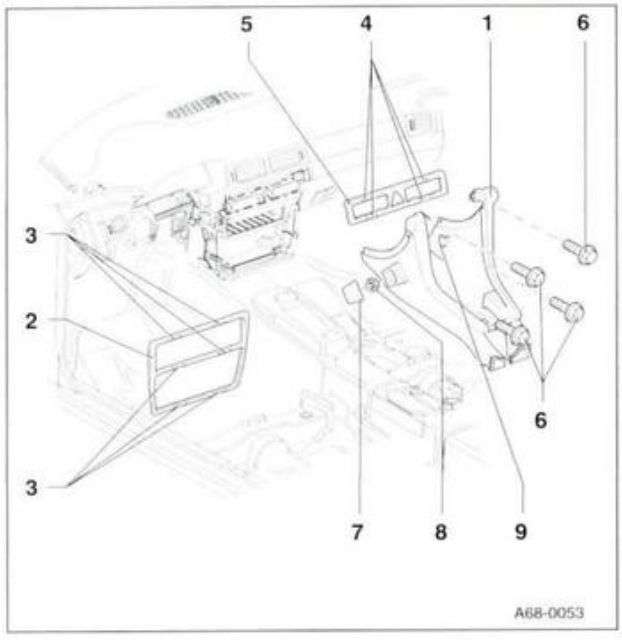
– Remove bolts (**2**) and set down driver's storage compartment.

– Disconnect electrical connector (**3**) from footwell light (**4**).

– Unclip data link connector (DLC) (**6**) by squeezing together tabs (**5**).

– Installation is reverse of removal.

## Center console (front section), removing and installing




1. Center console (front section)
2. Trim section
3. Fasteners
4. Fasteners
5. Switch module trim
6. Bolts (4x)
7. Trim cap
8. Nut
9. Retainer

– Remove rear section of center console. See **Center console (rear section), removing and installing** in this repair group.

– Open front ashtray and unclip trim section (**2**) at fasteners (**3**) (Chorus and Concert radios only).

– Remove radio. See **91 Radio and Communication**.

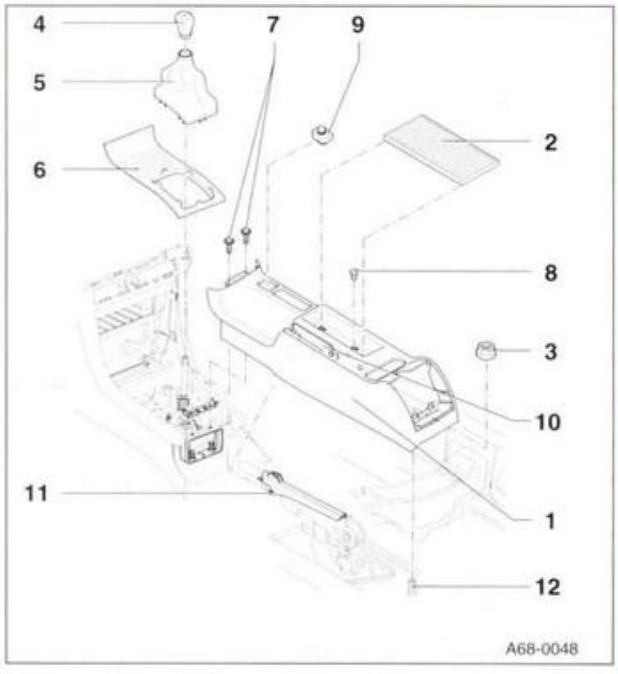
– Remove navigation system controls (if equipped).

– Remove A/C controls. See **87 Heating and Air-conditioning**.

– Remove front ashtray. See **Front ashtray, removing and installing** in this repair group.

– Unclip switch-panel trim (**5**) at fasteners (**4**).

– Remove console bolts (**6**).




– Pry off trim cap (**7**) on side of console and remove nut (**8**).

– Pull center console on driver's side over securing pin.

– Remove center console to rear.

– Installation is reverse of removal. Make sure retainer (**9**) locks in place.

## Center console (rear section), removing and installing

1. Center console (rear section)
2. Mat lining
3. Nut, 10 Nm (7 ft-lb)
4. Shifter knob
   - Twist on / off
5. Protective boot
   - Unclip upward. Make sure clips lock in place when installing
6. Center console insert
7. Screws (2x)
8. Screw (1x)
9. Mirror adjustment switch
10. Parking brake trim
11. Retainer tab
12. Stud

– Remove rear air vent and rear air duct connecting piece. See **Rear vent and duct, removing and installing** in this repair group.

– Remove center armrest (if necessary). See **Center armrest, removing and installing** in this repair group.

– Remove console nut (**3**).

– Remove mat lining (**2**) upward.

– Remove console bolt (**8**).

– Models with manual transmission:
  - Twist off shifter knob (**4**).
  - Unclip protective boot (**5**) upward.

– Unclip center console insert (**6**) upward.

– Remove console bolts (**7**).

– Remove parking brake trim.

– Raise rear section of center console (**1**) at front and detach connector for mirror adjustment switch (**9**).

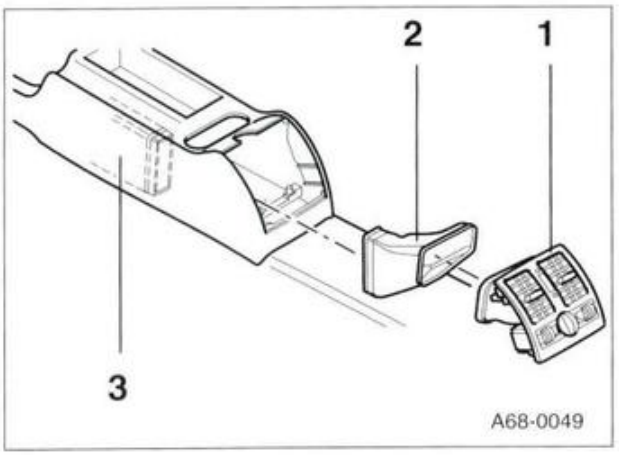
– Fully apply parking brake.

– Unfasten trim (**10**) from retainer (**11**) on parking brake.

– Raise rear section of center console (**1**) over stud (**12**) and pull center console to rear.

– Lift out rear section of center console (**1**) forward over parking brake.

– Installation is reverse of removal. Remember to:
  • Install trim (**10**) at retainer (**11**) of parking brake.
  • Make sure air ducts are properly installed when installing rear section of center console (**1**).




## Rear vent and duct, removing and installing

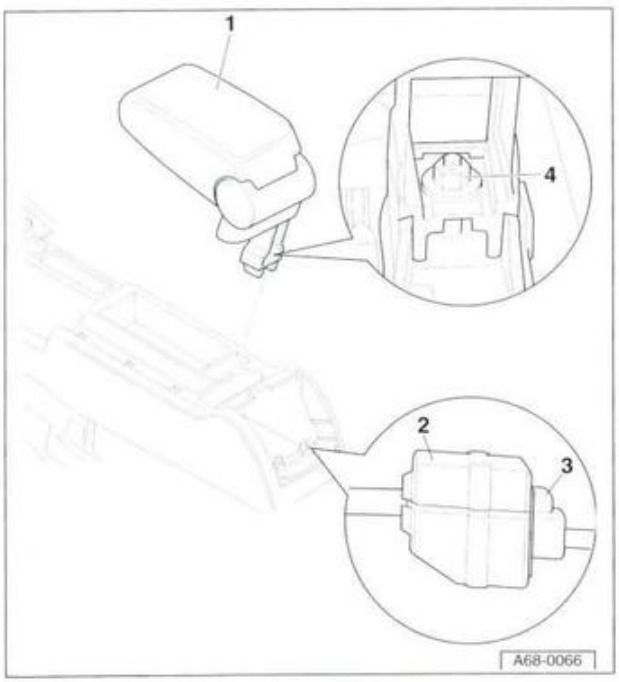
– Use or fabricate a suitable tool to remove vent trim (a screwdriver bent 90° at 6 - 10 mm along its length will work).

➤ Pull rear vent (**1**) out center console (rear section).

– Disconnect electrical connectors for cigarette lighter, vent light and rear heated seat (if equipped).

– Remove rear air duct connecting piece (**2**) from air duct (**3**).

– Installation is reverse of removal




## Center armrest, removing and installing

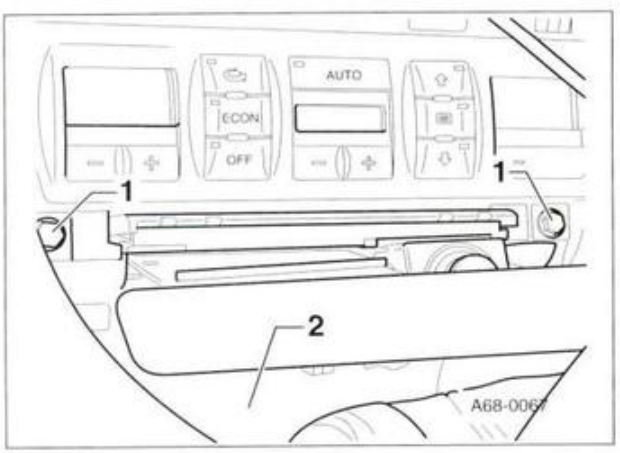
1. Center armrest
2. Connector
3. Retainer tabs
4. Nut, 26 Nm (18 ft-lb)

– Remove rear vent and duct. See **Rear vent and duct, removing and installing** in this repair group.

– Models with phone: Disconnect electrical connector (**2**) by squeezing retaining tabs (**3**).

– Remove nut (**4**) and remove armrest.

– Installation is reverse of removal. Make sure to clamp in connector (**2**) on right side between support bracket and center console.



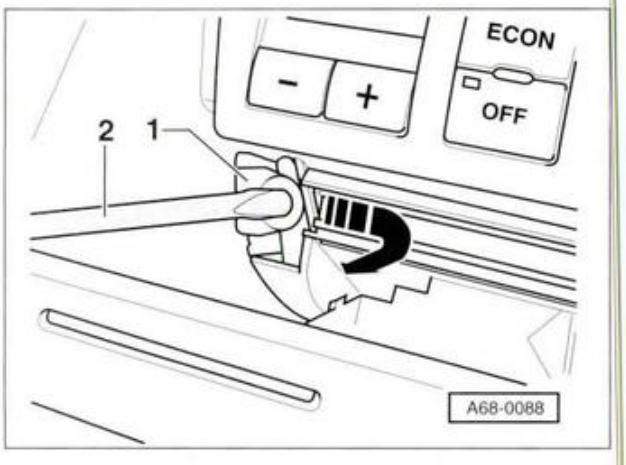

## Front ashtray (Concert radio), removing and installing

– Open radio flap and open front ashtray.

– Starting at bottom, carefully unclip front center console trim.

– Working above radio, carefully unclip switch panel trim.

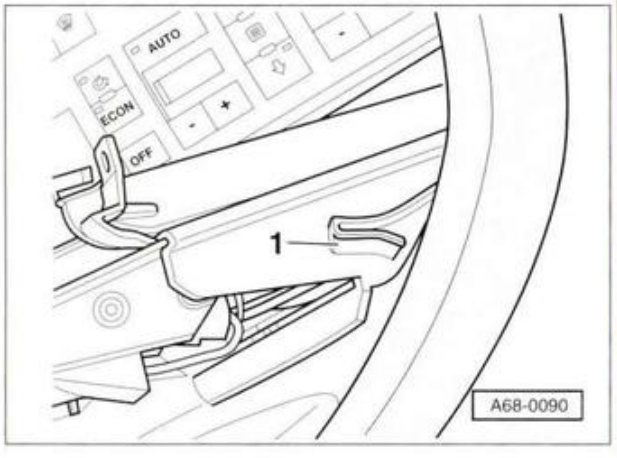
➤ Remove bolts (**1**).




➤ Use a screwdriver (**2**) to pull out retainer tabs (**1**) on left and right in direction of **arrow**.

– Carefully pull A/C control head out slightly toward the rear, and pull out ashtray downward and toward rear.

– Disconnect electrical connections for cigarette lighter and ashtray light. Remove ashtray.



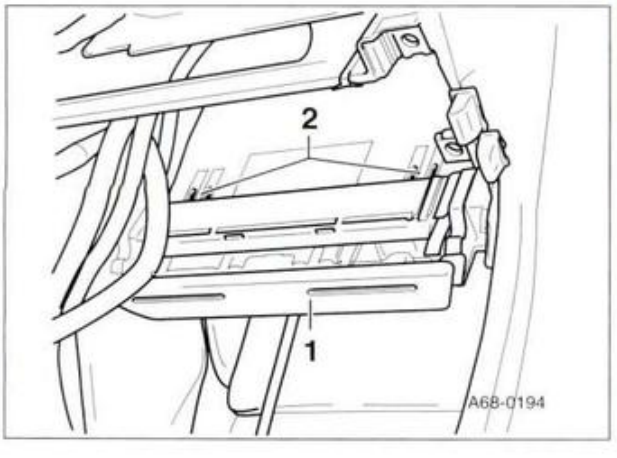

➤ When installing, make sure guide (**1**) engages on left and right in center console.

## Front ashtray (Symphony radio), removing and installing

– Remove radio. See **91 Radio and Communications**.

– Remove navigation system controls (if equipped).

– Remove A/C controls and heat controls. See **87 Heating and Air-conditioning**.

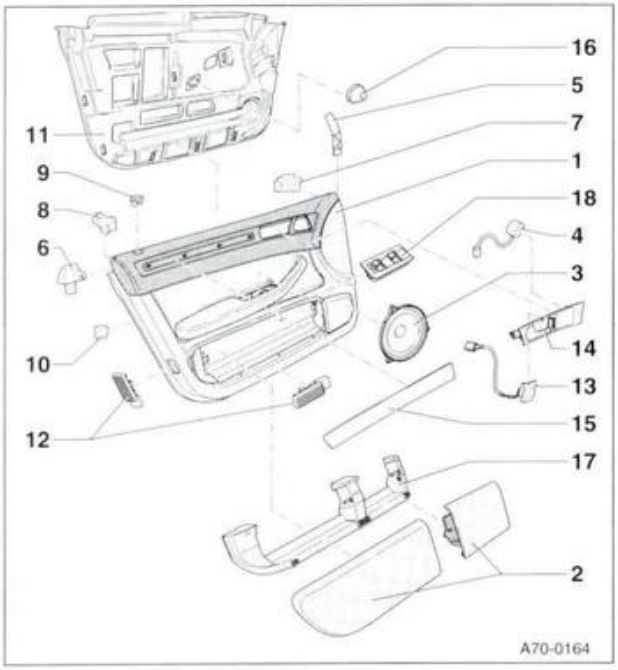



➤ Press retaining tabs (**2**) and pull ashtray out forward.

– Disconnect electrical connections and remove ashtray.

– Installation is reverse of removal. Make sure retaining tabs lock in place.

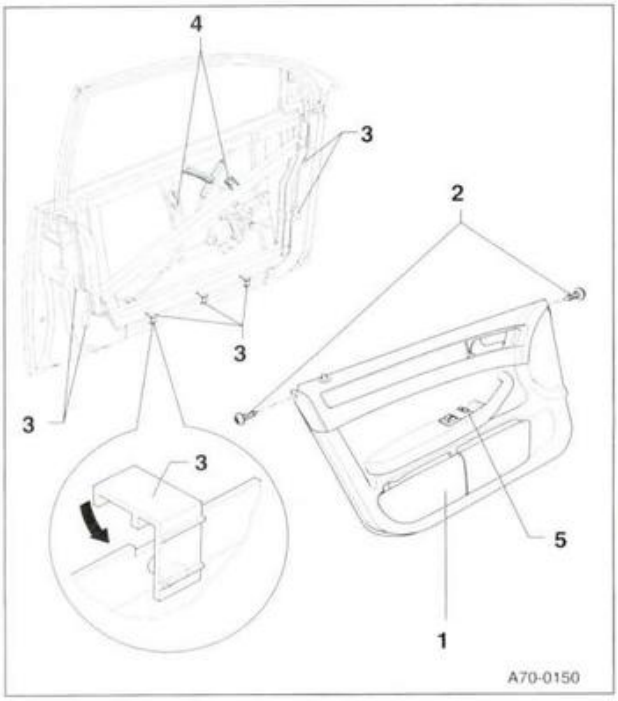
## Door Trim




### Front door trim components

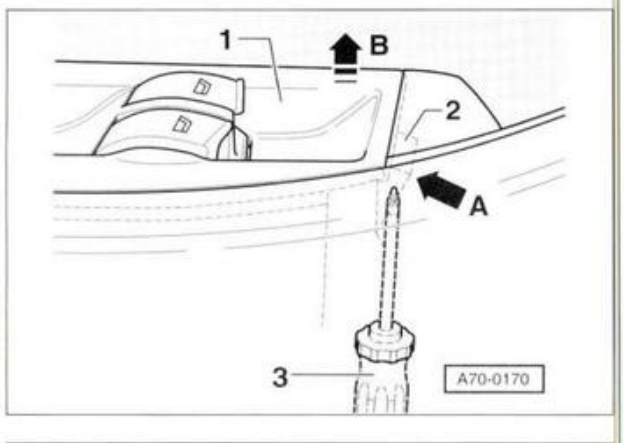
1. Door trim
2. Hinged pockets
3. Bass loudspeaker
4. Treble speaker
5. Inner connecting piece
6. Outer connecting piece
7. Inner filler piece
8. Outer filler piece
9. Locking knob guide
10. Clip locator
11. Insulation
12. Door courtesy light
13. Central locking switch (drivers side only)
14. Interior door handle
15. Decorative trim
16. Foam seal
17. Mount for hinged pockets
18. Window switch

### Front door trim, removing and installing




➤ Remove screws (**2**) from door trim (**1**).

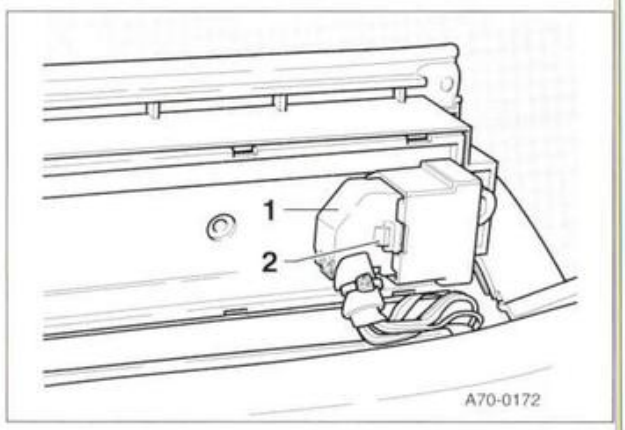
*Door Trim*




➤ Remove window switch unit by inserting screwdriver (**3**) in hole in armrest. Press locking tab (**2**) in direction of arrow (**A**).

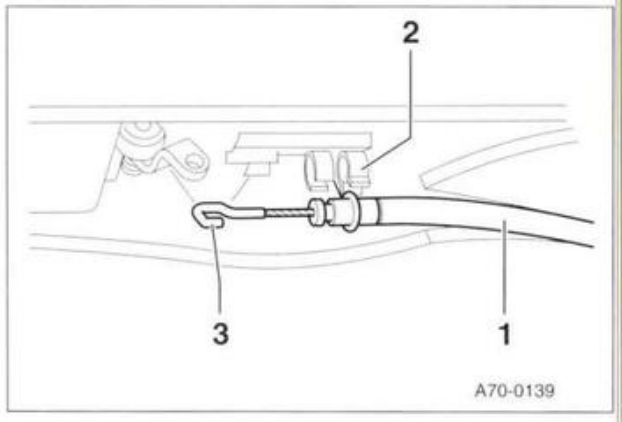
***NOTE***—

- *On models without hole in armrest, use a plastic prying tool to pry front edge of window switch up slightly and release locking tab.*




➤ Lift switch unit up. Press retainer tab (**2**) to release electrical connector (**1**).

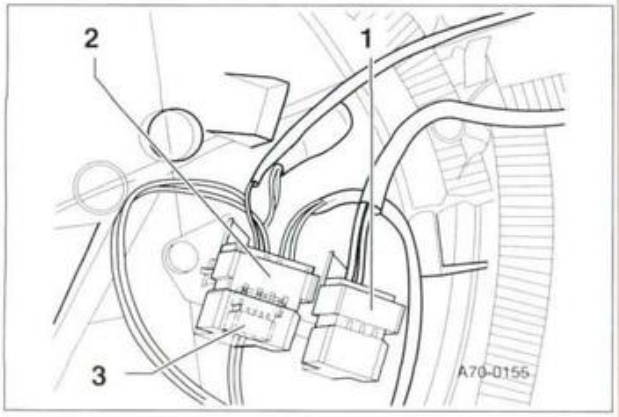
– Lift door trim about 20 cm (8 in) upward and remove from door.



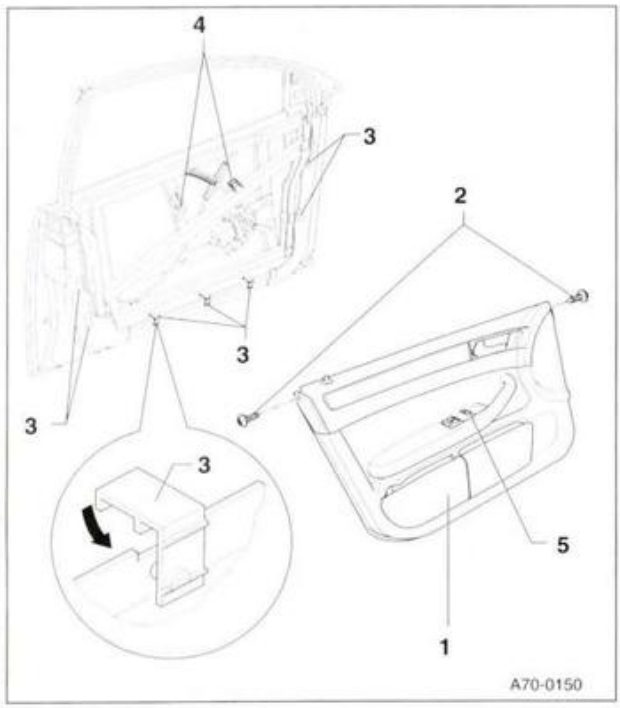

➤ Pull bowden cable (**1**) out of guide (**2**) and detach.

***NOTE***—

- *When installing, make sure hook (**3**) is facing upward.*

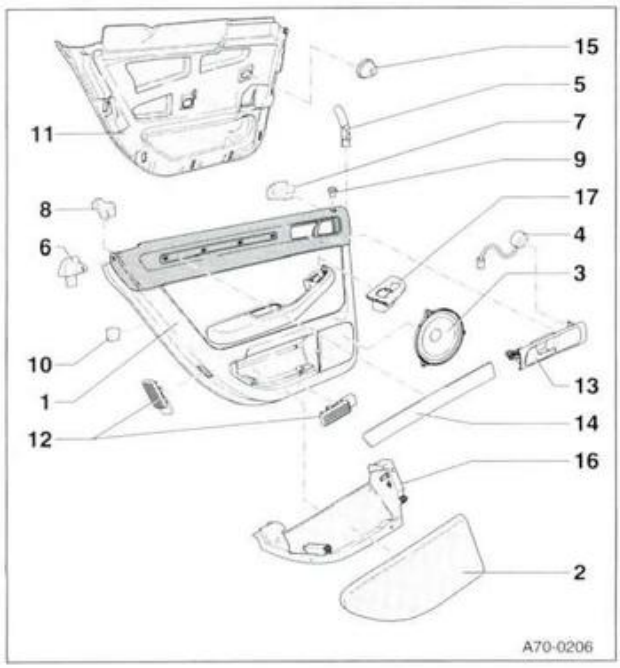



➤ Disconnect electrical connectors for central locking switch (**1**), door warning light (**2**) and radio speaker (**3**).




Installation is reverse of removal. Remember to:

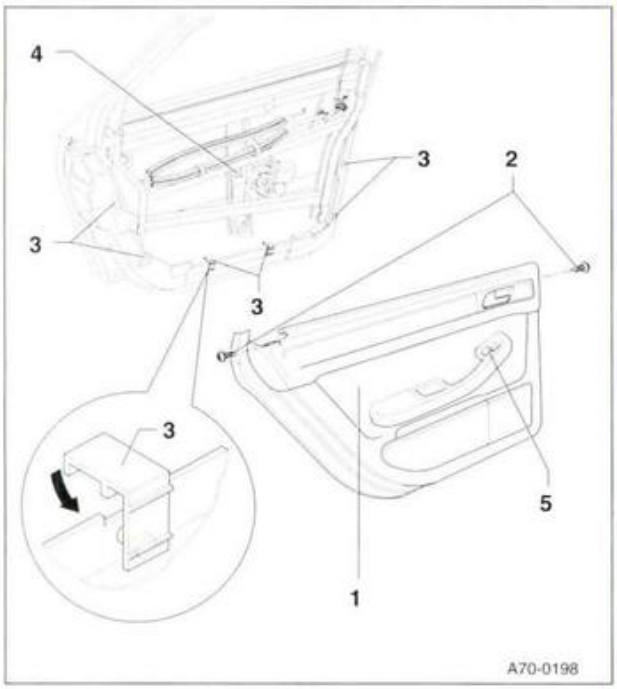
- Make sure door insulation is in place and not damaged.
- Press center of door trim on door first.
- Clip locators (**3** and **4**) in place.



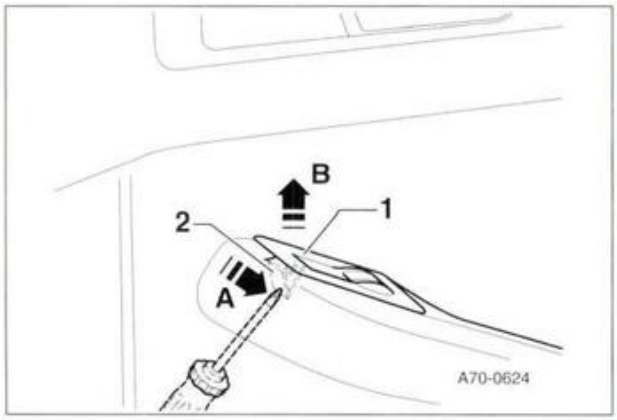

## Rear door trim components

1. Rear door trim
2. Hinged pocket
3. Bass speaker
4. Treble speaker
5. Inner connecting piece
6. Outer connecting piece
7. Inner filler piece
8. Outer filler piece
9. Locking knob guide
10. Clip locator
11. Insulation
12. Door courtesy light light
13. Interior door handle
14. Decorative trim
15. Foam seal
16. Mount for hinged pockets
17. Window switch

## Rear door trim, removing and installing



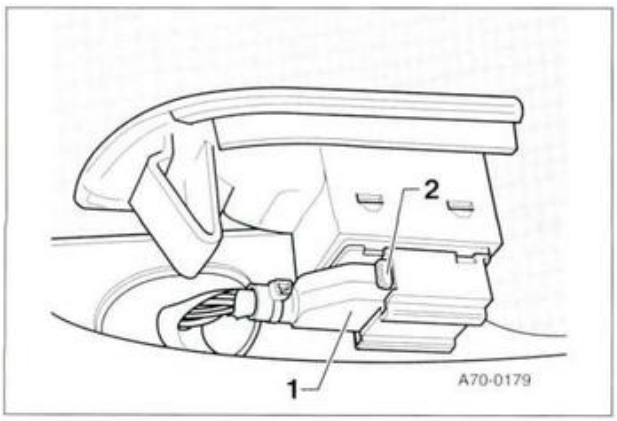

➤ Remove screws (**2**) from door trim (**1**).




➤ Remove window switch by inserting screwdriver in hole in armrest. Press locking tab (**2**) in direction of arrow (**A**).

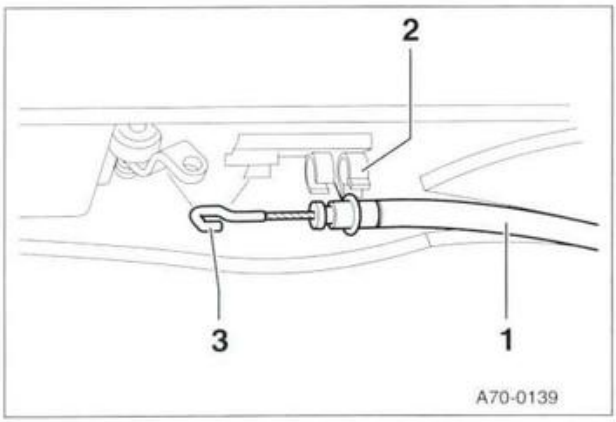
***NOTE***—

- *On models without hole in armrest, use a plastic prying tool to pry front edge of window switch up slightly and release locking tab.*




➤ Lift switch unit up. Press retainer tab (**2**) to release electrical connector (**1**).

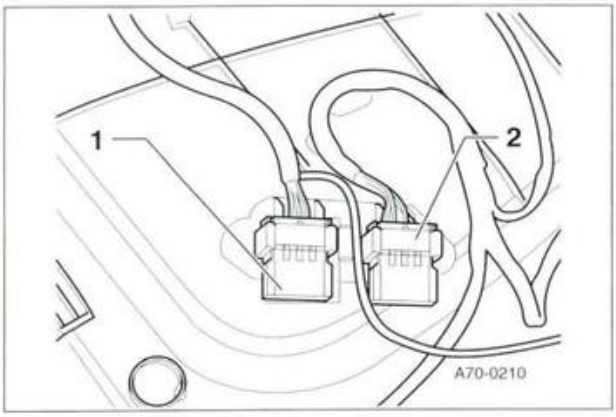
– Lift door trim about 20 cm (8 in) upward and remove from door.



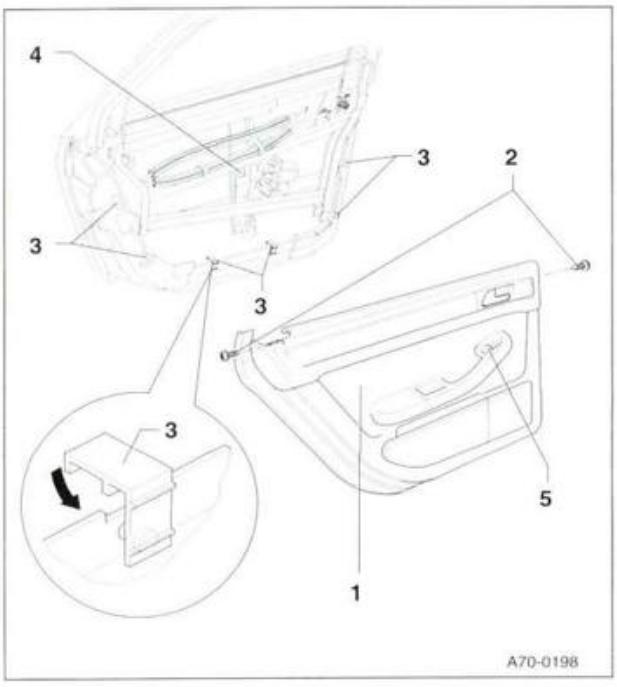

➤ Pull bowden cable (**1**) out of guide (**2**) and detach.

***NOTE***—

- *When installing, make sure hook (**3**) is facing upward.*

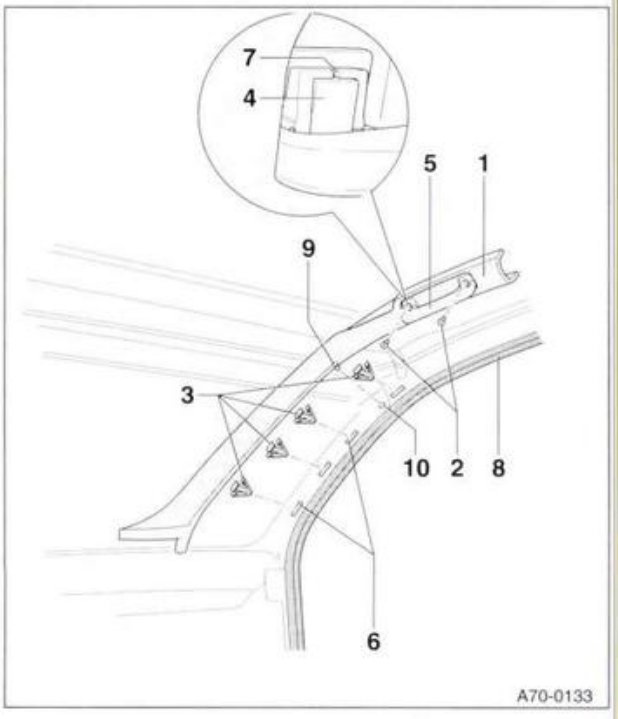


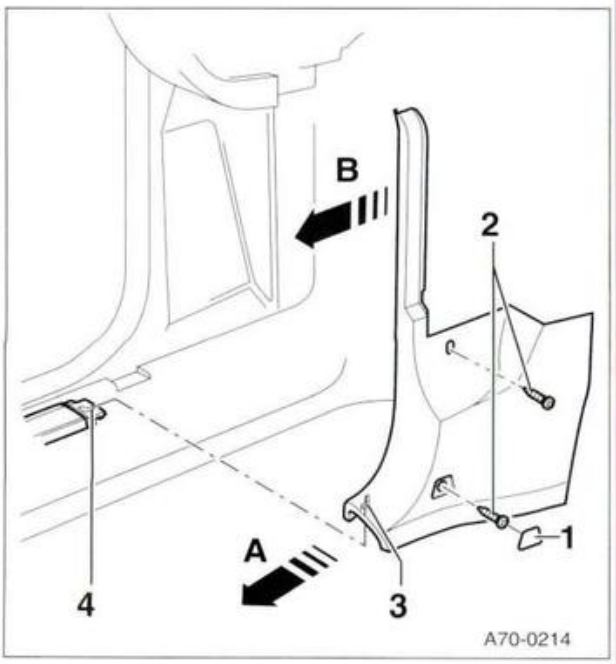

➤ Disconnect electrical connector for door warning light (**2**) and radio speaker (**1**).




➤ Installation is reverse of removal. Remember to:

- Make sure door insulation is in place and not damaged.
- Press center of door trim on door first.
- Clip locators (**3** and **4**) in place.




## Pillar and Side Trim

### Upper A-pillar trim, removing and installing

1. Upper A-pillar trim
2. Screws (2x)
3. Clips (4x)
4. Flap for roof grab handle
5. Roof grab handle
6. Mounts
7. Groove
8. Seal
9. Pin
10. Mount

– Pivot down flap (**4**) on roof grab handle (**5**) at groove (**7**).

– Remove screws (**2**).

– Unclip A-pillar trim (**1**), starting at top.

– Pull out trim and rotate upward.

– On models with hands-free telephone function, disconnect connector for hands-free unit.

– Installation is reverse of removal. Remember to:

- Carefully route wiring and connector for hands-free telephone unit from bottom to top (if equipped).
- Move sun visor out of the way and insert trim (**1**) with clips (**3**) in mounts (**6**).
- Insert pin (**9**) in mount (**10**).
- Clip in trim (**1**) and install door seal over (**A**) pillar trim.

### Lower A-pillar trim, removing and installing

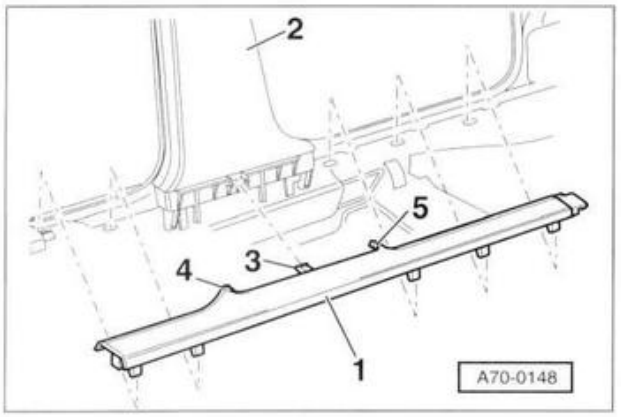
– Pry out cover (**1**) and remove screws (**2**).

➤ Pull lower A-pillar trim in direction of arrow (**A**) until pin (**3**) can be detached from groove (**4**).

– Pull extension of trim in direction of arrow (**B**) out of retainers.

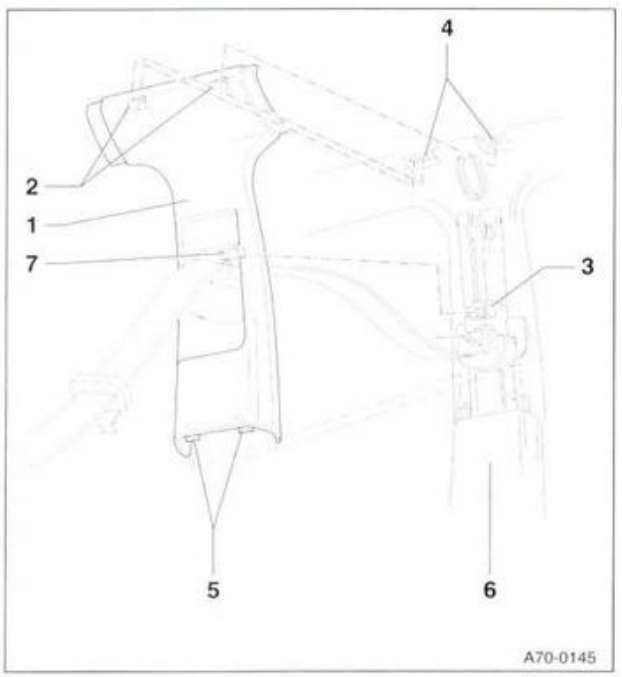
– Installation is reverse of removal.

## Sill trim, removing and installing




- Remove lower A-pillar trim. See **Lower A-pillar trim, removing** in this repair group.
- Unclip front sill trim (**1**).
- Detach sill trim (**1**) from lower B-pillar trim (**2**) at retainer (**5**).
- Unclip rear of sill trim (**1**).
- Detach sill panel trim from lower B-pillar trim (**2**) at retainer (**4**).
- Detach sill panel trim (**1**) from lower B-pillar trim (**2**) at retainer (**3**).
- Installation is reverse of removal.

## Upper B-pillar trim, removing and installing

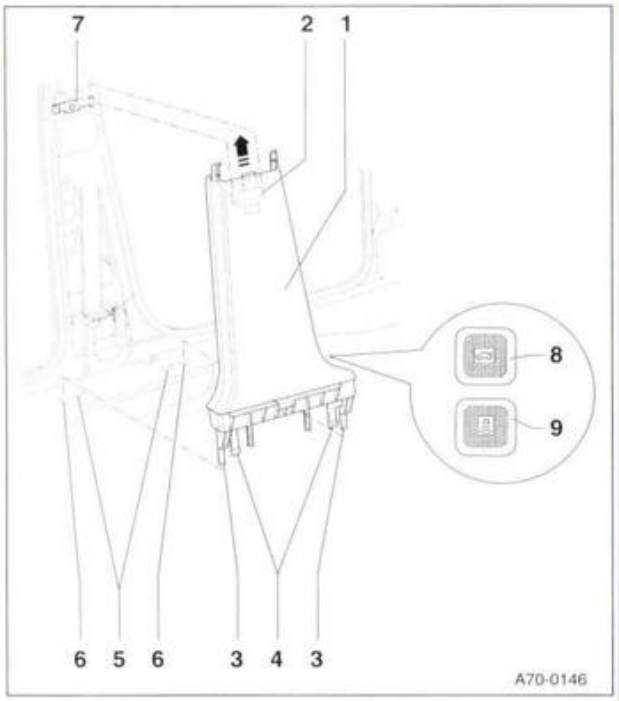



1. Upper B-pillar trim
2. Clip
3. Height adjuster
4. Mounts
5. Retainer tab
6. Lower B-pillar trim
7. Actuating button for height adjuster

- Remove outer seat belt attachment point. See **69 Seat Belts, Airbags**.
- Unfasten roof grab handle at upper A-pillar trim. See **Upper A-pillar trim, removing and installing** in this repair group.
- Unfasten roof grab handle and coat hook at upper C/D-pillar trim. See **Upper C-pillar trim, removing and installing** in this repair group.
- Pull clips (**2**) on trim (**1**) out of mounts (**4**) at the top.
- Detach retainer tabs (**5**) upwards from lower B-pillar trim (**6**).
- Installation is reverse of removal. Remember to:
  - Engage retainers (**5**) on trim (**1**) in lower B-pillar trim (**6**).
  - Insert actuating button for height adjuster (**7**) in height adjuster (**3**).
  - Insert clips (**2**) on trim (**1**) in mounts (**4**).
  - Make sure door seal is correctly seated and check operation of height adjuster.
  - Check that height adjuster engages audibly in each of 5 possible positions (including top position) and that adjuster button always returns to up position.

***NOTE —***

- *Do not press height adjustment fitting when installing.*




## Lower B-pillar trim, removing and installing

1. Lower B-pillar trim
2. Belt guide
3. Guide pins
4. Retainer tabs
5. Mounts
6. Mounts
7. Retainer
8. Push-button switch for trunk lid
9. Push-button switch for interior monitoring

***NOTE —***

- *The outer seat belt attachment point does not have to be removed when taking out the lower B-pillar trim.*

– Remove upper B-pillar trim. See **Upper B-pillar trim, removing and installing** in this repair group.

– Remove sill trim. See **Sill trim, removing and installing** in this repair group.

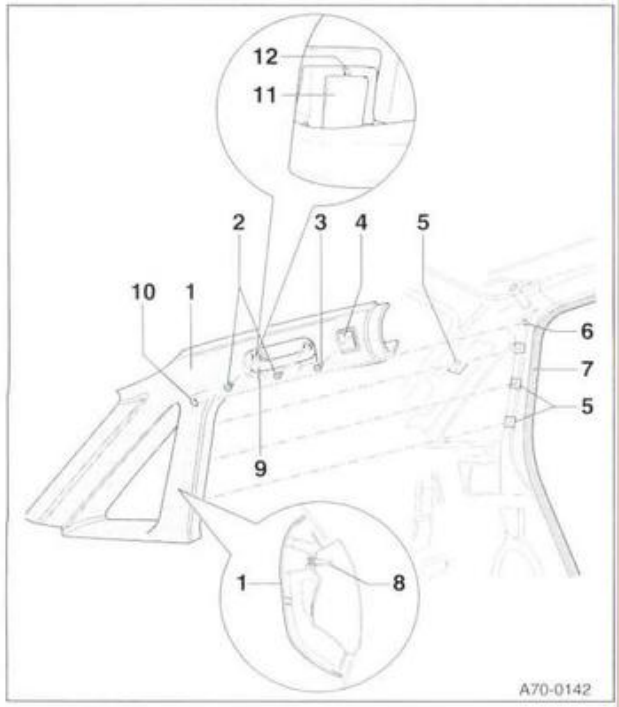
– Use screwdriver to press retainer tabs (**4**) outward.

– Pull up lower B-pillar trim in direction of **arrow** until it disengages at belt guide (**2**).

– Disconnect connectors for trunk lid and interior monitoring switches and remove trim.

– Installation is reverse of removal. Remember to:

- Insert belt guide (**2**) from top into retainer (**7**).
- Insert guide pins (**3**) and retainer tabs (**4**) in mounts (**5**) and (**6**).
- Make sure door seal is correctly seated.




## Upper C-pillar trim, removing and installing

1. Upper C-pillar trim
2. Screws (2x)
3. Screw (1x)
4. Coat hook
5. Mounts
6. Mount
7. Seal
8. Clips (7x)
9. Roof grab handle
10. Pin
11. Roof grab handle flap
12. Groove

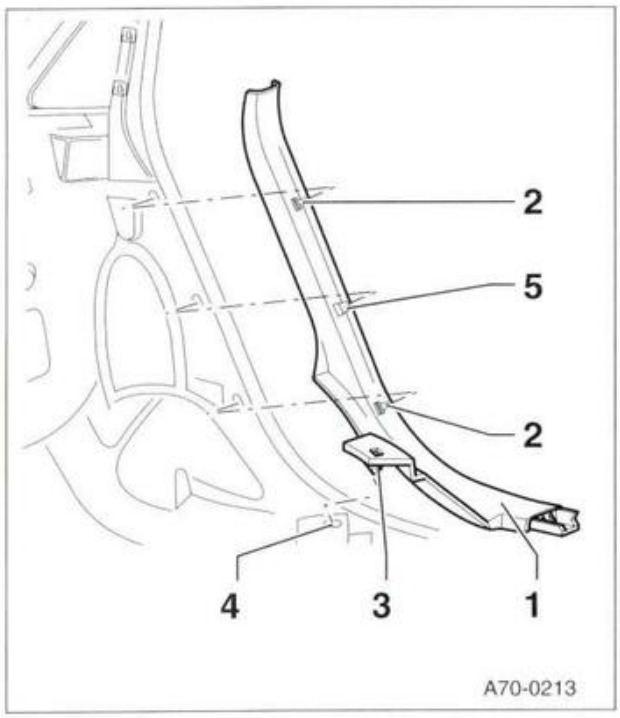
– Open out coat hook and remove screw (**3**).

– Pivot down flap (**11**) on roof grab handle (**9**) at groove (**12**).

– Remove trim screws (**2**) and unclip C-pillar trim (**1**), starting at top.

– Installation is reverse of removal. Remember to:
  • Insert trim (**1**) in rear shelf mounts.
  • Insert pin (**10**) on trim (**1**) in mount (**6**).
  • Insert clips (**8**) on trim (**1**) in mounts (**5**).
  • Clip trim (**1**) into place.
  • Make sure door seal is correctly seated.

## Lower C-pillar trim, removing and installing




– Remove sill trim. See **Sill trim, removing** in this repair group.

– Remove rear seat bench and rear side padding. See **72 Seats**.

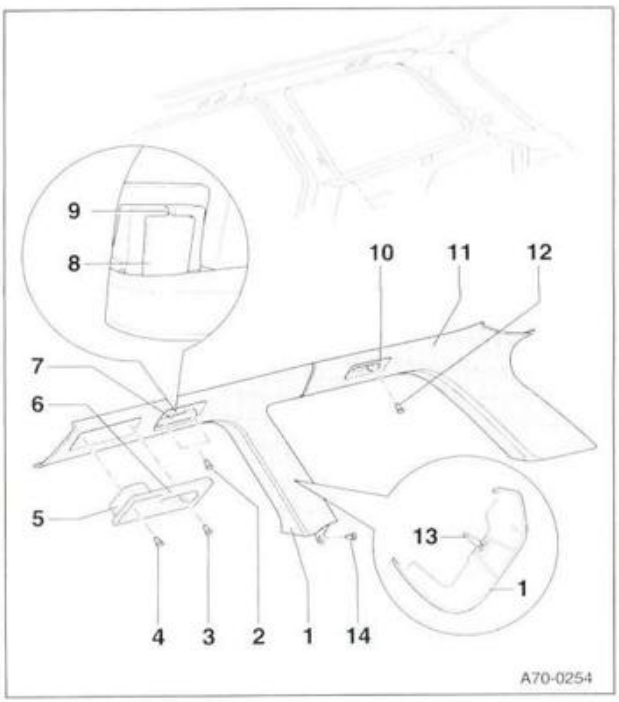
➤ Unclip upper C-pillar trim around lower C-pillar trim.

– Unclip lower C-pillar trim (**1**) at retaining clips (**2**).

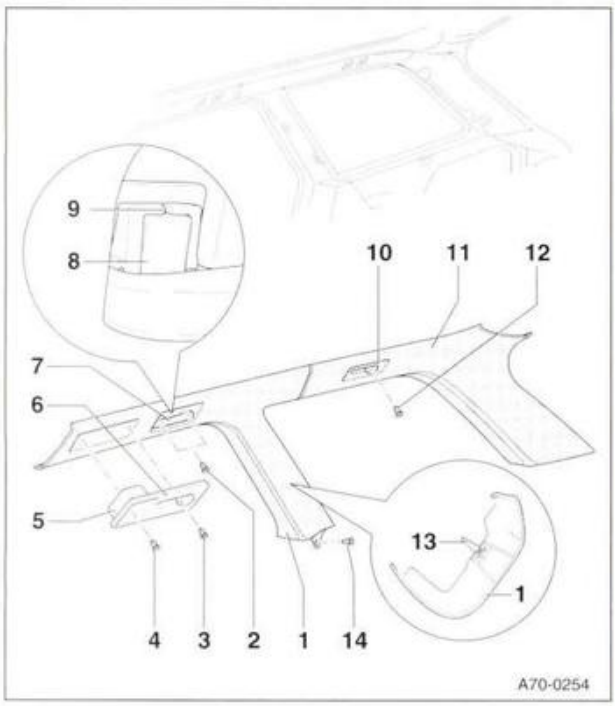
– Detach retainer tab (**3**) from mount (**4**) and remove trim.

– Installation is reverse of removal. Remember to align guide pin (**5**).

## Upper C-pillar trim (Avant), removing and installing




1. C-pillar trim
2. Screws (2x)
3. Screw
4. Bolt
5. Coat hook
6. Front partition grille mount
7. Roof grab handle
8. Roof grab handle flap
9. Groove
10. Rear partition grille mount
11. D-pillar trim
12. Screw
13. Clip
14. Screw




➤ Pull down coat hook (**5**) and remove screw (**4**).

– Remove screw (**3**) from front partition mount (**6**).

– Pull down flap (**8**) on roof grab handle (**7**) at groove (**9**).

– Remove screws (**2**).

– Remove screw (**12**) from rear partition mount (**10**).

– Remove trim plate for seat belt.

– Remove screw (**14**).

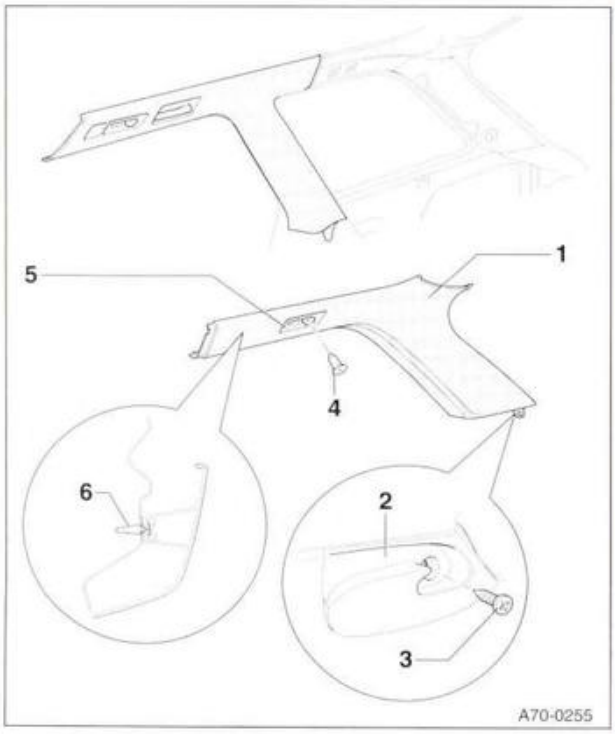
– Unclip D-pillar trim (**11**) at C-pillar trim (**1**).

– Carefully pull away D-pillar trim (**11**).

– Unclip C-pillar trim (**1**), working from the top downward.

– Installation is reverse of removal. Remember to:
- Push C-pillar trim in behind D-pillar trim.
- Insert clips (**1**) on trim (**13**) into mounts.
- Clip trim (**1**) into place.

## Upper D-pillar trim (Avant), removing and installing




1. D-pillar trim
2. Mount for cargo area cover
3. Screw
4. Screw
5. Rear partition grille mount
6. Clip

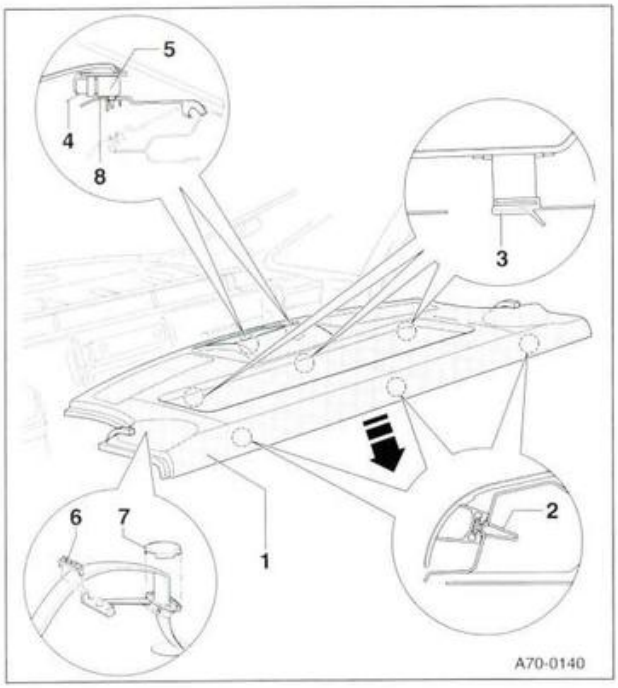
– Remove screw (**4**) from rear mount (**5**) for partition grille.

– Remove bolt (**3**).

– Unclip D-pillar trim (**1**) working from the top downward.

– Lift D-pillar trim out of cargo area side trim.

– Remainder of installation is reverse of removal. Remember to:
- Insert D-pillar trim behind cargo area side trim.
- Insert clips (**6**) on trim (**1**) in mounts.
- Clip trim (**1**) into place.




## Rear shelf (folding backrest), removing and installing

1. Rear shelf
2. Clip (3x)
3. Clip (3x)
4. Spring
5. Center brake light
6. Guide
7. Trim
8. Flap

– Fold down rear seat backrest.

– Unbolt lower attachment points for rear left and right three-point seat belts. See **69 Seat Belts, Airbags.**

– Remove rear left and right side padding. See **72 Seats**.

– Unclip trim (**7**) and guide (**6**) for rear left and right three-point seat belts.

– Remove upper C-pillar trim on left and right. See **Upper C-pillar trim, removing and installing** in this repair group.

– For vehicles with flap in rear shelf: Open flap (**8**) beneath high-mount brake light (**5**) in luggage compartment.

– For all vehicles: Unclip center brake light (**5**) by unfastening spring (**4**) in luggage compartment.

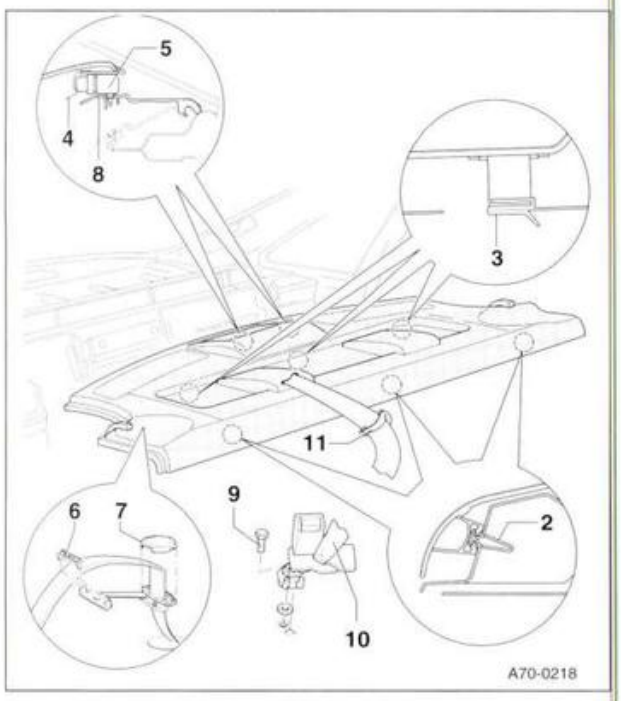
– On vehicles with electric sun shade, loosen sunshade screws in luggage compartment.

– Pull rear shelf (**1**) forward in direction of arrow and unclip rear shelf at clip (**2**).

– Disconnect electrical connector for sun shade (if equipped).

– Remove rear shelf upward and forward.

– Installation is reverse of removal. Remember to:
  • Press down rear shelf slightly until clips (**3**) and springs (**4**) engage.
  • Press in on front edge of self to engage clips (**2**).




## Rear shelf (fixed backrest), removing and installing

1. Rear shelf
2. Clip (3x)
3. Clip (3x)
4. Spring
5. Center brake light
6. Guide
7. Trim
8. Flap
9. Bolt (1x), 55 Nm (41 ft-lb)
10. Webbing
11. Guide

– Unbolt lower attachment points for rear left and right three-point seat belts. See **69 Seat Belts, Airbags**.

– Unbolt lower attachment point (**8**) for center three-point seat belt. See **69 Seat Belts, Airbags**.

– Remove rear seat backrest. See **72 Seats**.

– Unclip trim (**7**) and guide (**6**) for rear left and right three-point seat belts. See **69 Seat Belts, Airbags**.

– Remove upper C-pillar trim on left and right. See **Upper C-pillar trim, removing and installing** in this repair group.

– For vehicles with flap in parcel shelf: Open flap (**8**) beneath high-mount brake light (**5**) in luggage compartment.

– For all vehicles: Unclip center brake light (**5**) by unfastening spring (**4**) in luggage compartment.

– On vehicles with electric sun shade, loosen sunshade screws in luggage compartment

– Pull rear shelf (**1**) forward in direction of arrow and unclip rear shelf at clip (**2**).

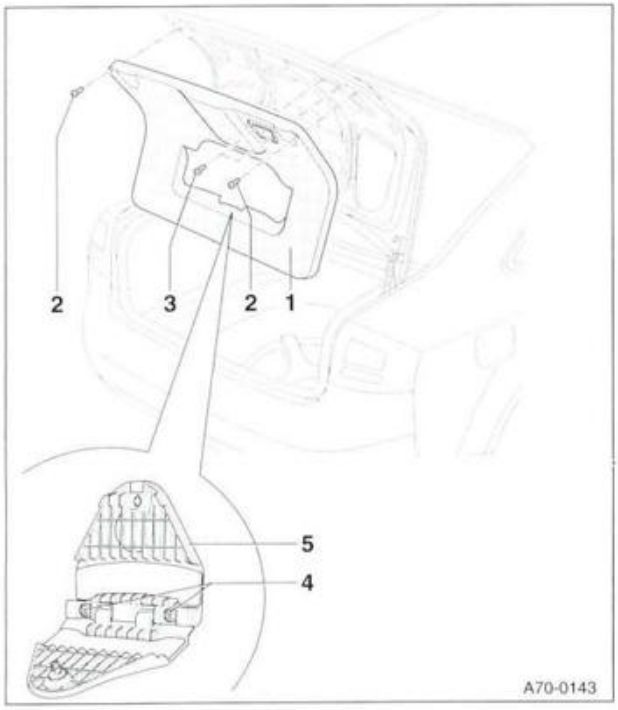
– Unclip trim and guide (**10**) for center three-point seat belt from the rear.

– Disconnect electrical connector for sun shade (if equipped).

– Remove rear shelf (**1**) upward and forward.

– Installation is reverse of removal. Remember to:
  • Press down rear shelf slightly until clips (**3**) and springs (**4**) engage.
  • Press in on front edge of shelf to engage clips (**2**).

## LUGGAGE COMPARTMENT TRIM




### Trunk lid trim, removing and installing

1. Rear lid trim
2. Screws (2x)
3. Screws (2x)
4. Screws (2x)
5. Bracket for hazard warning triangle

– Remove hazard warning triangle.

– Remove screws (**4**) and remove bracket for hazard warning triangle (**5**).

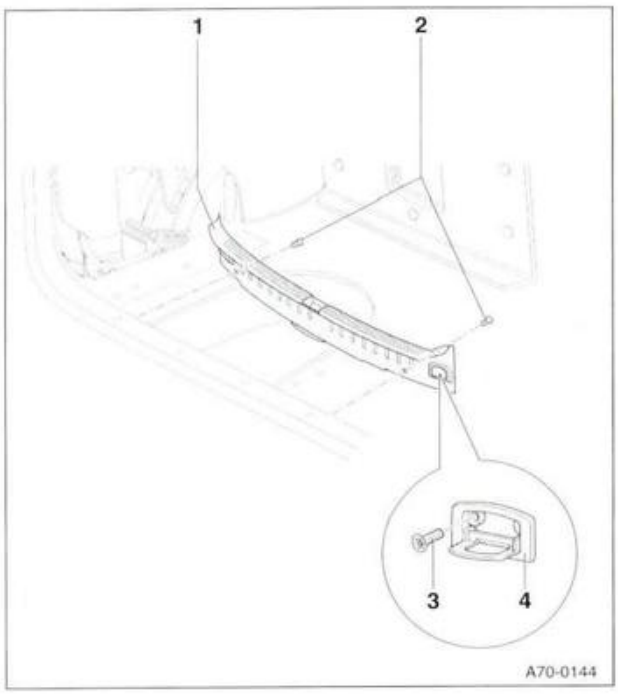
– Remove screws (**2**).

– Vehicle with emergency release: Unclip cover and remove bolt for emergency release handle.

– All vehicles: Remove screws (**3**).

– Unclip trunk lid trim (**1**) from underneath and remove trim.

– Installation is reverse of removal.




### Trunk sill trim, removing and installing

1. Trunk sill trim
2. Screws (2x)
3. Screws (2x)
4. Fastening rings

– Remove trunk light from sill trim (**1**).

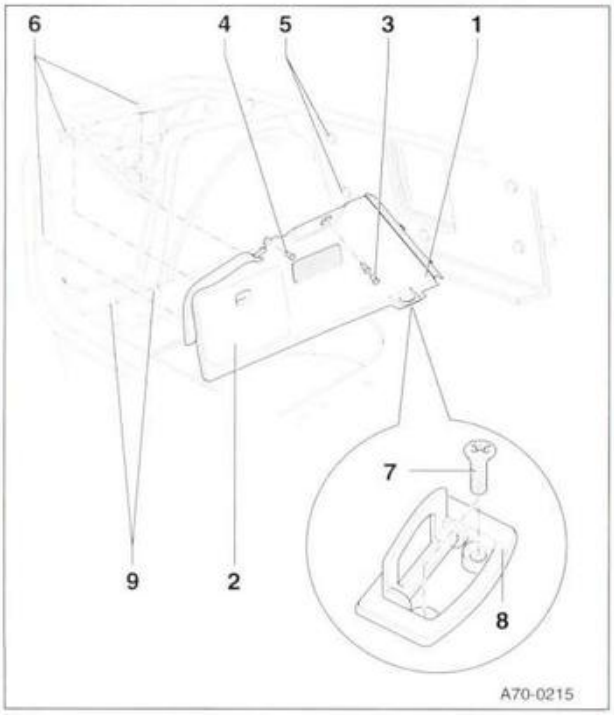
– Remove screws (**2**).

– Remove screws (**3**) from fastening rings (**4**) on left and right.

– Unclip sill trim (**1**) upward.

– Guide trunk light through opening in trim.

– Installation is reverse of removal. Make sure seal is correctly seated.




## Trunk side trim, removing and installing

1. Trunk side trim
2. Cover
3. Clip
4. Clip
5. Clips (2x)
6. Mounts
7. Bolts (2x)
8. Fastening rings
9. Fastening clip

– Remove trunk floor covering.

– Models with split rear seat: Remove respective backrest. See **72 Seats**.

– Remove trunk sill trim. See **Trunk sill trim, removing and installing** in this repair group.

– Remove screws (**7**) for fastening rings (**8**).

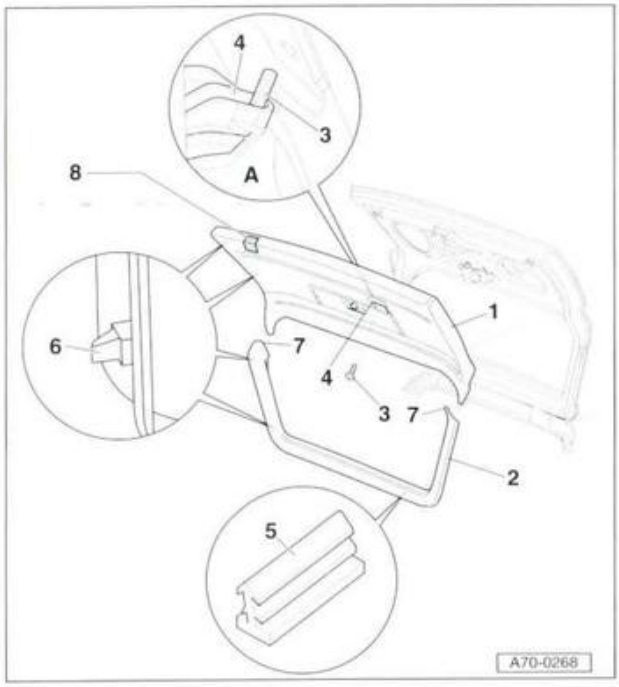
– Unclip front trunk trim clips (**5**).

– Unclip trim clips (**3** and **4**) and remove cover (**2**).

– Unclip remaining clips and pull side trim (**1**) upward out of locating tabs (**9**).

– Pull side trim (**1**) out from behind back panel trim.

– Installation is reverse of removal. Remember to insert side trim behind front trunk trim before replacing clips (**5**).




## Tailgate trim (Avant), removing and installing

1. Tailgate trim (bottom section)
2. Tailgate trim (top section)
3. Screw
4. Grip molding
5. Rubber buffer (10x)
6. Clip
7. Retainer
8. Light

### Tailgate trim bottom section

– Remove bolt (**3**).

– Remove screw behind warning triangle

– Pull bottom section of trim (**1**) away from tailgate slightly.

– Using a plastic trim tool or screwdriver with tip wrapped with tape, release clips (**6**) (8x) on bottom section of trim (**1**). Start at bottom right and proceed counterclockwise.

– Press out light (**3**) from behind trim.

– Disconnect connector for light (**8**).

– To install, locate bottom section of trim (**3**) at rear window first, and clip into place.

– Make sure that screw (**4**) also secures grip molding (**3**) (shown in inset **A**).

### Tailgate trim top section

– Remove bottom section of trim (**1**).

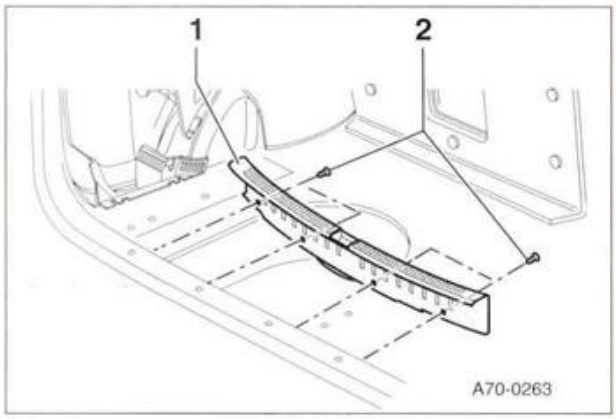
– Unclip retainer tabs (**7**) on both sides.

– Release clips (**6**) (7x) on top section of trim (**2**) by pulling sharply (do not use excessive force).

– Before installing top section of trim (**2**), make sure that rubber buffers (**5**) (10x) are installed properly.

– First install top section of trim (**2**) behind side tailgate flanges.

– Clip in upper tailgate trim (**2**) into place behind side flanges on tailgate.

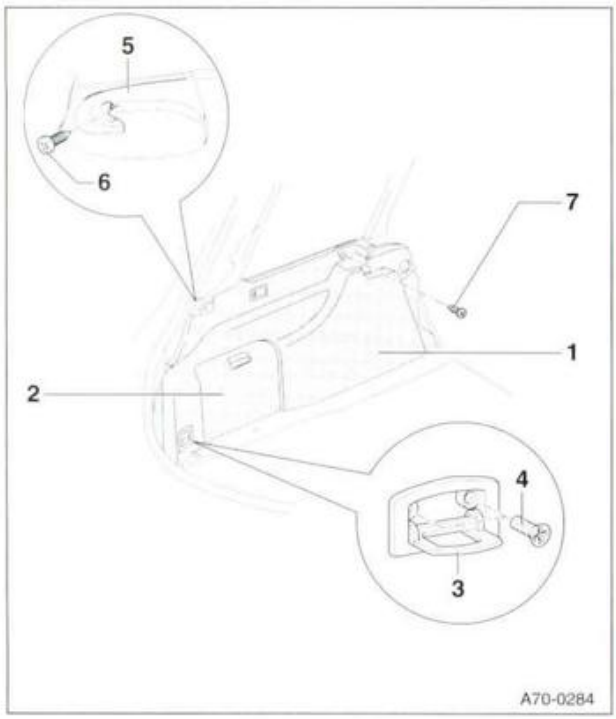



## Tailgate sill trim (Avant), removing and installing

➤ Remove screws (**2**) (4x).

– Remove sill trim (**1**).

– Install in reverse order. Make sure tailgate seal is positioned over sill panel trim.




## Tailgate side trim (Avant), removing and installing

1. Cargo area side trim
2. Cover
3. Fastening rings
4. Screw (2x)
5. Mount for cargo area cover
6. Screw
7. Screw

– Remove cargo area cover.

– Remove rear seat bench and respective side padding. See **72 Seats**.

– Detach seat belt from bottom attachment. Remove belt trim plate. See **69 Seat Belts, Airbags**.

– Remove tailgate sill trim. See **Tailgate sill trim, removing and installing** in this repair group.

– Remove screws (**4**) for fastening rings (**3**).

– Remove storage cover (**2**).

– Remove mounting bracket screw (**6**).

– Remove bolt (**7**).

– Unclip rear trim.

– Pull trim slightly toward front, and disconnect connector for rear electrical socket.

– Installation is reverse of removal. Remember to engage cargo area trim behind side window flange.

# 72 Seats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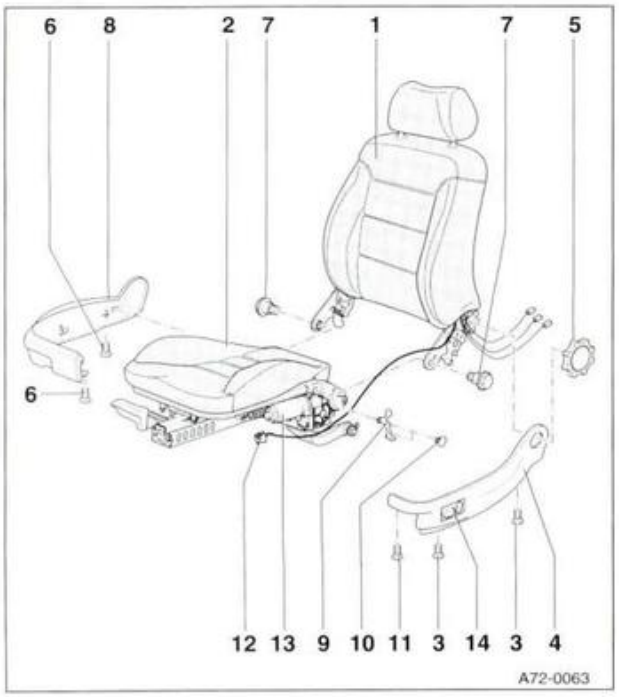
## GENERAL

This repair group covers removing and installing the front and rear seats. Both driver and passenger seats may be equipped with airbags mounted in the seat backrest frames. Additionally, airbags may be installed in the rear seat side upholstery. For airbag precautions and handling procedures see **69 Seat Belts, Airbags**.

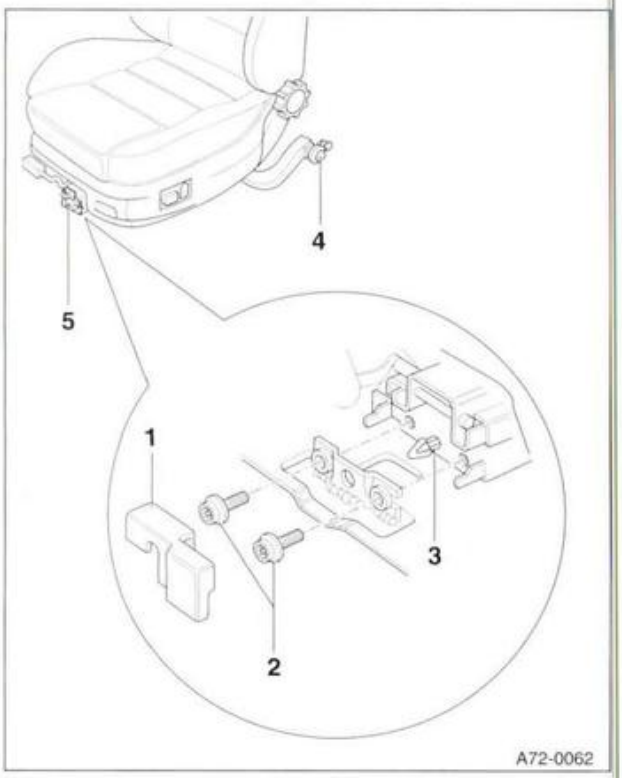
***WARNING*** —
- *Do not install aftermarket upholstery on any vehicle equipped with seat mounted airbags. Non-factory upholstery including "beads" and "sheepskins" may cause seat mounted airbags to deploy when they are not supposed to; fail to deploy when they should; or deploy in some manner other than designed. Serious injury or death could result.*

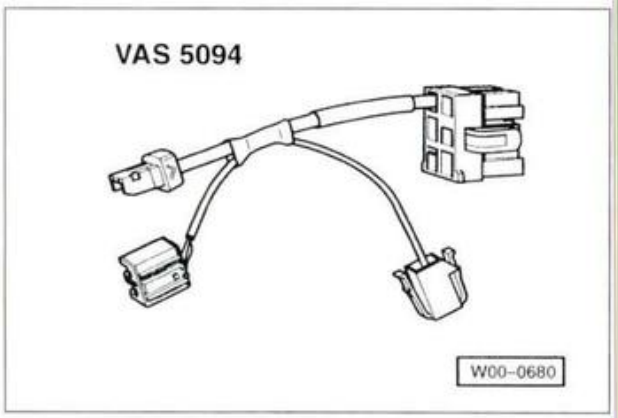



## FRONT SEATS

### Front seat components

1. Backrest
2. Seat pan
3. Bolts
4. Outer side panel of seat
5. Adjustment knob
6. Bolts
7. Bolts, 20 Nm (15 ft lb)
8. Inner side panel of seat
9. Bracket
10. Expanding pin
11. Screw
12. Connector
13. Motor for seat height adjuster
14. Seat adjustment switch




## Front seat, removing and installing

1. Cover
2. Bolts, 23 Nm (17 ft-lb)
   - Self-locking
   - Always replace
3. Clip
4. Rear rollers
5. Front sliders
   - Lubricate with multi-purpose grease

***NOTE***—
- *Removal and installation procedures may vary slightly depending on vehicle equipment.*

– Raise seat to highest position and adjust seat forward.

– Remove trim covers at rear of inner and outer seat rails.

– Adjust seat backward.

– Disconnect battery negative (-) cable.

***NOTE***—
- *Obtain radio code before disconnecting battery.*

– Remove trim cover (**1**) at front of front seat rail.

– Remove bolts (**2**) and release clip (**3**).

➤ Connect airbag adapter VAS 5094 to wiring harness for side airbag.

***WARNING***—
- *Observe all airbag warnings. See* **69 Seat Belts, Airbags**.
- *Before disconnecting airbag harness connector, discharge static electricity by briefly grasping chassis or door striker.*
- *Failure to install VAS 5094 could result in deployment of side airbag.*

– Disconnect remaining electrical connectors.

– Fold back floor covering at rear around guide rail.

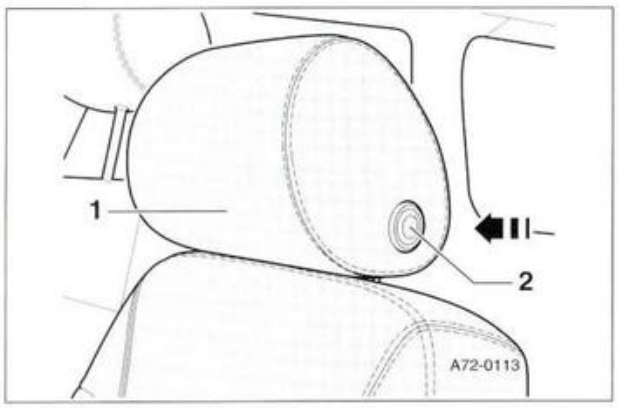
– Push seat backward out of guide and remove seat.

– Installation is reverse of removal. Remember to:
- Remove airbag adapter VAS 5094 and reattach electrical connectors.
- Replace seat mounting bolts with new.

| **Tightening torque** | |
|---|---|
| Front seat to seat rail | 23 Nm (17 ft-lb) |

## Headrest, removing and installing

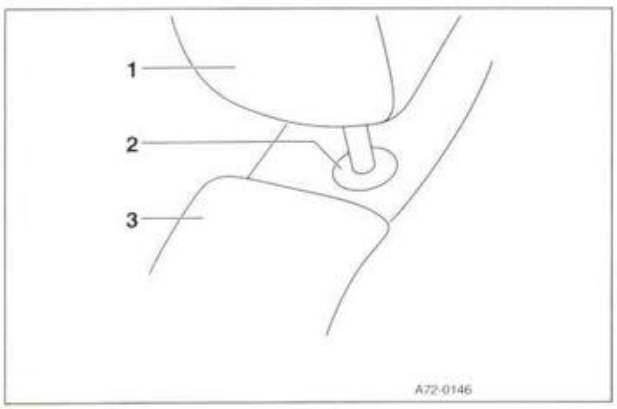
**Style 1:**




➤ Press release button (**2**) fully and lift headrest up and off seat back.

– To install, press release button (**2**) to first stage and slide headrest down on seat back. Press release button to adjust headrest height.

**Style 2:**




➤ Press down on guide sleeve (**2**) from above.

– Press down slightly on headrest (**1**) to release catch.

– Pull headrest up and off seat back.

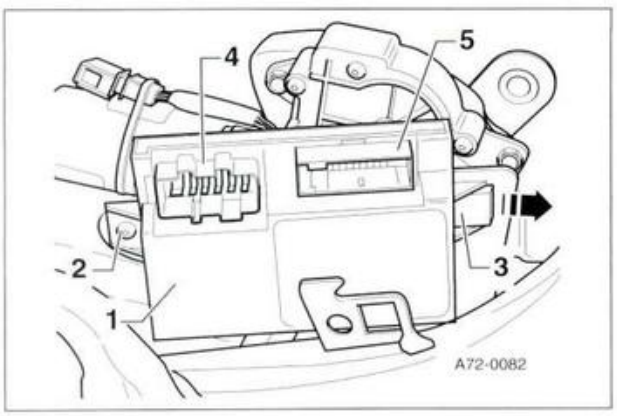
– To install, slide head rest down on seat back and press on guide sleeve (**2**) to adjust headrest height.

## Seat memory control module, removing and installing

– Remove driver's seat. See **Front seat, removing and installing** in this repair group.

– Working under seat, remove bolts for inner side panel of seat.

– Release clip on inner side panel. Push panel forward and remove. See **Front seat components** in this repair group for more information.

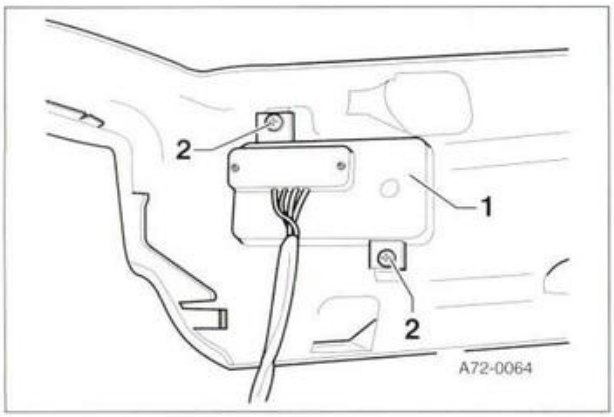



➤ Disconnect control module electrical connectors (**4** and **5**).

– Remove screw (**2**).

– Press clip (**3**) in direction of arrow using a screwdriver and remove control module.

– Installation is reverse of removal.




### Seat control switch, removing and installing

– Remove driver's seat. See **Front seat, removing and installing** in this repair group.

– Working under seat, remove bolts for outer side panel of seat.

– Release clip on inside of side panel. Push panel forward and remove. See **Front seat components** in this repair group for more information.

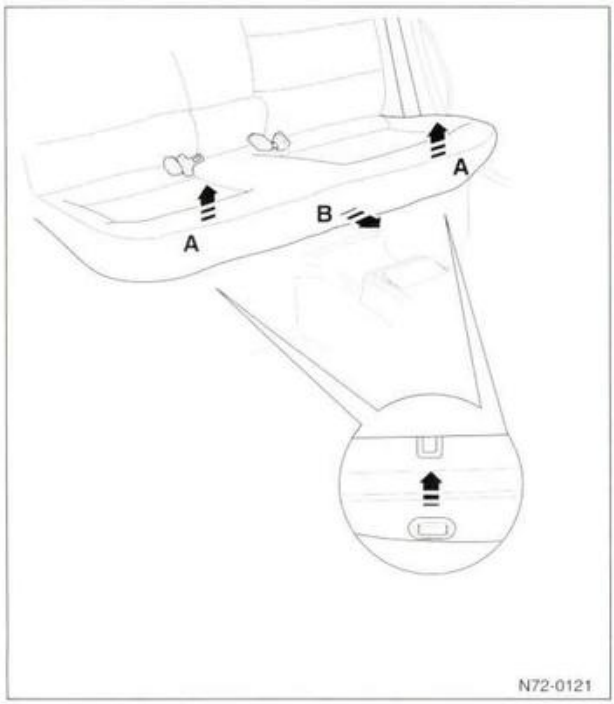
➤ Remove screws (2) and remove seat control switch.

– Installation is reverse of removal.

## REAR SEATS

### Seat bench, removing and installing

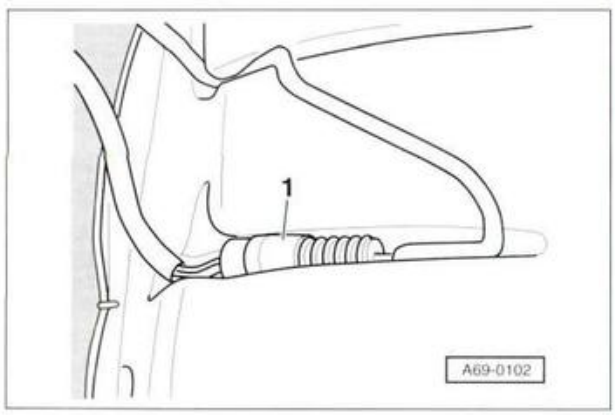
> ***WARNING*** —
> • *Observe all airbag warnings. See* **69 Seat Belts, Airbags**.
> • *Before disconnecting airbag harness connector, discharge static electricity by briefly grasping chassis or door striker.*




– Disconnect battery negative (-) cable.

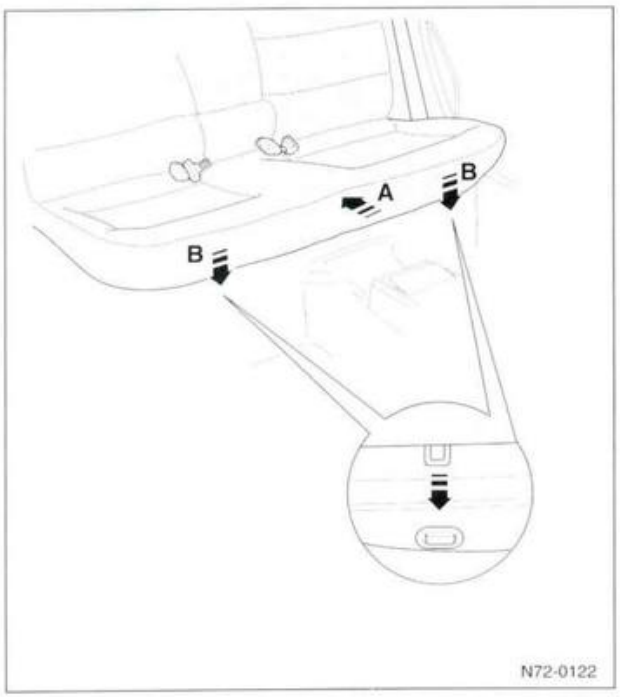
***NOTE*** —
• *Obtain radio code before disconnecting battery.*

➤ Lift front edge of seat bench in direction of arrows (**A**) and pull forward (**B**).




➤ Remove harness connector for side airbag (if equipped) from groove and disconnect.

– Disconnect connector for heated seats (if equipped) and remove seat bench.



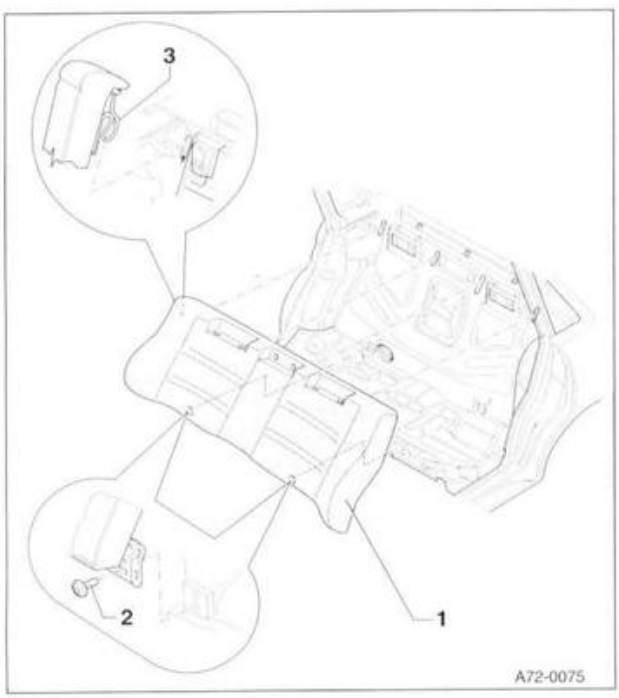

➤ Installation is reverse of removal. Remember to:

- Connect harness connector for side airbags and heated seats (if equipped).
- Slide bench rearward in direction of arrow (**A**).
- Guide anchoring eyelets into plastic sleeves (arrow **B**)
- Avoid damage to plastic sleeves (**inset**).

## Backrest (fixed), removing and installing

***WARNING*** —

- *Observe all airbag warnings. See* **69 Seat Belts, Airbags**.
- *Before disconnecting airbag harness connector, discharge static electricity by briefly grasping chassis or door striker.*




1. Fixed backrest
2. Screws (2x), 8 Nm (71 in-lb)
3. Hooks (4x)

– Remove rear seat bench. See **Seat bench, removing and installing** in this repair group.

– Remove head rest (if necessary). See **Rear headrest, removing and installing** in this repair group.

– Pry out frame for ski bag (if equipped)

– Disconnect electrical connectors for side airbags and heated seats (if equipped).

– Remove screws (**2**) (2x).

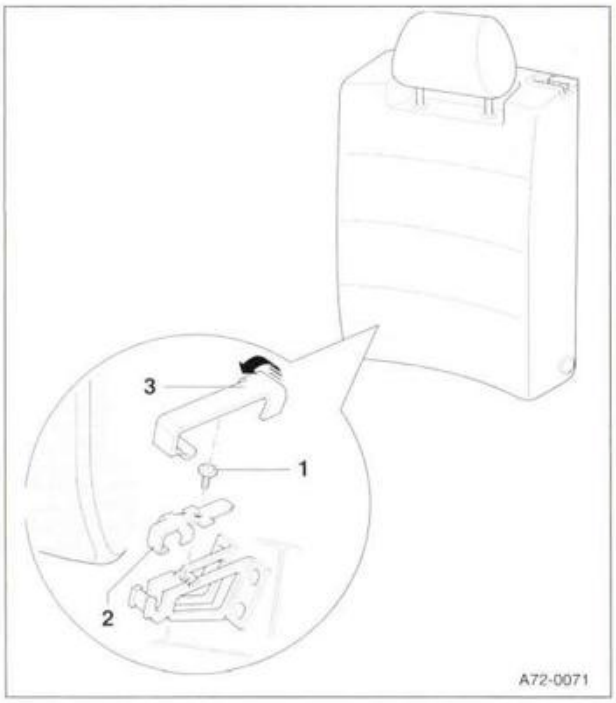
– Push backrest (**1**) upward and detach at hooks (**3**) (4x).

– Installation is reverse of removal.

## Backrest (split-folding), removing and installing

*WARNING —*
- *Observe all airbag warnings. See* **69 Seat Belts, Airbags**.
- *Before disconnecting airbag harness connector, discharge static electricity by briefly grasping chassis or door striker.*

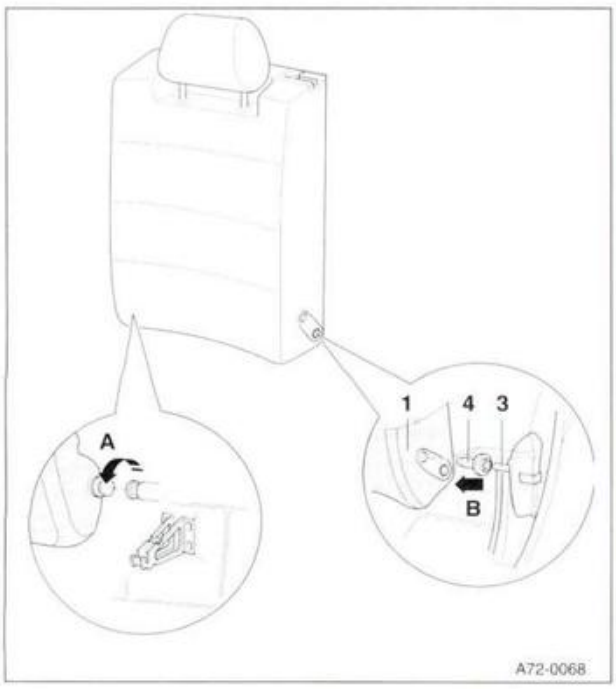
### 1/3 section




– Fold both backrest sections forward.

➤ Unclip trim piece (**3**) from rear in direction of **arrow**. If necessary, pry out trim clip from rear through hole.

– Remove bolt (**1**) and clamp (**2**).




➤ Lift backrest out of center support bracket (**2**) in direction of arrow (**A**) and pull off fitting (**3**) in direction of arrow (**B**).

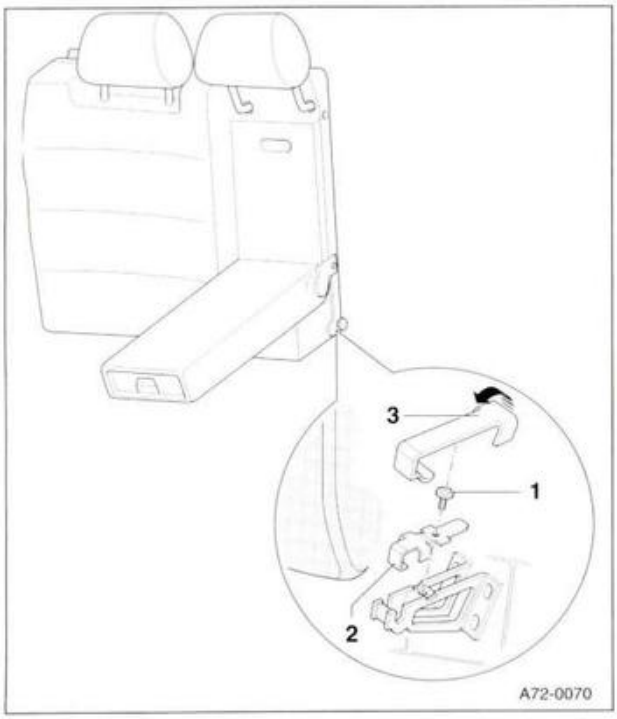
– Disconnect electrical connectors for heated seats (if equipped).

– Installation is reverse of removal. Remember to reinstall grommet (**4**) on pin (**3**) if it pulled off during removal.

| Tightening torque | |
|---|---|
| Backrest bracket bolt | 10 Nm (7 ft-lb) |

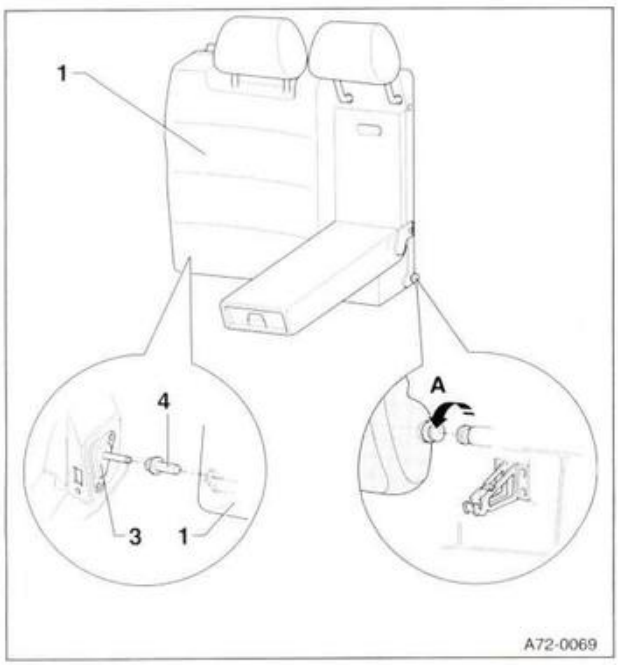
**2/3 section**

– Fold both backrest sections forward.




➤ Unclip trim piece (**3**) from rear in direction of **arrow**. If necessary, pry out clip from rear through hole.

– Remove bolt (**1**) and clamp (**2**).

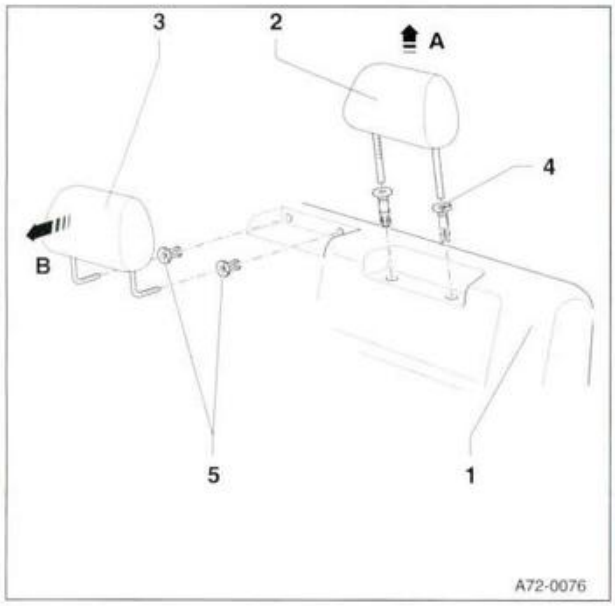



➤ Lift backrest out of center support bracket in direction of arrow (**A**) and pull off fitting (**3**) in direction of arrow (**B**).

– Disconnect electrical connectors for heated seats (if equipped).

– Installation is reverse of removal. Remember to reinstall grommet (**4**) on pin (**3**) if it pulled off of fitting during removal.

| **Tightening torque** | |
|---|---|
| Backrest bracket bolt | 10 Nm (7 ft-lb) |



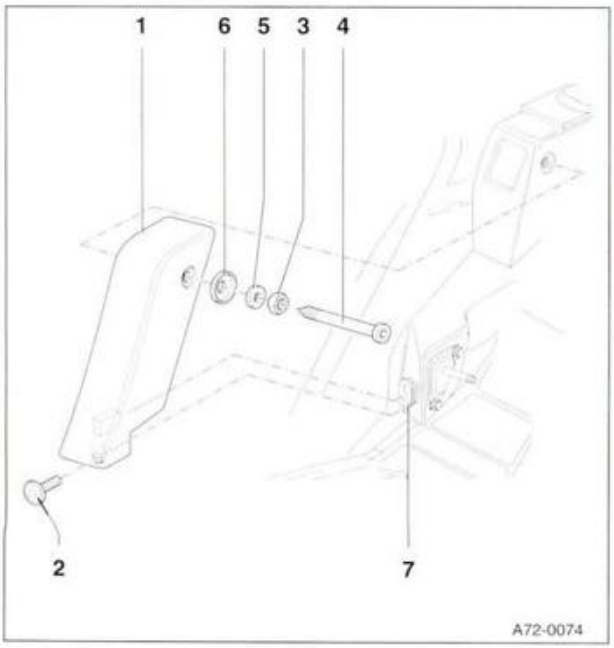

## Rear headrest, removing and installing

1. Rear backrest
2. Outer headrest
3. Center headrest
4. Guide piece with release button for outer headrest
5. Guide pieces with release buttons for center headrest

– To remove outer headrest (**2**), press release button (**4**) on left guide piece and pull out in direction of arrow (**A**).

– To remove inner headrest (**3**), press release buttons (**5**) on both guide pieces and pull out in direction of arrow (**B**).

– Installation is reverse of removal. Note that front and rear headrests are not interchangeable.




## Rear seat side padding, removing and installing

***WARNING*** —
- *Observe all airbag warnings. See* **69 Seat Belts, Airbags**.
- *Before disconnecting airbag harness connector, discharge static electricity by briefly grasping chassis or door striker.*

1. Side padding
2. Bolt, 8 Nm (71 in-lb)
3. Nut, 50 Nm (37 ft-lb)
4. Bolt
5. Washer
6. Dished washer
7. Retainer

– Remove rear seat bench. See **Rear seat bench, removing and installing** in this repair group.

– Remove lower bolt (**2**) and on side padding (**1**).

***NOTE*** —
- *Bolt (2) is only installed on vehicles with side airbag*

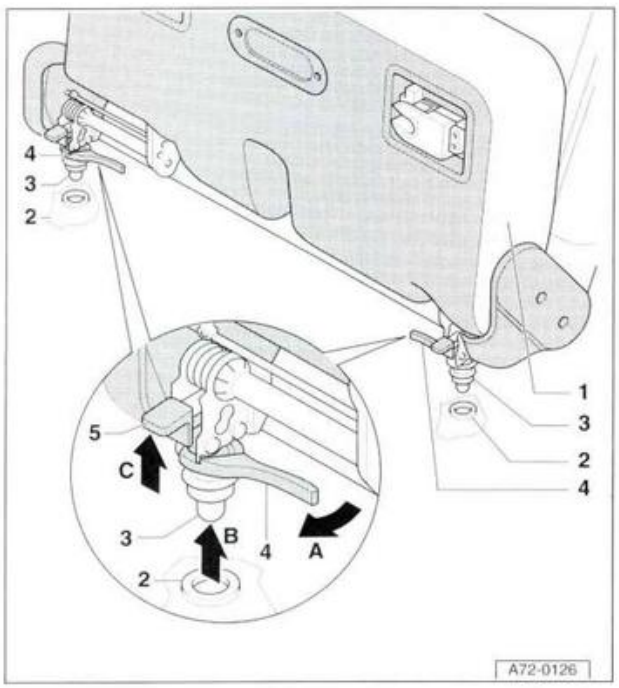
– Disconnect electrical connector for side airbag (if equipped).

– Remove nut (**3**) on striker pin (**4**) together with washer (**5**) and dished washer (**6**).

– Pull side padding out of bottom retainer (**7**).

– Installation is reverse of removal. remember to:
- Press side padding into bottom retainer (**7**).
- Adjust striker pin (**4**) and tighten nut (**3**).

## Children's bench (Avant), removing and installing




On Avant models, a rear facing children's bench seat in the luggage compartment is an option.

1. Children's bench
2. Mounts
3. Head of locking mechanism
4. Locking lever
5. Securing lever

– Release children's bench using locking levers (**4**).

– Press both securing levers (**5**) upwards in direction of arrow (**C**).

– Guide bench out of mounts (**2**) and remove bench.

– To install, guide locking mechanism heads (**3**) onto mounts (**2**). Make sure heads seat fully.

– Lock bench with locking levers (**4**) in direction of arrow (**A**).

# 87 Heating and Air-conditioning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## GENERAL

This repair group covers interior ventilation and air-conditioning. For additional information, see:

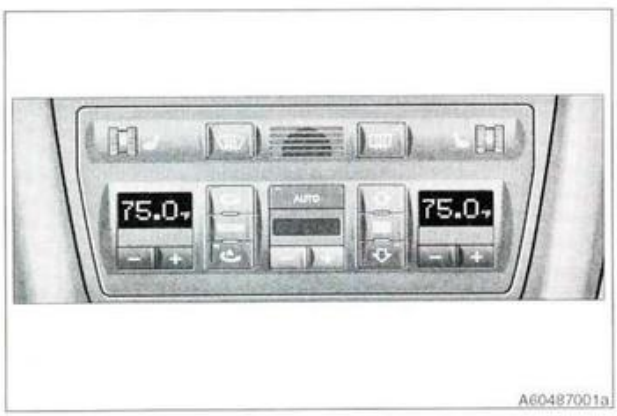
- **03 Maintenance** for engine accessory (A/C compressor) drive belt and dust and pollen filter service
- **19 Cooling System** for cooling system fan replacement
- **EWD Electrical Wiring Diagrams**

Some A/C or heater system repairs procedures require that the A/C refrigerant charge be evacuated. A/C system evacuating and recharging procedures are beyond the scope of this manual.

### Climate control

The climate control system (A/C and heater) automatically regulates the interior temperature. The left and right sides (driver and passenger sides) are controlled separately. Either side may be adjusted manually.

Setting the system at 75°F (23°C) on both sides turns automatic climate regulation ON.



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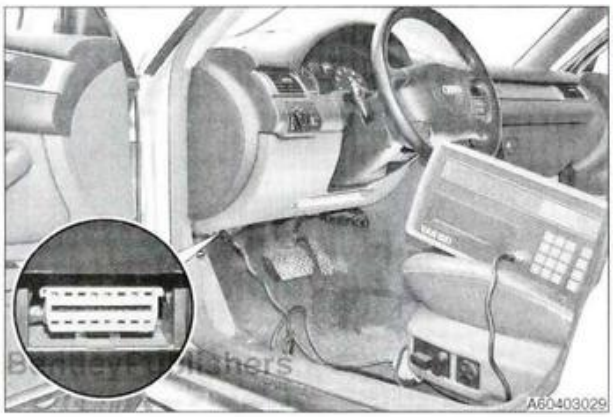
*General*




## Troubleshooting

If the on-board diagnostics (OBD II) system recognizes malfunctions in the climate control system, it sets diagnostic fault codes (DTCs).

Access fault memory with VAG scan tool or equivalent plugged into DLC plug (**inset**) under left side dashboard.

**Table a** provides common symptoms and possible corrective actions to aid in diagnosing simple faults in the A/C system.

**Table a. Air-conditioning troubleshooting**

| Symptom | Probable cause | Corrective action |
|---|---|---|
| Blower does not work. | Blower fuse blown. | Inspect blower fuse. See **Climate control and engine cooling fuses and relays** in this repair group. |
| | Blower resistor (power stage) faulty. | Test blower resistor. Replace if necessary. |
| | Blower motor wiring faulty. | Troubleshoot electrical harness. Repair as necessary. |
| | Blower motor faulty. | Test motor. Replace if necessary. |
| Blower does not operate in lower speeds. | Blower resistor (power stage) faulty. | Test blower resistor. Replace if necessary. |
| | Blower switch faulty. | Replace A/C and heating control panel. |
| Air-conditioning system does not produce cold air or produces low volume. | A/C compressor not engaging. | Check A/C compressor clutch electrical connector. Repair or reconnect as necessary. |
| | Refrigerant charge too low or too high. | Test A/C system pressures. Repair as necessary. |
| | Temperature control flap malfunction. | Test temperature control flap and motor. Repair or replace as necessary. |
| | Evaporator iced up. | Shut A/C off and allow to thaw. |
| | Pressure switch faulty. | Test pressure switch and replace if necessary. |
| Air-conditioned air smells musty. | Mold growing in A/C evaporator vanes. | Apply disinfectant using evaporator cleaning wand. |
| A/C compressor noisy. | Loose A/C compressor or mounting bracket. | Tighten A/C compressor and mounting bracket bolts. |
| | Refrigerant lines contacting each other or other components. | Reposition and realign refrigerant lines. |
| A/C compressor noisy immediately after switching ON or when driving around corners. | A/C system overcharged with refrigerant. | Discharge refrigerant and recharge correctly. |
| Water sprays out of dashboard vents. | Evaporator drain not functioning. | Check evaporator housing drain hose for correct routing. Make sure it is not kinked. |
| | | Check evaporator housing drain valve. |

## Warnings and Cautions

***WARNING*** —

- *Wear hand and eye protection (gloves and goggles) when working around the A/C system. If refrigerant oil comes in contact with your skin or eyes:*
  *-Remove contact lenses, if worn.*
  *-Do not rub skin or eyes.*
  *-Immediately flush skin or eyes with cool water for 15 minutes.*
  *-Rush to a doctor or hospital. Do not induce vomiting.*
- *Work in a well ventilated area. Switch on building exhaust / ventilation system when working on the A/C system.*
- *If you inhale refrigerant oil, breathe fresh air immediately and then seek medical attention.*
- *Do not expose any component of the A/C system to high temperatures (above 80°C / 176°F). Excessive heat could burst the system.*
- *Keep refrigerant away from open flames. Poisonous gas is produced if it burns. Do not smoke near refrigerant gases for the same reason.*
- *The A/C system is filled with refrigerant gas which is under pressure. Pressurized refrigerant in the presence of oxygen may form a combustible mixture. Do not introduce compressed air into any refrigerant container.*
- *Electric welding near refrigerant hoses causes refrigerant to decompose. Discharge system before welding.*
- *Dispose of refrigerant oil as hazardous waste.*

***CAUTION***—

- *US law requires that any person who services a motor vehicle air-conditioner is properly trained and certified, and uses approved refrigerant recycling equipment. Technicians must complete an EPA-approved recycling course to be certified.*
- *It is recommended that all A/C service be left to an authorized Audi dealer or other qualified A/C service facility.*
- *State and local governments may have additional requirements regarding A/C servicing. Always comply with state and local laws.*
- *Leak test and repair any A/C system which is known to lose its charge.*
- *Do not top off a partially charged refrigerant system. Discharge system, evacuate and then recharge system.*
- *Do not use R12 refrigerant, refrigerant oils or system components in R134a system. Component damage and system contamination results.*
- *Refrigerant oil (PAG oil) is extremely hygroscopic (water-absorbent). Do not store in open container.*
- *The mixture of refrigerant oil and refrigerant (R134a) attacks some metals and alloys (for example, copper) and breaks down certain hose materials. Use only hoses and pipes that are identified with a green mark (stripe) or the lettering "R134a".*
- *Immediately plug open connections on A/C components and pipes to prevent dirt and moisture contamination.*

***CAUTION—***

- *Do not steam clean A/C condensers or evaporators. Use only cold water or compressed air.*
- *Do not reuse refrigerant oil.*
- *Do not store refrigerant oil in vicinity of flames, heat sources or strongly oxidizing materials.*
- *In case of fire, use carbon dioxide ($CO_2$) extinguisher or sprayed water jet on A/C components.*
- *After refilling or testing refrigerant lines, replace protective caps. They serve as additional seals.*
- *In winter, run the A/C compressor at least 10 minutes each month to maintain a film of oil on its moving parts and to ensure seal integrity.*
- *If a new compressor is installed or an old compressor is charged with fresh refrigerant, turn over the compressor by hand approx. 10 revolutions. This ensures that the compressor is not damaged when activated.*

## A/C Fluids and Capacities

### Refrigerant

The air-conditioning refrigerant in Audi A6 models is R134a, known chemically as *tetrafluoroethane*. As it contains no chlorine, it is considered harmless to atmospheric ozone if accidentally discharged. Nevertheless, strict regulations govern the handling and disposal of automotive refrigerants. Be sure to read **Warnings and Cautions** in this group if working with A/C and heating components.

Refrigerant capacities for different models are shown in **Table b**.

**Table b. A/C system refrigerant (R134a) capacities**

| Engine, production date | Capacity in grams (oz) |
|---|---|
| **V6 engine** | |
| 11 / 1997 - 08 / 1998 | 850 + 50 (30 + 2) |
| 08 / 1998 - 04 / 1999 | 750 + 50 (26 + 2) |
| All except 3.0 liter, 04 / 1999 on | 650 + 50 (23 + 2) |
| 3.0 liter | 550 + 50 (19 + 2) |
| **V8 engine** | |
| to 03 / 1999 | 550 + 50 (19 + 2) |
| 03 / 1999 - 02 / 2000 | 650 + 50 (23 + 2) |
| 02 / 2000 on | 550 + 50 (19 + 2) |

### Refrigerant oil

A synthetic oil, *polyalkylene glycol* (PAG), is used to lubricate the A/C compressor. This type of oil is highly hygroscopic (attracts water). Be sure to immediately reseal an opened container after use.

VAG recommends a PAG oil with a specific part number for each type of A/C system used.

| PAG oil recommendation | |
|---|---|
| Denso compressor | G 052 300 A2 |
| Sanden compressor | G 052 154 A2 |
| Zexel compressor | G 052 154 A2<br>or G 052 200 A2 |

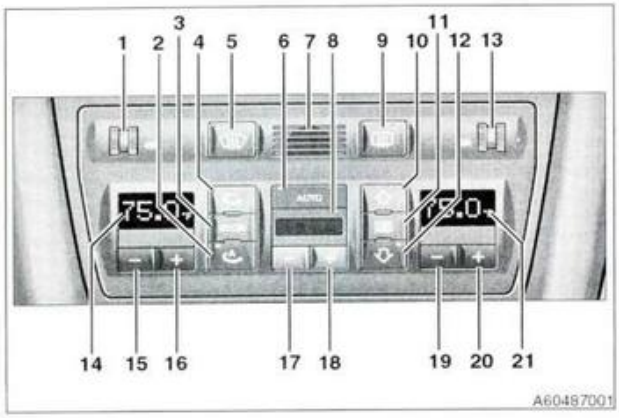
A new A/C compressor is filled at the factory with refrigerant oil. If installing a new compressor, recharge with refrigerant using A/C recharging equipment. Do not reuse oil from old compressor.

Refrigerant oil capacities for different models are shown in **Table c**.

| Table c. A/C system refrigerant oil (PAG) capacities | |
|---|---|
| **Engine, production date** | **Capacity in cc (oz)** |
| **V6 engine** | |
| All except 3.0 liter | 250 + 50 (8.5 + 1.7 oz) |
| 3.0 liter | 220 + 50 (7.4 + 1.7 oz) |
| **V8 engine** | |
| All with timing belt | 250 + 50 (8.5 + 1.7 oz) |
| allroad quattro (engine code BAS) | 220 + 50 (7.4 + 1.7 oz) |

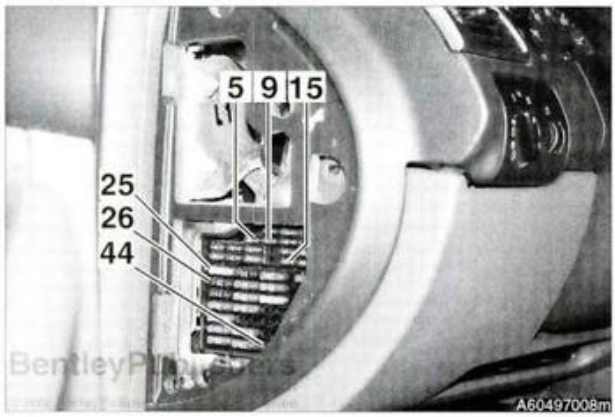
## Climate Control and Engine Cooling Controls

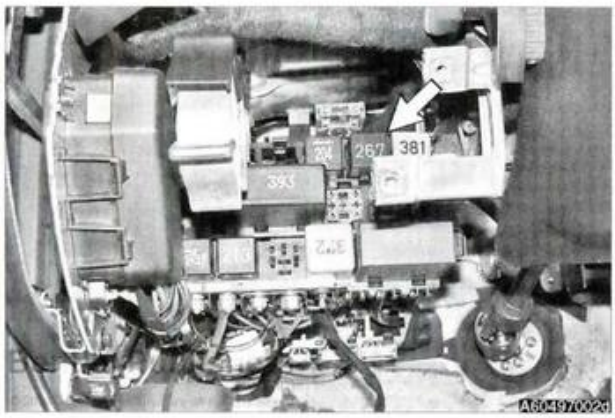
### A/C and heater control panel

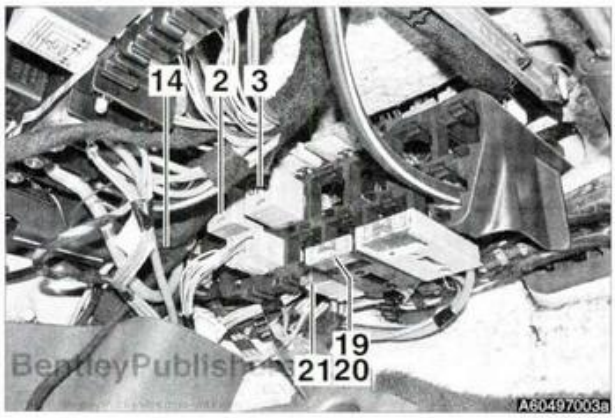


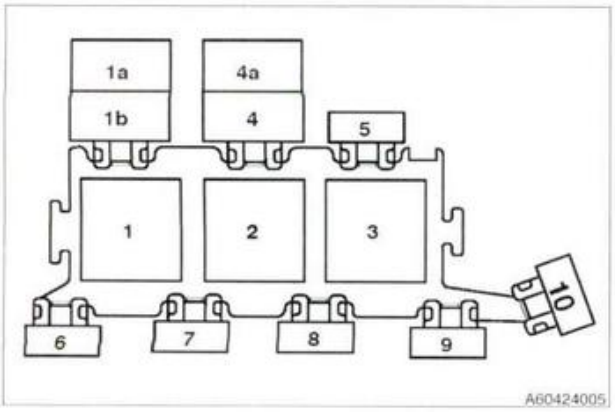

Climate control system automatically regulates interior temperature:

1. Left seat heater control
2. Recirculation OFF
3. A/C compressor OFF
4. Recirculation ON
5. Windshield defroster
6. Automatic setting: 23°C (75°F)
7. Interior air temperature sampling vent
8. Blower fan speed display
9. Rear window defogger
10. A/C and heater air directed to windshield defroster vents
11. A/C and heater air directed to dashboard vents
12. A/C and heater air directed to footwell vents
13. Right seat heater control
14. Left side temperature setting
15. Decrease left side temperature
16. Increase left side temperature
17. Decrease blower fan speed
18. Increase blower fan speed
19. Decrease right side temperature setting
20. Increase right side temperature setting
21. Right side temperature setting




## Climate control and engine cooling fuses and relays

Main fuse panel, left end of dashboard.

| Table d. Climate control and engine cooling fuses | | |
|---|---|---|
| **Function** | **Fuse #** | **Amperage** |
| Climate control | 5 | 10 |
| Outside mirror heating | 9 | 10 |
| Climate control | 15 | 10 |
| Blower | 25 | 30 |
| Rear window defogger | 26 | 30 |
| Seat heater | 44 | 30 |

13-fold relay panel, underneath left side dashboard, trim panel removed.

- A/C clutch relay (J44) (**arrow**)

See **97 Fuses, Relays, Component Locations** for access information.

8-fold relay panel, underneath left dashboard, trim panel removed.

- **2**: Engine cooling fan relay, high speed (J101)
- **3**: Engine cooling fan relay (J26)
- **14**: Engine cooling fan fuse, 60A (S26), 2002 - 2004 allroad quattro
- **19** and **20**: Engine cooling fan fuse, 40A (S42)
- **21**: Engine cooling fan control module fuse, 5A (S142)

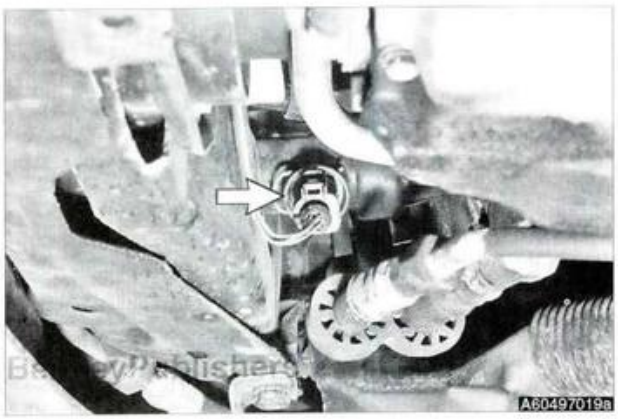
See **97 Fuses, Relays, Component Locations** for access information.

3-fold relay panel in E-box, under plenum chamber cover.

- **1b**: After-run coolant pump relay (J151)

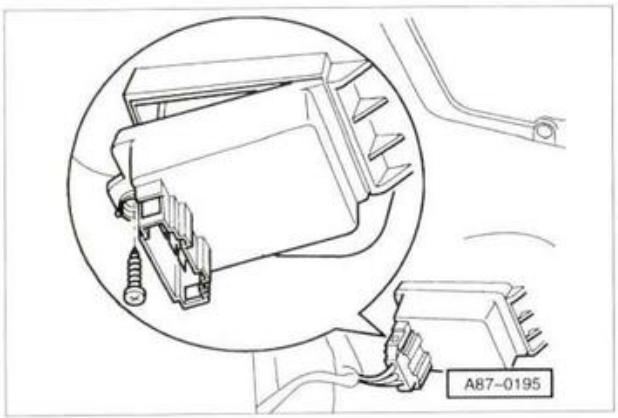
See **97 Fuses, Relays, Component Locations** for access information.

## Engine cooling fan and blower controls




Engine cooling fan switch (**arrow**) at radiator outlet pipe, right lower radiator.

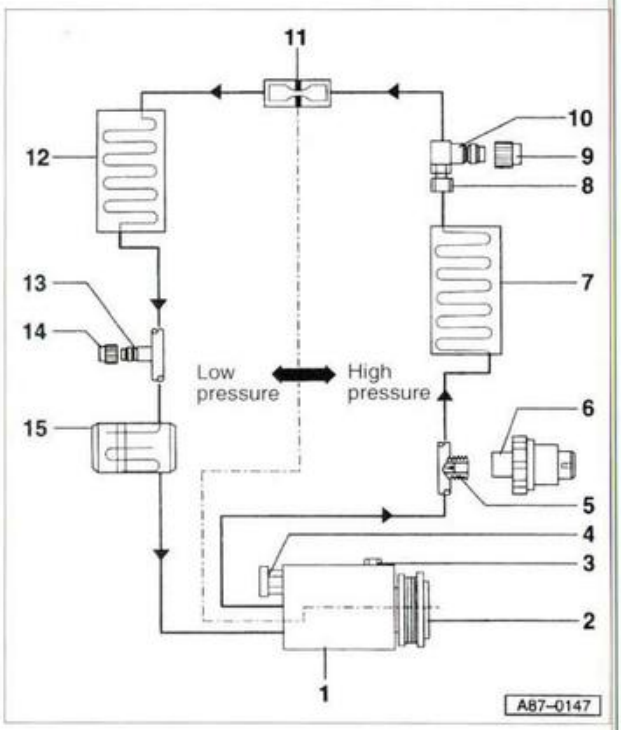
Engine cooling fan series resistor (N39) (**arrow**), underneath left front of engine.

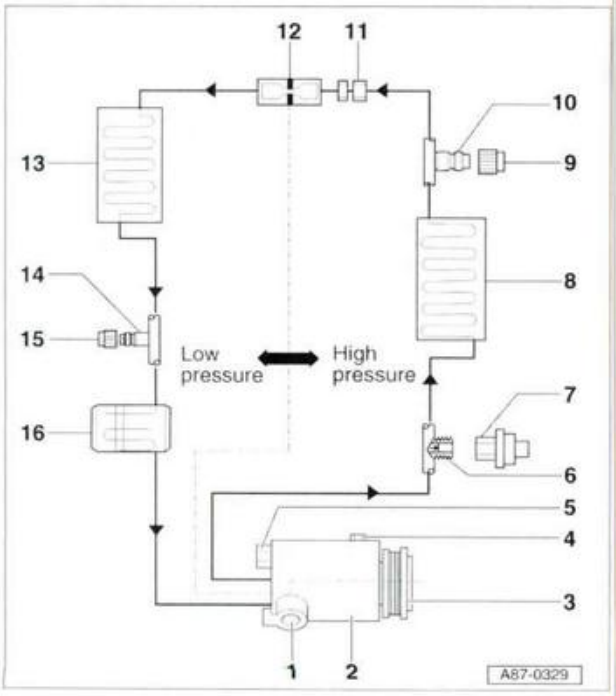



Blower motor control module (J126) (**inset**), behind glove compartment on evaporator housing, left of blower motor.

***NOTE —***

- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*




## Climate Control Operation

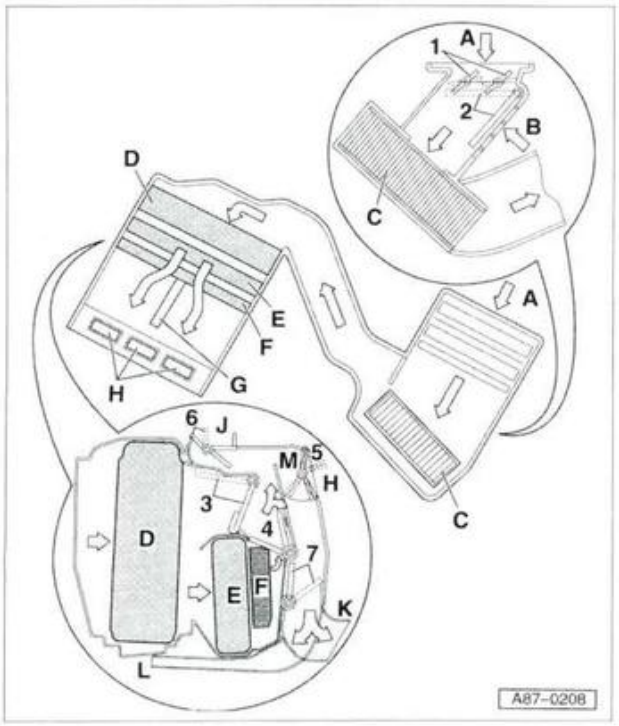
### A/C system schematics

A/C refrigerant circuit, compressor with clutch:

1. A/C compressor
2. Compressor clutch (N25)
3. Refrigerant oil drain plug, 30 Nm (22 ft-lb)
4. High pressure relief valve, 10 Nm (7 ft-lb)
5. Threaded junction
6. A/C pressure switch (F129)
   High pressure sensor (G65)
7. A/C condenser
8. Connector, 15 Nm (11 ft-lb)
9. Sealing cap
10. High pressure service port
11. Restrictor
12. A/C evaporator
13. Low pressure service port
14. Sealing cap
15. Receiver-dryer (accumulator)

A/C refrigerant circuit, compressor with regulator valve:

1. Compressor regulator valve (N280)
2. A/C compressor
3. Belt pulley
4. Refrigerant oil drain plug, 30 Nm (22 ft-lb)
5. High pressure relief valve, 10 Nm (7 ft-lb)
6. Threaded junction
7. High pressure sensor (G65)
8. A/C condenser
9. Sealing cap
10. High pressure service port
11. Connector
12. Restrictor
13. A/C evaporator
14. Low pressure service port
15. Sealing cap
16. Receiver-dryer (accumulator)




## Air distribution

Evaporator housing components and airflow:

- **A.** Dust and pollen filter element in plenum chamber
- **B.** Right front footwell
- **C.** Blower (V2)
- **D.** A/C evaporator
- **E.** Heater core
- **F.** Auxiliary heater element (Z35) (not for US market)
- **G.** Left / right side divider
- **H.** to Dashboard vents
- **I.** - - -
- **J.** to Windshield vents
- **K.** to Rear footwell vents
- **L.** to Footwell vents
- **M.** Wire mesh
- **1.** Air flow flaps
- **2.** Fresh air / recirculated air flap
- **3.** Temperature flap 1
- **4.** Temperature flap 2
- **5.** Center vent flap
- **6.** Defroster flap
- **7.** Footwell flap

## Climate Control Components

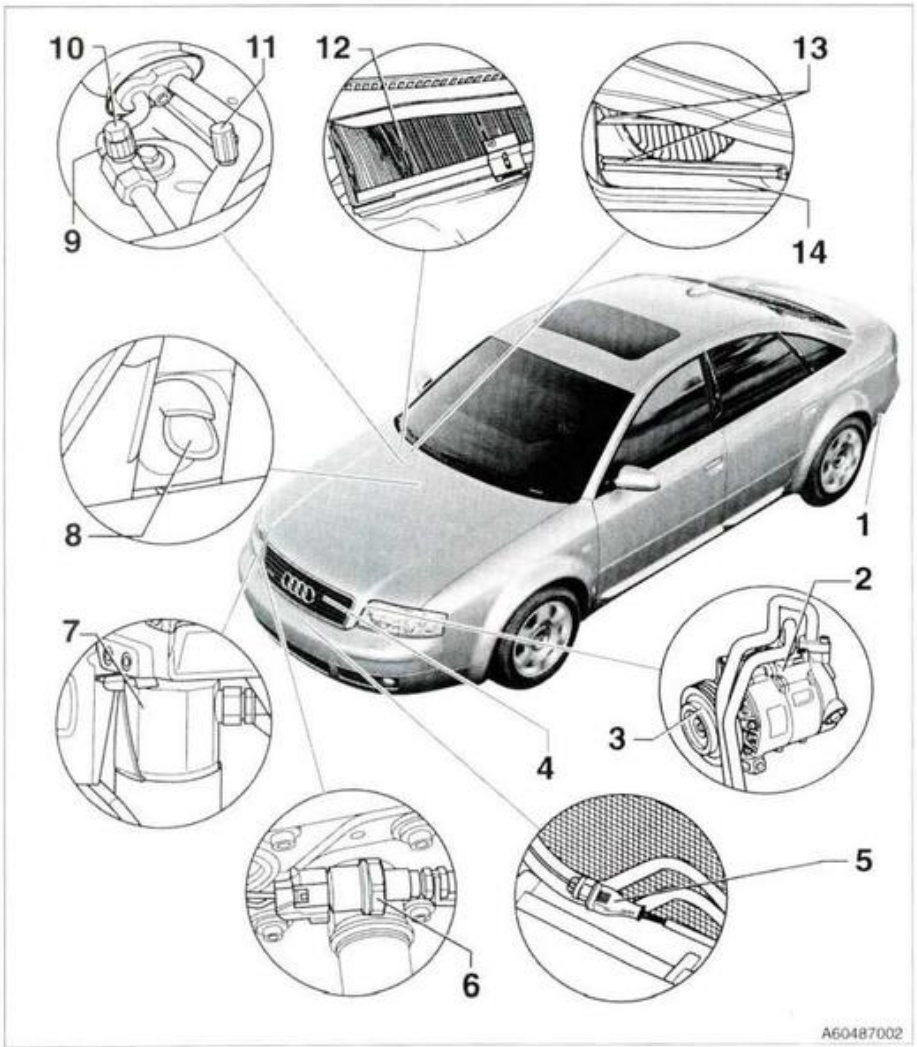
A/C and heating component locations are described in **Table e** and shown in illustrations.

**Table e. A/C and heater component locations**

| Component | Code | Location |
|---|---|---|
| A/C and heater control module | J255<br>J301 | A/C and heater control panel in center dashboard |
| A/C compressor | | Left front engine compartment |
| A/C compressor clutch | N25 | On A/C compressor, left front engine compartment |
| A/C compressor regulator valve | N280 | On A/C compressor, left front engine compartment |
| A/C high pressure sensor | G65 | Right front engine compartment (2002 - 2004) |
| A/C pressure switch | F129 | Right side of A/C condenser (1998 - 2001) |
| Air flow (back pressure) flap motor | V71 | Near blower motor fresh air intake |
| Air flow flap motor position sensor | G113 | Part of air flow (back pressure) flap motor |
| Blower control module | J126 | In heating and A/C duct between evaporator housing and blower motor |
| Blower motor | V2 | In evaporator housing behind glove box |
| Blower motor control module | J126 | Under right side dashboard, to left of blower motor |
| Blower motor resistor | N24 | Under right side of dashboard, on blower motor |
| Center air flow flap motor | V70 | Right side of evaporator housing, lowest position |
| Center air flow flap motor sensor | G112 | Part of center air flow flap motor |

*Climate Control Components*

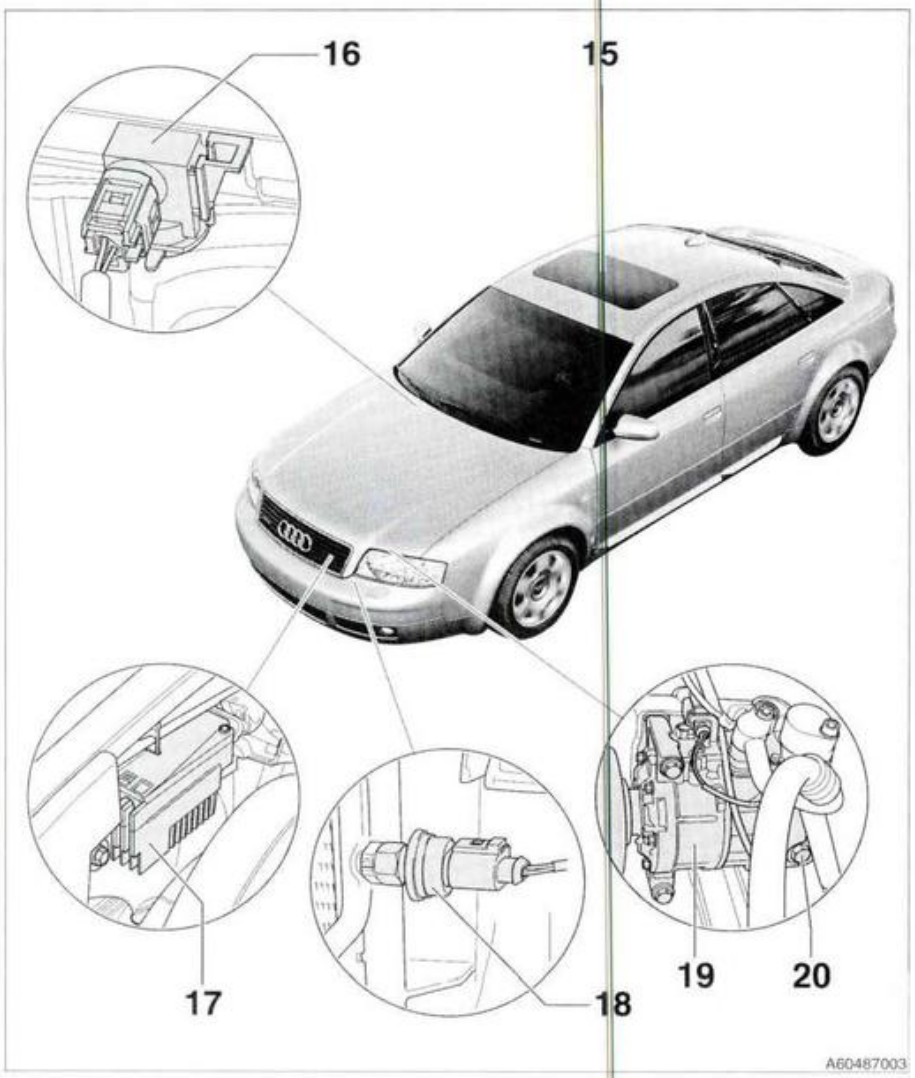
| Table e. A/C and heater component locations | | |
|---|---|---|
| **Component** | **Code** | **Location** |
| Compressor clutch relay | J44 | 13-fold relay panel underneath left side dashboard |
| Defroster flap motor | V107 | Right side of evaporator housing, topmost position |
| Defroster flap motor sensor | G135 | Part of defroster flap motor |
| Evaporator temperature sensor | G263 | Center of A/C and heater housing, under right side of dashboard |
| Footwell temperature sensor | G192 | A/C and heater housing, under right side of dashboard |
| Fresh air intake duct temperature sensor | G89 | Behind instrument panel, above blower motor housing, near fresh air intake duct |
| Interior temperature sensor | G56 | On A/C and heater control panel |
| Interior temperature sensor fan | V42 | On A/C and heater control panel |
| Left footwell vent temperature sensor | G192 | Left side of A/C and heater housing, under center of dashboard |
| Left temperature regulator flap motor | V158 | Left side of evaporator housing, above heater core |
| Left temperature regulator sensor | G220 | Part of left temperature regulator flap motor |
| Left vent temperature sensor | G150 | In ducting behind dashboard vents |
| Recirculation flap motor | V113 | In plenum chamber, rear of engine compartment (2002 - 2004) |
| Right temperature regulator flap motor | V159 | Right side of evaporator housing, center position |
| Right temperature regulator sensor | G221 | Part of right temperature regulator flap motor |
| Right vent temperature sensor | G151 | In ducting behind dashboard vents |




## Climate control components in engine compartment

1. **Air extraction vents**
   - Under left and right rear bumper
   - Free air movement through vents necessary for vehicle ventilation
2. **A/C compressor with clutch**
   - Left front of engine
3. **Compressor clutch (N25)**
   - Front of A/C compressor
4. **A/C condenser**
   - In front of radiator
5. **Outside air temperature sensor (G17)**
   - Behind front bumper
6. **A/C pressure switch (F129)**
   - 1998 - 2001
7. **Receiver - dryer (accumulator)**
   - Under right headlight
8. **Evaporator housing drain valve**
   - Underneath vehicle
9. **Restrictor**
   - In refrigerant line
10. **Service connection, high pressure side**
    - Reinstall cap after repairs
11. **Service connection, low pressure side**
    - Reinstall cap after repairs
12. **Dust and pollen filter**
    - See **03 Maintenance** for replacement procedure
13. **Air flow flap motor (V71)**
    - Includes back pressure flap motor position sensor (G113)
14. **Recirculation flap motor (V11)**

*Climate Control Components*




## Climate control components in engine compartment *(continued)*

**15. Sunroof with solar sensors**

**16. Air quality sensor (G238)**

- In dust and pollen filter housing

**17. Engine cooling fan control module (J293)**

- V6 3.0 liter engine
- In front of engine at cooling fan

**18. A/C high pressure sensor (G65)**

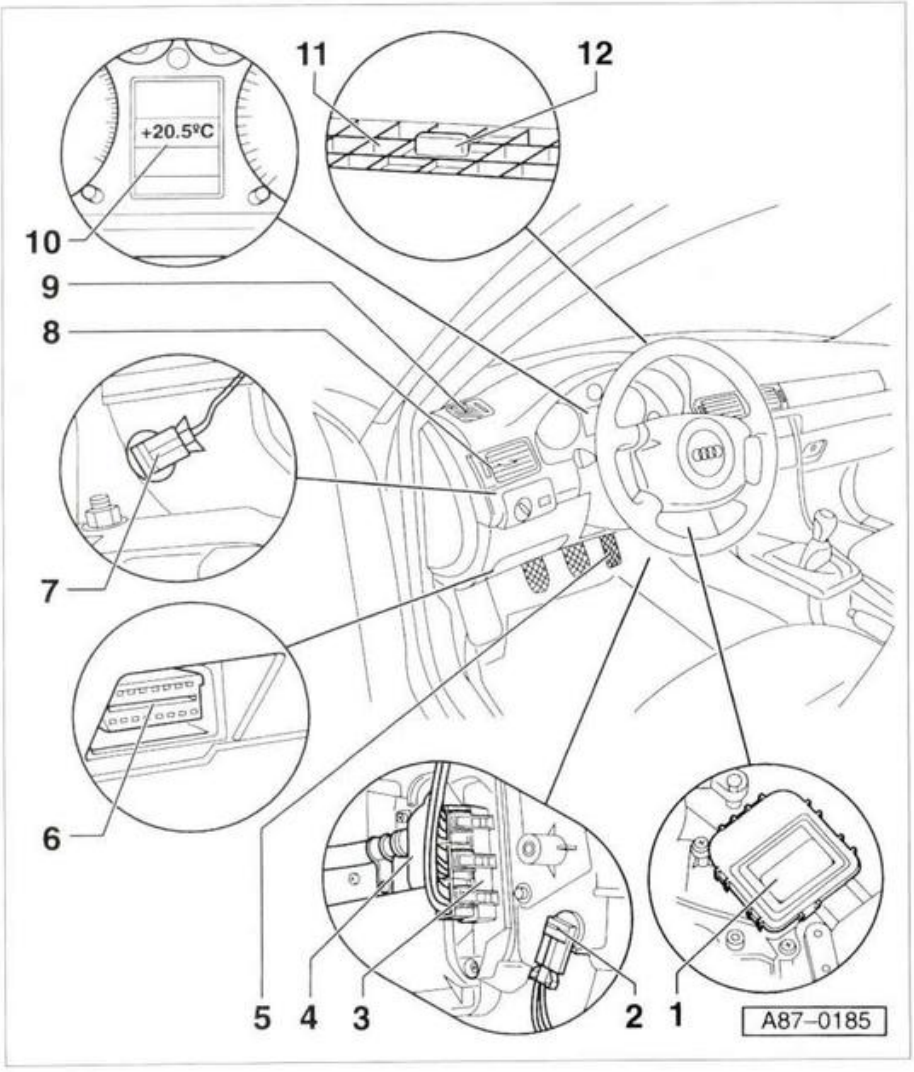
- 2002 - 2004

**19. A/C compressor with regulator valve**

- Left front of engine

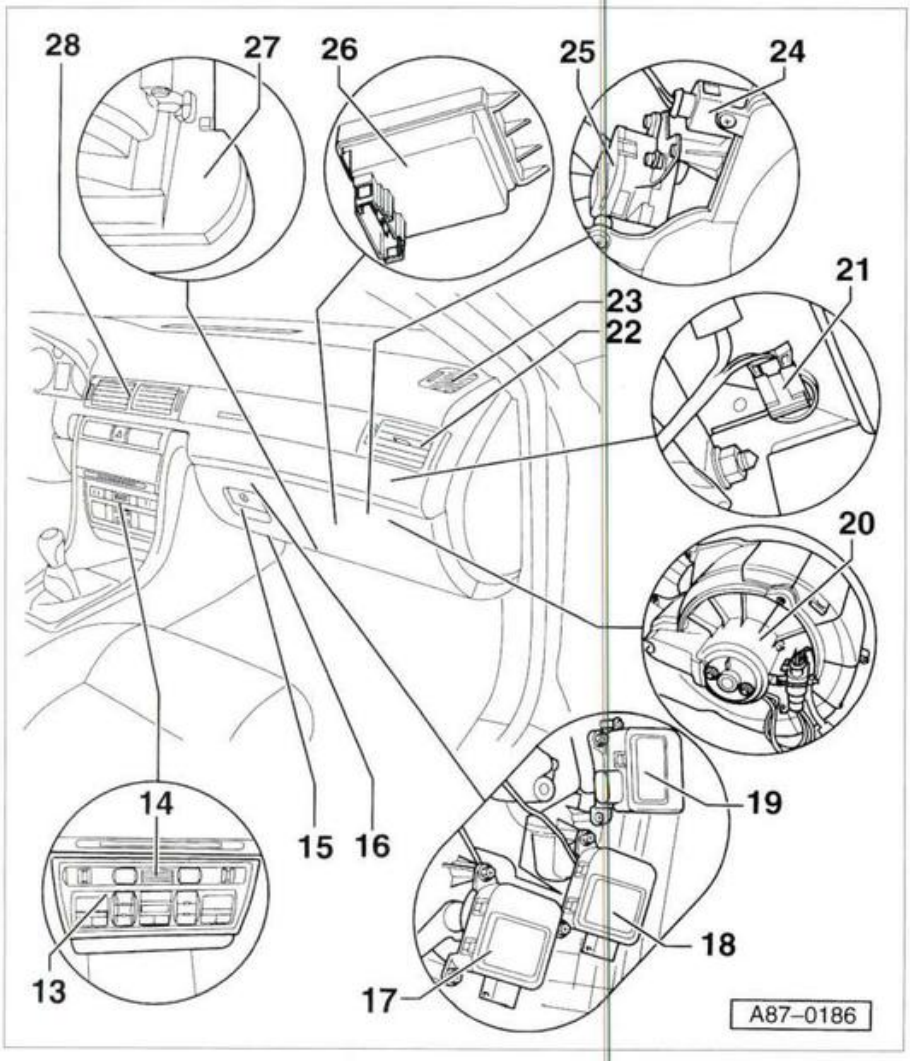
**20. A/C compressor regulator valve (N280)**

- Side of A/C compressor



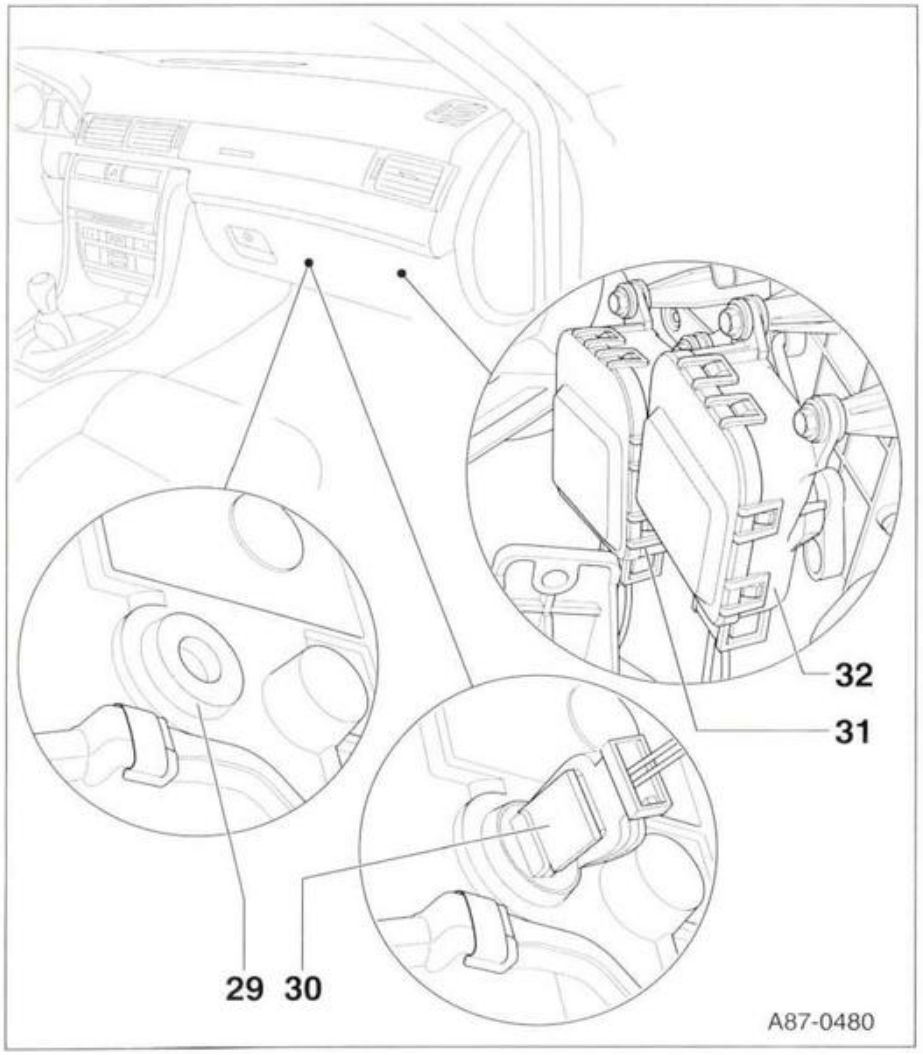

## Climate control components in dashboard

1. **Left temperature flap motor (V158)**
   - With temperature sensor (G220)
2. **Footwell temperature sensor (G192)**
3. **Auxiliary heater (Z35) (not for US market)**
4. **Heater core**
5. **A/C shut-off switch**
   - Controlled by ECM
6. **Data link connector (DLC)**
7. **Left vent temperature sensor (G150)**
8. **Left dashboard vent**
9. **Left side window defroster vent**
10. **Outside air temperature display (G106)**
11. **Windshield defroster vent**
12. **Sunlight photo sensor (G107)**




## Climate control components in dashboard *(continued)*

13. **A/C control panel (E87)**
14. **Interior temperature sensor (G56) and sensor fan (V42)**
15. **Evaporator housing (A/C and heating unit)**
16. **Footwell vent**
17. **Center vent flap motor (V70)**
    - With temperature sensor (G112)
18. **Right temperature flap motor (V159)**
    - With temperature sensor (G221)
19. **Defroster flap motor (V107)**
    - With temperature sensor (G135)
20. **Blower (V2)**
21. **Right vent temperature sensor (G151)**
22. **Right dashboard vent**
23. **Right side window defroster vent**
24. **Air intake duct temperature sensor (G89)**
25. **Air flow flap motor (V71)**
    - With back pressure flap motor position sensor (G113) or recirculation flap motor position sensor (G143)
    - Up to 2001
26. **Blower control module (J126)**
27. **Evaporator housing drain**
28. **Center dashboard vent**




## Climate control components in dashboard

**29. Sealing plug**

- From 2002

**30. Evaporator vent temperature sensor (G263)**

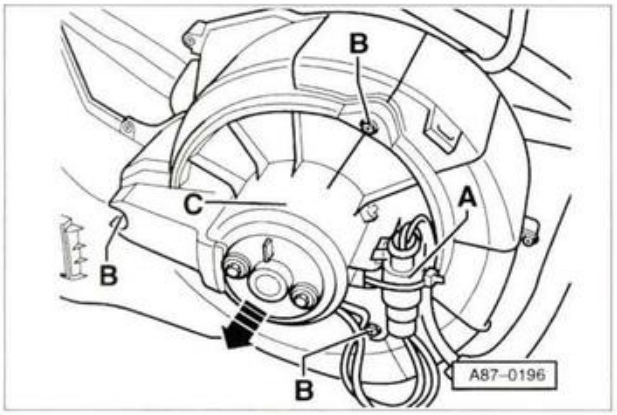
- From 2002

**31. Recirculation flap motor (V113)**

- From 2002

**32. Air flow flap motor (V71)**

- With back pressure flap motor position sensor (G113)
- From 2002




## Climate Control Repairs

### Blower, removing and installing

– Remove glove compartment. See **70 Interior Trim**.

➤ Working under right side dashboard:
- Separate harness connector (**A**).
- Remove blower mounting screws (**B**).
- Pull blower (**C**) out of evaporator housing in direction of **arrow**.

– Prior to installing new blower, carefully compare length of blower wheel blades. Two versions are used, with one approx. 10 mm (⅓ in) shorter.

– Installation is reverse of removal.

### A/C compressor with clutch, removing and installing

– Following manufacturer's instructions, connect an approved refrigerant recovery / recycling / recharging unit to A/C system and discharge system.

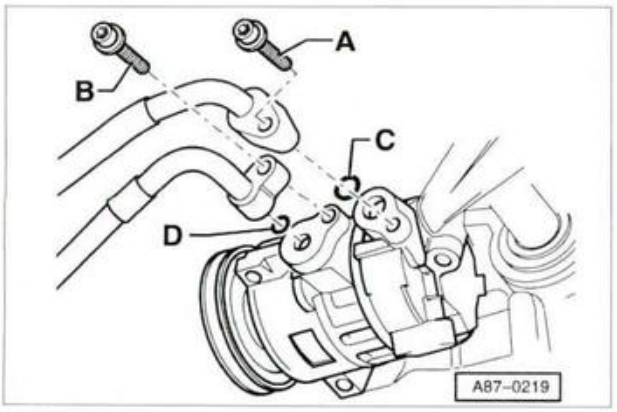
> ***WARNING —***
> - *Do not attempt to discharge or charge the A/C system without proper equipment and training. Damage to the vehicle and personal injury may result.*

– Raise car and support safely.

> ***WARNING —***
> - *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove engine lower cover. See **03 Maintenance**.

– Remove engine accessory belt. See **03 Maintenance**. Mark belt with direction of rotation if it is to be reused.




➤ Detach refrigerant lines from compressor: Remove bolts **A** and **B**.

> ***CAUTION—***
> - *Immediately seal off open refrigerant lines and ports.*

– Unbolt compressor from bracket.

– Installation is reverse of removal. Be sure to replace O-ring seals **C** and **D**.

| **Tightening torque** | |
|---|---|
| Compressor to engine bracket | 25 Nm (18 ft-lb) |
| Refrigerant line to compressor | 25 Nm (18 ft-lb) |

– Prior to starting engine, rotate compressor manually approx. 10 revolutions to lubricate internal components.

– Start engine with climate control OFF. Wait until idle is stable. Then switch A/C ON and allow to run at least 10 minutes at idle.

– Recheck accessory belt alignment.

## A/C compressor with regulator valve, removing and installing

– Following manufacturer's instructions, connect an approved refrigerant recovery / recycling / recharging unit to A/C system and discharge system.

> ***WARNING*** —
> • *Do not attempt to discharge or charge the A/C system without proper equipment and training. Damage to the vehicle and personal injury may result.*

– Place lock carrier (radiator support frame) in service position. See **50 Body–Front**.

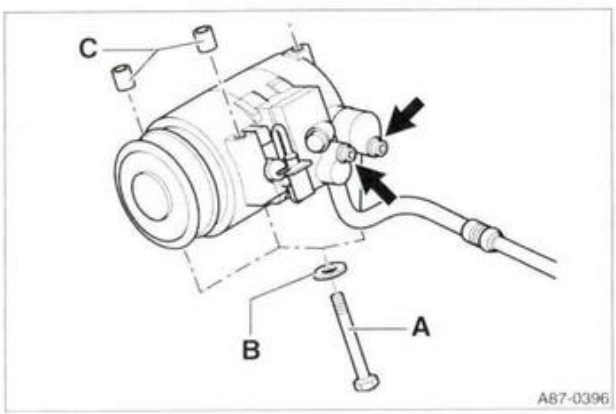
– Remove oil filter.

– Raise car and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove engine lower cover. See **03 Maintenance**.

– Remove engine accessory belt. See **03 Maintenance**. Mark belt with direction of rotation if it is to be reused.




➤ Working at side of compressor, remove regulator valve mounting bolts (**arrows**) from compressor. Tie regulator valve safely to side.

> ***CAUTION*** —
> • *Immediately seal off open refrigerant lines and ports.*

– Unbolt compressor from engine bracket.

– Installation is reverse of removal.
  • Install one washer (**B**) on each bolt (**A**).
  • Check that bushings (**C**) are seated correctly.

| **Tightening torque** | |
|---|---|
| Compressor to engine bracket | 25 Nm (18 ft-lb) |
| Regulator valve to compressor | 25 Nm (18 ft-lb) |

– Check refrigerant lines for correct placement.

– Prior to starting engine, rotate compressor manually approx. 10 revolutions to lubricate internal components.

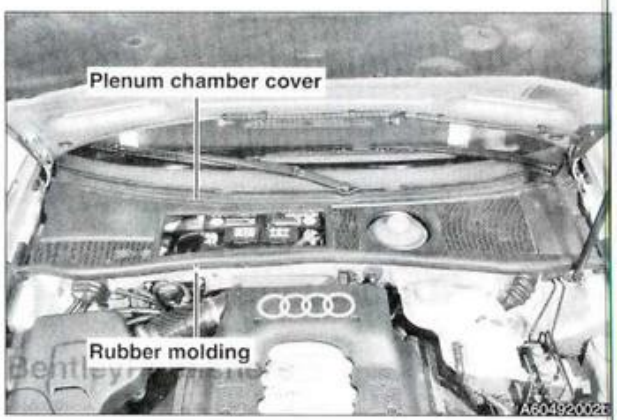
– Start engine with climate control OFF. Wait until idle is stable. Then switch A/C ON and allow to run at least 10 minutes at idle.

– Recheck accessory belt alignment.

## Heater core, removing and installing

***CAUTION—***
- *To avoid personal injury, be sure the engine is cold before opening the cooling system.*

– Vehicle with power seats: Move seats all the way back.

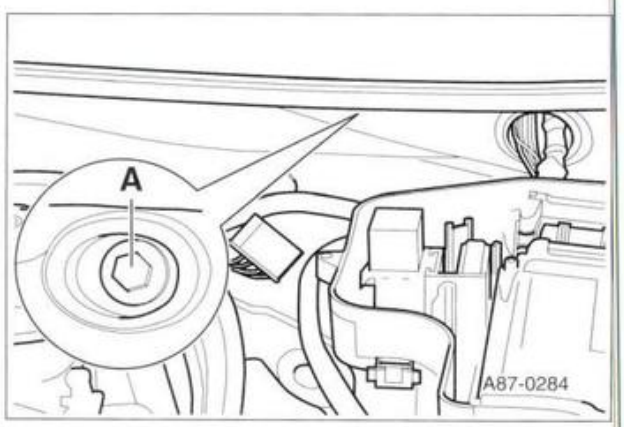



➤ Open engine hood and pull off rubber molding at engine compartment rear bulkhead. Pull plenum chamber cover forward and remove.

– Disconnect battery cables and remove battery. See **27 Battery, Alternator, Starter**.

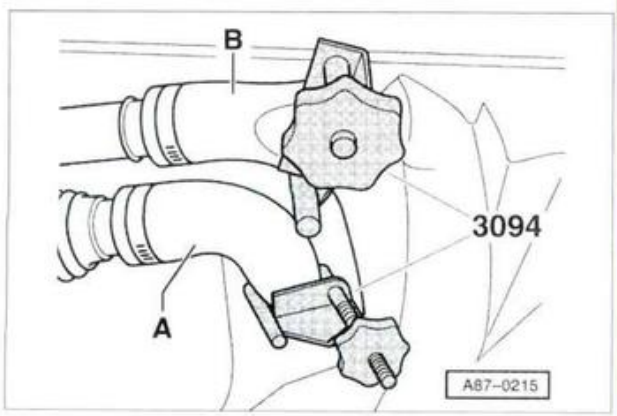
***CAUTION—***
- *Be sure to have the radio anti-theft code before disconnecting the battery.*

– 1998 model: Remove complete windshield wiper assembly. See **92 Wiper and Washers**.



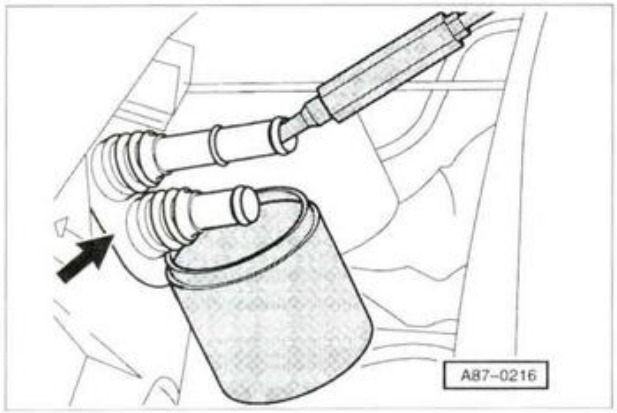

➤ Working in plenum chamber:
- Remove insulating grommet.
- Loosen screw (**A**) approx. 10 mm (⅜ in) or remove.

– Loosen coolant reservoir cap to release cooling system pressure.



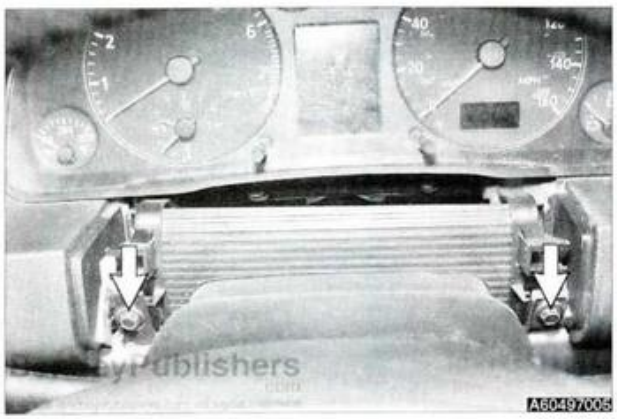

➤ Use coolant hose pinch-off clamps (special tool VAG 3094 or equivalent) to clamp off heater core hoses (**A** and **B**). Disconnect both hoses.

***NOTE—***
- *Mark the hoses so that they can be reattached correctly:*
  *Hose **A**: Coolant supply from cylinder head*
  *Hose **B**: Coolant return to coolant pump*



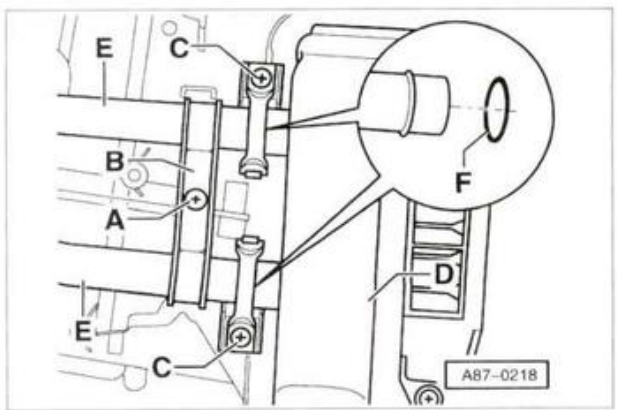

Place container under heater core connection and use compressed air to blow out coolant.

- Remove rubber grommet (**arrow**).




Working in passenger compartment, tilt steering column down and pull off trim under instrument cluster. Remove steering column trim panel fasteners (**arrows**).

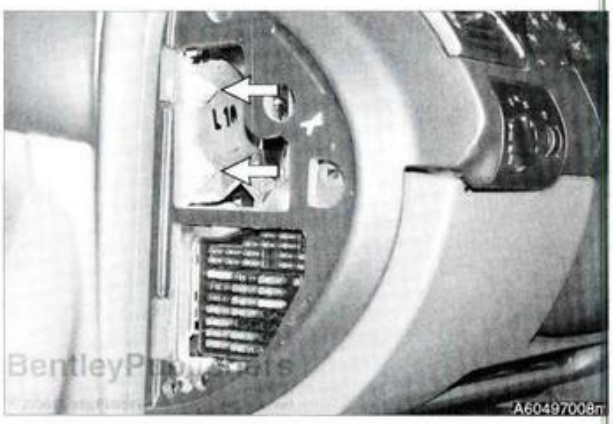
Remove lower trim fasteners (**arrows**) and pull down trim panels under steering column to gain access to left side of evaporator housing.




Working at left side of evaporator housing underneath dashboard:

- Unscrew screw (**A**) and remove bracket (**B**).
- Loosen clamps (**C**).
- Pull heater core (**D**) out of evaporator housing slightly.
- Pull coolant lines (**E**) off heater core.
- Remove heater core.

***CAUTION—***
*• Be prepared to catch dripping coolant.*




➤ If brake pedal mounting bracket interfered with heater core removal:

- Remove dashboard end covers on left and right.
- Loosen dashboard cross brace mounting fasteners (**arrows**) on left and right. This allows dashboard and pedals to be moved sufficiently out of the way for heater core removal.

> ***CAUTION—***
> - *The pedal assembly in 1998 models may interfere severely with heater core removal. In that case, the entire dashboard may need to be removed.*

– Installation is reverse of removal. Bear in mind:

- Replace heater core hose clamps and sealing O-rings.
- Install hose clamps so that they do not contact and rattle against evaporator housing.
- Fill and bleed cooling system. See **19 Cooling System**. Check system for leaks.

# 9 Electrical System–General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Warnings and Cautions ..... 9-1
BUS SYSTEMS ..... 9-2
ELECTRICAL TROUBLESHOOTING ..... 9-3
Voltage and voltage drop ..... 9-4
Continuity, checking ..... 9-5
Short circuits ..... 9-5


## GENERAL

This repair group presents a brief description of the principal parts of the electrical system, including the bus systems. Also covered here are basic electrical system troubleshooting tips.

Audi A6 models are equipped with a 12-volt, direct current (DC), negative-ground electrical system. The voltage regulator maintains the voltage in the system at approximately 12 volts. All circuits are grounded by direct or indirect connection to the negative (-) terminal of the battery.

All electrical circuits except those required for starting and operating the engine are protected by fuses. For a full listing of fuses and fuse locations, see **97 Fuses, Relays, Component Locations**.

Also see:

- **27 Battery, Alternator, Starter**
- **57 Doors and Locks**
- **64 Door Windows**
- **96 Interior Lights, Switches, Anti-theft**
- **EWD Electrical Wiring Diagrams**

### Warnings and Cautions

Please read the following before doing any work on your electrical system.

***WARNING —***

- *Airbags and pyrotechnic seat belt tensioners utilize explosive devices. Handle with extreme care. Refer to the warnings and cautions in* **69 Seat Belts, Airbags**.
- *The ignition system of the car operates at lethal voltages. If you have a weak heart or wear a pacemaker, do not expose yourself to ignition system electric currents. Take extra precautions when working on the ignition system or when servicing the engine while it is running or the key is ON. See* **28 Ignition System** *for additional ignition system warnings and cautions.*
- *Keep hands, clothing and other objects clear of the electric radiator cooling fan when working on a warm engine. The fan may start at any time, even when the ignition is switched OFF.*

***CAUTION—***

- *Do not disconnect the battery with the engine running.*
- *Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components. Connect and disconnect electrical connectors and ignition test equipment leads only while the ignition is switched OFF.*
- *Relay and fuse positions are subject to change and may vary from car to car. If questions arise, an authorized Audi dealer is the best source for the most accurate and up-to-date information.*
- *Use a digital multimeter for electrical tests. Switch the multimeter to the appropriate function and range before making test connections.*
- *Many control modules are static sensitive. Static discharge damages them permanently. Handle the modules using proper static prevention equipment and techniques.*
- *To avoid damaging harness connectors or relay panel sockets, use jumper wires with flat-blade connectors that are the same size as the connector or relay terminals.*
- *Do not try to start the engine of a car which has been heated above 176°F (80°C) (for example, in a paint drying booth). Allow it to cool to normal temperature.*
- *Disconnect the battery before doing any electric welding on the car. Do not wash the engine while it is running, or any time the ignition is ON.*
- *Choose test equipment carefully. Use a digital multimeter with at least 10 MΩ input impedance or an LED test light. An analog meter (swing-needle) or a test light with a normal incandescent bulb may draw enough current to damage sensitive electronic components.*
- *Do not use an ohmmeter to measure resistance on solid state components such as control modules.*
- *Disconnect the battery before making resistance (ohm) measurements on a circuit.*

## Bus Systems

Audi A6 vehicles are electrically complex. Many vehicle systems and subsystems are interconnected or integrated. In addition, the requirements of second generation on-board diagnostics (OBD II) are such that there are many more circuits and wires in the vehicle than ever before. The components must exchange large volumes of data with one another in order to perform their various functions.

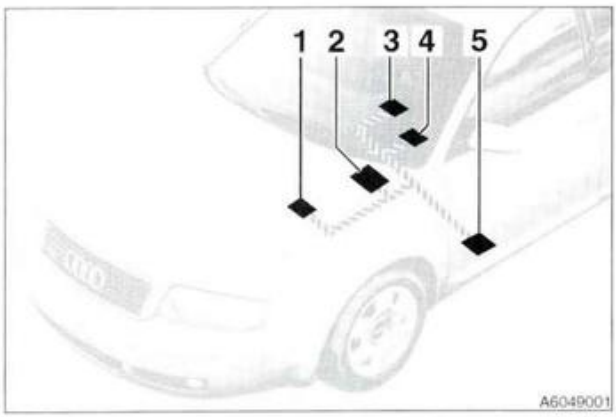
To handle this complexity effectively, the A6 makes extensive use of control module networking using controller area network (CAN) bus systems. Signals are shared digitally among several control modules on a CAN-bus, eliminating the need for separate connections for each pair of control modules. The use of bus communication for controls and accessories reduces wiring complexity and improves system response time.

The CAN-bus consists of a pair of wires twisted together to ensure reliable communication among modules without conflicts or interference. The two wires are referred to as CAN-high and CAN-low.

Data transfer over a the CAN-bus is similar to a telephone conference. A control module on the bus transmits a stream of data which other modules receive at the same time. Each control module then decides to use or ignore this data.

The benefits of the bus method of data transfer are as follows:

- As data and programs are modified and extended, only software modifications are necessary.
- Continuous verification of transmitted data leads to low error rate.
- Sensors and signal wires can be simplified or eliminated due to the transmittal of multiplexed digital data.
- Control modules transfer data at a high rate.
- Control module sizes and connector sizes are smaller.
- CAN-bus conforms to international standards. This facilitates data interchange between control modules of different manufacture.




As of 2000, the A6 CAN-bus systems consisted of the following:

- Drivetrain CAN-bus: 500k baud transfer rate
- Convenience CAN-bus: 100k baud transfer rate
- Infotainment CAN-bus: 100k baud transfer rate

Drivetrain CAN-bus

1. ABS / ESP control module (J104)
2. Engine control module (ECM) (J271)
3. Instrument cluster control module (J285)
4. Steering angle sensor (G85)
5. Automatic transmission control module (J217)

## Electrical Troubleshooting

Four things are required for current to flow in any electrical circuit:

- Voltage source
- Wires or connections to transport voltage
- Load or device that uses electricity
- Connection to ground

Most problems can be found using a digital multimeter (volt / ohm / ammeter) to check the following:

- Voltage supply
- Breaks in the wiring (infinite resistance / no continuity)
- A path to ground that completes the circuit

Electric current is logical in its flow, always moving from the voltage source toward ground. Electrical faults can usually be located through a process of elimination. When troubleshooting a complex circuit, separate the circuit into smaller parts. General tests outlined below may be helpful in finding electrical problems. The information is most helpful when used with wiring diagrams.

Be sure to analyze the problem. Use wiring diagrams to determine the most likely cause. Get an understanding of how the circuit works by following the circuit from ground back to the power source.

When making test connections at connectors and components, use care to avoid spreading or damaging the connectors or terminals.

Some tests may require jumper wires to bypass components or connections in the wiring harness. When connecting jumper wires, use blade connectors at the wire ends that match the size of the terminal being tested. The small internal contacts are easily spread apart, and this can cause intermittent or faulty connections that can lead to more problems.

## Voltage and voltage drop

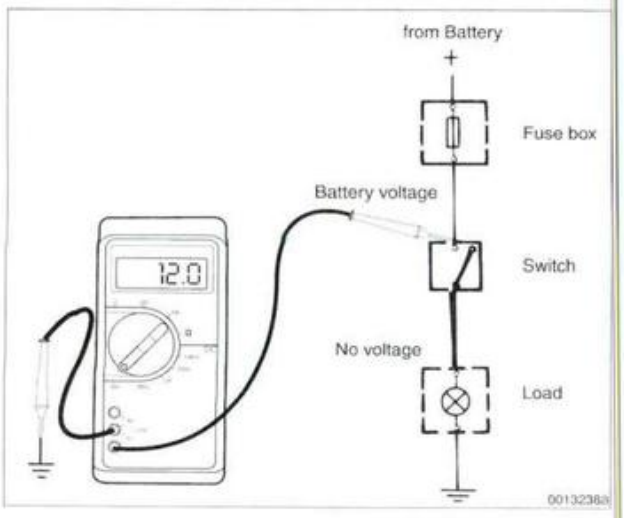
Wires, connectors, and switches that carry current are designed with very low resistance so that current flows with a minimum loss of voltage. A voltage drop is caused by higher than normal resistance in a circuit. This additional resistance actually decreases or stops the flow of current. Excessive voltage drop can be noticed by problems ranging from dim headlights to sluggish wipers. Some common sources of voltage drops are corroded or dirty switches, dirty or corroded connections or contacts, and loose or corroded ground wires and ground connections.

A voltage drop test is a good test to perform if current is flowing through the circuit but the circuit is not operating correctly. A voltage drop test helps pinpoint a corroded ground strap or a faulty switch. Normally, there should be less than 1 volt drop across most wires or closed switches. A voltage drop across a connector or short cable should not exceed 0.5 volt.

A voltage drop test is generally more accurate than a simple resistance check because the resistances involved are often too small to measure with most ohmmeters. For example, a resistance as small as 0.02 Ω would results in a 3 volt drop in a typical 150 amp starter circuit. (150 amps x 0.02 Ω = 3 volts).

Keep in mind that voltage with ignition key ON and voltage with engine running are not the same. With ignition ON and engine OFF (battery voltage), voltage should be approximately 12.6 volts. With engine running (charging voltage), voltage should be approximately 14.0 volts. Measure voltage at battery with ignition ON and then with engine running to get exact measurements.

## Voltage, measuring



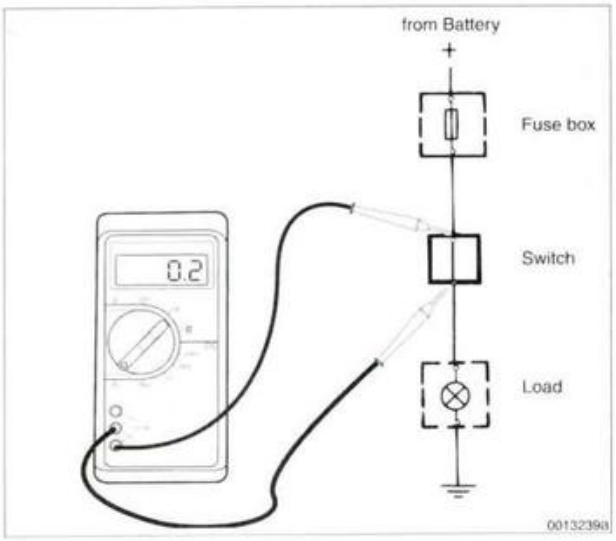

➤ Connect digital multimeter negative lead to a reliable ground point on car.

***NOTE***—

- *The negative (-) battery terminal is always a good ground point.*

– Connect digital multimeter positive lead to point in circuit you wish to measure.

– Voltage reading should not deviate more than 1 volt from voltage at battery. If voltage drop is more than this, check for a corroded connector or loose ground wire.




## Voltage drop, testing

Check voltage drop only when there is a load on the circuit, such as when operating the starter motor or turning on the headlights. Use a digital multimeter to ensure accurate readings.

➤ Connect digital multimeter positive lead to positive (+) battery terminal or a positive power supply close to battery source.

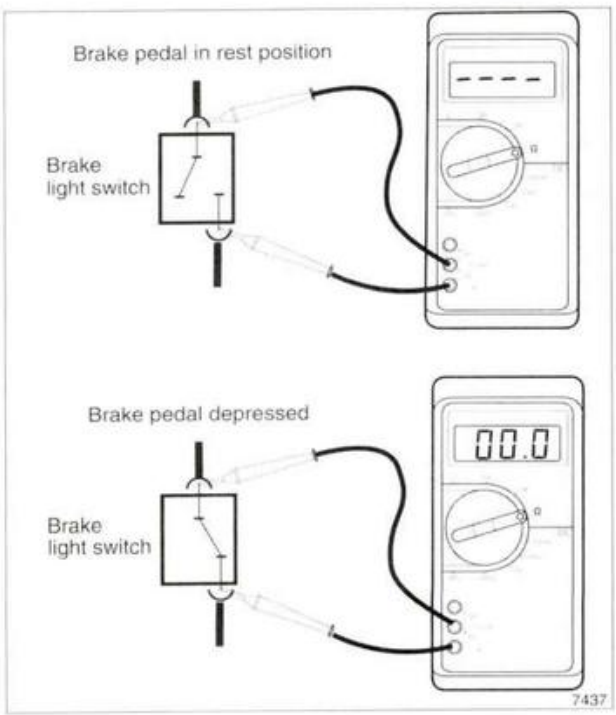
– Connect digital multimeter negative lead to other end of cable or switch being tested.

– With power on and circuit working, meter shows voltage drop (difference between two points). This value should not exceed 1 volt.

– Maximum voltage drop in an automotive circuit, as recommended by the Society of Automotive Engineers (SAE), is as follows:

- 0 volt for small wire connections
- 0.1 volt for high current connections
- 0.2 volt for high current cables
- 0.3 volt for switch or solenoid contacts

– On longer wires or cables, the drop may be slightly higher. In any case, a voltage drop of more than 1.0 volt usually indicates a problem.




## Continuity, checking

Use continuity test to check a circuit or switch. Because most automotive circuits are designed to have little or no resistance, a circuit or part of a circuit can be easily checked for faults using an ohmmeter. An open circuit or a circuit with high resistance does not allow current to flow. A circuit with little or no resistance allows current to flow easily.

When checking continuity, turn ignition OFF. On circuits that are powered at all times, disconnect battery. Using the appropriate wiring diagram, test circuit for faulty connections, wires, switches, relays and engine sensors by checking for continuity.

➤ Example: Test brake light switch for continuity:

- With brake pedal in rest position (switch open) there is no continuity (infinite Ω).
- With pedal depressed (switch closed) there is continuity (0 Ω).

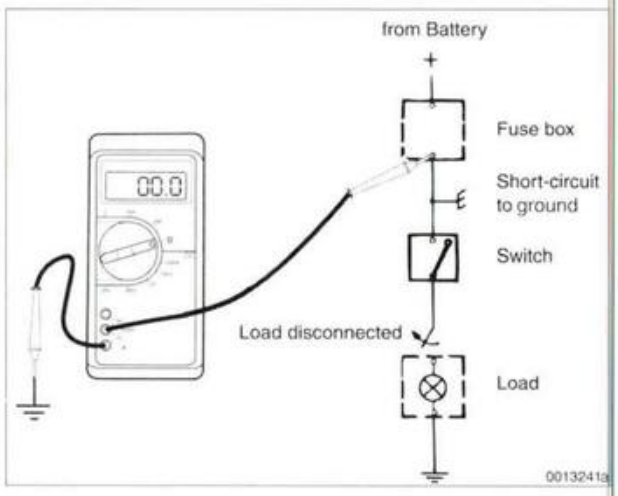
## Short circuits, testing

Short circuits are exactly what the name implies. Current in the circuit takes a shorter path than it was designed to take. The most common short that causes problems is a short to ground where the insulation on a positive (+) wire wears away and the metal wire is exposed. When the wire rubs against a metal part of the car or other ground source, the circuit is shorted to ground. If the exposed wire is live (positive battery voltage), a fuse blows and the circuit may be damaged.

Short circuits are often difficult to locate and may vary in nature. Short circuits can be found using a logical approach based on knowledge of the current path.

Use a digital multimeter to locate short circuits.

***CAUTION—***
- *In circuits protected with high rating fuses (25 amp and greater), wires or circuit components may be damaged before the fuse blows. Check for wiring damage before replacing fuses of this rating. Also, check for correct fuse rating.*




### Testing with ohmmeter

– Remove blown fuse from circuit and disconnect cables from battery. Disconnect harness connector from circuit load or consumer.

➤ Using an ohmmeter, connect one test lead to load side of fuse terminal (terminal leading to circuit) and other test lead to ground.

– If there is continuity to ground, there is a short to ground.

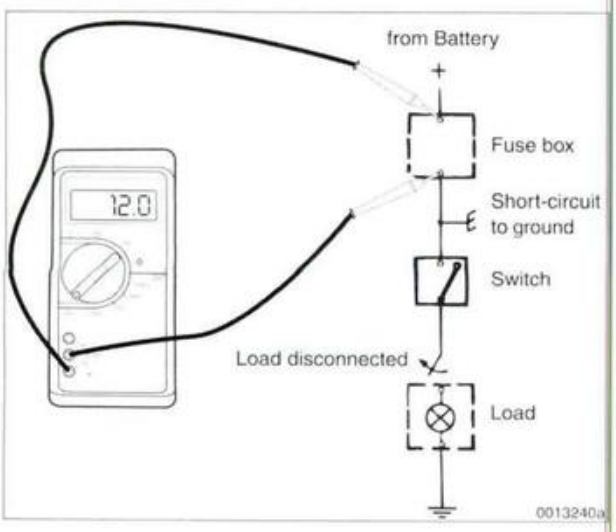
– If there is no continuity, work from wire harness nearest to fuse / relay panel and move or wiggle wires while observing meter. Continue to move down harness until meter displays a reading. This is the location of the short to ground.

– Visually inspect wire harness at this point for any faults. If no faults are visible, carefully slice open harness cover or wire insulation for further inspection. Repair any faults found.

### Testing with voltmeter

– Remove blown fuse from circuit. Disconnect harness connector from circuit load or consumer.

***NOTE—***
- *Most fuses power more than one consumer. Be sure all consumers are disconnected when checking for a short circuit.*




➤ Using a digital multimeter, connect test leads across fuse terminals. Make sure power is present in circuit. If necessary switch ignition ON.

– If voltage is present at voltmeter, there is a short to ground.

– If voltage is not present, work from wire harness nearest to fuse / relay panel and move or wiggle wires while observing meter. Continue to move down harness until meter displays a reading. This is the location of the short to ground.

Visually inspect wire harness at this point for any faults. If no faults are visible, carefully slice open harness cover or wire insulation for further inspection. Repair any faults found.

# 90 Instruments


**GENERAL** ..... 90-1
- Instrument cluster ..... 90-1
- Instrument cluster and warning lights ..... 90-2
- Driver information ..... 90-3
- On-board diagnostics ..... 90-3
- Cautions ..... 90-4

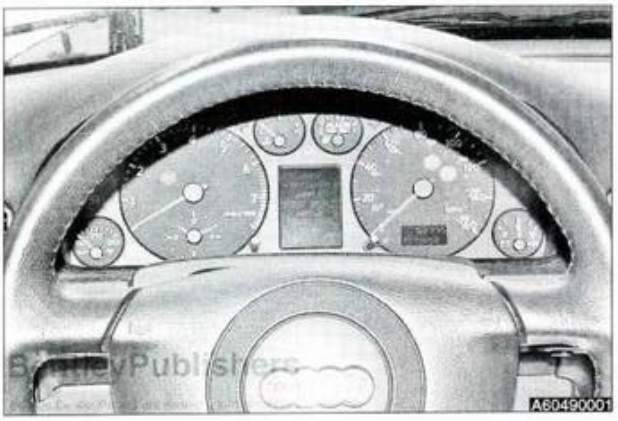
**INSTRUMENT CLUSTER REPAIRS** ..... 90-4
- Instrument cluster, removing and installing ..... 90-4
- Instrument cluster details ..... 90-5


## GENERAL

This repair group covers the instrument cluster and warning lights.

See **91 Radio and Communication** for information about the navigation system.

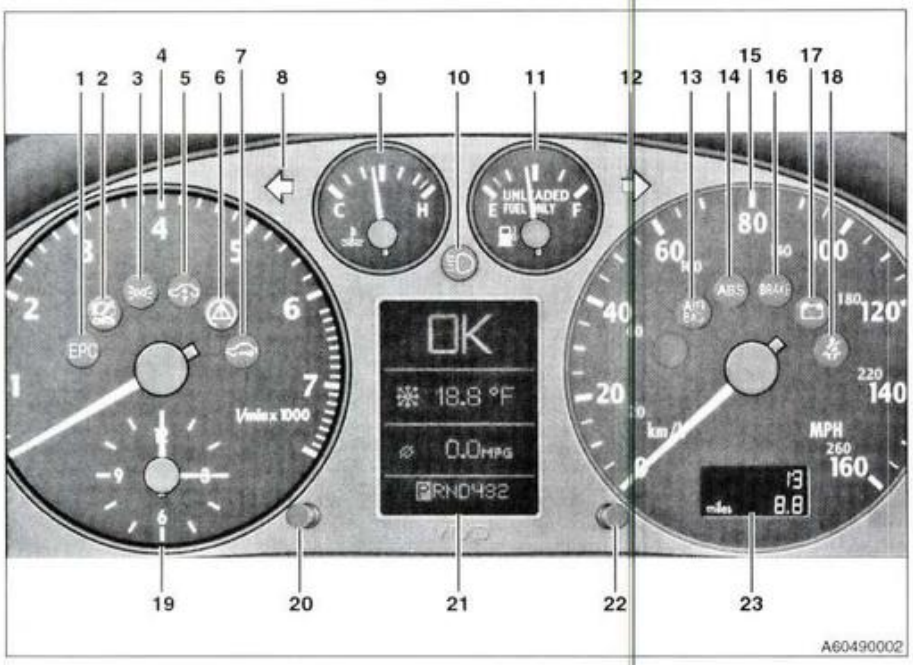
### Instrument cluster




The instrument cluster consists of
- Engine oil temperature gauge
- Tachometer with clock
- Engine coolant temperature gauge
- Fuel gauge
- Multifunction indicator (MFI) screen
- Electronic speedometer, odometer, trip odometer
- Voltmeter

Warning and indicator lights in the speedometer and tachometer faces are LEDs which cannot be serviced separately. An LED malfunction requires instrument cluster replacement.

The instrument cluster supplements various warning light displays with acoustic warnings.

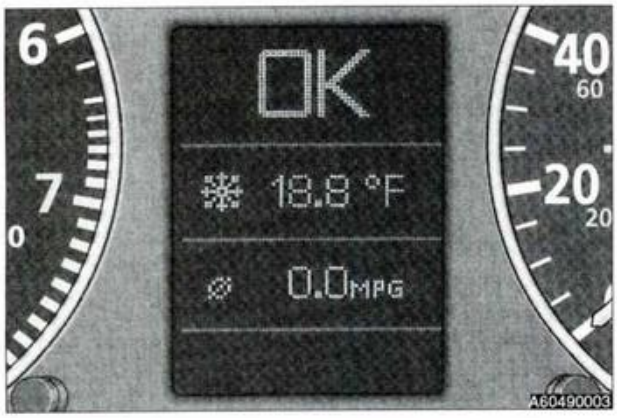



## Instrument cluster and warning lights

1. **Electronic throttle (EPC)**
2. **Malfunction indicator light (MIL)**
3. **Headlights and side marker lights on**
4. **Tachometer**
5. **Self-leveling suspension malfunction (allroad quattro)**
6. **Anti-slip regulation (ASR) or electronic stabilization program (ESP)**
7. **Electronic immobilizer on**
8. **Left turn signal indicator**
9. **Engine coolant temperature gauge**
10. **High beams on**
11. **Fuel gauge**
12. **Right turn signal indicator**
13. **Airbags malfunction**
14. **Anti-lock braking (ABS) malfunction**
15. **Speedometer**
16. **Brake fluid low or parking brake on**
17. **Charging system malfunction**
18. **Seat belts not buckled**
19. **Clock**
20. **Left setting button:**
    - Clock
    - Auto check system
    - Trip odometer
21. **Driver information display**
22. **Right setting button:**
    - Service interval
    - Trip odometer
23. **Odometer and service indicator**

***NOTE—***

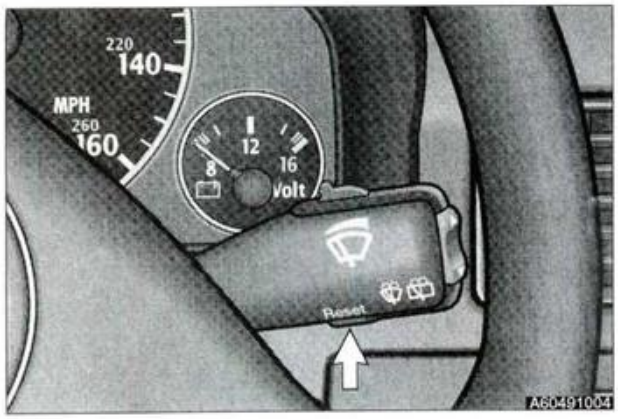
- *Warning light placement and other functions vary slightly among models.*




## Driver information

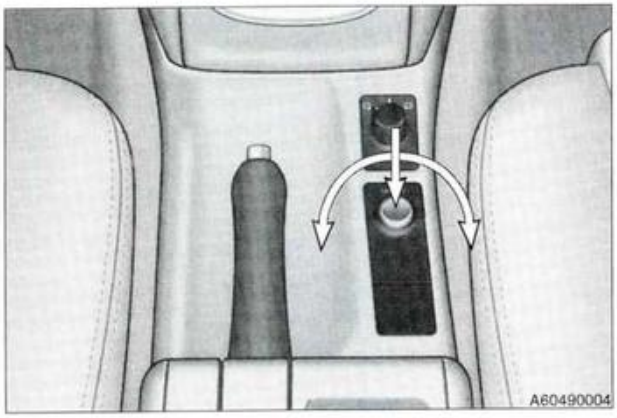
The driver information display in the center of the instrument cluster provides useful driver information and service reminders, including:

- Service interval
- Auto-check system
- Outside air temperature
- Trip computer
- Automatic transmission gear shift position
- Radio frequency
- Door open indicator
- Speed warning

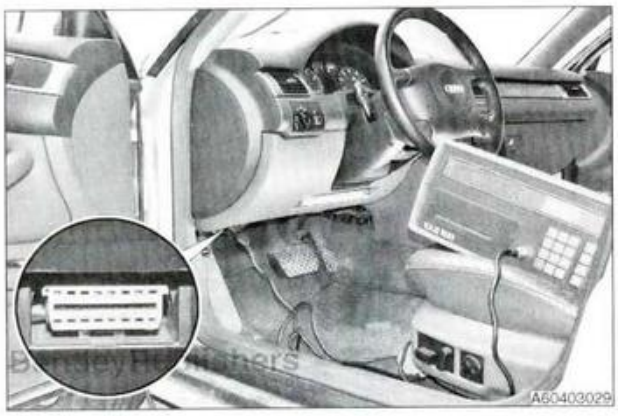



If equipped, the driver information display doubles as the navigation display. See **91 Radio, Communication**.

Use the reset button on the wiper / washer switch (**arrow**) to zero functions such as driving time, average mileage or average speed.




2002 - 2004: Select or reset driver information display using Menu button on center console, to the right of the parking brake handle.




## On-board diagnostics

If the on-board diagnostics (OBD II) system recognizes instrument cluster malfunctions relating to odometer or speedometer calibration, the trip odometer displays dEF.

Before performing troubleshooting or inspection, access fault memory with VAG scan tool or equivalent plugged into DLC plug (**inset**) under left side dashboard.

## Cautions

> ***CAUTION—***
> - *Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components.*
> - *Connect and disconnect electrical connectors and ignition test equipment leads only while the ignition is OFF.*
> - *Only use a digital multimeter for electrical tests.*
> - *To avoid damaging plastic interior trim, use a plastic prying tool or a screwdriver with the tip wrapped with masking tape.*

# INSTRUMENT CLUSTER REPAIRS

## Instrument cluster, removing and installing

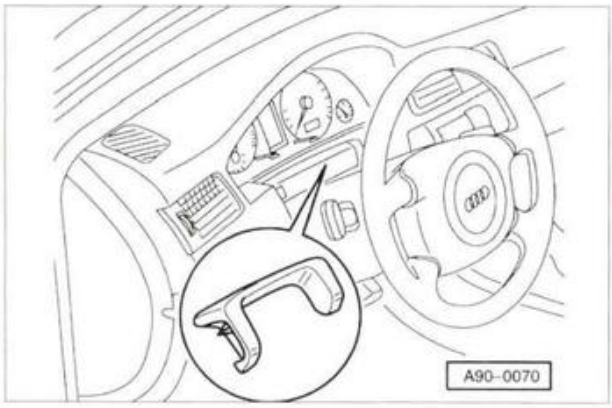
It is not necessary to remove steering wheel to remove instrument cluster.

– If replacing cluster with new, note odometer reading on old cluster.

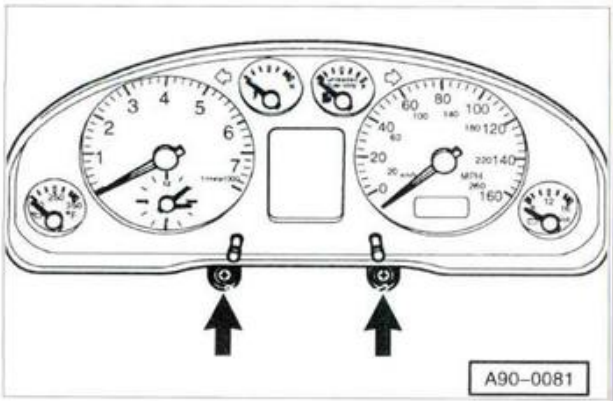
– Adjust steering wheel backward and down.

– Switch ignition OFF. Disconnect battery negative cable.

> ***CAUTION—***
> - *Prior to disconnecting the battery, read the battery disconnection precautions in* **27 Battery, Alternator, Starter**.



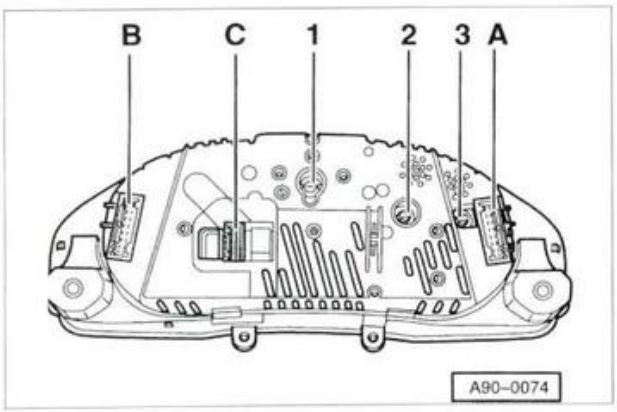

➤ Press in sides of instrument cluster lower trim (**insert**) to disengage from dashboard. Lift out trim.




➤ Remove cluster mounting screws (**arrows**)

– Tilt instrument cluster rearward and cut wire ties at rear. Unclip connectors securing latches and detach connectors.

– Installation is reverse of removal. If new cluster is installed, use VAG scan tool or equivalent for coding and adaptation functions:
- Code new cluster to vehicle version and equipment level.
- Adapt odometer reading.
- Adapt electronic immobilizer functions to engine control module (ECM).

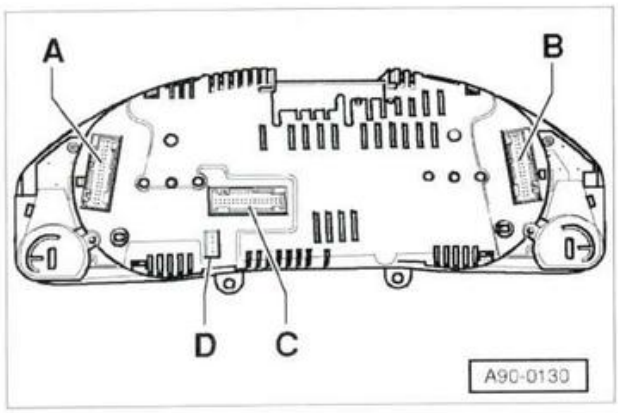



## Instrument cluster details

➤ 1998 - 1999: Lights **1**, **2**, **3** are 1.2 W replaceable bulbs:

**1.** High beam indicator
**2.** ASR / ESP indicator
**3.** Malfunction indicator light (MIL)
**A.** 32-pin connector, blue, basic functions
**B.** 32-pin connector, green, additional functions
**C.** 20-pin connector, red, driver information screen

– All other indicator lights are LEDs. In case of failure, replace instrument cluster.




➤ 2000 and later: All indicator lights are LEDs. In case of failure, replace instrument cluster.

**A.** 32-pin connector, green, basic functions
**B.** 32-pin connector, blue, additional functions
**C.** 32-pin connector, grey, driver information screen
**D.** 4-pin connector, black, remote clock (not connected in US)

# 91 Radio and Communication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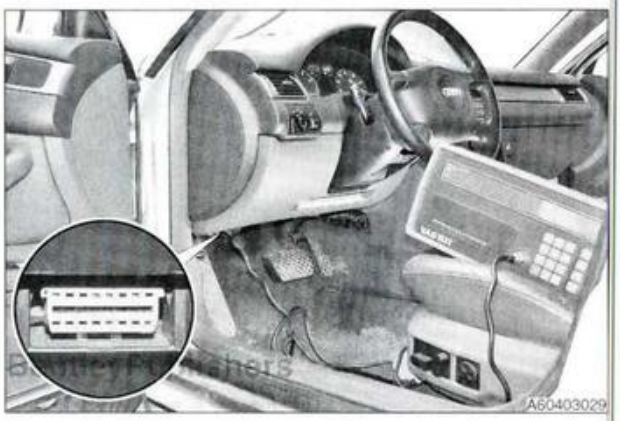
## GENERAL

This repair group covers Audi A6 factory installed sound systems. Also described are the optional telephone, Telematics, navigation system and multifunction steering wheel.

The basic and premium Audi A6 sound systems center on the Concert radio and the Symphony radio. The radio is coded to the vehicle using VAG scan tool or equivalent. Coding is based on other equipment installed such as telephone, CD changer, navigation or amplifier.

If you plan to install an aftermarket system, see **Cautions** in this repair group.

See also **EWD Electrical Wiring Diagrams**.




## On-board diagnostics

If the on-board diagnostics (OBD II) system recognizes malfunctions in the radio or communication systems, it sets diagnostic fault codes (DTCs).

➤ Access fault memory with VAG scan tool or equivalent plugged into DLC plug (**inset**) under left side dashboard.

## Cautions

Read the following cautions and the additional warnings and cautions in **97 Fuses, Relays, Component Locations** before doing any work on your electrical system.

***CAUTION***—

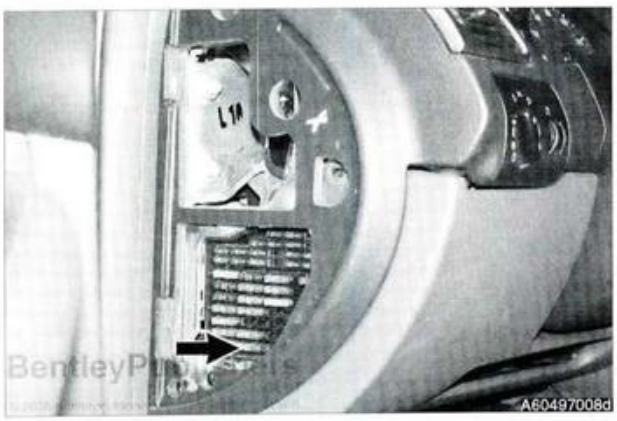
- *The radio is wired to the vehicle alarm system. If the alarm system is armed, removing the radio activates the alarm even if the proper tools are used. Do not attempt to remove the radio without disarming the alarm.*
- *The factory installed connectors are designed for the genuine Audi radio. If installing a different radio, remember that it may not fit properly into the space provided, the electrical connections may not be compatible and different terminals may be needed.*
- *The factory installed radio is electronically linked to the instrument cluster, ignition, alarm and data link circuits.*
- *Prior to disconnecting the battery, read the battery disconnection precautions in* **27 Battery, Alternator, Starter**.
- *Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components.*
- *Connect and disconnect electrical connectors and ignition test equipment leads only while the ignition is OFF.*
- *Only use a digital multimeter for electrical tests.*
- *To avoid damaging plastic interior trim, use a plastic prying tool or a screwdriver with the tip wrapped with masking tape.*

## RADIO

Audi A6 sound system components and options are as follows:

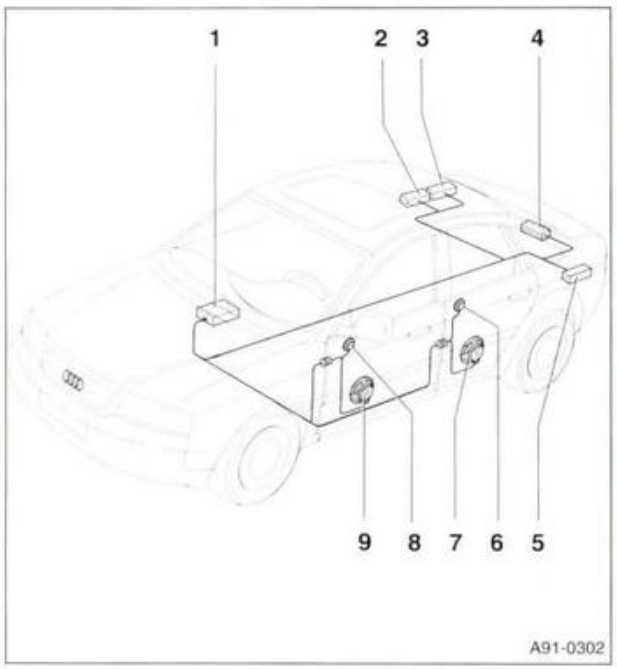
- **Basic** 140 watt ten speaker system
- **Premium** 200 watt ten speaker system
- **Concert** in-dash radio
- **Symphony** double-height (double-DIN) radio
- **Bass, midrange and treble speakers** in doors
- **Subwoofer** behind trunk or luggage compartment right side trim
- **Bose® amplifier** behind trunk or luggage compartment right side trim
- **CD changer** behind trunk or luggage compartment left side trim
- **Satellite radio** behind trunk or luggage compartment left side storage box
- **Antenna**
  -Sedan: Rear window
  -Avant: Side rear windows
- **Antenna amplifiers**
  -Sedan: Behind left and right D-pillar trim
  -Avant: Below left and right luggage compartment side trim
- **Antenna selection control module**
  -Sedan: Underneath rear parcel shelf trim
  -Avant: Under headliner near roof antenna
- **Satellite radio antenna** on roof

### Radio power supply




In main fuse panel, left end of dashboard.

| Sound system fuse rating | |
|---|---|
| Fuse 37 | 20 A |

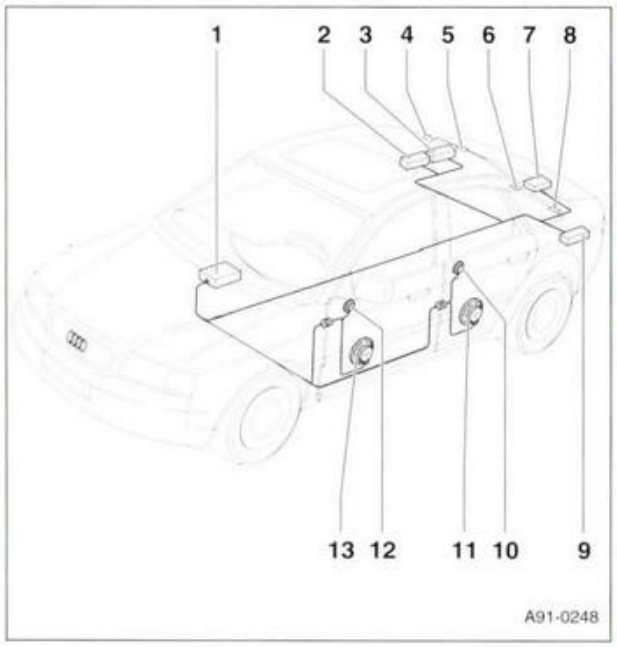



## Sound system components, sedan (1998 - 2001)

1. Radio (R) in center dashboard
2. Subwoofer (R100) in right rear trunk behind trim
3. Amplifier (R12) in right rear trunk behind trim, Bose®
4. Antenna amplifier behind left D-pillar trim
5. CD changer (R41)
6. Rear treble / midrange speakers (R34, R35) in rear door upper trim
7. Rear bass speakers (R15, R17) in rear door lower trim
8. Front treble / midrange speakers (R26, R27) in front door upper trim
9. Front bass speakers (R21, R23) in front door lower trim

***NOTE —***

- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*
- *Avant (station wagon) sound system layout and components are similar.*

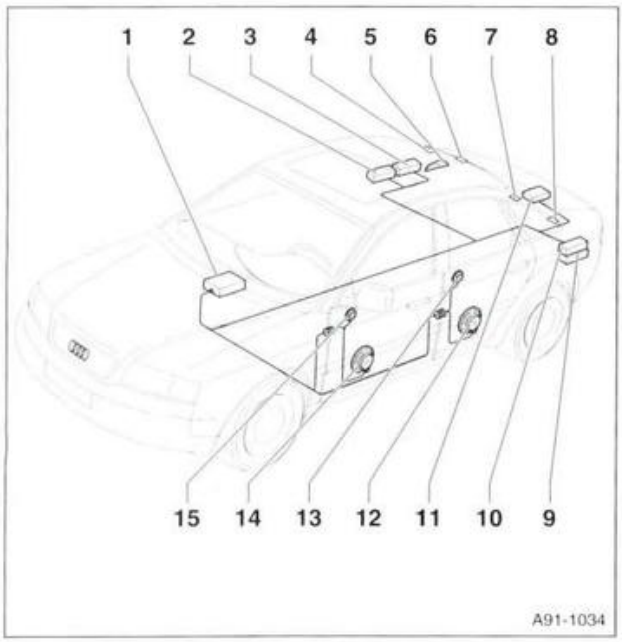



## Sound system components, sedan (2002 - 2004)

1. Radio (R) in center dashboard
2. Subwoofer (R100) in right rear trunk behind trim
3. Amplifier (R12) in right rear trunk behind trim, Bose®
4. Antenna amplifier (R82) behind right upper D-pillar trim
5. Antenna amplifier (R83) behind right lower D-pillar trim
6. Antenna amplifier (R85) behind left upper D-pillar trim
7. Antenna selection control module (J515) underneath left side parcel shelf
8. Antenna amplifier (R84) behind lower D-pillar trim
9. CD changer (R41)
10. Rear treble / midrange speakers (R34, R35) in rear door upper trim
11. Rear bass speakers (R15, R17) in rear door lower trim
12. Front treble / midrange speakers (R26, R27) in front door upper trim
13. Front bass speakers (R21, R23) in front door lower trim

***NOTE —***

- *Avant (station wagon) sound system layout and components are similar.*

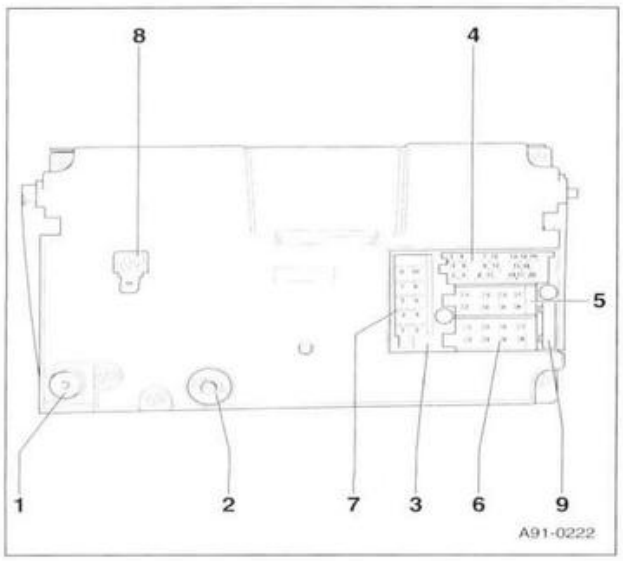



## Sound system with satellite radio (SDARS), sedan

1. Radio (R) in center dashboard
2. Subwoofer (R100) in right rear trunk behind trim
3. Amplifier (R12) in right rear trunk behind trim, Bose®
4. Antenna amplifier (R82) behind right upper D-pillar trim
5. Satellite antenna (R182) on roof
6. Antenna amplifier (R83) behind right lower D-pillar trim
7. Antenna amplifier (R85) behind left upper D-pillar trim
8. Antenna amplifier (R84) behind left lower D-pillar trim
9. CD changer (R41)
10. Satellite tuner (R146)
11. Antenna selection control module (J515) underneath left side parcel shelf
12. Rear bass speakers (R15, R17) in rear door lower trim
13. Rear treble / midrange speakers (R34, R35) in rear door upper trim
14. Front bass speakers (R21, R23) in front door lower trim
15. Front treble / midrange speakers (R26, R27) in front door upper trim

***NOTE***—

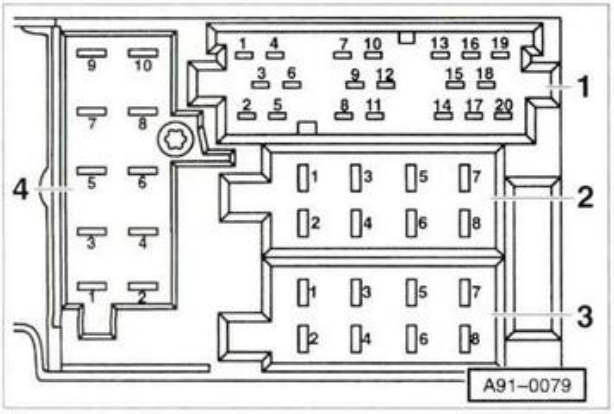
- *Avant (station wagon) sound system layout and components are similar.*




## Radio connections

At rear of radio:

1. Antenna connection socket for radio (HF wire)
2. ZF-wire
3. Radio switch block
4. Connector 1, 20-pin, black
5. Connector 2, 8-pin, brown
6. Connector 3, 8-pin, black
7. Connector 4, 10-pin, red
8. Anti-theft alarm system ground (1998 - 2001)
9. Fuse




## Radio pin assignments, basic

### Connector 1, 20-pin, black

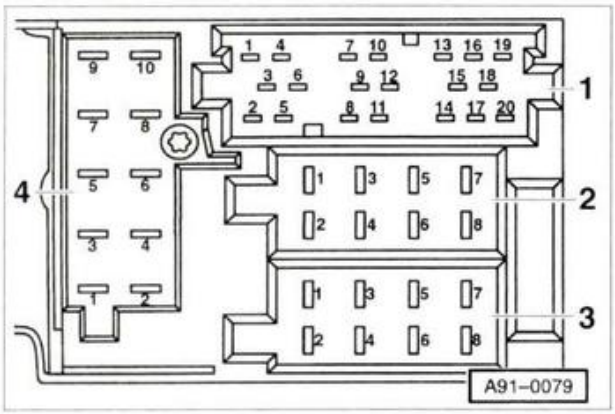
1. Line output, left rear
2. Line output, right rear
3. Line output, ground
4. Line output, left front, Bose®
5. Line output, right front, Bose®
6. Switched power for speakers
   Switched power for amplifier, Bose®
7. CAN-bus high (infotainment), 2002 - 2004
8. Radio clock, 1998 - 2001
9. Radio frequency data signal, 1998 - 2001
10. Radio frequency display enable signal, 1998 - 2001
    CD ground, 2002 - 2004
11. Steering wheel remote control, 1998 - 2001
12. CAN-bus low (infotainment), 2002 - 2004
13. CD display signal in
14. CD display signal out
15. CD clock
16. Power supply (B+), CD changer
17. Switched power supply, CD changer
18. Ground, CD changer
19. Line output, left, CD changer
20. Line output, right, CD changer

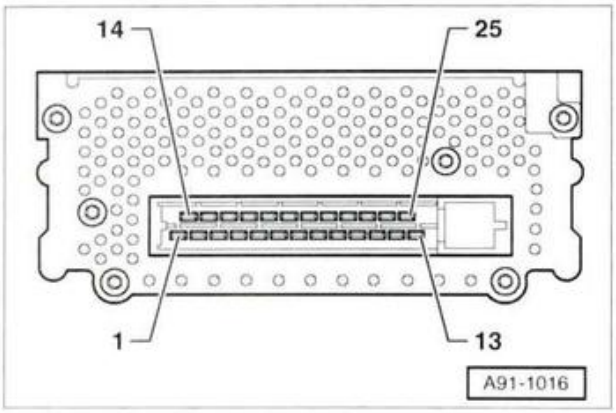
### Connector 2, 8-pin, brown

1. Right front speaker signal
2. Right front speaker ground
3. Left front speaker signal
4. Left front speaker ground

### Connector 3, 8-pin, black

1. GALA (vehicle speed signal), 1998 - 2001
   Bose® coding, 2002 - 2004
2. Telephone muting, 1998 - 2001
   Anti-theft ground, 2002 - 2004
3. K or L line, on-board diagnostics
4. Radio switching connection to ignition switch, 1998 - 2001
5. Automatic antenna control, 1998 - 2001
6. Switch illumination 1998 - 2001
7. Power supply (B+)
8. Ground



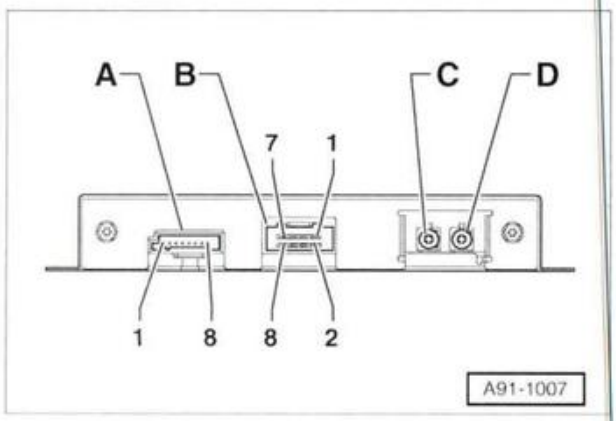




**Connector 4, 10 pin, red**

1. Telephone muting
2. Terminal 15, navigation only, 1998 - 2001
3. Telephone (NF+), without navigation
4. Telephone (NF-), without navigation
5. Navigation (NF+)
6. Navigation (NF-)
7. Navigation control wire
8. Not used
9. Display illumination, terminal 58d, 1998 - 2001
10. CD changer ground, 1998 - 2001

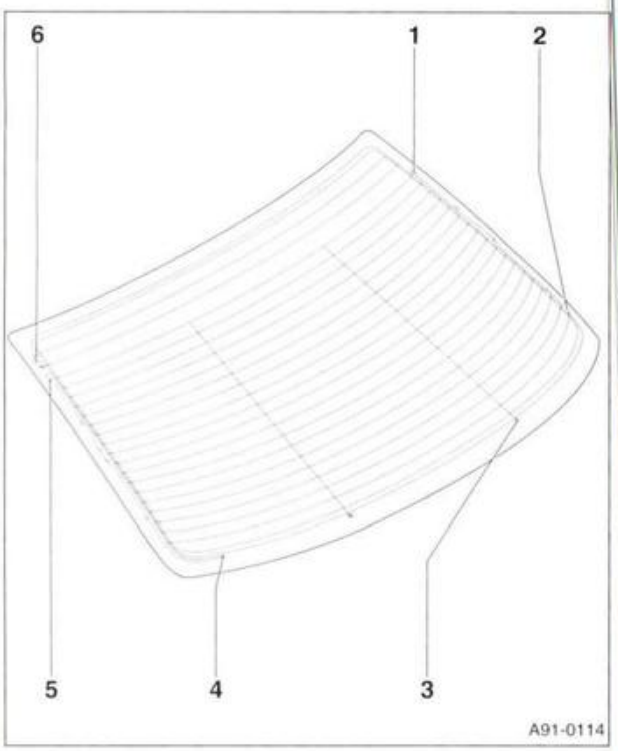
## Bose® amplifier pin assignments

1. Not used
2. Not used
3. Not used
4. Not used
5. Not used
6. Line input from radio, ground
7. Line input from radio, right rear
8. Line input from radio, left rear
9. Line input from radio, right front
10. Line input from radio, left front
11. Not used
12. Not used
13. Power (B+)
14. Not used
15. Not used
16. Left front speaker ground
17. Left front speaker power
18. Right front speaker power
19. Right front speaker power
20. Left rear speaker power
21. Left rear speaker ground
22. Right rear speaker power
23. Right rear speaker ground
24. Switched power



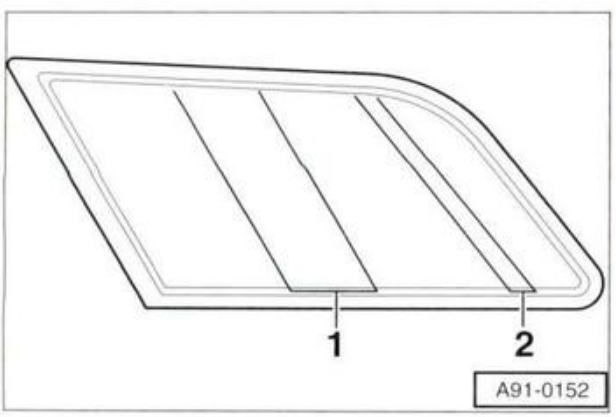

## Satellite radio pin assignments

**A.** Connector, 8-pin:
**1.** CAN-bus high (infotainment)
**2.** CAN-bus low (infotainment)
**3.** CD in, left
**4.** CD in, right
**5.** Ground NF (radio)
**6.** Left channel NF
**7.** Right channel NF
**8.** Ground (CD)
**B.** Connector, 8-pin:
**1.** Power
**2.** Ground
**C.** Satellite antenna, brown
**D.** Satellite antenna, green




## Rear window antenna connections (sedan)

**1.** FM antenna 1
**2.** FM antenna 2
**3.** Auxiliary heater antenna (if applicable)
**4.** FM antenna 3
**5.** FM antenna 4
**6.** AM antenna




## Side window antenna connection (Avant)

On Avant (station wagon), FM antennas 1 - 3 are in the side rear windows:

**1.** FM antenna 1 on right rear window
**1.** FM antenna 2 on left rear window
**2.** FM antenna 3 on left rear window

FM antenna 4 and AM antenna are on roof.

If equipped with satellite radio (SDARS) with antenna on roof, the following side window configuration is used:

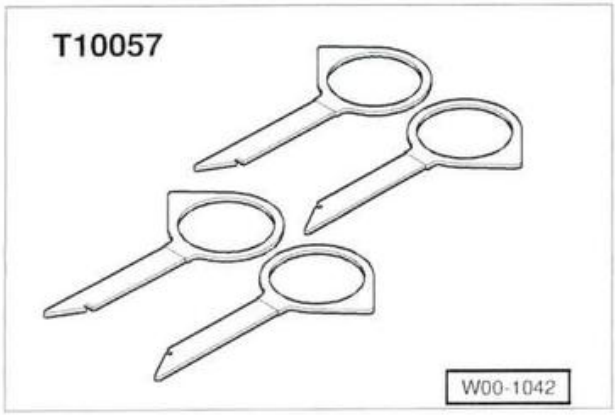
**1.** FM antenna 1 on right rear window
**2.** FM antenna 2 on right rear window
**1.** FM antenna 4, AM antenna on left rear window
**2.** FM antenna 3 on left rear window

## Radio, removing and installing

– Obtain radio anti-theft security code.

