

RENAULT

0 General vehicle information

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01C VEHICLE BODYWORK SPECIFICATIONS

01D MECHANICAL INTRODUCTION

02A LIFTING EQUIPMENT

03B COLLISION

04B CONSUMABLES - PRODUCTS

04E PAINT

X44

NOVEMBER 2009

EDITION ANGLAISE

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which the vehicles are constructed".

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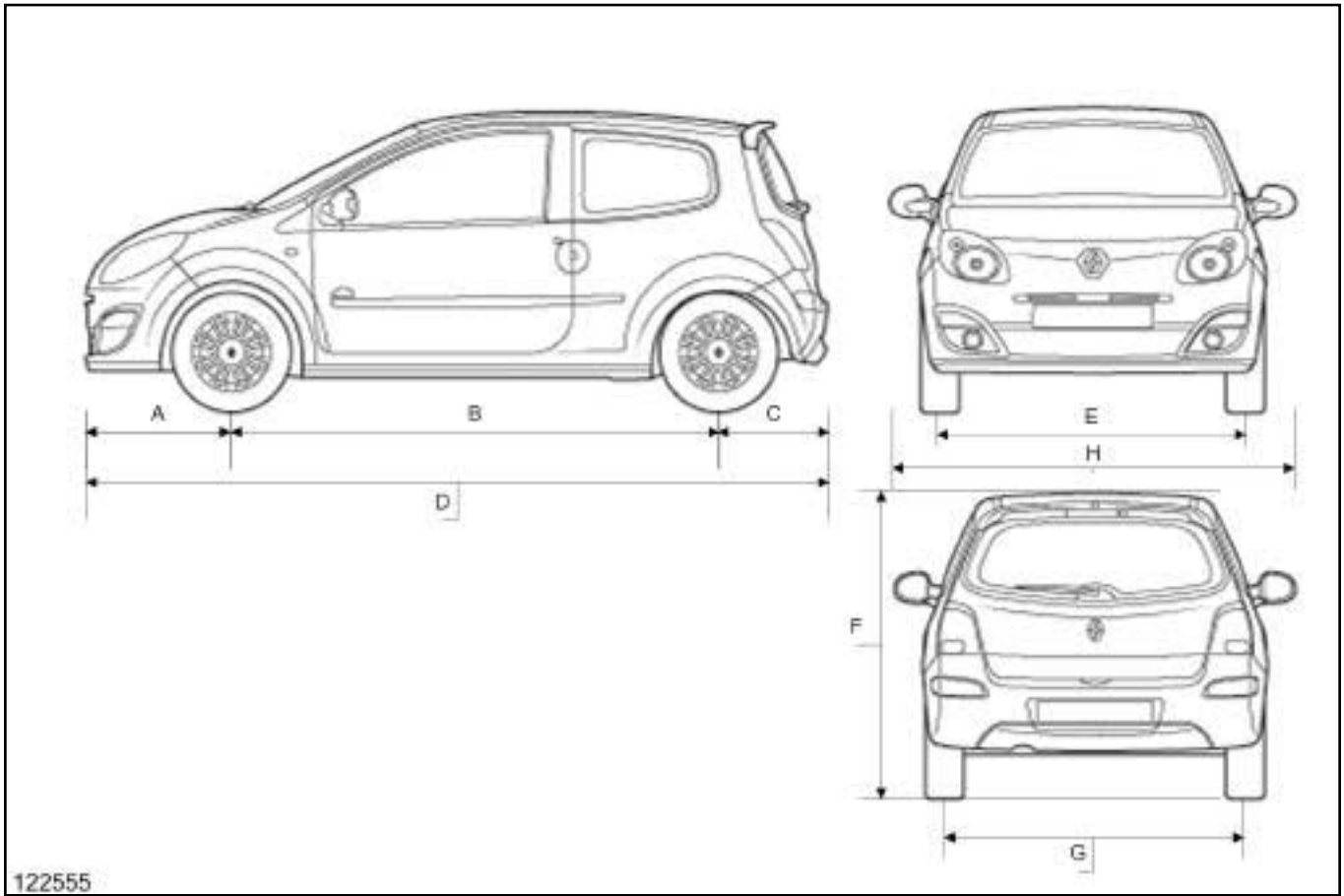
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TWINGO - Chapitre 0

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122555

122555

	Dimensions in metres
A	0.710 / 0.714 (RS)
B	2.367
C	0.525
D	3.602
E	1.400 / 1.414 (GT, RS)
F	1.470 (unladen)
G	1.386 / 1.400 (GT) / 1.430 (RS)
H	1.655

Engine type	Engine suf- fix	Cubic capacity(cc)	Gearbox	Gearbox suffix	Emissions standard
D4F	772	1149	JB1	521 523 524	EURO 4
				525	EURO 5
			JH1	020	EURO 4
				021	EURO 5
	780		JH3	169	EURO 4
	782			309	EURO 5
D7F	800	1598	JB1	520	EURO 4
K4M	854		JR5	176	
K9K	718		JR5	193	
	740	1461	JH3	166	

I - LOCATION OF VEHICLE IDENTIFICATION PLATE



120451

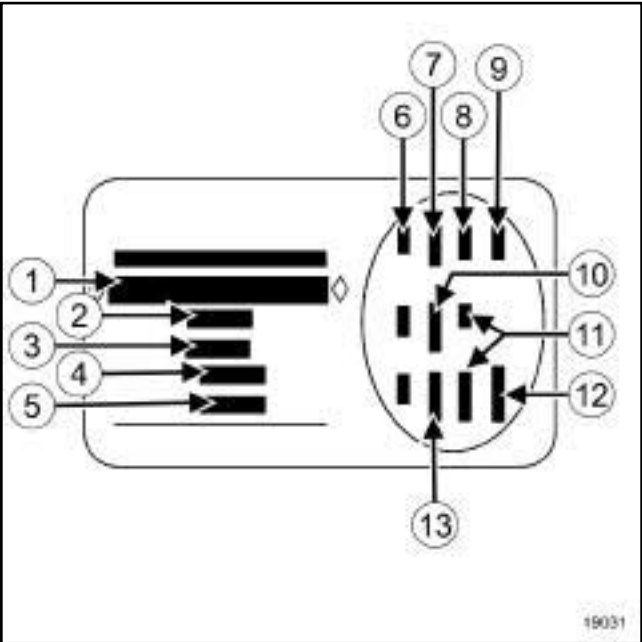
II - LOCATION OF THE VEHICLE IDENTIFICATION NUMBER



120452

III - DETAILED VIEW OF THE VEHICLE IDENTIFICATION PLATE

Plate (A)

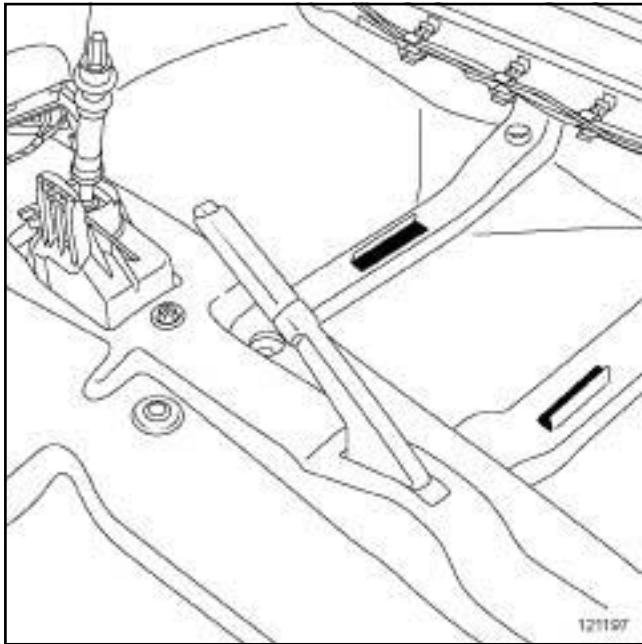


19031

- (1) Vehicle type and type number; this information also appears on marking (B)
- (2) MPAW (Vehicle's Maximum Permissible All-up Weight)
- (3) GTW (Gross train weight, vehicle under load with trailer)
- (4) Maximum permissible front axle load
- (5) Maximum permissible rear axle load
- (6) Technical vehicle specifications
- (7) Paintwork reference number
- (8) Equipment level
- (9) Vehicle type
- (10) Upholstery code
- (11) Additional equipment details
- (12) Production number
- (13) Interior trim code

IV - COLD-MARKING OF THE BODY

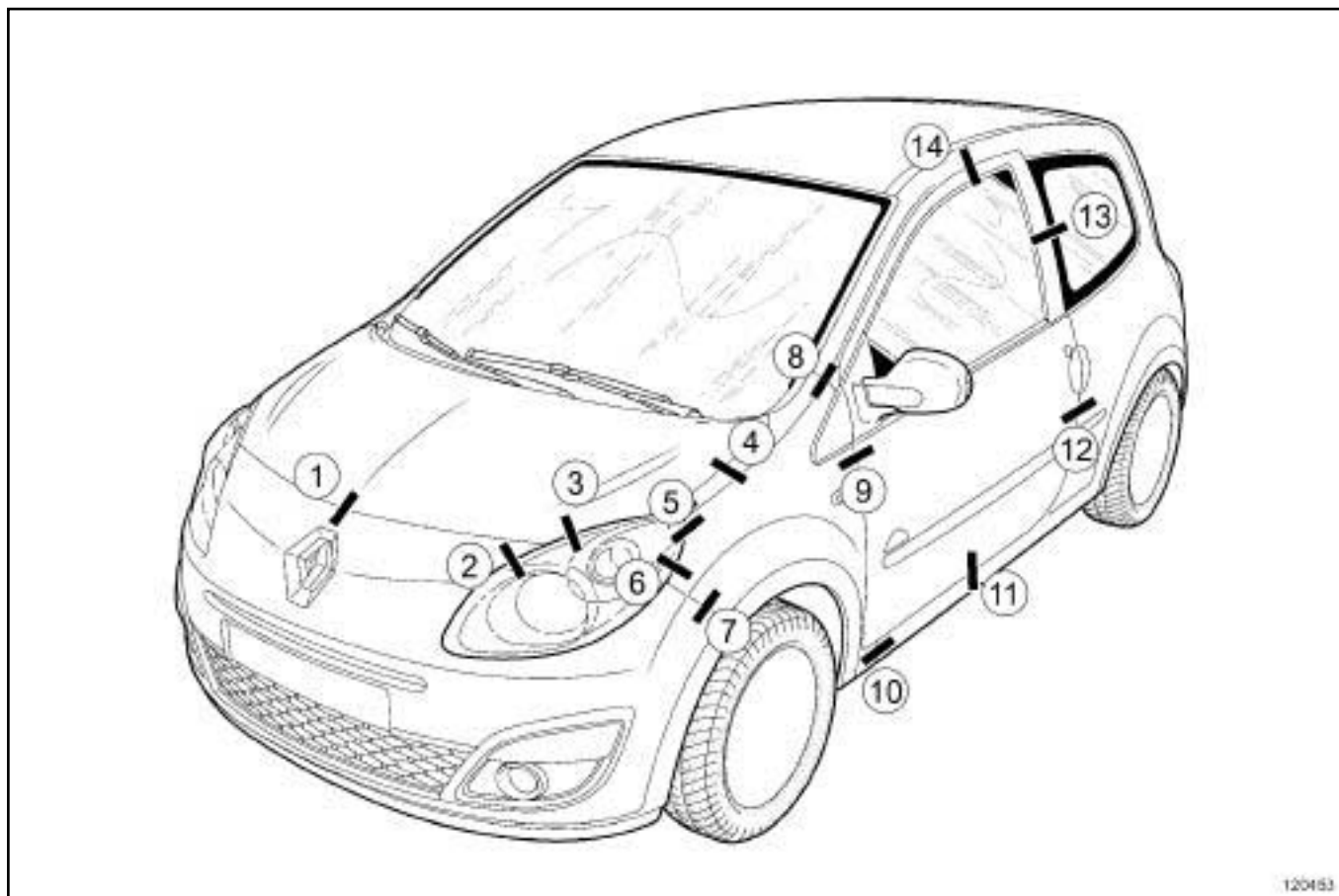
Marking (B)



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Note:

If the complete body is being replaced, it must be marked in compliance with the current regulations.



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120453

WARNING

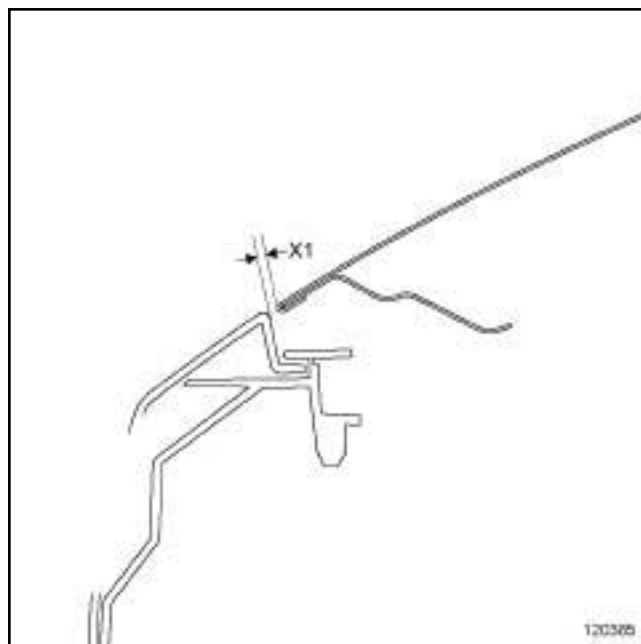
The clearance values are given for information purposes.

When adjusting clearances, certain rules have to be followed:

- maintain symmetry with respect to the opposite side,
- ensure the flush fitting is correct,
- check correct operation of the opening, and water/air-tightness.

All values are given in millimetres.

Section 1

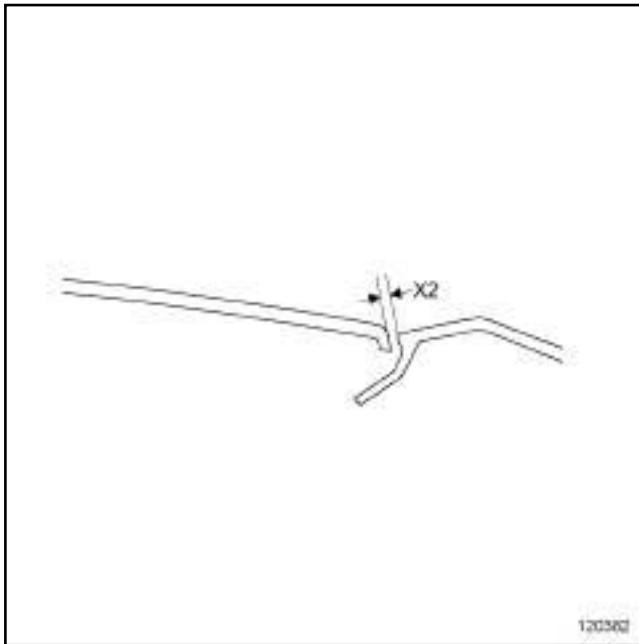


120385

120385

$$(X1) = 3.5 \pm 1.5$$

Section 2



120382

$$(X2) = 2 \pm 1.5$$

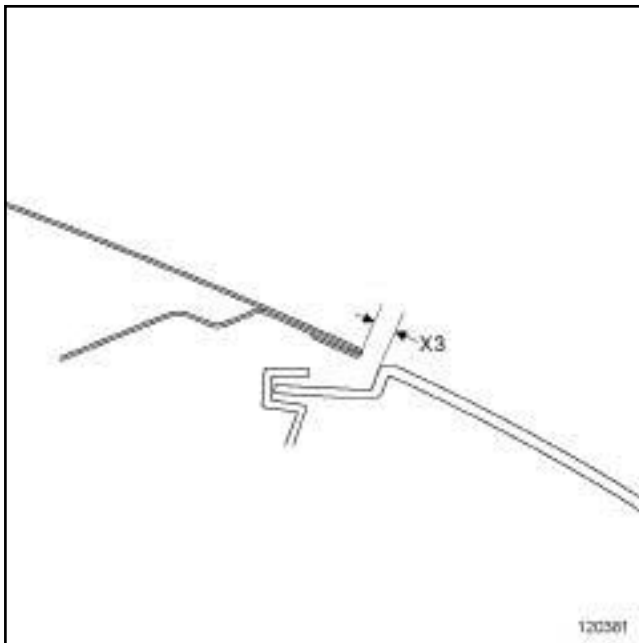
Section 4



120383

$$(X4) = 3.5 \pm 1.5$$

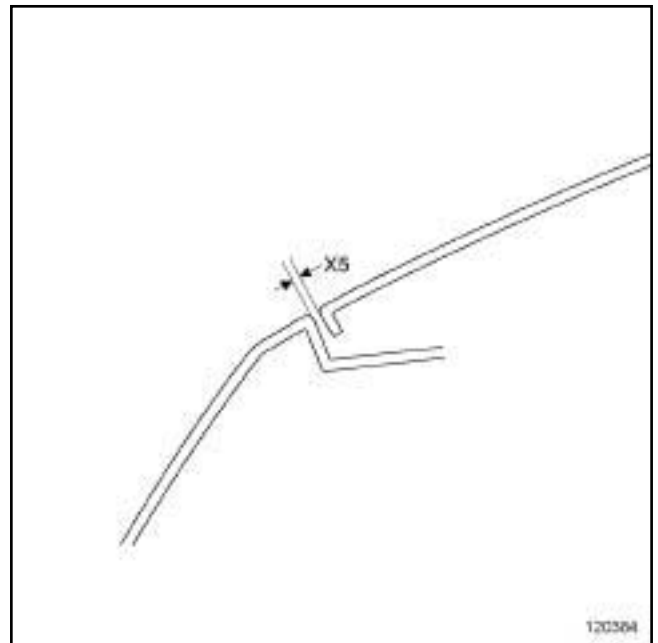
Section 3



120381

$$(X3) = 3 \pm 1.5$$

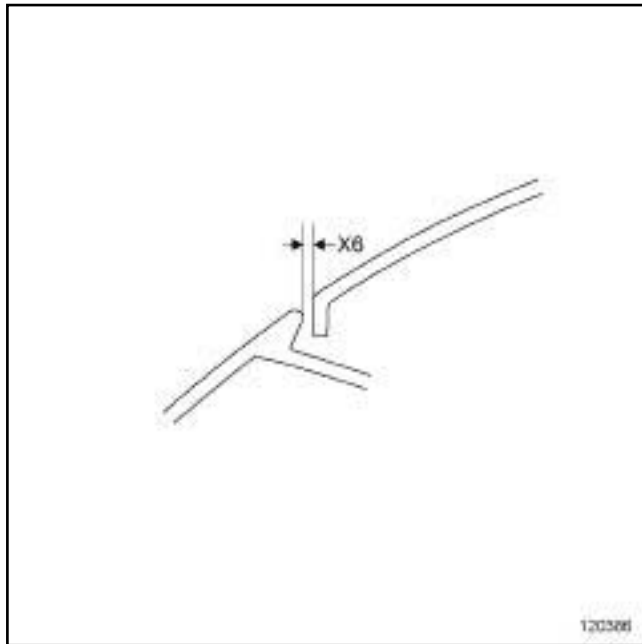
Section 5



120384

$$(X5) = 2 \pm 1.3$$

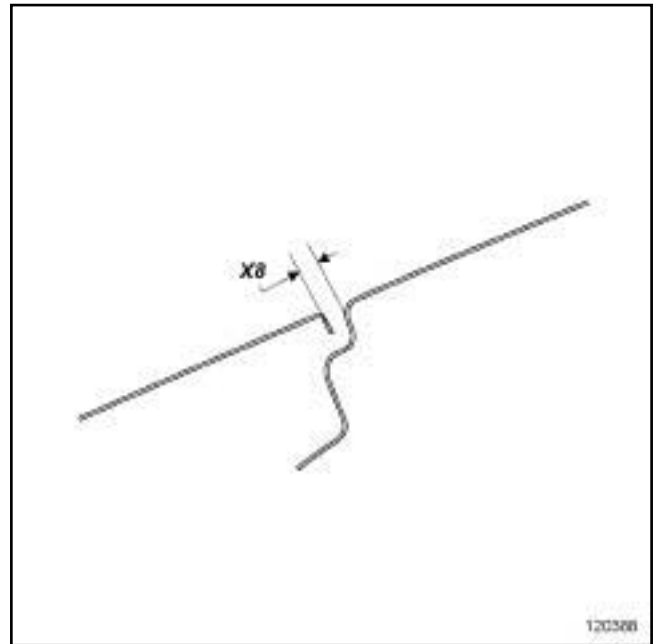
Section 6



120386

$$(X6) = 2 \pm 1.3$$

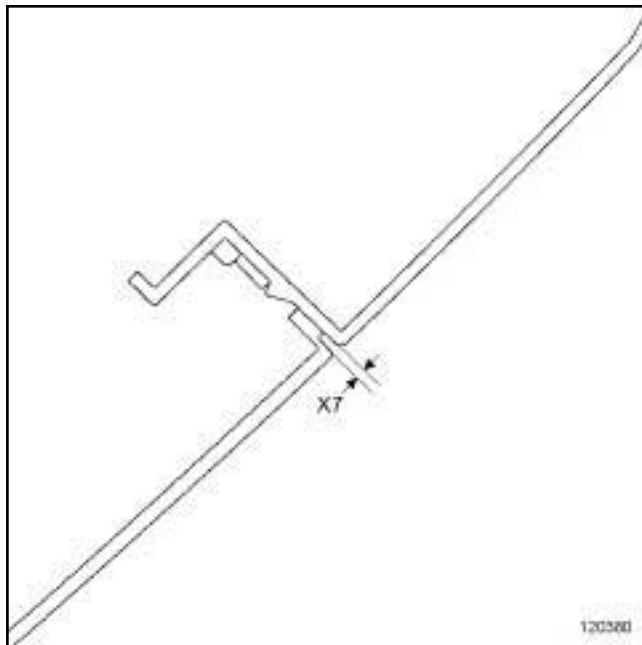
Section 8



120388

$$(X8) = 2.5 \pm 1.3$$

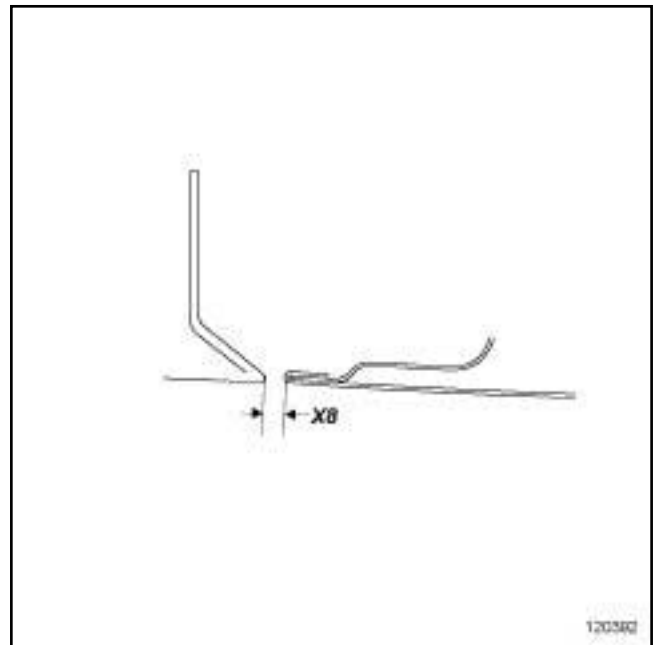
Section 7



120380

$$(X7) = 0 + 1/- 0$$

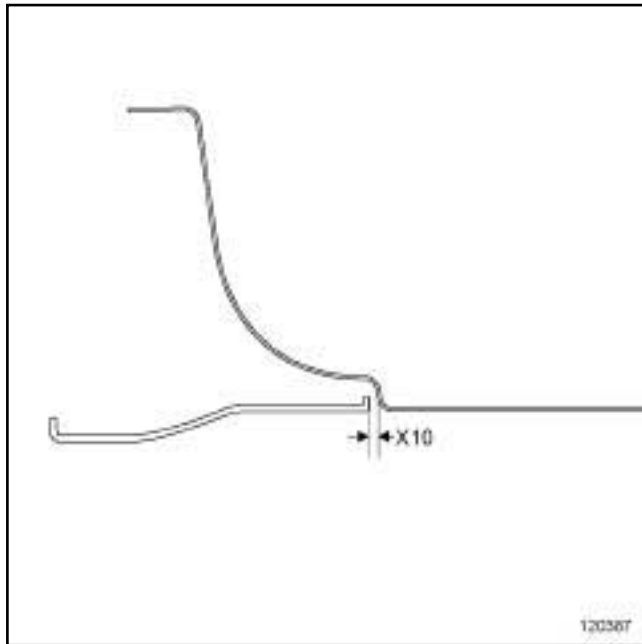
Section 9



120392

$$= 4.2 \pm 1$$

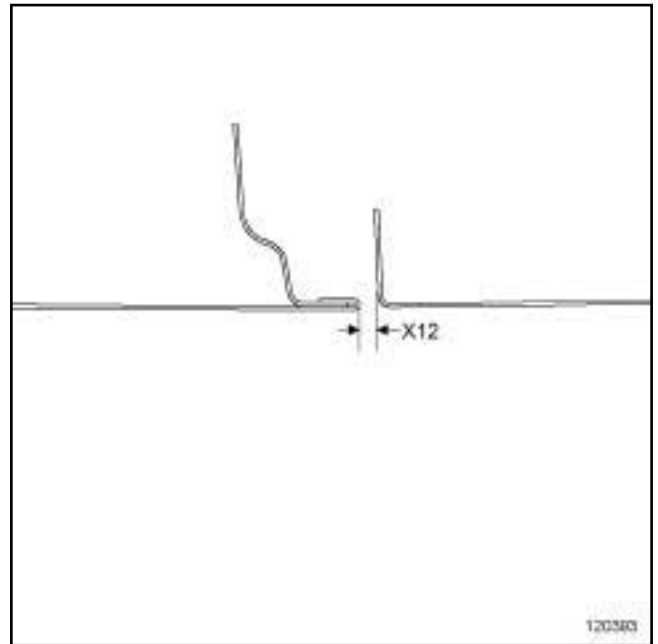
Section 10



120387

$$(X10) = 2 \pm 1.5$$

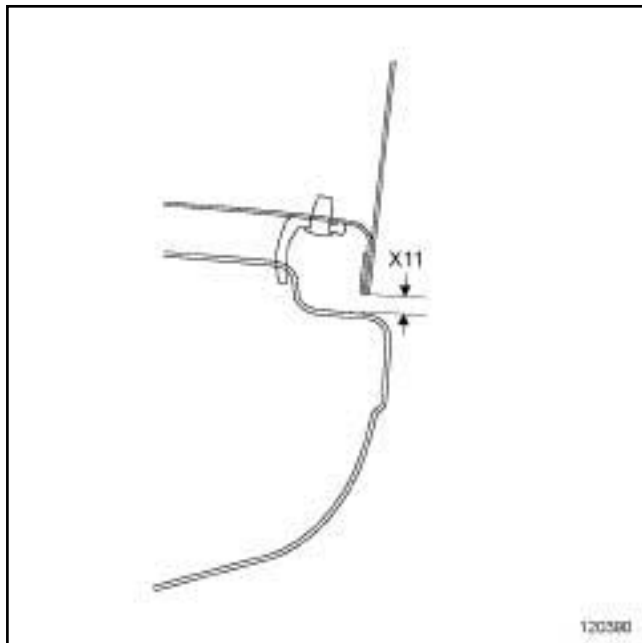
Section 12



120393

$$(X12) = 4 \pm 1.5$$

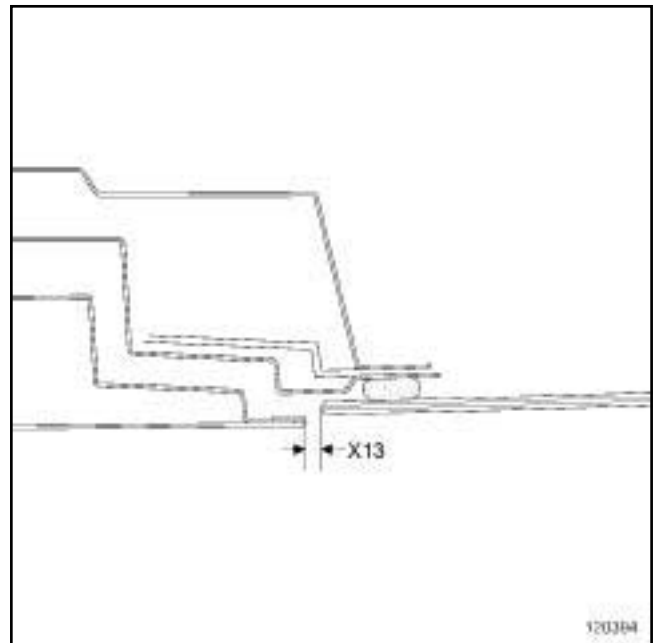
Section 11



120390

$$(X11) = 5 \pm 2$$

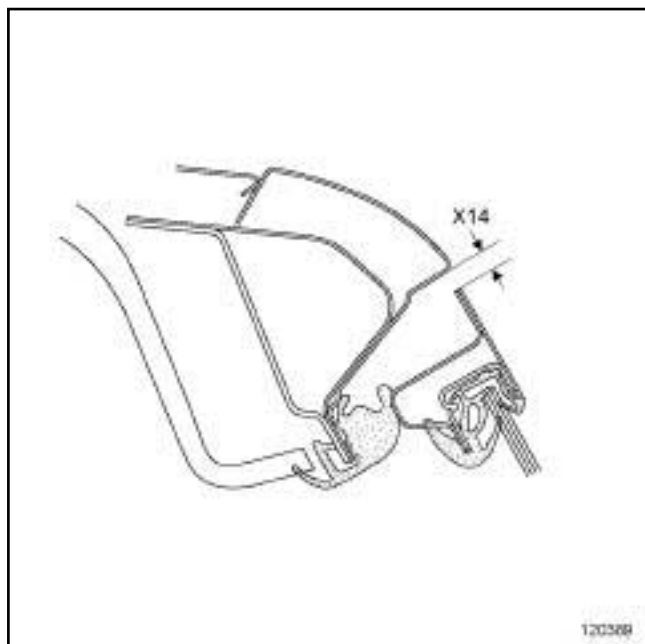
Section 13



120394

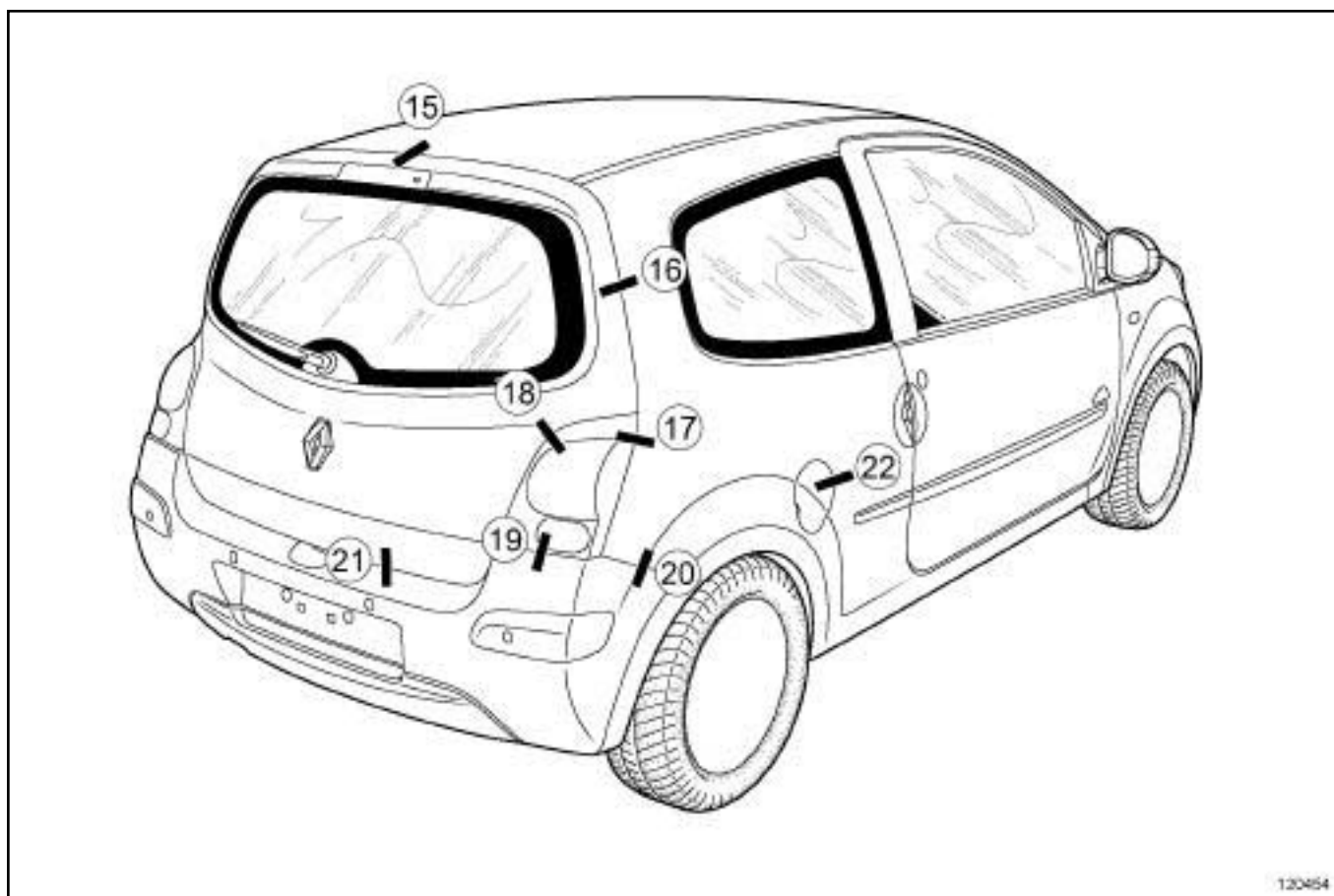
$$(X13) = 4 \pm 2.3$$

Section 14



120389

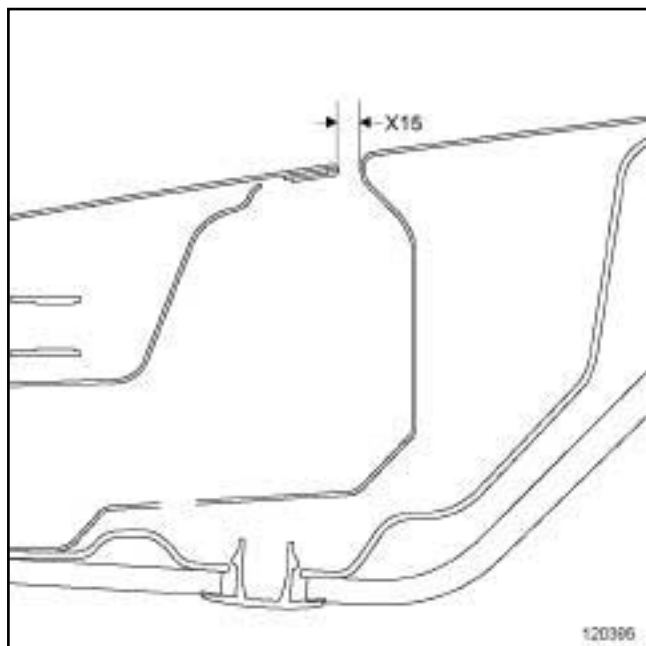
(X14) = 5.5 ± 1.5



120454

120454

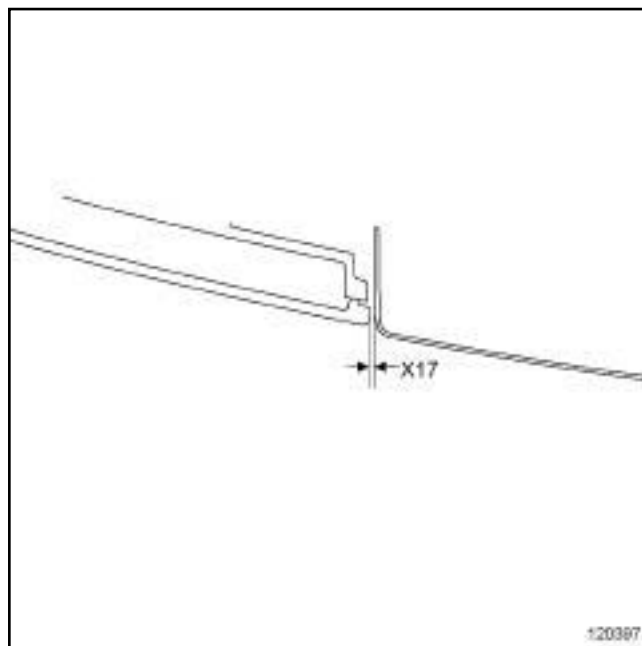
Section 15



120395

$$(X15) = 5.3 \pm 1$$

Section 17

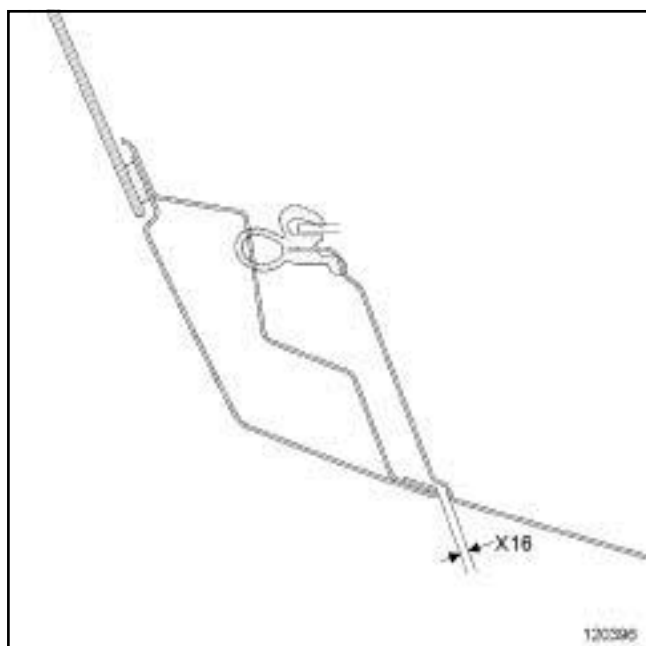


120397

120397

$$(X17) = 1.5 \pm 1$$

Section 16

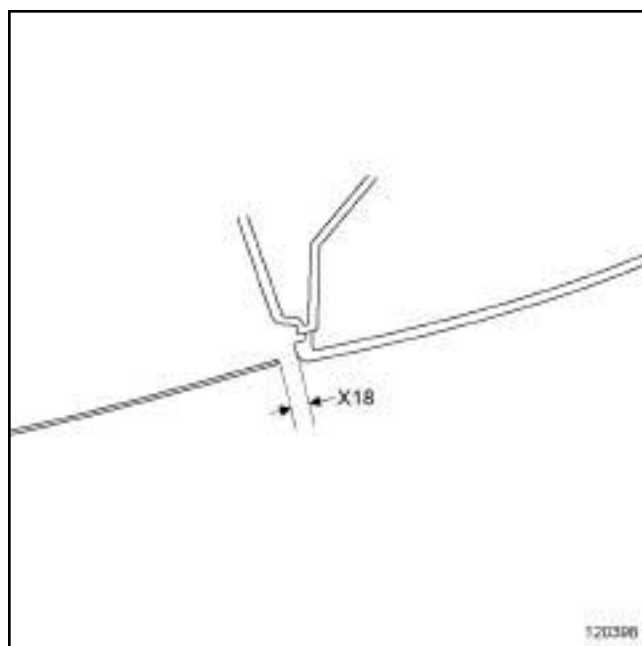


120396

120396

$$(X16) = 4.5 \pm 1.5$$

Section 18

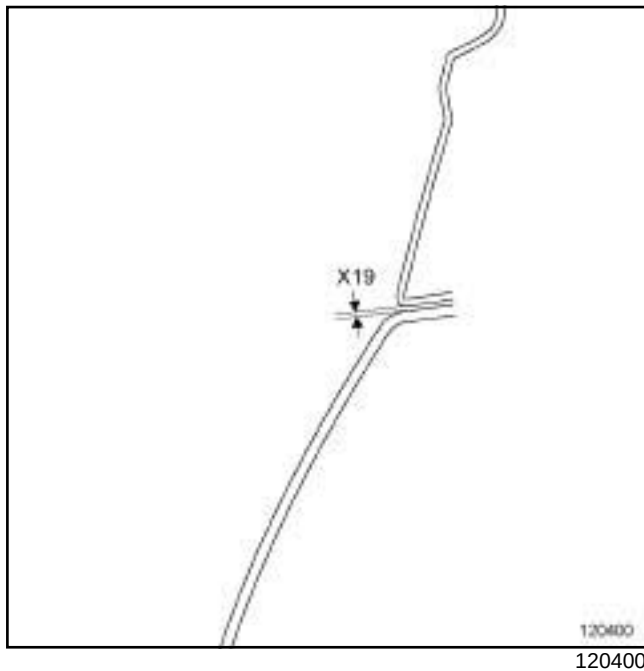


120398

120398

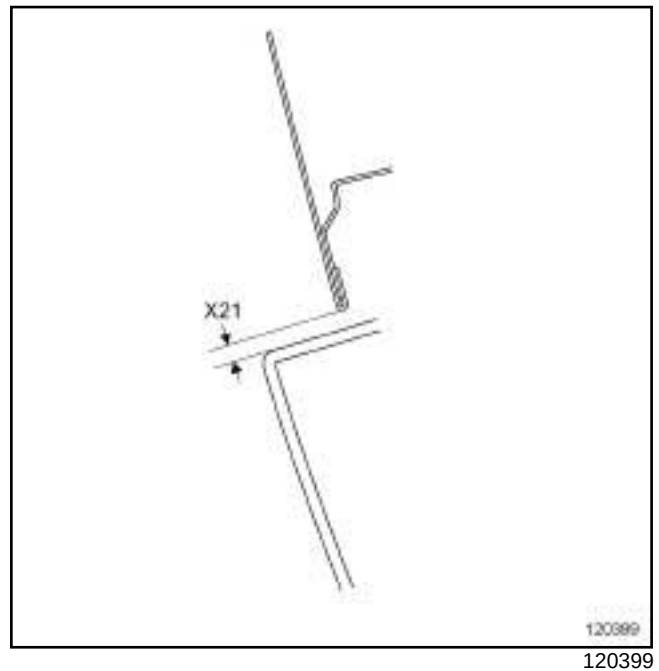
$$(X18) = 4 \pm 1.8$$

Section 19



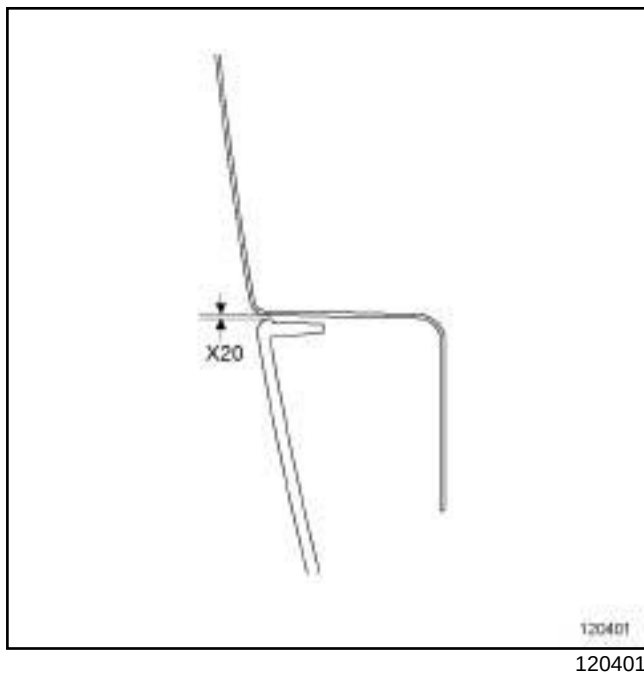
$$(X19) = 1.5 \pm 1.5$$

Section 21



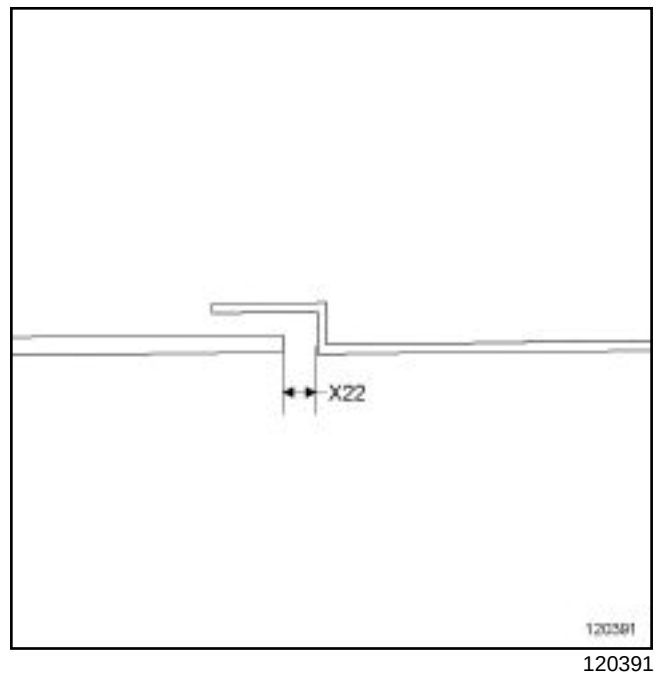
$$(X21) = 6 \pm 1.8$$

Section 20



$$(X20) = 0 + 1/- 0$$

Section 22



$$(X22) = 2.5 \pm 1$$

GENERAL INFORMATION

All information contained in these manuals is intended exclusively for automotive industry professionals.

The documentation is intended to cover all vehicles in the **RENAULT** range throughout the world, but may not cover equipment designed for use in specific countries.

The procedures and fault finding procedures recommended and described in this manual have been designed by automotive industry repair professionals.

1 - General recommendations

Observe basic principles of vehicle repair.

The quality of repair depends first and foremost on the care exercised by the person in carrying it out.

To ensure good repair:

- protect the sensitive areas of the vehicle (seats, steering wheel, wings, etc.),
- unless otherwise indicated, all repairs must be done with the ignition off,
- when welding on the vehicle, it is advisable to remove or disconnect components near the repair area that could be affected by the heat,
- use recommended professional products and original parts,
- observe the tightening torques,
- replace roll pins, self-locking or bonded nuts or bolts every time they are removed,
- take care with electrical and electronic components which cannot withstand excess voltage and improper handling; replace any electrical and electronic components which have experienced a voltage drop,
- make sure that the connectors are correctly clipped,
- do not pull on the wiring,
- check for the sealing plugs on the connectors,
- Do not splash any liquid, regardless of its type (oil, cleaner, etc.), on the electric and electronic components (computers, sensors, etc.)
- do not just replace parts one after the other, carry out detailed fault finding beforehand,
- carry out a final check before returning the vehicle to the customer (set the clock, check the alarm operation, check the lights and indicators etc.),
- clean and degrease the sections to be bonded (threads, stub axle splines) to ensure proper adherence,

- protect the accessories and timing belts, the electrical accessories (starter, blanking cover, electric power assisted steering pump) and the mating face to prevent diesel fuel spilling onto the clutch friction plate.

The design quality of our vehicles demands that nothing is left to chance in making a good repair, and it is essential to refit parts or components exactly as they were originally (for instance: heat shields, wiring routing, pipe routing, particularly in the area of the exhaust pipe).

Do not blow away asbestos particles or dust (brakes, clutch, etc.), vacuum them up or clean the component with a cleaning agent (such as a brake cleaning product).

Use professional products and apply them with care, for example do not apply too much sealing paste to the sealing surface.

Exhaust gases (petrol and diesel) are pollutants. Operate engines with care and always use exhaust gas extractors.

Ensure that there is no risk of a short circuit occurring when the electrical connections are reconnected (e.g. starter, alternator, etc.). Some points need greasing, others do not, therefore particular attention should be paid during refitting operations to ensure that they work properly under all conditions.

2 - Special tooling - ease of use

The repair procedures have been designed using special tools; they must therefore be carried out using these tools to ensure a high degree of working safety and quality of repair.

The equipment we have approved has undergone careful research and testing, and must be used and maintained with care.

3 - Reliability - updating

New repair procedures are constantly being developed in the interests of repair quality, either with new products (emission control, injection, electronics, etc.), or in fault finding. Be sure to consult the Workshop Repair Manuals or Technical Notes or fault finding summaries before any servicing operation.

Since vehicle specifications are subject to change during their commercial life, it is essential to check whether there are any updated Technical Notes when seeking information.

4 - Safety

Operations on certain equipment and certain parts (for instance: spring-shock absorber assembly, automatic transmission, brake system, ABS, airbag, common rail diesel injection, LPG, etc.) require particular attention to be paid to safety, cleanliness and care.

The safety symbol used in this manual indicates that special attention must be paid to the procedure or the tightening torque values.

Working safely:

- use suitable tools which are in good condition (use of « multi-purpose » tools, such as adjustable pliers, etc., should be avoided wherever possible),
- use supports and adopt a correct posture when performing heavy work or raising loads,
- make sure that the procedure used is not dangerous,
- Do not wear any jewellery or other small objects during an operation,
- use personal protection (gloves, safety glasses, work shoes, masks, skin barrier creams, etc.),
- always follow the safety instructions associated with the operation to be performed,
- do not smoke when working on vehicles,
- use smoke extractors (welding, exhaust gases, etc.),
- do not use harmful products in unventilated rooms,
- do not overstrain yourself or attempt inappropriate work operations,
- use axle stands when working under a vehicle raised on a jack,
- do not ingest any chemicals (brake fluid, coolant, etc.),
- do not open the cooling circuit when it is hot and pressurised,
- take care with components that are liable to start up suddenly (engine cooling fan, etc.).

Respecting the environment:

- do not allow waste refrigerants to escape into the atmosphere,
- do not dispose of waste vehicle fluids (oil, brake fluid, etc.) in drains,
- do not burn discarded products (tyres, etc.).

5 - Conclusion

The procedures contained in this document merit your attention. Please read them carefully in order to reduce the risk of injury, and avoid using incorrect procedures that could damage the vehicle or make it dangerous in use.

Following the recommended procedures will help you to provide a quality of service which will ensure the vehicles achieve the highest levels of performance and reliability.

Maintenance and repair operations must be carried out under the proper conditions to ensure that our vehicles run safely and reliably.

MECHANICAL INTRODUCTION

Tightening torques: General information

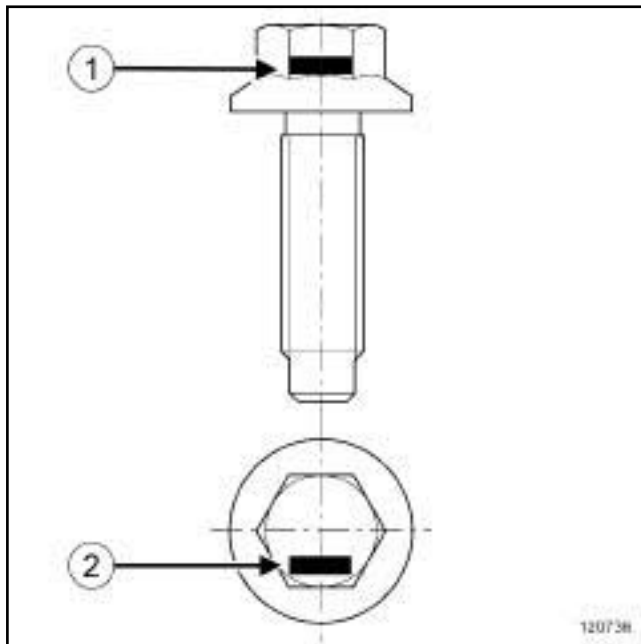
01D

I - TABLE OF STANDARD TORQUES

Fastenings		Standard tightening torque (N.m)
Diameter	Property class	
M6	8.8	10
M8	8.8	25
M10	8.8	50
M10	10.9	62
M12	10.9	105
M14	10.9	180
M16	10.9	280
M18	10.9	400

Special notes on electrical earths

Fastenings	
Diameter	Standard tightening torque (N.m)
M6	8
M8	21
M10	44



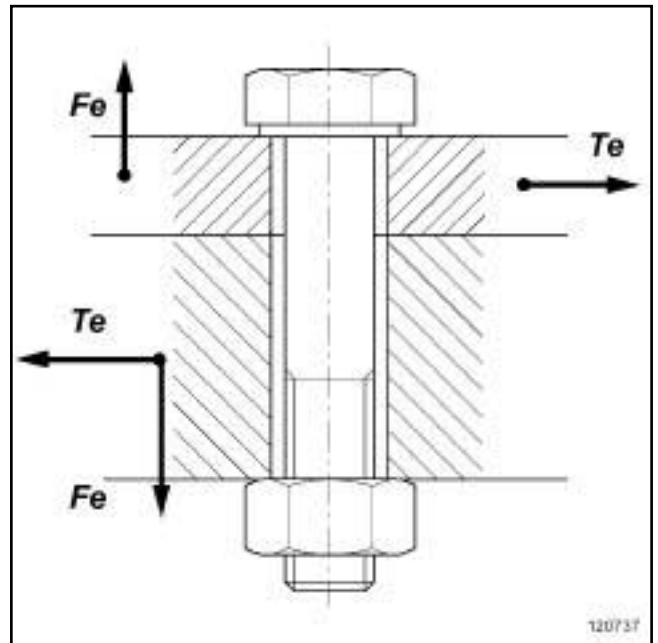
120736

The property class is indicated on the bolt (1) or (2) .

II - FUNCTION OF A BOLTED ASSEMBLY

The bolting system connects parts of an assembly to prevent their separation or sliding when submitted to exterior forces.

Exterior forces

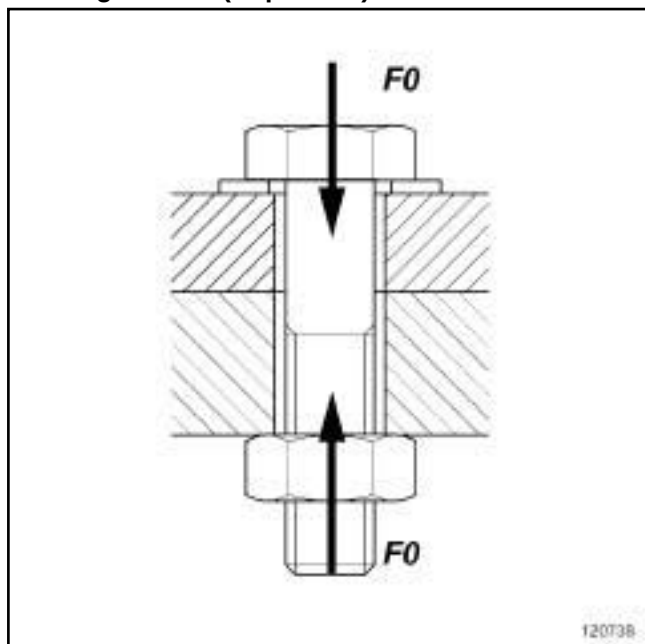


120737

The assembly is submitted to forces that are:

- static and / or dynamic,
- simple (e.g. simple traction),
- multiple (traction + flexion + torsion).

Creating tension (or preload) F_0

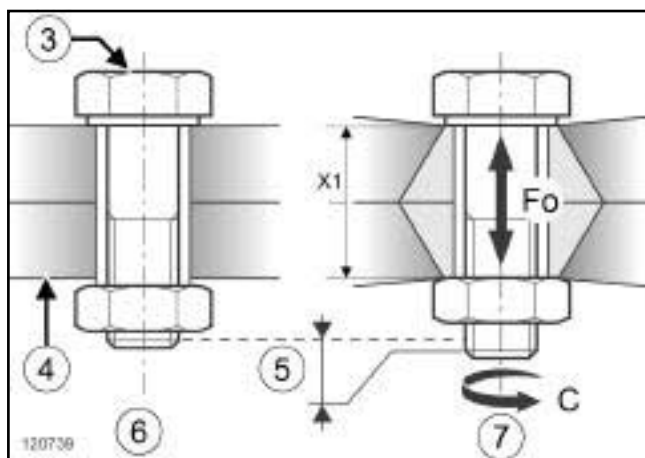


120738

The assembly is held together by the tension created in the bolt when it is tightened.

A reliable assembly is only possible if the correct tension is used:

- insufficient tension: risk of loosening,
- too much tension: risk of deformation of the parts to be assembled, or shearing of the bolt.



120739

(3)	Bolt
(4)	Assembled components
(5)	Extension of the bolt
(6)	Non-tightened assembly
(7)	Tightened assembly
(X1)	compression of the assembly
(F_0)	tension
(C)	tightening torque

Customer complaints resulting from incorrect tightening may be, following assembly, a safety issue (fire, loss of control of the vehicle etc.), an immobilising fault or a noise.

III - TIGHTENING PROCEDURES

The two controlled tightening procedures adapted to automotive repairs because of their low cost and simple operation are torque tightening and angle tightening (also called torque and angle).

1 - Torque tightening

This is the most commonly used procedure. It consists of tightening until a given resisting torque is reached, known as tightening torque.

The tightening torque is distributed in a large part as friction torque (under the head and in the thread) and in a small part as useful torque (to create the tension).

This practice spreads the tension significantly due to the variation in the friction coefficients from one assembly to another and the uncertainty of the tightening procedures and methods.

2 - Angle tightening

The principle consists of putting the parts of the assembly in contact using a mating torque (approximately 25 to 30% of the final torque) then to tighten to a determined angle.

This method, which is not dependent on the friction of the tightened assembly, gives more precise results than torque tightening.

IV - OBSERVING THE TIGHTENING TORQUES AND ANGLES

Bolted assemblies whose tightening torques and angles are explicitly specified in the removal / refitting procedures must be observed using the appropriate tools (torque wrench, angle measuring disc). Failure to observe this can lead to safety risks, immobilising faults or unwanted noises.

For other bolted assemblies, non-measured tightening (using standard spanners) is acceptable. Nevertheless, the corresponding tightening torque is indicated in the table of standard tightening torques.

V - RECOMMENDED TIGHTENING TOOLS

For measured tightening, the repairer must have available torque wrenches to tighten from **4 to 400 N.m** as well as an angle measuring disc.

The torque wrenches used may be click type or electronic.

For example:

- 1 torque wrench **4 - 40 N.m**,
- 1 torque wrench **20 - 100 N.m**,
- 1 torque wrench **80 - 400 N.m**,
- 1 angle measurement disc.

The torque wrenches used must comply with the **ISO 6789** standard. They must be calibrated regularly following the supplier's recommendations using the appropriate procedures.

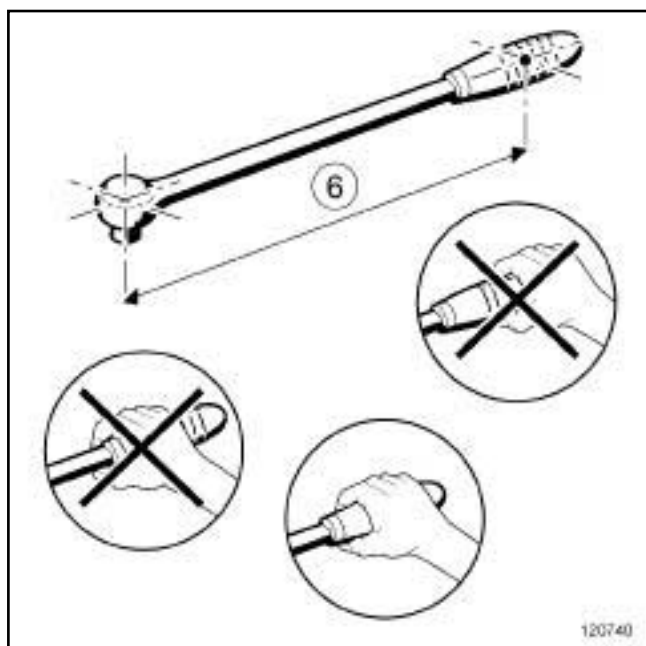
VI - PRECAUTIONS WHEN USING A CLICK TYPE TORQUE WRENCH

A click type torque wrench is a manual tightening tool. The trigger mechanism causes a break or disengagement of the wrench past a force threshold.

This threshold depends on the setting of the wrench but also depends on the way the wrench is handled.

When used following best practises, the accuracy of the tightness when using a click type torque wrench is $\pm 15\%$.

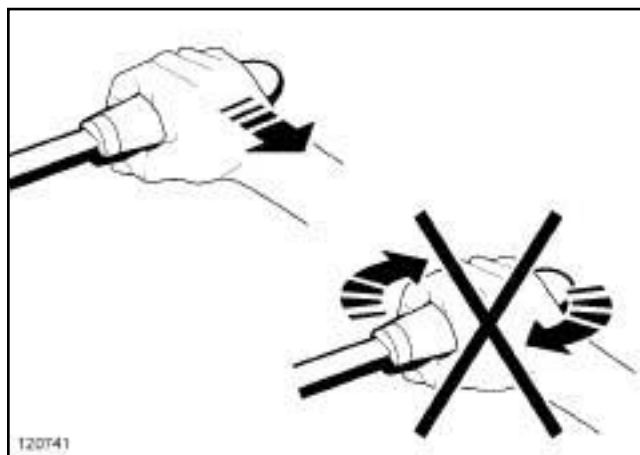
The instructions to be observed are:



120740

(6) lever arm

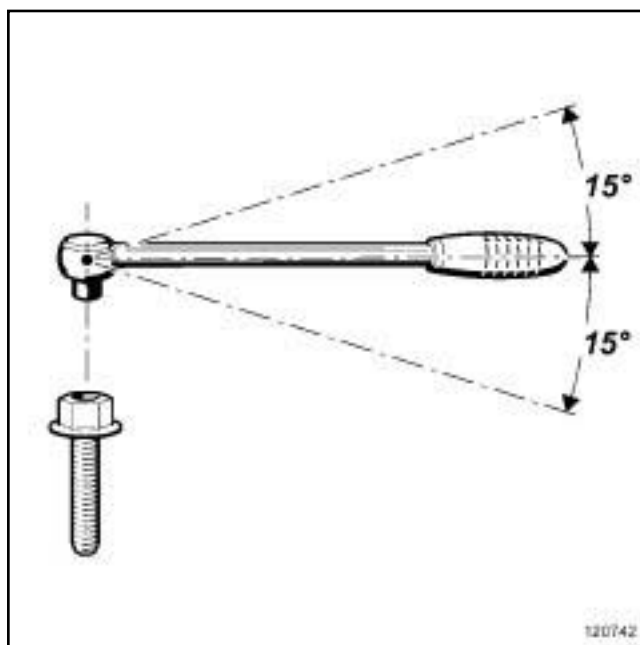
- Place the hand in the centre of the handle. An incorrectly positioned hand on the handle will alter the trigger threshold.



120741

- Pull the wrench gently and steadily, without applying any torsion. Excessive tightening speed as well as jerkiness are major causes of overtightening. Any torsion applied to the wrench will alter the trigger threshold.

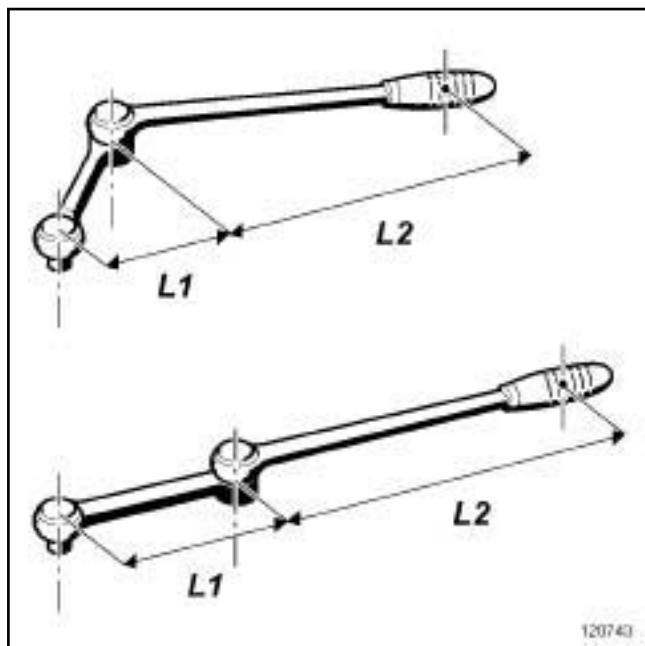
- Hold the wrench on the bolt using a minimum of effort. Any effort applied to the wrench head will alter the trigger threshold.



120742

- Apply the tightening effort perpendicular to the mounting observing a tolerance of $\pm 15^\circ$ relative to the perpendicularity. If the wrench is not perpendicular to the mounting axis, this will result in insufficient tightening.

- Stop tightening as soon as the wrench is triggered. Continued tightening after the wrench is triggered will lead to overtightening.



120743

If the length of the wrench is modified (extending the handle, adapting an end piece) it is essential to recalibrate the wrench to its new configuration.

Modifying the length of the wrench will modify its trigger threshold.

Use the formula: $C1 = CO \times L2 / (L1 + L2)$

- CO: torque to apply,
- C1: adjustment torque to be displayed on the wrench,
- L1: length of the extension,
- L2: length of the wrench.

Unless there are special instructions in the repair method, a universal joint (CARDAN joint type) should be used for measured tightening. Using a universal joint will result in a difference between the set torque of the wrench and the actual torque applied.

Before storing the wrench, loosen the adjustment spring completely. A wrench stored with a spring under tension will lose its tightening accuracy.

VII - PRECAUTIONS WHEN USING ELECTRONIC TORQUE WRENCHES

An electronic torque wrench is a manual tightening tool. The tightening torque and, depending on the model, the angle is read directly.

When used following best practises, the accuracy of the tightness when using an electronic torque wrench is $\pm 5\%$.

Electronic torque wrenches are not affected by the position of the operator's hand.

It is advisable to handle the wrench with care and to stop tightening when the required value is displayed on the wrench.

LIFTING EQUIPMENT

Vehicle: Towing and lifting

02A

Equipment required

Diagnostic tool

safety strap(s)

I - TOWING

WARNING

See the current towing regulations in each country.

Never use the drive shafts as attachment points.

The towing points may only be used for towing on the road.

Never use the towing points for removing the vehicle from a ditch or to lift the vehicle, either directly or indirectly.

Screw in and lock the towing ring before towing.

Vehicles fitted with automatic transmission:

- The vehicle should preferably be transported on a platform or towed by lifting the front wheels. As an exception, the vehicle may be towed with the wheels on the ground but at a speed below **12 mph (20km/h)** and over a maximum distance of **18 miles (30 kms)** (with the gear lever in neutral).

Vehicles fitted with Renault Card:

- If the vehicle battery is flat, the steering column remains locked. In this case, fit a new battery or connect to an electrical source to lock the airbag computer using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (88C, Airbag and pretensioners), which unlocks the steering column.
- If it is not possible to lock the airbag computer, the front of the vehicle must be lifted.

1 - Position of front attachment point



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2 - Position of rear attachment point



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II - LIFTING BY TROLLEY JACK

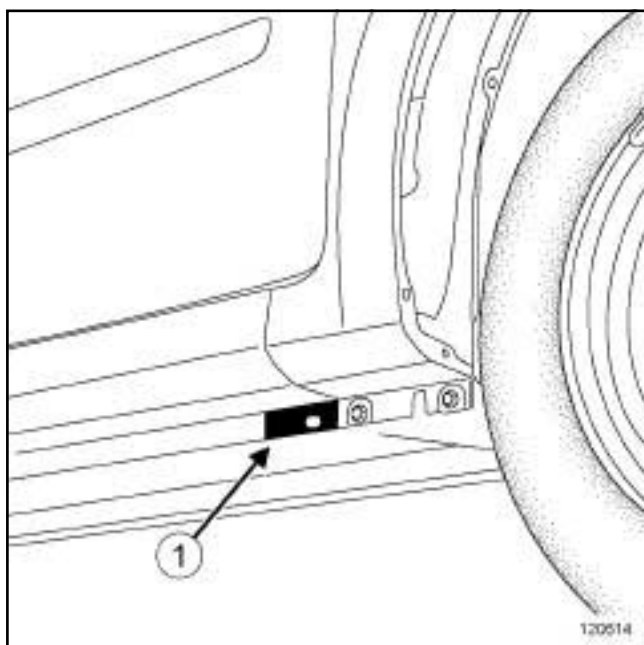
IMPORTANT

To prevent any accidents, the trolley jack must only be used to lift and/or move the vehicle. The vehicle height must be maintained with axle stands which are strong enough to support the weight of the vehicle.

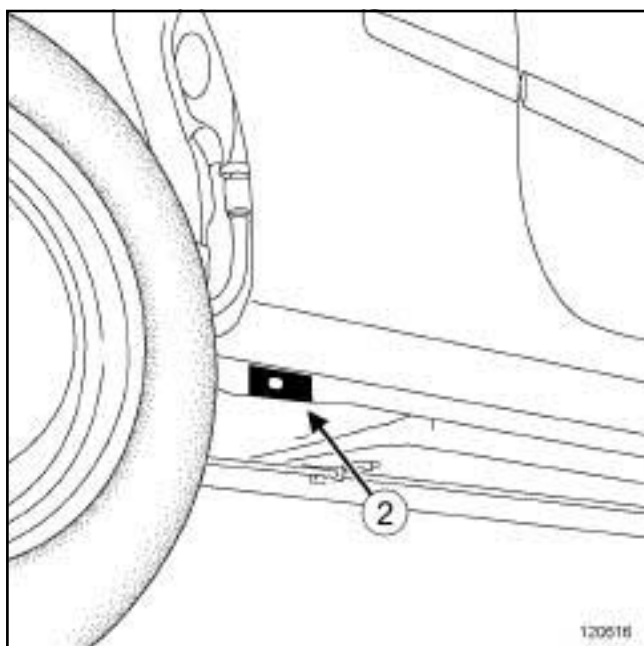
WARNING

To avoid any damage to the original protection, use equipment fitted with rubber pads to prevent the equipment coming into direct contact with the vehicle.

To avoid any damage to the axle assemblies, the vehicle must not be raised using the front suspension arms for support or under the rear axle.



120614

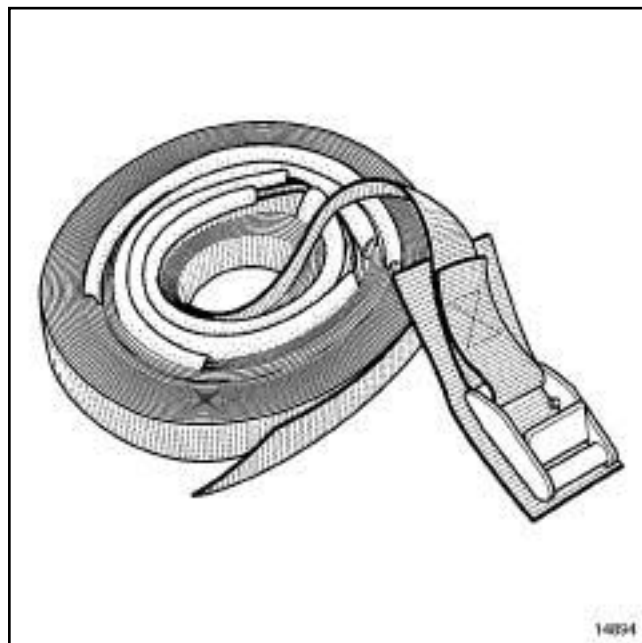


120616

To mount the vehicle onto axle stands, lift the entire vehicle on one side and the axle stands must be placed under zones (1) and (2) designed for positioning the tool kit jack.

III - LIFTING ON A LIFT

1 - Safety advice reminder

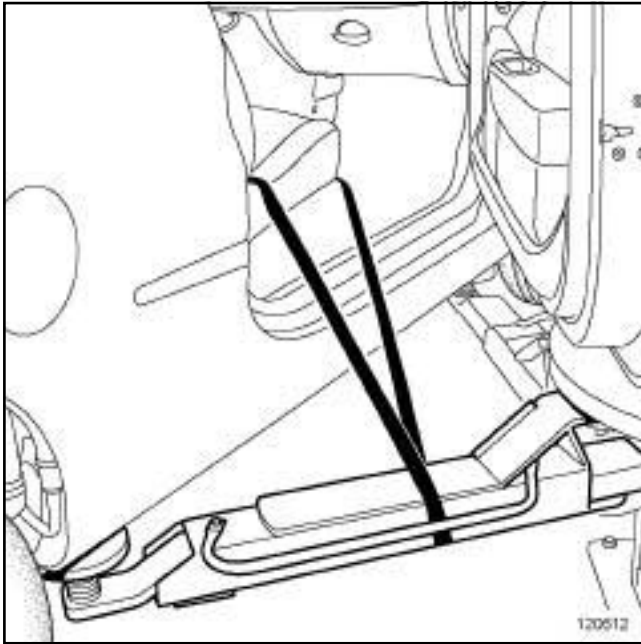


14894

To remove heavy components from the vehicle (engine and transmission assembly, rear axle, gearbox), use a four-post lift.

If the vehicle is on a two-post lift, there is a danger that it will tip after removal of these types of components. Fit the **safety strap(s)** available from **Spare Parts Department**.

2 - Fitting the straps



120612

For safety reasons, these straps must always be in perfect condition. Replace them as soon as they show signs of wear.

When fitting the straps, check that the seats and fragile parts of the vehicle are correctly protected.

If there is a danger of the vehicle tipping forward:

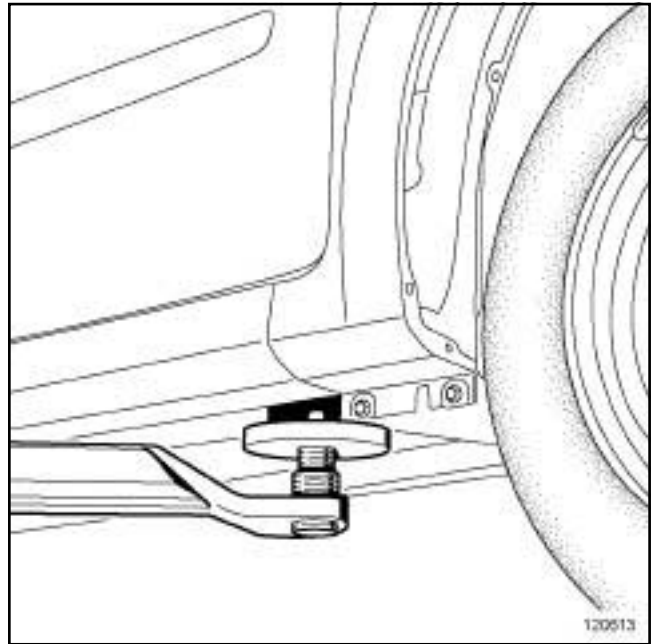
- place the strap under the rear right-hand arm of the lift,
- pass the strap through the inside of the vehicle,
- pass the strap under the left-hand rear arm of the lift,
- pass the strap through the inside of the vehicle again,
- tighten the strap.

If there is a danger of the vehicle tipping backwards:

- place the strap under the front right-hand arm of the lift,
- pass the strap through the inside of the vehicle,
- pass the strap under the front left-hand arm of the lift,
- pass the strap through the inside of the vehicle again,
- tighten the strap.

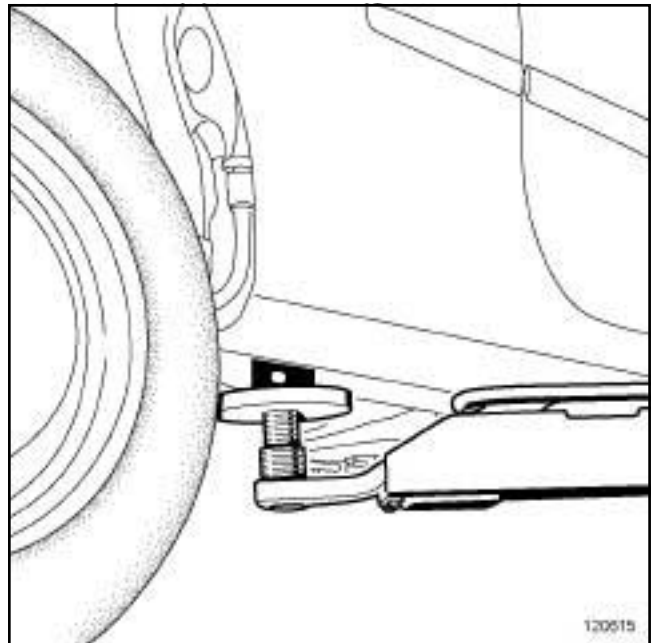
3 - Permitted jacking points

Front lifting points



120613

Rear lifting points



120615

IMPORTANT

Only the jacking points described in this section allow the vehicle to be raised in complete safety.

Do not raise the vehicle using points other than those described in this section.

LIFTING EQUIPMENT

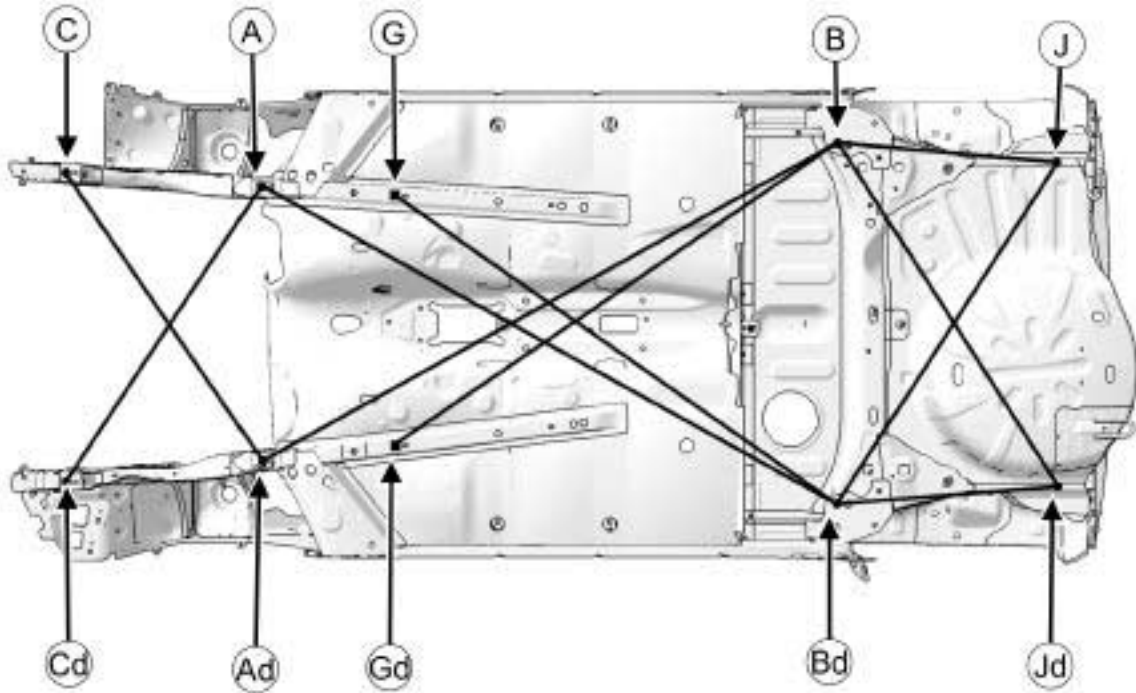
Vehicle: Towing and lifting

02A

To raise the vehicle, position the lifting arm pads as shown above, taking care not to damage the end of the front wing and the underside of the sill panel.

Vehicle involved in an impact: Impact fault finding

SUB-FRAME INSPECTION



121744

121744

**1 - Chronological order of checks:**☐ FRONT impact

- 1: (B) - (Ad) = (Bd) - (A)
- 2: (B) - (Gd) = (Bd) - (G)

☐ REAR impact

- 1: (A) - (Bd) = (Ad) - (B)
- 2: (G) - (Bd) = (Gd) - (B)

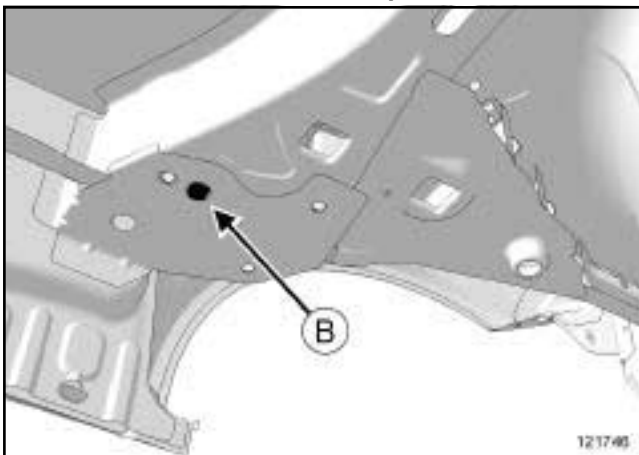
2 - Detailed view of inspection points

Point A, Ad: Front subframe rear mounting



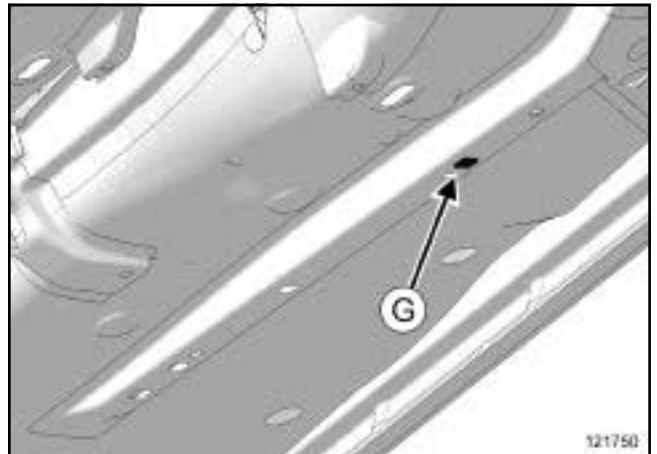
121747

Points B, Bd: Rear axle leader pin



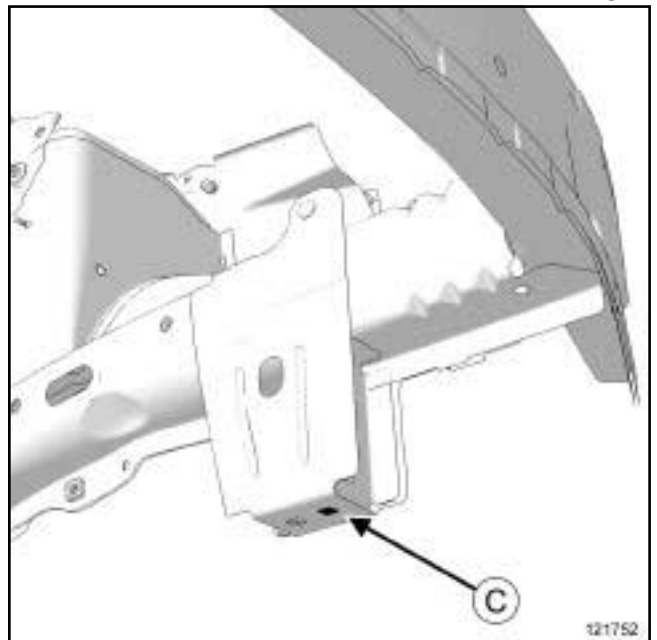
121746

Points G, Gd: Front side member rear mounting



121750

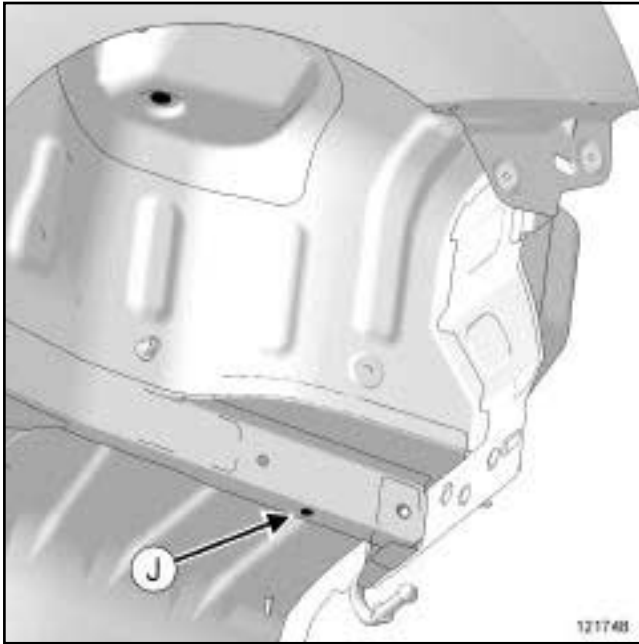
Points C, Cd: Front side member front mounting



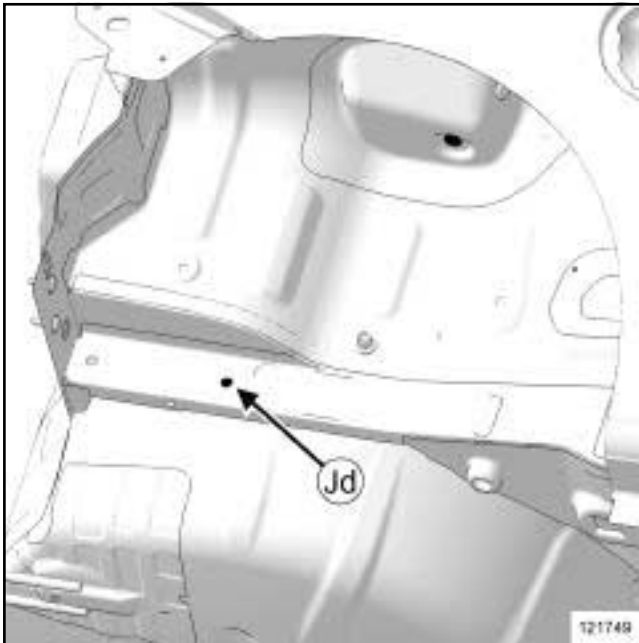
121752

Vehicle involved in an impact: Impact fault finding

Points J, Jd: Rear side member rear leader pin



121748

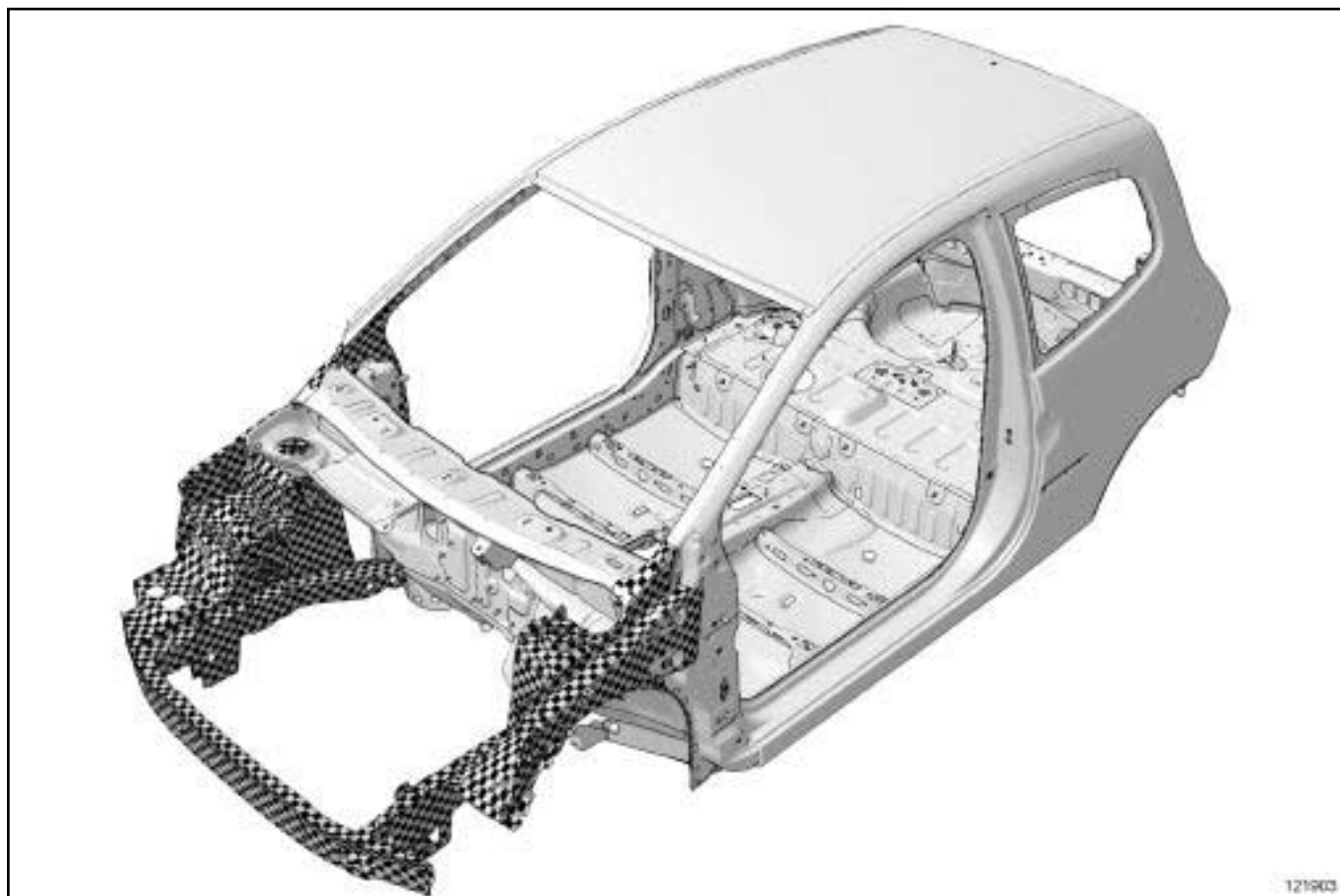


121749



Vehicle involved in a frontal impact: Description

COMBINATIONS FOR REPLACING WELDED
STRUCTURAL PARTS IN ACCORDANCE WITH
IMPACT SUSTAINED

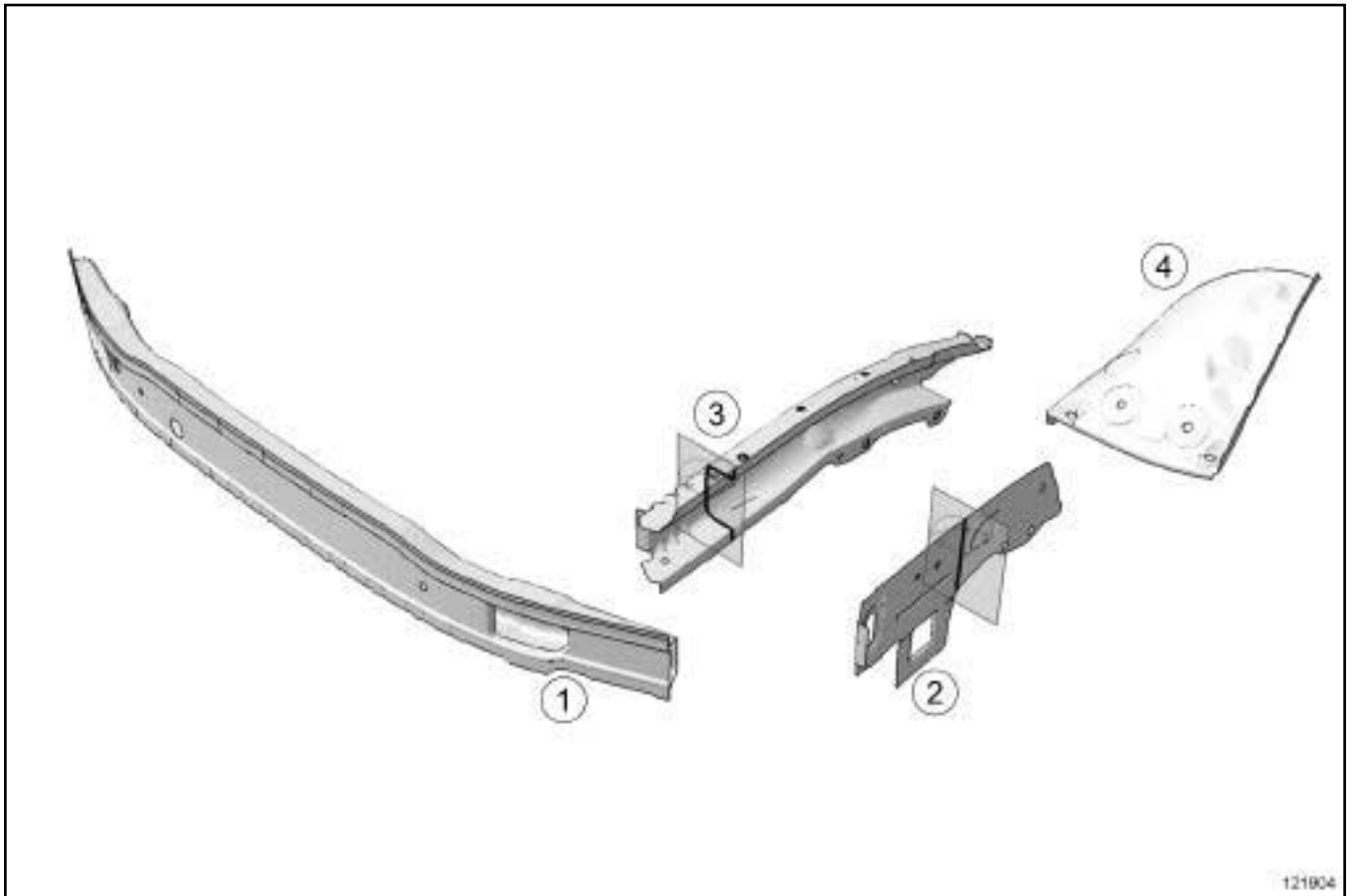


121903

121903

Vehicle involved in a frontal impact: Description

1st degree

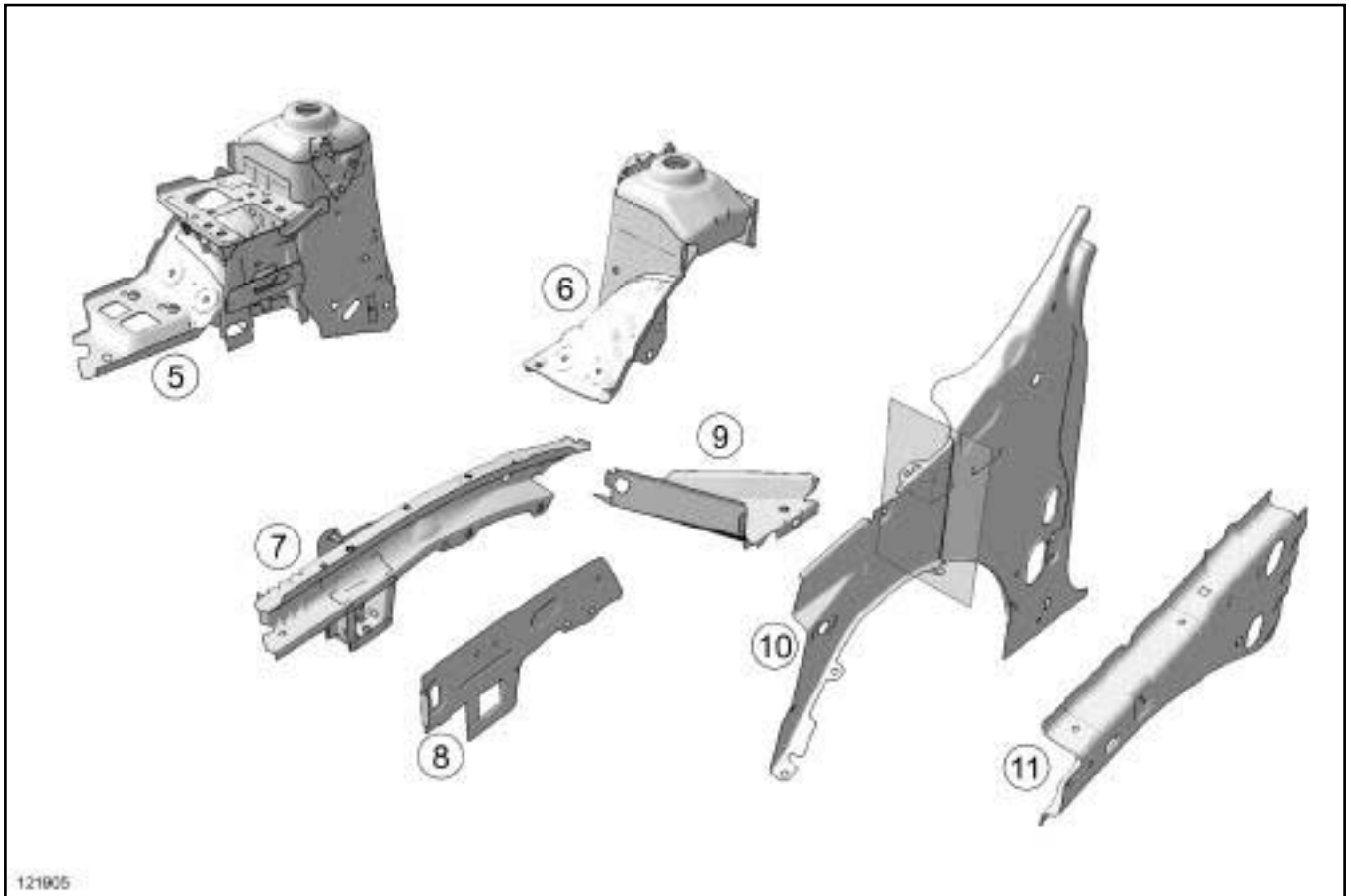


121904

121904

- (1) front end cross member
- (2) front side member closure panel
- (3) front side member front section
- (4) front wheel arch, front section

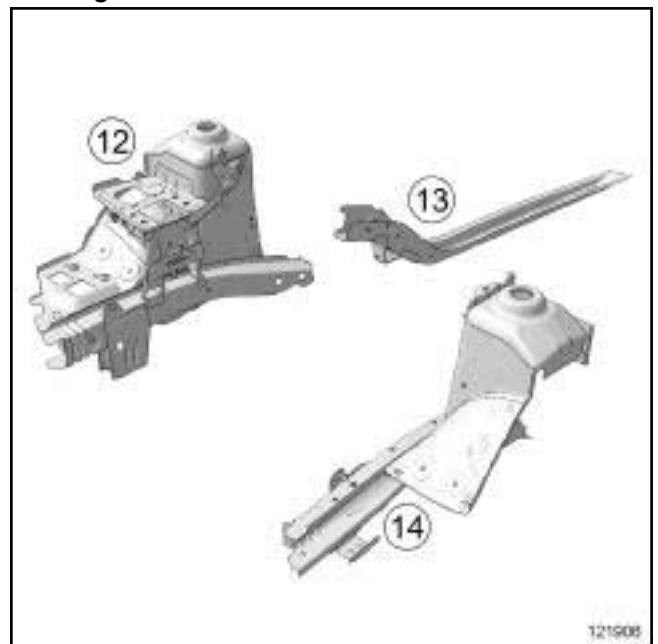
2nd Degree



121905

- (5) front right-hand wheel arch
- (6) front left-hand wheel arch
- (7) front side member front section
- (8) front side member closure panel
- (9) front side cross member
- (10) scuttle side panel
- (11) scuttle side panel upper reinforcement

3rd Degree

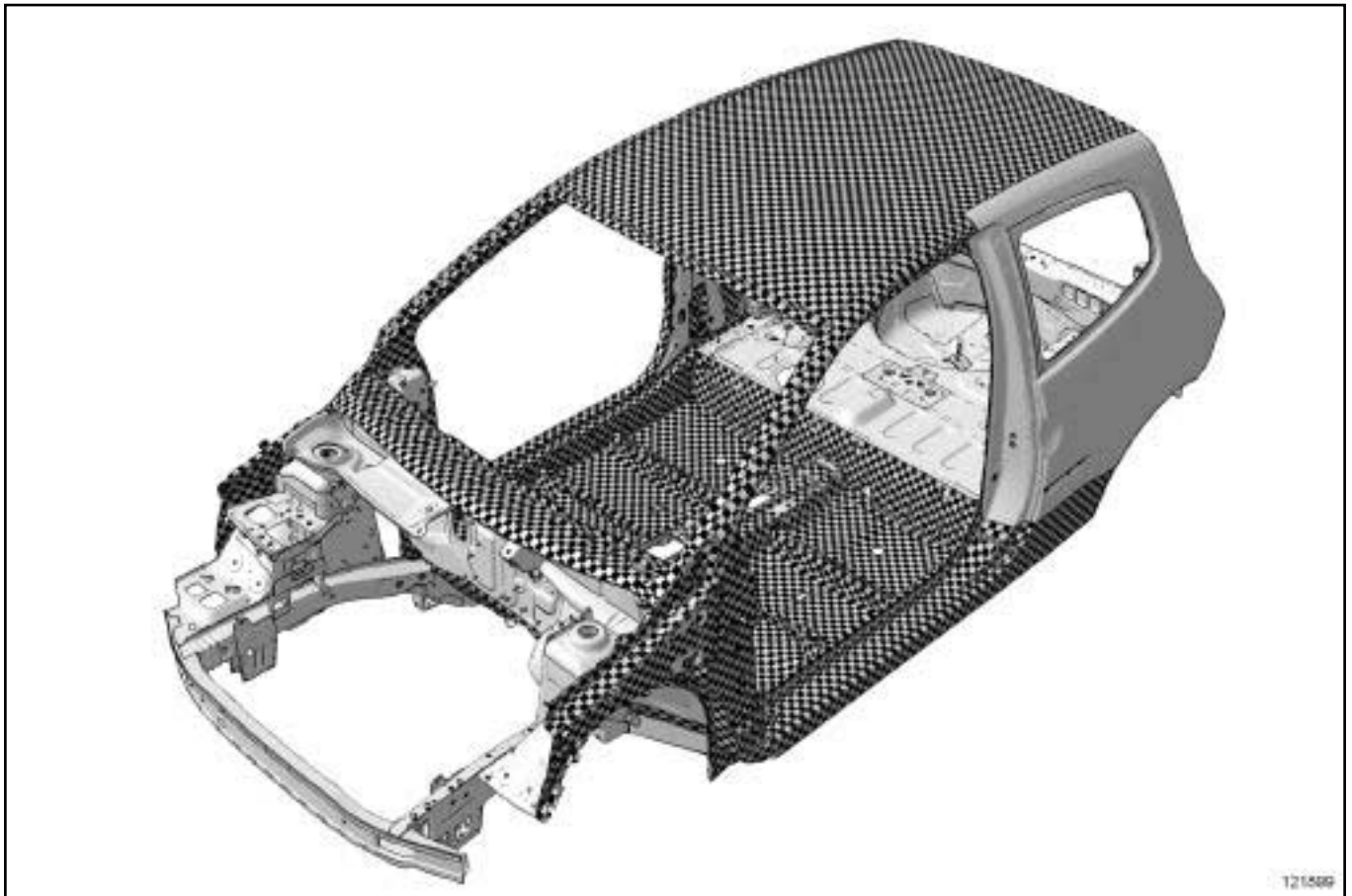


121906

121906

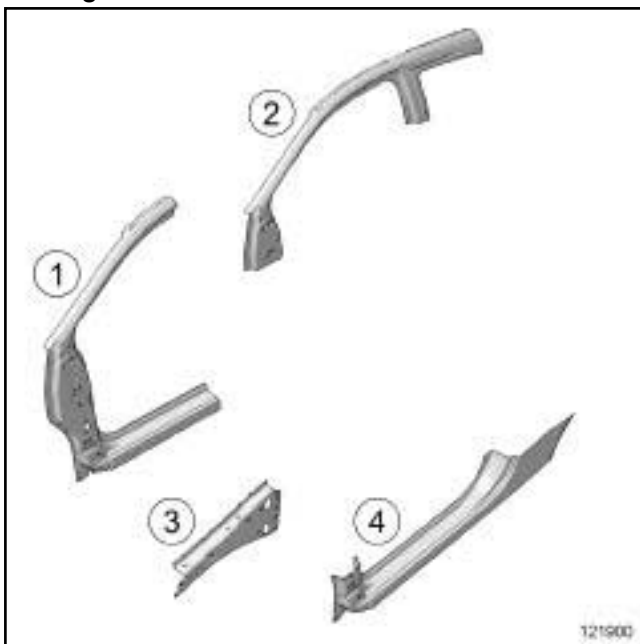
- (12) right-hand half unit
- (13) front side member rear section
- (14) left-hand half unit

Vehicle involved in a side impact: Description



121899

1st Degree



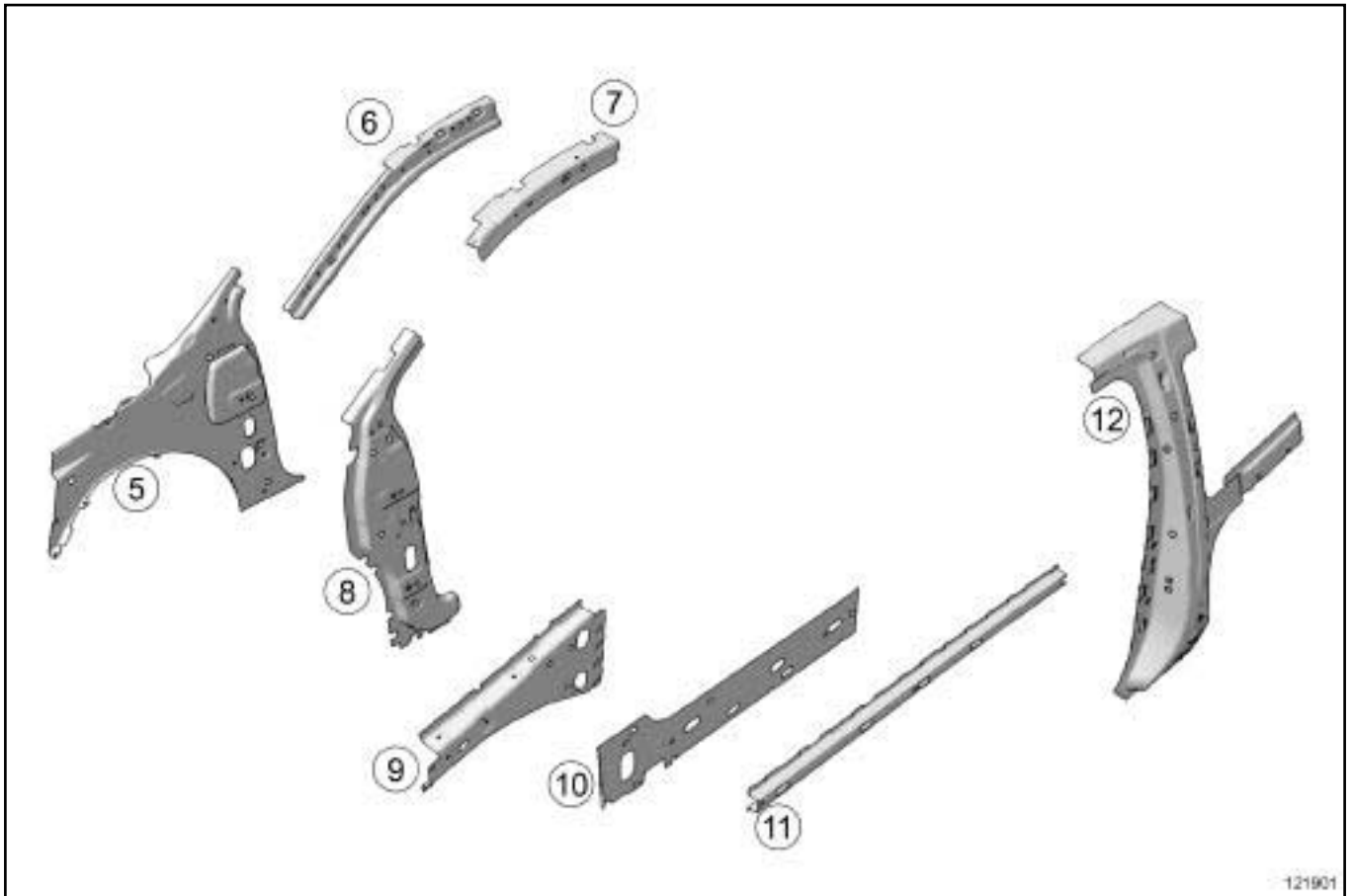
121900

- (1) A-pillar
- (2) upper body
- (3) scuttle side panel upper reinforcement

- (4) sill panel

Vehicle involved in a side impact: Description

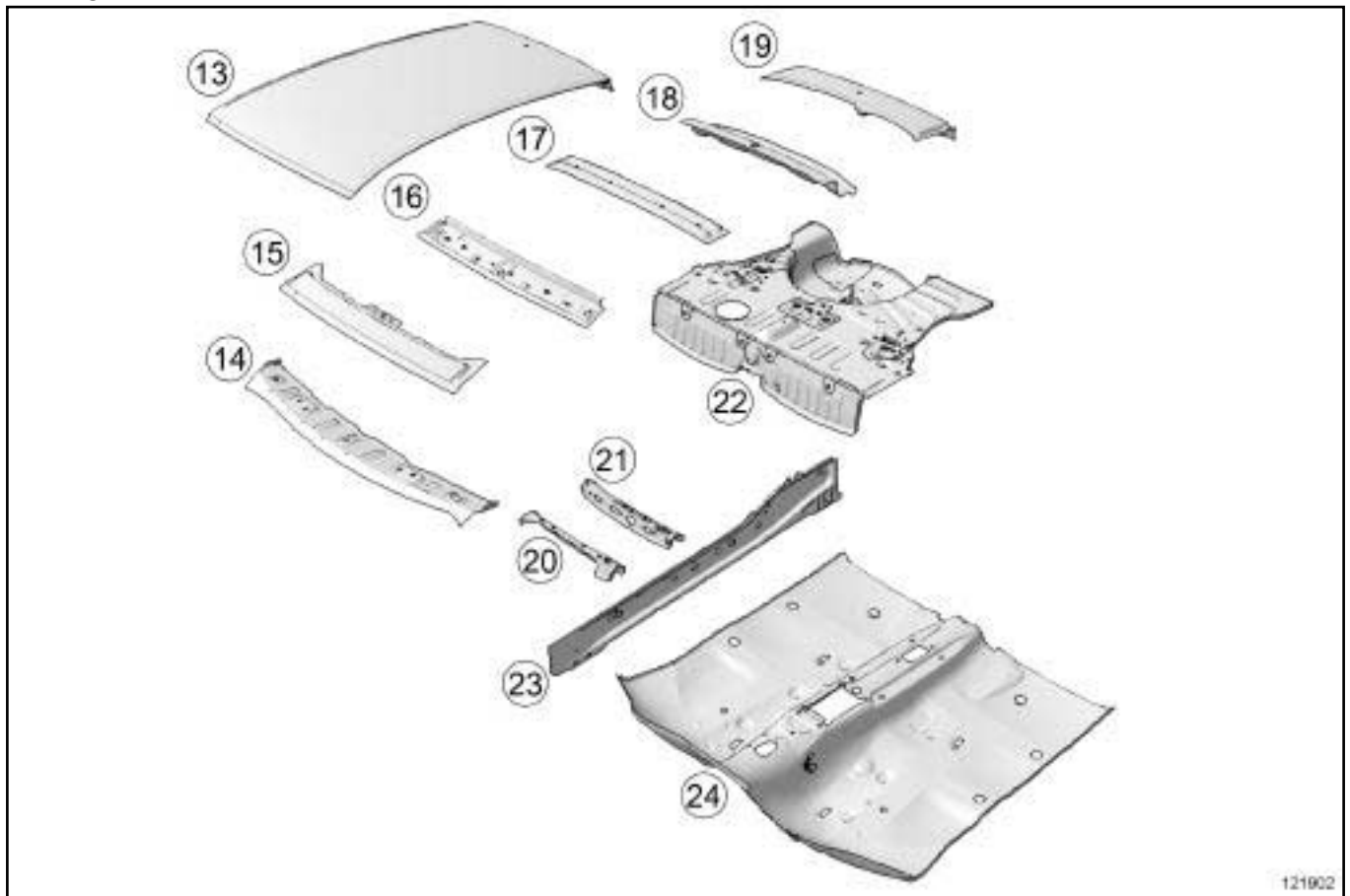
2nd Degree



- (5) scuttle side panel
- (6) windscreen pillar lining
- (7) side roof rail lining
- (8) A-pillar reinforcement
- (9) scuttle side panel upper reinforcement
- (10) sill panel reinforcement
- (11) sill panel stiffener
- (12) B-pillar reinforcement

Vehicle involved in a side impact: Description

3rd Degree

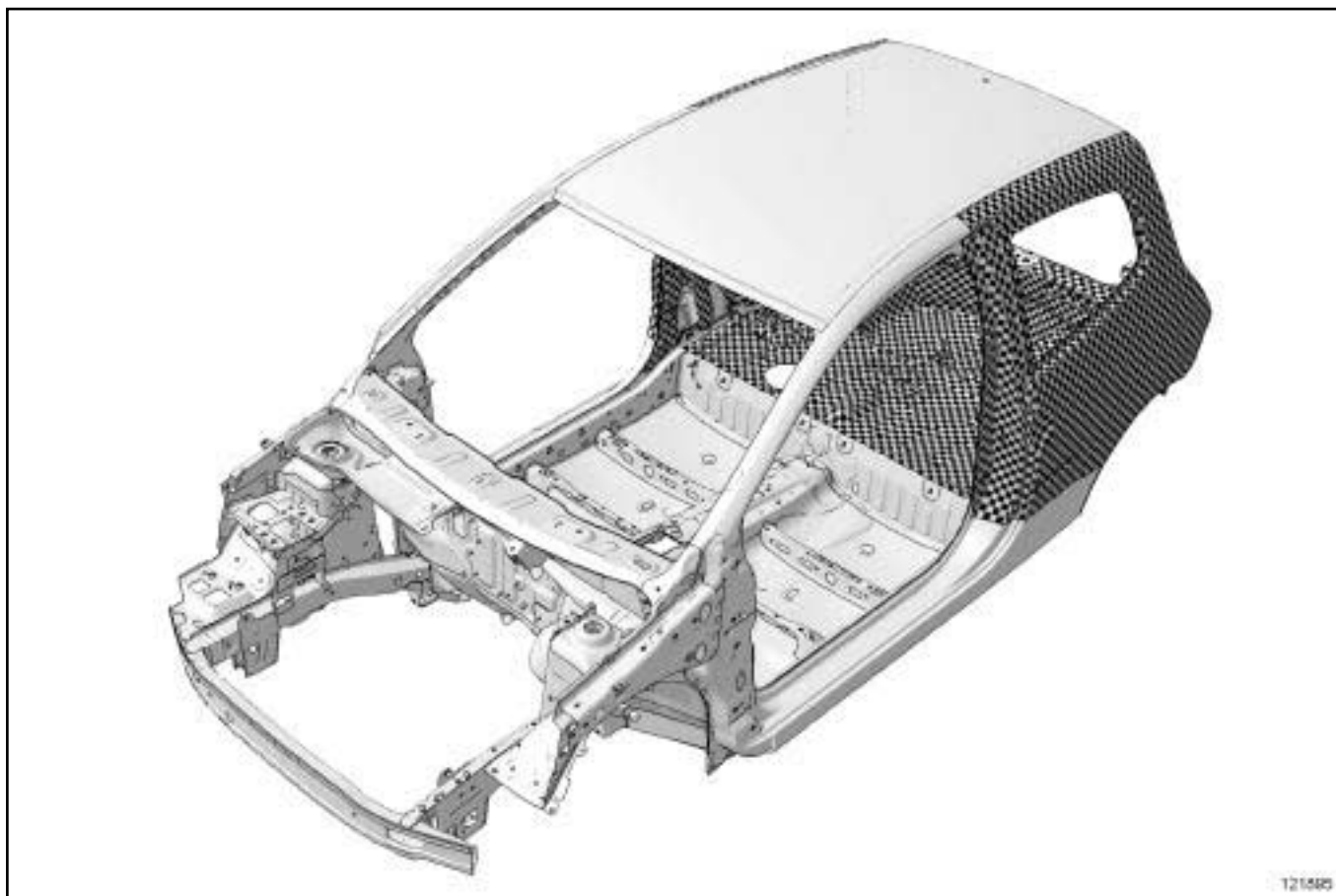


121902

121902

- (13) roof
- (14) windscreen aperture lower cross member closure panel
- (15) roof front section
- (16) roof front cross member
- (17) roof centre cross member
- (18) roof rear cross member
- (19) roof rear section
- (20) front cross member under front seat
- (21) rear cross member under front seat
- (22) rear floor
- (23) inner sill panel
- (24) centre floor

Vehicle involved in a rear impact: Description



121895

121895

1st Degree



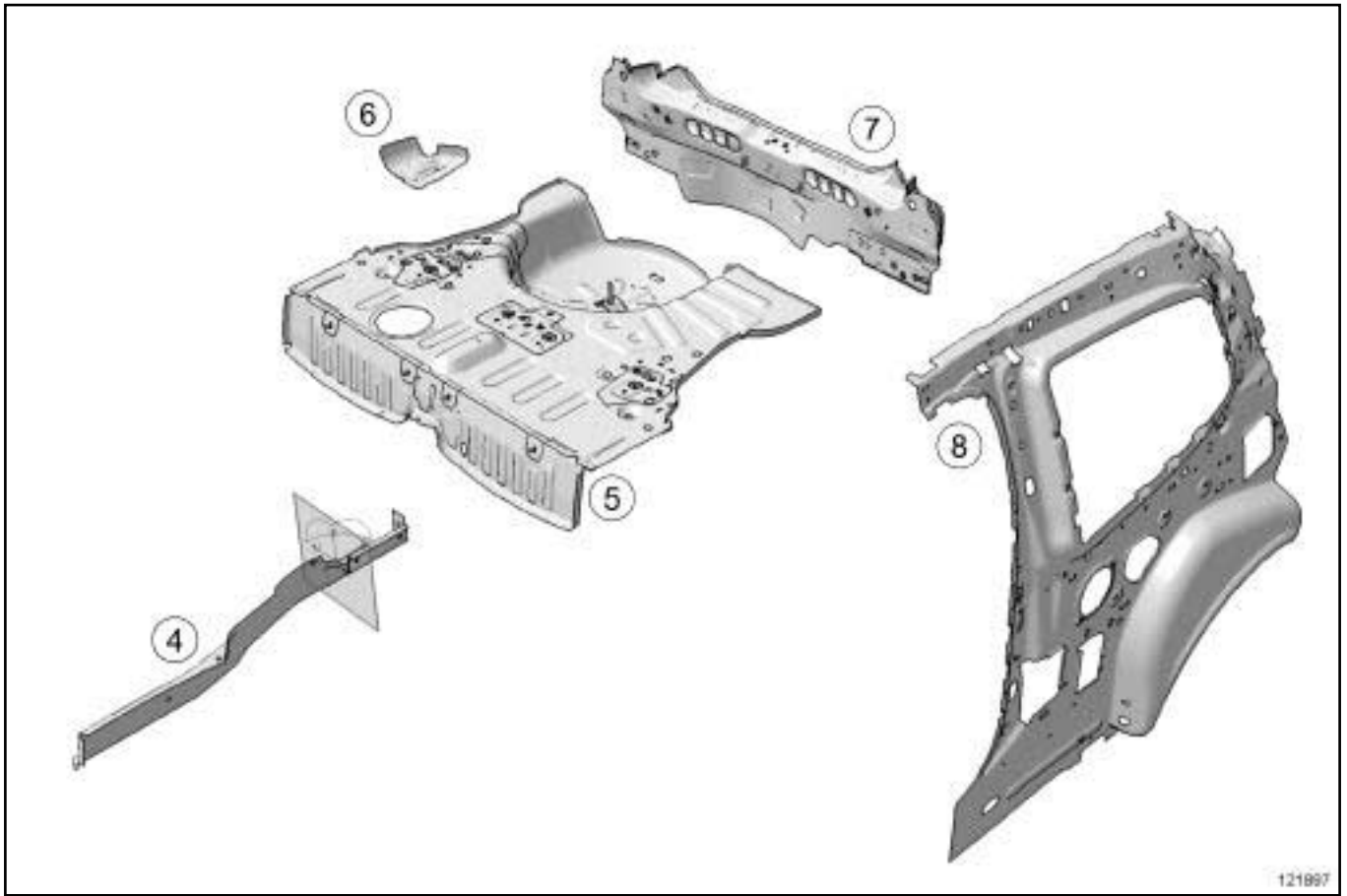
121896

121896

- (1) rear wing panel
- (2) rear light mounting
- (3) rear end panel

Vehicle involved in a rear impact: Description

2nd Degree



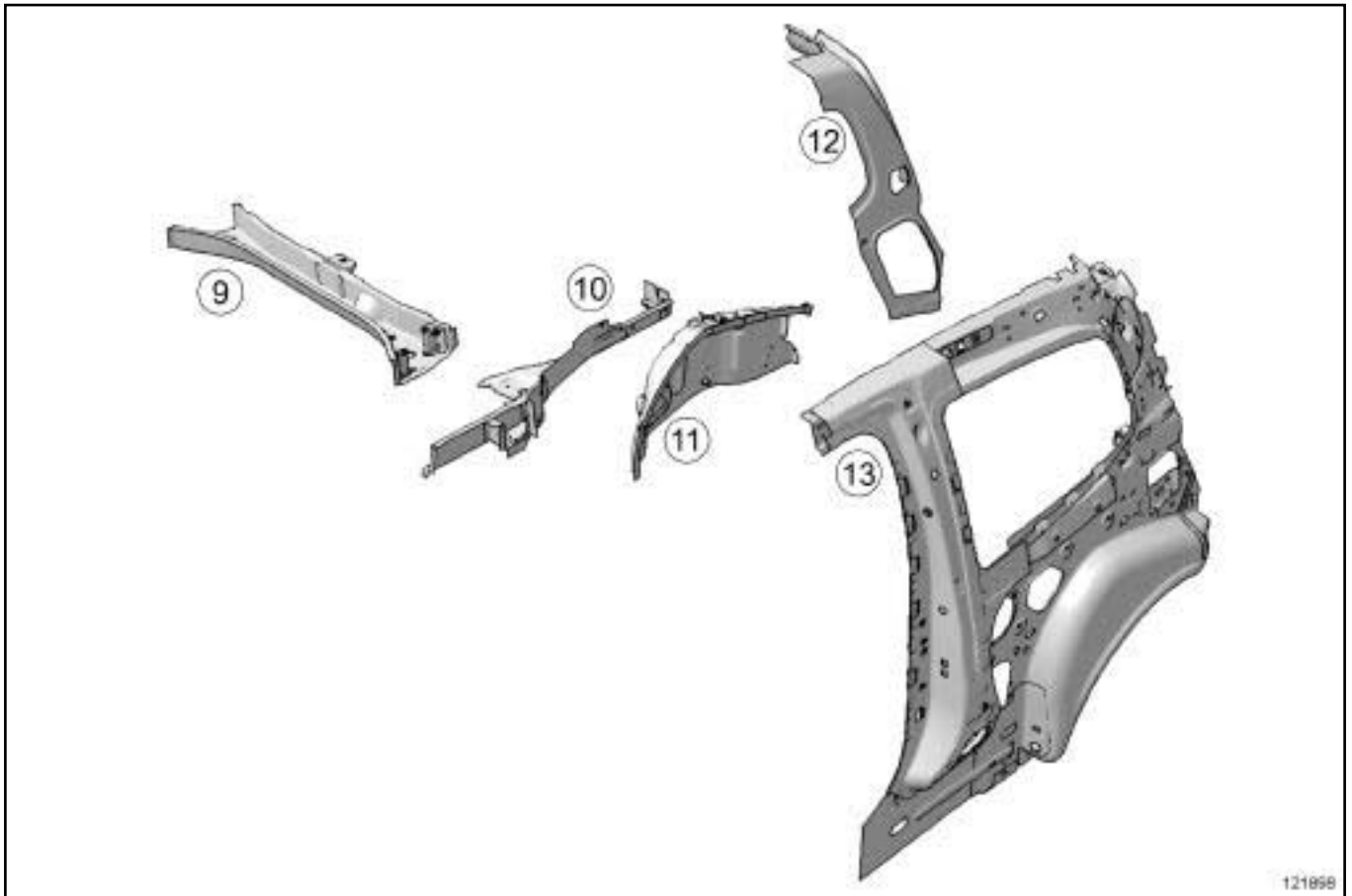
121897

121897

- (4) rear side member
- (5) rear floor
- (6) tow eye mounting
- (7) rear end panel lining
- (8) quarter panel lining

Vehicle involved in a rear impact: Description

3rd Degree



121898

121898

- (9) rear floor centre cross member
- (10) rear side member assembly
- (11) inner wheel arch
- (12) quarter panel upper rear reinforcement
- (13) quarter panel lining

Consumables for mechanical repair:

DEFINITION	PACKAGING	PART NUMBER
MECHANICAL SEALANTS		
SILICOR sealing paste	85 g tube	77 11 236 470
MASTIXO Joint face seal	100 g tube	77 11 236 172
BEARING SEALING KIT For crankshaft bearing cap side sealing	Kit	77 11 237 896
SILICONE ADHESIVE SEAL Engine and gearbox sealing paste	100 g cartridge	77 11 227 484
TRANSPARENT SEALING MASTIC	45 g tube	77 11 223 369
SILICOJOINT	90 g tube	77 11 236 469
LOCTITE ADHESIVE 597 Sealing paste for PXX gearboxes	Cartridge	77 11 219 705
RESIN ADHESIVE or SEALING RESIN Sealing resin for engine and gearbox covers	25 ml tube	77 11 237 640
EXHAUST MASTIC For exhaust pipe union seals	1.5 kg tin	77 01 421 161
LEAK DETECTOR	400 ml aerosol	77 11 236 176
ADHESIVES		
FRENETANCHE Sealing the threading at low and medium pressure	50 ml bottle	77 11 236 471
HIGH-STRENGTH THREADLOCK For locking bolts	50 ml bottle	77 11 230 112
SEALING RESIN For locking the bearings	50 ml bottle	77 11 236 472
LUBRICANT CLEANERS		
NÉTELEC Avoid bad contacts in electrical circuits	150 ml aerosol	77 11 225 871

CONSUMABLES - PRODUCTS

Vehicle: Parts and consumables for the repair

04B

INJECTOR CLEANER	355 ml container	77 11 224 188 or 77 11 225 539
CLOTH FOR INJECTION SYSTEM		77 11 211 707
SUPER RELEASING AGENT	500 ml aerosol	77 11 236 166
SUPER RELEASING AGENT	250 ml aerosol	77 11 420 439
SUPER CLEANER FOR JOINT FACES For cleaning joint faces	300 ml aerosol	77 11 238 181
SURFACE CLEANER	5 L container	77 01 404 178
SILICONE LUBRICANT	500 ml aerosol	77 11 236 168
SILICONE-FREE LUBRICANT	500 ml aerosol	77 11 236 167
BRAKE CLEANER	600 ml aerosol	77 11 422 413
	150 ml aerosol	77 11 422 414
BIO BRAKE CLEANER	750 ml spray bottle	77 11 427 217
AIR CONDITIONING CLEANER	250 ml aerosol	77 11 230 498
CARBURETTOR CLEANER	Aerosol	77 11 236 177
IXTAR ENGINE CLEANER	400 ml can	77 11 229 365
GREASE		
BR2+ GREASE For: - the lower arm bearings, - the anti-roll bar grooves, - the driveshaft splines.	1 kg pack	77 01 421 145
SILICONE GREASE For: - the tubular rear axle bushes, - the anti-roll bar bushes.	100 g tube	77 11 419 216
COPPER ANTI-SEIZE GREASE Grease for turbochargers (high temperature)	85 g tube	77 11 236 173
COPPER-ALUMINIUM LUBRICANT Grease for turbochargers (high temperature)	500 ml aerosol	77 11 236 169
GREASE For driveshaft seals	180 g sachets	77 11 420 011

CONSUMABLES - PRODUCTS

Vehicle: Parts and consumables for the repair

04B

WHITE GREASE For wheel sensors	400 ml aerosol	77 11 236 174
MULTIPURPOSE GREASE	500 ml aerosol	77 11 236 170
	250 ml aerosol	77 11 236 171
FLUORSTAR 2L Silicone-free electric sealing grease	100 g tube	82 00 168 855
LACQUER		
JELT ARGENT Varnish for repairing heated rear screens	5 g bottle	77 11 230 111
BRAKE		
DOT 4, ISO CLASS 6, RENAULT STANDARD: 03-50-006, For vehicles with and without electronic stability program (ESP)	0.5 L container	77 11 218 589
	5 L container	77 11 238 318
	25 L container	77 11 238 319
DOT 4, ISO CLASS 4, RENAULT STANDARD: 03-50-005 Authorised for vehicles without ESP	0.5 L container	77 11 172 381
	5 L container	77 01 395 503
	25 L container	77 11 171 926
DOT 4 Authorised for vehicles without ESP, without clutch with hydraulic tappet	0.5 L container	86 71 000 000
	5 L container	86 71 014 277
	25 L container	86 71 014 278
COOLING SYSTEM		
ANTIFREEZE (TYPE D)	1 L container	77 11 170 548
COOLANT (TYPE D)	1 L container	77 11 171 589
	2 L container	77 11 170 545
	5 L container	77 11 170 546
OIL		
ENGINE OIL	(see Engine oil: Specifications) (Technical Note 6013A, 04A, Lubricants)	
GEARBOX OIL	(see Manual gearbox oil: Specifications) (Technical Note 6012A, 04A, Lubricants)	
	(see Automatic gearbox oil: Specifications) (Technical Note 6012A, 04A, Lubricants)	
	(see Sequential gearbox oil: Specifications) (Technical Note 6012A, 04A, Lubricants)	

CONSUMABLES - PRODUCTS

Vehicle: Parts and consumables for the repair

04B

AXLE OIL	(see Rear axle oil: Specifications) (Technical Note 6012A, 04A, Lubri- cants)	
ELF RENAULT MATIC D2 Oil for power-assisted steering: Pump connected, pump assembly (except Laguna III)	2 L container	77 01 402 037
TOTAL POWER-ASSISTED STEERING FLUID Oil for power-assisted steering: Pump assembly (Laguna III)	1 L container	
PLANETELF PAG 488	250 ml container	77 11 172 668
SANDEN SP 10 Oil for air conditioning compressor		77 01 419 313
TYRES		
TYRE PASTE	1 kg pack	77 11 223 052
	5 kg pack	77 11 223 053
TYRE REPAIR AGENT	400 ml tube	77 11 221 296
	300 ml tube	77 11 222 802
BLANKING PLUG		
Engine type	Injection type	Part no.
F5R		77 01 206 382
F8Q		77 01 206 340
F9Q		77 01 208 229
G9T AND G9U		77 01 208 229
K9K	DELPHI	77 01 206 804
K9K	SIEMENS	77 01 476 857
M9R		77 01 209 062
P9X		77 01 474 730
ZD3		77 01 208 229
MISCELLANEOUS		
GREY ABRASIVE PAD		77 01 405 943

Consumables for bodywork repair:

HOLLOW SECTION WAX		
SPR CC	1 L container	77 11 172 672

CONSUMABLES - PRODUCTS

Vehicle: Parts and consumables for the repair

04B

SPR CC SPRAY	500 ml aerosol	77 11 211 654
STRUCTURAL ADHESIVE		
STRUCTURAL ADHESIVE	Kit =2 80 ml cartridges	77 11 219 885
HIGH PERFORMANCE STRUCTURAL ADHESIVE	1 195 ml cartridge	77 11 419 113
GLAZING PRODUCTS AND ADHESIVES		
MONOPAC EVOLUTION ADHESIVE KIT	310 ml cartridge	77 11 421 430
MONOPAC EVOLUTION ADDITIONAL CARTRIDGE + NOZZLE	310 ml cartridge	77 11 421 431
S-P KIT ADHESIVE KIT	310 ml cartridge	77 11 421 432
ADDITIONAL S-P KIT CARTRIDGE + NOZZLE	310 ml cartridge	77 11 421 433
BIPAC EVOLUTION ADHESIVE KIT	2 225 ml cartridges	77 11 421 434
LINT-FREE CLOTH	Box of 340 cloths	77 11 237 262
WINDOW SEALING MASTIC	310 ml cartridge	77 11 170 222
SPECIAL ADHESIVE FOR WINDOWS		77 11 425 759
ADHESION PROMOTER For bonding double-sided adhesive tape	Cloth	77 11 423 222
MISCELLANEOUS		
DOUBLE-SIDED ADHESIVE	18 mm wide	77 11 226 308
DOUBLE-SIDED ADHESIVE	8 mm wide	77 11 427 869
FRENETANCHE	50 ml bottle	77 11 236 471
ADHESIVE PATCH		82 00 043 181
ADHESIVE PAD		77 05 042 163
SEALS		
BLACK MJ PRO (Electroweldable)	310 ml cartridge	77 11 172 676
WHITE MJ PRO II (Electroweldable)	310 ml cartridge	77 11 426 951
PREFORMED SEALING MASTIC BEAD	2.6 m roll	77 01 423 330
BRUSH MASTIC	1 kg pack	77 11 228 113
FILLER MASTIC	60 beads Ø 6 mm by 0.3 m	77 11 170 230

GREASE		
WHITE GREASE	400 ml aerosol	77 11 236 174
OPENING ELEMENT MECHANISM GREASE	20 g sachets	77 11 419 865
SILICONE LUBRICANT	500 ml aerosol	77 11 236 168
SILICONE-FREE LUBRICANT	500 ml aerosol	77 11 236 167
SOUNDPROOFING		
SPR GREY EVOLUTION	1 l cartridge	77 11 419 114
SPR GREY EVOLUTION SPRAY	400 ml aerosol	77 11 419 116
SPR BLACK EVOLUTION II	1 l cartridge	77 11 419 115
SOUNDPROOFING PAD (3.5 Kg/m ²)	Pack of 10	77 01 423 546
SOUNDPROOFING PAD (6.5 Kg/m ²)	Pack of 5	77 01 423 269
POLISHING		
POLISHING LIQUID	1 L container	77 11 420 288
FINISHING LIQUID	1 L container	77 11 420 289
MASTIC		
Universal mastic		
GALAXI	2.5 kg pack	77 11 172 238
OPTIMAX	1.23 l cartridge	77 11 172 239
EXCELLENCE + For finishing plastic repair	960 g cartridge	77 11 423 539
	1 kg pack	77 11 423 540
Plugging mastic		
XFIBRE FIBREGLASS MASTIC	975 kg pack	77 11 172 235
STANDARD BASIX POLYESTER MASTIC	1.975 kg pack	77 11 172 234
ALUX ALUMINIUM MASTIC	975 kg pack	77 11 172 236
Sprayable mastic		
PIXTO SPRAYABLE POLYESTER MASTIC	1.5 kg tin	77 11 172 237
Finishing mastic		
IXTRA POLYESTER MASTIC	1.625 kg pack	77 11 172 233
Anti-grit mastic		

CONSUMABLES - PRODUCTS

Vehicle: Parts and consumables for the repair

04B

MAG PRO 1	310 ml cartridge	77 11 172 679
MAG PRO 3 (Dual component)	1.5 kg tin	77 11 218 364
SURFACE CLEANER		
HEPTANE	500 ml container	77 11 170 064
SOLVENT SURFACE CLEANER	5 L container	77 01 404 178
WATER-BASED SURFACE CLEANER	5 L container	77 11 421 337
ANTISTATIC THINNER (for plastic materials)	400 ml aerosol	77 01 408 493
COMPOSITE MATERIAL REPAIR BY BONDING		
PLASTIC REPAIR KIT		77 11 170 064
NOZZLE FOR PLASTIC REPAIR KIT		77 11 423 523
PLASTIC REPAIR CLEANER	1 L container	77 11 423 517
PLASTIC REPAIR PRIMER	150 ml bottle	77 11 423 518
PLASTIC REPAIR ADHESIVE	2 x 25 ml bicomponent cartridge	77 11 423 519
PLASTIC REPAIR CLOTH	90 m roller	77 11 423 520
PLASTIC REPAIR NOZZLES	12 nozzles	77 11 423 522
COMPOSITE MATERIAL REPAIR BY WELDING		
PLASTIC WELD REPAIR SET		77 11 425 742
PROTECTIVE STRIPS	Bag of 10 protective strips	77 11 425 744
STAINLESS STEEL MESH	Bag of 2 meshes	77 11 425 743
COOLER	400 ml aerosol	77 11 425 745
BRUSH	Box of 10 brushes	77 11 237 793
WINDOW MASKING TAPE		
10 MM WINDSCREEN TAPE		77 11 171 708
20 MM WINDSCREEN TAPE		77 11 171 709
PROTECTIVE WELDING		
ANTI-SPLASH SPRAY	400 ml aerosol	77 11 218 270
SPECIFIED UNDERCOAT		
PRE-TREATMENT PRIMER WITHOUT ZINC CHROMATE (I-Alpha) + THINNER	1 L container	77 11 420 027 (Primer)
		77 11 420 028 (Thinner)

CONSUMABLES - PRODUCTS

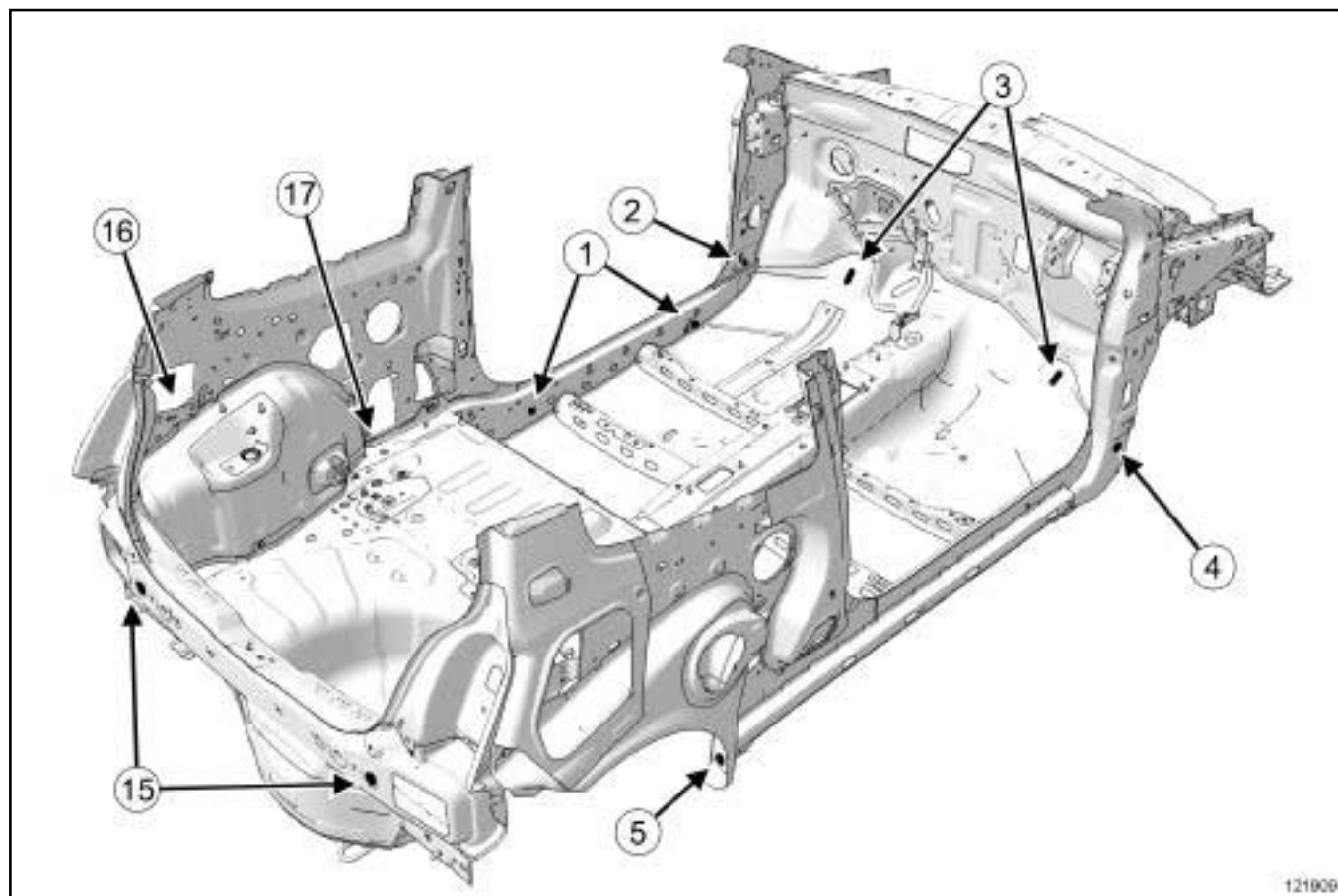
Vehicle: Parts and consumables for the repair

04B

I-PREMIA REACTIVE PRIMER (do not use on aluminium)	3.5 l container	77 11 239 243 (Primer)
		77 11 228 654 (Thinner)
I-PREMIA REACTIVE PRIMER (do not use on aluminium)	400 ml aerosol	77 11 419 416
ADHÉRA SPRAY (adhesion promoter for thermoplastics)	400 ml aerosol	77 11 423 734
PRIMARA BLACK (adhesion promoter/primer for thermoplastics)	1 L container	77 11 423 735
		77 11 171 514 (Activator)
PRIMARA (adhesion promoter/primer for thermoplastics)	1 L container	77 11 171 513
		77 11 171 514 (Activator)
UNDERCOAT		
LEVIA	3.5 l container	77 11 228 651
FORTIA	3.5 l container	77 11 228 650

Anti-corrosion protection product: Description

I - POINTS LOCATED INSIDE THE VEHICLE



121909

121909

Note:

Hollow body parts to be treated from inside the vehicle must be treated after painting and before retrimming.

Side impact:

- replacing or repairing the sill panel:

- protection of the join between the inner sill panel and the sill panel reinforcement: injection of wax into points (1) and (2) ,
- protection of the join between the sill panel and the sill panel closure: injection of wax into points (4) and (5) .

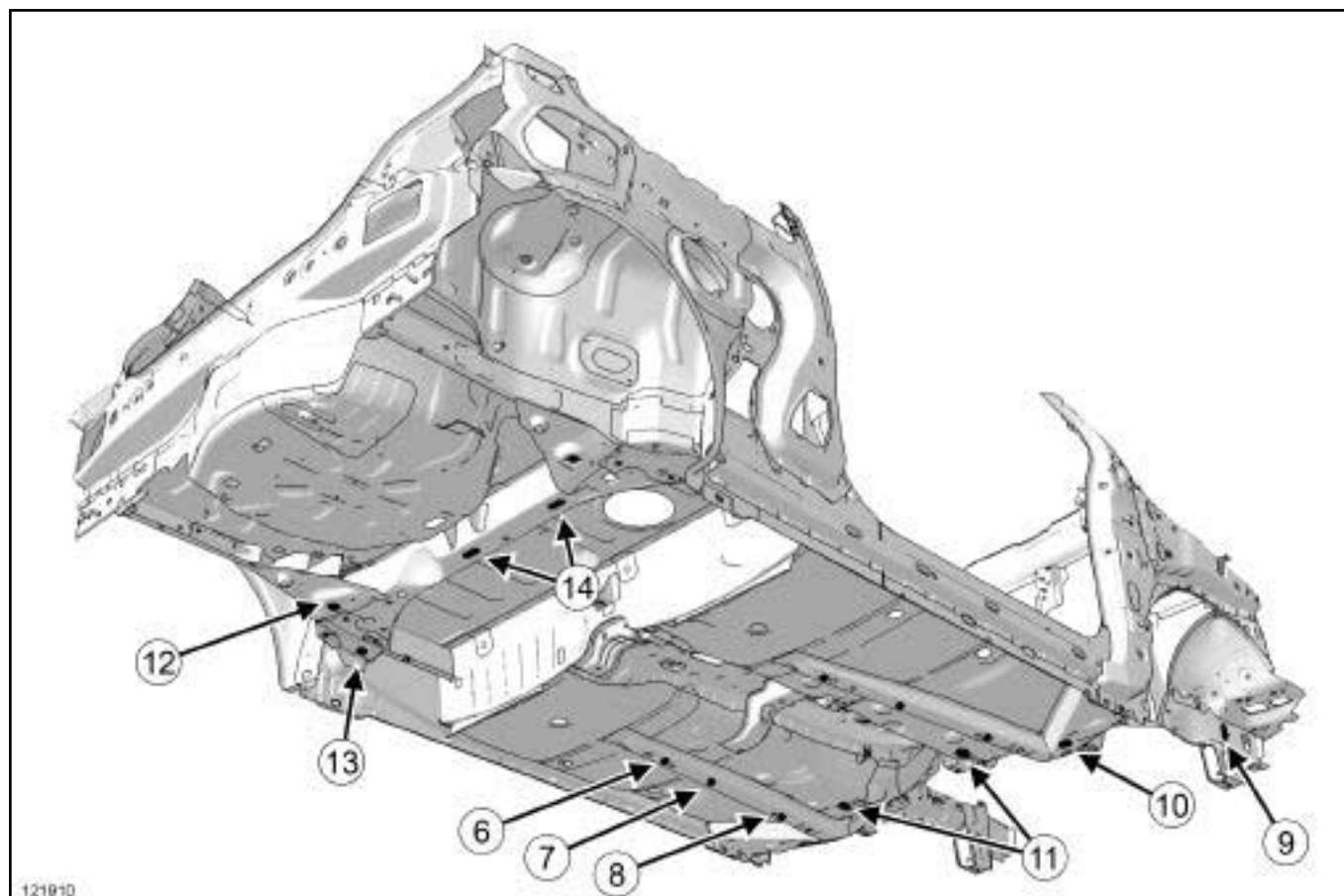
- replacing the quarter panel lining:

- injection of wax into points (6) and (7) .

- replacing the centre side member beneath the floor:

- injection of wax into points (6) , (8) and (7) .

II - POINTS BENEATH THE VEHICLE



121910

Note:

Blanking pieces are fitted to the injection points located beneath the vehicle. When any work is carried out on the vehicle, plug all the points used for injection. Replace any damaged or deformed blanking pieces with new ones.

Frontal impact:

- replacing or repairing the front side member, the front side member closure panel and the front sub-frame mounting unit:

- injection of wax into points **(3)** and **(9)** .

- replacing the front side cross member or the front half unit:

- injection of wax into points **(10)** and **(11)** .

Rear impact:

- replacing the complete rear side member:

- injection of wax into points **(12)** and **(13)** .

- Replacement of the rear end panel:

- injection of wax into point **(15)** .

- replacing the rear floor centre cross member:

- injection of wax into points **(13)** and **(14)** .

III - PRODUCTS AND EQUIPMENT FOR TREATING HOLLOW SECTIONS

The products and equipment required for carrying out this work are available from the **Parts Department**.

« PAC1, PAC2 » kit



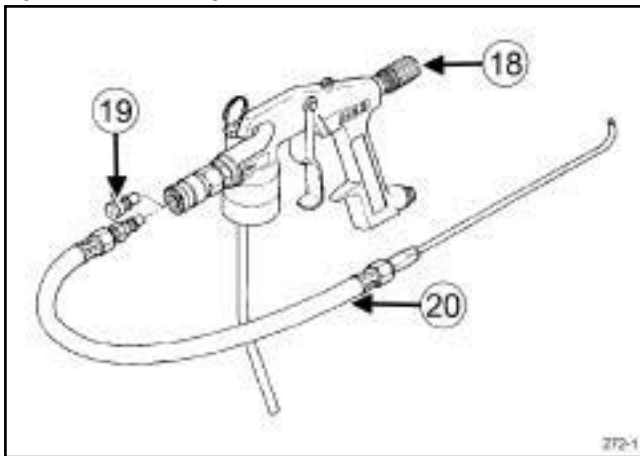
272-2

The hollow body parts of the structure of the vehicle are protected in the factory by injecting hot wax. To guarantee equivalent protection after repair, inject one after the other the two complementary products which make up a « PAC1, PAC2 » kit.

After injection, all the orifices must be covered using blanking covers moulded to fit each one.

The necessary information concerning blanking covers can be found in the **Parts Catalogue** for the vehicle.

Injector assembly



272-1

- (18) Wax flow control
- (19) Quick-release union end piece
- (20) Interchangeable injection hose

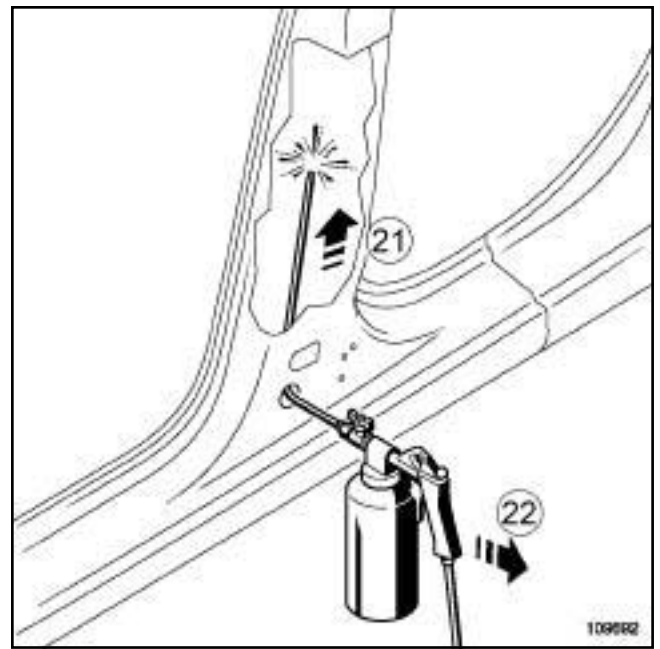
Protective wax



272

The subframe under the floor is protected with a special wax.

IV - OPERATING PROCEDURE FOR TREATING HOLLOW SECTIONS



109692

Insert the nozzle tip until it reaches the end of the hollow section (21) .

Inject the wax whilst retracting the nozzle tip (22) .

TWINGO

1 Engine and peripherals

86D

MULTIMEDIA CONNECTION UNIT

BICVdiag No.: 14

Fault finding – Introduction	86D - 2
Fault finding – List and location of components	86D - 8
Fault finding – Role of components	86D - 12
Fault finding – Function	86D - 13
Fault finding – Configurations	86D - 14
Fault finding – Programming	86D - 15
Fault finding – Replacement of components	86D - 16
Fault finding – Fault summary table	86D - 17
Fault finding – Interpretation of faults	86D - 18
Fault finding – Conformity check	86D - 28
Fault finding – Status summary table	86D - 32
Fault finding – Interpretation of statuses	86D - 33
Fault finding – Parameter summary table	86D - 37
Fault finding – Command summary table	86D - 38
Fault finding – Customer complaints	86D - 39
Fault finding – Fault Finding Chart	86D - 40

V1

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

Vehicle(s): **CLIO III and NEW TWINGO**

Function concerned: **MULTIMEDIA CONNECTION UNIT**

Computer name: **MULTIMEDIA CONNECTION UNIT**

Vdiag No.: **14**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

Wiring Diagrams:

- Visu-Schéma.

Type of diagnostic tools

- **CLIP**

Special tooling required

Special tooling required
Diagnostic tool
Multimeter
Elé. 1681 Universal bornier

3. REMINDERS

Fault finding procedure

To run fault finding on the vehicle computers, switch on the ignition.

Depending on the type of vehicle equipment, proceed as follows:

For vehicles with key/radio frequency remote control, use the key to switch on the ignition.

For vehicles with Renault cards,

- with the vehicle card in the card reader,
- press and hold the start button (longer than **5 seconds**) with start-up conditions not fulfilled, connect the **diagnostic tool** and perform the required operations.

To cut off + after ignition feed, proceed as follows:

For vehicles with key/radiofrequency remote control, use the key to switch off the ignition.

For vehicles with Renault cards,

Press the Start button twice briefly (less than **3 seconds**),
Ensure that the + after ignition feed has been cut off by checking that the computer warning lights on the instrument panel have gone out.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used after the **+ after ignition feed** has been switched on (without any of the system components being activated).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **Notes** section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the resistance of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check the data that does not display a fault on the **diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

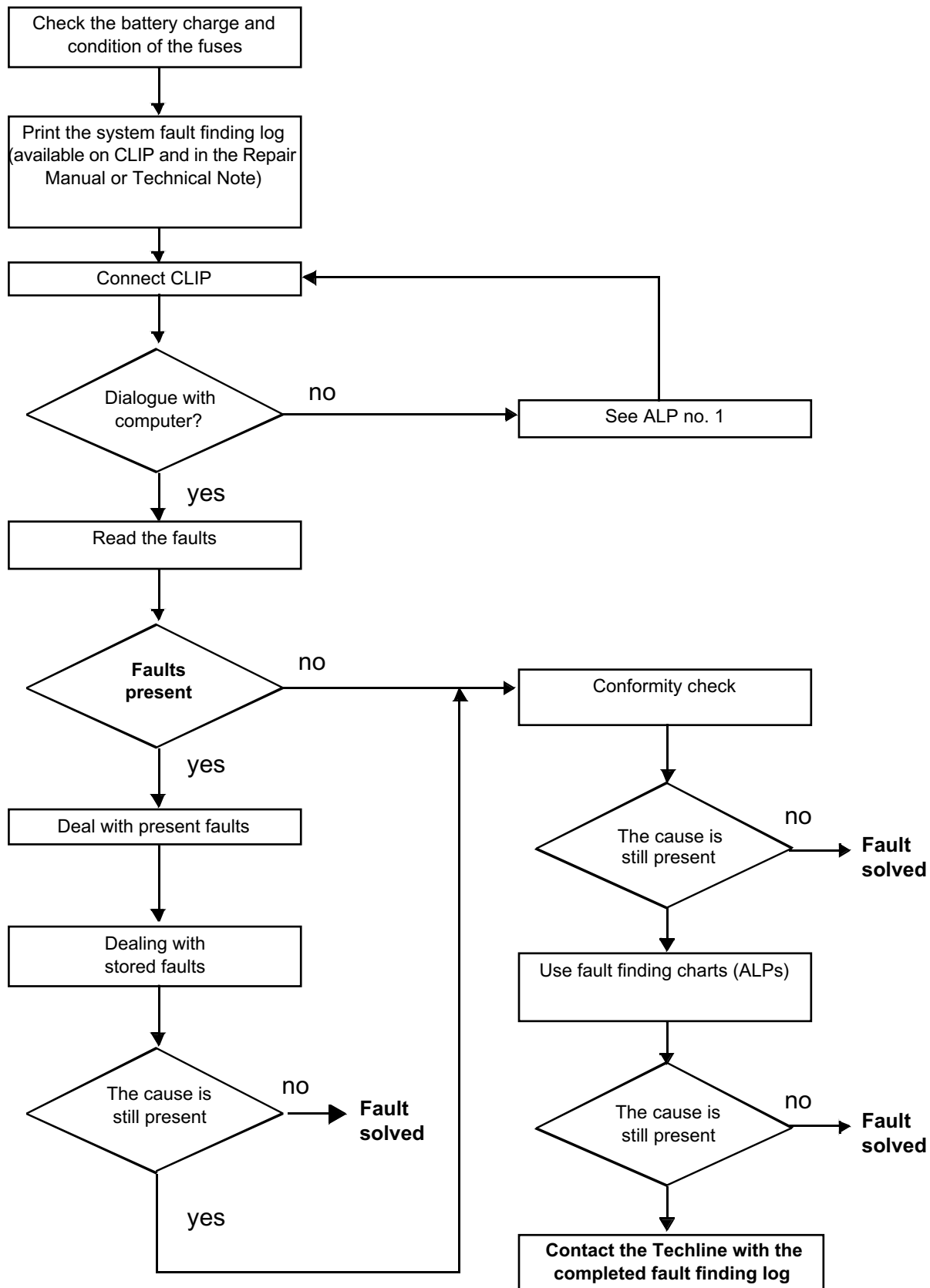
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **Customer Complaints**.

A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (continued)

4.1. Wiring check

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection

Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Physical inspection

While manipulating the wiring harness, use the **diagnostic tool** to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Checking earth insulation

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value should be 0 V.

Checking insulation against + 12 V or + 5 V

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

Continuity check

A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result must be between: $0 \Omega < X < 2 \Omega$ for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value must be between: $0 \Omega < X < 2 \Omega$.

Checking the supply

This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load)

4.2. Connector check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connection:

- Connector/Connector.
- Connector/Device.

1. Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

2. Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

3. Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

4. Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB).

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is gently pulled.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
- For unit seals (1 for each wire), check that the unit seals are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
- For a grommet seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
- For gel seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
- For hotmelt sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring**.

5. FAULT FINDING LOG



IMPORTANT!

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE COMPULSORY TO COMPLETE A FAULT FINDING LOG
EACH TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS
DEPARTMENT.**

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

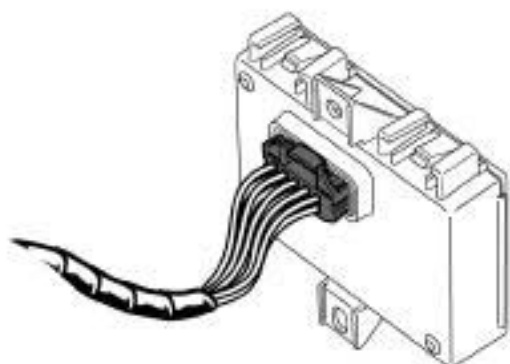
- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

Clio III

Multimedia connection unit



Connections of the multimedia connection unit



Display in the passenger compartment



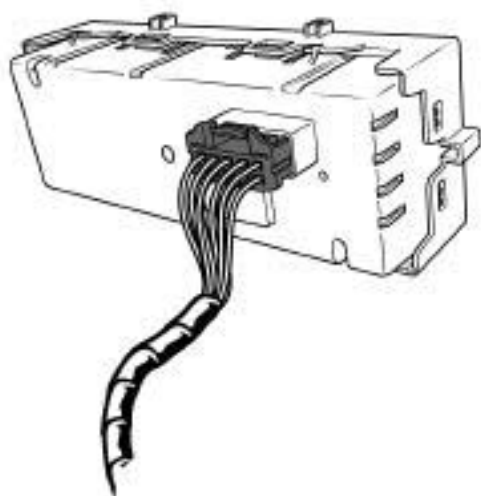
A2 display



A3 display

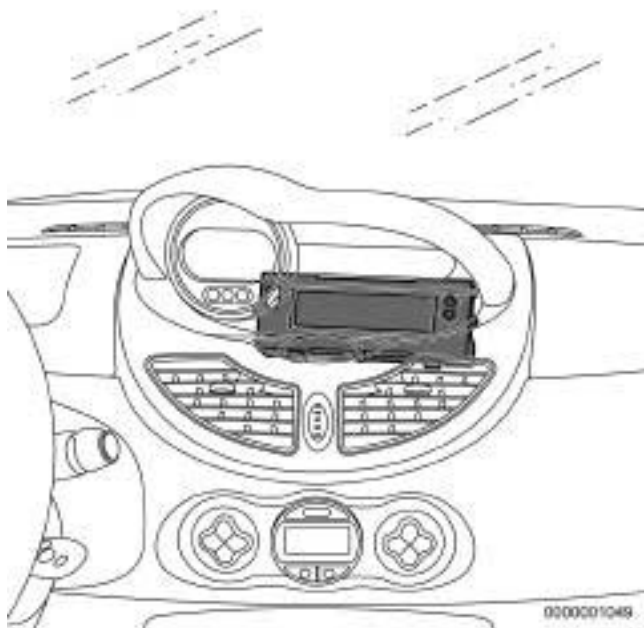


Rear view of the display

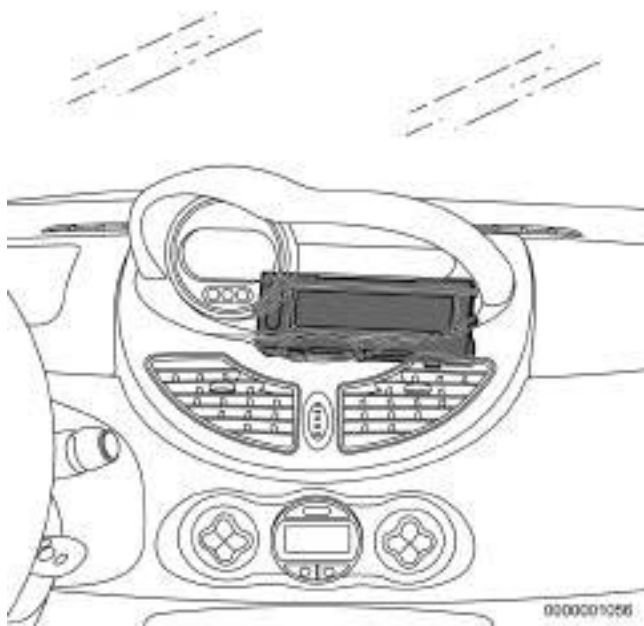


For New Twingo

A2 display



A3 display



Role of main components

- Multimedia network interface unit: enables information to be exchanged between the “vehicle” and “multimedia” multiplex networks.

The multimedia network interface unit is integrated into the display computer on vehicles not equipped with a navigation system.

If the vehicle is equipped with a navigation system, the multimedia network interface unit is a computer which is independent of the display: the multimedia connection unit, located behind the glovebox on the passenger side.

The multimedia connection unit (Display or Multimedia connection unit) receives various signals from the vehicle CAN (speed, status of exterior lights) and retransmits them for the radio via the Multimedia CAN.

The multimedia connection unit (Display or Multimedia connection unit) transmits the activation signal to the radio and to the other computers participating in the multimedia function when the user switches on the radio or starts the vehicle.

The multimedia connection unit is involved in the radio anti-theft protection system.

The protection is based on an identifier, the "Vehicle ID", sent on the CAN-V by the instrument panel computer. The multimedia connection unit reads the "Vehicle ID" on the CAN-V and sends it to the CAN-M for the multimedia type computers.

The multimedia connection unit allows the optimum configuration of the sound volume according to the vehicle speed.

- Display: displays various multimedia system data such as the station selected, time, CD listing and satellite guidance information.
- Radio control satellite: allows the different functions of the multimedia system to be accessed through the radio control satellite.
- Radio/navigation computer: manages the various multimedia system functions according to user requests and transmits audio data to the vehicle via the speakers.

General operation

The multimedia system is involved in the following functions:

- Radio reception (AM, FM).
- Playing CDs/MP3 CDs/navigation map.
- Guidance and navigation system with colour screen.
- Bluetooth hands-free phone.

The use of this multimedia system allows the customer:

- To select radio stations by using the preselections, the list or manual selection.
- To have an automatically-updated radio list.
- To listen to CDs or MP3 CDs.
- To control the radio using the radio control satellite.
- To change various acoustic parameters (bass, treble, fader, etc.).
- To navigate on a colour screen (visual and audio guidance): for this function the system uses GPS, the vehicle speed wire information and an internal gyroscope.
- To receive traffic information via RDS-TMC and to display it on the navigation map.
- To display the time and temperature on the screen.
- To use the hands-free phone function (sound relayed to the radio speakers) with a Bluetooth phone.
- To be protected by an immobiliser code.

CF007: Vehicle configuration (Carry out this configuration only if the vehicle is not equipped with a Navigation system).

This command is used to configure the computer according to the vehicle equipment.

After having performed **CF007**, perform **CF012 Lighting**.

CF008: Radio

This command is used to configure the computer according to the vehicle equipment.

Reread the configuration **LC004 Radio** in the **Read configuration** menu to confirm that the change was correctly accepted.

CF009: Navigation (Only for **Clio III**).

This command is used to configure the computer according to the Navigation equipment of the vehicle.

Only use this command on a vehicle equipped with navigation.

CF012: Lighting (Carry out this configuration only if the vehicle is not equipped with a Navigation system)

This command, on **New Twingo**, is used to configure the luminosity level of the display screen by selecting the type of radio.

This command, on **Clio III**, is used to configure the luminosity level of the display screen by selecting the type of radio, and to confirm the option with or without dimmer.

NOTE: The two types of radio can be distinguished as follows: radio R02 has a telephone button, radio R01 does not.

VP001: "Write VIN"

This command permits manual entry of the vehicle's VIN into the computer. Use this command each time the computer is replaced. The VIN number is inscribed on the manufacturer's plate.

Procedure for writing the VIN

- Establish dialogue with the computer of the multimedia connection unit
- Select the **Repair mode** menu.
- Select the **Other parameters** menu.
- Select line **VP001 Write VIN**.
- Enter the VIN.
- Exit fault finding mode.
- Switch off the ignition.
- Wait **5 seconds**.
- Reread the VIN in the Identification menu for confirmation (**ID008 VIN code**).

SC002: Vehicle identifier (Only for New Twingo)

This command is used to obtain the vehicle identifier. The **SC002** is used to read the "Vehicle ID" entered in the instrument panel computer and to enter it in the multimedia connection unit and in the display. The vehicle identifier is contained in this "Vehicle ID".

This command is to be used each time the computer is replaced. The radio will be locked if it does not read a correct vehicle identifier.

For information on removing and refitting the multimedia connection unit of the multimedia network, refer to the repair manual for the vehicle concerned:

If the vehicle is equipped with a Navigation computer (Only on **Clio III**):

See **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**.

If the vehicle is not equipped with a Navigation computer:

Clio III: See **MR 392, Mechanical, 86A, Radio, Display: Removal - Refitting**.

New Twingo: See **MR 411, Mechanical, 86A, Radio, Display: Removal - Refitting**.

Operations to be carried out before replacing the multimedia network interface unit:

Note:

If the radio and the multimedia connection unit (BIC) are replaced simultaneously, the multimedia connection unit must be configured first (see Configurations and Programming).

- 1- Before replacing the multimedia connection unit (with Techline approval), read the faults and carry out a conformity check to check that it is actually defective.
- 2- After obtaining Techline approval, remove the multimedia connection unit, with the ignition off (**wait 1 minute for the system to shut down completely**).
The multimedia network interface units available from the Parts Department are supplied unconfigured.

Operations to be carried out after replacing the multimedia connection unit:

- Connect **the diagnostic tool** and switch on the system, then establish dialogue with the computer.
- **Configure the multimedia connection unit** (see **Configurations and Programming**).
- Configure the computer using command **CF007 Vehicle configuration, then perform CF012 Lighting**. Only carry out these configurations on vehicles not equipped with a Navigation system. (see **Configurations**).
- If a radio is present, configure the computer using command **CF008 Radio** (see **Configurations**).
- If a Navigation system is present, configure the computer using command **CF009 Navigation** (see **Configurations**).
- Enter the VIN code using command **VP001 Write VIN** (see **Programming**).
- Check that there are no faults and that the multimedia system is operating correctly.

Tool fault	Associated DTC	Diagnostic tool title
DF001	9341	Computer configuration
DF002	9344	Computer
DF003	93E3	Screen
DF005	9303	Supply
DF006	9309	Activation signal
DF007	934C	Computer
DF008	934D	Computer
DF011	9331	External temperature sensor circuit

**DF001
PRESENT
OR
STORED**

COMPUTER CONFIGURATION
1.DEF: Blank or incomplete configuration

NOTES

Conditions for applying fault finding procedures to stored faults:
The fault is declared **present** after the multimedia system has been switched on.

Configure the system (see **Configurations and programming**).

If the fault is still present, contact your Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults using command **RZ001 Fault memory**.
Deal with any other faults.

**DF002
PRESENT
OR
STORED**COMPUTER

1.DEF: Internal electronic fault

NOTES**Conditions for applying fault finding procedures to stored faults:**The fault is declared **present** after the multimedia system has been switched on.

If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact your Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults using command **RZ001 Fault memory**.
Deal with any other faults.

DF003 PRESENT OR STORED	<u>SCREEN</u> DEF: No communication with display
NOTES	Conditions for applying fault finding procedures to stored faults: The fault is declared present after the multimedia system has been switched on.
	If the fault is present, the display does not operate.
If the vehicle is equipped with a Navigation computer (only on Clio III), replace the multimedia connection unit (see MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting). If the vehicle is not equipped with a Navigation computer, replace the display (see MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting). If the fault persists, contact your Techline.	

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults using command RZ001 Fault memory . Deal with any other faults.

DF005 PRESENT OR STORED	<u>SUPPLY</u> 1.DEF: Excess voltage 2.DEF: Undervoltage

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is declared present after the multimedia system has been switched on.
	Special notes: The undervoltage fault appears if the computer feed voltage is less than or equal to 7.5 V for at least 1 second . The overvoltage fault appears if the computer feed voltage is greater than or equal to 18.5 V for at least 1 second .
	Use the Wiring Diagrams Technical Note for Clio III or New Twingo . For a vehicle equipped with a Navigation computer, use component 1714 , Multimedia connection unit, for fault finding on the Multimedia interface unit. Otherwise use component 653 , display computer.

1.DEF	NOTES	None.

Check the battery and perform an alternator supply test (see **16A, Starting, Charging**).

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults using command RZ001 Fault memory . Deal with any other faults.

DF005 CONTINUED	

2.DEF	NOTES	None.

Remove the card from the reader or the key from the ignition, then check the condition of the battery.
Check the battery: leaks, incorrectly fitted, loosened battery terminal, and corrosion.
Check the earth connections of the vehicle: battery/chassis, engine/chassis, starter/engine, alternator/engine, gearbox/chassis.
If the fault is detected, resolve the abnormal contact fault.

Check the battery and perform an alternator supply test (see **16A, Starting, Charging**).

Check the condition of fuse **F48 (15 A)** for **New Twingo** or fuses **F14 (5 A)**, **F2 (20 A)**, and unit fuse **710 (15 A)** for **Clio III**.

Check the **connection and condition** of the connectors of the display computer, component code **653** or of the multimedia connection unit computer, component code **1714**, depending on the vehicle equipment.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the computer connector and check the conformity of the following connections:

- **BCP4** between components **260** and **653** or **1714**,
- **BPT** between components **645** and **653** or **1714**,
- **BPT3** between components **260** and **653** or **1714**,
- **NAM** between component **653** or **1714** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults using command RZ001 Fault memory . Deal with any other faults.

DF006 PRESENT OR STORED	<u>ACTIVATION SIGNAL</u> CO : Open circuit CC.0: Short circuit to earth CC.1: Short circuit to + 12 V

NOTES	Fault finding procedure application conditions: The fault is declared present after: The + after ignition feed is activated, then the multimedia system was switched on using the on/off button. The fault is declared stored after the vehicle is completely shut off (1 minute after locking).
	If the fault is present , the multimedia functions do not operate.
	For a vehicle equipped with a Navigation computer, use component 1714 , Multimedia connection unit, for fault finding on the Multimedia interface unit. Otherwise use component 653 , display computer.
	Use the Wiring Diagrams Technical Note for Clio III or New Twingo .

For a vehicle equipped with a Navigation system:

Check the connectors of the multimedia connection unit, component code **1714**, of the radio, component code **261**, of the mobile connectivity computer, component code **1959** (depending on equipment), and of the navigation computer, component code **662**.

For a vehicle not equipped with a Navigation system:

Check the connectors of the display, component code **653**, of the radio, component code **261**, and of the mobile connectivity computer, component code **1959** (depending on equipment).

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults using command RZ001 Fault memory . Deal with any other faults.

**DF006
CONTINUED**

Check the **insulation to earth and to +12 V, the continuity, and the absence of interference resistance** of the following connection:

For a vehicle equipped with a Navigation system:

- **34HU** between components **1714** and components **261, 662**, and, depending on equipment, **1959**.

For a vehicle not equipped with a Navigation system:

- **34HU** between components **653** and components **261** and, depending on equipment, **1959**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact your Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults using command **RZ001 Fault memory**.
Deal with any other faults.

**DF007
PRESENT
OR
STORED**COMPUTER

1.DEF: Internal electronic fault

NOTES

If the fault is **present**, the multimedia function is locked and no computer (radio, radio control satellite, etc.) operates.

If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact your Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults using command **RZ001 Fault memory**.
Deal with any other faults.

**DF008
PRESENT
OR
STORED**COMPUTER

1.DEF: Internal electronic fault

NOTES

If the fault is **present**, the multimedia function is locked and no computer (radio, radio control satellite, etc.) operates.

If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault persists, contact your Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults using command **RZ001 Fault memory**.
Deal with any other faults.

**DF011
PRESENT
OR
STORED**

EXTERNAL TEMPERATURE SENSOR CIRCUIT

CC.0: Short circuit to earth

CC.1: Open circuit or short circuit to +12 V

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared **present** after the ignition is switched off and back on.

Configure the system using **CF007 Vehicle configuration** followed by **CF012 Lighting configuration** (See **Configurations and programming**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.

Clear the stored faults using command **RZ001 Fault memory**.

Deal with any other faults.

NOTES

Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.

Application conditions: Engine stopped, ignition on, and the radio switched on.

MAIN SCREEN

Function	Parameter or status checked or action	Display and notes	Fault finding
Side lights	ET004: +12 V Side lights	INACTIVE INVALID OFF ON	In the event of an inconsistency, run fault finding on the UCH (see 87B, Passenger compartment connection unit).

NOTES

Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.

Application conditions: Engine stopped, ignition on, and the radio switched on.

FUNCTION: MULTIMEDIA**SUB-FUNCTION: USER SELECTION**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Button	ET002: Radio on/off button	INACTIVE ACTIVE This status remains active until the ignition is switched off.	In the event of an inconsistency, run fault finding on the radio (see 86A, Radio)
Battery voltage	PR002: Battery voltage	12 V < X < 15 V	In the event of an inconsistency, consult the interpretation of fault DF005 Supply .
Vehicle speed	PR003: Vehicle speed	Indicates the vehicle speed in mph (km/h).	In the event of an inconsistency, run fault finding on the ABS (see 38C, Anti-lock braking system).
External temperature	PR004 External temperature	-40°C < X < 60°C	In the event of an inconsistency, run fault finding on the UCH (see 87B, Passenger compartment connection unit).
System activation	AC002: On - Off Button	Used to simulate the On - Off Button of the radio	In the event of an inconsistency, consult the interpretation of fault DF006 Activation signal and run fault finding on the radio (see 86A, Radio).

NOTES

Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.

Application conditions: Engine stopped, ignition on, and the radio switched on.

FUNCTION: MULTIMEDIA (CONTINUED)**SUB-FUNCTION: USER SELECTION**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Button	ET009: Repeat button (only on Clio III)	PRESSED RELEASED	In the event of an inconsistency, consult the interpretation of status ET009 .
	ET020: Mute button		In the event of an inconsistency, consult the interpretation of status ET020 .
	ET011: + button		In the event of an inconsistency, consult the interpretation of status ET011 .
	ET012: - button		In the event of an inconsistency, consult the interpretation of status ET012 .
	ET023: Source button		In the event of an inconsistency, consult the interpretation of status ET023 .
	ET024: Mode button		In the event of an inconsistency, consult the interpretation of status ET024 .
	ET025: Telephone button		In the event of an inconsistency, consult the interpretation of status ET025 .
Wheel action	ET017: Wheel action	UPWARDS DOWNWARDS INACTIVE	In the event of an inconsistency, consult the interpretation of status ET017 .

NOTES

Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.

Application conditions: Engine stopped, ignition on, and the radio switched on.

FUNCTION: MULTIMEDIA**SUB-FUNCTION: DISPLAY**

Function	Parameter or status Checked or action	Display and notes	Fault finding
Display	AC001: Display test	This command is used to test the liquid crystal screen of the display.	None
Lighting	ET004: +12 V Side lights	OFF ON INVALID INACTIVE	In the event of an inconsistency, run fault finding on the UCH (see 87B, Passenger compartment connection unit).
	ET007: Brightness	PANEL GAP NIGHT	In the event of an inconsistency, consult the interpretation of ALP 4 Lighting does not change when the vehicle lights are switched on.

Tool status	Diagnostic tool title
ET002	Radio on/off button
ET004	+12 V Side lights
ET007	Brightness
ET009	Repeat button (only on Clio III)
ET011	+ button
ET012	- button
ET017	Wheel action
ET020	Mute button
ET023	Source button
ET024	Mode button
ET055	Telephone button

ET009 ET011 ET012 ET020 ET023 ET024 ET025	<u>REPEAT BUTTON</u> <u>+ BUTTON</u> <u>- BUTTON</u> <u>MUTE BUTTON</u> <u>SOURCE BUTTON</u> <u>MODE BUTTON</u> <u>TELEPHONE BUTTON</u>

STATUS DEFINITION	PRESSED: This means that the button is pressed. RELEASED: This means that the button is released.

NOTES	There must be no present or stored faults.
	Note: ET009 Repeat button is not present on the New Twingo .
	For a vehicle equipped with a Navigation computer, use component 1714 , Multimedia connection unit, for fault finding on the Multimedia interface unit. Otherwise use component 653 , display computer.
	Use the Wiring Diagrams Technical Note for Clio III or New Twingo .

Check the condition and connection:

- of the radio control satellite connector, component code **1519** (for **Clio III**) or component code **325** (for **New Twingo**).
- of the display connector, component code 653, or the multimedia connection unit connector, component code **1714**, depending on the vehicle equipment.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start.

ET009
ET011
ET012
ET020
ET023
ET024
ET025
CONTINUED

Using the universal bornier, check the **insulation, continuity and the absence of interference resistance** on the following connections:

- **34AT** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AR** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AS** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AQ** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AU** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AP** between components **1519 (or 325)** and **653 (or 1714)**.
- **34AO** between components **1519 and 653 (or 1714)** (only for **Clio III**).

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise change the wiring.

Replace the radio control satellite (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Radio satellite control: Removal - Refitting**).

If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.

ET017	<u>WHEEL ACTION</u>

STATUS DEFINITION	Downwards: This means that the wheel is turned downwards. Upwards: This means that the wheel is turned upwards. Inactive: This means that there is no action on the wheel.

NOTES	There must be no present or stored faults.
	For a vehicle equipped with a Navigation computer, use component 1714 , Multimedia connection unit, for fault finding on the Multimedia interface unit. Otherwise use component 653 , display computer.
	Use the Wiring Diagrams Technical Note for Clio III or New Twingo .

Check the condition and connection:

- of the radio control satellite connector, component code **1519** (for **Clio III**) or component code **325** (for **New Twingo**).
- of the display connector, component code **653**, or the multimedia connection unit connector, component code **1714**, depending on the vehicle equipment.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Using the universal bornier, check the insulation, continuity and the absence of interference resistance on the following connections:

- **34AT** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AR** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AS** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AQ** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AU** between components **1519 (or 325)** and **653 (or 1714)**,
- **34AP** between components **1519 (or 325)** and **653 (or 1714)**.
- **34AO** between components **1519 and 653 (or 1714)** (only for **Clio III**).

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise change the wiring.

AFTER REPAIR	Repeat the conformity check from the start.

**ET017
CONTINUED**

Replace the radio control satellite (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Radio satellite control: Removal - Refitting**).

If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.

MULTIMEDIA CONNECTION UNIT

Fault finding – Parameter summary table

86D

Tool Parameter	Diagnostic tool title
PR002	Battery voltage
PR003	Vehicle speed
PR004	External temperature

Tool command	Diagnostic tool title	Description
RZ001:	Fault memory	This command is used for clearing the stored faults from the computer.
AC001:	Display test	This command is used to test the liquid crystal screen of the display.
AC002:	On/Off Button	This command is used to simulate the pressing of the On/Off button of the radio.

NOTES	Only refer to the customer complaints after performing a complete check using the diagnostic tool.

NO DIALOGUE WITH THE COMPUTER	ALP 1
THE RADIO CONTROL SATELLITE DOES NOT OPERATE OR OPERATES POORLY	ALP 2
THE VOLUME DOES NOT INCREASE WITH THE VEHICLE SPEED	ALP 3
THE RADIO AND/OR THE DISPLAY REMAINS LIT FOR 1 MINUTE AFTER LOCKING THE VEHICLE (ON NEW TWINGO ONLY)	ALP 4

ALP 1

No dialogue with the computer

NOTES

For a vehicle equipped with a Navigation computer, use component **1714**, Multimedia connection unit, for fault finding on the Multimedia interface unit.
Otherwise use component **653**, display computer.

Use the **Wiring Diagrams Technical Note for Clio III or New Twingo**.

Try to establish dialogue with a computer on another vehicle to check that **the diagnostic tool** is not faulty. If the **diagnostic tool** is not causing the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting the fault finding line.
Use a process of successive disconnections to locate this computer.
Check the battery voltage, component code **107**, and perform the necessary operations to obtain the correct voltage (**12 V < X < 15 V**).



Check the presence and condition of the computer supply fuses:

- for **New Twingo**: **F48 (15 A)**,
- for **Clio III**: **F14 (5 A)**, **F2 (20 A)** and **unit fuse 710 (15 A)**.

Check the connection of the display connector, component code **653**, or the multimedia connection unit connector, component code **1714**, and the condition of its connections.

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that the computer is correctly supplied by checking the following connections:

- **BCP4** between components **260** and **653** or **1714**,
- **BPT** between components **645** and **653** or **1714**,
- **BPT3** between components **260** and **653** or **1714**,
- **NAM** between component **653** or **1714** and **earth**.

If the connection(s) is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**A**

AFTER REPAIR

When communication is established, deal with any faults indicated.

ALP 1
CONTINUED

A

Check that the diagnostic socket, component code **225**, is correctly supplied on the following connections:

- for **New Twingo**:
 - **BP19** between components **225** and **1016 (+ before ignition feed)**,
 - **NAM** and **MAN** (left-hand drive) or **MAM** (right-hand drive) of component **225**.
- for **Clio III**:
 - **BP32** between components **225** and **260 (+ before ignition feed)**,
 - **NAM** and **MK** of component **225**.

Check **the continuity** and **insulation** of the following connections:

- **107W** and **107X** between components **225** and **653** or **1714**,
- **133B** and **133C** between components **225** and **653** or **1714**.

If the connection(s) is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue is still not established after these various checks, replace the computer, component code **653** (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting** or **1714** (see **MR 392 (Clio III), Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the fault is still present, contact Techline.

AFTER REPAIR

When communication is established, deal with any faults indicated.

ALP 2

The radio control satellite does not operate or operates poorly

NOTES

For a vehicle equipped with a Navigation computer, use component **1714**, Multimedia connection unit, for fault finding on the Multimedia interface unit.
Otherwise use component **653**, display computer.

Use the **Wiring Diagrams Technical Note for Clio III or New Twingo**.

Does the display operate?

NO →

See **ALP1** No dialogue with the computer.YES
↓

Check the **statuses** of the radio control satellite (see
Conformity check)

Are the checks correct?

YES →

Contact the Techline.

NO
↓

A

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any faults.

ALP 2
CONTINUED 1

Check the **condition** and the **connection** of the satellite control connector, component code **325 (New Twingo)** or **1519 (Clio III)**.

If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

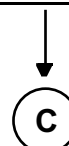
Check the **continuity, insulation** and the **absence of interference resistance** on the following connections:

- **34AT**, between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AR**, between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AS**, between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AQ**, between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AU**, between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AP** between components **653** or **1714** and **325 (New Twingo)** or **1519 (Clio III)**,
- **34AO** between components **653** or **1714** and **1519 (Clio III only)**.

Are the checks correct?

NO →

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.



AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any faults.

ALP 2 CONTINUED 2

B
YES
↓

Replace the radio control satellite, component code **325** (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Radio satellite control: Removal - Refitting**).



If the fault is still present:
If the vehicle is equipped with a Navigation computer (only on **Clio III**), replace the multimedia connection unit (see **MR 392, Mechanical, 83C, On-board telematics system, Multimedia network interface unit: Removal - Refitting**).

If the vehicle is not equipped with a Navigation computer, replace the display (see **MR 392 (Clio III) or MR 411 (New Twingo), Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact Techline

C
↓

If the fault is still present, contact Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any faults.

ALP 3**The volume does not increase with the vehicle speed.****NOTES**

Consult the user manual to make the adjustments.

Check the value of the volume correction
according to the speed.**Is the value 0?**

— YES —>

Put the value to **2**.NO
↓

Contact the Techline.

AFTER REPAIRCarry out another fault finding check on the system.
Deal with any faults.

ALP 4

The radio and/or the display remains lit for 1 minute after locking the vehicle (on New Twingo only)

NOTES

None.

Explain to the customer that this operation is normal on **New Twingo**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any faults.

TWINGO

8 Electrical equipment

87B

PASSENGER COMPARTMENT CONNECTION UNIT

UCH

Vdiag No.: 44

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V5

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **New Twingo**

Function concerned: **Passenger compartment connection unit**

Name of computer: **UCH**

Vdiag No.: **44**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the **diagnostic tool**),
- Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- **CLIP**

Special tooling required

Special tooling required	
Multimeter	
Elé. 1681	Universal bornier

3. REMINDER

To run fault finding on the vehicle computers, switch on the ignition.

- Switch on the ignition with the key.
- Connect the **diagnostic tool** and perform the required operations.

To cut off the + after ignition feed, proceed as follows:

- Switch off the ignition with the key.
- Disconnect the **diagnostic tool**.
- Switch off the ignition.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used following the + after ignition supply being switched on (without operating the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors for these lines (for oxidation, bent pins, etc.),
- the resistance of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** because the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

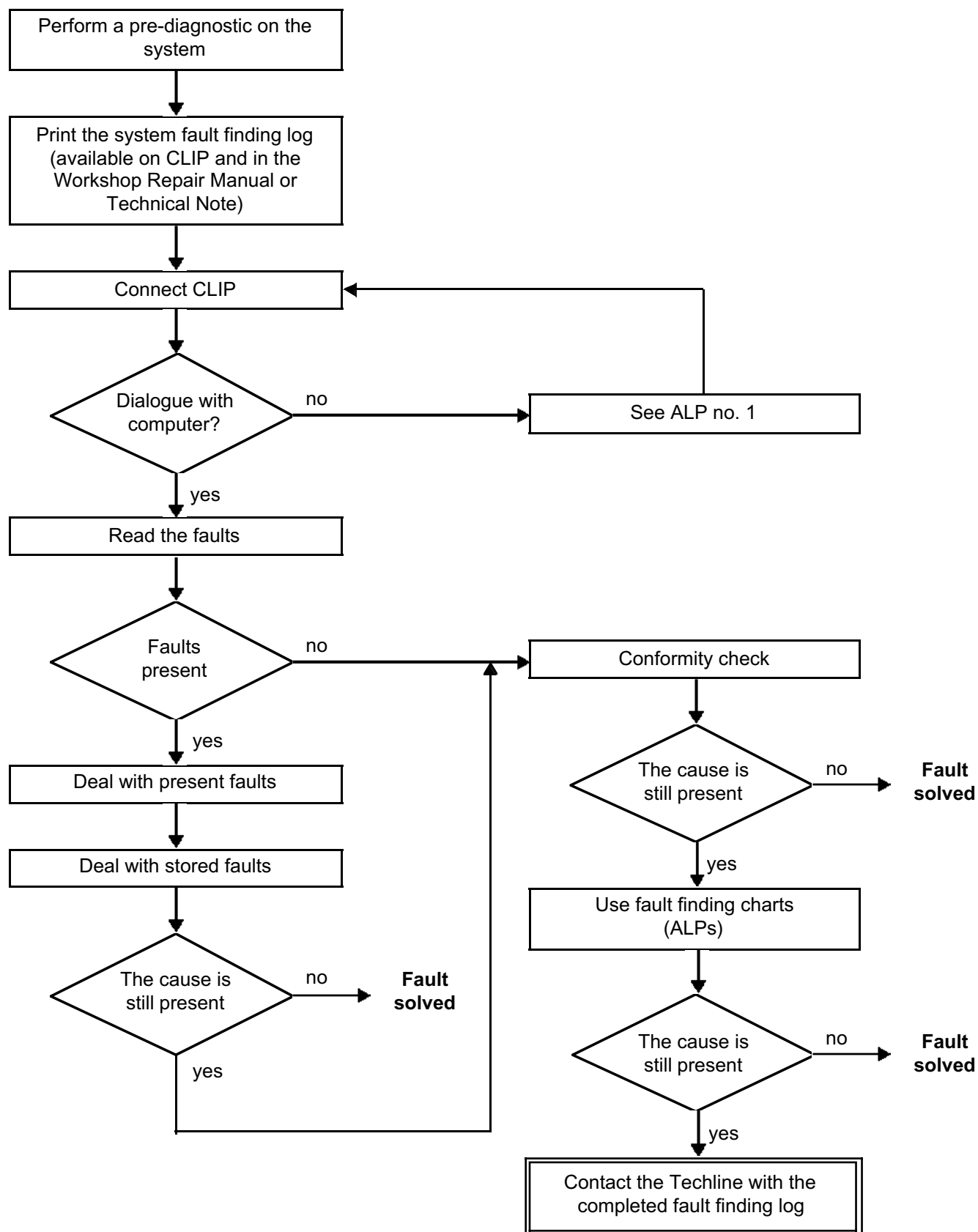
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be dealt with by **Customer complaints**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (continued)

Wiring check

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection

Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Tactile inspection

While manipulating the wiring harness, use the **diagnostic tool** to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component

Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

Continuity, insulation and resistance check

Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or to another wire.

If a fault is detected, repair or replace the wiring harness.

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT

You will always be asked for this log:

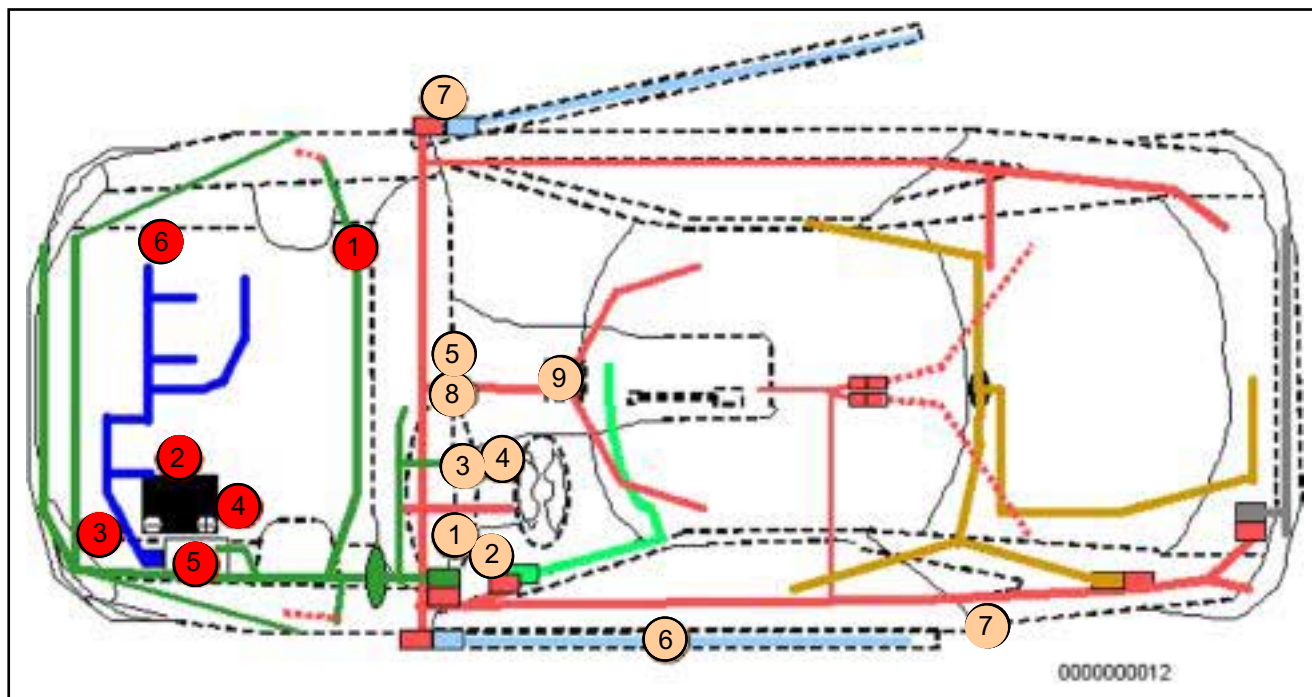
- when requesting technical assistance from the Techline,
- for approval requests when replacing parts for which approval is obligatory
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY ADVICE

Safety rules must be observed during any work on a component to prevent any damage or injury:

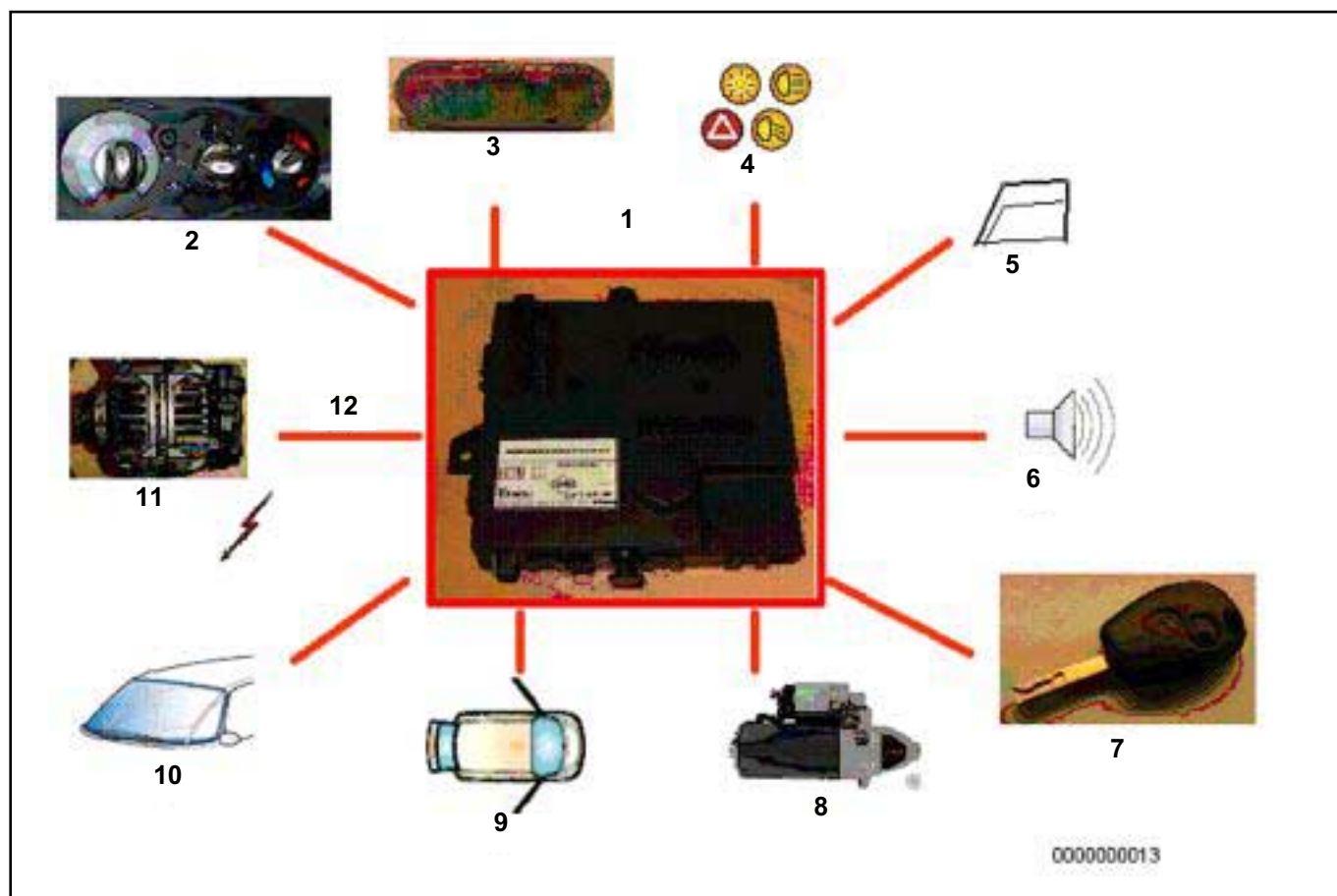
- check the battery voltage to avoid incorrect operation of computer functions,
- Use the proper tools.

- ENGINE HARNESS
- FRONT ENGINE WIRING & ADDITIONAL HEADLIGHTS
- DOOR WIRING
- CEILING WIRING
- PASSENGER COMPARTMENT WIRING
- REAR BUMPER WIRING
- TAILGATE WIRING



1	UCH
2	Passenger Compartment Relay/Fuse Box
3	Electric power-assisted steering.
4	Transponder ring.
5	Air conditioning panel.
6	One touch window/anti-pinch module.
7	Exterior temperature sensor.
8	Rain/light sensor & interior temperature sensor.
9	Anti-pinch/sunroof.

2	ABS computer.
2	Injection computer.
3	Preheating unit.
4	Sequential gearbox computer.
5	Engine fuse and relay box.
6	Alternator.



- 1 UCH.
- 2 Air conditioning.
- 3 Interior lighting.
- 4 Exterior lighting, signals.
- 5 One touch windows and electric sunroof.
- 6 Alarm.
- 7 Radiofrequency key.
- 8 Starter.
- 9 Opening elements.
- 10 Front/rear wipers, washers.
- 11 Alternator.
- 12 BSS* connection

*BSS: (see Role of components, Role of connection BSS).

GENERAL OPERATION

The UCH is involved in the following five functions (shared between several computers):

– Access-security function

This function is divided into three sub-functions: Access, Protection and Starting (see **82D, Access - Safety**).

– Air heating and manual air conditioning function

This function is divided into four sub-functions, which are: User selection, Heating, Cold loop and Passenger compartment ventilation (see **61A, Heating** and see **62C, Manual air conditioning**).

In this function, the UCH manages the heated rear screen operation indicator lights, heating controls and air conditioning activation requests, by sending requests to the engine management computer:

- In the case of a vehicle fitted with manual air conditioning, by pressing on the air conditioning button.
- In the case of a vehicle fitted with climate control, by request from the user or the climate control computer in automatic mode.

– Wiping function

This function is divided into two sub-functions, which are: Wiper control and Wiper power (see **85A, Wiping-washing**).

– Lighting Function

This function is divided into two sub-functions, which are: Lighting control and Lighting power (see **80D, Lighting**).

– Energy management function

Note: There is no UPC on this vehicle; this function is managed by the UCH.

The system is composed of the UCH which stores the programming for electrical energy management, the starter, the battery, and the alternator controlled via a BSS connection.

The role of this system is:

- to ensure electrical energy is supplied to the vehicle whilst respecting the dynamic performance constraints of the engine and transmission assembly,
- to control alternator loading* and load shedding** during engine management authorisation or variation of the electrical load,
- to ensure the quality of the on board network voltage in terms of the voltage level and variation,
- to optimise the battery charge by applying a voltage to its terminals correlating to its initial charge status (in sleep mode) and to its internal temperature,
- to inform the engine management about the mechanical power taken from the accessories pulley, the alternator charge rate and the rotor excitation current value,
- to run fault finding on the charging circuit: "Battery" warning light display.

***loading:** This operation consists of transferring control of the vehicle's electrical consumption from the battery to the alternator.

****load shedding:** This operation consists of involving the battery in the vehicle's general electric power balance.

Fault finding - Role of components

– Energy management function

Role of BSS connection:

This bidirectional connection located between the UCH and the alternator circulates the following signals:

- Signals sent by the alternator: rotor current value, alternator charge value and electrical, thermal and mechanical fault statuses.
- Signals sent by the UCH to the alternator: voltage setpoint, rail setpoint and rail inhibition.

Role of the DF terminal:

The signal circulating in the DF terminal is the alternator charge signal (displayed using PR073 "Alternator charge signal") which is used to adapt the alternator supply to the demands of the electrical consumers (such as the passenger compartment heating resistors, heated rear screen, etc.).

Depending on the battery charge status, the operating phase and the battery temperature, the UCH determines what the voltage across the battery terminals should be.

When the battery charge drops, and **PR076 Battery voltage after rest** decreases, the UCH can temporarily increase **PR075 Alternator setpoint voltage** by **1 V** for a period of **15 minutes** after switching on **+ after ignition feed**.

Before and during starting, **PR075 Alternator setpoint voltage** is fixed at **10.7 V**.

A maximum of **30 seconds** after the engine has started, the UCH sets **PR075 Alternator setpoint voltage** to the optimum value calculated.

The injection computer can also control the alternator regulation voltage. The injection computer sends the maximum authorised power delivered by the engine, to the UCH via the multiplex network. If this power supplied by the engine is less than the power consumed by the alternator, the UCH reduces the **PR075 Alternator setpoint voltage**.

Note:

At the time of user activation, if the mileage is less **than 12 miles (20 kms)** the charge status is used to display a warning: this ensures that vehicles are delivered with correct batteries.

The battery warning light will flash if a low battery charge is detected (no-load voltage less than **12.2 V**: voltage measured during technical use) for the first 12 miles (20 kms), then the warning light stops flashing. Also, the magic eye of the battery (the hydrometer) is black.

- **Access - Security function** (see 82D, Access - Security, Role of components).
- **Heating and manual air conditioning function** (see 61A, Heating, Role of components and 62C, Manual air conditioning, Role of components).
- **Wiping function** (see 85A, Washing wiping, Role of components).
- **Lighting function** (see 80D, Lighting, Role of components).

Functions managed by the different UCH ranges on the New Twingo:

	L1 Entry level	L2 Mid-range	L3 Top of the range
UCH reprogramming	X	X	X
Multiplex connection	X	X	X
Fault finding	X	X	X
Access - Protection	X	X	X
Transponder key	X		
Transponder and radiofrequency key		X	X
Engine immobiliser	X	X	X
+ Accessories feed control	X	X	X
Alarm management (predisposition)		X	X
Locking and unlocking using electric central door locking button		X	X
Deadlocking			X
Locking when driving (CAR*)		X	X
Automatic unlocking (in the event of impact)		X	X
Engine thermal protection	X	X	X
Automatic re-locking		X	X
One-touch electric windows			X
Tailgate electric lock	X	X	X
Tailgate opening switch	X	X	X
Tailgate locking switch (with key)	X		
Air conditioning			
Electric heated rear screen management	X	X	X
Air conditioning request management		X	X
Automatic climate control management (via CAN network)		X	X
External temperature management		X	X

* CPE: Electric central door locking

* CAR: Automatic locking when driving

CONTINUED (Functions managed by the different UCH ranges on the New Twingo):

	L1 Entry level	L2 Mid-range	L3 Top of the range
Lighting			
Exterior lighting			
Side, dipped beam, headlights			X
Direction indicators and hazard warning lights	X	X	X
One-touch front fog lights			X
One-touch rear fog lights			X
Lights on warning light	X	X	X
Hazard warning lights when decelerating hard	X	X	X
Illumination of hazard warning lights when airbag triggered	X	X	X
Illumination of indicators when locking/unlocking		X	X
Automatic lighting when driving and stationary			X
Delayed extinction of headlights when stationary			X
Daytime running lights on			X
Lights switch off when driver's door opened			X
Interior lighting			
Interior lights supply (no gradual dimming function)	X		
Interior lights supply (gradual dimming)		X	X
Wipers			
Windscreen wipers management	X	X	X
Automatic management of front wipers with rain sensor			X
Rear wipers	X	X	X
Windscreen and rear screen washers	X	X	X
Energy management			
Starter management	X	X	X
Controlled alternator (BSS connection)	X	X	X

When replacing the UCH (see **MR 411, Mechanical systems, 87B, Passenger compartment connection unit**).

If replacing the computer, carry out the programming and configuration operations described (see **configurations and programming**).

The order of programming and configuration operations is as follows:

1 - Write the VIN, using command **VP004 Write VIN**.

2 - Program the UCH using command **SC004 UCH programming**.

3 - Configuration of the UCH (in the Configuration and programming menu) using the following commands:

CF031 Calibration,
CF019 Type of heating and air conditioning system,
CF028 Engine type,
CF171 Temperature display,
CF029 External temperature sensor,
CF173 One-touch windows/sunroof (SR)*.
CF032 See-me-home lighting,
CF021 Front fog lights,
CF014 Daytime running lights
CF193 Automatic headlight function,
CF194 Automatic wiping function,
CF035 Rain/light sensor,
CF191 Wiper intermittent speed ring,
CF024 Hazard warning lights activated by ABS,
CF108 Locking via the RAID,
CF009 Deadlocking,
CF192 Central door locking,
CF195 Type of key,
CF229 Alarm.

4 - Key allocation, using command **SC015 Key allocation**.

5 - Configuration of the multiplex network is used to define (in the UCH) the different computers present and which support fault finding on the multiplex network.

* **TO: Sunroof.**

SC004

PROGRAMMING THE UCH

Equipment required

CLIP

Use this command only with a new and blank UCH.

A new UCH is not coded and is therefore not assigned to the vehicle; once it is fitted on the vehicle, it must be programmed to assign it to the vehicle.

To carry out this programming, always use a **key belonging to the vehicle** (allocated to the old UCH).

There are two programming methods: "Not connected" to the code server mode and "connected" to the code server mode.

- In "not connected" mode, the CLIP diagnostic tool supplies a programming key and the user enters the immobiliser code.
- In "connected" mode, the CLIP diagnostic tool automatically exchanges the programming key and the immobiliser code.

Before starting this operation, make sure that there are no components capable of interfering with the electromagnetic field (e.g.: CB (Citizen Band), mobile phone, etc.).

Note:

After replacing just the UCH, no operation needs to be carried out on the injection and electric power-assisted steering computers.
The computers keep the same immobiliser code.

IMPORTANT

When the UCH programming procedure is successfully completed, the UCH is no longer blank and is permanently assigned to the vehicle. It will not work on another vehicle.

IMPORTANT

When the programming operation is complete, only remove the key once the **Programming complete** message is displayed on the screen. Otherwise, programming has failed and the UCH cannot be used.

IMPORTANT

In "not connected" mode, once the tool has issued the programming key, the user has a limited amount of time in which to enter the immobiliser code.

If this time expires, the CLIP diagnostic tool displays the message "Time expired. Restart the procedure".

IMPORTANT

In "connected" mode, the exchange of the programming key and the entry of the immobiliser code is done automatically. If the connection parameters are not met, "connected" mode switches automatically to "not connected" mode.

**SC004
CONTINUED**

IMPORTANT

Do not interrupt the procedure when it is in progress.
If it is interrupted, restart the procedure; a new programming key will be displayed.

UCH programming procedure

- Establish dialogue with the UCH.
- Select the **"Repair mode"** menu.
- Select the **Secure programming** menu.
- Select line **SC004 Program UCH**.

Follow the instructions on the **CLIP diagnostic tool**.

In "not connected" mode, when the **CLIP diagnostic tool** displays the programming key, make a note of this key and the VIN.

To obtain the immobiliser code, see **Technical Note 5037A, Code delivery procedure**.

IMPORTANT

In "not connected" mode, the programming key can only be used for a limited amount of time, as indicated by the **CLIP diagnostic tool**. After this time, the programming key and associated immobiliser code are no longer valid. The operation must be restarted from the beginning.

Operations to be carried out after programming the UCH

➔ Enter the vehicle's VIN to the computer using command **VP004 Enter VIN**.

Make sure that all the keys can lock and start the vehicle.

➔ After programming the UCH, allocate all the keys using command **SC015 Allocate key**.

➔ Configure the equipment as present or not present on the vehicle using the commands (see **Configurations and Programming**).

SC015	<u>KEY ALLOCATION</u>

Equipment required
CLIP

This key allocation operation enables you to assign keys to the vehicle.

To add one or more keys, replace one or more keys, de-allocate one or more keys (in the event of theft for example).

There are two programming methods: "Not connected" to the code server mode and "connected" to the code server mode.

- In "not connected" mode, the CLIP diagnostic tool supplies a programming key and the user enters the immobiliser code.
- In "connected" mode, the CLIP diagnostic tool automatically exchanges the programming key and the immobiliser code.

IMPORTANT

It is not possible to allocate more than two blank keys per operation.
If more than two keys must be allocated: program 2 blank keys then repeat the procedure with all the keys.

Before starting this operation, make sure that there are no components capable of interfering with the electromagnetic field (e.g.: CB (Citizen Band), mobile phone, etc.).

WARNING

If not all of the keys are available, all the keys will have to be reallocated later. Keys not inserted will no longer be allocated to this vehicle.

WARNING

Only cards which have been ordered for the vehicle concerned or the vehicle's old cards can be inserted.

Only a **non blank** UCH can be programmed with keys.

With this system it is not possible to replace some components, such as the UCH and the key as these parts are sold blank and uncoded.

IMPORTANT

When the programming operation is complete, only remove the key once the **Remove the key** message is displayed on the screen. Otherwise the programming operation has failed and the key will be unusable.

WARNING

When the tool issues the programming key, the user has a limited time in which to enter the immobiliser code. If the time has elapsed, the Clip tool displays the message: **Time elapsed.Restart the procedure.**

SC015
CONTINUED

IMPORTANT

In "not connected" mode, once the tool has issued the programming key, the user has a limited amount of time in which to enter the immobiliser code.

If this time expires, the CLIP diagnostic tool displays the message "Time expired. Restart the procedure".

IMPORTANT

In "connected" mode, the exchange of the programming key and the entry of the immobiliser code is done automatically.

If the connection parameters are not met, "connected" mode switches automatically to "not connected" mode.

Key allocation procedure

- Establish dialogue with the UCH
- Select the **Repair mode** menu
- Select the **Secure programming** menu
- Select line **SC015 Allocate key**.

The procedure for allocating keys is divided in two parts:

- 1 Key insertion stage.
- 2 Key allocation stage.

1 - Key insertion stage

Clip requests that the keys to be allocated are inserted.

Insert ALL the keys to be allocated (old and new blank keys); any keys not inserted at this stage will be rejected in the **Key allocation** stage and the operation will have to be restarted from the beginning.

Once all the keys are inserted, the **Clip diagnostic tool** displays the programming key.

To obtain the immobiliser code, see **Technical Note 5037A, Code delivery procedure**.

IMPORTANT

The programming key can only be used for a limited time, as shown by the **Clip diagnostic tool**. After this time, the programming key and associated immobiliser code are no longer valid. The operation must be restarted from the beginning.

2 - Key allocation stage:

Continue the procedure following the instructions on **the CLIP diagnostic tool**.

Once the keys have been allocated, make sure that all the keys can lock and start the vehicle.

SC017	<u>PROGRAM INJECTION IMMOBILISER CODE</u>

Equipment required
CLIP

If the injection computer is being replaced, this operation enables the injection computer to program the UCH immobiliser code.

After an injection computer has been replaced, there are no operations to be performed on the UCH. It retains the same immobiliser code.

There are two programming methods: "Not connected" to the code server mode and "connected" to the code server mode.

- In "not connected" mode, the CLIP diagnostic tool supplies a programming key and the user enters the immobiliser code.
- In "connected" mode, the CLIP diagnostic tool automatically exchanges the programming key and the immobiliser code.

Only a **programmed** UCH can program the injection computer with the immobiliser code.

IMPORTANT

Do not interrupt the procedure when it is in progress.

If it is interrupted, restart the procedure; a new programming key will be displayed.

SC017
CONTINUED

Injection immobiliser code programming procedure:

- Establish dialogue with the UCH
- Select the **Repair mode** menu
- Select the **Secure programming** menu
- Select line **SC017 Program injection immobiliser code**.

Follow the instructions on the **CLIP diagnostic tool**.

When the **CLIP diagnostic tool** displays the programming key, make a note of this key and the VIN code.

To obtain the immobiliser code, see **Technical Note 5037A, Code delivery procedure**.

IMPORTANT

The programming key can only be used for a limited time, as shown by the **Clip diagnostic tool**. After this time, the programming key and associated immobiliser code are no longer valid. The operation must be restarted from the beginning.

IMPORTANT

In "not connected" mode, once the tool has issued the programming key, the user has a limited amount of time in which to enter the immobiliser code.

If this time expires, the CLIP diagnostic tool displays the message "Time expired. Restart the procedure".

IMPORTANT

In "connected" mode, the exchange of the programming key and the entry of the immobiliser code is done automatically.

If the connection parameters are not met, "connected" mode switches automatically to "not connected" mode.

SC018

CHECKING A KEY

Equipment required

CLIP

This scenario is used to check the status of the key in the event of a blank or not blank UCH.

It tells you:

- if the key is blank (**ET182 BLANK KEY**),
- if the key is allocated to **this** vehicle or not (**ET181 KEY ALLOCATED TO THE VEHICLE**),
- If the key is a memory type (**ET407 MEMORY KEY**).

1st solution:

Blank key	NO	This key is not blank but is allocated to the vehicle, therefore the key is operational. Check with the key statuses in the protection sub-function (see conformity check in the event of a fault).
Key allocated to the vehicle	YES	
Memory key	YES/NO	

2nd solution:

Blank key	YES	This key is blank, allocate the key using command SC015 KEY ALLOCATION to allow it to be used on the vehicle.
Key allocated to the vehicle	NO	
Memory key	YES/NO	

3rd solution:

Blank key	NO	This key is not blank, and it does not belong to this vehicle. It is impossible to allocate this key to the vehicle. Or: If the UCH is being replaced, this key belongs to the vehicle but is no longer allocated, so run command SC015 KEY ALLOCATION .
Key allocated to the vehicle	NO	
Memory key	YES/NO	

Functions available and operating mode

– Deadlocking (CF009)

This function enables you to disable the interior door opening control. This function is activated by a second locking request from the key or the electric central locking switch.

This function is only available on vehicles fitted with a top of the range UCH.

– Hazard warning lights activated by ABS (CF024)

This function is available for all countries except Brazil, Finland, Great Britain, Japan and Sweden.

For Brazil, Great Britain, Japan, Sweden and Finland configure **NONE**.

For other countries, configure **WITH**.

In the event of braking causing rapid deceleration, the ABS computer transmits an activate hazard warning lights request via the multiplex network to the UCH.

– New vehicle storage mode (LC041 New vehicle storage mode)

If this mode is activated, consult the command, **see LC041 "New vehicle storage mode"** and contact the Techline.

– Daytime running lights

This configuration automatically activates the side lights and dipped beam headlights when the engine is running, without the driver using the lighting controls.

To be used in accordance with legislative requirements.

CF031 Calibration:

When replacing the UCH computer, perform this configuration.

This command lasts approximately **30 seconds**.

UCH CONFIGURATIONS

List of individual configurations available on the diagnostic tool with the associated configuration reading.

Configuration	Configuration reading	Name of configuration	Choice of configuration
CF031		"Calibration",	To be performed if replacing the UCH.
CF019	LC013	"Type of heating and air conditioning system",	HEATING/MANUAL/ AUTOMATIC
CF028	LC023	"Engine type",	Configuration. 1 (K9K) Configuration. 2 (D7F/D4F without air conditioning) Configuration. 3 (other engine)
CF171	LC067	"Temperature display"	WITH/WITHOUT
CF029	LC002	"Exterior temperature sensor",	WITH/WITHOUT
CF173	LC070	"One-touch windows/SR*",	WITH/WITHOUT
CF032	LC025	"See-me-home lighting",	WITH/WITHOUT
CF021	LC015	"Front fog lights"	WITH/WITHOUT
CF014	LC008	"Daytime running lights",	WITH/WITHOUT
CF193	LC095	"Automatic headlighting function",	WITH/WITHOUT
CF194	LC096	"Automatic wiping function",	WITH/WITHOUT
CF035	LC044	"Rain/light sensor",	PRESENT/ABSENT
CF191	LC094	"Wiper intermittent speed ring",	WITH/WITHOUT
CF024	LC018	"Hazard warning lights switched on by ABS",	WITH/WITHOUT
CF108	LC040	"Automatic locking when driving",	WITH/WITHOUT
CF009	LC003	"Deadlocking",	WITH/WITHOUT
CF192	LC093	"Central door locking",	WITH/WITHOUT
CF195	LC097	"Type of key".	STANDARD/RF*
CF229	LC126	"Alarm".	WITH/WITHOUT

* SR: Sunroof.

*RF: radio frequency

Procedure to follow for modifying these configurations

- Establish dialogue with the UCH.
- Select the **Repair mode** menu.
- Select the **Enter configuration** menu.
- Select the line corresponding to the configuration to be modified.
- In the drop-down menu, select the line corresponding to the vehicle's equipment or the customer's selection.
- Click on **Confirm**.

In the **Read configuration** menu, check that the configuration has been completed.

Note:

If the configuration **LC089 Memory key function** is **WITH** and if status **ET407 Memory key** (displayed using command **SC018 Key check**) is **YES**, then the UCH computer can be used to handle information about the vehicle contained in the key.

Fault finding - Fault summary table

Summary of sensors and actuators on which the UCH can carry out fault finding (with the corresponding engineering office codes).

Tool fault	Associated DTC	Diagnostic tool title
DF001	9510	UCH
DF011	9522	Rain/light sensor circuit
DF012	95D1	Right-hand direction indicator circuit
DF013	95D0	Left-hand direction indicator circuit
DF027	9550	External temperature sensor circuit
DF040	95A0	Rear screen wiper park position
DF041	9560	Heated rear screen warning light circuit
DF042	9558	Air conditioning warning light circuit
DF054	9501	Computer
DF062	9580	Starter relay control circuit
DF065	95F0	Electric window authorisation connection
DF082	9570	Door locking button indicator light circuit
DF087	95C2	Side lights relay control circuit
DF088	95C3	Dipped beam headlights relay control circuit
DF097	95 A1	Windscreen wiper park position control
DF098	95C4	Main beam headlight relay control circuit
DF108	95C5	Front fog lights control circuit
DF109	95C6	Rear fog lights control circuit
DF133	9574	Deadlocking motor(s) circuit
DF134	95D2	Hazard warning lights indicator light circuit
DF135	9520	Rain detector
DF136	9521	Light sensor
DF137	96B1	UCH - Alternator connection
DF138	96B2	Alternator
DF139	9660	Interior lights
DF140	96B3	Voltage regulator
DF212	95B0	Alarm circuit

DF001 PRESENT OR STORED	<u>UCH</u> 1.DEF : Internal electronic fault

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched off and back on.

If the fault is stored , clear the fault, switch off the ignition and disconnect the F8 (15A) fuse of the UCH supply (component code 645) on the passenger compartment fuse and relay box (component code 1016). – Refit the fuse and switch the ignition back on. – Request locking and then unlocking, then start the engine.	
Check the condition and connection of the PE1, PE2 and PE3 connectors of the UCH (component code 645) (tabs pushed back, oxidised, broken). If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.	
Check for + after ignition feed on connection AP43 of component 645 . Check for + accessories feed on connection SP2 (for vehicles fitted with a manual gearbox) or SP15 (for vehicles fitted with a sequential gearbox) of component 645 . Check for earth on connection NAM of component 645 . Check the earth on connection MAM of component 645 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
If the fault reappears as stored , contact Techline. If the fault does not reappear , switch the lighting, wipers, vehicle locking and climate control request controls on and off several times, then read the faults again.	
If the fault is still present . Do not operate on the computer, contact Techline.	

AFTER REPAIR	If the computer has been replaced (at the request of the Techline): reconfigure the new UCH (see Configurations and programming). Deal with any other faults.

Fault finding - Interpretation of faults

DF011 PRESENT OR STORED	<u>RAIN/LIGHT SENSOR CIRCUIT</u> 1.DEF : Open circuit or short circuit

NOTES	Conditions for applying the fault finding procedure to stored faults: Switch on the ignition, activate automatic headlighting by quickly performing the following manipulation twice: control stalk (component code 209) on zero position → control stalk (component code 209) in Side light position. Status ET114 "Wiper request by rain sensor" should be "Low speed" or "High speed" when the water runs over the rain/light sensor on the windscreen or status ET115 "Request for lights to be switched on by light sensor" should be "Present" by placing an opaque cover over the rain/light sensor. Note: If there is an open circuit on connection BPT, there is a malfunction on the electric windows, rain/light sensor, interior light(s) and luggage compartment light.

Check that the vehicle has a rain/light sensor (component code 1415).
Check that the function is not deactivated, quickly perform the following cycle twice to activate the automatic headlighting function: Monolever (component code 209) OFF → Monolever (component code 209) in Side light ON position.
Check that the vehicle has a rain/light sensor (component code 1415). Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".
Check the condition and the positioning of fuses F2 (15A), F8 (15A), F19 (5A), F27 (5 A) depending on the equipment and F29 (15A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse(s) or repair if necessary.
Check the condition and connection of the PE1, PE2 and PE3 connectors of the UCH (component code 645) (tabs pushed back, oxidised, broken).
Check for + after ignition feed on connection AP43 of component 645. Check for + accessories feed on connection SP2 (for vehicles fitted with a manual gearbox) or SP15 (for vehicles fitted with a sequential gearbox) of component 645. Check for earth on connection NAM of component 645. Check the earth on connection MAM of component 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF011
CONTINUED

Check **the continuity and insulation** of the following connections:

- Connection code **AP43**,
- Connection code **SP2**,
- Connection code **SP15**.

Between components **645** and **1016**.

- Connection code **MAN** or **MAM** between component **645** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, check the rain/light sensor (**component code 1415**).

Rain/light sensor check:

Check the condition and connection of the 3-track rain/light sensor connector (**component code 1415**) (tabs bent, broken or oxidised).

Check for **+ 12 V** on **connection BPT** of component **1415**.

Check for **earth** on **connection MAM** of component **1415**.

Check **the continuity and insulation** of the following connections:

- Connection code **BPT** between components **645** and **1415**.
- Connection code **14S** between components **645** and **1415**.
- Connection code **MAM** between components **1415** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the sensor is not dirty.

Check that the sensor is correctly bonded to the windscreen. (see **MR 411 85A, Wipers - Washers, Rain and light detector: Removal - Refitting**)

If the fault is still present, replace the rain/light sensor (**component code 1415**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF012 PRESENT	RIGHT-HAND DIRECTION INDICATOR CIRCUIT CC.0 : Short circuit to earth C0.1 : Open circuit or short circuit to + 12 V 1.DEF : Bulb(s) not working or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault appears after: The right-hand indicator stalk is activated. OR Activation of AC023 Right-hand indicator.

Check that fuses **F13 (30A)** and **F15 (5 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).

Check the bulbs and condition of the bulb supports.
 Replace the bulbs if necessary.

With command **AC023 Right-hand indicator** running, check for **+ 12 V** on the following connection:

- Connection code **64D**.

Between components **256** and **645**.

Between components **268** and **645**.

Between components **173** and **645**.

Check the **continuity** on the following connection:

- Connection code **64D**.

Between components **256** and **645**.

Between components **268** and **645**.

Between components **173** and **645**.

Check for **earth** on the following connections:

- Connection code **MAS** between component **256** and **earth MAS**.

- Connection code **MAS** between component **268** and **earth MAS**.

- Connection code **MF** between component **173** and **earth MF**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds** and **earths** are correct, check the monolever (**component code 209**).

If the **feeds** and **earths** are not correct, check the condition and connection of the horn and lights switch connector (**component code 209**) and the UCH 40-track connector **PE2 (component code 645)** (tabs bent, broken or oxidised).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF012
CONTINUED

Checking the monolever (component code 209):

With command **AC023 Right-hand indicator** running, check for **+ 12 V** on the following connection:

- Connection code **64S** between components **209** and **645**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If there is no **+ 12 V**, check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **64S** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earths** and connections of the monolever (**component code 209**) are correct, replace the monolever (**component code 209**). (see **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF013 PRESENT	<u>LEFT-HAND DIRECTION INDICATOR CIRCUIT</u> CC.0 : Short circuit to earth C0.1 : Open circuit or short circuit to + 12 V 1.DEF : Bulb(s) not working or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault appears after: The left-hand indicator stalk is activated. OR Running AC022 Left-hand indicator.

Check that fuses **F13 (30A) et F15 (5 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).

Check the bulbs and condition of the bulb supports.
Replace the bulbs if necessary.

With command **AC022 Left-hand indicator** running, check for **+ 12 V** on the following connection:

- Connection code **64C**.

Between components **256 and 645**.

Between components **268 and 645**.

Between components **173 and 645**.

Check the **continuity** on the following connection:

- Connection code **64C**.

Between components **256 and 645**.

Between components **268 and 645**.

Between components **173 and 645**.

Check for **earth** on the following connections:

- Connection code **MAS** between component **256 and earth MAS**.

- Connection code **MAS** between component **268 and earth MAS**.

- Connection code **MF** between component **173 and earth MF**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds** and **earths** are correct, check the monolever (**component code 209**).

If the **feeds** and **earths** are not correct, check the condition and connection of the horn and lights switch connector (**component code 209**) and the UCH 40-track connector **PE2 (component code 645)** (tabs bent, broken or oxidised).

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF013
CONTINUED

Checking the monolever (component code 209):

With command **AC022 Left-hand indicator** running, check for **+ 12 V** on the following connection:

- Connection code **64T** between components **209** and **645**.

If the connection is defective and there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If there is no **+ 12 V**, check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **64T** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earths** and connections of the monolever (**component code 209**) are correct, replace the monolever (**component code 209**). (See **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF027 PRESENT OR STORED	<u>EXTERNAL TEMPERATURE SENSOR CIRCUIT</u> 1. DEF : Abnormal voltage CC.0 : Short circuit to earth C0.1 : Open circuit or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched off and back on. Note: If the exterior temperature sensor is disconnected or the vehicle is not equipped with an exterior temperature sensor, the temperature displayed is the default temperature of 215 °C.

Check whether the right-hand door mirror is fitted with an exterior temperature sensor. (See **MR 411 mechanical systems 62A, Air conditioning, Air conditioning: List and location of components**).

If the vehicle is fitted with an exterior temperature sensor, deal with the following fault finding procedure.

If **NO**, the vehicle is not fitted with this:

Check that the vehicle is configured without external temperature sensor (**component code 240** for left-hand drive vehicles) or (**component code 239** for right-hand drive vehicles):

Check that **LC002 "External temperature sensor"** is **"WITHOUT"**. Otherwise perform **CF029 "External temperature sensor"**.

Check the temperature sensor 2-track connector (bent, oxidised, broken tabs).

Check the **PE2** 40-track connector of the UCH, **component code 645** (tabs bent, oxidised, broken).

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **47D** between components **240** (for left-hand drive vehicles) or **239** (for right-hand drive vehicles) and **645**.
- Connection code **47C** between components **240** (for left-hand drive vehicles) or **239** (for right-hand drive vehicles) and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the resistance of the sensor (connector disconnected) on connections **47C** and **47D**.

Temperature (°C)	Sensor resistance (Ω) ± 50 Ω
0	5980
5	5020
10	4280
15	3530
20	2900
25	2300
30	2010
35	1620

Replace the sensor if not correct (see **MR 411 Mechanical systems 62A, Air conditioning, Exterior air temperature sensor: Removal - Refitting**).

If there is a fault, contact Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF040 PRESENT OR STORED	<u>REAR SCREEN WIPER PARK POSITION</u> 1.DEF : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault appears after: The ignition is switched off and back on again and the rear wipers are operated using the wiping stalk. OR Activating AC007 Rear screen wipers.

This fault may appear if the rear screen wiper motor (component code 211) is forced (e.g.: used on a dry screen, snow on the screen, etc.).	
Check that fuse F36 (15 A) is sound and correctly fitted to the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.	
Check the condition and connection of the 3-track rear screen wiper motor connector (component code 211) (broken, bent, oxidised tabs).	
Activate the rear screen wiper, check for + 12 V on connection 36A of the rear screen wiper motor connector (component code 211).	
Check that the earth on connection MYH of the rear screen wiper motor connector (component code 211) is in perfect condition.	
Check the condition and connection of the UCH 40-track PE1 connector (component code 645) (tabs broken, bent or oxidised) and the 3-track rear screen wiper motor connector (component code 211). If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.	

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF040
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Combined wiper-washer check:

- Connection code **AP71** between components **1016** and **145**.
- Connection code **36E (rear screen wiper timed control)** between components **645** and **145**.
- Connection code **MAN or MAM** between component **145** and the earth **MAN (left-hand drive)** or **MAM (right-hand drive)**.

Rear screen wiper motor check:

- Connection code **36C** between components **211** and **645**.
- Connection code **36A** between components **211** and **1016**.
- Connection code **MYH** between component **211** and earth **MYH**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting and activate the supply to the rear screen wiper motor (**component code 211**).
Repair if necessary or replace the motor if it is faulty. (see **MR 411, Mechanical systems, 85A, Washing - wiping, Rear screen wiper motor: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF041 PRESENT OR STORED	HEATED REAR SCREEN INDICATOR LIGHT CIRCUIT CC.1 : Short circuit to + 12 volts

NOTES	Apply this fault only to versions without heating or with manual climate control. Conditions for applying the fault finding procedure to stored faults: The fault appears after: The ignition is switched off and back on again and the rear screen de-icer is requested. OR Running command AC019 Heated rear screen indicator light.

Check that fuses F29 (15 A) and F42 (10 A) are sound and correctly fitted in the passenger compartment fuse and relay box (component code 1016) and/or heating. Replace the fuse(s) if necessary.
Check the air conditioning control panel black 9-track connector, (component code 319) (bent, oxidised or broken tabs).
Check that the earth on connection NAM of the manual air conditioning control panel black 9-track connector is in perfect condition.
Check for + 12 V on connection LPD (by running command AC019 Heated rear screen indicator light) of the manual air conditioning control panel black 9-track connector. Check for + 12 V accessories feed on connection SP2 of the manual air conditioning control panel black 9-track connector. Check that the rear screen de-icing indicator comes on when activating command AC019 Heated rear screen indicator.
Check the PE1 40-track connector of the UCH, component code 645 (tabs bent, oxidised, broken).

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF041
CONTINUED

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **38ES** between components **319** and **645**.
- Connection code **38LP** between components **319** and **645**.
- Connection code **38LQ** between components **319** and **645**.
- Connection code **15A** between components **319** and **645**.
- Connection code **15M** between components **319** and **645**.
- Connection code **LPD** and **SP2** between components **319** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF042 PRESENT OR STORED	<u>AIR CONDITIONING WARNING LIGHT CIRCUIT</u> CC.1 : Short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on and following an air conditioning activation request with all the lights switched off.

Check that the type of air conditioning of the vehicle (equipment level) corresponds with the UCH configuration: Check that LC013 Air conditioning type corresponds with the vehicle equipment level. Otherwise carry out CF019 Air conditioning type.	
Check that fuses F29 (15A) and F42 (10 A) are sound and correctly fitted in the passenger compartment fuse and relay box (component code 1016). Replace the fuse(s) if necessary.	
Check the air conditioning control panel black 9-track connector, (component code 319) (bent, oxidised or broken tabs).	
Check that the earth on connection NAM of the manual air conditioning control panel black 9-track connector is in perfect condition.	
Check for + 12 V accessories feed on connections LPD and SP2 of the manual air conditioning control panel black 9-track connector.	
Check the PE1 and PE2 40-track connectors of the UCH, (component code 645) (tabs bent, oxidised, broken).	
Check the insulation, continuity and absence of interference resistance of the following connections: ● Connection code 15A between components 319 and 645. ● Connection code 38ES between components 319 and 645. ● Connection code 38LP between components 319 and 645. ● Connection codes LPD and SP2 between components 319 and 1016. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
If the fault is still present, replace the air conditioning control panel (component code 319) (see MR 411 Mechanical systems 62B, Climate control, Control panel: Removal - Refitting).	
If the fault is still present, contact the Techline.	

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF054 PRESENT OR STORED	COMPUTER The radiofrequency receiver inside the UCH computer does not work 1.DEF : Internal electronic fault

NOTES	Conditions for applying the fault finding procedure to stored faults: – The fault is declared present after the ignition has been switched on.

If the fault is stored, switch off the ignition and check the **F8 (15A)** fuse of the UCH supply (**component code 645**) on the passenger compartment fuse and relay box (**component code 1016**).

- Replace the fuse if necessary, clear the fault and switch on the ignition again.
- Request locking and then unlocking, then start the engine.

Check for **+ after ignition feed** on connections **AP43, BP15, APT, BP6, BP13, BP19, SP2, SP15** of component **645**.

Check for **+ 12 V** accessories feed on connections **SP2 and SP15** of component **645**.

Check for **earth** on connections **MAN and NAM** of component **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that status **ET045 “RF* signal received”** is **“Yes”** by pressing the locking button on the key, if when pressing the status is **“No”** check the battery and the conformity of the key.

If the fault does not reappear, switch the lighting, wipers, vehicle locking and climate control request controls on and off several times, then read the faults again.

If the fault is still present. Do not operate on the computer, contact Techline.

*RF: radio frequency

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF062 PRESENT OR STORED	<u>STARTER RELAY CONTROL CIRCUIT</u> CC.1 : Short circuit to + 12 volts

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the starter is activated. WARNING When activating the starter, none of the gears must be engaged (and the parking brake must be applied).

Check that fuse F9 (15 A) is sound and correctly fitted in the passenger compartment fuse and relay box (component code 1016) and relay A (20 A) in the engine fuse and relay box (component code 597). Replace the fuse if necessary.	
Check the condition and connection of the UCH 24-track connector PE1 (component code 645) (tabs bent, oxidised or broken).	
Check the condition and connection of the starter relay 4-track black connector (tabs bent, oxidised or broken).	
With the starter activated, check for + 12 V on connection 1B of component 645. With the starter activated, check for + 12 V on connection AP29 of component 232.	
Check the insulation, continuity and absence of interference resistance of the following connections: Starter relay check: ● Connection code 1B between components 232 and 645. ● Connection code 1A between components 232 and 163. ● Connection code D between components 232 and 104. ● Connection code AP23 between components 232 and 1016. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
If the connections are correct, replace the starter relay (component code 232). (See MR 411 Mechanical systems 16A, Starting - Charging, Starting system: Identification).	
If the connections and the relay are correct, check the starter (component code 163). (See MR 411 Mechanical systems 16A, Starting - Charging, Starting system: Identification).	
If the fault is still present, contact the Techline.	

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF065 PRESENT OR STORED	<u>ELECTRIC WINDOWS AUTHORISATION CONNECTION</u> CC.1 : Short circuit to + 12 volts

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is declared present after: The ignition is switched off and back on again after pressing the driver's one-touch electric window switch or sunroof switch if the vehicle is fitted with a sunroof.

For vehicles fitted with sunroof (component code 1578): Check that the vehicle is configured with One-touch window(s) S.R*. : Check that LC070 One-touch window(s) S.R. is With. Otherwise use CF173 One-touch window(s) S.R.
Check the condition and connection of the UCH 24-track connector PE2 (component code 645) (tabs bent, oxidised or broken).
Check the condition and connection of the driver's electric window motor 6-track connector (bent, oxidised, broken tabs).
If there is an electric sunroof, check that fuse F26 (20 A) is sound and correctly fitted in the passenger compartment fuse and relay box (component 1016). Replace the fuse if necessary.
If there is an electric sunroof, check the condition and connection of the A-pillar 4-track connector 339 and of sunroof computer connector AA (tabs bent, oxidised, broken).
Check the insulation, continuity and absence of interference resistance of the following connections: ● Connection code 21K between components 203 and 645. ● Connection code MAM between component 203 and earth MAM. For vehicles fitted with a sunroof: ● Connection code 21K between components 1579 and 645. ● Connection code MAM between component 1579 and earth MAM. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the fault is still present, switch on the ignition and check for 0 V on connection 21K if no (see 87D electric windows - Sunroof).

* SR: Sunroof

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF082 PRESENT OR STORED	<u>DOOR LOCKING BUTTON CIRCUIT</u> CC.0 : Short circuit to earth

NOTES	Conditions for applying fault finding procedures to stored faults: The fault appears after: Pressing the central door locking button. OR Running AC020 CPE* button indicator light.

Check that the vehicle is correctly configured: Check that LC003 Deadlocking is With. Otherwise carry out CF009 Deadlocking. Check that LC040 Automatic locking when driving is With. Otherwise carry out CF108 Automatic locking when driving. Check that LC093 Central door locking is With. Otherwise perform CF192 Central door locking.	
Check that the door locking button indicator light comes on when running command AC020 CPE button indicator light .	
Check that fuses F42 (10 A) and F46 (15 A) on component 1016 are sound and correctly fitted.	
Check the condition and connection of the door lock switch/hazard warning lights switch connector (component code 1391) (bent, oxidised, broken tabs).	
Check the condition and connection of the UCH 40-track connector PE2 (component code 645) (tabs bent, oxidised or broken).	
Check for + 12 V on the following connections: ● Connection code 20M between components 1391 and 645. ● Connection code 20AW between components 1391 and 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
Check the insulation, continuity and the absence of interference resistance on the connections between: ● Connection code 20M between components 1391 and 645. ● Connection code 20AW between components 1391 and 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
If the fault is still present, replace the central door locking/hazard warning lights switch (component code 1391). (See MR 411 Mechanical systems 84A, Controls - Signals, Hazard warning lights and central door locking: Removal - Refitting).	
If the fault is still present, contact the Techline.	

*CPE: Electric central door locking.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF087 PRESENT OR STORED	SIDE LIGHTS RELAY CONTROL CIRCUIT CC.1 : Short circuit to + 12 volts CC.0 : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: The ignition is switched on and the side lights are activated. OR Running AC055 Side lights Note: This fault only appears on vehicles fitted with automatic headlighting. Check for the rain/light sensor (component code 1415) then use the diagnostic tool to check: – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function". – Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic headlight function".

With automatic headlighting:

Check that fuses F14 (20 A), F15 (5 A), F25 (5 A), F39 (10 A), F40 (5 A), F42 (10 A) and F43 (10 A) are sound and correctly fitted in the passenger compartment fuse and relay box (component code 1016). Replace the fuse(s) if necessary.
Check the presence and condition of the side light relays (component code 289) (20A) and 1034 (20A). Replace the side light relay (component code 289) if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs).
Check the condition and connection of the 40-track connectors PE1 and PE2 of the UCH (component code 645) (tabs broken, bent or oxidised).
Check the condition and connection of the horn and lights switch connector (component code 209) (tabs bent, oxidised, broken).
Check for the + 12 V (when requesting the side lights) on connection LPD of component 184 and on connection LPG of component 185. Check for the earth on connection MAR of component 184 and on connection MAS of component 185. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF087
CONTINUED 1

Side lights check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Right-hand front side light:

- Connection code **LPD** between components **184** and **1016**.
- Connection code **MAR** between component **184** and earth **MAR**.

Left-hand front side light:

- Connection code **LPG** between components **185** and **1016**.
- Connection code **MAS** between component **185** and earth **MAS**.

Rear right side light:

- Connection code **LPD** between components **172** and **1016**.
- Connection code **MF** between component **172** and earth **MF**.

Rear left side light:

- Connection code **LPG** between components **173** and **1016**.

Connection code **MG** between component **173** and earth **MG**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** (when side lights are requested) on connection **L** of component **289**.

Check for **+ 12 V** (when side lights are requested) on connection **78P** of components **289**.

Check for **+ 12 V** on connection **BP11** of component **289**.

Side light relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **L** between components **1016** and **289**.
- Connection code **BP11** between components **289** and **1016** and **597**.
- Connection code **78H** between components **645** and **1034**.
- Connection code **78P** between components **289** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF087
CONTINUED 2

Checking the monolever (component code 209):

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Check between the monolever (component code 209) and the UCH:

- Connection code **78B** between components **645** and **209**.

Check between the monolever (component code 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **BPA4** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**. Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earth** and connections are correct, replace the monolever (**component code 209**). (See **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF088 PRESENT OR STORED	<u>DIPPED BEAM HEADLIGHTS RELAY CONTROL CIRCUIT</u> CC.1 : Short circuit to + 12 volts CC.0 : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: The ignition is switched on and the side lights are activated. OR Running AC054 Dipped headlights Note: This fault only appears on vehicles fitted with automatic headlighting. Check for the rain/light sensor (component code 1415) then: – Check that the vehicle has a rain/light sensor (component code 1415). – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". – Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".

With automatic headlighting:

Check that fuses F13 (30A), F15 (5A), F25 (5 A), F34 (15 A) and F35 (15 A) are sound and correctly fitted in the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the presence and condition of the dipped headlights relay (component code 281) (20A). Replace the dipped headlights relay (component code 281) if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs).
Check the condition and connection of the UCH 40-track connector PE2 (component code 645) (tabs bent, oxidised or broken).
Check the condition and connection of the horn and lights switch connector (component code 209) (tabs bent, oxidised, broken). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF088
CONTINUED 1

Dipped headlights check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Front right-hand dipped beam headlight:

- Connection code **CPD** between components **226** and **1016**.
- Connection code **MAR** between component **226** and earth **MAR**.

Front left-hand dipped beam headlight:

- Connection code **CPG** between components **227** and **1016**.
- Connection code **MAS** between component **227** and earth **MAS**.

Check for **+ 12 V** (when there is a dipped headlights request) on connection **CPD** of component **226** and connection **CPG** of component **227**.

Check for the **earth** on connection **MAR** of component **226** and on connection **MAS** of component **227**.

Check for **+ 12 V** (when dipped headlights are requested) on connection **CSO** of component **281**.

Check for **+ 12 V** (when dipped headlights are requested) on connection **78M** of component **281**.

Check for **+ 12 V** on connection **BP59** of component **281**.

Dipped headlights relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **CSO** between components **281** and **1016**.
- Connection code **78M** between components **281** and **645**.
- Connection code **BP59** between components **281** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF088
CONTINUED 2

Checking the monolever (component code 209):

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Check between the monolever (**component code 209**) and the UCH:

- Connection code **78Q** between components **645** and **209**.

Check between the monolever (**component code 209**) and the **passenger compartment fuse and relay box (component code 1016)**:

- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **earth MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**.

Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earth** and connections are correct, replace the monolever (**component code 209**). (See **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF097 PRESENT OR STORED	WINDSCREEN WIPER PARK POSITION CIRCUIT 1.DEF : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched off and back on and the front wipers are operated from the wiping stalk.

This fault may appear if the windscreen wiper motor is forced (e.g.: used on a dry screen, snow on the screen, etc.).	
Check that fuse F2 (15 A) is sound and correctly fitted to the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.	
Check the condition and connection of the 5-track windscreen wiper motor connector (OR) (component code 212) (broken, bent, oxidised tabs).	
Check the condition and connection of the 40-track connectors PE1, PE2 and PE3 of the UCH (component code 645) (tabs broken, bent or oxidised).	
Check that the earth on connection MAS of the windscreen wiper motor connector (component code 212) is correct. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
Activate low speed, check for + 12 V on connections 14B of the windscreen wiper motor connector (component code 212) . Activate the high speed, check for + 12 V on connection 14A of the windscreen wiper motor connector (component code 212) .	
If there is no + 12 V , check the insulation, continuity and the absence of interference resistance on the following connections:	
Check the combined wiper-washer: ● Connection code AP71 between components 145 and 1016. ● Connection code 14E (windscreen wiper timed control) between components 645 and 145. ● Connection code 14G (low speed windscreen wiper control) between components 645 and 145. ● Connection code 14H (high speed windscreen wiper control) between components 645 and 145. ● Connection code MAN (left-hand drive or MAN (right-hand drive)) between component 145 and the earth MAN (left-hand drive) or MAM (right-hand drive).	

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF097
CONTINUED

Check the windscreen wiper motor:

- Connection code **14A** between components **212** and **645**.
- Connection code **14B** between components **212** and **645**.
- Connection code **14C** between components **212** and **645**.
- Connection code **MAS** between component **212** and earth **MAS**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting of the windscreen wiper motor (**component code 212**).

Repair if necessary or replace the motor if it is faulty. (see **MR 411, Mechanical systems, 85A, Washing - wiping, Windscreen wiper motor: Removal - Refitting**)

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF098 PRESENT OR STORED	MAIN BEAM HEADLIGHT RELAY CONTROL CIRCUIT CC.1 : Short circuit to + 12 volts CC.0 : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: The ignition is switched on and the main beam headlights are activated. OR Running AC062 Main beam headlights Note: This fault only appears on vehicles fitted with automatic daytime running lights. Check for the rain/light sensor (component code 1415) then: – Check that the vehicle has a rain/light sensor (component code 1415). – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out - CF035 "Rain/light sensor". – Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".

With automatic headlighting:

Check the presence and condition of fuses F15 (5 A), F25 (15 A), F32 (10 A) and F33 (10 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the presence and condition of the main beam headlights relay (component code 1574) (20A). Replace the main beam headlights relay (component code 1574) if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs).
Check the condition and connection of the UCH PE2 connectors (component code 645) (tabs bent, oxidised or broken).
Check the condition and connection of the horn and lights switch connector (component code 209) (tabs bent, oxidised, broken).
Check for + 12 V (when there is a main beam headlights request) on connection RPD of components 226 and 227. Check for an earth on connection MAR of component 226 and connection MAS on component 227. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF098
CONTINUED 1

Main beam headlights check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Front right-hand main beam headlight:

- Connection code **RPD** between components **226** and **1016**.
- Connection code **MAR** between component **226** and earth **MAR**.

Front left-hand main beam headlight:

- Connection code **RPG** between components **227** and **1016**.
- Connection code **MAS** between component **227** and earth **MAS**.

Check for **+ 12 V** (when main beam headlights are requested) on connection **R** of component **1574**.

Check for **+ 12 V** (when main beam headlights are requested) on connection **11A** of component **1574**. Check for **+ 12 V** on connection **BP11** of component **1574**.

Main beam headlights relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **R** between components **1016** and **1574**.
- Connection code **11A** between components **1574** and **645**.
- Connection code **BP11** between components **1574** and **597**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Checking the monolever (component code 209):

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Check between the monolever (component code 209) and the UCH:

- Connection code **11Q** between components **645** and **209**.

Hazard lights:

- Connection code **11R** between components **209** and **654**.

Check between the monolever (component code 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **209** and **1016**.
- Connection code **BPA3** between components **209** and **1016**.
- Connection code **MAN** (left-hand drive) or **MAM** (right-hand drive) between component **209** and the earth **MAN** (left-hand drive) or **MAM** (right-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF098
CONTINUED 2

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**.
Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earth** and connections are correct, replace the monolever (**component code 209**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF108 PRESENT OR STORED	FRONT FOG LIGHTS CONTROL CIRCUIT CC.1 : Short circuit to + 12 volts CC.0 : Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: Switching on the ignition and the front fog lights. OR Running AC008 Front fog lights Note: This fault only appears on vehicles fitted with automatic daytime running lights. Check for the rain/light sensor (component code 1415) then: Check that the vehicle has a rain/light sensor (component code 1415): – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out - CF035 "Rain/light sensor". – Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function". – Check that LC015 Front fog lights is With. Otherwise run CF021 Front fog lights.

With automatic headlighting:

Check the presence and condition of fuses F15 (5 A) , F20 (15 A) , F25 (5 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the presence and condition of the front foglights relay (component code 231) (20A). Replace the front fog lights relay (component code 231) if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the condition and connection of the UCH PE2 connector (component code 645) (tabs bent, oxidised or broken).
Check the condition and connection of the horn and lights switch connector (component code 209) (tabs bent, oxidised, broken).
Check for + 12 V (when front fog lights are requested) on connection 8B of components 176 and 177 . Check for earth on connection MAR of component 176 and connection MAS on component 177 .

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF108
CONTINUED

Front fog lights check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Front right-hand fog light and fog lights relay:

- Connection code **8B** between components **176** and **231**.

Front left-hand fog light and fog lights relay:

- Connection code **8B** between components **177** and **231**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** (when there is a front fog lights request) on connection **8M** of component **231**.

Check for **+ 12 V** on connection **BP16** of component **231**.

Front fog lights relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **8M** between components **231** and **645**.
- Connection code **BP16** between components **231** and **1016**.

Checking the monolever (component code 209):

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Check between the monolever (component code 209) and the UCH:

- Connection code **8H** between components **645** and **209**.

Check between the monolever (component code 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **209** and **1016**.
- Connection code **BPA3** between components **209** and **1016**.
- Connection code **MAN** (left-hand drive) or **MAM** (right-hand drive) between components **209** and the **earth MAN** (left-hand drive) or **MAM** (right-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**.

Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds** and the connections of the monolever (**component code 209**) are correct, replace the monolever (**component code 209**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF109 PRESENT OR STORED	REAR FOG LIGHTS CONTROL CIRCUIT CC.1: Short circuit to + 12 volts CC.0: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: If the fault reappears as present after: The ignition is switched on and the rear fog lights are activated. OR Running AC009 Rear fog lights. Note: This fault only appears on vehicles fitted with automatic daytime running lights. Check the presence of the rain/light sensor (component code 1415), then: Check that the vehicle is configured with a rain/light sensor (component code 1415): – Check that LC044 Rain/light sensor displays Present. If not, perform CF035 Rain/light sensor. – Check that LC096 Automatic wiper function displays With. If not, carry out CF194 "Automatic wiper function". – Check that LC095 Automatic headlight function displays With. If not, carry out CF193 "Automatic headlight function".

With automatic headlighting:

Check the presence and condition of fuses F15 (5 A), F20 (15 A), F25 (5 A), F39 (10 A) in the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the presence and condition of the rear fog lights relay (component code 230) (20A). Replace the rear fog lights relay (component code 230) if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs).
connection of the UCH PE2 connector (component code 645) (tabs bent, oxidised, broken).
Check the condition and connection of the control stalk connector (component code 209) (tabs bent, oxidised, broken).
Check for + 12 V (when there is a rear fog lights request) on connection 9P of components 172 and 173. Check for earth on connection MF of component 172 and connection MYH on component 173. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF109
CONTINUED

Rear fog lights and rear fog light relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Right-hand rear fog light:

- Connection code **9P** between components **172** and **230**.

Left-hand rear fog light:

- Connection code **9P** between components **173** and **230**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** (when there is a rear fog lights request) on connection **9W** of component **230**. Check for **+ 12 V** on connection **BP16** of component **230**.

Rear fog lights relay check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **9W** between components **230** and **645**.
- Connection code **BP16** between components **230** and **1016**.

Control stalk check (**component code 209**):

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

Check between the control stalk (component code 209) and the UCH (component code 645):

- Connection code **9B** between components **645** and **209**.

Check between the control stalk (component 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **209** and **1016**.
- Connection code **BPA3** between components **209** and **1016**.

Connection code **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) between component **209** and earth **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**.

Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supplies** and connections of the control stalk (**component code 209**) are correct, replace the control stalk (**component code 209**). (See **MR 411 Mechanical 84A, Control - Signals, Lighting - signals switch: Removal - Refitting**).

If the problem is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF133 PRESENT OR STORED	<u>DEADLOCKING MOTOR(S) CIRCUIT</u> CC.1: Short circuit to + 12 volts CO.0: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: If the fault reappears as present after: The ignition is switched on and the deadlocking button has been pressed. OR Activation of AC035 Deadlocking. Check that LC003 Deadlocking is definitely With. Otherwise, perform CF009 Deadlocking. Check that LC040 Locking when driving is definitely With. Otherwise, perform CF008 Locking when driving. Ensure that the central door locking is correctly fixed; there must be no objects preventing the central door locking from operating correctly. Check that the doors and tailgate are closed correctly during the electrical checks.

Check the presence and condition of fuse **F14 (20 A)** in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of connectors **PE1**, **PE2** and **PE3** of the UCH (**component code 645**) (tabs bent, oxidised, broken).
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the condition and connection of the electric central door locking connectors for the driver's and passenger's doors (tabs bent, oxidised, bent etc.).
If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

When deadlocking, check the signal status on components **140** and **141** of the following connections using an oscilloscope (refer to **test1 Central door locking**).

Right or left-hand door locks:

Oscilloscope red test pin on connection **20AP** of component **140** or **141**.
Oscilloscope black test pin on connection **20C** of component **140** or **141**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF133
CONTINUED 1

When unlocking, check the signal status on components **140 and 141** of the following connections using an oscilloscope (refer to **test2 Central door unlocking**).

Right or left-hand door locks:

Oscilloscope red test pin on connection **20D** of component **140 or 141**.
Oscilloscope black test pin on connection **20C** of component **140 or 141**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Central door deadlocking check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **20C** between components **140 or 141** and **645**.
- Connection code **20D** between components **140 or 141** and **645**.
- Connection code **20AP (specific to deadlocking)** between components **140 or 141** and **1042**.
- Connection code **MAN** between component **140** and **earth MAN** (for left-hand drive vehicles) and connection code **MAM** between component **141** and **earth MAM** (for right-hand drive vehicles).

For manual gearbox:

- Connection code **86H** between components **140 or 141** and **1016**.

For sequential gearbox:

- Connection code **H24** between components **140** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Central door locking relay check (for deadlocking):

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **BP3** between components **1042** and **1016**.
- Connection code **MAM** between component **1042** and **earth MAM**.
- Connection code **20AP** between components **1042** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If **the supply** and the **earth** of the central door locking relay (specific to deadlocking) are correct, replace the relay.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF133
CONTINUED 2

If the **supplies**, central door locking connections, locking relay (specific to deadlocking) and central door locking are correct, check the warning/central door locking switch (**component code 1391**).

Central door locking/warning switch check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **20AW** between components **645** and **1391**.
- Connection code **20M** between components **645** and **1391**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, replace the door lock concerned.

If the problem is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

DF134 PRESENT OR STORED	<u>HAZARD WARNING LIGHTS INDICATOR LIGHT CIRCUIT</u> CC.0: Short circuit to earth or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: If the fault reappears as present after: Switching on the ignition and pressing the hazard warning lights button. OR Activating AC52 Hazard warning lights indicator light. Note: If the hazard warning lights do not light up during emergency braking, check that LC018 Illumination of hazard warning lights by ABS is definitely With. Otherwise, run CF024 Illumination of hazard warning lights by ABS.

Check the presence and condition of fuse F42 (10 A) in the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the central door locking/warning switch connector (component code 1391) (tabs broken, bent, oxidised).
Check the condition and connection of connectors PE1 and PE2 of the UCH (component code 645) (tabs bent, oxidised, broken).
Check for + 12 V on connection LPD of the locking/warning switch (component code 1391). Check for earth on connection MAN of the locking/warning switch (component code 1391). If the connector or connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Switch check: Check the insulation, continuity and the absence of interference resistance of the following connections: ● Connection code 64F between components 1391 and 645. ● Connection code 64Q between components 1391 and 645. ● Connection code MAN between component 1391 and earth MAN. ● Connection code LPD between components 1391 and 1016. ● Connection code 20AM between components 1391 and 645. ● Connection code 20AW between components 1391 and 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the supply, earth and connections are correct, replace the door locking/warning switch (component code 1391) (see MR 411 Mechanical 84A, Control - Signals, Hazard warning lights and central door locking: Removal - Refitting).
If the problem is still present, contact the Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF135 DF136 PRESENT OR STORED	<u>RAIN DETECTOR</u> <u>LIGHT SENSOR</u> 1.DEF: Internal electronic fault

NOTES	Conditions for applying the fault finding procedure to stored faults: If the fault reappears as present after: Switching on the ignition, activating automatic headlight lighting by moving the control stalk twice in quick succession as follows: control stalk (component code 209) to position zero AE control stalk (component code 209) to side lights position. Status ET114 "Wiper request from rain sensor" should be "Low speed" or "High speed" when the water runs over the position of the rain/light sensor on the windscreen or status ET115 "Request for lights to be switched on from light sensor" should be "Present" when an opaque cover is placed over the rain/light sensor. Note: If there is an open circuit on connection BPT, there will be a malfunction on the electric window winders, on the rain/light sensor, on the interior lights and the boot lighting.

Check that the vehicle has a rain/light sensor (component code 1415).
Check that the vehicle is configured with a rain/light sensor (component code 1415). Check that LC044 Rain/light sensor is Present . If not, perform CF035 Rain/light sensor . Check that LC096 Automatic wiper function displays With . If not, carry out CF194 "Automatic wiper function" . Check that LC095 Automatic headlight function displays With . If not, carry out CF193 "Automatic headlight function" .
Check the condition and position of supply fuses F2 (15 A) , F8 (15 A) , F19 (5 A) , F27 (5 A) according to the equipment, F29 (15 A) of the rain/light sensor (component code 1415) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the 3-track connector of the rain/light sensor (component 1415) (tabs bent, broken or oxidised). Check the condition and connection of the PE2 connector of the UCH, (component code 645) (tabs bent, oxidised, broken).
Check for + 12 V on connection BPT of component 1415 . Check for earth on connection MAM of component 1415 .

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

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DF136
CONTINUED

Check **the continuity and insulation** of the following connections:

- Connection code **BPT** between components **1415** and **645**.
- Connection code **14S** between components **1415** and **645**.
- Connection code **MAM** between component **1415** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, replace the rain/light sensor (**component code 1415**). (See **MR 411 Mechanical 85A, Wiping - Washing, Rain and light sensor: Removal - Refitting**).

If the problem is still present, contact the Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Clear the stored faults.
Deal with any other faults.

Fault finding - Interpretation of faults

DF137 PRESENT OR STORED	<u>UCH - ALTERNATOR CONNECTION</u> CO : Open circuit 1.DEF : Dialogue disrupted CC.0 : Short circuit

NOTES	The fault is declared present after: Switching on the ignition, starting the engine and waiting 30 seconds. Check that the engine type is entered correctly using the configuration reading "Check that LC023 Engine Type is correct". Otherwise perform CF028 Engine type. Customer complaint: The battery warning light comes on when the fault appears and goes out 10 seconds after the fault disappears. Note: For petrol vehicles, the fault can be linked to a fault on the anti-interference capacitor if it is present.

Check the condition and connection of the 2-track connector of the alternator (component code 103) and connector PE1 of component 645 (tabs bent, oxidised, broken).
Check that the voltage is between 5 V and 10 V on connection 2N between components 103 and 645.
Check the continuity and insulation of the following connections: ● Connection code 2N between components 103 and 645. ● Connection code BPDA between components 103 and 163. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the problem is still present, contact the Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF138 PRESENT OR STORED	<u>ALTERNATOR</u> 1.DEF: Mechanical or electrical fault 2.DEF: Temperature fault

NOTES	The fault is declared present after: Switching on the ignition, starting the engine and waiting 1 minute in the event of an electrical or mechanical fault. In the event of a temperature fault, run the engine until the engine cooling fans are triggered. Effect on system: The fault is hidden for 3 seconds, the alternator voltage setpoint is 14.3 V and the on-board network voltage is equal to 14.3 V if the alternator can still regulate. Regulation resumes as soon as the fault disappears. Effect on system: The battery warning light comes on when the fault appears and goes out as soon as the fault disappears.

Check for the presence, condition and fitting of the alternator belt. (See MR 411, Mechanical, 11A, Top and front of engine, Accessories belt: Removal - Refitting).
Remove the accessories belt (MR411, Mechanical, 11A Top and front of engine, Accessories belt, Removal - Refitting).
Check that the alternator pulley is not offset against its axis.
Check that the alternator pulley turns freely on its axis.
Check that the continuity and electrical insulation of the rotor coil is correct. Check that there is no sign of the rotor overheating. (See MR 411, Mechanical 16A, Starting - Charging, Charging circuit: Check).
Perform a charging circuit test (see 80A, Battery).
If the fault is still present, replace the alternator (component code 103) (see MR 411, Mechanical 16A, Starting - Charging, Alternator: Removal - Refitting).

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF139 PRESENT OR STORED	<u>COURTESY LIGHT</u> CC.1: Short circuit to + 12 volts

NOTES	The fault is declared present after: Opening at least one door. OR Running AC063 Switching the interior lights on and off. Check the correct operation of status ET463 Door(s) or tailgate.

Check the condition and connection of the 6-track connector of the front interior lighting (**component code 213**) and connector **PE1** of component **645** (tabs bent, oxidised, broken).

Check for **+ 12 V** on **connection BPT** of component **213**.

Check **the continuity and insulation** of the following connections:

- Connection code **BTP**, between components **213** and **645**.
- Connection code **13E** between components **213** and **645**.
- Connection code **MAM** between component **213** and **earth MAM**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the operation of the rabbit switches using **ET463 Door(s) and tailgate**.

If **the supply, earths** and connections are correct, replace the courtesy light (**component code 213**).
(See **MR 411, Mechanical 81B, Interior lighting, courtesy light: Removal - Refitting**).

If the problem is still present, contact the Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

Fault finding - Interpretation of faults

DF140 PRESENT OR STORED	<u>VOLTAGE REGULATION</u> 1.DEF: Voltage too low 2.DEF: Voltage too high

NOTES	The fault is declared present after: switching on the ignition and waiting 1 minute. Note: The on-board network voltage is less than 0.89 times the battery voltage setpoint. The battery may be used to supply all of the energy. The alternator voltage setpoint is fixed as soon as the fault appears. Once the fault has been confirmed, the alternator voltage setpoint is 14.3 V. Regulation resumes as soon as the fault disappears. Effect on system: The battery warning light comes on when the fault appears and goes out as soon as the fault disappears.

Run command **AC130 Alternator regulation without any electrical consumers:**

- Wait **20 seconds**.
- For **10 seconds**, the voltage of the **alternator (component code 103)** should be equal to **15 V +/- 0.2 V** at the battery terminals.
- Wait **20 seconds**.
- For **10 seconds**, the voltage of the **alternator (component code 103)** should be equal to **13 V +/- 0.2 V** at the battery terminals.

If the voltages are not correct (see 80A, Battery, and see 16A, Starting charging).

Run command **AC130 Alternator regulation without any electrical consumers:**

- Wait **20 seconds**.
- For **10 seconds** the voltage of the **alternator (component code 103)** should be equal to **15 V +/- 0.2 V** at the terminals of the alternator (between the + terminal of the **alternator (component code 103)** and the engine earth).
- Wait **20 seconds**.
- **For 10 seconds** the voltage of the alternator should be equal to **13 V +/- 0.2 V** at the terminals of the **alternator (component code 103)** (between the + terminal of the **alternator (component code 103)** and the engine earth).

If the voltages are not correct, check the conformity of the engine earth.

Check the condition and connection of the **1-track** connector of component **103** (tabs bent, oxidised, broken).

Check for **+ 12 V** on **connection BPDA** of component **103**.

Check **the continuity and insulation** of the following connections:

- Connection code **BPDA** between components **103** and **163**.
- Connection code **2N** between components **103** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the problem is still present, contact the Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

DF212 PRESENT OR STORED	<u>ALARM CIRCUIT</u> CC.0: Short circuit to earth

NOTES	If the vehicle is fitted with an alarm: Check that the vehicle is configured with an alarm (component code 442). Check that LC126 Alarm is definitely With. Otherwise, perform CF229 Alarm.

Check the condition and presence of fuses F6 (15 A) and F46 (15 A) . Replace if necessary.
Check the condition and connection of the horn connector (component code 442) (tabs bent, oxidised, broken).
Check the continuity and insulation of the following connections: ● Connection code 20M between components 442 and 645. ● Connection code 64Q between components 442 and 645. ● Connection code AP3 between components 442 and 260. ● Connection code BCP4 between components 442 and 260. ● Connection code MG between component 442 and earth. ● Connection code 80A between components 442 and 438. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If the problem is still present, contact the Techline.

AFTER REPAIR	Carry out another fault finding check on the system. Clear the stored faults. Deal with any other faults.

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

MAIN SCREEN

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Electrical supplies	PR001: Battery voltage	9 V < X < 16 V	In the event of a fault, run fault finding on the charging circuit (see 80A, Battery) .
Ignition switch position	ET239: Ignition switch position	+ after ignition feed.	In the event of a fault, refer to the interpretation of status ET239 .
Brake pedal	ET047: Brake pedal position	DEPRESSED RELEASED	In the event of a fault, refer to the interpretation of status ET047 .
Engine operation.	ET142: Engine operating phase	STOPPED STARTING RUNNING STALLED	In the event of a fault, consult the interpretation of status ET142 .
Engine speed	PR025: Engine speed	0 rpm	In the event of a fault, run fault finding on the injection system (see 13B, Diesel injection or 17B, Petrol injection).
Vehicle speed	PR008: Vehicle speed	0 mph	In the event of a fault, run fault finding on the ABS system (see 38C, Anti-lock braking system).

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: PROTECTION

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
Engine immobiliser	ET046: Engine immobiliser	INACTIVE = Vehicle unprotected, ready to start. ACTIVE = Vehicle protected, starting impossible.	In the event of a fault, refer to the interpretation of status ET046 . And (see 87B, Passenger compartment connection unit).
	ET008: blank UCH	YES = If the UCH is blank. NO = If the UCH has been programmed with an immobiliser code.	In the event of a fault, refer to the interpretation of status ET008 . And (see 87B, Passenger compartment connection unit).
Key	ET185: Key code received	YES = If the UCH has received the immobiliser code from the key. NO = If the UCH does not receive the immobiliser code from the key.	In the event of a fault, refer to the interpretation of status ET185 . And (see 87B, Passenger compartment connection unit).
	ET181: Key allocated to the vehicle	YES = The key is allocated to the vehicle. NO = The key is not allocated to the vehicle.	In the event of a fault, refer to the interpretation of status ET181 . And (see 87B, Passenger compartment connection unit).

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: PROTECTION (CONTINUED)

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
Key	ET045: Radio frequency signal received	YES = When the UCH receives a radiofrequency signal. NO = When the UCH does not receive a Radiofrequency signal.	In the event of a fault, refer to the interpretation of status ET045 .
	ET193: Radiofrequency signal from a key allocated to the vehicle	PRESENT = Reception of a signal Radiofrequency signal from a key allocated to the vehicle. ABSENT = No reception of signal Radiofrequency or signal Radiofrequency signal from a key not allocated to the vehicle	In the event of a fault, refer to the interpretation of status ET193 .
	ET240: Key frequency (in MHz)	433 NONE	If NONE , refer to the interpretation of status ET240 .
	PR056: Number of keys allocated	X ≤ 4 key(s)	In the event of a fault, refer to the interpretation of fault PR056 .
Injection	ET229: Injection immobiliser code	PROGRAMMED NOT PROGRAMMED UNDETERMINED	In the event of a fault, consult the interpretation of status ET229 .
	ET250: Injection	NOT PROTECTED PROTECTED	In the event of a fault, refer to the interpretation of status ET250 . (See 17B, Petrol Injection, Conformity check, Protection) or (see 13B, Diesel Injection, Conformity check, Protection).
Starter actuator	ET239: Ignition switch position	INACTIVE + ACCESSORIES + after ignition feed. + START FEED	In the event of a fault, refer to the interpretation of status ET239 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: ACCESS

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Tailgate	ET061: Open tailgate request	PRESENT ABSENT	In the event of a fault, apply the interpretation of status ET061 .
	ET463: Door(s) or tailgate	OPEN CLOSED	In the event of a fault, apply the interpretation of status ET463 .
Locking/unlocking button	ET186: Short press on door closing button	Signal can be interpreted if the ignition is switched off (key removed from the ignition switch). ACTIVE = Remote control door closing button pressed for longer than 2 seconds. INACTIVE = Button not pressed or pressed for less than 2 seconds.	In the event of a fault, refer to the interpretation of status ET186 .
	ET189: Long press on door opening button	ACTIVE INACTIVE	In the event of a fault, refer to the interpretation of status ET189 .
Electric central locking button	ET044: Central Locking button	DEPRESSED RELEASED	In the event of a fault, refer to the interpretation of status ET044 .
One touch window / SR*.	ET087: One-touch window / SR* authorisation.	PRESENT ABSENT	In the event of a fault, apply the interpretation of status ET087 .
Locking command	AC004: Central door locking	This command is used to test whether central door locking is working	In the event of a fault, consult the procedure for dealing with command AC004 .

* SR: Sunroof.

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: ACCESS (CONTINUED)

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
Deadlocking command	AC035: Deadlocking	This command is used to test the operation of the deadlocking, if the vehicle is configured WITH deadlocking.	In the event of a fault, refer to the interpretation of fault DF133 .
Door unlocking switch	AC005: Central door unlocking	This command is used to test whether the 4 doors, tailgate and fuel filler flap unlocking function is operating correctly.	In the event of a fault, consult the procedure for dealing with command AC005 .
Tailgate opening control	AC061: Tailgate opening	This command is used to test whether the tailgate opening motor is working.	In the event of a fault, consult the procedure for dealing with command AC061 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: STARTING

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Engine	ET239: Ignition switch position	INACTIVE + ACCESSORIES + after ignition feed. + START FEED	In the event of a fault, refer to the interpretation of status ET239 . (See 17B, Petrol Injection, Conformity check, Protection) or (see 13B, Diesel Injection, Conformity check, Protection).
	ET142: Engine operating phase	STOPPED STARTING RUNNING STALLED	In the event of a fault, refer to the interpretation of status ET142 . (See 17B, Petrol Injection, Conformity check, Protection) or (see 13B, Diesel Injection, Conformity check, Protection).
	PR025: Engine speed	0 rpm	In the event of a fault, carry out a fault finding on the multiplex network (see 88B). (See 17B, Petrol Injection, Conformity check, Protection) or (see 13B, Diesel Injection, Conformity check, Protection).

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

FUNCTION: AIR CONDITIONING
SUB-FUNCTION: USER SELECTION

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
User selection	ET028: Heated rear screen button	DEPRESSED RELEASED	In the event of a fault, refer to the interpretation of status ET028 .
	ET029: Air conditioning button	DEPRESSED RELEASED	In the event of a fault, refer to the interpretation of status ET029 .
	ET015: Passenger compartment blower	RUNNING STOPPED	In the event of a fault, refer to the interpretation of status ET015 .
	AC015: Air conditioning button indicator light	This command is used to test the operation of the air conditioning button indicator light.	In the event of a fault, refer to the interpretation of DF042 .
	AC019: Heated rear screen indicator light	This command is for testing operation of the heated rear screen indicator light.	In the event of a fault, refer to the interpretation of DF041 .
	AC020: CPE* button indicator light	This command is used to operate the electric central locking button.	In the event of a fault, refer to the interpretation of DF082 .
	AC052: Hazard warning lights indicator light	This command is used to activate the hazard warning lights.	In the event of a fault, refer to the interpretation of DF134 .

* CPE: Electric central door locking.

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

FUNCTION: AIR CONDITIONING

SUB-FUNCTION: HEATING

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Heating	ET015: Passenger compartment blower	RUNNING STOPPED	In the event of a fault, consult the interpretation of status ET015 .
	ET239: Ignition switch position	+ after ignition feed. STARTING ACCESSORIES FEED	In the event of a fault, refer to the interpretation of status ET239 .
	PR025: Engine speed	0 rpm	In the event of a fault, carry out a fault finding on the multiplex network (see 88B). And (see 17B, Petrol Injection, Conformity check, Protection) or (see 13B, Diesel Injection, Conformity check, Protection).
	PR001: Battery voltage	9 V < X < 16 V	In the event of a fault, run fault finding on the charging circuit (see 80A, Battery) .
	PR002: External temperature	°C	In the event of a fault, refer to the interpretation of parameter PR002 .
	PR024: Engine coolant temperature	°C	In the event of a fault (see 17B, Petrol Injection, Conformity check, Protection) (see 13B, Diesel Injection, Conformity check, Protection).
	AC060: Rear screen de-icer	This command is used to test the operation of the rear screen de-icer.	In the event of a fault, refer to the interpretation of command AC060 .
	AC110: Temperature display	Important: this command lasts approximately 30 seconds . This command is for testing the display.	In the event of a fault, refer to the interpretation of command AC110 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

FUNCTION: AIR CONDITIONING

SUB-FUNCTION: COLD LOOP

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Cold loop	PR002: External temperature	°C	In the event of a fault, refer to the interpretation of parameter PR002 .
	ET142: Engine operating phase	STOPPED STARTING RUNNING STALLED	In the event of a fault, refer to the interpretation of status ET142 .
	ET015: Passenger compartment blower	RUNNING STOPPED	In the event of a fault, refer to the interpretation of status ET015 .
	ET030: Air conditioning request	This request is sent by the UCH to the engine management computer. There are two possible scenarios: 1st scenario: vehicle equipped with manual air conditioning. The request is made by pressing the air conditioning button. 2nd scenario: vehicle equipped with climate control. The request is made following a user request or climate control computer request.	In the event of a fault, refer to the interpretation of status ET030 .
	PR025: Engine speed	0 rpm	In the event of a fault, run fault finding on the multiplex network (see 88B, Multiplex) then run fault finding on the injection system (see 13B, Diesel injection or 17B, Petrol injection).

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

LIGHTING FUNCTION
SUB-FUNCTION: LIGHTING CONTROL

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Lighting control	ET081: Lighting switch position	SIDE DIPPED MAIN BEAM HEADLIGHTS HAZARD LIGHTS	In the event of a fault, refer to the interpretation for status ET081 .
	ET085: Hazard warning lights button	DEPRESSED RELEASED	In the event of a fault, refer to the interpretation for status ET085 .
Lighting request	ET115: Request to switch on lights by light sensor	PRESENT ABSENT	In the event of a fault, refer to the interpretation for status ET115 .
	ET111: Front fog lights request	PRESENT ABSENT	In the event of a fault, refer to the interpretation for status ET111 .
	ET082: Rear fog lights request	PRESENT ABSENT	In the event of a fault, refer to the interpretation for status ET082 .
	ET083: Left-hand indicator request	PRESENT ABSENT	In the event of a fault, refer to the interpretation of statuses ET083 and ET084 .
	ET084: Right-hand indicator request	PRESENT ABSENT	
Tailgate	ET463: Door(s) or tailgate	OPEN CLOSED	In the event of a fault, consult the interpretation of status ET463 .
Vehicle speed	PR008: Vehicle speed	0 mph	In the event of a fault, run fault finding on the ABS system (see 38C, Anti-lock braking system).

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: LIGHTING OUTPUT

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Front fog lights	AC008: Front fog lights	This command is used to activate the front fog light.	In the event of a fault, apply the interpretation of DF108 .
Rear fog lights	AC009: Rear fog lights	This command is used to activate the rear fog light.	In the event of a fault, apply the interpretation of DF109 .
Direction indicators	AC022: Left-hand direction indicators	This command is used to activate the left-hand direction indicators.	In the event of a fault, refer to the interpretation for fault DF013 Left-hand direction indicator circuit .
	AC023: Right-hand direction indicators	This command is used to activate the right-hand direction indicators.	In the event of a fault, refer to the interpretation for fault DF012 Right-hand direction indicator circuit .
Lights	AC055: Side lights	This command enables the side lights to be activated.	In the event of a fault, apply the interpretation of DF087 .
	AC054: Dipped headlights	This command enables the dipped beam headlights to be activated.	In the event of a fault, apply the interpretation of DF088 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: LIGHTING OUTPUT (CONTINUED)

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
Lights (continued)	AC062: Main beam headlights	This command enables the headlights to be activated.	In the event of a fault, apply the interpretation of DF098 .
	AC063: Progressive switching on and off of the courtesy light	This command is used to check that the gradual courtesy light activation and deactivation function is operating correctly.	In the event of a fault, apply the interpretation of DF139 .
Temperature display	AC110: Temperature display	Controls the display.	In the event of a fault, apply the interpretation of command AC110 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: WIPING CONTROL

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Wiper control	ET077: Wiper stalk position	INACTIVE INTERMITTENT LOW-SPEED HIGH SPEED	In the event of a fault, apply the interpretation of status ET077 .
	ET096: Wiper stalk intermittent speed ring position	1 2 3 4 5	In the event of a fault, apply the interpretation of status ET096 .
	ET114: Windscreen wiper request by rain sensor	ABSENT LOW-SPEED HIGH SPEED	In the event of a fault, apply the interpretation of status ET114 .
Windscreen wiper park position	ET078: Windscreen washer request	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET078 .
	ET027: Windscreen wiper park position	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET027 .
Rear screen wiper park position	ET079: Rear screen washer request	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET079 .
	ET097: Rear screen wiper park position	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of fault ET097 .
	ET080: Windscreen rear screen wiper	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET080 .
Reverse gear	ET109: Reverse gear engaged	YES NO	In the event of a fault, apply the interpretation of status ET109 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: WIPING POWER

Function	Parameter or Status Checked or Action	Display and Notes	Fault finding
Rear screen wiper	AC007: Rear screen wiper	This command is used to operate the rear screen wiper.	In the event of a fault, apply the procedure for dealing with command AC007 .
Wiper speed	AC058: Intermittent wiper operation	This command is used to operate the intermittent windscreen wiper action.	In the event of a fault, apply the procedure for dealing with command AC058 .
	AC056: Low-speed wiper	This command is used to operate the windscreen wipers at low speed.	In the event of a fault, apply the procedure for dealing with command AC056 .
	AC057: High-speed wiper	This command is used to operate the windscreen wipers at high speed.	In the event of a fault, apply the procedure for dealing with command AC057 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: BATTERY

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Battery voltage	PR001: Battery voltage	9 V < X < 16 V	In the event of a fault, run fault finding on the charging circuit (see 80A, Battery).
	PR074: Battery setpoint voltage	Indicates the battery setpoint in V.	In the event of a fault, apply the interpretation of parameter PR074.
	PR076: Battery voltage after rest	Indicates the battery voltage after rest in V.	In the event of a fault, apply the interpretation of parameter PR076.
Alternator operation	ET142: Engine operating phase	STOPPED STARTING RUNNING STALLED	In the event of a fault, apply the interpretation of status ET142.

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application condition: engine stopped, + after ignition feed present.

SUB-FUNCTION: ALTERNATOR

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Battery voltage	PR073: Alternator charge signal	Indicates the alternator charge in V.	In the event of a fault, apply the interpretation of parameter PR073 .
Alternator setpoint	PR075: Alternator setpoint voltage	Indicates the alternator setpoint in V.	In the event of a fault, apply the interpretation of parameter PR075 .
Battery voltage	PR001: Battery voltage	9 V < X < 16 V	In the event of a fault, run fault finding on the charging circuit (see, 80A Battery), run fault finding on the multiplex network (see 88B, Multiplex) and run fault finding on the injection (see 13B, Diesel injection or 17B, Petrol injection).
Engine	PR024: Engine coolant temperature	°C	
	PR025: Engine speed	rpm	
	ET142: Engine operating phase	STOPPED STARTING RUNNING STALLED	In the event of a fault, apply the interpretation of status ET142 .
Alternator	AC130: Alternator regulation	Indicates the regulation of the alternator in volts.	In the event of a fault, run fault finding on the charging circuit (see 80A, Battery).

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET008	Blank UCH
ET015	Passenger compartment blower
ET027	Windscreen wiper park position
ET028	Heated rear screen button
ET029	Air conditioning button
ET030	Air conditioning request 2
ET044	CPE* button
ET045	RF* signal. received
ET046	Engine immobiliser
ET047	Brake pedal position
ET061	Open tailgate request
ET077	Wiper stalk position
ET078	Windscreen washer request
ET079	Rear screen washer request
ET080	Rear screen wiper request
ET081	Lighting switch position
ET082	Rear fog lights request
ET083	Left-hand indicator request

*CPE: Electric central door locking

*RF: radio frequency

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET084	Right-hand indicator request
ET085	Hazard warning lights button
ET087	One-touch window/SR* authorisation
ET096	Wiper intermittent speed ring position
ET097	Rear screen wiper park position
ET109	Reverse gear engaged
ET111	Front fog lights request
ET114	Wiping request via rain sensor
ET115	Request to switch on lights by light sensor
ET142	Engine operating phase
ET181	Key allocated to the vehicle
ET185	Key code received
ET186	Short press on door closing button
ET189	Long press on door opening button
ET193	RF* signal from a key allocated to the vehicle
ET229	Injection immobiliser code
ET239	Ignition switch position
ET240	Key frequency (in Hz)
ET250	Injection
ET463	Door(s) or tailgate

*SR: Sunroof.

*RF: radio frequency

ET008

BLANK UCH

NOTES

No faults should be present or stored.

SPECIFICATIONS

YES
NO

ET008 is YES.

Program the UCH using **SC004 Program UCH**.
Apply the procedure after replacing the computer (see **Replacement of components**).

ET008 is NO.

If the UCH is not blank and has just been replaced, check whether the key is allocated (use command **SC018 Key check**).
If the key is not allocated, allocate the keys using command **SC015 Key allocation**.
If the key is allocated, the UCH is operational.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET015	<u>PASSENGER COMPARTMENT FAN</u>

NOTES	No faults should be present or stored. Apply this status for vehicles fitted with manual air conditioning or heating. Apply the checks if there is an inconsistency between the value of the status and the air actually blown.

SPECIFICATIONS	RUNNING STOPPED

Check the configuration of the heating and air conditioning type of the vehicle:

- Check that **LC013 "Air conditioning type"** is "**Heating**" or "**Manual**" or "**Automatic**" according to the equipment level. **Otherwise carry out CF019 Air conditioning type.**

Check the presence and condition of fuses **F28 (30 A)**, **F29 (15 A)**, **F42 (10 A)** on the passenger compartment fuse and relay box (**component code 1016**).

Replace the fuse(s) if necessary.

Check the condition and connection of the connectors for the air conditioning control panel and blower unit (manual air conditioning) (tabs bent, oxidised, broken).

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET015
CONTINUED

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Manual air conditioning between the air conditioning control panel (**component code 319**) and the blower unit:

Connection code **38AH** between components **319 and 164**.
 Connection code **38AJ** between components **319 and 164**.
 Connection code **38AK** between components **319 and 164**.
 Connection code **38AL** between components **319 and 164**.
 Connection code **38DA** between components **164 and 1156**.
 Connection code **38DB** between components **164 and 1156**.
 Connection code **SP3** between components **164 and 1016**.

Between the **air conditioning control panel (component code 319)** and the UCH: Climate control:

Connection code **38LQ** between components **319 and 645**.
 Connection code **15M** between components **319 and 645**.
 Connection code **15A** between components **319 and 645**.
 Connection code **38LQ** between components **319 and 645**.
 Connection code **38ES** between components **319 and 645**.

Connection code **SP2** between component **319 and earth**.
 Connection code **LPD** between component **319 and earth**.
 Connection code **SP3** between components **164 and 1016**.
 Connection code **SP3** between components **164 and 1428**.
 Connection code **NAM** between component **319 and earth**.
 Connection code **MAN** between component **319 and earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
 Carry out fault finding on the system.

ET027	<u>WINDSCREEN WIPER PARK POSITION</u>

NOTES	No faults should be present or stored. Note: The park position (rest position) is used as a reference point by the UCH when the ignition is switched off whilst the wipers are operating and is required for intermittent wiper operation.

SPECIFICATIONS	ACTIVE INACTIVE

Check that fuse **F2 (15 A)** is sound and correctly fitted in the passenger compartment fuse and relay box. Replace the fuse if necessary.

Check the condition and connection of the 5-track (OR) connector on the **windscreen wiper motor (component code 212)** and UCH connector PE3 (tabs bent, broken, oxidised).

Check that the **earth** on the **MAS** connection of component **212** is perfect.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **14A (high speed request) 14B and 14C (low speed request)** of component **212** and on connector **PE3** of the **UCH (component code 645)**.

Check the mountings of the windscreen wiper motor (**component code 212**). Check that there is no point of resistance on the windscreen wiper mechanism.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET027
CONTINUED

Check for **insulation, continuity and the absence of interference resistance** on the following connections:

Check the combined wiper-washer:

- Connection code **AP71** between components **145** and **1016**.
- Connection code **14E (windscreen wiper timed control)** between components **645** and **145**.
- Connection code **14G (low speed windscreen wiper control)** between components **645** and **145**.
- Connection code **14H (high speed windscreen wiper control)** between components **645** and **145**.
- Connection code **MAN** or **MAM** between component **145** and the earth **MAN (left-hand drive)** or **MAM (right-hand drive)**.

Windscreen wiper motor check:

- Connection code **14A** between components **212** and **645**.
- Connection code **14B** between components **212** and **645**.
- Connection code **14C** between components **212** and **645**.
- Connection code **MAS** between component **212** and earth **MAS**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting and activate the supply to the rear screen wiper motor (**component code 212**).
Repair if necessary (see **MR 411 mechanical systems 85A, Wiping washing, Windscreen wiper mechanism: Removal - Refitting**) or replace the motor (**component code 212**) if it is defective. (See **MR 411, mechanical systems, 85A, Washing wiping, Windscreen wiper motor: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET028	<u>HEATED REAR SCREEN BUTTON</u>

NOTES	No faults should be present or stored. Apply this status for vehicles fitted with manual air conditioning or heating.

SPECIFICATIONS	PRESSED RELEASED

Check the operation of the heated rear screen button indicator light using AC019 Heated rear screen indicator light . Check the operation of the rear de-icer using AC060 Rear screen de-icer .
Check that fuses F29 (15A) and F42 (10 A) are sound and correctly fitted in the passenger compartment fuse and relay box (component code 260). Replace the fuse(s) if necessary.
Check the air conditioning control panel black 9-track connector, (component code 319) (bent, oxidised or broken tabs). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the continuity of the earth NAM connection between component NAM and the 9-track black connector of the manual air conditioning control panel (component code 319).
Check for + 12 V on connection LPD of the manual air conditioning control panel black 9-track connector (component code 319). Check for + 12 V accessories feed on connection SP2 of the manual air conditioning control panel black 9-track connector.
Check the PE1 40-track connector of the UCH, component code 645 (tabs bent, oxidised, broken).

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET028
CONTINUED

Check the **insulation, continuity and absence of interference resistance** of the following connections:

- Connection code **15A** between components **319** and **645**.
- Connection code **15M** between components **319** and **645**.
- Connection codes **LPD** and **SP2** between components **319** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the rear screen de-icing button (**component code 319**) (see **MR 411 mechanical systems 61A heating control panel or 62B Climate control panel**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET029	<u>AIR CONDITIONING BUTTON</u>

NOTES	No faults should be present or stored. Apply this status for vehicles with manual climate control or heating.

SPECIFICATIONS	PRESSED RELEASED

Check the configuration of the heating and air conditioning type of the vehicle:

- Check that **LC013 "Air conditioning type"** is "**Heating**" or "**Manual**" or "**Automatic**" according to the equipment level. **Otherwise carry out CF019 Air conditioning type.**

Check the operation of the air conditioning button indicator light **AC015 "Air conditioning button indicator light"**.

Check that fuses **F29 (15A)** and **F42 (10 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse(s) if necessary.

Check the **air conditioning control panel black 9-track connector, (component code 319)** (bent, oxidised or broken tabs).

Check that the **earth** on **connection NAM** of the manual air conditioning control panel black 9-track connector is in perfect condition.

Check for **+ 12 V** accessories feed on connections **LPD** and **SP2** of the manual air conditioning control panel black 9-track connector.

Check the **PE2** 40-track connector of the UCH, **component code 645** (tabs bent, oxidised, broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET029
CONTINUED

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **38ES** between components **319 and 645**.
- Connection code **38LP** between components **319 and 645**.
- Connection code **LPD and SP2** between components **319 and 1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the air conditioning button. (See **MR 411 mechanical systems 62C, Manual air conditioning, Control panel: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET030	<u>AIR CONDITIONING REQUEST 2</u>

NOTES	No faults should be present or stored. Apply the checks if: – the status remains PRESENT when a climate control request had been made, with the engine running.

SPECIFICATIONS	ABSENT PRESENT

This is the request for air conditioning sent by the UCH to the engine management computer.
This request may reach the UCH in two ways:

- In the case of a vehicle fitted with manual air conditioning, by pressing on the air conditioning button.
- In the case of a vehicle fitted with climate control, by request from the user or the climate control computer in automatic mode.

MANUAL AIR CONDITIONING	Check that status ET142 Engine operating phase is RUNNING; otherwise, carry out fault finding on the injection. Check that status ET029 Air conditioning button is PRESSED (button indicator light lit), otherwise perform fault finding on this status. Check that status ET015 Passenger compartment blower is RUNNING; otherwise, carry out fault finding on this status.
	If the fault is still present, contact Techline.
	If ET030 Air conditioning request 2 is Absent, check that there are no faults in the UCH and injection system (see 13B, Diesel injection) or (see 17B, Petrol injection).

CLIMATE CONTROL	Carry out fault finding on the climate control computer (see 62B, regulated climate control).
	If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET044	<u>ELECTRIC DOOR LOCK BUTTON</u>

NOTES	No faults should be present or stored. Only apply the checks if the PRESSED and RELEASED statuses are inconsistent with the actual position of the electric door locking button.

SPECIFICATIONS	PRESSED RELEASED

Check the following configurations:

- Check that **LC003 Deadlocking** is **With**. Otherwise carry out **CF009 Deadlocking**.
- Check that **LC040 Automatic locking when driving** is **With**. Otherwise carry out **CF108 Automatic locking when driving**.
- Check that **LC093 Central door locking** is **With**. Otherwise perform **CF192 Central door locking**.

Check that fuse **F42 (10 A)** is sound and correctly fitted to the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the door lock switch/hazard warning lights switch connector (**component code 1391**) (bent, oxidised, broken tabs).

Check the condition and connection of the UCH **PE1** and **PE2** connectors (**component code 645**) (tabs bent, oxidised or broken).

If the connector(s) are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for **+ 12 V** on deadlocking/warning switch connection **LPD** (**component code 1391**).
Check for the **earth** on connection **MAN** of the locking / hazard warning lights switch (**component code 1391**).

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET044
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections and press the central door locking button to check the signal status on the following connections using the oscilloscope (see signal status in **test1 "Central door locking"**):

- Connection code **64F** between components **645 and 1391**.
- Connection code **64Q** between components **645 and 1391**.
- Connection code **20M** between components **1391 and 645**.
- Connection code **20AW** between components **1391 and 645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

On component **1391**, with the lock button pressed, check the **continuity** between connections **20AW** and **MAN**.
On component **1391**, with the lock button released, check the **insulation** between connections **20AW** and **MAN**.

If the fault is still present, replace the central door locking/hazard warning lights switch (**component code 1391**).
(See **MR 411 84A, Controls - Signals, Hazard warning lights and central door locking: Removal - Refitting**).

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET045	<u>RF* SIGNAL RECEIVED</u>

NOTES	No faults should be present or stored. Only apply these checks if the status remains NO when a button on a key is pressed.
	Special note: This status enables you to check that the UCH is receiving the radio frequency signals transmitted by a key that may or may not belong to the vehicle.

SPECIFICATIONS	YES NO

Does the status change to "YES" after one of the other buttons on the key is pressed?

YES	Replace the key.

NO	Check the operation of this status with another key for the New Twingo, Modus or Clio III. If the status changes to YES, check the condition of the first key's battery. If the fault is still present, replace the key and allocate the key using command SC015 Key allocation. If the status remains NO, consult the interpretation of DF054 Computer.

*RF: radio frequency.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET046	<u>ENGINE IMMOBILISER</u>

NOTES	No faults should be present or stored. Apply the checks only if, the status remains ACTIVE after the ignition is switched off and back on again under the following conditions.

SPECIFICATIONS	ACTIVE INACTIVE

Check sure that ET239 Ignition switch position is + after ignition feed. Otherwise, refer to the interpretation of this status.
Check that ET185 Key code received is YES . Otherwise, refer to the interpretation of this status.
Check that ET181 Key allocated to vehicle is YES . Otherwise, refer to the interpretation of this status.
Check that ET008 UCH blank is NO . Otherwise, refer to the interpretation of this status.
Check that ET229 Injection immobiliser code is PROGRAMMED . Otherwise, refer to the interpretation of this status.
Check that ET250 Injection is NOT PROTECTED . Otherwise, refer to the interpretation of this status.
Carry out fault finding on the multiplex network (see 88B, Multiplexing).
If none of the computers on the vehicle has a malfunction and the statuses named in the notes are working properly, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET047	<u>BRAKE PEDAL POSITION</u>

NOTES	No faults should be present or stored.

SPECIFICATIONS	PRESSED RELEASED

Check the presence and condition of fuse **F5 (15 A)** in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the brake pedal switch 4-track connector (**component code 160**).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

On component **160**, with the brake pedal depressed, check the **continuity** between connections **AP10** and **5A** and the **insulation** of connections **AP10** and **65A**.
On component **160**, with the brake pedal released, check the **continuity** between connections **AP10** and **65A** and the **insulation** between connections **AP10** and **5A**.
Replace the switch if faulty. (See **MR 411 mechanical systems 37A, Mechanical component controls, Brake light switch: Removal - Refitting**).

Check the condition and connection of connector **PE1** of the UCH (**component code 645**) (tabs bent, oxidised, broken).

Check for **+ 12 V** (+ battery feed) on connection **AP10** of the brake switch connector (**component code 160**).
If it is not correct, check the **insulation, continuity and the absence of interference resistance** of connection **AP10** between components **160** and **1016**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET047
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **5A** between components **160** and **120**.
- Connection code **65A** between components **160** and **645**.
- Connection code **65A** between components **160** and **119**.
- Connection code **65A** between components **160** and **1094**.
- Connection code **AP10** between components **160** and **1016**.
- Connection code **65A** between components **160** and **172**.
- Connection code **65A** between components **160** and **173**.
- Connection code **65A** between components **160** and **639**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If all these checks are in order and the fault is still present, contact Techline.

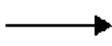
AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET061	<u>TAILGATE OPENING REQUEST</u>

NOTES	No faults should be present or stored. IMPORTANT On entry level vehicles (without central door locking), it is necessary to open the tailgate mechanically using the key.

SPECIFICATIONS	PRESENT ABSENT

Check the following configuration: – Check that LC093 Central door locking is With. Otherwise perform CF192 Central door locking.	
Check the condition and connection of the tailgate lock connector (bent, broken tabs, etc.).	
Check the condition and connection of the PE1 connector of the UCH, (component code 645) (tabs bent, broken, etc.).	
Check that the earth on connection MYH of the tailgate switch and tailgate lock are in perfect condition. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
When unlocking, check the signal status on component 1391 of the following connections using an oscilloscope (refer to test1 “Central door locking”).	
Tailgate lock:	
Oscilloscope red test pin on connection 20S of component 1322	 Oscilloscope black test pin on connection MYH of component 1322
If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET061
CONTINUED

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Tailgate lock check:

- Connection code **20S** between components **1322** and **645**.
- Connection code **86H** between components **1322** and **645**.

With electric central door locking:

- Connection code **20G** between components **560** and **645**.
- Connection code **MYH** between component **560** and earth **MHY**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET077	<u>WIPER STALK POSITION</u>

NOTES	No faults should be present or stored. Check the following configurations: – Check that LC094 "Wiper intermittent speed ring" displays "With". If not, carry out CF191 "Wiper intermittent speed ring". – Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function".

SPECIFICATIONS	INTERMITTENT LOW SPEED HIGH SPEED

Windscreen wiper fault:

Check the condition and connection of the 3-track windscreen wiper motor connector (component code 212) (broken, bent, oxidised tabs). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check that fuse F2 (15 A) is sound and correctly fitted to the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the UCH 40-track connector PE1 (component code 645) (tabs bent, oxidised or broken). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the insulation, continuity and the absence of interference resistance on the following connections: Combined wiper-washer check: ● Connection code AP71 between components 145 and 1016. ● Connection code 14E (windscreen wiper timed control) between components 645 and 145. ● Connection code 14G (low speed windscreen wiper control) between components 645 and 145. ● Connection code 14H (high speed windscreen wiper control) between components 645 and 145. ● Connection code 36E (rear screen wiper timed control) between components 645 and 145. ● Connection code MAN or MAN between component 145 and the earth MAN (left-hand drive) or MAM (right-hand drive). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the problem persists, replace the wiper stalk (component code 145). (See MR 411 mechanical systems 84A, Controls - Signals, Wiper switch: Removal - Refitting).

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET078 ET079	<u>WINDSCREEN WASHER REQUEST</u> <u>REAR SCREEN WASHER REQUEST</u>

NOTES	No faults should be present or stored.

SPECIFICATIONS	ACTIVE INACTIVE

Check that fuse **F2 (15 A)** is sound and correctly fitted to the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the 2-track connector on the **bidirectional washer pump (component code 677)** (broken, bent, oxidised tabs).

Check the condition and connection of the UCH 40-track connector **PE1 (component code 645)** (tabs bent, oxidised or broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Move the monolever (**component code 209**) to check the **+ 12 V, insulation, continuity and the absence of interference resistance** on the following connections:

Check the front and rear bidirectional washer pump:

- Connection code **16A** between components **677 and 145**.
- Connection code **24A** between components **677 and 145**.
- Connection code **16A** between components **145 and 645**.
- Connection code **24A** between components **145 and 645**.

If any of the connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, supply the pump. If the pump does not work, replace the bidirectional washer pump (**component code 677**). (See **MR 411, mechanical systems, 85A, Washing wiping, Windscreen washer pump: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET080	<u>REAR SCREEN WIPER REQUEST</u>

NOTES	No faults should be present or stored. Check the following configuration: Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function".

SPECIFICATIONS	ACTIVE INACTIVE

Check that fuse **F36 (15 A)** is sound and correctly fitted to the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the 3-track rear screen wiper motor connector (**component code 211**) (broken, bent, oxidised tabs).

Activate the rear screen wiper, check for **+ 12 V** on connection **36A** of the rear screen wiper motor connector (**component code 211**).

Check that the **earth** on connection **MYH** of the rear screen wiper motor connector (**component code 211**) is in perfect condition.

Check the condition and connection of the UCH 40-track connector **PE1 (component code 645)** (tabs bent, oxidised or broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET080
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Combined wiper-washer check:

- Connection code **AP71** between components **145 and 1016**.
- Connection code **36E (rear screen wiper timed control)** between components **645 and 145**.
- Connection code **MAN or MAM** between components **145 and the earth MAN (left-hand drive) or MAM (right-hand drive)**.
- Connection code **14E** between components **145 and 645**.
- Connection code **14H** between components **145 and 645**.
- Connection code **14G** between components **145 and 645**.

Rear screen wiper motor check:

- Connection code **36C** between components **211 and 645**.
- Connection code **36A** between components **211 and 1016**.
- Connection code **MYH** between component **211 and earth MYH**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting and supply of the **rear screen wiper motor (component code 211)** (see **MR 411, Mechanical systems 85A, Wiping**).

Repair if necessary or replace the motor if it is faulty.

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET081	<u>LIGHTING STALK POSITION</u>

NOTES	No faults should be present or stored. Check the following configurations: – Check that LC008 Daytime running lights is With. Otherwise carry out CF014 "Daytime running lights". – Check that LC015 Front fog lights is With. Otherwise run CF021 Front fog lights. – Check that LC025 "See-me-home lighting" is "With". Otherwise carry out CF032 "See-me-home lighting". – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".

SPECIFICATIONS	HAZARD LIGHTS SIDE DIPPED MAIN BEAM HEADLIGHTS

Check that fuses **F13 (30 A)**, **F15 (5 A)** (without automatic headlighting) or **F15 (15A)** (with automatic headlighting) is sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).

Check the condition and connection of the monolever connector (**component code 209**) and the UCH 40-track connector **PE2 (component code 645)** (tabs bent, broken or oxidised).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET081
CONTINUED 1

Checking the monolever (component code 209):

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Side lights:

With automatic headlighting:

- Connection code **78B** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

Dipped headlights:

With automatic headlighting:

- Connection code **78Q** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET081
CONTINUED 2

Main beam headlights:

With automatic headlighting:

- Connection code **11Q** between components **209** and **645**.
- Connection code **11R** (headlight flash) between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

Fog lights:

With automatic headlighting:

- Connection code **8H (front fog light)** between components **209** and **645**.
- Connection code **9B (rear fog light)** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or the (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earth** and connections are correct, replace the monolever (**component code 209**). (See **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET082	<u>REAR FOG LIGHTS REQUEST</u>

NOTES	No faults should be present or stored. Note: The signal can only be interpreted if the function is managed by the UCH (vehicle equipped with one-touch fog light control) Check the following configurations: Check that LC008 Daytime running lights is With. Otherwise carry out CF014 "Daytime running lights". – Check that LC015 Front fog lights is With. Otherwise run CF021 Front fog lights. – Check that LC025 "See-me-home lighting" is "With". Otherwise carry out CF032 "See-me-home lighting". – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".

SPECIFICATIONS	PRESENT ABSENT

With automatic headlighting:

Check the presence and condition of fuses F15 (5 A), F20 (15 A), F25 (5 A), F39 (10 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the light concerned (bent, oxidised, broken tabs).
Check the condition and connection of the UCH PE2 connector (component code 645) (tabs bent, oxidised or broken).
Check the condition and connection of the horn and lights switch connector (component code 209) (tabs bent, oxidised, broken).
Check for + 12 V (when rear fog lights are requested) on connection 9P of components 172 and 173. Check for earth on connection MF of component 172 and connection MG on component 173. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET082
CONTINUED 1

Rear fog lights check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Right-hand rear fog light:

- Connection code **9P** between components **172** and **230**.

Left-hand rear fog light:

- Connection code **9P** between components **173** and **230**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** (when there is a rear fog light request) on connection **9W** of component **230**. Check for **+ 12 V** on connection **BP16** of component **230**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Rear fog lights relay check:

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **9W** between components **230** and **645**.
- Connection code **BP16** between components **230** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET082
CONTINUED 2

Checking the monolever (**component code 209**):

Check the **insulation, continuity and the absence of interference resistance** on the following connection:

Check between the monolever (component code 209) and the UCH:

- Connection code **9B** between components **645** and **209**.

Check between the monolever (component code 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **209** and **1016**.
- Connection code **BPA3** between components **209** and **1016**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**. Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds** and the connections of the monolever (**component code 209**) are correct, replace the monolever (**component code 209**). (See **MR 411 mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET083 ET084	<u>LEFT-HAND INDICATOR REQUEST</u> <u>RIGHT-HAND INDICATOR REQUEST</u>

NOTES	No faults should be present or stored. Check the following configurations: Check that LC008 Daytime running lights is With. Otherwise carry out CF014 "Daytime running lights". – Check that LC015 Front fog lights is With. Otherwise run CF021 Front fog lights. – Check that LC025 "See-me-home lighting" is "With". Otherwise carry out CF032 "See-me-home lighting". – Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". – Check that LC095 "Automatic headlight function", displays "With". If not, carry out CF193 "Automatic headlight function".

SPECIFICATIONS	PRESENT ABSENT

Check that fuses **F13 (30A)** and **F15 (5 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse(s) if necessary.

Check the condition and connection of the monolever connector (**component code 209**) and the UCH 40-track connector **PE2 (component code 645)** (tabs bent, broken or oxidised).
If the connector(s) are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET083
ET084
CONTINUED

Checking the monolever (component code 209):

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Direction indicators:

With automatic headlighting:

- Connection code **64T (left-hand indicators)** between components **209** and **645**.
- Connection code **64S (right-hand indicators)** between components **209** and **645**.
- Connection code **BPA2** between components **1016** and **209**.
- Connection code **BPA3** between components **1016** and **209**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **feeds, earth** and connections are correct, replace the monolever (**component code 209**). (See **MR 411 Mechanical systems 84A, Controls - Signals, Lighting and signals switch: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET085	<u>HAZARD WARNING LIGHTS BUTTON</u>

NOTES	There must be no present or stored faults. Check the following configuration: – Check that LC018 Hazard warning lights switched on by ABS is definitely With. Otherwise, run CF024 Illumination of hazard warning lights by ABS.

SPECIFICATIONS	DEPRESSED RELEASED

Check the presence and condition of fuse **F42 (10 A)** in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the central door locking/warning switch connector (**component code 1391**) (tabs broken, bent, oxidised).

Check the condition and connection of the **PE1** connector of the UCH, (**component code 645**) (tabs bent, oxidised, broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for **+ 12 V** on connection **LPD** of the **locking/warning switch (component code 1391)**.
Check for **earth** on connection **MAN** of the **locking/warning switch (component code 1391)**.

Check for **+ 12 V** on connection **64D** (when there is a hazard warning lights request) on components **255, 267 and 172**.
Check for **earth** on components **255, 267 and 172** (indicator lights).
Check for **+ 12 V** on connection **64C** (when there is a hazard warning lights request) of components **256, 268 and 173** (indicator lights). Check for **earth** on components **256, 268 and 173**.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET085
CONTINUED

Lights check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

Front right-hand lights:

- Connection code **64D** between components **255 and 645**.
- Connection code **MAR** between component **1391 and earth MAR**.

Front left-hand lights:

- Connection code **64D** between components **256 and 645**.
- Connection code **MAS** between component **1391 and earth MAS**.

Right-hand repeater:

- Connection code **64D** between components **267 and 645**.
- Connection code **MAR** between component **1391 and earth MAR**.

Left-hand repeater:

- Connection code **64D** between components **268 and 645**.
- Connection code **MAN** between component **1391 and earth MAN**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supplies, earths** and connections are correct, replace the component concerned.

Check for **+ 12 V** on connection **LPD** of component **1391**.
Check for **earth** on connection **MAN** of component **1391**.

Switch check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **64F** between components **1391 and 645**.
- Connection code **64Q** between components **1391 and 645**.
- Connection code **MAN** between component **1391 and earth MAN**.
- Connection code **LPD** between components **1391 and 1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supply, earth** and connections are correct, replace the door **locking/warning switch (component code 1391)**. (see **MR 411 Mechanical 84A, Control - Signals, Hazard warning lights and central door locking: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET087	<u>ONE-TOUCH WINDOW CONTROL/SUNROOF AUTHORISATION.</u>

NOTES	There must be no present or stored faults. Check the following configuration: – Check that LC070 One-touch windows/SR* is With. Otherwise, perform CF173 One-touch windows/SR. Authorisation by the UCH of the one-touch window winder and/or sunroof motor function is present under the following conditions: – + ACCESSORIES FEED, – + AFTER IGNITION FEED, – when the engine is running.

SPECIFICATIONS	PRESENT ABSENT

Check the condition and connection of the **PE2** 24-track UCH connector, (**component code 645**) (tabs bent, broken, oxidised).

Check the condition and connection of the driver's electric window motor 6-track connector (**component 203**) (tabs bent, broken, oxidised).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If there is an electric sunroof, check that fuse **F26 (20 A)** is sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).

Check the condition and connection of the connectors for component **1512**.

With an electric sunroof, check the condition and connection of 4-track connector **339** in the A-pillar and the sunroof computer **12-track** connector (tabs bent, broken, oxidised).

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET087
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **SPB3** between components **203** and **1016**.
- Connection code **BPT3** between components **203** and **645**.
- Connection code **21E** between components **1512** and **203**.
- Connection code **21C** between components **1512** and **203**.
- Connection code **22D** between components **1512** and **133**.
- Connection code **22C** between components **1512** and **133**.
- Connection code **MAM** between component **1512** and earth **MAM**.
- Connection code **MAM** between component **203** and earth **MAM**.

For vehicles fitted with a sunroof:

- Connection code **21K**, between components **1579** and **645**.
- Connection code **MAM** between component **1579** and earth **MAM**.
- Connection code **BP93** between component **1579** and earth **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET096	<u>WIPER STALK INTERMITTENT SPEED RING POSITION</u>
NOTES	There must be no present or stored faults. Check the following configurations: – Check that LC094 Wiper intermittent speed ring displays With. If not, run CF191 Wiper intermittent speed ring. – Check that LC096 Automatic wiper function displays With. If not, run CF194 Automatic wiper function. – Check that LC095 Automatic headlight function displays "With". If not, run CF193 Automatic headlight function.
SPECIFICATIONS	INACTIVE 1 2 3 4 5

Windscreen wiper fault:

Check the condition and connection of the 3-track **windscreen wiper motor connector (component code 212)** (tabs bent, broken, oxidised).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the presence and condition of fuse **F2 (15 A)** on the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET096
CONTINUED

Check the condition and connection of the **PE1** 40-track UCH connector, (**component code 645**) (tabs bent, broken, oxidised).

If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Check the combined wiper-washer:

- Connection code **AP71** between components **145** and **1016**.
- Connection code **14E (windscreen wiper timed control)** between components **645** and **145**.
- Connection code **14G (low speed windscreen wiper control)** between components **645** and **145**.
- Connection code **14H (high speed windscreen wiper control)** between components **645** and **145**.
- Connection code **36E (rear screen wiper timed control)** between components **645** and **145**.
- Connection code **MAN** or **MAM** between component **145** and the earth **MAN (left-hand drive)** or **MAM (right-hand drive)**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the wiper stalk (**component code 145**).
(see **MR 411, Mechanical, 85A, Washing - Wiping, Windscreen wiper blade: Removal - Refitting**).

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET097	<u>REAR SCREEN WIPER PARK POSITION</u>

NOTES	There must be no present or stored faults.

SPECIFICATIONS	YES NO

Check the presence and condition of fuse **F36 (15 A)** on the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the 3-track rear screen wiper motor connector (**component 211**) (tabs bent, broken, oxidised).

Activate the rear screen wiper with the switch stalk (**component code 209**) or with **AC007 "Rear screen wiper"**, check for **+ 12 V** on connection **36A** of the **rear screen wiper motor connector (component code 211)**.

Check that the **earth** on connection **MYH** of the **rear screen wiper motor connector (component code 211)** is in perfect condition.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the condition and connection of the **PE1** 40-track UCH connector, (**component code 645**) (tabs bent, broken, oxidised).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET097
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Combined wiper-washer check:

- Connection code **AP71** between components **1016 and 145**.
- Connection code **36E (rear screen wiper timed control)** between components **645 and 145**.
- Connection code **MAN or MAM** between component **145 and the earth MAN (left-hand drive) or MAM (right-hand drive)**.

Rear screen wiper motor check:

- Connection code **36C** between components **211 and 645**.
- Connection code **36A** between components **211 and 1016**.
- Connection code **MYH** between component **211 and earth MYH**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting and supply of the **rear screen wiper motor, (component code 211)**.
Repair if necessary or replace the motor if it is faulty.

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET109	<u>REVERSE GEAR ENGAGED</u>

NOTES	There must be no present or stored faults.

Check the presence and condition of fuse F6 (15 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the 2-track connector on the switch connector (component code 155) of the reversing lights (component code 155) (tabs bent, broken, oxidised).
Check the condition and connection of the PE1 40-track UCH connector, (component code 645) (tabs bent, broken, oxidised). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check for + 12 V on connection AP3 of the reversing lights switch connector. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
With the switch pressed, check the continuity between connections AP3 and H66P of component 155. With the switch released, check the insulation between connections AP3 and H66P of component 155. If these checks are not correct, replace the reverse gear switch (component code 155) if necessary.
If these checks are correct, check the insulation, continuity and the absence of interference resistance on the following connections: ● Connection code AP3 between components 155 and 1016. ● Connection code HP66P between components 155 and 172. ● Connection code HP66P between components 155 and 173. ● Connection code HP66P between components 1222 and 155. ● Connection code HP66P between components 645 and 155. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair) repair the wiring or replace it.
If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET111	<u>FRONT FOG LIGHTS REQUEST</u>
NOTES	There must be no present or stored faults. Check that the LC015 Front fog lights is definitely With. Otherwise, use command CF021 Front fog lights. Note: The signal can only be interpreted if the function is managed by the UCH (component code 645) (vehicle equipped with one-touch fog light control).
SPECIFICATIONS	PRESENT ABSENT

With automatic headlighting:

Use AC008 Front fog lights to check that the front fog lights operate correctly.
Check the presence and condition of fuses F15 (5 A) , F20 (15 A) , F25 (5 A) , in the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the correct positioning and condition of the bulb concerned. Replace the light if necessary.
Check the condition and connection of the front fog light concerned (bent, oxidised, broken tabs).
Check the condition and connection of the PE2 connector of the UCH, (component code 645) (tabs bent, oxidised, broken).
Check the condition and connection of the control stalk connector (component code 209) (tabs bent, oxidised, broken). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check for + 12 V (when there is a rear fog lights request) on connection 8B of components 176 and 177 . Check for earth on connection MAR of component 176 and connection MAS of component 177 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET111
CONTINUED 1

Front fog lights check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

Right-hand light and front right-hand fog light relay:

- Connection code **8B**, between components **176** and **231**.

Front left-hand light and front left-hand fog light relay:

- Connection code **8B**, between components **177** and **231**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** (when there is a front fog lights request) on connection **8M** of component **231**. Check for **+ 12 V** on connection **BP16** of component **231**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Front fog lights relay check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- Connection code **8M** between components **231** and **645**.
- Connection code **BP16** between components **231** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET111
CONTINUED 2

Control stalk check (component code 209):

Check the **insulation, continuity and the absence of interference resistance** of the following connections:

Check between the switch stalk (component code 209) and the UCH:

- Connection code **8H** between components **209** and **645**.

Check between the control stalk (component 209) and the passenger compartment fuse and relay box (component code 1016):

- Connection code **BPA2** between components **209** and **1016**.
- Connection code **BPA3** between components **209** and **1016**.
- Connection code **MAN** or **MAM** between component **209** and **earth MAN** or **earth MAM** (depending on the driving layout, right- or left-hand drive).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 12 V** on connections **BPA2** and **BPA3** of component **209**. Check for **earth** on connection **MAM** (for right-hand drive vehicles) or **MAN** (for left-hand drive vehicles) of component **209**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supplies** and connections of the control stalk (**component code 209**) are correct, replace the control stalk (**component code 209**). (See **MR 411 Mechanical 84A, Control - Signals, Lighting - Signals switch: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET114 ET115	<u>WIPER REQUEST BY RAIN SENSOR</u> <u>LIGHT ACTIVATION REQUEST BY LIGHT SENSOR</u>

NOTES	There must be no present or stored faults. Make sure that the vehicle is fitted with the rain and light sensor. The status should change to LOW SPEED or HIGH SPEED if there is water on the windscreen where the sensor is positioned. The status should change to PRESENT when the light intensity requires the lights to be switched on with the engine running. Make sure that the other positions of the wiper control are working properly Check the following configurations: – Check that LC008 Daytime running lights is "With". Otherwise run CF014 Daytime running lights. – Check that LC044 Rain/light sensor displays "Present". If not, run CF035 Rain/light sensor. – Check that LC095 Automatic headlight function displays "With". If not, run CF193 Automatic headlight function. – Check that LC096 Automatic wiper function displays With. If not, run CF194 Automatic wiper function.

SPECIFICATIONS	ET114: ABSENT/LOW SPEED/HIGH SPEED ET115: PRESENT/ABSENT

Conditions: Check that the switch stalk (component code 209) is in the intermittent position so that automatic operation can be activated.	
Check that the vehicle has a rain/light sensor (component code 1415).	
Check that the function is not deactivated, perform the following cycle twice to activate the automatic headlight function: Switch stalk (component code 209) OFF → Σωιτχη σταλκ (χομπονεντ χοδε 209) to side lights ON position.	
Check the condition and connection of the 3-track connector of the rain/light sensor (component 1415) (tabs bent, broken or oxidised).	
If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.	
Check for + 12 V on connection BPT of component 1415 .	
Check for earth on connection MAM of component 1415 .	
If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET114
ET115
CONTINUED

Check **the continuity and insulation** of the following connections:

- Connection code **BPT** between components **645 and 1415**.
- Connection code **MAM** between component **1415 and earth**.
- Connection code **14S** between components **645 and 1415**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the rain/light sensor (**component code 1415**) is correctly positioned and bonded (see **MR411, Mechanical systems, 85A Wiping - Washing, Rain and light sensor: Removal - Refitting**).

If the fault is still present, replace the rain/light sensor (**component code 1415**). (See **MR 411 Mechanical 85A, Wiping - Washing, Rain and light sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET142	<u>ENGINE OPERATING PHASE</u>

NOTES	There must be no present or stored faults.

SPECIFICATIONS	STOPPED STARTING RUNNING STALLED

Run a multiplex network test (see 88B, Multiplexing).
Carry out fault finding on the injection system (see 13B, Diesel injection or 17B, Petrol injection).
If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET181	<u>KEY ALLOCATED TO THE VEHICLE</u>

NOTES	There must be no present or stored faults. Apply the checks only if the status is NO with the ignition on.

SPECIFICATIONS	YES NO

Check that ET185 "Key code received" is " YES ". If it is " NO ", run fault finding on this status.
Switch the ignition off and then on again. If the status remains NO , run command SC018 Key check .
If the fault is still present, replace the defective key(s) and allocate the keys using command SC015 Key allocation .
If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET185	<u>KEY CODE RECEIVED</u>

NOTES	There must be no present or stored faults. Apply the checks only if the status is NO with the ignition on.

SPECIFICATIONS	YES NO

Check that there are no powerful electromagnetic wave sources (CB (Citizen Band), mobile phone in close proximity to the transponder ring).
Switch the ignition off and then on again.

Check that fuse **F8 (15 A)** is sound and correctly fitted in the passenger compartment fuse and relay box.
Replace the fuse if necessary.

Try the vehicle's second key.
If the status changes to **YES**, replace the first key and program the keys using command **SC015 Key allocation**.

This status tells you whether the UCH has received the immobiliser code from the key.
If the status remains **NO**, check the connection between the transponder ring (**component code 1618**) and the UCH (**component code 645**).

Check the **+ 12 V** feed on connection **AP43** of component **1618**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the **earth** on track 2 of the transponder ring is in perfect condition.

Check **the insulation, the continuity and the absence of interference resistance** on the following connections:

- Connection code **AP43** between components **1016** and **1618**.
- Connection code **80X** between components **645** and **1618**.
- Connection code **80Y** between components **645** and **1618**.
- Connection code **NAM** between component **1618** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET186 ET189	<u>SHORT PRESS ON DOOR CLOSING BUTTON</u> <u>DOOR OPENING BUTTON PRESSED</u>

NOTES	There must be no present or stored faults. Check that LC097 Key type is definitely RF*. Otherwise run CF195 Key type and select RF*. Check the operation of statuses ET045 R.F.* signal received and ET193 RF* signal from a key allocated to the vehicle. Note: The key must not be in the ignition switch. Signal can be interpreted if the ignition is switched off (key removed from the ignition switch).

SPECIFICATIONS	ACTIVE INACTIVE

Check the condition of the key battery and of the button contacts.
Replace the battery if necessary.

Try the vehicle's second key.
If the status changes to **Active**, replace the first key and allocate the keys using command **SC015 Key allocation**.

If the fault is still present, contact the Techline.

* RF: radio frequency

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET193	<u>RF SIGNAL FOR A KEY ALLOCATED TO THE VEHICLE</u>

NOTES	There must be no present or stored faults. First check the operation of statuses ET045 RF* signal received and ET181 Key allocated to the vehicle .

SPECIFICATIONS	PRESENT ABSENT

If statuses **ET045 RF*** signal received and **ET181 Key allocated to the vehicle** are correct, contact Techline.

* RF: radio frequency

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET229	<u>INJECTION IMMOBILISER CODE</u>

NOTES	There must be no present or stored faults. Only apply the checks if the status is NOT PROGRAMMED or NOT DETERMINED after activating the + After ignition feed for 20 seconds; switch off the ignition, wait for the end of Powerlatch (20 minutes maximum), and then switch on the ignition again.

SPECIFICATIONS	UNDETERMINED NOT PROGRAMMED PROGRAMMED

STATUS NOT PROGRAMMED	Run command SC017 Program injection immobiliser code .

STATUS UNDETERMINED	Switch the ignition off and then on again.
	First check whether statuses ET046 Immobiliser , ET181 Key allocated to the vehicle and ET239 Position of the ignition switch are correct.
	Carry out a multiplex network test (see 88B, Multiplexing).
	Carry out fault finding on the injection system (see 13B, Diesel injection or 17B, Petrol injection).
	Check the condition of the injection computer connectors.
	Check that the + 12 V supply and injection computer earth (component code 120) are in order.
	If the fault is still present, contact the Techline.

* Powerlatch: Time required for injection computer supply after **+ 12 V** after ignition feed cut-off.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET239	<u>IGNITION SWITCH POSITION</u>

NOTES	There must be no present or stored faults.

SPECIFICATIONS	+ APC + START + ACCESSORIES FEED

Check the correct position and condition of fuses **F2 (60A)** in the engine fuse and relay box (**component code 597**) and **F8 (15A)** in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the starter switch connector (**component code 104**) (tabs bent, broken, oxidised).

Check the condition and connection of the **PE1** connector of the UCH, (**component code 645**) (tabs bent, oxidised, broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for **+12 V** on connection **AP29** of component **232**.

Check **the insulation, continuity and the absence of interference resistance** on the connections between the UCH (**component code 645**) and the **ignition switch (component 104)**:

- Connection code **A** between components **104 and 1016**.
- Connection code **BP12** between components **104 and 597**.
- Connection code **AP43** between components **1016 and 645**.
- Connection code **D** between components **104 and 232**.
- Connection code **1B** between components **232 and 645**.
- Connection code **AP29** between components **1016 and 232**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are in order, replace the ignition switch (**component code 104**).
(See **MR 411 Mechanical 82A, Immobiliser, Ignition switch: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET240	<u>KEY FREQUENCY (IN MHZ)</u>

NOTES	There must be no present or stored faults.

SPECIFICATIONS	433 NONE

NONE	The vehicle must not be equipped with a locking/unlocking button.
	Check that LC097 Key type is definitely " Standard ". Otherwise run CF195 Key type and select " Standard ".

WITH	The vehicle must be equipped with a locking/unlocking button.
	Check that LC097 Key type is definitely RF* , otherwise run CF195 Key type and select RF* .
	Check the operation of statuses ET045 R.F.* signal received and ET193 RF* signal from a key allocated to the vehicle .
	If the door locking/unlocking by radio frequency key does not operate, replace the key and run command SC015 Key allocation .
	If the fault is still present, contact the Techline.

* RF: radio frequency

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET250	<u>INJECTION</u>

NOTES	There must be no present or stored faults. Switch on the + after ignition feed for 20 seconds, switch off the ignition, wait until the end of Powerlatch* (20 minutes maximum), then switch on the ignition again. Check that the immobiliser warning light remains lit.

SPECIFICATIONS	NOT PROTECTED PROTECTED

After the setpoint has been obtained, if the status remains **PROTECTED**, first check that statuses **ET046 Engine immobiliser**, **ET181 Key allocated to vehicle** and **ET229 Injection immobiliser code** are operating correctly.

Carry out a multiplex network test (see **88B, Multiplexing**).

Carry out fault finding on the injection system (see **13B, Diesel injection** or **17B, Petrol injection**).

If the fault is still present, contact the Techline.

*Powerlatch: Time required for injection computer supply after + 12 V after ignition feed cut-off to the ignition switch.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET463	<u>DOOR(S) OR TAILGATE</u>
NOTES	There must be no present or stored faults. Status ET463 must be "Open" when at least one of the doors or tailgate is open and must be "Closed" when all of the doors and tailgate are closed. Note: The tailgate lock (electric central door locking) must only be used to open the luggage compartment and not to close it.
SPECIFICATIONS	OPEN CLOSED

With deadlocking:

Check the following configurations:

- Check that LC097 Key type is definitely RF depending on the vehicle equipment level. Otherwise run CF195 Key type.
- Check that LC003 Deadlocking is definitely With. Otherwise, run CF009 Deadlocking.
- Check that LC040 Locking when driving is definitely With. Otherwise, run CF108 Locking when driving.
- Check that LC093 Central door locking is definitely With. Otherwise run CF192 Central door locking.

Check the presence and condition of the fuse **F14 (20 A)** (for vehicles equipped with deadlocking) in the passenger compartment fuse box and relay, (**component code 1016**).

Replace the fuse if necessary.

Check the condition and connection of connectors **PE1**, **PE2** and **PE3** of the UCH (**component code 645**) (tabs bent, oxidised, broken).

Check the condition and connection of the electric central door locking connectors for the driver (**component code 140**) and passenger's doors (**component code 141**) and the tailgate (**component code 1322**) (tabs bent, broken, oxidised).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Door locks:

Check for **+ 12 V** on connection **BP3** of component **1042**.

Check for **+ 12 V** on connection **86H** of component **140** or **141**.

Check for **earth** on connection **MAM** of component **1042**.

Check for **earth** on connection **MAN** of component **140** or **141**.

AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET463
CONTINUED 1

Tailgate locks:

Check for **+ 12 V** on connection **86H** (when there is an opening request) of component **1322**. Check for **earth** on connection **MYH** on component **1322**.

Electric central door locking, tailgate lock and central door locking relay check:

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

Door locks:

- Connection code **20C** between components **140 or 141** and **645**.
- Connection code **20D** between components **140 or 141** and **645**.
- Connection code **20AP** between components **140 or 141** and **1016**.
- Connection code **MAN (right-hand drive) or MAM (left-hand drive)** between component **140** and **earth MAN (right hand drive) or MAM (left-hand drive)**.
- Connection code **MAN (left-hand drive) or MAM (right-hand drive)** between component **141** and **earth MAN (left-hand drive) or MAM (right-hand drive)**.

Tailgate lock:

- Connection code **20S** between components **1322 or 645**.
- Connection code **86H** between components **1322 or 645**.
- Connection code **MYH** between component **1322** and **earth MYH**.

For manual gearbox:

- Connection code **86H** between components **140 or 141** and **645**.

For sequential gearbox:

- Connection code **H24** between components **140** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supplies** and connections of the electric central door and tailgate locking are correct, check the central door locking relay.

Check **the insulation** of the contact of component **140** between connections **86H** and **MAM** (door closed).
Check **the continuity** of the contact of component **140** between connections **86H** and **MAM** (door open).
Check **the insulation** of the contact of component **141** between connections **86H** and **MAM** (door closed).
Check the **continuity** of the contact of component **141** between connections **86H** and **MAM** (door open).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supply**, connections and **earth** of the central door locking relay are correct, replace the relay.

If the **supplies**, central door locking connections, locking relay and electric central door locking relay are correct, replace the lock concerned.

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

ET463
CONTINUED 2

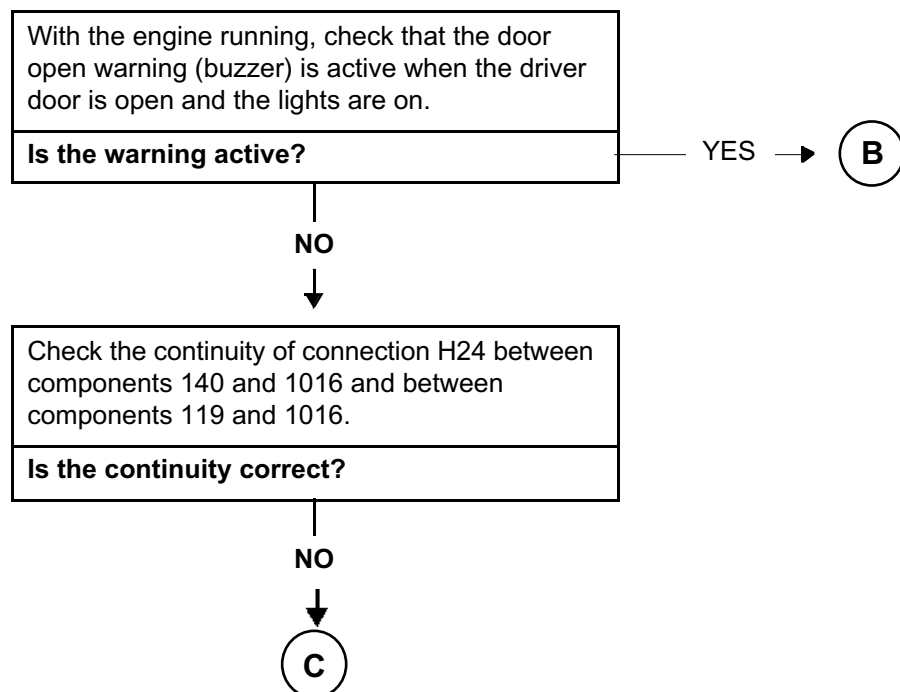
Check **the insulation, continuity and the absence of interference resistance** of the following connections:
Central door locking/warning switch check (**component code 1391**):

- Connection code **20AW** between components **645** and **1391**.
- Connection code **20M** between components **645** and **1391**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, replace the central door locking/warning switch (**component code 1391**).
(See **MR 411 Mechanical 84A, Control - Signals, Hazard warning lights and central door locking: Removal - Refitting**).

Special feature: Depending on the vehicle equipment, an additional fuse and diode are present on the wiring:



AFTER REPAIR

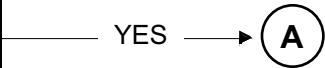
Repeat the conformity check from the start.
Carry out fault finding on the system.

ET463 CONTINUED 3	



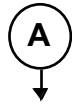
Check for the driver's door signal separation diode in the passenger compartment fuse box (location 46 in the relay and fuse box) and the conformity of fuse 2A (location 45 in the relay and fuse box), which are inserted between the driver's door switch and the UCH.

Are the diode and fuse present and correct?



AFTER REPAIR	Repeat the conformity check from the start. Carry out fault finding on the system.

ET463
CONTINUED 4



Check that the diode is fitted the right way round (in accordance with the foolproofing device).

Is the diode fitted the wrong way round?

YES

Fit a diode the right way round in the correct location in the passenger compartment fuse box.

(see **MR 411 Mechanical, 81C, Fuses, Fuses: List and location of components**)

NO



A disconnected earth causes damage to the fuse. If the diode and/or the fuse are damaged, the tailgate earth (MYH) and the passenger door earth (MAN and MAM) should be checked.

If the earths are correct, replace the diode and/or the fuse in the passenger compartment fuse box (see **MR 411 Mechanical, 81C, Fuses, Fuses: List and location of components**)



Check the continuity of connection **86H** between components **1016** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the wiring is in order, replace the driver's door switch (**component code 140**) (see **MR 411 Mechanical systems, 81B, Interior lights, Door switch: Removal - Refitting**)

AFTER REPAIR

Repeat the conformity check from the start.
Carry out fault finding on the system.

Tool parameter	Diagnostic tool title
PR002	External temperature
PR056	Number of keys allocated
PR073	Alternator charge signal
PR074	Battery setpoint voltage
PR075	Alternator setpoint voltage
PR076	Battery voltage after rest

PR002	<u>EXTERNAL TEMPERATURE</u>

NOTES	Only apply the checks if the parameter is inconsistent. Special notes: Check that LC002 "External temperature sensor" is "WITH". Otherwise perform CF029 "External temperature sensor". Check that LC067 "External temperature display" is "WITH". Otherwise perform CF171 "External temperature display".

Note:

If the exterior temperature sensor (**component code 245**) is disconnected or the vehicle is not equipped with an exterior temperature sensor, the temperature displayed is the default temperature of **215 °C**.

Check the 12-track temperature sensor connector, (**component code 245**) (tabs bent, oxidised, broken, etc.).

Check the **PE2** 40-track connector of the UCH, **component code 645** (tabs bent, oxidised, broken).

If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **47D** between components **240** (for left-hand drive vehicles) or **239** (for right-hand drive vehicles) and **645**.
- Connection code **47C** between components **240** (for left-hand drive vehicles) or **239** (for right-hand drive vehicles) and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the resistance of the connector sensor disconnected from connections **47C** and **47D**.

Temperature (°C)	Sensor resistance (Ω) ± 50 Ω
1	5980
5	5020
10	4280
15	3530
20	2900
25	2300
30	2010
35	1620

Replace the exterior temperature sensor (**component code 245**) if not correct. (**See MR 411 mechanical systems 62A, air conditioning, Exterior air temperature sensor: Removal - Refitting**).

If the fault is still present, contact Techline.

PR056	<u>NUMBER OF KEYS ALLOCATED</u>

NOTES	No faults should be present or stored.

This parameter indicates the number of key(s) programmed by the UCH.

0 < PR056 < 4

If **PR056 "Number of keys allocated" = 0**, no key is allocated by the UCH.
Perform key allocation using command **SC015 "Key allocation"**.

If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

PR073	<u>ALTERNATOR CHARGE SIGNAL</u>

NOTES	No faults should be present or stored. Note: In the event of a malfunction, the value will be 99.6% (engine running).

Depending on the battery charge status, the operating phase and the battery temperature, the UCH determines what the voltage across the battery terminals should be.

When the battery charge drops, and **PR076 Battery voltage after rest** decreases, the UCH can temporarily increase the **PR075 Alternator setpoint voltage** by 1 V and for a period of 15 minutes after switching on + after ignition feed.

Before and during starting, **PR075 Alternator setpoint voltage** is fixed at 10.7 V.

A maximum of 30 seconds after the engine has started, the UCH sets **PR075 Alternator setpoint voltage** to the optimum value calculated.

The injection computer can also control the **alternator (component code 103)** regulation voltage.

The injection computer sends the maximum authorised power delivered by the engine, to the UCH via the multiplex network.

If the power available by the engine is less than the power consumed by the **alternator (component code 103)**, the UCH reduces **PR075 Alternator setpoint voltage**.

0 % < PR073 < 100 %

In the event of a fault, carry out a complete check on the battery and the charging circuit (see **Technical Note 16A, Starting-Charging**).

If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

PR074	<u>BATTERY SETPOINT VOLTAGE</u>

NOTES	No faults should be present or stored.

Depending on the battery charge status, the operating phase and the battery temperature, the UCH determines what the voltage across the battery terminals should be.

When the battery charge drops, and **PR076 Battery voltage after rest** decreases, the UCH can temporarily increase the **PR075 Alternator setpoint voltage** by **1 V** and for a period of **15 minutes** after switching on **+ after ignition feed**.

Before and during starting, **PR075 Alternator setpoint voltage** is fixed at **10.7 V**.

A maximum of **30 seconds** after the engine has started, the UCH sets **PR075 Alternator setpoint voltage** to the optimum value calculated.

The injection computer can also control the **alternator (component code 103)** regulation voltage.

The injection computer sends the maximum authorised power delivered by the engine, to the UCH via the multiplex network.

If the power available by the engine is less than the power consumed by the **alternator (component code 103)**, the UCH reduces **PR075 Alternator setpoint voltage**.

In the event of a fault, perform a complete check on the battery and charging circuit (see **80A, Battery**).

If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

PR075	<u>ALTERNATOR SETPOINT VOLTAGE</u>

NOTES	No faults should be present or stored.

Depending on the battery charge status, the operating phase and the battery temperature, the UCH determines what the voltage across the battery terminals should be.

When the battery charge drops, and **PR076 Battery voltage after rest** decreases, the UCH can temporarily increase the **PR075 Alternator setpoint voltage** by **1 V** and for a period of **15 minutes** after switching on **+ after ignition feed**.

Before and during starting, **PR075 Alternator setpoint voltage** is fixed at **10.7 V**.

A maximum of **30 seconds** after the engine has started, the UCH sets **PR075 Alternator setpoint voltage** to the optimum value calculated.

The injection computer can also control the **alternator (component code 103)** regulation voltage.

The injection computer sends the maximum authorised power delivered by the engine, to the UCH via the multiplex network.

If the power available by the engine is less than the power consumed by the alternator, the UCH reduces **PR075 Alternator setpoint voltage**.

In the event of a fault, perform a complete check on the battery and charging circuit (see **80A, Battery**).

If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

PR076	<u>BATTERY VOLTAGE AFTER REST</u>

NOTES	No faults should be present or stored.

The battery voltage after rest represents the battery charge status.
9 V < PR076 < 14 V
In the event of a fault, perform a complete check on the battery and charging circuit (see 80A, Battery).
If the fault is still present, contact Techline.

AFTER REPAIR	Repeat the conformity check from the start.

Fault finding - Command summary table

Clearing		
RZ001	Fault memory	This command is used to clear certain present and stored faults in the UCH.

Settings		
VP004	Enter VIN	This command permits manual entry of the vehicle's VIN into the computer. Use this command each time the computer is replaced. The vehicle identification number is indicated on the oval plate on the right-hand side door pillar. Procedure for writing the VIN – establish dialogue with the UCH, – select the repair mode menu, – select the other settings menu, – select line VP004 Write VIN, – enter the vehicle identification number 2 times, – read the VIN again from the Identification menu to check that it conforms with ID019 “VIN code”.

Activation		
AC004	Central door locking	Refer to the interpretation of commands
AC005	Central door unlocking	Refer to the interpretation of commands
AC007	Rear screen wiper	Refer to the interpretation of commands
AC056	Low-speed wiper	Refer to the interpretation of commands
AC057	High-speed wiper	Refer to the interpretation of commands
AC058	Intermittent wiper request	Refer to the interpretation of commands
AC060	Rear screen de-icer	Refer to the interpretation of commands
AC061	Tailgate opening	Refer to the interpretation of commands
AC110	Temperature display	Refer to the interpretation of commands

AC004 AC005	<u>CENTRAL LOCKING</u> <u>CENTRAL DOOR UNLOCKING</u>

NOTES	Special notes: If the opening element motors are supplied too quickly and it is too difficult to test using a multimeter, the measurements must be made using an oscilloscope.
	No faults should be present or stored.

IMPORTANT

The door motors can perform 15 successive activations; beyond this there is a risk of the motors overheating and being damaged.

NOTES	No faults should be present or stored. Status ET463 "Door(s) or tailgate" must be "Open" when at least one of the doors or tailgate is open and must be "Closed" when all of the doors and tailgate are closed. Note: The tailgate lock (electric central door locking) must only be used to open the luggage compartment and not to close it.

Check that fuses **F14 (20 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (for vehicles equipped with deadlocking function) (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the **PE1**, **PE2** and **PE3** connectors of the UCH (**component code 645**) (tabs pushed back, oxidised, broken).

Check the condition and connection of the connectors of the electric locks of the driver's door (**component code 140**), passenger door (**component code 141**) and the tailgate (**component code 1322**) (tabs pushed back, oxidised, broken).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Carry out another fault finding check on the system.

AC004
AC005
CONTINUED 1

When unlocking, check the signal status on component **140 or 141** of the following connections using an oscilloscope (refer to **test1 “Central door locking”**).

Passenger door locks (**component code 141**) or driver door locks (**component code 140**) :

Oscilloscope red test pin on connection **20D** of component **140 or 141**
Oscilloscope black test pin on connection **20C** of component **140 or 141**

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

When deadlocking, check the signal status on component **140 or 141** of the following connections using an oscilloscope (refer to **test1 “Central door locking”**).

Passenger door locks (**component code 141**) or driver door locks (**component code 140**) :

Oscilloscope red test pin on connection **20AP** of component **140 or 141**
Oscilloscope black test pin on connection **20C** of component **140 or 141**

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

When unlocking, check the signal status on component **140 or 141** of the following connections using an oscilloscope (refer to **test2 “Central door unlocking”**).

Passenger door locks (**component code 141**) or driver door locks (**component code 140**) :

Oscilloscope red test pin on connection **20D** of component **140 or 141**
Oscilloscope black test pin on connection **20C** of component **140 or 141**

Oscilloscope red test pin on connection **20S** of component **1322 or 645**
Oscilloscope black test pin on connection **MYH** of component **1322 and the earth**

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Carry out another fault finding check on the system.

AC004
AC005
CONTINUED 2

Checking the electric central door locking, tailgate lock and central door locking relay (component code 1322):

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Door locks:

- Connection code **20C** between components **140 or 141** and **645**.
- Connection code **20D** between components **140 or 141** and **645**.
- Connection code **20AP** between components **140 or 141** and **1042** (if deadlocking).
- Connection code **MAN (right-hand motor) or MAM (left-hand motor)** between component **140 or 141** and the **earth MAN (right-hand motor) or MAM (left-hand motor)**.

Tailgate lock check:

- Connection code **20S** between components **1322 or 645**.
- Connection code **86H** between components **1322 or 645**.
- Connection code **MYH** between component **1322** and **earth MYH**.

For manual gearbox:

- Connection code **86H** between components **140 or 141** and **1016**.

For sequential gearbox:

- Connection code **H24** between components **140** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Vehicle which is equipped with deadlocking function:

If the **supplies** and connections of the electric central door and tailgate locking are correct, check the central door locking relay (**Component code 1042**).

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Central door locking relay check:

- Connection code **BP3** between components **1042** and **1016**.
- Connection code **MAM** between component **1042** and **earth MAM**.
- Connection code **20AP** between components **1042** and **645**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the **supply**, connections and **earth** of the central door locking relay are correct, replace the relay.

If the **feeds**, the electric door locking connections, the locking relay (**Connection code 1042**) and the electric central door locking are correct, check the door lock switch / hazard warning light switch (**component code 1391**).

AFTER REPAIR

Carry out another fault finding check on the system.

AC004
AC005
CONTINUED 3

Check **the insulation, continuity and the absence of interference resistance** on the following connections:
Central door locking/warning switch check:

- Connection code **20AW** between components **645** and **1391**.
- Connection code **20M** between components **645** and **1391**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the connections are correct, replace the central door locking/hazard warning lights switch (**Component code 1391**). (See **MR 411 mechanical systems 84A, Controls - Signals, Hazard warning lights and central door locking: Removal - Refitting**).

If the fault is still present, replace the door lock affected (passenger door lock (**component code 141**) or passenger door lock (**component code 140**)).

AFTER REPAIR

Carry out another fault finding check on the system.

AC007	<u>REAR SCREEN WIPER</u>

NOTES	No faults should be present or stored. Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". Check that LC094 "Windscreen wiper intermittent speed ring" is "With", otherwise carry out CF191 "Windscreen wiper intermittent speed ring".

Check that fuse F36 (15 A) is sound and correctly fitted to the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the 3-track rear screen wiper motor connector (component code 211) (broken, bent, oxidised tabs).
Activate the rear screen wiper, check for + 12 V on connection 36A of the rear screen wiper motor connector (component code 211).
Check that the earth on connection MYH of the rear screen wiper motor connector (component code 211) is in perfect condition.
Check the condition and connection of the UCH 40-track connector PE1 (component code 645) (tabs bent, oxidised or broken). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Carry out another fault finding check on the system.

AC007
CONTINUED 1

Check the **insulation, continuity and the absence of interference resistance** of the following connection:

Combined wiper-washer check:

- Connection code **AP71** between components **145 and 1016**.
- Connection code **36E (rear screen wiper timed control)** between components **645 and 145**.
- Connection code **MAN or MAN** between component **145 and the earth MAN (left-hand drive) or MAM (right-hand drive)**.

Rear screen wiper motor check:

- Connection code **36C** between components **211 and 645**.
- Connection code **36A** between components **211 and 1016**.
- Connection code **MYH** between component **211 and earth MYH**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting and activate the supply to the rear screen wiper motor (**component code 211**).
Repair if necessary or replace the motor (**component code 211**) if it is faulty.

If the fault is still present, contact Techline.

AFTER REPAIR

Carry out another fault finding check on the system.

AC056 AC057 AC058	<u>LOW-SPEED WIPER</u> <u>HIGH SPEED WIPER</u> <u>INTERMITTENT WIPER REQUEST</u>

NOTES	No faults should be present or stored. Check that LC094 "Wiper intermittent speed ring" displays "With". If not, carry out CF191 "Wiper intermittent speed ring". Check that LC096 "Automatic wiper function" displays "With". If not, carry out CF194 "Automatic wiper function". Check that LC044 "Rain/light sensor" displays "Present". If not, carry out CF035 "Rain/light sensor". Check that LC095 "Automatic headlight function" displays "With". If not, carry out CF193 "Automatic headlight function".

This fault may appear if the windscreen wiper motor is forced (e.g.: used on a dry screen, snow on the screen, etc.).

Check that fuse **F2 (15 A)** is sound and correctly fitted to the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

Check the condition and connection of the 3-track windscreen wiper motor connector (**component code 212**) (broken, bent, oxidised tabs).

Check the condition and connection of the 40 track connectors **PE1** and **PE3** of the UCH (**component code 645**) (tabs broken, bent or oxidised).

Check that the **earth** on connection **MAS** of the **windscreen wiper motor connector (component code 212)** is correct.

Activate the low speed, check for **+ 12 V** on connection **14B** of the **windscreen wiper motor connector (component code 212)**. Activate the high speed, check for **+ 12 V** on connection **14A** of the **windscreen wiper motor connector (component code 212)**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system.

AC056
AC057
AC058
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Combined wiper-washer check:

- Connection code **AP71** between components **145 and 1016**.
- Connection code **14E (windscreen wiper timed control)** between components **645 and 145**.
- Connection code **14G (low speed windscreen wiper control)** between components **645 and 145**.
- Connection code **14H (high speed windscreen wiper control)** between components **645 and 145**.
- Connection code **MAN or MAN** between component **145 and the earth MAN (left-hand drive) or MAM (right-hand drive)**.

Windscreen wiper motor check:

Left-hand drive:

- Connection code **14A** between components **212 and 645**.
- Connection code **14B** between components **212 and 645**.
- Connection code **14C** between components **212 and 645**.
- Connection code **MAS** between component **212 and earth MAS**.

Right-hand drive:

- Connection code **14A** between components **211 and 645**.
- Connection code **14B** between components **211 and 645**.
- Connection code **36C** between components **211 and 645**.
- Connection code **MAS** between component **211 and earth MAS**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the fitting of the windscreen wiper motor (**component code 212**).

Repair if necessary or replace the windscreen wiper motor (**component code 212**) if the **connections**, the **feeds** and the **earth** are correct. (see **MR 411, mechanical systems, 85A, Washing - wiping, Windscreen wiper motor: Removal - Refitting**)

If the fault is still present, contact Techline.

AFTER REPAIR

Carry out another fault finding check on the system.

AC060	<u>HEATED REAR SCREEN</u>

NOTES	No faults should be present or stored. Check that the interpretation of ET028 “Heated rear screen button” has been applied.

Check that fuses **F29 (15A)** and **F42 (10 A)** are sound and correctly fitted in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse(s) if necessary.

Check the **air conditioning control panel black 9-track connector, (component code 319)** (bent, oxidised or broken tabs).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for the **earth** on connection **MYH** of the connector of component **200**.

Run command **AC060 “Rear screen de-icer”** and check for **+ 12 V** on connection **15LP** of the connector of component **200**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity and absence of interference resistance** of the following connections:

- Connection code **15LP** between components **645** and **200**.
- Connection code **MYH** between **earth MYH** and component **200**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the supplies, earth and connections are correct, replace the heated rear screen (**component code 200**).

If the fault is still present, contact Techline.

AFTER REPAIR	Carry out another fault finding check on the system.

AC061	<u>TAILGATE OPENING</u>

NOTES	Special notes: If the opening element motors are supplied too quickly and it is too difficult to test using a multimeter, the measurements must be made using an oscilloscope.
	No faults should be present or stored. Check that the interpretation of ET463 "Door(s) or tailgate" has been applied.

Check the condition and connection of the tailgate lock connector (component code 1322) (tabs bent, oxidised, broken, etc.). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the condition and connection of the PE1 connector of the UCH, (component code 645) (tabs bent, broken, etc.).
Check that the earth on connection MYH of the tailgate switch (component code 560) and the tailgate lock (component code 1322) is in perfect condition. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
When unlocking, check the signal status on component 1322 , of the following connections using an oscilloscope (refer to test1 "Central door locking").
Tailgate lock:
Oscilloscope red test pin on connection 20S of component 1322 . Oscilloscope black test pin on connection MYH of component 1322 .
If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out another fault finding check on the system.

AC061
CONTINUED

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Tailgate lock check:

- Connection code **20S** between components **1322** and **645**.
- Connection code **86H** between components **1322** and **645**.

With electric central door locking:

- Connection code **20G** between components **560** and **645**.
- Connection code **MYH** between component **560** and earth **MHY**.

Without electric central door locking:

- Connection code **20G** between components **1733** and **645**.
- Connection code **20BW** between components **1733** and **560**.
- Connection code **MYH** between component **560** and earth **MHY**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check:

The **insulation** of the lock contact (**component code 1322**) between connections **86H** and **MHY** (tailgate closed)

The **continuity** of the lock contact (**component code 1322**) between connections **86H** and **MHY** (tailgate open)

Replace the lock if not correct (**component code 1322**).

If the fault is still present, contact Techline.

AFTER REPAIR

Carry out another fault finding check on the system.

AC110	<u>TEMPERATURE DISPLAY</u>

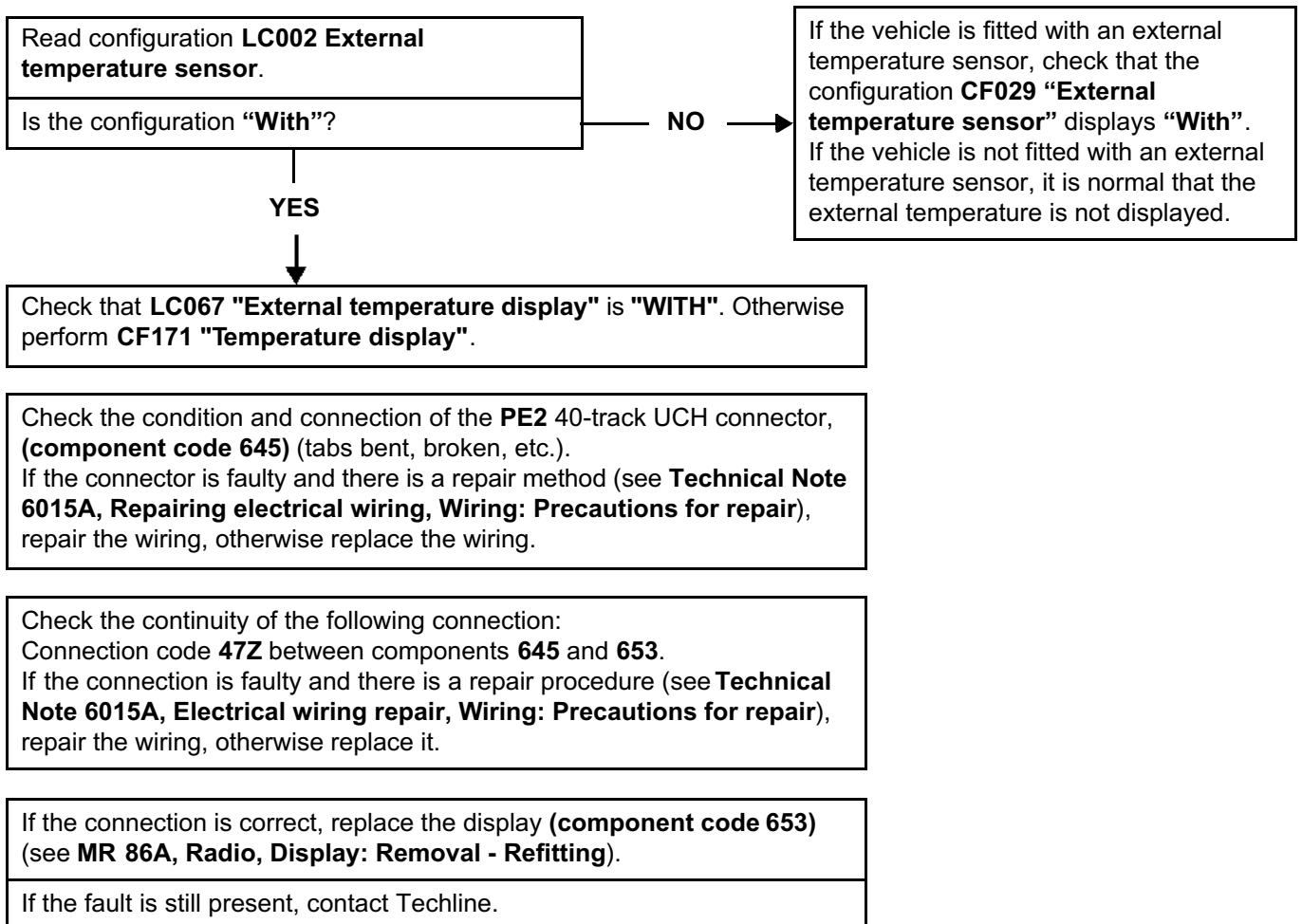
NOTES	Special notes: Check that the vehicle is equipped with an external temperature sensor.

IMPORTANT

This command lasts approximately **30 seconds**.

It makes it possible to check the connection between the display (**component code 653**) and the UCH (**component code 645**).

With the command running, the temperature display should change; if not apply the fault finding procedure below.



AFTER REPAIR	Carry out another fault finding check on the system.

NOTES	Special notes: This summary corresponds to the complete list of customer complaints for a UCH. These customer complaints are divided by function in the section corresponding to the function concerned.

DIALOGUE FAULT	87B
NO DIALOGUE WITH THE COMPUTER	ALP 1

LIGHTING	80D
NO REAR FOG LIGHTS	ALP 2
NO RIGHT-HAND DIRECTION INDICATOR	ALP 3
NO LEFT-HAND DIRECTION INDICATOR	ALP 4
NO SIDE LIGHTS	ALP 5
NO DIPPED BEAM HEADLIGHTS	ALP 6
NO HEADLIGHTS	ALP 7
NO FRONT FOG LIGHTS	ALP 8
LIGHTS DO NOT SWITCH OFF AFTER + AFTER IGNITION FEED IS CUT AND DRIVER'S DOOR IS OPENED	ALP 9
LIGHTS DO NOT SWITCH ON AT NIGHT	ALP 10
NO SEE-ME-HOME LIGHTING	ALP 11
NO COURTESY LIGHTS	ALP 12

WIPERS

85A

NO REAR SCREEN WIPING

ALP 13

THE REAR SCREEN WIPER BLADE STOPS IN
AN INCORRECT POSITION

ALP 14

NO WINDSCREEN WIPER FUNCTION WHEN THE STALK IS MANIPULATED

ALP 15

THE WINDSCREEN WIPER BLADES STOP IN
AN INCORRECT POSITION

ALP 16

NO FRONT AND REAR SCREEN WASHER

ALP 17

NO WIPING WHEN IT RAINS

ALP 18

NO CHANGE IN WIPING SPEED AFTER
ACTIVATING THE WIPER INTERMITTENT SPEED RING

ALP 19

ACCESS/SAFETY

82D

RF* CONTROL LOCKING/UNLOCKING
FAULT FAULT

ALP 20

TAILGATE OPENING PROBLEM

ALP 21

CENTRAL LOCKING/UNLOCKING FAULT
ON ONE OR MORE DOOR(S)

ALP 22

RENAULT ANTI-INTRUDER
DEVICE FUNCTION FAULT

ALP 23

OPENING FROM THE INSIDE NOT POSSIBLE

ALP 24

PROTECTION - STARTING

82D

STARTING PROTECTION (VEHICLE DOES NOT START
WHEN IGNITION KEY TURNED)

ALP 25

*RF: radio frequency

ENERGY MANAGEMENT	87B
NO + ACCESSORIES FEED	ALP 26
NO + AFTER IGNITION FEED ACTIVATION OR + AFTER IGNITION FEED REMAINS JAMMED	ALP 27
BATTERY WARNING LIGHT COMES ON	ALP 28
STARTER NOISY	ALP 29
LOW LIGHT INTENSITY	ALP 30
SUNROOF	87B
THE SUNROOF DOES NOT WORK	ALP 31
MEMORY KEY	87B
NO INFORMATION IN THE KEY	FAULT FINDING CHART 32
EXTERNAL TEMPERATURE DISPLAY	87B
NO EXTERNAL TEMPERATURE DISPLAY	ALP 33

ALP 1	No dialogue with the computer

NOTES	Check the condition and connection of the battery connections (see 80A Battery). Check the condition of the fuses. Check the battery voltage (see 80A Battery). Repair if necessary (see MR 411 Mechanical 80A Battery). Switch on the + after ignition feed. Connect the diagnostic tool and perform the required operations.

Connect the diagnostic tool to another vehicle to check that it establishes dialogue correctly with the vehicle. If dialogue is established correctly. Check the multiplex network of the faulty vehicle (see 88B Multiplexing).	
Check the connection between the diagnostic tool and the diagnostic socket (connection and cable in good condition), the computer supplies and the engine and passenger compartment fuses. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
Check the presence and condition of fuse F11 (20 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.	
Check the condition and connection of the connector of component 225 (tabs bent, oxidised or broken).	
Check for + 12 V battery feed on connection BP19 of component 225. Check for earth on connection MAM (for right-hand drive vehicles) or MAN (for left-hand drive vehicles) of component 225. Check for + after ignition feed on connections AP43, BP15, BPT, BP6, BP13, BP19, SP2, SP15 of component 645. Check for + 12 V accessories feed on connections SP2 and SP15 of component 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	

AFTER REPAIR	Carry out a complete check using the diagnostic tool .

**ALP 1
CONTINUED**

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

UCH check:

Connection code **BP15** between components **645** and **1033**.

Connection code **BP6** between components **645** and **1033**.

Connection code **BP3** between components **645** and **1033**.

Connection code **AP43** between components **645** and **1033**.

Connection code **SP2** between components **645** and **1016**.

Connection code **SP15** between components **645** and **1016**.

Connection code **MAN** or **MAM** between component **645** and the **earth MAN (left-hand drive)** or **MAM (right-hand drive)**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**) repair the wiring or replace it.

Diagnostic socket check:

Connection code **BP19** between components **225** and **1016**.

Connection code **133B** between components **225** and **645**.

Connection code **133C** between components **225** and **645**.

Connection code **MAN** or **MAM** between component **225** and the **earth MAN (left-hand drive)** or **MAM (right-hand drive)**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 26	Accessories feed not activated

NOTES	Check the battery voltage (see 80A Battery). Start the fault finding procedure with the ignition off and the vehicle locked. When the vehicle is unlocked, the instrument panel should light up for a moment. Otherwise, carry out fault finding on the multiplex network (see 88B, Multiplexing). Check the operation of status ET239 "Ignition switch position".

Check the presence and condition of fuses F27 (5 A), depending on the equipment, and F29 (15 A) on the passenger compartment fuse and relay box (component code 1016). Replace the fuse if necessary.
Check the condition and connection of the connectors of components 645 and 1016 (tabs bent, oxidised or broken).
Check for + accessories feed on connection SP2 (for vehicles fitted with a manual gearbox) or SP15 (for vehicles fitted with a sequential gearbox) of component 645. Check for earth on connection NAM of component 645. Check for earth on the connection MAM (for right-hand drive vehicles) or MAN (for left-hand drive vehicles) of component 645. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Check the insulation, continuity and the absence of interference resistance of the following connections: Connection code SP2 between components 645 and 1016. Connection code SP15 between components 645 and 1016. Connection code MAN or MAM between component 645 and earth MAN or MAM (depending on the driving layout; right-hand or left-hand drive). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the fault is still present, contact the Techline.

AFTER REPAIR	Carry out a complete check using the diagnostic tool .

ALP 27

No + after ignition feed activation or the + after ignition feed stays jammed

NOTES

Check the battery voltage (see **80A Battery**).
Check for faults using **the diagnostic tool**. Deal with the other faults first.
The + accessories feed activation function should be working; if not deal with **ALP 26 Accessories feed not activated** first.
Make sure that status **ET239 Ignition switch position** is working.

Make sure that status **ET239 Ignition switch position** is working. Apply the interpretation of the status if necessary.



Run a multiplex network test (see **88B, Multiplexing**).



See **13B, Diesel injection** or see **17B, Petrol injection**.

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 28

Illumination of the "battery charge" warning light

NOTES

Check the battery voltage (see **80A Battery**).
Check for faults using **the diagnostic tool**.
Deal with the other faults first.

Check with **LC023 Engine type** that the engine type configured matches the vehicle. Otherwise perform **CF028 Engine type** to modify the configuration.

IMPORTANT

The battery warning light can flash if a low battery charge is detected (no-load voltage less than **12.2 V**: voltage measured during technical use) for the first 12 miles (20 km), then the warning light stops flashing. Also, the magic eye of the battery (the hydrometer) is black.

If a vehicle has been driven less than **12 miles (20 km)**, the battery warning light is flashing and the battery magic eye (the hydrometer) is black, apply the following procedure:

- Recharge the battery for at least 6 hours. The battery must be disconnected (reconnection must be done to torque).

Note:

The battery must be recharged using a specific charger, which is listed in the "Garage Equipment" catalogue.

- After 6 hours, if the magic eye has not turned green, the battery must be replaced.

If the configuration is correct (see **80A Battery**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 29	Starter noisy

NOTES	Special notes: Check for faults using the diagnostic tool . Deal with the other faults first.
	Use the Wiring Diagrams Technical Note for New Twingo.

Check with LC023 Engine type that the engine type configured matches the vehicle. Otherwise perform CF028 Engine type to modify the configuration.
If the configuration is correct (see 16A Starting - Charging).
If the fault is still present, contact the Techline.

AFTER REPAIR	Carry out a complete check using the diagnostic tool .

ALP 30

Low light intensity

NOTES

Check the battery voltage (see **80A Battery**).
Check for faults using **the diagnostic tool**. Deal with the other faults first.

With the engine running at idle speed, run command **AC130 Alternator regulation**.

- Wait **20 seconds**.
- For **10 seconds** the voltage of the **alternator (component code 103)** should be equal to **15 V ± 0.2 V**, when using a multimeter to measure on connection **BPDA** between components **103 and 645**.



- Wait **20 seconds**.
- For **10 seconds** the voltage of the **alternator (component code 103)** must be equal to **13 V ± 0.2 V** when measuring between the alternator terminal (**component code 103**) and the **earth** on connection **2N** using a multimeter.



If the values measured are not correct, check the starting - charging circuit (see **16A Starting - Charging**) and check the battery (see **80A, Battery**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 31

The sunroof does not work

NOTES

Only consult this customer complaint after a **complete check** using the **diagnostic tool** and after having applied the interpretation of **DF065 Electric window authorisation connection**.

Check that nothing is obstructing the operation of the sunroof.
Repair if necessary.

Check the condition of fuses **F26 (20 A)** and **F31 (30 A)** in the passenger compartment fuse and relay box (**component code 1016**).
Replace the fuse if necessary.

For vehicles equipped with a sunroof, check that the **LC070 One-touch windows/SR*** is **With**. **Otherwise, perform CF173 One-touch windows/SR***.
If CF173 One-touch windows/SR* is With, (see MR 411 Mechanical, 87D Electric windows - Sunroof).

* SR.: Sunroof

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 32

No information in the key

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.

Read configuration **LC089 Memory key function**.

Is the configuration **YES**?

NO

The vehicle is not equipped with the **memory key** function.
It is normal for the key not to contain any information about the vehicle.

YES

Is status **ET407 YES**?
Status accessible in **SC018 Key test**.

NO

The key does not have the **memory key** function.
It is normal for the key not to contain any information about the vehicle.
If necessary, replace this key with a memory key.

YES

Replace the key.

AFTER REPAIR

Carry out a complete check using **the diagnostic tool**.

ALP 33

No external temperature display

NOTES

Only address this customer complaint after a **complete check** with the **diagnostic tool**.
Check that the temperature display works, use **AC110 Temperature display**.

Read configuration **LC002 External temperature sensor**.

Is the configuration **YES**?

NO

The vehicle is not equipped with the **External temperature sensor** function. It is normal for the external temperature not to be displayed.

YES

Check that **LC067 Temperature display** is **With**. Otherwise perform **CF171 Temperature display**.

Check the condition and connection of the **PE2** 40-track connector in the UCH (**component code 645**) (tabs bent, broken, etc.).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the continuity of the following connection:
Connection code **47Z** between components **645** and **653**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

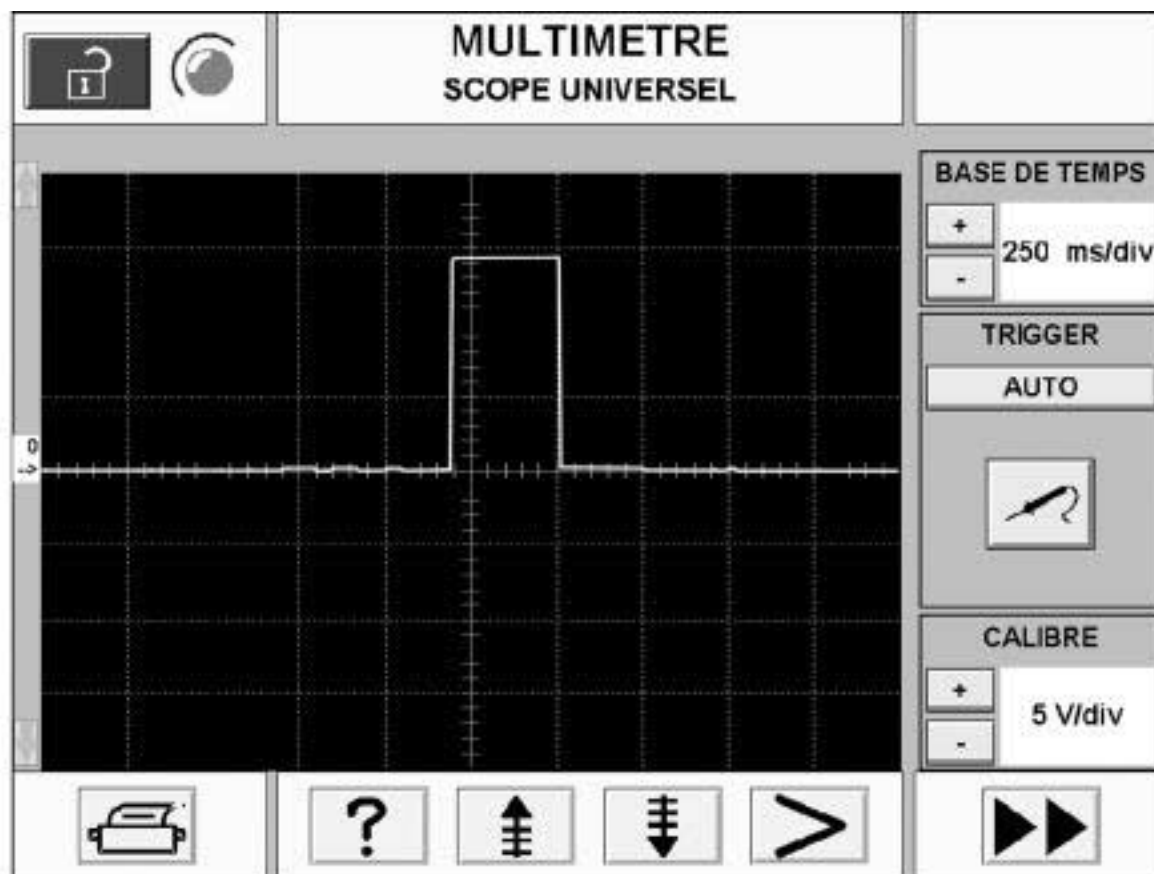
If the connection is correct, replace the display. (See **MR 411 Mechanical, 86A, Radio, Display: Removal - Refitting**).

If the fault is still present, contact the Techline.



TEST 1

Central door locking



25800



IMPORTANT

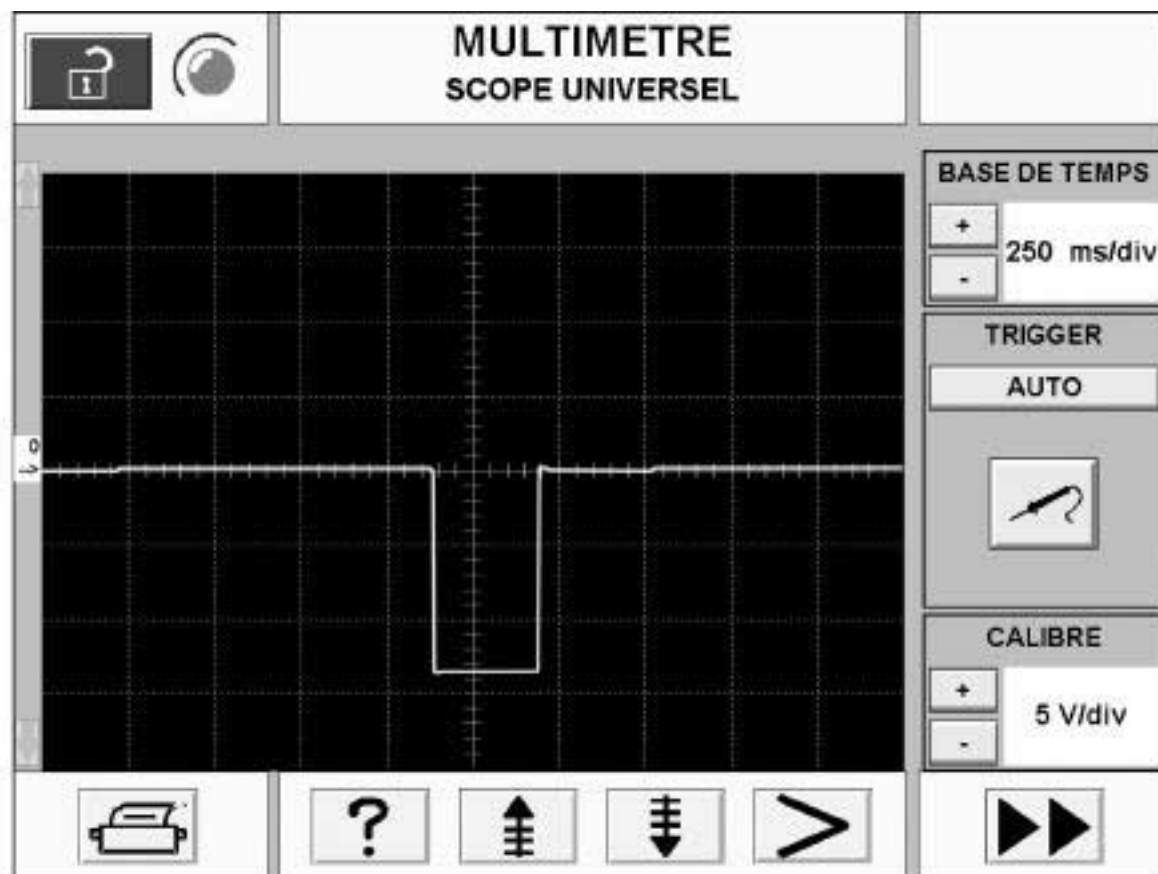
The signal frequency occurs every **250 ms**.
To check a measurement, repeat the locking or activation request several times.

Recommended scale:

- Time base $\Rightarrow 250 \mu\text{s/div}$
- Range $\Rightarrow 5 \text{ V/div}$

TEST 2

Unlock doors and boot



25807



IMPORTANT

The signal frequency occurs every **250 ms**.
To check a measurement, repeat the locking or activation request several times.

Recommended scale:

- Time base $\Rightarrow 250 \mu\text{s/div}$
- Range $\Rightarrow 5 \text{ V/div}$

TWINGO

1 Engine and peripherals

13B

DIESEL INJECTION

DCM 1.2 Injection

Program No.: 4D

Vdiag No.: 48, 4C, 50, 54, 58, 5C

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V6

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): CLIO III, MODUS, MEGANE II / SCENIC II, New Twingo, Kangoo 2.	Name of computer: DCM1.2 injection
Engines: K9K 718, 724, 740, 750, 752, 766, 768, 800, 802, 812	<i>Program No.:</i> 4D
Function concerned: Direct diesel injection, DELPHI, COMMON RAIL, MULTI INJECTION.	Vdiag No.: 48, 4C, 50, 54, 58, 5C

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this document):

- Assisted fault finding (integrated into the diagnostic tool), Dialogys.

Wiring Diagrams:

- Visu-Schéma.

Type of diagnostic tools

- CLIP

Special tooling required

Special tooling required	
Diagnostic tool	
Multimeter	
Elé. 1590	112-track computer bornier
Elé. 1681	Universal bornier
Mot 1711	Injector flow measuring kit

3. REMINDERS

Procedure

To run fault finding on the vehicle computers, switch on the ignition.

Depending on the type of vehicle equipment, proceed as follows:

For vehicles with radio frequency remote control/key,
switch on the ignition with the key.

For vehicles with a Renault card,
With the vehicle card in the card reader,
Press and hold the start button (**+ 5 seconds**) with starting conditions not met,
Connect the **diagnostic tool** and perform the required operations.

Note:

the left and right-hand xenon bulb computers are powered when the dipped headlights are lit. Therefore fault finding can only be carried out on them after the ignition has been switched on in fault finding mode (forced + after ignition feed) and the dipped headlights have been switched on.

To cut off + after ignition feed, proceed as follows:

For vehicles with a radio frequency remote control - key, use the key to switch off the ignition.

For vehicles with a Renault card,

press the Start button twice briefly (less than **3 seconds**), check that the forced + after ignition feed has been cut off by checking that the computer warning lights on the instrument panel have extinguished.

Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when using the **diagnostic tool** after switching on the + after ignition feed (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **Notes** section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical connections that correspond to the fault,
- the connectors for this connection,
- the resistance of the component detected as defective,
- the condition of the wires.

Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** because the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

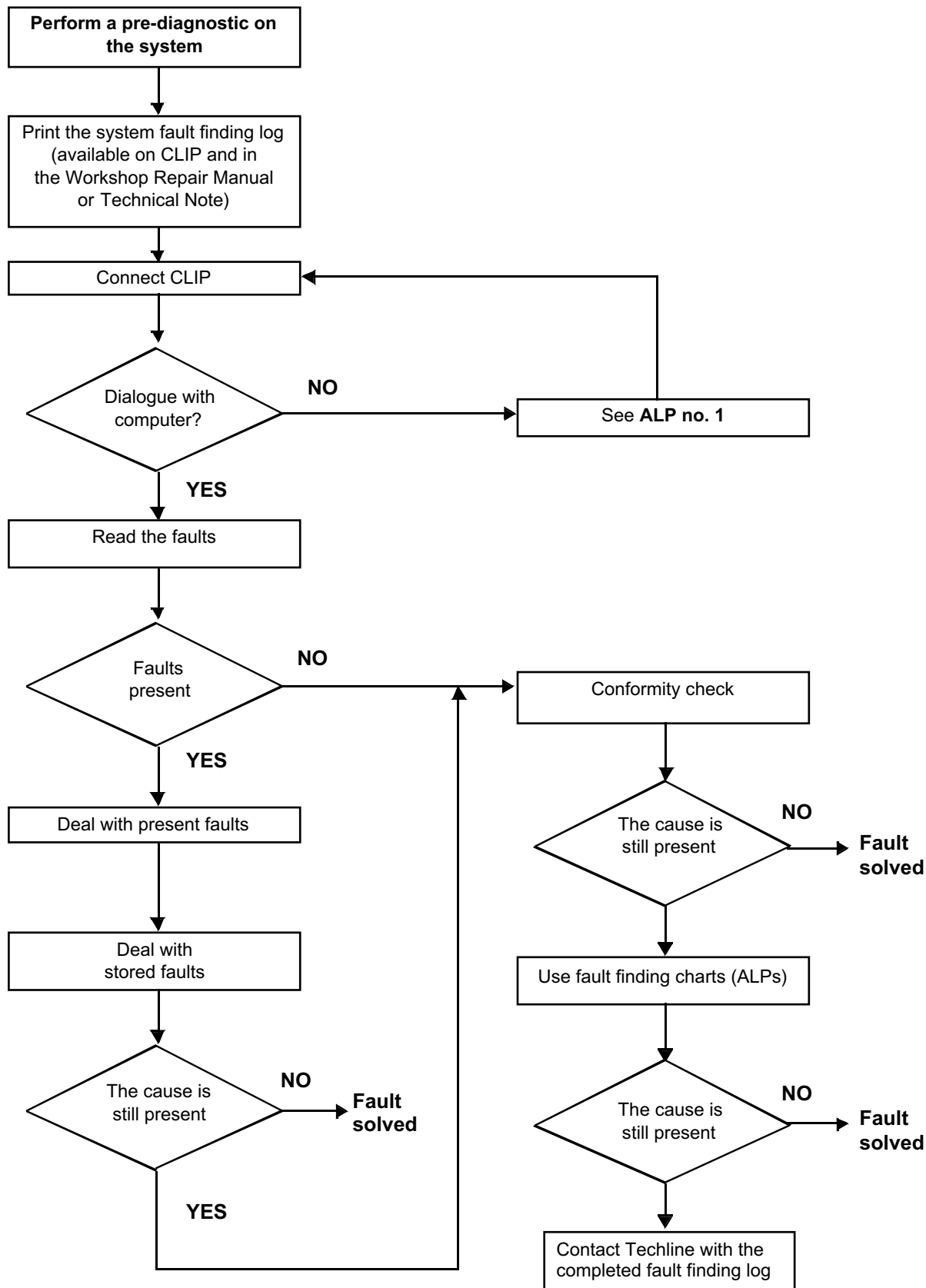
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (continued)

4.1 Wiring check

Fault finding problems

Disconnecting the connectors and/or handling the wiring harness may temporarily remove, the cause of a fault.

Visual inspection

Look for damage under the bonnet and in the passenger compartment.

Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

Physical inspection

While manipulating the wiring, use either the **diagnostic tool** to detect a change in status from "stored" to "present", or use the multimeter to view the status changes.

Make sure that the connectors are properly locked.

Apply light pressure to the connectors.

Twist the wiring harness.

Checking earth insulation

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V**.

Checking insulation against + 12 V or + 5 V

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**.

Continuity check

A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is: **1 Ω $\pm$ 1 Ω** for each connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1 Ω $\pm$ 1 Ω**

Checking the supply

This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

4.2 Connector check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be 2 types of connections:

- Connector/Connector.
- Connector/Device.

1. Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

2. Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

3. Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

4. Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is pulled slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

5. Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
- For unit seals (1 for each wire), check that the unit seals are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
- For a grommet seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
- For gel seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
- For hotmelt sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring**.

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

I. HAZARDS ASSOCIATED WITH CONTAMINATION

The high pressure direct injection system is highly sensitive to contamination. The risks associated with contamination are:

- damage to or destruction of the high pressure injection system,
- components jamming,
- components losing seal integrity.

All After-Sales operations must be performed under very clean conditions. This means that no impurities (particles a few microns in size) should have entered the system during dismantling.

The cleanliness principle must be applied from the filter to the injectors.

What are the sources of contamination?

- metal or plastic swarf,
- paint,
- fibres: from cardboard,
 from brushes,
 from paper,
 from clothing,
 from cloths.
- foreign bodies such as hair,
- ambient air
- etc.

IMPORTANT

Cleaning the engine using a high pressure washer is prohibited because of the risk of damaging connections. In addition, moisture may collect in the connectors and create electrical connection faults.

II. ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

IMPORTANT

Before any work is carried out on the high pressure injection system, protect:

- the accessories and timing belts,
- the electrical accessories, (starter, alternator, electric power-assisted steering pump),
- the flywheel surface, to prevent any diesel from running onto the clutch friction plate.

Check that you have plugs for the unions to be opened (set of plugs available from the Parts Department). The plugs are single-use only. After use, they must be discarded (once used they are soiled and cleaning is not sufficient to make them reusable). Unused plugs must also be discarded.

Check that you have hermetically resealable plastic bags for storing removed parts. Parts stored in this way will be less susceptible to the risk of contamination. The bags are single-use only. Once used, they must be thrown out.

Use lint-free cleaning cloths (cloth part reference **77 11 211 707**). Using normal cloth or paper is prohibited. They are not lint-free and could contaminate the fuel circuit. Each cloth should only be used once.

Use fresh cleaning agent for each operation (used cleaning agent is contaminated). Pour it into an uncontaminated container.

For each operation, use a clean brush in good condition (the brush must not shed its bristles).

Use a brush and cleaning agent to clean the unions to be opened.

Blast compressed air over the cleaned parts (tools, workbench, the parts, unions and injection system zones). Check that no bristles remain.

Wash your hands before and during the operation if necessary.

When wearing leather protective gloves cover them with latex gloves to prevent contamination.

III. INSTRUCTIONS TO BE FOLLOWED DURING THE OPERATION

As soon as the circuit is open, all openings must be plugged to prevent impurities from entering the system. The plugs to be used are available from the Parts Department. The plugs must not be reused under any circumstances.

Seal the pouch shut, even if it has to be opened shortly afterwards. Ambient air carries contamination.

All components removed from the injection system must be stored in a hermetically sealed plastic bag once they have been plugged.

Using a brush, cleaning agent, air gun, sponge or normal cloth is strictly prohibited once the circuit has been opened. These items could allow contamination to enter the system.

A new component replacing an old one must not be removed from its packaging until it is to be fitted to the vehicle.

High and low pressure pump:

This pump is located upstream of the common rail.

Solenoid injectors:

The injectors are fitted on the cylinder head after the common rail.

Turbocharger:

The turbocharger is located after the exhaust manifold.

Turbocharger control solenoid valve (K9K 724, 766, 802, and 812 only):

This solenoid valve is located close to the turbocharger, its position depends on the vehicle.

Air flowmeter:

The air mass flow meter is located at the air circuit inlet and integrates the air temperature sensor.

EGR valve:

The EGR valve is located between the inlet manifold and the exhaust manifold.

Accelerator pedal potentiometer:

The potentiometer is located on the accelerator pedal.

Clutch pedal switch:

The switch is located on the clutch pedal.

Catalytic converter:

The catalytic converter is located downstream of the turbocharger on the exhaust system.

Cruise control/speed limiter on/off switch:

This switch is located in the passenger compartment to the left of the steering wheel near the lighting dimmer.

Heater plugs:

The heater plugs are located on the cylinder head.

Inlet manifold pressure sensor:

The inlet manifold pressure sensor is located upstream of the turbocharger.

Air temperature sensor:

The air temperature sensor is located at the air circuit inlet, in place of the air flowmeter or integrated into it if the flowmeter is present, and/or in the inlet manifold.

Water in diesel fuel sensor (New Twingo and Kangoo 2 only):

This sensor is located in the diesel filter.

Fuel temperature sensor:

This sensor is positioned on the injection pump.

Rail pressure sensor:

This sensor is fitted to the common rail.

Atmospheric pressure sensor:

This sensor is incorporated in the computer.

TDC sensor:

This sensor is located on the flywheel.

Camshaft sensor:

This sensor is located at the end of the camshaft.

Refrigerant pressure sensor:

This sensor is located on the coolant circuit.

Engine coolant temperature sensor:

This sensor is located on the cylinder head near the engine water chamber.

Accelerometer:

This sensor is located on the cylinder block.

Passenger compartment heating resistor relay:

These relays are located in the engine compartment relay unit.

Air conditioning compressor relays:

These relays are located in the engine compartment relay unit.

Fan unit relay:

These relays are located in the engine compartment relay unit.

System outline

The **DCM1.2** injection system used on the **K9K** engine is an electronically-managed high pressure injection system. The fuel is compressed by a high pressure pump then stored in a rail that feeds the injectors. Injection takes place when a current pulse is applied to the injector holders. The amount injected is proportional to the rail pressure and the applied pulse length, and the start of injection is synchronised with the start of the pulse.

The system includes two subsystems, which have different fuel pressure levels:

- The low pressure circuit contains the tank, the diesel fuel filter, the transfer pump and the injector holder return pipes,
- the high-pressure system includes the high-pressure pump, rail, injector holders and high-pressure pipes.

Finally, there are a certain number of sensors and regulating actuators for controlling and monitoring the entire system.

Functions performed:

Function: Fuel supply management (timing, flow and pressure).

Quantity of fuel injected and injection timing setting

The injection checking parameters are the quantities to be injected and their respective timing.

These are calculated by the computer using signals from the following sensors:

- engine speed sensor (Crankshaft + Cam lobe for synchronisation),
- accelerator pedal sensor,
- coolant temperature sensor,
- rail pressure sensor,
- atmospheric pressure sensor,
- accelerometer,
- inlet manifold pressure sensor.

Specific vehicle / engine suffix details:

Modus	
K9K 750 752 (Euro 3)	Inlet manifold temperature and pressure sensor (a sensor which has two functions), management by the turbocharger control solenoid valve inlet pressure.
K9K 766 (Euro 4)	Either a flow sensor with an integrated temperature sensor or a temperature sensor instead of a flow sensor with inlet manifold temperature sensor, inlet manifold pressure sensor, management by turbocharger control solenoid valve programming.
K9K 768 (Euro 4)	Flow sensor with integrated temperature sensor, inlet manifold pressure sensor, management by the turbocharger control solenoid valve inlet pressure.

Clio III	
K9K 750 752 (Euro 3)	Inlet manifold temperature and pressure sensor (a sensor which has two functions), management by the turbocharger control solenoid valve inlet pressure.
K9K 766 (Euro 4)	Either a flow sensor with an integrated temperature sensor or a temperature sensor instead of a flow sensor with inlet manifold temperature sensor, inlet manifold pressure sensor, management by turbocharger control solenoid valve programming.
K9K 768 (Euro 4)	Flow sensor with integrated temperature sensor, inlet manifold pressure sensor, management by the turbocharger control solenoid valve inlet pressure.

Megane II / Scenic II	
K9K 724 (Euro 4)	Either a flow sensor with an integrated temperature sensor or a temperature sensor instead of a flow sensor with inlet manifold temperature sensor, inlet manifold pressure sensor, management by turbocharger control solenoid valve programming.

New Twingo	No UPC (Protection and Switching Unit).
K9K 740 (Euro 4)	Temperature sensor instead of the flow sensor with inlet manifold pressure and temperature sensor, management by the turbocharger control solenoid valve inlet pressure, water in diesel fuel sensor depending on target export countries.

Kangoo 2	
K9K 800 802 (Euro 4)	The flow of fresh air entering the engine is given by a hot wire ratiometric sensor. This flow sensor facilitates control of the amount of exhaust gas sent for recirculation, thus ensuring the best possible recirculation rates. An air temperature sensor is integrated into the flow sensor. Air flow measurement facilitates closed-loop control via the EGR valve.
K9K 812 (Euro 3)	Temperature sensor instead of the flow sensor with inlet manifold pressure and temperature sensor, management by the turbocharger control solenoid valve inlet pressure.

The quantities to be injected and their respective timing are converted into:

- a reference tooth,
- the time between this tooth and the start of the pulse,
- the time during which the supply to the injector holder is on.

An electrical current (pulse) is sent to each injector holder according to previously calculated data. The system carries out one to four injections (one pilot injection, one pre-injection, one main injection, one post-injection). The general principle is to calculate the total injection flow which is then divided between the injection stages to promote correct combustion and reduce pollutant emissions.

An accelerometer checks some of the fuel injection deviation. This has several functions:

- Protecting the engine by detection of injection system leaks.
- Checking the quantity injected by measuring deviations and variations.

By changing both the injection duration and advance, the system readjusts the quantity of fuel injected and the mixture's moment of ignition.

Rail pressure check

The quality of combustion is influenced by the size of the atomised droplets in the cylinder.

In the combustion chamber, smaller fuel droplets will have time to burn fully, and will not produce smoke or unburned particles. To meet emission control requirements, the droplet size must be reduced and therefore the injection holes must be smaller.

With smaller holes, less fuel will be able to be introduced at a given pressure, which limits the power. To offset this disadvantage, the quantity of fuel injected must be increased, which means increased pressure (and more holes in the injector nozzles). In the Delphi Common Rail injection system, the pressure in the rail can reach **1600 bar** and must be constantly controlled. The measuring circuit comprises an active pressure sensor on the rail connected to an analogue port on the computer.

The High Pressure pump is supplied at low pressure (**5 bar**) by a built-in transfer pump. This pump supplies the rail. The rail filling pressure is controlled by the filling valve (**IMV**) and the discharge pressure is controlled by the injector valves. This compensates for pressure drops. The filling actuator enables the high pressure pump to supply the exact quantity of diesel fuel required to maintain the rail pressure. This mechanism minimises the heat generated and improves engine output.

In order to discharge the rail using the injector valves, the valves are actuated by short electrical pulses which are:

- short enough not to open the injector (fuel passes through the return circuit from the injectors),
- long enough to open the valves and discharge the rail.

The fuel surplus is sent back to the fuel filter or the tank, according to its flow. If there is no **IMV*** control, the rail pressure is limited by a discharge valve on the pump.

IMV*: Filling actuator.

Idling speed regulation

The computer handles the calculation of idling speed. This has to take account of the instantaneous power level to be supplied, according to the following factors:

- engine coolant temperature,
- gear ratio engaged,
- battery charge,
- electrical consumers (Additional heating, Air conditioning, Fan assembly, heated windscreen, etc.) active or inactive,
- system faults detected.

Individual injector correction (C2I)

The DCM1.2 system injectors must be calibrated with corrective values so that their flow may be adjusted precisely. Each injector is calibrated for different pressures on a test bench, and its specifications are shown on a label attached to the body of the injector holders. These individual correction values are then entered into the computer memory, which can control the injectors, taking their manufacturing variations into account.

Angular position measurement

Engine speed sensor:

The angular position is measured using a magneto-inductive sensor triggered by machined teeth on the shaft flywheel. This flywheel has sixty teeth, six degrees apart, minus two missing teeth that form a notch.

Cylinder reference sensor:

A second sensor (Hall effect) triggered by a machined tooth on the high pressure pump drive pulley (synchronised with the camshaft), turning at half the engine speed, supplies a signal about the progress of the injection cycle. By comparing the signals from these two sensors, the computer's APS module (Angular Position Subsystem) can supply the entire system with the synchronisation factors, which are: the angular position of the flywheel, the engine speed, the number of the active injector and the injection cycle timing. This module also supplies the system with the engine speed signal.

New pump chamber filling procedure (pump boosting)

The pump lubrication goes through a booster cycle during which the pump is filled and pressurised before "transferring" the diesel fuel to the rail.

This lubrication goes through a procedure called **new pump chamber filling**, which prevents starting for approximately **10 seconds**, which is the time required for filling the pump and starting. For vehicles with keys, if the key is released before the end of this "initial starting" phase there is no need for a power latch phase to be completed before a fresh attempt to start the vehicle.

This procedure is run after the first start in the factory, after a **computer is replaced** if the parameters relating to the rail pressure have not been copied into the new computer, and also after reprogramming of the injection computer.

Variable Low Capacity (VLC) output function

Because of the combination of several parameters such as the diesel fuel temperature, part wear, clogging of the diesel filter etc., the system limit may be reached during its service life. If this happens, the rail pressure cannot be maintained because the pump lacks the necessary capacity. If the pump lacks the necessary capacity, this programming will therefore reduce the requested flow to a value that will enable the pressure monitoring system to control the pressure again.

The customer may have noticed a loss of vehicle performance when this program is activated (depending on the vehicle, this programming can be confirmed by **ET563 Flow capacity function**). This is normal operation of the injection system.

Function: Air flow management

EGR valve control

K9K 766 and 768 (Euro 4) engines (fitted on Clio III and Modus) and K9K 724 (Euro 4) engines (fitted on Mégane II and Scénic II) and K9K 740 engines (fitted on New Twingo) and K9K 800, 802 and 812 engines (fitted on Kangoo 2):

The **EGR** (Exhaust Gas Recirculation) system consists of a **DC proportional EGR valve**, which incorporates a valve position feedback potentiometer. The **EGR valve** is closed-loop controlled based on its position via the potentiometer and/or based on changes in the estimated air flow.

K9K 750 and 752 (Euro 3) engines (fitted on Clio III and Modus):

The **EGR** system (Exhaust Gas Recirculation) consists of an **EGR solenoid valve**, which incorporates a valve position feedback potentiometer. The **EGR valve** is closed-loop controlled based on its position via the potentiometer and/or based on changes in the estimated air flow.

Calculating the air flow

K9K 768 (Euro 4) engines (fitted on Clio III and Modus) and K9K 800, 802, and 812 engines (fitted on Kangoo 2):

The flow of fresh air entering the engine is measured by a hot wire ratiometric sensor. This flow sensor is used to manage the amount of exhaust gas to be recirculated to ensure optimum recirculation rates. A fresh air temperature sensor is integrated into the flowmeter.

Air flow measurement allows closed-loop control via the EGR valve.

Note:

The **K9K 812** does not have a flow sensor.

K9K 750 and 752 (Euro 3) engines (fitted on Clio III and Modus) and K9K 740 Euro 4 engines (fitted on New Twingo):

Some models are not fitted with air flow sensors. In this case the amount of fresh inlet air must be evaluated, based on the values supplied by the surrounding systems.

The (theoretical) amount of air is calculated with a computer model using the following parameters:

- the inlet air temperature measured by a sensor located after the turbocharger and/or after the intercooler (if fitted),
- the **inlet** pressure,
- the atmospheric pressure (external air),
- the **EGR valve** position,
- the fuel flow,
- the engine speed.

K9K 766 (Euro 4) engines (fitted to Clio III and Modus) and K9K 724 (Euro 4) engines (fitted on Mégane II and Scénic II):

These engines are fitted with one of the two systems.

Turbocharger control

The turbocharger system includes a solenoid valve that controls the wastegate to create an overpressure or a vacuum pressure in the inlet circuit.

K9K 750 (Euro 3) and K9K 766 (Euro 4) engines (fitted on Clio III and Modus), K9K 724 engines (fitted on Mégane II and Scénic II), and K9K 802 and 812 engines (fitted on Kangoo 2):

The solenoid valve is controlled by a computer program.

K9K 752 (Euro 3) and 768 (Euro 4) engines (fitted on Clio III and Modus), K9K 740 engines (fitted on New Twingo), and K9K 800 engines (fitted on Kangoo 2):

The solenoid valve is controlled by the pressure in the inlet ducts.

Function: Hosted functions

Air conditioning management assistance

On models with air conditioning, the DCM1.2 system allows the air conditioning to be deactivated under certain operating conditions:

- when requested by the driver,
- when starting the engine,
- if the engine overheats (in order to reduce the power the engine has to supply),
- when the engine speed is kept at a very high level (to protect the compressor),
- during transition phases (e.g. high acceleration demand for overtaking, anti-stalling and moving off). These conditions are only taken into account if they do not occur repeatedly, so as to prevent system instabilities (erratic deactivation),
- when certain faults appear.

Cold loop air conditioning management

The air conditioning is the cold loop type and its management shared between several computers. The injection computer is responsible for:

- managing demand for cold air according to the passenger compartment commands and the pressure value,
- determining the power absorbed by the compressor from the pressure,
- determining the fan unit commands according to vehicle speed and pressure.

The driver requests the instrument panel to switch on the air conditioning. The signal is sent to the injection computer via the multiplex line network. The cold air request is authorised or denied depending on the pressure measured. If this pressure is outside the operating limits, the cold loop program is not activated.

Note:

Fan unit actuation requests can be sent by the injection computer, but these are sent via the multiplex line. These requests depend on the air conditioning, but also on the engine coolant temperature and vehicle speed.

Thermal regulation of the passenger compartment heating circuit

In a direct injection engine, fuel is injected directly into the combustion chamber. This leads to heat being lost through the upper part of the engine and consequently, the cylinder head cooling system is smaller in size.

The effect of this is that the temperature of the coolant which flows through this circuit rises more slowly. This coolant is also used by the passenger compartment heating system. In very cold conditions, it is therefore difficult to achieve a comfortable passenger compartment temperature quickly.

To reduce the time taken to produce heat, air heating elements, called passenger compartment heating resistors, are fitted in the passenger compartment heating circuit. The UCH decides whether or not to switch on the passenger compartment heating resistors, and the UPC or the injection physically controls the heating elements. The injection computer determines whether to reduce the power supplied to the passenger compartment heating resistors according to the alternator load and also whether to inhibit the operation of the passenger compartment heating resistors according to the engine speed, the load, and the vehicle speed.

Cruise control - speed limiter (CC / SL) management

When activated, the cruise control function maintains the vehicle at a preselected speed, regardless of the driving conditions encountered. Using the control buttons, the driver can increase or reduce the speed of the vehicle.

The **cruise control** function can be deactivated either using the control buttons, or by switching off the cruise control function selector switch or when system events are detected such as the brake or clutch pedal being depressed, or when system errors are detected such as an inconsistent vehicle speed or excessive vehicle deceleration.

The **cruise control function** can also be temporarily overridden when the driver wants to resume control of the vehicle and exceed the selected cruising speed by pressing the accelerator pedal, which causes the controlled fuel flow to be exceeded. The cruising speed is resumed when the driver releases the accelerator pedal.

It is possible to reactivate cruise control and to return to the last cruising speed after the function has been deactivated for whatever reason, during the same cycle of use (computer supply voltage not cut off). The vehicle will then attempt to return to the cruising speed using a controlled vehicle acceleration rate.

When activated (using the selection switch), the vehicle speed limiter function limits the vehicle speed to a preselected value.

The driver controls the vehicle in the normal way using the accelerator pedal until the limit speed is reached. If an attempt is made to exceed this speed, the system will ignore the pedal request and will limit the vehicle speed, provided that the driver continues to depress the accelerator pedal.

As with the cruise control function, the limit speed can be altered using the control buttons by pressing briefly or by pressing and holding (pressing and holding not active on Kangoo 2).

For safety reasons, the limit speed can be exceeded by depressing the accelerator pedal beyond the pedal position limit value. The vehicle speed will then be totally controlled by the pedal until the speed falls back below the cruising speed when the speed limiter function will once again be reactivated.

The driver has the following controls for the **cruise control - speed limiter** function:

- accelerator pedal,
- brake pedal,
- clutch pedal (not for sequential gearbox),
- function selector switch, used to select **cruise control or speed limiter** operating mode,
- activation switch on the steering wheel,
- required speed adjustment switch on the steering wheel.

Instrument panel display

The computer manages the data display on the instrument panel relating to engine operation. This covers five functions: the OBD warning light for European On Board Diagnostics (EOBD), pre-postheating, coolant temperature, and Level 1 (non critical fault) and Level 2 (emergency stop) engine faults. These five functions are represented by five warning lights or messages displayed by the trip computer.

Pre-postheating warning light

This warning light indicates that preheating is active.