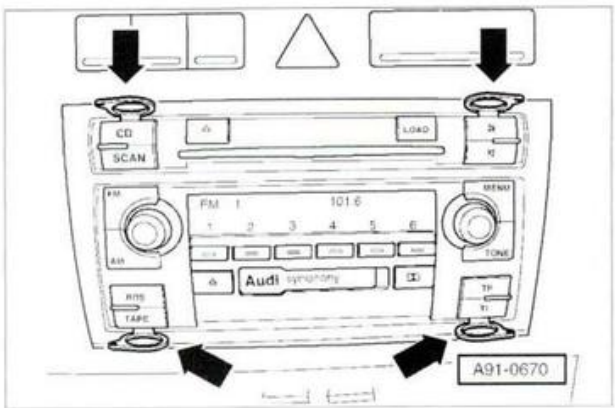
– Switch ignition OFF. Disconnect battery negative cable.

> ***CAUTION—***
> • *Prior to disconnecting the battery, read the battery disconnection precautions in* **27 Battery, Alternator, Starter.**




➢ Use VAG special tools for radio removal:
- VAG T10057 consists of 4 prying hooks for Symphony radio removal.
- VAG 3344 consists of 2 prying hooks for Concert radio removal

➢ Concert radio: Insert special tools 3344 (**arrows**) into front of radio and release from center dashboard.




➢ Symphony radio: Insert special tools T10057 (**arrows**) into upper and lower slots in front of radio and release from center dashboard.

– Pull radio out and detach connectors and antenna cable.

– Prior to reinstalling radio, remove special tools from panel.

– Attach electrical connections and antenna.

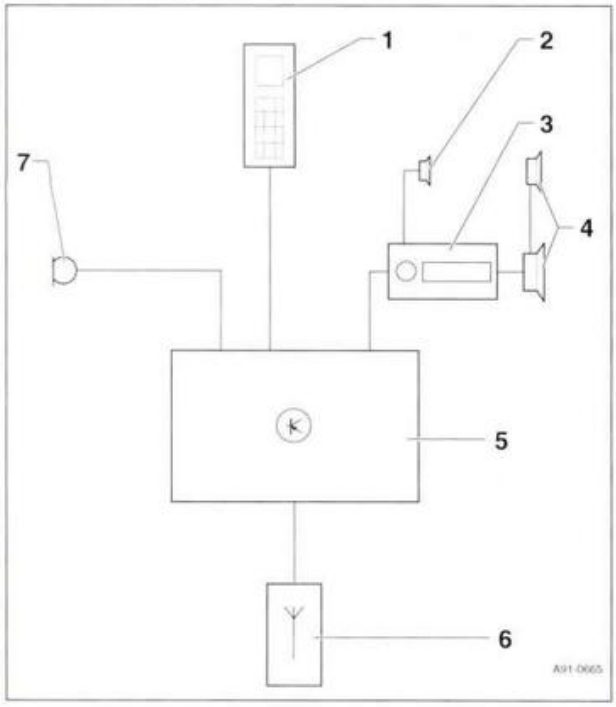
– Slide radio into center dashboard frame until it engages firmly.

– Reconnect battery and activate anti-theft coding.

## TELEPHONE

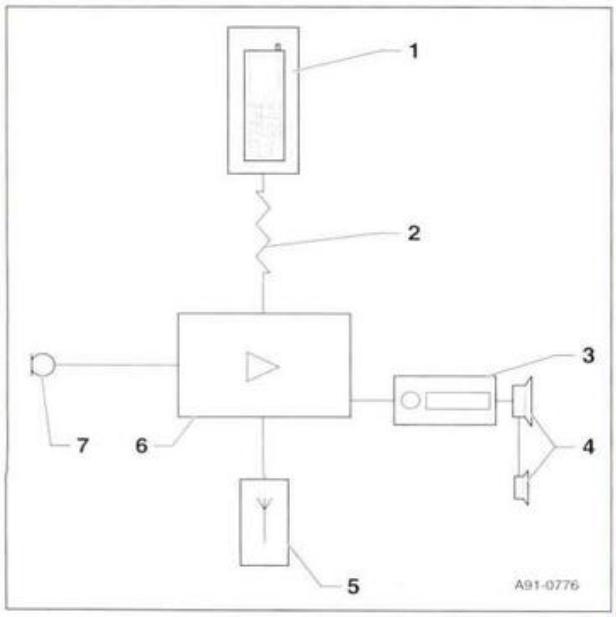
The telephone is an option supplied in two versions:

- **Hands-free telephone**, 1998 - 2001
- **Digital cellular telephone**, 2002 - 2004, used in conjunction with Telematics



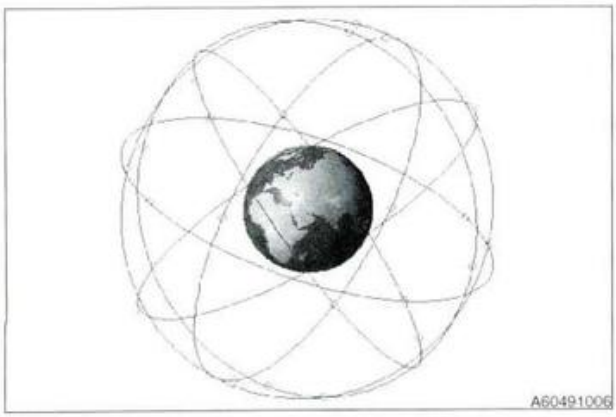

### Hands-free telephone components

1. Telephone handset (R37)
2. Telephone-navigation speaker (R39) behind left B-pillar lower trim (Bose® system)
3. Radio (R)
4. Front speakers behind front door panels
5. Telephone transceiver (R36)
   -1998: Under rear parcel shelf
   -1999 - 2004: in trunk or luggage compartment left side storage compartment
6. Antenna
   -Sedan: In rear window
   -Avant: On roof
7. Telephone microphone (R38)
   -1998 - 1999: In left A-pillar
   -2000 - 2004: In front interior light module




### Digital cellular telephone components

1. Telephone handset docking station (R54)
2. Spiral cord
3. Radio (R)
4. Front speakers behind front door panels
5. Telephone antenna (R65) in rear bumper
6. Telematics-telephone control module (J526) in right front footwell
7. Telephone microphone (R38)




## NAVIGATION

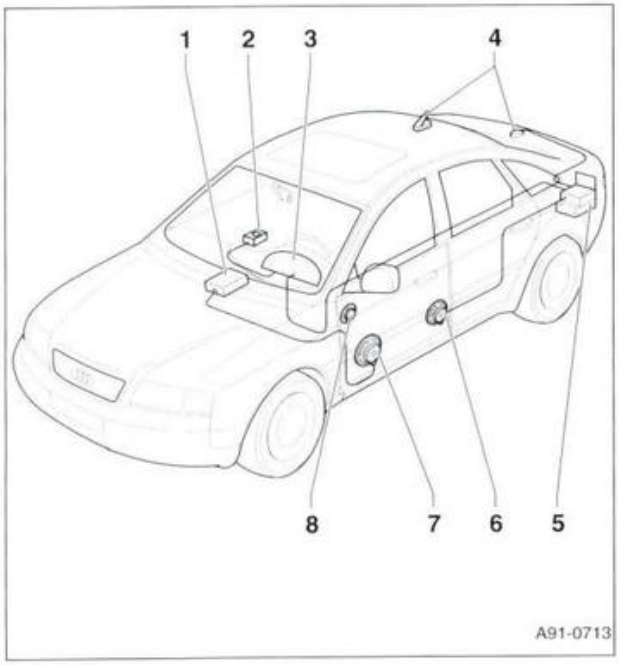
Vehicle navigation systems utilize the signal from 24 global positioning system (GPS) satellites.

The navigation system is available as an option in Audi A6 vehicles. Two versions of the system are used;

- **Navigation III**, 1998 - 2001:
  -Display in instrument cluster driver information screen
  -Data entries via multifunction switch on center console
  -Control module with CD reader in trunk or luggage compartment
  -Navigation antenna on roof
- **Navigation IV**, 2002 - 2004, has similar components but offers the following additional functions and features:
  -Dynamic route guidance
  -Integration with Audi Telematics
  -Compass
  -Help function

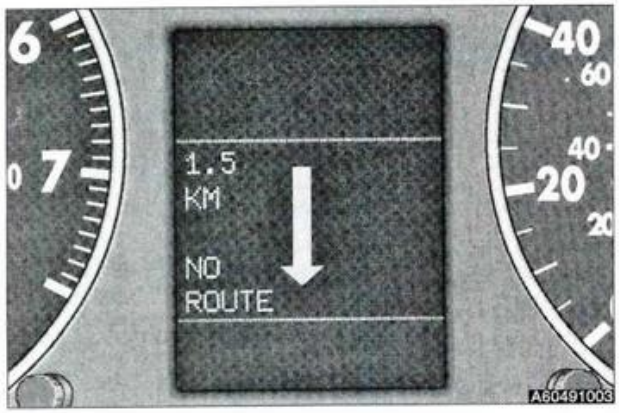
The navigation system is integrated with the vehicle CAN-bus network. The dynamic route guidance feature in Navigation IV enables local traffic report information to be accessed from either the radio or the telephone.

The navigation system is self-diagnosing. DTCs are stored in the navigation control module.



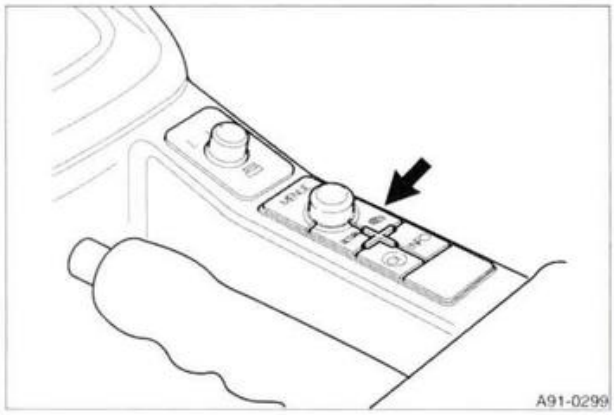

### Navigation system components

1. Radio (R) in center dashboard
2. Function selector switch (E272) in center console
3. Instrument cluster driver information display
4. Navigation antenna (R50)
   Radio-telephone-navigation antenna (R52)
   1998 - 2001: On trunk lid
   2002 - 2004: On roof
5. Navigation control module with CD reader (J401) in trunk or luggage compartment left side storage compartment
6. Telephone-navigation speaker (R39) in B-pillar trim (vehicle with Bose® sound system)
7. Bass speaker in front door lower trim
8. Tweeter / midrange speaker in front door upper trim



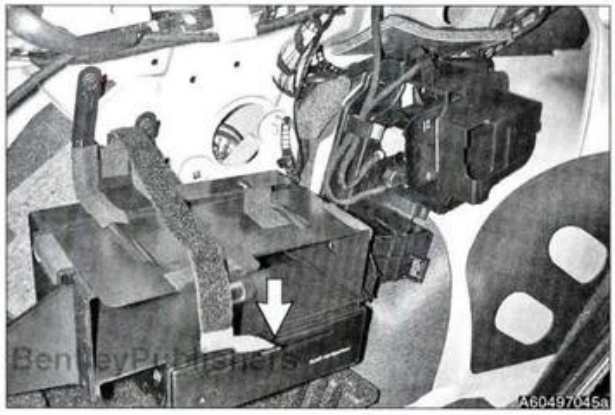

### Navigation display

The driver information display at center of instrument cluster serves as navigation display.




## Navigation function selector

The function selector switch (**arrow**) is on center console, to right of parking brake handle.




## Navigation control module

Navigation control module with CD reader (**arrow**) is in storage compartment at left side of trunk or luggage compartment.

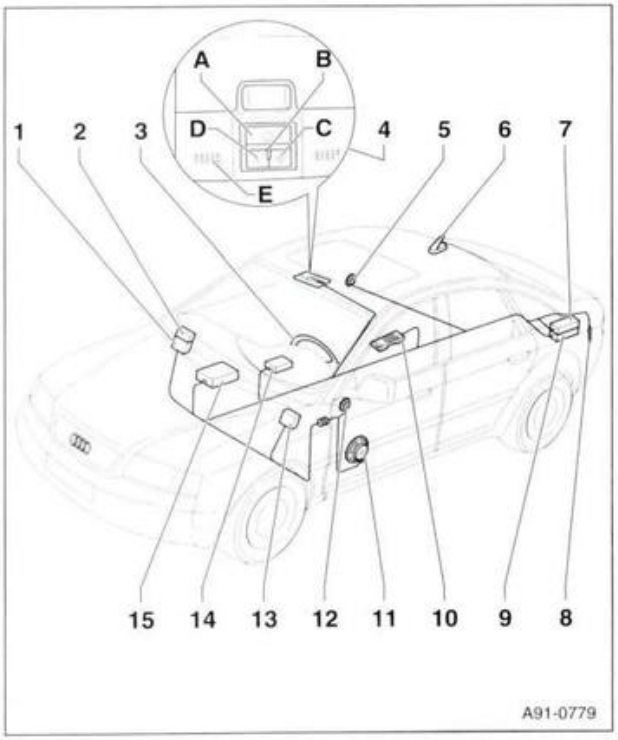
## TELEMATICS

Telematics is an optional system that uses cellular, internet and global positioning system (GPS) technologies to provide the driver with safety, security and convenience services.

The Telematics-telephone control module receives GPS data, decodes it, and transmits vehicle location to the service provider OnStar® call center via cellular network. OnStar® service plans may provide route directions, concierge services or emergency vehicle repair services.

If the airbag control module detects a crash, vehicle emergency flashers are activated and doors are unlocked via door control modules. In addition, the Telematics system automatically places an emergency call to the OnStar® call center.

An emergency (back-up) battery for the Telematics control module is used in case the vehicle battery goes dead or becomes disconnected.

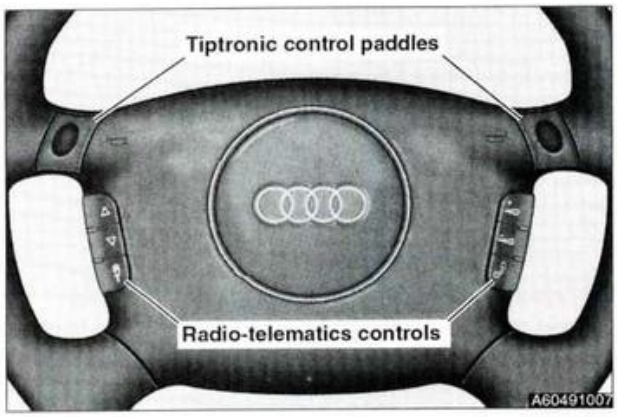



## Telematics components

1. Emergency battery (A16) on Telematics-telephone control module in right front footwell
2. Telematics-telephone control module (J526) in right front footwell
3. Multifunction steering wheel
4. Front interior light module with Telematics control head (E264)

**A.** OnStar® button
**B.** System status LED
**C.** Emergency button
**D.** Communication button
**E.** Telephone microphone (R38)

5. Telematics speaker (R91) behind right B-pillar lower trim
6. Navigation-Telematics antenna (R50, R90) on roof
7. Antenna splitter (R87) in trunk or luggage compartment left storage compartment
8. Telephone antenna (R65) in rear bumper
9. Navigation control module with CD reader (J401) in trunk or luggage compartment left side storage compartment
10. Cellular telephone (R54) in center console (optional with Telematics)
11. Front bass speakers (R21, R23) behind front door lower trim
12. Front midrange speakers (R26, R27) behind front door upper trim
13. Multifunction steering wheel control module (J453)
14. Instrument cluster
15. Radio



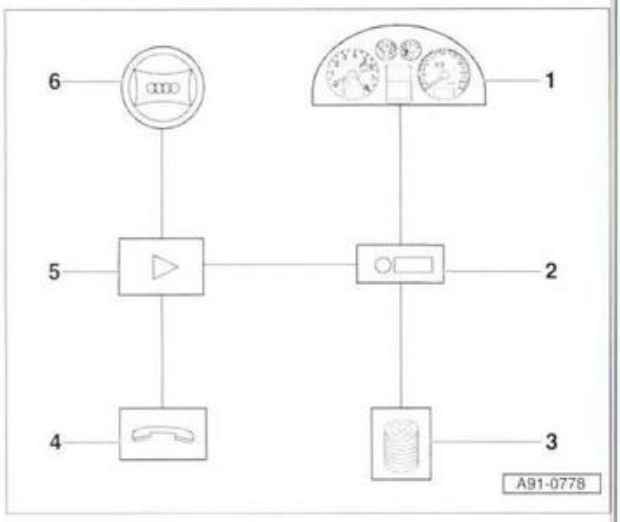

## MULTIFUNCTION STEERING WHEEL

Switches and buttons integrated into the optional multifunction steering wheel allow the driver to operate the radio, telephone and Tiptronic controls without taking hands off the steering wheel. In addition, the steering wheel is electrically heated.

Integrated electronics in the steering wheel regulate steering wheel heating and transmit switch operations to the multifunction steering wheel control module via vehicle CAN-bus network. The control module controls radio, navigation, telephone, instrument cluster, steering wheel heating and Tiptronic functions.

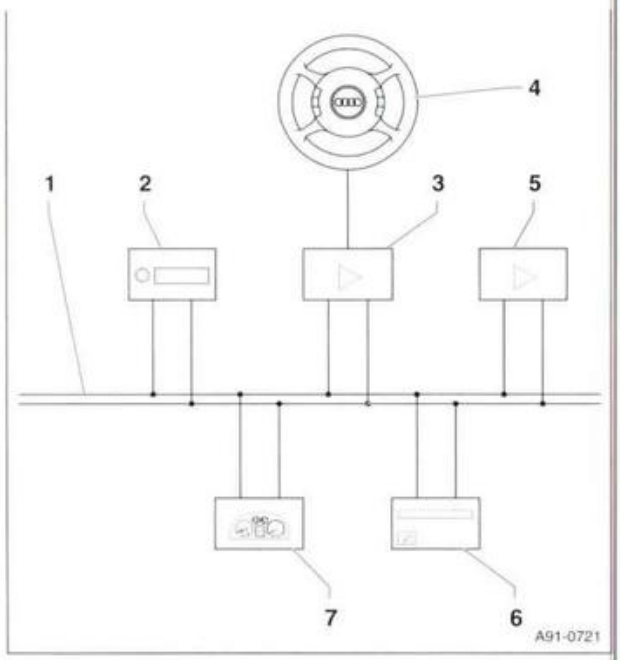
***WARNING*** —

- *The steering wheel houses the driver airbag. An airbag is an explosive device and part of the vehicle safety system. Prior to working on the steering wheel or its components, read the airbag precautions in* **69 Seat Belts, Airbags**.



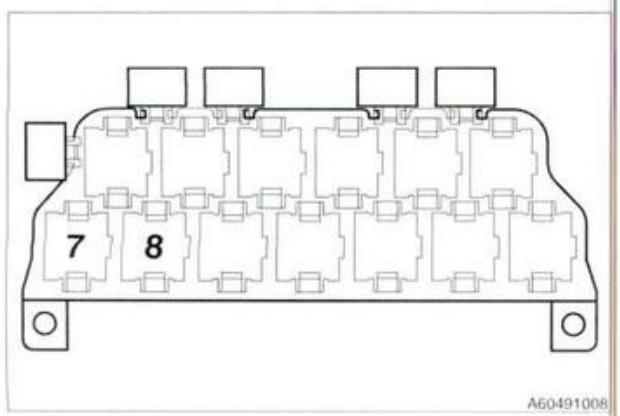

## Multifunction steering wheel, 1998 - 2001

1. Instrument cluster
2. Radio (R)
3. CD changer (R41) in trunk or luggage compartment left storage compartment
4. Telephone transceiver (R36)
5. Multifunction steering wheel control module (J453) in 13-fold relay panel, underneath left side dashboard
6. Multifunction steering wheel




## Multifunction steering wheel, 2002 - 2004

1. CAN-bus (infotainment)
2. Radio (R)
3. Multifunction steering wheel control module (J453) in 13-fold relay panel, underneath left side dashboard
4. Multifunction steering wheel
5. Telematics-telephone control module (J526) in right front footwell
6. Navigation control module with CD reader (J401) in trunk or luggage compartment left side storage compartment
7. Instrument cluster




## Multifunction steering wheel control module (J453)

➤ The multifunction steering wheel control module is a double-relay in positions 7 and 8 of the 13-fold relay panel under left side dashboard.

# 92 Wipers and Washers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## GENERAL

This repair group covers wiper blade service and wiper assembly repairs. Also covered are the windshield, rear window and headlight washer assemblies.

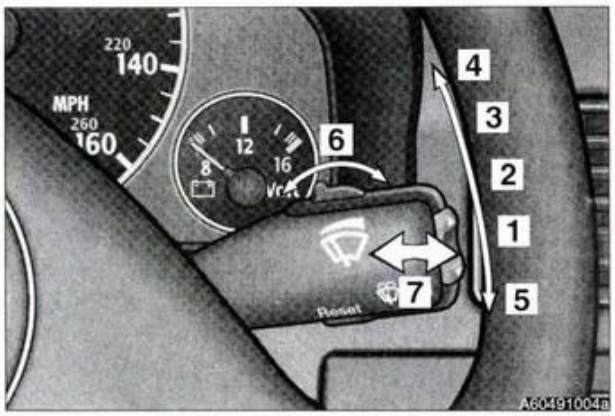
Also see:

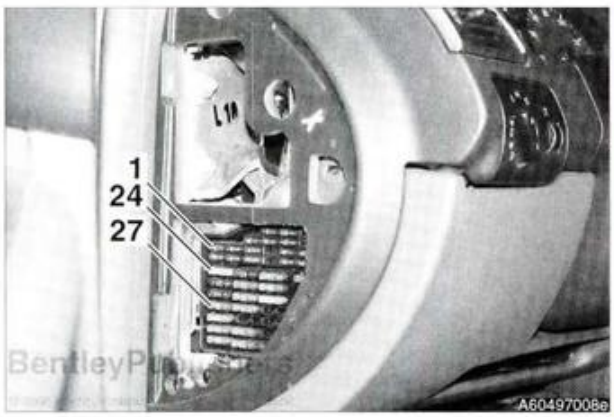
- **48 Steering** for steering column stalk switch (wiper and washer switch) replacement
- **97 Fuses, Relays, Component Locations**
- **EWD Electrical Wiring Diagrams**

### Cautions

***CAUTION—***

- *Switch the ignition OFF and disconnect the negative (-) battery cable before removing any electrical components.*
- *Prior to disconnecting the battery, read the battery disconnection precautions in* **00 Warnings and Cautions**.
- *Prior to disconnecting the battery:*
  *-Obtain radio code.*
  *-Record radio presets.*
- *Only use a digital multimeter for electrical tests.*
- *Do not operate the windshield wipers with the engine compartment lid open. The wiper arms may scrape.*



## Wiper and Washer Controls

### Wiper and washer switch

Switch positions are as follows:

1. Wipers parked
2. Intermittent wipe
3. Slow wipe
4. Fast wipe
5. One-tap wipe
6. Intermittent wiper speed adjuster
7. Pull back: Automatic windshield wiper and washer function
   Push forward: Automatic rear window wiper and washer

Wiper and washer stalk switch replacement is covered in **48 Steering**.

### Wiper and washer system fuses

In main fuse panel, left end of dashboard.

| **Wiper and washer fuses** | | |
|---|---|---|
| **Protected circuit** | **Fuse #** | **Amperage** |
| Washer nozzle heater | 1 | 5 |
| Front wiper / washer | 24 | 25 |
| Rear wiper / washer | 27 | 15 |

### Wiper and washer system relay

In micro central electric panel, underneath left side dashboard.

***NOTE***—

- *To gain access to relays, see* **97 Fuses, Relays, Component Locations**.

| **Wiper and washer system relay** | |
|---|---|
| Intermittent wiper / washer relay (J31) | Relay positions 5 and 6, micro central electric panel |

## WIPER ARMS AND BLADES

### Wiper blade cleaning problems

Common problems with the windshield wipers include streaking or sheeting, water drops after wiping, and blade chatter.

**Streaking** is usually caused when wiper blades are coated with road film or car wash wax.

– Clean blades using soapy water. If cleaning does not cure problem, replace blades.

**Drops** that remain behind after wiping are usually caused by oil, road film, or diesel exhaust residue on the glass.

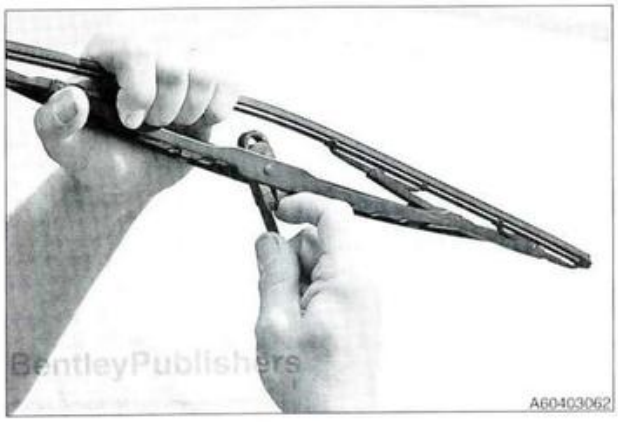
– Use an alcohol or ammonia solution or other non-abrasive cleaner to clean windshield.

**Chatter** may be caused by dirty or worn blades, or by wiper arms that are out of alignment.

– Clean blades and windshield as described above.

– Bend wiper arm so that there is even pressure along blade, and so that blade is perpendicular to windshield at rest.

– If problems persist, replace blades and wiper arms.




### Wiper blade, replacing

– Fold wiper arm away from windshield.

➤ Remove wiper blade:

- Rotate blade on arm approximately ¼ turn.
- Squeeze plastic retainer and slide blade off arm.

> ***CAUTION—***
> *• Do not allow wiper arm to snap back against windshield*

– Installation is reverse of removal.

### Wiper arm, removing and installing

– Make sure wipers are in PARK position and ignition switch is OFF. Open engine hood.

➤ Gently pry off plastic trim plugs (**arrows**) from base of wiper arm.

– Remove wiper arm mounting nuts.

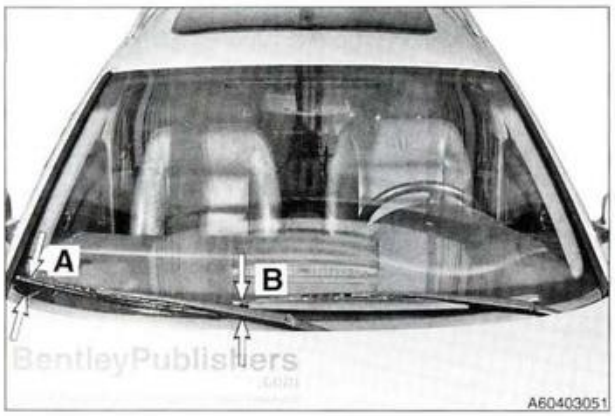
– On each side, mark position of wiper arm on shaft to aid installation.

– Remove wiper arms.

– Installation is reverse of removal. Tighten mounting nuts after adjusting position of arms.

***NOTE—***

*• The right wiper arm is longer.*




➤ Check that in PARK position wiper blades are at specified distances from top of water channel at lower edge of windshield.

| Wiper arm position at PARK | |
|---|---|
| Distance from wiper blade tip to lower edge of windshield:<br>• Right wiper (**A**)<br>• Left wiper (**B**) | <br>approx. 12 mm (½ in)<br>approx. 25 mm (1 in) |

– If necessary, loosen wiper arm mounting nut, adjust arm and retighten mounting nut.

| Tightening torque | |
|---|---|
| Wiper arm to shaft (M8) | 16 Nm (12 ft-lb) |

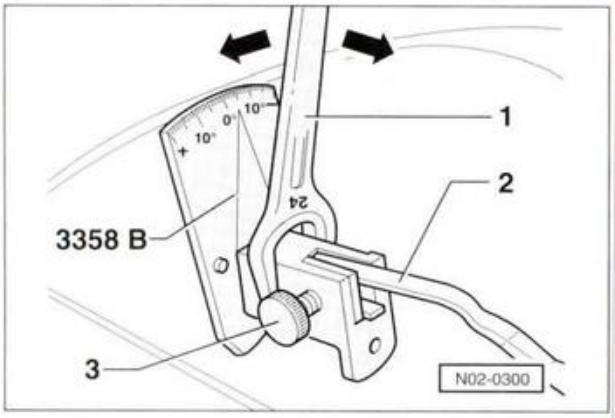
## Wiper blade contact angle, adjusting

Possible causes for wiper blades skipping or chattering are as follows:

- Windshield is scratched.
- Wiper blade rubber has become detached from arm or is split.
- Wiper arm or blade is loose or bent.
- Wiper blades are coated with wax or road grime.

If wiper blades are skipping or chattering and none of the causes listed apply, use the following procedure to adjust angle of wiper arms relative to windshield before installing new wiper blades.

– Move wiper arms to PARK position. Remove wiper blades.

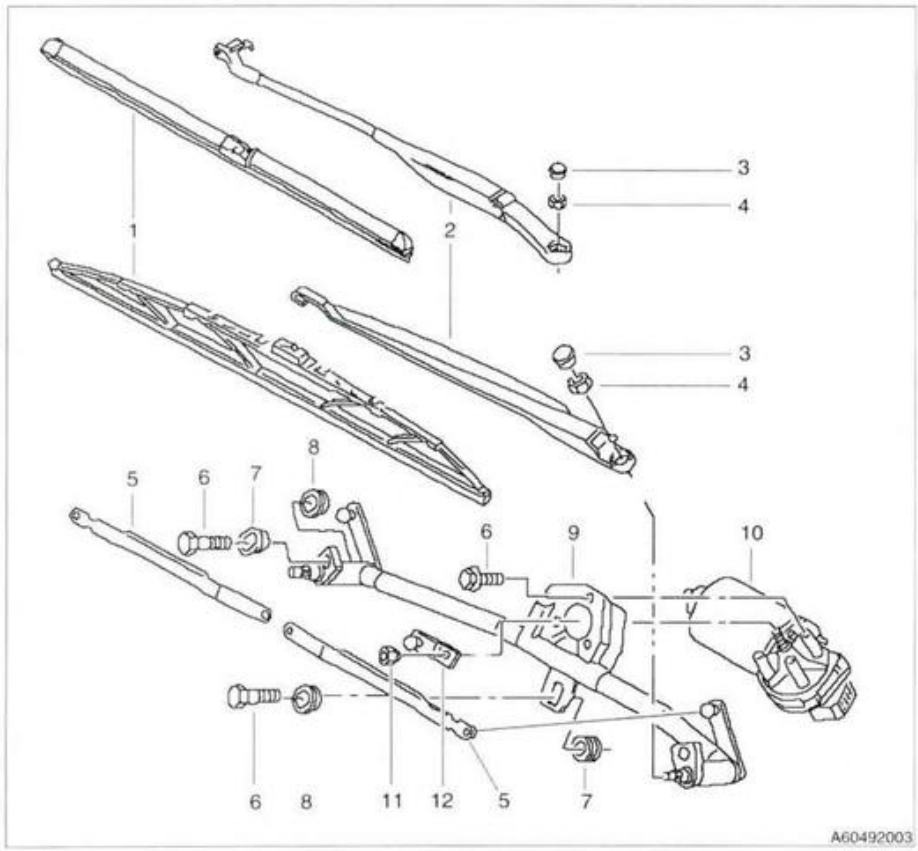



➤ Insert wiper arm (**2**) into windshield wiper adjuster tool (Audi special tool 3358 B) and secure with locking screw (**3**). Compare angle with specifications.

| Wiper arm angle specifications | |
|---|---|
| Left wiper arm | -9° |
| Right wiper arm | -5° |

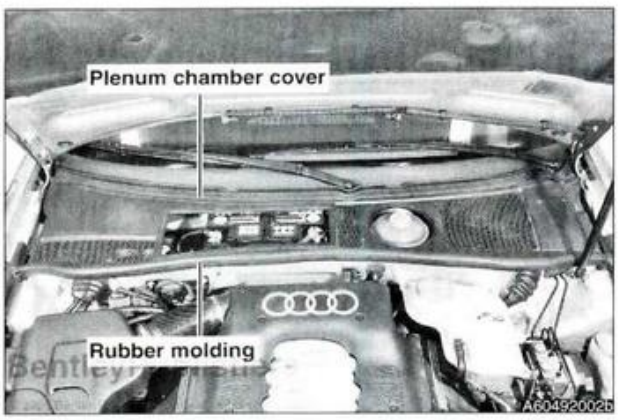
– If necessary, use 24 mm wrench (**1**) to adjust angle to specification.

# WINDSHIELD WIPER ASSEMBLY REPAIRS




## Windshield wiper assembly

1. **Wiper blade**
2. **Wiper arm**
3. **Trim cap**
4. **Nut, 16 Nm (12 ft-lb)**
5. **Link**
6. **M6 bolt**
7. **Grommet**
8. **Spacer bushing**
9. **Wiper assembly frame**
10. **Wiper motor**
11. **M8 self-locking nut**
12. **Crank**



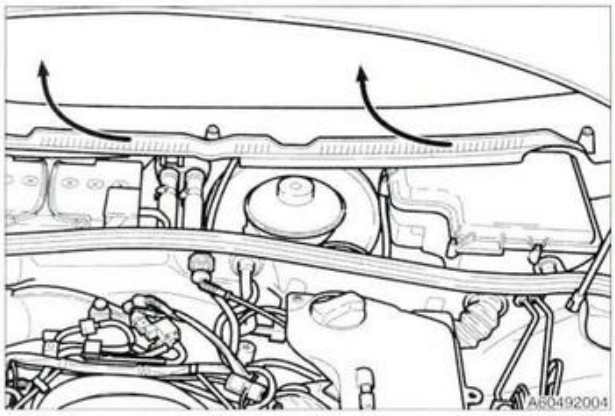

## Windshield wiper assembly, removing and installing

– Make sure wipers are in PARK position and ignition switch is OFF. Open engine hood.

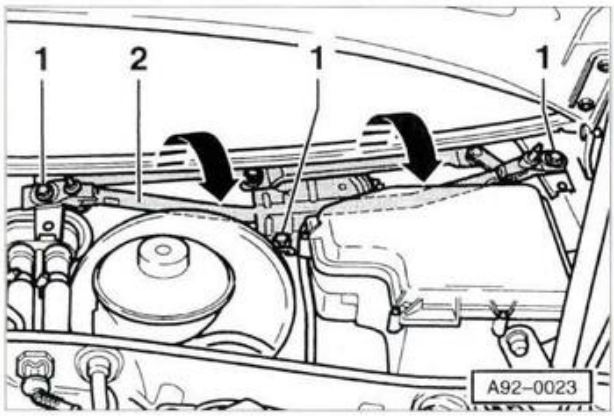
➢ Pull off rubber molding at engine compartment rear bulkhead. Pull plenum chamber cover forward and remove.

➢ Remove electronics box (E-box) cover retaining bolts (**arrows**). Lift off cover.

– Remove wiper arms. See **Wiper arm, removing and installing** in this repair group.




➤ Pull out 3 retaining clips and carefully lift out (**arrows**) plastic cowl cover at base of windshield.




➤ Working inside plenum chamber:

- Remove wiper assembly mounting bolts (**1**).
- Tilt (**arrows**) wiper assembly (**2**) forward and slide to right to remove from plenum chamber.
- Detach electrical connector at wiper motor.

– Installation is reverse of removal.

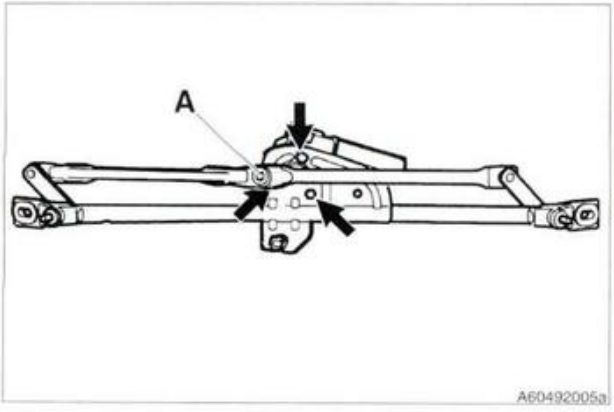
> ***CAUTION—***
> - *Before reinstalling wiper arms, switch ignition ON, make sure wiper motor is in PARK position, then switch ignition OFF.*

| **Tightening torque** | |
|---|---|
| Wiper arm to shaft (M8) | 16 Nm (12 ft-lb) |
| Wiper assembly to plenum chamber | 8 Nm (6 ft-lb) |

– Adjust wiper arms to correct position. See **Wiper arm, removing and installing** in this repair group.

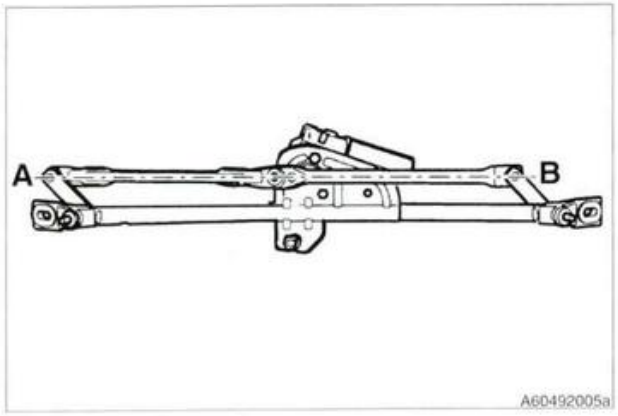
## Windshield wiper motor, removing and installing

– Remove wiper assembly. See **Windshield wiper assembly, removing and installing** in this repair group.




➤ Place wiper assembly on work bench:

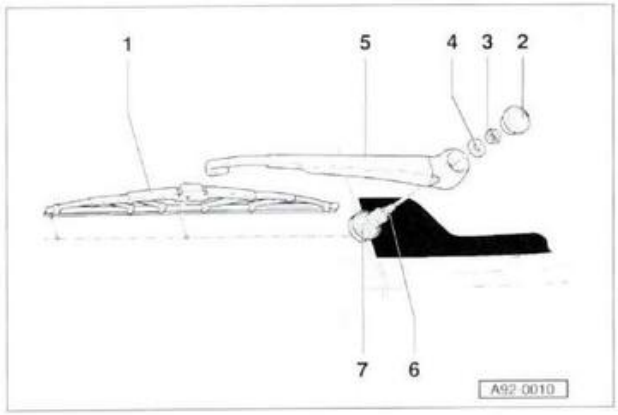
- Detach wiper links at wiper crank ball joint (**A**).
- Remove wiper motor mounting bolts (**arrows**) and lift motor off frame.

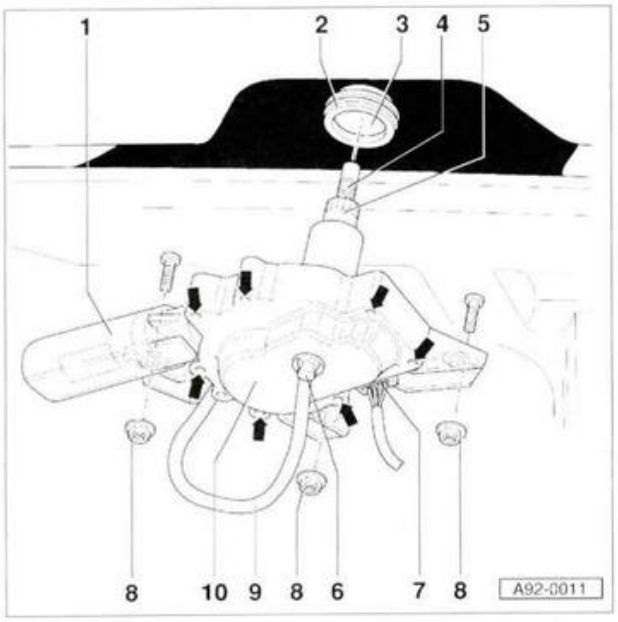



➤ Installation is reverse of removal. Make sure:

- With motor in PARK, wiper crank is parallel to wiper frame.
- When wiper links are attached to crank, they lie in a straight line (**AB**) aligned with wiper crank.

– Reinstall wiper assembly in vehicle. See **Windshield wiper assembly, removing and installing** in this repair group.




## Rear Wiper and Washer Assembly

On Avant (station wagon) models, the rear window wiper is controlled by the wiper switch. Washer fluid is supplied from the same reservoir as the windshield washers. See **Washer fluid reservoir and motor, removing and installing** in this repair group.

### Rear wiper

1. Wiper blade
2. Cap
3. M8 nut, 16 Nm (12 ft-lb)
4. Spring washer
5. Wiper arm
6. Washer jet
7. Wiper shaft

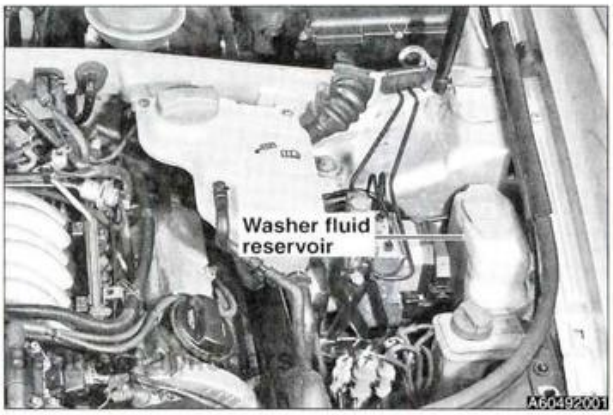
### Rear wiper assembly

1. Wiper motor
2. Seal
3. Hole in rear window
4. Washer jet
5. Wiper shaft
6. Washer fluid hose connector
7. Harness connector
8. M6 mounting nut
9. Washer fluid hose
10. Wiper motor cover

## Washers

The windshield washers, rear window washer (Avant models) and headlight washers are supplied from a fluid reservoir under the left front fender.

When the headlights are ON, the headlight washers operate each time the windshield washer is operated.

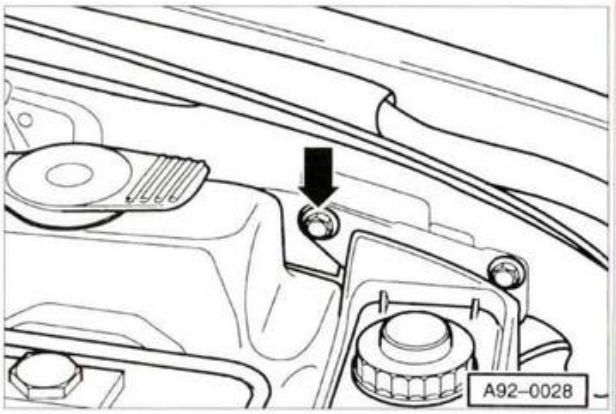



In Avant models, a single bidirectional washer motor supplies fluid to the windshield and headlight washers when activated in one direction and to the rear window when activated in the opposite direction.

## Washer fluid reservoir and motor, removing and installing

The fluid reservoir is a one piece plastic bottle on the left side of the engine compartment. It extends into the left wheel housing.

– Prior to removal, siphon out as much fluid as possible.

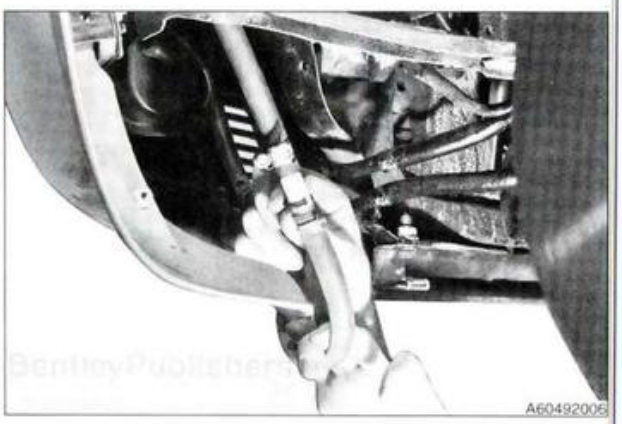



Remove washer reservoir upper mounting bolt (**arrow**).

– Raise left front of vehicle and support safely.

> ***WARNING*** —
> • *Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.*

– Remove left front wheel housing liner. See **66 Exterior Equipment**.




Place 2-gallon bucket underneath left fender. Pull off locking clip and detach fluid hose. Allow fluid to drain into bucket.

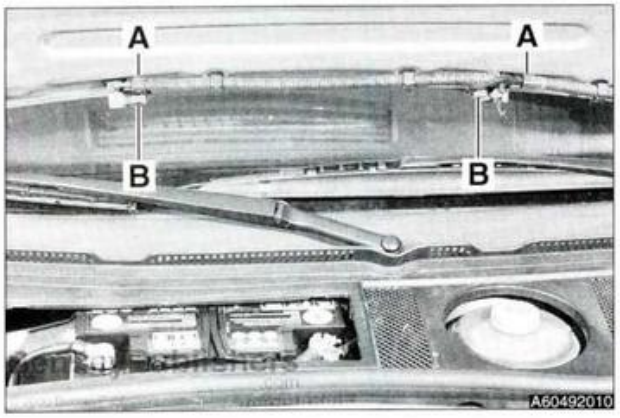
Working underneath left wheel housing:

- Detach fluid level sensor harness connector.
- Remove reservoir mounting bolts (**arrows**).

– Lower reservoir carefully. Reach up in front of reservoir and pull washer fluid pump out of front of reservoir.

> ***CAUTION***—
> • *Be prepared to catch spilling washer fluid.*

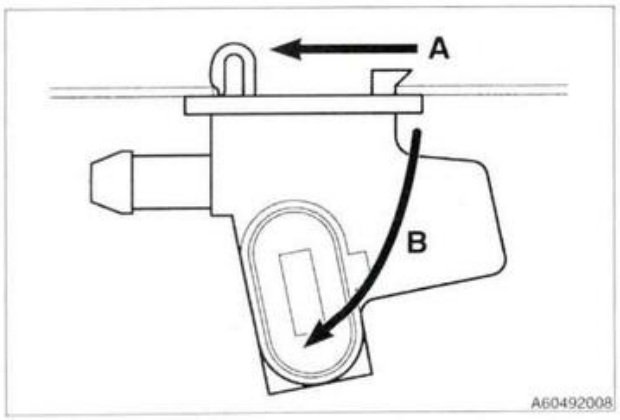
– Installation is reverse of removal. Be sure to replace washer motor sealing grommet in reservoir.




## Windshield washer nozzle, removing and installing

– Open engine hood.

➢ Working at underside of rear of hood:
- Detach fluid hoses (**A**) from nozzles.
- Detach harness connectors (**B**) from washer nozzle heaters.

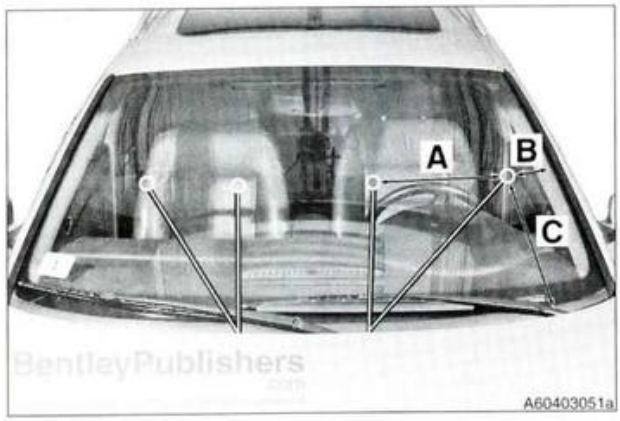



➢ Press nozzle forward (**A**) and tilt (**B**) out of engine hood.

– Installation is reverse of removal.

## Windshield washer nozzles, aiming

Washer fluid sprays at a slightly different angle when the car is stationary. The specified adjustment points take this into account.

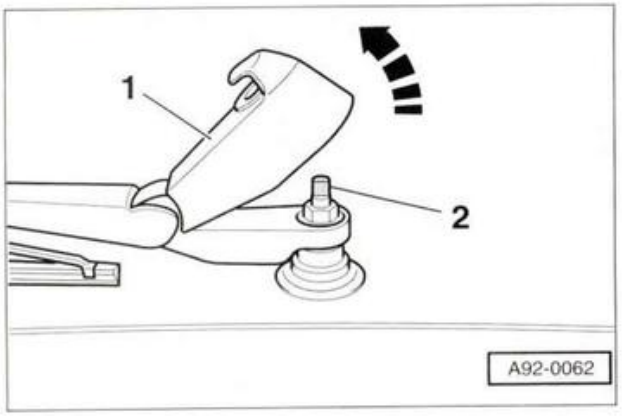



➢ Mark spots on windshield:
- **A** = 400 mm (15.75 in)
- **B**= 190 mm (7.5 in) (distance to windshield side molding)
- **C** = 420 mm (16.5 in) (distance to top of cowl cover)

– Using special tool VAG 3125 (washer nozzle aiming tool or a safety pin), adjust nozzles to correct settings.

– If spray stream is not uniform or cannot be adjusted to specified dimensions, replace nozzle.

## Rear window washer nozzle, removing and installing




➢ Working at rear window wiper:
- Lift up washer nozzle cover (**1**).
- Pull out spray nozzle (**2**) and insert new.

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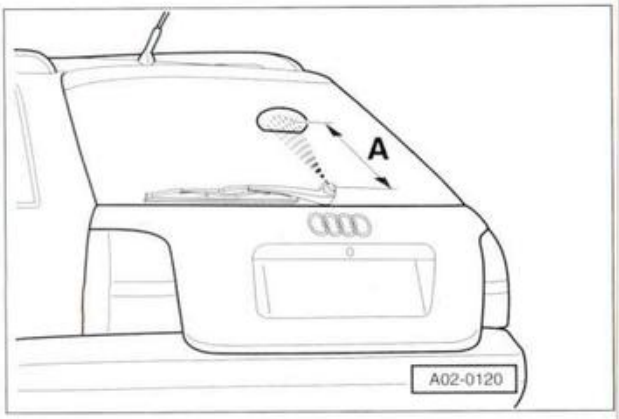
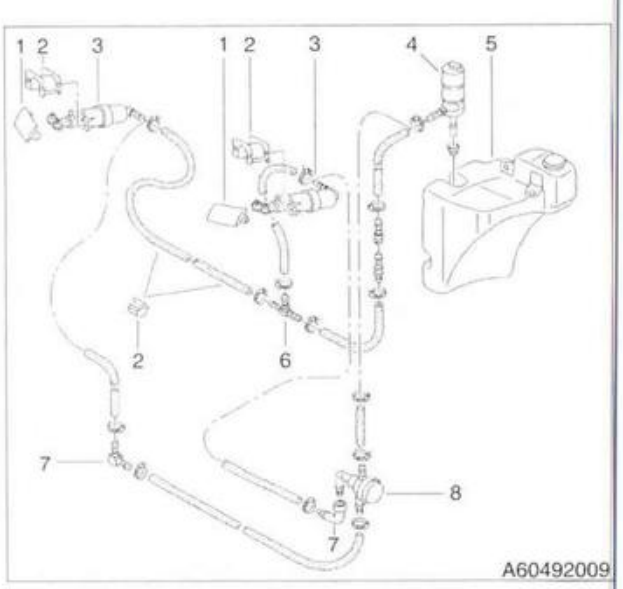



## Rear window washer nozzle, aiming

➤ Mark spot on rear window:

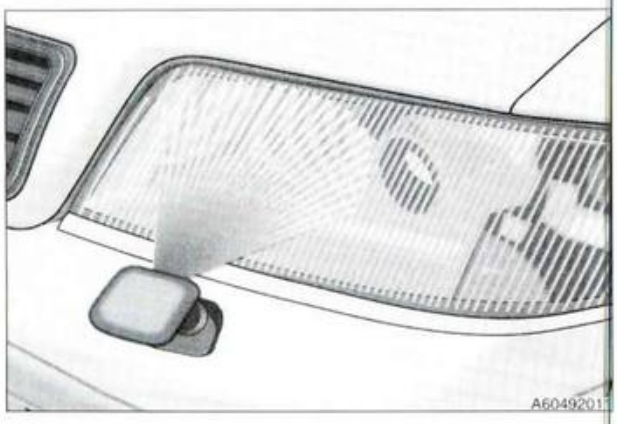
- **A** = 280 mm (11 in) above wiper shaft.

– Using special tool VAG 3125 (washer nozzle aiming tool or a safety pin), adjust nozzle to correct setting.




## Headlight washer system

1. Cap
2. Bracket
3. Washer nozzle
4. Washer pump
5. Washer fluid reservoir
6. T-fitting
7. Elbow fitting
8. Check valve




## Headlight washer nozzles aim

➤ Headlight washer nozzles, installed in the front bumper, are aimed correctly by the manufacturer and do not need to be adjusted.

# 94 Exterior Lights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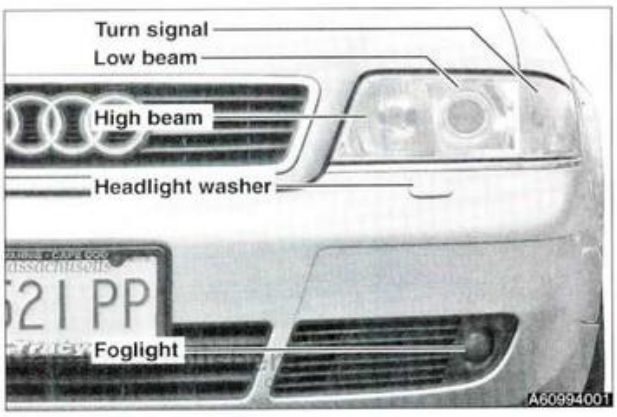



## GENERAL

This repair group covers exterior lighting repairs and bulb replacement.

For headlight beam adjustment, see **03 Maintenance**.

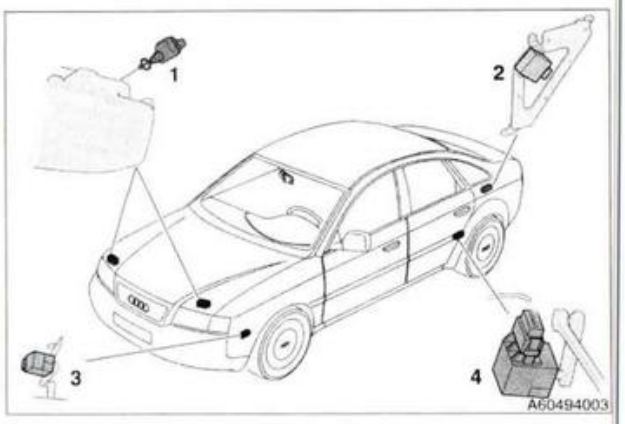
Also see:

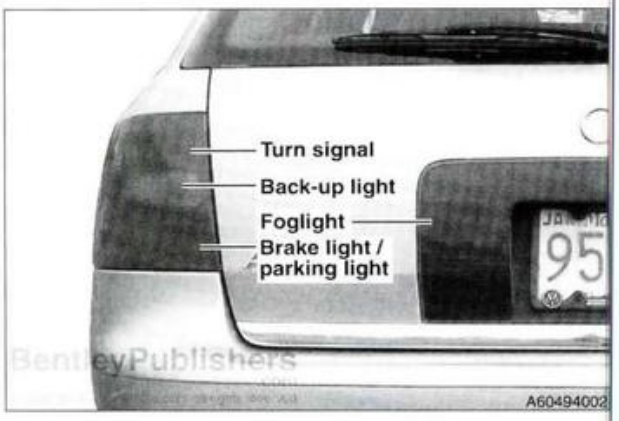
- **96 Interior Lights, Switches, Anti-theft**
- **97 Fuses, Relays, Component Locations**
- **EWD Electrical Wiring Diagrams**

### Headlights

The headlights and front turn signals are combined in one unit on each side. The headlight lens is made of impact-resistant flexible plastic coated with varnish, *which also makes it* scratch resistant.

High beams use a free-space reflector, producing a precisely formed cone of light. H7 halogen bulbs are used for extra brightness.




## Automatic headlight beam adjustment

A6 models with the optional high-intensity discharge (HID) or xenon headlights are equipped with the automatic headlight adjustment system.

1. Headlight adjuster stepper motor in each headlight assembly
2. Headlight adjuster control module
   -1998 - 2000: Behind trim in left side trunk or luggage compartment
   -2001 - 2004: Behind glove compartment
3. Front suspension level sensor at left front control arm
4. Rear suspension level sensor at left rear control arm

## Taillights

The single rear foglight is on the left. Avant taillights illustrated. Sedan is similar.

## Exterior bulb applications

For convenience, exterior bulb applications for A6 models are listed in **Table a**.

**Table a. A6 exterior bulb applications**

| Function | Type | Wattage |
|---|---|---|
| Back-up light | P21W | 21 |
| Brake light | | |
| • Center (sedan) | W5/1.2 | 2.3 |
| • Corners (with parking light) | P21/5W | 21 / 5 |
| Foglight | | |
| • Front | H3 | 55 |
| • Rear | P21W | 21 |
| Headlight | | |
| • High beam | H7 | 55 |
| • Low beam | H1 | 55 |
| • Xenon | D2S | 35 |
| License plate light | L | 5 |
| Parking light | | |
| • Front (with turn signal) | P25-2-1 (amber) | 21 / 5 |
| • Rear (with brake light) | P21/5W | 21 / 5 |
| Turn signal | | |
| • Front (with parking light) | P25-2-1 (amber) | 21 / 5 |
| • Rear | P21W | 21 / 5 |
| • Side | WY5W | 5 |

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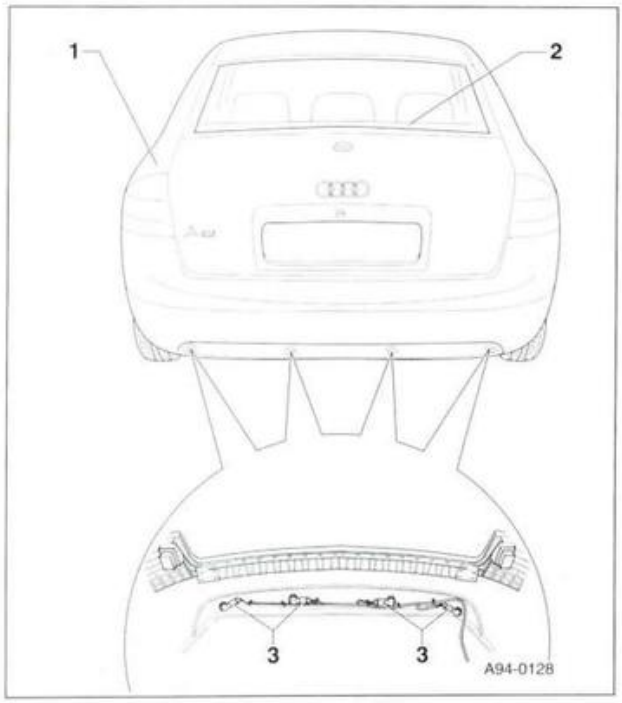



## Parking aid

The optional parking aid system helps the driver during parking maneuvers by giving audible and visual signals when the vehicle approaches obstructions in the rear.

Parking aid system components are as follows:

1. Parking aid control module (J446) behind left trunk trim
2. Parking aid warning buzzer (H15) on rear parcel shelf
3. Parking aid sensors in rear bumper cover

## Warnings and Cautions

***WARNING*** —

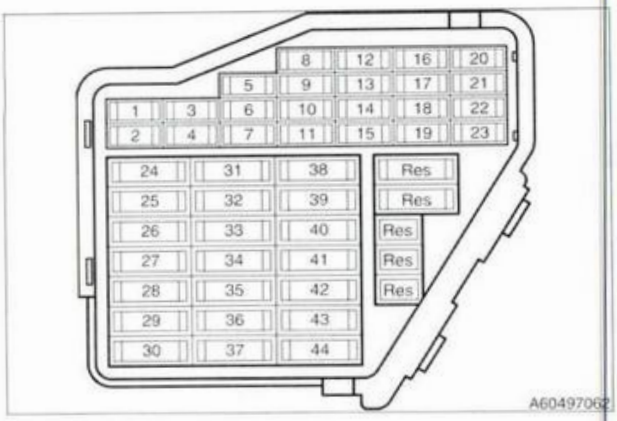
- *Xenon (high intensity discharge or HID) bulbs operate at high voltages. When working on xenon headlight components (control module, ignition unit, gas discharge bulb, drive motor), be sure to switch lights OFF.*
- *Some light bulbs, especially headlight bulbs, can become hot enough to cause injury. Allow bulbs to cool before working on the lighting system.*

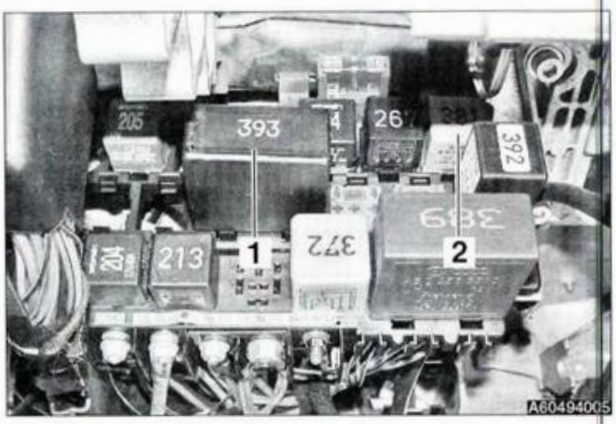
***CAUTION*** —

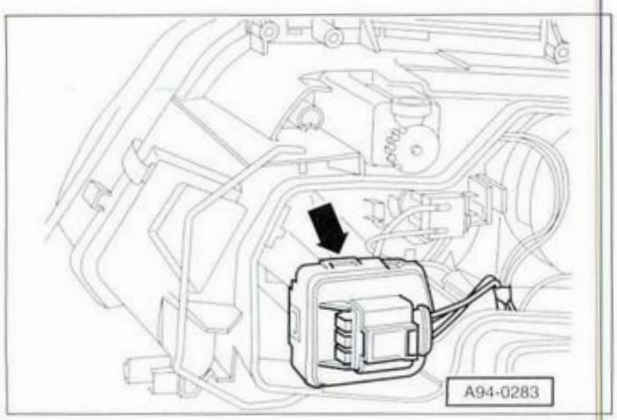
- *Switch the ignition OFF and disconnect the negative (-) battery cable before removing any electrical components.*
- *Prior to disconnecting the battery, read the battery disconnection precautions in* **27 Battery, Alternator, Starter**.
- *Only use a digital multimeter for electrical tests.*
- *Do not touch the glass of bulbs with bare skin. If necessary wipe bulb using a clean cloth dampened with rubbing alcohol.*
- *Use only original equipment replacement bulbs. Non-original bulbs may cause false failure readings on the dashboard display.*
- *Use only specified bulbs. A bulb with higher wattage may cause damage to bulb housing.*
- *To avoid marring car paint or trim, work with a plastic prying tool.*

***NOTE*** —

- *Xenon (HID) components are often marked with a yellow high voltage sticker.*




## LIGHTING CONTROLS

In this manual, light switches are covered as follows:

- Brake light switch in **46 Brakes–Mechanical**
- Headlight flasher switch in **48 Steering**
- Light switch, emergency flasher switch, back-up light switch in **96 Interior Lights, Switches, Anti-theft**.

### Lighting fuses

In main fuse panel, left end of dashboard.

**Table b. Lighting fuses**

| Protected circuit | Fuse # | Amperage |
|---|---|---|
| Back-up lights | 31 | 15 |
| Brake lights | 13 | 10 |
| Emergency flasher | 39 | 15 |
| Foglights | 36 | 15 |
| Headlights<br>• Automatic adjustment<br>• High beam left<br>• High beam right<br>• Low beam left<br>• Low beam right | <br>10<br>19<br>18<br>21<br>20 | <br>5<br>10<br>10<br>15<br>15 |
| License plate lights | 4 | 5 |
| Taillight, parking light<br>• Left<br>• Right | <br>23<br>22 | <br>5<br>5 |
| Turn signals | 2 | 10 |

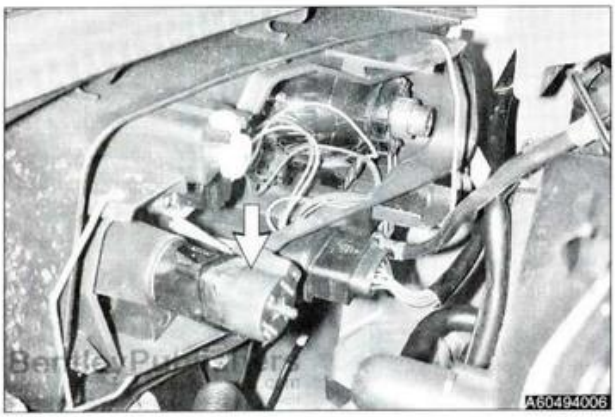
### Lighting system relays

13-fold relay panel underneath left side dashboard:

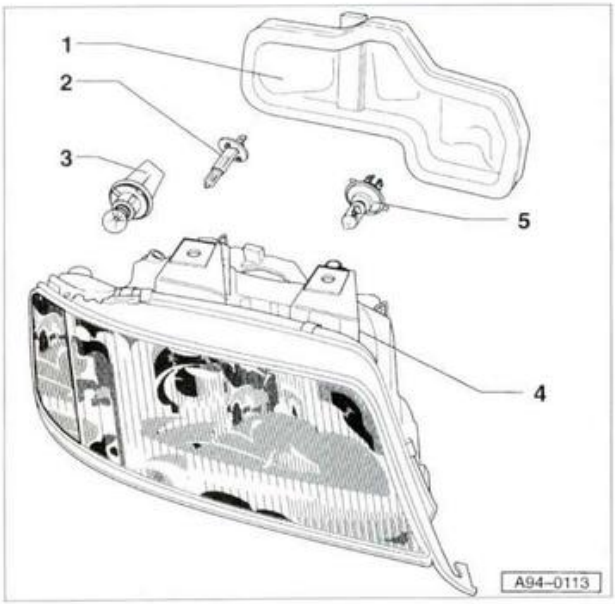
1. Relay positions 9 - 10: Headlight relay (J123)
2. Relay position 6: Foglight relay (J5)

### Headlight controls (xenon)

Xenon (HID) headlight control module (**arrow**) at rear of headlight assembly (static headlight aim adjusting system).



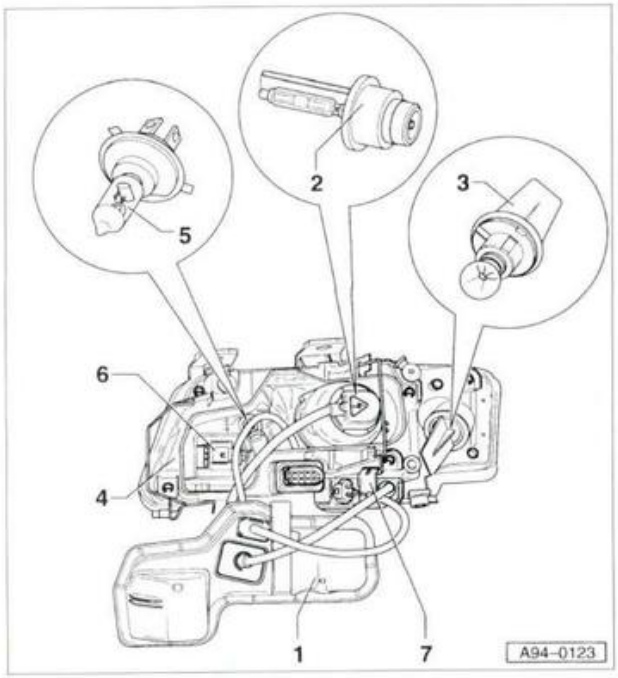

Xenon (HID) headlight adjustment stepper motor (**arrow**) at rear of headlight assembly (automatic headlight aim adjusting system).




## HEADLIGHT REPAIRS

### Headlight assembly

1. Headlight housing rear cover
2. Low beam bulb
3. Turn signal bulb
4. Headlight housing
5. High beam bulb




### Xenon (HID) headlight assembly

1. Headlight housing rear cover
2. Low beam xenon bulb
3. Turn signal bulb
4. Headlight housing
5. High beam bulb
6. Headlight aim adjusting motor (static)
7. Igniter for xenon bulb

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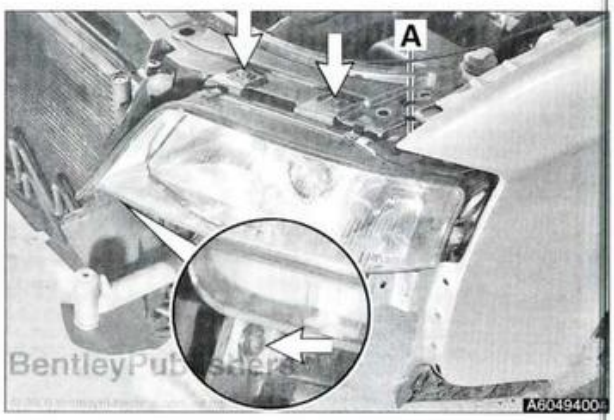
## Headlight, removing and installing

– Remove front bumper. See **63 Bumpers**.

– Xenon (HID) headlight: Disconnect negative (–) battery cable and cover battery terminal to keep cable from accidentally contacting terminal.

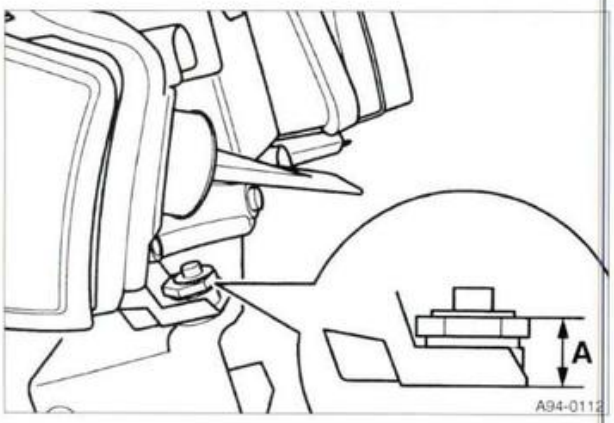
> ***CAUTION—***
> • *Be sure to have the radio anti-theft code before disconnecting the battery.*




➤ Working at headlight assembly:

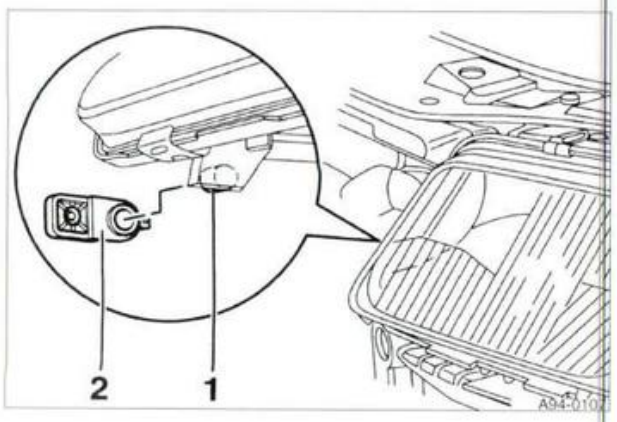
- Remove 3 T30 Torx screws (**arrows**). Use 8 inch (200 mm) Torx driver to remove lower inner screw (**insert**).
- Use VAG special too 3249 (ball-head Allen wrench) to reach behind headlight and loosen outer lower screw (**A**).
- Disconnect headlight electrical connector.

– Swivel headlight assembly toward center of car and remove.




➤ Prior to installing new headlight, measure distance **A** at plastic bolt on old headlight.

– Adjust plastic bolt on new headlight accordingly.

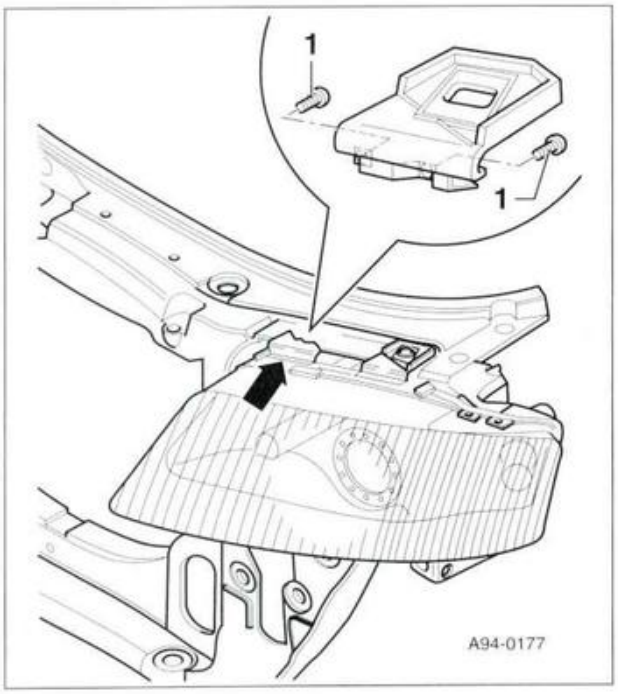



➤ When installing new headlight, first engage lug **1** in guide **2**.

– Remainder of installation is reverse of removal. Position headlight with even gap to surrounding body panels.

| Tightening torque | |
|---|---|
| Headlight to lock carrier (T30 bolts) | 6 Nm (53 in-lb) |

– Adjust headlight aim. See **03 Maintenance**.




## Headlight housing, repairing

A repair kit is available for broken headlight mounting tabs.

| Headlight tab repair kits | |
|---|---|
| Left headlight | Part no. 4B0 998 121 |
| Right headlight | Part no. 4B0 998 122 |

***NOTE***—

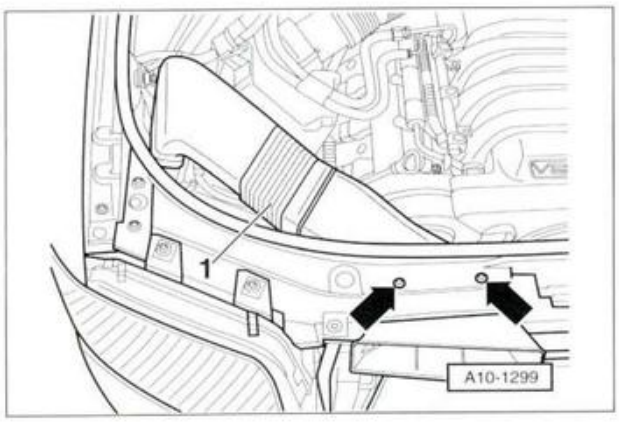
- *VAG part numbers given were correct at publication time but may change over time. Consult an authorized Audi dealer parts department for current part information.*

– Remove headlight with broken mounting tab. See **Headlight, removing and installing** in this repair group. Remove pieces of broken mount from headlight and from lock carrier.

➤ Place repair kit mount at edge of headlight housing (**arrow**). Secure with 2 screws (**1**) from behind.

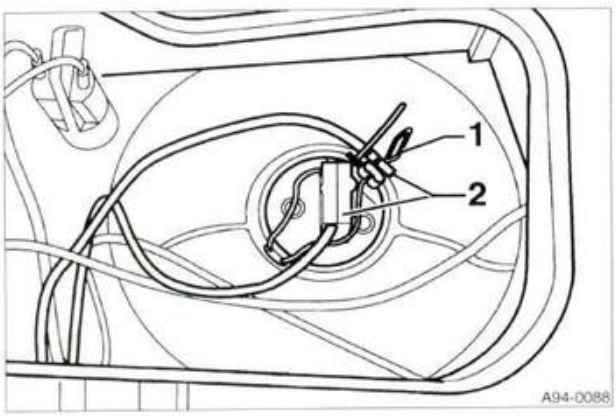
– Reinstall headlight.

## Headlight bulb, halogen, removing and installing



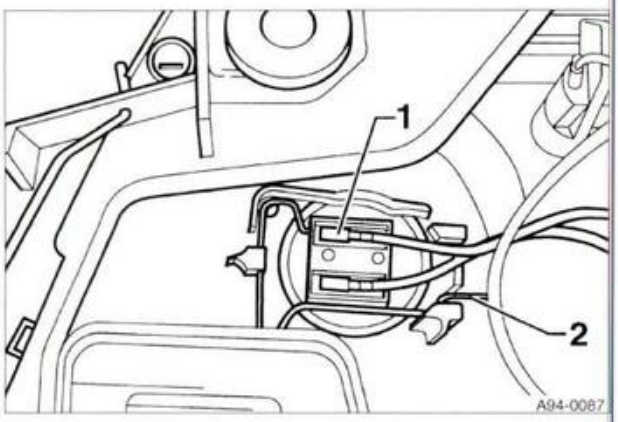

➤ Right headlight: Remove air filter housing cover. Then remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).

– Remove headlight housing cover.




➤ Low beam:

- Detach harness connector (**1**).
- Remove wire clip (**2**) and take bulb out of housing.




➤ High beam:
- Detach harness connector (**1**).
- Remove wire clip (**2**) and take bulb out of housing.

– Insert new bulb, lining up tabs on bulb with notches in headlight housing.

| **Bulb applications** | |
|---|---|
| Headlight high beam | H7 55 watt |
| Headlight low beam | H1 55 watt |

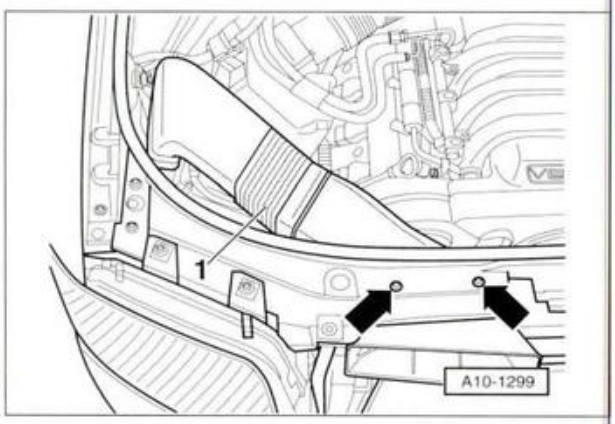
***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Reinstall wire clip, reattach harness connector and install cover.

## Xenon (HID) bulb, removing and installing

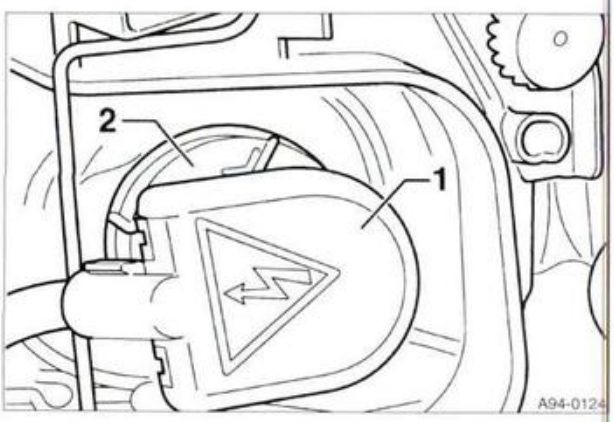
– Disconnect negative (–) battery cable and cover battery terminal to keep cable from accidentally contacting terminal.

***CAUTION—***
*• Be sure to have the radio anti-theft code before disconnecting the battery.*




➤ Right headlight: Remove air filter housing cover. Then remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).

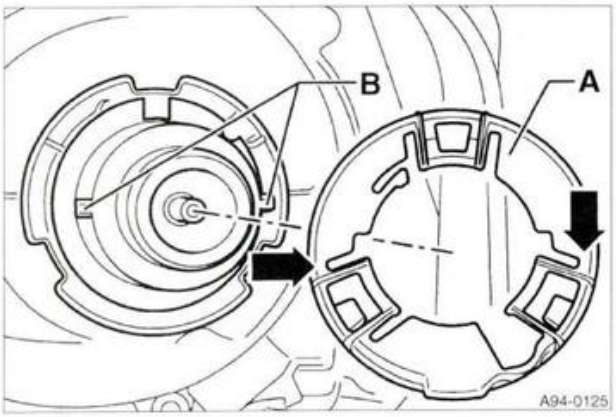
– Remove headlight housing cover.




➤ Working at rear of headlight:
- Turn low beam harness connector (**1**) counterclockwise to detach.
- Rotate bulb retainer ring (**2**) counterclockwise and remove.
- Remove bulb and insert new.

| **Bulb application** | |
|---|---|
| Xenon headlight | D2S 35 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*



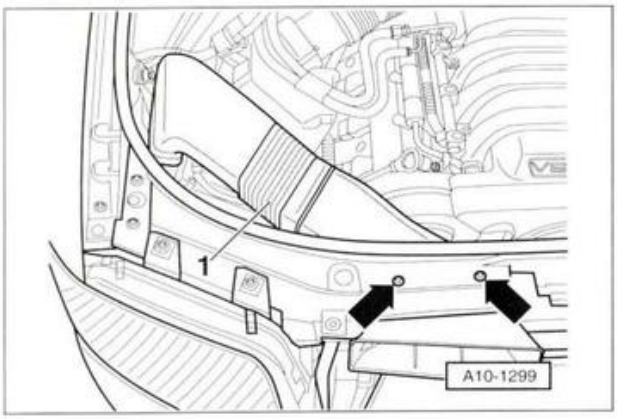

➤ Insert retainer ring (**A**) on bulb lugs (**B**), lining up with notches (**arrows**). Rotate retainer clockwise to secure.

– Reattach harness connector and install cover.

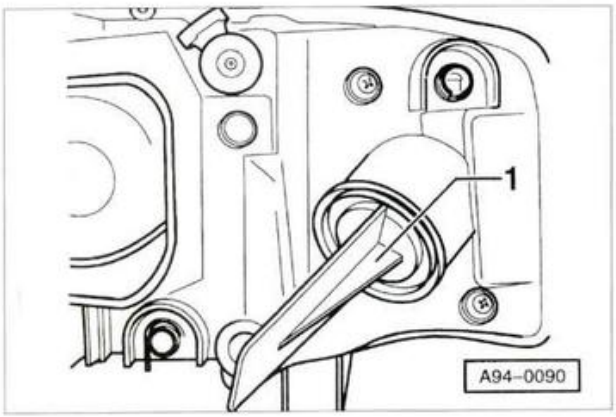
## FRONT TURN SIGNAL REPAIRS

### Front turn signal bulb, removing and installing

Front turn signal bulb also functions as parking light.




➤ Right front turn signal: Remove air filter housing cover. Then remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).



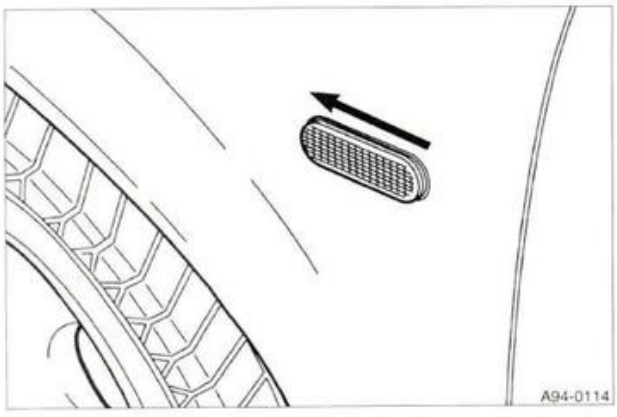

➤ Working at outboard corner of headlight assembly, rotate turn signal bulb socket (**1**) counterclockwise to remove.

– Rotate bulb to remove from socket. Replace with new and reassemble socket.

| **Bulb application** | |
|---|---|
| Front turn signal and parking (amber) | P25-2-1 21 / 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

### Side turn signal bulb, removing and installing



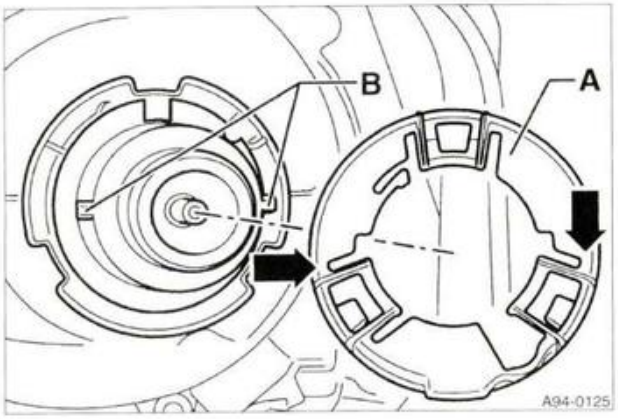

➤ Push side turn signal forward (**arrow**) against spring clip and remove from front fender.

– Detach electrical harness. Remove bulb and replace.

| **Bulb application** | |
|---|---|
| Side turn signal (amber) | WY5W 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.



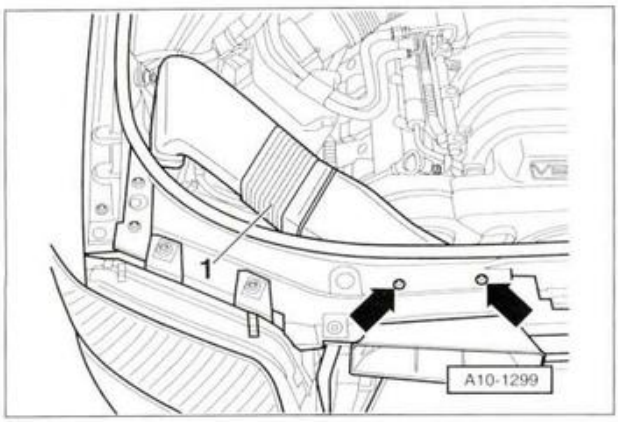

➤ Insert retainer ring (**A**) on bulb lugs (**B**), lining up with notches (**arrows**). Rotate retainer clockwise to secure.

– Reattach harness connector and install cover.

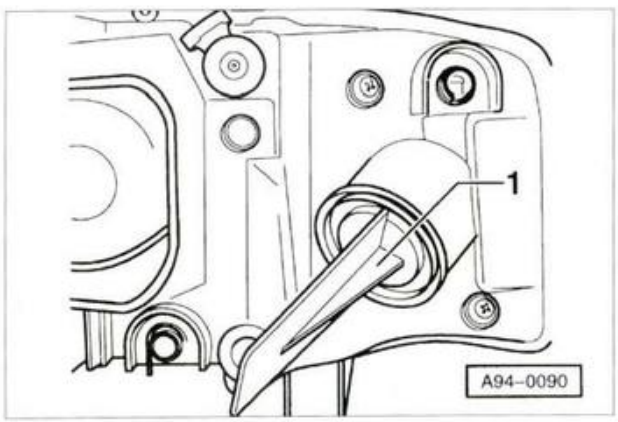
## FRONT TURN SIGNAL REPAIRS

### Front turn signal bulb, removing and installing

Front turn signal bulb also functions as parking light.




➤ Right front turn signal: Remove air filter housing cover. Then remove air duct mounting bolts (**arrows**) at lock carrier (radiator support frame). Remove air duct (**1**).



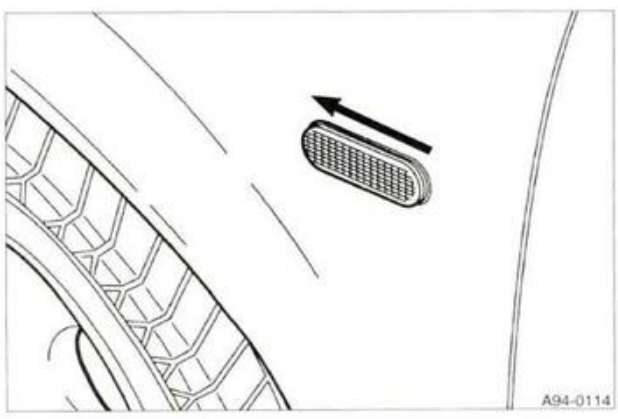

➤ Working at outboard corner of headlight assembly, rotate turn signal bulb socket (**1**) counterclockwise to remove.

– Rotate bulb to remove from socket. Replace with new and reassemble socket.

| **Bulb application** | |
|---|---|
| Front turn signal and parking (amber) | P25-2-1 21 / 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

### Side turn signal bulb, removing and installing



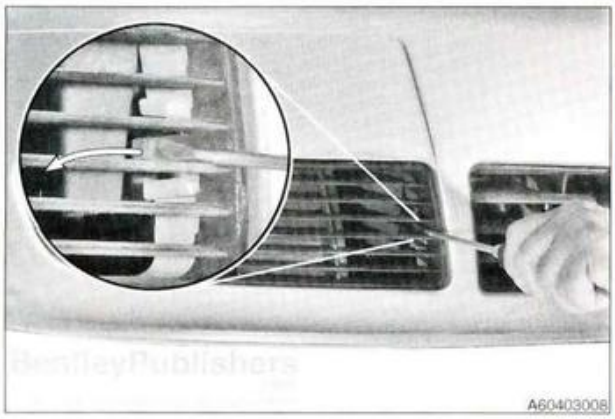

➤ Push side turn signal forward (**arrow**) against spring clip and remove from front fender.

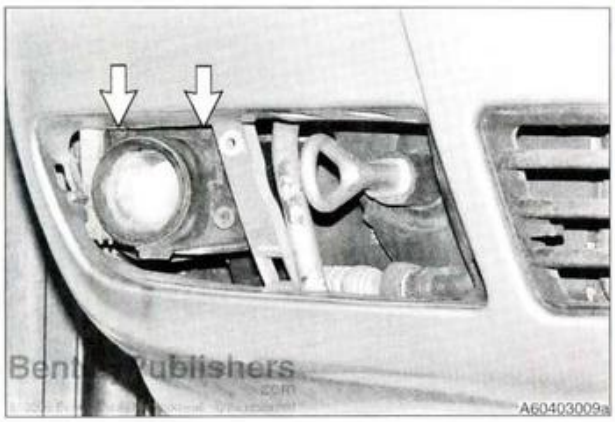
– Detach electrical harness. Remove bulb and replace.

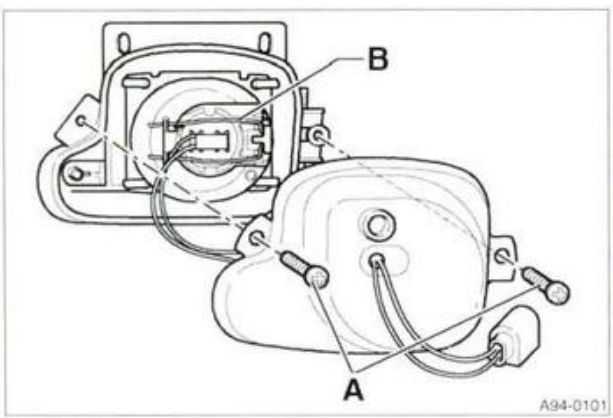
| **Bulb application** | |
|---|---|
| Side turn signal (amber) | WY5W 5 watt |

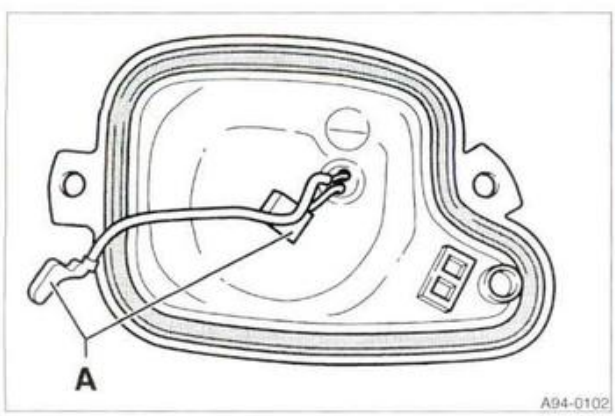
***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.




## FOGLIGHT REPAIRS

### Front foglight, removing and installing

➤ Insert screwdriver in lower grille slot. Pry gently on lock tab (**arrow**), then pull grille off.

➤ Remove foglight mounting screws (**arrows**).

– Pull foglight assembly forward and detach electrical harness.

– Installation is reverse of removal. Adjust foglight beam. See **Front foglight, adjusting** in this repair group.

### Front foglight bulb, removing and installing

#### Foglight with cover screwed on

– Remove foglight. See **Front foglight, removing and installing** in this repair group.

➤ Remove 2 Phillips screws (**A**) from foglight assembly cover. Pull cover back.

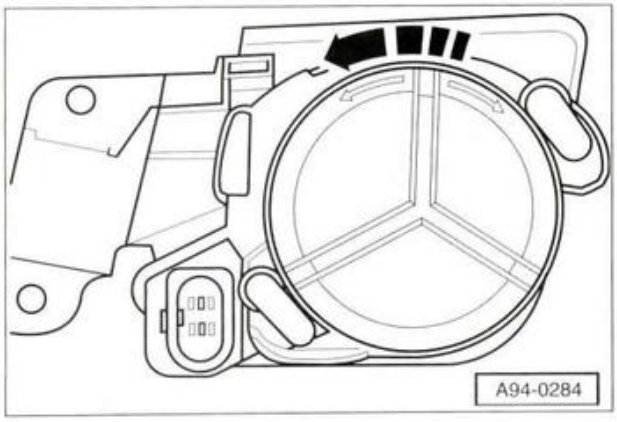
– Disengage wire (**B**) clip and remove bulb.

➤ Detach electrical connectors (**A**) from bulb holder in housing cover.

| Bulb application | |
|---|---|
| Front foglight | H3 55 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

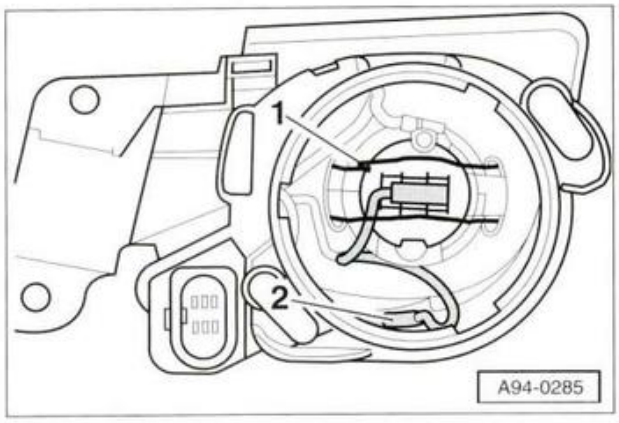
– Installation is reverse of removal.




**Foglight with bayonet mounted cover**

– Remove foglight. See **Front foglight, removing and installing** in this repair group.

➤ Rotate cover counterclockwise (**arrow**) to remove.




➤ Disengage wire (**1**) clip and remove bulb.

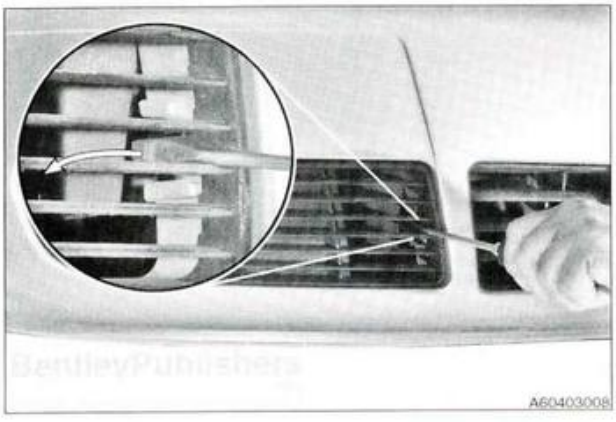
– Detach electrical connectors (**2**) from bulb holder in housing cover.

| **Bulb application** | |
|---|---|
| Front foglight | H3 55 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.

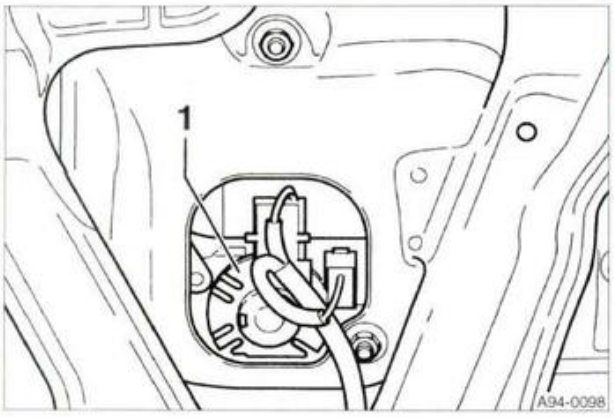
## Front foglight, adjusting




➤ Insert screwdriver in lower grille slot. Pry gently on lock tab (**arrow**), then pull grille off.

➤ Use adjustment screw to adjust foglight beam.
- Counterclockwise lowers beam.
- Clockwise raises beam.

It is not possible to adjust foglight beam horizontally.




## Rear foglight bulb, replacing

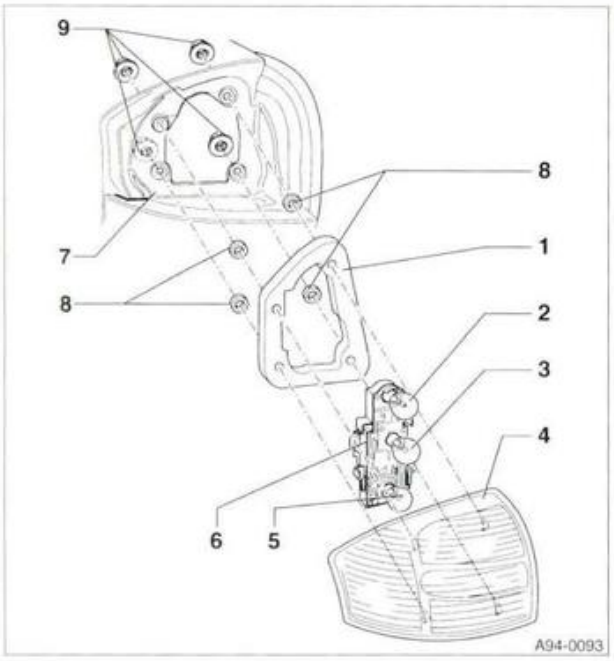
– Open trunk or luggage compartment. Remove trunk lid or rear deck lid trim.

➤ Rotate rear foglight bulb holder (**1**) clockwise and pull out. Replace rear foglight bulb.

| **Bulb applications** | |
|---|---|
| Rear foglight | P21W 21 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.




# TAILLIGHT REPAIRS

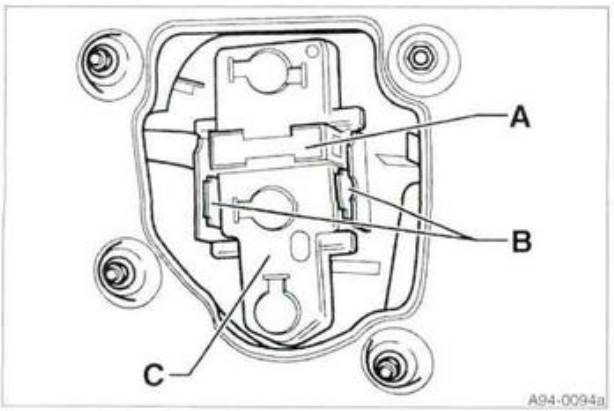
## Taillight assembly

1. Gasket
2. Turn signal bulb
3. Back-up light bulb
4. Tail lens
   - Sedan version illustrated
   - Avant (station wagon) version has additional lateral cover
5. Brake light / parking light bulb
6. Bulb carrier
7. Taillight housing
8. Spacers
9. Mounting nuts, 4 Nm (35 in-ft)

## Taillight bulb, replacing

– Open trunk or luggage compartment. Remove side storage compartment cover.

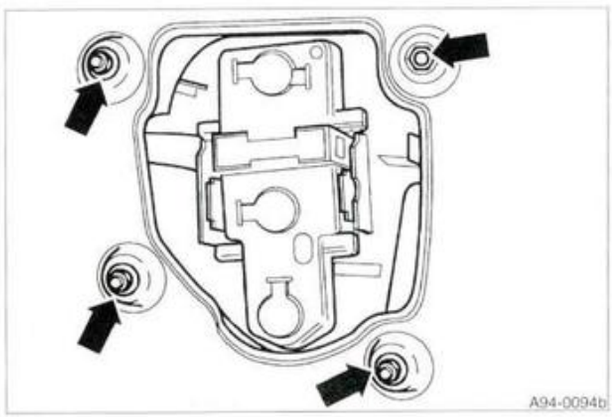
➤ Working at rear of taillight inside luggage compartment:
- Detach electrical harness (**A**).
- Press mounting bracket tabs (**B**) together and remove bulb carrier (**C**).
- Replace defective bulbs as necessary.




| **Taillight bulb applications** | |
|---|---|
| Back-up light | P21W 21 watt |
| Brake light / parking light | P21/5W 21 / 5 watt |
| Turn signal | P21W 21 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.




### Taillight lens, removing and installing

– Open trunk or luggage compartment. Remove bulb carrier. See **Taillight bulb, replacing** in this repair group.

> ***CAUTION—***
> *• Do not touch bulb glass with bare skin.*

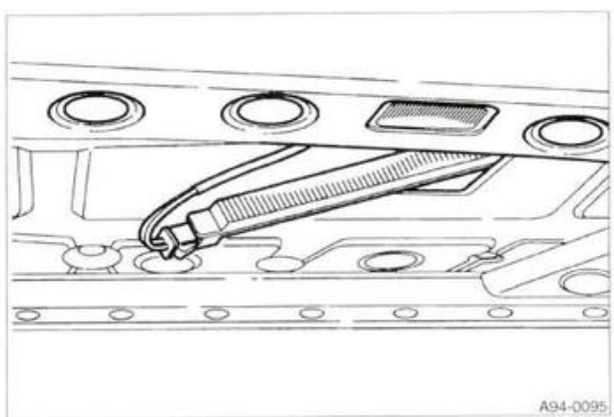
➤ Continuing to work inside luggage compartment, remove taillight lens mounting nuts (**arrows**).

– Remove taillight lens from body.

– Installation is reverse of removal, noting the following:
- Be sure to seat tail lens moisture seal correctly.
- Align tail lens to body contours when tightening mounting nuts.

| Tightening torque | |
|---|---|
| Taillight lens to body | 4 Nm (35 in-ft) |

## CENTER BRAKE LIGHT REPAIRS



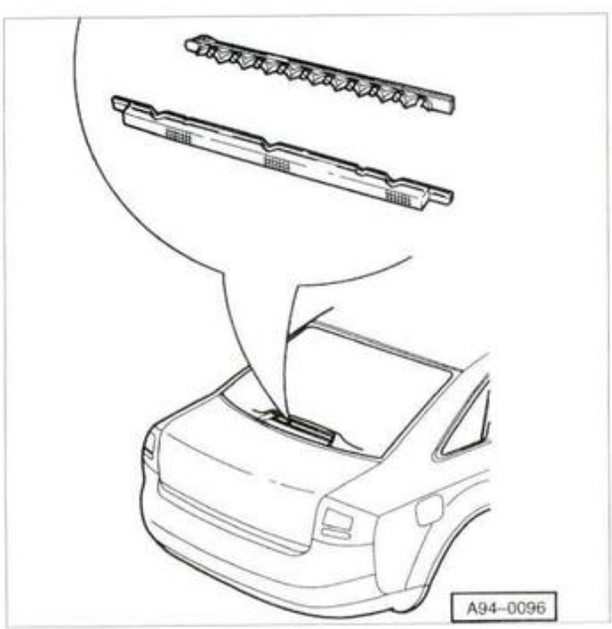

### Center brake light, removing and installing (sedan)

– Disconnect negative (–) battery cable and cover battery terminal to keep cable from accidentally contacting terminal.

> ***CAUTION—***
> *• Be sure to have the radio anti-theft code before disconnecting the battery.*

➤ Loosen center brake light from tabs in trunk and pull out from metal cut-out toward bottom of trunk.

– Detach electrical connection and remove bulb holder from trunk.




➤ Carefully lever off plastic cover from bulb carrier. Replace bulbs as necessary.

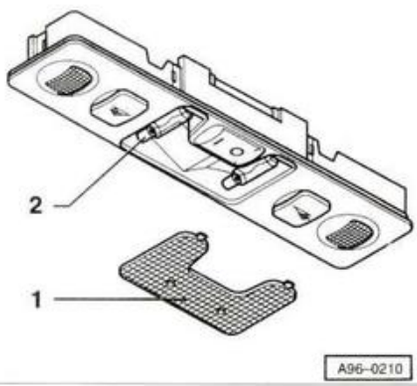
| Bulb applications | |
|---|---|
| Center brake light bulbs (qty. 10) | W5/1.2 2.3 watt |

> ***CAUTION—***
> *• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.

# 96-4 Interior Lights, Switches, Anti-theft

*Interior Lights*




## Rear interior light bulbs, servicing

### Rear dome light bulb, replacing

➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

- Carefully pry off dome light lens (**1**).
- Pry out and replace dome light bulbs (**2**) as necessary.

| Bulb application | |
|---|---|
| Rear dome light | K 10 watt |

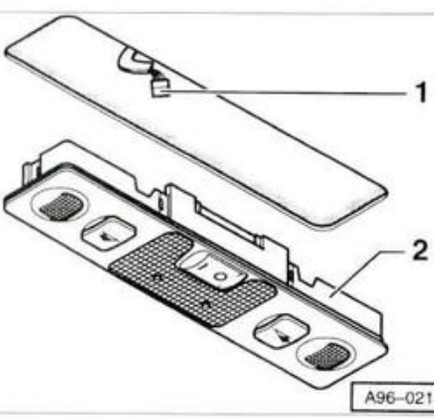
***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.

### Rear reading light bulb, replacing

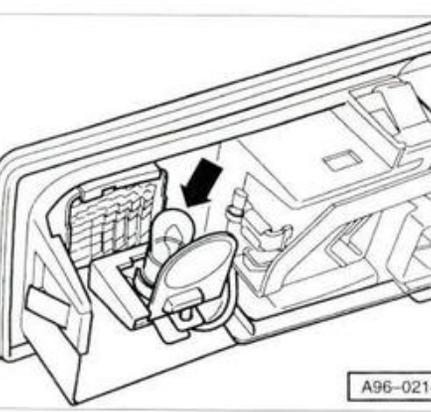
– Disconnect negative (–) battery cable and cover battery terminal to keep cable from accidentally contacting terminal.

***CAUTION—***
*• Be sure to have the radio anti-theft code before disconnecting the battery.*




➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

- Carefully pry dome light assembly (**2**) out of head liner.
- Disconnect electrical connector (**1**).



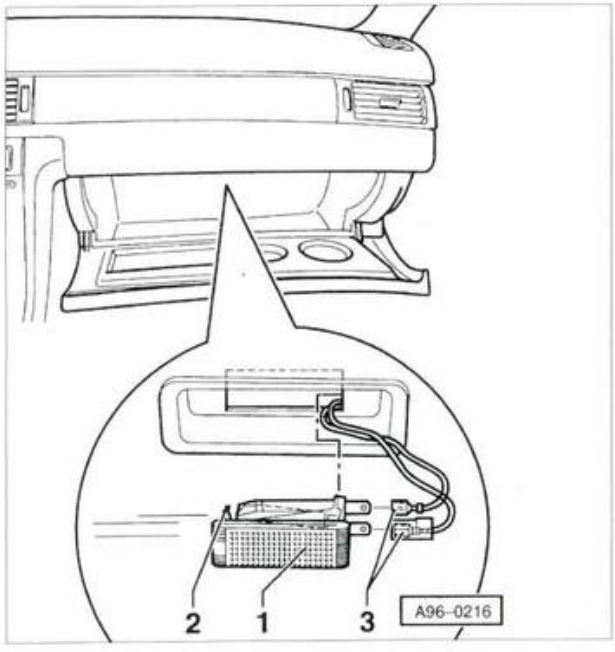

➤ Remove reading light bulb (**arrow**) from back of light assembly and replace with new.

| Bulb application | |
|---|---|
| Rear reading light | L 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Reattach electrical connector.

– When installing assembly into head liner, hook in one side and clip in at opposite side.




## Glove compartment light bulb, replacing

➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

- Carefully push in retaining tab (**2**) and pry out glove compartment light socket (**1**).
- Detach electrical connectors (**3**).

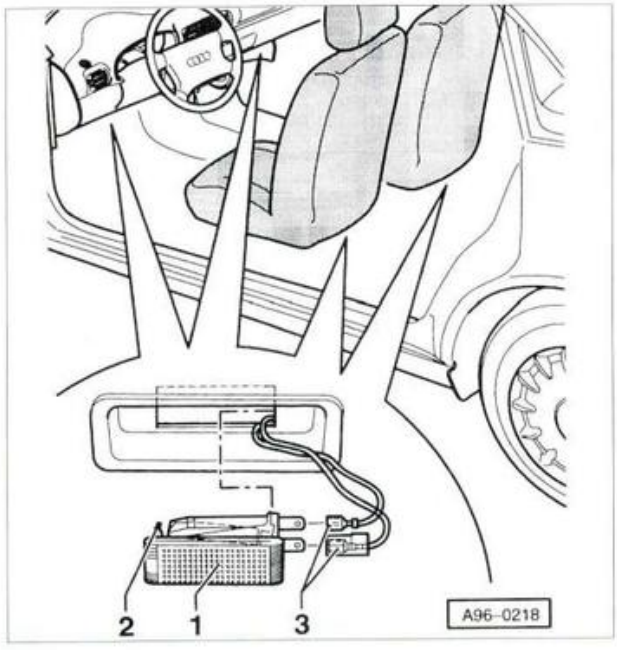
– Remove bulb from back of socket and replace with new.

| Bulb application | |
|---|---|
| Glove compartment light | L 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Reattach electrical connectors.

– When installing socket, hook in one side and clip in at opposite side.




## Footwell light bulb, replacing

➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

- Carefully push in retaining tab (**2**) and pry out footwell light socket (**1**).
- Detach electrical connectors (**3**).

– Remove bulb from back of socket and replace with new.

| Bulb application | |
|---|---|
| Footwell light | L 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Reattach electrical connectors.

– When installing socket, hook in one side and clip in at opposite side.

## Door courtesy light bulb, replacing

➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

- Carefully push in retaining tab and pry out courtesy light socket (**arrow**).
- Detach electrical connectors.

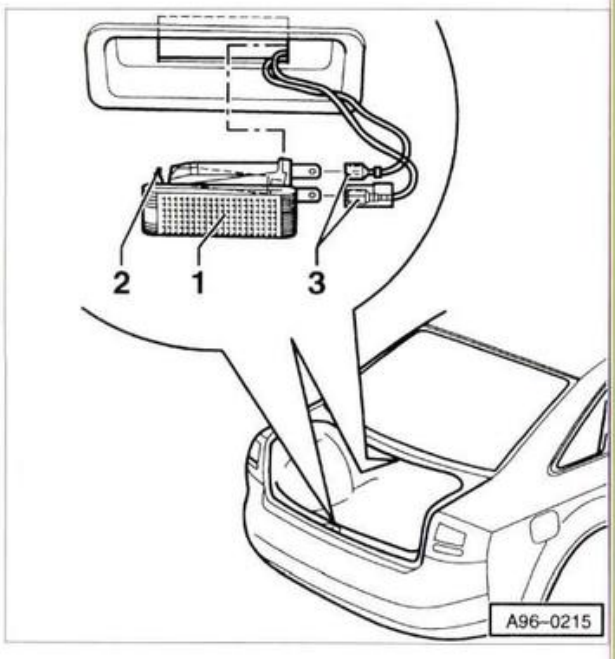
– Remove bulb from back of socket and replace with new.

| Bulb application | |
|---|---|
| Door courtesy light | W 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Installation is reverse of removal.

## Trunk light bulb, replacing




➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape:

• Carefully push in retaining tab (**2**) and pry out trunk light socket (**1**).

• Detach electrical connectors (**3**).

– Remove bulb from back of socket and replace with new.

| Bulb application | |
|---|---|
| Trunk light | L 5 watt |

***CAUTION—***
*• Do not touch bulb glass with bare skin.*

– Reattach electrical connectors.

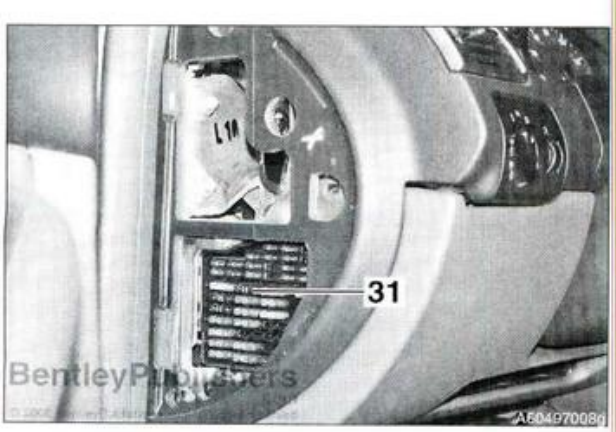
– When installing socket, hook in one side and clip in at opposite side.

***NOTE—***
*• Avant luggage compartment light bulb replacement is similar.*

# BACK-UP LIGHTS

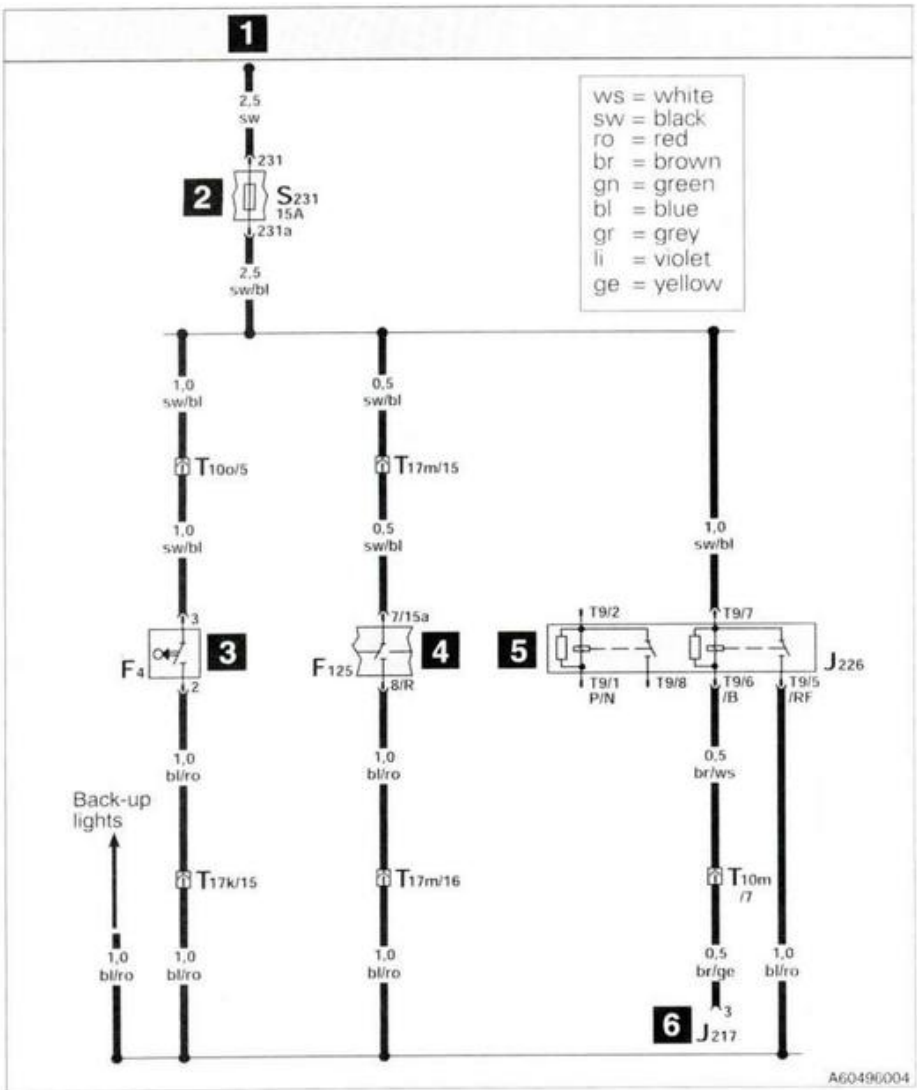
Back-up light bulbs are covered in **94 Exterior Lights**.

## Back-up lights power supply




➤ In main fuse panel, left end of dashboard.

| Back-up lights fuse rating | |
|---|---|
| Fuse 31 | 15 A |



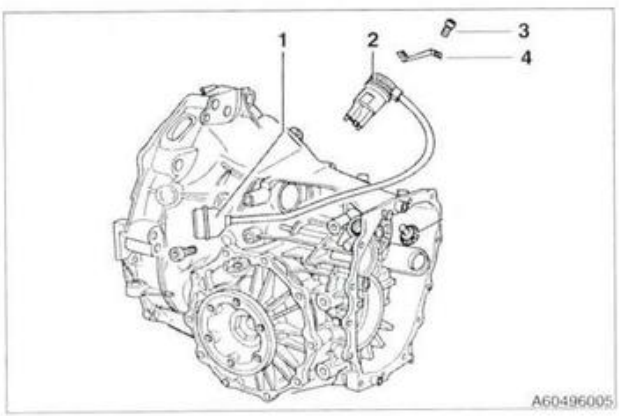

## Back-up lights circuits

1. **Power supply**
   - Terminal 15, switched power in dashboard wiring harness.
2. **Fuse 31, 15 A**
   - In main fuse panel, left end of dashboard. See **Back-up lights power supply** in this repair group.
3. **Back-up light switch (F4)**
   - Manual transmission model.
   - In transmission case. See **Back-up light switch, manual transmission** in this repair group.
4. **Multifunction transmission range switch (F125)**
   - Automatic transmission model.
   - Switch assembly on side of transmission, underneath vehicle.
5. **Park / neutral position (PNP) relay (J226)**
   - Multitronic (CVT) transmission model.
   - In 13-fold relay panel underneath left side dashboard. See **Back-up light switch function, multitronic transmission (CVT)** in this repair group.
6. **Transmission control module (J217)**
   - Multitronic (CVT) transmission model.
   - Inside transmission at rear of case, underneath end cover.

***NOTE —***

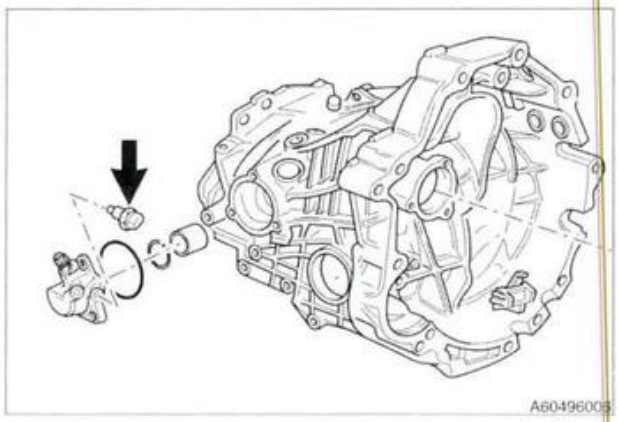
- *Audi identifies electrical components by a letter and/or a number in the electrical schematics. See* **EWD Electrical Wiring Diagrams**. *These electrical identifiers are listed in parentheses as an aid to electrical troubleshooting.*

## Back-up light switch, manual transmission




5-speed manual transmission:

1. Harness connector above left drive axle flange.
2. Gear position sender at top right of transmission housing.
   - Includes back-up light switch (F4).
3. Bolt, 25 Nm (18 ft-lb).
4. Hold-down bracket.



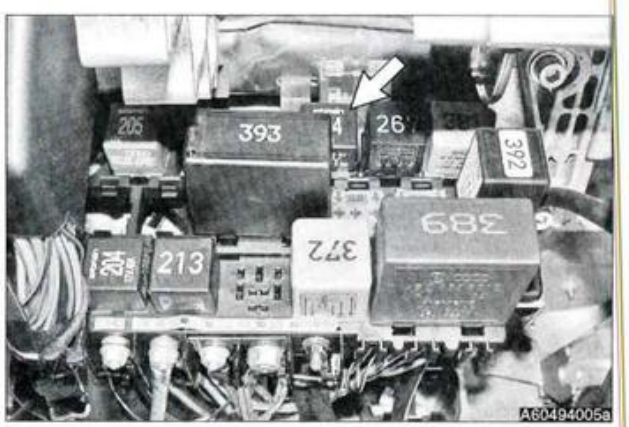

➤ 6-speed manual transmission: Backup light switch (F4)(**arrow**) on right side of transmission at selector shaft housing.

• Tighten to 20 Nm (15 ft-lb)

## Back-up light switch function, automatic transmission

When automatic transmission is placed in REVERSE, multifunction transmission range switch (F125) switches back-up lights ON.

## Back-up light switch function, multitronic transmission (CVT)

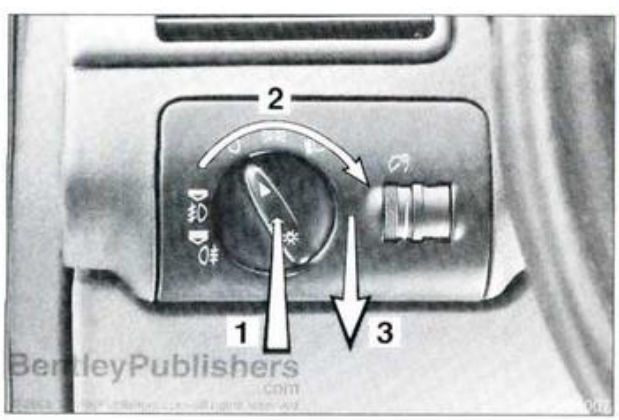



➤ When CVT transmission is placed in reverse, transmission control module (J217), under cover in rear of transmission, indicates gear position to park / neutral position (PNP) relay (J226) (**arrow**) in 13-fold relay panel under left side dashboard.

– PNP relay switches back-up lights ON.

# Dashboard and Center Console Switches

## Light switch, removing and installing




➤ Working at light switch in dashboard:

• Push in switch knob (**1**) and at same time turn it clockwise (**2**).

• Hold in this position and pull switch housing out of dashboard (**3**).

• Detach electrical connectors from switch.

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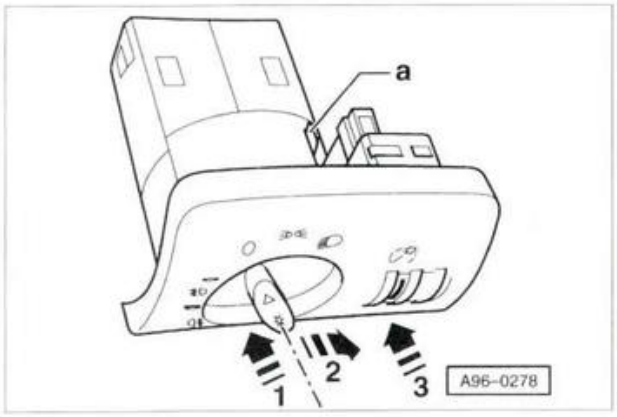
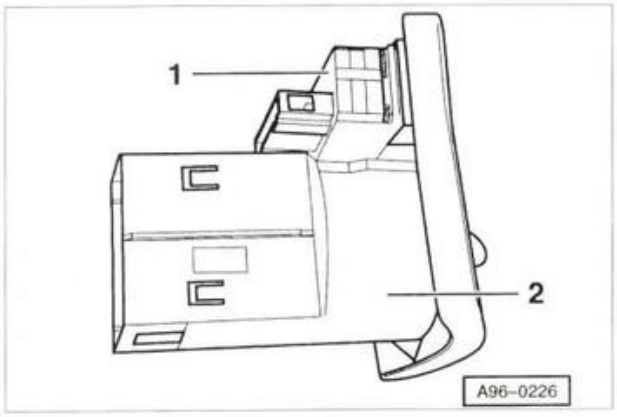



– To reinstall, reattach electrical connectors.

➤ Push switch knob in direction of arrow (**1**) and at same time turn it clockwise (**2**) to engage retaining catch (**a**).

– With switch in this position, push switch housing into recess in dashboard (**3**) until it clicks into place.



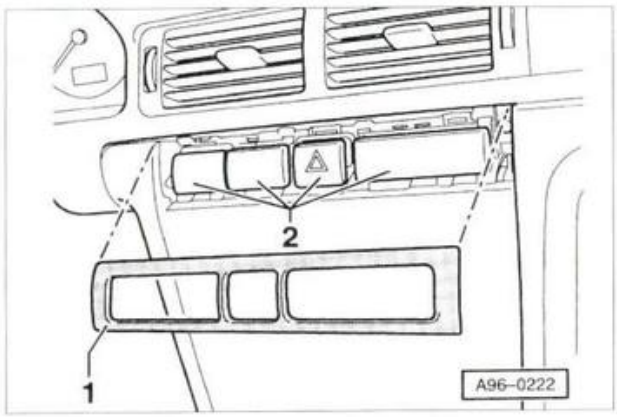

## Instrument light dimmer switch, removing and installing

The instrument light dimmer is part of the light switch, but can be replaced separately.

– Remove light switch. See **Light switch, removing and installing** in this repair group.

➤ Use thin flat screwdriver to pry off dimmer switch (**1**) and separate from light switch housing (**2**).

– Installation is reverse of removal

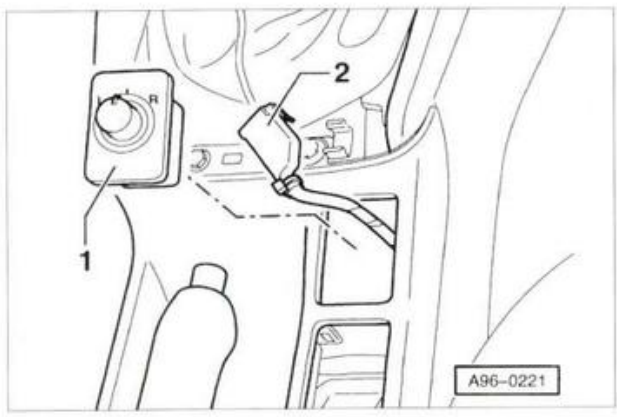



## Center dashboard switches, removing and installing

➤ Using plastic prying tool or flat screwdriver tip wrapped with tape, carefully pry off center dashboard trim (**1**).

– Pull out switch (**2**) all the way and detach electrical connector.

– Installation is reverse of removal.



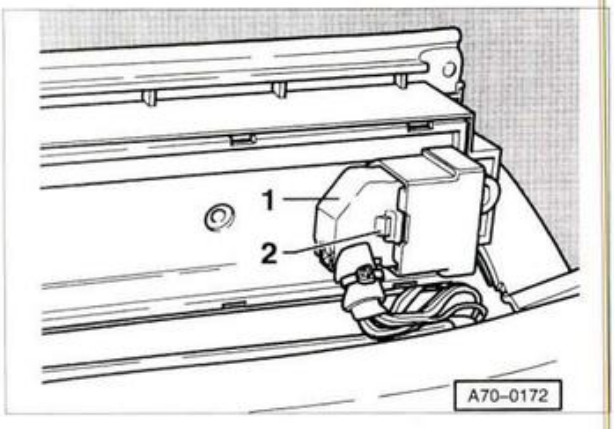

## Mirror adjustment switch, removing and installing

– Using plastic prying tool or flat screwdriver tip wrapped with tape, carefully pry off center console insert and shifter boot.

➤ Reach under mirror switch (**1**) with fingers or screwdriver to push switch up and out of console. Detach electrical harness (**2**).

– Installation is reverse of removal. Check for missing clips at front and rear of mirror switch

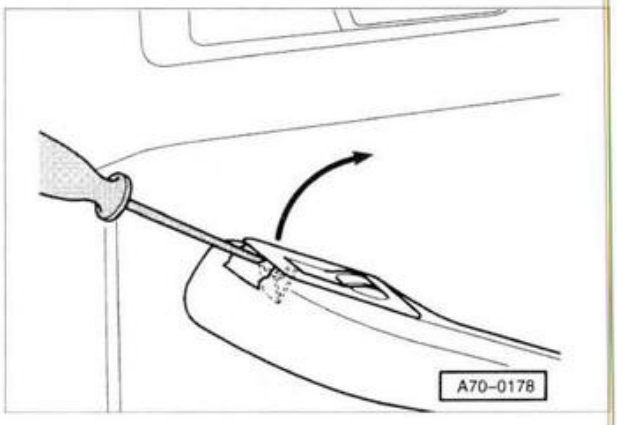
*Horns*



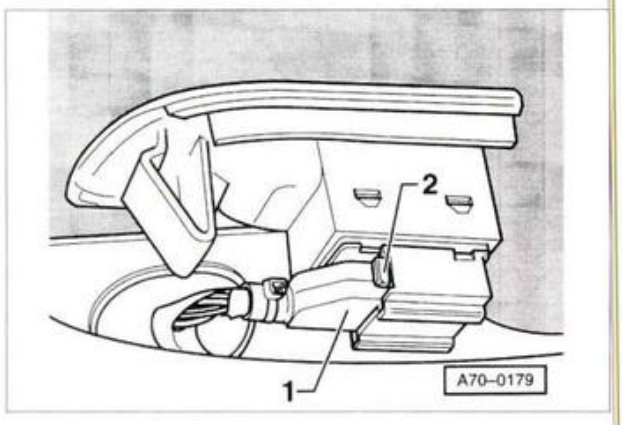

➤ Turn switch assembly over and press on retainer tab (**2**) to detach harness connector (**1**).

– Installation is reverse of removal.

### Right door window or rear window switch assembly, removing and installing




➤ Using plastic prying tool or flat screwdriver tip wrapped with masking tape, gently pry up on front edge of switch assembly (**1**).



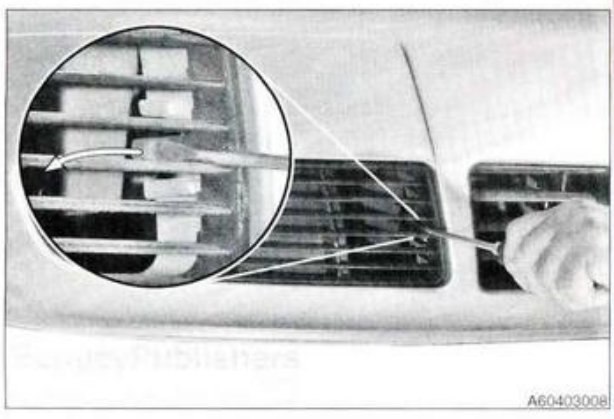

➤ Turn switch assembly over and press on retainer tab (**2**) to detach harness connector (**1**).

– Installation is reverse of removal.

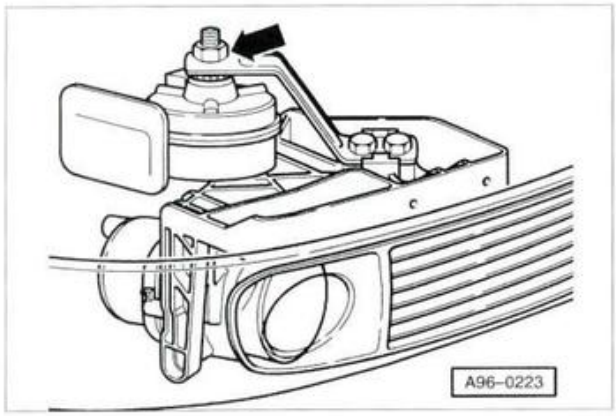
## HORNS

One horn is installed behind each end of the front bumper.

### Horn, removing and installing




➤ Insert screwdriver in lower grille slot. Pry gently on lock tab (**arrow**), then pull grille off.




➢ Remove horn mounting nut (**arrow**).

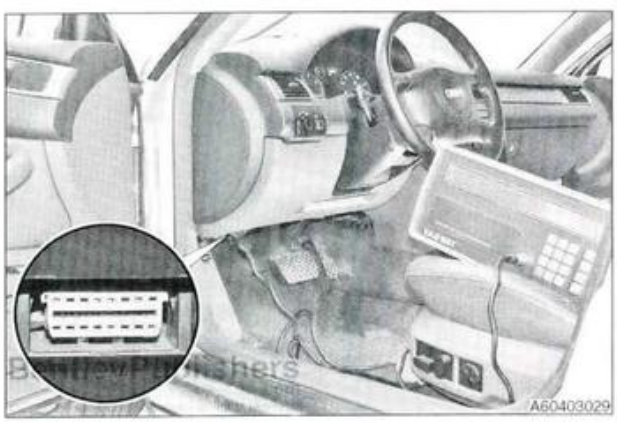
– Disconnect harness connector and lift out horn.

– Installation is reverse of removal.

## ANTI-THEFT SYSTEM

Electronic immobilizer system version 3 is standard on models covered by this manual. Anti-theft alarm is available as an option.

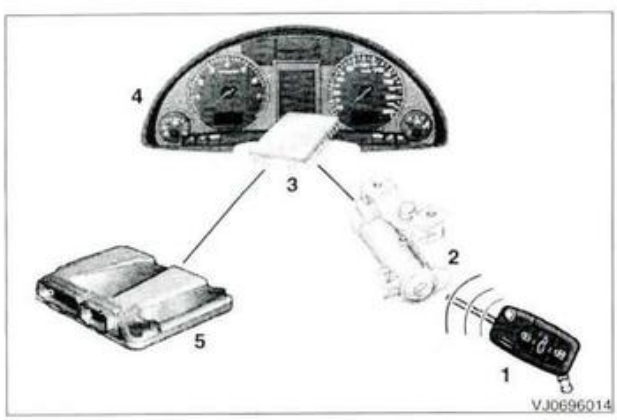
The ultrasonic interior monitor, supplied in conjunction with the optional anti-theft alarm, triggers the anti-theft alarm if an attempt is made to break into the vehicle.




### On-board diagnostics

If the on-board diagnostics (OBD II) system recognizes malfunctions in the immobilizer, anti-theft or central locking systems, it sets diagnostic fault codes (DTCs).

➢ Access fault memory with VAG scan tool or equivalent plugged into DLC plug (**inset**) under left side dashboard.




### Electronic immobilizer

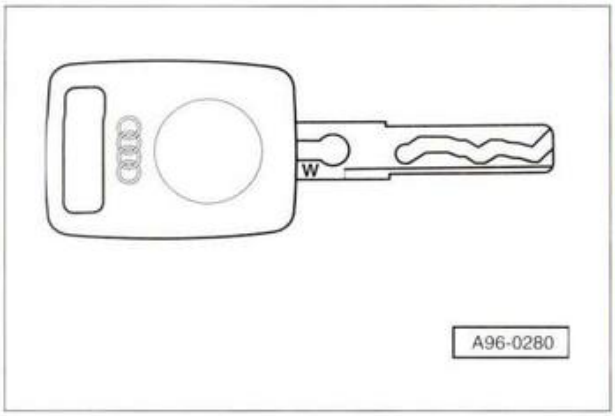
➢ Electronic immobilizer components are as follows:

1. Ignition key with wireless transponder
2. Ignition lock cylinder with immobilizer induction coil
3. Immobilizer control module integrated with **4**
4. Instrument cluster
5. Engine control module (ECM)

Electronic immobilization functions as follows:

- With vehicle key inserted into ignition switch, signal from ignition cylinder induction coil energizes key transponder.
- Key transponder sends unique signal to induction coil.
- Key signal is relayed to immobilizer control module in instrument cluster.
- If control module recognizes key as valid, signal is relayed to engine control module (ECM) via CAN-bus network and vehicle can be started.
- If key is not recognized as valid, starter and engine management system are blocked: Vehicle cannot be started.

*Anti-theft System*



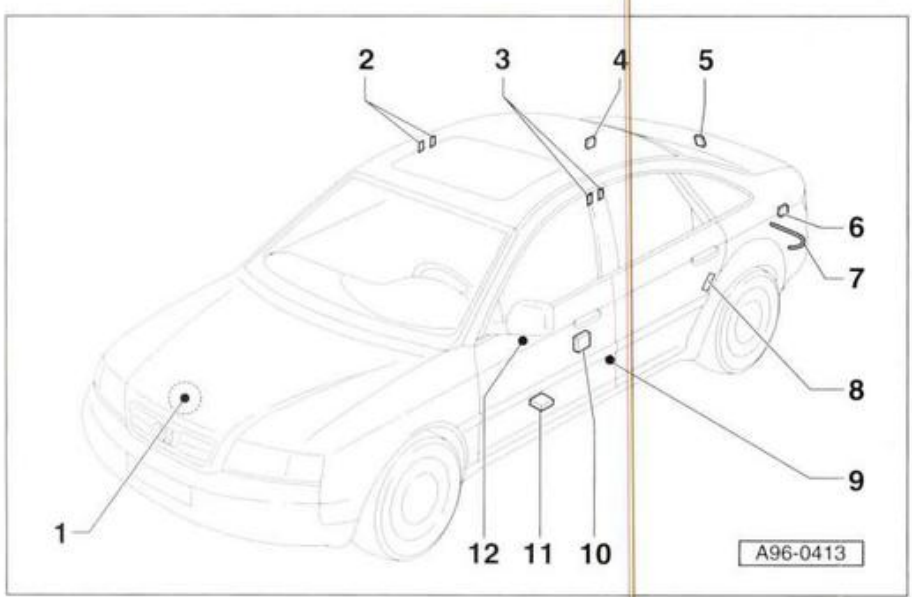

Ignition keys are inscribed with a W indicating that the key is capable of being coded to electronic immobilizer version 3. Only keys with this basic code can be adapted to the vehicle.

The immobilizer control module (J362) is integrated with the instrument cluster control module. In case of anti-theft immobilizer control module failure, replace the entire instrument cluster. See **90 Instruments**.

The immobilizer induction coil (D2) is integrated with the ignition key cylinder and cannot be replaced separately. In case of induction coil malfunction, replace the ignition cylinder. See **Ignition key cylinder, removing and installing** in this repair group.

The key transponder is integrated with the vehicle key. In case of transponder malfunction, replace the complete key. Once a key is replaced, adapt all the vehicle keys to the vehicle using the VAG scan tool or equivalent. If only one key is adapted, the remaining keys will not start the vehicle.

The immobilizer warning light illuminates briefly (max. 3 seconds) and then goes out when an authorized vehicle key is used. If an unauthorized vehicle key is used or when a system malfunction occurs, the warning light blinks constantly during ignition ON.

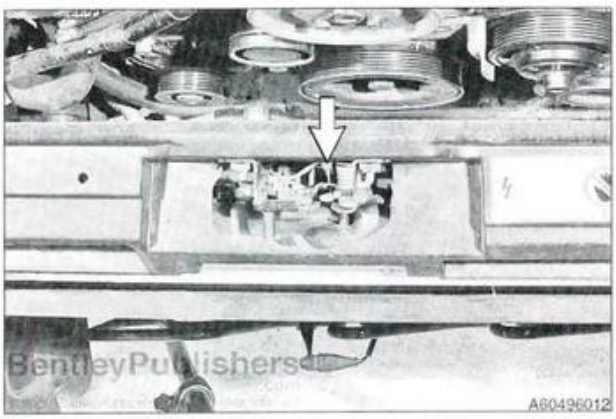



## Anti-theft and central locking components

1. **Hood alarm switch (F120)**
2. **Ultrasound interior motion sensor, right (G170)**
3. **Ultrasound interior motion sensor, left (G171)**
4. **Fuel tank filler flap lock actuator (V155)**
5. **Trunk lid lock actuator (F124, F206, F218, V53, V139)**
6. **Alarm horn (H8)**
7. **Alarm system and keyless entry antenna (R47)**
8. **Interior motion sensor control module (J347)**
9. **Interior motion sensor disable switch (E183)**
10. **Door lock actuator (F2, F131, F241, F243, *V56, V161*)**
11. **Central locking and anti-theft control module (J429)**
12. **Central locking master switch (E150)**
13. **Avant: Glass breakage sensors (G183, G184) below rear side glass (not in this illustration)**

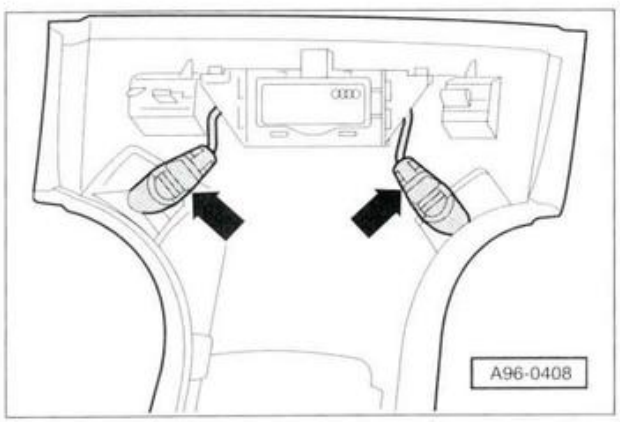
***NOTE*** —

- *2000 model is illustrated. Other models are similar.*



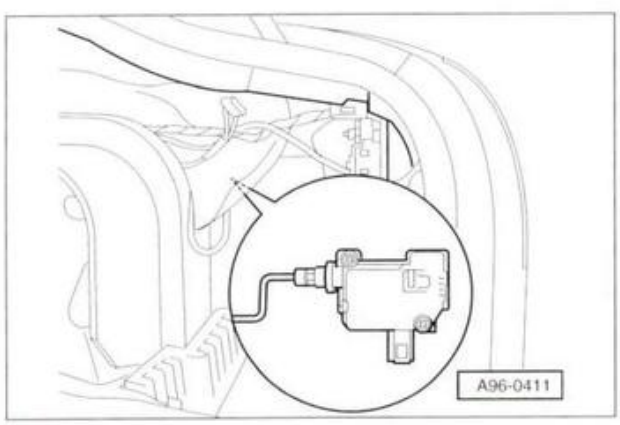

**Hood alarm switch (F120)**

- In hood lock mechanism on front lock carrier (radiator support frame)



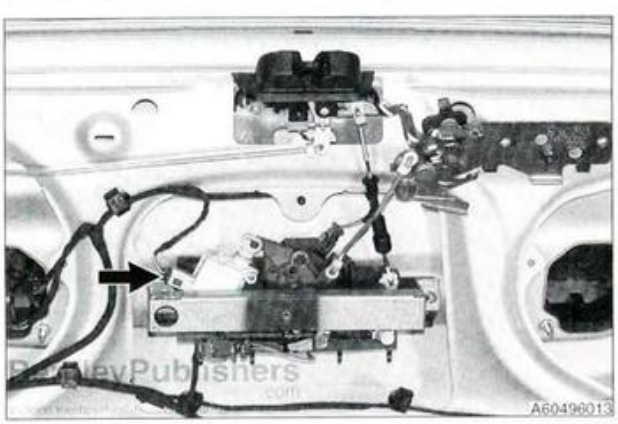

**Ultrasound interior motion sensor (G170, G171)**

- At head liner above left and right B-pillar



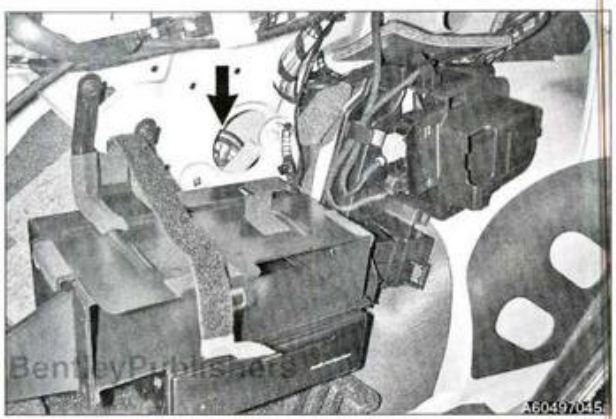

**Fuel tank filler flap lock actuator (V155)**

- In luggage compartment behind right rear side panel trim.



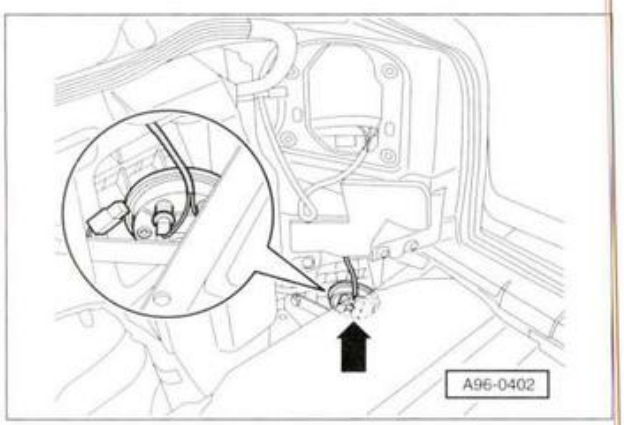

**Luggage compartment lid lock actuator (F124, F206, F218, V53, V139)**

- Behind trim (Avant tailgate lock illustrated)

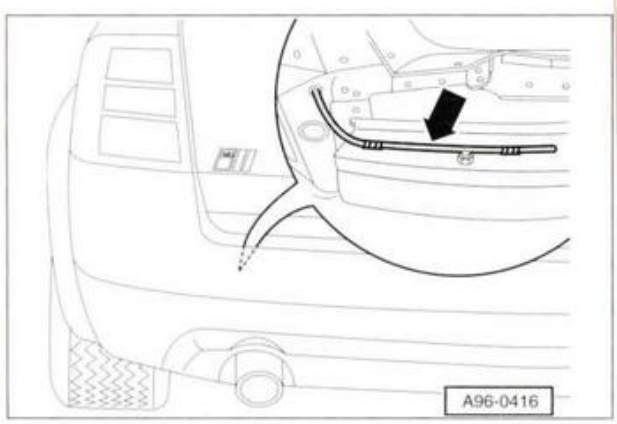



**Alarm horn (H8)**

- Sedan: In trunk behind left storage compartment cover

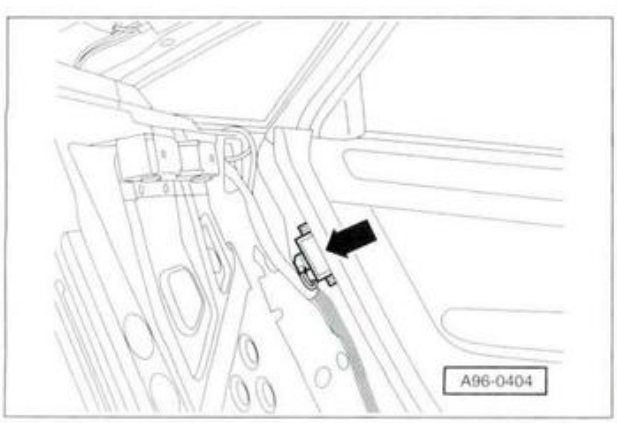



- Avant: In luggage compartment behind left storage compartment cover




**Alarm system and keyless entry antenna (R47)**

- Sedan: Left side of rear bumper cover
- Avant: Right side of rear bumper cover




**Interior motion sensor control module (J347)**

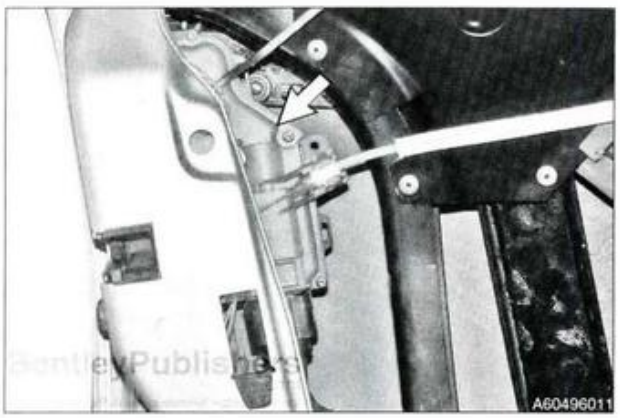
- At lower C-pillar, behind trim

Interior motion sensor control module actuates warning lights next to door lock buttons.

**Interior motion sensor disable switch (E183)**

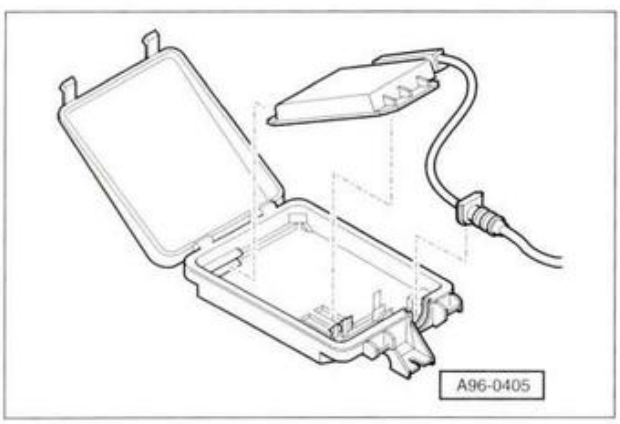
On left lower B-pillar

When locking up vehicle, deactivate interior monitor manually by pressing interior monitor switch (**arrow**) if, for example, a dog is to remain in vehicle.



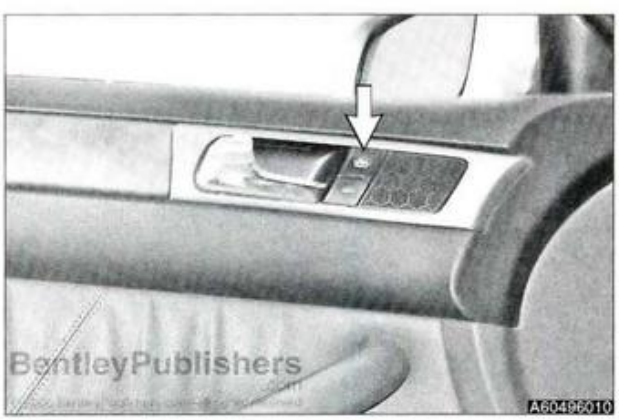

**Door lock actuator (F2, F131, F241, F243, V56, V161)**

In door cavity behind door trim panel



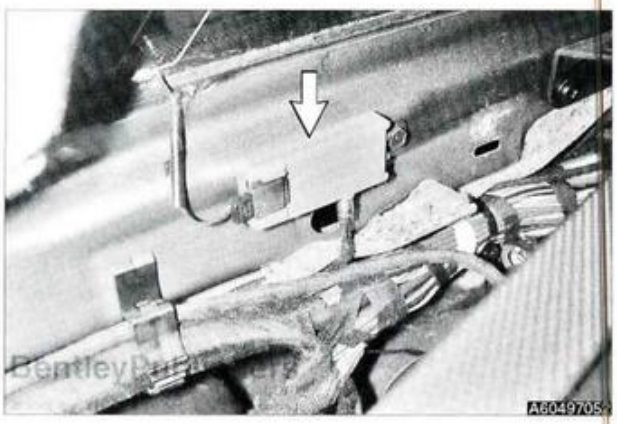

**Central locking and anti-theft control module (J429)**

In protective case underneath driver seat




**Central locking master switch (E150)**

Top front of driver door




**Glass breakage sensors (G183, G184)**

➤ Avant: Below rear side glass, behind trim

# 97 Fuses, Relays, Component Locations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ELECTRICAL COMPONENT LOCATIONS ..... 97-3
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Components underneath vehicle ..... 97-14
Interior components ..... 97-18
allroad quattro components ..... 97-22
FUSE AND RELAY PANELS ..... 97-23
E-box (electronics box) components ..... 97-24
Main fuse panel, fuse panel S2 ..... 97-25
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c. Right A-pillar connector station plugs ..... 97-19
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## GENERAL

This repair group covers fuses, relays, ground locations and electrical component locations, primarily via photos or illustrations.

The complex nature of the Audi A6 electrical systems requires a large number of fuses and electrical components. Locating the correct component in this array of equipment is an important first step in electrical diagnosis. Electrical equipment and accessories installed vary depending on model and model year. Always confirm that the proper electrical component is correctly identified.

Almost all electrical circuits are protected by fuses. For a full listing of fuses and fuse locations, see **Fuse and Relay Panels** in this repair group.

Investigating and correcting ground problems often solves mysterious and difficult to trace electrical problems. For ground information, see **Grounds** in this repair group.

Also see:

- **27 Battery, Starter, Alternator**
- **87 Heating and Air-conditioning** for climate control flap motors and temperature sensors
- **9 Electrical System–General** for information on bus systems
- **91 Radio, Communication** for sound system, telephone and navigation component locations
- **EWD Electrical Wiring Diagrams**

## Warnings and Cautions

Please read the following before doing any work on your electrical system.

***WARNING***—

- *Airbags utilize explosive devices. Handle with extreme care. Refer to the warnings and cautions in* **69 Seat Belts, Airbags**
- *The ignition system of the car operates at lethal voltages. If you have a weak heart or wear a pacemaker, do not expose yourself to ignition system electric currents. Take extra precautions when working on the ignition system or when servicing the engine while it is running or the key is ON. See* **28 Ignition System** *for additional ignition system warnings and cautions.*

***CAUTION***—

- *Do not disconnect the battery with the engine running.*
- *Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components. Connect and disconnect electrical connectors and ignition test equipment leads only while the ignition is switched OFF.*
- *Relay and fuse positions are subject to change and may vary from car to car. If questions arise, an authorized Audi dealer is the best source for the most accurate and up-to-date information.*
- *Use a digital multimeter for electrical tests. Switch the multimeter to the appropriate function and range before making test connections.*
- *Many control modules are static sensitive. Static discharge damages them permanently. Handle the modules using proper static prevention equipment and techniques.*
- *To avoid damaging harness connectors or relay panel sockets, use jumper wires with flat-blade connectors that are the same size as the connector or relay terminals.*
- *Do not try to start the engine of a car which has been heated above 176°F (80°C) (for example, in a paint drying booth). Allow it to cool to normal temperature.*
- *Disconnect the battery before doing any electric welding on the car.*
- *Do not wash the engine while it is running, or any time the ignition is ON.*
- *Choose test equipment carefully. Use a digital multimeter with at least 10 MΩ input impedance, or an LED test light. An analog meter (swing-needle) or a test light with a normal incandescent bulb may draw enough current to damage sensitive electronic components.*
- *Do not use an ohmmeter to measure resistance on solid state components such as control modules.*
- *Disconnect the battery before making resistance (ohm) measurements on a circuit.*

## Electrical Component Locations

**Table a** is a cross-referenced listing of electrical components for cars covered by this manual.

Audi identifies electrical components by a letter and/or a number in electrical schematics. These codes, listed in column 2, are also used in **EWD Electrical Wiring Diagrams**.

Figure numbers in column 4 and page numbers in column 5 refer to photographs and illustrations immediately following the table.

***NOTE*** —

- *Every component is not installed in every car.*
- *Due to changes in production, component locations may vary from what is illustrated. Consult your Audi dealer for the latest information.*
- *For information about bus systems and associated control modules, see* **9 Electrical System–General**.

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| 13-fold relay panel | | Underneath left side dashboard | **Fig. 48**<br>**Fig. 49** | 97-27<br>97-28 |
| 3-fold relay panel | | E-box, left side of plenum chamber under plastic cover | **Fig. 44**<br>**Fig. 45** | 97-24<br>97-24 |
| 8-fold relay panel | | Underneath left side dashboard | **Fig. 48**<br>**Fig. 51** | 97-27<br>97-29 |
| A/C and heater blower motor | V2 | In evaporator housing behind glove compartment | **Fig. 30**<br>**Fig. 31** | 97-20<br>97-20 |
| A/C and heater blower motor control module | J126 | Under right side dashboard, to left of blower motor on evaporator housing | | |
| A/C and heater blower motor resistor | N24 | On blower motor | | |
| A/C and heater control module | J255<br>J301 | A/C and heater control panel in center dashboard | | |
| A/C and heater left side flap motors and temperature sensors | | Left side of evaporator housing<br>*see also* **87 Heating and Air-conditioning** | **Fig. 29** | 97-20 |
| A/C and heater right side flap motors and temperature sensors | | Right side of evaporator housing<br>*see also* **87 Heating and Air-conditioning** | **Fig. 31** | 97-20 |
| A/C compressor clutch | N25 | On A/C compressor, left front engine compartment | | |
| A/C compressor clutch relay | J44 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| A/C compressor regulator valve, 2002 - 2004 | N280 | On A/C compressor, left front engine compartment | | |
| A/C high pressure sensor, 2002 - 2004 | G65 | Right front engine compartment | | |
| A/C pressure switch, 1998 - 2001 | F129 | Right side of A/C condenser | | |
| ABS | | *see also* ESP entries | | |
| ABS control module, Bosch 5.3 | J104 | Right footwell under floor covering | | |
| ABS control module, Bosch 5.7 | J104 | Left side of engine compartment | **Fig. 12** | 97-14 |
| ABS hydraulic pump, Bosch 5.3 | V156 | Under ABS hydraulic unit, left side of engine compartment | **Fig. 1** | 97-11 |
| ABS hydraulic unit | N55 | Left side of engine compartment | **Fig. 1**<br>**Fig. 12** | 97-11<br>97-14 |
| ABS return flow pump | V39 | Part of ABS hydraulic unit, engine compartment left front | **Fig. 12** | 97-14 |
| ABS return flow pump relay | J105 | 8-fold relay panel underneath left side dashboard | **Fig. 52** | 97-29 |
| ABS solenoid valve relay | J106 | 8-fold relay panel underneath left side dashboard | **Fig. 52** | 97-29 |

*Electrical Component Locations*

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| ABS wheel speed sensor | G44 - G47 | Integral with wheel bearing assembly (front wheel drive)<br>Mounted at back of wheel bearing housing (quattro) | **Fig. 22** | 97-16 |
| Accelerator pedal module | | Base of accelerator pedal | **Fig. 29** | 97-20 |
| Accelerator pedal position sensor 2 | G185 | Base of accelerator pedal | **Fig. 29** | 97-20 |
| After-run coolant pump | V51 | Under vehicle, behind left side of oil pan | **Fig. 15** | 97-15 |
| After-run coolant pump relay | J151 | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 45** | 97-24 |
| Air quality sensor | G238 | Under plenum cover, attached to dust and pollen filter housing | **Fig. 11** | 97-14 |
| Airbag connector, left front | | Under steering column trim covers | | |
| Airbag connector, right front | | Underneath right dashboard, above glove compartment | | |
| Airbag control module | J234 | On center tunnel under front of center console | | |
| Airbag crash sensor, front side airbag | G179<br>G180 | Under front seat and carpet, on rear of floor pan brace | | |
| Airbag crash sensor, rear side airbag | G256<br>G257 | On rear door sill | | |
| Airbag igniter, right, left | N131 | Base of B-pillar behind trim | **Fig. 34** | 97-21 |
| Airbag spiral spring | F138 | Steering column | | |
| Airbag, driver | | Steering wheel | | |
| Airbag, passenger | | Right side dashboard | **Fig. 30** | 97-20 |
| Airbag, side | | Outer seat bolster | | |
| Alarm horn | H8 | Left side luggage compartment, behind trim | **Fig. 39** | 97-22 |
| Alarm system | | *see* Central locking | | |
| Alternator (generator) | C | Right front of engine compartment, on engine | **Fig. 16** | 97-15 |
| Amplifier, audio | | Right side luggage compartment, behind trim<br>*see* **91 Radio and Communication** | | |
| Antenna amplifier | R82 | Behind D-pillar trim | | |
| Antenna selection control module | J515 | Under parcel shelf, left side | | |
| Antenna, alarm and central locking | R47 | Avant: Rear bumper, right side<br>Sedan: Rear bumper, left side<br>*see also* **96 Interior Lights, Switches, Anti-theft** | | |
| Antenna, navigation / telephone / auxiliary heater | R66<br>R172 | Roof<br>*see also* **91 Radio and Communication** | | |
| Antenna, radio and telephone | R51 | Left rear fender | | |
| Antenna, sound system | R11<br>R50 | Roof (Avant)<br>Trunk lid (sedan)<br>*see also* **91 Radio and Communication** | | |
| Antenna, tire pressure check | R59<br>R60<br>R61<br>R62 | Behind wheel housing liner, above wheel (allroad) | | |
| Anti-theft control module | | *see* Central locking control module | | |
| ASR | | *see* ABS<br>*see also* ESP | | |
| Audio components | | *see* **91 Radio and Communication** | | |
| Automatic headlight vertical aim control system module | | *see* Headlight aim control module | | |
| Automatic transmission control module, 5-speed automatic transmission | J217 | Inside protective box in floor cavity underneath front passenger seat and carpet, in front of floor pan brace | | |

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Automatic transmission control module, Multitronic® transmission (CVT) | J217 | Inside transmission, at rear of case | | |
| Automatic transmission gear position switch | | *see* Automatic transmission multifunction range switch | | |
| Automatic transmission multifunction range switch | F125 | Left side of transmission housing | **Fig. 21** | 97-16 |
| Automatic transmission selector lever switch | | At shifter | | |
| Auxiliary coolant pump | | *see* After-run coolant pump | | |
| Back-up light switch, automatic transmission | | *see* Automatic transmission multifunction switch | | |
| Back-up light switch, manual transmission | F4 | Top of transmission | | |
| Battery | A | Rear of engine compartment in plenum chamber | **Fig. 1** | 97-11 |
| Blower motor | | *see* A/C and heater blower motor | | |
| Blower motor resistor | | *see* A/C and heater blower motor resistor | | |
| Brake booster pressure sensor | G294 | Under plenum cover, directly in front of brake booster | **Fig. 5** | 97-12 |
| Brake booster vacuum pump | V192 | Engine compartment, left side | **Fig. 12** | 97-14 |
| Brake booster vacuum pump fuse, allroad | S279 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Brake booster vacuum pump fuse, except allroad | S279 | Central carrier relay panel under left side dashboard | **Fig. 55** | 97-30 |
| Brake booster vacuum pump relay | G569 | Central carrier relay panel under left side dashboard | **Fig. 55** | 97-30 |
| Brake fluid level warning switch | F34 | Brake fluid reservoir in plenum chamber | **Fig. 1** | 97-11 |
| Brake light switch | F | On pedal cluster above brake vacuum vent switch | | |
| Brake vacuum vent switch | F47 | On pedal cluster, below brake light switch | | |
| Broken window glass sensor, left rear | G183 | Under left rear window behind trim | **Fig. 41** | 97-23 |
| Broken window glass sensor, right rear | G184 | Under right rear window behind trim | | |
| Camshaft adjustment valve 1 | N205 | Rear of right cylinder head (bank 1) | | |
| Camshaft adjustment valve 2 | N208 | Front of left cylinder head (bank 2) | | |
| Camshaft sensor, left | G163 | Rear of left cylinder head (bank 2) | | |
| Camshaft sensor, right | G40 | Front of right cylinder head (bank 1) | **Fig. 2**<br>**Fig. 8** | 97-11<br>97-13 |
| CD changer | R41 | Left side luggage compartment in storage compartment<br>*see also* **91 Radio and Communication** | **Fig. 39** | 97-22 |
| Central carrier relay panel | | Underneath left side dashboard | **Fig. 55** | 97-30 |
| Central locking control module | J429 | In protective box underneath driver seat and carpet, in front of floor pan brace | | |
| Charge air pressure sensor, biturbo | G31 | In air intake boot, on intake manifold, front | **Fig. 8** | 97-13 |
| Connector station, A-pillar | | Behind A-pillar trim in kick panels, left and right | **Fig. 26**<br>**Fig. 27** | 97-18<br>97-19 |
| Coolant | | *see* Engine coolant | | |
| Cooling fan | | *see* Engine cooling fan | | |
| Crankshaft sensor | | *see* Engine speed (rpm) sensor | | |
| Crash sensor | | *see* Airbag crash sensor | | |
| Cruise control module | J213 | Behind glove compartment, near blower motor housing | **Fig. 30** | 97-20 |
| Cruise control stalk switch | E45 | On steering column, left | | |
| Cruise control vacuum pump | V18 | Underneath ABS control module, left front wheel housing | **Fig. 19** | 97-16 |
| Data link connector (DLC) | | Under left side dashboard | **Fig. 28** | 97-19 |
| Diagnostic connector | | *see* Data link connector (DLC) | | |

*Electrical Component Locations*

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Door contact switch | F2<br>F3<br>F10<br>F11 | Door lock motor | **Fig. 32** | 97-20 |
| Door courtesy light | | Door edge | **Fig. 33** | 97-21 |
| Door lock motor | V56<br>V57<br>V97<br>V115 | In door lock | **Fig. 32** | 97-20 |
| E-box (electronics box) | | Left side plenum chamber, left rear engine compartment | **Fig. 1**<br>**Fig. 44** | 97-11<br>97-24 |
| E-box connector station | | In E-box, left side of plenum chamber under plastic cover | **Fig. 44**<br>**Fig. 46** | 97-24<br>97-25 |
| ECM | | *see* Engine control module (ECM) | | |
| Electronic immobilizer induction coil | | Integrated with ignition key cylinder | | |
| Electronic power control (EPC) | | *see* Electronic throttle drive | | |
| Electronic throttle drive | G186 | Top rear of engine, behind intake manifold<br>*see* Throttle valve control module<br>*see also* Throttle angle sensor<br>*see also* Throttle position sensor | | |
| Electronics box | | *see* E-box | | |
| Emergency flasher | E3 | Center of dashboard | | |
| Engine control module (ECM) | J220 | In E-box, left side of plenum chamber under plastic cover | **Fig. 6**<br>**Fig. 44** | 97-12<br>97-24 |
| Engine control module (ECM) fuse, 2001 - 2004 | S102 | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 45** | 97-24 |
| Engine control module (ECM) power supply relay, 2001 - 2004 | J271 | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 45** | 97-24 |
| Engine coolant level warning switch | F66 | Bottom of coolant reservoir expansion tank | **Fig. 1** | 97-11 |
| Engine coolant pump relay | | *see* After-run coolant pump relay | | |
| Engine coolant temperature (ECT) sensor | G2<br>G62 | In coolant pipe behind intake manifold | | |
| Engine cooling fan | V7<br>V177 | In front of engine at radiator | | |
| Engine cooling fan control module, 1998 - 2001 | J293 | Left lower engine compartment on frame rail | | |
| Engine cooling fan control module, 2002 - 2004 | J293 | In front of engine compartment attached to fan | | |
| Engine cooling fan relay | J26 | 8-fold relay panel underneath left side dashboard | **Fig. 52** | 97-29 |
| Engine cooling fan relay, high speed | J101 | 8-fold relay panel underneath left side dashboard | **Fig. 52** | 97-29 |
| Engine cooling fan series resistor | N39 | Left front, underneath longitudinal chassis member | **Fig. 18** | 97-15 |
| Engine cooling fan switch | F54<br>F18 | On radiator, lower right | **Fig. 14** | 97-14 |
| Engine oil temperature sensor | G8 | Left front of cylinder block, above oil filter housing | | |
| Engine speed (rpm) sensor | G28 | Left transmission bellhousing near drive flange | | |
| EPC | | *see* Electronic throttle drive | | |
| ESP | | *see also* ABS entries | | |
| ESP sensor unit | | Underneath rear seat | **Fig. 35** | 97-21 |
| ESP switch | E256 | Center console | | |
| EVAP purge valve | | *see* Fuel tank evaporative control canister purge regulator valve | | |
| Evaporator temperature sensor | | *see* **87 Heating and Air-conditioning** | | |
| Exhaust flap valve | N321 | On exhaust system between muffler and tailpipe tips | **Fig. 25** | 97-17 |

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Exhaust temperature sensor 1, 2 (2.7 liter engine) | G235<br>G236 | In turbocharger outlet pipe, right, left (2.7 liter engine) | **Fig. 10** | 97-13 |
| Exhaust temperature sensor modules (2.7 liter engine) | | Center top of engine, right of intake manifold | **Fig. 9** | 97-13 |
| Flap motor | | *see* **87 Heating and Air-conditioning** | | |
| Flasher | | *see* Emergency flasher | | |
| Foglight | | Front bumper under left and right headlights | **Fig. 18** | 97-15 |
| Foglight relay | J5 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Fuel injectors | | Top of intake manifold, front of engine | | |
| Fuel level sensor, center | G237 | Top of fuel tank, access through luggage compartment (quattro) | **Fig. 37** | 97-22 |
| Fuel level sensor, left | G169 | Top of fuel tank, left | **Fig. 36** | 97-21 |
| Fuel level sensor, right | G | Top of fuel tank, right | **Fig. 36** | 97-21 |
| Fuel pump control module fuse, RS6 | S81 | Central carrier relay panel under left side dashboard | **Fig. 55** | 97-30 |
| Fuel pump control module, RS6 | J538 | Top right side of cylinder head | | |
| Fuel pump relay | J17 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Fuel pump, all models except RS6 | G6 | In fuel tank, access under rear seat bench | **Fig. 36** | 97-21 |
| Fuel pump, RS6 | | Underneath right rear of vehicle, ahead of fuel tank | | |
| Fuel tank evaporative control canister purge regulator valve, 2.7 liter engine | N80 | Right side of intake manifold | **Fig. 9** | 97-13 |
| Fuel tank evaporative control canister purge regulator valve, 2.8 liter engine | N80 | Right side of engine compartment | **Fig. 1** | 97-11 |
| Fuel tank filler door lock motor | V155 | Right side of luggage compartment | | |
| Fuel tank filler neck ground terminal | | Underneath right rear wheel housing liner | **Fig. 24** | 97-17 |
| Fuel tank leak detection pump | V144 | Back of left rear wheel housing, behind liner | **Fig. 23** | 97-17 |
| Fuse panel S1 | | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 44**<br>**Fig. 45** | 97-24<br>97-24 |
| Fuse panel S2 | | Main fuse panel, left end of dashboard | **Fig. 47** | 97-25 |
| Fuses | | *see* **Fuse and Relay Panels** in this repair group | | |
| Generator | | *see* Alternator | | |
| GPS | | *see* **91 Radio and Communication** | | |
| Grounds | | *see* **Grounds** in this repair group | **Fig. 56** | 97-30 |
| Headlight aim adjustment motor | V48<br>V49 | In headlight housing, below headlight | **Fig. 7** | 97-13 |
| Headlight aim control module, 1998 - 2000 | J431 | Left side luggage compartment, behind trim | | |
| Headlight aim control module, 2001 - 2004 | J431 | Behind glove compartment on bracket | **Fig. 31** | 97-20 |
| Headlight bulb control module | J343<br>J344 | In headlight housing, below headlight | | |
| Headlight washer pump | V11 | Washer fluid reservoir under left front fender | **Fig. 19** | 97-16 |
| Heater core | | In evaporator housing, access from left side | **Fig. 29** | 97-20 |
| High intensity discharge (HID) headlight | | *see* Headlight entries | | |
| High pressure sensor | | *see* A/C high pressure sensor | | |
| Hood alarm switch | F120 | Part of hood latch assembly | **Fig. 1** | 97-11 |
| Horn button | | Steering wheel | | |
| Horn relay | J4 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Horn, high tone | H2 | Behind front bumper, left side | **Fig. 17** | 97-15 |
| Horn, low tone | H7 | Behind front bumper, right side | **Fig. 18** | 97-15 |
| Hydraulic pump relay, 2001 - 2004 | J555 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |

*Electrical Component Locations*

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Ignition coil pack, 2.8 liter engine code AHA | | Front of engine compartment in front of intake manifold | **Fig. 1** | 97-11 |
| Ignition coils power output stage, 2.7 liter V6 engine code APB | | Air filter housing | | |
| Ignition coils power output stage, 2.8 liter V6 engine code AHA | N122 | Front of engine compartment in front of intake manifold | **Fig. 1** | 97-11 |
| Ignition coils power output stage, all except 2.7 liter engine code APB, 2.8 liter engine code AHA | | Integrated with ignition coils | | |
| Ignition coils, all except 2.8 liter engine code AHA | | Above each spark plug, top of cylinder head covers | | |
| Immobilizer | | *see* Electronic immobilizer<br>*see also* Central locking | | |
| Induction coil | | *see* Electronic immobilizer induction coil | | |
| Instrument cluster combination processor | J218 | Behind instrument cluster | | |
| Instrument cluster control module | J285 | Instrument cluster | | |
| Intake air temperature (IAT) sensor | G42 | Mounted on intake air ducting, rear of intake manifold | | |
| Intake manifold change-over valve, 2.8 liter engine | N156 | Left rear intake manifold above intake air duct | **Fig. 1** | 97-11 |
| Intake manifold change-over valve, 3.0 liter engine | N261 | Front of intake manifold | **Fig. 13** | 97-14 |
| Kickdown switch | F8 | In engine compartment on bulkhead | **Fig. 1** | 97-11 |
| Knock sensors | G61<br>G66 | Near right cylinder head underneath intake manifold<br>Near left cylinder head underneath intake manifold | | |
| Lamp control module | J123 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Leak detection pump | | *see* Fuel tank leak detection pump | | |
| Level control system accumulator valve | N311 | Under vehicle, rear, center, above stabilizer bar (allroad) | **Fig. 42** | 97-23 |
| Level control system compressor motor | V66 | Under vehicle, rear, driver side | **Fig. 43** | 97-23 |
| Level control system compressor relay | J403 | 8-fold relay panel underneath left side dashboard | **Fig. 52** | 97-29 |
| Level control system control module | J197 | In luggage compartment, left rear | **Fig. 41** | 97-23 |
| Level control system sensors | G76<br>G77<br>G78<br>G84 | In front wheel housing<br>In left rear wheel housing | **Fig. 40** | 97-22 |
| Level control system solenoid valve | N111 | Under vehicle, rear, driver side | **Fig. 43** | 97-23 |
| Light switch | E1 | Left of steering wheel on dashboard | | |
| Lighter | | In center console below radio | | |
| Load reduction relay | J59 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Manifold absolute pressure (MAP) sensor | G71 | Biturbo only | | |
| Mass air flow sensor | G70 | In intake air duct near top of air cleaner housing | **Fig. 1** | 97-11 |
| Micro central electric panel | | Underneath left side dashboard | **Fig. 48**<br>**Fig. 50** | 97-27<br>97-28 |
| Mirror fold away control module | J351 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Motronic control module | | *see* Engine control module (ECM) | | |
| *Motronic* main relay | | *see* Engine control module power supply relay | | |
| Multifunction steering wheel control module | J453 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Navigation control module | | Left side luggage compartment in storage compartment<br>*see also* **91 Radio and Communication** | **Fig. 39** | 97-22 |
| Neutral safety switch | | *see* Park / neutral position (PNP) relay | | |
| OBD II plug | | *see* Data link connector (DLC) | | |
| Oil level thermal sensor | G266 | Under engine on oil pan | **Fig. 16** | 97-15 |

**Table a. Electrical component locations**

| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Oil pressure sensor | F1 | On oil filter housing, underneath left front of engine | | |
| Outside air temperature sensor | G17 | In front of A/C condenser | | |
| Outside rear view mirror | | *see* Mirror | | |
| Oxygen sensor, post-catalyst | G130<br>G131 | Behind catalytic converter | **Fig. 20** | 97-16 |
| Oxygen sensor, precatalyst | G39<br>G108 | Before catalytic converter in front exhaust pipe | **Fig. 3** | 97-12 |
| Park / neutral position (PNP) relay, Multitronic® transmission (CVT) | J226 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Parking aid control module | J446 | Left side luggage compartment, behind trim | **Fig. 39** | 97-22 |
| Parking aid sensors | G204<br>G205<br>G334<br>G335 | In rear bumper | | |
| Parking aid warning buzzer, Avant | H15 | Left side luggage compartment, behind trim | | |
| Parking aid warning buzzer, sedan | H15 | Rear shelf | | |
| Parking brake warning light switch | F9 | At parking brake lever mechanism beneath center console | | |
| Pressure switch | | *see* A/C high pressure switch | | |
| Radiator outlet hose coolant temperature sensor | | *see* Engine coolant temperature (ECT) sensor | | |
| Radio | R | Center dashboard<br>*see also* **91 Radio and Communication** | | |
| Rear window shade control module | J262 | Left side luggage compartment, behind trim | | |
| Rear window shade motor fuse | S100 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Rear window wiper motor | V12 | Under center of tailgate trim | **Fig. 38** | 97-22 |
| Recirculating pump | | *see* After-run coolant pump | | |
| Relays | | *see* **Fuse and Relay Panels** in this repair group | | |
| Remote rear lid unlock motor | V151 | Under deck lid trim, center | | |
| Rotation rate sensor (yaw sensor) | G202 | Under rear seat bench, center | **Fig. 35** | 97-21 |
| Satellite radio | R146 | In left side of luggage compartment<br>*see also* **91 Radio and Communication** | | |
| Seat adjustment circuit breaker | S44<br>S80 | 8-fold relay panel | **Fig. 54** | 97-29 |
| Seat belt lock microswitch | | Seat belt buckle on seat | | |
| Seat belt tensioner igniter | N153<br>N154 | Behind lower B-pillar trim | **Fig. 34** | 97-21 |
| Seat memory control module, left | J136 | Under driver seat | | |
| Seatbelt reel microswitch, left | F145 | Behind left B-pillar lower trim | | |
| Seatbelt reel microswitch, right | F146 | Behind right B-pillar lower trim | **Fig. 34** | 97-21 |
| Secondary air injection pump | V101 | Underneath right front of engine | **Fig. 16**<br>**Fig. 17** | 97-15<br>97-15 |
| Secondary air injection pump fuse, 1998 | S130 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Secondary air injection pump fuse, 1999 - 2004 | S130 | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 45** | 97-24 |
| Secondary air injection pump relay | J299 | 3-fold relay panel in E-box, left side of plenum chamber under plastic cover | **Fig. 45** | 97-24 |
| Secondary air injection valve | N112 | Back of intake manifold above intake air duct | **Fig. 1** | 97-11 |
| Selector lever light relay, 1998 | | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Servotronic control module | J236 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Shiftlock solenoid | N110 | Part of gear selector mechanism underneath center console | | |

*Electrical Component Locations*

**Table a. Electrical component locations**

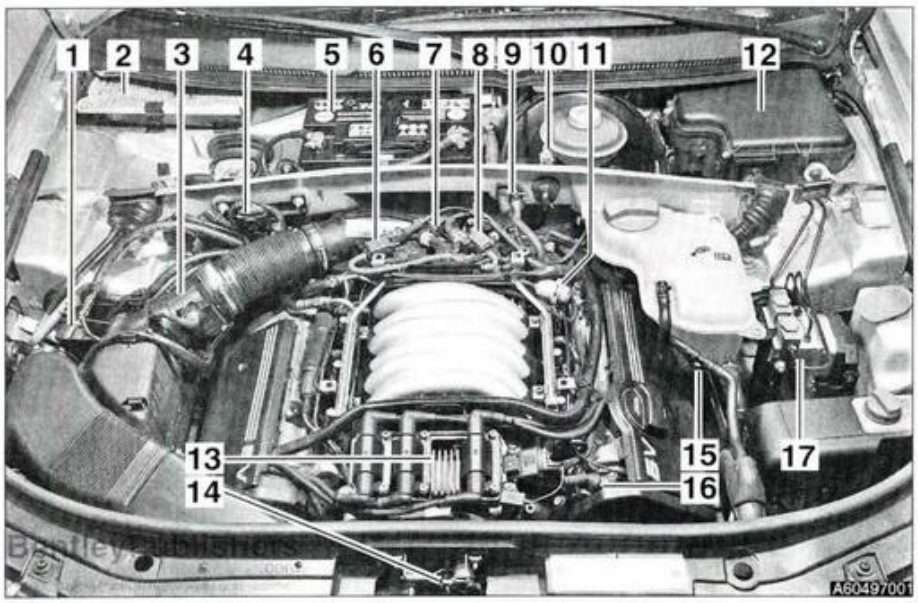
| Component | Code | Location | Fig. # | Pg. # |
|---|---|---|---|---|
| Solar cell separation relay | J309 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Solar operation control module | J355 | On sunroof inner surface | | |
| Sound system | | *see* **91 Radio and Communication** | | |
| Speakers | | *see* **91 Radio and Communication** | | |
| Speedometer vehicle speed sensor | G22 | On left side of transmission near drive axle flange | | |
| Starter | B | Right side of engine compartment connected to transmission | | |
| Starter interlock relay, manual transmission | J207 | 13-fold relay panel underneath left side dashboard | **Fig. 49** | 97-28 |
| Steering angle sensor | G85 | Steering column | | |
| Steering column adjustment motor fuse | S275 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Stop light switch | | *see* Brake light switch | | |
| Sunlight sensor | G107 | Top center of dashboard | | |
| Sunroof solar sensor control module | J355 | Above headliner on sunroof panel | | |
| Suspension strut valve | N148 -N151 | Under vehicle, center rear, above stabilizer bar | **Fig. 42** | 97-23 |
| Tailgate lock motor | V53 | Under center of tailgate trim | **Fig. 38** | 97-22 |
| Tailgate remote unlock motor | V151 | Under center of tailgate trim | **Fig. 38** | 97-22 |
| Telephone control module | J412 | Below center console rear, near parking brake lever *see also* **91 Radio and Communication** | | |
| Telephone transceiver | R36 | Right front footwell | | |
| Throttle angle sensor | G187 G188 | Integrated with throttle valve control module (J338) | **Fig. 4** **Fig. 8** | 97-12 97-13 |
| Throttle position sensor | G79 | Base of accelerator pedal | **Fig. 29** | 97-20 |
| Throttle valve control module | J338 | On throttle body at back of intake manifold | **Fig. 4** **Fig. 8** | 97-12 97-13 |
| Tiptronic gear selector | | At shift selector housing | | |
| Tiptronic switch | F189 | Left side of gear selector assembly | | |
| Tire pressure monitoring control module | J502 | Left side luggage compartment, behind trim | **Fig. 39** **Fig. 41** | 97-22 97-23 |
| Tire pressure sensor | G222 -G226 | On wheel rim near valve stem | | |
| Traction control | | *see* ESP | | |
| Transfer fuel pump, RS6 | | In fuel tank | | |
| Transmission control module | | *see* Automatic transmission control module | | |
| Transverse acceleration sensor | G200 | Under rear seat bench, center | **Fig. 35** | 97-21 |
| Trunk lid lock motor | V53 | Under center of trunk lid trim | | |
| Trunk light | | In trunk trim | | |
| Trunk remote unlock motor | V151 | Under center of trunk lid trim | | |
| Turn signal / high beam stalk switch | E2 E4 | On steering column | | |
| Turn signal flasher | E3 | Emergency flasher | | |
| Ultra-sound sensor control module | J347 | Below C-pillar on inside left rear door jamb, behind rear seat side trim | | |
| Washer fluid level sensor | G33 | Washer fluid reservoir, behind right front wheel housing liner | **Fig. 19** | 97-16 |
| Waste gate bypass regulator valve, 2.7 liter engine | N75 | Center of intake manifold, right of air intake duct | **Fig. 9** | 97-13 |
| Wheel speed sensor | | *see* ABS wheel speed sensor | | |
| Window control module | J295 - J298 | Integrated with window motor and window regulator assembly | **Fig. 32** | 97-20 |
| Window motor | | In door | **Fig. 32** | 97-20 |
| Window motor switch | | In door | **Fig. 32** | 97-20 |

| Table a. Electrical component locations | | | | |
|---|---|---|---|---|
| **Component** | **Code** | **Location** | **Fig. #** | **Pg. #** |
| Windshield washer fluid pump | V5 | Washer fluid reservoir, behind left front wheel housing liner | | |
| Windshield washer nozzle, heated | | Under engine hood | | |
| Windshield wiper motor | V | Under left cowl in plenum chamber | | |
| Wiper / washer intermittent relay | J31 | Micro central electric panel under left side dashboard | **Fig. 50** | 97-28 |
| Wiper / washer stalk switch | | On steering column | | |
| Wiper motor, rear window (Avant) | V12 | In tailgate underneath trim panel | **Fig. 38** | 97-22 |
| Woofer | | *see* Speaker | | |
| Yaw sensor | | *see* Rotation rate sensor (yaw sensor) | | |

## Engine compartment components

Component locations pictures, unless otherwise noted, are of a 1999 A6 Avant quattro with 2.8 liter engine code AHA. Components and locations vary depending on year and model.

**Fig. 1 1999 2.8 liter engine compartment, upper cover and plenum chamber cover removed**




1. **Fuel tank evaporative control canister purge regulator valve (N80)**
2. **Dust and pollen filter**
3. **Mass air flow (MAF) sensor (G70)**
4. **Oxygen sensor harness connectors**
5. **Battery (A)**
6. **Secondary air injection valve (N112)**
7. **Intake air temperature (IAT) sensor (G42)**
8. **Intake manifold change-over (tuning) valve (N156)**
9. **Transmission kick-down switch (F8)**
10. **Brake fluid level warning switch (F34)**
11. **Fuel pressure regulator**
12. **Electronics box (E-box)**
13. **Power output stage (N122) Ignition coils (N, N128, N158)**
14. **Hood alarm switch (F120)**
15. **Engine coolant level switch (F66)**
16. **Left camshaft adjustment valve (N208)**
17. **ABS hydraulic pump (V156)) ABS hydraulic unit (N55)**

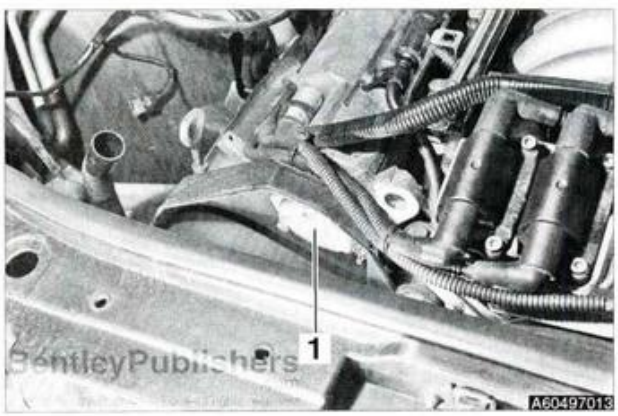



**Fig. 2 Right front of engine**

➤ Right upper timing belt cover removed

1. Right camshaft sensor (G40)

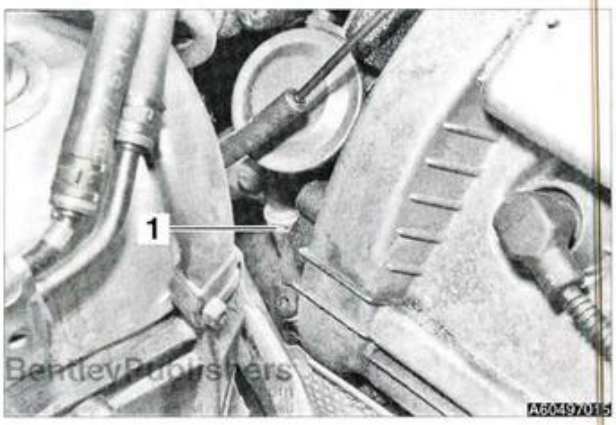



**Fig. 3 Right rear of engine**

Intake air duct and engine cover removed

1. Precatalyst oxygen sensor 1 (G39)

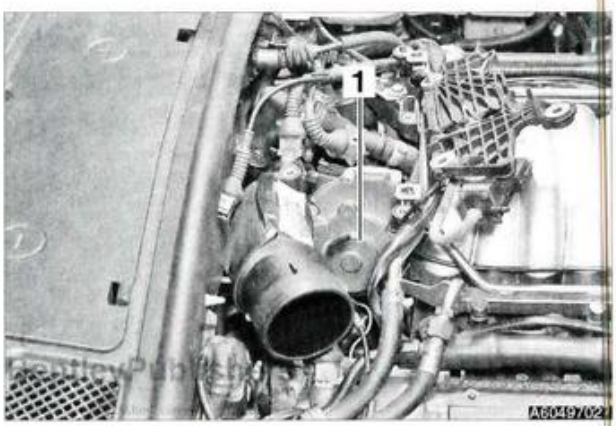



**Fig. 4 Rear of engine**

Intake air duct and upper engine cover removed

1. Throttle valve control module (J338)
   Throttle angle sensor (G187, G188)
   Throttle position sensor (G79)

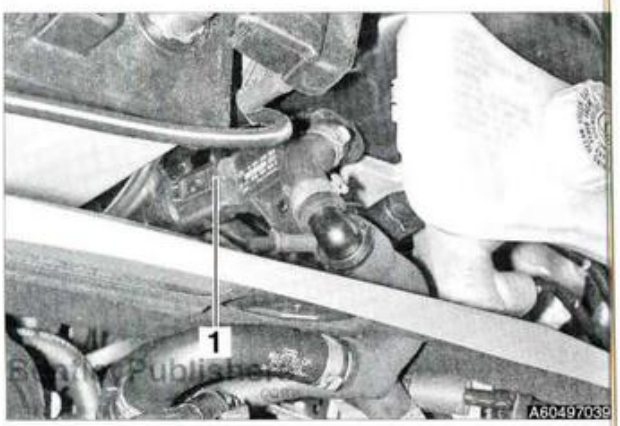



**Fig. 5 Plenum chamber, left of battery, 3.0 liter V6, all V8 engines**

Plenum chamber cover removed

1. Brake booster vacuum pressure sensor (G294)

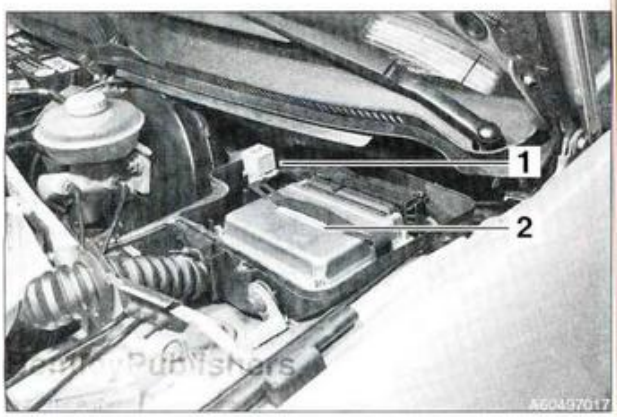



**Fig. 6 Plenum chamber, left side**

Plenum chamber and E-box *covers removed*

1. Secondary air injection relay (J299)
2. Engine control module (J220)

The electronics box (E-box) in the left rear of the engine compartment is protected by a plastic cover. It contains 3-fold relay panel and S1 fuse panel. For fuse ratings and relay applications, see **Fuse and Relay Panels** in this repair group.

**Fig. 7 Left headlight, xenon (HID)**

Headlight cover removed

1. Left headlight beam adjusting motor (V48)

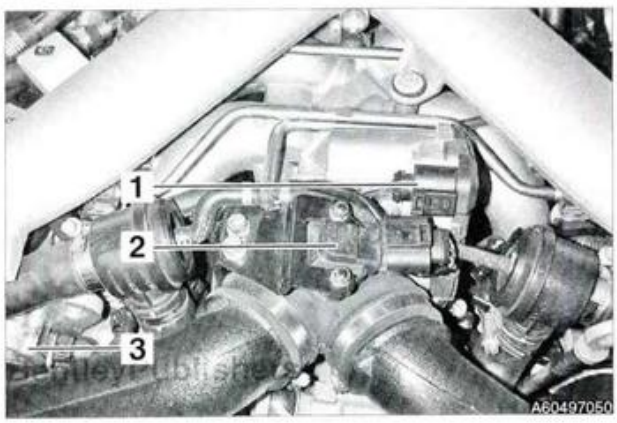



**Fig. 8 Top of engine, 2.7 liter biturbo V6 engine**

Upper engine cover removed

1. Throttle valve control module (J338)
   Throttle drive (G186)
   Throttle valve angle sensors (G187, G188)
2. Charge air pressure sensor (G31)
3. Right camshaft sensor (G40)

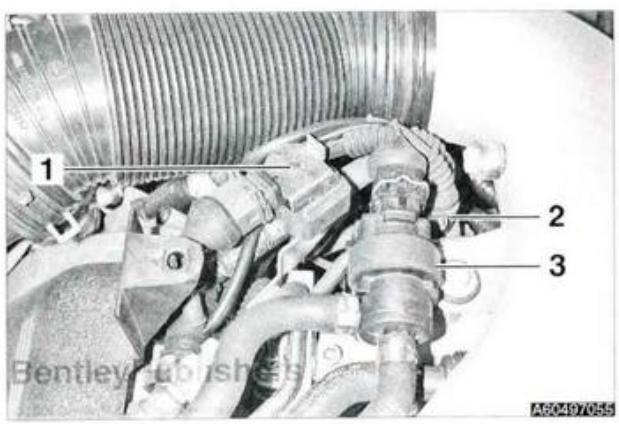



**Fig. 9 Top right of engine, 2.7 liter biturbo V6 engine**

Top of intake manifold, upper engine cover removed

1. Waste gate bypass regulator valve (N75)
2. Right exhaust temperature sensor module (G235)
3. Fuel tank evaporative control canister purge regulator valve (N80)

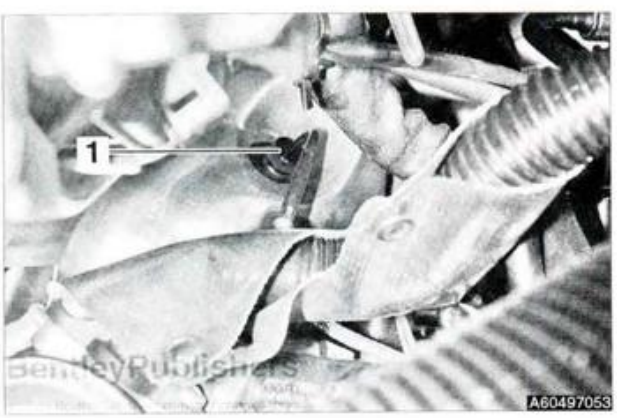



**Fig. 10 Rear of engine, 2.7 liter biturbo V6 engine**

Right turbocharger outlet pipe

1. Right exhaust temperature sensor (G235)

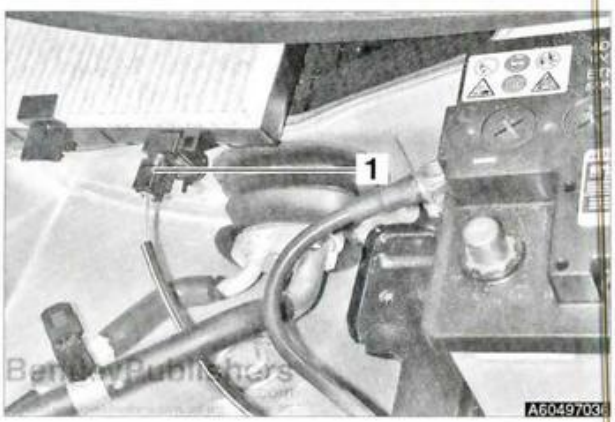



**Fig. 11 Plenum chamber, right of battery, 3.0 liter V6 engine**

➤ Plenum chamber cover removed

1. Air quality sensor (G238)

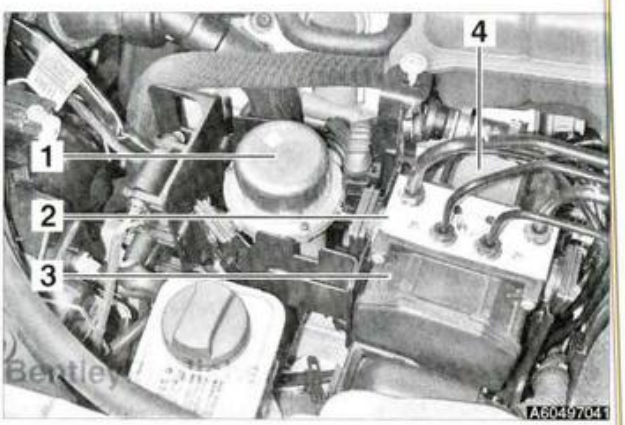



**Fig. 12 Engine compartment, left side, 3.0 liter V6 engine**

➤ Left side engine cover removed

1. Brake booster vacuum pump (V192)
2. ABS hydraulic unit (N55)
3. ABS control module (J104)
4. ABS return flow pump (V39)

**Fig. 13 Top of engine, 3.0 liter V6 engine**

➤ Upper engine cover removed

1. Intake manifold change-over (tuning) valve (N261)

## Components underneath vehicle

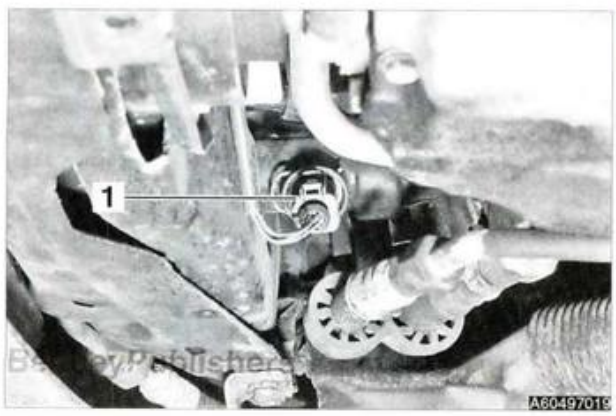



**Fig. 14 Underneath right side of engine**

➤ Radiator outlet pipe, engine lower cover removed

1. Engine cooling fan switch (F54, F18)

**Fig. 15 Underneath left side of engine**

Lower engine cover removed

1. After-run coolant pump (V51)

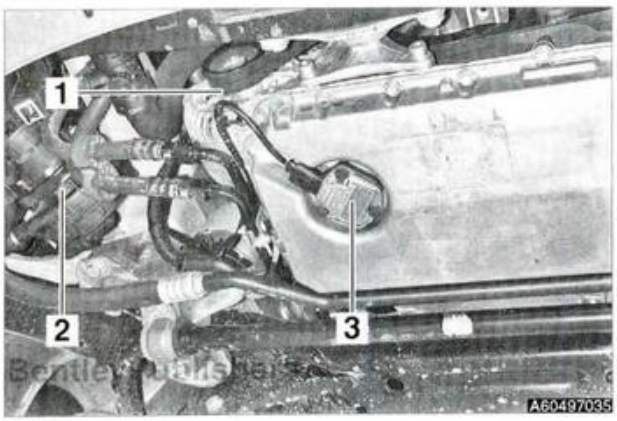



**Fig. 16 Underneath center of engine**

Lower sound absorber panel removed, 3.0 liter engine

1. Alternator (C)
2. Secondary air injection pump motor (V101)
3. Oil level thermal sensor (G266)

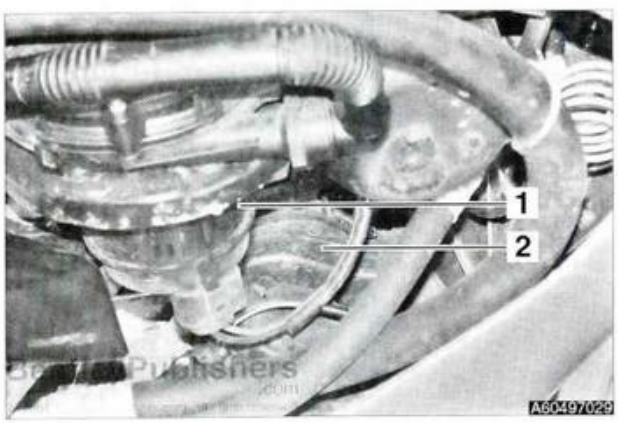



**Fig. 17 Underneath right front of vehicle**

Lower engine cover removed

1. Secondary air injection pump (V101)
2. Low tone horn (H7)

**Fig. 18 Underneath left front of vehicle**

Lower engine cover removed

1. Engine cooling fan series resistance (N39)
2. High tone horn (H2)
3. Left foglight

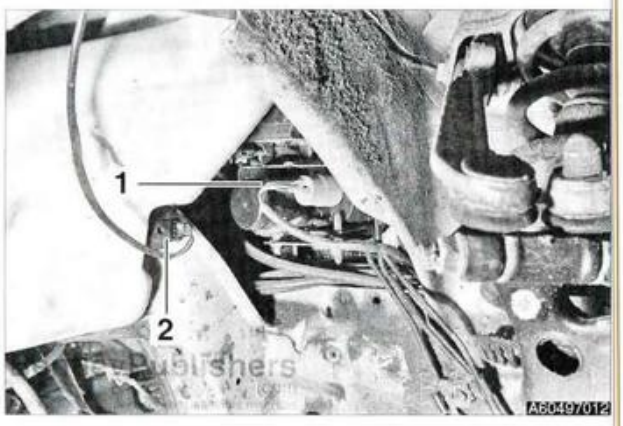



**Fig. 19 Left front wheel housing**

Wheel housing liner removed.

1. Cruise control vacuum pump (V18)
2. Washer fluid level sensor (G33)

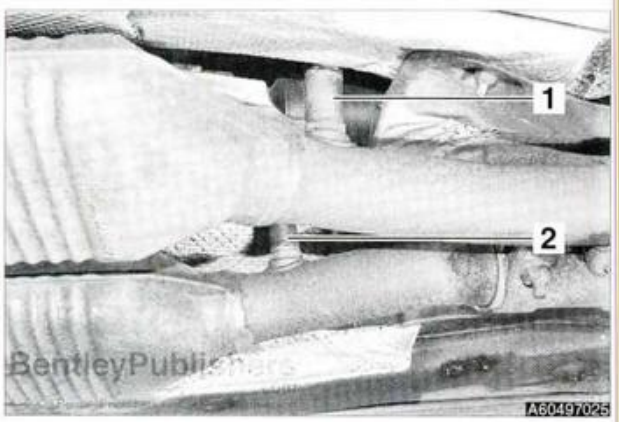



**Fig. 20 Underneath middle of vehicle**

Rear of catalytic converter, in exhaust system

1. Post-catalyst oxygen sensor 2 (G131)
2. Post-catalyst oxygen sensor 1 (G130)

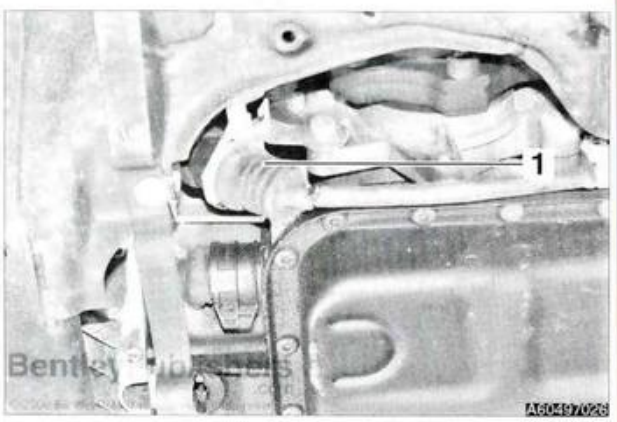



**Fig. 21 Underneath automatic transmission**

Lower sound absorber panel removed

1. Multifunction transmission range switch (F125)

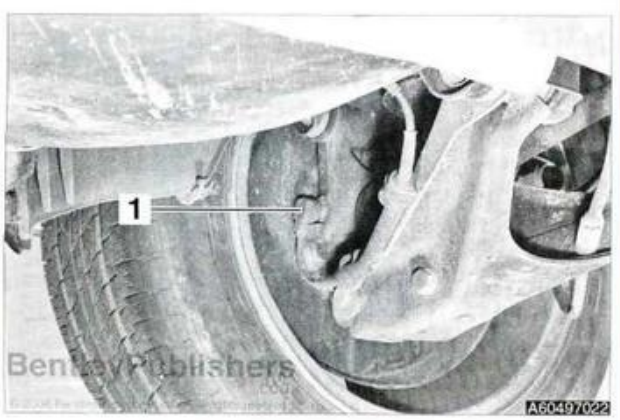



**Fig. 22 Underneath right rear of vehicle**

Right rear wheel hub

1. Right rear ABS wheel speed sensor (G46)

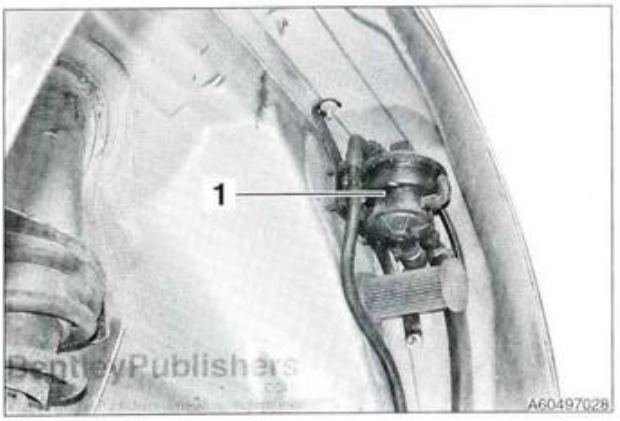



**Fig. 23 Left rear wheel housing**

➤ Wheel housing liner removed

1. Fuel tank leak detection pump (144)

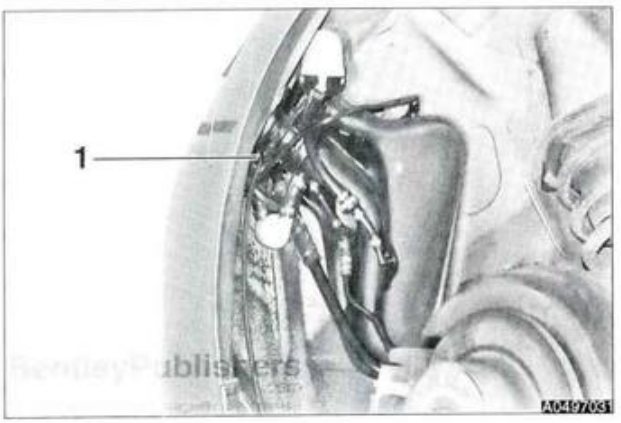



**Fig. 24 Right rear wheel housing**

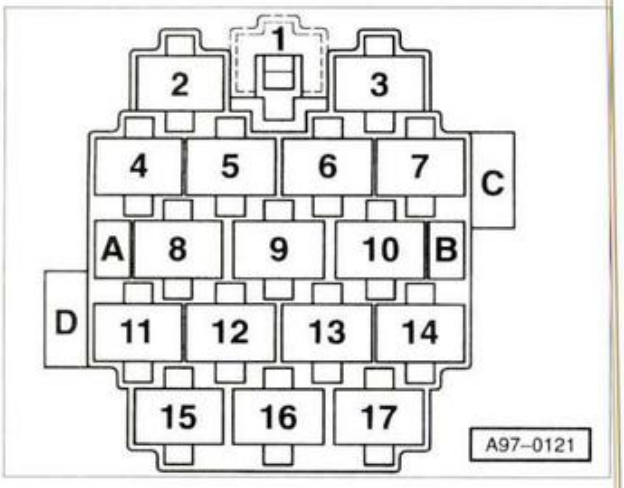
➤ Wheel housing liner removed

1. Fuel tank filler neck ground

**Fig. 25 Above tailpipe, 3.0 liter engine**

➤ In exhaust pipe

1. Exhaust flap valve (N321)




## Interior components

**Fig. 26 Left A-pillar connector station**

➤ Behind left kick panel trim

**Table b. Left A-pillar connector station plugs**

| No. | Color | From wiring harness | To wiring harness |
|---|---|---|---|
| 1 | Black | Dashboard | Mirror adjustment |
| 2 | Light brown | Central locking, anti-theft | Door lock, anti-theft |
| 3 | Red | Power window | Power window in door |
| 4 | Black | Cruise control | Dashboard |
| 5 | Blue | Speaker | Speaker |
| 6 | Grey | Power window | Power window |
| 7 | Blue | Rear of vehicle | Dashboard |
| 8 | Brown | Rear of vehicle | Dashboard |
| 9 | Red | Xenon headlight, left | Dashboard |
| 10 | Violet | Xenon headlight, left | Dashboard |
| 11 | Blue | Rear of vehicle | Dashboard |
| 12 | White | Seats, seat belt warning | Dashboard |
| 13 | Brown | Power window, sunroof | Dashboard |
| 14 | Grey | Engine cooling fan, A/C compressor | Dashboard |
| 15 | Orange | ABS | Dashboard |
| 16 | Violet | Dome light | Dashboard |
| 17 | Black | Wiper motor | Dashboard |
| A | Black | Rear of vehicle | Dashboard |
| B | Black | Washer | Dashboard |
| C | Blue | Dashboard | Temperature gauge |
| D | Yellow | Airbag, driver | Dashboard |

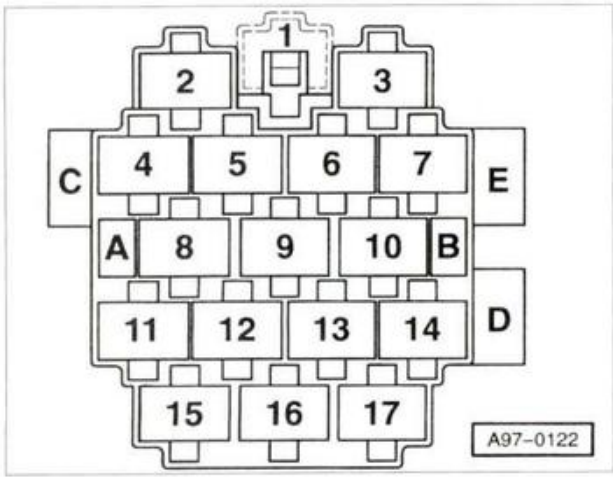



**Fig. 27 Right A-pillar connector station**

Behind right kick panel trim

**Table c. Right A-pillar connector station plugs**

| No. | Color | From wiring harness | To wiring harness |
|---|---|---|---|
| 1 | Black | Dashboard | Mirror adjustment |
| 2 | Red | Power window | Power window in door |
| 3 | Yellow | Central locking, anti-theft | Door lock, anti-theft |
| 4 | White | Parking aid | Dashboard |
| 5 | Blue | Headlight aim, xenon bulb | Dashboard |
| 6 | Green | Speaker | Speaker |
| 7 | Black | Central locking, anti-theft | Dashboard |
| 8 | Violet | Xenon headlight, right | Dashboard |
| 9 | red | Xenon headlight, right | Dashboard |
| 10 | Blue | Automatic transmission | Dashboard |
| 11 | Grey | ABS | Dashboard |
| 12 | Yellow | Airbag | Dashboard |
| 13 | Black | Reading lights | Dashboard |
| 14 | Grey | Automatic transmission | Dashboard |
| 15 | Yellow | Daytime running lights | Dashboard |
| 16 | Brown | Leak detection pump, automatic day/night mirror | Dashboard |
| 17 | Orange | Central locking, anti-theft | Dashboard |
| A | | Open | |
| B | | Open | |
| C | | Open | |
| D | White | Seat belt tensioner, passenger airbag | Dashboard |
| E | | Open | |

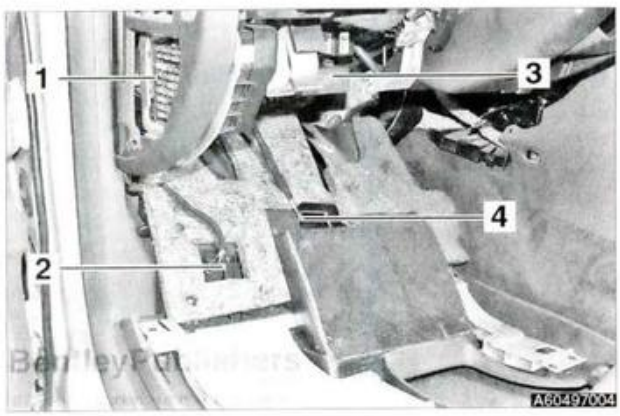



**Fig. 28 Under dashboard, left side**

Lower left dashboard trim panel pulled down (back side shown)

1. Main fuse panel
2. Data link connector (DLC)
3. 13-fold relay panel
   Micro central electric panel relay panel
4. Footwell light

**Fig. 29 Left footwell**

Lower left dashboard trim panel removed

1. Left temperature regulator flap motor (V158) and sensor (G220)
2. Heater core
3. Accelerator pedal module:
   Throttle position sensor (G79)
   Accelerator pedal position sensor 2 (G185)

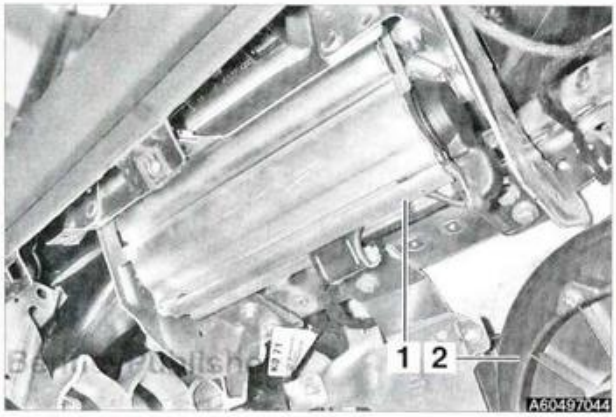



**Fig. 30 Under dashboard, right side**

Glove compartment removed

1. Passenger airbag ignitor (N131)
2. Blower motor (V2)

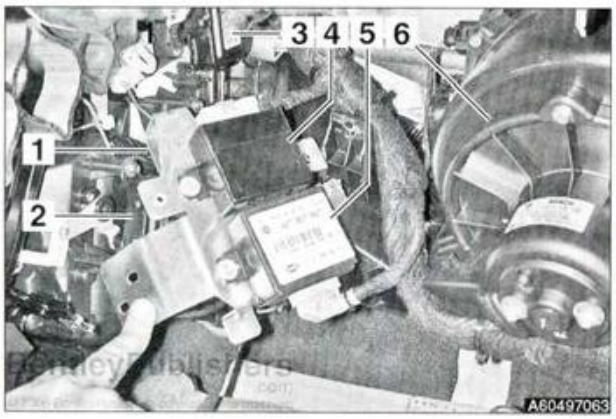



**Fig. 31 Under dashboard, right side**

Components behind glove compartment

1. Right temperature regulator flap motor (V159) and sensor (G221)
2. Center air flow flap motor (V70) and sensor (G112)
3. Defroster flap motor (V107) and sensor (G135)
4. Cruise control module (J213)
5. Headlight aim control module (J431)
6. Blower motor (V2)

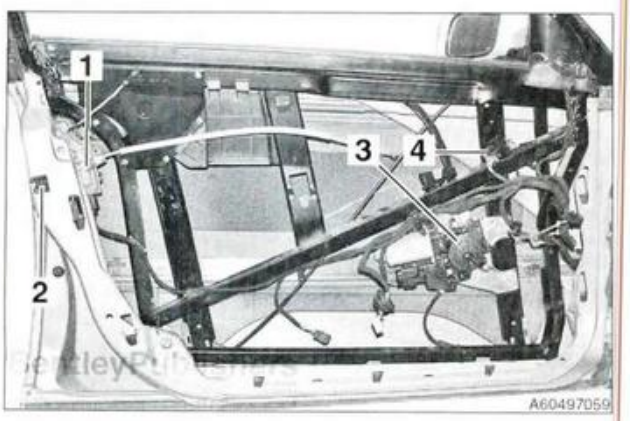



**Fig. 32 Driver's door**

Door panel removed

1. Door lock motor (V56)
   Door contact switch (F3)
2. Door lock
3. Window motor (V14)
   Window control module (J295)
4. Outside mirror electrical connector

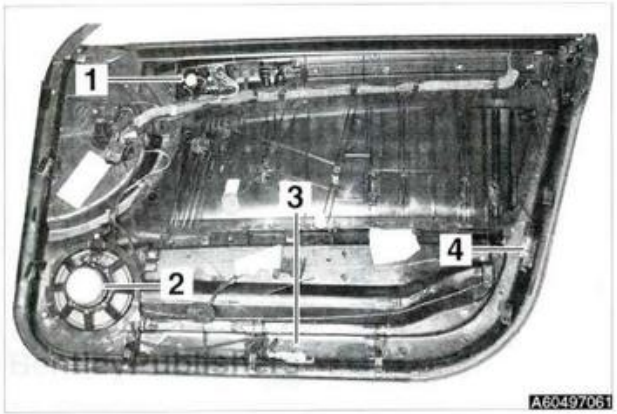



**Fig. 33 Driver's door panel**

Backside of panel removed from door

1. High frequency speaker (tweeter) (R34)
2. Midrange speaker (R21)
3. Door courtesy light
4. Door warning light

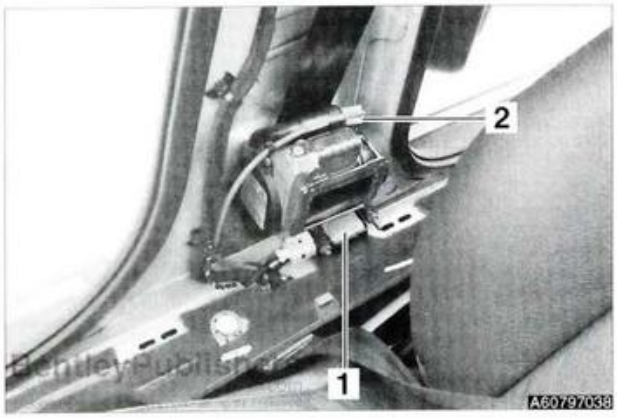



**Fig. 34 Lower B-pillar**

B-pillar trim removed

1. Seat belt reel microswitch (F146)
2. Seat belt tensioner igniter (N153)

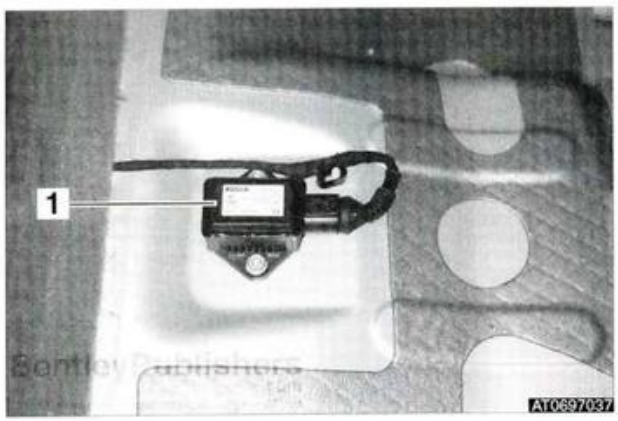



**Fig. 35 Under rear seat, 2000 - 2004 sedan**

Rear seat cushion removed

1. ESP sensor:
   Transverse acceleration (G200)
   Rotation rate (yaw) sensor (G202)

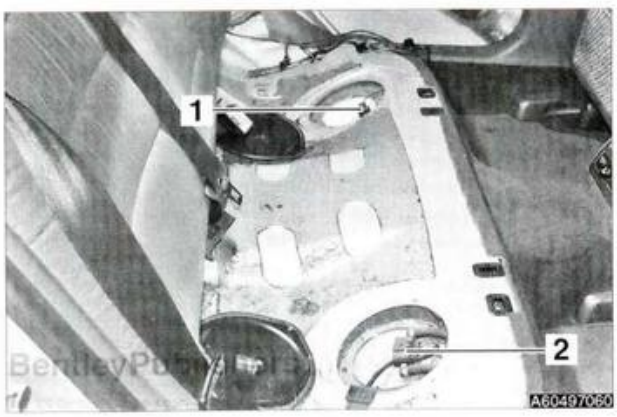



**Fig. 36 Under rear seat**

Rear seat cushion and fuel tank access covers removed

1. Fuel level sensor, left (G169)
2. Fuel level sensor, right (G)
   Fuel pump (G6)

**Fig. 37 Luggage compartment, Avant**

Behind rear seats, rear seat folded forward, luggage compartment carpet removed, fuel tank access cover removed

1. Fuel level sensor, center (G237) (quattro only)

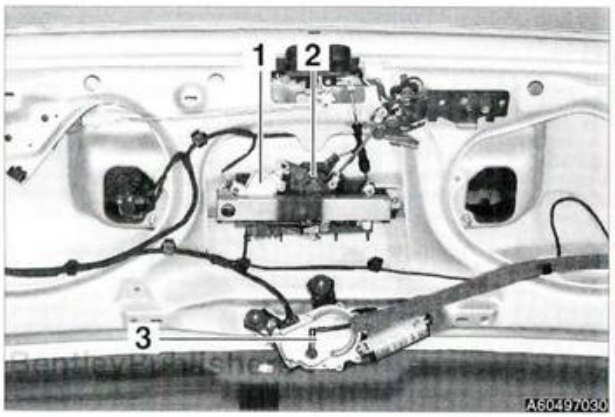



**Fig. 38 Tailgate, Avant**

Tailgate trim removed

1. Tailgate remote unlock motor (V151)
2. Tailgate lock motor (V53)
3. Rear window wiper motor (V12)

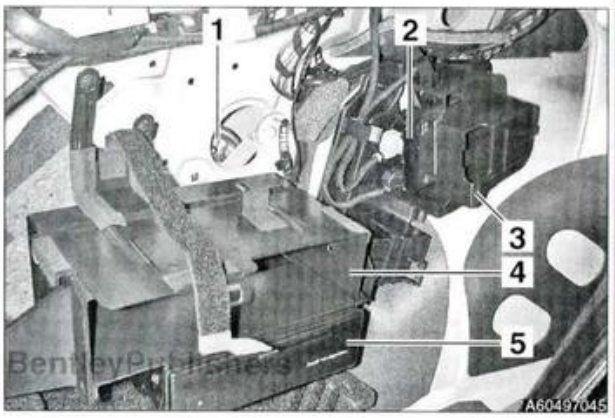



**Fig. 39 Left side luggage compartment, sedan**

Left storage cover removed

1. Alarm horn (H8)
2. Tire pressure monitoring control module (J502)
3. Parking aid control module (J446)
4. CD changer (R41)
5. Navigation control module

## allroad quattro components

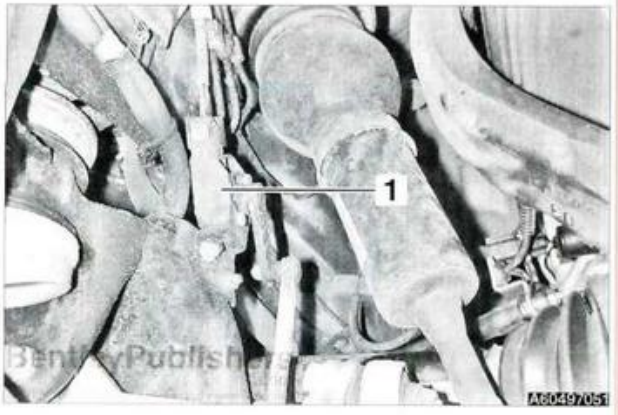



**Fig. 40 Left front wheel *housing***

Wheel housing liner removed

1. Left front level control system sensor (G78)

***NOTE —***

- *Level control sensors for the other wheels are as follows:*
  *-Right front: G84*
  *-Left rear: G76*
  *-Right rear: G77*

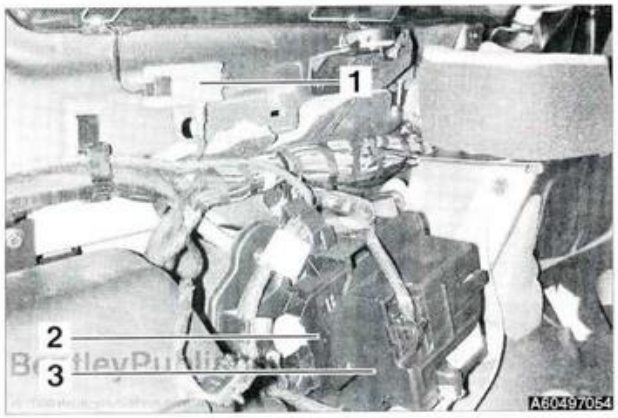



**Fig. 41 Left side luggage compartment**

Left storage cover and trim removed

1. Broken window glass sensor (G183, G184)
2. Tire pressure monitoring control module (J502)
3. Level control system control module (J197)

**Fig. 42 Rear underside of vehicle**

Above stabilizer bar

1. Suspension strut valve (N148, N149, N150, N151)
   Level control system accumulator valve (N311)

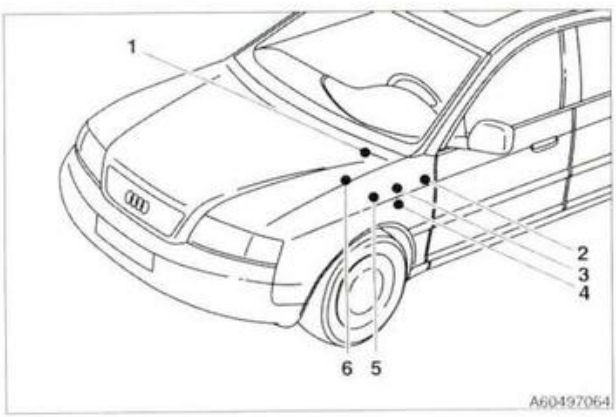
**Fig. 43 Left rear underside of vehicle**

Between exhaust system and spare tire well

1. Level control system compressor motor (V66)
   Level control system solenoid valve (N111)

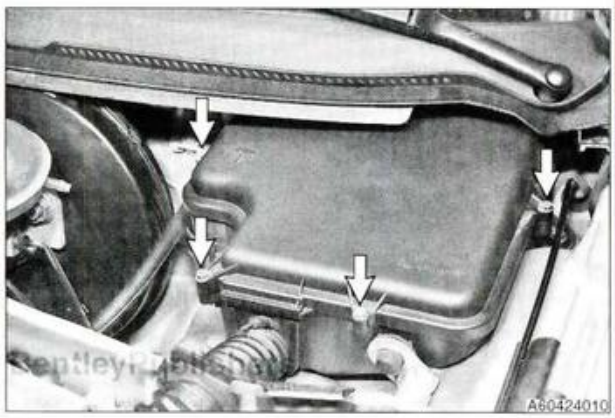
## FUSE AND RELAY PANELS

The majority of A6 fuses and relays are in the locations shown in the illustration. See **Table d** for names and locations.