Engine coolant temperature warning light

This warning light is used as an engine overheating indicator.

- In the event of overheating, it is up to the driver whether to stop the vehicle or continue driving.

OBD warning light

The **OBD** fault warning light is used to warn the driver of the presence of injection faults producing excessive pollution or that the **EOBD** system is deactivated.

The injection computer requests illumination of the **OBD** warning light for a present fault only after three consecutive driving cycles.

The visual check of the warning light when the power is switched on (automatic test procedure managed by the instrument panel) is carried out by the injection computer. It lasts **3 seconds** or until the engine starts for the New Twingo and Kangoo 2.

If a confirmed **OBD** fault causes the **OBD** warning light to come on, there should be no flashing after the warning light illumination test. The instrument panel will also display the message: **Check emission control**.

The gearbox computer, if fitted, may also request the illumination of this warning light.

Note:

This warning light comes on only if the vehicle is **EOBD** approved.

Level 1 warning

If there is a minor fault, the computer may request a level 1 warning to be displayed. Usually, the instrument panel switches on the SERVICE warning light and sends out a "Check the injection" message. Refer to the operation of the instrument panel (see **83A, instrument panel**).

Note:

The **SERVICE** warning light will come on if the instrument panel is configured as cruise control - speed limiter present, but the function has not yet been detected by the injection computer.

Level 2 warning

If there is a major fault, the computer requests a level 2 warning to be displayed. Usually, the instrument panel switches on the STOP warning light and sends out an "Injection fault" message. Refer to the operation of the instrument panel (see **83A, instrument panel**).

Faults that activate the OBD warning light

Tool fault	Diagnostic tool title	Specification
DF026	Cylinder 1 injector control circuit	CO - CC
DF027	Cylinder 2 injector control circuit	CO - CC
DF028	Cylinder 3 injector control circuit	CO - CC
DF029	Cylinder 4 injector control circuit	CO - CC
DF648	Computer	1.DEF - 2.DEF
DF114	EGR solenoid valve circuit (EGR valve jammed open)	4.DEF
DF209	EGR valve position sensor circuit (Minimum and maximum positions)	CO - CC.1
DF099*	AT* or sequential gearbox connection via the multiplex network*	1.DEF
DF016	EGR control circuit	CO – CC.1 – CC.0

* AT: Automatic transmission (automatic gearbox)

High and low pressure pump:

The pump draws in fuel from the tank, which passes through a fuel filter and supplies the fuel injectors.

Injector rail:

The injector rail receives and redistributes fuel under high pressure to the injectors.

Solenoid injectors:

These injectors enable rapid, precise metering of the quantity of fuel injected, with excellent injection process repetitiveness.

Catalytic converter:

Its role is to convert pollutant gases into harmless gases.

Heater plugs:

The heater plugs create a hot point in the combustion chamber to improve starting in low temperature conditions. They are also used to improve idle speed stability under some conditions.

Turbocharger:

The turbocharger is used to supply the engine with more air.

Turbocharger control solenoid valve (K9K 724, 766, 802, and 812 only):

This solenoid valve controls the turbocharger wastegate.

Air flowmeter (if present on the vehicle):

The flowmeter measures the amount of fresh air which goes back into the engine.

EGR valve:

The exhaust gas recirculation enables nitrogen oxide (NOx) emissions to be reduced significantly.

Cruise control - speed limiter on - off switch:

This switch turns the cruise control/speed limiter on or off.

Accelerator pedal potentiometer:

The accelerator potentiometer informs the computer about the position of the accelerator pedal (engine load).

Clutch pedal switch:

The clutch pedal switch informs the computer about the pedal status.

TDC sensor:

The angular position is measured using a magneto-inductive sensor triggered by machined teeth on the flywheel. This sensor gives the engine speed as well as the position of the crankshaft for injection.

Camshaft sensor:

This sensor gives a signal to perform the injection cycle.

When the piston of cylinder 1 is at top dead centre (TDC), it can be either at the end of the compression stroke or at the end of the exhaust stroke. The camshaft sensor enables a distinction to be made between these two states.

Refrigerant pressure sensor:

Its role is to measure the refrigerant pressure in the air conditioning circuit.

Engine coolant temperature sensor:

The engine coolant temperature sensor informs the computer about the engine coolant temperature.

Water in diesel fuel sensor (New Twingo and Kangoo 2 only):

This sensor determines if there is water present in the diesel fuel.

Air temperature sensor:

The air temperature sensor informs the computer about the temperature of air used by the engine. It will calculate the fresh air flow if the flow sensor is not fitted to the vehicle.

Atmospheric pressure sensor:

This sensor allows the atmospheric pressure to be supplied to the computer.

Inlet manifold pressure sensor:

This sensor indicates the pressure in the inlet circuit.

Rail pressure sensor:

This sensor is fitted to the rail and shows the pressure inside the rail.

Fuel temperature sensor:

This sensor measures the fuel return temperature from the pump and injector return.

Accelerometer:

This sensor measures vibrations and allows injector deviation compensation terms to be calculated.

Passenger compartment heating resistor relay:

This relay allows the passenger compartment heating resistors to be controlled during their activation.

Air conditioning compressor relays:

This relay allows the air conditioning compressor clutch to be controlled during its activation.

Fan unit relay:

This relay actuates the motor-driven fan assemblies when a temperature threshold has been exceeded.

COMPUTER REPLACEMENT OR REPROGRAMMING OPERATIONS

IMPORTANT

- Switch on the diagnostic tool (mains or cigarette lighter supply).
 - Connect a battery charger.
 - Switch off all electrical consumers (lights, interior lights, air conditioning, radio/CD, etc.).
- Wait for the engine to cool (engine coolant temperature less than 60°C and air temperature less than 50°C).

IMPORTANT

Before reprogramming the injection computer, **move the main cruise control - speed limiter switch to the rest position**. The information about the cruise control or the speed limiter displayed on the instrument panel disappears.

Otherwise, if the main switch remains in the cruise control or speed limiter position during and after reprogramming, the cruise control - speed limiter function will not be operational.

The procedure for resetting the function is as follows:

Vehicle ignition on.

Main switch in rest position (the computer then detects the rest position).

Switch in the **Cruise control** position to activate the Cruise control function.

Switch in the **Speed limiter** position to activate the Speed limiter function.

Before removing any old computer as an After-Sales operation, save the following data using the diagnostic tool:

- The **C2I (individual injector correction) parameters and the engine adaptives** using command **SC003 Save computer data**.

The system can be programmed by the diagnostic socket using the **RENAULT CLIP diagnostic tool** (refer to **Technical Note 3585A, Computer programming and reprogramming procedure**, and follow the instructions provided by the diagnostic tool).

After replacing or reprogramming the computer

- **Switch the ignition off and then on again.**
- Use the diagnostic tool command **SC001 Enter saved data** to restore the **C2I** and the engine adaptives.
- On Kangoo 2, use the **diagnostic tool command SC040 Speed limiter, if necessary**.
- Use command **AC028 Static test** to reinitialise the computer (fan assembly, etc.).
- **Switch the ignition off and then on again.**
- When changing the pump, refer to the high pressure pump replacement procedure (**consult Technical Note 5011A, Repriming Delphi high pressure pumps on K9K engines**).
- **Activate the starter without releasing the key until the engine starts (the engine start time can be up to 20 seconds).**
- **Stop the engine (to initialise the computer) and wait 30 seconds.**
- **Switch the ignition back on and use the diagnostic tool to carry out the following steps:**
- Run command **VP010 Enter VIN**.
- After injection system programming, stored faults may appear on other computers. Clear the memory of these computers.
- **Switch the ignition off and then on again.**

IMPORTANT

AFTER A PROGRAMMING OPERATION, DO NOT CONNECT THE BATTERY FOR AT LEAST 30 minutes (to carry out other work on the vehicle).

Note:

If commands **SC001 Enter saved data** and **SC003 Save computer data** have been lost or if they are not operating after programming the computer:

- Save the **C2I** of each injector manually by reading the **C2I** on each injector and use command **SC002 Enter injector codes** (see **injector replacement**).
- Use command **AC028 Static test** to reinitialise the computer (fan assembly, etc.).
- Switch the ignition off and then on again.

Clear the engine management computer faults.

For Clio III, Modus, and New Twingo only:**After programming a new injection computer:**

- Switch the ignition off and then on again.
- Select the UCH domain using the diagnostic tool.
- In repair mode, run command SC017 Injection immobiliser code programming, and follow the instructions given by the diagnostic tool.
- Switch the ignition off and then on again.
- Select the INJECTION subgroup and check that status ET006 is Code programmed.

If ET006 Code programmed = YES, go on to the next steps; if ET006 = NO, run command SC017 Injection immobiliser code programming again, and follow the instructions given by the diagnostic tool.

Note:

If commands **SC001 Enter saved data** and **SC003 Save computer data** have been lost or if they are not operating after programming the computer:

- Save the **C2I** of each injector manually by reading the **C2I** on each injector and use command **SC002 Enter injector codes** (see **injector replacement**).
- Use command **AC028 Static test** to reinitialise the computer (fan assembly, etc.).
- Switch the ignition off and then on again.
- Clear the engine management computer faults.

IMPORTANT

It is not possible to try an injection computer from the Parts Department as it will not be possible to fit it on another vehicle afterwards.

REPLACING THE INJECTORS:

Note:

C2I (individual injector correction) is a calibration carried out in the factory on **each injector** to **adjust the flow** of each injector precisely.

The correction values are written on **a label** affixed to each injector and then are entered in the computer, which can then actuate each injector by taking account of their **manufacturing variation**.

The system can be set up using the diagnostic socket with the **RENAULT CLIP** diagnostic tool.

The **C2I** parameters must be replaced after replacing an injector or injectors.

To do this, reprogram **C2I** into the computer using the following commands:

Cylinder 1 injector: command **VP001 Cylinder 1 injector code (cylinder at flywheel end)**

Cylinder 2 injector: command **VP002 Cylinder 2 injector code**

Cylinder 3 injector: command **VP003 Cylinder 3 injector code**

Cylinder 4 injector: command **VP004 Cylinder 4 injector code**

The four **C2I** can be entered using command **SC002 Enter injector codes**.

The technician can use the appropriate command to **re-enter the new C2I** for the replaced injector and to **erase the old C2I**.

Only after simultaneously replacing at least three injectors, reset the injector adaptives, using command **RZ004 Pressure regulation adaptives**.

HIGH PRESSURE PUMP REPLACEMENT

IMPORTANT

When reprogramming the computer, only carry out the following procedure after command **AC028 Static test** has been run (see Computer reprogramming operation).

PROCEDURE

Refer to Technical Note 5011A, Repriming Delphi high pressure pumps on K9K engines.

EGR VALVE REPLACEMENT:

If replacing the **EGR valve**, it is essential to program the new valve's offset position. To do this, clear the old offset using the EGR programming clearing procedure and run command **RZ002 EGR adaptives**.

CONFIGURATION READING

Index	Title	Display comment
LC120	Cruise control	With or Without
LC121	Speed limiter	With or Without
LC172	Flowmeter	With or Without

SETTINGS

VP001: Cylinder 1 injector code.

VP002: Cylinder 2 injector code.

VP003: Cylinder 3 injector code.

VP004: Cylinder 4 injector code.

These commands enable you to manually write the calibration code marked on the injector. Use these commands after replacing the injector or replacing or (re)programming the computer, when command **SC001 Enter saved data** does not work.

VP010: Enter VIN.

This command permits manual entry of the vehicle's VIN into the computer.
Use this command each time the computer is replaced or (re)programmed.

VP013: Lock injector control.

This command disables electrical actuation of the injectors, for carrying out the compression test.

SPECIAL COMMANDS

SC001: Enter saved data.

Use this command after replacing or (re)programming the computer (if the data were saved using command **SC003 Save computer data**).

SC002: Enter injector codes.

This command enables you to manually write the calibration code marked on the injectors. Run this command after replacing the injectors.

SC003: Save computer data.

This command saves the computer's operating data, C2I (individual injector correction) parameters and engine adaptives. Run this command before replacing or (re)programming.

SC040: Speed limiter.

This command is used to change the vehicle restriction speed. Run this command after replacing or (re)programming.

SC041: Modification of CV* idle speed.

This command is used to change the idle speed. Run this command after replacing or (re)programming.

* CV: Commercial vehicle

DIESEL INJECTION

Fault finding – Fault summary table

13B

Tool fault	DTC code	Diagnostic tool title
DF001	0115	Coolant temperature sensor circuit
DF002	0070	Air temperature sensor circuit
DF003	2226	Atmospheric pressure sensor circuit
DF005	0335	Engine speed sensor circuit
DF007	0190	Rail pressure sensor circuit
DF008	0225	Pedal potentiometer circuit gang 1
DF009	2120	Pedal potentiometer circuit gang 2
DF010	0409	EGR position sensor circuit
DF014	0500	Vehicle speed information circuit
DF015	0685	Main relay control circuit
DF016	0403	EGR control circuit
DF017	0382	Preheating unit control circuit
DF018	0480	Low-speed fan unit control circuit
DF019	0481	High-speed fan unit control circuit
DF024	0231	Low pressure actuator control circuit
DF025	0380	Pre-postheating unit diagnostic line
DF026	0201	Cylinder 1 injector control circuit
DF027	0202	Cylinder 2 injector control circuit
DF028	0203	Cylinder 3 injector control circuit
DF029	0204	Cylinder 4 injector control circuit
DF032	1641	Thermoplunger 1 relay control circuit
DF033	1642	Thermoplunger 2 relay control circuit
DF034	1643	Thermoplunger 3 relay control circuit
DF037	0513	Engine immobiliser
DF038	0606	Computer
DF039	0110	Inlet air temperature sensor circuit
DF047	0560	Computer feed voltage
DF049	0530	Refrigerant sensor circuit
DF050	0571	Brake switch circuit
DF051	0575	Cruise control/speed limiter function
DF052	0200	Injector control circuit

DIESEL INJECTION

Fault finding – Fault summary table

13B

Tool fault	DTC code	Diagnostic tool title
DF053	0089	Rail pressure regulation function
DF056	0100	Air flow sensor circuit
DF057	2264	Water in diesel fuel detector circuit
DF059	0263	Misfires in cylinder 1
DF060	0266	Misfires in cylinder 2
DF061	0269	Misfires in cylinder 3
DF062	0272	Misfires in cylinder 4
DF089	0235	Inlet manifold pressure sensor circuit
DF098	0180	Fuel temperature sensor circuit
DF099	C101	Automatic or sequential gearbox connection via the multiplex network
DF107	0604	Computer memory
DF112	0340	Cylinder reference sensor circuit
DF113	0641	Sensor feed voltage
DF114	0400	EGR solenoid valve circuit
DF121	0325	Accelerometer circuit
DF122	0651	Pedal potentiometer gang 2 supply voltage
DF130	0087	Flow capacity function
DF195	0016	Camshaft sensor / engine speed consistency
DF209	0487	EGR valve position sensor circuit
DF221	0830	Clutch switch signal
DF242	0654	Engine speed signal output
DF261	0045	Turbocharger actuator circuit
DF427	2263	Turbocharger actuator control
DF489	0645	Air conditioning compressor control
DF631	0703	Brake light switch signal
DF648	062F	Computer
DF859	0170	Injector programming cycle not done
DF886	2269	Presence of water in the diesel fuel
DF1070	0534	Cold loop

*supply: supply

DF001 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> CO.1: Open circuit or short circuit to +12 V CC.0: Short circuit to earth

NOTES	Special notes: If fault DF001 is present, the preheating time is greater than 10 seconds and the engine fan switches on at low speed (Fan assembly 1). If there is a fault on Fan assembly 1, then on vehicles fitted with air conditioning, Fan assembly 2 switches on.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the coolant temperature sensor connector, component code 244. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance of component 244 between connections 3JK and 3C. If the resistance of the coolant temperature sensor is not: at -40°C: 68780 Ω < X < 82780 Ω at -10°C: 11332 Ω < X < 13588 Ω at 25°C: 2140 Ω < X < 2364 Ω at 50°C: 772 Ω < X < 850 Ω at 80°C: 275 Ω < X < 291 Ω at 110°C: 112 Ω < X < 118 Ω at 120°C: 86 Ω < X < 90 Ω, replace the coolant temperature sensor, component code 244 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2) Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting).
Check the insulation and continuity of the following connections: – 3JK between components 120 and 244, – 3C between components 120 and 244. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the coolant temperature sensor, component code 244 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2) Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF002 PRESENT OR STORED	<u>AIR TEMPERATURE SENSOR CIRCUIT</u> CO.1: Open circuit or short circuit to +12 V CC.0: Short circuit to earth 1.DEF: inconsistency

NOTES	Depending on the engine type, the air temperature is given by the air temperature sensor, which is either on the air flowmeter or in place of the air flowmeter on K9K 724, 740, 766, 768, and 812 engines only. See the Technical Note Wiring Diagrams for the vehicle.

The air temperature sensor in the flow sensor has a separate electrical circuit. Move the wiring between the computer and the air temperature sensor to see if a change of status occurs (present ↔ stored). Look for any wiring damage and check the connection and condition of the air temperature sensor and its connections. Check the connection and condition of the injection computer connector. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Measure the resistance of component 272 between connections 3JQ and 3B. If the resistance of the air temperature sensor is not: (theoretical values for engines with flowmeter) at -10°C: 8716 Ω < X < 9688 Ω at 0°C: 5497 Ω < X < 6051 Ω at 10°C: 3553 Ω < X < 3875 Ω at 20°C: 2353 Ω < X < 2543 Ω at 30°C: 1613 Ω < X < 1729 Ω (theoretical values for engines without flowmeter) at -10°C: 8623 Ω < X < 10454 Ω at 25°C: 1928 Ω < X < 2174 Ω at 50°C: 763 Ω < X < 857 Ω, replace the air temperature sensor.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF002
CONTINUED

Check **the insulation and continuity** of the following connections:

- **3JQ** between components **120** and **272**,
- **3B** between components **120** and **272**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the air flowmeter or the air temperature sensor, component code **272** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2) Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF003 PRESENT OR STORED	<u>ATMOSPHERIC PRESSURE SENSOR CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to +12 volts

NOTES	Special note: The atmospheric pressure sensor is incorporated in the computer.
	See the Technical Note Wiring Diagrams for the vehicle.

Look for any wiring damage and check the condition and connection of the injection computer connectors, component code 120. Move the wiring between the injection computer, component code 120 and the battery, component code 107 to see if a change of status occurs (Present ↔ Stored). Look for any wiring damage and check the connection and condition of the battery, component code 107 and its connections. If the connector(s) are faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Measure the battery voltage when the ignition is switched on. If the battery voltage is less than 11 V, recharge the battery.
Check the connection and condition of the battery terminals and posts, component code 107.
Check the connection and condition of connector A (black 32-track) of the injection computer, component code 120. Check the connection and condition of the connector of the injection locking relay or of the UPC, according to the vehicle. If the connector(s) are faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF003
CONTINUED

Check **the insulation and continuity** of the following connections:

On K9K 740 engines only:

- **AP29** between components **120** and **1016**,
- **NH** between component **120** and **earth**,
- **3FB** between components **120** and **238**.

For the other engine suffixes:

- **AP15** between components **120** and **1337**,
- **NH** or **N** between component **120** and **earth**,
- **3FB** between components **120** and **1337**,
- **3FB1** between components **120** and **1337**,
- **3FB2** between components **120** and **1337**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF005 PRESENT OR STORED	ENGINE SPEED SENSOR CIRCUIT 1.DEF: Inconsistency 2.DEF: No signal 3.DEF: Too many additional teeth 4.DEF: Teeth missing 5.DEF: Additional teeth 6.DEF: Too many teeth missing

NOTES	Special note: If 1.DEF, 2.DEF, 3.DEF, or 6.DEF is present: the engine stops and the level 2 warning light illuminates, with the message Faulty injection displayed on the instrument panel. If 4.DEF or 5.DEF is present: the engine performance is reduced to 75% and the level 1 warning light illuminates. Conditions for applying fault finding procedures to stored faults: The fault is present when the starter motor is operating or the engine is running at idle speed. See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the engine speed sensor connector, component code 149. Check the connection and condition of connector B of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance of the engine speed sensor, component code 149 between connections 3BL and 3BG. If the resistance of the engine speed sensor, component code 149 is not between 510 Ω et 850 Ω (at 20°C), replace the engine speed sensor (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2) Mechanical, 13B Diesel injection, Crankshaft position sensor: Removal - Refitting).
Check the insulation and continuity of the following connections: – 3BG between components 149 and 120, – 3BL between components 149 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the engine speed sensor, component code 149 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2) Mechanical, 13B Diesel injection, Crankshaft position sensor: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF007 PRESENT OR STORED	<u>RAIL PRESSURE SENSOR CIRCUIT</u> CC.0: Short circuit to earth C0.1: Open circuit or short circuit to +12 V 1.DEF: Inconsistency 2.DEF: Below minimum threshold 3.DEF: Above maximum threshold 4.DEF: Value outside permitted tolerance

NOTES	Priority for dealing with a combination of faults: – DF113 Sensor supply voltage.
	Conditions for applying fault finding procedures to stored faults: The fault is declared present after the engine starts.
	Special note: If fault DF007 is present : the engine stops and cannot be restarted and the level 2 warning light illuminates, with the message Faulty injection displayed on the instrument panel.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the rail pressure sensor connector, component code 1032 . Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for +5 V on connection 3LX of component 1032 . Check for earth on connection 3LZ of component 1032 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3LX between components 1032 and 120 , – 3LY between components 1032 and 120 , – 3LZ between components 1032 and 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF007
CONTINUED

Check the sealing of the low pressure and high pressure diesel fuel circuits (visual inspections): on the pump casing, overpressure valve, pipes, rail and injector unions, injector wells, etc., run **TEST 1 Low pressure circuit check** and **TEST 7 High pressure circuit sealing check**.

If all the above checks are correct:

With the vehicle ignition on and the engine stopped for over **1 minute**:

Display **PR038 Rail pressure**, if the value is **less than 30 bar**, the sensor is correct.

Otherwise, use commands **AC005 Cylinder 1 injector**, **AC006 Cylinder 2 injector**, **AC007 Cylinder 3 injector**, **AC008 Cylinder 4 injector** in order to release any residual pressure.

Check that the value of **PR038** decreases. If **PR038** becomes less than **30 bar**, the sensor is correct.

If the fault is still present, replace the **rail pressure sensor**, component code **1032** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2) Mechanical**, **13B, Diesel injection, Rail pressure sensor: Removal - Refitting**).

Note: the rail pressure sensor is built into the rail.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF008 PRESENT OR STORED	PEDAL POTENTIOMETER CIRCUIT GANGED CIRCUIT 1 CO.0: Open circuit or short circuit to earth CC.1: Short circuit to +12 volts 1.DEF: Inconsistency between pedal gangs 1 and 2 2.DEF: No signal 3.DEF: Jammed component

NOTES	Priority for dealing with a combination of faults: – DF113 Sensor supply voltage.
	Special note: If fault DF008 is present: the idle speed is fast (1000 rpm), the engine performance is reduced to 75%, and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel. If DF008 and DF009 Pedal potentiometer circuit gang 2 are present: the engine speed increases to 1300 rpm or 1700 rpm if the vehicle is fitted with a sequential gearbox (fault on gangs 1 and 2), and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel. Note: possible risk of the engine speed racing with no load for 1 second.
	See the Technical Note Wiring Diagrams for the vehicle.

1.DEF 3.DEF	NOTES	None.

Disconnect connector A (black) of the injection computer, component code 120 and the connector of the pedal potentiometer, component code 921. Check the insulation between connections 3LS and 3LW of component 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, replace the accelerator pedal potentiometer, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting). If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF008 CONTINUED 1	

CO.0 CC.1 2.DEF	NOTES	Special note: None.

Check the connection and condition of the **pedal potentiometer** connector, component code **921**.
Check the connection and condition of **connector A** (black 32-track) of the **injection computer**, component code **120**.
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+ 5 V** on connection **3LR** of component **921**.
Check for **earth** on connection **3LT** of component **921**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:
– **3LR** between components **921** and **120**,
– **3LS** between components **921** and **120**,
– **3LT** between components **921** and **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Disconnect **connector A** of the **injection computer**, component code **120** and the connector of the **pedal potentiometer**, component code **921**.
Check the insulation between connections **3LS** and **3LW** of component **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF008
CONTINUED 2

Measure the resistance between connections **3LR** and **3LT** of component **921**.

If the pedal potentiometer resistance is not between **800 Ω** and **2600 Ω** , replace the pedal potentiometer, component code **921** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical**, **13B**, **Diesel injection**, **Accelerator pedal potentiometer: Removal - Refitting**).

If the fault is still present, replace the **accelerator pedal potentiometer**, component code **921** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical**, **13B**, **Diesel injection**, **Accelerator pedal potentiometer: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF009 PRESENT OR STORED	<u>PEDAL POTENTIOMETER TRACK 2 CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to +12 volts

NOTES	Priority for dealing with a combination of faults: – DF122 Pedal potentiometer gang 2 supply voltage.
	Special note: If fault DF009 is present : the idle speed is fast (1000 rpm), the engine performance is reduced to 75% , and the level 1 warning light illuminates with the message Check injector displayed on the instrument panel. If DF009 and DF008 Pedal potentiometer circuit gang 1 are present : the engine speed increases to 1300 rpm or 1700 rpm if the vehicle is fitted with a sequential gearbox (fault on gangs 1 and 2), and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel. Note: possible risk of the engine speed racing with no load for 1 second.
	See the Technical Note Wiring Diagrams for the vehicle.

CO.0	NOTES	Special note: None.

Check the connection and condition of the pedal potentiometer connector, component code 921 . Check the connection and condition of connector A (black 32-track) of the computer, component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 5 V on connection 3LU of component 921 . Check for earth on connection 3LV of component 921 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Disconnect connector A of the computer , component code 120 and the connector of the pedal potentiometer , component code 921 . Check the insulation against earth of connection 3LW on component 120 . If the connection is faulty and if there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF009
CONTINUED 1

Check the **insulation and continuity** of the following connection:

– **3LW** between components **921** and **120**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the resistance between connections **3LU** and **3LV** of component **921**.

If the resistance of the **pedal potentiometer**, component code **921** is not between **850 Ω** and **4900 Ω**, replace the pedal potentiometer, component code **921** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting**).

If the fault is still present, replace the **accelerator pedal potentiometer**, component code **921** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting**).

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF009 CONTINUED 2	

CC.1	NOTES	Special note: None.

Check the connection and condition of the pedal potentiometer connector, component code 921. Check the connection and condition of connector A (black 32-track) of the computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for +5 V on connection 3LU of component 921. Check for earth on connection 3LV of component 921. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3LU between components 921 and 120, – 3LV between components 921 and 120, – 3LW between components 921 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Disconnect connector A of the computer, component code 120 and the connector of the pedal potentiometer, component code 921. Check the insulation between connections 3LU and 3LW of component 120. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance between connections 3LU and 3LV of component 921. If the resistance of the pedal potentiometer, component code 921 is not between 850 Ω and 4900 Ω, replace the pedal potentiometer, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting).
If the fault is still present, replace the accelerator pedal potentiometer, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF010 PRESENT OR STORED	<u>EGR POSITION SENSOR CIRCUIT</u> 1.DEF: Above maximum threshold 2.DEF: Below minimum threshold

NOTES	Priority for dealing with a combination of faults: – DF113 Sensor supply voltage.
	See the Technical Note Wiring Diagrams for the vehicle.

K9K 724, 740, 766, 768, 800, 802, and 812 ENGINES (Euro 4):	
Check the connection and condition of the EGR valve connector, component code 1460 . Check the connection and condition of connector B (brown 48-track) of the computer, component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.	
Check the insulation and continuity of the following connections: – 3GC between components 1460 and 120 , – 3EL between components 1460 and 120 , – 3JM between components 1460 and 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.	
Check for + 5 V on connection 3GC of component 1460 . Check for earth on connection 3JM of component 1460 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.	
Measure the resistance of the EGR valve , component code 1460 : – with the engine stopped, the exhaust gas recirculation valve will be closed (unless there is a fault), – wait for the ambient temperature around the valve to stabilise (approximately 20°C), measure the resistance between connections 3VP and 3VQ of component 1460 . The resistance must be between 0.5 Ω < R < 50 Ω (while running command AC002 EGR solenoid valve). If the value is not correct, replace the EGR valve (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting). After replacing the EGR valve, use command RZ002 EGR Adaptives to reinitialise the EGR valve offsets.	
If the fault is still present, contact the Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF010 CONTINUED

K9K 750 and 752 ENGINES (Euro 3):

Check the connection and condition of the **EGR valve** connector, component code **1460**.
Check the connection and condition of **connector B** (brown 48-track) of the computer, component code **120**.
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:
– **3GC** between components **1460** and **120**,
– **3EL** between components **1460** and **120**,
– **3JM** between components **1460** and **120**.
If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 5 V** on connection **3GC** of component **1460**.
Check for **earth** on connection **3JM** of component **1460**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Measure the resistance of the **EGR valve**, component code **1460**:
– with the engine stopped, the exhaust gas recirculation valve will be closed (unless there is a fault),
– wait for the ambient temperature around the valve to stabilise (approximately **20°C**),
– measure the resistance between connections **3FB2** and **122B**. The resistance must be between **7.54 Ω < R < 8.5 Ω** (at **20°C**),
– measure the resistance between connections **3GC** and **3JM**. The resistance must be between **2.4 KΩ < R < 5.6 KΩ** (at **20°C**),
– measure the resistance between connections **3JM** and **3EL**. The resistance must be between **800 Ω < R < 3.6 KΩ** (at **20°C**),
if the value is not correct, replace the **EGR valve**, component code **1460** (see **MR 385 (Modus), MR 392 (Clio III), Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR Adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF014 PRESENT OR STORED	<u>VEHICLE SPEED SIGNAL CIRCUIT</u>

NOTES	Special note: None.

On this type of vehicle, the **ABS** or the **VSU*** (if the vehicle is not fitted with **ABS**) transmits the vehicle speed information via the multiplex network.

Run the **multiplex network test** (see **88B, Multiplexing**) to be able to work on the **CAN** network (Fault on **CAN H** and **CAN L** lines between the **injection** and the **ABS**). Also check that there are no faults in the **ABS** computer (see **38C, Anti-lock braking system**) or in the system delivering the vehicle speed (**VSU**, see **38G, Vehicle speed computer**).

* VSU: Vehicle Speed Unit

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF015 PRESENT OR STORED	<u>MAIN RELAY CONTROL CIRCUIT</u> 1.DEF: Permanent low level 2.DEF: Permanent high signal

NOTES	Conditions for applying fault finding procedures to stored faults: Apply the fault finding procedure below if the fault is present or stored .
	See the Technical Note Wiring Diagrams for the vehicle.

For Clio III, Modus, Mégane II, Scénic II, and Kangoo 2: Check the connection and condition of the UPC connectors; component code 1337. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. For New Twingo: Check the connection and condition of the injection locking relay connector, component code 238. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the connection and condition of connector C (grey 32-track) of the injection computer, component code 120. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3AA between components 1337 and 120, – 3FB2 between components 1337 and 120, – 3FB1 between components 1337 and 120. K9K 740 engines only: – 3FB between components 238 and 120, – 3AA between components 238 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, run a test of the Engine compartment connection unit (see 87G, Engine compartment connection unit) or replace the main relay, component code 238.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF016 PRESENT OR STORED	<u>EGR VALVE CONTROL CIRCUIT</u> CC.0: Short circuit to earth CC.1: Short circuit to +12 volts 1.DEF: Detection of overheating CO.0: Open circuit or short circuit to earth CO.1: Open circuit or short circuit to +12 V CO: Open circuit

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling.
	Special notes: If fault DF016 is present : unstable engine speed and even stalling. Starting difficult or even impossible when cold.
	See the Technical Note Wiring Diagrams for the vehicle.

K9K 724, 740, 766, 768, 800, 802, and 812 ENGINES (Euro 4):
Check the connection and condition of the exhaust gas recirculation valve connector, component code 1460 . Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3VP between components 1460 and 120 , – 3VQ between components 1460 and 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check for the supply 13 V < X < 14 V (with the engine running) , 11.5 V < X < 12.5 V (with the ignition on and the engine stopped) on connection 3VP of component 1460 . Check for earth on connection 3VQ of component 1460 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF016
CONTINUED 1

Measure the resistance of the **EGR valve**, component code **1460**:

- with the engine stopped, the exhaust gas recirculation valve will be closed (unless there is a fault),
 - wait for the ambient temperature around the valve to stabilise (approximately **20°C**),
- measure the resistance between connections **3VP** and **3VQ** of component **1460**. The resistance must be between **0.5 Ω < R < 50 Ω** (while running command **AC002 EGR solenoid valve**).

If the value is not correct, replace the **EGR valve**, component code **1460** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).

After replacing the EGR valve, use command **RZ002 EGR Adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF016 CONTINUED 2

K9K 750 and 752 ENGINES (Euro 3):

Check the connection and condition of the **exhaust gas recirculation solenoid valve** connector, component code **1460**.

Check the connection and condition of **connector B** (brown 48-track) of the **injection computer**, component code **1260**.

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:

- **122B** between components **1460** and **120**,
- **3FB2** between components **1460** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for the supply **13 V < X < 14 V (with the engine running)**, **11.5 V < X < 12.5 V (with the ignition on and the engine stopped)** on connection **3FB2** of component **1460**.

Measure the resistance of the **EGR valve**, component code **1460**:

- with the engine stopped, the exhaust gas recirculation valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20°C**),
- measure the resistance between connections **3FB2** and **122B** of component **1460**. The resistance must be between **7.5 Ω < R < 8.5 Ω** (at **20°C**),
- measure the resistance between connections **3GC** and **3JM** of component **1460**. The resistance must be between **2.4 KΩ < R < 5.6 KΩ** (at **20°C**),
- measure the resistance between connections **3JM** and **3EL** of component **1460**. The resistance must be between **800 Ω < R < 3.6 KΩ** (at **20°C**),

if the value is not correct, replace the **EGR valve** (see **MR 385 (Modus)**, **MR 392 (Clio III)**, **Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).

After replacing the EGR valve, use command **RZ002 EGR Adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF017 PRESENT OR STORED	<u>PREHEATING UNIT CONTROL CIRCUIT</u> C0.0: Open circuit or short circuit to earth CC.1: Short circuit to +12 volts

NOTES	Special notes: If fault DF017 is present: starting is difficult (even impossible when cold). If CC.1: heater plugs are permanently switched on with risk of engine damage or even failure.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the preheating unit connector, component code 257 or 980. Check the connection and condition of connector C (grey 32-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – BP35 between components 777 (or 597 for New Twingo) and 257 (or 980), – 3FY between connections 257 (or 980) and 120, – 3FF between components 257 (or 980) and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF018 PRESENT OR STORED	<u>LOW SPEED FAN ASSEMBLY CONTROL CIRCUIT</u> CC.1: Short-circuit to +12 volts CO.0: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: – the ignition is switched on, – clearing the fault from the memory, – the relay is actuated using command AC154 Low speed fan assembly.
	Special notes: – high-speed fan assembly constantly actuated, – the level 1 warning light is illuminated.
	– Use bornier Elé. 1681 for all operations on the connector of the engine management computer.
	– See the Technical Note Wiring Diagrams for the vehicle.

Check the connections of the low-speed fan assembly relay mounting, component code 700 . Check the connections of the engine management computer, component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC154 Low-speed fan assembly . If the command does not work, with the ignition on, check for +12 V on connection 3FB of component 700 and the earth of connection 3JN of component 700 .
Remove the low speed relay and check the continuity of the following connections: – 3FB between components 238 and 700, – 3JN between components 700 and 120.
If the fault is still present, check the relay and replace it if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF019 PRESENT OR STORED	HIGH SPEED FAN ASSEMBLY CONTROL CIRCUIT CC.1: Short circuit to +12 volts CO.0: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault reappears after: – the ignition is switched on, – clearing the fault from the memory, – relay actuated using command AC153 High speed fan assembly.
	Special notes: – the level 1 warning light is illuminated, – risk of overheating and air conditioning cut-off.
	– Use bornier Elé. 1681 for all operations on the connector of the engine management computer.
	– See the Technical Note Wiring Diagrams for the vehicle.

Check the connections of the high-speed fan assembly relay mounting, component code 234 . Check the connections of the engine management computer, component code 120 . If the connector(s) are faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Run command AC153 High speed fan assembly . If the command does not work, with the ignition on, check for + 12 V on connection 3FB of component 234 and the earth of connection 3JP of component 234 .
Remove the high speed relay and check the continuity of the following connections: – 3FB between components 238 and 234, – 3JP between components 120 and 234.
If the fault is still present, check the relay and replace it if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF024 PRESENT OR STORED	<u>LOW-PRESSURE ACTUATOR CONTROL CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to +12 volts

NOTES	Special notes: If fault DF024 is present with a C0 or CC.1: the level 2 warning light illuminates and, depending on the vehicle, the level 1 warning light illuminates with the message Faulty injection displayed on the instrument panel. The fuel flow actuator is fully open, there is a clicking, and the engine is stopped to prevent it from racing.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the flow actuator connector, component code 1105. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 12 V after ignition feed on connection 3FB1 or 3FB2 for New Twingo or 3FB3 for Kangoo 2 of component 1105.
Check the insulation and continuity of the following connection: – 3HI between components 1105 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Measure the resistance between connections 3HI and 3FB1 or 3FB2 for New Twingo or 3FB3 for Kangoo 2 of component 1105. If the resistance of the flow actuator is not between 4.8 Ω and 5.8 Ω at 20°C, replace the flow actuator (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Flow actuator: Removal - Refitting).
If the fault is still present, replace the low pressure actuator (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Flow actuator: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF025 PRESENT OR STORED	PRE-POSTHEATING UNIT DIAGNOSTIC LINE C0: Open circuit

NOTES	Special notes: This fault only directs the fault finding with an open circuit.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the heater plug connectors, component codes 680, 681, 682, and 683. Check the connection and condition of the preheating unit connector, component code 257 or 980. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance of each heater plug, component code 680, 681, 682, or 683. The resistance must be less than 2 Ω. Replace the faulty plugs, component codes 680, 681, 682, and 683 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13C, Preheating, Heater plugs: Removal - Refitting).
Check the connection and condition of connector C (grey 32-track) of the injection computer, component code 120. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for +12 V battery on connection BP35 of component 257 (or 980). Check for the control of the preheating unit on connection 3FF component 257 (or 980).
Check the insulation and continuity of the following connections: – 3FY between connections 257 (or 980) and 120, – 3FF between connections 257 (or 980) and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the preheating unit, component code 257 or 980 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13C, Preheating, Pre-postheating unit: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 PRESENT OR STORED	<u>CYLINDER 1 INJECTOR CONTROL CIRCUIT</u> C0: Open circuit CC: Short circuit 1.DEF: At minimum stop 2.DEF: At maximum stop

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling.
	Special notes: When fault DF026 occurs, the idle speed is locked at 1000 rpm , there is engine noise, the engine speed is unstable, the engine performance is reduced to 75% , the level 1 warning light illuminates, and the message Check injector is displayed until the next time the ignition is switched off.
	See the Technical Note Wiring Diagrams for the vehicle.

C0 - CC	NOTES	None.

Switch off the ignition and wait 15 seconds. Check the connection and condition of the cylinder 1 injector connector, component code 193. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC005 Cylinder 1 injector. If injector 1 cannot be heard operating five times in a cycle, connect the wire of the cylinder 2 injector to the cylinder 1 injector and run command AC006 Cylinder 2 injector. Does this injector actuation cycle work? Note: If the wires cannot be swapped, continue the procedure by replying YES to the previous question.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 CONTINUED 1	
YES	Injector 1 is not faulty, the fault is in the injector 1 control circuit. Check the insulation and continuity of the following connections: – 3L between components 193 and 120, – 3KW between components 193 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
NO	Injector 1 is faulty, replace the cylinder 1 injector, component code 193 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).
AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 CONTINUED 2	

1.DEF 2.DEF	NOTES	None.

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low, high or very high pressure injector).
Check that the C2I* is entered correctly in the injection computer .
Check the accelerometer shielding on connection TB1 of component 120 .
Check that the accelerometer is secured on the engine.
After retightening the accelerometer, be sure to clear the pressure regulation adaptives using command RZ004 Pressure regulation adaptives .
Carry out a road test to check if the fault is still present.
If the fault is still present, replace the cylinder 1 injector, component code 193 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF027 PRESENT OR STORED	<u>INJECTOR CYLINDER 2 CONTROL CIRCUIT</u> C0: Open circuit CC: Short circuit 1.DEF: At minimum stop 2.DEF: At maximum stop

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling.
	Special notes: When fault DF027 occurs, the idle speed is locked at 1000 rpm , there is engine noise, the engine speed is unstable, the engine performance is reduced to 75% , the level 1 warning light illuminates, and the message Check injector is displayed until the next time the ignition is switched off.
	See the Technical Note Wiring Diagrams for the vehicle.

C0 - CC	NOTES	None.

Switch off the ignition and wait 15 seconds. Check the connection and condition of the cylinder 2 injector connector, component code 194. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC006 Cylinder 2 injector. If injector 2 cannot be heard operating five times in a cycle, connect the wire of the cylinder 3 injector to the cylinder 2 injector and run command AC007 Cylinder 3 injector. Does this injector actuation cycle work? Note: If the wires cannot be swapped, continue the procedure by replying YES to the previous question.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF027 CONTINUED 1	
YES	Injector 2 is not defective; the fault is in the injector 2 control circuit. Check the insulation and continuity of the following connections: – 3LA between components 194 and 120, – 3KX between components 194 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
NO	Injector 2 is faulty, replace the cylinder 2 injector, component code 194 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).
AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF027 CONTINUED 2	

1.DEF 2.DEF	NOTES	None.

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low, high or very high pressure injector).
Check that the C2I* is entered correctly in the injection computer .
Check the accelerometer shielding on connection TB1 of component 120 .
Check that the accelerometer is secured on the engine.
After retightening the accelerometer, be sure to clear the pressure regulation adaptives using command RZ004 Pressure regulation adaptives .
Carry out a road test to check if the fault is still present.
If the fault is still present, replace the cylinder 2 injector, component code 194 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF028 PRESENT OR STORED	<u>CYLINDER 3 INJECTOR CONTROL CIRCUIT</u> C0: Open circuit CC: Short circuit 1.DEF: At minimum stop 2.DEF: At maximum stop

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling.
	Special notes: When fault DF028 occurs, the idle speed is locked at 1000 rpm , there is engine noise, the engine speed is unstable, the engine performance is reduced to 75% , the level 1 warning light illuminates, and the message Check injector is displayed until the next time the ignition is switched off.
	See the Technical Note Wiring Diagrams for the vehicle.

C0 - CC	NOTES	None.

Switch off the ignition and wait 15 seconds. Check the connection and condition of the cylinder 3 injector connector, component code 1954. Check the connection and condition of connector B (48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC007 Cylinder 3 injector. If injector 3 cannot be heard operating five times in a cycle, connect the wire of the cylinder 4 injector to the cylinder 3 injector and run command AC008 Cylinder 4 injector. Does this injector actuation cycle work? Note: If the wires cannot be swapped, continue the procedure by replying YES to the previous question.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF028 CONTINUED 1	
YES	Injector 3 is not defective; the fault is in the injector 3 control circuit. Check the insulation and continuity of the following connections: – 3LB between components 195 and 120, – 3KY between components 195 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
NO	Injector 3 is faulty, replace the cylinder 3 injector, component code 195 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).
AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF028 CONTINUED 2	

1.DEF 2.DEF	NOTES	None.

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low, high or very high pressure injector).
Check that the C2I* is entered correctly in the injection computer .
Check the accelerometer shielding on connection TB1 of component 120 .
Check that the accelerometer is secured on the engine.
After retightening the accelerometer, be sure to clear the pressure regulation adaptives using command RZ004 Pressure regulation adaptives .
Carry out a road test to check if the fault is still present.
If the fault is still present, replace the cylinder 3 injector, component code 195 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF029 PRESENT OR STORED	<u>INJECTOR CYLINDER 4 CONTROL CIRCUIT</u> C0: Open circuit CC: Short circuit 1.DEF: At minimum limit 2.DEF: At maximum limit

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling.
	Special notes: When fault DF029 occurs, the idle speed is locked at 1000 rpm , there is engine noise, the engine speed is unstable, the engine performance is reduced to 75% , the level 1 warning light illuminates, and the message Check injector is displayed until the next time the ignition is switched off.
	See the Technical Note Wiring Diagrams for the vehicle.

C0 - CC	NOTES	None.

Switch off the ignition and wait 15 seconds. Check the connection and condition of the cylinder 4 injector connector, component code 196. Check the connection and condition of connector B (48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC008 Cylinder 4 injector. If injector 4 cannot be heard operating five times in a cycle, connect the wire of the cylinder 3 injector to the cylinder 4 injector and use command AC007 Cylinder 3 injector. Does this injector actuation cycle work? Note: If the wires cannot be swapped, continue the procedure by replying YES to the previous question.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF029 CONTINUED 1	
YES	Injector 4 is not defective; the fault is in the injector 4 control circuit. Check the insulation and continuity of the following connections: – 3LC between components 196 and 120, – 3KZ between components 196 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
NO	Injector 4 is faulty, replace the cylinder 3 injector, component code 195 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).
AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF029 CONTINUED 2	

1.DEF 2.DEF	NOTES	None.

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low, high or very high pressure injector).
Check that the C2I* is entered correctly in the injection computer .
Check the accelerometer shielding on connection TB1 of component 120 .
Check that the accelerometer is secured on the engine.
After retightening the accelerometer, be sure to clear the pressure regulation adaptives using command RZ004 Pressure regulation adaptives .
Carry out a road test to check if the fault is still present.
If the fault is still present, replace the cylinder 4 injector, component code 196 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF032 PRESENT OR STORED	<u>THERMOPLUNGER 1 RELAY CONTROL CIRCUIT</u>

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is present when the ignition is switched on.
	See the Technical Note Wiring Diagrams for the vehicle.

For New Twingo

Check the connection and condition of the additional heater 1 relay connector, component code **1067** and the **80 A** maxi fuse in the engine fuse and relay box.
Check the connection and condition of the **injection computer** connector, component code **120**.
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run command **AC250 Heating resistor 1 relay**.
If the command does not run, check, with the ignition on, for earth on connection **3JA** of component **1067**.
Check for **+ 12 V** on connection **3FB** of component **1067**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:
– **3JA** between components **1067** and **120**,
– **3FB** between components **1067** and **238**,
– **38LL** between components **1067** and **1113**,
– **BP9** between components **1067** and **597**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, check the relay and replace it if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF032
CONTINUED

For Mégane II
and Scénic II:

Check the connection and condition of the connector of the additional heater interface unit, component code **1550** and the **70 A** maxi fuses on the power supply fuse board.

Check the connection and condition of the **injection computer** connector, component code **120**.

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run command **AC250 Heating resistor 1 relay**.

If the command does not run, check for **+ 12 V** on connections **BP27** and **BP35** of component **1550**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:

- **3JA** between components **1550** and **120**,
- **3JAA** between components **1550** and **120**,
- **3JAB** between components **1550** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, check the relay and replace it if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF033 PRESENT OR STORED	<u>THERMOPLUNGER 2 RELAY CONTROL CIRCUIT</u>

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is present when the ignition is switched on.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the additional heater 2 relay connector, component code 1068 and the 80 A maxi fuse in the engine fuse and relay box. Check the connection and condition of the injection computer connector, component code 120. If the connector(s) are faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC251 Heating resistor 2 relay. If the command does not run, check, with the ignition on, for earth on connection 3JAA of component 1068. Check for + 12 V on connection 3FB of component 1068. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3JAA between components 1068 and 120, – 3FB between components 1068 and 238, – 38LM between components 1068 and 1113, – BP9 between components 1068 and 597. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, check the relay and replace it if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF034 PRESENT OR STORED	<u>THERMOPLUNGER 3 RELAY CONTROL CIRCUIT</u>

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is present when the ignition is switched on.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the additional heater 2 relay connector, component code 1068 and the 80 A maxi fuse in the engine fuse and relay box. Check the connection and condition of the injection computer connector, component code 120. If the connector(s) are faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run command AC251 Heating resistor 2 relay. If the command does not run, check, with the ignition on, for earth on connection 3JAA of component 1068. Check for + 12 V on connection 3FB of component 1068. If the connector is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3JAA between components 1068 and 120, – 3FB between components 1068 and 238, – 38LM between components 1068 and 1113, – BP9 between components 1068 and 597. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, check the relay and replace it if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF037 PRESENT OR STORED	<u>ENGINE IMMOBILISER</u>

NOTES	None.

Run a multiplex network test (see 88B, Multiplex).
If the fault is still present, see 82A Engine immobiliser .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF038 PRESENT OR STORED	COMPUTER 1.DEF: Analogue - digital converter 2.DEF: Enter injector codes 3.DEF: Memory self-test 4.DEF: Watchdog not refreshed 5.DEF: Interference on the injector control line 6.DEF: Watchdog activation

NOTES	Special notes: When this fault appears: either: the engine speed is locked at 1300 rpm , the engine is noisy, and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel, or: the engine stops and the level 2 warning light illuminates with the message Faulty injection displayed on the instrument panel.
	See the Technical Note Wiring Diagrams for the vehicle.

1.DEF 3.DEF 4.DEF 6.DEF	NOTES	None.

Contact Techline.

2.DEF	NOTES	None.

Check that the individual injector correction (C2I*) matches the injectors; if not, enter the C2I* (see Configurations and programming).
If the C2I* does match the injectors, contact the Techline.

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF038 CONTINUED	

5.DEF	NOTES	None.

Check the connection and condition of **connector B** (brown 48-track) of the **injection computer**, component code **120**.

If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:

- **3L** between components **193** and **120**,
- **3KW** between components **193** and **120**,
- **3LA** between components **194** and **120**,
- **3KX** between components **194** and **120**,
- **3LB** between components **195** and **120**,
- **3KY** between components **195** and **120**,
- **3LC** between components **196** and **120**,
- **3KZ** between components **196** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF039 PRESENT OR STORED	<u>INLET AIR TEMPERATURE SENSOR CIRCUIT</u> CO.1: Open circuit or short circuit to +12 V CC.0: Short circuit to earth

NOTES	Special notes: When this fault arises, the engine is noisy and a light smoke appears.
	See the Technical Note Wiring Diagrams for the vehicle.

IMPORTANT

The Inlet air temperature sensor is absent when the engine is fitted with a flow sensor. In this case, its value is not a true representation and is fixed on the following engines: **K9K766, K9K724 in Vdiag 4C and 50**. It will always be absent on **K9K 766, 768, 724 in Vdiag 48, as well as on K9K 768 Vdiag 4C and 50**.

ENGINE: K9K 750

Move the wiring between the **computer**, component code **120** and the **injection air temperature and pressure sensor**, component code **1474** to see if the status changes (**present** ↔ **stored**).

Look for any wiring damage and check the **connection and condition** of the **inlet air temperature and pressure sensor**, component code **1474** and its connections.

If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the resistance of the air temperature sensor is not:

15614 Ω ± 828 Ω at -20°C

5887 Ω ± 283 Ω at 0°C

2511 Ω ± 108 Ω at 20°C

1200 Ω ± 47 Ω at 40°C

612 Ω ± 22 Ω at 60°C,

replace the air temperature sensor.

Check the **insulation and continuity** of the following connections:

- **3KQ** between components **1474** and **120**,
- **3LQ** between components **1474** and **120**,
- **3LN** between components **1474** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the **inlet air temperature and pressure sensor**, component code **1474**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF039 CONTINUED	

NOTES	None.

ENGINE: K9K 752, 740, 766, and 724

Move the wiring between the computer, component code 120 and the inlet air temperature sensor, component code 272 to see if the status changes (present ↔ stored). Look for any wiring damage and check the connection and condition of the inlet air temperature sensor, component code 272 and its connections. If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
If the resistance of the air temperature sensor is not: 49933 Ω ± 6791 Ω at -40°C 9539 Ω ± 916 Ω at -10°C 2051Ω ± 123 Ω at 25°C 810 Ω ± 47 Ω at 50°C 309 Ω ± 17 Ω at 80°C replace the air temperature sensor.
Check the insulation and continuity of the following connections: – 3KQ between components 120 and 272, – 3SH between components 120 and 272. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the inlet air temperature sensor, component code 272.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF047 PRESENT OR STORED	COMPUTER SUPPLY VOLTAGE 1.DEF: Above maximum threshold 2.DEF: Below minimum threshold

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present when the engine speed is greater than 1000 rpm .
	See the Technical Note Wiring Diagrams for the vehicle.

Move the wiring harness between the injection computer, component code 120 and the battery, component code 107 to see if the status changes (Present ↔ Stored). Look for any wiring damage and check the connection and condition of the battery, component code 107 and its connections. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Measure the battery voltage when the ignition is switched on. If the battery voltage is less than 11 V, recharge the battery.
Check the condition and connection of the battery terminals and posts, component code 107. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the vehicle's charge circuit (see 87B, Passenger compartment connection unit for the New Twingo or see 87G, Engine compartment connection unit for Clio III, Modus, Mégane II, Scénic II, and Kangoo 2).
Check the connection and condition of connector A (black 32-track) of the injection computer, component code 120. Check the connection and condition of the injection locking relay connector, component code 238. Check the connection and condition of the UPC connectors, component code 1337. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF047
CONTINUED

Check **the insulation and continuity** of the following connections:
(except K9K 740 engines)

- **AP15** between components **120** and **1337**,
- **NH** or **N** between component **120** and **earth**,
- **3FB1** between components **120** and **1337**,
- **3FB2** between components **120** and **1337**.

(K9K 740 engines only)

- **AP29** between components **120** and **1016**,
- **NH** between component **120** and **earth**,
- **3FB** between components **120** and **238**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF049 PRESENT OR STORED	<u>REFRIGERANT SENSOR CIRCUIT</u> C0.1: Open circuit or short circuit to +12 V CC.0: Short circuit to earth

NOTES	Conditions for applying fault finding procedures to stored faults: Apply the fault finding procedure below if the fault is present or stored .
	Priority when dealing with a number of faults: – DF113 Sensor supply voltage.
	See the Technical Note Wiring Diagrams for the vehicle.

Display PR037 Refrigerant pressure . If the value is less than 2 bar, top up the refrigerant (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical , 62A , Air conditioning , Refrigerant circuit: Draining - Filling).
Move the wiring between the computer , component code 120 and the refrigerant pressure sensor , component code 1202 to see if the status changes (present ↔ stored). Look for any wiring damage and check the connection and condition of the refrigerant pressure sensor , component code 1202 and its connections. If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the connection and condition of the connector of the refrigerant pressure sensor , component code 1202 . Check the connection and condition of connector C (grey 32-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 5 V on connection 38Y of component 1202 . Check for earth on connection 38W of component 1202 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF049 CONTINUED	

Check the insulation and the continuity of the following connections:

- **38Y** between components **1202** and **120**,
- **38X** between components **1202** and **120**,
- **38W** between components **1202** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the **refrigerant pressure sensor**, component code **1202**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF050 PRESENT OR STORED	<u>BRAKE SWITCH CIRCUIT</u> C0.0: Open circuit or short circuit to earth 1.DEF: No signal

NOTES	Special notes: The cruise control function is inhibited. The fault is declared present when decelerating, when the brake pedal is depressed.
	Conditions for applying fault finding procedures to stored faults: Apply the fault finding procedure below if the fault is present or stored .
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of the brake light switch connector, component code 160 . If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 12 V on connection AP10 (for New Twingo) or BPT (for Mégane II, Scénic II, Modus, and Clio III) or BPT2 and SP17 (for Kangoo 2) of component 160 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the connection and condition of connector A (black 32-track) of the injection computer , component code 160 . Check the connection and condition of the injection locking relay connector , component code 238 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Check the operation of the brake light switch .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF050
CONTINUED

Check **the insulation and continuity** of the following connections:

- **5A** between components **160** and **120**,
- **BPT** between components **160** and **645** (for Mégane II, Scénic II, Modus, and Clio III),
- **BPT2** between components **160** and **645** (for Kangoo 2),
- **SP17** between components **160** and **260** (for Kangoo 2),
- **AP10** between components **160** and **1016** (for New Twingo),
- **65A** between components **160** and **645** (vehicle without ESP),
- **65G** between components **160** and **645** (vehicle with ESP).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the brake switch, component code **160** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 37A, Mechanical component controls, Brake light switch: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF051 PRESENT OR STORED	<u>CRUISE CONTROL/SPEED LIMITER FUNCTION</u> 1.DEF: Inconsistency 2.DEF: On - off switch

NOTES	Special notes: The cruise control function is inhibited.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connection and condition of **connector A** (black **32-track**) of the injection computer, component code **160**.
Check the connection and condition of the **cruise control On - Off switch** connections, component code **1081**.
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:
– **3FX** between components **1081** and **120**,
– **3PD** between components **1081** and **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check that the **cruise control - speed limiter** on - off switch is working (refer to the interpretation of ET042 Cruise control - speed limiter).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF052 PRESENT OR STORED	<u>INJECTORS CONTROL CIRCUIT</u> CC.1: short circuit to +12 volts. CC.0: short circuit to earth

NOTES	Priorities when dealing with a number of faults: – DF026 Cylinder 1 injector control circuit, – DF027 Cylinder 2 injector control circuit, – DF028 Cylinder 3 injector control circuit, – DF029 Cylinder 4 injector control circuit, the fault finding procedure remains the same, but the combination of faults makes it possible to identify the defective injector(s).
	Special notes: When the fault occurs: there is engine noise, the engine speed is unstable, the engine performance is reduced, and the level 2 warning light comes on with the message Faulty injection displayed on the instrument panel.
	See the Technical Note Wiring Diagrams for the vehicle.

Switch off the ignition , check the condition and connection of the injector connectors , component codes 193, 194, 195, and 196 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Switch off the ignition, disconnect the injectors (or the injector identified by faults DF026 Cylinder 1 injector control circuit, DF027 Cylinder 2 injector control circuit, DF028 Cylinder 3 injector control circuit, DF029 Cylinder 4 injector control circuit) and switch on the ignition again. Using the diagnostic tool , check for changes to fault DF052 . Is DF052 present or stored?

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF052 CONTINUED	
DF052 PRESENT	The injectors are not defective. Check the condition and connection of the injection computer (brown 48-track) connector B. If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector(s), otherwise replace the wiring. Check the insulation, the continuity and the absence of interference resistance on the following connections: – 3L between components 193 and 120, – 3KW between components 193 and 120, – 3LA between components 194 and 120, – 3KX between components 194 and 120, – 3LB between components 195 and 120, – 3KY between components 195 and 120, – 3LC between components 196 and 120, – 3KZ between components 196 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
DF052 STORED	Injector(s) defective. Replace the injector identified by faults DF026 Cylinder 1 injector control circuit to DF029 Cylinder 4 injector control circuit if any are present. If none of the faults identifying the defective injector circuit are present: – switch off the ignition, – reconnect one of the four injectors, – switch on the ignition again. If the fault recurs as present, replace the reconnected injector, component code 193, 194, 195, or 196 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting). Follow the same procedure for the other injectors.
AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF053 PRESENT OR STORED	<u>RAIL PRESSURE REGULATION FUNCTION</u> 1.DEF: at minimum stop 2.DEF: at maximum stop 3.DEF: below minimum threshold 4.DEF: above maximum threshold 5.DEF: high flow current < minimum 6.DEF: high flow current > maximum 7.DEF: low flow current < minimum 8.DEF: low flow current > maximum

NOTES	Priorities when dealing with a number of faults: – DF098 Fuel temperature sensor circuit, – DF007 Rail pressure sensor circuit.
	Special note. If DF053, the engine may stop with the level 2 warning light illuminated with the message Faulty injection displayed on the instrument panel.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine running.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the presence and conformity of the fuel, run TEST 13: Diesel fuel conformity check .
Check the connection and condition of the flow actuator connector, component code 1105 . If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 12 V (after relay) on connection 3FB1 or 3FB2 (for New Twingo) or 3FB3 (for Kangoo 2) of component 1105 .
Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance between connections 3HI and 3FB1 or 3FB2 (for New Twingo) or 3FB3 (for Kangoo 2) of component 1105 . If the resistance of the flow actuator is not between 4.8 Ω and 5.8 Ω at 20°C , replace the flow actuator, component code 1105 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Flow actuator: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF053
CONTINUED

Check the **insulation and continuity** of the following connection:

– **3HI** between components **1105** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Run **Test 1: Low pressure circuit check**.

Run **Test 6: High pressure system check**.

Run **Test 8: Injector return flow**.

If the fault is still present contact Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF056 PRESENT OR STORED	<u>AIR FLOWMETER CIRCUIT</u> 1.DEF: Permanent low level 2.DEF: Permanent high level 3.DEF: Below minimum threshold 4.DEF: Above maximum threshold 5.DEF: At minimum stop 6.DEF: At maximum stop

NOTES	Special notes: If fault DF056 is present : air flow regulation stops and the EGR valve is closed.
	See the Technical Note Wiring Diagrams for the vehicle.

Check that the air filter is not blocked. Check that the air filter is not clogged and that the air inlet system is not blocked between the air filter outlet and the inlet manifold. Run TEST 5: Inlet circuit check. Run TEST 11: Air line at the turbocharger.
Check the connection and condition of the air flowmeter connector, component code 799. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 5 V on connection 3KJ of component 799.
Check for earth on connection 3DW of component 799.
Check the insulation and continuity of the following connections: – 3KJ between components 799 and 120, – 3DW between components 799 and 120, – 3DV between components 799 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the air flowmeter, component code 799 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF057 PRESENT OR STORED	<u>WATER IN DIESEL FUEL DETECTOR CIRCUIT</u> CO.1: Open circuit or short circuit to + 12 V CC.0: Short circuit to earth 1.DEF: above maximum threshold

NOTES	Special notes: – If water is detected downstream of the diesel filter, the high pressure pump and the injectors may be damaged.
	Use bornier Elé. 1681 for all operations on the connector of the engine management computer.
	See the Technical Note Wiring Diagrams for the vehicle.

Check the connections of the water in diesel fuel sensor, component code 414 . Check the connections of the engine management computer, component code 120 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
With the ignition on, check for +12 V on connections 3FB1 and 3FB2 (for New Twingo) or AP15 (for Kangoo 2) of component 414 . Check for earth on the following connections: – M or 3WU (for New Twingo) of component 120 . – MH and MW (for Kangoo 2) of component 414 .
Check the continuity of the following connections: – 3WT between components 414 and 120 , – M between components 414 and 120 , – 3FB1 between components 414 and 1337 . (only for New Twingo): – 3WT between components 414 and 120 , – 3WU between components 414 and 120 , – 3FB2 between components 414 and 238 . (only for Kangoo 2): – AP15 between components 414 and 1337 , – 3WT between components 414 and 1337 , – MH and MW between earth and component 414 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF057 CONTINUED	

If the fault is still present, replace the diesel filter (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13A**, Fuel supply, Fuel filter: **Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF059 PRESENT OR STORED	<u>COMBUSTION MISFIRES ON CYLINDER 1</u>

NOTES	Special notes: If fault DF059 is present : there is engine noise and jerking, the engine runs on three cylinders, the engine speed is held at 1000 rpm , the engine performance is reduced to 75% , and the level 1 warning light illuminates.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling .
	Priorities when dealing with a number of faults: – DF026 Cylinder 1 injector control circuit (CC or CO), – DF053 Rail pressure regulation function.

Check the presence and conformity of the fuel. Run TEST 13: Diesel fuel conformity check .
Run TEST 3 Injector check . Run TEST 7 High pressure circuit sealing check .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
Check the inlet ducts , as well as the EGR valve , and clean them if necessary (see Technical Note 3916 Cleaning the EGR solenoid valve).
If the fault is still present, replace the injector, component code 193 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical , 13B , Diesel injection , Diesel injector: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF060 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 2</u>

NOTES	Special notes: If fault DF060 is present : there is engine noise and jerking, the engine runs on three cylinders, the engine speed is held at 1000 rpm , the engine performance is reduced to 75% , and the level 1 warning light illuminates.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling .
	Priorities when dealing with a number of faults: – DF027 Cylinder 2 injector control circuit (CC or CO), – DF053 Rail pressure regulation function.

Check the presence and conformity of the fuel. Run TEST 13: Diesel fuel conformity check .
Run TEST 3 Injector check . Run TEST 7 High pressure circuit sealing check .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
Check the inlet ducts , as well as the EGR valve , and clean them if necessary (see Technical Note 3916 Cleaning the EGR solenoid valve).
If the fault is still present, replace the injector, component code 194 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical , 13B , Diesel injection , Diesel injector: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF061 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 3</u>

NOTES	Special notes: If fault DF061 is present : there is engine noise and jerking, the engine runs on three cylinders, the engine speed is held at 1000 rpm , the engine performance is reduced to 75% , and the level 1 warning light illuminates.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling .
	Priorities when dealing with a number of faults: – DF028 Cylinder 3 injector control circuit (CC or CO), – DF053 Rail pressure regulation function.

Check the presence and conformity of the fuel. Run TEST 13: Diesel fuel conformity check .
Run TEST 3 Injector check . Run TEST 7 High pressure circuit sealing check .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
Check the inlet ducts , as well as the EGR valve , and clean them if necessary (see Technical Note 3916 Cleaning the EGR solenoid valve).
If the fault is still present, replace the injector, component code 195 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical , 13B , Diesel injection , Diesel injector: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF062 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 4</u>

NOTES	Special notes: If fault DF062 is present : there is engine noise and jerking, the engine runs on three cylinders, the engine speed is held at 1000 rpm , the engine performance is reduced to 75% , and the level 1 warning light illuminates.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine idling .
	Priorities when dealing with a number of faults: – DF029 Cylinder 4 injector control circuit (CC or CO), – DF053 Rail pressure regulation function.

Check the presence and conformity of the fuel. Run TEST 13: Diesel fuel conformity check .
Run TEST 3 Injector check . Run TEST 7 High pressure circuit sealing check .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
Check the inlet ducts , as well as the EGR valve , and clean them if necessary (see Technical Note 3916 Cleaning the EGR solenoid valve).
If the fault is still present, replace the injector, component code 196 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF089 PRESENT OR STORED	<u>INLET MANIFOLD PRESSURE SENSOR CIRCUIT</u> 1.DEF: Permanent low level 2.DEF: Permanent high level 3.DEF: Below minimum threshold 4.DEF: Above maximum threshold 5.DEF: Inconsistency 6.DEF: At maximum stop 7.DEF: At minimum stop

NOTES	Priority in dealing with a number of faults: – DF113 Sensor supply voltage.
	Special notes: The level 1 warning light illuminates accompanied by the message Check injection .
	See Technical Note Wiring Diagrams of the vehicle concerned.

1.DEF 2.DEF 3.DEF 4.DEF	NOTES	None.

Check the connection and condition of the inlet pressure sensor connector, component code 1071 . Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + 5 V on connection 3LQ of component 1071 (or 1474 for the K9K750).
Check for earth on connection 3LN of component 1071 (or 1474 for the K9K750).
Check the insulation, the continuity and the absence of interference resistance on the following connections: – 3LQ between components 120 and 1071 (or 1474 for the K9K750). – 3LP between components 120 and 1071 (or 1474 for the K9K750). – 3LN between components 120 and 1071 (or 1474 for the K9K750). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF089 CONTINUED	

5.DEF 6.DEF 7.DEF	NOTES	None.

Visually check the sealing of the inlet and exhaust ducts. Repair if necessary.
Remove the exhaust and inlet ducts. Check that the ducts are not blocked. Repair if necessary.
Check for consistency between the atmospheric pressure and the inlet pressure (PR035 Atmospheric pressure = PR032 Inlet pressure). Engine stopped (cold), the pressure read by the two sensors must be nearly the same. If the values are very different, replace the inlet pressure sensor.
Run Test 12 Turbocharger. Repair if necessary.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF098 PRESENT OR STORED	<u>FUEL TEMPERATURE SENSOR CIRCUIT</u> CO.1: Open circuit or short circuit to + 12 V CC.0: Short circuit to earth

NOTES	None.
	See Technical Note Wiring Diagrams of the vehicle concerned.

Check the connection and condition of the **fuel temperature sensor** connector, component code **1066**.
 Check the connection and condition of **connector B** (brown 48-track) of the **injection computer**, component code **120**.
 If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the insulation, the continuity and the absence of interference resistance** on the following connections:
 – **3FAB** between components **1066** and **120**,
 – **3LD** between components **1066** and **120**.
 If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Measure the resistance at the **fuel temperature sensor** terminals.
 If the resistance of the **fuel temperature sensor** is not approximately **2.2 kΩ** at **25°C**, replace the fuel temperature sensor, component code **1066** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (Nouvelle Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, Fuel temperature sensor, Removal - Refitting**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF099 PRESENT OR STORED	<u>AUTOMATIC TRANSMISSION OR SEQUENTIAL GEARBOX CONNECTION VIA THE MULTIPLEX NETWORK</u> 1.DEF: No signal

NOTES	Special notes: – Gearbox does not change gear in automatic mode. – OBD warning light illuminated.
	See Technical Note Wiring Diagrams of the vehicle concerned.

Run a multiplex network test (see 88B, Multiplex).
Check the connection and condition of connector A (black 52-track) of the sequential gearbox computer , component code 119 . Check the connection and condition of connector C (brown 48-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation, the continuity and the absence of interference resistance on the following connections: – 3MT between components 119 and 120, – 3MS between components 119 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF107 PRESENT OR STORED	<u>COMPUTER MEMORY</u>

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine running .
	Special notes: If fault DF107 is present : the engine stops and cannot be restarted and the level 2 warning light illuminates, with the message Faulty injection displayed on the instrument panel.

Enter the individual injector corrections (C2I*) using the diagnostic tool (command SC002 Enter injector codes) .
If the fault is still present, contact the Techline.

* C2I: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF112 PRESENT OR STORED	<u>CYLINDER REFERENCE SENSOR CIRCUIT</u> 1.DEF: No signal

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is present when the starter motor is operating or the engine is running at idle speed .
	See Technical Note Wiring Diagrams of the vehicle concerned.

Check the connection and condition of the cylinder reference sensor connector , component code 746 . If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for +12 V after ignition feed on connection 3FB2 or 3FB3 of component 746 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120 . Check the connection and condition of the connector of the injection locking relay , component code 238 or the UPC , component code 1337 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Check for earth on connection 3PL of component 746 .
Check the insulation, continuity and the absence of interference resistance on the following connections: – 3CQ between components 746 and 120 , – For Clio and Modus : 3FB2 between components 1337 and 746 , – For Mégane II and Scénic II : 3FB1 and 3FB2 between components 746 and 1337 , – For New Twingo : 3FB and 3FB2 between components 746 and 238 , – For Kangoo 2 : 3FB3 between components 1337 and 746 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the timing setting.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF113 PRESENT OR STORED	<u>SENSOR SUPPLY VOLTAGE</u> 1.DEF: At minimum limit 2.DEF: At maximum limit

NOTES	Special notes: If fault DF113 is present : the engine stops immediately and cannot be restarted. The level 2 warning light illuminates with the message Faulty injection displayed on the instrument panel.
	See Technical Note Wiring Diagrams of the vehicle concerned.

Check the condition and connection of the connectors on all sensors with a + 5 V supply. – Refrigerant pressure sensor. – Cylinder reference sensor. – Turbocharger inlet pressure sensor. – Rail pressure sensor. – Pedal sensor, gangs 1 and 2. – EGR valve position sensor. – Flow sensor. If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Check the condition and connection of the injection computer connectors, component code 120. If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
To locate a possible internal fault on one of the sensors with a + 5 V supply (short circuit), disconnect each of the sensors on the above list in turn, checking after each disconnection whether the fault changes status from present to stored. If the faulty sensor is located, check its connections and that it is in order. If necessary replace the sensor.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

**DF113
CONTINUED**

Check **the insulation, continuity and the absence of interference resistance** of the following connections:

- **38Y** between components **1202** and **120**,
- **3LQ**, between components **1071** and **120**,
- **3LX** between components **1032** and **120**,
- **3LR** between components **921** and **120**,
- **3LU** between components **921** and **120**,
- **3GC** between components **1460** and **120**,
- **3KJ** between components **799** and **120 (vehicle with flowmeter)**,
- **3B** between components **245** and **120 (K9K 740 engine)**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF114 PRESENT OR STORED	<u>EGR SOLENOID VALVE CIRCUIT</u> 1.DEF: At minimum limit 2.DEF: At maximum limit 3.DEF: Inconsistency 4.DEF: Valve jammed 5.DEF: Valve clogged

NOTES	Priority when dealing with a number of faults: – DF113 Sensor supply voltage.
	Special notes: If fault DF114 is present : unstable engine speed and even stalling. Starting difficult or even impossible when cold, smoke emissions and loss of performance possible. On status 4.DEF , the level 1 warning light illuminates with the message Faulty injection displayed on the instrument panel.
	Conditions for applying fault finding procedures to stored faults: The fault is present with the engine running .
	See Technical Note Wiring Diagrams of the vehicle concerned.

K9K 766, 768, 724, 740, 800, 802, and 812 ENGINES (Euro 4):
Check the connection and condition of the EGR valve connector, component code 1460 . Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3VP between components 1460 and 120 , – 3VQ between components 1460 and 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check for +5 V on connection 3GC of component 1460 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF114 CONTINUED 1

Check the resistance of the **EGR valve**:

- with the engine stopped, the **EGR valve** will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20°C**),
- measure the resistance between connections **3VP** and **3VQ** of component **1460**. The resistance should be between **0.5 Ω < R < 50 Ω** (while running command **AC002 EGR solenoid valve**).

If the value is not correct, replace the **EGR valve**, component code **1460** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).

After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

Also if a **3.DEF, 4.DEF, or 5.DEF** fault is present:

- Remove the EGR valve.
- Check that there are no foreign bodies (scale, etc.) that could jam the valve.
- Remove the foreign matter and clean the EGR valve (see **Technical Note 3916A, Cleaning the EGR solenoid valve**).
- Refit the EGR valve.
- use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.
- Clear the faults from the **computer** memory. Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF114 CONTINUED 2

K9K 750 and 752 ENGINES (Euro 3):

Check the connection and condition of the **EGR valve** connector, component code **1460**.

Check the connection and condition of **connector B** (brown 48-track) of the **injection computer**, component code **120**.

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the insulation and continuity** of the following connections:

- **122B** between components **1460** and **120**,
- **3FB2** between components **1460** and **1337**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check for **+ 12 V** on connection **3GC** of component **1460**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the resistance of the **EGR valve**, component code **1460**:

- with the engine stopped, the exhaust gas recirculation valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20°C**),
- measure the resistance between connections **3FB2** and **122B**. The resistance must be between **7.5 Ω < R < 8.5 Ω** (at **20°C**),
- measure the resistance between connections **3GC** and **3JM**. The resistance must be between **2.4 kΩ < R < 5.6 kΩ** (at **20°C**),
- measure the resistance between connections **3JM** and **3EL**. The resistance must be between **800 Ω < R < 3.6 kΩ** (at **20°C**).

If the value is not correct, replace the **EGR valve**, component code **1460** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).

After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF114
CONTINUED 3

Also if a **3.DEF**, **4.DEF**, or **5.DEF** fault is present:

- Remove the EGR valve.
- Check that there are no foreign bodies (scale, etc.) that could jam the valve.
- Remove the foreign matter and clean the EGR valve (see **Technical Note 3916A, Cleaning the EGR solenoid valve**).
- Refit the EGR valve.
- use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.
- Clear the faults from the **computer** memory. Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF121 PRESENT OR STORED	<u>ACCELEROMETER CIRCUIT</u> 1.DEF: No signal

NOTES	Priority when dealing with a number of faults: If there is a combination of the following faults: – DF121 Accelerometer sensor circuit, – DF001 Coolant temperature sensor circuit, – DF002 Air temperature sensor circuit, – DF003 Atmospheric pressure sensor circuit, – DF098 Fuel temperature sensor circuit, – DF026 Cylinder 1 injector control circuit, – DF027 Cylinder 2 injector control circuit, – DF028 Cylinder 3 injector control circuit, – DF029 Cylinder 4 injector control circuit, Deal first with faults DF026, DF027, DF028, and DF029 (1.DEF - 2.DEF). A fault on these sensors could lead to incorrect fault finding on the accelerometer.
	Conditions for applying the fault finding procedure to a stored fault: The fault is present with the engine running.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low, high or very high pressure injector).
Check the connection and condition of the accelerometer connector, component code 146. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120 and the sensor shielding on connection TB1. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3DQ between components 146 and 120, – 3S between components 146 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF121 CONTINUED	

Check that the **C2I*** is entered correctly in the computer.
Check that the accelerometer is secured on the engine, component code **146** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical**, **13B**, **Diesel injection**, **Accelerometer: Removal - Refitting**).
Disconnect and reconnect the accelerometer sensor to accomplish fast programming.
Carry out a road test followed by another check with the **diagnostic tool**.
If the fault is still present, replace the accelerometer, component code **146** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical**, **13B**, **Diesel injection**, **Accelerometer: Removal - Refitting**).

If the fault is still present, contact the Techline.

C2I*: Individual injector correction

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF122 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 2 SUPPLY VOLTAGE</u> CO.1: open circuit or short circuit to +12 V. CC.0: short circuit to earth.

NOTES	Special notes: If fault DF122 is present : the idle speed is locked at 1000 rpm , the engine performance is reduced to 75% , and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel.
	See Technical Note Wiring Diagrams of the vehicle concerned

CC.0	NOTES	None.

Check the connection and condition of the pedal potentiometer connector, component code 921 . Check the connection and condition of connector A (black 32-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Run test 14 Accelerator pedal check .
Check for earth on connection 3LV of component 921 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Check the insulation and continuity of the following connection: – 3LU between components 921 and 120 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Disconnect connector A of the injection computer and the connector of the pedal potentiometer , component code 921 . Check the insulation against earth of connection 3LU of component 120 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF122 CONTINUED	

CO.1	NOTES	None.

Check the connection and condition of the pedal potentiometer connector, component code 921. Check the connection and condition of connector A (black 32-track) of the injection computer, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Measure the resistance between connections 3LV and 3LU of component 921. If the pedal potentiometer resistance is not between 0.35 KΩ and 5.35 KΩ, replace the pedal potentiometer, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting).
Check for +5 V on connection 3LU of component 921. Check for earth on connection 3LV of component 921. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Disconnect connector A of the injection computer and the pedal potentiometer connector. – Check the insulation of connections 3LU and 3LV of component 120. – Check the insulation against +12 V of connection 3LU of component 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3LU between components 921 and 120, – 3LV between components 921 and 120.
If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the pedal potentiometer, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Accelerator pedal potentiometer: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF130 PRESENT OR STORED	<u>FLOW CAPACITY FUNCTION</u> 1.DEF: High flow current < minimum 2.DEF: High flow current > maximum

NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is present with the engine running .
	Special notes: If fault DF130 is present : the engine may stop with the level 2 warning light illuminated and the message Faulty injection displayed on the instrument panel.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the flow actuator (IMV) connector , component code 1105 . Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Check the insulation and continuity of the following connection: – 3HI between components 1105 and 120 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Measure the resistance between connections 3HI and 3FB1 or 3FB2 (for New Twingo) or 3FB3 (for Kangoo 2) of component 1105 . If the resistance of the flow actuator is not between 4.8 Ω and 5.8 Ω at 20°C , replace the flow actuator, component code 1105 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 13B, Diesel injection, Flow actuator: Removal - Refitting).
Check the presence and conformity of the fuel in the tank. Run Test 13: Diesel fuel conformity check .
Run Test 1 Low pressure circuit check and repair if necessary.
Run Test 6: High pressure system check .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF195 PRESENT OR STORED	<u>ENGINE SPEED/CAMSHAFT SENSOR CONSISTENCY</u>

NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is present when the starter motor is operating or the engine is running at idle speed.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the cylinder reference sensor connector, component code 746. Check the connection and condition of connector B (brown 48-track) of the injection computer, component code 120. Check the connection and condition of the connector of the injection locking relay, component code 238 or the UPC, component code 1337. If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
Check for +12 V after ignition feed on connection 3FB2 or 3FB3 (for Kangoo 2) of component 746. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Check for earth on connection 3PL of component 746.
Check the insulation, continuity and the absence of interference resistance on the following connections: – 3CQ between components 746 and 120, – 3PL between components 746 and 120, – For Clio and Modus: 3FB2 between components 1337 and 746, – For Mégane II and Scénic II: 3FB1 and 3FB2 between components 746 and 1337, – For New Twingo: 3FB and 3FB2 between components 746 and 238, – For Kangoo 2: 3FB3 between components 1337 and 746. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check the timing setting.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF209 PRESENT OR STORED	<u>EGR VALVE POSITION SENSOR CIRCUIT</u> CO.0: Open circuit or short circuit to earth. CC.1: Short circuit to +12 V.

NOTES	Priority when dealing with a number of faults: – DF113 Sensor supply voltage.
	Special note: If fault DF209 is present , the message Faulty injection is displayed on the instrument panel.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the EGR valve connector, component code 1460 . Check the connection and condition of connector B of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connections: – 3GC between components 1460 and 120 , – 3EL between components 1460 and 120 , – 3JM between components 1460 and 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Check for +5 V on connection 3GC of component 1460 . Check for earth on connection 3JM of component 1460 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, replace the EGR valve, component code 1460 (see MR 364 (Mégane II) , MR 370 (Scénic II) , MR 385 (Modus) , MR 392 (Clio III) , MR 411 (New Twingo) , MR 417 (Kangoo 2) , Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting). After replacing the EGR valve, use command RZ002 EGR adaptives to reinitialise the EGR valve offsets.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF221 PRESENT OR STORED	<u>CLUTCH CONTACT SIGNAL</u> 1.DEF: Inconsistency

NOTES	None.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the clutch pedal switch connector, component code 675. Check the connection and condition of connector A of the injection computer, component code 120. If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair) repair the connector(s), otherwise replace the wiring.
With the switch in the rest position, check the continuity between: – connections MAS and 86D of component 675 (for Modus, Clio III, New Twingo, and Kangoo 2). – connections MAM and 26X of component 675 (for Mégane II and Scénic II). If not correct, replace the clutch pedal switch, component code 675 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting).
Check for earth on – connection MAS of component 675 (for Modus, Clio III, New Twingo, and Kangoo 2). – connection MAM of component 675 (for Mégane II and Scénic II). If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Check the insulation and continuity of the following connection: – 86D between components 675 and 120. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the fault is still present, replace the clutch pedal switch, component code 675 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF242 PRESENT OR STORED	ENGINE SPEED SIGNAL OUTPUT CC.1: Short circuit to + 12 volts CO.0: Open circuit or short circuit to earth

NOTES	Special note: The operation of the power-assisted steering is not correct.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the variable power-assisted steering connector, component code 502 . Check the connection and condition of connector B (brown 48-track) of the injection computer , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the insulation and continuity of the following connection: – H7 between components 120 and 502 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the fault is still present, run fault finding on the power-assisted steering and the sequential gearbox (see 36B, Power-assisted steering) and (see 21B, Sequential gearbox).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF261 PRESENT OR STORED	<u>TURBOCHARGER ACTUATOR CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to + 12 volts

NOTES	Special note: If fault DF261 is present , the air flow regulation is switched off, the EGR valve is closed , and the turbocharging regulation is switched off. The level 1 warning light illuminates with the message Faulty injection displayed on the instrument panel, and the performance is reduced.
	See Technical Note Wiring Diagrams of the vehicle concerned

Run TEST 11 Air line at the turbocharger . Run TEST 5 Inlet circuit check . Run TEST 10 Turbocharger control solenoid valve check . Run TEST 12 Turbocharger . Check the inlet pressure signal, check the gear number when changing gear.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF427 PRESENT OR STORED	<u>TURBO ACTUATOR CONTROL</u> 1.DEF: At minimum limit 2.DEF: At maximum limit

NOTES	Special note: If fault DF427 is present , the air flow regulation is switched off, the EGR valve is closed, and the turbocharging regulation is switched off. On status 2.DEF, the level 1 warning light illuminates and the performance is reduced.
	Priority when dealing with a number of faults: – DF261 Turbocharger actuator circuit.
	See Technical Note Wiring Diagrams of the vehicle concerned

Run TEST 11 Air line at the turbocharger. Run TEST 5 Inlet circuit check. Run TEST 10 Turbocharger control solenoid valve check. Run TEST 12 Turbocharger. Check the turbocharging pressure signal, check the gear number when changing gear.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF489 PRESENT OR STORED	<u>AIR CONDITIONING COMPRESSOR CONTROL</u> CC.1: Short circuit to + 12 volts C0.0: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults The fault is considered present when the engine is running.
	Special notes: The heating and air conditioning system request is not longer possible. The compressor is still active, risk of irreparable damage to the compressor (loss of capacity). The customer is complaining that the air conditioning is operating continuously.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the **injection computer connector**, component code **120**.
Check the connection and condition of the **air conditioning compressor relay connector**, component code **5845**.
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run command **AC180 Air conditioning compressor relay control**.
If the command does not work, check, with the ignition on, for **+12 V** on connection **3FB** of component **584** and for earth on connection **38K** of component **584**.

Check **the insulation and continuity** of the following connections:
– **38K** between components **584** and **120**,
– **3FB** between components **584** and **238**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, run fault finding on the climate control computer (see **62B, Climate control**).

If the fault is still present, check the relay and replace it if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF631 PRESENT OR STORED	<u>BRAKE LIGHT SWITCH SIGNAL</u> 1.DEF: No signal 2.DEF: Inconsistency

NOTES	Conditions for applying the fault finding procedure to stored faults Apply the fault finding procedure below if the fault is present or stored .
	Special notes: The fault is declared present when decelerating, when the brake pedal is depressed. The cruise control function is inhibited.
	See Technical Note Wiring Diagrams of the vehicle concerned

Check the connection and condition of the brake light switch connector, component code 160 . Check the connection and condition of the injection computer connector , component code 120 . If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for +12 V on connection AP10 (for New Twingo) or BPT (for Mégane II, Scénic II, Modus, and Clio III) or BPT2 (for Kangoo 2) and SP17 (for Mégane II, Scénic II, Modus, Kangoo 2, and Clio III) of component 160 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Check the operation of the brake light switch , component code 160 . Repair if necessary.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

**DF631
CONTINUED**

Check **the insulation and continuity** of the following connections:

- **5A** between components **160** and **120**,
- **BPT** between components **160** and **645** (for Mégane II, Scénic II, Modus and Clio III),
- **AP10** between components **160** and **1016** (for New Twingo),
- **BPT2** between components **160** and **645** (for Kangoo 2),
- **SP17** between components **160** and **260** (for Kangoo 2),
- **65A** between components **160** and **645** (vehicle without ESP),
- **65G** between components **160** and **645** (vehicle with ESP).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the brake light switch, component code **160** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 37A, Mechanical component controls, Brake light switch: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF648 PRESENT OR STORED	<u>COMPUTER</u> 1.DEF: Enter EEPROM memory 2.DEF: Read EEPROM memory

NOTES	Special notes: When this fault appears: the engine speed is locked at 1300 rpm , the engine is noisy, and the level 1 warning light illuminates with the message Check injection displayed on the instrument panel,

Contact Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF859 PRESENT OR STORED	<u>INJECTOR PROGRAMMING CYCLE NOT DONE</u>

NOTES	Conditions for applying fault finding procedures to stored faults: The fault is considered present when the engine is running.
	Priorities when dealing with a number of faults: – Deal with all the other faults before fault DF859
	Special notes: This fault is activated if the injector recalibration has not been carried out since 1800 miles (3000 km) .

Leave the vehicle to run at idle speed until the engine is warm.

When the engine is warm (**PR064 COOLANT TEMPERATURE above 77°C**), carry out the following test drive:

- Drive at a speed of up to **30 mph (50 km/h)** and change into **5th gear**.
- Stay in this gear and perform **8** accelerations from **30 mph (50 Km/h)** to **54 mph (90 Km/h)**.
- At the end of driving: without switching off the ignition, allow the vehicle to run at idle speed for at least **10 minutes**.
- Switch off the ignition, and wait **30 seconds**.
- switch on the ignition, check that the fault is stored and clear the fault.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF886 PRESENT OR STORED	<u>PRESENCE OF WATER IN THE DIESEL FUEL</u>

NOTES	Priorities when dealing with a number of faults: – DF057 Water in diesel fuel detector circuit,
	Special notes: If water is detected downstream of the diesel filter, the high pressure pump and the injectors may be damaged. The level 1 warning light is illuminated.
	Use bornier Elé. 1681 for all operations on the engine management computer connector.
	See the Technical Note Wiring Diagrams for the vehicle.

If there is water present, bleed the diesel filter. If there is a great amount of water, run the first part of Test 13: Diesel fuel conformity check (Is the fuel cloudy or does it separate into 2 parts?)
Check the connections of the water in diesel fuel sensor, component code 414 . Check the connections of the engine management computer grey connector, component code 120 . If the connector(s) are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector(s), otherwise replace the wiring.
With the ignition on, check for +12 V on connections 3FB1 or 3FB2 (for New Twingo) or AP15 (for Kangoo 2) of component 414 . Check for earth on connections M or 3WU (only for New Twingo) of component 120 . If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

**DF886
CONTINUED**

Check the **continuity** of the following connections:

- **3WT** between components **414** and **120**,
- **M** between components **414** and **120**,
- **3FB1** between components **414** and **1337**.

(only for New Twingo):

- **3WT** between components **414** and **120**,
- **3WU** between components **414** and **120**,
- **3FB2** between components **414** and **238**.

(only for Kangoo 2):

- **3WT** between components **414** and **1337**,
- **AP15** between components **414** and **1337**,
- **MH** and **MW** between earth and component **414**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the diesel filter.

If the fault is still present, contact the Techline

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF1070 PRESENT OR STORED	<u>COLD LOOP</u> 1.DEF: Jammed component

NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present with the engine running and with a heating and air conditioning system request.
	Priorities when dealing with a number of faults: – DF049 Refrigerant sensor circuit if it is present or stored.

When the fault is present or stored, the heating and air conditioning system is inhibited. There is no longer any air conditioning.
Check fuse F22 (10 A) of the UPC, component code 1337 .
Check the connector of the air conditioning compressor, component code 171 . If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the air conditioning compressor wiring. If the wiring is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Manually check if the compressor is jammed (turn the clutch plate manually to check that there is no point of resistance). In the event of jamming, replace the air conditioning compressor (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 62A, Air conditioning, Compressor: Removal - Refitting).
Top up the refrigerant, check for any leaks, and repair if necessary (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 62A, Air conditioning, Refrigerant circuit: Draining - Filling).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

The global **conformity check** for the functions and sub-functions of this system is no longer interpreted in the conformity check. Instead, all information available in the functions and sub-functions can be found in the following sections:

For **STATUSES**, refer to **INTERPRETATION OF STATUSES**.

For **PARAMETERS**, refer to **INTERPRETATION OF PARAMETERS**.

For **COMMANDS**, refer to **INTERPRETATION OF COMMANDS**.

DIESEL INJECTION

Fault finding – Status summary table

13B

Tool status	Diagnostic tool title
ET001	+ After ignition computer feed
ET003	Engine immobiliser
ET004	Air conditioning authorisation
ET006	Code programmed
ET007	Pre-postheating control
ET008	EGR solenoid valve control
ET021	High speed fan assembly request
ET022	Low speed fan assembly request
ET023	Fast idle speed request
ET038	Engine
ET042	Cruise control/Speed limiter
ET076	Starting
ET077	Impact detected
ET079	Air conditioning present
ET088	Compressor actuation request
ET111	RCH* number set
ET112	RCH* cut-off
ET405	Clutch pedal switch
ET415	Deactivation of cruise control/speed limiter
ET563	Flow capacity function
ET637	New pump chamber filling
ET703	Cruise control - speed limiter button
ET704	Brakecontact No 1
ET705	Brakecontact No 2
ET741	Optional vehicle speed restriction
ET800	Fast idle function

* RCH: Passenger compartment heating resistor.

ET001	<u>COMPUTER + AFTER IGNITION FEED</u>

STATUS DEFINITION	PRESENT: This status indicates that the + after ignition feed is active. ABSENT: This status indicates that the + after ignition feed is not active.

Conformity check: Engine stopped, ignition on or engine running.

"ABSENT"	NOTES	Ignition on

Check the supply fuse from the injection computer main supply relay, component code **120**.

- **F18 (5A)** (Kangoo 2),
- **313 (10A)** (Modus and Clio III),
- **F5D (5A)** (Mégane II and Scénic II),
- **F9 (15A)** (New Twingo)

Use a multimeter to check for a **+ 12 V feed** on the fuse holder with the ignition on.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the continuity and insulation against earth of the following connection:

- **AP15** between components **1337** and **120**
- **AP29** between components **1337** and **120** (for New Twingo)

Check for continuity and the absence of interference resistance on the following connection:

- **N** between the earth and component **120** (for Kangoo 2),
- **NH** between the earth and component **120** (for Modus, Clio III and New Twingo),
- **M** between the earth and component **120** (for Mégane II and Scénic II).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

"PRESENT"	NOTES	Ignition on

Normal operating condition:

Check, using a multimeter, the absence of a **+ 12 V** ignition off on the connection **AP15** or **AP29** of component **120**. If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET003	<u>ENGINE IMMOBILISER</u>

STATUS DEFINITION	ACTIVE: This status indicates that the immobiliser is active. INACTIVE: This status indicates that the immobiliser is inactive.

NOTES	ACTIVE: ET003 "ENGINE IMMOBILISER" shows the vehicle protection status. This Verlog 4 type immobiliser function is managed by the UCH computer and the injection computer. Before any starting request, the computer is protected. When a starting request is made, the injection computer and the UCH exchange authentication data via the multiplex network. This determines whether the engine start is authorised or denied. After more than 5 consecutive failed authentication attempts, the injection computer goes into protection (anti-scanning) mode and no longer tries to authenticate the UCH computer. It only leaves this mode when the following sequence of operations is carried out: – The ignition is left on for at least 5 seconds, – The ignition is switched off, – The injection computer self-supply cuts out when it should (the time varies according to engine coolant temperature).

Conformity check: Engine stopped, ignition on or engine running.

"ACTIVE"	If status ET003 is ACTIVE see 82A, Engine immobiliser .

"INACTIVE"	When the ignition is switched on and when driving, status ET003 should be INACTIVE , if this is not the case, see 82A, Engine immobiliser .

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET004	<u>AC AUTHORISED</u>
STATUS DEFINITION	YES: This status indicates that the air conditioning is active. NO: This status indicates that the air conditioning is inactive.
Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C	
YES	The air conditioning authorisation only changes to YES if: – the air conditioning request has been made by the driver (air conditioning switch in AC position with minimum ventilation), – the engine is not under full load, – the air conditioning system is not faulty.
NO	Status ET004 remains at NO under the following conditions: – Vehicle stopped with the ignition on, – faults present in the air conditioning circuit, – no air conditioning request made by the driver, – engine under full load. If status ET004 remains NO then the air conditioning should be authorised; check: – that the air conditioning compressor is activated correctly, – the air conditioning system feed fuses, – the presence of refrigerant in the air conditioning circuit.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET006	<u>CODE PROGRAMMED</u>

STATUS DEFINITION	YES: This status indicates that the immobiliser code has been programmed. NO: This status indicates that the immobiliser code has not been programmed.

NOTES	The injection immobiliser code is not written in the injection computer. The programming of this code in the injection computer is managed by the UCH. To carry out programming: – establish communication with the UCH see 87B, Passenger compartment connection unit. – run command SC017 Program injection immobiliser code, – follow the instructions for the procedure. As long as this phase has not been completed, ET006 "Code programmed" is "NO".
	IMPORTANT: the immobiliser code is written in the injection computer memory at the end of the computer auto-feed phase. Do not disconnect the battery before the end of this phase.

Conformity check: Engine stopped, ignition on or engine running.

YES	Status ET006 is YES if dialogue is possible between the UCH computer and the injection computer and the key code is recognised. The engine is only authorised to start if the code is recognised by the UCH computer and if status ET003 Immobiliser is INACTIVE. In the event of a fault, (see 87B, Passenger compartment connection unit, conformity check).

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET006 CONTINUED	
NO	Status ET006 is NO if dialogue is not possible between the UCH computer and the injection computer (status ET003 Immobiliser remains ACTIVE). This fault may be caused by incorrect key programming or a lack of key programming. In this case, refer to the UCH fault finding note (see 87B, Passenger compartment connection unit) and follow the key programming procedure. If the key programming is not the cause, run a multiplex network test (see 88B, Multiplexing) and check that dialogue between the UCH and the injection computer is possible. If dialogue is not established, contact the Techline.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET007	<u>PRE-POSTHEATING UNIT CONTROL</u>
STATUS DEFINITION	ACTIVE: the status is active when the heater plugs are activated according to the engine coolant temperature. INACTIVE: the status is inactive after the engine has been running for a certain period. In the event of a fault, consult the interpretation of fault DF017 Preheating unit control circuit.
Conformity check: Engine running and the engine coolant temperature > 80°C	
ACTIVE	When the ignition is switched on, status ET007 should be ACTIVE for a time that varies according to the engine coolant temperature. Both the relay and the heater plugs are supplied. After starting the status should remain ACTIVE for a time that varies depending on the engine coolant temperature. This is postheating. If ET007 is INACTIVE when the ignition is switched on, check: – The supply fuse FB1 (70A) of the engine fuse and relay box or F2 (70A) on the power feed fuse board, according to the vehicle. – The feed to the heater plugs following relay actuation, and the heater plugs connections. – The continuity and the absence of interference resistance between the following connections: ● Connection code 37Z between components 257 (or 980) and 680. ● Connection code 37AA between components 257 (or 980) and 681. ● Connection code 37AB between components 257 (or 980) and 682. ● Connection code 37AC between components 257 (or 980) and 683. – That the contacts of the pre-postheating unit connector are in good condition and connected correctly. If the vehicle starts, preheating is completed and status ET007 remains ACTIVE during the engine operating phase, consult the interpretation of faults DF017 Preheating unit control circuit and DF025 Preheating unit fault finding connection.
INACTIVE	If the vehicle does not start, the status remains INACTIVE and the preheating was not executed when the ignition was switched on or during the starting phase, check the following connections: ● connection code 3FY and 3FF between components 120 and 257 (or 980). Check for + 12 V on the preheating unit. ● Connection code BP35 of component 257 (or 980). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET007 CONTINUED	

Conformity check with engine stopped and ignition on.

ACTIVE THEN INACTIVE	After a certain period, the ET007 status passes from ACTIVE to INACTIVE

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET008	<u>EGR SOLENOID VALVE CONTROL</u>
STATUS DEFINITION	" ACTIVE ": the status is active as soon as the EGR valve control is activated. " INACTIVE ": the status is inactive when the EGR valve is not controlled.
Conformity check: Engine stopped, ignition on or engine running.	
ACTIVE OR INACTIVE	In the event of a fault, refer to the interpretation of faults: – DF016 EGR valve control circuit – DF114 EGR solenoid valve circuit.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET021	<u>HIGH-SPEED FAN REQUEST</u>
STATUS DEFINITION	" ACTIVE ": The high speed fan assembly request is active. " INACTIVE ": The high speed fan assembly request is not active.
Conformity check with engine stopped, ignition on or engine running	
ACTIVE	The injection computer requests the activation of the high speed GMV when: – the engine coolant temperature is above 104°C , – the injection computer has system faults that could lead to the engine overheating. When the high speed fan is supplied: – status ET021 High speed fan request becomes ACTIVE . Fan assembly activation is controlled by the UPC.
INACTIVE	The high-speed fan assembly stops when: – the engine coolant temperature is below 102°C , no fault which could cause engine overheating is present in the injection system. Fan assembly activation is controlled by the UPC.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET022	<u>LOW-SPEED FAN REQUEST</u>

STATUS DEFINITION	" ACTIVE ": The low speed fan assembly request is active. " INACTIVE ": The low speed fan assembly request is not active.

Conformity check with engine stopped, ignition on or engine running

ACTIVE	The injection computer requests the activation of the low speed GMV when: – the engine coolant temperature is above 96°C, – the injection computer has system faults that could lead to the engine overheating, – the air conditioning is switched on by the driver. When the low-speed fan assembly is supplied: – status ET022 Low speed fan request becomes ACTIVE. Fan assembly activation is controlled by the UPC.

INACTIVE	The low-speed fan assembly stops when: – the engine coolant temperature is below 94°C, – no fault which could cause engine overheating is present in the injection system. – the air conditioning is not switched on by the driver. Fan assembly activation is controlled by the UPC.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET023	<u>FAST IDLE SPEED REQUEST</u>

STATUS DEFINITION	"PRESENT": The fast idle speed request is present. "ABSENT": The fast idle speed request is not present.

NOTES	Special notes: The idle speed setpoint is dependent on: – the coolant temperature, – the emission control programs, – air conditioning requirements, – the electrical consumers, – the battery voltage, – the gear engaged. – use of command SC041 "Changing commercial vehicle idle speed" (Kangoo 2)

Conformity check with engine stopped, ignition on or engine running

PRESENT	Status is "PRESENT" when there is an engine load: – inconsistency between the positions of the brake and accelerator pedals, – coolant temperature < 80 °C or > 89 °C, – heating and air conditioning system deactivated, – with electrical consumers, – the battery voltage is incorrect. – or after running command SC041 "Changing commercial vehicle idle speed" (Kangoo 2)

ABSENT	Status is "ABSENT" when there is no engine load: – coolant temperature = 80°C, – heating and air conditioning system deactivated, – without electrical consumers, – the battery voltage is correct.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET038	<u>ENGINE</u>
STATUS DEFINITION	"RUNNING": The engine is running. "NOT RUNNING": The engine is not running.
Conformity check with engine stopped and ignition on.	
NOT RUNNING	Status ET038 is not running if the engine has stopped.
Conformity check: Engine running	
RUNNING	Status ET038 is running if the engine has started.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042	<u>CRUISE CONTROL/SPEED LIMITER</u>
STATUS DEFINITION	NOT DETECTED: This status indicates that the cruise control or speed limiter function is not present on the vehicle. INACTIVE: This status indicates that the cruise control/speed limiter main On/Off switch is in the rest (or neutral) position. LIMITER: This status indicates that the driver has used the main switch to select the speed limiter. CRUISE CONTROL: This status indicates that the driver has used the main switch to select the cruise control.
NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
Conformity check: Engine stopped, ignition on or engine running.	
NOT DETECTED	If the vehicle is not fitted with cruise control/speed limiter function buttons, status ET042 is permanently NOT DETECTED. This confirms that the cruise control/speed limiter function is not present on the vehicle. If the vehicle is fitted with cruise control or speed limiter function buttons, the main switch is in rest (or neutral) position and the injection computer has just been programmed or reprogrammed, then status ET042 is NOT DETECTED. To activate the cruise control or speed limiter function, press the main switch in the cruise control position and then in the speed limiter position. Return to rest position. The tool displays status ET042 INACTIVE. If not, several steps must be checked: 1. Return to the multiplex network test page on the Clip application. Repeat the multiplex network test. Re-establish dialogue with the injection computer. Check status ET042. If ET042 is INACTIVE, the injection computer has detected the various positions of the main switch. The cruise control/speed limiter is active. 2. If status ET042 is still NOT DETECTED, check that the vehicle's owner has not had the cruise control/speed limiter function disabled in the past. Contact the Techline.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 1	
INACTIVE	When the main switch is in rest position (or neutral), status ET042 is INACTIVE. If CRUISE CONTROL or SPEED LIMITER appears despite the main switch being in the rest (or neutral) position, carry out the following operations: For Mégane II and Scénic II: Check the connections of the cruise control/speed limiter main switch, component code 1081 (Mégane II) or 1546 (Scénic II). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for + 12 V after ignition on the main switch connector. ● Connection code AP43, component 1081 (Mégane II) or 1546 (Scénic II). If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the main switch and with it in the rest position, check the insulation between: ● Connection codes AP43 and 3FX, component 1081 (Mégane II) or 1546 (Scénic II). ● Connection codes AP43 and 3PD, component 1081 (Mégane II) or 1546 (Scénic II). Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) or 1546 (Scénic II) at speed limiter position. Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) or 1546 (Scénic II) at cruise control position. If the checks are incorrect, replace the switch, component code 1081 (Mégane II) or 1546 (Scénic II). Check the insulation, continuity and the absence of interference resistance on the following connections: ● 3FX between components 120 and 1081 (Mégane II) or 1546 (Scénic II), ● 3PD between components 120 and 1081 (Mégane II) or 1546 (Scénic II), If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Check the connections of the engine management computer, component code 120. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 2	
INACTIVE CONTINUED	For Clio III, Modus, New Twingo and Kangoo 2: Check the connections on the cruise control/speed limiter on-off control, component code 1081. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for + 12 V after ignition on the main switch connector: – Connection code AP10 of component 1081. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the cruise control speed limiter on/off control connector, component code 1081 and with it in the rest position, check the insulation between the connections: – AP10 and 3FX of component 1081 – AP10 and 3PD of component 1081. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Check on the cruise control speed limiter on/off control connector the continuity between connections AP10 and 3PD of component 1081, in speed limiter position. Check on the cruise control speed limiter on/off control connector the continuity between connections AP10 and 3FX of component 1081, in cruise control position. If the checks are incorrect, replace the switch, component code 1081. Check the insulation, continuity and the absence of interference resistance on the following connections: – 3FX between components 1081 and 120, – 3PD between components 1081 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Also check the engine management computer connections, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 3	
SPEED LIMITER	When the driver presses the main speed limiter button, status ET042 becomes SPEED LIMITER. If CRUISE CONTROL or INACTIVE appears although the driver pressed the switch in the speed limiter position, carry out the following operations: For Mégane II and Scénic II: Check the connections of the cruise control/speed limiter main switch, component code 1081 (Mégane II) or 1546 (Scénic II). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for + 12 V after ignition on the AP43 connection of component 1081 (Mégane II) or 1546 (Scénic II). If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the main switch and with it in the rest position, check the insulation between connections: ● AP43 and 3FX of component 1081 (Mégane II) or 1546 (Scénic II), ● AP43 and 3PD of component 1081 (Mégane II) or 1546 (Scénic II). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) or 1546 (Scénic II) at speed limiter position. Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) or 1546 (Scénic II) at cruise control position. If the checks are incorrect, replace the switch, component code 1081 (Mégane II) or 1546 (Scénic II). Check the insulation, continuity and the absence of interference resistance on the following connections: – 3FX between components 120 and 1081 (Mégane II) or 1546 (Scénic II), – 3PD between components 120 and 1081 (Mégane II) or 1546 (Scénic II). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Also check the engine management computer connections, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 4	
LIMITATION CONTINUED	For Clio III, Modus, New Twingo and Kangoo 2: Check the connections on the cruise control/speed limiter on-off control, component code 1081. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for + 12 V after ignition feed on connection AP10 of component 1081. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the connector of the cruise control / speed limiter on-off control, component code 1081 and with it in the rest position, check the insulation between connections AP10 and 3FX component 1081 and between connections AP10 and 3PD component 1081. Check on the cruise control / speed limiter on-off control connector, component code 1081, the continuity between connections AP10 and 3FX component 1081 and between connections AP10 and 3PD component 1081, in the limiter position. Check on the cruise control / speed limiter on-off control connector, component code 1081, the continuity between connections AP10 and 3FX component 1081 and between connections AP10 and 3PD component 1081, in the cruise control position. If the checks are incorrect, replace the switch, component code 1081. Check the insulation, continuity and the absence of interference resistance on the following connections: – 3FX between components 1081 and 120, – 3PD between components 1081 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Also check the engine management computer connections, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 5	
CRUISE CONTROL	When the driver presses the main cruise control button, status ET042 becomes CRUISE CONTROL. If CRUISE CONTROL or INACTIVE appears although the driver pressed the switch in the speed limiter position, carry out the following operations: For Mégane II and Scénic II: Check the connections of the cruise control/speed limiter main switch, component code 1081 (Mégane II) or 1546 (Scénic II). If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for + 12 V after ignition on the AP43 connection of component 1081 (Mégane II) or 1546 (Scénic II). If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the main switch and with it in the rest position, check the insulation between connections: ● AP43 and 3FX of component 1081 (Mégane II) or 1546 (Scénic II), ● AP43 and 3PD of component 1081 (Mégane II) or 1546 (Scénic II). Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) or 1546 (Scénic II) in the speed limiter position. Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) or 1546 (Scénic II) in the cruise control position. If the checks are incorrect, replace the switch, component code 1081 (Mégane II) or 1546 (Scénic II). Check the insulation, continuity and the absence of interference resistance on the following connections: – 3FX between components 120 and 1081 (Mégane II) or 1546 (Scénic II), – 3PD between components 120 and 1081 (Mégane II) or 1546 (Scénic II). If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Also check the engine management computer connections, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET042 CONTINUED 6	
CRUISE CONTROL CONTINUED	For Clio III, Modus, New Twingo and Kangoo 2: Check the connections on the cruise control/speed limiter on-off control, component code 1081. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector(s), otherwise replace the wiring. Check for + 12 V after ignition feed on connection AP10 of component 1081. If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Disconnect the cruise control speed limiter on/off control connector, component code 1081 and with it in the rest position, check the insulation between connections: ● AP10 and 3FX of component 1081 ● AP10 and 3PD of component 1081. Check on the cruise control speed limiter on/off control connector component code 1081, the continuity between connections AP10 and 3PD of component 1081, in the speed limiter position. Check on the cruise control speed limiter on/off control connector, component code 1081, the continuity between connections AP10 and 3FX of component 1081, in the cruise control position. If the checks are incorrect, replace the switch, component code 1081 Check the insulation, continuity and the absence of interference resistance on the following connections: – 3FX between components 1081 and 120, – 3PD between components 1081 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. Also check the engine management computer connections, component code 120. If the connector(s) is faulty and if there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET076	<u>STARTING</u>
STATUS DEFINITION	PROHIBITED: This status indicates that starting is not possible. AUTHORISED: This status indicates that starting is possible.
NOTES	This status only concerns the automatic gearbox .
Conformity check: Engine stopped, ignition on or engine running.	
"PROHIBITED" OR AUTHORISED	Refer to the Automatic gearbox fault finding note (see 23A, Automatic gearbox).

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET077	<u>IMPACT DETECTED</u>

STATUS DEFINITION	YES: This status indicates that the airbag computer has detected an impact. NO: This status indicates that the airbag computer has not detected an impact.

Conformity check: Engine stopped, ignition on or engine running.

YES	If an impact has been stored by the injection computer, switch off the ignition for 10 seconds, then switch it back on so that the engine can be started. Then clear any faults.

NO	Under normal operating conditions, the computer has received no impact signal.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET079	<u>AIR CONDITIONING PRESENT</u>

STATUS DEFINITION	YES: This status indicates that air conditioning is present on the vehicle. NO: This status indicates that air conditioning is not present on the vehicle.

NOTES	The heating and air conditioning system is present depending on the vehicle's equipment level.

Conformity check: Engine stopped, ignition on or engine running.

YES or NO , depending on the vehicle equipment.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET088	<u>REQUEST TO START COMPRESSOR</u>

STATUS DEFINITION	ACTIVE: the compressor activation request is active. INACTIVE: the compressor activation request is not active.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

ACTIVE	Status ET088 becomes ACTIVE if there has been a request for air conditioning (press on AC or AUTO button, with maximum cold request) and status ET004 is YES. The selection is made on the air conditioning control panel, the request for air conditioning is transmitted to the UCH which in turn transmits the request to the injection computer which either authorises or does not authorise compressor activation. If the injection computer authorises activation of the compressor, it sends the compressor activation request to the UPC and status ET088 Compressor activation request becomes ACTIVE (Climate control). If the vehicle is equipped with manual air conditioning, the air conditioning request is transmitted from the air conditioning control panel to the UCH which then accepts or does not accept the air conditioning compressor coming on depending on the operating status of the passenger compartment fan. When the request has been accepted, the request to switch on the compressor is transmitted to the injection computer which either authorises or does not authorise the compressor to start. If the injection computer authorises compressor activation, it sends the compressor activation request to the UPC and status ET088 Compressor activation request becomes ACTIVE. If there has been no compressor activation request and status ET088 remains ACTIVE, see 62A, Air conditioning. Note: Compressor operation is only authorised when the engine is running. Compressor activation is commanded by the UPC.

INACTIVE	Status ET088 is INACTIVE when no air conditioning request has been made. When compressor activation is not authorised (ET004 is NO or when the driver switches the air conditioning off). If a compressor activation request has been made and status ET088 remains INACTIVE see 62A, Air conditioning. Note: Compressor operation is only authorised when the engine is running. Compressor activation is commanded by the UPC.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET111	<u>SET NUMBER OF PASSENGER COMPARTMENT HEATING RESISTORS</u>
STATUS DEFINITION	This status indicates that the injection computer is blocking any change to the number of passenger compartment air heating resistors active (active ones are not cut off, but no more can be added). This freeze in the number of heating resistors is in response to vehicle needs (availability of power, need for torque etc.).
Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C	
YES	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required). Status ET111 becomes YES when the number of activated passenger compartment heating resistors is set by the injection computer.
NO	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required). Status ET111 becomes NO if the number of passenger compartment heating resistors engaged can be freely controlled by the UCH.

*RCH = Passenger Compartment Heating Resistors

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET112	<u>PASSENGER COMPARTMENT HEATING RESISTOR CUT-OFF</u>
STATUS DEFINITION	This status indicates that the injection computer is blocking activation of all passenger compartment air heating resistors due to vehicle needs (availability of power, need for torque, injection defect mode or heating and ventilation etc.).
Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C	
YES	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer cuts off the passenger compartment heating resistors. Status ET112 becomes YES when the passenger compartment heating resistors are cut off by the injection computer.
NO	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer cuts off the passenger compartment heating resistors. Status ET112 becomes NO when the passenger compartment heating resistors can be freely controlled by the UCH.

*RCH = Passenger Compartment Heating Resistors

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET405	<u>CLUTCH PEDAL SWITCH</u>

STATUS DEFINITION	ACTIVE: this status indicates that the clutch pedal is depressed. INACTIVE: this status indicates that the clutch pedal is released.

NOTES	Special note: Only apply the checks if the INACTIVE and ACTIVE statuses are not consistent with the pedal position.

Conformity check: Engine stopped, ignition on or engine running.

STATUS INACTIVE with clutch pedal depressed.	– Check the condition and the fitting of the clutch switch, component code 675. – Check and ensure continuity on connection 86D between components 675 and 120. – Check and ensure the presence of earth on connection MAS of component 675 (for Clio III, Modus, New Twingo, Mégane II and Scénic II) and on the connection MAN of component 675 (for Kangoo 2). – Repair if necessary. Remove the clutch switch and test its operation:	
	Switch pressed (Clutch pedal released)	Continuity between connections 86D and MAS or MAN
	Switch released (Clutch pedal depressed)	Insulation between connections - 86D and MAS or MAN
	If necessary, replace the clutch pedal switch, component code 675 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting).	

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET405 CONTINUED	

STATUS ACTIVE with clutch pedal released.	– Check the condition and the fitting of the clutch switch, component code 675. – Remove the clutch switch and check that it is operating correctly:		
		Continuity between connections	Insulation between connections
	Switch pressed (Clutch pedal released)	86D and MAS or MAN	-
	Switch released (Clutch pedal depressed)	-	86D and MAS or MAN
	If necessary, replace the clutch pedal switch (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting). Check and ensure the earth insulation of the connection ● MAS or MAN between components 675 and 120. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.		

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET415	<u>CRUISE CONTROL/SPEED LIMITER DEACTIVATION</u>

STATUS DEFINITION	This status varies according to engine specifications.

Note:

Cruise control can be activated when the vehicle speed exceeds **18 mph (30 km/h)**.

Status **ET415** shows various reasons for deactivation of the cruise control/speed limiter function, due to a driver request or the external environment (e.g. **STATUS 1**).

IMPORTANT

Clear the fault memory by running command **RZ001 "Fault memory"** to reset this status to **"NONE"**.

Conformity check: Engine stopped, ignition on or engine running.

WITHOUT	This status is present on the diagnostic tool when: – the computer has been reinitialised. – the computer has been reprogrammed.

STATUS 1	Traction control request If the vehicle is fitted with a traction control system, the cruise control function is deactivated every time the ABS computer calls for traction control. Status ET415 becomes STATUS 1 when driving with the cruise control active (ET042 Cruise control/Speed limiter: CRUISE CONTROL) and traction control is requested. This deactivates cruise control. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 1 with no traction control request (see 38C, Anti-lock braking system).

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET415 CONTINUED 1	
STATUS 2	Brake pedal depressed The cruise control function is deactivated when the brake pedal is depressed. Status ET415 becomes STATUS 2 when driving with cruise control active (ET042 Cruise control / Speed limiter: CRUISE CONTROL) and the brake pedal is depressed. This deactivates cruise control. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 2 without pressing the brake pedal, consult the interpretation of statuses ET704 and ET705 Brake contact No. 1 and No. 2.
STATUS 3	Clutch pedal depressed Manual gearbox ONLY. The cruise control function is deactivated when the gearbox is not coupled to the engine (clutch pedal depressed). Status ET415 becomes STATUS 3 when driving with cruise control active (ET042 Cruise control/speed limiter: CRUISE CONTROL) and the clutch pedal is depressed. This deactivates cruise control. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 3 without the clutch pedal being depressed, consult the interpretation of status ET405 Clutch pedal. If the vehicle is fitted with automatic transmission: Test the multiplex network: check the configuration of the multiplex network in relation to the vehicle's technical specification, especially the configuration of the automatic transmission computer (see 88B, Multiplexing).
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET415 CONTINUED 2	
STATUS 4	Cancel button pressed The cruise control/speed limiter function is deactivated each time the suspend button is pressed. Status ET415 becomes STATUS 4, when driving if: – either the cruise control is active or – the speed limiter is active, – and the driver presses the 0 button. This action deactivates the Cruise control/Speed limiter. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 4 without pressing the 0 button, consult the interpretation of status ET703 Cruise control / speed limiter buttons and run fault finding on the R/0 control button located on the right-hand side of the steering wheel.
STATUS 5	Cruise control or speed limiter monitoring This status appears when the vehicle brakes or decelerates sharply without the injection computer receiving a signal indicating that the brake pedal switch has been pressed. If status ET415 is STATUS 5, consult the interpretation: – of status ET042 Cruise control/Speed limiter – of status ET703 Cruise control/Speed limiter buttons, – of status ET704 Brake switch no. 1, – and status ET705 Brake switch no. 2, to test the cruise control/speed limiter system components and find the defective component. Also check the operation of the accelerator pedal, and check for any faults on the diagnostic tool relating to this component. Deal with them if necessary. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 5, deal with the present or stored faults in the injection computer. If the fault is still present, contact the Techline.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET415 CONTINUED 3	
STATUS 6	Gear lever in neutral (manual gearbox) or the neutral position (automatic gearbox) Status ET415 becomes STATUS 6 when driving with cruise control active (ET042 Cruise control / speed limiter: CRUISE CONTROL) and: – if the driver puts the gear lever in neutral position on a manual gearbox without declutching or, – if the gear lever is put in neutral on an automatic transmission. This deactivates cruise control. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 6 without shifting the gear lever into neutral on a manual gearbox without declutching, or into the neutral position on an automatic transmission, run fault finding on the ABS computer and check the configuration of the tyre size stored in the computer. If the configuration is correct, contact the Techline.
STATUS 7	Lack of correlation between the request and the vehicle speed Status ET415 becomes STATUS 7 if the computer detects too great a difference between the speed requested by the driver and the vehicle speed. This could occur when driving with cruise control active (ET042 Cruise control/ speed limiter: CRUISE CONTROL) and when there is a significant difference. This inconsistency deactivates cruise control. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If status ET415 becomes STATUS 7 on flat terrain, contact the Techline.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET415 CONTINUED 4	
STATUS 8	Automatic gearbox in defect mode. Status ET415 becomes STATUS 8 when driving with the cruise control active (ET042 Cruise control/speed limiter: CRUISE CONTROL) and the automatic gearbox is in defect mode. This signal is conveyed on the multiplex line and deactivates the cruise control. Carry out a multiplex network test (see 88B, Multiplexing), then run fault finding on the automatic gearbox computer. Deal with any present or stored faults (see 23A, Automatic gearbox). Clear the fault memory of the automatic gearbox computer by applying command RZ001 Fault memory. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If the specification STATUS 8 is still present, contact Techline.
STATUS 9	Vehicle speed monitoring Status ET415 becomes STATUS 9 if the vehicle speed received by the computer is invalid or absent. This signal is conveyed on the multiplex line and deactivates the cruise control. Test the multiplex network (see 88B, Multiplexing), then run fault finding on the ABS computer. Deal with any present or stored faults (see 38C, Anti-lock braking system). Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory". If the specification STATUS 9 is still present, contact Techline.
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET415 CONTINUED 5	
STATUS 10	Monitoring by injection computer Status ET415 becomes STATUS 10 when driving with cruise control active (ET042 Cruise control/speed limiter: CRUISE CONTROL) and if the injection computer detects a fault anywhere in the engine management system, or an engine speed that is too high or too low. This signal is conveyed on the multiplex line and deactivates the cruise control. Test the multiplex network (see 88B, Multiplexing), then run fault finding on the injection computer. Deal with present or stored faults. Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET563	<u>FLOW CAPACITY FUNCTION</u>
STATUS DEFINITION	ACTIVE: This status indicates that the flow capacity function is active. INACTIVE: This status indicates that the flow capacity function is inactive.
Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80°C	
INACTIVE OR ACTIVE	If there is a fault, use the interpretation of fault DF130 "Flow capacity function" .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ET637	<u>NEW PUMP CHAMBER FILLING</u>

STATUS DEFINITION	COMPLETED: This status indicates that the new pump chamber filling has been completed. NOT COMPLETED: This status indicates that the new pump chamber filling has not been completed.

Conformity check: Engine stopped, ignition on or engine running.

COMPLETED OR NO COMPLETED	The actuator AC212 "New pump chamber filling" must be controlled before the engine start following the replacement of the high pressure pump (see NT5011A "Repriming Delphi high pressure pumps on K9K engines").

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET703	<u>CRUISE CONTROL/SPEED LIMITER BUTTONS</u>

STATUS DEFINITION	INACTIVE: This status indicates that no button has been pressed. INCREASE: This status indicates that the increase button is pressed. DECREASE: This status indicates that the decrease button is pressed. SUSPEND: This status indicates that the 0 is pressed. RESUME: This status indicates that the R button is pressed.

Conformity check: Engine stopped, ignition on or engine running.

INACTIVE	Status ET703 becomes INACTIVE when none of the cruise control/speed limiter buttons is pressed. These buttons are located on the steering wheel. To be able to remove the driver's airbag and carry out the measurements safely (see 88C, Airbag and pretensioners). If status ET703 does not display INACTIVE, ● check the condition of the cruise control/speed limiter $\pm$ button and the condition of its connector. ● check the condition of the cruise control/speed limiter R/0 button and the condition of its connector. Repair if necessary.

INCREASE	Status ET703 becomes INCREASE when the + cruise control/speed limiter button is pressed. This button is on the steering wheel, on the left-hand side. To be able to remove the driver's airbag and carry out the measurements safely (see 88C, Airbag and pretensioners). If status ET703 does not display INCREASE, check the condition of the cruise control/speed limiter $\pm$ button, and the condition of its connector. Repair if necessary. Measure the resistance of the button between connections 86M and 86G while pressing on the + button. If the resistance is not approximately 300 Ω, check the continuity of the connection when the button is in the rest position. If there is continuity, replace the $\pm$ control button (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 83D, Cruise control, Steering wheel switch: Removal - Refitting).

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET703 CONTINUED 1	
DECREASE	Status ET703 becomes DECREASE when the - button of the cruise control/speed limiter is pressed. This button is on the steering wheel, on the left-hand side. To be able to remove the driver's airbag and carry out the measurements safely (see 88C, Airbag and pretensioners). If status ET703 does not display DECREASE, check the condition of the cruise control/speed limiter $\pm$ button, and the condition of its connector. If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Measure the resistance of the button between connections 86M and 86G while pressing on the - button. If the resistance is not approximately 100 Ω, check the continuity of the connection when the button is not pressed. If there is continuity, replace the $\pm$ control button (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 83D, Cruise control, Steering wheel switch: Removal - Refitting).
SUSPEND	Status ET703 becomes SUSPEND when the cruise control/speed limiter "0" button is pressed. This button is located on the steering wheel, to the right. To be able to remove the driver's airbag and carry out the measurements safely (see 88C, Airbag and pretensioners). If status ET703 does not become SUSPEND, check the condition of the cruise control/speed limiter "R/0" button and the condition of its connector. If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Measure the resistance of the button between connections 86M and 86G while pressing on the 0 button. If the resistance is not about 0 Ω, replace the R/0 control button (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 83D, Cruise control, Steering wheel switch: Removal - Refitting). If there is continuity, replace the R/0 control button (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 83D, Cruise control, Steering wheel switch: Removal - Refitting).
AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET703 CONTINUED 2	

RESUME	Status ET703 becomes RESUME when the cruise control/speed limiter "R" button is pressed. This button is located on the steering wheel, to the right. To be able to remove the driver's airbag and carry out the measurements safely (see 88C, Airbag and pretensioners). If status ET703 does not change to RESUME, check the condition of the cruise control/speed limiter R/0 button, and the condition of its connector. If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Measure the resistance of the button between connections 86M and 86G while pressing on the R button. If the resistance is not approximately 900 Ω, check the continuity of the connection when the button is not pressed. If there is continuity, replace the R/0 control button (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 83D, Cruise control, Steering wheel switch: Removal - Refitting).

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET704 ET705	<u>BRAKE SWITCH NO. 1</u> <u>BRAKE SWITCH NO. 2</u>

STATUS DEFINITION	ACTIVE: This status indicates that the brake pedal is depressed. INACTIVE: This status indicates that the brake pedal is released.

Note:
Statuses **ET704** and **ET705** should change status at the same time. In the event of inconsistency, refer to the interpretation of fault **DF050 Brake switch circuit**.

Conformity check: Engine stopped, ignition on or engine running.

ACTIVE OR INACTIVE	If the brake lights are working, check the continuity and the absence of interference resistance between the following connections: – 5A between components 160 and 120, – BPT between components 160 and 645 (for Mégane II, Scénic II, Modus and Clio III), – BPT2 between components 160 and 645 (for Kangoo 2), – AP10 between components 160 and 1016 (for New Twingo), – 65A between components 160 and 645 (vehicle without ESP), – 65G between components 160 and 645 (vehicle with ESP).
	If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If the brake lights are not operational, check: – the condition and fitting of the brake switch, – the condition and conformity of the brake lights fuse, the conformity of the values in the following table:

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

DCM1.2_V48_ET704/DCM1.2_V4C_ET704/DCM1.2_V50_ET704/DCM1.2_V54_ET704/DCM1.2_V58_ET704/DCM1.2_V5C_ET704/
DCM1.2_V48_ET705/DCM1.2_V4C_ET705/DCM1.2_V50_ET705/DCM1.2_V54_ET705/DCM1.2_V58_ET705/DCM1.2_V5C_ET705

ET704 ET705 CONTINUED	

ACTIVE OR INACTIVE CONTINUED		Continuity between connections	Insulation between connections
	Switch pressed (Brake pedal released)	5A and BPT or BPT2	SP17 and 65G (with ESP) SP17 and 65A (without ESP)
	Switch released (Brake pedal depressed)	SP17 and 65G (with ESP) SP17 and 65A (without ESP)	5A and BPT or BPT2
	Only for New Twingo	Continuity between connections	Insulation between connections
	Switch pressed (Brake pedal released)	5A and AP10	65A and AP10
	Switch released (Brake pedal depressed)	65A and AP10	5A and AP10
	If the values obtained are not correct, replace the brake switch (see MR 417 Mechanics, 37A, Mechanical component controls, Brake light Switch: Removal - Refitting).		

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET741	<u>OPTIONAL VEHICLE SPEED RESTRICTION</u>
STATUS DEFINITION	ACTIVE: This status indicates that the optional speed limiting function is active. INACTIVE: This status indicates that the optional speed limiting function is inactive.
NOTES	Special note: This status indicates whether the vehicle speed restriction is a customer option, using command SC040 Speed limiter . This status is valid only on Kangoo 2
Conformity check: Engine stopped, ignition on or engine running.	
"ACTIVE"	Vehicle speed restricted using command SC040 Speed limiter . See the interpretation of parameter PR879 Maximum speed authorized to find the configured speed restriction.
"INACTIVE"	The vehicle has no optional speed restriction.

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

ET800	<u>FAST IDLE SPEED FUNCTION</u>
STATUS DEFINITION	ACTIVE: This status indicates that the fast idle speed function is active. INACTIVE: This status indicates that the fast idle speed function is inactive.
NOTES	Special note: This status indicates if the fast idle speed function is activated after use of the command SC041 Changing commercial vehicle idle speed . This status is valid only on Kangoo 2.
Conformity check: Engine stopped, ignition on or engine running.	
ACTIVE	Is the fast idle speed function active? See the interpretation of parameter PR878 Fast idle speed to find the configured idle speed.
INACTIVE	The fast idle speed function is inactive.

*VU: Commercial vehicle

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

DIESEL INJECTION

Fault finding – Parameter summary table

13B

Tool parameter	Diagnostic tool title
PR005	EGR valve opening setpoint
PR008	Rail reference pressure
PR010	Idle speed regulation setpoint
PR017	Fuel flow
PR030	Accelerator pedal position
PR032	Inlet pressure
PR035	Atmospheric pressure
PR037	Refrigerant pressure
PR038	Rail pressure
PR051	EGR valve position feedback
PR055	Engine speed
PR059	Inlet air temperature
PR063	Fuel temperature
PR064	Coolant temperature
PR074	Battery voltage
PR077	EGR valve position sensor voltage
PR078	Inlet pressure sensor voltage
PR080	Rail pressure sensor voltage
PR086	Pedal potentiometer voltage gang 1
PR088	Pedal potentiometer gang 2 voltage
PR089	Vehicle speed
PR125	Power consumed by the air conditioning compressor
PR130	Cruise control setpoint
PR132	Air flow
PR147	Pedal potentiometer voltage gang 1
PR148	Pedal potentiometer voltage gang 2
PR568	Pedal position gang 1
PR569	Pedal position gang 2

DIESEL INJECTION

Fault finding – Parameter summary table

13B

Tool parameter	Diagnostic tool title
PR730	Air flow sensor temperature
PR873	Oil oxidation signal
PR878	Increased idle speed
PR879	Maximum authorised speed
PR932	Rate of engine oil dilution
PR1015	Oil service interval

PR005	<u>EGR VALVE OPENING VALUE REQUIRED</u>

PARAMETER DEFINITION	This parameter indicates a theoretical opening value for the EGR valve giving optimum engine performance.

Conformity check with engine stopped and ignition on

The EGR valve theoretical opening value for operation with the engine stopped and ignition on is: - 10% < PR005 < 0%

Conformity check: Engine running, engine coolant temperature > 80°C

The EGR valve theoretical opening value for operation with the engine running and the engine coolant temperature > 80°C is: 10% < PR005 < 40%

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR008	<u>RAIL REFERENCE PRESSURES</u>

PARAMETER DEFINITION	This parameter indicates the theoretical rail pressure value for optimum engine operation in bar .

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

The theoretical rail pressure value is a setpoint of: 200 bar < PR008 < 400 bar

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR010	<u>IDLE SPEED REGULATION SETPOINT</u>

PARAMETER DEFINITION	This parameter indicates the speed of rotation setpoint before last engine stop in rpm .

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

At idle speed, the engine rotation speed must be between: 700 rpm < PR010 < 1300 rpm. In the event of a fault, consult the interpretation of faults DF053 Rail pressure regulation function , DF007 Rail pressure sensor circuit and DF024 Low pressure actuator control circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR017	<u>FUEL FLOW</u>

PARAMETER DEFINITION	This parameter indicates the fuel flow in mg/st.

Conformity check with engine stopped and ignition on.

PR017 = 0.0 mg/st. In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.

Conformity check: Engine running, engine coolant temperature > 80°C

PR017 = 5 mg/st. In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR030	<u>ACCELERATOR PEDAL POSITION</u>

PARAMETER DEFINITION	This parameter indicates the accelerator pedal position as a percentage.

NOTES	There must be no present or stored faults. Perform this fault finding procedure: – after finding an inconsistency in the parameter, – after a customer complaint (e.g. lack of power). See the Wiring diagrams Technical Note for the vehicle.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

If no pressure is being applied to the pedal PR030 = 0% In the event of a fault, refer to the interpretation of fault DF008 Pedal potentiometer circuit gang 1 or DF009 Pedal potentiometer circuit gang 2.

Sensor electrical conformity

Check the continuity and absence of interference resistance of the following connections: ● connection code 3LR, ● connection code 3LS, ● connection code 3LT, ● connection code 3LU, ● connection code 3LW, ● connection code 3LV, ● between components 120 and 921. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Pedal sensor connected, vehicle with ignition on and engine stopped: – check the value of PR030: ● 0% no load, ● 100% full load, ● 138% full load after kickdown point on pedal. If the value is not correct, replace the accelerator pedal sensor, component code 921 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR032	<u>INLET PRESSURE</u>

PARAMETER DEFINITION	This parameter indicates the inlet pressure in bar .

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

900 mbar < PR032 < 1100 mbar. Local atmospheric pressure. If the values are inconsistent, check with the engine stopped and ignition switched on that PR032 = PR035 Atmospheric pressure = local atmospheric pressure.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR035	<u>ATMOSPHERIC PRESSURE</u>

PARAMETER DEFINITION	This parameter indicates the atmospheric pressure in mbar .

NOTES	Special notes: the sensor is built into the computer.

Conformity check: Engine stopped and the ignition on, or the engine running and the engine coolant temperature > 80°C

The atmospheric pressure value is: 800 mbar < PR035 < 1200 mbar. In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR037	<u>REFRIGERANT PRESSURE</u>

PARAMETER DEFINITION	This parameter indicates the refrigerant fluid pressure in bar; it varies according to the operating mode.

NOTES	Special notes: Defect value: 0 bar .

Conformity check: Engine running, engine coolant temperature > 80°C

The value should be between: 1 bar < PR037 < 32.4 bar In the event of a fault, consult the interpretation of fault DF049 Refrigerant sensor circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR038	<u>RAIL PRESSURE</u>

PARAMETER DEFINITION	This parameter indicates the fuel pressure in the rail in bars .

NOTES	There must be no present or stored faults. Perform this fault finding procedure: – after an inconsistency appears on the Parameter screen, – following a customer complaint (starting problems, poor performance, stalling, etc.).
	Special note: Default value: 2000 bar .
	See the Wiring diagrams Technical Note for the vehicle.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

Cold, PR038 = 1 bar .
In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR051	<u>EGR VALVE POSITION FEEDBACK</u>

PARAMETER DEFINITION	This parameter indicates the EGR valve opening ratio.

NOTES	There must be no present or stored faults. Perform this fault finding procedure: – after finding an inconsistency in the parameter, – after a customer complaint (loss of power, smoke etc.).
	Special note: Default value: 0%.
	See the Wiring diagrams Technical Note for the vehicle.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

This parameter indicates the EGR valve opening ratio. In the event of a fault, consult the interpretation of fault DF209 EGR valve position sensor circuit.

Sensor electrical conformity

Check for continuity and absence of interference resistance of the following connections: ● connection code 3JM, ● connection code 3EL, ● connection code 3GC, ● between components 120 and 1460. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR055	<u>ENGINE SPEED</u>

PARAMETER DEFINITION	This parameter indicates the engine's rotational speed in rpm .

Conformity check with engine stopped and ignition on.

PR055 = 0 rpm. In the event of a fault, consult the interpretation of faults DF195 Camshaft/engine speed sensor consistency and DF005 Engine speed sensor circuit .

Conformity check: Engine running, engine coolant temperature > 80°C

PR055 = 800 rpm (approx.). In the event of a fault, consult the interpretation of faults DF195 Camshaft/engine speed sensor consistency and DF005 Engine speed sensor circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR059	<u>INLET AIR TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the inlet air temperature in °C.

NOTES	See the Wiring diagrams Technical Note for the vehicle.

Conformity check: Engine stopped, ignition on or engine running.

Check the condition of the air temperature/pressure sensor connectors (flowmeter).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Measure the **resistance** between connections **3B** and **3DW** of the air flowmeter.
If the resistance of the air temperature / pressure sensor is not:
(theoretical values)
3553 Ω < R < 3875 Ω at 10°C
2353 Ω < R < 2543 Ω at 20°C
1613 Ω < R < 1729 Ω at 30°C,
replace the air temperature/pressure sensor (see **MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR063	<u>FUEL TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the fuel temperature in °C.

NOTES	Special notes: Default value: 40 °C .
	There must be no present or stored faults. Perform this fault finding procedure: – after finding an inconsistency in the parameter, – after a customer complaint (e.g. lack of power).
	See the Wiring diagrams Technical Note for the vehicle.

Conformity check: Engine stopped and the ignition on, or the engine running and the engine coolant temperature > 80°C

- 30°C < PR063 < 90°C. In the event of a fault, consult the interpretation of fault DF098 Fuel temperature sensor circuit .

Sensor electrical conformity

Check the continuity and absence of interference resistance of the following connections: – Connection code 3FAB, – Connection code 3LD, – between components 120 and 1066. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
Measure the resistance between connections 3FAB and 3LD of component 1066 . If its resistance is not: 3538 Ω < R < 4102 Ω at + 10°C 1950 Ω < R < 2150 Ω at + 25°C 763 Ω < R < 857 Ω at + 50°C, replace the fuel temperature sensor, component code 1066 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel Injection, Fuel temperature sensor: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR064	<u>COOLANT TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the engine coolant temperature in °C.

NOTES	Special note: Default value: 80 °C.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

Cold, PR064 = ambient temperature. Check the condition of the coolant temperature sensor connections. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. If necessary, replace the coolant temperature sensor (see MR 417 Mechanical systems, 19A, Cooling, Coolant temperature sensor: Removal - Refitting). Measure the resistance between connections 3C and 3JK of component 244. If the resistance of the coolant temperature sensor is not: (theoretical values) - at – 40 °C: 68780 Ω < X < 82780 Ω - at – 10 °C: 11332 Ω < X < 13588 Ω - at 25 °C: 2140 Ω < X < 2364 Ω - at 50 °C: 772 Ω < X < 850 Ω - at 80 °C: 275 Ω < X < 291 Ω - at 110 °C: 112 Ω < X < 118 Ω - at 120 °C: 86 Ω < X < 90 Ω, Replace the coolant temperature sensor, component code 244 (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR074	<u>BATTERY VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the battery voltage in Volts .

NOTES	There must be no present or stored faults. Without electrical consumers (radio, air conditioning, fan assemblies, headlights, etc.).

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

12 V < PR074 < 14.4 V.	
Ignition on then at idle speed	If the voltage is at minimum: Check the battery and the charge circuit (see 87B, Passenger compartment connection unit for the New Twingo or see 87G, Engine compartment connection unit for Clio III, Modus, Mégane II, Scénic II and Kangoo 2). If the voltage is at maximum: Check that the charging voltage is correct with and without electrical consumers switched on.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR077	<u>EGR VALVE POSITION SENSOR VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the EGR valve position sensor voltage in volts .

Conformity check with engine stopped and ignition on.

0 < PR077 < 1.5 V. Default value: 0 V . In the event of a fault, refer to the interpretation of fault DF113 Sensor supply voltage .

Conformity check: Engine running, engine coolant temperature > 80°C

0 V < PR077 < 5 V. Default value: 0 V . In the event of a fault, refer to the interpretation of fault DF113 Sensor supply voltage .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR078	<u>INLET PRESSURE SENSOR VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the inlet pressure sensor voltage in volts .

Conformity check: Engine stopped and ignition on, engine running and engine coolant temperature > 80°C

0.2 V < PR078 < 4.9 V

If there is a problem, consult the interpretation for fault **DF089 Inlet manifold pressure sensor circuit**.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR080	<u>RAIL PRESSURE SENSOR VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the rail pressure sensor voltage in volts .

NOTES	Special notes: Default value: 4.5 V .

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

0 V <PR080 <5 V In the event of a fault, consult the interpretation of parameter DF056 Air flow sensor circuit .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR089	<u>VEHICLE SPEED</u>

PARAMETER DEFINITION	This parameter indicates the vehicle speed in mph (km/h) .

NOTES	Special notes: This parameter is transmitted by the ABS computer or by the wheel speed computer. This signal is transmitted to the injection on the multiplex network.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

In the event of a fault, carry out a multiplex network test (see 88B, Multiplexing) Then a complete fault finding procedure of the ABS computer (see 38C, Antilock braking system) or VSU (see 38G, Wheel speed computer).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR125	<u>POWER ABSORBED BY THE AIR CONDITIONING COMPRESSOR*</u>

PARAMETER DEFINITION	This parameter indicates the power absorbed by the air conditioning compressor in W .

Conformity check: Engine stopped and ignition on, or engine running without electrical consumer, and engine coolant temperature > 80°C

PR125 = 0 W

Conformity check: With engine running and compressor activation request active

PR125 = 1200 W

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR130	<u>CRUISE CONTROL SETPOINT</u>

PARAMETER DEFINITION	This parameter indicates the cruise control speed setpoint in mph (km/h) .

NOTES	There must be no faults present. Perform this fault finding procedure: – after finding an inconsistency in the parameter, – or after a customer complaint (lack of power, smoke etc.).

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

Indicates the cruise control cruising speed. Cruise control can only be activated for a speed greater than 18 mph (30 km/h) .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR132	<u>AIR FLOW</u>

PARAMETER DEFINITION	This parameter indicates the inlet air flow in mg/st.

NOTES	Special notes: For vehicles that are not equipped with a flowmeter, the air flow is estimated using the following parameters: – Inlet air temperature, – The atmospheric pressure, – The EGR valve position, – The fuel flow, – The engine speed.
	There must be no faults present. Perform this fault finding procedure: – after finding an inconsistency in the parameter, – or after a customer complaint (lack of power, smoke etc.).
	See the Wiring diagrams Technical Note for the vehicle.

Conformity check with engine stopped and ignition on.

Indicates the inlet air flow PR132 $\approx$ 0 mg/st.

Conformity check: Engine running at idle speed and engine coolant temperature > 80°C

Indicates the inlet air flow PR132 $\approx$ 200 mg/st.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR132 CONTINUED	

Sensor electrical conformity

Test the air inlet circuit (from the air filter inlet to the inlet manifold tracts, run **test 5 Inlet circuit check**):

- air filter unit inlet not blocked and filter not clogged,
- oil vapour recirculation circuit connected correctly,
- **low** and **high pressure** air circuit **sealed** and **not obstructed**: ducts, mounting clamps present and tightened, turbocharging pressure sensor fitted, exchanger, etc., run **TEST 1 Low pressure circuit check** and **TEST 7 High pressure circuit sealing check**
- check that the damper valve is not jammed closed.

Carry out the necessary repairs.

Check **the electrical conformity of the air flowmeter**:

Check the **+ 5 V supply** of the air flowmeter on the following connection:

- **3KJ** of component **799**.

Check the **+ 12 V** after relay **supply** of the air flowmeter on the following connection:

- **3FB (or 3FB3)** of component **799**.

Check the **continuity and absence of interference resistance** of the following connections:

- **3DV**,
- **3DW**, between components **120** and **799**.

Flowmeter **connected, vehicle ignition on and engine stopped**:

Measure the voltage between connections **3DW** and **3DV** of component **799**.

If the voltage is not between **0.3 V** and **0.7 V**, replace the air flowmeter, component code **799** (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 12A, Fuel Mixture, Air Flowmeter: Removal - Refitting**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

PR147	<u>PEDAL POTENTIOMETER GANG 1 VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the pedal potentiometer gang 1 voltage in volts .

Conformity check: Engine stopped, ignition on or engine running.

PR147 $\approx$ 0.72 V and varies depending on the pedal status. In the event of a fault, apply the interpretation of DF008 Pedal sensor circuit gang 1 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR148	<u>PEDAL POTENTIOMETER GANG 2 VOLTAGE</u>

PARAMETER DEFINITION	This parameter indicates the pedal potentiometer gang 2 voltage in volts .

Conformity check: Engine stopped, ignition on or engine running.

PR148 $\approx$ 0.72 V and varies depending on the pedal status. In the event of a fault, apply the interpretation of DF009 Pedal sensor circuit gang 2 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR568	<u>PEDAL POSITION (GANG 1)</u>

PARAMETER DEFINITION	This parameter indicates the accelerator pedal position gang 1 as a %.

Conformity check: Engine stopped, ignition on or engine running.

PR568 ≈ 16%. In the event of a fault, apply the interpretation of DF008 Pedal sensor circuit gang 1 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR569	<u>PEDAL POSITION GANG 2</u>

PARAMETER DEFINITION	This parameter indicates the accelerator pedal position gang 2 as a %.

Conformity check: Engine stopped, ignition on or engine running.

PR569 $\approx$ 7%. In the event of a fault, apply the interpretation of DF009 Pedal sensor circuit gang 2 .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR730	<u>AIR FLOW SENSOR TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the air temperature of the flowmeter in °C.

NOTES	Special notes: Depending on the engine type, the air temperature is given by the air flowmeter or the exterior air temperature sensor.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

Check the condition of the air flow sensor connections. If the connector is faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. If necessary, replace the sensor (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting). Measure the resistance between the following connections: (vehicle with flowmeter) – 3B and 3DW of component 799; (vehicle without flowmeter) – 3PB and 3KQ of component 272, – 3SH and 3KQ of component 272, – 3JQ and 3KQ of component 272. If the connection or connections are faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR730 CONTINUED

If the resistance of the air flowmeter or the exterior air temperature sensor is not:
(theoretical values for flowmeter K9K 724, 766, 768, 800 and 802)

at -10°C: $8716 \Omega < X < 9688 \Omega$

at 0°C: $5497 \Omega < X < 6051 \Omega$

at 10°C: $3553 \Omega < X < 3875 \Omega$

at 20°C: $2353 \Omega < X < 2543 \Omega$

at 30°C: $1613 \Omega < X < 1729 \Omega$

(theoretical values for exterior air temperature sensor K9K 750, 752, 740 and 812)

at -10°C: $8623 \Omega < X < 10454 \Omega$

at 25°C: $1928 \Omega < X < 2174 \Omega$

at 50°C: $763 \Omega < X < 857 \Omega$,

replace the air temperature/pressure sensor or the exterior air temperature sensor, component code **272** (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting).

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**. Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

PR873

OIL OXIDATION SIGNAL

PARAMETER DEFINITION

This parameter indicates the vehicle distance in **km** when the warning requesting the oil change was displayed on the instrument panel.

NOTES

This parameter is not to be interpreted:

- on the **K9K812** engine,
- if **PR873 = 0** (Vdiag 58 only).

Conformity check: Engine stopped, ignition on or engine running.

The oil status is calculated by the oxidation program in the injection computer, depending on the engine revs. When this count reaches a certain threshold before the end of the oil change period, the injection computer sends a signal to the instrument panel, which will display "**service required soon**". **PR873** corresponds to the vehicle distance at the time this signal is sent. The instrument panel computer will then count **900 miles (1500 km)** before displaying the message "**service required**".

IMPORTANT

When the message **Service required** appears on the instrument panel, the customer must arrange an oil change within the remaining **900 miles (1500 km)**.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**. Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

PR878	<u>FAST IDLE SPEED</u>

PARAMETER DEFINITION	This parameter indicates the fast idle speed in rpm .

NOTES	Special notes: It is possible to modify the value of the PR878 using the command SC041 Modification of the commercial vehicle idle speed . This parameter is valid only on Kangoo 2.

Conformity check: Engine stopped, ignition on or engine running.

If the function was activated (ET800 Fast idle function ACTIVE status), PR878 shows the value of fast idle speed in rpm. It is possible to modify the value using command SC041 Changing VU idle speed . The idle speed values that can be modified are: 1000, 1100, 1200, 1300 rpm .

*VU: Commercial vehicle

AFTER REPAIR	Deal with any faults. Clear the faults from the computer memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .

PR879	<u>MAXIMUM AUTHORISED SPEED</u>

PARAMETER DEFINITION	This parameter indicates the maximum authorised speed in mph (km/h) requested by the customer using command SC040 Speed limiter .

NOTES	Special notes: It is possible to modify the value of PR879 using command SC040 Speed limiter . This parameter is valid only on Kangoo 2.

Conformity check: Engine stopped and ignition on, or engine running and engine coolant temperature > 80°C

If ET741 "Optional vehicle speed restriction" is ACTIVE , the value of PR879 is between 18 mph (30 km/h) and 150 mph (250 km/h) . In the event of a fault or modification of this speed, use command SC040 Speed limiter .

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PR932

DEGREE OF ENGINE OIL DILUTION

PARAMETER DEFINITION

This parameter gives the value for the degree of oil wear in %.

NOTES

This parameter is not to be interpreted:
– on the **K9K812** engine,
– if **PR932 = 0** (Vdiag 58 only).

Conformity check: Engine stopped, ignition on or engine running.

PR932 = 0% for the first **900 miles (1500 km)**, beyond this value the **PR932** changes regularly until it reaches **100%**.

If **PR932 = 100%** it means that the oil should be changed.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**. Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

PR1015

OIL SERVICE INTERVAL

PARAMETER DEFINITION

This parameter indicates the vehicle distance before the next oil change in **miles (km)**.

NOTES

- This parameter is not to be interpreted:
- on the **K9K812** engine,
- if **PR1015 = 50000 (Vdiag 58 only)**.

Conformity check: Engine stopped, ignition on or engine running.

20000 km < PR1015 < 0 km.

This parameter decreases to **0** according to the vehicle distance and the degree of oil wear.

AFTER REPAIR

Deal with any faults displayed by the **diagnostic tool**. Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DIESEL INJECTION

Fault finding – Command summary table

13B

Tool command	Diagnostic tool title	Comments
RZ001	Fault memory	This command is used for clearing the computer's stored faults.
RZ002	EGR programming adaptives	Use this command when replacing the EGR valve or after it has been cleaned.
RZ004	Pressure regulation adaptives	Use this command when replacing all four injectors at once. It enables you to reset the injector adaptive programs.
RZ005	Programming	This command enables you to reinitialise the entire computer configuration according to the vehicle.

AC001	Preheating unit	Activating this actuates the preheating unit to test the heater plug supply. In the event of a fault, refer to the interpretation of DF017 Preheating unit control circuit .
AC002	EGR solenoid valve	This command actuates the EGR valve. In the event of a fault, refer to the interpretation of faults DF016 "EGR control circuit" and DF114 "EGR solenoid valve circuit" .
AC004	Turbocharging solenoid valve	This command actuates the turbocharging solenoid valve. In the event of a fault, refer to the interpretation of faults DF261 "Turbocharger actuator circuit" and DF427 "Turbo actuator control" .
AC005	Cylinder 1 injector	This activation makes it possible to check injector 1 by listening. In the event of a fault, refer to the interpretation of fault DF026 Cylinder 1 injector control circuit .
AC006	Cylinder 2 injector	This activation makes it possible to check injector 2 by listening. In the event of a fault, refer to the interpretation of fault DF027 Cylinder 2 injector control circuit .
AC007	Cylinder 3 injector	This activation makes it possible to check injector 3 by listening. In the event of a fault, refer to the interpretation of fault DF028 Cylinder 3 injector control circuit .
AC008	Cylinder 4 injector	This activation makes it possible to check injector 4 by listening. In the event of a fault, refer to the interpretation of fault DF029 Cylinder 4 injector control circuit .
AC010	High pressure pump	Activating this lets you listen to the operation of the high pressure pump.
AC028	Static test	This activation allows systems to be detected and starts the diagnostic check of the EGR and high pressure pump circuits (Ignition switched on, engine stopped) .
AC029	High pressure circuit sealing test	This activation allows the high pressure circuit sealing to be checked after an operation has been carried out (Engine running vehicle stopped) .

DIESEL INJECTION

Fault finding – Command summary table

13B

Tool command	Diagnostic tool title	Comments
AC153*	High-speed fan assembly	This command enables the high-speed fan assembly to be controlled. In the event of a fault, consult the interpretation of fault DF019 High speed fan assembly control circuit . Except Vdiag48 and 4C.
AC154*	Low-speed fan assembly	This command enables the low-speed fan assembly to be controlled. In the event of a fault, consult the interpretation of fault DF018 Low speed fan assembly control circuit . Except Vdiag48 and 4C.
AC180*	Air conditioning compressor relay control	This activation allows the air conditioning compressor clutch relay to be controlled. In the event of a fault, refer to the interpretation of DF489 Air conditioning compressor control .
AC212	New pump chamber filling	Activates New pump chamber filling next time the vehicle is started.
AC250	Heating resistor 1 relay	This activation enables the heating resistor 1 relay to be controlled. If there is a fault, refer to the interpretation of fault DF032 Thermoplunger 1 relay control circuit . Only for Vdiag 50.
AC251	Heating resistor 2 relay	This activation enables the heating resistor 2 relay to be controlled. If there is a fault, refer to the interpretation of fault DF033 Thermoplunger 2 relay control circuit . Only for Vdiag 50.

SC001	Write saved data	Use this command after replacing or (re)programming the computer (if the data has been saved using command SC003).
SC002	Enter injector codes	This command enables you to manually write the calibration code marked on the injectors. Run this command after replacing the injectors.
SC003	Save computer data	This command enables the computer operating data and the engine adaptives to be recorded.
SC040	Speed limiter	This command enables the vehicle speed restriction to be modified. Run this command after replacing or (re)programming. This command applies only on Kangoo 2
SC041	Changing commercial vehicle idle speed	This command enables the idle speed to be modified. Run this command after replacing or (re)programming. This command applies only on Kangoo 2

DIESEL INJECTION

Fault finding – Tests

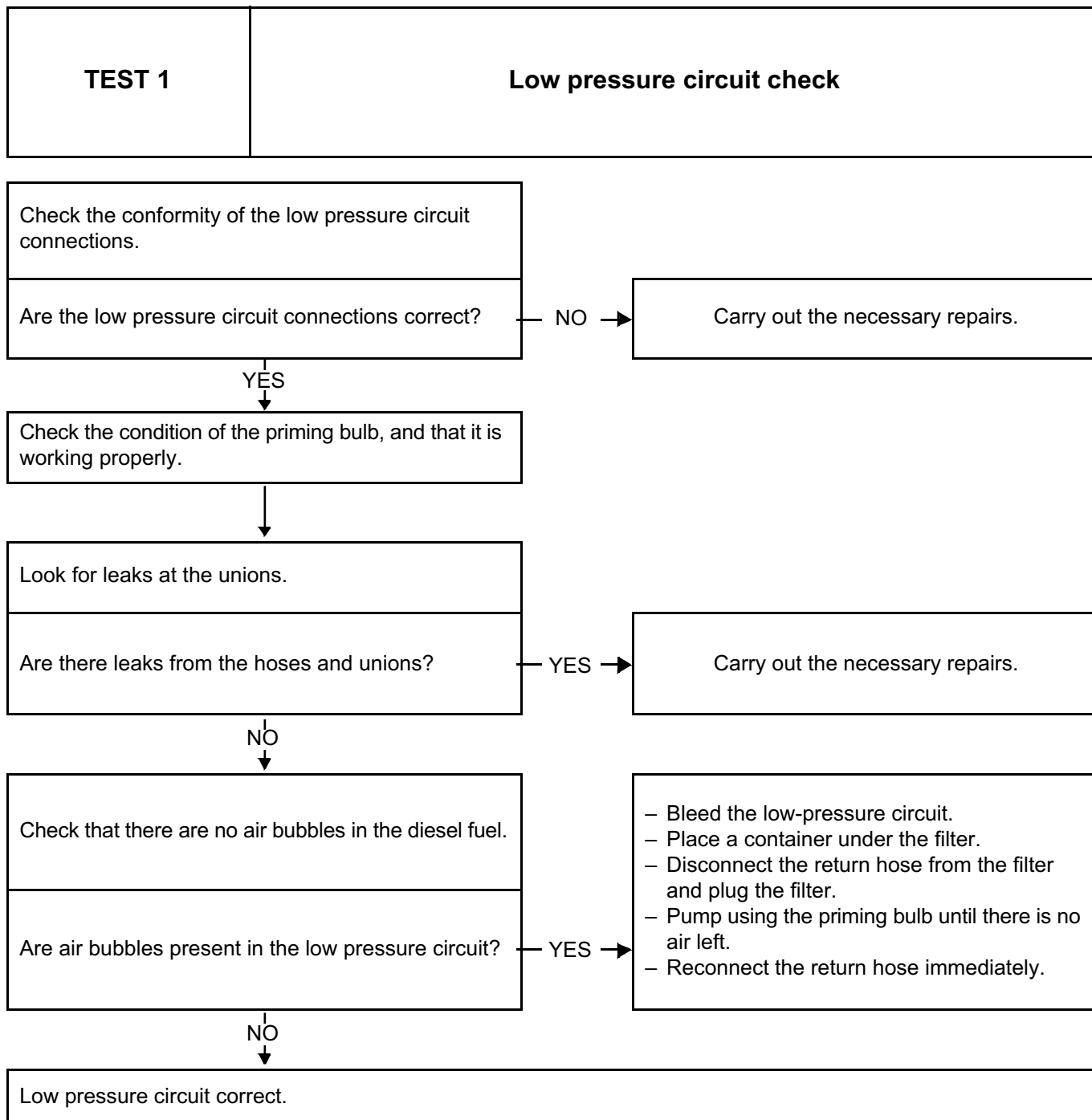
13B

NOTES

Only consult these tests when dealing with a fault finding chart (ALP) or when interpreting faults.

Some specific checks are grouped together into tests and are used as required in various fault finding charts (ALPs) or fault interpretations.

Low pressure circuit check	→	TEST 1
Electrical circuit check	→	TEST 2
Injector check	→	TEST 3
Inlet circuit check	→	TEST 5
High pressure system check	→	TEST 6
High pressure circuit sealing check	→	TEST 7
Injector return flow	→	TEST 8
Diesel filter check	→	TEST 9
Turbocharger solenoid valve check	→	TEST 10
Air line at the turbocharger	→	TEST 11
Turbocharger	→	TEST 12
Diesel fuel conformity check	→	TEST 13
Accelerator pedal check	→	TEST 14



TEST 2

Electrical circuit check

Check the battery charge and that the alternator is operating correctly (see **87B, Passenger compartment connection unit** for the New Twingo or see **87G, Engine compartment connection unit** for Clio III, Modus, Mégane II, Scénic II and Kangoo 2).

Is the charging circuit in good order?

NO

Carry out the necessary repairs.

YES

Check the fuses.

Are the fuses correct?

NO

Carry out the necessary repairs.

YES

Check that the injection locking relay is operating correctly.

Is the injection locking relay working properly?

NO

Carry out the necessary repairs.

YES

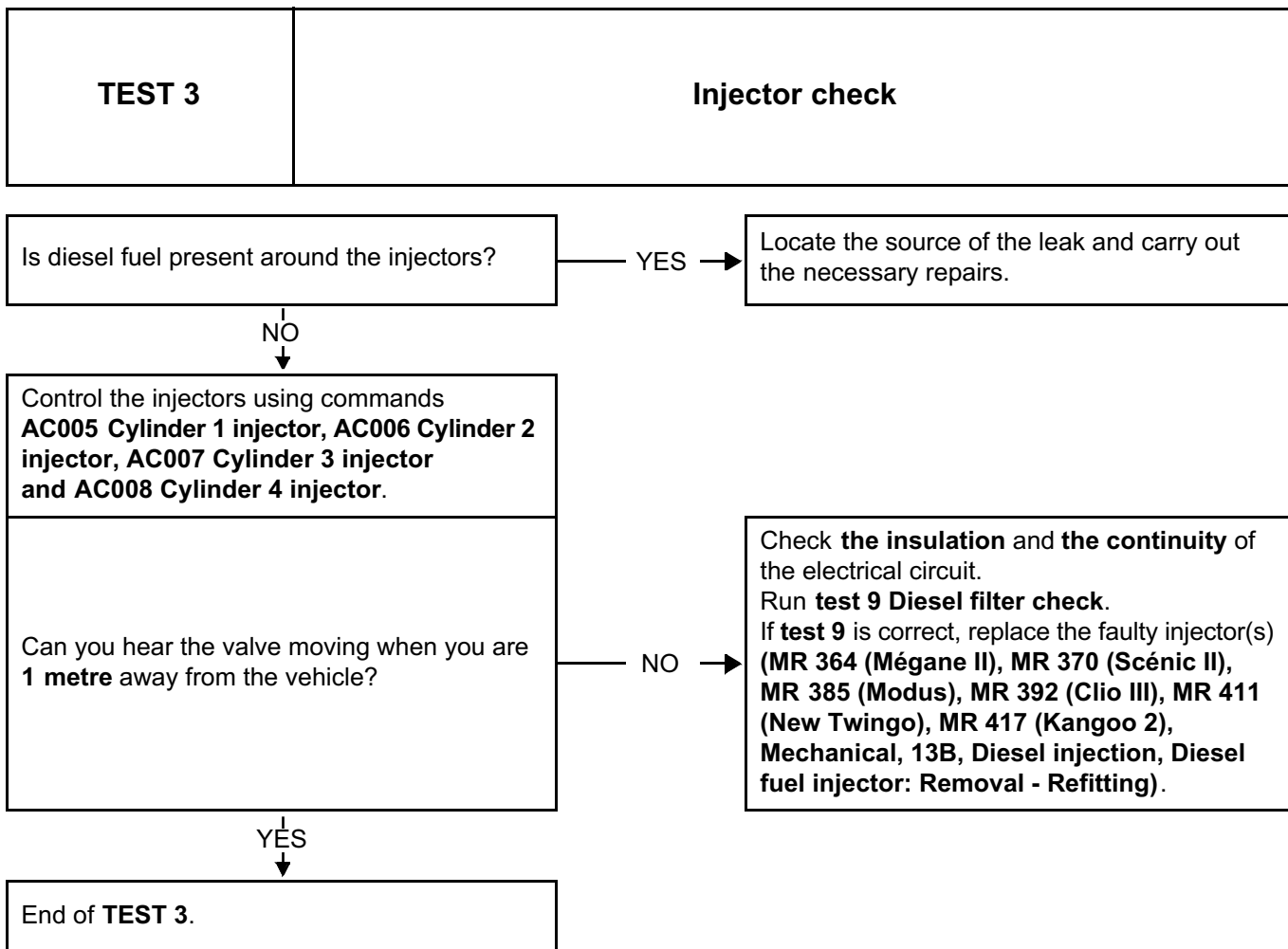
Check the engine earths.

Are the engine earths correct?

NO

Carry out the necessary repairs.

The electrical circuit is in good order.



TEST 5

Inlet circuit check

Check for air leaking in or out.

Is air leaking in or out?

YES →

Carry out the necessary repairs.

NO
↓

Check the condition of the air filter.

Is the air filter correct?

NO →

Replace the air filter (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 12A, Fuel mixture, Air filter: Removal - Refitting**).

YES
↓

Check that the inlet manifold is not obstructed (clogged).

Is the inlet manifold blocked?

YES →

Clean the inlet manifold.

NO
↓

Air system in good order.

TEST 6

High pressure system check

NOTES

Special note:

Certain faults make it impossible to carry out this test - deal with these first.

WARNING

Running the starter motor for more than 5 seconds is dangerous and serves no useful purpose.

Preliminary checks:

- Check for the presence of fuel
- Check that there is no air in the low pressure circuit. Run **TEST 1 Low pressure circuit check**.
- Ensure that the correct fuel is being used. Run **test 13 Diesel fuel conformity check**.

The pump's capacity to produce high pressure can be checked by the following procedure:

- **With the ignition off, disconnect** the low pressure actuator from the pump (**IMV brown connector**) and connect a **test IMV** or the adapter of **MOT. 1711**.
- Electrically disconnect the four injectors.
- Switch on the ignition, connect the diagnostic tool and re-establish dialogue with the injection system.
- Go to the **Main computer statuses and parameters** screen.
- Run the test cold, **PR064 "Coolant temperature" < 30°C** or equal to ambient temperature.
- Engage **the starter for 5 seconds**.
- Read the maximum rail pressure value **PR038 Rail pressure** during the test on the diagnostic tool.



A

TEST 6 CONTINUED



PR038 > 1050 bar?

NO
↓

- Switch off the ignition, reconnect the electrical connections to the four injectors and the low-pressure actuator.
 - Switch on the ignition again, and clear the injection faults using the **diagnostic tool**.
 - Check if there is no fuel leak in the high pressure circuit. Run **TEST 7 High pressure circuit sealing check**.
 - Check the conformity of the diesel filter. Run **TEST 9 Diesel filter check**.
 - Carry out fault finding on the injectors by checking the return flow volume of the four injectors, run **TEST 8 Injector return flow**.
- Is **TEST 8** OK?

NO
↓

Replace the faulty injector(s) (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, Diesel fuel injector: Removal - Refitting**).

YES
↓

- The pump can supply the operating pressure. Switch off the ignition, reconnect the electrical connections to the four injectors and the low pressure actuator. Switch on the ignition again, and clear the injection faults using the **diagnostic tool**.
- Check if there is no fuel leak in the high pressure circuit. Run **TEST 7 "High pressure circuit sealing check"**.
 - Carry out fault finding on the injectors by checking the return flow volume of the four injectors, run **TEST 8 Injector return flow**. If **TEST 8** is correct, the high pressure fuel circuit is correct.

YES
↓

Replace the high pressure pump (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, High pressure pump: Removal - Refitting**).

IMV = fuel flow actuator

TEST 7	High pressure circuit sealing check

NOTES	Special note: Certain faults make it impossible to carry out this test - deal with these first.

The command AC029 High pressure circuit sealing test enables a high pressure circuit sealing test to be carried out when the engine is running.

This command can locate a leak in the high pressure circuit if a union is incorrectly fitted or screwed on. This test does not identify a minor leak due to a union not being tightened to torque.

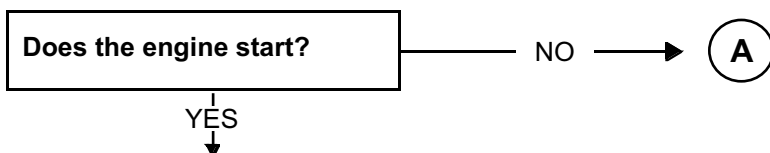
This command can only be used if the engine temperature is **above 60°C**.

Watch out for any objects (tools or others) on the sides of the engine housing during the 4 accelerations (possible vibrations).

Use command **AC029 High-pressure circuit sealing test**; the engine will automatically carry out a cycle of four accelerations to increase the rail pressure and check for leaks in the high pressure circuit.

TEST 8	Injector return flow

NOTES	Special note: Certain faults make it impossible to carry out this test - deal with these first.



Command AC029 High pressure circuit sealing also checks the return volume of each injector to detect any leaks inside the injectors.

Be careful with any objects (tool or other) on the engine housing during the four cycles of the operation (possible vibrations).

Tooling required

– **Mot. 1711 Injector flow measuring kit.**

Or: Use four tubes of internal diameter **4 mm** and approximately **50 cm** long, and four graduated measuring cylinders.

Procedure

- Check that the engine coolant temperature is **above 60°C**,
- switch off the ignition,
- disconnect the return pipes from the four injectors,
- cap the pump venturi tube to prevent the low-pressure circuit from depriming,
- connect the four transparent tubes in place of the return pipes,
- put the other ends of the four pipes into four graduated measuring cylinders.

When all the preparations are complete, start the engine and leave it running:

30 seconds	for Euro 4 engines: K9K 766 - 768 (Clio III and Modus); K9K 724 (Mégane II and Scénic II); K9K 740 - 718 (New Twingo); K9K 800 - 802 - 812 (Kangoo 2).

Let it idle for 2 minutes	for Euro 3 type engines: K9K 750 - 752 (Clio III and Modus).

Note:

These time periods must be respected for the test results to be interpreted correctly.

– **Run command AC029 High pressure circuit sealing check.**

The engine will carry out automatically a cycle of four accelerations to increase the rail pressure and measure internal injector leaks under these conditions.

– **When the cycle has finished, run command AC029 High pressure circuit sealing test a second time to obtain the correct return volume reading for each injector.**

– **Switch off the engine at the end of the cycle.**

TEST 8 CONTINUED 1

At the end of the idling phase and these two cycles, the return volume of each injector must be:

45 ml (maximum)	for Euro 4 type engines: K9K 766 - 768 (Clio III and Modus); K9K 724 (Mégane II and Scénic II) K9K 740 - 718 (New Twingo); K9K 800 - 802 - 812 (Kangoo 2).

35 ml maximum	for Euro 3 type engines: K9K 750 - 752 (Clio III and Modus),

If the back-leakage volume of any of the injectors is more than the values above, only replace the faulty injector (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 13B, Diesel injection, Diesel fuel injector: Removal - Refitting**).

Disconnect the 4 transparent pipes and reconnect the injector return circuit.

Carry out the following test to confirm the repair:

- With the ignition off, disconnect the low pressure actuator from the pump (**brown IMV connector**) and connect the test adapter (**test IMV, Mot. 1711**),
- electrically disconnect the 4 injectors,
- switch on the ignition, connect the **diagnostic tool** and re-establish dialogue with the injection system,
- go to the **Main computer statuses and parameters** screen,
- run the starter for **5 seconds**,
- read the maximum rail pressure value **PR038 Rail pressure** during the test on the diagnostic tool.

If the rail pressure (PR038 Rail pressure) is lower than 1050 bar, run test 6: High pressure system check.

- **Switch off the ignition, and reconnect the four injectors electrically,**
- disconnect the test filling actuator (test IMV) and reconnect the low-pressure actuator connector (IMV) to the pump,
- switch on the ignition again, and clear the injection faults using the **diagnostic tool**.

If the rail pressure (PR038) is greater than 1050 bar, the repair is correct.

End of **TEST8**.

TEST 8 CONTINUED 2



If the engine does not start, only the static leakage can be measured, i.e. the leakage with the injector closed, not actuated and under high pressure.

Make sure that the ignition circuit is working correctly (minimum engine speed **200 rpm**).

Tooling required

– **Mot. 1711 Injector flow measuring kit.**

Or: Use four tubes of internal diameter 4 mm and approximately **50 cm long** and a test adapter (**TEST IMV**).

Procedure

- **Switch off the ignition,**
- disconnect the return pipes from the four injectors,
- cap the pump venturi tube to prevent the low-pressure circuit from depriming,
- connect the four transparent pipes in place of the return pipes (**Mot. 1711**),
- disconnect the low pressure actuator from the pump (**brown IMV connector**) and connect a test IMV or the **Mot. 1711** adapter,
- **disconnect the four injectors electrically,**
- switch on the ignition and engage **the starter for 5 seconds**,
- measure the amount of diesel fuel in each pipe.

If the return leakage is greater than 10 cm, replace the injector(s) (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel fuel injector: Removal - Refitting).

Switch off the ignition, and reconnect the four injectors electrically.

Disconnect the test low pressure actuator and reconnect the low pressure actuator connector to the pump. Disconnect the four transparent tubes and reconnect the injectors return circuit. Switch on the ignition again, and clear the injection faults using the diagnostic tool.

Carry out the following test to confirm the repair:

- **With the ignition off, disconnect** the low pressure actuator from the pump (**brown IMV connector**) and connect the test adapter (**test IMV, Mot. 1711**),
- disconnect the four injectors electrically,
- switch on the ignition, connect the **diagnostic tool** and re-establish dialogue with the injection system,
- go to the **Main computer statuses and parameters** screen,
- run the starter for **5 seconds**,
- read the maximum rail pressure value **PR038 Rail pressure** during the test on the **diagnostic tool**.

If the rail pressure (PR038 Rail pressure) is lower than 1050 bar, run test 6: High pressure system check.

- **Switch off the ignition, and reconnect the four injectors electrically,**
- disconnect the test IMV and reconnect the low-pressure actuator connector to the pump,
- switch on the ignition again, and clear the injection faults using the **diagnostic tool**.

End of **TEST 8**.

TEST 9

Diesel filter check

Check the conformity of the diesel filter.

Is the diesel filter in order?

NO

Replace the air filter with an original part
(see MR 364 (Mégane II), MR 370
(Scénic II), MR 385 (Modus), MR 392
(Clio III), MR 411 (New Twingo), MR 417
(Kangoo 2), Mechanical, 13A, Fuel
mixture, Air filter: Removal - Refitting).

YES

- Switch off the ignition and analyse the diesel fuel in the diesel filter.
- Disconnect the diesel supply and return hoses from the filter.
- Block the filter inlets and outlets straight away with appropriate plugs.
- Remove the filter from its holder and shake it firmly while holding the caps in place. Tap the edge of the filter with a screwdriver handle to detach any contamination. Empty the contents of the filter into a glass container by lifting a protective plug, then loosening and completely removing the bleed screw.

Are black particles present on the bottom of the container?

YES

NO

Pass a magnet beneath the container to collect all the metal particles. Take the magnet away from the container.

Do the particles collected using the magnet cover a surface area greater than 1 cm²?

YES

NO

Replace the entire injection system.

Diesel filter in good order.

Diesel filter in good order.

TEST 10

Turbocharger solenoid valve check

Note:

No turbocharger control solenoid valve present on the K9K 740 engine for New Twingo and the K9K 800 engine for Kangoo 2.

Checking the vacuum at the pressure regulator inlet

Run the engine at idle speed.

Check the engine temperature using the CLIP parameter **PR064 Coolant temperature**.

Let the engine warm up until the temperature reaches **80°C**.

Disconnect the vacuum pipe from the end piece of the pressure regulator.

Connect a vacuum pressure gauge **to the end of the disconnected pipe** and put it in the **vacuum measurement** position.

Perform a quick acceleration by depressing the accelerator pedal completely and then releasing it immediately.

The total duration of pressing and holding in the full load position must not exceed **1 second**.

During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation 3 times.

Read the maximum vacuum posted by the pressure gauge during the increase and decrease in the speed and after the return to idle speed.

Tolerance intervals for the vacuum are:

– **1 bar < CORRECT vacuum value < - 0.6 bar**

– **0.6 bar < INCORRECT vacuum value < 0 bar**

Is the vacuum at the turbocharging pressure regulator inlet displayed on the vacuum gauge within the tolerance interval?

NO



YES

The solenoid valve is in order.

TEST 10
CONTINUED 1

A

Reconnect the vacuum pipe on the turbocharging pressure regulator

Checking the vacuum at the solenoid valve outlet

Leave the engine running at idle speed.

Disconnect the vacuum pipe from the end piece of the solenoid valve outlet.

This pipe connects the solenoid valve to the turbocharging pressure regulator.

Connect a vacuum pressure gauge to the solenoid valve outlet and put it in the **vacuum measurement** position.

Perform a quick acceleration by depressing the accelerator pedal completely and then releasing it immediately.

The total duration of pressing and holding in the full load position must not exceed **1 second**.

During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation 3 times.

Read the maximum vacuum posted by the pressure gauge during the increase and decrease in the speed and after the return to idle speed.

Tolerance intervals for the vacuum are:

- **1 bar** < CORRECT vacuum value < - **0.6 bar**
- **0.6 bar** < INCORRECT vacuum value < **0 bar**

Is the vacuum displayed by the pressure gauge at the solenoid valve outlet within the tolerance interval?

NO

Reconnect the vacuum pipe on
the turbocharging pressure regulator

B

YES

Replace the vacuum pipe between the solenoid valve
and the turbocharging pressure regulator (see
Mechanical MR of the vehicle, 12B turbocharging).

TEST 10
CONTINUED 2

B

Visual inspection of the electrical connector of the solenoid valve

Switch off the engine.

Note:

The requested checks are only visual.

1. Check that the connector is correctly connected and locked.
2. Check the absence of damage to the electric wires where they leave the insulation.
Disconnect the connector to continue the checks.
3. Check the absence of thermal damage to the unit and mechanical damage to the lock.
4. Check the absence of deformations of the contacts (clips and tabs).
5. Check the sealing of the connector.

Do the visual inspections show any damage?

NO

C

YES

Refer to **Technical Note 6015A, Repairing electrical wiring.**

A

TEST 10
CONTINUED 3

C

Checking the vacuum at the solenoid valve inlet

Run the engine at idle speed.

Disconnect the vacuum pipe from the end piece of the solenoid valve inlet.
This pipe connects the vacuum pump to the turbocharger solenoid valve.

Connect a vacuum pressure gauge **to the end of the disconnected pipe** and put it in the **vacuum measurement** position.

Read the vacuum posted by the pressure gauge.

Tolerance intervals for the vacuum are:

- **1 bar** < CORRECT vacuum value < **-0.85 bar**
- **0.85 bar** < INCORRECT vacuum value < **0 bar**

Is the vacuum displayed by the pressure gauge at the solenoid valve inlet within the tolerance interval?

NO

YES

Carry out the following operations.

- reconnect the vacuum pipe to the turbocharger solenoid valve.
- Check the conformity of the vacuum pipe connections.
- visually check the condition of the vacuum pipes leaving the vacuum pump to the different supplied components.

Refer to the repair manual (see **Mechanical MR of the vehicle, 12B turbocharging**).

Replace the solenoid valve
(see **Mechanical MR of the corresponding vehicle 12B turbocharging**).

TEST 11

Air line at the turbocharger

Check that the air filter is present.
Check the replacement interval of the air filter on the maintenance booklet.
Compare the part nos. of the fitted air filter on the vehicle and of the air filter recommended by the manufacturer.
Check the direction of fitting of the air filter.

Is the air filter correctly fitted on the vehicle?

YES

NO

Check the condition of the air filter

Visually inspect the condition of the filtering section of the air filter.

Is the air filter or its seal damaged?

Is the air filter fouled (does it contain a lot of impurities)?

YES →

Replace the air filter (see **MR 364 (Mégane II), 370 (Scénic II), 392 (Clio III), 385 (Modus), 411 (New Twingo) or 417 (Kangoo II) Mechanical, 12A, Fuel mixture, Air filter, Removal - Refitting).**

NO

Low pressure circuit check

Note:

Depending on the vehicle type, the best visual access will be either from above or from below.

Visually inspect the condition of the following components:

- fresh air inlet scoop on the front panel of the vehicle,
- air inlet pipe to the air filter,
- air pipe of the filter up to the compressor inlet,
- air flowmeter mountings.

Is one of these components incorrect (pipes dislodged, torn, bent, pierced or kinked)?

YES →

Replace the faulty parts (see **MR 364 (Mégane II), 370 (Scénic II) 392 (Clio III), 385 (Modus), 411 (New Twingo) or 417 (Kangoo II), Mechanical, 12B, Turbocharging).**

NO



**TEST 11
CONTINUED**

A

High pressure circuit check

Note:

Depending on the vehicle type, the best visual access will be either from above or from below.

Visually inspect the condition of the following components:

- compressor outlet pipe to the turbocharging air cooler (on some engines, the turbocharging air cooler does not exist),
- outlet pipe of the turbocharging air cooler to the inlet manifold,
- inlet manifold,
- pressure and temperature sensors.

Is one of these components incorrect (pipes dislodged, torn, bent, pierced or kinked)?

YES →

Replace the faulty parts (see **MR 364** (Mégane II), 370 (Scénic II), 392 (Clio III), 385 (Modus), 411 (New Twingo) or 417 (Kangoo II), Mechanical, 12B Turbocharging).

NO

YES →

Exhaust circuit check

Visually inspect the condition of the following engine sections:

- from the exhaust manifold circuit to the turbocharger turbine,
- from the turbine outlet pipe to the end of the exhaust pipe,
- from the inlet manifold to the EGR valve,
- pressure and temperature sensors connected.

Do certain of these components have blackish or whitish traces?

NO

Run **test 10 Turbocharger solenoid valve check**.

TEST 12	Turbocharger

IMPORTANT

Perform these checks without removing the turbocharger and with the vehicle ignition switched off.

Checking the turbocharger shaft

WARNING

Observe the following safety precautions:

- wear high temperature protective gloves when the engine is hot,
- do not wear oversize or baggy clothing or hanging jewellery,
- watch out for possible triggering of the motor-driven cooling fan unit and the operation of the accessories belt or belts.

Note:

The turbocharger shaft is the shaft that connects the compressor wheel and the turbine wheel.

Depending on the vehicle type, the best visual access will be either from above or from below.

Disconnect the air pipe located between the turbocharger and the air filter.

Wearing gloves, check the operation of the turbocharger shaft by turning the vanes manually without forcing.

Does the shaft have a kickdown point in rotation?

Does the compressor wheel touch the casing of the turbocharger?

If for these 2
questions the
response is **NO**

If **YES** for one of these 2 questions

A

Replace the turbocharger (see **MR 364 (Mégane II)**, **370 (Scénic II)** **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)** or **417 (Kangoo II)**, **Mechanical**, **12B**, **Turbocharging**, **Turbocharger: Removal - Refitting and Technical Note 3938A**, **Broken turbocharger: Replacement instructions**).

TEST 12 CONTINUED 1

A

Checking the condition of the turbocharger vanes.

Note:

This check is facilitated by using a mirror and a bulb.

Depending on the vehicle type, the best visual access will be either from above or from below.

Visually check that the compressor vanes are in good condition.

Are the vanes damaged or twisted?

YES

Replace the turbocharger (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)** or **417 (Kangoo II)**, Mechanical, 12B turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A, Broken turbocharger: Replacement instructions).

NO

Which type of turbocharger is it?

Variable geometry
turbocharger

Fixed geometry
turbocharger

B

C

TEST 12
CONTINUED 2

B

Checking the turbocharging pressure regulator to determine if it is a variable geometry turbocharger

Note:

The pressure regulator rod of a variable geometry turbocharger is orthogonal to the turbocharger shaft.

Variable geometry turbochargers are controlled by a solenoid valve.

Depending on the vehicle type, the best visual access will be either from above or from below.

Note:

If necessary, according to the vehicle type and the accessibility of the pressure regulator, connect the vacuum pump to the end of the pressure regulator pipe at the solenoid valve outlet.

Using a **manual vacuum pump**, apply a vacuum on the turbocharging pressure regulator of approximately **650 mbar**.

1. Check that the fitting is completely leaktight.
2. Check that the control rod **is resting against its stop**.
3. Lock the **vacuum device** and check that the pressure variation is not greater than **100 mbar in 10 seconds**.
4. Release the pressure and check that the control rod comes back to its initial position without jerking.

Repeat the complete sequence 3 times.

Is the pressure regulator leaktight and is the rod movement correct?

YES

The turbocharger is correct.
End of procedure.

NO

Replace the turbocharger (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)** or **417 (Kangoo II)**, **Mechanical, 12B turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A**, **Broken turbocharger: Replacement instructions**).

TEST 12
CONTINUED 3

C

Checking the turbocharging pressure regulator to determine if it is a fixed geometry turbocharger

Note:

The pressure regulator rod of a fixed geometry turbocharger is aligned with the turbocharger shaft.

Fixed geometry turbochargers are controlled by a solenoid valve.

Depending on the vehicle type, the best visual access will be either from above or from below.

Note:

If necessary, according to the vehicle type and the accessibility of the pressure regulator, connect the vacuum pump to the end of the pressure regulator pipe at the solenoid valve outlet.

Using a **manual vacuum pump**, apply a vacuum on the turbocharging pressure regulator of approximately **650 mbar**.

1. Check that the fitting is completely leaktight.
2. Check that the control rod **moved several millimetres**.
3. Lock the **vacuum device** and check that the pressure variation is not greater than **100 mbar in 10 seconds**.
4. Release the pressure and check that the control rod comes back to its initial position without jerking.

Repeat the complete sequence 3 times.

Is the pressure regulator leaktight and is the rod movement correct?

YES

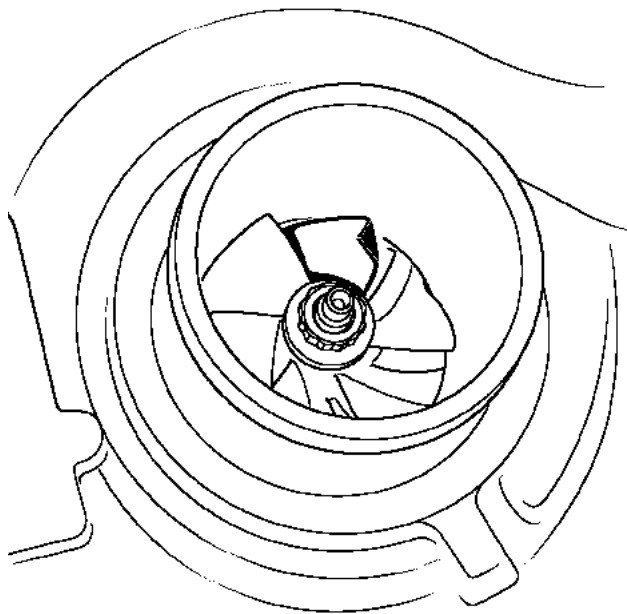
The turbocharger is correct.
End of procedure.

NO

Replace the turbocharger (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)** or **417 (Kangoo II)**, **Mechanical, 12B turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A**, **Broken turbocharger: Replacement instructions**).

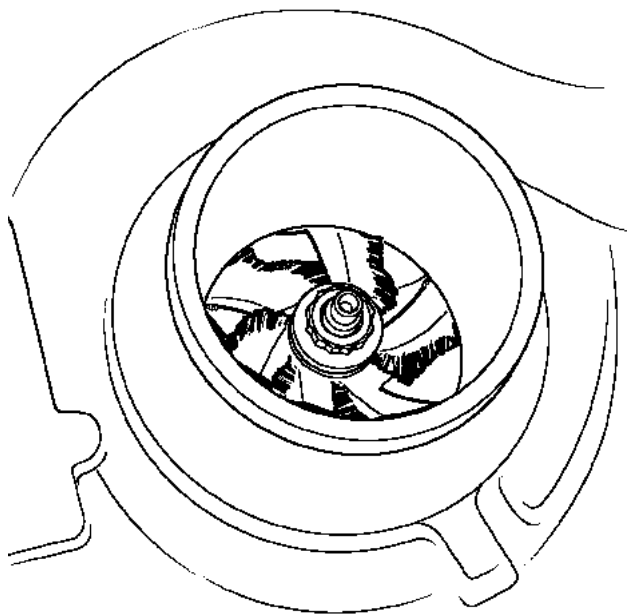
**TEST 12
CONTINUED 4**

Deformed, twisted blade ("soft" foreign body)



110737

Broken blades ("hard" foreign body)



110738

End of TEST 12

TEST 13

Diesel fuel conformity check

WARNING

During this operation, it is essential to:

- refrain from smoking or bringing incandescent objects close to the work area,
- protect yourself against fuel splashes due to residual pressure in the pipes,
- wear safety goggles with side guards,
- wear leaktight gloves (Nitrile type).

IMPORTANT

- To avoid any corrosion or damage, protect the areas on which fuel is likely to run.
- To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Preparations:

Weigh an empty **1300 ml** plastic cup (**part no. 77 11 171 413**) with its cover (**part no. 77 11 171 416**) using an electronic scale similar to those used in body paint workshops (for example: **PANDA part no. 77 11 224 995**).

Record the weight of the empty cup.

This type of plastic cup is used to prepare paint.

Take a **1 l** fuel sample from the **diesel fuel filter outlet** (see **MR 364 (Mégane II)** or **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 19C, Tank, Fuel tank draining**), using a pneumatic transfer pump (**part no. 634-200**) and place it in the **1300 ml** plastic cup. Cover the plastic cup with its cover and let it settle for approximately **2 minutes**.

Is the fuel cloudy or does it
separate into two parts?

– YES ➔

The diesel fuel contains water and is not compliant.
Drain the fuel circuit, including the tank (see **MR 364 (Mégane II)** or **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 19C, Tank, Fuel tank drain**).

NO



TEST 13 CONTINUED 1

A

Weigh the diesel fuel and note the fuel weight after subtracting the weight of the empty plastic cup and its cover. Does the fuel weight fall between the minimum and maximum weights given in the table below?

Calculated weight (g.)		Fuel temperature (°C)
Min. weight	Max. weight	
821	846	13
821	846	14
820	845	15
819	844	16
819	844	17
818	843	18
817	842	19
816	841	20
816	841	21
815	840	22
814	839	23
814	839	24
813	838	25

Check the fuel temperature by immersing a thermometer in the plastic cup.

YES
↓

End of test.

NO
↓

The fuel is not correct.
If the fuel weight is less than the minimum value then there is petrol in the diesel fuel.
If the fuel weight is greater than the maximum value then there is oil in the diesel fuel.
Drain the fuel circuit, including the tank (see **MR 364 (Mégane II)** or **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 19C, Tank, Fuel tank drain**).

TEST 13
CONTINUED 2

Note:

If the weight measured hits the upper and lower limits, the measurement can be performed with a **2230 ml** plastic cup (**part no. 77 11 171 414**) and its cover (**part no. 77 11 171 417**):

- Carry out a quick test drive in order to mix the fuel, then remove 2 l of fuel.
- Perform the test again and check the results by multiplying the limit values by 2.

Contact the Techline if you have doubts or problems with the customer.

TEST 14

Accelerator pedal check

Can the accelerator pedal be fully depressed and does it return fully?

NO →

Check that there are no obstructions between the floor and the accelerator pedal, and check that the latter has no points of resistance.

YES ↓

Vehicle under + after ignition feed.
Measure the voltage between connections 3LR and 3LT of component 921.

Expected result:
 $4.75\text{ V} < X < 5.25\text{ V}$

NO →

Check the continuity and insulation of connections 3LR and 3LT between components 921 and 120.
If the connection is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES ↓

Vehicle under + after ignition feed.
Fully depress the accelerator pedal and measure the voltage between connections 3LS and 3LT of component 921.

Expected result:
 $3.94 < X < 4.56\text{ V}$

NO →

Check the continuity and insulation of connection 3LS between components 921 and 120.
If the connection is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If these checks are correct, replace the accelerator pedal sensor (see **MR 392 (Clio III), MR 364 (Mégane II), MR 370 (Scénic II), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**) or (see **MR 385 (Modus), MR 411 (New Twingo), Mechanical, 37A, Mechanical component controls, Accelerator brake pedal assembly: Removal – Refitting**).

YES ↓

Vehicle under + after ignition feed.
Accelerator pedal in no load position, measure the voltage between connections 3LS and 3LT of component 921.

Expected result:
 $0.66\text{ V} < X < 0.84\text{ V}$

NO →

Replace the accelerator pedal sensor (see **MR 392 (Clio III), MR 364 (Mégane II), MR 370 (Scénic II), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**) or (see **MR 385 (Modus), MR 411 (New Twingo), Mechanical, 37A, Mechanical component controls, Accelerator brake pedal assembly: Removal – Refitting**).

YES ↓



TEST 14 CONTINUED

A

Vehicle under + after ignition feed.
Measure the voltage between
connections **3LU** and **3LV** of
component **921**.

Expected result:
4.75 V < X < 5.25 V

NO →

Check the continuity and insulation of connections **3LU** and **3LV** between components **921** and **120**.
If the connection is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Vehicle under + after ignition feed. Fully
depress the accelerator pedal
and measure the voltage between
connections **3LW** and **3LV** of
component **921**.

Expected result:
2.16 < X < 2.38 V

NO →

Check the continuity and insulation of connection **3LW** between components **921** and **120**.
If the connection is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If these checks are correct, replace the accelerator pedal sensor (see **MR 392 (Clio III), MR 364 (Mégane II), MR 370 (Scénic II), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**) or (see **MR 385 (Modus), MR 411 (New Twingo), Mechanical, 37A, Mechanical component controls, Accelerator brake pedal assembly: Removal – Refitting**).

YES

Vehicle under + after ignition feed.
Accelerator pedal in no load position,
measure the voltage between
connections **3LW** and **3LV** of
component **921**.

Expected result:
0.32 < X < 0.42 V

NO →

Replace the accelerator pedal sensor (see **MR 392 (Clio III), MR 364 (Mégane II), MR 370 (Scénic II), MR 417 (Kangoo 2), Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**) or (see **MR 385 (Modus), MR 411 (New Twingo), Mechanical, 37A, Mechanical component controls, Accelerator brake pedal assembly: Removal – Refitting**).

YES

Contact the Techline

DIESEL INJECTION

Fault finding – Customer complaints

13B

NOTES

Special note:

Only consult this customer complaint after a full check with the **diagnostic tool**.

No dialogue with the computer

ALP1

Starting fault:

The engine will not start

ALP2

The engine starts with difficulty, or starts then stalls

ALP3

Starting difficult with warm engine

ALP4

Rough idle (pumping)

ALP5

Idling speed too high or too low

ALP6

Behaviour while driving:

Erratic acceleration/deceleration and engine racing

ALP7

Acceleration gap

ALP8

Engine cut-out (stalling)

ALP9

Engine bucking

ALP10

Loss of power

ALP11

Too much power

ALP12

Excessive consumption

ALP13

Overspeed when releasing accelerator or changing gear

ALP14

Engine dies on pulling away

ALP15

Noise, odours or smoke:

Knocking engine, noisy engine, noise from the turbocharger

ALP16

Blue, white or black smoke

ALP17

Oil leaks from the turbocharger

ALP18

ALP1	No dialogue with the computer

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .

To check that the **diagnostic tool** is not causing the fault, try to establish dialogue with a computer on another vehicle. If the **diagnostic tool** is not the cause and communication cannot be established with any other computer on the same vehicle, it is possible that another computer is disrupting the multiplex network. Check the battery voltage and make the necessary adjustments to obtain a correct voltage (**9.5 V < Battery voltage < 17.5 V**).



Run fault finding on the multiplex network using the **diagnostic tool** (see **88B, Multiplexing**).



Check the presence and the condition of the injection fuses on the UPC and on the engine fuse box.
Check the connection of the computer connectors and the condition of its connections.
Check the injection computer earths (quality, oxidation, earth bolts secure on the battery terminal).
Check that the supply to the computer is correct:

For New Twingo:

- **AP29** between components **1016** and **120**,
- **3FB** between components **238** and **120**,
- **NH** between earth and component **120**,

For Mégane II, Scénic II, Modus, and Clio III:

- **AP15** between components **1337** and **120**,
- **NH** between earth and component **120**,
- **3FB1** between components **1337** and **120**,
- **3FB2** between components **1337** and **120**.

For Kangoo 2:

- **AP15** between components **1337** and **120**,
- **N** between earth and component **120**,
- **3FB** between components **1337** and **120**,
- **3FB1** between components **1337** and **120**,
- **3FB2** between components **1337** and **120**.



Ensure that the supply to the diagnostic socket is correct:

- **BP32** between components **225** and **260**,
- **AP43** between components **225** and **1337**,
- **MN** between earth and component **225**.



If dialogue has still not been established after these checks, contact Techline.

ALP2

The engine will not start

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

Is the catalytic converter clogged or damaged?

— YES —>

Replace the catalytic converter (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting).

NO

Check the electrical circuit: run **TEST 2 Electrical circuit check**.

Check the electrical conformity of the **heater plugs** (the **resistance** value of the heater plug must be **less than 2 Ω**).

Is the timing set correctly?

— NO —>

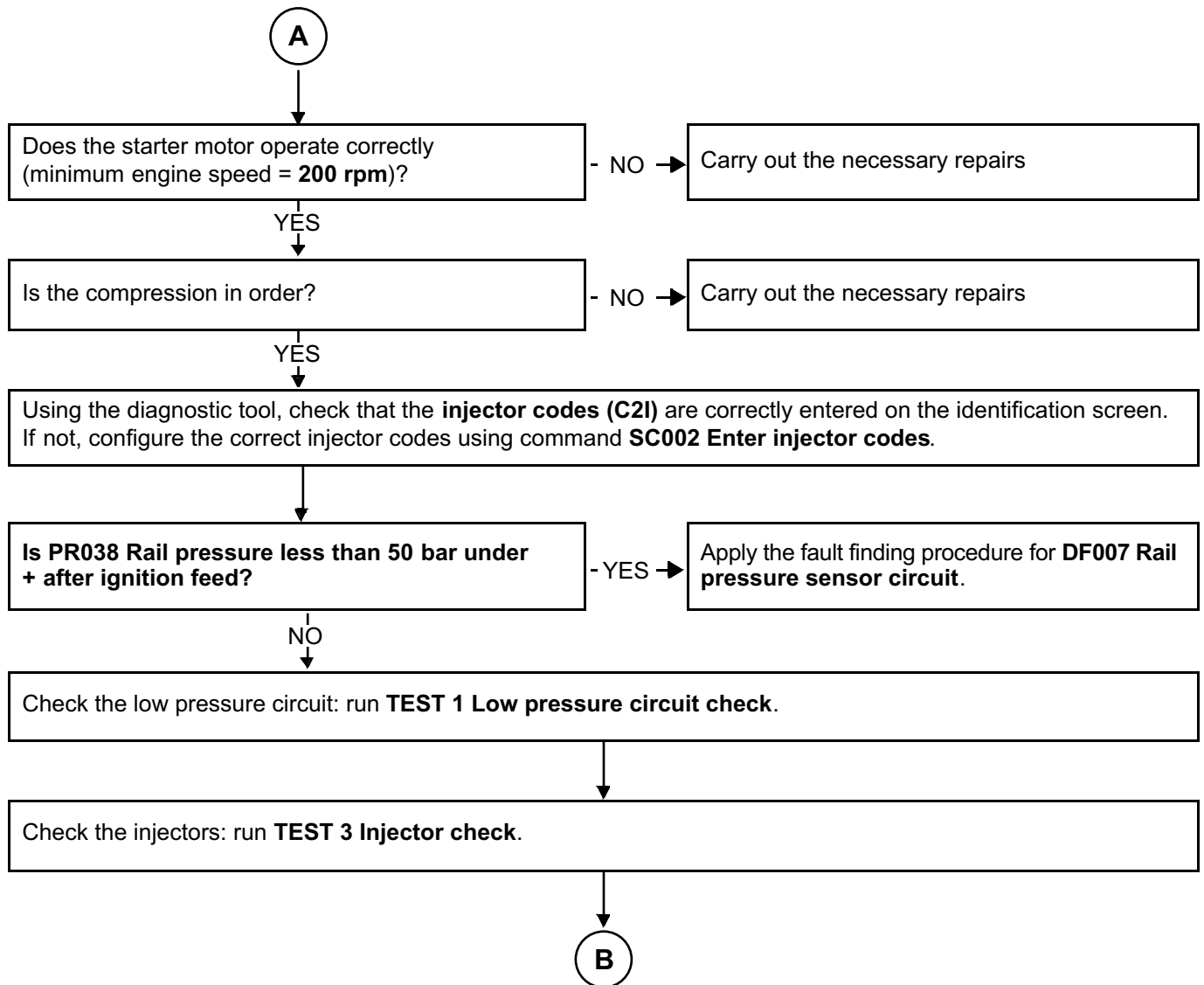
Carry out the necessary repairs.

YES

Visually check the condition of the engine wiring harness.

A

**ALP2
CONTINUED 1**



**ALP2
CONTINUED 2**

B

Visually check that there are no leaks on the high pressure circuit: run **TEST 7 High pressure circuit sealing check**.

Check the high pressure system: run **TEST 6 High pressure system check**.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP3

The engine starts with difficulty, or starts then stalls

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Check the air inlet circuit: run **test 5 Air inlet circuit check**.

Is the catalytic converter clogged or damaged?

— YES →

Replace the catalytic converter (see **MR 364** (Mégane II), **MR 370** (Scénic II), **MR 385** (Modus), **MR 392** (Clio III), **MR 411** (New Twingo), **MR 417** (Kangoo 2), **Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO
↓

Check the electrical conformity of the **heater plugs** (the **resistance** value of the heater plug must be **less than 2 Ω**).

Is the timing set correctly?

— NO →

Carry out the necessary repairs.

YES
↓

Is the compression in order?

— NO →

Carry out the necessary repairs.

YES
↓

Visually check the condition of the engine wiring harness.

A

**ALP3
CONTINUED**

A

Check the electrical circuit: run **TEST 2 Electrical circuit check**.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Visually check that there are no leaks on the high pressure circuit: run **TEST 7 High pressure circuit sealing check**.

Check the high pressure system: run **TEST 6 High pressure system check**.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP4

Starting difficult with warm engine

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

Is the compression in order?

NO

Carry out the necessary repairs.

YES

Is the timing set correctly?

NO

Carry out the necessary repairs.

YES

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Visually check the condition of the engine wiring harness.

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

A

**ALP4
CONTINUED**



Control the injectors using the commands:

- AC005 Cylinder 1 injector,
- AC006 Cylinder 2 injector,
- AC007 Cylinder 3 injector,
- AC008 Cylinder 4 injector.

Can you hear the valve moving when you are 1 metre from the vehicle?

– NO →

Run Test 9 Diesel filter check.
If test 9 is correct, replace only the faulty injector(s) (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting).

YES
↓

Check the high pressure system: run **TEST 6 High pressure system check**.

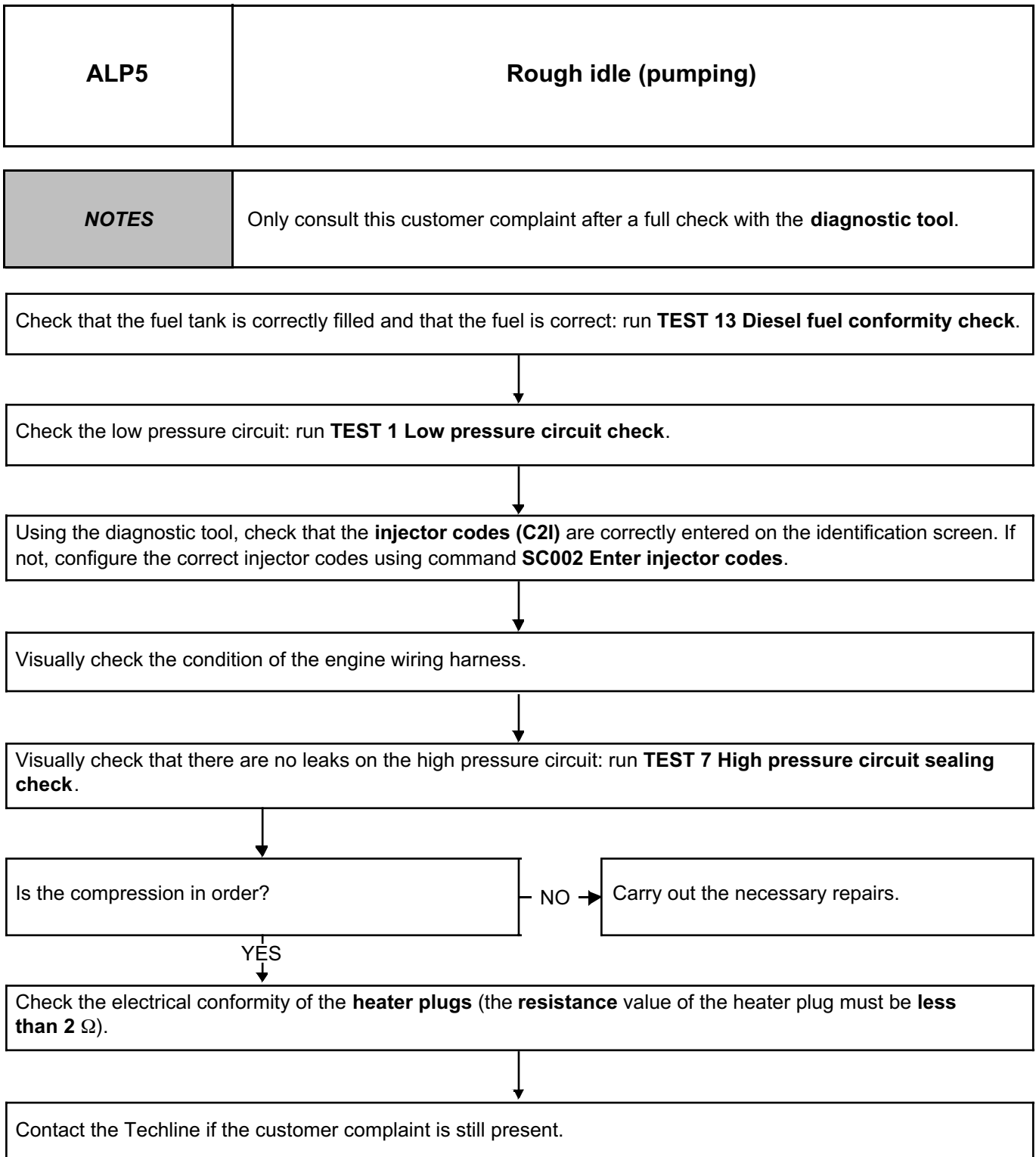
Check the computer:

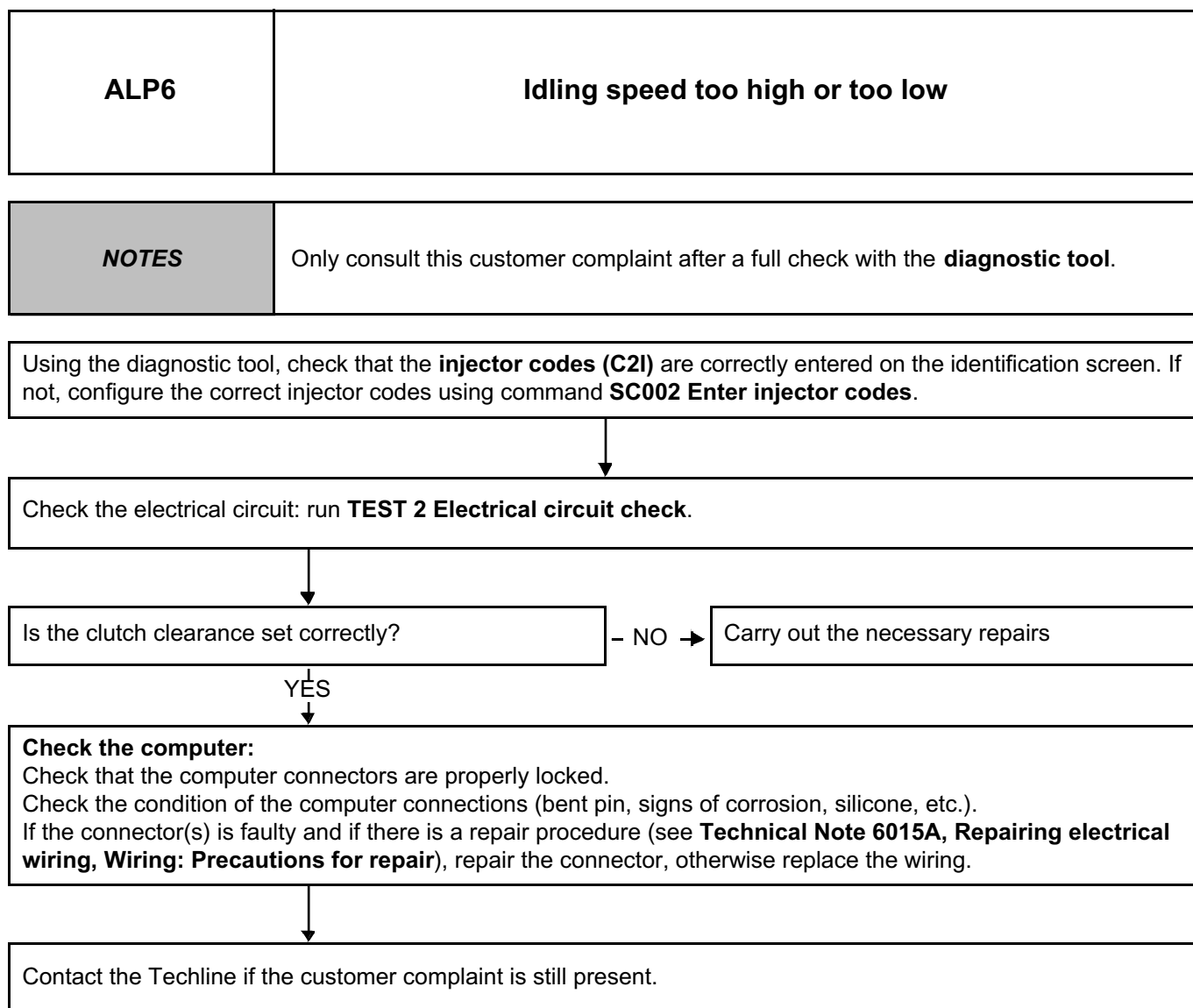
Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.





ALP7

Unexpected acceleration/deceleration and engine racing

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that the engine has not sucked up its oil (engine racing).



Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.



Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.



Visually check the condition of the engine wiring harness.



Check the injectors: run **TEST 3 Injector check**.



Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

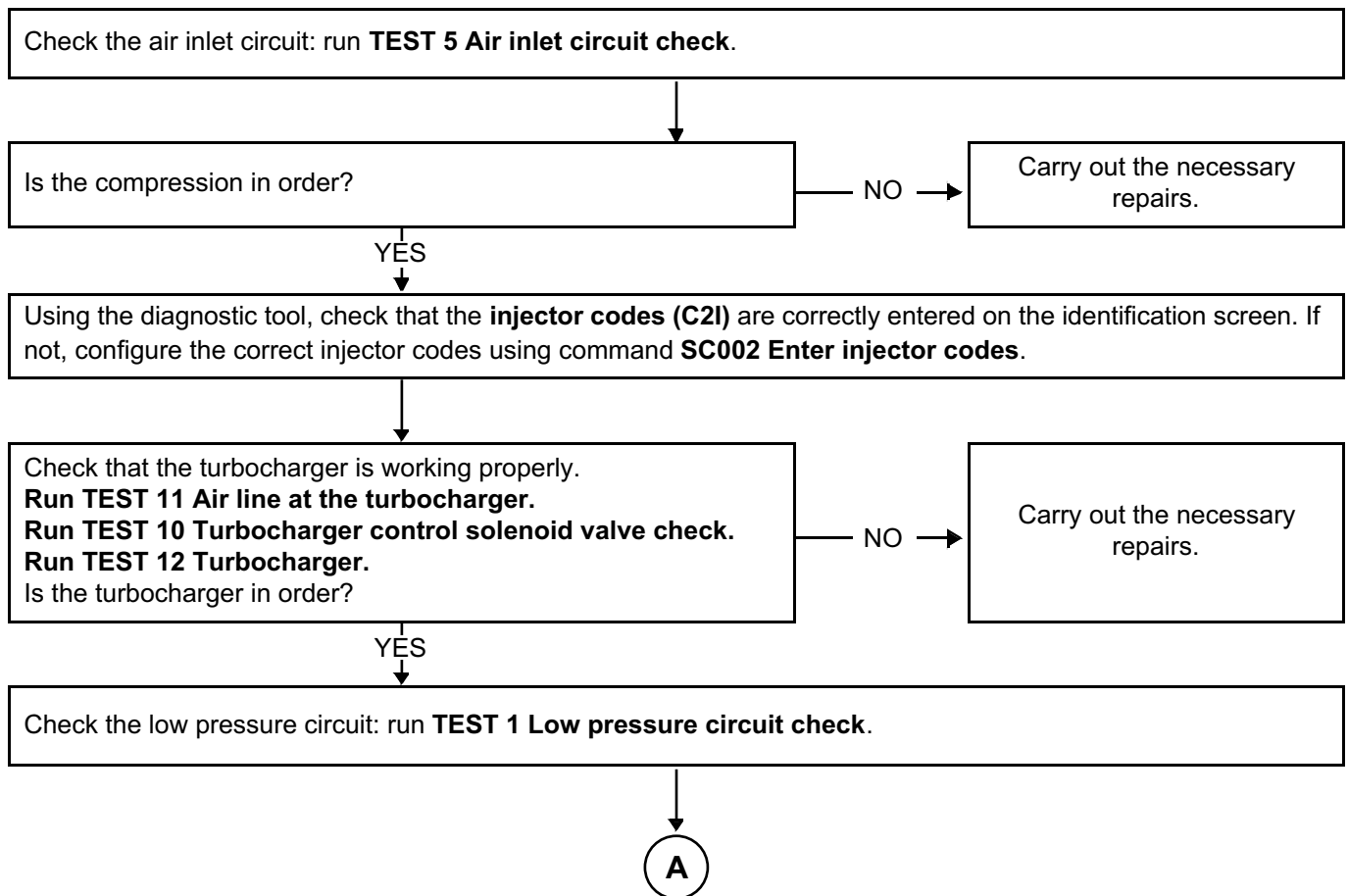
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.



Contact the Techline if the customer complaint is still present.

ALP8	Acceleration gap

NOTES	Only consult this customer complaint after a full check with the diagnostic tool .



**ALP8
CONTINUED**

A

Visually check that there are no leaks on the high pressure circuit: run **TEST 7 High pressure circuit sealing check**.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP9

Engine cut-out (stalling)

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Check that the engine has not sucked up its oil (engine racing).

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

Is the catalytic converter clogged or damaged?

YES →

Replace the catalytic converter (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO

Visually check the condition of the engine wiring harness.

Check the electrical circuit: run **TEST 2 Electrical circuit check**.

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Visually check that there are no leaks on the high pressure circuit: run **TEST 7 High pressure circuit sealing check**.

A

**ALP9
CONTINUED**

A

Check the injectors: run **TEST 3 Injector check**.

Check the high pressure system: run **TEST 6 High pressure system check**.

Check that the computer connectors are properly locked.
Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP10	Engine bucking

NOTES	Special note: Only consult this customer complaint after a full check with the diagnostic tool. See Feature, Function: Fuel supply management (timing, flow rate and pressure), Flow capacity function (VLC) section.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.



Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.



Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.



Is the engine wiring harness cut or pinched?	— YES —>	Carry out the necessary repairs.



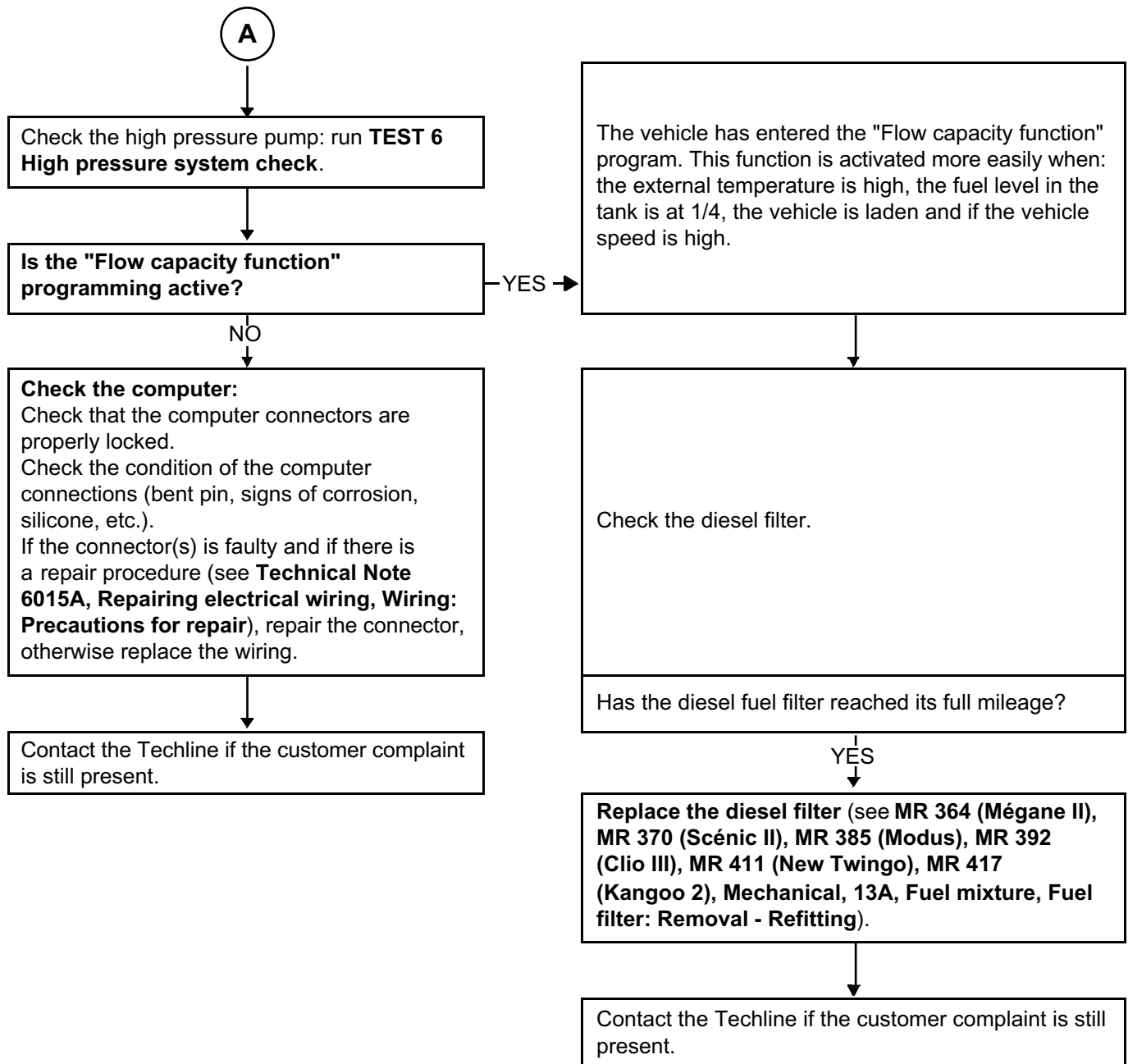
Is the compression in order?	— NO —>	Carry out the necessary repairs.



Is the valve clearance set correctly?	— NO —>	Carry out the necessary repairs.

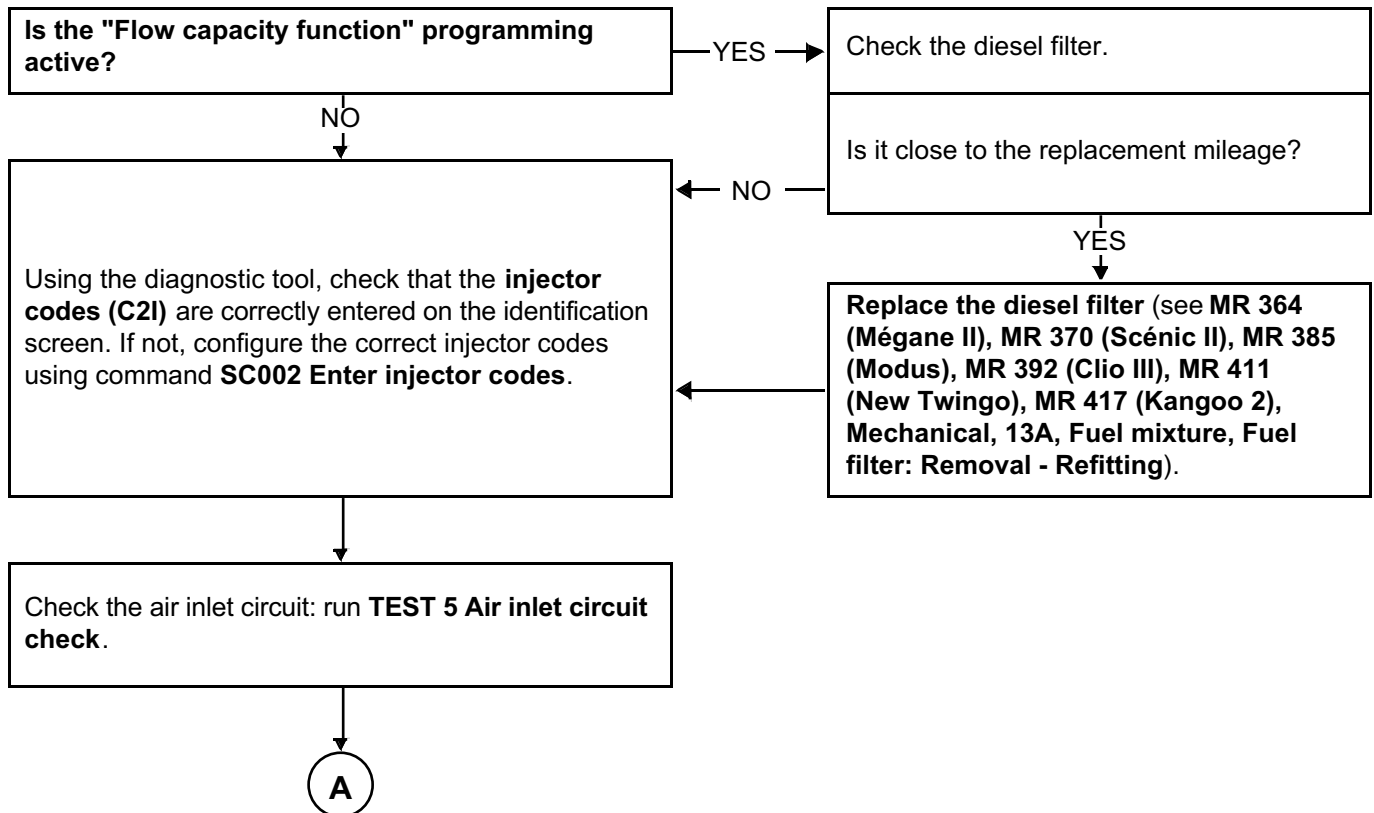


ALP10 CONTINUED

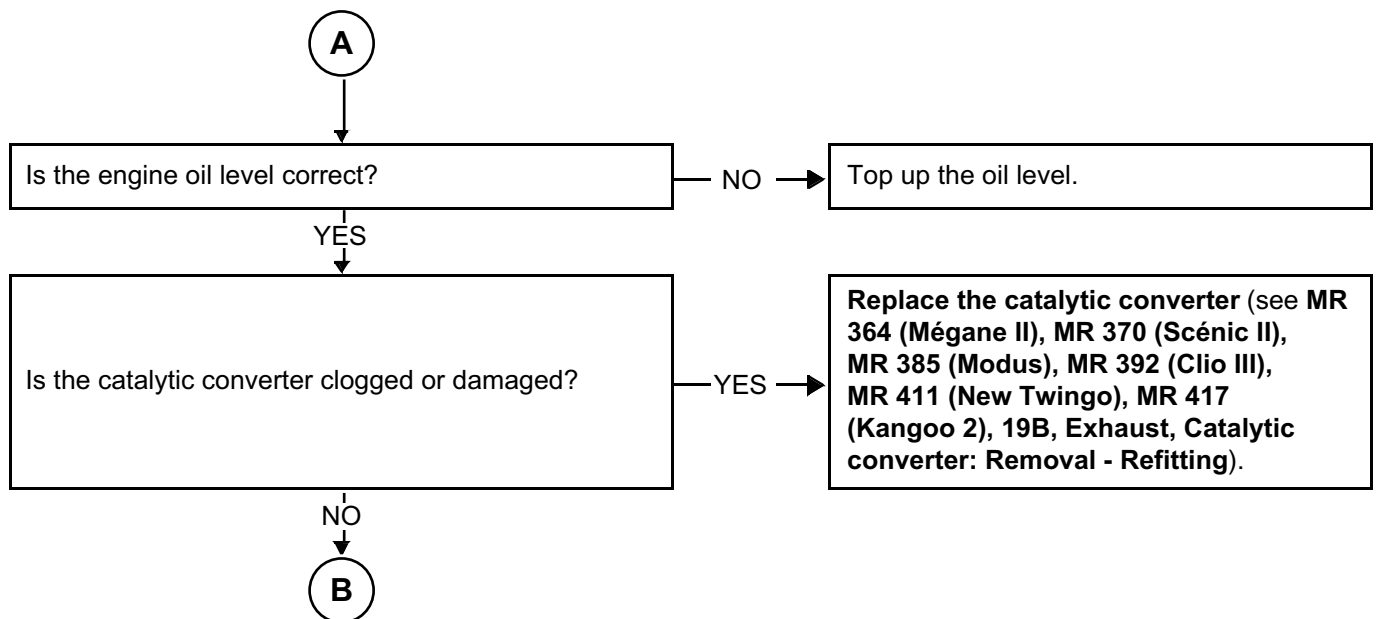


ALP11	Loss of power
NOTES	Special note: Only consult this customer complaint after a complete check with the diagnostic tool . See explanation for flow capacity function in system operation.
	There is no turbocharging control solenoid valve on New Twingo K9K 740 engines or on Kangoo 2 K9K 800 engines.

In this case, the lack of power is due to insufficient vacuum for the OCR * setpoint given.



**ALP11
CONTINUED 1**



* OCR: opening cyclic ratio

**ALP11
CONTINUED 2**

B

Check that the turbocharger is working properly.
Run TEST 11 Air line at the turbocharger.
Run TEST 10 Turbocharger control solenoid valve check.
Run TEST 12 Turbocharger.

Are the components in good condition?

NO →

Carry out the necessary repairs.

YES ↓

Check the low pressure circuit: run **TEST 1 Low pressure circuit check.**

Check the injectors: run **TEST 3 Injector check.**

Check the high pressure system: run **TEST 6 High pressure system check.**

Is the compression in order?

NO →

Carry out the necessary repairs.

YES ↓

Is the valve clearance set correctly?

NO →

Carry out the necessary repairs.

YES ↓

Contact the Techline if the customer complaint is still present.

ALP12	Too much power

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .

In this case, the control solenoid valve is jammed: the vacuum can increase, but it cannot then be decreased.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.



Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.



Check that the engine has not sucked up its oil (engine racing).



Check that the electrical and pneumatic connections of the turbocharger control solenoid valve are correct.
See TEST 10 Turbocharger control solenoid valve check.



Are all the electrical and pneumatic connections of the turbocharger control solenoid valve correct?

— NO —→

Reconnect the hoses and electrical cables correctly, if necessary.

YES
↓

Are the solenoid valve pipes connected the wrong way round?

— YES —→

Reconnect the pipes correctly.

NO
↓



**ALP12
CONTINUED 1**

A

Check the turbocharger regulation control.
Is the turbocharger regulation control jammed?

—YES→

Carry out the necessary repairs.

NO
↓

Replace the solenoid valve.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP12 CONTINUED 2

NOTES

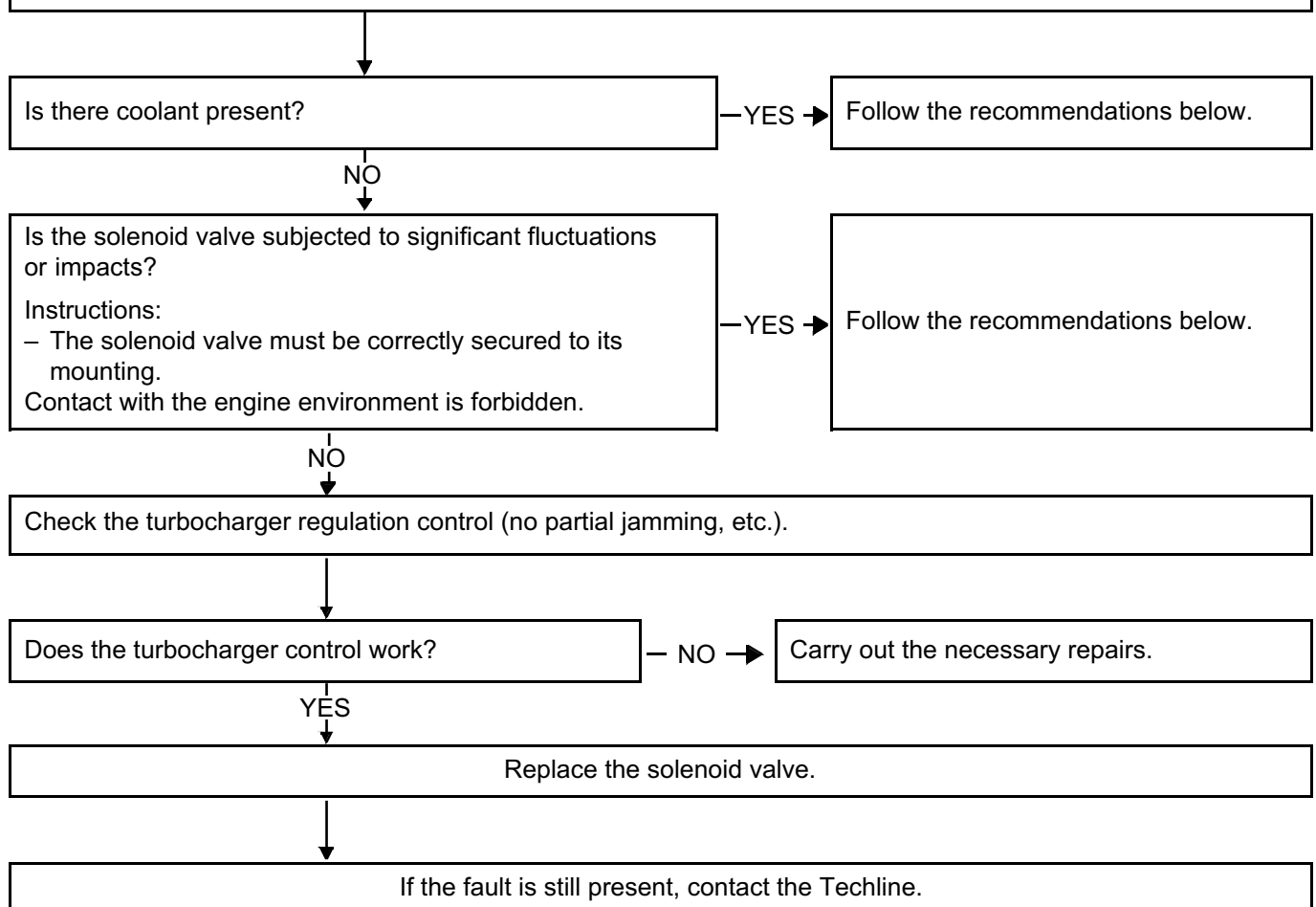
Only consult this customer complaint after a full check with the **diagnostic tool**.

In this case, it may be the solenoid valve dynamic specification which is at fault (atmospheric pressure resetting time). Final fault finding is carried out by measuring this specification on a special bench.

Check that solenoid valve casing does not have any splashes of fluid on it which may impede the breather (water, engine oil, gearbox oil, brake fluid, coolant, mud, dust, or any other substance).

Instructions:

- The solenoid valve must be set up **450 mm** above the ground, in an area free from water, mud, or any other fluid.
- **Cleaning with a high pressure jet is forbidden.**



ALP13

Excessive consumption

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Is the fuel temperature sensor leaking?

YES

Replace the fuel temperature sensor, (see MR 364 (Mégane II), MR 370 (Scénic II), MR 385 (Modus), MR 392 (Clio III), MR 411 (New Twingo), MR 417 (Kangoo 2), Mechanical, 13B, Diesel injection, Rail pressure sensor: Removal - Refitting).

NO

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Visually check that there are no leaks on the high pressure circuit: run **TEST 7 High pressure circuit sealing check**.

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

A

ALP 13 CONTINUED

A

Is the compression in order?

NO →

Carry out the necessary repairs.

YES

Is the catalytic converter clogged or damaged?

YES →

Replace the catalytic converter (see **MR 364** (Mégane II), **MR 370** (Scénic II), **MR 385** (Modus), **MR 392** (Clio III), **MR 411** (New Twingo), **MR 417** (Kangoo 2), **Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO

Check that the turbocharger is working properly.
Run TEST 11 Air line at the turbocharger.
Run TEST 10 Turbocharger control solenoid valve check.
Run TEST 12 Turbocharger.

YES

Is the turbocharger in order?

NO →

Carry out the necessary repairs.

Check the computer:

Check that the computer connectors are properly locked.
Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).
If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP14

Engine races when accelerator is released or when changing gear

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that there are no obstacles that might impede the accelerator pedal travel (carpet, point of resistance, etc.).

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Visually check the condition of the engine wiring harness.

Is the clutch clearance set correctly?

— NO → Carry out the necessary repairs.

YES

Check that the engine has not sucked up its oil (engine racing).

Is the compression in order?

— NO → Carry out the necessary repairs.

YES

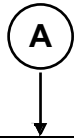
Check that the turbocharger is working properly.
Run TEST 11 Air line at the turbocharger.
Run TEST 10 Turbocharger control solenoid valve check.
Run TEST 12 Turbocharger.
Is the turbocharger in order?

— NO → Carry out the necessary repairs.

YES

A

**ALP14
CONTINUED**



Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.



Contact the Techline if the customer complaint is still present.

ALP15

Engine dies on pulling away

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Is the clutch clearance set correctly?

NO

Carry out the necessary repairs.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

Is the catalytic converter clogged or damaged?

YES

Replace the catalytic converter (see **MR 364 (Mégane II)**, **MR 370 (Scénic II)**, **MR 385 (Modus)**, **MR 392 (Clio III)**, **MR 411 (New Twingo)**, **MR 417 (Kangoo 2)**, **Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Visually check the condition of the engine wiring harness.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP16

Engine rattling, noisy engine, turbocharger noise

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

If the noise arises from the turbocharger, apply **Technical Note 5164A, Noise fault finding**.

Note:

Pay close attention to faulty components that might result in unjustified replacement of the turbocharger. For example, whistling does not necessarily indicate damage to the turbocharger (this could be coming from the exhaust, the timing, the gearbox, etc.).

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Is the compression in order?

NO →

Carry out the necessary repairs.

YES ↓

Check the electrical conformity of the **heater plugs** (the **resistance** value of the heater plug must be **less than 2 Ω**).

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Check the air inlet circuit: run **TEST 5 Air inlet circuit check**.

A

**ALP16
CONTINUED**

A

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Check the injectors: run **TEST 3 Injector check**.

Check the high pressure system: run **TEST 6 High pressure system check**.

Contact the Techline if the customer complaint is still present.

ALP17

Blue, white or black smoke

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.

Check that the fuel tank is correctly filled and that the fuel is correct: run **TEST 13 Diesel fuel conformity check**.

Check the levels of engine oil and coolant.

Is the compression in order?

NO

Carry out the necessary repairs.

YES

Check the electrical conformity of the **heater plugs** (the **resistance** value of the heater plug must be less than 2 Ω).

Is the catalytic converter clogged or damaged?

YES

Replace the catalytic converter (see **MR 364** (Mégane II), **MR 370** (Scénic II), **MR 385** (Modus), **MR 392** (Clio III), **MR 411** (New Twingo), **MR 417** (Kangoo 2), **Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO

Run **TEST 5 Inlet circuit check**.
Run **TEST 11 Air line at the turbocharger**.
Run **TEST 10 Turbocharger control solenoid valve check**.

A

**ALP17
CONTINUED**

A

Run **TEST 12 Turbocharger**.
Is the turbocharger in order?

– NO →

Carry out the necessary repairs.

YES
↓

Visually check the condition of the engine wiring harness.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**.

Check the low pressure circuit: run **TEST 1 Low pressure circuit check**.

Check the computer:

Check that the computer connectors are properly locked.

Check the condition of the computer connections (bent pin, signs of corrosion, silicone, etc.).

If the connector(s) is faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Contact the Techline if the customer complaint is still present.

ALP18	Oil leaks from the turbocharger

NOTES	Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool. If the customer complaint is not eliminated, perform the following checks.

Check the area around the turbocharger

Note:

An oil leak does not correspond always to a turbocharger fault, the oil leak can arise from the area around the turbocharger.

Depending on the vehicle type, the best visual access will be either from above or from below.

1. Do not start the engine.
Check the area around the turbocharger and identify the origin of the leaks.
Clean the oil traces on the turbocharger.
2. Start the engine and let it warm up several minutes.

IMPORTANT

If the air filter was removed previously, refit it before starting the engine (risks foreign matter entering the air inlet circuit).

Accelerate with no load several times, progressively increasing the duration before releasing the accelerator pedal.

Visually inspect the exterior condition of the fuel supply pipes and the turbocharger oil return and the area around it. Identify the origin of the leaks.

Is an oil leak present at the air compressor inlet or outlet?

YES

NO

A

Check the air compressor inlet or outlet

Check for a loose interface (inlet or outlet) that is the cause of the air leak.

Note:

It is normal to find oil traces inside the pipes at the turbocharger inlet or outlet, because the air entering the compressor is laden with oil from the engine rebreathing circuit.

Is the suspected interface properly tightened?

— NO →

Tighten the interface
or the concerned pipe.
End of procedure.

YES

Replace the pipe concerned (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)**, or **417 (Kangoo II)**, **Mechanical**, **12B Turbocharging**).

ALP18 CONTINUED

A

Is an oil leak present only at the casing of the compressor section?

YES

The turbocharger is not faulty. The oil leak is from another engine component and the oil is flowing onto the turbocharger.
End of procedure.

NO

Is an oil leak present at the turbocharger oil supply inlet or outlet?

YES

Check the turbocharger oil supply inlet and outlet
Check for a loose interface (inlet or outlet) that is the cause of the oil leak.
Is the suspected interface properly tightened?

NO

Tighten the pipe concerned.
End of procedure.

YES

Replace only the seal or the pipe of the section concerned (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)**, or **417 (Kangoo II)**, Mechanical, 12B, Turbocharging).

NO

Is an oil leak present at the interfaces of the turbine casing and the exhaust pipes?

YES

NO

End of procedure.

The turbocharger is not faulty. Another engine fault is probably present. Identify the component that is the source of the leak and refer to the repair manual (see **MR 364 (Mégane II)**, **370 (Scénic II)**, **392 (Clio III)**, **385 (Modus)**, **411 (New Twingo)**, or **417 (Kangoo II)**, 10A, Engine and peripherals).

TWINGO

1 Engine and peripherals

16A STARTING-CHARGING

New Twingo

Fault finding – List and location of components	16A - 2
Fault finding – Role of components	16A - 3
Fault finding – Operating diagram	16A - 4
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Fault finding – Tests	16A - 16

V2

Edition Anglaise

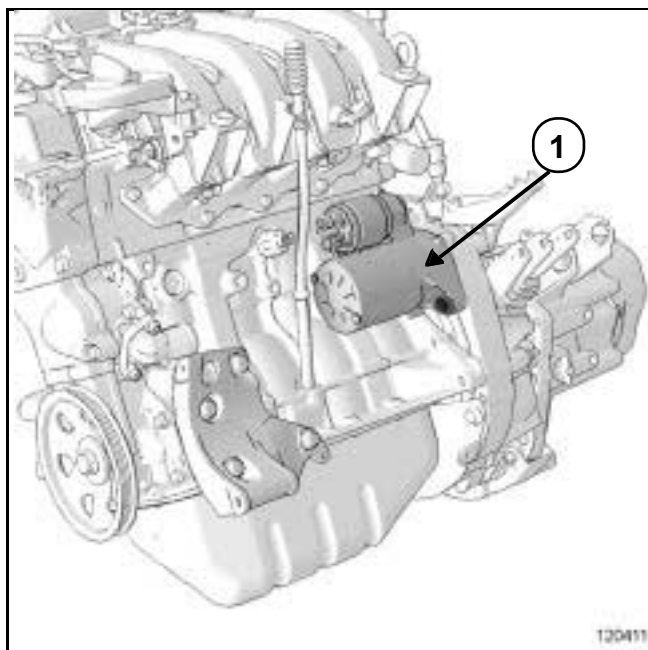
"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

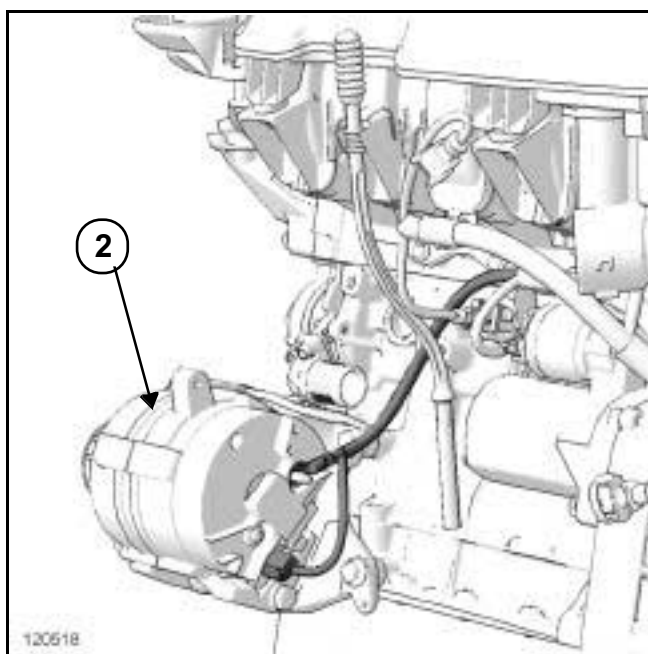
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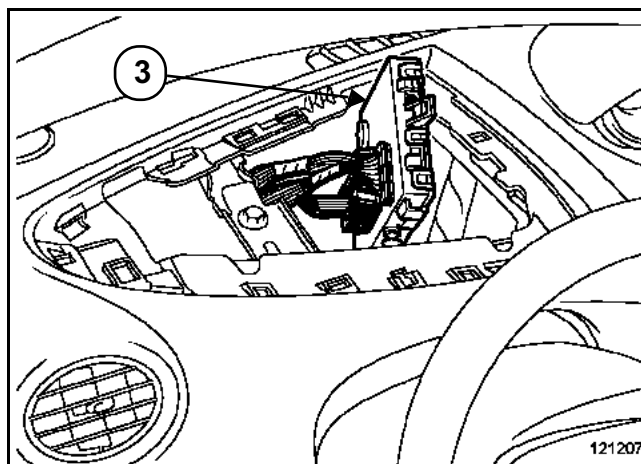
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1 Starter motor



2 Alternator



3 Passenger compartment unit UCH

● Battery

The principal purpose of the battery is to provide the powerful current briefly required by the starter motor to start the engine. For optimum starting, the current supplied by the battery must be sent to the starter motor with minimum loss. To achieve this, the electrical connections (wires, terminals, connectors, etc.) must be in good condition. When the engine is not running, the battery must feed the accessories that operate constantly, even with the ignition switched off, such as the alarm, radio codes, computers, etc.

● Alternator

The alternator only operates when the engine is running. Its function is to recharge the battery, and at the same time to supply the electrical power required to operate all the electrical accessories on the vehicle.

The alternator fitted to the New Twingo is a controlled alternator. The UCH controls the regulation by means of a serial connection (BSS).

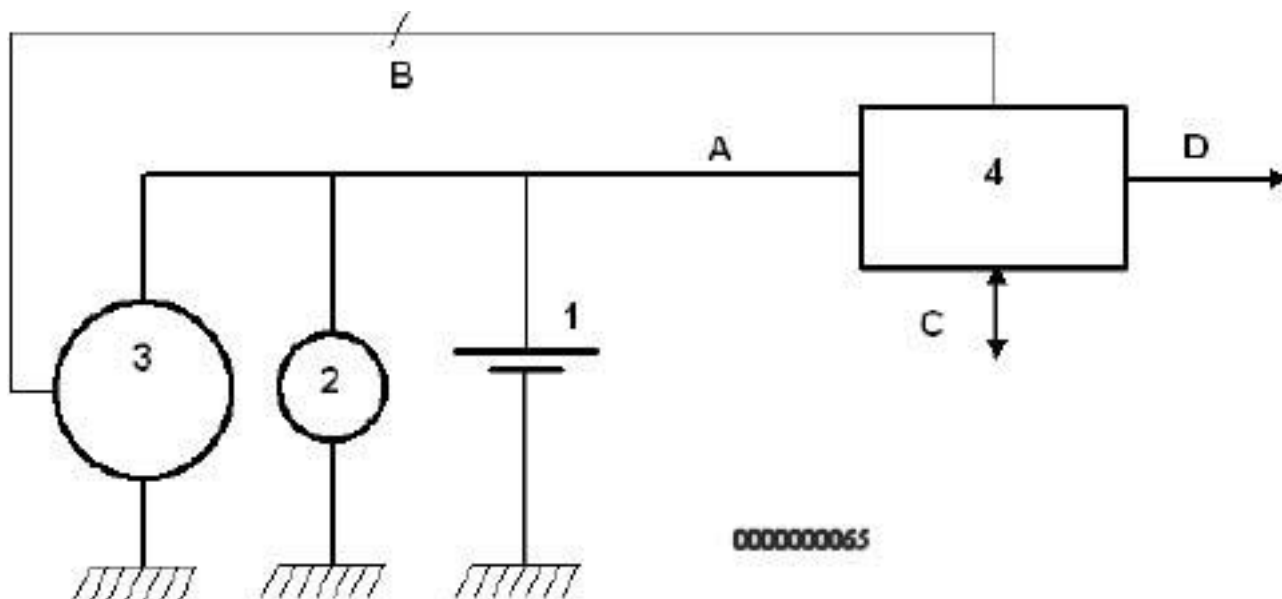
● UCH

The UCH is linked to the alternator by a serial connection (BSS connection). The UCH and the alternator communicate via this connection.

The UCH intelligently manages the alternator regulation voltage according to the engine phase, battery charge and temperature.

● Starter

This turns the engine over to make it start, and requires a very powerful electric current, which the battery must be able to supply.

STARTING - CHARGING FLOWCHART:

- 1 Battery (107)
- 2 Starter (163)
- 3 Alternator (103)
- 4 UCH (645)

- A Supply and voltage measurement
- B BSS connection (serial connection for communication between the alternator and the UCH)
- C Starter control line

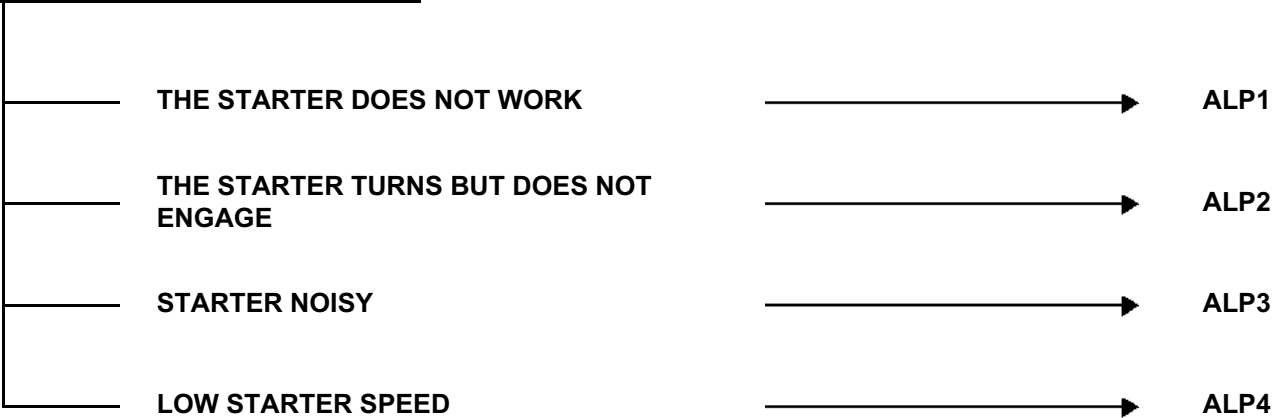
The function of the charging circuit is to:

- Ensure electrical energy is supplied to the vehicle whilst respecting the dynamic performance constraints of the engine and transmission assembly: the alternator resisting torques and the torque gradients measured must be managed.
- To control alternator loading and load shedding during engine management authorisation or variation of the electrical load.
- To ensure the quality of the on board network voltage in terms of the voltage level and variation (voltage gradient management).
- To optimise the battery charge by applying a voltage to its terminals correlating to its initial charge status (in sleep mode) and to its internal temperature.
- To inform the engine management about the mechanical power taken from the accessories pulley the alternator charge rate and the rotor excitation current value.
- To run fault finding on the charging circuit: “Battery” warning light display.

The function of the starting circuit is to:

- Start the vehicle during a starting request with the ignition key if necessary.

STARTING



ALP1

The starter does not work

NOTES

Test the condition of the battery (see **80A, Battery**).
 Test the condition of the power fuse (see TEST 2).
 Check that fuse F9 on component 1016 is in good condition.
 Check that the engine is not jammed.

Check that the following terminals are correctly tightened:

- ⇒ the battery
- ⇒ starter
- ⇒ engine earth
- ⇒ bodywork earth

Are the terminals correctly tightened?

NO

Retighten the terminals (see **MR 411, 80A, Battery, Battery: Removal - Refitting**).

YES

Check that the following wires are in good condition:

- ⇒ the wire connecting the battery +, component 107, to terminal B+ of the starter, component 163,
- ⇒ the wire connecting the battery - to the bodywork earth,
- ⇒ the wire connecting the engine to the bodywork earth.

Are the wires in good condition?

NO

Repair the damaged wires and terminals. If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, repairing electrical wiring, wiring: Precautions for repair**), repair the wiring otherwise change the wiring.

YES

Try starting.

If the starter still does not turn, can a clicking noise be heard when the starter is activated?

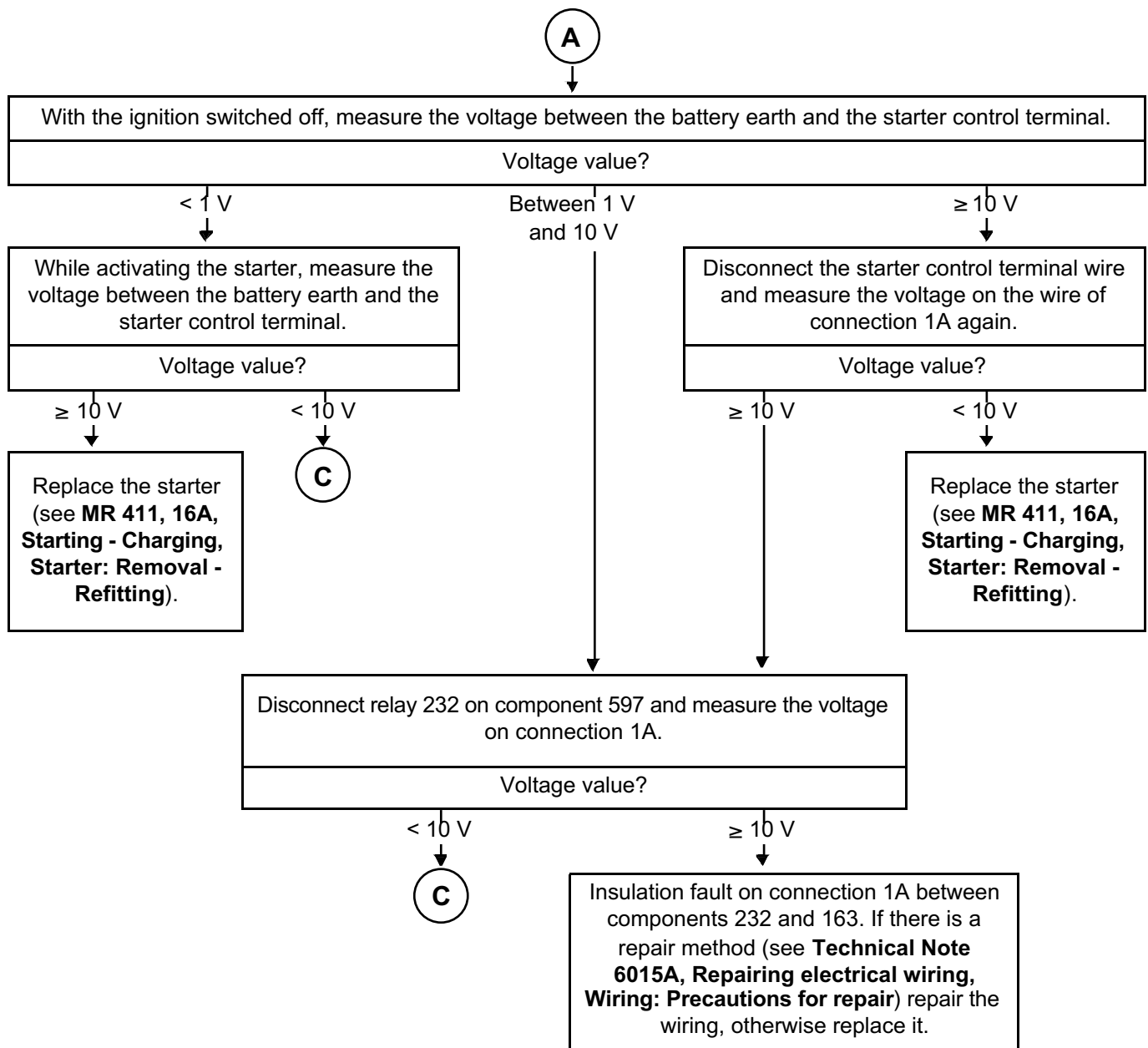
NO

A

YES

B

ALP1 CONTINUED 1



**ALP1
CONTINUED 2****B**

Measure the voltage on connection BPDA between the earth taken on one of the starter mounting points and its B+ terminal while activating the starter.

Voltage value?

> 10 V

Between 0 V and 10 V

Measure the drop in voltage on connection BPDA between the battery + terminal and the starter B+ terminal while activating the starter.

Voltage value?

 $\geq 1 \text{ V}$

Replace the wire connecting the battery + terminal to the starter.

< 1 V

Measure the drop in voltage between the battery - terminal and the earth on one of the starter mounting points while activating the starter.

Voltage value?

 $\geq 1 \text{ V}$

Replace the earth wire(s) connecting the engine to the battery.

< 1 V

Replace the starter (see **MR 411, 16A, Starting - Charging, Starter: Removal - Refitting**).

ALP1 CONTINUED 3

C

Use the diagnostic tool to check DEF 062 of the starter relay control circuit (see **87B, Passenger compartment connection unit, Interpretation of faults**).
Is the fault present?

YES →

Fault on connection 1B between components **597 and 645** (see **87B, Passenger compartment connection unit, Interpretation of faults**). If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

NO ↓

Check the starting conditions (see **87B, Passenger compartment connection unit, Interpretation of statuses**).
Is ET046 immobiliser active?

YES →

Starting conditions fault (see **87B, UCH, Interpretation of statuses**).

NO ↓

With the ignition on, check for 12 V between connections AP29 and 1B of the relay connector, component 232, located on the engine relay box, component 597.
Is there 12 V?

NO →

Check the continuity and/or the insulation of connections 1B between components 232 and 645, or of connection AP29 of components 232 and 1016.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, repairing electrical wiring, wiring: Precautions for repair**), repair the wiring otherwise change the wiring.

YES ↓

Check for **12 V** on relay 232 between connection **D** of component **232** and a chassis **earth** when starting is requested.
Is there 12 V?

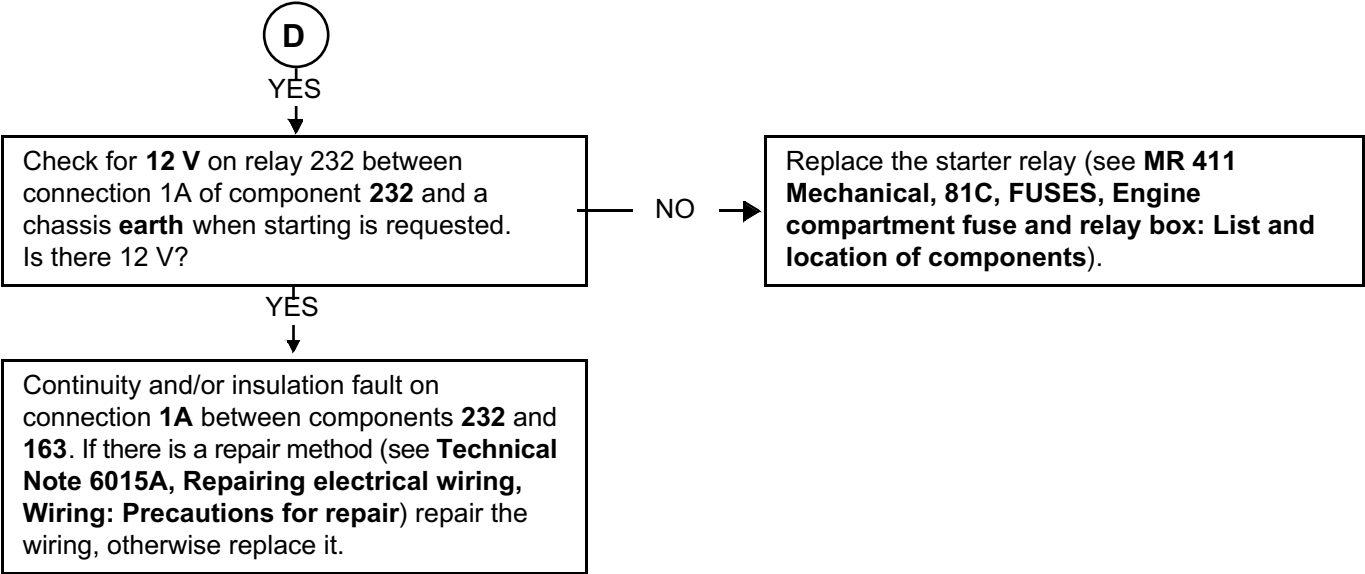
NO →

Check the continuity and/or the insulation of connection **D** between components **232** and **104**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, repairing electrical wiring, wiring: Precautions for repair**), repair the wiring otherwise change the wiring.

YES ↓

D

ALP1 CONTINUED 4	



ALP2

The starter turns but does not engage

NOTES**Special notes:**

Disconnect the battery earth before handling.

Remove the starter (see **MR 411 Mechanical, 16A, Starter: Removal - Refitting**).

Check that the ring gear of the flywheel is in good condition.

Are the ring gear teeth damaged?

YES

NO

Replace the flywheel (see **MR 411, Mechanical, 10A, Flywheel: Removal - Refitting**).

Check the condition of the starter (broken teeth or worn gears).

Is the starter in good condition?

NO

Replace the starter (see **MR 411 Mechanical, 16A, Starter: Removal - Refitting**).

YES

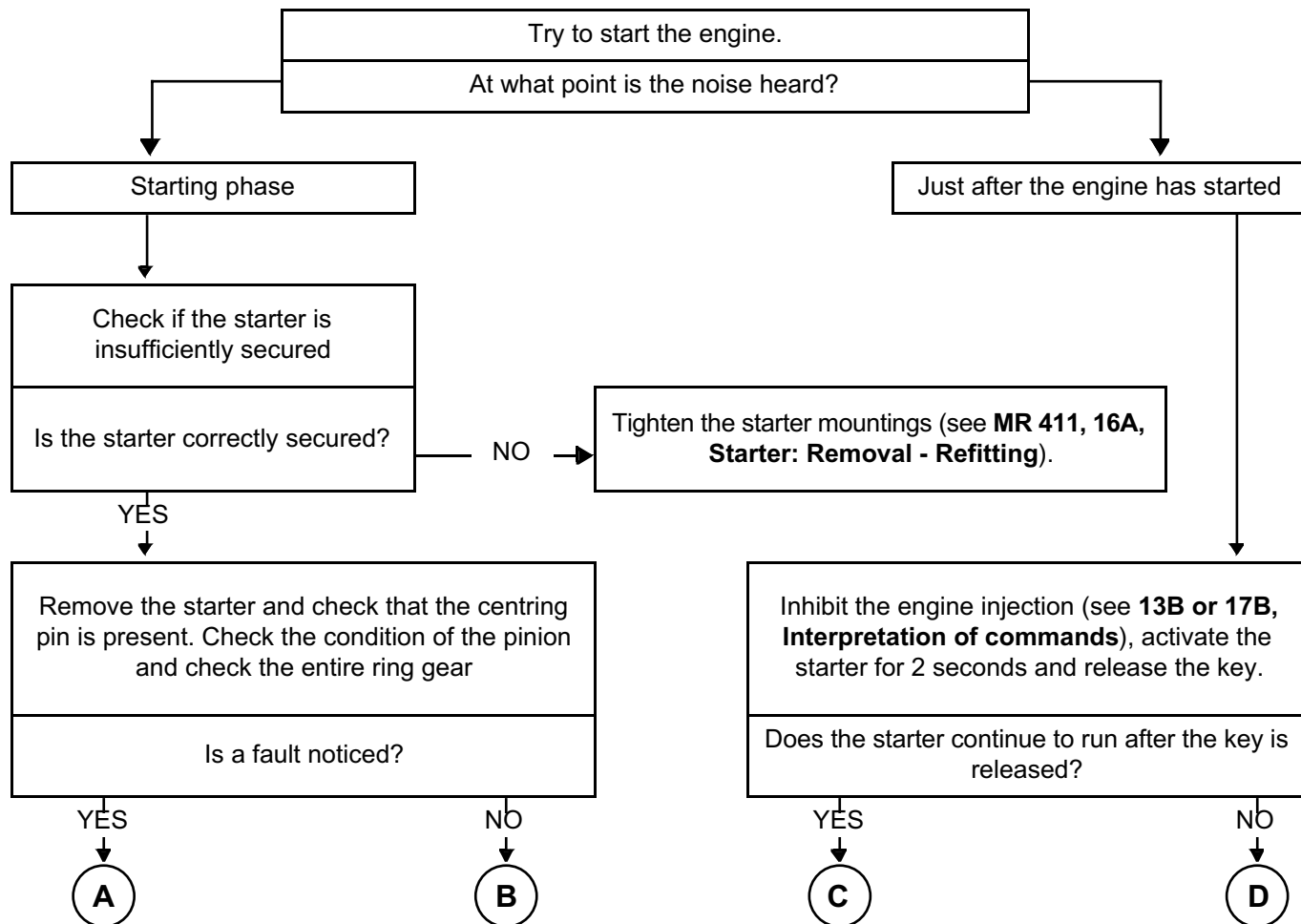
Refit the starter (see **MR 411 Mechanical, 16A, Starter: Removal - Refitting**).

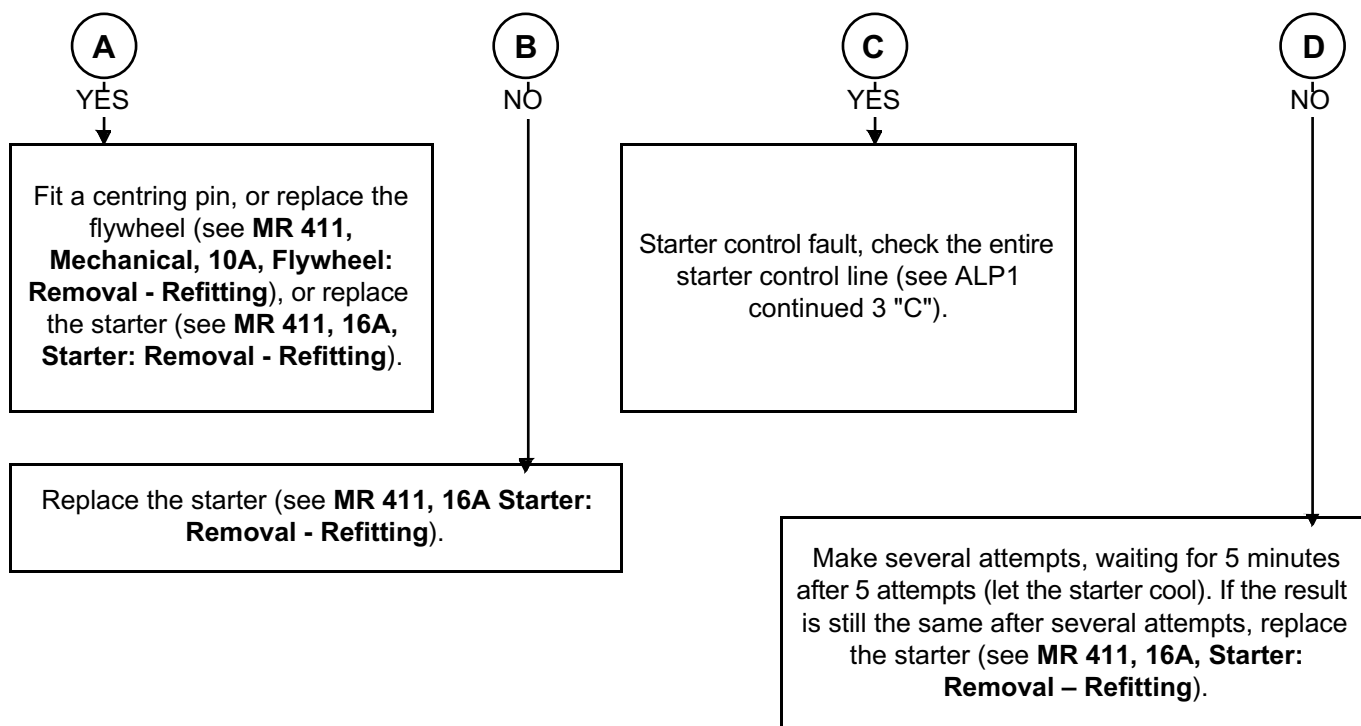
ALP3

The starter is noisy when starting

NOTES

Test the condition of the battery (see **MR 413, 80A, Battery**).
Check that the noise is actually coming from the starter.



ALP3
CONTINUED

ALP4

The starter rotates slowly from the outset.
The rotation speed of the starter decreases rapidly.
The starter causes the warning lights on the instrument panel to become very dim

Applicability: All types**NOTES**

Test the wiring (TEST3).
Test the status of the battery (see **80A, Battery**).

If the fault is still present, replace the starter (see **MR 411, 16A, Starting - Charging, Starter: Removal - Refitting**).

NOTES

Perform this test only after running complete fault finding on the UCH using the diagnostic tool (see **87B, UCH**).
Because the UCH houses the CHARGING CIRCUIT function (sub-function: alternator) and checks the alternator via a serial connection (BSS).

CHARGING

ALTERNATOR SUPPLY TEST

TEST1

TEST1

Alternator supply test

NOTES

Test the condition of the battery (see **80A, Battery**).

Measure the voltage at the battery terminals with the engine warm and running at idle speed for 2 minutes and with all consumers switched off.

Voltage value?

< 14.8V

> 14.8V

Replace the alternator (see **MR 411, 16A, Starting - Charging, Alternator: Removal - Refitting**).
Visually inspect the consequences (battery condition, corrosion, etc.).

With the engine at idle speed, connect a current clamp to the alternator B+ wire, connection BPDA, with all consumers switched off.

Current < 5 A

Current between 5 A
and 35 A

Current > 35A

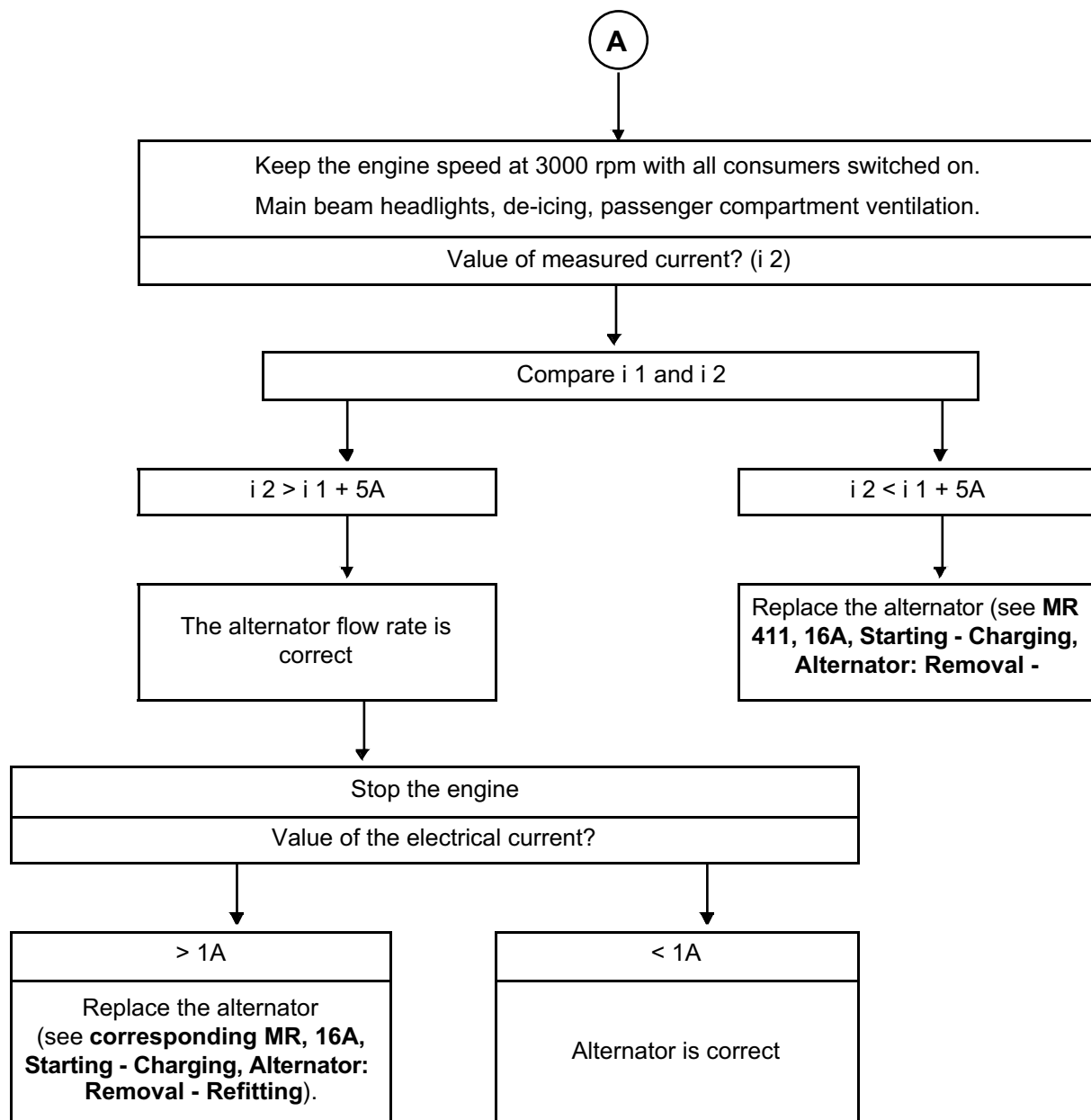
Replace the alternator
(see **MR 411, 16A, Starting - Charging, Alternator: Removal - Refitting**).

Keep the engine speed at
3000 rpm and still with no
consumers switched on.

Value of measured current?
(i 1)

A

Check that there are no
electrical components
consuming an abnormal
amount of current.
Disconnect the fuses one by
one to identify the consumer.
To be examined

TEST1
CONTINUED 1

TEST2

Test the condition of the power fuse and the cause of its fault

NOTES

Check that the engine is not locked

With the ignition off, measure the voltage between the negative battery terminal and the power fuse output.

Is the voltage greater than or equal to 10V?

YES

NO

The power fuse is sound

The power fuse is faulty

With the battery disconnected, measure the resistance between the negative battery terminal and the power fuse output.

Is the resistance ≥ 10 Ohms?

NO

YES

Disconnect the alternator + terminal and then measure the resistance between the negative battery terminal and the power fuse output.

Is the resistance ≥ 10 Ohms?

NO

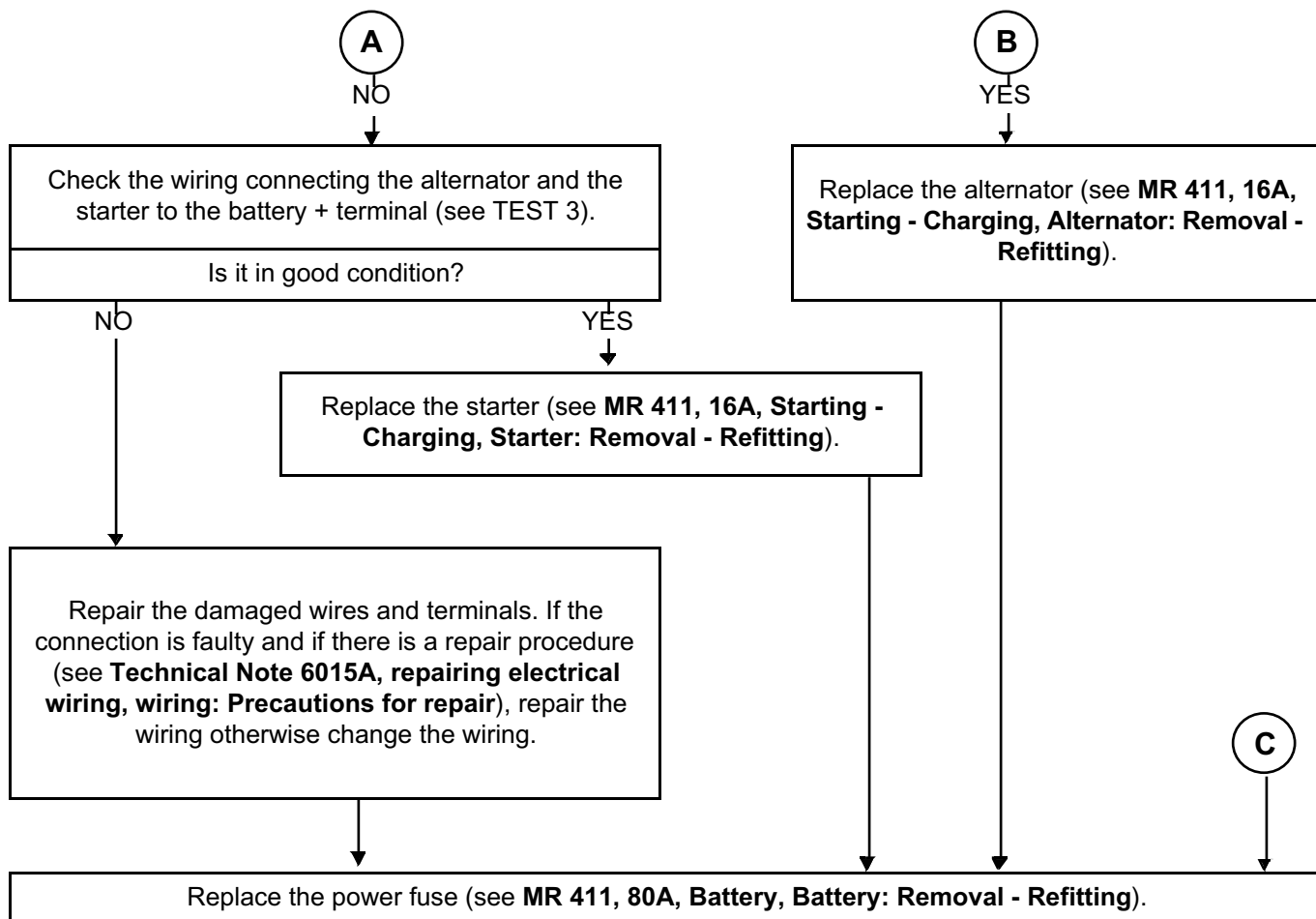
YES

A

B

Possible external causes:
use of a "starter charger", excessively long use of starter (e.g.: activate the starter, gear engaged for driving the vehicle) etc.

C

TEST2
CONTINUED 1

TEST3

Wiring test

Check the condition of the battery terminals. Check that there is no corrosion on the battery terminals. Check that the terminals are correctly tightened and secure (see **MR 411 Mechanical, 80A, Battery, Battery: Removal - Refitting**).

Are the terminals and posts in good condition and not corroded?

NO

Clean the terminals and posts or replace them, if necessary.

YES

Check that there are no electrolyte leaks from the battery (cracks or breakage).

Check that the mechanical mounting of the battery is sound (see **MR 411, Mechanical, 80A, Battery, Battery: Removal - Refitting**).

Is the battery in good condition?

NO

Change the battery and clean the surrounding area on the vehicle if necessary.
(see **MR 411, Mechanical, 80A, Battery, Battery: Removal – Refitting**).

YES

Inhibit the engine injection (see **13B or 17B, Interpretation of commands**).

With the starter activated, measure the voltage on connection BPDA between the + terminal of the battery, component 107, and the B+ of the starter, component 163.

Is the voltage > 1 V?

YES

Repair the damaged wires and terminals. If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring

NO



TEST3
CONTINUED

A
NO

With the engine running and the main beam headlights lit and the heated rear screen on, measure the voltage between the B+ of the battery, component 107, and the B+ of the alternator, component 103.

Is the voltage > 0.7 V?

YES

Check that all the wires connecting the battery, the alternator and the starter are secure and in good condition, and that all their terminals are correctly tightened and secure.

Repair the damaged wires and terminals. If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring

NO

With the engine running and the main beam headlights lit and the heated rear screen on, measure the voltage between the negative terminal of the battery, component 107, and the alternator frame, component 103.

Is the voltage > 0.7 V?

YES

Check the earths of the engine, the alternator, the chassis, the gearbox, the battery, or the starter (check the tightness and condition of the terminals and the condition of the wires) (see **Technical Note for the relevant vehicle**).

Repair the damaged wires and terminals. If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring

NO

The electrical circuit is in good order.

RENAULT

2 Transmission

20A CLUTCH

21A MANUAL GEARBOX

21B SEQUENTIAL GEARBOX

29A DRIVESHAFTS

X44

NOVEMBER 2009

EDITION ANGLAISE

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TWINGO - Chapitre 2

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Clutch: Precautions for the repair

Special tooling required	
Emb. 1518	Set of clutch plate centring mandrels
Emb. 1780	Set of clutch plate centring mandrels.

Before removing the clutch, check:

- The direction of fitting for the clutch plate.

Before refitting the clutch, check:

- The flywheel friction track (no scratches or blue stains),
- The crankshaft bearing (no sticking),
- The engine and gearbox seals (replace if necessary),
- The sliding action of the clutch plate on the output shaft,
- The guide of the thrust bearing and clutch fork (no wear or scratches).

WARNING

To prevent the clutch from juddering or slipping, do not grease the output shaft or the clutch plate hub.

During refitting:

Check the direction of the clutch plate.

Centre the clutch plate using the **(Emb. 1518)** or **(Emb. 1780)**.

Gradually torque tighten the clutch pressure plate bolts.

After refitting, check:

- The clutch play (for a cable operated vehicle),
- Bleeding of the hydraulic circuit (for vehicles with hydraulic controls).

CLUTCH

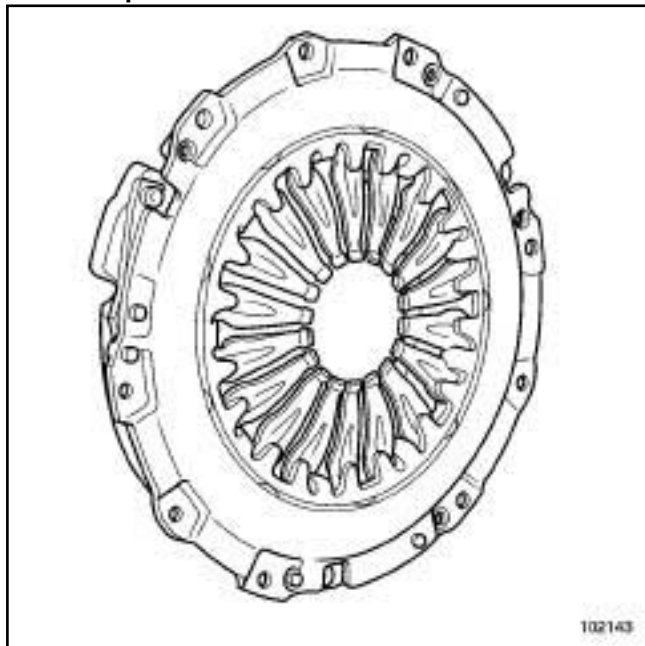
Clutch: Specifications

20A

D4F – D7F – K9K – K4M

D4F – D7F

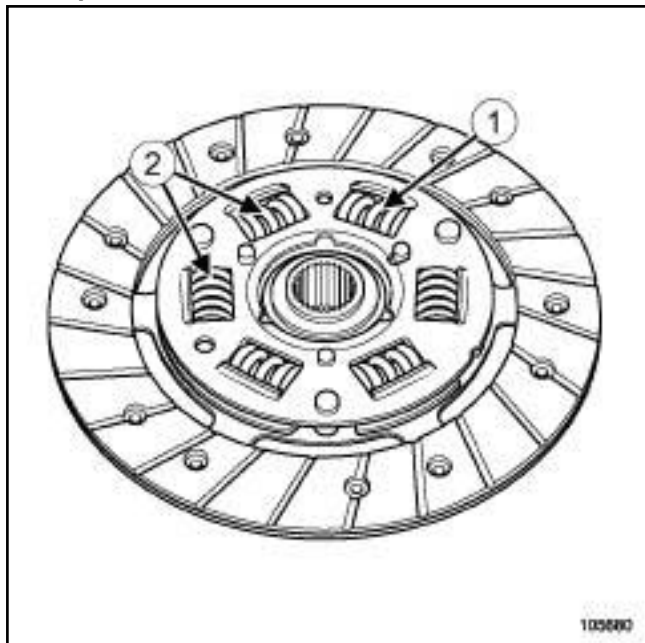
Pressure plate



102143

Pressure plate part no.: **180 CPOE 3300**

Drive plate



105680

Plate external diameter: **181.5 mm**

Plate thickness: **6.7 mm**

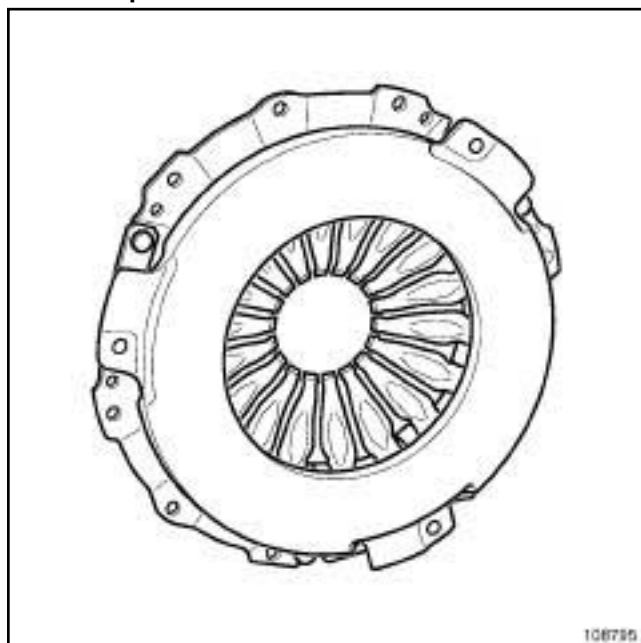
Number of grooves: **26**

Colour of springs (1) : Grey

Colour of springs (2) : Black

K9K

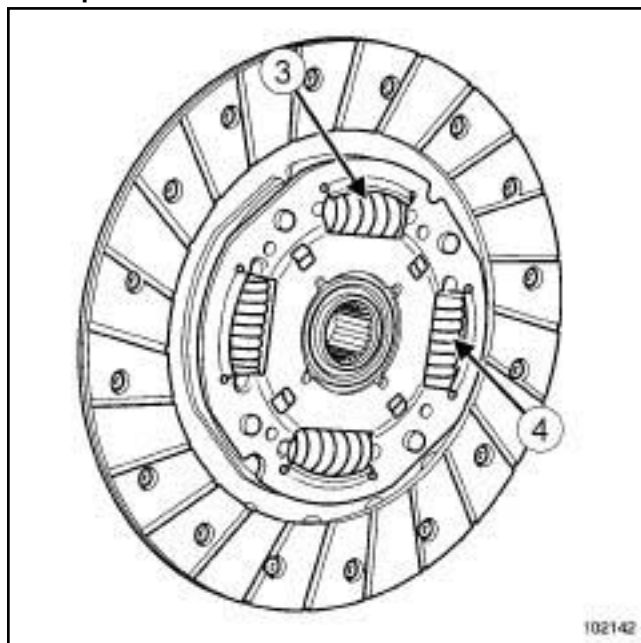
Pressure plate



108795

Pressure plate part no.: **215 CPOVK 4400**

Drive plate



102142

Plate outer diameter: **215 mm**

Plate thickness: **6.9 mm**

CLUTCH

Clutch: Specifications

20A

D4F – D7F – K9K – K4M

Number of grooves: **26**

Colour of springs (3) : Red and Black

Colour of springs (4) : Grey

Plate outer diameter: **215 mm**

Plate thickness: **6.9 mm**

Number of grooves: **26**

Spring colour (5) : Moss green

Spring colour (6) : Light blue

Spring colour (7) : Green

Spring colour (8) : Capri blue

K4M

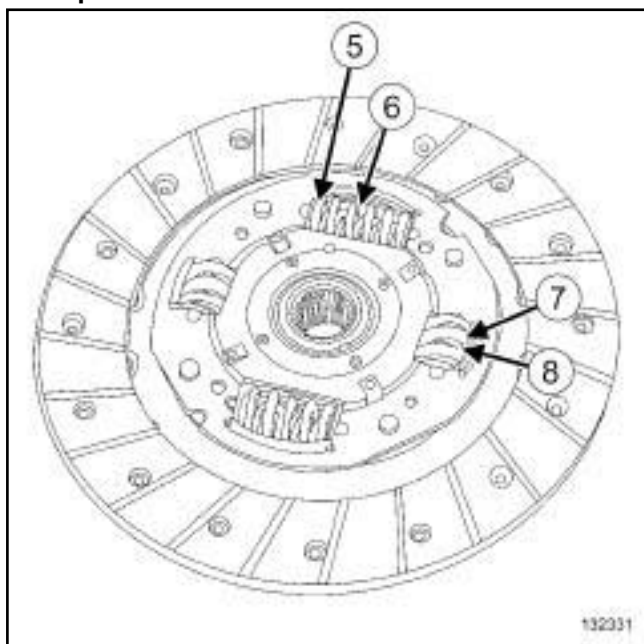
Pressure plate



132330

Pressure plate part no.: **215 CPOE 4350**

Drive plate



132331

Pressure plate - Disc: Removal - Refitting

D4F – D7F – K9K

Special tooling required

Mot. 582-01	Flywheel locking tool.
Emb. 1780	Set of clutch plate centring mandrels.

Tightening torques

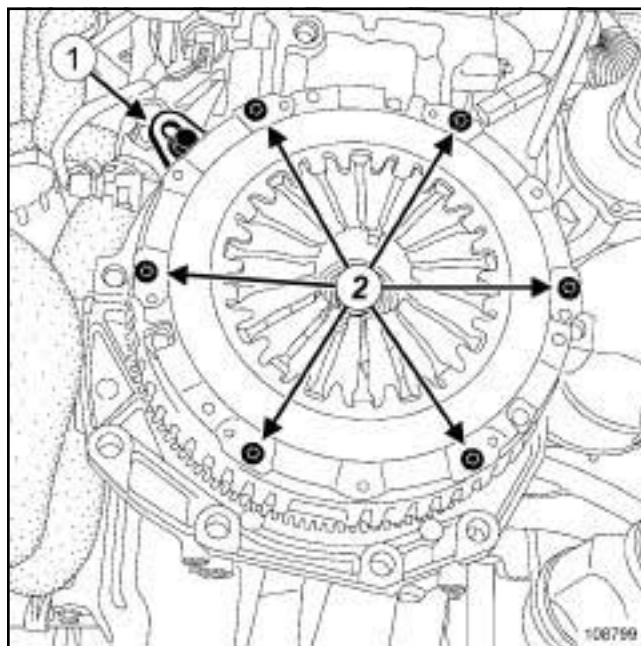
clutch pressure plate bolts (D4F and D7F engines)	20 Nm
clutch pressure plate bolts (K9K engine)	15 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Remove the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Lock the engine using tool (**Mot. 582-01**) (1) .
- ☐ Remove:
 - the pressure plate bolts (2) ,
 - the pressure plate and friction plate.

REFITTING

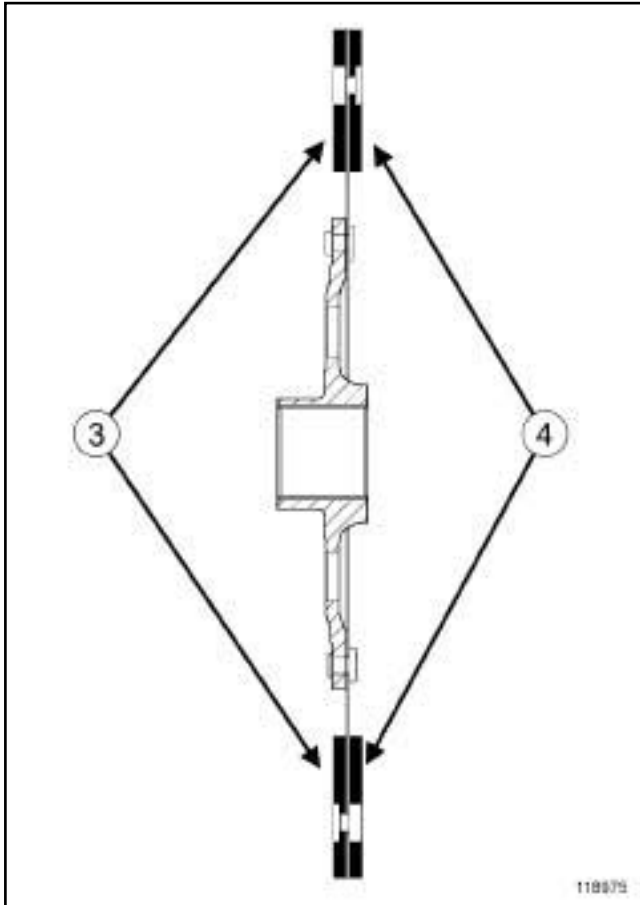
I - REFITTING PREPARATIONS OPERATION

- ☐ Degrease the flywheel friction face.
- ☐ Clean the clutch shaft splines.

D4F – D7F – K9K

II - REFITTING OPERATION FOR PART CONCERNED

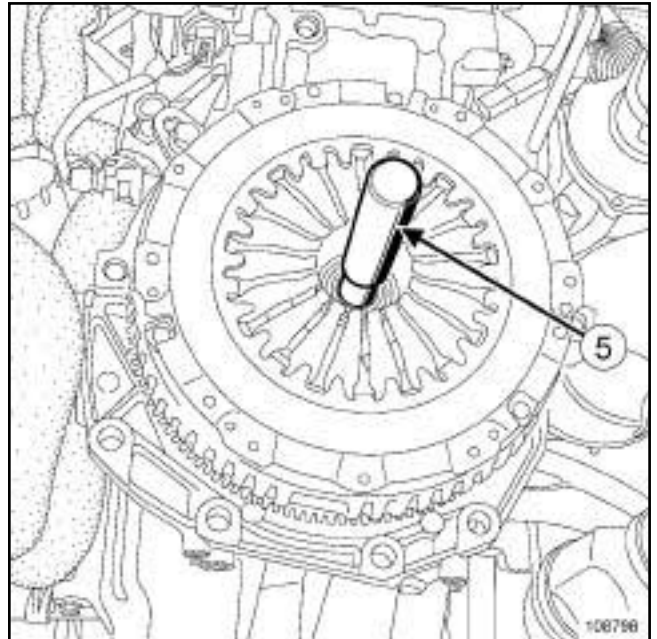
K9K



- ☐ Position the clutch plate, face (3) against the fly-wheel, face (4) against the clutch pressure plate.

D4F – D7F

- ☐ Position the clutch driven plate.



- ☐ Centre the clutch plate using tool (**Emb. 1780**) (5) .
- ☐ Refit:
 - the clutch pressure plate,
 - the clutch pressure plate bolts by gradually tightening them in a radial pattern.

D4F – D7F

- ☐ Torque tighten the **clutch pressure plate bolts (D4F and D7F engines) (20 Nm)**.

K9K

- ☐ Torque tighten the **clutch pressure plate bolts (K9K engine) (15 Nm)**.

- ☐ Remove the (**Emb. 1780**) and (**Mot. 582-01**).

III - FINAL OPERATION.

- ☐ Refit the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

K4M

Special tooling required

Mot. 1677	Flywheel locking tool.
Emb. 1780	Set of clutch plate centring mandrels.

Tightening torques

clutch pressure plate bolts	23 N.m

REMOVAL**I - REMOVAL PREPARATION OPERATION**

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Remove:

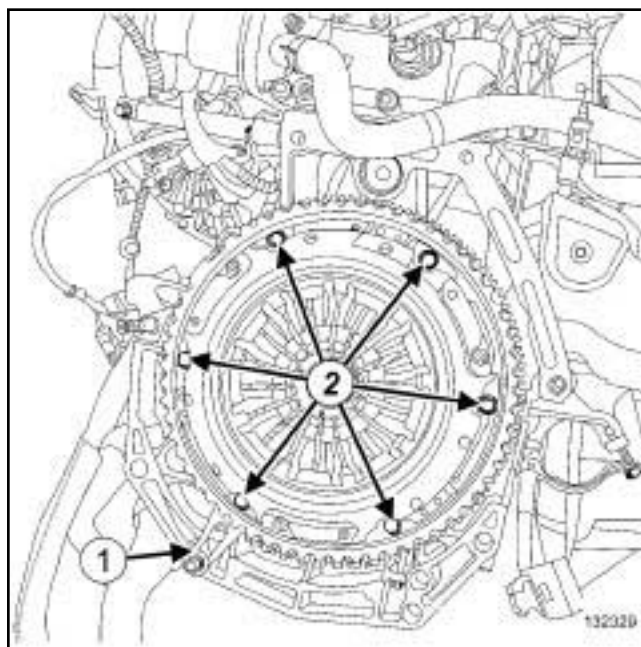
- the engine undertray bolts,
- the engine undertray,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

☐ Drain:

- the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) ,
- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

☐ Remove:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the front left-hand driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) ,
- the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
- the manual gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

132329

☐ Position the **(Mot. 1677)** (1) .

☐ Remove:

- the clutch pressure plate bolts (2) ,
- the clutch pressure plate,
- the clutch plate.

K4M

REFITTING

I - REFITTING PREPARATION OPERATION

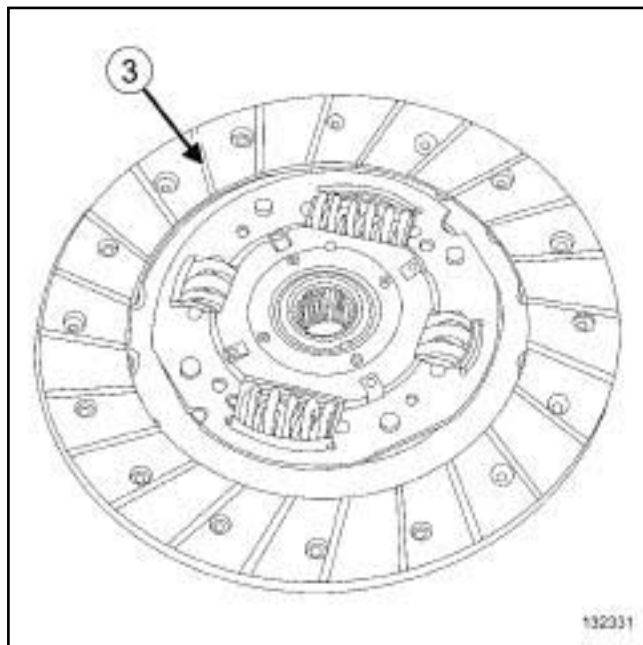
- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the flywheel friction face,
- the clutch shaft splines.

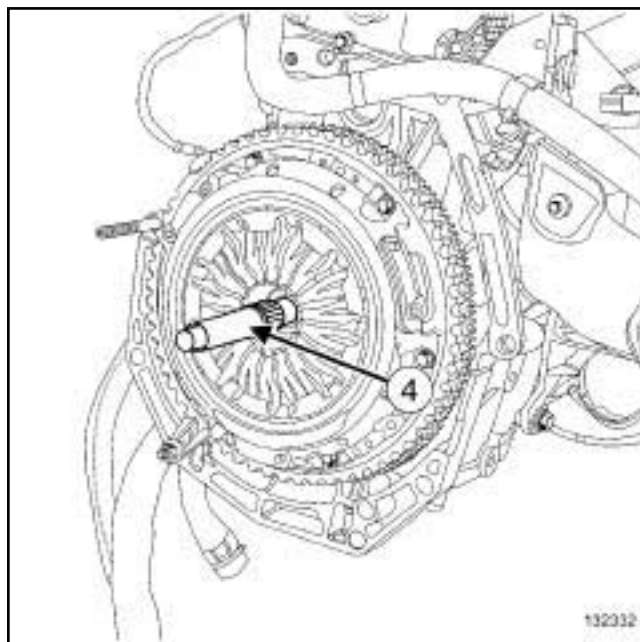
WARNING

Do not grease the clutch shaft splines.

II - REFITTING OPERATION FOR PART CONCERNED



- ☐ Fit the clutch plate, with the face (3) to the clutch pressure plate end.



132332

- ☐ Centre the clutch plate using the (**Emb. 1780**) (4) .
- ☐ Refit:
 - the clutch pressure plate,
 - the clutch pressure plate bolts by gradually tightening them in a radial pattern.
- ☐ Torque tighten the **clutch pressure plate bolts** (23 N.m).
- ☐ Remove the (**Emb. 1780**) and (**Mot. 1677**).

III - FINAL OPERATION.

- ☐ Refit:
 - the manual gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) ,
 - the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
 - the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .
 - the front left-hand driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) ,
 - the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

Pressure plate - Disc: Removal - Refitting

K4M

□ Refill:

- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) ,
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

□ Refit:

- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the engine undertray.

JH3 or JR5

Tightening torques

clutch thrust bearing bolts (JH3)	21 N.m

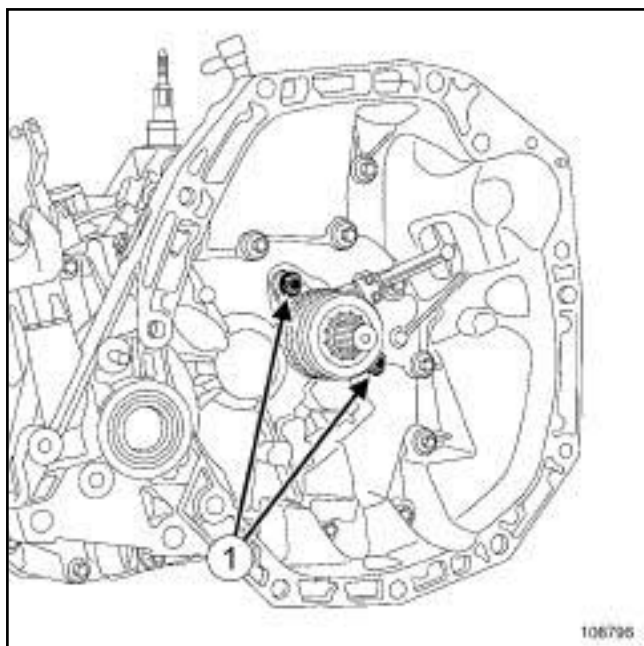
clutch thrust bearing bolts (JR5)	25 N.m

Note:

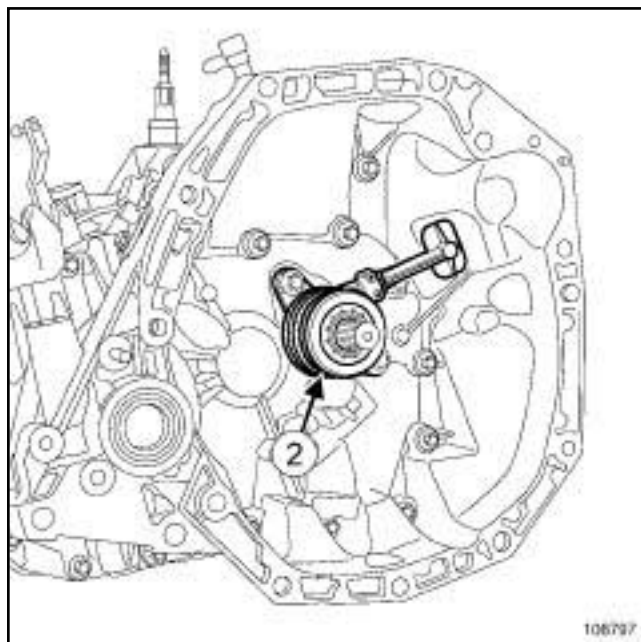
The clutch thrust bearing cannot be separated from the clutch slave cylinder.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

- ☐ Remove the clutch thrust bearing bolts (1) .



- ☐ Remove the clutch thrust bearing (2) .

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REFITTING**I - REFITTING PREPARATION OPERATION**
☐
WARNING

To avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.

WARNING

Never operate the system when the slave cylinder is removed (even if it is connected to the clutch pedal). There is a risk that the hydraulic piston and the slave cylinder stop will be ejected.

Note:

To obtain optimum bleeding, pre-fill the clutch thrust bearing when refitting the thrust bearing.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the clutch thrust bearing.

Clutch thrust bearing: Removal - Refitting

JH3 or JR5

JH3

- ☐ Torque tighten the **clutch thrust bearing bolts (JH3) (21 N.m)**.

JR5

- ☐ Torque tighten the **clutch thrust bearing bolts (JR5) (25 N.m)**.

III - FINAL OPERATION.

- ☐ Refit the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page **21A-24**) .
- ☐ Bleed the clutch control (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).
- ☐ Refit the engine undertray.

Clutch thrust bearing: Removal - Refitting

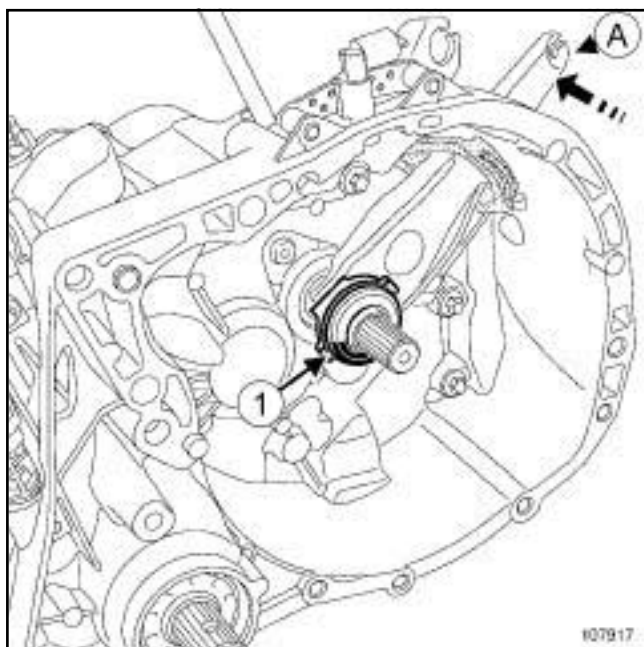
JB1

REMOVAL

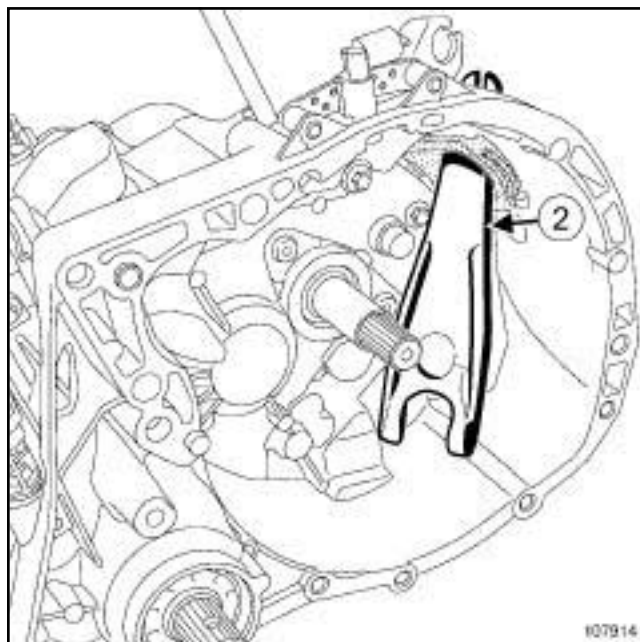
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Remove the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove the clutch thrust bearing (1) by tilting the fork at (A) .



- ☐ Remove the fork (2) by pulling it towards the inside of the clutch housing.

REFITTING

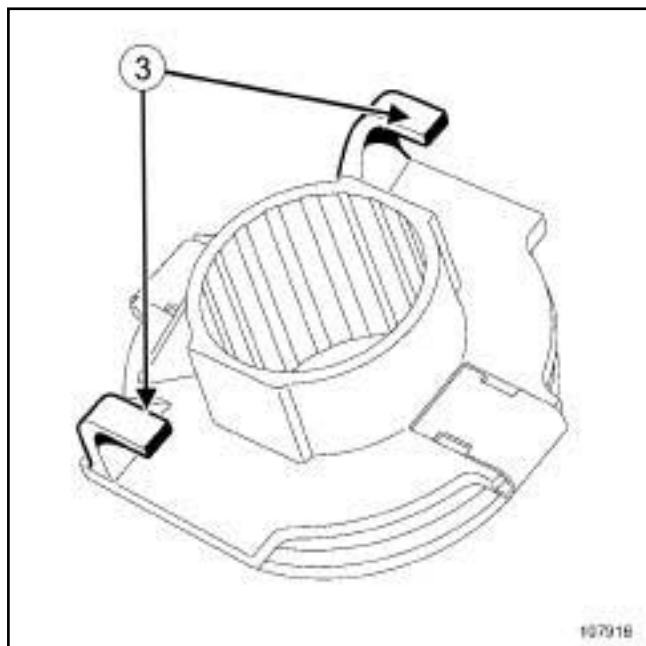
I - REFITTING PREPARATIONS OPERATION

- ☐ Check that there are no leaks from the input shaft, replace the guide tube if necessary (see **21A, Manual gearbox, Input shaft lip seal: Removal - Refitting**, page 21A-41) .
- ☐ Coat the walls of the guide tube and the fork pads with **BR2+ GREASE**.

Clutch thrust bearing: Removal - Refitting

JB1

II - REFITTING OPERATION FOR PART CONCERNED



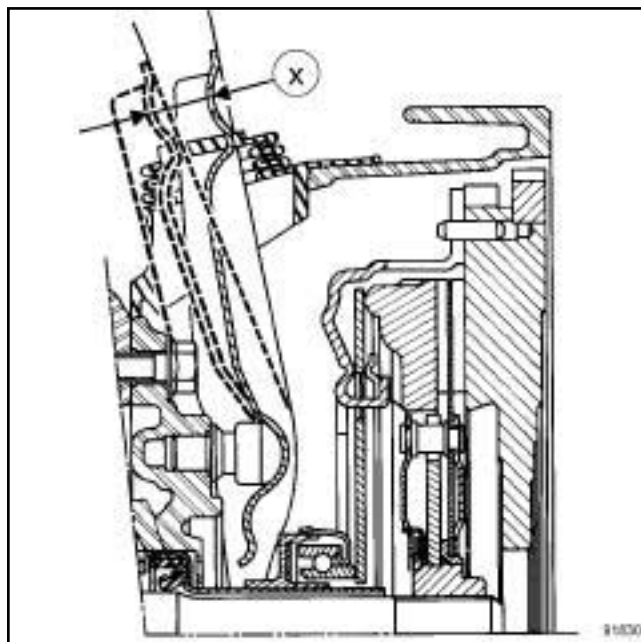
- ☐ Refit the fork.
- ☐ Refit:
 - the fork,
 - the stop on the guide tube, placing the hooks (3) into the fork.
- ☐ Ensure that it slides correctly.

Note:

During operations where the gearbox does not have to be removed or refitted, do not lift the fork because this may cause the hooks to come out (3) of the thrust bearing.

III - FINAL OPERATION.

- ☐ Refit the gearbox (see 21A, **Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .



- ☐ After refitting the gearbox, check the travel (X) of the fork.

This must be:

- D4F engine: $x = 29.5 \text{ mm} \pm 0.5$,
- D7F engine: $x = 29.5 \text{ mm} \pm 0.5$.

- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

MANUAL GEARBOX

Manual gearbox oil: Specifications

21A

5-SPEED MANUAL GEARBOX

I - GEARBOX TYPE/OIL TYPE CORRELATIONS:

GEARBOX TYPE	TYPE OF OIL FOR GEARBOX
JBX JCX JRX JHX NDX TLX	TRANSELF TRJ 75W80 or TRANSELF NfJ 75W80
PKX PFX VMX NEX NGX N0X UNX	TRANSELF TRX 75W80 or TRANSELF NfP 75W80
ZFX	TRANSELF LD 75W80

Component identification:

The third character **X** corresponds to the figure written on the identification plate and therefore covers the entire manual gearbox range.

II - STANDARDS AND PART NUMBERS OF THE VARIOUS RECOMMENDED OILS:

DESIGNATION	STANDARD	PART NUMBER
TRANSELF TRX 75W80 or TRANSELF NfP 75W80	APIGL4, MIL-L-2105 C or D	77 11 143 534 (5 litres)

TRANSELF TRJ 75W80 or TRANSELF NfJ 75W80	APIGL4, MIL-L-2105 C or D	May be ordered from ELF
TRANSELF LD 75W80	APIGL4, MIL-L-2105	May be ordered from ELF

III - IDENTIFICATION OF OIL FOR STANDARD EXCHANGE PK1 GEARBOXES:

Note:

For standard exchange PK1 gearboxes, the oil type (TRZ or TRP) is shown on a label.

These two oils are replaced by TRX 75W80 or NfP 75W80.

MANUAL GEARBOX

Manual gearbox oils: Draining - Filling

21A

JB1 or JH3 or JR5

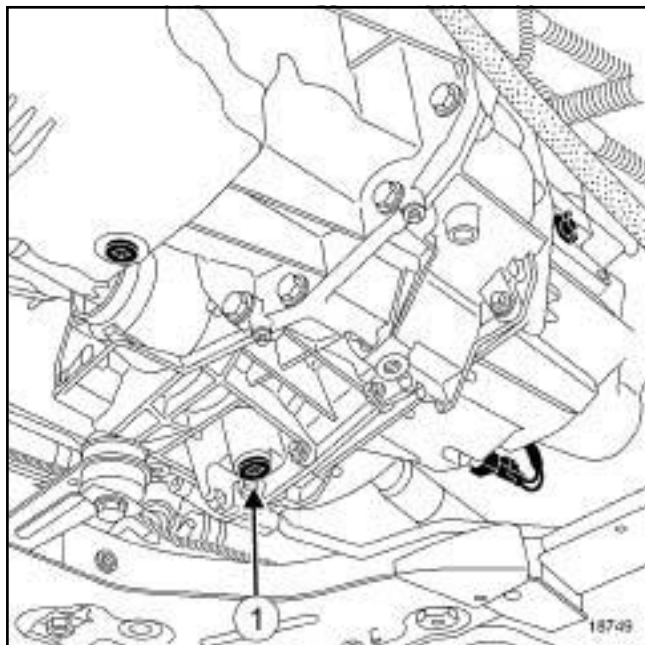
Equipment required

oil recovery tray

Gearbox	Capacity (l)
JB1	3.4
JH3	2.8
JR5	2.3

DRAINING

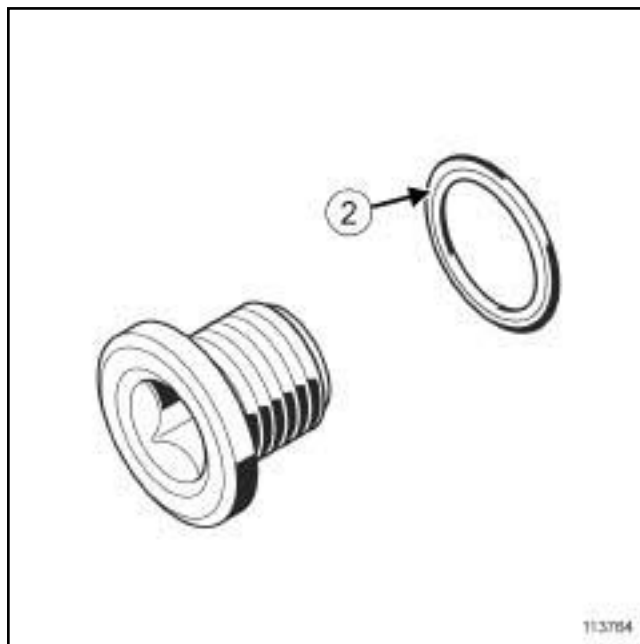
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the engine undertray.
- ☐ Fit a **oil recovery tray** under the gearbox.



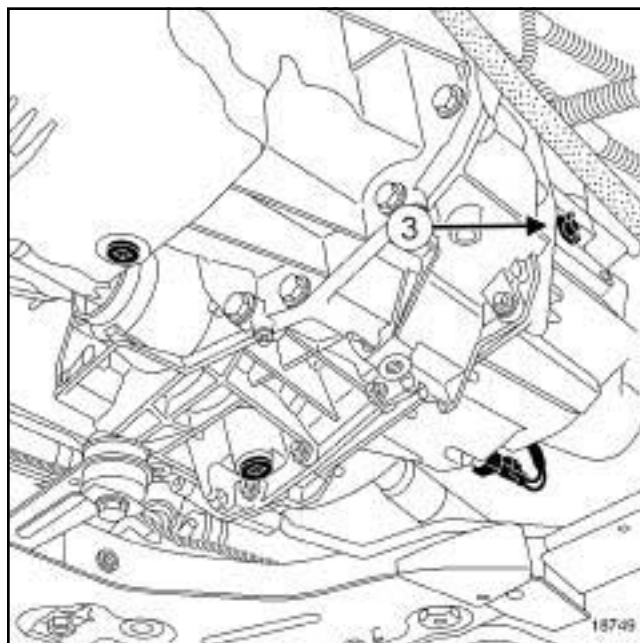
- ☐ Remove the drain plug (1) .
- ☐ Let the oil run into the **oil recovery tray**.

FILLING

- ☐ **parts always to be replaced: mechanism housing drain plug seal.**



- ☐ Refit a new seal on the drain plug with the groove (2) facing the plug.
- ☐ Refit the drain plug fitted with its new seal.



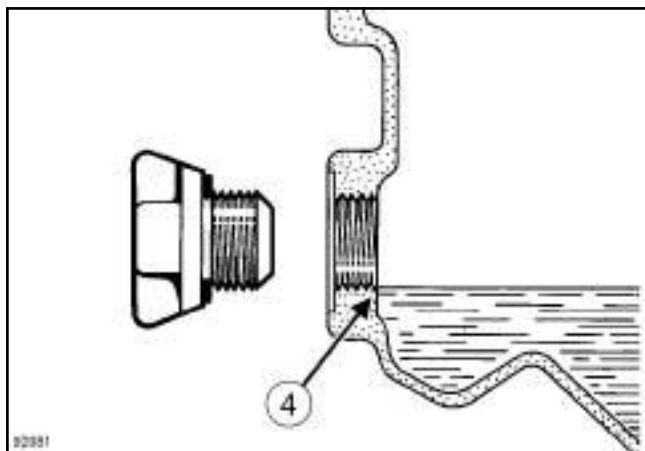
- ☐ Remove the filler cap (3) .

MANUAL GEARBOX

Manual gearbox oils: Draining - Filling

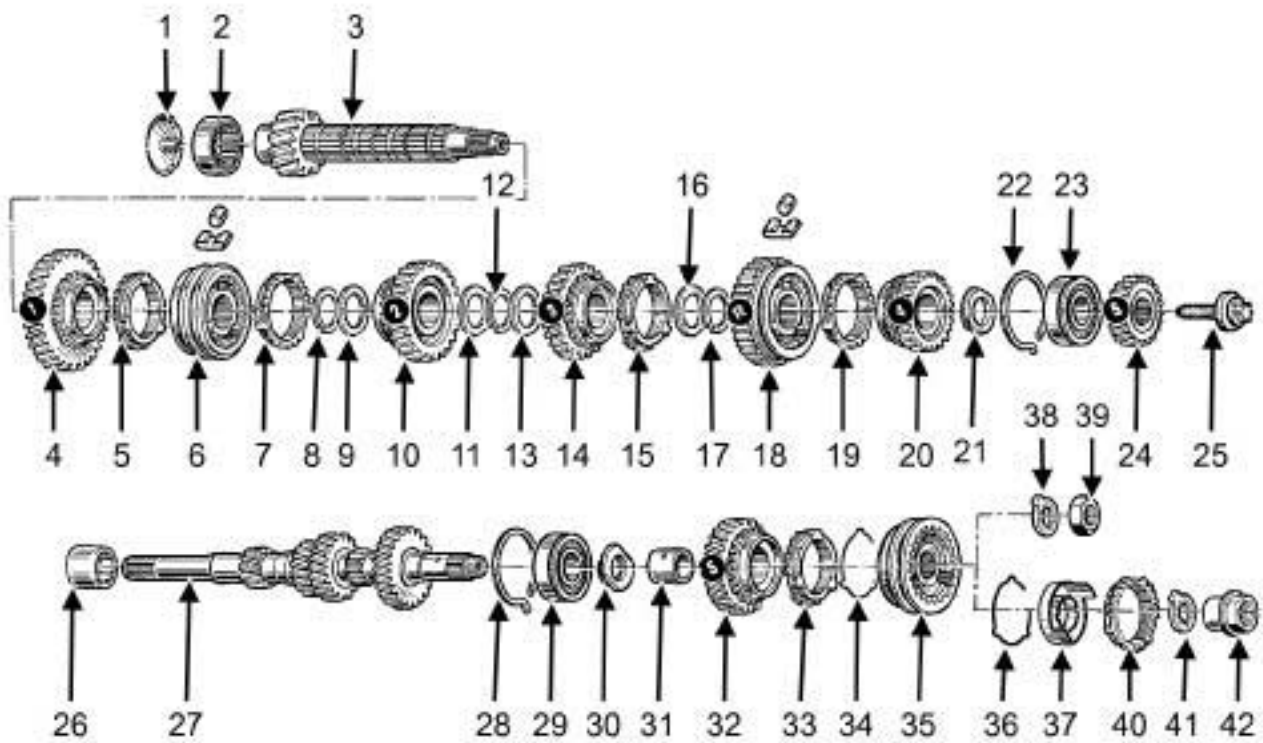
21A

JB1 or JH3 or JR5



- ☐ Fill with the recommended oil to the level (4) of the opening (see **21A, Manual gearbox, Manual gearbox oil: Specifications**, page **21A-1**) (Technical Note 6012A, 04A, Lubricants).
- ☐ Refit the filler cap.
- ☐ Wipe any oil run-off with a cloth.
- ☐ Remove the **oil recovery tray**.
- ☐ Refit the engine undertray.

JB1



101388

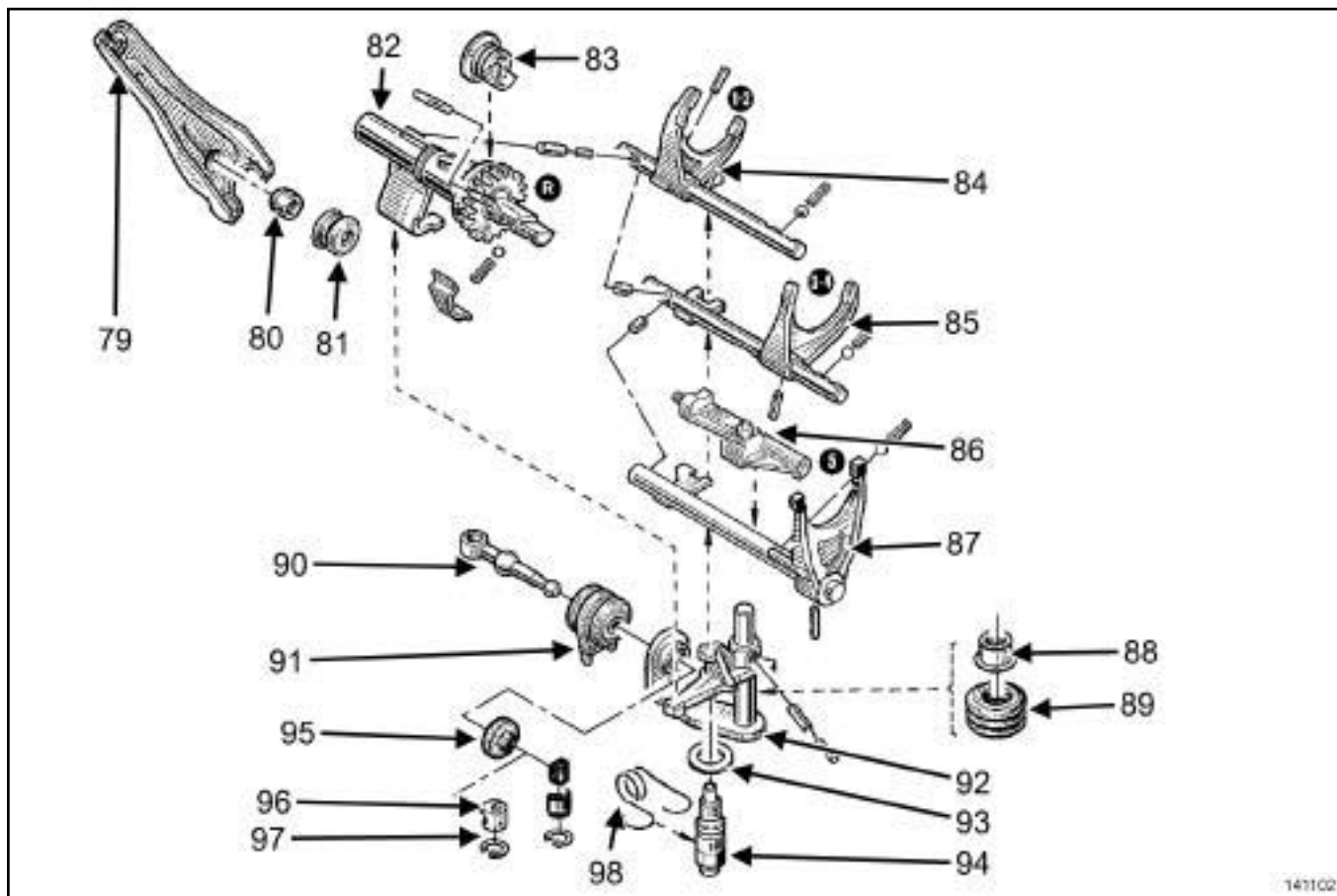
101388

(1)	Oil deflector	(21)	Lock washer
(2)	Output shaft bearing	(22)	Bearing retaining clips on mechanism housing
(3)	Output shaft	(23)	Output shaft bearing
(4)	First idle gear	(24)	Fifth fixed gear
(5)	Synchroniser ring	(25)	Output shaft bolt
(6)	First-second synchroniser hub	(26)	Input shaft bearing
(7)	Synchroniser ring	(27)	Primary shaft
(8)	Lock ring	(28)	Bearing retaining clips on mechanism housing
(9)	Splined washer	(29)	Input shaft bearing
(10)	Second idle gear	(30)	Lock washer
(11)	Splined washer	(31)	Ring under fifth idle gear
(12)	Lock ring	(32)	Fifth idle gear
(13)	Splined washer	(33)	Synchroniser ring
(14)	Third idle gear	(34)	Synchroniser spring
(15)	Synchroniser ring	(35)	Fifth gear synchroniser hub
(16)	Splined washer	(36)	Synchroniser spring
(17)	Lock ring	(37)	Friction cone
(18)	Third-fourth synchroniser hub	(38)	Retaining washer
(19)	Synchroniser ring	(39)	Input shaft nut
(20)	Fourth idle gear		

Manual gearbox: List and location of components

JB1

- (40) Synchroniser ring
- (41) Retaining washer
- (42) Input shaft nut



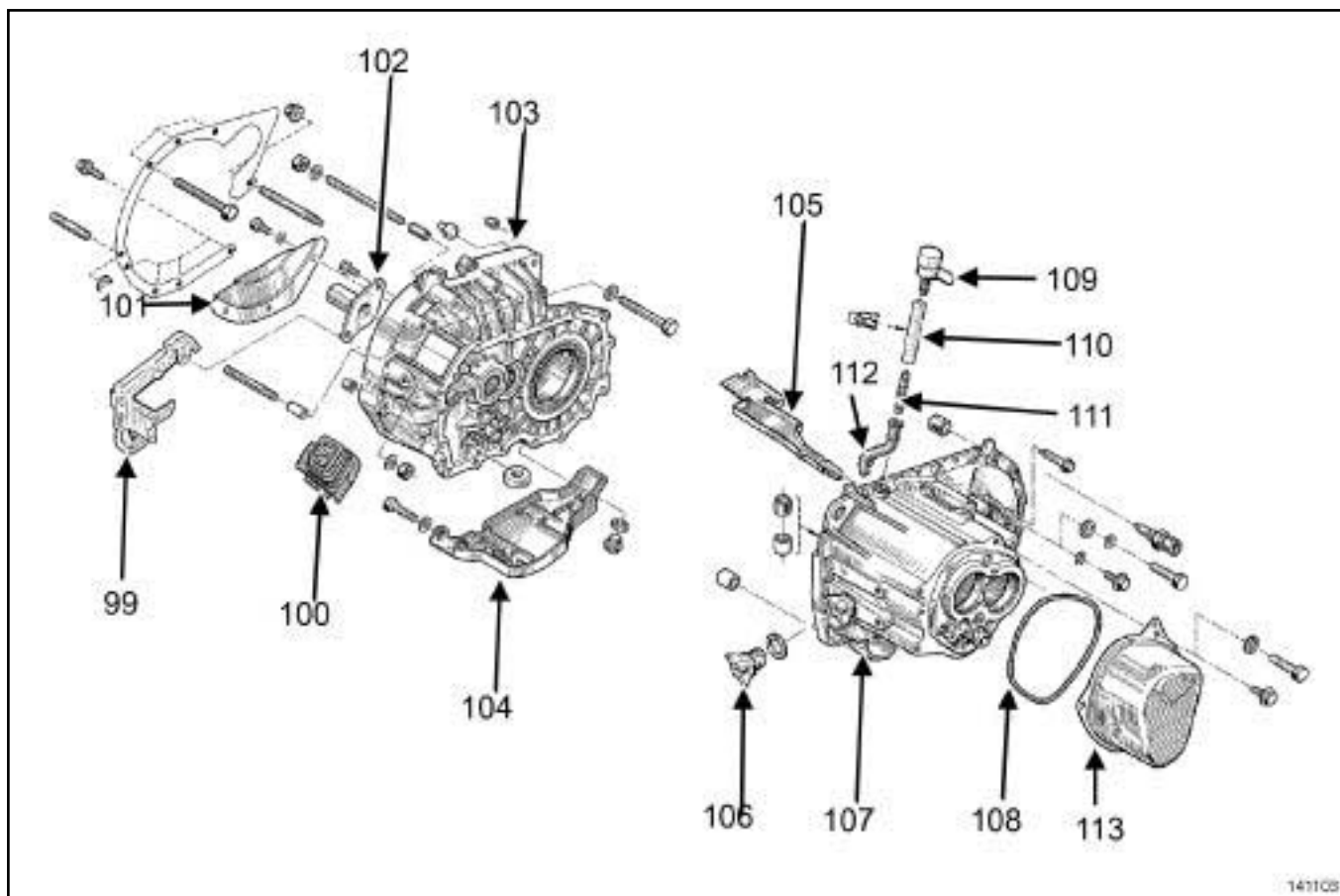
141102

141102

- (79) Clutch control fork
- (80) Fork pivot ball joint
- (81) Pivot gaiter
- (82) Assembled reverse gear shaft
- (83) Bearing ring
- (84) Assembled 1-2 fork shaft claw
- (85) Assembled 3-4 fork shaft claw
- (86) Reverse gear guide
- (87) Assembled 5th gear fork shaft
- (88) Lip seal
- (89) Gaiter
- (90) Tie-bar
- (91) Gaiter
- (92) Shaft lever and finger assembly
- (93) Thickness washer
- (94) 5th gear kickdown point
- (95) Gaiter

- (96) Ball joint bearing shell
- (97) Lock ring
- (98) Return spring

JB1

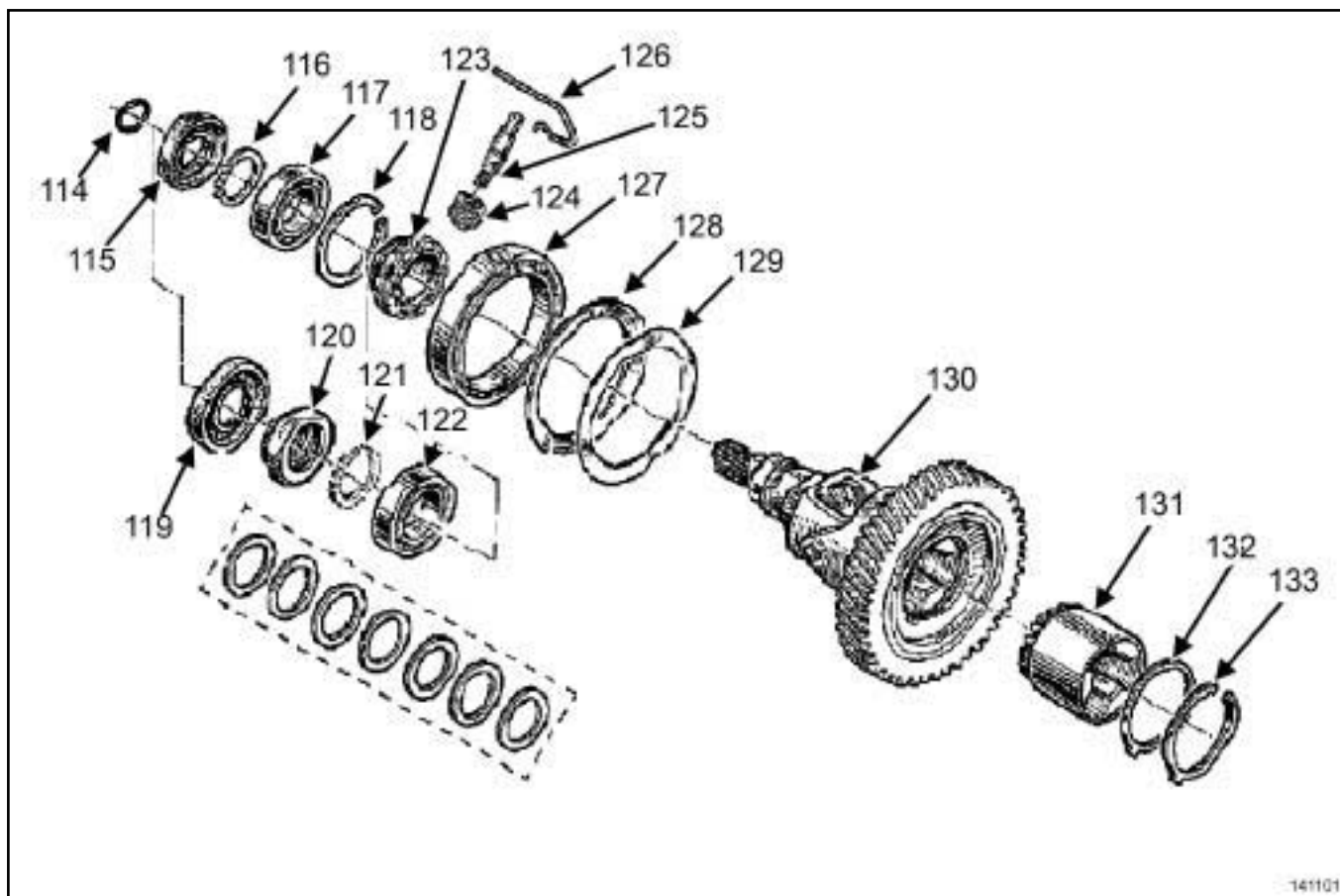


141103

141103

(99)	Support bracket
(100)	Gaiter
(101)	Clutch protection component
(102)	Clutch guide tube
(103)	Clutch housing
(104)	Oil collector
(105)	Oil supply channel
(106)	Filler plug
(107)	Mechanism housing
(108)	5th gear cover seal
(109)	Breather vent body
(110)	Breather pipe
(111)	Union
(112)	Breather
(113)	5th gear cover

JB1



141101

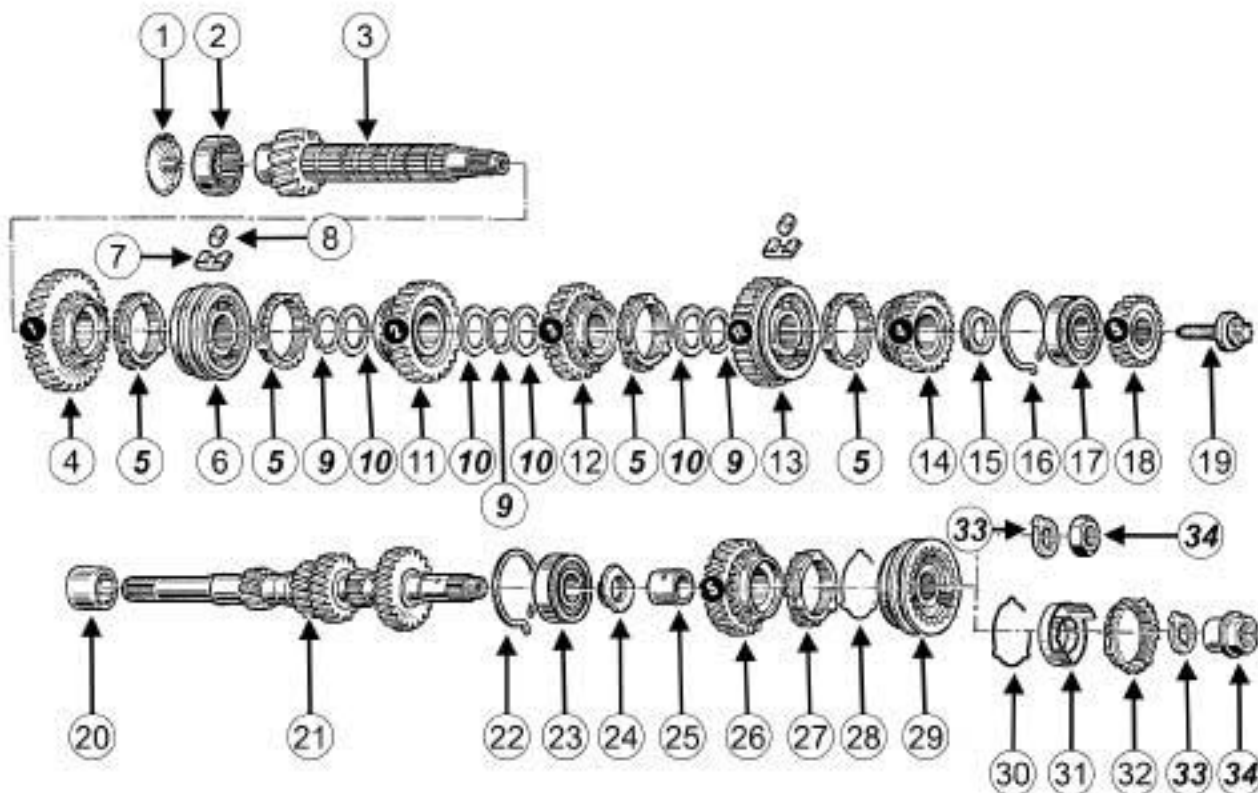
141101

(114)	O-ring
(115)	Lip seal
(116)	Lock ring
(117)	Ball bearing
(118)	Lock ring
(119)	Lip seal
(120)	Differential line tightening nut
(121)	Adjusting shim
(122)	Roller bearing
(123)	Tachometer control ring
(124)	Tachometer control pinion
(125)	Tachometer pinion shaft
(126)	Locking pin
(127)	Ball bearing
(128)	Washer
(129)	Spring washer
(130)	Assembled differential mechanism
(131)	Hollow sun wheel

(132)	Thrust washer
(133)	Stop washer

JH1 or JH3 or JR5

JH1 or JH3



101388

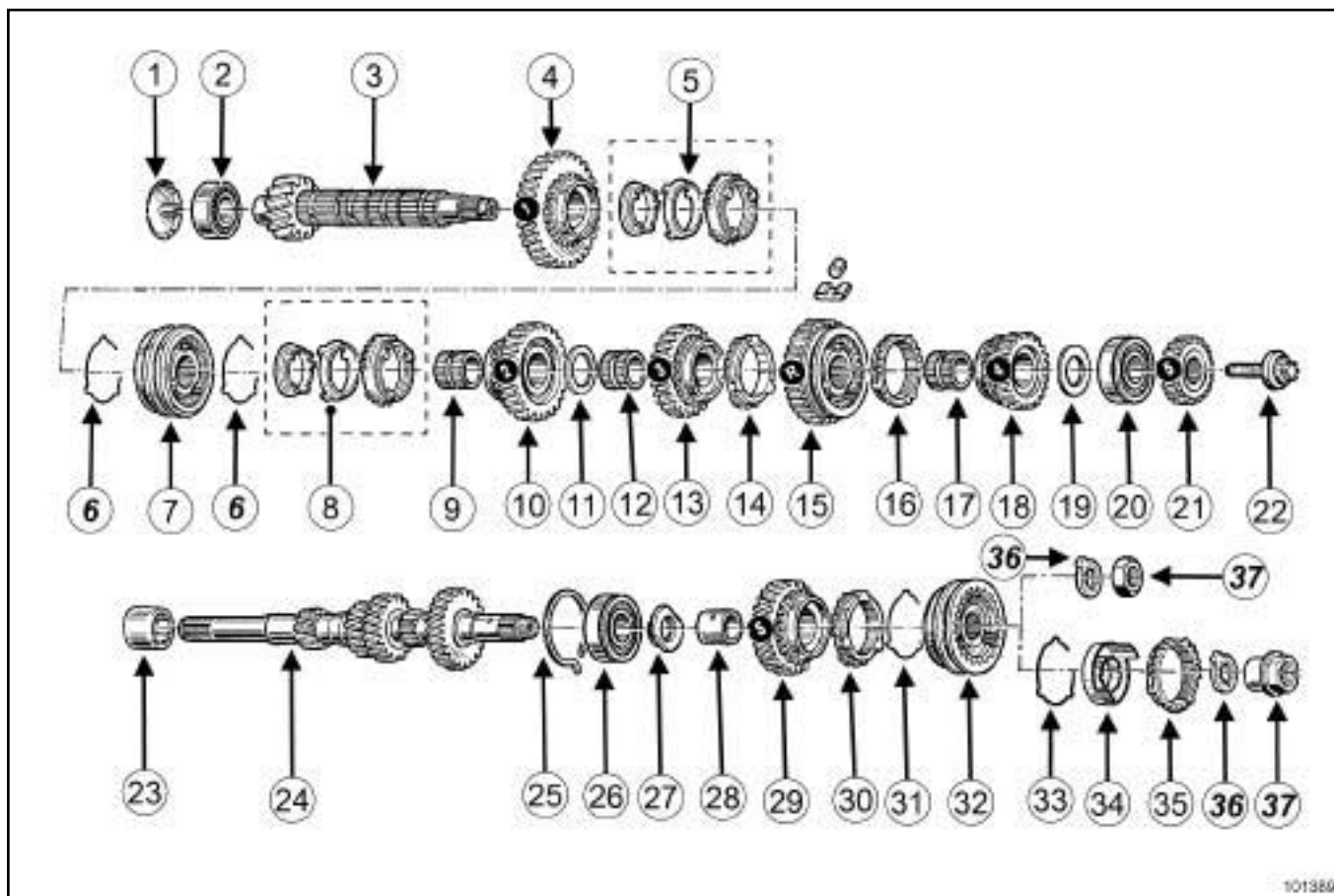
101388

- (1) Oil deflector
- (2) Bearing
- (3) Output shaft
- (4) First gear pinion
- (5) Synchromesh ring
- (6) First-second gear synchroniser hub
- (7) Spring
- (8) Roller
- (9) Lock ring
- (10) Splined washer
- (11) Second gear pinion
- (12) Third gear pinion
- (13) Third-fourth gear synchroniser hub
- (14) Fourth gear pinion
- (15) Lock washer
- (16) Retaining clips

- (17) Bearing
- (18) Fifth gear pinion
- (19) Output shaft bolt
- (20) Bearing guide
- (21) Primary shaft
- (22) Retaining clips
- (23) Bearing
- (24) Lock washer
- (25) Sprocket supporting ring
- (26) Fifth gear pinion
- (27) Synchromesh ring
- (28) Spring
- (29) Synchroniser hub
- (30) Spring
- (31) Friction cone
- (32) Synchromesh ring
- (33) Washer
- (34) Input shaft nut

JH1 or JH3 or JR5

JR5



101389

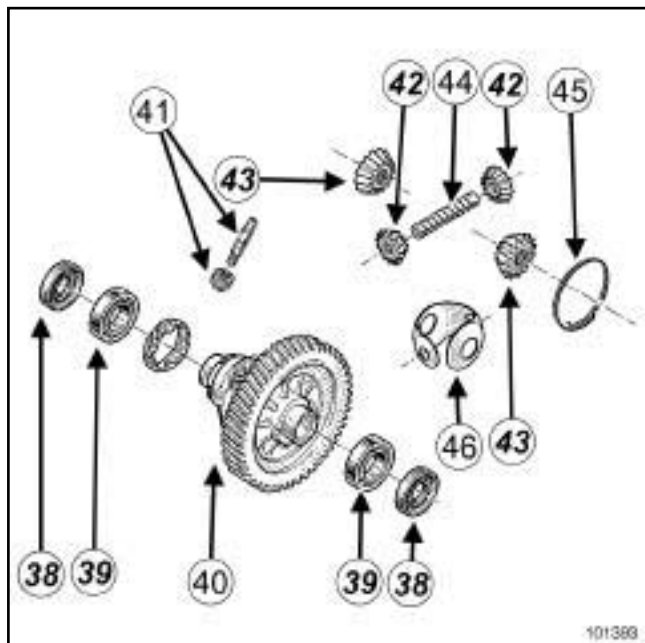
- (1) Oil deflector
- (2) Bearing
- (3) Output shaft
- (4) First gear pinion
- (5) Synchromesh ring
- (6) Spring
- (7) First-second gear synchroniser hub
- (8) Synchromesh ring
- (9) Sprocket supporting ring
- (10) Second gear pinion
- (11) Splined washer
- (12) Sprocket supporting ring
- (13) Third gear pinion
- (14) Synchromesh ring
- (15) Third-fourth gear synchroniser hub
- (16) Synchromesh ring

- (17) Sprocket supporting ring
- (18) Fourth gear pinion
- (19) Adjustment washer
- (20) Bearing
- (21) Fifth gear pinion
- (22) Output shaft bolt
- (23) Bearing guide
- (24) Primary shaft
- (25) Retaining clips
- (26) Bearing
- (27) Lock washer
- (28) Sprocket supporting ring
- (29) Fifth gear pinion
- (30) Synchromesh ring
- (31) Spring
- (32) Synchroniser hub
- (33) Spring
- (34) Friction cone

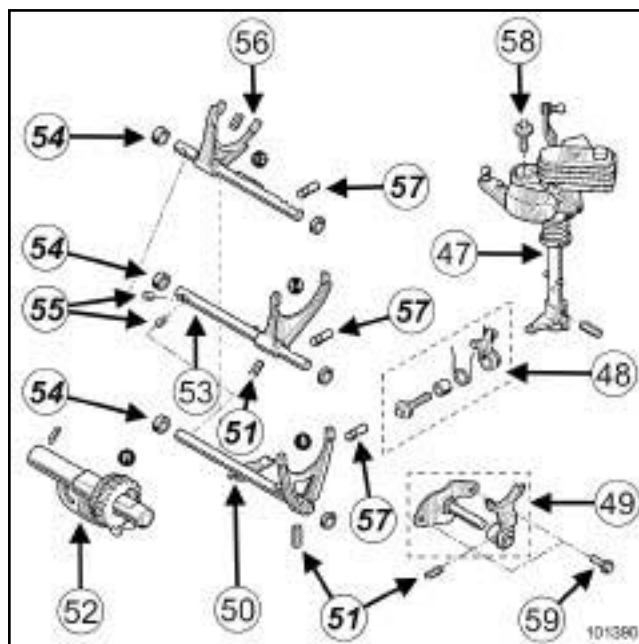
Manual gearbox: List and location of components

JH1 or JH3 or JR5

- (35) Synchromesh ring
- (36) Washer
- (37) Input shaft nut



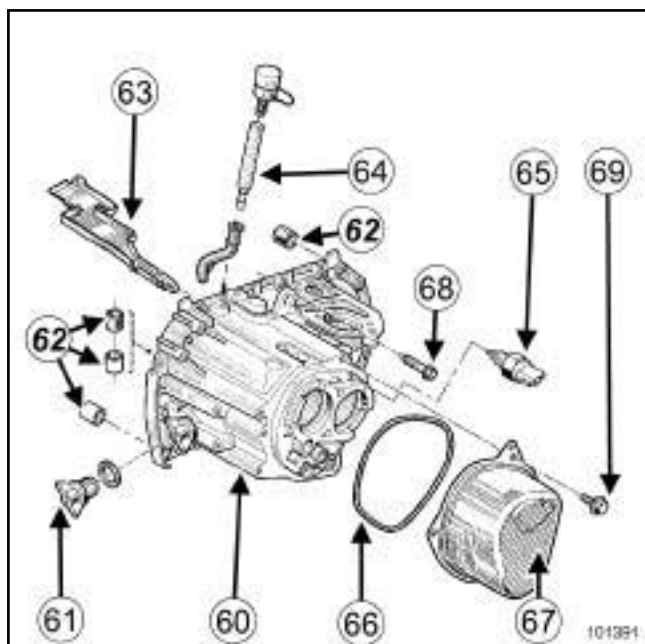
- (38) Differential seal
- (39) Bearing
- (40) Differential
- (41) Tachometer sprocket (if fitted to the vehicle)
- (42) Satellite
- (43) Sunwheel
- (44) Axis
- (45) Shaft retaining spring
- (46) Friction cover



- (47) Selector shaft
- (48) Gear shift catch
- (49) Reverse gear brake fork and shaft
- (50) Fifth gear fork and shaft
- (51) Pin
- (52) Reverse gear shaft
- (53) Third-fourth gear fork and shaft
- (54) Ring
- (55) Lock shaft
- (56) First-second gear fork and shaft
- (57) Retaining locating ball cartridge
- (58) Selector shaft bolt
- (59) Reverse gear fork shaft bolt

Manual gearbox: List and location of components

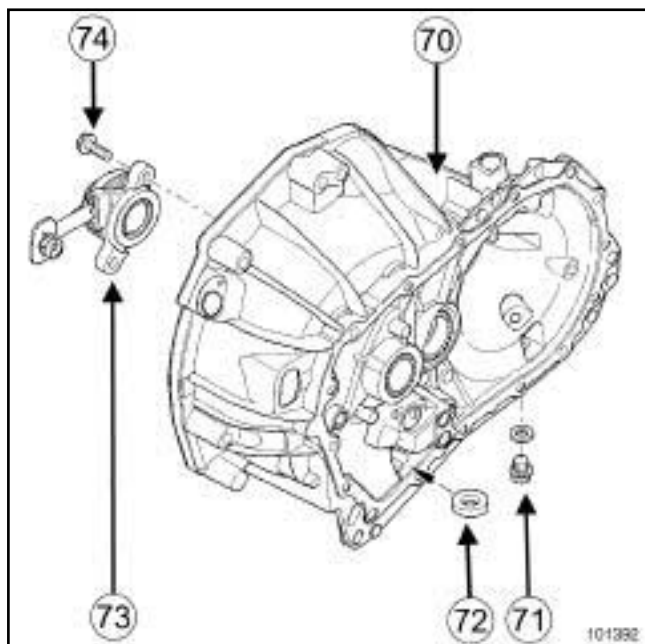
JH1 or JH3 or JR5



101391

- (60) Mechanism housing
- (61) Filler plug
- (62) Spacer
- (63) Oil channel
- (64) Breather pipe
- (65) Reverse gear sensor
- (66) O-ring
- (67) Fifth gear housing
- (68) Gearbox bell housing bolt
- (69) Fifth gear housing bolt

- (70) Clutch housing
- (71) Drain plug
- (72) Magnet
- (73) Hydraulic clutch release bearing
- (74) Hydraulic clutch release bearing bolt



101392

MANUAL GEARBOX

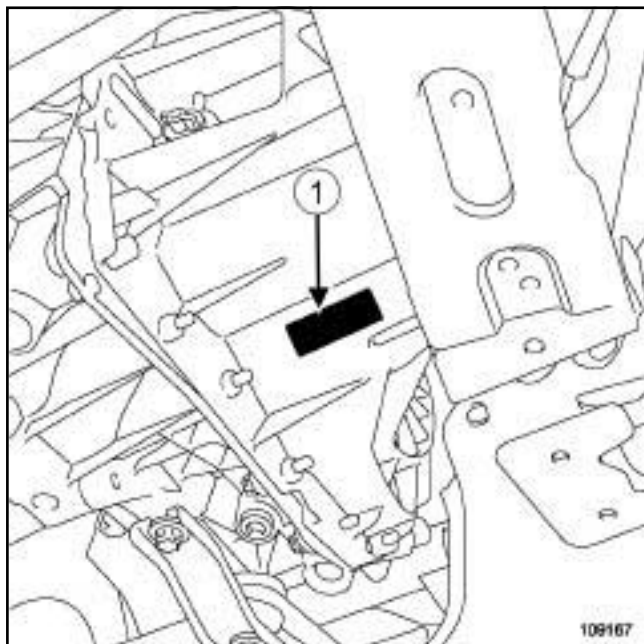
Manual gearbox: Identification

21A

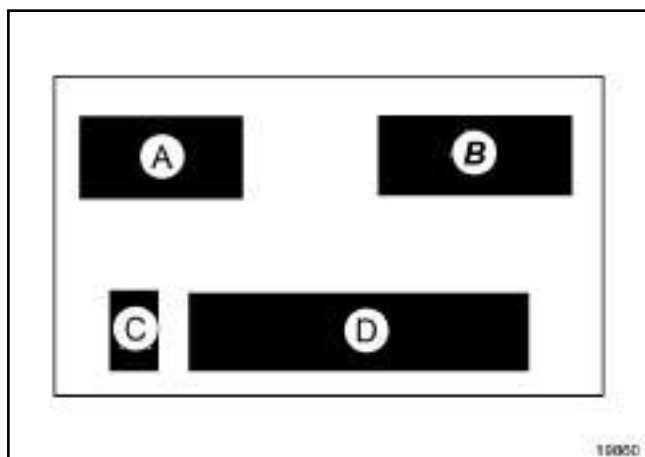
JH1 or JH3 or JR5

K4J / K4M / K9K / D4F engines are fitted with type JH and JR manual gearboxes.

A marking **(1)** on the gearbox casing indicates:



109167



19860

(A)	Gearbox type
(B)	Gearbox suffix
(C)	Production plant
(D)	Production number

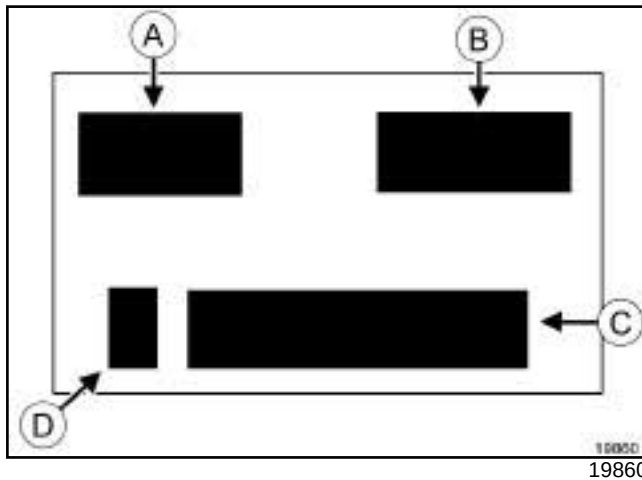
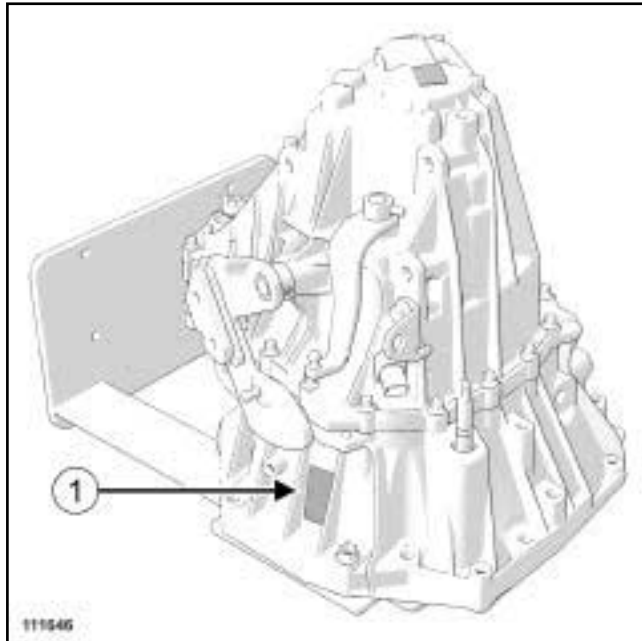
MANUAL GEARBOX

Manual gearbox: Identification

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JB1 or JH1 or JH3

A marking **(1)** on the gearbox casing indicates:



- (A) Gearbox type
- (B) Gearbox suffix
- (C) Production number
- (D) Production plant

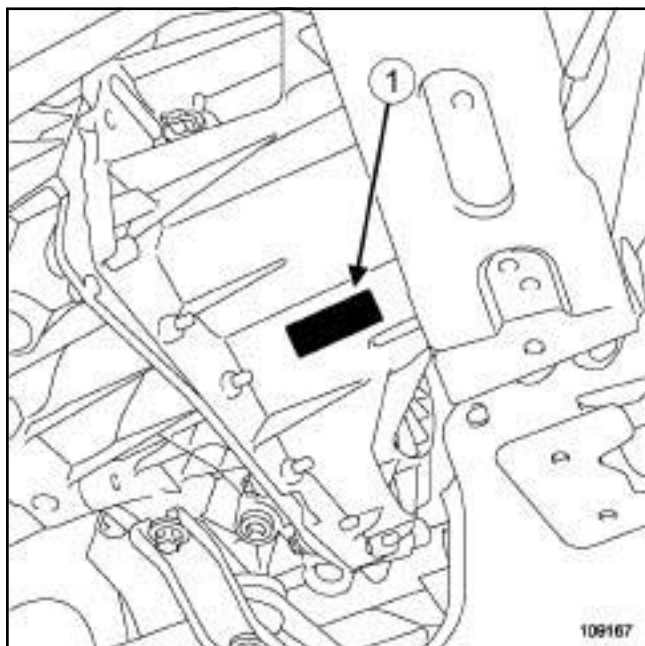
MANUAL GEARBOX

Manual gearbox: Specifications

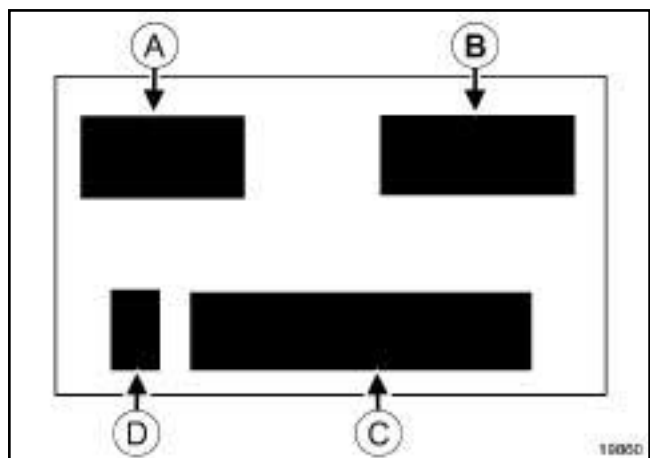
21A

JB1

I - IDENTIFICATION



109167



19860

A marking (1) on the gearbox casing indicates:

- (A) Gearbox type
- (B) Gearbox suffix
- (C) Fabrication number
- (D) Factory of manufacture

II - GEAR RATIOS

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB0								
JB0-017	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19
JB0-019	11/41	21/43	28/37	31/28	-	15/56	11/39	21/19
JB0-020	11/41	21/43	28/37	31/28	-	19/59	11/39	21/20
JB0-021	11/41	21/43	28/37	31/28	-	14/59	11/39	21/19
JB0-022	11/41	21/43	28/37	31/28	-	14/63	11/39	21/19
JB0-023	11/41	21/43	28/37	31/28	-	15/58	11/39	21/19
JB0-024	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19
JB0-028	11/41	21/43	28/37	31/28	-	15/58	11/39	21/20
JB0-029	11/41	21/43	28/37	31/28	-	17/56	11/39	21/20
JB0-030	11/41	21/43	28/37	31/28	-	16/57	11/39	21/20
JB0-031	11/41	21/43	28/37	31/28	-	16/55	11/39	21/20
JB0-032	11/41	21/43	28/37	31/28	-	16/57	11/39	21/20
JB0-033	11/41	21/43	28/37	31/28	-	15/58	11/39	21/19
JB0-034	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19

MANUAL GEARBOX

Manual gearbox: Specifications

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JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB0-035	11/41	21/43	28/37	31/28	-	15/61	11/39	21/19
JB0-036	11/41	21/43	28/37	31/28	-	15/61	11/39	21/20
JB0-040	11/41	21/43	28/37	31/28	-	17/56	11/39	21/19
JB0-041	11/41	21/43	28/37	31/28	-	17/56	11/39	21/19
JB1								
JB1-510	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-511	11/41	21/43	28/37	30/29	39/31	14/63	11/39	21/19
JB1-513	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB1-514	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-515	11/41	21/43	28/39	34/35	39/32	14/63	11/39	-
JB1-517	11/37	22/41	28/37	30/29	39/32	15/58	11/39	-
JB1-518	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-519	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-520	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-521	11/37	22/41	28/37	30/29	42/31	14/63	11/39	-
JB1-523	11/37	22/41	28/37	30/29	42/31	14/63	11/39	-
JB1-524	11/41	21/43	28/39	34/35	39/31	16/57	11/39	-
JB1-525	11/41	21/43	28/39	34/35	39/31	16/57	11/39	-
JB1-926	11/41	21/43	28/37	30/29	39/31	14/59	11/39	21/19
JB1-939	11/41	21/43	28/37	30/29	39/31	15/61	11/39	21/19
JB1-940	11/37	22/41	28/37	30/29	41/31	15/56	11/39	21/20
JB1-941	11/37	22/41	28/37	30/29	39/32	15/58	11/39	21/20
JB1-956	11/41	21/43	28/37	30/29	39/31	14/69	11/39	21/19
JB1-962	11/41	21/43	28/37	30/29	41/31	15/56	11/39	-
JB1-967	11/37	22/41	28/37	34/35	39/31	16/55	11/39	21/19
JB1-968	11/37	22/41	28/37	34/35	39/31	16/57	11/39	21/19
JB1-969	11/41	21/43	28/39	34/35	39/31	16/55	11/39	21/19
JB1-970	11/41	21/43	28/39	34/35	37/33	15/58	11/39	21/18
JB1-974	11/41	21/43	28/39	34/35	37/33	16/57	11/39	21/19
JB1-977	11/41	21/43	28/39	34/35	39/32	16/55	11/39	21/19

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB1-985	11/41	21/43	28/39	34/35	39/32	14/63	11/39	21/18
JB1-988	11/37	22/41	28/37	30/29	41/31	15/56	11/39	21/19
JB1-989	11/37	22/41	28/37	30/29	39/32	15/58	11/39	21/19
JB1-990	11/41	21/43	28/37	30/29	39/31	14/69	11/39	21/19
JB1-991	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB1-992	11/41	21/43	28/39	34/35	39/32	14/69	11/39	21/18
JB1-994	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/19
JB1-996	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB1-997	11/37	22/41	28/37	34/35	39/32	14/59	11/39	21/19
JB1-999	11/41	21/43	28/39	34/35	39/31	14/69	11/39	21/19
JB3								
JB3-905	11/37	22/41	28/37	30/29	41/31	16/55	11/39	21/19
JB3-938	11/37	22/41	28/37	30/29	42/31	15/58	11/39	-
JB3-949	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-952	11/41	21/43	28/39	34/35	39/32	15/58	11/39	-
JB3-953	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-954	11/41	21/43	28/37	30/29	39/31	15/61	11/39	-
JB3-955	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-956	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-957	11/41	21/43	28/39	34/35	39/32	14/59	11/39	22/18
JB3-958	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB3-960	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/19
JB3-961	11/41	21/43	28/39	34/35	39/32	15/61	11/39	21/18
JB3-967	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-969	11/37	22/41	28/37	30/29	42/31	16/57	11/39	21/19
JB3-970	11/37	22/41	28/37	30/29	41/31	14/59	11/39	21/19
JB3-971	11/41	21/43	28/37	30/29	39/31	14/59	11/39	21/19
JB3-972	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-973	11/37	22/41	28/37	34/35	39/31	15/61	11/39	-
JB3-974	11/37	22/41	28/37	30/29	41/31	15/58	11/39	21/19

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB3-975	11/41	21/43	28/37	30/29	41/31	14/63	11/39	21/19
JB3-976	11/41	21/43	28/39	34/35	39/31	16/57	11/39	21/18
JB3-979	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-980	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-981	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-982	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-983	11/37	22/41	28/37	30/29	42/31	15/58	11/39	-
JB3-984	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-985	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-986	11/37	22/41	28/37	30/29	41/31	16/55	11/39	-
JB3-987	11/41	21/43	28/37	30/29	41/31	14/63	11/39	21/18
JB3-988	11/37	22/41	28/37	30/29	42/31	16/57	11/39	21/18
JB3-989	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/18
JB3-990	11/41	21/43	28/37	30/29	41/31	14/63	11/39	-
JB3-991	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-992	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-995	11/41	21/43	28/37	30/29	41/31	14/59	11/39	-

JB5

JB5-000	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/19
JB5-001	11/41	19/39	25/33	30/29	34/27	16/55	11/39	21/20
JB5-002	11/34	19/35	25/33	30/29	33/25	15/61	11/39	21/20
JB5-003	11/41	19/39	25/33	30/29	34/27	17/56	11/39	21/20
JB5-004	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/20
JB5-005	11/41	19/39	25/33	30/29	34/27	16/57	11/39	21/20
JB5-006	11/41	19/39	25/33	30/29	34/27	16/57	11/39	21/20
JB5-007	11/41	19/39	25/33	30/29	34/27	15/58	11/39	21/19
JB5-008	11/41	19/39	25/33	30/29	34/27	15/58	11/39	21/20
JB5-009	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/19
JB5-010	11/41	19/39	25/33	30/29	34/27	15/57	11/39	21/20
JB5-015	11/41	19/39	25/33	30/29	34/27	14/59	11/39	21/20

MANUAL GEARBOX

Manual gearbox: Specifications

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JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JC5								
JC5-062	11/37	22/41	28/37	34/35	39/31	15/61	11/39	21/18
JC5-070	11/41	21/43	28/37	35/34	39/31	15/61	11/39	22/18
JC5-089	11/34	22/41	28/37	34/35	39/31	15/58	11/39	21/19
JC5-090	11/37	22/41	28/37	34/35	39/32	15/58	11/39	-
JC5-100	11/41	21/43	28/39	31/34	39/32	15/58	11/39	-
JC5-103	11/41	21/43	28/37	35/34	42/31	15/56	11/39	22/18
JC5-106	11/41	21/43	28/39	31/34	37/33	16/57	11/39	-
JC5-107	11/41	21/43	28/37	35/34	42/31	17/56	11/39	-
JC5-108	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JC5-109	11/41	21/43	28/37	35/34	42/31	15/56	11/39	-
JC5-119	11/41	21/43	28/37	35/34	39/31	15/61	11/39	-
JC5-120	11/41	21/43	28/37	35/34	42/31	15/58	11/39	-
JC5-125	11/37	22/41	28/37	35/34	41/31	15/58	11/39	21/19
JC5-126	11/41	21/43	28/37	35/34	41/31	16/57	11/39	21/19
JC5-128	11/41	21/43	28/37	35/34	41/31	17/56	11/39	21/19
JC5-129	11/34	22/41	28/37	34/35	39/31	15/61	11/39	21/19
JC5-130	11/34	22/41	28/37	34/35	39/31	15/61	11/39	-
JC5-131	11/37	22/41	28/37	34/35	39/32	15/58	11/39	-
JC5-132	11/41	21/43	28/37	35/34	41/31	16/57	11/39	-
JC5-137	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JC5-138	11/41	21/43	28/37	35/34	42/31	17/56	11/39	-
JC5-140	11/41	21/43	28/37	35/34	41/31	17/56	11/39	-
JC5-144	11/41	21/43	28/37	35/34	41/31	17/56	11/39	21/19

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JH1 or JH3 or JR5

GEAR RATIOS

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JA3 sequential gearbox								
JA3-001	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JA5 sequential gearbox								
JA5-001	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JH1 manual gearbox								
JH1 -004	11/37	22/41	28/37	34/35	39/32	11/39	14/59	21/19
JH1 -013	11/37	22/41	28/37	34/35	39/32	11/39	15/61	21/19
JH1 -014	11/37	22/41	28/37	30/29	39/32	11/39	15/58	21/19
JH1 -015	11/37	22/41	28/37	30/29	41/31	11/39	15/56	21/19
JH1 -016	11/37	22/41	28/37	34/35	39/32	11/39	14/59	None
JH1 -017	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JH1-019	11/37	22/41	28/37	34/35	39/32	14/59	14/59	21/19
JH1 -018	11/37	22/41	28/37	30/29	41/31	11/39	15/56	21/19
JH1 -020	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH1-021	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH1 -053	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JH1-054	11/41	21/43	28/39	34/35	39/31	11/39	15/56	21/19
JH1-055	11/37	21/41	28/37	34/35	39/31	11/39	16/55	21/19
JH3 manual gearbox								
JH3-050	11/41	21/43	28/39	34/35	39/31	11/39	15/56	21/19
JH3-052	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-053	11/37	22/41	28/37	30/29	42/41	11/39	15/58	22/18
JH3-054	11/41	21/43	28/37	30/29	41/31	11/39	14/63	22/18
JH3-055	11/41	21/43	28/37	30/29	39/31	11/39	14/63	22/18
JH3-056	11/41	21/43	28/37	30/29	41/31	11/39	14/61	22/18
JH3-057	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH3-058	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-059	11/45	22/47	28/39	34/35	37/33	11/39	14/69	22/18

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JH3-060	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JH3-061	11/41	21/43	28/39	34/35	39/31	11/39	14/61	22/18
JH3-062	11/41	21/43	28/39	34/35	39/31	11/39	14/61	22/18
JH3-063	11/41	21/43	28/39	34/35	39/32	11/39	14/61	22/18
JH3-064	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-065	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-066	11/41	21/43	28/29	34/35	39/31	11/39	14/63	22/18
JH3-067	11/37	22/41	28/37	34/35	39/32	11/39	14/63	22/18
JH3-068	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-071	11/41	21/43	28/37	30/29	39/31	11/39	14/63	22/18
JH3-072	11/41	21/43	28/37	34/35	39/32	11/39	14/59	22/18
JH3-105	11/41	21/43	28/39	31/34	37/33	11/39	14/59	None
JH3-106	11/41	21/43	28/39	34/35	39/32	11/39	14/63	None
JH3-128	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JH3-129	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-131	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JH3-132	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-137	11/41	21/43	28/39	31/34	37/33	11/39	14/59	None
JH3-141	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-142	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-143	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-144	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-145	11/37	22/41	28/37	30/29	42/31	11/39	16/57	None
JH3-150	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-154	11/41	21/43	28/39	31/34	37/33	11/39	16/61	None
JH3-155	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JH3-156								
JH3-160	11/41	22/41	28/37	30/29	42/31	11/39	15/58	22/18
JH3-166	11/41	21/43	28/37	30/29	42/31	11/39	16/55	None
JH3-169	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JH3-170	11/41	21/43	28/39	34/35	39/32	11/39	14/63	None
JH3-171	11/37	22/41	28/37	34/35	39/31	11/39	15/61	None
JH3-172	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-173	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-174	11/37	22/41	28/37	30/29	42/31	11/39	15/68	None
JH3-175	11/37	22/41	28/37	30/29	42/31	11/39	15/68	None
JH3-176	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JH3-177	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-179	11/41	21/43	28/39	31/34	37/33	11/39	15/68	None
JH3-183	11/41	21/43	28/39	34/35	39/32	11/39	14/59	None
JH3-184	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-185	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-186	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-187	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-189	11/37	22/41	28/37	30/29	42/31	11/39	15/56	None
JH3-190	11/37	22/41	28/37	30/29	42/31	11/39	15/56	None
JH3-193	11/41	21/43	28/37	30/29	42/31	11/39	16/55	None
JH3-199	11/41	21/43	28/39	34/35	39/32	11/39	14/59	None
JH3-309	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-312	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-313	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-315	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-321	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JR5 manual gearbox								
JR5-003	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-004	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-008	11/41	21/43	29/39	31/34	37/33	11/39	15/58	None
JR5-015	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JR5-016	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-017	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None

MANUAL GEARBOX

Manual gearbox: Specifications

21A

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JR5-018	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-113	11/41	21/43	28/37	35/34	41/31	11/39	16/57	None
JR5-116	11/41	21/43	28/37	35/34	41/31	11/39	16/55	21/19
JR5-124	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-126	11/37	21/41	28/37	35/34	42/31	11/39	15/58	21/19
JR5-144	11/37	21/41	28/37	35/34	42/31	11/39	15/58	21/18
JR5-145	11/41	21/43	28/37	35/34	41/31	11/39	16/55	21/19
JR5-147	11/41	21/43	28/37	35/34	42/31	11/39	15/58	22/18
JR5-149	11/41	21/43	28/39	31/34	42/31	11/39	15/58	22/18
JR5-151	11/41	21/43	28/37	35/34	39/31	11/39	14/63	22/18
JR5-152	11/41	21/43	28/37	35/34	39/32	11/39	14/63	None
JR5-156	11/41	21/43	28/37	35/34	39/32	11/39	15/58	None
JR5-158	11/41	21/43	28/37	35/34	42/31	11/39	15/61	22/18
JR5-165	11/41	21/43	28/37	35/34	42/31	11/39	14/69	22/18
JR5-166	11/41	21/43	28/37	35/34	42/31	11/39	16/57	22/18
JR5-168	11/41	21/43	28/37	35/34	41/31	11/39	14/69	None
JR5-169	11/41	21/43	28/37	35/34	42/31	11/39	14/73	22/18
JR5-170	11/41	21/43	28/37	35/34	42/31	11/39	14/69	22/18
JR5-171	11/41	21/43	28/37	35/34	39/32	11/39	14/63	None
JR5-172	11/41	21/43	28/39	31/34	37/33	11/39	14/63	22/18
JR5-173	11/41	21/43	28/37	35/34	39/32	11/39	14/61	None
JR5-175	11/41	21/43	28/37	34/35	39/32	11/39	15/56	None
JR5-176	11/41	22/41	28/37	35/34	42/31	11/39	15/56	None
JR5-183	11/41	21/43	28/37	35/34	39/32	11/39	14/59	None
JR5-184	11/41	21/43	28/37	35/34	39/32	11/39	15/58	None
JR5-185	11/41	21/43	28/37	35/34	41/31	11/39	17/56	None
JR5-187	11/41	21/43	28/37	35/34	39/32	11/39	14/69	None
JR5-189	11/41	21/43	28/37	35/34	41/31	11/39	14/59	None
JR5-193	11/41	21/43	28/37	35/34	41/31	11/39	1756	None
JR5-301	11/41	21/43	28/37	35/34	41/31	11/39	15/56	None

MANUAL GEARBOX
Manual gearbox: Specifications

21A

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JR5-302	11/41	21/43	28/37	35/34	41/31	11/39	14/69	None
JR5-308	11/41	21/43	28/37	31/29	45/31	11/39	18/57	None

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

K9K, and JH3 or JR5

Special tooling required

Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Equipment required

component jack

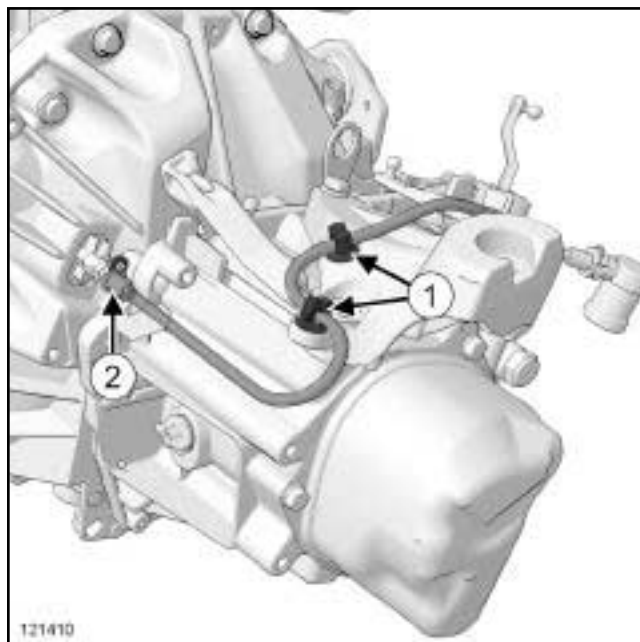
Tightening torques

lower gearbox bolts	44 N.m
gearbox nuts and bolts	44 N.m
gearbox upper bolts	44 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).
- ☐ Disconnect the engine management computer connectors.
- ☐ Remove:
 - the engine management computer mounting bolts,
 - the engine management computer mounting nuts.
- ☐ Remove the engine management computer mounting.
- ☐ Remove the engine management computer wiring harness nut from the engine management computer mounting.
- ☐ Remove the engine management computer wiring harness.
- ☐ Remove the engine management computer mounting fitted with the engine management computer.



121410

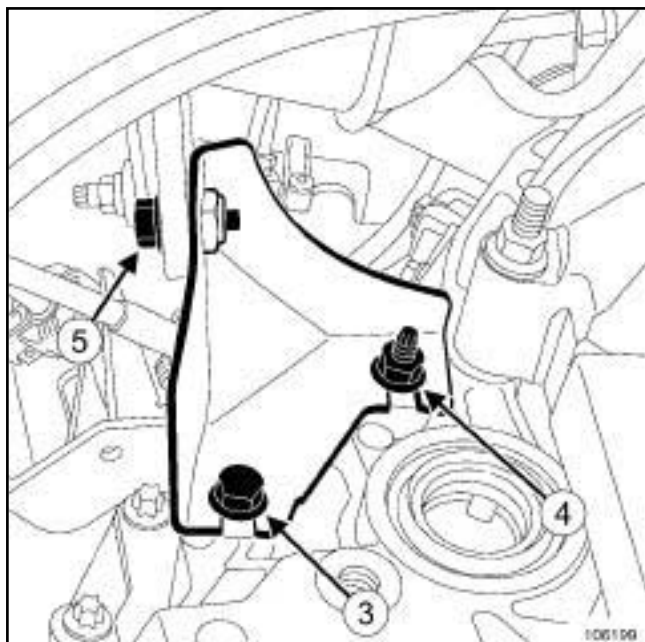
- ☐ Unclip:
 - the clutch hydraulic control pipe on the gearbox (1),
 - the union (2) on the hydraulic tappet slave cylinder,
 - the gearbox breather.
- ☐ Remove:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- ☐ Drain the gearbox oil (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2).
- ☐ Remove:
 - the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (31A, Front axle components),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

K9K, and JH3 or JR5



106199

- ❑ Loosen the bolt (3) and the nut (4) on the upstream strut of the catalytic converter on the gearbox.

❑ Remove:

- the bolt (5) from the upstream strut of the catalytic converter on the catalytic converter,
- the upstream strut of the catalytic converter by sliding it upwards,
- the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging).



121415

❑ Fit the (Mot. 1453) :

- positioning it on the front wing opening stops and on the headlight brackets,
- using the two engine lifting eyes to avoid the « engine - gearbox » assembly tilting too much,
- making sure the tool is strapped to the vehicle.

❑ Remove:

- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
- the subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).

II - OPERATION FOR REMOVAL OF PART CONCERNED



108265

- ❑ Detach the gearbox controls by pressing on the cable end pieces (6) .

- ❑ Remove the earth strap bolt.

- ❑ Remove the upper gearbox bell housing bolts.

❑ Disconnect:

- the speed and position sensor connector,
- the reverse gear switch connector.

❑ Remove:

- the lower gearbox bell housing bolts,
- the gearbox nuts,
- the gearbox studs.

- ❑ Fit a **component jack** under the gearbox.

❑ Remove:

- the lower gearbox bell housing bolts,
- the gearbox.

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

K9K, and JH3 or JR5

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- the gearbox using a **component jack**,
- the gearbox stud nuts,
- the gearbox lower bolts.

☐ Torque tighten:

- the **lower gearbox bolts (44 N.m)**,
- the **gearbox nuts and bolts (44 N.m)**.

☐ Refit the upper gearbox bolts.

☐ Torque tighten the **gearbox upper bolts (44 N.m)**.

☐ Refit the earth strap bolt on the gearbox.

☐ Connect:

- the reverse gear switch connector,
- the speed and position sensor connector.

☐ Clip the gearbox controls into place.

II - FINAL OPERATION

☐ Refit:

- the subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

☐ Remove the tool (**Mot. 1453**).

☐ Refit:

- the upstream strut of the catalytic converter by sliding it upwards,
- the catalytic converter upstream strut bolt on the catalytic converter.

☐ Tighten the bolt and nut on the upstream strut of the catalytic converter on the gearbox.

☐ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (31A, Front axle components),
- the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging),

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

☐ Clip:

- the union onto the hydraulic tappet slave cylinder,
- the hydraulic clutch control pipe,
- the gearbox breather.

☐ Bleed the clutch (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

☐ Refit the engine management computer mounting fitted with the engine management computer.

☐ Fit the engine management computer wiring harness.

☐ Refit the engine management computer wiring harness nut on the engine management computer mounting.

☐ Fit the engine management computer mounting.

☐ Refit:

- the engine management computer mounting bolts,
- the engine management computer mounting nuts.

☐ Connect the engine management computer connectors.

☐ Refit:

- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),

☐ Fill up the gearbox oil (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .

☐ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

D4F, and JB1 – D7F, and JB1

Special tooling required

Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Equipment required

component jack

Tightening torques

gearbox mountings **44 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery).

D4F

- ☐ Remove the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).
- ☐ Remove:
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

- ☐ Disconnect the engine management computer connectors.
- ☐ Remove:
 - the engine management computer mounting bolts,
 - the engine management computer mounting nuts.
- ☐ Remove the engine management computer mounting.
- ☐ Remove the engine management computer wiring harness nut from the engine management computer mounting.
- ☐ Remove the engine management computer wiring harness.
- ☐ Remove the engine management computer mounting fitted with the engine management computer.
- ☐ Unclip:
 - the clutch cable,
 - the gearbox breather.
- ☐ Remove:
 - the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).
- ☐ Drain the gearbox oil (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2).
- ☐ Remove:
 - the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (MR 411, 31A, Front axle components),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging).

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

D4F, and JB1 – D7F, and JB1



121415

❑ Fit the (**Mot. 1453**) :

- positioning it on the front wing opening stops and on the headlight brackets,
- using the two engine lifting eyes to avoid the « engine - gearbox » assembly tilting too much,
- making sure the tool is strapped to the vehicle.

❑ Remove:

- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle component).

II - OPERATION FOR REMOVAL OF PART CONCERNED

❑ Disconnect the reverse gear switch connector.

❑ Remove:

- the earth strap bolt on the gearbox,
- the gearbox upper bolts,
- the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection).
- the gearbox lower bolts,
- the flywheel protection plate bolts,
- the flywheel protection plate,
- the gearbox stud nuts,
- the gearbox using a **component jack**.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the gearbox using a **component jack**.
- the gearbox mountings.

❑ Torque tighten the **gearbox mountings (44 Nm)**.

❑ Refit:

- the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the earth strap bolt on the gearbox.

❑ Connect the reverse gear switch connector.

II - FINAL OPERATION.

❑ Refit:

- the subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components),
- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (MR 411, 19D, Engine mounting).

❑ Remove the (**Mot. 1453**).

❑ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (MR 411, 31A, Front axle components),
- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

❑ Clip:

- the clutch cable,
- the gearbox breather.

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

D4F, and JB1 – D7F and JB1

- ☐ Refit the engine management computer mounting fitted with the engine management computer.
- ☐ Fit the engine management computer wiring harness.
- ☐ Refit the engine management computer wiring harness nut on the engine management computer mounting.
- ☐ Fit the engine management computer mounting.
- ☐ Refit:
 - the engine management computer mounting bolts,
 - the engine management computer mounting nuts.
- ☐ Connect the engine management computer connectors.
- ☐ Refit:
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

D4F

- ☐ Refit the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).
-
- ☐ Fill up the gearbox oil (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-2**).
 - ☐ Refit:
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

K4M, and JR5

Equipment required

workshop hoist

Tightening torques

manual gearbox nuts and bolts	44 N.m
earth strap bolt on the gearbox	44 N.m
support bolts for the suspended engine mounting on the gearbox	62 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Remove:

- the engine undertray,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

☐ Drain:

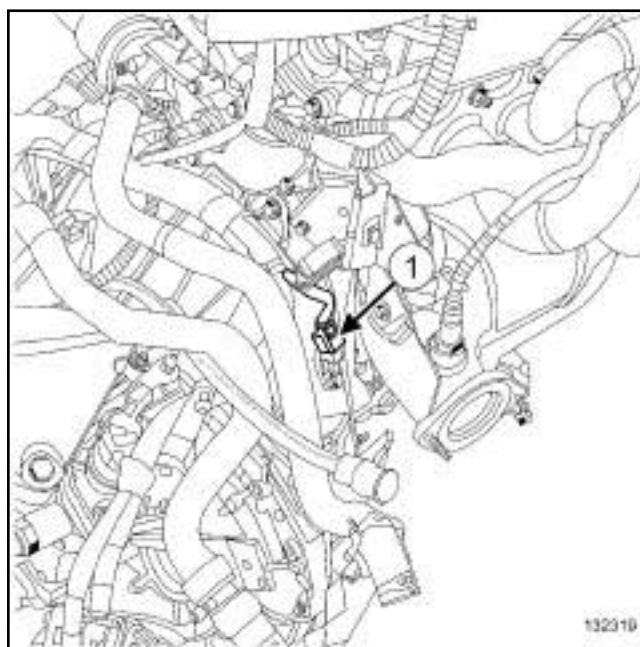
- the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) ,
- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

☐ Remove:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the front left-hand driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) ,
- the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) ,
- the differential output seals (see **21A, Manual gearbox, Differential output seal: Removal - Refitting**, page 21A-38) (21A, Manual gearbox),
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals).

II - OPERATION FOR REMOVAL OF PART CONCERNED

☐ Remove the “engine - gearbox” assembly from the using a **workshop hoist**.



132319

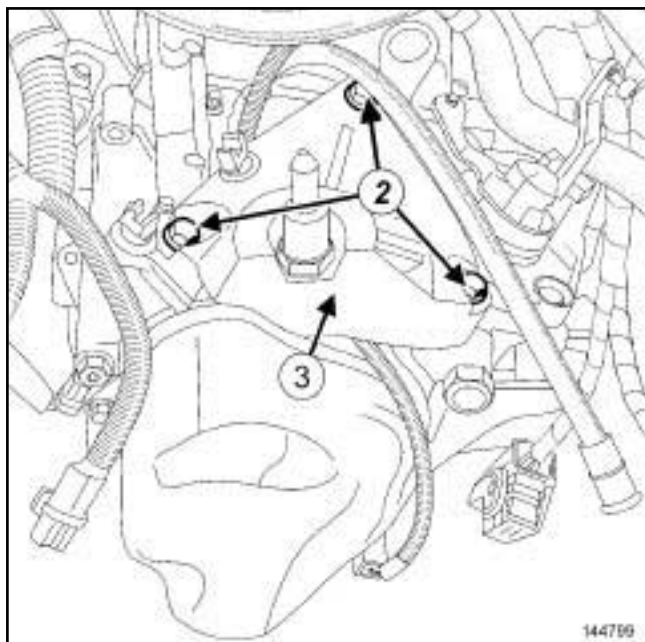
☐ Disconnect the TDC sensor connector (1) .

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

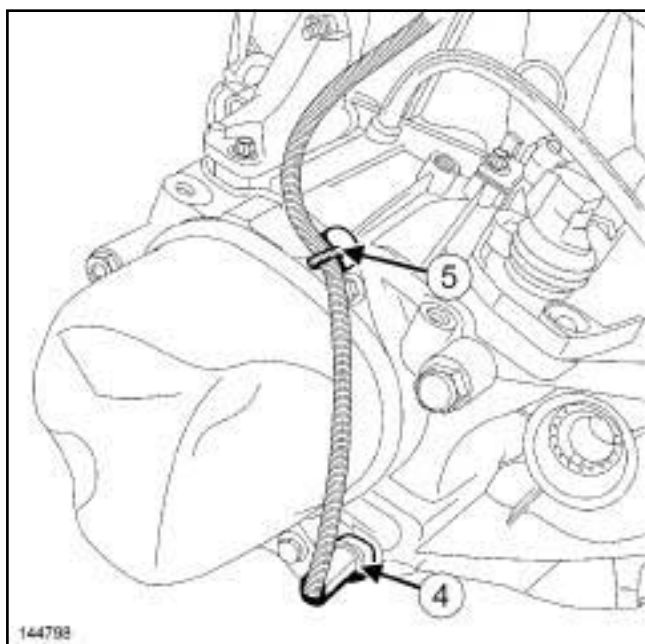
K4M, and JR5



144799

❑ Remove:

- the suspended engine mounting support bolts (2) on the gearbox,
- the suspended engine mounting support (3) on the gearbox.



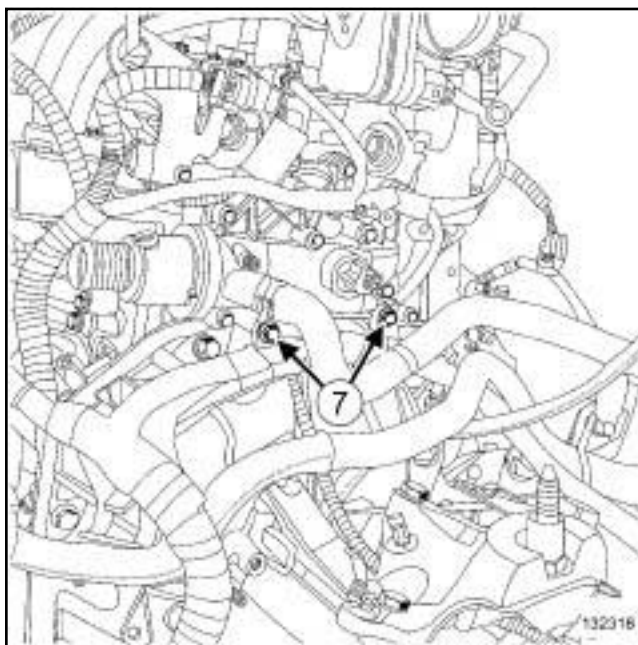
144798

- ❑ Disconnect the connector (4) from the reverse gear switch.
- ❑ Unclip the reverse gear switch at (5) .



132321

- ❑ Remove the bolt (6) from the earth strap on the gearbox.



132318

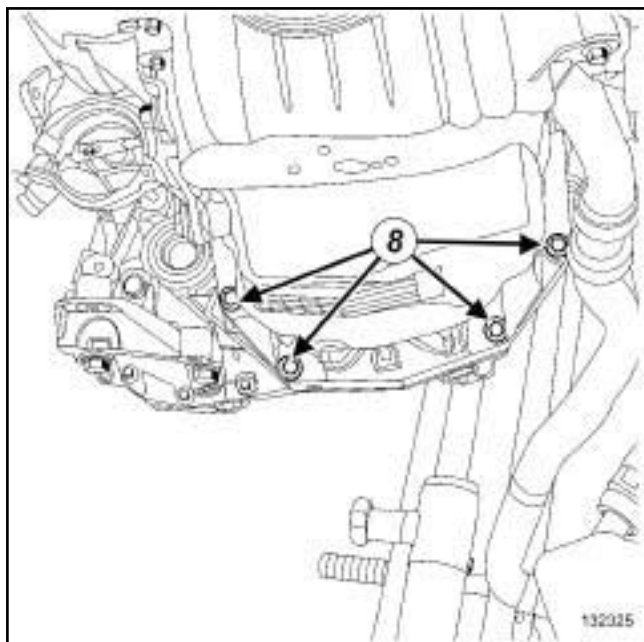
- ❑ Remove the bolts (7) from the engine wiring harness channel.
- ❑ Move aside the engine wiring.
- ❑ Remove the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging).

MANUAL GEARBOX

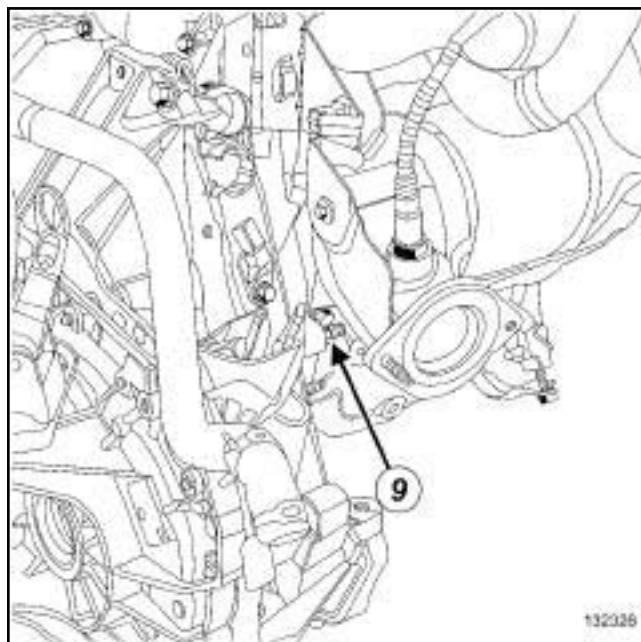
Manual gearbox: Removal - Refitting

21A

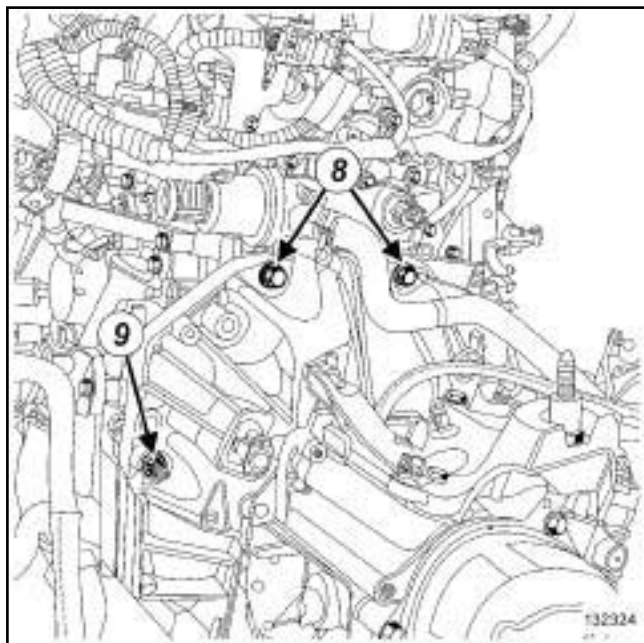
K4M, and JR5



132325



132326



132324

❑ Remove:

- the bolts (8) and the nuts (9) from the manual gearbox,
- the manual gearbox.

REFITTING

I - REFITTING PREPARATION OPERATION



WARNING

Never operate the system when the slave cylinder is removed (even if it is connected to the clutch pedal). There is a risk that the hydraulic piston and the slave cylinder stop will be ejected.

WARNING

To avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.

WARNING

Do not grease the clutch shaft splines.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the manual gearbox.
- ❑ Torque tighten the **manual gearbox nuts and bolts (44 N.m)**.

MANUAL GEARBOX

Manual gearbox: Removal - Refitting

21A

K4M, and JR5

- ☐ Fit the engine wiring.
- ☐ Refit:
 - the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging),
 - the bolts of the engine wiring channel,
 - the earth strap bolt on the gearbox.
- ☐ Torque tighten the **earth strap bolt on the gearbox (44 N.m)**.
- ☐ Connect the reverse gear switch connector.
- ☐ Clip on the reverse gear switch.
- ☐ Refit the suspended engine mounting support on the gearbox.
- ☐ Torque tighten the **support bolts for the suspended engine mounting on the gearbox (62 N.m)**.
- ☐ Connect the TDC sensor connector.
- ☐ Refit the engine - gearbox assembly on the.

III - FINAL OPERATION

- ☐ Refit:
 - the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
 - the differential output seals (see **21A, Manual gearbox, Differential output seal: Removal - Refitting**, page **21A-38**) (21A, Manual gearbox),
 - the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .
 - the front left-hand driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
 - the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Refill:
 - the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
 - the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
 - the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ☐ Refit the engine undertray.

JB1

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Manual gearbox: Precautions for the repair**) .

REMOVAL

I - REPAIR PREPARATION OPERATION

- ☐ Remove the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .
- ☐ Position the gearbox on the component support (see **Gearbox support equipment: Use**) .

II - REMOVAL OPERATION.

- ☐ Remove:
 - the fifth gear housing (see **5th gear housing: Removal - Refitting**) ,
 - the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
 - the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
 - the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
 - the differential (see **Manual gearbox differential: Removal - Refitting**) .

III - REPAIR OPERATION

- ☐ Strip down the output shaft (see **Output shaft: Stripping - Rebuilding**) .
- ☐ Check the shafts (see **Manual gearbox: Check**) .
- ☐ Remove:
 - the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
 - the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
 - the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
 - the manual gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean all the removed parts (see **Manual gearbox: Precautions for the repair**) .
- ☐ Replace worn or damaged parts.
- ☐ Parts always to be replaced:
 - the lip seals,
 - the O-rings,
 - the clutch thrust bearing guide,
 - the gear lock rings,
 - the roll pins,
 - the input and output shaft bearing circlips,
 - the synchroniser hub springs,
 - the removed bearings,
 - the selector shaft rings,
 - the spy seals,
 - the hydraulic clutch thrust bearing (if equipped),
 - the magnet.

II - REFITTING OPERATION

- ☐ Refit:
 - the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) ,
 - the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
 - the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
 - the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
 - the differential (see **Manual gearbox differential: Removal - Refitting**) .
- ☐ Rebuild the output shaft (see **Output shaft: Stripping - Rebuilding**) .
- ☐ Refit:
 - the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
 - the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
 - the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,

JB1

- the fifth gear housing (see **5th gear housing: Removal - Refitting**) .

III - FINAL OPERATION

- ☐ Remove the gearbox from the component support (see **Gearbox support equipment: Use**) .
- ☐ Refit the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page **21A-24**) .

JH1 or JH3 or JR5

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Manual gearbox: Precautions for the repair**) .

REMOVAL

I - REPAIR PREPARATION OPERATION

- ☐ Remove the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting, page 21A-24**) .
- ☐ Position the gearbox on the component support (see **Gearbox support equipment: Use**) .

II - REMOVAL OPERATION

- ☐ Remove:
 - the fifth gear housing (see **5th gear housing: Removal - Refitting**) ,
 - the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
 - the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
 - the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
 - the differential (see **Manual gearbox differential: Removal - Refitting**) .

III - REPAIR OPERATION

- ☐ Strip down the output shaft (see **Output shaft: Stripping - Rebuilding**) .
- ☐ Remove:
 - the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
 - the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
 - the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
 - the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) .

- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) to clean all of the removed parts.

- ☐ Check (see **Manual gearbox: Check**) :

- the pinions (teeth, claws, friction cone, inner wall),
- the synchroniser hubs,
- the synchroniser rings,
- the bearings.

- ☐ Replace worn or damaged parts.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Parts always to be replaced:
 - the lip seals,
 - the O-rings,
 - the clutch thrust bearing guide,
 - the gear lock rings,
 - the roll pins,
 - the input and output shaft bearing circlips,
 - the selector rod hub springs,
 - the hydraulic clutch slave cylinder (if fitted),
 - the magnet,
 - the selector shaft rings,
 - the lock ring of the differential,
 - the differential retaining nut.

II - REFITTING OPERATION

- ☐ Refit:
 - the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) ,
 - the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
 - the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
 - the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) .
- ☐ Rebuild the output shaft (see **Output shaft: Stripping - Rebuilding**) .

JH1 or JH3 or JR5

III - REMOVAL OPERATION

☐ Refit:

- the differential (see **Manual gearbox differential: Removal - Refitting**) ,
- the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) .

☐ Adjust the shafts (see **Gearbox shaft: Adjustment**) if replacing a shaft or housing.

☐ Refit:

- the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
- the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
- the fifth gear housing (see **5th gear housing: Removal - Refitting**) .

IV - FINAL OPERATION

- ☐ Remove the gearbox from the component support (see **Gearbox support equipment: Use**) .
- ☐ Refit the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

MANUAL GEARBOX

Differential output seal: Removal - Refitting

21A

JB1 or JH1 or JH3 or JR5

Special tooling required

Bvi. 945	Mandrel for fitting the sun-wheel seal.
Bvi. 1666	Tool for fitting differential seals.