*Fuse and Relay Panels*

| Table d. A6 fuse and relay panels | | | |
|---|---|---|---|
| **No.** | **Panel** | **Location** | **See section in this repair group** |
| 1 | 3-fold relay panel, fuse panel S1 | Left side plenum chamber, rear of engine compartment | **E-box (electronics box) components** |
| 2 | *Main* fuse panel, fuse panel S2 | Left end of dashboard | **Main fuse panel, fuse panel S2** |
| 3 | 13-fold relay panel | Under left side dashboard | **Under-dash relay panels** |
| 4 | Micro central electric panel | Under left side dashboard | **Under-dash relay panels** |
| 5 | 8-fold relay panel | Under left side dashboard | **Under-dash relay panels** |
| 6 | Central carrier relay panel | Under left side dashboard | **Under-dash relay panels** |




## E-box (electronics box) components

– Open engine hood and remove plenum chamber cover.

➤ Remove E-box cover retaining bolts (**arrows**). Lift off cover.

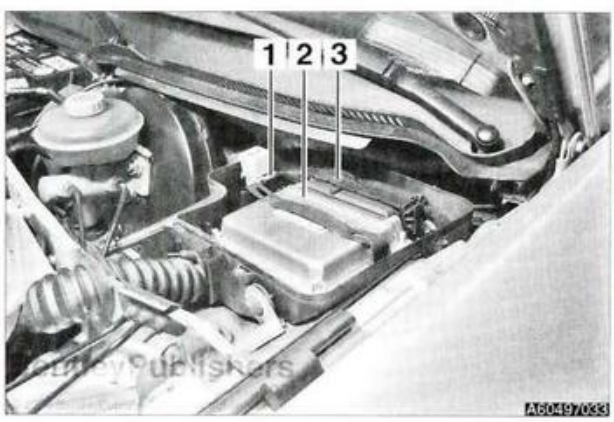



**Fig. 44 E-box**

➤ Plenum chamber cover and E-box cover removed

1. 3-fold relay panel
   Fuse panel S1
2. Engine control module (ECM)
3. E-box connector station

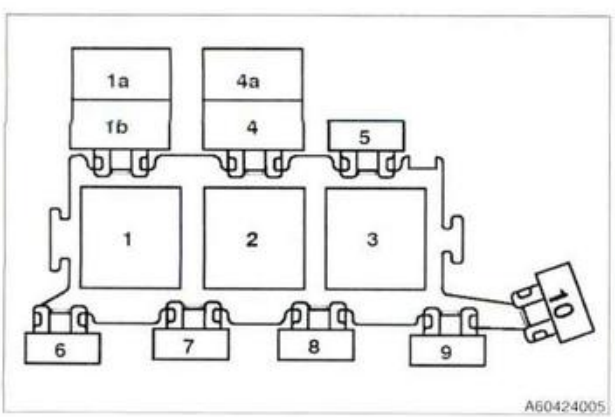
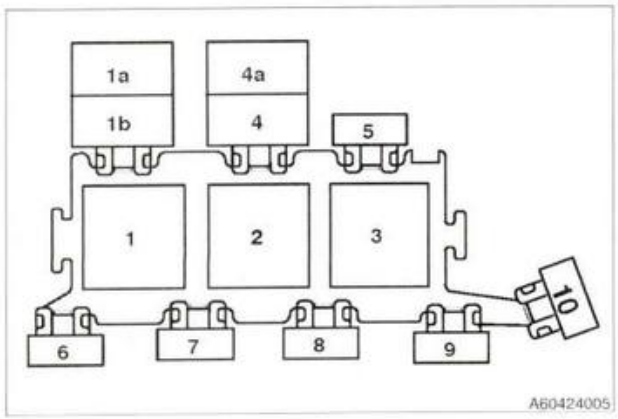



**Fig. 45 3-fold relay panel, fuse panel S1**

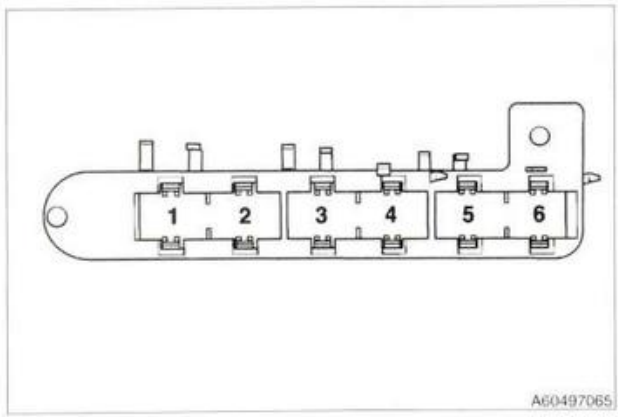
➤ Relay and fuse configuration varies by year and model

| Table e. 3-fold relay panel fuses and relays | | |
|---|---|---|
| **Fuse** | **Amps** | **Protected circuit** |
| 1 | | Open |
| 1a | | Open |
| 1b | | After-run coolant pump relay (J151) |
| 2 | | Secondary air injection pump relay (J299) |
| 3 | | ECM power relay (J271) |
| 4 | | Open |
| 4a | | Open |




| Table e. 3-fold relay panel fuses and relays | | |
|---|---|---|
| **Fuse** | **Amps** | **Protected circuit** |
| 5 | 15 | ECM fuse (S102) |
| 6 | | Open |
| 7 | 40 | Secondary air injection pump fuse (S130) |
| 8 | | Open |
| 9 | | Open |
| 10 | | Open |

**Fig. 46 E-box connector station**




| Table f. E-box connector station plugs | | | |
|---|---|---|---|
| **No.** | **Color** | **From wiring harness** | **To wiring harness** |
| 1 | White | Dashboard | Engine |
| 2 | Blue | Dashboard | Engine / transmission |
| 3 | Orange | Dashboard | Engine |
| 4 | Red | Dashboard | Engine |
| 5 | Brown | Dashboard | Engine/ transmission |
| 6 | Black | Dashboard | Engine compartment |

## Main fuse panel, fuse panel S2

Gently pry open cover at left end of dashboard to gain access to main fuse panel.

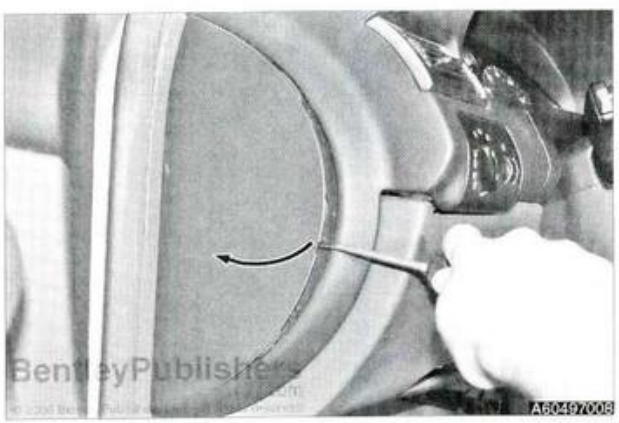



**Fig. 47 Dashboard fuse panel**

Left end of dashboard, under cover.

1. Fuse panel S2

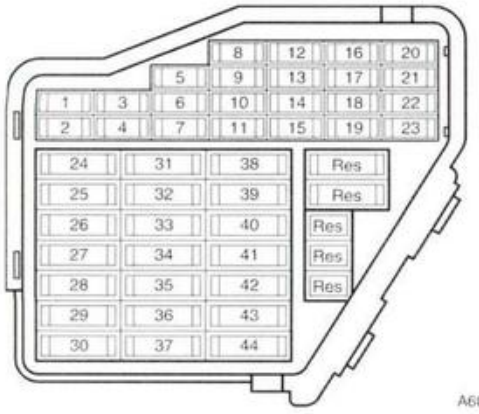
See **Table g** for fuse ratings and applications. Be sure to replace a bad fuse with one of equivalent rating.

***NOTE —***

- *Starting with fuse 23, fuses in the main fuse panel are identified with an additional S2 in the wiring diagrams.*
  *-Example: Fuse 23 = S223*

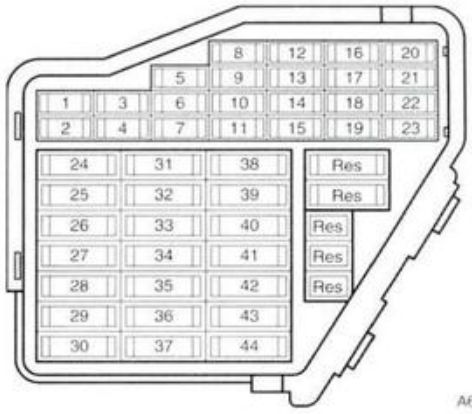
*Fuse and Relay Panels*

**Table g. Main fuse panel**

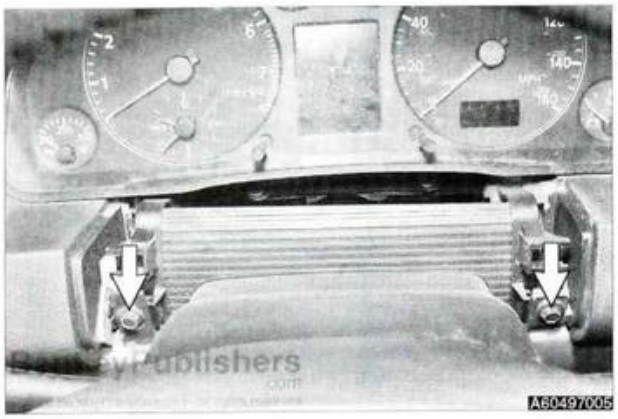



| Fuse | Amps | Protected circuit |
|---|---|---|
| 1 | 5 | Washer nozzle heater |
| 2 | 10 | Turn signal |
| 3 | 5 | Illumination (glove compartment, climate control, instrument cluster) |
| 4 | 5 | License plate lights |
| 5 | 10 | Instrument cluster<br>Climate control<br>Outside mirror<br>Lamp control module<br>Seat heating<br>Rear window shade<br>Telephone |
| 6 | 5 | Central locking |
| 7 | 10 | ABS |
| 8 | 5 | Telephone |
| 9 | 10 | Mirror heating |
| 10 | 5 | Automatic headlight aim control |
| 11 | 5 | Cruise control |
| 12 | 10 | Supply voltage diagnostic |
| 13 | 10 | Brake lights |
| 14 | 10 | Interior lights<br>Reading lights<br>Central locking<br>Vanity mirror light<br>Seat memory |
| 15 | 10 | Instrument cluster<br>Automatic transmission<br>Climate control<br>Mirror memory |
| 16 | 5 | Steering angle sensor |
| 17 | 10 | Level control system |
| 18 | 10 | Headlight high beam, right |
| 19 | 10 | Headlight high beam, left |
| 20 | 15 | Headlight low beam, right<br>Headlight adjusting |
| 21 | 15 | Headlight low beam, left<br>Headlight adjusting |
| 22 | 5 | Tail and parking light, right |

**Table g. Main fuse panel**




| Fuse | Amps | Protected circuit |
|---|---|---|
| 23 | 5 | Tail and parking light, left |
| 24 | 25 | Wiper and washer system |
| 25 | 30 | Blower, climate control |
| 26 | 30 | Rear window defogger |
| 27 | 15 | Rear window wiper and washer<br>Heated steering wheel |
| 28 | 15 | Fuel pump (1998 - 2000) |
| 28 | 20 | Fuel pump (2001 - 2004) |
| 29 | 20 | Engine control module (ECM) (1998 - 2000) |
| 29 | 30 | Engine control module (ECM) (2001 - 2004) |
| 30 | 20 | Sunroof |
| 31 | 15 | Automatic transmission<br>Back-up lights<br>Cruise control<br>Automatic day / night interior mirror<br>Data link connector |
| 32 | 20 | Engine control module |
| 33 | 15 | Cigarette lighter |
| 34 | 15 | Engine control module, fuel injectors |
| 35 | | Open |
| 36 | 15 | Foglights |
| 37 | 20 | Sound system |
| 38 | 15 | Luggage compartment light<br>Central locking system (1998 - 2000) |
| 38 | 20 | Luggage compartment light<br>Central locking system (2001 - 2004) |
| 39 | 15 | Emergency flasher |
| 40 | 25 | Horn |
| 41 | | Open |
| 42 | 25 | ABS / ESP |
| 43 | | Open |
| 44 | 30 | Seat heater |




## Under-dash relay panels

➤ Tilt steering column down and pull off trim under instrument cluster. Remove steering column trim panel fasteners (**arrows**).

➤ Remove lower trim fasteners (**arrows**) and pull down trim panels under steering column to gain access to fuse and relay panels under dashboard.

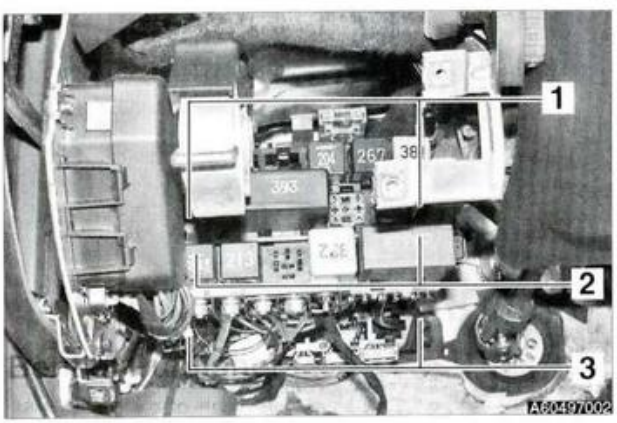



**Fig. 48 Underneath left side of dashboard**

➤ Lower steering column trim panel removed

1. 13-fold relay panel
2. Micro central electric panel
3. 8 fold relay panel

*Fuse and Relay Panels*

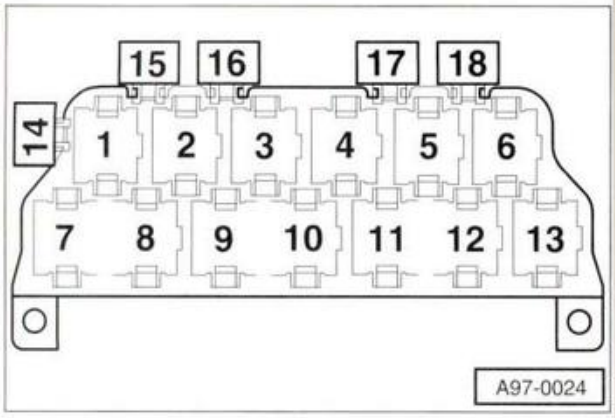



**Fig. 49 13-fold relay panel**

Underneath left side dashboard, trim panel removed

| Table h. 13-fold relay panel fuses and relays | | |
|---|---|---|
| **Pos** | **Amps** | **Circuit or component** |
| 1 | | Selector lever light relay (1998) |
| 2 | | Open |
| 3 | | Solar cell separation relay (J309) |
| 4 | | Starter interlock relay (J207), manual transmission Park / neutral position (PNP) relay (J226), Multitronic® transmission (CVT) |
| 5 | | A/C clutch relay (J44) |
| 6 | | Foglight relay (J5) |
| 7 | | Multi-function steering wheel control module (J453) |
| 8 | | |
| 9 | | Lamp control module (J123) |
| 10 | | |
| 11 | | Mirror fold away control module (J351) |
| 12 | | |
| 13 | | Servotronic control module (J236) |
| 14 | 15 | Brake booster vacuum pump fuse (S279) (allroad) |
| 15 | | Open |
| 16 | | Open |
| 17 | 50 | Secondary air pump fuse (S130) (1998) |
| 18 | | Open |

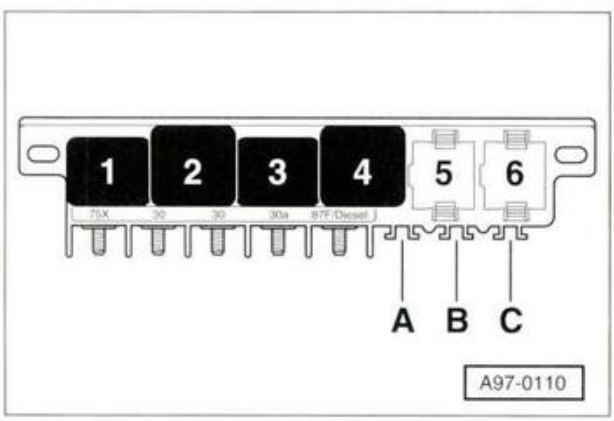



**Fig. 50 Micro central electric panel**

Underneath left side dashboard, trim panel removed

| Table i. Micro central electric panel fuses and relays | | |
|---|---|---|
| **Pos** | **Amps** | **Circuit or component** |
| 1 | | Horn relay (J4) |
| 2 | | Load reduction relay (J59) |
| 3 | | Hydraulic pump relay (J555) (2001 - 2004) |
| 4 | | Fuel pump relay (J17) |
| 5 | | Wiper / washer intermittent relay (J31) |
| 6 | | |
| A | 20 | Steering column adjustment motor fuse (S275) |
| B | 10 | Rear window shade motor fuse (S100) |
| C | | Open |

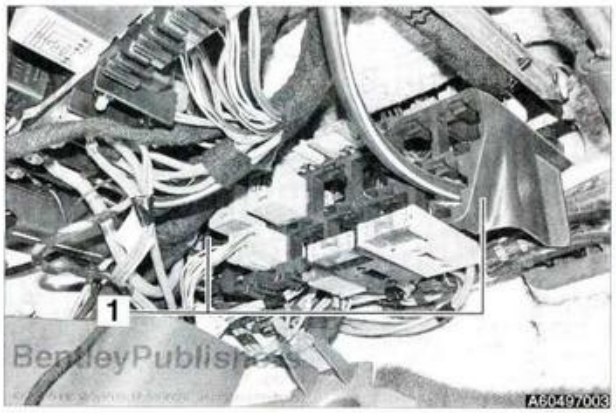



**Fig. 51 8-fold relay panel**

Underneath left side dashboard, trim panel removed

1. 8-fold relay and fuse panel

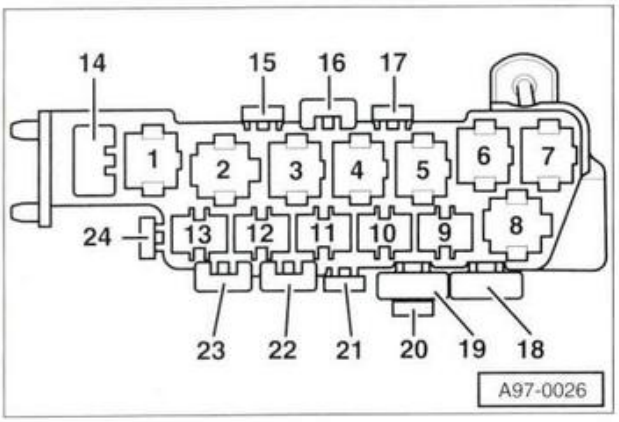



**Fig. 52 8-fold relay panel relays**

| Table j. 8-fold relay panel relays | |
|---|---|
| **Relay** | **Circuit** |
| 1 | ABS solenoid valve relay (J106) (2002 - 2004) |
| 2 | Engine cooling fan relay, high speed (J101) |
| 3 | Engine cooling fan relay (J26) |
| 4 | ABS solenoid valve relay (J106) (2001) |
| 5 | Open |
| 6 | Level control system compressor relay (J403) (2001 - 2004) |
| 7 | ABS return flow pump relay (J105) (2001 - 2004) |
| 8 | Open |

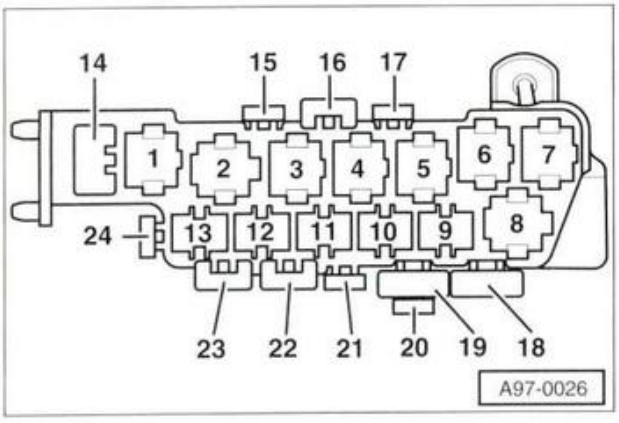



**Fig. 53 8-fold relay panel connectors**

| Table k. 8-fold relay panel connectors | | | |
|---|---|---|---|
| **No.** | **Color** | **From wiring harness** | **To wiring harness** |
| 9 | | Open | |
| 10 | Grey | Level control system | Dashboard |
| 11 | Black | ABS / ESP | Dashboard |
| 12 | Violet | Rear of vehicle | Central locking, anti-theft |
| 13 | | Open | |

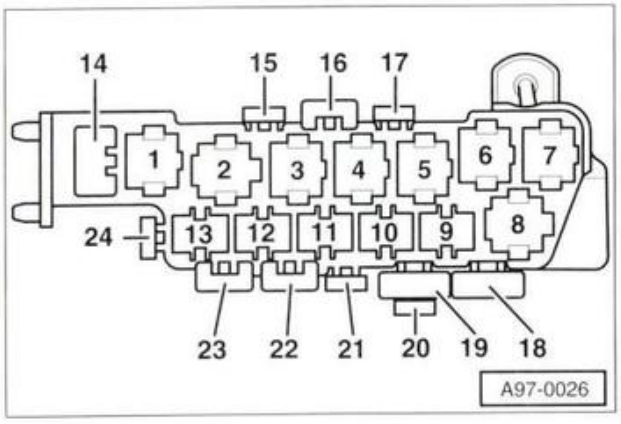



**Fig. 54 8-fold relay panel fuses**

| Table l. 8-fold relay panel fuses | | |
|---|---|---|
| **Fuse** | **Amps** | **Protected circuit** |
| 14 | | Driver seat heater circuit breaker 1 (S44) (1998 - 2001) |
| 14 | 60 | Engine cooling fan (S42) (2002 - 2004 allroad) |
| 15 | 20 | Luggage compartment auxiliary power socket (S184) |
| 16 | | Front window circuit breaker (S37) |
| 17 | | Rear window circuit breaker (S43) |
| 18 | 50 | ABS control module (S123) |
| 19 | 40 | Engine cooling fan (S42) (1998 - 2000) |
| 19 | | Open |
| 20 | 40 | Engine cooling fan (S42) |
| 21 | 5 | Engine cooling fan control module fuse (S142) |
| 22 | | Driver seat heater circuit breaker 1 (S44) (2002 -2004) |
| 23 | 40 | Level control system (S110) |
| 24 | | Passenger seat heater circuit breaker (S80) |

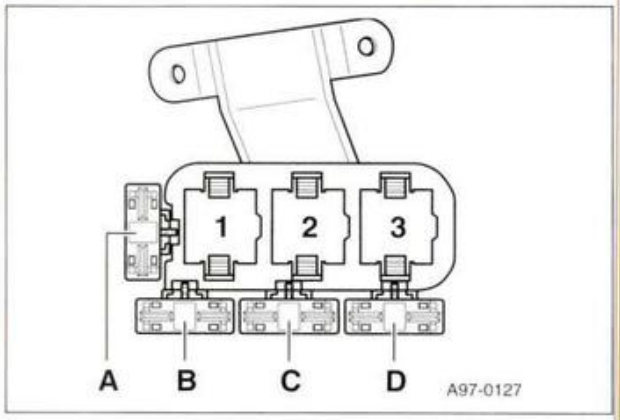



**Fig. 55 Central carrier relay panel**

Underneath left side dashboard, attached to dashboard center support, trim panel removed

| Table m. Central carrier relay panel fuses and relays | | |
|---|---|---|
| **Pos** | **Amps** | **Circuit** |
| 1 | | Brake booster vacuum pump relay (J569) |
| 2 | | Open |
| 3 | | Open |
| A | | Open |
| B | | Open |
| C | 15 | Brake booster vacuum pump fuse (S279) |
| D | 15 | Fuel pump control module fuse (S81) (RS6) |

## GROUNDS

Grounds are distributed throughout the vehicle body. Many are found under the interior carpets or behind trim panels. Several components grounds are often ganged. Ground positions vary among models. Lugs and connectors attached to ground are susceptible to damage and corrosion. Clean or renew as necessary.

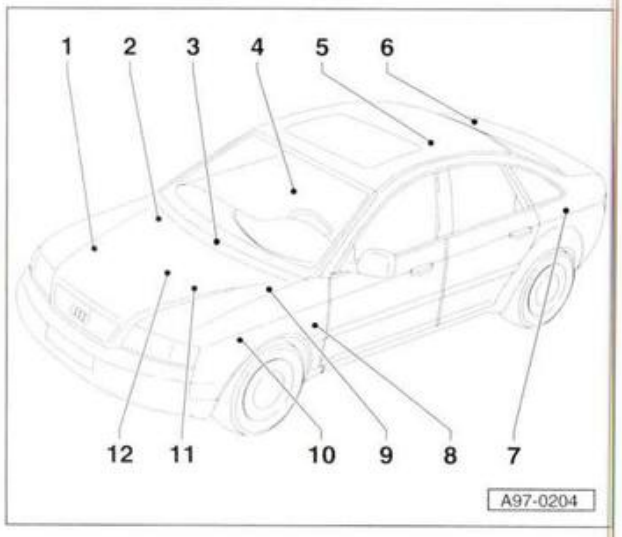



**Fig. 56 Ground locations**

Major grounding locations throughout the vehicle body:

1. Right side engine compartment
2. Right lower A-pillar
3. Battery to body ground cable
4. Right lower B-pillar
5. Right lower D-pillar
6. Near right taillight
7. Left side luggage compartment
8. Left lower A-pillar
9. ABS hydraulic unit ground
10. Left side engine compartment
11. Engine to body ground strap
12. Near ignition coil pack

***NOTE —***

- *In wiring diagrams, ground locations are described following a circled number.*

*-Example: (44) – Ground connection on left A-pillar lower part*

# EWD Electrical Wiring Diagrams


**GENERAL** . . . . . EWD-1
- Warnings and Cautions . . . . . EWD-2
- Terminal (circuit) identification . . . . . EWD-3
- How to read wiring diagrams . . . . . EWD-3
- Symbols used in wiring diagrams . . . . . EWD-5

**ELECTRICAL WIRING DIAGRAM INDEX** . . . . EWD-6
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- Standard equipment (2001) . . . . . EWD-7
- Standard equipment (2002) . . . . . EWD-8
- Standard equipment (2003) . . . . . EWD-9
- CD changer (2003) . . . . . EWD-9
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- Daytime running lights (1999) . . . . . EWD-12
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- Daytime running lights (2001) . . . . . EWD-12
- Daytime running lights (2004) . . . . . EWD-12
- Engine management, 2.7 liter, engine code APB (2001) . . . . . EWD-13
- Engine management, 2.7 liter, engine codes APB, BEL (2003) . . . . . EWD-14
- Engine management, 2.8 liter, engine code AHA (1998) . . . . . EWD-15
- Engine management, 2.8 liter, engine code ATQ (2001) . . . . . EWD-16
- Engine management, 3.0 liter, engine code AVK (2002) . . . . . EWD-17
- Engine management, 4.2 liter, engine code ART (2001) . . . . . EWD-18
- Engine management, 4.2 liter, engine codes AWN, BBD (2002) . . . . . EWD-18
- Engine management, 4.2 liter, engine code BAS (allroad quattro 2003) . . EWD-19
- Engine management, 4.2 liter, engine code BCY (RS6 2003) . . . . . EWD-20
- Headlight washer (1998) . . . . . EWD-21
- Headlight washer (2000) . . . . . EWD-21
- Headlights, xenon (HID) (1998) . . . . . EWD-21
- Headlights, xenon (HID) (2000) . . . . . EWD-21
- Headlights, xenon (HID) (2001) . . . . . EWD-21
- Headlights, xenon (HID) dynamic (2001) . . . EWD-21
- Headlights, xenon (HID) static (2001) . . . . . EWD-21
- Headlights, xenon (HID) dynamic (2003) . . . EWD-21
- Instruments and controls (1998) . . . . . EWD-22
- Instruments and controls (2000) . . . . . EWD-22
- Instruments and controls (2001) . . . . . EWD-22
- Instruments and controls (2004) . . . . . EWD-22
- Level control (2002) . . . . . EWD-22
- Parking aid (Parktronic) (2003) . . . . . EWD-22
- Seats (2001) . . . . . EWD-22
- Sound system (1998) . . . . . EWD-23
- Sound system (2000) . . . . . EWD-23
- Sound system (2001) . . . . . EWD-23
- Sound system, Bose (1998) . . . . . EWD-23
- Sound system, Bose (2000) . . . . . EWD-23
- Sound system, Bose (2001) . . . . . EWD-24
- Sound system, Bose (2003) . . . . . EWD-24
- Sound system, satellite radio, Bose (2003) . . EWD-24
- Sunroof (2000) . . . . . EWD-24
- Windows (1998) . . . . . EWD-24
- Windows (2000) . . . . . EWD-24
- Windows (2001) . . . . . EWD-24
- Windows (2002) . . . . . EWD-25

**ELECTRICAL WIRING DIAGRAMS** . . . . . EWD-26


## GENERAL

This section contains selected wiring diagrams for vehicles covered by this manual. These diagrams are provided by Audi of America, Inc. The publisher of this manual cannot vouch for the accuracy of these diagrams. Additional wiring diagrams can be found in the *Official Factory Repair Manual* available on CD-ROM or via web subscription at **www.BentleyPublishers.com**.

For a comprehensive list of fuses, relays and electrical component locations, see **97 Fuses, Relays, Component Locations**.

## Warnings and Cautions

Please read the following before doing any work on your electrical system.

***WARNING*** —

- *Airbags and pyrotechnic seat belt tensioners utilize explosive devices. Handle with extreme care. Refer to the warnings and cautions in* **69 Seat Belts, Airbags**.
- *The ignition system of the car operates at lethal voltages. If you have a weak heart or wear a pacemaker, do not expose yourself to the ignition system electric currents. Take extra precautions when working on the ignition system or when servicing the engine while it is running or the key is ON. See* **28 Ignition System** *for additional ignition system warnings and cautions.*
- *Keep hands, clothing and other objects clear of the electric radiator cooling fan when working on a warm engine. The fan may start at any time, even when the ignition is switched OFF.*

***CAUTION***—

- *Do not disconnect the battery with the engine running.*
- *Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components. Connect and disconnect electrical connectors and ignition test equipment leads only while the ignition is switched OFF.*
- *Relay and fuse positions are subject to change and may vary from car to car. If questions arise, an authorized Audi dealer is the best source for the most accurate and up-to-date information.*
- *Use a digital multimeter for electrical tests. Switch the multimeter to the appropriate function and range before making test connections.*
- *Many control modules are static sensitive. Static discharge damages them permanently. Handle the modules using proper static prevention equipment and techniques.*
- *To avoid damaging harness connectors or relay panel sockets, use jumper wires with flat-blade connectors that are the same size as the connector or relay terminals.*
- *Do not try to start the engine of a car which has been heated above 176°F (80°C) (for example, in a paint drying booth). Allow it to cool to normal temperature.*
- *Disconnect the battery before doing any electric welding on the car.*
- *Do not wash the engine while it is running, or any time the ignition is ON.*
- *Choose test equipment carefully. Use a digital multimeter with at least 10 MΩ input impedance, or an LED test light. An analog meter (swing-needle) or a test light with a normal incandescent bulb may draw enough current to damage sensitive electronic components.*
- *Do not use an ohmmeter to measure resistance on solid state components such as control modules.*
- *Disconnect the battery before making resistance (ohm) measurements on a circuit.*

## Wiring diagram organization

Audi wiring diagrams in this manual are organized as follows:

- **Standard equipment** covers
  Grounds
  Power supply
  Alternator (generator) and starter
  Exterior lights
  ABS
  Wipers and washers
  Seats and mirrors
- **Central locking system**
- **Daytime running lights** including foglights
- **Engine management**
- **Headlights and headlight washers**
- **Instruments and controls** covers switches and instrument panel on dashboard
- **Sound system**
- **Windows**

## Terminal (circuit) identification

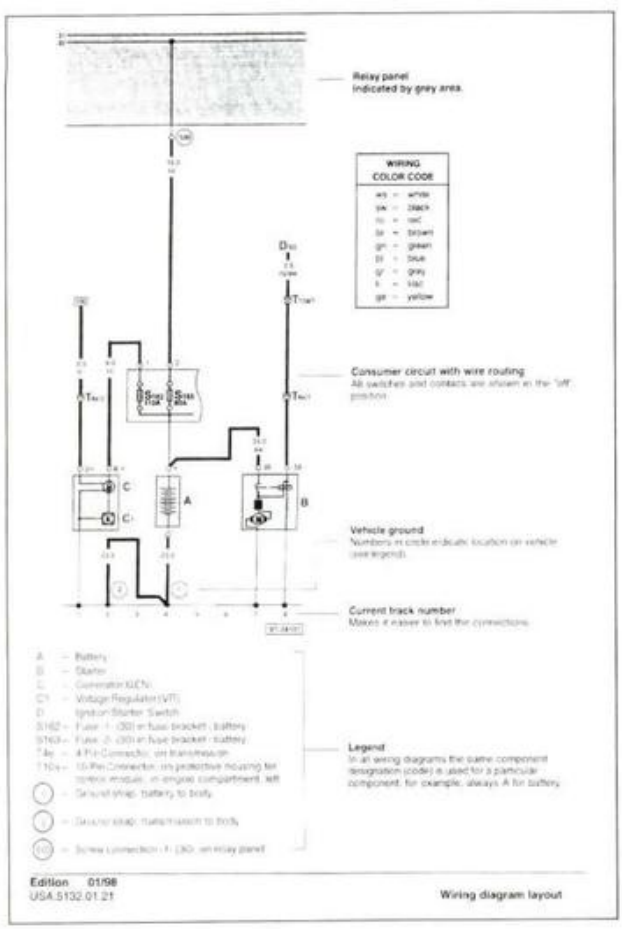
Several circuits in the vehicle's electrical system are identified with a number or letter designation. These circuits are universally identified in many wiring diagrams and may also be used to identify switch connector terminals.

| Terminal | Identification |
|---|---|
| 1 | Ignition coil/distributor low voltage (i.e. RPM signal) |
| 15 | Switched battery positive (B+) from ignition switch |
| 30 | Battery positive (B+), hot at all times |
| 31 | Ground (–) |
| 31b | Switched ground (–) |
| 50 | Starter control; switched B+ from ignition switch |
| 58 | Switched parking light, taillight, B+ from light switch |
| S (SU) | Key in ignition, switched B+ from ignition switch |
| X | Switched B+ from load reduction relay |

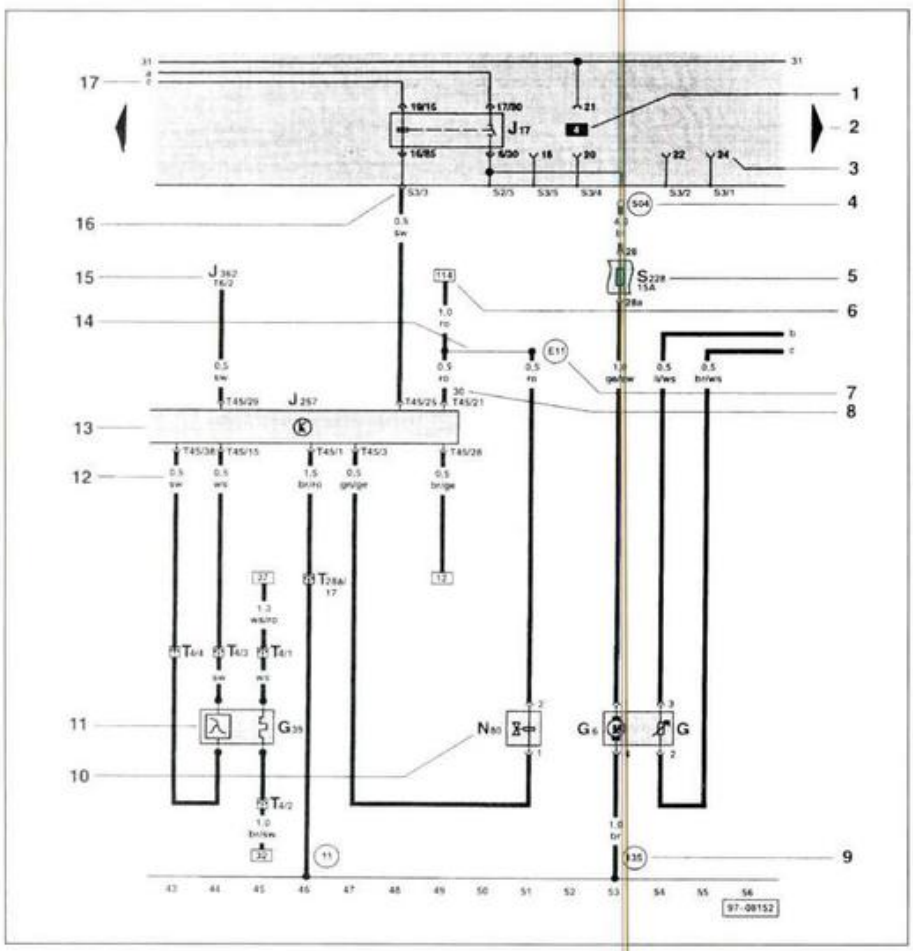
## How to read wiring diagrams

This diagram shows how a typical wiring diagram page is laid out.

Details of wiring diagrams are explained on the next 3 pages.

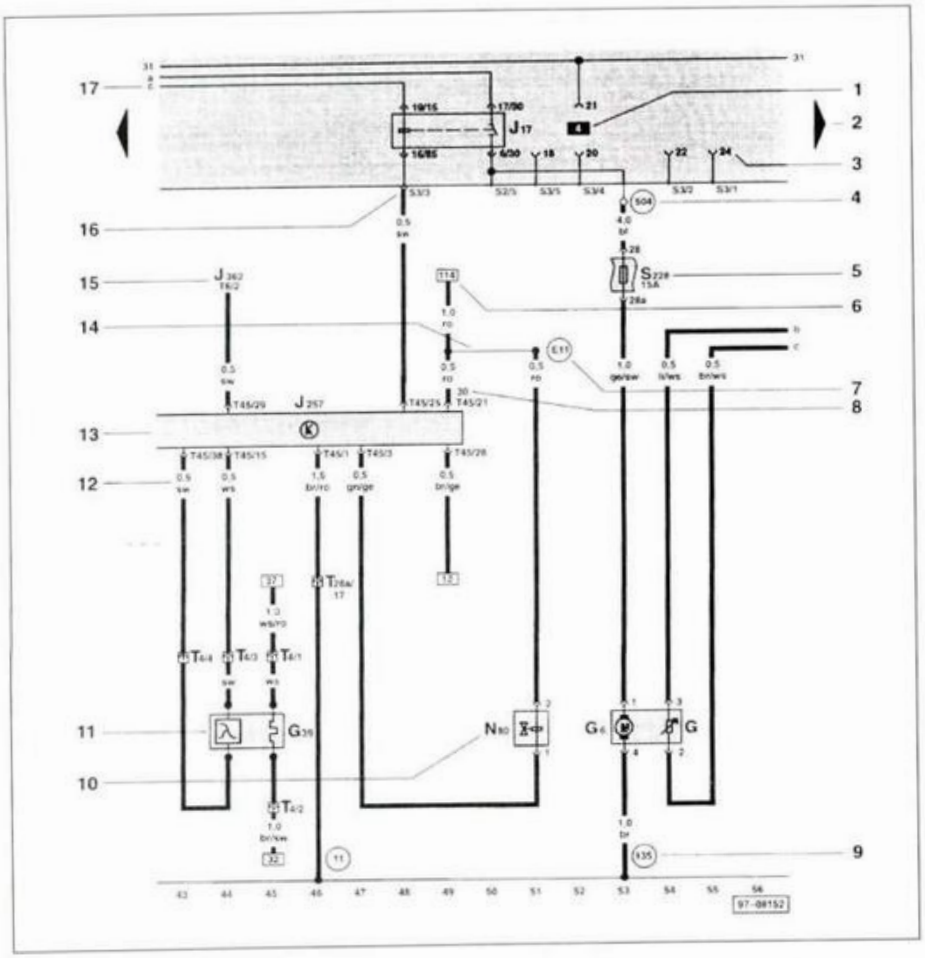


*General*




## Wiring diagram details

1. **Relay location number**
   - Indicates location on relay panel.
2. **Arrow**
   - Indicates wiring circuit is continued on the previous and/or next page.
3. **Connection designation - relay control module on relay panel**
   - Shows individual terminals in a multi-point connector.
   - For example: terminal 24 indicated.
4. **Diagram of threaded pin on relay panel**
   - White circle shows detachable connection.
5. **Fuse designation**
   - For example: S228 = fuse number 228, 15 amps, in fuse holder.
6. **Reference of wire continuation (current track number)**
   - Number in frame indicates current track where wire is continued on another wiring diagram page.
7. **Wire connection designation in wiring harness**
   - Location of wire connections are indicated in legend.
8. **Terminal designation**
   - Designation which appears on actual component and/or terminal number of a multi-point connector.
9. **Ground connection designation in wire harness**
   - Locations of ground connections are indicated in legend.
10. **Component designation**
    - Use legend to identify component code.
11. **Component symbols**
    - See **Symbols used in wiring diagrams** in this repair group.
12. **Wire cross-section size (in mm²) and wire colors**
    - Abbreviations are explained in color chart beside wiring diagram.
13. **Component symbol with open drawing side**
    - Indicated component is continued on another wiring diagram page.




**14. Internal connections (thin lines)**

- These connections are not wires.
- Internal connections are current carrying and are shown to allow tracing of current flow inside components or wiring harnesses.

**15. Reference of continuation of wire to component**

- For example: Anti-theft immobilizer (J362) control module on 6-pin connector, terminal 2.

**16. Relay panel connectors**

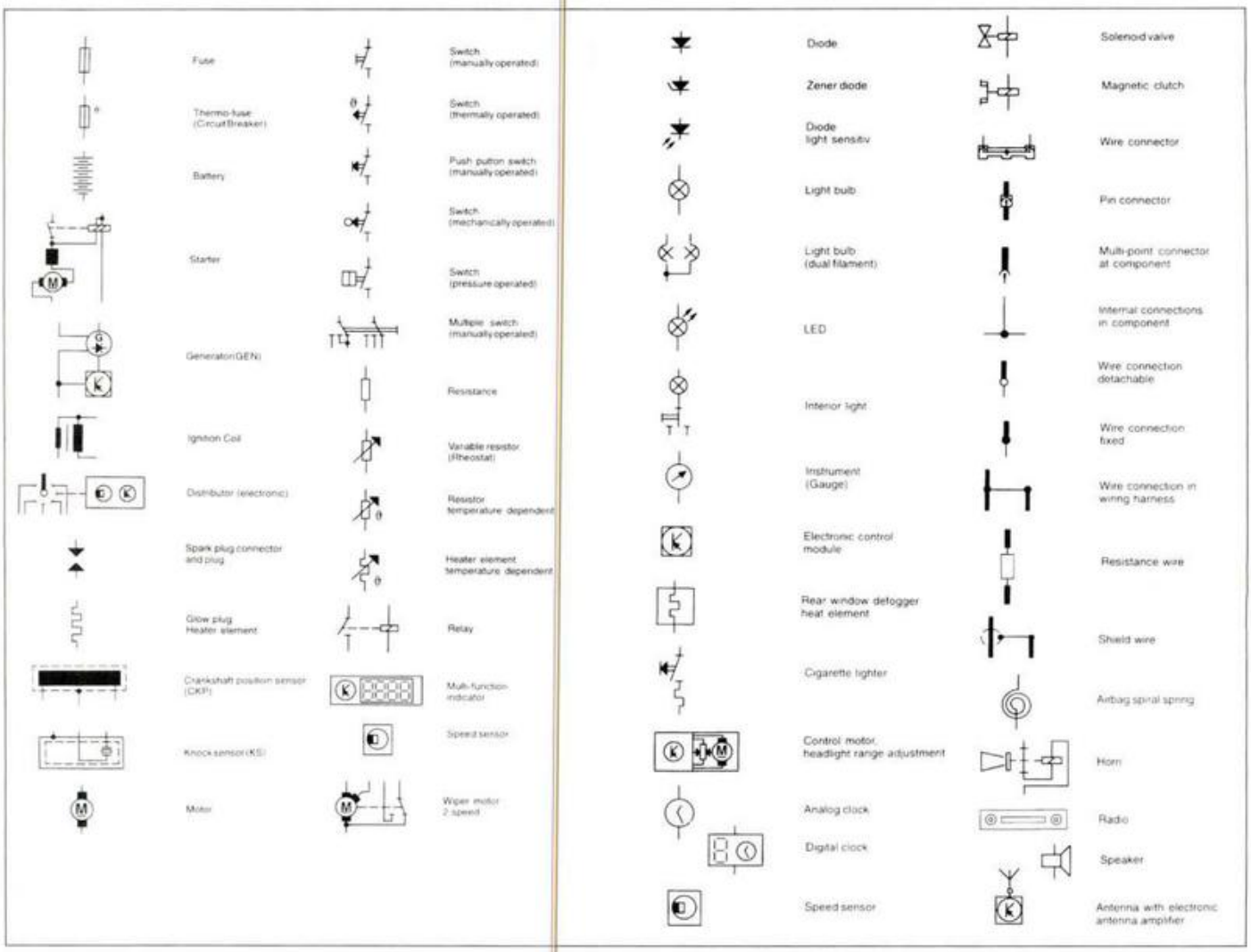
- Shows wiring of multi-point or single connectors on relay panel.
- For example: S3/3 = multi-point connector S3, terminal 3.

**17. Reference of internal connection continuation**

- Letters indicate where connection continues on previous and/or next page.

## Symbols used in wiring diagrams

Various symbols identified below are used in the wiring diagrams.



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Alternator (generator) . . . . . EWD-99
Antitheft immobilizer induction coil . . . . . EWD-108
Automatic transmission control module . . . . EWD-98
Automatic transmission range switch . . . . . EWD-98
Back-up light switch . . . . . EWD-105
Back-up lights . . . . . EWD-105
Battery . . . . . EWD-99
Brake fluid level warning switch . . . . . EWD-107
Brake light switch . . . . . EWD-102
Brake lights . . . . . EWD-105
Brake pad wear indicator . . . . . EWD-107
Brake vacuum vent valve . . . . . EWD-102
Central locking control module . . . . . EWD-102
Cigarette lighters . . . . . EWD-103
Clock . . . . . EWD-107
Clutch pedal position switch . . . . . EWD-98
Emergency flasher relay . . . . . EWD-100
Emergency flasher switch . . . . . EWD-100
Engine control module (ECM) . . . . . EWD-100
Engine coolant temperature (ECT) sensor . EWD-106
Engine coolant temperature gauge . . . . . EWD-106
Foglight switch . . . . . EWD-99
Foglights, front . . . . . EWD-101
Foglights, rear . . . . . EWD-105
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Fuel gauge . . . . . EWD-106
Fuel pump . . . . . EWD-105
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Horns . . . . . EWD-103
Ignition switch . . . . . EWD-98
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Light switch . . . . . EWD-99
Mirrors . . . . . EWD-102
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Parking light switch . . . . . EWD-99
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Antitheft immobilizer induction coil . . . . . EWD-172
Automatic transmission control module . . . . EWD-167
Automatic transmission range switch . . . . . EWD-169
Back-up light switch . . . . . EWD-169
Battery . . . . . EWD-163
Board computer function selector switch . . . EWD-172
Brake fluid level warning switch . . . . . EWD-172
Brake light switch . . . . . EWD-167
Brake lights, left . . . . . EWD-169
Brake pad wear indicator . . . . . EWD-171
Brake pedal switch . . . . . EWD-167
Central locking control module . . . . . EWD-171
Cigarette lighter . . . . . EWD-168
Clock . . . . . EWD-171
Emergency flasher switch . . . . . EWD-165
Engine control module (ECM) . . . . . EWD-167
Engine coolant level warning switch . . . . . EWD-172
Engine coolant temperature (ECT) sensor . . EWD-171
Engine coolant temperature gauge . . . . . EWD-171
Foglight switch . . . . . EWD-163
Foglights, front . . . . . EWD-166
Foglights, rear . . . . . EWD-169
Fuel gauge senders . . . . . EWD-170
Fuel gauge . . . . . EWD-171
Fuel pump relay . . . . . EWD-170
Fuel pump . . . . . EWD-170
Grounds . . . . . EWD-162
Headlight beam adjusting . . . . . EWD-164
Headlight dimmer / flasher switch . . . . . EWD-163
Headlights, left . . . . . EWD-169
Headlights, right . . . . . EWD-168
Hood alarm switch . . . . . EWD-172
Horns . . . . . EWD-168
Instrument lights dimmer switch . . . . . EWD-171
Level control system sensors . . . . . EWD-164
Light switch . . . . . EWD-163
Malfunction indicator lamp . . . . . EWD-170
Mirrors . . . . . EWD-167
Multifunction steering wheel control module . . . . . EWD-172
Oil level thermal switch . . . . . EWD-172
Oil pressure switch . . . . . EWD-172
Parking light switch . . . . . EWD-163
Parking brake warning light switch . . . . . EWD-170
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Parking light, right . . . . . EWD-168
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Shift-lock solenoid . . . . . EWD-169
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Starter . . . . . EWD-163
Tachometer . . . . . EWD-171
Tail and brake lights, right . . . . . EWD-170
Turn signal switch . . . . . EWD-163
Turn signals, left . . . . . EWD-169
Turn signals, right . . . . . EWD-168
Vehicle speed sensor . . . . . EWD-171
Voltage regulator . . . . . EWD-163
Voltmeter . . . . . EWD-171
Warning buzzer . . . . . EWD-171
Washer nozzle heaters . . . . . EWD-166
Wipers / washers . . . . . EWD-165

**Standard equipment (2003)** . . . . . EWD-208
12v socket . . . . . EWD-216
A/C control panel . . . . . EWD-213
ABS control module . . . . . EWD-211
Airbag control module . . . . . EWD-212
Alternator (generator) . . . . . EWD-210
Antitheft immobilizer induction coil . . . . . EWD-220
Automatic transmission control module . . . EWD-210
Automatic transmission range switch . . . . . EWD-210
Back up light switch . . . . . EWD-217
Battery . . . . . EWD-210
Board computer function selector switch . . EWD-220
Brake fluid level warning switch . . . . . EWD-219
Brake light switch . . . . . EWD-214
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Central locking control module . . . . . EWD-210
Central locking control module . . . . . EWD-214
Clock . . . . . EWD-219
Clutch pedal position switch . . . . . EWD-210
Cruise control brake switch . . . . . EWD-214
Emergency flasher switch . . . . . EWD-212
Engine control module (ECM) . . . . . EWD-214
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Engine coolant level warning switch . . . . . EWD-219
Engine coolant temperature (ECT) sensor . EWD-218
Engine coolant temperature gauge . . . . . EWD-218
Foglight relay . . . . . EWD-213
Foglight switch . . . . . EWD-211
Foglights . . . . . EWD-213
Fuel gauge senders . . . . . EWD-217
Fuel gauge . . . . . EWD-218
Fuel pump relay . . . . . EWD-217
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Headlights . . . . . EWD-216
Hood alarm switch . . . . . EWD-220
Horn button . . . . . EWD-215
Horn relay . . . . . EWD-215
Horns . . . . . EWD-215
Ignition switch . . . . . EWD-210
Instrument lights dimmer switch . . . . . EWD-218
Level control system sensors . . . . . EWD-211
Light switch . . . . . EWD-210
Mirrors . . . . . EWD-214
Multifunction steering wheel control module . . . . . EWD-220
Oil level thermal sensor . . . . . EWD-220
Oil pressure switch . . . . . EWD-219
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Parking brake warning light switch . . . . . EWD-218
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Starter . . . . . EWD-210
Tachometer . . . . . EWD-218
Taillights . . . . . EWD-217
Turn signal switch . . . . . EWD-211
Turn signals . . . . . EWD-216
Vehicle speed sensor . . . . . EWD-218
Voltmeter . . . . . EWD-219
Warning buzzer . . . . . EWD-219
Wiper / washer intermittent relay . . . . . EWD-210
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Automatic transmission range switch . . . . . EWD-57
Blower . . . . . EWD-58
Central locking control module . . . . . EWD-54
Central locking motor, rear . . . . . EWD-56
Central locking motor, right rear . . . . . EWD-57
Central locking switch, left front . . . . . EWD-55
Central locking switch, left rear . . . . . EWD-56
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Door lock switch, driver interior . . . . . EWD-55
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Instrument cluster combination processor . . . EWD-54
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Radio . . . . . EWD-54
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Sunroof control module . . . . . EWD-56
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Trunk lid locking motor . . . . . EWD-57
Trunk lid release switch . . . . . EWD-54
Window motors . . . . . EWD-56
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Automatic transmission range switch . . . . . EWD-64
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Fuel tank lid unlock motor . . . . . EWD-68
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Interior (ultrasound) monitoring sensors . . . . . EWD-70
Level control system control module . . . . . EWD-65
Parking aid control module . . . . . EWD-68
Radio . . . . . EWD-64
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Trunk or luggage compartment lid controls . . EWD-68
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Door lock switches, interior ..... EWD-192
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Fuel tank lid unlock motor ..... EWD-195
Hood alarm switch ..... EWD-191
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Central locking switch ..... EWD-241
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Headlights . . . . . EWD-63
Ignition / starter switch . . . . . EWD-63
Instrument cluster combination processor . . . EWD-62
Lamp control module . . . . . EWD-63
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Automatic transmission control module . . . EWD-116
Automatic transmission range switch . . . . . EWD-111
Battery . . . . . EWD-111
Brake booster vacuum pump . . . . . EWD-114
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Charge air pressure sensor . . . . . EWD-113
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Coolant fan switch . . . . . EWD-116
Cruise control switch . . . . . EWD-116
Cruise control vacuum switches . . . . . EWD-115
Emergency flasher switch . . . . . EWD-113
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Airbag control module . . . . . EWD-226
Alternator (generator) . . . . . EWD-224
Automatic transmission range switch . . . . . EWD-224
Automatic transmission control module . . . . EWD-229
Battery . . . . . EWD-224
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Light switch . . . . . EWD-135
Low beam headlights . . . . . EWD-135
Outside air temperature sensor . . . . . EWD-136
Parking lights . . . . . EWD-135
Radio . . . . . EWD-134
Taillights . . . . . EWD-135
Washer fluid level warning switch . . . . . EWD-134

**Instruments and controls (2004)** . . . . . EWD-253
A/C control panel . . . . . EWD-254
Auto check system . . . . . EWD-254
Board computer . . . . . EWD-254
Brake lights . . . . . EWD-255
Ignition switch . . . . . EWD-254
Lamp control module . . . . . EWD-254
Left parking light . . . . . EWD-255
Light switch . . . . . EWD-255
Low beam headlights . . . . . EWD-255
Outside temperature display . . . . . EWD-254
Outside temperature sensor . . . . . EWD-256
Taillights . . . . . EWD-255
Washer fluid level warning switch . . . . . EWD-254

**Level control (2002)** . . . . . EWD-205
ABS control module . . . . . EWD-206
Alternator (generator) . . . . . EWD-206
Capacitor . . . . . EWD-205
Central locking control module . . . . . EWD-205
Headlight beam adjusting control module . . EWD-206
Headlight beam adjusting motor . . . . . EWD-207
Ignition switch . . . . . EWD-205
Left level control sensors . . . . . EWD-206
Level control compressor motor . . . . . EWD-206
Level control module . . . . . EWD-205
Level control sensor . . . . . EWD-206
Level control solenoid . . . . . EWD-206
Light switch . . . . . EWD-207
Rear suspension strut valves . . . . . EWD-206
Starter . . . . . EWD-206

**Parking aid (Parktronic) (2003)** . . . . . EWD-276
Automatic transmission range switch . . . . . EWD-277
Back-up light switch . . . . . EWD-277
Foglight shut-off contact switch . . . . . EWD-277
Ignition switch . . . . . EWD-276
Parking aid control module . . . . . EWD-276
Warning buzzer . . . . . EWD-276

**Seats (2001)** . . . . . EWD-144
Driver's seat adjuster . . . . . EWD-144
Driver's seat heating elements . . . . . EWD-144
Instrument cluster combination processor . . EWD-144
Passenger seat adjuster . . . . . EWD-145
Passenger seat heating elements . . . . . EWD-145
Rear seat heated elements . . . . . EWD-145
Rear seat heating regulation switch . . . . . EWD-145
Rear seat temperature sensors . . . . . EWD-145
Seat temperature sensors . . . . . EWD-144

**Sound system (1998)** . . . . . EWD-48
Auto check system . . . . . EWD-49
CD changer . . . . . EWD-49
Central locking control module . . . . . EWD-49
Data link connector (DLC) . . . . . EWD-48
Ignition / starter switch . . . . . EWD-48
Instrument cluster combination processor . . EWD-48
Power antenna . . . . . EWD-48
Radio . . . . . EWD-48
Rear window defogger switch . . . . . EWD-48
Rear window defogger with antenna . . . . . EWD-48
Speakers . . . . . EWD-49
Telephone / radio antenna amplifier . . . . . EWD-48
Telephone transceiver . . . . . EWD-49
**Sound system (2000)** . . . . . EWD-201
CD changer . . . . . EWD-202
Central locking control module . . . . . EWD-203
Ignition switch . . . . . EWD-201
Instrument cluster combination processor . EWD-202
Interior lock switch . . . . . EWD-203
Multifunction steering wheel control module . . . . . EWD-203
Power antenna . . . . . EWD-201
Radio . . . . . EWD-201
Rear window defogger switch . . . . . EWD-201
Rear window defogger with antenna . . . . . EWD-201
Right rear woofer / amplifier . . . . . EWD-202
Speakers . . . . . EWD-203
Telephone / radio antenna amplifier . . . . . EWD-201
Telephone transceiver . . . . . EWD-202
**Sound system (2001)** . . . . . EWD-150
CD changer . . . . . EWD-151
Central locking control module . . . . . EWD-152
Data link connector . . . . . EWD-151
Ignition switch . . . . . EWD-150
Instrument cluster combination processor . EWD-151
Multifunction steering wheel control module . . . . . EWD-152
Power antenna . . . . . EWD-150
Radio . . . . . EWD-150
Rear window defogger switch . . . . . EWD-150
Rear window defogger with antenna . . . . . EWD-150
Right rear woofer amplifier . . . . . EWD-151
Speakers . . . . . EWD-152
Telephone / radio antenna amplifier . . . . . EWD-150
Telephone transceiver . . . . . EWD-151
**Sound system, Bose (1998)** . . . . . EWD-43
Antenna amplifier . . . . . EWD-42
Auto check system . . . . . EWD-47
Central locking control module . . . . . EWD-43
Data link connector (DLC) . . . . . EWD-47
Ignition / starter switch . . . . . EWD-47
Instrument cluster combination processor . . EWD-43
Power antenna . . . . . EWD-42
Radio . . . . . EWD-43
Rear window defogger switch . . . . . EWD-42
Rear window defogger with antenna . . . . . EWD-42
Right rear woofer / amplifier . . . . . EWD-47
Speakers . . . . . EWD-46
Telephone / radio antenna amplifier . . . . . EWD-42
Telephone speaker . . . . . EWD-42
Telephone transceiver . . . . . EWD-47
**Sound system, Bose (2000)** . . . . . EWD-77
Aerial selection control unit . . . . . EWD-80
Antenna amplifier . . . . . EWD-78
CD changer . . . . . EWD-78
Central locking control module . . . . . EWD-79
Ignition switch . . . . . EWD-78
Instrument cluster combination processor . . EWD-77
Multifunction steering wheel control module . . . . . EWD-79
Navigation control unit with CD-drive . . . . . EWD-78
Power antenna . . . . . EWD-78
Radio . . . . . EWD-77
Rear window defogger / heat element . . . . . EWD-80
Rear window defogger switch . . . . . EWD-78
Rear window defogger switch . . . . . EWD-80
Rear window defogger with antenna . . . . . EWD-78
Right rear woofer / amplifier . . . . . EWD-79
Speaker (telephone, navigation) . . . . . EWD-78
Speakers . . . . . EWD-79
Telephone transceiver . . . . . EWD-79
TV antenna amplifier . . . . . EWD-80

*Electrical Wiring Diagram Index*

**Sound system, Bose (2001)** . . . . . EWD-153
Aerial selection control unit . . . . . EWD-155
Antenna amplifier . . . . . EWD-154
Antenna . . . . . EWD-154
CD changer . . . . . EWD-154
Central locking control module . . . . . EWD-155
Data link connector . . . . . EWD-153
Ignition switch . . . . . EWD-154
Instrument cluster combination processor . . EWD-153
Multifunction steering wheel control module . . . . . EWD-155
Navigation control unit with CD drive . . . . . EWD-154
Power antenna . . . . . EWD-154
Radio . . . . . EWD-153
Rear window defogger / heat element . . . . . EWD-155
Rear window defogger switch . . . . . EWD-154
Rear window defogger with antenna . . . . . EWD-155
Rear window defogger with window antenna . . . . . EWD-154
Right rear woofer/amplifier . . . . . EWD-155
Speaker (Telephone, navigation) . . . . . EWD-154
Speakers . . . . . EWD-155
Telephone radio antenna amplifier . . . . . EWD-154
Telephone transceiver . . . . . EWD-155
TV antenna amplifiers . . . . . EWD-155

**Sound system, Bose (2003)** . . . . . EWD-261
Antenna for radio, telephone, navigation . . . EWD-262
Antenna selection control module . . . . . EWD-264
Antenna . . . . . EWD-265
CD changer . . . . . EWD-262
Central locking control module . . . . . EWD-263
Multifunction steering wheel control module . . . . . EWD-263
Navigation control unit with CD . . . . . EWD-262
Radio . . . . . EWD-261
Rear window defogger switch . . . . . EWD-262
Rear window defogger switch . . . . . EWD-264
Rear window defogger with antenna . . . . . EWD-262
Rear window defogger . . . . . EWD-264
Right rear woofer / amplifier . . . . . EWD-263
Speakers . . . . . EWD-264
Telephone / radio amplifier . . . . . EWD-262
Telephone / telematic control module . . . . . EWD-262
Telephone / telematic control module . . . . . EWD-263
TV antenna amplifier . . . . . EWD-264
Windshield antenna suppression filter . . . . . EWD-264

**Radio, satellite radio, Bose (2003)** . . . . . EWD-278
Antenna for navigation system (GPS) . . . . . EWD-280
Antenna for radio / telephone / navigation . . EWD-280
Antenna selection control module . . . . . EWD-283
CD changer unit . . . . . EWD-279
Central locking control module . . . . . EWD-281
GPS antenna splitter . . . . . EWD-280
Heated rear window . . . . . EWD-282
Navigation control unit with CD . . . . . EWD-280
Radio . . . . . EWD-278
Rear window defogger switch . . . . . EWD-282
Rear window defogger with antenna . . . . . EWD-283
Right rear woofer / amplifier . . . . . EWD-281
Satellite radio . . . . . EWD-279
Speakers . . . . . EWD-282
Telephone / telematic control module . . . . . EWD-280
TV antenna amplifiers . . . . . EWD-282
Windshield antenna suppression filter . . . . . EWD-282

**Sunroof (2000)** . . . . . EWD-96

**Windows (1998)** . . . . . EWD-42
Front windows . . . . . EWD-42
Ignition / starter switch . . . . . EWD-43
Instrument cluster combination processor . . . EWD-44
Rear windows . . . . . EWD-43
Sunroof control module . . . . . EWD-42
Switch for interior lock, left front . . . . . EWD-44
Window lock-out switch . . . . . EWD-44

**Windows (2000)** . . . . . EWD-77
Central locking control module . . . . . EWD-78
Ignition switch . . . . . EWD-79
Interior lock switch . . . . . EWD-79
Left front windows . . . . . EWD-77
Left rear windows . . . . . EWD-78
Right front windows . . . . . EWD-78
Right rear windows . . . . . EWD-79
Sunroof control module . . . . . EWD-78
Window circuit breakers . . . . . EWD-77
Window lockout switch . . . . . EWD-79

**Windows (2001)** . . . . . EWD-140
Central locking control module . . . . . EWD-141
Ignition switch . . . . . EWD-142
Instrument cluster combination processor . . EWD-142
Left front windows . . . . . EWD-140
Left rear windows . . . . . EWD-141
Power sunroof control module . . . . . EWD-141
Rear window switches . . . . . EWD-141
Right front windows . . . . . EWD-141
Right rear windows . . . . . EWD-142
Window lockout switch . . . . . EWD-142

**Windows (2002)** . . . . . EWD-201
Central locking control module . . . . . EWD-202
Front window switches . . . . . EWD-201
Ignition switch . . . . . EWD-203
Left rear window switches . . . . . EWD-202
Power sunroof control module . . . . . EWD-202
Rear window control module . . . . . EWD-202
Rear window motor regulator . . . . . EWD-202
Right front window module . . . . . EWD-202
Right front window motor . . . . . EWD-202
Right rear door window motor . . . . . EWD-203
Right rear window switches . . . . . EWD-203
Window lockout switch . . . . . EWD-203
Window motors . . . . . EWD-201
Window regulator switches . . . . . EWD-202

## (2,8 l - Injection Engine, 6-Cylinder), Code AHA

**1998 m. y.**

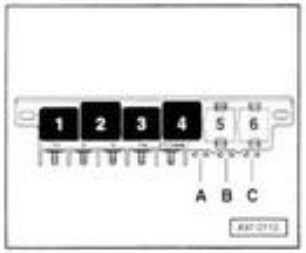
**Fuse Panel**

**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

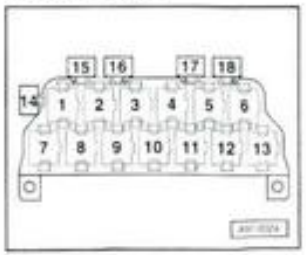
**Micro Central Electric Panel**




**Relay Location:**

1 - Dual Horn Relay, J4
2 - Load Reduction Relay, J59
4 - Fuel Pump (FP) Relay, J17
5 - Wiper/Washer Intermittent Relay, J31
6 - Wiper/Washer Intermittent Relay, J31

**13 - Fold Relay Panel**



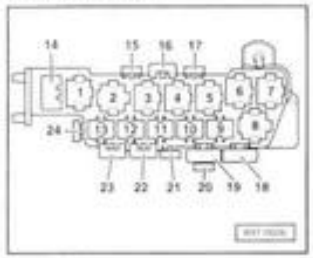

**Relay Location:**

4 - Starting Interlock Relay, J207
6 - Fog Light Relay, J5
17 - Fuse for secondary air pump, S130





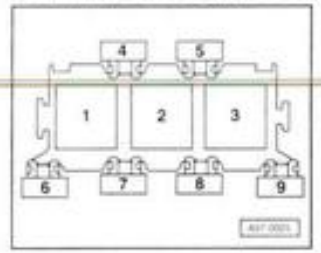
**8 - Fold Relay Panel**




**Relay Location:**

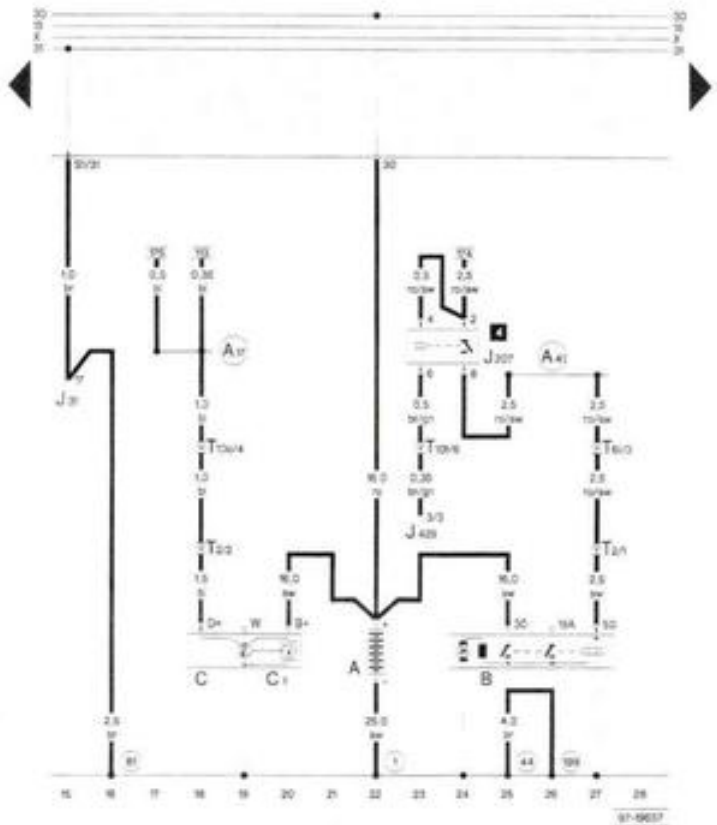
2 - Second Speed Coolant Fan Control (FC) Relay, J101
3 - Coolant Fan control (FC) Relay, J26
20 - Coolant Fan Fuse, S42
21 - Control module fuse for coolant fan, S142

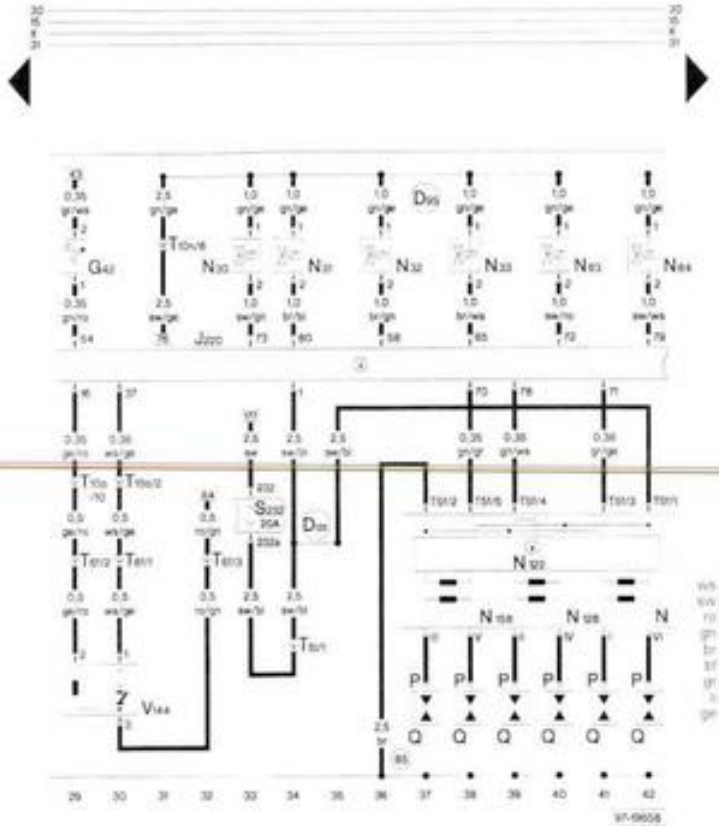
**3 - Fold Relay Panel in E-Box plenum chamber**




**Relay Location:**

2 - Secondary Air Injection (AIR) Pump Relay, J299





G 42 - Intake Air Temperature (IAT) Sensor
J 220 - Motronic Engine Control Module (ECM)
N - Ignition Coil
N 30 - Cylinder 1 Fuel Injector
N 31 - Cylinder 2 Fuel Injector
N 32 - Cylinder 3 Fuel Injector
N 33 - Cylinder 4 Fuel Injector
N 83 - Cylinder 5 Fuel Injector
N 84 - Cylinder 6 Fuel Injector
N 122 - Power Output Stage
N 128 - Ignition Coil 2
N 158 - Ignition Coil 3
P - Spark Plug Connectors
Q - Spark Plugs
S 232 - Fuse
T 6 - Connector 6 pin, ignition coil unit
T 6 - Connector 6 pin, black/brown, connector station A pillar, right
T 6 - Connector 6 pin, red, connector station electronic box plenum chamber
T 10 - Connector 10 pin, yellow, connector station electronic box plenum chamber
T 10 - Connector 10 pin, brown, connector station electronic box plenum chamber
T 10 - Connector 10 pin, black, connector station electronic box plenum chamber
V 144 - Leak Detection Pump (LDP)

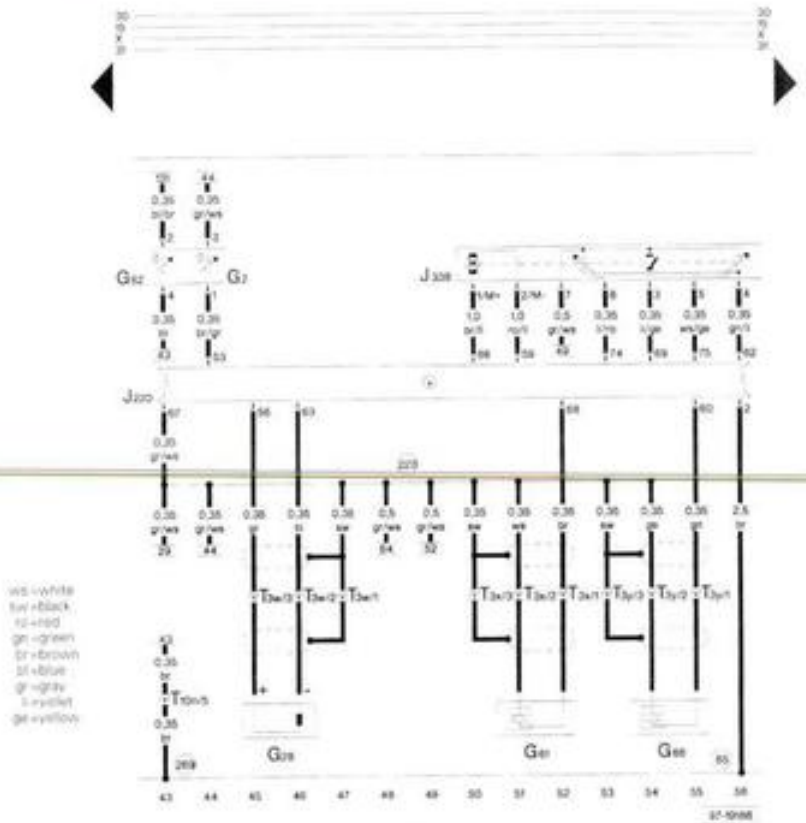
ws = white
sw = black
ro = red
gr = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow

- Ground connection 1, in engine compartment wiring harness
- Wire connection (inactive), in engine compartment wiring harness
- Wire connection (15), above circuit Breaker, in engine compartment wiring harness



**Fuel Injectors, Motronic Engine Control Module, Power Output Stage, Leak Detection Pump**



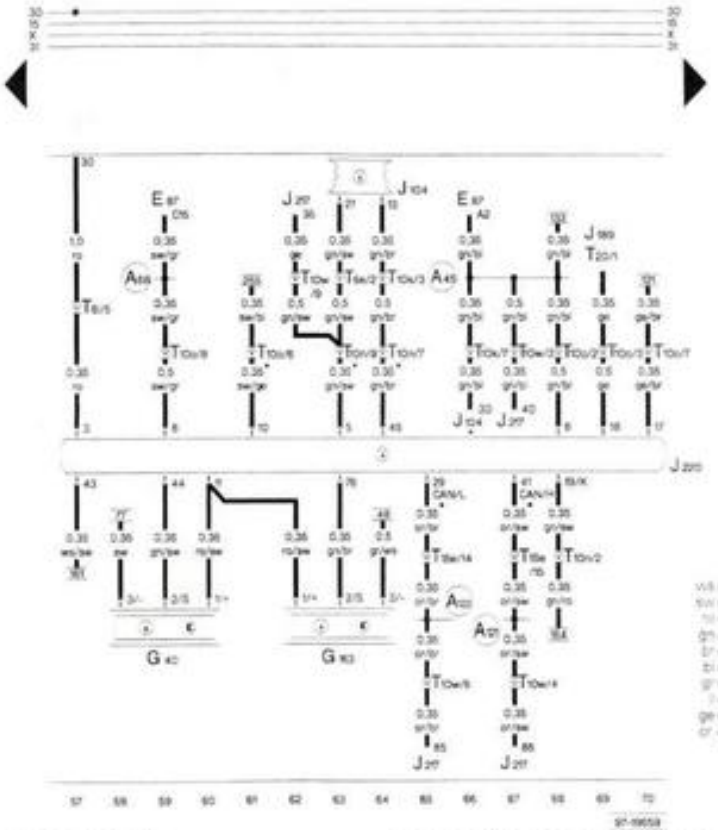


G 2 - Engine Coolant Temperature (ECT) Sensor
G 28 - Engine Speed (RPM) Sensor
G 61 - Knock Sensor (KS) 1
G 62 - Engine Coolant Temperature (ECT) Sensor
G 66 - Knock Sensor (KS) 2
J 220 - Motronic Engine Control Module (ECM)
J 338 - Throttle Valve Control Module
T 3 w - Connector 3 pin, grey, on engine speed sensor
T 3 x - Connector 3 pin, blue, on knock sensor 1
T 3 x - Connector 3 pin, blue, on knock sensor 2
T 10 - Connector 10 pin, yellow, connector station electronic box plenum chamber

- Ground connection 1, in engine compartment wiring harness
- Ground connection (sensor ground), in engine compartment wiring harness
- Ground connection (sensor ground) 1, in instrument panel wiring harness



**Motronic Engine Control Module, Throttle Valve Control Module, Engine Coolant Temperature Sensor, Knock Sensors**



E 87 - A/C Control Head
G 40 - Camshaft Position (CMP) Sensor
G 163 - Camshaft Position (CMP) Sensor 2
J 104 - ABS Control Module (w/EDL)
J 198 - Auto Check System
J 217 - Transmission Control Module (TCM)
J 220 - Motronic Engine Control Module (ECM)
T 6 e - Connector 6 pin, grey, connector station A pillar, right
T 6 f - Connector 6 pin, red, connector station electronic box plenum chamber
T 10 x - Connector 10 pin, orange, connector station A pillar, left
T 10 n - Connector 10 pin, yellow, connector station electronic box plenum chamber
T 10 o - Connector 10 pin, brown, connector station electronic box plenum chamber
T 12 p - Connector 12 pin, black, connector station electronic box plenum chamber
T 10 w - Connector 10 pin, blue, connector station A pillar, right
T 15 e - Connector 15 pin, white, connector station electronic box plenum chamber
T 20 - Connector 20 pin, red/white, on instrument cluster

(A6) - Wire connection (RPM signal), in instrument panel wiring harness
(A45) - Connector (C15, A/C), in instrument panel wiring harness
(A22) - Connection (high bus), in instrument panel wiring harness
(A21) - Connection (low bus), in instrument panel wiring harness

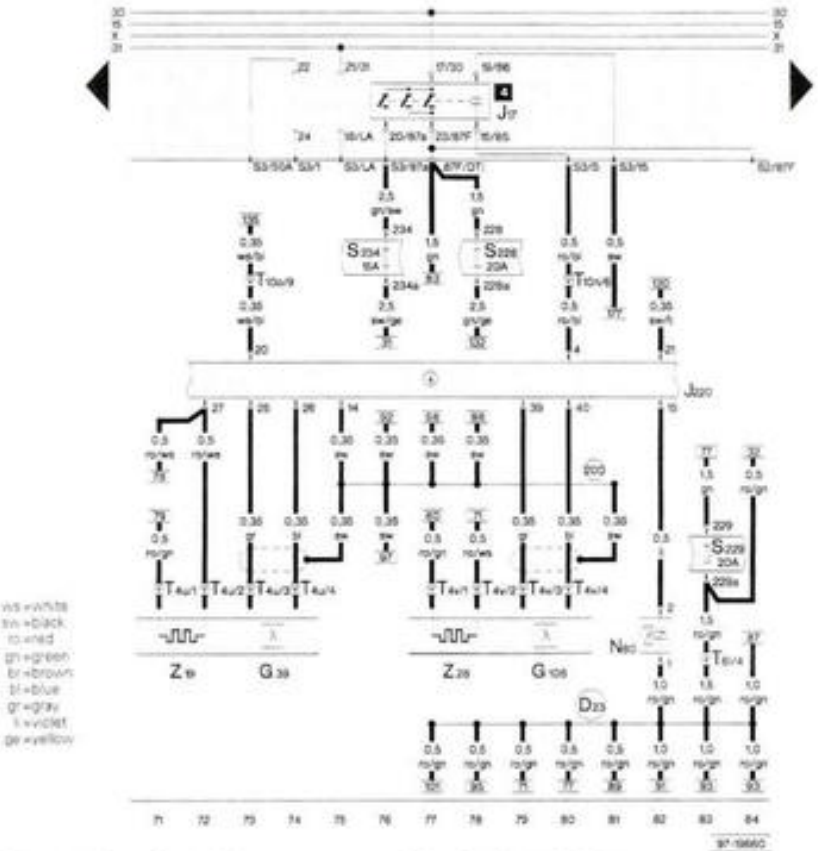
• - CAN Bus
• - Vehicles with front wheel drive

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



Motronic Engine Control Module, Camshaft Position Sensors

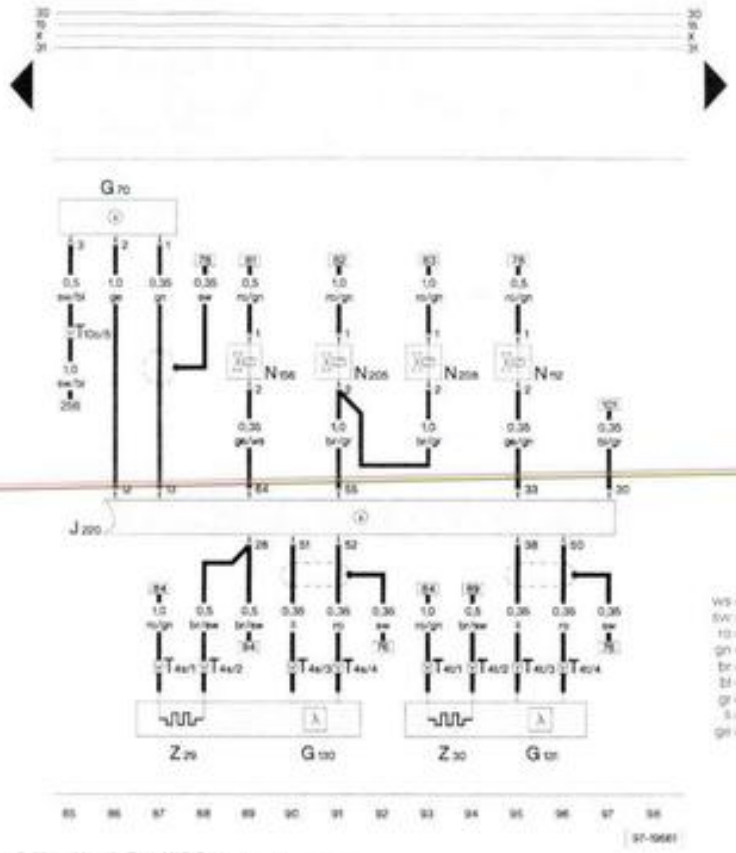




G 39 - Heated Oxygen Sensor (HO2S)
G 108 - Heated Oxygen Sensor (HO2S) 2
J 17 - Fuel Pump (FP) Relay
J 220 - Motronic Engine Control Module (ECM)
N 80 - Evaporative Emission (EVAP) Canister Purge Regulator Valve
S 229 - Fuse
S 229 - Fuse
S 234 - Fuse
T 4 u - Connector 4 pin, black, Heated Oxygen Sensor
T 4 v - Connector 4 pin, black, Heated Oxygen Sensor 2
T 6 f - Connector 6 pin, red, connector station electronic box plenum chamber
T 10 n - Connector 10 pin, yellow, connector station electronic box plenum chamber
T 10 o - Connector 10 pin, brown, connector station electronic box plenum chamber
Z 19 - Oxygen Sensor (O2S) Heater
Z 29 - Oxygen Sensor (O2S) 2 Heater

(D23) - Ground connection (shielding), in engine compartment wiring harness
(D) - Connector (over fuse 229), in wiring harness front, right

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow




G 70 - Mass Air Flow (MAF) Sensor
G 130 - Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G 131 - Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J 220 - Motronic Engine Control Module (ECM)
N 112 - Secondary Air Injection (AIR) Solenoid Valve
N 156 - Intake Manifold Change-Over Valve
N 205 - Valve 1- for camshaft adjustment
N 208 - Valve 2- for camshaft adjustment
T 4 s - Connector 4 pin, green, near oxygen sensor, behind Three Way Catalytic Converter (TWC)
T 4 t - Connector 4 pin, brown, near oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T 10 o - Connector 10 pin, brown, connector station electronic box plenum chamber
Z 29 - Heater for Lambda probe 1
Z 30 - Heater for Lambda probe 2

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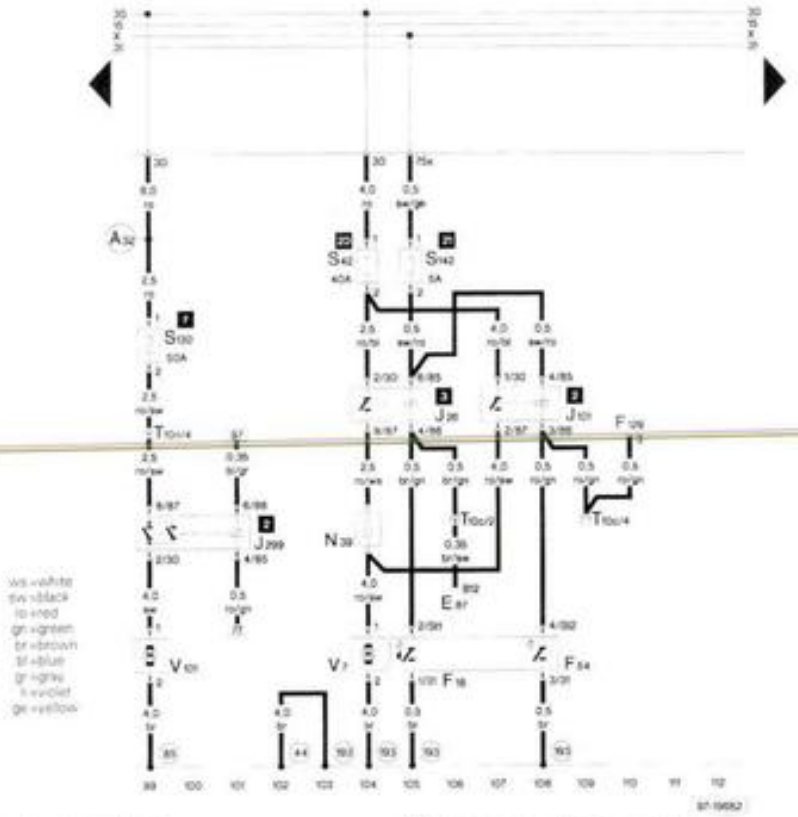
W42 USA 5602.01.21

**Motronic Engine Control Module, Mass Air Flow Sensor, Oxygen Sensor Behind Three Way Catalytic Converter**



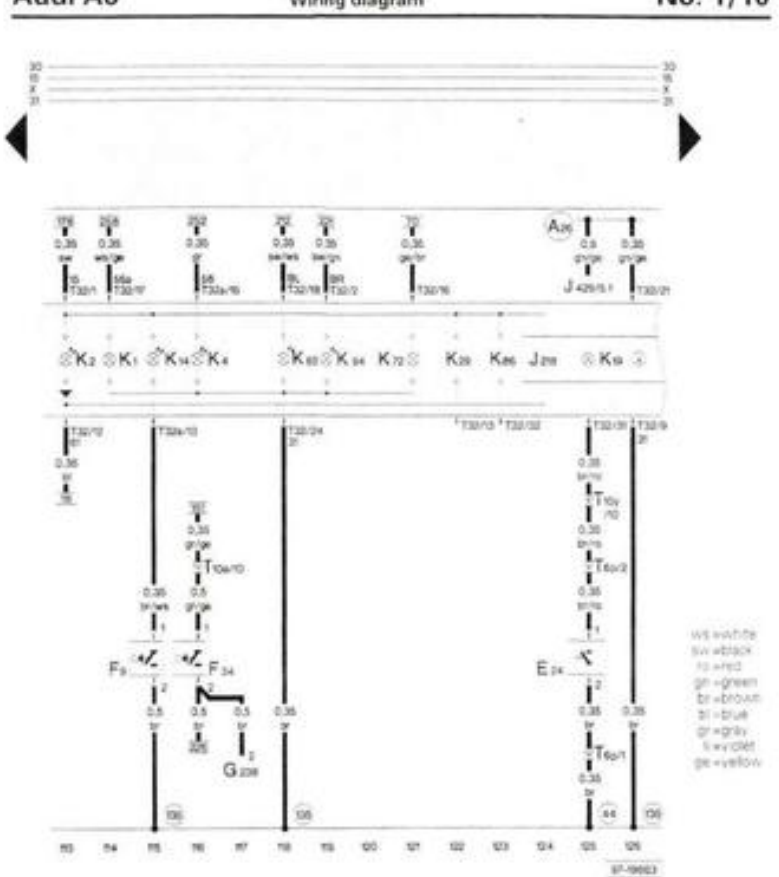



E 87 - A/C Control Head
F 18 - Coolant Fan Control (FC) Thermal Switch
F 54 - Coolant Fan Control (FC) Thermo Switch
F *129 - A/C Pressure Switch
J 26 - Coolant Fan control (FC) Relay
J 101 - Second Speed Coolant Fan Control (FC) Relay
J 299 - Secondary Air Injection (AIR) Pump Relay
N 39 - Coolant Fan Control (FC) Series Resistance
S 42 - Coolant Fan Fuse
S 100 - Fuse for secondary air pump
S 142 - Control module fuse for coolant fan
T 6 a - Connector 6 pin, blue, connector station A pillar, left
T 10 c - Connector 10 pin, grey, connector station A pillar, left
T 10 n - Connector 10 pin, yellow, connector station electronic box plenum chamber
V 7 - Coolant Fan
V 101 - Secondary Air Injection (AIR) Pump Motor

(31) - Ground connection, on left A pillar, lower part
(31) - Ground connection *1, in engine compartment wiring harness
(31) - Ground connection *1, in coolant fan wiring harness
(30) - Plus connection (30), in instrument panel wiring harness

**Coolant Fan,**
**Secondary Air Injection Pump Motor**

**Edition 10/97**
W42 USA 5602.01.21



E 24 - Left Seat Belt Switch
F 9 - Parking Brake Warning Light Switch
F 34 - Brake Fluid Level Warning Switch
G 238 - Air Quality Sensor
J 218 - Instrument Cluster Combination Processor
J 429 - Control module for central locking
K 1 - Headlight High Beam Indicator Light
K 2 - Generator (GEN) Warning Light
K 4 - Park Light Indicator Light
K 14 - Parking Brake Indicator Light
K 19 - Seat Belt Warning Light
K 29 - Glow Plug Indicator Light
K 85 - Left Turn Signal Indicator Light
K 72 - Warning light for catalyst monitoring
K 86 - Traction Control Indicator Light
K 34 - Right Turn Signal Indicator Light
T 6 p - Connector 6 pin, red, below driver's seat
T 10 e - Connector 10 pin, violet, connector station A pillar, left
T 10 g - Connector 10 pin, green, connector station A pillar, right
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster

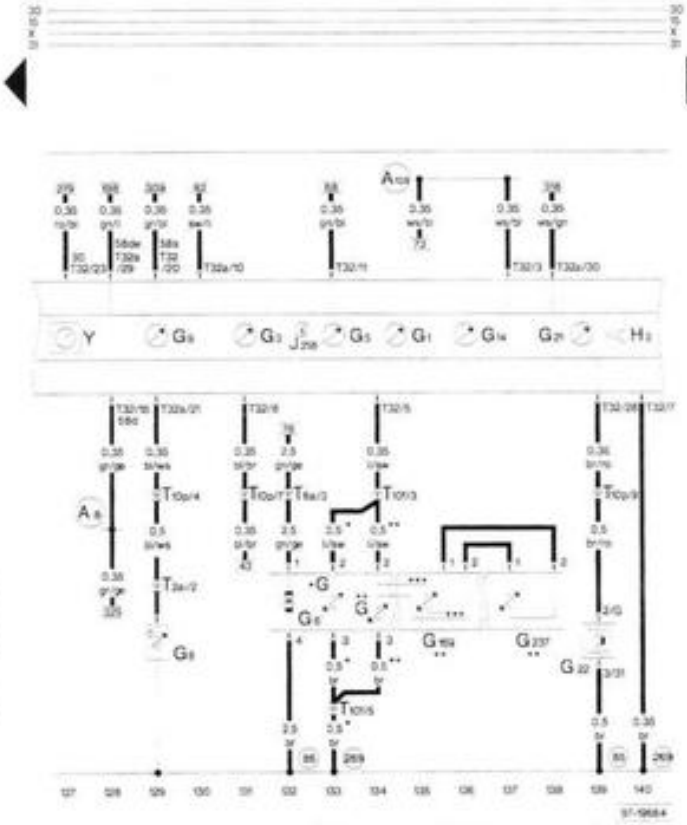
A26 - Ground connection, on left A-pillar, lower part
(G1) - Ground connection 2, in instrument panel wiring harness
(A37) - Wire connection (driver's door contact switch), in instrument panel wiring harness

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow



Instrument Cluster, Parking Brake Warning Light Switch, Brake Fluid Level Warning Switch

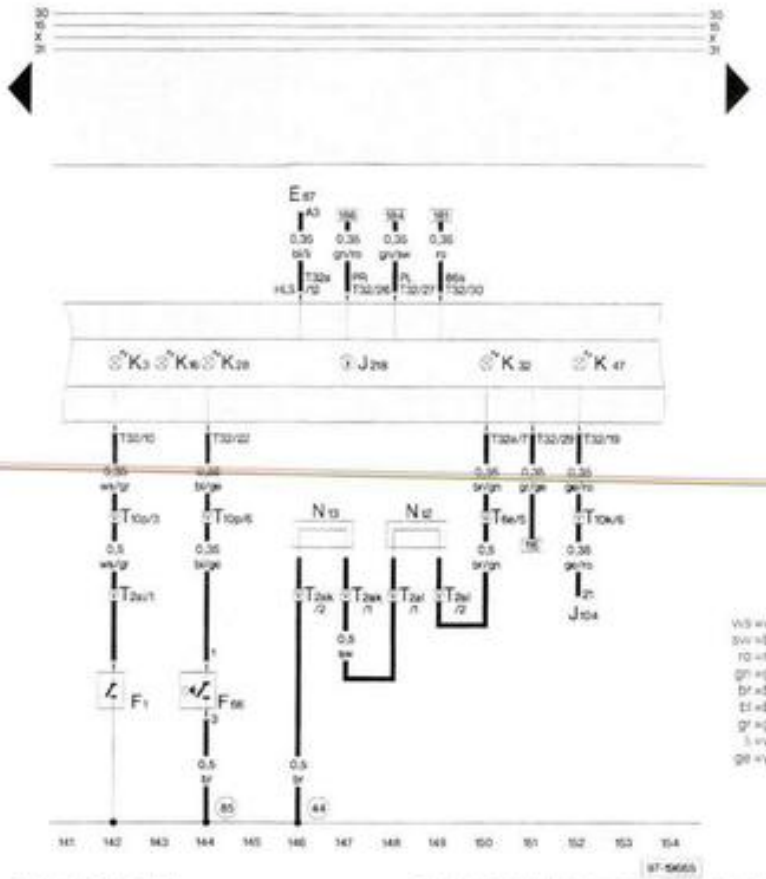




G - Fuel Level Sensor
G 1 - Fuel Gauge
G 3 - Engine Coolant Temperature (ECT) Gauge
G 5 - Tachometer
G 6 - Fuel Pump (FP)
G 8 - Engine Oil Temperature Sensor
G 9 - Engine Oil Temperature Gauge
G 14 - Voltmeter
G 21 - Speedometer
G 22 - Speedometer Vehicle Speed Sensor (VSS)
G 169 - Fuel Level Sensor 2
G 237 - Fuel Level Sensor 3
H 2 - Warning Buzzer
J 218 - Instrument Cluster Combination Processor
T 2 w - Connector 2 pin, black, in tank
T 6 g - Connector 6 pin, blue, connector station A pillar, left
T 10 f - Connector 10 pin, brown, connector station A pillar, left
T 10 p - Connector 10 pin, black, connector station electronic box (plenum chamber)
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster
V - Analog Clock

(A) - Ground connection -1-, in engine compartment wiring harness
(G) - Ground connection -1-, in rear wiring harness
(G1) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(G2) - Plus connection (58d), in instrument panel wiring harness (Display illumination)
(A139) - Wire connection (vehicle speed signal), in instrument panel wiring harness

* - Vehicles with front-wheel drive
** - Vehicles with all-wheel drive



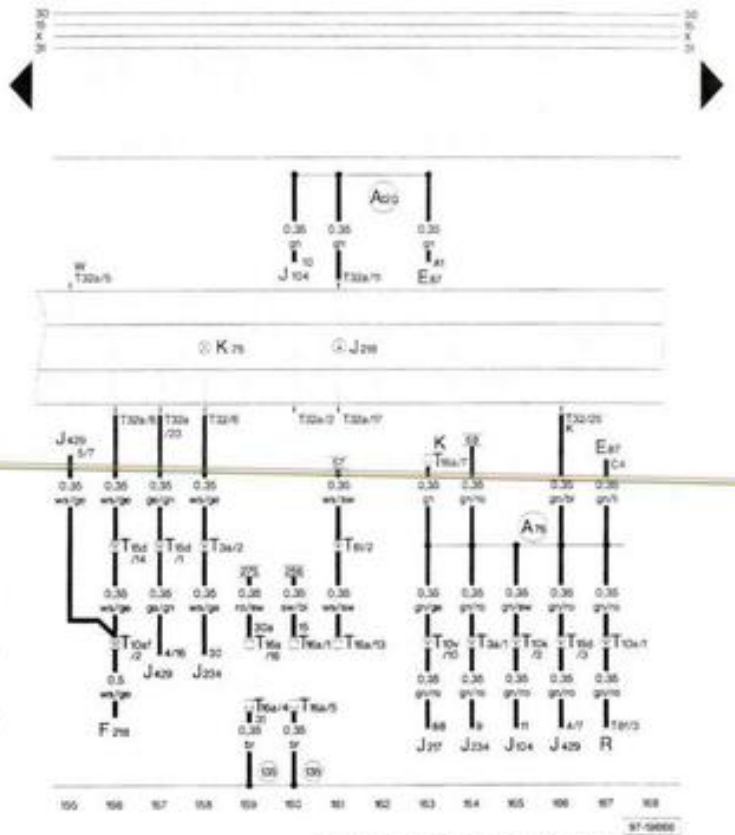
E 87 - A/C Control Head
F 1 - Oil Pressure Switch
F 66 - Engine Coolant Level (ECL) Warning Switch
J 104 - ABS Control Module (w/EDL)
J 218 - Instrument Cluster Combination Processor
K 3 - Oil Pressure Warning Light
K 16 - Fuel Reserve Warning Light
K 28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
K 32 - Brake Pad Wear Indicator Light
K 47 - ABS Warning Light
N 12 - Right Brake Pad Wear Indicator (Shear Element)
N 13 - Left Brake Pad Wear Indicator (Shear Element)
T 2 a - Connector 2 pin, black, oil sensor
T 3 a - Connector 3 pin, red, on firewall, left
T 3 b - Connector 2 pin, red, on firewall, right
T 6 a - Connector 6 pin, grey, connector station A pillar, right
T 10 a - Connector 10 pin, orange, connector station A pillar, left
T 10 g - Connector 10 pin, black, connector station electronic box plenum chamber
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster

(A1) - Ground connection, on left A-pillar, lower part
(E1) - Ground connection 1, in engine compartment wiring harness

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow

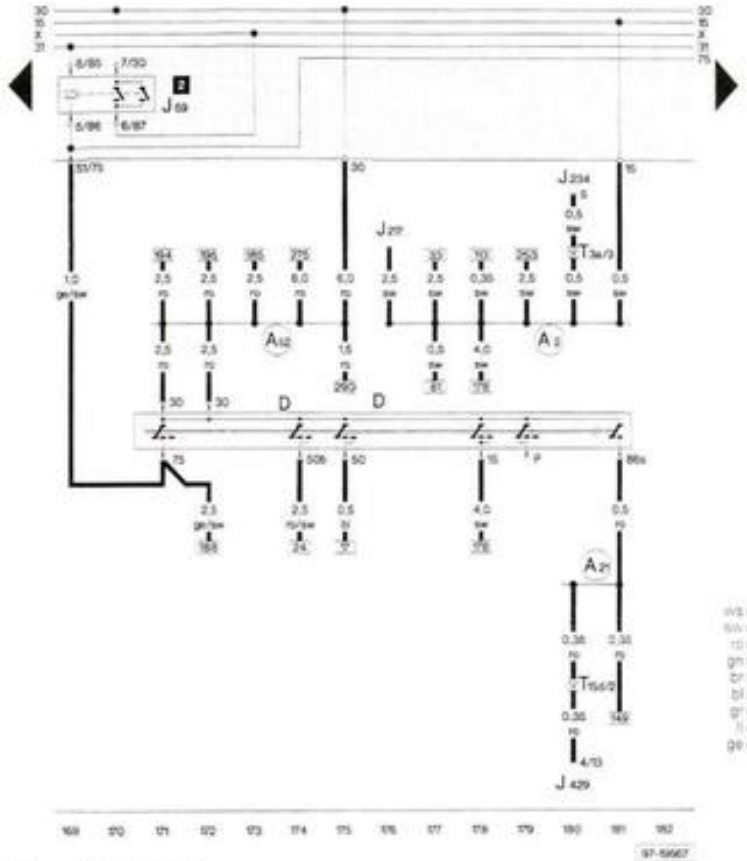






E 87 - A/C Control Head
F 218 - Switch for central locking, trunk lid
J 104 - ABS Control Module (w/EDL)
J 217 - Transmission Control Module (TCU)
J 218 - Instrument Cluster Combination Processor
J 234 - Airbag Control Module
J 429 - Control module for central locking
K - DLC (Data Link Connector) Rapid Data Transfer
K 75 - Airbag Malfunction Indicator Lamp (MIL)
R - Radio
T 3 a - Connector 3 pin, black, connector station A pillar, right
T 6 - Connector 6 pin, red, connector station electronic box plenum chamber
T 8 f - Connector 8 pin, black, connector radio II
T 10 e - Connector 10 pin, orange, connector station A pillar, left
T 10 v - Connector 10 pin, brown, connector station A pillar, right
T 10 x - Connector 10 pin, pink, connector station A pillar, right
T 10 d - Connector 10 pin, black, connector station A pillar, right
T 16 a - Connector 16 pin, data link connector
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster

(75) - Ground connection -2-, in instrument panel wiring harness
(A75) - Connector (K-diagnosis wire), in instrument panel wiring harness
(D12) - Wire connection (immobilization timer), in instrument panel wiring harness



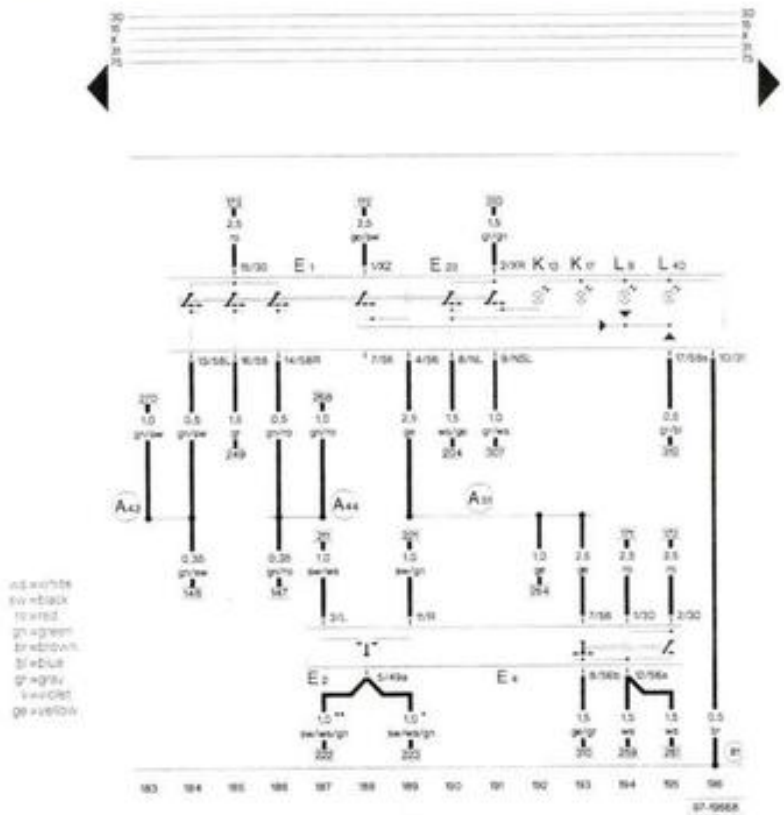
ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
J 59 - Load Reduction Relay
J 217 - Transmission Control Module (TCM)
J 234 - Airbag Control Module
J 429 - Control module for central locking
T 3 a - Connector 3 pin, black, connector station A pillar, right
T 16 d - Connector 16 pin, black, connector station A pillar, right

(15) - Plus connection (15), in instrument panel wiring harness
(86s) - Wire connection (86s), in instrument panel wiring harness
(30) - Plus connection (30), in instrument panel wiring harness



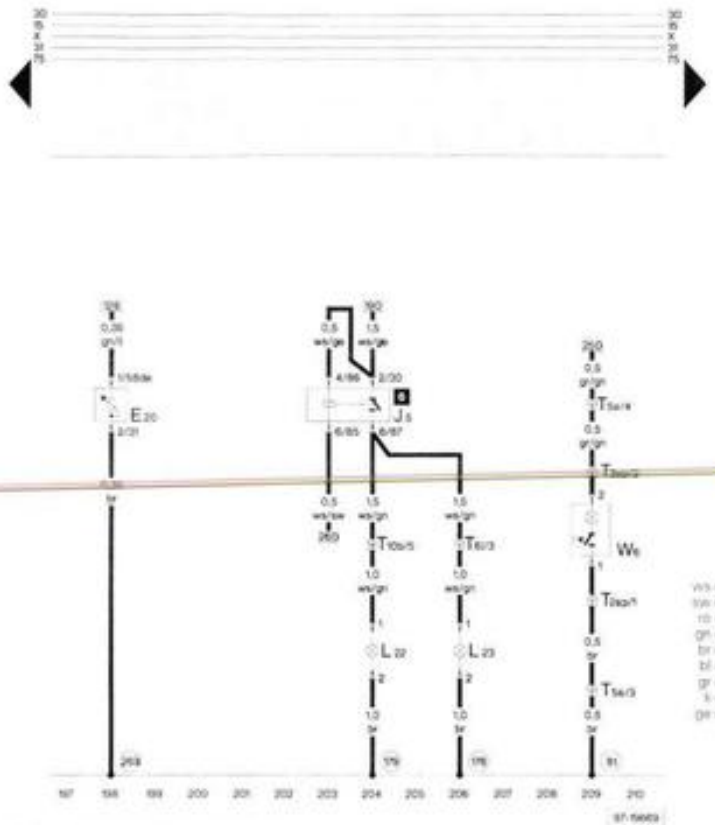




E 1 - Light Switch
E 2 - Turn Signal Switch
E 4 - Headlight Dimmer/Flasher Switch
E 23 - Fog Light Switch
K 13 - Rear Fog Light Indicator Light
K 17 - Fog Light Indicator Light
L 9 - Headlight Switch Light
L 40 - Front and Rear Fog Light Switch Light

(31) - Ground connection (31), in instrument panel wiring harness
(87L) - Wire connection (87L), in instrument panel wiring harness
(87R) - Wire connection (87R), in instrument panel wiring harness
(56) - Wire connection (56), in instrument panel wiring harness

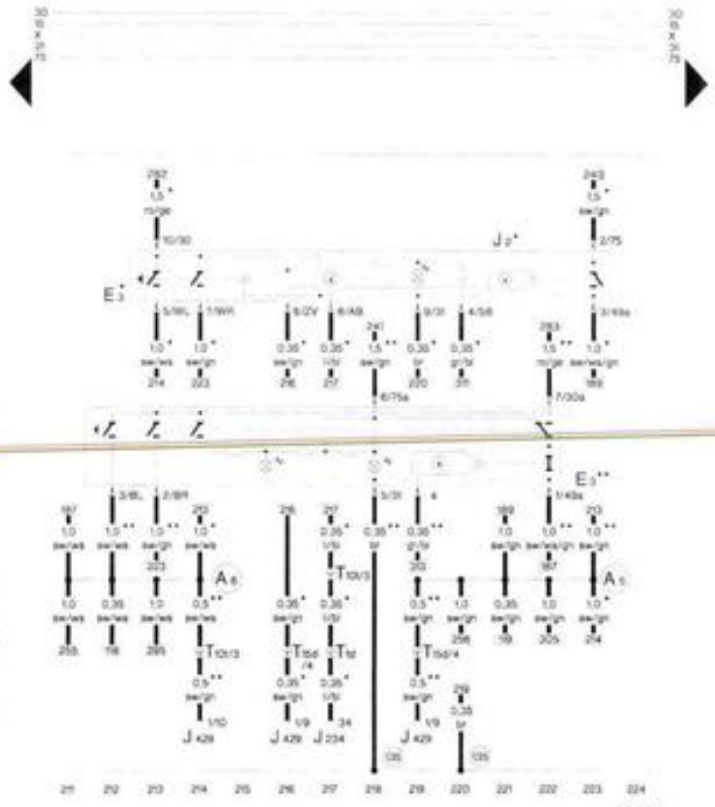
* - Chassis number upto 5000
** - Chassis number from 5001

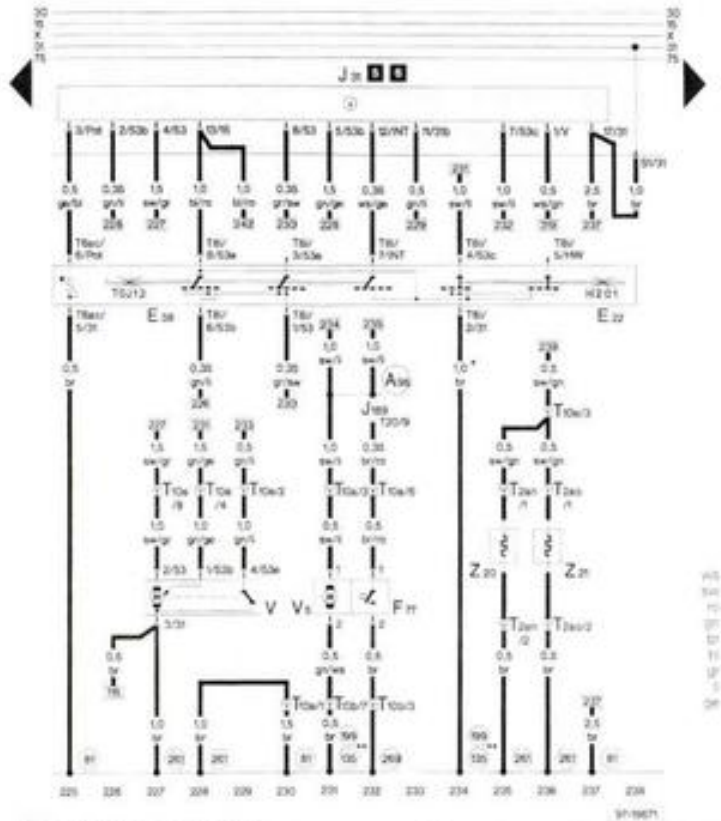





**Instrument Panel Light Dimmer Switch, Fog Light Relay, Front Fog Light**







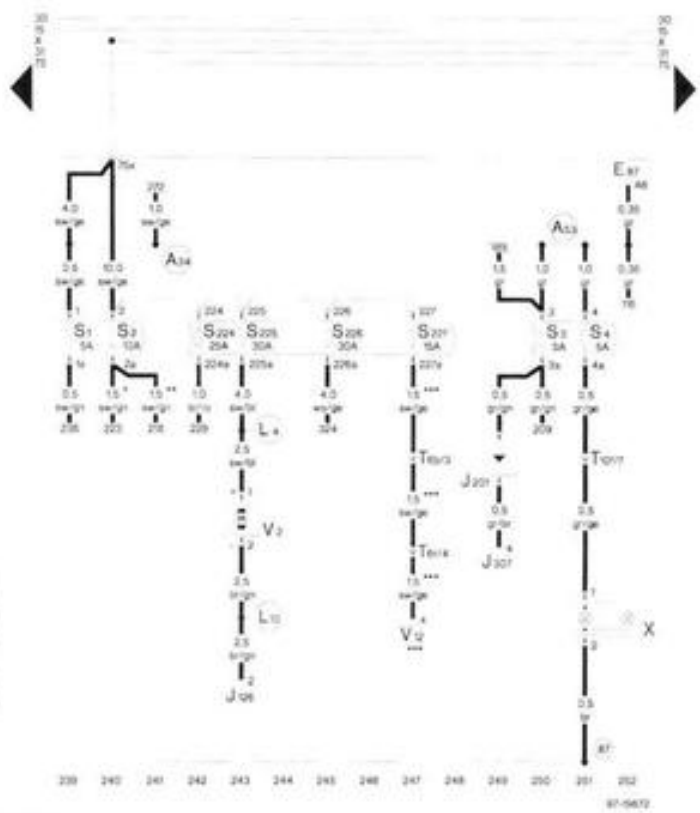
E - Windshield Wiper/Washer Switch
J - Windshield Wiper Intermittent Regulator
N - Windshield Washer Fluid Level Warning Switch
J - Wiper/Washer Intermittent Relay
J - Auto Check System
Z - ws - Connector 2 pin, washer jet, left
Z - ws - Connector 2 pin, washer jet, right
T - ws - Connector 6 pin, brown, on windshield wiper intermittent regulator
T - ro - Connector 6 pin, on windshield wiper/washer switch
T - ro - Connector 10 pin, sink, connector station A pillar, left
T - ro - Connector 10 pin, red, connector station A pillar, left
T - ro - Connector 10 pin, violet, connector station A pillar, left
T - ro - Connector 20 pin, red/white, on instrument cluster
V - Windshield Wiper Motor
V - Windshield Washer Pump
Z - Left Washer Nozzle Heater
Z - Right Washer Nozzle Heater

- Ground connection 1, in instrument panel wiring harness
- Ground connection 2, in instrument panel wiring harness
- Ground connection 3, in instrument panel wiring harness
- Ground connection, in wiring harness heated spray jet
- Ground connector (sensor ground), in instrument panel wiring harness
- Connector (53a), in instrument panel wiring harness

+ only wagon
** depth is possible





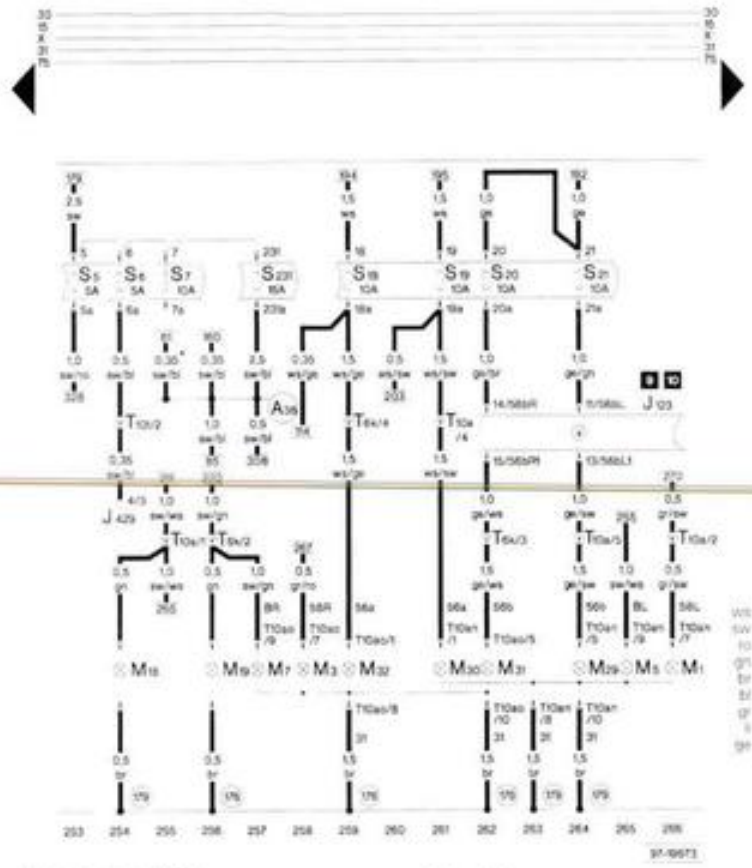


ws - white
sw - black
ro - red
gr - green
br - brown
bl - blue
gr - gray
li - violet
ge - yellow

E - A/C Control Head
J - Control Module for Fresh Air Blower
V - Protection Diode
J - Selector Lever Light Relay
S - Fuse
S - Fuse
S - Fuse
S - Fuse
S - Fuse
S - Fuse
S - Fuse
S - Fuse
T - b - Connector 6 pin, white, connector station A pillar, left
T - c - Connector 6 pin, brown, in luggage compartment
T - Connector 10 pin, brown, connector station A pillar, left
V - Fresh Air Blower
V - Rear Window Wiper Motor
X - License Plate Light

- Ground connection 3, in rear wiring harness
- Wire connection (Tbr), in instrument panel wiring harness
- Plug connection (58b), in instrument panel wiring harness
- Wire connection (Tbl), in A/C wiring harness
- Wire connection -3-, in A/C wiring harness

* Chassis number upto 5000
** Chassis number from 5001
*** only wagon



J 123 - Lamp Control Module
J 429 - Control module for central locking
M 1 - Left Parking Light
M 3 - Right Parking Light
M 5 - Left Front Turn Signal Light
M 7 - Right Front Turn Signal Light
M 18 - Left, Side Turn Signal Light
M 19 - Right, Side Turn Signal Light
M 29 - Left Low Beam Headlight
M 32 - Left High Beam Headlight
M 31 - Right Low Beam Headlight
M 32 - Right High Beam Headlight
S 5 - Fuse
S 6 - Fuse
S 7 - Fuse
S 18 - Fuse
S 19 - Fuse
S 20 - Fuse
S 21 - Fuse
S 231 - Fuse
T 6 - Connector 6 pin, pink, connector station A pillar, right
T 10 - Connector 10 pin, pink, connector station A pillar, left
T 10 - Connector 10 pin, orange, connector station A pillar, right
T 10 - Connector 10 pin, on headlight, left
T 10 - Connector 10 pin, on headlight, right

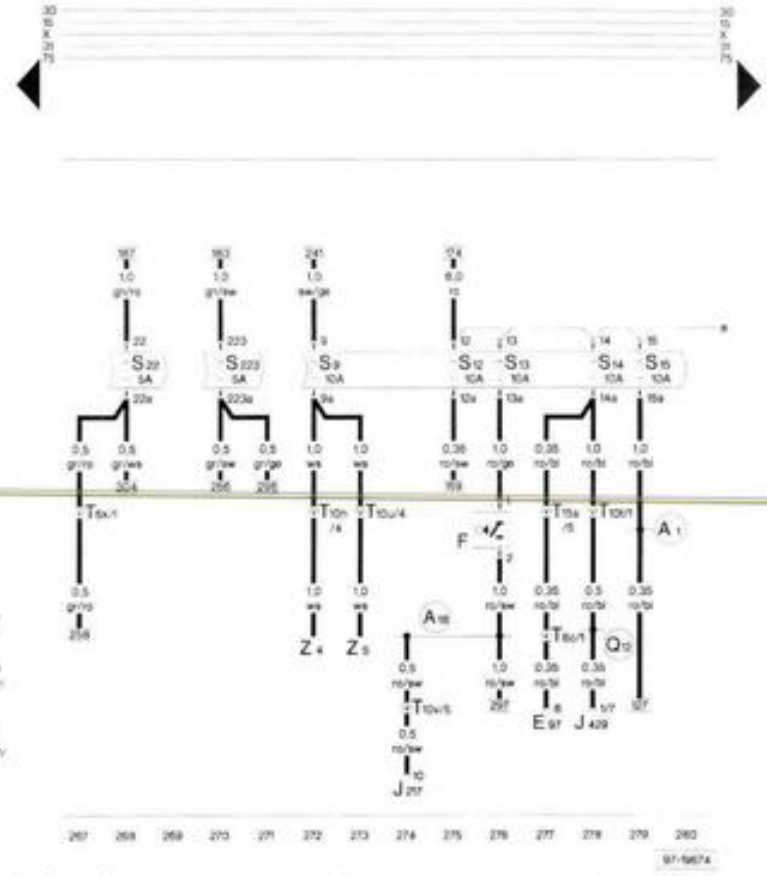
- Ground connection, in right headlight wiring harness
- Ground connection, in left headlight wiring harness
- Plus connection (15a /2), in instrument panel wiring harness

- Vehicles with front wheel drive

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

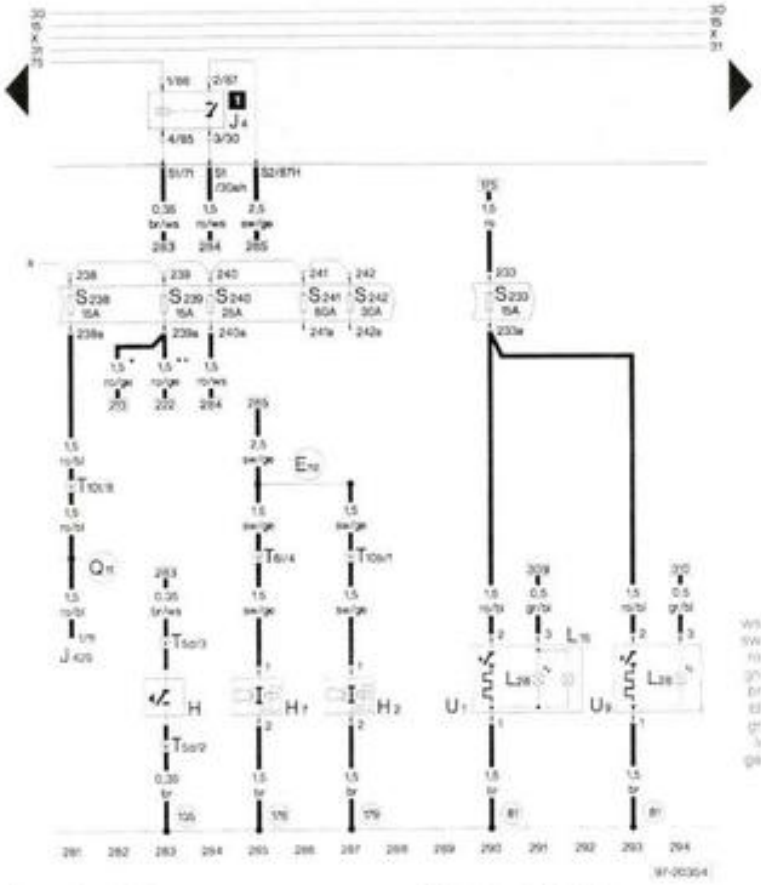






E 97 - Memory Program Switch
F - Brake Light Switch
J 217 - Transmission Control Module (TCM)
J 429 - Control module for central locking
S 9 - Fuse
S 12 - Fuse
S 13 - Fuse
S 14 - Fuse
S 15 - Fuse
S 22 - Fuse
S 223 - Fuse
T 6 - Connector 6 pin, pink, connector station A pillar, right
T 8 - Connector 8 pin, black, in driver's door
T 10 - Connector 10 pin, black, connector station A pillar, left
T 10 - Connector 10 pin, orange, connector station A pillar, right
T 10 - Connector 10 pin, black, connector station A pillar, right
T 10 - Connector 10 pin, brown, connector station A pillar, right
T 16 - Connector 16 pin, black, connector station A pillar, left
Z 4 - Heated outside mirror, driver side
Z 5 - Heated outside mirror, passenger side

- Plus connection (30a), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness
- Plus connection (30a), in power windows/central locking system and door contact switch wiring harness



H - Horn Button
H 1 - High Tone Horn
H 7 - Low Tone Horn
J 4 - Dual Horn Relay
J 429 - Control module for central locking
L 75 - Ashtray Light
L 28 - Cigarette Lighter Light
S 233 - Fuse
S 238 - Fuse
S 239 - Fuse
S 240 - Fuse
S 241 - Fuse
S 242 - Fuse
T 6 - Connector 6-pin, behind steering column switch cover
T 6 - Connector 6-pin, red, connector station A pillar, right
T 10 b - Connector 10-pin, red, connector station A pillar, left
T 10 f - Connector 10-pin, orange, connector station A pillar, right
U 1 - Cigarette Lighter
U 9 - Rear Cigarette Lighter

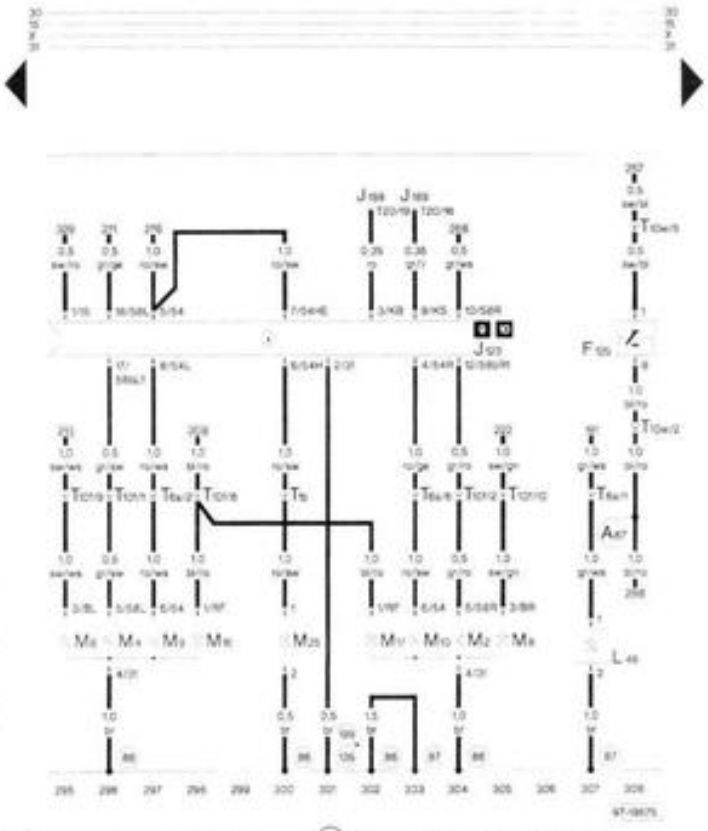
(1) Ground connection -1-, in instrument panel wiring harness
(2) Ground connection -2-, in instrument panel wiring harness
(3) Ground connection, in right headlight wiring harness
(4) Ground connection, in left headlight wiring harness
(5) Connector (black - 87h), in instrument panel wiring harness
(6) Plus connection (30a), in power window/central locking system and door contact switch wiring harness

* - Chassis number upto 5000
** - Chassis number from 5001

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow





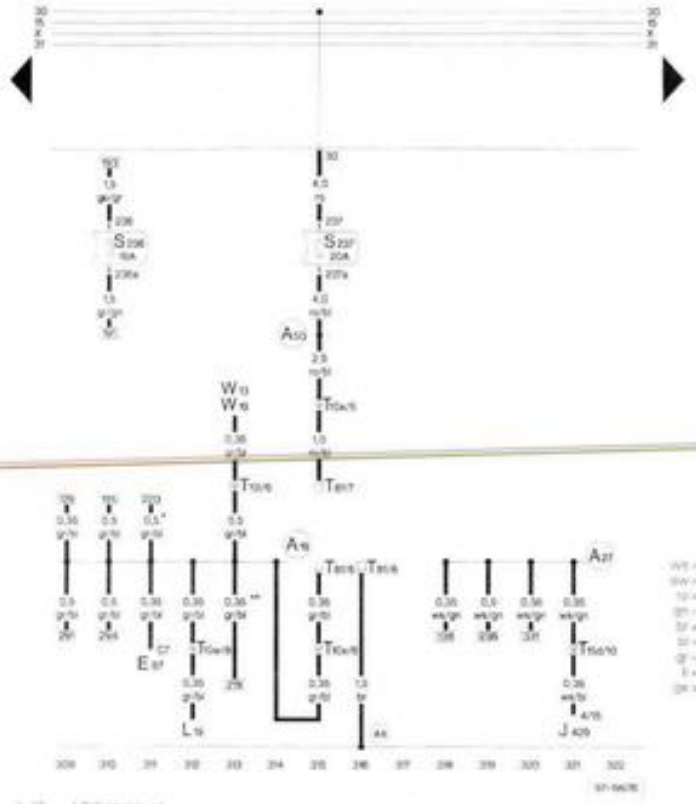


F 125 - Multi Function Transmission Range (TR) Switch
J 123 - Lane Control Module
J 188 - Auto Check System
L 86 - Left Rear Fog Light
M 2 - Right Tail Light
M 4 - Left Tail Light
M 6 - Left Rear Turn Signal Light
M 8 - Right Rear Turn Signal Light
M 9 - Left Brake Light
M 10 - Right Brake Light
M 16 - Left Back-Up Light
M 17 - Right Back-Up Light
M 25 - High mount Brake Light
T 1 a - Single connector, black, connector station A pillar, right
T 6 a - Connector 6-pin, blue, connector station A pillar, left
T 10 c - Connector 10-pin, brown, connector station A pillar, left
T 10 w - Connector 10-pin, blue, connector station A pillar, right
T 20 - Connector 20-pin, red/white, on instrument cluster

(1) Ground connection -1-, in rear wiring harness
(2) Ground connection -2-, in rear wiring harness
(3) Ground connection -2-, in instrument panel wiring harness
(4) Ground connection -3-, in instrument panel wiring harness
(5) Connector (red), in instrument panel wiring harness

* - Audi is possible

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow



E 67 - A/C Control Head
J 428 - Control module for central locking
S 19 - Automatic Transmission Console Light
S 236 - Fuse
S 237 - Fuse
T 6 - Connector 6-pin, black, connector take-off
T 10 - Connector 10-pin, red/brown, connector station A pillar, left
T 12 w - Connector 12-pin, blue, connector station A pillar, right
T 12 x - Connector 12-pin, pink, connector station A pillar, right
T 16 - Connector 16-pin, black, connector station A pillar, right
W 15 - Right Front Map/Reading Light
W 16 - Left Front Reading Light

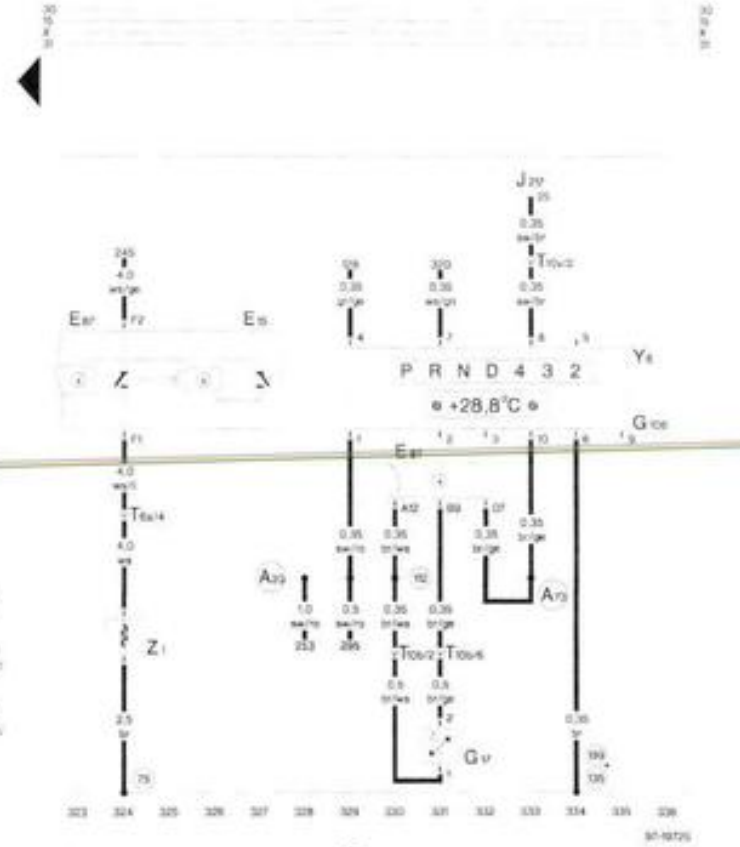
- Ground connection, on left A-pillar, lower part
- Wire connection (58s), in instrument panel wiring harness
- Switch illumination
- Wire connection (vehicle speed signal), in instrument panel wiring harness
- Plus connection (30a), in instrument panel wiring harness

* - Chassis number upto 8000
** - Chassis number from 8001

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow








E 15 - Rear Window Defogger Switch
E 87 - A/C Control Head
G 17 - Outside Air Temperature Sensor
G 106 - Outside Air Temperature Display
J 217 - Transmission Control Module (TCM)
T 6 a - Connector 6-pin, blue, connector station A pillar, left
T 10 b - Connector 10-pin, red, connector station A pillar, left
T 10 z - Connector 10-pin, brown, connector station A pillar, right
Y 8 - Transmission Range (TR) Selector Lever Display
Z 1 - Heated rear window

- Ground connection, on right rear pillar
- Ground connection 2, in A/C wiring harness
- Ground connection 2, in instrument panel wiring harness
- Ground connection 3, in instrument panel wiring harness
- Wire connection (15a), in instrument panel wiring harness
- Connector, outside temperature indication, in instrument panel wiring harness

* - both is possible

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

## Driver's Information System

1998 m. y.

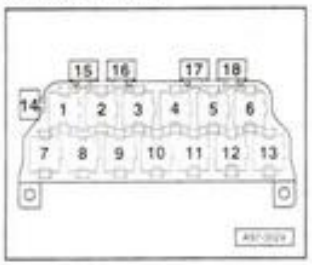
**Fuse Panel**

**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
5 A - Beige

Starting with fuse position 22, fuses in the fuse holder are identified with 223 in the wiring diagram.

**13 - Fold Relay Panel**



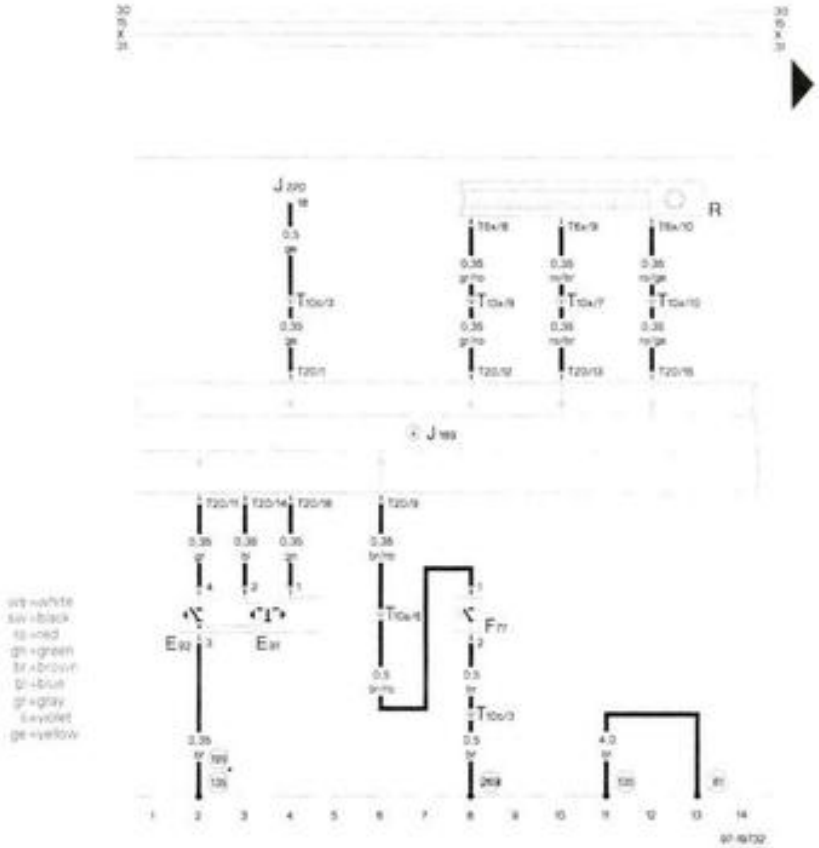

**Relay Location:**

9 - Lamp Control Module J123

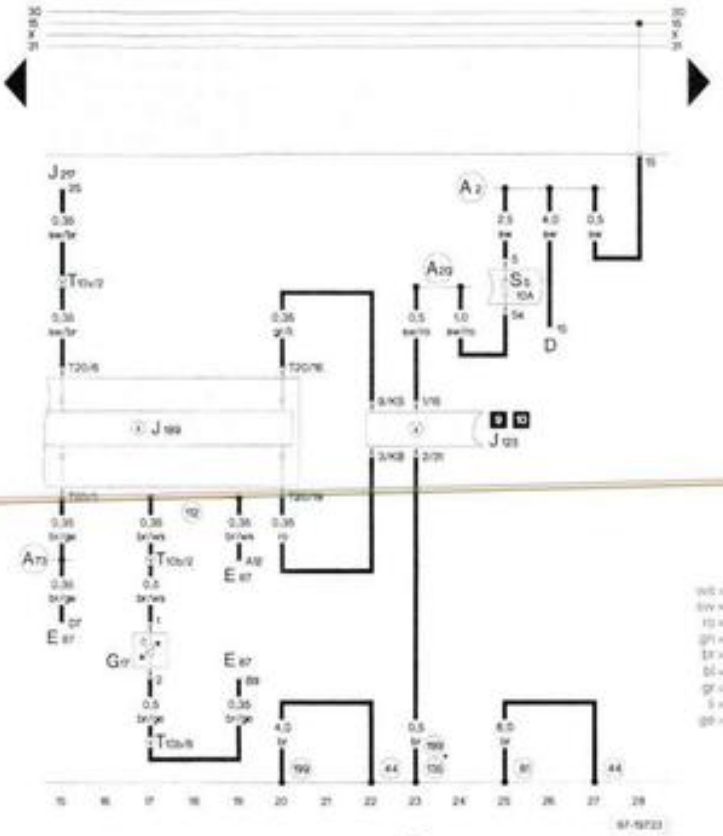
10 - Lamp Control Module J123








**Auto Check System, Board Computer Funtion Selector Switch, Windshield Washer Fluid Level Warning Switch**




D - Ignition/Starter Switch
E 87 - A/C Control Head
G 17 - Outside Air Temperature Sensor
J 123 - Lamp Control Module
J 189 - Auto Check System
J 217 - Transmission Control Module (TCM)
S 5 - Fuse
T 16 k - Connector 16 pin, red, connector station A pillar, left
T 10 r - Connector 10 pin, brown, connector station A pillar, right
T 20 - Connector 20 pin, red/white, on instrument cluster

(A1) - Ground connection, on left A pillar, lower part
(K) - Ground connection -1-, in instrument panel wiring harness

(1) - Ground connection -2-, in A/C wiring harness
(2) - Ground connection -2-, in instrument panel wiring harness
(3) - Ground connection -3-, in instrument panel wiring harness
(C) - Plus connection (15), in instrument panel wiring harness
(10) - Wire connection (10a), in instrument panel wiring harness
(A1) - Connector (outside temperature indicator), in instrument panel wiring harness

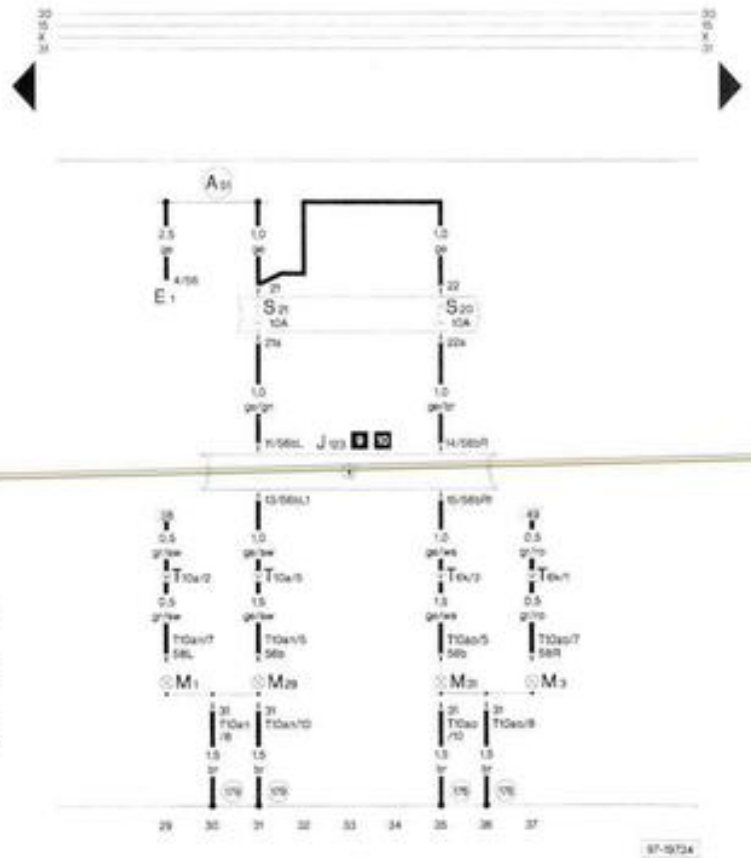
• - sooth is possible

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow



**Auto Check System, Lamp Control Module**

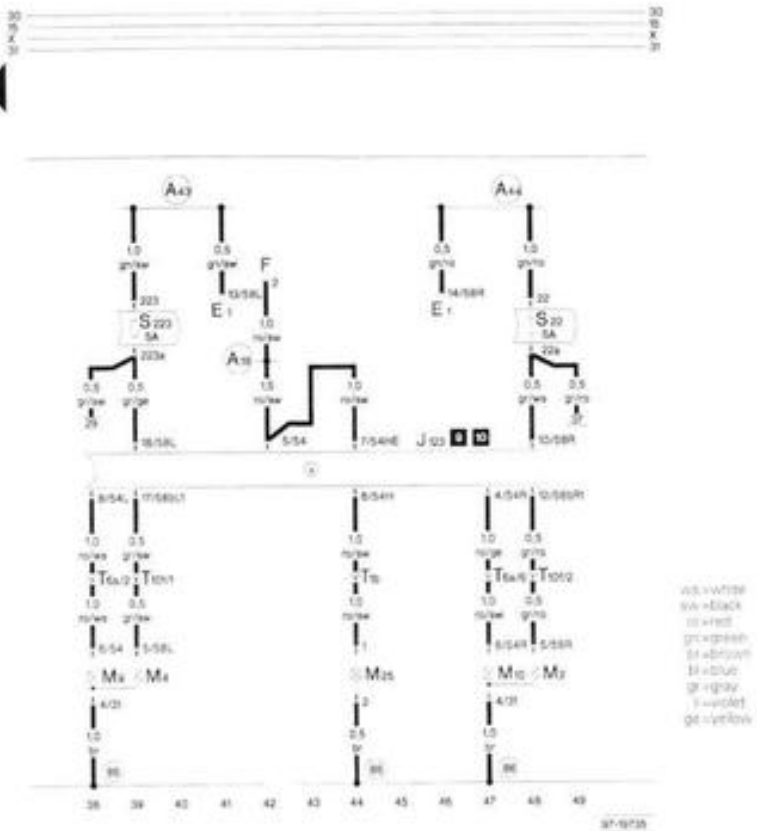





S 1 - Light switch
J 123 - Lamp Control Module
M 1 - Left Parking Light
M 3 - Right Parking Light
M 29 - Left Low Beam Headlight
M 31 - Right Low Beam Headlight
S 20 - Fuse
S 21 - Fuse
T 6 k - Connector 6 pin, pink, connector station A pillar, right
T 10 a - Connector 10 pin, pink, connector station A pillar, left
T 10 an - Connector 10 pin, on headlight, left
T 10 ao - Connector 10 pin, on headlight, right

(12) - Ground connection, in right headlight wiring harness
(13) - Ground connection, in left headlight wiring harness
(X) - Wire connection (58), in instrument panel wiring harness

**Lamp Control Module, Parking Light, Low Beam Headlight**




ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow

S 1 - Light switch
1 - Brake Light Switch
J 523 - Lamp Control Module
M 2 - Right Tail Light
M 4 - Left Tail Light
M 9 - Left Brake Light
M 10 - Right Brake Light
M 25 - High-mount Brake Light
S 22 - Fuse
S 223 - Fuse
T 1 - 1-pin single connector, black, connector station A prior right
T 6 - 6-pin connector, blue, connector station A pillar, left
T 10 - 10-pin connector, brown, connector station A pillar, left

(85) - Ground connection -1-, in rear wiring harness
(A) - Wire connection (54), in instrument panel wiring harness
(D) - Wire connection (D/TU), in instrument panel wiring harness
(X) - Wire connection (X/R), in instrument panel wiring harness



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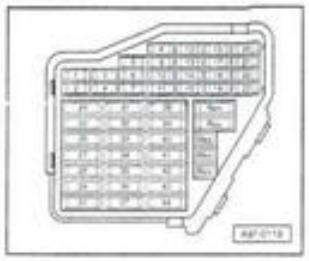
## Power Window

1998 m. y.

**Fuse Panel**

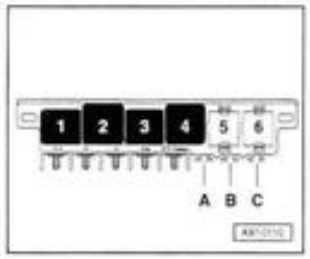


**Fuse Colors:**

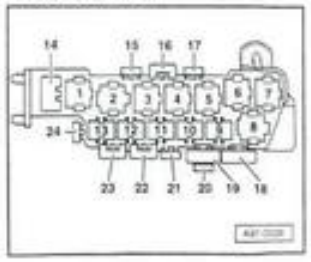
30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**




**8 - Fold Relay Panel**

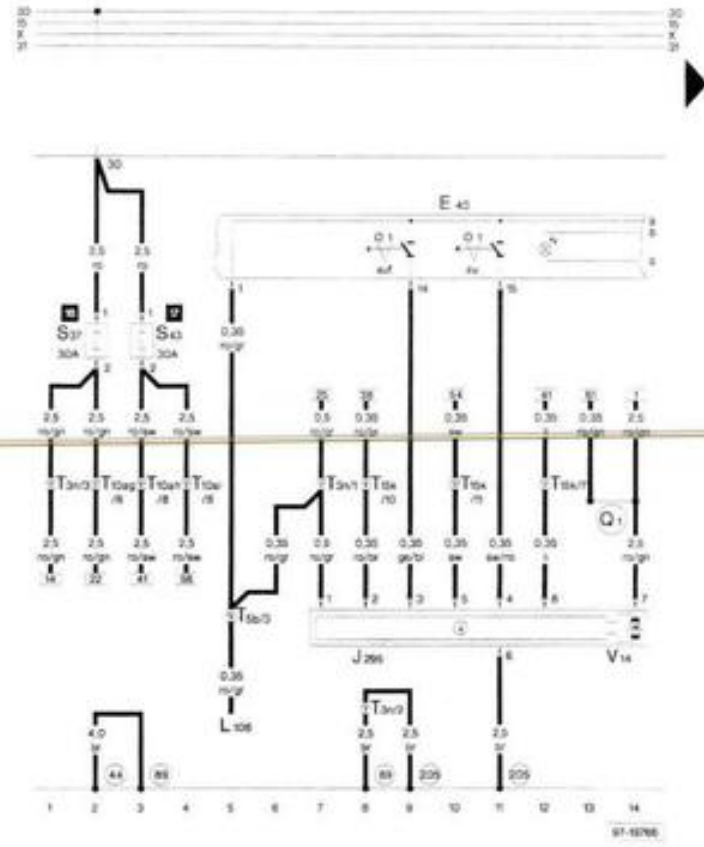



**Fuse Location**

16 - Power Window Circuit Breaker Front, S37
17 - Power Window Circuit Breaker Rear, S43





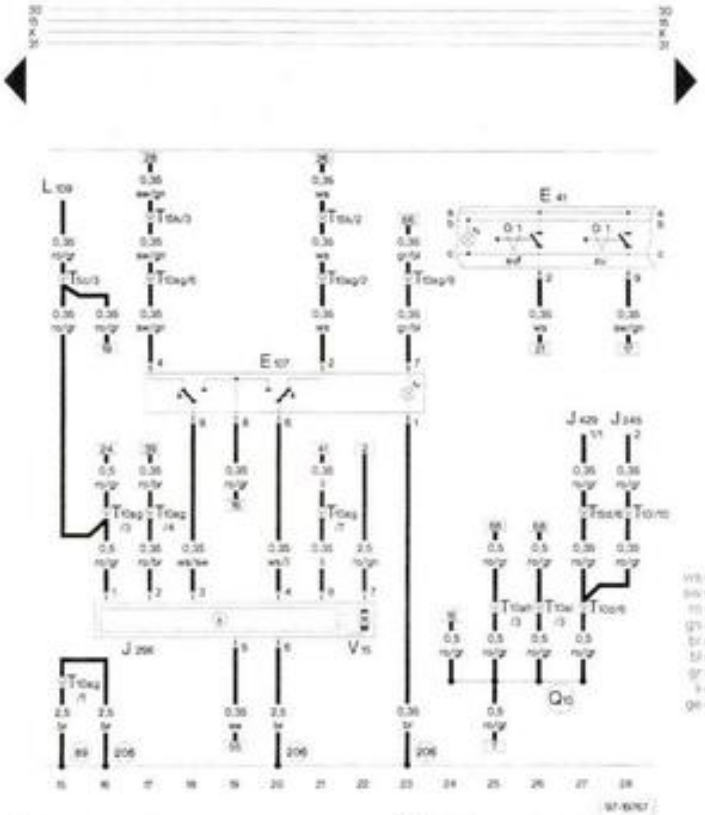



ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow

S 40 - Left Front Window Switch
J 386 - Left Front Power Window Control Module
L 106 - Door Courtesy Illumination, Driver's Side
S 37 - Power Window Circuit Breaker Front
S 43 - Power Window Circuit Breaker Rear
T 3 n - Connector 3 pin, red, connector station A pillar, left
T 5 b - Connector 5 pin, black, in driver's door
T 10 ag - Connector 10 pin, red, connector station A pillar, right
T 10 an - Connector 10 pin, red, in B pillar, left
T 10 ai - Connector 10 pin, red, in B pillar, right
T 15 k - Connector 15 pin, red, connector station A pillar, left
V 14 - Left Window Motor

(4) - Ground connection, on left A-pillar, lower part
(30) - Ground connection -1-, in power window wiring harness
(31) - Ground connection, in driver's door wiring harness
(X) - Plus connection (30), in power window wiring harness

**Left Front Power Window, Power Window Circuit Breaker**



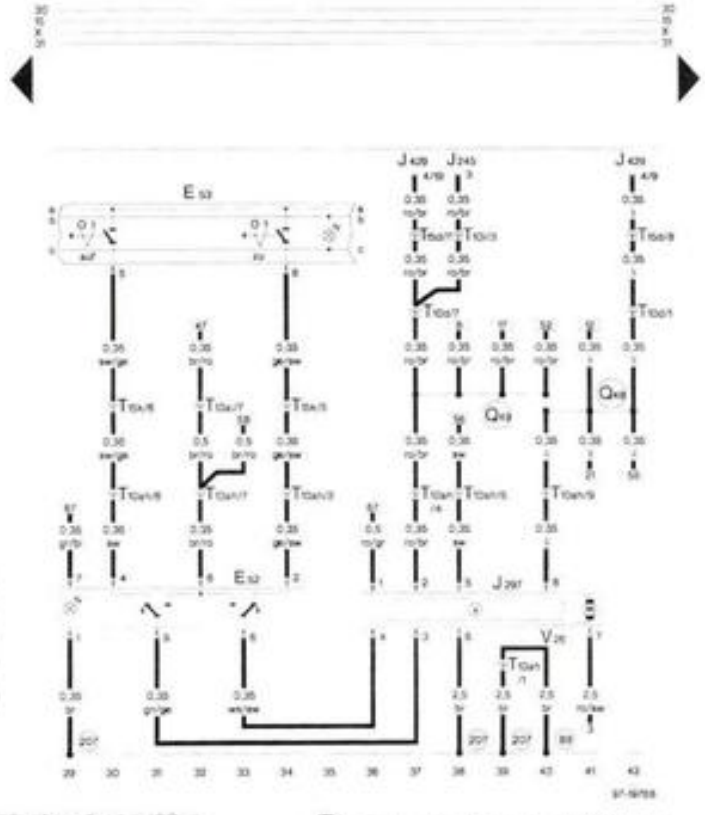
E 41 - Right Front Window Switch
E 107 - Switch for window regulator, in passenger door
J 245 - Power Sunroof Control Module
J 386 - Right Front Power Window Control Module
J 429 - Control module for central locking
L 109 - Door Opener Illumination, Passenger's Side
T 5 c - Connector 5 pin, black, in passenger's door
T 10 a - Connector 10 pin, green, connector station A pillar, left
T 10 i - Connector 10 pin, darkbrown, connector station A pillar, left
T 10 ag - Connector 10 pin, red, in passenger's door
T 10 ah - Connector 10 pin, red, in left rear door
T 10 e - Connector 10 pin, red, in right rear door
T 15 d - Connector 15 pin, black, connector station A pillar, right
T 15 e - Connector 15 pin, red, connector station A pillar, left
V 15 - Right Window Motor

- Ground connection 1, in power window wiring harness
- Ground connection, in passenger's door wiring harness
- Plus connection (87), in power window/central locking system and door contact switch wiring harness

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow



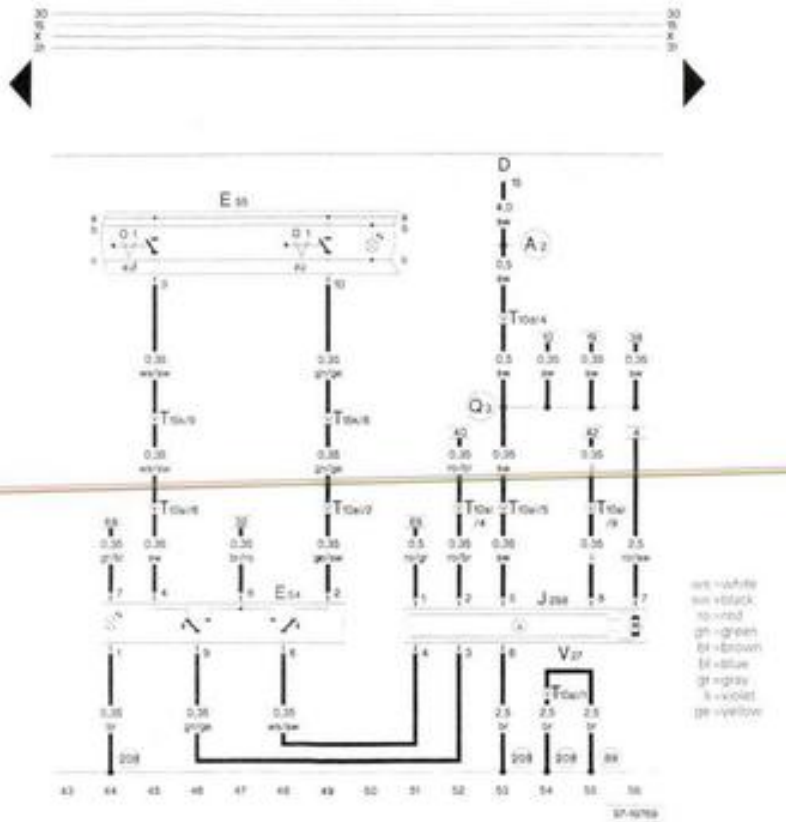




E 52 - Left Rear Window Switch, on LR Door
E 53 - Left Rear Window Switch, in Console
J 245 - Power Sunroof Control Module
J 297 - Left Rear Power Window Control Module
J 429 - Control module for central locking
T 10 d - Connector 10 pin, green, connector station A pillar, left
T 10 i - Connector 10 pin, darkbrown, connector station A pillar, left
T 10 ah - Connector 10 pin, red, in left rear door
T 10 e - Connector 10 pin, red, in right rear door
T 15 d - Connector 15 pin, black, connector station A pillar, right
T 15 e - Connector 15 pin, red, connector station A pillar, left
V 26 - Motor for window regulator, rear, left

- Ground connection 1, in power window wiring harness
- Ground connection, at left rear door wiring harness
- Connector (open), in wiring harness interior
- Connector (closed), in wiring harness interior

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = grey
li = violet
ge = yellow

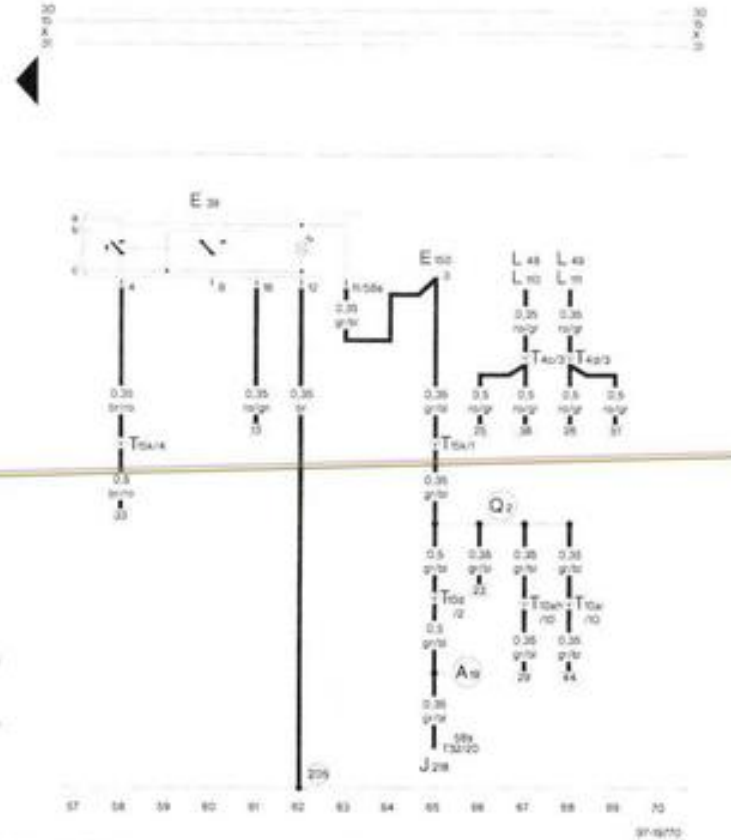



D - ignition/Starter Switch
E 54 - Right Rear Window Switch, in RR Door
E 55 - Right Rear Window Switch, in Console
J 386 - Right Rear Power Window Control Module
T 10 - a- Connector 10 pin, green, connector station A pillar, left
T 10 - a- Connector 10 pin, red, in B pillar, right
T 19 - x - Connector 19 pin, red, connector station A pillar, left
V 27 - Motor for window regulator, rear, right

- Ground connection -1- in power window wiring harness
- Ground connection -1- in right rear door wiring harness
- Plus connection (15), in instrument panel wiring harness
- Plus connection (15), in power window wiring harness








E 39 - Window Lockout Switch
E 150 - Switch for interior lock, driver side
J 217 - Instrument Cluster Comparison Processor
L 48 - Left Rear Airbag Light
L 49 - Right Rear Airbag Light
L 110 - Door Opener Illumination, rear left
L 111 - Door Opener Illumination, rear right
T 4 - c - Connector 4 pin, black, in left rear door
T 4 - d - Connector 4 pin, black, in right rear door
T 10 - d - Connector 10 pin, green, connector station A pillar, left
T 10 - ah - Connector 10 pin, red, in B pillar, left
T 10 - ai - Connector 10 pin, red, in B pillar, right
T 19 - x - Connector 19 pin, red, connector station A pillar, left
T 32 - Connector 32 pin, blue, on instrument cluster

- Ground connection -2- in driver's door wiring harness
- Wire connection (58x), in instrument panel wiring harness (Switch illumination)
- Plus connection (58x), in power window wiring harness

## Radio Concert, Bose with and without CD Changer

1998 m. y.

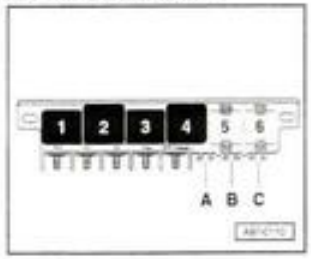
Fuse Panel

Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

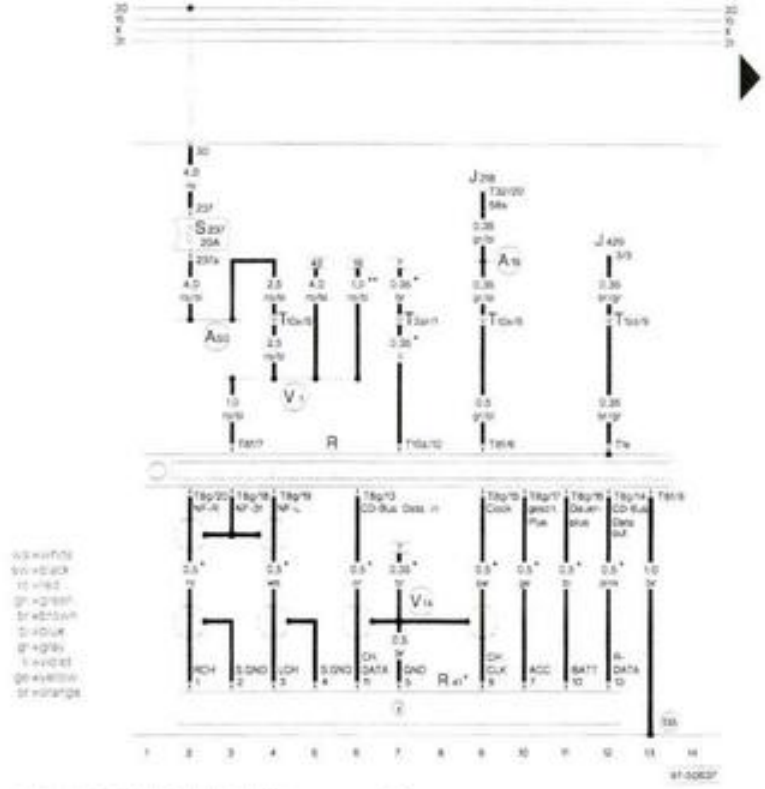
Starting with fuse position 22, fuses in the fuse holder are identified with 223 in the wiring diagram.

Micro Central Electric Panel





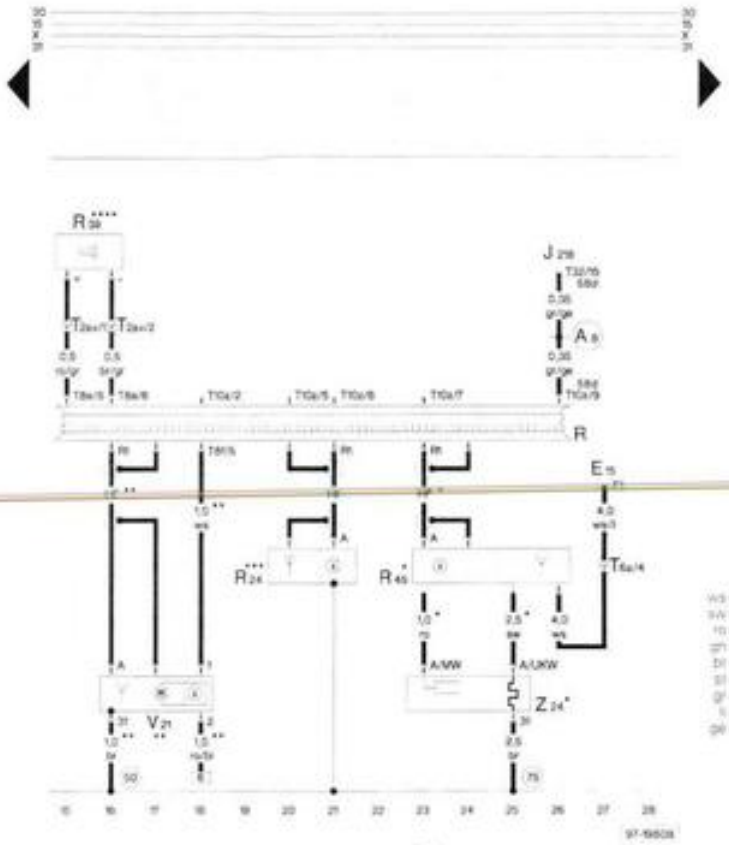


J 218 - Instrument Cluster Combination Processor
J 429 - Control module for central locking
R - Radio
R 41 - CD Changer unit
* 1 - a - Single connector, on Radio
* 2 - a / - Connector 2 pin, black, behind instrument panel, center
T 6 - f - Connector 6 pin, black, connector radio II
T 8 - g - Connector 8 pin, blue, connector radio I - 3
* 10 - x - Connector 10 pin, grey, connector station A pillar, right
* 10 - y - Connector 10 pin, red, connector radio IV
T 15 - p - Connector 15 pin, black, connector station A pillar, right
T 32 - Connector 32 pin, blue, on instrument cluster

- Ground connection, in speaker wiring harness
- Wire connection (58d), in instrument panel wiring harness (Switch illumination)
- Plus connection (30a2), in instrument panel wiring harness
- Plus connection (30), in rear speaker wiring harness
- Wire connection (shielding), in CD changer wiring harness

* - Vehicles with CD Changer
** - Automatic climatronic



E 15 - Rear Window Defogger Switch
J 218 - Instrument Cluster Combination Processor
R - Radio
R 1 - Antenna Connection
R 24 - Antenna Amplifier
R 39 - Telephone Speaker
R 40 - Telephone/Radio Antenna Amplifier
T 2 ws - Connector 2 pin, black, for loudspeaker, B pillar, left
T 6 u - Connector 6 pin, blue, connector station A pillar, left
T 8 w - Connector 8 pin, brown, connector radio I
T 8 f - Connector 8 pin, black, connector radio II
T 10 c - Connector 10 pin, red, connector radio IV
T 32 - Connector 32 pin, blue, on instrument cluster
V 21 - Power Antenna
Z 24 - Rear Window Defogger With Window Antenna

Ground connection, in luggage compartment, left
Ground connection, on right rear pillar
Fuse connection (58d), in instrument panel wiring harness (Display illumination)

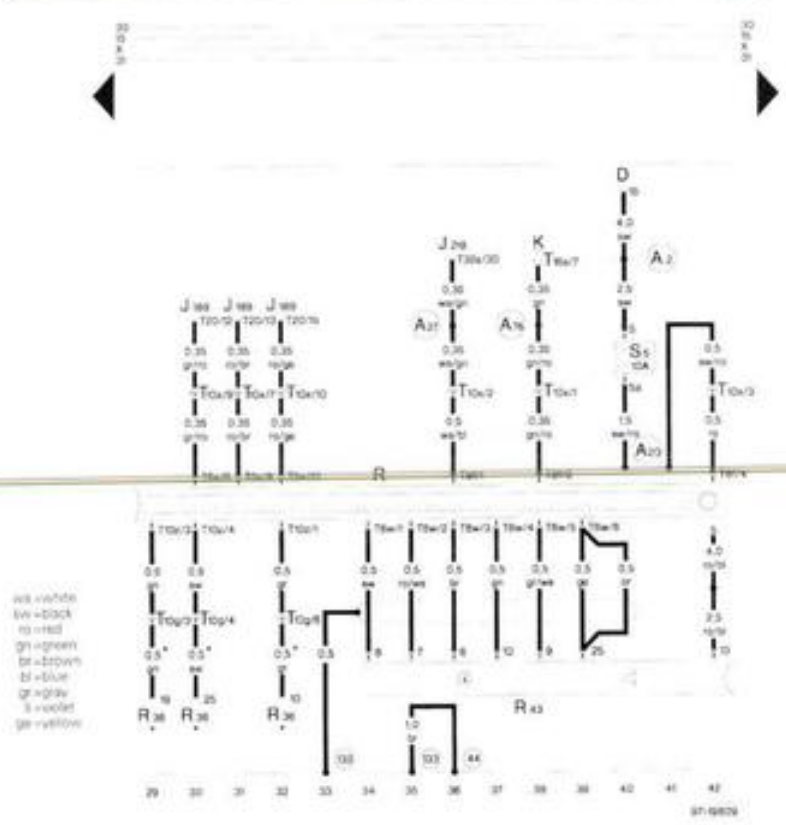
* - Rear Window Antenna
** - Automatic Antenna
*** - Wagon
**** - Vehicles with Telephone

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow



**Radio Concert, Bose with and without CD Changer**





D - Ignition/Starter Switch
J 104 - Anti-Theft System
J 218 - Instrument Cluster Combination Processor
K - DLC (Data Link Connector) Rapid Data Transfer
R - Radio
R 36 - Telephone Transceiver
R 43 - Right Rear Woofer Amplifier
S 5 - Fuse
T 6 w - Connector 6 pin, yellow, connector radio I - 1
T 6 x - Connector 6 pin, green, connector radio I - 2
T 8 f - Connector 8 pin, black, connector radio II
T 10 g - Connector 10 pin, white, connector station A pillar, left
T 10 w - Connector 10 pin, pink, connector station A pillar, right
T 10 c - Connector 10 pin, red, connector radio IV
T 16 a - Connector 16 pin, data link connector
T 20 - Connector 20 pin, red/anthr., on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster

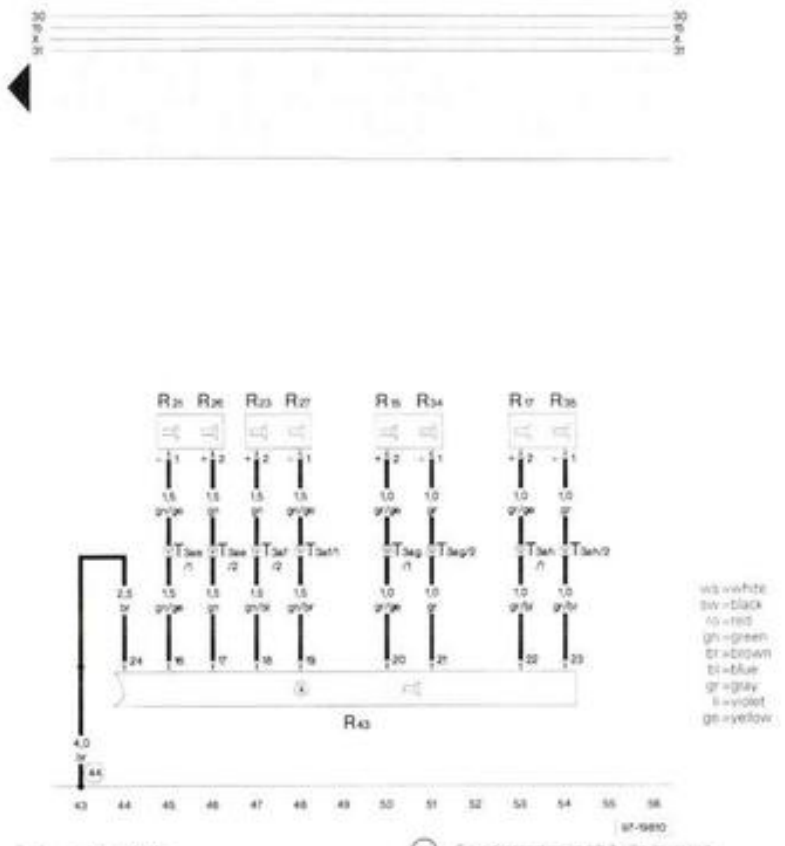
Ground connection, on left A pillar, lower part
Ground connection, in speaker wiring harness
Fuse connection (75), in instrument panel wiring harness
Wire connection (15a), in instrument panel wiring harness
Wire connection (vehicle speed signal), in instrument panel wiring harness
Connector A (diagnosis wire), in instrument panel wiring harness

* - Vehicles with Telephone

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow



**Radio Concert, Bose with and without CD Changer**




R 15 - Left Rear Woofer
R 17 - Right Rear Woofer
R 21 - Left Front Woofer
R 23 - Right Front Woofer
R 26 - Left Front Midrange Speaker
R 27 - Right Front Midrange Speaker
R 34 - Left Rear Midrange Speaker
R 35 - Right Rear Midrange Speaker
R 43 - Right Rear Woofer/Amplifier
T 3 ae - Connector 3 pin, brown, in driver's door
T 3 af - Connector 3 pin, brown, in front passenger door
T 3 ag - Connector 3 pin, blue, in rear left door
T 3 ah - Connector 3 pin, blue, in rear right door



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## Radio-Stereo, Concert

**1998 m. y.**

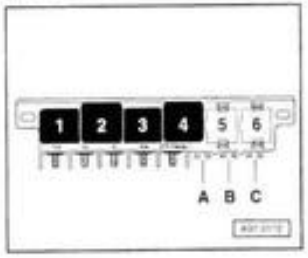
**Fuse Panel**

**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
5 A - Beige

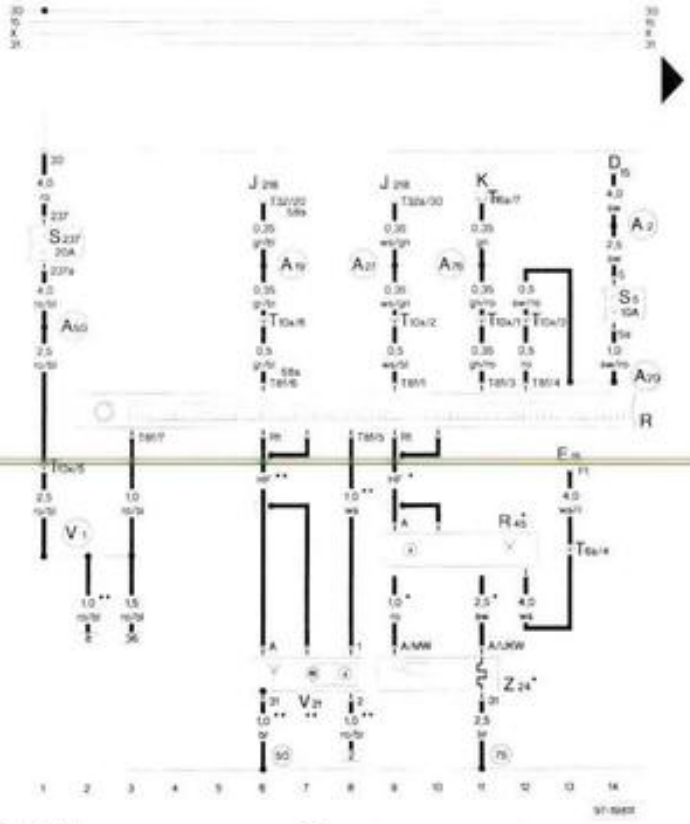
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**



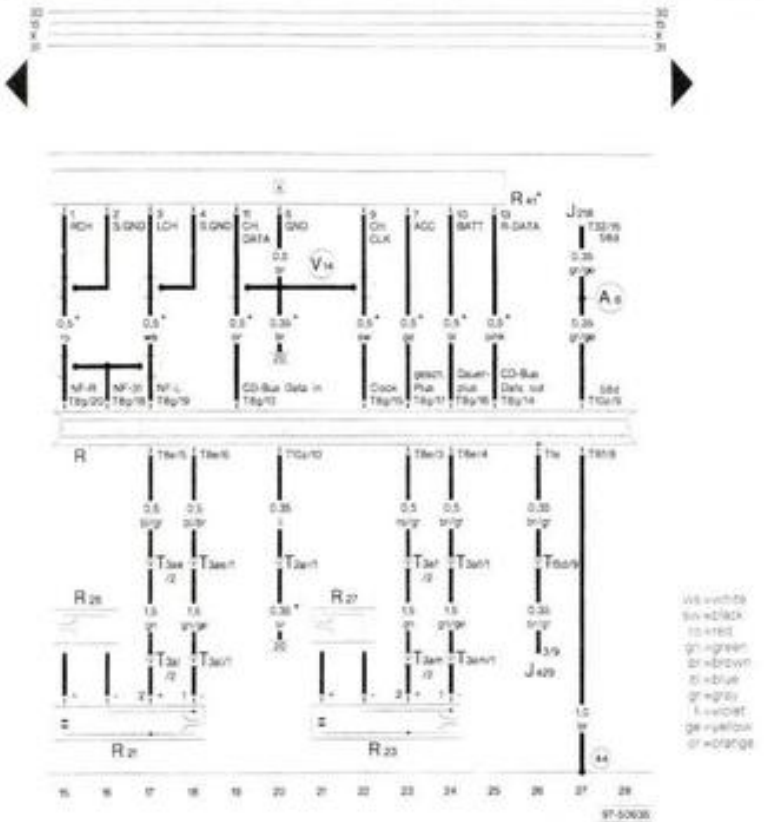





D - Ignition/Starter Switch
E 15 - Rear Window Defogger Switch
J 218 - Instrument Cluster Combination Processor
K - DLC (Data Link Connector) Rapid Data Transfer
R - Radio
R 1 - Antenna Connector
R 45 - Telephone/Radio Antenna Amplifier
S 5 - Fuse
S 237 - Fuse
T 6 a - Connector 6 pin, blue, connector station A pillar, left
T 8 f - Connector 8 pin, black, connector radio (i)
T 10 x - Connector 10 pin, pink, connector station A pillar, right
T 16 a - Connector 16 pin, data link connector
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster
V 21 - Power Antenna
Z 24 - Rear Window Defogger With Window Antenna
(1) - Ground connection, in luggage compartment, left
(2) - Ground connection, on right rear pillar
(A2) - Plus connection (15), in instrument panel wiring harness
(A19) - Wire connection (58s), in instrument panel wiring harness (Switch illumination)
(A21) - Wire connection (15a), in instrument panel wiring harness
(A76) - Wire connection (vehicle speed signal), in instrument panel wiring harness
(A70) - Plus connection (30as), in instrument panel wiring harness
(K) - Connector (K-diagnosis wire), in instrument panel wiring harness
(T) - Plus connection (30), in rear speaker wiring harness
* - Rear Window Antenna
** - Automatic Antenna

**Radio Concert, Power Antenna, Rear Window Defrogger With Window Antenna**



J - 218 - Instrument Cluster Comprehsion Processor
J - 423 - Control module for central locking
R - Radio
R 21 - Left Front Woofer
R 23 - Right Front Woofer
R 26 - Left Front Midrange Speaker
R 27 - Right Front Midrange Speaker
R 41 - CD Changer Unit
* 1 x - Single connector, on Radio
* 2 ar - Connector 2 pin, black, behind instrument panel, center
* 3 ae - Connector 3 pin, brown, connector station A pillar, left
* 3 at - Connector 3 pin, brown, connector station A pillar, right
* 3 al - Connector 3 pin, black, in driver's door
* 3 am - Connector 3 pin, black, in passenger's door
* 8 s - Connector 8 pin, brown, connector radio II
* 8 t - Connector 8 pin, black, connector radio III
* 9 g - Connector 9 pin, blue, connector radio I - 3
* 10 j - Connector 10 pin, red, connector radio IV
* 15 d - Connector 15 pin, black, connector station A pillar, right
* 32 - Connector 32 pin, blue, on instrument cluster

- Ground connection, on left A-pillar, lower part
- Fuse connection (58d), in instrument panel wiring harness (Display illumination)
- Wire connection (shielding), in CD Changer wiring harness

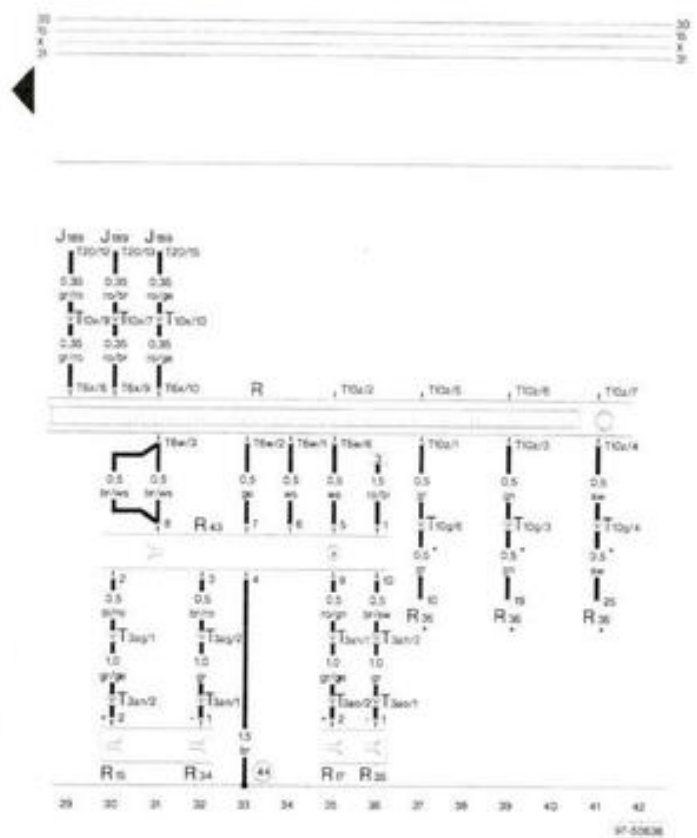
* - Vehicles with CD Changer

wsw = white
sw = black
rt = red
gn = green
br = brown
bl = blue
gr = grau
li = violet
ge = yellow
or = orange



Radio Concert, CD Changer Unit, Front Speakers





J 188 - Auto Check System
R - Radio
R 15 - Left Rear Woofer
R 17 - Right Rear Woofer
R 34 - Left Rear Midrange Speaker
R 35 - Right Rear Midrange Speaker
R 36 - Telephone Transceiver
R 43 - Right Rear Woofer Amplifier
* 3 ag - Connector 3 pin, blue, in B pillar, left
* 3 ar - Connector 3 pin, blue, in B pillar, right
* 3 al - Connector 3 pin, black, in left rear door
* 3 ao - Connector 3 pin, black, in right rear door
* 6 w - Connector 6 pin, yellow, connector radio - I
* 8 x - Connector 8 pin, green, connector radio I - 2
* 10 g - Connector 10 pin, white, connector station A pillar, left
* 10 x - Connector 10 pin, grey, connector station A pillar, right
* 10 y - Connector 10 pin, red, connector radio IV
* 20 - Connector 20 pin, red/white, on instrument cluster

- Ground connection, on left A-pillar, lower part

* - Vehicles with Telephone

wsw = white
sw = black
rt = red
gn = green
br = brown
bl = blue
gr = grau
li = violet
ge = yellow

## Headlight Washer

1998 m. y.

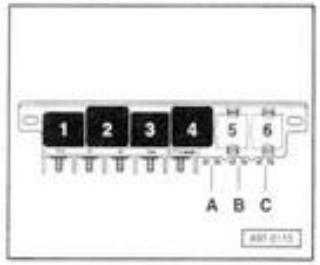
**Fuse Panel**

**Fuse Colors**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**



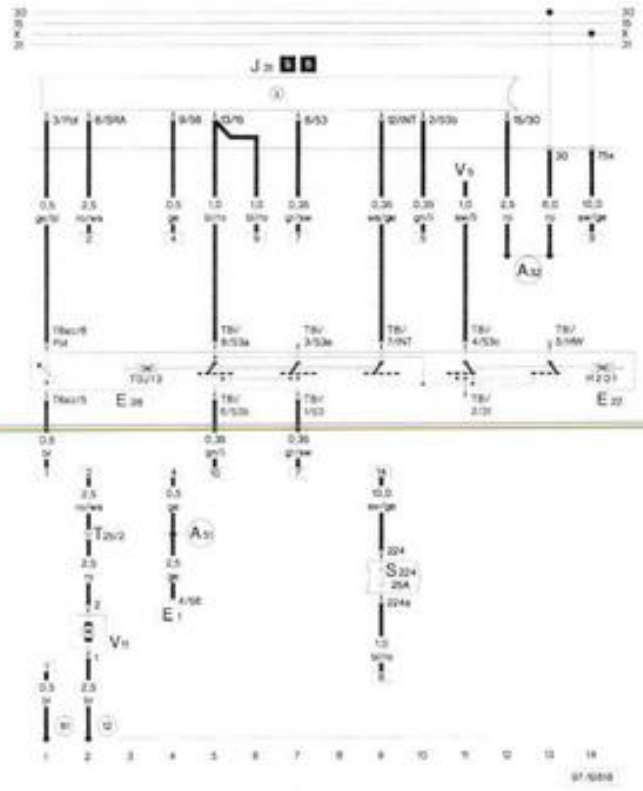

**Relay Location**

5 - Wiper/Washer Intermittent Relay, J31

6 - Wiper/Washer Intermittent Relay, J31








ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

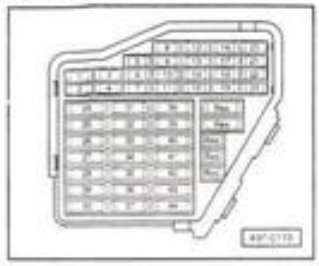
E 1 - Light switch
E 22 - Windshield Wiper/Washer Switch
E 38 - Windshield Wiper Intermittent Regulator
J 31 - Wiper/Washer Intermittent Relay
S 224 - Fuse
T 2 - b - Connector 2 pin, black, connector station A (c/w, left
T 6 - ac - Connector 6 pin, brown, (at windshield wiper intermittent regulator)
T 8 - Connector 8 pin, on windshield wiper/washer switch
V 5 - Windshield Washer Pump
V 11 - Headlight Washer Pump

- Ground connection, in engine compartment, left
- Ground connection 1, in instrument panel wiring harness
- Plus connection (30), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness

# Headlight with Hight Intensity Gas discharge Lamps and automatic Headlight Beam Adjusting

1998 m. y.