Equipment required

roll pin punch

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

JB1 or JH1

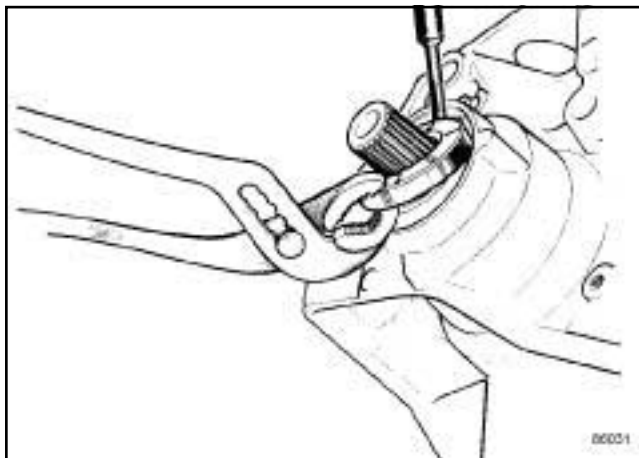
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .

JH3 or JR5

- ☐ Drain the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .
- ☐ Remove:
 - the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front wheel driveshaft for the side in question (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) or (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

JB1 or JH1



86031

- ☐ Tap the base of the differential output seal using a **roll pin punch** and a small hammer to rotate it in its housing.
- ☐ Remove the differential output seal using pliers, taking care not to damage the splines on the sunwheel.

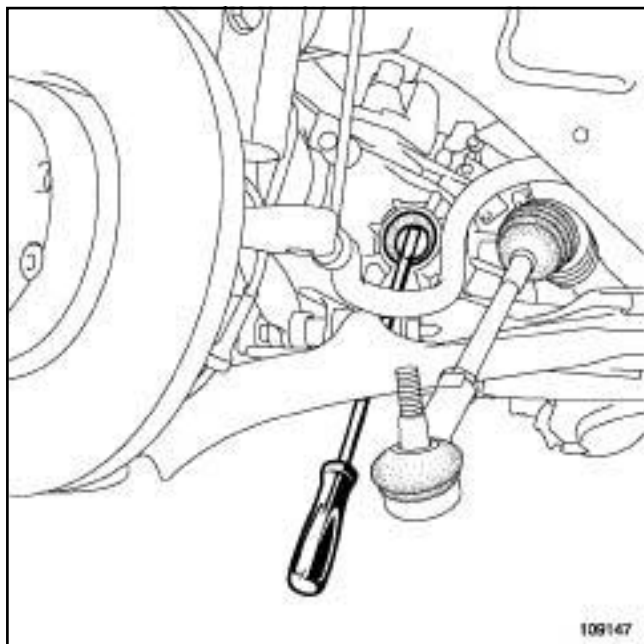
MANUAL GEARBOX

Differential output seal: Removal - Refitting

21A

JB1 or JH1 or JH3 or JR5

JH3 or JR5

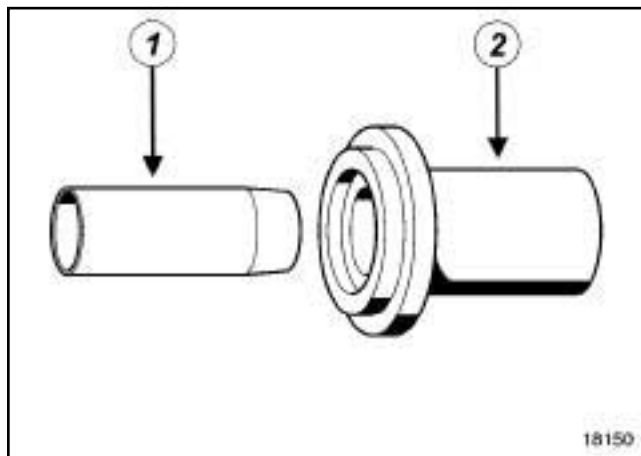


- ❑ Tap the base of the differential output seal using a **roll pin punch** and a small hammer to detach it and rotate it in its housing.
- ❑ Remove the differential output seal using a large screwdriver, taking care not to damage the differential housing.

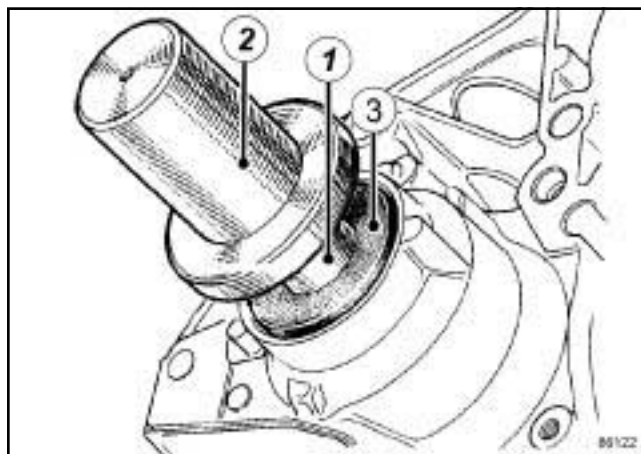
REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

JB1 or JH1



18150



86122

- ❑ The differential output seal (3) is refitted using the (Bvi. 945) consisting of:
 - a seal protector (1) ,
 - a mandrel (2) for fitting the differential output seal (3) .
- ❑ Lubricate the external surface of the seal protector.
- ❑ Fit:
 - the seal protector (1) onto the sunwheel,
 - the differential output seal (3) onto the seal protector (1) .
- ❑ Tap the mandrel (2) with a copper hammer to fully seat the differential output seal (3) .

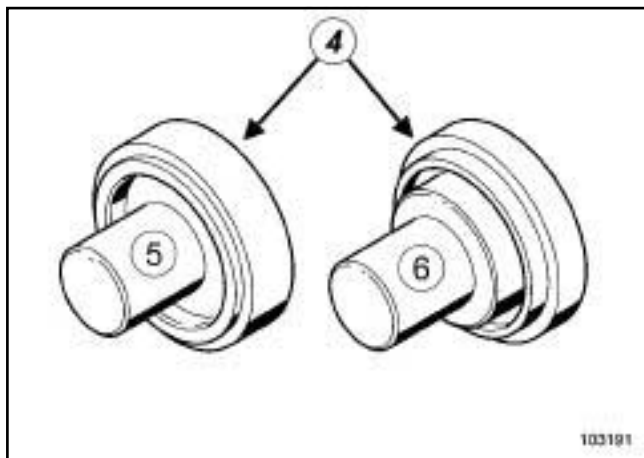
MANUAL GEARBOX

Differential output seal: Removal - Refitting

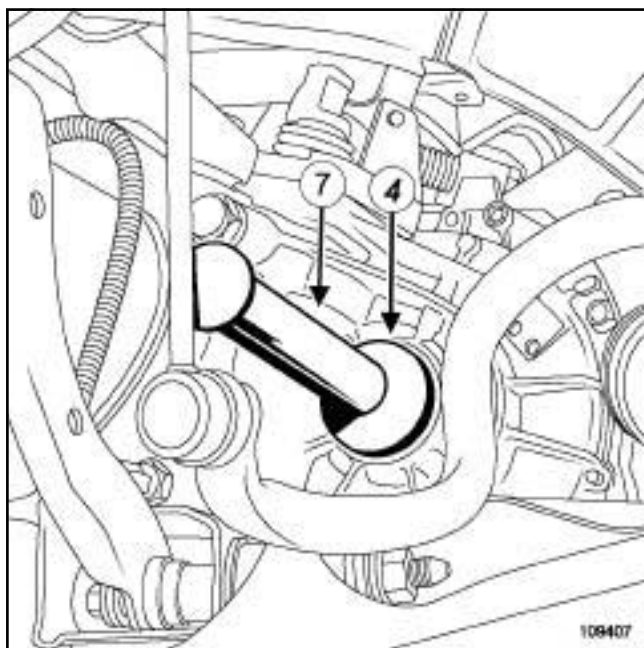
21A

JB1 or JH1 or JH3 or JR5

JH3 or JR5



103191



109407

- ☐ The differential output seal is refitted using the (**Bvi. 1666**) (4) consisting of:
 - a mandrel (5) for the right-hand side,
 - a mandrel (6) for the left-hand side.
- ☐ Lubricate the internal surface of the differential output seal.

II - FINAL OPERATION

JB1 or JH1

☐ Refit:

- the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

JH3 or JR5

☐ Refit:

- the front wheel driveshaft on the side concerned (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) or (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) ,
- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

- ☐ Fill the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .

MANUAL GEARBOX

Input shaft lip seal: Removal - Refitting

21A

JB1

Special tooling required

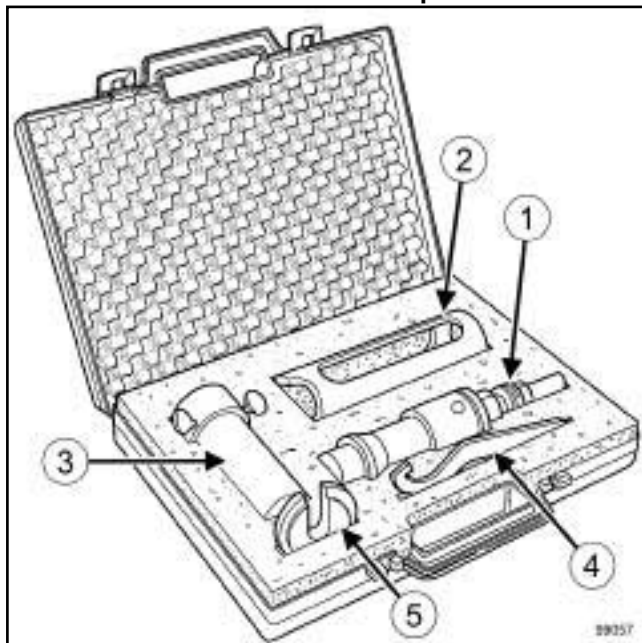
Bvi. 1828 Snap rivet and pressure plate for removal and refitting of the guide tube (JH1 gearbox)

Note:

The lip seal and the primary shaft bearing are built into the thrust pad guide tube.

It is lubricated via an aperture into the housing bore.

Detailed view of the Bvi tool components. 1445



99057

- (1) tightening clamp
- (2) sleeve
- (3) Sender
- (4) key
- (5) split ring

☐ The gearbox must be removed.

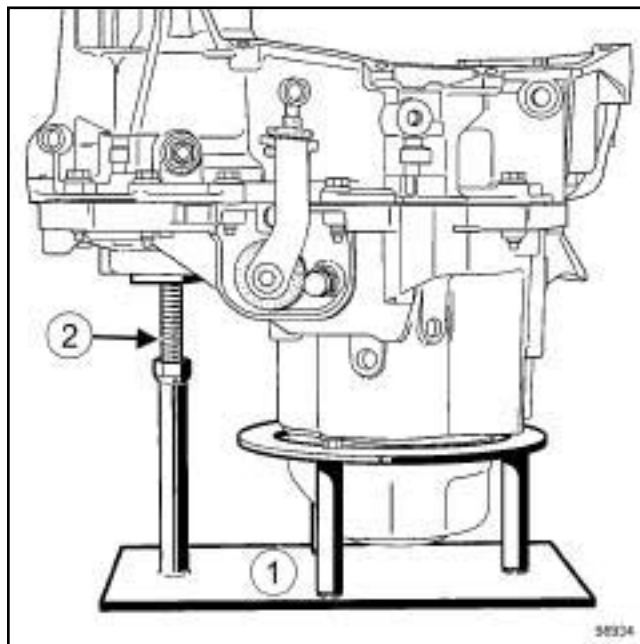
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

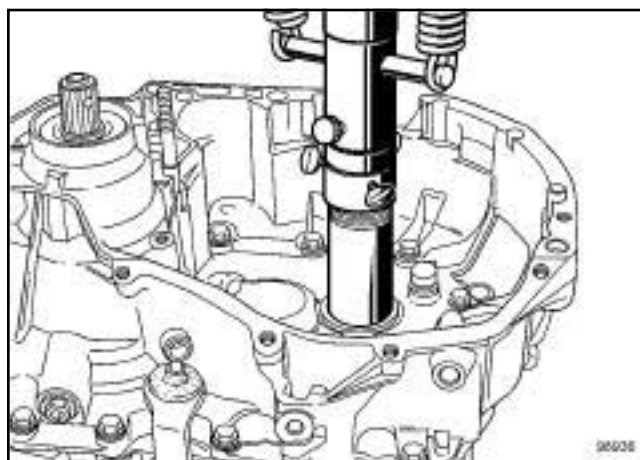
- ☐ Remove the gearbox (see **21A, Manual gearbox, Manual gearbox: Removal - Refitting**, page 21A-24) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



98934

- ☐ Position the gearbox on the mounting (1) adjusting the adjustable support (2) .



98936

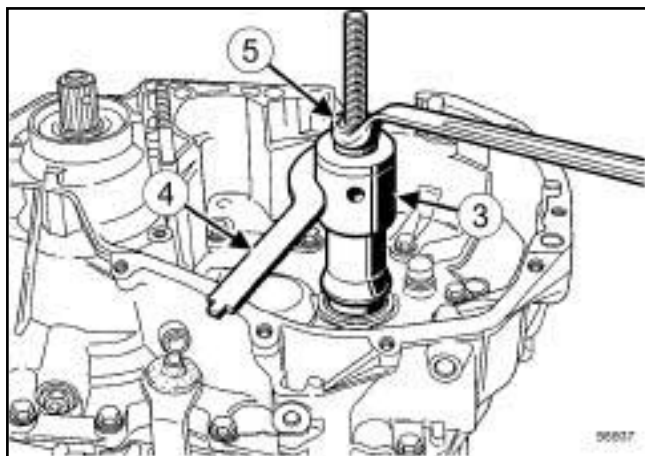
- ☐ Gently remove the guide tube with a press using the (**Bvi. 1828**).
- ☐ Degrease the guide tube.

MANUAL GEARBOX

Input shaft lip seal: Removal - Refitting

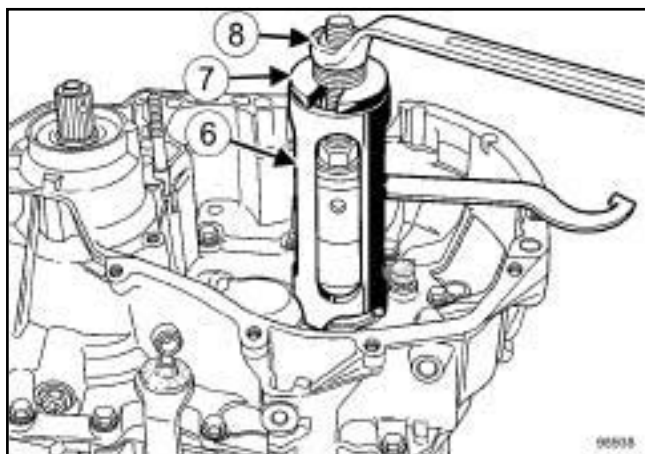
21A

JB1



98937

- ❑ Place the tightening clamp (3) onto the tube.
- ❑ Lock the tightening clamp using the spanner (4) .
- ❑ Tighten the nut firmly (5) .

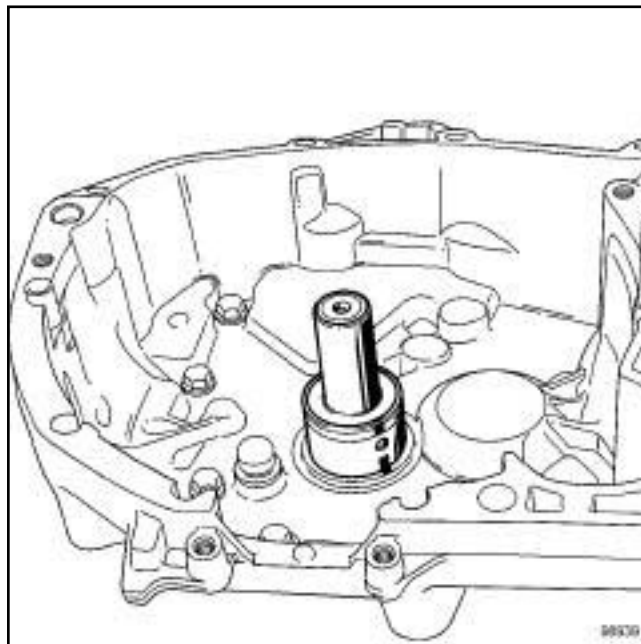


98938

- ❑ Position the sleeve (6) and the split ring (7) .
- ❑ Turn the upper nut (8) .
- ❑ Gently extract the guide tube.

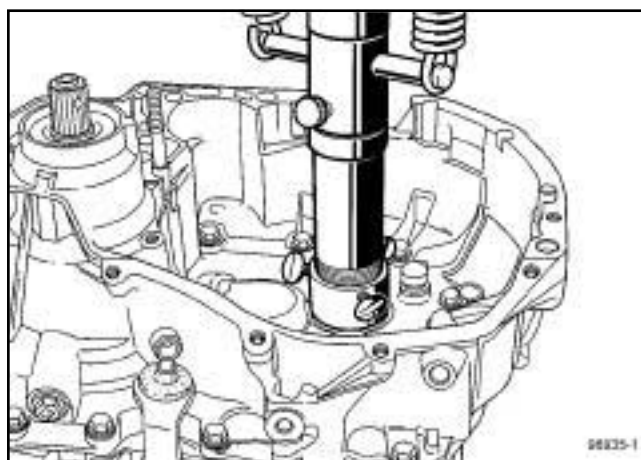
REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



98939

- ❑ Position the new guide tube on the clutch housing.



98935-1

- ❑ Gently remove the guide tube with a press and the (Bvi. 1828).

II - FINAL OPERATION.

- ❑ Refit the gearbox (see 21A, Manual gearbox, Manual gearbox: Removal - Refitting, page 21A-24) (MR 411, 21A, Manual gearbox).
- ❑ Connect the battery (see Battery: Removal - Refitting) (MR 411, 80A, Battery).

MANUAL GEARBOX

Input shaft lip seal: Removal - Refitting

21A

JH1 or JH3 or JR5

- ❑ Replace the lip seal after having opened the gearbox (see **Clutch housing bearing: Removal - Refitting**) (Technical Note 6029A, 21A, Manual gearbox).

MANUAL GEARBOX

Reverse gear switch: Removal - Refitting

21A

JB1 or JH1 or JH3 or JR5

Special tooling required

Bvi. 1934 Socket for removing/refitting reverse gear switch

Tightening torques

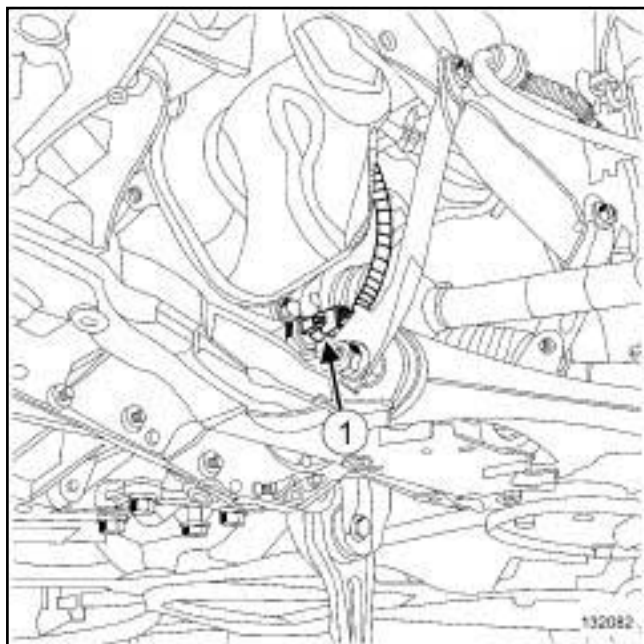
reverse gear switch **23 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

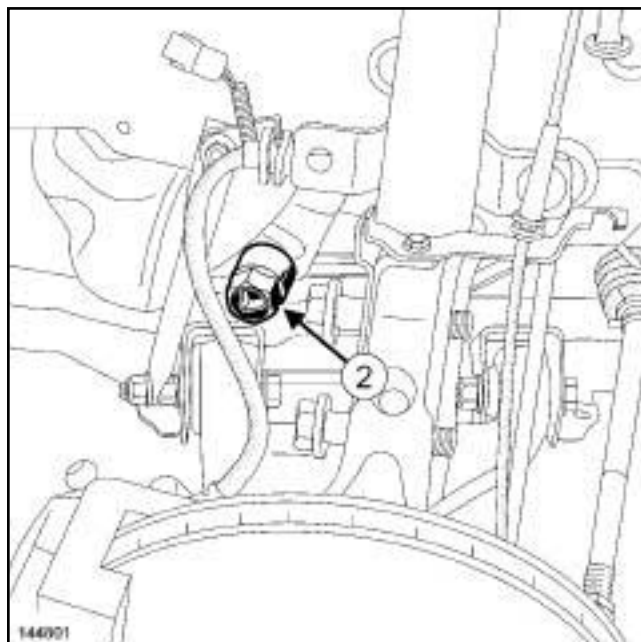
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- ☐ Remove the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132082

- ☐ Disconnect the connector (1) from the reverse gear switch.



144801

- ☐ Remove the reverse gear switch using the tool (**Bvi. 1934**) (2) .

Note:

Seal the housing of the reverse gear switch while replacing the part.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Apply some **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the threading of the reverse gear switch.
- ☐ Refit the reverse gear switch using the (**Bvi. 1934**).
- ☐ Torque tighten the **reverse gear switch (23 N.m)**.
- ☐ Connect the reverse gear switch connector.

II - FINAL OPERATION

- ☐ Fill the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .
- ☐ Refit the engine undertray.
- ☐ Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

MANUAL GEARBOX

Reverse gear switch: Removal - Refitting

21A

JB1 or JH1 or JH3 or JR5

- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

SEQUENTIAL GEARBOX

Sequential gearbox: Precautions for the repair

21B

D4F, and JH1

Equipment required

Diagnostic tool

I - SEQUENTIAL GEARBOX

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the **Diagnostic tool**.

WARNING

If any operation is carried out on the electro-hydraulic unit, it is essential to clean the unit using a cleaning product and compressed air.

Never leave the circuit open and never use a high pressure cleaner.

II - SEQUENTIAL GEARBOX COMPUTER

To disconnect the computer, switch off the ignition and wait for **1 minute**.

III - ELECTRO-HYDRAULIC UNIT

Discharge the pressure accumulator using the **Diagnostic tool** before any operation on the electro-hydraulic unit.

Be careful not to twist the high pressure pipes when removing the electro-hydraulic unit.

WARNING

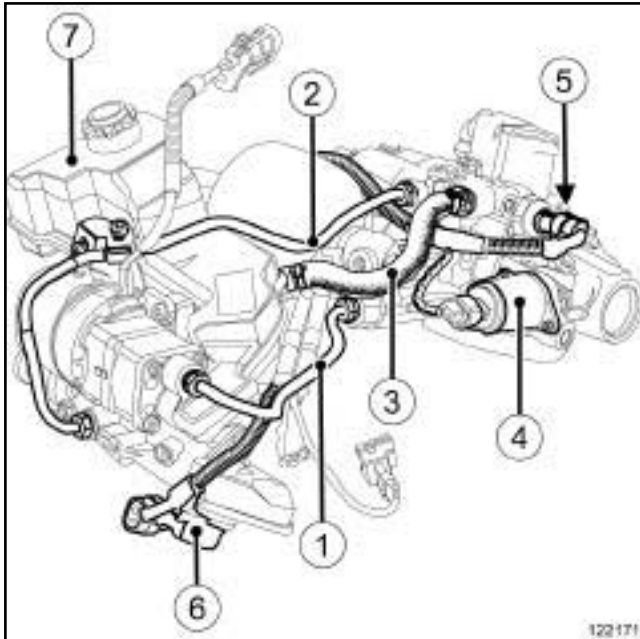
After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

IV - GEAR SELECTION SENSOR

WARNING

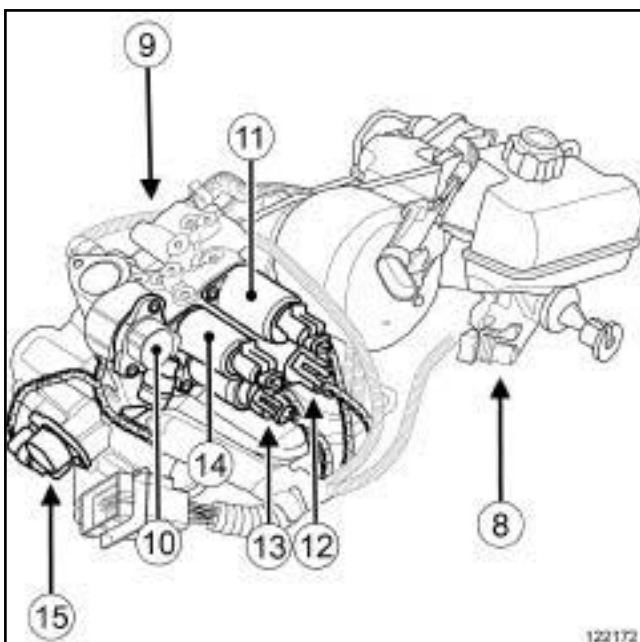
To remove the gear selection sensor it is essential that you shift to first gear before removal.

D4F, and JH1



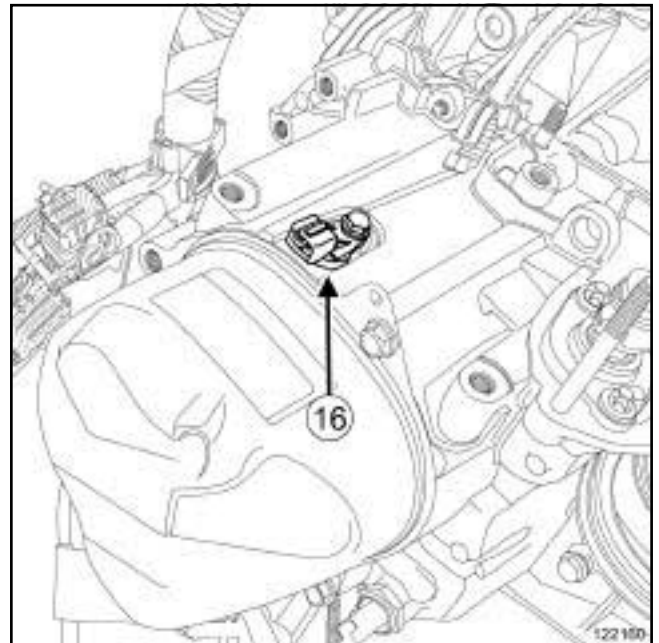
122171

- (1) Actuator module high pressure supply pipe
- (2) Clutch stay high pressure supply pipe
- (3) Reservoir return hose
- (4) Engagement solenoid valve 2
- (5) Solenoid valve unit pressure sensor
- (6) Clutch position sensor
- (7) Tank



122172

- (8) Pump unit
- (9) Actuator module
- (10) Gear selection sensor
- (11) Clutch solenoid valve
- (12) Engagement solenoid valve 1
- (13) Selection solenoid valve 3
- (14) Selection solenoid valve 4
- (15) Engagement sensor



122160

- (16) Sequential gearbox speed sensor

SEQUENTIAL GEARBOX

Sequential gearbox oil: Draining - Filling

21B

JH1

Special tooling required

Mot. 1018 8 mm square engine drain plug spanner.

Equipment required

oil recovery tray

Tightening torques

drain plug 25 N.m

Oil capacity

Gearbox type	Oil capacity (in litres)
JH1	2.8
JA3	2.8
JA5	2.5

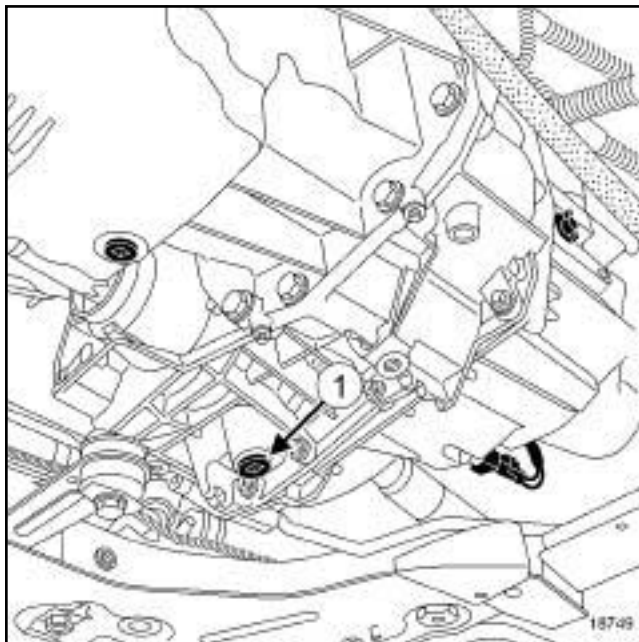
DRAINING

I - DRAINING PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray.

II - DRAINING OPERATION

- ☐ Fit a **oil recovery tray** under the gearbox.



- ☐ Remove:
 - the gearbox drain plug (1) using the tool (**Mot. 1018**),
 - the drain plug seal.
- ☐ Let the oil run into the **oil recovery tray**.

FILLING

I - FILLING PREPARATION OPERATION

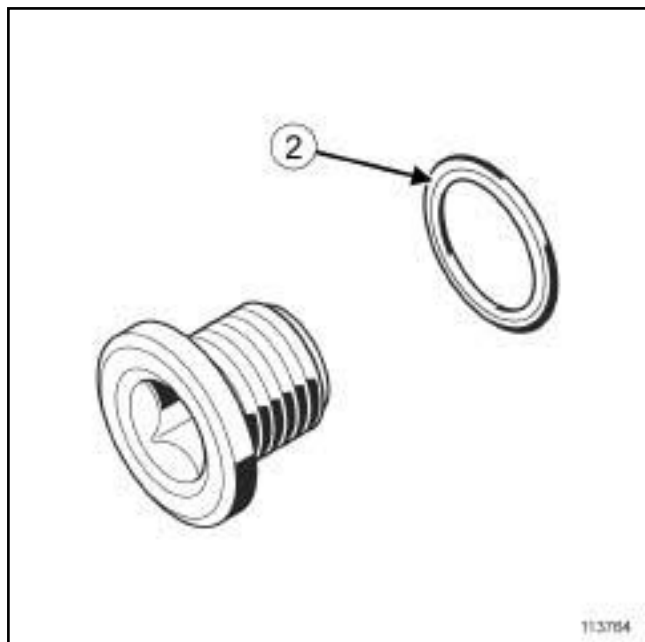
- ☐ Always replace the manual gearbox drain plug seal.

SEQUENTIAL GEARBOX

Sequential gearbox oil: Draining - Filling

21B

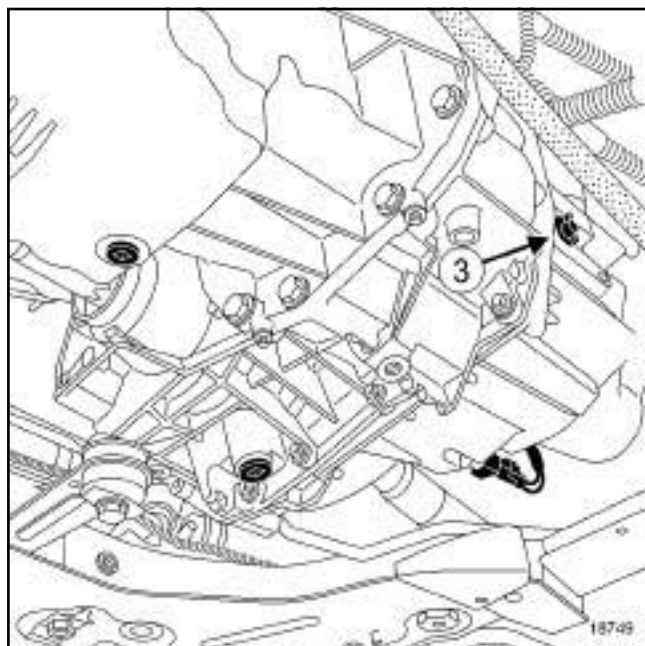
JH1



113764

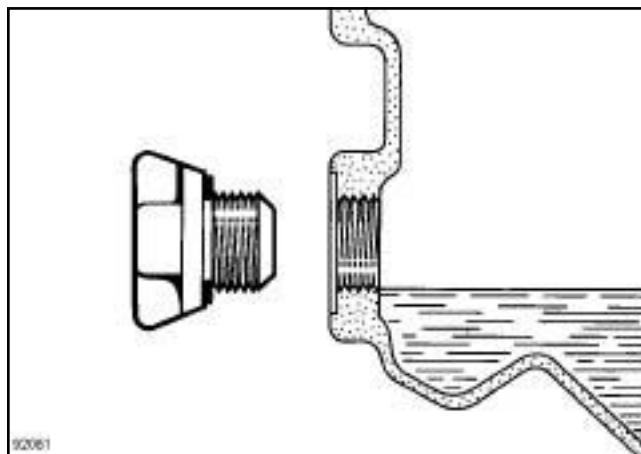
- ☐ Position the slot (2) of the new seal towards the drain plug.
- ☐ Refit the drain plug fitted with its new seal.
- ☐ Torque tighten the **drain plug (25 N.m)**.

II - FILLING OPERATION



18749

- ☐ Remove the filler plug (3) .



92081

- ☐ Fill the gearbox using a syringe containing recommended oil (see **21A, Manual gearbox, Manual gearbox oil: Specifications**, page **21A-1**) (Technical Note 6012A, 04A, Lubricants) until the oil overflows out of the filler cap hole.
- ☐ Refit the filler plug.

III - FINAL OPERATION

- ☐ Wipe any oil run-off with a cloth.
- ☐ Remove the **oil recovery tray**.
- ☐ Refit the engine undertray.

SEQUENTIAL GEARBOX

Pressure accumulator: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Mot. 445 Oil filter strap wrench.

Equipment required

Diagnostic tool

IMPORTANT

Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair, page 21B-1**).

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

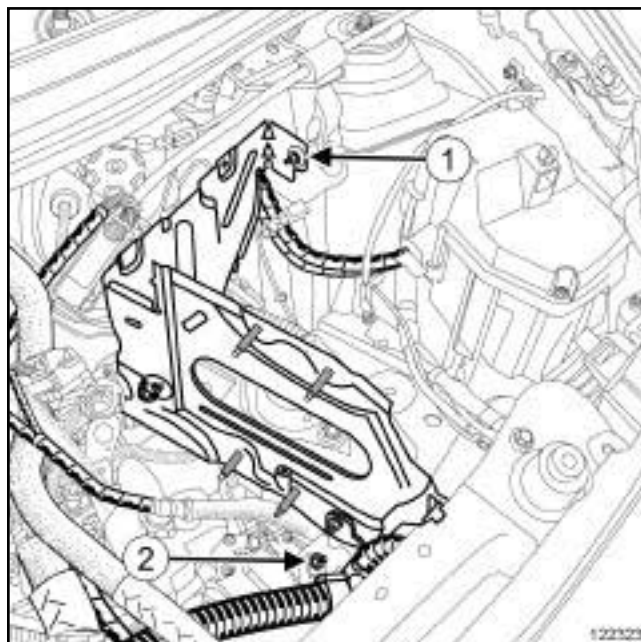
I - REMOVAL PREPARATION OPERATION

☐ Remove:

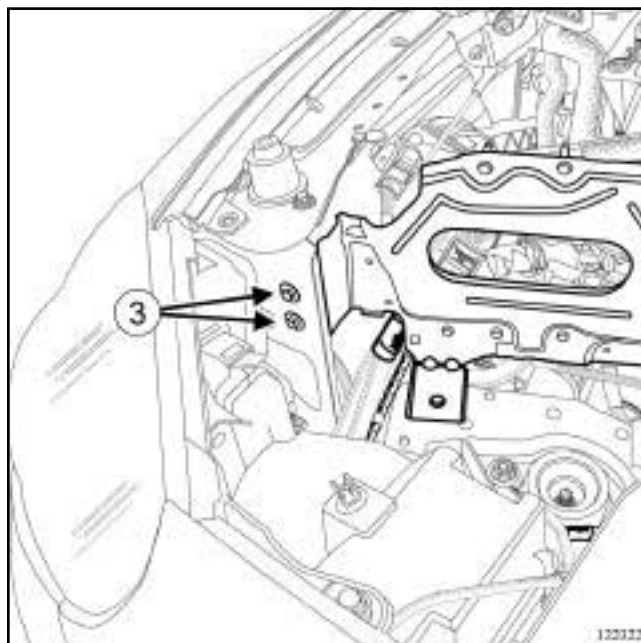
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting, page 21B-47**),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

☐ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122321



122322

☐ Remove:

- the petrol injection computer mounting nut (1),
- the engine wiring harness nut (2) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (3).

☐ Remove the engine wiring harness from the petrol injection computer mounting.

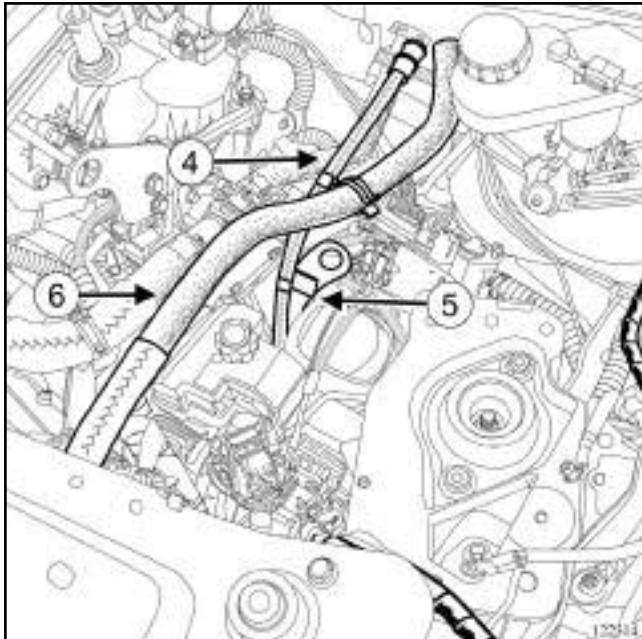
☐ Remove the petrol injection computer mounting.

SEQUENTIAL GEARBOX

Pressure accumulator: Removal - Refitting

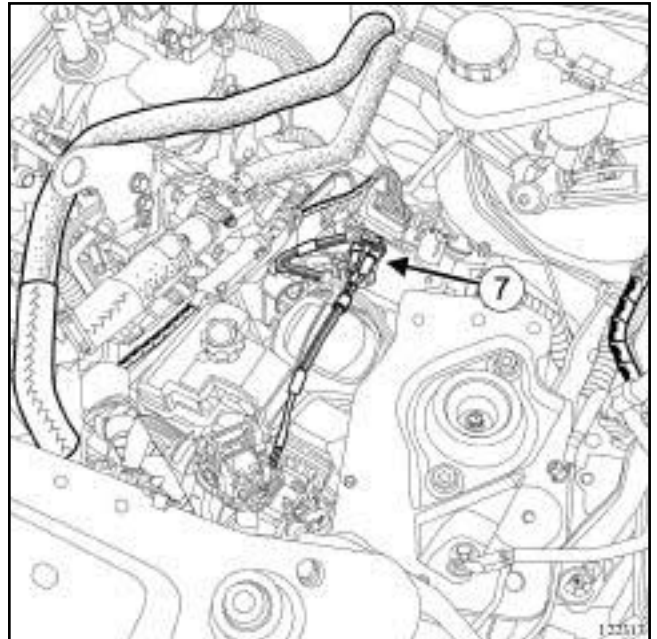
21B

D4F, and JH1



122314

- ❑ Detach the breather pipe (4) :
 - from the sequential gearbox lifting eye (5) ,
 - from the cooling hose (6) .
- ❑ Remove:
 - the breather pipe (4) from the sequential gearbox,
 - the lifting eye nut (5) from the sequential gearbox,
 - the lifting eye (5) from the sequential gearbox.

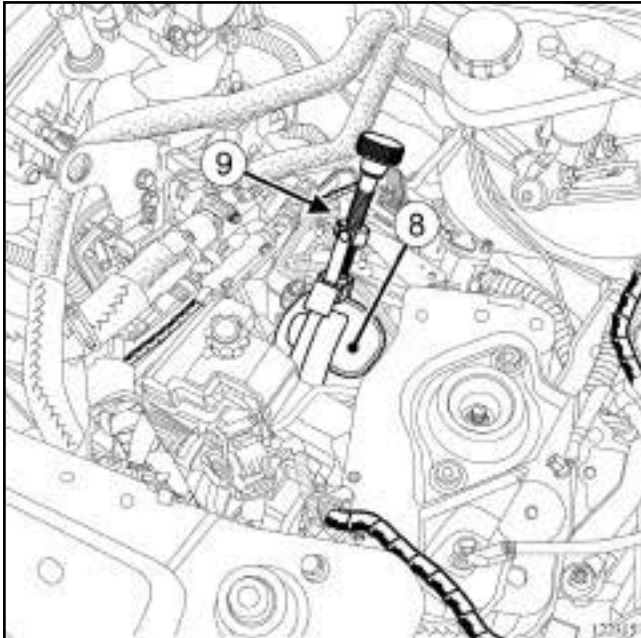


122313

- ❑ Remove the cooling hose.
- ❑ Disconnect the supply connector from the pump assembly pump.
- ❑ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.
- ❑ Remove the electro-hydraulic unit wiring harness.

D4F, and JH1

II - OPERATION FOR REMOVAL OF PART CONCERNED



Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ☐ Remove the pressure accumulator (8) from the actuator module using the (Mot. 445) (9) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ If replacing the pressure accumulator, affix a safety label to the accumulator.
- ☐ It is essential to replace the pressure accumulator seal.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the pressure accumulator onto the actuator module using the (Mot. 445).

III - FINAL OPERATION

- ☐ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.
- ☐ Connect the pump assembly supply connector.

☐ Refit:

- the sequential gearbox lifting eye on the sequential gearbox,
- the sequential gearbox lifting eye nut,
- the breather pipe on the sequential gearbox.

☐ Attach the breather pipe:

- to the cooling hose,
- to the sequential gearbox lifting eye.

☐ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

☐ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

☐ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

☐ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

SEQUENTIAL GEARBOX

Pressure accumulator: Removal - Refitting

21B

D4F, and JH1

- ❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

Pump assembly reservoir: Removal - Refitting

D4F, and JH1

Special tooling required

Ms. 583 Pipe clamps.

Equipment required

Diagnostic tool

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page 21B-1).

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),

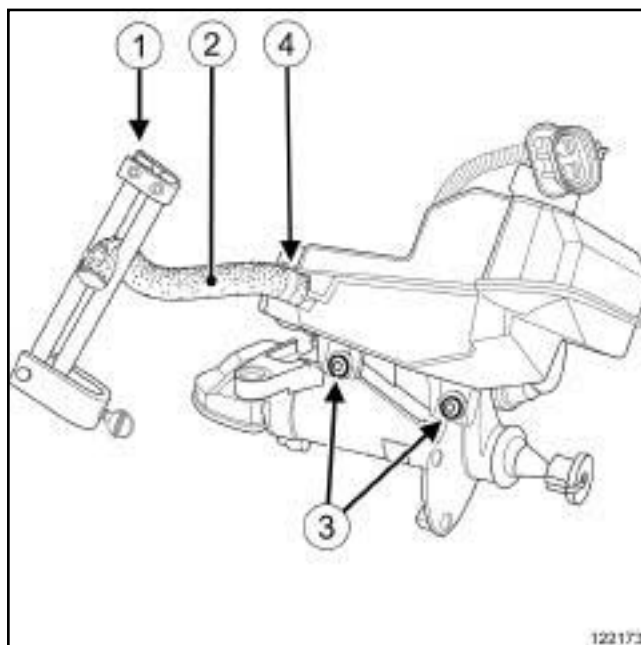
- the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page 21B-11),

☐ Position the (**Ms. 583**)

☐ Separate

- the pump assembly from the electro-hydraulic unit (see **21B, Sequential gearbox, Pump assembly: Removal - Refitting**, page 21B-18).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122173

☐ Remove the (**Ms. 583**) (1) from the low pressure hose (2).

☐ Drain the pump assembly reservoir.

☐ Remove:

- the bolts (3) from the pump assembly reservoir,
- the electric pump unit tank.

☐ In the event of replacement, remove:

- the clip (4) from the low pressure hose (2),
- the low pressure hose (2).

D4F, and JH1

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ In the event of replacement, refit:
 - the low pressure hose,
 - the low pressure hose clip.
- ☐ It is essential to replace the pump assembly reservoir seal on the pump inlet.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the pump assembly reservoir,
 - the pump assembly reservoir bolts.

III - FINAL OPERATION

- ☐ Assemble:
 - the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting, page 21B-11**),
- ☐ Remove
 - the pump assembly on the electro-hydraulic unit (see **21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-18**),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting, page 21B-47**),
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

- ☐ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required

Diagnostic tool

Tightening torques

left-hand suspended engine mounting bolts	21 N.m

left-hand suspended engine mounting rubber pad bolts	62 N.m

left-hand suspended engine mounting rubber pad nut	105 N.m

Note:

When replacing the electric pump assembly, always replace the control relay.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page **21B-1**) .

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,

- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

☐ Detach from the petrol injection computer mounting:

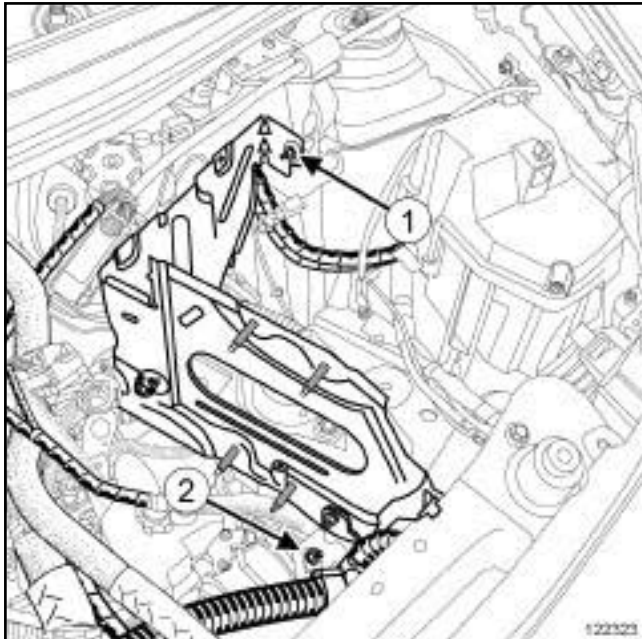
- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.

SEQUENTIAL GEARBOX

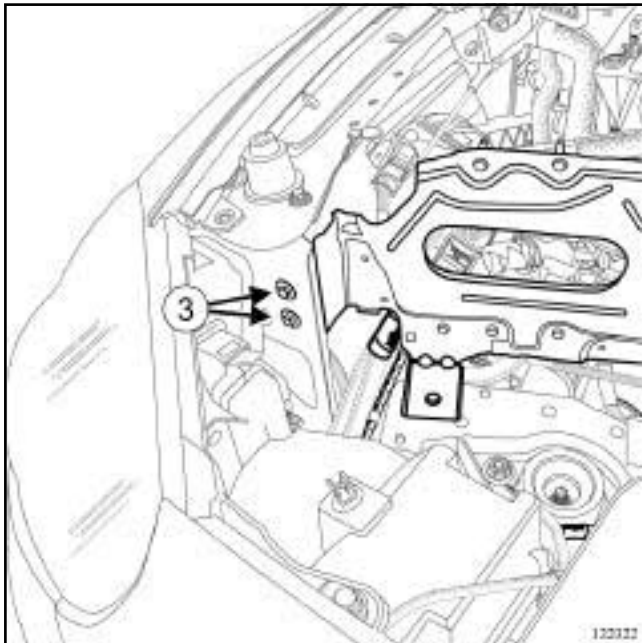
Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1



122323



122322

❑ Remove:

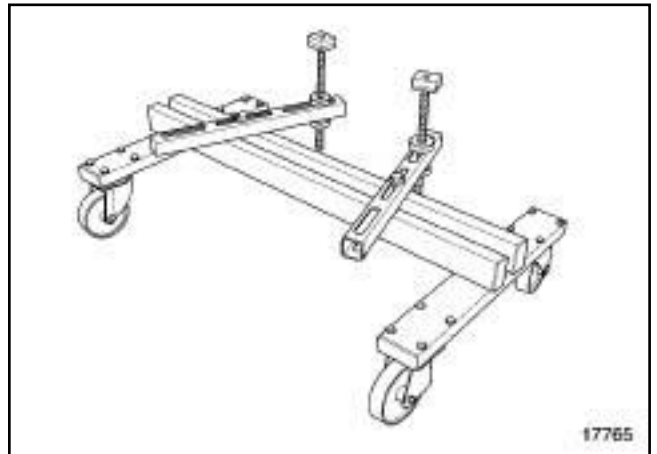
- the petrol injection computer mounting nut (1) ,
- the engine wiring harness nut (2) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (3) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

❑ Remove:

- the petrol injection computer support,

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).



17765

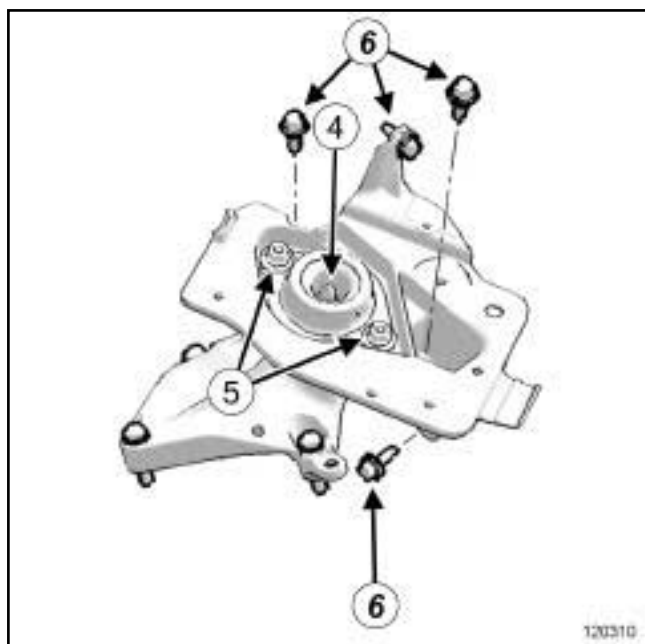
- ❑ Support the sequential gearbox on the (**Mot. 1390**).

SEQUENTIAL GEARBOX

Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1



120310

☐ Mark the positions:

- of the left-hand suspended engine mounting on the body,
- of the rubber pad on the left-hand suspended engine mounting.

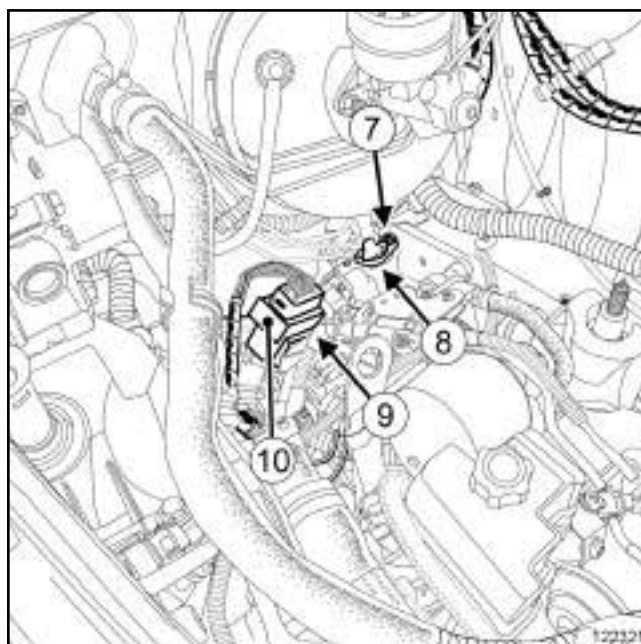
☐ Remove:

- the left-hand suspended engine mounting rubber pad nut (4) ,
- the left-hand suspended engine mounting rubber pad bolts (5) ,
- the rubber pad from the left-hand suspended engine mounting

☐ Lower the sequential gearbox to access the left-hand suspended engine mounting bolt on the body.

☐ Remove:

- the left-hand suspended engine mounting bolts (6) ,
- the left-hand suspended engine mounting.



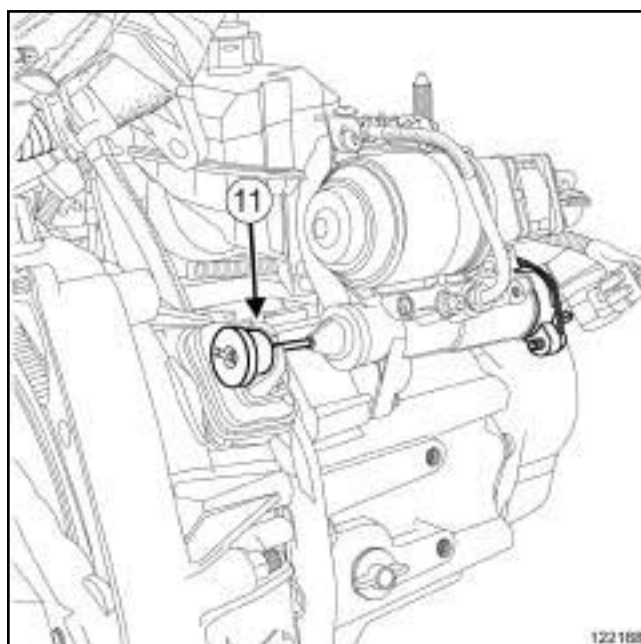
122321

☐ Remove:

- the selector shaft cover bolt (7) ,
- the selector shaft cover (8) .

☐ Disconnect the connector (9) from the electro-hydraulic unit by moving the lock (10) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



122168

☐ Remove the clutch stay cable (11) from the clutch fork.

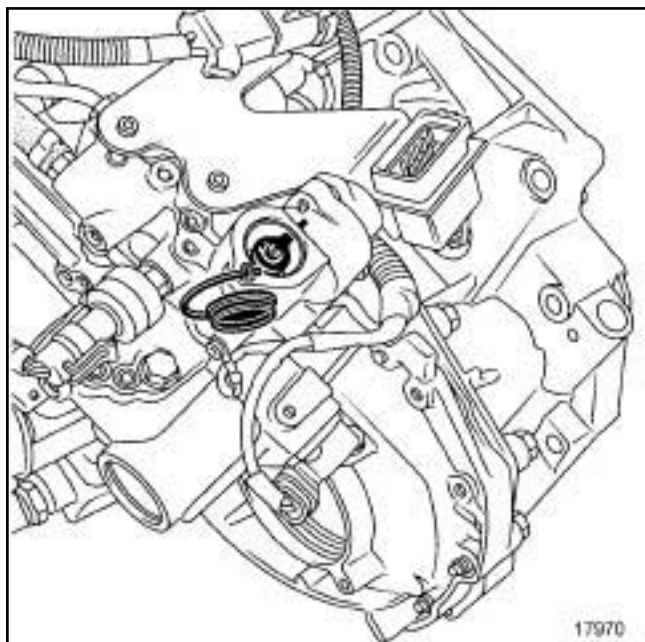
SEQUENTIAL GEARBOX

Electro-hydraulic unit: Removal - Refitting

21B

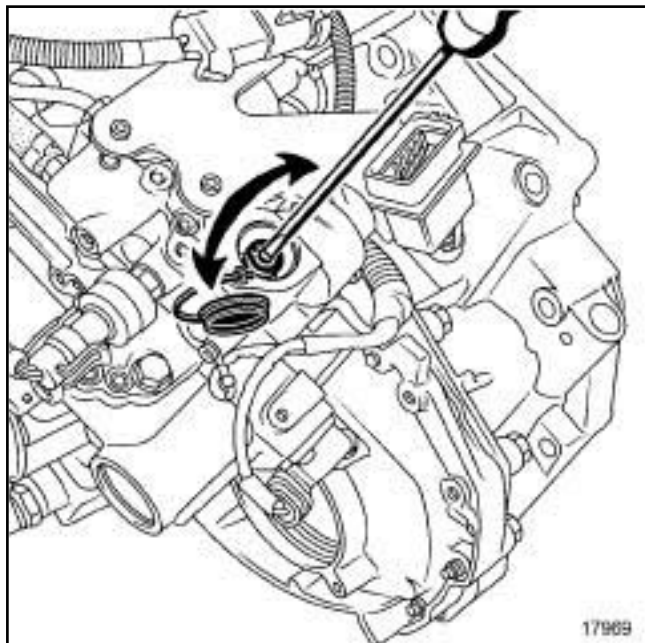
D4F, and JH1

Selector shaft locked



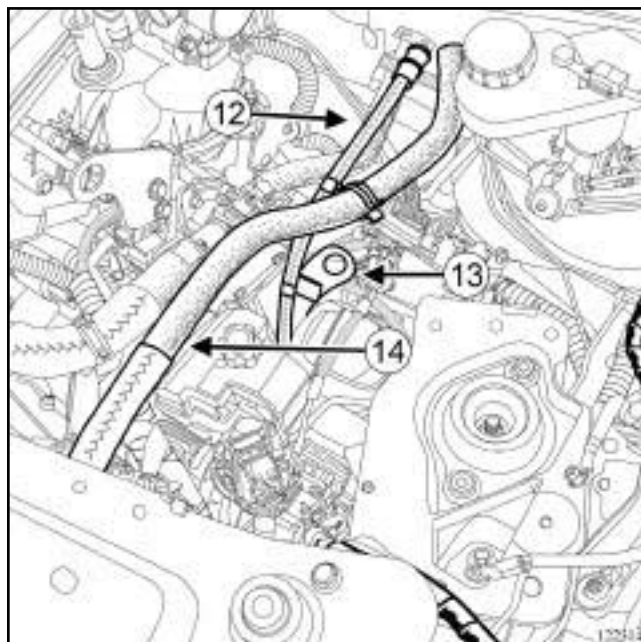
17970

Selector shaft unlocked



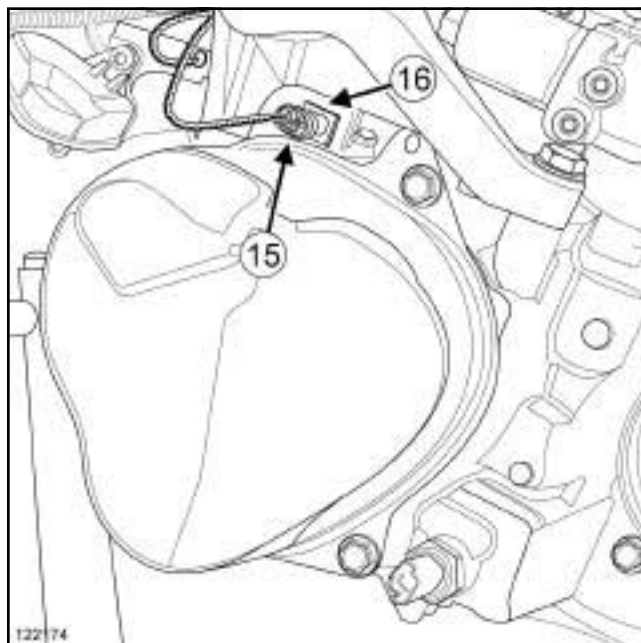
17969

- Unlock the gear selector shaft by turning the shaft by a quarter of a turn using a screwdriver.



122314

- Detach the breather pipe (12) :
 - from the sequential gearbox lifting eye (13) ,
 - from the cooling hose (14) .



122174

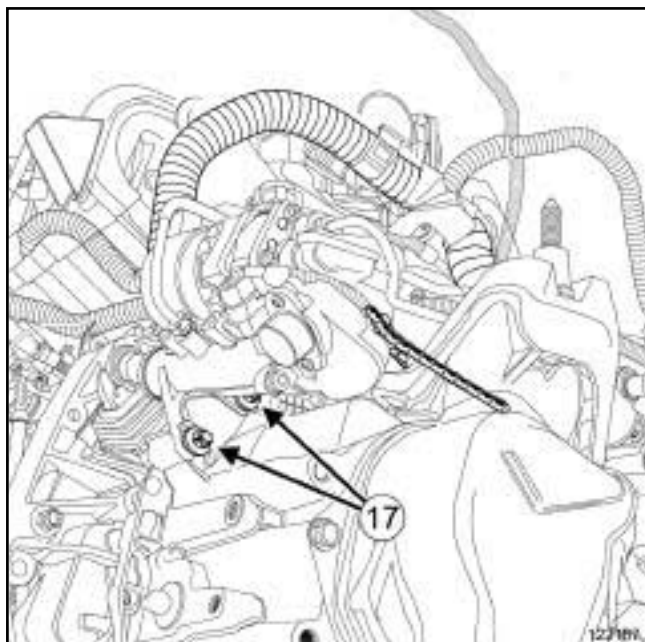
- Disconnect the sequential gearbox speed sensor connector (15) using a screwdriver on the lock (16) .

SEQUENTIAL GEARBOX

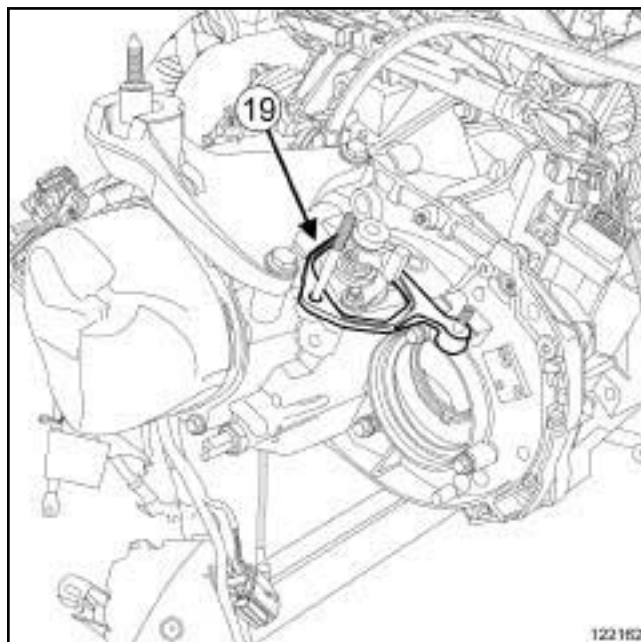
Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1



122167

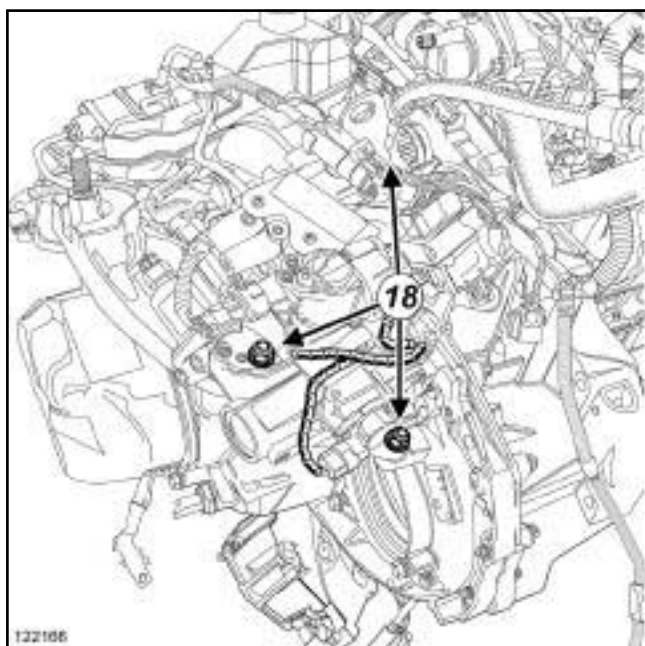


122162

- ❑ Remove the electro-hydraulic unit seal (19) .

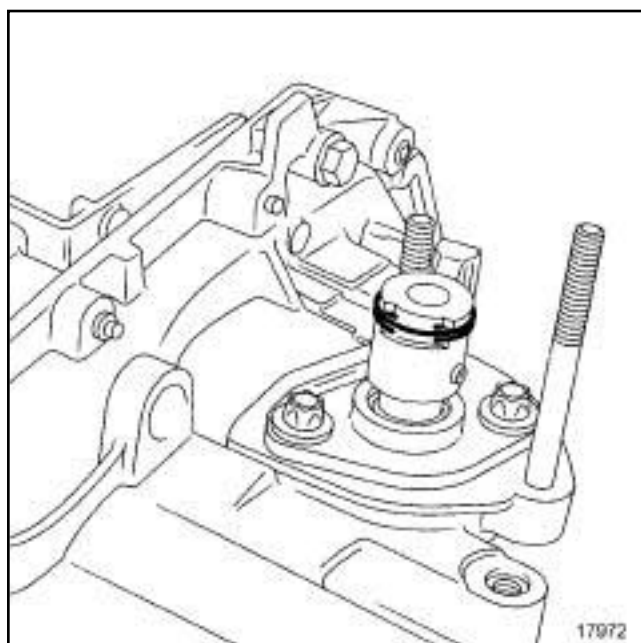
REFITTING

I - REFITTING PREPARATION OPERATION



122166

- ❑ Remove:
 - the electro-hydraulic unit bolts (17) ,
 - the electro-hydraulic unit nuts (18) ,
 - the sequential gearbox breather pipe,
 - the sequential gearbox lifting eye,
 - the electro-hydraulic unit.



17972

- ❑ Check that the half-moons are correctly positioned.
- ❑ Coat the half-moons and the sequential gearbox selector shaft with **SILICONE GREASE** (see **Vehicle: Parts and consumables for the repair**) (MR 411, 04B, Consumables - Products).

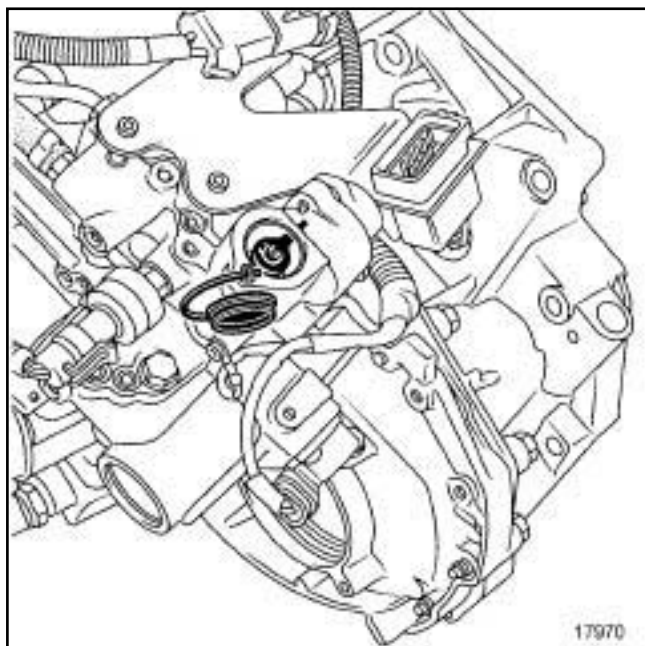
SEQUENTIAL GEARBOX

Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1

- ❑ It is essential to replace the electro-hydraulic unit seal.

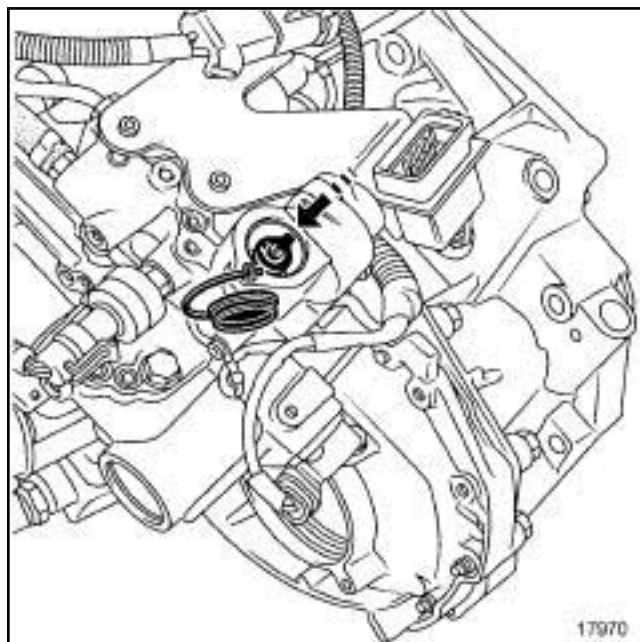


17970

- ❑ Place the actuator module selector shaft in a raised and locked position.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Fit:
 - the new electro-hydraulic unit seal,
 - the electro-hydraulic unit.
- ❑ Refit:
 - the sequential gearbox lifting eye on the sequential gearbox,
 - the breather pipe on the sequential gearbox.
 - the electro-hydraulic unit nuts,
 - the electro-hydraulic unit bolts.
- ❑ Connect the sequential gearbox speed sensor connector.
- ❑ Attach the breather pipe:
 - to the cooling hose,
 - to the sequential gearbox lifting eye.



17970

- ❑ Press on the selector shaft with a screwdriver to clip the sequential gearbox selector shaft to the actuator module.
- ❑ Refit the clutch stay cable to the clutch fork.
- ❑ Connect the electro-hydraulic unit connector by moving the lock.

III - FINAL OPERATION

- ❑ Refit:
 - the selector shaft cover,
 - the selector shaft cover bolt.
- ❑ Fit the left-hand suspended mounting on the body.
- ❑ Fit the left-hand suspended engine mounting bolts without tightening them.
- ❑ Torque tighten the **left-hand suspended engine mounting bolts (21 N.m)**.
- ❑ Raise the sequential gearbox to its original position.
- ❑ Fit the left-hand suspended engine mounting rubber pad.
- ❑ Fit the left-hand suspended engine mounting rubber pad bolts without tightening them.
- ❑ Torque tighten the **left-hand suspended engine mounting rubber pad bolts (62 N.m)**.
- ❑ Fit the left-hand suspended engine mounting rubber pad nut without tightening it.
- ❑ Torque tighten the **left-hand suspended engine mounting rubber pad nut (105 N.m)**.

SEQUENTIAL GEARBOX

Electro-hydraulic unit: Removal - Refitting

21B

D4F, and JH1

❑ Refit:

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting).

Refit.

❑ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

❑ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❑ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

❑ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

❑ If replacing the electro-hydraulic unit, carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Pump assembly: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Ms. 583 Pipe clamps.

Equipment required

Diagnostic tool

Tightening torques

high pressure pipe unions **14 N.m**

Note:

When replacing the electric pump assembly, always replace the control relay.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

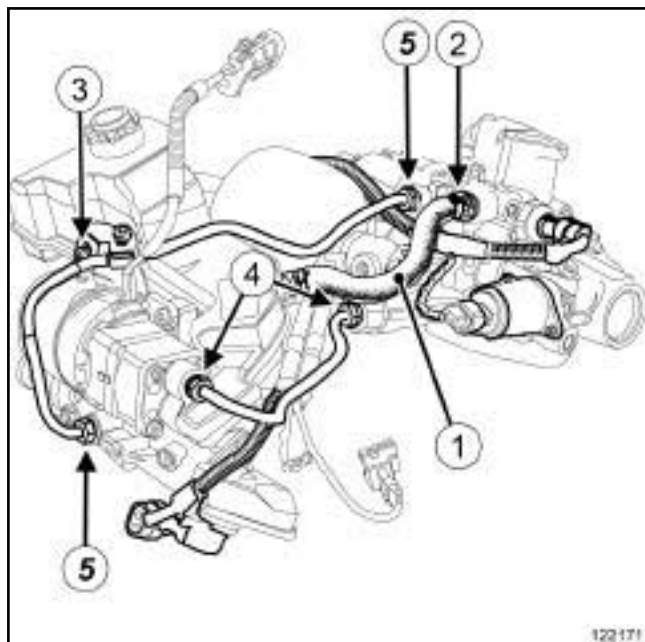
- ☐ Disconnect the supply connector from the pump assembly pump.
- ☐ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

SEQUENTIAL GEARBOX

Pump assembly: Removal - Refitting

21B

D4F, and JH1



122171

- ☐ Position the **(Ms. 583)** on the reservoir low pressure return hose (1) .
- ☐ Remove the clip (2) from the reservoir return hose.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ☐ Disconnect the reservoir low pressure return hose (1) from the actuator module.
- ☐ Remove:
 - the clutch stay high pressure supply pipe bracket bolt (3) ,
 - the actuator module high pressure supply pipe by pressing on the unions (4) ,
 - the clutch stay high pressure supply pipe by pressing on the unions (5) ,
 - the pump assembly from the actuator module.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit:
 - the clutch stay high pressure supply pipe,
 - the actuator module high pressure supply pipe.
- ☐ Fit the high pressure pipe unions, without tightening them.

- ☐ Connect the reservoir low pressure return hose to the actuator module.
- ☐ Refit the reservoir return hose clip on the actuator module.
- ☐ Remove the **(Ms. 583)** from the reservoir low pressure return hose.
- ☐ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.
- ☐ Connect the pump assembly supply connector.

II - FINAL OPERATION

- ☐ Refit the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .
- ☐ Torque tighten the **high pressure pipe unions (14 N.m)**.
- ☐ Refit:
 - the clutch stay high pressure supply pipe bracket bolt,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

SEQUENTIAL GEARBOX

Pump assembly: Removal - Refitting

21B

D4F, and JH1

- ☐ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Mot. 1390 Support for removal - refitting of engine - gearbox assembly

Equipment required

Diagnostic tool

Tightening torques

left-hand suspended engine mounting bolts **21 N.m**

left-hand suspended engine mounting rubber pad bolts **62 N.m**

left-hand suspended engine mounting rubber pad nut **105 N.m**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair, page 21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

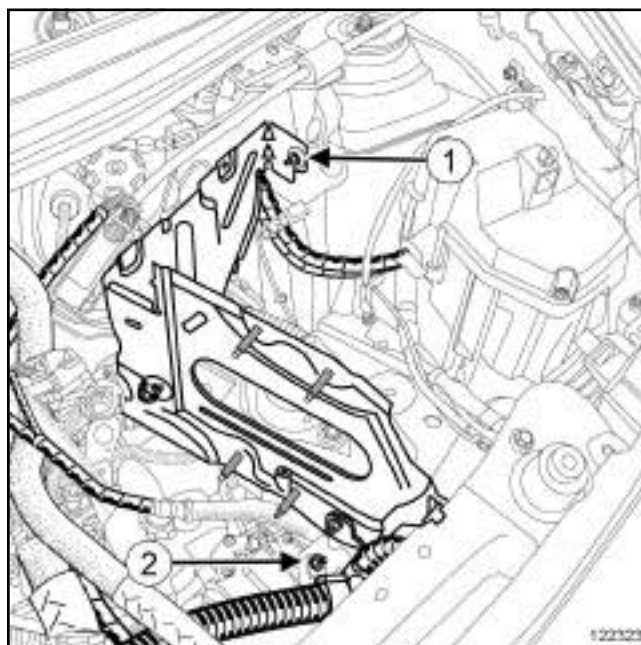
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting, page 21B-47**) ,
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),

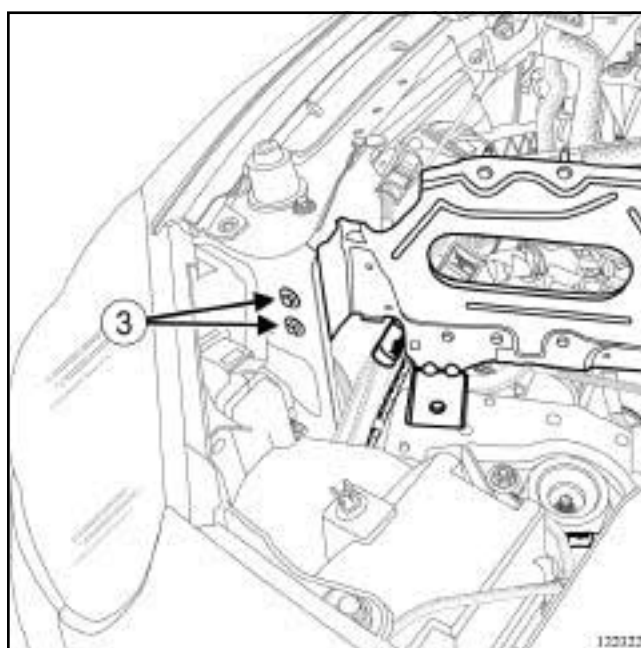
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

- ☐ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122323



122322

- ☐ Remove:
 - the petrol injection computer mounting nut (1) ,

SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

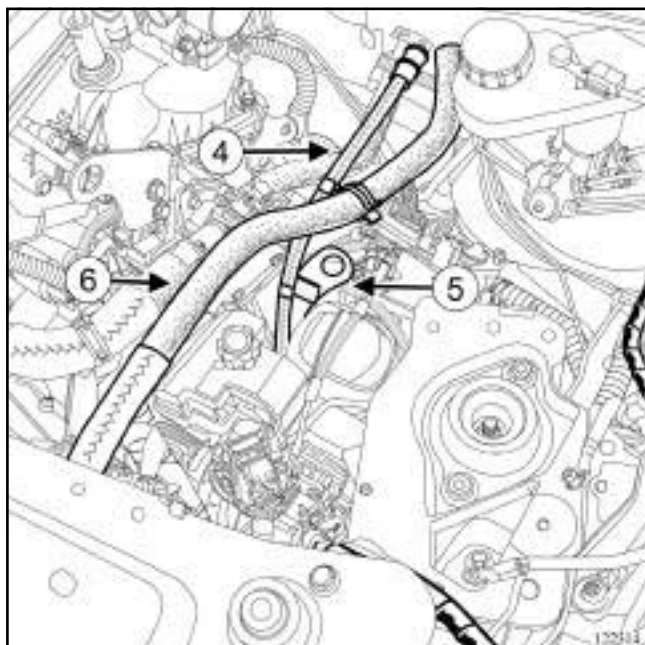
21B

D4F, and JH1

- the engine wiring harness nut (2) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (3) .

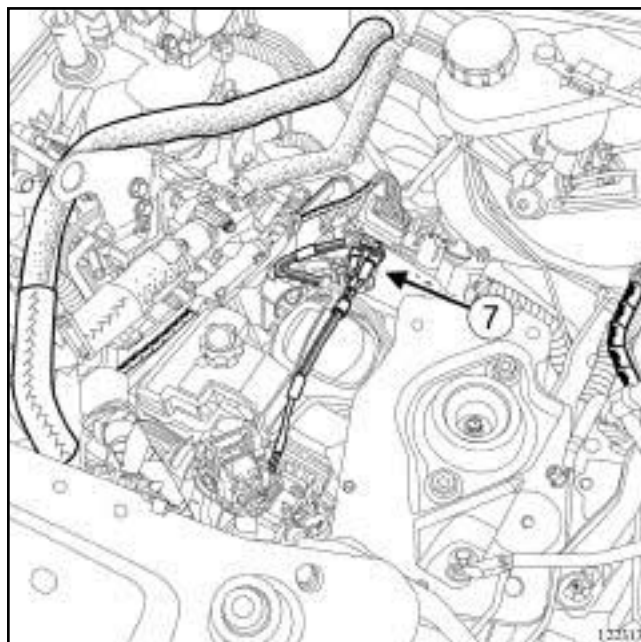
- ❑ Remove the engine wiring harness from the petrol injection computer mounting.
- ❑ Remove the petrol injection computer mounting.

1 - Removing engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

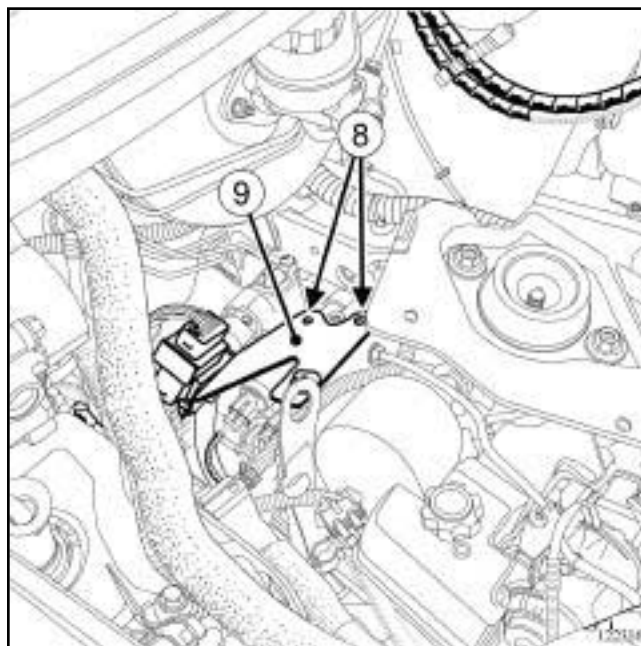


122314

- ❑ Detach the breather pipe (4) :
 - from the sequential gearbox lifting eye (5) ,
 - from the cooling hose (6) .
- ❑ Remove:
 - the breather pipe (4) from the sequential gearbox,
 - the lifting eye nut (5) from the sequential gearbox,
 - the lifting eye (5) from the sequential gearbox.



122313



122316

- ❑ Remove the cooling hose.
- ❑ Disconnect the pump assembly supply connector (7) .
- ❑ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.
- ❑ Remove the bolts (8) from the electro-hydraulic unit connector mounting (9) .
- ❑ Remove the electro-hydraulic unit connector mounting (9) .

SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

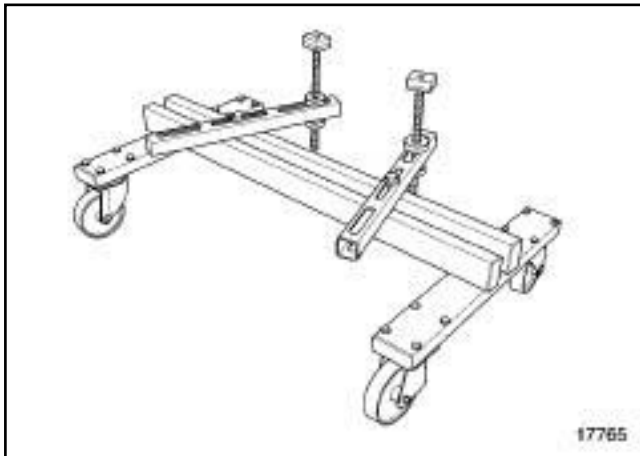
21B

D4F, and JH1

2 - Removing engagement solenoid valve 2

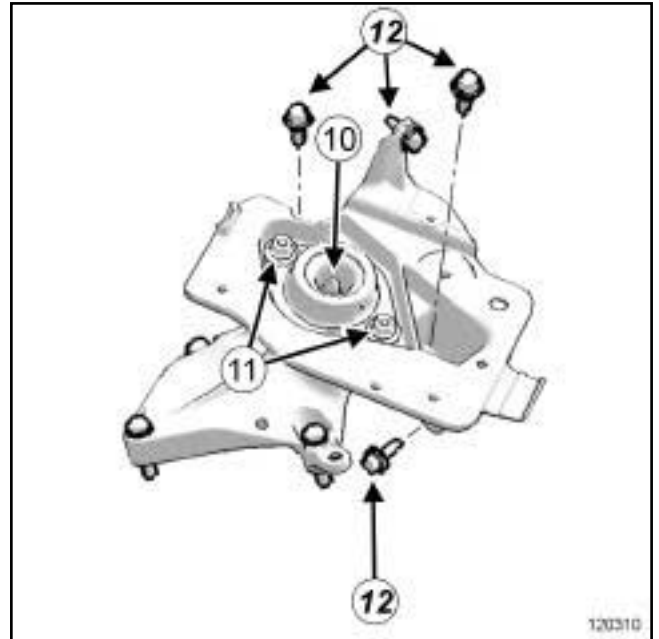
❑ Remove:

- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting).



17765

- ❑ Support the sequential gearbox on the (**Mot. 1390**).



120310

❑ Mark the positions:

- of the left-hand suspended engine mounting on the body,
- of the rubber pad on the left-hand suspended engine mounting.

❑ Remove:

- the left-hand suspended engine mounting rubber pad nut (**10**) ,
- the left-hand suspended engine mounting rubber pad bolts (**11**) ,
- the rubber pad from the left-hand suspended engine mounting

- ❑ Lower the sequential gearbox to access the left-hand suspended engine mounting bolt on the body.

❑ Remove:

- the left-hand suspended engine mounting bolts (**12**) ,
- the left-hand suspended engine mounting.

II - OPERATION FOR REMOVAL OF PART CONCERNED

❑

Note:

Before removing the solenoid valves, always mark their respective connectors in order not to mix them up.

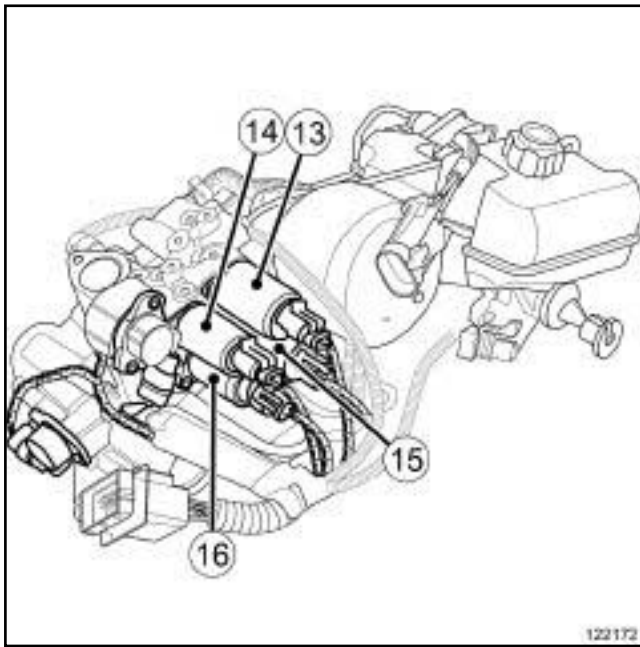
SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

21B

D4F, and JH1

1 - Removing engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

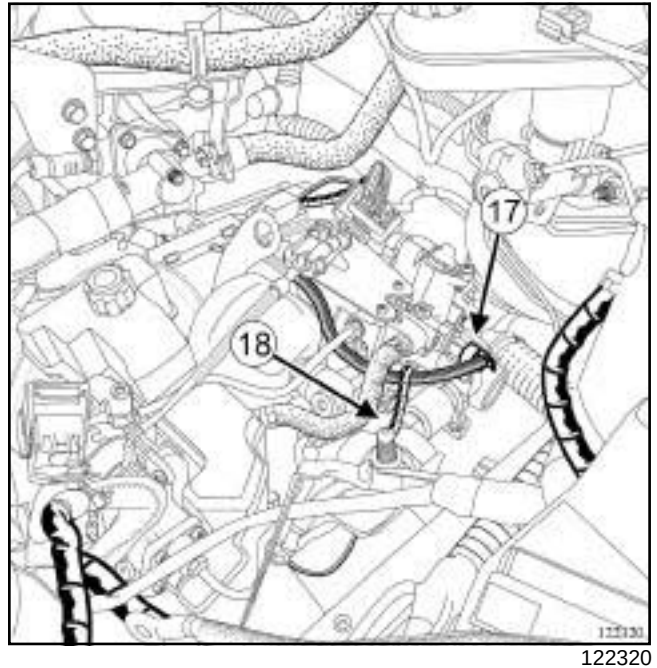


Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ❑ Remove the solenoid valve affected, following the correct removal order for the solenoid valves:
 - the clutch solenoid valve (13) ,
 - selection solenoid valve 4 (14) ,
 - selection solenoid valve 3 (15) ,
 - engagement solenoid valve 1 (16) .

2 - Removing engagement solenoid valve 2



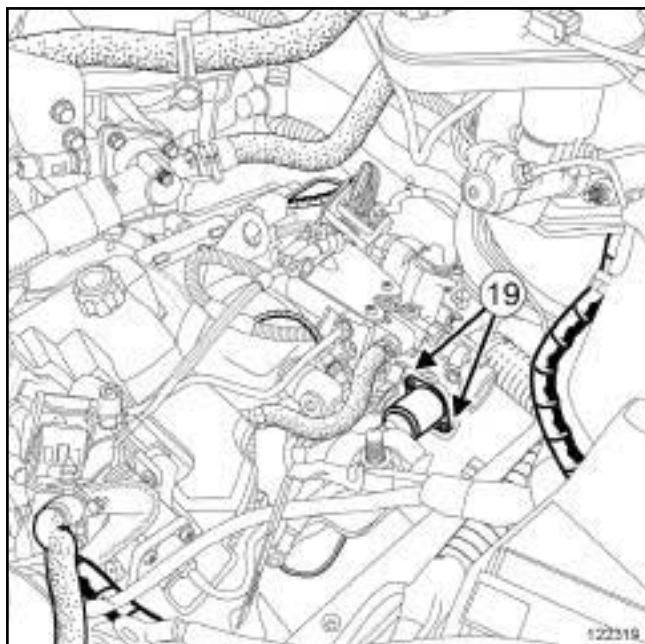
- ❑ Disconnect the following connectors :
 - (17) from the solenoid valve unit pressure sensor,
 - (18) from engagement solenoid valve 2.
- ❑ Remove the actuator module wiring harness.

SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

21B

D4F, and JH1



122319



Note:

Prepare for oil to flow out of the electro-hydraulic unit.

Remove:

- the bolts (19) from engagement solenoid valve 2,
- engagement solenoid valve 2.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ It is essential to replace the engagement or clutch solenoid valve seal.

II - REFITTING OPERATION FOR PART CONCERNED

1 - Refitting engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

- ☐ Refit the affected solenoid valve, following the correct removal order for the solenoid valves:
 - engagement solenoid valve 1 fitted with its new seal,
 - selection solenoid valve 3,
 - selection solenoid valve 4,
 - the clutch solenoid valve fitted with its new seal.

2 - Refitting engagement solenoid valve 2

Refit:

- engagement solenoid valve 2 fitted with its new seal,
- engagement solenoid valve 2 bolts.

Connect the connectors:

- to engagement solenoid valve 2,
- to the solenoid valve unit pressure sensor.

III - FINAL OPERATION

1 - Refitting engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

- ☐ Fit the electro-hydraulic unit connector mounting.
- ☐ Refit the electro-hydraulic unit connector mounting bolts.
- ☐ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.
- ☐ Connect the pump assembly supply connector.
- ☐ Refit:
 - the sequential gearbox lifting eye on the sequential gearbox,
 - the sequential gearbox lifting eye nut,
 - the breather pipe on the sequential gearbox.
- ☐ Attach the breather pipe:
 - to the cooling hose,
 - to the sequential gearbox lifting eye.

2 - Refitting engagement solenoid valve 2

- ☐ Fit the left-hand suspended engine mounting to the body.
- ☐ Fit the left-hand suspended engine mounting bolts without tightening them.
- ☐ Torque tighten the **left-hand suspended engine mounting bolts (21 N.m)**.
- ☐ Raise the sequential gearbox to its original position.
- ☐ Fit the left-hand suspended engine mounting rubber pad.
- ☐ Fit the left-hand suspended engine mounting rubber pad bolts without tightening them.
- ☐ Torque tighten the **left-hand suspended engine mounting rubber pad bolts (62 N.m)**.

SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting

21B

D4F, and JH1

- ☐ Fit the left-hand suspended engine mounting rubber pad nut without tightening it.
- ☐ Torque tighten the **left-hand suspended engine mounting rubber pad nut (105 N.m)**.
- ☐ Refit:
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

3 - Refitting all solenoid valves

- ☐ Fit:
 - the petrol injection computer support,
 - the engine wiring harness on the petrol injection computer mounting.
- ☐ Refit:
 - the petrol injection computer mounting bolts,
 - the engine wiring harness nut on the petrol injection computer mounting,
 - the petrol injection computer mounting nut.
- ☐ Clip onto the petrol injection computer mounting:
 - the battery wiring harness,
 - the petrol injection computer wiring harness,
 - the sequential gearbox computer wiring harness,
 - the cooling hose.
- ☐ Refit:
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

- ☐ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Engagement sensor: Removal - Refitting

21B

D4F, and JH1

Equipment required

Diagnostic tool

IMPORTANT

Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT

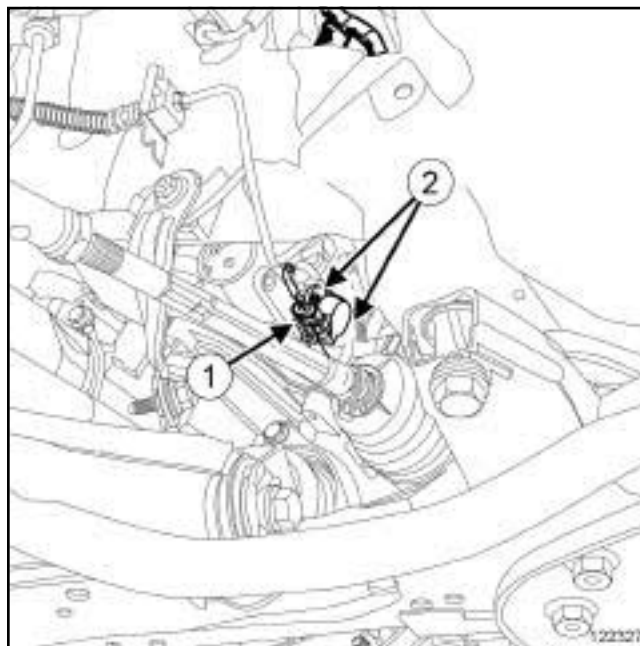
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair, page 21B-1**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove the front left-hand wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122327

- ☐ Disconnect the engagement sensor connector (1) .
- ☐ Remove:
 - the engagement sensor bolts (2) ,
 - the engagement sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the engagement sensor,
 - the engagement sensor bolts.
- ☐ Connect the engagement sensor connector.

II - FINAL OPERATION.

- ☐ Refit the front left-hand wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).
- ☐ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Actuator module: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Ms. 583 Pipe clamps.

Equipment required

Diagnostic tool

Tightening torques

high pressure pipe unions **14 N.m**

IMPORTANT

Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page **21B-1**).

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**),

- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page **21B-11**),
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components).

II - OPERATION FOR REMOVAL OF PART CONCERNED

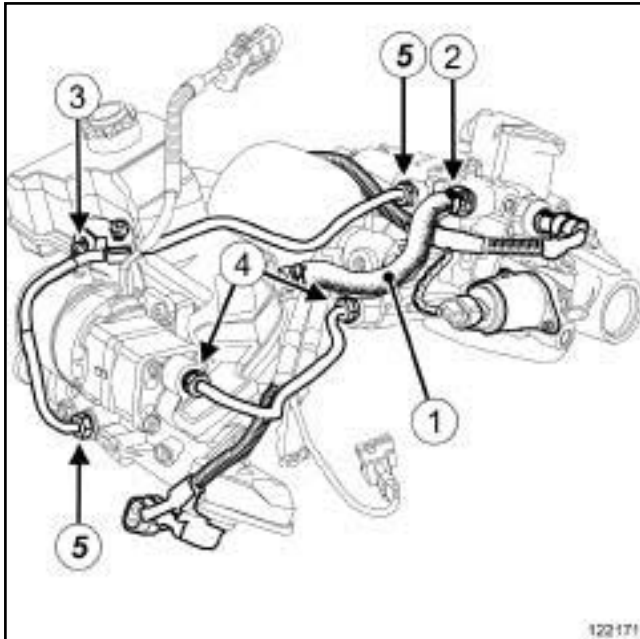
- ☐ Disconnect the supply connector from the pump assembly pump.
- ☐ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

SEQUENTIAL GEARBOX

Actuator module: Removal - Refitting

21B

D4F, and JH1



122171

- ☐ Position the **(Ms. 583)** on the reservoir low pressure return hose (1) .
- ☐ Remove the clip (2) from the reservoir return hose.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ☐ Disconnect the reservoir low pressure return hose (1) from the actuator module.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ☐ Remove:
 - the clutch stay high pressure supply pipe bracket bolt (3) ,
 - the actuator module high pressure supply pipe by pressing on the unions (4) ,
 - the clutch stay high pressure supply pipe by pressing on the unions (5) ,
 - the actuator module from the pump assembly.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit:
 - the clutch stay high pressure supply pipe,
 - the actuator module high pressure supply pipe.
- ☐ Fit the high pressure pipe unions, without tightening them.
- ☐ Connect the reservoir low pressure return hose to the actuator module.
- ☐ Refit the reservoir return hose clip on the actuator module.
- ☐ Remove the **(Ms. 583)** from the reservoir low pressure return hose.
- ☐ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.
- ☐ Connect the pump assembly supply connector.

II - FINAL OPERATION

- ☐ Refit the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page 21B-11) .
- ☐ Torque tighten the **high pressure pipe unions (14 N.m)**.
- ☐ Refit:
 - the clutch stay high pressure supply pipe bracket bolt,
 - the front axle subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),

SEQUENTIAL GEARBOX

Actuator module: Removal - Refitting

21B

D4F, and JH1

- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**),

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),

- ❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

- ❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Gear selection sensor: Removal - Refitting

21B

D4F, and JH1

Equipment required

Diagnostic tool

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page 21B-1).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Engage first gear

WARNING

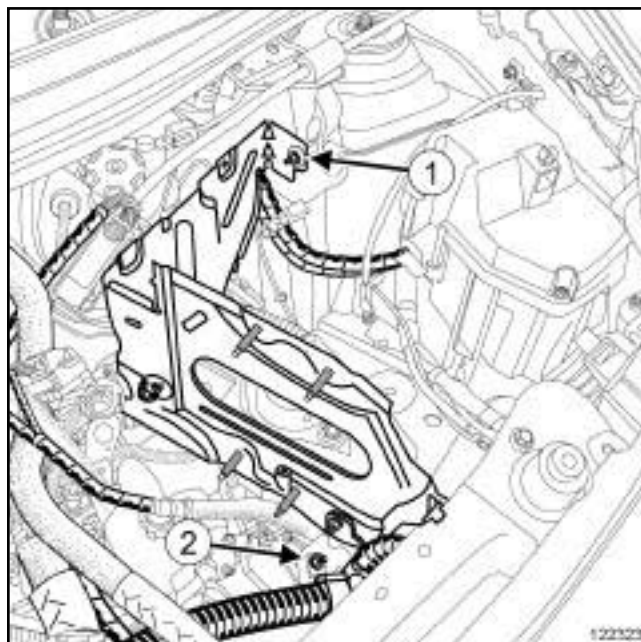
To remove the gear selection sensor it is essential that you shift to first gear before removal.

- ☐ Remove:

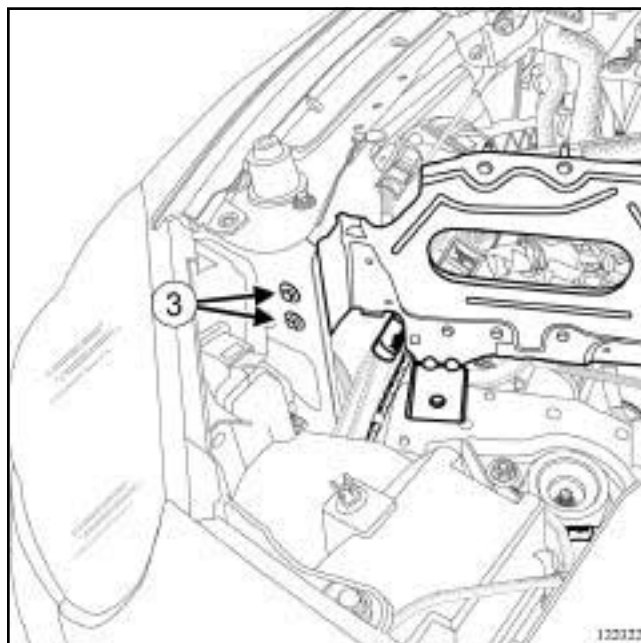
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

- ☐ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122321



122322

- ☐ Remove:

- the petrol injection computer mounting nut (1) ,
- the engine wiring harness nut (2) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (3) .

- ☐ Remove the engine wiring harness from the petrol injection computer mounting.

- ☐ Remove the petrol injection computer mounting.

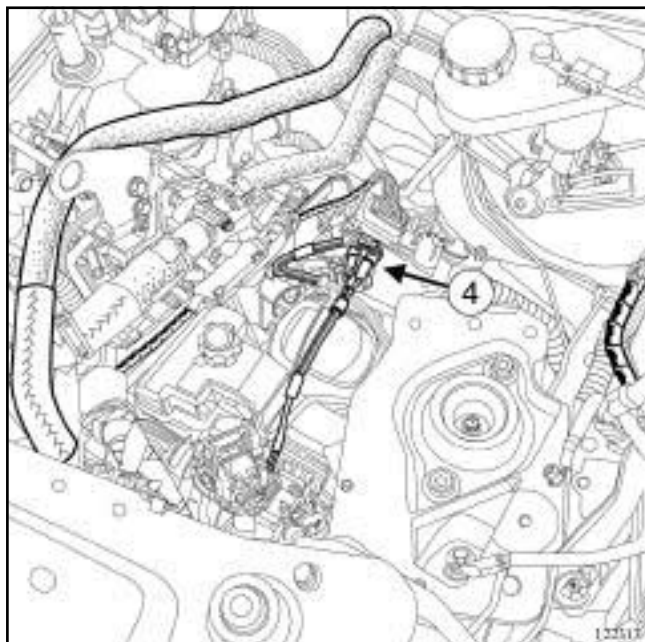
SEQUENTIAL GEARBOX

Gear selection sensor: Removal - Refitting

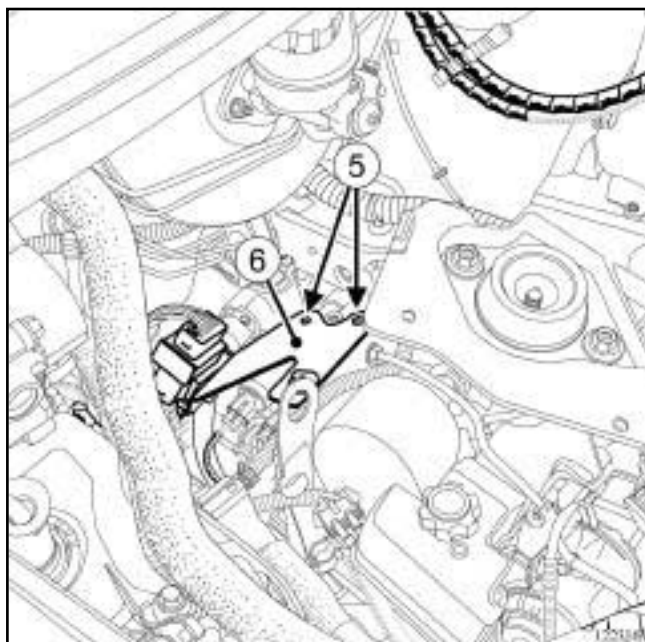
21B

D4F, and JH1

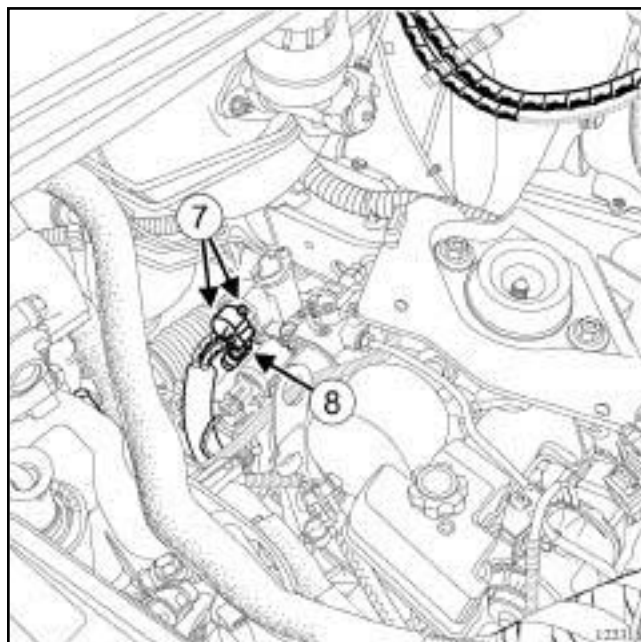
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Disconnect the pump assembly supply connector (4).
- ☐ Unclip the pump assembly supply connector (4) from the electro-hydraulic unit connector mounting.



- ☐ Remove the bolts (5) from the electro-hydraulic unit connector mounting (6).
- ☐ Remove the electro-hydraulic unit connector mounting (6).



- ☐ Remove the gear selection sensor bolts (7).
- ☐ Remove the gear selection sensor from its housing.
- ☐ Disconnect the gear selection sensor connector (8).
- ☐ Remove the gear selection sensor.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Check that the gear selection sensor is able to rotate freely.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Connect the gear selection sensor connector.
- ☐ Position the gear selection sensor.
- ☐ Refit the gear selection sensor bolts.
- ☐ Refit:
 - the electro-hydraulic unit connector mounting,
 - the electro-hydraulic unit connector mounting bolts.
- ☐ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.
- ☐ Connect the pump assembly supply connector.

III - FINAL OPERATION.

- ☐ Fit:
 - the petrol injection computer support,

SEQUENTIAL GEARBOX

Gear selection sensor: Removal - Refitting

21B

D4F, and JH1

- the engine wiring harness on the petrol injection computer mounting.
- ❑ Refit:
 - the petrol injection computer mounting bolts,
 - the engine wiring harness nut on the petrol injection computer mounting,
 - the petrol injection computer mounting nut.
- ❑ Clip onto the petrol injection computer mounting:
 - the battery wiring harness,
 - the petrol injection computer wiring harness,
 - the sequential gearbox computer wiring harness,
 - the cooling hose.
- ❑ Refit:
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- ❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

SEQUENTIAL GEARBOX

Clutch position sensor: Removal - Refitting

21B

D4F, and JH1

Equipment required

Diagnostic tool

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page 21B-1).

IMPORTANT

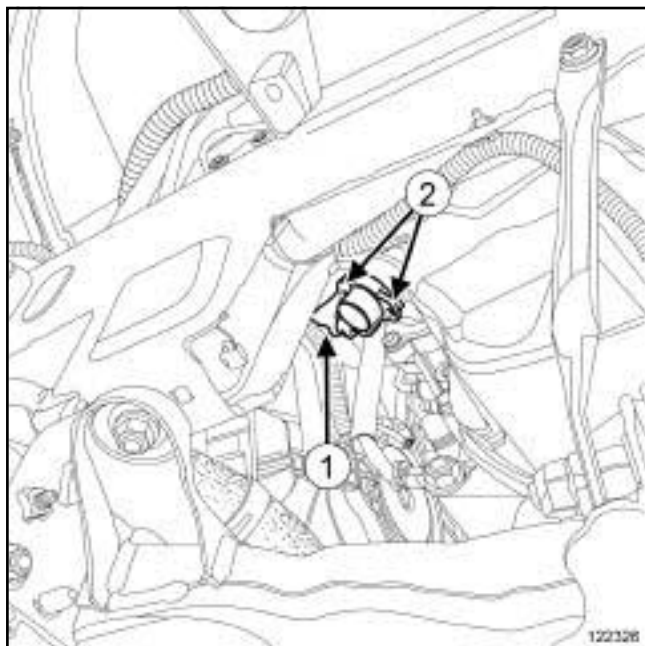
Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

II - OPERATION FOR REMOVAL OF PART CONCERNED



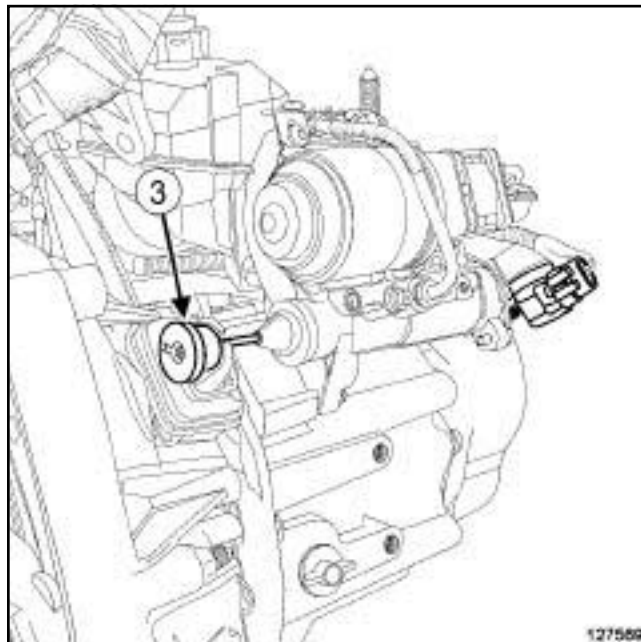
122326

- ❑ Disconnect the clutch position sensor connector (1).
- ❑ Remove:
 - the clutch position sensor bolts (2),

- the clutch position sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



127569

❑

Note:

The clutch cable (3) must be in place on the fork, i.e. out of the cylinder casing.

- ❑ Position the clutch position sensor on the cylinder control shaft.
- ❑ Pivot the clutch position sensor clockwise until the holes of the sensor are opposite the mounting holes.
- ❑ Tighten the clutch position sensor bolts.
- ❑ Connect the clutch position sensor connector.

II - FINAL OPERATION.

- ❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

SEQUENTIAL GEARBOX
Clutch position sensor: Removal - Refitting

21B

D4F, and JH1

D4F, and JH1

Equipment required

Diagnostic tool

IMPORTANT

Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page 21B-1).

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

I - REMOVAL PREPARATION OPERATION

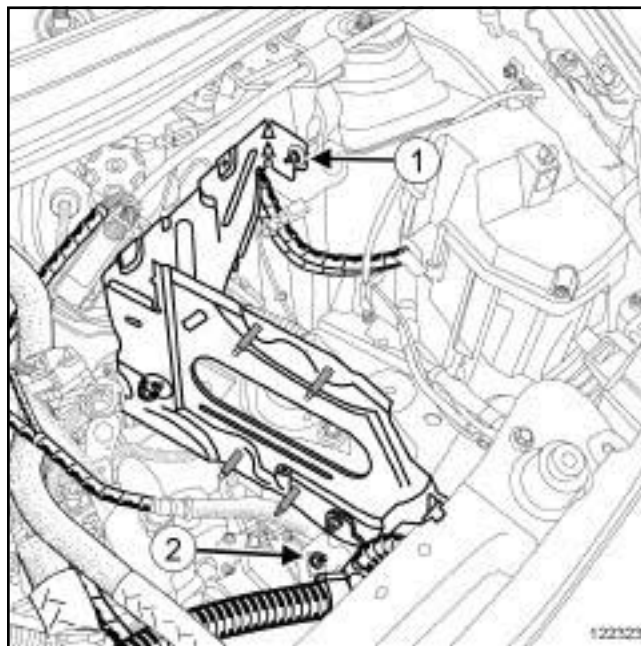
❑ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

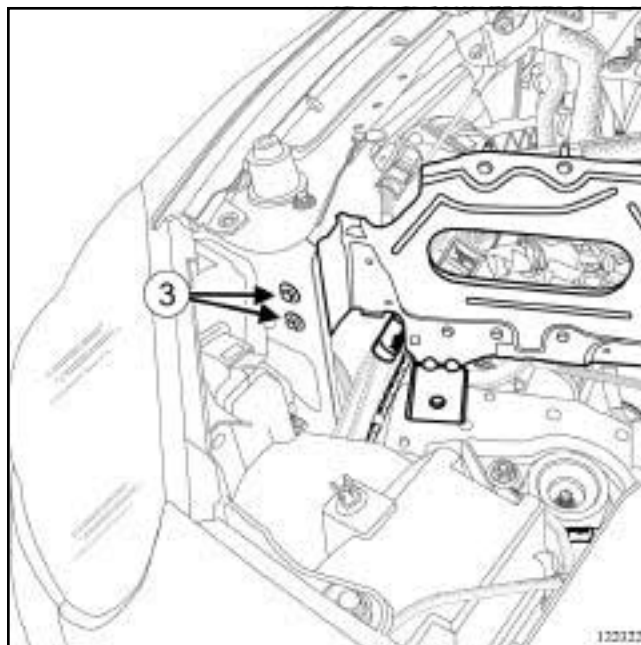
❑ Unclip:

- the cooling hose from the petrol injection computer mounting,
- the sequential gearbox computer wiring harness from the petrol injection computer mounting,
- the petrol injection computer wiring harness from the petrol injection computer mounting,

- the battery wiring harness from the petrol injection computer mounting.



122323



122322

❑ Remove:

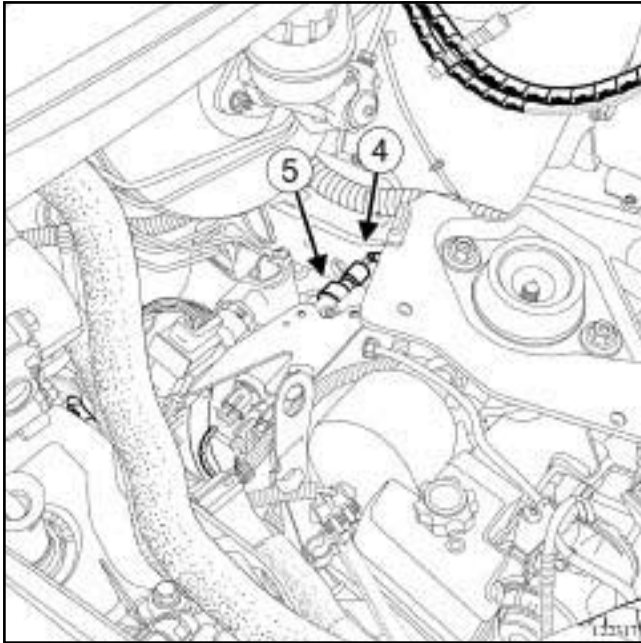
- the petrol injection computer mounting nut (1) ,
- the engine wiring harness nut (2) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (3) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

❑ Remove the petrol injection computer mounting.

D4F, and JH1

II - OPERATION FOR REMOVAL OF PART CONCERNED



122317

- ☐ Disconnect the connector (4) from the solenoid valve unit pressure sensor.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

- ☐ Remove the solenoid valve unit pressure sensor (5).

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ It is essential to replace the solenoid valve unit pressure sensor seal.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the solenoid valve unit pressure sensor.
- ☐ Connect the solenoid valve unit pressure sensor connector.

III - FINAL OPERATION

- ☐ Fit:
 - the petrol injection computer support,
 - the engine wiring harness on the petrol injection computer mounting.

☐ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

☐ Clip:

- the battery wiring harness to the petrol injection computer mounting,
- the petrol injection computer wiring harness to the petrol injection computer mounting,
- the sequential gearbox computer wiring harness to the petrol injection computer mounting,
- the cooling hose to the petrol injection computer mounting.

☐ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

- ☐ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

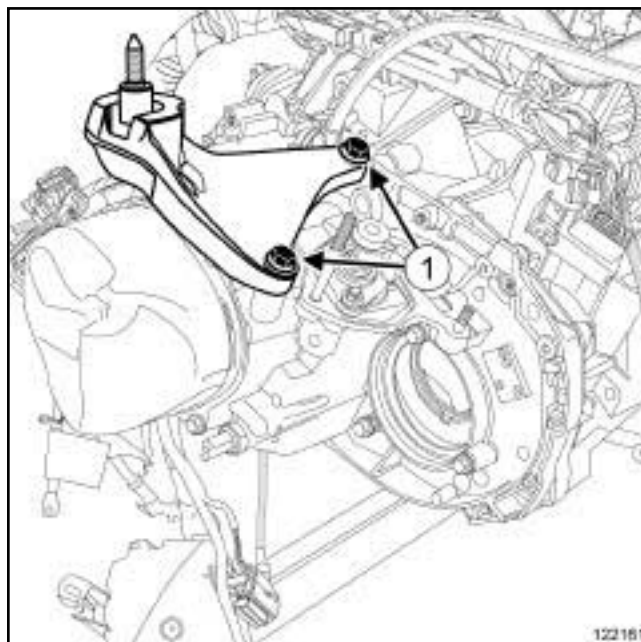
D4F, and JH1

Tightening torques 	
left-hand suspended engine mounting shaft bolts	62 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

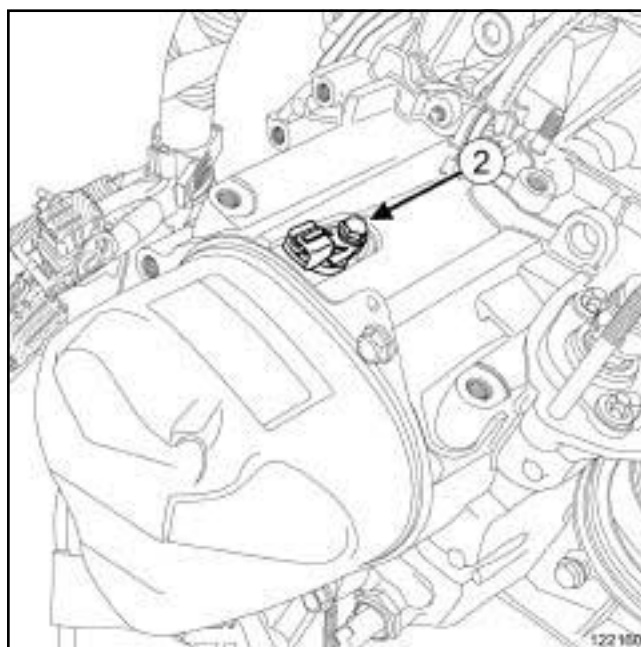
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
 - the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page 21B-11) .



122161

- ☐ Remove:
 - the left-hand suspended engine mounting shaft bolts (1) ,
 - the left-hand suspended engine mounting shaft.

II - OPERATION FOR REMOVAL OF PART CONCERNED



122160

- ☐ Remove:
 - the sequential gearbox engine speed sensor bolt (2) ,
 - the sequential gearbox engine speed sensor.

D4F, and JH1

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- the sequential gearbox engine speed sensor,
- the sequential gearbox engine speed sensor bolt.

II - FINAL OPERATION

- ☐ Fit the left-hand suspended engine mounting shaft onto the sequential gearbox.
- ☐ Fit the left-hand suspended engine mounting shaft bolts without tightening them.
- ☐ Torque tighten the **left-hand suspended engine mounting shaft bolts (62 Nm)**.

☐ Refit:

- the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page **21B-11**),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

21B

D4F, and JH1

Special tooling required

Mot. 1448 Remote operation pliers for hose clips.

Equipment required

workshop hoist

load balancer

roller-type stud removal tool

Tightening torques

sequential gearbox studs	7 Nm

sequential gearbox bolts	44 Nm

sequential gearbox nuts	44 Nm

flywheel protection plate bolts (18)	44 Nm

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B, Sequential gearbox, Sequential gearbox: Precautions for the repair**, page **21B-1**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

☐ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),

- the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page **21B-47**),

- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),

- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),

- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),

- the catalytic converter (see **Catalytic converter: Removal - Refitting**),

- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),

- the front bumper (see **Front bumper: Removal - Refitting**) (MR 412, 55A, Exterior protection).

☐ Drain:

- the cooling system (see **Cooling system: Draining - Refilling**) (MR 411, 19A, Cooling),

- the sequential gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page **21A-2**).

AIR CONDITIONING or CLIMATE CONTROL

☐ Drain the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (MR 411, 62A, Air conditioning).

☐ Remove:

- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (MR 411, 10A, Engine and peripherals),

- the hub-carrier - driveshaft assembly (see) (MR 411, 31A, Front axle components),

- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),

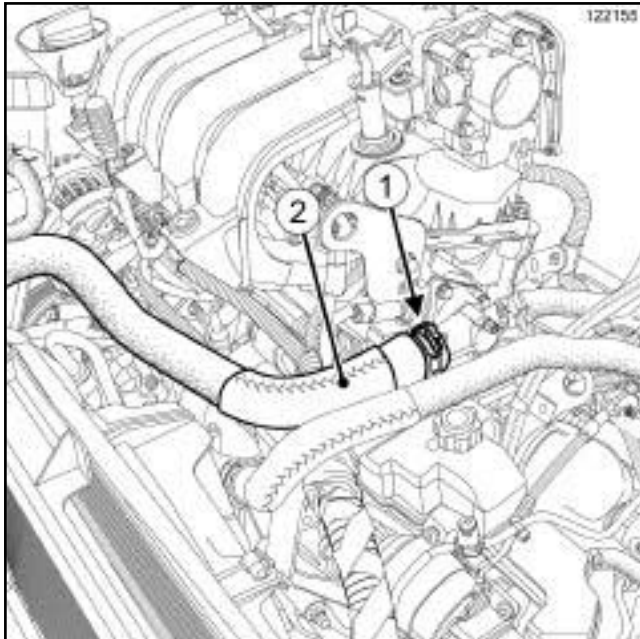
- the crankshaft position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection).

SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

21B

D4F, and JH1



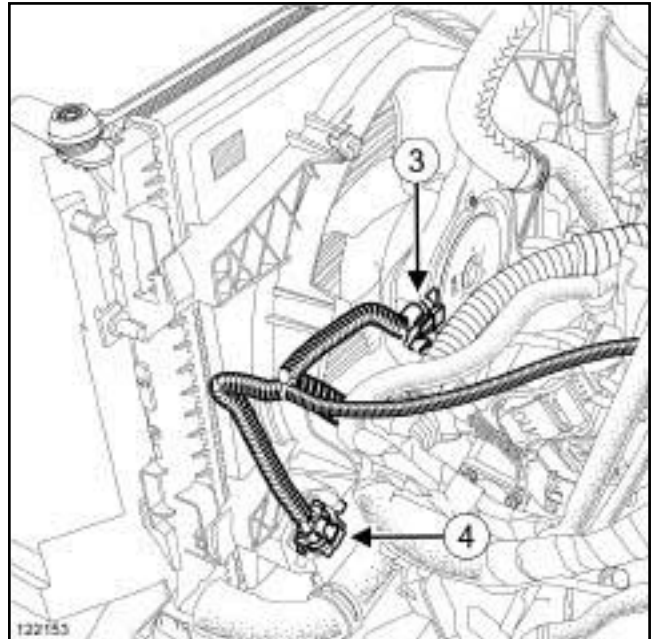
122155

- ❑ Remove the cooling radiator top hose clip (1) using the (Mot. 1448).

WARNING

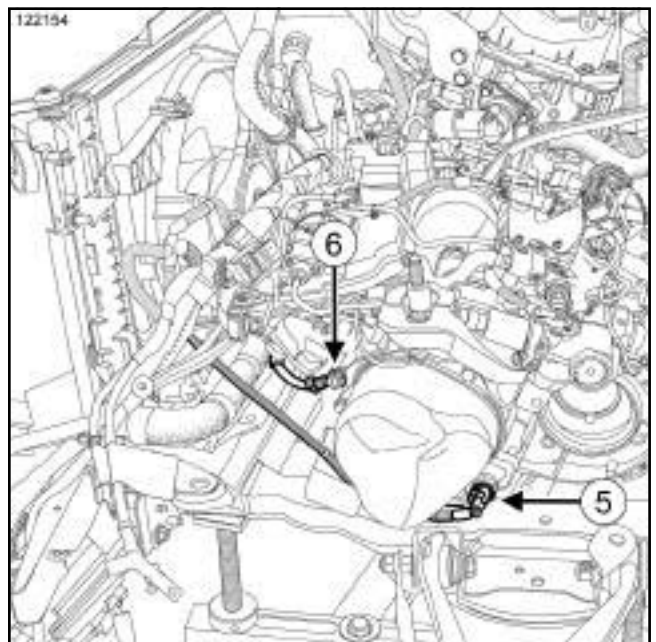
Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Disconnect the cooling radiator top hose (2) from the water chamber.



122153

- ❑ Disconnect:
 - the fan assembly connector (3) ,
 - the resistor unit connector (4) from the blower unit.
- ❑ Unhook the electrical harness from fan assembly.



122154

- ❑ Disconnect the connector (5) from the reverse gear switch.
- ❑ Remove the sequential gearbox earth cable bolt (6) .

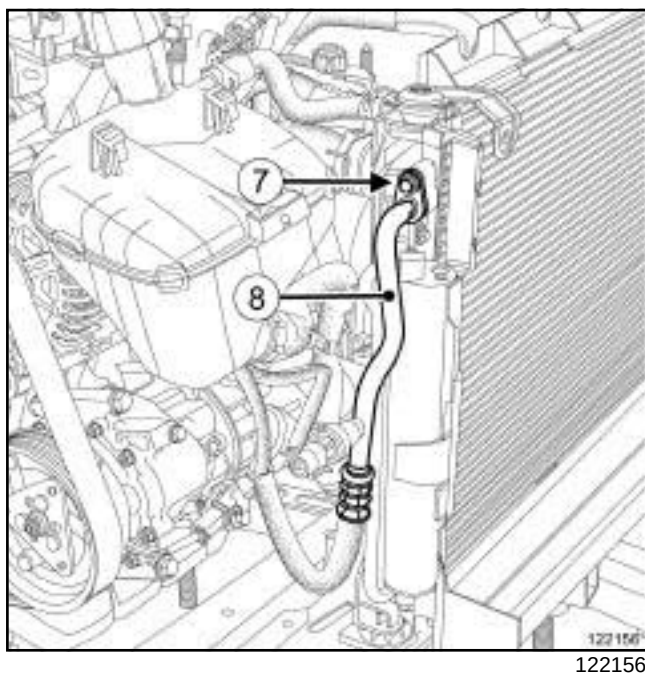
SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

21B

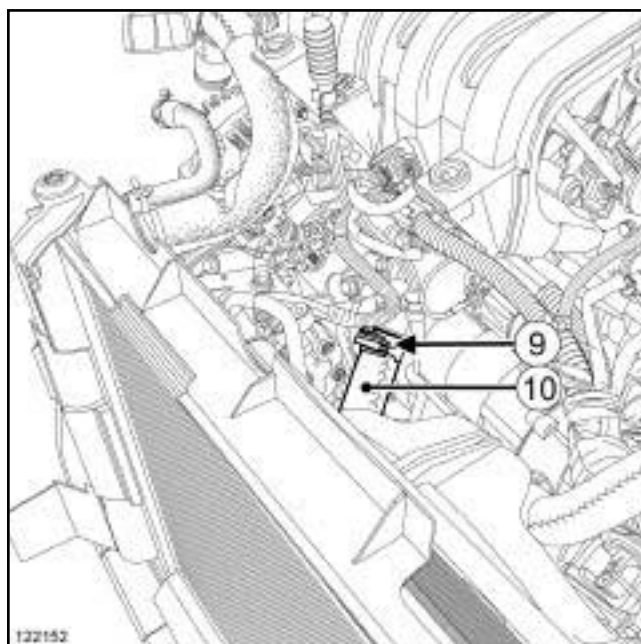
D4F, and JH1

AIR CONDITIONING or CLIMATE CONTROL



❑ Remove:

- the air conditioning condenser inlet pipe bolt (7) ,
- the air conditioning condenser inlet pipe (8) .



- ❑ Remove the cooling radiator bottom hose clip (9) using the (Mot. 1448).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Disconnect the cooling radiator bottom hose (10) from the coolant pump inlet pipe.

STANDARD HEATING

- ❑ Remove the « cooling radiator - cooling radiator hose » assembly from the front axle sub-frame.

AIR CONDITIONING or CLIMATE CONTROL

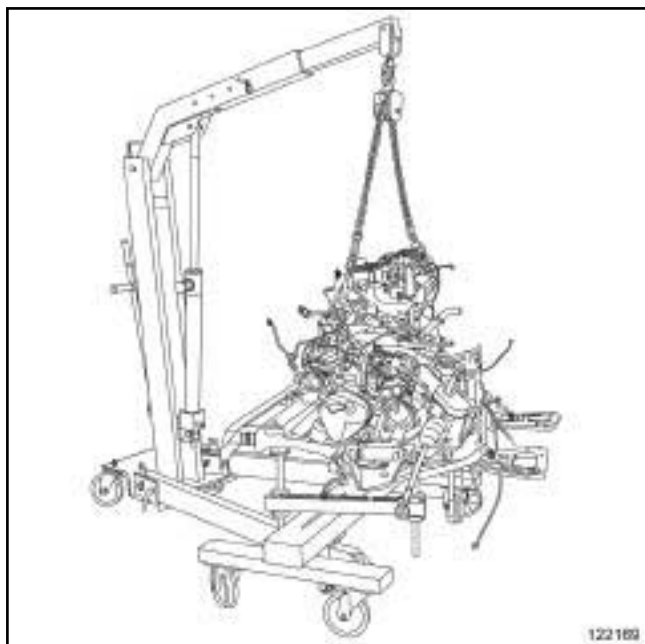
- ❑ Remove the « cooling radiator - cooling radiator hose - air conditioning condenser » assembly from the front axle sub-frame.

SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

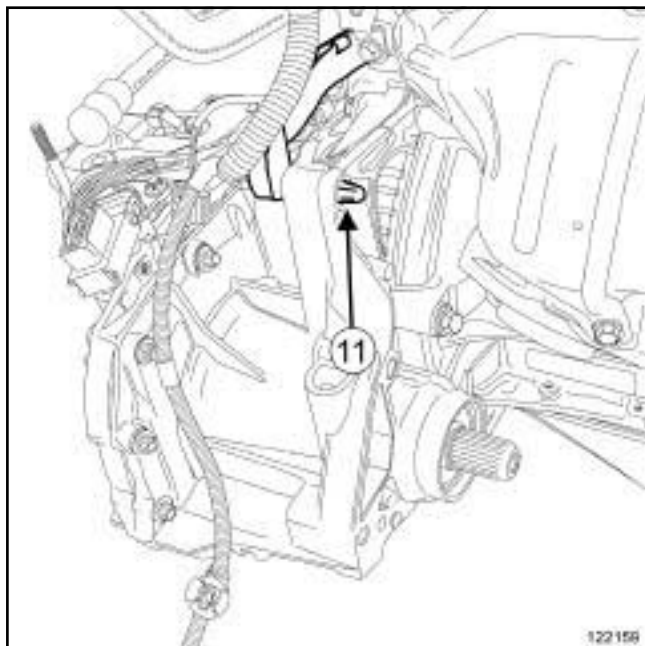
21B

D4F, and JH1



122169

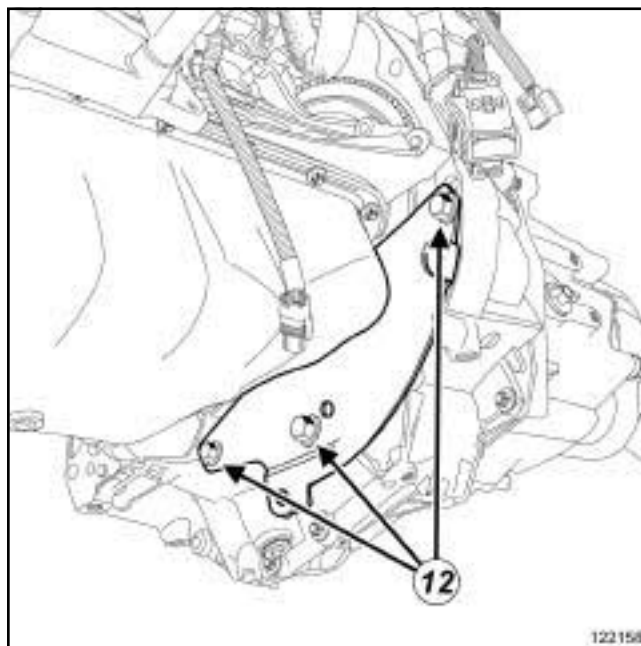
- ❑ Separate the «engine - sequential gearbox» assembly from the front axle sub-frame using a **workshop hoist** and a **load balancer**.
- ❑ Remove the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**, page **21B-11**).



122159

- ❑ Remove the sequential gearbox engine wiring harness neck by pressing on the clip (**11**).
- ❑ Remove the sequential gearbox engine wiring harness neck.

II - OPERATION FOR REMOVAL OF PART CONCERNED



122158

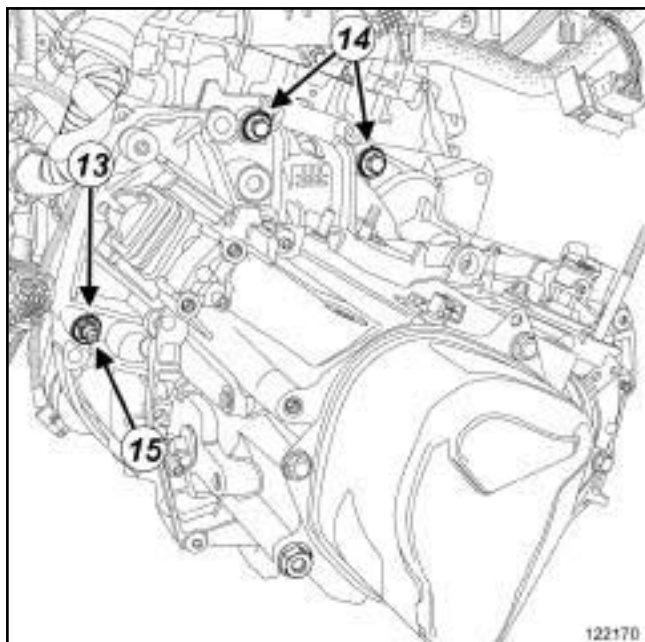
- ❑ Remove:
 - the flywheel protection plate bolts (**12**),
 - the flywheel protection plate.

SEQUENTIAL GEARBOX

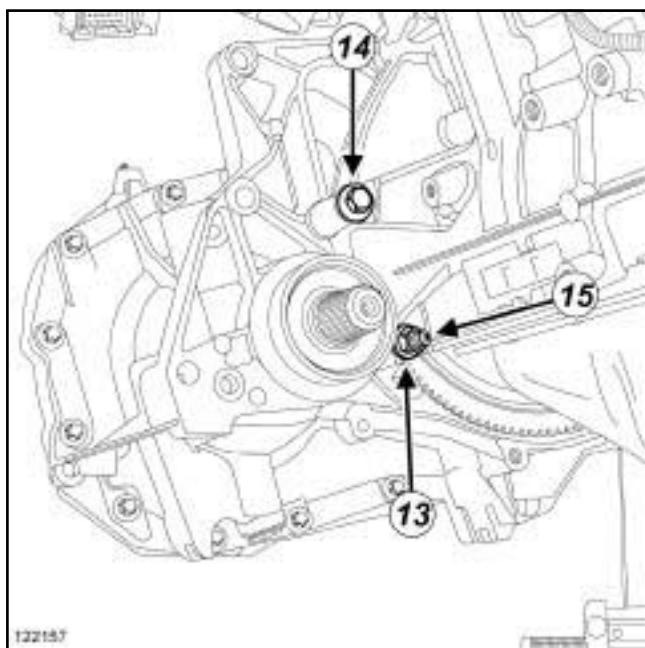
Sequential gearbox: Removal - Refitting

21B

D4F, and JH1



122170

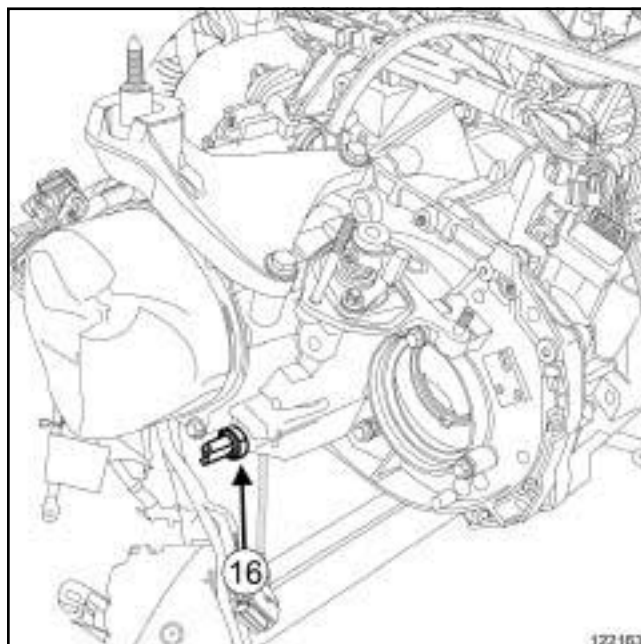


122157

☐ Remove:

- the sequential gearbox nuts (**13**) ,
- the sequential gearbox bolts (**14**) ,
- the sequential gearbox from the engine,
- the sequential gearbox studs (**15**) using a **roller-type stud removal tool**.

If replacing the sequential gearbox



122163

☐ Remove:

- the reverse gear switch (**16**) ,
- the sequential gearbox speed sensor (see **21B, Sequential gearbox, Sequential gearbox engine speed sensor: Removal - Refitting**, page **21B-38**) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Check that the centring ring is in place.

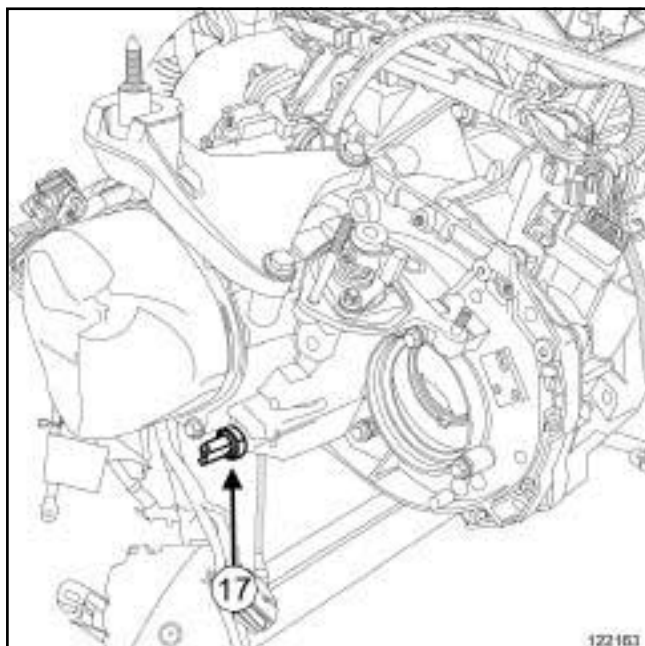
SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

21B

D4F, and JH1

If replacing the sequential gearbox

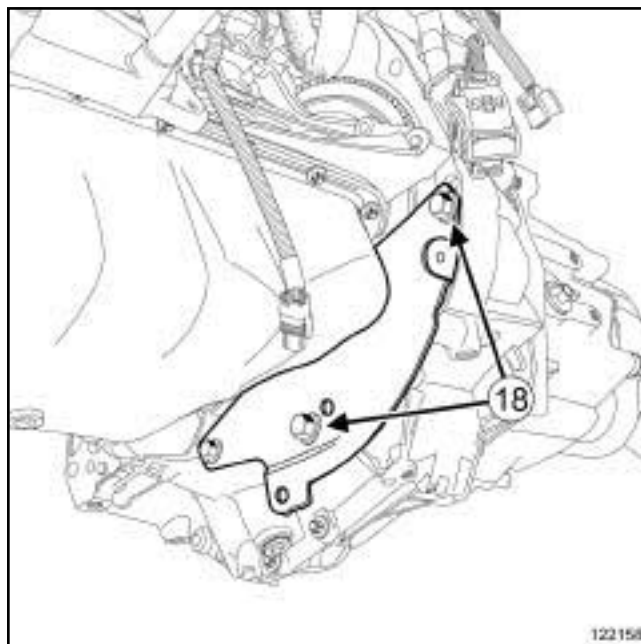


☐ Refit:

- the sequential gearbox engine speed sensor (see **21B, Sequential gearbox, Sequential gearbox engine speed sensor: Removal - Refitting, page 21B-38**) ,
- the reverse gear switch (17) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the sequential gearbox to the engine.
- ☐ Fit the sequential gearbox studs without tightening them.
- ☐ Torque tighten the **sequential gearbox studs (7 Nm)** using a **roller-type stud removal tool**.
- ☐ Fit without tightening:
 - the sequential gearbox bolts,
 - the sequential gearbox nuts.
- ☐ Tighten to torque:
 - the **sequential gearbox bolts (44 Nm)**,
 - the **sequential gearbox nuts (44 Nm)**.



☐ Refit:

- the flywheel protection plate,
- the flywheel protection plate bolt.

- ☐ Fit the flywheel protection plate bolts (18) without tightening them.

- ☐ Torque tighten the **flywheel protection plate bolts (18) (44 Nm)**.

III - FINAL OPERATION

- ☐ Attach the engine wiring harness neck to the sequential gearbox.
- ☐ Refit the electro-hydraulic unit (see **21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting, page 21B-11**) .
- ☐ Fit the « engine - sequential gearbox » assembly to the front axle sub-frame using a **workshop hoist** and a **load balancer** in its original position.

STANDARD HEATING

- ☐ Refit the « cooling radiator - cooling radiator hose » assembly to the front axle sub-frame.

SEQUENTIAL GEARBOX

Sequential gearbox: Removal - Refitting

21B

D4F, and JH1

AIR CONDITIONING or CLIMATE CONTROL

- ❑ Refit the «cooling radiator - cooling radiator hose - air conditioning condenser» assembly to the front axle sub-frame.

- ❑ Connect the cooling radiator bottom hose to the coolant pump inlet pipe.
- ❑ Refit the cooling radiator bottom hose clip using the **(Mot. 1448)**.

AIR CONDITIONING or CLIMATE CONTROL

- ❑ Refit:
 - the air conditioning condenser inlet pipe,
 - the air conditioning condenser inlet pipe bolt.
- ❑ Refit the sequential gearbox earth cable bolt.
- ❑ Connect the reverse gear switch connector.
- ❑ Clip the wiring harness to the motor-driven fan assembly.
- ❑ Connect:
 - the motor-driven fan assembly resistor unit connector,
 - the motor-driven fan assembly connector.
- ❑ Connect the cooling radiator top hose to the water chamber.
- ❑ Refit the cooling radiator top hose clip using the **(Mot. 1448)**.
- ❑ Refit:
 - the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),
 - the hub-carrier - driveshaft assembly (see) (MR 411, 31A, Front axle components),
 - the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (MR 411, 10A, Engine and peripherals).

AIR CONDITIONING or CLIMATE CONTROL

- ❑ Fill the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (MR 411, 62A, Air conditioning).
- ❑ Refill:
 - the sequential gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) ,
 - the cooling system (see **Cooling system: Draining - Refilling**) (MR 411, 19A, Cooling).
- ❑ Refit:
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the catalytic converter (see **Catalytic converter: Removal - Refitting**) ,
 - the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the sequential gearbox computer (see **21B, Sequential gearbox, Sequential gearbox converter: Removal - Refitting**, page 21B-47) ,
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

SEQUENTIAL GEARBOX

Sequential gearbox converter: Removal - Refitting

21B

D4F, and JH1

Equipment required

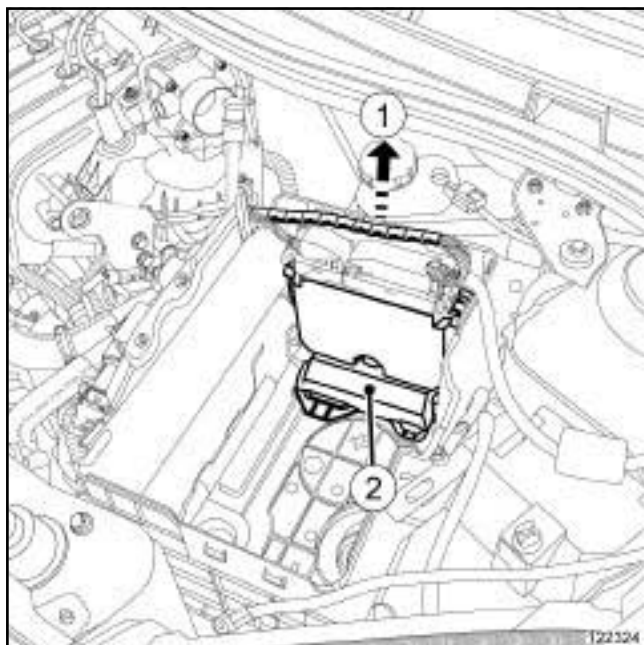
Diagnostic tool

REMOVAL

I - REMOVAL PREPARATION OPERATION

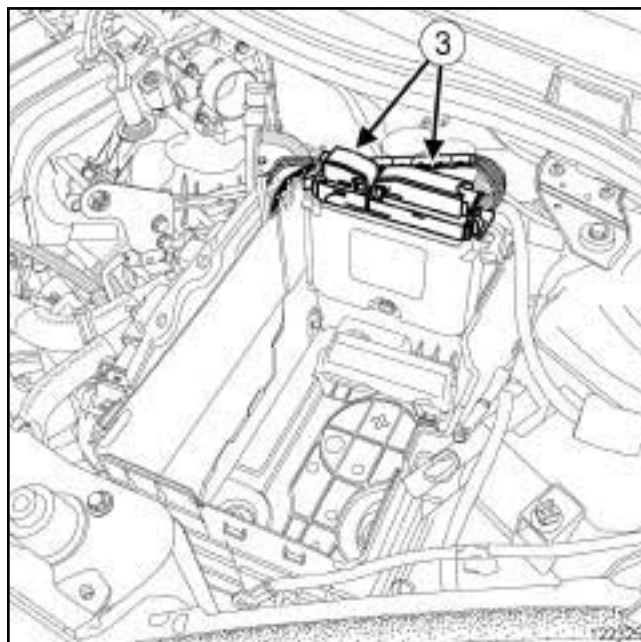
- ❑ Remove the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122324

- ❑ Unclip (1) the sequential gearbox computer from its mounting (2) .



122325

- ❑ Disconnect the sequential gearbox computer connectors (3) by pressing the locks.
- ❑ Remove the sequential gearbox computer.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ❑ Connect the sequential gearbox computer connectors by pressing the locks.
- ❑ Clip the sequential gearbox computer onto its mounting.

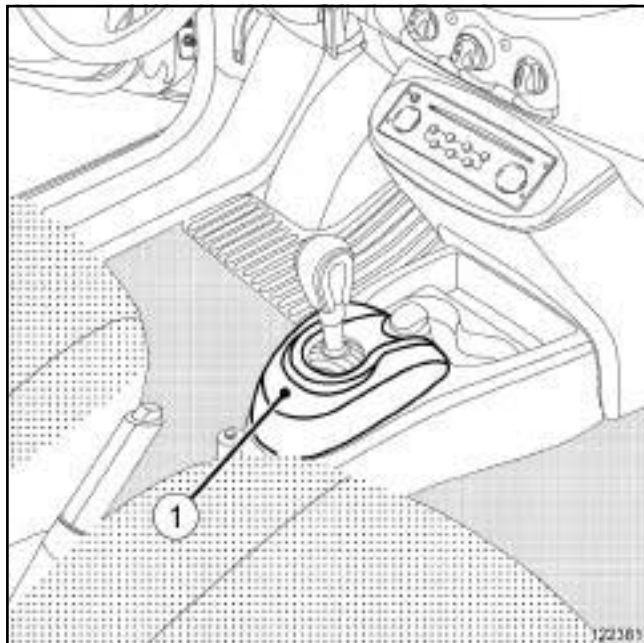
II - FINAL OPERATION

- ❑ Refit the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ❑ If replacing the sequential gearbox computer, carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

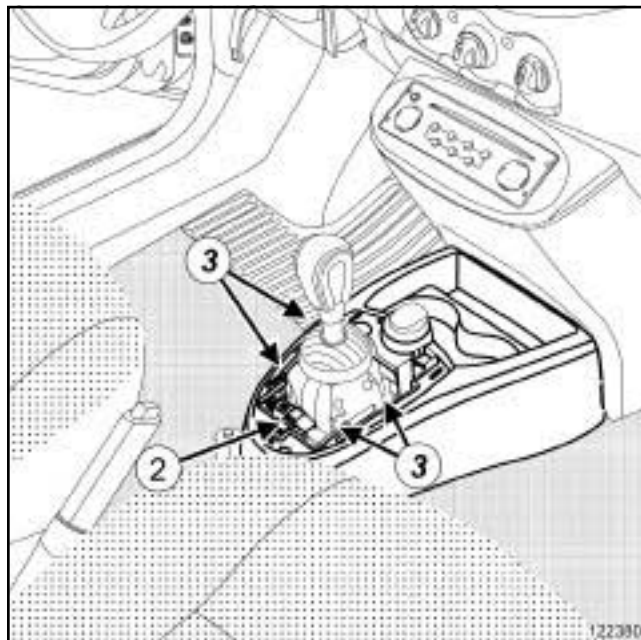
REMOVAL

I - REMOVAL PREPARATION OPERATION



- ☐ Unclip the sequential gearbox gear lever cover (1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Disconnect the sequential gearbox gear lever connector (2) .
- ☐ Detach the sequential gearbox gear lever connector (2) .
- ☐ Remove:
 - the sequential gearbox gear lever bolts (3) ,
 - the sequential gearbox gear lever.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the sequential gearbox gear lever by positioning the wiring harness at the front,
 - the sequential gearbox gear lever bolts.
- ☐ Clip on the sequential gearbox gear lever connector.
- ☐ Connect the sequential gearbox gear lever connector.

II - FINAL OPERATION.

- ☐ Clip on the sequential gearbox gear lever cover.

Driveshaft: Precautions for the repair

JB1 or JH1 or JH3 or JR5

WARNING

A gearbox oil leak at the driveshaft may destroy it.

WARNING

Lubricate the base of the bearing with **MOLYKOTE** to prevent the bearing sticking.

Make sure that the O-ring is correctly positioned in the base of the relay bearing, if the bearing has one.

WARNING

Always replace seals whenever the driveshaft is removed.

WARNING

Always replace the left-hand driveshaft lock ring, if the driveshaft has one.

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

Front left-hand driveshaft: Removal - Refitting

JB1 or JH1

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques

the flange mounting bolts	21 Nm
shock absorber base bolts	105 N.m
track rod end nut	37 Nm
hub nut	280 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

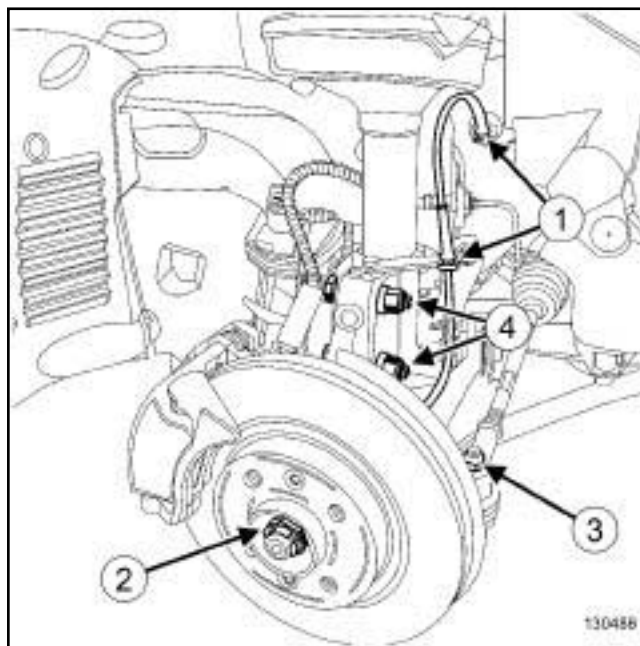
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray.
- ☐ Drain the manual gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page **21A-2**).
- ☐ Remove the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

II - OPERATION FOR REMOVAL OF PART CONCERNED

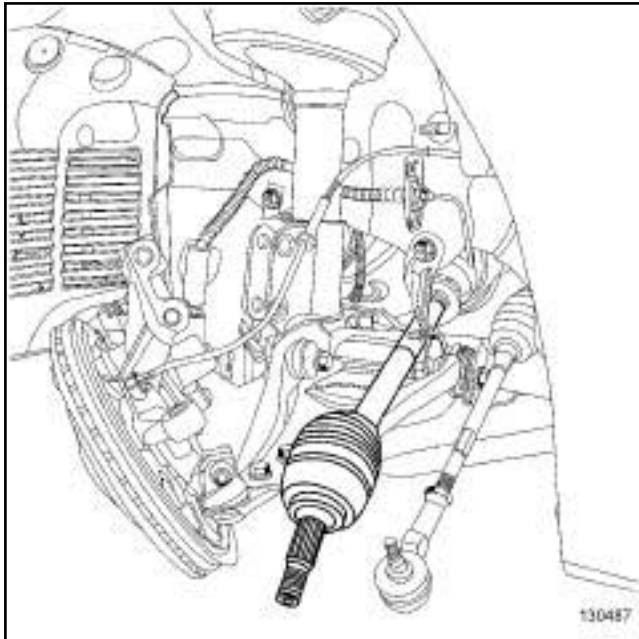


130488

- ☐ Detach the wiring from the wheel speed sensor (1) .
- ☐ Remove:
 - the hub nut (2) by immobilising the hub using the tool (**Rou. 604-01**),
 - the track rod end nut (3) ,
 - the track rod end from the stub axle carrier using the (**Tav. 476**),
 - the shock absorber base bolts (4) .

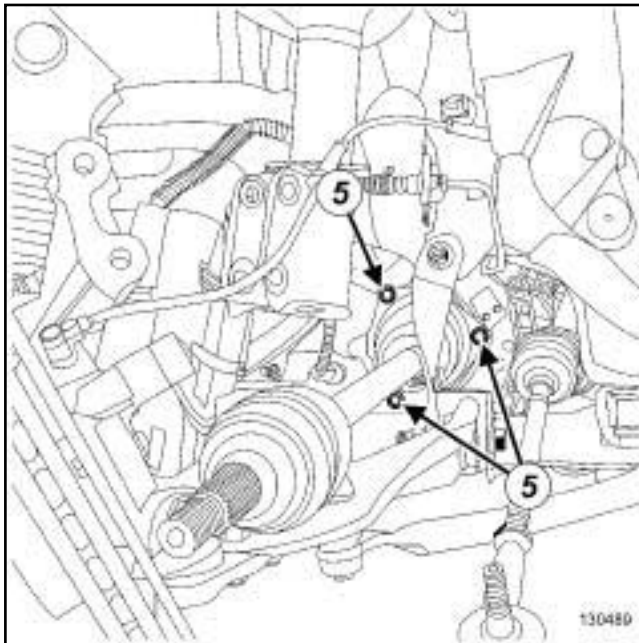
Front left-hand driveshaft: Removal - Refitting

JB1 or JH1



130487

- ❑ Push the front left-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



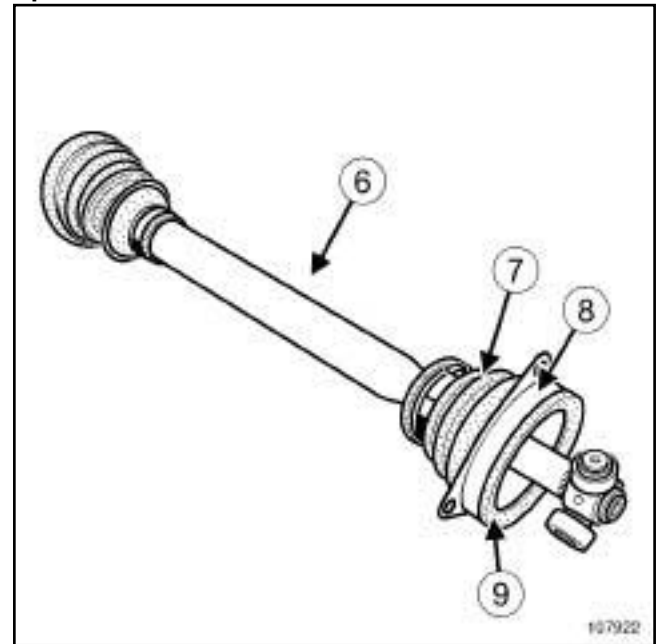
130489

- ❑ Remove:
 - the bolts (5) securing the front left-hand driveshaft to the gearbox,
 - the front left-hand driveshaft.

REFITTING

I - REFITTING THE DRIVESHAFT

Special notes on the front left-hand driveshaft



107922

- (6) Front left-hand driveshaft
- (7) Bearing gaiter (gearbox side)
- (8) Gaiter flange
- (9) Gaiter lip (for gearbox seal)

Front left-hand driveshaft: Removal - Refitting

JB1 or JH1

- ☐ The seal (gearbox side) is made by pushing the gaiter lip (9) into its housing on the gearbox, moving the flange (8) .

WARNING

To ensure a correct seal when refitting a gaiter to a gearbox:

- the flange (8) must be fitted to the gaiter (7) (see figure 107922) in order to support the seal lip (9) and to fit it correctly into its holder on the gearbox.

Wipe oil from:

- the flange (8) ,
- between the flange and the gaiter,
- the seal lip (9) ,
- the face of the lip on the gearbox.

Refit the driveshaft on the gearbox side (this operation requires two people):

- Person 1:
 - position the driveshaft at the differential input,
 - fit the flange (8) on the gaiter (7) ,
 - fit the driveshaft into the gearbox whilst keeping the flange (8) on the gaiter,
 - push the flange (8) to insert the gaiter lip (9) in its housing (do not pinch the gaiter (7)).
- Person 2:
 - tighten the 3 flange mounting bolts (8) but do not tighten fully (the flange should still be loose).
- Person 1:
 - keep the driveshaft as horizontal as possible (with respect to the differential).
- Person 2:
 - torque tighten the flange mounting bolts (21 Nm).

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Fit the front left-hand driveshaft into the stub axle carrier.
- ☐ Refit the bolts to the shock absorber base.
- ☐ Torque tighten the shock absorber base bolts

(105 N.m).

- ☐ Position the track rod.
Torque tighten the track rod end nut (37 Nm).
- ☐ Refit the hub nut.
- ☐ Torque tighten the hub nut (280 N.m) using the tool (Rou. 604-01).
- ☐ Clip on the wheel speed sensor wiring harness.

II - FINAL OPERATION.

- ☐ Refit the front left-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres).
- ☐ Fill the gearbox (see 21A, Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-2) .
- ☐ Refit the engine undertray.

Front left-hand driveshaft: Removal - Refitting

JH3 or JR5

Special tooling required

Rou. 604-01	Hub locking tool.
Emb. 880	Pin extractor tool.
Tav. 1813	Extraction claw for clip secured type driveshafts

Tightening torques

shock absorber base bolts	105 N.m
track rod end nut	37 N.m
hub nut	280 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

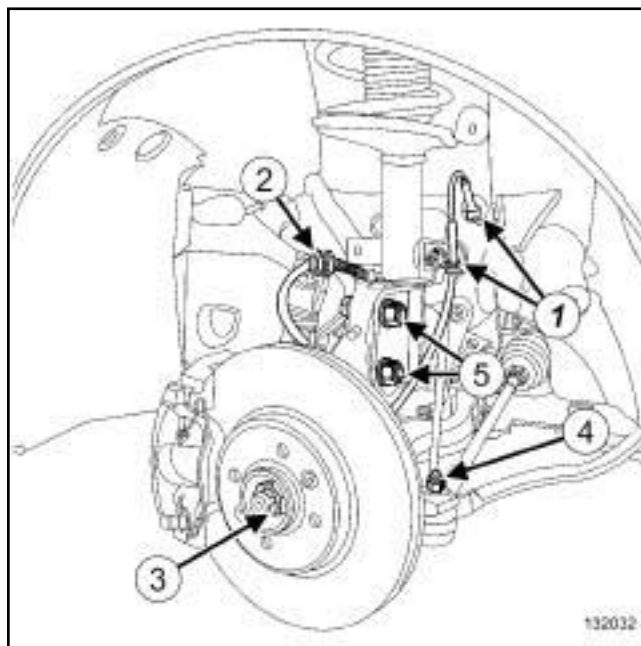
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray.
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132032

☐ Unclip:

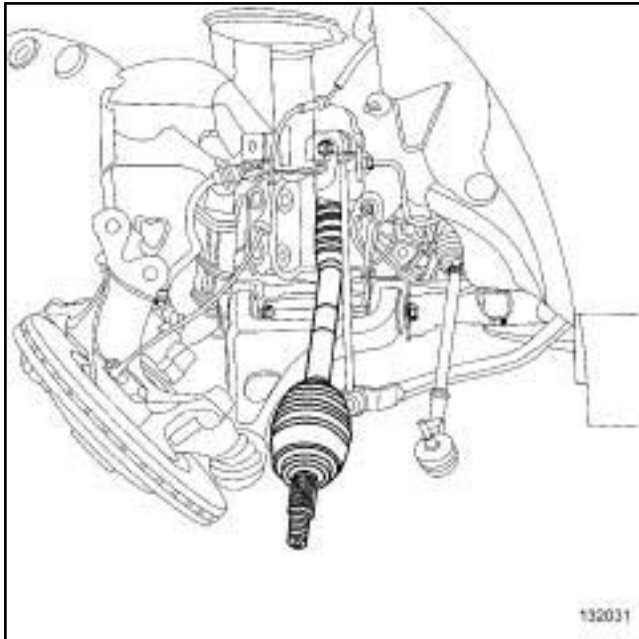
- the wheel speed sensor wiring (1) ,
- the brake hose (2) .

☐ Remove:

- the hub nut (3) by immobilising the hub using the tool (**Rou. 604-01**),
- the track rod end nut (4) ,
- the shock absorber base bolts (5) .

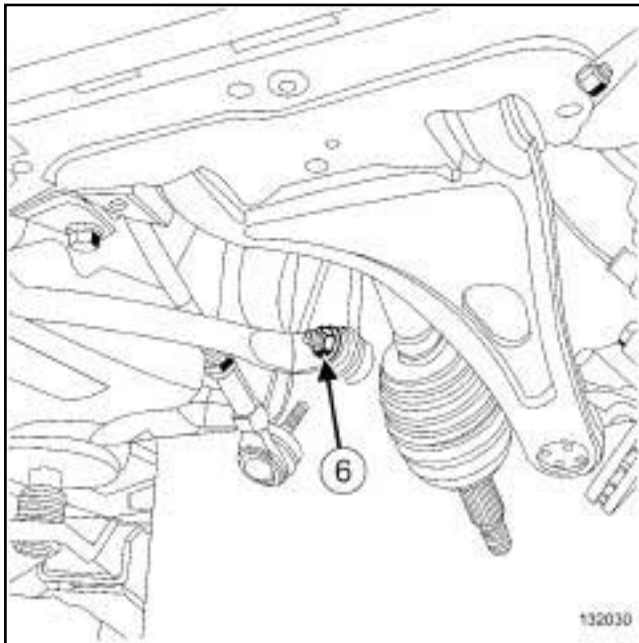
Front left-hand driveshaft: Removal - Refitting

JH3 or JR5



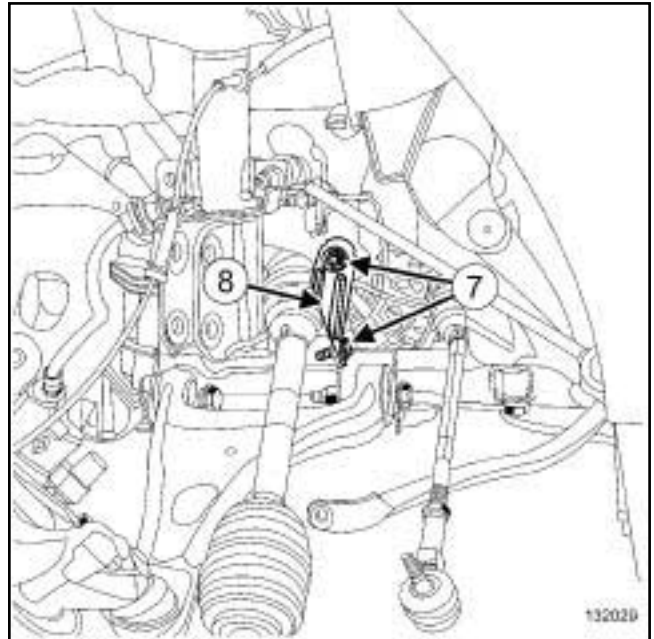
132031

- ❑ Push the front left-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



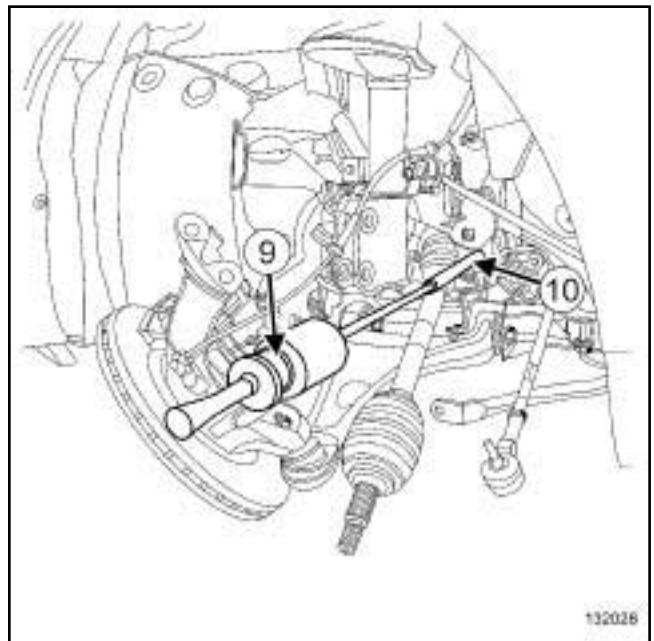
132030

- ❑ Remove the lower nut (6) from the left-hand anti-roll bar tie-rod.
- ❑ Separate the left-hand anti-roll bar tie-rod.



132029

- ❑ Remove:
 - the bolts (7) from the left-hand tie rod,
 - the left-hand tie-rod (8) .



132028

- ❑ Extract the front left-hand driveshaft from the manual gearbox using the tool (**Emb. 880**) (9) fitted with the tool (**Tav. 1813**) (10) .
- ❑ Remove the front left-hand driveshaft.

Front left-hand driveshaft: Removal - Refitting

JH3 or JR5

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace the differential output seal (see **21A, Manual gearbox, Differential output seal: Removal - Refitting**, page **21A-38**) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the front left-hand driveshaft into the gearbox as horizontally as possible.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Fit the front left-hand driveshaft into the stub axle carrier.
- ☐ Refit the bolts to the shock absorber base.
- ☐ Torque tighten the **shock absorber base bolts (105 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit the hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.
- ☐ Refit the left-hand tie-rod.
- ☐ Refit the lower nut for the left-hand anti-roll bar tie-rod.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.

III - FINAL OPERATION

- ☐ Top up the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page **21A-2**) .
- ☐ Refit:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

JB1 or JH1

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques

shock absorber base bolts	105 N.m
track rod end nut	37 Nm
hub nut	280 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

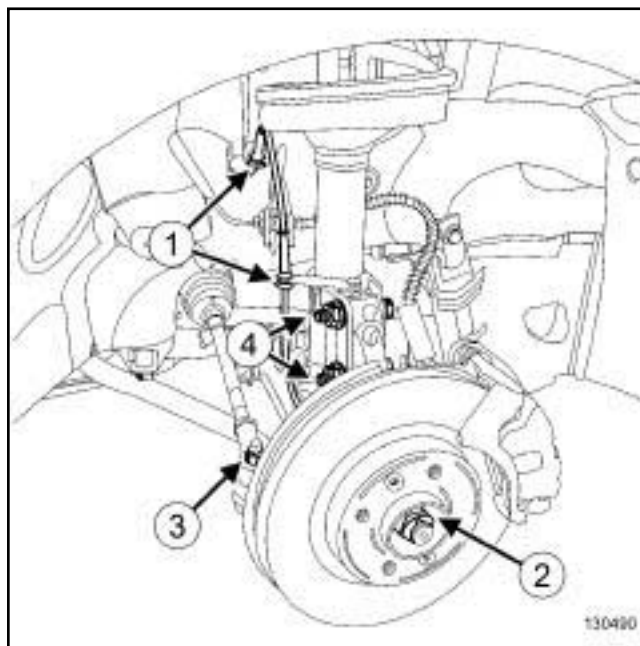
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

II - OPERATION FOR REMOVAL OF PART CONCERNED

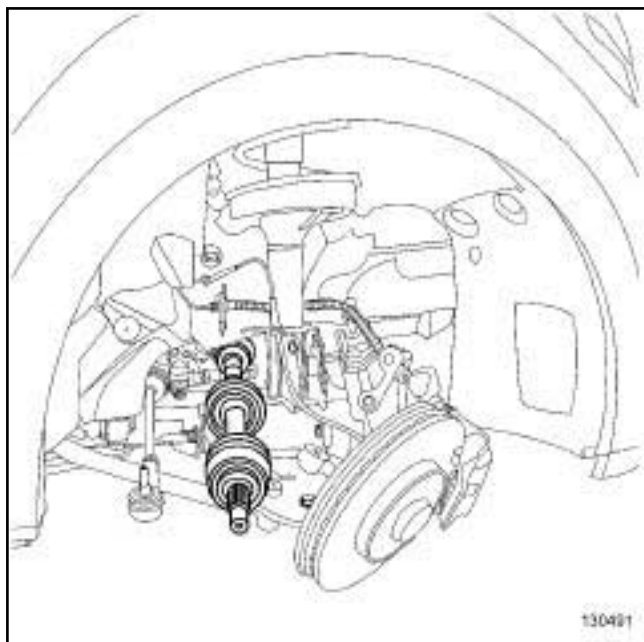


130490

- ☐ Detach the wiring from the wheel speed sensor (1) .
- ☐ Remove:
 - the hub nut (2) by immobilising the hub using the tool (**Rou. 604-01**),
 - the track rod end nut (3) ,
 - the track rod end from the stub axle carrier using the (**Tav. 476**),
 - the shock absorber base bolts (4) .

Front right-hand driveshaft: Removal - Refitting

JB1 or JH1



130491

- ☐ Push the front right-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.
- ☐ Remove the front right-hand driveshaft.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the front right-hand driveshaft to the gearbox sun-wheel.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Fit the front right-hand driveshaft into the stub axle carrier.
- ☐ Refit the bolts to the shock absorber base.
- ☐ Torque tighten the **shock absorber base bolts (105 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 Nm)**.
- ☐ Refit the hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.
- ☐ Clip on the wheel speed sensor wiring harness.

II - FINAL OPERATION.

- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

JH3 or JR5

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques

relay bearing bolt	21 N.m
shock absorber base bolts	105 N.m
track rod end nut	37 N.m
hub nut	280 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

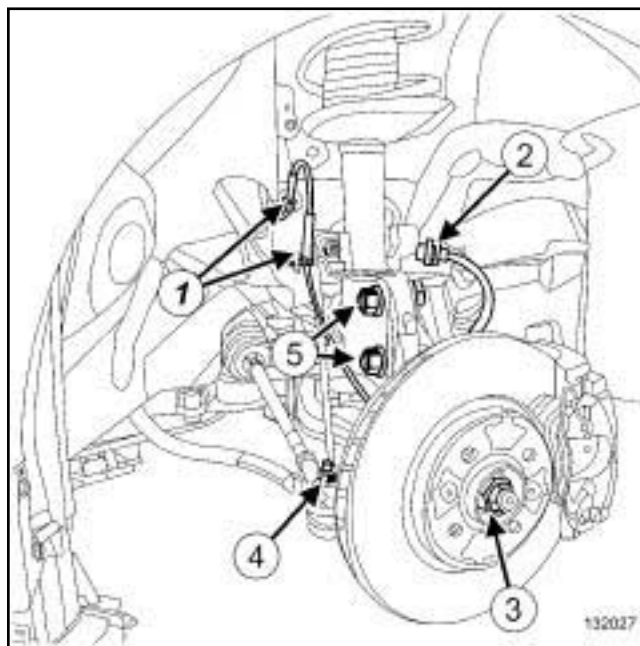
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132027

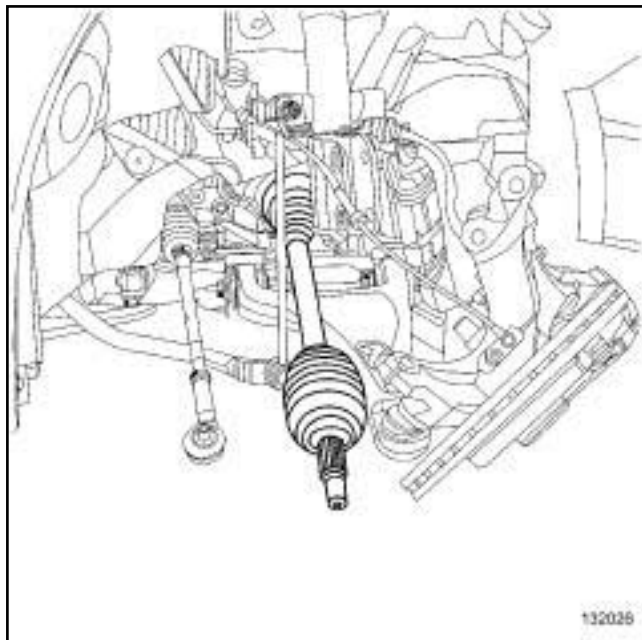
☐ Unclip:

- the wheel speed sensor wiring (1) ,
- the brake hose (2) .

☐ Remove:

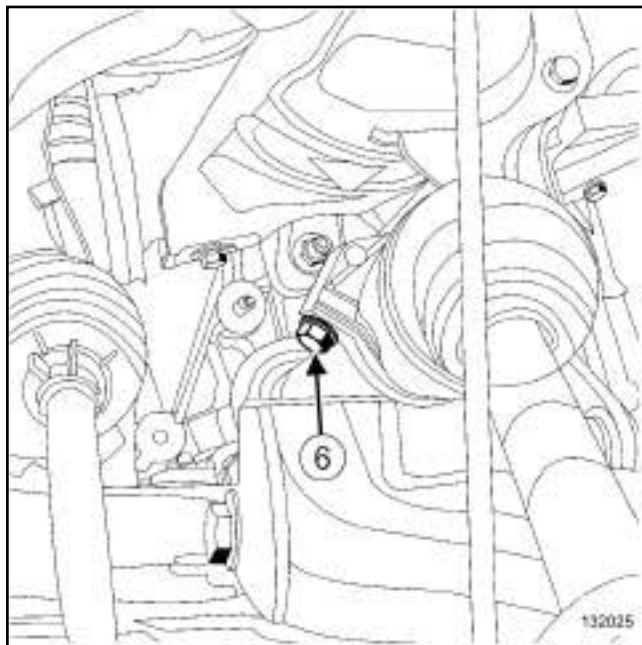
- the hub nut (3) by immobilising the hub using the tool (**Rou. 604-01**),
- the track rod end nut (4) ,
- the track rod end from the stub axle carrier using the (**Tav. 476**),
- the shock absorber base bolts (5) .

JH3 or JR5



132026

- ❑ Push the front right-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



132025

- ❑ Remove:
 - the driveshaft relay bearing bolt (6) ,
 - the front right-hand wheel driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Always replace the differential output seal (see **21A, Manual gearbox, Differential output seal: Removal - Refitting**, page 21A-38) .
- ❑ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ❑ Clean and lubricate the bore of the driveshaft relay bearing into which the bearing will be fitted using **BR2+GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Position and fit the front right-hand driveshaft into the gearbox.
- ❑ Refit:
 - the front right-hand driveshaft into the relay bearing,
 - the relay bearing bolt.
- ❑ Torque tighten the **relay bearing bolt (21 N.m)**.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ❑ Fit the front right-hand driveshaft into the stub axle carrier.
- ❑ Refit the bolts to the shock absorber base.
- ❑ Torque tighten the **shock absorber base bolts (105 N.m)**.
- ❑ Position the track rod.
- ❑ Torque tighten the **track rod end nut (37 N.m)**.
- ❑ Refit the hub nut.
- ❑ Torque tighten the **hub nut (280 N.m)** using the tool (**Rou. 604-01**).
- ❑ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.

Front right-hand driveshaft: Removal - Refitting

JH3 or JR5

III - FINAL OPERATION

- ☐ Top up the gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page **21A-2**).
- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Relay shaft bearing: Removal - Refitting

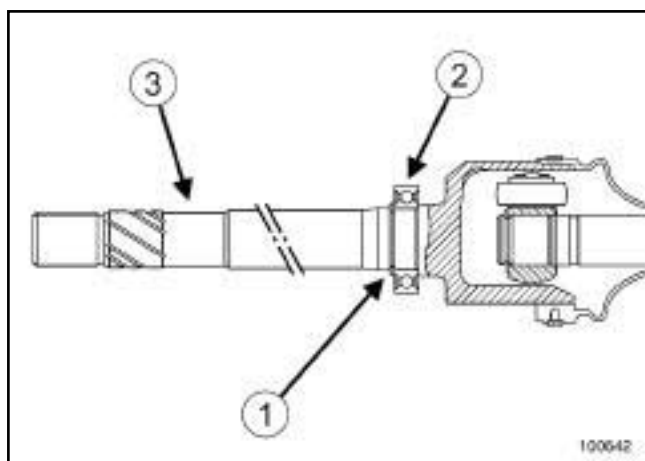
JH3 or JR5

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray.
- ☐ Drain the manual gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .
- ☐ Extract the deflector using a press and an extractor.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove the rubber ring (1) of the relay bearing (2) .

Note:

Do not scratch the mating face of the lip seal on the relay shaft (3) .

- ☐ Extract the relay shaft bearing (2) using a press and an extractor.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Relay shaft bearing.
- parts always to be replaced: relay bearing rubber ring .
- ☐ Clean and degrease the bore of the relay bearing with **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Lubricate the mating face of the driveshaft receiving the deflector and the relay shaft bearing.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit a new relay shaft bearing to the relay shaft.
- ☐ Fit the bearing to the end using a tube, so that it rests on the inner bush of the bearing.
- ☐ Refit a new rubber ring for the relay bearing.

III - FINAL OPERATION

- ☐ Fit a new deflector to the relay shaft.
- ☐ Fit the deflector to the end using a tube, so that it rests on the surface of the deflector.
- ☐ Clean and grease the bearing hole into which the bearing will be inserted.
- ☐ Refit:
 - the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) ,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Fill up the manual gearbox (see **21A, Manual gearbox, Manual gearbox oils: Draining - Filling**, page 21A-2) .
- ☐ Refit the engine undertray.

Front driveshaft gaiter, wheel side: Removal - Refitting

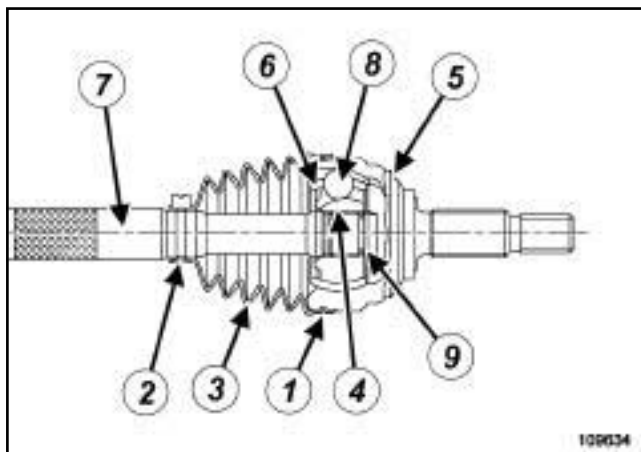
JB1 or JH1 or JH3 or JR5

Special tooling required

Tav. 1168	"Clic" type clip pliers for drive-shafts with a thermoplastic gaiter.
Tav. 1784	Pliers for the driveshaft gaiter collar.

Equipment required

steel inertia hammer
roll pin punch
parts washer



109634

- (1) Big securing clip
- (2) Small securing clip
- (3) Driveshaft gaiter
- (4) Ball hub
- (5) Stub axle bowl
- (6) Ball race
- (7) Driveshaft
- (8) Balls
- (9) Locking spring ring

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

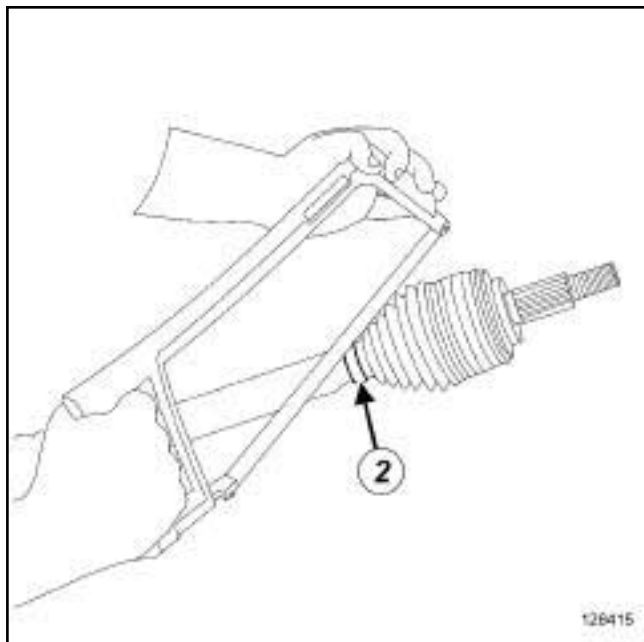
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the driveshaft on the side concerned (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) or (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) .

JB1 or JH1 or JH3 or JR5

II - OPERATION FOR REMOVAL OF PART CONCERNED

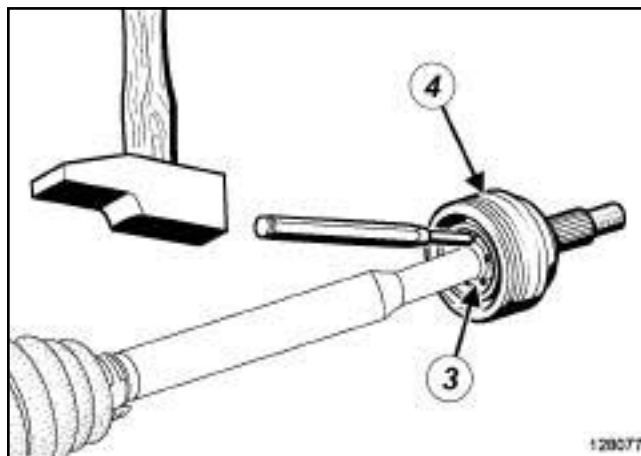


93034



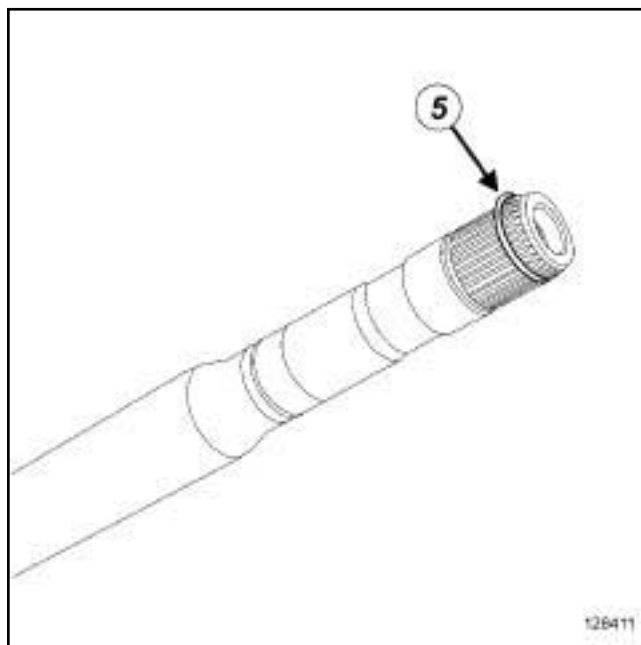
126415

- ☐ Cut the big securing clip (1) and the small securing clip (2) using cutting pliers or a metal saw, taking care not to damage the stub axle bowl and the driveshaft.
- ☐ Push back the gaiter to release the stub axle bowl.
- ☐ Cut off the driveshaft gaiter.
- ☐ Remove the driveshaft gaiter.
- ☐ Remove as much grease as possible.



128077

- ☐ Tap the hub bearing several times (3) using a **steel inertia hammer** and a **roll pin punch** to separate the stub axle bowl (4) from the driveshaft.



126411

- ☐ Remove the locking spring ring (5) .

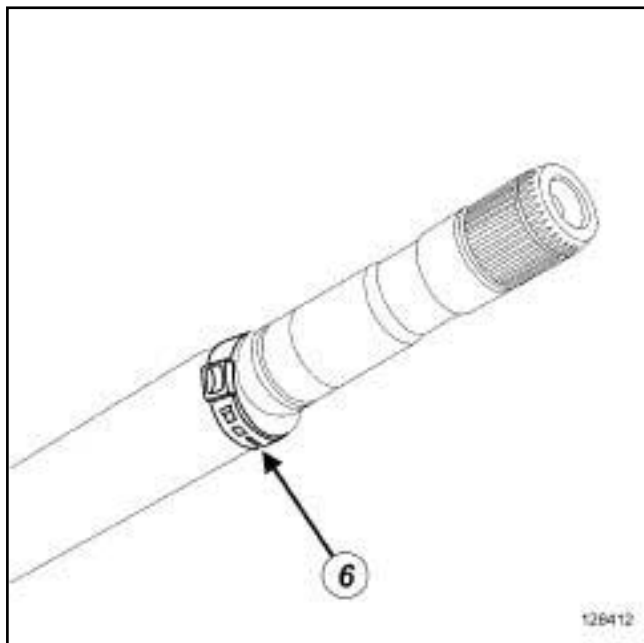
REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the driveshaft gaiter,
 - the big securing clip,
 - the small securing clip,
 - the locking spring ring.
- ☐ Using a **parts washer**, clean the driveshaft and the stub axle bowl.

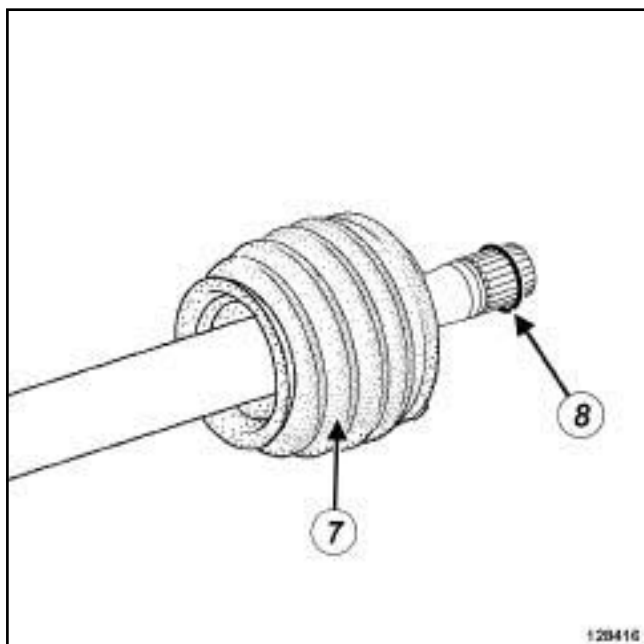
JB1 or JH1 or JH3 or JR5

II - REFITTING OPERATION FOR PART CONCERNED



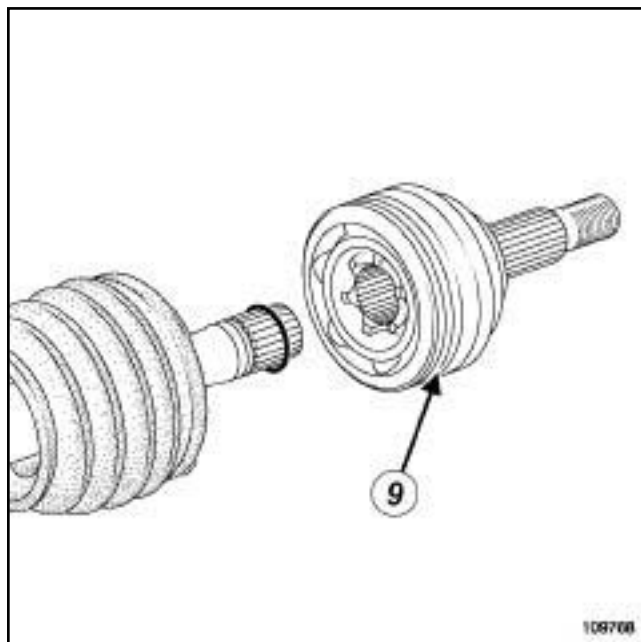
128412

- ☐ Fit the small securing clip (6) onto the driveshaft.
- ☐ Lightly lubricate the driveshaft using the grease supplied with the gaiter to facilitate its fitting.



128416

- ☐ Refit the gaiter (7) onto the driveshaft.
- ☐ Insert the gaiter lip into the groove of the driveshaft.
- ☐ Refit the locking spring ring (8) .
- ☐ Spread the quantity of grease around the gaiter and the stub axle bowl.



109768

- ☐ Refit the stub axle bowl (9) to the driveshaft by tapping on the stub axle bowl using a brass drift until the locking spring ring clicks into place behind the hub bearing.
- ☐ Fit the lip of the driveshaft gaiter into the groove on the stub axle bowl.

Note:

Check that the gaiter lip is correctly positioned in the groove of the driveshaft.

- ☐ Fit the small securing clip on the driveshaft gaiter.
- ☐ Refit the big securing clip on the driveshaft gaiter.

JB1 or JH1 or JH3 or JR5

Clic clip



115197

Clip with profile end



115196

- ☐ Tighten the clips using the tool (**Tav. 1168**) (10) for clic clips or the tool (**Tav. 1784**) (11) for profile end clips.

III - FINAL OPERATION

☐ Refit:

- the driveshaft on the side concerned (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) or (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page 29A-2) ,

- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray.

Front right-hand driveshaft gaiter, gearbox side: Removal - Refitting

JB1 or JH1 or JH3 or JR5

Special tooling required

Tav. 1168 "Clic" type clip pliers for drive-shafts with a thermoplastic gaiter.

Tav. 1784 Pliers for the driveshaft gaiter collar.

Equipment required

parts washer

(1)	Big securing clip
(2)	Small securing clip
(3)	Driveshaft gaiter
(4)	Yoke sleeve
(5)	Spider
(6)	Cup
(7)	Cup spring
(8)	Driveshaft

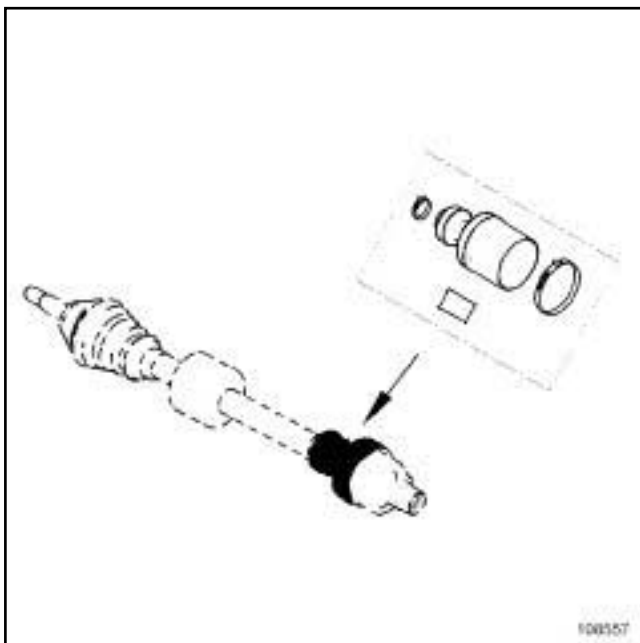
IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

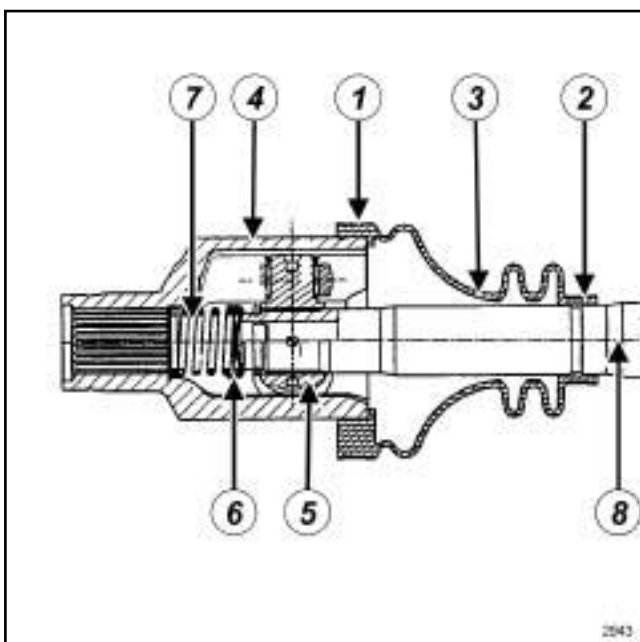
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8) .



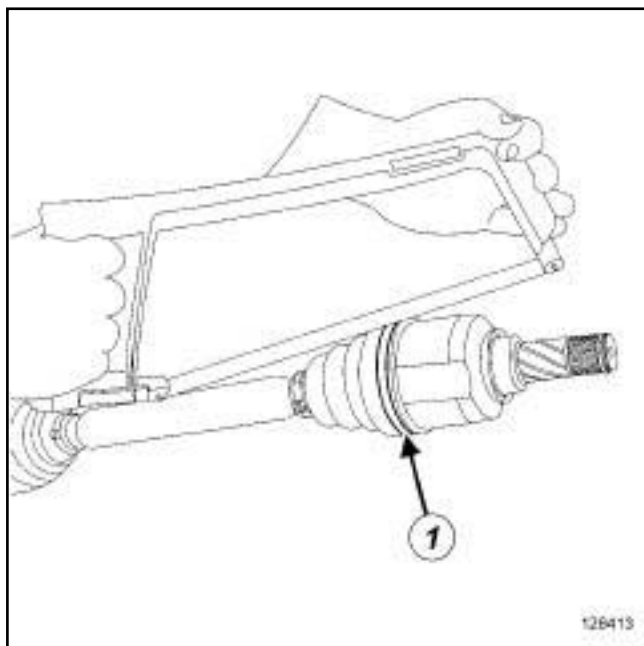
108557



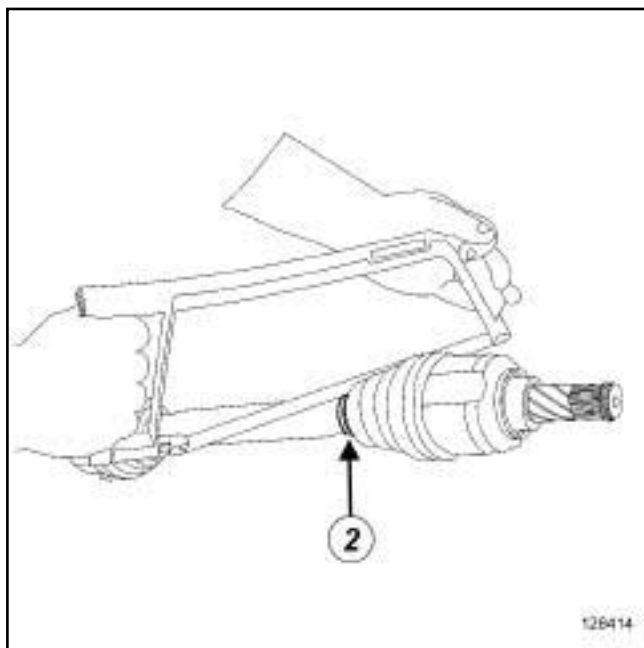
2943

JB1 or JH1 or JH3 or JR5

II - OPERATION FOR REMOVAL OF PART CONCERNED

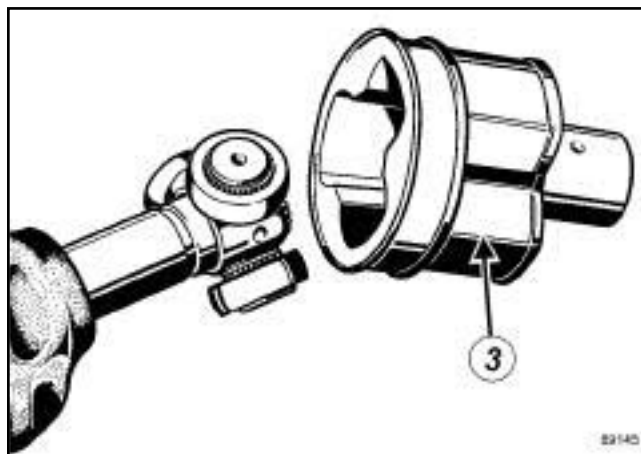


128413



128414

- ☐ Cut the big securing clip (1) and the small securing clip (2) using cutting pliers or a metal cutting saw, taking care not to damage the yoke sleeve and the driveshaft.
- ☐ Push back the driveshaft gaiter to release the yoke sleeve.



89145

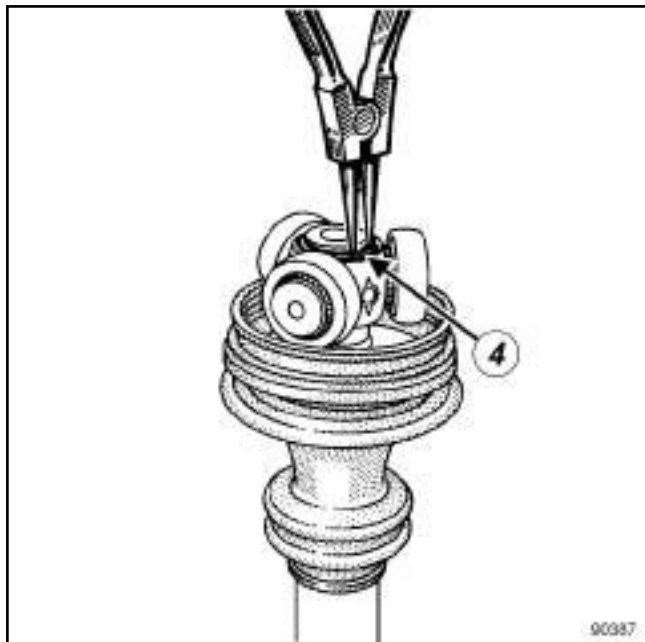
- ☐ Remove the yoke sleeve (3) .

Note:

- since the driveshaft yoke sleeve does not have a stop tab, it can be removed without being forced,
- do not remove the rollers from their respective bushings as the rollers and needles are matched and should never be interchanged.

- ☐ Remove as much grease as possible from the yoke sleeve.