**Fuse Panel**

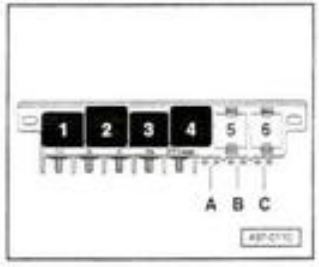


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

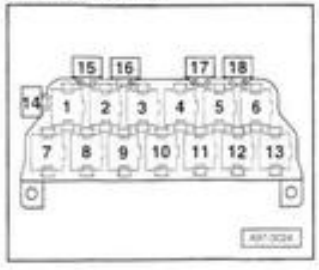
**Micro Central Electric Panel**




**Relay Location:**

2 - Load Reduction Relay, J59

**13 - Fold Relay Panel**



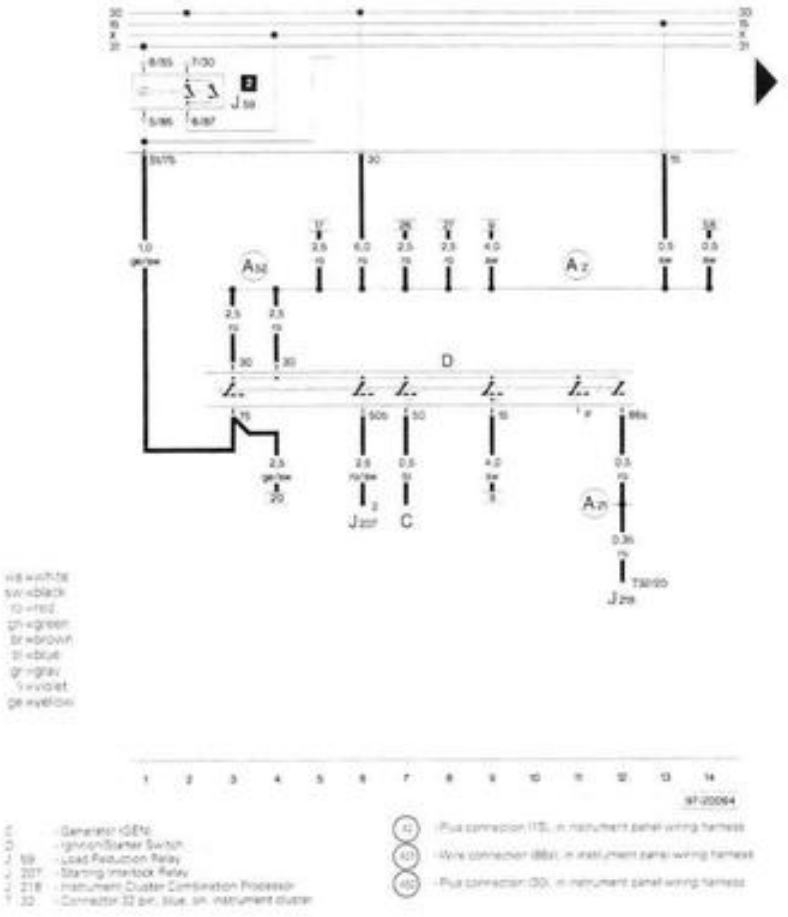

**Relay Location:**

9 - Lamp Control Module, J123

10 - Lamp Control Module, J123





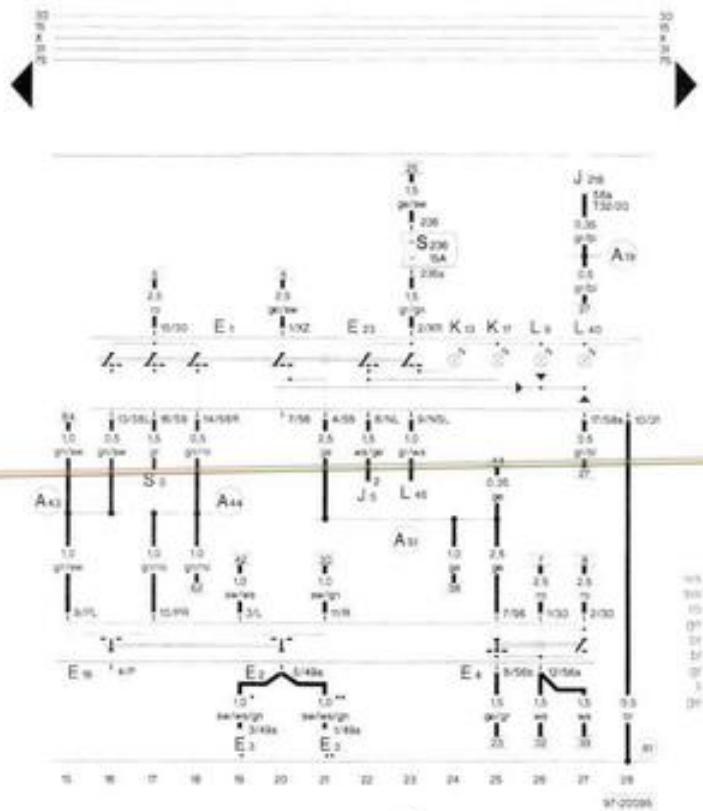



ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
vi = violet
ge = yellow

J - Generator (GEN)
D - Ignition/Starter Switch
J 59 - Load Reduction Relay
J 207 - Starting Interlock Relay
J 218 - Instrument Cluster Combination Processor
T 32 - Connector 32 pin, blue, on instrument cluster

(C) - Plus connection (15), in instrument panel wiring harness
(D) - Wire connection (B+), in instrument panel wiring harness
(50) - Plus connection (50), in instrument panel wiring harness

Ignition/Starter Switch, Load Reduction Relay



E 1 - Light Switch
E 2 - Turn Signal Switch
E 3 - Emergency Flasher Switch
E 4 - Headlight Dimmer/Flasher Switch
E 19 - Park Light Switch
E 23 - Fog Light Switch
J 7 - Fog Light Relay
J 218 - Instrument Cluster Control Unit (on Processor)
K 13 - Rear Fog Light Indicator Light
K 17 - Fog Light Indicator Light
L 9 - Headlight Switch Light
L 40 - Front And Rear Fog Light Switch Light
L 46 - Left Rear Fog Light
S 2 - Fuse
S 236 - Fuse
T 32 - Connector 32 pin, blue, on instrument cluster

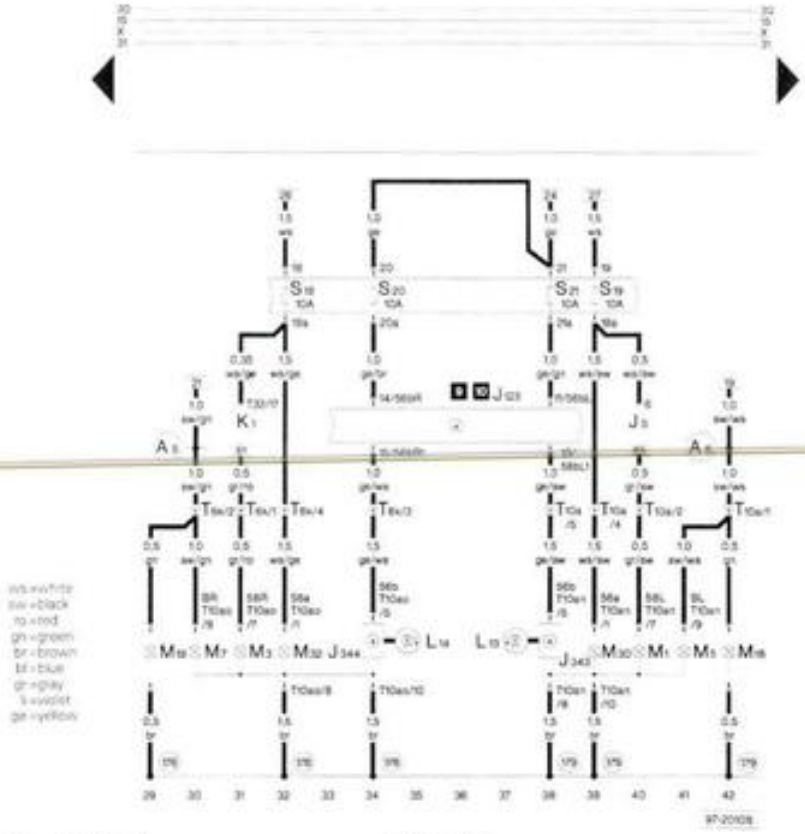
- Ground connection 1, in instrument panel wiring harness
- Wire connection 58c, in instrument panel wiring harness (Switch Illumination)
- Wire connection 30/1, in instrument panel wiring harness
- Wire connection 30/c, in instrument panel wiring harness
- Wire connection 58, in instrument panel wiring harness

* - Chassis number upto 9000
** - Chassis number from 9001

ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

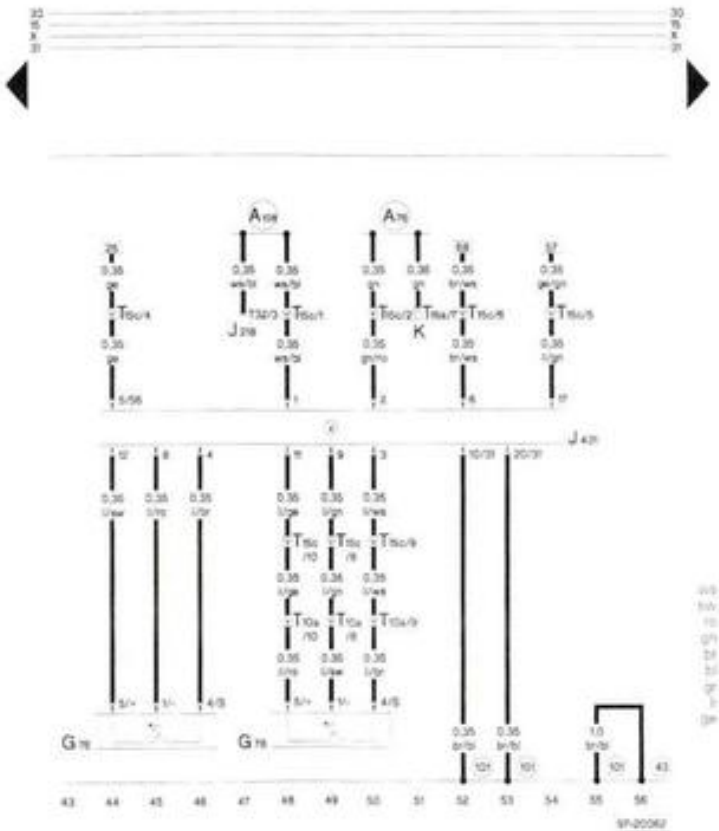






J 5 - Fog Light Relay
J 123 - Lamp Control Module
J 343 - Control Module for high-intensity gas discharge lamp
J 344 - Control Module for high-intensity gas discharge lamp
K 1 - Headlight High Beam Indicator Light
L 13 - High-intensity gas discharge lamp left
L 14 - High-intensity gas discharge lamp right
M 1 - Left Parking Light
M 3 - Right Parking Light
M 5 - Left Front Turn Signal Light
M 7 - Right Front Turn Signal Light
M 18 - Left Side Turn Signal Light
M 19 - Right Side Turn Signal Light
M 30 - Left High Beam Headlight
M 31 - Right High Beam Headlight
S 18 - Fuse
S 19 - Fuse
S 20 - Fuse
S 21 - Fuse
T 6 - Connector 6 pin, pink, connector station A pillar, right
T 10 a - Connector 10 pin, pink, connector station A pillar, left
T 10 al - Connector 10 pin, on headlight, left
T 10 ar - Connector 10 pin, on headlight, right
T 32 - Connector 32 pin, blue, on instrument cluster

- Ground connection, in right headlight wiring harness
- Ground connection, in left headlight wiring harness
- Plus connection (right turn signal), in instrument panel wiring harness
- Plus connection (left turn signal), in instrument panel wiring harness



G 76 - Left Rear Level Control System Sensor
G 78 - Left Front Level Control System Sensor
J 218 - Instrument Cluster Electronics Processor
J 431 - Control Unit for Beam Adjusting
L - DLC Data Link Connector/ Rapid Data Transfer
T 10 a - Connector 10 pin, pink, connector station A pillar, left
T 15 a - Connector 15 pin, white, connector station A pillar, right
T 16 a - Connector 16 pin, data link connector
T 32 - Connector 32 pin, blue, on instrument cluster

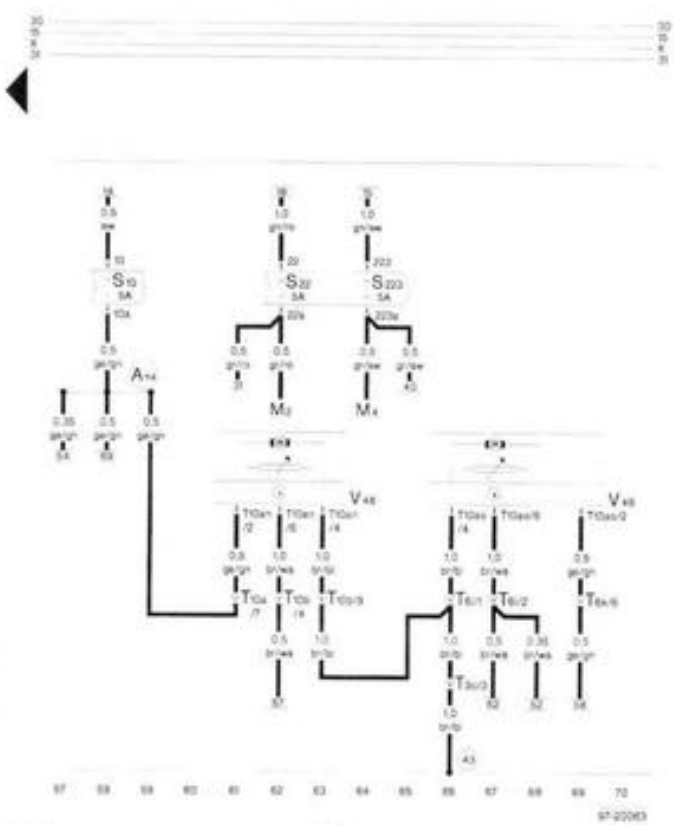
ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

- Ground connection, on right A pillar, lower part
- Ground connection, in headlight range adjustment wiring harness
- Connector (4 diagnostic wire), in instrument panel wiring harness
- Wire connection (vehicle specific option), in instrument panel wiring harness









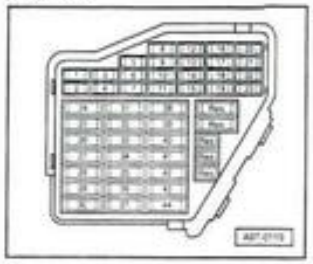
V 2 - Right Tail Light
V 4 - Left Tail Light
S 10 - Fuse
S 22 - Fuse
S 223 - Fuse
T 3 - Connector 3 pin, white, connector station A pillar, right
T 6 - Connector 6 pin, red, connector station A pillar, right
T 6 - Connector 6 pin, pink, connector station A pillar, right
T 10 a - Connector 10 pin, pink, connector station A pillar, left
T 10 li - Connector 10 pin, red, connector station A pillar, left
T 10 ah - Connector 10 pin, on headlight, left
T 10 as - Connector 10 pin, on headlight, right
V 48 - Left Headlight Beam Adjusting Motor
V 49 - Right Headlight Beam Adjusting Motor

- Ground connection, on right A pillar, lower part
- Connection (Beam Adjusting), in instrument panel wiring harness

## Central Locking System/Anti Theft Alarm System/ Ultra-Sound Interior Monitor

**1999 m. y.**

**Fuse Panel**

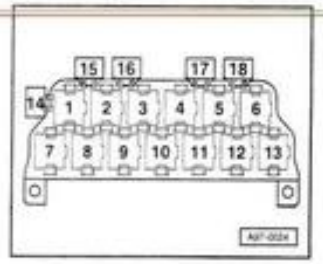


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**13 - Fold Relay Panel**

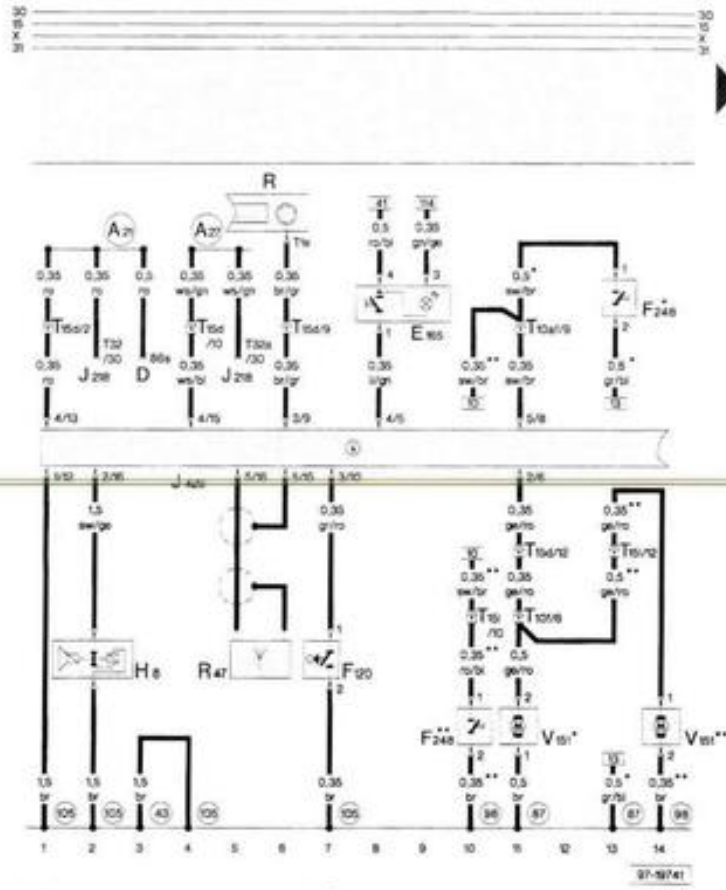



**Relay Location:**

**4** - Starting Interlock Relay, J207





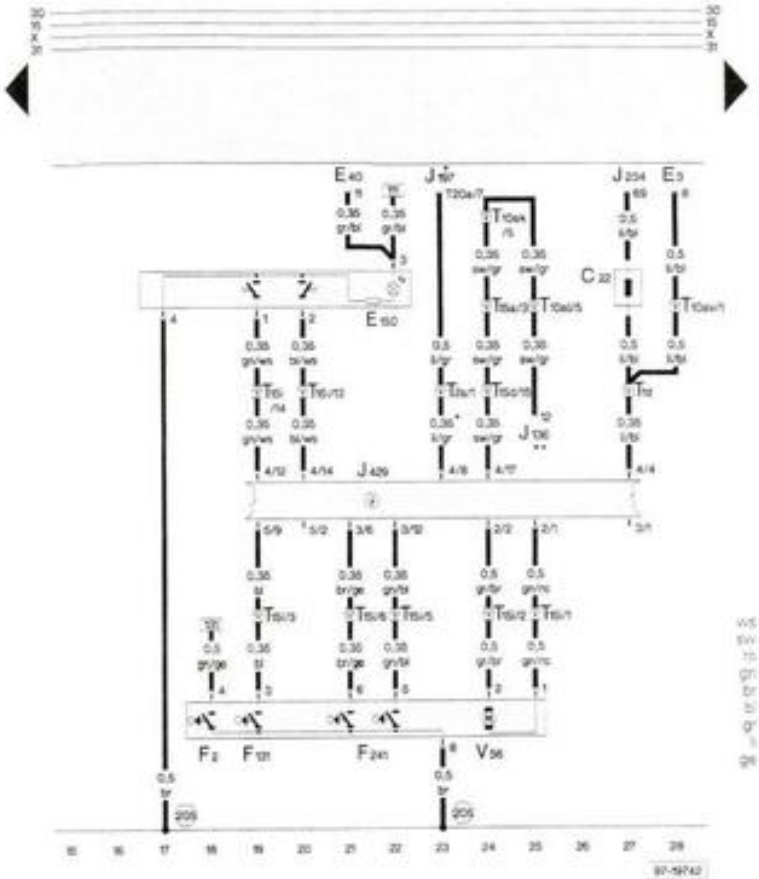



D - Ignition/Starter Switch
E 165 - Trunk Lid Release Switch
F 120 - Hood Alarm Switch
F 248 - Switch for unlocking, rear lid lock cylinder
H 8 - Alarm Horn
J 218 - Instrument Cluster Combination Processor
J 429 - Control module for central locking
R - Radio
R 47 - Antenna wire for central locking and anti-theft warning system
T 1 e - Single connector, on Radio
T 10 f - Connector 10 pin, brown, connector station A pillar, left
T 15 d - Connector 15 pin, black, connector station A pillar, right
T 15 i - Connector 15 pin, black, in luggage compartment
T 32 - Connector 32 pin, blue, on instrument cluster
T 32 a - Connector 32 pin, green, on instrument cluster
V 151 - Motor for remote unlock rear lid

(G) - Ground connection, on right A-pillar, lower part
(G1) - Ground connection -2-, in rear wiring harness
(G2) - Ground connection, in rear lid wiring harness
(G3) - Ground connection -1-, in central locking system wiring harness
(A21) - Wire connection (86s), in instrument panel wiring harness
(A27) - Wire connection (vehicle speed signal), in instrument panel wiring harness

* - only sedan
** - only wagon

**Alarm Horn, Hood Alarm Switch, Antenna wire for Central Locking and Anti-Theft Warning System**



C 22 - Interference filter
E 3 - Emergency Flasher Switch
E 40 - Left Front Window Switch
E 150 - Switch for interior lock, driver side
F 2 - Door Contact Switch - Driver's side
F 131 - Left Front Central Locking System Activator/Switch
F 241 - Switch in door lock, driver's side
J 136 - Memory Seat Control Module
J 197 - Level Control System Control Module
J 234 - Airbag Control Module
J 429 - Control module for central locking
T 1 d - Single connector, brown, connector station A pillar, right
T 2 s - Connector 2 pin, black, connector station A pillar, right
T 10 av - Connector 10 pin, green, connector station A pillar, left
T 10 a - Connector 10 pin, brown, below driver's seat
T 10 av - Connector 10 pin, yellow, connector station A pillar, right
T 15 a - Connector 15 pin, black, connector station A pillar, left
T 15 d - Connector 15 pin, black, connector station A pillar, right
T 15 i - Connector 15 pin, brown, connector station A pillar, left
T 20 a - Connector 20 pin, red, on Control Module for Level Control
V 56 - Driver's Door Central Locking System Motor

(205) - Ground connection, in driver's door wiring harness

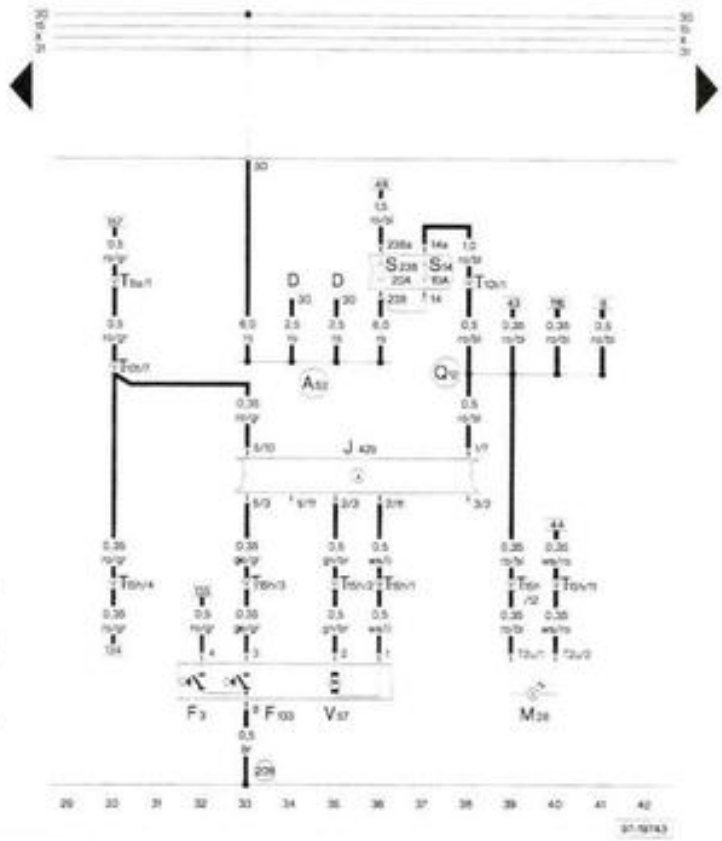
* - Vehicles with Level Control System
** - Vehicles with Memory Seat

ws = white
sw = black
ro = red
gr = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow



**Switch for Interior Lock, Driver Side, Lock Unit for Central Locking, Driver Side**

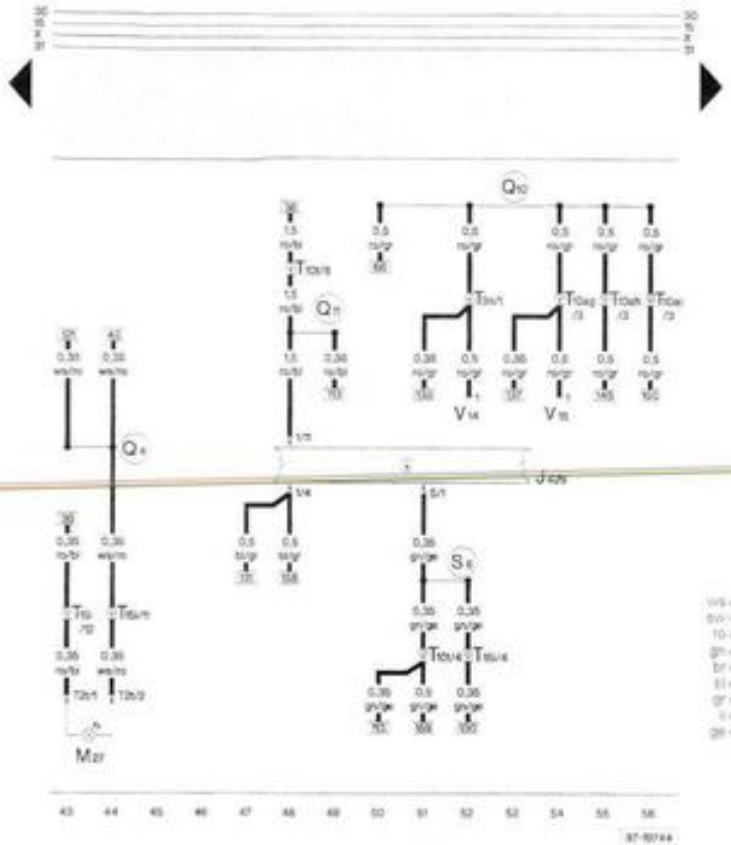




D - Ignition/Starter Switch
F 3 - Door Contact Switch - Passenger side
F 133 - Right Front Central Locking System Activator/Switch
J 429 - Control module for central locking
M 28 - Right Door Warning Light
S 14 - Fuse
S 238 - Fuse
T 2 u - Connector 2 pin, black, in front passenger's door
T 5 a - Connector 5 pin, black, behind instrument panel, right
T 10 t - Connector 10 pin, orange, connector station A pillar, right
T 15 h - Connector 15 pin, brown, connector station A pillar, right
V 57 - Passenger's Door Central Locking System Motor

(24) - Ground connection, in passenger's door wiring harness
(30) - Plus connection (30), in instrument panel wiring harness
(75) - Plus connection (30a), in power windows/central locking system and door contact switch wiring harness

**Lock Unit for Central Locking Passenger Side, Right Door Warning Light**



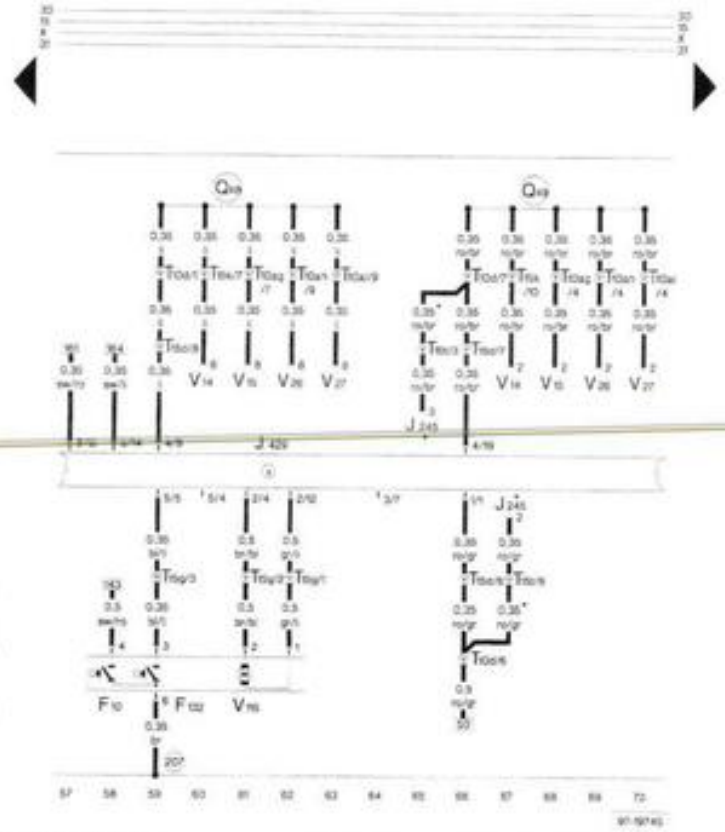
J 428 - Control module for central locking
V 27 - Left Door Warning Light
T 2 - Connector 2 p.n. black, in driver's pipe
T 3 - Connector 3 p.n. red, connector station A pillar, left
T 10 - Connector 10 pin, orange, connector station A pillar, right
T 10 aq - Connector 10 pin, red, connector station A pillar, right
T 10 ah - Connector 10 pin, red, in B pillar, left
T 10 a - Connector 10 pin, red, in B pillar, right
T 19 - Connector 19 pin, brown, connector station A pillar, left
V 14 - Left Window Motor
V 15 - Right Window Motor

Plus connection (30) in power window/central locking system and door contact switch wiring harness
Plus connection (87) in power window/central locking system and door contact switch wiring harness
Plus connection (30a) in power window/central locking system and door contact switch wiring harness
Wire connection (Pin 5/1), in central locking system wiring harness

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow





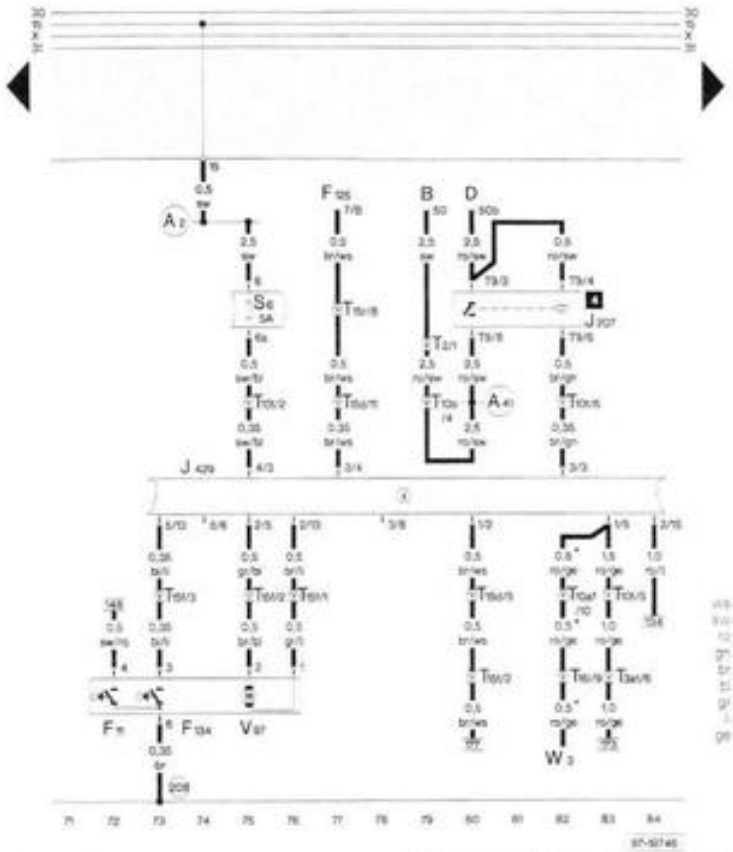


F 10 - Left Rear Door Contact Switch
F 132 - Left Rear Central Locking System Activate/Switch
J 248 - Power Sunroof Control Module
J 429 - Control module for central locking
T 10 a - Connector 10 pin, green, connector station A pillar, left
T 10 aq - Connector 10 pin, red, connector station A pillar, right
T 10 ah - Connector 10 pin, red, in B pillar, left
T 10 a - Connector 10 pin, red, in B pillar, right
T 16 - Connector 16 pin, black, connector station A pillar, right
T 16 - Connector 16 pin, blue, in connector station B pillar, left
T 16 - Connector 16 pin, red, connector station A pillar, left
T 16 - Connector 16 pin, grey, connector station A pillar, left
V 14 - Left Window Motor
V 15 - Right Window Motor
V 26 - Motor for Window Regulator, rear, left
V 27 - Motor for Window Regulator, rear, right
V 115 - Left Rear Central Locking System Motor

Ground connection, in left rear door wiring harness
Connection open, in wiring harness interior
Connection closed, in wiring harness interior

* - Vehicles with Power Sunroof

ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow




wsi = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

B - Starter
D - Ignition/Starter Switch
F 11 - Right Rear Door Contact Switch
F 125 - Multi-Function Transmission Range (TR) Switch
F 134 - Right Rear Central Locking System Activator/Switch
J 207 - Starting Interlock Relay
J 428 - Control module for central locking
S 6 - Fuse
T 2 - Connector 2 pin, grey, in engine compartment, right
T 3 af - Connector 3 pin, grey, connector station A pillar, left
T 9 - Connector 9 pin, brown, on starting interlock relay
T 10 ai - Connector 10 pin, brown, connector station electronic box plenum chamber
T 10 t - Connector 10 pin, orange, connector station A pillar, right
T 10 af - Connector 10 pin, violet, connector station A pillar, left
T 15 di - Connector 15 pin, black, connector station A pillar, right
T 15 f - Connector 15 pin, blue, in connector station B pillar, right
T 15 i - Connector 15 pin, black, in luggage compartment
T 15 r - Connector 15 pin, brown, connector station A pillar, right
V 97 - Double Cab Right Rear Door Central Locking System Motor
W 3 - Luggage Compartment Light

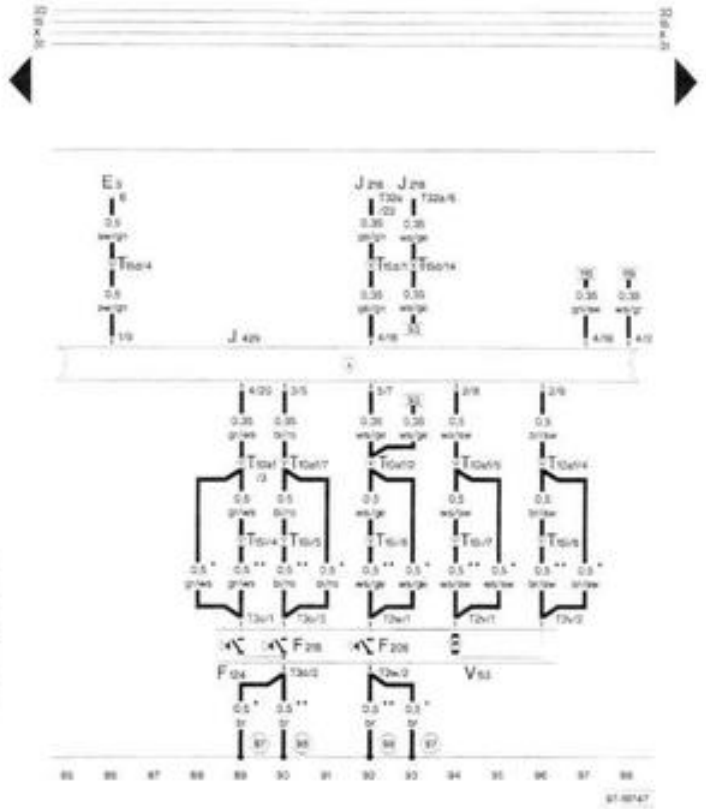
208 - Ground connection, in right rear door wiring harness
N - Plus connection (15), in instrument panel wiring harness
N 52 - Plus connection (52), in instrument panel wiring harness

* - only wagon



Lock Unit for Central Locking, rear, right, Starting Interlock Relay



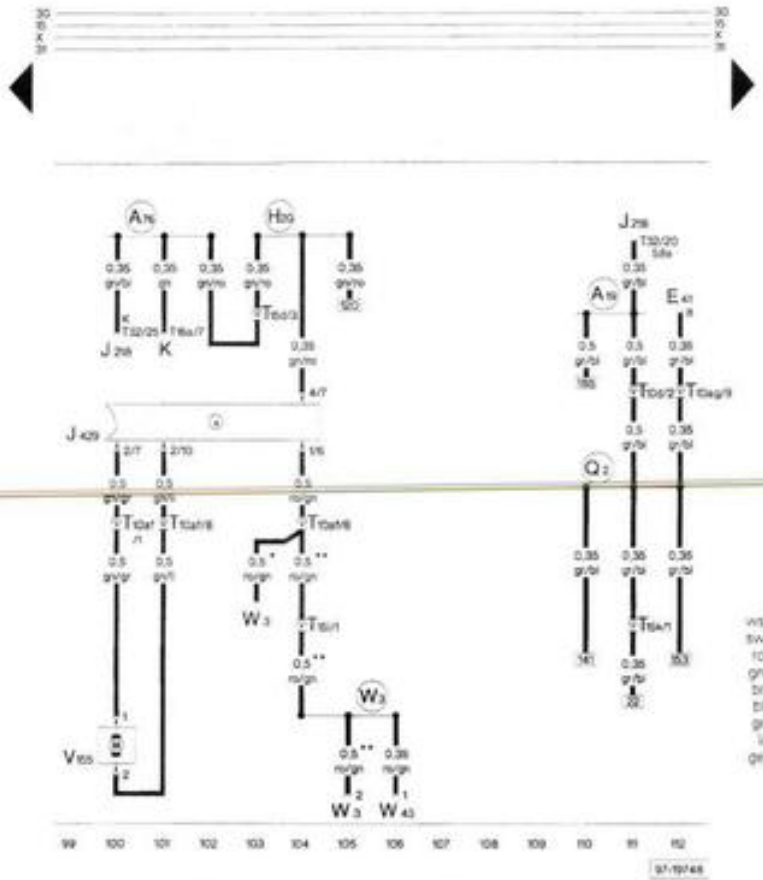



wsi = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

E 3 - Emergency Flasher Switch
F 124 - Trunk Lock Alarm/Central Locking Switch
F 208 - Trunk Lid Closed Position Switch
J 218 - Instrument Cluster Combination Processor
J 428 - Control module for central locking
T 2 - Connector 2 pin, black, luggage compartment
T 2 - Connector 2 pin, grey, luggage compartment
T 3 - Connector 3 pin, black, in rear lid
T 10 af - Connector 10 pin, violet, connector station A pillar, left
T 15 - Connector 15 pin, black, connector station A pillar, right
T 15 - Connector 15 pin, black, in luggage compartment
T 32 - Connector 32 pin, green, on instrument cluster
V 53 - Decklid Central Locking System Motor

87 - Ground connection 2, in rear wiring harness
95 - Ground connection, in rear lid wiring harness

* - only sedan
** - only wagon




E 41 - Right Front Window Switch
J 218 - Instrument Cluster Combination Processor
J 429 - Control module for central locking
K - DLC (Data Link Connector) Rapid Data Transfer
T 10 di - Connector 10 pin, green, connector station A pillar, left
T 10 at - Connector 10 pin, violet, connector station A pillar, left
T 10 ag - Connector 10 pin, red, connector station A pillar, right
T 15 d - Connector 15 pin, black, connector station A pillar, right
T 15 v - Connector 15 pin, red, connector station A pillar, left
T 15 i - Connector 15 pin, black, in luggage compartment
T 16 a - Connector 16 pin, data link connector
T 32 - Connector 32 pin, blue, on instrument cluster
V 155 - Motor for fuel tank lid unlock
W 3 - Luggage Compartment Light
W 43 - Rear courtesy lamp, in rear lid

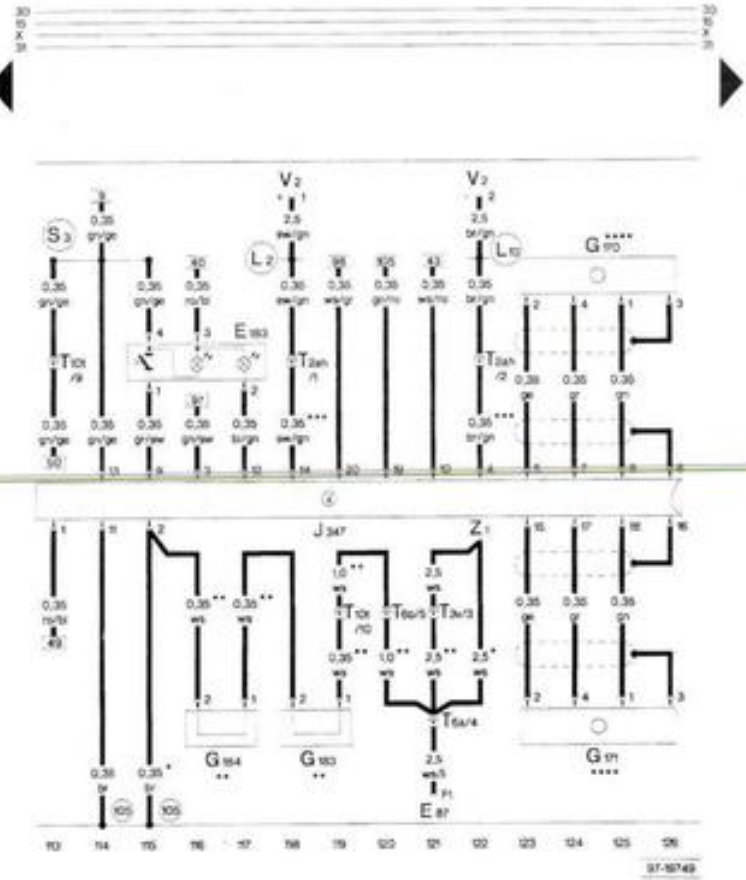
(A76) - Wire connection (58a), in instrument panel wiring harness
(A76) - Connector (K-diagnosis wire), in instrument panel wiring harness
(H39) - Wire connection -1-, in On-Board Diagnostic (OBD) wiring harness
(S2) - Plus connection (58), in power window wiring harness
(W3) - Wire connection, in rear wiring harness

* - only sedan
** - only wagon

**Edition 07/99**
W42.USA.5602.05.21

**Motor for Fuel Tank Lid Unlock**





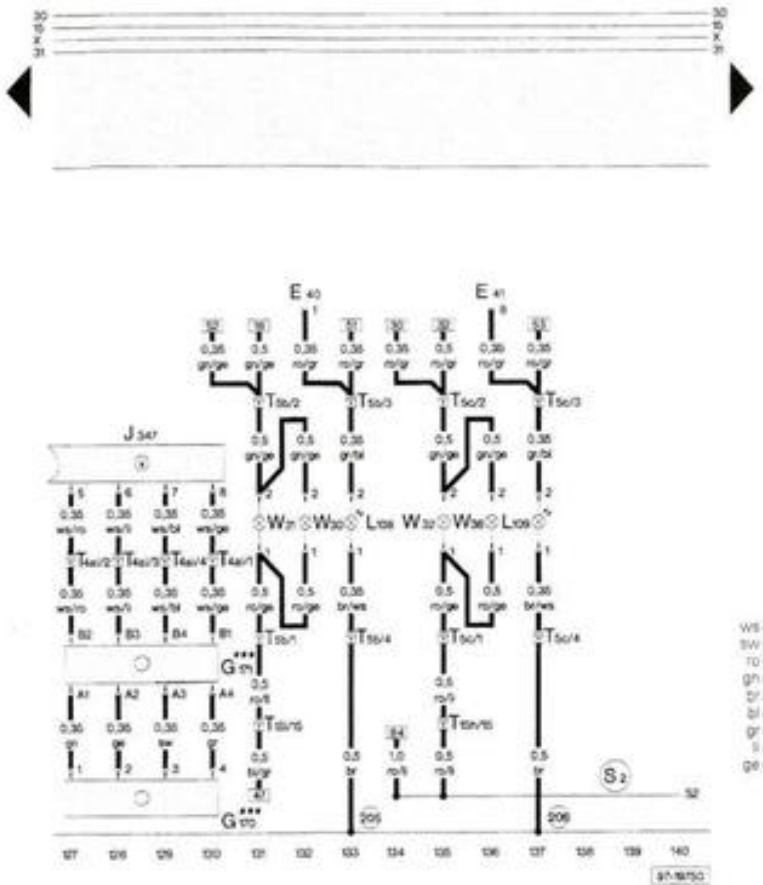

E 87 - A/C Control Head
E 193 - Switch for passenger compartment monitoring
G 170 - Ultra - sound sensor, left for anti-theft warning system
G 171 - Ultra - sound sensor, right for anti-theft warning system
G 193 - Sensor for broken window glass rear left
G 194 - Sensor for broken window glass rear right
J 347 - Control Module for Ultra-Sound sensors
T 2 ah - Connector 2 pin, blue, connector station A pillar, right
T 3 v - Connector 3 pin, black, in luggage compartment
T 6 a - Connector 6 pin, blue, connector station A pillar, left
T 6 b - Connector 6 pin, white, connector station A pillar, left
T 10 t - Connector 10 pin, orange, connector station A pillar, right
V 2 - Fresh Air Blower
Z 1 - Heated rear window

(105) - Ground connection -1-, in central locking system wiring harness
(L) - Wire connection, in A/C wiring harness
(LR) - Wire connection -2-, in A/C wiring harness
(S) - Wire connection -1- (switch/control module), central locking system wiring harness

* - only sedan
** - only wagon
*** - Vehicles with solar cells
**** - Vehicles without head airbag

**Control Module for Ultra-Sound Sensors**

**Edition 07/99**
W42.USA.5602.05.21




ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow

E 40 - Left Front Window Switch
E 41 - Right Front Window Switch
G 170 - Ultra-sound sensor, left for anti-theft warning system
G 171 - Ultra-sound sensor, right for anti-theft warning system
J 347 - Control Module for Ultra-Sound sensors
L 108 - Door Opener Illumination, Driver's Side
L 109 - Door Opener Illumination, Passenger's Side
T 4 a - Connector 4 pin, on C pillar, right
T 5 b - Connector 5 pin, black, in driver's door
T 5 c - Connector 5 pin, black, in passenger's door
T 15 h - Connector 15 pin, brown, connector station A pillar, right
T 15 i - Connector 15 pin, brown, connector station A pillar, left
W 30 - Door warning light, driver side
W 31 - Entry light front, left
W 32 - Entry light front, right
W 36 - Door warning light, passenger side

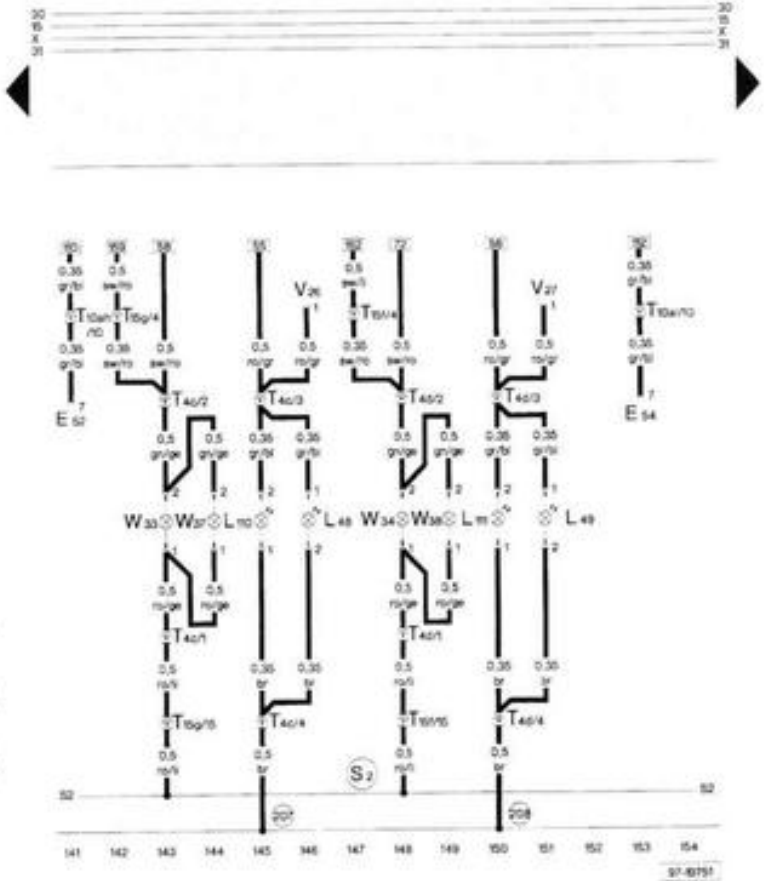
205 - Ground connection, in driver's door wiring harness
206 - Ground connection, in passenger's door wiring harness
52 - Wire connection, in central locking system wiring harness

* - Vehicles with head airbag



**Door Warning Lights Front, Entry Lights Front**



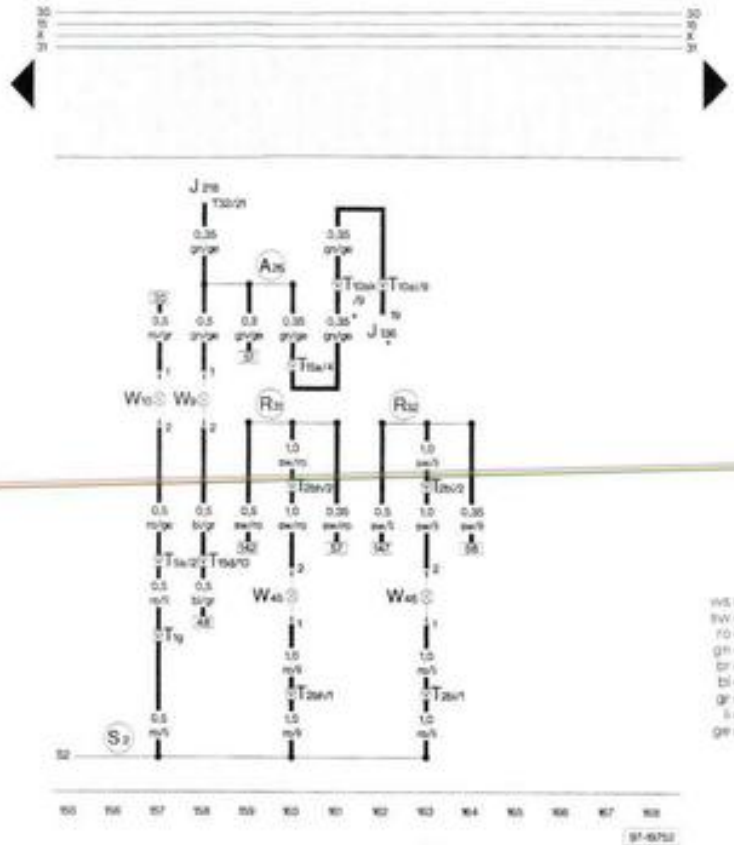



ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =gray
li =violet
ge =yellow

E 52 - Left Rear Window Switch, on LR Door
E 54 - Right Rear Window Switch, on RR Door
L 48 - Left Rear Ashtray Light
L 49 - Right Rear Ashtray Light
L 110 - Door Opener Illumination, rear left
L 111 - Door Opener Illumination, rear right
T 4 c - Connector 4 pin, black, in left rear door
T 4 d - Connector 4 pin, black, in right rear door
T 10 ah - Connector 10 pin, red, in B pillar, left
T 10 ai - Connector 10 pin, red, in B pillar, right
T 15 f - Connector 15 pin, blue, in connector station B pillar, right
T 15 g - Connector 15 pin, blue, in connector station B pillar, left
V 26 - Motor for window regulator, rear, left
V 27 - Motor for window regulator, rear, right
W 33 - Entry light rear, left
W 34 - Entry light rear, right
W 37 - Door warning light rear, left
W 38 - Door warning light rear, right

207 - Ground connection, in left rear door wiring harness
208 - Ground connection, in right rear door wiring harness
52 - Wire connection, in central locking system wiring harness

**Door Warning Lights Rear, Entry Lights Rear**



ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =grey
li =violet
ge =yellow

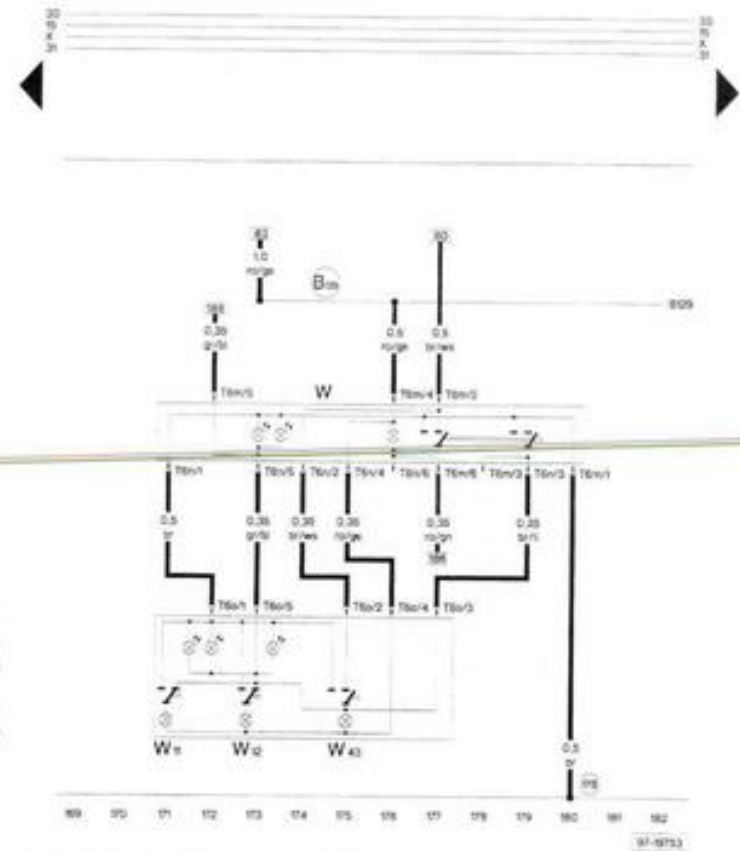
J 136 - Memory Seat Control Module
J 218 - Instrument Cluster Combination Processor
T 1 g - Single connector, black, connector station A pillar, right
T 5 a - Connector 5 pin, black, behind instrument panel, right
T 2 bh - Connector 2 pin, black, below driver's seat
T 2 bi - Connector 2 pin, black, below passenger's seat
T 10 ai - Connector 10 pin, green, connector station A pillar, left
T 10 ai - Connector 10 pin, brown, below driver's seat
T 15 a - Connector 15 pin, black, connector station A pillar, left
T 15 a - Connector 15 pin, black, connector station A pillar, right
T 32 - Connector 32 pin, blue, on instrument cluster
W 9 - Left Footwell Light
W 10 - Right Footwell Light
W 45 - Left Footwell Light, rear
W 46 - Right Footwell Light, rear

(A26) - Wire connection (driver's door contact switch), in instrument panel wiring harness
(R31) - Wire connection -1-, in left rear door wiring harness
(R32) - Wire connection -2-, in right rear door wiring harness
(S) - Wire connection, in central locking system wiring harness

* - Vehicles with Memory Seat



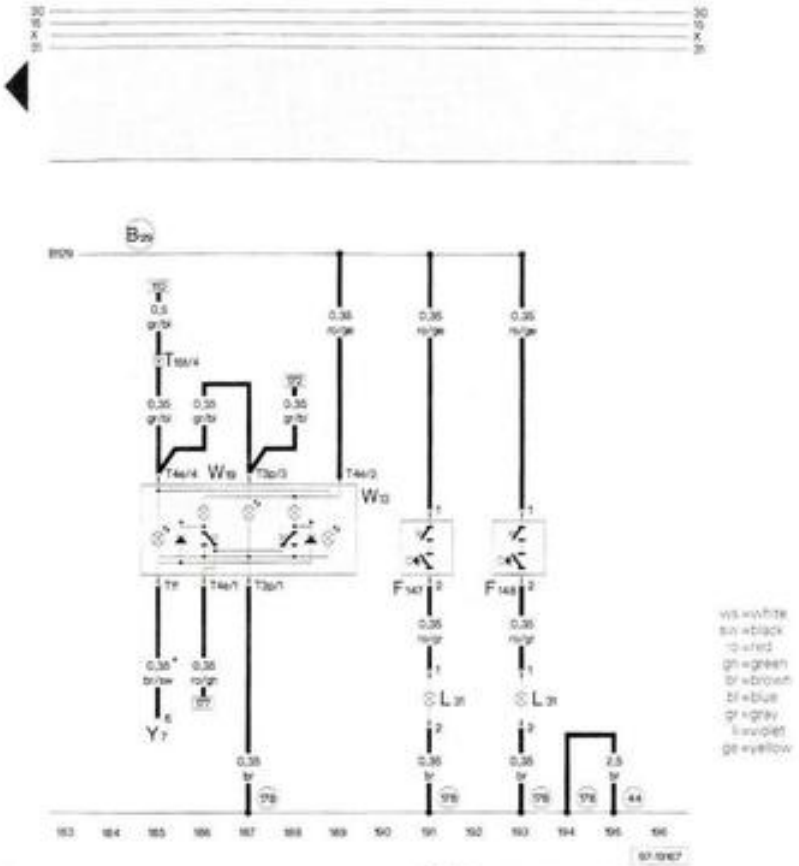




ws =white
sw =black
ro =red
gn =green
br =brown
bl =blue
gr =grey
li =violet
ge =yellow

T 6 m - Connector 6 pin, on interior light, front
T 6 n - Connector 6 pin, on interior light, front
T 6 o - Connector 6 pin, on interior light, rear
W - Front Interior Light
W 11 - Left Rear Reading Light
W 12 - Right Rear Reading Light
W 43 - Rear courtesy lamp

(1) - Ground connection, in sunroof wiring harness
(1/2) - Connector interior light 3/Li, in wiring harness interior




F 147 - Left Make-Up Mirror Light Switch
F 148 - Right Make-Up Mirror Light Switch
L 31 - Make-up Mirror Light
T 1 1 - Single connector, black, on front interior light
T 3 3 - Connector 3 pin, on reading lamp front right
T 4 4 - Connector 4 pin, on reading lamp front left
T 15 1 - Connector 15 pin, grey, connector station A pillar, left
W 13 - Right Front Map/Reading Light
W 19 - Left Front Reading Light
Y 7 - Automatic daylight interior mirror

44 - Ground connection, on left A-pillar, lower part
176 - Ground connection, in sunroof wiring harness
V23 - Connector (interior light 3/L), in wiring harness interior

• - Vehicles with Automatic Dimmer Inside Mirror



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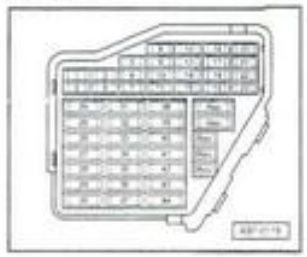
# Daytime Running Lights with Fog Light and Rear Fog Light (Canada)

**1999 m. y.**

**Fuse Panel**

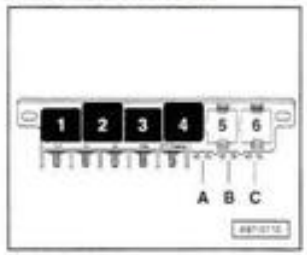


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

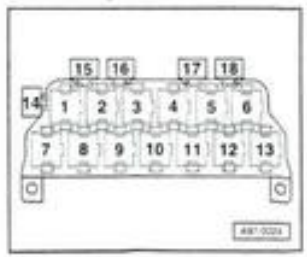
**Micro-Central Electric Panel**




**Relay Location:**

**2** - Load Reduction Relay, J59

**13 - Fold Relay Panel**




**Relay Location:**

**6** - Fog Light Relay, J5

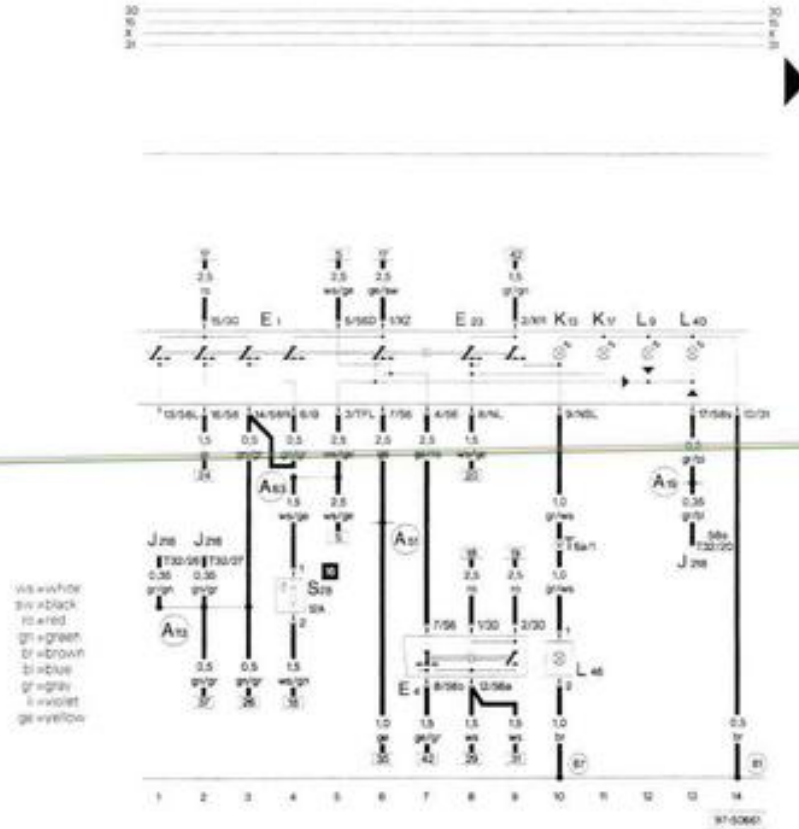
**9** - Lamp Control Module, J123

**10** - Lamp Control Module, J123

**16** - Fog Light Circuit Breaker, S28





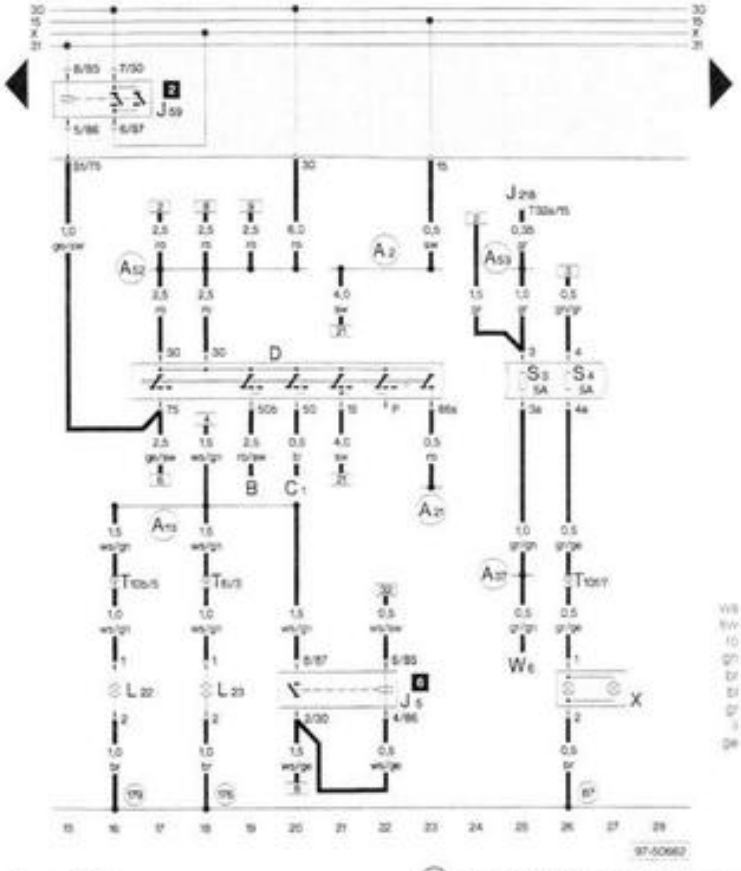



ws = white
sw = black
ro = red
gn = green
br = brown
bl = blue
gr = gray
li = violet
ge = yellow

E 1 - Light switch
E 4 - Headlight Dimmer/Flasher Switch
E 23 - Fog Light Switch
J 218 - Instrument Cluster Combination Processor
K 13 - Rear Fog Light Indicator Light
K 17 - Fog Light Indicator Light
L 9 - Headlight Switch Light
L 40 - Front And Rear Fog Light Switch Light
L 46 - Left Rear Fog Light
S 28 - Fog Light Circuit Breaker
T 6 - Connector 6 pin, blue, connector station A pillar, left
T 32 - Connector 32 pin, blue, on instrument cluster

(X) - Ground connection -1-, in instrument panel wiring harness
(X) - Ground connection -2-, in rear wiring harness
(X) - Wire connection (58c), in instrument panel wiring harness (Switch illumination)
(X) - Wire connection (58), in instrument panel wiring harness
(X) - Connector (daytime running lights), in instrument panel wiring harness
(X) - Connector -2- (daytime running lights), in instrument panel wiring harness

**Light Switch, Front And Rear Fog Light Switch, Headlight Dimmer/Flasher Switch**

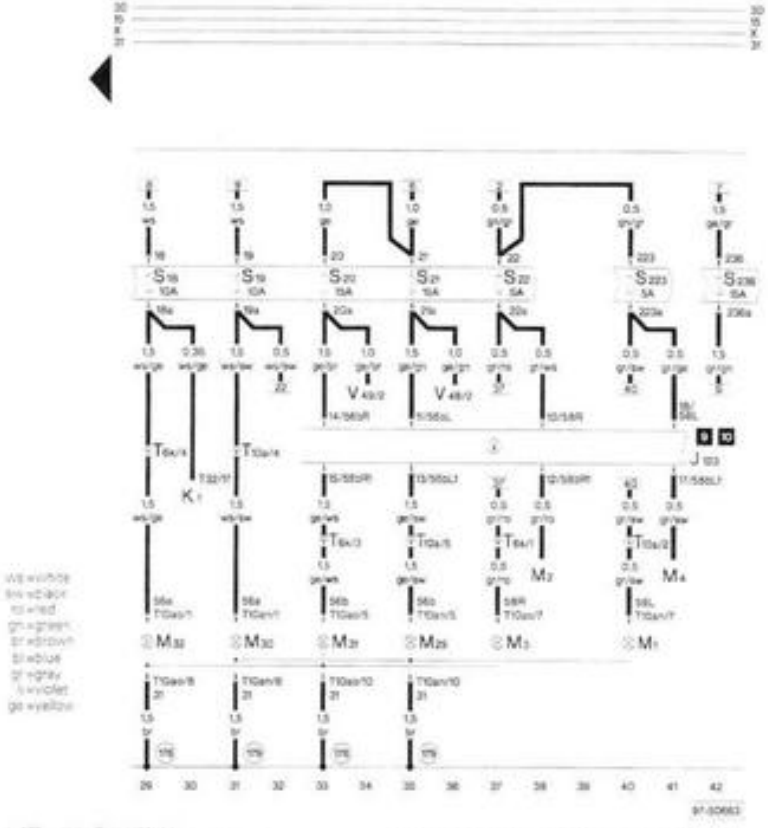


B - Starter
C, C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J 5 - Fog Light Relay
J 59 - Load Reduction Relay
J 218 - Instrument Cluster Combination Processor
L 22 - Left Front Fog Light
L 23 - Right Front Fog Light
S 3 - Fuse
S 4 - Fuse
T 6 - Connector 6 pin, red, connector station A pillar, right
T 10 a - Connector 10 pin, red, connector station A pillar, left
T 10 t - Connector 10 pin, brown, connector station A pillar, left
T 32 a - Connector 32 pin, green, on instrument cluster
W 6 - Glove Compartment Light
X - License Plate Light

(1) - Ground connection -2-, in rear wiring harness
(2) - Ground connection, in right headlight wiring harness
(3) - Ground connection, in left headlight wiring harness
(K) - Plus connection (15), in instrument panel wiring harness
(A) - Wire connection -86a-, in instrument panel wiring harness
(C) - Wire connection -87a-, in instrument panel wiring harness
(D) - Plus connection (30), in instrument panel wiring harness
(S) - Plus connection (58b), in instrument panel wiring harness
(T) - Connection 2 (daytime running light), in instrument panel wiring harness







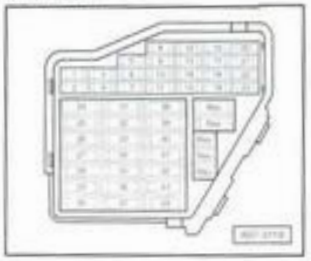
J 123 - Lamp Control Module
K 1 - Headlight High Beam Indicator Light
M 1 - Left Parking Light
M 2 - Right Tail Light
M 3 - Right Parking Light
M 4 - Left Tail Light
M 29 - Left Low Beam Headlight
M 30 - Left High Beam Headlight
M 31 - Right Low Beam Headlight
M 32 - Right High Beam Headlight
S 19 - Fuse
S 20 - Fuse
S 21 - Fuse
S 22 - Fuse
S 223 - Fuse
S 236 - Fuse
T 6 - Connector 6 pin, pink, connector station A pillar, right
T 12 a - Connector 12 pin, pink, connector station A pillar, left
T 12 ar - Connector 12 pin, on headlight, left
T 12 al - Connector 12 pin, on headlight, right
T 32 - Connector 32 pin, blue, on instrument cluster
V 48 - Left Headlight Beam Adjusting Motor
V 49 - Right Headlight Beam Adjusting Motor

(1) - Ground connection, in right headlight wiring harness
(2) - Ground connection, in left headlight wiring harness

# Central Locking System / Anti Theft Alarm System / Ultra-Sound Interior Monitor

2000 m. y.

Fuse Panel

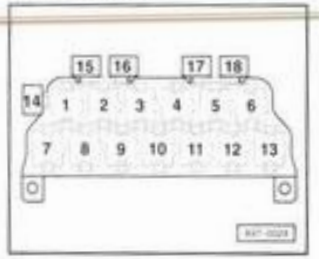


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

13 - Fold Relay Panel

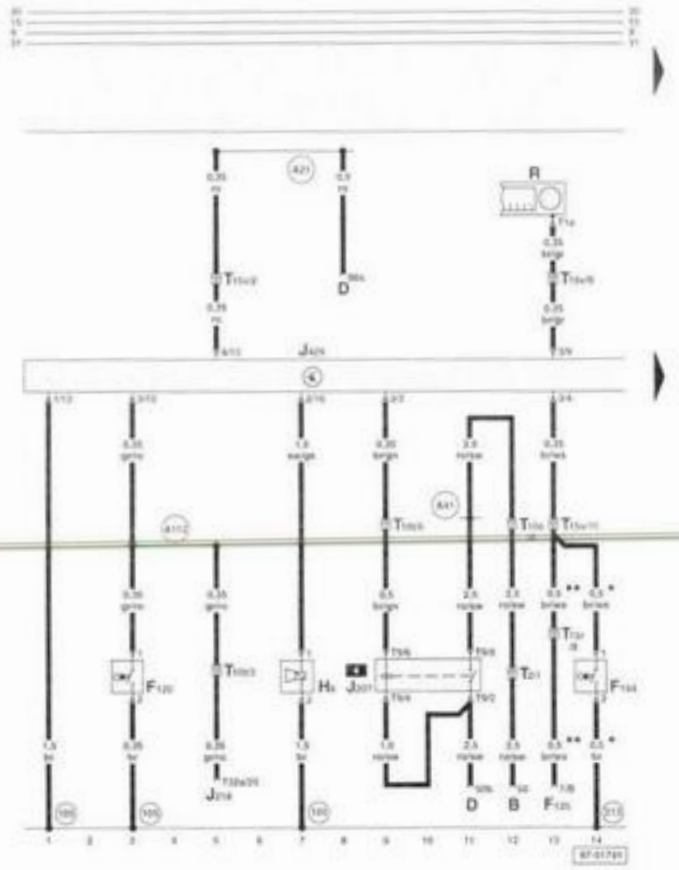



Relay Location:

4 - Starting Interlock Relay, J207



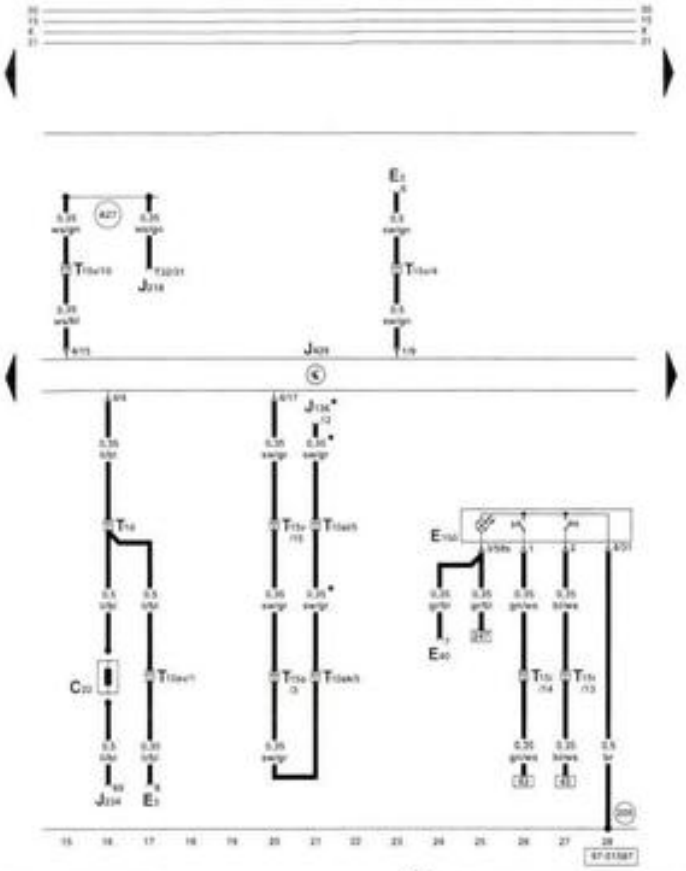





B - Starter
D - Ignition/Starter Switch
F120 - Hood Alarm Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
Hk - Alarm Horn
J207 - Starting Interlock Relay
J218 - Instrument Cluster Combination Processor
J429 - Control module for central locking
R - Radio
T1e - Single connector, on Radio
T2 - Connector 2 pin, grey, in engine compartment, right
T9 - Connector 9 pin, brown, on starting interlock relay
T10u - Connector 10 pin, brown, connector station electronic box plenum chamber
T10t - Connector 10 pin, orange, connector station A pillar, right
T16r - Connector 16 pin, blue, connector station A pillar, right
T16v - Connector 16 pin, orange, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster

(105) - Groundconnection -1-, in central locking system wiring harness
(215) - Groundconnection, in instrument panel wiring harness
(A7) - Wire connection (86s), in instrument panel wiring harness
(A4) - Plus connection (30), in instrument panel wiring harness
(A10) - Connection (driver's cab lock), in instrument panel wiring harness

* - Vehicles with manually shifted transmission
** - Vehicles with automatic transmission



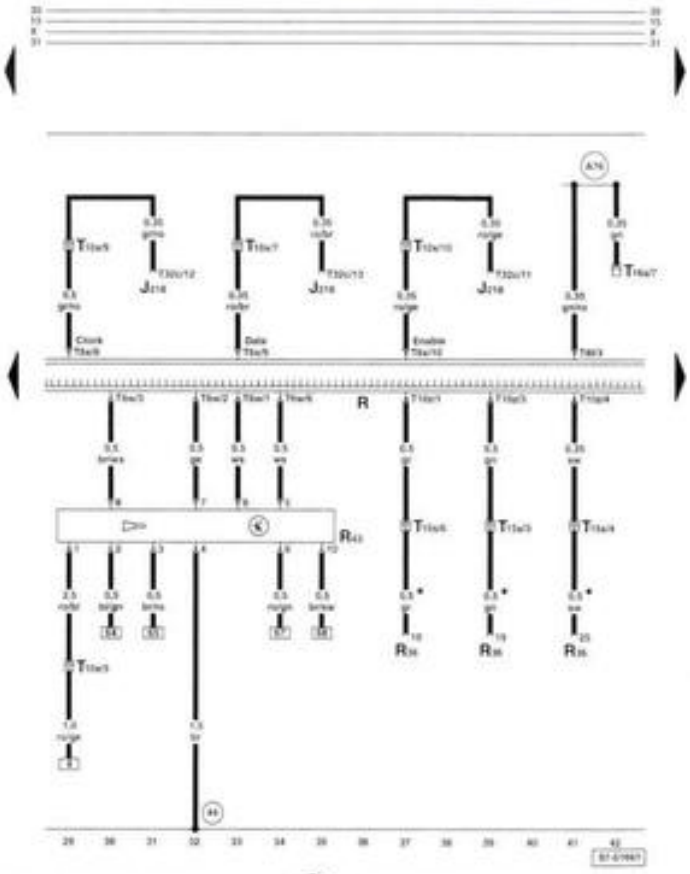
C22 - Interference filter
E3 - Emergency Flasher Switch
E40 - Left Front Window Switch
E150 - Switch for interior lock, driver side
J136 - Memory Seat Control Module
J218 - Instrument Cluster Combination Processor
J234 - Airbag Control Module
J429 - Control module for central locking
T1d - Single connector, brown, connector station A pillar right
T10ak - Connector 10 pin, green, connector station A pillar, left
T10al - Connector 10 pin, brown, below driver's seat
T10av - Connector 10 pin, yellow, connector station A pillar, right
T15a - Connector 15 pin, black, connector station A pillar, left
T15i - Connector 15 pin, brown, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster

- Ground connection, in driver's door wiring harness
- Wire connection (vehicle sided signal), in instrument panel wiring harness
- Vehicles with Memory Seat

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



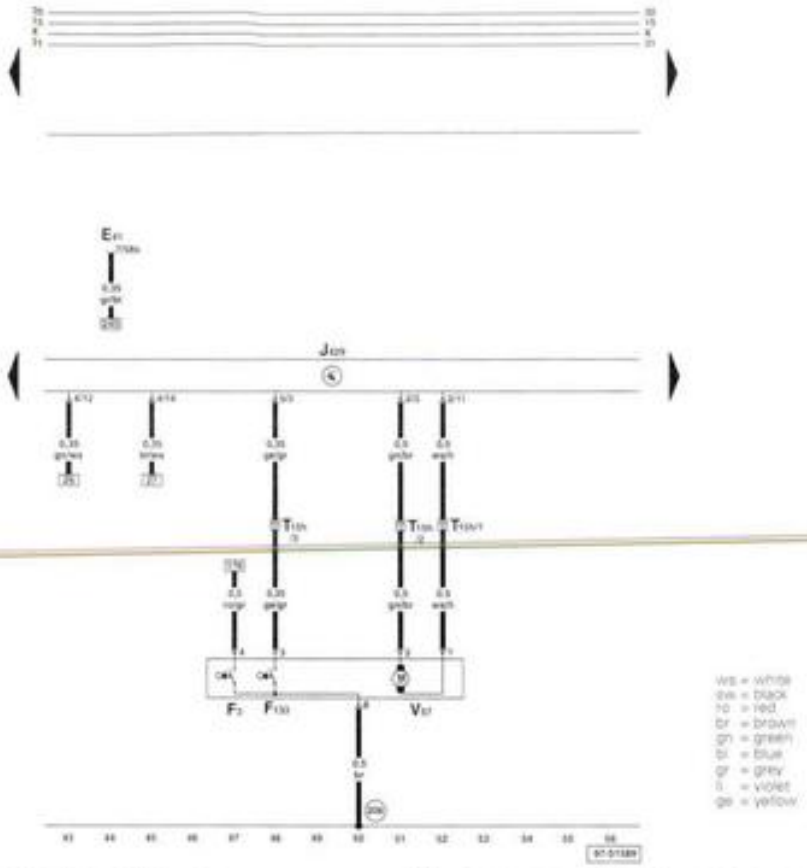




J218 - Instrument Cluster Combination Processor
R - Radio
R36 - Telephone Transceiver
R43 - Right Rear Woofer/Amplifier
T6w - Connector 6 pin, yellow, connector radio I - 1
T6x - Connector 6 pin, green, connector radio I - 2
T6f - Connector 6 pin, black, connector radio III
T10a - Connector 10 pin, green, connector station A pillar, right
T10y - Connector 10 pin, red, connector radio IV
T15a - Connector 15 pin, blue, connector station A pillar, left
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, grey, on instrument cluster

- Ground connection, on left A-pillar, lower part
- Connector (K-diagnosis wire), in instrument panel wiring harness
- Vehicles with Telephone

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

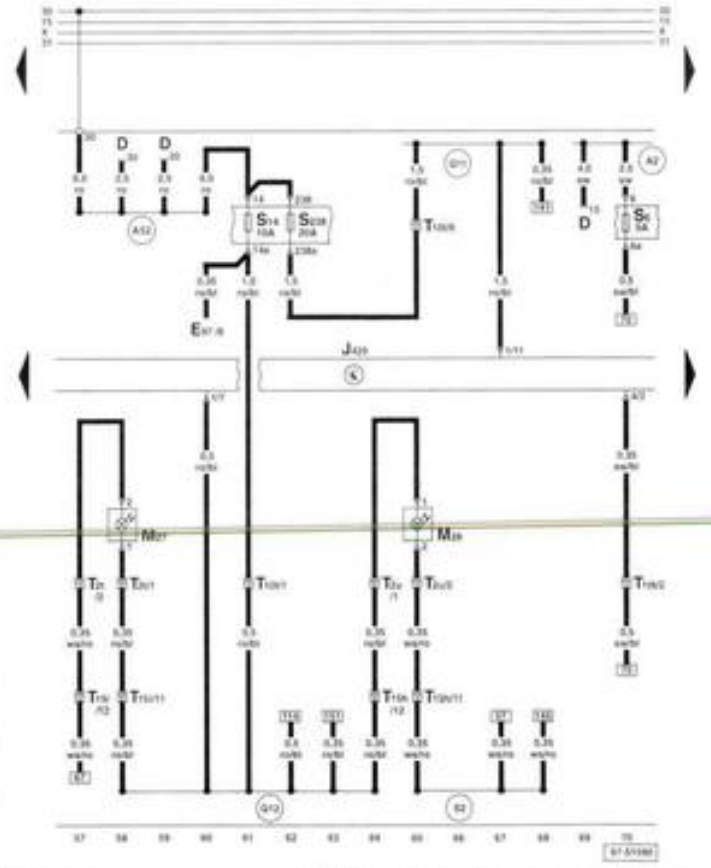
E41 – Right Front Window Switch
F3 – Door Contact Switch - Passenger's side
F120 – Right Front Central Locking System Activator/Switch
J329 – Control module for central locking
T16r – Connector 16 pin, brown, connector station A pillar, right
V97 – Passenger's Door Central Locking System Motor

(206) – Ground connection, in passenger's door wiring harness



**Control Module for Central Locking, Door Contact Switch Passenger's Side**





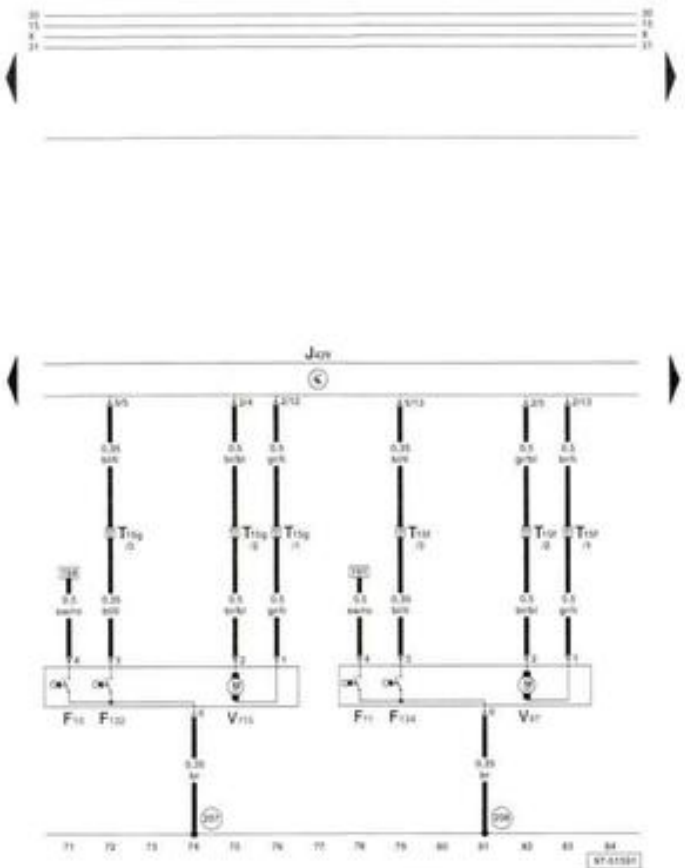
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
E97 – Memory Program Switch
J329 – Control module for central locking
M27 – Left Door Warning Light
M28 – Right Door Warning Light
S6 – Fuse
S14 – Fuse
S239 – Fuse 39 in fuse holder
T2f – Connector 2 pin, black, in driver's door
T2u – Connector 2 pin, black, in front passenger's door
T10r – Connector 10 pin, orange, connector station A pillar, right
T16r – Connector 16 pin, brown, connector station A pillar, right
T16l – Connector 16 pin, brown, connector station A pillar, left

(15) – Plus connection (15), in instrument panel wiring harness
(X) – Plus connection, 2 (30), in instrument panel wiring harness
(30) – Plus connection (30a), in power windows/central locking system and door contact switch wiring harness
(30) – Plus connection (30b), in power windows/central locking system and door contact switch wiring harness
(31) – Wire connection, in central locking system wiring harness



**Control Module for Central Locking, Left and Right Door Warning Light**



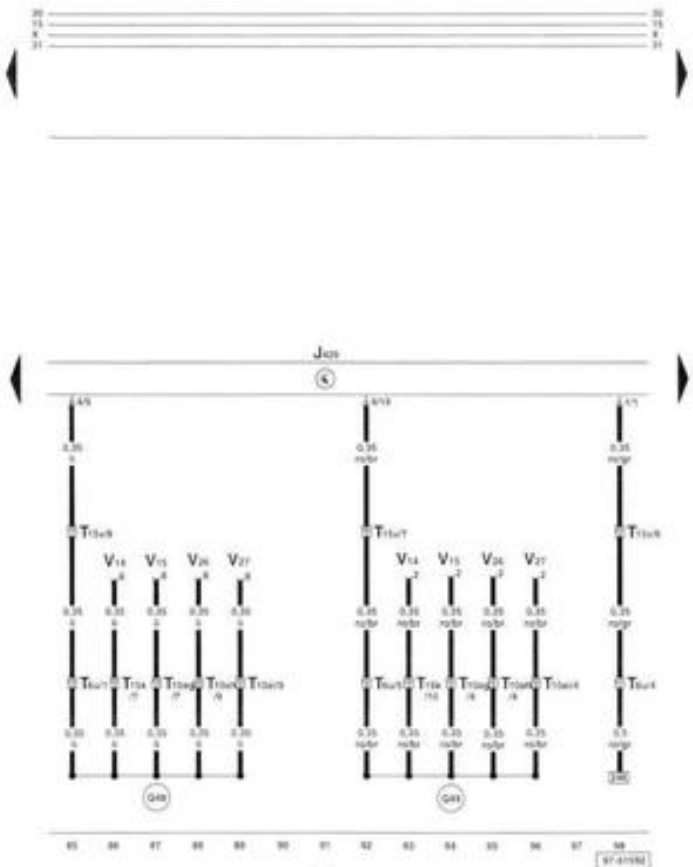
F10 - Left Rear Door Contact Switch
F11 - Right Rear Door Contact Switch
F132 - Left Rear Central Locking System Actuator/Switch
F134 - Right Rear Central Locking System Actuator/Switch
J429 - Control module for central locking
T15f - Connector 15 pin, blue, in connector station B pillar, right
T15g - Connector 15 pin, blue, in connector station B pillar, left
V97 - Double Cab Right Rear Door Central Locking System Motor
V115 - Left Rear Central Locking System Motor

(367) - Ground connection, in left rear door wiring harness
(206) - Ground connection, in right rear door wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

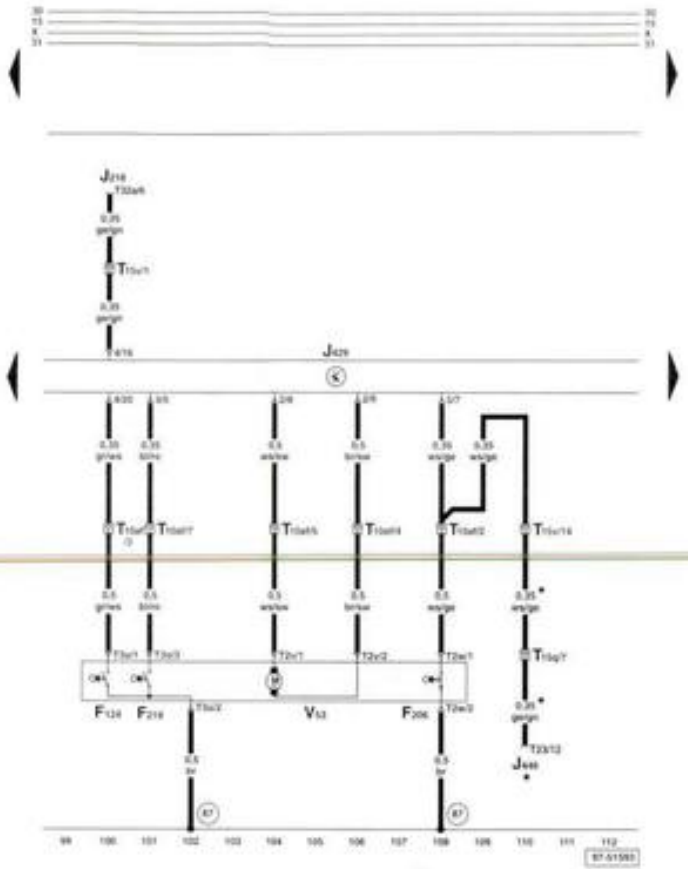






J429 - Control module for central locking
T6c - Connector 6 pin, grey, connector station A pillar, left
T10eg - Connector 10 pin, red, connector station A pillar, right
T10eh - Connector 10 pin, red, in B pillar, left
T10ei - Connector 10 pin, red, in B pillar, right
T15e - Connector 15 pin, red, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
V14 - Left Window Motor
V15 - Right Window Motor
V26 - Left Rear Door Window Motor
V27 - Right Rear Door Window Motor

(349) - Connection (open), in wiring harness interior
(349) - Connection (closed), in wiring harness interior



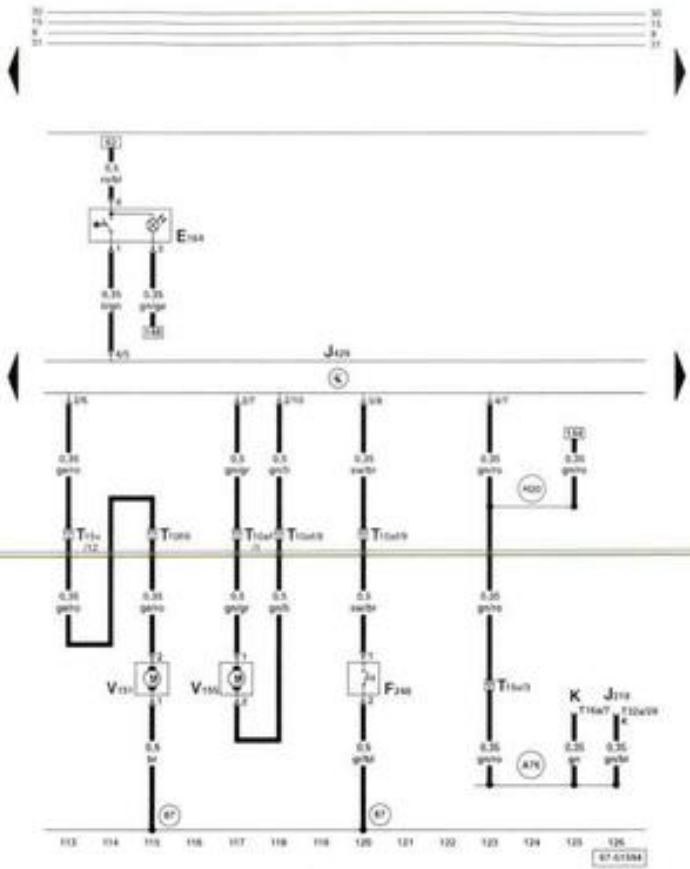
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F124 - Trunk Lock Alarm/Central Locking Switch
F206 - Trunk Lid Closed Position Switch
F218 - Switch for central locking, trunk lid
J218 - Instrument Cluster Combination Processor
J429 - Control module for central locking
J446 - Control module for parking aid
T2v - Connector 2 pin, black, luggage compartment
T2w - Connector 2 pin, grey, luggage compartment
T3o - Connector 3 pin, black, in rear lid
T10af - Connector 10 pin, violet, connector station A pillar, left
T15q - Connector 15 pin, white, connector station A pillar, right
T15v - Connector 15 pin, orange, connector station A pillar, right
T23 - Connector 23 pin, black, on control module for parking aid
T32a - Connector 32 pin, green, on instrument cluster
V53 - Decklid Central Locking System Motor

- Ground connection -2-, in rear wiring harness
- Vehicles with parking aid



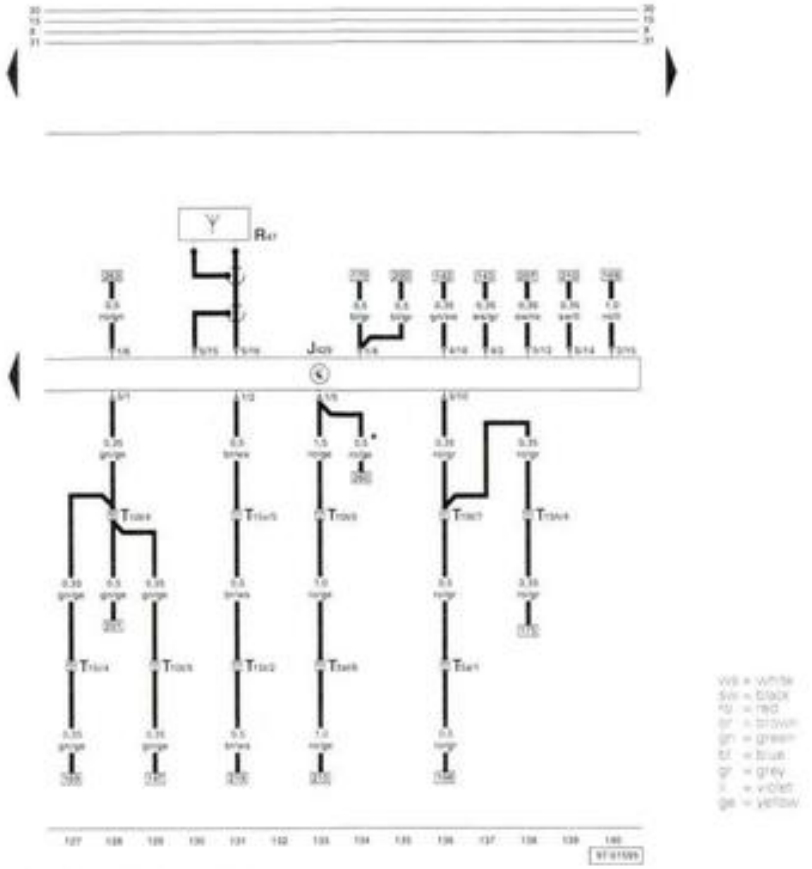




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E164 - Luggage Compartment Release Switch
F248 - Switch for unlocking, rear lid lock cylinder
J218 - Instrument Cluster Combination Processor
J429 - Control module for central locking
K - Data Link Connector (DLC) Rapid Data Transfer
T2f - Connector 10 pin, brown, connector station A pillar, left
T10af - Connector 10 pin, violet, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
T16a - Connector 16 pin, data link connector
T32a - Connector 32 pin, green, on instrument cluster
V151 - Motor for remote unlock rear lid
V155 - Motor for fuel tank lid unlock

- Ground connection -2-, in rear wiring harness
- Connector (K-diagnosis wire), in instrument panel wiring harness
- Wire connection -1-, in On-Board Diagnostic (OBD) wiring harness



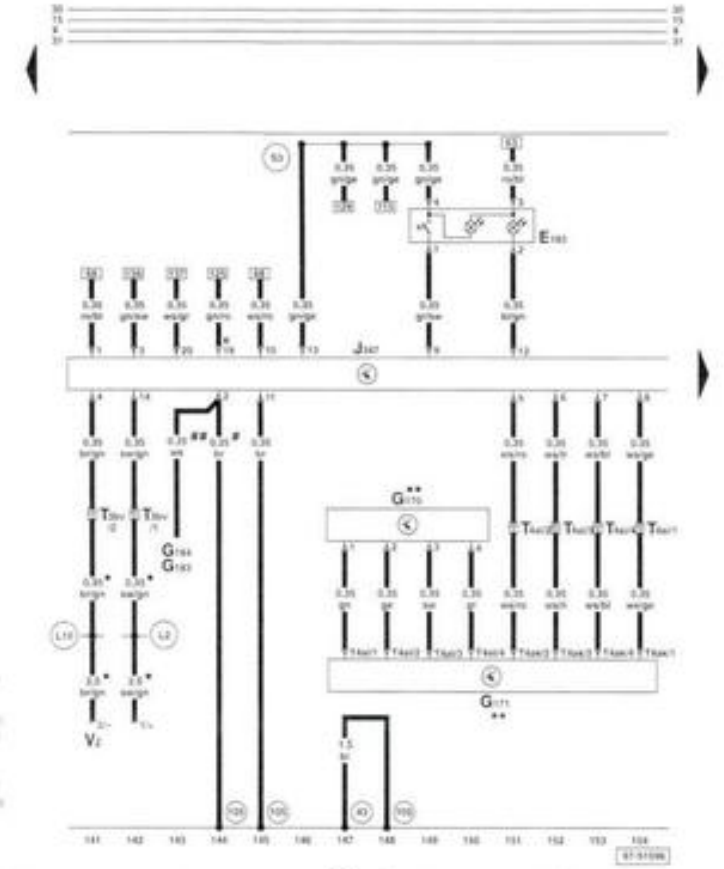
ws = white
sw = black
ro = red
br = brown
gr = green
bl = blue
gr = grey
li = violet
ge = yellow

J429 – Comfort module for central locking
R47 – Window antenna for central locking and anti-theft warning system
T3d – Connector 3 pin, grey, connector station A pillar, left
T5k – Connector 5 pin, black, behind instrument panel, right
T10r – Connector 10 pin, orange, connector station A pillar, right
T10s – Connector 10 pin, brown, connector station A pillar, right
T10t – Connector 10 pin, brown, connector station A pillar, left
T10u – Connector 10 pin, grey, connector station A pillar, left
T10v – Connector 10 pin, orange, connector station A pillar, right

* – Wagon





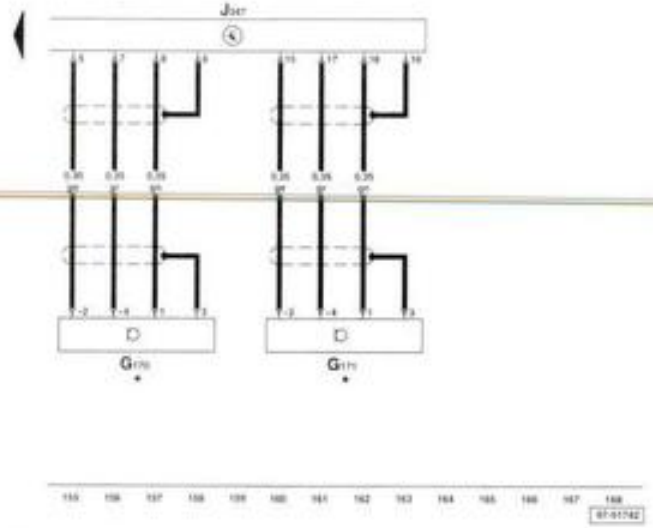


ws = white
sw = black
ro = red
br = brown
gr = green
bl = blue
gr = grey
li = violet
ge = yellow

E193 – Switch for passenger compartment monitoring
G769 – Interior Monitoring sensor, left for anti-theft warning system
G771 – Interior Monitoring sensor, right for anti-theft warning system
G183 – Sensor for brown window glass rear left
G184 – Sensor for brown window glass rear right
J347 – Control Module for Interior Monitoring sensors
T3bv – Connector 3 pin, orange, connector station A pillar right
T4w – Connector 4 pin, on C pillar, right
T4ax – Connector 4 pin, on interior monitoring sensor, right
T4ay – Connector 4 pin, on interior monitoring sensor, right
V2 – Fresh Air Blower

Ground connection, on right A-pillar, lower part
Ground connection -1-, in central locking system wiring harness
Wire connection, in A/C wiring harness
Wire connection -2-, in A/C wiring harness
Wire connection -1- (switch)/control modules, central locking system wiring harness

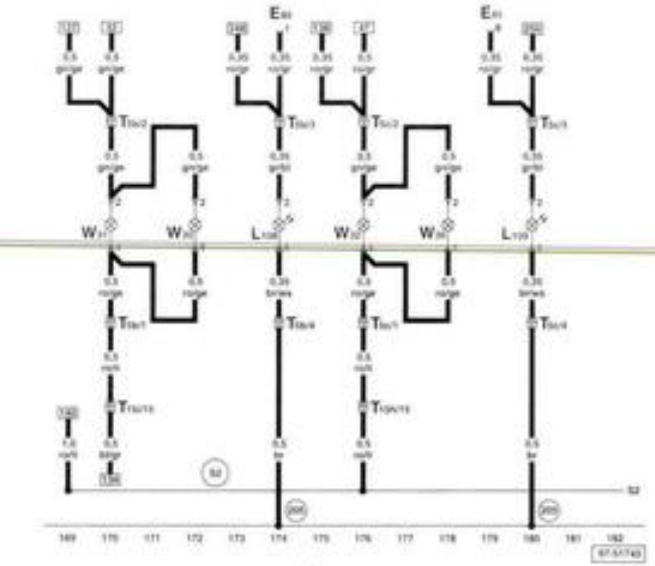
* – Vehicles with Sunroof with Solar Cells
** – Vehicles with head airbag
\# – Sedan
\## – Wagon




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G170 - Interior Monitoring sensor, left for anti-theft warning system
G171 - Interior Monitoring sensor, right for anti-theft warning system
J347 - Control Module for Interior Monitoring sensors

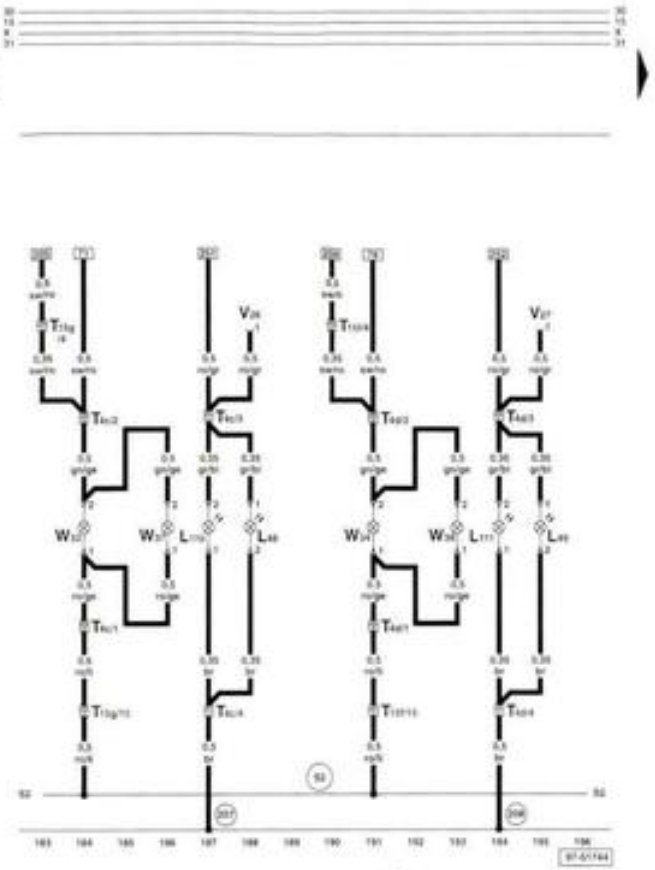
• - Vehicles without head airbag




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E40 - Left Front Window Switch
E41 - Right Front Window Switch
L108 - Door opener lighting, driver side
L109 - Door opener lighting, passenger side
T5b - Connector 5 pin, black, in driver's door
T5c - Connector 5 pin, black, in passenger's door
T16h - Connector 16 pin, brown, connector station A pillar, right
T16i - Connector 16 pin, brown, connector station A pillar, left
W30 - Door Warning Light
W31 - Entry light front, left
W32 - Entry light front, right
W36 - Door warning light, passenger side

(xx) - Ground connection, in driver's door wiring harness
(xx) - Wire connection, in central locking system wiring harness



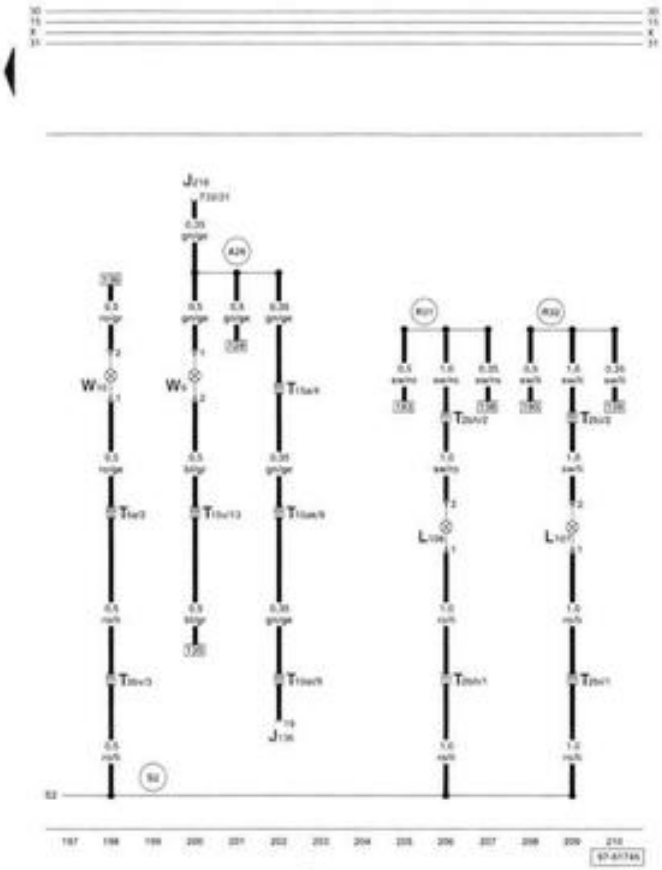
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

L49 - Left Rear Ashtray Light
L49 - Right Rear Ashtray Light
L110 - Door opener lighting, left rear
L111 - Door opener lighting, right rear
T4c - Connector 4 pin, black, in left rear door
T4d - Connector 4 pin, black, in right rear door
T15f - Connector 15 pin, blue, in connector station B pillar, right
T15g - Connector 15 pin, blue, in connector station B pillar, left
V26 - Left Rear Door Window Motor
V27 - Right Rear Door Window Motor
W33 - Entry light rear, left
W34 - Entry light rear, right
W37 - Door warning light rear, left
W38 - Door warning light rear, right

- Ground connection, in left rear door wiring harness
- Ground connection, in right rear door wiring harness
- Wire connection, in central locking system wiring harness



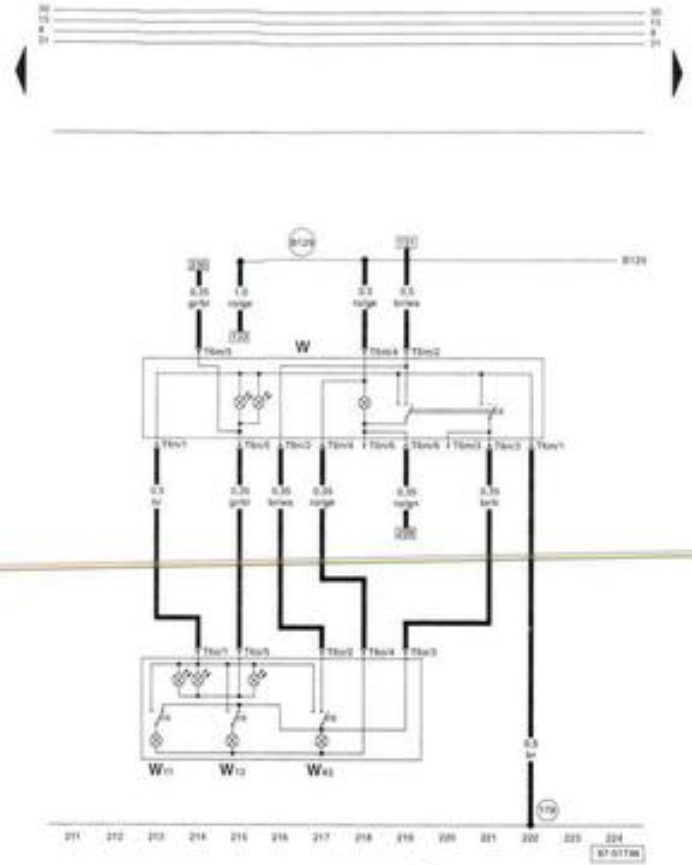




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J136 - Memory Seat Control Module
J218 - Instrument Cluster Combination Processor
L106 - Footwell lighting, left rear
L107 - Footwell lighting, right rear
T2bh - Connector 2 pin, black, below driver's seat
T2fs - Connector 2 pin, black, below passenger's seat
T3bw - Connector 3 pin, orange, connector station A pillar, right
T5a - Connector 5 pin, black, behind instrument panel, right
T10ak - Connector 10 pin, green, connector station A pillar, left
T10w - Connector 10 pin, brown, below driver's seat
T15a - Connector 15 pin, black, connector station A pillar, left
T15y - Connector 15 pin, orange, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
W9 - Left Footwell Light
W10 - Right Footwell Light

- Wire connection driver's door contact switch, in instrument panel wiring harness
- Wire connection -1-, in left rear door wiring harness
- Wire connection -2-, in right rear door wiring harness
- Wire connection, in central locking system wiring harness



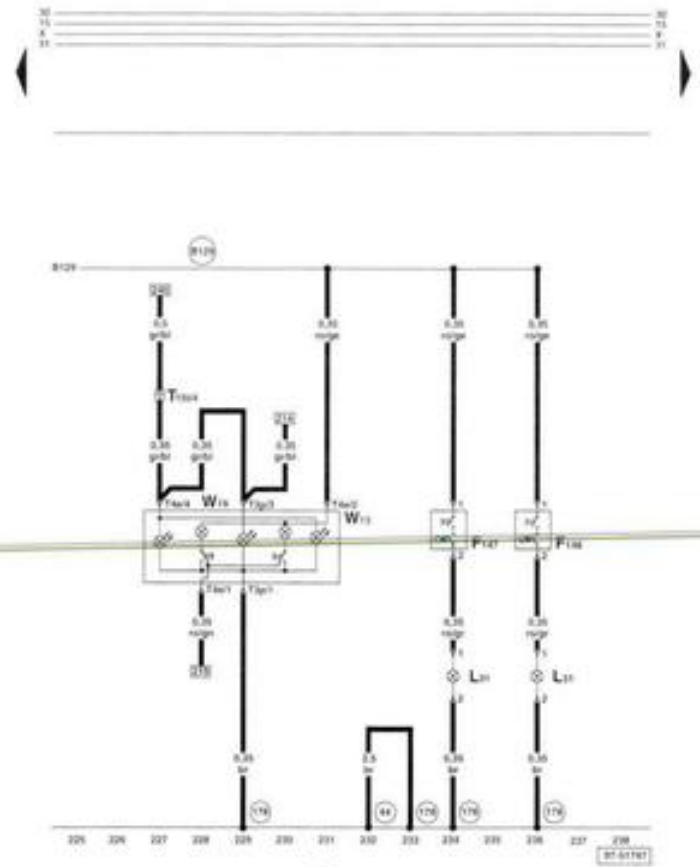
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

T6m – Connector 6 pin, on interior light, front
T6n – Connector 6 pin, on interior light, front
T6o – Connector 6 pin, on interior light, rear
W – Front Interior Light
W11 – Left Rear Reading Light
W12 – Right Rear Reading Light
W43 – Rear courtesy lamp

– Ground connection, in sunroof wiring harness
– Connector interior light 31(L), in wiring harness interior



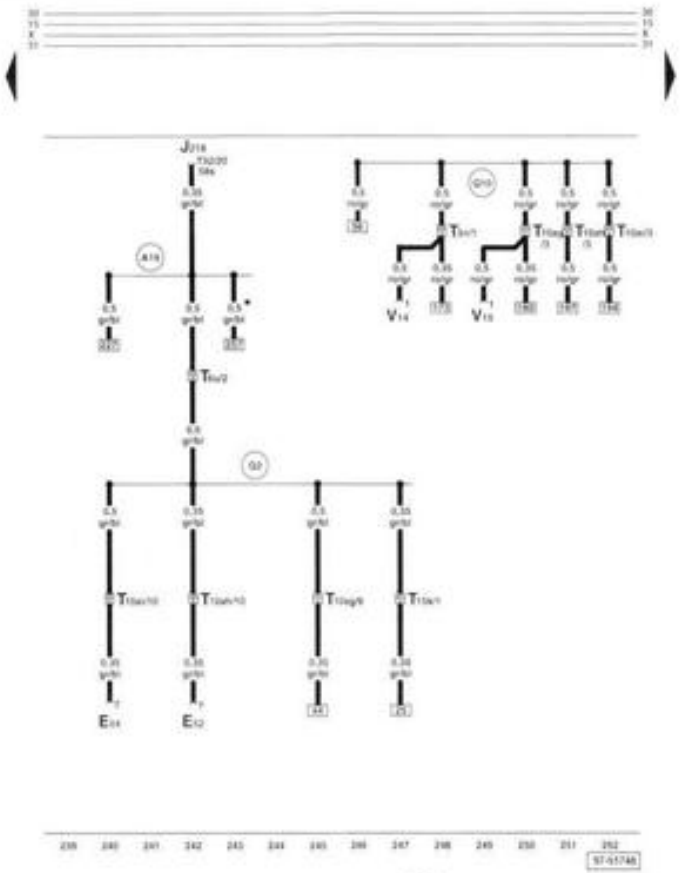




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F14T – Left Make-Up Mirror Light Switch
F14B – Right Make-Up Mirror Light Switch
L31 – Make-up Mirror Light
T3c – Connector 3 pin, on reading lamp front right
T4e – Connector 4 pin, on reading lamp front left
T15i – Connector 15 pin, grey, connector station A pillar, left
W13 – Right Front Map/Reading Light
W19 – Left Front Reading Light

– Ground connection, on left A-pillar, lower part
– Ground connection, in sunroof wiring harness
– Connector interior light 31(L), in wiring harness interior



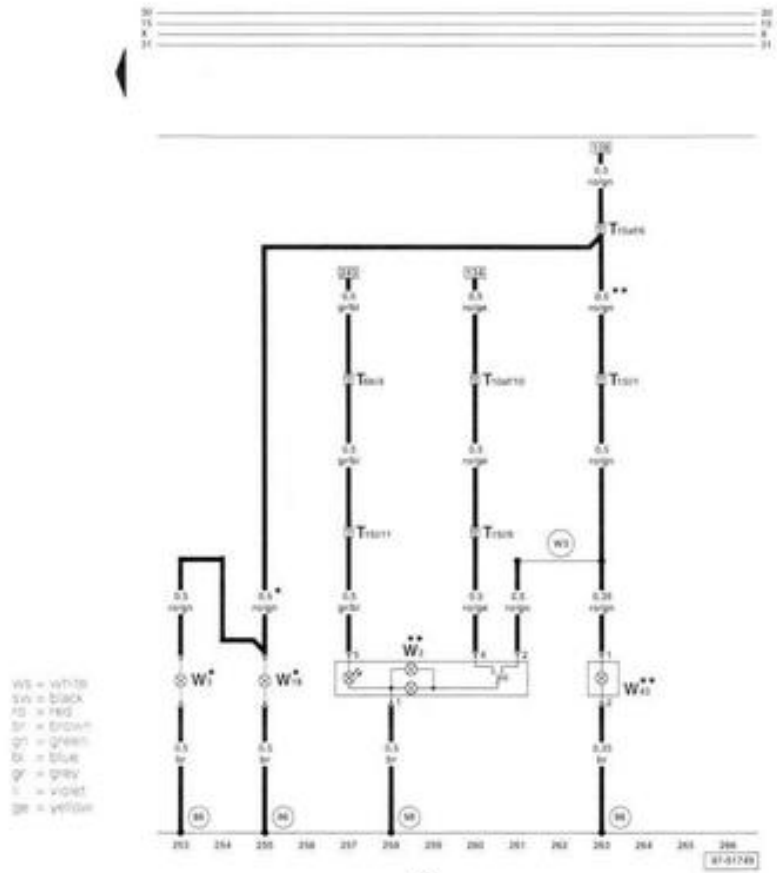
E52 - Left Rear Window Switch, in LR Door
E54 - Right Rear Window Switch, in RR Door
J218 - Instrument Cluster Combination Processor
T2r - Connector 2 pin, red, connector station A pillar, left
T6c - Connector 6 pin, grey, connector station A pillar, left
T10ag - Connector 10 pin, red, connector station A pillar, right
T10eh - Connector 10 pin, red, in B pillar, left
T10ei - Connector 10 pin, red, in B pillar, right
T15s - Connector 15 pin, red, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
V14 - Left Window Motor
V15 - Right Window Motor

- Wire connection (58s), in instrument panel wiring harness
- Plus connection (58s), in power window wiring harness
- Plus connection (87), in power window/central locking system and door contact switch wiring harness
- Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow







T8h - Connector 8 pin, white, connector station A pillar, left
T10at - Connector 10 pin, violet, connector station A pillar, left
T15i - Connector 15 pin, black, in luggage compartment
W3 - Luggage Compartment Light
W16 - Left Luggage Compartment Light
W43 - Rear courtesy lamp

- Ground connection -1-, in rear wiring harness
- Ground connection, in rear lid wiring harness
- Wire connection, in rear wiring harness

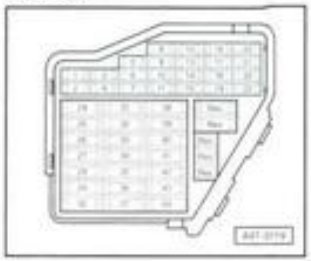
* - only Sedan
** - only Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

## Radio-Stereo, Concert with and without CD-Changer

**2000 m. y.**

**Fuse Panel**

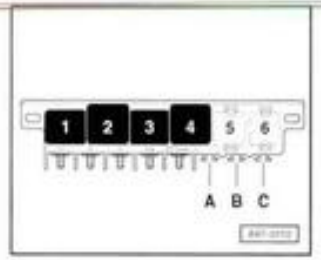


**Fuse Colors:**

| | | |
|---|---|---|
| 30 | A | Green |
| 25 | A | White |
| 20 | A | Yellow |
| 15 | A | Blue |
| 10 | A | Red |
| 7.5 | A | Brown |
| 5 | A | Beige |

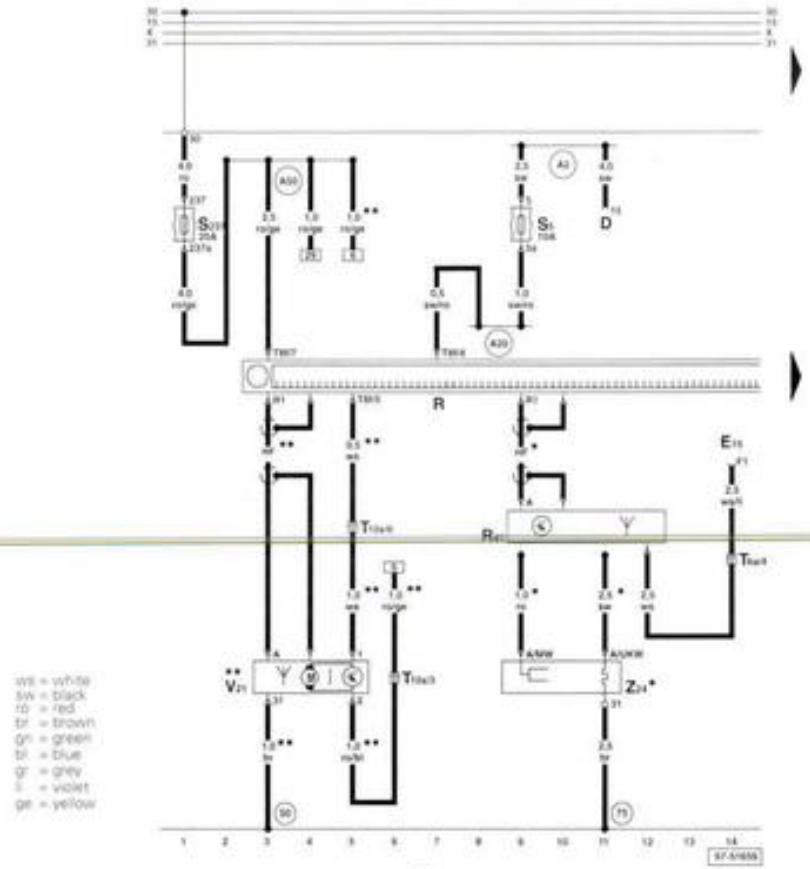
Starting with fuse position 23, fuses in the fuse holder are identified with Z23 in the wiring diagram.

**Micro Central Electric Panel**





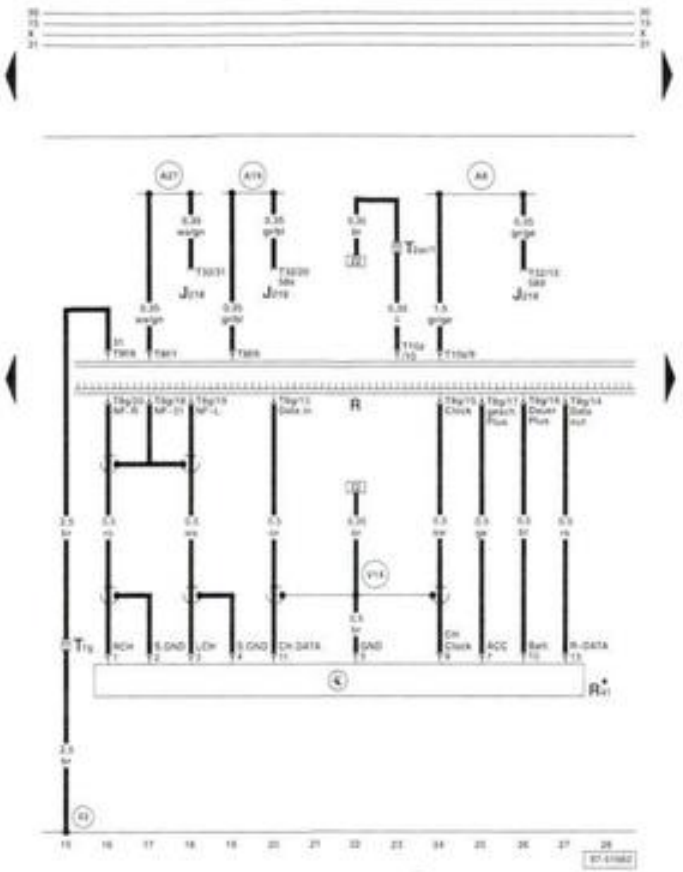



D - Ignition/Starter Switch
E15 - Rear Window Defogger Switch
R - Radio
R1 - Antenna Connection
R45 - Telephone/Radio Antenna Amplifier
S5 - Fuse
S237 - Fuse 37 in fuse holder
TBa - Connector 6 pin, blue, connector station A pillar, left
TBf - Connector 8 pin, black, connector radio III
TDx - Connector 10 pin, green, connector station A pillar, right
V21 - Power Antenna
Z24 - Rear Window Defogger With Window Antenna

- Ground connection, in luggage compartment, left
- Ground connection, on right rear pillar
- Plus connection (15), in instrument panel wiring harness
- Wire connection (15a), in instrument panel wiring harness
- Plus connection (30a1), in instrument panel wiring harness

* - Vehicles with rear Window Antenna
** - Vehicles with Automatic Antenna



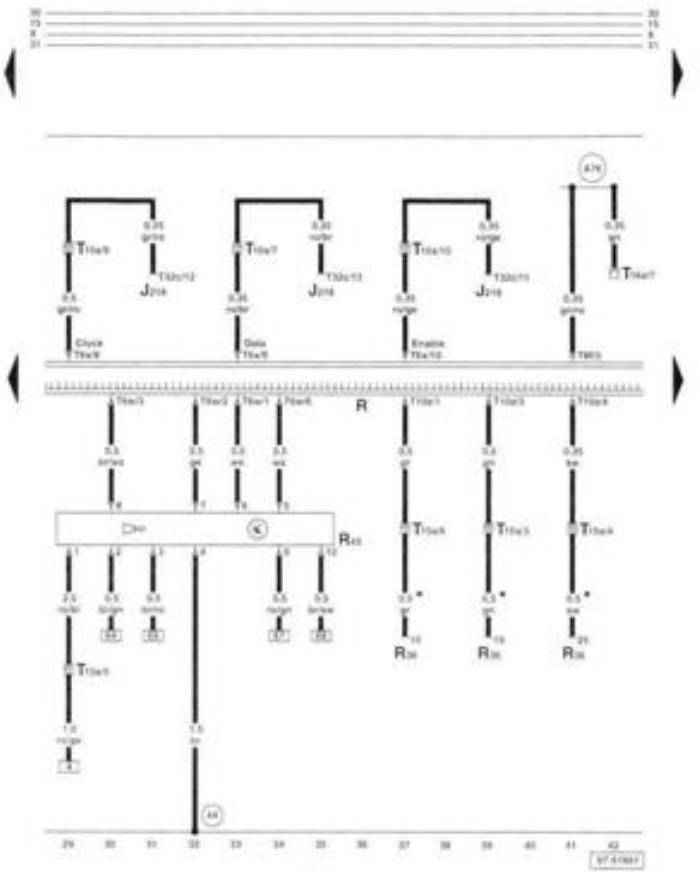
J218 – Instrument Cluster Combination Processor
R – Radio
R41 – CD Changer Unit
T1g – Single connector, black, connector station A pillar, right
T2w – Connector 2 pin, black, behind instrument panel, center
T8f – Connector 8 pin, black, connector radio III
T8g – Connector 8 pin, blue, connector radio I - 2
T10r – Connector 10 pin, red, connector radio IV
T32 – Connector 32 pin, blue, on instrument cluster

Ground connection, on right A pillar, lower part
Pos connection (B+), in instrument panel wiring harness
Wire connection (data), in instrument panel wiring harness
Wire connection vehicle speed signal, in instrument panel wiring harness
Wire connection (shielding), in CD changer wiring harness
• – Vehicles with CD Changer

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange
rs = pink



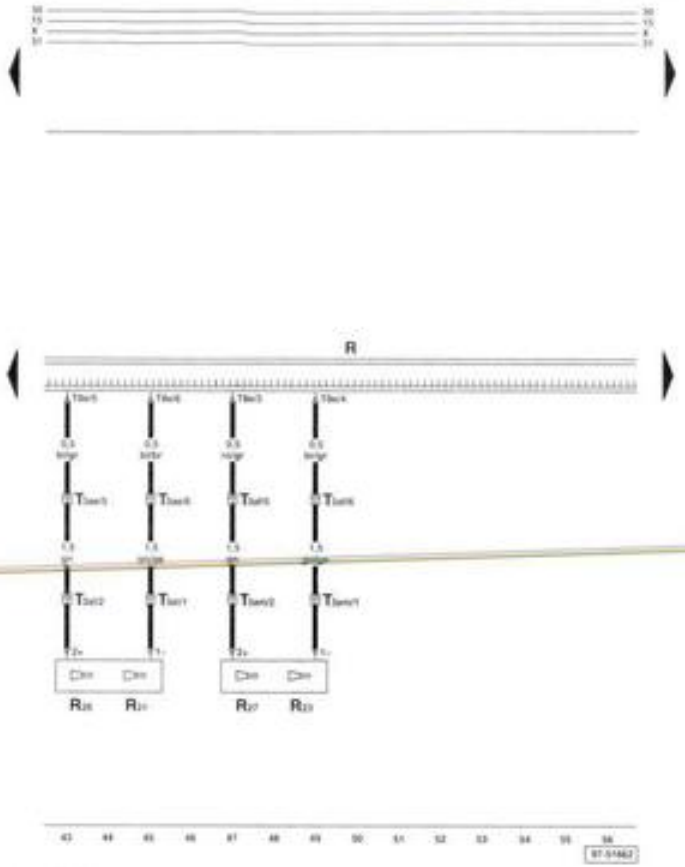




J218 – Instrument Cluster Combination Processor
R – Radio
R36 – Telephone Transceiver
R43 – Right Rear Woofer/Amplifier
T6w – Connector 6 pin, yellow, connector radio I - 1
T6x – Connector 6 pin, green, connector radio I - 2
T8f – Connector 8 pin, black, connector radio III
T10r – Connector 10 pin, green, connector station A pillar, right
T10y – Connector 10 pin, red, connector radio IV
T16a – Connector 16 pin, Data Link Connector (DLC)
T32c – Connector 32 pin, grey, on instrument cluster

Ground connection, on left A pillar, lower part
Connector (K-diagnosis wire), in instrument panel wiring harness
• – Vehicles with Telephone

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

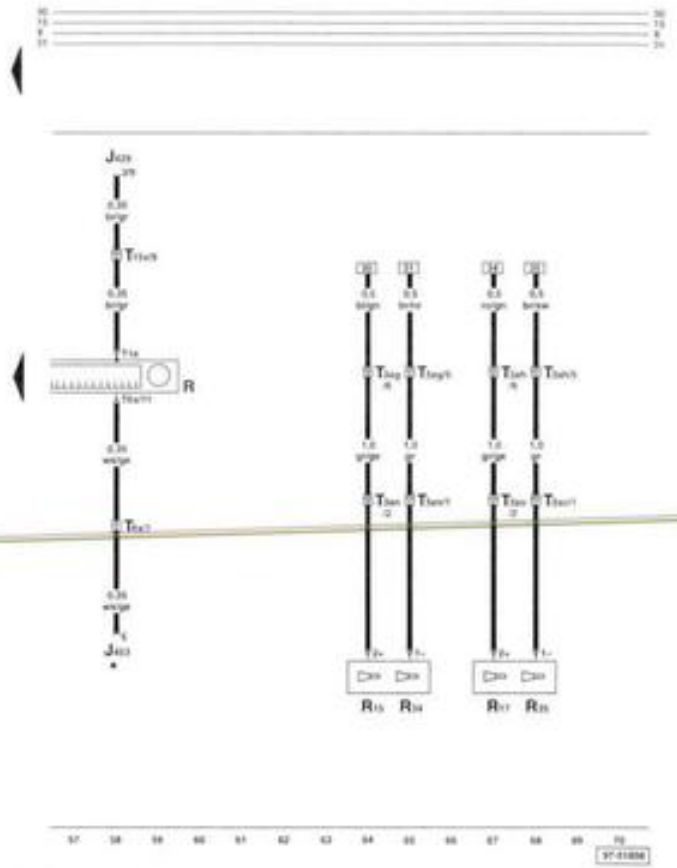



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

R - Radio
R21 - Left Front Woofer
R23 - Right Front Woofer
R26 - Left Front Midrange Speaker
R27 - Right Front Midrange Speaker
T3ae - Connector 3 pin, brown, connector station A pillar, left
T3af - Connector 3 pin, brown, connector station A pillar, right
T3al - Connector 3 pin, black, in driver's door
T3am - Connector 3 pin, black, in passenger's door
T8e - Connector 8 pin, brown, connector radio II








ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

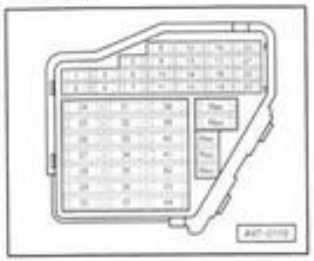
J429 - Control module for central locking
J453 - Control module for multi-function steering wheel
R - Radio
R15 - Left Rear Woofer
R17 - Right Rear Woofer
R24 - Left Rear Midrange Speaker
R25 - Right Rear Midrange Speaker
T1e - Single connector, on Radio
T3ag - Connector 3 pin, blue, in B pillar left
T3ah - Connector 3 pin, blue, in B pillar right
T3an - Connector 3 pin, black, in left rear door
T3ao - Connector 3 pin, black, in right rear door
T6x - Connector 6 pin, green, connector radio I - 2
T15v - Connector 15 pin, orange, connector station A pillar, right

• - Vehicles with multi-function steering wheel

# Radio Concert, Symphony, Bose with and without CD Changer

2000 m. y.

**Fuse Panel**

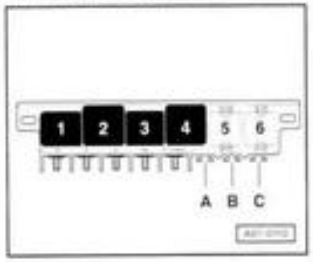


**Fuse Colors**

| | | |
|---|---|---|
| 30 | A | Green |
| 25 | A | White |
| 20 | A | Yellow |
| 15 | A | Blue |
| 10 | A | Red |
| 7.5 | A | Brown |
| 5 | A | Beige |

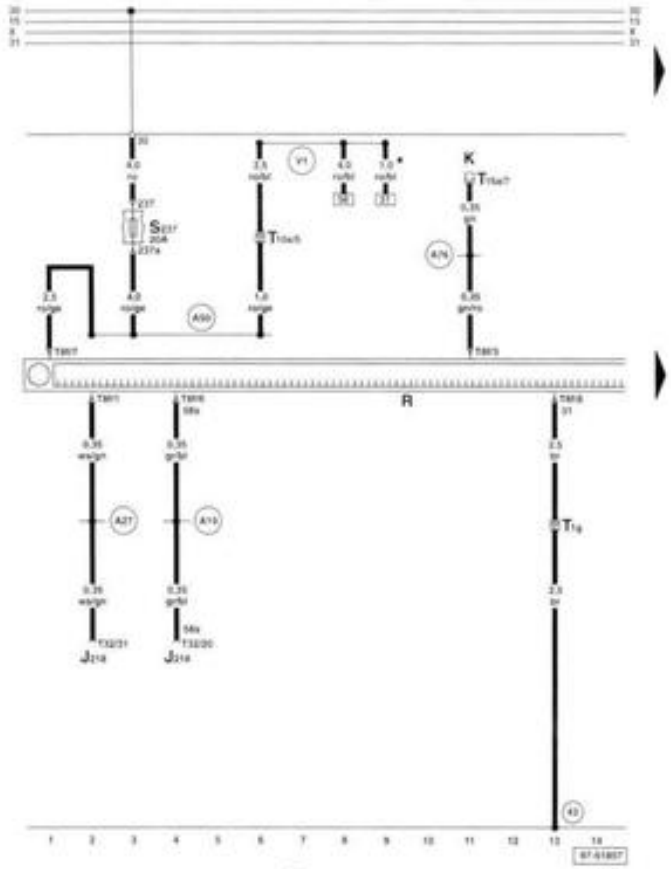
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**







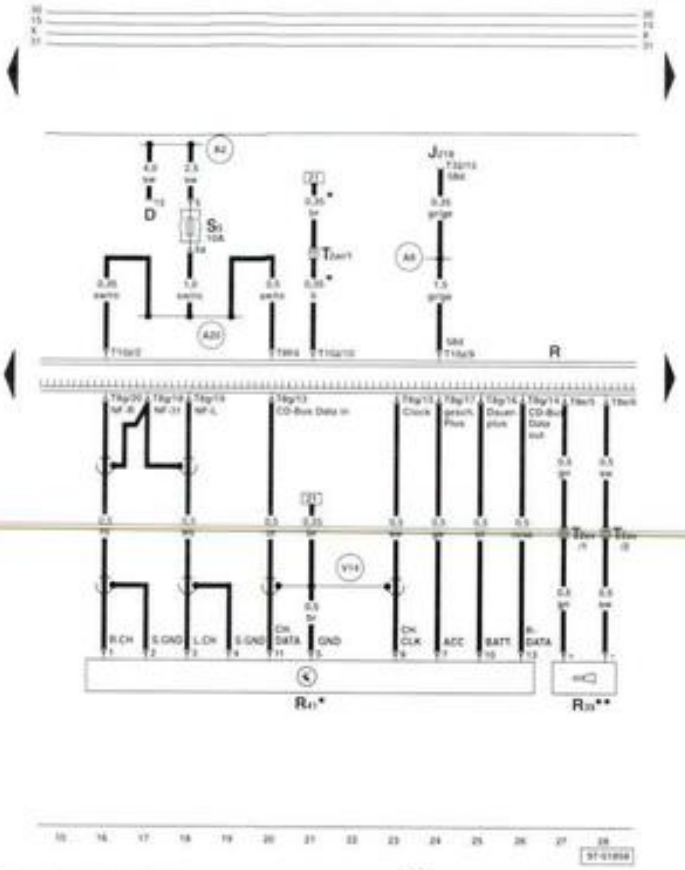




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J218 - Instrument Cluster Combination Processor
R - Radio
S237 - Fuse 37 in fuse holder
T1g - Single connector, black, connector station A pillar, right
T8f - Connector 8 pin, black, connector radio III
T10x - Connector 10 pin, green, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster

- Ground connector, on right A-pillar, lower part
- Wire connection (58s), in instrument panel wiring harness
- Wire connection (vehicle speed signal), in instrument panel wiring harness
- Plus connection (30as), in instrument panel wiring harness
- Connector (K-diagnosis wire), in instrument panel wiring harness
- Plus connection (30), in rear speaker wiring harness

* - Vehicles with Automatic Antenna



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

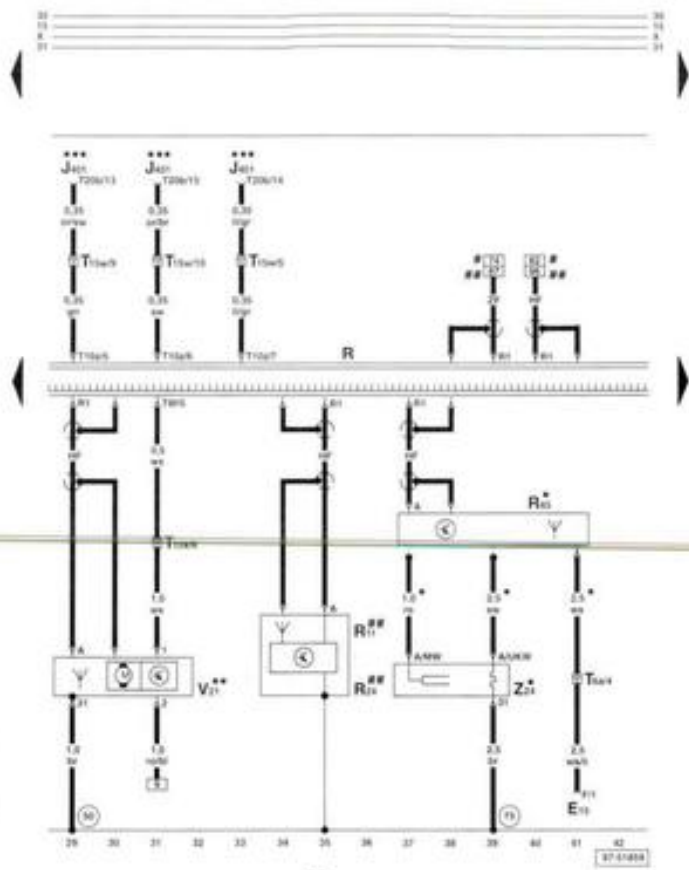
D – Ignition/Starter Switch
J218 – Instrument Cluster Combination Processor
R – Radio
R29 – Speaker, telephone, navigation
R41 – CD Changer Unit
SB – Fuse
T2ar – Connector 2 pin, black, behind instrument panel, center
T2av – Connector 2 pin, black, for loudspeaker, B pillar, left
T8w – Connector 8 pin, brown, connector radio I
T8f – Connector 8 pin, black, connector radio III
T8g – Connector 8 pin, blue, connector radio I - 3
T10z – Connector 10 pin, red, connector radio IV
T32 – Connector 32 pin, blue, on instrument cluster

A2 – Plus connection (15), in instrument panel wiring harness
A5 – Plus connection (S86), in instrument panel wiring harness
A20 – Wire connection (15a), in instrument panel wiring harness
A31 – Wire connection (shielding), in CD changer wiring harness

• – Vehicles with CD Changer
•• – Vehicles with Telephone





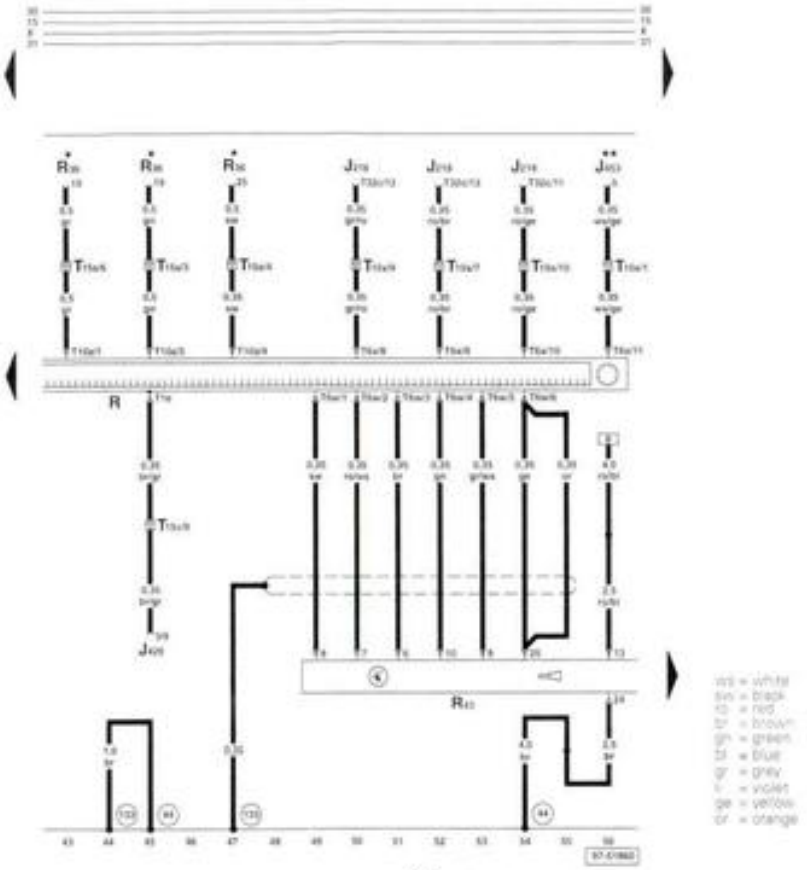


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

E15 – Rear Window Defogger Switch
J401 – Control unit for navigation with CD drive
R – Radio
R1 – Antenna Connector
R11 – Antenna
R24 – Antenna Amplifier
R45 – Telephone/Radio Antenna Amplifier
T6e – Connector 6 pin, blue, connector station A pillar, left
T8f – Connector 8 pin, black, connector radio III
T10s – Connector 10 pin, green, connector station A pillar, right
T10z – Connector 10 pin, red, connector radio IV
T15ar – Connector 15 pin, green, connector station A pillar, right
T20b – Connector 20 pin, black, on control unit for navigation
V21 – Power Antenna
Z24 – Rear Window Defogger With Window Antenna

M – Ground connection, in luggage compartment, left
T5 – Ground connection, on right rear pillar

• – Vehicles with rear Window Antenna
•• – Vehicles with Automatic Antenna
••• – Vehicles with Navigation
# – Sedan
## – Wagon



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

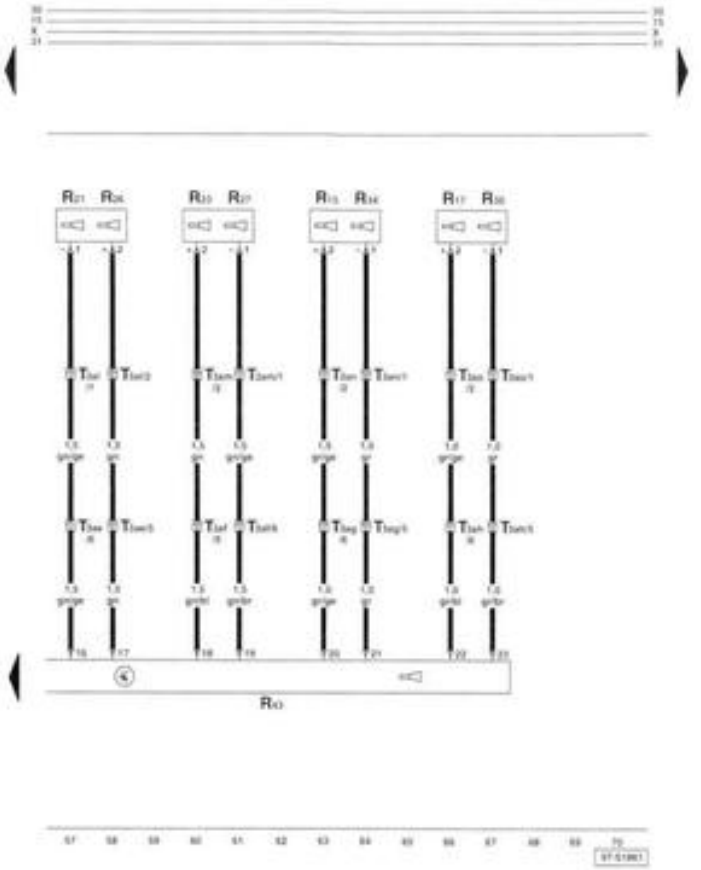
J218 - Instrument Cluster Combination Processor
J429 - Control module for central locking
J453 - Control module for multi-function steering wheel
R - Radio
R36 - Telephone Transceiver
R43 - Right Rear Woofer/Amplifier
T1e - Single connector, on Radio
T6w - Connector 6 pin, yellow, connector radio I - 1
T6x - Connector 6 pin, green, connector radio I - 2
T10a - Connector 10 pin, green, connector station A pillar, right
T10z - Connector 10 pin, red, connector radio IV
T15e - Connector 15 pin, blue, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
T32c - Connector 32 pin, grey, on instrument cluster

(31) - Ground connection, on left A-pillar, lower part
(X) - Ground connection, in speaker wiring harness

* - Vehicles with Telephone
** - Vehicles with multi-function steering wheel

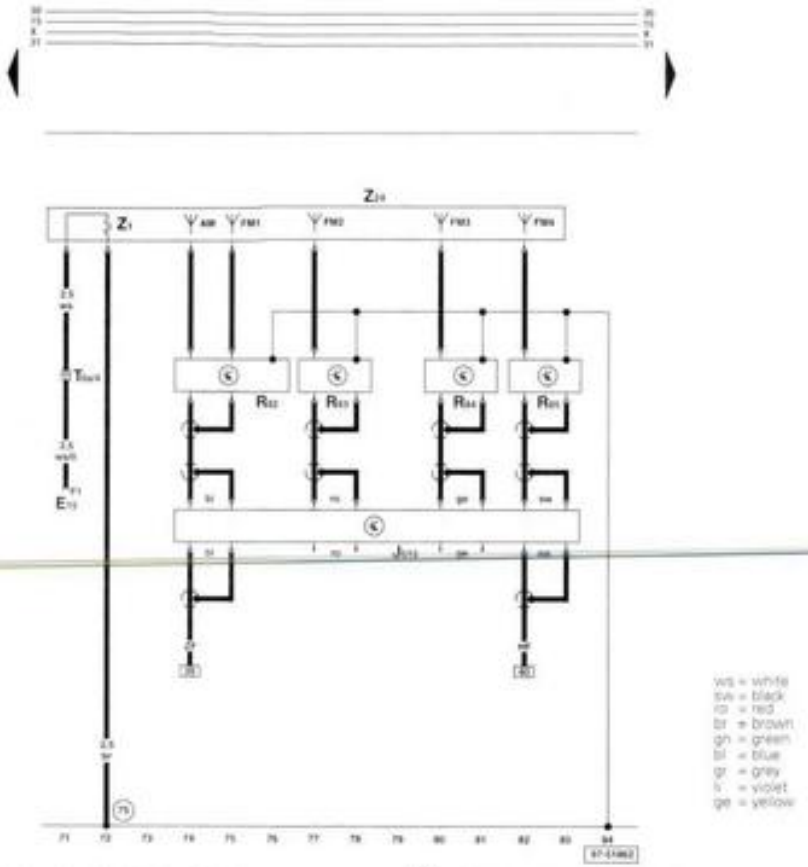






ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

R15 - Left Rear Woofer
R17 - Right Rear Woofer
R21 - Left Front Woofer
R23 - Right Front Woofer
R26 - Left Front Midrange Speaker
R27 - Right Front Midrange Speaker
R34 - Left Rear Midrange Speaker
R35 - Right Rear Midrange Speaker
R43 - Right Rear Woofer/Amplifier
T3al - Connector 3 pin, brown, connector station A pillar, left
T3ar - Connector 3 pin, brown, connector station A pillar, right
T3bg - Connector 3 pin, blue, in B pillar left
T3bh - Connector 3 pin, blue, in B pillar right
T3d - Connector 3 pin, black, in driver's door
T3en - Connector 3 pin, black, in passenger's door
T3el - Connector 3 pin, black, in left rear door
T3er - Connector 3 pin, black, in right rear door



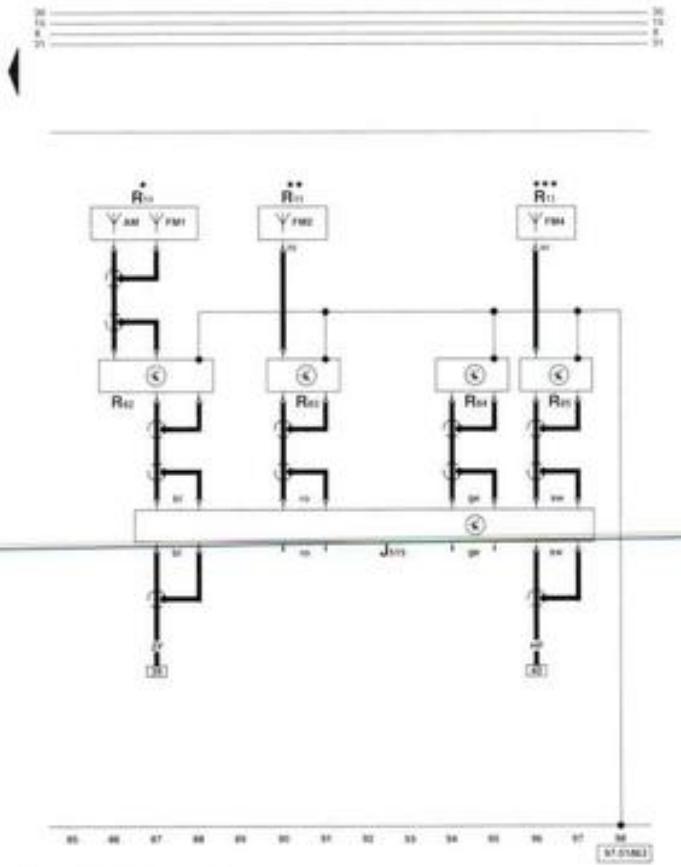
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E15 - Rear Window Defogger Switch
J515 - Control unit for aerial selection (aerial diversity function)
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
TBa - Connector 8 pin, blue, connector station A pillar, left
Z1 - Rear Window Defogger/Heat Element
Z24 - Rear Window Defogger With Window Antenna

(75) - Ground connection, on right rear pillar







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

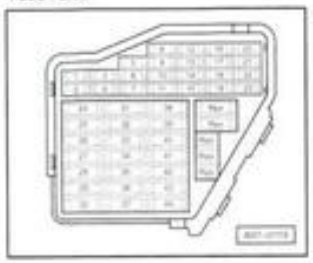
J515 - Control unit for aerial selection (aerial diversity function)
R11 - Antenna
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4

* - Roof Antenna
** - Window rear left
*** - Window rear right

## Driver's Information System

2000 m. y.

Fuse Panel

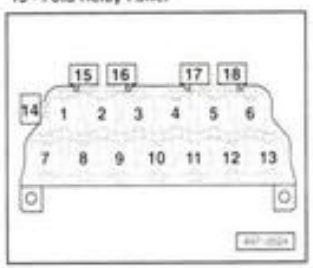


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
 7.5 A - Brown
 5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

13 - Fold Relay Panel



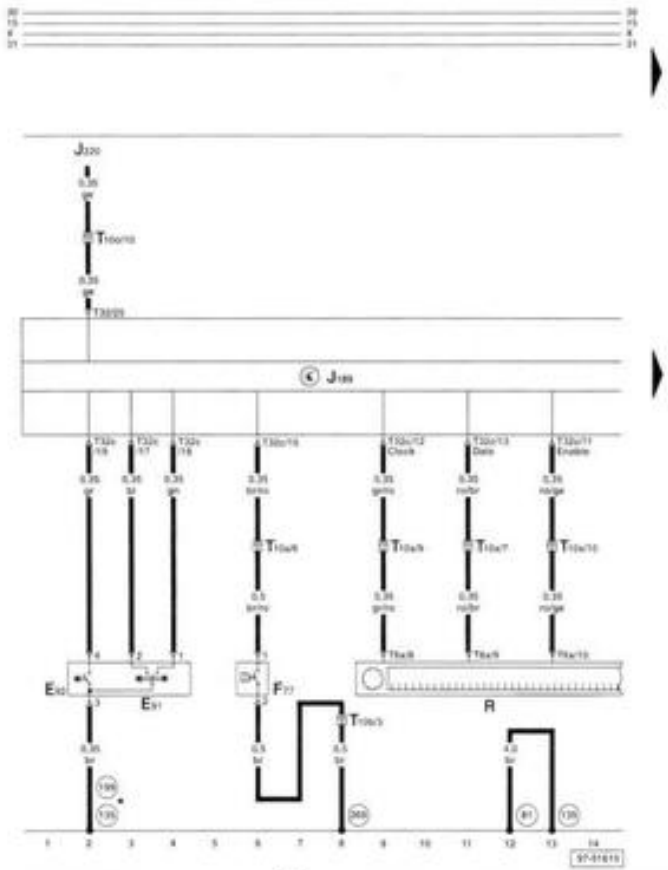

Relay Location:

9 - Lamp Control Module, J129

10 - Lamp Control Module, J123



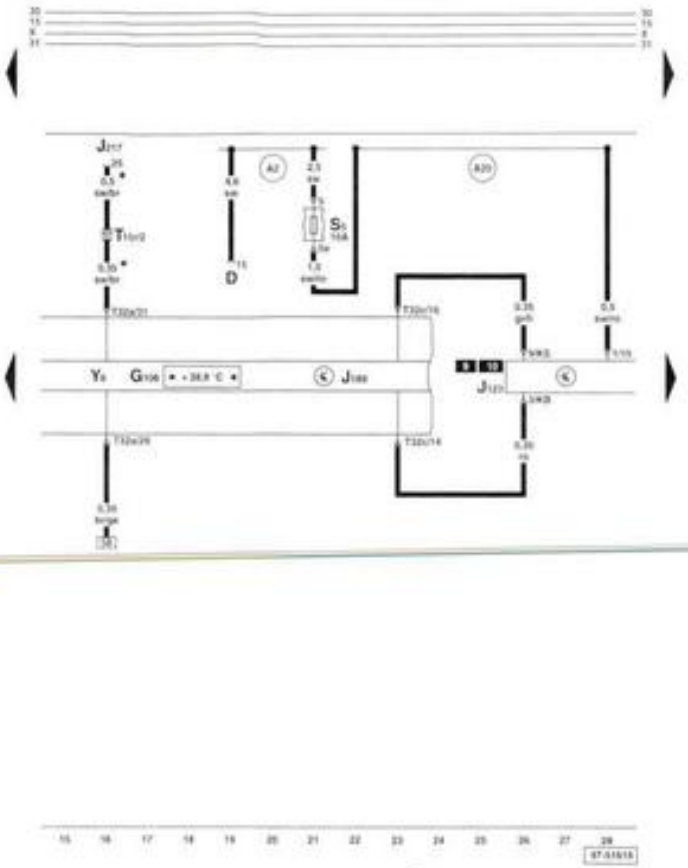





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E91 - Board Computer Function Selector Switch
E92 - Board Computer Reset Button
F77 - Windshield Washer Fluid Level Warning Switch
J285 - Auto Check System
J220 - Motronic Engine Control Module (ECM)
R - Radio
T6a - Connector 6 pin, green, connector radio 1 , 2
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10c - Connector 10 pin, brown, connector station electronic box plenum chamber
T10x - Connector 10 pin, green, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster

- Ground connection 1, in instrument panel wiring harness
- Ground connection 2, in instrument panel wiring harness
- Ground connection 3, in instrument panel wiring harness
- Ground connector (sensor ground) 1, in instrument panel wiring harness
- Both are possible



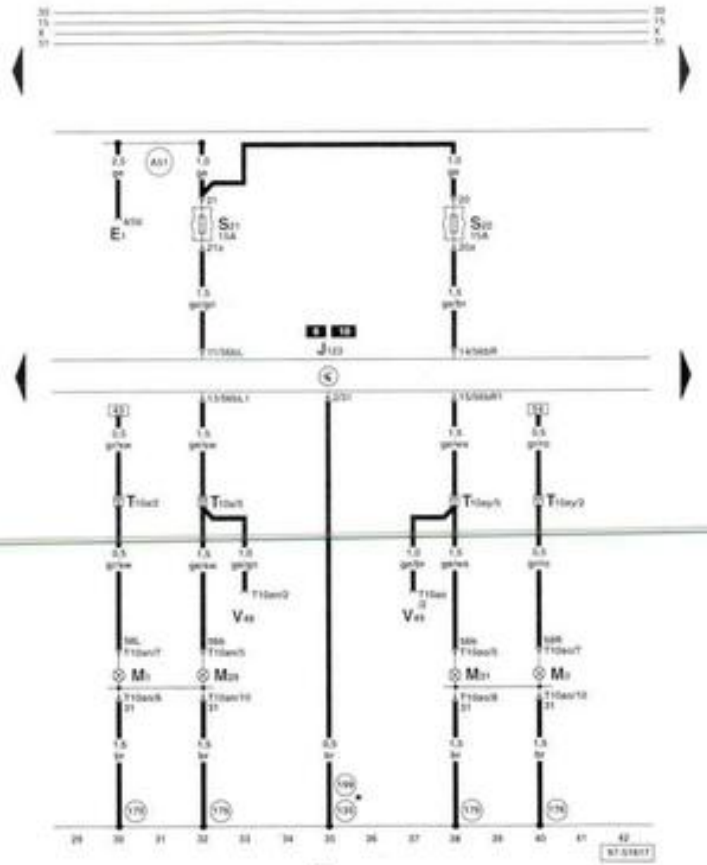
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
G106 - Outside Air Temperature Display
J123 - Lamp Control Module
J189 - Auto Check System
J217 - Transmission Control Module (TCM)
SB - Fuse
T15r - Connector 15 pin, blue, connector station A polar, right
T32a - Connector 32 pin, green, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster
Y8 - Transmission Range (TR) Selector Lever Display

(A2) - Plus connection (15), in instrument panel wiring harness
(A20) - Wire connection (15a), in instrument panel wiring harness
• - Vehicles with automatic transmission (01V



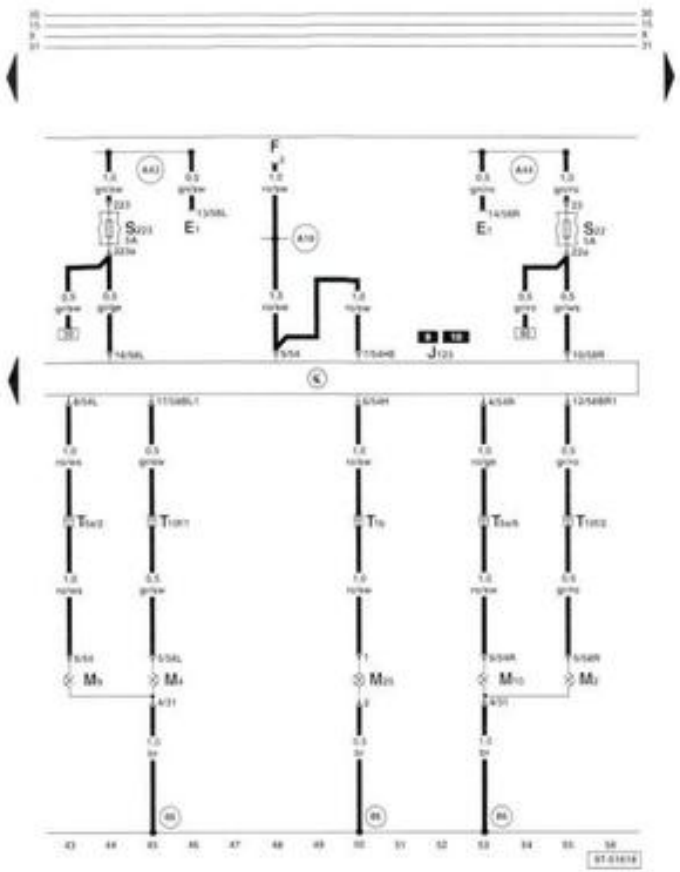




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
J123 - Lamp Control Module
M1 - Left Parking Light
M3 - Right Parking Light
M29 - Left Low Beam Headlight
M31 - Right Low Beam Headlight
S20 - Fuse
S21 - Fuse
T10a - Connector 10 pin, pink, connector station A polar, left
T10en - Connector 10 pin, on headlight, left
T10ep - Connector 10 pin, on headlight, right
T10ev - Connector 10 pin, pink, connector station A polar, right
V48 - Left Headlight Beam Adjusting Motor
V49 - Right Headlight Beam Adjusting Motor

(A51) - Ground connection -2-, in instrument panel wiring harness
(C9) - Ground connection, in right headlight wiring harness
(C10) - Ground connection, in left headlight wiring harness
(D4) - Ground connection -3-, in instrument panel wiring harness
(X1) - Wire connection (58), in instrument panel wiring harness
• - Both are possible



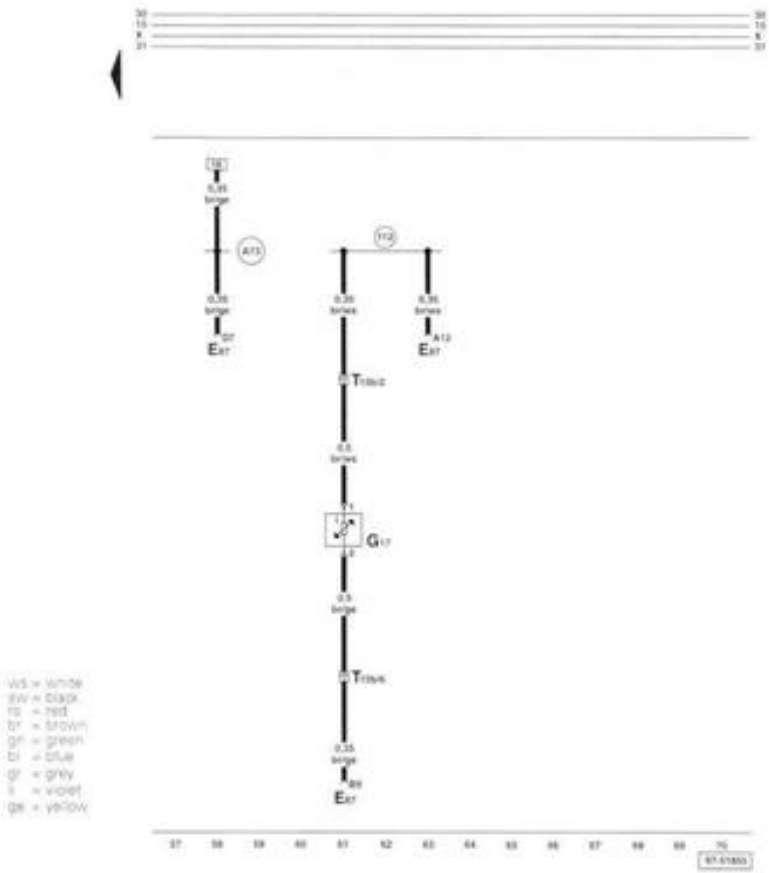
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
F - Brake Light Switch
J123 - Lamp Control Module
M2 - Right Tail Light
M4 - Left Tail Light
M9 - Left Brake Light
M10 - Right Brake Light
M25 - High-mount Brake Light
S22 - Fuse
S223 - Fuse 23 in fuse holder
T1b - Single connector, black, connector station A pillar right
T6a - Connector 6 pin, blue, connector station A pillar, left
T10f - Connector 10 pin, brown, connector station A pillar, left

(A10) - Ground connection 1, in rear wiring harness
(A42) - Wire connection (54), in instrument panel wiring harness
(A43) - Wire connection (57c), in instrument panel wiring harness
(A44) - Wire connection (57m), in instrument panel wiring harness







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

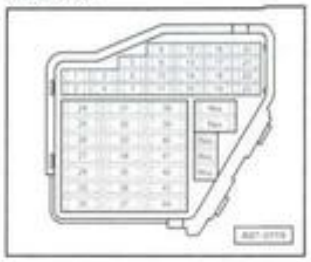
E87 - A/C Control Head
G17 - Outside Air Temperature Sensor
T10k - Connector 10 pin, red, connector station A pillar, left

(A13) - Ground connection 2, in A/C wiring harness
(Y12) - Connector outside temperature indicator, in instrument panel wiring harness

# Daytime Running Lights with Fog Light and Rear Fog Light (Canada)

2000 m. y.

**Fuse Panel**

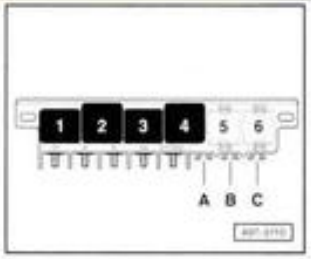


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
25 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

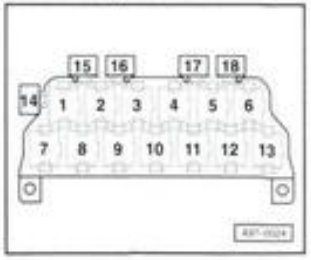
**Micro Central Electric Panel**




**Relay Location:**

**2** - Load Reduction Relay, J59

**13 - Fold Relay Panel**




**Relay Location:**

**6** - Fog Light Relay, J5

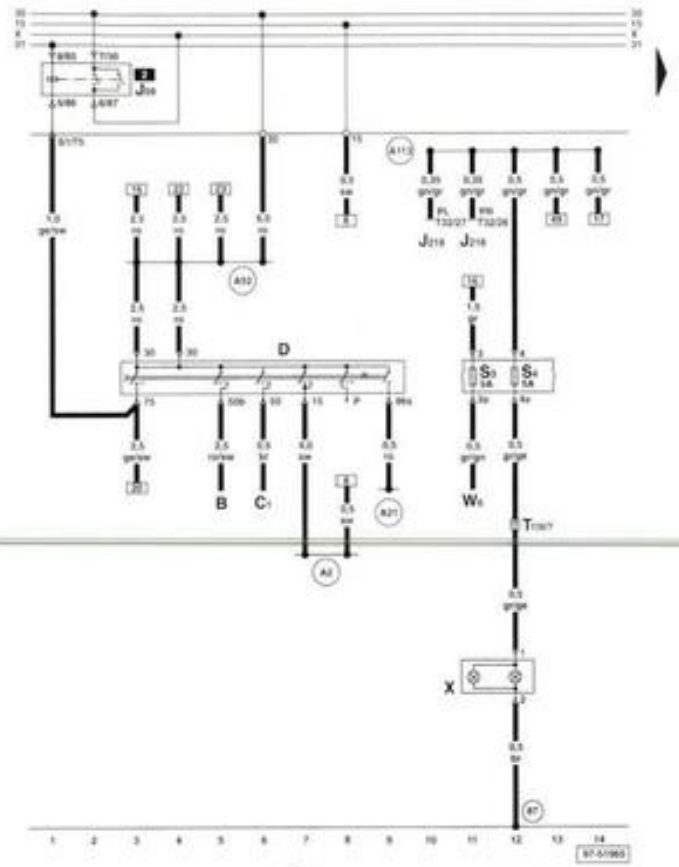
**9** - Lamp Control Module, J123

**10** - Lamp Control Module, J123

**17** - Fog Light Circuit Breaker, S28





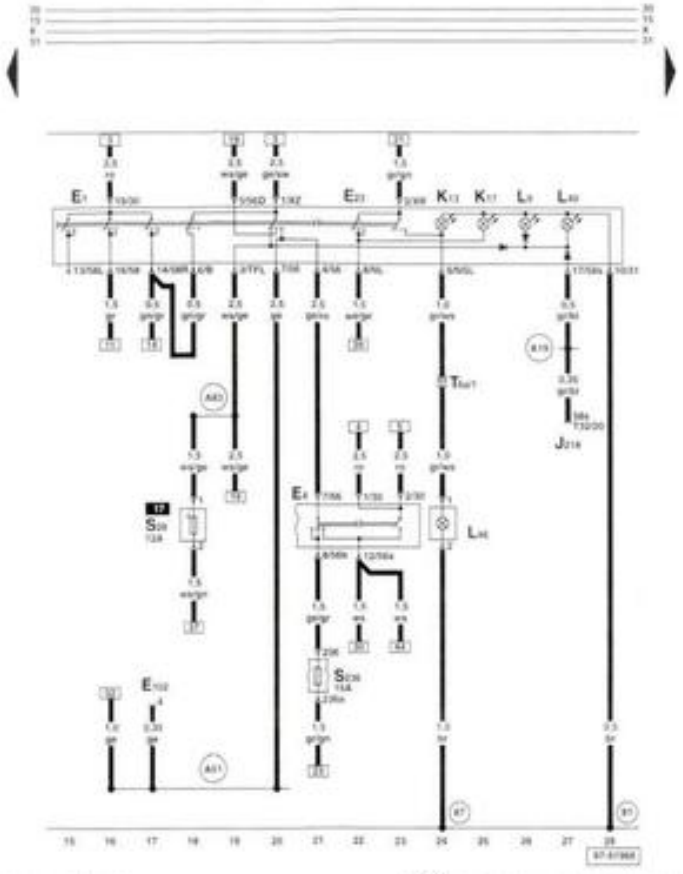



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

B - Starter
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J218 - Instrument Cluster Commotion Processor
S3 - Fuse
S4 - Fuse
T10c - Connector 10 pin, orange, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
W6 - Glove Compartment Light
X - License Plate Light

67 - Ground connection -2-, in rear wiring harness
A2 - Plus connection (15), in instrument panel wiring harness
A27 - Wire connection (86s), in instrument panel wiring harness
A32 - Plus connection -2- (30), in instrument panel wiring harness
A112 - Connector 2 (daytime running lights), in instrument panel wiring harness

Ignition/Starter Switch, License Plate Light, Load Reduction Relay



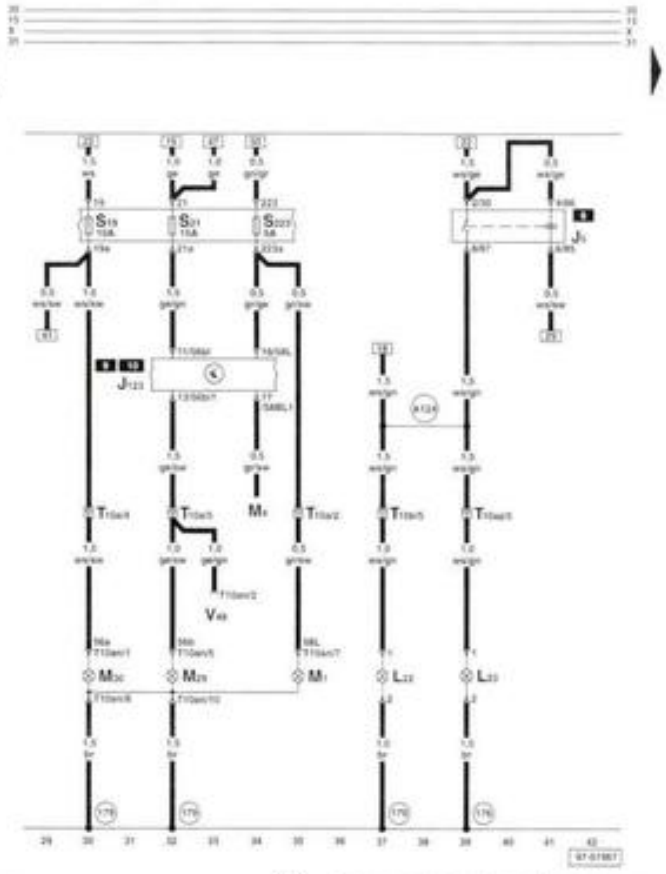
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E4 - Headlight Dimmer/Flasher Switch
E23 - Fog Light Switch
E102 - Headlight Adjuster
J218 - Instrument Cluster Combination Processor
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light
L96 - Left Rear Fog Light
S29 - Fog Light Fuse
S206 - Fuse 36 in fuse holder
T6a - Connector 6 pin, blue, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster

- Ground connection -1-, in instrument panel wiring harness
- Ground connection -2-, in rear wiring harness
- Wire connection (56b), in instrument panel wiring harness
- Wire connection (56), in instrument panel wiring harness
- Connector daytime running lights, in instrument panel wiring harness



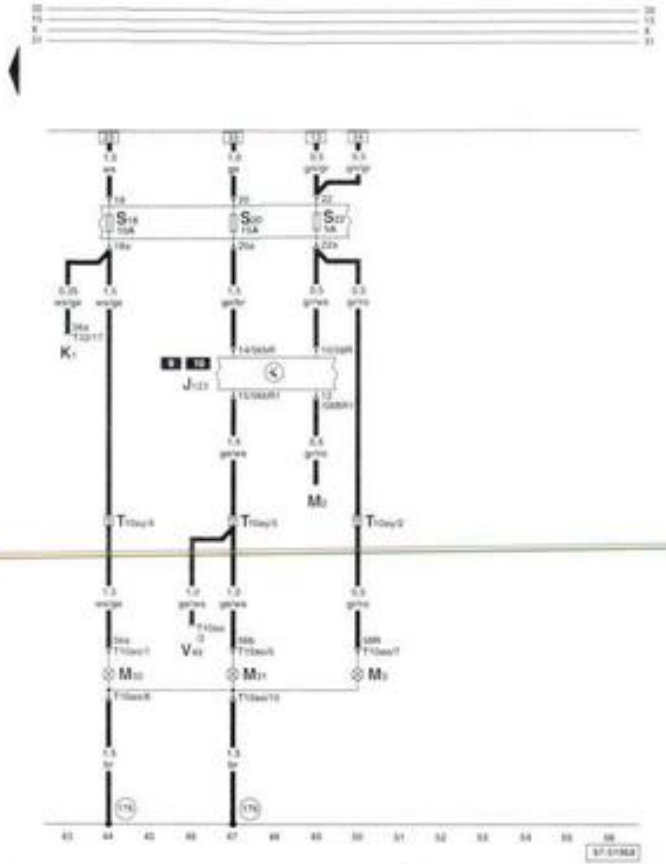




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J5 - Fog Light Relay
J123 - Lamp Control Module
L22 - Left Front Fog Light
L23 - Right Front Fog Light
M1 - Left Parking Light
M4 - Left Tail Light
M29 - Left Low Beam Headlight
M30 - Left High Beam Headlight
S19 - Fuse
S21 - Fuse
S223 - Fuse 23 in fuse holder
T10a - Connector 10 pin, pink, connector station A pillar, left
T10p - Connector 10 pin, red, connector station A pillar, left
T10sn - Connector 10 pin, on headlight, left
T10sz - Connector 10 pin, red, connector station A pillar, right
V48 - Left Headlight Beam Adjusting Motor

- Ground connection, in right headlight wiring harness
- Ground connection, in left headlight wiring harness
- Connector 3 daytime running lights, in instrument panel wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
K1 - Headlight High Beam Indicator Light
M2 - Right Tail Light
M3 - Right Parking Light
M31 - Right Low Beam Headlight
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
V48 - Right Headlight Beam Adjusting Motor

(176) - Ground connection, in right headlight wiring harness





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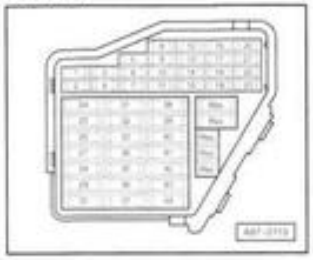
# Headlight with High Intensity Gas discharge Lamps and automatic Headlight Beam Adjusting

2000 m. y.

**Fuse Panel**

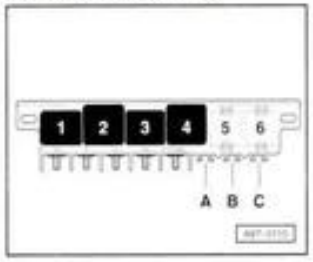


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

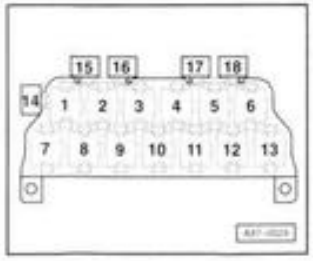
**Micro Central Electric Panel**




**Relay Location:**

2 - Load Reduction Relay, J59

**13 - Fold Relay Panel**



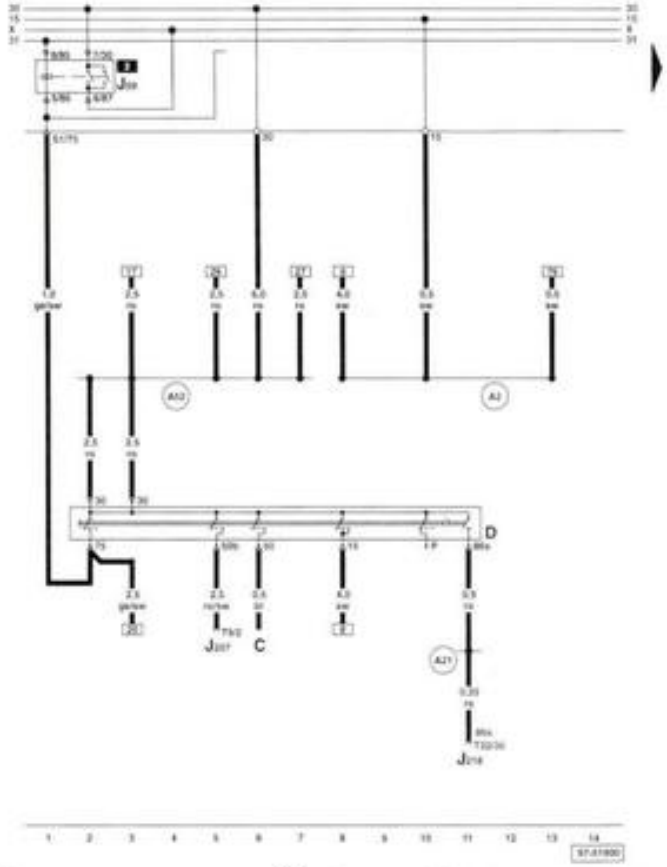

**Relay Location:**

9 - Lamp Control Module, J123

10 - Lamp Control Module, J123

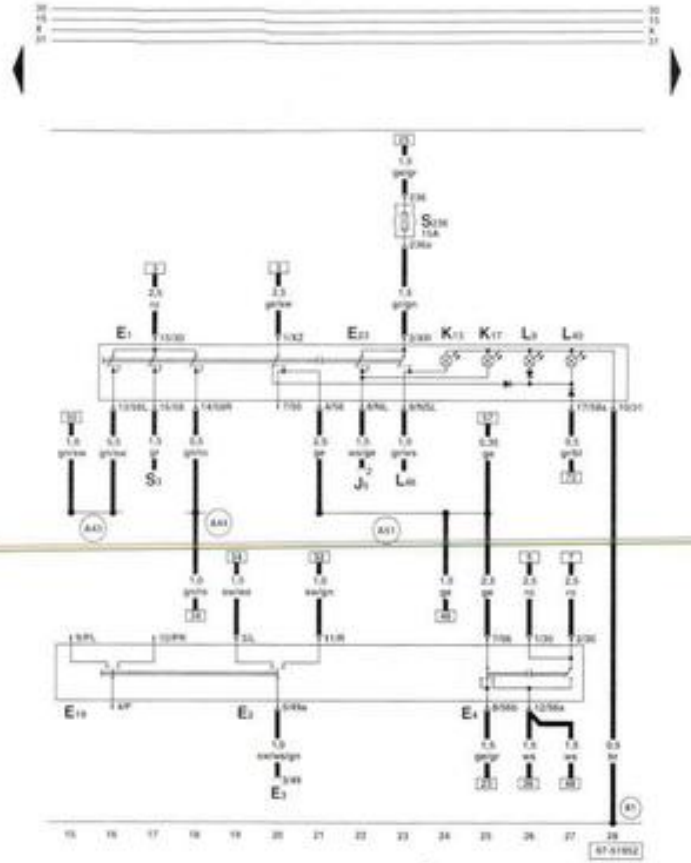







C - Generator (GEN)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J207 - Starting Interlock Relay
J218 - Instrument Cluster Combination Processor
T9 - Connector 9 pin, brown, on starting interlock relay
T32 - Connector 32 pin, blue, on instrument cluster

(A1) - Plus connection (15), in instrument panel wiring harness
(A2) - Wire connection (86s), in instrument panel wiring harness
(A21) - Plus connection 2 (30), in instrument panel wiring harness



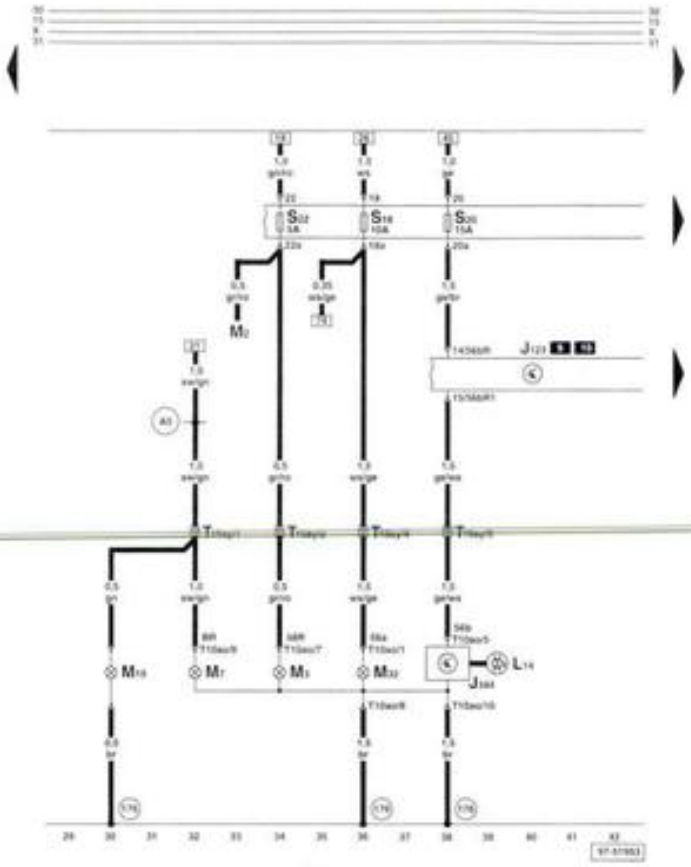
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E2 - Turn Signal Switch
E3 - Emergency Flasher Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
J5 - Fog Light Relay
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light
L46 - Left Rear Fog Light
S3 - Fuse
S236 - Fuse 36 in fuse holder

(A1) - Ground connection -1-, in instrument panel wiring harness
(A41) - Wire connection (57), in instrument panel wiring harness
(A44) - Wire connection (57c), in instrument panel wiring harness
(A51) - Wire connection (58), in instrument panel wiring harness



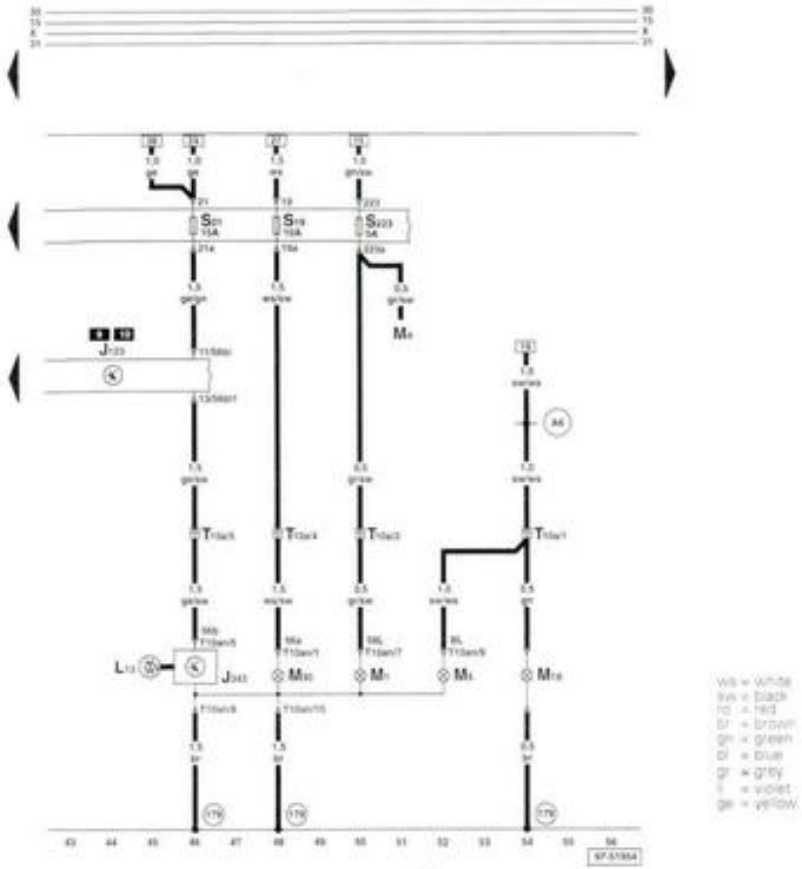




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
J344 - Control Module for High-Intensity gas discharge lamp
L18 - High intensity gas discharge lamp right
M2 - Right Tail Light
M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right Side Turn Signal Light
M32 - Right High Beam Headlight
S16 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right

(T10) - Ground connection, in right headlight wiring harness
(T10) - Plus connection (right turn signal), in instrument panel wiring harness



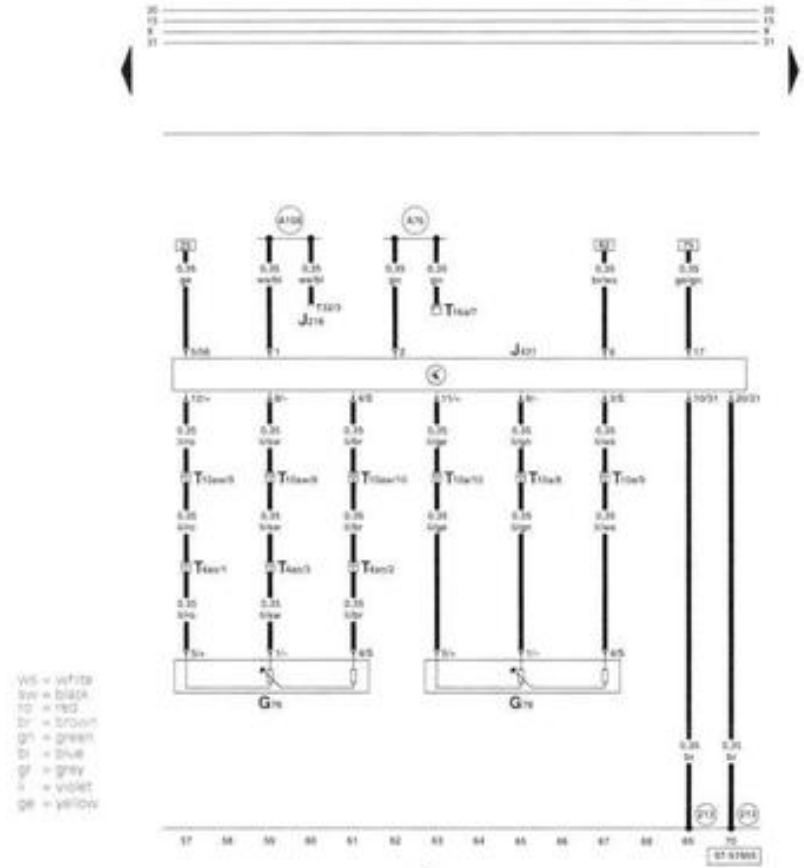
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
J343 - Control Module for high-intensity gas discharge lamp
L13 - High intensity gas discharge lamp left
M1 - Left Parking Light
M4 - Left Tail Light
M5 - Left Front Turn Signal Light
M16 - Left, Side Turn Signal Light
M30 - Left High Beam Headlight
S19 - Fuse
S21 - Fuse
S223 - Fuse 23 in fuse holder
T10a - Connector 10 pin, pink, connector station A pillar, left
T10ax - Connector 10 pin, on headlight, left

(176) - Ground connection, in left headlight wiring harness
(A6) - Plus connector, left turn signals, in instrument panel wiring harness



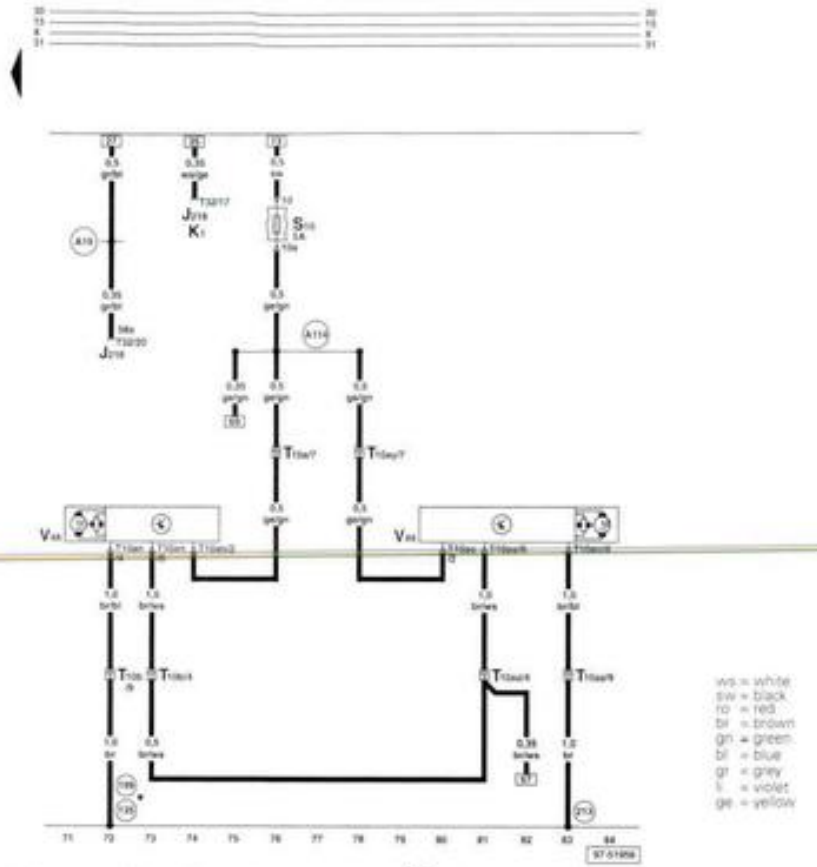




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G76 - Left Rear Level Control System Sensor
G78 - Left Front Level Control System Sensor
J218 - Instrument Cluster Combination Processor
J431 - Control module for Headlight Beam Adjusting
T4ax - Connector 4 pin, black, below rear seat, left
T10a - Connector 10 pin, pink, connector station A pillar, left
T10aw - Connector 10 pin, black, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster

(176) - Ground connection, in instrument panel wiring harness
(A76) - Connector (K-diagnosis wire), in instrument panel wiring harness
(A106) - Connector (speed signal), in instrument panel wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J218 - Instrument Cluster Combination Processor
K1 - Headlight High Beam Indicator Light
S10 - Fuse
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10ei - Connector 10 pin, on headlight, left
T10eo - Connector 10 pin, on headlight, right
T10ey - Connector 10 pin, pink, connector station A pillar, right
T10ez - Connector 10 pin, red, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
V48 - Left Headlight Beam Adjusting Motor
V49 - Right Headlight Beam Adjusting Motor

(19) - Ground connection -2-, in instrument panel wiring harness
(30) - Ground connection -3-, in instrument panel wiring harness
(111) - Ground connection, in instrument panel wiring harness
(A114) - Wire connection (58s), in instrument panel wiring harness
(T10ey/7) - Connection (headlight beam adjusting) in instrument panel wiring harness

• - Both are possible





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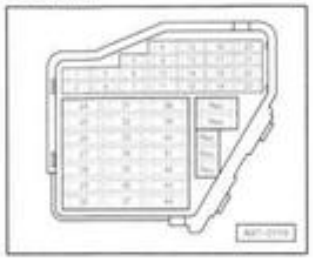
# Headlight Washer

2000 m. y.

**Fuse Panel**

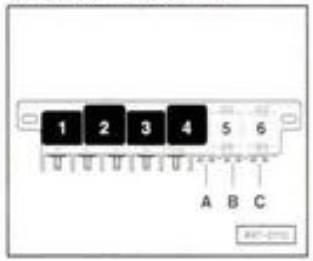


**Fuse Colors**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 222 in the wiring diagram.

**Micro Central Electric Panel**



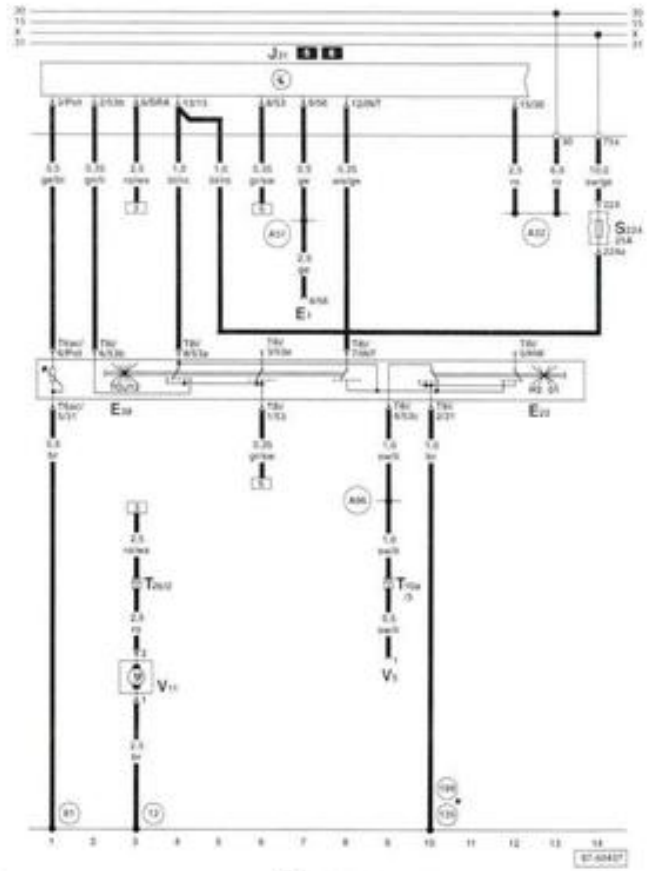

**Relay Location**

5 - Wiper/Washer Intermittent Relay, J31

6 - Wiper/Washer Intermittent Relay, J31








E1 - Light switch
E22 - Windshield Wiper/Washer Switch
E39 - Windshield Wiper Intermittent Regulator
J31 - Wiper/Washer Intermittent Relay
S224 - Fuse 24 in fuse holder
T2b - Connector 2-pin, black, connector station A-pillar, left
T6ac - Connector 6-pin, brown, on windshield wiper intermittent regulator
T6b - Connector 6-pin, on windshield wiper/washer switch
T10a - Connector 10-pin, pink, connector station A-pillar, left
V5 - Windshield Washer Pump
V11 - Headlight Washer Pump

- Ground connection, in engine compartment, left
- Ground connection -1-, in instrument panel wiring harness
- Ground connection -2-, in instrument panel wiring harness
- Ground connection -3-, in instrument panel wiring harness
- Plus connection (30), in instrument panel wiring harness
- Wire connection (56), in instrument panel wiring harness
- Connector (92a), in instrument panel wiring harness
- • - Both are possible

# Power Windows

2000 m. y.

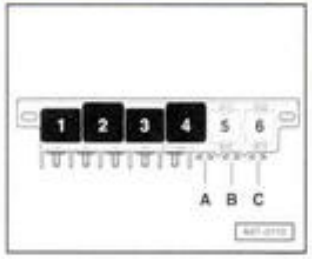
Fuse Panel

Fuse Colors:

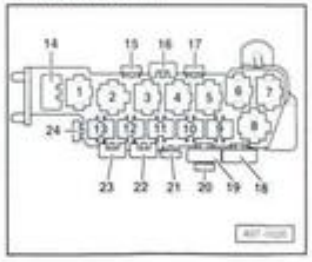
30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

Micro Central Electric Panel




8 - Fold Relay Panel



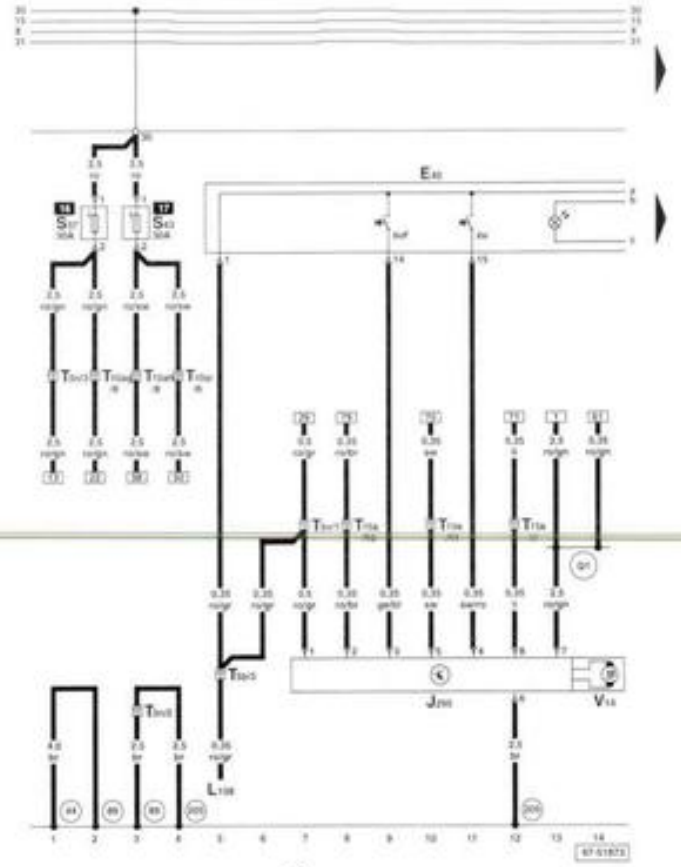

Fuse Location

16 Power Window Circuit Breaker Front, S37

17 Power Window Circuit Breaker Rear, S43



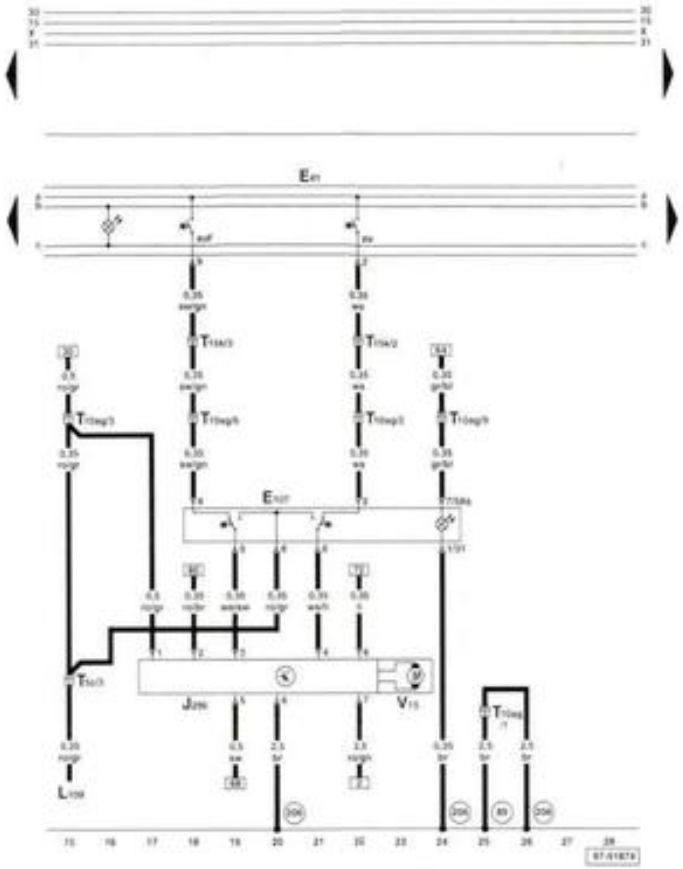




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E40 - Left Front Window Switch
J386 - Left Front Power Window Control Module
L108 - Door opener lighting, driver side
S37 - Power Window Circuit Breaker Front
S43 - Power Window Circuit Breaker Rear
T3n - Connector 3 pin, red, connector station A pillar, left
T5e - Connector 5 pin, black, in driver's door
T10ag - Connector 10 pin, red, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10ai - Connector 10 pin, red, in B pillar, right
T16a - Connector 16 pin, red, connector station A pillar, left
V14 - Left Window Motor

(31) - Ground connection, on left A-pillar, lower part
(X) - Ground connection, X, in power window wiring harness
(200) - Ground connection, in driver's door wiring harness
(+) - Plus connection (30), in power window wiring harness

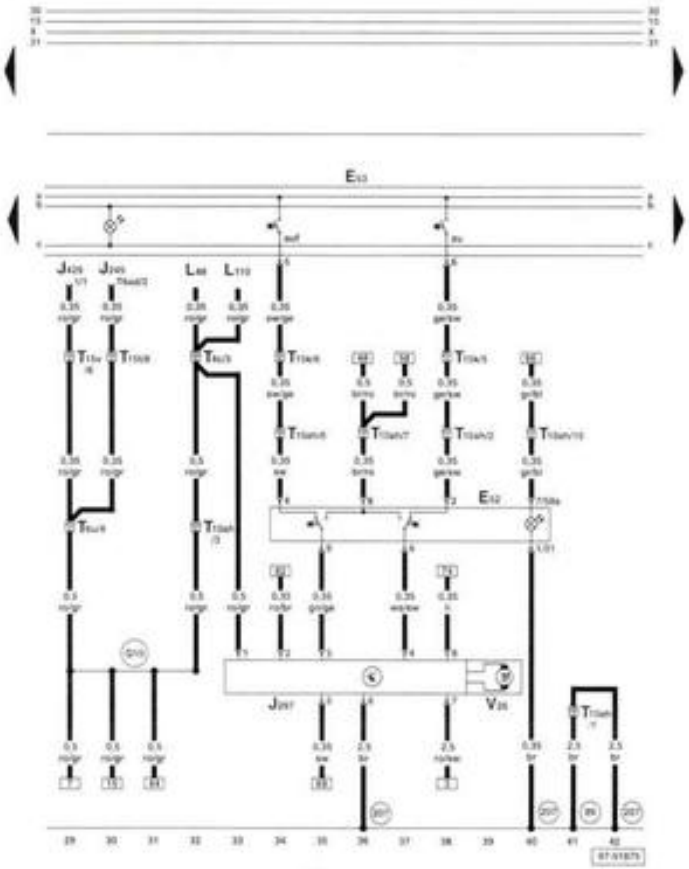



E81 - Right Front Window Switch
E107 - Switch for window regulator, in passenger door
J256 - Right Front Power Window Control Module
L109 - Door opener lighting, passenger side
T5c - Connector 5 pin, black, in passenger's door
T10aq - Connector 10 pin, red, connector station A pillar, right
T15x - Connector 15 pin, red, connector station A pillar, left
V15 - Right Window Motor

(93) - Ground connection 1, in power window wiring harness
(206) - Ground connection, in passenger's door wiring harness

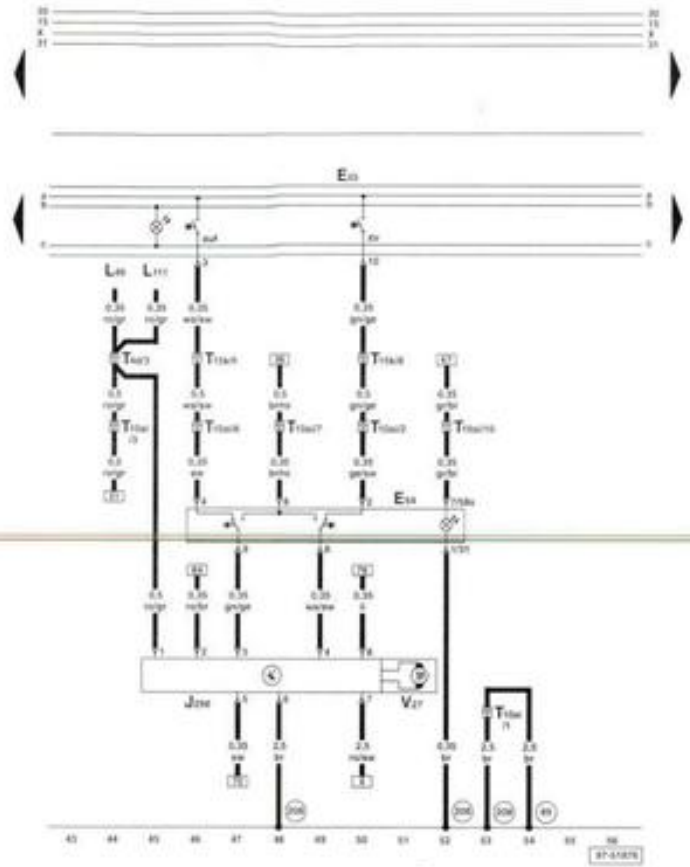







E52 - Left Rear Window Switch, in LR Door
E53 - Left Rear Window Switch, in Console
J245 - Power Sunroof Control Module
J257 - Left Rear Power Window Control Module
J429 - Control module for central locking
L48 - Left Rear Ashtray Light
L110 - Door opener lighting, left rear
T4c - Connector 4 pin, black, in left rear door
T6u - Connector 6 pin, grey, connector station A pillar, left
T6ud - Connector 6 pin, blue, on power sunroof control module
T10ah - Connector 10 pin, red, in B pillar, left
T15x - Connector 15 pin, red, connector station A pillar, left
T15t - Connector 15 pin, grey, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
V26 - Left Rear Door Window Motor

(93) - Ground connection 1, in power window wiring harness
(206) - Ground connection, in left rear door wiring harness
(270) - Plus connection (87), in power window/central locking system and door contact switch wiring harness



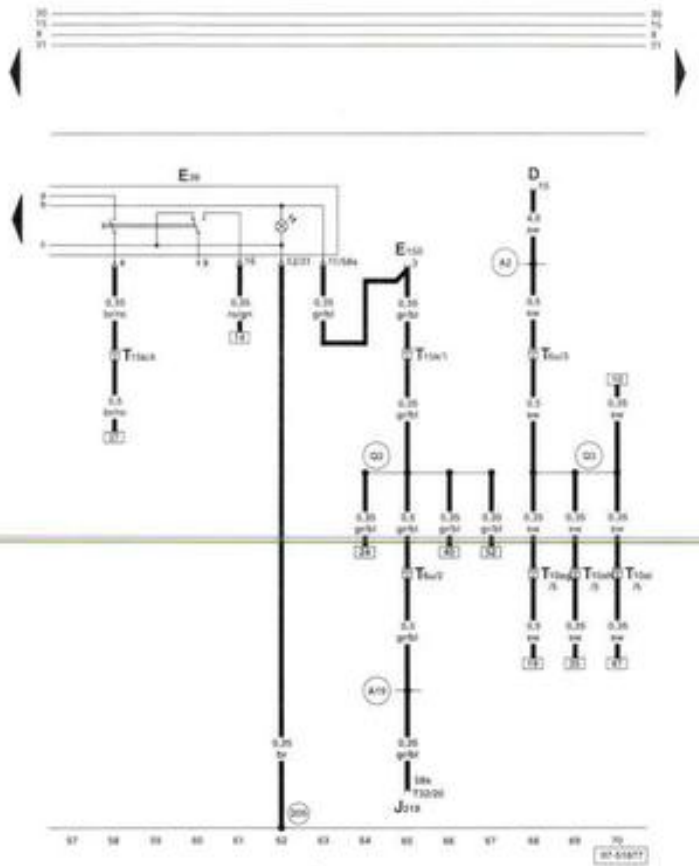
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E53 - Right Rear Window Switch, in RR Door
E55 - Right Rear Window Switch, in Console
J386 - Right Rear Power Window Control Module
L49 - Right Rear Ashtray Light
L111 - Door opener lighting, right rear
T4d - Connector 4 pin, black, in right rear door
T10a - Connector 10 pin, red, in B pillar, right
T15k - Connector 15 pin, red, connector station A pillar, left
V27 - Right Rear Door Window Motor

(31) - Ground connection -1-, in power window wiring harness
(49) - Ground connection, in right rear door wiring harness



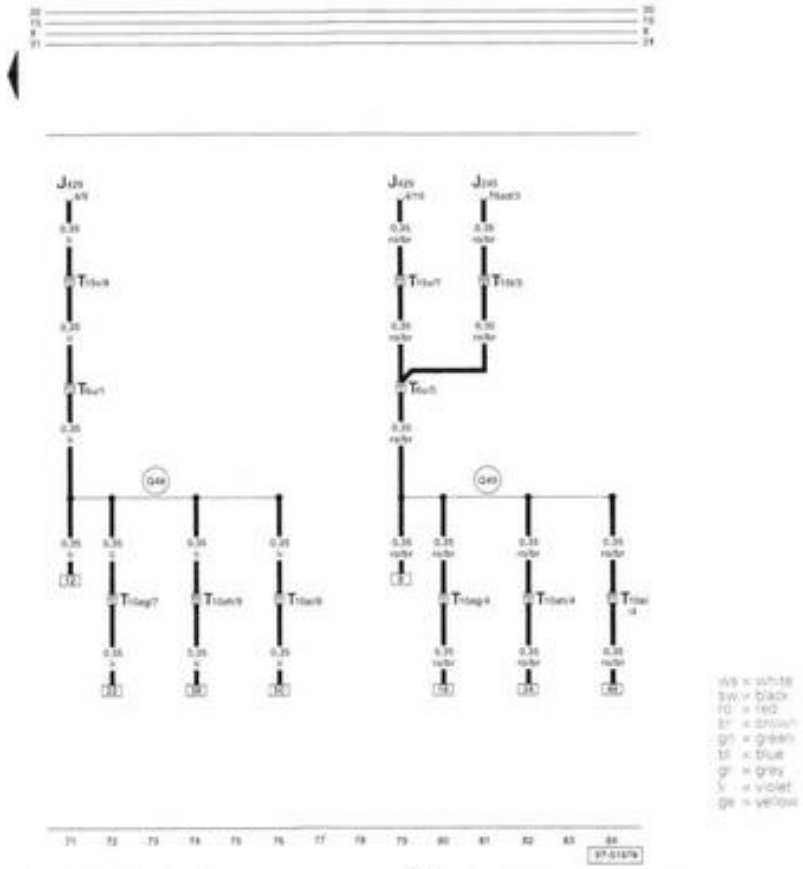




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
E38 - Window Lockout Switch
E150 - Switch for interior lock, driver side
J218 - Instrument Cluster Combination Processor
T6u - Connector 6 pin, grey, connector station A pillar, left
T10eg - Connector 10 pin, red, connector station A pillar, right
T10eh - Connector 10 pin, red, in B pillar, left
T10ei - Connector 10 pin, red, in B pillar, right
T15k - Connector 15 pin, red, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster

(30) - Ground connection, in driver's door wiring harness
(A2) - Plus connection (15), in instrument panel wiring harness
(A15) - Wire connection (58b), in instrument panel wiring harness
(58) - Plus connection (58), in power window wiring harness
(75) - Plus connection (75a), in power window wiring harness



J220 - Power Sunroof Control Module
J429 - Control module for central locking
T6u - Connector 6 pin, grey, connector station A pillar, left
T6sr - Connector 6 pin, blue, on power sunroof control module
T10dg - Connector 10 pin, red, connector station A pillar, right
T10sh - Connector 10 pin, red, in B pillar, left
T10a - Connector 10 pin, red, in B pillar, right
T15t - Connector 15 pin, grey, connector station A pillar, left
T15x - Connector 15 pin, orange, connector station A pillar, right

Connection (open), in wiring harness-interior

Connection (closed), in wiring harness-interior

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

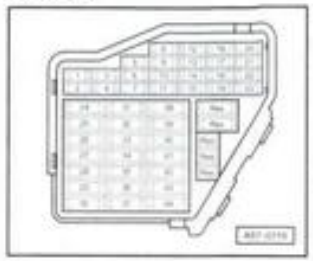


THIS SPACE INTENTIONALLY
LEFT BLANK

## Power Sunroof with Automatic Preselection

2000 m. y.

**Fuse Panel**

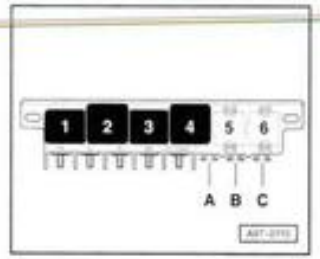


**Fuse Colors:**

| | | |
|---|---|---|
| 30 | A | Green |
| 25 | A | White |
| 20 | A | Yellow |
| 15 | A | Blue |
| 10 | A | Red |
| 7.5 | A | Brown |
| 5 | A | Beige |

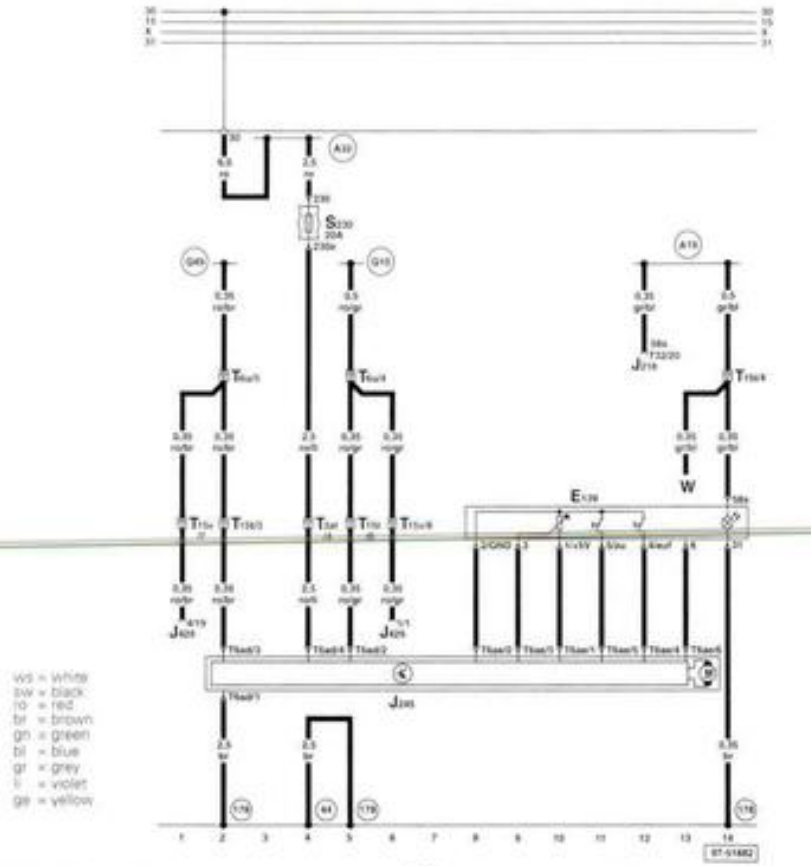
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

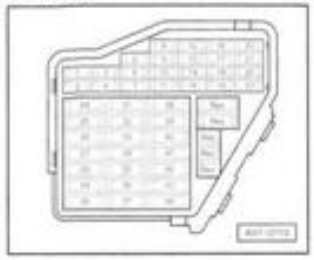
E139 - Sunroof Regulator
J218 - Instrument Cluster Combination Processor
J245 - Power Sunroof Control Module
J429 - Control module for central locking
S230 - Fuse 30 in fuse holder
T3at - Connector 3 pin, grey, connector station A pillar, left
T6ad - Connector 6 pin, blue, on power sunroof control module
T6ae - Connector 6 pin, on power sunroof control module
T6u - Connector 6 pin, grey, connector station A pillar, left
T15t - Connector 15 pin, grey, connector station A pillar, left
T15v - Connector 15 pin, orange, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
W - Front Interior Light

(31) - Ground connection, on left A pillar, lower part
(176) - Ground connection, in sunroof wiring harness
(A19) - Wire connector (58s), in instrument panel wiring harness
(X2) - Plus connection (30), in instrument panel wiring harness
(X4) - Plus connection (87), in power window/central locking system and door contact switch wiring harness
(Z67) - Connection (closed), in wiring harness interior

## Standard Equipment

2001 m. y.

### Fuse Panel

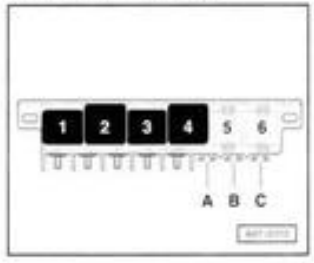


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
 7.5 A - Brown
 5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 23 in the wiring diagram.

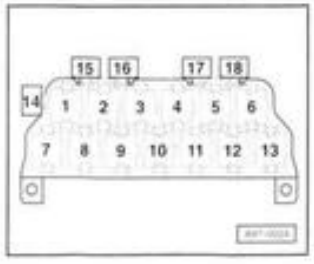
### Micro Central Electric Panel




Relay Location:

1 - Dual Horn Relay, J4
2 - Load Reduction Relay, J59
4 - Fuel Pump (FP) Relay, J17
5 - Wiper/Washer Intermittent Relay, J31
6 - Wiper/Washer Intermittent Relay, J31

### 13 - Fold Relay Panel



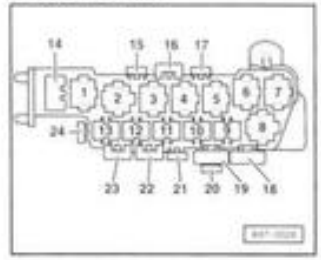

Relay Location:

4 - Starting Interlock Relay, J207
6 - Fog Light Relay, J5



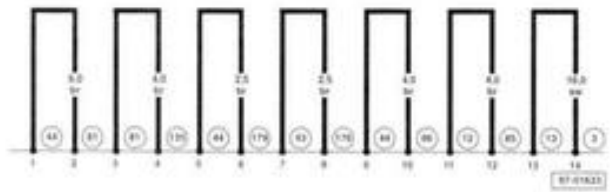


### 8 - Fold Relay Panel




Fuse Location:

15 - Fuse for Luggage Compartment Socket, S180

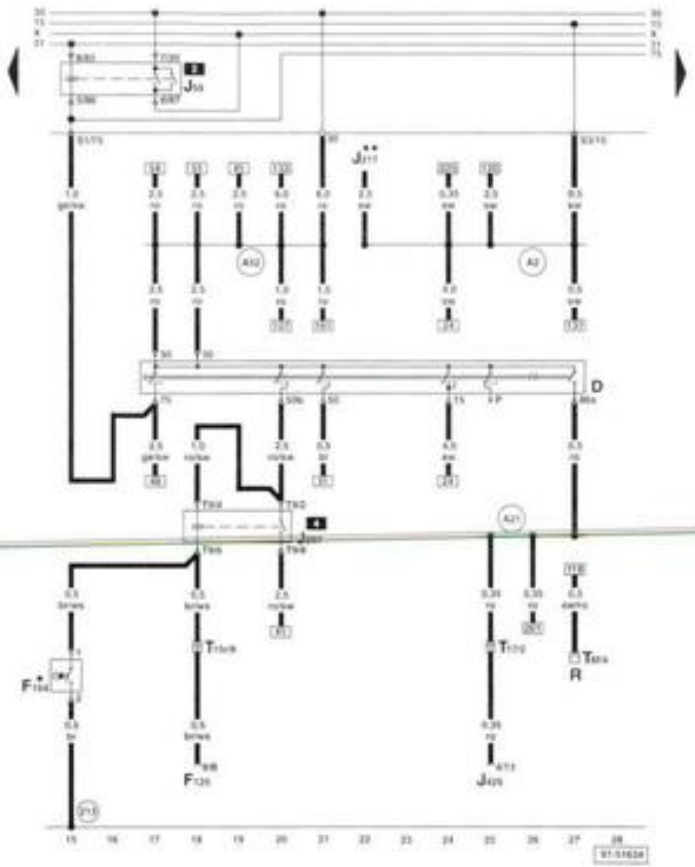


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

- Ground (mas, engine to body
- Ground connection, in engine compartment, left
- Ground connection, in engine compartment, right
- Ground connection, on right A-pillar, lower part
- Ground connection, on left A-pillar, lower part
- Ground connection -1-, in instrument panel wiring harness
- Ground connection -1-, in engine compartment wiring harness
- Ground connection -1-, in rear wiring harness
- Ground connection -2-, in instrument panel wiring harness
- Ground connection, in right headlight wiring harness
- Ground connection, in left headlight wiring harness

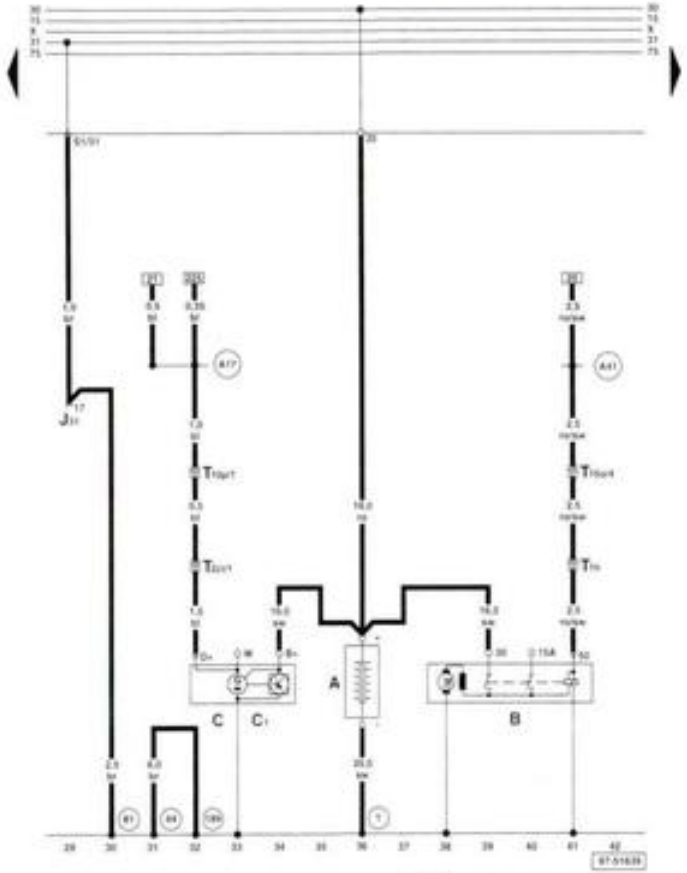






ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

- D - Ignition/Starter Switch
- F125 - Multi-Function Transmission Range (TR) Switch
- F194 - Clutch Pedal Position (CPP) Switch
- J59 - Load Reduction Relay
- J207 - Starting Interlock Relay
- J217 - Transmission Control Module (TCM)
- J428 - Control module for central locking
- R - Radio
- T8f - Connector 8-pin, black, connector radio III
- T9 - Connector 9-pin, brown, on starting interlock relay
- T16r - Connector 16-pin, blue, connector station A-pillar, right
- T17 - Connector 17-pin, orange, connector station A-pillar, right
- Ground connection, in instrument panel wiring harness
- Plus connection (15), in instrument panel wiring harness
- Wire connection (88b), in instrument panel wiring harness
- Plus connection 2- (30), in instrument panel wiring harness
- * - Vehicles with manually shifted transmission
- ** - Vehicles with automatic transmission



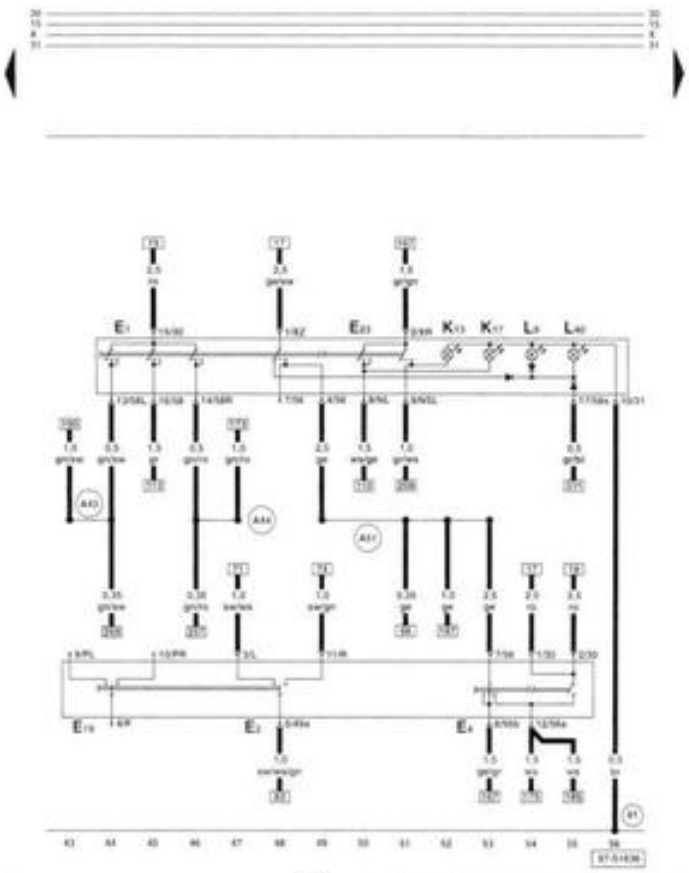
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

A - Battery
B - Starter
C - Generator (G37x)
C1 - Voltage Regulator (VR)
J31 - Wiper/Washer Intermittent Relay
T1 - Single connector, black, in engine compartment, right
T2vt - Connector 2 pin, black, in engine compartment, right
T10bn - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(1) - Ground strap, battery to body
(2) - Ground connection, on left A-pillar, lower part
(31) - Ground connection -1-, in instrument panel wiring harness
(50) - Ground connection -3-, in instrument panel wiring harness
(81) - Wire connection (81), in instrument panel wiring harness
(82) - Plus connection (82), in instrument panel wiring harness



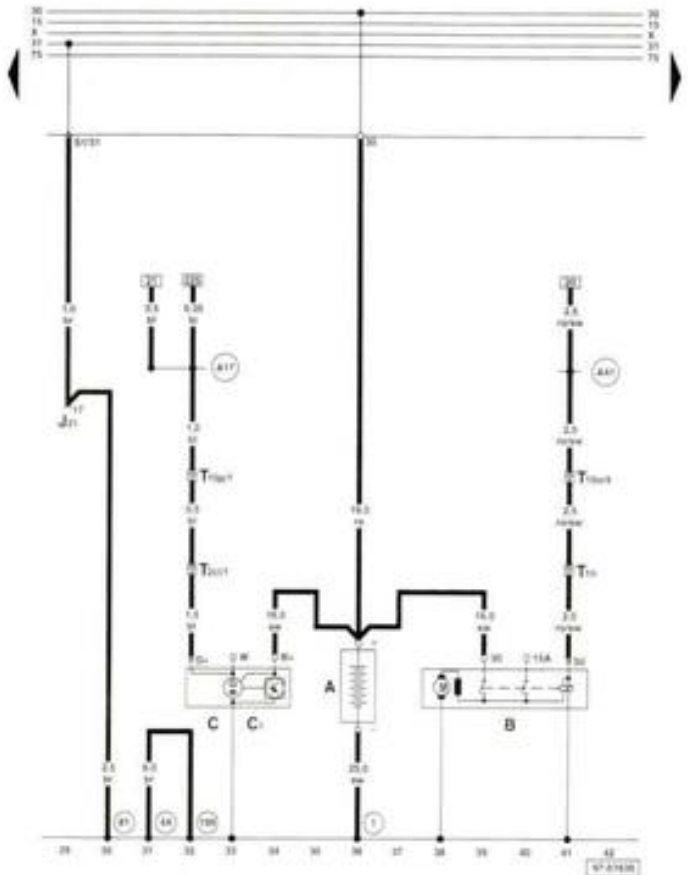




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E2 - Turn Signal Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light

(1) - Ground connection -1-, in instrument panel wiring harness
(2) - Wire connection (57h), in instrument panel wiring harness
(3) - Wire connection (57h), in instrument panel wiring harness
(4) - Wire connection (58), in instrument panel wiring harness



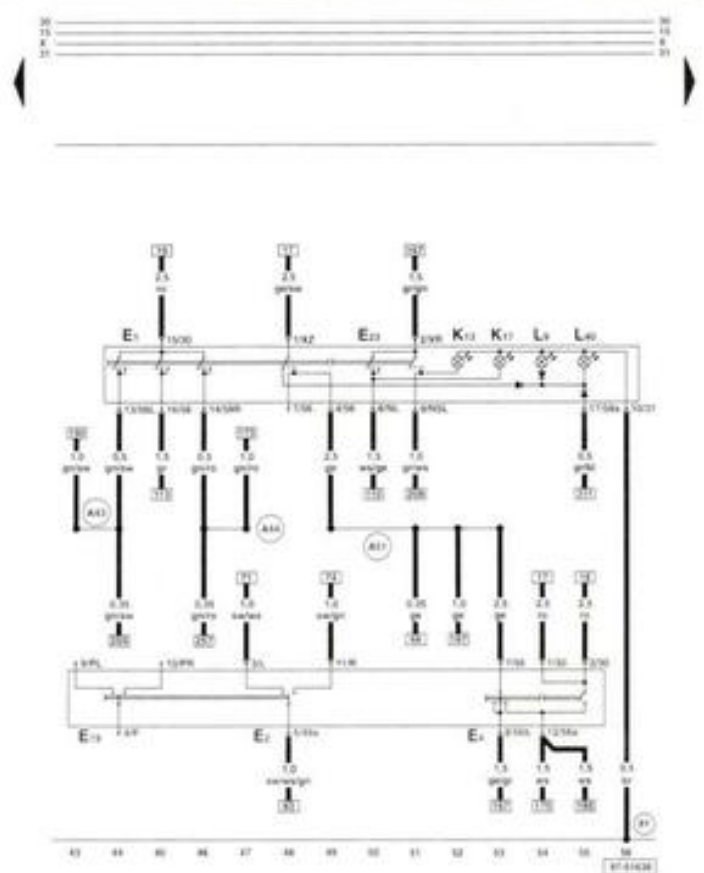
A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
J31 - Wiper/Washer Intermittent Relay
T2zi - Connector 2 pin, black, in engine compartment, right
T16b - Connector 16 pin, brown, connector station electronic box plenum chamber
T16c - Connector 16 pin, black, connector station electronic box plenum chamber

- Ground strap, battery to body
- Ground connection, on left A-pillar, lower part
- Ground connection -1-, in instrument panel wiring harness
- Ground connection -3-, in instrument panel wiring harness
- Wire connection (40), in instrument panel wiring harness
- Plus connection (50), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow







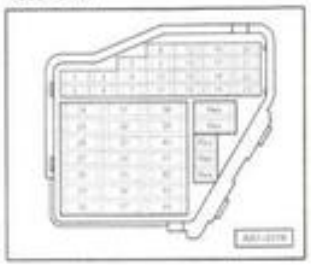
E1 - Light switch
E2 - Turn Signal Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light

- Ground connection -1-, in instrument panel wiring harness
- Wire connection (57), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness

## (2,7 l - Injection Engine, 6 Cylinder), Code APB

2001 m. y.

### Fuse Panel

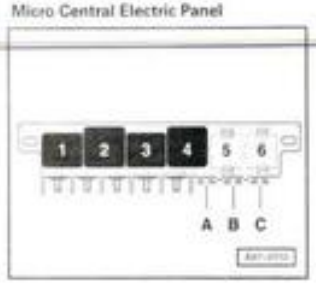


Fuse Colors:

30 A – Green
25 A – White
20 A – Yellow
15 A – Blue
10 A – Red
7,5 A – Brown
5 A – Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

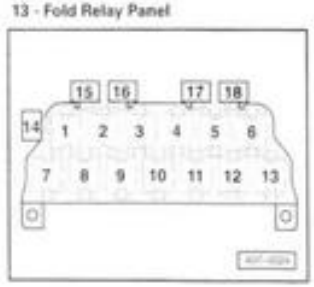
### Micro Central Electric Panel




Relay Location:

4 – Fuel Pump (FP) Relay, J17

### 13 - Fold Relay Panel



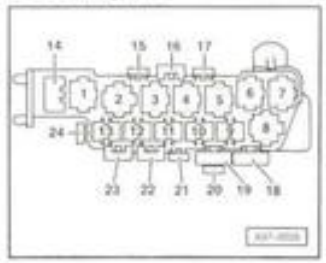

Relay Location:

4 – Starting Interlock Relay, J207





### 8 - Fold Relay Panel

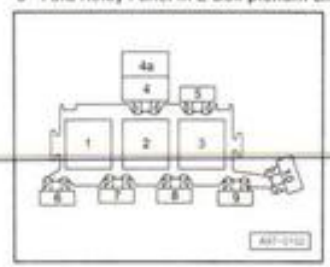



Fuse Location:

20 – Coolant Fan Fuse, S40

21 – Control module fuse for coolant fan, S142

### 3 - Fold Relay Panel in E-Box plenum chamber

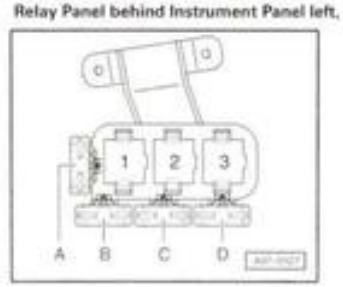



Relay Location:

2 – Secondary Air Injection (AIR) Pump Relay, J299

7 – Fuse for secondary air pump, S130

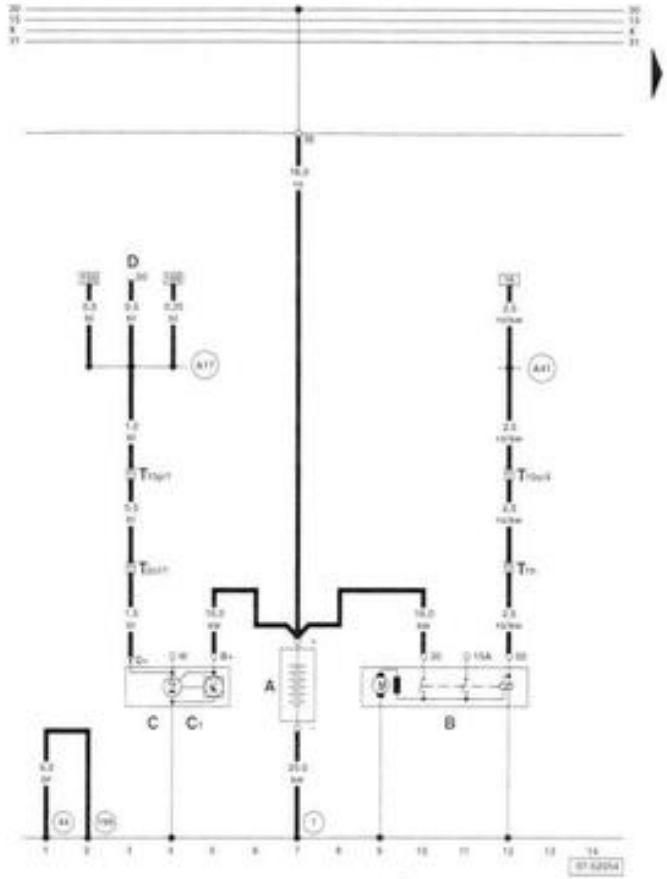
### Relay Panel behind Instrument Panel left, on central girder




Relay Location:

1 – Brake Booster Relay, J343

C – Fuse for Hydraulic Pump Relay, S219



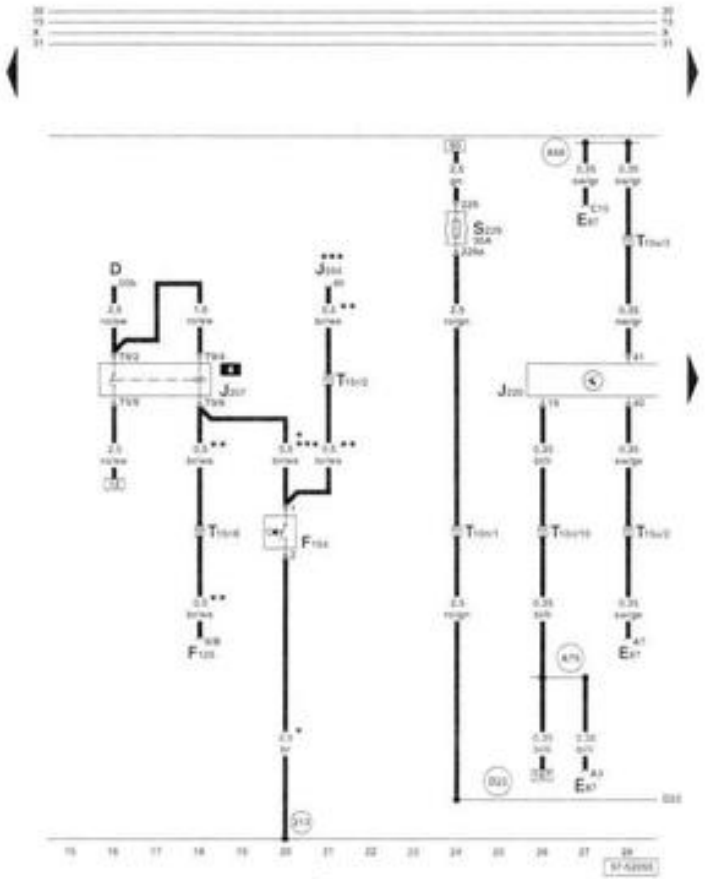
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

A – Battery
B – Starter
C – Generator (GEN)
C1 – Voltage Regulator (VR)
D – Ignition/Starter Switch
T1h – Single connector, black, in engine compartment, right
T2bl – Connector 2 pin, black, in engine compartment, right
T10b – Connector 10 pin, brown, connector station electronic box plenum chamber
T10r – Connector 10 pin, black, connector station electronic box plenum chamber

– Ground strap, battery to body
– Ground connection, on left A-pillar, lower part
– Ground connection (), in instrument panel wiring harness
– Wire connection 40+, in instrument panel wiring harness
– Fuse connection (50), in instrument panel wiring harness





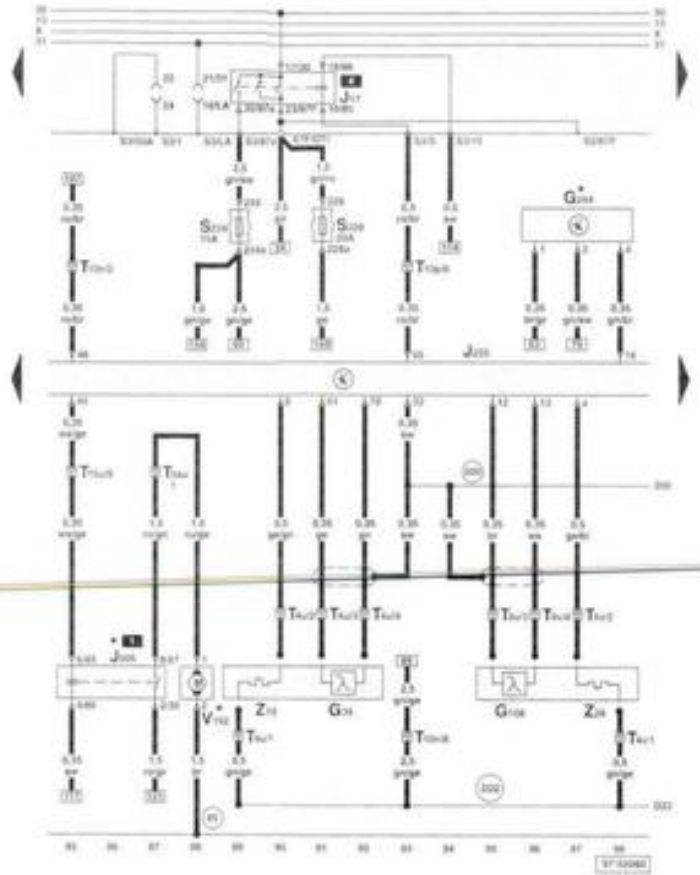


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
E47 – A/C Control Head
F125 – Multi-Function Transmission Range (TR) Switch
F194 – Clutch Pedal Position (CPP) Switch
J207 – Starting Interlock Relay
J220 – Motronic Engine Control Module (ECM)
J604 – 4 Low Range Control Module
S229 – Fuse 29 in Fuse Holder
T9 – Connector 9 pin, brown, on starting interlock relay
T10h – Connector 10 pin, orange, connector station electronic box plenum chamber
T16b – Connector 16 pin, blue, connector station A pillar, right
T16u – Connector 16 pin, red, connector station electronic box plenum chamber

– Ground connection, in instrument panel wiring harness
– Connector (C10, A/C), in instrument panel wiring harness
– Connector engine overheat warning light, in instrument panel wiring harness
– Connector lower fuse 229, in wiring harness front, right

* – Vehicles with manually shifted transmission
** – Vehicles with automatic transmission
*** – Vehicles ahead with shifted transmission 01E



G39 – Heated Oxygen Sensor (HO2S) 2
G108 – Heated Oxygen Sensor (HO2S) 3
G294 – Brake Booster Pressure Sensor
J17 – Fuel Pump (FP) Relay
J220 – Motronic Engine Control Module (ECM)
J583 – Brake booster relay
SZ29 – Fuse 29 in fuse holder
SZ34 – Fuse 34 in fuse holder
T2av – Connector 2 pin, red, connector station electronic box plenum chamber
T4v – Connector 4 pin, black, heated oxygen sensor
T4z – Connector 4 pin, black, heated oxygen sensor 2
T10r – Connector 10 pin, orange, connector station electronic box plenum chamber
T10z – Connector 10 pin, black, connector station electronic box plenum chamber
T15u – Connector 15 pin, red, connector station electronic box plenum chamber
V192 – Brake Vacuum Pump
Z19 – Oxygen Sensor (O2S) Heater
Z29 – Oxygen Sensor (O2S) 2 Heater

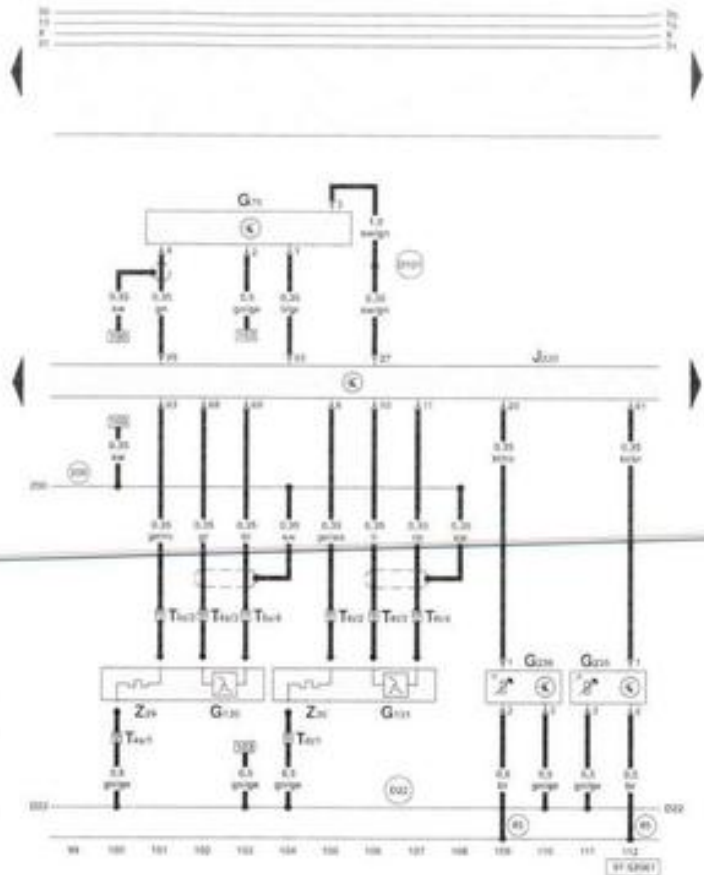
(31) – Ground connection 1, in engine compartment wiring harness
(X) – Ground connection (shielding), in engine compartment wiring harness
(X) – Connector (rear fuse 224), in wiring harness front, right
* – Only Vehicles with automatic transmission

wt = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



Motronic Engine Control Module, Fuel Pump Relay, Oxygen Sensors Heater, Brake Vacuum Pump



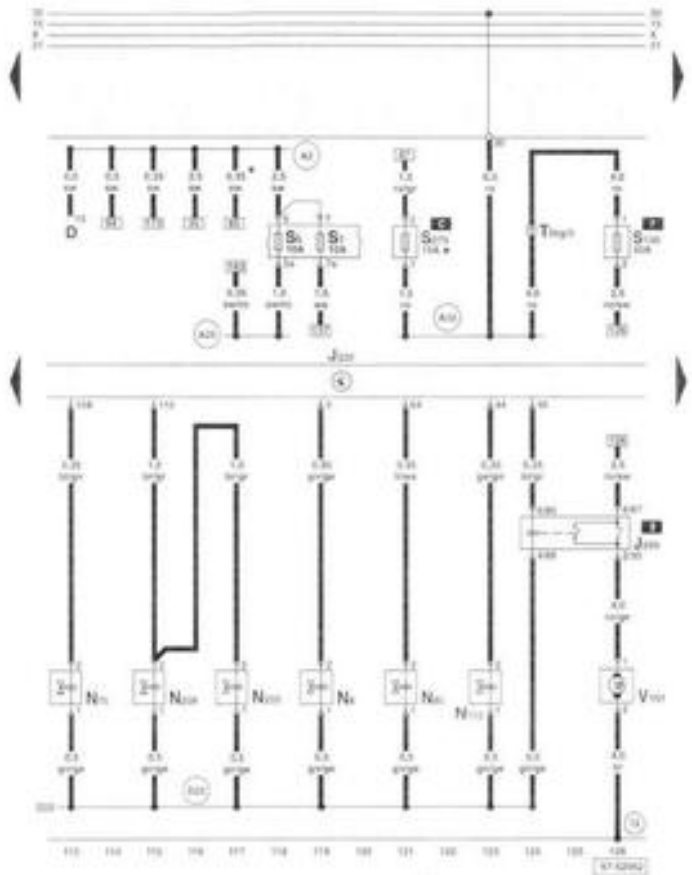


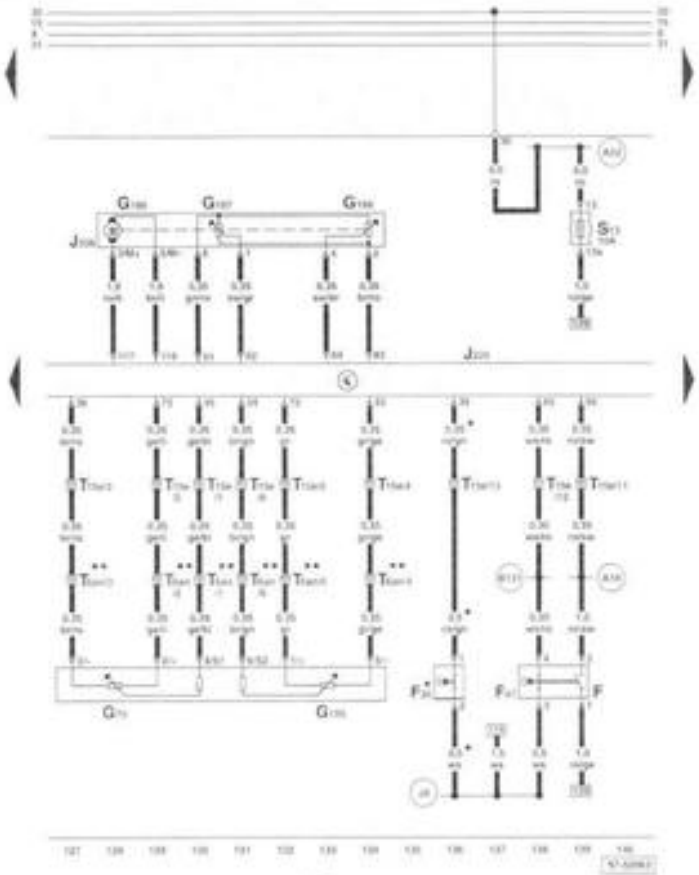
G70 – Mass Air Flow (MAF) Sensor
G130 – Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 – Heated Oxygen Sensor (O2S) 3 Behind Three Way Catalytic Converter (TWC)
G235 – Sensor 1 for exhaust temperature
G236 – Sensor 2 for exhaust temperature
J220 – Motronic Engine Control Module (ECM)
T4x – Connector 4 pin, green, rear oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4t – Connector 4 pin, brown, rear oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
Z19 – Oxygen Sensor (O2S) Heater
Z30 – Oxygen Sensor (O2S) 3 Heater

(31) – Ground connection 1, in engine compartment wiring harness
(X) – Ground connection (shielding), in engine compartment wiring harness
(X) – Connector (rear fuse 224), in wiring harness front, right
(X) – Wire connection 1, in engine compartment wiring harness

wt = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

Motronic Engine Control Module, Mass Air Flow Sensor, Heated Oxygen Sensors

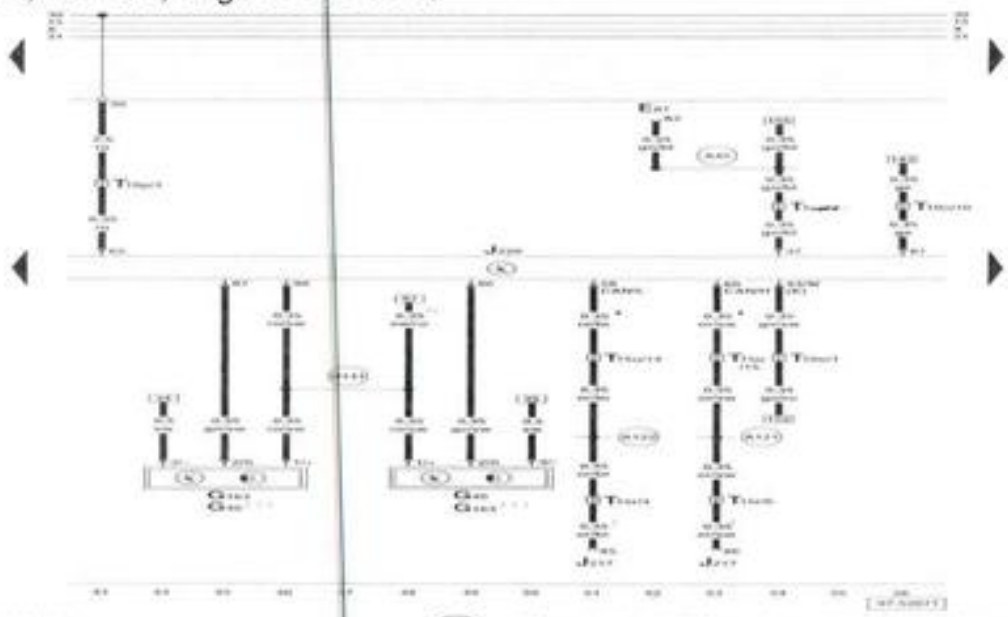




*Engine Management, 2.8 Liter, Engine Code ATQ*

## EWD-120 Electrical Wiring Diagrams

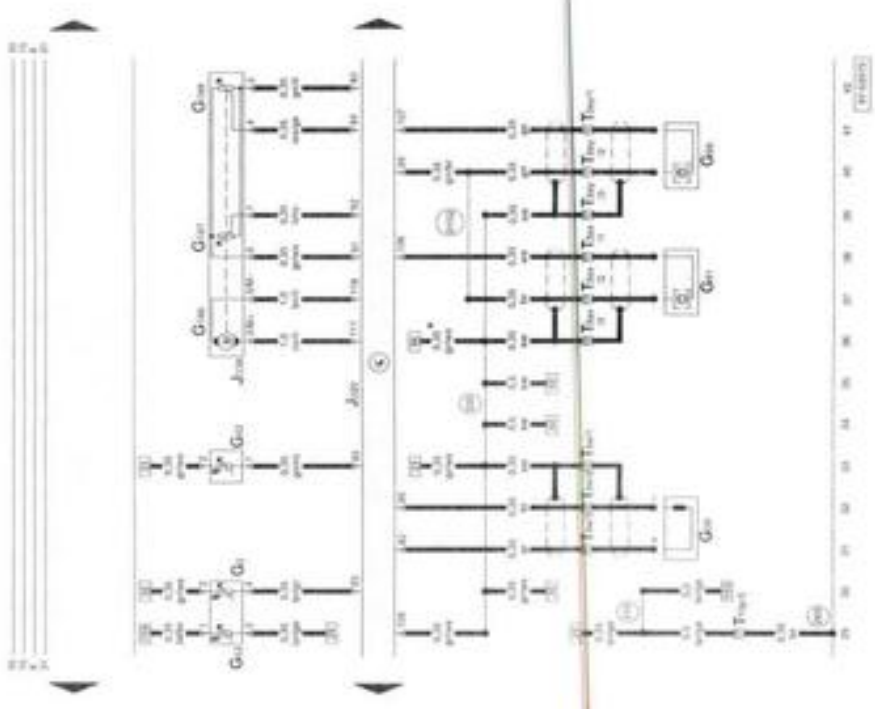
*Engine Management, 2.8 Liter, Engine Code ATQ*



**Motronic Engine Control Module, Transmission Control Module, Camshaft Position Sensor**

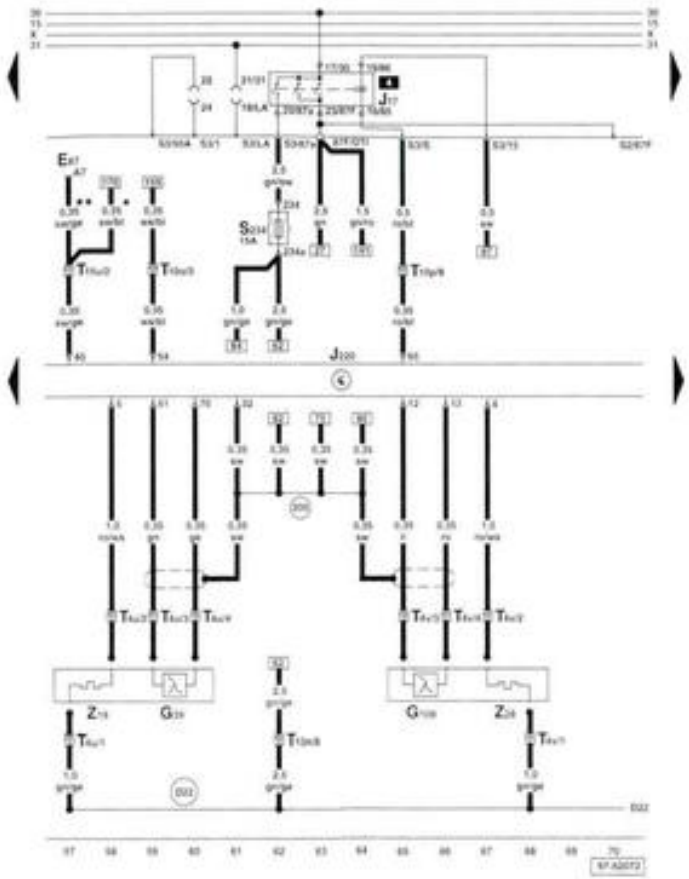
**Edition 01/01**
VW2 LEA 0000 02 21

Audi A6 — Wiring diagram — No. 4/5



**Motronic Engine Control Module, Knock Sensors, Throttle Valve Control Module**

**Edition 01/01**
VW2 LEA 5000 02 21



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

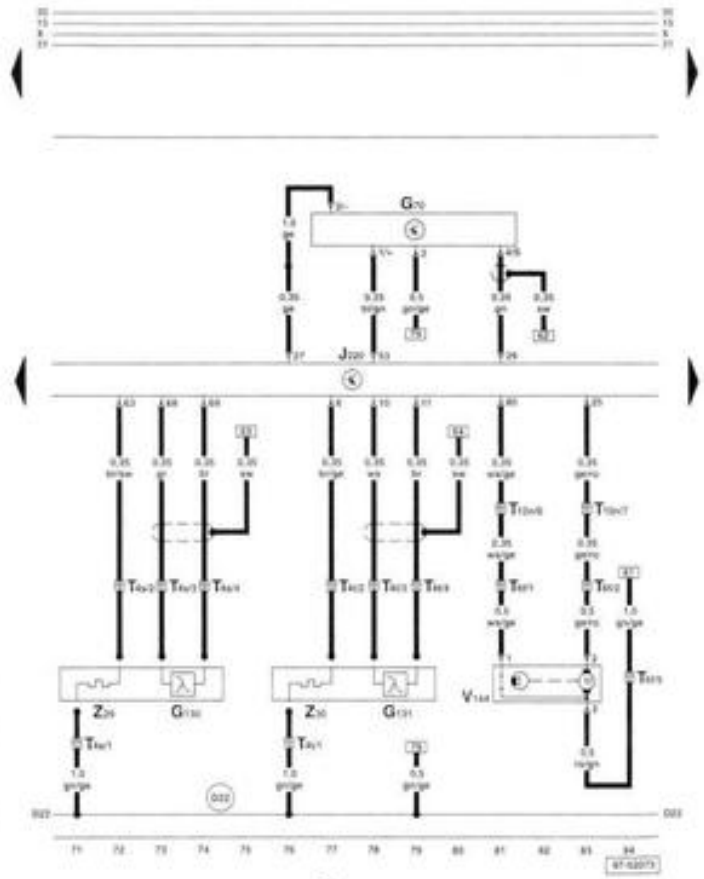
E87 – A/C Control Head
G39 – Heated Oxygen Sensor (HO2S) 2
G108 – Heated Oxygen Sensor (HO2S) 2
J17 – Fuel Pump (FP) Relay
J220 – Motronic Engine Control Module (ECM)
S234 – Fuse 34 in fuse holder
T4u – Connector 4 pin, black, heated oxygen sensor
T4v – Connector 4 pin, black, heated oxygen sensor 2
T10n – Connector 10 pin, orange, connector station electronic box plenum chamber
T10o – Connector 10 pin, brown, connector station electronic box plenum chamber
T10p – Connector 10 pin, black, connector station electronic box plenum chamber
T15u – Connector 15 pin, red, connector station electronic box plenum chamber
Z19 – Oxygen Sensor (O2S) Heater
Z29 – Oxygen Sensor (O2S) 2 Heater

– Ground connection (shielding), in engine compartment wiring harness
– Connector (own fuse 234), in wiring harness front, right

* – Vehicles with front wheel drive
** – Vehicles with all wheel drive and manually shifted transmission







ws = white
sw = black
ro = red
br = brown
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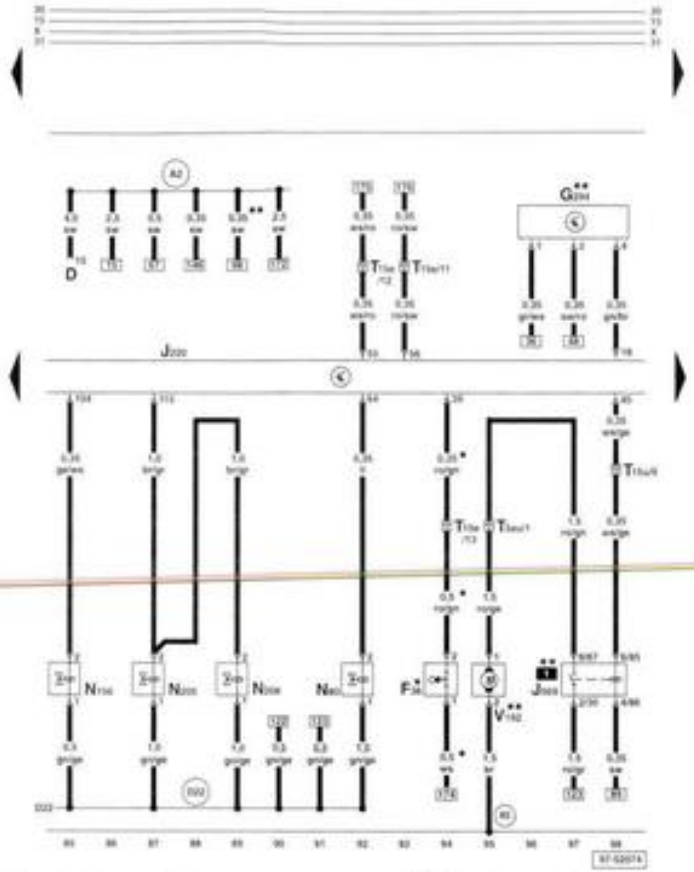
bl = blue
gr = grey
li = violet
ge = yellow

G70 – Mass Air Flow (MAF) Sensor
G130 – Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 – Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J220 – Motronic Engine Control Module (ECM)
T4x – Connector 4 pin, green, rear oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4t – Connector 4 pin, brown, rear oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T6f – Connector 6 pin, darkbrown, connector station A pillar, right
T10n – Connector 10 pin, orange, connector station electronic box plenum chamber
V144 – Leak Detection Pump (LDP)
Z19 – Oxygen Sensor (O2S) Heater
Z30 – Oxygen Sensor (O2S) 2 Heater

– Connector (own fuse 234), in wiring harness front, right



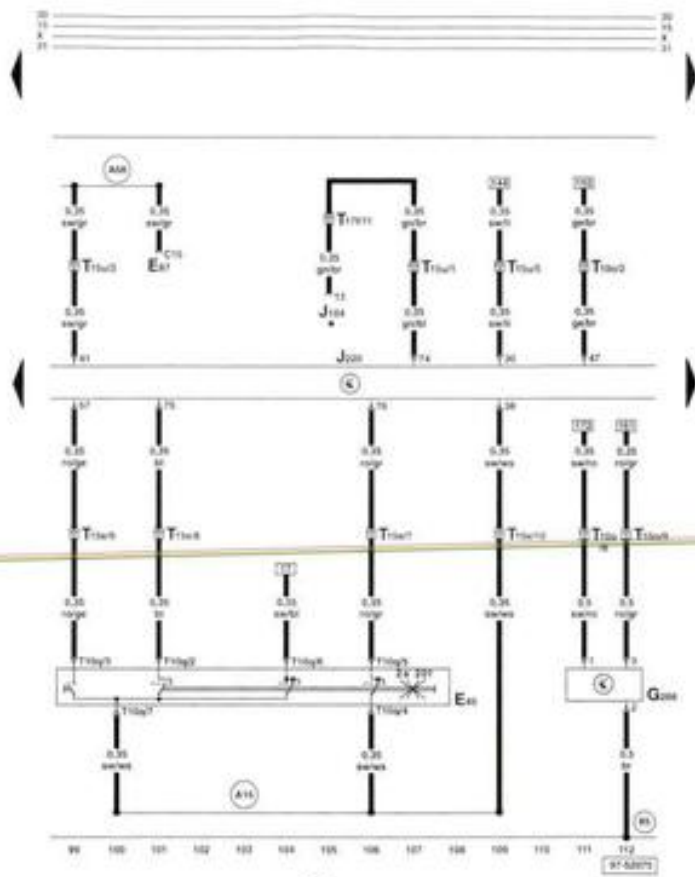

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
F36 – Clutch Vacuum Vent Valve Switch
G294 – Brake Booster Pressure Sensor
J220 – Motronic Engine Control Module (ECM)
J569 – Brake booster relay
N80 – Evaporative Emission (EVAP) Canister Purge Regulator Valve
N156 – Intake Change-Over Valve
N205 – Valve -1- for camshaft adjustment
N109 – Valve -2- for camshaft adjustment
T2eu – Connector 2 pin, red, connector station electronic box, plenum chamber
T16e – Connector 16 pin, white, connector station electronic box, plenum chamber
T16u – Connector 16 pin, red, connector station electronic box, plenum chamber
V192 – Brake Vacuum Pump

(A1) – Ground connection -1-, in engine compartment wiring harness
(A2) – Plus connection (15), in instrument panel wiring harness
(C2) – Connector (fuse) fuse 234), in wiring harness front, right
• – Vehicles with manually shifted transmission
•• – only Vehicles with automatic transmission



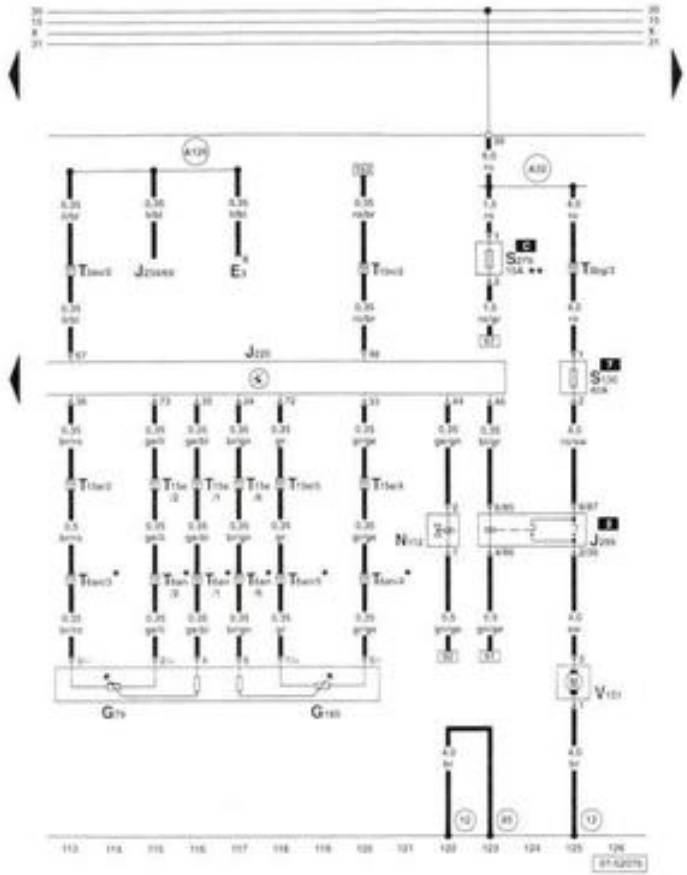





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F45 – Cruise Control Switch
E97 – A/C Control Head
G266 – Oil Level Thermal Sensor (OR)
J104 – ABS Control Module (w/EDL)
J220 – Motronic Engine Control Module (ECM)
T10u – Connector 10 pin, brown, connector station electronic box, plenum chamber
T10q – Connector 10 pin, black, on cruise control switch
T16e – Connector 16 pin, white, connector station electronic box, plenum chamber
T16u – Connector 16 pin, red, connector station electronic box, plenum chamber
T17l – Connector 17 pin, black, in B Post Relay Panel behind the storage driver's side

(A1) – Ground connection -1-, in engine compartment wiring harness
(C2) – Wire connection (cruise control), in instrument panel wiring harness
(C15) – Connector (C15, A/C), in instrument panel wiring harness
• – Vehicles with ABS 5.3



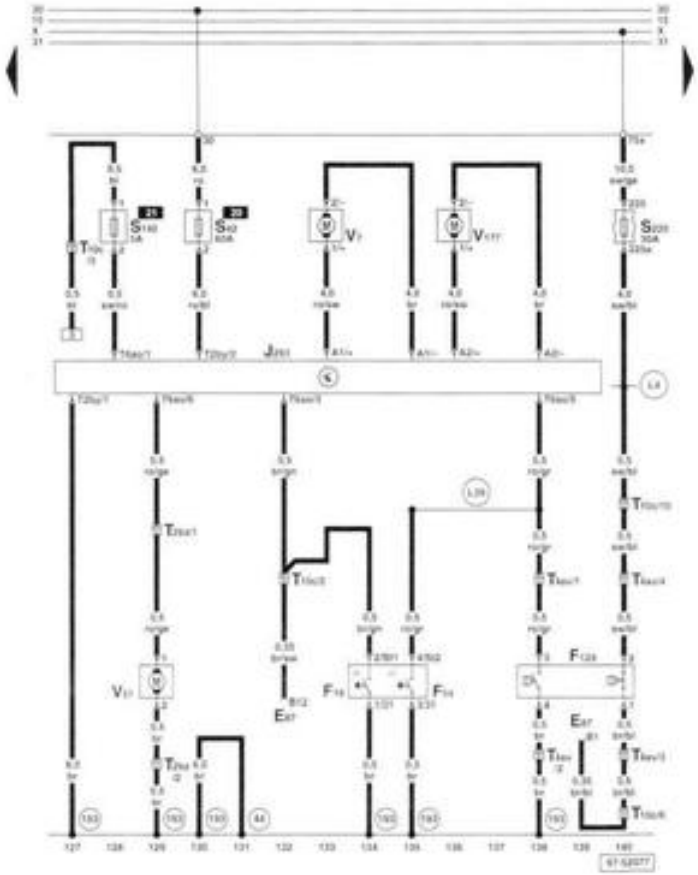
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E3 - Emergency Flasher Switch
G79 - Throttle Position (TP) Sensor
G185 - Sensor -2- for accelerator pedal position
J220 - Motronic Engine Control Module (ECM)
J234 - Airbag Control Module
J299 - Secondary Air Injection (AIR) Pump Relay
N112 - Secondary Air Injection (AIR) Solenoid Valve
S130 - Fuse for secondary air pump
S279 - Brake Booster Relay Fuse
T3au - Connector 3 pin, red, connector station electronic box plenum chamber
T3bg - Connector 3 pin, white, connector station electronic box plenum chamber
T6an - Connector 6 pin, in front footwell, left
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber
T15e - Connector 15 pin, white, connector station electronic box plenum chamber
V101 - Secondary Air Injection (AIR) Pump Motor

(12) - Ground connection, in engine compartment, left
(85) - Ground connection -1-, in engine compartment wiring harness
(X,X) - Plus connection (30), in instrument panel wiring harness
(X,X) - Connection (crash signal) in instrument panel wiring harness
* - new Throttle Position (TP) Sensor without adapter wire, running change
** - only Vehicles with automatic transmission



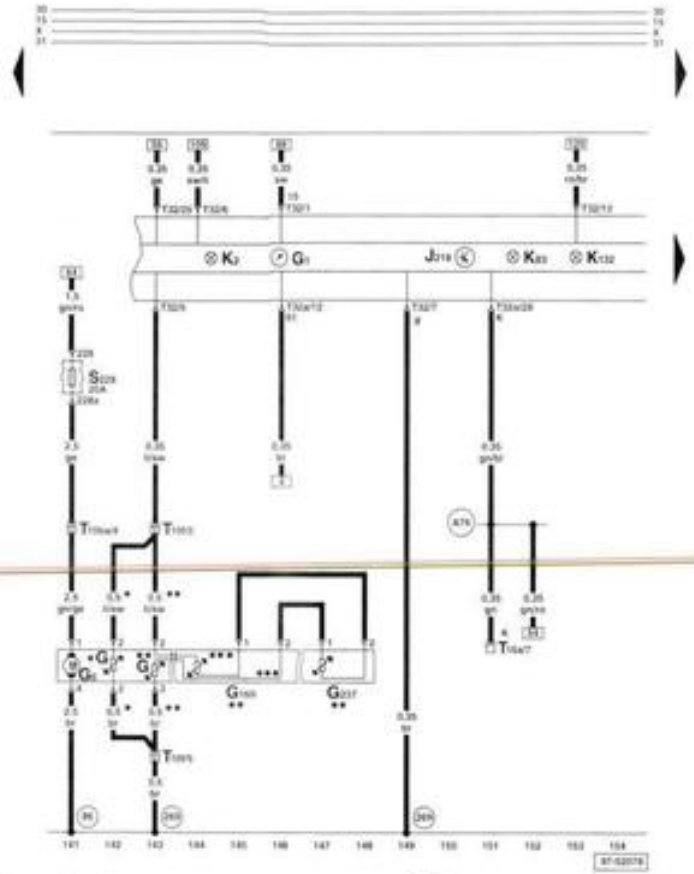




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E87 - A/C Control Head
F18 - Coolant Fan Control (FC) Thermal Switch
F54 - Coolant Fan Control (FC) Thermal Switch
F129 - A/C Pressure Switch
J293 - Coolant FC (Fan Control) Control Module
S42 - Coolant Fan Fuse
S142 - Control module fuse for coolant fan
S225 - Fuse 25 in fuse holder
T2by - Connector 2 pin, on Coolant FC (Fan Control) Control Module
T2bz - Connector 2 pin, green, for After-Run Coolant Pump
T4ax - Connector 4 pin, red, in engine compartment, left
T6ao - Connector 6 pin, on Coolant FC (Fan Control) Control Module
T10c - Connector 10 pin, grey, connector station A pillar, left
V7 - Coolant Fan
V51 - After-Run Coolant Pump
V177 - Coolant fan -2-

(4) - Ground connection, on left A-pillar, lower part
(50) - Ground connection -1-, in coolant fan wiring harness
(X) - Wire connection (75at), in A/C wiring harness
(X) - Wire connection -1- (A/C Pressure Switch), in Climatronic wiring harness



G - Sender for fuel gauge
G1 - Fuel Gauge
G6 - Fuel Pump (FP)
G169 - Sender 2 for fuel gauge
G237 - Sensor 3- for fuel supply
J218 - Instrument Cluster Combination Processor
K2 - Generator (GEN) Warning Light
K83 - Malfunction Indicator Lamp (MIL)
K132 - Fault light for power accelerator activation
SZ28 - Fuse 28 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
T16a - Connector 16 pin, data link connector
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

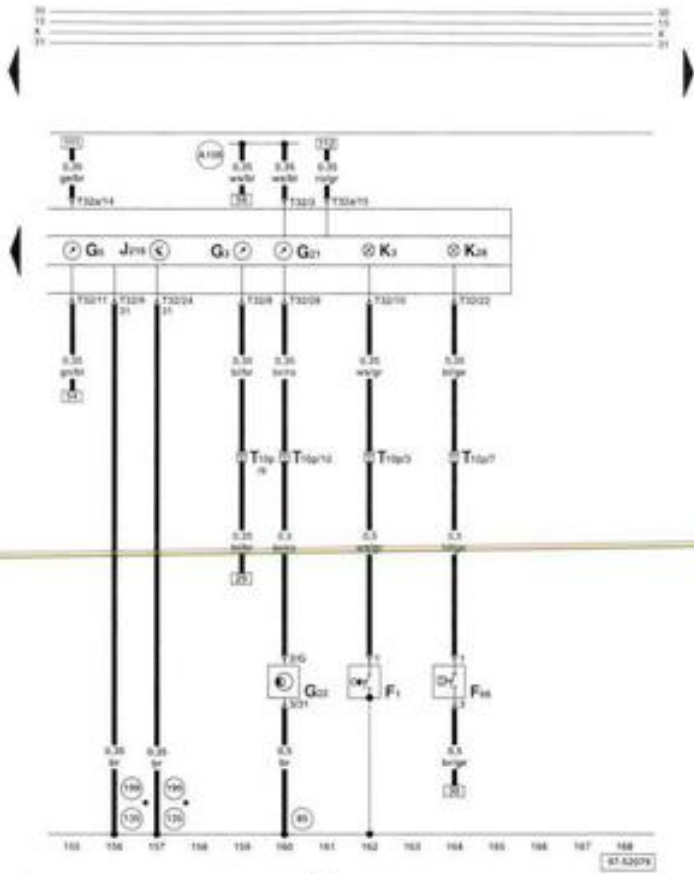
(30) - Ground connection -1-, in rear wiring harness
(A106) - Ground connector sensor ground -1-, in instrument panel wiring harness
(A176) - Connector (K diagnosis wire), in instrument panel wiring harness

* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank
# - Exit Sensor ground

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow





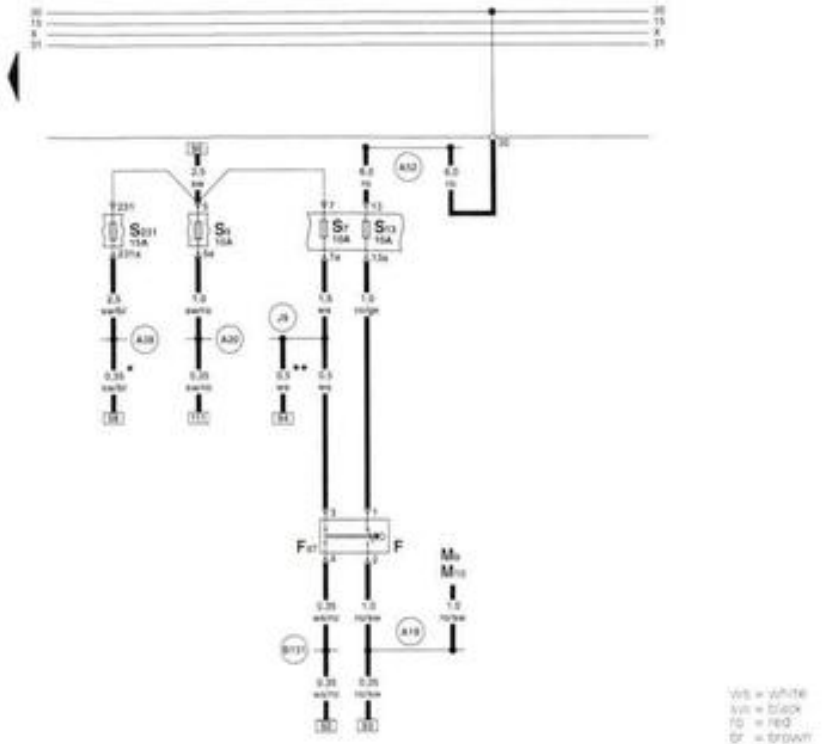


F1 - Oil Pressure Switch
F66 - Engine Coolant Level (ECL) Warning Switch
G3 - Engine Coolant Temperature (ECT) Gauge
G5 - Tachometer
G21 - Speedometer
G22 - Speedometer Vehicle Speed Sensor (VSS)
J218 - Instrument Cluster Combination Processor
K3 - Oil Pressure Warning Light
K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(30) - Ground connection -1-, in engine compartment wiring harness
(A106) - Ground connection -2-, in instrument panel wiring harness
(A176) - Ground connection -3-, in instrument panel wiring harness
(S) - Connector speed signal, in instrument panel wiring harness

* - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



F - Brake Light Switch
F47 - Vacuum Vent Valve, Brake
M9 - Left Brake Light
M10 - Right Brake Light
S5 - Fuse
S7 - Fuse
S13 - Fuse
S231 - Fuse 31 in fuse holder

wh = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

- Wire connection (54), in instrument panel wiring harness
- Wire connection (15a), in instrument panel wiring harness
- Plus connection (15a II), in instrument panel wiring harness
- Plus connection, 2 -DD-, in instrument panel wiring harness
- Connector (54), in wiring harness interior
- Wire connection -1- (15a), in ABS wiring harness

* - Vehicles with front wheel drive
** - Vehicles with manually shifted transmission



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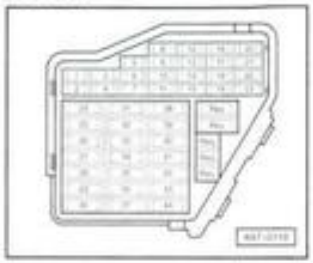
LEFT BLANK

## (4,2 l - Injection Engine, 8 Cylinder), Code ART

2001 m. y.

### Fuse Panel

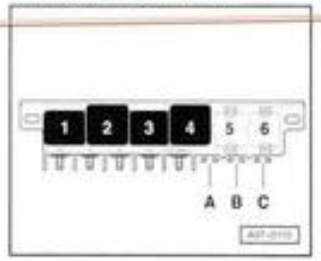


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

### Micro Central Electric Panel



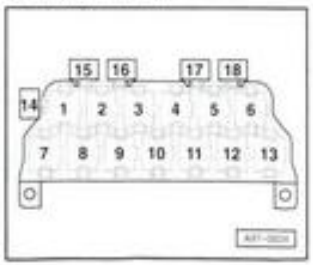

**Relay Location:**

**4** Fuel Pump (FP) Relay, J17

**5** Wiper/Washer Intermittent Relay, J31

**6** Wiper/Washer Intermittent Relay, J31

### 13 - Fold Relay Panel



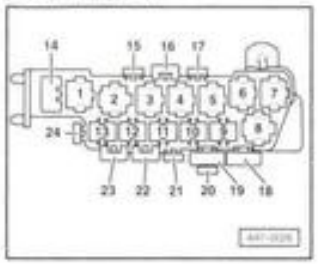

**Relay Location:**

**4** Starting Interlock Relay, J207





### 8 - Fold Relay Panel

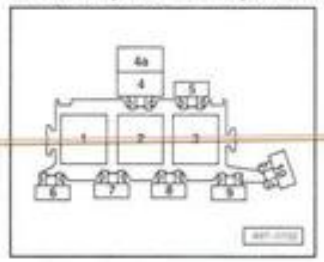



**Fuse Location:**

**20** Coolant Fan Fuse, S42

**21** Control module fuse for coolant fan, S132

### 3 - Fold Relay Panel in E-Box plenum chamber

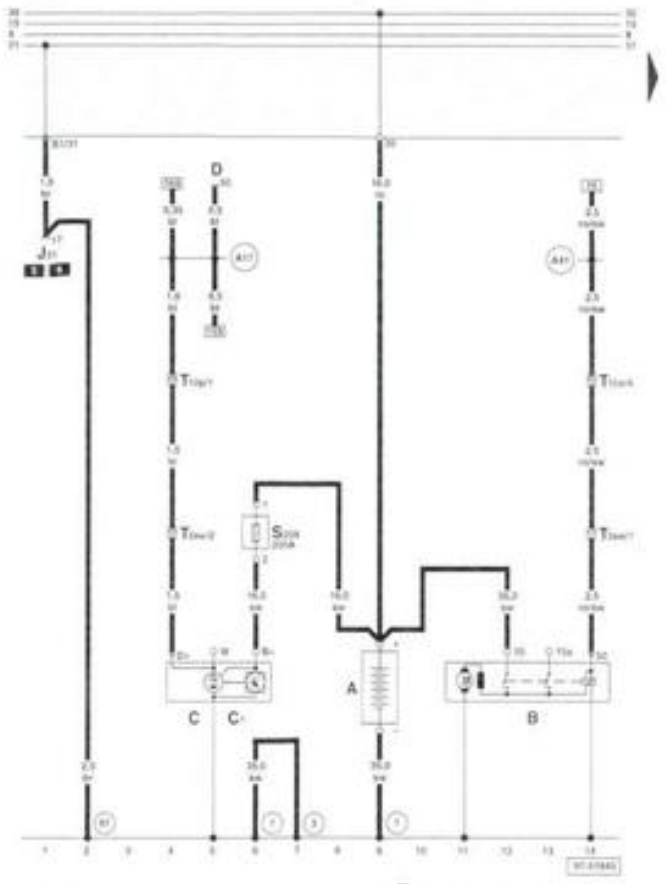



**Relay Location:**

**2** Secondary Air Injection (AIR) Pump Relay, J299

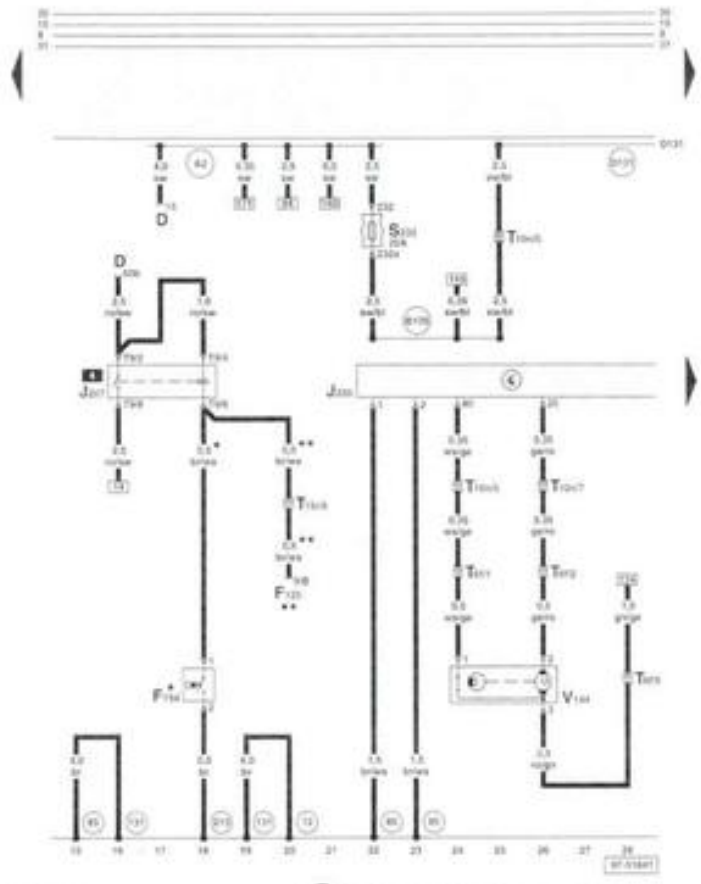
**3** Motronic Engine Control Module (ECM) Power Supply Relay, J271

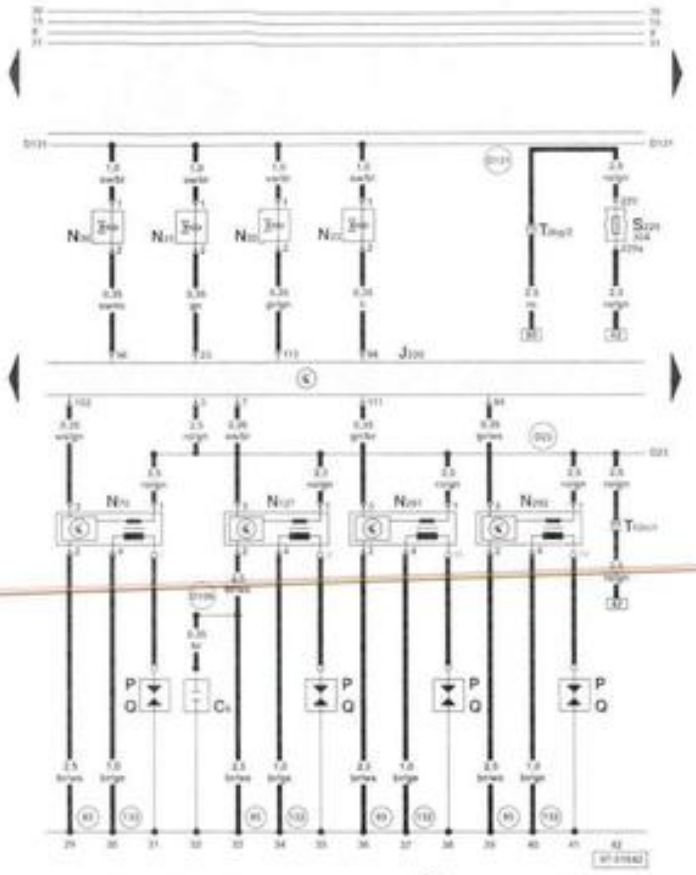
**7** Fuse for secondary air pump, S130











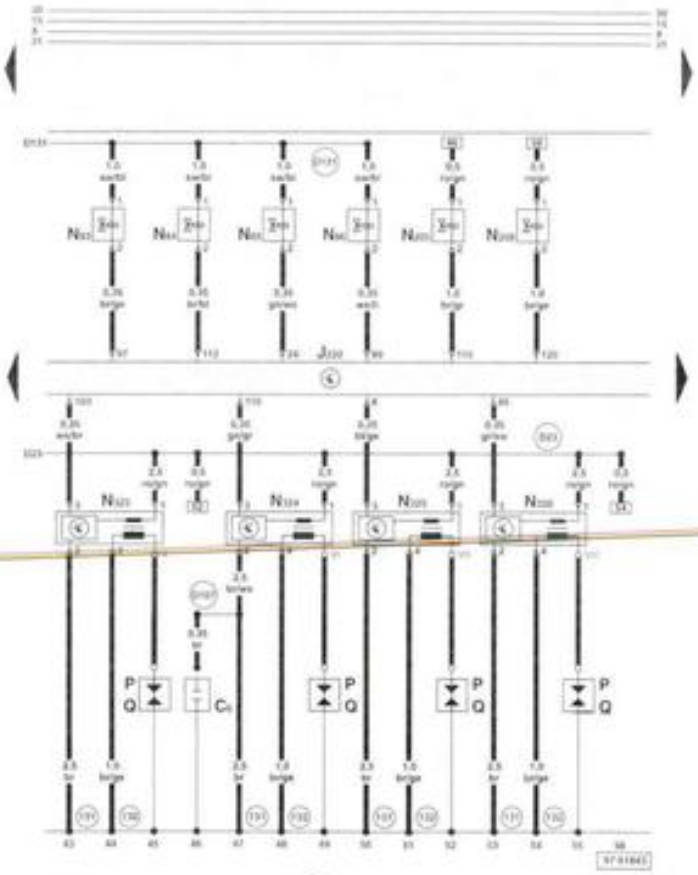
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

CE - Distributor ignition (DI) Capacitor
J220 - Motronic Engine Control Module (ECM)
N30 - Cylinder 1 Fuel Injector
N31 - Cylinder 2 Fuel Injector
N32 - Cylinder 3 Fuel Injector
N33 - Cylinder 4 Fuel Injector
N70 - Ignition Coil 1 with Power Output Stage
N127 - Ignition Coil 2 with Power Output Stage
N291 - Ignition Coil 3 with Power Output Stage
N292 - Ignition Coil 4 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
SD29 - Fuse 29 in fuse holder
T36g - Connector 3-pin, white, connector station electronics box plenum chamber
T10n - Connector 10-pin, orange, connector station electronics box plenum chamber

- Ground connection 1, in engine compartment wiring harness
- Ground connection 3, in engine compartment wiring harness
- Connector over fuse 229, in wiring harness front, right
- Wire connection 4, in engine compartment wiring harness
- Wire connection (16), over fuse 232, in engine compartment wiring harness



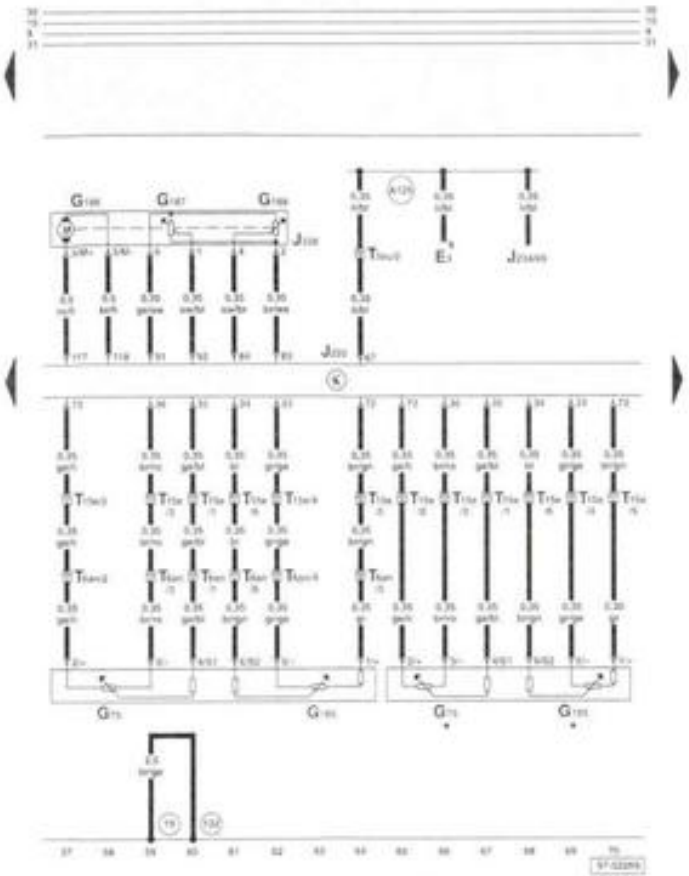




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

CE - Distributor ignition (DI) Capacitor
J220 - Motronic Engine Control Module (ECM)
N83 - Cylinder 5 Fuel Injector
N84 - Cylinder 6 Fuel Injector
N85 - Cylinder 7 Fuel Injector
N86 - Cylinder 8 Fuel Injector
N205 - Valve 1 for camshaft adjustment
N208 - Valve 2 for camshaft adjustment
N323 - Ignition Coil 5 with Power Output Stage
N324 - Ignition Coil 6 with Power Output Stage
N325 - Ignition Coil 7 with Power Output Stage
N326 - Ignition Coil 8 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs

- Ground connection 2, in engine compartment wiring harness
- Ground connection 3, in engine compartment wiring harness
- Connector over fuse 229, in wiring harness front, right
- Wire connection 5, in engine compartment wiring harness
- Wire connection (16), over fuse 232, in engine compartment wiring harness



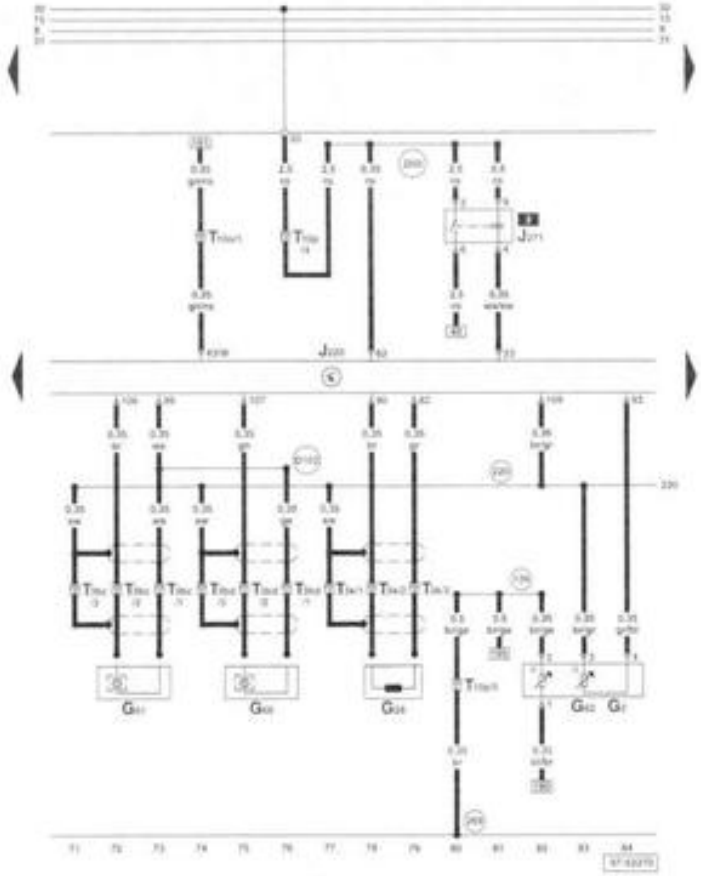
E3 – Emergency Flasher Switch
G79 – Throttle Position (TP) Sensor
G185 – Sensor -2- for accelerator pedal position
G186 – Throttle drive (power accelerator actuation)
G187 – Angle sensor -1- for throttle drive (power accelerator actuation)
G188 – Angle sensor -2- for throttle drive (power accelerator actuation)
J220 – Motronic Engine Control Module (ECM)
J234 – Airbag Control Module
J338 – Throttle Valve Control Module
T3au – Connector 3 pin, red, connector station electronic box plenum chamber
T6l – Connector 6 pin, on interior light, horn
T10w – Connector 10 pin, white, connector station electronic box plenum chamber

- Ground connection, near ignition coil
- Ground connection -2-, in engine compartment wiring harness
- Connection (crash signal) in instrument panel wiring harness
- Running production change



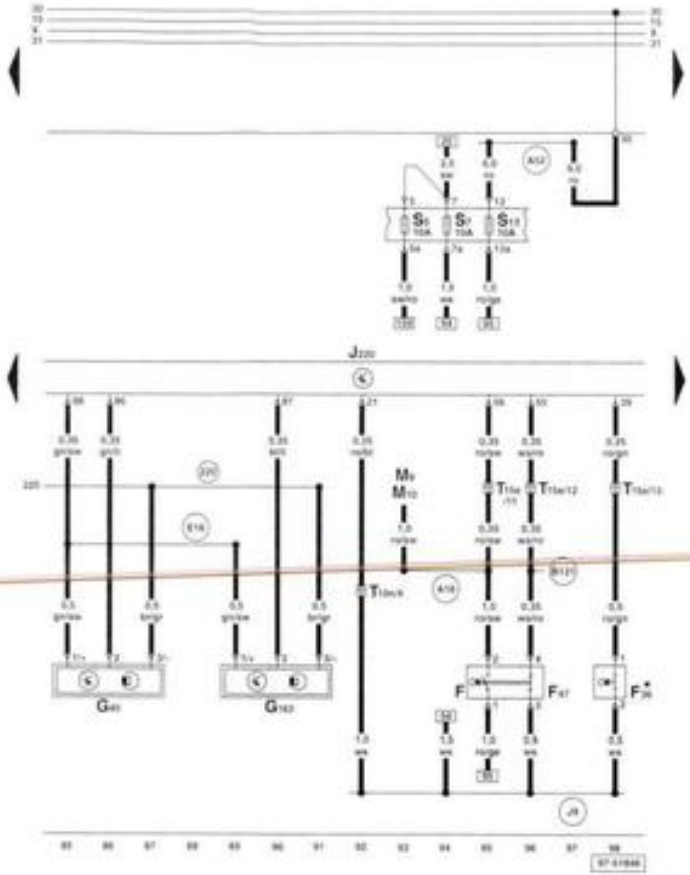
Motronic Engine Control Module, Throttle Valve Control Module, Throttle Position Sensor





G1 – Engine Coolant Temperature (ECT) Sensor
G28 – Engine Speed (RPM) Sensor
G61 – Knock Sensor (KS) 1
G62 – Engine Coolant Temperature (ECT) Sensor
G66 – Knock Sensor (KS) 2
J220 – Motronic Engine Control Module (ECM)
J271 – Motronic Engine Control Module (ECM) Power Supply Relay
T3b – Connector 3 pin, grey, on Engine Speed (RPM) Sensor
T3bv – Connector 3 pin, green, on Knock Sensor 1
T3bz – Connector 3 pin, green, on Knock Sensor 2
T10o – Connector 10 pin, brown, connector station electronic box plenum chamber
T10p – Connector 10 pin, black, connector station electronic box plenum chamber

- Ground connection (sensor Ground), in Motronic Multipoint Fuel Injection (MFI) wiring harness
- Ground connection (sensor ground), in engine compartment wiring harness
- Ground connection (sensor ground) -1-, in instrument panel wiring harness
- Plus connection (30), in engine compartment wiring harness
- Wire connection -2-, in engine compartment wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

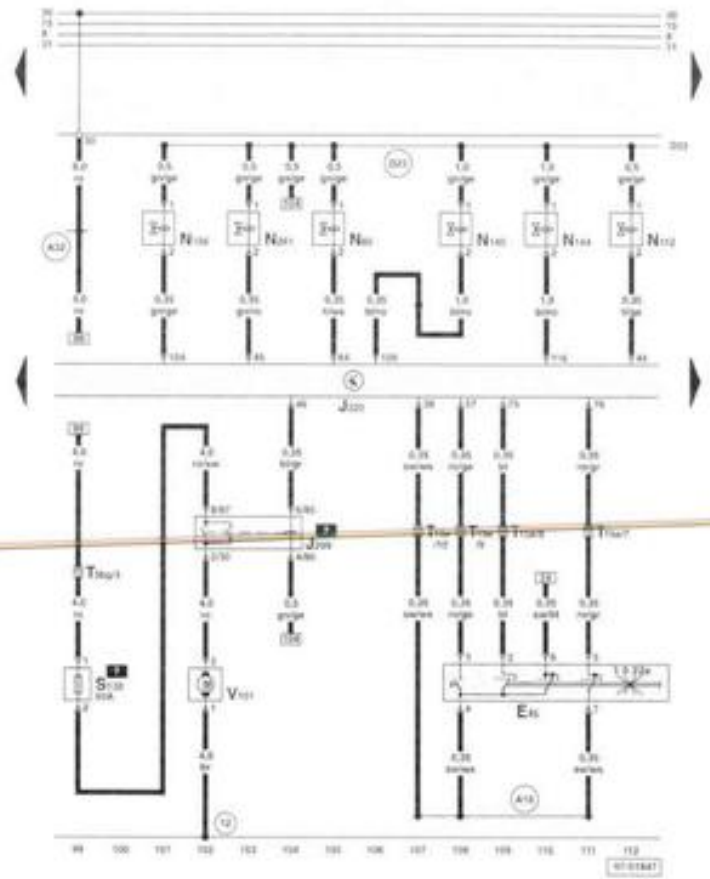
F – Brake Light Switch
F36 – Clutch Vacuum Vent Valve Switch
F47 – Vacuum Vent Valve, Brake
G40 – Camshaft Position (CMP) Sensor
G163 – Camshaft Position (CMP) Sensor 2
J220 – Motronic Engine Control Module (ECM)
M9 – Left Brake Light
M10 – Right Brake Light
S5 – Fuse
S7 – Fuse
S13 – Fuse
T10n – Connector 10-pin, orange, connector station electronic box plenum chamber
T15w – Connector 15-pin, white, connector station electronic box plenum chamber

(A10) – Ground connection (sensor ground), in engine compartment wiring harness
(A12) – Wire connection (54), in instrument panel wiring harness
(B1) – Plus connection 2 (30), in instrument panel wiring harness
(B121) – Connector (54), in wiring harness interior
(E16) – Plus connection (5 Volts), in Motronic Multipart Fuel Injection (MFI) wiring harness
(J9) – Wire connection - h (15a), in ABS wiring harness
• – Vehicles with manually shifted transmission



**Motronic Engine Control Module, Camshaft Position Sensor, Brake Light Switch**



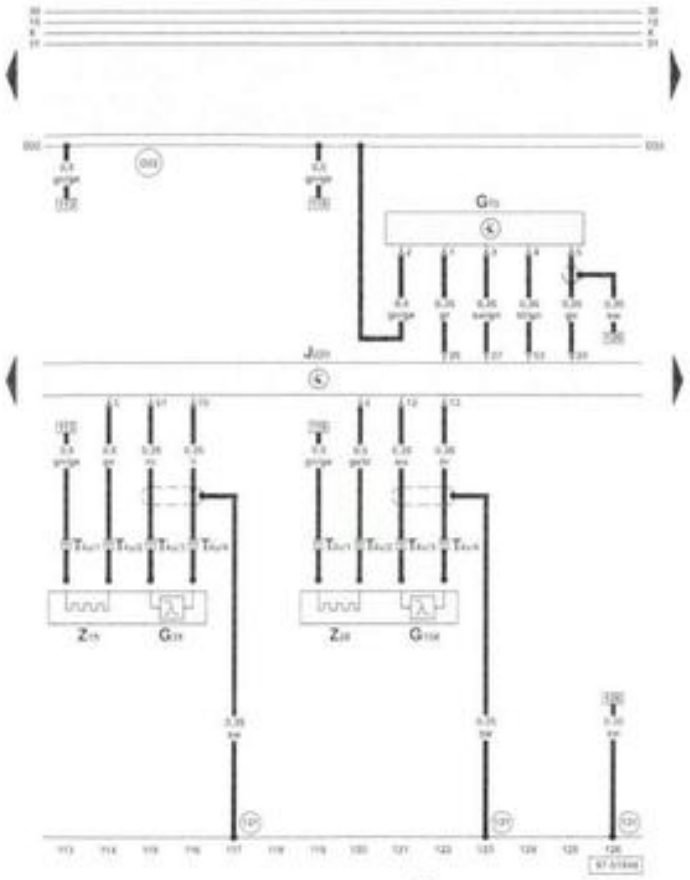


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E45 – Cruise Control Switch
J220 – Motronic Engine Control Module (ECM)
J299 – Secondary Air Injection (AIR) Pump Relay
N80 – Evaporative Emission (EVAP) Canister Purge Regulator Valve
N112 – Secondary Air Injection (AIR) Solenoid Valve
N144 – Left Electro-Hydraulic Engine Mount Solenoid Valve
N145 – Right Electro-Hydraulic Engine Mount Solenoid Valve
N156 – Intake Charge Over Valve
N261 – Intake Manifold Tuning (IMT) Valve 2
S132 – Fuse for secondary air pump
T2ng – Connector 2-pin, white, connector station electronic box plenum chamber
T16w – Connector 16-pin, white, connector station electronic box plenum chamber
V101 – Secondary Air Injection (AIR) Pump Motor

(A10) – Ground connection, in engine compartment, left
(A12) – Wire connection (double contact), in instrument panel wiring harness
(B1) – Plus connection (30), in instrument panel wiring harness
(C) – Connector (rear fuse 23A), in wiring harness front, right

**Motronic Engine Control Module, Secondary Air Injection Pump Relay, Cruise Control Switch**

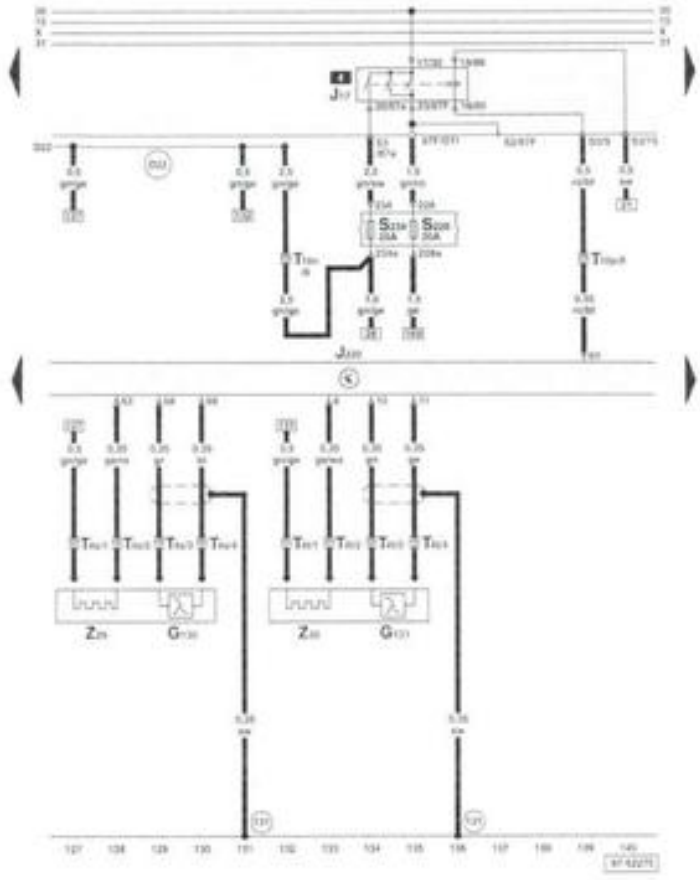


G39 – Heated Oxygen Sensor (HO2S) 2
G70 – Mass Air Flow (MAF) Sensor
G108 – Heated Oxygen Sensor (HO2S) 2
J220 – Motronic Engine Control Module (ECM)
T4v – Connector 4 pin, black, heated oxygen sensor
T4x – Connector 4 pin, black, heated oxygen sensor 2
Z19 – Oxygen Sensor (O2S) Heater
Z20 – Oxygen Sensor (O2S) 2 Heater

– Ground connection, 2 - in engine compartment wiring harness
– Connector (rear fuse 23A), in wiring harness front, right



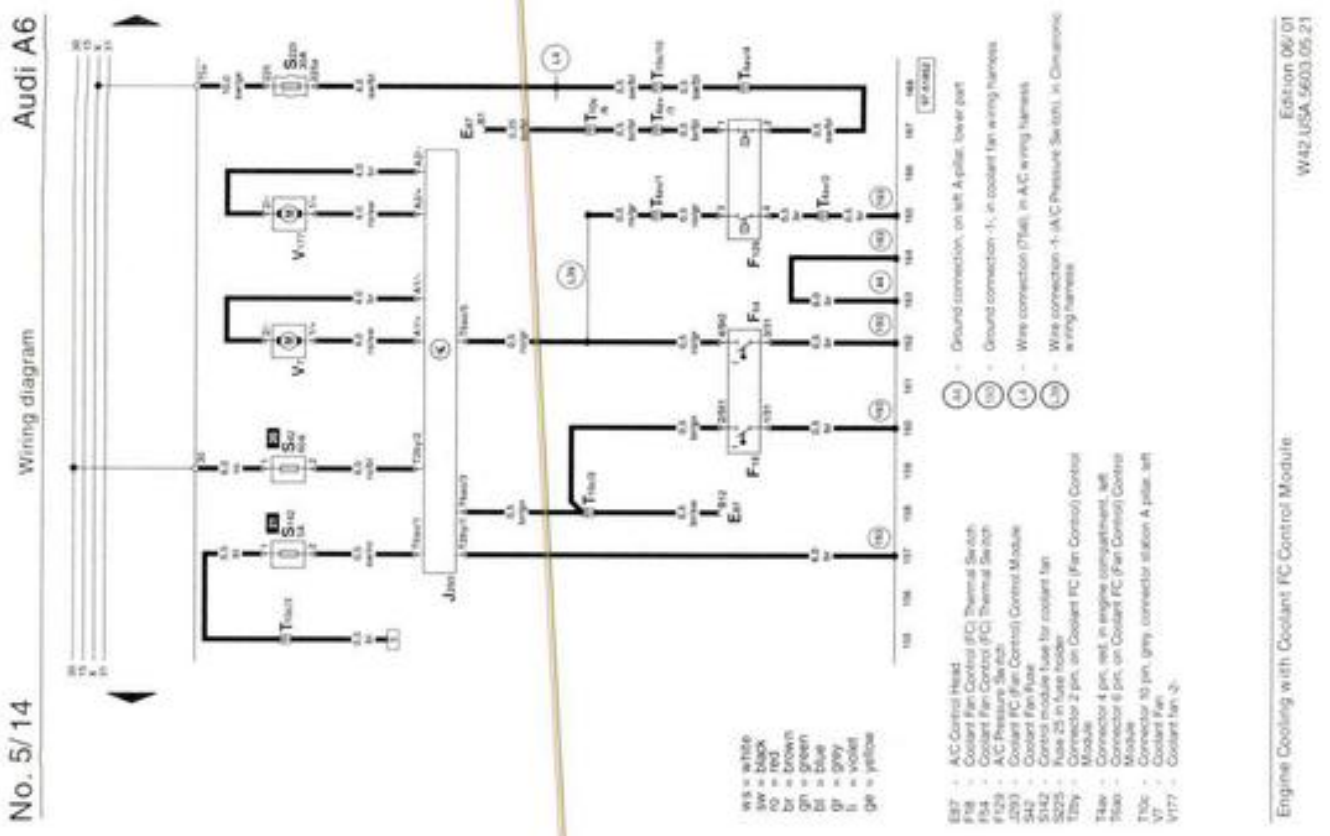


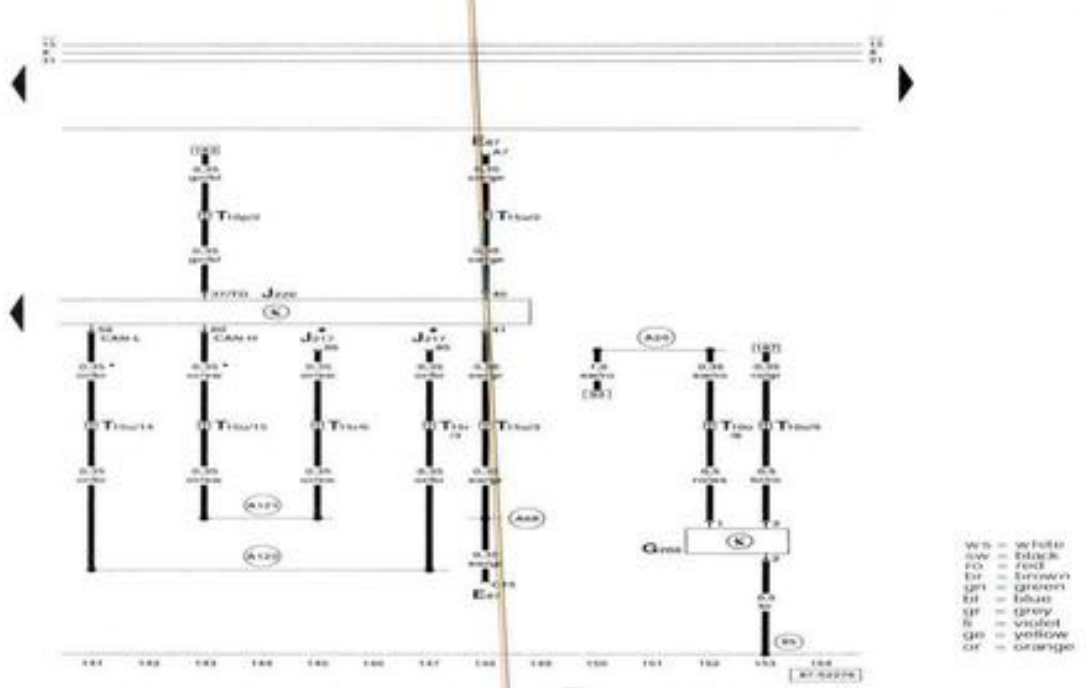


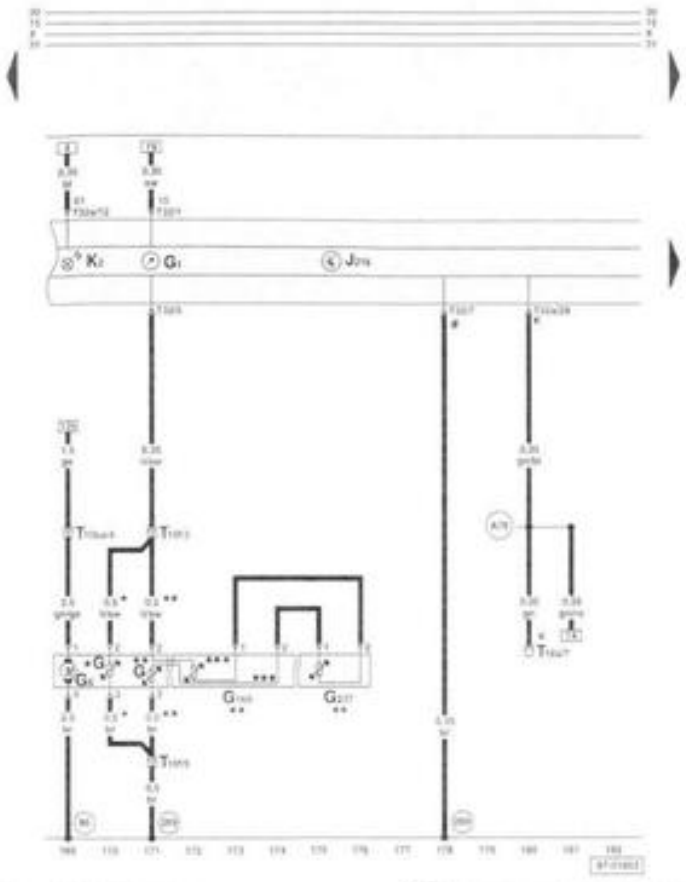
G130 – Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 – Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J17 – Fuel Pump (FP) Relay
J220 – Motronic Engine Control Module (ECM)
SB28 – Fuse 28 in fuse holder
SB34 – Fuse 34 in fuse holder
T4u – Connector 4 pin, green, rear oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4w – Connector 4 pin, brown, rear oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T10n – Connector 10 pin, orange, connector station electronic box, plenum chamber
T10p – Connector 10 pin, black, connector station electronic box, plenum chamber
Z19 – Oxygen Sensor (O2S) Heater
Z20 – Oxygen Sensor (O2S) 2 Heater

– Ground connection, 2 - in engine compartment wiring harness
– Ground connection, -4 in engine compartment wiring harness
– Connector (rear fuse 23A), in wiring harness front, right

*Engine Management, 4.2 Liter, Engine Code ART*

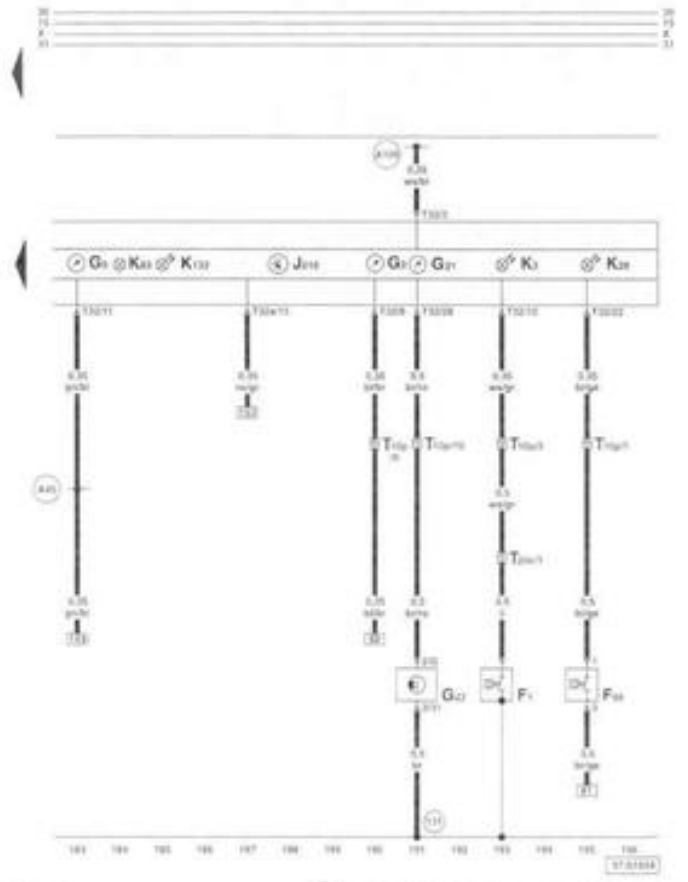






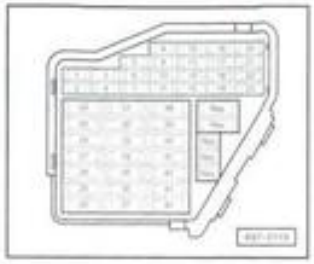




## Driver's Information System

2001 m. y.

**Fuse Panel**

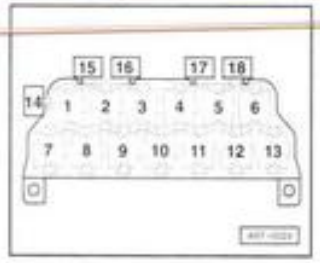


**Fuse Colors**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
25 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**13 - Fold Relay Panel**



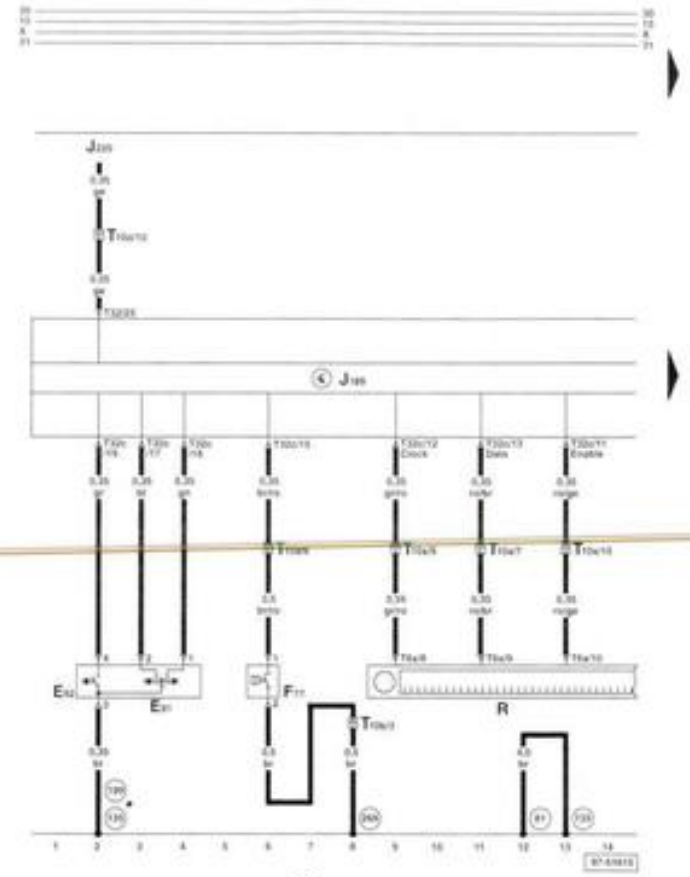

**Relay Location:**

**9** - Lamp Control Module, J123

**10** - Lamp Control Module, J123



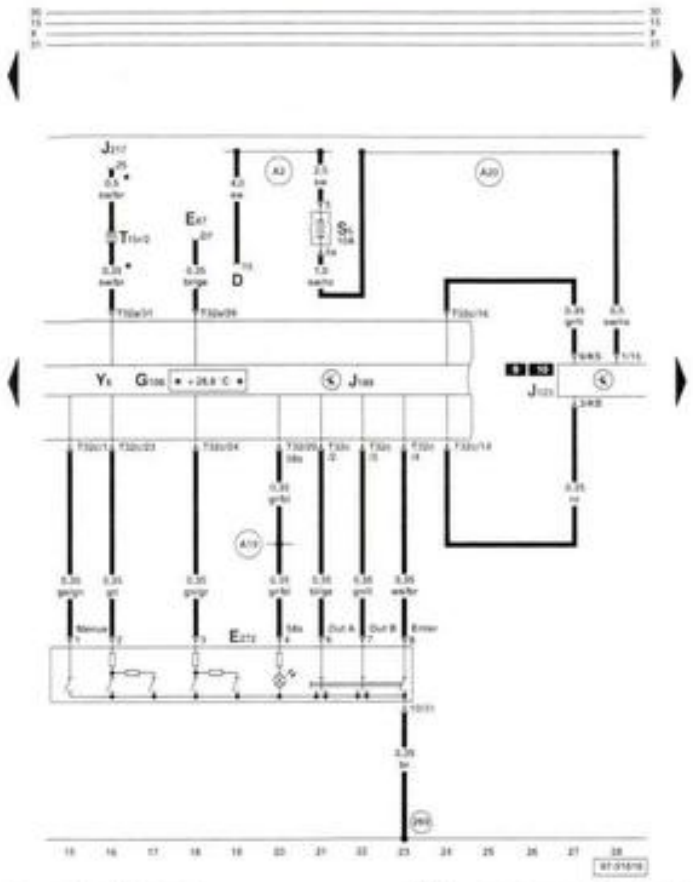





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E51 - Board Computer Function Selector Switch
E52 - Board Computer Reset Button
F77 - Windshield Washer Fluid Level Warning Switch
J185 - Auto Check System
J220 - Motronic Engine Control Module (ECM)
R - Radio
T4x - Connector 6 pin, green, connector radio 1 - 2
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10c - Connector 10 pin, brown, connector station electronic box plenum chamber
T10x - Connector 10 pin, green, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster

(81) - Ground connection -1-, in instrument panel wiring harness
(235) - Ground connection -2-, in instrument panel wiring harness
(236) - Ground connection -3-, in instrument panel wiring harness
(244) - Ground connector starter ground -1-, in instrument panel wiring harness
• - Both are possible



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

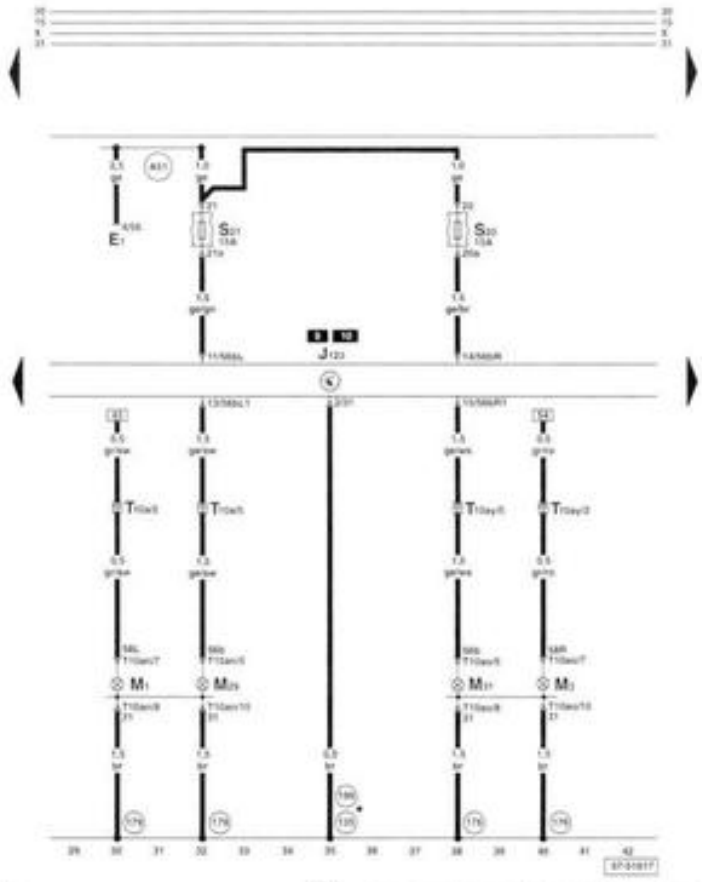
D - Ignition/Starter Switch
E87 - A/C Control Head
E272 - Board Computer Function Selector Switch II, in console
G106 - Outside Air Temperature Display
J123 - Lamp Control Module
J189 - Auto Check System
J217 - Transmission Control Module (TCM)
S5 - Fuse
T9r - Connector 15 pin, blue, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster
Y6 - Transmission Range (TR) Selector Lever Display

A2 - Plus connection (15), in instrument panel wiring harness
A19 - Wire connection (58b), in instrument panel wiring harness
A20 - Wire connection (75a), in instrument panel wiring harness
• - Vehicles with automatic transmission only



Lamp Control Module, Outside Air Temperature Display, Board Computer Function Selector Switch II

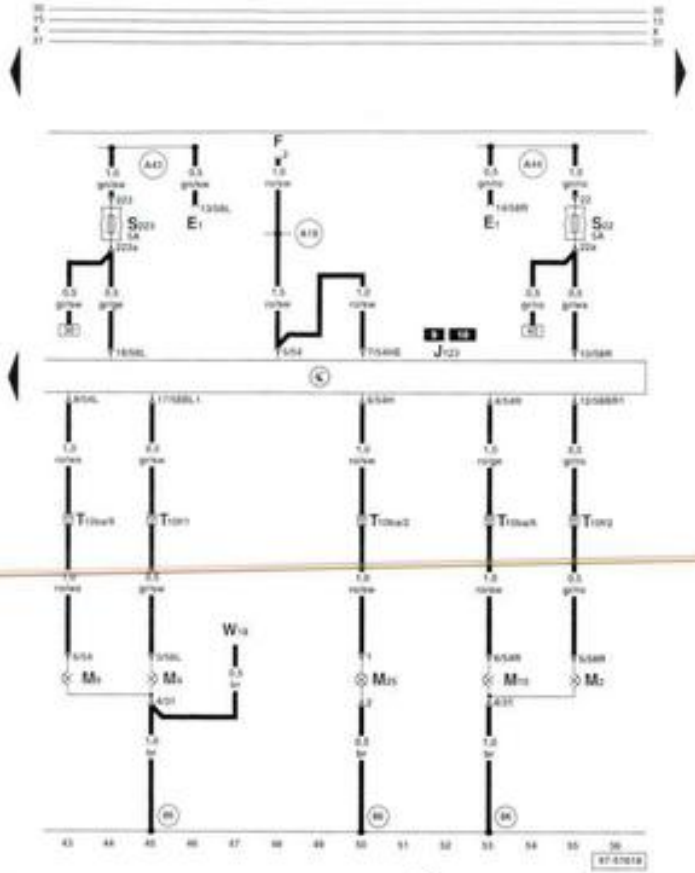




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
J123 - Lamp Control Module
M1 - Left Parking Light
M3 - Right Parking Light
M29 - Left Low Beam Headlight
M31 - Right Low Beam Headlight
S20 - Fuse
S21 - Fuse
T16a - Connector 16 pin, pink, connector station A pillar, left
T16an - Connector 16 pin, on headlight, left
T16ao - Connector 16 pin, on headlight, right
T16ay - Connector 16 pin, pink, connector station A pillar, right

(17) - Ground connection, 2., in instrument panel wiring harness
(C) - Ground connection, in right headlight wiring harness
(D) - Ground connection, in left headlight wiring harness
(E) - Ground connection, 3., in instrument panel wiring harness
(F) - Wire connection (58), in instrument panel wiring harness
• - both are possible



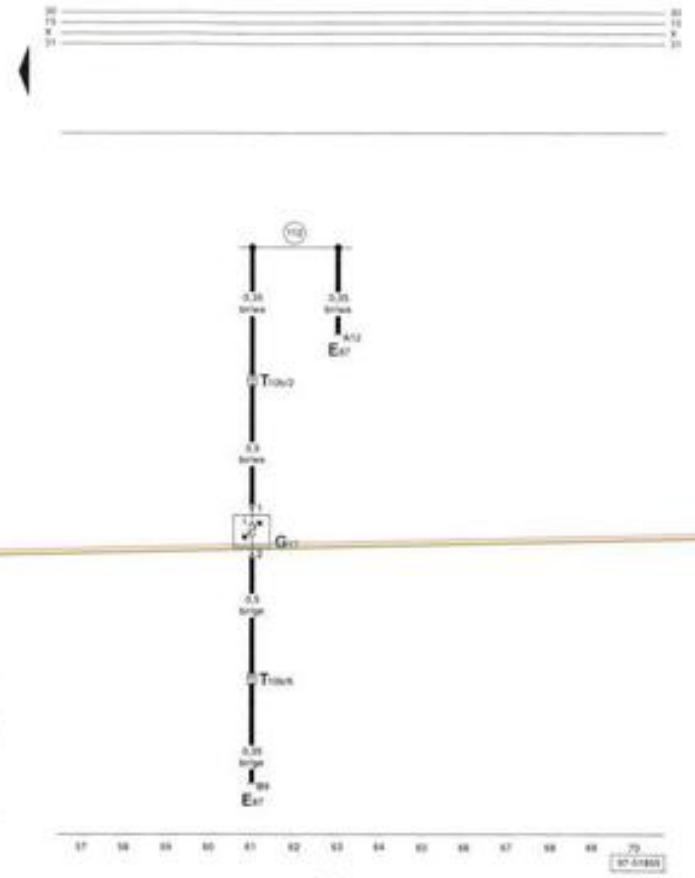
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
F - Brake Light Switch
J123 - Lamp Control Module
M2 - Right Tail Light
M4 - Left Tail Light
M9 - Left Brake Light
M10 - Right Brake Light
M26 - High-mount Brake Light
S22 - Fuse
S223 - Fuse 23 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10w - Connector 10 pin, blue, connector station A pillar, left
W16 - Left Luggage Compartment Light

(A2) - Ground connection 1, in rear wiring harness
(A44) - Wire connection (54), in instrument panel wiring harness
(A47) - Wire connection (57c), in instrument panel wiring harness
(A48) - Wire connection (57m), in instrument panel wiring harness







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

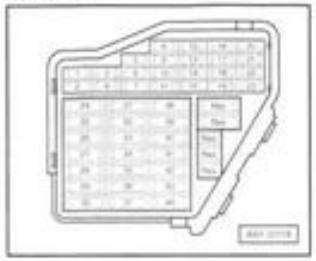
E87 - A/C Control Head
G17 - Outside Air Temperature Sensor
T16b - Connector 16 pin, red, connector station A pillar, left

(A12) - Ground connection 2, in A/C wiring harness

# Daytime Running Lights with Fog Light and Rear Fog Light (Canada)

2001 m. y.

**Fuse Panel**

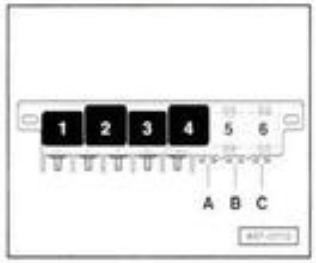


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 22, fuses in the fuse holder are identified with 223 in the wiring diagram.

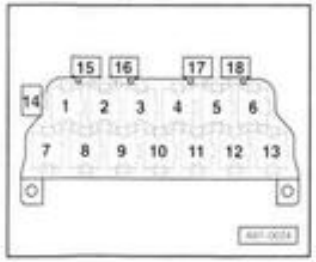
**Micro Central Electric Panel**




**Relay Location:**

**2** - Load Reduction Relay, J59

**13 - Fold Relay Panel**




**Relay Location:**

**6** - Fog Light Relay, J5

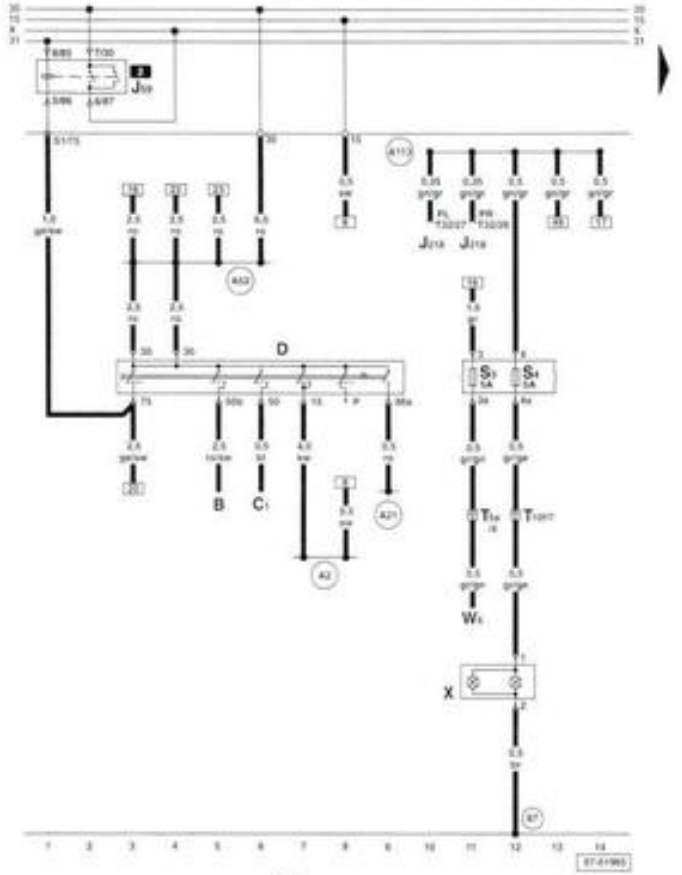
**9** - Lamp Control Module, J123

**10** - Lamp Control Module, J123

**17** - Fog Light Circuit Breaker, S28



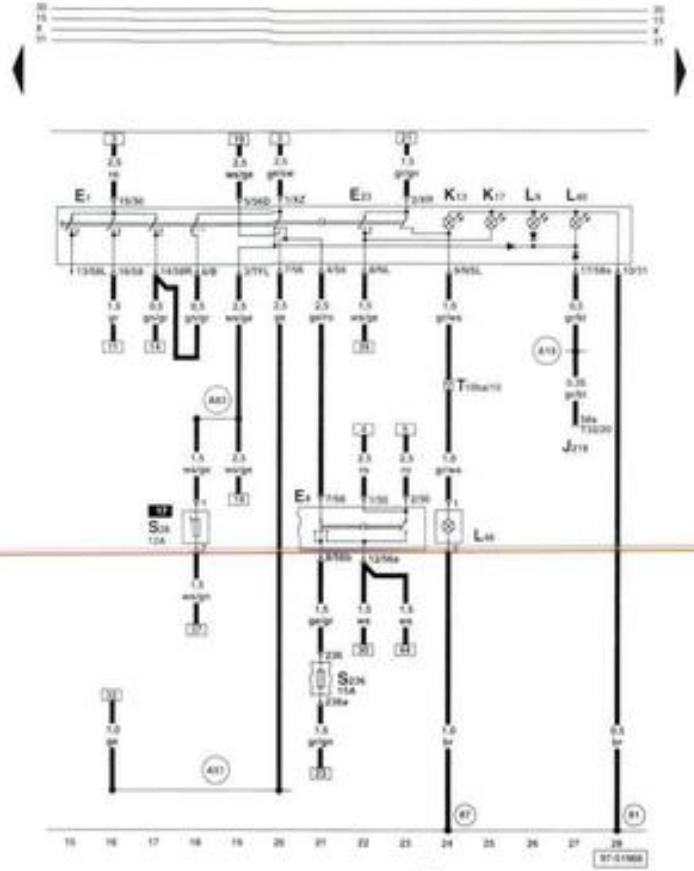





B - Starter
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J519 - Instrument Cluster Combination Processor
S3 - Fuse
S4 - Fuse
T5a - Connector 5 pin, black, behind instrument panel, right
T10f - Connector 10 pin, brown, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
W6 - Glove Compartment Light
X - License Plate Light

(A7) - Ground connection 2, in rear wiring harness
(A21) - Plus connection (15), in instrument panel wiring harness
(A2) - Wire connection (86s), in instrument panel wiring harness
(A3) - Plus connection 2 (30), in instrument panel wiring harness
(A112) - Connection 2 daytime running lights, in instrument panel wiring harness

**Ignition/Starter Switch, License Plate Light, Load Reduction Relay**



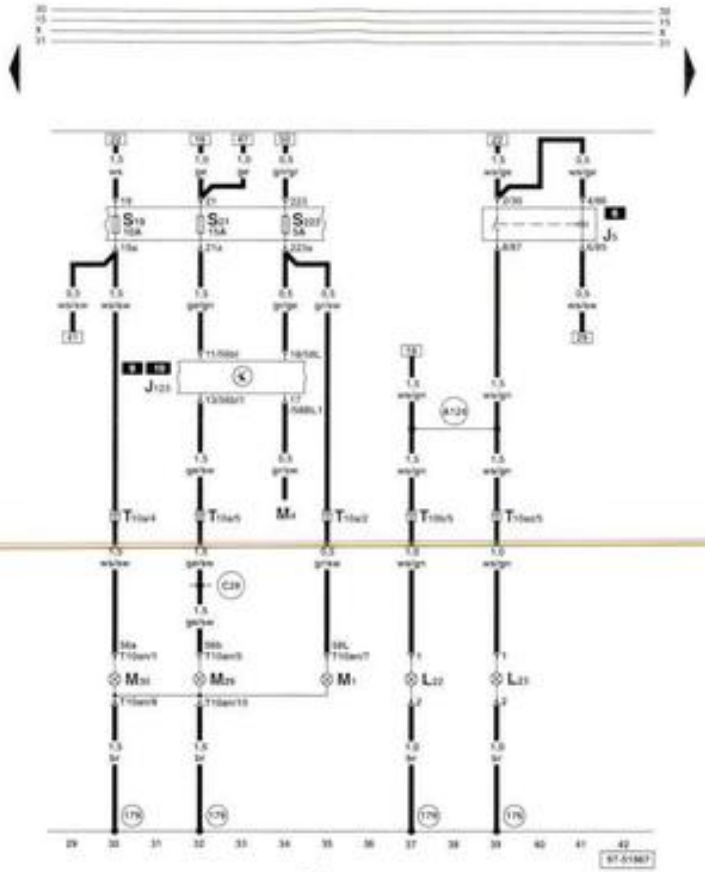
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E4 - Headlight Dimmer/Flasher Switch
E23 - Fog Light Switch
J218 - Instrument Cluster Combination Processor
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light
L46 - Left Rear Fog Light
S28 - Fog Light Fuse
S236 - Fuse 36 in fuse holder
T10ba - Connector 10 pin, blue, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster

(A1) - Ground connection -1-, in instrument panel wiring harness
(A2) - Ground connection -2-, in rear wiring harness
(A13) - Wire connection (58d), in instrument panel wiring harness
(A14) - Wire connection (58), in instrument panel wiring harness
(A15) - Connector (daytime running lights), in instrument panel wiring harness



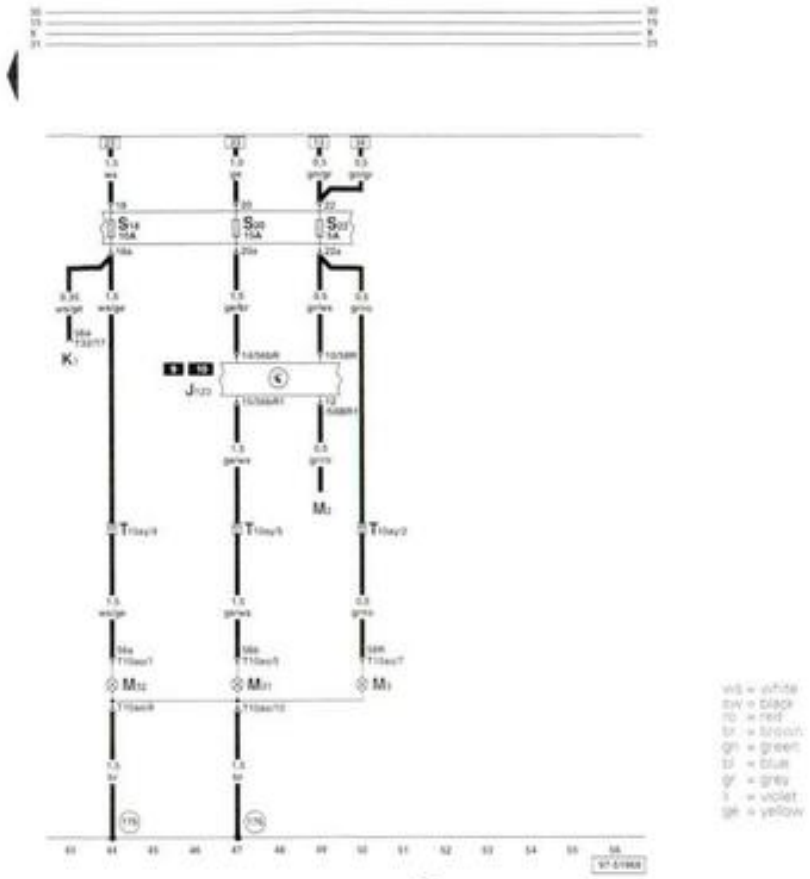




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J5 - Fog Light Relay
J123 - Lamp Control Module
L22 - Left Front Fog Light
L23 - Right Front Fog Light
M1 - Left Parking Light
M4 - Left Tail Light
M29 - Left Low Beam Headlight
M30 - Left High Beam Headlight
S19 - Fuse
S21 - Fuse
S223 - Fuse 23 in fuse holder
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10en - Connector 10 pin, on headlight, left
T10ez - Connector 10 pin, red, connector station A pillar, right

(A120) - Ground connection, in right headlight wiring harness
(A121) - Ground connection, in left headlight wiring harness
(A122) - Connection 3 (daytime running lights), in instrument panel wiring harness
(C39) - Connector -1- (58d), in wiring harness headlamp



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
K1 - Headlight High Beam Indicator Light
M2 - Right Tail Light
M3 - Right Parking Light
M31 - Right Low Beam Headlight
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10do - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, junc. connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster

(176) - Ground connection, in right headlight wiring harness



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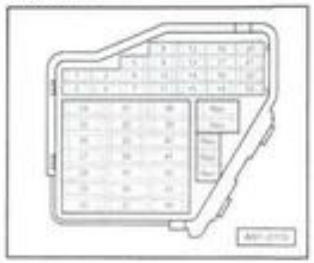
# Power Windows

2001 m. y.

**Fuse Panel**

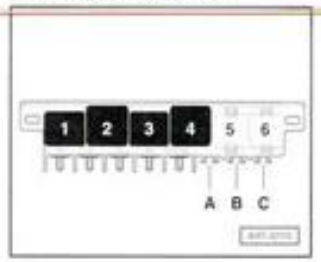


**Fuse Colors:**

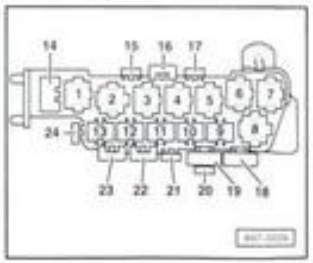
30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**




**8 - Fold Relay Panel**




**Fuse Location:**

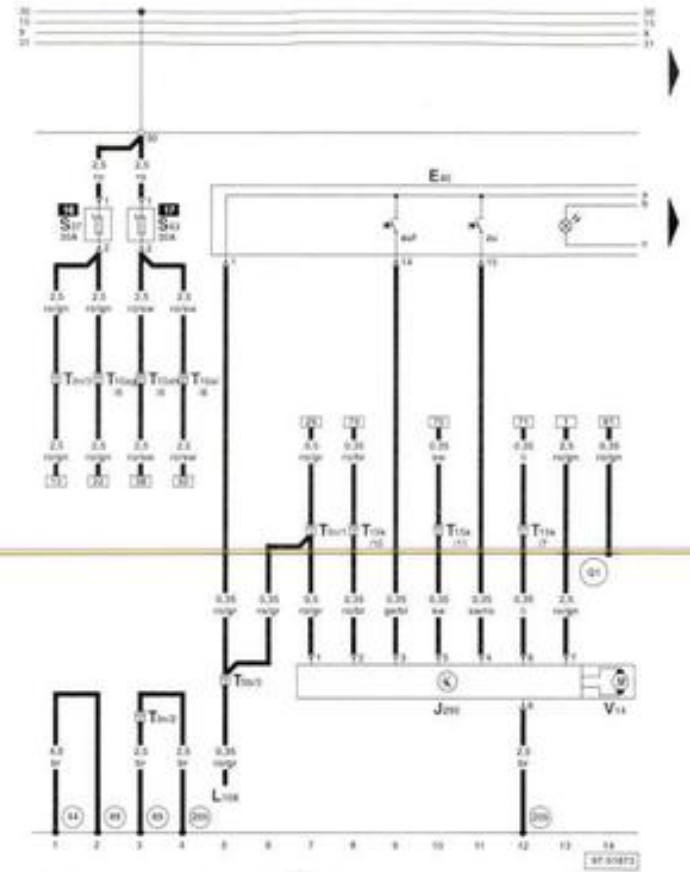
16 - Power Window Circuit Breaker Front, S37

17 - Power Window Circuit Breaker Rear, S43



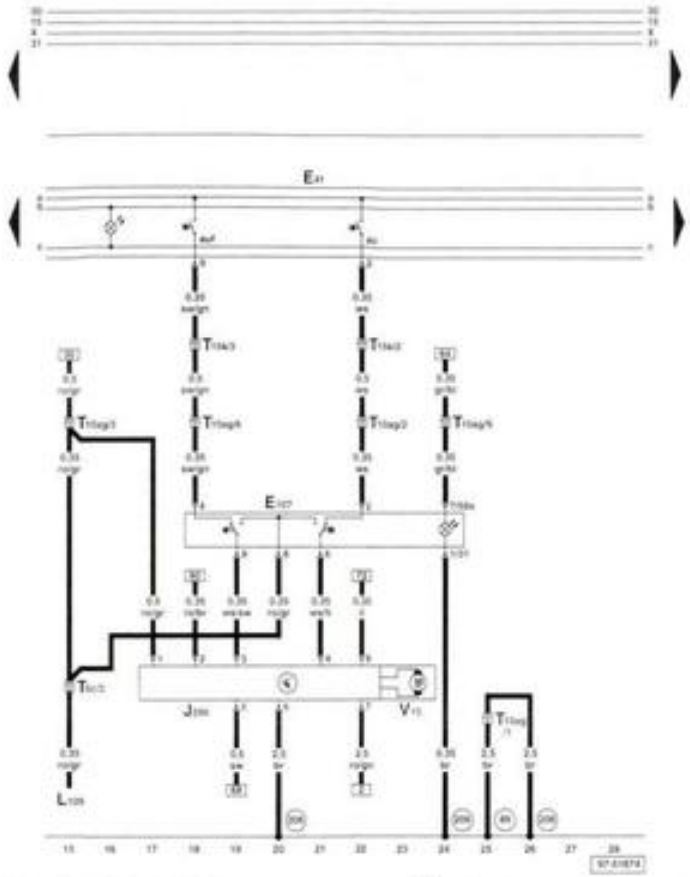







E40 - Left Front Window Switch
J256 - Left Front Power Window Control Module
L108 - Door opener lighting, driver side
S37 - Power Window Circuit Breaker Front
S43 - Power Window Circuit Breaker Rear
T2h - Connector 2 pin, red, connector station A pillar, left
T5b - Connector 5 pin, black, in driver's door
T10ag - Connector 10 pin, red, connector station A pillar, right
T10af - Connector 10 pin, red, in B pillar, left
T10a - Connector 10 pin, red, in B pillar, right
T15a - Connector 15 pin, red, connector station A pillar, left
V14 - Left Window Motor

(+1) - Ground connection, on left A pillar, lower part
(+2) - Ground connection 1, in power window wiring harness
(+3) - Ground connection, in driver's door wiring harness
(+31) - Plus connection (30), in power window wiring harness



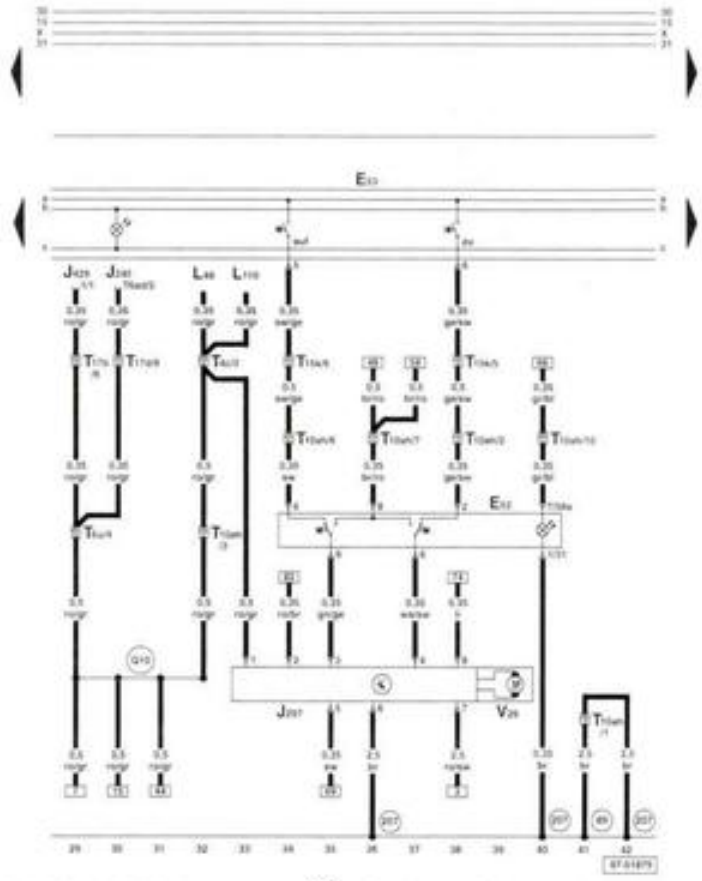
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E41 – Right Front Window Switch
E107 – Switch for window regulator, in passenger door
J386 – Right Front Power Window Control Module
L109 – Door opener lighting, passenger side
T5c – Connector 5 pin, black, in passenger's door
T10aq – Connector 10 pin, red, connector station A pillar, right
T15a – Connector 15 pin, red, connector station A pillar, left
V15 – Right Window Motor

(30) – Ground connection 1, in power window wiring harness
(31) – Ground connection, in passenger's door wiring harness



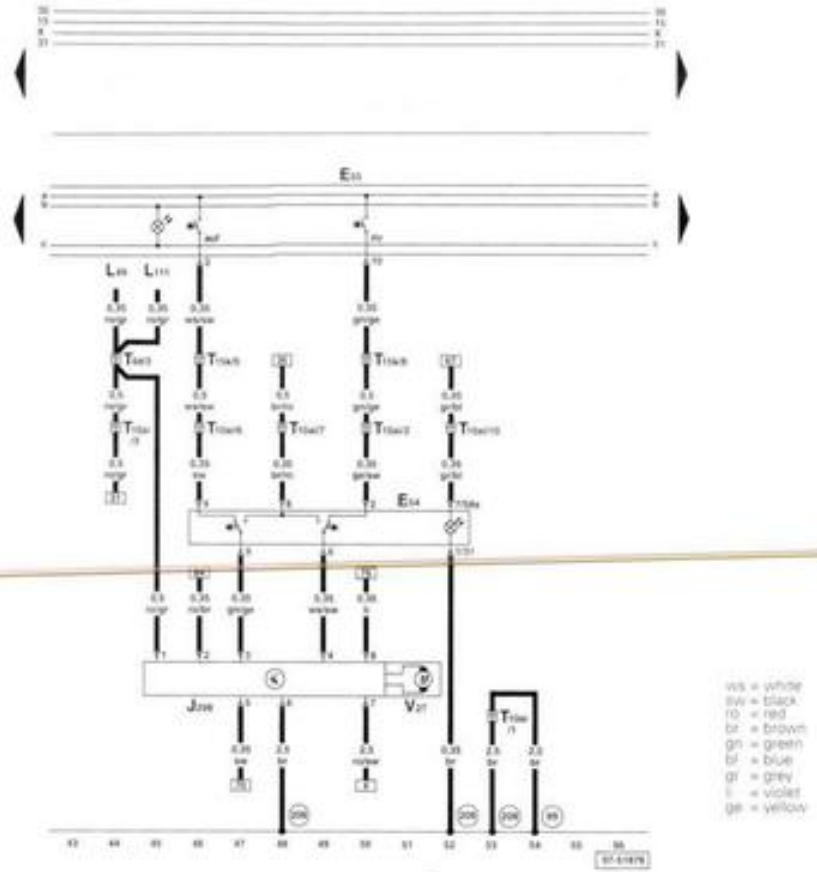




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E52 – Left Rear Window Switch, in LR Door
E53 – Left Rear Window Switch, in Console
J245 – Power Sunroof Control Module
J297 – Left Rear Power Window Control Module
J429 – Control module for central locking
L48 – Left Rear Ashtray Light
L110 – Door opener lighting, left rear
T4c – Connector 4 pin, black, in left rear door
T6c – Connector 6 pin, grey, connector station A pillar, left
T6ad – Connector 6 pin, blue, on power sunroof control module
T10ah – Connector 10 pin, red, in B pillar, left
T15a – Connector 15 pin, red, connector station A pillar, left
T17b – Connector 17 pin, black, connector station A pillar, right
T17g – Connector 17 pin, grey, connector station A pillar, left
V26 – Left Rear Door Window Motor

(30) – Ground connection 1, in power window wiring harness
(31) – Ground connection, in left rear door wiring harness
(219) – Plus connection (87), in power window/central locking system and door contact switch wiring harness



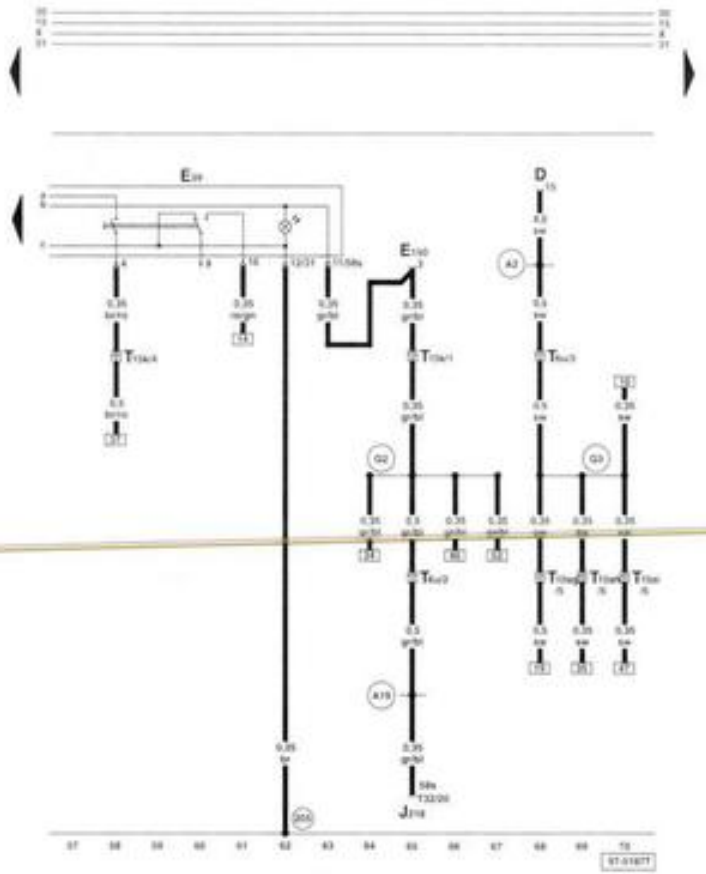
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E54 – Right Rear Window Switch, in RR Door
E55 – Right Rear Window Switch, in Console
J386 – Right Rear Power Window Control Module
L49 – Right Rear Ashtray Light
L111 – Door opener lighting, right rear
T4y – Connector 4 pin, black, in right rear door
T10a – Connector 10 pin, red, in B pillar, right
T15a – Connector 15 pin, red, connector station A pillar, left
V27 – Right Rear Door Window Motor

(57) – Ground connection -1-, in power window wiring harness
(T15/1) – Ground connection, in right rear door wiring harness



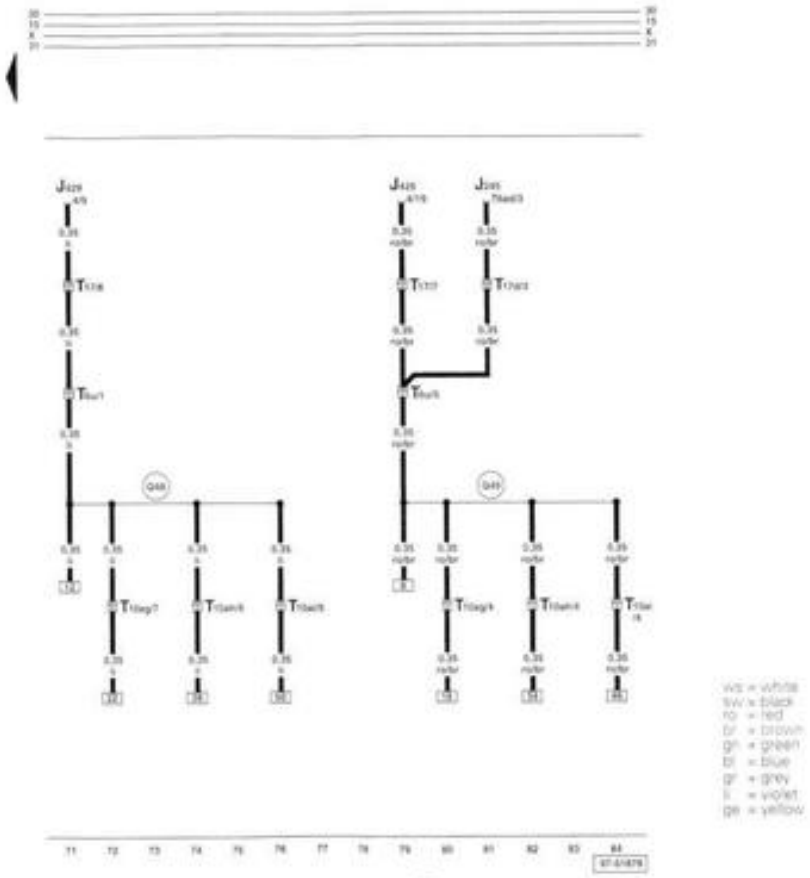




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
E38 – Window Lockout Switch
E150 – Switch for interior lock, driver side
J218 – Instrument Cluster Comfortsystem Processor
T6u – Connector 6 pin, grey, connector station A pillar, left
T10dg – Connector 10 pin, red, connector station A pillar, right
T10ah – Connector 10 pin, red, in B pillar, left
T10a – Connector 10 pin, red, in B pillar, right
T15k – Connector 15 pin, red, connector station A pillar, left
T32 – Connector 32 pin, blue, on instrument cluster

(T15) – Ground connection, in driver's door wiring harness
(15) – Plus connection (15), in instrument panel wiring harness
(58d) – Wire connection (58d), in instrument panel wiring harness
(58) – Plus connection (58), in power window wiring harness
(75x) – Plus connection (75x), in power window wiring harness




J245 - Power Sunroof Control Module
J329 - Control module for central locking
T6u - Connector 6 pin, grey, connector station A pillar, left
T6ad - Connector 6 pin, blue, on power sunroof control module
T10ag - Connector 10 pin, red, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10ai - Connector 10 pin, red, in B pillar, right
T17 - Connector 17 pin, orange, connector station A pillar, right
T17d - Connector 17 pin, grey, connector station A pillar, left

(X48) - Connection (spare), in wiring harness, interior
(X49) - Connector (closed), in wiring harness interior



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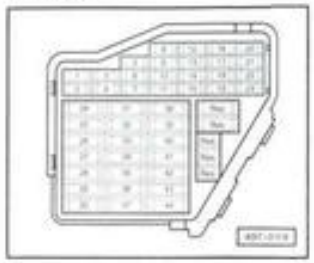
# Heated Seats

2001 m. y.

Fuse Panel

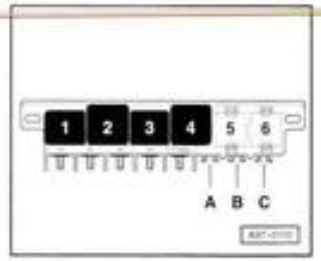


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

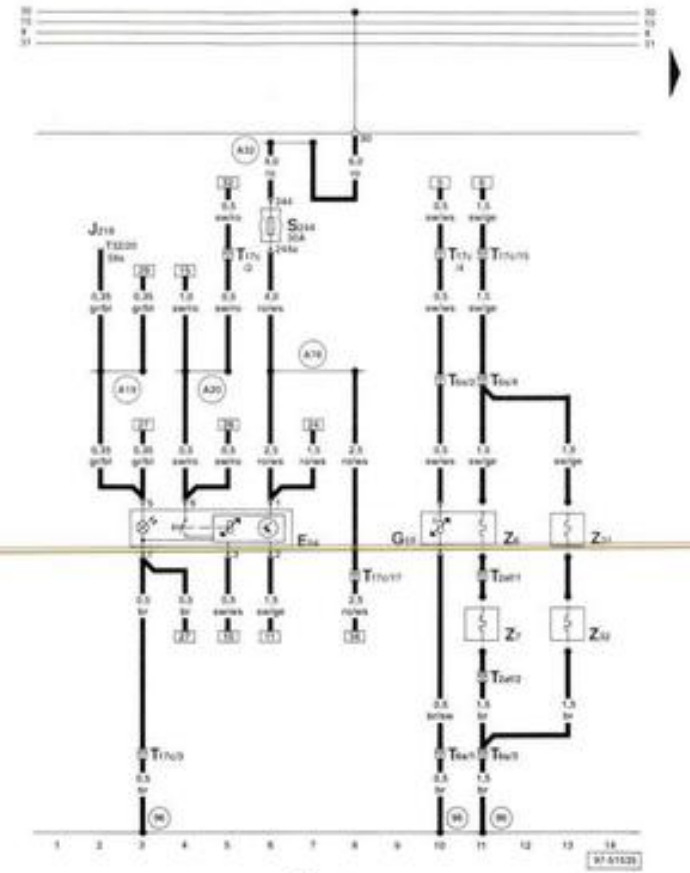
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

Micro Central Electric Panel





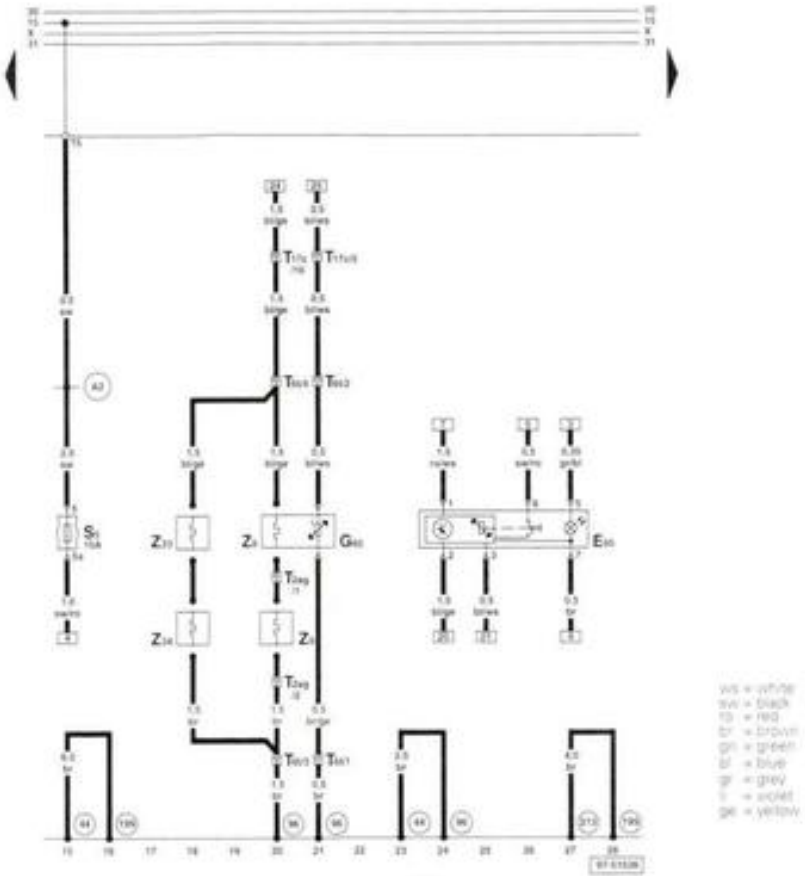


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E94 - Adjuster for heated driver's seat
G59 - Driver's Heated Seat Temperature Sensor
J218 - Instrument Cluster Combination Processor
S244 - Fuse 44 in fuse holder
T2af - Connector 2 pin, black, below driver's seat
T6bv - Connector 6 pin, green, below driver's seat
T17b - Connector 17 pin, green, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster
Z6 - Driver's Seat Heating Element
Z7 - Driver's Backrest Heating Element
Z31 - Driver's Seat Side Bolster Heater
Z32 - Driver's Seat Backrest, Side Bolster Heater

- Ground connection -1-, in heated seats wiring harness
- Wire connection (58s), in instrument panel wiring harness
- Wire connection (15a), in instrument panel wiring harness
- Plus connection (30), in instrument panel wiring harness
- Connector (30a S244), in instrument panel wiring harness



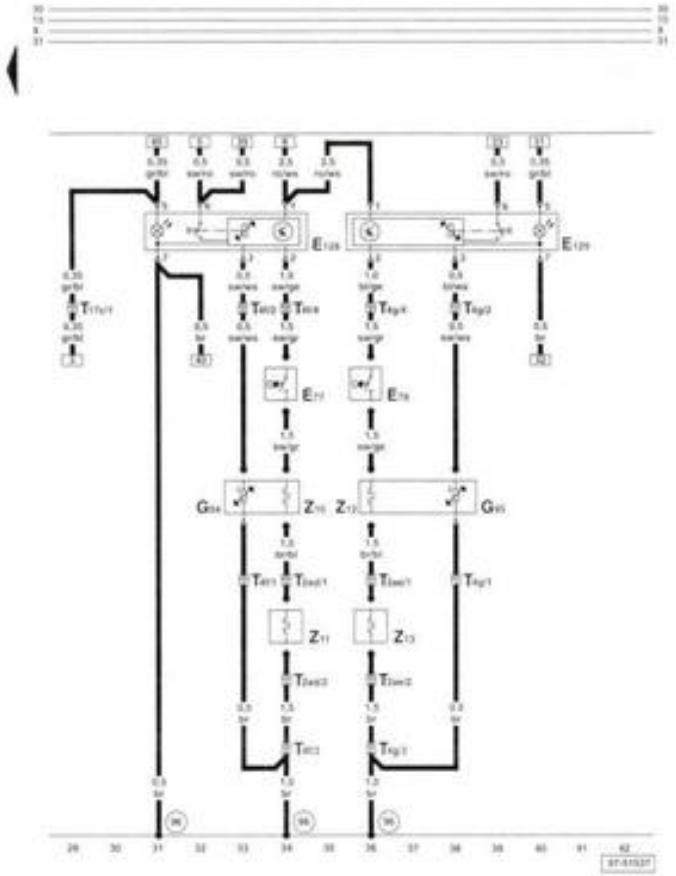
E35 – Adjuster for heated passenger's seat
G40 – Passenger's Heated Seat Temperature Sensor
S5 – Fuse
T2ag – Connector 2 pin, black, below passenger's seat
T8t – Connector 8 pin, green, below passenger's seat
T17c – Connector 17 pin, green, connector station A pillar, right
Z9 – Passenger's Seat Heating Element
Z9 – Passenger's Backrest Heating Element
Z33 – Passenger's Seat Side Bolster Heater
Z34 – Passenger's Seat Backrest Side Bolster Heater

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

– Ground connection, on left A-pillar, lower part
– Ground connection 1, in heated seats wiring harness
– Ground connection 2, in instrument panel wiring harness
– Ground connection, in instrument panel wiring harness
– Plus connection (15), in instrument panel wiring harness







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

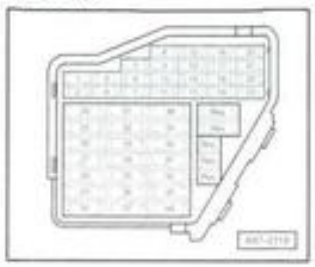
E77 – Left Rear Heated Seat Switch
E79 – Right Rear Heated Seat Switch
E128 – Left Rear Heated Seat Regulating Switch
E129 – Right Rear Heated Seat Regulating Switch
G94 – Left Rear Heated Seat Temperature Sensor
G95 – Right Rear Heated Seat Temperature Sensor
T2eb – Connector 2 pin, black, below rear seat, left
T2ee – Connector 2 pin, black, below rear seat, right
T4f – Connector 4 pin, black, below rear seat, left
T4g – Connector 4 pin, black, below rear seat, right
T17r – Connector 17 pin, green, connector station A pillar, right
Z10 – Left Rear Seat Heating Element
Z11 – Left Rear Backrest Heating Element
Z12 – Right Rear Seat Heating Element
Z13 – Right Rear Backrest Heating Element

– Ground connection 1, in heated seats wiring harness

# Headlight with High Intensity Gas discharge Lamps and automatic dynamic Headlight Beam Adjusting

2001 m. y.

Fuse Panel

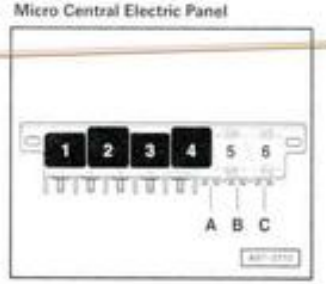


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

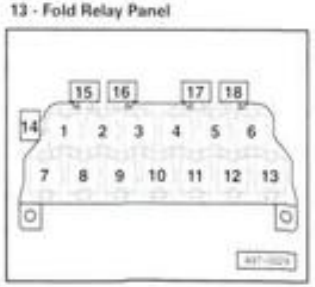
Micro Central Electric Panel




Relay Location:

**2** Load Reduction Relay, J59

13 - Fold Relay Panel



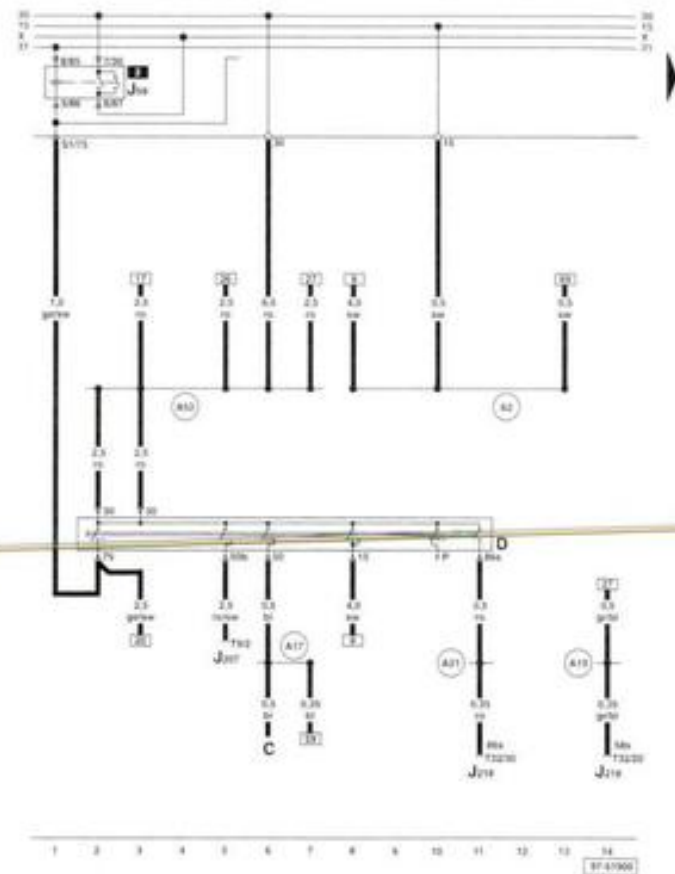

Relay Location:

**9** Lamp Control Module, J123

**10** Lamp Control Module, J123



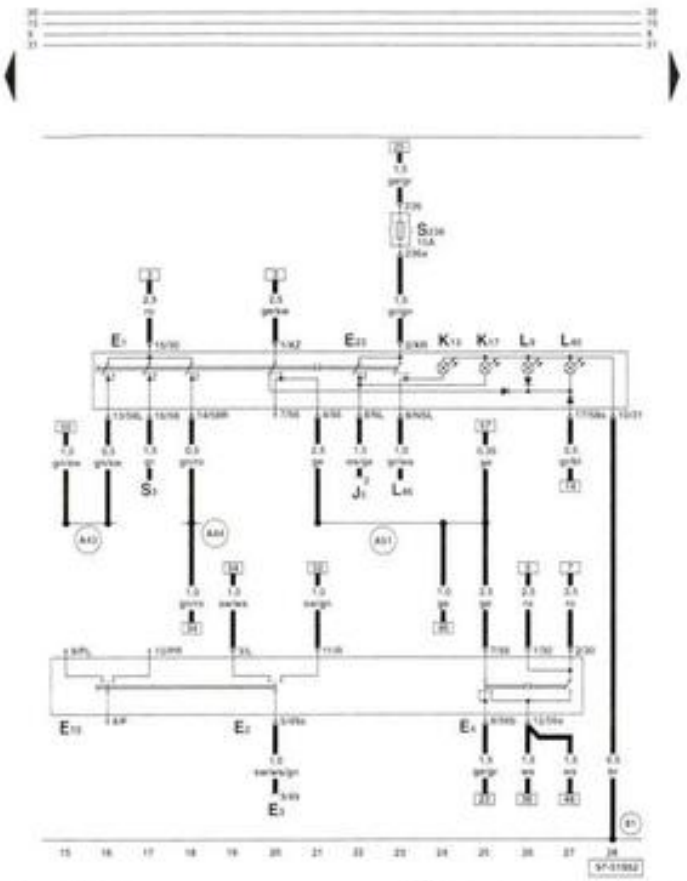





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

C - Generator (GETA)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J207 - Starting Interlock Relay
J218 - Instrument Cluster Combination Processor
T9 - Connector 9-pin, brown, on starting interlock relay
T32 - Connector 32-pin, blue, on instrument cluster

- Plus connection (15), in instrument panel wiring harness
- Wire connection 401, in instrument panel wiring harness
- Wire connection 56b, in instrument panel wiring harness
- Wire connection 66b, in instrument panel wiring harness
- Plus connection 2 (30), in instrument panel wiring harness



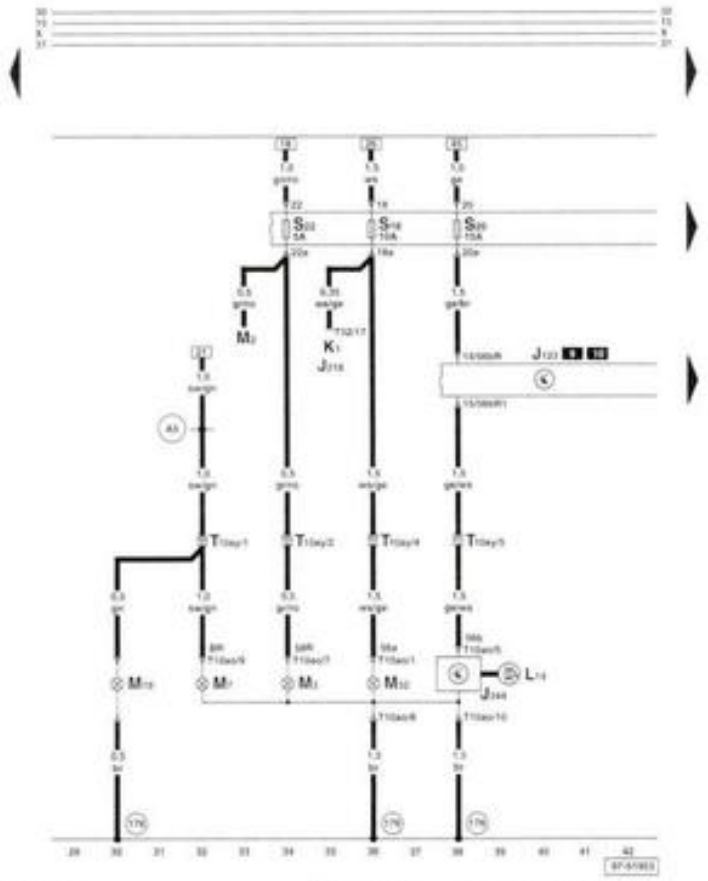
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E2 - Turn Signal Switch
E3 - Emergency Flasher Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
J5 - Fog Light Relay
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front Anti Rear Fog Light Switch Light
L46 - Left Rear Fog Light
S2 - Fuse
S236 - Fuse 36 in fuse holder

- Ground connection -1-, in instrument panel wiring harness
- Wire connection (57), in instrument panel wiring harness
- Wire connection (57c), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness



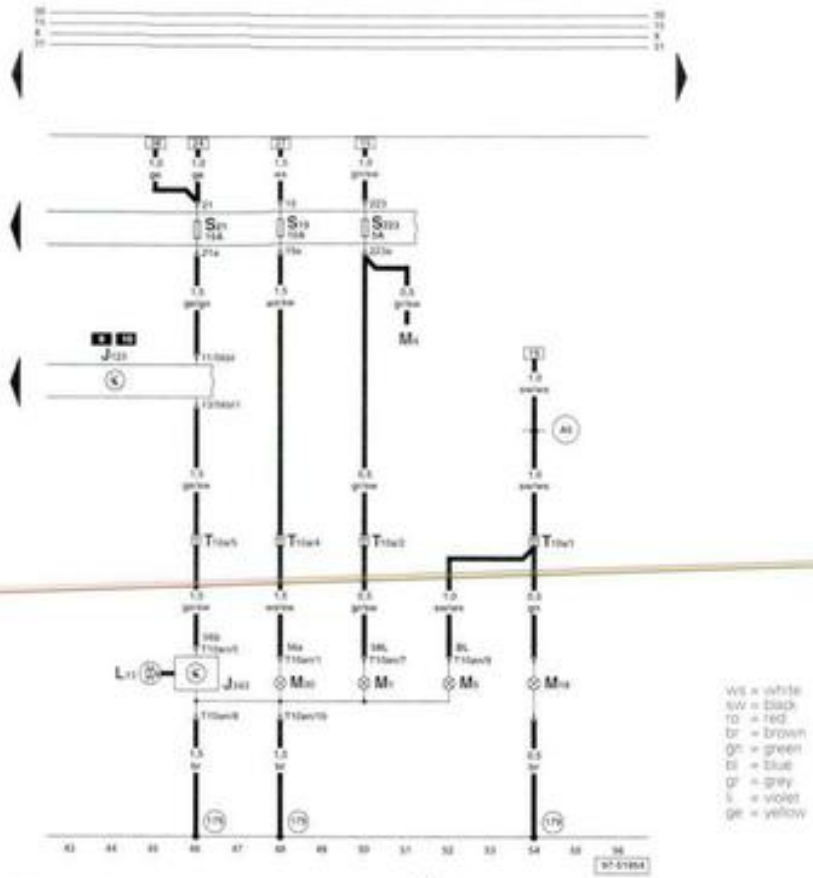




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
J216 - Instrument Cluster Combination Processor
J344 - Control Module for high-intensity gas discharge lamp
K1 - Headlight High Beam Indicator Light
L14 - High intensity gas discharge lamp right
M2 - Right Tail Light
M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right, Side Turn Signal Light
M32 - Right High Beam Headlight
S19 - Fuse
S20 - Fuse
S22 - Fuse
T10ax - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster

- Ground connection, in right headlight wiring harness
- Plus connection (right turn signal), in instrument panel wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

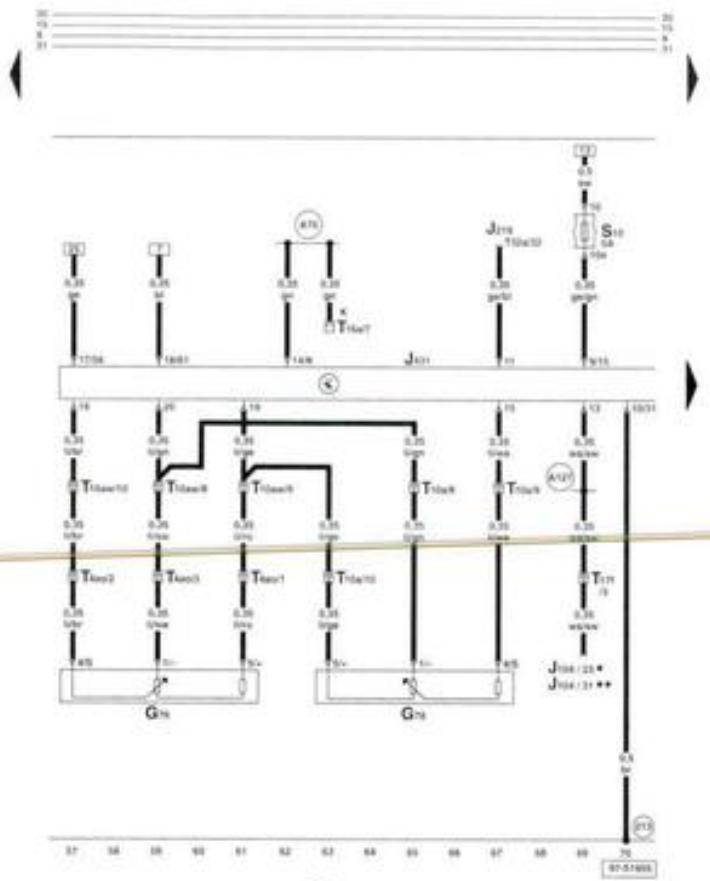
J123 – Lamp Control Module
J343 – Control Module for High-Intensity gas discharge lamp
L13 – High Intensity gas discharge lamp left
M1 – Left Parking Light
M4 – Left Tail Light
M5 – Left Front Turn Signal Light
M18 – Left, Side Turn Signal Light
M20 – Left High Beam Headlight
S19 – Fuse
S21 – Fuse
S223 – Fuse 23 in fuse holder
T10a – Connector 10 pin, pink, connector station A pillar, left
T10ax – Connector 10 pin, on headlight, left

(175) – Ground connection, in left headlight wiring harness
(A4) – Plus connection (left turn signal), in instrument panel wiring harness



Lamp Control Module, High Intensity Gas Discharge Lamp Left





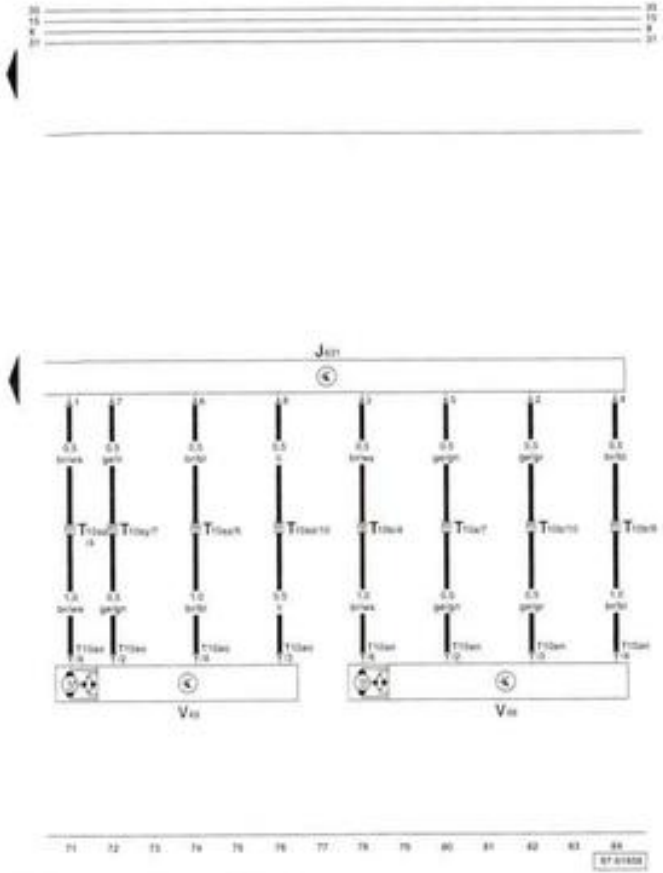
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G76 – Left Rear Level Control System Sensor
G78 – Left Front Level Control System Sensor
J104 – ABS Control Module (w/ESP)
J216 – Instrument Cluster Combination Processor
J431 – Control module for Headlight Beam Adjusting
S10 – Fuse
T4ao – Connector 4 pin, black, below rear seat, left
T10a – Connector 10 pin, pink, connector station A pillar, left
T10ax – Connector 10 pin, black, connector station A pillar, right
T16a – Connector 16 pin, Data Link Connector (DLC)
T17f – Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side
T32a – Connector 32 pin, green, on instrument cluster

(175) – Ground connection, in instrument panel wiring harness
(A24) – Connector (K-diagnosis wire), in instrument panel wiring harness
(A127) – Connection (road wheel speed sensor, left rear) in harness for instrument cluster

* – Vehicles with ABS 5.3
** – Vehicles with ABS 5.3 with ESP

Control Module for Headlight Beam Adjusting, Level Control System Sensor




J431 – Control module for Headlight Beam Adjusting
T10a – Connector 10 pin, pink, connector station A pillar, left
T10b – Connector 10 pin, red, connector station A pillar, left
T10ei – Connector 10 pin, on headlight, left
T10ew – Connector 10 pin, on headlight, right
T10ex – Connector 10 pin, pink, connector station A pillar, right
T10ey – Connector 10 pin, red, connector station A pillar, right
V48 – Left Headlight Beam Adjusting Motor
V49 – Right Headlight Beam Adjusting Motor



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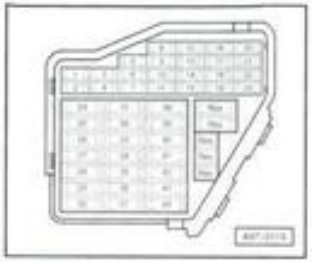
## Radio-Stereo, Concert with and without CD-Changer

2001 m. y.

**Fuse Panel**

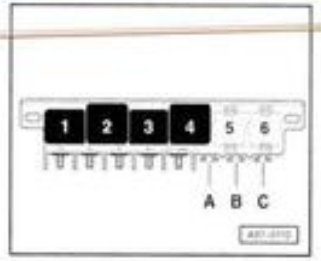


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

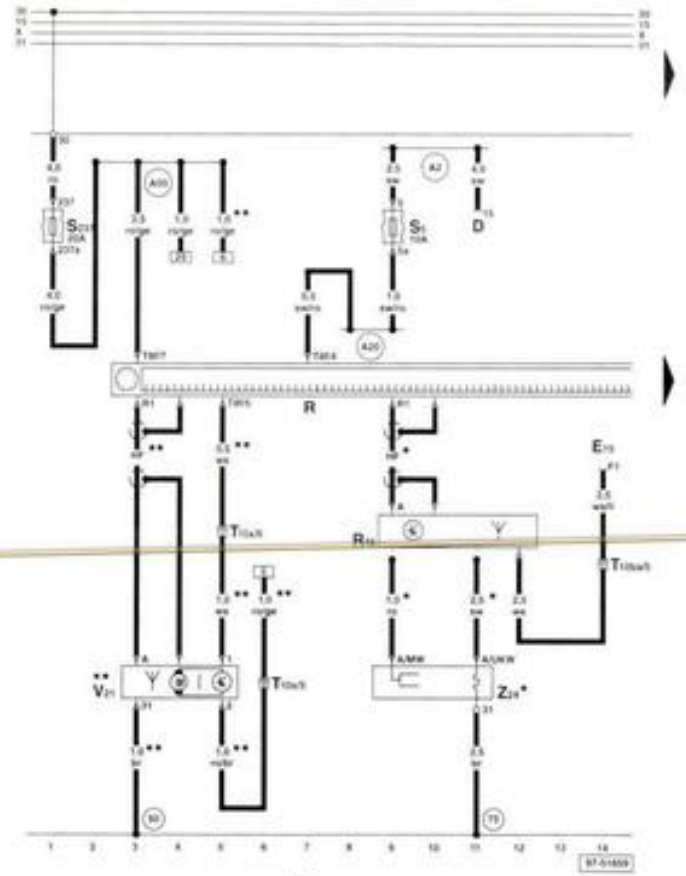
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**







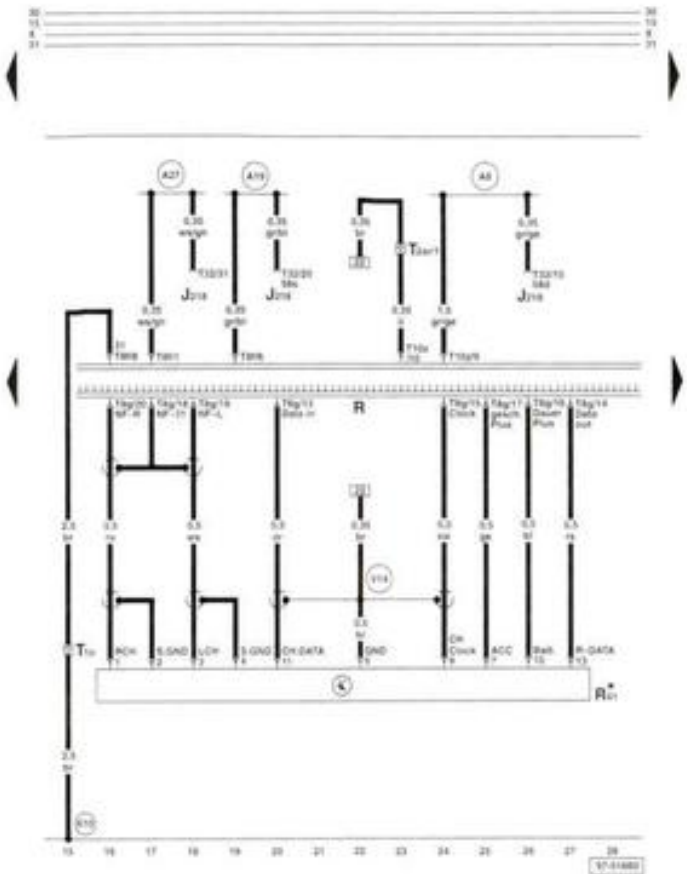



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
E15 - Rear Window Defogger Switch
R - Radio
R1 - Antenna Connection
R45 - Telephone/Radio Antenna Amplifier
SI - Fuse
S237 - Fuse 37 in fuse holder
T8f - Connector 8 pin, black, connector radio III
T10x - Connector 10 pin, green, connector station A pillar, right
T10bx - Connector 10 pin, blue, connector station A pillar, left
V21 - Power Antenna
Z24 - Rear Window Defogger With Window Antenna

(X) - Ground connection, in luggage compartment, left
(Y) - Ground connection, on right rear pillar
(A) - Plus connection (15), in instrument panel wiring harness
(A2) - Wire connection (15a), in instrument panel wiring harness
(A4) - Plus connection (30a), in instrument panel wiring harness

• - Vehicles with rear Window Antenna
•• - Vehicles with Automatic Antenna



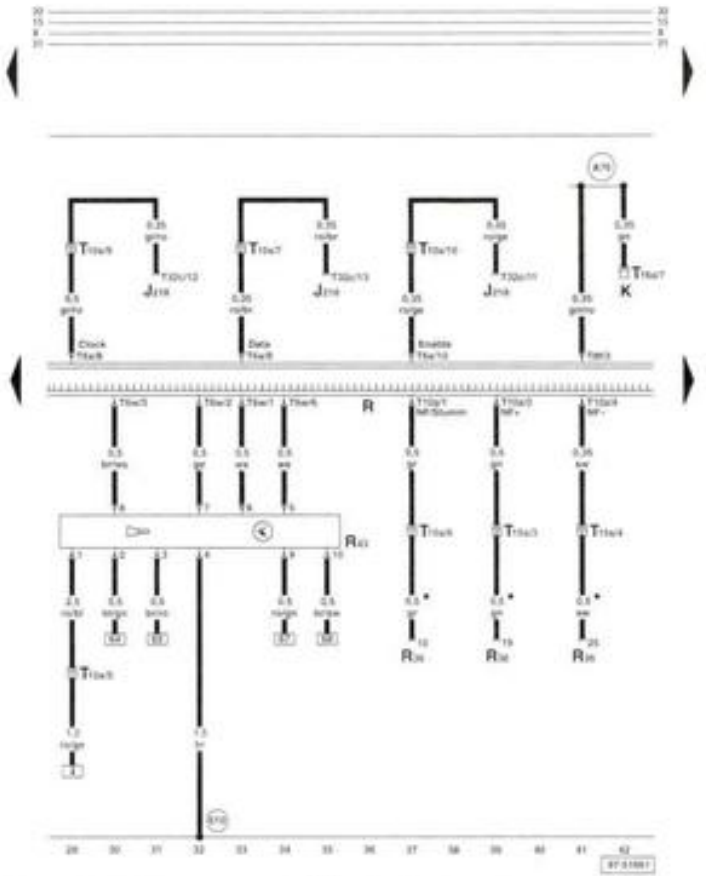
wh = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange
rs = pink

J218 – Instrument Cluster Combination Processor
R – Radio
R41 – CD Changer Unit
T1c – Single connector, behind instrument panel, center
T2br – Connector 2 pin, black, behind instrument panel, center
T8f – Connector 8 pin, black, connector radio R
T8g – Connector 8 pin, blue, connector radio I - 3
T10z – Connector 10 pin, red, connector radio IV
T32 – Connector 32 pin, blue, on instrument cluster

– Ground connection, mass under center console, front
– Plus connection (fuse), in instrument panel wiring harness
– Wire connection (fiber), in instrument panel wiring harness
– Wire connection (vehicle speed signal), in instrument panel wiring harness
– Wire connection (shielding), in CD-changer wiring harness
• – Vehicles with CD Changer



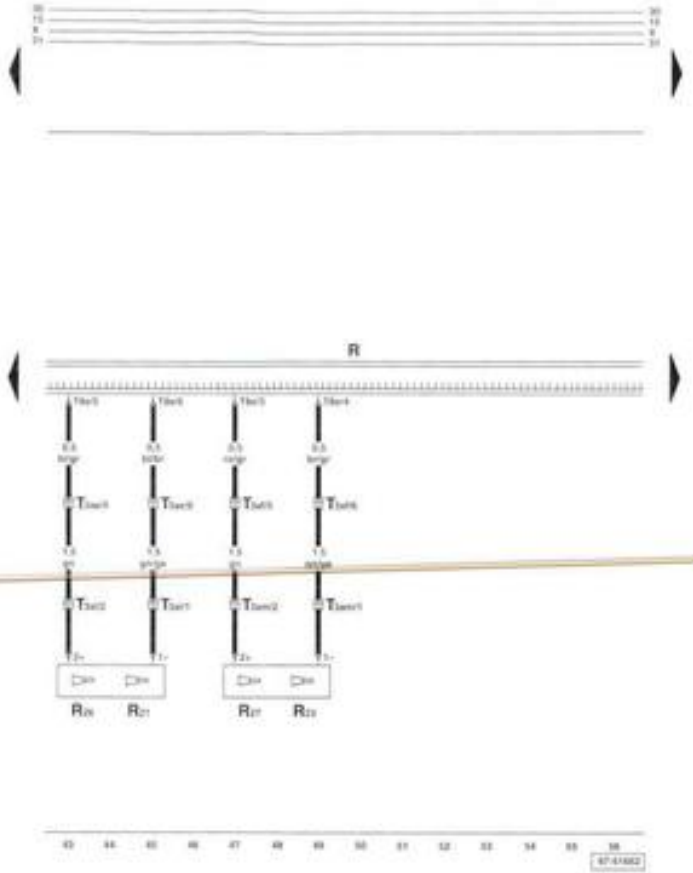




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J218 – Instrument Cluster Combination Processor
K – Data Link Connector (DLC) Rapid Data Transfer
R – Radio
R36 – Telephone Transceiver
R43 – Right Rear Woofer/Amplifier
T6u – Connector 6 pin, yellow, connector radio I - 1
T6x – Connector 6 pin, green, connector radio I - 2
T8f – Connector 8 pin, black, connector radio R
T10a – Connector 10 pin, green, connector station A p/se, right
T10z – Connector 10 pin, red, connector radio IV
T16a – Connector 16 pin, Data Link Connector (DLC)
T32c – Connector 32 pin, grey, on instrument cluster

– Ground connection, mass under center console, front
– Connector K diagnosis wire, in instrument panel wiring harness
• – Vehicles with Telephone

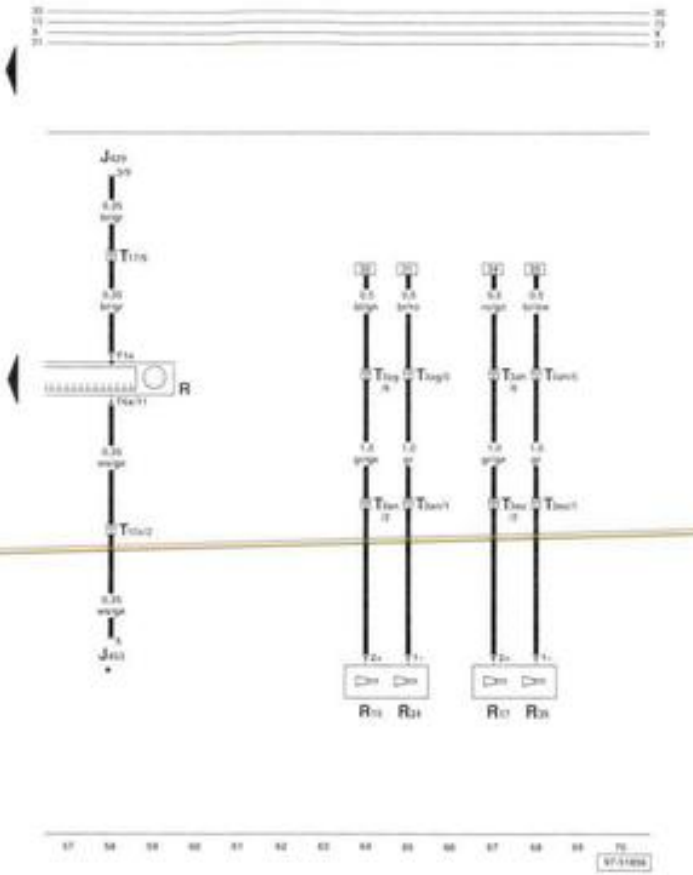



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

R – Radio
R21 – Left Front Woofer
R23 – Right Front Woofer
R26 – Left Front Midrange Speaker
R27 – Right Front Midrange Speaker
T3ae – Connector 3 pin, brown, connector station A pillar, left
T3af – Connector 3 pin, brown, connector station A pillar, right
T3al – Connector 3 pin, black, in driver's door
T3am – Connector 3 pin, black, in passenger's door
T8e – Connector 8 pin, brown, connector radio








ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

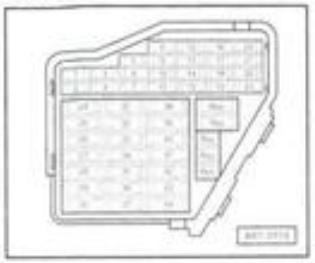
J429 – Control module for central locking
J453 – Control module for multi-function steering wheel
R – Radio
R16 – Left Rear Woofer
R17 – Right Rear Woofer
R34 – Left Rear Midrange Speaker
R35 – Right Rear Midrange Speaker
T1e – Single connector, on Radio
T3ag – Connector 3 pin, blue, in B pillar left
T3ah – Connector 3 pin, blue, in B pillar right
T3an – Connector 3 pin, black, in left rear door
T3ao – Connector 3 pin, black, in right rear door
T6x – Connector 6 pin, green, connector radio I - 2
T10x – Connector 10 pin, green, connector station A pillar, right
T17 – Connector 17 pin, orange, connector station A pillar, right

• – Vehicles with multi-function steering wheel

# Radio Concert, Symphony, Bose with and without CD Changer

2001 m. y.

**Fuse Panel**

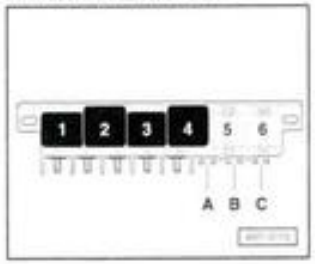


**Fuse Colors:**

30 A – Green
25 A – White
20 A – Yellow
15 A – Blue
10 A – Red
7.5 A – Brown
5 A – Beige

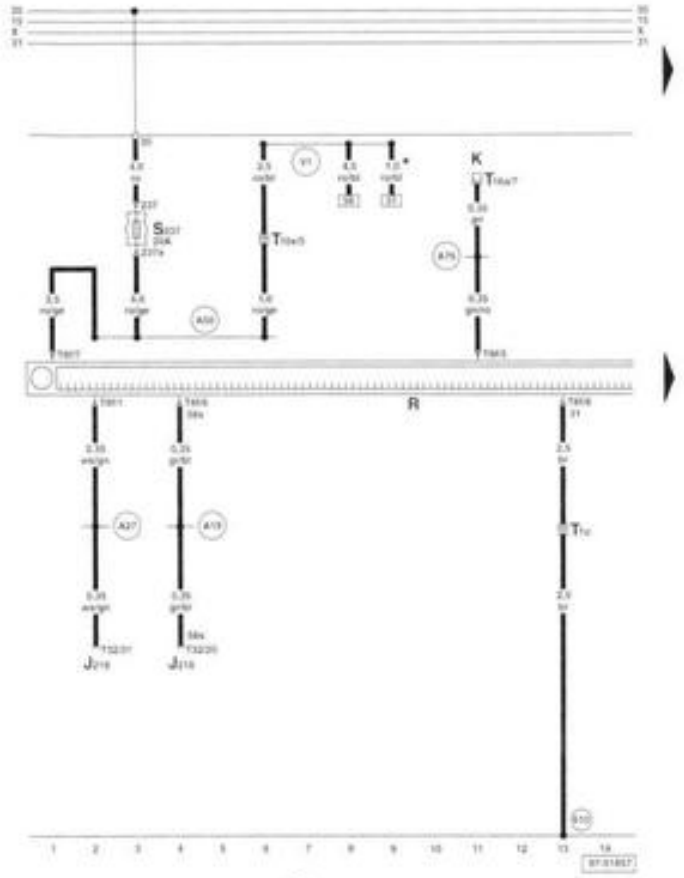
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**





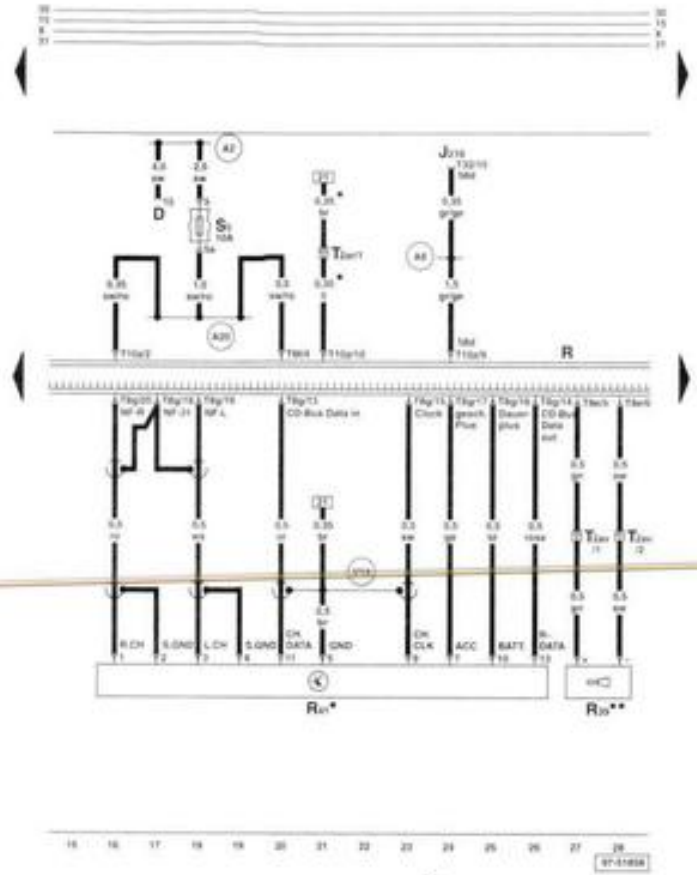



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J218 – Instrument Cluster Combination Processor
A – Data Link Connector (DLC) Rapid Data Transfer
R – Radio
S237 – Fuse 37 in fuse holder
T1c – Single connector, behind instrument panel, center
T8f – Connector 8 pin, black, connector code 19
T10a – Connector 10 pin, green, connector station A pillar, right
T16a – Connector 16 pin, Data Link Connector (DLC)
T32 – Connector 32 pin, blue, on instrument cluster

- Ground connection, radio, under center console, front
- Wire connection (Bass), in instrument panel wiring harness
- Wire connection (without speed signal), in instrument panel wiring harness
- Plus connection (Bass), in instrument panel wiring harness
- Connector (K-diagnosis wire), in instrument panel wiring harness
- Plus connection (SD), in rear speaker wiring harness
- Vehicles with Automatic Antenna




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

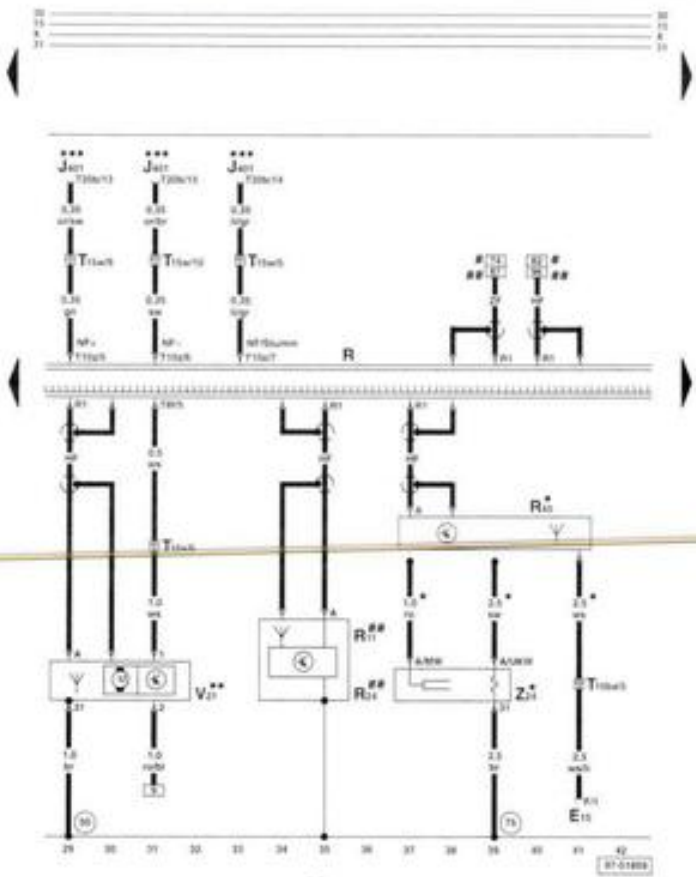
D - Ignition/Starter Switch
J218 - Instrument Cluster Combination Processor
R - Radio
R39 - Speaker (telephone, navigation)
R41 - CD Changer Unit
S1 - Fuse
T2ar - Connector 2 pin, black, behind instrument panel, center
T2av - Connector 2 pin, black, for loudspeaker, B pillar, left
T8w - Connector 8 pin, brown, connector radio II
T8r - Connector 8 pin, black, connector radio III
T8g - Connector 6 pin, blue, connector radio I / 3
T10z - Connector 10 pin, red, connector radio IV
T32 - Connector 32 pin, blue, on instrument cluster

A2 - Plus connection (15), in instrument panel wiring harness
A6 - Plus connection (B+), in instrument panel wiring harness
A20 - Wire connection (15a), in instrument panel wiring harness
A58 - Wire connection (shielding), in CD changer wiring harness

* - Vehicles with CD-Changer
** - Vehicles with Telephone





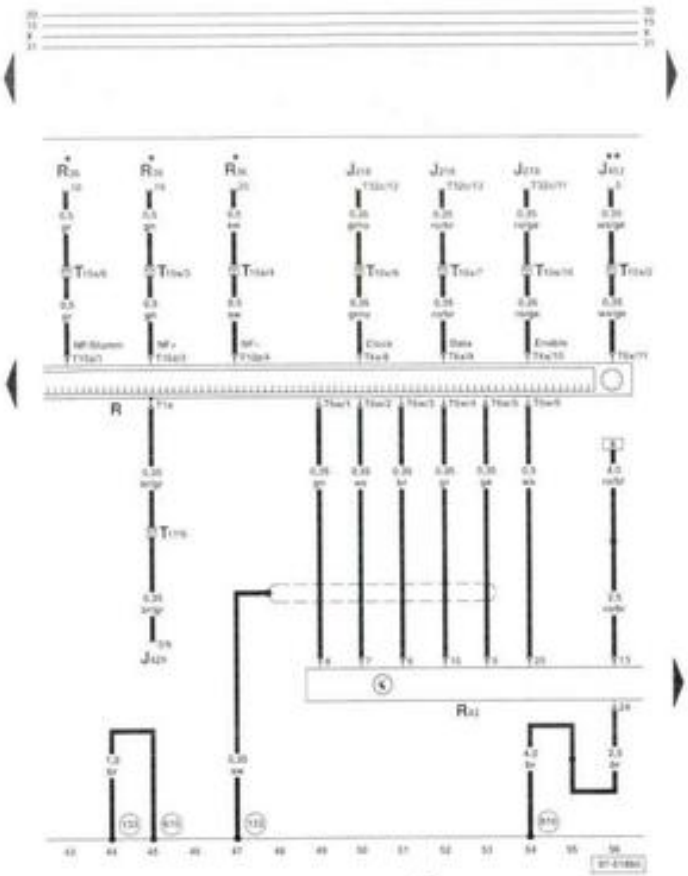



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

E15 - Rear Window Defogger Switch
J401 - Control unit for navigation with CD drive
R - Radio
R1 - Antenna Connection
R11 - Antenna
R24 - Antenna Amplifier
R45 - Telephone/Radio Antenna Amplifier
T8f - Connector 8 pin, black, connector radio III
T10x - Connector 10 pin, green, connector station A pillar, right
T10z - Connector 10 pin, red, connector radio IV
T10ax - Connector 10 pin, blue, connector station A pillar, left
T15av - Connector 15 pin, green, connector station A pillar, right
T20b - Connector 20 pin, black, on control unit for navigation
V21 - Power Antenna
Z24 - Rear Window Defogger With Window Antenna

A10 - Ground connection, in luggage compartment, left
A11 - Ground connection, on right rear pillar

* - Vehicles with rear Window Antenna
** - Vehicles with Automatic Antenna
*** - Vehicles with Navigation
# - Sedan
## - Wagon



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

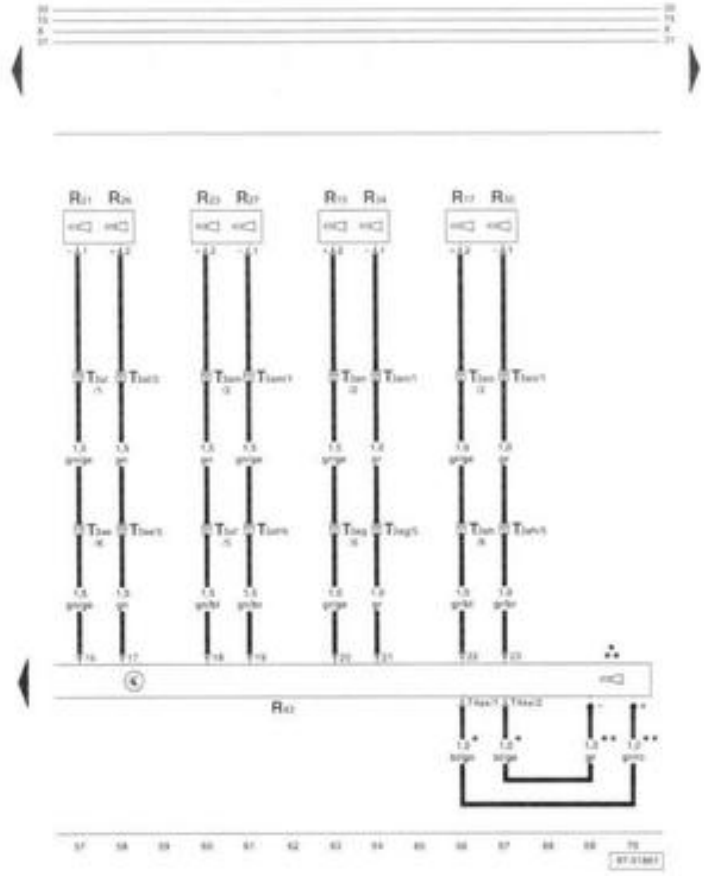
J218 – Instrument Cluster Combination Processor
J329 – Control module for comfort systems
J453 – Control module for multi-function steering wheel
R – Radio
R36 – Telephone Transceiver
R43 – Right Rear Woofer/Amplifier
T1a – Single connector on Radio
T6a – Connector 6 pin, yellow, connector radio I - 1
T6b – Connector 6 pin, green, connector radio I - 2
T10a – Connector 10 pin, green, connector station A pillar, right
T10z – Connector 10 pin, red, connector radio IV
T15a – Connector 15 pin, blue, connector station A pillar, left
T17 – Connector 17 pin, orange, connector station A pillar, right
T32a – Connector 32 pin, grey, on instrument cluster

– Ground connection, in speaker wiring harness
– Ground connection radio under center console, front

* – Vehicles with Telephone
** – Vehicles with multi-function steering wheel



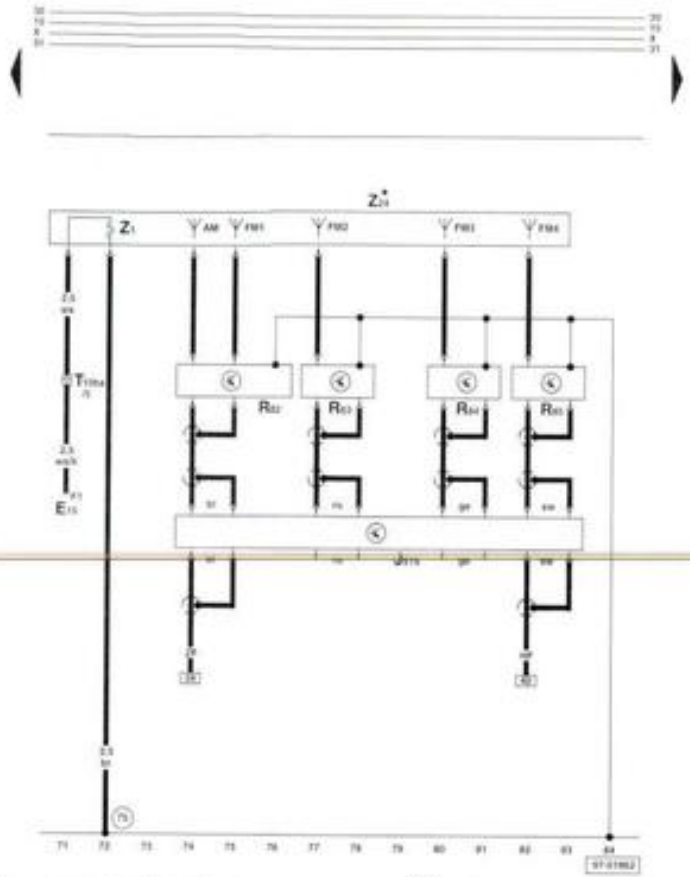




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

R15 – Left Rear Woofer
R17 – Right Rear Woofer
R21 – Left Front Woofer
R23 – Right Front Woofer
R26 – Left Front Midrange Speaker
R27 – Right Front Midrange Speaker
R29 – Left Rear Midrange Speaker
R30 – Right Rear Midrange Speaker
R43 – Right Rear Woofer/Amplifier
T3ae – Connector 3 pin, brown, connector station A pillar, left
T3af – Connector 3 pin, brown, connector station A pillar, right
T3eg – Connector 3 pin, blue, in B pillar left
T3gn – Connector 3 pin, blue, in B pillar right
T3ei – Connector 3 pin, black, in driver's door
T3en – Connector 3 pin, black, in passenger's door
T3el – Connector 3 pin, black, in left rear door
T3ek – Connector 3 pin, black, in right rear door
T4aw – Connector 4 pin, on Woofer/Amplifier

* – Subwoofer, Tweter
** – Subwoofer, Woofer



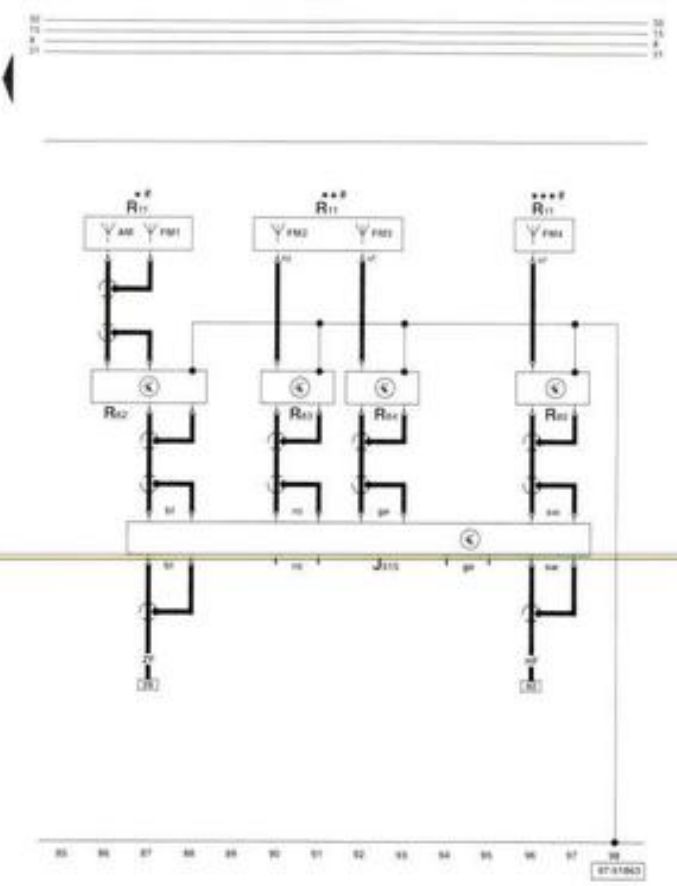

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E15 - Rear Window Defogger Switch
J345 - Control unit for aerial selection (aerial diversity function)
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
T10br - Connector 10 pin, blue, connector station A pillar, left
Z1 - Rear Window Defogger/Heat Element
Z24 - Rear Window Defogger With Window Antenna

⏚ - Ground connection, on right rear pillar
• - Sedan only








ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J345 - Control unit for aerial selection (aerial diversity function)
R11 - Antenna
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4

• - Roof Antenna
•• - Window rear left
••• - Window rear right

⧫ - Wagon only

# Headlight with High Intensity Gas discharge Lamps and automatic static Headlight Beam Adjusting

2001 m. y.

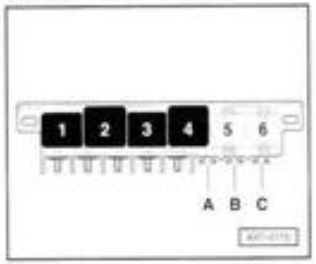
**Fuse Panel**

**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

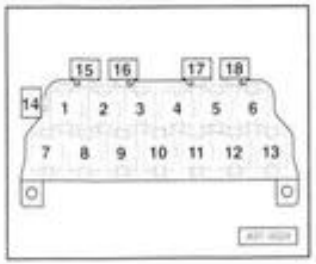
**Micro Central Electric Panel**




**Relay Location:**

**2** Load Reduction Relay, J59

**13 - Fold Relay Panel**



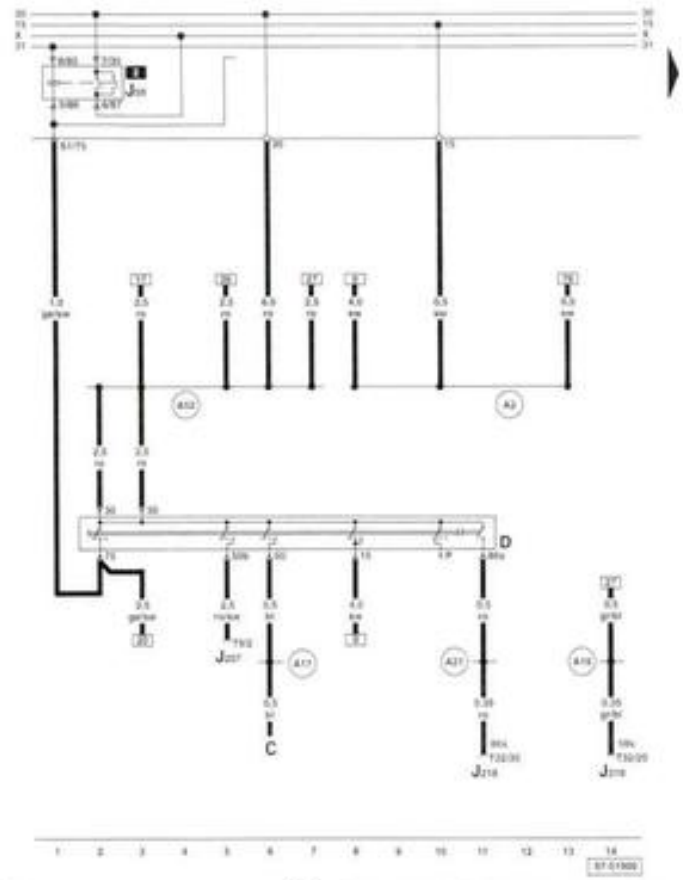

**Relay Location:**

**9** Lamp Control Module, J123

**10** Lamp Control Module, J123

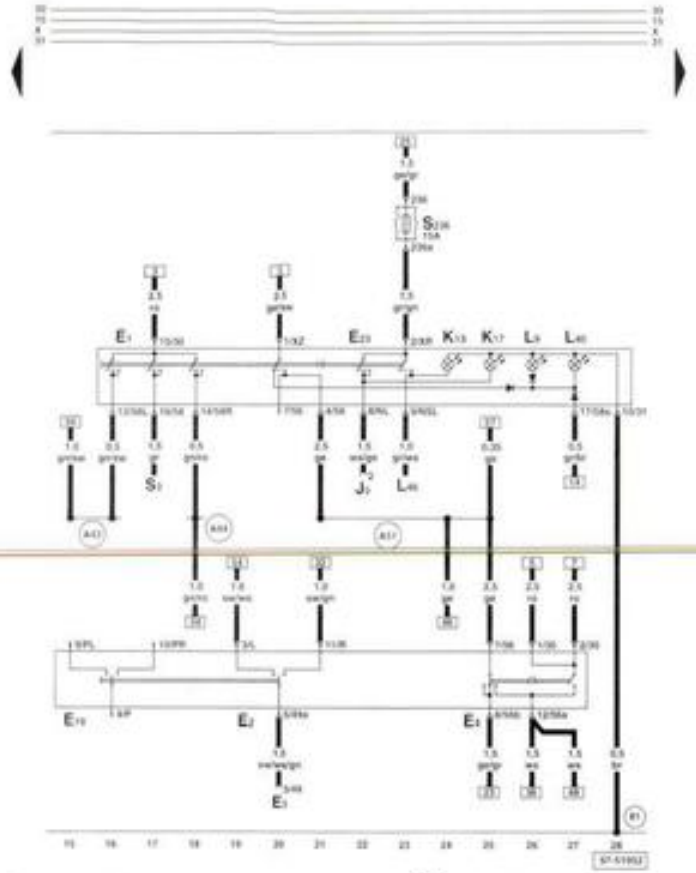







C - Generator (GEN)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J207 - Starting Interlock Relay
J218 - Instrument Cluster Communication Processor
T9 - Connector 9 pin, brown, on starting interlock relay
T32 - Connector 32 pin, blue, on instrument cluster

- Plus connection (15), in instrument panel wiring harness
- Wire connection (B1), in instrument panel wiring harness
- Wire connection (bBs), in instrument panel wiring harness
- Wire connection (bBs), in instrument panel wiring harness
- Plus connection 2 (30), in instrument panel wiring harness



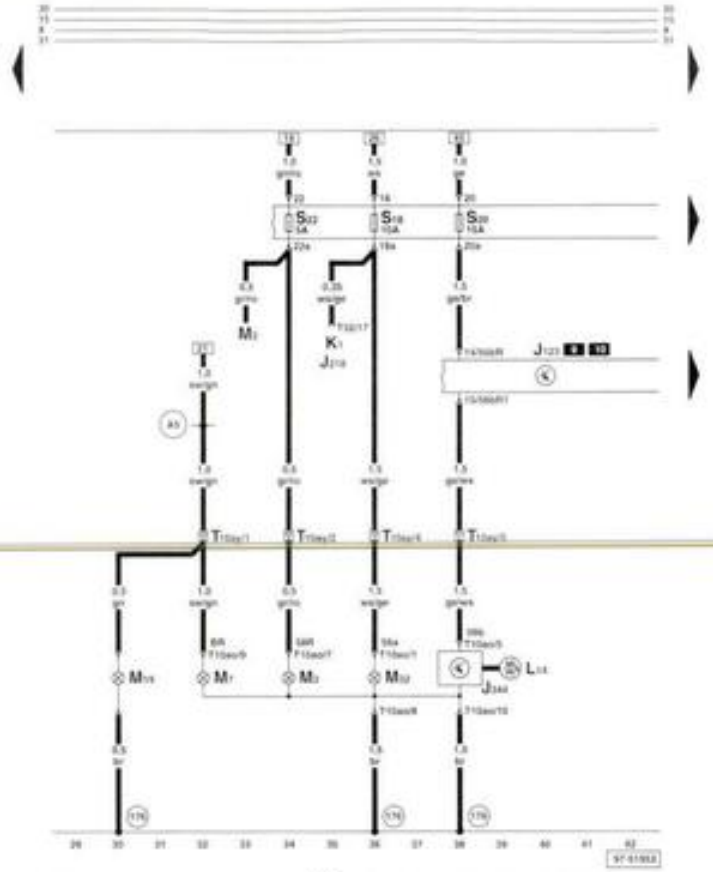
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E2 - Turn Signal Switch
E3 - Emergency Flasher Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
J5 - Fog Light Relay
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light
L56 - Left Rear Fog Light
S3 - Fuse
S236 - Fuse 36 in fuse holder

(31) - Ground connection, 1., in instrument panel wiring harness
(A43) - Wire connection (57c), in instrument panel wiring harness
(A44) - Wire connection (57m), in instrument panel wiring harness
(A45) - Wire connection (58), in instrument panel wiring harness



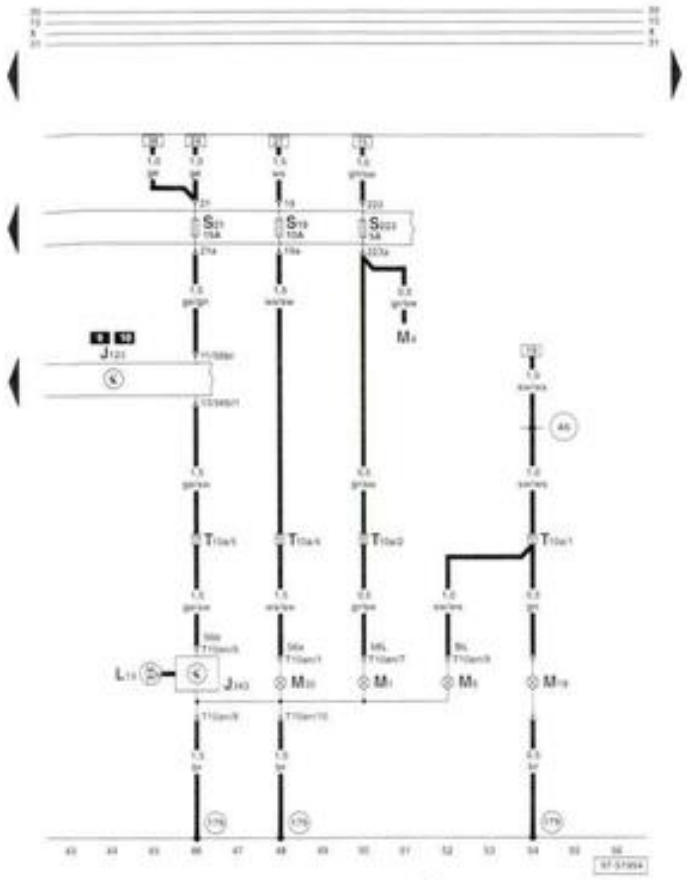




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
J218 - Instrument Cluster Combination Processor
J344 - Control Module for High-Intensity gas discharge lamp
K1 - Headlight High Beam Indicator Light
L14 - High-intensity gas discharge lamp right
M2 - Right Tail Light
M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right Side Turn Signal Light
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10av - Connector 10 pin, pink, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster

(176) - Ground connection, in right headlight wiring harness
(A1) - Plus connection (right turn signal), in instrument panel wiring harness



wh = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

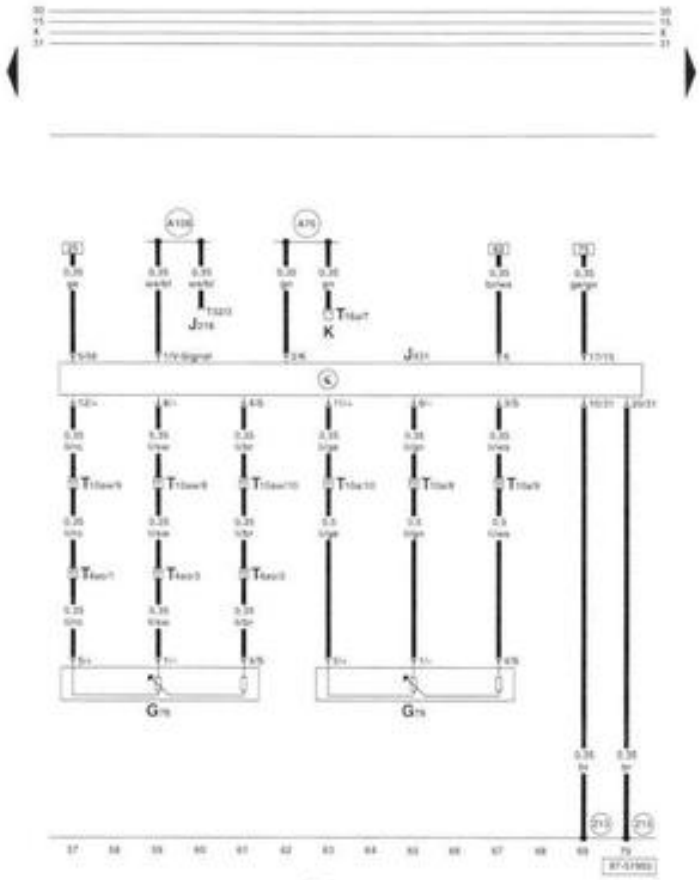
J123 – Lamp Control Module
J343 – Control Module for High-Intensity gas discharge lamp
L13 – High intensity gas discharge lamp, left
M1 – Left Parking Light
M4 – Left Tail Light
M5 – Left Front Turn Signal Light
M19 – Left, Side Turn Signal Light
M30 – Left High Beam Headlight
S19 – Fuse
S21 – Fuse
S223 – Fuse 23 in fuse holder
T16a – Connector 16 pin, pink, connector station A pillar, left
T16an – Connector 16 pin, on headlight, left

○ – Ground connection, in left headlight wiring harness
○ – Fuse connection (left turn signal), in instrument panel wiring harness



Lamp Control Module, High Intensity Gas Discharge Lamp Left

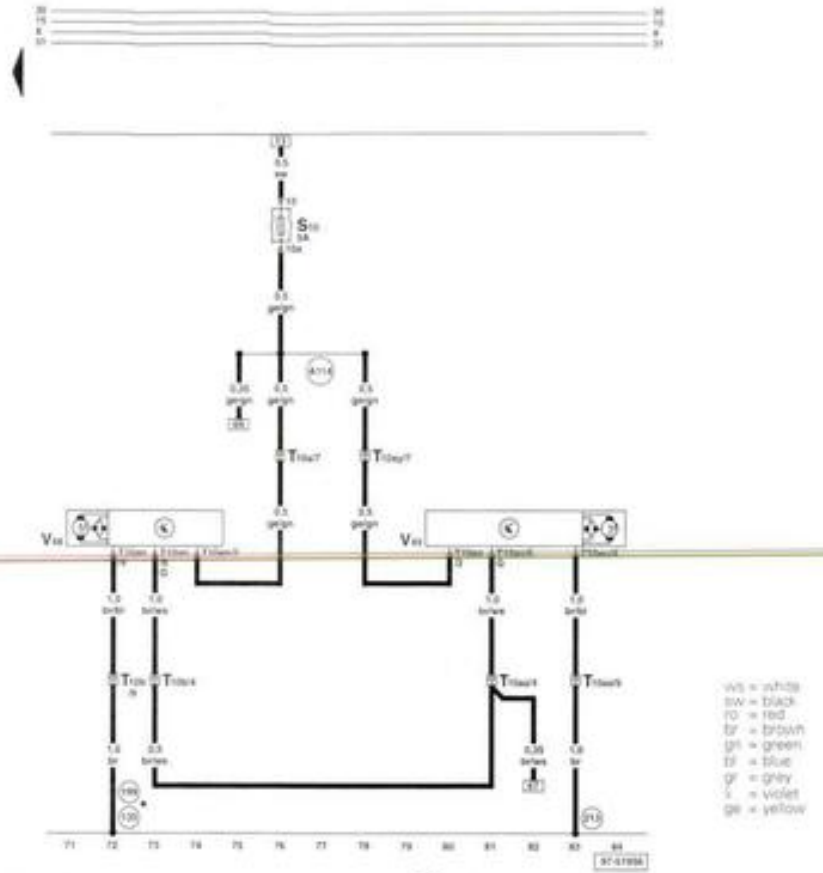




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G78 – Left Rear Level Contrl System Sensor
G78 – Left Front Level Contrl System Sensor
J218 – Instrument Cluster Combination Processor
J431 – Control module for Headlight Beam Adjusting
K – Data Link Connector (DLC) Rapid Data Transfer
T4ax – Connector A pin, black, below rear seat, left
T16a – Connector 16 pin, pink, connector station A pillar, left
T16an – Connector 16 pin, black, connector station A pillar, right
T16a – Connector 16 pin, Data Link Connector (DLC)
T32 – Connector 32 pin, blue, on instrument cluster

○ – Ground connection, in instrument panel wiring harness
○ – Connector (K-diagnosis wire), in instrument panel wiring harness
○ – Connector (speed signal), in instrument panel wiring harness
• – Vehicles with ABS 5.3
•• – Vehicles with ABS 5.3 with ESP




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

S10 – Fuse
T10a – Connector 10-pin, pink, connector station A pillar, left
T10b – Connector 10-pin, red, connector station A pillar, left
T10an – Connector 10-pin, on headlight, left
T10bn – Connector 10-pin, on headlight, right
T10ay – Connector 10-pin, pink, connector station A pillar, right
T10by – Connector 10-pin, red, connector station A pillar, right
V48 – Left Headlight Beam Adjusting Motor
V49 – Right Headlight Beam Adjusting Motor

(2) – Ground connection -2-, in instrument panel wiring harness
(3) – Ground connection -3-, in instrument panel wiring harness
(...) – Ground connection, in instrument panel wiring harness
(...) – Connection (headlight beam adjusting) in instrument panel wiring harness
• – Both are possible





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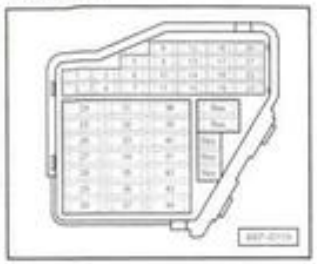
## Standard Equipment

2002 m. y.

### Fuse Panel

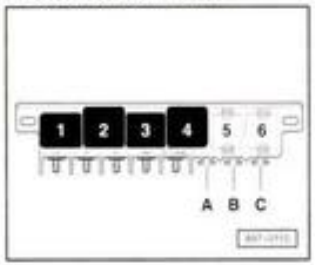


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 23 in the wiring diagram.