JB1 or JH1 or JH3 or JR5

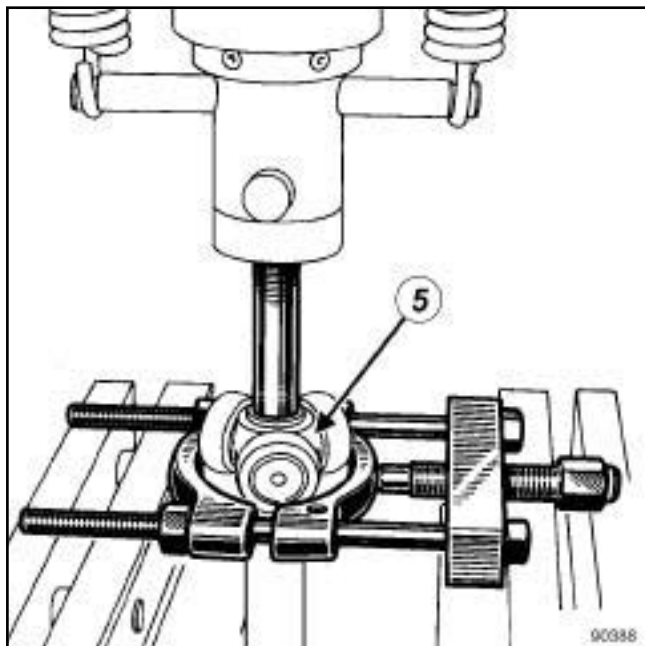


90387

- ❑ Remove the lock ring (4) .

Note:

Mark the position of the spider before extracting it.



90388

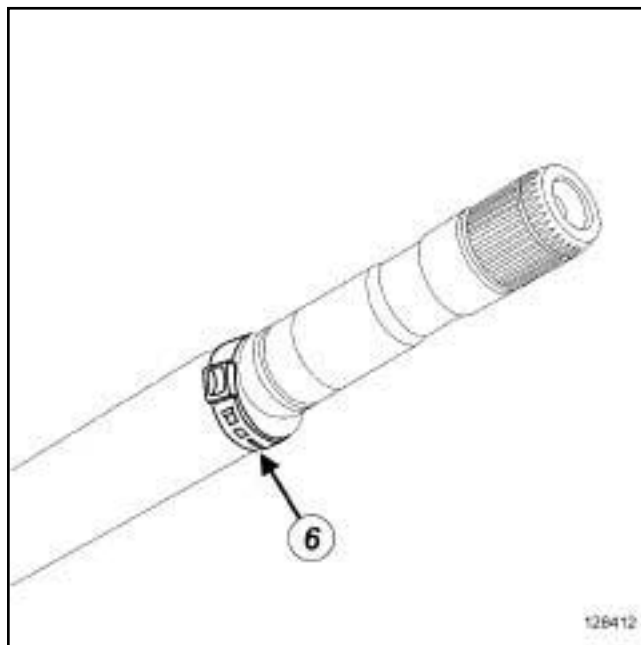
- ❑ Remove:
 - the spider (5) using a separator and a press,
 - the driveshaft gaiter from the driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Always replace:
 - the cup,
 - the cup spring,
 - the driveshaft gaiter,
 - the stop ring,
 - the big securing clip,
 - the small securing clip.
- ❑ Using a **parts washer**, clean the driveshaft, the spider and the yoke sleeve.

II - REFITTING OPERATION FOR PART CONCERNED

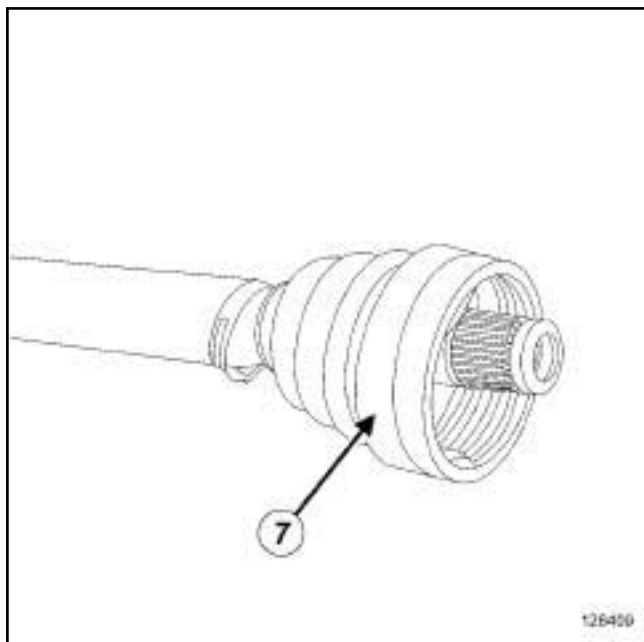


128412

- ❑ Fit the small securing clip (6) onto the driveshaft.
- ❑ Lightly lubricate the driveshaft using the grease supplied with the gaiter to facilitate its fitting.

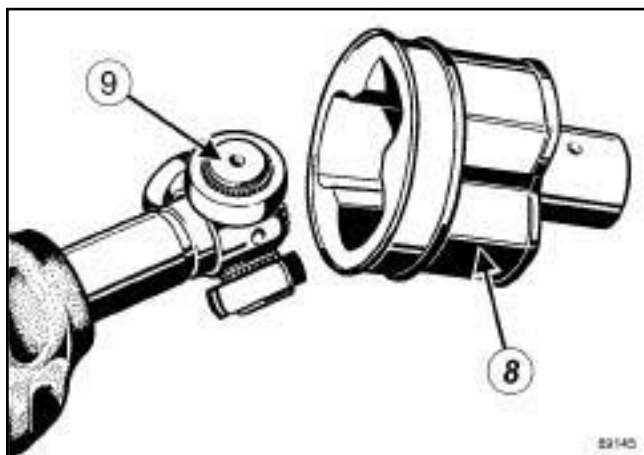
Front right-hand driveshaft gaiter, gearbox side: Removal - Refitting

JB1 or JH1 or JH3 or JR5



128409

- ☐ Refit the gaiter (7) onto the driveshaft.
- ☐ Insert the gaiter lip into the groove of the driveshaft.
- ☐ Refit:
 - the spider in the position marked during removal,
 - the stop ring,
 - the cup onto the cup spring,
 - the cup spring equipped with the cup into the drive-shaft yoke sleeve.



89145

- ☐ Spread the quantity of grease around the gaiter and the yoke sleeve.
- ☐ Fit the driveshaft yoke sleeve (8) to the spider (9) .

- ☐ Insert the gaiter lip into the groove of the yoke sleeve.

Note:

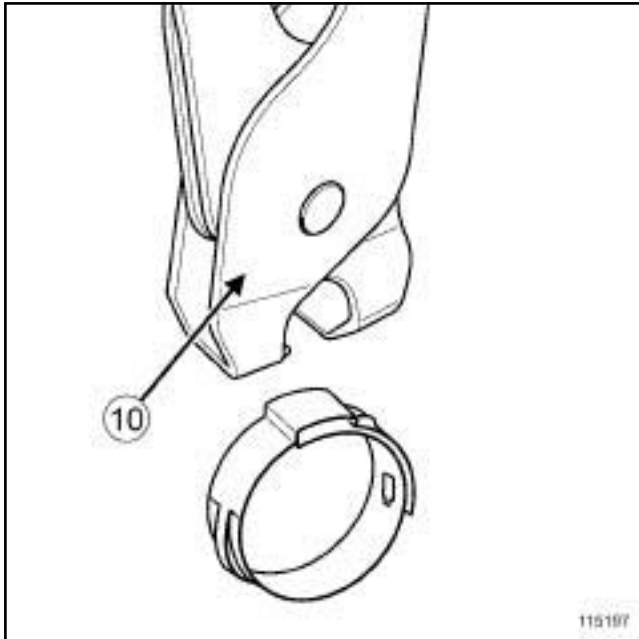
Check that the gaiter lip is correctly positioned in the groove of the driveshaft.

- ☐ Fit the small securing clip on the driveshaft gaiter.
- ☐ Refit the big securing clip on the driveshaft gaiter.

Front right-hand driveshaft gaiter, gearbox side: Removal - Refitting

JB1 or JH1 or JH3 or JR5

Clic clip



115197

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray.

Clip with profile end



115196

- ☐ Tighten the clips using the tool (**Tav. 1168**) (10) for clic type clips or the tool (**Tav. 1784**) (11) for profile end clips.

III - FINAL OPERATION

☐ Refit:

- the front right-hand driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-8),

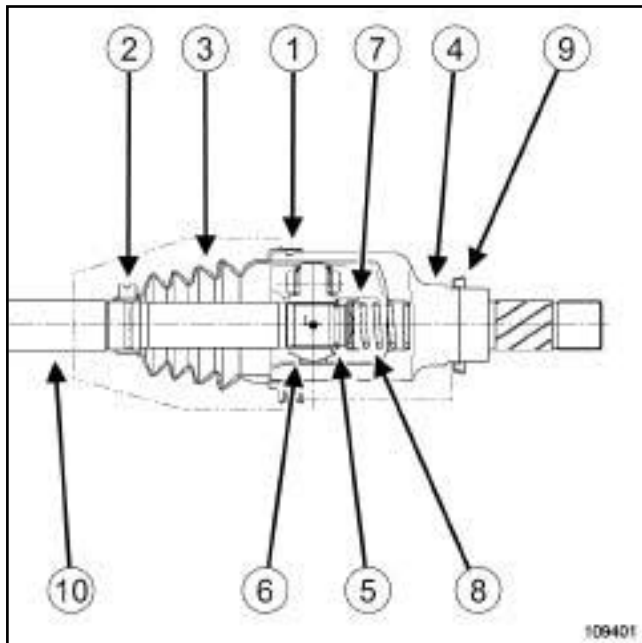
JH3 or JR5

Special tooling required

Tav. 1168 "Clic" type clip pliers for drive-shafts with a thermoplastic gaiter.

Equipment required

parts washer



109401

- (1) Big securing clip
- (2) Small securing clip
- (3) Driveshaft gaiter
- (4) Driveshaft yoke sleeve
- (5) Lock ring
- (6) Spider
- (7) Cup
- (8) Cup spring
- (9) Deflector
- (10) Driveshaft

IMPORTANT

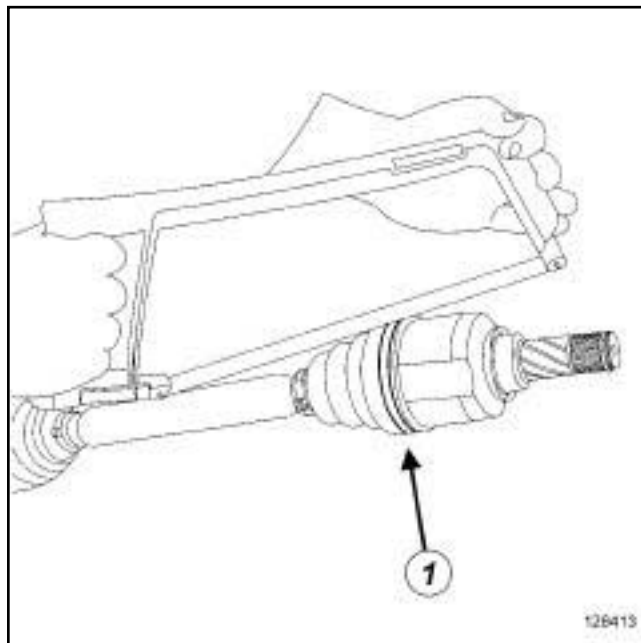
Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

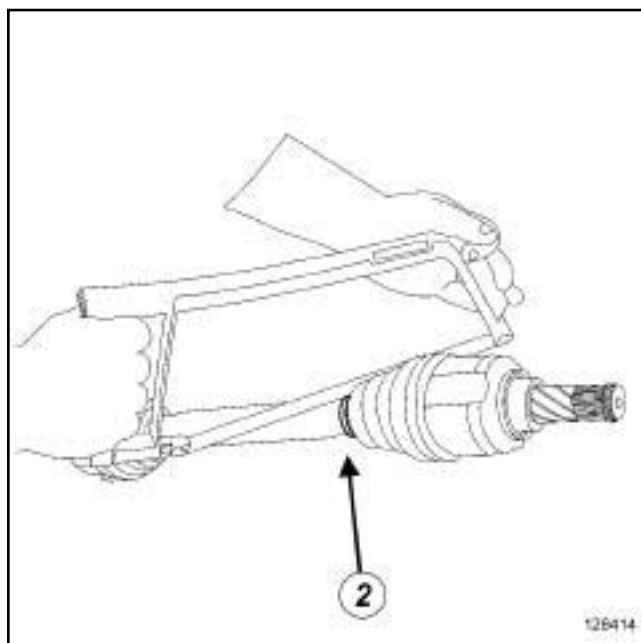
I - REMOVAL PREPARATION OPERATION

- ☐ Remove the front left-hand driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2**).

II - REMOVAL OPERATION



128413



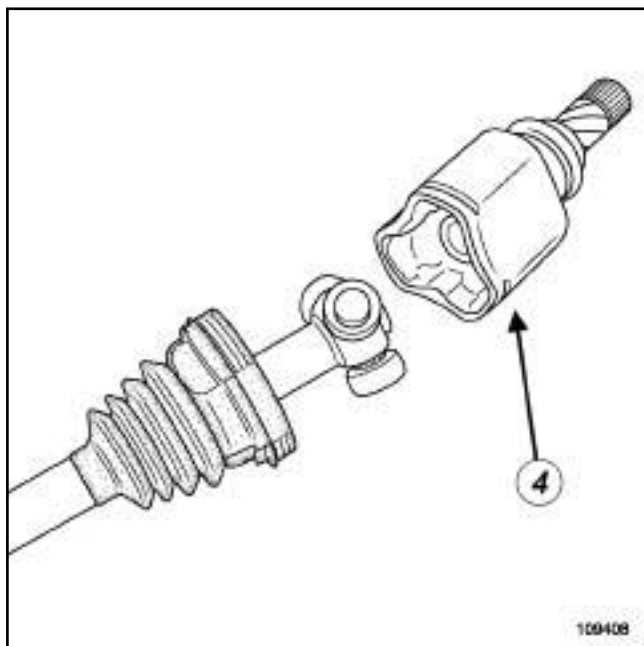
128414

- ☐ Cut the big securing clip (1) and the small securing clip (2) using cutting pliers or a metal saw, taking care not to damage the yoke sleeve or the drive-shaft.

Front left-hand driveshaft gaiter, gearbox side: Removal - Refitting

JH3 or JR5

- ❑ Push back the driveshaft gaiter to release the drive-shaft yoke sleeve.



- ❑ Remove the driveshaft yoke sleeve (4) .

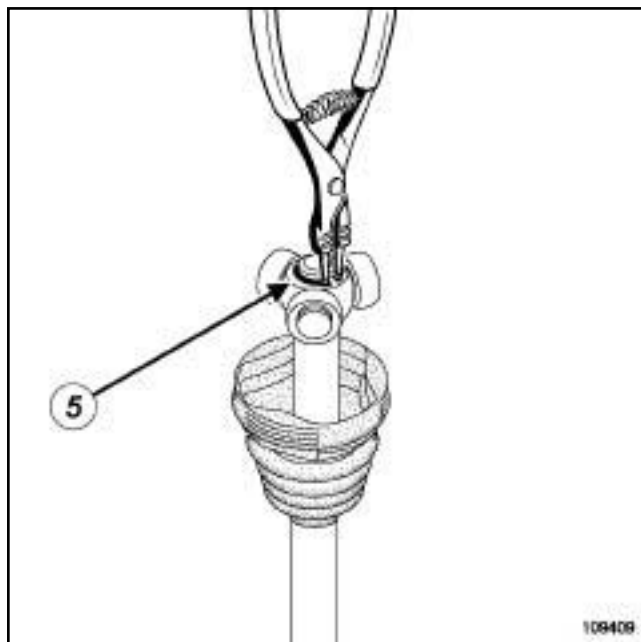
Note:

- Since the driveshaft yoke sleeve does not have a stop tab, it can be removed without being forced,
- do not remove the rollers from their respective bushings as the rollers and needles are matched and should never be interchanged.

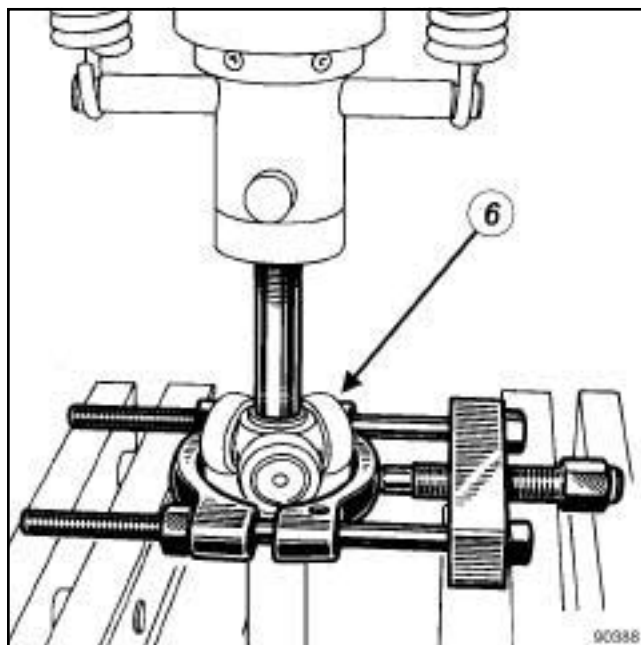
- ❑ Remove as much grease as possible.

Note:

Never use thinner to remove grease.



- ❑ Remove the lock ring (5) using circlip pliers.



- ❑ Remove the spider (6) using a press and a releasing type extractor.

Note:

Mark the position of the spider before extracting it.

- ❑ Remove:
 - the gaiter from the driveshaft,
 - the cup equipped with the cup spring.

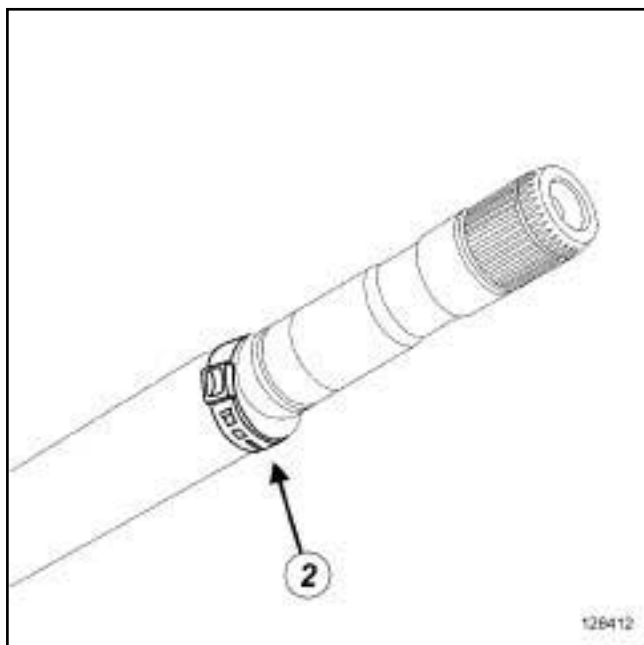
JH3 or JR5

REFITTING

I - REFITTING PREPARATION OPERATION

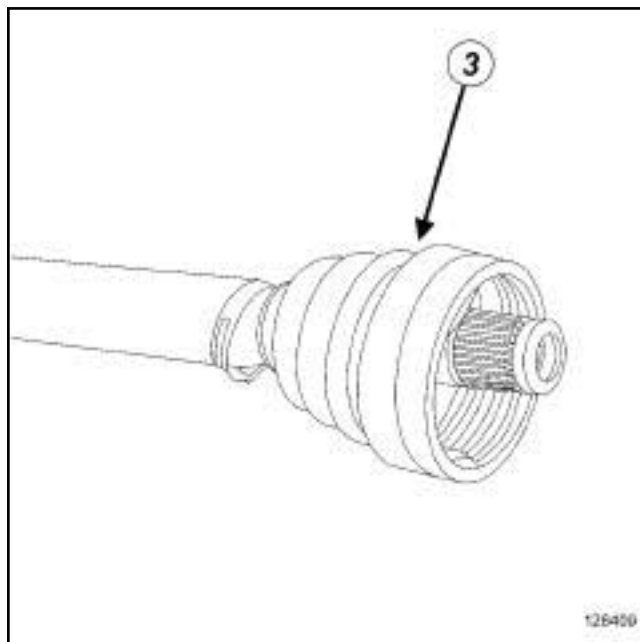
- ☐ parts always to be replaced: Front left-hand driveshaft gaiter, gearbox side.
- ☐ parts always to be replaced: gearbox side front driveshaft seal locking ring.
- ☐ Always replace:
 - the cup,
 - the cup spring,
 - the big securing clip,
 - the small securing clip.
- ☐ Use a **parts washer** to clean the driveshaft, the spider and the driveshaft yoke sleeve.

II - REFITTING OPERATION



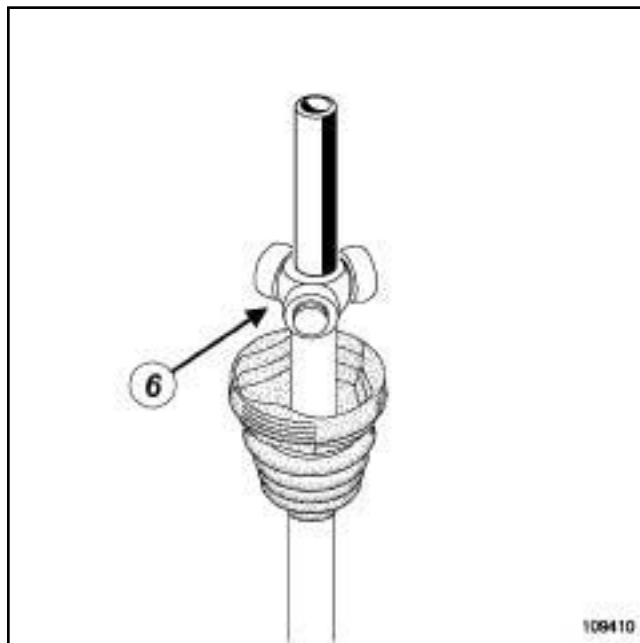
128412

- ☐ Fit the small tightening clip (2) to the driveshaft.
- ☐ Lightly lubricate the driveshaft using the **GREASE** supplied with the gaiter to facilitate its fitting.



128409

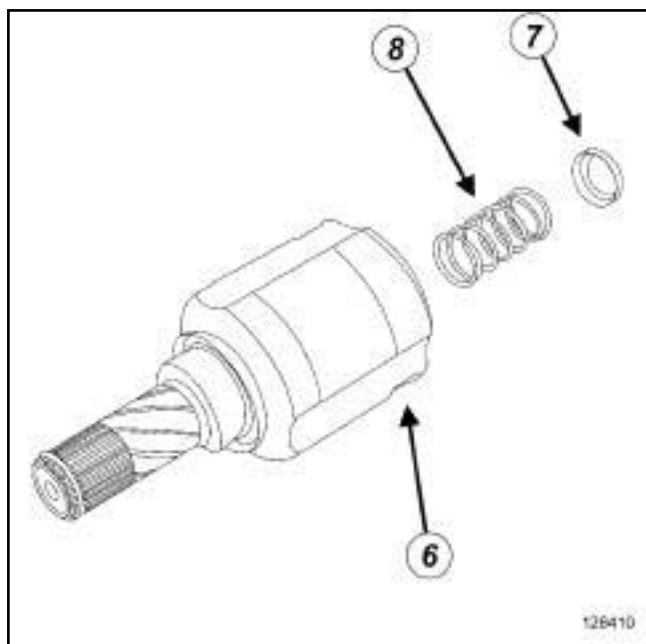
- ☐ Refit the gaiter (3) onto the driveshaft.
- ☐ Insert the gaiter lip into the groove of the driveshaft.



109410

- ☐ Refit:
 - the spider (6) in the position marked during removal,
 - a new lock ring using **circlip pliers**.

JH3 or JR5



128410

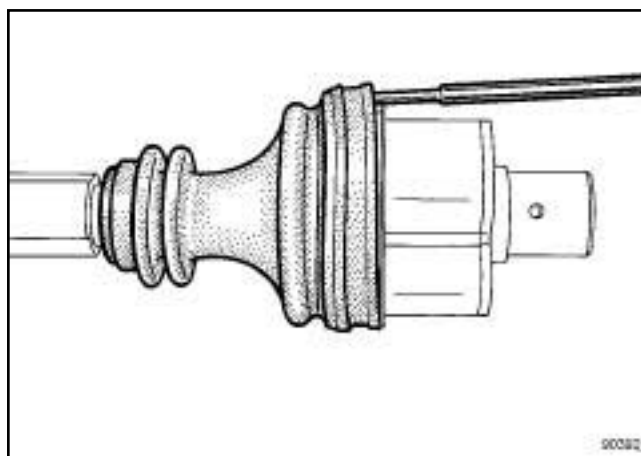
❑ Refit:

- the cup (7) onto the cup spring (8) ,
- the cup spring equipped with the cup into the drive-shaft yoke sleeve (6) .

- ❑ Divide the quantity of grease between the driveshaft gaiter and the yoke sleeve.
- ❑ Fit the driveshaft yoke sleeve onto the spider.
- ❑ Position the driveshaft gaiter lip into the groove of the yoke sleeve.

Note:

Check that the gaiter lip is correctly positioned in the groove of the driveshaft.



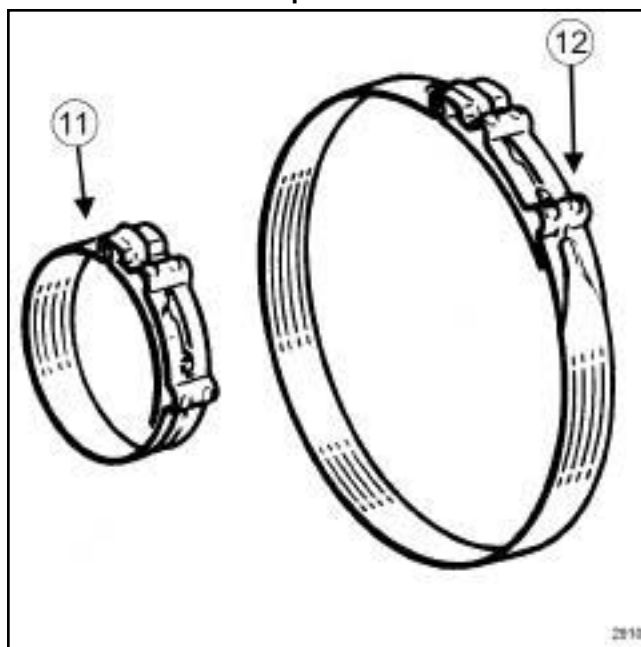
90392

- ❑ Insert a smooth rod with a rounded end between the gaiter and driveshaft to control the amount of air inside the joint.

❑ Fit:

- the small securing clip on the driveshaft gaiter,
- the big securing clip on the driveshaft gaiter.

CAILLEAU « click » clips



2910

- ❑ Tighten the small clip (11) and the big clip (12) until they click, using the tool (Tav. 1168).

JH3 or JR5

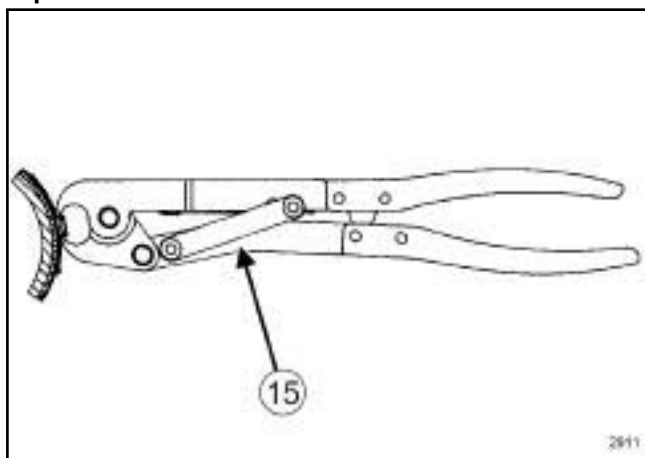
OETIKER clips



96048

- ❑ Tighten the small clip (13) and the big clip (14) using the tool.

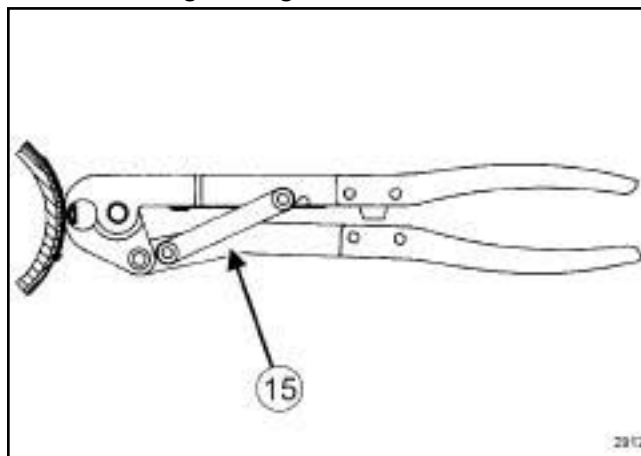
Position 1 - Pre-tightening and positioning of the clip



2911

- ❑ Put the linkage (15) in the lower position, and close the pliers fully. The pre-tightened clip slides onto the gaiter and can be positioned.

Position 2 - Tightening



2912

- ❑ Put the linkage (15) in the upper position, and close the pliers fully.

III - FINAL OPERATION

- ❑ Refit the front left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2) .

TWINGO

2 Transmission

21B

SEQUENTIAL GEARBOX

Vdiag No: 04

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V2

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **New Twingo**

Function concerned: **Sequential gearbox**

Name of computer: **Sequential gearbox**

Vdiag No: **04**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the diagnostic tool), Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- CLIP

Special tooling required

Special tooling required	
Multimeter	
Elé. 1589	Sequential gearbox bornier
Elé. 1590	Injection bornier
Elé. 1681	Test probe kit

3. REMINDERS

Procedure

To run fault finding on the vehicle computers, switch on the ignition.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is switched on after the + after ignition feed (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the resistance of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the diagnostic tool because the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

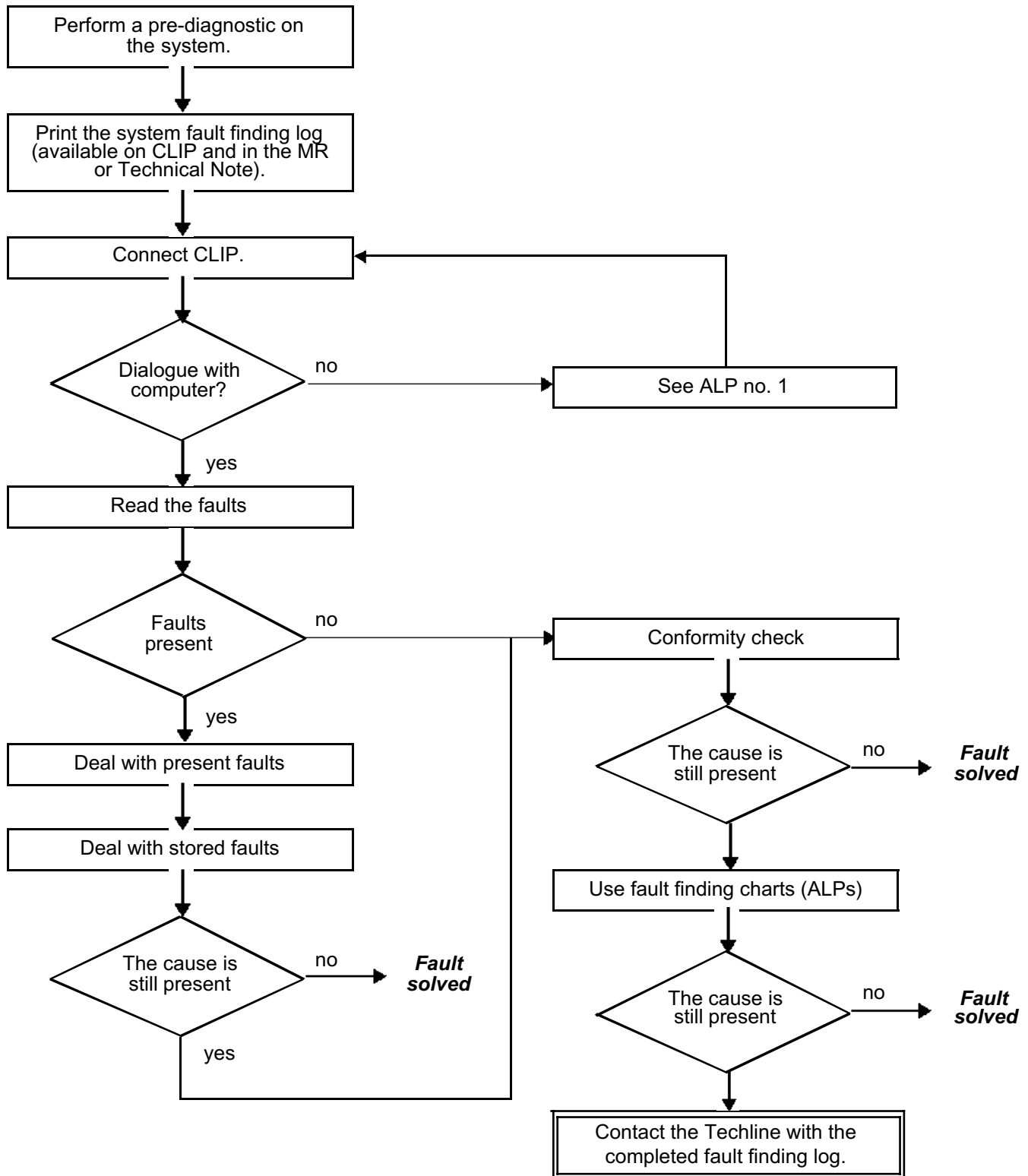
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the diagnostic tool is OK but the customer complaint is still present, the fault should be processed by **customer complaint**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (CONTINUED)

Wiring check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connections:

- Connector / Connector
- Connector / Device

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault.

Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection of the connection

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection

- Check the condition of the mounting (pin, strap, adhesive tape, etc.), that the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when pulling the wire slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
 - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
 - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
 - For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
 - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**).

5. FAULT FINDING LOG**IMPORTANT****IMPORTANT**

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

Make sure the battery is properly charged to avoid damaging the computers if there is a low charge.
Use the appropriate tools.

1. Sequential gearbox functions

The electrohydraulic system attached to the gearbox comprises two actuators, one for gear selection and changing, the other for operating the clutch, and a hydraulic power unit which supplies power to the actuators.

The assembly is linked to the sequential gearbox computer, which itself is linked to the engine management computer by a multiplex line connection. The gear lever is used to select gears: in automatic mode, gear changes are controlled by the computer which uses auto-adaptive shift patterns; in manual mode, the driver moves a lever which, via the computer, change the gears.

When the gear is changed, the sequential gearbox computer controls the engine management computer and the torque in such a way as to reduce bucking, leaving the driver free to leave his foot on the accelerator pedal.

The automatic mode used by the sequential gearbox is based on the design of the DP0 automatic gearbox which uses shift patterns that adapt automatically to the driving style and road conditions.

The gear change is determined by a set of gear change graphs as a function of the accelerator pedal position and the vehicle speed.

The sequential gearbox is a conventional manual gearbox with an electrohydraulic control.

Description of user operation:

The interface between the driver and the sequential gearbox system inside the passenger compartment comprises:

- a gear lever (mechanical section and internal electronic section),
- a display,
- a buzzer.

Using this interface, the driver can:

- request gear changes (up or down),
- request a specific gear change (into neutral or reverse),
- switch between manual and automatic mode,

Description of passenger compartment control:

Description of gear lever positions:

- **“S”: Standby:** this is the only stable gear lever position. Each time the driver presses the lever, it returns to the **S** position.
- **“R”: Reverse:** moving the lever to this position enables the driver to select reverse gear. Given the lever position of the reverse function, if the movement is too slow, the sequential gearbox computer can read the **N** signal and hence neutral is selected before reverse.
- **“N”: Neutral:** moving the lever to this position enables the driver to select neutral.
- **“A/M”: AUTO/MANUAL:** moving the lever to this position enables the driver to select either the manual mode (or semi-automatic) or automatic mode. If **AUTO** mode is selected, moving the lever will enable the driver to select manual mode, if manual mode is selected; moving the lever will enable the driver to select automatic mode.

Description of gear lever positions (continued):

- **"+"**: moving the gear lever towards this position enables the driver to shift up,
- **"-"**: moving the gear lever towards this position will enable the driver to shift down.

Description of the display:

This display is specifically for the sequential gearbox. It displays 4 types of information for the driver:

- displays the gear selected: **1, 2, 3, 4, 5, N** or **R**,
- the pictogram displaying **AUTO** mode: this pictogram lights up when **AUTO** mode is selected,
- the **"depress brake pedal"** symbol: this symbol lights up when a driver action requires the brake pedal to be depressed if the driver is not depressing the brake pedal. This symbol only lights up when there is an error (driver actions without depressing the brake pedal = symbol lighting up),
- the **sequential gearbox** fault warning light: this lights up when the sequential gearbox computer detects a fault on the sequential gearbox system.

General information about the operation:**Reminder:**

Creep is only possible in first or reverse gears; it makes parking manoeuvres easier: if the brake pedal or the handbrake is released, the vehicle moves forward by itself, without the driver having to accelerate. Creeping is not possible in second gear.

Operation in MANUAL mode:

Manual mode allows the driver to select gears by moving the gear lever. However, in manual mode, the driver is not completely free to do what he/she likes. This is why this mode is also called semiautomatic mode because the driver is still assisted by the sequential gearbox computer in the following instances:

- when driving, shifting the lever towards the **"+"** position may result in underspeed. As a result, the sequential gearbox computer forbids the driver's request,
- when driving, shifting the lever towards the **"-"** position may result in engine overspeed. As a result, the sequential gearbox computer forbids the driver's request,
- when driving, as the overspeed threshold is approached, the computer automatically selects a higher gear,
- when driving, as the underspeed threshold is approached, the computer automatically selects a lower gear,
- when driving, if the vehicle speed reduces too quickly (brakes applied), the sequential gearbox computer can order a downshift.

Operation in MANUAL mode (continued):

- when driving, the selection of “**N**” is only accepted by the sequential gearbox computer if the driver's foot is on the brake pedal,
- when driving, selection of reverse gear is prohibited,
- when the vehicle is slowing down and the speed is approaching 0 mph, the sequential gearbox computer automatically selects **1st** gear.

In manual mode, the driver decides when to change gears by:

- moving the gear lever towards “**+**” which enables a higher gear to be selected,
- moving the gear lever towards “**-**” which enables a lower gear to be selected,
- moving the gear lever to “**N**” which enables neutral to be selected,
- moving the gear lever to “**R**” which enables reverse gear to be selected.

Operation in AUTO mode:

Automatic mode frees the driver from having to worry about changing gear: instead, the sequential gearbox computer determines when best to change gear in relation to the different vehicle parameters (speed, acceleration, position of accelerator pedal etc.,).

The main characteristics of automatic mode are as follows:

- **AUTO** mode only functions when the engine is running.
- **AUTO** mode is preselected when the engine is started.

The **AUTO** mode entry conditions are as follows:

- Moving the gear lever to the left (towards **A/M**) when manual mode is selected, when a forward gear is engaged and **AUTO** mode was selected.
- Engine started.

To exit AUTO mode when driving and under normal operating conditions (no faults), the following exit conditions must be met:

- Movement of the gear lever to the left (deselecting automatic mode using the lever).
- Movement of gear lever towards “**+**” (except when changing from **R** to **1** or **N** to “**X**”).
- Movement of the gear lever towards “**-**” (except when changing from **N** to “**X**” or when reverse gear is engaged).

Buzzer operation:

The buzzer operates in the following cases:

- Safety risk: the buzzer sounds when one of the front doors is opened, if the following conditions are met:
 - the engine is running,
 - a gear is engaged,
 - the driver is not applying the brakes.
- The buzzer will cut out if one of the following conditions is confirmed:
 - the engine is not running,
 - the driver applies the brakes,
 - the driver closes the door(s).
- Driver warning when push-starting vehicle:
 - The buzzer will sound to inform the driver that moving the lever to select a gear will enable the engine to start. The buzzer will sound when the vehicle has reached the speed that will allow the engine to start.
- When the computer detects that the clutch is overheating.

Lever operation:

- Each time the lever is moved, it returns to the “**S**” position automatically.
- When the vehicle has stopped and the engine is switched off and the key is in **+ after ignition feed** position, lever movements will only be registered if the driver depresses the brake pedal. In this case, all gears are available. The number of gear changes possible is unlimited.
- When the vehicle has stopped and the engine is running, lever movements will only be registered if the driver depresses the brake pedal. In this configuration, only gears **N, 1, 2 and R** are available.
- Position **N** only allows neutral to be engaged if the driver depresses the brake pedal.
- Position **R** enables reverse gear to be engaged. Reverse gear will only be engaged if the vehicle has stopped and if the driver depresses the brake pedal. Engaging reverse when driving is prevented by the sequential gearbox computer.

Display operation:**AUTO repeater**

- As the display has an **AUTO (A)** symbol, it is possible to display the gear engaged at the same time as **AUTO** mode.

Gear selection display

- Vehicle stopped or almost stopped: A new gear will only be displayed after confirmation that the gear has really been engaged in the gearbox.
- Vehicle being driven: the change in the status of the display will depend on the driving mode selected:
In **AUTO** mode: simultaneous display of the **AUTO** mode and the gear engaged.
In **MANUAL** mode: engaged gear is displayed.

Display programming when gears cannot be engaged

- When a request would lead to engine overspeed or underspeed: the requested gear flashes then initial gear reappears. Flashing ends after a delay.
- When there is a mechanical fault: application of the “**retry**” **(1)** program by the computer.
During retry: the requested gear flashes; then, the engaged gear is displayed on the instrument panel at the end of the retry period. This program cannot be applied to neutral because the “**N**” position cannot flash on the instrument panel; it remains lit.

(1) “RETRY”: If there is a mechanical fault engaging a gear (lower or higher), the computer will detect this and will attempt to re-engage twice more; if this does not work, the requested gear will flash on the instrument panel display and the gearbox will return to the gear used prior to this request.

Depress brake pedal symbol:

- The “depress brake” symbol lights up when there is:
 - a request to change gear when stopped without the brake pedal applied,
 - a request to start the engine with gear engaged without brake pedal applied,
 - a request to select **N** when driving without brake pedal applied,
 - a request to select **AUTO**, with the vehicle stationary, the engine running and 2nd gear engaged.
- Depress brake pedal symbol goes out:
 - The symbol goes out if the driver depresses the brake pedal or after a delay.

Note:

If, while the symbol is lit, the driver depresses the brake pedal, the symbol will go out and the display will return to its previous status (the lever request is not registered).

In the event that the driver makes a request causing the gear requested to flash and the symbol to be displayed at the same time, they will be synchronised and last for the same period of time.

Fault warning light:

This warning light comes on when a fault is detected by the sequential gearbox computer.

COMPUTER - (RE)PROGRAMMING

No setpoint following sequential gearbox computer reprogramming.

COMPUTER: REPLACEMENT

1. DIALOGUE POSSIBLE WITH THE SEQUENTIAL GEARBOX COMPUTER BEFORE REPLACEMENT

A) Before replacement:

Switch on the ignition.

Note the replacement date of the clutch **ID024 "Read date new clutch fitted"**.

Note the value of the clutch released position **PR148 "Clutch released position"**.

B) Replacement / Reprogramming:

C) After reprogramming:

a. Switch on the ignition (important, during the entire procedure, the ignition must not be switched off except when indicated in the procedure).

b. Rehabilitate the hydraulic unit using command **AC007 Hydraulic unit pump rehabilitation**.

c. Programming the grille.

Check that **PR145 Engine coolant temperature** is below 50 °C.

Gearbox in neutral position, handbrake engaged, engine speed zero and no fault with the solenoid valves and the master slave sensors.

Program the gears with command **VP008 Program selection/engagement ranges**.

Wait for the procedure to end.

Exit fault finding mode and switch off the ignition.

Wait **1 minute** and then re-establish dialogue with the computer.

Check that programming has been successful by referring to the following status:

– **ET061 "Gear programming"** displays **"DONE"**.

Brake and select all the gears in the gearbox, while checking that they are recognised on the display.

Restart procedure **c** from the beginning if **ET061** does not display **"DONE"**.

d. Biting point programming:

Put the gearbox in neutral.

Start the engine.

Wait **10 seconds** without changing gear (to program the clutch biting point).

Check that the programming has been successful by referring to the following statuses:

– **ET062 "Biting point programming"** displays **"DONE"**,

– **ET063 "Solenoid valve zero point programming"** displays **"DONE"**.

– If **"NOT DONE"**, repeat procedure **F**.

e. Programming clutch progressivity:

Check that the **PR145 "Engine coolant temperature"** is above 80 °C and that the **PR095 "Clutch temperature"** is below 180 °C.

Repeat starting the vehicle briskly at half-load 4 or 5 times to program the clutch progressivity.

Exit fault finding mode and switch off the ignition.

Wait **1 minute** and then re-establish dialogue with the computer.

Check that programming has been successfully completed by referring to the following status:

– **ET065 "Progressivity programming"** displays **"DONE"**.

Repeat procedure **e** if status **ET065 "Progressivity programming"** displays **"NOT DONE"**.

- f. Program the vehicle identification number code with command **VP001 Enter VIN**.
- g. Enter the clutch replacement date using command **VP013 Enter new clutch fitting date**.
Check the entry with **ID024 "Read date new clutch fitted"**.
Repeat the procedure if unsuccessful.
- h. Write the value of the initial released position with command **VP014 "Write initial clutch released position"**.
Check that programming has been successful by referring to the following status:
 - **ET064 "Clutch position programming"** displays **"DONE"**.Repeat procedure h if not done.
- i. Enter the last After-Sales operation date using command **VP009 Enter last After-Sales operation date**.
Check the entry with **ID022 "Read date of last After-Sales operation"**.
Repeat the procedure if unsuccessful.
- j. Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
- k. Check the faults and clear the computer fault memory (some faults are stored when the command modes are used) or deal with the present faults.
- l. Carry out a road test followed by another check with the diagnostic tool.

2. DIALOGUE IMPOSSIBLE WITH THE SEQUENTIAL GEARBOX COMPUTER BEFORE REPLACEMENT

A. Replacement / Reprogramming

B. After reprogramming:

- a. Switch on the ignition (important, during the entire procedure, the ignition must not be switched off except when indicated in the procedure).
- b. Rehabilitate the hydraulic unit using command **AC007 Hydraulic unit pump rehabilitation**.
- c. Programming the grille.
Check that **PR145 Engine coolant temperature** is below 50 °C.
Gearbox in neutral position, handbrake engaged, engine speed zero and no fault with the solenoid valves and the master slave sensors.
Program the gears with command **VP008 Program selection/engagement ranges**.
Wait for the procedure to end.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
Check that programming has been successful by referring to the following status:
– **ET061 "Gear programming"** displays **"DONE"**.
Brake and select all the gears in the gearbox, while checking that they are recognised on the display.
Restart procedure **c** from the beginning if **ET061** does not display **"DONE"**.
- d. Biting point programming:
Put the gearbox in neutral.
Start the engine.
Wait **10 seconds** without changing gear (to program the clutch biting point).
Check that the programming has been successful by referring to the following statuses:
– **ET062 "Biting point programming"** displays **"DONE"**,
– **ET063 "Solenoid valve zero point programming"** displays **"DONE"**.
If **"NOT DONE"**, repeat procedure **F**.
- e. Programming clutch progressivity:
Check that the **PR145 "Engine coolant temperature"** is above 80 °C and that the **PR095 "Clutch temperature"** is below 180 °C.
Repeat starting the vehicle briskly at half-load 4 or 5 times to program the clutch progressivity.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
Check that programming has been successfully completed by referring to the following status:
– **ET065 "Progressivity programming"** displays **"DONE"**.
Repeat procedure **e** if status **ET065 "Progressivity programming"** displays **"NOT DONE"**.
- f. Program the vehicle identification number code with command **VP001 Enter VIN**.
- g. Enter the last After-Sales operation date using command **VP009 Enter last After-Sales operation date**.
Check the entry with **ID022 "Read date of last After-Sales operation"**.
Repeat the procedure if unsuccessful.
- h. Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
- i. Check the faults and clear the computer fault memory (some faults are stored when the command modes are used) or deal with the present faults.
- j. Carry out a road test followed by another check with the diagnostic tool.
Repeat the procedure if unsuccessful.

GEARBOX - HYDRAULIC UNIT KIT (without clutch)

WARNING

For all operations on the hydraulic circuit, activate commands AC006 "Hydraulic unit pump inhibition" and AC081 "Discharge pressure accumulator" until the hydraulic pressure PR018 "Hydraulic pressure" is close to zero.

- A)** Switch on the ignition.
Clear the computer fault memory using command **RZ001 Stored fault(s)**.
- B)** Rehabilitate the hydraulic unit using command **AC007 "Hydraulic unit pump rehabilitation"**.
Bleed the hydraulic circuit.
Gearbox in neutral, engine speed zero, handbrake engaged and no fault with the solenoid valves and the master slave sensors.
Bleed the hydraulic pressure unit using command **AC011 Bleed hydraulic pressure unit**.
Wait for the procedure to end.
Repeat the procedure if unsuccessful.
- C)** Bleed the clutch hydraulic circuit using command **AC008 "Clutch circuit phase 1 bleed"**.
Wait for the procedure to end (this should take **6 minutes**).
- D)** Bleed the clutch hydraulic circuit using command **AC009 "Clutch circuit phase 2 bleed"**.
Wait for the procedure to end (this should take **8 minutes**).
- E)** In order for the following steps to run smoothly, check that parameter **PR145 "Engine coolant temperature"** is below **50 °C**.
Clear all programming using commands:
– **RZ002 Programming**,
– **RZ003 Program biting point**,
– **RZ008 Initial closed position of clutch**.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
- F)** Program the gears using command **VP008 "Programming selection/engagement zones"**.
Wait for the procedure to end.
- Exit fault finding mode and switch off the ignition.
- Wait **1 minute** and then re-establish dialogue with the computer.
Check that programming has been successful by referring to the following status:
ET061 "Gear programming" displays **"DONE"**.
Brake and select all the gears in the gearbox, while checking that they are recognised on the display. Repeat procedure **G** if not done.

- G) Shift the selector lever to neutral.
Start the engine.

Wait **10 seconds** without changing gear (to program the clutch biting point).

Check that the programming has been successful by referring to the following statuses:

- **ET062 "Biting point programming"** displays **"DONE"**,
- **ET063 "Solenoid valve zero point programming"** displays **"DONE"**.

If **"NOT DONE"**, repeat procedure **E**.

- H) Check that **PR145 "Engine coolant temperature"** is above **80 °C** and that **PR095 "Clutch temperature"** is less than **180 °C**.

Repeat starting at half-load 4 or 5 times to program the clutch progressivity.

Exit fault finding mode and switch off the ignition.

Wait **1 minute** and then re-establish dialogue with the computer.

Check that programming has been successfully completed by referring to the following status:

- **ET065 "Progressivity programming"** displays **"DONE"**.

Repeat procedure **F** if status **ET065 "Progressivity programming"** displays **"NOT DONE"**.

- I) Exit fault finding mode and switch off ignition.

HIGH PRESSURE PIPE

WARNING

For all operations carried out on the hydraulic unit, run commands **AC006 Disable hydraulic unit pump** and **AC081 Discharge pressure accumulator**.

Use command **AC081** until hydraulic pressure is close to zero.

- A) Switch on the ignition.
- B) Apply the following command:
 - **RZ001 Stored faults**.Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
- C) Rehabilitate the hydraulic unit using command **AC007 "Hydraulic unit pump rehabilitation"**.
Open the bleed screw,
Gearbox in neutral position, handbrake engaged, engine speed zero and no fault with the solenoid valves and the master slave sensors.
Bleed the clutch hydraulic circuit using command **AC008 "Clutch circuit phase 1 bleed"**.
Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to end (this should take **6 minutes**).
- D) Bleed the clutch hydraulic circuit using command **AC009 "Clutch circuit phase 2 bleed"**.
Wait for the procedure to end (this should take **8 minutes**).
- E) Exit fault finding mode and switch off the ignition.

CLUTCH OR GEARBOX + CLUTCH

WARNING

For all operations on the hydraulic circuit, activate commands AC006 "Hydraulic unit pump inhibition" and AC081 "Discharge pressure accumulator" until the hydraulic pressure PR018 "Hydraulic pressure" is close to zero.

- A) Switch on the ignition.
- B) Clear all programming using commands
- **RZ002 Programming,**
 - **RZ003 Program biting point,**
 - **RZ008 Initial closed position of clutch.**
- Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
- C) Rehabilitate the hydraulic unit using command **AC007 "Hydraulic unit pump rehabilitation"**.
Bleed the hydraulic circuit.
Open the bleed screw,
Start the engine with the handbrake applied.
Gearbox in neutral and no faults in the solenoid valves or master slave sensors.
Bleed the hydraulic circuit using command **AC025 Bleed slave cylinder hydraulic circuit**.
Repeat procedure **C** if not done.
- D) Check that **PR145 "Engine coolant temperature"** is below 50 °C.
Program the gears with command **VP008 Program selection/engagement ranges**.
Wait for the procedure to end.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
Check that programming has been successful by referring to the following status:
– **ET061 "Gear programming"** displays **"DONE"**.
Brake and select all the gears in the gearbox, while checking that they are recognised on the display.
Repeat procedure **D** if not done.
- E) Shift the selector lever to neutral.
Start the engine.
- Wait **10 seconds** without changing gear (to program the clutch biting point).
Repeat the clutch biting point programming 4 or 5 times.
Check that programming has been successful by referring to the following status:
– **ET062 "Biting point programming"** displays **"DONE"**.
If **"NOT DONE"**, repeat procedure **E**.

- I) Check that **PR145 "Engine coolant temperature"** is above **80 °C** and that **PR095 "Clutch temperature"** is less than **180 °C**.
Repeat starting at half-load 4 or 5 times to program the clutch progressivity.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and then re-establish dialogue with the computer.
Check that programming has been successfully completed by referring to the following status:
– **ET065 "Progressivity programming"** displays **"DONE"**.
Repeat procedure **J** if not done.
- G) Exit fault finding mode and switch off ignition.

SETTINGS

VP001: "Write VIN"

This command permits manual entry of the vehicle's VIN into the computer.
Use this command each time the computer is replaced or (re)programmed.

Note:

When replacing or reprogramming a computer, use command **AC007 Hydraulic unit pump rehabilitation** before carrying out parameter **VP008 Program selection/engagement ranges**.

VP008: "Selection/engagement zones programming"

This command enables the gears to be programmed.

Use this command when:

- replacing the electrohydraulic unit, the clutch or the gearbox,
- replacing or reprogramming the computer,
- replacing the engagement position sensor and the selecting position sensor,
- replacing the engagement, selection or clutch solenoid valves.
- replacing the reservoir, accumulator or pump only.

VP009: "Enter last After-Sales operation date"

Use this command for each workshop operation on the sequential gearbox.

Select command VP009 on the diagnostic tool.

Enter the operation date with the tool keyboard.

VP013: "Enter new clutch fitting date"

This command should be used when the clutch is replaced.

Select command VP013 on the diagnostic tool.

Enter the operation date with the tool keyboard.

VP014: "Enter clutch initial closed position"

This command enables the value of the initial closed position of the clutch to be re-entered into a new or reprogrammed computer in order to keep a consistent record of the clutch wear,.

Use this command each time the computer is replaced or reprogrammed.

SEQUENTIAL GEARBOX

Fault finding - Fault summary table

21B

Tool fault	Associated DTC	Diagnostic tool title
DF002	0613	Computer
DF039	0725	Engine speed signal
DF043	0785	Gear change consistency
DF046	5002	Idling setpoint multiplex signal
DF048	0720	Vehicle speed signal
DF059	C100	Injection connection → Automatic transmission (multiplex line signal)
DF062	C073	Multiplex line fault
DF065	0945	Pump relay circuit
DF067	0820	Lever position switch circuit
DF068	0805	Clutch position sensor circuit
DF069	0904	Selection position sensor circuit
DF070	0914	Engagement position sensor circuit
DF071	0750	Clutch solenoid valve circuit
DF072	0755	Engagement solenoid valve 1 circuit
DF073	0760	Engagement solenoid valve 2 circuit
DF074	0765	Selection solenoid valve 1 circuit
DF075	0770	Selection solenoid valve 2 circuit
DF076	0900	Clutch control
DF077	0928	Gearbox servo control
DF078	0944	Hydraulic servo control
DF080	0560	Battery voltage
DF082	0571	Brake lights switch circuit
DF107	5000	Engine speed multiplex signal
DF108	4073	Effective average torque multiplex signal
DF114	5007	Pedal position multiplex signal
DF115	5005	Torque multiplex signal
DF117	4037	RR* wheel speed multiplex signal left
DF118	403A	RR* right-hand wheel speed multiplex signal
DF122	C140	Passenger compartment computer connection

*RR: rear

SEQUENTIAL GEARBOX

Fault finding - Fault summary table

Tool fault	Associated DTC	Diagnostic tool title
DF144	5001	Coolant temperature multiplex signal
DF145	5003	Invalid pedal position multiplex signal*
DF146	4074	Torque no reduction multiplex signal
DF147	5004	Invalid anticipated torque multiplex signal*
DF148	4040	Invalid switch 2 multiplex signal
DF150	C155	Instrument panel multiplex connection
DF166	0932	Pressure sensor circuit
DF175	4031	FR* wheel speed multiplex signal left
DF176	4034	FR* wheel speed multiplex signal right
DF180	0942	Hydraulic pump
DF181	0919	Gear selection impossible
DF185	C121	No ABS/ESP multiplex signal
DF187	0949	Programming
DF188	0701	System operation
DF232	0604	Computer
DF233	0605	Computer
DF234	0603	Computer
DF251	0715	Gearbox input speed
DF252	0946	Pump relay
DF254	0218	Clutch temperature
DF256	2711	Erratic gear jumping
DF257	0934	Slow loss of hydraulic pressure
DF258	0935	Rapid loss of hydraulic pressure
DF259	0867	Pressure accumulator
DF262	0780	Auto-adaptive pattern
DF263	5006	Instantaneous maximum torque multiplex signal
DF265	0885	Computer

*signal: signal

* FR: front

DF002 PRESENT OR STORED	COMPUTER 1.DEF: Internal electronic fault

NOTES	Special note: – fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **condition and positioning** of the following fuses:

- Fuse **F1 (30A)** located in the engine fuse and relay box.
- Fuses **F16 (20A)** and **F4 (7.5A)** located in the passenger compartment fuse box.

Check the connection and condition of the **52-track** connector of component **119**.

If the connector is faulty and there is a repair procedure (**see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+ before ignition** on connection **BP39** and for **+ after ignition** feed on connection **AP4** on the connector of component **119**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:

- Connection code **N** between component **119** and the chassis earth **MC - 12A**.
- Connection code **N** between component **119** and the chassis earth **MC - 12B**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Clear the computer fault memory and exit fault finding.

Switch off the ignition.

Switch on the ignition again and carry out a new check using the **diagnostic tool**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool . Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool .

DF039 PRESENT OR STORED	ENGINE SPEED SIGNAL 1.DEF: Signal incoherent 2.DEF: No signal

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine starts.
	Special note: Fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

1.DEF	NOTES	None.

Engine running at idle speed and vehicle stopped, check the gearbox input engine speed sensor and the engine speed sensor are operating correctly using the following parameters:

- PR006 Engine speed,
- PR014 "Gearbox input speed".

Check the mechanical **condition** of the clutch.

2.DEF	NOTES	None.

Check the **connection and condition** of the connectors of components **119** and **120**.

If the connector(s) are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **insulation, continuity and absence of interference resistance** on the following connection:

- Connection code **H7** between components **119** and **120**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the injection system (see **17B, Petrol injection**) and deal with any faults.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF043 PRESENT OR STORED	<u>GEAR CHANGE CONSISTENCY</u> DEF: Inconsistency between gear read and gear engaged

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine starts.
	Special note: If the fault is present: ● Fault warning light comes on. ● Impossible to start the engine. ● Impossible to change gear.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check **the condition and connection** of the connectors of the gearbox computer, component code **119**, of the engagement position sensor, component code **1055** and of the selection position sensor, component code **1056** as well as the intermediate connector.

If the connector(s) are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

The connector check must be accurately carried out before moving on to the next step.

Start the engine.

- Engage first gear and wait for the solenoid valves to be deactivated.
- Engage neutral, display the value of the parameters **PR017 Engagement position** and **PR016 Selection position** and wait **10 seconds**, checking that the values do not change.
- Switch off the engine and wait **15 seconds**.

If, after waiting **15 seconds**, it is impossible to push the vehicle, replace the engagement position sensor (see **MR 411 Mechanical, 21B, Sequential gearbox, Engagement sensor: Removal - Refitting**).

- Start the engine.
- Engage second gear and wait for the solenoid valves to be deactivated.
- Engage neutral, display the value of the parameters **PR017** and **PR016** and wait **10 seconds**, checking that the values do not change.
- Switch off the engine and wait **15 seconds**.

If, after waiting **15 seconds**, it is impossible to push the vehicle, replace the engagement position sensor (see **MR 411 Mechanical, 21B, Sequential gearbox, Engagement sensor: Removal - Refitting**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF046 PRESENT OR STORED	<u>IDLING SETPOINT MULTIPLEX SIGNAL</u> 1.DEF: Communication disrupted

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started. If one of the gears engaged, accelerator pedal position or engine speed signals are not available, a default value is used: – Engine idle speed = 816 rpm.
	Use the Wiring Diagrams Technical Note, New TWINGO.

Perform a multiplex network test (see **88B, Multiplex**).

Check the **connection** and **condition** of the connectors of components **120** and **119**.

If the connector(s) are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **insulation to + 12 V and to earth and check the continuity** of the following connections:

- Connection code **3MT**,
- Connection code **3MS**,

between components **120** and **119**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, check the injection system (see **17B, Petrol injection**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF048 PRESENT OR STORED	<u>VEHICLE SPEED SIGNAL</u> 1.DEF: Signal incoherent 2.DEF: No signal

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying fault finding procedures to stored faults: The fault is declared present after a road test.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Carry out a road test.

Check the concordance between the speed indicated on the speedometer and parameter **PR105 Vehicle speed**.

Check the **connection** and **condition** of the connectors of components **119, 120** and **1094**.

If the connector(s) are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Run a multiplex network test (see **88B, Multiplexing, Introduction**).

If the fault is still present, run fault finding on the ABS/ESP system (see **38C, Anti-lock braking system**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF059 PRESENT OR STORED	INJECTION → AUTOMATIC TRANSMISSION CONNECTION (CAN SIGNALS) 1.DEF: No signal

NOTES	Priorities when dealing with a number of faults: In the event of a number of faults, deal with DF062 Multiplex line fault first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **120** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Run fault finding on the injection system (see **17B, Petrol Injection**).

Check the **insulation to + 12 V and to earth and check the continuity** of the following connections:

- Connection code **3MT**,
- Connection code **3MS**,

between components **120** and **119**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF062 PRESENT OR STORED	MULTIPLEX LINE FAULT 1.DEF: Multiplex line connection fault

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: The computer fault memory is cleared, the ignition is switched off and on again and the engine is started.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Perform a multiplex network test (see **88B, Multiplex**).
 Run fault finding on the injection system (see **17B, Petrol Injection**).

Check the **connection** and **condition** of the connectors of components **120** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **insulation to + 12 V and to earth and check the continuity of the following connections:**

- Connection code **3MT**,
- Connection code **3MS**,

between components **120** and **119**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

21B

DF065 PRESENT OR STORED	<u>PUMP RELAY CIRCUIT</u> CC.0: Short circuit to earth CO.1: Open circuit or short circuit to + 12 V

NOTES	Priorities when dealing with a number of faults: Deal with fault DF166 Pressure sensor circuit first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: – switching on the ignition again and starting the engine.
	Special note: – Fault warning light comes on. – Any gear changes and automatic mode are inhibited.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the presence and conformity of component **762** in the engine fuse box.
 Check for the earth on connection **MAS** of component **792**.
 If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **connection** and **condition** of the connectors of components **762** and **120**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check for **+ before ignition** on connection **BP36** of component **762**.
 If there is **no + before ignition**, check fuse **F1 (30A)** on component **597**.
 If the fuse is correct, check the **continuity** of connection **BP36** between components **762** and **597**.
 If the fuse is not correct, **check the insulation to earth** of connection **BP36** between components **762** and **597**.
 If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **continuity** and **insulation to earth and to + 12 V** of the following connections:

- Connection code **5AF** between components **762** and **119**.
- Connection code **5AE** between components **762** and **724**.

If the connections are faulty, check the connection and condition of intermediate connector **R235** located on the hydraulic unit.
 If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF065
CONTINUED**

Check the **insulation** between the following connections:

- Connection code **MAS** of component **762**,
- Connection code **BP36** between components **762** and **597**,
- Connection code **5AF** between components **762** and **119**,
- Connection code **5AE** between components **762** and **724**,
- Connection code **M** of component **724**.

If the connections are faulty, check the connection and condition of intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the pump supply relay (component code **762**).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults displayed by the diagnostic tool.
Clear the computer memory.
Carry out a road test followed by another check with the diagnostic tool.

DF067 PRESENT OR STORED	<u>LEVER POSITION SWITCH CIRCUIT</u> CC.0: Short circuit to earth CO.1: Open circuit or short circuit to + 12 V 1.DEF: Values outside the limits
NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or the engine is started.
	Use the Wiring Diagrams Technical Note for New TWINGO.
Check the connection and condition of the connectors of components 1058 and 119 . If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.	
Check the continuity and insulation to earth and + 12 V on the following connections: ● Connection code 5FJ, ● Connection code 5FK, ● Connection code 5FM, ● Connection code 5FL, ● Connection code 5FI, between components 1058 and 119 . If the connections are faulty, check the connection and condition of intermediate connector R107 located under the dashboard and intermediate connector R67 located near the engine fuse and relay box. If the connection(s) are faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
If the wiring harness is correct, apply the fault finding procedure associated with the statuses: ET043 Lever switch No. 0, ET044 Lever switch No. 1, ET045 Lever switch No. 2 and ET046 Lever switch No. 3 (see Interpretation of statuses).	
If the fault is still present, contact the Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF068 PRESENT OR STORED	<u>CLUTCH POSITION SENSOR CIRCUIT</u> CC.0: Short circuit to earth CO.1: Open circuit or short circuit to + 12 V 1.DEF: Signal incoherent

NOTES	Special notes: If the fault is present: Fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO.

Check the **connection** and **condition** of the connectors of components **1057** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5HN**,
- Connection code **5HX**,
- Connection code **5AN**,

between components **1057** and **119**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the condition of the clutch solenoid valve (no leaks etc.) as well as the condition of the fork.

Use command **AC014 Clutch solenoid valve** and check that the fork is operating correctly.

If the fork does not move correctly, replace the clutch solenoid valve (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

Replace the clutch position sensor (see **MR 411 Mechanical, 21B, Sequential gearbox, Clutch position sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF069 PRESENT OR STORED	<u>SELECTION POSITION SENSOR CIRCUIT</u> CC.0: Short circuit to earth CO.1: Open circuit or short circuit to + 12 V

NOTES	Special note: Fault warning light comes on. With the engine stopped, starting is not authorised until a request for neutral to be engaged has been made.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1056** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5HN**,
- Connection code **5HX**,
- Connection code **5FB**,

between components **1056** and **119**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Remove the selection position sensor and check the wear of the cylinder-potentiometer mechanical connection (see **MR 411 Mechanical, 21B, Sequential gearbox, Selection position sensor**).

Repair if necessary.

If the checks are correct, replace the selection position sensor (see **MR 411 Mechanical, 21B, Sequential gearbox, Gear selection sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF070 PRESENT OR STORED	<u>ENGAGEMENT POSITION SENSOR CIRCUIT</u> CC.0: Short circuit to earth CO.1: Open circuit or short circuit to + 12 V

NOTES	Special note: Fault warning light comes on. Starting is not permitted until the driver has depressed the brake pedal (enabling neutral to be engaged).
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1055** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5HN**,
- Connection code **5HX**,
- Connection code **5FA**,

between components **1055** and **119**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Remove the engagement position sensor and check the wear of the cylinder-potentiometer mechanical connection.

(see **MR 411 Mechanical, 21B, Sequential gearbox, Engagement position sensor**).

Repair if necessary.

If the checks are correct, replace the engagement position sensor (see **MR 411 Mechanical, 21B, Sequential gearbox, Engagement sensor: Removal - refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF071 PRESENT OR STORED	<u>CLUTCH SOLENOID VALVE CIRCUIT</u> CO: Open circuit CC.0: Short circuit to earth CC.1: Short circuit to + 12 V

NOTES	Special notes: – fault warning light comes on, – following programming not possible: biting point, clutch closed position, selection/engagement ranges, – automatic mode deactivated, – all gear changes unauthorised.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1050** and **119**.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5FG** between components **119** and **1050**.
- Connection code **N** between component **1050** and chassis earth **N**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the clutch solenoid valve is operating correctly with a listening test using command **AC014 Clutch solenoid valve**.

If the checks are correct, replace the clutch solenoid valve (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF072 PRESENT OR STORED	ENGAGEMENT SOLENOID VALVE 1 CIRCUIT CO: Open circuit CC.0: Short circuit to earth CC.1: Short circuit to + 12 volts

NOTES	Conditions for applying the fault finding procedure to stored faults: A fault is declared present after engaging all gears, with the brake pedal depressed and the engine stopped.
	Special note: – warning light comes on, – automatic mode deactivated, – certain gear changes are inhibited.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1051** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5FE**,
between components **119** and **1051**.

- Connection code **N**,
between component **1051** and chassis earth **N**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that engagement solenoid valve 1 is operating correctly by carrying out a listening test using command **AC015 Engagement solenoid valves**.

If the checks are correct, replace engagement solenoid valve 1 (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

DF073 PRESENT OR STORED	ENGAGEMENT SOLENOID VALVE 2 CIRCUIT CO: Open circuit CC.0: Short circuit to earth CC.1: Short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: – engagement of any of the gears, with the brake pedal depressed and the engine stopped.
	Special note: – warning light comes on, – automatic mode deactivated, – certain gear changes are inhibited.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1052** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5FF**,
between components **119** and **1052**.

- Connection code **N**,
between component **1052** and chassis earth **N**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that engagement solenoid valve 2 is operating correctly by carrying out a listening test using command **AC015 Engagement solenoid valves**.

If the checks are correct, replace engagement solenoid valve 2 (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF074 PRESENT OR STORED	<u>SELECTION SOLENOID VALVE 1 CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: – engagement of any of the gears, – the brake pedal is depressed, – the engine is stopped.
	Special notes: – warning light comes on and automatic mode deactivated, – if C0.0: only gear changes between 3-4 and reverse gear are authorised, – if CC.1: only gear changes between 1 and 2 are authorised.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1053** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5FC**,
between components **119** and **1053**.

- Connection code **N**,
between component **1053** and chassis earth **N**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Using the **diagnostic tool**, run command **AC016 Selection solenoid valves** and check that the selection is made correctly by carrying out a listening test.

If the selection is not made correctly, replace selection solenoid valve 1 (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF075 PRESENT OR STORED	<u>SELECTION SOLENOID VALVE 2 CIRCUIT</u> CO.0: Open circuit or short circuit to earth CC.1: Short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: – engagement of any of the gears, – the brake pedal is depressed, – the engine is stopped.
	Special notes: – warning light comes on and automatic mode deactivated, – if C0.0: only gear changes 1, 2, 3, 4 and reverse are authorised, – if CC.1: only selection of reverse gear is authorised.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **1054** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and to + 12 V** on the following connections:

- Connection code **5FD**,
between components **119** and **1054**.

- Connection code **N**,
between component **1054** and chassis earth **N**.

If the connections are faulty, check the connection and condition of the intermediate connector **R235** located on the hydraulic unit.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Using the diagnostic tool, run command **AC016 Selection solenoid valves** and check that the selection is made correctly by carrying out a listening test.

If the selection is not made correctly, replace selection solenoid valve 2 (see **MR 411 Mechanical, 21B, Sequential gearbox, Solenoid valves: Removal - Refitting**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF076 PRESENT OR STORED	CLUTCH CONTROL 1.DEF: Clutch inconsistency upon gear change

NOTES	Priorities when dealing with a number of faults: In the event of a number of faults, deal with faults DF068 Clutch position sensor circuit , DF071 Clutch solenoid valve circuit and DF254 Clutch temperature .
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following harsh use of the clutch (prolonged hold on a hill, PR095 Clutch temperature $\geq 248^{\circ}\text{C}$).
	Special notes: Fault warning light comes on, When PR095 Clutch temperature $\geq 248^{\circ}\text{C}$, the buzzer is activated.

Check that the clutch is not slipping by performing a road test, driving with a low load and then up or down an incline.

If the clutch slips, pull away several times with a low load and check if **PR096 Clutch progressivity** changes.

If the fault is still present, replace the clutch (see **MR 411 Mechanical**, **21B, Sequential gearbox**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF077 PRESENT OR STORED	<u>GEARBOX CONTROL</u> 1.DEF: Impossible to engage or disengage a gear

NOTES	Priorities when dealing with a number of faults: If DF069 Selection position sensor circuit and/or DF070 Engagement position sensor circuit is stored, deal with them first.
	Special notes: Fault warning light comes on. Improper use of lever when the vehicle is stationary may lead to this fault.

Check that the selector lever is correctly clipped onto the hydraulic unit by looking through the inspection flap (see **MR 411 Mechanical, 21B, Sequential gearbox**).

Check if the water in the gearbox oil is due to condensation.
 Replace the oil if necessary (see **MR 411 Mechanical, 21B, Sequential gearbox, Electric pump assembly oil: Specifications**).

If it is difficult to select gears, especially reverse gear, apply the interpretation of **PR018 Hydraulic pressure**.

Clear the computer fault memory.
 Carry out the programming procedure for the **Hydraulic unit - gearbox kit (without clutch) or Clutch or gearbox + Clutch** (see **Replacement of components**).
 If the fault is still present, this means there is an internal mechanical fault with the gearbox, contact Techline.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF078 PRESENT OR STORED	HYDRAULIC CONTROL 1.DEF: Signal outside lower limit

NOTES	Priorities when dealing with a number of faults: Apply the interpretation of other faults first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.
	Special note: Improper use of the gear lever when stationary may lead to this fault.

Using the diagnostic tool, via parameter **PR018 Hydraulic pressure**, check that the pump is activated at **40 bar** and stops at **50 bar**.

Pressure level below a pressure threshold.

Fault linked to a lack of oil (internal or external leak) or to a pump failure.

Repair or replace if necessary (see **MR 411 Mechanical, 21B, Sequential gearbox, Electric pump assembly oil: Specifications**).

Case of excessive pump operation:

- Internal or external leak in the circuit. For an external leak, locate the leak and repair if necessary. If there is an internal leak, replace the hydraulic unit (see **MR 411 Mechanical, 21B, Sequential gearbox, Electrohydraulic unit: Removal - Refitting**).

If the fault is still present, replace the accumulator (see **MR 411 Mechanical, 21B, Sequential gearbox, Pressure accumulator: Removal - Refitting**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF080 PRESENT OR STORED	BATTERY VOLTAGE 1.DEF: Battery undervoltage

NOTES	Special notes: – Fault warning light comes on. Use the Wiring Diagrams Technical Note for New TWINGO .

Check that the sequential gearbox supply fuse is **correctly positioned** and in good condition in the passenger compartment fuse box.

Measure the battery **voltage** and check the **charging circuit** (see **Technical Note 6014A, Charging circuit check**).
Repair if necessary.

Ensure that the battery and its connections are in **good condition** (condition and tightness of the terminals).
Check the engine **earths** on the vehicle.
Repair if necessary.

Check the **connection** and **condition** of the connectors of components **1016** and **119**.
If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation** of the connections between:

- Connection code **BP39**,
 - Connection code **AP4**,
- between components **119** and **1016**.
- The two connections **N** between component **119** and the chassis earths **MC-12A** and **MC-12B**.
- If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF082 PRESENT OR STORED	<u>BRAKE LIGHTS SWITCH CIRCUIT</u> 1.DEF: Signal incoherent

NOTES	Special note: Indicator light comes on if the fault is present when driving twice in succession.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check for the **presence**, **condition** and **correct positioning** of the **15A** fuse for the brake lights in the passenger compartment fuse box.

Check the **connection** and **condition** of the connectors of components **160** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **fitting** and **adjustment** of component **160** on the pedal assembly.

Pedal depressed:

Check the **continuity** between **connections AP10 (track 2) and 65A** of component **160**.
 Check the **insulation** between **connections AP10 (track 4) and 5A** of component **160**.
 If the checks are incorrect, replace the switch (see **MR 411 Mechanical, 83D Cruise control, Brake light switch: Removal - Refitting**).

Pedal released:

Check the **insulation** between **connections AP10 (track 2) and 65A** of component **160**.
 Check the **insulation** between **connections AP10 (track 4) and 5A** of component **160**.
 If the checks are incorrect, replace the switch (see **MR 411 Mechanical, 83D Cruise control, Brake light switch: Removal - Refitting**).

Check **the continuity and insulation from earth** of the following connection:

- Connection code **65A** between components **160** and **119**.

If the connection is faulty, check the connection and condition of intermediate connector **R67** located near the engine fuse and relay box.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, perform fault finding of the following computers:

- The UCH (see **87B, Passenger compartment connection unit**).
- The injection computer (see **17B, Petrol injection**).
- The ABS computer (see **38C, Anti-lock braking system**).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF107 PRESENT OR STORED	<u>ENGINE SPEED MULTIPLEX SIGNAL</u> 1.DEF: Communication disrupted
NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first. Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started. Special note: Fault warning light comes on. Use the Wiring Diagrams Technical Note for New TWINGO.
Check the connection and condition of the connectors of components 120 and 119. If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.	
Check the continuity and insulation to earth and to + 12 V on the following connections: ● Connection code 3MT, ● Connection code 3MS, between components 120 and 119. If the connection(s) are faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
Check the injection system (see 17B, Petrol injection) and deal with any faults.	
If the fault is still present, contact the Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF108 PRESENT OR STORED	<u>AVERAGE EFFECTIVE TORQUE MULTIPLEX SIGNAL</u> 1.DEF: Communication disrupted
NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
Check the injection system (see 17B, Petrol injection) and deal with any faults. If no fault appears, contact Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF114 PRESENT OR STORED	MULTIPLEX PEDAL POSITION 1.DEF: Communication disrupted
NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
Check the injection system (see 17B, Petrol injection) and deal with any faults. If no fault appears, contact Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF115 PRESENT OR STORED	<u>TORQUE MULTIPLEX SIGNAL</u> 1.DEF: Communication disrupted
NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
Check the injection system (see 17B, Petrol injection) and deal with any faults. If no fault appears, contact Techline.	

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF117 DF118 PRESENT OR STORED	<u>REAR LEFT-HAND WHEEL SPEED MULTIPLEX SIGNAL LEFT</u> <u>REAR LEFT-HAND WHEEL SPEED MULTIPLEX SIGNAL RIGHT</u> 1.DEF: Communication disrupted

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: – RR left-hand wheel speed multiplex signal = Rear left-hand wheel speed multiplex signal. – RR right-hand wheel speed multiplex signal = Rear right-hand wheel speed multiplex signal.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **120**, **1094** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Run a multiplex network test (see **88B, Multiplexing**).

Check the injection system (see **17B, Petrol injection**) and deal with any faults.

If the fault is still present, run fault finding on the ABS/ESP system (see **38C, Anti-lock braking system**).

* RR: rear

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF122 PRESENT OR STORED	<u>UCH CONNECTION</u> 1.DEF: No signal

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer memory is cleared, the ignition is switched off and on again and the engine is started.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Perform a multiplex network test (see 88B, Multiplex).
Check the connection and condition of the connectors of components 120, 645 and 119 . If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.
Check the continuity and insulation to earth and to + 12 V on the following connections: ● Connection code 3MT, ● Connection code 3MS, between components 120 and 119 . ● connection code 133B, ● Connection code 133C, between components 120 and 645 . If the connection(s) are faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
If the fault is still present, carry out fault finding on the UCH (see 87B, Passenger compartment connection unit).

AFTER REPAIR	Deal with any faults displayed by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF144 PRESENT OR STORED	<u>COOLANT TEMPERATURE MULTIPLEX SIGNAL</u> 1.DEF : Communication disrupted

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
	Special note: Default value PR145 Engine coolant temperature = 20 °C
	Use the Wiring Diagrams Technical Note for New TWINGO .

Run a multiplex network test (see **88B, Multiplex**).

Run a check of the injection system (see **17B, Petrol injection**).

Check the **connection** and **condition** of the connectors of components **120** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **connection** and **condition** of the coolant temperature sensor connector (component code **244**) **integrated with the injection system**.
 If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

DF145 PRESENT OR STORED	<u>INVALID PEDAL POSITION MULTIPLEX SIGNAL</u> 1.DEF : Communication disrupted

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
	Special note: Fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Run a multiplex network test (see 88B, Multiplex).
Check the connection and condition of the connectors of components 119, 120 and 921 . If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.
Check component 921 is correctly positioned on the accelerator pedal.
Run fault finding on the injection system (see 17B, Petrol injection).
If no fault appears, contact Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF146 PRESENT OR STORED	<u>TORQUE NO REDUCTION MULTIPLEX SIGNAL</u> 1.DEF : Communication disrupted

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.

Run fault finding on the injection system (see 17B, Petrol injection).
Run a multiplex network test (see 88B, Multiplex).
If no faults are present or stored, contact Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF147
PRESENT
OR
STORED**

INVALID ANTICIPATED TORQUE MULTIPLEX SIGNAL

1.DEF : Communication disrupted

NOTES

Priorities when dealing with a number of faults:

If fault **DF062 Multiplex line fault** is present or stored, deal with it first.

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.

Run fault finding on the injection system (see **17B, Petrol injection**).

Run a multiplex network test (see **88B, Multiplex**).

If no faults are present or stored, contact Techline.

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.

Clear the computer memory.

Carry out a road test followed by another check with the diagnostic tool.

DF148 PRESENT OR STORED	<u>SECONDARY BRAKE CONTACT MULTIPLEX SIGNAL</u> 1.DEF : Communication disrupted 2.DEF : Inconsistent signal

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Run a multiplex network test (see 88B, Multiplex).
Run fault finding on the injection system (see 17B, Petrol injection).
Check for the presence, condition and correct positioning of the 15A fuse for the brake lights in the passenger compartment fuse box.
Check that the indicator light switches off quickly as soon as the brake pedal moves.
Check the connection and condition of the connectors of components 120 and 160 . If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.
Check the adjustment of the brake light switch on the pedals.
Check for continuity with the pedal depressed, between connections AP10 (track 2) and 65A of component 160 . Replace the switch if necessary (see MR 411 Mechanical systems, 83D Cruise control, Brake light switch: Removal - Refitting).
Check there is no continuity with the pedal released, between connections AP10 (track 2) and 65A of component 160 . Replace the switch if necessary (see MR 411 Mechanical systems, 83D Cruise control, Brake light switch: Removal - Refitting).
Ensure the insulation to + 12 V, to earth and the continuity of the following connections: ● Connection code 3MT , ● Connection code 3MS , between components 120 and 119 . If the connection(s) are faulty and there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF150 PRESENT OR STORED	<u>INSTRUMENT PANEL MULTIPLEX CONNECTION</u> 1.DEF : No signal

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **connection** and **condition** of the connectors of components **120, 119** and **247**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Run a multiplex network test (see **88B, Multiplex**).

If the multiplex network is correct, perform a fault finding of the instrument panel (see **83A, Instrument panel**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

DF166 PRESENT OR STORED	<u>PRESSURE SENSOR CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF : Signal incoherence

NOTES	Special note: – Fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

CO.0/ CC.1	NOTES	None

Check the **condition** and **position** of the **30 A** fuse for the pump in the engine compartment.
Repair if necessary.

Check the **connection** and **condition** of the connectors of components **119** and **1059** and the 24 track intermediate connector located on the hydraulic unit.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation to earth and + 12 V** on the following connections:

- Connection code **5HN**,
- Connection code **5HX**,
- Connection code **5AD**,

between components **119** and **1059**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the oil pressure sensor on the Sequential gearbox (see **MR 411, Sequential gearbox, solenoid valve unit pressure sensor, Removal refitting**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF166
CONTINUED**

1.DEF

NOTES

None

Check the level of oil in the discharged accumulator, refer to the interpretation of command **AC081 Discharge pressure accumulator**.
 Check the **condition** and **position** of the **30 A** fuse for the pump in the engine compartment.
 Use command **AC012 "Hydraulic pump relay"** with the **diagnostic tool** and check that the pump assembly is working. If the pump is not working, perform the necessary repairs.
 If the fault is still present, replace the oil pressure sensor (see **MR 411, Sequential gearbox, solenoid valve unit pressure sensor, Removal refitting**).

Switch off the ignition.
 Switch on the ignition again and carry out a new check using the diagnostic tool.
 Replace the pump assembly if the fault reappears (see **MR 411, Sequential gearbox, pump assembly, Removal refitting**).

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.
 Clear the computer memory.
 Carry out a road test followed by another check with the diagnostic tool.

DF175 DF176 PRESENT OR STORED	<u>FRONT LEFT-HAND WHEEL SPEED MULTIPLEX SIGNAL</u> <u>FRONT RIGHT-HAND WHEEL SPEED MULTIPLEX SIGNAL</u> 1.DEF : Communication disrupted

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: – “ FR left-hand wheel speed multiplex signal ” = Front left-hand wheel speed multiplex signal. – “ FR right-hand wheel speed multiplex signal ” = Front right-hand wheel speed multiplex signal.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Run a multiplex network test (see **88B, Multiplex**).

Check the **connection** and **condition** of the connectors of components **120**, **1094** and **119**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Run fault finding on the ABS computer (see **38C, Anti-lock braking system**).

* FR: front

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

DF180 PRESENT OR STORED	<u>HYDRAULIC PUMP</u>

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present if: – The pump is switched off for 10 seconds. – If the oil pressure is less than the starting value.
	Special note: – Fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check for **+ AVC** on connection **BP36** of component **762**.
 If there is **no + AVC**, check fuse **F1 30A** on component **597**.
 If the fuse is correct, check the **continuity** of connection **BP36** between components **762** and **597**.
 If the fuse is not correct, check the **insulation to earth** of connection **BP36** between components **762** and **597**.
 If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair**), repair the wiring, otherwise replace it.

Check the **connection** and **condition** of the connectors of components **724**, **119** and **762**.
 Also check the **connection** and **condition** of the 24-track intermediate connector located on the hydraulic unit.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation** of the following connections:

- Connection code **M** between component **724** and earth **MS-99E**,
- Connection code **5AE** between components **762** and **724**,
- Connection code **5AF** between components **119** and **762**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Case of excessive pump operation:

- Internal or external leak in the circuit. For an external leak, locate the leak and repair if necessary. If there is an internal leak, replace the hydraulic unit (see **MR 411, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**).

If the fault is still present, replace the accumulator (see **MR 411, Sequential gearbox, Pressure accumulator: Removal - Refitting**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF181 PRESENT OR STORED	<u>GEAR SELECTION IMPOSSIBLE</u> 1.DEF : Impossible to select gear

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after an engine start attempt and an attempt to engage a gear.
	Special note: – Fault warning light comes on. – Neutral engaged immediately.

Check that there are no engagement or selection sensor faults.
If faults associated with these components are present, deal with these first.

Check that the selection control lever is correctly clipped to the hydraulic unit (see **MR 411, 21B, Sequential gearbox**).
Carry out the necessary repairs.

Check that there is no water in the sequential gearbox oil.
Repair if necessary.

Clear the computer fault memory using command **RZ001 "Stored fault(s)"**.
Carry out the programming procedure for the **"Hydraulic unit - gearbox kit (without clutch) or Clutch or gearbox + Clutch"** (see **"Replacement of components"**).
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF185 PRESENT OR STORED	<u>NO ABS/ESP MULTIPLEX SIGNAL</u> 1.DEF : No signal

NOTES	Priorities when dealing with a number of faults: If fault DF062 Multiplex line fault is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the computer fault memory has been cleared, the ignition has been switched off and on again and the engine has been started.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Perform a multiplex network test (see 88B, Multiplex).
Check the connection and condition of the connectors of components 120, 119 and 1094 . If the connectors are faulty and if there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connectors; otherwise, replace the wiring.
If the fault is still present, run fault finding on the ABS/ESP system (see 38C, Anti-lock braking system).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF187
PRESENT
OR
STORED**

PROGRAMMING

- 1.DEF : Programming not carried out or inconsistent
- 2.DEF : Values outside the limits
- 3.DEF : Configuration/Initialisation

NOTES

Special note:

- Fault warning light comes on.
- Impossible to start the engine.

Program the gears with command **VP008 Program selection/engagement ranges**.

Check that the solenoid valves are operating correctly using commands **AC015 Engagement solenoid valves** and **AC016 Selection solenoid valves**.

Check the correct positioning of the actuators.

Repair if necessary (see **MR 411, 21B, Sequential gearbox, Actuator module: Removal - Refitting**).

If the fault is still present, apply the interpretation of faults **DF072 Engagement solenoid valve 1 circuit**, **DF073 Engagement solenoid valve 2 circuit**, **DF074 Selection solenoid valve 1 circuit** and **DF075 Selection solenoid valve 2 circuit**.

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.

Clear the computer memory.

Carry out a road test followed by another check with the diagnostic tool.

DF188 PRESENT OR STORED	<u>SYSTEM OPERATION</u>
NOTES	Priorities when dealing with a number of faults: Apply the interpretation of other faults first.
	Special note: – warning light comes on, – neutral engaged immediately, – engine stops immediately.
This fault appears following an electronic and mechanical inconsistency on the sequential system. If the fault is still present, contact the Techline.	

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF232 DF233 DF234 PRESENT OR STORED	COMPUTER 1.DEF : Internal electronic fault

NOTES	Special note: – fault warning light comes on.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check the **condition** and **position** of the sequential gearbox fuses in the engine compartment and in the passenger compartment.

Check the **connection and condition** of the **52-track** connector of component **119**.
 If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+ AVC** on connection **BP39** and for **+ after ignition feed** on connection **AP4** on the **52-track** connector of component **119**.
 If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
 ● Connection code **N** of earths **MC - 12B** and **MC - 12A**.
 If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Clear the computer fault memory using command **RZ001 "Stored fault(s)"**.
 Switch off the ignition.
 Switch on the ignition again and carry out a new check using the **diagnostic tool**.
 If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

21B

DF251 PRESENT OR STORED	GEARBOX INPUT SPEED 1.DEF : Signal incoherence 2.DEF : Signal Absent

NOTES	Priorities when dealing with a number of faults: If fault DF254 Clutch temperature is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: The fault can only be cleared from the memory using the diagnostic tool after a road test where the vehicle speed signal is detected by the computer. If fault DF254 Clutch temperature is present, the buzzer may sound.
	Use the Wiring Diagrams Technical Note for New TWINGO .

Check **the connection and condition** of the connectors of components **119** and **1060**.
 If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.
 Check that the sensor is correctly fitted on the sequential gearbox.

Engine running at idle speed and vehicle stopped, check the gearbox input engine speed sensor and the engine speed sensor are operating correctly:

- **PR006 Engine speed,**
- **PR014 "Gearbox input speed".**

Check **the continuity and insulation** of the following connections:

- Connection code **5DA**,
- Connection code **5DB**,

between components **1060** and **119**.
 If the connections are faulty, check the connection and condition of intermediate connector **R235** located on the hydraulic unit.
 If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the gearbox input speed sensor resistance between connections **5DA** and **5DB** of the sensor are equal to $470\ \Omega \pm 94\ \Omega$.

If the fault is still present, replace the sensor (see **MR 411, 21B, Sequential gearbox, sequential gearbox engine speed sensor: Removal - Refitting**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF252 PRESENT OR STORED	PUMP RELAY 1.DEF : Relay jammed

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: – all gear changes are inhibited, – fault warning light comes on, – automatic mode is inhibited.
	Use the Wiring Diagrams Technical Note for New TWINGO .

After switching on the ignition, check that the **PR018 "Hydraulic pressure"** is between **40 bar** and **50 bar**. If this is not the case, apply the interpretation for fault **DF166 "Pressure sensor circuit"**.

If the checks described in **DF166 "Pressure sensor circuit"** are correct and that **PR018 "Hydraulic pressure"** indicates a lower pressure than that measured previously following activation of the pump motor, replace the pressure sensor (see **MR 411, 21B, Sequential gearbox, Solenoid valve unit: Removal - Refitting**).

Disconnect the relay and check that there is **no continuity** between connections **BP36** and **5AE** of component **762**.

Replace the relay if it is not correct.

Check **the continuity and insulation** of the following connection:

- Connection code **5AE**,

Between components **724** and **762**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for the absence of **+ 12 V** on connection **5AE** of component **762**.

Check **the continuity and insulation** of the following connection:

- Connection code **5AF**,

Between components **119** and **762**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF254 PRESENT OR STORED	<u>CLUTCH TEMPERATURE</u> 1.DEF : Clutch overheating

NOTES	Priorities when dealing with a number of faults: Deal with other faults declared present first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the clutch is used under severe conditions (prolonged holding on a hill).
	Special note: – Instrument panel displays: “Sequential gearbox overheating” – Fault warning light comes on. – An engine speed wire fault or incorrect multiplex line value (speed equals 0) may increase the occurrence of this fault.

Clear the stored fault and check that the clutch is not slipping by performing a road test, pulling away with a low load then up or down an incline.

If the clutch slips, proceed in the following way:

- Pull away several times with low load and check parameter **PR096 Clutch progressivity**.
- If the fault is still present, replace the clutch.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF256 PRESENT OR STORED	<u>ERRATIC GEAR JUMPING</u> 1.DEF : Erratic gear jumping

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the previous gear has been engaged.
	Special note: Fault warning light comes on following erratic gear disengagement and after the previous gear has been engaged.

Check that there are no engagement or selection sensor faults. Repair if necessary.
Check that the selection control lever is correctly clipped onto the hydraulic unit. Carry out the necessary repairs (see MR 411 Mechanical, 21B, Sequential gearbox, Electro-hydraulic unit, Removal - Refitting).
Check that there is no water in the gearbox oil. Repair if necessary.
Clear the faults using command RZ001 "Stored fault(s)" . Reprogram VP008 Program selection/engagement ranges .
Check there are no other faults by carrying out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF257
PRESENT
OR
STORED**

SLOW LOSS OF HYDRAULIC PRESSURE

1.DEF : Slow loss of pressure

NOTES

Special note:

Fault warning light comes on.

Small internal leak: replace the hydraulic unit or clutch solenoid valve (see **MR 411 Mechanical, 21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**).

Slow external leak: repair or replace the component concerned (see **Replacement of components**).

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.

Clear the computer memory.

Carry out a road test followed by another check with the diagnostic tool.

**DF258
PRESENT
OR
STORED**

RAPID LOSS OF HYDRAULIC PRESSURE

1.DEF : Rapid loss of pressure

NOTES

Special note:
Warning light comes on.

Small internal leak: replace the hydraulic unit or clutch solenoid valve (see **MR 411 Mechanical, 21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting**).

Slow external leak: repair or replace the component concerned (see **Replacement of components**).

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.
Clear the computer memory.
Carry out a road test followed by another check with the diagnostic tool.

DF259 PRESENT OR STORED	<u>PRESSURE ACCUMULATOR</u> 1.DEF : Pressure accumulator fault

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after low nitrogen pressure has been recorded at least 40 times.
	Special note: – Fault warning light comes on when low nitrogen pressure has been recorded at least 40 times. – Engine stalls when the vehicle is slowing down. – Gear change impossible when driving.

Replace the accumulator (see **MR 411 Mechanical, 21B, Sequential gearbox, Pressure accumulator: Removal - Refitting**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

**DF262
PRESENT
OR
STORED**

AUTO-ADAPTIVE PATTERN

1.DEF : Configuration/Initialisation

NOTES

Special note:

- Fault warning light comes on.
- Automatic mode deactivated.

Carry out fault finding on the injection (see **17B, Petrol injection**).

If there are no injection faults, this fault is only due to pulling away with significant skidding on a slippery road followed by recovery of tyre grip.

Clear this fault using command **RZ001 "Stored fault(s)"**.

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.
Clear the computer memory.
Carry out a road test followed by another check with the diagnostic tool.

**DF263
PRESENT
OR
STORED**

INSTANTANEOUS MAXIMUM TORQUE MULTIPLEX SIGNAL

1.DEF : Communication disrupted

NOTES

Priorities when dealing with a number of faults:

If fault **DF062 Multiplex line fault** is present or stored, deal with it first.

Run a check of the injection system (see **17B, Petrol injection**).

Check **the condition and connection** of the connectors of components **119** and **120**.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check **the continuity and insulation of the following connections**:

- Connection code **3MS**,
- Connection code **3MT**,

between components **119** and **120**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults detected by the diagnostic tool.

Clear the computer memory.

Carry out a road test followed by another check with the diagnostic tool.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of faults

21B

DF265 PRESENT OR STORED	COMPUTER 1.DEF : Main relay fault (integrated in the computer)

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: – all gear changes are inhibited, – automatic mode is inhibited.

Check the condition and connection of the earths on both connections N of component 119 .
Check the condition and position of the sequential gearbox fuses in the engine compartment and in the passenger compartment.
Check the condition and connection of the connectors for component 119 . If the connector is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check for + AVC on connection BP39 of component 119 . If the + AVC is absent, check the insulation to earth and the continuity of the following connection: ● Connection code BP39 , between components 119 and 1016 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair), repair the wiring, otherwise replace it.
Check for + after ignition feed on connection AP4 of component 119 . If the + after ignition feed is absent, check the insulation to earth and the continuity of the following connection: ● Connection code AP4 , between components 119 and 1016 . If the connection is faulty and there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair), repair the wiring, otherwise replace it.
Clear the computer fault memory using command RZ001 "Stored fault(s)" , exit the fault finding and switch off the ignition. Carry out another check using the diagnostic tool. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

The global **conformity check** for the functions and sub-functions of this system is no longer interpreted in the conformity check. Instead, all information available in the functions and sub-functions can be found in the following sections:

For the **STATUSES**, consult "INTERPRETATION OF STATUSES".

For the **PARAMETERS**, consult "INTERPRETATION OF PARAMETERS".

For the **COMMANDS**, consult "INTERPRETATION OF COMMANDS".

SEQUENTIAL GEARBOX

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET003	Brake light switch (opening)
ET004	Brake light switch (closure)
ET012	Gear lever position
ET013	Gear engaged
ET027	Driver's door open
ET028	Handbrake
ET030	Accelerator pedal position
ET043	Lever switch no. 0
ET044	Lever switch no. 1
ET045	Lever switch no. 2
ET046	Lever switch no. 3
ET048	Driver's door statuses detection
ET049	Handbrake position recognition
ET053	Vehicle speed signal* detection
ET054	Pump relay control
ET055	Starter relay control
ET056	Clutch solenoid valve control
ET057	Engagement solenoid valve 1 control
ET058	Engagement solenoid valve 2 control
ET059	Selection solenoid valve 1 control
ET060	Selection solenoid valve 2 control
ET061	Gear programming
ET062	Biting point programming
ET063	Solenoid valve zero point programming
ET064	Clutch position programming
ET065	Progressivity programming
ET086	Downshift request

*signal: signal

ET003 ET004	<u>BRAKE LIGHT SWITCH (OPENING)</u> <u>STOP LIGHT SWITCH (CLOSURE)</u>

STATUS DEFINITION	These statuses indicate the position of the brake pedal.

NOTES	Use the Wiring Diagrams Technical Note for New TWINGO .

Engine stopped, ignition on

- Brake pedal released: **ET003: "Closed" and ET004: "Open"**.
 - Brake pedal depressed: **ET003: "Open" and ET004: "Closed"**.
- If the statuses do not correspond with the position of the brake pedal, perform the following fault finding procedure.

Electrical check of the sensor

Check the condition of the **15 A** fuse of the brake light switch located on component **1016**.
 Check the brake light switch is correctly positioned on the brake pedal.

Check the condition and correct connection of component **160**.
 If the connector is faulty and there is a repair procedure (**see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **the + after ignition feed** on both connections **AP10** of component **160**.
 If **there is no + after ignition feed**, check the **continuity and insulation to earth** of the two connections **AP10** between components **160** and **1016**.
 If the connection(s) are faulty and there is a repair method (**see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Pedal released:
 Check the continuity between connections **AP10 (track 4)** and **5A** of component **160**.
 Check the insulation between connections **AP10 (track 2)** and **65A** of component **160**.
Pedal depressed:
 Check the continuity between connections **AP10 (track 2)** and **65A** of component **160**.
 Check the insulation between connections **AP10 (track 4)** and **5A** of component **160**.
 If one of these checks is incorrect, replace the brake light switch (**see MR 411 Mechanical, 83D Cruise control, Brake light switch: Removal - Refitting**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET003
ET004
CONTINUED

Check the condition and correct connection of component **119**.

If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the continuity of connection **65A** between components **119** and **160**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair**), repair the wiring, otherwise replace it.

Check the insulation to **+ 12 V** of the following connections:

- Connection code **65A** between components **160** and **119**.
- Connection code **65A** between components **160** and **645**.
- Connection code **65A** between components **160** and **172**.
- Connection code **65A** between components **160** and **173**.
- Connection code **65A** between components **160** and **639**.
- Connection code **65A** between components **160** and **1094**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, perform fault finding of the following computers:

- The UCH (see **87B, Passenger compartment connection unit**).
- The injection computer (see **17B, Petrol injection**).
- The ABS computer (see **38C, Anti-lock braking system**).

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET012	<u>GEAR LEVER POSITION</u>

STATUS DEFINITION	This status ET012 indicates one of the six positions of the gear lever: UP, DW, N, R, STB or A .

NOTES	None

Engine stopped, ignition on

Check the specification of status **ET012** for each position of the gear lever:

- movement towards the front of the vehicle: "**UP**".
- movement towards the rear of the vehicle: "**DW**".
- Movement to the right: "**N**".
- Movement to the left: "**A**".
- Brake pedal depressed, movement to the right followed by a movement to the rear: "**R**".
- Lever in rest position: "**STB**".

If status **ET012** is not consistent with the position of the gear lever each time it is moved, refer to the interpretation of fault **DF067 "Lever position switch circuit"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET013	<u>GEAR ENGAGED</u>

STATUS DEFINITION	This status ET013 indicates the gear engaged and corresponds to the gear displayed on the instrument panel: ● 1: 1st ● 2: 2nd ● 3: 3rd ● 4: 4th ● 5: 5th ● N: Neutral ● R: Reverse

NOTES	None

Engine stopped, ignition on

Check the specification of status **ET013** each time the gear lever is moved:

- **Gears 1st to 5th**: push the lever forwards for the next gear up and backwards for the next gear down and check how status **ET013** changes each time the gear lever moves.
- **Position N (neutral)**: when status **ET013** is "1", push the lever to the right and check that status **ET013** is "N".
- **Gear R (reverse)**: check status **ET013** changes to "R" after depressing the brake pedal, pushing the lever to the right and then to the rear.

If status **ET013** is not correct, refer to the interpretation of faults **DF069 "Selection position circuit"** and **DF070 "Engaging position sensor circuit"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET027	<u>DRIVER'S DOOR OPEN</u>

STATUS DEFINITION	Status ET027 indicates the position of the opening elements by the specifications " CLOSED " and " OPEN ".

NOTES	Use the Wiring Diagrams Technical Note for New TWINGO .

Engine stopped, ignition on

CLOSED: Driver's door closed

OPEN: Driver's door open

In the event of a fault, refer to the fault finding procedure below.

Electrical check of the sensor

Check the **connection** and **condition** of the connectors of components **140**, **1016** and **119** as well as the driver's door intermediate connector.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation** of connection **H24** between components **119**, **1016** and **140**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, carry out fault finding on the UCH (see **87B, Passenger compartment connection unit**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET028	<u>HANDBRAKE</u>

STATUS DEFINITION	"Engaged": the handbrake lever is raised. "Released": the handbrake lever is in rest position.

NOTES	Use the Wiring Diagrams Technical Note for New TWINGO .

Engine stopped, ignition on

Status **ET028** indicates the position of the handbrake lever:

- **"Engaged"**: the handbrake lever is raised.
- **"Released"**: the handbrake lever is in rest position.

If status **ET028** is incorrect, apply the procedure below.

Electrical check of the sensor

Run a multiplex network test (see **88B, multiplex**).

Check the condition of the connections of component **156** and check that they are correctly connected.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Remove the handbrake switch.
Press the handbrake switch and check the insulation between connection **27A** and **earth**.
If there is resistance, replace the handbrake switch.
Release the handbrake switch and check the continuity between the same connections.
If there is no continuity, replace the handbrake switch.

Check the condition of the connections of component **247** and check that they are correctly connected.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity and the earth insulation** on connection **27A** between components **247** and **156**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, perform a fault finding of the instrument panel (see **83A, Instrument panel**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET030	<u>ACCELERATOR PEDAL POSITION</u>

STATUS DEFINITION	"PL": the accelerator pedal is in the "no load" position. "Intermediate": the accelerator pedal is in the intermediate position. "PF": the accelerator pedal is in the "full load" position.

NOTES	Use the Wiring Diagrams Technical Note for New TWINGO .

Engine stopped, ignition on

Status **ET030** is a multiplexed signal supplied by the injection computer.
This status **ET030** indicates the position of the accelerator pedal, check the conformity of the status by depressing the accelerator pedal:

- **PL**: pedal in rest position
- **Intermediate**: pedal in an intermediate position
- **PF**: pedal in full load position

If status **ET030** is incorrect, apply the procedure below.

Electrical check of the sensor

Check the positioning of the accelerator pedal potentiometer on the accelerator pedal.

Check that nothing inhibits the movement of the pedal (floor carpet etc.).

Check the condition of the connections of component **921** and check that they are correctly connected.
If the connector is faulty and there is a repair procedure (**see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run fault finding on the injection system (see **17B, Petrol injection**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

SEQUENTIAL GEARBOX

Fault finding - Interpretation of statuses

21B

ET043 ET044 ET045 ET046	<u>LEVER SWITCH NO. 0</u> <u>LEVER SWITCH NO. 1</u> <u>LEVER SWITCH NO. 2</u> <u>LEVER SWITCH NO. 3</u>

STATUS DEFINITION	Statuses ET043 , ET044 , ET045 and ET046 have the specification " OPEN " and " CLOSED ". They change according to the position of the gear lever.

NOTES	Use the Wiring Diagrams Technical Note for New TWINGO .

LEVER POSITION	SWITCH STATUSES	MEASURE RESISTANCE ON THE CONNECTOR ON THE GEAR LEVER SIDE
Lever in rest position ET012 "Gear lever position": Stb confirmed	ET043: OPEN ET044: OPEN ET045: OPEN ET046: OPEN	Between connections 5FI and 5FL = 1090 Ω Between connections 5FI and 5FM = 1090 Ω Between connections 5FI and 5FK = 1090 Ω Between connections 5FI and 5FJ = 1090 Ω
Neutral position maintained: ET012 "Gear lever position": N confirmed	ET043: OPEN ET044: CLOSED ET045: CLOSED ET046: OPEN	Between connections 5FI and 5FL = 1090 Ω Between connections 5FI and 5FM = 270 Ω Between connections 5FI and 5FK = 270 Ω Between connections 5FI and 5FJ = 1090 Ω
R position maintained ET012 "Gear lever position": R confirmed	ET043: OPEN ET044: OPEN ET045: CLOSED ET046: CLOSED	Between connections 5FI and 5FL = 1090 Ω Between connections 5FI and 5FM = 1090 Ω Between connections 5FI and 5FK = 270 Ω Between connections 5FI and 5FJ = 270 Ω

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET043
ET044
ET045
ET046
CONTINUED

LEVER POSITION	SWITCH STATUSES		MEASURE RESISTANCE ON THE CONNECTOR ON THE GEAR LEVER SIDE
“+” position maintained ET012 "Gear lever position": UP confirmed	ET043: ET044: ET045: ET046:	CLOSED CLOSED OPEN OPEN	Between connections 5FI and 5FL = 270 Ω Between connections 5FI and 5FM = 270 Ω Between connections 5FI and 5FK = 1090 Ω Between connections 5FI and 5FJ = 1090 Ω
“-” position maintained ET012 "Gear lever position": DW confirmed	ET043: ET044: ET045: ET046:	OPEN CLOSED OPEN CLOSED	Between connections 5FI and 5FL = 1090 Ω Between connections 5FI and 5FM = 270 Ω Between connections 5FI and 5FK = 1090 Ω Between connections 5FI and 5FJ = 270 Ω
“AUTO” position maintained ET012 "Gear lever position": A confirmed	ET043: ET044: ET045: ET046:	CLOSED OPEN OPEN CLOSED	Between connections 5FI and 5FL = 270 Ω Between connections 5FI and 5FM = 1090 Ω Between connections 5FI and 5FK = 1090 Ω Between connections 5FI and 5FJ = 270 Ω

Replace the gear lever unit if one of the switches are defective (see **MR 411 Mechanical, 21B, Sequential gearbox, Sequential gearbox gear lever: Removal - Refitting**).

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET048DRIVER'S DOOR STATUSES DETECTION**STATUS
DEFINITION**

This status indicates detection by the sequential gearbox computer of the driver's door and has the specification "**DONE**" or "**NOT DONE**".

NOTES

None

Engine stopped, ignition on**ET048: "DONE"**

In the event of a fault, refer to the interpretation of status **ET027 "Driver's door open"**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET049HANDBRAKE POSITION RECOGNITION**STATUS
DEFINITION**

This status indicates detection by the sequential gearbox computer of the handbrake position and has the specification "**DONE**" or "**NOT DONE**".

NOTES

None

Engine stopped, ignition on

ET049: "DONE"

In the event of a fault, refer to the interpretation of status **ET028 "Handbrake"**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET053VEHICLE SPEED SIGNAL DETECTION**STATUS
DEFINITION**

This status indicates detection by the sequential gearbox computer of the vehicle speed and has the specification "**DONE**" or "**NOT DONE**".

NOTES

None

Engine stopped, ignition on**ET053: "DONE"**

In the event of a fault, refer to the interpretation of the following faults:

- DF176 "Front right-hand wheel speed multiplex signal",
- DF175 "Front left-hand wheel speed multiplex signal",
- DF117 "Rear left-hand wheel speed multiplex signal",
- DF118 "Rear right-hand wheel speed multiplex signal".

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET054	<u>PUMP RELAY CONTROL</u>

STATUS DEFINITION	ACTIVE: indicates that the pump is supplied to increase the pressure in the hydraulic circuit. INACTIVE: indicates that the pump is not being actuated.

NOTES	None

Engine running at idle speed

If parameter **PR018 "Hydraulic pressure"** is below **40 bar**, **ET054** is "**ACTIVE**" until **PR018 = 50 bar** is reached.
If parameter **PR018 "Hydraulic pressure"** is above **40 bar**, **ET054** is "**INACTIVE**".
In the event of a fault, refer to the interpretation of fault **DF252 "Pump relay"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET055	<u>STARTER RELAY CONTROL</u>

STATUS DEFINITION	This signal indicates the status of the starter control circuit and has the specification " ACTIVE " or " INACTIVE ".

NOTES	None

Engine stopped, ignition on

INACTIVE

"ACTIVE" when the starter is operating.

In the event of a fault, perform fault finding on the UCH (see **87B, Passenger compartment connection unit**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET056CLUTCH SOLENOID VALVE CONTROL**STATUS
DEFINITION**

This signal indicates the status of the clutch solenoid valve and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**INACTIVE: engine stopped**

In the event of a fault, consult the interpretation of fault **DF071** "Clutch solenoid valve circuit".

Engine warm at idle speed**INACTIVE: engine running****ACTIVE: when a gear is being selected**

In the event of a fault, consult the interpretation of fault **DF071** "Clutch solenoid valve circuit".

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET057ENGAGEMENT SOLENOID VALVE 1 CONTROL**STATUS
DEFINITION**

This signal indicates the status of the control circuit of engagement solenoid valve 1 and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**INACTIVE**, engine stoppedIn the event of a fault, consult the interpretation of fault **DF072** "Engagement solenoid valve 1 circuit".**Engine warm at idle speed****INACTIVE**, engine running, vehicle stopped**ACTIVE** when each gear is selectedIn the event of a fault, consult the interpretation of fault **DF072** "Engagement solenoid valve 1 circuit".**AFTER REPAIR**

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET058ENGAGEMENT SOLENOID VALVE 2 CONTROL**STATUS
DEFINITION**

This signal indicates the status of the control circuit of engagement solenoid valve 2 and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**INACTIVE**, engine stopped

In the event of a fault, consult the interpretation of fault **DF073** "Engagement solenoid valve 2 circuit".

Engine warm at idle speed**INACTIVE**, engine running, vehicle stopped**ACTIVE** when each gear is selected

In the event of a fault, consult the interpretation of fault **DF073** "Engagement solenoid valve 2 circuit".

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET059SELECTION SOLENOID VALVE 1 CONTROL**STATUS
DEFINITION**

This signal indicates the status of the control circuit of selection solenoid valve 1 and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**INACTIVE**, engine stoppedIn the event of a fault, consult the interpretation of fault **DF074** "Selection solenoid valve 1 circuit".**Engine warm at idle speed****INACTIVE**, engine running, vehicle stopped**ACTIVE** during selection of first and second gearsIn the event of a fault, consult the interpretation of fault **DF074** "Selection solenoid valve 1 circuit".**AFTER REPAIR**

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET060SELECTION SOLENOID VALVE 2 CONTROL**STATUS
DEFINITION**

This signal indicates the status of the control circuit of selection solenoid valve 2 and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**INACTIVE**, engine stoppedIn the event of a fault, consult the interpretation of fault **DF075** "Selection solenoid valve 2 circuit".**Engine warm at idle speed****INACTIVE**, engine running, vehicle stopped**ACTIVE** during selection of fifth and reverse gearsIn the event of a fault, consult the interpretation of fault **DF075** "Selection solenoid valve 2 circuit".**AFTER REPAIR**

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET061GEAR PROGRAMMING**STATUS
DEFINITION**

This signal indicates the status of the programming of all the gears and has the specification "**NOT DONE**", "**DONE**" or "**OK**".

NOTES

None

Engine stopped, ignition on**ET061: "DONE" or "OK"**

If "**NOT DONE**", consult the interpretation of faults **DF069 "Selecting position sensor circuit"**, **DF070 "Engaging position sensor circuit"** and **DF067 "Lever position sensor circuit"**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET062	<u>BITING POINT PROGRAMMING</u>

STATUS DEFINITION	This signal indicates the status of the programming of the clutch biting point and has the specification " NOT DONE " or " DONE ".

NOTES	None

Engine stopped, ignition on

ET062: DONE

If "**NOT DONE**", put the gearbox in neutral.
Start the engine.
Wait **10 seconds** without changing gear (to program the clutch biting point).
Check the programming was applied correctly:

ET062 displays "**DONE**".

If "**NOT DONE**", refer to the interpretation of fault **DF068 "Clutch position sensor circuit"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

ET063SOLENOID VALVE ZERO POINT PROGRAMMING**STATUS
DEFINITION**

This signal indicates the status of the programming of the clutch solenoid valve position and has the specification "**NOT DONE**" or "**DONE**".

NOTES

None

Engine stopped, ignition on**ET063: DONE**

If "**NOT DONE**", put the gearbox in neutral.
Start the engine.
Wait **10 seconds** without changing gear (to program the clutch biting point).
Check the programming was applied correctly:

ET063 displays "**DONE**".

If "**NOT DONE**", consult the interpretation of faults **DF068 "Clutch position sensor circuit"**, **DF069 "Selecting position sensor circuit"** and **DF070 "Engaging position sensor circuit"**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET064CLUTCH POSITION PROGRAMMING**STATUS
DEFINITION**

This signal indicates the status of the programming of the clutch position and has the specification "**NOT DONE**" or "**DONE**".

NOTES

None

Engine stopped, ignition on**ET064: DONE**

If "**NOT DONE**", refer to the section "**replacement of components**".

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET065PROGRESSIVITY PROGRAMMING**STATUS
DEFINITION**

This signal indicates the status of the programming of the progressivity of the transmission of engine torque and has the specification "**NOT DONE**" or "**DONE**".

NOTES

None

Engine stopped, ignition on**ET065: DONE**

If "**NOT DONE**", refer to the section "**replacement of components**".

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

ET086**DOWNSHIFT REQUEST****STATUS
DEFINITION**

This status indicates the request, by the injection computer or by the driver, to change down a gear and has the specification "**ACTIVE**" or "**INACTIVE**".

NOTES

None

Engine stopped, ignition on**ET086: INACTIVE**

In the event of a fault, consult the interpretation of faults **DF062 "CAN fault"** and **DF067 "Lever position sensor circuit"**.

Road test

ET086: ACTIVE following low engine speed or a request to change down from the driver.

In the event of a fault, consult the interpretation of faults **DF062 "CAN fault"** and **DF067 "Lever position sensor circuit"**.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

SEQUENTIAL GEARBOX

Fault finding - Parameter summary table

Tool parameter	Diagnostic tool title
PR006	Engine speed
PR008	Computer feed voltage
PR010	Clutch wear
PR014	Gearbox input speed
PR015	Clutch position
PR016	Selection position
PR017	Engagement position
PR018	Hydraulic pressure
PR095	Clutch temperature
PR096	Clutch progressivity
PR105	Vehicle speed
PR106	Effective engine torque
PR107	No reduction engine torque
PR145	Engine coolant temperature
PR148	Closed position of clutch
PR152	Anticipated engine torque
PR153	Slow torque setpoint
PR154	Rapid torque setpoint

PR006	<u>ENGINE SPEED</u>

PARAMETER DEFINITION	This parameter indicates the engine's speed of rotation expressed in rpm .

NOTES	None

Engine stopped, ignition on

PR006 = 0 rpm

In the event of a fault, consult the interpretation of fault **DF039 “Engine speed signal”**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR008COMPUTER SUPPLY VOLTAGE**PARAMETER
DEFINITION**

This parameter indicates the sequential gearbox computer supply voltage value expressed in **V**.

NOTES

Use the Wiring Diagrams Technical Note for **New TWINGO**.

Engine stopped, ignition on**PR008 ≈ 12 V**

The computer supply voltage value must be close to the battery voltage.

Electrical check of the component

Check that the sequential gearbox supply fuse is **correctly positioned** and in good condition in the engine compartment connection unit.

Check the engine **earths** on the vehicle are in good condition.
Repair if necessary.

Measure the battery **voltage** and check the **charge circuit** (see **Technical Note 6014A, Charge circuit check**).

Check the **connection** and **condition** of the connections of component 119.
If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **continuity and insulation** of the following connections:

- Connection code **BP39**,
- Connection code **AP4**,

between components **1016** and **119**.

- Connection code **N** (2 connections) between earths **MC-12A** and **MC-12B** and component **119**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

PR010	<u>CLUTCH WEAR</u>

PARAMETER DEFINITION	Parameter PR010 indicates clutch wear as a percentage (%).

NOTES	None

Engine stopped, ignition on

PR010 = 0% if the clutch is new.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR014	<u>GEARBOX INPUT SPEED</u>

PARAMETER DEFINITION	This parameter indicates the rotation speed at the sequential gearbox input expressed in rpm .

NOTES	None

Engine stopped, ignition on

PR014 = 0 rpmIn the event of a fault, consult the interpretation of fault **DF251 "Gearbox input speed"**.

Engine warm at idle speed and gearbox in neutral

PR014 ≈ PR006 "Engine speed"In the event of a fault, consult the interpretation of fault **DF251 "Gearbox input speed"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR015	<u>CLUTCH POSITION</u>

PARAMETER DEFINITION	This parameter indicates the position of the clutch cylinder expressed in mm .

NOTES	None

Engine stopped, ignition on

PR015 = 36 mm (new clutch)

In the event of a fault, consult the interpretation of fault **DF068 “Clutch position sensor circuit”**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR016	<u>SELECTION POSITION</u>

PARAMETER DEFINITION	This parameter indicates the position of the selection cylinder expressed in mm .

NOTES	None

Engine stopped, ignition on

The value of parameter **PR016** will change depending on the gear engaged:

1: **PR016** = 6 mm
2: **PR016** = 6 mm
3: **PR016** = 12 mm
4: **PR016** = 12 mm
5: **PR016** = 19 mm
R: **PR016** = 19 mm
N: **PR016** = 12 mm

In the event of a fault, consult the interpretation of fault **DF069** “**Selection position sensor circuit**”.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR017	<u>ENGAGEMENT POSITION</u>

PARAMETER DEFINITION	This parameter indicates the position of the engagement cylinder expressed in mm .

NOTES	None

Engine stopped, ignition on

The value of parameter **PR017** will change depending on the gear engaged:

1: **PR017** = 6 mm
2: **PR017** = 18 mm
3: **PR017** = 6 mm
4: **PR017** = 18 mm
5: **PR017** = 6 mm
R: **PR017** = 18 mm
N: **PR017** = 12 mm

In the event of a fault, consult the interpretation of fault **DF070** “Engagement position sensor circuit”.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR018	<u>HYDRAULIC PRESSURE</u>

PARAMETER DEFINITION	This parameter indicates the value of the pressure in the hydraulic circuit expressed in bar .

NOTES	None

Engine stopped, ignition on

The pressure value is measured by the pressure sensor.
Using this information, the computer will activate or deactivate the pump to regulate the pressure.

40 < PR018 < 50 bar

In the event of a fault, consult the interpretation of faults **DF065 “Pump relay circuit”**, **DF166 “Pressure sensor circuit”**, **DF252 “Pump relay”**, **DF180 “Hydraulic pump”** and **DF259 “Pressure accumulator”**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR095	<u>CLUTCH TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the temperature of the clutch system expressed in °C.

NOTES	None

Engine stopped, ignition on

The clutch temperature will change depending on the driving style of the vehicle (sporty driving, holding the vehicle on an incline, etc.).

When **PR095** $\geq$ **248 °C**, the buzzer is activated.

Check the clutch is correctly programmed (see **replacement of components**).

In the event of a fault, consult the interpretation of fault **DF254 "Clutch temperature"**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR096	<u>CLUTCH PROGRESSIVITY</u>

PARAMETER DEFINITION	This parameter indicates the progressivity of the clutch.

NOTES	None

Engine stopped, ignition on

3000 < PR096 < 9000**Default value: PR096 = 7500**, in this case, program the clutch progressivity (see **Replacement of components**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR105	<u>VEHICLE SPEED</u>

PARAMETER DEFINITION	This parameter indicates the vehicle speed expressed in mph (km/h) .

NOTES	None

Engine stopped, ignition on

PR105 = 0 km/h

If not correct, run fault finding on the ABS/ESP system (see **38C, Anti-lock braking system**).
If the fault is still present, contact Techline.

Road test

Carry out a road test.
Check the consistency between the parameter value **PR038 "Vehicle speed"** in the domain of the **ABS computer** and the speed displayed on the instrument panel.
If not correct, run fault finding on the ABS/ESP system (see **38C, Anti-lock braking system**).
If the fault is still present, contact Techline.

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

PR106
PR107
PR152
PR153
PR154

EFFECTIVE ENGINE TORQUE
NO REDUCTION ENGINE TORQUE
ANTICIPATED ENGINE TORQUE
SLOW TORQUE SETPOINT
FAST TORQUE SETPOINT

**PARAMETER
DEFINITION**

This parameters indicate the value of the torque supplied by the engine in **Nm**.

NOTES

None

Engine stopped, ignition on

PR106 = 0 Nm
PR107 = 0 Nm
PR152 = 0 Nm
PR153 = 0 Nm
PR154 = 0 Nm

In the event of a fault, carry out a multiplex network test (see **88B, Multiplexing**).
Run fault finding on the injection system (see **17B, Petrol injection**).

AFTER REPAIR

Carry out another fault finding check on the system.
Deal with any other faults.
Clear the stored faults.

PR145	<u>ENGINE COOLANT TEMPERATURE</u>

PARAMETER DEFINITION	This parameter indicates the coolant temperature in °C.

NOTES	None

Engine stopped, ignition on

PR145 = 20 °C in default mode

Compare the value of parameter **PR145** with the value measured by the coolant temperature sensor in the domain of the injection computer (see **17B, Petrol injection**).
If not correct, run a multiplex network test (see **88B, Multiplex**).

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

PR148	<u>CLUTCH CLOSED POSITION</u>

PARAMETER DEFINITION	This parameter indicates the position of the clutch in mm .

NOTES	None

Engine stopped, ignition on

PR148 = 576 mm (new clutch)

In the event of a fault, consult the interpretation of fault **DF068 “Clutch position sensor circuit”**.

AFTER REPAIR	Carry out another fault finding check on the system. Deal with any other faults. Clear the stored faults.

SEQUENTIAL GEARBOX

Fault finding - Command summary table

Tool command	Diagnostic tool title
RZ001	Stored fault(s)
RZ002	Programming
RZ003	Biting point programming
RZ008	Initial closed position of clutch
AC006	Disable hydraulic unit pump
AC007	Hydraulic unit pump rehabilitation
AC008	Clutch circuit phase 1 bleed
AC009	Clutch circuit phase 2 bleed.
AC011	Hydraulic pressure unit bleed
AC012	Hydraulic pump relay
AC014	Clutch solenoid valve
AC015	Engagement solenoid valves
AC016	Selection solenoid valves
AC017	Display
AC019	Return gearbox to neutral
AC024	Sequential actuator control
AC028	Engage reverse gear
AC081	Discharge pressure accumulator
VP001	Write VIN
VP008	Program selection/engagement ranges
VP009	Enter last APV* operation date
VP013	Enter new clutch fitting date
VP014	Enter initial closed position of clutch

*APV: After-Sales

CLEARING

- RZ001 Stored fault(s)**
This command is used for clearing the stored faults from the computer.
- RZ002 "Programming"**
This command enables the gear programming to be cleared.
Use this command each time parts are replaced (see **Replacement of components**).
- RZ003 "Biting point programming"**
This command enables the clutch biting point programming to be cleared.
Use this command each time parts are replaced (see **Replacement of components**).
- RZ008 "Initial closed position of clutch"**
This command enables the initial closed position of clutch programming to be cleared.
Use this command each time parts are replaced (see **Replacement of components**).

ACTUATORS

- AC006 "Disable hydraulic unit pump"**
This command enables inhibition of the hydraulic pump.
- AC007 "Hydraulic unit pump rehabilitation"**
This command enables rehabilitation of the hydraulic pump after the computer has been replaced or after the inhibition of the pump using command **AC006**
Hydraulic unit pump inhibition.
- AC008 "Clutch circuit phase 1 bleed"**
This command is used to perform the first clutch circuit bleeding phase after an operation with parts replacement (see **"Replacement of components"**).
This command takes 6 minutes.
- AC009 "Clutch circuit phase 2 bleed"**
This command is used to perform the second clutch circuit bleeding phase after an operation with parts replacement (see **Replacement of components**).
This command takes 8 minutes.
- AC011 "Hydraulic pressure unit bleed"**
This command is used to bleed the hydraulic pressure unit after an operation with parts replacement (see **Replacement of components**).
- AC012 "Hydraulic pump relay"**
This command enables the hydraulic pump relay to be operated to perform a listening check or to test its supply.

ACTUATORS (Continued)

AC014 "Clutch solenoid valve"

This command enables the clutch solenoid valves to be operated to perform a listening check or to test their supply.

AC015 "Engagement solenoid valves"

This command enables the engagement solenoid valves to be operated to perform a listening check or to test their supply.

AC016 "Selection solenoid valves"

This command enables the selection solenoid valves to be operated to perform a listening check or to test their supply.

AC017 "Display"

This command enables the display integrity to be checked by searching through all the data available relating to the sequential gearbox.

AC019 "Return gearbox to neutral"

This command returns the gearbox to neutral.

AC024 Sequential actuator control

This command enables all sequential gearbox switches to be operated in order to check that they are working.

AC028 "Engage reverse gear"

This command enables reverse gear to be engaged.

AC081 "Discharge pressure accumulator"

This command enables pressure in the hydraulic circuit to be discharged. The handbrake must be applied when using this command.

SETTINGS

VP001 "Write VIN"

This command permits manual entry of the vehicle's VIN into the computer.
Use this command each time the computer is replaced or (re)programmed.

Note:

When replacing or reprogramming a computer, use command **AC007 Hydraulic unit pump rehabilitation** before carrying out parameter **VP008 Program selection/engagement ranges**.

VP008 "Program selection/engagement ranges"

This command enables the gears to be programmed.

Use this command when:

- replacing the electrohydraulic unit, the clutch or the gearbox,
- replacing or reprogramming the computer,
- replacing the engagement position sensor and the selecting position sensor,
- replacing the engagement, selection or clutch solenoid valves.
- replacing the reservoir, accumulator or pump only.

SETTINGS (continued)**VP009 “Enter last APV operation* date”**

Use this command for each workshop operation on the sequential gearbox.

Select command VP009 on the diagnostic tool.

Enter the operation date with the tool keyboard.

VP013 “Enter new clutch fitting date”

This command should be used when the clutch is replaced.

Select command VP013 on the diagnostic tool.

Enter the service date with the diagnostic tool keypad.

VP014 “Enter initial closed position of clutch”

This command enables the value of the initial closed position of the clutch to be re-entered into a new or reprogrammed computer in order to keep a consistent record of the clutch wear,.

Use this command each time the computer is replaced or reprogrammed.

*APV: After-Sales

NOTES	Only refer to the customer complaints after performing a complete check using the diagnostic tool. Carry out a fault finding procedure on the multiplex network. Run fault finding on the sequential gearbox.

NO DIALOGUE WITH THE DIAGNOSTIC TOOL

NO DIALOGUE WITH THE SEQUENTIAL GEARBOX COMPUTER	ALP 1

SEQUENTIAL GEARBOX OPERATING FAULTS IMMOBILISING THE VEHICLE

CANNOT SELECT A FORWARD OR REVERSE GEAR WHEN STATIONARY	ALP 2
IMPOSSIBLE TO SELECT NEUTRAL	ALP 2
IMPOSSIBLE TO START WITH GEAR ENGAGED, EVEN WITH BRAKE PEDAL DEPRESSED	ALP 2
IMPOSSIBLE TO ENGAGE OR DISENGAGE A GEAR	ALP 3
ENGINE CAN ONLY BE STARTED IF BRAKE PEDAL DEPRESSED	ALP 3
SEMIAUTOMATIC MODE IMPOSSIBLE	ALP 3
ENGINE STALLS WHEN BRAKE PEDAL IS DEPRESSED	ALP 3

**SEQUENTIAL GEARBOX FAULTS NOT IMMOBILISING
THE VEHICLE**

CANNOT ACCESS AUTOMATIC MODE IF SEMI-AUTOMATIC MODE WAS PREVIOUSLY SELECTED	ALP 4
CANNOT ACCESS SEMIAUTOMATIC MODE IF AUTOMATIC MODE WAS PREVIOUSLY SELECTED	ALP 4
SWITCHING TO AUTOMATIC MODE POSSIBLE IF RESTARTING ENGINE	ALP 4
NO REVERSING LIGHT	ALP 5
NO CREEPING	ALP 6
BRAKE LIGHTS PERMANENTLY LIT	ALP 6
FORWARD OR REVERSE GEAR CAN BE SELECTED WITHOUT DEPRESSING THE BRAKE PEDAL	ALP 6
LOSS OF AUTOMATIC MODE	ALP 7
VEHICLE DOES NOT MOVE FORWARD WITH GEAR ENGAGED AND ENGINE RUNNING	ALP 8
INADEQUATE REACTION TO FULL LOAD REQUEST	ALP 9
LOSS OF DISPLAY WHEN DRIVING	ALP 10
DISPLAY AND WARNING BUZZER FUNCTION ERRATICALLY	ALP 11
VEHICLE JUMPS WHEN ENGINE IS STARTED	ALP 12

ALP 1

No dialogue with the sequential gearbox computer

NOTES

Special notes:

Only consult this customer complaint after a **complete check** with the **diagnostic tool**.

Use the Wiring Diagrams Technical Note for **New TWINGO**.

Try to establish dialogue with a computer on another vehicle to make sure that the **diagnostic tool** is not faulty. If the tool is not causing the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting the **CAN** diagnostic line.
Use a process of successive disconnections to locate this computer.
Check the voltage of the battery and carry out the operations necessary to obtain a voltage which is to specification (**9.5 V < battery voltage < 17.5 V**).

Check the presence of and condition of the **Sequential Gearbox** fuses on the passenger compartment fuse box (**7.5 A and 20 A**).

Check that the computer connector is properly connected and check the condition of its connections.

Check the **sequential gearbox** earths (good condition, not corroded, tightness of the earth bolt above the hydraulic unit).

Check that the supply to the computer is correct:

- **Earth on the N** connections of the **52-track** connector.
- **+ AVC on connection BP39** of the **52-track** connector.
- **+ after ignition feed on connection AP4** of the **52-track** connector.

Check that the power supply to the diagnostic socket is correct:

- **+ AVC on connection BP19**.
- **Earth on connections MAM and NAM**.

If dialogue has still not been established after these checks, contact the Techline.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 2

Cannot select a forward or reverse gear when stationary
Impossible to select N
Impossible to start engine with gear engaged, even with brake pedal depressed

NOTES**Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Use the Wiring Diagrams Technical Note for **New TWINGO**.

Check the **+ after ignition feeds** and **the earths** of the sequential gearbox computer.

Check the condition of the gear lever contacts and that it is operating correctly (**consult the interpretation of statuses ET043 "Lever contact No. 0", ET044 "Lever contact No. 1", ET045 "Lever contact No. 2" and ET046 Lever contact No. 3"**).

Repair if necessary.

Check for the presence and condition of the brake light switch supply fuse on the passenger compartment fuse board.

Repair if necessary.

Check that the brake light switch connector is correctly connected, check the condition of the connections as well as those of the computer.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check that the brake light switch on the pedal is correctly fitted and adjusted.

Check for continuity, with the pedal depressed, between **connections AP10 (track 2) and 65A** of component **160**.

Replace the switch if necessary (see **MR 411 Mechanical, 83D Cruise control, Brake light switch: Removal - Refitting**).

Check there is no continuity with the pedal released, between **connections AP10 (track 2) and 65A** of component **160**.

Replace the switch if necessary (see **MR 411 Mechanical, 83D Cruise control, Brake light switch: Removal - Refitting**).

If the fault is still present, check the continuity of the following connection:

- Connection code **65A** between components **160** and **119**.

Also ensure the insulation to earth.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 3

**Impossible to engage or disengage a gear
Engine can only be started if brake pedal depressed
Semiautomatic mode not possible
Engine stalls when brake pedal is depressed**

NOTES**Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Check the **+ after ignition feeds** and **the earths** of the sequential gearbox computer.

Check that the gear lever is not jammed or damaged or even broken. Replace the lever if necessary (see **MR 411 Mechanical, 21B, Sequential gearbox, Sequential gearbox selector lever: Removal - Refitting**).

Apply the fault finding procedure for **ET043 "Lever switch No. 0"**, **ET044 "Lever switch No. 1"**, **ET045 "Lever switch No. 2"** and **ET046 Lever switch No. 3"**.

If the fault is still present, run a multiplex network test using the **diagnostic tool** (see **88B, Multiplex**).

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 4

Cannot access automatic mode if semi-automatic mode was previously selected
Cannot access semiautomatic mode if automatic mode was previously selected
Switching to automatic mode possible if restarting engine

NOTES**Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Use the Wiring Diagrams Technical Note for **New TWINGO**.

Check the connection and condition of the connectors of components **1058 and 119**.

If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Apply the interpretation of statuses **ET043 "Lever switch no. 0"**, **ET044 "Lever switch no. 1"**, **ET045 "Lever switch no. 2"** and **ET046 "Lever switch no. 3"**.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 5

No reversing lights

NOTES

Special notes:

Only consult this customer complaint after a complete check with the diagnostic tool.

Use the Wiring Diagrams Technical Note for **New TWINGO**.

Check the condition of the bulbs for the reversing lights.
Replace if not correct.

Check the conformity of the supply fuse of the reversing light switch (**15 A**) located on the passenger compartment fuse box.
Replace the fuse if not correct.

If, following replacement of the fuse and switching on the ignition, the fuse is not correct, check **the insulation to earth** of connection **AP3** between components **1016** and **155**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Replace the faulty fuse.

If the fuse is correct, check the presence of **+ 12 V** on connection **AP3** of component **155**.

If **there is no + 12 V**, check **the continuity** of connection **AP3** between components **1016** and **155**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, wiring: precautions for repair**), repair the wiring, otherwise replace it.

Check the conformity of the reversing lights switch:

- **Switch in rest position: insulation** between connections **AP3** and **H66P** of component **155**.
- **Switch depressed: continuity** between connections **AP3** and **H66P** of component **155**.

Replace the reversing lights switch if not correct.

Check for the earth of the reversing light on the following connection(s):

- Left-hand drive: connection **MF** of component **172**.
- Right-hand drive: connection **MG** of component **173**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

**ALP 5
CONTINUED**

Engage reverse gear.

Check for **+ 12 V** on connection **H66P** of component **172 (left-hand drive)** or **173 (right-hand drive)**.

If **there is no + 12 V**, check **the insulation and continuity** of connection **H66P** between components **155** and **172 (left-hand drive)** or **173 (right-hand drive)**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, carry out fault finding on the UCH (see **87B, Passenger Compartment Connection Unit**).

If the vehicle is fitted with the parking distance control system, perform fault finding on the parking distance control computer (see **87F, Parking distance control**).

If the supply and earth of the reversing light are correct, replace the reversing light.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 6	No creeping Brake lights permanently lit Forward or reverse gear can be selected without depressing the brake pedal

NOTES	Special notes: Only consult this customer complaint after a complete check with the diagnostic tool. In a case where there is no creeping, if the customer has heard the buzzer whilst driving, it is normal for creeping to be prohibited (clutch overheating). Leave the clutch to cool down and then check if there is any creep. Apply the following procedure if the fault persists.
	Use the Wiring Diagrams Technical Note for New TWINGO.

Check for the **presence**, **condition** and **correct positioning** of the brake light fuse in the passenger compartment fuse box.

Check the **connection** and **condition** of the connectors of components **160**, **156** and **119**.
If the connectors are faulty and if there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connectors; otherwise, replace the wiring.

Check the **fitting** and **adjustment** of component **160** on the pedals.

Pedal depressed:

Check **the continuity** between **connections AP10 (track 2) and 65A** of component **160**.

Check **the insulation** between **connections AP10 (track 4) and 5A** of component **160**.

If the checks are incorrect, replace the switch (see **MR 411 Mechanical systems, 83D Cruise control, Brake light switch: Removal - Refitting**).

Pedal released:

Check **the insulation** between **connections AP10 (track 2) and 65A** of component **160**.

Check **the continuity** between **connections AP10 (track 4) and 5A** of component **160**.

If the checks are incorrect, replace the switch (see **MR 411 Mechanical systems, 83D Cruise control, Brake light switch: Removal - Refitting**).

Check **the continuity and insulation from earth** of the following connection:

- Connection code **65A**,
between components **160** and **119**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Switch off the ignition and wait 20 seconds. Carry out a road test followed by another check with the diagnostic tool.

ALP 7**Loss of automatic mode****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Level 1 severity injection fault sent by the engine management via the multiplex line connection.
Using the diagnostic tool, check the injection system (see **17B, Petrol injection**).

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 8**Vehicle does not move forward with gear engaged and engine running****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Apply the fault finding procedure associated with the multiplex network test (see **88B, Multiplexing**).

Check the mechanical condition of the clutch (no grease or leaks on the flywheel, clutch driven plate not cracked or disintegrated, no broken parts, etc.).

Check the condition of the driveshaft (broken joint, internal gearbox mechanical fault etc.).

Repair or replace the faulty components.

If the engine speed remains at idle speed, check the positioning of the accelerator pedal sensor.

Run fault finding on the injection system (see **17B, Petrol Injection**).

If the fault is still present, contact Techline.

AFTER REPAIRClear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 9**Inadequate reaction to full load request****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Carry out a road test and check for a hard point on the accelerator pedal under full load and on consecutive downshifting.
If the hard point is noticeable on the pedal but not when downshifting, perform another road test with the selector in automatic mode.
If downshifting is still not active, use the diagnostic tool to check that status **ET030 Accelerator pedal position** varies depending on the pedal position.
Check the operation of the pedals (pedal travel fault or pedal potentiometer damaged).
If the fault is still present, check the injection system (see **17B, petrol injection**).

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 10**Loss of display when driving****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

Check the sequential gearbox supply fuses.
Check all the earths and that the wiring is not damaged.
Check that the connectors have been correctly clipped into the right position.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 11**Display and warning buzzer operation erratically****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

- The buzzer is active:
 - when the front doors are opened,
 - if the clutch overheats while the vehicle is being driven,
 - if the sequential gearbox programming has not been carried out.
- The depress brake pedal symbol is active:
 - when the engine is stopped by a gear lever request or if the lever is accidentally shifted to the neutral position while the vehicle is being driven.

Carry out a road test to recreate the customer complaint.

Carry out the following programming:

- **VP008 “Program selection/engagement ranges”**.

- Program the biting point using command:

RZ003 Clutch biting point programming

Exit fault finding mode and switch off the ignition.

Wait **1 minute** and then re-establish dialogue with the computer.

Shift the gear lever to rest position (Stb).

Start the engine.

Wait 10 seconds without changing gear (for programming the clutch biting point).

Check that programming has been successfully completed by referring to the following status:

ET062 “Biting point programming” displays **“Done”**.

Repeat the procedure if unsuccessful.

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 12**Vehicle jumps when engine is started****NOTES****Special notes:**

Only consult this customer complaint after a complete check with the diagnostic tool.

If a gear was engaged when there is a request to start the engine check the oil level in the sequential gearbox circuit.

Check the operation of the brake pedal switch as well as the condition of the gear lever switches (**consult the interpretation of statuses: ET043 "Lever switch no. 0", ET044 "Lever switch no. 1", ET045 "Lever switch no. 2" and ET046 "Lever switch no. 3"**).

Ensure that the cylinder and the clutch fork are operating correctly (damage, seizing, part breakage, etc.).

AFTER REPAIR

Clear the computer fault memory. Switch off the ignition and wait **20 seconds**. Carry out a road test followed by another check with the **diagnostic tool**.

TWINGO

3 Chassis

38C ANTI-LOCK BRAKING SYSTEM

MK70 ABS

Vdiag No: 04

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V1

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle: **New Twingo**

Function concerned: **MK70 ABS**

Computer name: **TEVES ABS**

Vdiag No.: **04**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- **CLIP**

Special tooling required

Special tooling required	
Multimeter	
Elé. 1681	Universal bornier

3. REMINDERS

Procedure

To run diagnostics on the vehicle computers, switch on the ignition using the key.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is switched on after the **+ after ignition feed** (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the **resistance** of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check statuses and parameters that do not produce a fault display on the **diagnostic tool** when they are inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

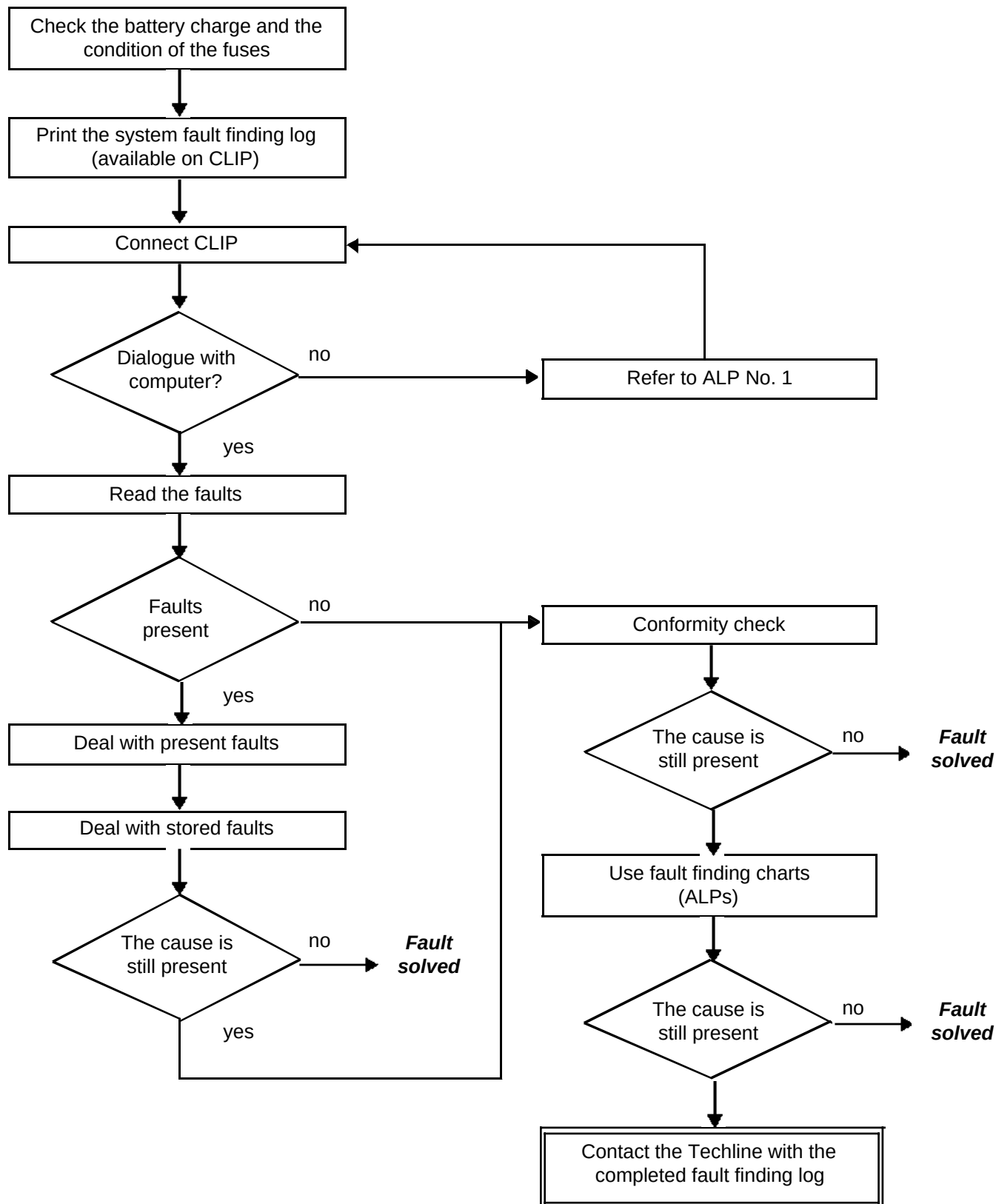
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaint**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (CONTINUED)

Wiring check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connections:

- Connector / Connector
- Connector / Device

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault.

Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when pulling the wire slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
 - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
 - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
 - For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
 - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**)

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for
- warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).

The computer/hydraulic unit assembly:

- Located to the left of the bulkhead in the engine compartment.

Front wheel sensors:

- Screwed into the stub-axle, each front sensor has an intermediate connector located behind the plastic wheel arch liner.

Rear wheel sensor intermediate connectors:

- Located in a sealed unit under the vehicle.

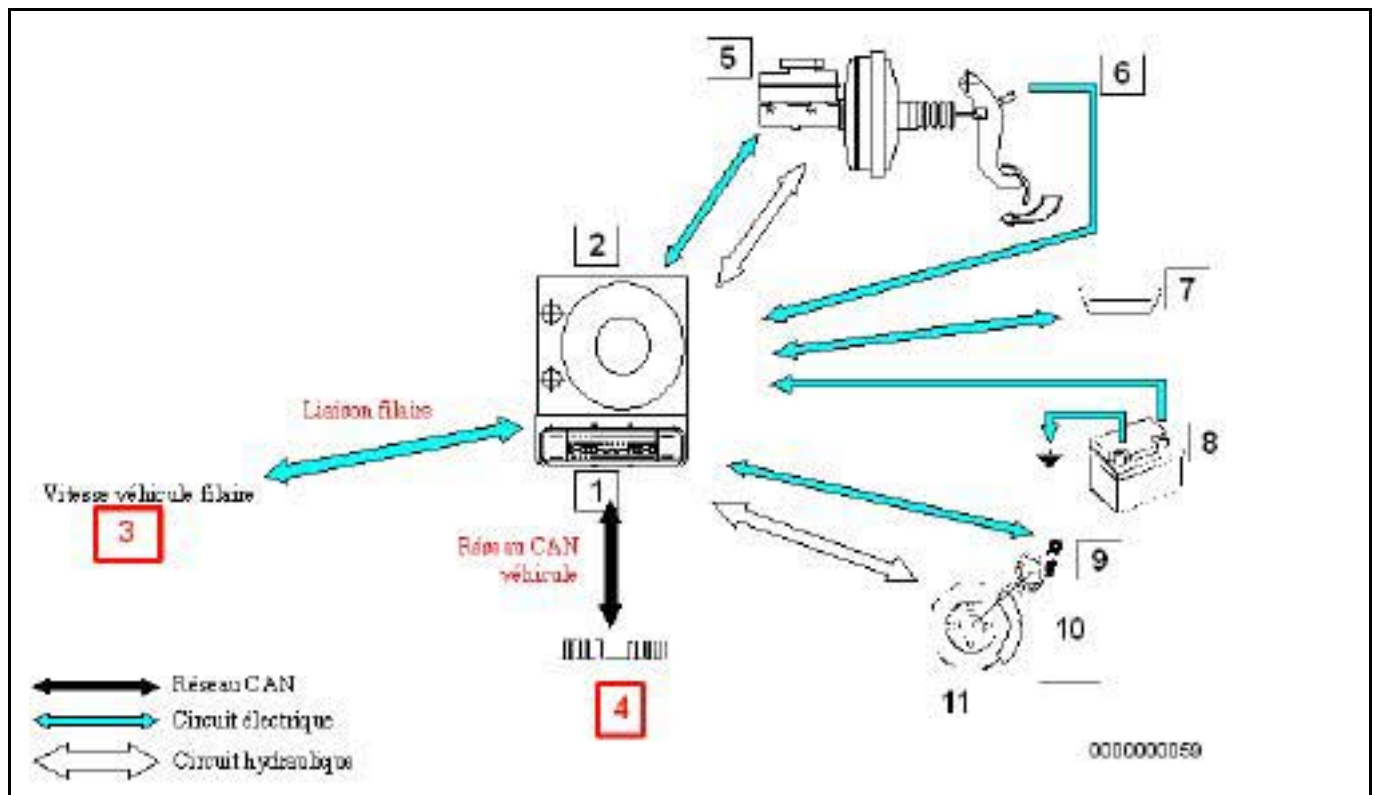
Rear wheel sensors:

- Screwed into the rear brake drum flange.

Brake light switch:

- Located on the pedal assembly.

Number	Description
1	Computer
2	Hydraulic unit (8 solenoid valves)
3	Electric power assisted steering
4	Instrument panel - engine management
5	Passive brake servo
6	Brake lights switch
7	Diagnostic socket
8	Battery
9	Wheel speed sensor
10	Target
11	Brake discs



EBD (electronic braking distribution):

The **EBD** optimises the brakeforce distribution between the front and rear axles. This function ensures vehicle stability under braking.

ABS (anti-lock braking system):

The **ABS** prevents the wheels from locking when braking. This function allows the vehicle to be steered under braking and ensures vehicle stability under braking.

MSR (engine torque control):

This is a function that enhances the **ABS** function. It prevents the drive wheels from spinning excessively when lifting off the accelerator or changing down a gear on a low grip surface, by allowing the engine to regulate the driving torque of the engine (resisting torque compensation) to "relaunch" the wheels.

The system also supplies the other computers with information on the vehicle speed via a wire connection for the radio, the power steering and the electric sunroof, and via the multiplex network for the other computers. The **ABS** computer supplies the multiplex network with the odometry for the instrument panel and navigation system. If heavy braking produces very rapid deceleration, the **ABS** computer sends out a request to the **UCH** (passenger compartment connection unit) via the multiplex network to ask it to switch on the hazard warning lights (depending on the law in the relevant country).

Wheel speed sensor:

Gives the speed of each of the vehicle's wheels. The analysis of the right/left-hand speeds makes it possible to calculate in what direction the vehicle is turning.

Brake lights switch:

Visual indication of the brake pedal position. It makes it possible to tell if the driver is braking or not.

Wire connection (vehicle speed):

The **ABS** computer is best suited to transmit the vehicle speed to the other computers. To do this, the **ABS** transmits the vehicle speed on the **CAN** network. However, some computers are not connected to the **CAN** network, this is why the **ABS** is fitted with a "vehicle speed" wire output. Fault finding is not run on this connection by the **ABS** computer. This enables the consumers of this signal to perform the necessary checks during their own fault finding procedure, or to check the connection by observing the customer complaint on the consumer (for example, increase in the volume of the radio if the speed increases, electric power-assisted steering).

Fault finding warning lights programming

Instrument panel warning light				Instrument panel message	Meaning
Brake faults	ABS system		STOP		No computer.
	ABS flashing at 8 Hz (quickly)				Tachometric index not programmed.
	ABS flashing at 8 Hz (quickly)	SERVICE			Tachometric index not programmed and versions not programmed.
Brake faults flashing at 2 Hz	ABS flashing at 2 Hz (slowly)			No message	ABS computer is in fault finding mode.
	ABS system	SERVICE		Check the ABS	ABS fault.
Brake faults	ABS system	SERVICE	STOP	Braking system fault	EBD fault.

Note:

The STOP warning light is always accompanied by a single audible warning (1 beep).

REPLACING THE COMPUTER

When replacing the computer (see **MR411 Mechanical systems, 38C, Brake computer, removal - refitting**), apply the following procedure:

- switch off the ignition,
- replace the computer,
- enter the VIN number using command VP001 "Write VIN",
- configure the tachometric index with command VP007 "Tachometric index",
- configure the vehicle parameters with command VP004 "Vehicle parameters",
- configure the gearbox type fitted to the vehicle with command CF079 "Gearbox type",
- enter the After-Sales date with command VP006 "Enter last After-Sales operation date",
- perform a road test followed by a fault reading to confirm that the system is operating correctly.

SETTINGS

VP001: Enter VIN.

This command allows the **vehicle identification number** to be entered into the computer.
Use this command each time the computer is replaced. The VIN (**VF...**) is engraved on the manufacturer's plate on the front right-hand door pillar and stamped on the body under the windscreen on the left-hand side.

VP004: Vehicle parameters.

This command configures the engine type configuration, the braking definition and the body type.
Select command **VP004** on the **diagnostic tool**.

VP006: Write last After Sales operation date.

Whenever the **ABS** system is worked on in the shop, the date must be entered.
Select command **VP006 "Write date of last After-Sales operation"** on the **diagnostic tool**.
Enter the operation date with the tool keyboard.

VP007: Tachometric index.

This command is used to program the computer memory with the index required to calculate vehicle speed from the speed at which the wheels turn.
The **MK70 ABS** computer supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.). This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.
The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

Note:

The vehicle speed is delivered by wire (**connection 47F**) to the radio, to the electric power-assisted steering, to the electric sunroof and by the multiplex network for the other computers.

The tyre circumference must be programmed into the memory of a new computer. This consists of entering an index "X" using command VP007 "Tachometric index" on the diagnostic tool.

Once the number has been entered using the **VP007** command, delete the fault in the computer memory and then switch off the ignition. Use parameter **PR030 Tachometric index** to check that the index entered has been correctly registered.

CONFIGURATIONS

CF079: Gearbox type.

Use this command to configure the gearbox type fitted on the vehicle.

OTHER COMMANDS

LC008: Gearbox type.

This command tells you the gearbox type configured on the vehicle.

ANTI-LOCK BRAKING SYSTEM
Fault finding - Fault summary table

Tool fault	Associated DTC	Diagnostic tool title
DF001	50 Short circuit	Computer supply
DF006	5015	Front left-hand wheel speed sensor circuit
DF007	5035	Rear left-hand wheel speed sensor circuit
DF008	501F	Front left-hand wheel speed sensor signal
DF009	503F	Rear left-hand wheel speed sensor signal
DF010	50D3	Pump motor circuit
DF017	50C3	Computer
DF020	5140	Tachometric index programming
DF026	5005	Front right-hand wheel speed sensor circuit
DF027	5025	Rear right-hand wheel speed sensor circuit
DF028	500F	Front right-hand wheel speed sensor signal
DF029	502F	Rear right-hand wheel speed sensor signal
DF055	5143	Vehicle parameter programming
DF066	50E2	No injection multiplex signal
DF090	5041	Front right-hand wheel target
DF091	5042	Front left-hand wheel target
DF092	5043	Rear right-hand wheel target
DF093	5044	Rear left-hand wheel target
DF096	5148	Computer internal electronic irregularity
DF098	50E4	No UCH multiplex signal
DF119	5150	Gearbox type configuration
DF121	D11D	Torque requested not available
DF152	50E6	Multiplex network
DF188	50C6	Brake light switch circuit
DF219	D132	ABS multiplex signal consistency
DF229	5002	Front right-hand wheel speed
DF230	5011	Front left-hand wheel speed
DF231	5021	Rear right-hand wheel speed
DF232	5031	Rear left-hand wheel speed
DF250	D117	Engine speed multiplex signal
DF251	D118	Effective average torque multiplex signal
DF252	D119	Torque request multiplex feedback signal
DF253	D120	Recalculated torque multiplex signal
DF254	D12F	Resisting torque multiplex signal
DF311	50E3	No BVR multiplex signal

DF001 PRESENT OR STORED	COMPUTER SUPPLY VOLTAGE 1.DEF: Feed voltage too low 2.DEF: Feed voltage too high

NOTES	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.
	Use the Technical Note wiring diagram for New Twingo .

1.DEF	NOTES	Special notes: This fault will appear in a road test (speed greater than 12 mph (20 km/h)) if the computer supply voltage is below the minimum operating voltage (9.4 V < min battery voltage < 10 V).

Check the tightness and the condition of the battery terminals.
Check the battery voltage and carry out any work required to obtain the correct voltage (**10 V < battery voltage < 17 V**).
Check the charging circuit (see **80A, battery**).

Check the condition and position of the **15A** and **20A** fuses in the **engine fuse and relay box**.
Check the condition and position of the **F10 5 A** fuse in the **Passenger compartment fuse box**.
Consult section **81C, Fuses**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

- Connector of **component 1094** disconnected, check the **insulation and continuity** of connection **MAH** of **component 1094** (tightness, oxidisation etc.).
- Connectors of **component 1094** and **R107** disconnected, check the **insulation and continuity** of connection **AP5** between **component 1094** and intermediate connector **R107**.
- Check the **insulation and continuity** of connection **AP5** between intermediate connector **R107** and **component 1016**.
- Connectors of **component 1094** and **R67** disconnected, check the **insulation and continuity** of connections **BP8** and **BP14** between **component 1094** and intermediate connector **R67**.
- Check the **insulation and continuity** of connections **BP8** and **BP14** between intermediate connector **R67** and **component 597**.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
If the checks reveal no faults, perform a conformity check of **component 597**.

If all the checks are in order, reconnect the computer and clear the computer fault memory.
Exit the fault finding procedure and carry out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF001 CONTINUED	

2.DEF	NOTES Special notes: This fault will appear in a road test (speed greater than 12 mph (20 km/h)) if the computer supply voltage is above the maximum operating voltage (17 V < maximum battery voltage < 19 V). This fault may appear when starting using a charger or a 24 V battery.

Check the charging circuit (See **MR411 Mechanical systems, 16A, Starting-charging**).

If all the checks are in order, reconnect the computer and clear the computer fault memory.
Exit the fault finding procedure and carry out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF006 PRESENT OR STORED	FRONT LEFT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit

NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF006 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF006 PRESENT	NOTES	None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **153** near component **1094**.
Is the voltage measured correct?

YES	Swap the 2 front wheel speed sensors over. Clear the computer fault memory. Switch off the ignition. Switch on the ignition again. If the fault initially declared as DF006 Front left wheel speed sensor circuit has become a present DF026 Front right wheel speed sensor circuit , replace the wheel speed sensor. If the fault remains on the same side, the wiring between the computer and the sensor is faulty. Check insulation and continuity of connections 4C and 4E between components 153 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.

NO	Check insulation and continuity of connections 4C and 4E between components 153 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF006 CONTINUED	

DF006 STORED	NOTES	None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Swap the 2 front wheel speed sensors over.
 Clear the computer fault memory.
 Carry out a road test followed by another check with the **diagnostic tool**.

If a fault, which was initially registered as **DF006 Front left-hand wheel speed sensor** becomes **present DF026 Front right-hand wheel speed sensor**, replace the wheel speed sensor (see **MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting**).
 If the fault remains on the same side, the wiring between the computer and the sensor is faulty.
 Check **insulation and continuity** of **connections 4C and 4E** between **components 153** and **1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF007 PRESENT OR STORED	REAR LEFT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit

NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF007 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF007 PRESENT	NOTES	None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 151**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **151** near **component 1094**.
Is the voltage measured correct?

YES	Check insulation and continuity of connections 4G and 4H between components 151 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the checks reveal no faults, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting).

NO	Check insulation and continuity of connections 4G and 4H between components 151 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF007
CONTINUED

DF007 STORED

NOTES

None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check **insulation and continuity** of **connections 4G and 4H** between **components 151 and 1094**.
Also check the **insulation** between these 2 connections.
If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact Techline.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF008 PRESENT OR STORED	FRONT LEFT-HAND WHEEL SPEED SENSOR SIGNAL 1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed

NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of the connector of component **153** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If a fault, which was initially registered as **DF008 Front left-hand wheel speed sensor signal** has become **present DF028 Front right-hand wheel speed sensor signal**, replace the wheel speed sensor (see **MR 411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting**).

If the fault stays on the same side, the target is faulty, replace the active sensor bearing.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF009 PRESENT OR STORED	REAR LEFT-HAND WHEEL SPEED SENSOR SIGNAL 1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed

NOTES	Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.
Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.
Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 151. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of the connector of component 151 near component 1094. If a 12 V feed is not present, contact the Techline.
If all the checks are in order, swap the 2 rear wheel brake drums. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If the fault initially declared as DF009 "Rear left-hand wheel speed sensor signal" has become present DF029 "Rear right-hand wheel speed sensor signal", replace the complete drum (see MR411 Mechanical systems, 33A, Rear axle components). If the fault remains on the same side, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting). Important, do not forget to refit the drums to the correct wheels. If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF010 PRESENT OR STORED	<u>PUMP MOTOR CIRCUIT</u>
NOTES	Special notes: If this fault appears after the computer is replaced, the pump motor connection has been twisted. Separate the hydraulic unit from the computer and restore the connection to working order.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: Brake pedal held down and AC016 Test pump motor actuator command.
	Use the Technical Note wiring diagram for New Twingo .
Check the tightness and the condition of the battery terminals. Check the condition and position of the 15A and 20A fuses in the engine fuse and relay box . Check the condition and position of the F10 5A fuse in the Passenger compartment fuse box . Consult section 81C, Fuses .	
Check the connection and condition (possible damage to the wiring) of the connector of component 1094 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring.	
● Connector of component 1094 disconnected, check the insulation and continuity of connection MAH of component 1094 (tightness, oxidisation etc.). ● Connectors of component 1094 and R107 disconnected, check the insulation and continuity of connection AP5 between component 1094 and intermediate connector R107. ● Check the insulation and continuity of connection AP5 between intermediate connector R107 and component 1016. ● Connectors of component 1094 and R67 disconnected, check the insulation and continuity of connections BP8 and BP14 between component 1094 and intermediate connector R67. ● Check the insulation and continuity of connections BP8 and BP14 between intermediate connector R67 and component 597. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.	
Use command AC016 Pump motor test . If the fault is still present (no sound of the pump turning or loss of communication with the computer), replace the entire unit (pump mechanically seized, pump short circuited, etc.).	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF017
PRESENT
OR
STORED

COMPUTER
1.DEF: Computer fault

NOTES

Conditions for applying the fault finding procedure to stored faults:
Apply the fault finding procedure whether the fault is present or stored.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Clear the computer fault memory, exit the fault finding and switch off the ignition.
Carry out another check using the **diagnostic tool**.
If the fault is still present, contact the Techline.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF020 PRESENT	<u>TACHOMETRIC INDEX PROGRAMMING</u> 1.DEF: Tachometric index not programmed

NOTES	None

The **MK70 ABS** computer with the tachometric function supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.).

This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.

The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

The tyre circumference must be programmed into the memory of a new computer. This consists of entering an index "X" using command VP007 "TACHOMETRIC INDEX" using the diagnostic tool.

Once the index has been entered using the **VP007** command, clear the computer fault memory and then switch off the ignition.

Use the **PR030** parameter to check that the index has been stored correctly.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 PRESENT OR STORED	FRONT RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit	
NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF026 stored .	
	Use the Technical Note wiring diagram for New Twingo .	
DF026 PRESENT	NOTES	None
Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 152. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of component 152 near component 1094. Is the voltage measured correct?		
YES	Swap the 2 front wheel speed sensors over. Clear the computer fault memory. Switch off the ignition. Switch on the ignition again. If a fault, which was initially registered as DF026 Front right-hand wheel speed sensor circuit becomes present DF006 Front left-hand wheel speed sensor circuit, replace the wheel speed sensor (see MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting). If the fault remains on the same side, the wiring between the computer and the sensor is faulty. Check the insulation and continuity of connections 4M and 4N between components 152 and 1094. Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.	
NO	Check the insulation and continuity of connections 4M and 4N between components 152 and 1094. Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.	
AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.	

**DF026
CONTINUED**

DF026 STORED

NOTES

None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 152**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check **the insulation and continuity of connections 4M and 4N** between **components 152 and 1094**.
Also check the **insulation** between these 2 connections.
If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
Swap the 2 front wheel speed sensors over.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

If a fault, which was initially registered as **DF026 Front right-hand wheel speed sensor circuit** becomes **present DF006 Front left-hand wheel speed sensor circuit**, replace the wheel speed sensor (see **MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting**).
If the fault remains on the same side, the wiring between the computer and the sensor is faulty.
Check **the insulation and continuity of connections 4M and 4N** between **components 152 and 1094**.
Also check the **insulation** between these 2 connections.
If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF027 PRESENT OR STORED	REAR RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit

NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF027 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF027 PRESENT	NOTES	None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **150** near **component 1094**.
Is the voltage measured correct?

YES	Check the insulation and continuity of connections 4S and 4T between components 150 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the checks reveal no faults, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting).

NO	Check the insulation and continuity of connections 4S and 4T between components 150 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF027
CONTINUED

DF027 STORED

NOTES

None

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check **the insulation and continuity of connections 4S and 4T** between **components 150 and 1094**.
Also check the **insulation** between these 2 connections.
If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.
Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact Techline.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

DF028 PRESENT OR STORED	<u>FRONT RIGHT-HAND WHEEL SPEED SENSOR SIGNAL</u> 1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed

NOTES	Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 152**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of **component 152** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If a fault, which was initially registered as **DF028 Front right-hand wheel speed sensor signal** has become **present DF008 Front left-hand wheel speed sensor signal**, replace the wheel speed sensor (see **MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting**).

If the fault stays on the same side, the target is faulty, replace the active sensor bearing.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF029 PRESENT OR STORED	REAR RIGHT-HAND WHEEL SPEED SENSOR SIGNAL 1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed

NOTES	Priorities when dealing with a number of faults: Deal first with fault DF027 Rear right-hand wheel speed sensor circuit if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **150** near **component 1094**.
If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 rear brake drums. Clear the computer fault memory.
Switch off the ignition. Switch the ignition back on and carry out a road test.
If the fault initially declared as **DF029 Rear right-hand wheel speed sensor circuit signal has become present DF009 Rear left-hand wheel speed sensor circuit signal**, replace the complete drum. (see **MR411 Mechanical systems, 33A Rear axle components**).
If the fault remains on the same side, replace the speed sensor (see **MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting**).
Important, do not forget to refit the drums to the correct wheels.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF055 PRESENT	<u>VEHICLE PARAMETER PROGRAMMING</u> 1.DEF: Absence of vehicle parameter programming

NOTES	None

Configure the vehicle parameters with command **VP004 "Vehicle parameters"** in accordance with the vehicle configuration.
Clear the fault memory, and initialise the computer (switch the + **after ignition feed switch off and on again**).

Check for any possible faults.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF066 PRESENT OR STORED	<u>INJECTION MULTIPLEX SIGNAL ABSENT</u>
NOTES	Special notes: Even though it is stored in the computer, this fault does not cause the warning light to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.
	Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.

Perform a multiplex network test and an injection check (see MR413 Fault finding, 13B, Diesel injection or 17B, Petrol injection) using the diagnostic tool. If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF090 PRESENT OR STORED	<u>FRONT RIGHT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF091 PRESENT OR STORED	<u>FRONT LEFT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF092 PRESENT OR STORED	<u>REAR RIGHT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF027 right rear wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the complete drum.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF093 PRESENT OR STORED	<u>REAR LEFT-HAND WHEEL TARGET.</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the complete drum.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF096 PRESENT OR STORED	<u>COMPUTER INTERNAL ELECTRONIC FAULT</u> 1.DEF: Fault in EEPROM

NOTES	None

Clear the fault memory using the **diagnostic tool** and switch off the ignition.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF098 PRESENT OR STORED	<u>NO UCH MULTIPLEX SIGNAL</u>
NOTES	Special notes: Even though it is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the UCH (Passenger compartment connection unit) using the diagnostic tool. Note: After repairing the fault in the UCH (Passenger compartment connection unit), clear the fault memory in the ABS system.
	Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.
Check the UCH (Passenger compartment connection unit) using the diagnostic tool .	
Run a multiplex network test (see 88B, Multiplex). If the fault is still present, contact the Techline.	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

**DF119
PRESENT**

GEARBOX TYPE CONFIGURATION

DEF: Configuration absent or incorrect

NOTES

Priorities when dealing with a number of faults:

Deal with fault **DF097 No automatic transmission multiplex signal** first if it is present.

Check the gearbox type configuration with the **diagnostic tool**, using command **LC008 Gearbox type**.

If the configuration is not correct, configure the gearbox type present on the vehicle using command **CF079 Gearbox type**.

Clear the computer fault memory, exit the fault finding and switch off the ignition.

Switch on the ignition again and carry out a new check using the **diagnostic tool**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

DF121 PRESENT OR STORED	<u>TORQUE REQUESTED NOT AVAILABLE</u>

NOTES	Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection** or **17B, Petrol injection**).
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF152 PRESENT OR STORED	<u>MULTIPLEX NETWORK</u> 1.DEF: Multiplex line connection fault
NOTES	Special notes: If several computers are affected by a similar multiplex network fault, contact the Techline to check the cases previously noted first.
	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure as below.
	Use the Technical Note wiring diagram for New Twingo.
If no other computer has detected the failure of the multiplex network but only the absence of ABS frames, carry out the following checks: Check the connection and condition (possible damage to the wiring) of the connector of component 1094. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check the Insulation and continuity of connections 133B, 133C and HK of component 1094. Also check the insulation between these connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.	
Run a multiplex network test (see 88B, Multiplex). If the fault is still present, contact the Techline.	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF188 PRESENT OR STORED	<u>BRAKE LIGHT SWITCH CIRCUIT</u> 1.DEF: Inconsistency

NOTES	Conditions for applying the fault finding procedure to stored faults: Clear the stored fault, carry out a road test at a speed of > 36 mph (60 km/h) and test the brakes using ABS . Use the interpretation of the fault if it recurs.
	Special notes: The fault is detected if the computer does not detect a brake lights switch status change for 4 acceleration/braking cycles and/or the contact is closed for over 6 minutes with the vehicle speed above 24 mph (40 km/h) .

Using the diagnostic tool, check on the statuses screen that **ET017 Brake pedal** recognises the depressed and released positions of the brake pedal.
If the pedal position is not detected, use the interpretation of **ET017**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF219 PRESENT OR STORED	<u>ABS MULTIPLEX SIGNAL CONSISTENCY</u>

NOTES	Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection or 17B, Petrol injection**).
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF229 PRESENT OR STORED	FRONT RIGHT-HAND WHEEL 1.DEF: Vehicle speed sensor signal consistent

NOTES	Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 152**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of **component 152** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If a fault, which was initially registered as **DF229 front right-hand wheel speed** has become **present DF230 front left-hand wheel speed**, replace the wheel speed sensor (see **MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting**).

If the fault stays on the same side, the target is faulty, replace the active sensor bearing.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF230 PRESENT OR STORED	FRONT LEFT-HAND WHEEL SPEED 1.DEF: Vehicle speed sensor signal consistent

NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of the connector of **component 153** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If a fault, which was initially registered as **DF230 front left-hand wheel speed** has become **present DF229 front right-hand wheel speed**, replace the wheel speed sensor (see **MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting**).

If the fault stays on the same side, the target is faulty, replace the active sensor bearing.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF231 PRESENT OR STORED	<u>REAR RIGHT-HAND WHEEL</u> 1.DEF: Vehicle speed sensor signal consistent

NOTES	Priorities when dealing with a number of faults: Deal with fault DF027 right rear wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of component **150** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 rear brake drums. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If the fault initially declared as **DF231 "rear right-hand wheel speed"** has become **DF232 "rear left-hand wheel speed" present**, replace the complete drum (see **MR411 Mechanical systems, 33A, Rear axle component**).

If the fault remains on the same side, replace the speed sensor (see **MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting**).

Important, do not forget to refit the drums to the correct wheels.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF232 PRESENT OR STORED	REAR LEFT-HAND WHEEL 1.DEF: Vehicle speed sensor signal consistent

NOTES	Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.

Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

If there is a lot of grease on the target, contact the Techline.

Check that the wheel speed sensor mounting is in good condition.

Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.

If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 151**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage of approximately **12 V** between the two connections of the connector of component **151** near **component 1094**.

If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 rear wheel brake drums. Clear the computer fault memory.

Switch off the ignition. Switch the ignition back on and carry out a road test.

If the fault initially declared as **DF232 "rear left-hand wheel speed"** has become **present DF231 "rear right-hand wheel speed"**, replace the complete drum. (see **MR411 Mechanical systems, 33A Rear axle components**).

If the fault remains on the same side, replace the speed sensor (see **MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting**).

Important, do not forget to refit the drums to the correct wheels.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

DF250 DF251 DF252 DF253 DF254 PRESENT OR STORED	<u>ENGINE SPEED MULTIPLEX SIGNAL</u> <u>AVERAGE EFFECTIVE TORQUE MULTIPLEX SIGNAL</u> <u>TORQUE REQUEST MULTIPLEX FEEDBACK SIGNAL</u> <u>CALCULATED TORQUE MULTIPLEX SIGNAL</u> <u>RESISTING TORQUE MULTIPLEX SIGNAL</u>

NOTES	Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection** or **17B, Petrol injection**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

DF311 PRESENT OR STORED	<u>NO BVR MULTIPLEX SIGNAL</u>

NOTES	Special notes: Even though it is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the BVR (sequential gearbox) using the diagnostic tool . Note: After repairing the fault in the BVR (sequential gearbox), clear the fault memory in the ABS system.
	Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.

Check the gearbox type configuration with the **diagnostic tool**, using command **LC008 Gearbox type**.
If the configuration is not correct, configure the gearbox type present on the vehicle using configuration command **CF079 Gearbox type**.

Check the **BVR** (sequential gearbox) using the **diagnostic tool**.

Run a multiplex network test (see **88B, Multiplex**).
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

NOTES

Only check conformity after a full check with the **diagnostic tool**.

SUB-FUNCTION: BRAKE REGULATION

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Diagnostic tool dialogue		ABS system	Apply ALP1.
2	Computer configuration	PR030: Tachometric index	Check that the index entered corresponds to the tyres fitted to the vehicle (see Clip help).	See Configurations and Programming (VP007).
3	Brake pedal not depressed detection	ET017: Brake pedal	Status " RELEASED " confirmed, brake pedal not depressed.	If there is a fault, use the interpretation for ET017 Brake pedal.
4	Depressed brake pedal detection	ET017: Brake pedal	Status " DEPRESSED " confirmed, brake pedal depressed.	If there is a fault, use the interpretation for ET017 Brake pedal.
5	Vehicle parameter reading	PR063: Vehicle parameters	Check that the version corresponds to the vehicle being tested (see the Clip Help)	See Configuration and programming (VP004 "Vehicle parameters").
6	Gearbox type reading	LC008: Gearbox type	Check that the gearbox selected corresponds to that fitted on the vehicle.	See Configuration and programming (CF079 "Gearbox type").

ABS STATUS SUMMARY TABLE

Tool status	Diagnostic tool title
ET017	Brake pedal

ABS PARAMETER SUMMARY TABLE

Tool parameter	Diagnostic tool title
PR001	Front right-hand wheel speed
PR002	Front left-hand wheel speed
PR003	Rear right-hand wheel speed
PR004	Rear left-hand wheel speed
PR005	Computer feed voltage
PR030	Tachometric index
PR038	Vehicle speed
PR063	Vehicle parameters

ET017	<u>BRAKE PEDAL</u>

NOTES	Special notes: Only carry out the checks if the PRESSED and RELEASED statuses are inconsistent with the pedal position.
	Use the Technical Note wiring diagram for New Twingo .

STATUS "RELEASED" Brake pedal depressed	If brake lights operate: – Check the continuity of connection 65A between components 160 and 1094. If the connector is faulty (see NT6015, Repairing electrical wiring, wiring: Precaution for repairs), repair the connector, otherwise replace the wiring. If the brake lights are not working: – Check the condition, mounting and adjustment of the brake light switch and the conformity of the bulbs. – Remove the brake light switch and check that it is operating correctly:									
	<table><tr><th></th><th>Connection continuity</th><th>Connection insulation</th></tr><tr><td>Switch pressed (Brake pedal released)</td><td>AP10 and 5A</td><td>AP10 and 65A</td></tr><tr><td>Switch released (Brake pedal depressed)</td><td>AP10 and 65A</td><td>AP10 and 5A</td></tr></table> – Replace the switch if necessary. Intermediate connector R107 and component 160 and 1081 disconnected: – Check the continuity and insulation of connection AP10 between component 1016 and intermediate connector R107. – Check the continuity and insulation of connection AP10 between component 160 and intermediate connector R107. If the connector is faulty (see NT6015, Repairing electrical wiring, wiring: Precaution for repairs), repair the connector or the wiring, otherwise replace the wiring.		Connection continuity	Connection insulation	Switch pressed (Brake pedal released)	AP10 and 5A	AP10 and 65A	Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A
	Connection continuity	Connection insulation								
Switch pressed (Brake pedal released)	AP10 and 5A	AP10 and 65A								
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A								

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ET017 CONTINUED 1

Connectors of **components 645, 172, 173, 639 and 1094**, intermediate connectors **R107 and R15** and connector of **component 119** (if present on the vehicle) disconnected from **connection 65A**:

- Check **the insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.
- Check **the insulation** of **connection 65A** between **component 172** and intermediate connector **R107**.
- Check **the insulation** of **connection 65A** between **component 173** and intermediate connector **R107**.
- Check **the insulation** of **connection 65A** between intermediate connectors **R107 and R15**.
- Check **the insulation** of **connection 65A** between **component 639** and intermediate connector **R15**.
- Check **the insulation** of **connection 65A** between **component 645** and intermediate connector **R107**.

If the connector is faulty (**see NT6015, Repairing electrical wiring, wiring: Precaution for repairs**), repair the connector, otherwise replace the wiring.

- Check for **+ 12 V after ignition feed** on connection **AP10** of **component 1016** to earth **MAH**.

If the checks reveal no faults, carry out a check of each component associated with connection **65A** and **AP10** (short circuits).
Check the condition and positioning of the **F5 5A** fuse (**see MR411 Mechanical systems, 81C, Fuses: 16A**).

STATUS DEPRESSED: Brake pedal released

- Check the condition, mounting and adjustment of the brake light switch and the conformity of the bulbs.
- Remove the brake light switch and check that it is operating correctly:

	Connection continuity	Connection insulation
Switch pressed (Brake pedal released)	AP10 and 5A	AP10 and 65A
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A

- Replace the switch if necessary.
- Connectors of **components 645, 172, 173, 639 and 1094**, intermediate connectors **R107 and R15** and connector of **component 119** (if present on the vehicle) disconnected from connection **65A**
- Check **the insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ET017 CONTINUED 2	

– Check the insulation of connection 65A between component 172 and intermediate connector R107. – Check the insulation of connection 65A between component 173 and intermediate connector R107. – Check the insulation of connection 65A between intermediate connectors R107 and R15. – Check the insulation of connection 65A between component 639 and intermediate connector R15. – Check the insulation of connection 65A between component 645 and intermediate connector R107. If the connector is faulty (see NT6015, Repairing electrical wiring, wiring: Precaution for repairs), repair the connector, otherwise replace the wiring. If the checks reveal no faults, carry out a check of each component associated with connection 65A (internal component faults).	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

PARAMETERS

PR001: Front right-hand wheel speed.

PR002: Front left-hand wheel speed.

PR003: Rear right-hand wheel speed.

PR004: Rear left-hand wheel speed.

These parameters indicate the speed in **mph (km/h)** of each wheel on the vehicle.

PR005: Computer supply voltage.

This parameter indicates the computer supply voltage in **volts**.

PR030: Tachometric index.

This parameter specifies the tachometric index entered in the computer for the tyres fitted to the vehicle.

PR038: Vehicle speed.

This parameter indicates the vehicle speed in **mph (km/h)**.

PR063: Vehicle parameters.

This parameter shows whether the configuration (**VP004 "Vehicle parameters"**) matches the vehicle undergoing fault finding.

STATUS

ET017: Brake pedal

This status gives the position (depressed or released) of the brake pedal

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

CLEARING

RZ001: Fault memory.
This command is used for clearing the computer's stored faults.

SPECIAL COMMANDS

SC001: Check target teeth.
This command tests the condition of the teeth on each wheel.
Select command **SC001 "Check target teeth"** and follow the instructions.
The test result should indicate **48 sprockets**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ANTI-LOCK BRAKING SYSTEM

Fault finding - Command summary table

38C

Tool command	Diagnostic tool title
AC003	Front left-hand wheel solenoid valves
AC004	Front right-hand wheel solenoid valves
AC005	Rear left-hand wheel solenoid valves
AC006	Rear right-hand wheel solenoid valves
AC016	Pump motor test
AC153	Bleed front left-hand wheel
AC154	Bleed front right-hand wheel
AC155	Bleed rear left-hand wheel
AC156	Bleed rear right-hand wheel
AC195	Vehicle speed signal
AC196	Hazard warning light activation request

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

AC003
AC004
AC005
AC006

FRONT LEFT-HAND WHEEL SOLENOID VALVES
FRONT RIGHT-HAND WHEEL SOLENOID VALVES
REAR LEFT-HAND WHEEL SOLENOID VALVES
REAR RIGHT-HAND WHEEL SOLENOID VALVES

NOTES

Conditions of use of the command.
Ignition on, engine stopped and vehicle speed zero.

Before using the commands, check that the battery is fully charged.

The previous 4 commands allow the hydraulic check of each wheel.
Raise the vehicle in order to be able to rotate the wheels, and check that they rotate freely.
Keep the brake pedal depressed to prevent the wheel being tested from being turned by hand (do not brake so firmly that full braking power is reached).
Select and confirm the command of the wheel being examined (e.g. Front left-hand wheel solenoid valves, etc.)
Turn the wheel concerned by hand; **5 locking/unlocking cycles** should be noted on the wheel.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

AC016	<u>PUMP MOTOR TEST</u>
NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the command, check that the battery is fully charged.
This command is used to test the pump motor control circuit. Select command AC016 Pump Motor Test . The motor must run for 5 seconds .	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

AC153
AC154
AC155
AC156

BLEED FRONT LEFT-HAND WHEEL
BLEED FRONT RIGHT-HAND WHEEL
BLEED REAR LEFT-HAND WHEEL
BLEED REAR RIGHT-HAND WHEEL

NOTES

Conditions of use of the command.
Ignition on, engine stopped and vehicle speed zero.

Before using the commands, check that the battery is fully charged.

These 4 commands should only be used if you observe lengthening of the brake pedal travel during a road test with **ABS** regulation (the system should have been bled in advance using the conventional procedure).
See ALP8.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

AC195	<u>VEHICLE SPEED SIGNAL</u>

NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the command, check that the battery is fully charged.

This command is used to generate a speed other than **0 mph** at the computer's vehicle speed wire output (**connection 47F**) for users of that signal (radio, sunroof).
This command has no visible effect on the dashboard speedometer needle.

- **Radio:** Turn on the radio and make sure that the Adjust volume as a function of speed function is active. Run command **AC195**. During the command, you should notice the volume of the sound increase and then decrease. (**See 86A, radio**).
- **Sunroof:** This command has no visible effect on the sunroof. This command changes the activation threshold of the anti-pinch system (the energy required to close the sunroof varies with vehicle speed due to aerodynamic constraints). (**See 87D ELECTRIC WINDOWS - SUNROOF**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

AC196	<u>HAZARD WARNING LIGHT ACTIVATION REQUEST</u>
NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the command, check that the battery is fully charged.
This command sends a hazard warning light activation request to the UCH (Passenger compartment connection unit) to test their operation in the event of emergency braking (depending on UCH, Passenger Compartment Connection Unit configuration).	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

NOTES

Only consult this customer complaint after a complete check with the diagnostic tool.

FAULTS DETECTED ON BRAKING WITH ABS/BRAKING REGULATION

LOCKING OF ONE OR MORE WHEELS	ALP 2
PULLING	ALP 3
DRIFT	ALP 4
UNEXPECTED ABS OPERATION AT LOW SPEEDS AND SLIGHT PEDAL PRESSURE	ALP 5
UNEXPECTED ABS OPERATION ON A POOR ROAD SURFACE	ALP 6
UNEXPECTED ABS OPERATION WHEN SPECIAL EQUIPMENT USED (CAR PHONE, CB, ETC.)	ALP 7
EXTENSION OF BRAKE PEDAL TRAVEL FOLLOWING REGULATION PHASE (WITH LEAKING PEDAL WHEN STARTING REGULATION PHASE)	ALP 8
SPONGY PEDAL	ALP 9
BRAKE PEDAL VIBRATION	ALP 10
NOISES FROM THE PUMP, PIPES OR HYDRAULIC UNIT	ALP 11

OTHER CASES

NO DIALOGUE WITH THE ABS COMPUTER	ALP 1

ALP 1	No dialogue with the ABS computer

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .

Check that the **diagnostic tool** is not causing the fault by trying to establish dialogue with a computer on another vehicle. If the tool is not at fault, and dialogue cannot be established with any other computer on the same vehicle, the cause could be a faulty computer interfering on the multiplex network.
Check the battery voltage and carry out the necessary operations to obtain the correct voltage (**9.5 V < Battery voltage < 17.5 V**, see **MR411 Mechanical systems, 16A, Starting-charging**).

Run fault finding on the multiplex network, using the **diagnostic tool** (see **MR413 Fault finding, 88B, Multiplex**).

Check the condition and position of the **15A** and **20A** fuses in the **engine fuse and relay box**.
Check the condition and position of the **F10 5 A** fuse in the **Passenger compartment fuse box**.
Consult section **81C, Fuses**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check that the supply to the computer is correct:

- Connector of **component 1094** disconnected, check the **insulation and continuity** of connection **MAH** of **component 1094** (tightness, oxidation etc.).
- Connectors of **component 1094** and **R107** disconnected, check the **insulation and continuity** of connection **AP5** between component **1094** and intermediate connector **R107**.
- Check the **insulation and continuity** of connection **AP5** between intermediate connector **R107** and **component 1016**.
- Connectors of **component 1094** and **R67** disconnected, check the **insulation and continuity** of connections **BP8** and **BP14** between **component 1094** and intermediate connector **R67**.
- Check the **insulation and continuity** of connections **BP8** and **BP14** between intermediate connector **R67** and **component 597**.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP 1 CONTINUED	

Ensure that the supply to the diagnostic socket is correct: Check the condition and position of the F12 5 A fuse in the Passenger compartment fuse box. Consult section 81C, Fuses. Connector of component 645 of connection BP19 disconnected: – Check for + after ignition feed on connection BP19 of component 225. If the + after ignition feed is not present on connection BP 19, check component 1016. – Check connections NAM and MAM of component 225. If the connection is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the wiring, otherwise replace it.
If dialogue has still not been established after these checks, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

ALP 2	Locking of one or more wheels

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.

NOTES	Locking of wheels on a vehicle fitted with ABS or squealing of the tyres, which feels like locking to the customer, may be linked to normal operation of the system and should not always be considered a fault: – Locking is allowed below 4 mph (6 km/h) (system regulation will not be activated). – Braking with ABS system regulation on very poor roads (significant grating).

However, if the wheel(s) is/are actually locking, lift the vehicle in order to be able to rotate the wheels and check:

- Possible inversion when connecting the speed sensors.

Using parameters **PR001, PR002, PR003 and PR004**, rotate the wheels slowly and check the consistency of the results obtained.

If the value measured is zero, rotate the other wheels to confirm an electrical inversion of the sensors and repair the wiring harness.

- Possible inversion of pipes on the hydraulic unit.

Use commands Front left wheel solenoid valves, Front right wheel solenoid valves, Rear left wheel solenoid valves and Rear right wheel solenoid valves while depressing the brake pedal and check for 10 unlocking/locking cycles on the wheel concerned (see **Dealing with command modes**). If the 10 cycles are not carried out on the wheel tested (wheel remains locked), check whether they are carried out on another wheel (confirmation of a reversal: repair).

If the 10 cycles are not detected on a wheel and the pipes have not been reversed, change the hydraulic unit.

Check that the sensor holder does not rotate (depending on fitting).

Check the quality of the mounting of the wheel speed sensors (correct clipping for the front wheels).

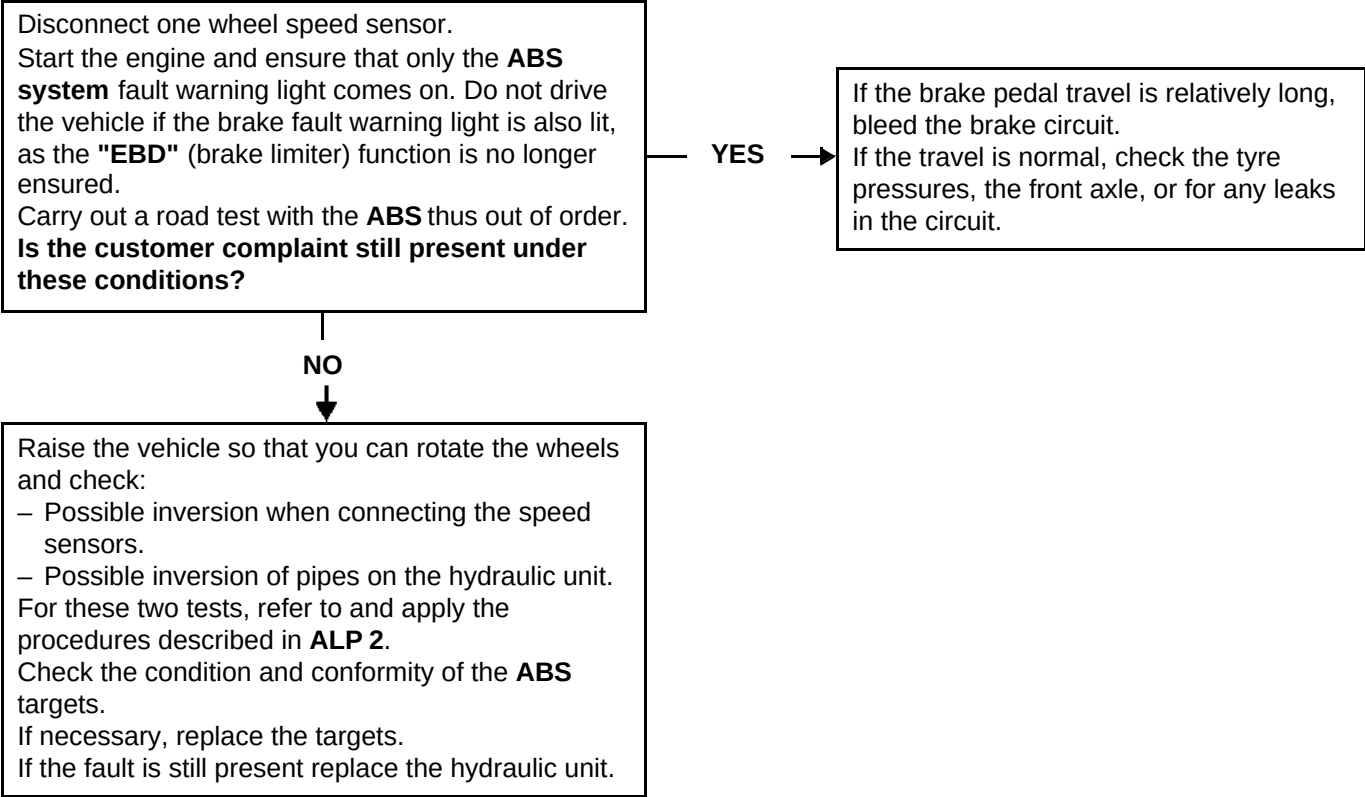
Check the conformity of the targets: condition, **number of teeth = 48 (using command SC001 Check target teeth)**.

If the fault is still present after these checks, replace the hydraulic unit.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.

ALP 3	Pull

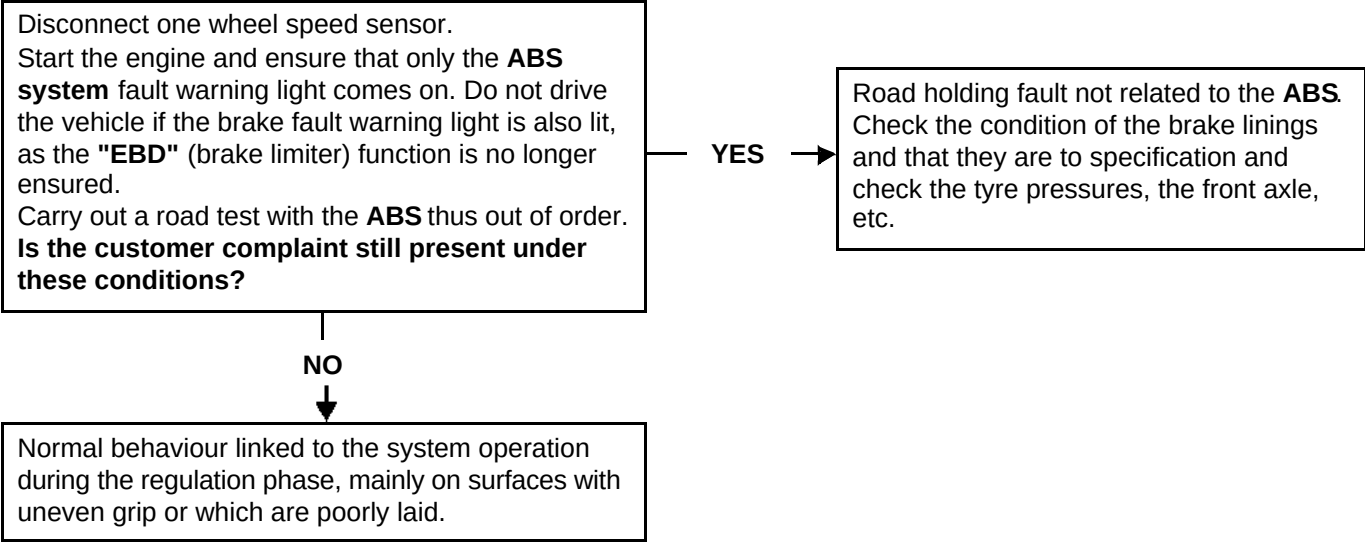
NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.



AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP 4	Drift

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool.



AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP 5

Unexpected ABS operation at low speed and with slight pedal pressure

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
IMPORTANT: **ABS** regulation is sensitive on slippery surfaces (ice, wet cobbled streets, etc.).

Check the conformity of the mechanical components.

Brake pedal vibrations may be felt which are connected to the system behaviour in particular situations:

- Crossing speed bumps.
- Tight cornering with lifting of the inside rear wheel.

These vibrations may be linked simply to "EBD" (brake limiter) activation, when the pressure on the rear axle is limited.

If the fault relates to something else, check the speed sensor connectors (micro-breaks) as well as the targets.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 6

Unexpected ABS system intervention on a poor road surface

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components.

On poor road surfaces it is normal to feel bucking and vibration of the pedal as well as more significant tyre squealing than on good surfaces.
This gives the impression of a variation in efficiency, but this should be considered normal.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 7

**Unexpected ABS operation when using special equipment
(car phone, CB, etc.)**

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.

Check that the equipment which is causing the fault is approved.
Check that this equipment has been correctly installed without modification to the original wiring, in particular, that of the **ABS** (connections to earth and **+ after ignition/+ before ignition** of the **ABS** are not permitted).

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 8

**Lengthening of the brake pedal travel following a regulation phase
(with an irregular pedal when entering the regulation phase)**

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components.

Air transit from the hydraulic unit regulation channels to the brake circuits.

Using the following **diagnostic tool** commands:

AC155: Rear left wheel bleed.

AC154: Front right wheel bleed.

AC156: Rear right wheel bleed.

AC153: Front left wheel bleed.

Carry out a bleed of the secondary circuits starting with the left-hand rear brake then the right-hand front brake, the right-hand rear brake then the left-hand front brake.

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present, carry out the above operation again 1 or 2 times.

If the customer complaint is particularly serious, and bleeding the circuit does not improve matters, replace the hydraulic unit.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 9

Spongy pedal

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components.

Air in the brake circuits.

Carry out a conventional primary circuit bleed (see **MR411, Mechanical systems, 30A, Braking circuit, Bleed**).
Repeat the operation if necessary.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 10

Brake pedal vibration

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components and in particular check that the brake discs are not warped.

Normal reaction of the brake pedal during **ABS** regulation or of limitation of pressure on the rear axle ("EBD" brake limiter function).

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 11

Noises from the pump, the pipes or the hydraulic unit

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components.