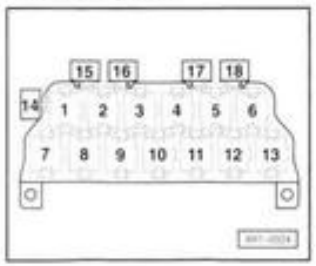
### Micro Central Electric Panel




**Relay Location:**

1 - Dual Horn Relay, J4
2 - Load Reduction Relay, J59
4 - Fuel Pump (FP) Relay, J17
5 - Wiper/Washer Intermittent Relay, J31
6 - Wiper/Washer Intermittent Relay, J31

### 13 - Fold Relay Panel



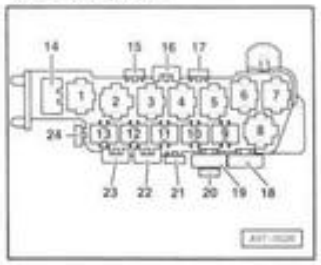

**Relay Location:**

4 - Starting Interlock Relay, J207
6 - Fog Light Relay, J5



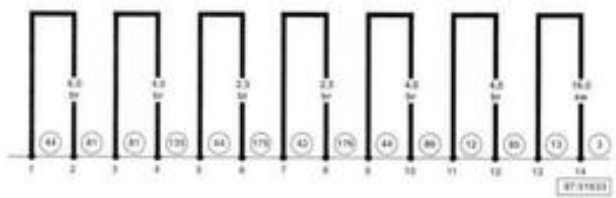


### 8 - Fold Relay Panel




**Fuse Location:**

15 - Fuse for Luggage Compartment Socket, S184

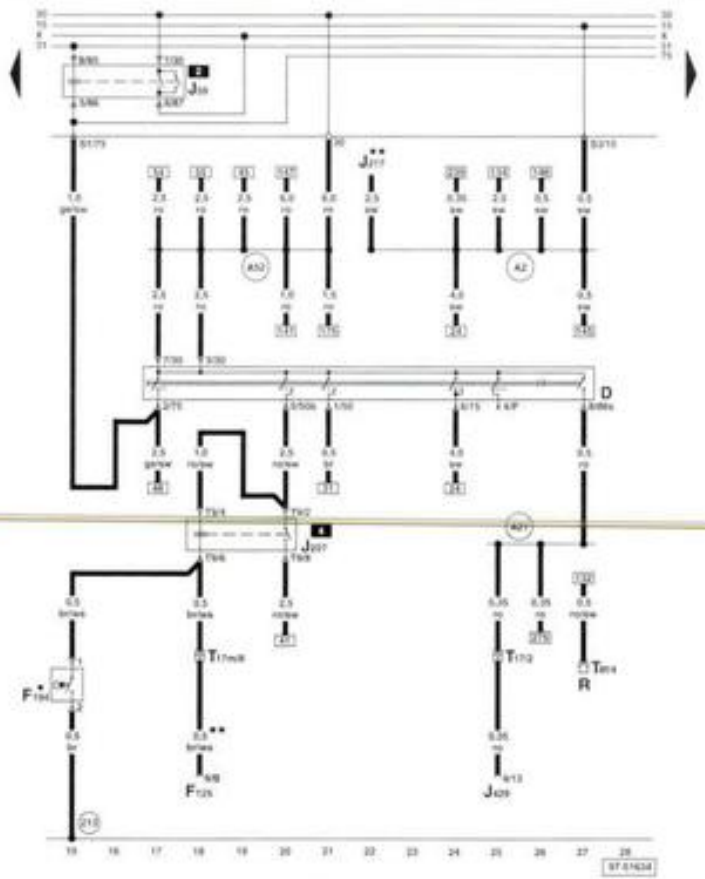


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

- (3) - Ground strap, engine to body
- (10) - Ground connection, in engine compartment, left
- (12) - Ground connection, in engine compartment, right
- (43) - Ground connection, on right A-pillar, lower part
- (44) - Ground connection, on left A-pillar, lower part
- (61) - Ground connection -1-, in instrument panel wiring harness
- (85) - Ground connection -1-, in engine compartment wiring harness
- (86) - Ground connection -1-, in rear wiring harness
- (135) - Ground connection -2-, in instrument panel wiring harness
- (176) - Ground connection, in right headlight wiring harness
- (175) - Ground connection, in left headlight wiring harness

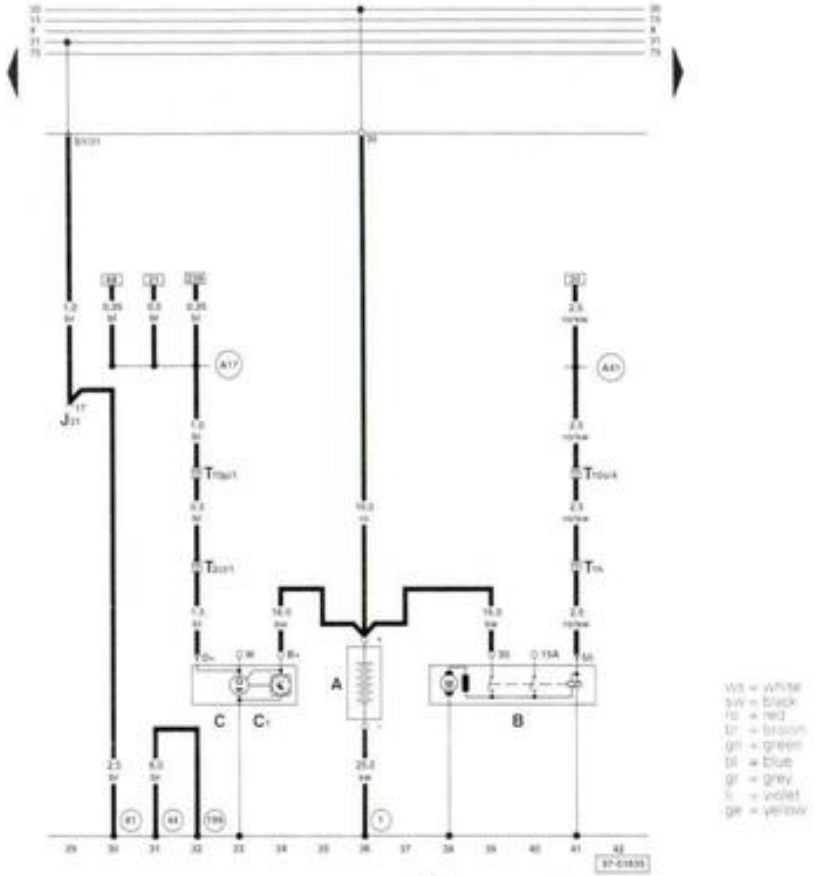






ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

- D - Ignition/Starter Switch
- F125 - Multi-Function Transmission Range (TR) Switch
- F194 - Clutch Pedal Position (CPP) Switch
- J59 - Load Reduction Relay
- J207 - Starting Interlock Relay
- J217 - Transmission Control Module (TCM)
- J429 - Control module for central locking
- R - Radio
- T8f - Connector 8 pin, black, connector radio III
- T9 - Connector 9 pin, brown, on starting interlock relay
- T17 - Connector 17 pin, orange, connector station A pillar, right
- T17m - Connector 17 pin, blue, connector station A pillar, right
- (215) - Ground connection, in instrument panel wiring harness
- (A2) - Plus connection (15), in instrument panel wiring harness
- (A27) - Wire connection (86s), in instrument panel wiring harness
- (A52) - Plus connection -2- (30), in instrument panel wiring harness
- * - Vehicles with manually shifted transmission
- ** - Vehicles with automatic transmission



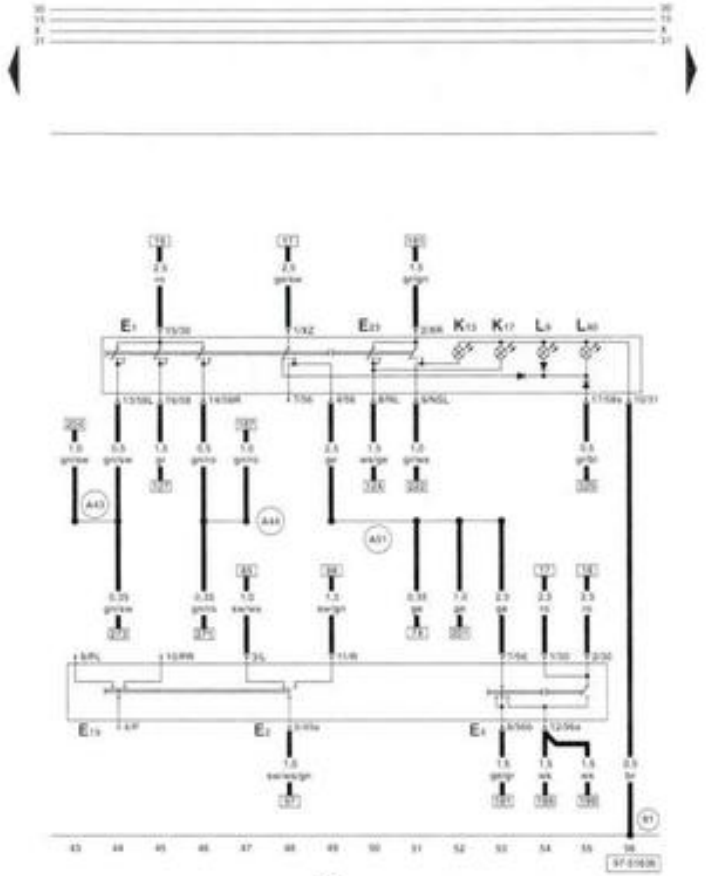
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

A – Battery
B – Starter
C – Generator (GRX)
C1 – Voltage Regulator (VR)
J31 – Wiper/Washer Intermittent Relay
T1n – Single connector, black, in engine compartment, right
T2d – Connector 2 pin, black, in engine compartment, right
T10d – Connector 10 pin, brown, connector station electronic box plenum chamber
T10r – Connector 10 pin, black, connector station electronic box plenum chamber

- Ground strap, battery to body
- Ground connection, on left A-pillar, lower part
- Ground connection -1-, in instrument panel wiring harness
- Ground connection -3-, in instrument panel wiring harness
- Wire connection (61), in instrument panel wiring harness
- Plus connection (30), in instrument panel wiring harness



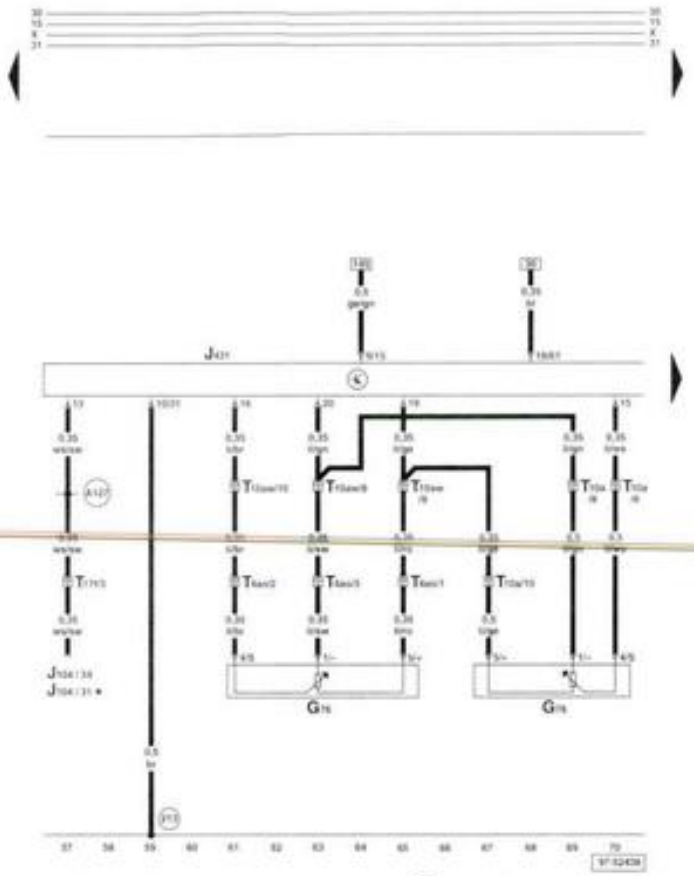




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 – Light switch
E2 – Turn Signal Switch
E4 – Headlight Dimmer/Flasher Switch
E19 – Park Light Switch
E23 – Fog Light Switch
K13 – Rear Fog Light Indicator Light
K17 – Fog Light Indicator Light
L9 – Headlight Switch Light
L40 – Front And Rear Fog Light Switch Light

- Ground connection -1-, in instrument panel wiring harness
- Wire connection (57), in instrument panel wiring harness
- Wire connection (58), in instrument panel wiring harness
- Wire connection (58b), in instrument panel wiring harness

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sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

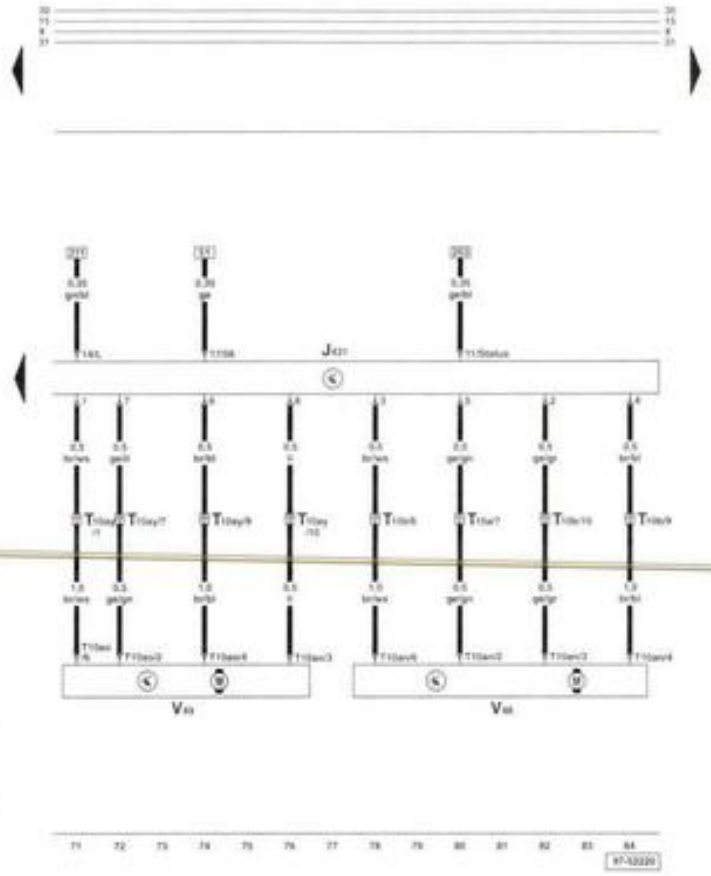
G76 – Left Rear Level Control System Sensor
G78 – Left Front Level Control System Sensor
J104 – ABS Control Module (w/EDL)
J431 – Control module for Headlight Beam Adjusting
T4ac – Connector 4 pin, black, below rear seat, left
T10a – Connector 10 pin, pink, connector station A pillar, left
T10aw – Connector 10 pin, black, connector station A pillar, right
T17r – Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side

(T10) – Ground connection, in instrument panel wiring harness
(...) – Connection (rear) wheel speed sensor, left rear, in harness for instrument cluster
• – only Vehicles Abroad



Control Module for Headlight Beam Adjusting, Left Rear and Front Level Control System Sensor

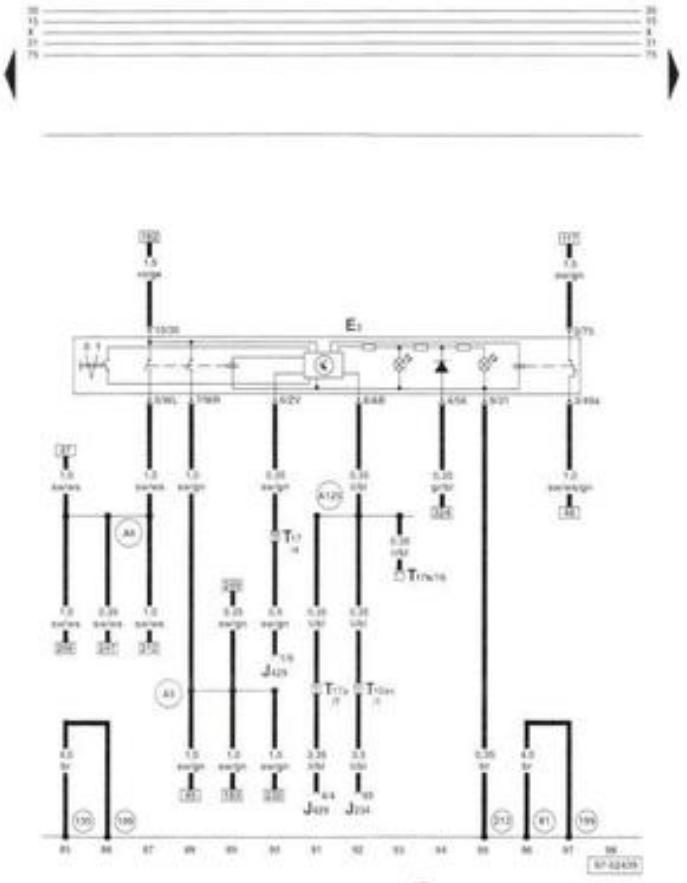





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J431 – Control module for Headlight Beam Adjusting
T10a – Connector 10 pin, pink, connector station A pillar, left
T10b – Connector 10 pin, red, connector station A pillar, left
T10ar – Connector 10 pin, on headlight, left
T10au – Connector 10 pin, on headlight, right
T10ay – Connector 10 pin, pink, connector station A pillar, right
V48 – Left Headlight Beam Adjusting Motor
V49 – Right Headlight Beam Adjusting Motor

Control Module for Headlight Beam Adjusting, Left and Right Headlight Beam Adjusting Motor

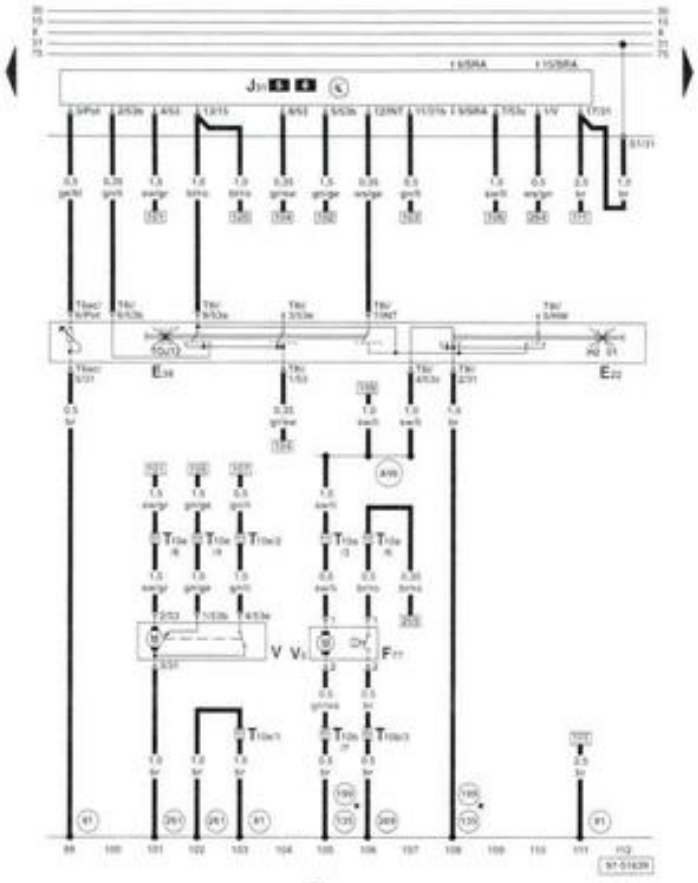



E3 - Emergency Flasher Switch
J234 - Airbag Control Module
J429 - Control module for central locking
T10a - Connector 10 pin, yellow, connector station A pillar, right
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17k - Connector 17 pin, red, connector station electronic box plenum chamber

(31) - Ground connection -1-, in instrument panel wiring harness
(130) - Ground connection -2-, in instrument panel wiring harness
(195) - Ground connection -3-, in instrument panel wiring harness
(213) - Ground connection, in instrument panel wiring harness
(A5) - Plus connection (right turn signal), in instrument panel wiring harness
(A6) - Plus connection (left turn signal), in instrument panel wiring harness
(A125) - Connection (crash signal) in instrument panel wiring harness

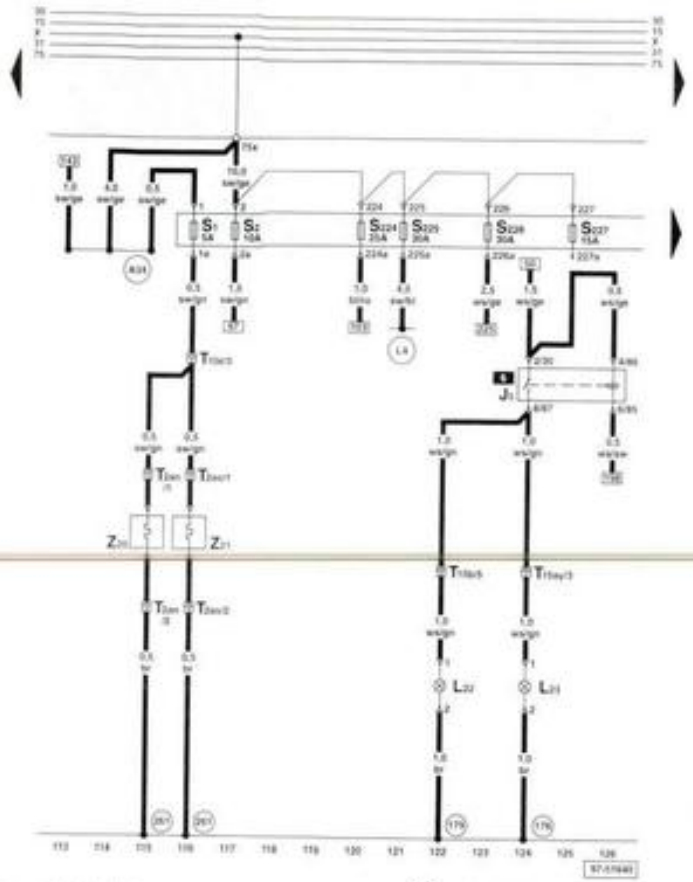







E22 - Windshield Wiper/Washer Switch
E38 - Windshield Wiper Intermittent Regulator
F77 - Windshield Washer Fluid Level Warning Switch
J31 - Wiper/Washer Intermittent Relay
T6ac - Connector 6 pin, brown, on windshield wiper intermittent regulator
T8i - Connector 8 pin, black, on windshield wiper/washer switch
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10e - Connector 10 pin, violet, connector station A pillar, left
V - Windshield Wiper Motor
V5 - Windshield Washer Pump

(31) - Ground connection -1-, in instrument panel wiring harness
(130) - Ground connection -2-, in instrument panel wiring harness
(195) - Ground connection -3-, in instrument panel wiring harness
(213) - Ground connection, in wiring harness heated spray jet
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(A56) - Connector (53a), in instrument panel wiring harness
• - both are possible



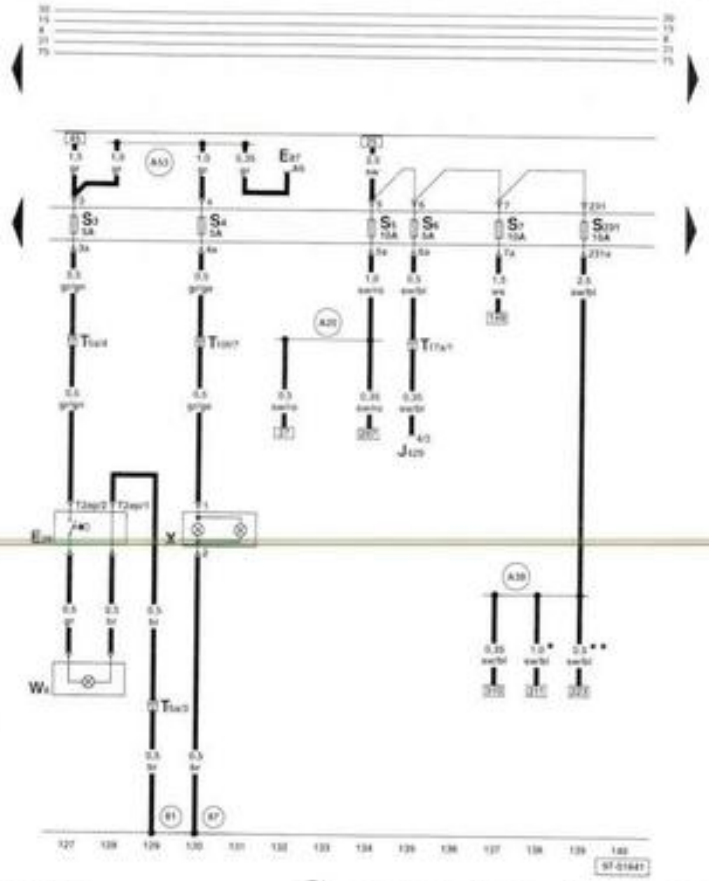
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E - Fog Light Relay
L22 - Left Front Fog Light
L23 - Right Front Fog Light
S1 - Fuse
S2 - Fuse
S224 - Fuse 24 in fuse holder
S225 - Fuse 25 in fuse holder
S226 - Fuse 26 in fuse holder
S227 - Fuse 27 in fuse holder
T2an - Connector 2 pin, washer jet, left
T2ao - Connector 2 pin, washer jet, right
T10b - Connector 10 pin, red, connector station A pillar, left
T10e - Connector 10 pin, violet, connector station A pillar, left
T10dv - Connector 10 pin, pink, connector station A pillar, right
Z20 - Left Washer Nozzle Heater
Z21 - Right Washer Nozzle Heater

- Ground connection, in right headlight wiring harness
- Ground connection, in left headlight wiring harness
- Ground connection, in wiring harness heated spray jet
- Wire connection (7bc), in instrument panel wiring harness
- Wire connection (7bc), in A/C wiring harness





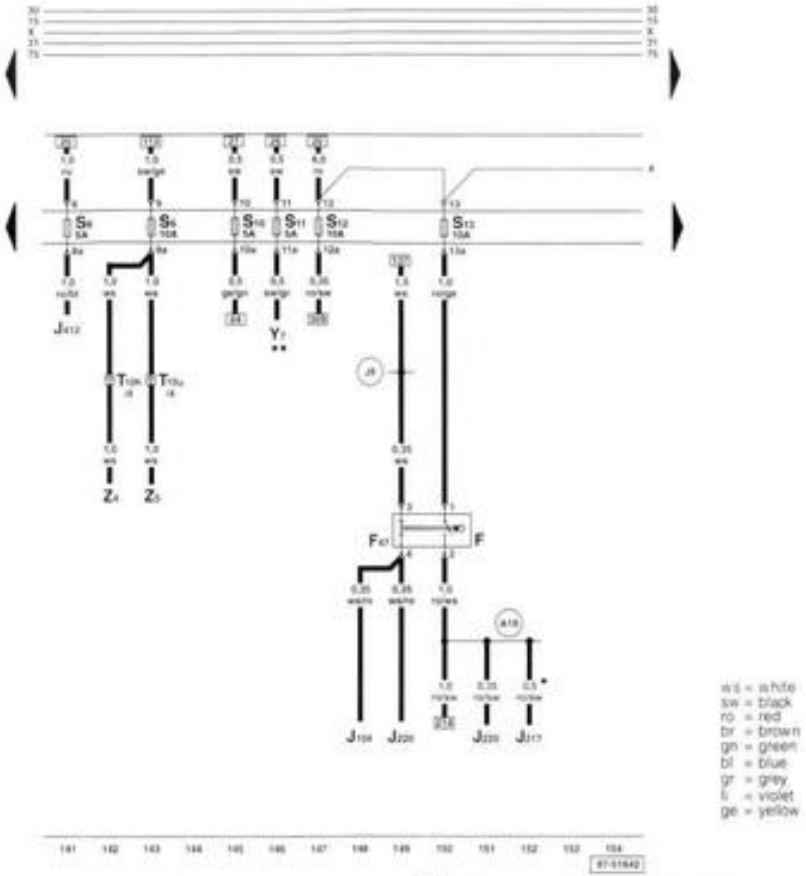


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E26 - Glove compartment light
E87 - A/C Control Head
J428 - Control module for central locking
S3 - Fuse
S4 - Fuse
S5 - Fuse
S6 - Fuse
S7 - Fuse
S231 - Fuse 31 in fuse holder
T2ap - Connector 2 pin, black, behind instrument panel, right
T5a - Connector 5 pin, black, behind instrument panel, right
T10f - Connector 10 pin, brown, connector station A pillar, left
T17a - Connector 17 pin, brown, connector station A pillar, right
W6 - Glove Compartment Light
X - License Plate Light

- Ground connection -1-, in instrument panel wiring harness
- Ground connection -2-, in rear wiring harness
- Wire connection (7bc), in instrument panel wiring harness
- Plus connection (15a II), in instrument panel wiring harness
- Plus connection (58b), in instrument panel wiring harness

* - vehicles with manually shifted transmission
** - vehicles with automatic transmission



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

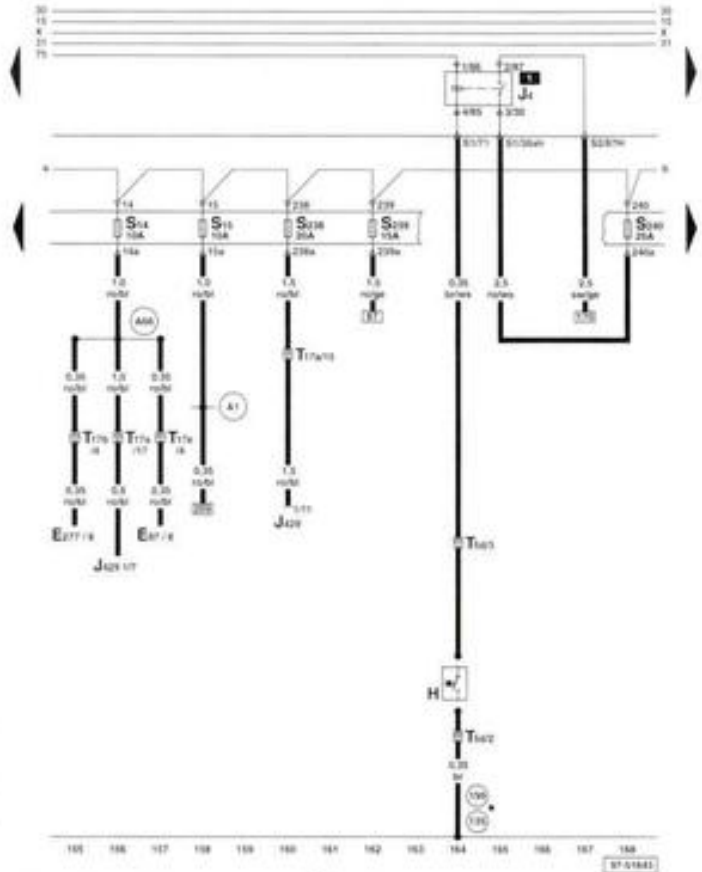
F - Brake Light Switch
F47 - Brake Pedal Switch (cruise control/Diesel Direct Fuel Injection)
J104 - ABS Control Module (w/ EDL)
J217 - Transmission Control Module (TCM)
J220 - Motronic Engine Control Module (ECM)
J412 - Control module for operating electronics, telephone
S8 - Fuse
S9 - Fuse
S10 - Fuse
S12 - Fuse
S13 - Fuse
T10h - Connector 10 pin, black, connector station A pillar, left
T10u - Connector 10 pin, black, connector station A pillar, right
Y7 - Automatic day/night interior mirror
Z4 - Heated outside mirror, driver side
Z5 - Heated outside mirror, passenger side

A10 - Wire connection (54), in instrument panel wiring harness
J9 - Wire connection -1- (15a), in ABS wiring harness

* - Vehicles with automatic transmission 01V
** - Vehicles with automatic day/night interior mirror





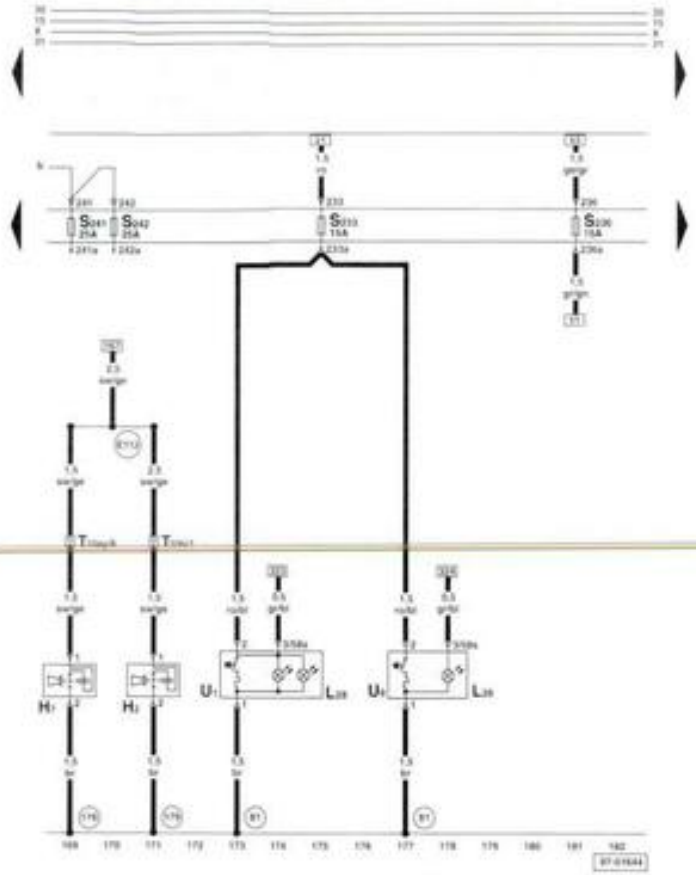


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E97 - Driver's Seat Memory Program Control
E277 - Passenger's Seat Memory Program Control
H - Signal horn activation
J4 - Dual Horn Relay
J429 - Control module for central locking
S14 - Fuse
S15 - Fuse
S238 - Fuse 38 in fuse holder
S239 - Fuse 39 in fuse holder
S240 - Fuse 40 in fuse holder
T5d - Connector 5 pin, yellow, behind steering column switch cover
T17a - Connector 17 pin, brown, connector station A pillar, right
T17b - Connector 17 pin, black, connector station A pillar, right
T17e - Connector 17 pin, black, connector station A pillar, left

(135) - Ground connection -2-, in instrument panel wiring harness
(195) - Ground connection -3-, in instrument panel wiring harness
(A1) - Plus connection (30a), in instrument panel wiring harness
(A66) - Connector (30a, central locking/anti-theft warning system 1R), in instrument panel wiring harness

* - both are possible



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

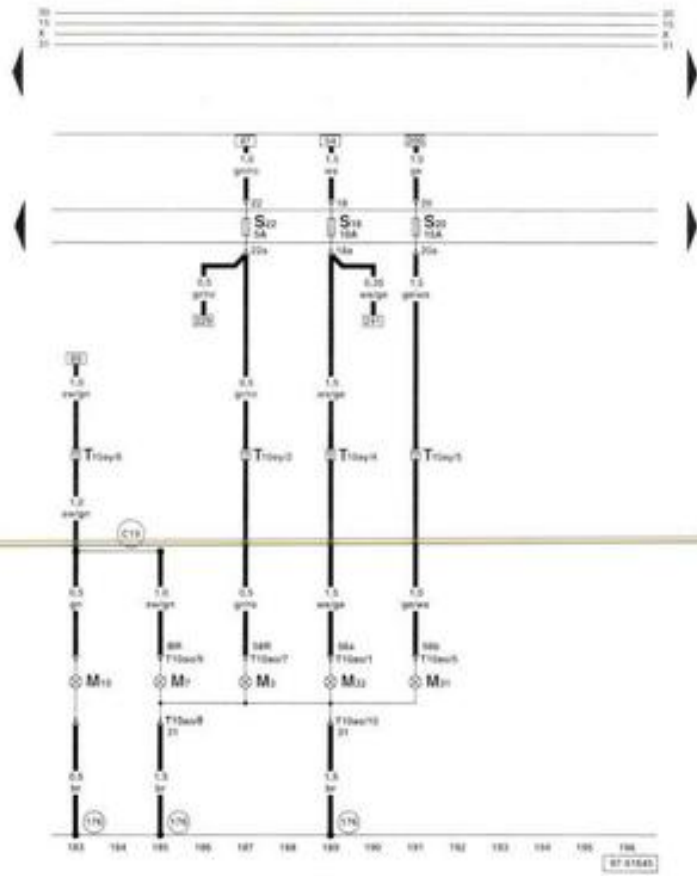
H2 - High Tone Horn
H7 - Low Tone Horn
U9 - Cigarette Lighter Light
S233 - Fuse 33 in fuse holder
S236 - Fuse 36 in fuse holder
S241 - Fuse 41 in fuse holder
S242 - Fuse 42 in fuse holder
T10b - Connector 10 pin, red, connector station A pillar, left
T10ay - Connector 10 pin, pink, connector station A pillar, right
U1 - Cigarette Lighter
U9 - Rear Cigarette Lighter

(1) - Ground connection -1-, in instrument panel wiring harness
(176) - Ground connection, in right headlight wiring harness
(178) - Ground connection, in left headlight wiring harness
(...) - Connector (Horn - 87h), in instrument panel wiring harness



Fuse Holder, Cigarette Lighter, High Tone Horn, Low Tone Horn



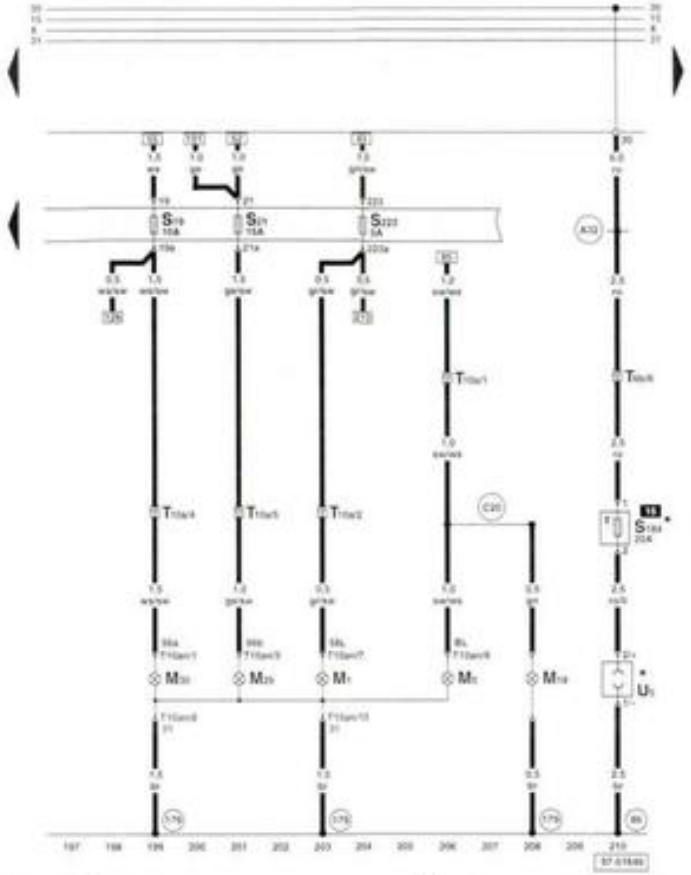


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right, Side Turn Signal Light
M31 - Right Low Beam Headlight
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right

(176) - Ground connection, in right headlight wiring harness
(...) - Connector (-), right turn signals, in wiring harness headlamp

Fuse Holder, Right Headlight



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

M1 – Left Parking Light
M5 – Left Front Turn Signal Light
M16 – Left, Side Turn Signal Light
M29 – Left Low Beam Headlight
M30 – Left High Beam Headlight
S19 – Fuse
S21 – Fuse
S223 – Fuse 23 in Fuse Holder
SA6 – Fuse for Luggage Compartment Socket
T8b – Connector 8 pin, white, connector station A pillar, left
T10a – Connector 10 pin, pink, connector station A pillar, left
T10an – Connector 10 pin, on headlight, left
U5 – 12 V Socket

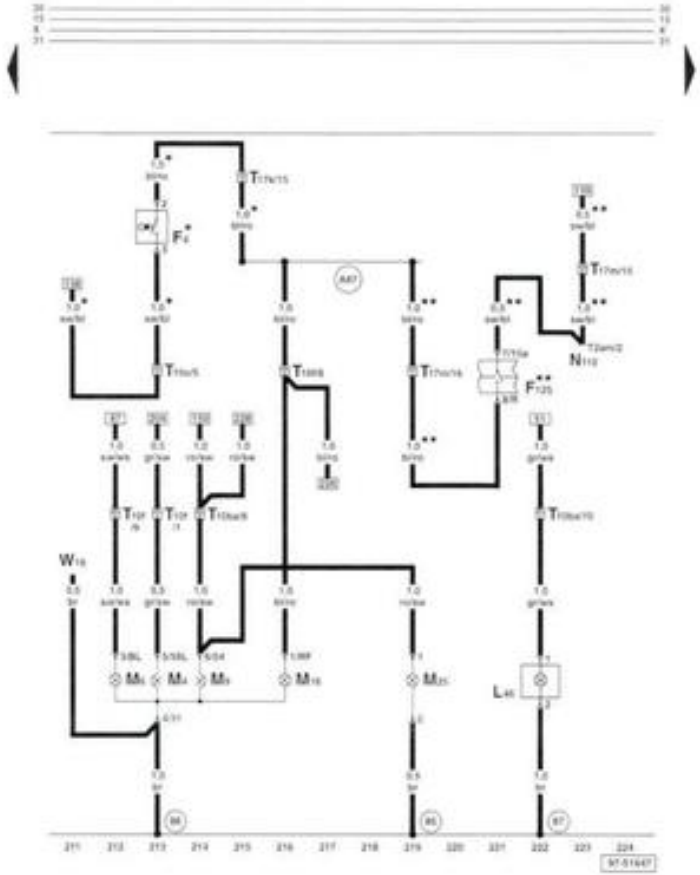
(A32) – Ground connection 1, in rear wiring harness
(C20) – Ground connection, in left headlight wiring harness
(C30) – Plus connection (30), in instrument panel wiring harness
(C175) – Wire connection (left turn signal), in headlight wiring harness

• – only Wagon



Fuse Holder, Left Headlight, 12 V Socket



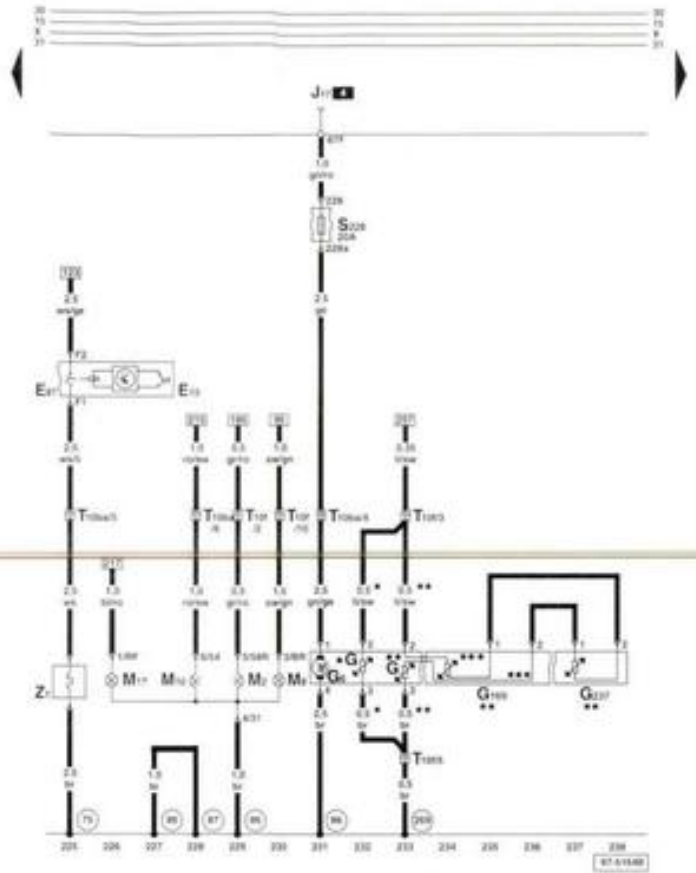


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F4 – Back-Up Light Switch
F125 – Multi-Function Transmission Range (TR) Switch
L46 – Left Rear Fog Light
M4 – Left Tail Light
M6 – Left Rear Turn Signal Light
M9 – Left Brake Light
M18 – Left Back-Up Light
M25 – High-mount Brake Light
N110 – Shift Lock Solenoid
T2an – Connector 2 pin, black, on selector lever
T10f – Connector 10 pin, brown, connector station A pillar, left
T10r – Connector 10 pin, brown, connector station electronic box plenum chamber
T10ta – Connector 10 pin, blue, connector station A pillar, left
T17a – Connector 17 pin, red, connector station electronic box plenum chamber
T17m – Connector 17 pin, blue, connector station A pillar, right
W16 – Left Luggage Compartment Light

(A7) – Ground connection 1, in rear wiring harness
(A67) – Ground connection 2, in rear wiring harness
(C175) – Connector (175), in instrument panel wiring harness

• – Vehicles with manually shifted transmission
•• – Vehicles with automatic transmission



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

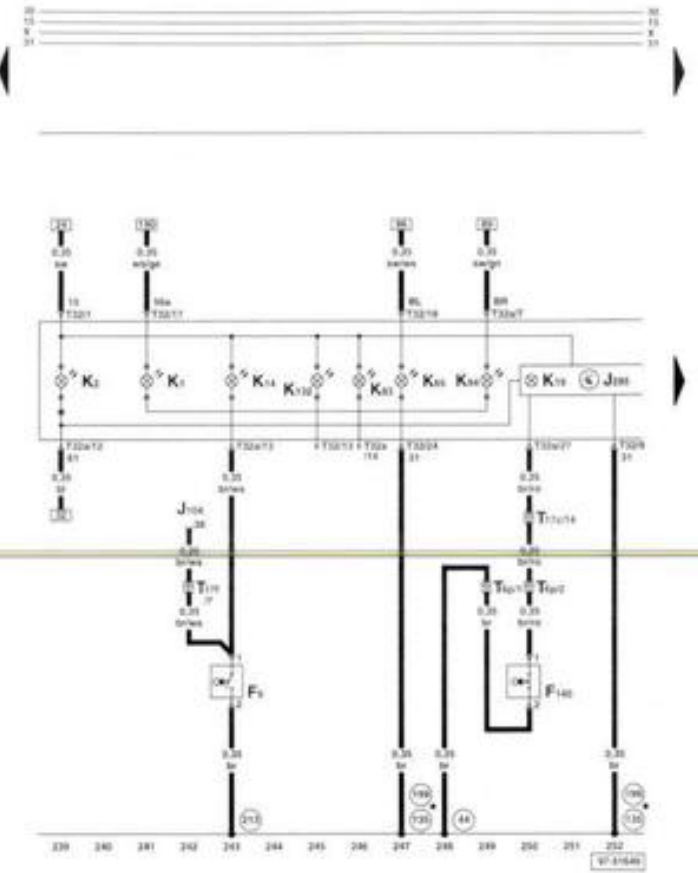
E15 - Rear Window Defogger Switch
E87 - A/C Control Head
G - Sender for fuel gauge
G6 - Fuel Pump (FP)
G169 - Fuel level Sensor 2
G237 - Sensor -3- for fuel supply
J17 - Fuel Pump (FP) Relay
M2 - Right Tail Light
M9 - Right Rear Turn Signal Light
M10 - Right Brake Light
M17 - Right Back-up Light
S228 - Fuse 28 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
Z1 - Heated rear window

- Ground connection, on right rear pillar
- Ground connection -1-, in rear wiring harness
- Ground connection -2-, in rear wiring harness
- Ground connector (sensor ground) -1-, in instrument panel wiring harness

* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank





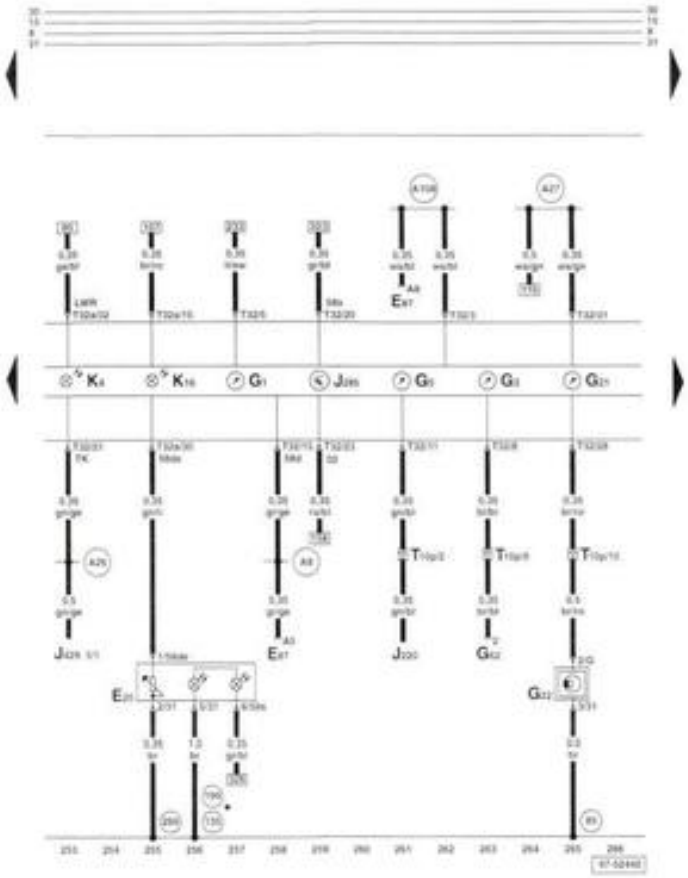


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F9 - Parking Brake Warning Light Switch
F140 - Left Front A-pillar Microswitch
J104 - ABS Control Module (w/EDL)
J285 - Control Module with indicator unit in instrument panel insert
K1 - Headlight High Beam Indicator Light
K2 - Generator (GEN) Warning Light
K14 - Parking Brake Indicator Light
K19 - Seat Belt Warning Light
K85 - Left Turn Signal Indicator Light
K86 - Malfunction Indicator Lamp (MIL)
K94 - Right Turn Signal Indicator Light
K132 - Electronic Power Control (EPC) Warning Lamp
T6e - Connector 6 pin, red, below driver's seat
T17c - Connector 17 pin, green, connector station A pillar, right
T19f - Connector 19 pin, black, in 8-Fold Relay Plate behind the storage drawer's side
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

- Ground connector, on left A-pillar, lower part
- Ground connector -2-, in instrument panel wiring harness
- Ground connector -3-, in instrument panel wiring harness
- Ground connector, in instrument panel wiring harness

* - both are possible



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

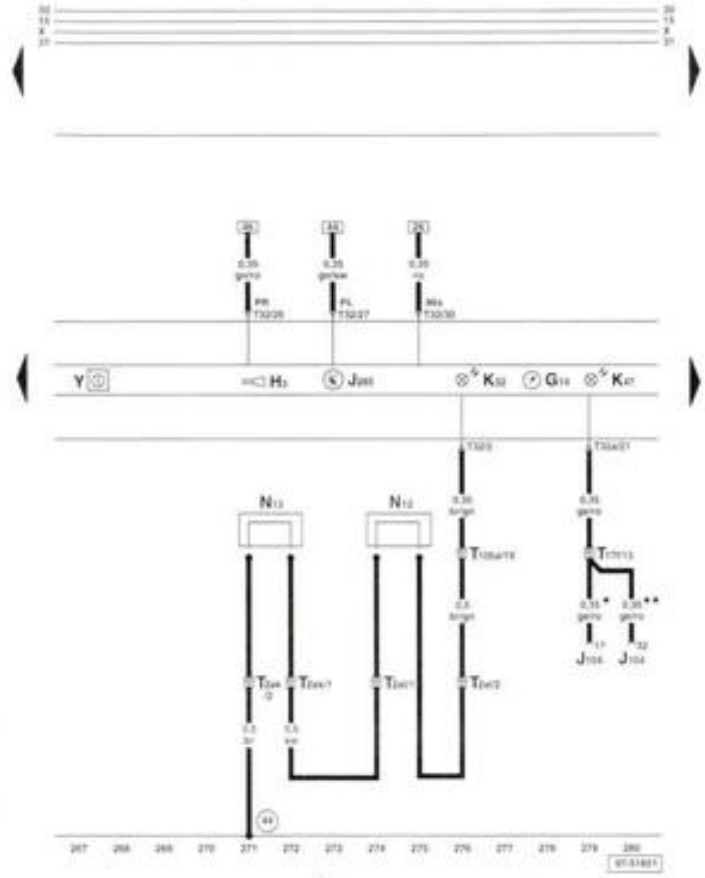
E20 – Instrument Panel Light Dimmer Switch
E87 – A/C Control Head
G1 – Fuel Gauge
G3 – Engine Coolant Temperature (ECT) Gauge
G5 – Tachometer
G21 – Speedometer
G22 – Speedometer Vehicle Speed Sensor (VSS)
G62 – Engine Coolant Temperature (ECT) Sensor
J220 – Motronic Engine Control Module (ECM)
J285 – Control Module with indicator unit in instrument panel insert
J329 – Comfo module for central locking
K4 – Park Light Indicator Light
K16 – Fuel Reserve Warning Light
T10g – Connector 10 pin, black, connector station electronic box plenum chamber
T32 – Connector 32 pin, blue, on instrument cluster
T32a – Connector 32 pin, green, on instrument cluster

(1) – Ground connection -1-, in engine compartment wiring harness
(2) – Ground connection -2-, in instrument panel wiring harness
(3) – Ground connection -3-, in instrument panel wiring harness
(15) – Ground connector (series ground) -1-, in instrument panel wiring harness
(30) – Plus connection (B+), in instrument panel wiring harness
(56a) – Wire connection (driver's door contact switch), in instrument panel wiring harness
(A2) – Wire connection (vehicle speed signal), in instrument panel wiring harness
(A27) – Connector (speed signal), in instrument panel wiring harness
• – both are possible



Instrument Cluster, Fuel Gauge, Tachometer, Speedometer, Instrument Panel Light Dimmer Switch

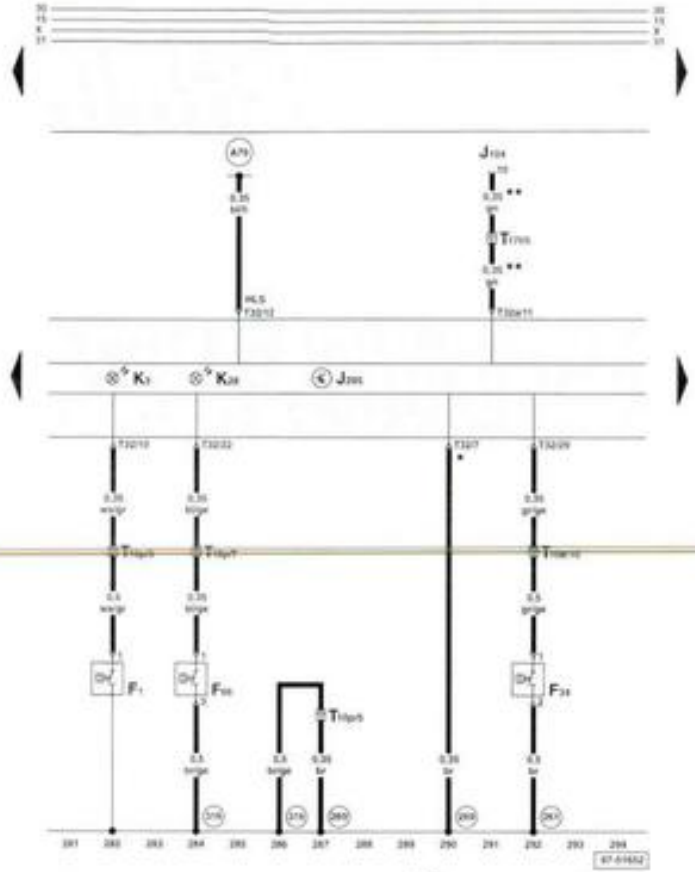




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G14 – Voltmeter
H3 – Warning Buzzer
J104 – ABS Control Module w/EDL
J285 – Control Module with indicator unit in instrument panel insert
K32 – Brake Pad Wear Indicator Light
K47 – ABS Warning Light
N12 – Right Brake Pad Wear Indicator (Shoe Element)
N13 – Left Brake Pad Wear Indicator (Shoe Element)
T2ak – Connector 2 pin, red, on firewall, left
T2al – Connector 2 pin, red, on firewall, right
T106a – Connector 16 pin, blue, connector station A pillar, left
T17f – Connector 17 pin, black, in B Post Relay Panel behind the storage drawer's side
T32 – Connector 32 pin, blue, on instrument cluster
T32a – Connector 32 pin, green, on instrument cluster
Y – Analog Clock

(31) – Ground connection, on left A-pillar, lower part
• – Vehicles with ABS 5.7
•• – Vehicles with ABS 5.3, Allroad




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

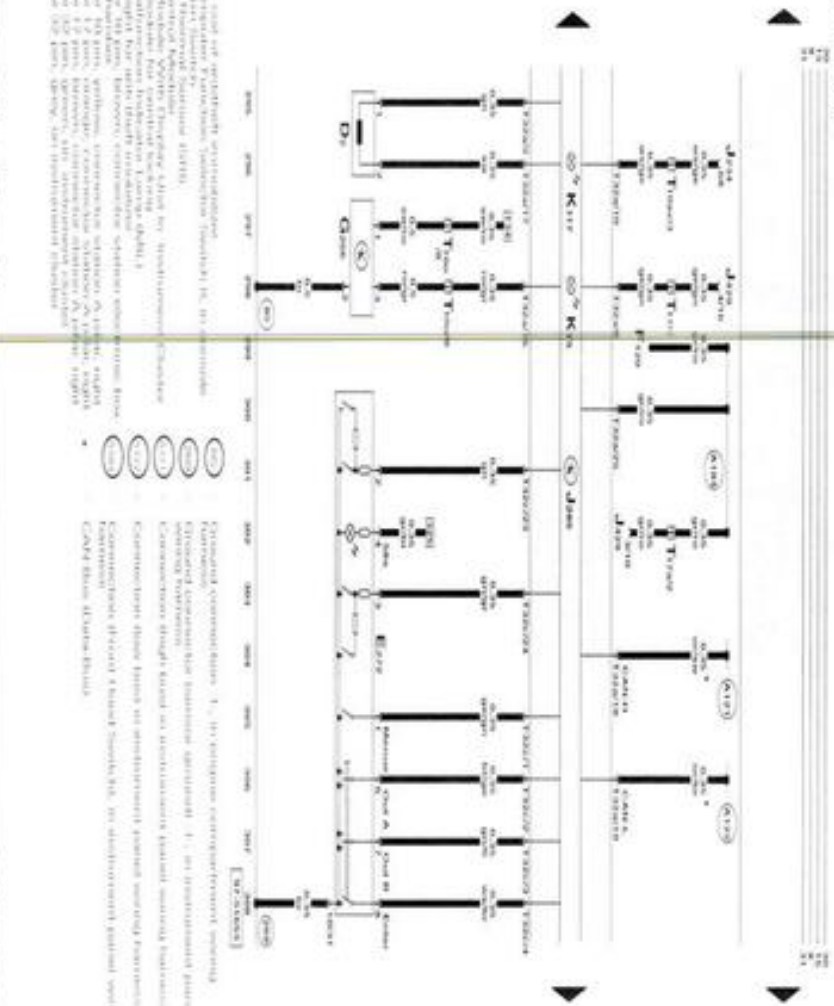
F1 – Oil Pressure Switch
F34 – Brake Fluid Level Warning Switch
F66 – Engine Coolant Level (ECL) Warning Switch
J104 – ABS Control Module (w/EDL)
J285 – Control Module With Display Unit In Instrument Cluster
K3 – Oil Pressure Warning Light
K28 – Engine Coolant Level/Temperature (ECL/ECT) Warning Light
T10a – Connector 10 pin, violet, connector station A pillar, left
T10a – Connector 10 pin, black, connector station electronic box plenum chamber
T32 – Connector 32 pin, blue, on instrument cluster
T32a – Connector 32 pin, green, on instrument cluster

(A79) – Ground connection, in wiring harness heated spray jet
(G) – Ground connector (sensor ground) -1-, in instrument panel wiring harness
(G1) – Sensor Ground Connection 2 (in engine wiring harness)
(S) – Connector (engine overheat warning light), in instrument panel wiring harness

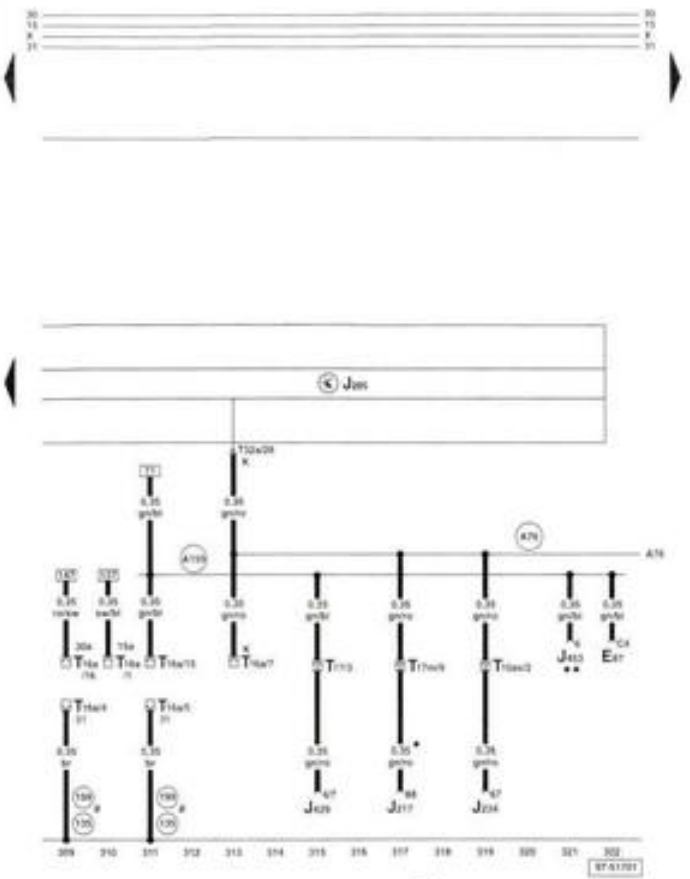
* – Exit Sensor ground
** – Vehicles with ABS 5.3, Ahnait







Instrument Cluster, Oil Level Thermal Sensor, Board Computer Function Selector Switch II



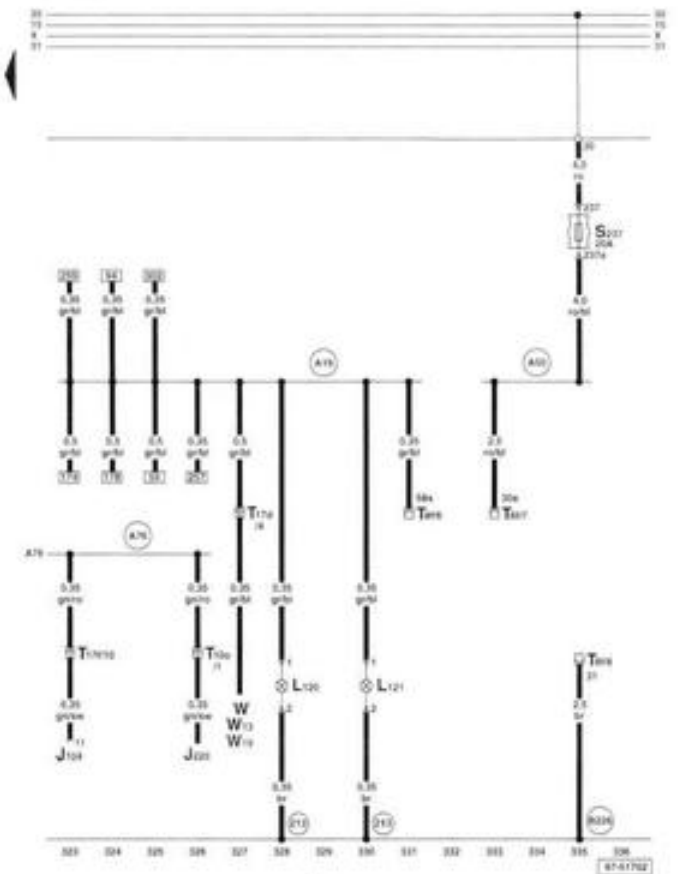

E87 - A/C Control Head
J217 - Transmission Control Module (TCM)
J234 - Airbag Control Module
J285 - Control Module with Indicator Unit in Instrument Panel Insert
J428 - Control module for central locking
J453 - Control module for multi-function steering wheel
T16a - Connector 16 pin, yellow, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T17 - Connector 17 pin, orange, connector station A pillar, right
T17m - Connector 17 pin, blue, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster

(135) - Ground connection -3-, in instrument panel wiring harness
(195) - Ground connection -3-, in instrument panel wiring harness
(A76) - Connector (K-diagnosis wire), in instrument panel wiring harness
(A195) - Connector (L) in instrument panel wiring harness

• - Vehicles with automatic transmission
•• - Vehicles with multi-function steering wheel
# - both are possible







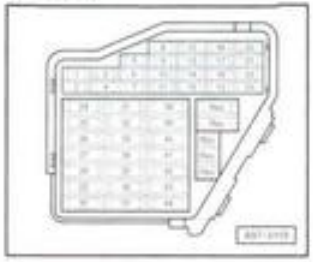

J104 - ABS Control Module (w/EDL)
J220 - Motronic Engine Control Module (ECM)
L120 - Storage compartment illumination
L121 - Cup Holder Illumination
S237 - Fuse 37 in Fuse Holder
T8f - Connector 8 pin, black, connector radio III
T10a - Connector 10 pin, brown, connector station electronic box plenum chamber
T17a - Connector 17 pin, grey, connector station A pillar, left
T17f - Connector 17 pin, black, in B-Post Relay Panel behind the storage driver's side
W - Front Interior Light
W13 - Passenger's Map/Reading Light
W19 - Left Front Reading Light

(212) - Ground connection, in instrument panel wiring harness
(A76) - Wire connection (58b), in instrument panel wiring harness
(A195) (A50) - Plus connection (30as), in instrument panel wiring harness
(A76) (A195) - Connector (K-diagnosis wire), in instrument panel wiring harness
(A195) - Connection -3- (radio), interior wiring harness

## (3,0 l - Injection Engine, 6 Cylinder), Code AVK

2002 m. y.

Fuse Panel

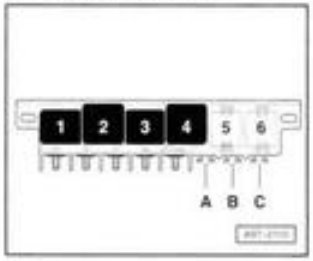


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

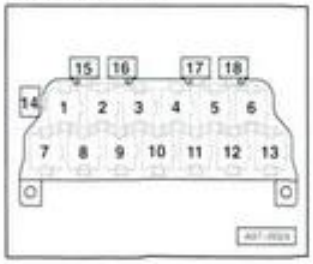
Micro Central Electric Panel




Relay Location:

**4** -Fuel Pump (FP) Relay, J17

13 - Fold Relay Panel



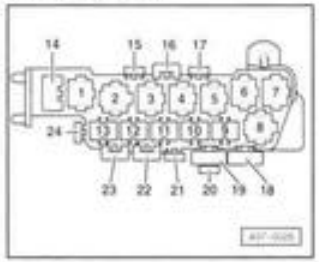

Relay Location:

**4** -Starting Interlock Relay, J207





8 - Fold Relay Panel

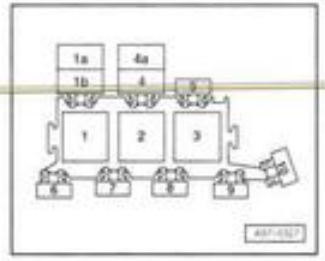



Relay Location:

**20** -Coolant Fan Fuse, S42

**21** -Control module fuse for coolant fan S142

3 - Fold Relay Panel in E-Box plenum chamber




Relay Location:

**1b** -Coolant Circulation Pump Relay, J151

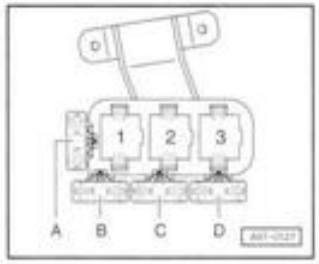
**2** -Secondary Air Injection (AIR) Pump Relay, J299

**3** -Motronic Engine Control Module (ECM) Power Supply Relay, J271

**5** -Engine Electronic Fuse, S262

**7** -Fuse for secondary air pump, S130

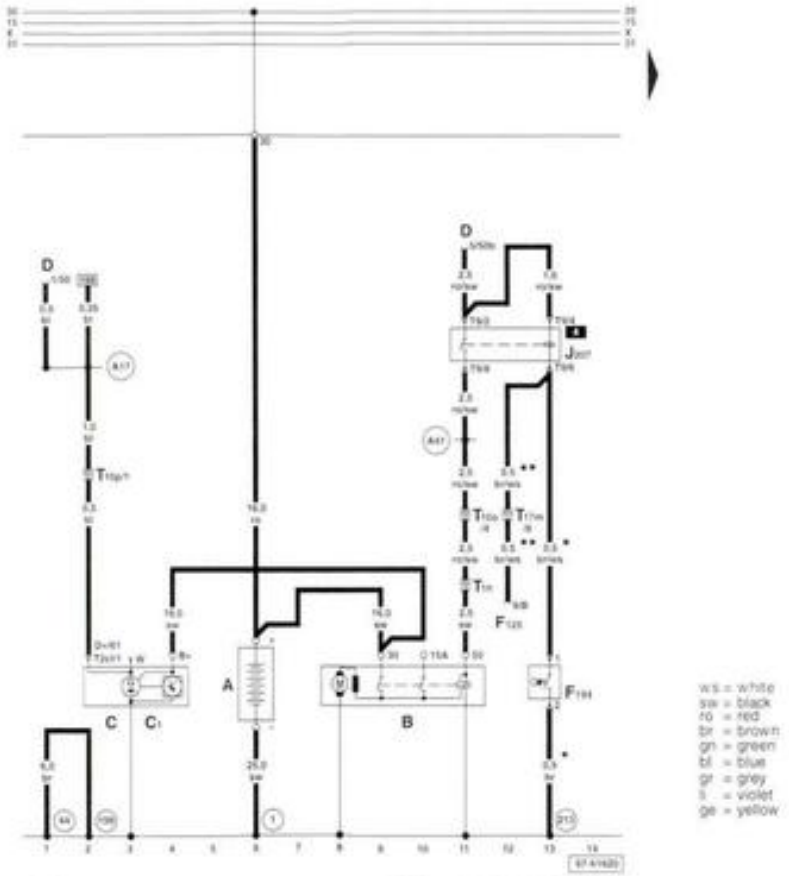
Relay Panel behind Instrument Panel left, on central girder




Relay Location:

**1** -Brake Booster Relay, J569

**C** -Fuse for Hydraulic Pump Relay, S279

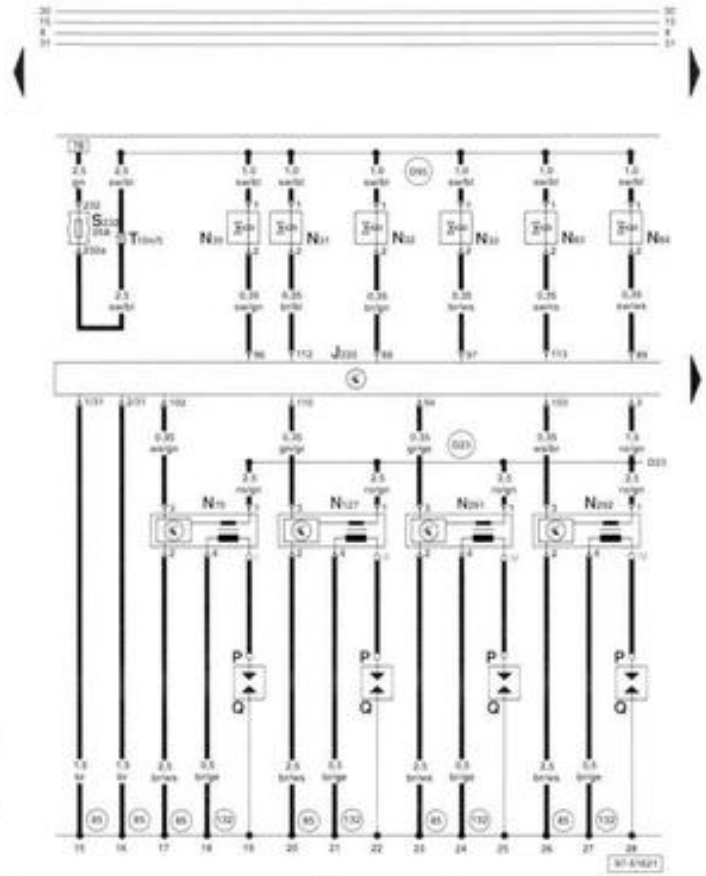



A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
J207 - Starting Interlock Relay
T1h - Single connector, black, in engine compartment, right
T2c/ - Connector 2 pin, black, in engine compartment, right
T9 - Connector 9 pin, brown, on starting interlock relay
T10a - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A-pillar, right

(1) - Ground strap, battery to body
(44) - Ground connection, on left A-pillar, lower part
(139) - Ground connection -3-, in instrument panel wiring harness
(213) - Ground connection, in instrument panel wiring harness
(A17) - Wire connection (61), in instrument panel wiring harness
(A47) - Plus connection (50), in instrument panel wiring harness
* - Vehicles with manually shifted transmission
** - Vehicles with automatic transmission



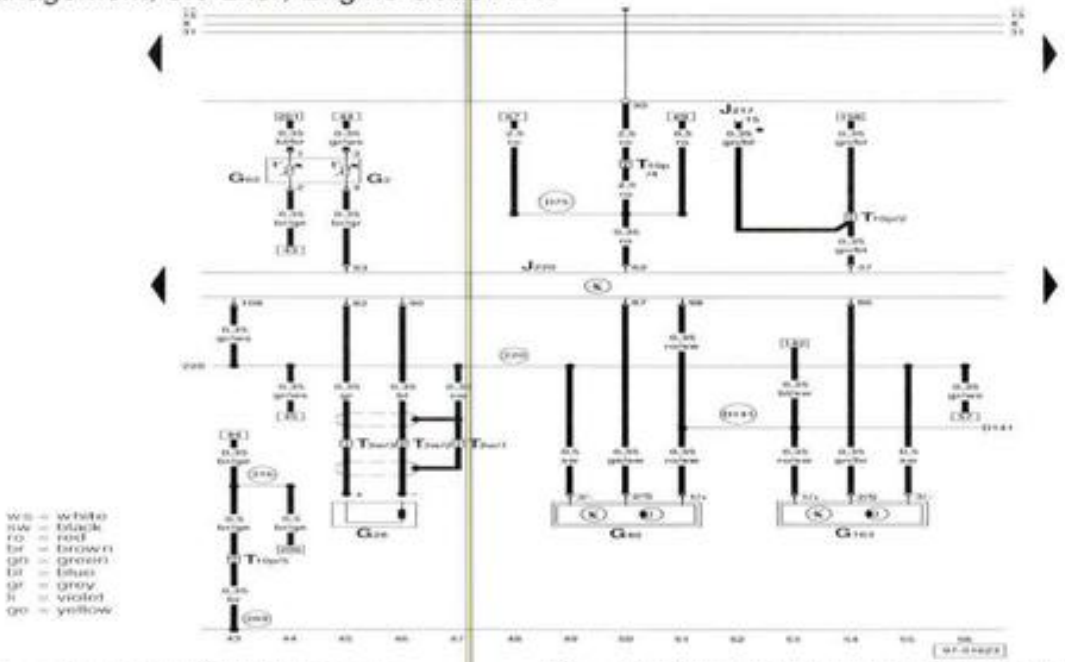





J220 - Motronic Engine Control Module (ECM)
N30 - Cylinder 1 Fuel Injector
N31 - Cylinder 2 Fuel Injector
N32 - Cylinder 3 Fuel Injector
N33 - Cylinder 4 Fuel Injector
N70 - Ignition Coil 1 with Power Output Stage
N83 - Cylinder 5 Fuel Injector
N84 - Cylinder 6 Fuel Injector
N127 - Ignition Coil 2 with Power Output Stage
N291 - Ignition Coil 3 with Power Output Stage
N292 - Ignition Coil 4 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
S232 - Fuse 32 in fuse holder
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber

(30) - Ground connection -1-, in engine compartment wiring harness
(32) - Ground connection -3-, in engine compartment wiring harness
(229) - Connector (over fuse 229), in wiring harness front, right
(355) - Wire connection (injectors), in engine compartment wiring harness

*Engine Management, 3.0 Liter, Engine Code AVK*

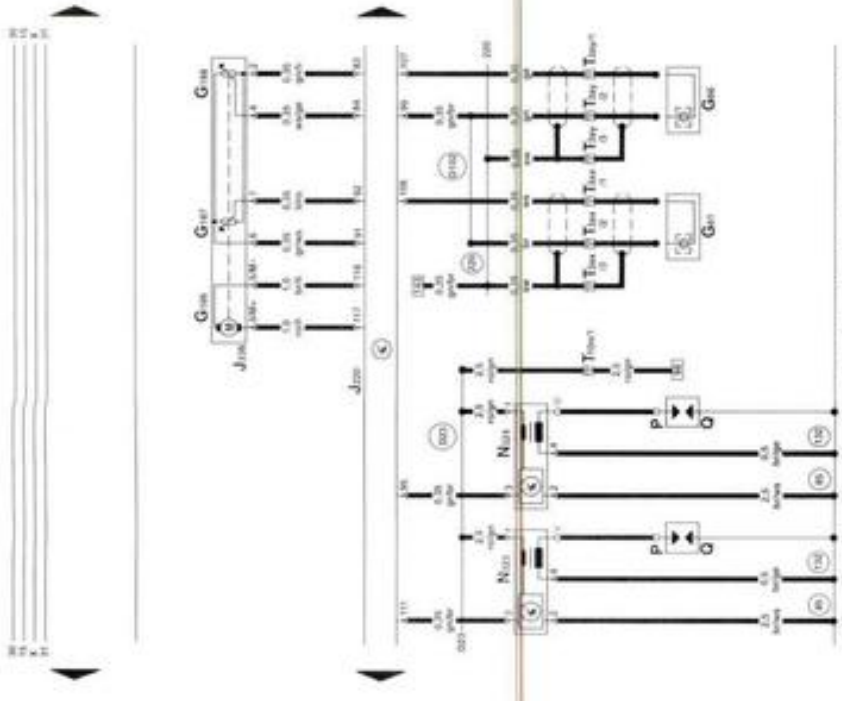


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G62 - Engine Coolant Temperature (ECT) Sensor
G28 - Engine Speed (RPM) Sensor
G40 - Camshaft Position (CMP) Sensor
G62 - Engine Coolant Temperature (ECT) Sensor
G163 - Camshaft Position (CMP) Sensor 2
J217 - Transmission Control Module (TCM)
J220 - Motronic Engine Control Module (ECM)
T3w - Connector 3 pin, grey, on engine speed sensor
T10s - Connector 10 pin, black, connector station electronic box plenum chamber

- Ground connection (sensor ground), in engine compartment wiring harness
- Ground connector (sensor ground) -1-, in instrument panel wiring harness
- Sensor Ground Connection 2 (in engine wiring harness)
- Plus connection -2- (30), in engine compartment wiring harness
- Connector (5V), in wiring harness, engine pre-wiring
- Vehicles with automatic transmission multitronic • - 01J





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G61 - Knock Sensor (KS) 1
G66 - Knock Sensor (KS) 2
G186 - Throttle drive (power accelerator actuation)
G187 - Angle sensor -1- for throttle drive (power accelerator actuation)
G188 - Angle sensor -2- for throttle drive (power accelerator actuation)
J220 - Motronic Engine Control Module (ECM)
J338 - Throttle Valve Control Module
N323 - Ignition Coil 5 with Power Output Stage
N324 - Ignition Coil 6 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
T3bx - Connector 3 pin, brown, on knock sensor 1
T3by - Connector 3 pin, brown, on knock sensor 2
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber

- Ground connection -1-, in engine compartment wiring harness
- Ground connection -3-, in engine compartment wiring harness
- Ground connection (sensor ground), in engine compartment wiring harness
- Connector (power fuse 229), in wiring harness front, right
- Wire connection -3-, in engine compartment wiring harness

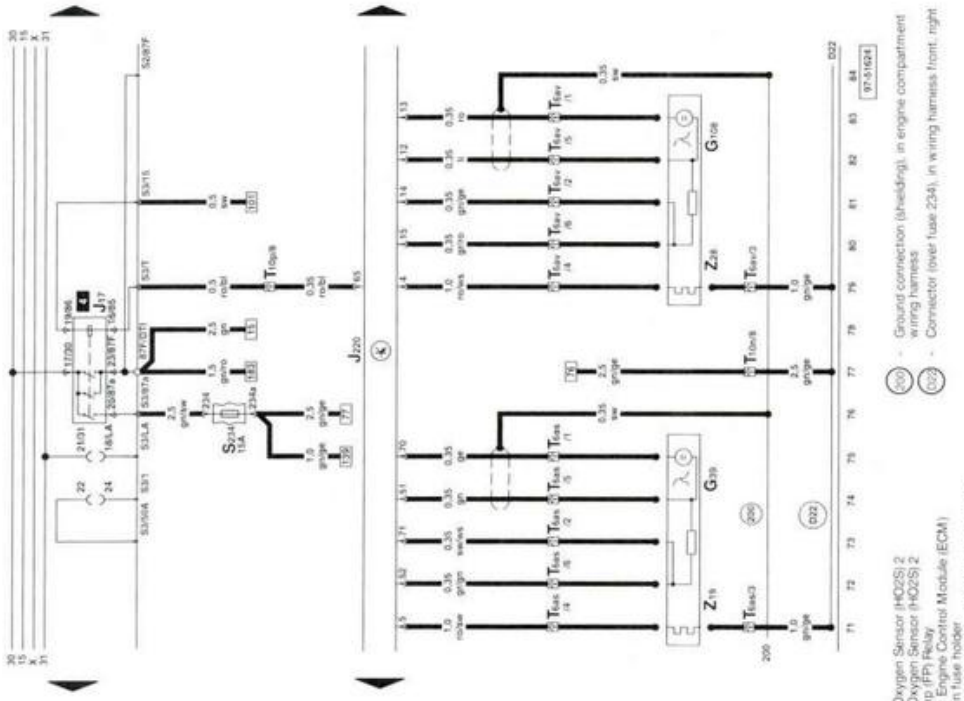
Motronic Engine Control Module, Knock Sensors, Throttle Valve Control Module, Ignition Coils 5, 6

Edition 06/01
W4Z.USA.5603.06.21

Audi A6

Wiring diagram

No. 43/8



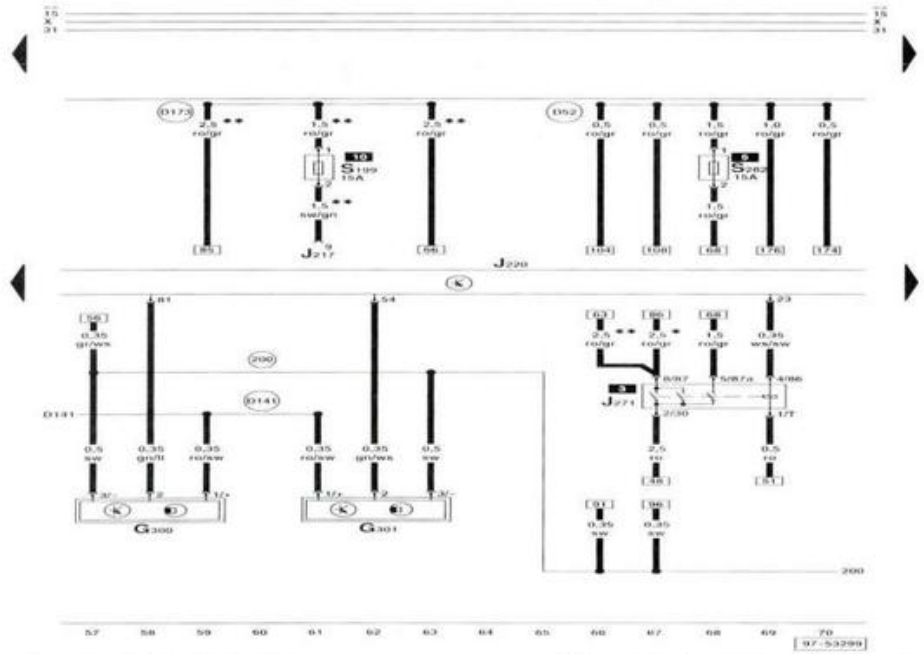
G39 - Heated Oxygen Sensor (HO2S) 2
G108 - Heated Oxygen Sensor (HO2S) 2
J17 - Fuel Pump (FP) Relay
J220 - Motronic Engine Control Module (ECM)
S234 - Fuse 34 in fuse holder
T6as - Connector 6 pin, black, heated oxygen sensor
T6av - Connector 6 pin, black, heated oxygen sensor 2
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
Z19 - Oxygen Sensor (O2S) Heater
Z28 - Oxygen Sensor (O2S) 2 Heater

(X) - Ground connection (shielding), in engine compartment wiring harness
(D22) - Connector (lower fuse 234), in wiring harness front, right

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

Edition 08/01
W42 USA 5603.06.21

Motronic Engine Control Module, Fuel Pump Relay, Heated Oxygen Sensors



G300 - Camshaft Position Sensor 3
G301 - Camshaft Position Sensor 4
J217 - Transmission Control Module (TCM)
J220 - Motronic Engine Control Module (ECM)
J271 - Motronic Engine Control Module (ECM) Power Supply Relay
S199 - Fuse 1 (15)
S282 - Engine Electronics Fuse

(200) - Ground connection (shielding), in engine compartment wiring harness
(D52) - Plus connection (15a), in engine compartment wiring harness
(D141) - Connector (5V), in wiring harness, engine pre-wiring
(D173) - Connection (87) (in engine compartment wiring harness)

• - Vehicles without automatic transmission multitronic • 01J
•• - Vehicles with automatic transmission multitronic • 01J

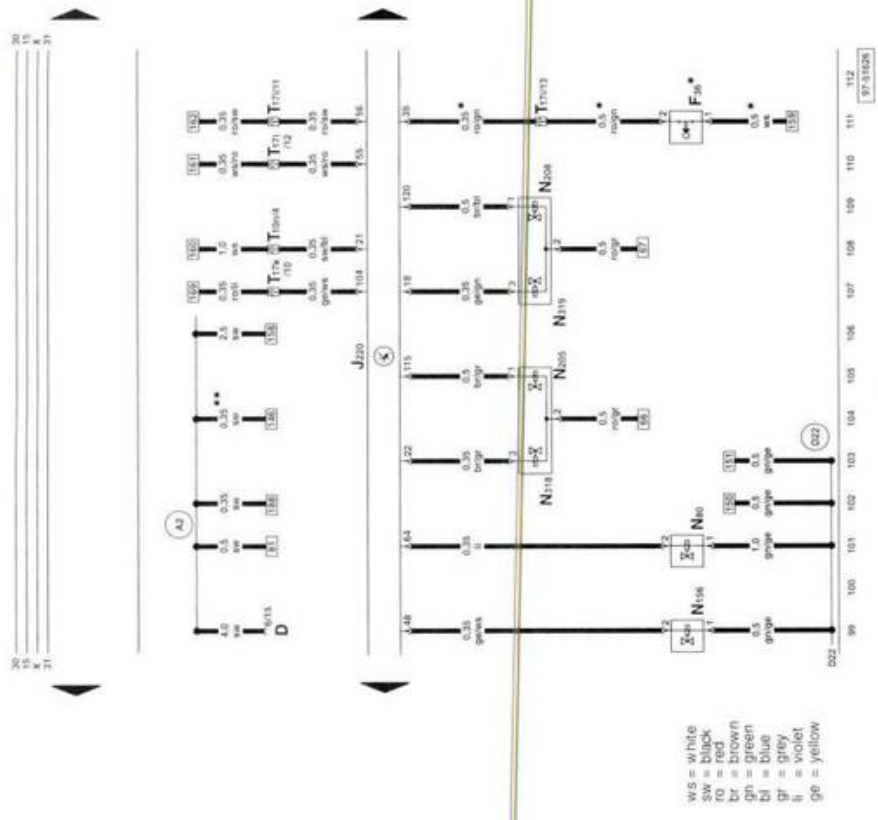
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

*Engine Management, 3.0 Liter, Engine Code AVK*

Audi A6

Wiring diagram

No. 43/10



D - Ignition-Starter Switch
F36 - Clutch Vacuum Vent Valve Switch
J220 - Motronic Engine Control Module (ECM)
N80 - Evaporative Emission (EVAP) Canister Purge Regulator Valve
N156 - Intake Manifold Change-Over Valve
N205 - Valve -1- for camshaft adjustment
N208 - Valve -2- for camshaft adjustment
N318 - Camshaft Adjustment Valve 1 (exhaust)
N319 - Camshaft Adjustment Valve 2 (exhaust)
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber
T17i - Connector 17 pin, white, connector station electronic box plenum chamber
T17k - Connector 17 pin, red, connector station electronic box plenum chamber

A2 - Plus connection (15), in instrument panel wiring harness
D22 - Connector (over fuse 234), in wiring harness front, right

* - Vehicles with manualy shifted transmission
** - Vehicles with automatic transmission

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

Motronic Engine Control Module, Valves

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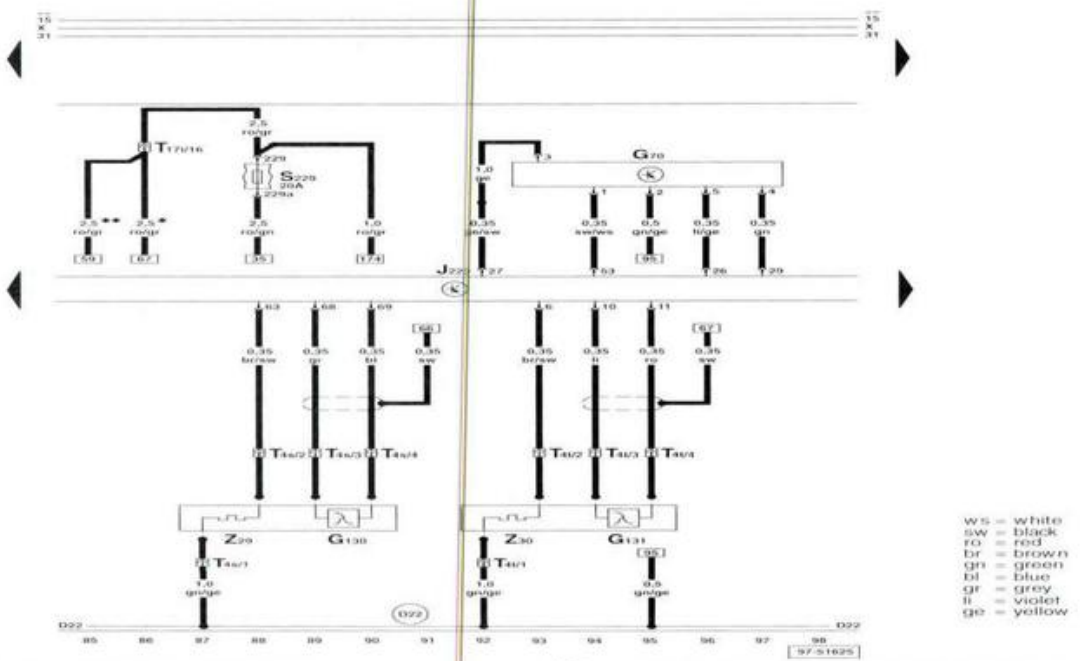
W42.USA.5603.06.21

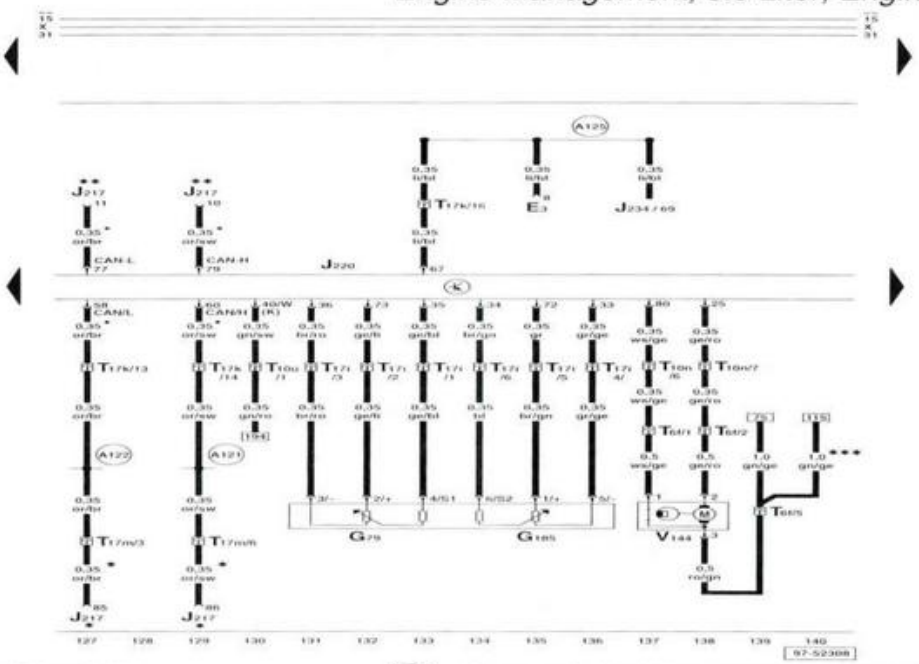


G70 - Mass Air Flow (MAF) Sensor
G130 - Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 - Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J220 - Motronic Engine Control Module (ECM)
S229 - Fuse 29 in fuse holder
T4s - Connector 4 pin, green, near oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4t - Connector 4 pin, brown, near oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T17i - Connector 17 pin, white, connector station electronic box plenum chamber
Z29 - Oxygen Sensor (O2S) Heater 1
Z30 - Oxygen Sensor (O2S) Heater 2

D22 - Connector (over fuse 234), in wiring harness front, right

* - Vehicles without automatic transmission multitronic • 01J
** - Vehicles with automatic transmission multitronic • 01J

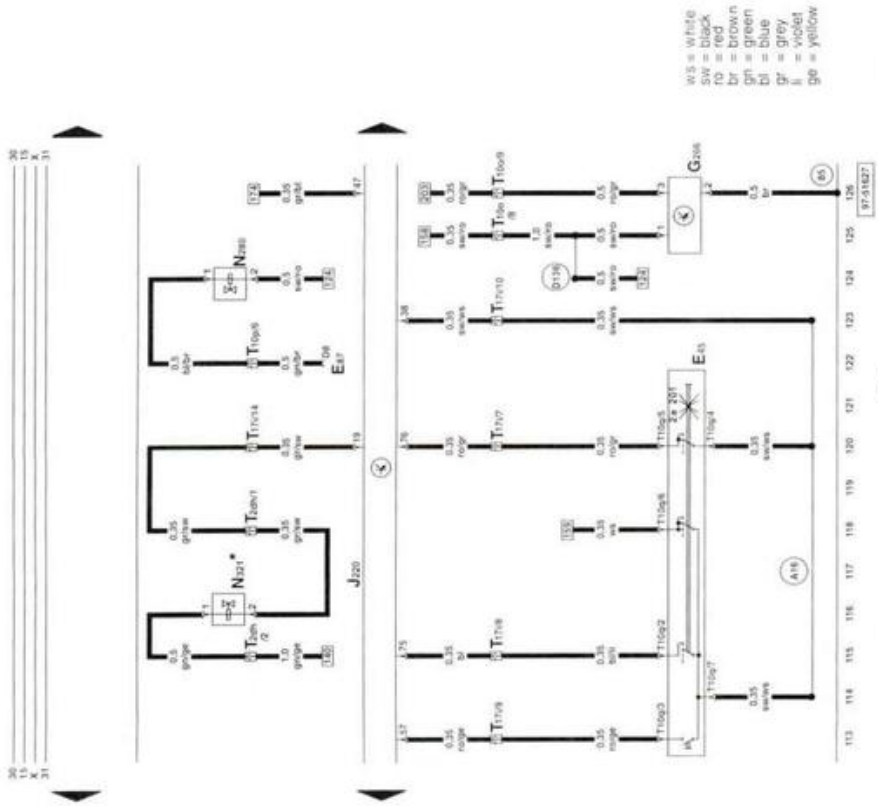
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow




E3 - Emergency Flasher Switch
G79 - Throttle Position (TP) Sensor
G185 - Sensor -2- for accelerator pedal position
J217 - Transmission Control Module (TCM)
J220 - Motronic Engine Control Module (ECM)
J234 - Airbag Control Module
T6f - Connector 6 pin, darkbrown, connector station A pillar, right
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T17i - Connector 17 pin, white, connector station electronic box plenum chamber
T17k - Connector 17 pin, red, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right
V144 - Leak Detection Pump (LDP)

A121 - Connection (high bus) in instrument panel wiring harness
A122 - Connection (low bus) in instrument panel wiring harness
A125 - Connection (crash signal) in instrument panel wiring harness
* - CAN-Bus (Data Bus)
** - Vehicles with automatic transmission 01V
** - Vehicles with automatic transmission multitronic 01J
*** - Vehicles with front-wheel-drive

Audi A6 Wiring diagram No. 43/11

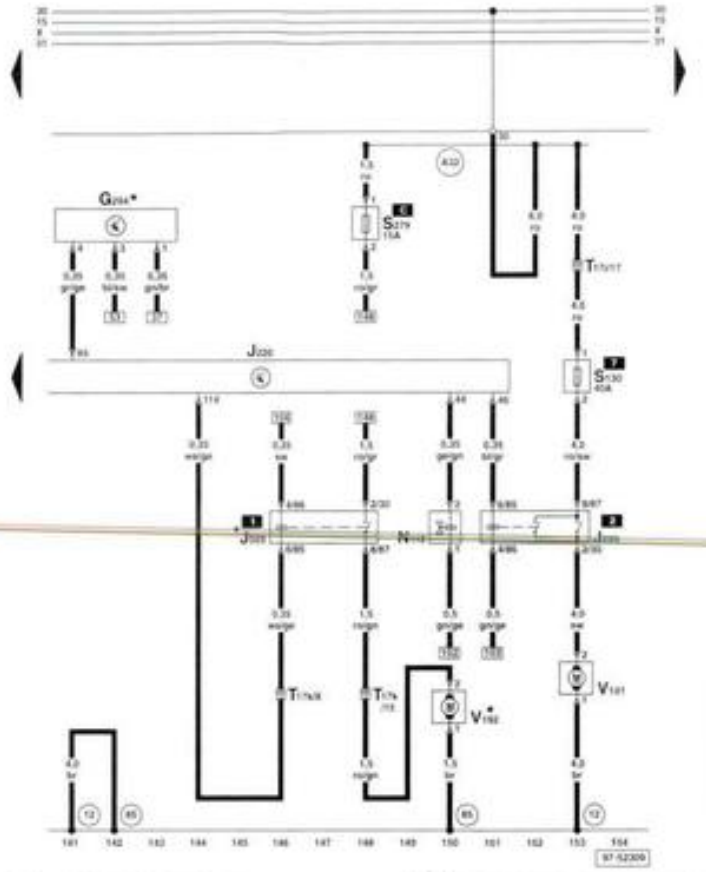



E45 - Cruise Control Switch
E87 - A/C Control Head
G366 - Oil Level Thermal Sensor (SRI)
J220 - Motronic Engine Control Module (ECM)
N280 - A/C compressor regulator valve
N321 - Exhaust Flap Valve 1
T2dh - Connector 2 pin, black, connector station A pillar, right
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T10q - Connector 10 pin, black, on cruise control switch
T17i - Connector 17 pin, white, connector station electronic box plenum chamber

(85) - Ground connection -1-, in engine compartment wiring harness
(A19) - Wire connection (cruise control), in instrument panel wiring harness
(J136) - Plus connection -2- (15a), in wiring harness engine compartment
* - Vehicles with front-wheel-drive



Motronic Engine Control Module, Cruise Control Switch, A/C Compressor Regulator Valve, Oil Level Thermal Sensor



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

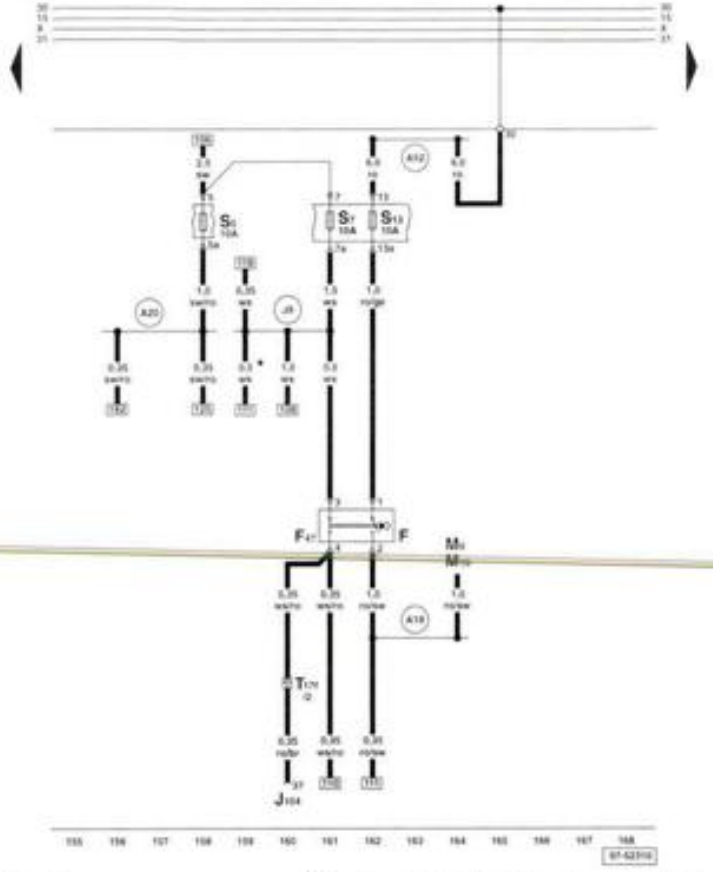
G294 – Brake Booster Pressure Sensor
J220 – Motronic Engine Control Module (ECM)
J299 – Secondary Air Injection (AIR) Pump Relay
J569 – Brake booster relay
N112 – Secondary Air Injection (AIR) Solenoid Valve
S130 – Fuse for secondary air pump
S279 – Fuse for Hydraulic Pump Relay
T1l – Connector 17 pin, white, connector station electronic box, plenum chamber
T17x – Connector 17 pin, red, connector station electronic box, plenum chamber
V101 – Secondary Air Injection (AIR) Pump Motor
V192 – Brake System Vacuum Pump

(12) – Ground connection, in engine compartment, left
(85) – Ground connection -1-, in engine compartment wiring harness
(X30) – Plus connection (30), in instrument panel wiring harness
• – Vehicles with automatic transmission



**Motronic Engine Control Module, Brake System Vacuum Pump, Secondary Air Injection Pump Motor**



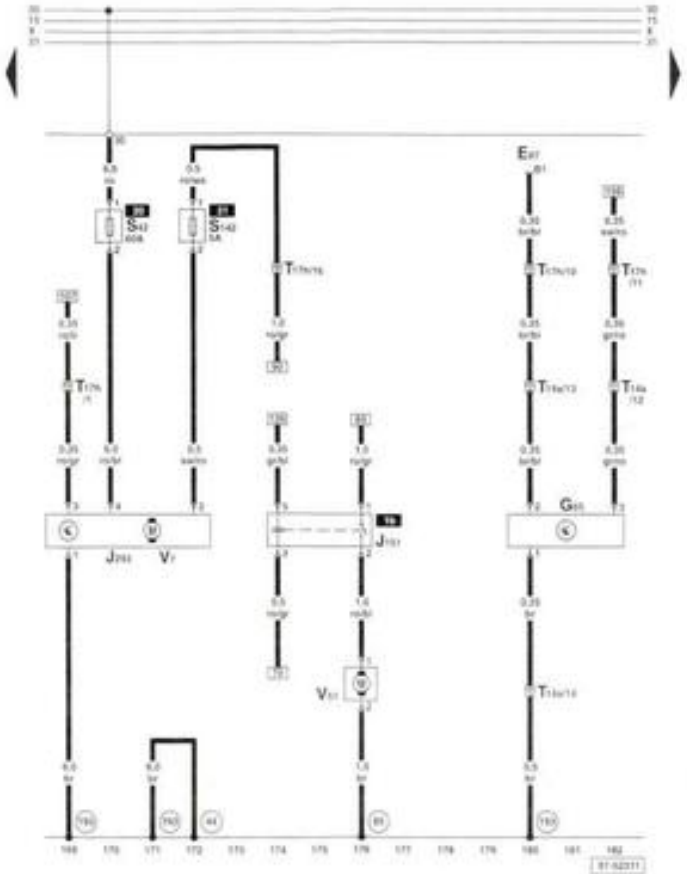


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F – Brake Light Switch
F47 – Brake Pedal Switch (Cruise Control/Diesel Direct Fuel Injection)
J104 – ABS Control Module (w/EDL)
M9 – Left Brake Light
M10 – Right Brake Light
S5 – Fuse
S7 – Fuse
S13 – Fuse
T17f – Connector 17 pin, black, in B-Pillar Relay Panel behind the storage driver's side

(X10) – Wire connection (54), in instrument panel wiring harness
(X11) – Wire connection (15a), in instrument panel wiring harness
(X12) – Plus connection 2 (30), in instrument panel wiring harness
(A1) – Wire connection -1- (15a), in ABS wiring harness
• – Vehicles with manually shifted transmission

**Brake Light Switch, Brake Pedal Switch (Cruise Control/Diesel Direct Fuel Injection)**

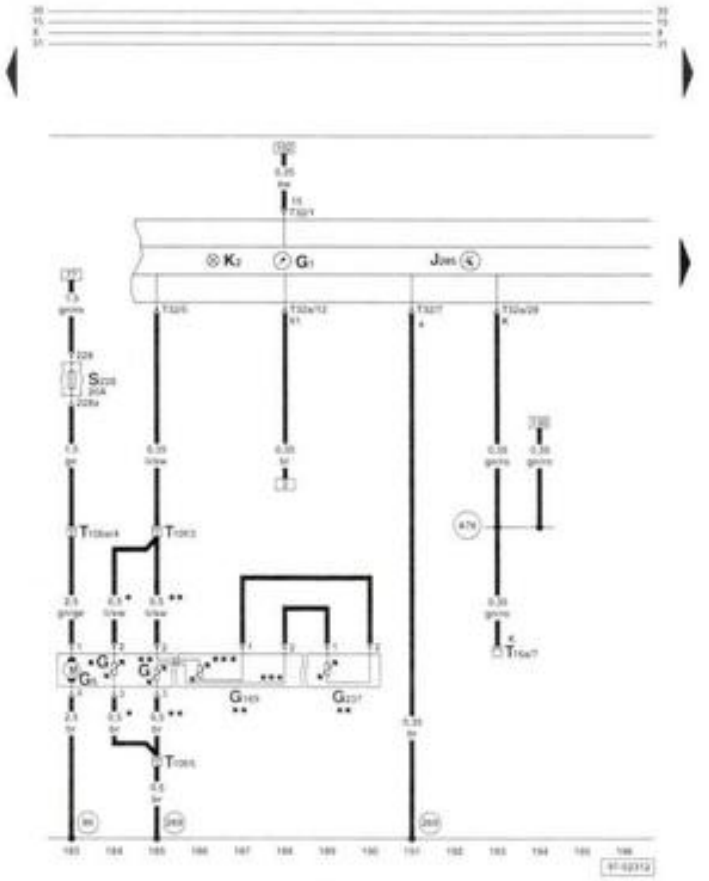



E87 - A/C Control Head
G65 - High Pressure Sensor
J151 - Coolant Circulation Pump Relay
J293 - Coolant FC (Fan Control) Control Module
S42 - Coolant Fan Fuse
S142 - Control module fuse for coolant fan
T14a - Connector 14 pin, black, in engine compartment, left front
T17h - Connector 17 pin, brown, connector station A pillar, left
V7 - Coolant Fan
V51 - After-Run Coolant Pump

(44) - Ground connection, on left A-pillar, lower part
(81) - Ground connection -1-, in engine compartment wiring harness
(V2) - Ground connection -1-, in coolant fan wiring harness

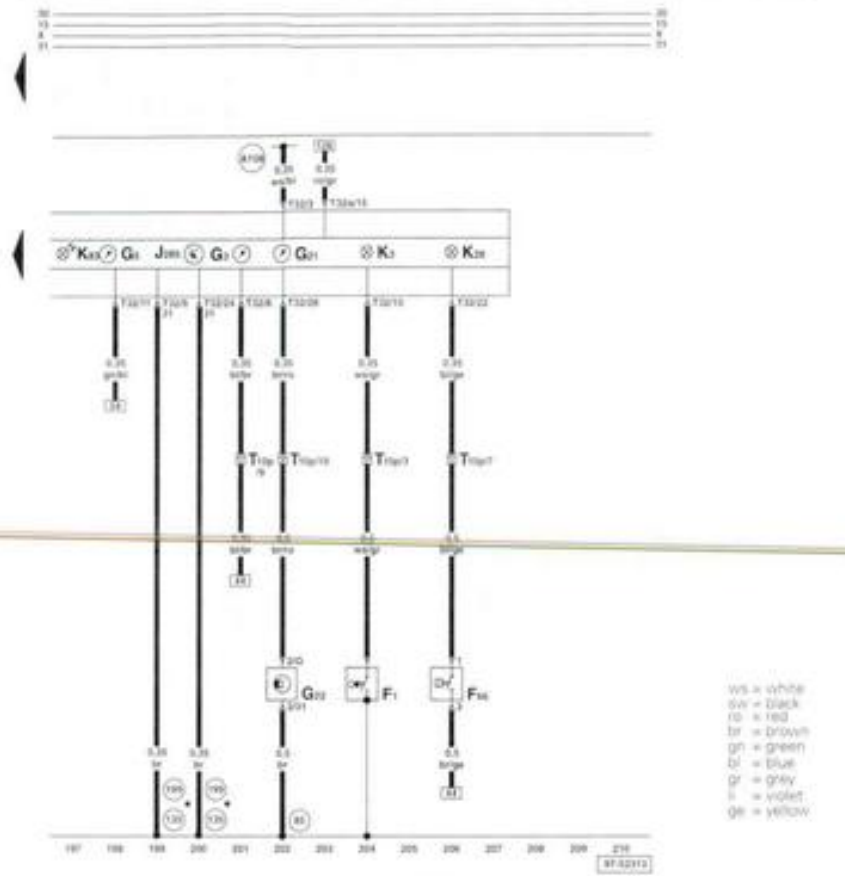







G - Sender for fuel gauge
G1 - Fuel Gauge
G6 - Fuel Pump (FP)
G169 - Fuel Level Sensor 2
G237 - Sensor -3- for fuel supply
J285 - Control Module with indicator unit in instrument panel insert
K2 - Generator (GEN) Warning Light
S228 - Fuse 28 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10fa - Connector 10 pin, blue, connector station A pillar, left
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(A5) - Ground connection -1-, in rear wiring harness
(A76) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(A79) - Connector (K-diagnosis wire), in instrument panel wiring harness
* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank
+ - Exit sensor ground




F1 – Oil Pressure Switch
F66 – Engine Coolant Level (ECL) Warning Switch
G3 – Engine Coolant Temperature (ECT) Gauge
G5 – Tachometer
G21 – Speedometer
G22 – Speedometer Vehicle Speed Sensor (VSS)
J285 – Control Module With Display Unit in Instrument Cluster
K3 – Oil Pressure Warning Light
K28 – Engine Coolant Level/Temperature (ECL/ECT) Warning Light
K83 – Malfunction Indicator Lamp (MIL)
T10p – Connector 10 pin, black, connector station electronic box plenum chamber
T32 – Connector 32 pin, blue, on instrument cluster
T32a – Connector 32 pin, green, on instrument cluster

- Ground connection -1-, in engine compartment wiring harness
- Ground connection -2-, in instrument panel wiring harness
- Ground connection -3-, in instrument panel wiring harness
- Connector (speed signal), in instrument panel wiring harness
- • – both are possible



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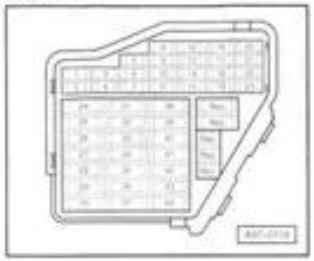
## (4,2 l - Injection Engine, 8 Cylinder), Code AWN, BBD

2002 m. y.

### Fuse Panel

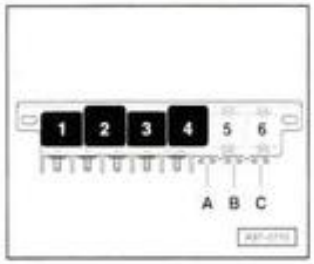


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

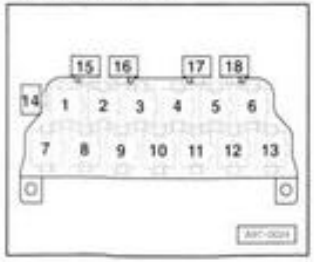
### Micro Central Electric Panel




Relay Location:

4 - Fuel Pump (FP) Relay, J17
5 - Wiper/Washer Intermittent Relay, J31
6 - Wiper/Washer Intermittent Relay, J31

### 13 - Fold Relay Panel



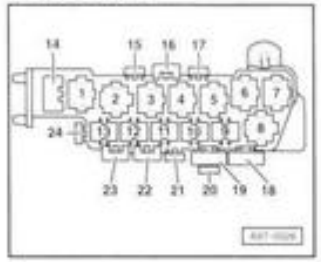

Relay Location:

4 - Starting Interlock Relay, J207





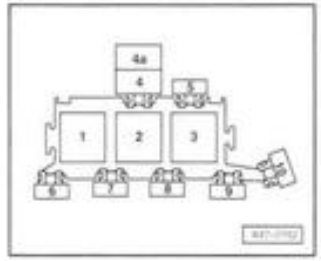
### 8 - Fold Relay Panel




Fuse Location:

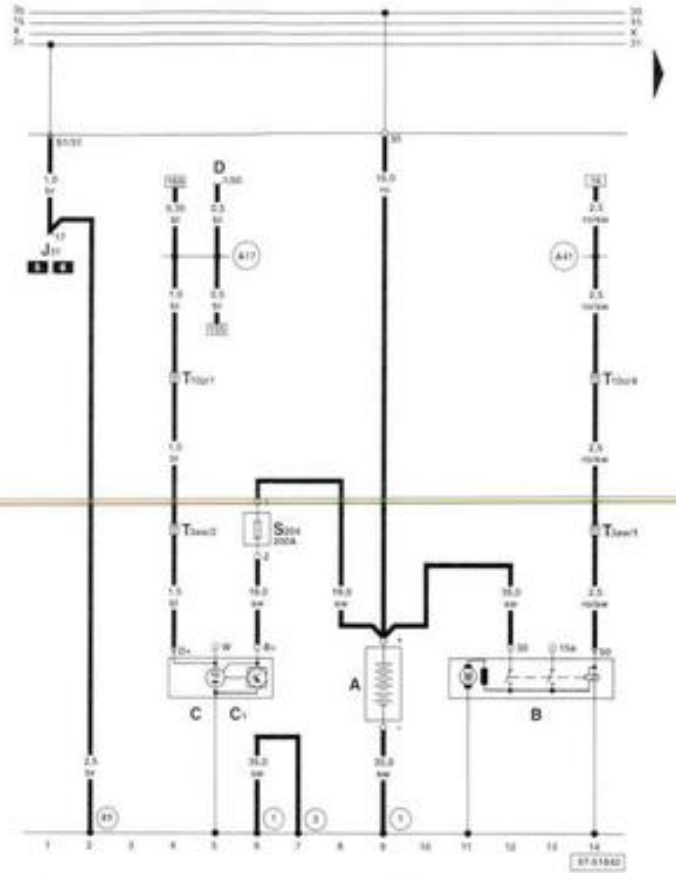
20 - Coolant Fan Fuse, S42
21 - Control module fuse for coolant fan, S142

### 3 - Fold Relay Panel in E-Box plenum chamber




Relay Location:

2 - Secondary Air Injection (AIR) Pump Relay, J299
3 - Motronic Engine Control Module (ECM) Power Supply Relay, J271
7 - Fuse for secondary air pump, S130



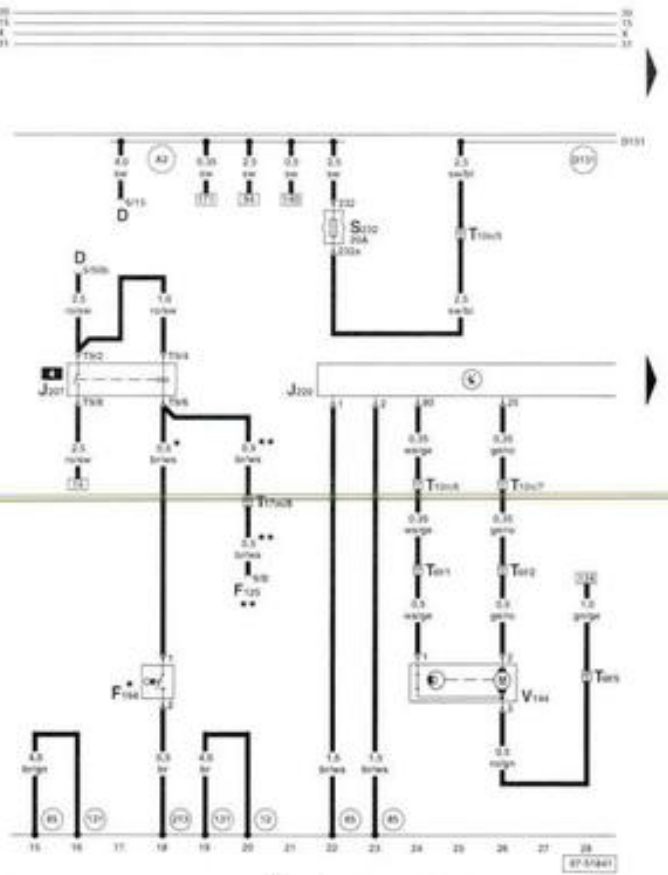
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J31 - Wiper/Washer Intermittent Relay
S204 - Fuse 1 (30)
T3aw - Connector 3 pin, black, in engine compartment, right
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(1) - Ground strap, battery to body
(2) - Ground strap, engine to body
(61) - Ground connection -1-, in instrument panel wiring harness
(A17) - Wire connection (61), in instrument panel wiring harness
(A41) - Plus connection (50), in instrument panel wiring harness





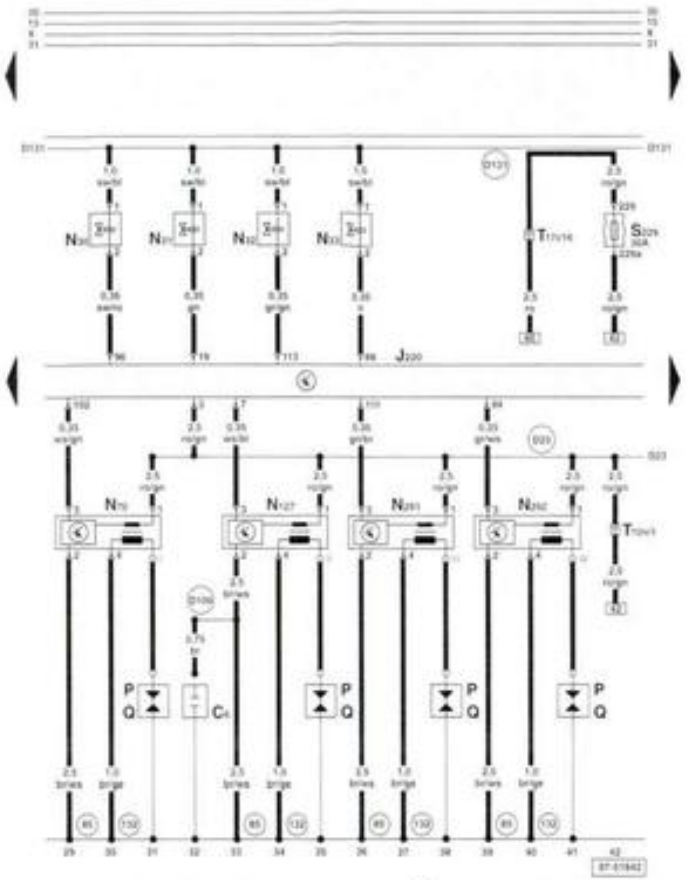


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
J207 - Starting Interlock Relay
J220 - Motronic Engine Control Module (ECM)
S232 - Fuse 32 in fuse holder
T6f - Connector 6 pin, dark brown, connector station A pillar, right
T9 - Connector 9 pin, brown, on starting interlock relay
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right
V144 - Leak Detection Pump (LDP)

(2) - Ground connection, in engine compartment, left
(60) - Ground connection -1-, in engine compartment wiring harness
(131) - Ground connection -2-, in engine compartment wiring harness
(A12) - Ground connection, in instrument panel wiring harness
(A2) - Plus connection (15), in instrument panel wiring harness
(S232) - Wire connection (15), over fuse 232, in engine compartment wiring harness

* - Vehicles with manually shifted transmission
** - Vehicles with automatic transmission



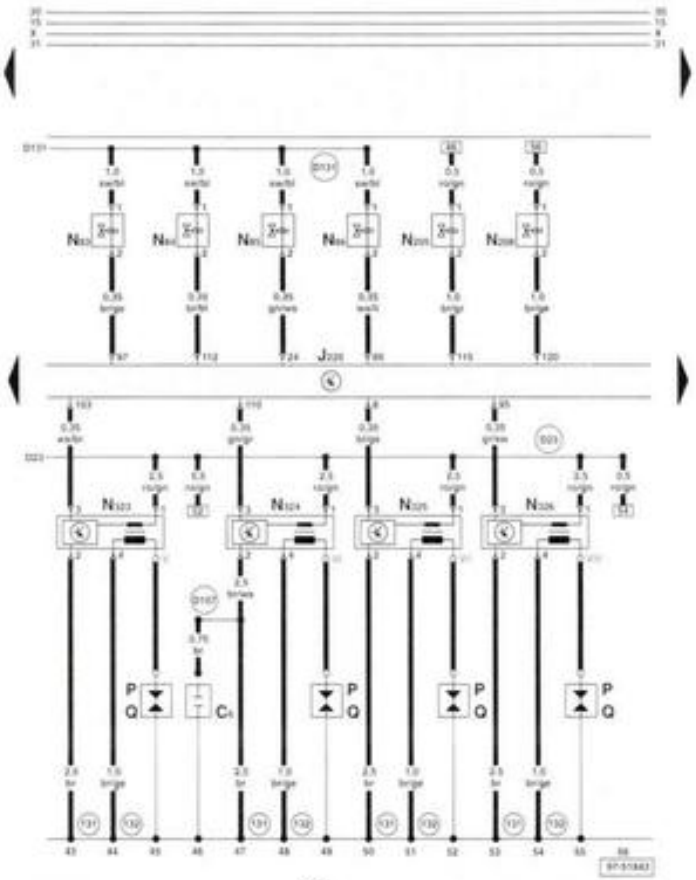
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D6 - Distributor ignition (DI) Capacitor
J220 - Motronic Engine Control Module (ECM)
N30 - Cylinder 1 Fuel Injector
N31 - Cylinder 2 Fuel Injector
N32 - Cylinder 3 Fuel Injector
N33 - Cylinder 4 Fuel Injector
N70 - Ignition Coil 1 with Power Output Stage
N127 - Ignition Coil 2 with Power Output Stage
N291 - Ignition Coil 3 with Power Output Stage
N292 - Ignition Coil 4 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
S229 - Fuse 29 in fuse holder
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
T17i - Connector 17 pin, white, connector station electronic box plenum chamber

- Ground connection -1-, in engine compartment wiring harness
- Ground connection -3-, in engine compartment wiring harness
- Connector (over fuse 229), in wiring harness front, right
- Wire connection -4-, in engine compartment wiring harness
- Wire connection (19), over fuse 232, in engine compartment wiring harness



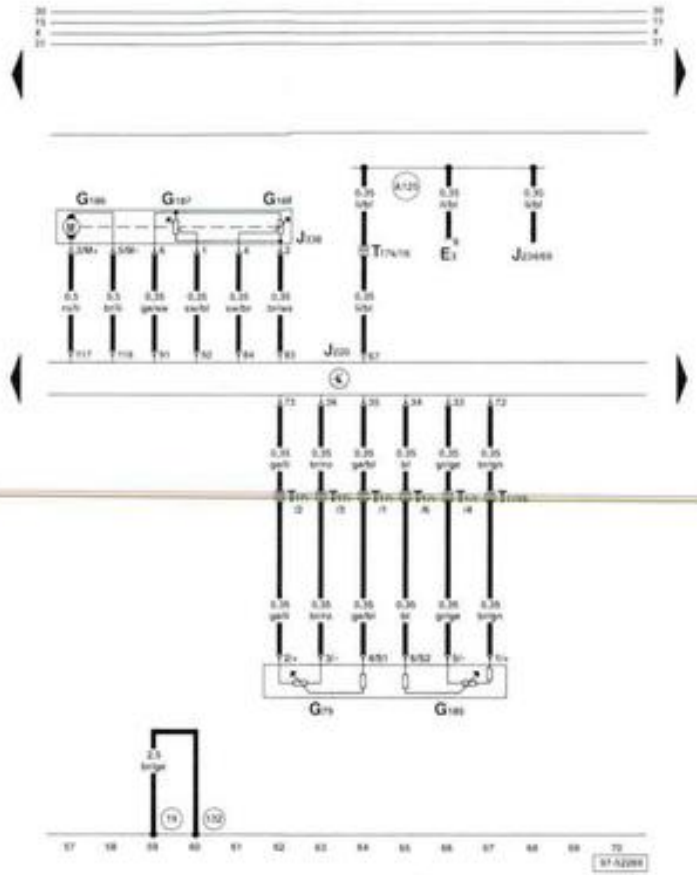




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D6 - Distributor ignition (DI) Capacitor
J220 - Motronic Engine Control Module (ECM)
N83 - Cylinder 5 Fuel Injector
N84 - Cylinder 6 Fuel Injector
N85 - Cylinder 7 Fuel Injector
N86 - Cylinder 8 Fuel Injector
N205 - Valve -1- for camshaft adjustment
N208 - Valve -2- for camshaft adjustment
N323 - Ignition Coil 5 with Power Output Stage
N324 - Ignition Coil 6 with Power Output Stage
N325 - Ignition Coil 7 with Power Output Stage
N326 - Ignition Coil 8 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs

- Ground connection -2-, in engine compartment wiring harness
- Ground connection -3-, in engine compartment wiring harness
- Connector (over fuse 229), in wiring harness front, right
- Wire connection -5-, in engine compartment wiring harness
- Wire connection (19), over fuse 232, in engine compartment wiring harness



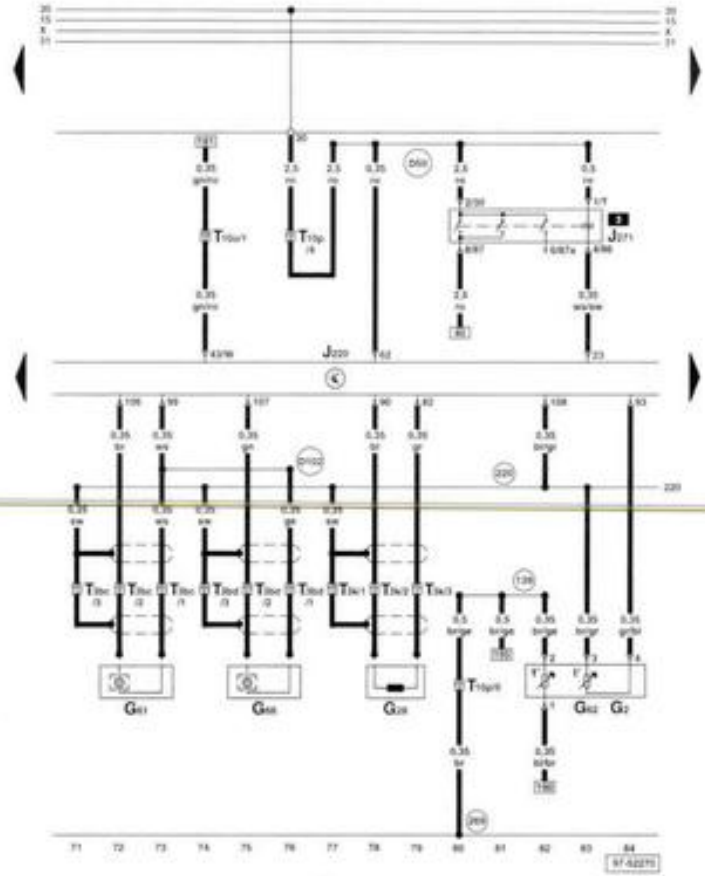
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E3 - Emergency Flasher Switch
G79 - Throttle Position (TP) Sensor
G185 - Sensor -2- for accelerator pedal position
G186 - Throttle drive (power accelerator actuation)
G187 - Angle sensor -1- for throttle drive (power accelerator actuation)
G188 - Angle sensor -2- for throttle drive (power accelerator actuation)
J220 - Motronic Engine Control Module (ECM)
J234 - Airbag Control Module
J338 - Throttle Valve Control Module
T17i - Connector 17 pin, white, connector station electronic box plenum chamber
T17k - Connector 17 pin, red, connector station electronic box plenum chamber

(19) - Ground connection, near ignition coil
(132) - Ground connection -3-, in engine compartment wiring harness
(A125) - Connection (crash signal) in instrument panel wiring harness



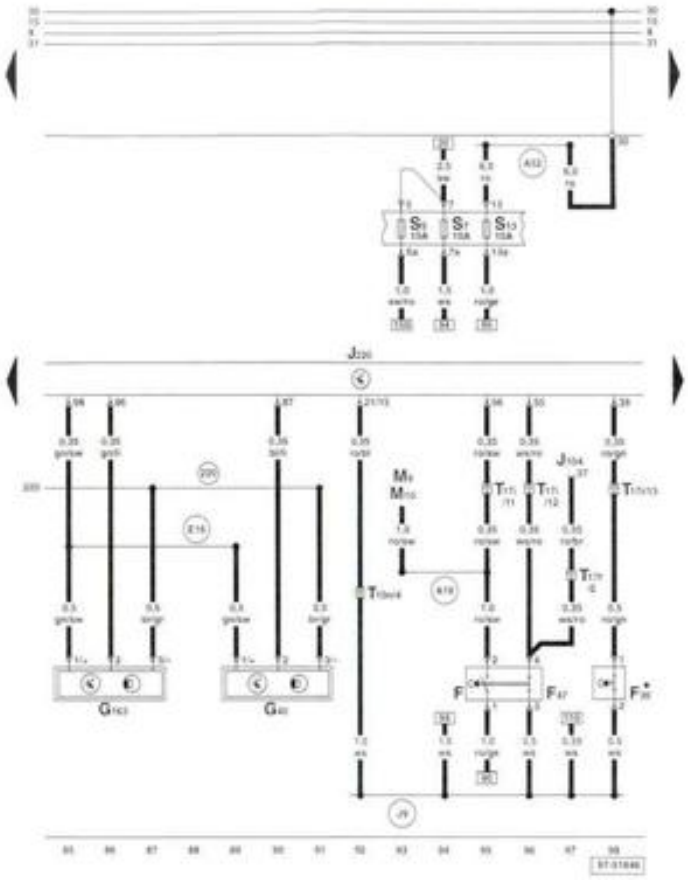




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G2 - Engine Coolant Temperature (ECT) Sensor
G28 - Engine Speed (RPM) Sensor
G61 - Knock Sensor (KS) 1
G62 - Engine Coolant Temperature (ECT) Sensor
G66 - Knock Sensor (KS) 2
J220 - Motronic Engine Control Module (ECM)
J271 - Motronic Engine Control Module (ECM) Power Supply Relay
T3k - Connector 3 pin, grey, on Engine Speed (RPM) Sensor
T3bc - Connector 3 pin, green, on Knock Sensor 1
T3bd - Connector 3 pin, green, on Knock Sensor 2
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(139) - Ground connection (sensor Ground), in Motronic Multiport Fuel Injection (MFI) wiring harness
(220) - Ground connection (sensor ground), in engine compartment wiring harness
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(30) - Plus connection (30), in engine compartment wiring harness
(A132) - Wire connection -2-, in engine compartment wiring harness



F – Brake Light Switch
F36 – Clutch Vacuum Vent Valve Switch
F47 – Brake Pedal Switch for Cruise Control
G40 – Camshaft Position (CMP) Sensor
G163 – Camshaft Position (CMP) Sensor 2
J104 – ABS Control Module (with EDL)
J220 – Motronic Engine Control Module (ECM)
M9 – Left Brake Light
M10 – Right Brake Light
S5 – Fuse
S7 – Fuse
S13 – Fuse
T10h – Connector 10-pin, orange, connector station electronic box plenum chamber
T20h – Connector 17-pin, black, in A-Post Relay Panel behind the storage driver's side
T32 – Connector 17-pin, white, connector station electronic box plenum chamber

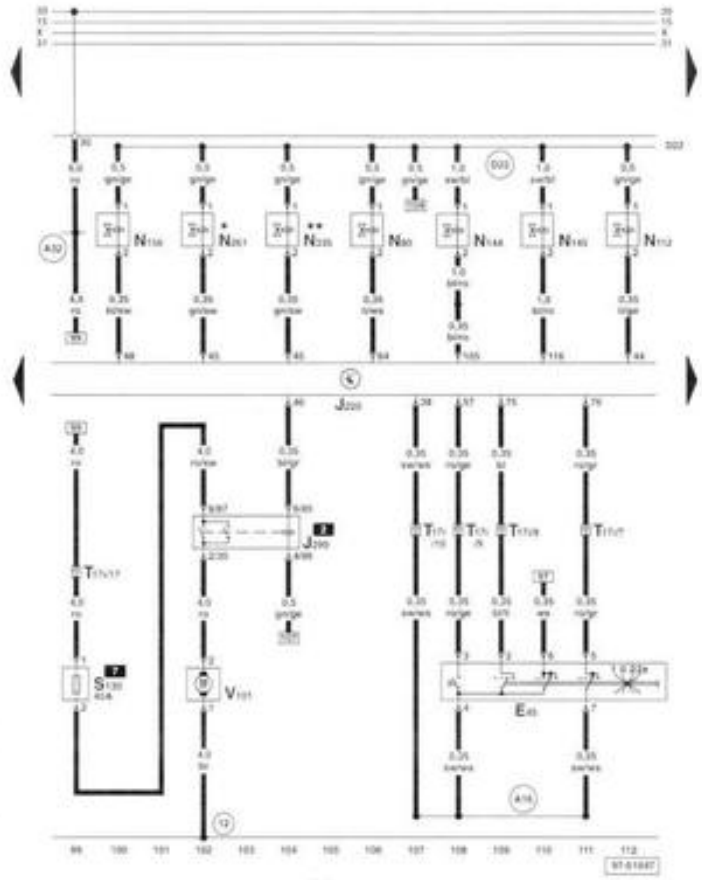
(22) – Ground connection (sensor ground), in engine compartment wiring harness
(53) – Wire connection (58), in instrument panel wiring harness
(58) – Plus connection 2 (30), in instrument panel wiring harness
(75) – Plus connection (15 basic, in Motronic Multipoint fuel injection (MPI) wiring harness
(76) – Wire connection, 1-/15a-, in ABS wiring harness

* – Vehicles with manually shifted transmission



Motronic Engine Control Module, Camshaft Position Sensor, Brake Light Switch





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

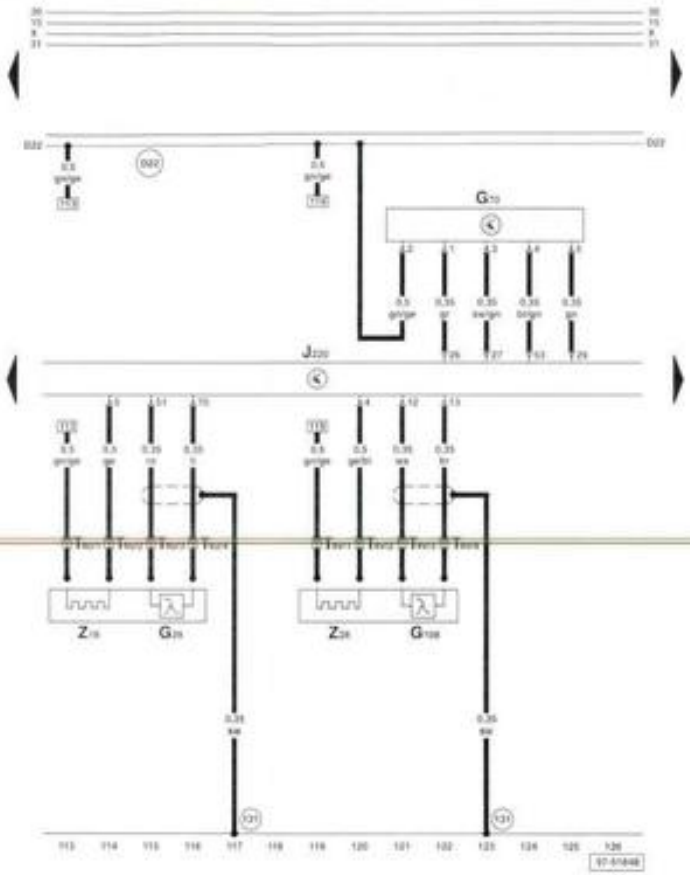
E45 – Cruise Control Switch
J220 – Motronic Engine Control Module (ECM)
J299 – Secondary Air Injection (AIR) Pump Relay
N80 – Evaporative Emission (EVAP) Canister Purge Regulator Valve
N112 – Secondary Air Injection (AIR) Solenoid Valve
N144 – Left Electro-Hydraulic Engine Mount Solenoid Valve
N145 – Right Electro-Hydraulic Engine Mount Solenoid Valve
N156 – Intake Manifold Change-Over Valve
N261 – Intake Manifold Tuning (IMT) Valve 2
N335 – Intake Air Switch-over valve
S130 – Fuse for secondary air pump
T10 – Connector 10-pin, white, connector station electronic box plenum chamber
V101 – Secondary Air Injection (AIR) Pump Motor

(22) – Ground connection, in engine compartment, left
(53) – Wire connection cruise control, in instrument panel wiring harness
(58) – Plus connection (30), in instrument panel wiring harness
(76) – Connector blue fuse (2A), in wiring harness front, right

* – Engine Code AWN
** – Engine Code BBD (M)



Motronic Engine Control Module, Secondary Air Injection Pump Relay, Cruise Control Switch




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

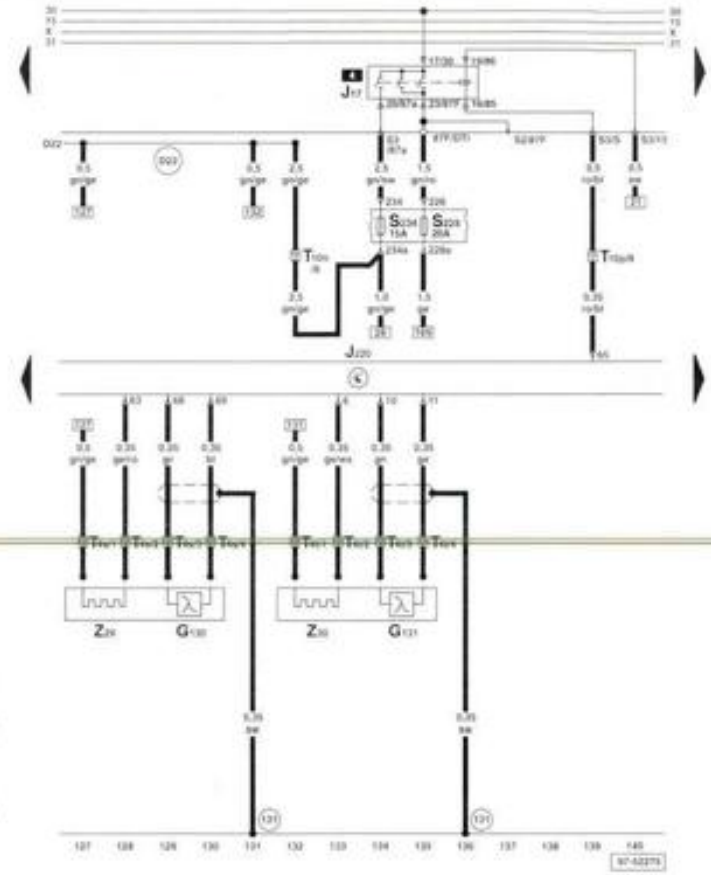
G39 – Heated Oxygen Sensor (HO2S) 2
G70 – Mass Air Flow (MAF) Sensor
G108 – Heated Oxygen Sensor (HO2S) 2
J220 – Motronic Engine Control Module (ECM)
T4u – Connector 4 pin, black, heated oxygen sensor
T4v – Connector 4 pin, black, heated oxygen sensor 2
Z19 – Oxygen Sensor (O2S) Heater
Z29 – Oxygen Sensor (O2S) 2 Heater

(1) – Ground connection, 2-, in engine compartment wiring harness
(2) – Connector (over) fuse 23(4), in wiring harness front, right



**Motronic Engine Control Module, Heated Oxygen Sensors, Mass Air Flow Sensor**






ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

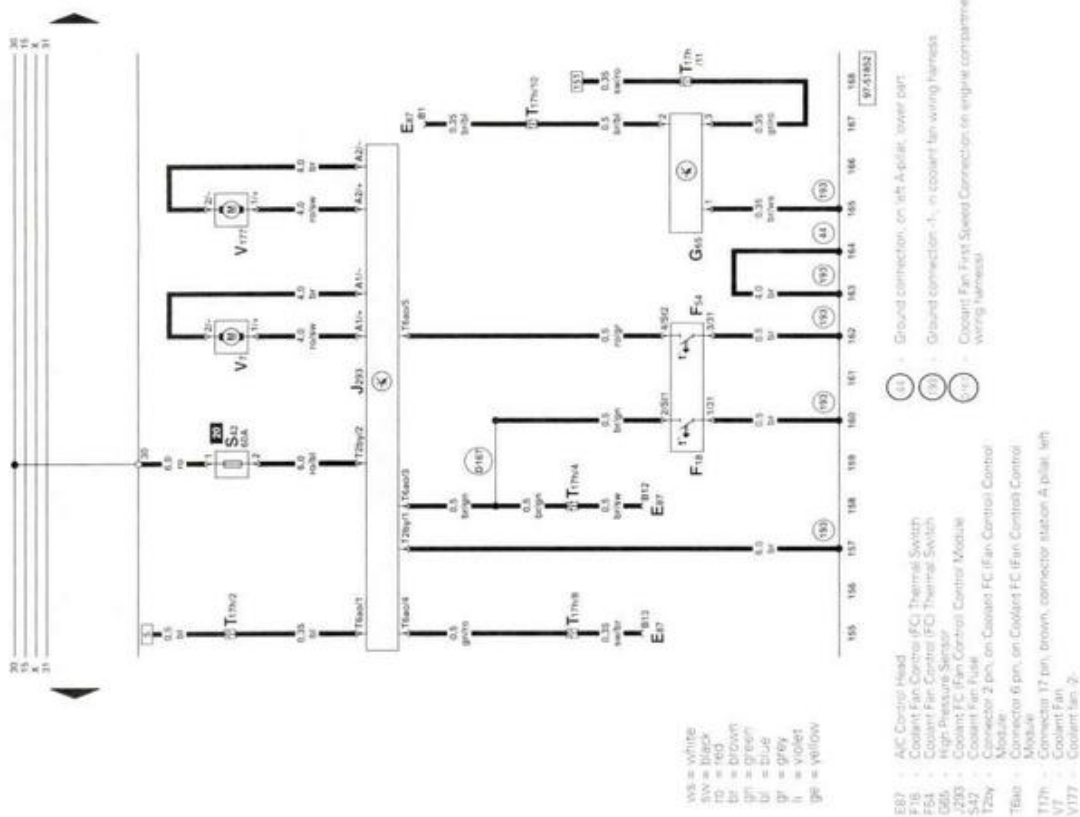
G130 – Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 – Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J17 – Fuel Pump (FP) Relay
J220 – Motronic Engine Control Module (ECM)
S228 – Fuse 28 in fuse holder
S234 – Fuse 34 in fuse holder
T4x – Connector 4 pin, green, rear oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4y – Connector 4 pin, brown, rear oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T10x – Connector 10 pin, orange, connector station electronic box plenum chamber
T10y – Connector 10 pin, black, connector station electronic box plenum chamber
Z29 – Oxygen Sensor (O2S) Heater
Z30 – Oxygen Sensor (O2S) 2 Heater

(1) – Ground connection, 2-, in engine compartment wiring harness
(2) – Connector (over) fuse 23(4), in wiring harness front, right

**Motronic Engine Control Module, Fuel Pump Relay, Heated Oxygen Sensors Behind Three Way Catalytic Converter**

**Audi A6**

**No. 44/14** Wiring diagram



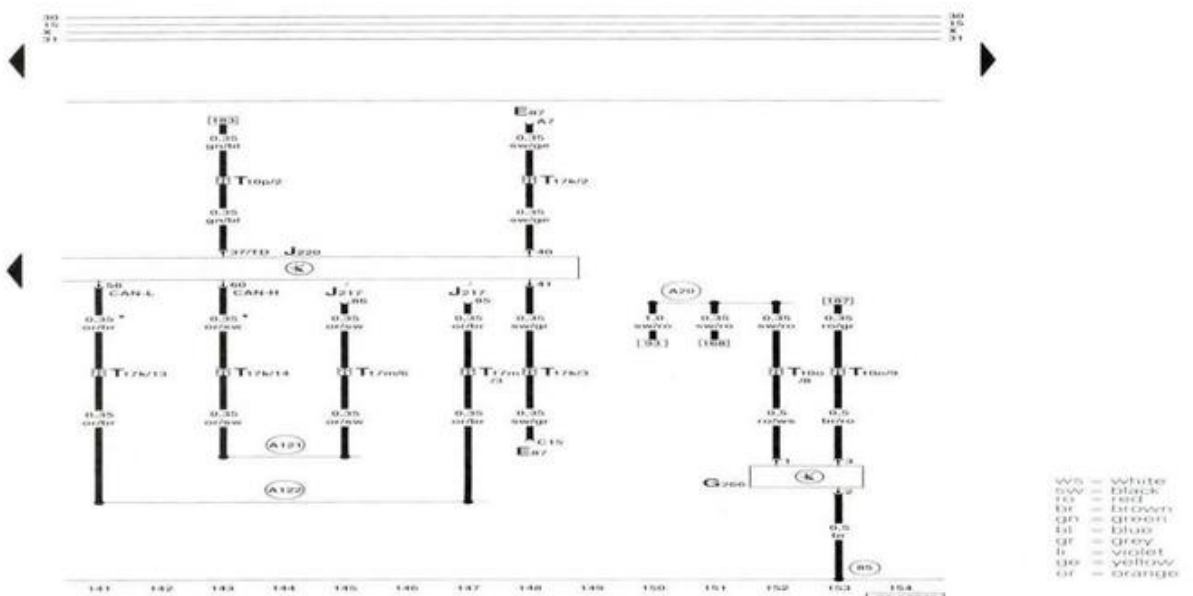
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E87 - A/C Control Head
F18 - Coolant Fan Control (FC) Thermal Switch
F54 - Coolant Fan Control (FC) Thermal Switch
G65 - High Pressure Sensor
J293 - Coolant FC (Fan Control) Control Module
S42 - Coolant Fan Fuse
T2dy - Connector 2 pin, on Coolant FC (Fan Control) Control Module
T6ao - Connector 6 pin, on Coolant FC (Fan Control) Control Module
T17h - Connector 17 pin, brown, connector station A pillar, left
V7 - Coolant Fan
V177 - Coolant fan 2

(J) - Ground connection, on left A-pillar, lower part
(T6) - Ground connection -1-, in coolant fan wiring harness
(T10) - Coolant Fan First Speed Connection on engine compartment wiring harness

**Engine Cooling with Coolant FC Control Module**

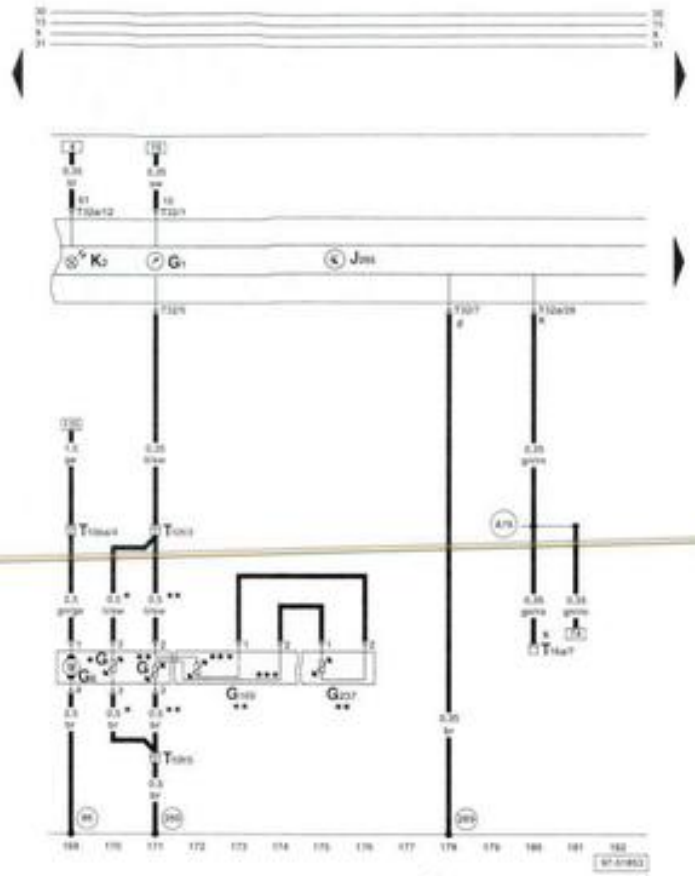
Edition 05/01
W42.USA.5603.04.21



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

E87 - A/C Control Head
G265 - Oil Level Thermal Sensor (SAE)
J217 - Transmission Control Module (TCM)
J220 - Motronic Engine Control Module II (CM)
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10q - Connector 10 pin, black, connector station electronic box plenum chamber
T17k - Connector 17 pin, red, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right

(T10) - Ground connection -1-, in engine compartment wiring harness
(T10o) - Wire connection (Plug), in instrument panel wiring harness
(T17) - Connection (high bus) in instrument panel wiring harness
(T17) - Connection (low bus) in instrument panel wiring harness
* - CAN-Bus (Data Bus)
- - Vehicles with automatic transmission



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

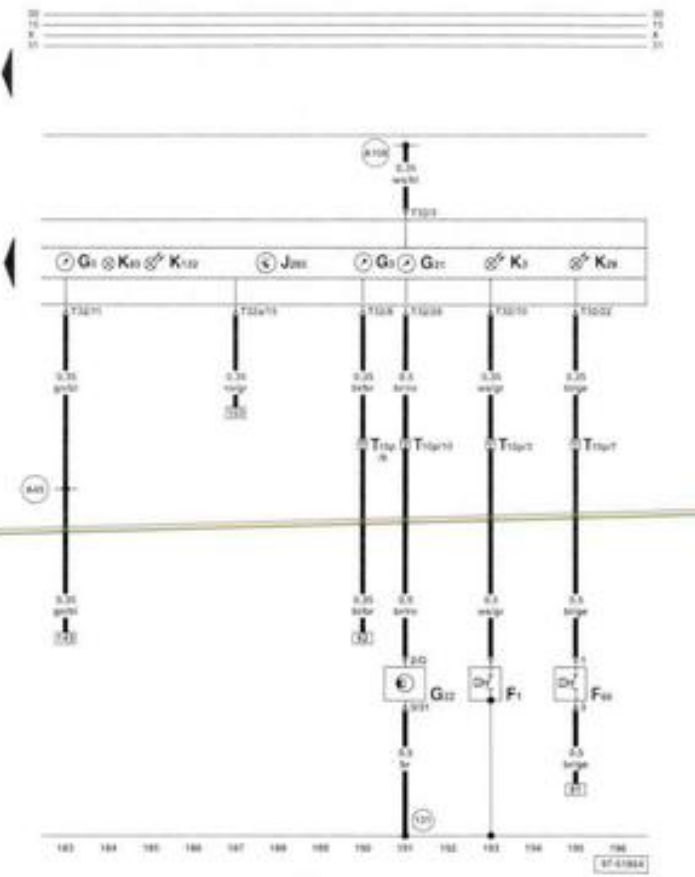
G - Sender for fuel gauge
G1 - Fuel Gauge
G6 - Fuel Pump (FP)
G169 - Sender 2 for fuel gauge
G237 - Sensor -3- for fuel supply
J285 - Control Module With Display Unit In Instrument Cluster
K2 - Generator (GEN) Warning Light
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(A) - Ground connection -1-, in rear wiring harness
(D) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(CAN) - Connector (K-diagnosis wire), in instrument panel wiring harness

* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank
# - Exit Sensor ground







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

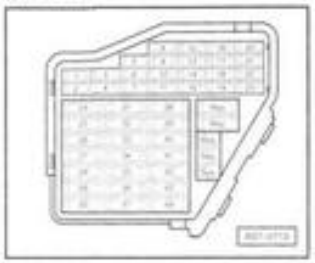
F1 - Oil Pressure Switch
F66 - Engine Coolant Level (ECL) Warning Switch
G3 - Engine Coolant Temperature (ECT) Gauge
G5 - Tachometer
G21 - Speedometer
G22 - Speedometer Vehicle Speed Sensor (VSS)
J285 - Control Module With Display Unit In Instrument Cluster
K3 - Oil Pressure Warning Light
K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
K83 - Malfunction Indicator Lamp (MIL)
K132 - Electronic Power Control (EPC) Warning Lamp
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(D) - Ground connection, -2-, in engine compartment wiring harness
(CAN) - Wire connection (RPM signal), in instrument panel wiring harness
(CAN) - Connector (speed signal), in instrument panel wiring harness

# Central Locking System / Anti Theft Alarm System / Ultra-Sound Interior Monitor

2002 m. y.

Fuse Panel

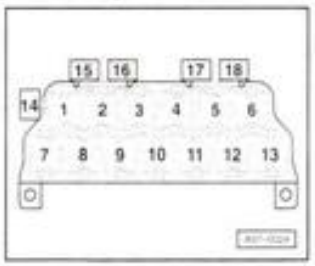


Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

13 - Fold Relay Panel

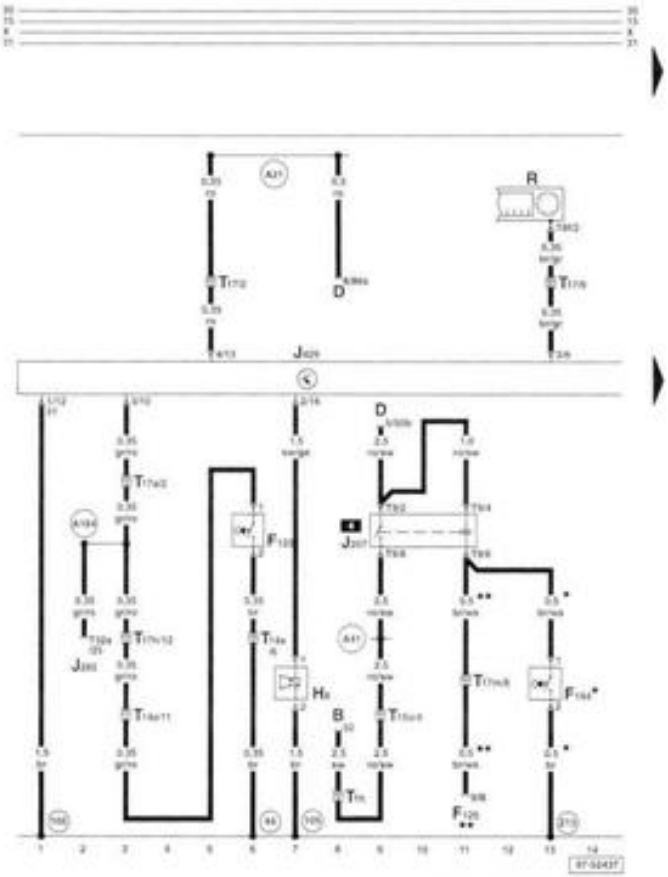



Relay Location:

4 - Starting Interlock Relay, J207






R
D
B
J329
J207
J285
F120
F125
F194
H6
T17c/12
T14a/11
T17a/8
T17c/8
T1h
T10a/6
T14a/6
T17a/2
T17c/2
T14a/7
T32a/32
T32a/1
T32a/2
T32a/3
T32a/4
T32a/5
T32a/6
T32a/7
T32a/8
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T32a/12
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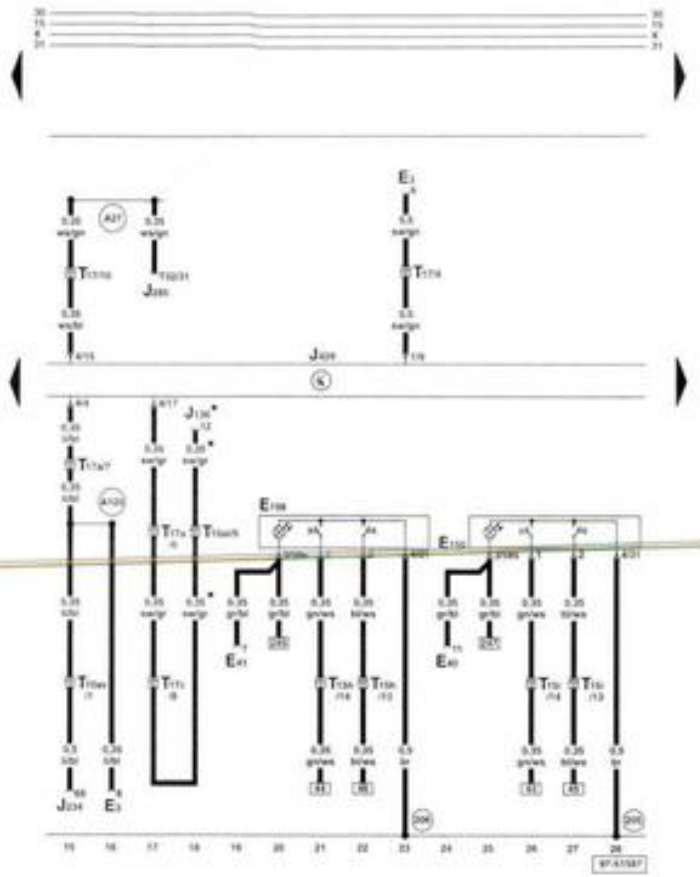
T32a/28
T32a/29
T32a/30
T32a/31



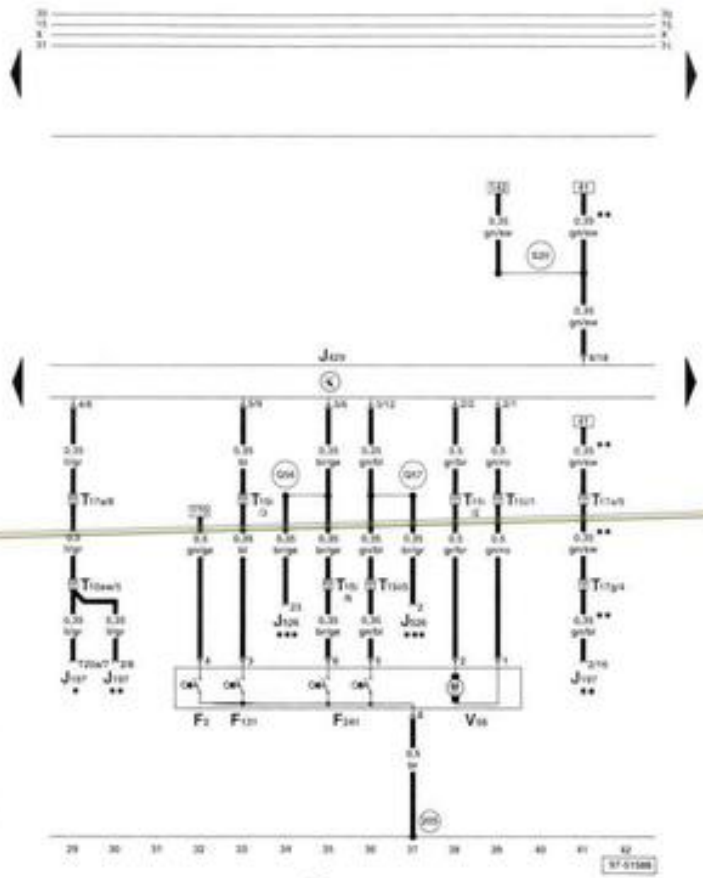
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E3 – Emergency Flasher Switch
E40 – Left Front Window Switch
E41 – Right Front Window Switch
E150 – Switch for interior lock, driver side
E198 – Passenger Side Interior Lock Switch
J136 – Memory Seat Control Module
J234 – Airbag Control Module
J285 – Control Module with indicator unit in instrument panel insert
J926 – Control module for central locking
T10d – Connector 10 pin, brown, below driver's seat
T10ew – Connector 10 pin, yellow, connector station A pillar, right
T15r – Connector 15 pin, brown, connector station A pillar, right
T15l – Connector 15 pin, brown, connector station A pillar, left
T17 – Connector 17 pin, orange, connector station A pillar, right
T17a – Connector 17 pin, brown, connector station A pillar, right
T17c – Connector 17 pin, green, connector station A pillar, right
T32 – Connector 32 pin, blue, on instrument cluster

(204) – Ground connection, in driver's door wiring harness
(205) – Ground connection, in passenger's door wiring harness
(A2) – Wire connection (vehicle speed signal), in instrument panel wiring harness
(A3) – Connection (crash signal) in instrument panel wiring harness
* – Vehicles with Memory Seat



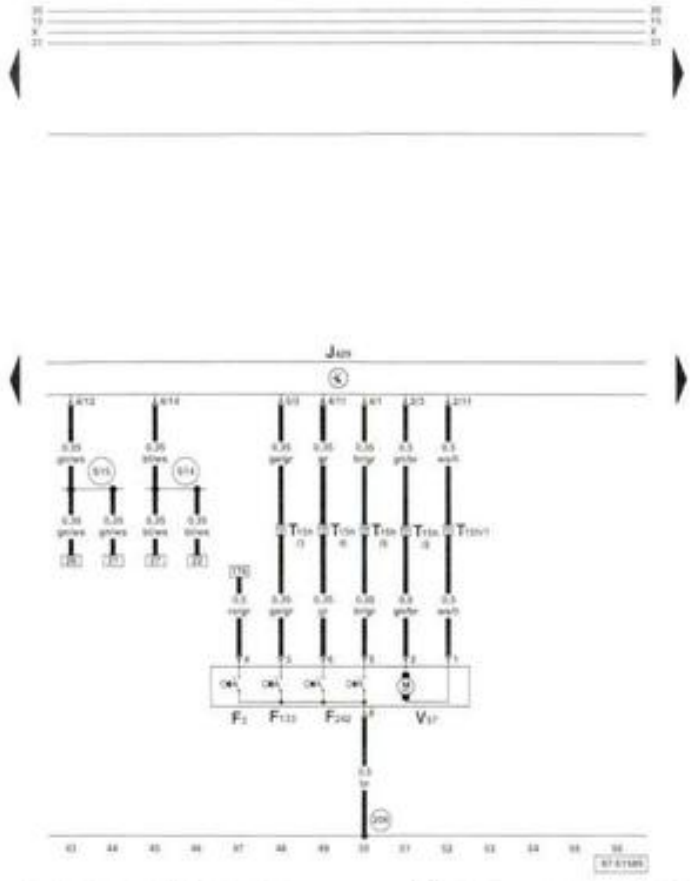




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F2 – Door Contact Switch - Driver's side
F131 – Left Front Central Locking System Actuator/Switch
F241 – Contact switch for lock cylinder, driver side
J197 – Level Control System Control Module
J926 – Control module for central locking
J926 – Telephone/Telematic Control Module
T10ew – Connector 10 pin, black, connector station A pillar, right
T15l – Connector 15 pin, brown, connector station A pillar, left
T17a – Connector 17 pin, brown, connector station A pillar, right
T17g – Connector 17 pin, grey, in B-Post Relay Panel behind the storage driver's side
T20x – Connector 20 pin, red, on Control Module for Level Control
V56 – Driver's Door Central Locking System Motor

(204) – Ground connection, in driver's door wiring harness
(A2) – Wire connection (open), in alarm system wiring harness
(A3) – Wire connection (closed), in alarm system wiring harness
(C2) – Connector -2- in wiring harness central locking
* – Vehicles with Level Control System, not allroad
** – Vehicles with Level Control System, allroad
*** – Vehicles with Telematics



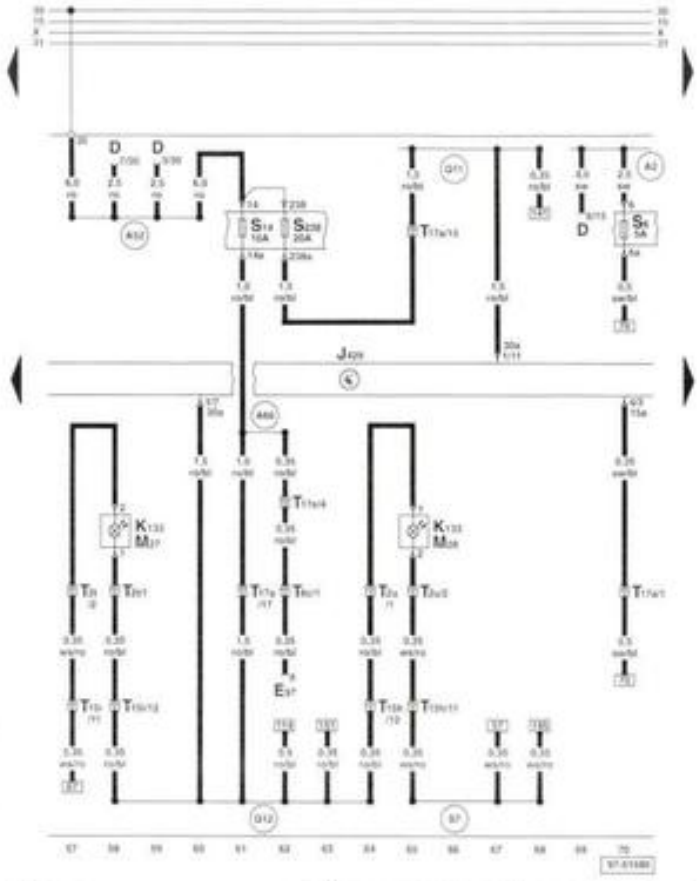

F2 – Door Contact Switch - Passenger's side
F133 – Right Front Central Locking System Actuator/Switch
F242 – Contact switch for rear lumbar, passenger side
J429 – Control module for central locking
T10n – Connector 10-pin, brown, connector station A pillar, right
V57 – Passenger's Door Central Locking System Motor

Ground connection, in passenger's door wiring harness
Wire connection (open), in central locking system wiring harness
Wire connection (closed), in central locking system wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



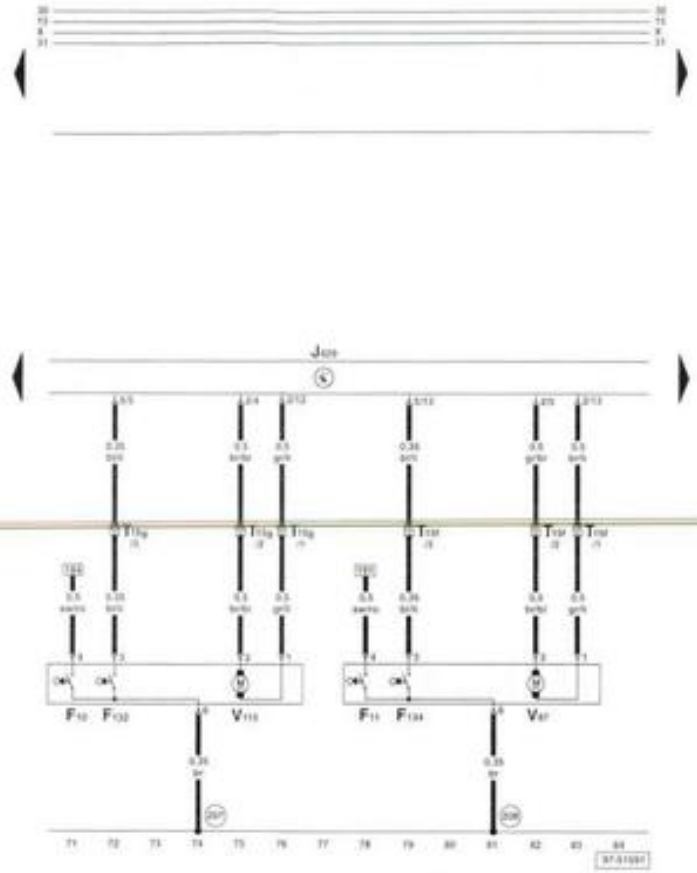





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
E97 – Driver's Seat Memory Program Control
J429 – Control module for central locking
K133 – Warning light for central locking (SAFE)
M27 – Left Door Warning Light
M28 – Right Door Warning Light
S6 – Fuse
S14 – Fuse
S238 – Fuse 28 in fuse holder
T2l – Connector 2-pin, black, in driver's door
T2u – Connector 2-pin, black, in front passenger's door
T8c – Connector 8-pin, black, in driver's door
T10n – Connector 10-pin, brown, connector station A pillar, right
T16l – Connector 16-pin, brown, connector station A pillar, left
T17a – Connector 17-pin, violet/white, connector station A pillar, right
T17e – Connector 17-pin, black, connector station A pillar, left

Ground connection, in instrument panel wiring harness
Plus connection (15), in instrument panel wiring harness
Plus connection 2 (30), in instrument panel wiring harness
Connector (30a, central locking/anti-theft warning system/R), in instrument panel wiring harness
Plus connection (30a), in power windows/central locking system and door contact switch wiring harness
Plus connection (30a), in power windows/central locking system and door contact switch wiring harness
Wire connection -2-, in central locking system wiring harness



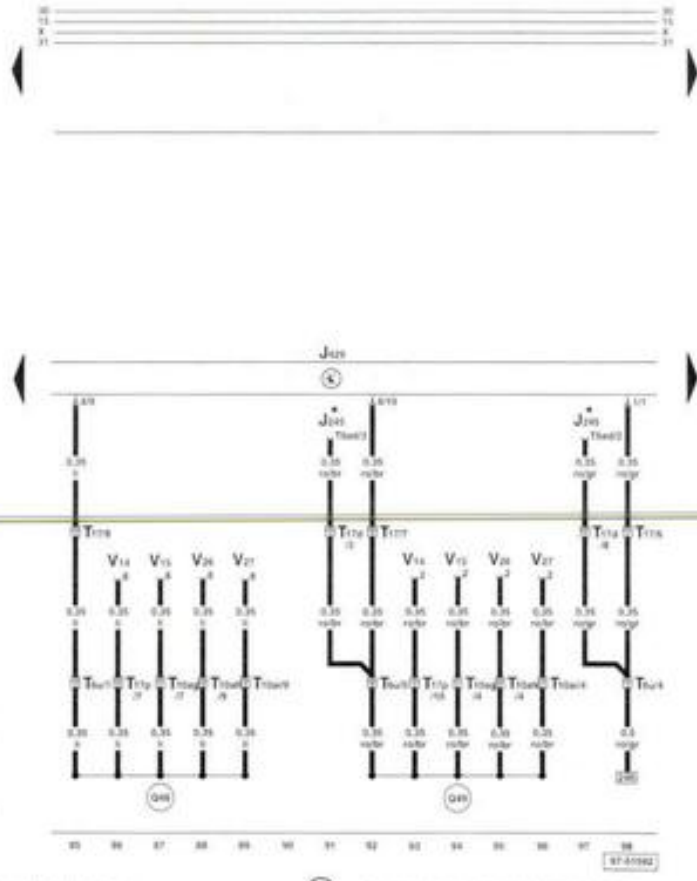
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F10 – Left Rear Door Contact Switch
F11 – Right Rear Door Contact Switch
F132 – Left Rear Central Locking System Actuator/Switch
F134 – Right Rear Central Locking System Actuator/Switch
J429 – Control module for central locking
T1M – Connector 15 pin, blue, in connector station B pillar, right
T15g – Connector 15 pin, blue, in connector station B pillar, left
V97 – Right Rear Door Central Locking System Motor
V115 – Left Rear Central Locking System Motor

(X) – Ground connection, in left rear door wiring harness
(Y) – Ground connection, in right rear door wiring harness



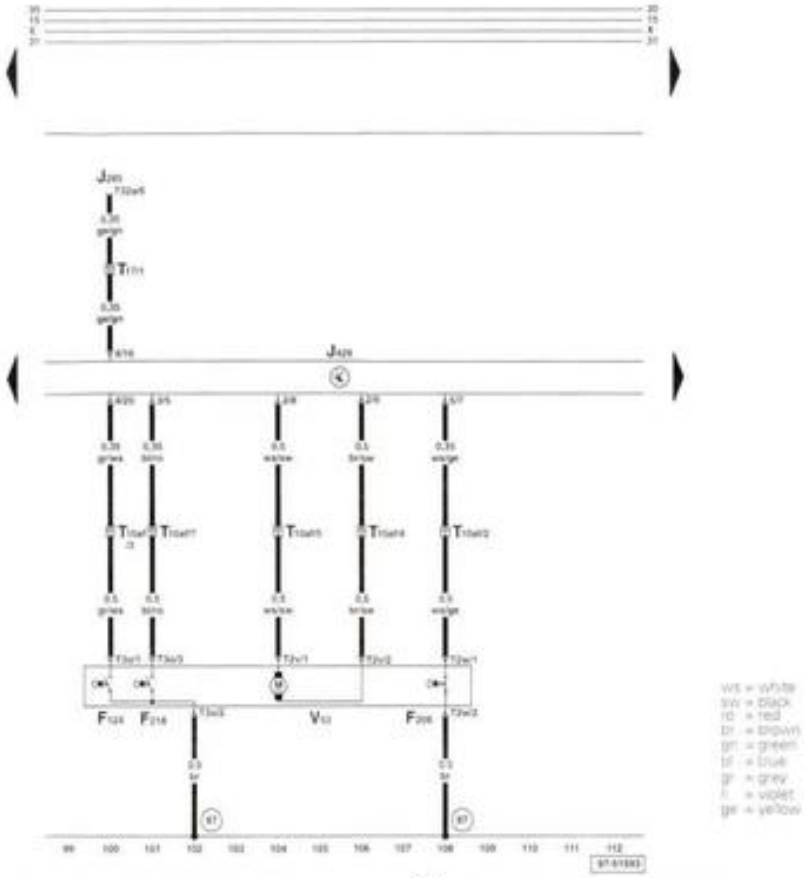




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J245 – Power Sunroof Control Module
J429 – Control module for central locking
T6u – Connector 6 pin, gray, connector station A pillar, left
T6ad – Connector 6 pin, blue, on power sunroof control module
T10ag – Connector 10 pin, red, connector station A pillar, right
T10ah – Connector 10 pin, red, in B pillar, left
T10w – Connector 10 pin, red, in B pillar, right
T17 – Connector 17 pin, orange, connector station A pillar, right
T17q – Connector 17 pin, grey, connector station A pillar, left
T17p – Connector 17 pin, red, connector station A pillar, left
V14 – Left Window Motor
V15 – Right Window Motor
V26 – Left Rear Door Window Motor
V27 – Right Rear Door Window Motor

(X) – Connection opens, in wiring harness interior
(Y) – Connection closed, in wiring harness interior
* – Vehicles with Power Sunroof




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

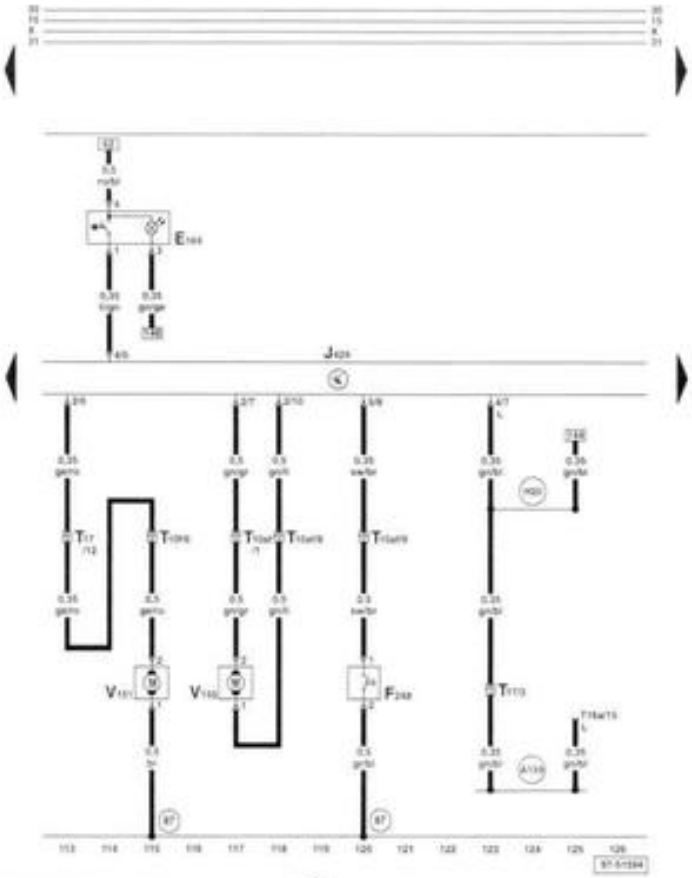
F124 – Trunk Lock Alarm/Central Locking Switch
F206 – Trunk Lid Closed Position Switch
F216 – Switch for central locking, trunk lid
J285 – Control Module with indicator unit in instrument panel insert
J429 – Control module for central locking
T2v – Connector 2 pin, black, luggage compartment
T2w – Connector 2 pin, grey, luggage compartment
T3c – Connector 3 pin, black, in rear lid
T10af – Connector 10 pin, violet, in B-Pillar Relay Panel behind the storage driver's side
T17 – Connector 17 pin, orange, connector station A pillar, right
T32a – Connector 32 pin, green, on instrument cluster
V53 – Deactivated Central Locking System Motor

Ground connection -2-, in rear wiring harness



Control Module for Central Locking, Trunk Lock Alarm/Central Locking Switch



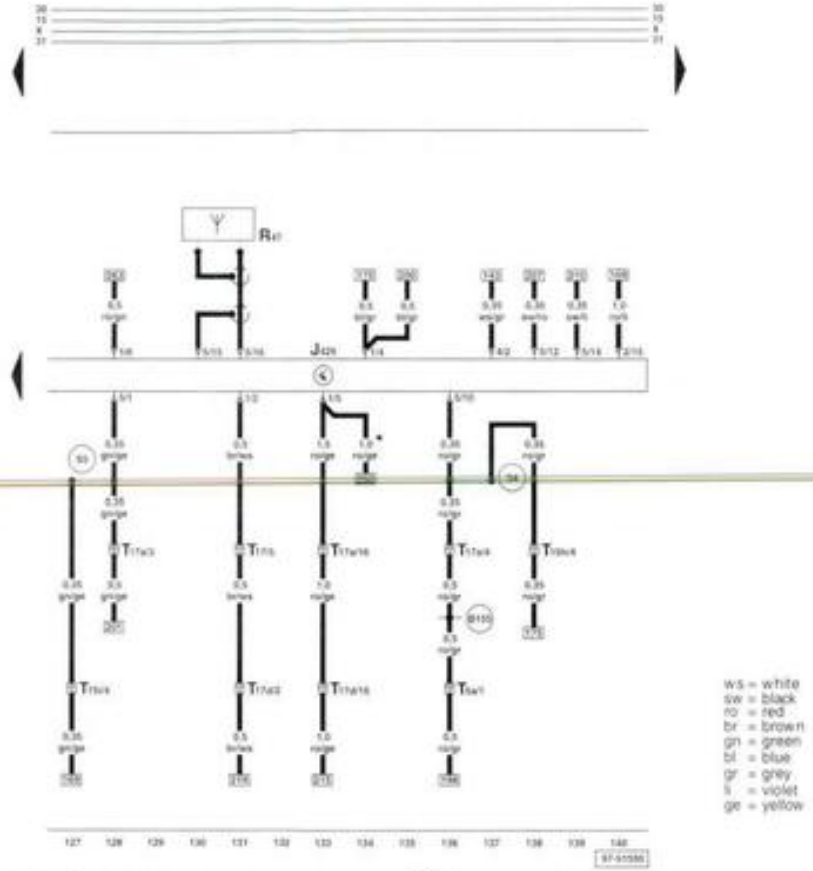



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E164 – Luggage Compartment Release Switch
F249 – Switch for unlocking, rear lid lock cylinder
J428 – Control module for central locking
T10f – Connector 10 pin, brown, connector station A pillar, left
T10af – Connector 10 pin, violet, in B-Pillar Relay Panel behind the storage driver's side
T16a – Connector 16 pin, data link connector
T17 – Connector 17 pin, orange, connector station A pillar, right
V121 – Motor for remote unlock rear lid
V155 – Motor for fuel tank lid unlock

Ground connection -2-, in rear wiring harness
Connection (L) (in instrument panel wiring harness)
Wire connection -1-, in On-Board Diagnostic (OBD) wiring harness

Control Module for Central Locking, Luggage Compartment Release Switch, Motor for Remote Unlock Rear Lid

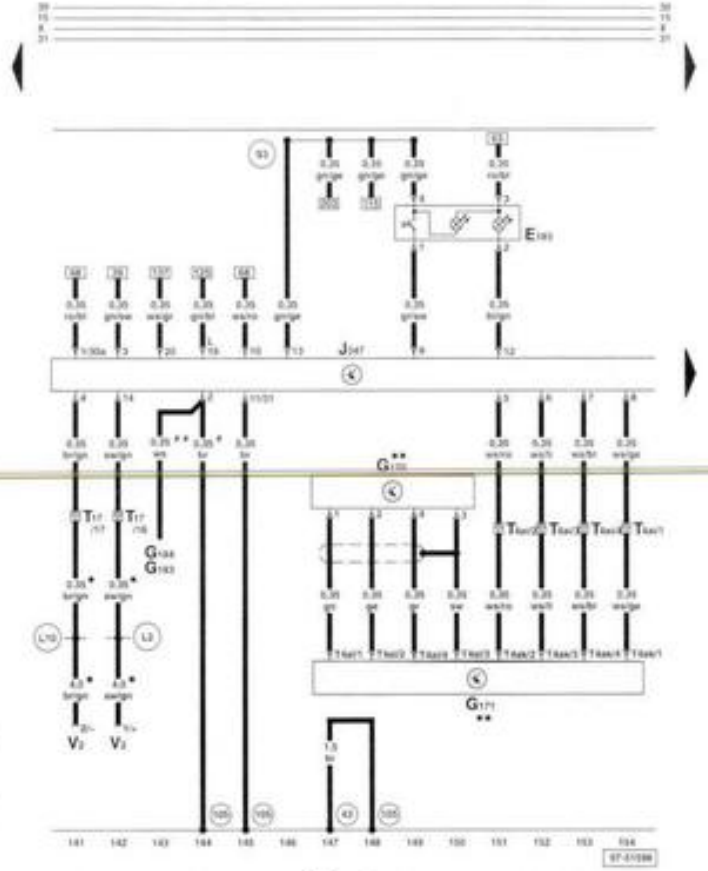



J429 - Control module for central locking
R47 - Window antenna for central locking and anti-theft warning system
T5a - Connector 5 pin, black, behind instrument panel, right
T15h - Connector 15 pin, brown, connector station A pillar, right
T15i - Connector 15 pin, brown, connector station A pillar, left
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17d - Connector 17 pin, grey, connector station A pillar, left

(T15h) - Connector -2- (TK), in wiring harness interior
(S4) - Wire connection (TK right), central locking system wiring harness
(S5) - Wire connection (TK left), central locking system wiring harness
* - only wagon

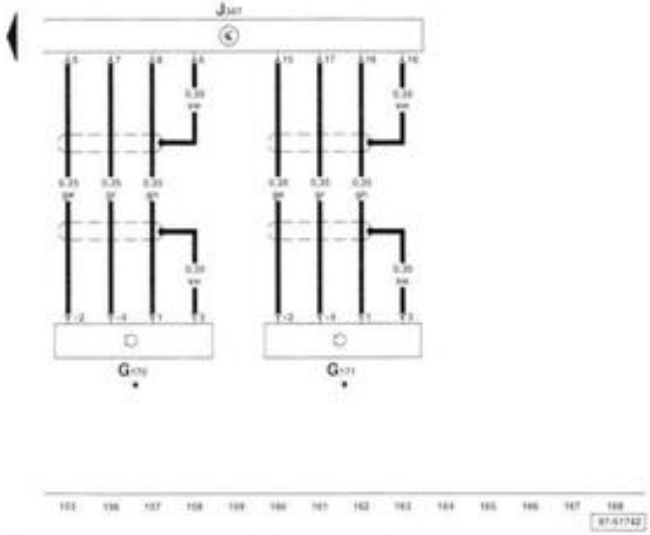







E183 - Switch for passenger compartment monitoring
G170 - Interior Monitoring sensor, left for anti-theft warning system
G171 - Interior Monitoring sensor, right for anti-theft warning system
G183 - Sensor for broken window glass rear left
G184 - Sensor for broken window glass rear right
J347 - Control Module for Ultra-Sound sensors
T4a - Connector 4 pin, on C pillar, right
T4ak - Connector 4 pin, on interior monitoring sensor, right
T4al - Connector 4 pin, on interior monitoring sensor, right
T17 - Connector 17 pin, orange, connector station A pillar, right
V2 - Fresh Air Blower

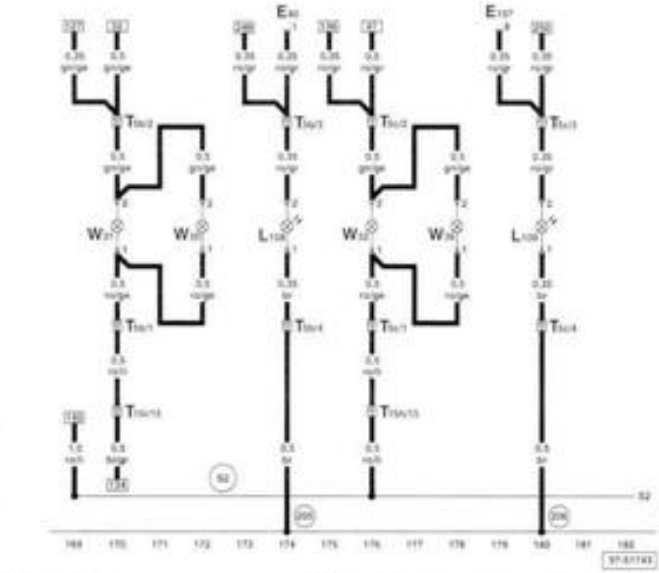
(43) - Ground connection, on right A-pillar, lower part
(S3) - Ground connection -1-, in central locking system wiring harness
(L2) - Wire connection, in A/C wiring harness
(L10) - Wire connection -2-, in A/C wiring harness
(S3) - Wire connection -1- (switch/control module), central locking system wiring harness
* - Vehicles with Sunroof with Solar Cells
** - Vehicles with head airbag
a - Sedan
aa - Wagon




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G170 - Interior Monitoring sensor, left for anti-theft warning system
G171 - Interior Monitoring sensor, right for anti-theft warning system
J347 - Control Module for Ultra-Sound sensors

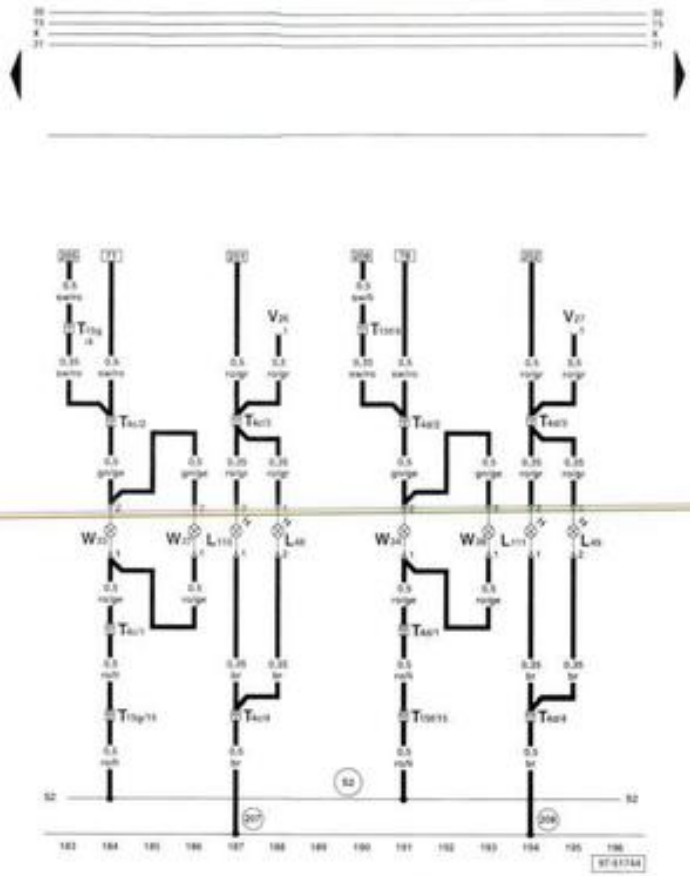
• - Vehicles without head airbag




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E40 - Left Front Window Switch
E107 - Switch for window regulator, in passenger door
L108 - Door opener lighting, driver side
L109 - Door opener lighting, passenger side
T5b - Connector 5 pin, black, in driver's door
T5c - Connector 5 pin, black, in passenger's door
T15h - Connector 15 pin, brown, connector station A pillar, right
T15i - Connector 15 pin, brown, connector station A pillar, left
W30 - Door Warning Light, driver side
W31 - Entry light front, left
W32 - Entry light front, right
W36 - Door warning light, passenger side

(205) - Ground connection, in driver's door wiring harness
(206) - Ground connection, in passenger's door wiring harness
(52) - Wire connection, in central locking system wiring harness

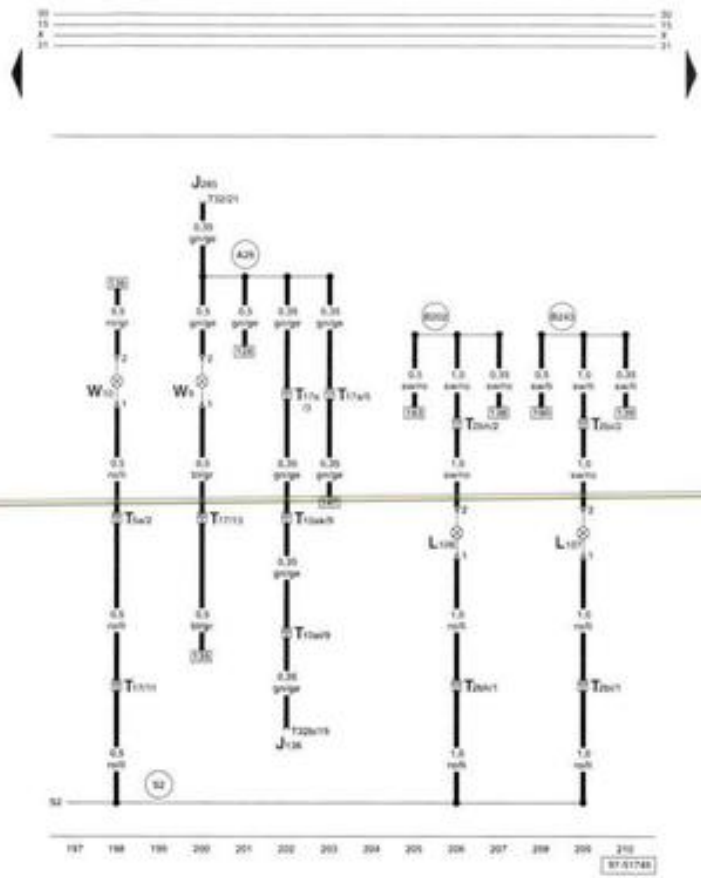



L48 - Left Rear Ashtray Light
L49 - Right Rear Ashtray Light
L110 - Door opener lighting, left rear
L111 - Door opener lighting, right rear
T4c - Connector 4 pin, black, in left rear door
T4d - Connector 4 pin, black, in right rear door
T15f - Connector 15 pin, blue, in connector station B pillar, right
T15g - Connector 15 pin, blue, in connector station B pillar, left
V26 - Motor for Window regulator, rear, left
V27 - Motor for Window regulator, rear, right
W33 - Entry light rear, left
W34 - Entry light rear, right
W37 - Door warning light rear, left
W38 - Door warning light rear, right

(207) - Ground connection, in left rear door wiring harness
(206) - Ground connection, in right rear door wiring harness
(52) - Wire connection, in central locking system wiring harness

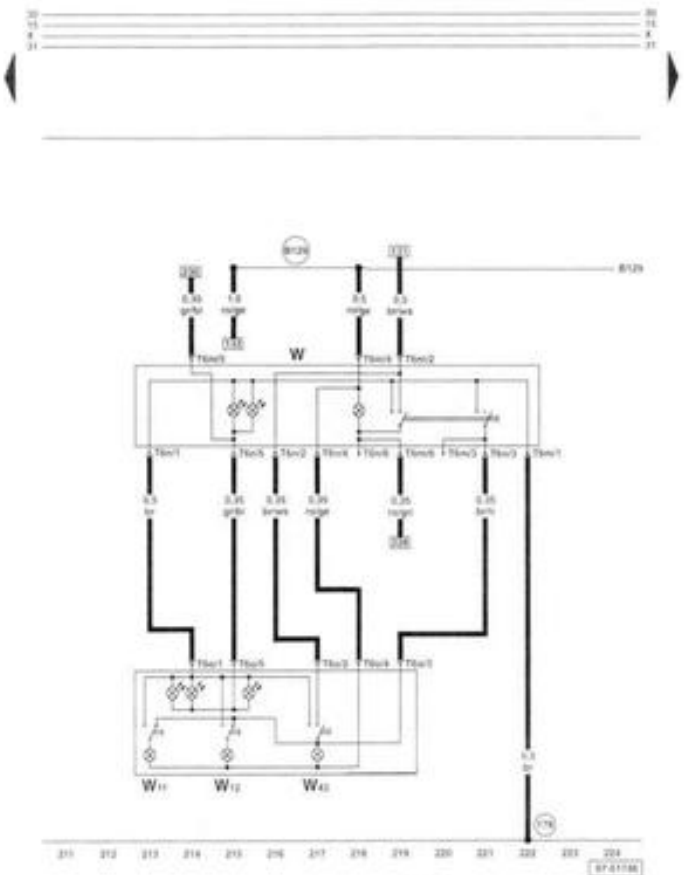







J136 - Memory Seat Control Module
J285 - Control Module with indicator unit in instrument panel insert
L106 - Footwell lighting, left rear
L107 - Footwell lighting, right rear
T2bh - Connector 2 pin, black, below driver's seat
T2bi - Connector 2 pin, black, below passenger's seat
T5a - Connector 5 pin, black, behind instrument panel, right
T10ak - Connector 10 pin, green, connector station A pillar, left
T10al - Connector 10 pin, brown, below driver's seat
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17e - Connector 17 pin, black, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
T32b - Connector 32 pin, blue, in driver's seat
W9 - Left Footwell Light
W10 - Right Footwell Light

(A25) - Wire connection (driver's door contact switch), in instrument panel wiring harness
(B202) - Connection 3 (TK), in passenger compartment wiring harness
(B243) - Connection 4 (TK) (in passenger compartment wiring harness)
(52) - Wire connection, in central locking system wiring harness



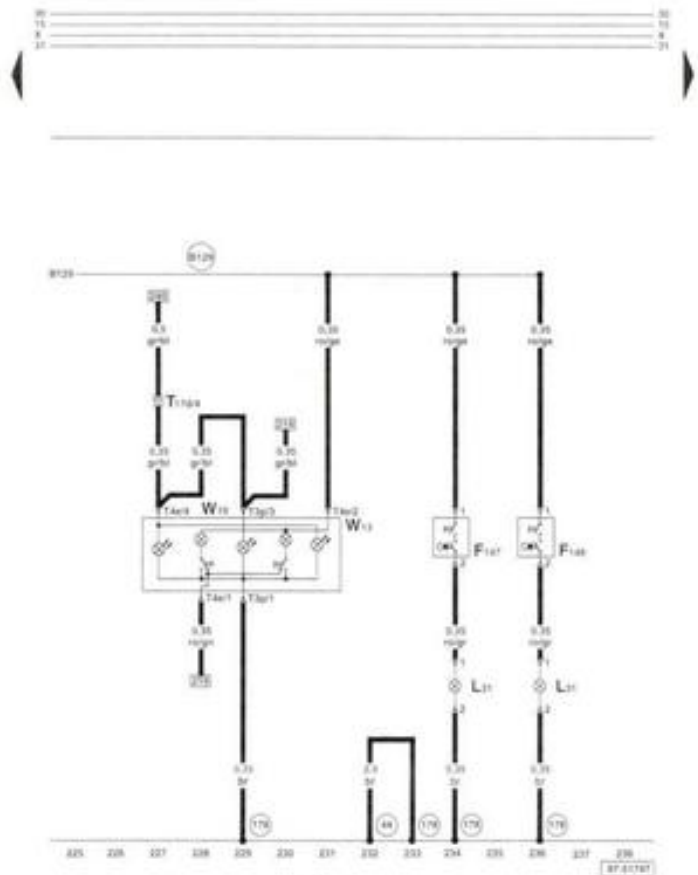
ws = white
sw = black
ro = red
br = brown
gr = green
bl = blue
gr = grey
li = violet
ge = yellow

T6m - Connector 6 pin, on interior light, front
T6n - Connector 6 pin, on interior light, front
T6o - Connector 6 pin, on interior light, rear
W - Front Interior Light
W11 - Left Rear Reading Light
W12 - Right Rear Reading Light
W43 - Rear courtesy lamp

- Ground connection, in sunroof wiring harness
- Connector (interior light 2) (L), in wiring harness interior



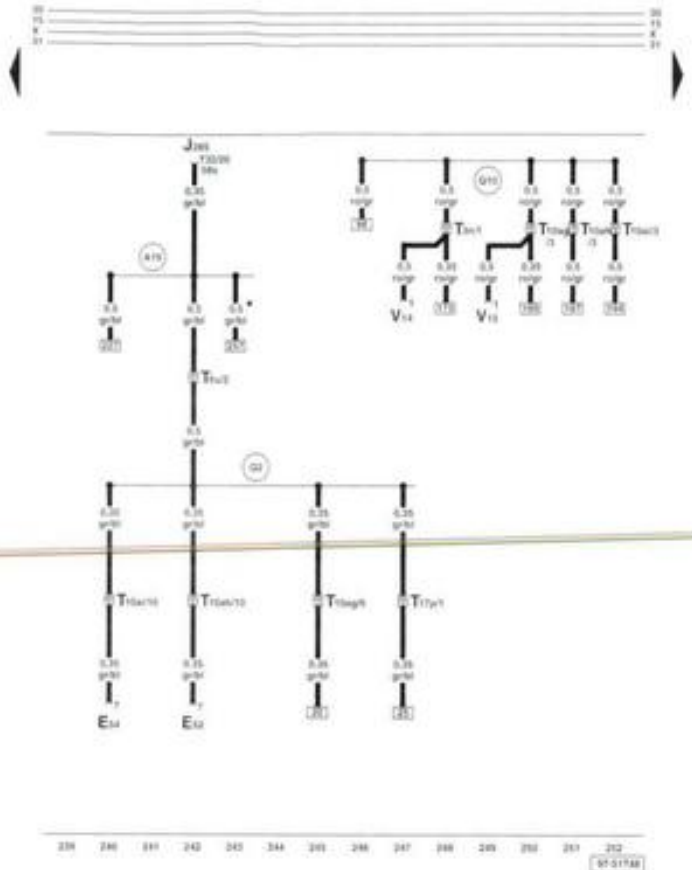




ws = white
sw = black
ro = red
br = brown
gr = green
bl = blue
gr = grey
li = violet
ge = yellow

F127 - Left Make-Up Mirror Light Switch
F128 - Right Make-Up Mirror Light Switch
L21 - Make-up Mirror Light
T3p - Connector 3 pin, on reading lamp front right
T4e - Connector 4 pin, on reading lamp front left
T10z - Connector 10 pin, grey, connector station A pillar, left
W13 - Right Front Map/Reading Light
W19 - Left Front Reading Light

- Ground connection, on left A-pillar, lower part
- Ground connection, in sunroof wiring harness
- Connector (interior light 3) (L), in wiring harness interior



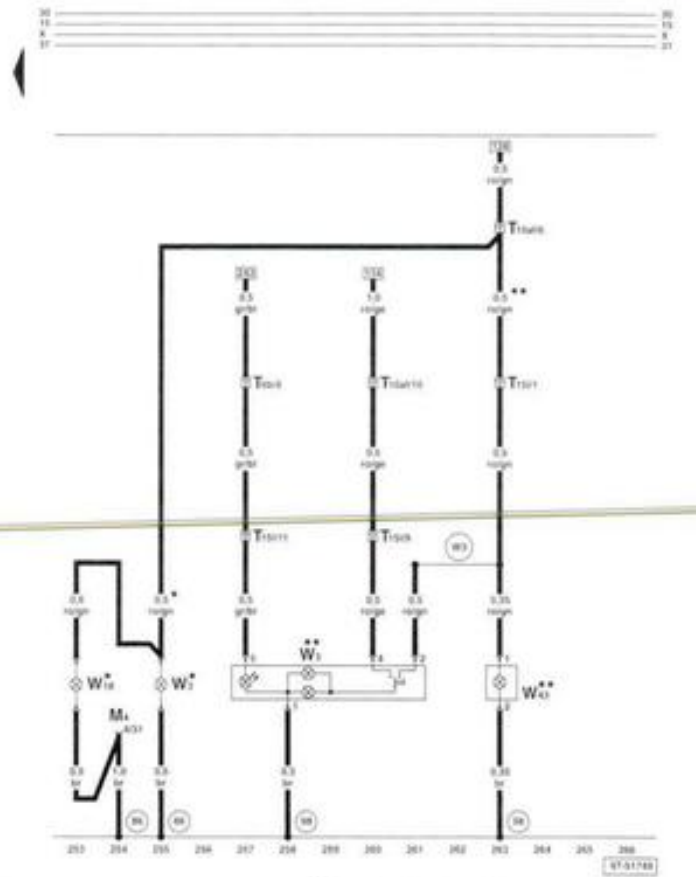
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E53 - Left Rear Window Switch, in LR Door
E54 - Right Rear Window Switch, in RR Door
J386 - Control Module with indicator unit in instrument panel insert
T2n - Connector 2 pin, red, connector station A pillar, left
T6j - Connector 6 pin, grey, connector station A pillar, left
T10ag - Connector 10 pin, red, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10ai - Connector 10 pin, red, in B pillar, right
T17p - Connector 17 pin, red, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
V14 - Left Window Motor
V15 - Right Window Motor

- Wire connection (58s), in instrument panel wiring harness
- Plus connection (58s), in power window wiring harness
- Plus connection (87), in power window/central locking system and door contact switch wiring harness
- only wagon







ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

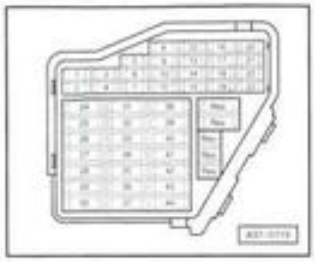
M4 - Left Tail Light
T6b - Connector 6 pin, white, connector station A pillar, left
T10ef - Connector 10 pin, violet, in E-Fold Relay Panel behind the storage driver's side
T35 - Connector 35 pin, black, in luggage compartment
W3 - Luggage Compartment Light
W16 - Left Luggage Compartment Light
W43 - Rear courtesy lamp

- Ground connection 1, in rear wiring harness
- Ground connection, in rear lid wiring harness
- Wire connection, in rear wiring harness
- only Sedan
- only Wagon

# Power Windows

2002 m. y.

**Fuse Panel**

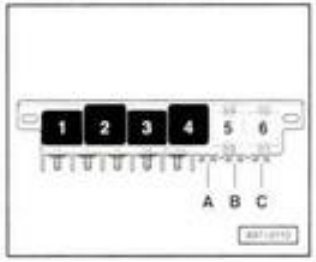


**Fuse Colors:**

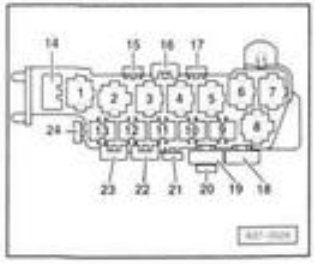
30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**




**8 - Fold Relay Panel**



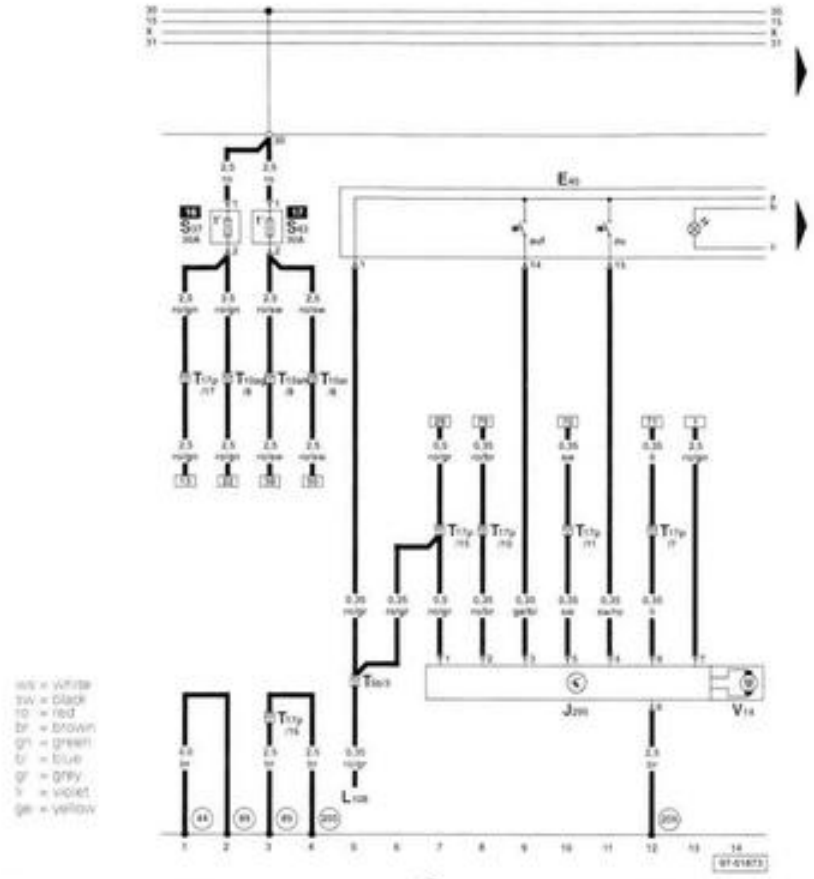

**Fuse Location**

16 Power Window Circuit Breaker Front, S37

17 Power Window Circuit Breaker Rear, S43

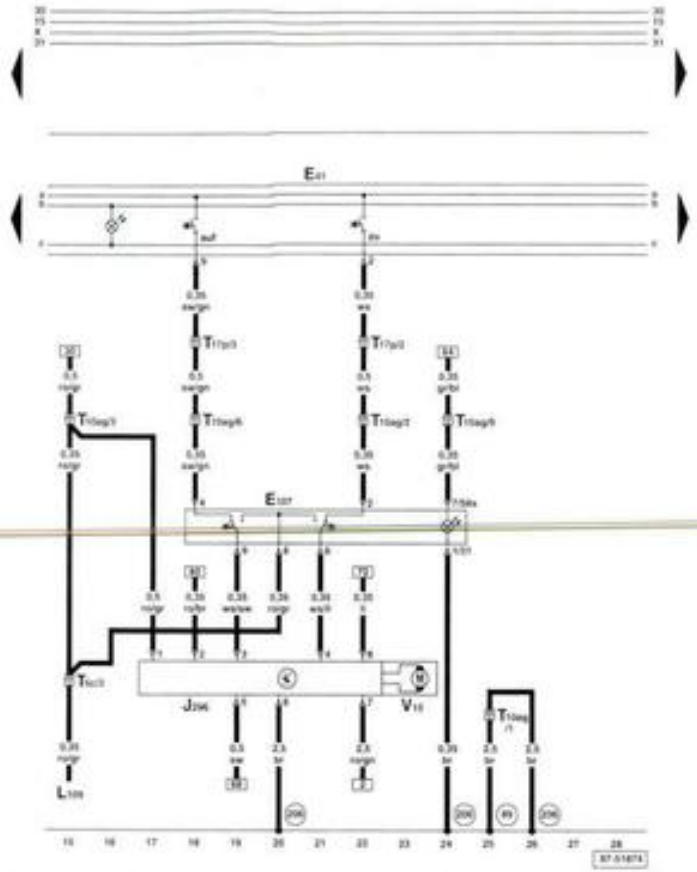







E40 - Left Front Window Switch
J295 - Left Front Power Window Control Module
L108 - Door opener lighting, driver side
S37 - Power Window Circuit Breaker Front
S43 - Power Window Circuit Breaker Rear
T8ch - Connector 8 pin, black, in driver's door
T10aq - Connector 10 pin, white, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10w - Connector 10 pin, red, in B pillar, right
T17p - Connector 17 pin, red, connector station A pillar, left
V14 - Left Window Motor

(14) - Ground connection, on left A pillar, lower part
(G) - Ground connection -1-, in power window wiring harness
(G1) - Ground connection, in driver's door wiring harness



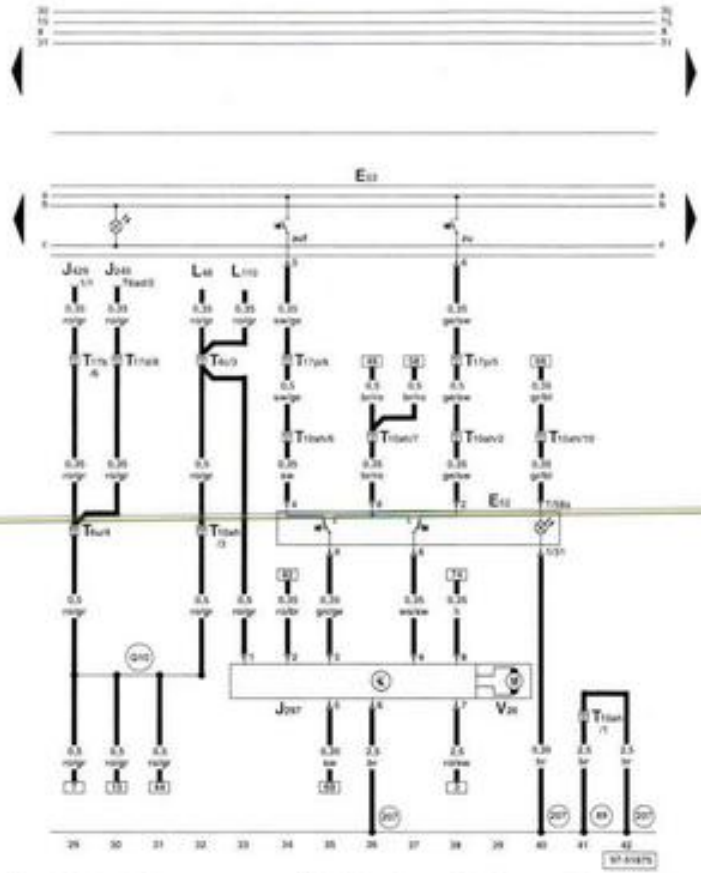
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E41 - Right Front Window Switch
E107 - Switch for window regulator, in passenger door
J386 - Right Front Power Window Control Module
L109 - Door opener lighting, passenger side
T5c - Connector 5 pin, black, in passenger's door
T10ag - Connector 10 pin, white, connector station A pillar, right
T17p - Connector 17 pin, red, connector station A pillar, left
V15 - Right Window Motor

(93) - Ground connection 1, in power window wiring harness
(206) - Ground connection, in passenger's door wiring harness



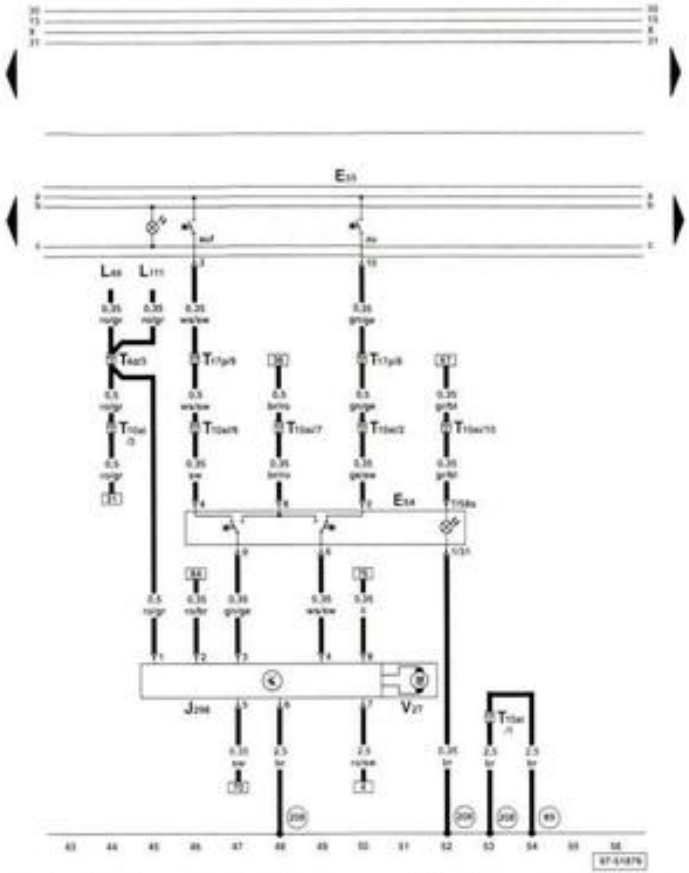




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E52 - Left Rear Window Switch, in LR Door
E53 - Left Rear Window Switch, in Console
J245 - Power Sunroof Control Module
J297 - Left Rear Power Window Control Module
J429 - Control module for central locking
L68 - Left Rear Ashtray Light
L110 - Door opener lighting, left rear
T4c - Connector 4 pin, black, in left rear door
T6u - Connector 6 pin, grey, connector station A pillar, left
T6ad - Connector 6 pin, blue, on power sunroof control module
T10ah - Connector 10 pin, red, in B pillar, left
T17b - Connector 17 pin, black, connector station A pillar, right
T17g - Connector 17 pin, grey, connector station A pillar, left
T17p - Connector 17 pin, red, connector station A pillar, left
V26 - Motor for Window regulator, rear, left

(93) - Ground connection 1, in power window wiring harness
(206) - Ground connection, in left rear door wiring harness
(J10) - Plus connection (87), in power window/central locking system and door contact switch wiring harness



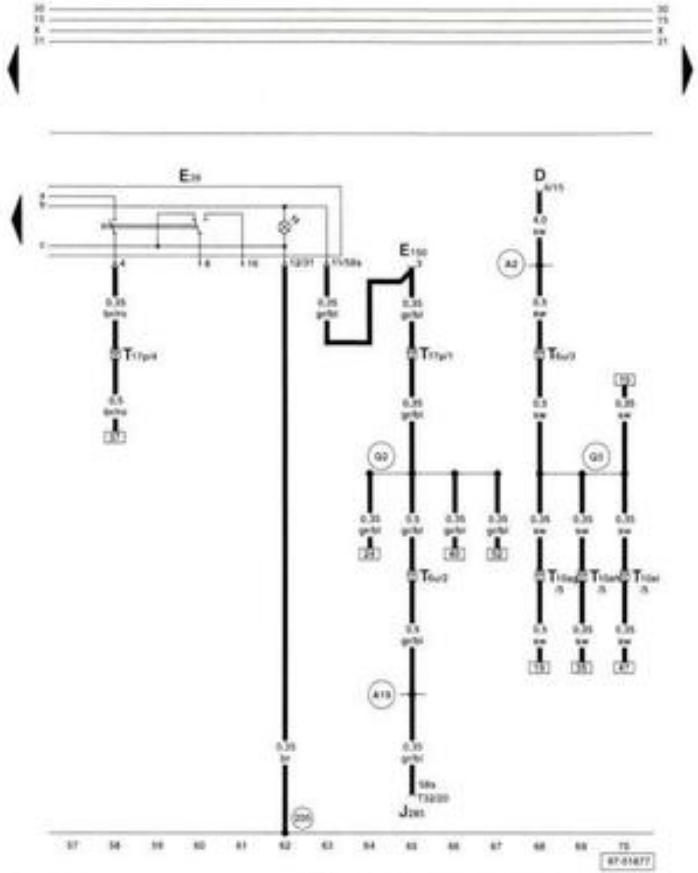
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E54 - Right Rear Window Switch, (in RR Door)
E55 - Right Rear Window Switch, (in Console)
J386 - Right Rear Power Window Control Module
L49 - Right Rear Ashtray Light
L131 - Door opener lighting, right rear
T4d - Connector 4 pin, black, in right rear door
T10e - Connector 10 pin, red, in B pillar, right
T17p - Connector 17 pin, red, connector station A pillar, left
V27 - Right Rear Door Window Motor

(55) - Ground connection -1-, in power window wiring harness
(206) - Ground connection, in right rear door wiring harness



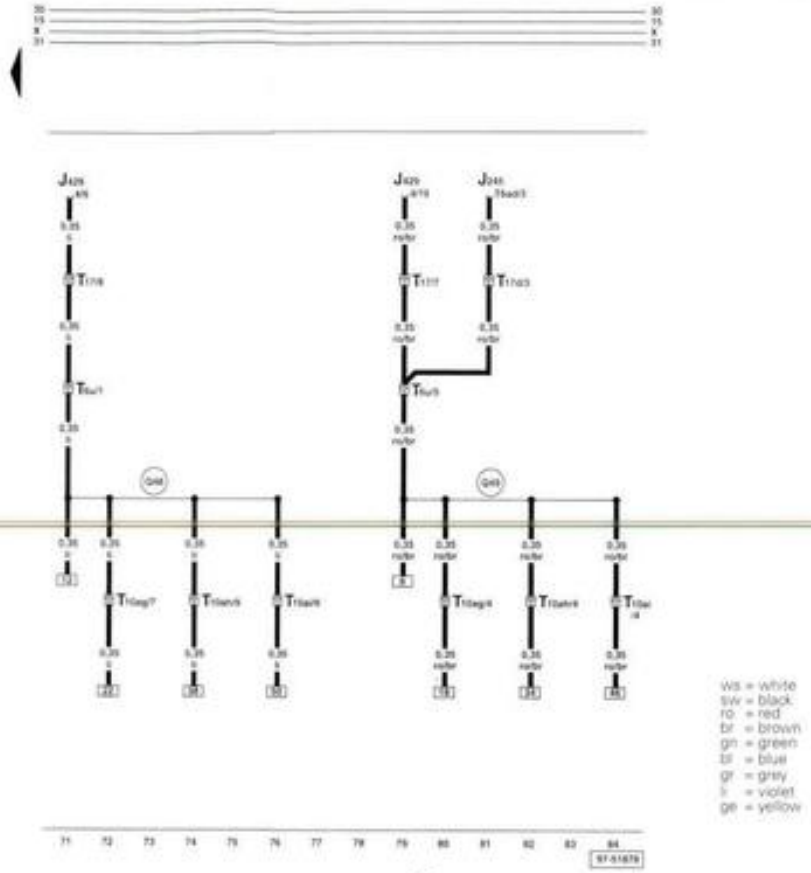




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D - Ignition/Starter Switch
E39 - Window Lockout Switch
E150 - Switch for interior lock, driver side
J285 - Control Module With Display Unit In Instrument Cluster
T6u - Connector 6 pin, grey, connector station A pillar, left
T10ag - Connector 10 pin, white, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10e - Connector 10 pin, red, in B pillar, right
T17p - Connector 17 pin, red, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster

(206) - Ground connection, in driver's door wiring harness
(A2) - Plus connection (15), in instrument panel wiring harness
(A15) - Wire connection (58b), in instrument panel wiring harness
(Q2) - Plus connection (58), in power window wiring harness
(Q3) - Plus connection (75a), in power window wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J245 - Power Sunroof Control Module
J429 - Control module for central locking
T6u - Connector 6 pin, grey, connector station A pillar, left
T6ad - Connector 6 pin, blue, on power sunroof control module
T10ag - Connector 10 pin, white, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10ai - Connector 10 pin, red, in B pillar, right
T17 - Connector 17 pin, orange, connector station A pillar, right
T17d - Connector 17 pin, grey, connector station A pillar, left

(Q48) - Connection (open), in wiring harness interior
(Q49) - Connection (closed), in wiring harness interior





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## Level Control System

2002 m. y.

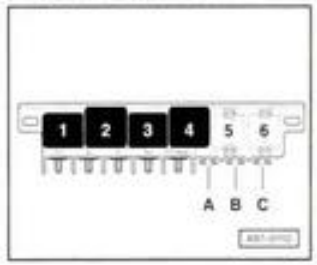
**Fuse Panel**

**Fuse Colors:**

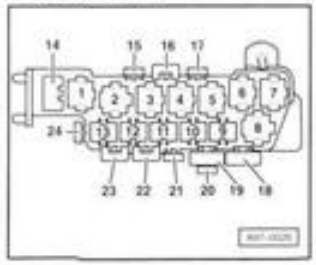
30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**Micro Central Electric Panel**




**8 - Fold Relay Panel**

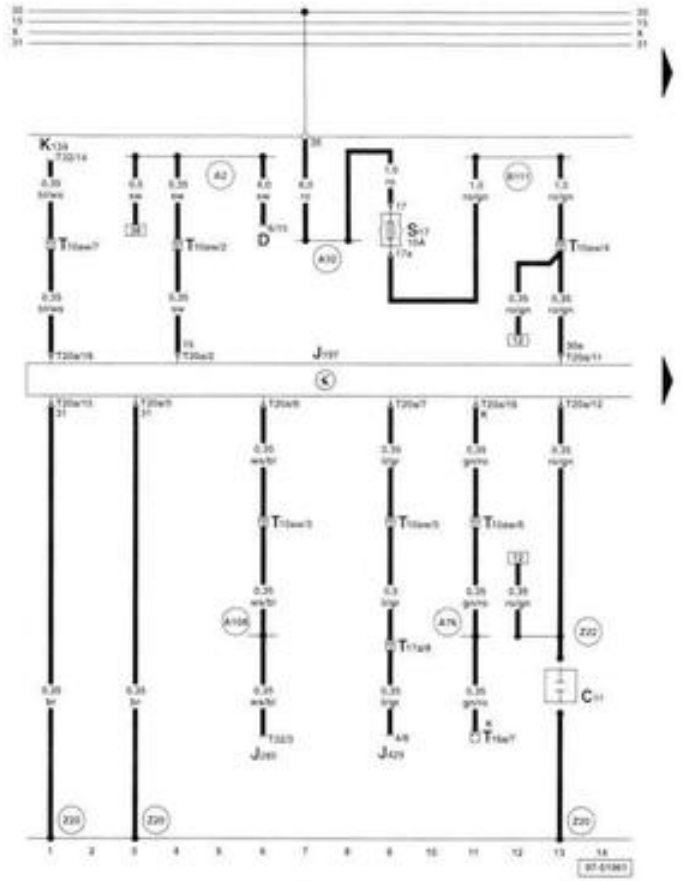



**Fuse Location:**

23 Self-Leveling System Fuse, S10

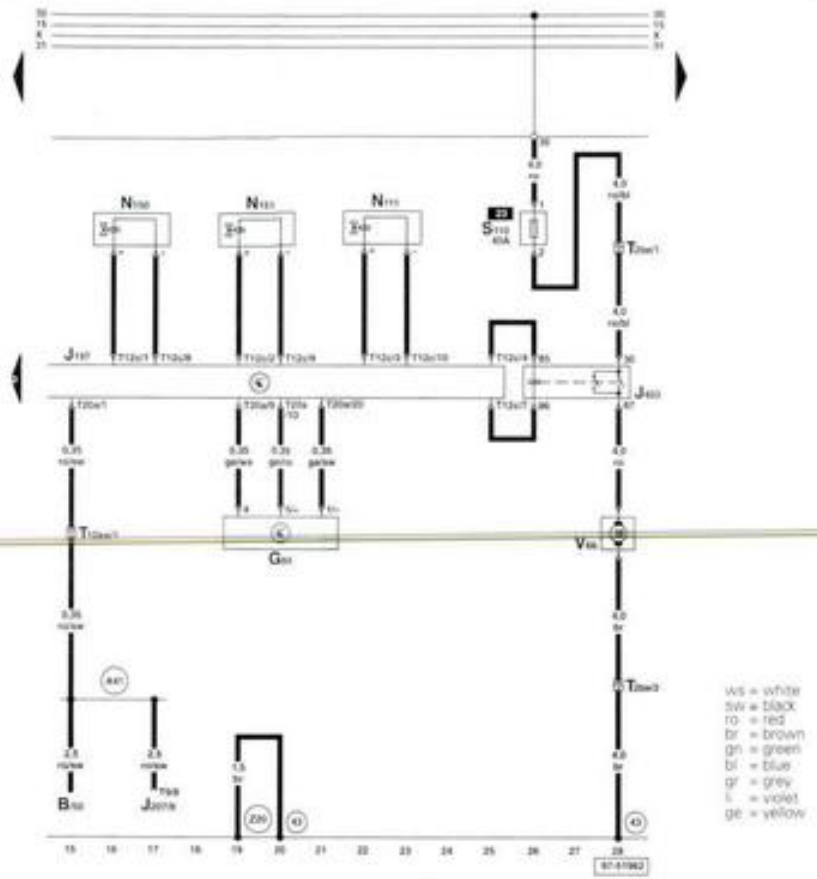







C11 - Capacitor
D - Ignition/Starter Switch
J197 - Level Control System Control Module
J285 - Control Module With Display Unit In Instrument Cluster
J428 - Control module for central locking
K134 - Indicator lamp for level control system
S17 - Fuse
T10aw - Connector 10 pin, black, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T17a - Connector 17 pin, brown, connector station A pillar, right
T20a - Connector 20 pin, red, on Control Module for Level Control
T32 - Connector 32 pin, blue, on instrument cluster

- Plus connection (15), in instrument panel wiring harness
- Plus connection (30), in instrument panel wiring harness
- Connector (K-diagnosis wire), in instrument panel wiring harness
- Connector (speed signal), in instrument panel wiring harness
- Connector (56a), in wiring harness interior
- Wire connection, in self leveling wiring harness
- Plus connection (30), in self leveling System wiring harness

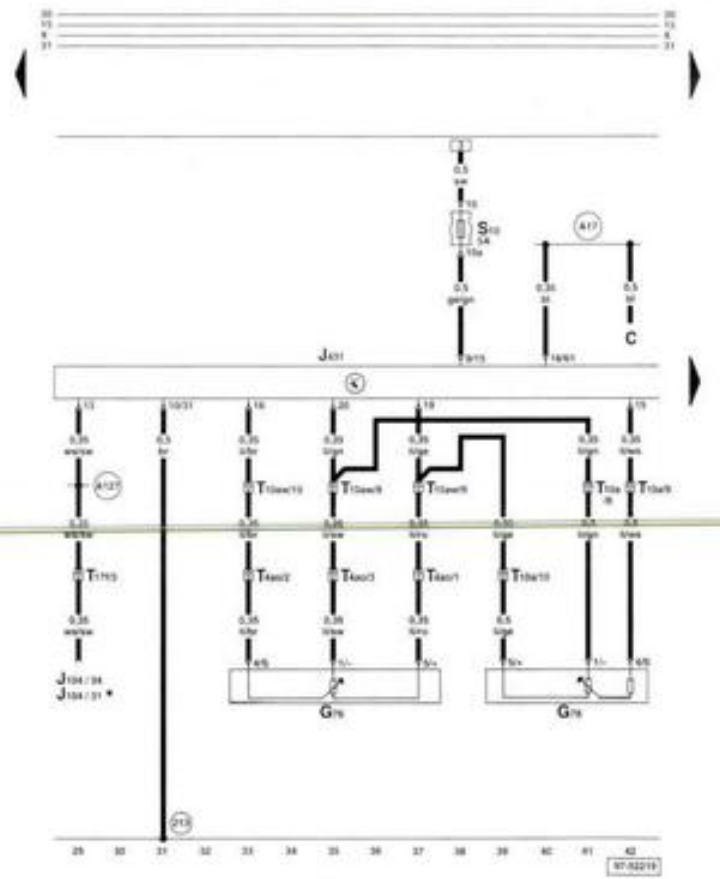



B - Starter
G84 - Level Control System Sensor (ESP)
J197 - Level Control System Control Module
J207 - Starting Interlock Relay
J403 - Relay for compressor level control system
N111 - Solenoid for level control system
N150 - Left Rear Suspension Strut Valve
N151 - Right Rear Suspension Strut Valve
S110 - Self Levelling System Fuse
T2se - Connector 2 pin, near Control Module for Level Control
T9 - Connector 9 pin, brown, on starting interlock relay
T10aw - Connector 10 pin, black, connector station A pillar, right
T12c - Connector 12 pin, red, on Control Module for Level Control
T20a - Connector 20 pin, red, on Control Module for Level Control
V66 - Level Control System Compressor Motor

(A1) - Ground connection, on right A pillar, lower part
(A4) - Plus connection (50), in instrument panel wiring harness
(A17) - Wire connection, in self levelling wiring harness

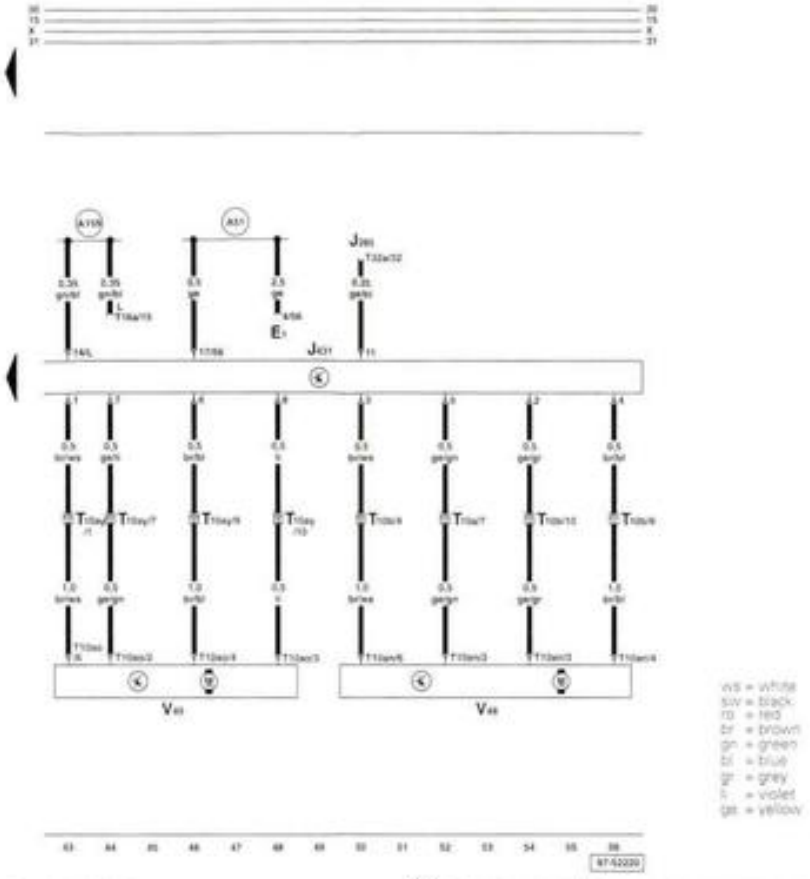







C - Generator (GEN)
G78 - Left Rear Level Control System Sensor
G79 - Left Front Level Control System Sensor
J104 - ABS Control Module (w/EDL)
J431 - Control module for Headlight Beam Adjusting
S10 - Fuse
T4ac - Connector 4 pin, black, below rear seat, left
T10a - Connector 10 pin, pink, connector station A pillar, left
T10aw - Connector 10 pin, black, connector station A pillar, right
T17f - Connector 17 pin, black, in B-Post Relay Panel behind the storage driver's side

(A1) - Ground connection, in instrument panel wiring harness
(A4) - Wire connection (87), in instrument panel wiring harness
(A17) - Connection (rear) wheel speed sensor, left rear) in harness for instrument cluster
* - only Allroad




E1 - Light switch
J285 - Control Module With Display Unit In Instrument Cluster
J431 - Control module for Headlight Beam Adjusting
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10dm - Connector 10 pin, on headlight, left
T10dn - Connector 10 pin, on headlight, right
T10dy - Connector 10 pin, pink, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T32a - Connector 32 pin, green, on instrument cluster
V48 - Left Headlight Beam Adjusting Motor
V49 - Right Headlight Beam Adjusting Motor

(A31) - Wire connection (56), in instrument panel wiring harness
(A155) - Connection (L) in instrument panel wiring harness



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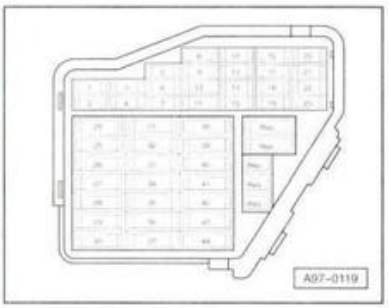
## Standard Equipment

2003 m.y.




**Fuse Panel**

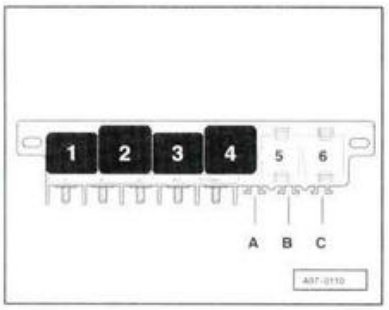
Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige
1 A - Black

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.



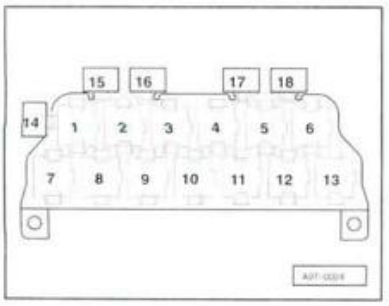





**Micro Central Electric Panel**

Relay Location:

1 - Dual Horn Relay, J4
2 - Load Reduction Relay, J59
4 - Fuel Pump (FP) Relay, J17
5 - Wiper/Washer Intermittent Relay, J31
6 - Wiper/Washer Intermittent Relay, J31



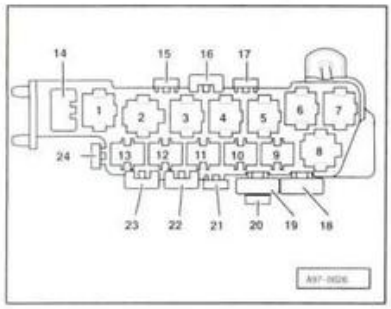

**13 - Fold Relay Panel**

Relay Location:

4 - Starting Interlock Relay, J207
6 - Fog Light Relay, J5

## Audi A6

**Wiring Diagram** — **No. 1/3**




**8 - Fold Relay Panel**

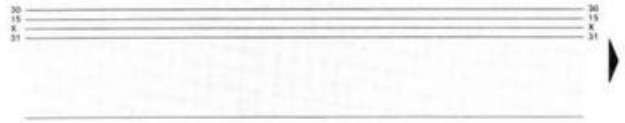
Fuse Location

15 - Fuse for Luggage Compartment Socket, S184



## Audi A6

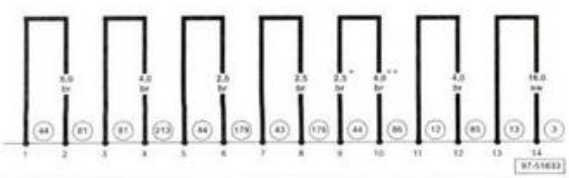
**Wiring Diagram** — **No. 1/4**




**Ground Connections**

- (3) - Ground strap, engine to body
- (12) - Ground connection, in engine compartment, left
- (13) - Ground connection, in engine compartment, right
- (43) - Ground connection, on right A-pillar, lower part
- (44) - Ground connection, on left A-pillar, lower part
- (81) - Ground connection -1-, in instrument panel wiring harness
- (85) - Ground connection -1-, in engine compartment wiring harness
- (86) - Ground connection -1-, in rear wiring harness
- (176) - Ground connection, in right headlight wiring harness
- (179) - Ground connection, in left headlight wiring harness
- (213) - Ground connection, in instrument panel wiring harness

* - Vehicles without Trailer Socket
** - Vehicles with Trailer Socket



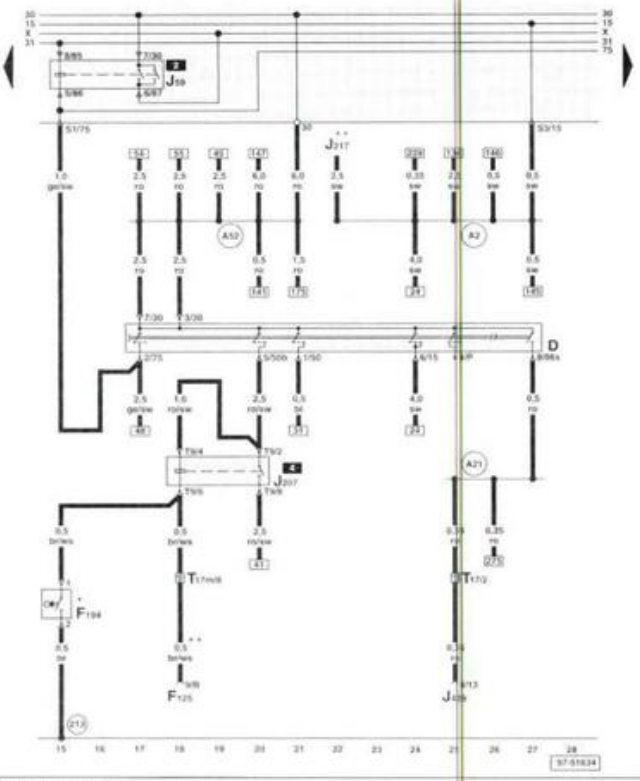

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

*Standard Equipment (2003)*

## Audi A6

**Wiring Diagram**

**No. 1/5**



**Ignition/Starter Switch, Load Reduction Relay, Clutch Pedal Position Switch**

D - Ignition/Starter Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
J59 - Load Reduction Relay
J207 - Starting Interlock Relay
J217 - Transmission Control Module (TCM)
J429 - Control module for central locking
T9 - Connector 9 pin, brown, on starting interlock relay
T17 - Connector 17 pin, orange, connector station A pillar, right
T17m - Connector 17 pin, blue, connector station A pillar, right

(213) - Ground connection, in instrument panel wiring harness
(A2) - Plus connection (15), in instrument panel wiring harness
(A21) - Wire connection (86s), in instrument panel wiring harness
(A52) - Plus connection 2 (30), in instrument panel wiring harness

* - Vehicles with manual transmission
** - Vehicles with automatic transmission

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

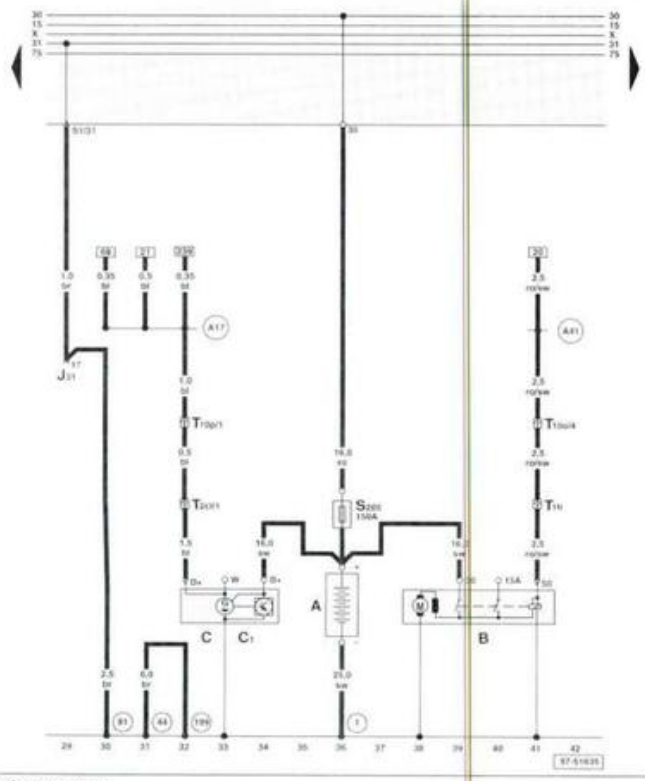
USA.5604.03.21

Edition 05/03

## Audi A6

**Wiring Diagram**

**No. 1/6**



**Battery, Starter, Generator**

A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
J31 - Wiper/Washer Intermittent Relay
S205 - Fuse 2 (30)
T1h - Single connector, black, in engine compartment, right
T2cl - Connector 2 pin, black, in engine compartment, right
T10a - Connector 10 pin, brown, connector station electronic box plenum chamber
T10b - Connector 10 pin, black, connector station electronic box plenum chamber

(1) - Ground strap, battery to body
(44) - Ground connection, on left A-pillar, lower part
(81) - Ground connection -1-, in instrument panel wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(A17) - Wire connection (61), in instrument panel wiring harness
(A41) - Plus connection (58), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

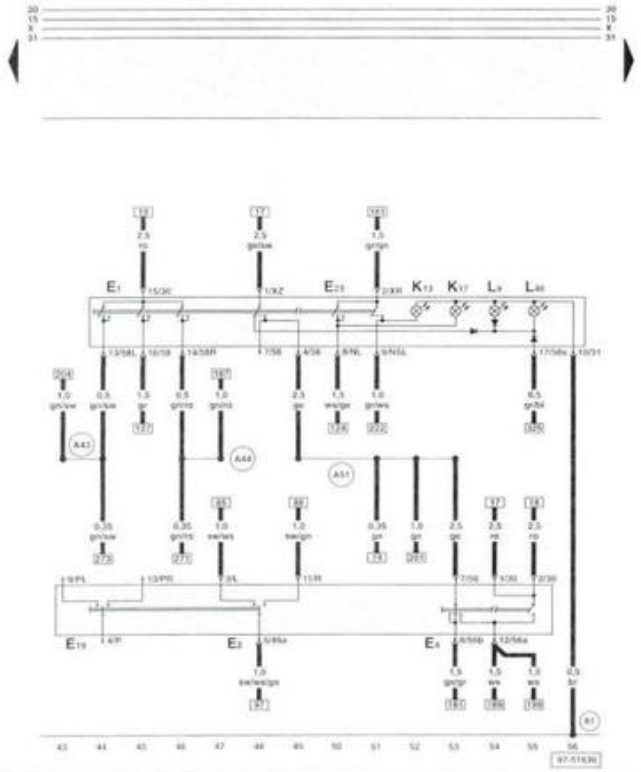
USA.5604.03.21

Edition 05/03

## Audi A6

**Wiring Diagram**

## No. 1/7



**Light Switch, Headlight Dimmer/Flasher Switch, Park Light Switch, Fog Light Switch**

E1 - Light switch
E2 - Turn Signal Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light

(B1) - Ground connection -1-, in instrument panel wiring harness
(A42) - Wire connection (57h), in instrument panel wiring harness
(A43) - Wire connection (57t), in instrument panel wiring harness
(A51) - Wire connection (56), in instrument panel wiring harness

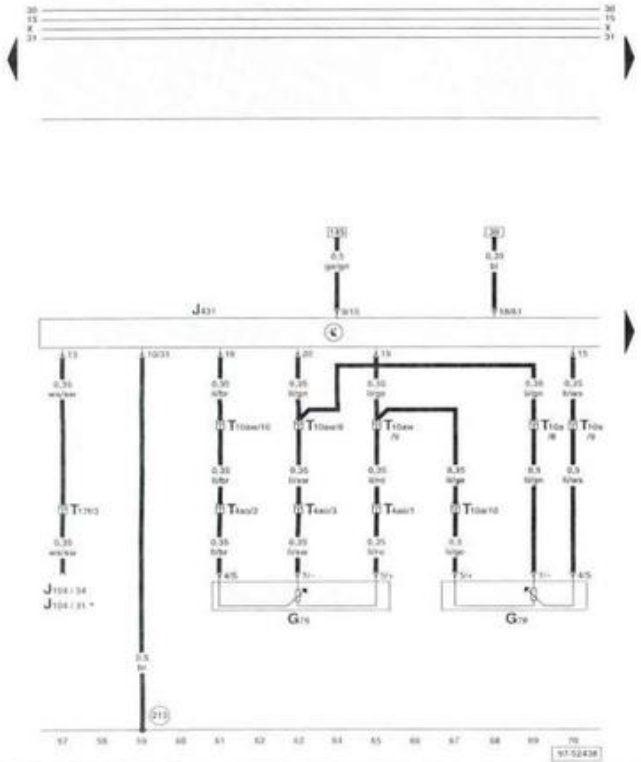
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 1/8



**Control Module for Headlight Beam Adjusting, Left Rear and Front Level Control System Sensor**

G76 - Left Rear Level Control System Sensor
G78 - Left Front Level Control System Sensor
J104 - ABS Control Module (w/EDL)
J431 - Control module for Headlight Beam Adjusting
T4as - Connector 4 pin, black, below rear seat, left
T10s - Connector 10 pin, pink, connector station A pillar, left
T10sw - Connector 10 pin, black, connector station A pillar, right
T17f - Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side

(211) - Ground connection, in instrument panel wiring harness

* - abroad only

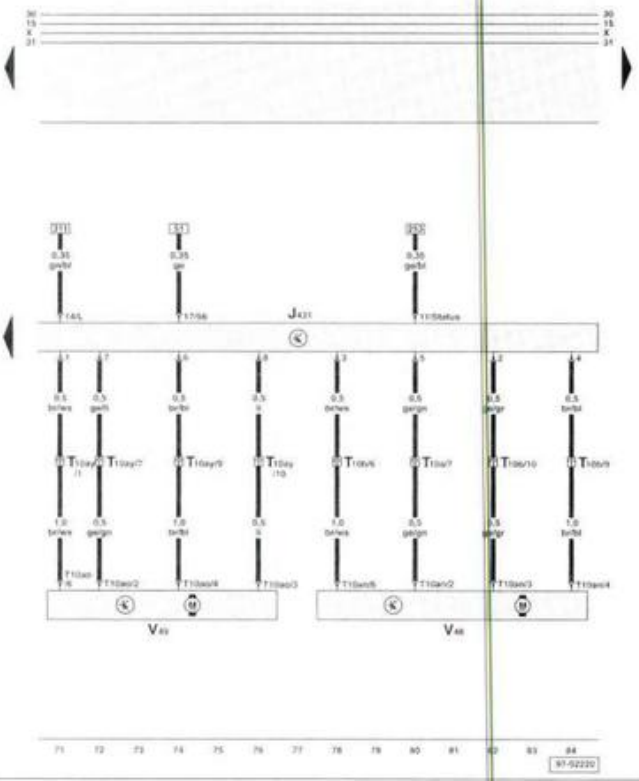
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

*Standard Equipment (2003)*

## Audi A6

**Wiring Diagram**

## No. 1/9



**Control Module for Headlight Beam Adjusting, Left and Right Headlight Beam Adjusting Motor**

- J431 - Control module for Headlight Beam Adjusting
- T10a - Connector 10 pin, pink, connector station A pillar, left
- T10b - Connector 10 pin, red, connector station A pillar, left
- T10an - Connector 10 pin, on headlight, left
- T10ao - Connector 10 pin, on headlight, right
- T10ay - Connector 10 pin, pink, connector station A pillar, right
- V48 - Left Headlight Beam Adjusting Motor
- V49 - Right Headlight Beam Adjusting Motor

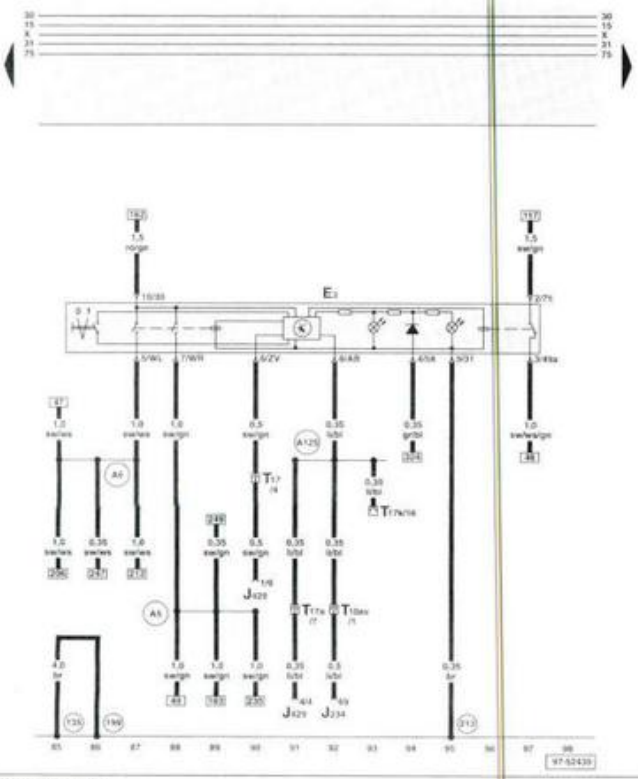
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 1/10



**Emergency Flasher Switch**

- E3 - Emergency Flasher Switch
- J234 - Airbag Control Module
- J429 - Control module for central locking
- T10av - Connector 10 pin, yellow, connector station A pillar, right
- T17 - Connector 17 pin, orange, connector station A pillar, right
- T17a - Connector 17 pin, brown, connector station A pillar, right
- T17t - Connector 17 pin, red, connector station electronic box plenum chamber

- (135) - Ground connection -2-, in instrument panel wiring harness
- (199) - Ground connection -3-, in instrument panel wiring harness
- (213) - Ground connection, in instrument panel wiring harness
- (A5) - Plus connection (right turn signal), in instrument panel wiring harness
- (A6) - Plus connection (left turn signal), in instrument panel wiring harness
- (J17) - Connection (crash signal) in instrument panel wiring harness

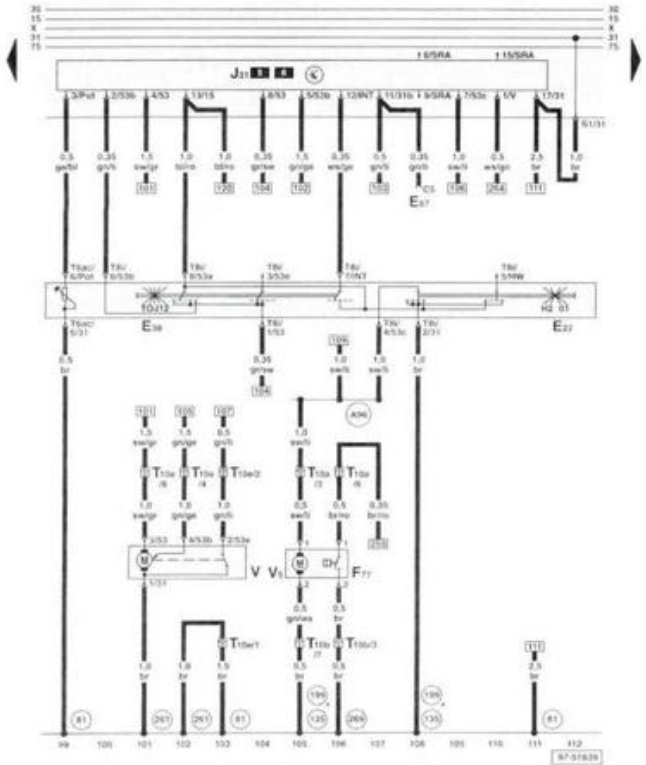
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 1/11

**Windshield Wiper Motor, Windshield Washer Pump**



E22 - Windshield Wiper/Washer Switch
E36 - Windshield Wiper Intermittent Regulator
E87 - A/C Control Head
F77 - Windshield Washer Fluid Level Warning Switch
J31 - Wiper/Washer Intermittent Relay
T6ac - Connector 6 pin, brown, on windshield wiper intermittent regulator
T8 - Connector 8 pin, black, on windshield wiper/washer switch
T10a - Connector 10 pin, pink, connector station A pillar, left
T10b - Connector 10 pin, red, connector station A pillar, left
T10e - Connector 10 pin, violet, connector station A pillar, left
V - Windshield Wiper Motor
V5 - Windshield Washer Pump

(81) - Ground connection -1-, in instrument panel wiring harness
(135) - Ground connection -2-, in instrument panel wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(261) - Ground connection, in wiring harness heated spray jet
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(A96) - Connector (53a), in instrument panel wiring harness

* - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

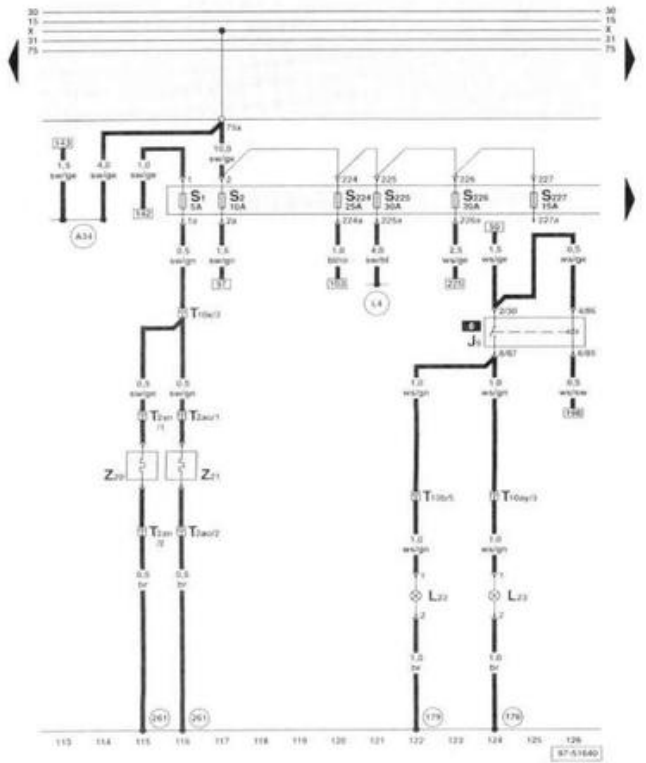


## Audi A6

**Wiring Diagram**

## No. 1/12

**Fuse Holder, Washer Jets, Fog Light**



J5 - Fog Light Relay
L22 - Left Front Fog Light
L23 - Right Front Fog Light
S1 - Fuse
S2 - Fuse
S224 - Fuse 24 in fuse holder
S225 - Fuse 25 in fuse holder
S226 - Fuse 26 in fuse holder
S227 - Fuse 27 in fuse holder
T2an - Connector 2 pin, washer jet, left
T2ao - Connector 2 pin, washer jet, right
T10b - Connector 10 pin, red, connector station A pillar, left
T10e - Connector 10 pin, violet, connector station A pillar, left
T10ay - Connector 10 pin, pink, connector station A pillar, right
Z20 - Left Washer Nozzle Heater
Z21 - Right Washer Nozzle Heater

(176) - Ground connection, in right headlight wiring harness
(179) - Ground connection, in left headlight wiring harness
(261) - Ground connection, in wiring harness heated spray jet
(A34) - Wire connection (75x), in instrument panel wiring harness
(L4) - Wire connection (75alt), in A/C wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



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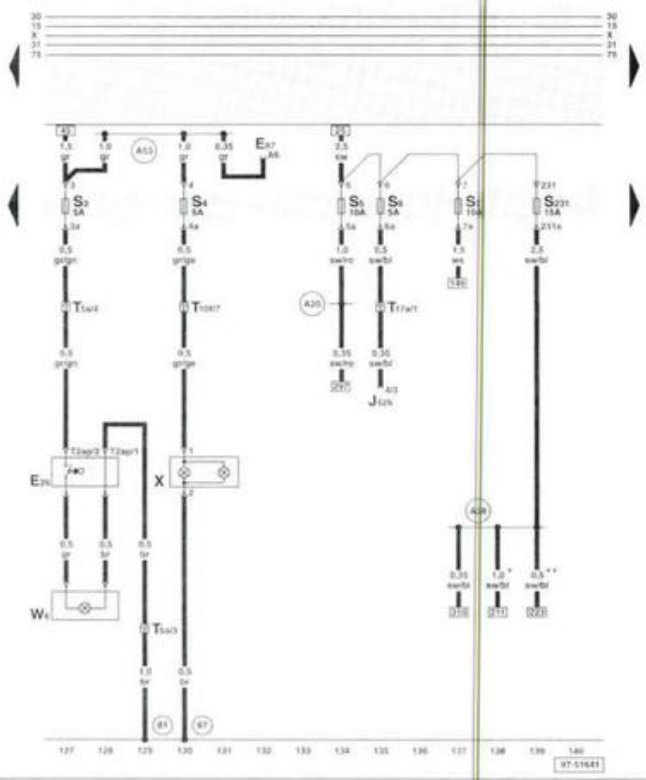
## Audi A6

**Wiring Diagram**

## No. 1/13



**Fuse Holder, License Plate Light, Glove Compartment Light**

- E26 - Glove compartment light
- E87 - A/C Control Head
- J429 - Control module for central locking
- S3 - Fuse
- S4 - Fuse
- S5 - Fuse
- S6 - Fuse
- S7 - Fuse
- S231 - Fuse 31 in fuse holder
- T2ap - Connector 2 pin, black, behind instrument panel, right
- T5a - Connector 5 pin, black, behind instrument panel, right
- T10t - Connector 10 pin, brown, connector station A pillar, left
- T17a - Connector 17 pin, brown, connector station A pillar, right
- W6 - Glove Compartment Light
- X - License Plate Light

- (61) - Ground connection -1-, in instrument panel wiring harness
- (67) - Ground connection -2-, in rear wiring harness
- (A20) - Wire connection (15a), in instrument panel wiring harness
- (A36) - Plus connection -2- (15a), in instrument panel wiring harness
- (A57) - Plus connection (58), in instrument panel wiring harness

* - Vehicles with manual transmission
** - Vehicles with automatic transmission

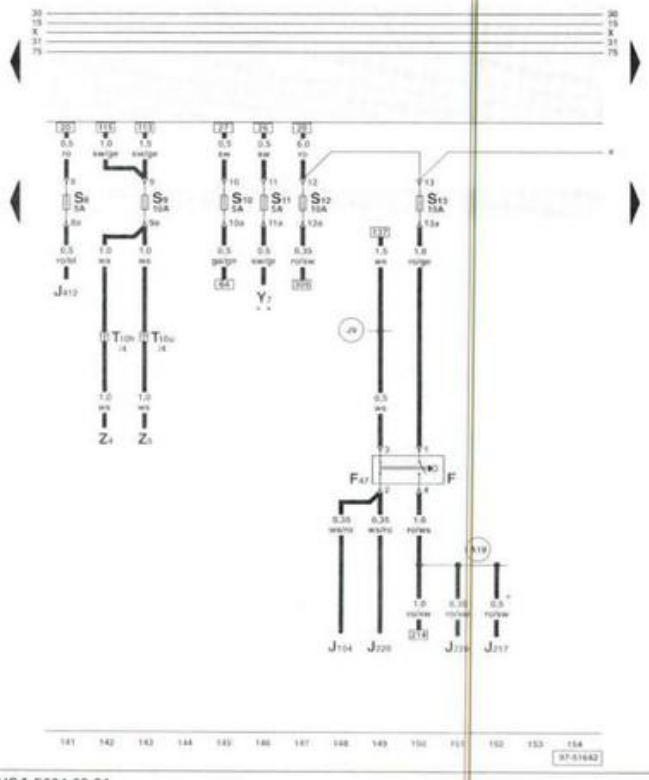
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 1/14



**Fuse Holder, Heated Mirror, Brake Light Switch**

- F - Brake Light Switch
- F47 - Brake Vacuum Vent Valve Switch for Cruise Control
- J104 - ABS Control Module (w/EDL)
- J217 - Transmission Control Module (TCM)
- J220 - Motronic Engine Control Module (ECM)
- J412 - Operating electronics and Telephone Control Module
- S8 - Fuse
- S9 - Fuse
- S10 - Fuse
- S11 - Fuse
- S12 - Fuse
- S13 - Fuse
- T10h - Connector 10 pin, black, connector station A pillar, left
- T10u - Connector 10 pin, black, connector station A pillar, right
- Y7 - Automatic daylight interior mirror
- Z4 - Heated outside mirror, driver side
- Z5 - Heated outside mirror, passenger side

- (A18) - Wire connection (54), in instrument panel wiring harness
- (J9) - Wire connection -1- (15a), in ABS wiring harness

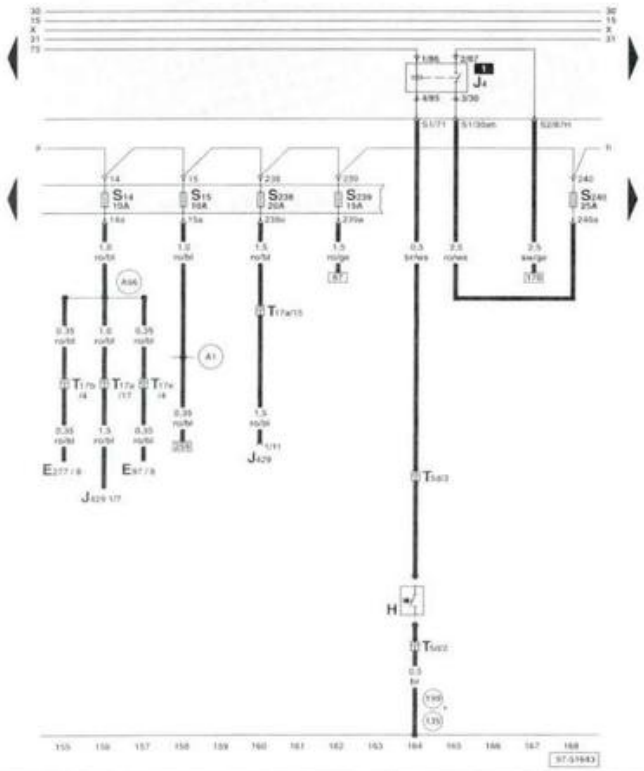
* - Vehicles with automatic transmission 01V
** - Vehicles with automatic daylight interior mirror

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 1/15



**Fuse Holder, Dual Horn Relay**

E97 - Driver's Seat Memory Program Control
E277 - Passenger's Seat Memory Program Control
H - Signal Horn Activation
J4 - Dual Horn Relay
J429 - Control module for central locking
S14 - Fuse
S15 - Fuse
S238 - Fuse 38 in fuse holder
S239 - Fuse 39 in fuse holder
S240 - Fuse 40 in fuse holder
T5d - Connector 5 pin, yellow, behind steering column switch cover
T17a - Connector 17 pin, brown, connector station A pillar, right
T17b - Connector 17 pin, black, connector station A pillar, right
T17e - Connector 17 pin, black, connector station A pillar, left

(135) - Ground connection -2-, in instrument panel wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(A1) - Plus connection (30a), in instrument panel wiring harness
(A66) - Connector (30a, central locking/anti-theft warning system/RL, in instrument panel wiring harness

* - both are possible

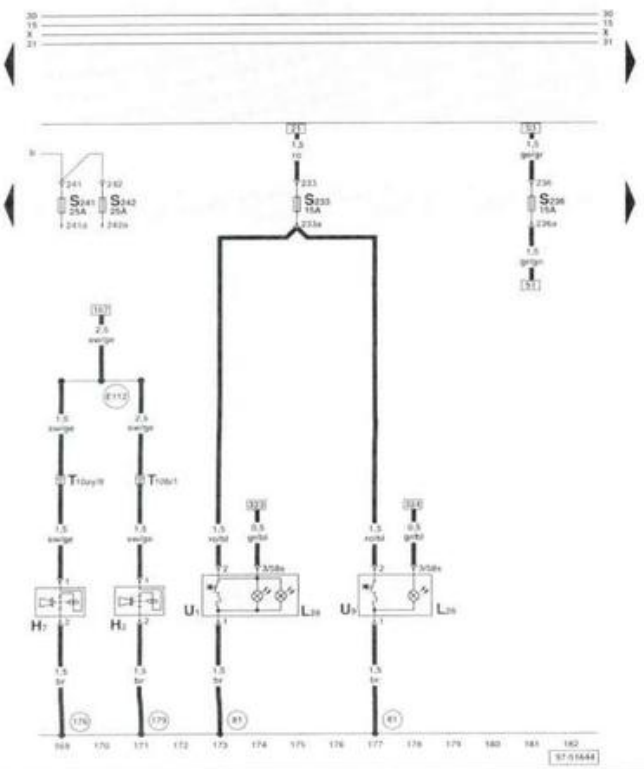
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 1/16



**Fuse Holder, Cigarette Lighter, High Tone Horn, Low Tone Horn**

H2 - High Tone Horn
H7 - Low Tone Horn
L28 - Cigarette Lighter Light
S233 - Fuse 33 in fuse holder
S236 - Fuse 36 in fuse holder
S241 - Fuse 41 in fuse holder
S242 - Fuse 42 in fuse holder
T10b - Connector 10 pin, red, connector station A pillar, left
T10day - Connector 10 pin, pink, connector station A pillar, right
U1 - Cigarette Lighter
U9 - Rear Cigarette Lighter

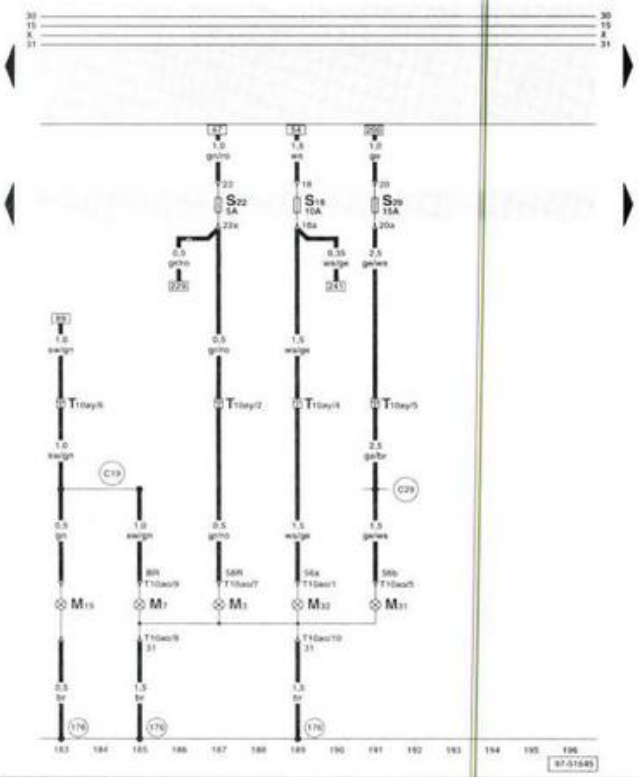
(81) - Ground connection -1-, in instrument panel wiring harness
(176) - Ground connection, in right headlight wiring harness
(179) - Ground connection, in left headlight wiring harness
(E112) - Connector (Horn - 87h), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 1/17



**Fuse Holder, Right Parking Light, Right Turn Signal Light, Right Low and High Beam Headlight**

M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right, Side Turn Signal Light
M31 - Right Low Beam Headlight
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right

(176) - Ground connection, in right headlight wiring harness
(C19) - Connector -1- (right turn signal), in wiring harness headlamp
(C29) - Connector -2- (56b), in wiring harness headlamp

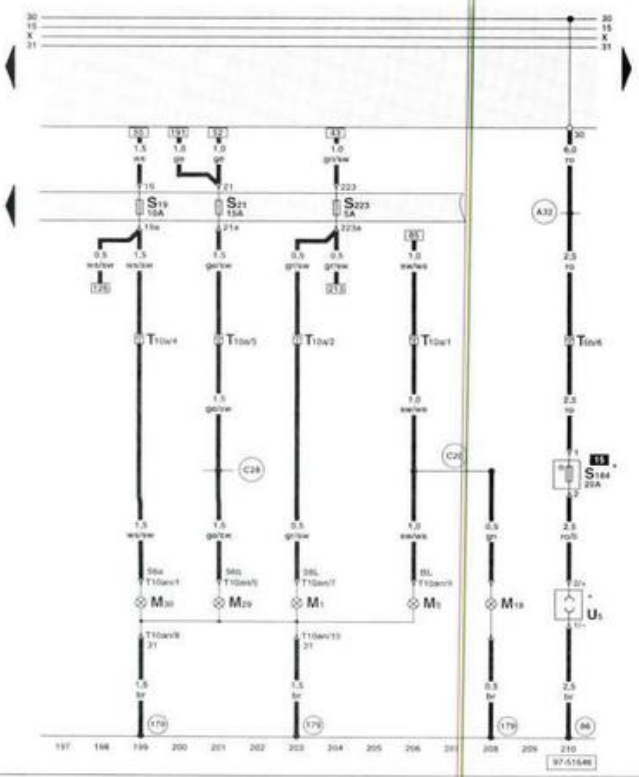
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 1/18



**Fuse Holder, Left Low and High Beam Headlight, Left Turn Signal Light, Left Parking Light, 12 V Sokket**

M1 - Left Parking Light
M5 - Left Front Turn Signal Light
M18 - Left, Side Turn Signal Light
M29 - Left Low Beam Headlight
M30 - Left High Beam Headlight
S19 - Fuse
S21 - Fuse
S184 - Power Outlet Fuse 1
S223 - Fuse 23 in fuse holder
T6b - Connector 6 pin, white, connector station A pillar, left
T10a - Connector 10 pin, pink, connector station A pillar, left
T10an - Connector 10 pin, on headlight, left
U5 - 12 V Socket

(86) - Ground connection -1-, in rear wiring harness
(179) - Ground connection, in left headlight wiring harness
(A32) - Plus connection (30), in instrument panel wiring harness
(C20) - Wire connection (left turn signal), in headlight wiring harness
(C26) - Connector -1- (56b), in wiring harness headlamp

* - Wagon only

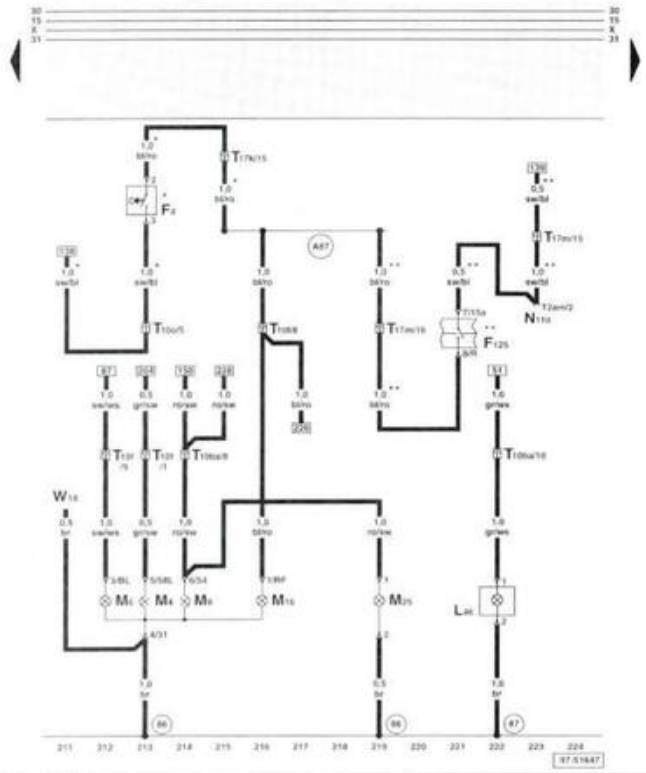
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 1/19

**Left Tail Light, Back-Up Light, High Mount Brake Light**



F4 - Back-Up Light Switch
F125 - Multi-Function Transmission Range (TR) Switch
L40 - Left Rear Fog Light
M4 - Left Tail Light
M6 - Left Rear Turn Signal Light
M9 - Left Brake Light
M16 - Left Back-Up Light
M25 - High-mount Brake Light
N110 - Shift Lock Solenoid
T2am - Connector 2 pin, black, on selector lever
T10f - Connector 10 pin, brown, connector station A pillar, left
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10ba - Connector 10 pin, blue, connector station A pillar, left
T17k - Connector 17 pin, red, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right
W18 - Luggage Compartment light, left

(86) - Ground connection -1-, in rear wiring harness
(87) - Ground connection -2-, in rear wiring harness
(A87) - Connector (RF), in instrument panel wiring harness

* - Vehicles with manual transmission
** - Vehicles with automatic transmission

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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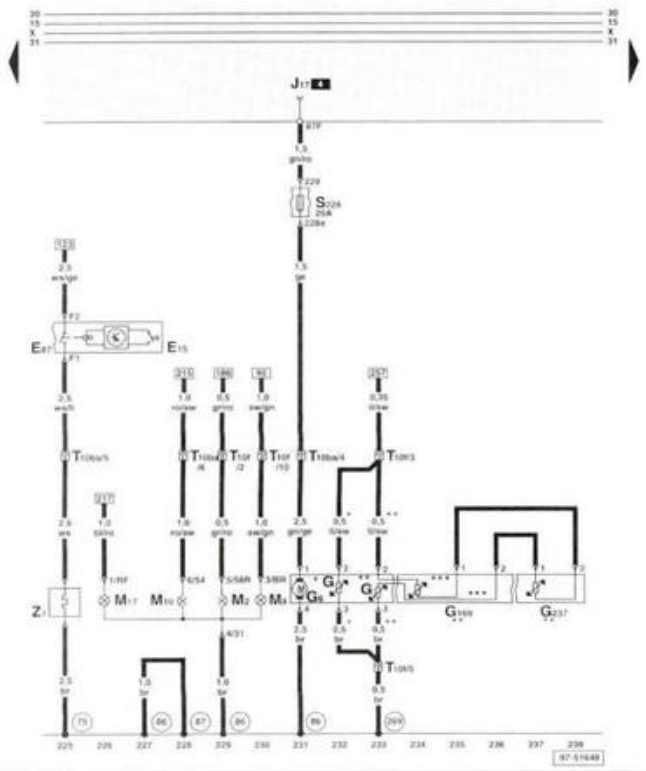
## Audi A6

**Wiring Diagram**

## No. 1/20

**Right Tail Light, Fuel Pump, Heated Rear Window**



E15 - Rear Window Defogger Switch
E87 - A/C Control Head
G - Sender for fuel gauge
G6 - Fuel Pump (FP)
G169 - Fuel Level Sensor 2
G237 - Sensor -3- for fuel supply
J17 - Fuel Pump (FP) Relay
M2 - Right Tail Light
M8 - Right Rear Turn Signal Light
M10 - Right Brake Light
M17 - Right Back-Up Light
S228 - Fuse 28 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
Z1 - Heated rear window

(75) - Ground connection, on right rear pillar
(86) - Ground connection -1-, in rear wiring harness
(87) - Ground connection -2-, in rear wiring harness
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness

* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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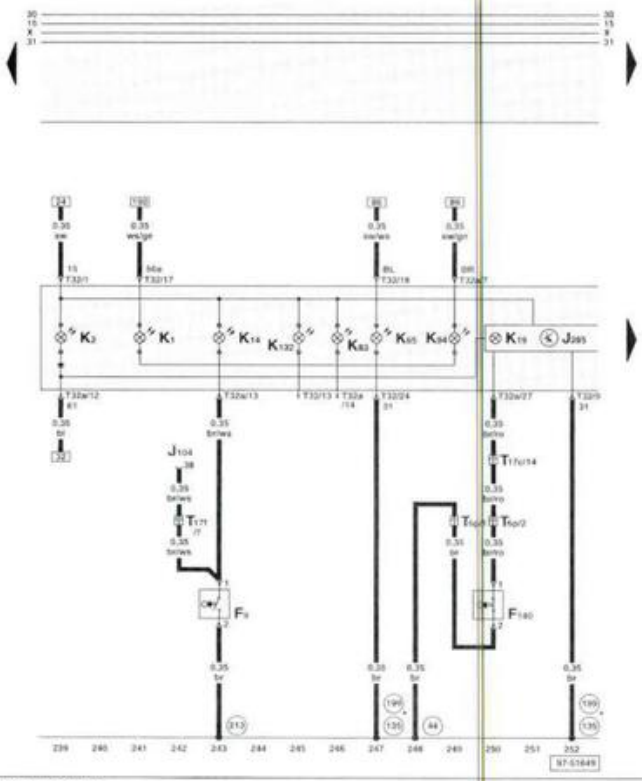
*Standard Equipment (2003)*

**Audi A6** | **Wiring Diagram** | **No. 1/21**



**Instrument Cluster, Indicator Light**

F9 - Parking Brake Warning Light Switch
F140 - Left Front Seatbelt Microswitch
J104 - ABS Control Module (w/EDL)
J285 - Control Module with indicator unit in instrument panel insert
K1 - Headlight High Beam Indicator Light
K2 - Generator (GEN) Warning Light
K14 - Parking Brake Indicator Light
K19 - Seat Belt Warning Light
K65 - Left Turn Signal Indicator Light
K83 - Malfunction Indicator Lamp (MIL)
K84 - Right Turn Signal Indicator Light
K132 - Electronic Power Control (EPC) Warning Lamp
T6p - Connector 6 pin, red, below driver's seat
T17c - Connector 17 pin, green, connector station A-pillar, right
T17f - Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(44) - Ground connection, on left A-pillar, lower part
(135) - Ground connection -2-, in instrument panel wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(213) - Ground connection, in instrument panel wiring harness

* - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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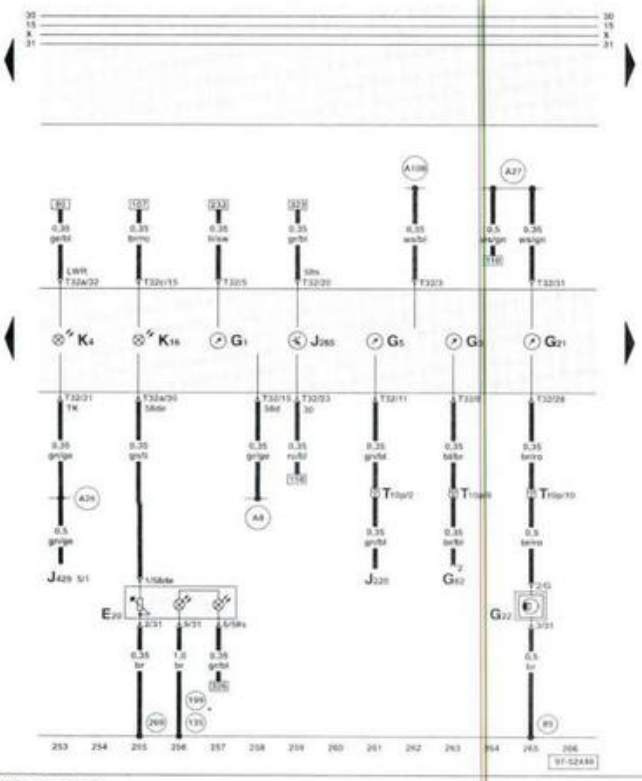
**Audi A6** | **Wiring Diagram** | **No. 1/22**



**Instrument Cluster, Fuel Gauge, Tachometer, Speedometer, Instrument Panel Light Dimmer Switch**

E20 - Instrument Panel Light Dimmer Switch
G1 - Fuel Gauge
G2 - Engine Coolant Temperature (ECT) Gauge
G5 - Tachometer
G21 - Speedometer
G22 - Speedometer Vehicle Speed Sensor (VSS)
G62 - Engine Coolant Temperature (ECT) Sensor
J220 - Motronic Engine Control Module (ECM)
J285 - Control Module with indicator unit in instrument panel insert
J429 - Control module for central locking
K4 - Park Light Indicator Light
K16 - Fuel Reserve Warning Light
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster

(85) - Ground connection -1-, in engine compartment wiring harness
(135) - Ground connection -2-, in instrument panel wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(A6) - Plus connection (58d), in instrument panel wiring harness
(A26) - Wire connection (driver's door contact switch), in instrument panel wiring harness
(A27) - Wire connection (vehicle speed signal), in instrument panel wiring harness
(A106) - Connector (speed signal), in instrument panel wiring harness

* - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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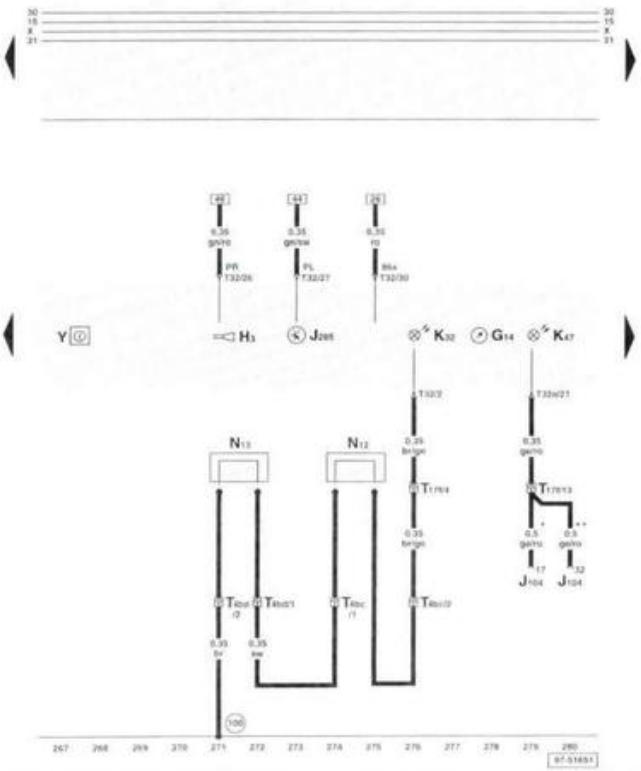
## Audi A6

**Wiring Diagram**

## No. 1/23




**Instrument Cluster, Analog Clock, Brake Pad Wear Indicator**

- G14 - Voltmeter
- H3 - Warning Buzzer
- J104 - ABS Control Module (w/EDL)
- J285 - Control Module with indicator unit in instrument panel insert
- K32 - Brake Pad Wear Indicator Light
- K47 - ABS Warning Light
- N12 - Right Brake Pad Wear Indicator (Shear Element)
- N13 - Left Brake Pad Wear Indicator (Shear Element)
- T4bc - Connector 4 pin, black, for Left Front ABS Wheel Speed Sensor
- T4bd - Connector 4 pin, black, for Right Front ABS Wheel Speed Sensor
- T17f - Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side
- T32 - Connector 32 pin, blue, on instrument cluster
- T32a - Connector 32 pin, green, on instrument cluster
- Y - Analog Clock

(100) - Ground connection -1-, in ABS wiring harness

* - Vehicles with ABS 5.7

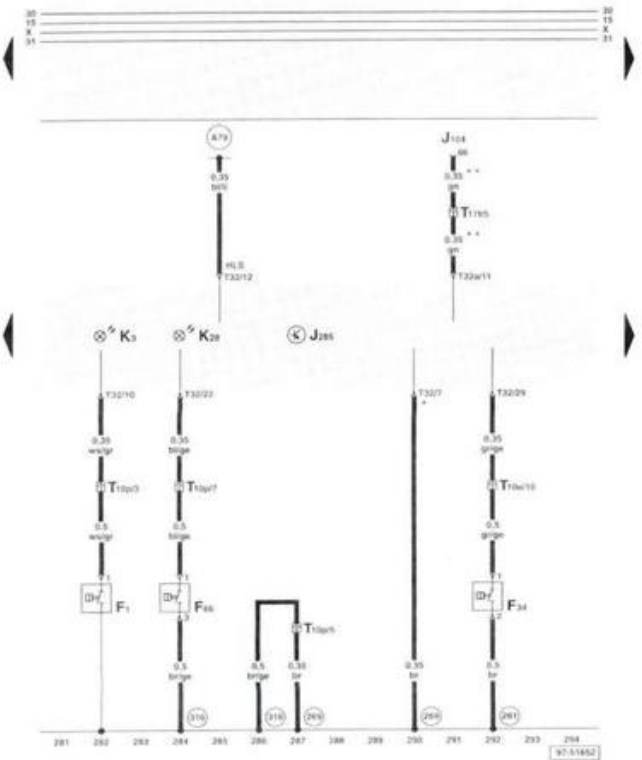
** - Vehicles with ABS 5.3, allroad



## Audi A6

**Wiring Diagram**

## No. 1/24




**Instrument Cluster, Oil Pressure Switch, Engine Coolant Level Warning Switch, Brake Fluid Level Warning Switch**

- F1 - Oil Pressure Switch
- F34 - Brake Fluid Level Warning Switch
- F66 - Engine Coolant Level (ECL) Warning Switch
- J104 - ABS Control Module (w/EDL)
- J285 - Control Module with indicator unit in instrument panel insert
- K3 - Oil Pressure Warning Light
- K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
- T10e - Connector 10 pin, violet, connector station A pillar, left
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- T17f - Connector 17 pin, black, in B-Fold Relay Panel behind the storage driver's side
- T32 - Connector 32 pin, blue, on instrument cluster
- T32a - Connector 32 pin, green, on instrument cluster

(261) - Ground connection, in wiring harness heated spray jet

(262) - Ground connector (sensor ground) -1-, in instrument panel wiring harness

(316) - Sensor Ground Connection 2 (in engine wiring harness)

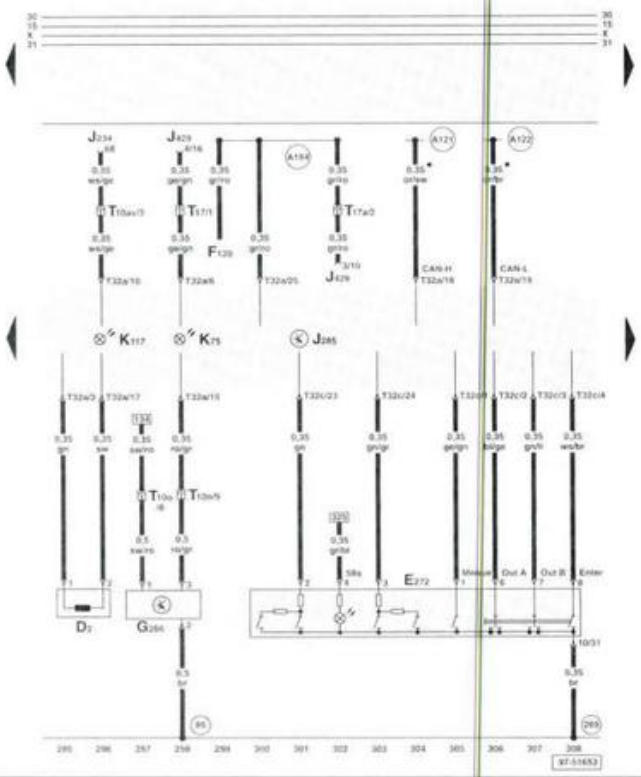
(A79) - Connector (engine overheat warning light), in instrument panel wiring harness

* - Exit Sensor Ground

** - Vehicles with ABS 5.3, allroad

*Standard Equipment (2003)*

**Audi A6** **Wiring Diagram** **No. 1/25**



**Instrument Cluster, Oil Level Thermal Sensor, Function Selector Switch II**

D2 - Induction coil of antitheft immobilizer
E272 - Board Computer Function Selector Switch II, in console
F120 - Hood Alarm Switch
G266 - Oil Level Thermal Sensor (SRI)
J234 - Airbag Control Module
J285 - Control Module with indicator unit in instrument panel insert
J429 - Control module for central locking
K75 - Airbag Malfunction Indicator Lamp (MIL)
K117 - Warning light for anti-theft immobilizer sensor
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10av - Connector 10 pin, yellow, connector station A pillar, right
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster
T32c - Connector 32 pin, grey, on instrument cluster

(85) - Ground connection -1-, in engine compartment wiring harness
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
(A121) - Connection (high bus) in instrument panel wiring harness
(A122) - Connection (low bus) in instrument panel wiring harness
(A154) - Front Hood Contact Switch Connection (in instrument panel wiring harness)

* - CAN-Bus (Data-Bus)

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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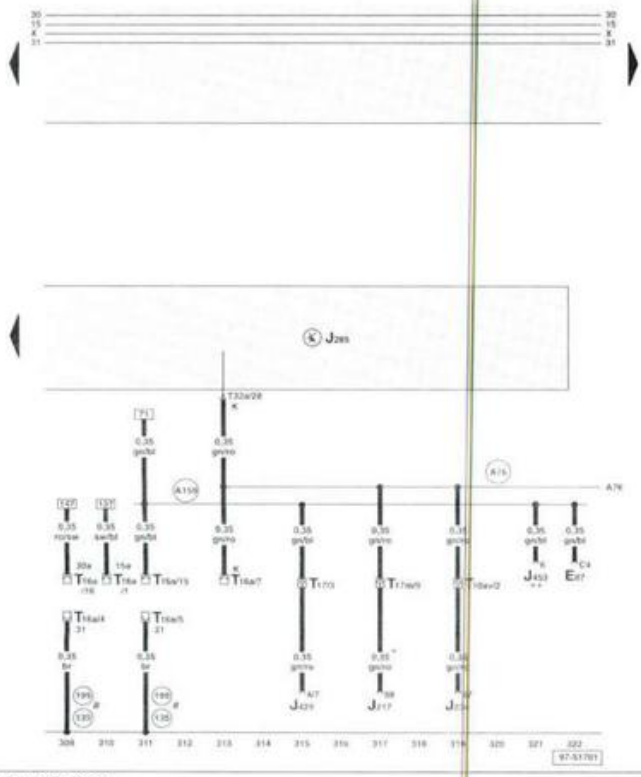
**Audi A6** **Wiring Diagram** **No. 1/26**



**Instrument Cluster, Data Link Connector (DLC)**

E87 - A/C Control Head
J217 - Transmission Control Module (TCM)
J234 - Airbag Control Module
J285 - Control Module with indicator unit in instrument panel insert
J429 - Control module for central locking
J453 - Control module for multi-function steering wheel
T10av - Connector 10 pin, yellow, connector station A pillar, right
T16a - Connector 16 pin, Data Link Connector (DLC)
T17 - Connector 17 pin, orange, connector station A pillar, right
T17m - Connector 17 pin, blue, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster

(135) - Ground connection -2-, in instrument panel wiring harness
(190) - Ground connection -3-, in instrument panel wiring harness
(A76) - Connector (K-diagnosis wire), in instrument panel wiring harness
(A155) - Connection (L) (in instrument panel wiring harness)

* - Vehicles with automatic transmission
** - Vehicles with multi-function steering wheel
# - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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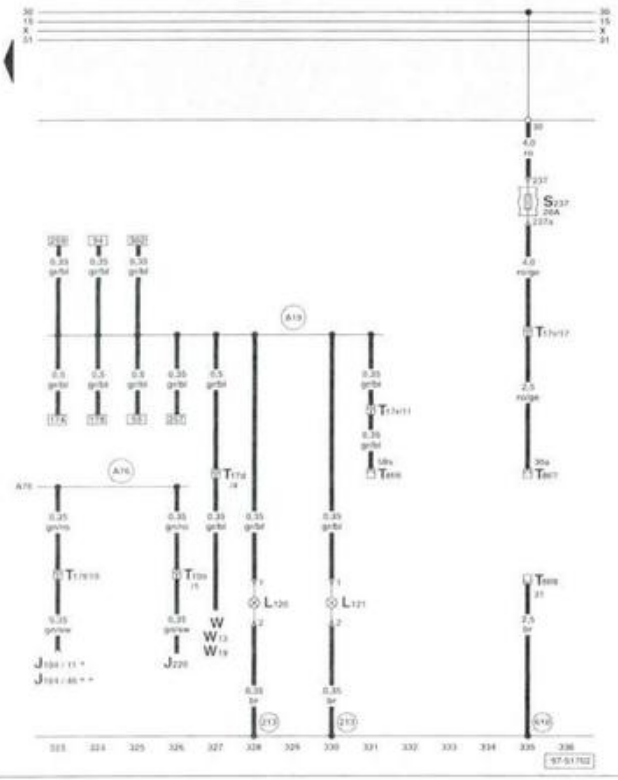
**Audi A6** **Wiring Diagram** **No. 1/27**



**Connector Radio, Storage Compartment Illumination, Cup Holder Illumination**

- J104 - ABS Control Module (w/EDL)
- J220 - Motronic Engine Control Module (ECM)
- L120 - Storage Compartment Illumination
- L121 - Cup Holder Illumination
- S237 - Fuse 37 in fuse holder
- T8f - Connector 8 pin, black, connector radio III
- T10b - Connector 10 pin, brown, connector station electronic box plenum chamber
- T17d - Connector 17 pin, grey, connector station A pillar, left
- T17f - Connector 17 pin, black, in 8-Fold Relay Panel behind the storage driver's side
- T17r - Connector 17 pin, white, behind instrument panel, center
- W - Front Interior Light
- W12 - Passenger's Map/Reading Light
- W19 - Left Front Reading Light

(213) - Ground connection, in instrument panel wiring harness

(610) - Ground connection (radio) under center console, front

(A19) - Wire connection (58s), in instrument panel wiring harness

(A76) - Connector (K diagnosis wire), in instrument panel wiring harness

* - ABS 5.7

** - ABS 5.3, allroad

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

97-51702

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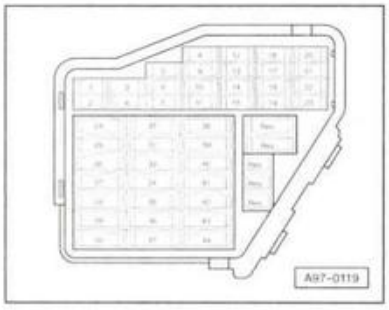
**THIS SPACE INTENTIONALLY**

**LEFT BLANK**

## (2,7 l - Injection Engine, 6 Cylinder), Code APB, BEL

2003 m.y.




**Fuse Panel**

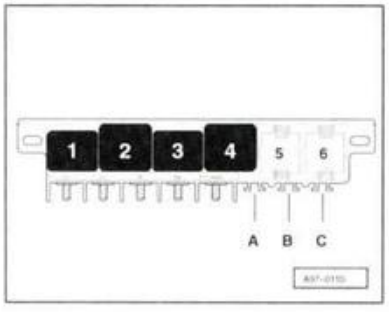
Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige
1 A - Black

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.



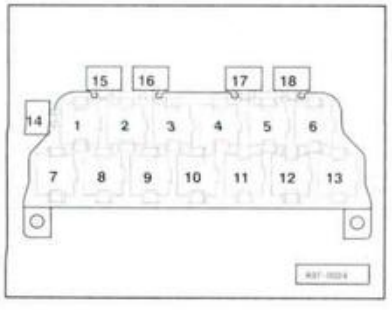





**Micro Central Electric Panel**

Relay Location:

4 - Fuel Pump (FP) Relay, J17




**13 - Fold Relay Panel**

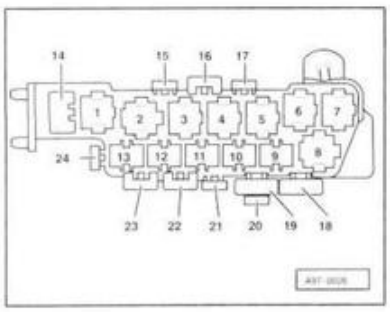
Relay Location:

4 - Starting Interlock Relay, J207

## Audi A6

**Wiring Diagram**

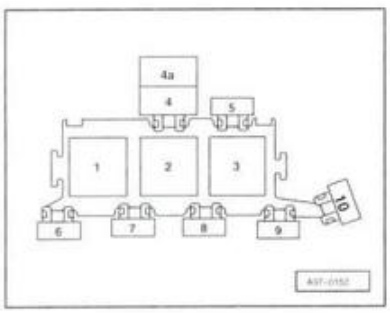
## No. 2/3




**8 - Fold Relay Panel**

Fuse Location:

19 - Coolant Fan Fuse, S42




**3 - Fold Relay Panel in E-Box plenum chamber**

Relay Location:

2 - Secondary Air Injection (AIR) Pump Relay, J299

3 - Motronic Engine Control Module (ECM) Power Supply Relay, J271

5 - Engine Electronics Fuse, S282

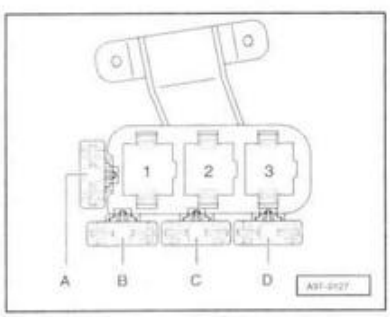
7 - Fuse for Secondary Air Pump, S130



## Audi A6

**Wiring Diagram**

## No. 2/4




**Relay Panel behind Instrument Panel left, on central girder**

Relay Location:

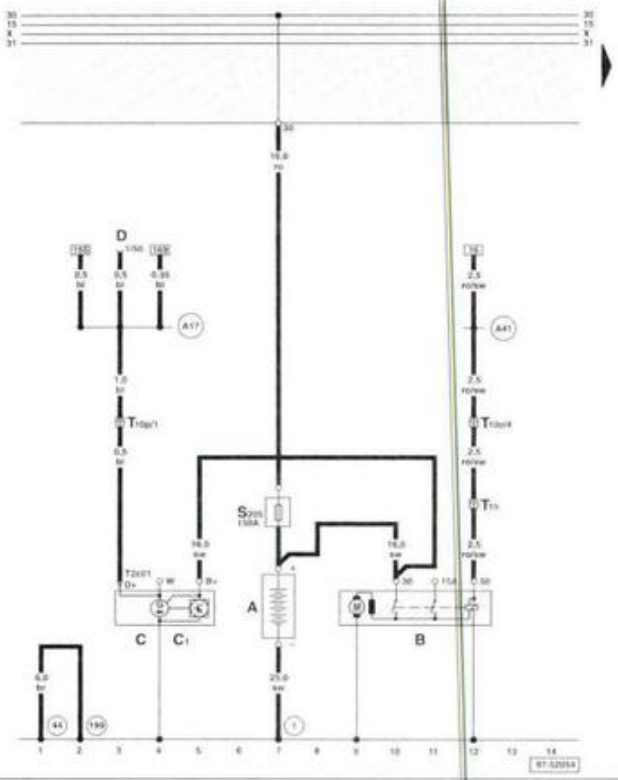
1 - Brake Booster Relay, J569

C - Fuse for Hydraulic Pump Relay, S279

*Engine Management, 2.7 Liter, Engine Codes APB, BEL (2003)*

**Audi A6** **Wiring Diagram** **No. 2/5**

**Battery, Starter, Generator, Ignition/Starter Switch**




A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
S205 - Fuse 2 (30)
T1h - Single connector, black, in engine compartment, right
T2c - Connector 2 pin, black, in engine compartment, right
T10p - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(1) - Ground strap, battery to body
(44) - Ground Connection, on left A-pillar, lower part
(199) - Ground Connection 3, in instrument panel wiring harness
(A17) - Connection (61), in instrument panel wiring harness
(A41) - Plus Connection (50), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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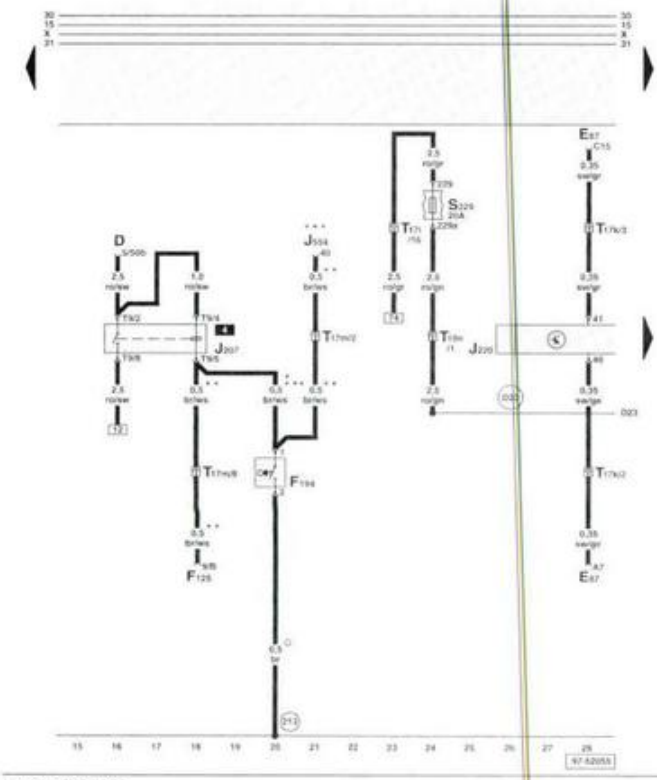
**Audi A6** **Wiring Diagram** **No. 2/6**

**Motronic Engine Control Module, Starting Interlock Relay, Clutch Pedal Starter Interlock Switch**




D - Ignition/Starter Switch
E87 - A/C Control Head
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Starter Interlock Switch
J207 - Starting Interlock Relay
J220 - Motronic Engine Control Module (ECM)
J554 - 4-Low Range Control Module
S229 - Fuse in fuse holder
T9 - Connector 9 pin, brown, on starting interlock relay
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber
T17i - Connector 17 pin, white, connector station electronic box plenum chamber
T17k - Connector 17 pin, red, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right

(213) - Ground Connection, in instrument panel wiring harness
(002) - Connection (over fuse 229), in wiring harness front, right

* - Vehicles with manual transmission
** - Vehicles with automatic transmission
*** - allroad with manual transmission 01E

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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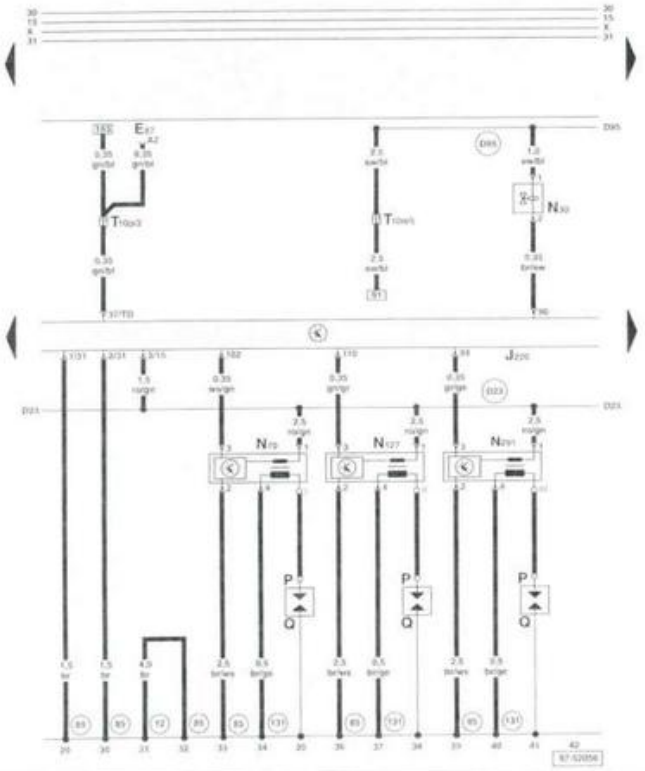
## Audi A6

Wiring Diagram

## No. 2/7

**Motronic Engine Control Module, Ignition Coils 1 - 3 with Power Output Stage**



E87 - A/C Control Head
J220 - Motronic Engine Control Module (ECM)
N30 - Cylinder 1 Fuel Injector
N70 - Ignition Coil 1 with Power Output Stage
N127 - Ignition Coil 2 with Power Output Stage
N291 - Ignition Coil 3 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
T10bx - Connector 10 pin, orange, connector station electronic box plenum chamber
T10bp - Connector 10 pin, black, connector station electronic box plenum chamber

(12) - Ground Connection, in engine compartment, left
(85) - Ground Connection 1, in engine compartment wiring harness
(131) - Ground Connection 2, in engine compartment wiring harness
(D23) - Connection fuser fuse 229b, in wiring harness front, right
(D95) - Connection injectors5, in engine compartment wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = gray
li = violet
ge = yellow
or = orange

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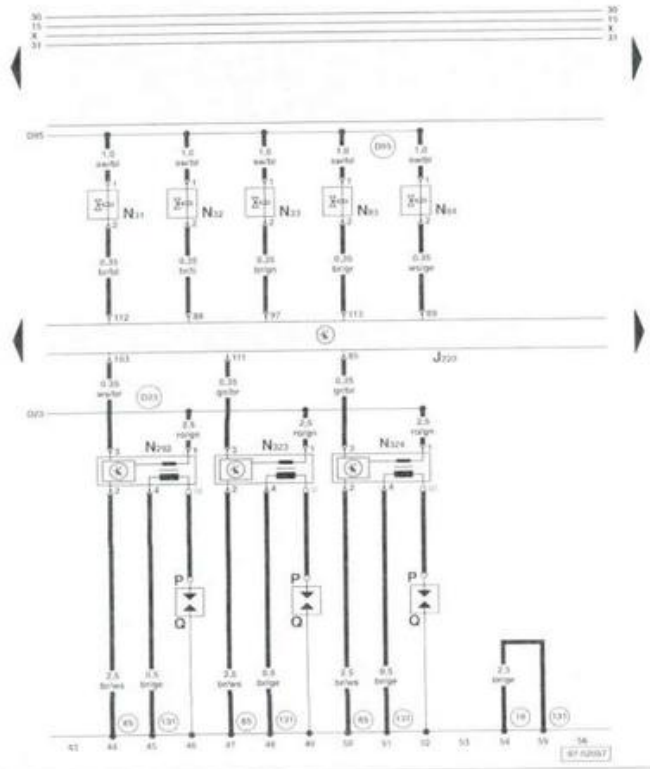
## Audi A6

Wiring Diagram

## No. 2/8

**Motronic Engine Control Module, Ignition Coils 4 - 6 with Power Output Stage**



J220 - Motronic Engine Control Module (ECM)
N31 - Cylinder 2 Fuel Injector
N32 - Cylinder 3 Fuel Injector
N33 - Cylinder 4 Fuel Injector
N83 - Cylinder 5 Fuel Injector
N84 - Cylinder 6 Fuel Injector
N292 - Ignition Coil 4 with Power Output Stage
N323 - Ignition Coil 5 with Power Output Stage
N324 - Ignition Coil 6 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs

(19) - Ground Connection, on engine block
(85) - Ground Connection 1, in engine compartment wiring harness
(131) - Ground Connection 2, in engine compartment wiring harness
(D23) - Connection fuser fuse 229b, in wiring harness front, right
(D95) - Connection injectors5, in engine compartment wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = gray
li = violet
ge = yellow
or = orange

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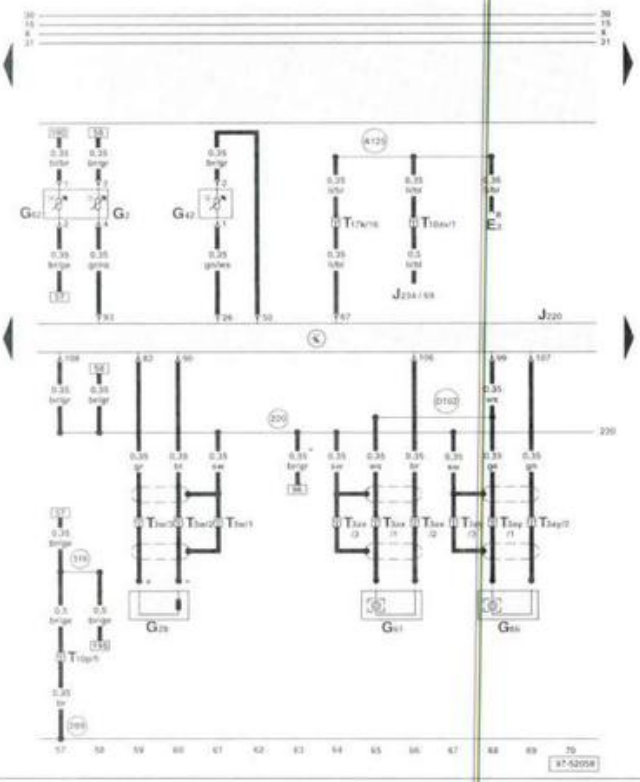
## Audi A6

**Wiring Diagram**

## No. 2/9

**Motronic Engine Control Module, Knock Sensors, Engine Coolant Temperature Sensor**



E3 - Emergency Flasher Switch
G2 - Engine Coolant Temperature (ECT) Sensor
G28 - Engine Speed (RPM) Sensor
G42 - Intake Air Temperature (IAT) Sensor
G61 - Knock Sensor (KS) 1
G62 - Engine Coolant Temperature (ECT) Sensor
G66 - Knock Sensor (KS) 2
J220 - Motronic Engine Control Module (ECM)
J234 - Airbag Control Module
T3bv - Connector 3 pin, grey, on engine speed sensor
T3bx - Connector 3 pin, brown, on knock sensor 1
T3by - Connector 3 pin, brown, on knock sensor 2
T10p - Connector 10 pin, black, connector station electronic box plenum chamber
T10av - Connector 10 pin, yellow, connector station A pillar, right
T17r - Connector 17 pin, red, connector station electronic box plenum chamber

(220) - Ground Connection (sensor grounds), in engine compartment wiring harness
(262) - Ground connector (sensor ground) 1, in instrument panel wiring harness
(316) - Sensor Ground Connection 2 (in engine wiring harness)
(D102) - Connection (crash signal) in instrument panel wiring harness
(D162) - Connection 2, in engine compartment wiring harness

* - Vehicles with automatic transmission

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

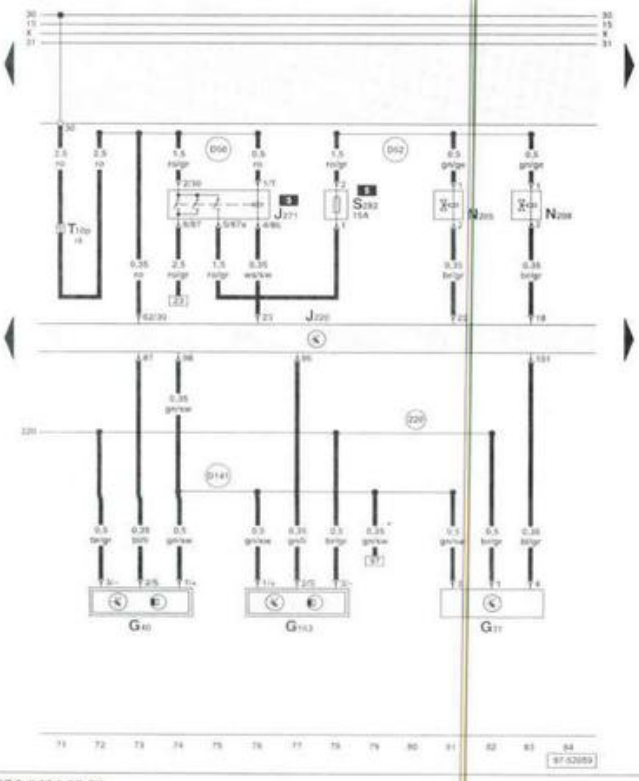


## Audi A6

**Wiring Diagram**

## No. 2/10

**Motronic Engine Control Module, Camshaft Position Sensors, Valves for Camshaft Adjustment**



G31 - Charge Air Pressure Sensor
G40 - Camshaft Position (CMP) Sensor
G163 - Camshaft Position (CMP) Sensor 2
J220 - Motronic Engine Control Module (ECM)
J271 - Motronic Engine Control Module (ECM) Power Supply Relay
N205 - Valve 1 for camshaft adjustment
N208 - Valve 2 for camshaft adjustment
S292 - Engine Electronics Fuse
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(220) - Ground Connection (sensor grounds), in engine compartment wiring harness
(D56) - Plus Connection (30), in engine compartment wiring harness
(D62) - Plus Connection (15a), in engine compartment wiring harness
(D141) - Connection (5W), in wiring harness, engine pre-wiring

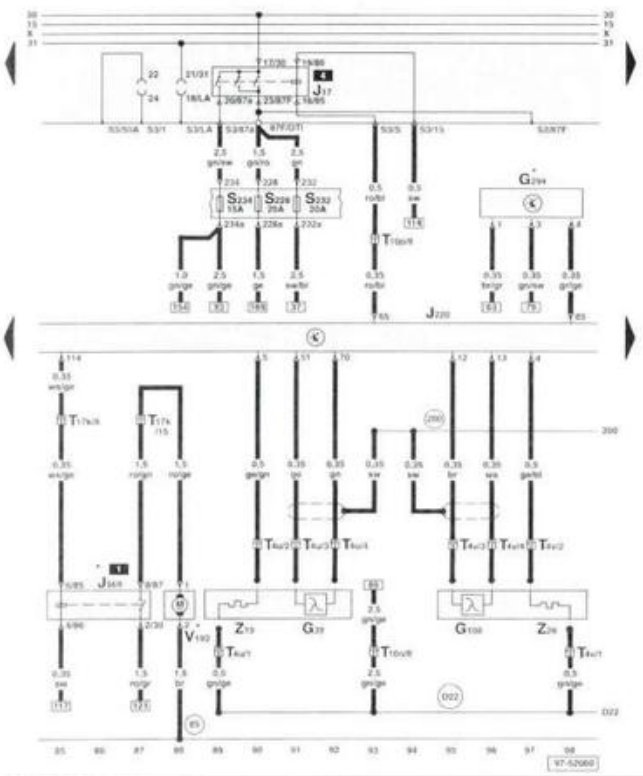
* - only Vehicles with automatic transmission

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 2/11



**Motronic Engine Control Module, Fuel Pump Relay, Oxygen Sensors Heater, Brake System Vacuum Pump**

- G39 - Heated Oxygen Sensor (HO2S)
- G108 - Heated Oxygen Sensor (HO2S) 2
- G294 - Brake Booster Pressure Sensor
- J17 - Fuel Pump (FP) Relay
- J220 - Motronic Engine Control Module (ECM)
- J569 - Brake Booster relay
- S228 - Fuse in fuse holder
- S232 - Fuse in fuse holder
- S234 - Fuse in fuse holder
- T4u - Connector 4 pin, black, heated oxygen sensor
- T4v - Connector 4 pin, black, heated oxygen sensor 2
- T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- T17k - Connector 17 pin, red, connector station electronic box plenum chamber
- V102 - Brake System Vacuum Pump
- Z19 - Oxygen Sensor (O2S) Heater
- Z28 - Oxygen Sensor (O2S) Heater 2

- (85) - Ground Connection 1, in engine compartment wiring harness
- (200) - Ground Connection (shielding), in engine compartment wiring harness
- (D22) - Connection (over fuse 234), in wiring harness front, right

* - only Vehicles with automatic transmission

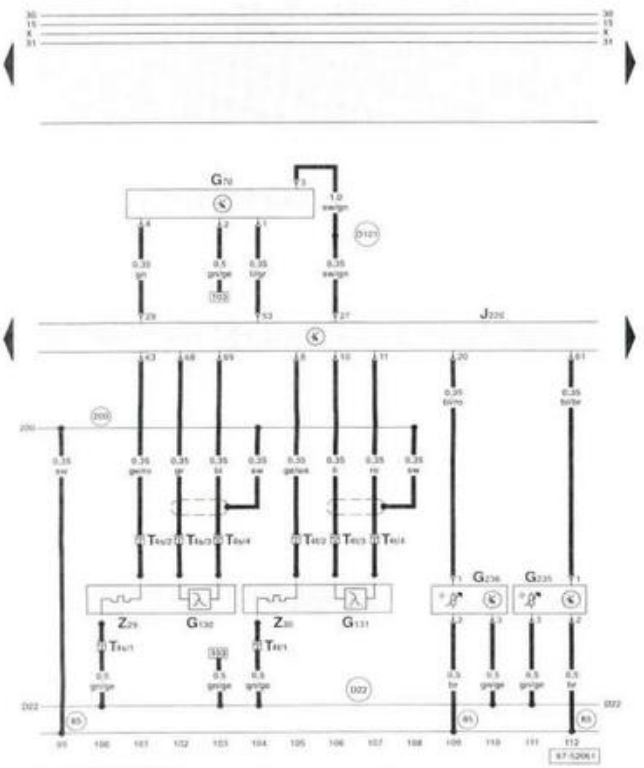
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 2/12



**Motronic Engine Control Module, Mass Air Flow Sensor, Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)**

- G70 - Mass Air Flow (MAF) Sensor
- G130 - Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
- G131 - Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
- G235 - Sensor 1 for exhaust temperature
- G236 - Sensor 2 for exhaust temperature
- J220 - Motronic Engine Control Module (ECM)
- T4s - Connector 4 pin, green, rear oxygen sensor, behind Three Way Catalytic Converter (TWC)
- T4t - Connector 4 pin, brown, rear oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
- Z29 - Oxygen Sensor (O2S) Heater 1 (behind Three Way Catalytic Converter (TWC))
- Z30 - Oxygen Sensor (O2S) Heater 2 (behind Three Way Catalytic Converter (TWC))

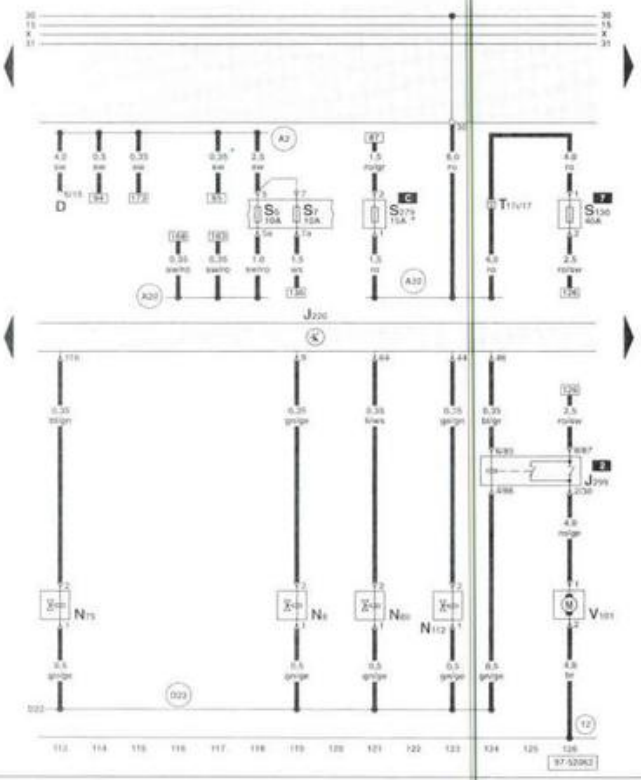
- (85) - Ground Connection 1, in engine compartment wiring harness
- (200) - Ground Connection (shielding), in engine compartment wiring harness
- (D22) - Connection (over fuse 234), in wiring harness front, right
- (559) - Connection 1, in engine compartment wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 2/13



**Motronic Engine Control Module, Valves, Secondary Air Injection Pump Relay**

D - Ignition/Starter Switch
J220 - Motronic Engine Control Module (ECM)
J299 - Secondary Air Injection (AIR) Pump Relay
N8 - Central Idle, Idle Air Control (IAC) Cut-Off Valve
N75 - Wastegate Bypass Regulator Valve
N80 - Evaporative Emission (EVAP) Canister Purge Regulator Valve
N112 - Secondary Air Injection (AIR) Solenoid Valve
S5 - Fuse
S7 - Fuse
S130 - Fuse for secondary air pump
S279 - Hydraulic Pump Relay Fuse
T1/- - Connector 17 pin, white, connector station electronic box plenum chamber
V101 - Secondary Air Injection (AIR) Pump Motor

(12) - Ground Connection, in engine compartment, left
(A2) - Plus Connection (15), in instrument panel wiring harness
(A20) - Connection (15a), in instrument panel wiring harness
(A32) - Plus Connection (30), in instrument panel wiring harness
(D22) - Connection (over fuse 234), in wiring harness front, right

* - only Vehicles with automatic transmission

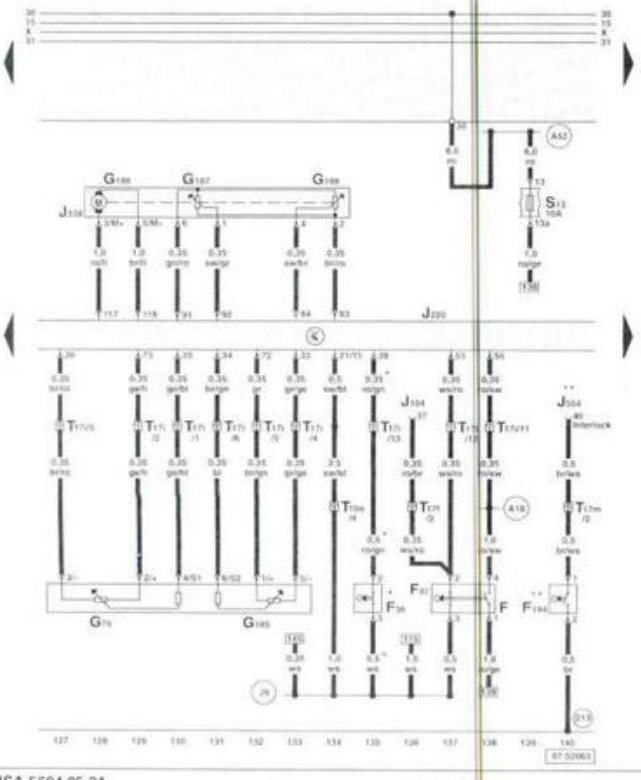
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 2/14



**Motronic Engine Control Module, Brake Light Switch, Throttle Valve Control Module**

F - Brake Light Switch
F36 - Clutch Pedal Switch
F47 - Brake Pedal Switch
F194 - Clutch Pedal Starter Interlock Switch
G79 - Throttle Position (TP) Sensor
G185 - Sensor 2 for accelerator pedal position
G186 - Throttle drive (power accelerator actuation)
G187 - Angle sensor 1 for throttle drive (power accelerator actuation)
G188 - Angle sensor 2 for throttle drive (power accelerator actuation)
J220 - Motronic Engine Control Module (ECM)
J338 - Throttle Valve Control Module
S13 - Fuse
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber
T17f - Connector 17 pin, black, in B Ford Relay Panel behind the storage driver's side
T17/- - Connector 17 pin, white, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right

(213) - Ground Connection, in instrument panel wiring harness
(A18) - Connection (54), in instrument panel wiring harness
(A52) - Plus Connection 2 (30), in instrument panel wiring harness
(J9) - Connection 1 (15a), in ABS wiring harness

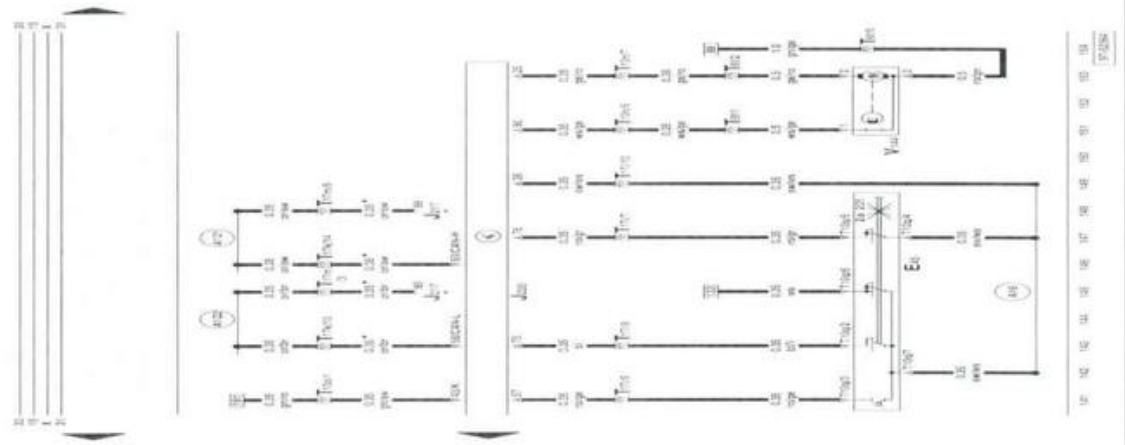
* - Vehicles with manual transmission
** - allroad with manual transmission 01E

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

No. 2/15

Motronic Engine Control Module, Cruise Control Switch, Leak Detection Pump

Wiring Diagram



Edition 07/04

Audi A6

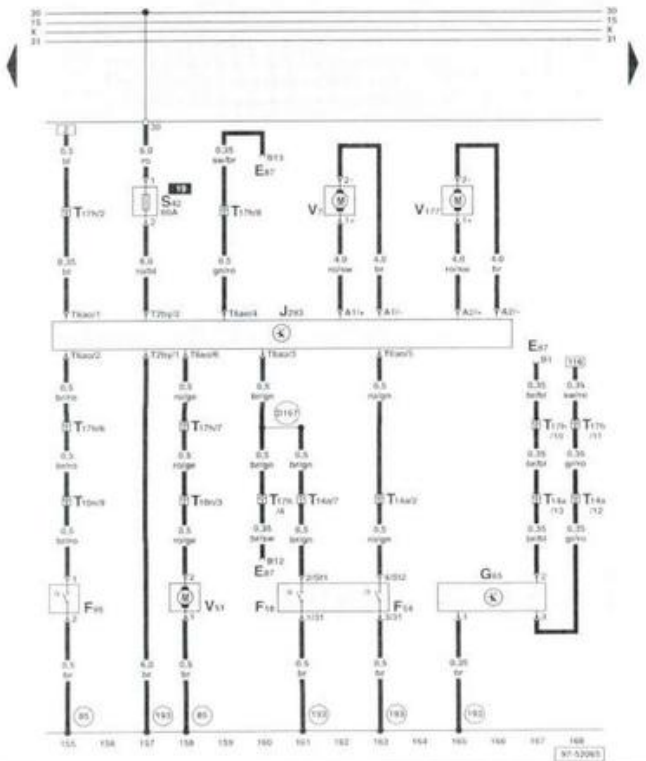
USA.5604.05.21

## Audi A6

Wiring Diagram

## No. 2/16

**Coolant Fan Control (FC) Control Module, Coolant Fan, Coolant Fan Control (FC) Thermal Switch**



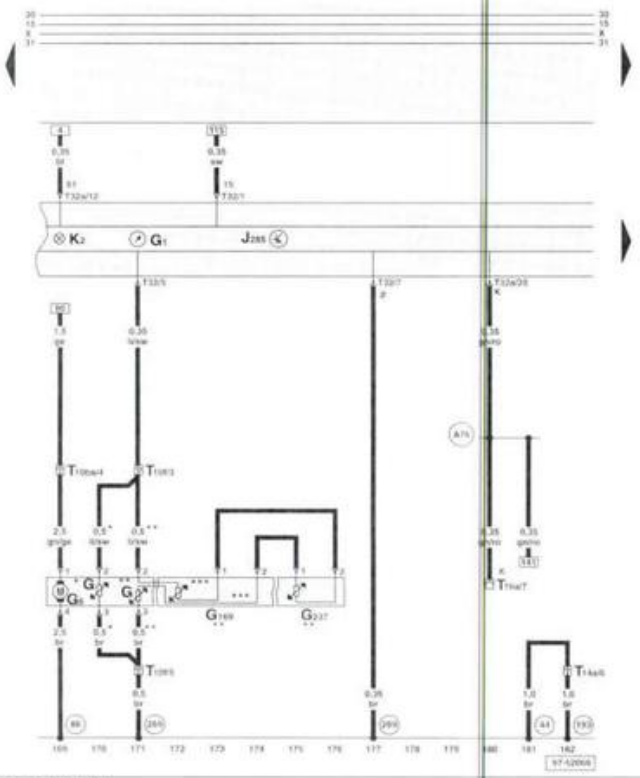
E87 - A/C Control Head
F18 - Coolant Fan Control (FC) Thermal Switch
F54 - Coolant Fan Control (FC) Thermal Switch
F96 - After-Run Coolant Thermal Switch
G65 - High Pressure Sensor
J293 - Coolant Fan Control (FC) Control Module
S42 - Coolant Fan Fuse
T2bv - Connector 2 pin, on Coolant FC (Fan Control) Control Module
T6ao - Connector 6 pin, on Coolant FC (Fan Control) Control Module
T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
T14a - Connector 14 pin, black, in engine compartment, left front
T17h - Connector 17 pin, brown, connector station A pillar, left
V7 - Coolant Fan
V51 - After-Run Coolant Pump
V177 - Coolant fan 2

(85) - Ground Connection 1, in engine compartment wiring harness
(193) - Ground Connection 1, in coolant fan wiring harness
(-/-) - Coolant Fan First Speed Connection (in engine compartment wiring harness)

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

*Engine Management, 2.7 Liter, Engine Codes APB, BEL (2003)*

**Audi A6** | **Wiring Diagram** | **No. 2/17**



**Control Module with Indicator Unit in Instrument Panel Insert, Fuel Pump**

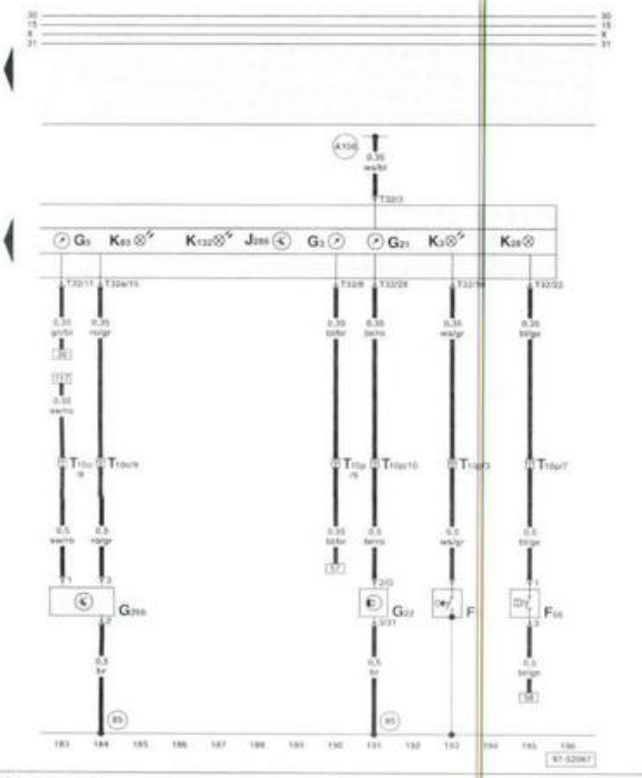
G - Sender for fuel gauge
G1 - Fuel Gauge
G6 - Fuel Pump (FP)
G169 - Fuel Level Sensor 2
G237 - Sensor 3 for fuel supply
J285 - Control Module with indicator unit in instrument panel insert
K2 - Generator IGEN Warning Light
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
T14a - Connector 14 pin, black, in engine compartment, left front
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster
(44) - Ground Connection, on left A pillar, lower part
(86) - Ground Connection 1, in rear wiring harness
(193) - Ground Connection 1, in coolant fan wiring harness
(269) - Ground connector (sensor ground) 1, in instrument panel wiring harness
(A76) - Connection (K-diagnosis wire), in instrument panel wiring harness

* - Vehicles with front wheel drive
** - Vehicles with all wheel drive
*** - Wiring inside fuel tank
# - Exit Sensor ground

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



**Audi A6** | **Wiring Diagram** | **No. 2/18**



**Control Module with Indicator Unit in Instrument Panel Insert, Oil Level Thermal Sensor, Oil Pressure Warning Light**

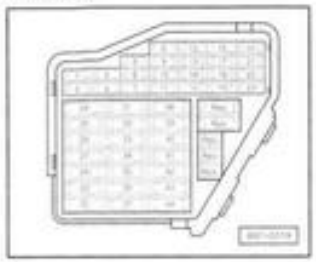
F1 - Oil Pressure Switch
F66 - Engine Coolant Level (ECL) Warning Switch
G3 - Engine Coolant Temperature (ECT) Gauge
G5 - Tachometer
G21 - Speedometer
G22 - Speedometer Vehicle Speed Sensor (VSS)
G266 - Oil Level Thermal Sensor (SPI)
J285 - Control Module with indicator unit in instrument panel insert
K3 - Oil Pressure Warning Light
K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
K83 - Malfunction Indicator Lamp (MIL)
K132 - Electronic Power Control (EPC) Warning Lamp
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10q - Connector 10 pin, black, connector station electronic box plenum chamber
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster
(95) - Ground Connection 1, in engine compartment wiring harness
(A106) - Connection (speed signal), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## (4,2 l - Injection Engine, 8 Cylinder), Code BAS - allroad

2003 m. y.

### Fuse Panel

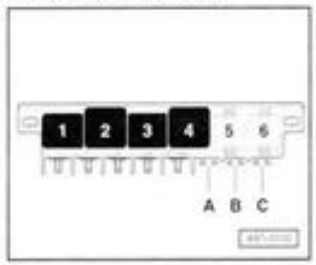


Fuse Colors

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in this fuse holder are identified with 222 in the wiring diagram.

### Micro Central Electric Panel



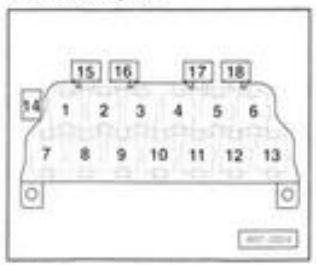

Relay Location

4 Fuel Pump (FP) Relay, J17

5 Wiper/Washer Intermittent Relay, J31

6 Wiper/Washer Intermittent Relay, J31

### 13 - Fold Relay Panel



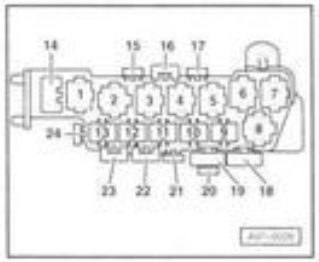

Relay Location

4 Starting Interlock Relay, J207





### 8 - Fold Relay Panel



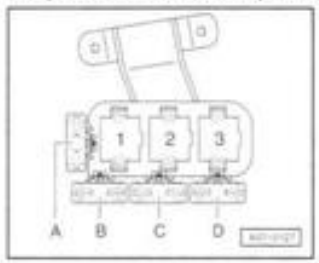

Relay Location

19 Coolant Fan Fuse, S42

21 Fuse for Fan for coolant 1st and 2nd stage, S136

22 Second Speed Coolant Fan Fuse, S194

### Relay Panel behind Instrument panel left, on central girder

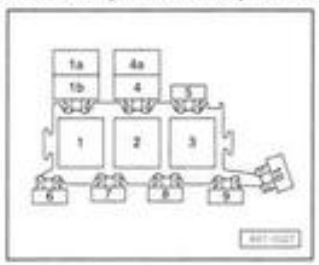



Relay Location

1 Brake Booster Relay, J569

C Fuse for Hydraulic Pump Relay, S279

### 3 - Fold Relay Panel in E-Box plenum chamber




Relay Location

1 Coolant Fan Control (FC) Relay, J26

10 Coolant Circulation Pump Relay, J151

2 Secondary Air Injection (AIR) Pump Relay, J299

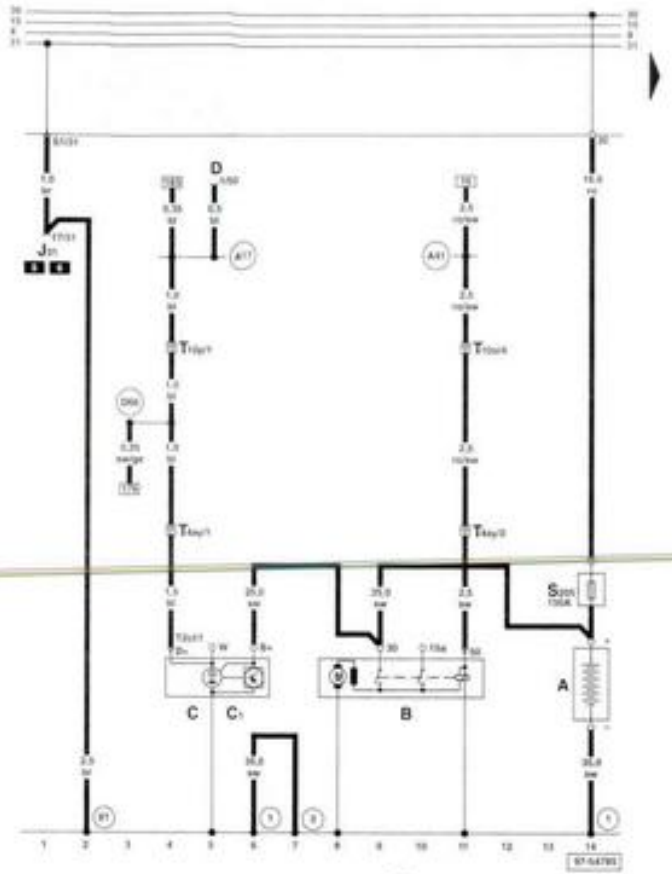
3 Motronic Engine Control Module (ECM) Power Supply Relay, J271

5 Engine Electronics Fuse, S262

7 Fuse for secondary air pump, S130

9 Third Speed Coolant Fan Fuse, S94

10 Control module fuse for coolant fan, S142

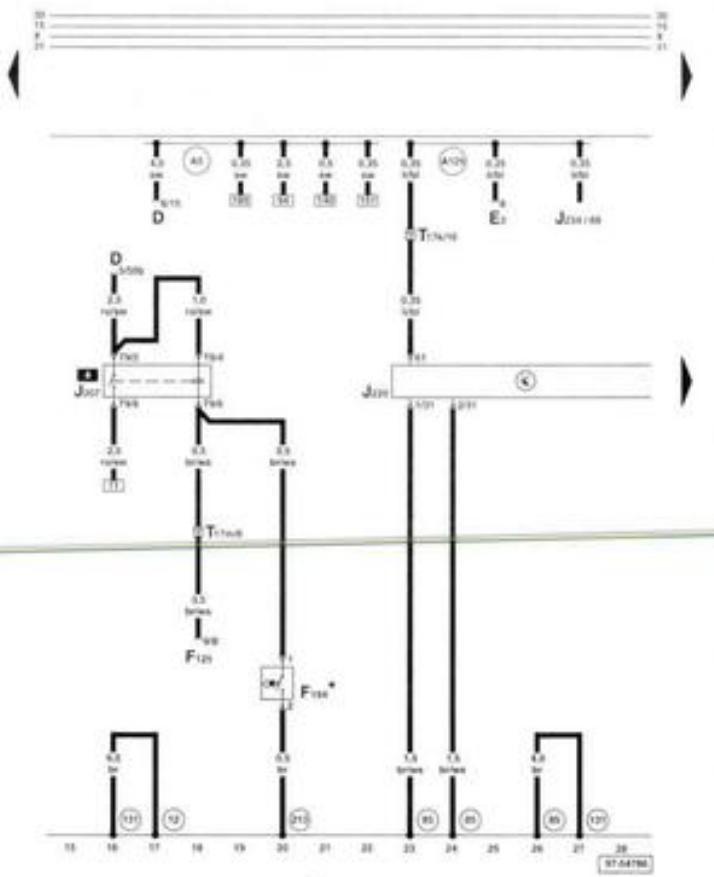



A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J31 - Wiper/Washer Intermittent Relay
S205 - Fuse 2 (30)
T2d - Connector 2 pin, black, in engine compartment, right
T4av - Connector 4 pin, black, in engine compartment, right
T10u - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

1 - Ground strap, battery to body
2 - Ground strap, engine to body
4 - Ground connection -1-, in instrument panel wiring harness
53 - Valve connection (87), in instrument panel wiring harness
54 - Plus connection (58), in instrument panel wiring harness
192 - Plus connection (61), in engine compartment wiring harness

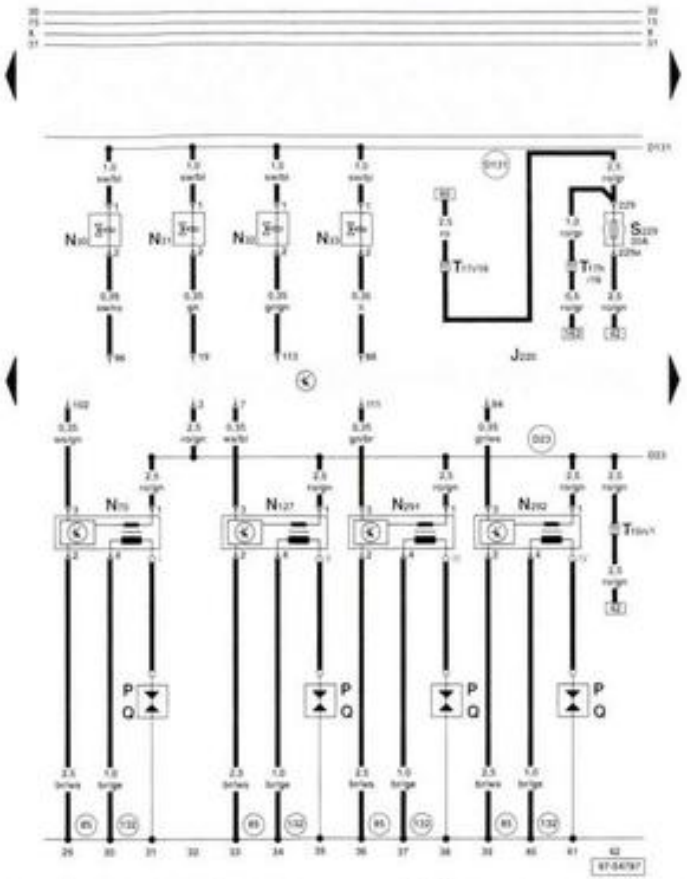







D - Ignition/Starter Switch
E2 - Emergency Flasher Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
J207 - Starting Interlock Relay
J220 - Motronic Engine Control Module (ECM)
J234 - Airbag Control Module
T9 - Connector 9 pin, brown, on starting interlock relay
T17k - Connector 17 pin, red, connector station electronic box plenum chamber
T17m - Connector 17 pin, blue, connector station A pillar, right

31 - Ground connection, in engine compartment, left
46 - Ground connection -1-, in engine compartment wiring harness
131 - Ground connection -2-, in engine compartment wiring harness
170 - Ground connection, in instrument panel wiring harness
182 - Plus connection (15), in instrument panel wiring harness
238 - Connection crash signal in instrument panel wiring harness
* - Vehicles with manual transmission



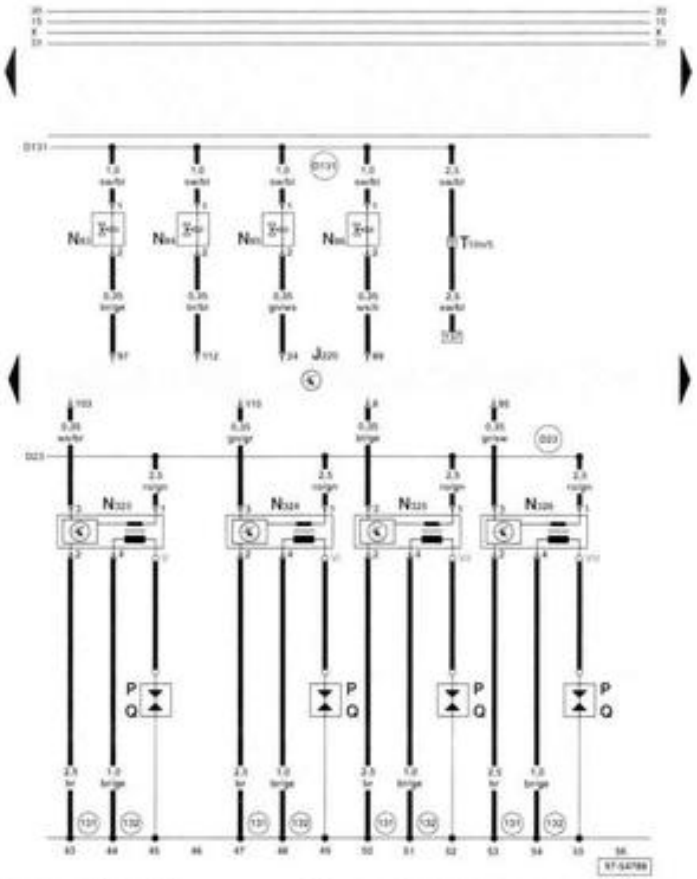
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J220 - Motronic Engine Control Module (ECM)
N30 - Cylinder 1 Fuel Injector
N31 - Cylinder 2 Fuel Injector
N32 - Cylinder 3 Fuel Injector
N33 - Cylinder 4 Fuel Injector
N70 - Ignition Coil 1 with Power Output Stage
N127 - Ignition Coil 2 with Power Output Stage
N291 - Ignition Coil 3 with Power Output Stage
N292 - Ignition Coil 4 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
S229 - Fuse 29 in fuse holder
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber
T12h - Connector 12 pin, brown, connector station A pillar, left
T12i - Connector 12 pin, white, connector station electronic box plenum chamber

- Ground connection -1-, in engine compartment wiring harness
- Ground connection -3-, in engine compartment wiring harness
- Connector over fuse 229, in wiring harness front, right
- Wire connection (15), over fuse 232, in engine compartment wiring harness



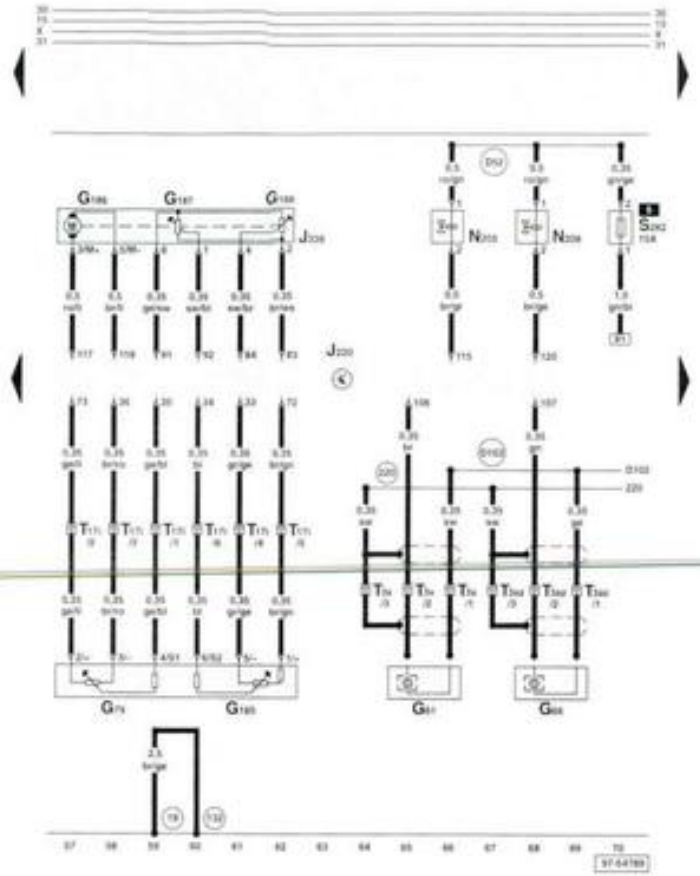




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J220 - Motronic Engine Control Module (ECM)
N83 - Cylinder 5 Fuel Injector
N84 - Cylinder 6 Fuel Injector
N85 - Cylinder 7 Fuel Injector
N86 - Cylinder 8 Fuel Injector
N323 - Ignition Coil 5 with Power Output Stage
N324 - Ignition Coil 6 with Power Output Stage
N325 - Ignition Coil 7 with Power Output Stage
N326 - Ignition Coil 8 with Power Output Stage
P - Spark Plug Connectors
Q - Spark Plugs
T10h - Connector 10 pin, orange, connector station electronic box plenum chamber

- Ground connection -2-, in engine compartment wiring harness
- Ground connection -3-, in engine compartment wiring harness
- Connector over fuse 229, in wiring harness front, right
- Wire connection (15), over fuse 232, in engine compartment wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

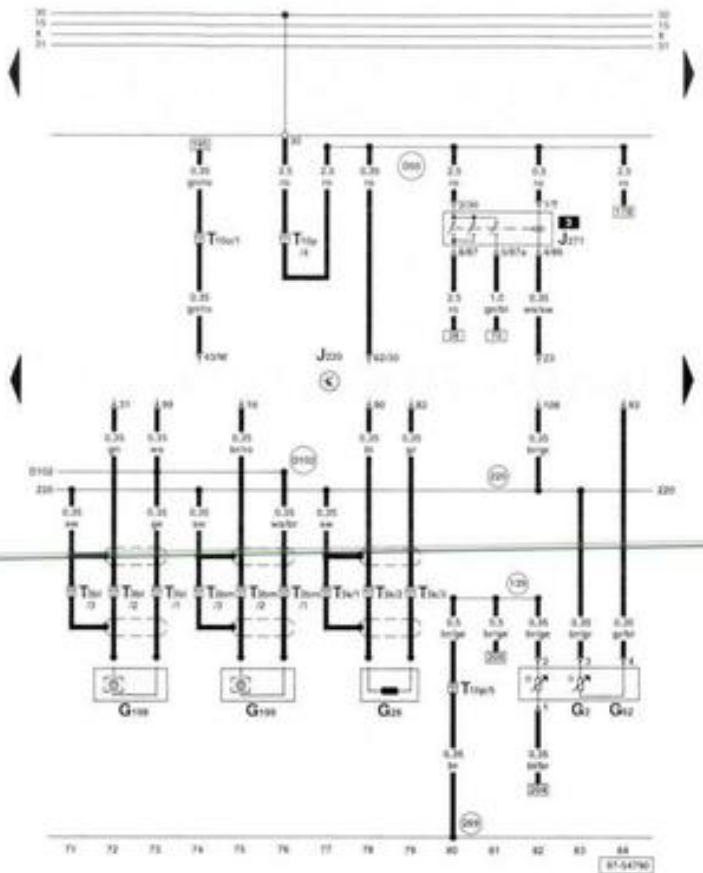
G87 - Knock Sensor (KS) 1
G66 - Knock Sensor (KS) 2
G79 - Throttle Position (TP) Sensor
G185 - Sensor 2- for accelerator pedal position
G186 - Throttle drive (power accelerator actuator)
G187 - Angle sensor -1- for throttle drive (power accelerator actuator)
G188 - Angle sensor -2- for throttle drive (power accelerator actuator)
J220 - Motronic Engine Control Module (ECM)
J338 - Throttle Valve Control Module
N205 - Valve -1- for camshaft adjustment
N208 - Valve -2- for camshaft adjustment
S262 - Engine Electronics Fuse
T3x - Connector 3 pin, blue, on knock sensor 1
T3ad - Connector 3 pin, black, on Knock Sensor 2
T17i - Connector 17 pin, white, connector station electronic box plenum chamber

(19) - Ground connection, near ignition coil
(220) - Ground connection 3 , in engine compartment wiring harness
(232) - Ground connection (sensor ground), in engine compartment wiring harness
(262) - Plus connection (15a), in engine compartment wiring harness
(132) - Wire connection -2- , in engine compartment wiring harness



**Motronic Engine Control Module, Throttle Valve Control Module, Throttle Position Sensor, Knock Sensors, Valves for Camshaft Adjustment**



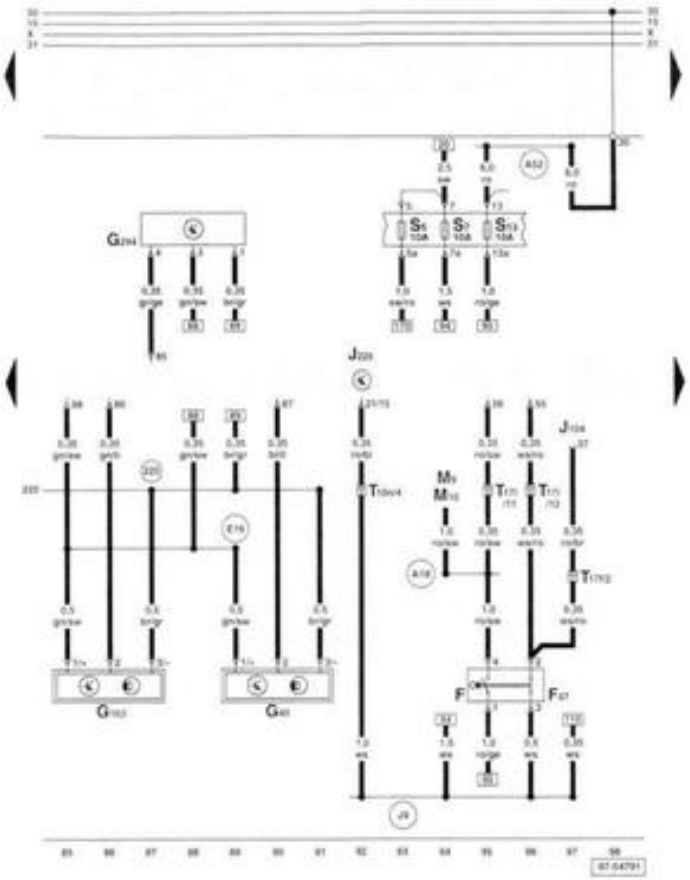


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G2 - Engine Coolant Temperature (ECT) Sensor
G28 - Engine Speed (RPM) Sensor
G62 - Engine Coolant Temperature (ECT) Sensor
G198 - Knock sensor 3
G199 - Knock sensor 4
J220 - Motronic Engine Control Module (ECM)
J271 - Motronic Engine Control Module (ECM) Power Supply Relay
T2k - Connector 2 pin, grey, on Engine Speed (RPM) Sensor
T3bi - Connector 3 pin, black, on Knock Sensor 2
T3bm - Connector 3 pin, blue, on Knock Sensor 4
T10a - Connector 10 pin, brown, connector station electronic box plenum chamber
T10bl - Connector 10 pin, black, connector station electronic box plenum chamber

(19) - Ground connection (sensor Ground), in Motronic Multipoint Fuel Injection (MFI) wiring harness
(220) - Ground connection (sensor ground), in engine compartment wiring harness
(232) - Ground connection (sensor ground) -1-, in instrument panel wiring harness
(262) - Plus connection (30), in engine compartment wiring harness
(132) - Wire connection -2-, in engine compartment wiring harness

**Motronic Engine Control Module, Engine Speed Sensor, Engine Coolant Temperature Sensor, Motronic Engine Control Module Power Supply Relay**



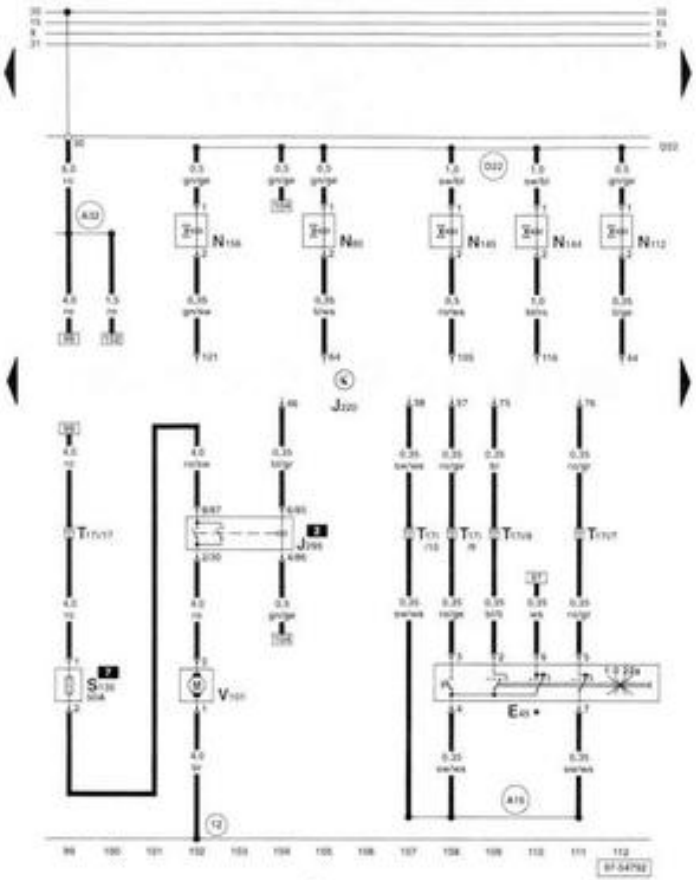

F – Brake Light Switch
F47 – Brake Vacuum Vent Valve Switch for Cruise Control/Diesel Fuel Injection
G40 – Camshaft Position (CMP) Sensor
G163 – Camshaft Position (CMP) Sensor 2
G294 – Brake Booster Pressure Sensor
J104 – ABS Control Module (with EDL)
J220 – Motronic Engine Control Module (ECM)
M9 – Left Brake Light
M10 – Right Brake Light
S5 – Fuse
S7 – Fuse
S13 – Fuse
T10w – Connector 10 pin, orange, connector station electronic box plenum chamber
T17/1 – Connector 17 pin, black, in B-Post Relay Panel behind the storage drawer, driver's side
T17/2 – Connector 17 pin, white, connector station electronic box plenum chamber

(31) – Ground connection (sensor ground), in engine compartment wiring harness
(A14) – Wire connection (54), in instrument panel wiring harness
(E14) – Plus connection (2, 30), in instrument panel wiring harness
(J9) – Plus connection (5 Volts), in Motronic Multiport Fuel Injection (MFI) wiring harness
(J9) – Wire connection -1- (15a), in ABS wiring harness



Motronic Engine Control Module, Camshaft Position Sensor, Brake Light Switch, Brake Booster Pressure Sensor



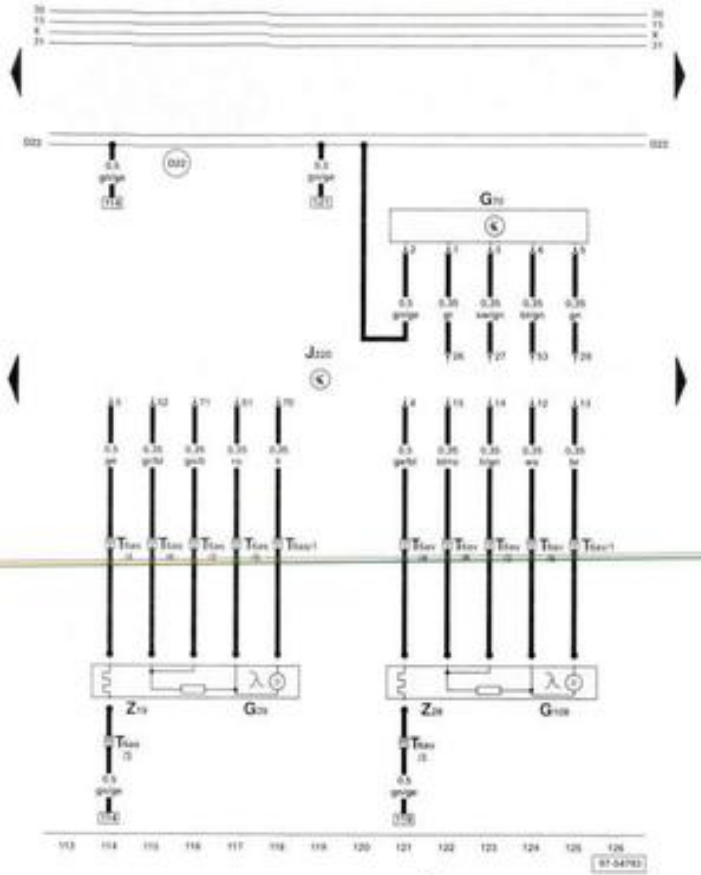



E45 – Cruise Control Switch
J220 – Motronic Engine Control Module (ECM)
J299 – Secondary Air Injection (AIR) Pump Relay
N80 – Evaporative Emission (EVAP) Canister Purge Regulator Valve
N112 – Secondary Air Injection (AIR) Solenoid Valve
N144 – Left Electro-Hydraulic Engine Mount Solenoid Valve
N145 – Right Electro-Hydraulic Engine Mount Solenoid Valve
N156 – Intake Change-Over Valve
S130 – Fuse for secondary air pump
T17/- – Connector 17 pin, white, connector station electronic box plenum chamber
V101 – Secondary Air Injection (AIR) Pump Motor

(31) – Ground connection, in engine compartment, left
(A14) – Wire connection (cruise control), in instrument panel wiring harness
(E14) – Plus connection (30), in instrument panel wiring harness
(S130) – Connector (rear fuse 234), in wiring harness front, right
• – Vehicles with Cruise Control

Motronic Engine Control Module, Secondary Air Injection Pump Relay, Evaporative Emission Canister Purge Regulator Valve, Cruise Control Switch

## Audi A6 — Wiring diagram — No. 5/11



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

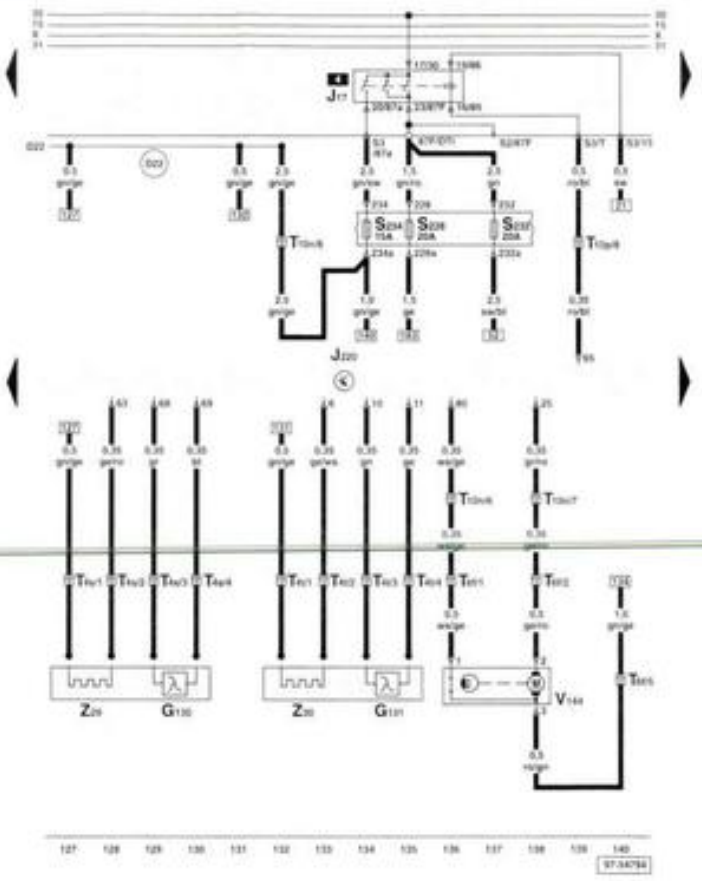
G39 – Heated Oxygen Sensor (HO2S) 2
G70 – Mass Air Flow (MAF) Sensor
G108 – Heated Oxygen Sensor (HO2S) 2
J220 – Motronic Engine Control Module (ECM)
T6as – Connector 6 pin, black, heated oxygen sensor
T6av – Connector 6 pin, black, heated oxygen sensor 2
Z19 – Oxygen Sensor (O2S) Heater
Z29 – Oxygen Sensor (O2S) 2 Heater

(CC) – Connector (over fuse 234), in wiring harness front, right



**Motronic Engine Control Module, Mass Air Flow Sensor, Heated Oxygen Sensor**

## No. 5/12 — Wiring diagram — Audi A6



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G130 – Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
G131 – Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
J17 – Fuel Pump (FP) Relay
J220 – Motronic Engine Control Module (ECM)
S228 – Fuse 28 in fuse holder
S232 – Fuse 32 in fuse holder
S234 – Fuse 34 in fuse holder
T4x – Connector 4 pin, green, near oxygen sensor, behind Three Way Catalytic Converter (TWC)
T4t – Connector 4 pin, brown, near oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
T6t – Connector 6 pin, dark brown, connector station A pillar, right
T10n – Connector 10 pin, orange, connector station electronic box, plenum chamber
T10s – Connector 10 pin, black, connector station electronic box, plenum chamber
V144 – Leak Detection Pump (LDP)
Z29 – Oxygen Sensor (O2S) Heater 1
Z30 – Oxygen Sensor (O2S) Heater 2

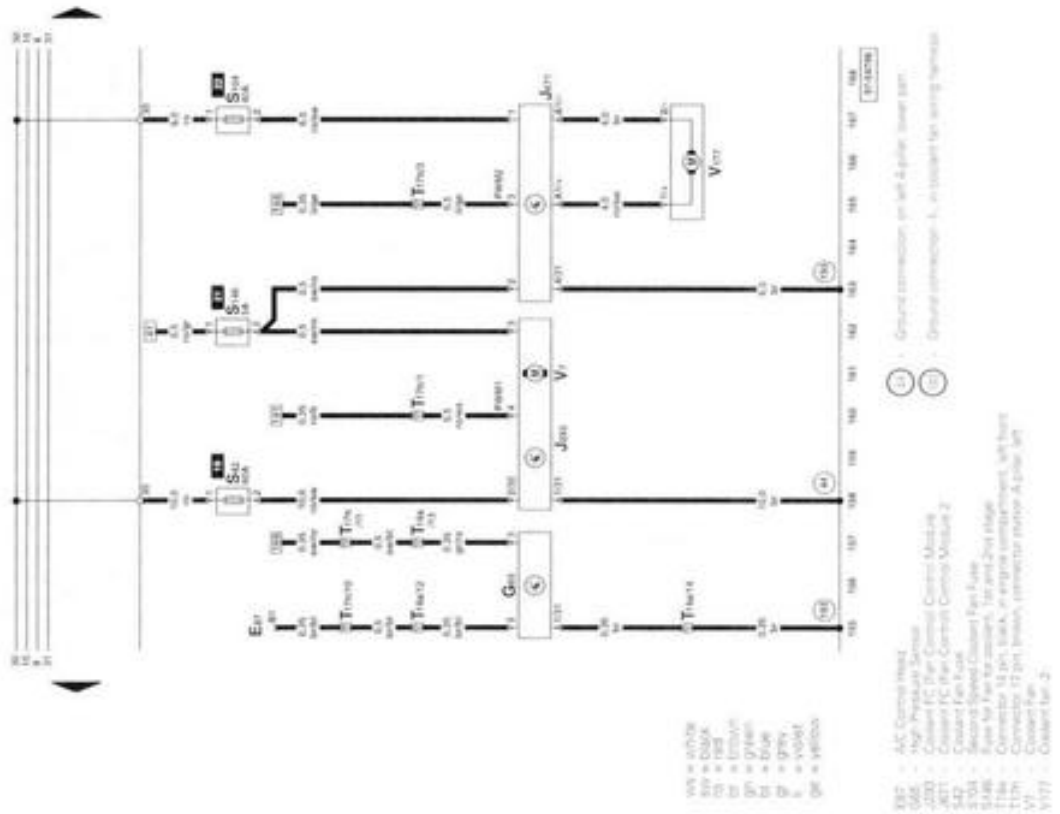
(CC) – Connector (over fuse 234), in wiring harness front, right

**Motronic Engine Control Module, Fuel Pump Relay, Heated Oxygen Sensor behind Three Way Catalytic Converter, Leak Detection Pump**

**Audi A6**

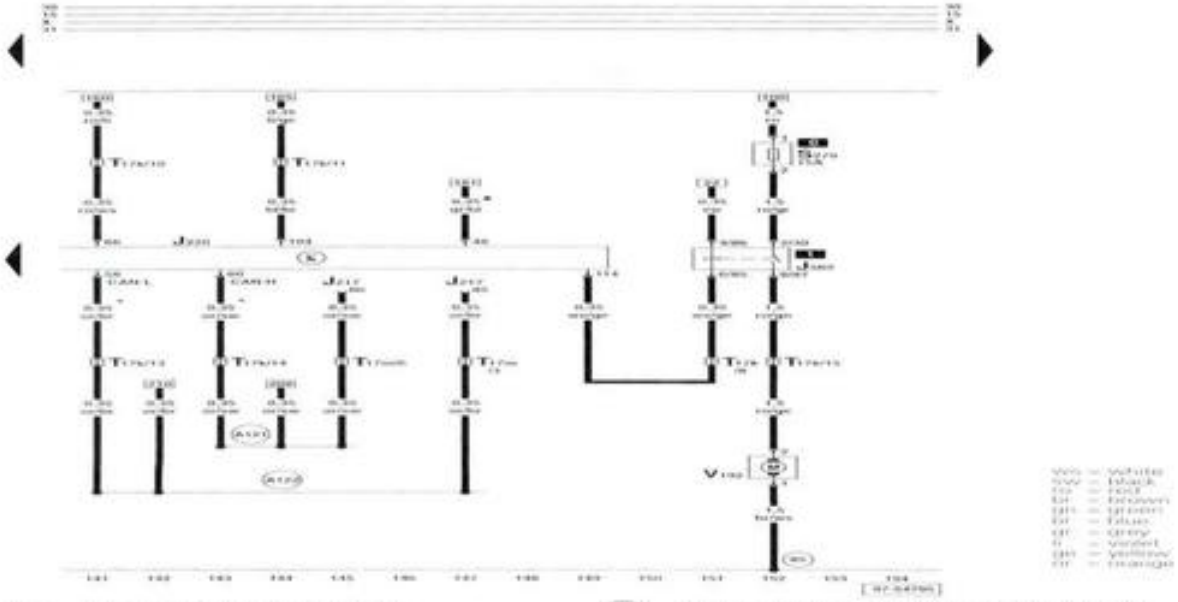
Wiring diagram

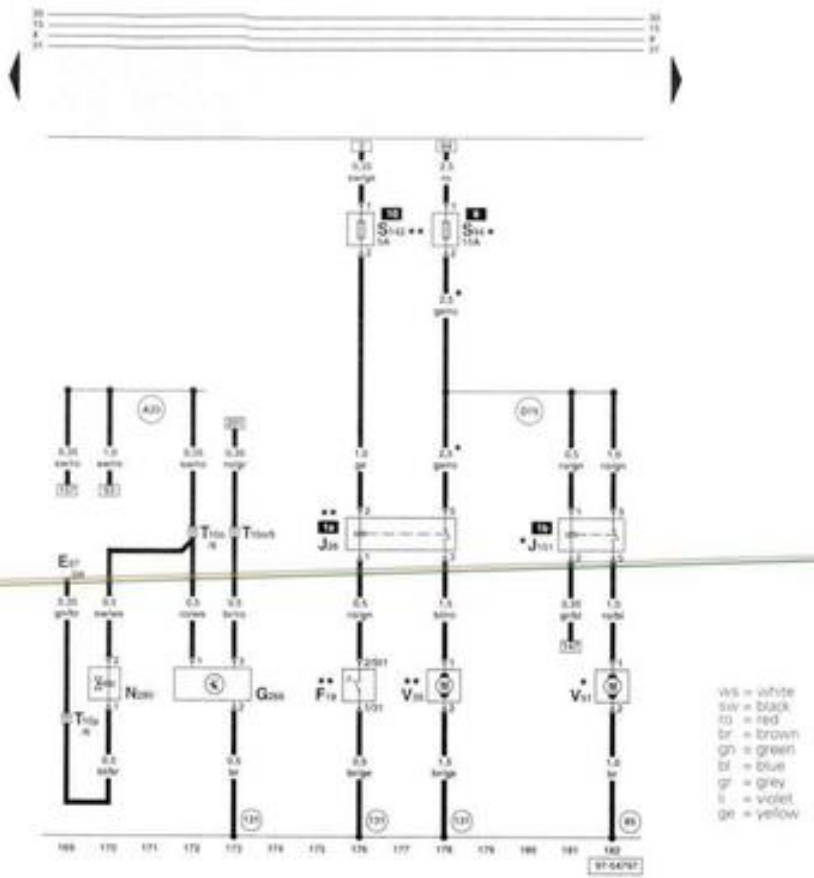
**No. 5/14**



**Coolant FC (Fan Control) Control Module, Coolant FC (Fan Control) Control Module 2, High Pressure Sensor**

Edition 11/02
W42 USA 5604.01.21





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E87 - A/C Control Head
F18 - Coolant Fan Control (FC) Thermal Switch
G266 - Oil Level Thermal Sensor (SR)
J26 - Coolant Fan control (FC) Relay
J151 - Coolant Circulation Pump Relay
N280 - A/C compressor regulator valve
S94 - Third Speed Coolant Fan Fuse
S142 - Control module fuse for coolant fan
T10o - Connector, 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector, 10 pin, black, connector station electronic box plenum chamber
V35 - Right Coolant Fan
V51 - After-Run Coolant Pump

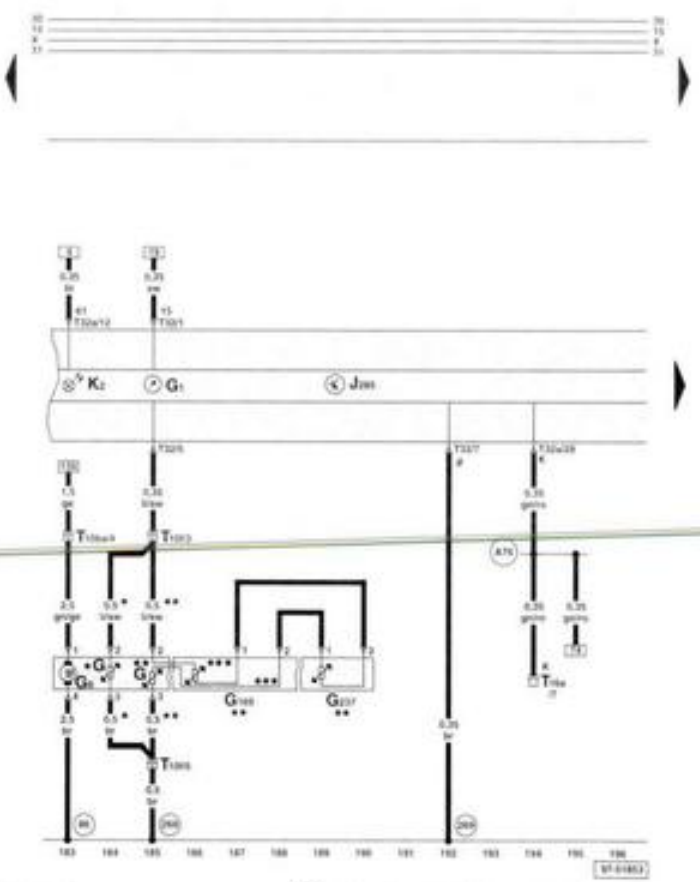
(A31) - Ground connection -1-, in engine compartment wiring harness
(D11) - Ground connection -2-, in engine compartment wiring harness
(A2) - Wire connection (15a), in instrument panel wiring harness
(+) - Plus connection -2- (30), in engine compartment wiring harness

• - Vehicles with After-Run Coolant Fan
•• - Vehicles with Trailer Socket



Coolant Fan Control (FC) Relay, Coolant Circulation Pump Relay, Right Coolant Fan, After-Run Coolant Pump, Oil Level Thermal Sensor





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G - Sender for fuel gauge
G1 - Fuel Gauge
G6 - Fuel Pump (FP)
G169 - Fuel Level Sensor 2
G237 - Sensor -3- for fuel supply
J285 - Control Module with indicator unit in instrument panel insert
K2 - Generator (GEN) Warning Light
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ta - Connector 10 pin, blue, connector station A pillar, left
T16a - Connector 16 pin, Data Link Connector (DLC)
T32 - Connector 32 pin, blue, on instrument cluster
T32a - Connector 32 pin, green, on instrument cluster

(A) - Ground connection -1-, in rear wiring harness
(A1) - Ground connection (sensor ground) -1-, in instrument panel wiring harness
(A75) - Connector (K diagnosis wire), in instrument panel wiring harness

• - Vehicles with front-wheel drive
•• - Vehicles with all-wheel drive
••• - Wiring inside fuel tank
# - Sensor ground output

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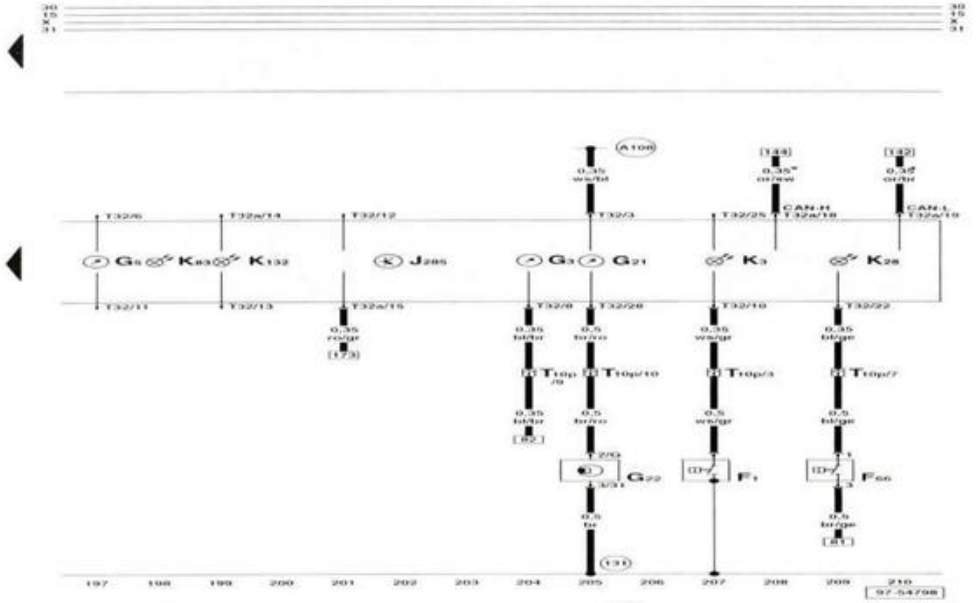



F1 – Oil Pressure Switch
F66 – Engine Coolant Level (ECL) Warning Switch
G3 – Engine Coolant Temperature (ECT) Gauge
G5 – Tachometer
G21 – Speedometer
G22 – Speedometer Vehicle Speed Sensor (VSS)
J285 – Control Module with indicator unit in instrument panel insert
K3 – Oil Pressure Warning Light
K28 – Engine Coolant Level/Temperature (ECL/ECT) Warning Light
K83 – Malfunction Indicator Lamp (MIL)
K132 – Electronic Power Control (EPC) Warning Lamp
T10p – Connector, 10 pin, black, connector station electronic box plenum chamber
T32 – Connector, 32 pin, blue, on instrument cluster
T32a – Connector, 32 pin, green, on instrument cluster

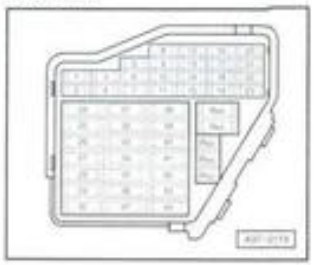
(131) – Ground connection -2-, in engine compartment wiring harness
(A108) – Connector (speed signal), in instrument panel wiring harness
CAN Bus (Data Bus)

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

# Central Locking System / Anti Theft Alarm System / Ultra-Sound Interior Monitor

2003 m. y.

**Fuse Panel**

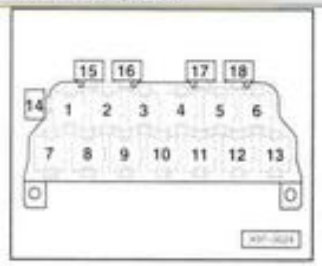


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

**13 - Fold Relay Panel**

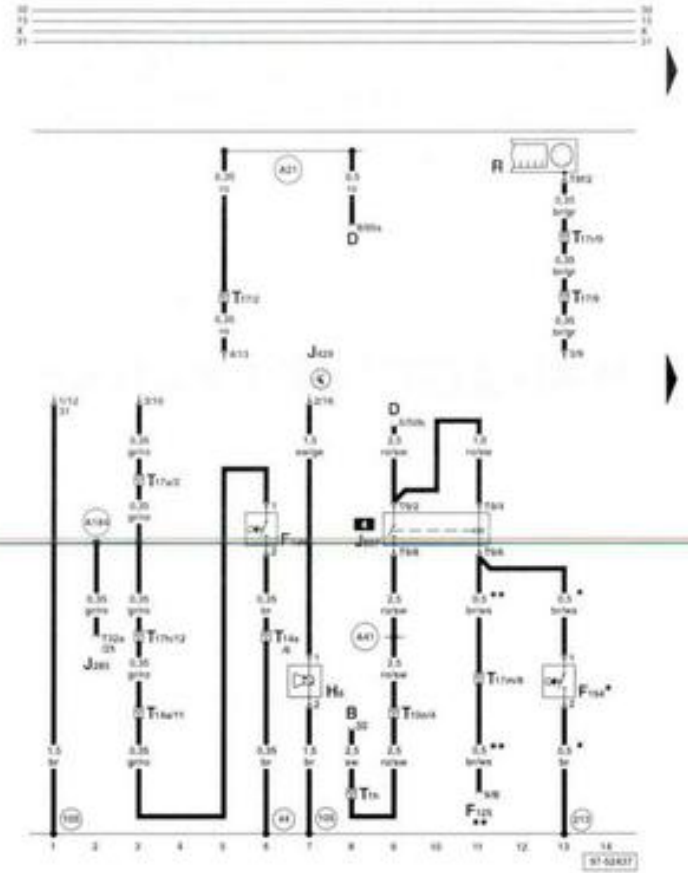



**Relay Location:**

4 Starting Interlock Relay J207

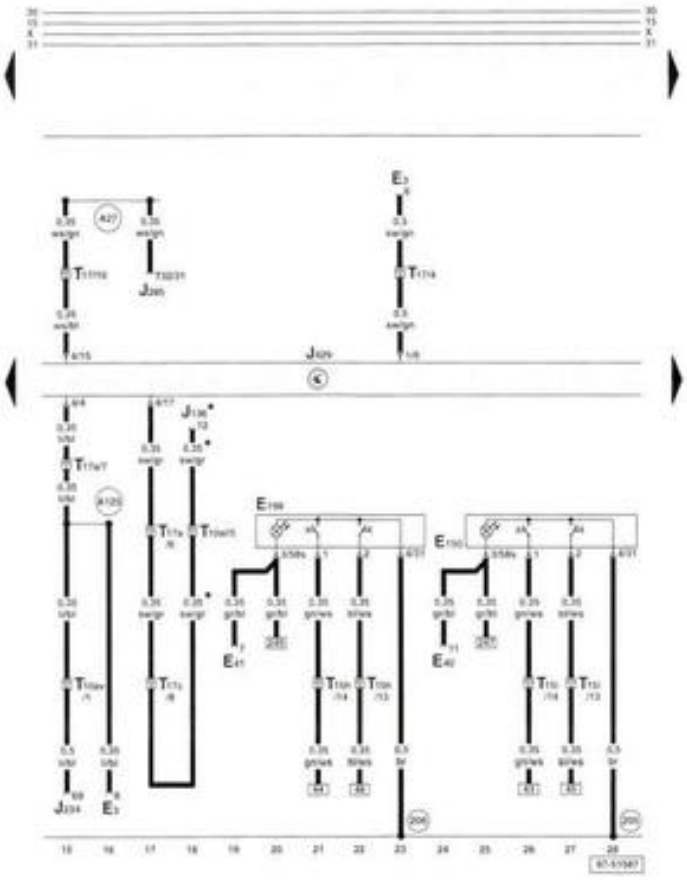







B - Starter
D - Ignition/Starter Switch
F120 - Hood Alarm Switch
F125 - Multi-Function Transmission Range (TR) Switch
F194 - Clutch Pedal Position (CPP) Switch
Hs - Alarm Horn
J207 - Starting Interlock Relay
J285 - Control Module with indicator unit in instrument panel insert
J329 - Control module for central locking
R - Radio
T1h - Single connector, black, in engine compartment, right
T8f - Connector 8 pin, black, connector radio III
T9 - Connector 9 pin, brown, on starting interlock relay
T10b - Connector 10 pin, brown, connector station electronic box pneum chamber
T14a - Connector 14 pin, black, in engine compartment, left front
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17h - Connector 17 pin, brown, connector station A pillar, left
T17m - Connector 17 pin, blue, connector station A pillar, right
T17r - Connector 17 pin, white, behind instrument panel, center
T32a - Connector 32 pin, green, on instrument cluster
(105) - Ground connection, on left A pillar, lower part
(105) - Ground connection 1, in central locking system wiring harness
(112) - Ground connection, in instrument panel wiring harness
(127) - Wire connection (86s), in instrument panel wiring harness
(441) - Plus connection (30), in instrument panel wiring harness
(744) - Front Hood Contact Switch Connector, in instrument panel wiring harness
* - Vehicles with manual transmission
** - Vehicles with automatic transmission

**Control Module for Central Locking, Alarm Horn, Hood Alarm Switch**



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

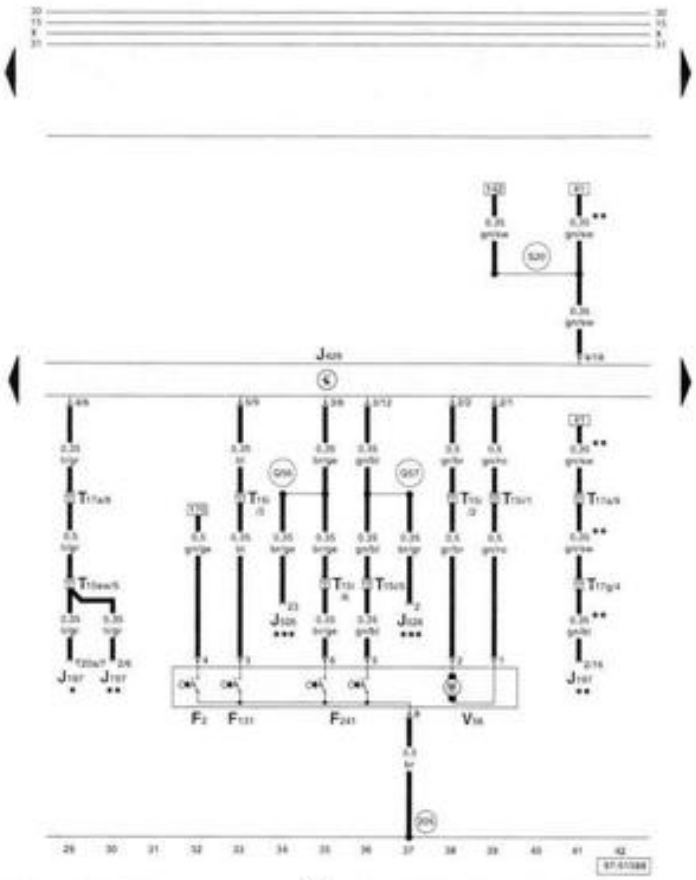
E3 – Emergency Flasher Switch
E40 – Left Front Window Switch
E41 – Right Front Window Switch
E150 – Switch for interior lock, driver side
E199 – Passenger Side Interior Lock Switch
J136 – Memory Seat Control Module
J234 – Airbag Control Module
J285 – Control Module with indicator unit in instrument panel insert
J429 – Control module for central locking
T10a – Connector 10 pin, brown, below driver's seat
T10w – Connector 10 pin, yellow, connector station A pillar, right
T16h – Connector 16 pin, brown, connector station A pillar, right
T16i – Connector 16 pin, brown, connector station A pillar, left
T17 – Connector 17 pin, orange, connector station A pillar, right
T17a – Connector 17 pin, brown, connector station A pillar, right
T17c – Connector 17 pin, green, connector station A pillar, right
T32 – Connector 32 pin, blue, on instrument cluster

(A15) – Ground connection, in driver's door wiring harness
(A16) – Ground connection, in passenger's door wiring harness
(A27) – Wire connection (vehicle speed signal), in instrument panel wiring harness
(A28) – Connection (crash signal) in instrument panel wiring harness
• – Vehicles with Memory Seat



**Control Module for Central Locking, Switch for Interior Lock Driver Side, Passenger Side Interior Lock Switch**



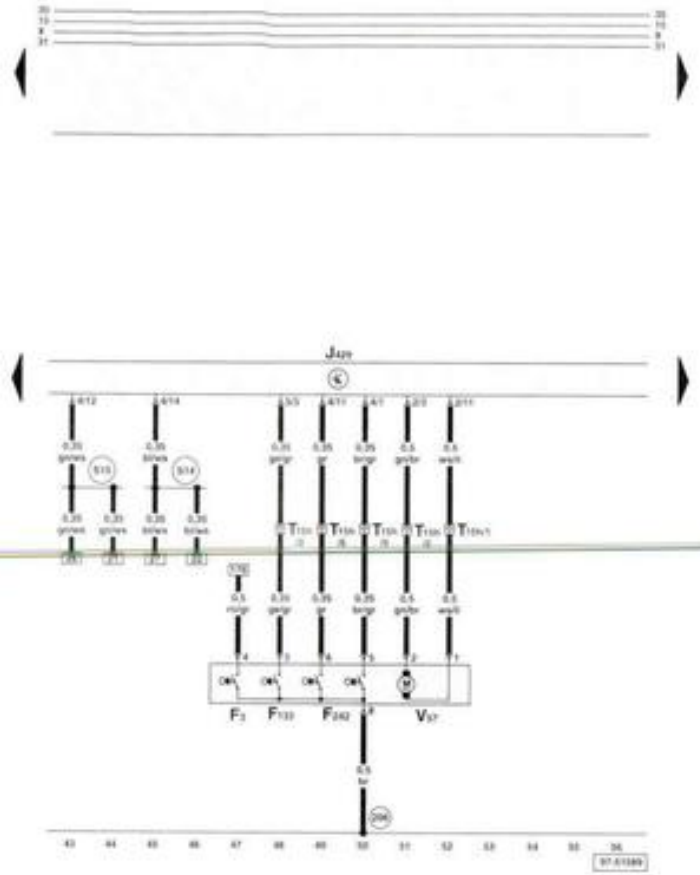


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

F2 – Door Contact Switch - Driver's side
F131 – Left Front Central Locking System Activator/Switch
F241 – Contact switch for lock cylinder, driver side
J197 – Level Control System Control Module
J429 – Control module for central locking
J526 – Telephone/Telematic Control Module
T10aw – Connector 10 pin, black, connector station A pillar, right
T16i – Connector 16 pin, brown, connector station A pillar, left
T17a – Connector 17 pin, brown, connector station A pillar, right
T17g – Connector 17 pin, grey, in B-Fold Relay Panel behind the storage driver's side
T20a – Connector 20 pin, red, on Control Module for Level Control
V56 – Driver's Door Central Locking System Motor

(A5) – Ground connection, in driver's door wiring harness
(A6) – Wire connection open), in alarm system wiring harness
(A7) – Wire connection (closed), in alarm system wiring harness
(1) – Connector -4- in wiring harness central locking
• – Vehicles with Level Control System, not allowed
•• – Vehicles with Level Control System, allowed
••• – Vehicles with Telematics

**Control Module for Central Locking, Door Contact Switch Driver's Side**




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

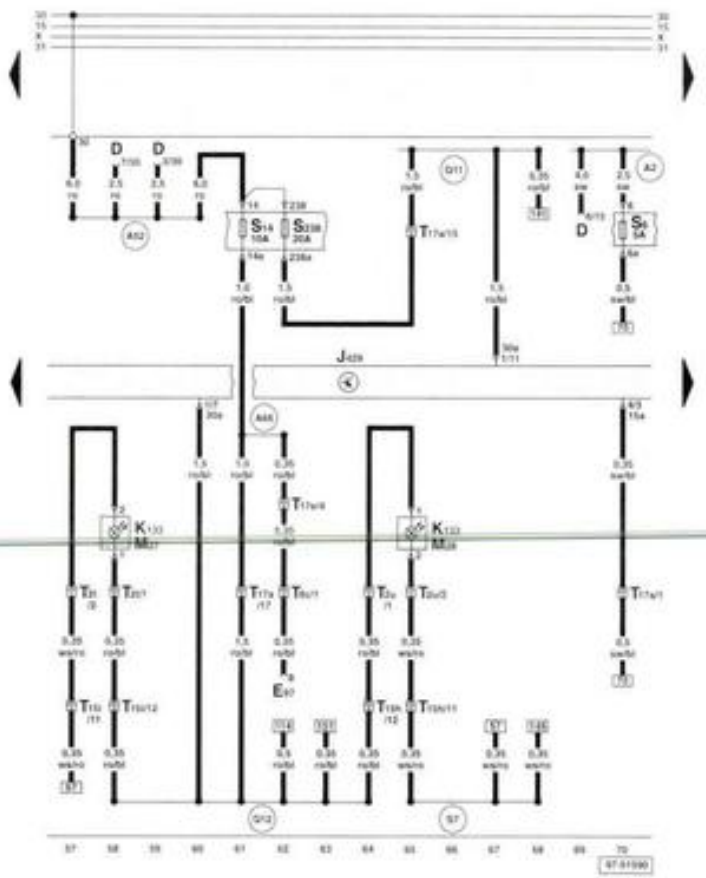
F3 – Door Contact Switch - Passenger's side
F133 – Right Front Central Locking System Actuator/Switch
F242 – Contact switch for lock cylinder, passenger side
J429 – Control module for central locking
T16h – Connector 16 pin, brown, connector station A pillar, right
V57 – Passenger's Door Central Locking System Motor

(T2a) – Ground connection, in passenger's door wiring harness
(2) – Wire connection (open), in central locking system wiring harness
(T1) – Wire connection (closed), in central locking system wiring harness



**Control Module for Central Locking, Door Contact Switch Passenger's Side**





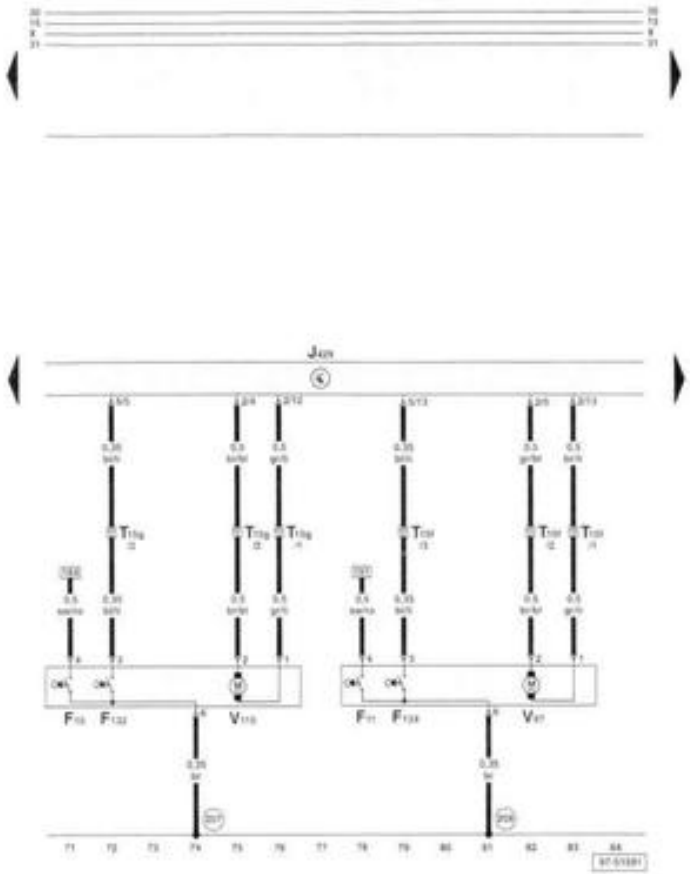

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

D – Ignition/Starter Switch
E97 – Driver's Seat Memory Program Control
J429 – Control module for central locking
K133 – Warning light for central locking SAFE
M27 – Left Door Warning Light
M28 – Right Door Warning Light
S6 – Fuse
S14 – Fuse
S238 – Fuse 38 in fuse holder
T2i – Connector 2 pin, black, in driver's door
T2o – Connector 2 pin, black, in front passenger's door
T8k – Connector 8 pin, black, in driver's door
T16h – Connector 16 pin, brown, connector station A pillar, right
T16i – Connector 16 pin, brown, connector station A pillar, left
T17a – Connector 17 pin, brown, connector station A pillar, right
T17d – Connector 17 pin, black, connector station A pillar, left

(A2) – Plus connection (15), in instrument panel wiring harness
(D11) – Plus connection 2 (30), in instrument panel wiring harness
(A12) – Connector (30a, central locking/anti-theft warning system/SR), in instrument panel wiring harness
(S14) – Plus connection (30a), in power window/central locking system and door contact switch wiring harness
(S238) – Plus connection (30a), in power window/central locking system and door contact switch wiring harness
(1) – Wire connection -2-, in central locking system wiring harness



**Control Module for Central Locking, Left and Right Door Warning Light**



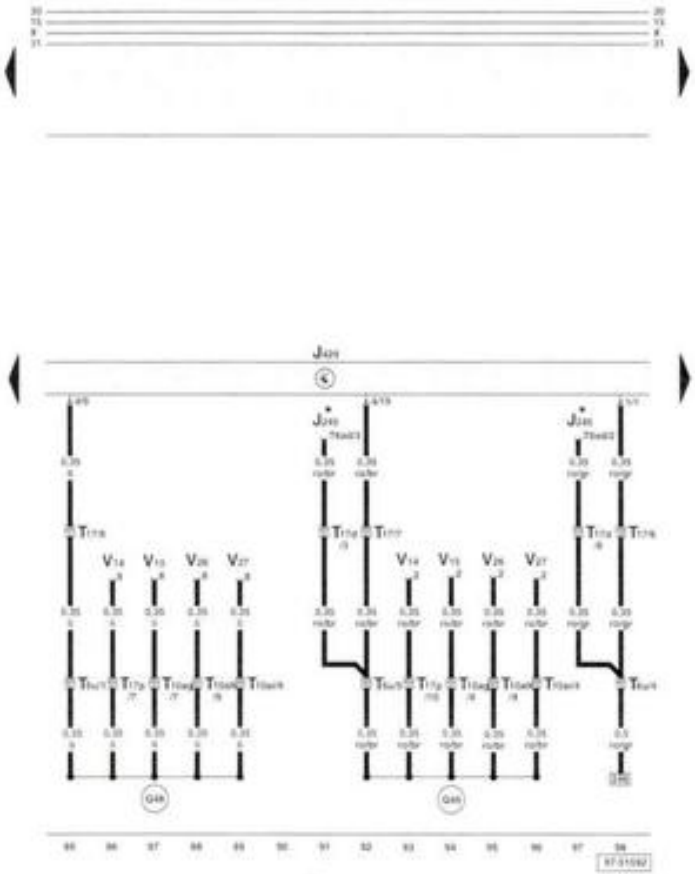
F10 - Left Rear Door Contact Switch
F11 - Right Rear Door Contact Switch
F132 - Left Rear Central Locking System Activator/Switch
F134 - Right Rear Central Locking System Activator/Switch
J429 - Control module for central locking
T16f - Connector 16 pin, blue, in connector station B pillar, right
T16g - Connector 16 pin, blue, in connector station B pillar, left
V97 - Double Cab Right Rear Door Central Locking System Motor
V116 - Left Rear Central Locking System Motor

(207) - Ground connection, in left rear door wiring harness
(208) - Ground connection, in right rear door wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



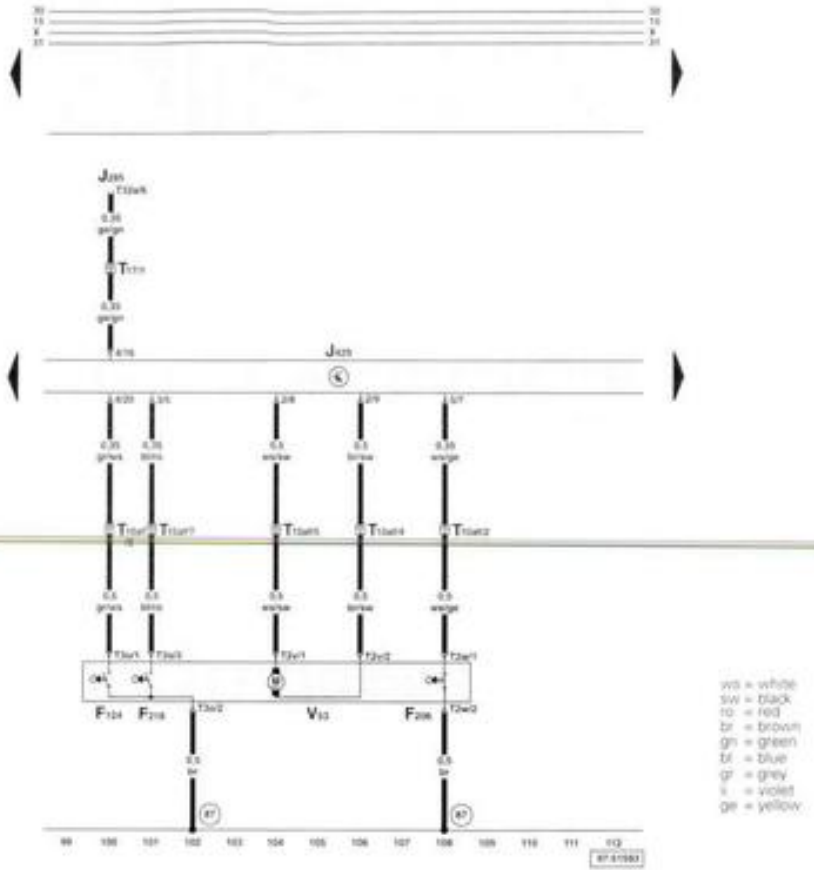




J245 - Power Sunroof Control Module
J429 - Control module for central locking
T6... - Connector 6 pin, grey, connector station A pillar, left
T6e3 - Connector 6 pin, blue, on power sunroof control module
T10ag - Connector 10 pin, red, connector station A pillar, right
T10ah - Connector 10 pin, red, in B pillar, left
T10e - Connector 10 pin, red, in B pillar, right
T17 - Connector 17 pin, orange, connector station A pillar, right
T17g - Connector 17 pin, grey, connector station A pillar, left
T17p - Connector 17 pin, red, connector station A pillar, left
V14 - Left Window Motor
V15 - Right Window Motor
V26 - Motor for Window regulator, rear, left
V27 - Motor for Window regulator, rear, right

(34) - Connection (open), in wiring harness interior
(35) - Connection (closed), in wiring harness interior
• - Vehicles with Power Sunroof

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

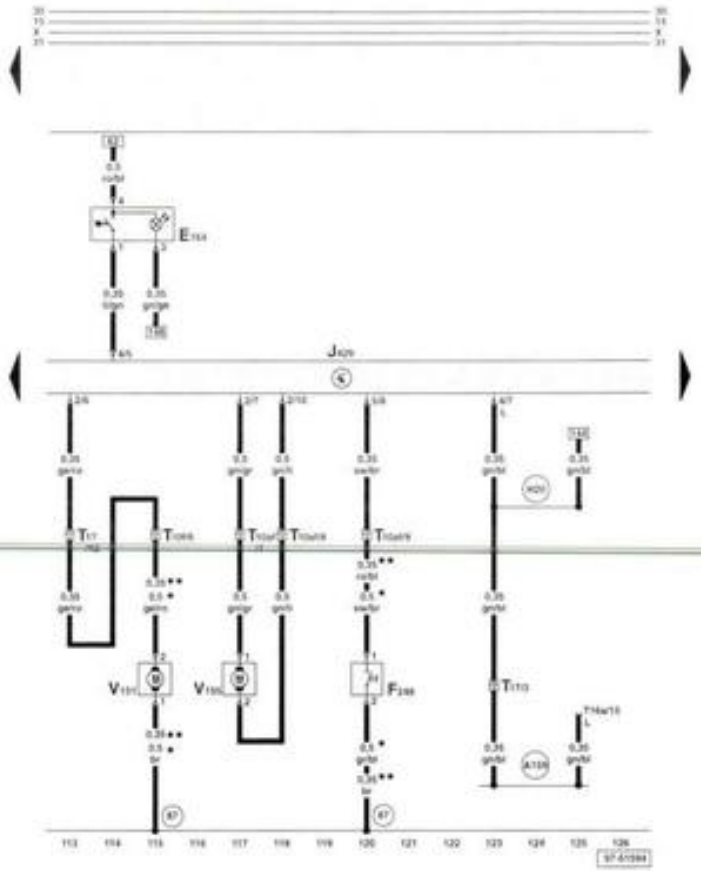



F124 - Trunk Lock Alarm/Central Locking Switch
F206 - Trunk Lid Closed Position Switch
F218 - Switch for central locking, trunk lid
J285 - Control Module with indicator unit in instrument panel insert
J519 - Control module for central locking
T2v - Connector 2 pin, black, luggage compartment
T2w - Connector 2 pin, grey, luggage compartment
T3o - Connector 3 pin, black, in rear lid
T10af - Connector 10 pin, violet, in B-Post Relay Panel behind the storage driver's side
T17 - Connector 17 pin, orange, connector station A pillar, right
T32a - Connector 32 pin, green, on instrument cluster
V53 - Decklid Central Locking System Motor

Ground connection -2-, in rear wiring harness

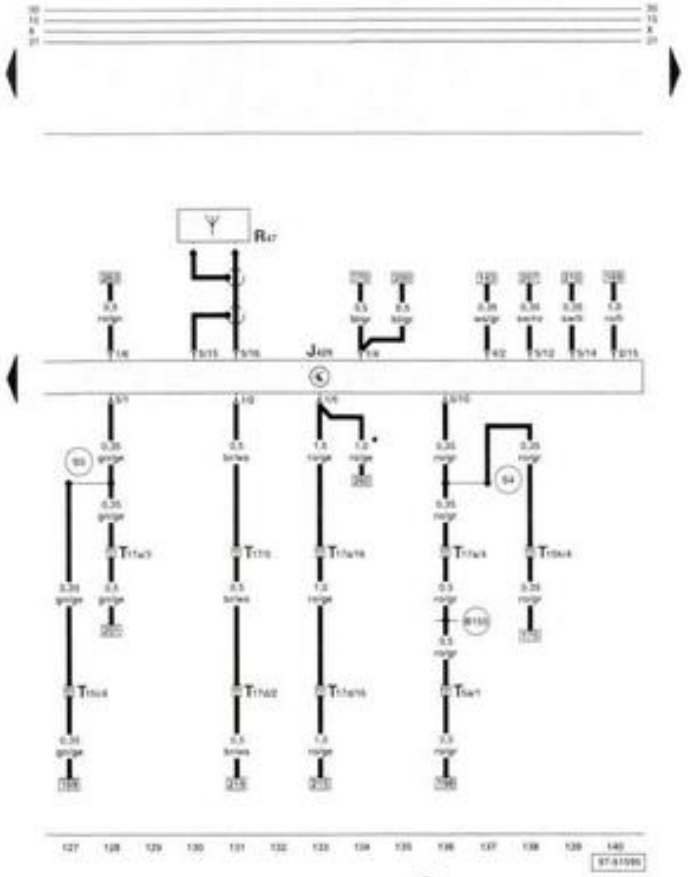







E164 - Luggage Compartment Release Switch
F248 - Switch for unlocking, rear lid lock cylinder
J429 - Control module for central locking
T10f - Connector 10 pin, brown, connector station A pillar, left
T10af - Connector 10 pin, violet, in B-Post Relay Panel behind the storage driver's side
T16a - Connector 16 pin, data link connector
T17 - Connector 17 pin, orange, connector station A pillar, right
V151 - Motor for remote unlock rear lid
V155 - Motor for fuel tank lid unlock

Ground connection -2-, in rear wiring harness
Connection (L) on instrument panel wiring harness
Wire connection -1-, in On-Board Diagnostic (OBD) wiring harness
* - Sedan
** - Wagon



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

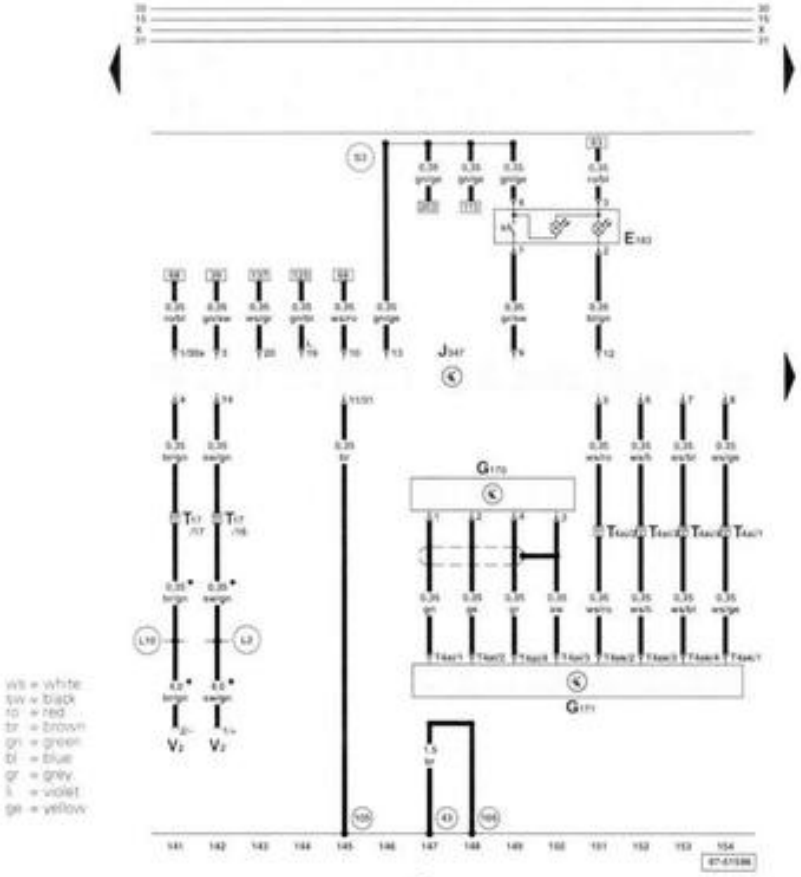
J429 - Control module for central locking
R47 - Window antenna for central locking and anti-theft warning system
T5a - Connector 5 pin, black, behind instrument panel, right
T10h - Connector 10 pin, brown, connector station A pillar, right
T16 - Connector 16 pin, brown, connector station A pillar, left
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17d - Connector 17 pin, grey, connector station A pillar, left

(74) - Connector 2- (TK), in wiring harness interior
(S4) - Wire connection (TK right), central locking system wiring harness
(S5) - Wire connection (TK left), central locking system wiring harness
• - Wagon only



Control Module for Central Locking, Window Antenna for Central Locking and Anti-Theft Warning System

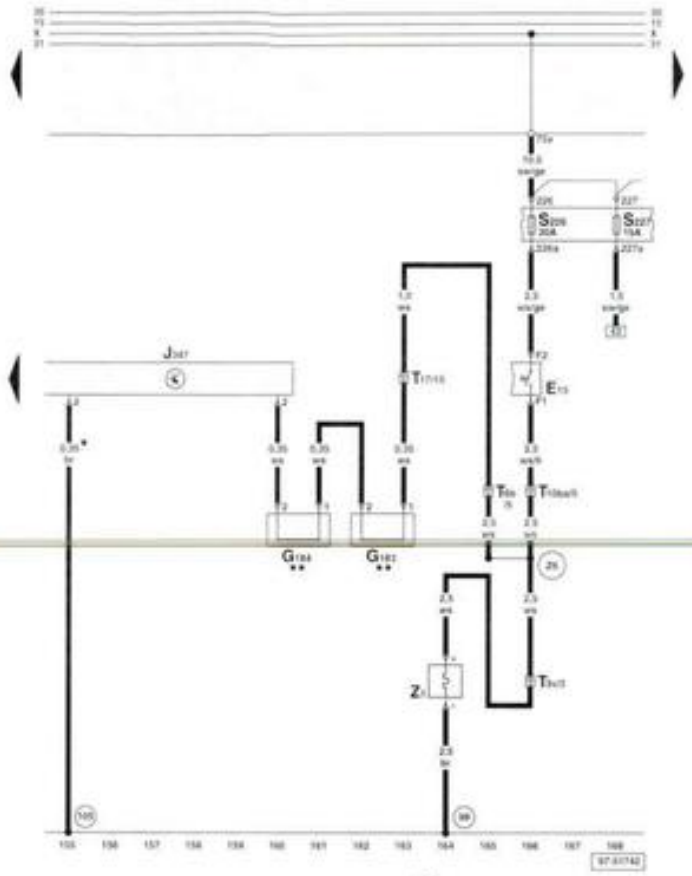




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E193 - Switch for passenger compartment monitoring
G170 - Interior Monitoring sensor, left for anti-theft warning system
G171 - Interior Monitoring sensor, right for anti-theft warning system
J347 - Control Module for Ultra-Sound sensors
T4a - Connector 4 pin, on C pillar, right
T4ak - Connector 4 pin, on interior monitoring sensor, right
T4al - Connector 4 pin, on interior monitoring sensor, right
T17 - Connector 17 pin, orange, connector station A pillar, right
V2 - Fresh Air Blower

(42) - Ground connection, on right A-pillar, lower part
(105) - Ground connection -1-, in central locking system wiring harness
(L2) - Wire connection, in A/C wiring harness
(L10) - Wire connection -2-, in A/C wiring harness
(S3) - Wire connection -1- (switch/control module), central locking system wiring harness
• - Vehicles with Sunroof with Solar Cells



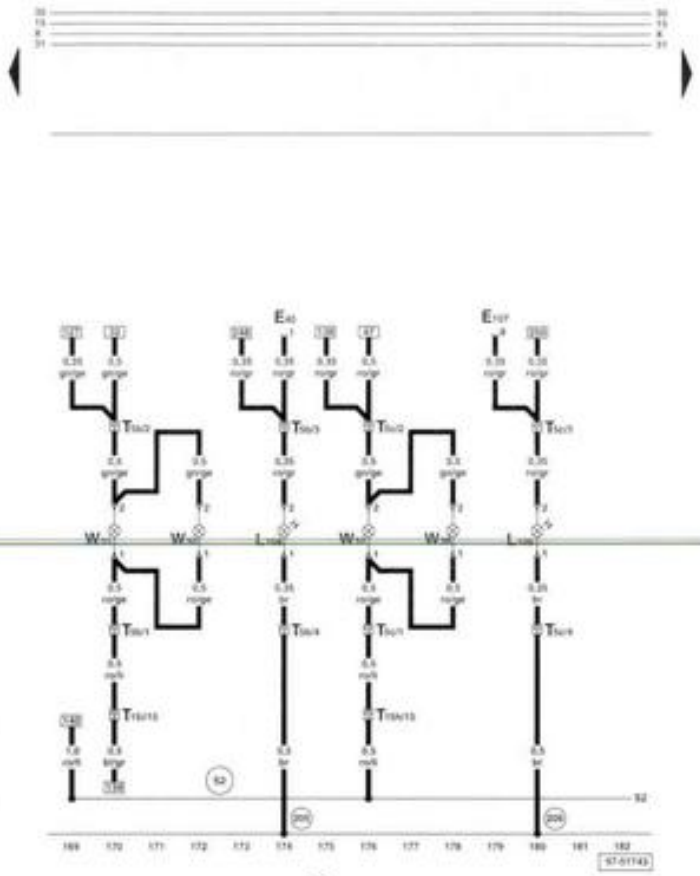

E15 - Rear Window Defogger Switch
G183 - Sensor for broken window glass rear left
G184 - Sensor for broken window glass rear right
J347 - Control Module for Ultra-Sound sensors
S226 - Fuse 26 in fuse holder
S227 - Fuse 27 in fuse holder
T3v - Connector 3 pin, black, in luggage compartment
T6b - Connector 6 pin, white, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
T17 - Connector 17 pin, orange, connector station A pillar, right
Z1 - Heated rear window

(30) - Ground connection, in rear lid wiring harness
(75) - Ground connection -1-, in central locking system wiring harness
(76) - Positive connection (K), in window heating wiring harness

• - Sedan
•• - Wagon

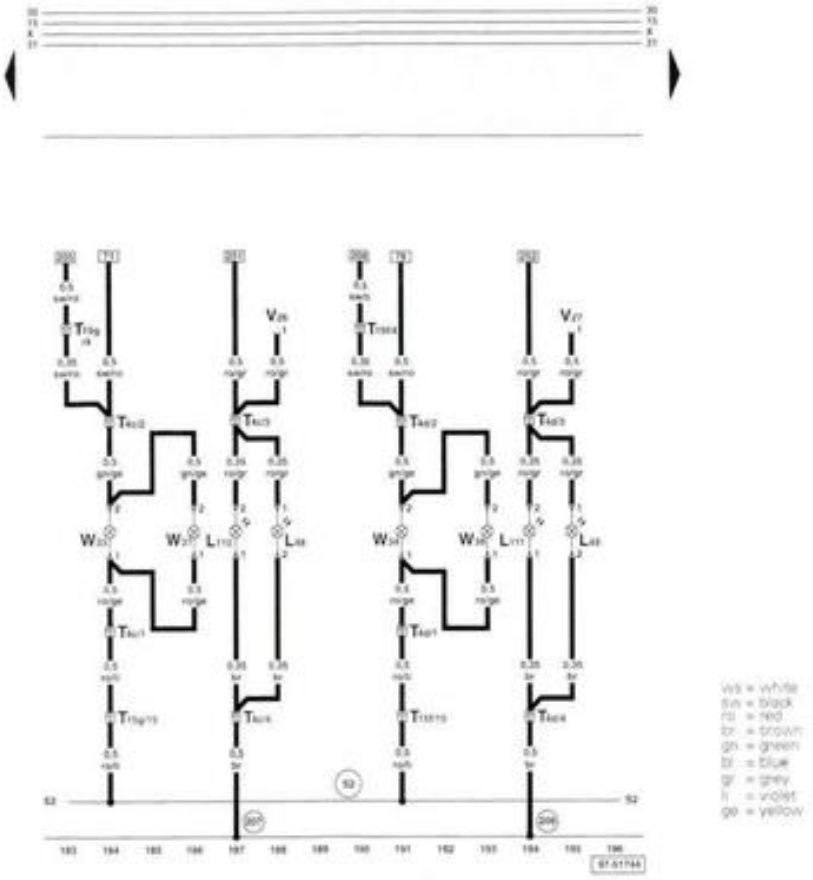







E40 - Left Front Window Switch
E107 - Switch for window regulator, in passenger door
L108 - Door opener lighting, driver side
L109 - Door opener lighting, passenger side
T5b - Connector 5 pin, black, in driver's door
T5c - Connector 5 pin, black, in passenger's door
T15h - Connector 15 pin, brown, connector station A pillar, right
T15i - Connector 15 pin, brown, connector station A pillar, left
W30 - Door Warning Light, driver side
W31 - Entry light front, left
W32 - Entry light front, right
W36 - Door warning light, passenger side

(15) - Ground connection, in driver's door wiring harness
(24) - Ground connection, in passenger's door wiring harness
(53) - Wire connection, in central locking system wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

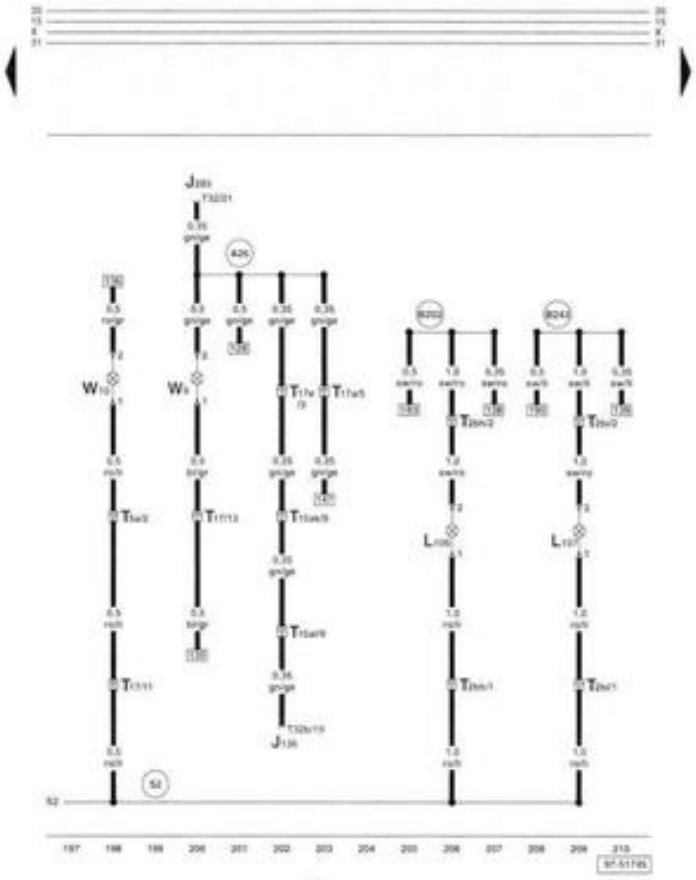
L48 - Left Rear Ashtray Light
L49 - Right Rear Ashtray Light
L110 - Door opener lighting, left rear
L111 - Door opener lighting, right rear
T4c - Connector 4 pin, black, in left rear door
T4d - Connector 4 pin, black, in right rear door
T15f - Connector 15 pin, blue, in connector station B pillar, right
T15g - Connector 15 pin, blue, in connector station B pillar, left
V26 - Motor for Window regulator, rear, left
V27 - Motor for Window regulator, rear, right
W33 - Entry light rear, left
W34 - Entry light rear, right
W37 - Door warning light rear, left
W38 - Door warning light rear, right

(52) - Ground connection, in left rear door wiring harness
(206) - Ground connection, in right rear door wiring harness
(X) - Wire connection, in central locking system wiring harness



Entry Light Rear, Door Warning Light
Rear, Door Opener Lighting Rear



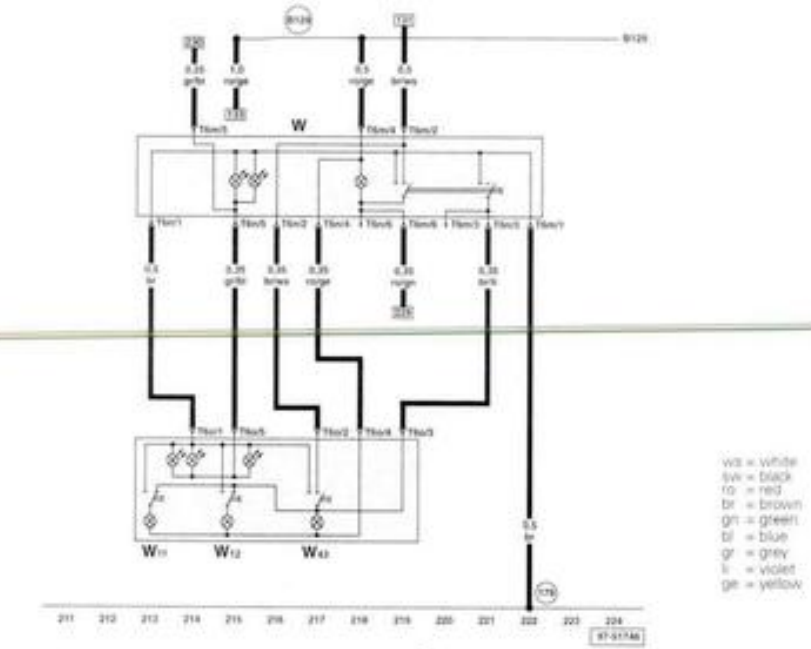


ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J136 - Memory Seat Control Module
J285 - Control Module with indicator unit in instrument panel insert
L106 - Footwell lighting, left rear
L107 - Footwell lighting, right rear
T26h - Connector 2 pin, black, below driver's seat
T26i - Connector 2 pin, black, below passenger's seat
T5a - Connector 5 pin, black, behind instrument panel, right
T10ak - Connector 10 pin, green, connector station A pillar, left
T10al - Connector 10 pin, brown, below driver's seat
T17 - Connector 17 pin, orange, connector station A pillar, right
T17a - Connector 17 pin, brown, connector station A pillar, right
T17e - Connector 17 pin, black, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
T32b - Connector 32 pin, blue, in driver's seat
W9 - Left Footwell Light
W10 - Right Footwell Light

(52) - Wire connection (driver's door contact switch), in instrument panel wiring harness
(53) - Connector 3 (TK), in passenger compartment wiring harness
(202) - Connector 4 (TK) in passenger compartment wiring harness
(X) - Wire connection, in central locking system wiring harness

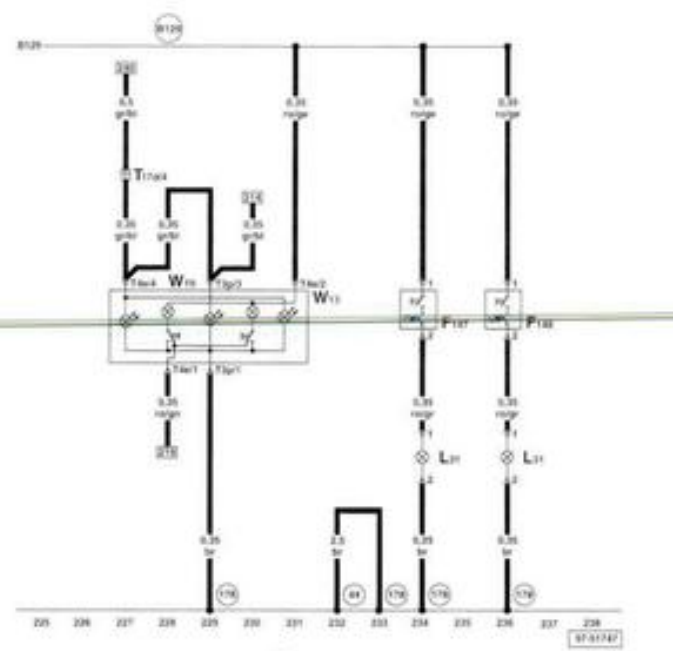
Footwell Lighting Rear, Footwell Light




T6m - Connector 6 pin, on interior light, front
T6n - Connector 6 pin, on interior light, front
T6o - Connector 6 pin, on interior light, rear
W - Front Interior Light
W11 - Left Rear Reading Light
W12 - Right Rear Reading Light
W43 - Rear courtesy lamp

Ground connection, in sunroof wiring harness

Connector interior light 2/11, in wiring harness interior

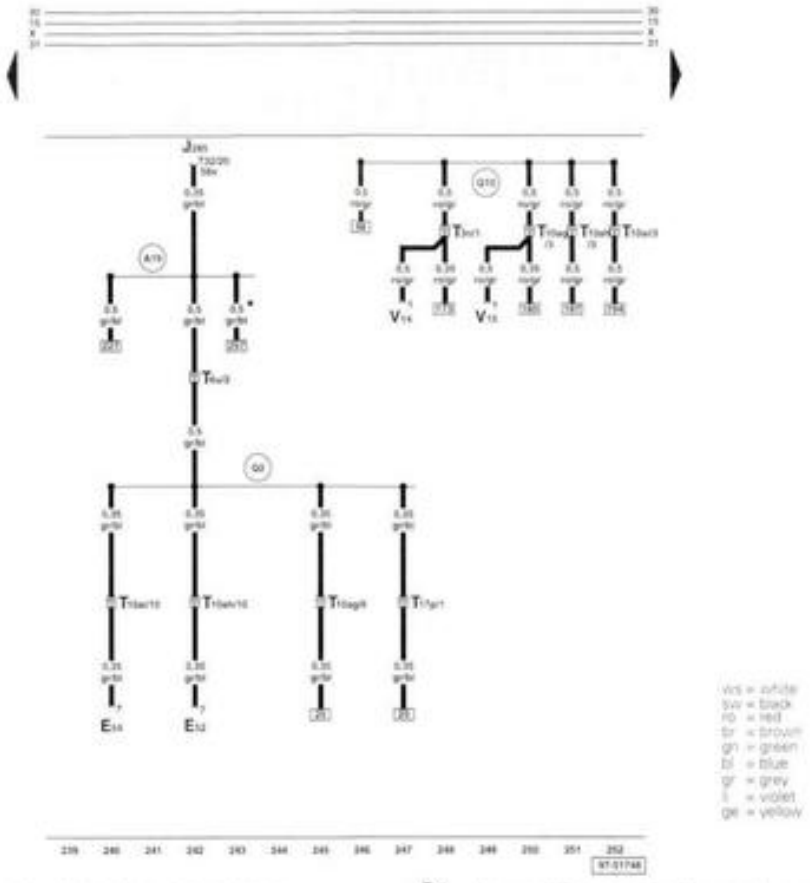



F147 - Left Make-Up Mirror Light Switch
F148 - Right Make-Up Mirror Light Switch
L31 - Make-up Mirror Light
T3p - Connector 3 pin, on reading lamp front right
T4e - Connector 4 pin, on reading lamp front left
T17d - Connector 17 pin, grey, connector station A pillar, left
W13 - Passenger's Map/Reading Light
W19 - Left Front Reading Light

Ground connection, on left A-pillar, lower part

Ground connection, in sunroof wiring harness

Connector interior light 2/11, in wiring harness interior



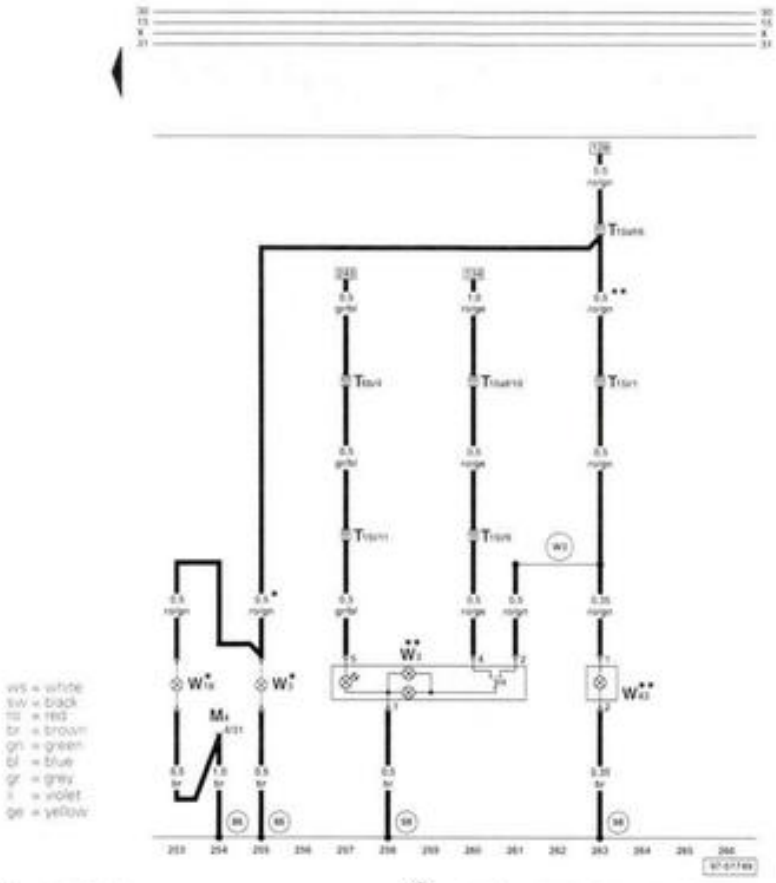

E52 – Left Rear Window Switch, in LR Door
E54 – Right Rear Window Switch, in RR Door
J386 – Control Module with indicator unit in instrument panel insert
T2r – Connector 2 pin, red, connector station A pillar, left
T6c – Connector 6 pin, grey, connector station A pillar, left
T10ag – Connector 10 pin, red, connector station A pillar, right
T10ah – Connector 10 pin, red, in B pillar, left
T10e – Connector 10 pin, red, in B pillar, right
T17o – Connector 17 pin, red, connector station A pillar, left
T32 – Connector 32 pin, blue, on instrument cluster
V14 – Left Window Motor
V15 – Right Window Motor

(X28) – Wire connection (58s), in instrument panel wiring harness
(G2) – Plus connection (58s), in power window wiring harness
(+15) – Plus connection (87), in power window/central locking system and door contact switch wiring harness

• – Wagon only








M4 – Left Tail Light
T6b – Connector 6 pin, white, connector station A pillar, left
T10af – Connector 10 pin, violet, in 8-Fold Relay Panel behind the storage driver's side
T15i – Connector 15 pin, black, in Luggage compartment
W3 – Luggage Compartment Light
W18 – Left Luggage Compartment Light
W43 – Rear courtesy lamp

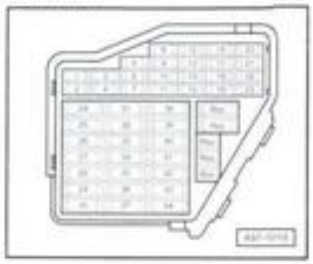
(31) – Ground connection 1, in rear wiring harness
(X) – Ground connection, in rear lid wiring harness
(Y2) – Wire connection, in rear wiring harness

• – Sedan
•• – Wagon

# Daytime Running Lights with Fog Light and Rear Fog Light (Canada)

2003 m. y.