- Vibration of the unit: Check that the unit support **insulating** rubber mounting bushes are in place and in good condition.
 - Vibration of pipes: check that all pipes are correctly supported in their mounting clips and that there is no contact between pipes or between pipes and bodywork.
- The Front left-hand wheel solenoid valves, Front right-hand wheel solenoid valves, Rear left-hand wheel solenoid valves and Rear right-hand wheel solenoid valves actuating commands may be used while depressing the brake pedal to determine where the noise is coming from.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

TWINGO

3 Chassis

38C

ANTI-LOCK BRAKING SYSTEM

Bosch 8.1 ESP

Vdiag No.: 05

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V3

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. APPLICABILITY OF THE DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle: **New Twingo**

Function concerned: **Bosch ESP**

Computer name: **Bosch 8.1 ESP**

Vdiag No.: **05**

2. PREREQUISITES FOR FAULT FINDING:

Documentation type

Fault finding procedures (this document):

- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- CLIP

Special tooling required

	Special tooling required
	Multimeter
Elé. 1681	Universal bornier

3. REMINDERS

Procedure

To run fault finding on the vehicle computers, switch on the ignition.

Depending on the type of vehicle equipment, proceed as follows:

For vehicles with key/radio frequency remote control, use the key to switch on the ignition.

For vehicles with a Renault card,

- with the vehicle card in the card reader,
- press and hold the start button (longer than **5 seconds**) with start-up conditions not fulfilled, connect the **diagnostic tool** and perform the required operations.

To cut off + after ignition feed, proceed as follows:

For vehicles with key/radio frequency remote control, use the key to switch off the ignition.

For vehicles with a Renault card,

- press the Start button twice briefly (less than **3 seconds**),
- ensure that the + after ignition feed has been cut off by checking that the computer indicator lights on the instrument panel have gone out.

Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used after the + after ignition feed (without activating the system components).

For a **present fault**, apply the procedure described in the Interpretation of faults section.

For a **stored fault**, note the faults displayed and apply the Notes section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

the electrical connections that correspond to the fault,

the connectors for this connection,

the resistance of the faulty component,

the condition of the wires.

Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors

Conformity check

The aim of the conformity check is to check data which does not produce a fault on **the diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:

carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.

check that the system is operating correctly and that there is no risk of a fault recurring after repair.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

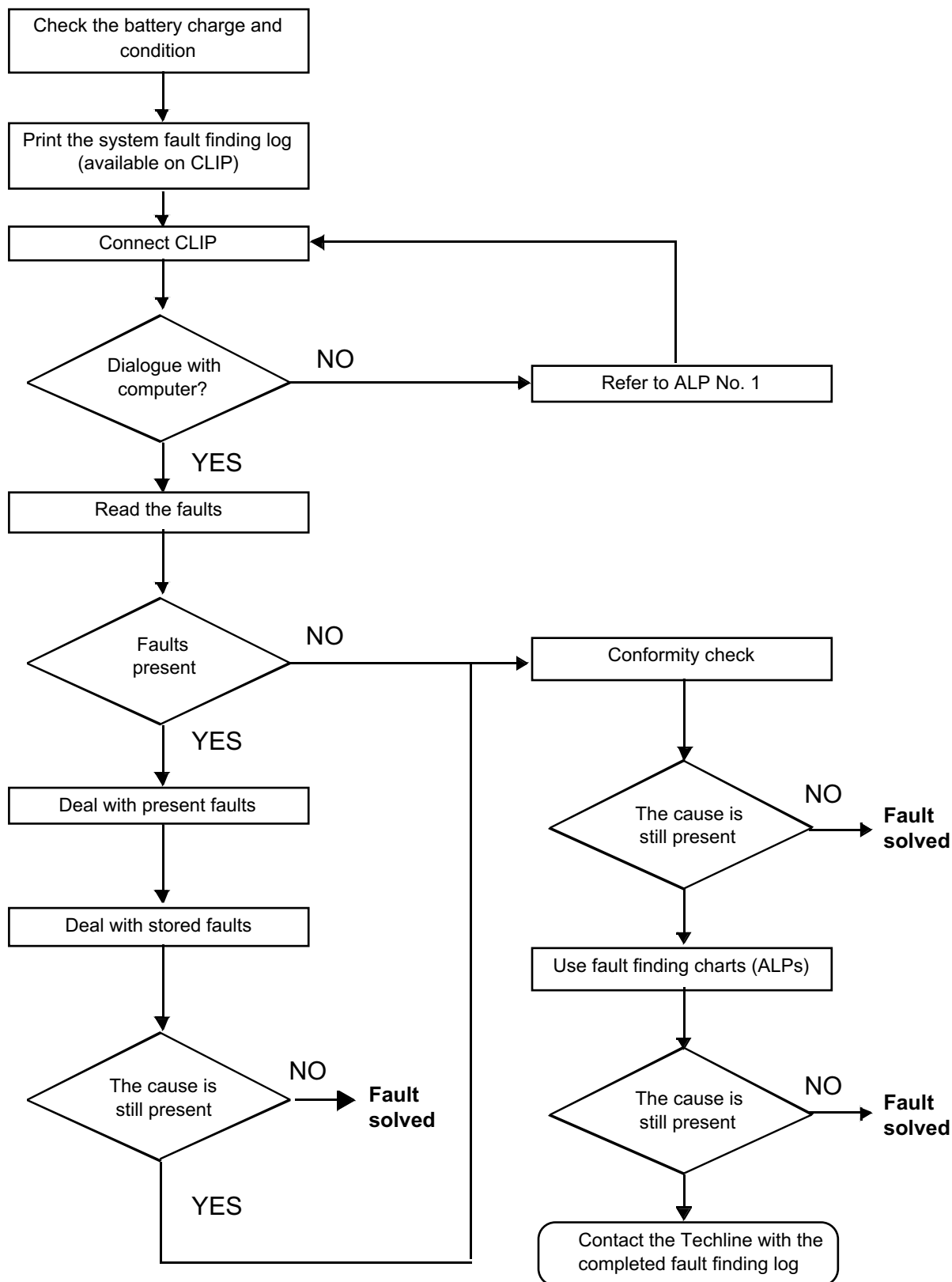
If a status is not behaving normally or a parameter is outside permitted tolerance values, you should consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with **the diagnostic tool** is OK but the customer complaint is still present, the fault should be dealt with by **customer complaints**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (CONTINUED)

4.1 Wiring check

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring may temporarily clear the cause of a fault.

Visual inspection

Look for damage under the bonnet and in the passenger compartment.

Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

Physical inspection

When manipulating the wiring, either use the **diagnostic tool** to detect a change in status, from "stored" to "present", or the multimeter to view the status changes.

Make sure that the connectors are firmly secured.

Apply light pressure to the connectors.

Twist the wiring harness.

Checking earth insulation

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V**.

Checking insulation against + 12 V or + 5 V

This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**.

Continuity check

A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1 ± 1** for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1 ± 1**.

Checking the supply

This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

4.2 Checking the connectors

Note:

Carry out each requested check visually.
Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be 2 types of connections:

- Connector/Connector.
- Connector/Device.

Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is pulled slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
- For unit *joints* (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
- For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
- For gel seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
- For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring**.

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

All faults involving a complex system call for thorough diagnostics with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.

You will always be asked for this log:

- when requesting technical assistance from the Techline,
- when requesting approval before replacing parts for which approval is compulsory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

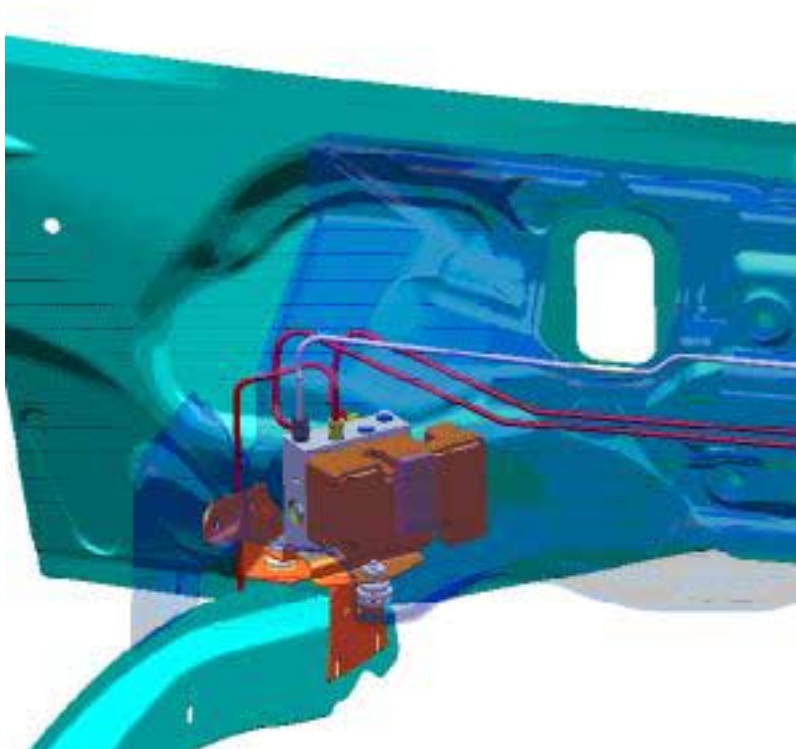
Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).

The computer/hydraulic unit assembly:

- Located to the left of the bulkhead in the engine compartment.



Front wheel sensors:

- Screwed into the stub-axle, each front sensor has an intermediate connector located behind the plastic wheel arch liner.

Rear wheel sensor intermediate connectors:

- Located in a sealed unit under the vehicle.

Rear wheel sensors:

- Screwed into the rear brake drum flange (For vehicles equipped with drum brakes).
- Clipped onto the sensor mounting (For vehicles equipped with disc brakes).

Brake light switch:

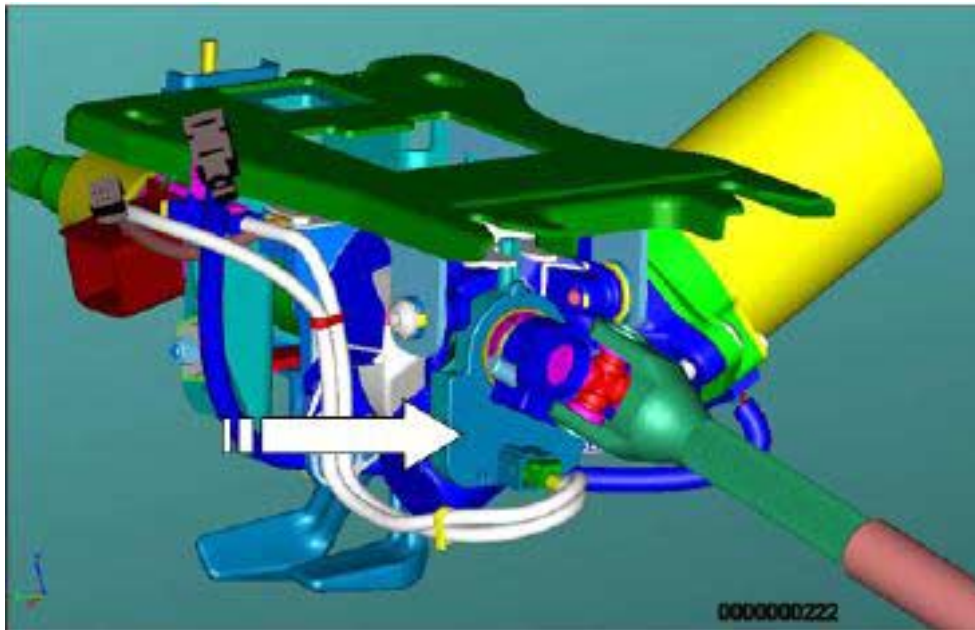
- Located on the pedal assembly.

Lateral acceleration and yaw speed sensor:

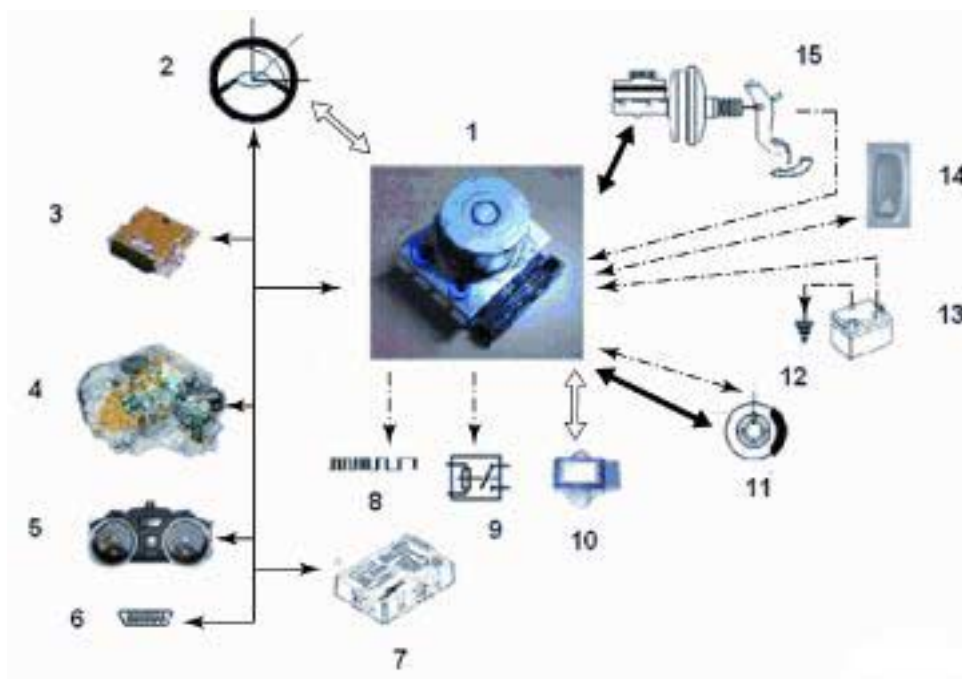
- Located under the passenger seat

Steering wheel angle sensor:

- Located on the steering column, on the intermediate shaft side.



Number	Description
1	Computer/hydraulic unit assembly
2	Steering wheel angle
3	Torque setpoint on the engine management computer
4	Sequential gearbox operating phase (if fitted)
5	Instrument panel
6	Diagnostic socket
7	UCH
8	Vehicle speed wire
9	Brake light control relay
10	Combined sensor: lateral acceleration and yaw speed
11	Brake disc with instrumented bearing target
12	Wheel speed sensor
13	Battery
14	Traction control deactivation button (Only on RS version)
15	Brake switch
↔ - - - ↔	Electric circuit
↔	Hydraulic circuit
↔	Private multiplex line
↔	Vehicle multiplex line



EBD (electronic braking distribution):

The **electronic braking distribution unit** optimises the brakeforce distribution between the front and rear axles. This function ensures vehicle stability under braking.

ABS (anti-lock braking system):

The **ABS** prevents the wheels from locking when braking. This function allows the vehicle to be steered under braking and ensures vehicle stability under braking.

MSR (engine torque control):

This is a function that enhances the **ABS** function. Its purpose is to prevent the drive wheels from spinning excessively when lifting off the accelerator or changing down a gear on a low grip surface, by requesting the engine management to regulate the driving torque of the engine (resisting torque compensation) to "relaunch" the wheels.

ASR (wheel traction control):

This function keeps the drive wheels from slipping during starting or acceleration. The system brakes the wheel in a slippage situation to maintain full traction.

ESP: Electronic stability program:

The ESP guarantees within physical limits the dynamic stability of the vehicle by checking and correcting oversteer. In any case, the ESP system does not intervene in place of the driver. Using data from the steering wheel, it merely makes vehicle handling truer to the driver's intention.

CDC (Dynamic Driving Control):

The **Dynamic Driving Control** guarantees vehicle steerability within physical limits by checking and correcting understeer.

The **Dynamic Driving Control** is an advancement of the ESP system and has same objective: to maintain vehicle control in all operating situations.

The **ESP** computer supplies the other computers with information on the vehicle speed via a wire connection for the radio, the power-assisted steering and the electric sunroof, and via the multiplex network for the other computers. The **ESP** computer also supplies the multiplex network with the odometry for the instrument panel and navigation system.

If heavy braking produces very rapid deceleration, the **ESP** computer issues a request to the **UCH** (passenger compartment connection unit) via the multiplex network asking it to switch on the hazard warning lights (depending on the law in the relevant country).

Wheel speed sensors:

Give the speed of each of the vehicle's wheels. The analysis of the sensors allows the calculation of the vehicle speed.

Brake lights switch:

Signals the position of the brake pedal (pressed or released).

Combined sensor (Dual sensor):

Indicates the lateral acceleration and the yaw speed of the vehicle. The analysis of these data combined with the data from the other sensors allows the determination of the vehicle's path.

Steering wheel angle sensor:

Angular indication of the desired path of the vehicle.

Fault finding warning lights programming

Instrument panel warning light					Meaning
Brake faults	ABS system	ESP	SERVICE	STOP	"Brake limiter" , ABS , and ESP functions not working
	ABS system	ESP	SERVICE		ESP and ABS functions not working, "brake limiter" operational
		ESP	SERVICE		ESP function not working, ABS and "brake limiter" operational
		ESP			"Wheel traction control" function deactivated by fault finding or ESP momentarily disconnected after the battery is disconnected
Brake faults flashing at 2 Hz (slowly)	ABS flashing at 2 Hz (slowly)	ESP flashing at 2 Hz (slowly)			ESP computer in fault finding mode
		ESP flashing at 8 Hz (quickly)			ESP or "wheel traction control" or "anti-lock brake system on engine torque control" active
	ABS flashing at 8 Hz (quickly)				Tachometric index not programmed
Brake faults	ABS system	ESP flashing at 8 Hz (quickly)	SERVICE	STOP	Vehicle variant not programmed
Brake faults	ABS flashing at 8 Hz (quickly)	ESP flashing at 8 Hz (quickly)		STOP	Vehicle option and tachometric index not programmed

Note:

The **STOP** warning light is always accompanied by a single audible warning (1 beep).

REPLACING THE COMPUTER:

When replacing the computer (see **MR 411, Mechanical, 38C, Anti-lock braking system, Braking computer:**

Removal - Refitting), use the following procedure:

- Switch off the ignition.
- Replace the computer.
- Enter the VIN number using command **VP001 Enter VIN** (see **Configurations and Programming**).
- Configure the tachometric index using command **VP007 Tachometric index** (see **Configurations and programming**).
- Configure the vehicle parameters using command **VP004 Vehicle parameters** (see **Configurations and programming**).
- Inhibit or authorise illumination of the automatic brake lights (depending on the country's legislation) using command **VP021 Inhibit automatic brake lights** or **VP022 Authorise automatic brake lights**.
- Clear the ESP sensor offsets using command **RZ011 Sensors offsets** (see **Configurations and programming**).
- Enter the After-Sales date using command **VP006 Enter last APV* operation date**.
- Perform a road test followed by a fault reading to confirm that the system is operating correctly.

REPLACING THE STEERING WHEEL ANGLE SENSOR:

- Calibrate the steering wheel angle sensor using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).
- Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

REPLACING THE COMBINED SENSOR:

- Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

* APV: After-Sales

Parameters:

VP001: Enter VIN

This command allows the **vehicle identification number** to be entered into the computer.

Use this command each time the computer is replaced. The VIN (**VF...**) is engraved on the manufacturer's plate on the front right-hand door pillar and stamped on the body under the windscreen on the left-hand side.

VP003: Steering wheel angle sensor

This command is used to calibrate the steering wheel angle.

With the steering wheel horizontal and the front wheels set straight ahead, calibrate the steering wheel angle sensor using command **VP003** on the **diagnostic tool**.

VP004: Vehicle parameters

This command configures the engine type configuration, the braking definition and the body type. Select the command **VP004** on the **diagnostic tool**.

VP006: Enter last After-Sales operation date

Whenever the **ABS** system is worked on in the shop, the date must be entered.

Select command **VP006** on the **diagnostic tool**.

Enter the service date using the **diagnostic tool** keypad.

VP007: Tachometric index

This command is used to program the computer memory with the index required to calculate the vehicle speed according to the tyre size.

The **BOSCH 8.1 ESP** computer supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.). This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.

The **ESP** computer calculates the vehicle speed from the wheel speed and the tyre circumference.

Note:

The vehicle speed is supplied by a wire (**connection 47F**) to the radio, to the electric power-assisted steering, to the electric sunroof and by the multiplex network for the other computers.

The tyre circumference must be programmed into the memory of a new computer. This consists of entering an index "X" using the command **VP007 "Tachometric index"** on the **diagnostic tool**.

Once the number has been entered using the **VP007** command, delete the fault in the computer memory and then switch off the ignition. Use parameter **PR030 "Tachometric index"** to check that the index entered has been recognised by the system.

VP021: Inhibit automatic brake lights

This command deactivates the automatic brake lights.

Select command **VP021** on the **diagnostic tool**.

VP022: Automatic brake lights authorisation

This command authorises the automatic brake lights.

Select command **VP022** on the **diagnostic tool**.

* APV: After-Sales

Tool fault	Associated DTC	Diagnostic tool title
DF001	50 Short circuit	Computer supply
DF006	501F	Front left-hand wheel speed sensor circuit
DF007	503F	Rear left-hand wheel speed sensor circuit
DF011	50 CB	Solenoid valve supply
DF017	50C3	Computer
DF020	50C3	Tachometric index programming
DF026	500F	Front right-hand wheel speed sensor circuit
DF027	502F	Rear right-hand wheel speed sensor circuit
DF055	50C3	Vehicle parameter programming
DF063	5046	Wheel speed inconsistency
DF066	5180	No injection multiplex signal
DF075	5158	Steering wheel angle sensor signal
DF086	50C3	Computer configuration
DF087	5158	Steering wheel angle sensor programming
DF090	5041	Front right-hand wheel target
DF091	5042	Front left-hand wheel target
DF092	5043	Rear right-hand wheel target
DF093	5044	Rear left-hand wheel target
DF098	5183	No UCH multiplex signal
DF099	50F4	Private multiplex network

Tool fault	Associated DTC	Diagnostic tool title
DF100	5158	Steering wheel angle multiplex signal absent
DF108	5158	Steering wheel angle sensor
DF126	50F4	Combined sensor signal plausibility
DF152	50E6	Multiplex network
DF153	50C3	Multiplex network
DF186	5182	No instrument panel multiplex signal
DF187	50CE	Brake light activation relay circuit
DF188	50C6	Brake light switch circuit
DF189	50F4	Combined sensor circuit
DF190	50F4	Combined sensor
DF191	50C9	ESP on/off button circuit (only on RS version)
DF193	5180	Invalid inj.* multiplex signals
DF202	5183	Invalid UCH multiplex signals
DF216	5158	Steering wheel angle programming offset
DF300	50CA	Pump motor control circuit
DF311	5188	No sequential gearbox multiplex signal (depending on vehicle)
DF313	5188	Invalid sequential gearbox multiplex signals (depending on vehicle)
DF321	5180	Clutch switch signal consistency

* inj: Injection

DF001 PRESENT OR STORED	COMPUTER SUPPLY VOLTAGE 1.DEF: voltage outside tolerances 2.DEF: below minimum threshold 3.DEF: above maximum threshold

NOTES	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored .
	Use the Wiring Diagram Technical Note for New Twingo .

1.DEF 2.DEF	NOTES	Special notes: This fault is declared present when the supply voltage of the computer is less than the minimum operating voltage (10 V < minimum battery voltage < 16 V).

Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging).
Check the condition and position of fuses F1 and F2 (40A and 30A) in the engine fuse box and fuse F10 (5A) in the passenger compartment fuse box (see 81C, Fuse box).
Check the connection and condition (for possible wiring damage) of the connector of components 1094, 1834 and the intermediate connector R107 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
With the connector of component 1094 disconnected, check the insulation and continuity of connections MAH of component 1094 (tightness, oxidation etc.). With the connectors of component 1094, 1175, 583 and intermediate connector R107 disconnected, check the insulation and continuity of connection AP5 between component 1094 and intermediate connector R107 . Check the insulation and continuity of connection AP5 between intermediate connector R107 and component 1016 . With the connectors of components 1094 and 1834 disconnected, check the continuity and insulation of connection BP14 between components 1094 and 1834 . With the connectors of components 1094 and 1834 disconnected, check the continuity and insulation of connection BP8 between components 1094 and 1834 . If the connection(s) are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF001 CONTINUED	

3.DEF	NOTES	Special notes: Special notes: This fault appears if the computer supply voltage is above the maximum operating voltage (16 V < maximum battery voltage < 19.6 V). This fault may appear when starting using a charger or a 24 V battery.

Check the charging circuit (see **16A, Starting - Charging**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF006 PRESENT OR STORED	<u>FRONT LEFT-HAND WHEEL SPEED SENSOR CIRCUIT</u> CO.0: open circuit or short circuit to earth CO.1: open circuit or short circuit to +12 V 1. DEF: internal electronic fault 2. DEF: magnetic or mechanical fault on the target or interference

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

CO.0 CO.1 1.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094 and 153**. If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Swap the 2 front wheel speed sensors (see **MR 411 Mechanical, 38C, Wheel speed sensor, Removal - Refitting**).
Clear the computer fault memory.
Switch off the ignition.
Switch on the ignition again.
Did the fault initially declared as **DF006** become fault **DF026 "Front right-hand wheel speed sensor circuit" present**?

YES	Replace component 153 (see MR 411 Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting).

NO	Check the insulation and continuity of connections 4C and 4E between components 153 and 1094 . Also check the insulation between these 2 connections. If the connection(s) are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

**DF006
CONTINUED 1**

2.DEF

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present after a road test.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094** and **153**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Swap the 2 front wheel speed sensors (see **MR 411 Mechanical, 38C, Anti-lock braking system, Wheel speed sensor: Removal - Refitting**).
Clear the computer fault memory.
Switch off the ignition.
Switch on the ignition again.
Carry out a road test.
Did the fault initially declared as **DF006** become fault **DF026 "Front right-hand wheel speed sensor circuit" present**?

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF006 CONTINUED 2	
YES	Replace component 153 (see MR 411 Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting).
NO	Check the insulation and continuity of connections 4C and 4E between components 153 and 1094. Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Visually inspect the condition of the target (metallic contamination, etc.) and clean using compressed air if necessary. Check the sensor / target air gap through one wheel revolution (0.4 < front wheel air gap < 1.7 mm). If the air gap is incorrect: – Replace the instrumented bearing/wheel sensor mounting assembly (see MR 411, Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting). If the air gap is correct: – After cleaning the target, clear the computer fault memory. – Carry out a road test followed by another check with the diagnostic tool. – If the fault is still present, replace the instrumented bearing/wheel sensor mounting assembly (see MR 411 Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting).
AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF007 PRESENT OR STORED	REAR LEFT-HAND WHEEL SPEED SENSOR CIRCUIT CO.0: open circuit or short circuit to earth CO.1: open circuit or short circuit to +12 V 1.DEF: internal electronic fault 2 DEF: magnetic or mechanical fault on the target or interference

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

CO.0 CO.1 1.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094 and 151**. If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Using command **AC013 Wheel speed sensor supply test** (see **Interpretation of commands**), check for a voltage of approximately **12 V** between **connections 4G and 4H** of **component 151**.
Is the voltage measured correct?

YES	Replace component 151 (see MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting).

NO	With the connectors of components 151 and 1094 disconnected, check the continuity and insulation of connections 4G and 4H between components 151 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF007 CONTINUED 1	

2.DEF	NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094** and **151**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check **the insulation and continuity** of connections **4G** and **4H** between components **151** and **1094**.
 Also check **the insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
 Inspect the condition of the target (metallic contamination etc.).
 Clean the target with compressed air if necessary.

For versions equipped with disc brakes:

Check the sensor / target air gap through one wheel revolution (**0.1 < rear wheel air gap < 0.9 mm**).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF007 CONTINUED 2

If the air gap is correct:

- Swap both rear wheel brake discs as well as the brake pads.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF007** has become **DF027 Rear right-hand wheel speed sensor circuit**, replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).
- If the fault remains on the same side, replace component **151** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

For versions equipped with drum brakes:

- Swap both rear wheel brake drums.
- Clear the computer fault memory.
- Carry out a road test followed by another check with the **diagnostic tool**.
- If the fault initially declared as **DF007** has become **DF027 Rear right-hand wheel speed sensor circuit**, replace the target (see **MR 411, Mechanical, 33A, Rear axle components, Rear brake drums, Removal - Refitting**).
- If the fault remains on the same side, replace component **151** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF011 PRESENT OR STORED	<u>SOLENOID VALVE SUPPLY</u> DEF: Abnormal voltage

NOTES	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored .
	Use the Wiring Diagram Technical Note for New Twingo .

Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging).
Check the condition and position of fuse F2 (30A) in the engine fuse box .
Check the connection and condition (possible wiring damage) of the connector of component 1094 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
With the connector of component 1094 disconnected, check the insulation and continuity of connections MAH of component 1094 (tightness, oxidation, etc.). With the connectors of components 1094 and 1834 disconnected, check the continuity and insulation of connection BP8 between components 1094 and 1834 . If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF017 PRESENT OR STORED	COMPUTER 1. DEF: Supply fault or internal electronic fault

NOTES	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored .
	Use the Wiring Diagram Technical Note for New Twingo .

Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging).
Check the condition and position of fuses F1 and F2 (40A and 30A) in the engine fuse box and fuse F10 (5A) in the passenger compartment fuse box (see MR413, Fault finding, 81C, Fuse box).
Check the connection and condition (possible wiring damage) of the connector of component 1094 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
With the connector of component 1094 disconnected, check the insulation and continuity of connections MAH of component 1094 (tightness, oxidation etc.). With the connectors of component 1094, 1175, 583 and intermediate connector R107 disconnected, check the insulation and continuity of connection AP5 between component 1094 and intermediate connector R107 . Check the insulation and continuity of connection AP5 between intermediate connector R107 and component 1016 . With the connectors of components 1094 and 1834 disconnected, check the continuity and insulation of connection BP14 between components 1094 and 1834 . With the connectors of components 1094 and 1834 disconnected, check the continuity and insulation of connection BP8 between components 1094 and 1834 . If the connection(s) are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF020 PRESENT

TACHOMETRIC INDEX PROGRAMMING

1. DEF: tachometric index not programmed

NOTES

None.

The **ESP** computer with the tachometric function supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.).

This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.

The **ESP** computer calculates the vehicle speed from the wheel speed and the tyre circumference.

The tyre circumference must be programmed into the memory of a new computer. This consists of entering an X index using command VP007 Tachometric index on the diagnostic tool.

Once the index has been entered using command **VP007 Tachometric index**, clear the computer fault memory and then switch off the ignition.

Use parameter **PR030 Tachometric index** to check that the index entered is being used correctly by the system.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF026 PRESENT OR STORED	FRONT RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT CO.0: open circuit or short circuit to earth CO.1: open circuit or short circuit to +12 V 1. DEF: internal electronic fault 2. DEF: magnetic or mechanical fault on the target or interference

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

CO.0 CO.1 1.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094** and **152**. If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Swap the 2 front wheel speed sensors (see **MR 411 Mechanical, 38C, Wheel speed sensor, Removal - Refitting**).
Clear the computer fault memory.
Switch off the ignition.
Switch on the ignition again.
Did the fault initially declared as **DF026** become fault **DF006 "Front left-hand wheel speed sensor circuit" present**?

YES	Replace the wheel speed sensor (see MR 411 Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting).

NO	Check the insulation and continuity of connections 4M and 4N between components 152 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If all the checks are in order, contact Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF026 CONTINUED			
2.DEF	<table border="1"> <thead> <tr> <th>NOTES</th><th> Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test. </th></tr> </thead> </table>	NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.		
Check the connection and condition (possible wiring damage) of the connectors of components 1094 and 152. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Swap the 2 front wheel speed sensors (see MR 411 Mechanical, 38C, Wheel speed sensor, Removal - Refitting). Clear the computer fault memory. Switch off the ignition. Switch on the ignition again. Carry out a road test. Did the fault initially declared as DF026 become DF006 "Front left-hand wheel speed sensor circuit" present?			
YES	Replace component 152 (see MR 411, Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting).		
NO	Check the insulation and continuity of connections 4M and 4N between components 152 and 1094. Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. Inspect the condition of the target (metallic contamination etc.). Clean the target with compressed air if necessary. Check the sensor / target air gap through one wheel revolution (0.4 < front wheel air gap < 1.7 mm). If the air gap is incorrect: – Replace the instrumented bearing/wheel sensor mounting assembly (see MR 411, Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting). If the air gap is correct: – After cleaning the target, clear the computer fault memory. – Carry out a road test followed by another check with the diagnostic tool. – If the fault is still present, replace the instrumented bearing/wheel sensor mounting assembly (see MR 411 Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting).		
AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.		

DF027 PRESENT OR STORED	REAR RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT CO.0: open circuit or short circuit to earth CO.1: open circuit or short circuit to +12 V 1. DEF: internal electronic fault 2. DEF: magnetic or mechanical fault on the target or interference

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

CO.0 CO.1 1.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094 and 150**. If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Using command **AC013 Wheel speed sensor supply test** (see **Interpretation of commands**), check for a voltage of approximately **12 V** between **connections 4S and 4T** of the component.
Is the voltage measured correct?

YES	Replace component 150 (see MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting).

NO	Check the insulation and continuity of connections 4S and 4T between components 150 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF027 CONTINUED	

2.DEF	NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.

Check the connection and condition (possible wiring damage) of the connectors of **components 1094** and **150**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check the insulation and continuity of **connections 4S** and **4T** between **components 150** and **1094**.
 Also check **the insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
 Inspect the condition of the target (metallic contamination etc.).
 Clean the target with compressed air if necessary.

For versions equipped with disc brakes:

Check the sensor/target air gap through one wheel revolution (**0.1 mm < rear wheel air gap < 0.9 mm**).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).

If the air gap is correct:

- Swap both rear wheel brake discs as well as the brake pads.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF007 Rear left-hand wheel speed sensor circuit** has become **DF027**, replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).
- If the fault remains on the same side, replace **component 150** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

For versions equipped with drum brakes:

- Swap both rear wheel brake drums.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF007 Rear left-hand wheel speed sensor circuit** has become **DF027**, replace the target (see **MR 411, Mechanical, 33A, Rear axle components, Rear brake drums, Removal - Refitting**).
- If the fault remains on the same side, replace **component 150** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF055 PRESENT

VEHICLE PARAMETER PROGRAMMING

DEF: configuration absent or incorrect

NOTES

None.

Configure the vehicle parameters using command **VP004 Vehicle parameters** (see help table in clip).
Clear the fault memory, and initialise the computer (switch the **+ after ignition feed** off and on again).
Check for any possible faults.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF063 PRESENT OR STORED	<u>WHEEL SPEED CONSISTENCY</u> DEF: inconsistency CC.1: short-circuit to +12 volts	
NOTES	Special notes: This fault indicates that the wheel speeds are inconsistent with each other. The computer does not know how to determine which one is faulty.	
	Priorities when dealing with a number of faults: Deal first with faults DF090 Front right-hand wheel target , DF091 Front left-hand wheel target , DF092 Rear right-hand wheel target and DF093 Rear left-hand wheel target even if they are stored.	
	Use the Wiring Diagram Technical Note for New Twingo .	
DEF	NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
Check the quality of the mounting of the wheel speed sensors (correct clipping without excessive play). Check the conformity of the targets (condition, number of teeth = 48) using the specific command SC001 Check target teeth for each wheel. Are the numbers of teeth correct?		
YES	Visually inspect the condition of the axles (impacts, deformations, etc.) and check that the tyre mountings conform and are in good condition (see MR 411, Mechanical, 35A, Wheels and tyres, Identification). Ensure that the braking system is in good condition (condition of the linings, tightness, grip, bleeding, bearing play, lubricant on the targets, etc.).	
NO	Apply the target fault procedure for the wheel(s) concerned: – DF090 Front right-hand wheel target – DF091 Front left-hand wheel target – DF092 Rear right-hand wheel target – DF093 Rear left-hand wheel target	
AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.	

DF063 CONTINUED	

2.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connectors:

- of **component 1094**,
- of **component 150**,
- of **component 151**,
- of **component 152**,
- of **component 153**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of **connections 4M** and **4N** between **components 152** and **1094**.

Also check the **insulation** between these 2 connections.

Check the **insulation and continuity** of **connections 4S** and **4T** between **components 150** and **1094**.

Also check the **insulation** between these 2 connections.

Check the **insulation and continuity** of **connections 4C** and **4E** between **components 153** and **1094**.

Also check the **insulation** between these 2 connections.

Check the **insulation and continuity** of **connections 4G** and **4H** between **components 151** and **1094**.

Also check the **insulation** between these 2 connections.

If the connection(s) are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Perform the procedure of counting the poles for each wheel (number of teeth = **48**) using special command **SC001 Check target teeth** to confirm the disappearance of the fault.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

**DF066
PRESENT
OR
STORED**

INJECTION MULTIPLEX SIGNAL ABSENT

NOTES

Special notes:

The injection does not always store these transient faults as quickly as the **ESP system**.

If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline.

Once the fault in the injection system has been repaired, clear the ESP computer fault memory.

Priority in the event of a number of faults:

Deal with fault **DF152 Multiplex network** first if it is present or stored.

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present when the engine is started.

Check the injection computer (see **13B, Diesel injection** or **17B, Petrol injection**) using the **diagnostic tool**.

Run a multiplex network test (see **88B, Multiplex**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF075 PRESENT OR STORED	STEERING WHEEL ANGLE SENSOR SIGNAL 1. DEF: inconsistency 2. DEF: constant signal

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.

1.DEF	NOTES Special notes: Question the customer to find out if he regularly drives on a speed track. If this is the case, follow the procedure below but never replace component 583 .

Clear the ESP offsets using command RZ011 Sensor offset. Position the steering wheel straight ahead (the wheels must be directly in line with the vehicle) and read the value of the steering wheel angle using the parameter PR033 "Steering wheel angle". If the value is not close to 0 ± 5°, calibrate component 583 using command VP003 Steering wheel angle sensor (see Configurations and programming). Clear the ESP sensor offsets using command RZ011 Sensor offset.	
With the steering wheel horizontal and the front wheels set straight ahead, turn the steering wheel a quarter of a turn to the left. Using parameter PR033 Steering wheel angle, check that the steering wheel angle value is close to - 90. With the steering wheel horizontal and the front wheels set straight ahead, turn the steering wheel a quarter of a turn to the right. Using parameter PR033 Steering wheel angle, check that the steering wheel angle value is close to + 90. If the steering wheel angle values are not correct, replace component 583 (see MR 411, Mechanical, 36A, Steering assembly, Steering column, Removal - Refitting).	
Drive in a straight line. If the steering wheel is not horizontal when the vehicle is driving in a straight line (the vehicle "pulls" to the left or right): Check the conformity of the tyres, pressures, wear and dimensions (see MR 411, 35A, Wheels and tyres, Tyres, Identification and tyre pressure, Identification). Replace the tyre(s) if necessary (see MR 411, 35A, Wheels and tyres, Tyres, Removal - Refitting). Adjust the wheel alignment (see MR 411, Mechanical, 30A, General information, Front axle: Adjustment). Calibrate component 583 using command VP003 Steering wheel angle sensor (see Configurations and programming). Clear the ESP sensor offsets using command RZ011 Sensor offsets.	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF075 CONTINUED	

2.DEF	NOTES	None.

Clear the ESP offsets using command **RZ011 Sensor offset**.
When stationary, turn the steering wheel from left to right and check that the value changes using parameter **PR033 Steering wheel angle**.
If the value is inconsistent, replace **component 583** (see **MR 411, Mechanical, 36A, Steering assembly, Steering column, Removal - Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

**DF086
PRESENT
OR
STORED**

COMPUTER CONFIGURATION

DEF: incorrect vehicle configuration

NOTES

None.

Configure the inhibition or authorisation of the automatic brake lights (according to the legislation of the country).
Using command **VP021 Automatic brake light inhibition**:
Configure the inhibition of the automatic brake lights using command **VP021 Automatic brake light inhibition**
Using command **VP022 Automatic brake light authorisation**:
Configure the authorisation of the automatic brake lights using command **VP022 Automatic brake light authorisation**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF087 PRESENT OR STORED	<u>PROGRAMMING THE STEERING WHEEL ANGLE SENSOR</u> DEF: Programming not performed

NOTES	None.

Position the steering wheel horizontally and the front wheels set straight ahead.
Check and store the internal fault code of **component 583** using parameter **PR113 Steering wheel angle sensor internal fault code**.
The internal fault code of the steering wheel angle sensor must be **0, 10 or 11**, if it is different, replace **component 583** (see **MR 411, Mechanical, 36A, Steering assembly, Steering column, Removal - Refitting**).

Calibrate **component 583** using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).
Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.
Check the value of parameter **PR033 Steering wheel angle**.
The steering wheel angle value must be close to **0° ± 5°**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF090 PRESENT OR STORED	<u>FRONT RIGHT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF026 Front right-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.

Visually inspect the condition of the axle assemblies (impacts, deformations etc.) and the conformity and good condition of the tyre mountings (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Identification** and **Tyre pressure, Identification**).
 Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
 Check that the wheel speed sensor mounting is in good condition.
 Check the sensor/target air gap through one wheel revolution (**0.4 < front wheel air gap < 1.7 mm**).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly if necessary (see **MR 411, Mechanical, 31A, Front axle components, Hub carrier bearing: Removal - Refitting**).

If the air gap is correct.

- Swap both front wheel speed sensors.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF090** has become **DF091 Front left-hand wheel target**, replace the magnetic target (see **MR 411, Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting**).
- If the fault remains on the same side, replace component **152** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF091 PRESENT OR STORED	<u>FRONT LEFT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.

Visually inspect the condition of the axle assemblies (impacts, deformations etc.) and the conformity and good condition of the tyre mountings (see **MR 411, Mechanical systems, 35A, Wheels and tyres, Tyres, Identification and Tyre pressure, Identification**).
 Replace the tyre(s) if necessary (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Removal - Refitting**).
 Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
 Check that the wheel speed sensor mounting is in good condition.
 Check the sensor/target air gap through one wheel revolution (**0.4 < front wheel air gap < 1.7 mm**).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly if necessary (see **MR 411, Mechanical, 31A, Front axle components, Hub carrier bearing: Removal - Refitting**).

If the air gap is correct.

- Swap both front wheel speed sensors.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF091** has become **DF090 Front right-hand wheel target**, replace the magnetic target (see **MR 411, Mechanical, 31A, Front axle components, Front hub carrier bearing: Removal – Refitting**).
- If the fault remains on the same side, replace component **153** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor, Removal - Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF092 PRESENT OR STORED	<u>REAR RIGHT-HAND WHEEL TARGET</u>

NOTES	Priorities when dealing with a number of faults: Deal with fault DF027 Rear right-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.

Visually inspect the condition of the axle assemblies (impacts, deformations etc.) and the conformity and good condition of the tyre mountings (see **MR 411, Mechanical systems, 35A, Wheels and tyres, Tyres, Identification** and **Tyre pressure, Identification**).

Replace the tyre(s) if necessary (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Removal - Refitting**).
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF092 CONTINUED

Check that the wheel speed sensor mounting is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

For versions equipped with disc brakes:

Check the sensor/target air gap through one wheel revolution ($0.1 < \text{rear wheel air gap} < 0.9 \text{ mm}$).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).

If the air gap is correct.

- Swap both rear wheel brake discs as well as the brake pads.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF092** has become **DF093 Rear left-hand wheel target**, replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411 Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).
- If the fault remains on the same side, replace component **150** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Wheel speed sensor, Removal - Refitting**).

For versions equipped with drum brakes:

- Swap both rear wheel brake drums.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF092** has become **DF093 Rear left-hand wheel target**, replace the target (see **MR 411, Mechanical, 33A, Rear axle components, Rear brake drums, Removal - Refitting**).
- If the fault remains on the same side, replace component **150** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

**DF093
PRESENT
OR
STORED**

REAR LEFT-HAND WHEEL TARGET.

NOTES

Priorities when dealing with a number of faults:

Deal with fault **DF007 Left rear wheel speed sensor circuit** first if it is present.

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present during a road test.

Visually inspect the condition of the axle assemblies (impacts, deformations etc.) and the conformity and good condition of the tyre mountings (see **MR 411, Mechanical systems, 35A, Wheels and tyres, Tyres, Identification and Tyre pressure, Identification**).
Replace the tyre(s) if necessary (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Removal - Refitting**).
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF093 CONTINUED

Check that the wheel speed sensor mounting is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.

For versions equipped with disc brakes:

Check the sensor/target air gap through one wheel revolution ($0.1 < \text{rear wheel air gap} < 0.9 \text{ mm}$).

If the air gap is incorrect:

- Replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411, Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).

If the air gap is correct.

- Swap both rear wheel brake discs as well as the brake pads.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the fault initially declared as **DF093** has become **DF092 Rear right-hand wheel target**, replace the instrumented bearing/wheel sensor mounting assembly (see **MR 411 Mechanical, 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting**).
- If the fault remains on the same side, replace component **151** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Wheel speed sensor, Removal - Refitting**).

For versions equipped with drum brakes:

- Swap both rear wheel brake drums.
- Clear the computer fault memory.
- Carry out a road test followed by another check with **the diagnostic tool**.
- If the initially declared fault **DF093** became **DF092 "Rear right-hand wheel target "**, replace the target (see **MR 411 Mechanical system, 33A, Rear axle components, Rear brake drums, removal-refitting**).
- If the fault remains on the same side, replace component **151** (see **MR 411, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor, Removal - Refitting**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

**DF098
PRESENT
OR
STORED**

NO UCH MULTIPLEX SIGNAL

NOTES

Special notes:

Even though this is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the **ESP** system is not faulty.
Perform fault finding on the **UCH** (Passenger compartment connection unit) using the **diagnostic tool**.

Note:

After repairing the fault in the UCH (Passenger compartment connection unit), clear the fault memory in the ESP system.

Priority in the event of a number of faults:

Deal with fault **DF152 Multiplex network** first if it is present or stored.

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present when the engine is started.

Check the **UCH** (Passenger compartment connection unit) using the **diagnostic tool** (see **87B, Passenger compartment connection unit**).

Run a multiplex network test (see **88B, Multiplex**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF099 PRESENT OR STORED	<u>PRIVATE MULTIPLEX NETWORK</u>

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

Check the connection and condition (possible wiring damage) of the connectors of **components 1094** and **1175**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of **12 V** between **connections MAM** and **AP5** of **component 1175**.
Is the voltage measured correct?

YES	Connector of component 583 and intermediate union R107 disconnected. Check the insulation and continuity of connections 4AP and 4AH between component 1175 and the intermediate union R107. Check the insulation and continuity of connections 4AP and 4AH between intermediate union R107 and component 1094. If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If the checks do not reveal any faults, replace component 1175 (see MR 411, Mechanical, 38C, Anti-lock braking system, Lateral acceleration and yaw speed sensor, Removal - Refitting).

NO	Check the condition and position of fuse F10 (5A) in the passenger compartment fuse and relay box (see 81C, Fuse box). Connectors of components 1175, 583, 1094 and intermediate union R107 disconnected. Check the insulation and continuity of connection MAM of component 1175. Check the insulation and continuity of connection AP5 between components 1016 and 1175. Check the insulation and continuity of connection AP5 between component 1094 and intermediate union R107. If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF100 PRESENT OR STORED	<u>NO STEERING WHEEL ANGLE MULTIPLEX SIGNAL</u>

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

Check that the connections and location of any special fittings (CB, car phone, amplifier, etc.) are not preventing the system from working correctly.

With the ignition on, check for **12 V** between **connections NAM** and **AP5** of **component 583**.
Is the voltage measured correct?

YES	Connectors of components 1175, 1094, 583 and intermediate union R107 disconnected. Check the insulation and continuity of connections 4AP and 4AH between component 583 and intermediate union R107. Check the insulation and continuity of connections 4AP and 4AH between intermediate union R107 and component 1094. If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

NO	Check the condition and position of fuse F10 (5A) in the passenger compartment fuse box (see 81C, Fuse box). Check the connection and condition (possible wiring damage) of the connectors of components 583 and 1016. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Connectors of components 1175, 1094, 583 and intermediate union R107 disconnected. Check the insulation and continuity of connection AP5 between component 1016 and component 583. Check the continuity and insulation of connection AP5 between component 1094 and intermediate connector R107. Check the continuity and insulation of connection NAM between component 583 and the chassis earth (tightness, oxidation, etc.). If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF108 PRESENT OR STORED	<u>STEERING WHEEL ANGLE SENSOR</u> DEF: sensor fault

NOTES	None.

Check the internal fault code of the steering wheel angle sensor using parameter **PR113 Steering wheel angle sensor internal fault code**.

Is the internal fault code of the steering wheel angle sensor 10 or 11?

YES	Calibrate component 583 using command VP003 Steering wheel angle sensor (see Configurations and programming). Clear the ESP sensor offsets using command RZ011 Sensor offsets .

NO	Note the internal fault code of the steering wheel angle sensor for the purposes of completing the approval request. Replace component 583 (see MR 411, Mechanical, 36A, Steering assembly, Steering column, Removal - Refitting).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF126 PRESENT OR STORED	<u>COMBINED SENSOR SIGNAL PLAUSIBILITY</u>

NOTES	Special notes: If the fault appears while the vehicle is being driven on a steep gradient, during a very tight turn or while the vehicle is being transported on a lorry, train, boat etc., with the engine running, clear the fault and test drive, if possible, to check that the fault does not return.
	Conditions for applying fault finding procedures to stored faults: The fault is declared present after a road test.

Check that **component 1175** is fitted and attached correctly (the arrow indicating the front of the vehicle).
Check the conformity of the tyres (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres: Identification** and **Tyre pressure, Identification**).
Check the axle assembly geometry (see **MR 411, Mechanical, Chassis, Front axle adjustment**).
Calibrate **component 583** using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).
Clear the ESP sensor offsets using command **RZ011 Sensor offset**.

Re-establish dialogue with the **ABS/ESP** computer, and if no other fault is to be dealt with, clear the computer fault memory.
Carry out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

**DF152
PRESENT
OR
STORED**

MULTIPLEX NETWORK

1. DEF: apply the multiplex network fault finding procedure

NOTES

Priorities when dealing with a number of faults:

Deal with fault **DF099 Private multiplex network** first if it is present or stored.

Special notes:

If several computers are affected by a similar multiplex network fault, contact the Techline to check the cases previously noted first.

Use the wiring diagram Technical Note for **New Twingo**.

Test the multiplex network using **the diagnostic tool** (see **88B, Multiplexing**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

**DF153
PRESENT
OR
STORED**

MULTIPLEX NETWORK

1. DEF: apply the multiplex network fault finding procedure

NOTES

Special notes:

If several computers are affected by a similar multiplex network fault, contact the Techline to check the cases previously noted first.

Use the wiring diagram Technical Note for **New Twingo**.

Test the multiplex network using **the diagnostic tool** (see **88B, Multiplexing**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF186 PRESENT OR STORED	<u>NO INSTRUMENT PANEL MULTIPLEX SIGNAL</u>

NOTES	Note: When the fault in the instrument panel has been repaired, clear the ESP fault memory.
	Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started.

Check the instrument panel using the **diagnostic tool** (see **83A, Instrument panel**).

Run a multiplex network test (see **88B, Multiplex**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF187 PRESENT OR STORED	<u>BRAKE LIGHT ACTIVATION RELAY CIRCUIT</u> DEF: open circuit or short circuit

NOTES	Special notes: If this fault appears after running command AC187 Brake light activation relay , ignore this fault.
	Use the Wiring Diagram Technical Note for New Twingo .

Are the brake lights continuously lit?

YES	Connector of components 1281 , 1094 and intermediate union R107 disconnected, Check the insulation to earth of connection 4GJ between component 1281 and intermediate union R107 . Check the insulation to earth of connection 4GJ between intermediate union R107 and component 1094 . If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
	If all these checks are in order, replace component 1281 .

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF187 CONTINUED	

NO	Check that the "Automatic brake light" function is activated using status ET030 Automatic brake light .
	If the status ET030 "Automatic brake lights" is "PROHIBITED" : inhibit or authorise the automatic brake lights (depending on the country's legislation) using command VP021 Automatic brake light inhibition or VP022 Automatic brake light authorisation .
	Check the condition and position of fuse F5 (15 A) in the passenger compartment fuse box (see 81C, Fuse box). Connector of components 1281 , 1094 and intermediate union R107 disconnected, Check the continuity of connection 4GJ between component 1281 and intermediate union R107 . Check the continuity of connection 4GJ between intermediate union R107 and component 1094 . If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.
	With the connector of components 1281 and 1016 disconnected, check the continuity and insulation of connection AP10 between components 1016 and 1281 . If the connection is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If all these checks are in order, replace component 1281 .

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF188 PRESENT OR STORED	<u>BRAKE LIGHT SWITCH CIRCUIT</u> 1.DEF: Inconsistency 2.DEF: Permanent high signal

NOTES	Conditions for applying the fault finding procedure to stored faults: Clear the stored fault, carry out a road test at a speed of > 36 mph (60 km/h) and test the brakes using ABS . Use the interpretation of the fault if it recurs.
	Special notes: The fault is detected if the computer does not detect a brake lights switch status change for 4 acceleration/braking cycles and/or the contact is closed for over 6 minutes with the vehicle speed above 24 mph (40 km/h) .

Using the **diagnostic tool**, check on the status screen that **ET017 Brake pedal** recognises the correct pressed and released positions of the brake pedal.
If the correct pedal position is not displayed, use the interpretation of **ET017 Brake pedal**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF189 PRESENT OR STORED	<u>COMBINED SENSOR CIRCUIT</u>

NOTES	Use Wiring Diagram Technical Note, New Twingo .

Check the condition and position of fuse F10 (5 A) in the passenger compartment fuse box (see 81C, Fuse box).
Check the connection and condition (possible wiring damage) of the connectors of components 1175, 1094 and 1016 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Check the connection and condition (possible wiring damage) of intermediate connector R107 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
Connector of components 1175, 1094, 1016 and intermediate union R107 disconnected. – check the insulation and continuity of connection AP5 between components 1175 and 1016 . – check the insulation and continuity of connection AP5 between component 1094 and intermediate connector R107 . – check the insulation and continuity of connection MAM of component 1175 (tightness, oxidation, etc.). If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF190 PRESENT OR STORED	<u>COMBINED SENSOR</u> 1.DEF: Sensor internal electronic fault 2.DEF: Sensor incorrectly fitted 3.DEF: Abnormal voltage

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

1.DEF	NOTES	None.

Replace **component 1175** (see **MR 411 Mechanical, 38C, Anti-lock braking system, Lateral acceleration and yaw speed sensor, Removal - Refitting**) then it is essential to clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

2.DEF	NOTES	None.

Check the connection and condition (possible wiring damage) of the connector of **component 1094**.
 Check the connection and condition (possible wiring damage) of the connector of **component 1175**.
 Check the connection and condition (possible wiring damage) of intermediate connector **R107**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity** of **connections 4AP and 4AH** between **components 1094 and 1175**.
 If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that **component 1175** is fitted and attached correctly (the arrow indicates the front of the vehicle).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF190 CONTINUED	

3.DEF	NOTES	None.

Check the tightness and condition of the battery terminals (see **80A, Battery**).
Check the charging circuit (see **16A, Starting - Charging**).

Apply the fault finding procedure for fault **DF189 Combined sensor circuit**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

**DF191
PRESENT
OR
STORED**

ESP ON/OFF BUTTON CIRCUIT
CO.0: Open circuit or short circuit to earth

NOTES

Special notes:

This fault does not cause the warning lights to come on or a fault message on the instrument panel.

The **ESP** is not faulty, but it is no longer possible to disable the ESP using the button.

Apply the interpretation of status **ET023 ESP on/off button**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**
If the fault is still present, contact the Techline.

DF193 PRESENT OR STORED	<u>INJ. MULTIPLEX SIGNALS INVALID</u>

NOTES	Special notes: Even though it is stored in the computer, the ABS/ESP system is not faulty. The ESP is deactivated following unusable information from the injection system. Perform fault finding on the injection system using the diagnostic tool. Note: The injection does not always store these transient faults as quickly as the ABS/ESP. Note: Once the fault in the injection system has been repaired, clear the ABS/ESP computer fault memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started.

Check the injection computer (see 13B, Diesel injection or 17B, Petrol injection) using the diagnostic tool .
Run a multiplex network test (see 88B, Multiplex).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF202 PRESENT OR STORED	<u>UCH MULTIPLEX SIGNALS DISABLED</u> DEF: Reverse gear signal consistency

NOTES	Special notes: Even though this is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the ESP system is not faulty. Perform fault finding on the UCH (Passenger compartment connection unit) using the diagnostic tool. Note: After repairing the fault in the UCH (Passenger compartment connection unit), clear the fault memory in the ESP system.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started.

Run a check on the UCH (Passenger compartment connection unit) using the diagnostic tool (see 87B, Passenger compartment connection unit).
Run a multiplex network test (see 88B, Multiplex).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF216 PRESENT OR STORED	<u>STEERING WHEEL ANGLE PROGRAMMING OFFSET</u>

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after an extended road test.

With the steering wheel horizontal and the wheels set straight ahead (the wheels must be directly in line with the vehicle), read the value of the steering wheel angle using parameter **PR033 Steering wheel angle**.

If the value is not close to $0 \pm 5^\circ$, calibrate **component 583** using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).

Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

With the steering wheel horizontal and the wheels set straight ahead, turn the steering wheel a quarter of a turn to the left.

Using parameter **PR033 Steering wheel angle**, check that the steering wheel angle value is close to **- 90**.

With the steering wheel horizontal and the wheels set straight ahead, turn the steering wheel a quarter of a turn to the right.

Using parameter **PR033 Steering wheel angle**, check that the steering wheel angle value is close to **+ 90**.

If the values are not correct, replace **component 583** (see **MR 411, Mechanical, 36A, Steering assembly, Steering column, Removal - Refitting**).

Drive in a straight line.

If the steering wheel is not horizontal when the vehicle is driving straight ahead (the vehicle "pulls" to the left or right).

Check the conformity of the tyres, pressures, wear, and dimensions (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres: Identification and Tyre pressure, Identification**).

Replace the tyre(s) if necessary (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Removal - Refitting**).

Adjust the wheel alignment (see **MR 411, Mechanical, 30A, General information, Front axle: Adjustment**).

With the steering wheel horizontal and the wheels set straight ahead, calibrate component **583** using command **VP003 Steering wheel angle sensor**.

Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF300 PRESENT OR STORED	<u>PUMP MOTOR CONTROL CIRCUIT</u> DEF: Abnormal voltage.

NOTES	Use the Wiring Diagram Technical Note for New Twingo .

Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging).
Check the condition and position of fuse F1 (40A) and F2 (30A) in the engine fuse box (see 81C, Fuse box).
Check the connection and condition (possible wiring damage) of the connectors of components 1094, 1834, 1016 and intermediate connector R107. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring.
With the connector of component 1094 disconnected, check the insulation and continuity of connections MAH of component 1094 (tightness, oxidation, etc.). Connectors of components 1094, 1175, 583 and intermediate union R107 disconnected, – check the insulation and continuity of connection AP5 between component 1094 and intermediate connector R107. – Check the insulation and continuity of connection AP5 between intermediate connector R107 and component 1016. – Check the insulation and continuity of connection BP14 between components 1094 and 1834. – Check the insulation and continuity of connection BP8 between components 1094 and 1834. If the connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF311 PRESENT OR STORED	<u>NO SEQUENTIAL GEARBOX MULTIPLEX SIGNAL</u>

NOTES	Special notes: Even though it is stored in the computer, this fault does not cause the warning light to come on or a fault message, because the ESP system is not faulty. Perform fault finding on the BVR (sequential gearbox) using the diagnostic tool. Note: After repairing the fault in the BVR (sequential gearbox), clear the fault memory in the ESP system.
	Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started.

Run a check on the BVR using the diagnostic tool (see 21B, Sequential gearbox).
Run a multiplex network test (see 88B, Multiplex).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF313 PRESENT OR STORED	<u>INVALID SEQUENTIAL GEARBOX MULTIPLEX SIGNALS</u>

NOTES	Special notes: The ABS/ESP system is not faulty, but has received unusable signals from the BVR . Perform fault finding on the BVR using the diagnostic tool . Note: Once the fault in the sequential gearbox system has been repaired, clear the ABS/ESP computer fault memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started.

Run a check on the BVR using the diagnostic tool (see 21B, Sequential gearbox).
Run a multiplex network test (see 88B, Multiplex).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

DF321 PRESENT OR STORED	<u>CLUTCH SWITCH SIGNAL CONSISTENCY</u> DEF: Inoperative

NOTES	Special notes: The ABS/ESP system is not faulty. Perform fault finding on the injection system using the diagnostic tool . Note: Once the fault in the INJECTION system has been repaired, clear the ABS/ESP computer fault memory.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when driving after having exceeded a speed of 42 mph (70 km/h).

Check the injection computer (see **13B, Diesel injection** or **17B, Petrol injection**) using the **diagnostic tool**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool If the fault is still present, contact the Techline.

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool**.

SUB-FUNCTION: ELECTRONIC STABILITY PROGRAM

Function	Parameter or Status Check or Action		Display and Notes	Fault finding
Diagnostic tool dialogue			ESP	Apply ALP1
Computer configuration	PR030:	Tachometric index	Check that the index entered corresponds to the tyres fitted to the vehicle (see Clip help)	See Configurations and Programming (VP007).
Brake pedal not depressed detection	ET017:	Brake pedal	State Released confirmed, brake pedal not depressed	In the event of a fault, apply the interpretation of ET017 Brake pedal .
Depressed brake pedal detection	ET017:	Brake pedal	State Depressed confirmed, brake pedal fully depressed	In the event of a fault, apply the interpretation of ET017 Brake pedal .
Check calibration Steering wheel angle	PR033:	Steering wheel angle	Right-hand wheel values within: -5° < X < +5°	In the event of a fault, see Configurations and programming (VP003)
Vehicle parameter reading	PR063:	Vehicle parameters	Check that the version corresponds to the vehicle being tested (see the Clip help)	See Configuration and programming (VP004 "Vehicle parameters").

ANTI-LOCK BRAKING SYSTEM

Fault finding – Status summary table

Tool status	Diagnostic tool title
ET017	Brake pedal
ET023	ESP on/off button
ET030	Automatic brake light lighting
ET108	Steering wheel angle programming

ET017

BRAKE PEDAL

NOTES

Special notes:

Only carry out the checks if the **PRESSED** and **RELEASED** statuses are inconsistent with the pedal position.

Use the Wiring Diagram Technical Note for **New Twingo**.

"Released" STATUS Brake pedal depressed.**If the brake lights are working:**

With the connectors of components **1094**, **160**, intermediate union **R107** and component **119** disconnected (depending on equipment), check the **continuity** of **connection 65A** between **components 160 and 1094**. If the connection is faulty (see **Technical Note 6015A**, **Electrical wiring repair**, **Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the brake lights are not working:

- Check the condition, fitting and the adjustment of **component 160** as well as the conformity of the bulbs.
- Remove (see **MR 411**, **Mechanical**, **37A**, **Mechanical component control**, **Brake light switch: Removal - Refitting**) and test the operation of **component 160**:

	Continuity between tracks	Insulation between tracks
Switch engaged (Brake pedal released)	AP10 and 5A	AP10 and 65A
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A

Replace **component 160** if necessary.

Check the condition and position of fuse **F5 (15A)** (see **81C**, **Fuse box**).

Check for **+12 V after ignition feed** on connection **AP10** of component **1016** to the earth **MAH**.

With intermediate connector **R107** and **component 160**, **1281** and **1081** disconnected (depending on equipment):

- Check **the continuity and insulation** of **connection AP10** between **component 1016** and intermediate connector **R107**.
- Check **the continuity and insulation** of **connection AP10** between **component 160** and intermediate connector **R107**.

AFTER REPAIR**Clear the computer fault memory.**

Carry out a road test followed by another check with **the diagnostic tool**.

ET017 CONTINUED 1

If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.

Connectors of **components 645, 172, 173, 639, 1281 and 1094**, intermediate connectors **R107** and **R15** and connector of **component 119** (if present on the vehicle) disconnected from **connection 65A**:

Check the **continuity** and **insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between **component 172** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between **component 173** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between intermediate connectors **R107** and **R15**.

Check the **insulation** of **connection 65A** between **component 639** and intermediate connector **R15**.

Check the **insulation** of **connection 65G** between **component 645** and intermediate connector **R107**.

Check the **insulation** of **connection 65G** between **component 1281** and intermediate connector **R107**.

If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If these checks do not reveal any faults:

Carry out a complete check of **component 645** using **the diagnostic tool**.

Perform a visual inspection of **components 172, 173, 639** present on connections **65A** and **AP10** (short circuit to earth).

Replace the component(s) if necessary:

See **MR 411 Mechanical, Rear lighting, Rear wing lights, Removal - Refitting** for **components 172** and **173**.

See **MR 411 Mechanical, Rear lighting, High level brake light, Removal - Refitting** for **component 639**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ET017
CONTINUED 2

STATUS "DEPRESSED": Brake pedal released.

- Check the condition, fitting and adjustment of **component 160** as well as the conformity of the bulbs.
- Remove (see **MR 411, Mechanical, 37A, Mechanical component control, Brake light switch: Removal - Refitting**) and test the operation of **component 160**:

	Continuity between tracks	Insulation between tracks
Switch engaged (Brake pedal released)	AP10 and 5A	AP10 and 65A
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A

Replace **component 160** if necessary.

Connectors of **components 645, 172, 173, 639** and **1094**, intermediate connectors **R107** and **R15** and connector of **component 119** (if present on the vehicle) disconnected from **connection 65A**:

Check the **insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between **component 172** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between **component 173** and intermediate connector **R107**.

Check the **insulation** of **connection 65A** between intermediate connectors **R107** and **R15**.

Check the **insulation** of **connection 65A** between **component 639** and intermediate connector **R15**.

Check the **insulation** of **connection 65A** between **component 645** and intermediate connector **R107**.

If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If these checks do not reveal any faults:

Perform a complete check of **component 645** using **the diagnostic tool**.

Perform a visual inspection of **components 172, 173, 639** present on connections **65A** and **AP10** (short circuit to earth).

Replace the component(s) if necessary:

See **MR 411 Mechanical, Rear lighting, Rear wing lights, Removal - Refitting** for **components 172** and **173**.

See **MR 411 Mechanical, Rear lighting, High level brake light, Removal - Refitting** for **component 639**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ET023	<u>ESP ON/OFF BUTTON</u>

NOTES	Special notes: Apply the checks only if the PRESSED and RELEASED statuses are not consistent with the position of the ESP on/off button (RS version only)
	Use the Wiring Diagram Technical Note for New Twingo .

PRESSED STATUS

Connector of component **1106** disconnected and without action on the component.
 Check that there is no continuity between connections **MAM** and **4AQ** of component **1106**.
 Otherwise, replace **component 1106**.

Check the connection and condition (possible wiring damage) of the connectors of components **1106**, **1094**.
 Check the connection and condition (possible wiring damage) of intermediate union **R107**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Connector of components **1106** and **1094** and intermediate union **R107** disconnected,
 Check the **insulation** of **connection 4AQ** between **component 1106** and intermediate union **R107**.
 Check the **insulation** of **connection 4AQ** between intermediate union **R107** and **component 1094**.
 If the connection is faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, or replace it.
 If the fault is still present, contact the Techline.

AFTER REPAIR

Clear the computer fault memory.
 Carry out a road test followed by another check with **the diagnostic tool**.

ET023 CONTINUED

RELEASED STATUS

Connector of component **1106** disconnected and with action on the component.
Check for continuity between connections **MAM** and **4AQ** of component **1106**.
Otherwise, replace **component 1106**.

Check the connection and condition (possible wiring damage) of the connectors of components **1106** and **1094**.
Check the connection and condition (possible wiring damage) of intermediate union **R107**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Connector of components **1106** and **1094** and intermediate union **R107** disconnected,
check the **continuity** of **connection MAM** between **component 1106** and the **chassis earth** (tightness, oxidation, etc.),
check the **continuity** of **connection 4AQ** between **component 1106** and intermediate union **R107**,
check the **continuity** of **connection 4AQ** between intermediate union **R107** and **component 1094**.
If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the fault is still present, contact the Techline.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

Tool parameter code	Diagnostic tool title	Comments
PR001	Front right-hand wheel speed	These parameters indicate the speed in mph (km/h) of each wheel on the vehicle.
PR002	Front left-hand wheel speed	
PR003	Rear right-hand wheel speed	
PR004	Rear left-hand wheel speed	
PR005	Computer feed voltage	This parameter indicates the computer supply voltage in volts .
PR007	Longitudinal acceleration	This parameter indicates the longitudinal acceleration of the vehicle in ms⁻² . It should be 0 when the vehicle is stationary.
PR016	Lateral accel.* programming offset	This parameter gives the correction made by the ESP on the gross value of the lateral acceleration sensor.
PR030	Tachometric index	This parameter specifies the tachometric index entered in the computer for the tyres fitted to the vehicle.
PR033	Steering wheel angle	This parameter gives the steering wheel angle in degrees . It must be equal to $0^{\circ} \pm 5^{\circ}$ with the wheels set straight ahead.
PR034	Yaw angle	This parameter indicates the yaw angle in °/s supplied by the combined sensor. It should be 0 when the vehicle is stationary.
PR036	Transverse acceleration	This parameter indicates the lateral acceleration in g supplied by the combined sensor. It should be 0 when the vehicle is stationary.
PR038	Vehicle speed	This parameter indicates the vehicle speed in mph (km/h) .
PR063	Vehicle parameters	This parameter shows whether the configuration (VP004 "Vehicle parameters") matches the vehicle undergoing fault finding.
PR065	Yaw angle programming offset	This parameter indicates the correction applied by the ESP to the yaw sensor gross value.
PR066	Steering wheel angle programming offset	This parameter indicates the correction applied by the ESP to the gross value of the steering wheel angle sensor.

accel.*: acceleration

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

Tool command	Diagnostic tool title	Comments
RZ001	Fault memory	This command is used for clearing the computer's stored faults
RZ011	Sensor offsets	This command reinitialises programming of the ESP sensors. Run this command each time an operation required the steering wheel angle to be programmed or following any operation on the axle assemblies. Also run this command when the combined sensor has been removed or replaced
SC001	Check target teeth	This command tests the condition of the teeth on each wheel. Select the command SC001 and follow the instructions. The test result should indicate 48 teeth .
SC006	Bleed the hydraulic unit and brake circuits	This command should only be used if an abnormally long brake pedal travel is noted during a road test with ABS control (the system must have been bled beforehand by the usual method). Select command SC006 and follow the instructions given by the diagnostic tool .
AC003	Front left-hand wheel solenoid valves	See the interpretation of command (see Interpretation of commands).
AC004	Front right-hand wheel solenoid valves	See the interpretation of command (see Interpretation of commands).
AC005	Rear left-hand wheel solenoid valves	See the interpretation of command (see Interpretation of commands).
AC006	Rear right-hand wheel solenoid valves	See the interpretation of command (see Interpretation of commands).
AC013	Wheel speed sensor supply test	See the interpretation of command (see Interpretation of commands).
AC016	Pump motor test	See the interpretation of command (see Interpretation of commands).
AC187	Brake light activation relay	See the interpretation of command (see Interpretation of commands).
AC195	Vehicle speed signal	See the interpretation of command (see Interpretation of commands).
AC196	Hazard warning light activation request	See the interpretation of command (see Interpretation of commands).

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

AC003

AC004

AC005

AC006

FRONT LEFT-HAND WHEEL SOLENOID VALVES
FRONT RIGHT-HAND WHEEL SOLENOID VALVES
REAR LEFT-HAND WHEEL SOLENOID VALVES
REAR RIGHT-HAND WHEEL SOLENOID VALVES

NOTES

Conditions of use of the command.

Ignition on, engine stopped and vehicle speed zero.

The previous four commands allow the hydraulic check of each wheel.

Raise the vehicle in order to be able to rotate the wheels, and check that they rotate freely.

Keep the brake pedal depressed to prevent the wheel being tested from being turned (do not brake so firmly that full brake power is reached).

Select and confirm the command of the wheel being examined (e.g. Front left-hand wheel solenoid valves, etc.)

Turn the wheel concerned by hand to see it go through several locking/unlocking cycles.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

AC013

WHEEL SPEED SENSOR SUPPLY TEST

NOTES

Conditions of use of the command.
Ignition on, engine off.

This command is used to test the supply to every wheel speed sensor.

Select command **AC013** and check for **12 V** between:

- **connections 4T and 4S of component 150,**
- **connections 4H and 4G of component 151,**
- **connections 4E and 4C of component 153,**
- **connections 4N and 4M of component 152.**

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

AC016

PUMP MOTOR TEST

NOTES

Conditions of use of the command.
Ignition on, engine off.

This command is used to test the pump motor control circuit.
Select the command **AC016**.
Engine operation must be audible.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

AC187

BRAKE LIGHT ACTIVATION RELAY

NOTES

Conditions of use of the command.
Ignition on, engine off.

This command is used to test brake light activation by the **ESP** when controlling oversteer with sharp deceleration.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

AC195	<u>VEHICLE SPEED SIGNAL</u>

NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.

This command is used to generate a speed other than **0 mph (0 km/h)** at the computer's vehicle speed wire output (**connection 47F**) for users of that signal (radio, sunroof, power-assisted steering).
 This command has no visible effect on the dashboard speedometer needle.

Radio: Switch on the radio and check that the "adjustment of volume according to speed" function is active (see **86A, radio**).
 Run the command **AC195**. During the command, you should hear the volume of the sound increase and then decrease.
Variable electric power-assisted steering: Start the vehicle then return to the conditions of use of the command.
 Turn the steering wheel from lock to lock using command **AC195**, to note a variation in the assistance level.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

AC196

HAZARD WARNING LIGHT ACTIVATION REQUEST

NOTES

Conditions of use of the command.

Ignition on, engine stopped and vehicle speed zero.

This command is used to send a hazard warning lights activation request to the **UCH** (Passenger compartment connection unit) to test their operation in the event of emergency braking depending on the **UCH** configuration (Passenger compartment connection unit).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

NOTES

Only check the customer complaint after performing a full check with the diagnostic tool.

FAULTS DETECTED ON BRAKING WITH ABS/BRAKING REGULATION

	Locking of one or more wheels	→	ALP2
	Pull	→	ALP3
	Drift	→	ALP4
	Unexpected ABS operation at low speed and with slight pedal pressure	→	ALP5
	Unexpected ABS operation on a poor road surface	→	ALP6
	Unexpected ABS operation when using special equipment (car phone, CB, etc.)	→	ALP7
	Lengthening of the brake pedal travel following a regulation phase (with an irregular pedal when entering the regulation phase)	→	ALP8
	Spongy pedal	→	ALP9
	Brake pedal vibration	→	ALP10
	Noises from the pump, the pipes or the hydraulic unit	→	ALP11

OTHER CASES

No dialogue with the ABS computer	→	ALP1
ESP computer not detected during the multiplex network test on CLIP	→	ALP12
Illumination of brake lights	→	ALP 13
Unexpected ABS operation at low speeds and slight pedal pressure	→	ALP14
Intermittent illumination of brake, ESP, ABS, SERVICE and STOP warning lights and the message "Brake failure" on the instrument panel with no fault codes in the computer	→	ALP15

ALP1	No dialogue with the ABS/ESP computer
NOTES	Only address this customer complaint after a complete check with the diagnostic tool .
	Use the Wiring Diagram Technical Note for New Twingo .
Try to establish dialogue with an ESP computer on another vehicle to make sure that the diagnostic tool is not faulty. If the tool is not at fault, and dialogue cannot be established with any other computer on the same vehicle, the cause could be a faulty computer interfering on the multiplex network. Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging). Check that the power supply to the diagnostic socket is correct: Check for + 12 V on connection BP19 of component 225. Check for earth on connections MAM and NAM of component 225. If the connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it.	
Apply the fault finding procedure for specification 1. DEF of fault DF001 Computer supply .	
Carry out fault finding on the multiplex network using the diagnostic tool (see 88B, Multiplexing).	
If dialogue has still not been established after these checks, contact Techline.	

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP2	Locking or braking of one or more wheels

NOTES	Only consult this customer complaint after a full check with the diagnostic tool . Check the conformity of the mechanical components (see MR 411, Mechanical, 30A, General information, Brake, Specifications).

REMINDER	Locking of wheels on a vehicle fitted with ABS or squealing of the tyres, which feels like locking to the customer, may be linked to normal operation of the system and should not always be considered a fault. Braking with ABS regulation on very poor roads can cause significant squealing.

However, if the wheel(s) is/are actually locking, lift the vehicle in order to be able to rotate the wheels and check:
Possible inversion when connecting the speed sensors.
Use parameters **PR001 Front right-hand wheel speed, PR002 Front left-hand wheel speed, PR003 Rear right-hand wheel speed and PR004 Rear left-hand wheel speed** whilst slowly turning the wheels in question and checking the consistency of the results obtained.
If the value measured is zero, rotate the other wheels to confirm an electrical inversion of the sensors and repair the wiring harness.
If a single reading is incorrect:

- Check that the sensor casing is secured when rotating.
- Check that the wheel speed sensor mounting is in good condition.
- If that is unsuccessful, replace the corresponding sensor and repeat the check procedure (see **MR 411 Mechanical, 38C, Anti-lock braking system, Wheel speed sensor: Removal - Refitting**).
- A possible inversion of the pipes on the hydraulic unit (see **MR 411, Mechanical, 38C, Anti-lock braking system, Hydraulic braking unit, List and location of components**).

Run commands **AC003 Front left-hand wheel solenoid valves, AC004 Front right-hand wheel solenoid valves, AC005 Rear left-hand wheel solenoid valves and AC006 Rear right-hand wheel solenoid valves** while depressing the brake pedal and check for locking/unlocking cycles on the wheel concerned (see **Dealing with command modes**).

If the cycles are not detected on the wheel tested (wheel remains locked), check if they occur on another wheel (confirmation of a reversal after a repair, see **MR 411, Mechanical, 38C, Hydraulic braking unit, List and location of components**).

If the cycles are not detected on a wheel and the pipes have not been inverted, replace **component 1094** (see **MR 411, Mechanical, 38C, Hydraulic braking unit, Removal- Refitting**).

Check that the sensor holder does not rotate (depending on fitting).
Check the quality of the mounting of the wheel speed sensors (correct clipping for the front wheels).
Check the conformity of the targets: the condition and **the number of teeth= 48 (using the command SC001 "Check target teeth")**.
Replace if necessary.
If the fault is still present after these checks, replace **component 1094** (see **MR 411, Mechanical, 38C, Hydraulic braking unit, Removal- Refitting**).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP3

Pull

NOTES

Only consult this customer complaint after a full check with the **diagnostic tool**.
Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

Disconnect one wheel speed sensor.
Start the engine and check that only the **ABS** and **ESP** fault warning lights are lit.
Is the brake fault warning light also lit?

—YES—>

Do not drive, the "braking compensator" function cannot be carried out (risk of a spin).
Deal first with the faults **using the diagnostic tool**.

NO
↓

Drive the vehicle and operate the brakes.
Is the customer complaint still present under these conditions?

—YES—>

If the brake pedal travel is comparatively long, bleed the brake circuit (see **MR 411, Mechanical, 30A, General information, Brake circuit, Bleeding**).
If the travel is normal, check that the 4 vehicle tyres are identical and in accordance with the manufacturer's recommendations (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyre, Tyre pressure, Identification** and **Tyre, Identification**).
Check and adjust the wheel alignment (see **MR 411, Mechanical, 30A, General information, Front axle, Adjustment**).
Check for any leaks on the brake circuit.

NO
↓

Apply the fault finding procedure described in **the ALP 2 "Locking of one or several wheels"**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP4

Drift

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.

Disconnect one wheel speed sensor.
Start the engine and check that only the ABS
and ESP fault warning lights are lit.
Is the brake fault warning light also lit?

—YES—→

Do not drive, the "braking compensator" function
cannot be carried out (risk of a spin).
Deal first with the faults using the **diagnostic tool**.

NO
↓

Drive the vehicle and operate the brakes.
**Is the customer complaint still present
under these conditions?**

—YES—→

It is a road holding fault not related to the **ABS/ESP**
system.
Check the condition and conformity of the front and
rear brake linings.
Check that the 4 vehicle tyres are identical and in
accordance with the manufacturer's
recommendations (see **MR 411, Mechanical, 35A,
Wheels and tyres, Tyre pressure, Identification
and Tyres, Identification**).
Check that the pressures of the 4 tyres conform to
the manufacturer's recommendations (see **MR 411,
Mechanical, 35A, Wheels and tyres, Tyre
pressure, Identification**).
Check and adjust the wheel alignment (see **MR 411,
Mechanical, 30A, General information, Front
axle, Adjustment**).

NO
↓

Normal behaviour linked to the system operation during the
regulation phase, mainly on surfaces with uneven grip or
which are poorly laid.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP5

Unexpected ABS operation at low speed and with slight pedal pressure

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**. Important: **ABS** regulation is sensitive on slippery surfaces (ice, wet cobbled streets, etc.).

Brake pedal vibrations associated with the reactions of the system may be felt in particular circumstances, such as:

- Crossing speed bumps.
- Tight cornering with lifting of the inside rear wheel.

These vibrations also may be linked merely to activation of the **Braking distributor** function, when the pressure on the rear axle is limited.

Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

If the fault is not one of the situations indicated above, check the correct connection of the wheel speed sensors, the air gap between these sensors and the magnetic targets.

Refer to the interpretation of fault **DF063 Wheel speed consistency**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ALP6

Unexpected ABS system intervention on a poor road surface

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

On poor road surfaces it is normal to feel hesitation and vibrations of the pedal as well grating which is more significant than on good surfaces.
This gives the impression of a variation in efficiency, but this should be considered normal.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP7

**Unexpected ABS operation when using special equipment
(car phone, CB, etc.)**

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.

Check that the equipment which is causing the fault is approved.

Check that this equipment was correctly installed without modification of the original wiring, in particular that of the **ABS/ESP**.

Connections to **earth** and to the **ABS/ESP supply** are forbidden.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ALP8

Lengthening of the brake pedal travel following a regulation phase (with an irregular pedal when entering the regulation phase)

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

Bleed the primary hydraulic circuit (see **MR 411, Mechanical, 30A, General information, Brake circuit, Bleeding**).

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present:

Carry out an After-Sales bleed using command **SC006 Bleed hydraulic unit and brake circuit**.

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present:

Bleed the primary hydraulic circuit again (see **MR 411, Mechanical, 30A, General information, Brake circuit, Bleeding**).

After the operation, carry out a road test with **ABS** regulation.

If the customer complaint is particularly pronounced, and bleeding the circuit does not improve matters, replace **component 1094** (see **MR 411, Mechanical, 38C, Hydraulic brake unit, Removal - Refitting**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ALP9

Spongy pedal

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

Bleed the primary hydraulic circuit (see **MR 411, Mechanical, 30A, General information, Brake circuit, Bleeding**).

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present:

Carry out an After-Sales bleed using command **SC006 Bleed hydraulic unit and brake circuit**.

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present:

Bleed the primary hydraulic circuit again (see **MR 411, Mechanical, 30A, General information, Brake circuit, Bleeding**).

After the operation, carry out a road test with **ABS** regulation.

If the customer complaint is particularly pronounced, and bleeding the circuit does not improve matters, replace **component 1094** (see **MR 411, Mechanical, 38C, Hydraulic brake unit, Removal - Refitting**).

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ALP10

Brake pedal vibration

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Check the conformity of the mechanical components and in particular check that the brake discs are not warped.

It is normal that the brake pedal vibrates during **ABS** regulation or braking pressure distribution on the front and rear axles ("braking compensator" function).

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP11

Noises from the pump, the pipes or the hydraulic unit

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Check the conformity of the mechanical components (see **MR 411, Mechanical, 30A, General information, Brake, Specifications**).

Vibration of the unit: check the presence and condition of the unit mounting **insulating** rubber mountings.
Vibration of pipes: check that all the pipes are securely clipped in their retaining clips and that there is no contact between pipes or between pipes and bodywork.
To identify the source of the noise, use the control commands of the solenoid valves **AC003 "Front left-hand wheel solenoid valves"**, **AC004 "Front right-hand wheel solenoid valves"**, **AC005 "Rear left-hand wheel solenoid valves"** and **AC006 "Rear right-hand wheel solenoid valves"** and of the pump **AC016 "Pump motor test"**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP12

ABS computer not detected during the multiplex network test on CLIP

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.

After the multiplex network test on CLIP, if the **ABS/ESP** computer is not detected, carry out the following operations:

- Return to the home menu of the CLIP screen.
- Switch off the ignition.
- Restart the engine (**+ after ignition feed**).
- Repeat the multiplex network test.
- If the fault is still present, perform the fault finding described in **ALP1 No dialogue with the ABS/ESP computer**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

ALP 13

Faulty brake light illumination

NOTES

Only address this customer complaint after a **complete check** with **the diagnostic tool**.

Using **the diagnostic tool**, check the consistent status **ET017 "Brake pedal"** for pedal pressed and pedal released.

If inconsistent, apply the fault finding procedure for status **ET017 Brake pedal**.

If the lights come on continuously, check the operation of component **1281** using command **AC187 Brake light activation relay**. The brake lights must light only when the command is run.

Otherwise, with **component 1281** removed, check the continuity between connections **65A** and **65G** of **component 1281**.

If continuity is not guaranteed, replace **component 1281**.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with **the diagnostic tool**.

ALP14	Erratic ESP regulation

NOTES	Only address this customer complaint after a complete check with the diagnostic tool .

Check that the 4 vehicle tyres are identical and in accordance with the manufacturer's recommendations (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyres, Identification**).

Check that the pressures of the 4 tyres conform to the manufacturer's recommendations (see **MR 411, Mechanical, 35A, Wheels and tyres, Tyre pressure, Identification**).

Using the **diagnostic tool**, check that the **vehicle version** corresponds to the vehicle type.

If necessary, reconfigure the vehicle version using command **VP004 Vehicle parameters** to correspond to the vehicle type.

Using parameter **PR030 Tachometric index**, check that the tachometric index corresponds to the vehicle type.

If necessary, reconfigure the tachometric index using command **VP007 Tachometric index** to correspond to the vehicle.

Check the connection and condition (possible wiring damage) of the connector of **component 1175**.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that **component 1175** is properly mounted on the body and in the correct direction (the arrow must point towards the front of the vehicle).

Calibrate **component 583** using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).

Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.

Clear the faults from the computer using the command **RZ001 "Fault memory"**.

Carry out a road test followed by another check with **the diagnostic tool**.

If the fault is still present:

- Adjust the axle geometry (see **MR 411, Mechanical, 30A, General information, Front axle, Adjustment**).
- Calibrate **component 583** using command **VP003 Steering wheel angle sensor** (see **Configurations and programming**).
- Clear the ESP sensor offsets using command **RZ011 Sensor offsets**.
- Clear the faults from the computer using the command **RZ001 "Fault memory"**.
- Carry out a road test followed by another check with **the diagnostic tool**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .

ALP15

Intermittent illumination of brake, ESP, ABS, SERVICE and STOP warning lights and the message "brake failure" on the instrument panel with no fault codes in the computer

NOTES

Special notes:

Only address this customer complaint after a **complete check** with **the diagnostic tool**.
Problem with external supply to the computer:
The computer is intermittently without supply because of bad contacts in the electrical supply circuit.

Refer to the interpretation of fault **DF001 Computer supply**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with **the diagnostic tool**.

TWINGO

3 Chassis

36B POWER – ASSISTED STEERING

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **New Twingo**
Function concerned: **Electric power steering**

Computer name: **EPAS**
Vdiag No.: **04 - 08**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the diagnostic tool), Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- **CLIP + multiplex line sensor**

Special tooling required

Special tooling required	
Multimeter	
Elé. 1681	Universal bornier

3. REMINDERS

Procedure

To run diagnostics on the vehicle computers, proceed as follows:

- turn the ignition key to APC,
- connect the **diagnostic tool** and perform the required operations.

To cut off + after ignition feed, proceed as follows:

- disconnect the **diagnostic tool**,
- turn the ignition key to OFF,
- switch off the ignition.

Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the diagnostic tool is switched on after the + after ignition feed (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the resistance of the component detected as defective,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the diagnostic tool because the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

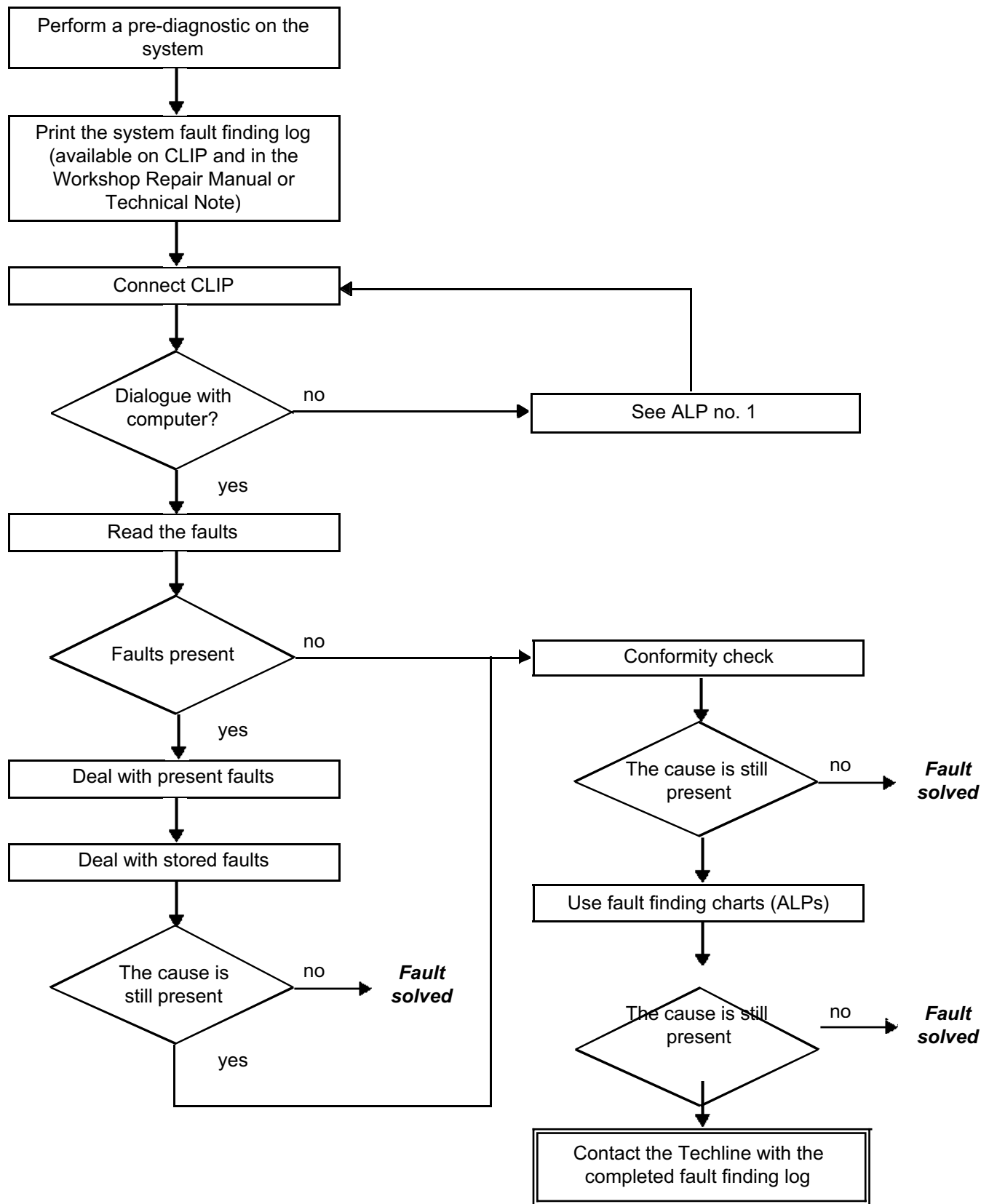
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (CONTINUED)

Wiring check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connections:

- Connector / Connector
- Connector / Device

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection of the connection:

Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.), that the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is pulled.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANT RETURNS DEPARTMENT.

You will always be asked for this log:

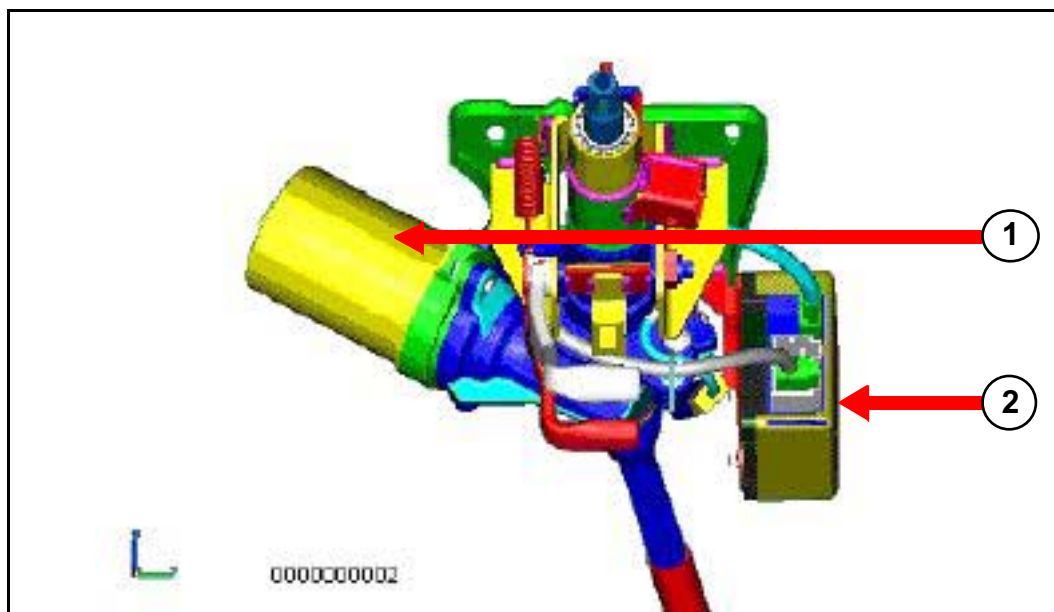
- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

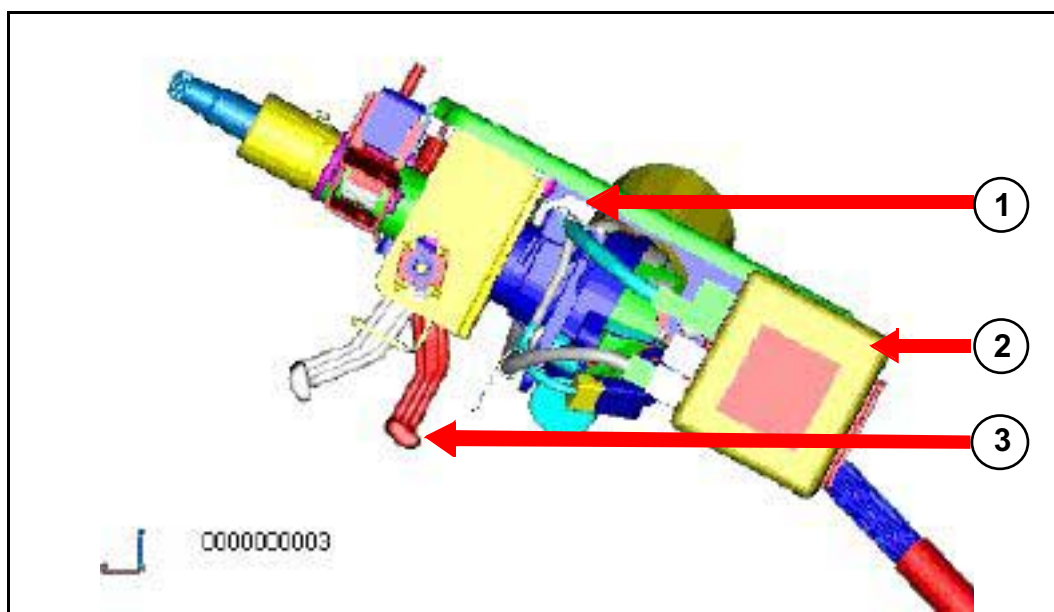
- check the battery voltage to avoid incorrect operation of computer functions,
- use the appropriate tools,
- do not touch the discharge bulbs, and do not work on the COSLAD system when it is in operation, as the voltage can be above 20,000 V.

Figure 1: Computer and motor



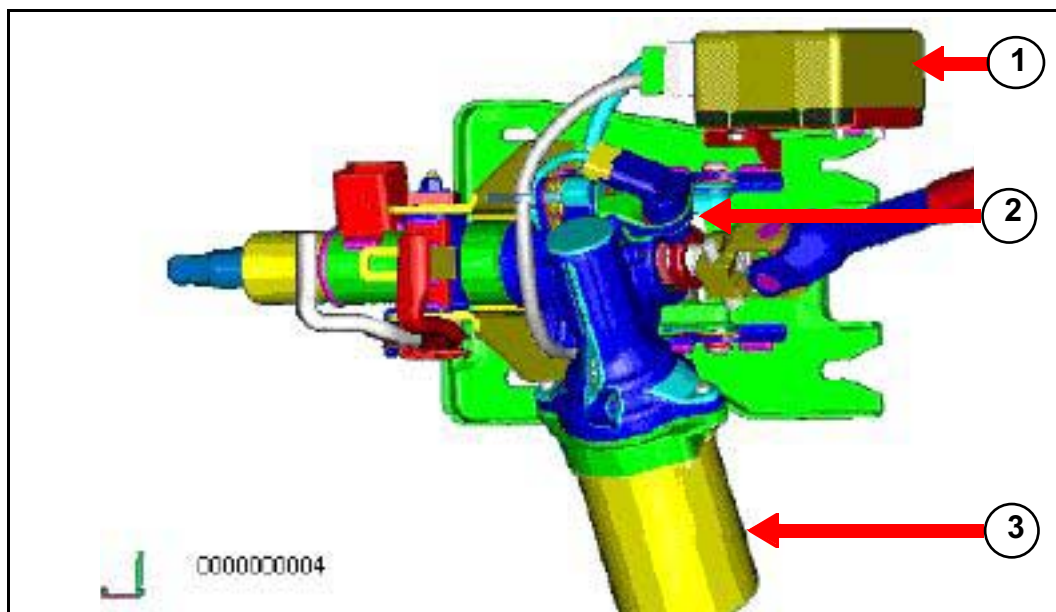
- 1 Engine
- 2 Computer

Figure 2: Torque sensor and column adjustment handle



- 1 Torque sensor
- 2 Computer
- 3 Column adjustment handle

Figure 3: Computer, Angle sensor and Motor



- 1 Computer
- 2 Angle sensor (on for Vdiag 04)
- 3 Engine

Angle sensor:

This sensor indicates the position of the steering wheel in real time (only for Vdiag 04).

Torque sensor:

This sensor enables the assistance torque to be controlled according to the force applied to the steering wheel by the driver.

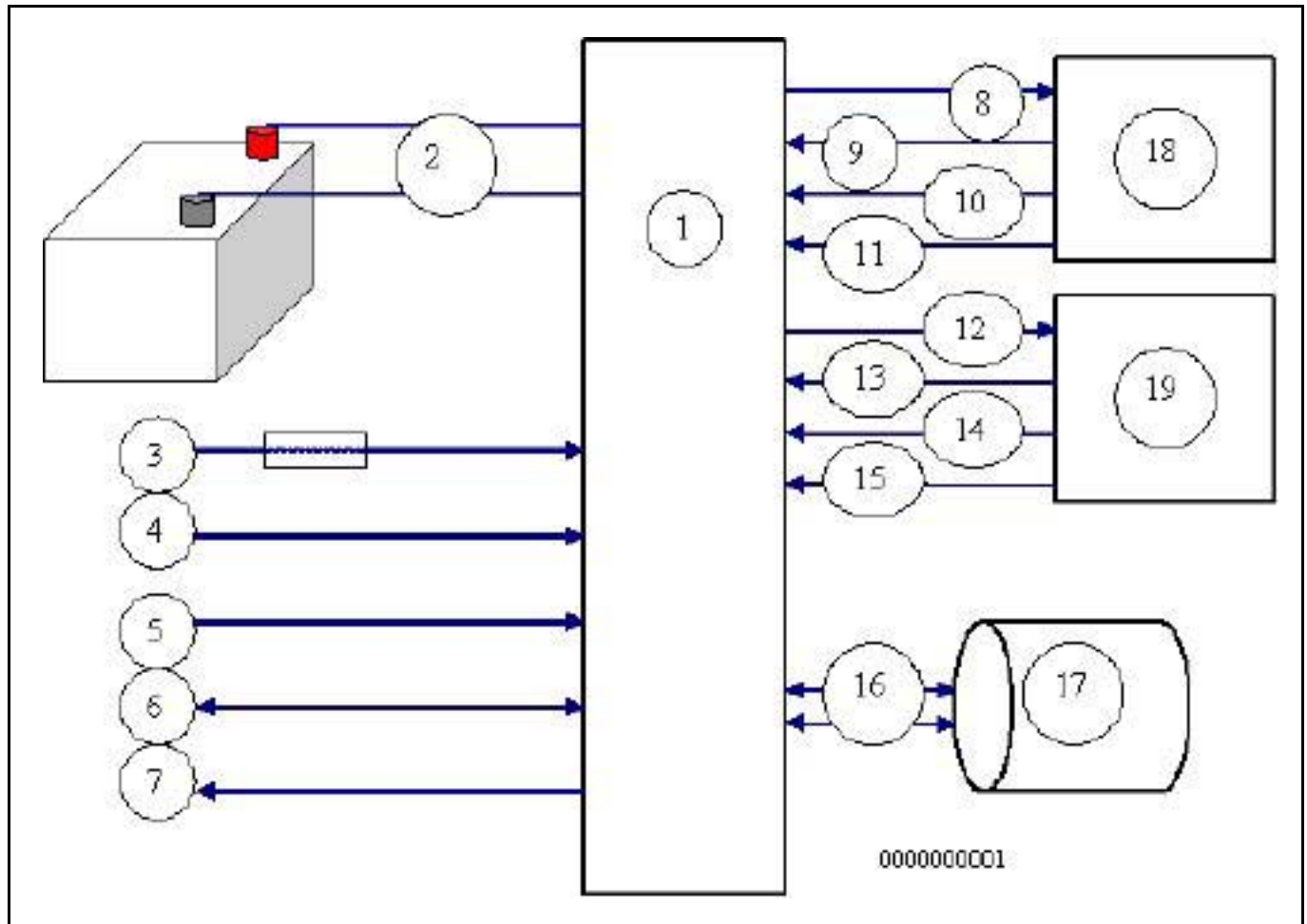
Computer:

This computer calculates the level of steering assistance required according to various parameters, including the vehicle speed and the steering wheel torque.

Motor:

The motor provides the necessary steering torque assistance according to driver requirements.

Column steering system



- 1 Computer
- 2 Computer supply
- 3 + after ignition feed
- 4 Vehicle speed
- 5 Engine speed
- 6 K line
- 7 Fault warning light
- 8 + torque sensor
- 9 Main signal
- 10 Secondary signal
- 11 0 V
- 12 + angle sensor (only in **Vdiag 04**)
- 13 Signal 1 (only in **Vdiag 04**)
- 14 Signal 2 (only in **Vdiag 04**)
- 15 0 V (only in **Vdiag 04**)
- 16 Brush motor supply
- 17 Power-assisted steering motor
- 18 Torque sensor
- 19 Angle sensor (only in **Vdiag 04**)

GENERAL OPERATION

On this vehicle, the steering system is power-assisted by an electric motor attached to the steering column.

The torque sensor and steering column angle sensor interpret any movement of the steering wheel as it is turned. Assistance is provided by an electric motor which applies more or less torque to the steering column, in one direction or the other.

A computer controls this assistance according to several vehicle environment parameters, including the vehicle speed.

EPAS ALSO OFFERS THE FOLLOWING:

Active recall:

This function is made necessary by the design of the front axle of vehicles with electric power-assisted steering. It returns the steering wheel to the centre point when driving at low speeds (5 to 20 mph / 8 to 32 km/h) but not when the vehicle is stationary. This function is normal on hydraulic power-assisted steering vehicles or vehicles without assistance.

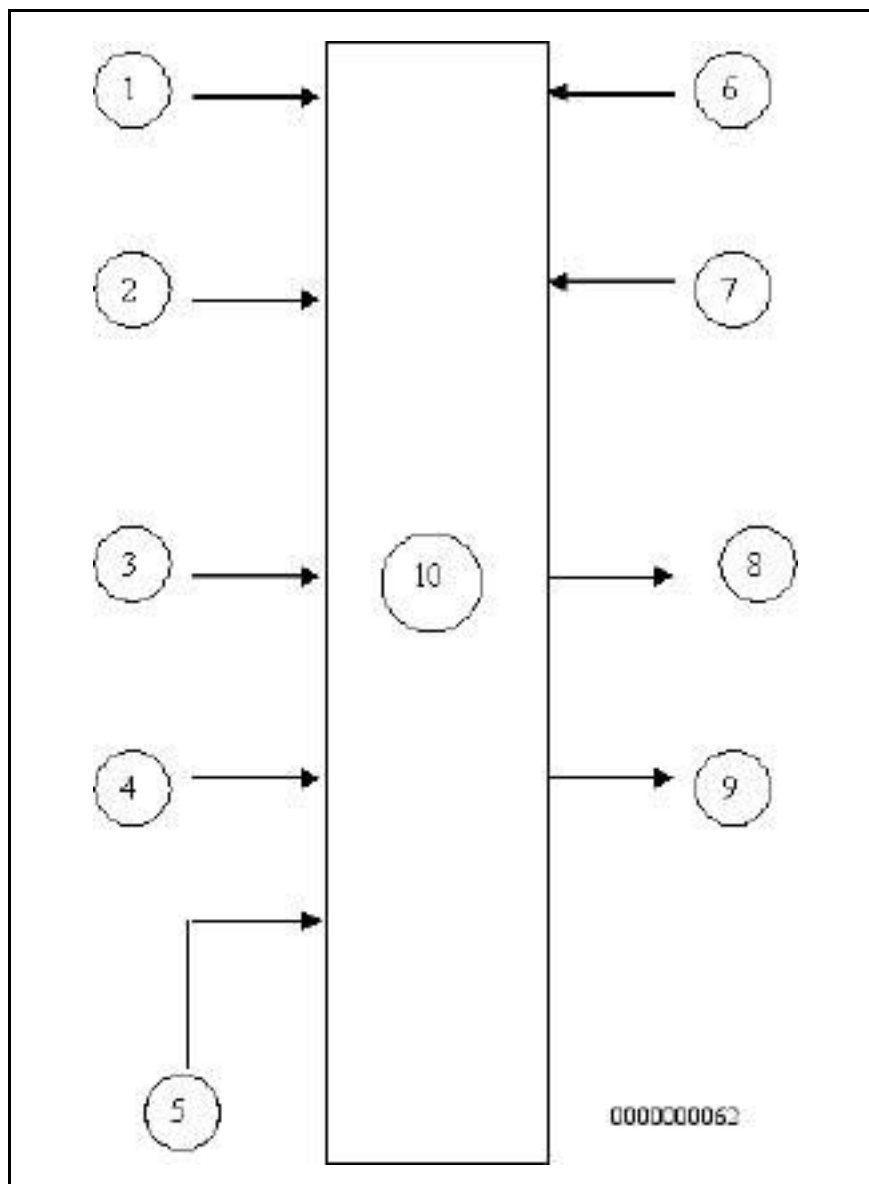
This function cannot be deactivated by the diagnostic tool.

Note:

When the computer detects a fault, the level of assistance can be modified depending on how serious the fault is. An incorrect or absent vehicle speed signal results in assistance equal to that provided at **72 mph (120 km/h)** without active return. The EPAS sends a "Steering wheel angle signal" to the ABS/ESP computer.

Depending on the operating conditions and the operations performed on the vehicle before switching on the ignition, the assistance system may take a certain amount of time to be activated after engine starting, for instance after battery cut-off or switching off the ignition (see Configurations and programming).

SIGNALS RECEIVED AND SENT



- 1 Vehicle speed
- 2 Engine speed
- 3 Power supply (permanent +)
- 4 Supply (+ after ignition feed)
- 5 Earth
- 6 Steering wheel angle (**Vdiag 04** only)
- 7 Steering wheel torque
- 8 Instrument panel indicator light on
- 9 Diagnostic socket
- 10 Power-assisted steering computer

Precautions for use

- The electric motor and upper column (EPAS system) assembly cannot be taken apart.
- Only reuse an EPAS system from one vehicle on another vehicle if the column and computer part numbers match.

WARNING

Never leave the ignition switched on or the engine running during a **mechanical operation** on the EPAS or the front axle. To avoid any accident, **the battery must be disconnected** (to prevent the risk of accidentally triggering the EPAS motor).

A. Replacing the EPAS (computer - top steering column assembly):

Before replacing the EPAS, run fault finding on the system: apply the appropriate fault finding procedure. The EPAS may be replaced only with the consent of the **Techline**.

When replacing the electric power assisted steering, carry out the following operations **in order**:

- disconnect the vehicle battery,
- replace the EPAS (see **MR411 Mechanical systems, 36B, Power-assisted steering**),
- reconnect the vehicle battery,
- connect the diagnostic tool, switch on the ignition and establish dialogue with the electric power-assisted steering computer (EPAS computer),
- perform the configurations (see Configurations and programming),
- check that there are no faults, check the conformity of the variables, and check that the EPAS operates correctly (steering assistance provided when the engine is running),
- perform a road test then, without switching off the ignition, check that status **ET020 Steering wheel angle sensor programming** is **Programmed** (only for **Vdiag 04**).

B. Replacing the intermediate shaft or the steering rack (without changing the EPAS):

- disconnect the vehicle battery,
- replace the intermediate shaft or the steering rack (see **MR 411 Mechanical systems, 36A, Steering assembly**),
- reconnect the vehicle battery,
- connect the diagnostic tool, switch on the ignition and establish dialogue with the electric power-assisted steering computer (EPAS computer),
- check that there are no faults,
- check that the EPAS is working correctly (steering assistance available when the engine is running).

C. Replacing the power-assisted steering computer:

- disconnect the vehicle battery,
- replace the power-assisted steering computer,
- reconnect the vehicle battery,
- connect the diagnostic tool, switch on the ignition and establish dialogue with the electric power-assisted steering computer (EPAS computer),
- configure the computer (see Configurations and programming),
- check that there are no faults,
- check that the EPAS is working correctly (steering assistance available when the engine is running).

Summary table of configurations and configuration readings

Configuration		Configuration readings	
CF073	Strategy number	LC002	Strategy number
		LC001	Type of power-assisted steering

CONFIGURATION:

After replacing the EPAS computer, configure the computer using command **CF073 Strategy number**.

The following procedure must be followed for this configuration:

- connect the **diagnostic tool**,
- switch on the ignition and establish dialogue with the electric power-assisted steering computer,
- Clear the faults using command **RZ001 Fault memory**.
- select the Repair mode menu,
- use command **CF073 Strategy number** to perform the configuration and select the relevant strategy number using the table as a guide,
- make sure the configuration readings have been properly registered,
- check that the system is operating correctly (steering assistance available when the engine is running).

STEERING WHEEL ANGLE PROGRAMMING:

IMPORTANT

The steering wheel angle sensor is programmed automatically each time the vehicle is driven and therefore it cannot be programmed using the tool.

POWER – ASSISTED STEERING

Fault finding – Fault summary table

Tool fault	Diagnostic tool title	Associated DTC	Customer complaints and warning light coming on
DF001	Motor thermal protection	5660	Steering assistance intermittent reduction (no warning light or buzzer)
DF002	Computer	5640	No assistance on start-up or sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF017	Motor circuit	5630	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF023	+ after ignition feed	5622	Gradual loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF028	Engine speed zero	5621	Incorrect level of assistance (no warning light or buzzer)
DF037	Battery voltage	5650	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF038	Angle sensor	5610	Loss of "active return" function with no warning light
DF039	Torque sensor circuit	5603	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF043	Vehicle speed	5620	Incorrect level of assistance (no warning light or buzzer)
DF048	Torque sensor circuit	5602	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF050	Torque sensor circuit signal 2	5601	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer
DF054	Torque sensor	5600	Sudden loss of assistance with EPAS fault warning light, STOP warning light and buzzer

DF001 PRESENT OR STORED	MOTOR THERMAL PROTECTION DEF: Operating temperature too high

NOTES	Conditions for applying the fault finding procedure to stored faults: Apply this fault finding procedure even if the fault is stored.
	Notes: This fault does not indicate a system failure, but indicates overheating either of the Electric Power-Assisted Steering (EPAS) motor or of the computer during repeated manoeuvres. This fault may appear after the steering wheel is moved repeatedly (parking) and causes a gradual reduction in steering but the fault warning light does not come on.

Use the **diagnostic tool** to check the conformity of **PR129 Motor power (60 A)** and **PR130 Motor power (45 A)** (**zero in absence of PR001 Torque applied to steering wheel**).
Contact the Techline in the event of any nonconformity.

Check the conformity of the computer and steering column (**45 or 60 A**) in relation to the table below:

	Left-hand drive	Right-hand drive
Torque sensor wiring harness	blue	black
Motor wiring 45 A	green	black
Motor wiring 60 A	blue	grey

	45 A	60 A
Computer label	yellow	white

In the event of a nonconformity, consult "RENAULTNET" to repair the vehicle according to the technical vehicle definition.

Disconnect the battery then allow the **electric power-assisted steering** to cool down.
Reconnect the battery, clear the faults, start the vehicle and check the operation of the **electric power-assisted steering** by turning the steering wheel full lock to the left or right.
The fault should not recur in the next **30 seconds**.

If the fault recurs as present or stored, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF002 PRESENT OR STORED	COMPUTER 1. DEF: + After relay supply fault 2. DEF: Internal electronic fault

NOTES	Priority in the event of a number of faults: In the event of numerous faults, deal with the other present and stored faults before applying the fault finding procedure for this fault.
	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure even if the fault is stored.
	Notes: This fault causes: No assistance on start-up or sudden loss of assistance with illumination of the Fault warning light + STOP + Beep.

Contact Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF017 PRESENT OR STORED	<u>MOTOR CIRCUIT</u> DEF : Short circuit to earth or short circuit to 12 V CC.O : Short circuit to earth CO : Open circuit

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine was started and after turning the steering wheel from lock to lock, then returning it to the centre.
	Notes: This fault causes: Sudden loss of steering assistance with illumination of the Fault warning light + STOP + Beep.
	Use the Wiring Diagram Technical Note for New Twingo.

With + after ignition feed off, check the connection and condition (possible wiring damage) of the connector of component 502 and its clips. If the connector is faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connector, otherwise replace the steering column. Connector of component 502 and component 540 disconnected: check the insulation against +, -, and between the connections and check the continuity of the following connections: ● Connection 109R ● Connection 109S If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or the wiring, otherwise replace the steering column. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF023 STORED	+ AFTER IGNITION FEED CO.O: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is stored after the after ignition feed is switched off at speeds over 6 mph (10 km/h) .
	Notes: This fault causes: Sudden loss of steering assistance with illumination of the Fault warning light + STOP + Beep .
	Use the Wiring Diagram Technical Note for New Twingo .

Important note: this fault may indicate the system is being incorrectly used by the customer (ignition cut off at speeds over 6 mph (10 km/h)).
In this instance, this fault should be ignored.

With + after ignition feed off, check the connection and condition (possible wiring damage) of the connector of **component 502** and its clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
With the connector of component **1016** disconnected, check the insulation and continuity of connection **AP23** between components **502** and **1016**.
If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks reveal no faults, perform a conformity check of component **1016**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF028 PRESENT OR STORED	ENGINE SPEED ABSENT DEF: Open circuit, short circuit to earth or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after having started the engine and turned the steering wheel from lock to lock, then returning it to the centre.
	Notes: This fault causes: No assistance with illumination of the Fault warning light + STOP + Beep .
	Use the Wiring Diagram Technical Note for New Twingo .

Start the vehicle and use the diagnostic tool to check the conformity of PR004 Engine speed (not zero). If necessary, carry out a fault finding procedure on the injection system.
With + after ignition feed off, check the connection and condition (possible wiring damage) of the connector of component 502 and its clips. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. With the connector of component 502 and intermediate connector R107 disconnected: check the insulation and the continuity of connection H7 between component 502 and intermediate connector R107 . Connector of components 119 and 120 disconnected: check the insulation and the continuity of connection H7 between component 120 and intermediate connector R107 . If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF037 PRESENT OR STORED	BATTERY VOLTAGE 1. DEF: Under voltage 2. DEF: Excess voltage

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after starting the engine and turning the steering wheel from lock to lock left to right.
	Notes: This fault causes: Sudden loss of steering assistance with illumination of the Fault warning light + STOP + Beep .
	Use the Wiring Diagram Technical Note for New Twingo .

Check the tightness and condition of the battery terminals (see 80A, Battery). Check the charging circuit (see 16A, Starting - Charging).
Check the condition and position of the 80 A fuse in the engine fuse and relay box . Check the condition and position of fuse F3 (15 A) fuse in the passenger compartment fuse box (see 81C, Fuse box).
With the ignition on and the engine stopped, check for a voltage equal to the battery voltage on connections BP81 and AP23 against earth ML .
With the connectors of component 502 disconnected, check the condition and conformity of the connectors and their clips. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the connector, otherwise replace the wiring. With the connectors of components 597 and 1016 disconnected: Check the continuity and insulation of connection BP81 between components 502 and 597 . Check the continuity and insulation of connection AP23 between components 502 and 1016 . Check the continuity and insulation of connection ML of component 502 . If the connection or connections are faulty (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace it. If the checks reveal no faults, check the conformity of components 597 and 1016 .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF038 PRESENT OR STORED	ANGLE SENSOR DEF: Open circuit, short circuit to earth or short circuit to + 12 V

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after having started the engine and turned the steering wheel from lock to lock, then returning it to the centre.
	Notes: This fault causes: Loss of the "active return" function with no fault warning light or Beep.
	Use the Wiring Diagram Technical Note for New Twingo .

With + after ignition feed off, check the connection and condition (possible wiring damage) of the connector of component 502 and its clips. With + after ignition feed off, check the connection and condition (possible wiring damage) of connector E and its clips of component 583. If the connector is faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair) repair the wiring, otherwise replace it. Visually check the condition of the wiring harness of component 583 (for possible wiring damage). If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the steering column. With the connectors of components 502 and 583 disconnected: check the continuity and insulation of the following connections between components 502 and 583: ● Connection 109F ● Connection 109Z ● Connection 109X ● Connection 109I If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the steering column. Check the condition of the tabs of the connections of component 502. Contact the Techline in the event of any nonconformity. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF039 DF048 DF050 DF054 PRESENT OR STORED	<u>TORQUE SENSOR CIRCUIT</u> <u>TORQUE SENSOR CIRCUIT</u> <u>TORQUE SENSOR CIRCUIT SIGNAL 2</u> <u>TORQUE SENSOR</u> CO.O: Open circuit or short circuit to earth

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after having started the engine and turned the steering wheel from lock to lock, then returning it to the centre.
	Notes: This fault causes: Sudden loss of steering assistance with illumination of the Fault warning light + STOP + Beep .
	Use the Wiring Diagram Technical Note for New Twingo .

With + after ignition feed off, check the connection and condition (possible wiring damage) of connector C and its clips of component 502. If the connector is faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair) repair the wiring, otherwise replace it. Visually check the condition of the wiring harness of component 850 (for possible wiring damage). If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the steering column. With the connectors of components 502 and 850 disconnected, check the continuity and insulation of the following connections between components 502 and 850. ● Connection 109K ● Connection 109M ● Connection 109N ● Connection 109P If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the steering column. With + after ignition feed off, disconnect and check the condition and conformity of connector C and its clips. Visually check the condition of the torque sensor wiring harness. In the event of a nonconformity, replace the steering column. Check the condition of the connection pins of components 502 and 850. Contact the Techline in the event of any nonconformity. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

DF043 PRESENT OR STORED	VEHICLE SPEED DEF: Open circuit, short circuit to earth or to + 12 V

NOTES	Notes: This fault causes: Assistance in defect mode with no fault warning light or Beep (Insufficient assistance).
	Use the Wiring Diagram Technical Note for New Twingo .

Carry out a road test.
Check the consistency of the speed signal on the instrument panel.
If necessary, carry out fault finding on the **ABS/ESP** system (see **38C, Anti-lock braking system**).
Then use the **diagnostic tool** to check that **PR003** is not zero.

With **+ after ignition feed** off, check the **connection and condition** (possible wiring damage) of the connector of **component 502** and its clips.

If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the intermediate connector **R107** and the connector of component **502** disconnected, check the continuity and insulation of **connection 47F** between component 502 and intermediate connector R107.

With the connector of components **1579, 261** and **1094** disconnected: check the continuity and insulation of **connection 47F** between component 1094 and intermediate connector R107.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the checks reveal no faults, check the conformity of components **1579, 261** and **1094**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the stored faults. Check that the EPAS is working.

POWER – ASSISTED STEERING

Fault finding – Conformity check

36B

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool**.
Application conditions: ignition on, engine stopped, no movement of the steering wheel, front wheels set straight ahead.

MAIN SCREEN

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Wire information	PR003: Vehicle speed	X = 0 mph (km/h)	In the event of a fault, apply the interpretation of parameter PR003 .
	PR004: Engine speed	0 = rpm	In the event of a fault, apply the interpretation of parameter PR004 .
Assistance	PR001: Torque applied to the steering wheel	0 Nm (+ 0.2 Nm)	In the event of a fault, apply the interpretation of parameter PR001 .
Steering wheel angle (Vdiag 04 only)	PR121: Steering wheel angle	- 5° < X < 5°	In the event of a fault, apply the interpretation of parameter PR121 .

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool**.
Application conditions: ignition on, engine stopped, no movement of the steering wheel, front wheels set straight ahead.

SUB-FUNCTION: ASSISTANCE

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Power supply	PR032: Feed voltage	0 V	In the event of a fault on this parameter, apply the fault finding procedure of DF037 Battery voltage .
Wire information	PR003: Vehicle speed	0 mph	In the event of a fault, apply the interpretation of parameter PR003 .
	PR004: Engine speed	0 rpm	In the event of a fault, apply the interpretation of parameter PR004 .
Steering wheel angle (Vdiag 04 only)	ET020: Steering wheel angle sensor programming	Not programmed	In the event of a fault, apply the interpretation of status ET020 .
	PR121: Steering wheel angle	- 5° < X < 5°	In the event of a fault, apply the interpretation of parameter PR121 .
Faults	ET021: Motor thermal protection indicator	Not active	In the event of a fault, apply the interpretation of status ET021 .
	ET025: Fault indicator	Off	In the event of a fault, apply the interpretation of status ET025 .

NOTES	Only carry out this conformity check after a complete check with the diagnostic tool . Application conditions: ignition on, engine stopped, no movement of the steering wheel, front wheels set straight ahead.

SUB-FUNCTION: ASSISTANCE (CONTINUED)

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Assistance	PR001: Torque applied to the steering wheel	0 Nm (+ 0.2 Nm)	In the event of a fault, apply the interpretation of parameter PR001 .
Output	PR132: Current setpoint (45 A)	0 A Note: these two parameters must be approximately the same.	In the event of a fault, apply the interpretation of parameters PR132 and PR130 .
	PR130: Motor power (45 A)		
	PR131: Current setpoint (60 A)	0 A Note: these two parameters must be approximately the same.	In the event of a fault, apply the interpretation of parameters PR131 and PR129 .
	PR129: Motor power (60 A)		

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool**.
Application conditions: engine at idle speed, no movement of the steering wheel, front wheels straight ahead.

MAIN SCREEN

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Wire information	PR003: Vehicle speed	0 mph	In the event of a fault, apply the interpretation of parameter PR003 .
	PR004: Engine speed	850 +/- 50 rpm	In the event of a fault, apply the interpretation of parameter PR004 .
Assistance	PR001: Torque applied to the steering wheel	0 Nm (+ 0.2 Nm)	In the event of a fault, apply the interpretation of parameter PR001 .
Steering wheel angle (Vdiag 04 only)	PR121: Steering wheel angle	- 5° < X < 5°	In the event of a fault, apply the interpretation of parameter PR121 .

POWER – ASSISTED STEERING

Fault finding – Conformity check

36B

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool**.
Application conditions: engine at idle speed, no movement of the steering wheel, front wheels straight ahead.

SUB-FUNCTION: ASSISTANCE

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Power supply	PR032: Feed voltage	12 < X < 16 V	In the event of a fault on this parameter, apply the fault finding procedure of DF037 Battery voltage .
Wire information	PR003: Vehicle speed	0 mph	In the event of a fault, apply the interpretation of parameter PR003 .
	PR004: Engine speed	850 +/- 50 rpm	In the event of a fault, apply the interpretation of parameter PR004 .
Steering wheel angle (Vdiag 04 only)	ET020: Steering wheel angle sensor programming	Not programmed	In the event of a fault, apply the interpretation of status ET020 .
	PR121: Steering wheel angle	- 5° < X < 5°	In the event of a fault, apply the interpretation of parameter PR121 .
Faults	ET021: Motor thermal protection indicator	Not active	In the event of a fault, apply the interpretation of status ET021 .
	ET025: Fault indicator	Off	In the event of a fault, apply the interpretation of status ET025 .

NOTES	Only carry out this conformity check after a complete check with the diagnostic tool . Application conditions: engine at idle speed, no movement of the steering wheel, front wheels straight ahead.

SUB-FUNCTION: ASSISTANCE (CONTINUED)

Function	Parameter or Status Checked or Action	Display and notes	Fault finding
Assistance	PR001: Torque applied to the steering wheel	0 Nm (+ 0.2 Nm)	In the event of a fault, apply the interpretation of parameter PR001 .
Output	PR132: Current setpoint (45 A)	0 A Note: these two parameters must be approximately the same.	In the event of a fault, apply the interpretation of parameters PR132 and PR130 .
	PR130: Motor power (45 A)		
	PR131: Current setpoint (60 A)	0 A Note: these two parameters must be approximately the same.	In the event of a fault, apply the interpretation of parameters PR131 and PR129 .
	PR129: Motor power (60 A)		

Tool status	Diagnostic tool title
ET020	Steering wheel angle programming
ET021	Motor thermal protection indicator
ET025	Fault indicator

ET020	<u>PROGRAMMING THE STEERING WHEEL ANGLE SENSOR</u>

NOTES	Note: Deal first with DF038 Angle sensor .
	Special note: Every time the ignition is switched on, status ET020 is NOT PROGRAMMED . Programming is performed automatically each time the vehicle is driven.

Drive the vehicle, then switch off the ignition and check that status **ET020** is **PROGRAMMED**.

If status **ET020** remains **NOT PROGRAMMED** after the vehicle is driven, carry out the fault finding procedure for fault **DF038 Angle sensor**.

AFTER REPAIR	Perform a test using the diagnostic tool .

ET021	<u>THERMAL PROTECTION INDICATOR</u>

NOTES	Special note: The status is declared correct when it is NOT ACTIVE .

If status **ET021** is active after approximately one hour without any manoeuvring, carry out the fault finding procedure for fault **DF001 Motor thermal protection**.

AFTER REPAIR	Perform a test using the diagnostic tool .

ET025	<u>FAULT INDICATOR</u>

NOTES	Special note: The status is declared correct when it is NOT ACTIVE .

If status **ET025** is **ACTIVE**, consult the possible faults.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

Tool parameter	Diagnostic tool title
PR001	Torque applied to the steering wheel
PR003	Vehicle speed
PR004	Engine speed
PR121	Steering wheel angle
PR129	Motor power (60 A)
PR130	Motor power (45 A)
PR131	Current setpoint (60 A)
PR132	Current setpoint (45 A)

PR001	<u>TORQUE APPLIED TO THE STEERING WHEEL</u>

NOTES	None.

This parameter indicates the torque applied by the driver to the steering column.

If the parameter does not conform with the values indicated in the **Conformity check**, consult the interpretation of fault **DF054 Torque sensor**.

AFTER REPAIR	Perform a test using the diagnostic tool .

PR003	<u>VEHICLE SPEED</u>

NOTES	None.

This parameter indicates the vehicle speed sent by the **ABS/ESP** on the multiplex line.

If the parameter does not correspond to the values indicated in the **Conformity check**, consult the interpretation of fault **DF043 Vehicle speed**.

AFTER REPAIR	Perform a test using the diagnostic tool .

PR004	<u>ENGINE SPEED</u>

NOTES	None.

This parameter indicates the engine speed sent by the injection computer.

If the parameter does not correspond to the values indicated in the **Conformity check**, consult the interpretation of fault **DF028 No engine speed**.

AFTER REPAIR	Perform a test using the diagnostic tool .

PR121	<u>STEERING WHEEL ANGLE</u>

NOTES	None.

This parameter indicates the position of the steering wheel in relation to zero.
The steering wheel angle programming is performed automatically by the power-assisted steering computer every time the vehicle is driven.
This parameter is positive to the right and negative to the left.

If the parameter does not correspond to the values indicated in the **Conformity check**, consult the interpretation of fault **DF038 Angle sensor**.

AFTER REPAIR	Perform a test using the diagnostic tool .

PR129 PR131	<u>MOTOR POWER (60 A)</u> <u>CURRENT SETPOINT (60 A)</u>

NOTES	None.

Parameter **PR131 Current setpoint (60 A)** indicates the current setpoint (power) sent by the **EPAS** computer to the steering motor according to the torque applied to the steering wheel. Parameter **PR129 Motor power (60 A)** indicates the electric current actually consumed by the **EPAS** motor.

The value of parameter **PR131 Current setpoint (60 A)** must be approximately equal to the value of parameter **PR129 Motor power (60 A)**.
If the parameters are not the same, contact the Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

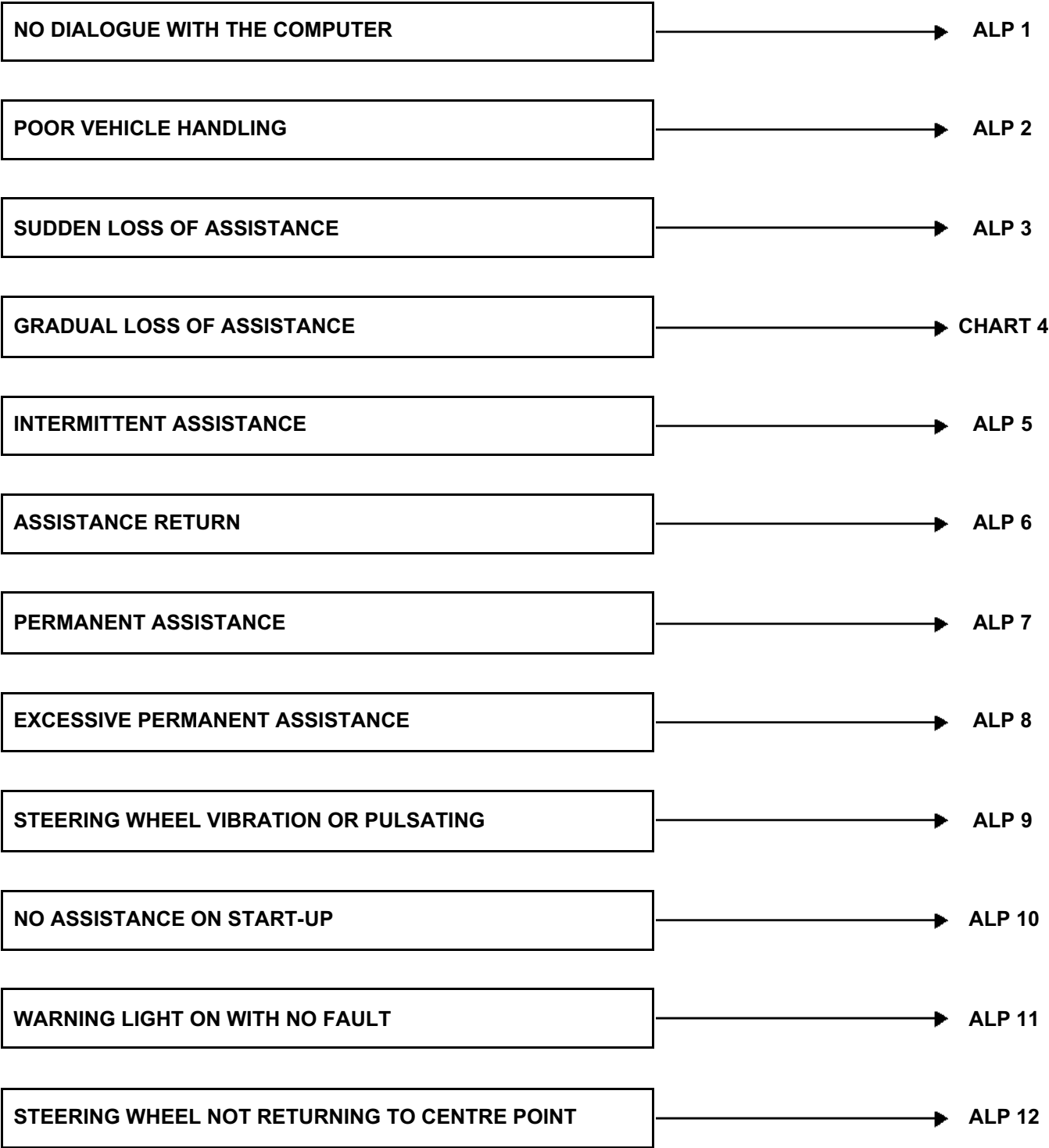
PR130 PR132	<u>MOTOR POWER (45 A)</u> <u>CURRENT SETPOINT (45 A)</u>

NOTES	None.

Parameter **PR130 Current setpoint (45 A)** indicates the current setpoint (power) sent by the **EPAS** computer to the steering motor according to the torque applied to the steering wheel. Parameter **PR132 Motor power (45 A)** indicates the electric current actually consumed by the **EPAS** motor.

The value of parameter **PR130 Current setpoint (45 A)** must be approximately equal to the value of parameter **PR132 Motor power (45 A)**.
If the parameters are not the same, contact the Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .



ALP 1	No dialogue with the computer

NOTES	Use the Technical Note wiring diagram for New Twingo .

Try to establish dialogue with a computer on another vehicle to check that **the diagnostic tool** is not faulty.
If the tool is not faulty and no dialogue is established with any other computer of the same vehicle, check the tightness and condition of the battery terminals (see **80A, Battery**).
Check the charging circuit (see **16A, Starting - Charging**).

With connector A of component **502** and the connector of **components 1222 and 1094** disconnected, check the continuity and insulation of **connection HK** between components **502** and **225**.
If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks reveal no faults, check the conformity of **components 1022 and 1094**.

Check the condition and the position of the **80 A** fuse in the **engine fuse and relay box**.
Check the condition and the position of fuse **F3 (15 A)** in the **passenger compartment fuse box**.

With the ignition on and the engine stopped, check for a voltage equal to the battery voltage on connections **BP81** and **AP23** against earth **ML**.

Connectors of component **502** disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
With the connectors of components **597** and **1016** disconnected:
Check the continuity and insulation of **connection BP81** between components **502** and **597**.
Check the continuity and insulation of **connection AP23** between components **502** and **1016**.
Check the continuity and insulation of **connection ML** of component **502**.
If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks reveal no faults, check the conformity of components **597** and **1016**.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

ALP 2

CUSTOMER COMPLAINTS CONCERNING ASSISTANCE

NOTES

Only consult this customer complaint after a **complete check** with the **diagnostic tool**.

Check that the steering column and steering rack are in sound mechanical condition.
Repair if necessary.

Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.

Check that the configuration reading **LC002 Strategy number** corresponds to the vehicle equipment.
Configure the computer correctly using the diagnostic tool, if necessary (**see Configuration and Programming**).

AFTER REPAIR

Perform a check using the **diagnostic tool**.

ALP 3	SUDDEN LOSS OF ASSISTANCE

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
	Use the Technical Note wiring diagram for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the connector of component **597** disconnected:

Check the continuity and insulation of **connection BP81** between components **502** and **597**.

Check the continuity and insulation of **connection ML** of component **502**.

If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the checks reveal no faults, perform a conformity check of component **597**.

Check the pressure and condition of the tyres, the steering, joints and the front axle geometry.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a check using the diagnostic tool .

CHART 4	GRADUAL LOSS OF ASSISTANCE

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
	Use the Technical Note wiring diagram for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the connector of component **1016** disconnected:

Check the continuity and insulation of **connection AP23** between components **502** and **1016**.

Check the continuity and insulation of **connection ML** of component **502**.

If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the checks reveal no faults, perform a conformity check of component **1016**.

Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a check using the diagnostic tool .

ALP 5	INTERMITTENT ASSISTANCE

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
	Use the wiring diagram Technical Note for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
With the connector of component **1016** disconnected:
Check the continuity and insulation of **connection AP23** between components **502** and **1016**.
Check the continuity and insulation of **connection ML** of component **502**.
If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks reveal no faults, perform a conformity check of component **1016**.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a check using the diagnostic tool .

ALP 6	ASSISTANCE RETURN WHILE DRIVING

NOTES	Only address this customer complaint after a complete check with the diagnostic tool .
	Use the wiring diagram Technical Note for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
With the connector of component **597** disconnected:
Check the continuity and insulation of **connection BP81** between components **502** and **597**.
Check the continuity and insulation of **connection ML** of component **502**.
If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks reveal no faults, perform a conformity check of component **597**.
Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

ALP 7

PERMANENT ASSISTANCE

NOTES

Only consult this customer complaint after a **complete check** with the **diagnostic tool**.

Check the conformity of the computer and the steering column (45 or 60 A) in relation to the table below:

		Left-hand drive	Right-hand drive
Torque sensor wiring harness		blue	black
Motor wiring	45 A	green	black
Motor wiring	60 A	blue	grey

		45 A	60 A
ECU label		yellow	white

In the event of non-conformity, consult **RENAULT NET** to repair the vehicle according to the technical vehicle definition.

Check that the configuration reading **LC002 Strategy number** corresponds to the vehicle equipment. Configure the computer correctly using the diagnostic tool, if necessary (**see Configuration**).

Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.

If the fault is still present, contact Techline.

AFTER REPAIR

Perform a test using the **diagnostic tool**.

ALP 8	EXCESSIVE PERMANENT ASSISTANCE

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .

Check that the configuration reading LC002 Strategy number corresponds to the vehicle equipment. Configure the computer correctly using the diagnostic tool, if necessary (see Configuration and Programming).
Apply the fault finding procedure for fault DF043 Vehicle speed .
If the fault is still present, contact Techline.

AFTER REPAIR	Perform a check using the diagnostic tool .

ALP 9	STEERING WHEEL VIBRATION OR PULSATING

NOTES	Only address this customer complaint after a complete check with the diagnostic tool .
	Use the Technical Note wiring diagram for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the connector of component 1016 disconnected:

Check the continuity and insulation of **connection AP23** between components 502 and 1016.

Check the continuity and insulation of **connection ML** of component 502.

If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the checks reveal no faults, perform a conformity check of component 1016.

Check the conformity of **PR001 Torque applied to steering wheel** (see **Conformity check**).

If the value of this parameter changes drastically without any movement of the steering wheel, contact the Techline

Check the conformity of **PR129 Motor power (60 A)** or **PR130 Motor power (45 A)** (see **Conformity check**).

If the value of this parameter changes drastically without any movement of the steering wheel, contact the Techline.

If the incident is still present, contact the Techline.

AFTER REPAIR	Perform a check using the diagnostic tool .

ALP 10	NO ASSISTANCE ON START-UP

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
	Use the Technical Note wiring diagram for New Twingo .

Connectors of component 502 disconnected, check the condition and conformity of the connectors and clips.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the connector of component **1016** disconnected:

Check the continuity and insulation of **connection AP23** between components **502** and **1016**.

Check the continuity and insulation of **connection ML** of component **502**.

If the connection or connections are faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the checks reveal no faults, perform a conformity check of component **1016**.

Check the battery voltage and carry out any operations necessary to obtain a correct voltage
(**10 V < battery voltage < 16 V**, see **MR 411 Mechanical systems, 16A, Starting - Charging**).

Apply the fault finding procedure for fault **DF028 No engine speed**.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

ALP 11	WARNING LIGHT ON WITH NO FAULT

NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
	Use the Technical Note wiring diagram for New Twingo .

With the connectors of components **502** and **247** disconnected, check the continuity and insulation of connection **109H** between components **502** and **247**.

If the connection is faulty (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the checks reveal no faults, perform a conformity check of component **247**.

If the fault is still present, contact Techline.

AFTER REPAIR	Perform a test using the diagnostic tool .

CHART 12

STEERING WHEEL NOT RETURNING TO CENTRE POINT

NOTES

Only consult this customer complaint after a **complete check** with the **diagnostic tool**.

Conditions:

The steering automatic return function is effective within a speed range of **5** and **20 mph** (8 to 32 km/h).

Carry out a complete check of the axle assemblies on an axle adjustment bench (see MR 411, 30A, General information, for the checking values).

If the fault is still present, contact Techline.

AFTER REPAIR

Perform a test using the **diagnostic tool**.

RENAULT

3 Chassis

30A GENERAL INFORMATION

31A FRONT AXLE COMPONENTS

33A REAR AXLE COMPONENTS

35A WHEELS AND TYRES

36A STEERING ASSEMBLY

36B POWER ASSISTED STEERING

37A MECHANICAL COMPONENT CONTROLS

38C ANTI-LOCK BRAKING SYSTEM

X44

NOVEMBER 2009

EDITION ANGLAISE

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which the vehicles are constructed".

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TWINGO - Chapitre 3

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38C ANTI-LOCK BRAKING SYSTEM

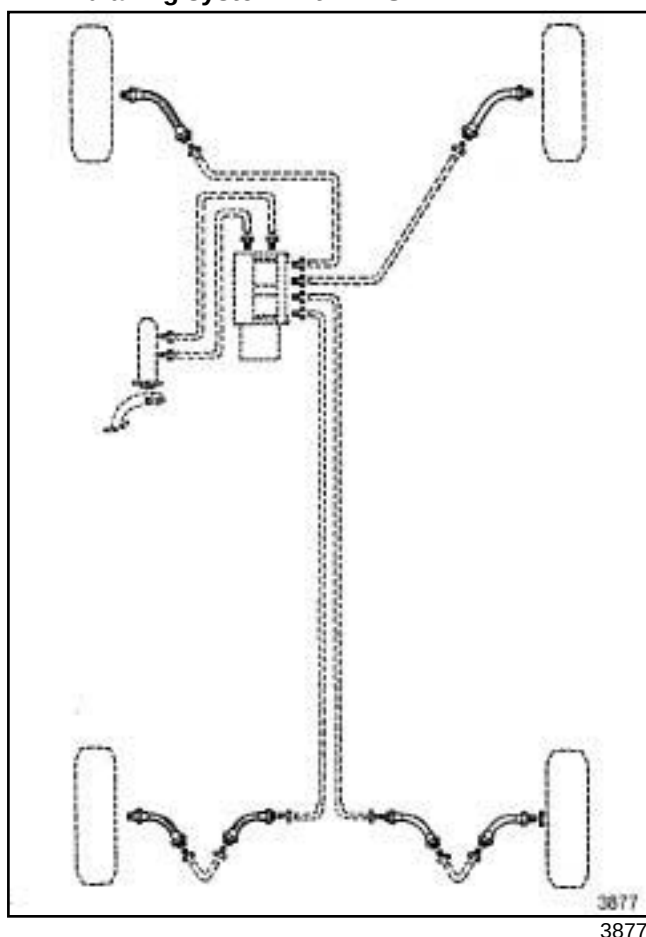
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GENERAL INFORMATION

Brake circuit: Operating diagram

30A

« X » braking system with ABS



IMPORTANT

This is a diagram of the general principle, do not use it as a reference for take-off points or circuit allocation. When replacing components in a vehicle's braking circuit, always mark the pipes before removing them.

I - SAFETY

1 - Advice to be followed before any operation

For an operation requiring the use of a lift, follow the safety advice (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

The brake regulation circuit must be free of all hydraulic and electrical faults.

In case of incorrect handling, the brake fluid can cause serious injury and damage. Follow the manufacturer's instructions for brake fluid.

To prevent dust from entering the master cylinder reservoir and the brake circuit, the plug must be removed just before filling and closed immediately afterwards,

2 - Instructions to be followed during the operation

Do not press on the brake pedal during work on the brake system.

If, during work on the brake system, any damage on any part is observed, it must be repaired before driving the vehicle again.

Brake fluid is highly corrosive. Ensure any brake fluid spilt on parts of the vehicle is cleaned off.

Use brake fluids that comply with the Renault standard (see **Vehicle: Parts and consumables for the repair**)

Check the brake fluid levels in the braking circuit and the bleeding device.

Check that the pressure of the bleeding device is between **1.5 bar and 2 bar**.

II - CLEANLINESS

1 - Advice to be followed before any operation

Protect any bodywork components that risk being damaged by brake fluid with a cover.

2 - Instructions to be followed during the operation

Fit blanking plugs recommended for the Siemens K9K injection system at the end of each pipe and in all the openings of the disconnected components of the brake circuit.

Clean around the braking system with **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

III - GENERAL RECOMMENDATIONS

When replacing brake pads, always replace the pads on the other side as well.

When replacing a disc, always replace the disc on the opposite side.

When replacing brake discs, you must replace the brake pads.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components, regardless of the position of the wheels.

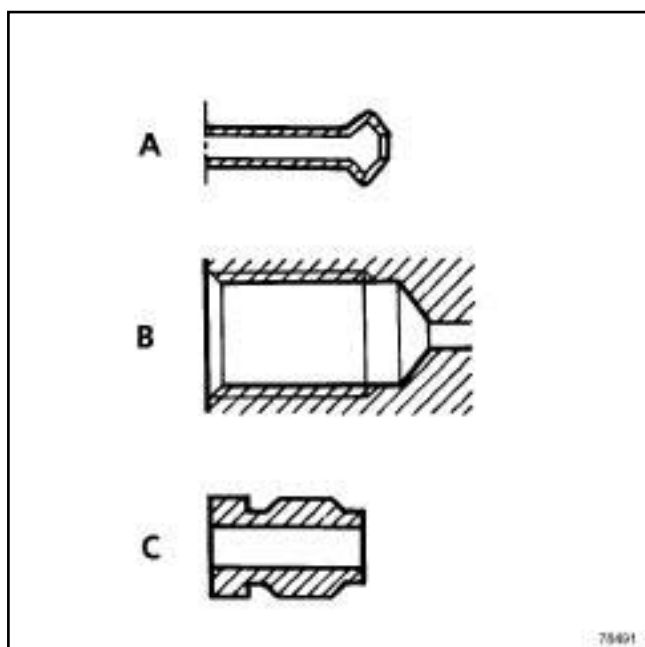
IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Always replace the rigid brake pipe clips.

Reminder:

- The pipes between the master cylinder, callipers and the hydraulic assembly are connected using threaded unions with a metric thread.
- Therefore, only parts specified in the Parts Catalogue for this vehicle should be used.



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Parts identification:

- shape of steel or copper pipe end piece (A),
- shape of connecting points on components (B),
- shape of unions (C): **11 mm** hexagonal.

Precautions to be taken before and during the brake circuit bleeding operation:

- use brake fluid which conforms to the Renault standard (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products),
- check the brake fluid levels in the brake circuit and the bleeding device,
- the braking regulation circuit must be free from all hydraulic and electrical faults,
- check that the pressure of the bleeding device is between **1.5 bars and 2 bars**.

Equipment required

pedal press

brake circuit bleeding device

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **30A, General information, Brake circuit: Precautions for the repair**, page **30A-2**) .

This procedure must be applied after one of the following components has been removed or replaced:

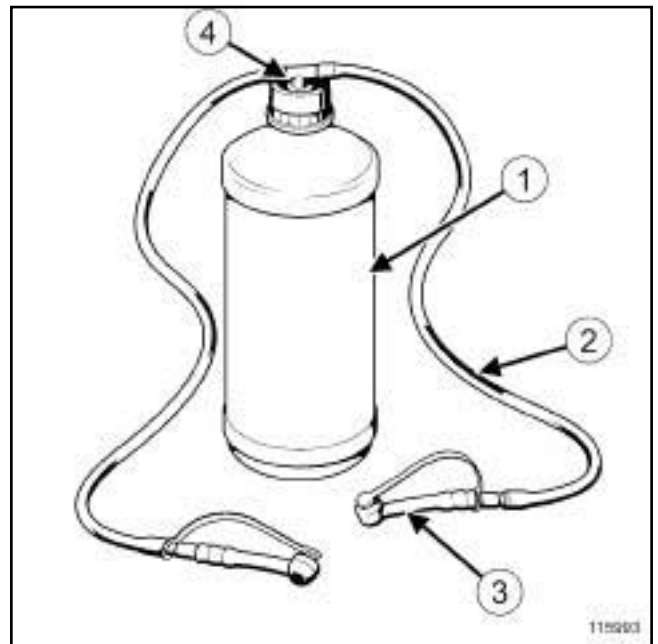
- the master cylinder,
- the brake fluid,
- the hydraulic unit,
- a rigid pipe,
- a hose,
- the reservoir,
- a calliper.

WARNING

Switch off the vehicle ignition so as not to activate the hydraulic unit solenoid valves when bleeding the brake circuit.

WARNING

The level must be between the «MIN» and «MAX» markings on the reservoir.



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- ☐ Use locally produced containers to collect the used brake fluid.

Front and rear callipers:

- 2 washer fluid containers (1) (1 litre),
- 4 mm diameter transparent pipes (2) ,
- 4 pipettes (3) ,
- 2 T-unions (4) .

Note:

The new hydraulic unit is pre-filled.

When working on one of the following components, position a **pedal press** to limit the outflow of brake fluid and prevent any air from entering the master cylinder and the circuits downstream of the master cylinder:

- hydraulic unit,
- pipes between the hydraulic unit and brake callipers,
- brake hoses,
- brake calliper.

Remove the **pedal press** before carrying out the braking system bleeding procedure.

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Switch off the vehicle ignition.

- ☐ Connect the **brake circuit bleeding device** (after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).
- ☐ Pressurise the brake circuit.
- ☐ Adjust the pressure to between **1.5 bar < P < 2 bar** for **3 minutes** to stabilise it in the braking circuit.
- ☐ Close the circuit between the bleed screw and brake fluid reservoir without dumping the pressure.

Note:

The circuit between the bleed screw and brake fluid reservoir is closed in different ways depending on the type of equipment used:

- valve,
- switch.

- ☐ Fit the bleed containers to the four bleed screws of the callipers.
- ☐ Undo the calliper bleed screws:
 - front left-hand,
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- ☐ Open the circuit between the bleed screw and brake fluid reservoir and allow the liquid to run until all the air bubbles have been released.
- ☐ Tighten the bleed screws in the following order:
 - front left-hand,
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- ☐ Undo the calliper bleed screw:
 - front left-hand,
 - allow the fluid to run until all the air bubbles have been released,
 - tighten the bleed screw on the calliper.
- ☐ Carry out the previous operation on the callipers:
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- ☐ Close the bleed screw to dump the pressure in the brake circuit.

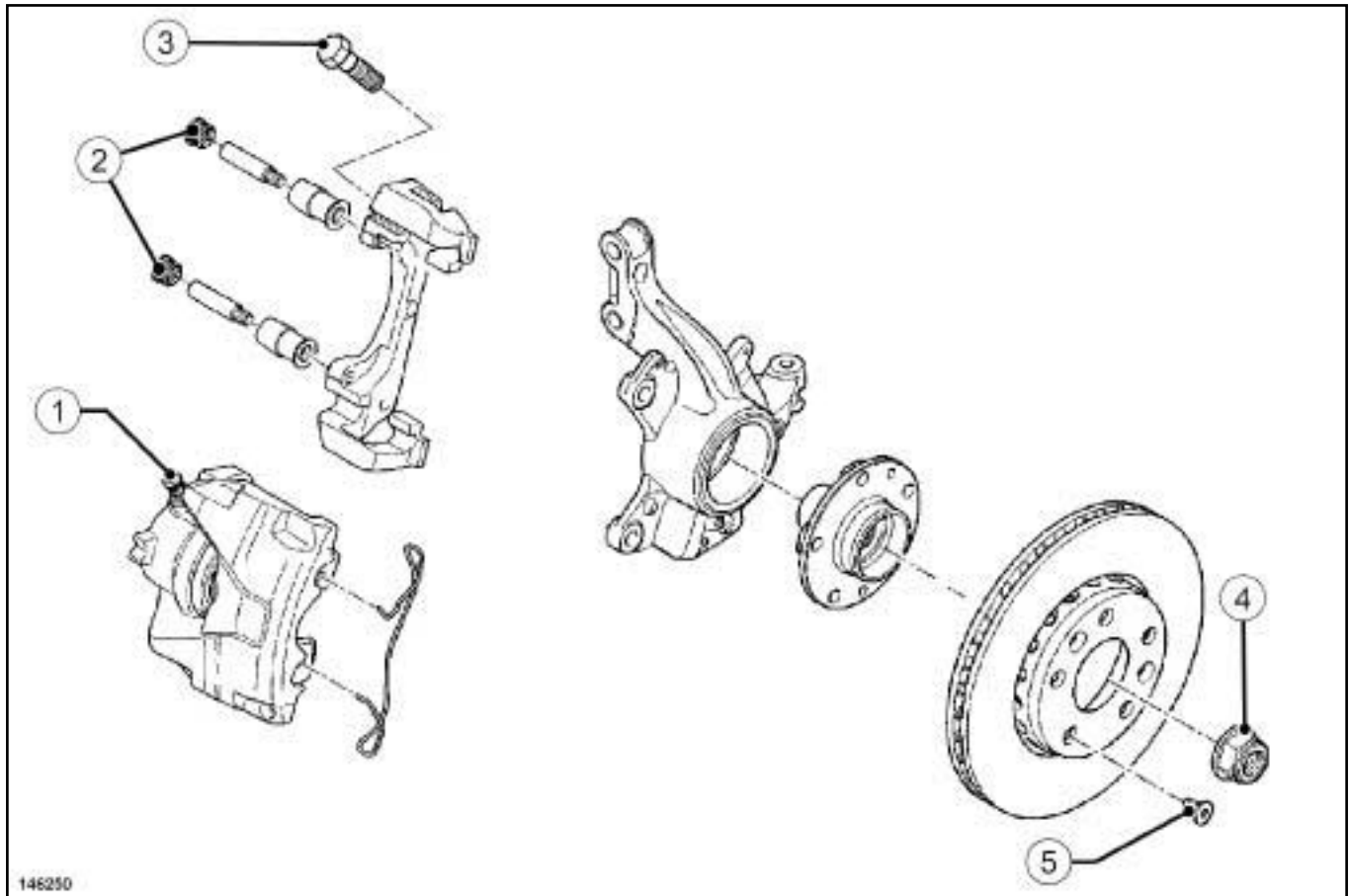
- ☐ Remove the **brake circuit bleeding device** from the master cylinder reservoir.
- ☐ Check pedal travel and resistance. If it is not correct, finish bleeding the brake circuit with the help of a second operator. Start the bleed operation by bleeding the calliper that is the furthest away from the master cylinder:
 - hold down the brake pedal,
 - open the circuit bleed screw to release the air from the brake circuit,
 - close the circuit bleed screw,
 - release the brake pedal.
- ☐ Top up the brake fluid level in the reservoir, if necessary. Check the sealing of the front and rear bleed screws and ensure that the sealing covers are in place (see **30A, General information, Brake circuit: Tightening torque**, page 30A-6) .
- ☐ During a road test, trigger braking regulation to confirm that the brake pedal travel is correct.
- ☐ Clean off any traces of brake fluid on the vehicle using **BRAKE CLEANING PRODUCT** (see **Vehicle: Parts and consumables for the repair**)

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

I - FRONT BRAKES

EQUIPMENT LEVEL SPORT



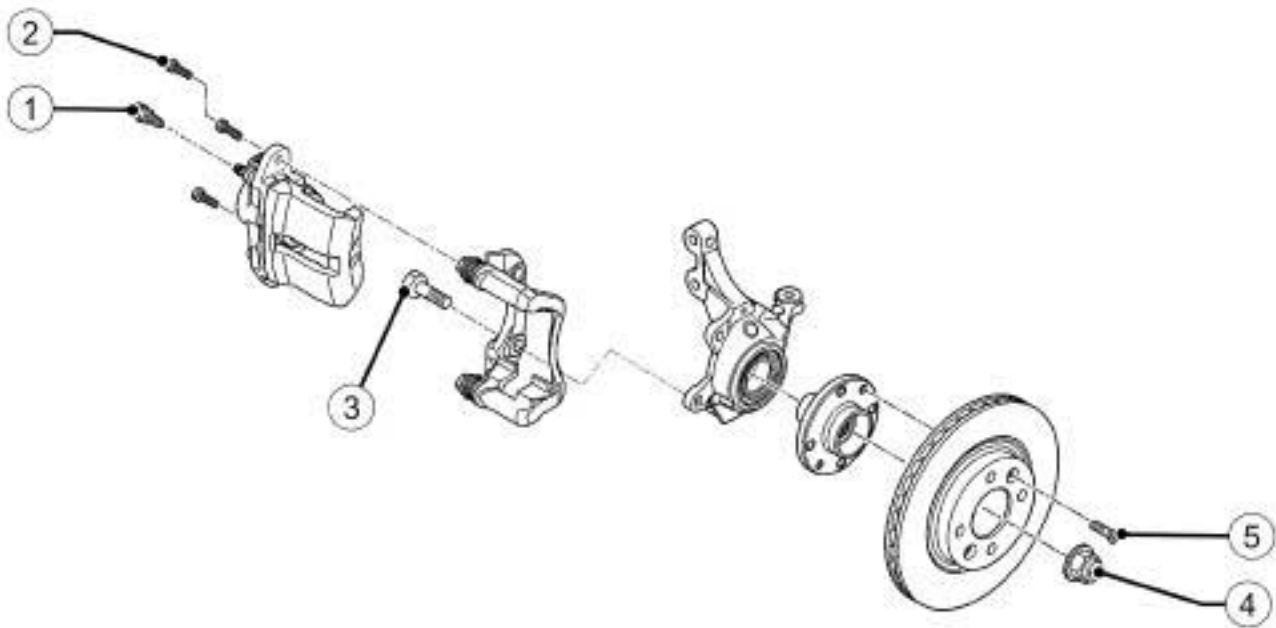
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No.	Description	Tightening torque (N.m)
(1)	Calliper bleed screw	10
(2)	Guide pin bolts	28
(3)	Calliper support bolt	100
(4)	Hub nut	280
(5)	Brake disc bolt	14
-	Brake pipe union on the calliper	17

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL
EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT
LEVEL EA5 or EQUIPMENT LEVEL EAG or
EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL
EZ4



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135206

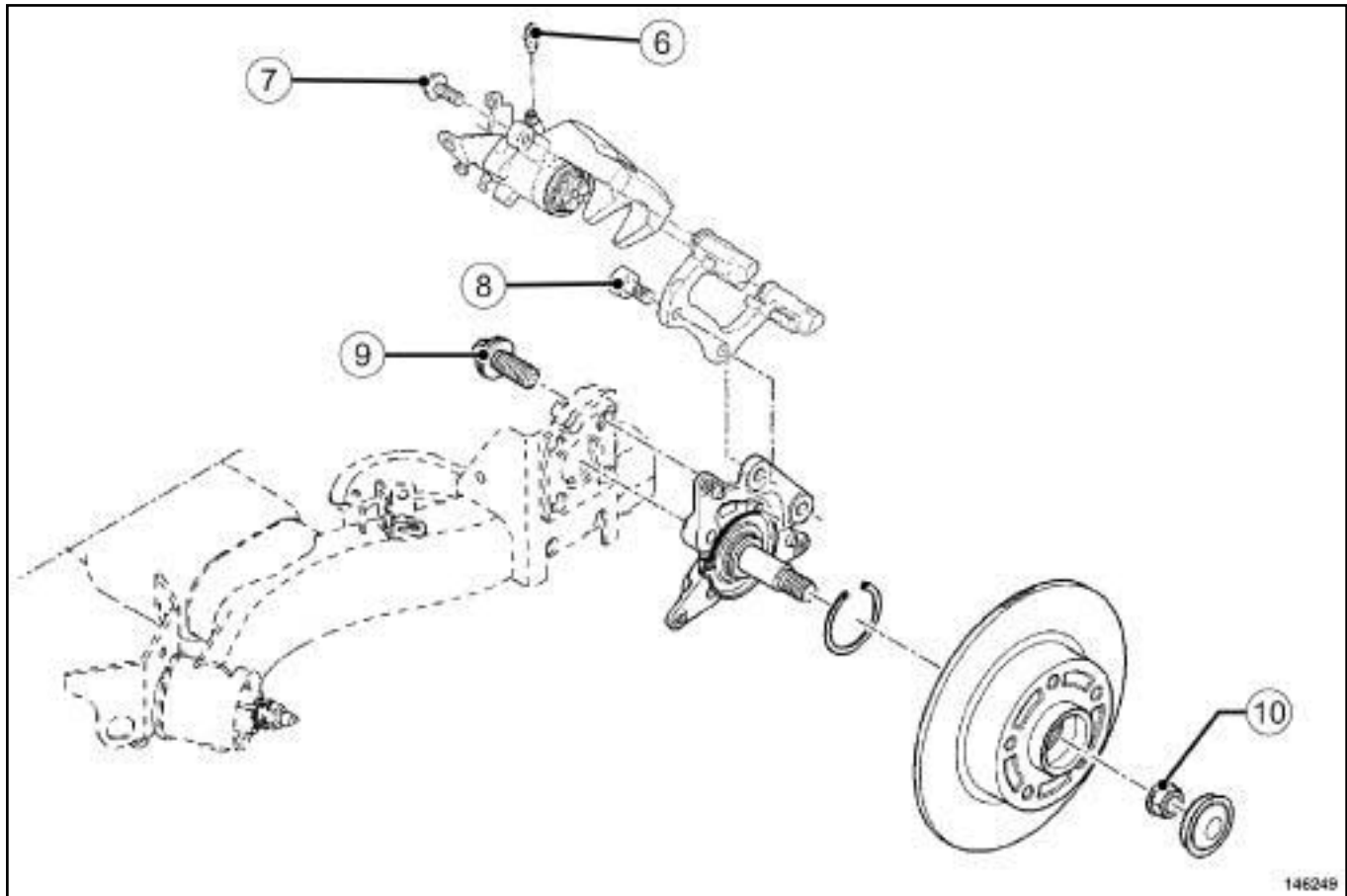
No.	Description	Tightening torque (N.m)
(1)	Calliper bleed screw	11
(2)	Guide pin bolts	35
(3)	Calliper support bolt	100
(4)	Hub nut	280
(5)	Brake disc bolt	14
-	Brake pipe union on the calliper	17

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

II - REAR BRAKES

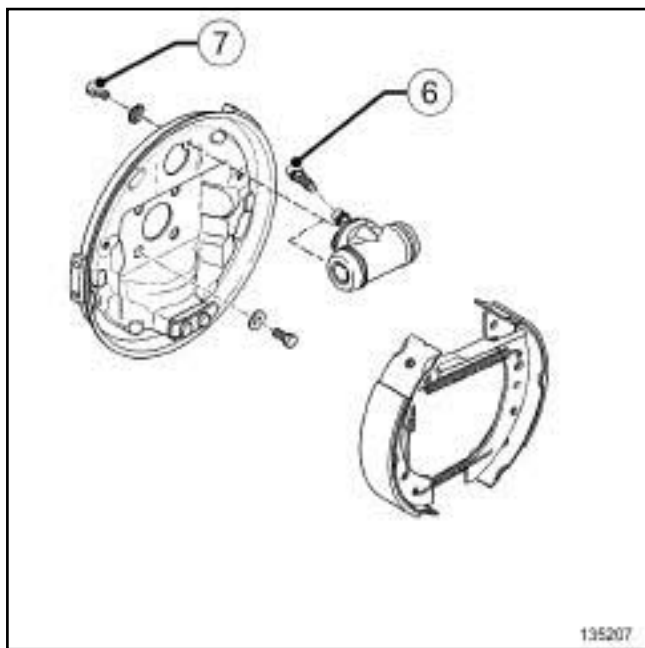
EQUIPMENT LEVEL SPORT



No.	Description	Tightening torque (N.m)
(6)	Calliper bleed screw	11
(7)	Guide pin bolts	35
(8)	Calliper support bolt	105
(9)	Stub-axle carrier bolt	53
(10)	Brake disc nut	175

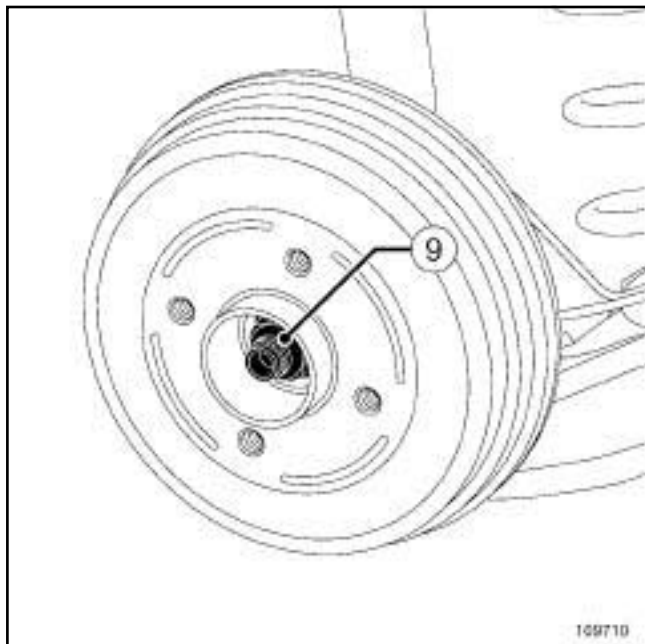
GENERAL INFORMATION
Brake circuit: Tightening torque

30A



135207

No.	Description	Tightening torque (N.m)
(6)	Calliper bleed screw	6
(7)	Guide pin bolts	15



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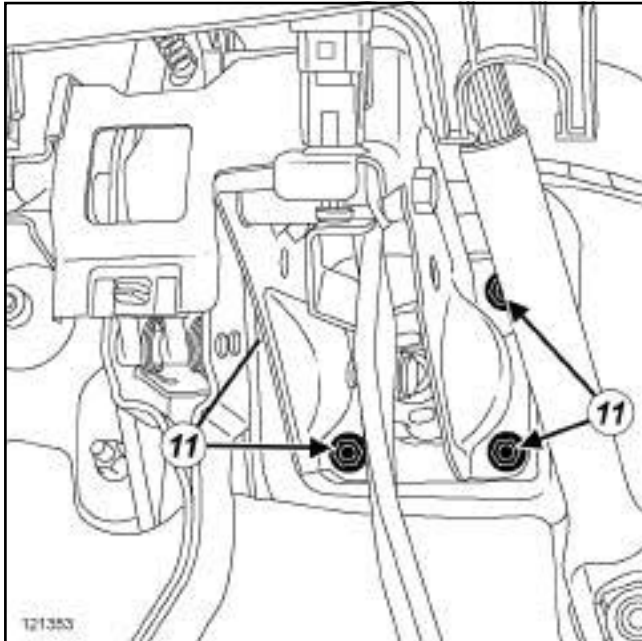
No.	Description	Tightening torque (N.m)
(9)	Drum nut	175

GENERAL INFORMATION

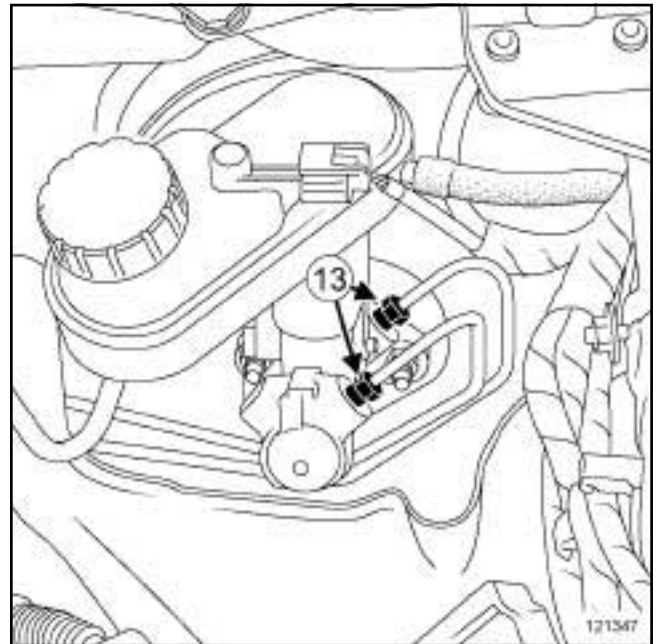
Brake circuit: Tightening torque

30A

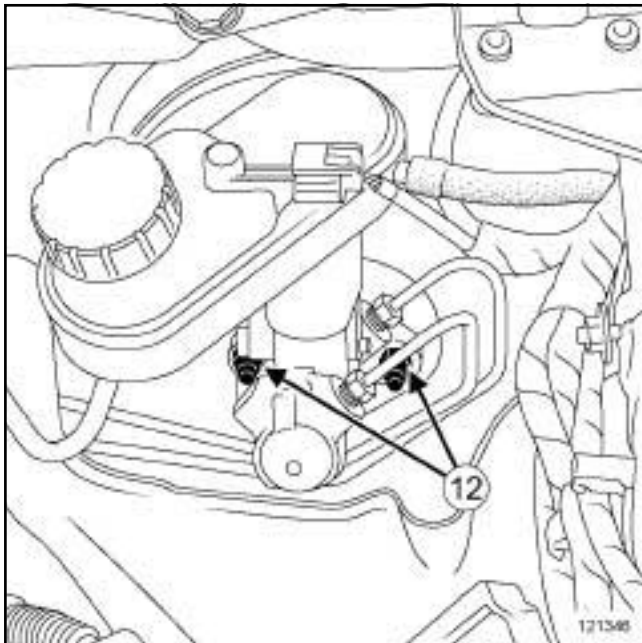
III - BRAKE CONTROL



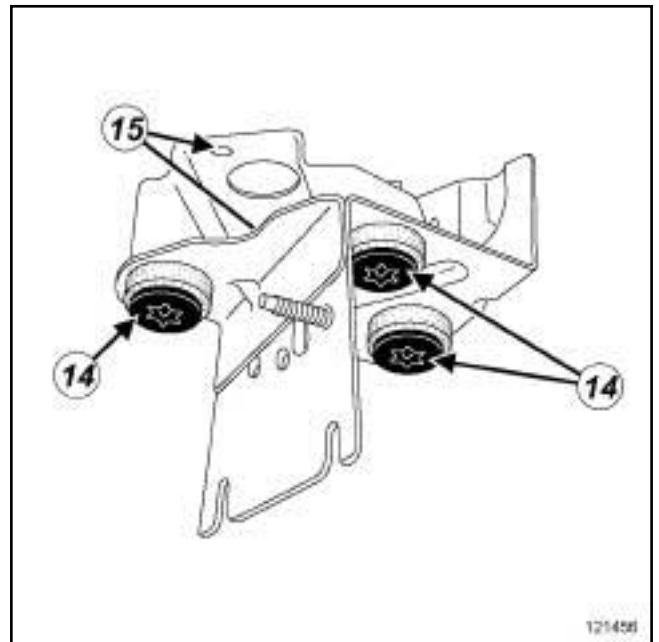
121353



121347



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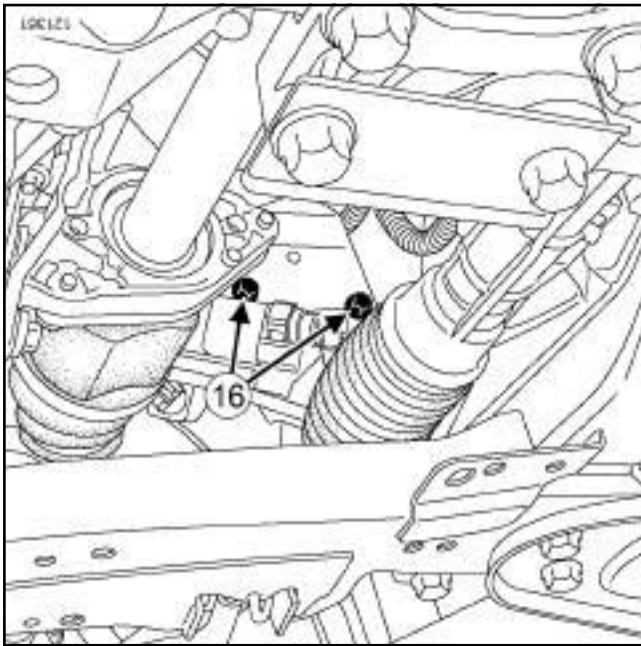


121456

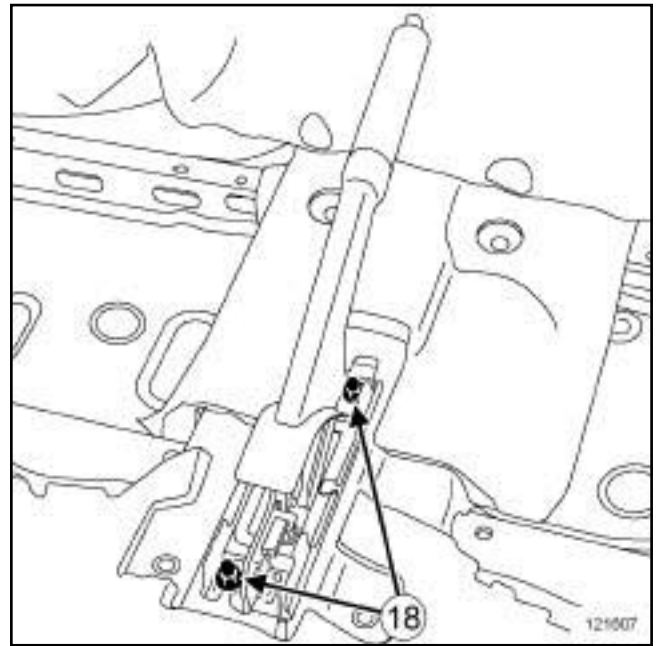
GENERAL INFORMATION

Brake circuit: Tightening torque

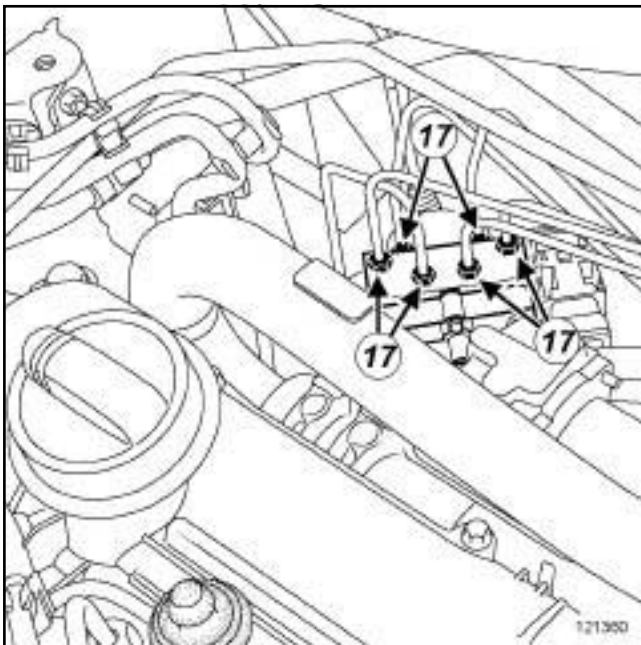
30A



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No.	Description	Tightening torque (N.m)
(11)	Brake servo bolts	25
(12)	Master cylinder nuts	25
(13)	Master cylinder outlet pipe unions	15
(14)	Hydraulic unit bolt on its intermediate bracket	8

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

No.	Description	Tightening torque (N.m)
(15)	Hydraulic unit intermediate bracket bolt on the main mounting	6.5
(16)	Hydraulic unit main mounting bolt on the body	8
(17)	Hydraulic unit pipe unions	13
(18)	Parking brake control nuts	8

Equipment required

compressed air nozzle

Tightening torques brake pipe bolts **8 N.m**underbody unions (female/male) **6 N.m**

This procedure applies to copper pipes diameter **4.7 mm**.

Note:

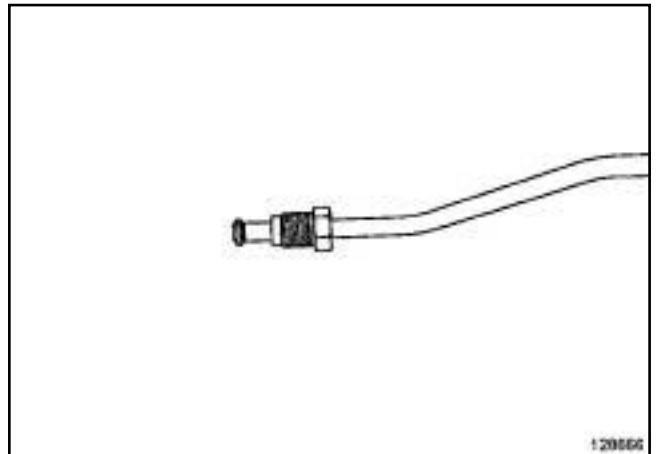
This procedure does not apply to:

- hybrid pipes (pipe + hose),
- pipes with diameters **6 mm** and **8 mm**.

REPAIR**I - PIPE PREPARATION OPERATION****WARNING**

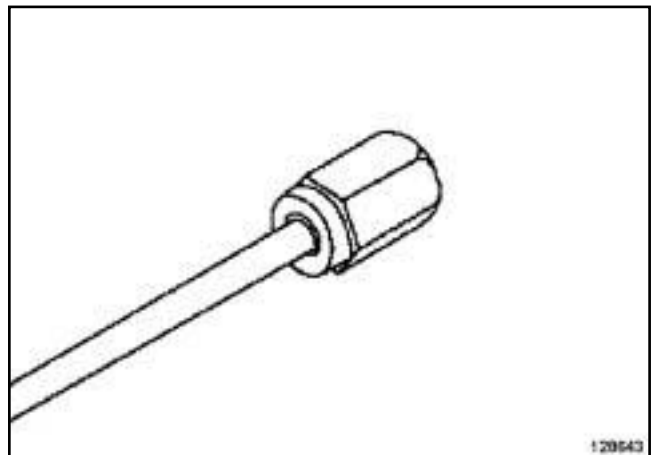
To avoid causing a breakdown in hydraulic brake circuit , do not squash or bend the rigid pipe when cutting.

- ☐ Cut the pipe to the recommended length using a tube cutter (see **Garage equipment catalogue**).



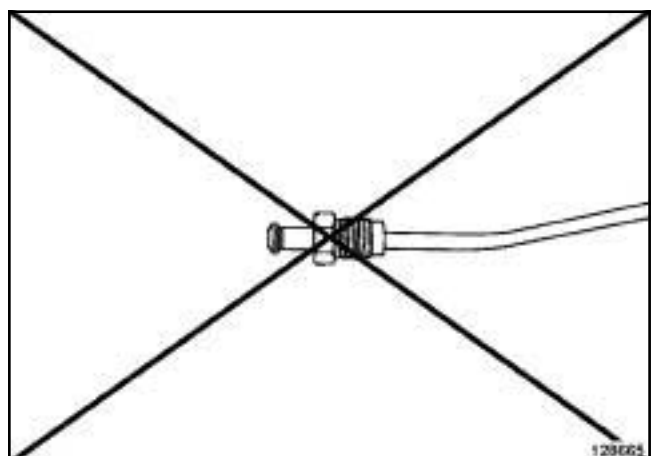
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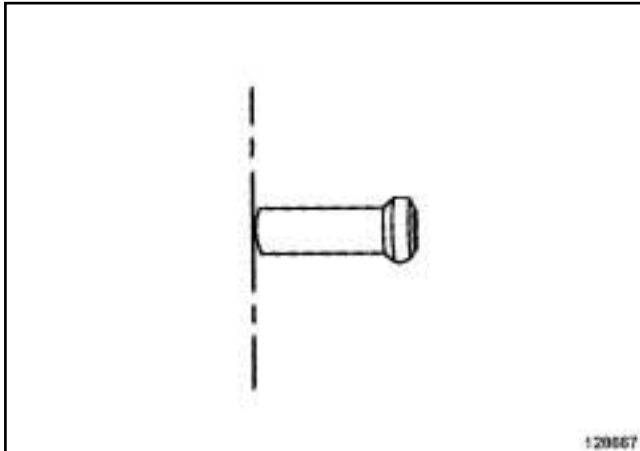
- ☐ Put the nuts or bolts on the pipe before forming the rivets.

II - MAKING THE RIVETS**Note:**

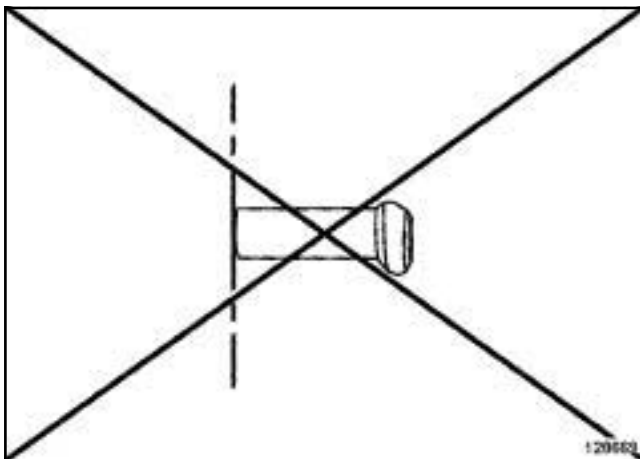
To make the rivets, fit the rivet press in a vice.

- ☐ Fit the pipe in the rivet press (see **Garage Equipment Catalogue**).
- ☐ Adjust the length of the pipe to be shaped.
- ☐ Torque tighten the press end piece(40 N.m).

III - CHECKING THE RIVETS

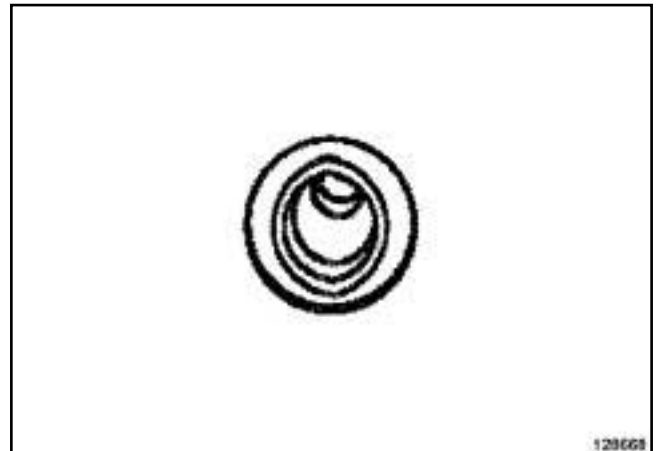


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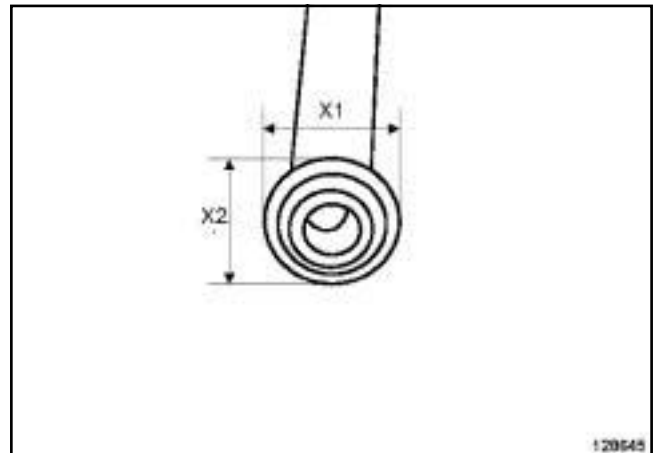
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- ☐ Visually inspect:
 - the uniformity of the rivets' diameter,
 - the rivet centring in relation to the pipe shaft.



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- ☐ Visually check that the internal diameter of the pipe is not oval-shaped.



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- ☐ Check that the diameter of the end panel is not oval shaped using a sliding calliper.

Correct diameter if $(X1) = (X2)$

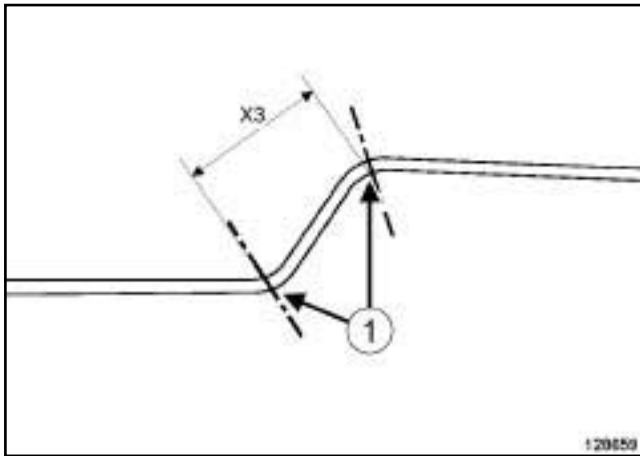
IV - PREPARATION OF THE PIPE BEFORE BENDING



Note:

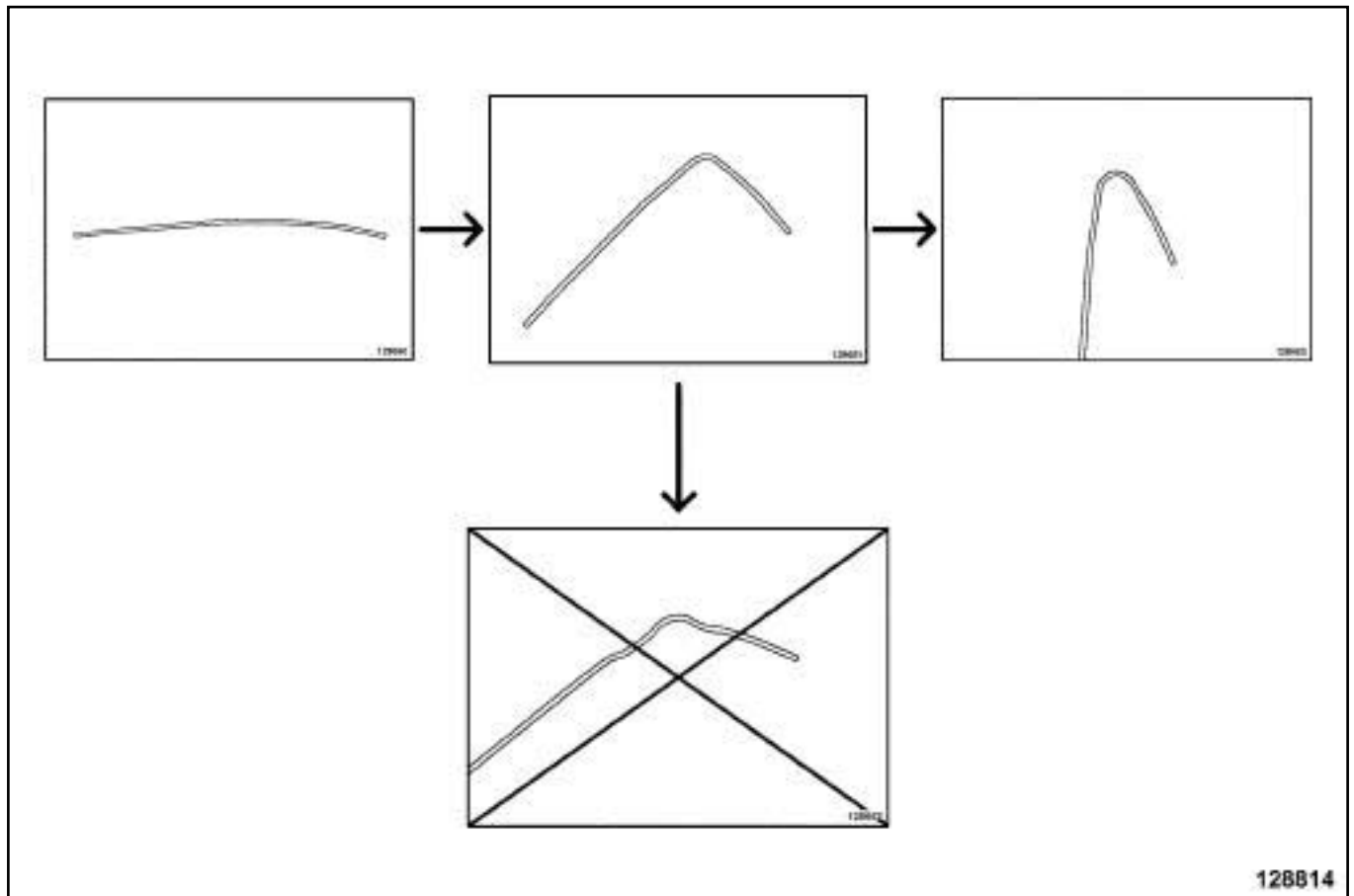
Impurities may spread inside the pipe while the rivets are being made.

- ☐ Blow inside the pipe in both directions using a **compressed air nozzle**.
- ☐ Put plugs on the bolts or nuts at the ends of the pipe.
- ☐ Put the original pipe on a flat base plate that is the length of the pipe.



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- ❑ Measure the dimensions (**X3**) (in mm) curve after curve, between each curve radius « centre » (**1**) of the old pipe.



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**WARNING**

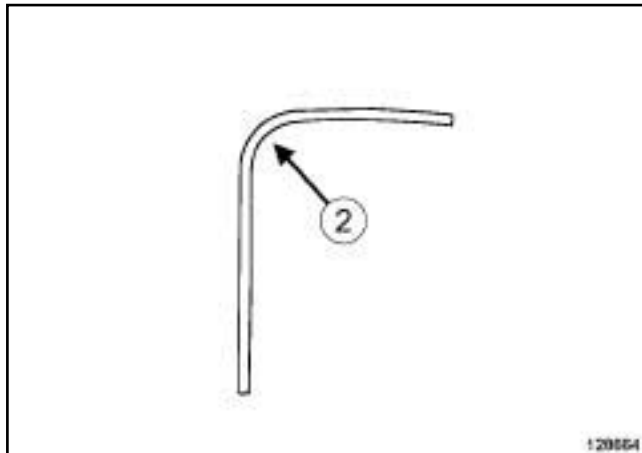
To avoid weakening the pipe, either bend once or bend progressively by increasing the bend (that is, by continually decreasing the curve radius). Do not install a rigid pipe on a vehicle that may have been bended and then unbended alternatively to reach the correct curve radius.

Note:

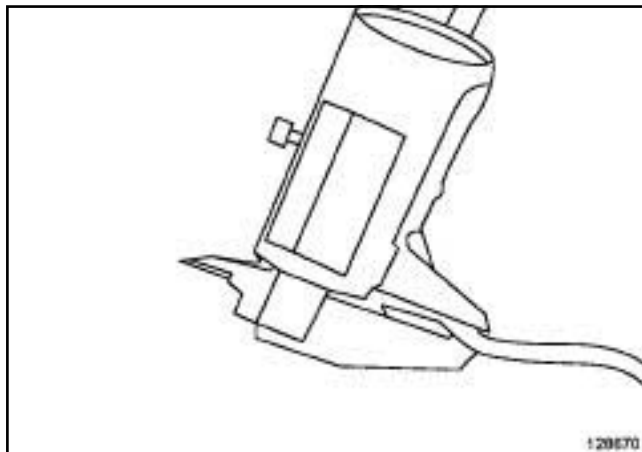
During the bending operation, the required angle should be passed slightly in order to compensate for material elasticity.

- Shape the pipe using a bender, curve after curve, while respecting the original shape of the pipe.

V - CHECKING BENDING



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- ❑ Check the out-of-roundness of the outer diameter at the centre of the curve radius (2) using a sliding caliper (the out-of-roundness of the outer diameter is correct if it is less than 10% flattening):
 - nominal diameter of the pipe: **4.75 mm**,
 - minimum diameter after bending: **4.30 mm**.

VI - REFITTING THE PIPE



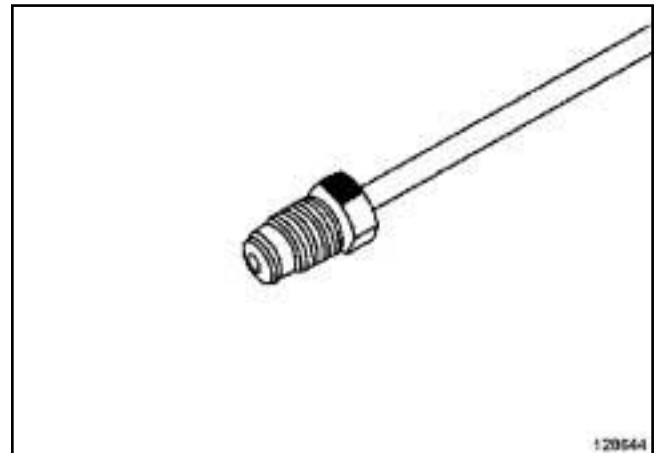
Note:

When refitting the rigid brake pipe:

- respect the original routing as much as possible,
- adjust the pipe routing by hand when fitting inside the clips.

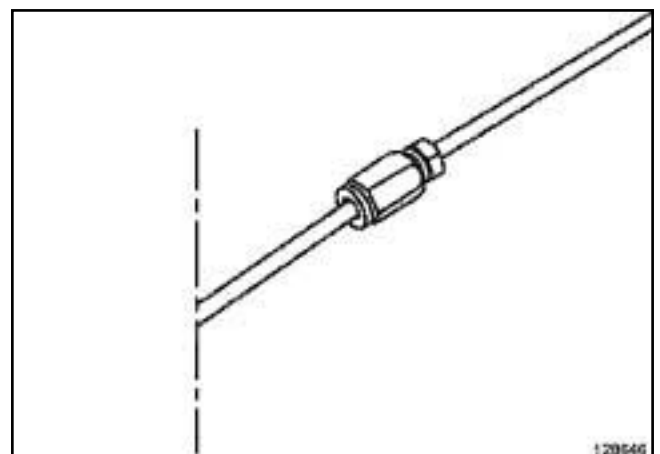
WARNING

Contact points between the rigid brake pipe and the surrounding components could cause damage to the pipe. In order to avoid these contacts, adjust the pipe routing by hand.



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- ❑ Torque tighten the **brake pipe bolts (8 N.m)**.



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- ❑ Torque tighten the **underbody unions (female/male) (6 N.m)**.

BRAKE FLUID REPLACEMENT INTERVAL

Our braking technology, and in particular the disc brakes (hollow pistons which conduct little heat, have a low volume of fluid in the cylinder, sliding callipers avoiding the need for a fluid reserve in the least cooled area of the wheel), has allowed us to prevent the risk of « vapour lock » as far as possible, even with heavy braking (mountainous area). However, current brake fluids are subject to minor deterioration during the first months of use due to slight humidity intake. This is why it is recommended that you change the brake fluid: see **maintenance booklet for the vehicle**.

1 - Topping up the level

Wear of the brake pads will result in a gradual drop in the fluid level in the reservoir.

Do not top up the fluid, as the level will rise again when the pads are next changed. The brake fluid level must not fall below the minimum mark.

2 - Approved brake fluid

Mixing two incompatible brake fluids in the brake circuit may lead to:

- serious risk of leakage due mainly to deterioration of the cups,
- deterioration in the operation of the ESP system.

To prevent such risks, it is essential to use only brake fluids that comply with the RENAULT standard (see **Vehicle: Parts and consumables for the repair**) .

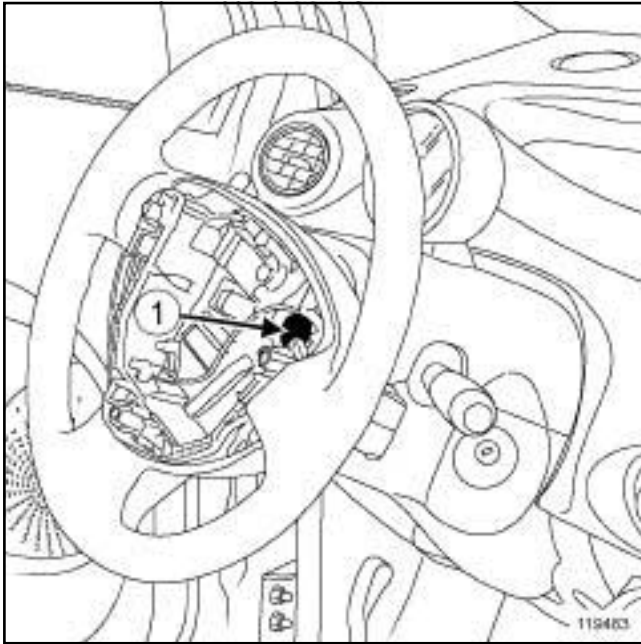
GENERAL INFORMATION

Brake: Specifications

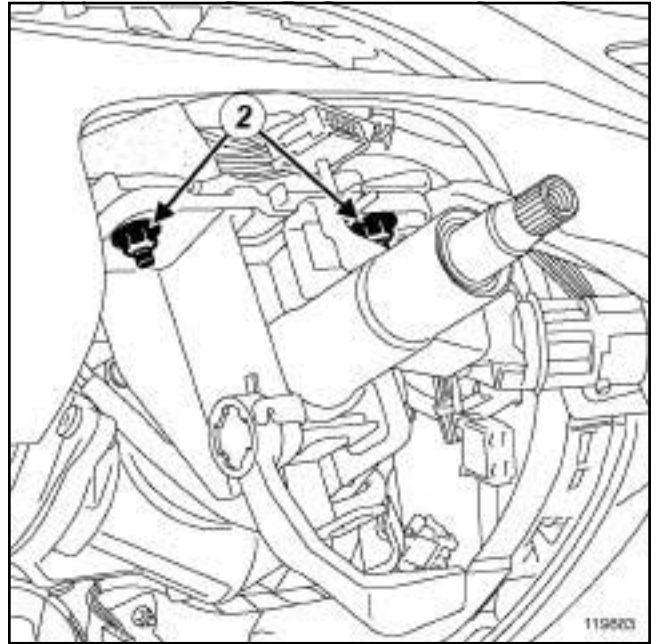
30A

	Full front brake discs	Ventilated front brake discs	
Front brake (mm)			
Piston diameter	48	48	57
Disc diameter	259	259	280
Disc thickness	12	20.6	24
Minimum disc thickness (1)	10.6	17.7	21.8
Maximum disc run-out	0.03		
Brake pad thickness (including backplate)	18		17.5
Minimum pad thickness (including backplate)	6		8.2
Rear drum brake (mm)			
Slave cylinder diameter	17.5		
Drum diameter	203.2		
Maximum diameter of drum wear	204.45		
Drum pad thickness (including support)	5.5		
Minimum drum lining thickness (including mounting)	2.4		
Rear disc brake (mm)			
Piston diameter	34		
Disc diameter	240		
Disc thickness	8		
Minimum disc thickness (1)	7		
Maximum disc run-out	0.06		
Brake pad thickness (including backplate)	16		
Minimum pad thickness (including backplate)	6		

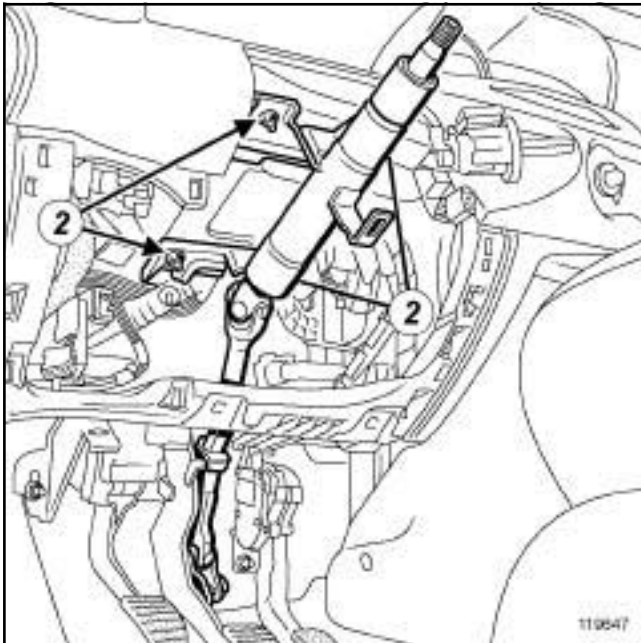
(1) the brake discs cannot be repaired. The brake discs must be replaced if they are excessively scratched or worn.