**Fuse Panel**

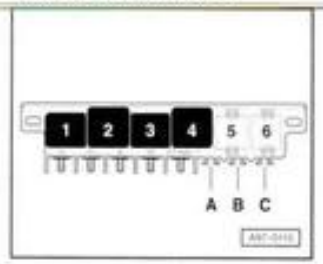


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
15 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

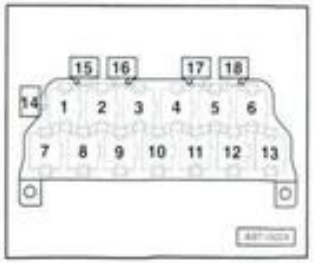
**Micro Central Electric Panel**




**Relay Location:**

**2** Load Reduction Relay, J59

**13 - Fold Relay Panel**




**Relay Location:**

**6** Fog Light Relay, J5

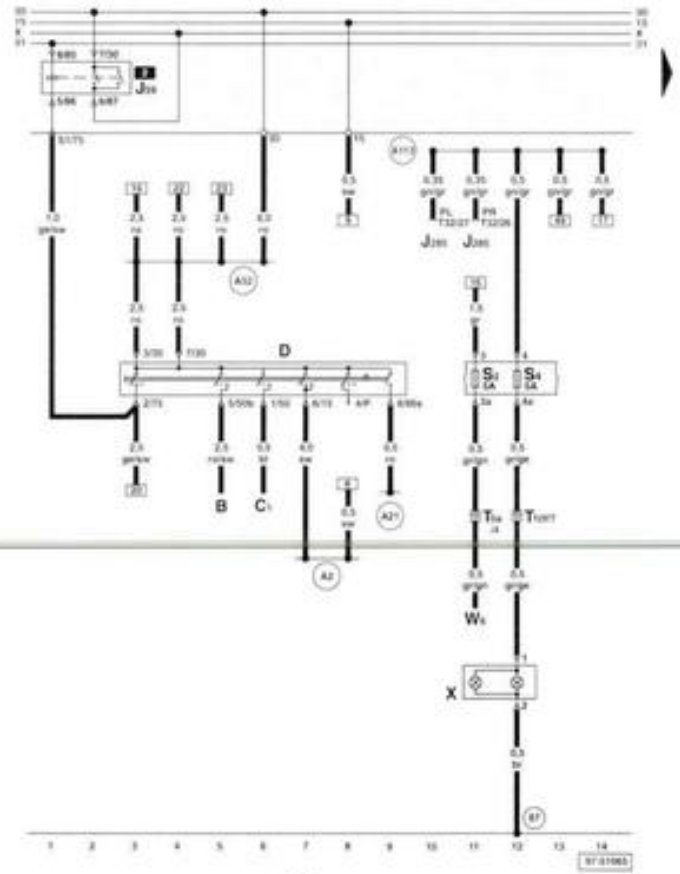
**9** Lamp Control Module, J123

**10** Lamp Control Module, J123

**17** Fog Light Circuit Breaker, S28



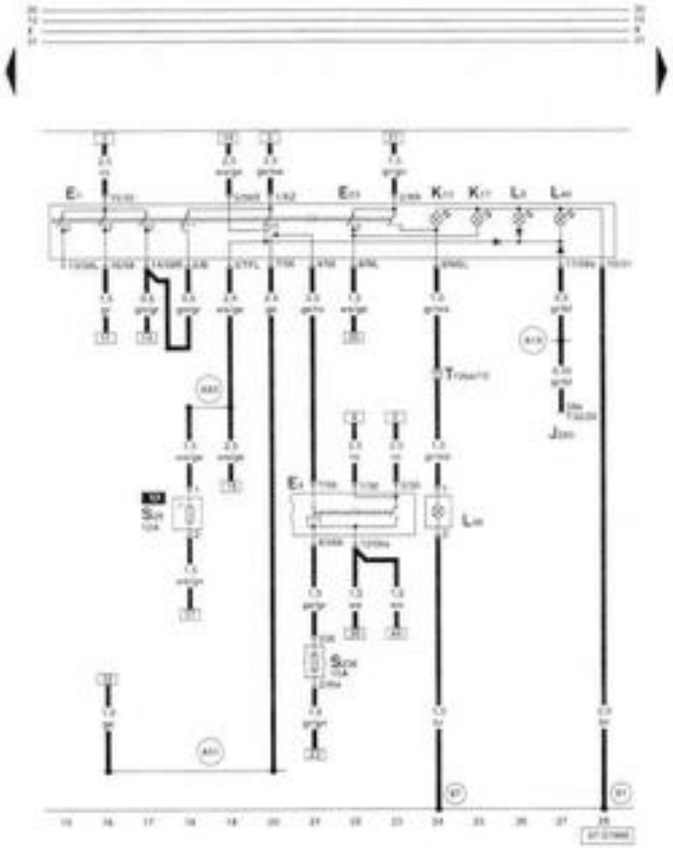





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

B - Starter
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J285 - Control Module with indicator unit in instrument panel insert
S3 - Fuse
S4 - Fuse
T5a - Connector 5 pin, black, behind instrument panel, right
T10f - Connector 10 pin, brown, connector station A pillar, left
T32 - Connector 32 pin, blue, on instrument cluster
W1 - Glove Compartment Light
X - License Plate Light

87 - Ground connection -2-, in rear wiring harness
A2 - Plus connection (15), in instrument panel wiring harness
A12 - Wire connection (86s), in instrument panel wiring harness
A21 - Plus connection -2- (30), in instrument panel wiring harness
A112 - Connection 2 (daytime running lights), in instrument panel wiring harness



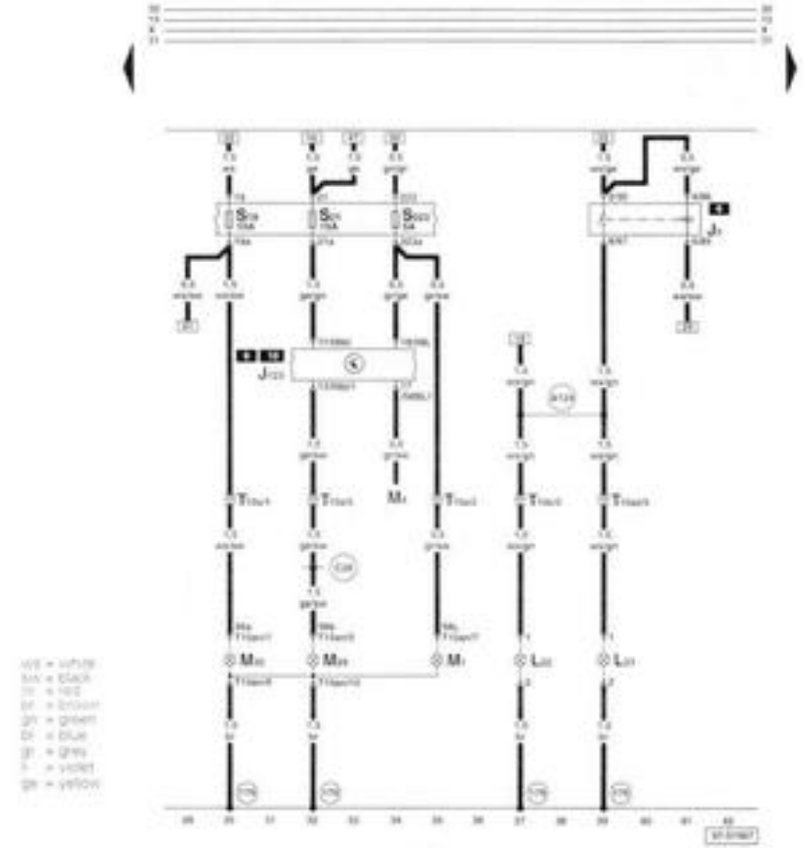
E1 – Light switch
E4 – Headlight Dimmer/Flasher Switch
E23 – Fog Light Switch
J285 – Control Module with indication unit in instrument panel insert
K13 – Rear Fog Light Indicator Light
K17 – Fog Light Indicator Light
L9 – Headlight Switch Light
L40 – Front And Rear Fog Light Switch Light
L96 – Left Rear Fog Light
S29 – Fog Light Fuse
S236 – Fuse 36 in fuse holder
T16a – Connector 16-pin, blue, connector station A pillar, left
T32 – Connector 32-pin, blue, on instrument cluster

1 – Ground connection 1, in instrument panel wiring harness
2 – Ground connection 2, in rear wiring harness
5 – Wire connection (58s), in instrument panel wiring harness
10 – Wire connection (58), in instrument panel wiring harness
A4 – Connector, daytime running lights, in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow







J5 – Fog Light Relay
J23 – Lamp Control Module
L22 – Left Front Fog Light
L23 – Right Front Fog Light
M1 – Left Parking Light
M4 – Left Tail Light
M29 – Left Low Beam Headlight
M30 – Left High Beam Headlight
S19 – Fuse
S21 – Fuse
S223 – Fuse 23 in fuse holder
T10a – Connector 10-pin, pink, connector station A pillar, left
T10b – Connector 10-pin, red, connector station A pillar, left
T10ai – Connector 10-pin, on headlight, left
T10ar – Connector 10-pin, red, connector station A pillar, right

1 – Ground connection, in right headlight wiring harness
2 – Ground connection, in left headlight wiring harness
3 – Connection 3 (daytime running lights), in instrument panel wiring harness
4 – Connector 1, (58s), in wiring harness headlamp

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow



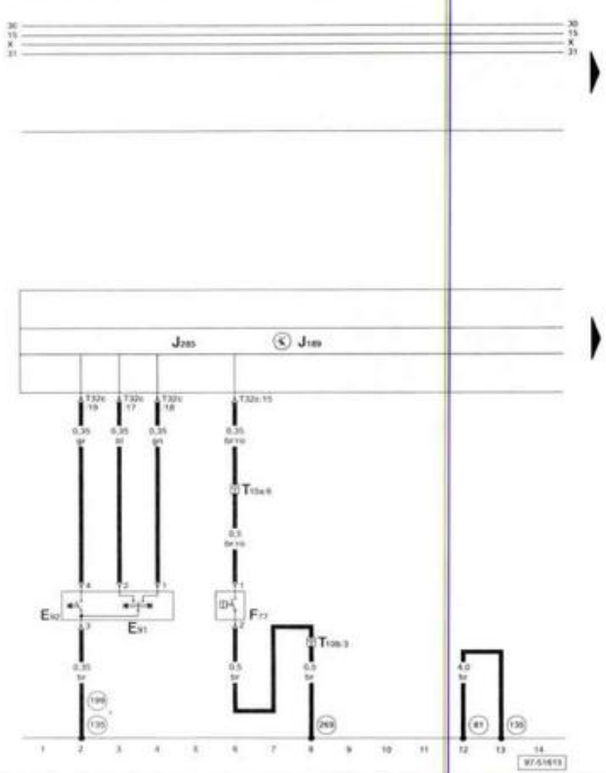


USA 5604.03.21
Edition 06/03

# EWD-254 Electrical Wiring Diagrams

*Instruments and Controls (2003)*

**Audi A6** **Wiring Diagram** **No. 16/3**




**Board Computer Function Selector Switch, Windshield Washer Fluid Level Warning Switch**

- E91 - Board Computer Function Selector Switch
- E92 - Board Computer Reset Button
- F77 - Windshield Washer Fluid Level Warning Switch
- J189 - Auto Check System
- J285 - Control Module with indicator unit in instrument panel insert
- T10a - Connector 10 pin, pink, connector station A pillar, left
- T10b - Connector 10 pin, red, connector station A pillar, left
- T32c - Connector 32 pin, grey, on instrument cluster
- (81) - Ground connection -1-, in instrument panel wiring harness
- (135) - Ground connection -2-, in instrument panel wiring harness
- (195) - Ground connection -3-, in instrument panel wiring harness
- (269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
- * - both are possible

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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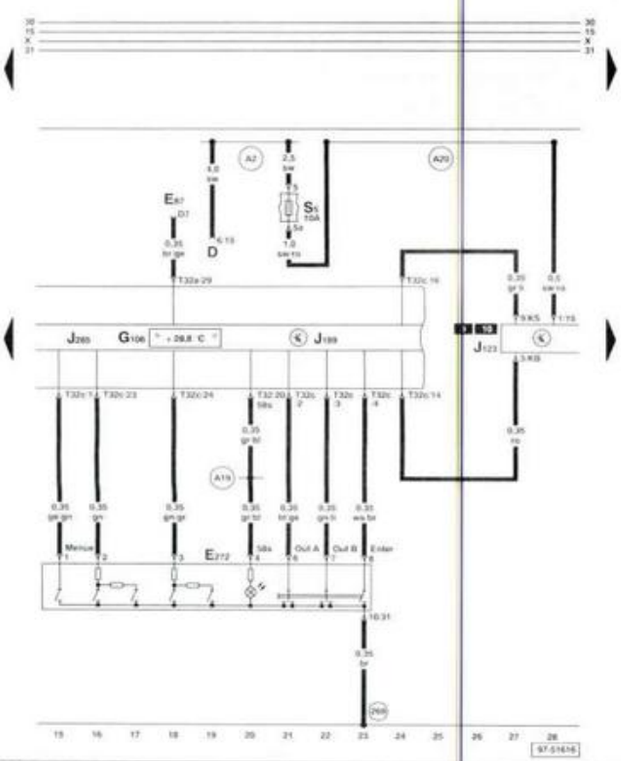
**Audi A6** **Wiring Diagram** **No. 16/4**




**Lamp Control Module, Outside Air Temperature Display, Board Computer Function Selector Switch II**

- D - Ignition/Starter Switch
- E87 - A/C Control Head
- E272 - Board Computer Function Selector Switch II, in console
- G106 - Outside Air Temperature Display
- J123 - Lamp Control Module
- J189 - Auto Check System
- J285 - Control Module with indicator unit in instrument panel insert
- S5 - Fuse
- T32 - Connector 32 pin, blue, on instrument cluster
- T32a - Connector 32 pin, green, on instrument cluster
- T32c - Connector 32 pin, grey, on instrument cluster
- (269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
- (A2) - Plus connection (15), in instrument panel wiring harness
- (A19) - Wire connection (58d), in instrument panel wiring harness
- (A20) - Wire connection (15a), in instrument panel wiring harness

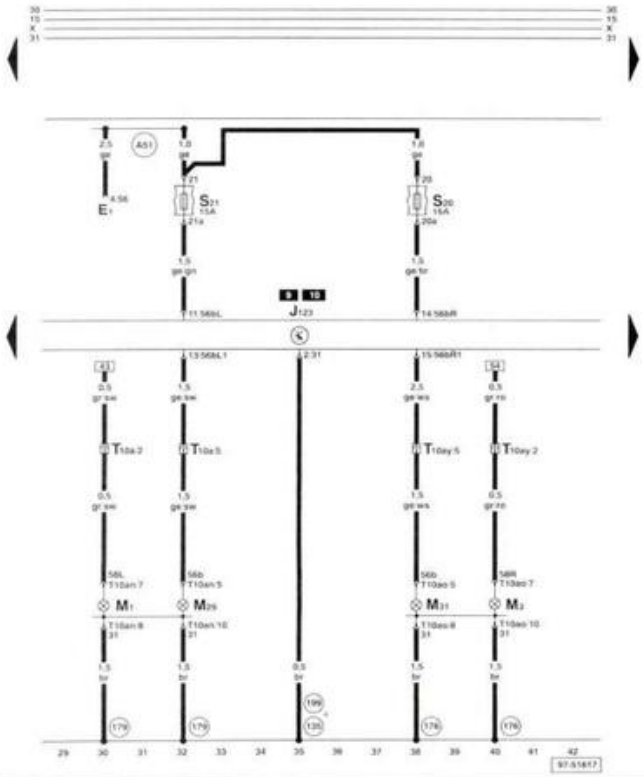
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

USA.5604.03.21 Edition 05/03

## Audi A6

**Wiring Diagram**

## No. 16/5



**Lamp Control Module, Parking Light, Low Beam Headlight**

E1 - Light switch
J123 - Lamp Control Module
M1 - Left Parking Light
M3 - Right Parking Light
M29 - Left Low Beam Headlight
M31 - Right Low Beam Headlight
S20 - Fuse
S21 - Fuse
T10a - Connector 10 pin, pink, connector station A pillar, left
T10an - Connector 10 pin, on headlight, left
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right

(135) - Ground connection -2-, in instrument panel wiring harness
(176) - Ground connection, in right headlight wiring harness
(179) - Ground connection, in left headlight wiring harness
(199) - Ground connection -3-, in instrument panel wiring harness
(A51) - Wire connection (56), in instrument panel wiring harness

* - both are possible

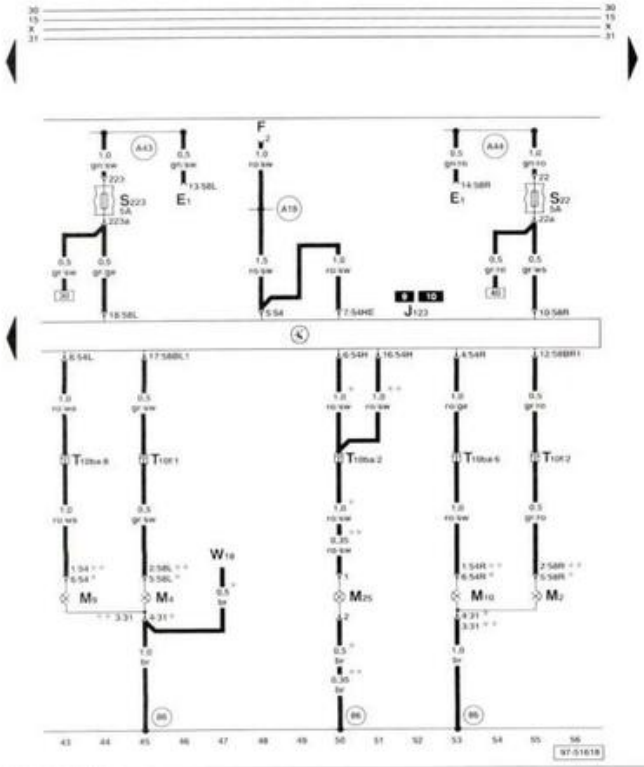
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 16/6



**Lamp Control Module, Brake Light, Tail Light**

E1 - Light switch
F - Brake Light Switch
J123 - Lamp Control Module
M2 - Right Tail Light
M4 - Left Tail Light
M9 - Left Brake Light
M10 - Right Brake Light
M25 - High-mount Brake Light
S22 - Fuse
S223 - Fuse 23 in fuse holder
T10f - Connector 10 pin, brown, connector station A pillar, left
T10ba - Connector 10 pin, blue, connector station A pillar, left
W18 - Luggage Compartment light, left

(86) - Ground connection -1-, in rear wiring harness
(A19) - Wire connection (54), in instrument panel wiring harness
(A43) - Wire connection (57s), in instrument panel wiring harness
(A44) - Wire connection (57t), in instrument panel wiring harness

* - Sedan
** - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



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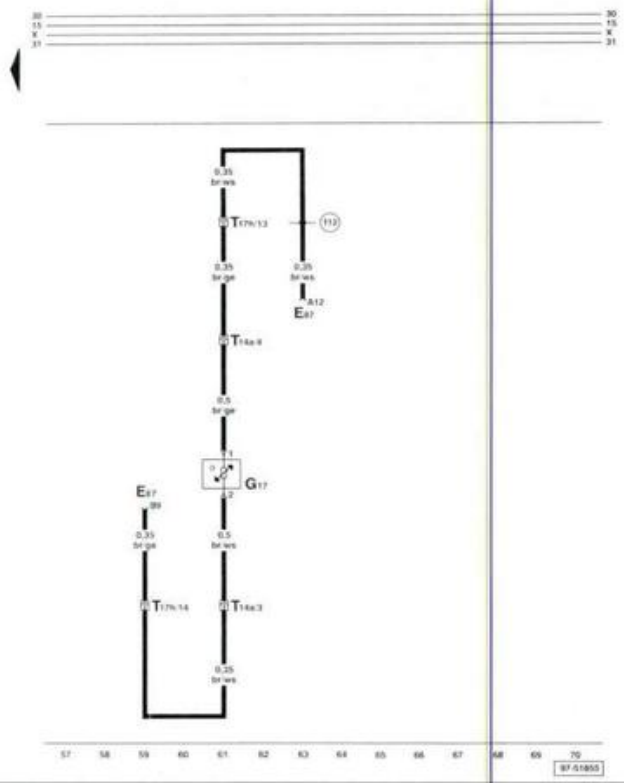
**Audi A6** | **Wiring Diagram** | **No. 16/7**




**Outside Air Temperature Sensor**

E87 - A/C Control Head
G17 - Outside Air Temperature Sensor
T14a - Connector 14 pin, black, in engine compartment, left front
T17h - Connector 17 pin, brown, connector station A pillar, left

(112) - Ground connection -2-, in A/C wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



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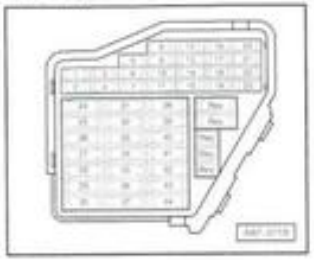
# Headlights with High Intensity Gas Discharge (HID) Lamps and Automatic Dynamic Headlight Beam Adjusting

2003 m. y.

**Fuse Panel**

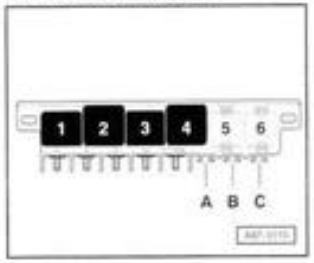


**Fuse Colors:**

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7.5 A - Brown
5 A - Beige

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.

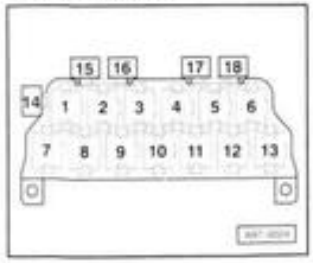
**Micro Central Electric Panel**




**Relay Location:**

**2** Load Reduction Relay, J59

**13 - Fold Relay Panel**



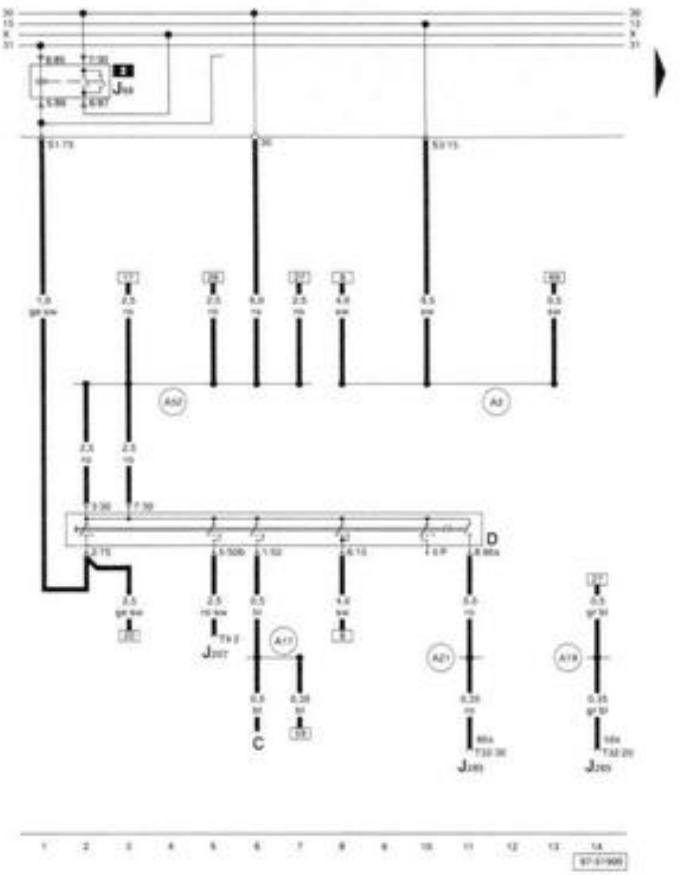

**Relay Location:**

**9** Lamp Control Module, J123

**10** Lamp Control Module, J123



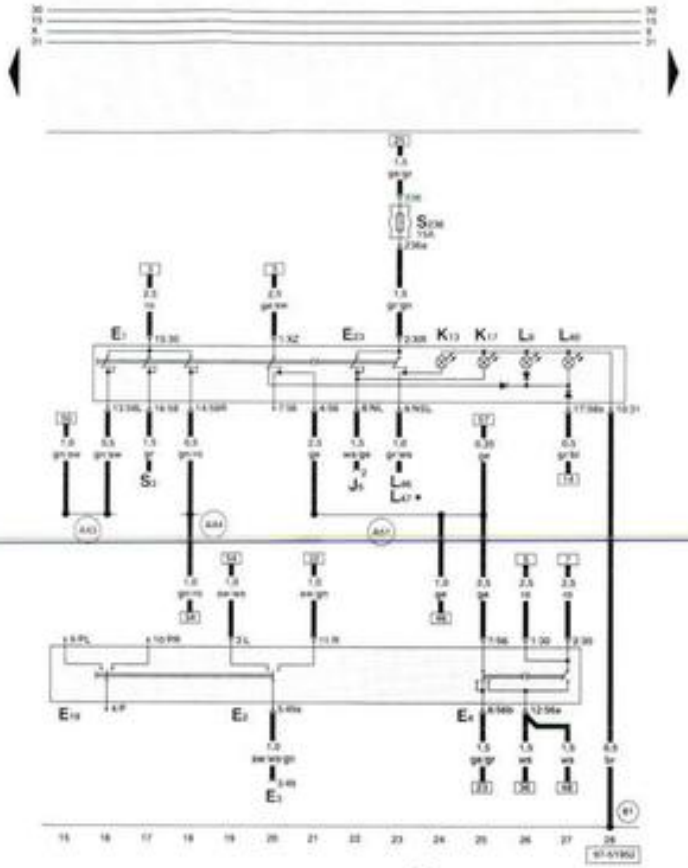





ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

C - Generator (DEN)
D - Ignition/Starter Switch
J59 - Load Reduction Relay
J207 - Starting Interlock Relay
J285 - Control Module with indicator unit in instrument panel insert
T9 - Connector 9-pin, brown, on starting interlock relay
T32 - Connector 32-pin, blue, on instrument cluster

A2 - Plus connection (15), in instrument panel wiring harness
A17 - Wire connection (61), in instrument panel wiring harness
A21 - Wire connection (56b), in instrument panel wiring harness
A19 - Wire connection (86s), in instrument panel wiring harness
A52 - Plus connection 2 (30), in instrument panel wiring harness



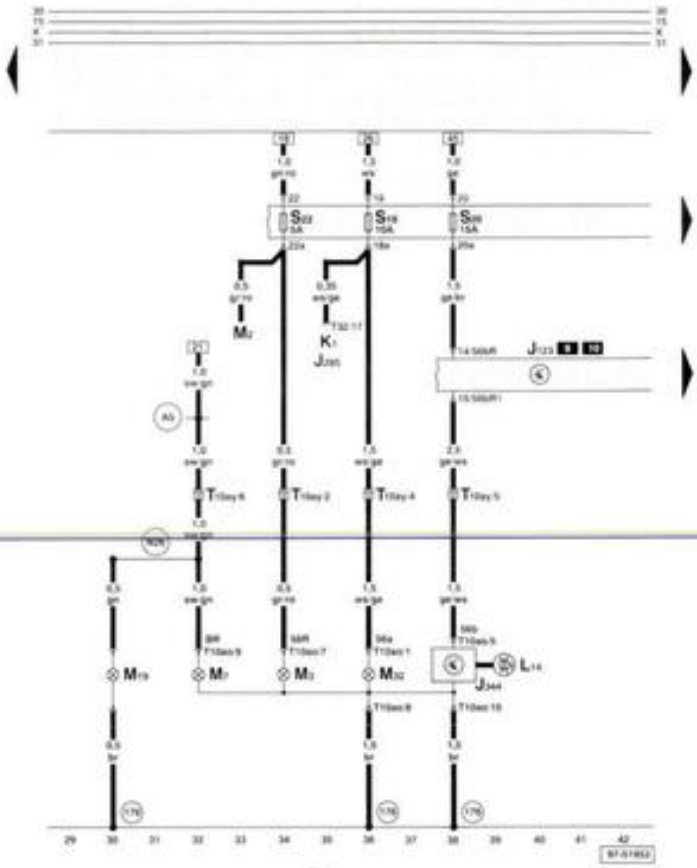
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

E1 - Light switch
E2 - Turn Signal Switch
E3 - Emergency Flasher Switch
E4 - Headlight Dimmer/Flasher Switch
E19 - Park Light Switch
E23 - Fog Light Switch
J5 - Fog Light Relay
K13 - Rear Fog Light Indicator Light
K17 - Fog Light Indicator Light
L9 - Headlight Switch Light
L40 - Front And Rear Fog Light Switch Light
L46 - Left Rear Fog Light
L47 - Right Rear Fog Light
S3 - Fuse
S236 - Fuse 36 in fuse holder

(A1) - Ground connection 1, in instrument panel wiring harness
(A44) - Wire connection (57f), in instrument panel wiring harness
(A47) - Wire connection (57h), in instrument panel wiring harness
(A5) - Wire connection (58), in instrument panel wiring harness
• - Wagon only



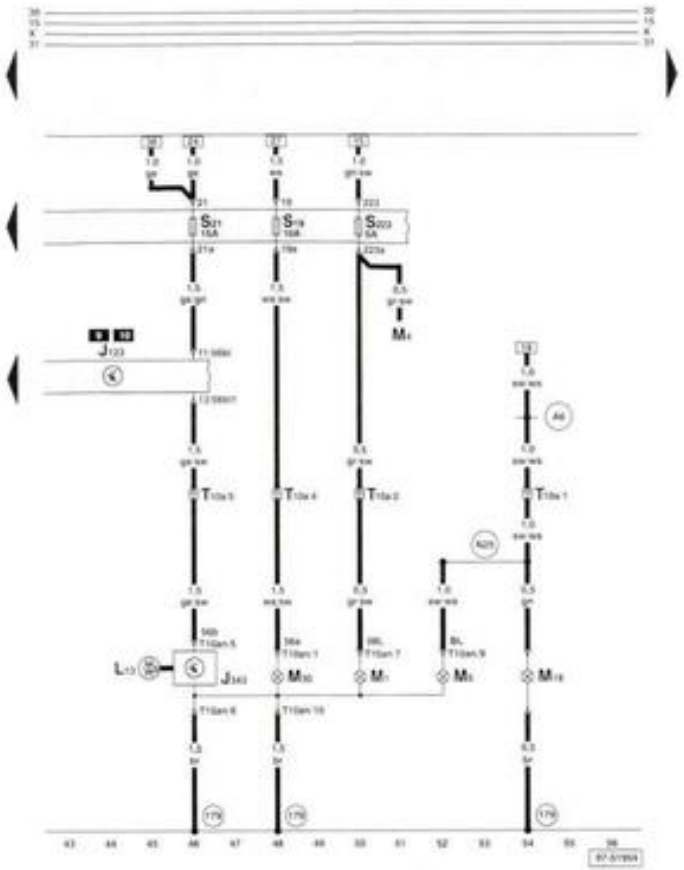




ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

J123 - Lamp Control Module
J285 - Control Module with indicator unit in instrument panel insert
J344 - Right High-intensity gas discharge lamp Control Module
K1 - Headlight High Beam Indicator Light
L14 - High intensity gas discharge lamp right
M2 - Right Tail Light
M3 - Right Parking Light
M7 - Right Front Turn Signal Light
M19 - Right Side Turn Signal Light
M32 - Right High Beam Headlight
S18 - Fuse
S20 - Fuse
S22 - Fuse
T10ao - Connector 10 pin, on headlight, right
T10ay - Connector 10 pin, pink, connector station A pillar, right
T32 - Connector 32 pin, blue, on instrument cluster

(176) - Ground connection, in right headlight wiring harness
(A3) - Plus connection (right turn signal), in instrument panel wiring harness
(A23) - Wire connection (right turn signal), in additional turn signal lights wiring harness



ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

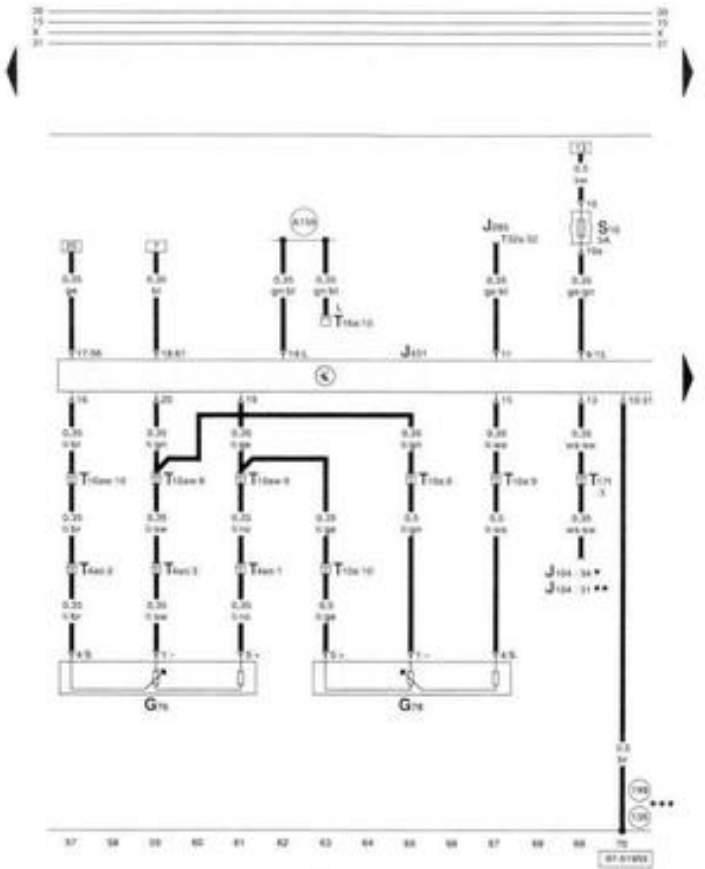
J123 – Lamp Control Module
J343 – Left High-Intensity gas discharge lamp control module
L12 – High-intensity gas discharge lamp left
M1 – Left Parking Light
M4 – Left Tail Light
M5 – Left Front Turn Signal Light
M18 – Left, Side Turn Signal Light
M30 – Left High Beam Headlight
S19 – Fuse
S21 – Fuse
S223 – Fuse 23 in fuse holder
T10a – Connector 10 pin, pink, connector station A pillar, left
T10an – Connector 10 pin, on headlight, left

– Ground connection, in left headlight wiring harness
– Plus connection (left turn signal), in instrument panel wiring harness
– Wire connection (left turn signal), in additional turn signal lights wiring harness



Lamp Control Module, High Intensity Gas Discharge Lamp Left





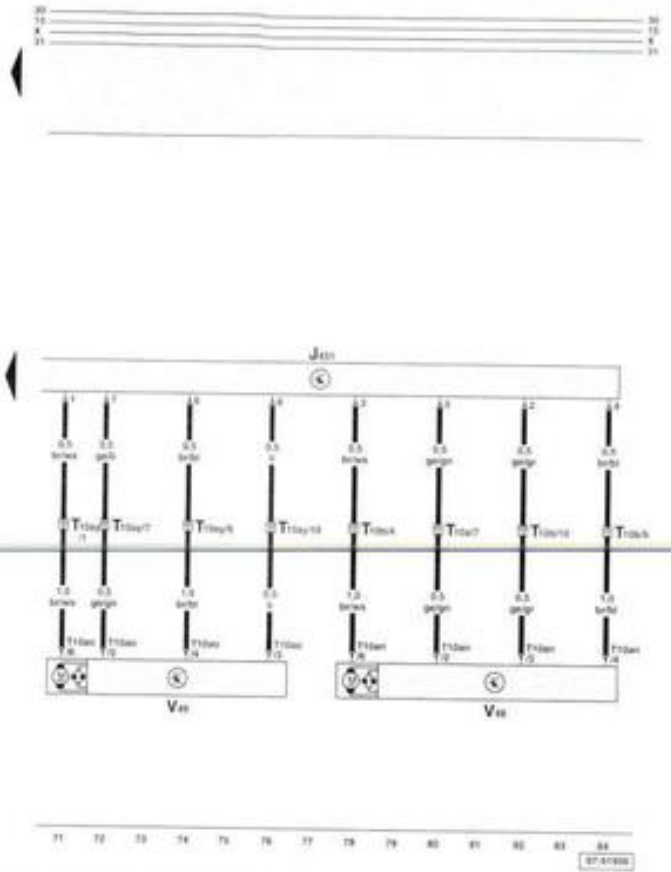
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow

G76 – Left Rear Level Control System Sensor
G78 – Left Front Level Control System Sensor
J104 – ABS Control Module (w/EDL)
J285 – Control Module with indicator unit in instrument panel insert
J431 – Control module for Headlight Beam Adjusting
S10 – Fuse
T4an – Connector 4 pin, black, below rear seat, left
T10a – Connector 10 pin, pink, connector station A pillar, left
T10an – Connector 10 pin, black, connector station A pillar, right
T16a – Connector 16 pin, data link connector
T121 – Connector 121 pin, black, in B-Post Relay Panel behind the storage driver's side
T32a – Connector 32 pin, green, on instrument cluster

– Ground connection -2-, in instrument panel wiring harness
– Ground connection -3-, in instrument panel wiring harness
– Connection (L) in instrument panel wiring harness

• – Vehicles with ABS 5.7
•• – Vehicles with ABS 5.3, ahead
••• – both are possible

Control Module for Headlight Beam Adjusting, Level Control System Sensor




J431 – Control module for Headlight Beam Adjusting
T10a – Connector 10 pin, pink, connector station A pillar, left
T10b – Connector 10 pin, red, connector station A pillar, left
T10en – Connector 10 pin, on headlight, left
T10eo – Connector 10 pin, on headlight, right
T10ev – Connector 10 pin, pink, connector station A pillar, right
V48 – Left Headlight Beam Adjusting Motor
V49 – Right Headlight Beam Adjusting Motor





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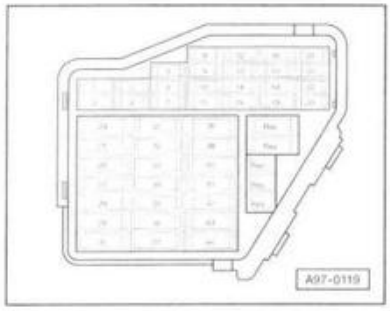
## Radio Concert I, Concert II, Symphony, Bose with and without CD Changer

2003 m.y.



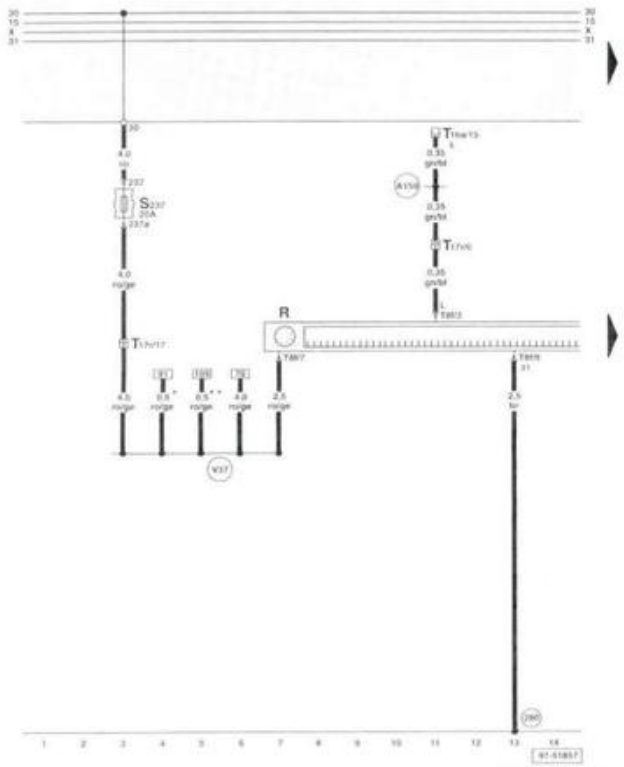

**Fuse Panel**

Fuse Colors:
- 30 A - Green
- 25 A - White
- 20 A - Yellow
- 15 A - Blue
- 10 A - Red
- 7,5 A - Brown
- 5 A - Beige
- 1 A - Black

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.








**Radio, Data Link Connector (DLC)**

R - Radio
S237 - Fuse 37 in fuse holder
T6f - Connector 6 pin, black, connector radio III
T16a - Connector 16 pin, Data Link Connector (DLC)
T17r - Connector 17 pin, white, behind instrument panel, center

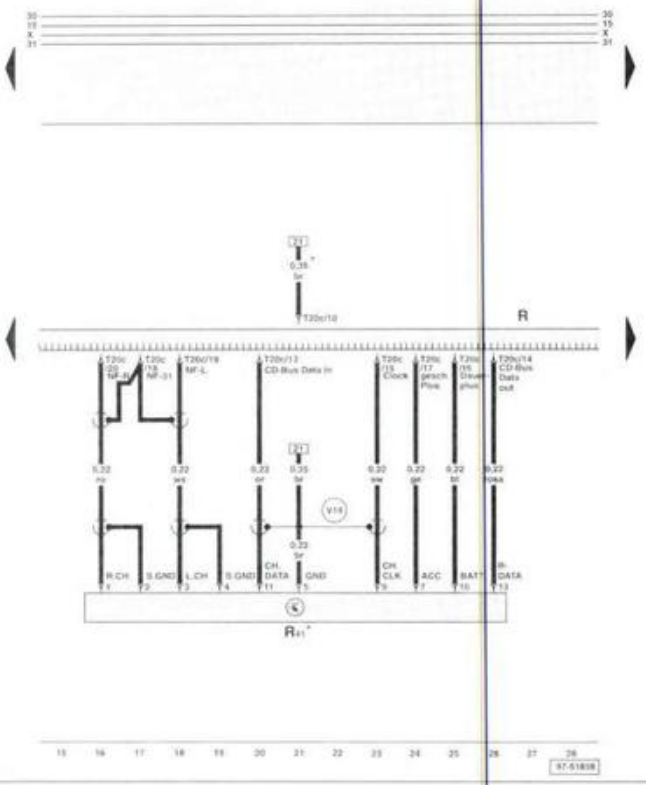
(280) - Ground connector -2-, in wiring harness engine compartment
(A156) - Connection (L) in instrument panel wiring harness
(V37) - Positive connection (30) in communication wiring harness

* - Sedan
** - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram** **No. 24/3**



**Radio, CD Changer Unit**

R - Radio
R41 - CD Changer Unit
T20c - Connector 20 pin, black, connector radio I

(V14) - Wire connection (shielding), in CD changer wiring harness

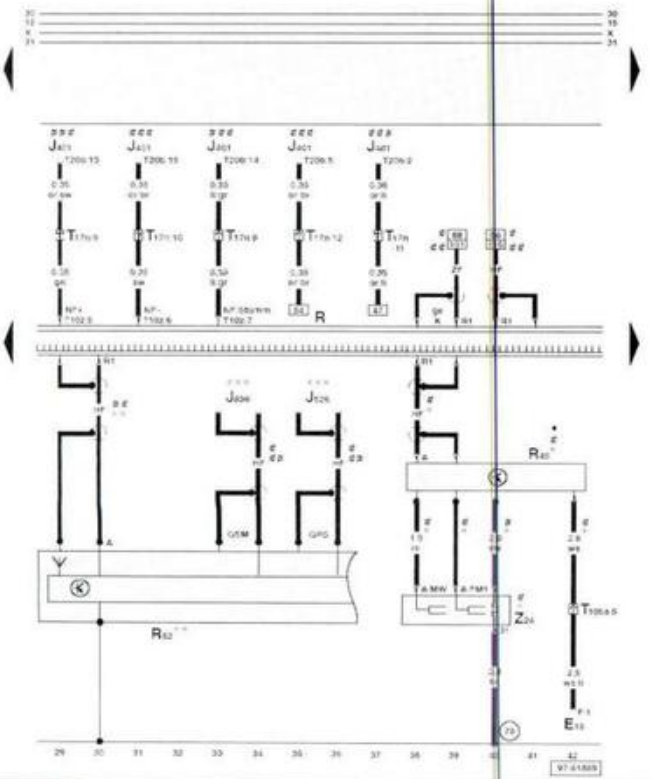
* - Vehicles with CD Changer

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram** **No. 24/4**



**Radio, Telephone/Radio Antenna Amplifier, Antenna for Radio/Telephone/Navigation (GPS)**

E15 - Rear Window Defogger Switch
J401 - Control unit for navigation with CD-mechanism
J526 - Telephone/Telematic Control Module
R - Radio
R1 - Antenna Connection
R45 - Telephone/Radio Antenna Amplifier
R52 - Antenna for radio/telephone/navigation (GPS)
T10z - Connector 10 pin, red, connector radio IV
T10ba - Connector 10 pin, blue, connector station A pillar, left
T17n - Connector 17 pin, brown, connector station A pillar, right
T20b - Connector 20 pin, black, on control unit for navigation
Z24 - Rear Window Defogger With Window Antenna

(75) - Ground connection, on right rear pillar

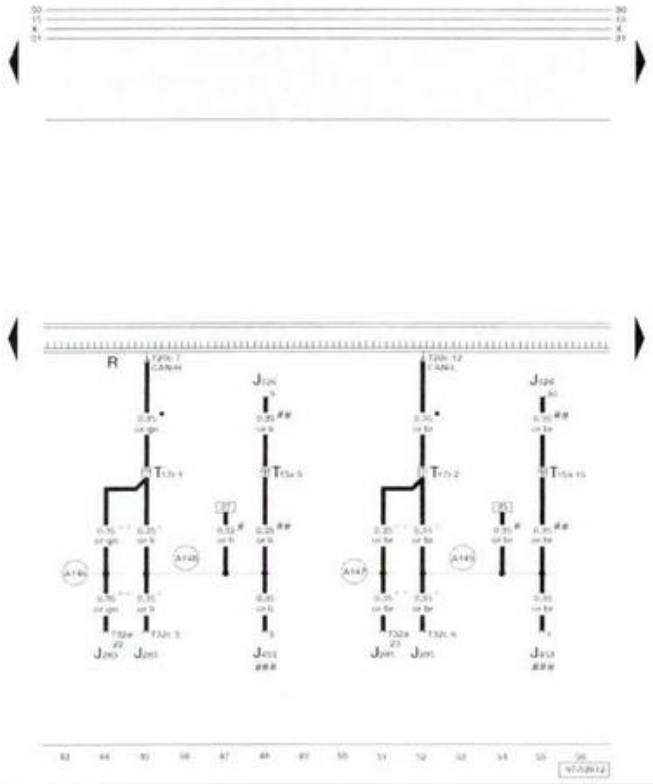
* - Rear Window Antenna
** - Roof Antenna
*** - Vehicles with Telematics
# - Sedan
## - Wagon
### - Vehicles with Navigation
• - only Radio Concert I

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

**Wiring Diagram**

## No. 24/5



**CAN-Bus Connection**

- J285 - Control Module with indicator unit in instrument panel insert
- J453 - Control module for multi-function steering wheel
- J526 - Telephone/Telematic Control Module
- R - Radio
- T15s - Connector 15 pin, blue, connector station A pillar, left
- T17r - Connector 17 pin, white, behind instrument panel, center
- T20c - Connector 20 pin, black, connector radio I
- T32a - Connector 32 pin, green, on instrument cluster
- T32c - Connector 32 pin, grey, on instrument cluster
- A146 - Connection (high bus, comfort), in instrument panel wiring harness
- A147 - Connection (low bus, comfort), in instrument panel wiring harness
- A148 - Connection (high bus, navigation), in instrument panel wiring harness
- A149 - Connection (low bus, navigation), in instrument panel wiring harness

- • - CAN-Bus (Data-Bus)
- * - Vehicles with Auto Check System
- ** - Vehicles without Auto Check System
- # - Vehicles with Navigation
- ## - Vehicles with Telematics, Telephone
- ### - Vehicles with multi-function steering wheel

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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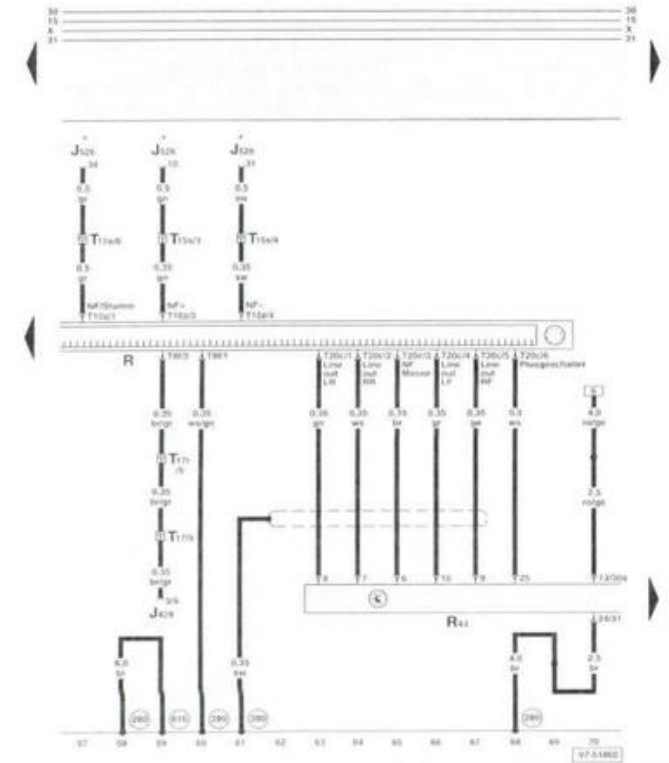
## Audi A6

**Wiring Diagram**

## No. 24/6



**Radio, Right Rear Woofer/Amplifier**

- J429 - Control module for central locking
- J526 - Telephone/Telematic Control Module
- R - Radio
- R42 - Right Rear Woofer/Amplifier
- T8f - Connector 8 pin, black, connector radio III
- T10z - Connector 10 pin, red, connector radio IV
- T15s - Connector 15 pin, blue, connector station A pillar, left
- T17 - Connector 17 pin, orange, connector station A pillar, right
- T17r - Connector 17 pin, white, behind instrument panel, center
- T20c - Connector 20 pin, black, connector radio I
- 280 - Ground connector -2-, in wiring harness engine compartment
- 610 - Ground connection (radio) under center console, front

- * - Vehicles with Telematics, Telephone

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

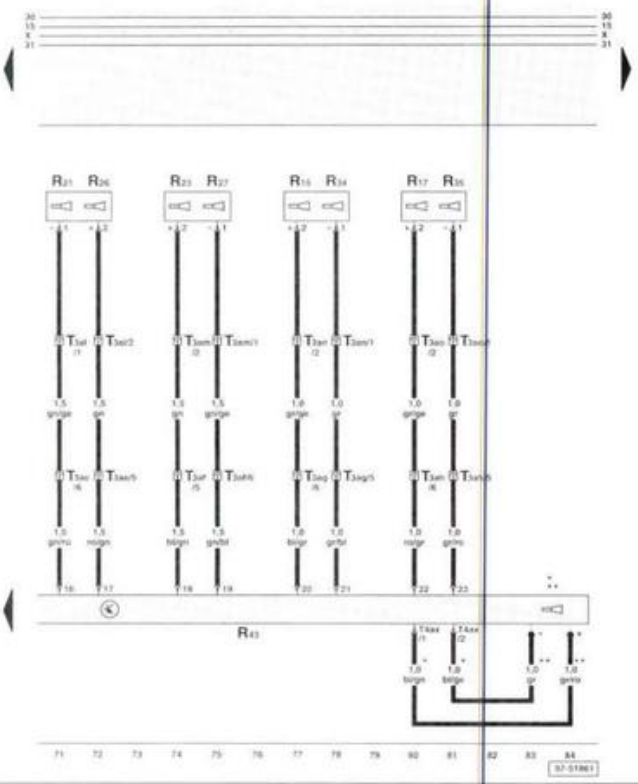
USA.5604.03.21

**Edition 05/03**

## Audi A6

**Wiring Diagram**

## No. 24/7



**Right Rear Woofer/Amplifier, Front and Rear Bass Speaker, Front and Rear Midrange Speaker**

R15 - Bass speaker, left rear
R17 - Bass speaker, right rear
R21 - Bass speaker, left front
R23 - Bass speaker, right front
R26 - Left Front Midrange Speaker
R27 - Right Front Midrange Speaker
R34 - Left Rear Midrange Speaker
R35 - Right Rear Midrange Speaker
R43 - Right Rear Woofer/Amplifier
T3ae - Connector 3 pin, brown, connector station A pillar, left
T3af - Connector 3 pin, brown, connector station A pillar, right
T3ag - Connector 3 pin, blue, in B pillar left
T3ah - Connector 3 pin, blue, in B pillar right
T3al - Connector 3 pin, black, in driver's door
T3am - Connector 3 pin, black, in passenger's door
T3an - Connector 3 pin, black, in left rear door
T3ao - Connector 3 pin, black, in right rear door
T4ax - Connector 4 pin, on Woofer/Amplifier

* - Subwoofer, sedan
** - Subwoofer, wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

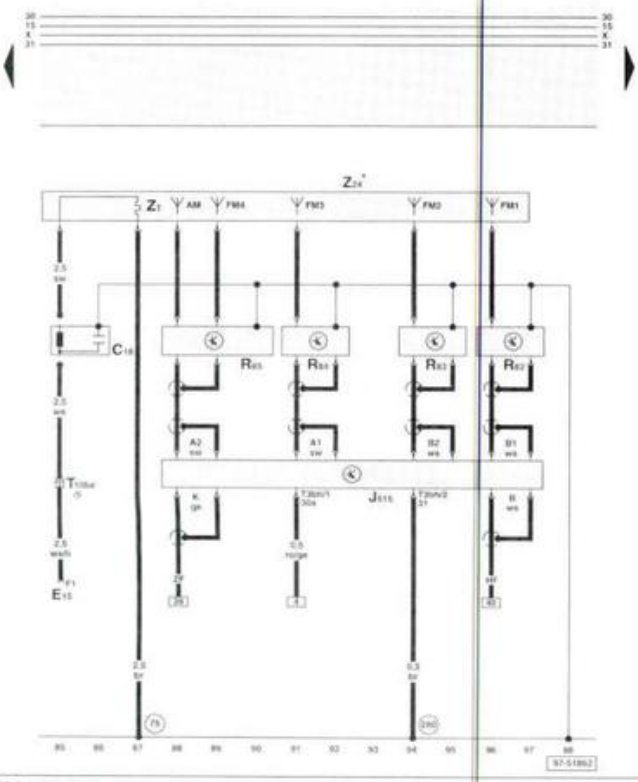
USA.5604.03.21

Edition 05/03

## Audi A6

**Wiring Diagram**

## No. 24/8



**Antennas for Radio Concert II, Symphony, Antenna Selection Control Module, TV Antenna Amplifier, Rear Window Defogger with Window Antenna**

C18 - Windshield Antenna Suppression Filter
E15 - Rear Window Defogger Switch
J515 - Antenna Selection Control Module
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
T3bn - Connector 3 pin, black, on Control unit for aerial selection (aerial diversity function)
T10ba - Connector 10 pin, blue, connector station A pillar, left
Z1 - Heated rear window
Z24 - Rear Window Defogger With Window Antenna

(75) - Ground connection, on right rear pillar
(280) - Ground connector -2-, in wiring harness engine compartment

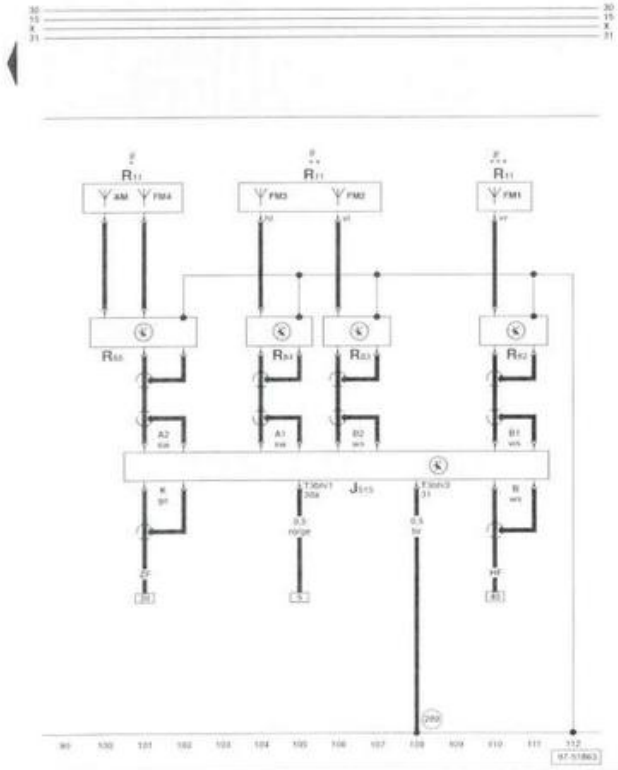
* - Sedan

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

USA.5604.05.21

Edition 07/04

**Audi A6** | **Wiring Diagram** | **No. 24/9**



**Antennas for Radio Concert II, Symphony, Antenna Selection Control Module, TV Antenna Amplifier**

J515 - Antenna Selection Control Module
R11 - Antenna
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
T3bh - Connector 3 pin, black, on Control unit for aerial selection (aerial diversity function)

(250) - Ground connector -2-, in wiring harness engine compartment

* - Roof Antenna
** - Left rear window
*** - Right rear window
\# - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



**THIS SPACE INTENTIONALLY**

**LEFT BLANK**

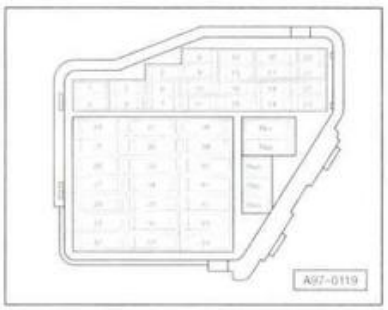
## Audi A6

**Wiring Diagram**

## No. 28/1

### (4,2 l - Injection Engine, 8 Cylinder), Code BCY - RS6

2003 m.y.




**Fuse Panel**

Fuse Colors:

- 30 A - Green
- 25 A - White
- 20 A - Yellow
- 15 A - Blue
- 10 A - Red
- 7,5 A - Brown
- 5 A - Beige
- 1 A - Black

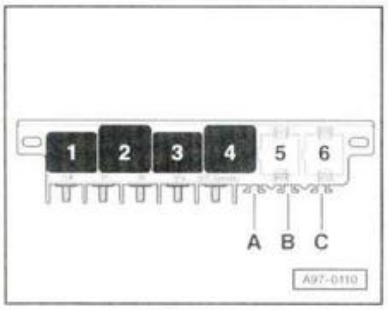
Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.



Audi A6

Wiring Diagram

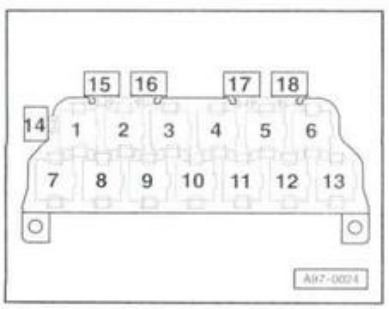
## No. 28/2




**Micro Central Electric Panel**

Relay Location:

- 4 - Fuel Pump (FP) Relay, J17
- 5 - Wiper/Washer Intermittent Relay, J31
- 6 - Wiper/Washer Intermittent Relay, J31




**13 - Fold Relay Panel**

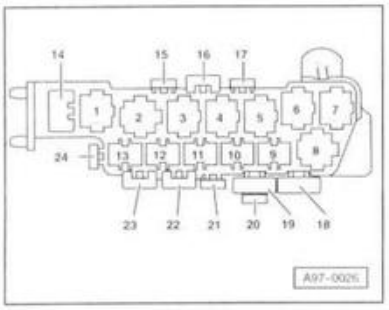
Relay Location:

- 4 - Starting Interlock Relay, J207

## Audi A6

**Wiring Diagram**

## No. 28/3



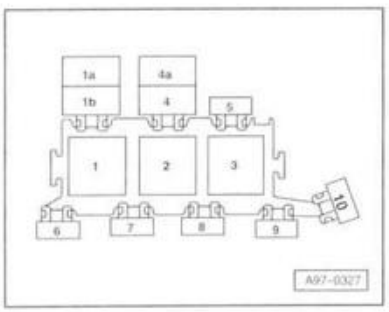

**8 - Fold Relay Panel**

Relay Location:

19 - Coolant Fan Fuse, S42

21 - Control Module Fuse for Coolant Fan, S142

22 - Second Speed Coolant Fan Fuse, S104




**3 - Fold Relay Panel in E-Box plenum chamber**

Relay Location:

1 - Secondary Air Injection (AIR) Pump Relay, J299

3 - Motronic Engine Control Module (ECM) Power Supply Relay, J271

4 - Coolant Circulation Pump Relay, J151

7 - Fuse for Secondary Air Pump, S130

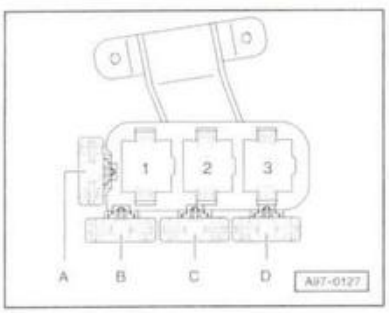
9 - Engine Coolant Pump Circuit Breaker, S78



## Audi A6

**Wiring Diagram**

## No. 28/4




**Relay Panel behind Instrument Panel left, on central girder**

Relay Location:

1 - Brake Booster Relay, J569

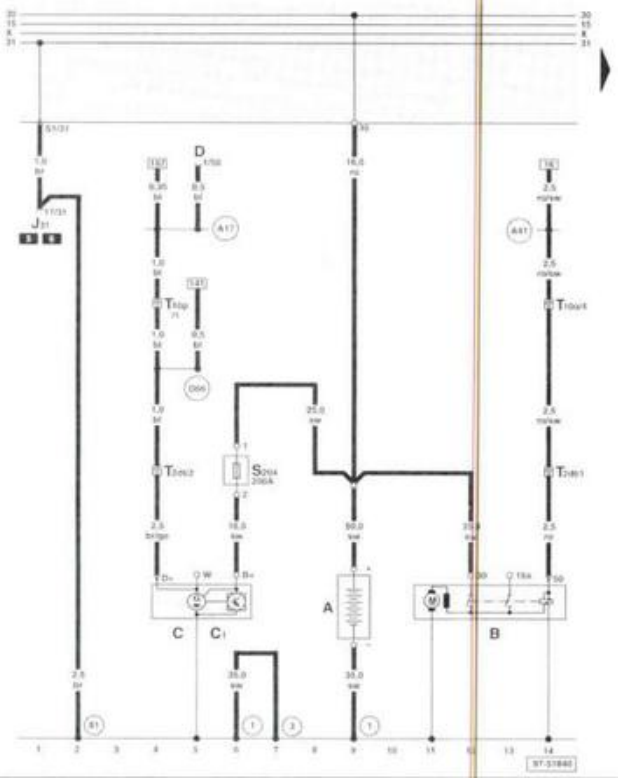
C - Hydraulic Pump Relay Fuse, S279

D - Fuel Pump (FP) Fuse, S81

## Audi A6

**Wiring Diagram**

## No. 28/5



**Battery, Starter, Generator**

A - Battery
B - Starter
C - Generator (GEN)
C1 - Voltage Regulator (VR)
D - Ignition/Starter Switch
J31 - Wiper/Washer Intermittent Relay
S204 - Fuse 1 (30)
T2dt - Connector 2 pin, black, in engine compartment right
T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
T10p - Connector 10 pin, black, connector station electronic box plenum chamber

(1) - Ground strap, battery to body
(3) - Ground strap, engine to body
(61) - Ground connection -1-, in instrument panel wiring harness
(A17) - Wire connection (61), in instrument panel wiring harness
(A41) - Plus connection (50), in instrument panel wiring harness
(D66) - Plus connection (61), in engine compartment wiring harness

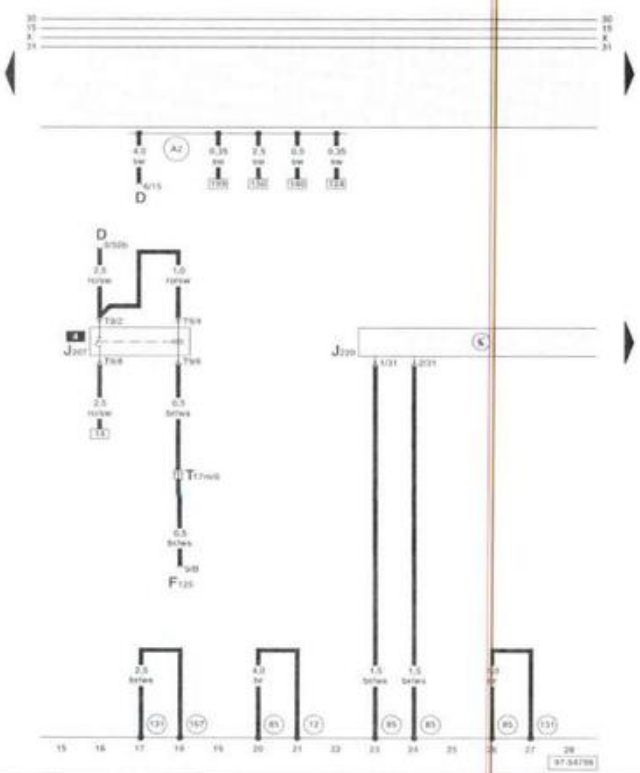
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

**Wiring Diagram**

## No. 28/6



**Motronic Engine Control Module, Starting Interlock Relay**

D - Ignition/Starter Switch
F125 - Multi-Function Transmission Range (TR) Switch
J207 - Starting Interlock Relay
J220 - Motronic Engine Control Module (ECM)
T9 - Connector 9 pin, brown, on starting interlock relay
T17m - Connector 17 pin, blue, connector station A pillar, right

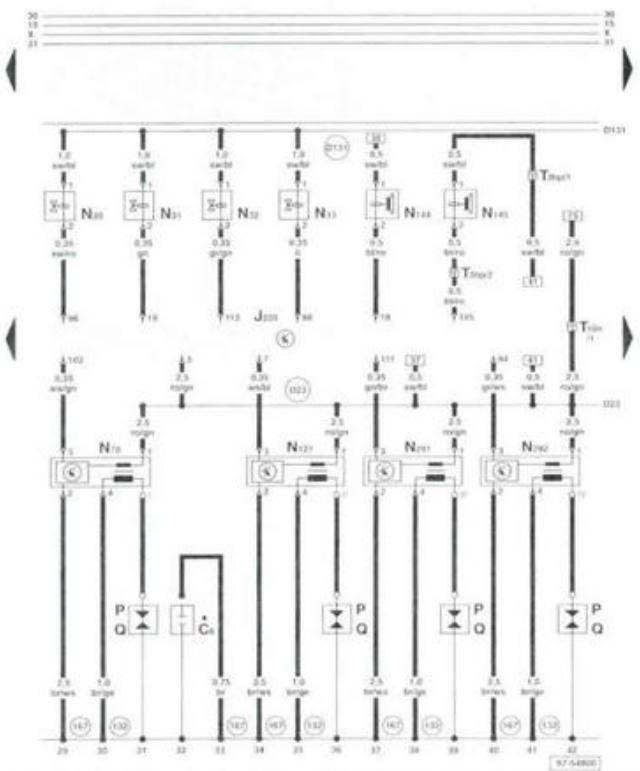
(12) - Ground connection, in engine compartment, left
(85) - Ground connection -1-, in engine compartment wiring harness
(131) - Ground connection -2-, in engine compartment wiring harness
(167) - Ground connection -4-, in engine compartment wiring harness
(A2) - Plus connection (15), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

Wiring Diagram

## No. 28/7



**Motronic Engine Control Module, Cylinder 1 - 4 Fuel Injectors, Ignition Coils 1 - 4 with Power Output Stage, Electro-Hydraulic Engine Mount Solenoid Valve**

- C6 - Distributor ignition (DI) Capacitor
- J220 - Motronic Engine Control Module (ECM)
- N30 - Cylinder 1 Fuel Injector
- N31 - Cylinder 2 Fuel Injector
- N32 - Cylinder 3 Fuel Injector
- N33 - Cylinder 4 Fuel Injector
- N70 - Ignition Coil 1 with Power Output Stage
- N127 - Ignition Coil 2 with Power Output Stage
- N144 - Left Electro-Hydraulic Engine Mount Solenoid Valve
- N145 - Right Electro-Hydraulic Engine Mount Solenoid Valve
- N291 - Ignition Coil 3 with Power Output Stage
- N292 - Ignition Coil 4 with Power Output Stage
- P - Spark Plug Connectors
- Q - Spark Plugs
- T3bb - Connector 3 pin, black, in engine compartment right
- T10m - Connector 10 pin, orange, connector station electronic box plenum chamber

- (132) - Ground connection -3-, in engine compartment wiring harness
- (147) - Ground connection -4-, in engine compartment wiring harness
- (023) - Connector (over fuse 229), in wiring harness front, right
- (D131) - Wire connection (15), over fuse 232, in engine compartment wiring harness

* - Vehicles with Distributor Ignition Capacitor

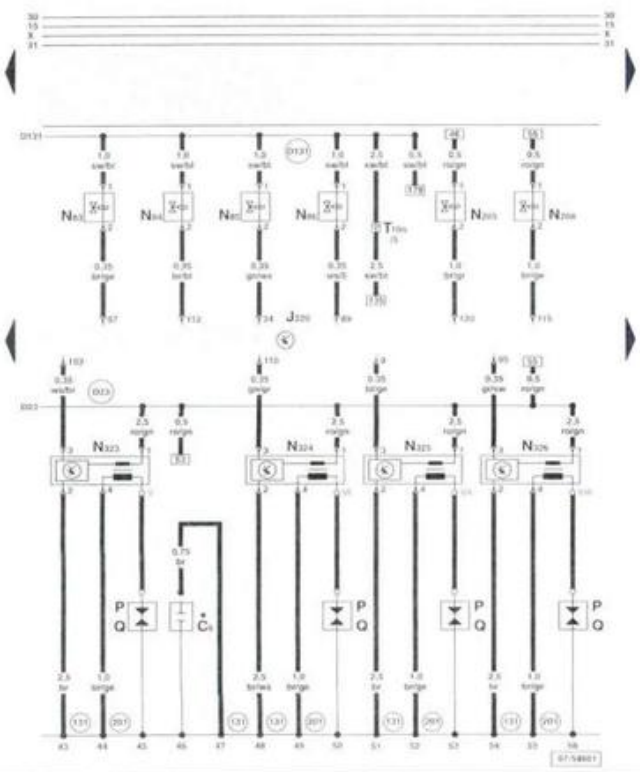
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
vi = violet
ge = yellow
or = orange



## Audi A6

Wiring Diagram

## No. 28/8



**Motronic Engine Control Module, Cylinder 5 - 8 Fuel Injectors, Ignition Coils 5 - 8 with Power Output Stage, Valves for Camshaft Adjustment**

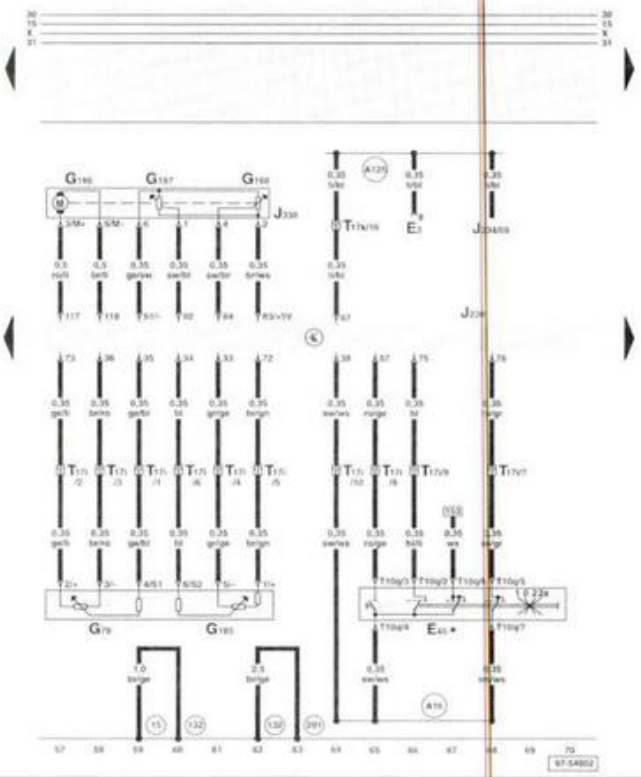
- C6 - Distributor ignition (DI) Capacitor
- J220 - Motronic Engine Control Module (ECM)
- N83 - Cylinder 5 Fuel Injector
- N84 - Cylinder 6 Fuel Injector
- N85 - Cylinder 7 Fuel Injector
- N86 - Cylinder 8 Fuel Injector
- N205 - Valve -1- for camshaft adjustment
- N208 - Valve -2- for camshaft adjustment
- N323 - Ignition Coil 5 with Power Output Stage
- N324 - Ignition Coil 6 with Power Output Stage
- N325 - Ignition Coil 7 with Power Output Stage
- N326 - Ignition Coil 8 with Power Output Stage
- P - Spark Plug Connectors
- Q - Spark Plugs
- T10n - Connector 10 pin, orange, connector station electronic box plenum chamber

- (131) - Ground connection -2-, in engine compartment wiring harness
- (201) - Ground connection -5-, in engine compartment wiring harness
- (023) - Connector (over fuse 229), in wiring harness front, right
- (D131) - Wire connection (15), over fuse 232, in engine compartment wiring harness

* - Vehicles with Distributor Ignition Capacitor

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
vi = violet
ge = yellow
or = orange

**Audi A6** **Wiring Diagram** **No. 28/9**



**Motronic Engine Control Module, Throttle Valve Control Module, Throttle Position Sensor, Cruise Control Switch**

- E3 - Emergency Flasher Switch
- E45 - Cruise Control Switch
- G79 - Throttle Position (TP) Sensor
- G185 - Sensor -2- for accelerator pedal position
- G186 - Throttle drive (power accelerator actuation)
- G187 - Angel sensor -1- for throttle drive (power accelerator actuation)
- G188 - Angel sensor -2- for throttle drive (power accelerator actuation)
- J220 - Motronic Engine Control Module (ECM)
- J234 - Airbag Control Module
- J338 - Throttle Valve Control Module
- T10q - Connector 10 pin, black, on cruise control switch
- T12l - Connector 12 pin, white, connector station electronic box plenum chamber
- T17r - Connector 17 pin, red, connector station electronic box plenum chamber

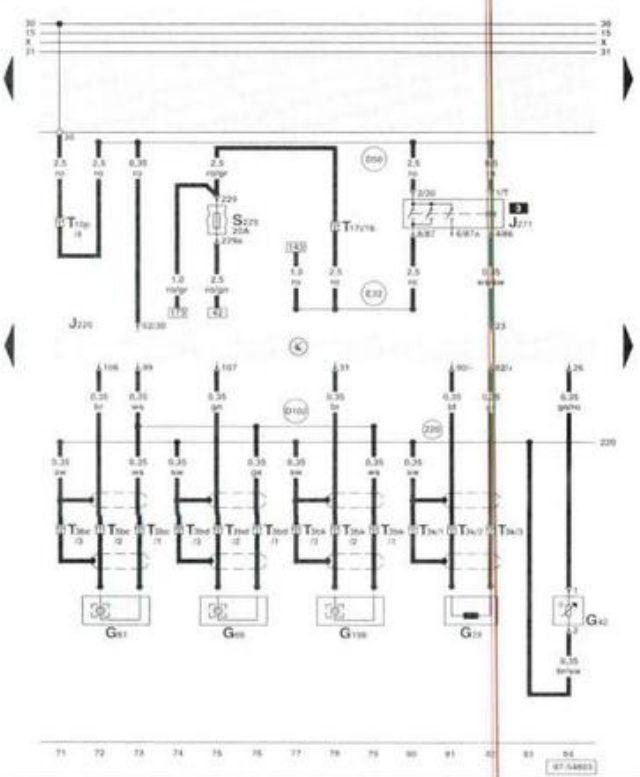
(15) - Ground connection, on cylinder head
(132) - Ground connection -3-, in engine compartment wiring harness
(201) - Ground connection -5-, in engine compartment wiring harness
(A16) - Wire connection (cruise control), in instrument panel wiring harness
(A125) - Connection (clash signal) in instrument panel wiring harness

* - Vehicles with Cruise Control

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

USA.5604.03.21 Edition 05/03

**Audi A6** **Wiring Diagram** **No. 28/10**



**Motronic Engine Control Module, Knock Sensors, Engine Speed Sensor, Motronic Engine Control Module Power Supply Relay, Intake Air Temperature Sensor**

- G28 - Engine Speed (RPM) Sensor
- G42 - Intake Air Temperature (IAT) Sensor
- G61 - Knock Sensor (KS) 1
- G66 - Knock Sensor (KS) 2
- G198 - Knock sensor 3
- J220 - Motronic Engine Control Module (ECM)
- J271 - Motronic Engine Control Module (ECM) Power Supply Relay
- S229 - Fuse 29 in fuse holder
- T3r - Connector 3 pin, grey, on Engine Speed (RPM) Sensor
- T3bc - Connector 3 pin, green, on Knock Sensor 1
- T3bd - Connector 3 pin, green, on Knock Sensor 2
- T3bf - Connector 3 pin, green, on Knock Sensor 3
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- T17l - Connector 17 pin, white, connector station electronic box plenum chamber

(220) - Ground connection (sensor ground), in engine compartment wiring harness
(D50) - Plus connection (D9), in engine compartment wiring harness
(D102) - Wire connection -2-, in engine compartment wiring harness
(E32) - Connector (87), in wiring harness Motronic

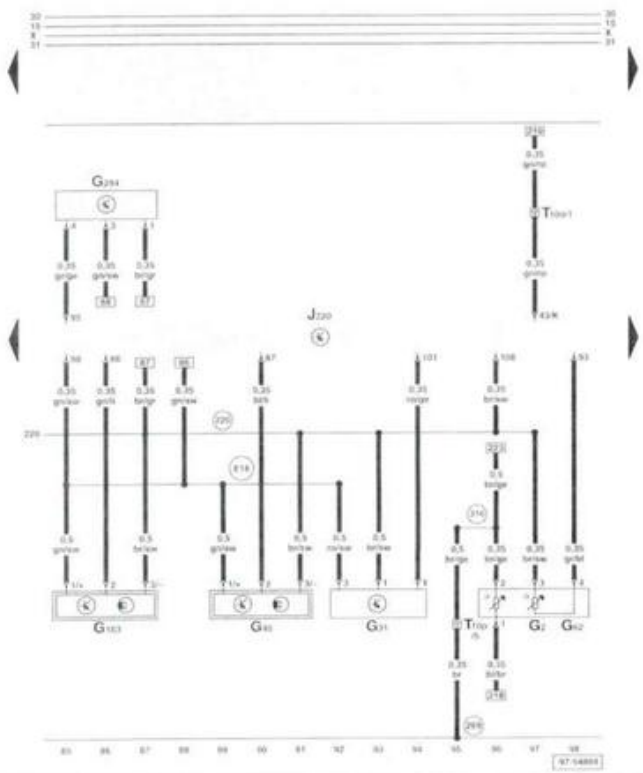
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

*USA.5604.03.21* Edition 05/03

## Audi A6

Wiring Diagram

## No. 28/11



**Motronic Engine Control Module, Camshaft Position Sensor, Engine Coolant Temperature Sensor, Charge Air Pressure Sensor, Brake Booster Pressure Sensor**

- G2 - Engine Coolant Temperature (ECT) Sensor
- G31 - Charge Air Pressure Sensor
- G40 - Camshaft Position (CMP) Sensor
- G62 - Engine Coolant Temperature (ECT) Sensor
- G163 - Camshaft Position (CMP) Sensor 2
- G294 - Brake Booster Pressure Sensor
- J220 - Motronic Engine Control Module (ECM)
- T10a - Connector 10 pin, brown, connector station electronic box plenum chamber
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber

- (220) - Ground connection (sensor ground), in engine compartment wiring harness
- (303) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
- (314) - Sensor Ground Connection 2 hn engine wiring harness
- (316) - Plus connection (5 Volts), in Motronic Multiport Fuel Injection (MFI) wiring harness

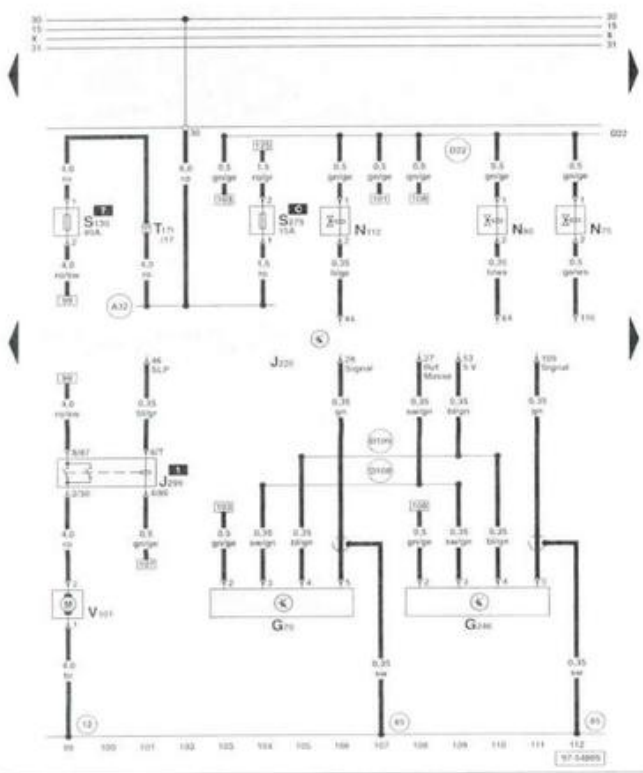
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

Wiring Diagram

## No. 28/12



**Motronic Engine Control Module, Secondary Air Injection (AIR) Pump Relay, Evaporative Emission Canister Purge Regulator Valve, Mass Air Flow Sensor**

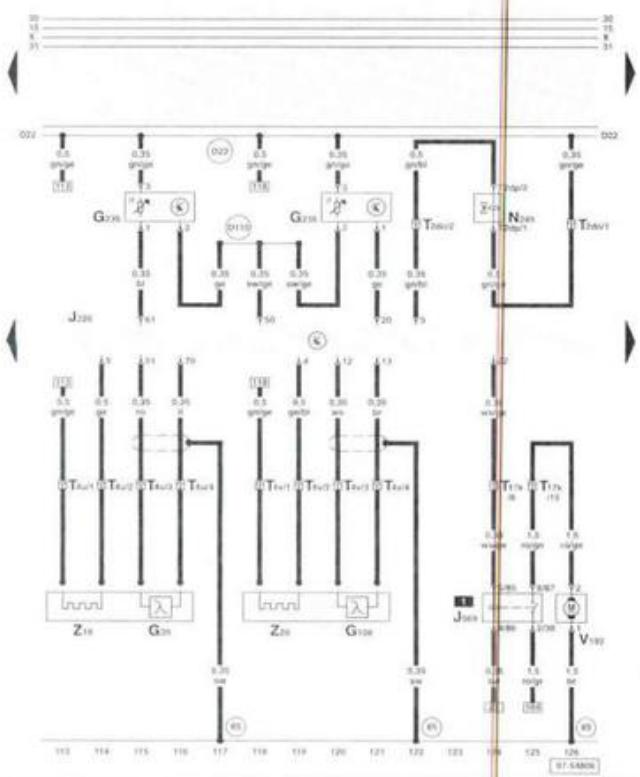
- G70 - Mass Air Flow (MAF) Sensor
- G246 - Mass Air Flow (MAF) Sensor 2
- J220 - Motronic Engine Control Module (ECM)
- J299 - Secondary Air Injection (AIR) Pump Relay
- N75 - Wastegate Bypass Regulator Valve
- N80 - Evaporative Emission (EVAP) Canister Purge Regulator Valve
- N112 - Secondary Air Injection (AIR) Solenoid Valve
- S130 - Fuse for secondary air pump
- S279 - Hydraulic Pump Relay Fuse
- T17 - Connector 17 pin, white, connector station electronic box plenum chamber
- V101 - Secondary Air Injection (AIR) Pump Motor

- (12) - Ground connection, in engine compartment, left
- (85) - Ground connection -1-, in engine compartment wiring harness
- (A32) - Fuse connection (30), in instrument panel wiring harness
- (Z23) - Connector (fuel fuse Z34), in wiring harness, front, right
- (x49) - Wire connection -6-, in engine compartment wiring harness
- (x50) - Wire connection -7-, in engine compartment wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

*Engine Management, 4.2 Liter, Engine Code BCY (RS6 2003)*

**Audi A6** **Wiring Diagram** **No. 28/13**



**Motronic Engine Control Module, Heated Oxygen Sensors, Sensors for Exhaust Temperature, Recirculating Valve for Turbocharger, Brake Booster Relay**

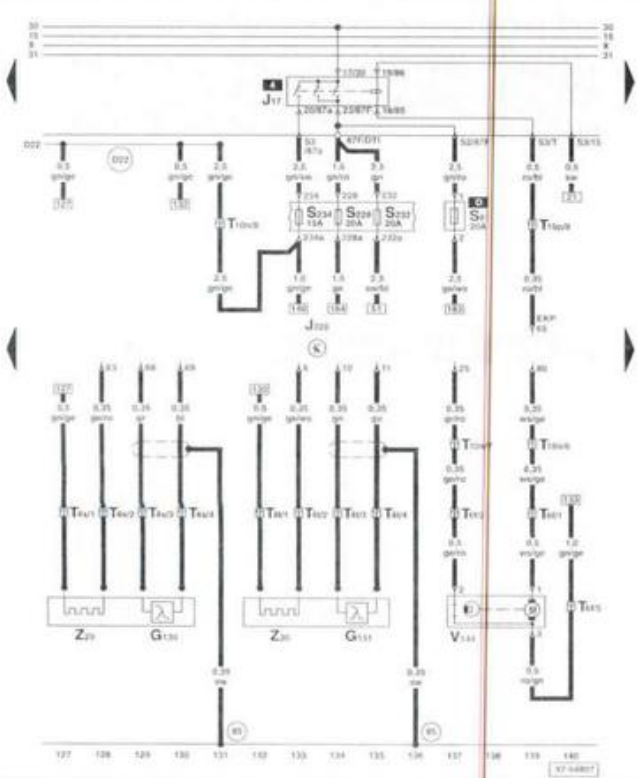
- G39 - Heated Oxygen Sensor (HO2S)
- G108 - Heated Oxygen Sensor (HO2S) 2
- G235 - Sensor -1- for exhaust temperature
- G236 - Sensor -2- for exhaust temperature
- J220 - Motronic Engine Control Module (ECM)
- J569 - Brake Booster relay
- N249 - Recirculating valve for turbocharger
- T2do - Connector 2 pin, black, for Recirculating valve for turbocharger
- T2dp - Connector 2 pin, green, on Recirculating valve for turbocharger
- T4u - Connector 4 pin, black, heated oxygen sensor
- T4v - Connector 4 pin, black, heated oxygen sensor 2
- T17k - Connector 17 pin, red, connector station electronic box plenum chamber
- V192 - Brake System Vacuum Pump
- Z19 - Oxygen Sensor (O2S) Heater
- Z28 - Oxygen Sensor (O2S) 2 Heater

(85) - Ground connection -1-, in engine compartment wiring harness
(D22) - Connector fuse/ fuse 23/4, in wiring harness front, right
(118) - Wire connection -8-, in engine compartment wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



**Audi A6** **Wiring Diagram** **No. 28/14**



**Motronic Engine Control Module, Fuel Pump (FP) Relay, Heated Oxygen Sensor Behind Three Way Catalytic Converter, Leak Detection Pump**

- G130 - Heated Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)
- G131 - Heated Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC)
- J17 - Fuel Pump (FP) Relay
- J220 - Motronic Engine Control Module (ECM)
- SB1 - Fuel Pump (FP) Fuse
- S228 - Fuse 28 in fuse holder
- S232 - Fuse 32 in fuse holder
- S234 - Fuse 34 in fuse holder
- T4s - Connector 4 pin, green, near oxygen sensor, behind Three Way Catalytic Converter (TWC)
- T4t - Connector 4 pin, brown, near oxygen sensor 2, behind Three Way Catalytic Converter (TWC)
- T6f - Connector 6 pin, darkbrown, connector station A pillar, right
- T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- V144 - Leak Detection Pump (LDP)
- Z29 - Oxygen Sensor (O2S) Heater 1
- Z30 - Oxygen Sensor (O2S) Heater 2

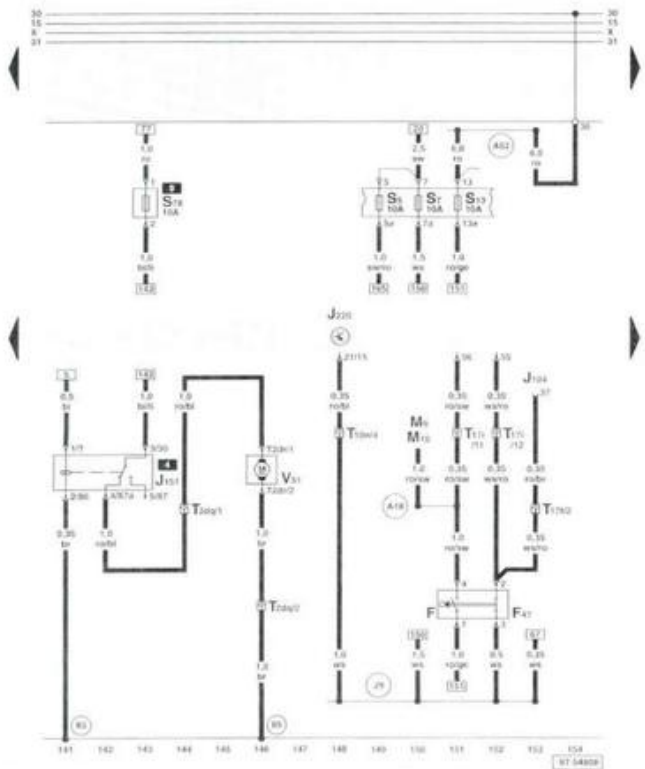
(85) - Ground connection -1-, in engine compartment wiring harness
(D22) - Connector fuse/ fuse 23/4, in wiring harness front, right

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

## Audi A6

Wiring Diagram

## No. 28/15



**Motronic Engine Control Module, Brake Light Switch, Coolant Circulation Pump Relay, After-Run Coolant Pump**

- F - Brake Light Switch
- F47 - Brake Vacuum Vent Valve Switch for Cruise Control
- J104 - ABS Control Module (w/EDL)
- J151 - Coolant Circulation Pump Relay
- J220 - Motronic Engine Control Module (ECM)
- M9 - Left Brake Light
- M10 - Right Brake Light
- S6 - Fuse
- S7 - Fuse
- S13 - Fuse
- S26 - Engine Coolant Pump Circuit Breaker
- T2da - Connector 2 pin, green, for After-Run Coolant Pump
- T2dr - Connector 2 pin, black/green, on After-Run Coolant Pump
- T10n - Connector 10 pin, orange, connector station electronic box plenum chamber
- T17f - Connector 17 pin, black, in B-Post Relay Panel behind the stowage driver's side
- T17i - Connector 17 pin, white, connector station electronic box plenum chamber
- V51 - After-Run Coolant Pump

- (J5) - Ground connection -1-, in engine compartment wiring harness
- (A16) - Wire connection (54), in instrument panel wiring harness
- (A52) - Plug connection -2- (30), in instrument panel wiring harness
- (J9) - Wire connection -1- (15a), in ABS wiring harness

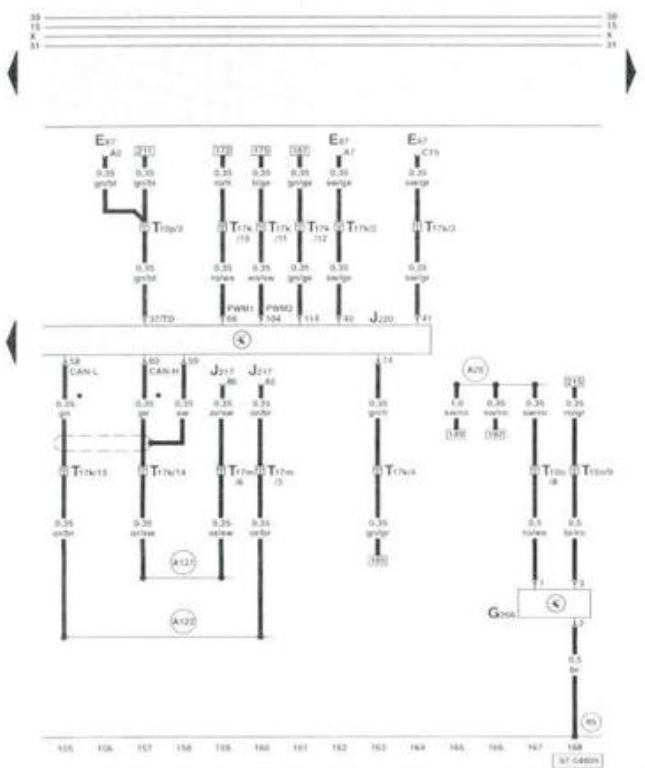
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



## Audi A6

Wiring Diagram

## No. 28/16



**Motronic Engine Control Module, Can-Bus, Oil Level Thermal Sensor**

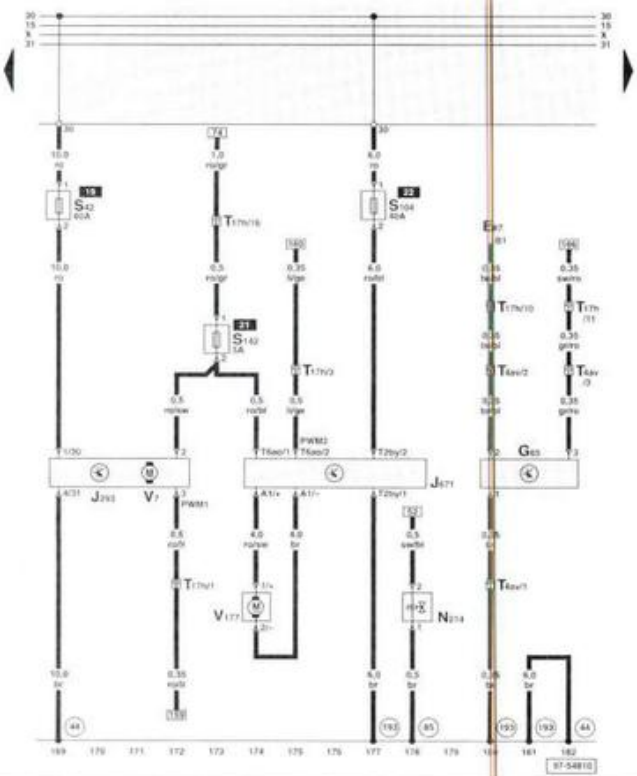
- E47 - A/C Control Head
- G266 - Oil Level Thermal Sensor (SRI)
- J217 - Transmission Control Module (TCM)
- J220 - Motronic Engine Control Module (ECM)
- T10o - Connector 10 pin, brown, connector station electronic box plenum chamber
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- T17i - Connector 17 pin, red, connector station electronic box plenum chamber
- T17m - Connector 17 pin, blue, connector station A-pillar, right

- (J5) - Ground connection -1-, in engine compartment wiring harness
- (A20) - Wire connection (15a), in instrument panel wiring harness
- (A121) - Connection (high bus) in instrument panel wiring harness
- (A122) - Connection (low bus) in instrument panel wiring harness

• - CAN-Bus (Data Bus)

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

**Audi A6** **Wiring Diagram** **No. 28/17**



**Coolant FC (Fan Control) Control Module, Coolant FC (Fan Control) Control Module 2, High Pressure Sensor, Valve for Coolant Circulation, Coolant Fan**

- E87 - A/C Control Head
- G65 - High Pressure Sensor
- J293 - Coolant FC (Fan Control) Control Module
- J671 - Coolant FC (Fan Control) Control Module 2
- N214 - Valve for coolant circulation
- S42 - Coolant Fan Fuse
- S104 - Second Speed Coolant Fan Fuse
- S142 - Control module fuse for coolant fan
- T2bv - Connector 2 pin, on Coolant FC (Fan Control) Control Module
- T4av - Connector 4 pin, red, in engine compartment, left
- T6ao - Connector 6 pin, on Coolant FC (Fan Control) Control Module
- T17h - Connector 17 pin, brown, connector station A pillar, left
- V7 - Coolant Fan
- V177 - Coolant fan -2-

(44) - Ground connection, on left A-pillar, lower part

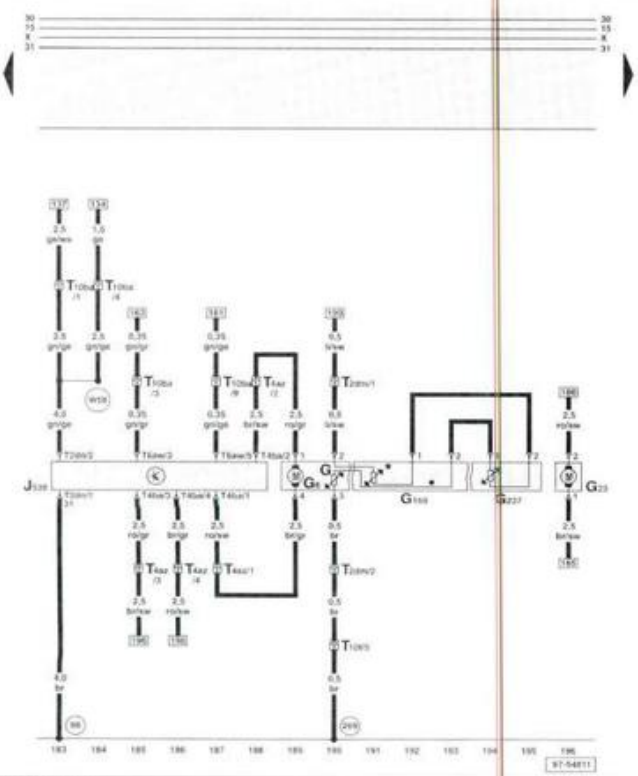
(85) - Ground connection -1-, in engine compartment wiring harness

(193) - Ground connection -1-, in coolant fan wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



**Audi A6** **Wiring Diagram** **No. 28/18**



**Fuel Pump (FP) Control Module, Fuel Pump (FP), Sender for Fuel Gauge**

- G - Sender for fuel gauge
- G6 - Fuel Pump (FP)
- G23 - Transfer Fuel Pump (FP)
- G169 - Fuel Level Sensor 2
- G237 - Sensor -3- for fuel supply
- J538 - Fuel Pump (FP) Control Module
- T2dm - Connector 2 pin, below rear seat
- T2dn - Connector 2 pin, on Fuel Pump (FP) Control Module
- T4az - Connector 4 pin, below rear seat
- T4ba - Connector 4 pin, on Fuel Pump (FP) Control Module
- T6av - Connector 6 pin, on Fuel Pump (FP) Control Module
- T10f - Connector 10 pin, brown, connector station A pillar, left
- T10ba - Connector 10 pin, blue, connector station A pillar, left

(66) - Ground connection -1-, in rear wiring harness

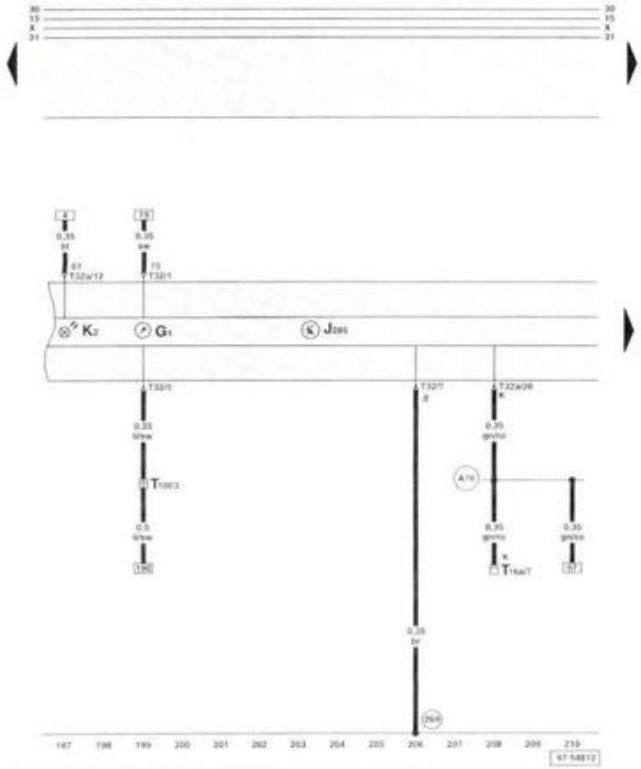
(269) - Ground connector (sensor ground) -1-, in instrument panel wiring harness

(755) - Connection (87) (in rear wiring harness)

* - Wiring inside Fuel Tank

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

**Audi A6** Wiring Diagram **No. 28/19**



**Control Module with Indicator Unit in Instrument Panel Insert, Fuel Gauge**

- G1 - Fuel Gauge
- J285 - Control Module with indicator unit in instrument panel insert
- K2 - Generator (GEN) Warning Light
- T16f - Connector 16 pin, brown, connector station A pillar, left
- T16a - Connector 16 pin, Data Link Connector (DLC)
- T32 - Connector 32 pin, blue, on instrument cluster
- T32a - Connector 32 pin, green, on instrument cluster
- (X6) - Ground connector (sensor ground) -1-, in instrument panel wiring harness
- (A76) - Connector (K-diagnosis wire), in instrument panel wiring harness
- # - Sensor Ground Output

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

97-54812

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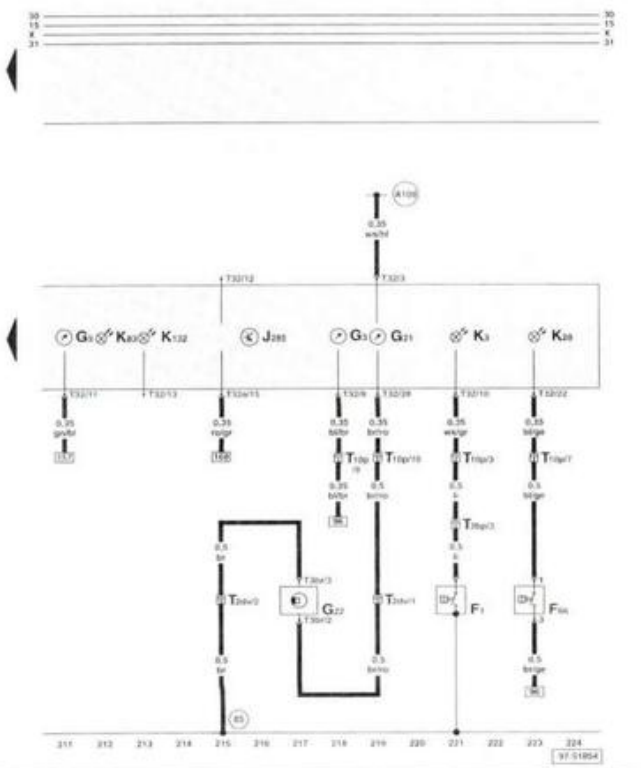
**Audi A6** Wiring Diagram **No. 28/20**



**Control Module with Indicator Unit in Instrument Panel Insert, Oil Pressure Switch, Engine Coolant Level Warning Switch, Speedometer Vehicle Speed Sensor (VSS)**

- F1 - Oil Pressure Switch
- F66 - Engine Coolant Level (ECL) Warning Switch
- G3 - Engine Coolant Temperature (ECT) Gauge
- G5 - Tachometer
- G21 - Speedometer
- G22 - Speedometer Vehicle Speed Sensor (VSS)
- J285 - Control Module with indicator unit in instrument panel insert
- K3 - Oil Pressure Warning Light
- K28 - Engine Coolant Level/Temperature (ECL/ECT) Warning Light
- K83 - Malfunction Indicator Lamp (MIL)
- K132 - Electronic Power Control (EPC) Warning Lamp
- T2dv - Connector 2 pin, black, for Speedometer Vehicle Speed Sensor (VSS)
- T2bp - Connector 3 pin, black, in engine compartment right
- T3br - Connector 3 pin, on Speedometer Vehicle Speed Sensor (VSS)
- T10p - Connector 10 pin, black, connector station electronic box plenum chamber
- T32 - Connector 32 pin, blue, on instrument cluster
- T32a - Connector 32 pin, green, on instrument cluster
- (X6) - Ground connector -1-, in engine compartment wiring harness
- (A10) - Connector (speed signal), in instrument panel wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

97-51854

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*Parking Aid (Parktronic)*

No. 30/1

Wiring Diagram

Audi A6

Parking Aid (Parktronic )

2003 m.y.

Fuse Panel

Fuse Colors

30 A - Green

25 A - White

20 A - Yellow

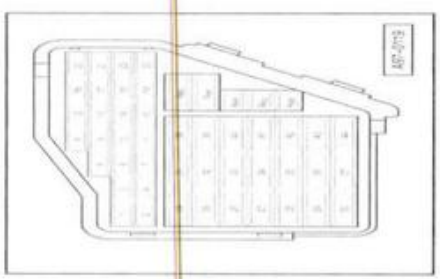
15 A - Blue

10 A - Red

7.5 A - Brown

5 A - Beige

1 A - Black




Starting with fuse position 23, fuses in the fuse holder are identified with 220 in the wiring diagram.

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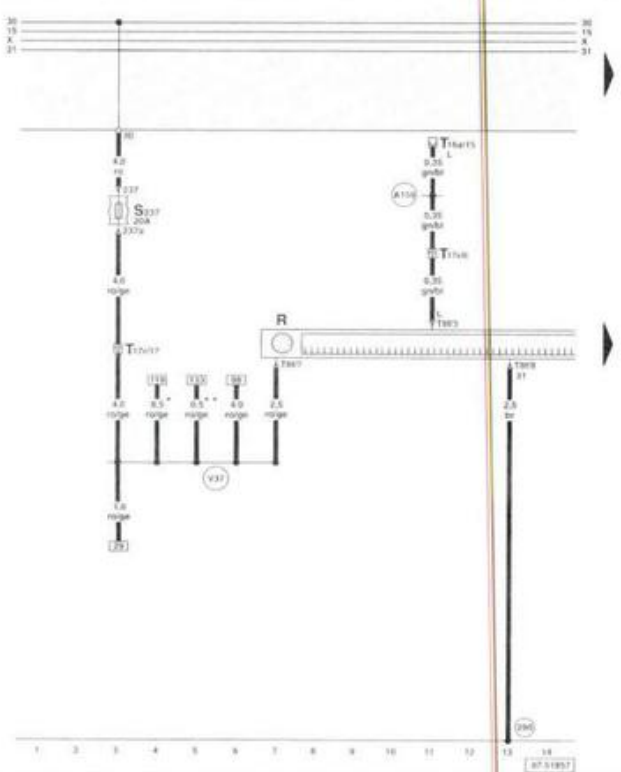
Audi A6

Wiring Diagram

No. 31/2




**Radio, Data Link Connector (DLC)**

R - Radio
S237 - Fuse 37 in fuse holder
T8f - Connector 8 pin, black, connector radio III
T16a - Connector 16 pin, Data Link Connector (DLC)
T17h - Connector 17 pin, white, behind instrument panel, center

(280) - Ground connector -2-, in wiring harness engine compartment
(J519) - Connection (L) (in instrument panel wiring harness)
(V37) - Positive connection (30) in communication wiring harness

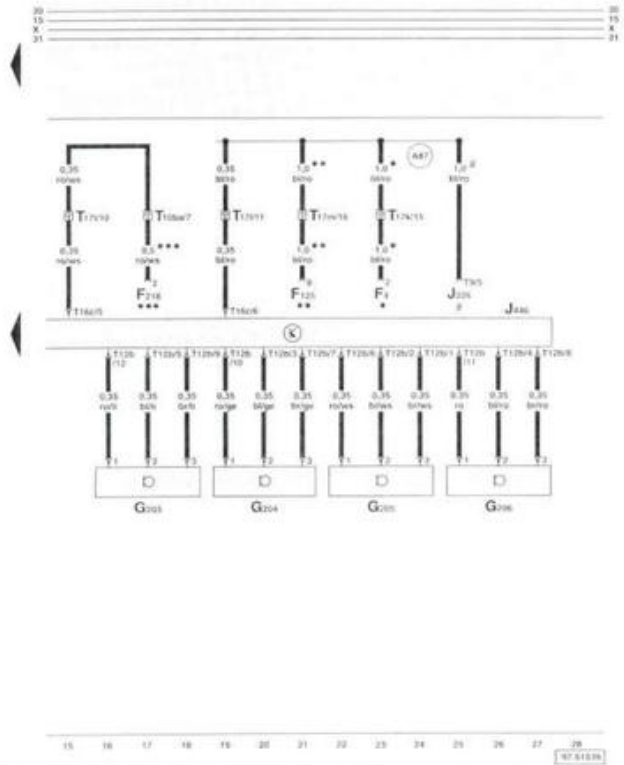
* - Sedan
** - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

USA.5604.03.21

Edition 05/03

**Audi A6** | **Wiring Diagram** | **No. 30/3**



**Control Module for Parking Aid, Parking Sensors**

F4 - Back-Up Light Switch
F125 - Multi-Function Transmission Range (TR) Switch
F215 - Contact switch for fog light shut off
G203 - Parking sensor, rear left
G204 - Parking sensor, rear left, center
G205 - Parking sensor, rear right, center
G206 - Parking sensor, rear right
J226 - Park/Neutral Position (PNP) Relay
J446 - Control module for parking aid
19 - Connector 9 pin, brown, on starting interlock relay
T10ba - Connector 10 pin, blue, connector station A pillar, left
T12b - Connector 12 pin, black, on Control Module for parking aid
T16c - Connector 16 pin, on Control Module for parking aid
T17a - Connector 17 pin, red, connector station electronic box plenum chamber
T17i - Connector 17 pin, white, connector station A pillar, right
T17m - Connector 17 pin, blue, connector station A pillar, right

(A87) - Connector (RF), in instrument panel wiring harness

* - Vehicles with manual transmission
** - Vehicles with automatic transmission 01V, 01L
*** - Vehicles with Trailer Socket
\# - Vehicles with automatic transmission multitronic® 01J

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



**THIS SPACE INTENTIONALLY**

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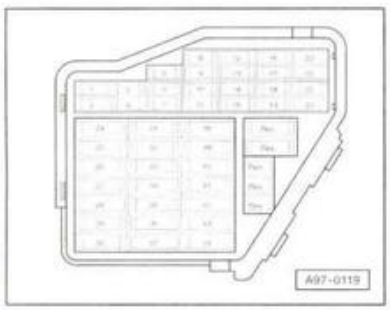
## Radio, Satellite Radio, Bose with and without CD Changer

2003 m.y.




**Fuse Panel**

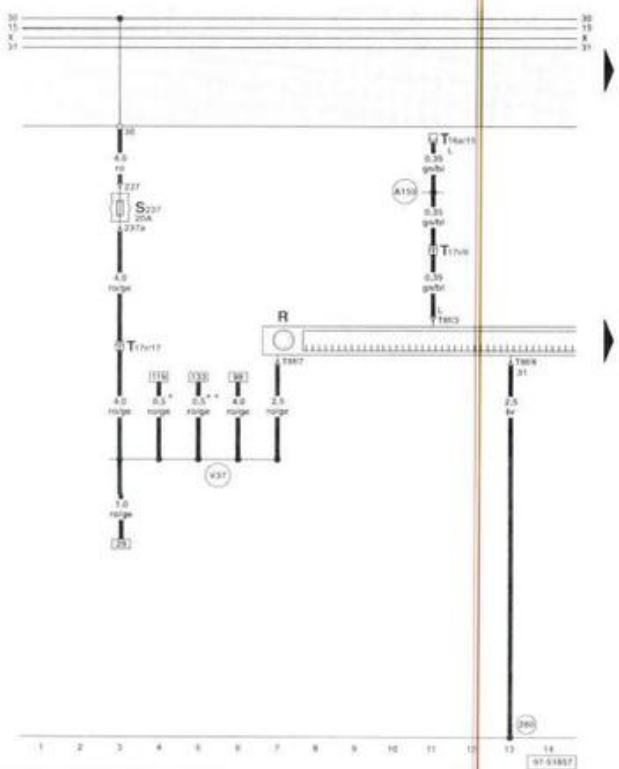
Fuse Colors:

30 A - Green
25 A - White
20 A - Yellow
15 A - Blue
10 A - Red
7,5 A - Brown
5 A - Beige
1 A - Black

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.








**Radio, Data Link Connector (DLC)**

R - Radio
S237 - Fuse 37 in fuse holder
T8f - Connector 8 pin, black, connector radio III
T16a - Connector 16 pin, Data Link Connector (DLC)
T17r - Connector 17 pin, white, behind instrument panel, center

(280) - Ground connector -2-, in wiring harness engine compartment
(V519) - Connection (L) in instrument panel wiring harness
(V37) - Positive connection (30) in communication wiring harness

* - Sedan
** - Wagon

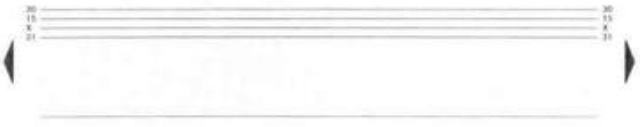
ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

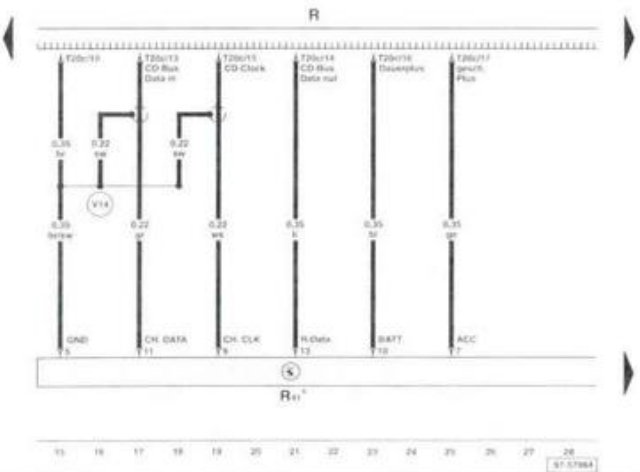
## Audi A6

Wiring Diagram

## No. 31/3

**Radio, CD Changer Unit**






ws = white
sw = black
rt = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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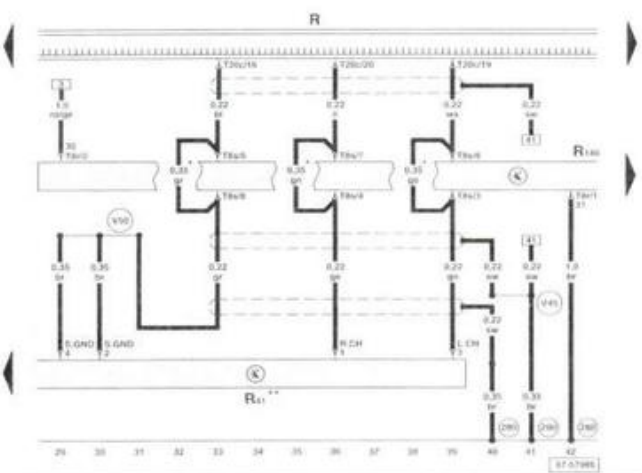
## Audi A6

Wiring Diagram

## No. 31/4

**Radio, Satellite Radio, CD Changer Unit**




ws = white
sw = black
rt = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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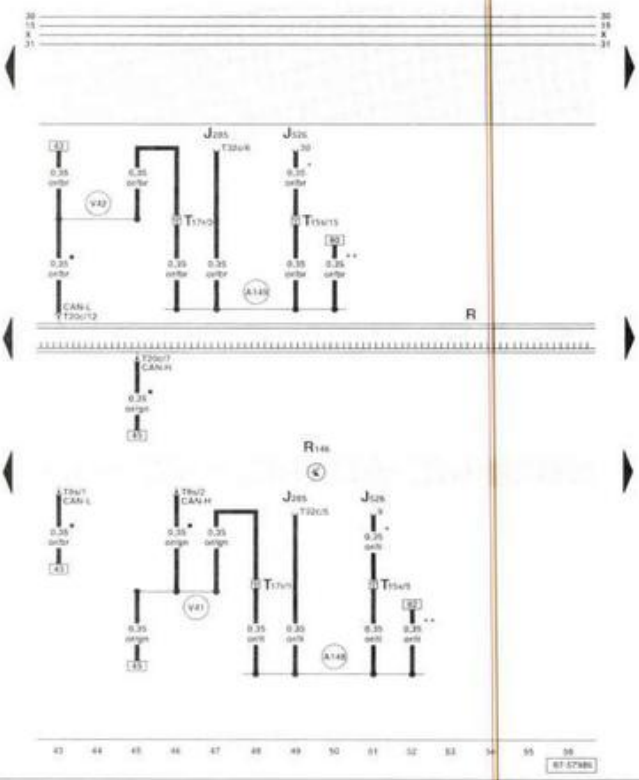
*Sound System, Bose (2003)*

**Audi A6** **Wiring Diagram** **No. 31/5**

**Radio, Satellite Radio, CAN-Bus Connection**




J285 - Control Module with indicator unit in instrument panel insert
J526 - Telephone/Telematic Control Module
R - Radio
R146 - Satellite Radio
T8s - Connector 8 pin, black, on Satellite Radio
T16s - Connector 16 pin, blue, connector station A pillar, left
T17r - Connector 17 pin, white, behind instrument panel, center
T20c - Connector 20 pin, black, connector radio 1
T32c - Connector 32 pin, grey, on instrument cluster
A143 - Connection (high bus, navigation), in instrument panel wiring harness
A144 - Connection (low bus, navigation), in instrument panel wiring harness
V41 - High-Bus Connection (in communications wiring harness)
V42 - Low-Bus Connection (in communications wiring harness)

• - CAN-Bus (Data-Bus)
* - Vehicles with Telematics, Telephone
** - Vehicles with Navigation System

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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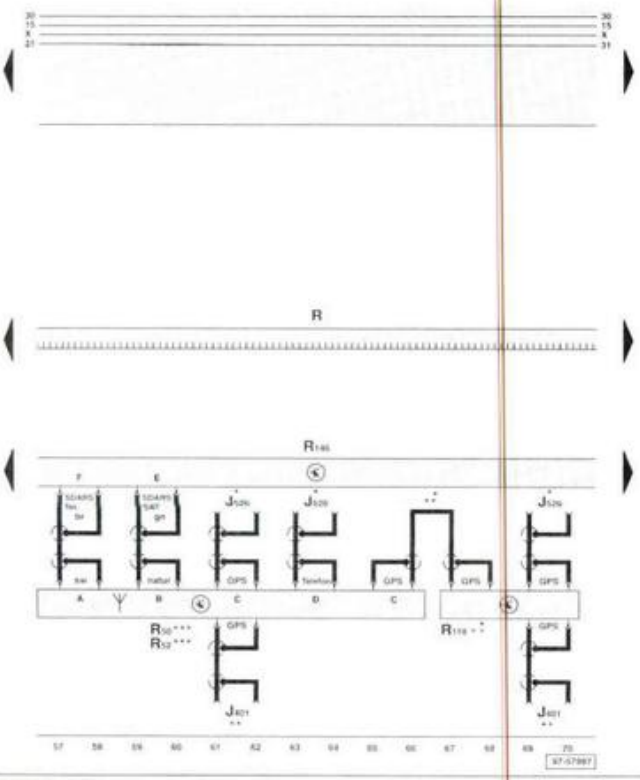
**Audi A6** **Wiring Diagram** **No. 31/6**

**Radio, Satellite Radio, Antennas for Sedan**




J401 - Control unit for navigation with CD-mechanism
J526 - Telephone/Telematic Control Module
R - Radio
R50 - Antenna for navigation system (GPS)
R52 - Antenna for radio/telephone/navigation (GPS)
R110 - GPS Antenna Splitter
R146 - Satellite Radio

* - Vehicles with Telematics
** - Vehicles with Navigation System
*** - Roof Antenna Sedan

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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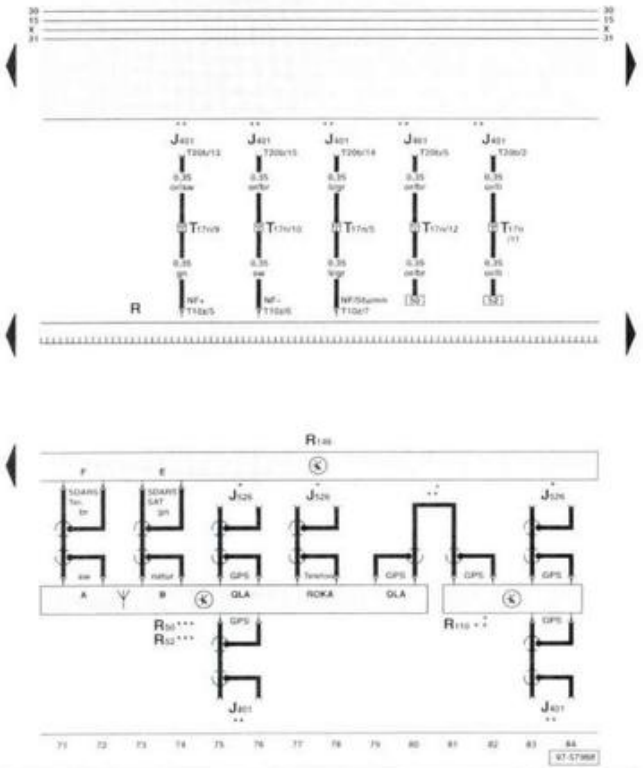
## Audi A6

**Wiring Diagram**

## No. 31/7

**Radio, Satellite Radio, Antennas for Wagon**



J401 - Control unit for navigation with CD mechanism
J526 - Telephone/Telematic Control Module
R - Radio
R50 - Antenna for navigation system (GPS)
R52 - Antenna for radio/telephone/navigation (GPS)
R110 - GPS Antenna Splitter
R146 - Satellite Radio
T10z - Connector 10 pin, red, connector radio IV
T17n - Connector 17 pin, brown, connector station A pillar, right
T20b - Connector 20 pin, black, on control unit for navigation

* - Vehicles with Telematics
** - Vehicles with Navigation System
*** - Roof Antenna Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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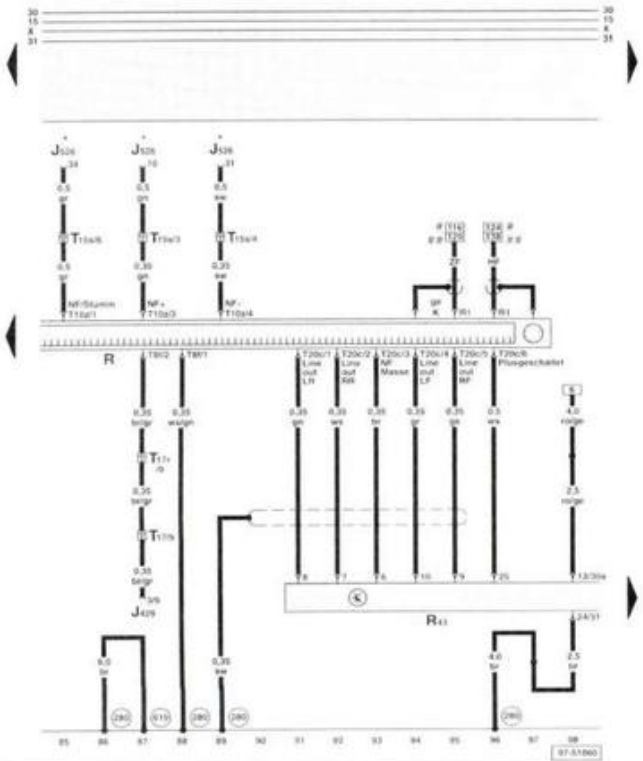
## Audi A6

**Wiring Diagram**

## No. 31/8

**Radio, Right Rear Woofer/Amplifier**



J429 - Control module for central locking
J526 - Telephone/Telematic Control Module
R - Radio
R43 - Right Rear Woofer/Amplifier
T6f - Connector 6 pin, black, connector radio III
T10r - Connector 10 pin, red, connector radio IV
T16s - Connector 16 pin, blue, connector station A pillar, left
T17 - Connector 17 pin, orange, connector station A pillar, right
T17r - Connector 17 pin, white, behind instrument panel, center
T20c - Connector 20 pin, black, connector radio I
(280) - Ground connector -2-, in wiring harness engine compartment
(610) - Ground connection (radio) under center console, front

* - Vehicles with Telematics, Telephone
# - Sedan
## - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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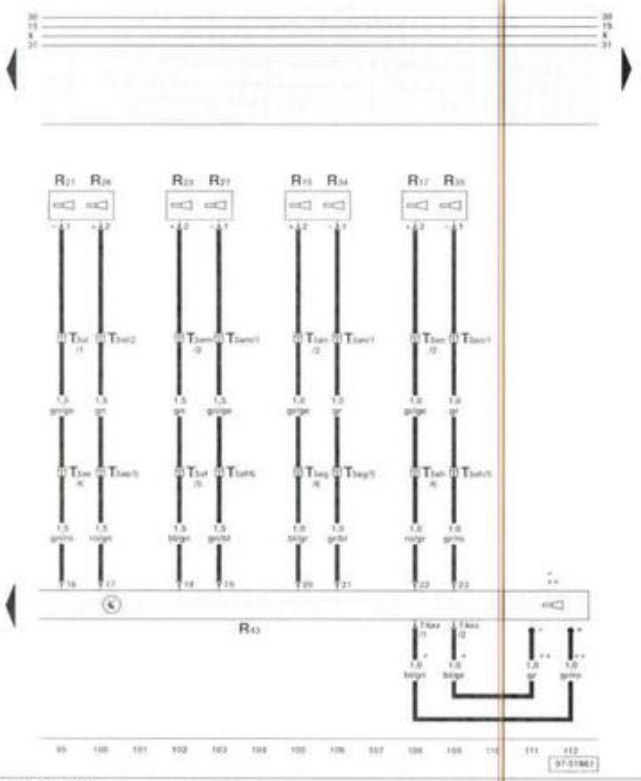
Edition 05/03

## Audi A6

**Wiring Diagram**

## No. 31/9



**Right Rear Woofer/Amplifier, Front and Rear Bass Speaker, Front and Rear Midrange Speaker**

R15 - Bass speaker, left rear
R17 - Bass speaker, right rear
R21 - Bass speaker, left front
R23 - Bass speaker, right front
R26 - Left Front Midrange Speaker
R27 - Right Front Midrange Speaker
R34 - Left Rear Midrange Speaker
R35 - Right Rear Midrange Speaker
R43 - Right Rear Woofer/Amplifier
T3ae - Connector 3 pin, brown, connector station A pillar, left
T3af - Connector 3 pin, brown, connector station A pillar, right
T3ag - Connector 3 pin, blue, in B pillar left
T3ah - Connector 3 pin, blue, in B pillar right
T3al - Connector 3 pin, black, in driver's door
T3am - Connector 3 pin, black, in passenger's door
T3an - Connector 3 pin, black, in left rear door
T3ao - Connector 3 pin, black, in right rear door
T4av - Connector 4 pin, on Woofer/Amplifier

* - Subwoofer, sedan
** - Subwoofer, wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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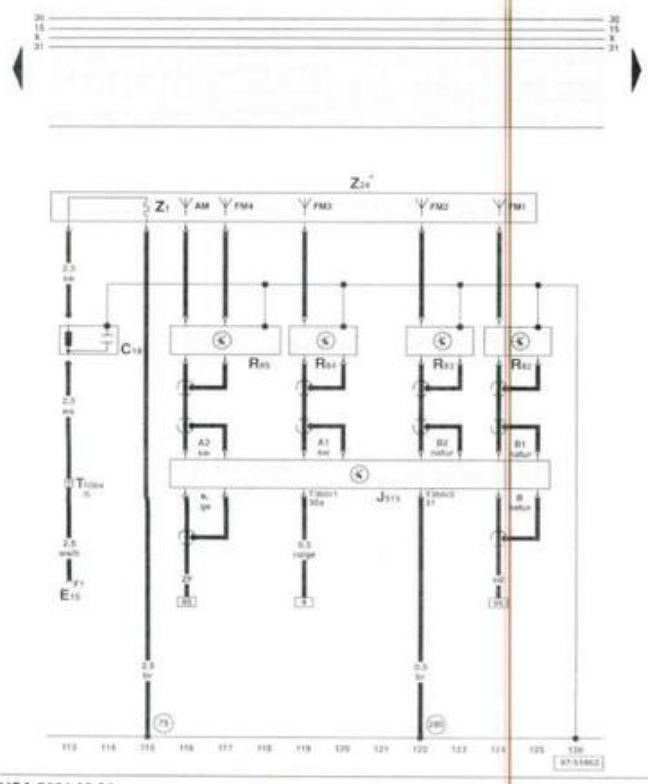
Edition 05/03

## Audi A6

**Wiring Diagram**

## No. 31/10



**Antenna Selection Control Module, TV Antenna Amplifier, Rear Window Defogger with Window Antenna**

C19 - Windshield Antenna Suppression Filter
E15 - Rear Window Defogger Switch
J515 - Antenna Selection Control Module
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
T3bn - Connector 3 pin, black, on Control unit for aerial selection (aerial diversity function)
T10bw - Connector 10 pin, blue, connector station A pillar, left
Z1 - Heated rear window
Z24 - Rear Window Defogger With Window Antenna

(75) - Ground connection, on right rear pillar
(290) - Ground connector -2-, in wiring harness engine compartment

* - Sedan

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

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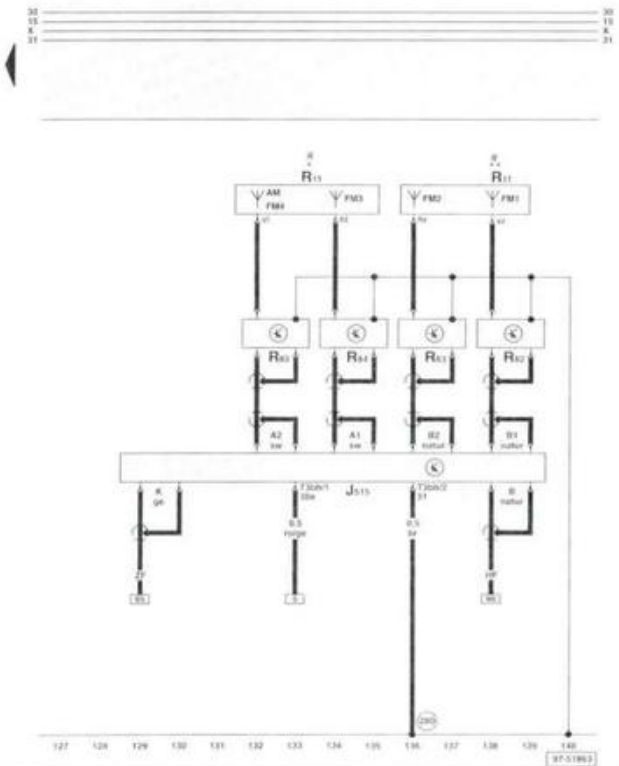
**Audi A6** Wiring Diagram **No. 31/11**



**Antenna Selection Control Module, TV Antenna Amplifier**

J515 - Antenna Selection Control Module
R11 - Antenna
R82 - TV Antenna Amplifier 1
R83 - TV Antenna Amplifier 2
R84 - TV Antenna Amplifier 3
R85 - TV Antenna Amplifier 4
T3bh - Connector 3 pin, black, on Control unit for aerial selection (aerial diversity function)

(Z9) - Ground connector "Z", in wiring harness engine compartment

* - Left rear window
** - Right rear window
\# - Wagon

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange



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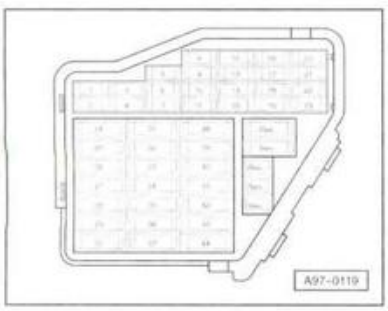
## CD Changer Unit

2004 m.y.




**Fuse Panel**

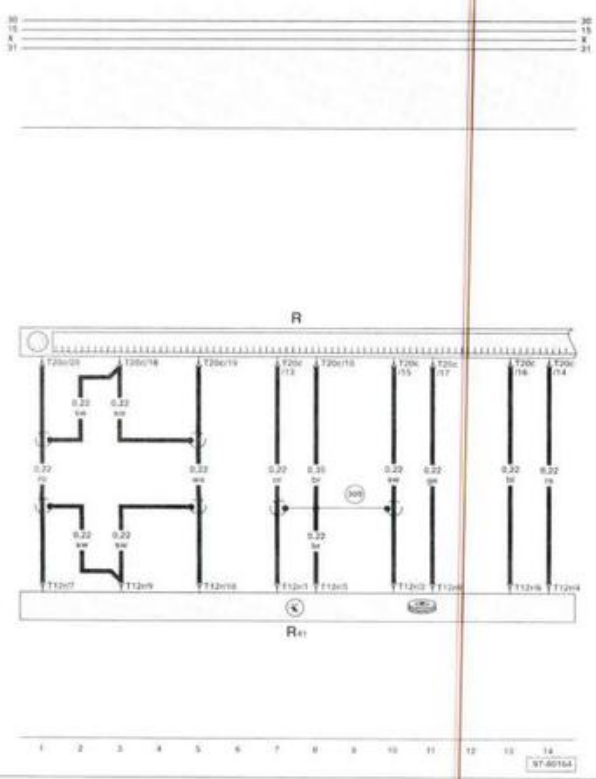
Fuse Colors:

- 30 A - Green
- 25 A - White
- 20 A - Yellow
- 15 A - Blue
- 10 A - Red
- 7.5 A - Brown
- 5 A - Beige
- 1 A - Black

Starting with fuse position 23, fuses in the fuse holder are identified with 223 in the wiring diagram.








**CD Changer Unit, Radio**

R - Radio
R41 - CD Changer Unit
T12r - Connector 12 pin, black, on CD Changer Unit
T20c - Connector 20 pin, black, connector radio I
(209) - Ground Connection (shielding) in CD changer wiring harness

ws = white
sw = black
ro = red
br = brown
gn = green
bl = blue
gr = grey
li = violet
ge = yellow
or = orange

# OBD On-Board Diagnostics

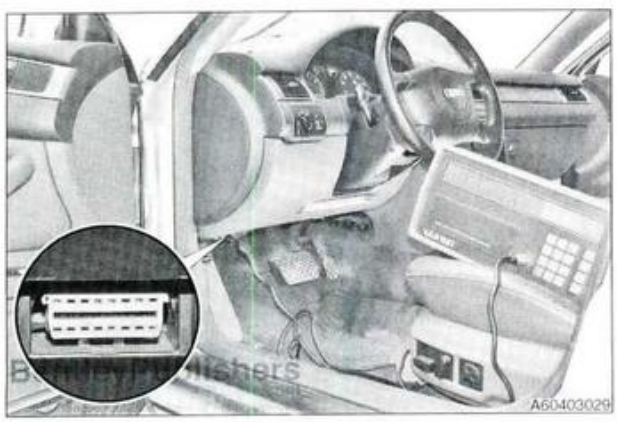
GENERAL . . . . . .OBD-1
ON-BOARD DIAGNOSTICS . . . . . .OBD-1
OBD II . . . . . .OBD-1
Scan tool . . . . . .OBD-2
Diagnostic scan tool and special tool suppliers . . . . . .OBD-3
DIAGNOSTIC TROUBLE CODES . . . . . .OBD-3
VAG 1551/1552 OPERATING OVERVIEW FLOWCHART . . . . . .OBD-25
TABLES
a. Diagnostic trouble codes (P-code DTCs). . . . . OBD-3

## GENERAL

This section gives a brief overview of on-board diagnostics (OBD) and a list of diagnostic trouble codes (DTCs) applicable to the powertrain.

While most DTCs can be accessed with a generic scan tool, full and complete vehicle system diagnostic information can only be obtained using a VW / Audi scan tool such as the VAS 5051 / 5052 and derivatives, or an equivalent aftermarket scan tool.

## ON-BOARD DIAGNOSTICS




Vehicles covered by this manual are equipped with on-board diagnostics. Diagnosis system access is via the data link connector (DLC) (**inset**) under left side dashboard, to left of steering solumn.

The DLC uses the industry standard SAE 16-pin connector. The connector is recessed into the panel under the dashboard and does not use a cover.

### OBD II

Second generation on-board diagnostics (OBD II) is a system mandated by federal regulations for all cars sold in the United States since 1996. OBD II is integrated with VW / Audi factory system diagnostics.

OBD II, programmed into the engine control module (ECM) monitors operation and function of engine management and automatic transmission to insure compliance with specified exhaust and evaporative emission levels. When the OBD II system recognizes a malfunction (or fault) a DTC is stored in the ECM and the malfunction indicator light (MIL) in the instrument cluster is illuminated. This alerts the driver of a problem and the need to have the system checked.

Each DTC is assigned two codes. The first is a numerical code assigned by VW / Audi (VAG code). The second is referred to as a P-code or U-code and follows a structure required by law and defined by the Society of Automotive Engineers (SAE). DTCs follow

VAS 5052

VAS 5051

VAG 1552

VAG1551

0024463

a standard format. This standard uses a letter to designate the system and four numbers or letters to further identify and detail the malfunction as listed below.

First digit structure is as follows:

- **Pxxxx**: Powertrain
- **Uxxxx**: Vehicle network communications
- **Bxxxx**: Body
- **Cxxxx**: Chassis

Second digit structure is:

- **P0xxx**: Government required codes
- **P1xxx**: Manufacturer codes for additional emission system function; not required but reported to government

Third digit structure is:

- **Px1xx**: Air and fuel measurement
- **Px2xx**: Air and fuel measurement
- **Px3xx**: Ignition system
- **Px4xx**: Additional emission controls
- **Px5xx**: Speed and idle regulation
- **Px6xx**: Computer and output signals
- **Px7xx**: Transmission
- **Px8xx**: Transmission
- **Px9xx**: Control modules, input and output signals

The fourth and fifth digits denote the individual components and systems. In some cases, the fifth digit can be a letter.

The digit structure shown above has P as the first digit. However, letters B, C, and U could be used where applicable. Only P and U codes are currently used in vehicles covered by this manual.

**Table a** in this repair group contains P-codes and VAG codes with brief descriptions of each.

## Scan tool

Sampling of VW / Audi scan tools. VAS 5051 is superseded by VAS 5051B. Note that VAG 1551 and VAG 1552 do not have the ability to access all of the systems on the CAN-bus.

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## Diagnostic scan tool and special tool suppliers

The following suppliers offer diagnostic scan tools or computerized scan tool programs. Some of them also offer special tools and equipment for specialized repair work.

Assenmacher Specialty Tools, Inc.
6440 Odell Place
Boulder, CO 80301
(800) 525-2943
www.asttool.com

Baum Tools Unlimited, Inc.
PO Box 5867
Sarasota, FL 34277
(800) 848-6657
www.baumtools.com

Equipment Solutions
P.O. Box 1450
Kenosha, WI 53141-1450
(800) 892-9650

Metalnerd
5113 Crestview Drive, Suite B
Greensburg, PA, 15601 USA
(412) 601-4270
www.metalnerd.com

Ross-Tech
920 South Broad Street
Lansdale, PA 19446
215-361-8942
www.ross-tech.com

Samstag Sales
115 Main St. N., Suite 216
Carthage, TN 37030
(615) 735-3388
www.samstagsales.com

Shade Tree Software
4186 Culebra Ct.
Boulder, CO 80301
(303) 449-1664
(303) 940-2468
www.shadetreesoftware.com

ZDMAK Tools
P.O. Box 5100
Sarasota, FL 34277
(877) 938-6657
www.zdmak.com

Zelenda Automotive, Inc.
66-02 Austin St.
Forest Hills, NY 11374
(888) 892-8348
www.zelenda.com

## Diagnostic Trouble Codes

**Table a** contains a list of available powertrain scan tool codes for VW / Audi vehicles available at the time of publication. Not all codes apply to all vehicles.

**Table a. Diagnostic trouble codes (DTCs or P-codes)**

| VAG code | SAE P-code | Description |
|---|---|---|
| 16394 | P0010 | -A- Camshaft Pos. Actuator Circ. Bank 1 Malfunction |
| 16395 | P0020 | -A- Camshaft Pos. Actuator Circ. Bank 2 Malfunction |
| 16449 | P0065 | Air Assisted Injector Control Range/Performance |
| 16450 | P0066 | Air Assisted Injector Control Low Input/Short to ground |
| 16451 | P0067 | Air Assisted Injector Control Input/Short to B+ |
| 16485 | P0101 | Mass or Volume Air Flow Circ Range/Performance |
| 16486 | P0102 | Mass or Volume Air Flow Circ Low Input |
| 16487 | P0103 | Mass or Volume Air Flow Circ High Input |

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*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 16489 | P0105 | Manifold Abs.Pressure or Bar.Pressure Voltage supply |
| 16490 | P0106 | Manifold Abs.Pressure or Bar.Pressure Range/Performance |
| 16491 | P0107 | Manifold Abs.Pressure or Bar.Pressure Low Input |
| 16492 | P0108 | Manifold Abs.Pressure or Bar.Pressure High Input |
| 16496 | P0112 | Intake Air Temp.Circ Low Input |
| 16497 | P0113 | Intake Air Temp.Circ High Input |
| 16500 | P0116 | Engine Coolant Temp.Circ Range/Performance |
| 16501 | P0117 | Engine Coolant Temp.Circ Low Input |
| 16502 | P0118 | Engine Coolant Temp.Circ High Input |
| 16504 | P0120 | Throttle/Pedal Pos.Sensor A Circ Malfunction |
| 16505 | P0121 | Throttle/Pedal Pos.Sensor A Circ Range/Performance |
| 16506 | P0122 | Throttle/Pedal Pos.Sensor A Circ Low Input |
| 16507 | P0123 | Throttle/Pedal Pos.Sensor A Circ High Input |
| 16509 | P0125 | Insufficient Coolant Temp.for Closed Loop Fuel Control |
| 16512 | P0128 | Coolant Thermostat/Valve Temperature below control range |
| 16514 | P0130 | O2 Sensor Circ.,Bank1-Sensor1 Malfunction |
| 16515 | P0131 | O2 Sensor Circ.,Bank1-Sensor1 Low Voltage |
| 16516 | P0132 | O2 Sensor Circ.,Bank1-Sensor1 High Voltage |
| 16517 | P0133 | O2 Sensor Circ.,Bank1-Sensor1 Slow Response |
| 16518 | P0134 | O2 Sensor Circ.,Bank1-Sensor1 No Activity Detected |
| 16519 | P0135 | O2 Sensor Heater Circ.,Bank1-Sensor1 Malfunction |
| 16520 | P0136 | O2 Sensor Circ.,Bank1-Sensor2 Malfunction |
| 16521 | P0137 | O2 Sensor Circ.,Bank1-Sensor2 Low Voltage |
| 16522 | P0138 | O2 Sensor Circ.,Bank1-Sensor2 High Voltage |
| 16523 | P0139 | O2 Sensor Circ.,Bank1-Sensor2 Slow Response |
| 16524 | P0140 | O2 Sensor Circ.,Bank1-Sensor2 No Activity Detected |
| 16525 | P0141 | O2 Sensor Heater Circ.,Bank1-Sensor2 Malfunction |
| 16534 | P0150 | O2 Sensor Circ.,Bank2-Sensor1 Malfunction |
| 16535 | P0151 | O2 Sensor Circ.,Bank2-Sensor1 Low Voltage |
| 16536 | P0152 | O2 Sensor Circ.,Bank2-Sensor1 High Voltage |
| 16537 | P0153 | O2 Sensor Circ.,Bank2-Sensor1 Slow Response |
| 16538 | P0154 | O2 Sensor Circ.,Bank2-Sensor1 No Activity Detected |
| 16539 | P0155 | O2 Sensor Heater Circ.,Bank2-Sensor1 Malfunction |
| 16540 | P0156 | O2 Sensor Circ.,Bank2-Sensor2 Malfunction |
| 16541 | P0157 | O2 Sensor Circ.,Bank2-Sensor2 Low Voltage |
| 16542 | P0158 | O2 Sensor Circ.,Bank2-Sensor2 High Voltage |
| 16543 | *P0159* | O2 Sensor Circ.,Bank2-Sensor2 Slow Response |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 16544 | P0160 | O2 Sensor Circ.,Bank2-Sensor2 No Activity Detected |
| 16545 | P0161 | O2 Sensor Heater Circ.,Bank2-Sensor2 Malfunction |
| 16554 | P0170 | Fuel Trim,Bank1 Malfunction |
| 16555 | P0171 | Fuel Trim,Bank1 System too Lean |
| 16556 | P0172 | Fuel Trim,Bank1 System too Rich |
| 16557 | P0173 | Fuel Trim,Bank2 Malfunction |
| 16558 | P0174 | Fuel Trim,Bank2 System too Lean |
| 16559 | P0175 | Fuel Trim,Bank2 System too Rich |
| 16566 | P0182 | Fuel temperature sender-G81 Short to ground |
| 16567 | P0183 | Fuel temperature sender-G81 Interruption/Short to B+ |
| 16581 | P0197 | Engine Oil Temperature Circuit Low Input |
| 16582 | P0198 | Engine Oil Temperature Circuit High Input |
| 16585 | P0201 | Cyl.1, Injector Circuit Fault in electrical circuit |
| 16586 | P0202 | Cyl.2, Injector Circuit Fault in electrical circuit |
| 16587 | P0203 | Cyl.3, Injector Circuit Fault in electrical circuit |
| 16588 | P0204 | Cyl.4, Injector Circuit Fault in electrical circuit |
| 16589 | P0205 | Cyl.5 Injector Circuit Fault in electrical circuit |
| 16590 | P0206 | Cyl.6 Injector Circuit Fault in electrical circuit |
| 16591 | P0207 | Cyl.7 Injector Circuit Fault in electrical circuit |
| 16592 | P0208 | Cyl.8 Injector Circuit Fault in electrical circuit |
| 16599 | P0215 | Engine Shut-Off Solenoid Malfunction |
| 16600 | P0216 | Injector/Injection Timing Control Malfunction |
| 16603 | P0219 | Engine Overspeed Condition |
| 16605 | P0221 | Throttle Pos. Sensor -B- Circuit Range/Performance |
| 16606 | P0222 | Throttle Pos. Sensor -B- Circuit Low Input |
| 16607 | P0223 | Throttle Pos. Sensor -B- Circuit High Input |
| 16609 | P0225 | Throttle Pos. Sensor -C- Circuit Voltage supply |
| 16610 | P0226 | Throttle Pos. Sensor -C- Circuit Range/Performance |
| 16611 | P0227 | Throttle Pos. Sensor -C- Circuit Low Input |
| 16612 | P0228 | Throttle Pos. Sensor -C- Circuit High Input |
| 16614 | P0230 | Fuel Pump Primary Circuit Fault in electrical circuit |
| 16618 | P0234 | Turbocharger Overboost Condition Control limit exceeded |
| 16619 | P0235 | Turbocharger Boost Sensor (A) Circ Control limit not reached |
| 16620 | P0236 | Turbocharger Boost Sensor (A) Circ Range/Performance |
| 16621 | P0237 | Turbocharger Boost Sensor (A) Circ Low Input |
| 16622 | P0238 | Turbocharger Boost Sensor (A) Circ High Input |
| 16627 | P0243 | Turbocharger Wastegate Solenoid (A) Open/Short Circuit to Ground |
| 16629 | P0245 | Turbocharger Wastegate Solenoid (A) Low Input/Short to ground |

*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 16630 | P0246 | Turbocharger Wastegate Solenoid (A) High Input/Short to B+ |
| 16636 | P0252 | Injection Pump Metering Control (A) Range/Performance |
| 16645 | P0261 | Cyl.1 Injector Circuit Low Input/Short to ground |
| 16646 | P0262 | Cyl.1 Injector Circuit High Input/Short to B+ |
| 16648 | P0264 | Cyl.2 Injector Circuit Low Input/Short to ground |
| 16649 | P0265 | Cyl.2 Injector Circuit High Input/Short to B+ |
| 16651 | P0267 | Cyl.3 Injector Circuit Low Input/Short to ground |
| 16652 | P0268 | Cyl.3 Injector Circuit High Input/Short to B+ |
| 16654 | P0270 | Cyl.4 Injector Circuit Low Input/Short to ground |
| 16655 | P0271 | Cyl.4 Injector Circuit High Input/Short to B+ |
| 16657 | P0273 | Cyl.5 Injector Circuit Low Input/Short to ground |
| 16658 | P0274 | Cyl.5 Injector Circuit High Input/Short to B+ |
| 16660 | P0276 | Cyl.6 Injector Circuit Low Input/Short to ground |
| 16661 | P0277 | Cyl.6 Injector Circuit High Input/Short to B+ |
| 16663 | P0279 | Cyl.7 Injector Circuit Low Input/Short to ground |
| 16664 | P0280 | Cyl.7 Injector Circuit High Input/Short to B+ |
| 16666 | P0282 | Cyl.8 Injector Circuit Low Input/Short to ground |
| 16667 | P0283 | Cyl.8 Injector Circuit High Input/Short to B+ |
| 16684 | P0300 | Random/Multiple Cylinder Misfire Detected |
| 16685 | P0301 | Cyl.1 Misfire Detected |
| 16686 | P0302 | Cyl.2 Misfire Detected |
| 16687 | P0303 | Cyl.3 Misfire Detected |
| 16688 | P0304 | Cyl.4 Misfire Detected |
| 16689 | P0305 | Cyl.5 Misfire Detected |
| 16690 | P0306 | Cyl.6 Misfire Detected |
| 16691 | P0307 | Cyl.7 Misfire Detected |
| 16692 | P0308 | Cyl.8 Misfire Detected |
| 16697 | P0313 | Misfire Detected Low Fuel Level |
| 16698 | P0314 | Single Cylinder Misfire |
| 16705 | P0321 | Ign./Distributor Eng.Speed Inp.Circ Range/Performance |
| 16706 | P0322 | Ign./Distributor Eng.Speed Inp.Circ No Signal |
| 16709 | P0325 | Knock Sensor 1 Circuit Electrical Fault in Circuit |
| 16710 | P0326 | Knock Sensor 1 Circuit Range/Performance |
| 16711 | P0327 | Knock Sensor 1 Circ Low Input |
| 16712 | P0328 | Knock Sensor 1 Circ High Input |
| 16716 | P0332 | Knock Sensor 2 Circ Low Input |
| 16717 | P0333 | Knock Sensor 2 Circ High Input |

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| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 16719 | P0335 | Crankshaft Pos. Sensor (A) Circ Malfunction |
| 16720 | P0336 | Crankshaft Pos. Sensor (A) Circ Range/Performance/Missing tooth |
| 16721 | P0337 | Crankshaft Pos.Sensor (A) Circ Low Input |
| 16724 | P0340 | Camshaft Pos. Sensor (A) Circ Incorrect allocation |
| 16725 | P0341 | Camshaft Pos.Sensor Circ Range/Performance |
| 16726 | P0342 | Camshaft Pos.Sensor Circ Low Input |
| 16727 | P0343 | Camshaft Pos.Sensor Circ High Input |
| 16735 | P0351 | Ignition Coil (A) Cyl.1 Prim./Sec. Circ Malfunction |
| 16736 | P0352 | Ignition Coil (B) Cyl.2 Prim./Sec. Circ Malfunction |
| 16737 | P0353 | Ignition Coil (C) Cyl.3 Prim./Sec. Circ Malfunction |
| 16738 | P0354 | Ignition Coil (D) Cyl.4 Prim./Sec. Circ Malfunction |
| 16739 | P0355 | Ignition Coil (E) Cyl.5 Prim./Sec. Circ Malfunction |
| 16740 | P0356 | Ignition Coil (F) Cyl.6 Prim./Sec. Circ Malfunction |
| 16741 | P0357 | Ignition Coil (G) Cyl.7 Prim./Sec. Circ Malfunction |
| 16742 | P0358 | Ignition Coil (H) Cyl.8 Prim./Sec. Circ Malfunction |
| 16764 | P0380 | Glow Plug/Heater Circuit (A) Electrical Fault in Circuit |
| 16784 | P0400 | Exhaust Gas Recirc.Flow Malfunction |
| 16785 | P0401 | Exhaust Gas Recirc.Flow Insufficient Detected |
| 16786 | P0402 | Exhaust Gas Recirc.Flow Excessive Detected |
| 16787 | P0403 | Exhaust Gas Recirc. Contr. Circ Malfunction |
| 16788 | P0404 | Exhaust Gas Recirc. Contr. Circ Range/Performance |
| 16789 | P0405 | Exhaust Gas Recirc. Sensor (A) Circ Low Input |
| 16790 | P0406 | Exhaust Gas Recirc. Sensor (A) Circ High Input |
| 16791 | P0407 | Exhaust Gas Recirc. Sensor (B) Circ Low Input |
| 16792 | P0408 | Exhaust Gas Recirc. Sensor (B) Circ High Input |
| 16794 | P0410 | Sec.Air Inj.Sys Malfunction |
| 16795 | P0411 | Sec.Air Inj.Sys. Incorrect Flow Detected |
| 16796 | P0412 | Sec.Air Inj.Sys.Switching Valve A Circ Malfunction |
| 16802 | P0418 | Sec. Air Inj. Sys. Relay (A) Contr. Circ Malfunction |
| 16804 | P0420 | Catalyst System,Bank1 Efficiency Below Threshold |
| 16806 | P0422 | Main Catalyst,Bank1 Below Threshold |
| 16811 | P0427 | Catalyst Temperature Sensor, Bank 1 Low Input/Short to ground |
| 16812 | P0428 | Catalyst Temperature Sensor, Bank 1 High Input/Open/Short Circuit to B+ |
| 16816 | P0432 | Main Catalyst,Bank2 Efficiency Below Threshold |
| 16820 | P0436 | Catalyst Temperature Sensor, Bank 2 Range/Performance |
| 16821 | P0437 | Catalyst Temperature Sensor, Bank 2 Low Input/Short to ground |
| 16822 | P0438 | Catalyst Temperature Sensor, Bank 2 High Input/Open/Short Circuit to B+ |

*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 16824 | P0440 | EVAP Emission Contr.Sys. Malfunction |
| 16825 | P0441 | EVAP Emission Contr.Sys.Incorrect Purge Flow |
| 16826 | P0442 | EVAP Emission Contr.Sys.(Small Leak) Leak Detected |
| 16827 | P0443 | EVAP Emiss. Contr. Sys. Purge Valve Circ Electrical Fault in Circuit |
| 16836 | P0452 | EVAP Emission Contr.Sys.Press.Sensor Low Input |
| 16837 | P0453 | EVAP Emission Contr.Sys.Press.Sensor High Input |
| 16839 | P0455 | EVAP Emission Contr.Sys.(Gross Leak) Leak Detected |
| 16845 | P0461 | Fuel Level Sensor Circ Range/Performance |
| 16846 | P0462 | Fuel Level Sensor Circuit Low Input |
| 16847 | P0463 | Fuel Level Sensor Circuit High Input |
| 16885 | P0501 | Vehicle Speed Sensor Range/Performance |
| 16887 | P0503 | Vehicle Speed Sensor Intermittent/Erratic/High Input |
| 16889 | P0505 | Idle Control System Malfunction |
| 16890 | P0506 | Idle Control System RPM Lower than Expected |
| 16891 | P0507 | Idle Control System Higher than Expected |
| 16894 | P0510 | Closed Throttle Pos.Switch Malfunction |
| 16915 | P0531 | A/C Refrigerant Pressure Sensor Circuit Range/Performance |
| 16916 | P0532 | A/C Refrigerant Pressure Sensor Circuit Low Input |
| 16917 | P0533 | A/C Refrigerant Pressure Sensor Circuit High Input |
| 16935 | P0551 | Power Steering Pressure Sensor Circuit Range/Performance |
| 16944 | P0560 | System Voltage Malfunction |
| 16946 | P0562 | System Voltage Low Voltage |
| 16947 | P0563 | System Voltage High Voltage |
| 16952 | P0568 | Cruise Control Set Signal Incorrect Signal |
| 16955 | P0571 | Cruise/Brake Switch (A) Circ Malfunction |
| 16984 | P0600 | Serial Comm. Link (Data Bus) Message Missing |
| 16985 | P0601 | Internal Contr.Module Memory Check Sum Error |
| 16986 | P0602 | Control Module Programming Error/Malfunction |
| 16987 | P0603 | Internal Contr.Module (KAM) Error |
| 16988 | P0604 | Internal Contr.Module Random Access Memory (RAM) Error |
| 16989 | P0605 | Internal Contr.Module ROM Test Error |
| 16990 | P0606 | ECM/PCM Processor |
| 17026 | P0642 | Knock Control Module Malfunction |
| 17029 | P0645 | A/C Clutch Relay Control Circuit |
| 17034 | P0650 | MIL Control Circuit Electrical Fault in Circuit |
| 17038 | P0654 | Engine RPM Output Circuit Electrical Fault in Circuit |
| 17040 | P0656 | Fuel Level Output Circuit Electrical Fault in Circuit |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17084 | P0700 | Transm.Contr.System Malfunction |
| 17086 | P0702 | Transm.Contr.System Electrical |
| 17087 | P0703 | Torque Converter/Brake Switch B Circ Malfunction |
| 17089 | P0705 | Transm.Range Sensor Circ.(PRNDL Inop.) Malfunction |
| 17090 | P0706 | Transm.Range Sensor Circ Range/Performance |
| 17091 | P0707 | Transm.Range Sensor Circ Low Input |
| 17092 | P0708 | Transm.Range Sensor Circ High Input |
| 17094 | P0710 | Transm.Fluid Temp.Sensor Circ. Malfunction |
| 17095 | P0711 | Transm.Fluid Temp.Sensor Circ. Range/Performance |
| 17096 | P0712 | Transm.Fluid Temp.Sensor Circ. Low Input |
| 17097 | P0713 | Transm.Fluid Temp.Sensor Circ. High Input |
| 17099 | P0715 | Input Turbine/Speed Sensor Circ. Malfunction |
| 17100 | P0716 | Input Turbine/Speed Sensor Circ. Range/Performance |
| 17101 | P0717 | Input Turbine/Speed Sensor Circ. No Signal |
| 17105 | P0721 | Output Speed Sensor Circ Range/Performance |
| 17106 | P0722 | Output Speed Sensor Circ No Signal |
| 17109 | P0725 | Engine Speed Inp.Circ. Malfunction |
| 17110 | P0726 | Engine Speed Inp.Circ. Range/Performance |
| 17111 | P0727 | Engine Speed Inp.Circ. No Signal |
| 17114 | P0730 | Gear Incorrect Ratio |
| 17115 | P0731 | Gear 1 Incorrect Ratio |
| 17116 | P0732 | Gear 2 Incorrect Ratio |
| 17117 | P0733 | Gear 3 Incorrect Ratio |
| 17118 | P0734 | Gear 4 Incorrect Ratio |
| 17119 | P0735 | Gear 5 Incorrect Ratio |
| 17124 | P0740 | Torque Converter Clutch Circ Malfunction |
| 17125 | P0741 | Torque Converter Clutch Circ Performance or Stuck Off |
| 17132 | P0748 | Pressure Contr.Solenoid Electrical |
| 17134 | P0750 | Shift Solenoid A malfunction |
| 17135 | P0751 | Shift Solenoid A Performance or Stuck Off |
| 17136 | P0752 | Shift Solenoid A Stuck On |
| 17137 | P0753 | Shift Solenoid A Electrical |
| 17140 | P0756 | Shift Solenoid B Performance or Stuck Off |
| 17141 | P0757 | Shift Solenoid B Stuck On |
| 17142 | P0758 | Shift Solenoid B Electrical |
| 17145 | P0761 | Shift Solenoid C Performance or Stuck Off |
| 17146 | P0762 | Shift Solenoid C Stuck On |

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*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17147 | P0763 | Shift Solenoid C Electrical |
| 17152 | P0768 | Shift Solenoid D Electrical |
| 17157 | P0773 | Shift Solenoid E Electrical |
| 17174 | P0790 | Normal/Performance Switch Circ Malfunction |
| 17509 | P1101 | O2 Sensor Circ.,Bank1-Sensor1Voltage too Low/Air Leak |
| 17510 | P1102 | O2 Sensor Heating Circ.,Bank1-Sensor1 Short to B+ |
| 17511 | P1103 | O2 Sensor Heating Circ.,Bank1-Sensor1 Output too Low |
| 17512 | P1104 | Bank1-Sensor2 Voltage too Low/Air Leak |
| 17513 | P1105 | O2 Sensor Heating Circ.,Bank1-Sensor2 Short to B+ |
| 17514 | P1106 | O2 Sensor Circ.,Bank2-Sensor1 Voltage too Low/Air Leak |
| 17515 | P1107 | O2 Sensor Heating Circ.,Bank2-Sensor1 Short to B+ |
| 17516 | P1108 | O2 Sensor Heating Circ.,Bank2-Sensor1 Output too Low |
| 17517 | P1109 | O2 Sensor Circ.,Bank2-Sensor2 Voltage too Low/Air Leak |
| 17518 | P1110 | O2 Sensor Heating Circ.,Bank2-Sensor2 Short to B+ |
| 17519 | P1111 | O2 Control (Bank 1) System too lean |
| 17520 | P1112 | O2 Control (Bank 1) System too rich |
| 17521 | P1113 | Bank1-Sensor1 Internal Resistance too High |
| 17522 | P1114 | Bank1-Sensor2 Internal Resistant too High |
| 17523 | P1115 | O2 Sensor Heater Circ.,Bank1-Sensor1 Short to Ground |
| 17524 | P1116 | O2 Sensor Heater Circ.,Bank1-Sensor1 Open |
| 17525 | P1117 | O2 Sensor Heater Circ.,Bank1-Sensor2 Short to Ground |
| 17526 | P1118 | O2 Sensor Heater Circ.,Bank1-Sensor2 Open |
| 17527 | P1119 | O2 Sensor Heater Circ.,Bank2-Sensor1 Short to Ground |
| 17528 | P1120 | O2 Sensor Heater Circ.,Bank2-Sensor1 Open |
| 17529 | P1121 | O2 Sensor Heater Circ.,Bank2-Sensor2 Short to Ground |
| 17530 | P1122 | O2 Sensor Heater Circ.,Bank2-Sensor2 Open |
| 17531 | P1123 | Long Term Fuel Trim Add.Air.,Bank1 System too Rich |
| 17532 | P1124 | Long Term Fuel Trim Add.Air.,Bank1 System too Lean |
| 17533 | P1125 | Long Term Fuel Trim Add.Air.,Bank2 System too Rich |
| 17534 | P1126 | Long Term Fuel Trim Add.Air.,Bank2 System too Lean |
| 17535 | P1127 | Long Term Fuel Trim mult.,Bank1 System too Rich |
| 17536 | P1128 | Long Term Fuel Trim mult.,Bank1 System too Lean |
| 17537 | P1129 | Long Term Fuel Trim mult.,Bank2 System too Rich |
| 17538 | P1130 | Long Term Fuel Trim mult.,Bank2 System too Lean |
| 17539 | P1131 | Bank2-Sensor1 Internal Resistance too High |
| 17540 | P1132 | O2 Sensor Heating Circ.,Bank1+2-Sensor1 Short to B+ |
| 17541 | P1133 | O2 Sensor Heating Circ.,Bank1+2-Sensor1 Electrical Malfunction |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17542 | P1134 | O2 Sensor Heating Circ.,Bank1+2-Sensor2 Short to B+ |
| 17543 | P1135 | O2 Sensor Heating Circ.,Bank1+2-Sensor2 Electrical Malfunction |
| 17544 | P1136 | Long Term Fuel Trim Add.Fuel,Bank1 System too Lean |
| 17545 | P1137 | Long Term Fuel Trim Add.Fuel,Bank1 System too Rich |
| 17546 | P1138 | Long Term Fuel Trim Add.Fuel,Bank2 System too Lean |
| 17547 | P1139 | Long Term Fuel Trim Add.Fuel,Bank2 System too Rich |
| 17548 | P1140 | Bank2-Sensor2 Internal Resistance too High |
| 17549 | P1141 | Load Calculation Cross Check Range/Performance |
| 17550 | P1142 | Load Calculation Cross Check Lower Limit Exceeded |
| 17551 | P1143 | Load Calculation Cross Check Upper Limit Exceeded |
| 17552 | P1144 | Mass or Volume Air Flow Circ Open/Short to Ground |
| 17553 | P1145 | Mass or Volume Air Flow Circ Short to B+ |
| 17554 | P1146 | Mass or Volume Air Flow Circ Supply Malfunction |
| 17555 | P1147 | O2 Control (Bank 2) System too lean |
| 17556 | P1148 | O2 Control (Bank 2) System too rich |
| 17557 | P1149 | O2 Control (Bank 1) Out of range |
| 17558 | P1150 | O2 Control (Bank 2) Out of range |
| 17559 | P1151 | Bank1, Long Term Fuel Trim, Range 1 Leanness Lower Limit Exceeded |
| 17560 | P1152 | Bank1, Long Term Fuel Trim, Range 2 Leanness Lower Limit Exceeded |
| 17562 | P1154 | Manifold Switch Over Malfunction |
| 17563 | P1155 | Manifold Abs.Pressure Sensor Circ. Short to B+ |
| 17564 | P1156 | Manifold Abs.Pressure Sensor Circ. Open/Short to Ground |
| 17565 | P1157 | Manifold Abs.Pressure Sensor Circ. Power Supply Malfunction |
| 17566 | P1158 | Manifold Abs.Pressure Sensor Circ. Range/Performance |
| 17568 | P1160 | Manifold Temp.Sensor Circ. Short to Ground |
| 17569 | P1161 | Manifold Temp.Sensor Circ. Open/Short to B+ |
| 17570 | P1162 | Fuel Temp.Sensor Circ. Short to Ground |
| 17571 | P1163 | Fuel Temp.Sensor Circ. Open/Short to B+ |
| 17572 | P1164 | Fuel Temperature Sensor Range/Performance/Incorrect Signal |
| 17573 | P1165 | Bank1, Long Term Fuel Trim, Range 1 Rich Limit Exceeded |
| 17574 | P1166 | Bank1, Long Term Fuel Trim, Range 2 Rich Limit Exceeded |
| 17579 | P1171 | Throttle Actuation Potentiometer Sign.2 Range/Performance |
| 17580 | P1172 | Throttle Actuation Potentiometer Sign.2 Signal too Low |
| 17581 | P1173 | Throttle Actuation Potentiometer Sign.2 Signal too High |
| 17582 | P1174 | Fuel Trim, Bank 1 Different injection times |
| 17584 | P1176 | O2 Correction Behind Catalyst,B1 Limit Attained |
| 17585 | P1177 | O2 Correction Behind Catalyst,B2 Limit Attained |

*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17586 | P1178 | Linear 02 Sensor / Pump Current Open Circuit |
| 17587 | P1179 | Linear 02 Sensor / Pump Current Short to ground |
| 17588 | P1180 | Linear 02 Sensor / Pump Current Short to B+ |
| 17589 | P1181 | Linear 02 Sensor / Reference Voltage Open Circuit |
| 17590 | P1182 | Linear 02 Sensor / Reference Voltage Short to ground |
| 17591 | P1183 | Linear 02 Sensor / Reference Voltage Short to B+ |
| 17592 | P1184 | Linear 02 Sensor / Common Ground Wire Open Circuit |
| 17593 | P1185 | Linear 02 Sensor / Common Ground Wire Short to ground |
| 17594 | P1186 | Linear 02 Sensor / Common Ground Wire Short to B+ |
| 17595 | P1187 | Linear 02 Sensor / Compens. Resistor Open Circuit |
| 17596 | P1188 | Linear 02 Sensor / Compens. Resistor Short to ground |
| 17597 | P1189 | Linear 02 Sensor / Compens. Resistor Short to B+ |
| 17598 | P1190 | Linear 02 Sensor / Reference Voltage Incorrect Signal |
| 17604 | P1196 | O2 Sensor Heater Circ.,Bank1-Sensor1 Electrical Malfunction |
| 17605 | P1197 | O2 Sensor Heater Circ.,Bank2-Sensor1 Electrical Malfunction |
| 17606 | P1198 | O2 Sensor Heater Circ.,Bank1-Sensor2 Electrical Malfunction |
| 17607 | P1199 | O2 Sensor Heater Circ.,Bank2-Sensor2 Electrical Malfunction |
| 17609 | P1201 | Cyl.1-Fuel Inj.Circ. Electrical Malfunction |
| 17610 | P1202 | Cyl.2-Fuel Inj.Circ. Electrical Malfunction |
| 17611 | P1203 | Cyl.3-Fuel Inj.Circ. Electrical Malfunction |
| 17612 | P1204 | Cyl.4-Fuel Inj.Circ. Electrical Malfunction |
| 17613 | P1205 | Cyl.5-Fuel Inj.Circ. Electrical Malfunction |
| 17614 | P1206 | Cyl.6-Fuel Inj.Circ. Electrical Malfunction |
| 17615 | P1207 | Cyl.7-Fuel Inj.Circ. Electrical Malfunction |
| 17616 | P1208 | Cyl.8-Fuel Inj.Circ. Electrical Malfunction |
| 17617 | P1209 | Intake valves for cylinder shut-off Short circuit to ground |
| 17618 | P1210 | Intake valves for cylinder shut-off Short to B+ |
| 17619 | P1211 | Intake valves for cylinder shut-off Open circuit |
| 17621 | P1213 | Cyl.1-Fuel Inj.Circ. Short to B+ |
| 17622 | P1214 | Cyl.2-Fuel Inj.Circ. Short to B+ |
| 17623 | P1215 | Cyl.3-Fuel Inj.Circ. Short to B+ |
| 17624 | P1216 | Cyl.4-Fuel Inj.Circ. Short to B+ |
| 17625 | P1217 | Cyl.5-Fuel Inj.Circ. Short to B+ |
| 17626 | P1218 | Cyl.6-Fuel Inj.Circ. Short to B+ |
| 17627 | P1219 | Cyl.7-Fuel Inj.Circ. Short to B+ |
| 17628 | P1220 | Cyl.8-Fuel Inj.Circ. Short to B+ |
| 17629 | P1221 | Cylinder shut-off exhaust valves Short circuit to ground |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17630 | P1222 | Cylinder shut-off exhaust valves Short to B+ |
| 17631 | P1223 | Cylinder shut-off exhaust valves Open circuit |
| 17633 | P1225 | Cyl.1-Fuel Inj.Circ. Short to Ground |
| 17634 | P1226 | Cyl.2-Fuel Inj.Circ. Short to Ground |
| 17635 | P1227 | Cyl.3-Fuel Inj.Circ. Short to Ground |
| 17636 | P1228 | Cyl.4-Fuel Inj.Circ. Short to Ground |
| 17637 | P1229 | Cyl.5-Fuel Inj.Circ. Short to Ground |
| 17638 | P1230 | Cyl.6-Fuel Inj.Circ. Short to Ground |
| 17639 | P1231 | Cyl.7-Fuel Inj.Circ. Short to Ground |
| 17640 | P1232 | Cyl.8-Fuel Inj.Circ. Short to Ground |
| 17645 | P1237 | Cyl.1-Fuel Inj.Circ. Open Circ. |
| 17646 | P1238 | Cyl.2-Fuel Inj.Circ. Open Circ. |
| 17647 | P1239 | Cyl.3-Fuel Inj.Circ. Open Circ. |
| 17648 | P1240 | Cyl.4-Fuel Inj.Circ. Open Circ. |
| 17649 | P1241 | Cyl.5-Fuel Inj.Circ. Open Circ. |
| 17650 | P1242 | Cyl.6-Fuel Inj.Circ. Open Circ. |
| 17651 | P1243 | Cyl.7-Fuel Inj.Circ. Open Circ. |
| 17652 | P1244 | Cyl.8-Fuel Inj.Circ. Open Circ. |
| 17653 | P1245 | Needle Lift Sensor Circ. Short to Ground |
| 17654 | P1246 | Needle Lift Sensor Circ. Range/Performance |
| 17655 | P1247 | Needle Lift Sensor Circ. Open/Short to B+ |
| 17656 | P1248 | Injection Start Control Deviation |
| 17657 | P1249 | Fuel consumption signal Electrical Fault in Circuit |
| 17658 | P1250 | Fuel Level Too Low |
| 17659 | P1251 | Start of Injection Solenoid Circ Short to B+ |
| 17660 | P1252 | Start of Injection Solenoid Circ Open/Short to Ground |
| 17661 | P1253 | Fuel consumption signal Short to ground |
| 17662 | P1254 | Fuel consumption signal Short to B+ |
| 17663 | P1255 | Engine Coolant Temp.Circ Short to Ground |
| 17664 | P1256 | Engine Coolant Temp.Circ Open/Short to B+ |
| 17665 | P1257 | Engine Coolant System Valve Open |
| 17666 | P1258 | Engine Coolant System Valve Short to B+ |
| 17667 | P1259 | Engine Coolant System Valve Short to Ground |
| 17688 | P1280 | Fuel Inj.Air Contr.Valve Circ. Flow too Low |
| 17691 | P1283 | Fuel Inj.Air Contr.Valve Circ. Electrical Malfunction |
| 17692 | P1284 | Fuel Inj.Air Contr.Valve Circ. Open |
| 17693 | P1285 | Fuel Inj.Air Contr.Valve Circ. Short to Ground |

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*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17694 | P1286 | Fuel Inj.Air Contr.Valve Circ. Short to B+ |
| 17695 | P1287 | Turbocharger bypass valve open |
| 17696 | P1288 | Turbocharger bypass valve short to B+ |
| 17697 | P1289 | Turbocharger bypass valve short to ground |
| 17704 | P1296 | Cooling system malfunction |
| 17705 | P1297 | Connection turbocharger - throttle valve pressure hose |
| 17708 | P1300 | Misfire detected Reason: Fuel level too low |
| 17721 | P1319 | Knock Sensor 1 Circ. Short to Ground |
| 17728 | P1320 | Knock Sensor 2 Circ. Short to Ground |
| 17729 | P1321 | Knock Sensor 3 Circ. Low Input |
| 17730 | P1322 | Knock Sensor 3 Circ. High Input |
| 17731 | P1323 | Knock Sensor 4 Circ. Low Input |
| 17732 | P1324 | Knock Sensor 4 Circ. High Input |
| 17733 | P1325 | Cyl.1-Knock Contr. Limit Attained |
| 17734 | P1326 | Cyl.2-Knock Contr. Limit Attained |
| 17735 | P1327 | Cyl.3-Knock Contr. Limit Attained |
| 17736 | P1328 | Cyl.4-Knock Contr. Limit Attained |
| 17737 | P1329 | Cyl.5-Knock Contr. Limit Attained |
| 17738 | P1330 | Cyl.6-Knock Contr. Limit Attained |
| 17739 | P1331 | Cyl.7-Knock Contr. Limit Attained |
| 17740 | P1332 | Cyl.8-Knock Contr. Limit Attained |
| 17743 | P1335 | Engine Torque Monitoring 2 Control Limit Exceeded |
| 17744 | P1336 | Engine Torque Monitoring Adaptation at limit |
| 17745 | P1337 | Camshaft Pos.Sensor,Bank1 Short to Ground |
| 17746 | P1338 | Camshaft Pos.Sensor,Bank1 Open Circ./Short to B+ |
| 17747 | P1339 | Crankshaft Pos./Engine Speed Sensor Cross Connected |
| 17748 | P1340 | Crankshaft-/Camshaft Pos.Sens.Signals Out of Sequence |
| 17749 | P1341 | Ignition Coil Power Output Stage 1 Short to Ground |
| 17750 | P1342 | Ignition Coil Power Output Stage 1 Short to B+ |
| 17751 | P1343 | Ignition Coil Power Output Stage 2 Short to Ground |
| 17752 | P1344 | Ignition Coil Power Output Stage 2 Short to B+ |
| 17753 | P1345 | Ignition Coil Power Output Stage 3 Short to Ground |
| 17754 | P1346 | Ignition Coil Power Output Stage 3 Short to B+ |
| 17755 | P1347 | Bank2,Crankshaft-/Camshaft os.Sens.Sign. Out of Sequence |
| 17756 | P1348 | Ignition Coil Power Output Stage 1 Open Circuit |
| 17757 | P1349 | Ignition Coil Power Output Stage 2 Open Circuit |
| 17758 | P1350 | Ignition Coil Power Output Stage 3 Open Circuit |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17762 | P1354 | Modulation Piston Displ.Sensor Circ. Malfunction |
| 17763 | P1355 | Cyl. 1, ignition circuit Open Circuit |
| 17764 | P1356 | Cyl. 1, ignition circuit Short to B+ |
| 17765 | P1357 | Cyl. 1, ignition circuit Short to ground |
| 17766 | P1358 | Cyl. 2, ignition circuit Open Circuit |
| 17767 | P1359 | Cyl. 2, ignition circuit Short Circuit to B+ |
| 17768 | P1360 | Cyl. 2, ignition circuit Short Circuit to Ground |
| 17769 | P1361 | Cyl. 3, ignition circuit Open Circuit |
| 17770 | P1362 | Cyl. 3, ignition circuit Short Circuit to B+ |
| 17771 | P1363 | Cyl. 3, ignition circuit Short Circuit to ground |
| 17772 | P1364 | Cyl. 4 ignition circuit Open Circuit |
| 17773 | P1365 | Cyl. 4 ignition circuit Short circuit to B+ |
| 17774 | P1366 | Cyl. 4 ignition circuit Short circuit to ground |
| 17775 | P1367 | Cyl. 5, ignition circuit Open Circuit |
| 17776 | P1368 | Cyl. 5, ignition circuit Short Circuit to B+ |
| 17777 | P1369 | Cyl. 5, ignition circuit short to ground |
| 17778 | P1370 | Cyl. 6, ignition circuit Open Circuit |
| 17779 | P1371 | Cyl. 6, ignition circuit Short Circuit to B+ |
| 17780 | P1372 | Cyl. 6, ignition circuit short to ground |
| 17781 | P1373 | Cyl. 7, ignition circuit Open Circuit |
| 17782 | P1374 | Cyl. 7, ignition circuit Short Circuit to B+ |
| 17783 | P1375 | Cyl. 7, ignition circuit short to ground |
| 17784 | P1376 | Cyl. 8, ignition circuit Open Circuit |
| 17785 | P1377 | Cyl. 8, ignition circuit Short Circuit to B+ |
| 17786 | P1378 | Cyl. 8, ignition circuit short to ground |
| 17794 | P1386 | Internal Control Module Knock Control Circ.Error |
| 17795 | P1387 | Internal Contr. Module altitude sensor error |
| 17796 | P1388 | Internal Contr. Module drive by wire error |
| 17799 | P1391 | Camshaft Pos.Sensor,Bank2 Short to Ground |
| 17800 | P1392 | Camshaft Pos.Sensor,Bank2 Open Circ./Short to B+ |
| 17801 | P1393 | Ignition Coil Power Output Stage 1 Electrical Malfunction |
| 17802 | P1394 | Ignition Coil Power Output Stage 2 Electrical Malfunction |
| 17803 | P1395 | Ignition Coil Power Output Stage 3 Electrical Malfunction |
| 17804 | P1396 | Engine Speed Sensor Missing Tooth |
| 17805 | P1397 | Engine speed wheel Adaptation limit reached |
| 17806 | P1398 | Engine RPM signal, TD Short to ground |
| 17807 | P1399 | Engine RPM signal, TD Short Circuit to B+ |

*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17808 | P1400 | EGR Valve Circ Electrical Malfunction |
| 17809 | P1401 | EGR Valve Circ Short to Ground |
| 17810 | P1402 | EGR Valve Circ Short to B+ |
| 17811 | P1403 | EGR Flow Deviation |
| 17812 | P1404 | EGR Flow Basic Setting not carried out |
| 17814 | P1406 | EGR Temp.Sensor Range/Performance |
| 17815 | P1407 | EGR Temp.Sensor Signal too Low |
| 17816 | P1408 | EGR Temp.Sensor Signal too High |
| 17817 | P1409 | Tank Ventilation Valve Circ. Electrical Malfunction |
| 17818 | P1410 | Tank Ventilation Valve Circ. Short to B+ |
| 17819 | P1411 | Sec.Air Inj.Sys.,Bank2 Flow too Flow |
| 17820 | P1412 | EGR Different.Pressure Sensor Signal too Low |
| 17821 | P1413 | EGR Different.Pressure Sensor Signal too High |
| 17822 | P1414 | Sec.Air Inj.Sys.,Bank2 Leak Detected |
| 17825 | P1417 | Fuel Level Sensor Circ Signal too Low |
| 17826 | P1418 | Fuel Level Sensor Circ Signal too High |
| 17828 | P1420 | Sec.Air Inj.Valve Circ Electrical Malfunction |
| 17829 | P1421 | Sec.Air Inj.Valve Circ Short to Ground |
| 17830 | P1422 | Sec.Air Inj.Sys.Contr.Valve Circ Short to B+ |
| 17831 | P1423 | Sec.Air Inj.Sys.,Bank1 Flow too Low |
| 17832 | P1424 | Sec.Air Inj.Sys.,Bank1 Leak Detected |
| 17833 | P1425 | Tank Vent.Valve Short to Ground |
| 17834 | P1426 | Tank Vent.Valve Open |
| 17840 | P1432 | Sec.Air Inj.Valve Open |
| 17841 | P1433 | Sec.Air Inj.Sys.Pump Relay Circ. open |
| 17842 | P1434 | Sec.Air Inj.Sys.Pump Relay Circ. Short to B+ |
| 17843 | P1435 | Sec.Air Inj.Sys.Pump Relay Circ. Short to ground |
| 17844 | P1436 | Sec.Air Inj.Sys.Pump Relay Circ. Electrical Malfunction |
| 17847 | P1439 | EGR Potentiometer Error in Basic Setting |
| 17848 | P1440 | EGR Valve Power Stage Open |
| 17849 | P1441 | EGR Valve Circ Open/Short to Ground |
| 17850 | P1442 | EGR Valve Position Sensor Signal too high |
| 17851 | P1443 | EGR Valve Position Sensor Signal too low |
| 17852 | P1444 | EGR Valve Position Sensor range/performance |
| 17853 | P1445 | Catalyst Temp.Sensor 2 Circ. Range/Performance |
| 17854 | P1446 | Catalyst Temp.Circ Short to Ground |
| 17855 | P1447 | Catalyst Temp.Circ Open/Short to B+ |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17856 | P1448 | Catalyst Temp.Sensor 2 Circ. Short to Ground |
| 17857 | P1449 | Catalyst Temp.Sensor 2 Circ. Open/Short to B+ |
| 17858 | P1450 | Sec.Air Inj.Sys.Circ Short to B+ |
| 17859 | P1451 | Sec.Air Inj.Sys.Circ Short to Ground |
| 17860 | P1452 | Sec.Air Inj.Sys. Open Circ. |
| 17861 | P1453 | Exhaust gas temperature sensor 1 open/short to B+ |
| 17862 | P1454 | Exhaust gas temperature sensor short 1 to ground |
| 17863 | P1455 | Exhaust gas temperature sensor 1 range/performance |
| 17864 | P1456 | Exhaust gas temperature control bank 1 limit attained |
| 17865 | P1457 | Exhaust gas temperature sensor 2 open/short to B+ |
| 17866 | P1458 | Exhaust gas temperature sensor 2 short to ground |
| 17867 | P1459 | Exhaust gas temperature sensor 2 range/performance |
| 17868 | P1460 | Exhaust gas temperature control bank 2 limit attained |
| 17869 | P1461 | Exhaust gas temperature control bank 1 Range/Performance |
| 17870 | P1462 | Exhaust gas temperature control bank 2 Range/Performance |
| 17873 | P1465 | Additive Pump Short Circuit to B+ |
| 17874 | P1466 | Additive Pump Open/Short to Ground |
| 17875 | P1467 | EVAP Canister Purge Solenoid Valve Short Circuit to B+ |
| 17876 | P1468 | EVAP Canister Purge Solenoid Valve Short Circuit to Ground |
| 17877 | P1469 | EVAP Canister Purge Solenoid Valve Open Circuit |
| 17878 | P1470 | EVAP Emission Contr.LDP Circ Electrical Malfunction |
| 17879 | P1471 | EVAP Emission Contr.LDP Circ Short to B+ |
| 17880 | P1472 | EVAP Emission Contr.LDP Circ Short to Ground |
| 17881 | P1473 | EVAP Emission Contr.LDP Circ Open Circ. |
| 17882 | P1474 | EVAP Canister Purge Solenoid Valve electrical malfunction |
| 17883 | P1475 | EVAP Emission Contr.LDP Circ Malfunction/Signal Circ.Open |
| 17884 | P1476 | EVAP Emission Contr.LDP Circ Malfunction/Insufficient Vacuum |
| 17885 | P1477 | EVAP Emission Contr.LDP Circ Malfunction |
| 17886 | P1478 | EVAP Emission Contr.LDP Circ Clamped Tube Detected |
| 17908 | P1500 | Fuel Pump Relay Circ. Electrical Malfunction |
| 17909 | P1501 | Fuel Pump Relay Circ. Short to Ground |
| 17910 | P1502 | Fuel Pump Relay Circ. Short to B+ |
| 17911 | P1503 | Load signal from Alternator Term. DF Range/performance/Incorrect Signal |
| 17912 | P1504 | Intake Air Sys.Bypass Leak Detected |
| 17913 | P1505 | Closed Throttle Pos. Does Not Close/Open Circ |
| 17914 | P1506 | Closed Throttle Pos.Switch Does Not Open/Short to Ground |
| 17915 | P1507 | Idle Sys.Learned Value Lower Limit Attained |

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*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17916 | P1508 | Idle Sys.Learned Value Upper Limit Attained |
| 17917 | P1509 | Idle Air Control Circ. Electrical Malfunction |
| 17918 | P1510 | Idle Air Control Circ. Short to B+ |
| 17919 | P1511 | Intake Manifold Changeover Valve circuit electrical malfunction |
| 17920 | P1512 | Intake Manifold Changeover Valve circuit Short to B+ |
| 17921 | P1513 | Intake Manifold Changeover Valve2 circuit Short to B+ |
| 17922 | P1514 | Intake Manifold Changeover Valve2 circuit Short to ground |
| 17923 | P1515 | Intake Manifold Changeover Valve circuit Short to Ground |
| 17924 | P1516 | Intake Manifold Changeover Valve circuit Open |
| 17925 | P1517 | Main Relay Circ. Electrical Malfunction |
| 17926 | P1518 | Main Relay Circ. Short to B+ |
| 17927 | P1519 | Intake Camshaft Contr.,Bank1 Malfunction |
| 17928 | P1520 | Intake Manifold Changeover Valve2 circuit Open |
| 17929 | P1521 | Intake Manifold Changeover Valve2 circuit electrical malfunction |
| 17930 | P1522 | Intake Camshaft Contr.,Bank2 Malfunction |
| 17931 | P1523 | Crash Signal from Airbag Control Unit range/performance |
| 17933 | P1525 | Intake Camshaft Contr.Circ.,Bank1 Electrical Malfunction |
| 17934 | P1526 | Intake Camshaft Contr.Circ.,Bank1 Short to B+ |
| 17935 | P1527 | Intake Camshaft Contr.Circ.,Bank1 Short to Ground |
| 17936 | P1528 | Intake Camshaft Contr.Circ.,Bank1 Open |
| 17937 | P1529 | Camshaft Control Circuit Short to B+ |
| 17938 | P1530 | Camshaft Control Circuit Short to ground |
| 17939 | P1531 | Camshaft Control Circuit open |
| 17941 | P1533 | Intake Camshaft Contr.Circ.,Bank2 Electrical Malfunction |
| 17942 | P1534 | Intake Camshaft Contr.Circ.,Bank2 Short to B+ |
| 17943 | P1535 | Intake Camshaft Contr.Circ.,Bank2 Short to Ground |
| 17944 | P1536 | Intake Camshaft Contr.Circ.,Bank2 Open |
| 17945 | P1537 | Engine Shutoff Solenoid Malfunction |
| 17946 | P1538 | Engine Shutoff Solenoid Open/Short to Ground |
| 17947 | P1539 | Clutch Vacuum Vent Valve Switch Incorrect signal |
| 17948 | P1540 | Vehicle Speed Sensor High Input |
| 17949 | P1541 | Fuel Pump Relay Circ Open |
| 17950 | P1542 | Throttle Actuation Potentiometer Range/Performance |
| 17951 | P1543 | Throttle Actuation Potentiometer Signal too Low |
| 17952 | P1544 | Throttle Actuation Potentiometer Signal too High |
| 17953 | P1545 | Throttle Pos.Contr Malfunction |
| 17954 | P1546 | Boost Pressure Contr.Valve Short to B+ |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 17955 | P1547 | Boost Pressure Contr.Valve Short to Ground |
| 17956 | P1548 | Boost Pressure Contr.Valve Open |
| 17957 | P1549 | Boost Pressure Contr.Valve Short to Ground |
| 17958 | P1550 | Charge Pressure Deviation |
| 17959 | P1551 | Barometric Pressure Sensor Circ. Short to B+ |
| 17960 | P1552 | Barometric Pressure Sensor Circ. Open/Short to Ground |
| 17961 | P1553 | Barometric/manifold pressure signal ratio out of range |
| 17962 | P1554 | Idle Speed Contr.Throttle Pos. Basic Setting Conditions not met |
| 17963 | P1555 | Charge Pressure Upper Limit exceeded |
| 17964 | P1556 | Charge Pressure Contr. Negative Deviation |
| 17965 | P1557 | Charge Pressure Contr. Positive Deviation |
| 17966 | P1558 | Throttle Actuator Electrical Malfunction |
| 17967 | P1559 | Idle Speed Contr.Throttle Pos. Adaptation Malfunction |
| 17968 | P1560 | Maximum Engine Speed Exceeded |
| 17969 | P1561 | Quantity Adjuster Deviation |
| 17970 | P1562 | Quantity Adjuster Upper Limit Attained |
| 17971 | P1563 | Quantity Adjuster Lower Limit Attained |
| 17972 | P1564 | Idle Speed Contr.Throttle Pos. Low Voltage During Adaptation |
| 17973 | P1565 | Idle Speed Control Throttle Position lower limit not attained |
| 17974 | P1566 | Load signal from A/C compressor range/performance |
| 17975 | P1567 | Load signal from A/C compressor no signal |
| 17976 | P1568 | Idle Speed Contr.Throttle Pos. mechanical Malfunction |
| 17977 | P1569 | Cruise control switch Incorrect signal |
| 17978 | P1570 | Contr.Module Locked |
| 17979 | P1571 | Left Eng. Mount Solenoid Valve Short to B+ |
| 17980 | P1572 | Left Eng. Mount Solenoid Valve Short to ground |
| 17981 | P1573 | Left Eng. Mount Solenoid Valve Open circuit |
| 17982 | P1574 | Left Eng. Mount Solenoid Valve Electrical fault in circuit |
| 17983 | P1575 | Right Eng. Mount Solenoid Valve Short to B+ |
| 17984 | P1576 | Right Eng. Mount Solenoid Valve Short to ground |
| 17985 | P1577 | Right Eng. Mount Solenoid Valve Open circuit |
| 17986 | P1578 | Right Eng. Mount Solenoid Valve Electrical fault in circuit |
| 17987 | P1579 | Idle Speed Contr.Throttle Pos. Adaptation not started |
| 17988 | P1580 | Throttle Actuator B1 Malfunction |
| 17989 | P1581 | Idle Speed Contr.Throttle Pos. Basic Setting Not Carried Out |
| 17990 | P1582 | Idle Adaptation at Limit |
| 17991 | P1583 | Transmission mount valves Short to B+ |

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*Diagnostic Trouble Codes*

**Table a. Diagnostic trouble codes (DTCs or P-codes)**

| VAG code | SAE P-code | Description |
|---|---|---|
| 17992 | P1584 | Transmission mount valves Short to ground |
| 17993 | P1585 | Transmission mount valves Open circuit |
| 17994 | P1586 | Engine mount solenoid valves Short to B+ |
| 17995 | P1587 | Engine mount solenoid valves Short to ground |
| 17996 | P1588 | Engine mount solenoid valves Open circuit |
| 18008 | P1600 | Power Supply (B+) Terminal 15 Low Voltage |
| 18010 | P1602 | Power Supply (B+) Terminal 30 Low Voltage |
| 18011 | P1603 | Internal Control Module Malfunction |
| 18012 | P1604 | Internal Control Module Driver Error |
| 18013 | P1605 | Rough Road/Acceleration Sensor Electrical Malfunction |
| 18014 | P1606 | Rough Road Spec Engine Torque ABS-ECU Electrical Malfunction |
| 18015 | P1607 | Vehicle speed signal Error message from instrument cluster |
| 18016 | P1608 | Steering angle signal Error message from steering angle sensor |
| 18017 | P1609 | Crash shut-down activated |
| 18019 | P1611 | MIL Call-up Circ./Transm.Contr.Module Short to Ground |
| 18020 | P1612 | Electronic Control Module Incorrect Coding |
| 18021 | P1613 | MIL Call-up Circ Open/Short to B+ |
| 18022 | P1614 | MIL Call-up Circ./Transm.Contr.Module Range/Performance |
| 18023 | P1615 | Engine Oil Temperature Sensor Circuit range/performance |
| 18024 | P1616 | Glow Plug/Heater Indicator Circ. Short to B+ |
| 18025 | P1617 | Glow Plug/Heater Indicator Circ. Open/Short to Ground |
| 18026 | P1618 | Glow Plug/Heater Relay Circ. Short to B+ |
| 18027 | P1619 | Glow Plug/Heater Relay Circ. Open/Short to Ground |
| 18028 | P1620 | Engine coolant temperature signal open/short to B+ |
| 18029 | P1621 | Engine coolant temperature signal short to ground |
| 18030 | P1622 | Engine coolant temperature signal range/performance |
| 18031 | P1623 | Data Bus Powertrain No Communication |
| 18032 | P1624 | MIL Request Sign.active |
| 18033 | P1625 | Data-Bus Powertrain Implausible Message from Transm.Contr. |
| 18034 | P1626 | Data-Bus Powertrain Missing Message from Transm.Contr. |
| 18035 | P1627 | Data-Bus Powertrain missing message from fuel injection pump |
| 18036 | P1628 | Data-Bus Powertrain missing message from steering sensor |
| 18037 | P1629 | Data-Bus Powertrain missing message from distance control |
| 18038 | P1630 | Accelera.Pedal Pos.Sensor 1 Signal too Low |
| 18039 | P1631 | Accelera.Pedal Pos.Sensor 1 Signal too High |
| 18040 | P1632 | Accelera.Pedal Pos.Sensor 1 Power Supply Malfunction |
| 18041 | P1633 | Accelera.Pedal Pos.Sensor 2 Signal too Low |

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 18042 | P1634 | Accelera.Pedal Pos.Sensor 2 Signal too High |
| 18043 | P1635 | Data Bus Powertrain missing message f.air condition control |
| 18044 | P1636 | Data Bus Powertrain missing message from Airbag control |
| 18045 | P1637 | Data Bus Powertrain missing message f.central electr.control |
| 18046 | P1638 | Data Bus Powertrain missing message from clutch control |
| 18047 | P1639 | Accelera.Pedal Pos.Sensor 1+2 Range/Performance |
| 18048 | P1640 | Internal Contr.Module (EEPROM) Error |
| 18049 | P1641 | Please check DTC Memory of Air Condition ECU |
| 18050 | P1642 | Please check DTC Memory of Airbag ECU |
| 18051 | P1643 | Please check DTC Memory of central electric ECU |
| 18052 | P1644 | Please check DTC Memory of clutch ECU |
| 18053 | P1645 | Data Bus Powertrain missing message f.all wheel drive contr. |
| 18054 | P1646 | Please Check DTC Memory of all wheel drive ECU |
| 18055 | P1647 | Please check coding of ECUs in Data Bus Powertrain |
| 18056 | P1648 | Data Bus Powertrain Malfunction |
| 18057 | P1649 | Data Bus Powertrain Missing message from ABS Control Module |
| 18058 | P1650 | Data Bus Powertrain Missing message fr.instrument panel ECU |
| 18059 | P1651 | Data Bus Powertrain missing messages |
| 18060 | P1652 | Please check DTC Memory of transmission ECU |
| 18061 | P1653 | Please check DTC Memory of ABS Control Module |
| 18062 | P1654 | Please check DTC Memory of control panel ECU |
| 18063 | P1655 | Please check DTC Memory of ADR Control Module |
| 18064 | P1656 | A/C clutch relay circuit short to ground |
| 18065 | P1657 | A/C clutch relay circuit short to B+ |
| 18066 | P1658 | Data Bus Powertrain Incorrect signal from ADR Control Module |
| 18084 | P1676 | Drive by Wire-MIL Circ. Electrical Malfunction |
| 18085 | P1677 | Drive by Wire-MIL Circ. Short to B+ |
| 18086 | P1678 | Drive by Wire-MIL Circ. Short to Ground |
| 18087 | P1679 | Drive by Wire-MIL Circ. Open |
| 18089 | P1681 | Contr.Unit Programming, Programming not Finished |
| 18092 | P1684 | Contr.Unit Programming Communication Error |
| 18094 | P1686 | Contr.Unit Error Programming Error |
| 18098 | P1690 | Malfunction Indication Light Malfunction |
| 18099 | P1691 | Malfunction Indication Light Open |
| 18100 | P1692 | Malfunction Indication Light Short to Ground |
| 18101 | P1693 | Malfunction Indication Light Short to B+ |
| 18102 | P1694 | Malfunction Indication Light Open/Short to Ground |

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*Diagnostic Trouble Codes*

**Table a. Diagnostic trouble codes (DTCs or P-codes)**

| VAG code | SAE P-code | Description |
|---|---|---|
| 18112 | P1704 | Kick Down Switch Malfunction |
| 18113 | P1705 | Gear/Ratio Monitoring Adaptation limit reached |
| 18119 | P1711 | Wheel Speed Signal 1 Range/Performance |
| 18124 | P1716 | Wheel Speed Signal 2 Range/Performance |
| 18129 | P1721 | Wheel Speed Signal 3 Range/Performance |
| 18131 | P1723 | Starter Interlock Circ. Open |
| 18132 | P1724 | Starter Interlock Circ. Short to Ground |
| 18134 | P1726 | Wheel Speed Signal 4 Range/Performance |
| 18136 | P1728 | Different Wheel Speed Signals Range/Performance |
| 18137 | P1729 | Starter Interlock Circ. Short to B+ |
| 18141 | P1733 | Tiptronic Switch Down Circ. Short to Ground |
| 18147 | P1739 | Tiptronic Switch up Circ. Short to Ground |
| 18148 | P1740 | Clutch temperature control |
| 18149 | P1741 | Clutch pressure adaptation at limit |
| 18150 | P1742 | Clutch torque adaptation at limit |
| 18151 | P1743 | Clutch slip control signal too high |
| 18152 | P1744 | Tiptronic Switch Recognition Circ. Short to Ground |
| 18153 | P1745 | Transm.Contr.Unit Relay Short to B+ |
| 18154 | P1746 | Transm.Contr.Unit Relay Malfunction |
| 18155 | P1747 | Transm.Contr.Unit Relay Open/Short to Ground |
| 18156 | P1748 | Transm.Contr.Unit Self-Check |
| 18157 | P1749 | Transm.Contr.Unit Incorrect Coded |
| 18158 | P1750 | Power Supply Voltage Low Voltage |
| 18159 | P1751 | Power Supply Voltage High Voltage |
| 18160 | P1752 | Power Supply Malfunction |
| 18168 | P1760 | Shift Lock Malfunction |
| 18169 | P1761 | Shift Lock Short to Ground |
| 18170 | P1762 | Shift Lock Short to B+ |
| 18171 | P1763 | Shift Lock Open |
| 18172 | P1764 | Transmission temperature control |
| 18173 | P1765 | Hydraulic Pressure Sensor 2 adaptation at limit |
| 18174 | P1766 | Throttle Angle Signal Stuck Off |
| 18175 | P1767 | Throttle Angle Signal Stuck On |
| 18176 | P1768 | Hydraulic Pressure Sensor 2 Too High |
| 18177 | P1769 | Hydraulic Pressure Sensor 2 Too Low |
| 18178 | P1770 | Load Signal Range/Performance |
| 18179 | P1771 | Load Signal Stuck Off |

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| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 18180 | P1772 | Load Signal Stuck On |
| 18181 | P1773 | Hydraulic Pressure Sensor 1 Too High |
| 18182 | P1774 | Hydraulic Pressure Sensor 1 Too Low |
| 18183 | P1775 | Hydraulic Pressure Sensor 1 adaptation at limit |
| 18184 | P1776 | Hydraulic Pressure Sensor 1 range/performance |
| 18185 | P1777 | Hydraulic Pressure Sensor 2 range/performance |
| 18186 | P1778 | Solenoid EV7 Electrical Malfunction |
| 18189 | P1781 | Engine Torque Reduction Open/Short to Ground |
| 18190 | P1782 | Engine Torque Reduction Short to B+ |
| 18192 | P1784 | Shift up/down Wire Open/Short to Ground |
| 18193 | P1785 | Shift up/down Wire Short to B+ |
| 18194 | P1786 | Reversing Light Circ. Open |
| 18195 | P1787 | Reversing Light Circ. Short to Ground |
| 18196 | P1788 | Reversing Light Circ. Short to B+ |
| 18197 | P1789 | Idle Speed Intervention Circ. Error Message from Engine Contr. |
| 18198 | P1790 | Transmission Range Display Circ. Open |
| 18199 | P1791 | Transmission Range Display Circ. Short to Ground |
| 18200 | P1792 | Transmission Range Display Circ. Short to B+ |
| 18201 | P1793 | Output Speed Sensor 2 Circ. No Signal |
| 18203 | P1795 | Vehicle Speed Signal Circ. Open |
| 18204 | P1796 | Vehicle Speed Signal Circ. Short to Ground |
| 18205 | P1797 | Vehicle Speed Signal Circ. Short to B+ |
| 18206 | P1798 | Output Speed Sensor 2 Circ. Range/Performance |
| 18207 | P1799 | Output Speed Sensor 2 Circ. RPM too High |
| 18221 | P1813 | Pressure Contr.Solenoid 1 Electrical |
| 18222 | P1814 | Pressure Contr.Solenoid 1 Open/Short to Ground |
| 18223 | P1815 | Pressure Contr.Solenoid 1 Short to B+ |
| 18226 | P1818 | Pressure Contr.Solenoid 2 Electrical |
| 18227 | P1819 | Pressure Contr.Solenoid 2 Open/Short to Ground |
| 18228 | P1820 | Pressure Contr.Solenoid 2 Short to B+ |
| 18231 | P1823 | Pressure Contr.Solenoid 3 Electrical |
| 18232 | P1824 | Pressure Contr.Solenoid 3 Open/Short to Ground |
| 18233 | P1825 | Pressure Contr.Solenoid 3 Short to B+ |
| 18236 | P1828 | Pressure Contr.Solenoid 4 Electrical |
| 18237 | P1829 | Pressure Contr.Solenoid 4 Open/Short to Ground |
| 18238 | P1830 | Pressure Contr.Solenoid 4 Short to B+ |
| 18242 | P1834 | Pressure Contr.Solenoid 5 Open/Short to Ground |

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*Diagnostic Trouble Codes*

| Table a. Diagnostic trouble codes (DTCs or P-codes) | | |
|---|---|---|
| **VAG code** | **SAE P-code** | **Description** |
| 18243 | P1835 | Pressure Contr.Solenoid 5 Short to B+ |
| 18249 | P1841 | Engine/Transmission Control Modules Versions do not match |
| 18250 | P1842 | Please check DTC Memory of instrument panel ECU |
| 18251 | P1843 | Please check DTC Memory of ADR Control Module |
| 18252 | P1844 | Please check DTC Memory of central electric control ECU |
| 18255 | P1847 | Please check DTC Memory of brake system ECU |
| 18256 | P1848 | Please check DTC Memory of engine ECU |
| 18257 | P1849 | Please check DTC Memory of transmission ECU |
| 18258 | P1850 | Data-Bus Powertrain Missing Message from Engine Contr. |
| 18259 | P1851 | Data-Bus Powertrain Missing Message from Brake Contr. |
| 18260 | P1852 | Data-Bus Powertrain Implausible Message from Engine Contr. |
| 18261 | P1853 | Data-Bus Powertrain Implausible Message from Brake Contr. |
| 18262 | P1854 | Data-Bus Powertrain Hardware Defective |
| 18263 | P1855 | Data-Bus Powertrain Software version Contr. |
| 18264 | P1856 | Throttle/Pedal Pos.Sensor A Circ. Error Message from Engine Contr. |
| 18265 | P1857 | Load Signal Error Message from Engine Contr. |
| 18266 | P1858 | Engine Speed Input Circ. Error Message from Engine Contr. |
| 18267 | P1859 | Brake Switch Circ. Error Message from Engine Contr. |
| 18268 | P1860 | Kick Down Switch Error Message from Engine Contr. |
| 18269 | P1861 | Throttle Position (TP) sensor Error Message from ECM |
| 18270 | P1862 | Data Bus Powertrain Missing message from instr. panel ECU |
| 18271 | P1863 | Data Bus Powertrain Missing Message from St. Angle Sensor |
| 18272 | P1864 | Data Bus Powertrain Missing message from ADR control module |
| 18273 | P1865 | Data Bus Powertrain Missing message from central electronics |
| 18274 | P1866 | Data Bus Powertrain Missing messages |

# VAG 1551/1552 OPERATING OVERVIEW FLOW CHART

## MODE MENU

1 - Rapid Data =>
2 - Blink Code
3 - Self Test
4 - Dealership Code
5 - LT - Diagnosis

## ADDRESS WORDS MENU (V9)

01 - Engine Electronics =>
11 - Engine Electronics II
41 - Diesel Pump Electronics
51 - Electric Drive
61 - Battery Control
71 - Battery Charger
02 - Transmission Electronics
12 - Clutch Electronics
22 - 4 Wheel Drive Electronics
03 - Brake Electronics
13 - Distance Control
33 - OBD II
14 - Suspension Electronics
24 - Anti - Slip Control
34 - Level Control
44 - Steering Assist
54 - Rear Spoiler
15 - Airbag
25 - Anti-Theft Immobilizer Sensor
35 - Central Locking
45 - Interior Monitor
55 - Headlamp Vert. Aim Control
65 - Tire Pressure Monitoring
75 - Emergency Call Module
16 - Steering Wheel Electronics
26 - Automatic Roof Control
36 - Seat Adjustment Driver's Side
46 - Comfort System (AC CM)
56 - Radio
66 - Seat & Mirror Adjustment
76 - Parking Aid
17 - Instrument Cluster
37 - Navigation System
47 - Sound System
57 - Airbag (Cabriolet only)
67 - Language Control
08 - A/C & Heating Electronics
18 - Auxiliary Heater
09 - Electronic Control Module
19 - Diagnostic Interface for Data Bus
29 - Left Light Control
39 - Right Light Control
49 - Auto Light Switch
00 - Automatic Test Sequence

## FUNCTIONS MENU

01 - Check Control Module Versions
02 - Check DTC Memory
03 - Output Diagnostic Test Mode
04 - Basic Setting
Display Group xxx =>
05 - Erase DTC Memory
06 - End Output
07 - Code Control Module
08 - Read Measuring Value Block
Display Group xxx =>
09 - Read Individual Measuring Values
Channel xx
10 - Adaptation
Channel xx
11 - Log-In Procedure
15 - Readiness Code

## DISPLAY GROUP FORMAT

Display Group 000 (only)
xx xx xx xx xx xx xx xx xx xx

Display Group 001 (and higher)
xxxxx xxxxx xxxxx xxxxx

***WARNING***

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