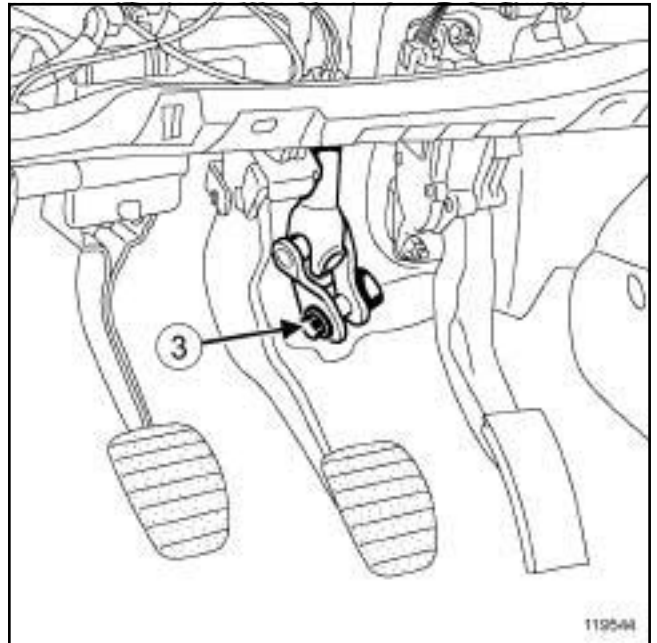
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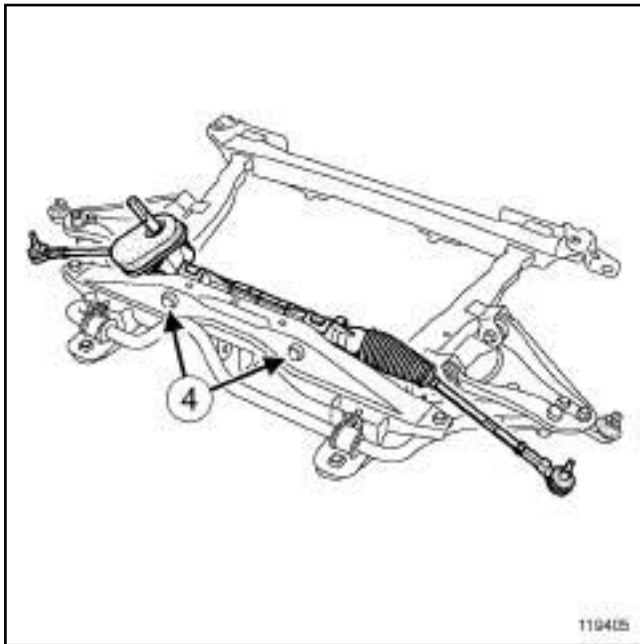


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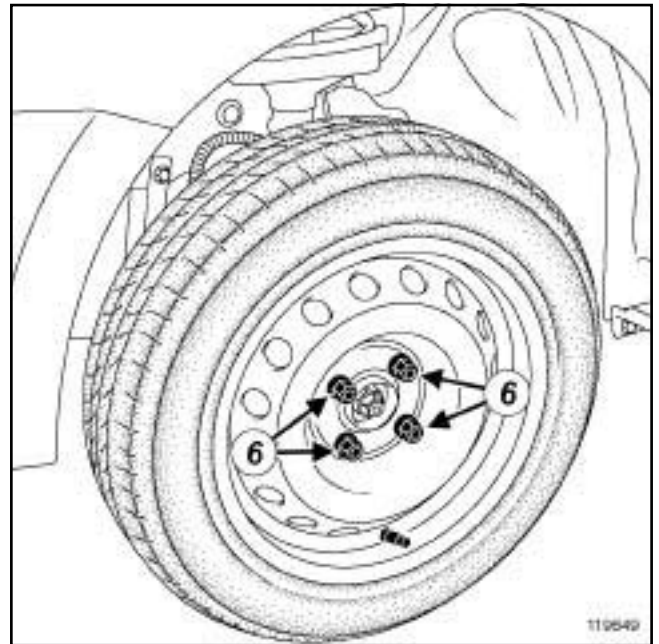
GENERAL INFORMATION

Steering: Tightening torque

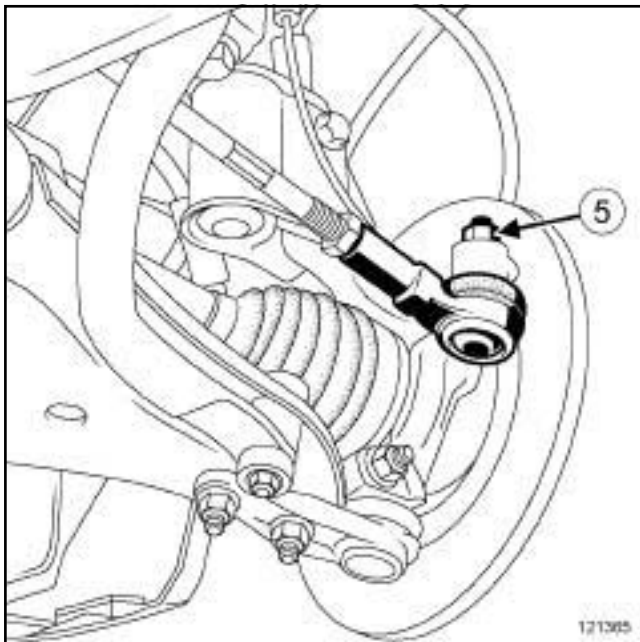
30A



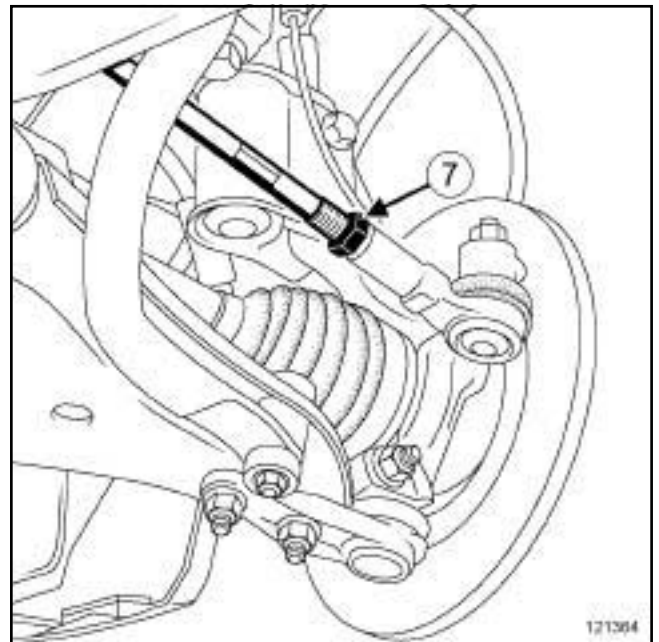
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No.	Description	Tightening torque (Nm)
(1)	Steering wheel bolt	44
(2)	Steering column nuts	21
(3)	Universal joint bolts on the steering box	24
(4)	Steering box bolt	105
(5)	Track rod nuts	37

GENERAL INFORMATION
Steering: Tightening torque

30A

No.	Description	Tightening torque (Nm)
(6)	Wheel bolt	105
(7)	Wheel alignment lock nut	53

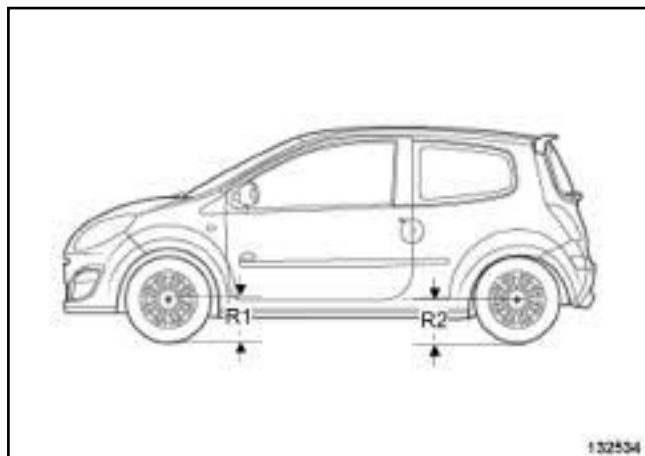
- ☐ Lock the slip plates of the lift.
- ☐ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) .
- ☐ Check the condition of the following components:
 - track rods,
 - axial ball joint linkages,
 - subframe,
 - lower arm rubber bushes,
 - lower arm ball joints (see **Front driveshaft lower arm ball joint: Check**) ,
 - shock absorbers,
 - tyres,
- ☐ Check:
 - the tyre size (see **35A, Wheels and tyres, Tyres: Identification**, page **35A-7**) ,
 - the tyre inflation pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page **35A-10**) .
- ☐ Put the vehicle in the VODM position (vehicle in running order) (see **30A, General information, Underbody heights: Adjustment value**, page **30A-24**) :
 - tank full,
 - vehicle empty (without luggage, etc.).
- ☐ Consult:
 - the front axle geometry values (see **30A, General information, Front axle assembly: Adjustment values**, page **30A-31**) ,
 - the rear axle geometry values (see **30A, General information, Rear axle assembly: Adjustment values**, page **30A-38**) .
- ☐ Refer to the user manual for the geometry tester.
- ☐ Check the geometry using the geometry tester.
- ☐ If there is an inconsistency between the manufacturer's values and the measured values:
- ☐ Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page **30A-36**)

GENERAL INFORMATION

Underbody heights: Adjustment value

30A

I - MEASURING POINT

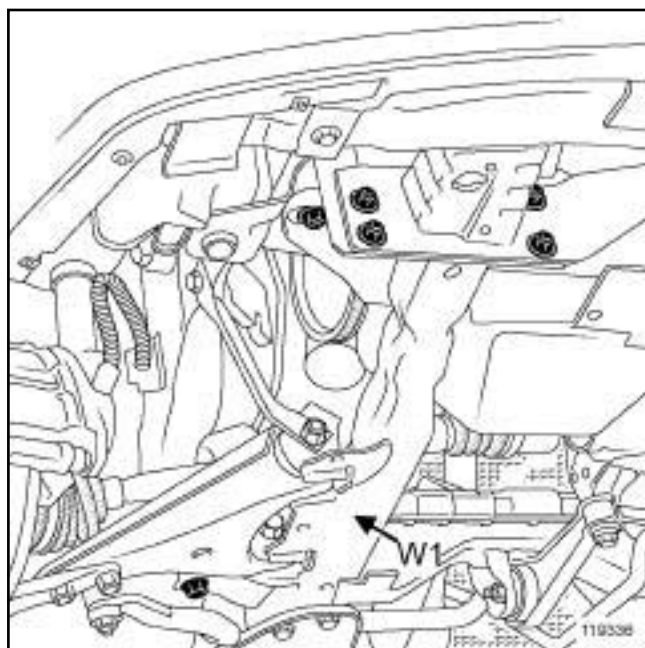


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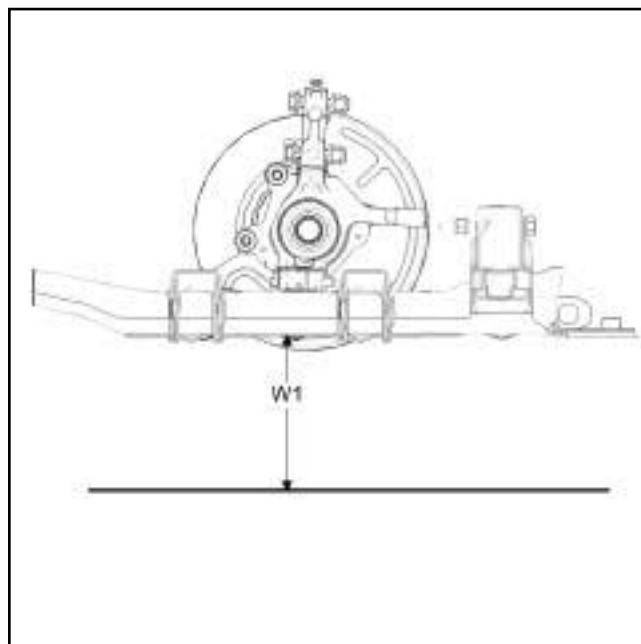
Radius under load:

- R1: Distance between the ground and the front wheel shaft.
- R2: Distance between the ground and the rear wheel shaft.

1 - Front height (W1):



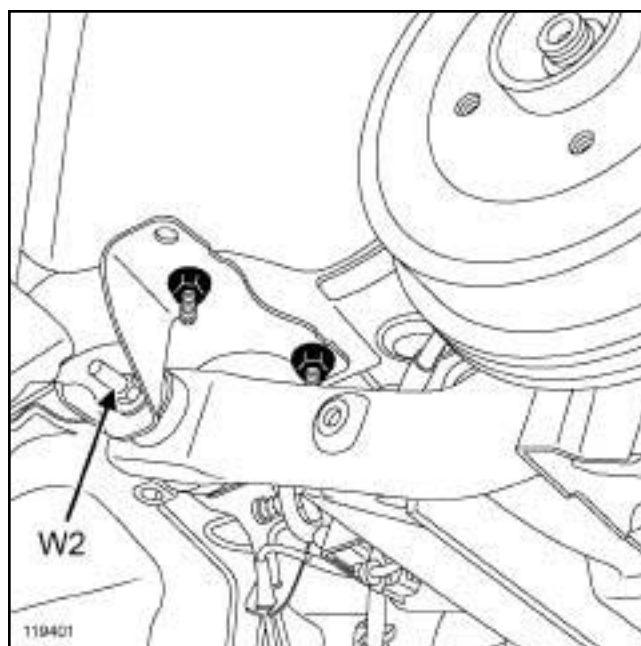
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(W1) : Height between the ground and the side member (the measuring point is located 23 mm from point B of the yoke)

2 - Rear height (W2)

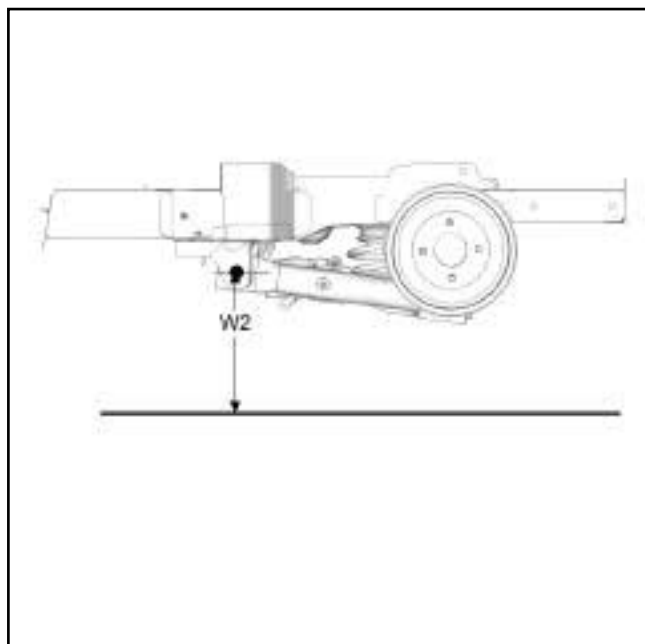


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GENERAL INFORMATION

Underbody heights: Adjustment value

30A



139112

(W2) : Height between the ground and the bolt shaft of the rear axle bearing

II - MEASURING METHODS

Note:

For the measurement of W1 and W2, take into account the height differences between the plates and the final drive.

Measure the heights:

- R1,
- R2,
- W1 right-hand and left-hand,
- W2 right-hand and left-hand.

Note:

The value of Wx to be entered into the geometry bench is the average of the W1 heights, right-hand and left-hand and of the W2 heights, right-hand and left-hand.

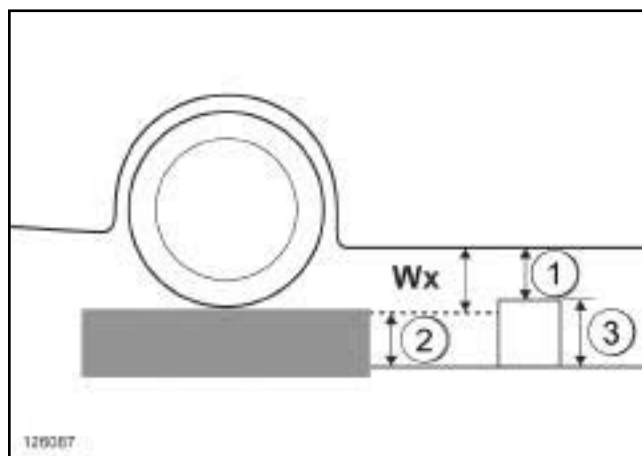
Special cases:

Note:

If the measuring points are located in empty space (between the rails of the lift), use a bar.

Fit a bar across the lift.

1 - Plate higher than the lift:



126087

Measure the heights (1) , (2) , (3) .

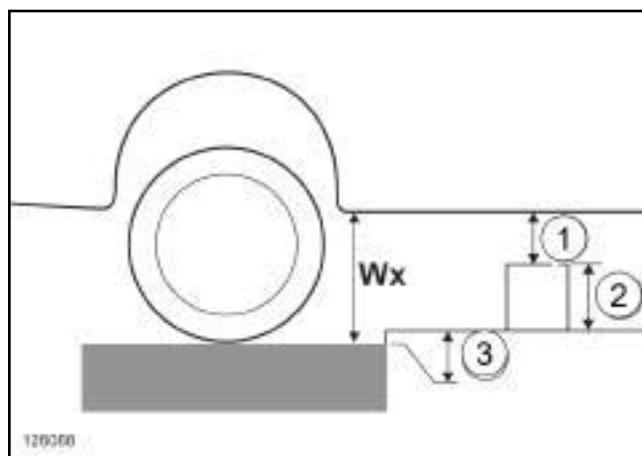
Example: (1) = 6 cm, (2) = 8 cm, (3) = 10 cm.

Calculate the height Wx:

$Wx = \text{height (1)} + \text{height (3)} - \text{height (2)}$,

$Wx = 8 \text{ cm}$.

2 - Plate lower than the lift:



126088

Measure the heights (1) , (2) , (3) .

Example: (1) = 8 cm, (2) = 10 cm, (3) = 4 cm.

Calculate the height Wx:

$Wx = \text{height (1)} + \text{height (2)} + \text{height (3)}$,

$Wx = 22 \text{ cm}$.

III - VEHICLE IN RUNNING ORDER POSITION

VODM (Vehicle in working order) position:

- Tank full,
- Empty vehicle (without luggage, etc.).

GENERAL INFORMATION
Underbody heights: Adjustment value

30A

EQUIPMENT LEVEL SPORT, and 16" ALUMIN-
IUM WHEELS

W1 = 158 mm ± 8 mm

W2 = 270.7 mm ± 12 mm

EQUIPMENT LEVEL SPORT, and 17" ALUMIN-
IUM WHEELS, and WITHOUT ADDITIONAL
SPORT PACK

W1 = 163.5 mm ± 8 mm

W2 = 275.1 mm ± 12 mm

EQUIPMENT LEVEL SPORT, and 17" ALUMIN-
IUM WHEELS, and ADDITIONAL EXTREME PACK

W1 = 157.7 mm ± 8 mm

W2 = 270.3 mm ± 12 mm

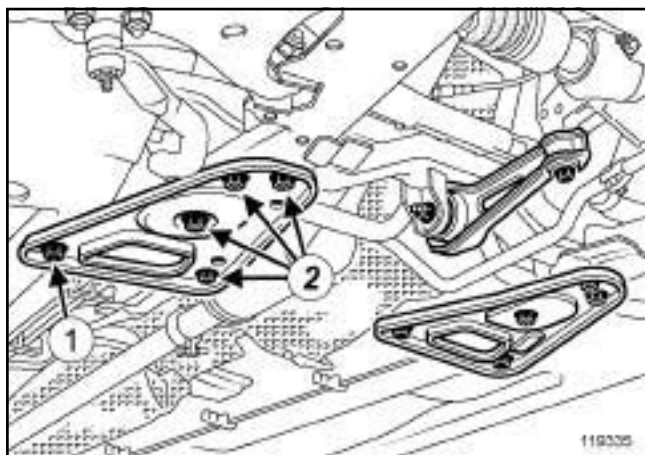
Note:

The position of the vehicle varies according to:

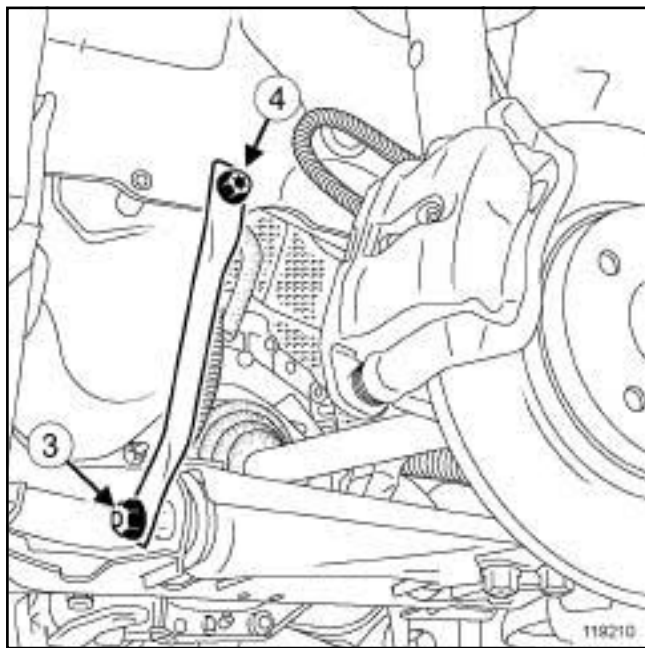
- the weight of the engine,
- the springs and shock absorbers,
- the tyres,
- the amount of fuel in the tank.

GENERAL INFORMATION
Front axle system: Tightening torque

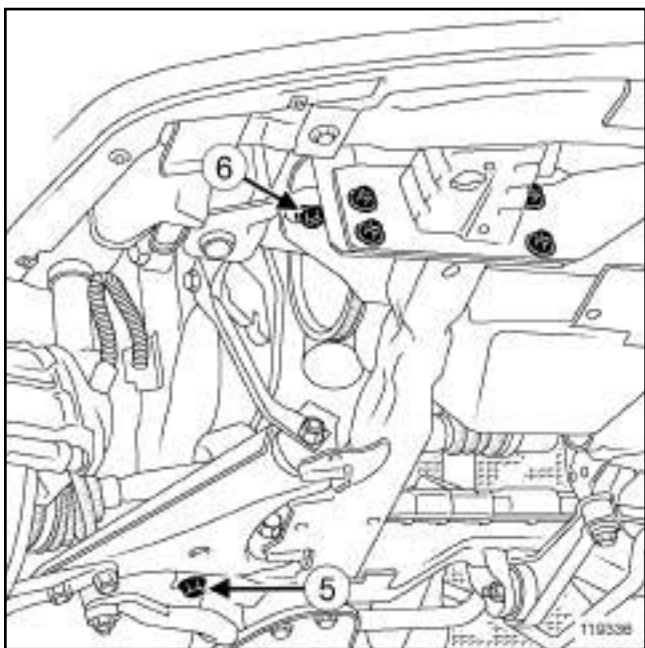
30A



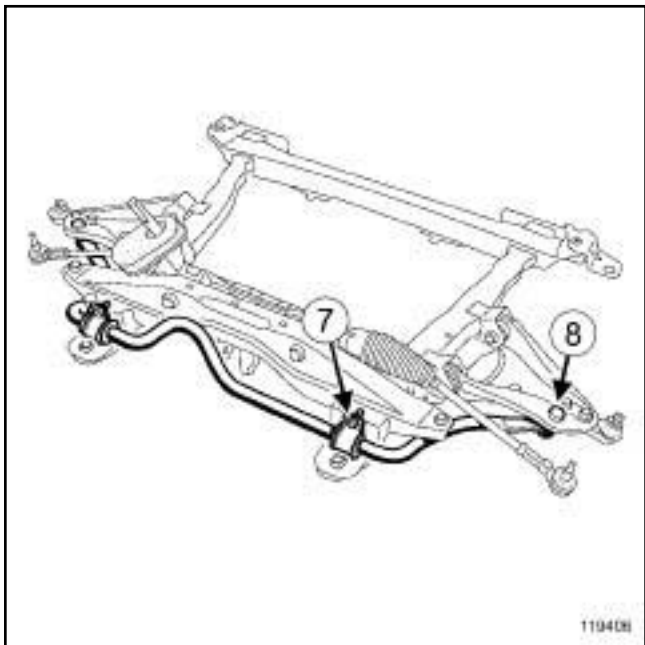
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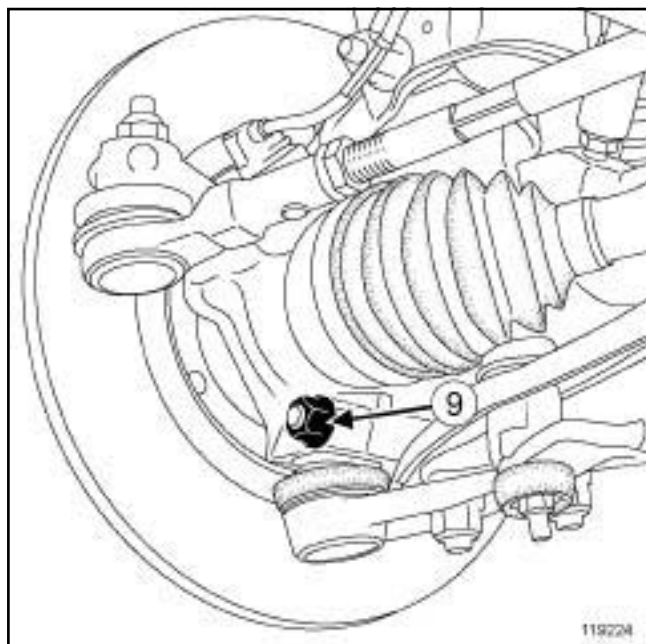


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GENERAL INFORMATION

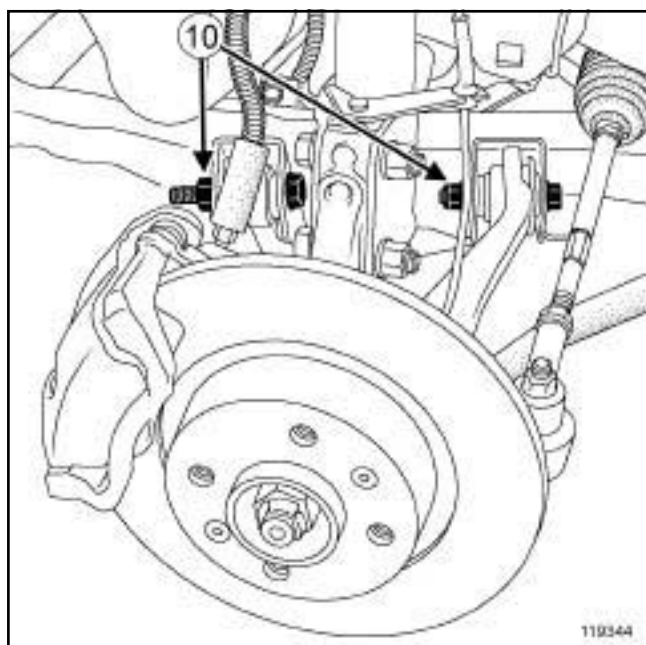
Front axle system: Tightening torque

30A



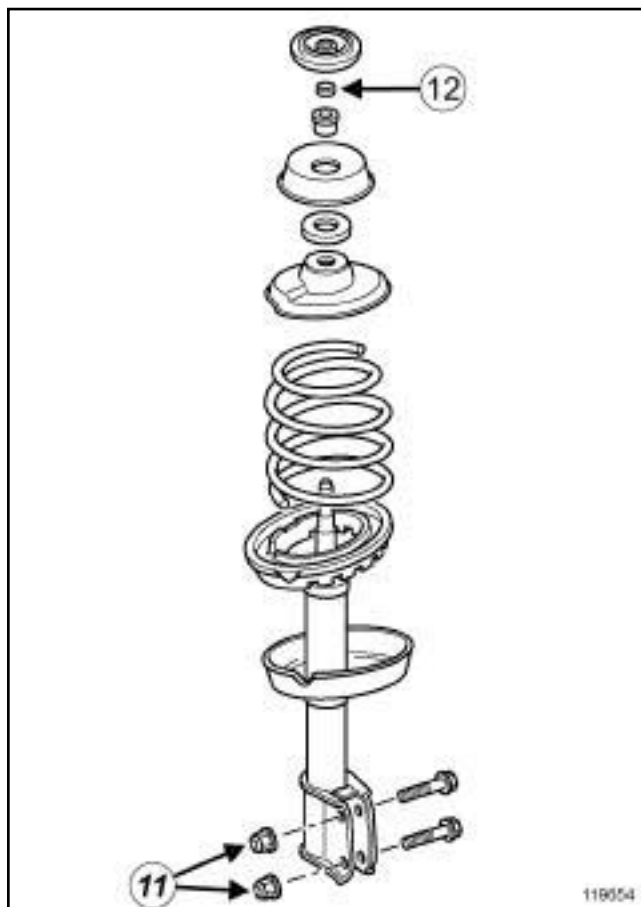
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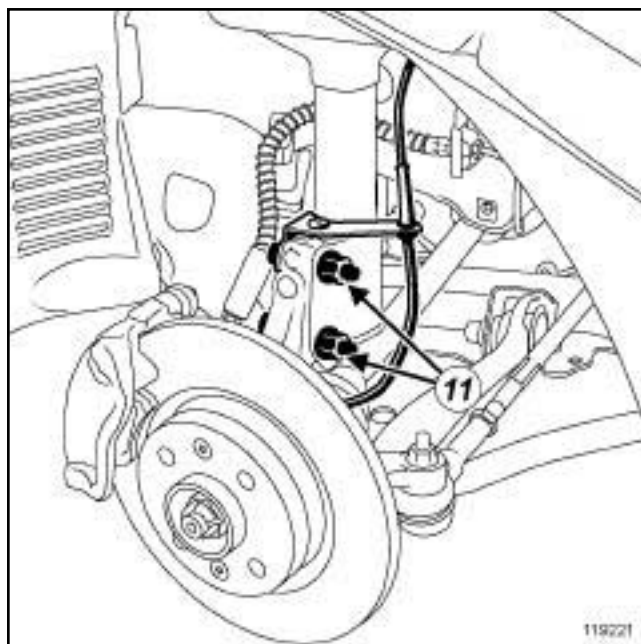
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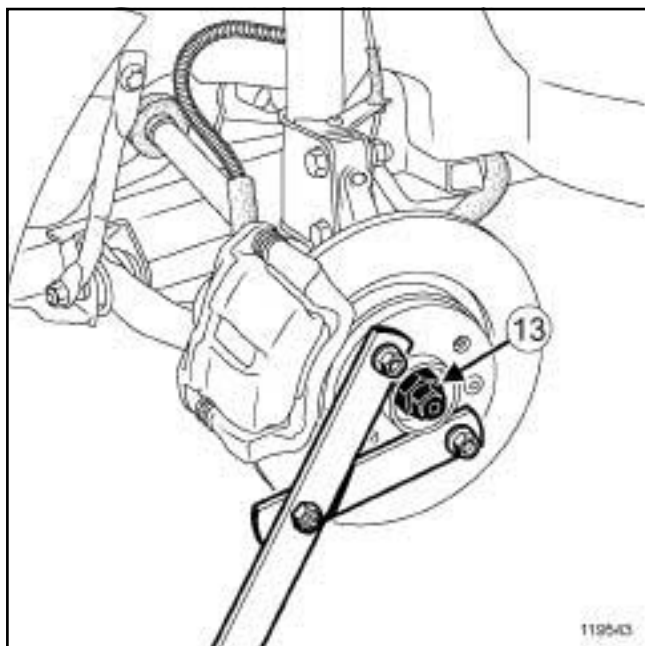


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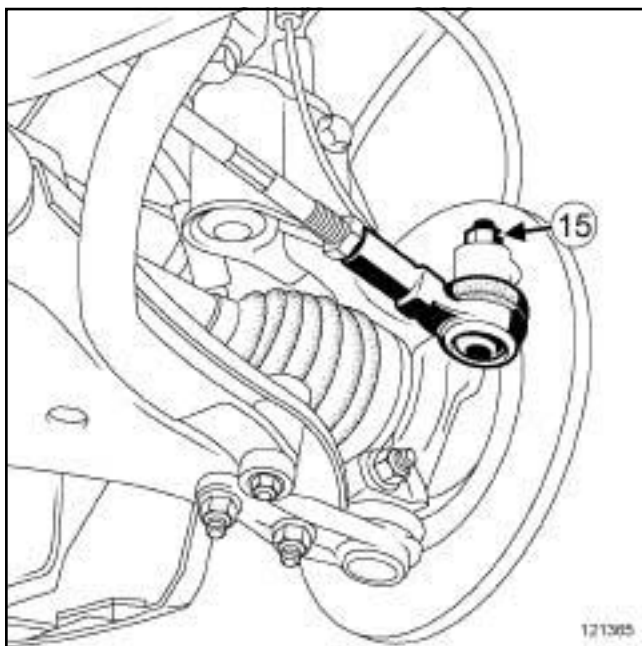
119221

GENERAL INFORMATION
Front axle system: Tightening torque

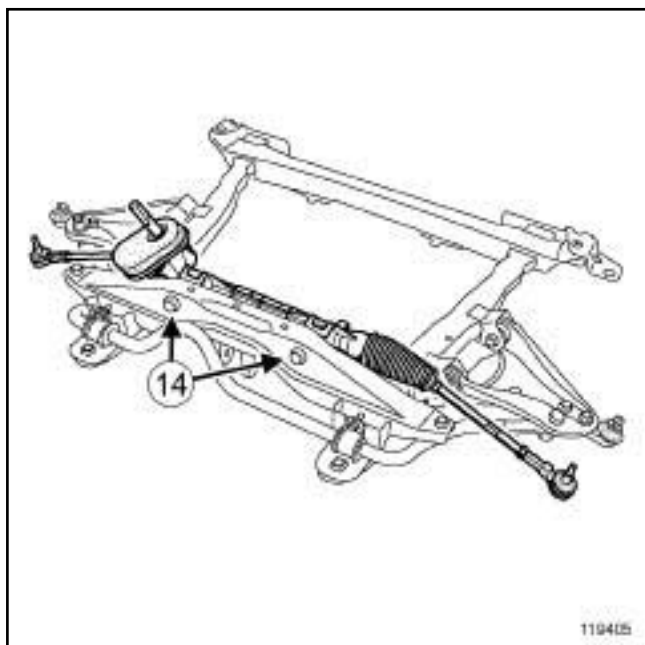
30A



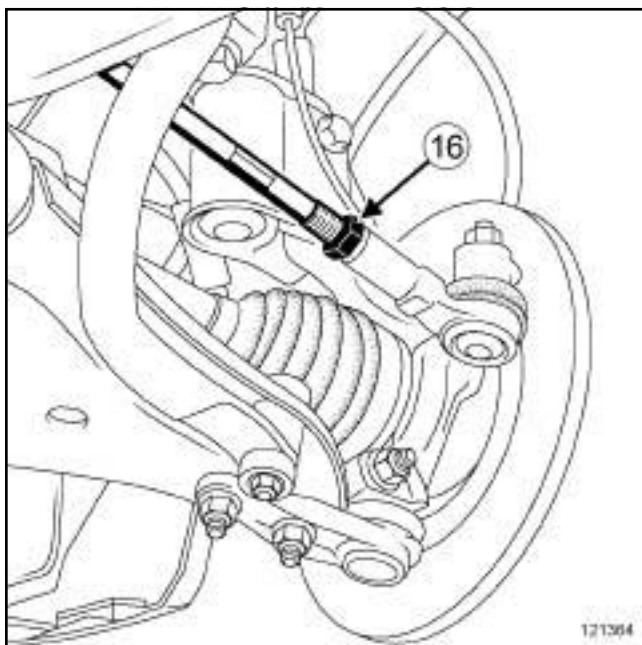
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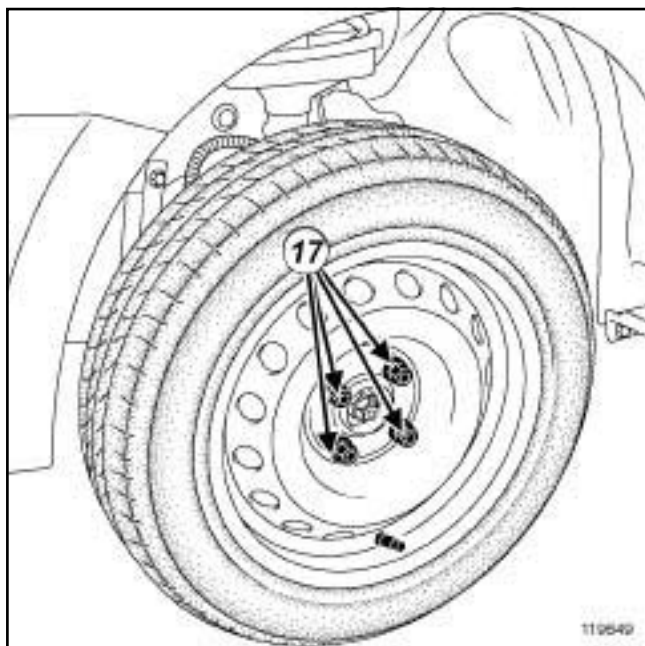


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GENERAL INFORMATION

Front axle system: Tightening torque

30A



119649

No.	Description	Tightening torque (N.m)
(1)	Impact bracket bolts	21
(2)	Impact bracket bolts	90
(3)	Acoustic tie-rod nuts	62
(4)	Acoustic tie-rod bolts	21
(5)	Subframe rear bolt	105
(6)	Subframe front bolts	62
(7)	Anti-roll bar bearing bolts on the subframe	35
(8)	Anti-roll bar bolt on the wheel side	14
(9)	Lower ball joint bolt	62
(10)	Front driveshaft lower arm bolts	105
(11)	Shock absorber lower bolts	105
(12)	Shock absorber rod nut	21
(13)	Hub nut	280
(14)	Steering box bolts	105
(15)	Track rod end nut	37
(16)	Wheel alignment lock nut	53
(17)	Wheel bolts	105

GENERAL INFORMATION

Front axle assembly: Adjustment values

30A

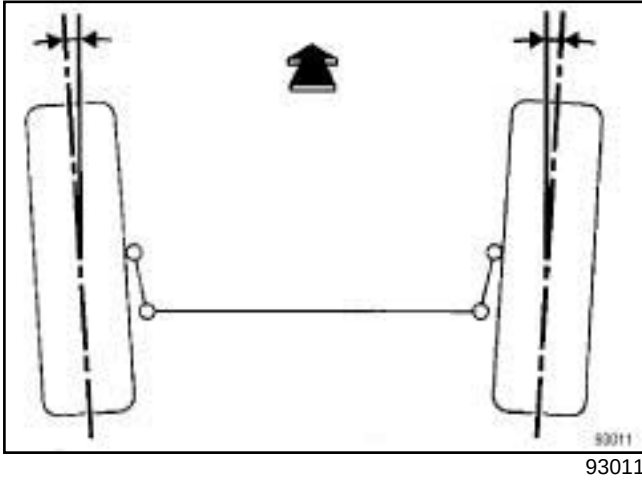
I - WHEEL ALIGNMENT: MEANING OF SYMBOLS

WARNING

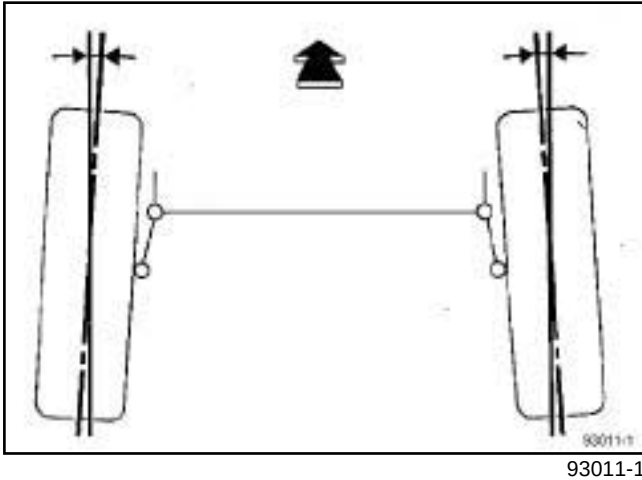
Symbols used by RENAULT:

- toe-out: -
- toe-in: +

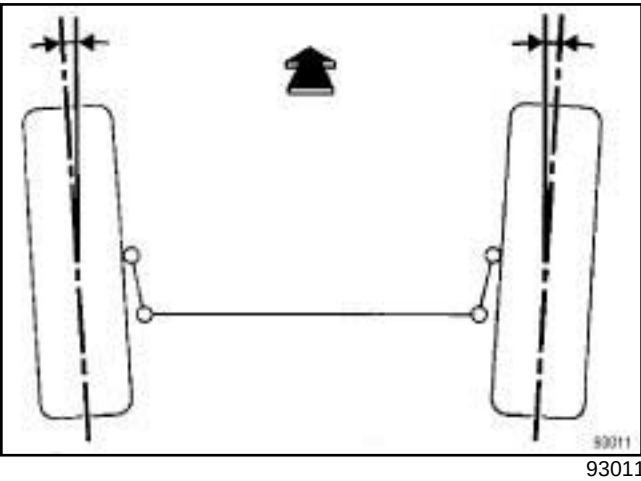
Toe-out: minus sign



Toe-in: plus sign



II - WHEEL ALIGNMENT



EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value (for two wheels)	Position of vehicle
$-0^{\circ}10' \pm 15'$	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value (for two wheels)	Position of vehicle
$-0^{\circ}10' \pm 9'$	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value (for two wheels)	Position of vehicle
$-0^{\circ}10' \pm 9'$	Vehicle in running order

GENERAL INFORMATION

Front axle assembly: Adjustment values

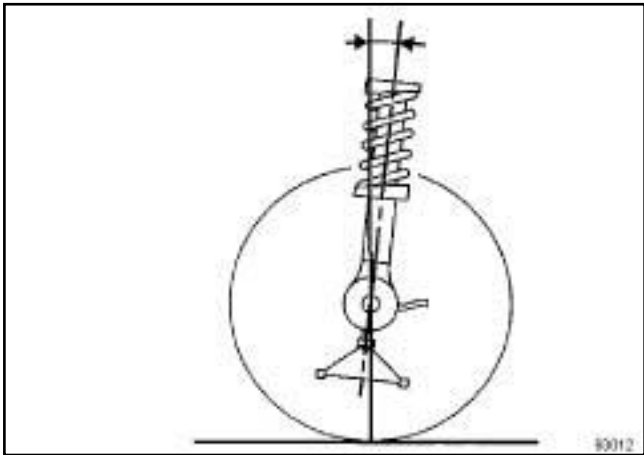
30A

EQUIPMENT LEVEL SPORT, and 17" ALUMINUM WHEELS, and ADDITIONAL EXTREME PACK

Value (for two wheels)	Position of vehicle
$-0^{\circ}11' \pm 9'$	Vehicle in running order

III - CASTOR ANGLE

Not adjustable.



93012

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4, and MANUAL STEERING

Value	Vehicle position (mm)
$1^{\circ}52' \pm 30'$	W2 - W1 = 112
$1^{\circ}53' \pm 30'$	W2 - W1 = 113
$1^{\circ}50' \pm 30'$	W2 - W1 = 114
$1^{\circ}44' \pm 30'$	W2 - W1 = 117
$1^{\circ}41' \pm 30'$	W2 - W1 = 119
$1^{\circ}38' \pm 30'$	W2 - W1 = 120
$1^{\circ}40' \pm 30'$	W2 - W1 = 121
$1^{\circ}37' \pm 30'$	W2 - W1 = 122
$1^{\circ}33' \pm 30'$	W2 - W1 = 125
$1^{\circ}29' \pm 30'$	W2 - W1 = 127
Maximum left - right difference = 30'	

GENERAL INFORMATION

Front axle assembly: Adjustment values

30A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4, and POWER ASSISTED STEERING

Value	Vehicle position (mm)
2°40' ± 30'	W2 - W1 = 112
2°41' ± 30'	W2 - W1 = 113
2°38' ± 30'	W2 - W1 = 114
2°32' ± 30'	W2 - W1 = 117
2°29' ± 30'	W2 - W1 = 119
2°26' ± 30'	W2 - W1 = 120
2°28' ± 30'	W2 - W1 = 121
2°25' ± 30'	W2 - W1 = 122
2°21' ± 30'	W2 - W1 = 125
2°17' ± 30'	W2 - W1 = 127
Maximum left - right difference = 30'	

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value	Max difference Left/Right
2°57' ± 18'	30'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

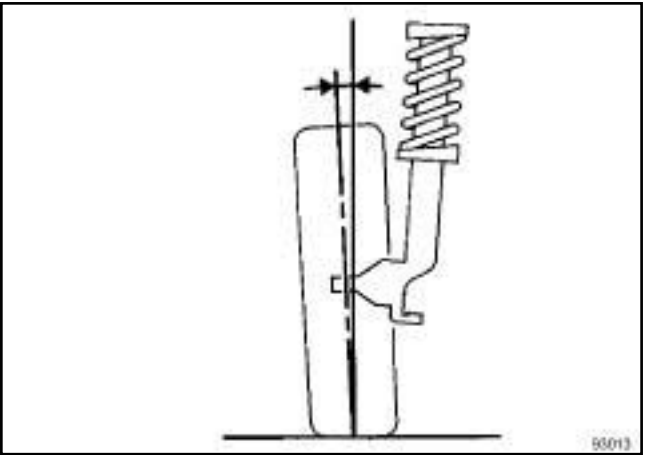
Value	Max difference Left/Right
2°57' ± 18'	30'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Max difference Left/Right
3° ± 18'	30'

IV - CAMBER

Not adjustable.



93013

GENERAL INFORMATION

Front axle assembly: Adjustment values

30A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Vehicle position (mm)
-0°45' ± 60'	R1 - W1 = 100
-0°46' ± 60'	R1 - W1 = 103
-0°47' ± 60'	R1 - W1 = 105
-0°49' ± 60'	R1 - W1 = 109
-0°49' ± 60'	R1 - W1 = 111
-0°50' ± 60'	R1 - W1 = 112
-0°50' ± 60'	R1 - W1 = 113
-0°50' ± 60'	R1 - W1 = 114
-0°51' ± 60'	R1 - W1 = 115

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value

-0°50' ± 1°

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value

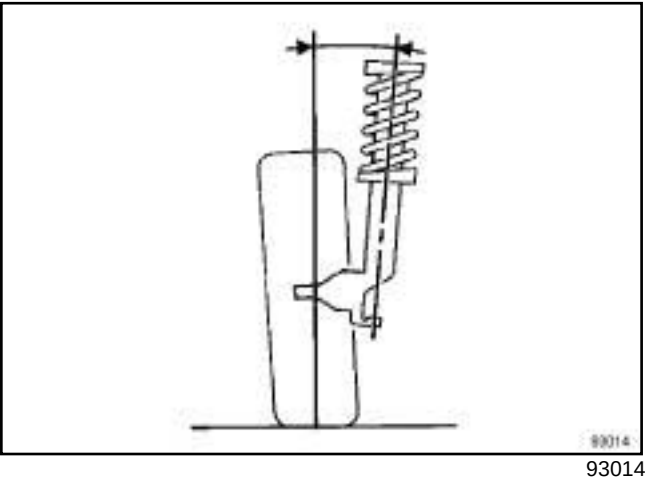
-0°50' ± 1°

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value

-0°54' ± 18'

V - PIVOT



GENERAL INFORMATION

Front axle assembly: Adjustment values

30A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Vehicle position (mm)
11°40' ± 30'	R1 - W1 = 100
11°80' ± 30'	R1 - W1 = 103
11°11' ± 30'	R1 - W1 = 105
11°16' ± 30'	R1 - W1 = 109
11°18' ± 30'	R1 - W1 = 111
11°19' ± 30'	R1 - W1 = 112
11°21' ± 30'	R1 - W1 = 113
11°22' ± 30'	R1 - W1 = 114
11°23' ± 30'	R1 - W1 = 115
Maximum left - right difference = 40'	

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Max difference Left/Right
13°30' ± 18'	± 24'

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value	Max difference Left/Right
13°20' ± 18'	± 24'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value	Max difference Left/Right
13°20' ± 18'	± 24'

GENERAL INFORMATION

Front axle system: Adjustment

30A

Equipment required

flywheel immobiliser

Tightening torques

wheel alignment adjustment lock nuts	53 N.m

2 - Castor angle

☐ Not adjustable.

3 - Camber

☐ Not adjustable.

4 - Pivot

☐ Not adjustable.

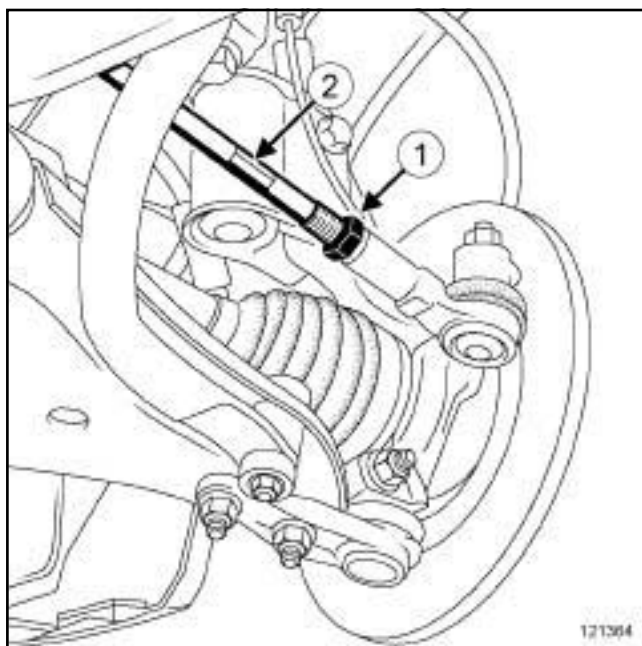
I - ADJUSTMENT PREPARATION STAGE

- ☐ Check the geometry (see **30A, General information, Axle assemblies: Check**, page 30A-23) .

II - ADJUSTMENT OPERATION

1 - Wheel alignment

- ☐ Set the wheels straight ahead.
- ☐ Lock the steering wheel using a **flywheel immobiliser**.
- ☐ Adjust the wheel alignment by rotating the track rod sleeves.



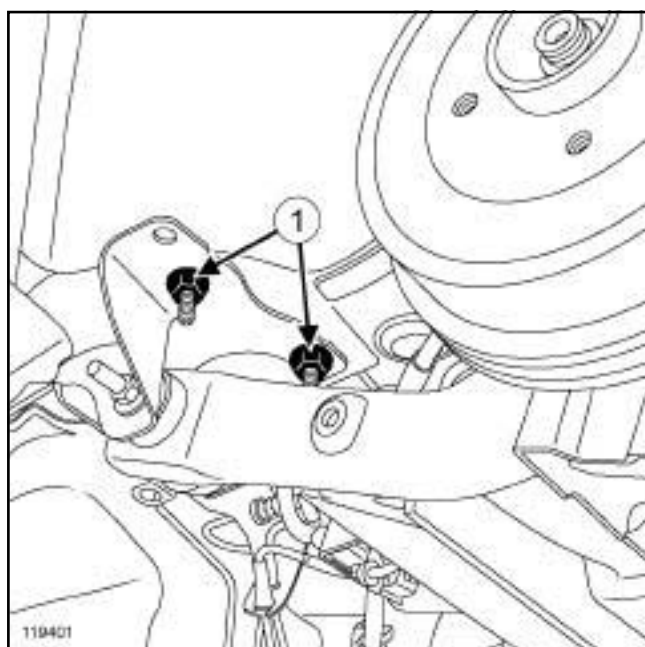
121364

- ☐ Loosen the wheel alignment adjustment lock nut (1) .
- ☐ Turn the track rod sleeve (2) to the required value.
- ☐ After adjustment, torque tighten the **wheel alignment adjustment lock nuts (53 N.m)**.

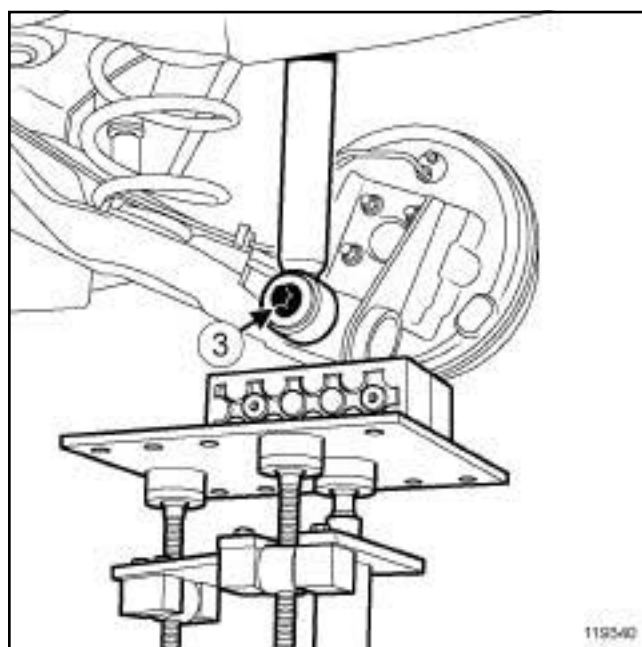
GENERAL INFORMATION

Rear axle system: Tightening torque

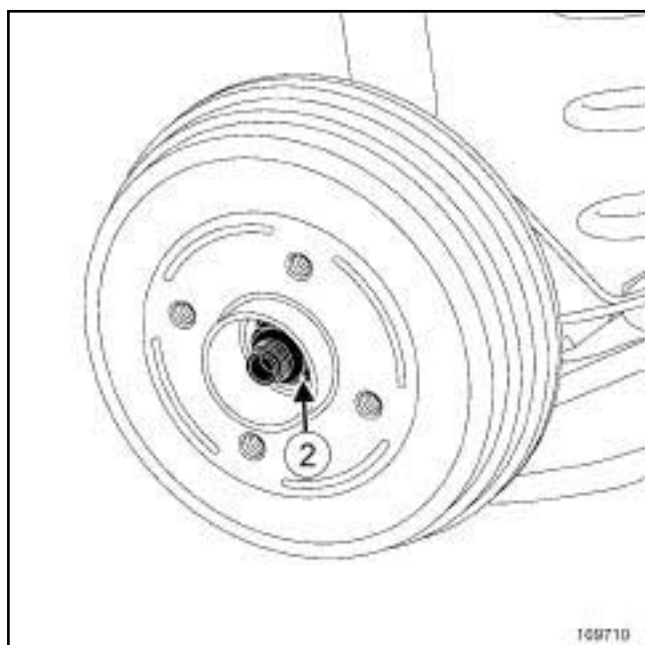
30A



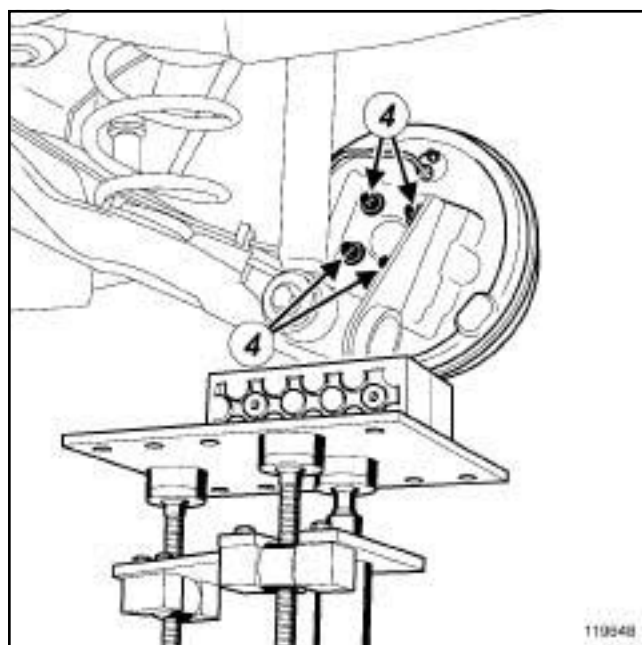
119401



119340



109710



119648

No.	Description	Tightening torque (Nm)
(1)	Rear axle bearing bolts	62
(2)	Rear brake drum nut	175
(3)	Rear shock absorber lower bolt	105
(4)	Front stub-axle carrier bolts	53

GENERAL INFORMATION

Rear axle assembly: Adjustment values

30A

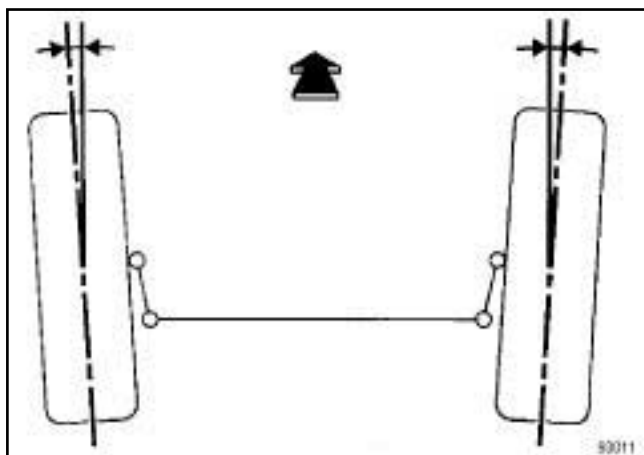
I - WHEEL ALIGNMENT: MEANING OF SYMBOLS

WARNING

Symbols used by RENAULT:

- toe-out: -
- toe-in: +

II - WHEEL ALIGNMENT



93011

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value (for both wheels)	Position of vehicle
$0^{\circ}30' \pm 15'$	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value (for both wheels)	Position of vehicle
$0^{\circ}20' \pm 15'$	Vehicle in running order

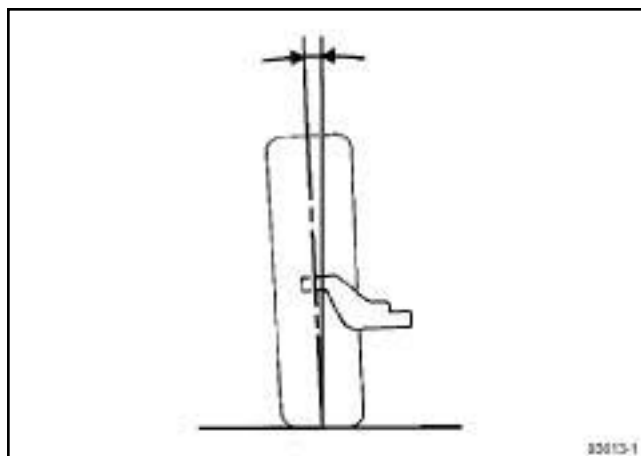
EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value (for both wheels)	Position of vehicle
$0^{\circ}20' \pm 15'$	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value (for both wheels)	Position of vehicle
$0^{\circ}22' \pm 15'$	Vehicle in running order

III - CAMBER



93013-1

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Position of vehicle
$-1^{\circ}05' \pm 19'$	Vehicle in running order

GENERAL INFORMATION

Rear axle assembly: Adjustment values

30A

EQUIPMENT LEVEL SPORT, and 16" ALUMIN-IUM WHEELS

Value	Position of vehicle
-0°50' ± 15'	Vehicle in running order



EQUIPMENT LEVEL SPORT, and 17" ALUMIN-IUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value	Position of vehicle
-0°50' ± 15'	Vehicle in running order



EQUIPMENT LEVEL SPORT, and 17" ALUMIN-IUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Position of vehicle
-0°49' ± 15'	Vehicle in running order



FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Tightening torques

guide pin bolt	34 N.m

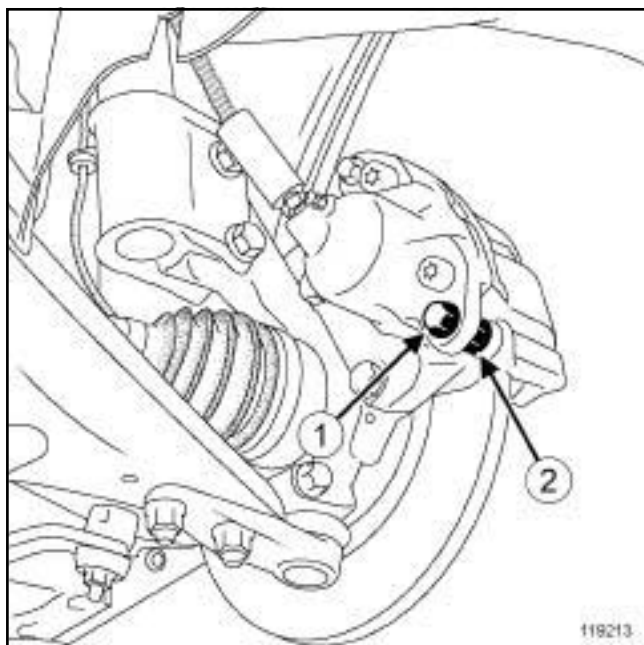
When replacing brake pads, be sure to replace the pads on the opposite side.

REMOVAL

I - OPERATION FOR REMOVAL OF PART CONCERNED

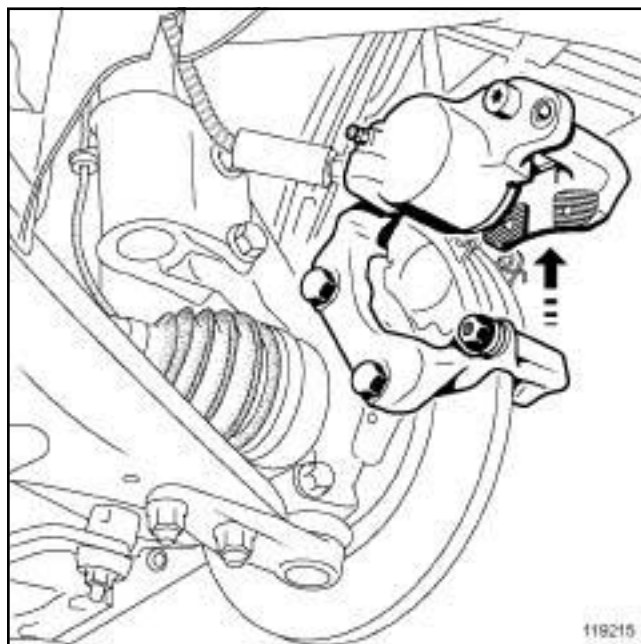
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .
- ☐ Switch off the ignition without removing the key to keep the steering column unlocked.
- ☐ Remove the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



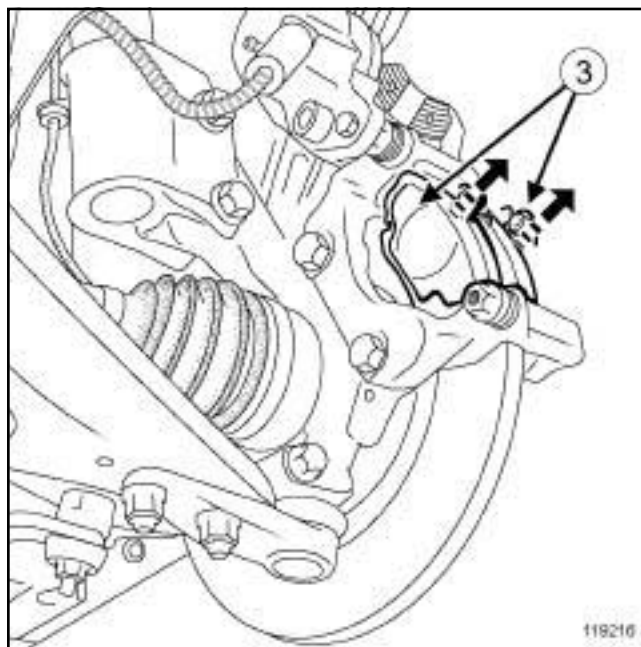
119213

- ☐ Remove the guide pin lower bolt (1) while holding the nut (2) .



119215

- ☐ Rotate the calliper upwards.



119216

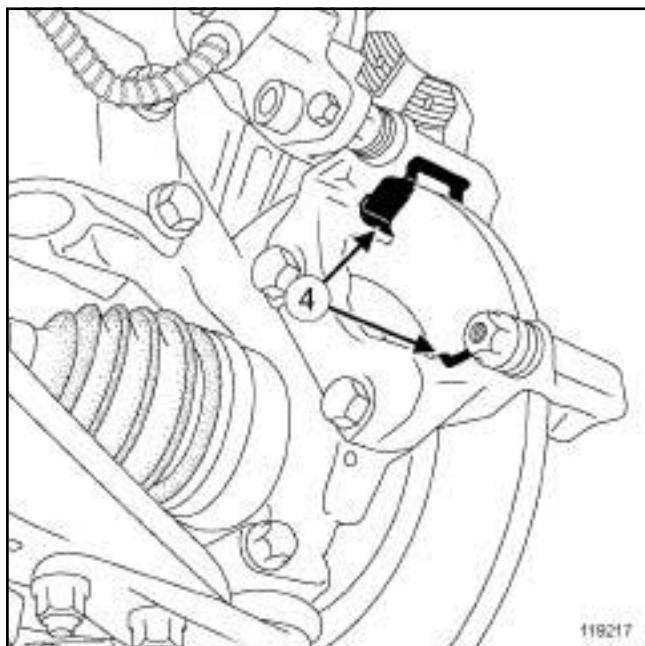
- ☐ Remove the pads (3) .

FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



- ☐ Remove the noise reducing fins (4) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Check the thickness of the pads (see **30A, General information, Brake: Specifications**, page **30A-19**) .
- ☐ Replace any faulty parts.
- ☐ Clean:
 - the calliper supports,
 - the callipers.
- ☐ Push the piston.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the new noise reducing fins.
- ☐ Fit the front brake pads starting from the inside.
- ☐ Pivot the calliper downwards to return it to its original position.
- ☐ Refit the new guide pin bolt.

- ☐ Torque tighten the **guide pin bolt (34 N.m)**.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

III - FINAL OPERATION

- ☐ Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

indelible pencil

Tightening torques

guide pin bolts **28 N.m**

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

In order not to damage the brake hose:

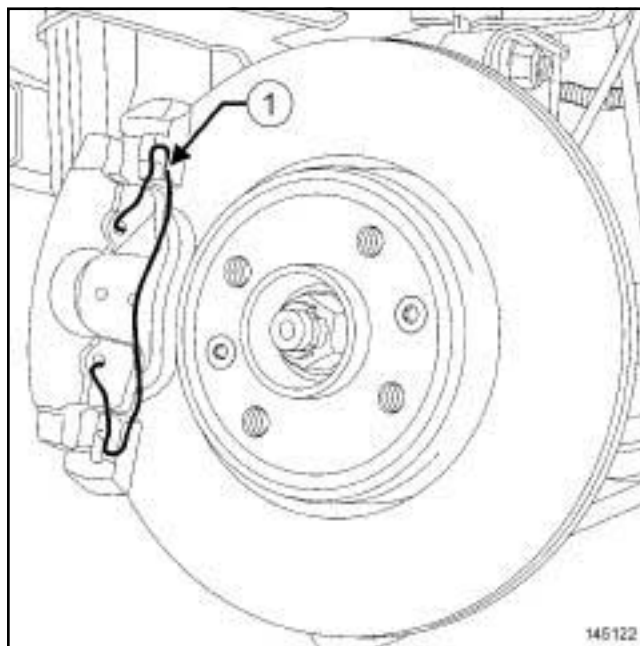
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Set the wheels straight ahead.
- ☐ Remove the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

II - REMOVAL OPERATION



145122

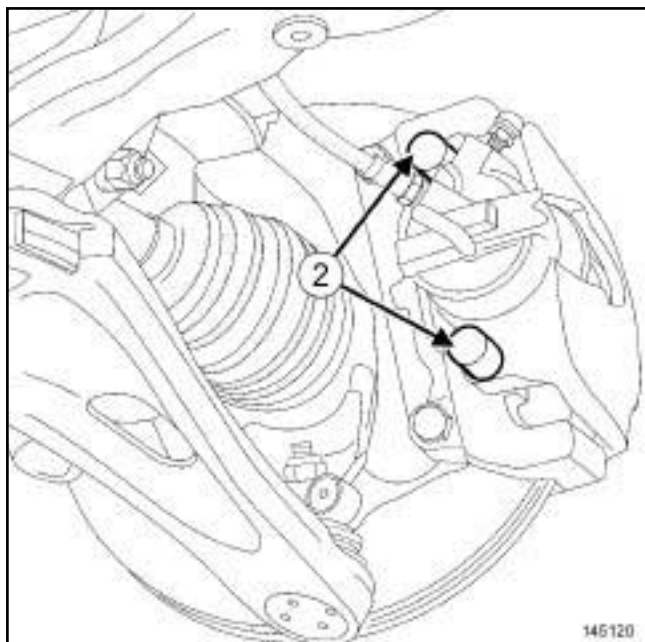
- ☐ Remove the retaining spring (1) using a wide, flat-blade screwdriver.
- ☐ Mark the position of the cap on the base of the shock absorber using a **indelible pencil**.
- ☐ Unclip the cap from the base of the shock absorber.

FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT



145120

❑ Remove:

- the guide pin bolt caps (2) ,
- the guide pin bolts.

❑ Suspend the brake calliper on the subframe.

❑ Remove the brake pads.

REFITTING

I - REFITTING PREPARATION OPERATION

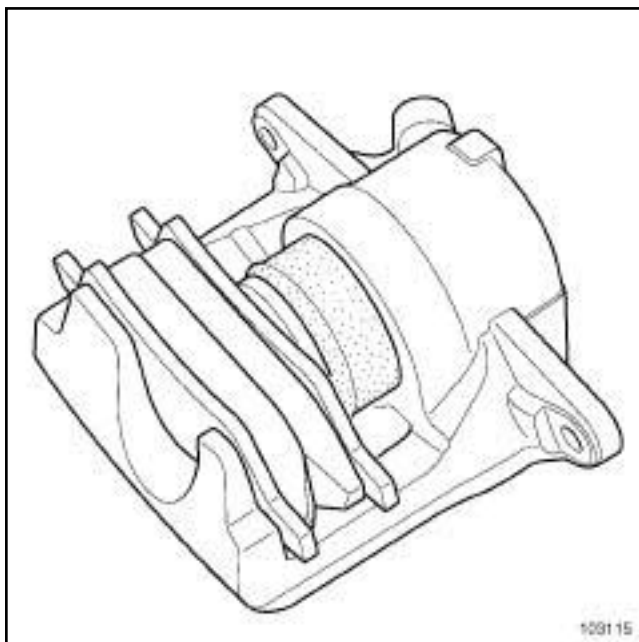
❑ Measure the thickness of the pads and then compare them to the minimum values (see **30A, General information, Brake: Specifications**, page **30A-19**) .

❑ Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

❑ **parts always to be replaced: Front brake calliper guide pin bolt.**

❑ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the calliper supports,
- the callipers.



103115

❑ Push the piston fully into its housing using the tool (**Fre. 1190-01**) part number **77 11 223 715**.

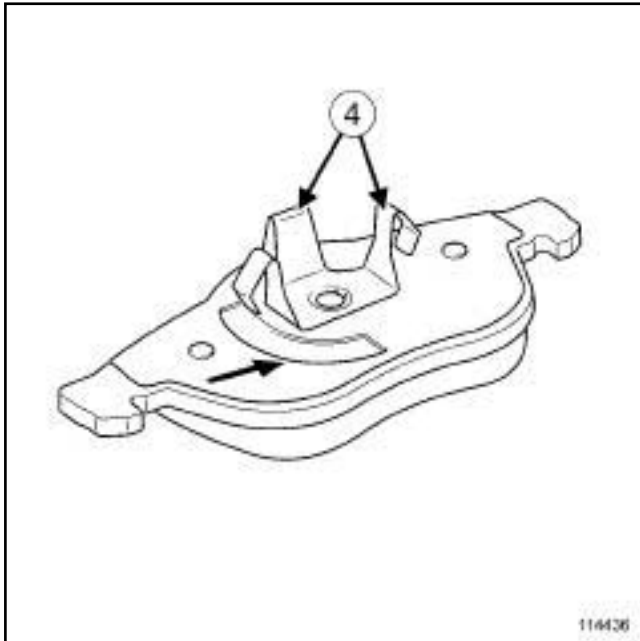
FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

II - REFITTING OPERATION



- ☐ Fit the inner brake pad with the lugs (4) in the caliper piston.
- ☐ Refit:
 - the outer brake pad on the caliper mounting,
 - the calliper with the inner brake pad on the calliper mounting.
- ☐ Torque tighten the **guide pin bolts (28 N.m)**.
- ☐ Refit:
 - the guide pin caps,
 - the retaining spring.
- ☐ Set the wheels straight ahead.
- ☐ Clip the cap on the shock absorber base by aligning the marks made on **indelible pencil**.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

III - FINAL OPERATION

- ☐ Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A

Equipment required

pedal press

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**) .

WARNING

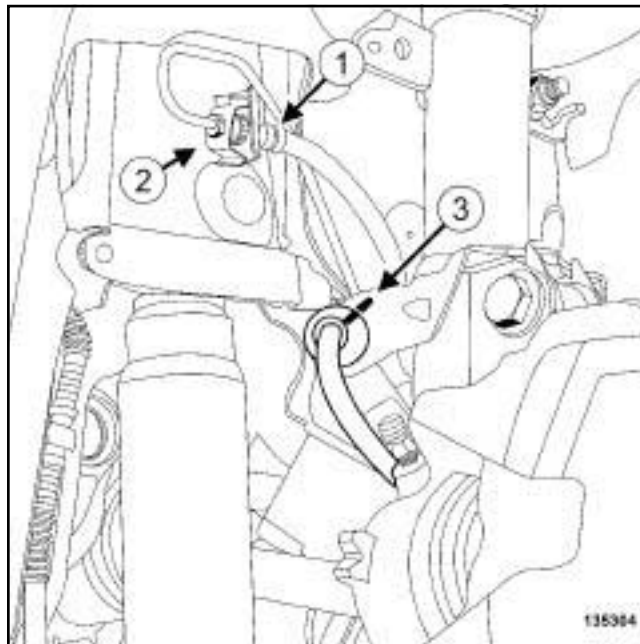
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .
- ☐ Set the wheels straight ahead.
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



135304

- ☐ Loosen the hose union (1) on the rigid pipe union.
- ☐ Remove the retaining (2) fork from the hose.
- ☐ To avoid the premature damage of the brake hose by friction, observe the following procedure before unclipping the hose:
- ☐ Set the wheels straight ahead.
- ☐ Mark the position of the cap on the base of the shock absorber using a permanent marker.
- ☐ Unclip the brake hose cap (3) from the shock absorber base.
- ☐ Loosen the hose union on the brake calliper.
- ☐ Remove the brake hose.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A

- ☐ Set the wheels straight ahead.
- ☐ Refit the brake hose at the calliper end.
- ☐ Torque tighten the brake hose (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**)
- ☐ Clip the brake hose cap on to the base of the shock absorber, aligning the marks made using a permanent marker.
- ☐ Refit:
 - the brake hose on the rigid pipe union,
 - the hose retaining fork.
- ☐ Torque tighten the brake hose union on the rigid pipe union. (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**)

II - FINAL OPERATION

- ☐ Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Equipment required

pedal press

Tightening torques

guide pin bolts **34 N.m**

brake hose **17 N.m**

Note:

The callipers supplied as spare parts are pre-filled with brake fluid.

REMOVAL

I - REMOVAL PREPARATION OPERATION

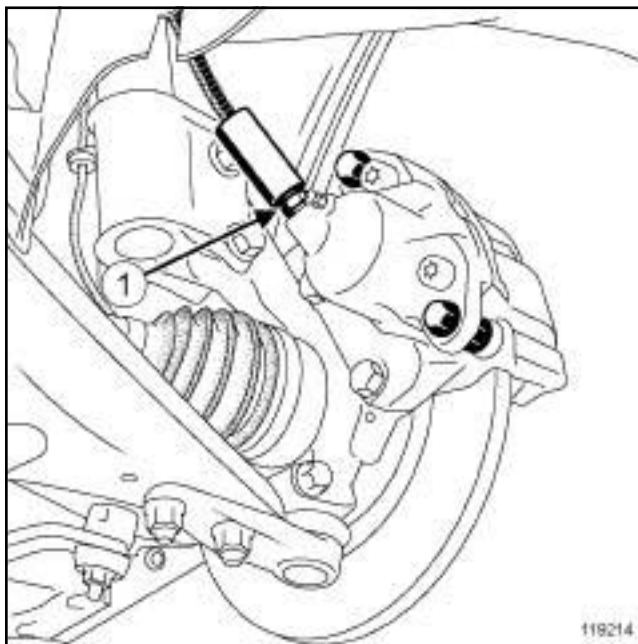
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ☐ Fit the **pedal press** to the brake pedal to limit the outflow of brake fluid.
- ☐ Unlock the steering column.
- ☐ Remove the front wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119214

- ☐ Unlock the brake hose (1) on the brake calliper.
- ☐ Remove the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) .

WARNING

In order not to damage the brake hose:

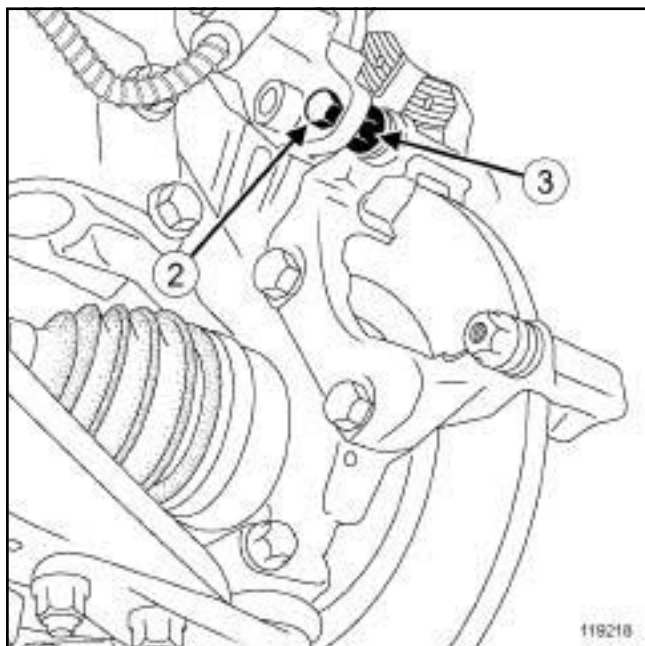
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119218

❑ Remove:

- the bolts from the guide pins (2) while holding the nut (3) ,
- the brake calliper from the hose,
- the brake calliper.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Check the condition of the gaiter and calliper piston (replace defective parts).
- ❑ Push the piston back until it is at the end of its bore.
- ❑ Using the cleaning station, clean:
 - the calliper mounting,
 - the calliper.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Set the front wheels straight.
- ❑ Without using a tool, screw the calliper to the brake hose as tightly as possible.
- ❑ Refit:
 - the brake pads (see 31A, **Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
 - the calliper,
 - the new guide pin bolts.
- ❑ Torque tighten:
 - the **guide pin bolts (34 N.m)**,
 - the **brake hose (17 N.m)**.

III - FINAL OPERATION

- ❑ Remove the **pedal press** from the brake pedal.
- ❑ Bleed the brake circuit (see 30A, **General information, Braking circuit: Bleed**, page 30A-4) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- ❑ Refit the front wheel on the side concerned (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

Tightening torques

brake hose union **13 N.m**

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

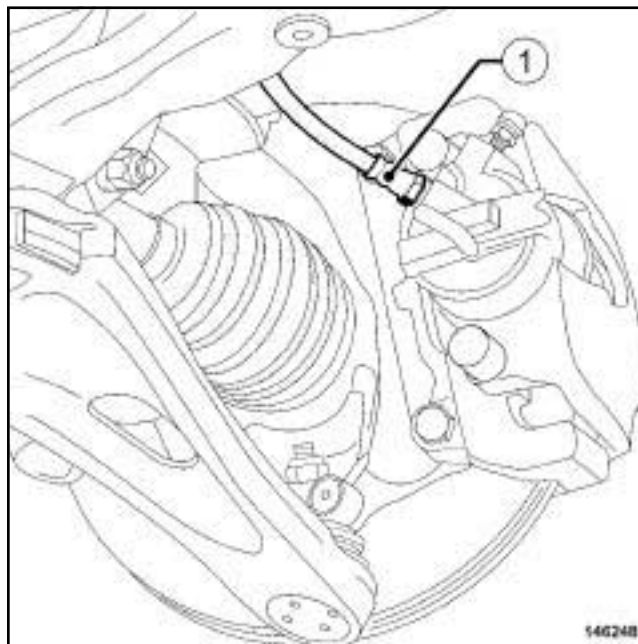
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- ☐ Fit a **pedal press** on the brake pedal to limit the out-flow of brake fluid.

II - REMOVAL OPERATION



146248

- ☐ Slightly loosen the brake hose union (1) of the calliper.
- ☐ Remove:
 - the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) ,
 - the brake hose union on the brake calliper.
- ☐ Fit blanking plugs on the ends of the openings.
- ☐ Remove the brake calliper.

REFITTING

I - REFITTING PREPARATION OPERATION

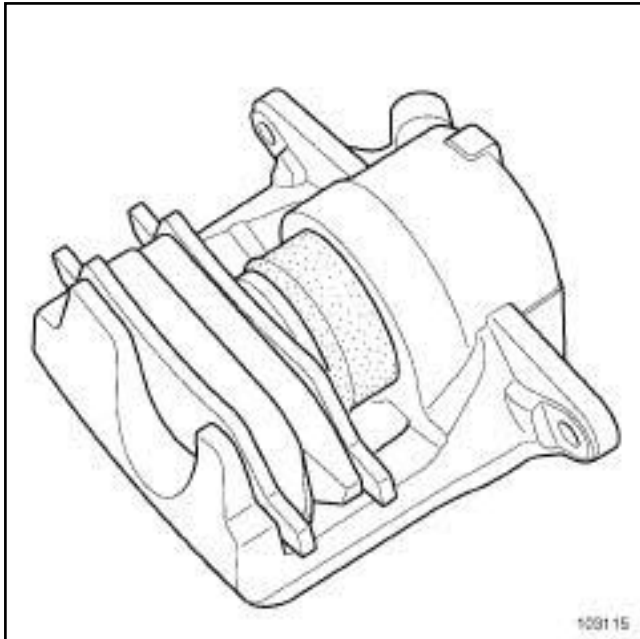
- ☐ Check:
 - the condition of the calliper gaiter,
 - the condition of the calliper piston; replace it if there are deep scratches or cracks.
- ☐ Replace any faulty parts (see **31A, Front axle components, Front brake calliper: Repair**, page **31A-12**) .
- ☐ Clean using a wire brush and **BRAKE CLEANER** (see) (04B, Consumables - Products):
 - the calliper mounting,
 - the calliper.

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT



103115

- ☐ Push the piston fully into its housing using the tool (**Fre. 1190-01**) part number **77 11 223 715**.

II - REFITTING OPERATION

☐

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- ☐ Screw the brake hose union onto the calliper.
- ☐ Refit the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**).
- ☐ Torque tighten the **brake hose union (13 N.m)**.
- ☐ Clean the drips using **BRAKE CLEANER** (see) (04B, Consumables - Products).

III - FINAL OPERATION

- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

IMPORTANT

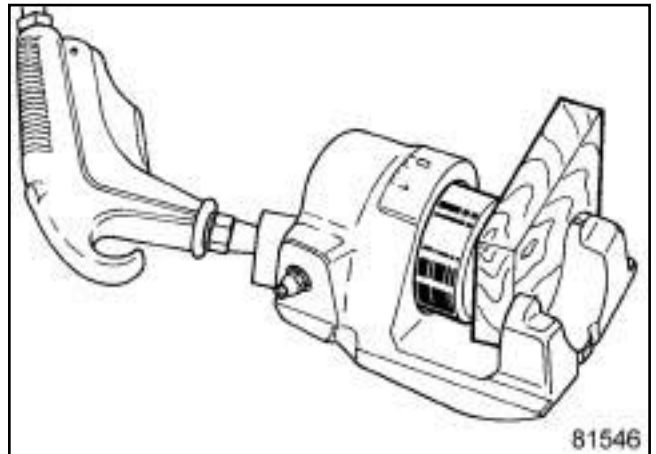
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REPAIR**I - REPAIR PREPARATION OPERATION**

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
 - the front brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page 31A-8).

II - REPAIR OPERATION FOR PART CONCERNED

81546

- ☐ Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston to avoid damaging it. Any trace of impact on the end panel will render the piston unfit for use.

- ☐ Remove the dust seal.



81545

- ☐ Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

WARNING

The whole calliper must systematically be replaced if there are any scratches in the calliper bore.

- ☐ Clean the parts using methylated spirit.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**☐ Refit:

- the new rectangular section seal in the calliper groove,
- the piston (after having smeared it with the grease supplied in the repair kit) using the **(Fre. 1190-01)**,
- the dust seal.

II - FINAL OPERATION.☐ Refit:

- the brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting, page 31A-8**),
- the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

☐ Remove the **pedal press**.**IMPORTANT**

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed, page 30A-4**).

Front brake calliper mounting: Removal - Refitting

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Equipment required

safety strap(s)

Tightening torques

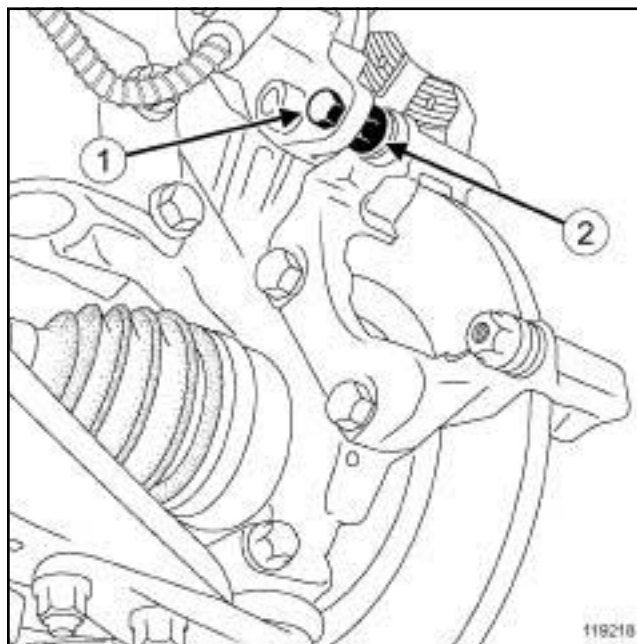
brake calliper mounting bolts **100 N.m**

guide pin upper bolt **29 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**).



119218

- ☐ Remove the guide pin upper bolt (1) while holding the nut (2).

WARNING

In order not to damage the brake hose:

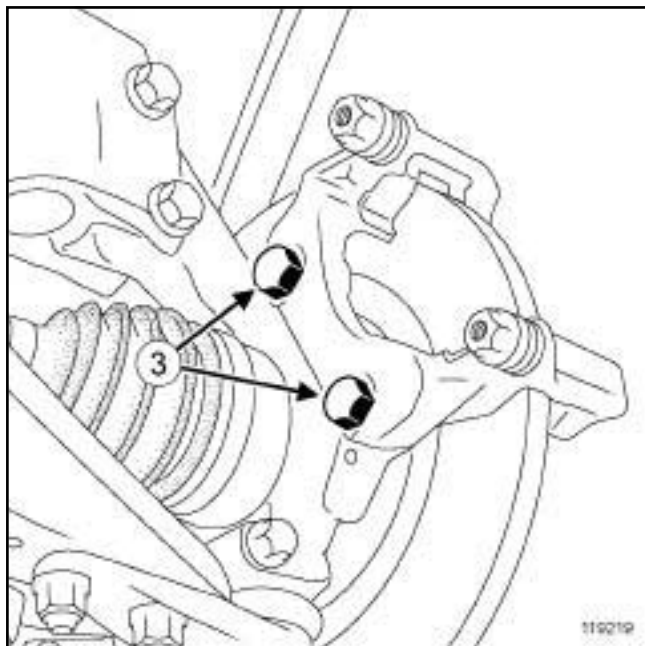
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- ☐ Hang the brake calliper on the shock absorber spring using a **safety strap(s)**.

Front brake calliper mounting: Removal - Refitting

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

II - REMOVAL OPERATION



119219

❑ Remove:

- the brake calliper mounting bolts (3) ,
- the brake calliper mounting.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Always replace the guide pin upper bolt.
- ❑ Using the cleaning station, clean:
 - the brake calliper mounting,
 - the brake calliper.
- ❑ Coat the brake calliper mounting bolts with **HIGH STRENGTH THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) before refitting them.

II - REFITTING OPERATION

- ❑ Refit:
 - the brake calliper mounting,
 - the brake calliper mounting bolts.
- ❑ Torque tighten the **brake calliper mounting bolts (100 N.m)**.

III - FINAL OPERATION

- ❑ Fit the front brake calliper.

- ❑ Refit the upper bolt on the guide pin while holding the nut.
- ❑ Torque tighten the **guide pin upper bolt (29 N.m)** while holding the nut.
- ❑ Refit:
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**),
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

EQUIPMENT LEVEL SPORT

Tightening torques

calliper mounting bolts	100 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

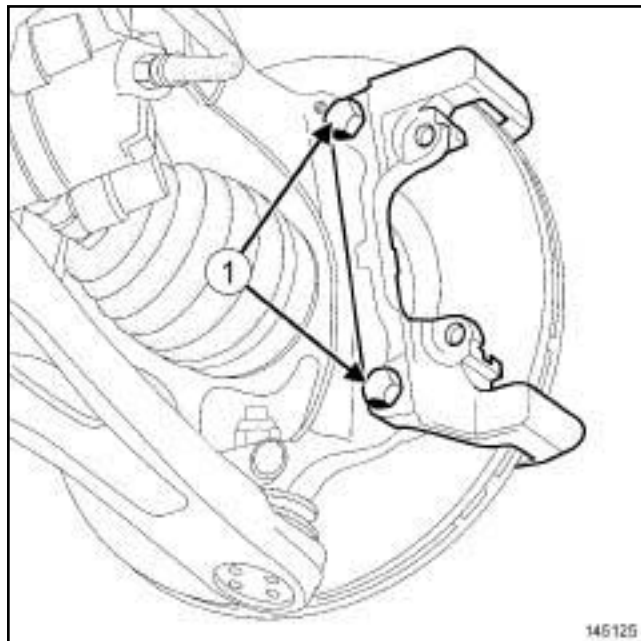
- (see **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) .

II - REMOVAL OPERATION



145125

- ☐ Remove:
 - the calliper mounting bolts (1) ,
 - the calliper mounting.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper mounting,
 - the calliper,
 - the hub carrier.
- ☐ **parts always to be replaced: Front brake calliper mounting bolt.**

II - REFITTING OPERATION

- ☐ Refit the calliper mounting.
- ☐ Torque tighten the **calliper mounting bolts (100 N.m)**.

III - FINAL OPERATION

- ☐ Refit:
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) ,

FRONT AXLE COMPONENTS

Front brake calliper mounting: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

- the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

FRONT AXLE COMPONENTS

Front brake disc protector: Removal - Refitting

31A

Tightening torques

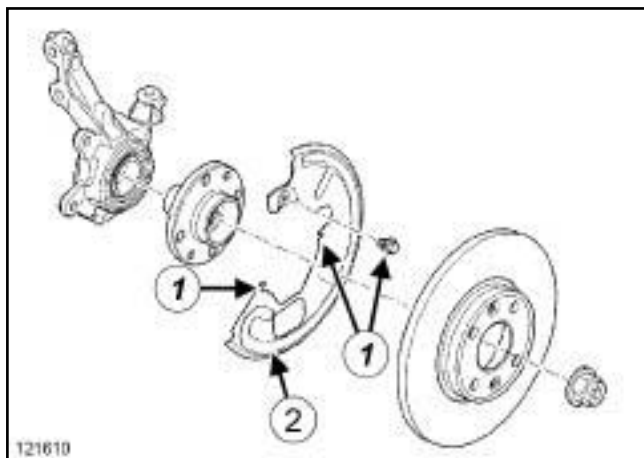
brake disc protector bolts	8 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
 - the calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page 31A-14) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-19) ,
 - the hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page 31A-23) ,
 - the hub carrier bearing (see **31A, Front axle components, Front hub carrier bearing: Removal - Refitting**, page 31A-26) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove:
 - the brake disc protector bolts (1) ,

- the brake disc protector (2) .

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Always replace the hub carrier bearing when a hub is removed (see **31A, Front axle components, Front hub carrier bearing: Removal - Refitting**, page 31A-26) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the brake disc protector,
 - the brake disc protector bolts.
- ☐ Torque tighten the **brake disc protector bolts (8 Nm)**.

III - FINAL OPERATION.

- ☐ Refit:
 - the hub carrier bearing (see **31A, Front axle components, Front hub carrier bearing: Removal - Refitting**, page 31A-26) ,
 - the hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page 31A-23) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-19) ,
 - the calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page 31A-14) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

FRONT AXLE COMPONENTS

Front brake disc: Removal - Refitting

31A

Equipment required

indelible pencil

parts washer

Brake discs cannot be reground. If there is excessive scoring or wear, they will need to be replaced (see **30A, General information, Brake: Specifications**, page **30A-19**) .

IMPORTANT

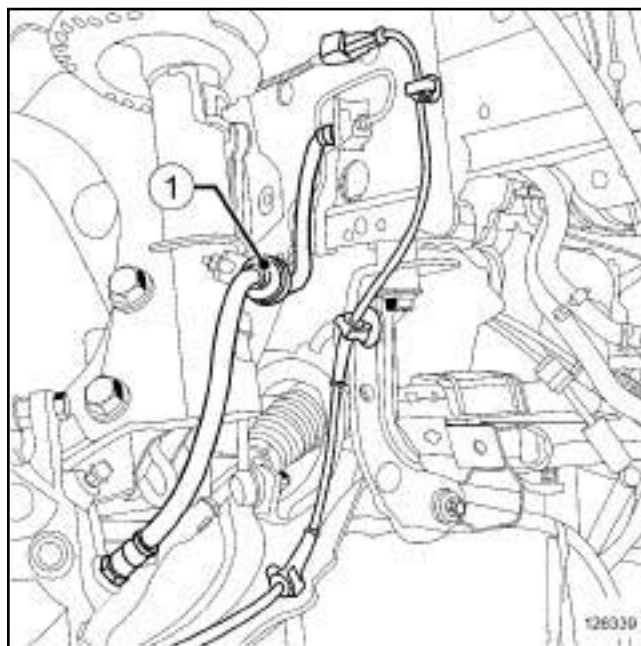
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **30A, General information, Brake circuit: Precautions for the repair**, page **30A-2**) (30A, General information),
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Set the wheels straight ahead.
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .



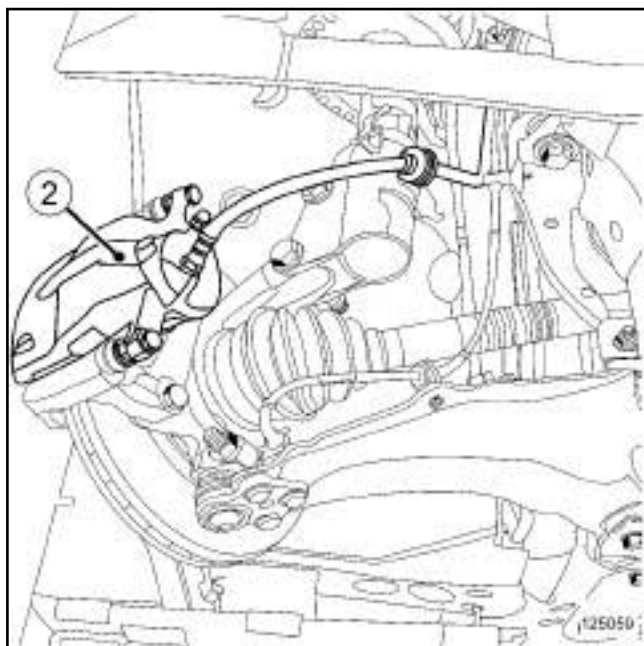
126339

- ☐ Mark the position of the cap (1) on the base of the shock absorber using a **indelible pencil**.
- ☐ Unclip the cap (1) from the base of the shock absorber.

FRONT AXLE COMPONENTS

Front brake disc: Removal - Refitting

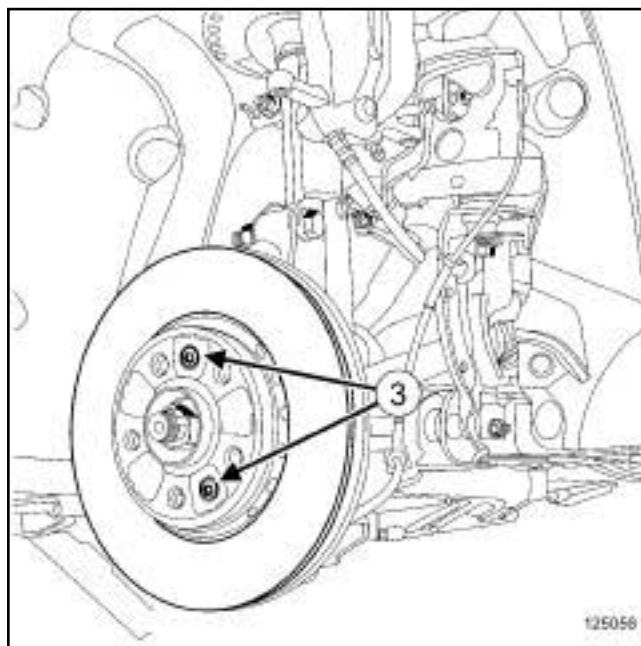
31A



125059

- ☐ Remove the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**)
- ☐ Remove the "brake calliper mounting - brake calliper" assembly (2) (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting, page 31A-14**) .
- ☐ Hang the "brake calliper mounting - brake calliper" assembly (2) on the suspension spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED



125056

- ☐ Remove:
 - the brake disc bolt or bolts (3) ,
 - the brake disc.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean the brake discs using a **parts washer**.
- ☐ Dry the surface of the discs.
- ☐ Clean the mating faces of the disc on the hub using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ **parts always to be replaced: Front brake disc bolt**

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the brake disc with new bolts.
- ☐ Torque tighten the new disc mounting bolts (see **30A, General information, Brake circuit: Tightening torque, page 30A-6**)

FRONT AXLE COMPONENTS

Front brake disc: Removal - Refitting

31A

III - FINAL OPERATION

- ☐ Refit the "brake calliper mounting - brake calliper" assembly (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-14**) .
- ☐ Refit the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**)
- ☐ Set the wheels straight ahead.
- ☐ Clip the cap on the base of the shock absorber while aligning the marks made with a **indelible pencil**.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- ☐ Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- ☐ Advise the customer to run-in the brake pads (no harsh braking).

I - PREPARATION OPERATION FOR CHECK

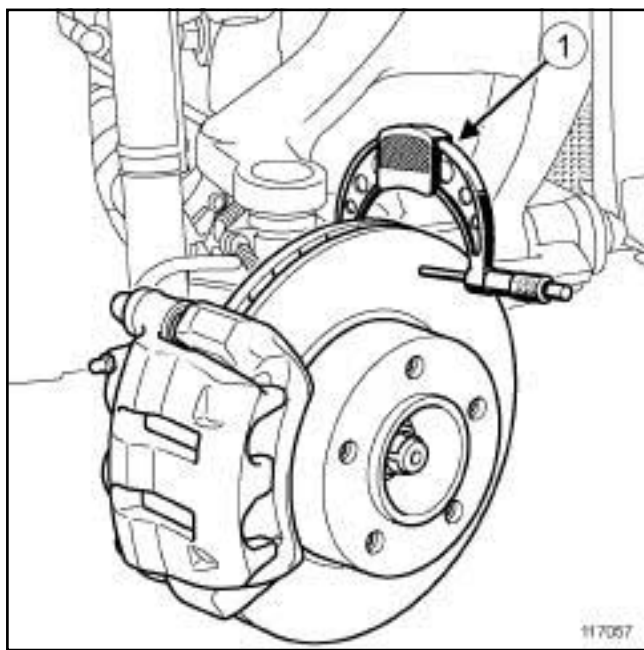
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Remove the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - CHECKING OPERATION FOR PART CONCERNED

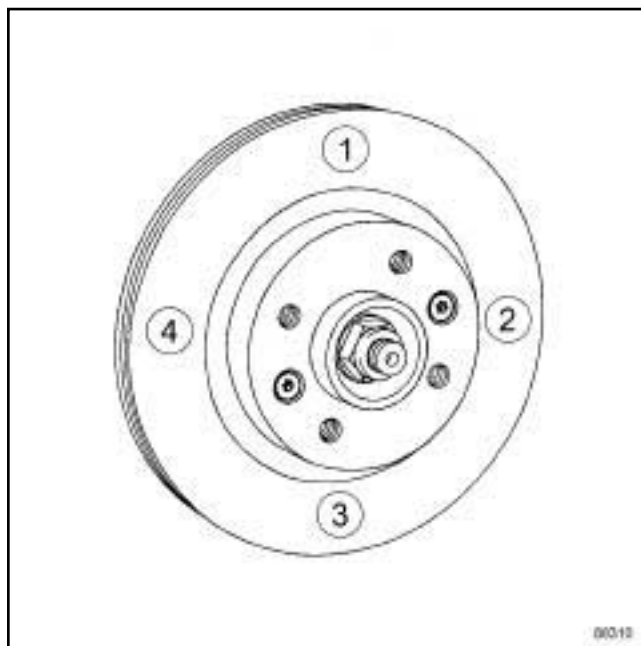
Note:

Use a Palmer type tool to check the thickness of the disc.



117057

Position the Palmer tool (1) to measure the disc thickness.



88310

Measure the thickness of the disc at 4 points in order (90° apart).

Compare the values with those recommended by the manufacturer (see **30A, General information, Brake: Specifications**, page 30A-19) .

III - FINAL OPERATION

Replace the discs if necessary (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-19) .

Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.

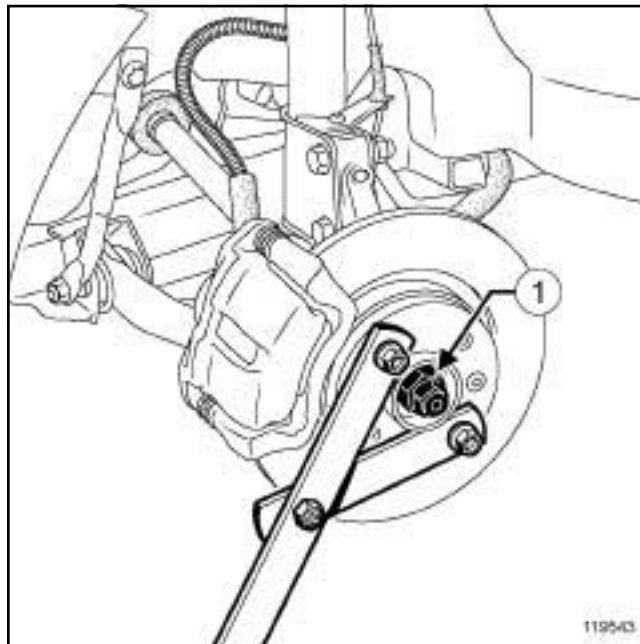
Tightening torques 	
shock absorber lower bolts	105 Nm
front driveshaft lower arm ball joint bolt	105 Nm
ABS wiring bracket bolt	8 Nm
track rod end nut	37 N.m
hub nut	280 Nm
guide pin upper bolt	29 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

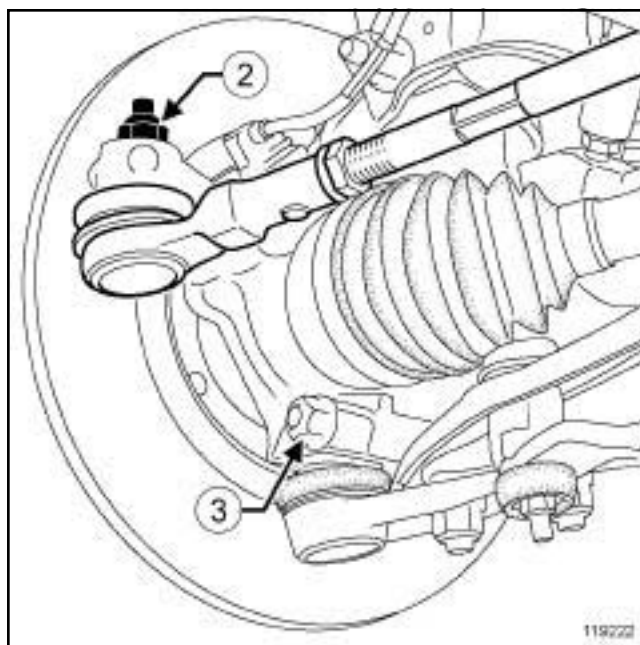
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front wheel on the side in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front brake pads of the side in question (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) ,
- ☐ Remove:
 - the front brake calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-19**) ,
 - the front wheel speed sensor on the hub carrier (see **38C, Anti-lock braking system, Front wheel speed sensor: Removal - Refitting**, page **38C-15**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



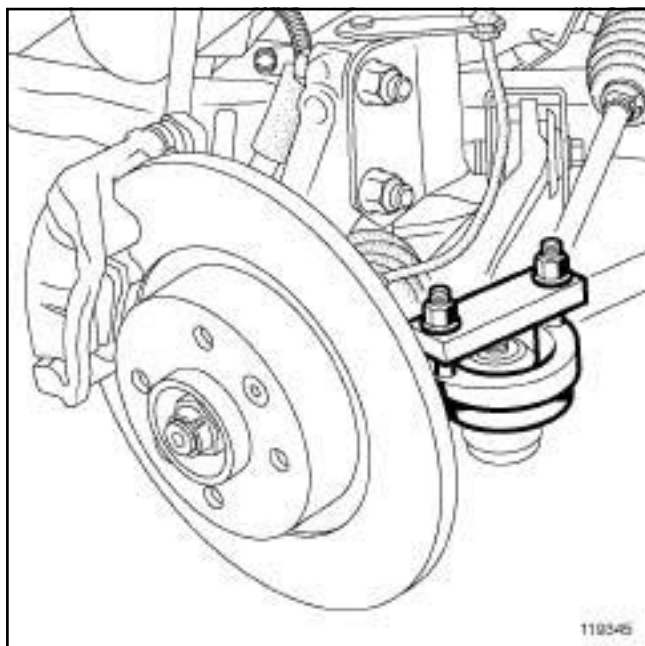
119543

- ☐ Position the **(Rou. 604-01)**.
- ☐ Remove the hub nut (1) .



119222

- ☐ Remove:
 - the nut (2) from the track rod end,
 - the bolt (3) from the lower ball joint.



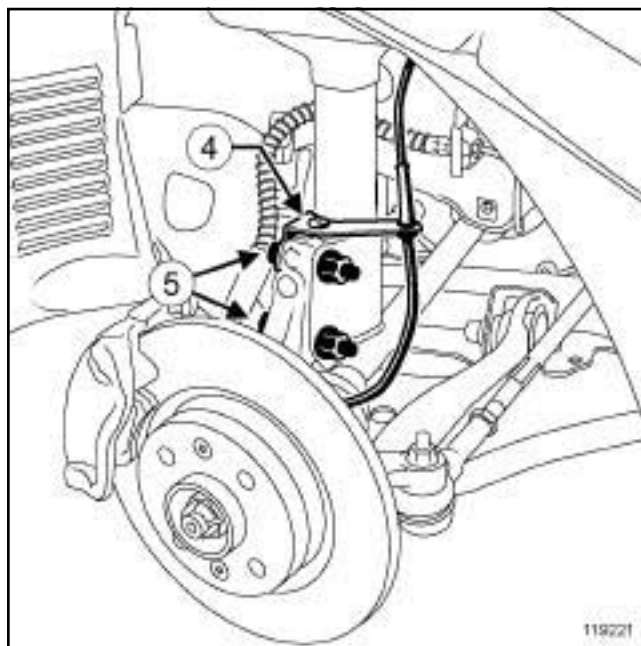
119345

❑ Remove:

- the track rod end using the **(Tav. 476)**,
- the front driveshaft lower arm ball joint.

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.



119221

❑ Remove:

- the bolt (4) from the ABS wiring bracket,
- the ABS wiring bracket,
- the shock absorber lower studs (5) .

❑ Separate the driveshaft from the hub carrier using the **(Tav. 1420-01)**.

❑ Remove the front driveshaft hub carrier.

REFITTING

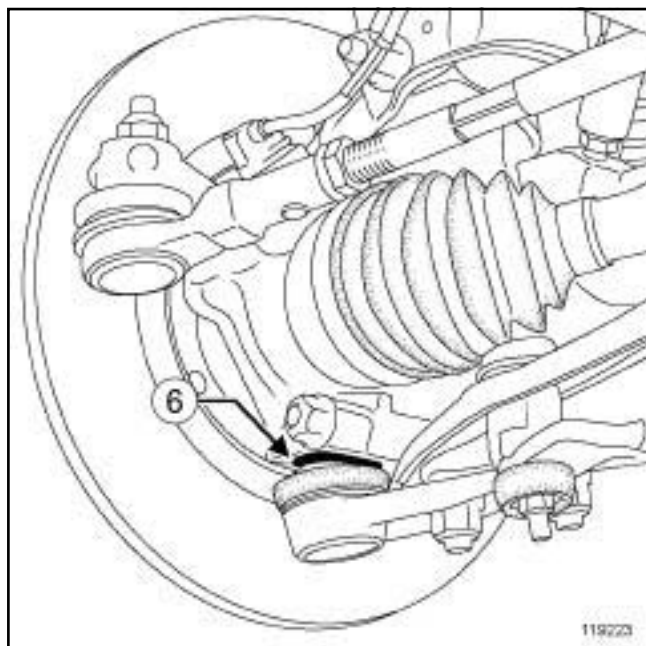
I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the front driveshaft hub carrier,
- the driveshaft into the front driveshaft hub-carrier,
- the shock absorber lower bolts.

❑ Torque tighten the **shock absorber lower bolts (105 Nm)**.

❑ Fit the front driveshaft lower arm ball joint.



119223

- ☐ Check that the bush (6) is correctly fitted on the front driveshaft lower arm ball joint.
- ☐ Refit the front driveshaft lower arm ball joint bolt.
- ☐ Torque tighten the **front driveshaft lower arm ball joint bolt (105 Nm)**.
- ☐ Refit:
 - the ABS wiring bracket,
 - the ABS wiring bracket bolt.
- ☐ Torque tighten the **ABS wiring bracket bolt (8 Nm)**.
- ☐ Position the track rod.
- ☐ Refit the track rod end nut.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit the hub nut using the **(Rou. 604-01)**.
- ☐ Torque tighten the **hub nut (280 Nm)**.

II - FINAL OPERATION

- ☐ Refit:
 - the front wheel speed sensor on the hub carrier,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-19**),
 - the front brake calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting, page 31A-14**).
- ☐ Fit the front brake calliper.
- ☐ Refit the upper bolt on the guide pin while holding the nut.

- ☐ Torque tighten the **guide pin upper bolt (29 Nm)**.
- ☐ Refit:
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**),
 - the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

WARNING

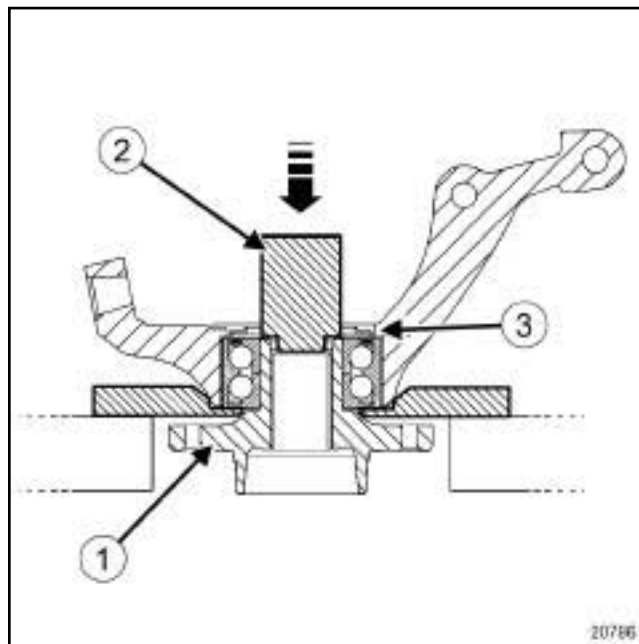
To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

REMOVAL

I - REMOVAL PREPARATION OPERATION

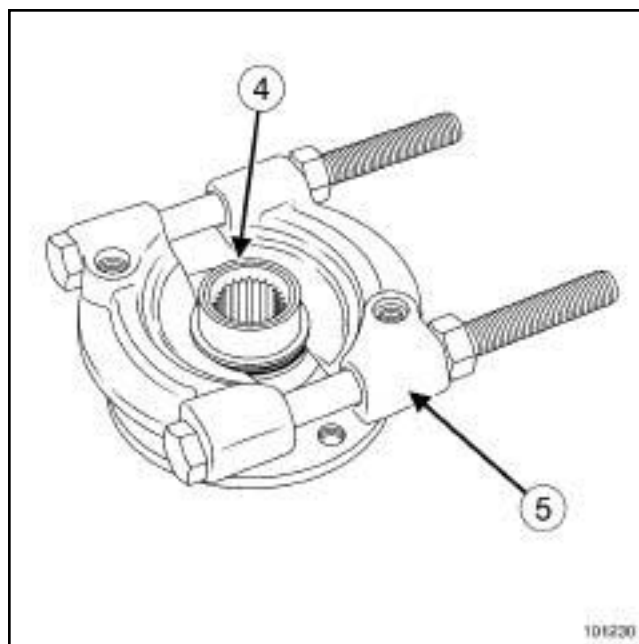
- Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- Remove:
 - the front wheel on the side in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) ,
 - the calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting, page 31A-14**) ,
 - the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-19**) ,
 - the front driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting, page 31A-23**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

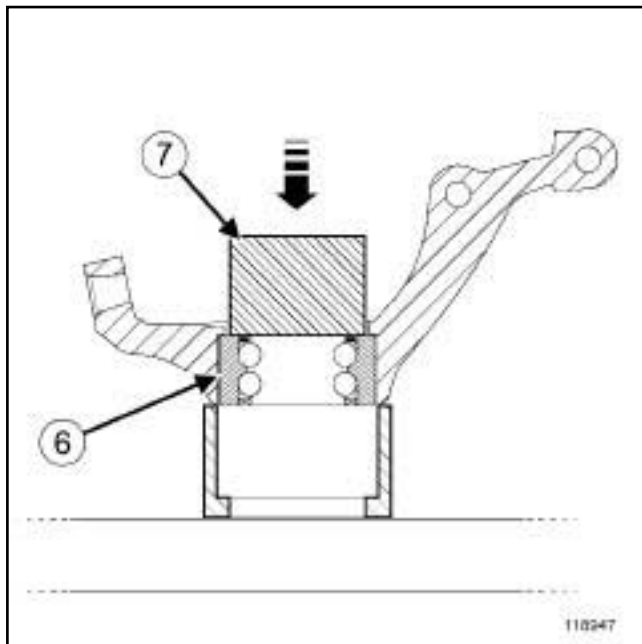


□ Remove:

- the hub (1) using a hydraulic press, applying force with a pipe 65 mm (2) in diameter,
- the circlip (3) .



- Remove the internal bush (4) from the hub using an extractor with jaws (5) .



118947

- ❑ Remove the bearing (6) using a hydraulic press, taking hold of the outer bush with a **pipe 65 mm in diameter (7)**.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ❑ Always replace:
 - the front hub carrier bearing,
 - the circlip.
- ❑ Use a degreasing product to clean the inner and outer surfaces of the new bearing which are in contact with the stub axle carrier and the hub.



117348

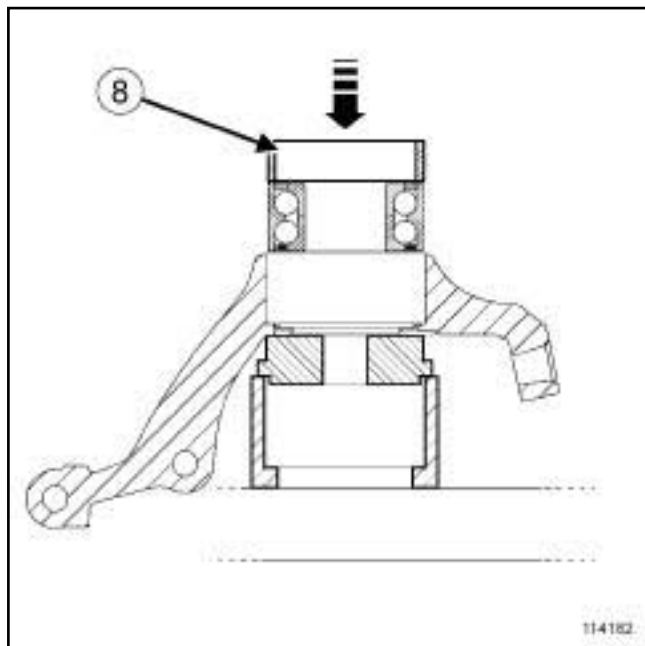
- ❑ Using the cleaning station, clean:
 - the stub axle carrier surfaces in contact with the new bearing,
 - the hub surfaces in contact with the new bearing.
- ❑ It is essential to check the condition of the hub surface and the hub carrier bore before refitting the bearing.

Note:

Replace the bearing if the hub carrier is faulty.

Front hub carrier bearing: Removal - Refitting

II - REFITTING OPERATION FOR PART CONCERNED



- ❑ Refit the bearing using a hydraulic press, taking hold of the outer bush with a **pipe with an outer diameter of 70 mm (8)**.

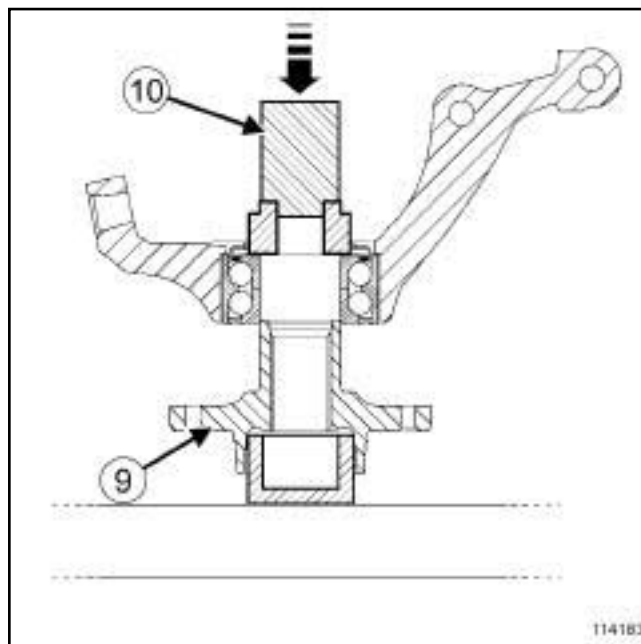
WARNING

Do not press the bearing's inner bush so as to avoid damaging the bearing (very high shrink-fitting force).

Note:

the black side of the bearing must be fitted on the circlip side.

- ❑ Refit the circlip.



- ❑ Refit the hub (9) using a hydraulic press, taking hold of the bearing's internal bush with a **pipe with an outer diameter of 50 mm (10)**.

III - FINAL OPERATION.

- ❑ Refit:

- the front driveshaft hub carrier (see 31A, **Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page 31A-23) ,
- the brake disc (see 31A, **Front axle components, Front brake disc: Removal - Refitting**, page 31A-19) ,
- the calliper mounting (see 31A, **Front axle components, Front brake calliper mounting: Removal - Refitting**, page 31A-14) ,
- the front brake pads (see 31A, **Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
- the front wheel on the side in question (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

FRONT AXLE COMPONENTS

Front shock absorber and spring: Removal - Refitting

31A

Equipment required

safety strap(s)

spanner for shock absorber rod nut

Tightening torques

new shock absorber rod nut	62 N.m

new shock absorber base nuts	105 N.m

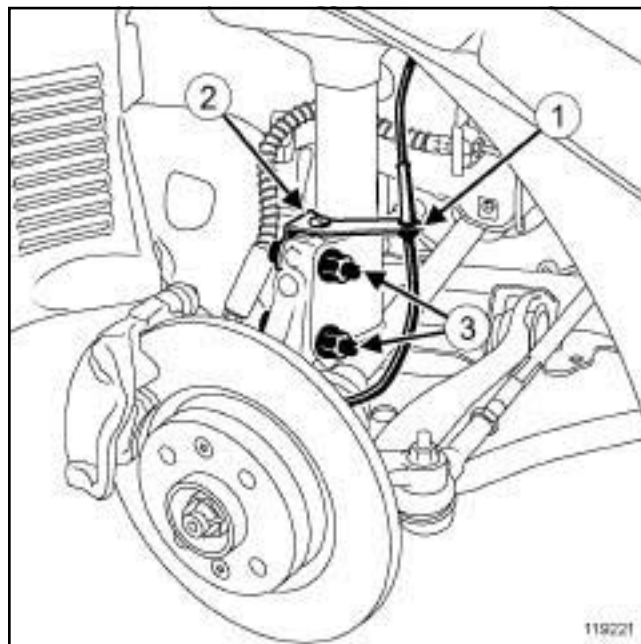
wheel speed sensor wiring bracket bolt	8 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

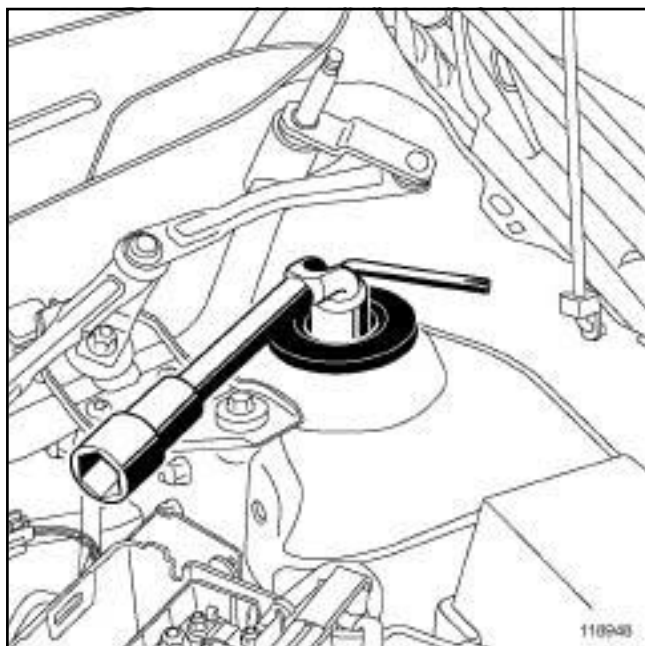
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Disconnect the battery (see) (80A, Battery).
- ☐ Remove the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



119221

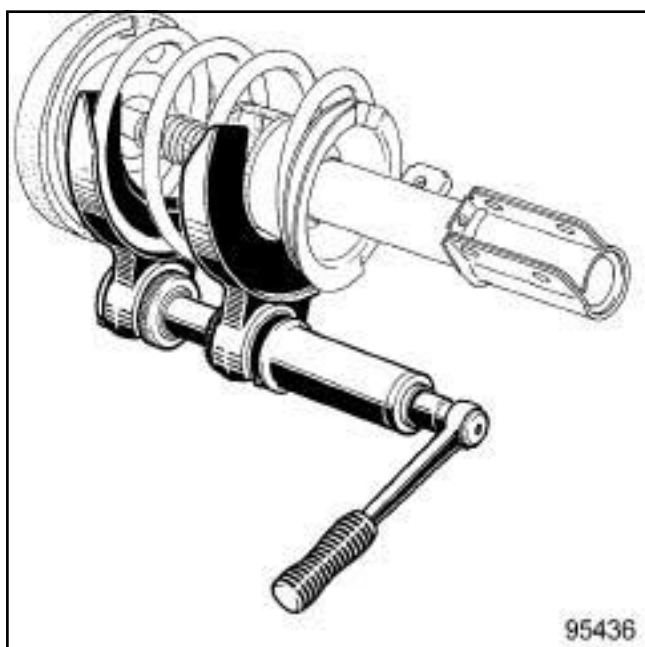
- ☐ Detach the wiring (1) from the wheel speed sensor.
- ☐ Remove:
 - the bolt (2) of the wheel speed sensor wiring bracket,
 - the wheel speed sensor wiring bracket,
 - the shock absorber base nuts (3),
 - the shock absorber base bolts.
- ☐ Hang the hub carrier on the body using a **safety strap(s)**.
- ☐ Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the shock absorber nut cover.



118948

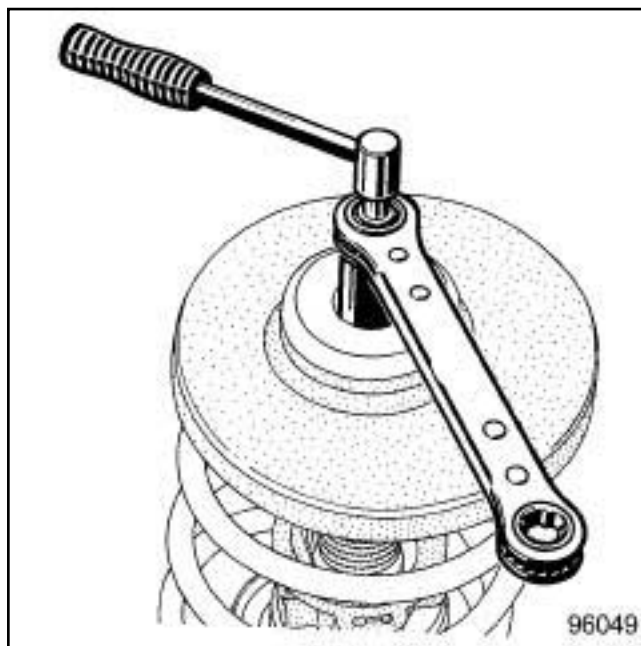
❑ Remove:

- the shock absorber cup nut,
- the shock absorber cup,
- the « spring - shock absorber » assembly.



95436

- ❑ Position the appropriate cups on the **spring compressor**.
- ❑ Position the assembly on the spring.
- ❑ Detach the spring from the cups by compressing the spring.



96049

- ❑ Remove the shock absorber rod nut using the **spanner for shock absorber rod nut**.
- ❑ Separate the various components which make up the « spring/shock absorber » assembly.
- ❑ Decompress the spring.

REFITTING

I - REFITTING PREPARATION OPERATION

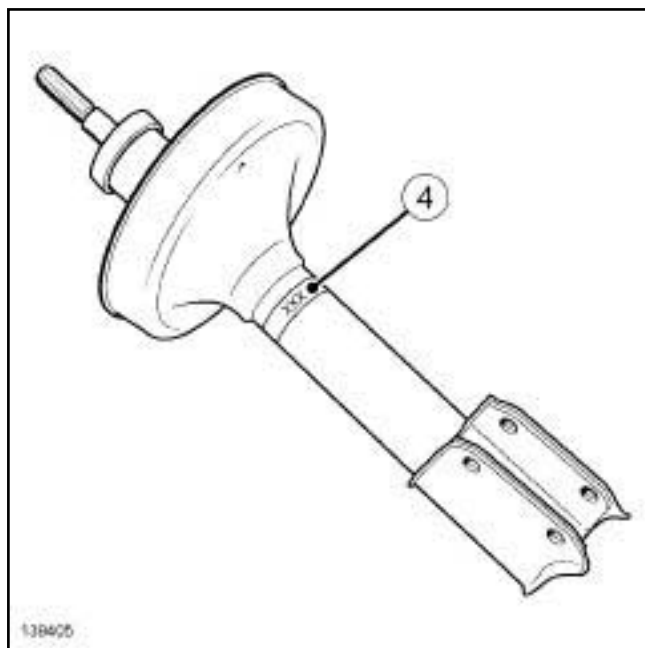
- ❑ **parts always to be replaced: front shock absorber rod nut.**

Note:

When removing/refitting springs, you must not strike the springs as this could damage their surface treatments.

- ❑ **parts always to be replaced: front shock absorber lower nut.**

RIGHT-HAND DRIVE



139405

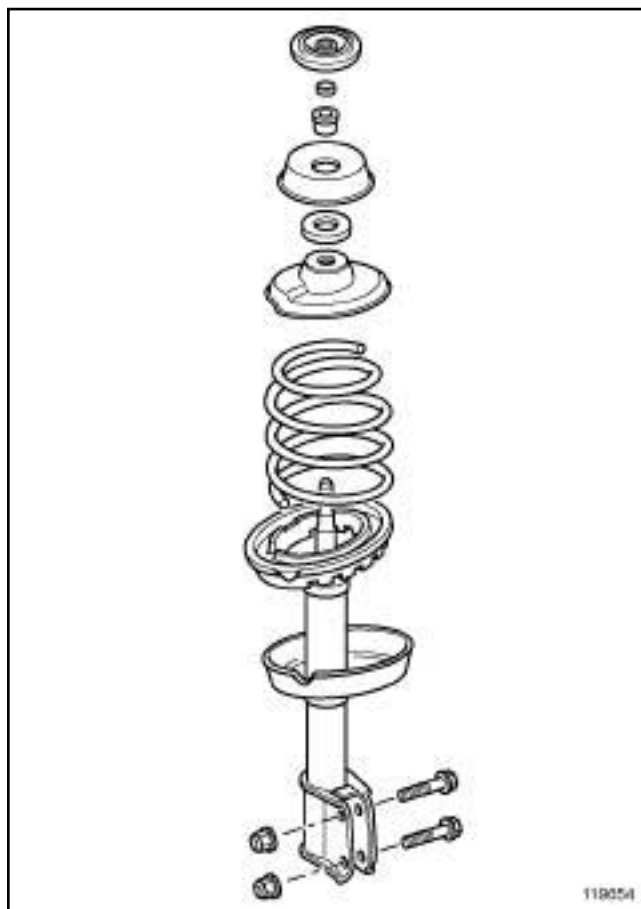


WARNING

Only the left-hand shock absorber is supplied with its marking to prevent the left and right-hand shock absorbers from being mixed up.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Place the **spring compressor** tool in the vice fitted with jaws.
- ☐ Compress the spring.
- ☐ Insert the spring in the neck of the cup.



119654

- ☐ Respect the order and direction of fitting for the constituent parts.
- ☐ Torque tighten the **new shock absorber rod nut (62 N.m)**.
- ☐ Decompress the spring.
- ☐ Remove the **spring compressor** tool.
- ☐ Refit:
 - the « spring/shock absorber » assembly,
 - the shock absorber cup,
 - the shock absorber nut cover.
- ☐ Remove the **safety strap(s)**.
- ☐ Refit:
 - the shock absorber base bolts,
 - the shock absorber base nuts,
 - the wheel speed sensor wiring bracket,
 - the bolt of the wheel speed sensor wiring bracket.
- ☐ Tighten to torque:
 - the **new shock absorber base nuts (105 N.m)**,
 - the **wheel speed sensor wiring bracket bolt (8 N.m)**.

- ☐ Clip on the wheel speed sensor wiring harness.
- ☐ Refit:
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).

III - FINAL OPERATION

- ☐ Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Connect the battery (see) (80A, Battery).
- ☐ Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page 30A-36) .

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Special tooling required

Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).

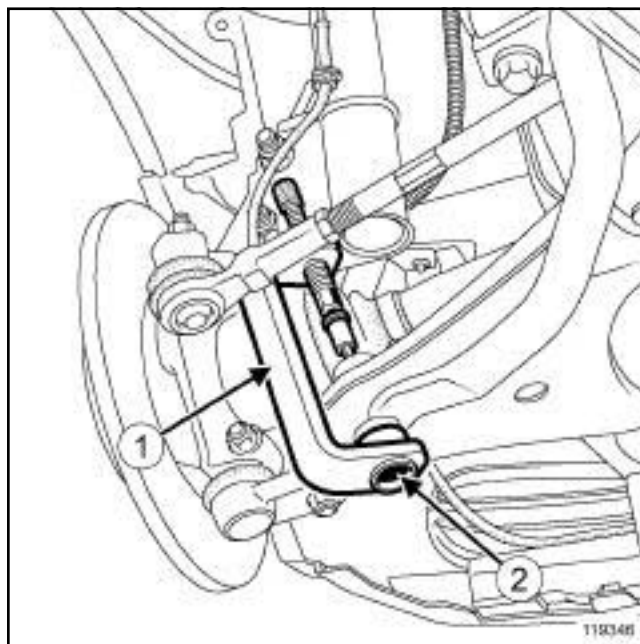
Tightening torques

front driveshaft lower arm bolts	105 Nm
lower ball joint bolt	105 Nm
acoustic tie-rod nut	62 Nm
acoustic tie-rod bolt	21 Nm
anti-roll bar bolt on the wheel side	14 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

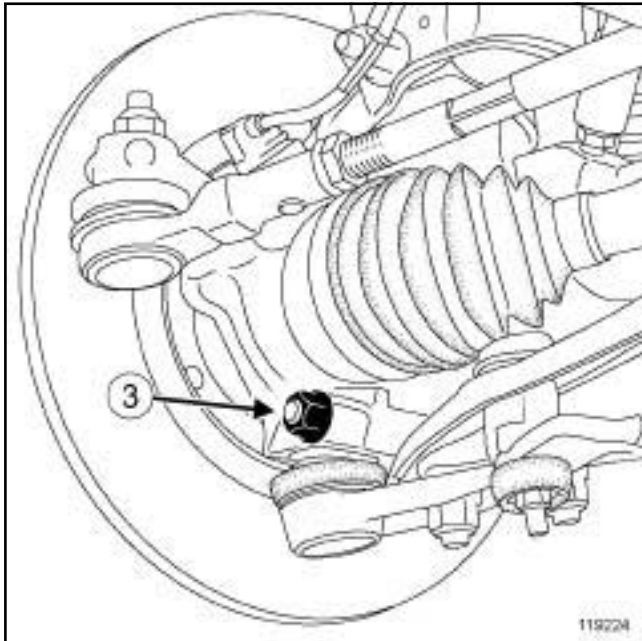


119346

- ☐ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413) (1)** .
- ☐ Remove:
 - the bolt **(2)** from the anti-roll bar on the wheel side,
 - the rubber mounting bush from the anti-roll bar on the wheel side.

Front driveshaft lower arm: Removal - Refitting

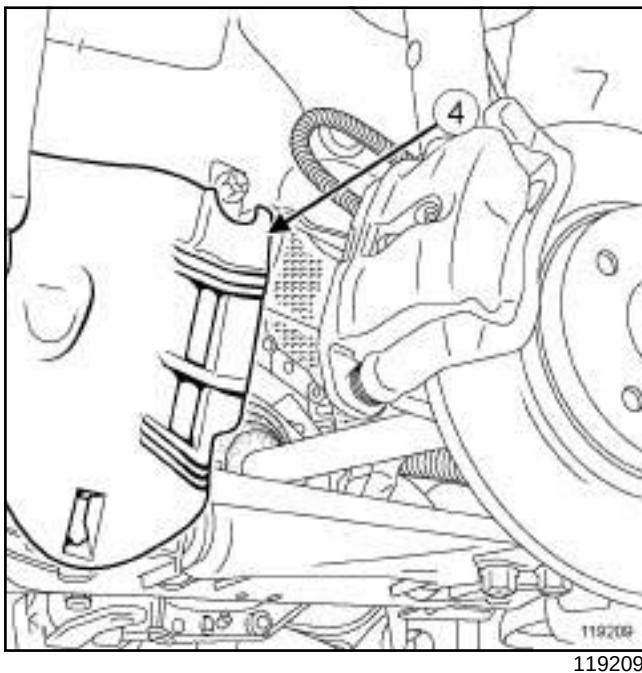
EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



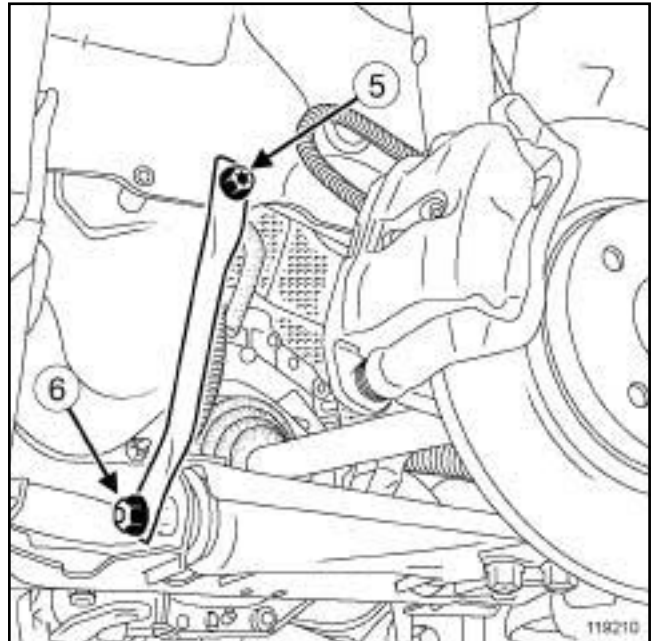
- ☐ Remove the bolt (3) from the lower ball joint.
- ☐ Remove the lower ball joint from the front driveshaft hub carrier.

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.



- ☐ Detach the wheel arch liner (4) .



- ☐ Remove:
 - the bolt (5) from the acoustic tie-rod,
 - the nut (6) from the acoustic tie-rod,
 - the acoustic tie-rod.

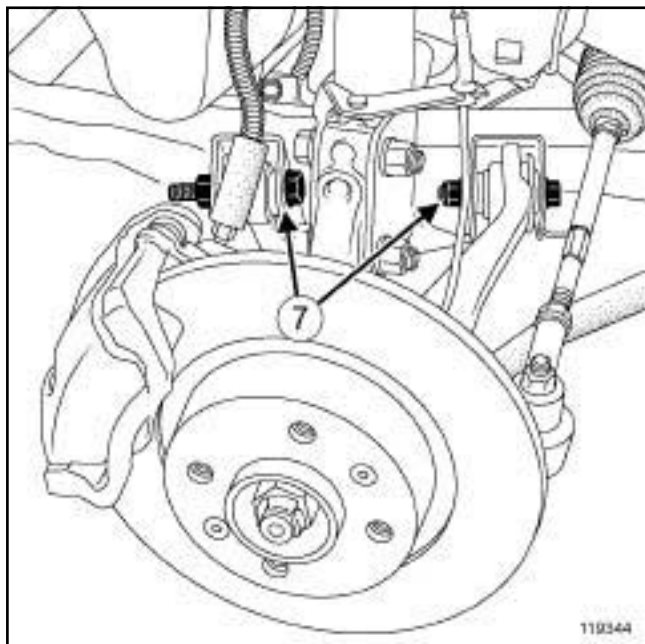
FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

II - OPERATION FOR REMOVAL OF PART CONCERNED



119344

❑ Remove:

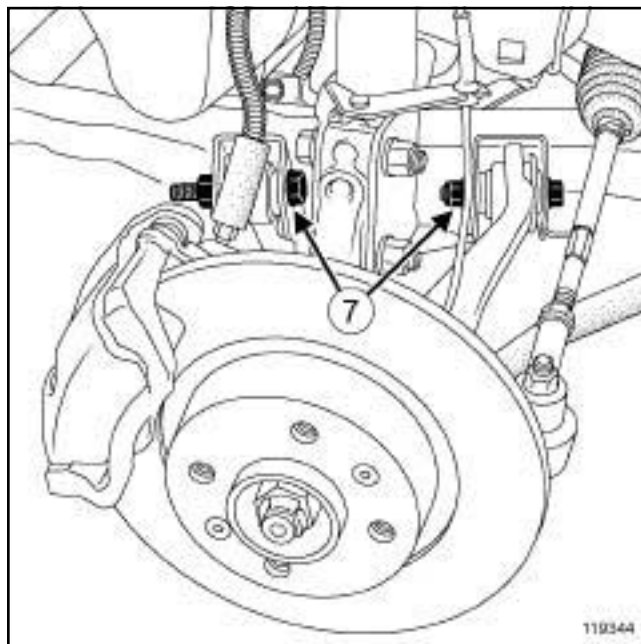
- the bolts (7) from the front driveshaft lower arm,
- the front driveshaft lower arm.

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



119344

❑ Refit:

- the front driveshaft lower arm,
- the front driveshaft lower arm bolts.

Note:

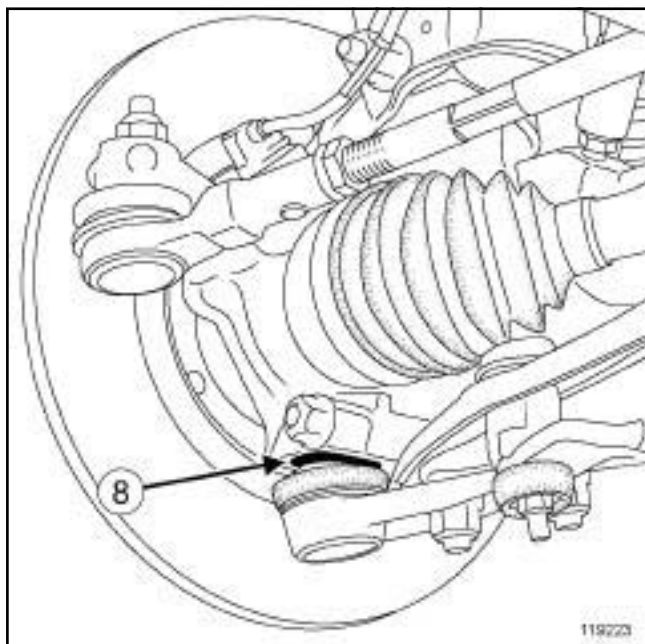
Observe the direction of fitting for the front driveshaft lower arm bolts (7) .

- ❑ Torque tighten the **front driveshaft lower arm bolts (105 Nm)**.

II - FINAL OPERATION.

- ❑ Fit the lower ball joint on the front driveshaft hub carrier.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119223

- ☐ Ensure that the ring (8) is correctly positioned on the lower ball joint.
- ☐ Refit the lower ball joint stud.
- ☐ Torque tighten the **lower ball joint bolt (105 Nm)**.
- ☐ Refit:
 - the acoustic tie-rod,
 - the acoustic tie-rod nut,
 - the acoustic tie-rod bolt.
- ☐ Tighten to torque:
 - the **acoustic tie-rod nut (62 Nm)**,
 - the **acoustic tie-rod bolt (21 Nm)**.
- ☐ Refit:
 - the anti-roll bar rubber mounting bush on the wheel side,
 - the anti-roll bar bolt on the wheel side.
- ☐ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.
- ☐ Refit the anti-roll bar nut on the wheel side.
- ☐ Torque tighten the **anti-roll bar bolt on the wheel side (14 Nm)**.
- ☐ Refit the front wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).
- ☐ Check the front axle geometry (see **30A, General information, Front axle assembly: Adjustment values, page 30A-31**).

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

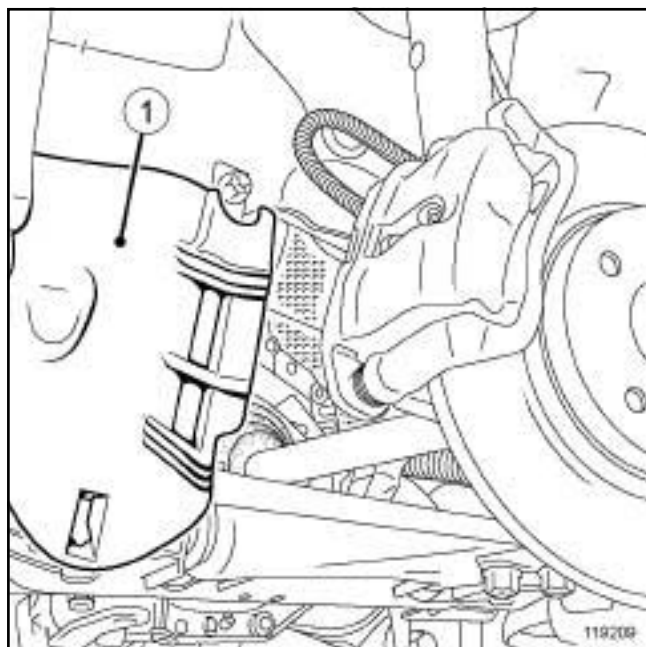
EQUIPMENT LEVEL SPORT

Tightening torques 	
front driveshaft lower arm bolts	105 N.m
lower ball joint nut	62 N.m
acoustic tie-rod nut	62 N.m
acoustic tie-rod bolt	21 N.m

REMOVAL

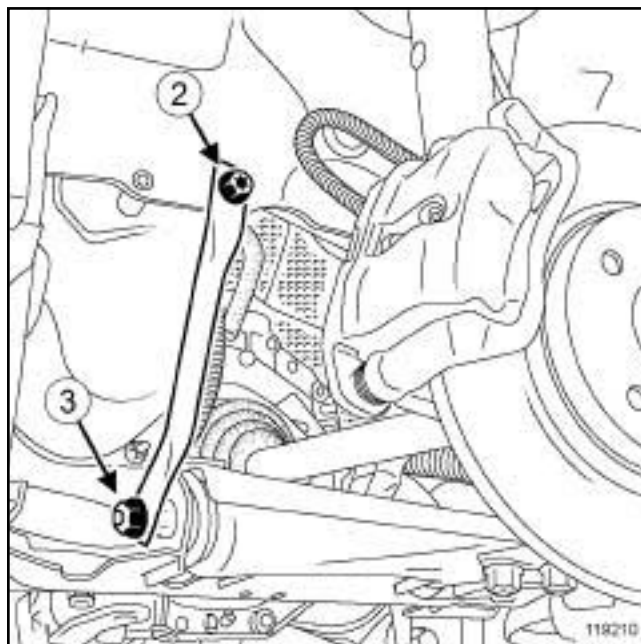
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .



119209

- ☐ Detach the wheel arch liner (1) .



119210

- ☐ Remove:
 - the bolt (2) from the acoustic tie-rod,
 - the nut (3) from the acoustic tie-rod,
 - the acoustic tie-rod.

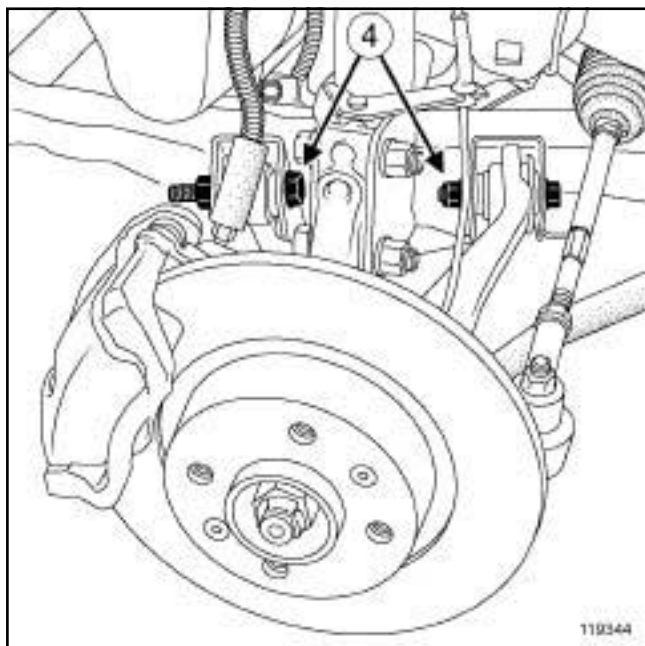
FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

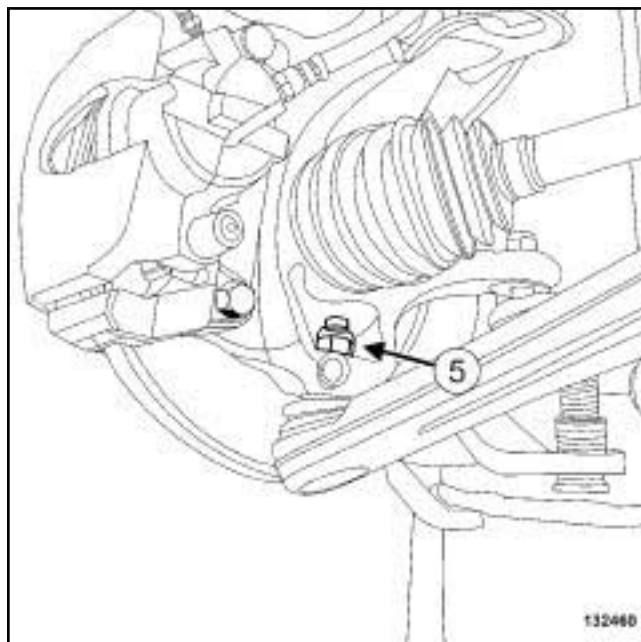
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove the studs (4) from the front driveshaft lower arm.

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.



- ☐ Remove the lower ball joint nut (5) .
- ☐ Remove the lower ball joint from the front driveshaft hub carrier.
- ☐ Remove the lower arm.

FRONT AXLE COMPONENTS

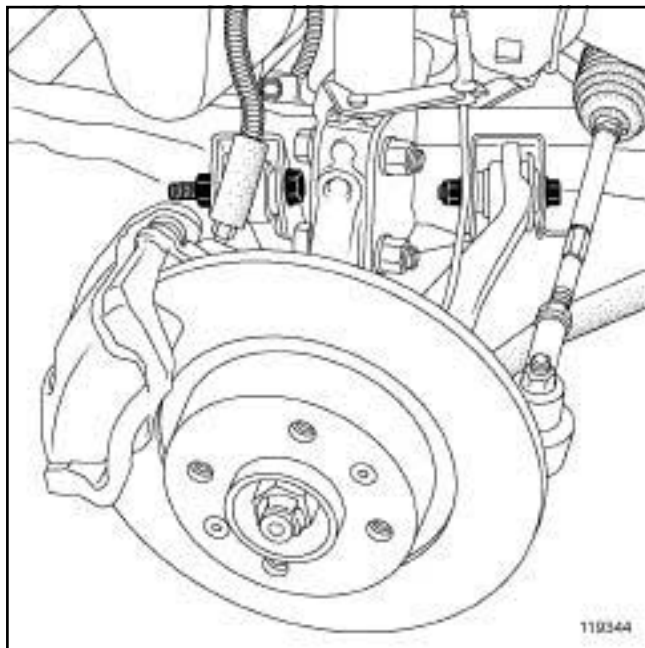
Front driveshaft lower arm: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



- ☐ Refit the front driveshaft lower arm.

Note:

Ensure that direction of fitting for the front driveshaft lower arm bolts is correct.

- ☐ Fit the lower ball joint on the front driveshaft hub carrier.
- ☐ Torque tighten the **front driveshaft lower arm bolts (105 N.m)**.
- ☐ Torque tighten the **lower ball joint nut (62 N.m)**.

II - FINAL OPERATION

- ☐ Refit the acoustic tie-rod.
- ☐ Torque tighten:
 - the **acoustic tie-rod nut (62 N.m)**,
 - the **acoustic tie-rod bolt (21 N.m)**.
- ☐ Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Check the front axle geometry (see **30A, General information, Front axle assembly: Adjustment values**, page 30A-31) .

Special tooling required

Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).

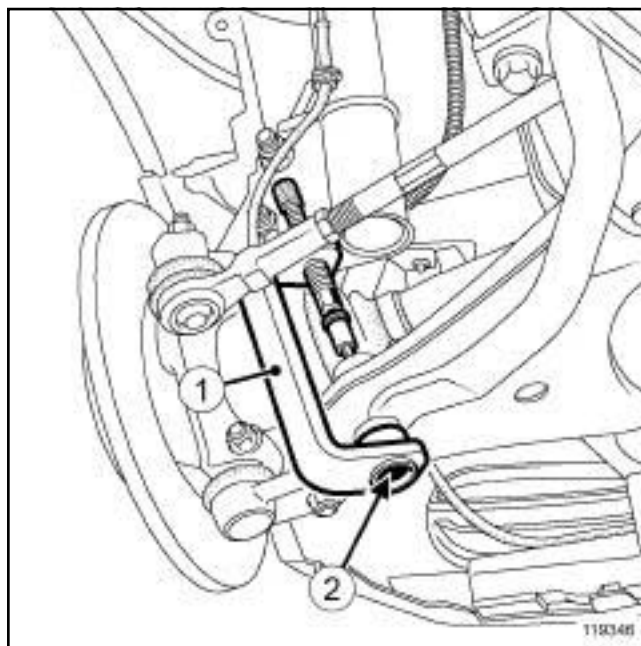
Tightening torques

lower ball joint nuts on the front driveshaft lower arm	113 Nm
lower ball joint nut on the front driveshaft hub-carrier	62 Nm
front driveshaft lower arm nuts	105 Nm
acoustic tie-rod nut	62 Nm
acoustic tie-rod bolt	21 Nm
anti-roll bar nut on the wheel side	14 Nm

REMOVAL

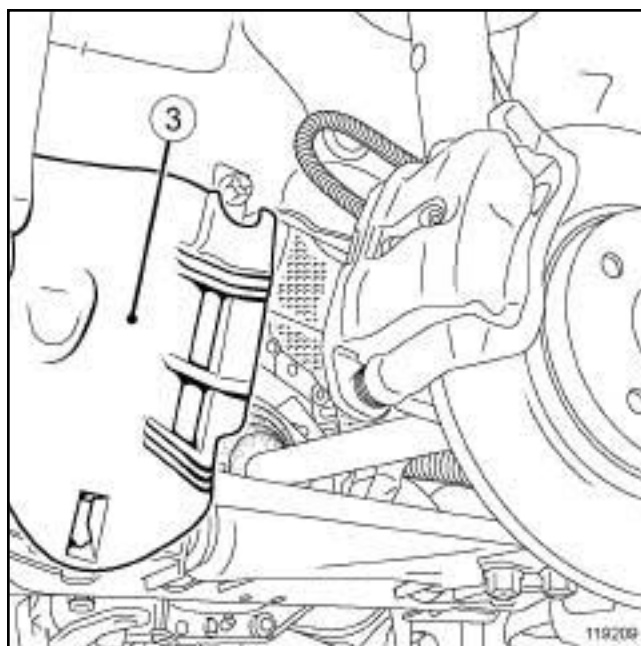
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove the front wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .



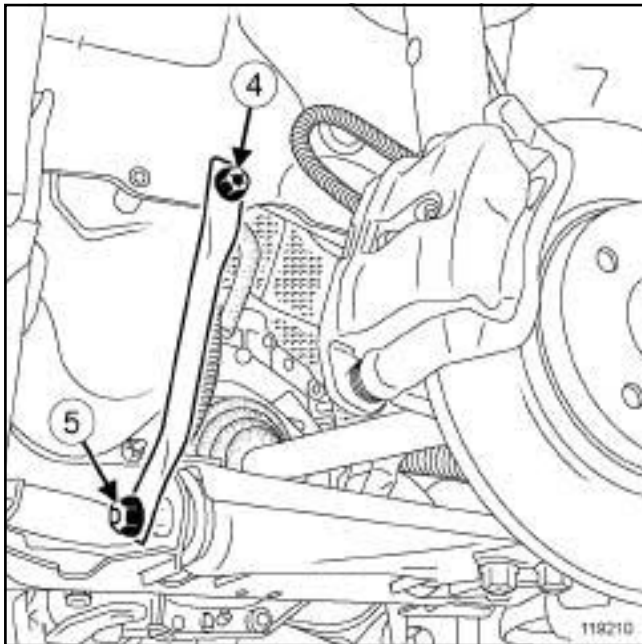
119346

- ☐ Compress the rubber mounting bush on the anti-roll bar on the wheel side using the **(Sus. 1413) (1)** .
- ☐ Remove:
 - the nut **(2)** from the anti-roll bar on the wheel side,
 - the rubber mounting bush from the anti-roll bar on the wheel side.



119209

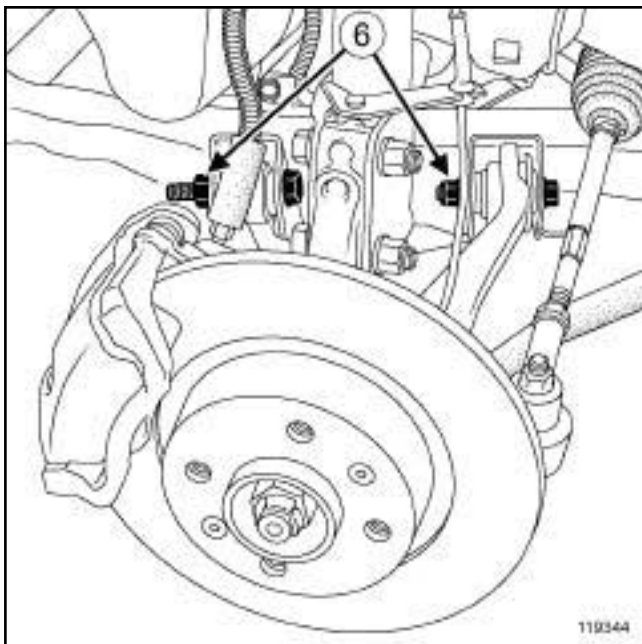
- ☐ Detach the wheel arch liner **(3)** .



119210

❑ Remove:

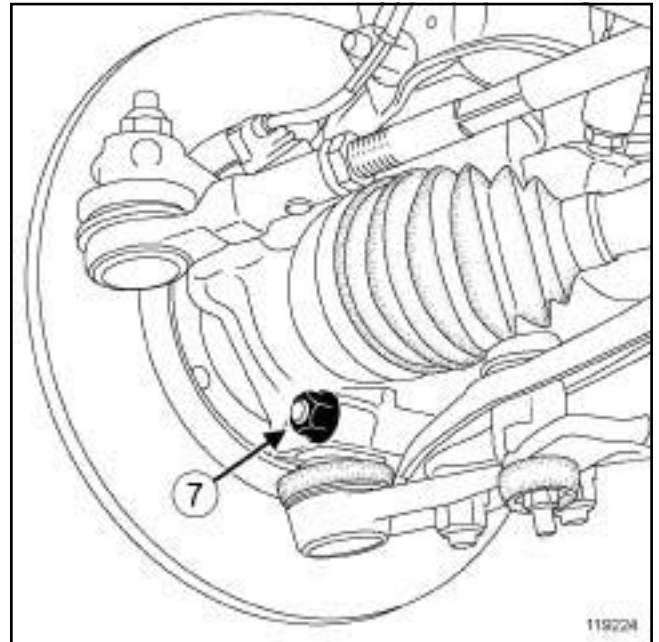
- the bolt (4) from the acoustic tie-rod,
- the nut (5) from the acoustic tie-rod,
- the acoustic tie-rod.



119344

- ❑ Undo the front driveshaft lower arm nuts (6) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119224

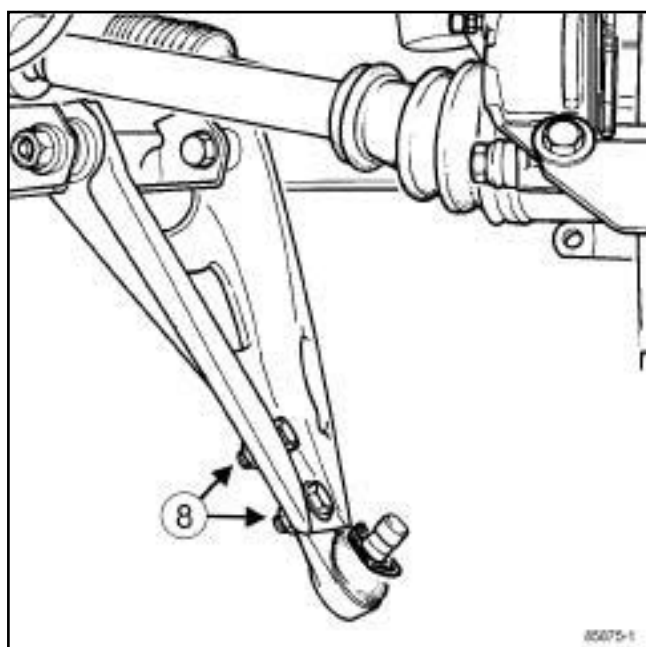
❑ Remove:

- the lower ball joint nut (7) ,
- the lower ball joint bolt.

- ❑ Remove the lower ball joint from the front driveshaft hub carrier.

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.



85875-1

❑ Remove:

- the lower ball joint nuts (8) ,
- the lower ball joint.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the lower ball joint,
- the lower ball joint nuts.

❑ Torque tighten the **lower ball joint nuts on the front driveshaft lower arm (113 Nm)**.

❑ Fit the lower ball joint on the front driveshaft hub carrier.

❑ Check that the plastic ring is correctly positioned on the lower arm ball joint.

❑ Refit:

- the lower ball joint bolt on the front driveshaft hub carrier,
- the lower ball joint nut on the front driveshaft hub-carrier.

❑ Torque tighten the **lower ball joint nut on the front driveshaft hub-carrier (62 Nm)**.

II - FINAL OPERATION.

❑ Torque tighten the **front driveshaft lower arm nuts (105 Nm)**.

❑ Refit:

- the acoustic tie-rod,
- the acoustic tie-rod nut,
- the acoustic tie-rod bolt.

❑ Torque tighten:

- the **acoustic tie-rod nut (62 Nm)**,
- the **acoustic tie-rod bolt (21 Nm)**.

❑ Attach the wheel arch liner.

❑ Refit:

- the front anti-roll bar rubber mounting bush on the wheel side,
- the front anti-roll bar bolt on the wheel side.

❑ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.

❑ Refit the front anti-roll bar nut on the wheel side.

❑ Torque tighten the **anti-roll bar nut on the wheel side (14 Nm)**.

❑ Refit the front wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

❑ Check the front axle geometry (see **30A, General information, Front axle assembly: Adjustment values**, page **30A-31**) .

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

Special tooling required	
Tav. 476	Ball joint extractor.
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required
flywheel immobiliser

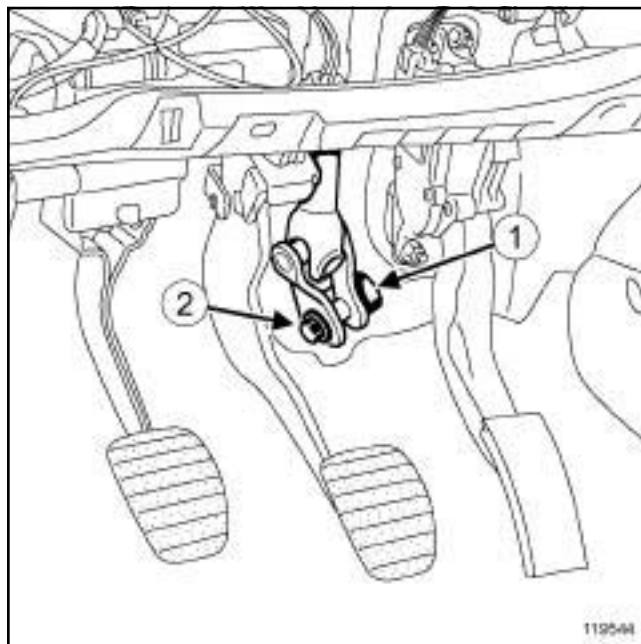
Tightening torques 	
rear subframe bolts	105 Nm
front subframe bolts	62 Nm
front end cross member bolts	21 Nm
acoustic tie-rod bolts	21 Nm
acoustic tie-rod bolts	90 Nm
subframe tie-rod bolts	21 Nm
subframe tie-rod nuts	62 Nm
gear lever arm nut	28 Nm
nuts of the lower arm ball joints	62 N.m
bolts of the lower ball joints	62 N.m
nuts of the track rod ends	37 N.m
universal joint bolt	24 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



119544

- ☐ Remove the universal joint cover (1) (do not keep).
- ☐ Set the wheels straight ahead.
- ☐ Fit a **flywheel immobiliser**.
- ☐ Remove the bolt (2) from the universal joint (do not keep).
- ☐ Tilt the universal joint on the steering box to detach it from the pinion.

Note:

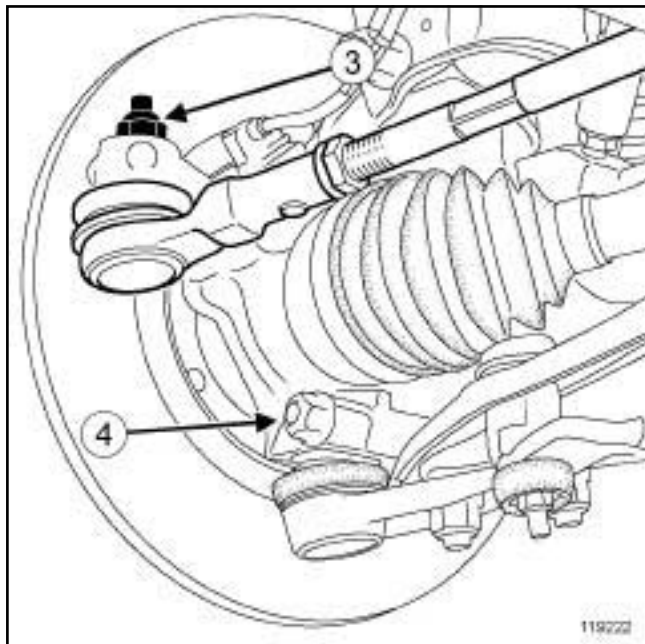
Do not pull the intermediate shaft out.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG

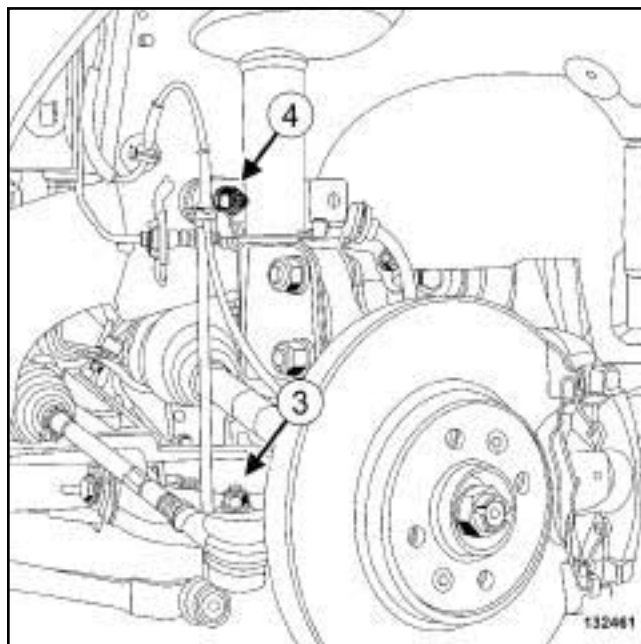


119222

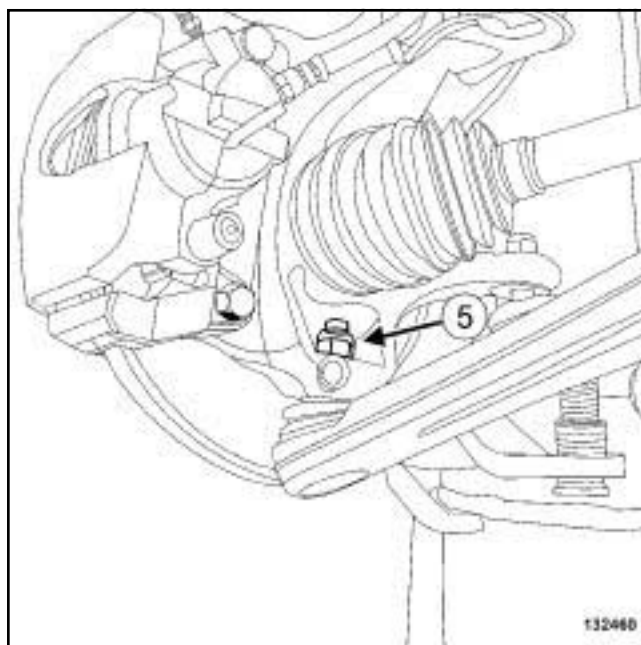
❑ Remove:

- the nuts (3) from the track rod ends,
- the bolts (4) from the lower ball joints.

EQUIPMENT LEVEL SPORT



132461



132460

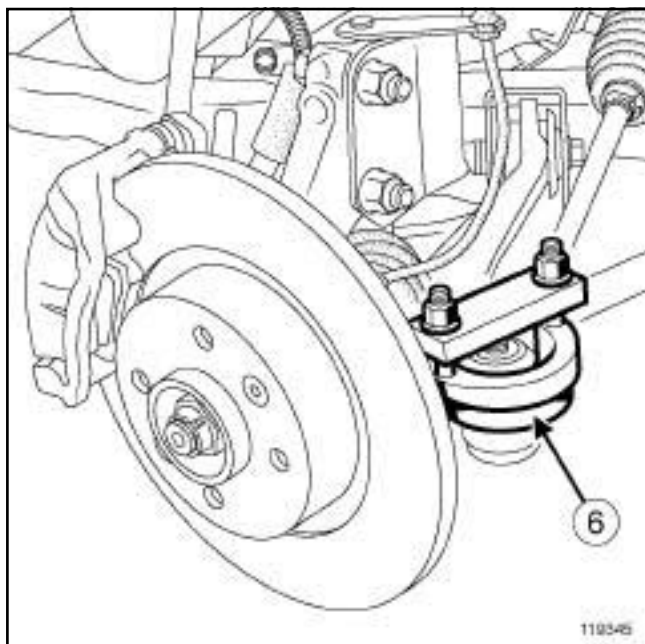
❑ Remove:

- the nuts (3) from the track rod ends,
- the nuts (4) from the anti-roll bar tie rods,
- the anti-roll bar tie rods from the shock absorbers,
- the nuts (5) from the lower arm ball joints.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

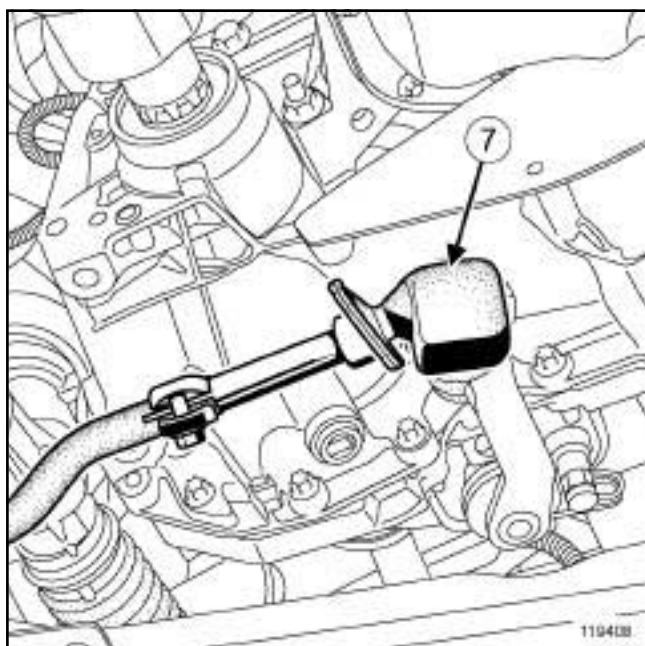


119345

Remove:

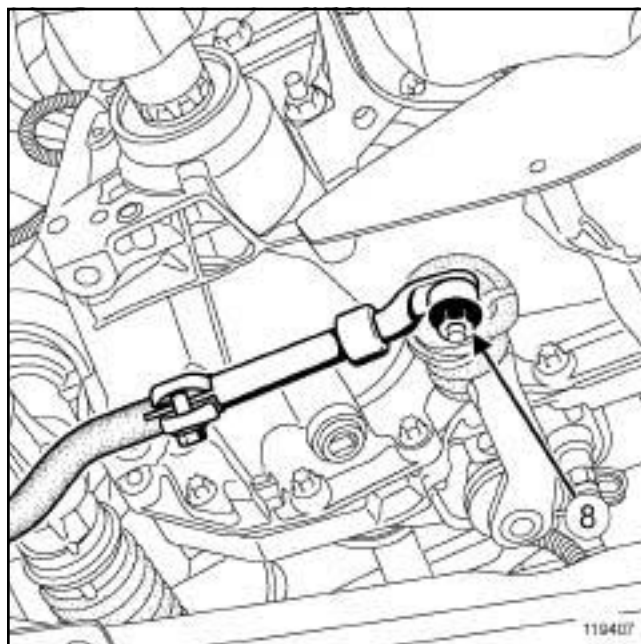
- the track rod ends using the (Tav. 476) (6) ,
- the lower arm ball joints.

JB1



119408

- Remove the rubber protector (7) from the gear lever arm.



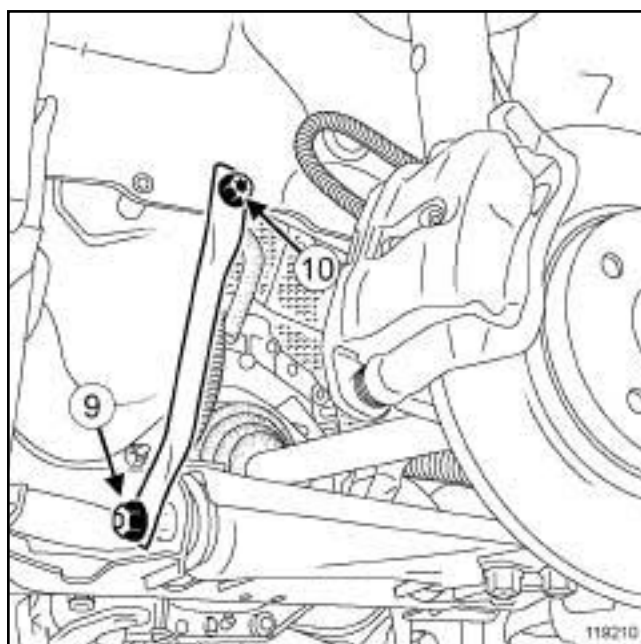
119407

- Remove the nut (8) from the gear lever arm.

- Remove the gear lever arm from the gearbox control.

Remove:

- the heat shield under the gear lever,
- the gearbox control lever arm.



119210

Remove:

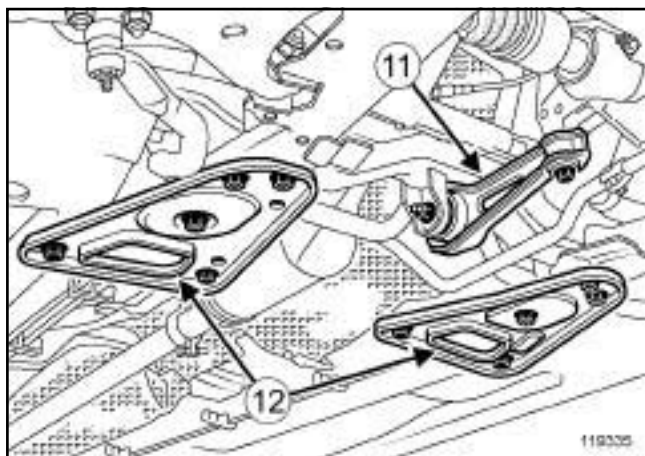
- the subframe tie-rod nuts (9) ,

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

- the subframe tie-rod bolts (10) ,
- the subframe tie-rods.

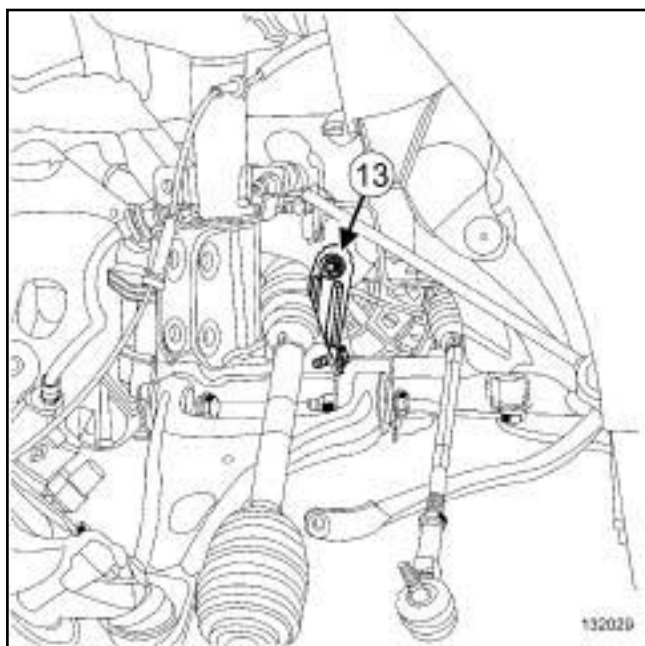


119335

❑ Remove:

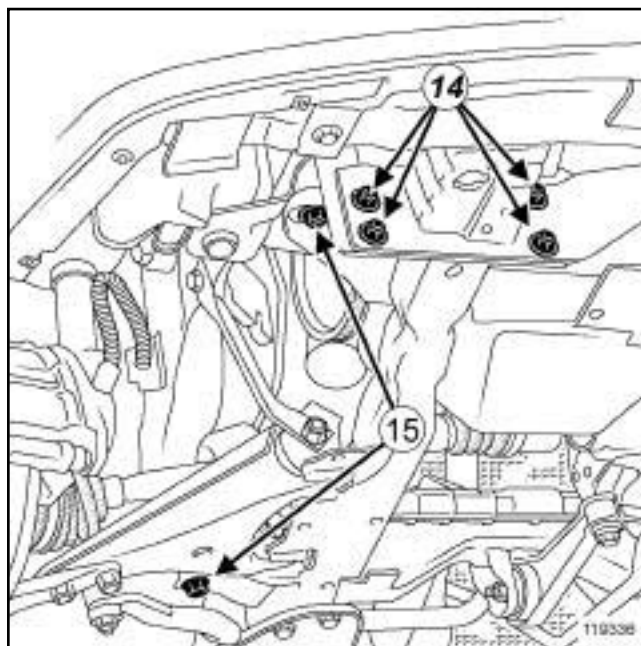
- the rear suspended engine mounting (11) (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the acoustic tie-rod bolts (12) ,
- the acoustic tie rods.

❑ Position the (Mot. 1390).



132029

❑ Remove the left-hand tie-rod bolt (13) .



119336

❑ Attach the cooling radiator to the upper cross member.

Note:

This operation requires two people.

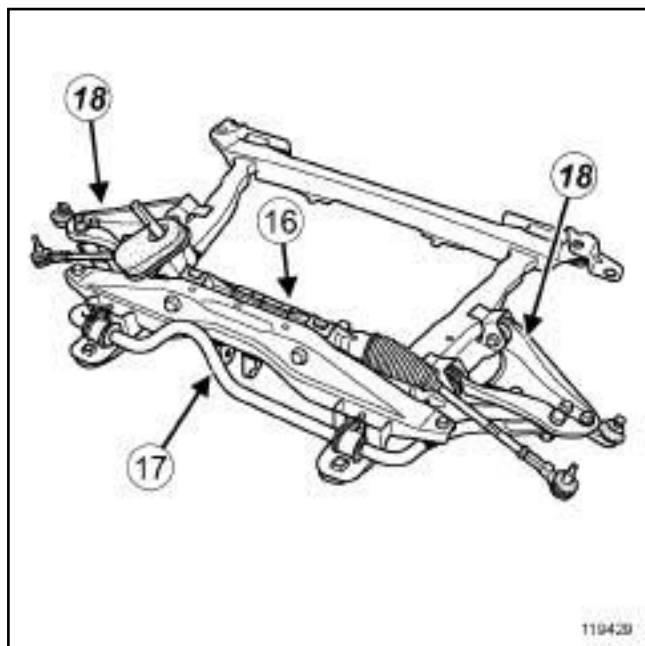
❑ Remove:

- the bolts (14) from the front end cross member,
- the subframe bolts (15) ,
- the « subframe - front driveshaft lower arm - steering box - front anti-roll bar » assembly with the (Mot. 1390).

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

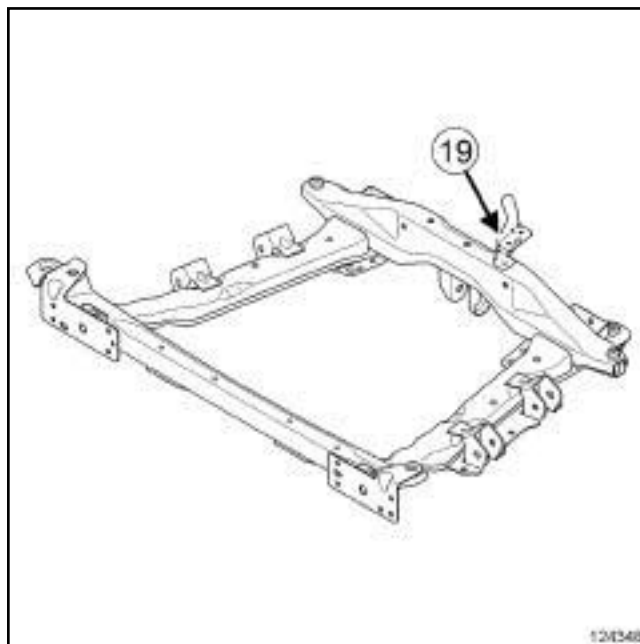


119429

❑ Remove:

- the steering box (16) (see 36A, **Steering assembly, Steering box: Removal - Refitting**, page 36A-1) ,
- the front anti-roll bar (17) (see 31A, **Front axle components, Front anti-roll bar: Removal - Refitting**, page 31A-52) ,
- the lower arms from the front driveshaft (18) (see 31A, **Front axle components, Front driveshaft lower arm: Removal - Refitting**, page 31A-33) .

K9K



124348

❑ Remove:

- the gear selection cable guide bolt (19) from the subframe,
- the gear selection cable guide (19) from the sub-frame.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace:

- the subframe bolts,
- the bolt from the universal joint.

- ❑ Degrease the contact surface areas of the subframe and the body using surface cleaner (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

II - REFITTING OPERATION FOR PART CONCERNED

K9K

- ☐ Refit the speed selection cable guide on the sub-frame.

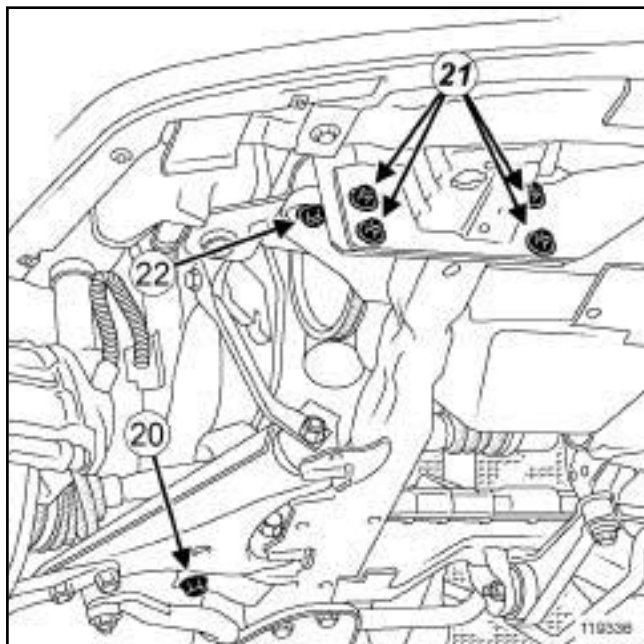
☐ Refit:

- the front driveshaft lower arms (see **31A, Front axle components, Front driveshaft lower arm: Removal - Refitting**, page **31A-33**) ,
- the front anti-roll bar (see **31A, Front axle components, Front anti-roll bar: Removal - Refitting**, page **31A-52**) ,
- the steering box (see **36A, Steering assembly, Steering box: Removal - Refitting**, page **36A-1**) .

Note:

Be careful with the guide of the lower or upper radiator when fitting the subframe. There is a risk of the radiator guides breaking.

- ☐ Refit the « subframe - front driveshaft lower arm - steering box - front anti-roll bar » assembly with the (**Mot. 1390**).



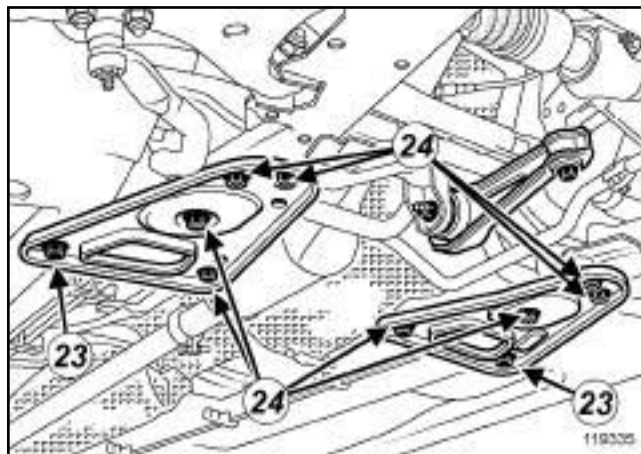
119336

☐ Tighten to torque:

- the **rear subframe bolts (105 Nm) (20)** ,
- the **front subframe bolts (62 Nm) (22)** ,
- the **front end cross member bolts (21 Nm) (21)** .

☐ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the acoustic tie rods.



119335

☐ Tighten to torque:

- the **acoustic tie-rod bolts (21 Nm) (23)** ,
- the **acoustic tie-rod bolts (90 Nm) (24)** .

☐ Refit the sub-frame tie-rods.

☐ Tighten to torque:

- the **subframe tie-rod bolts (21 Nm)**,
- the **subframe tie-rod nuts (62 Nm)**.

K9K

- ☐ Check the position of the gear selection cables in the guide.

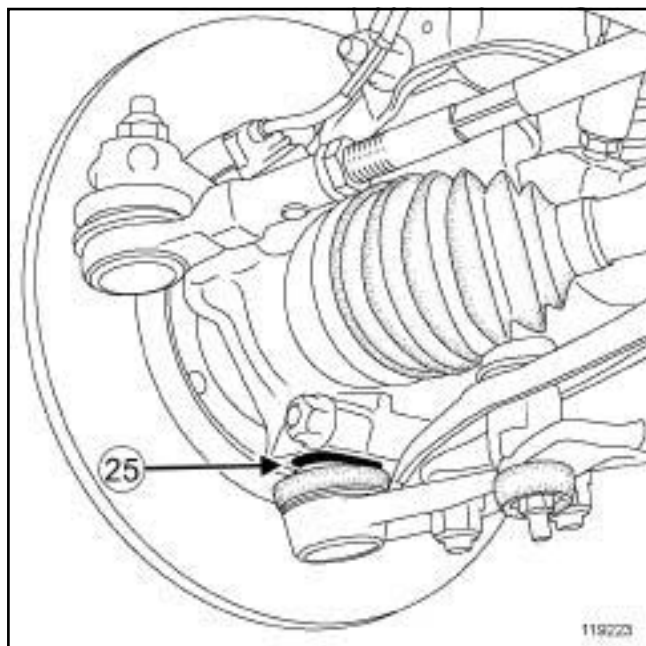
JB1

- ☐ Fit the gearbox control gear lever arm.
- ☐ Torque tighten the **gear lever arm nut (28 Nm)**.
- ☐ Fit the gear lever arm rubber protector.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A



119223

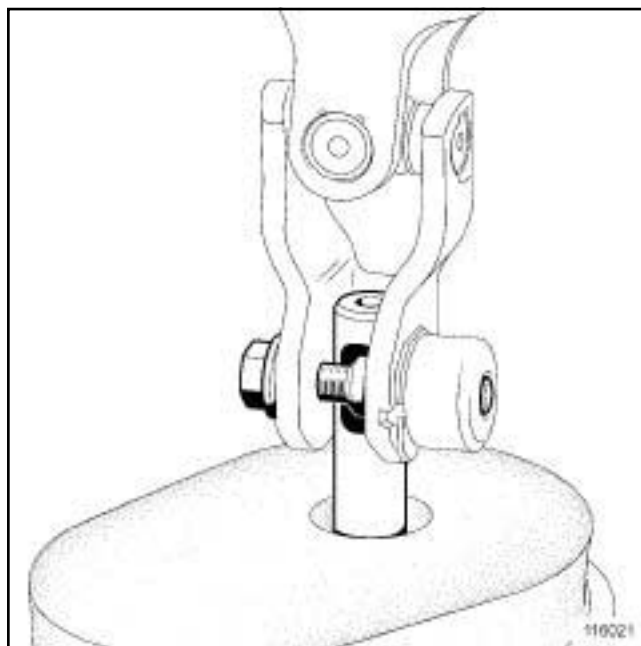
- ☐ Check that the bush (25) is correctly positioned on the lower arm ball joint.
- ☐ Refit:
 - the lower arm ball joints,
 - the track rod ends.

EQUIPMENT LEVEL SPORT

- ☐ Refit the anti-roll bar tie-rods to the shock absorbers.
- ☐ Torque tighten the **nuts of the lower arm ball joints (62 N.m)**.

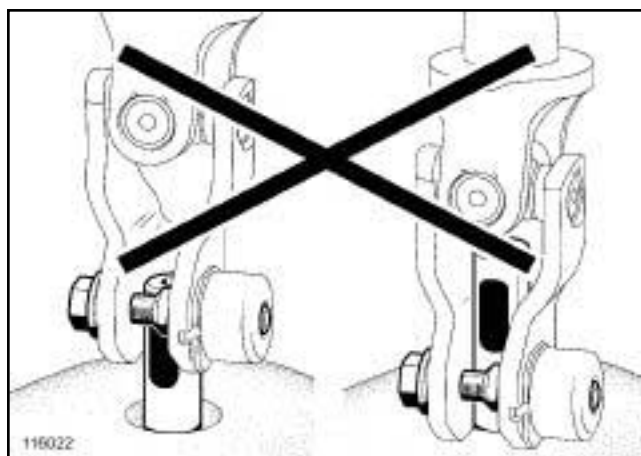
EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG

- ☐ Torque tighten the **bolts of the lower ball joints (62 N.m)**.
- ☐ Torque tighten the **nuts of the track rod ends (37 N.m)**.
- ☐ Observe the direction of fitting for the universal joint cam nut and bolt.
- ☐ fit the universal joint to the steering box.



116021

- ☐ Refit the universal joint cam nut and a new bolt.
- ☐ Position the universal joint cam nut and bolt.
- ☐ Immobilise the cam nut in its housing (on the universal joint).
- ☐ Pretighten the universal joint cam nut and bolt.



116022

- ☐ Check that the universal joint is in the correct position.
- ☐ Torque tighten the **universal joint bolt (24 Nm)**.
- ☐ Remove the **flywheel immobiliser**.

III - FINAL OPERATION.

- ☐ Refit:
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Check the front axle geometry (see **30A, General information, Front axle assembly: Adjustment values**, page 30A-31) .

Tightening torques

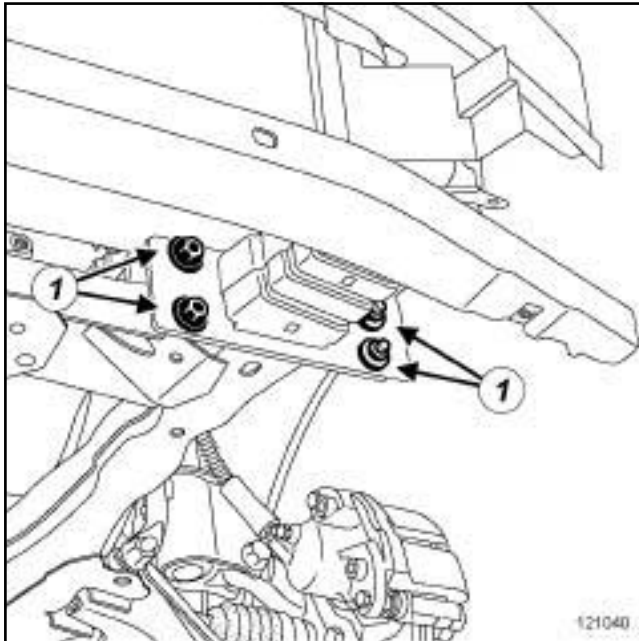
radiator mounting cross member bolts	44 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Remove the front bumper ((see **Front bumper: Removal - Refitting**)).
- ☐ Attach the radiator upper section.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121040

- ☐ Remove:
 - the bolts (1) ,
 - the radiator mounting cross member.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the radiator mounting cross member,
 - the bolts (1) .
- ☐ Torque tighten the **radiator mounting cross member bolts (44 Nm)**.

II - FINAL OPERATION.

- ☐ Detach the radiator upper section.
- ☐ Refit the front bumper ((see **Front bumper: Removal - Refitting**)).

FRONT AXLE COMPONENTS

Front anti-roll bar: Removal - Refitting

31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Special tooling required	
Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).
Sus. 1824	Fork for fitting the anti-roll bar centre bearings.

Tightening torques 	
anti-roll bar bearing bolts on the subframe	35 Nm
anti-roll bar bolt on the wheel side	14 Nm

Anti-roll bar specifications:

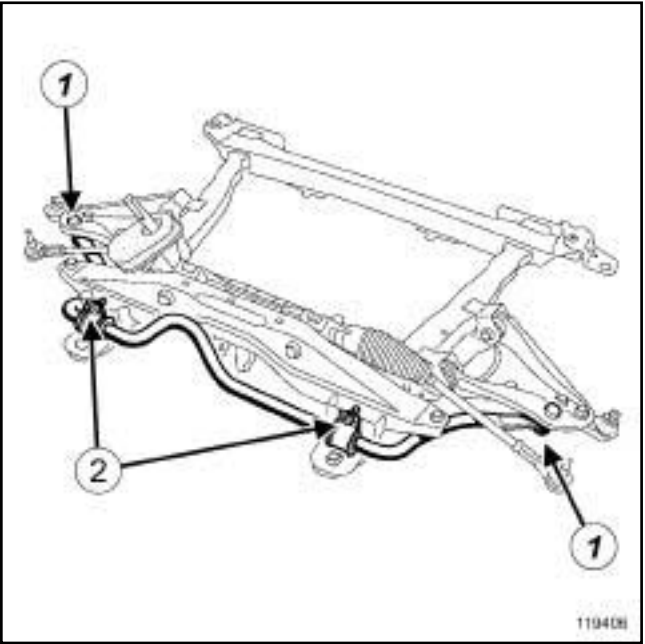
Engine	Ø of the strut in mm
D7F	25
D4F, K9K	26

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-43) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.
- ☐ Remove:
 - the bolt (1) from the anti-roll bar on the wheel side,
 - the rubber mounting bush from the anti-roll bar,
 - the anti-roll bar bearing bolts (2) ,
 - the anti-roll bar bearings,
 - the anti-roll bar,
 - the rubber mounting bush from the anti-roll bar bearing.

REFITTING

REFITTING OPERATION FOR PART CONCERNED

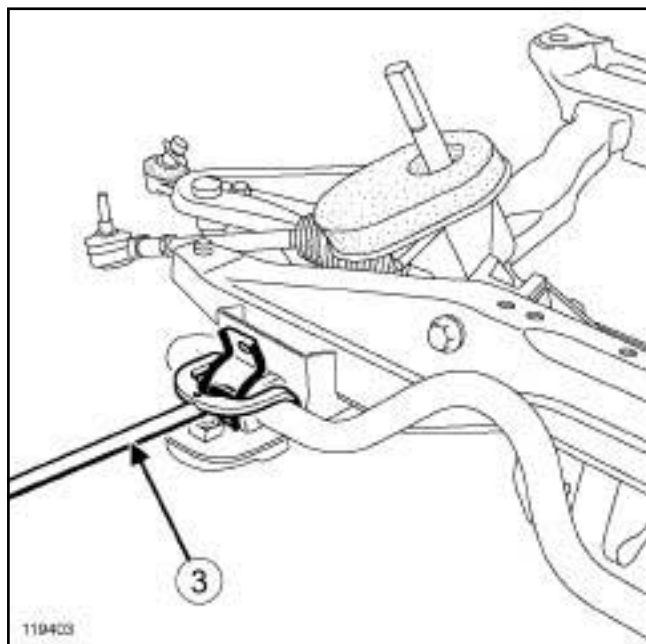
- ☐ Refit:
 - the anti-roll bar bearing rubber mounting bush,
 - the anti-roll bar.
- ☐ Fit the anti-roll bar bearings into the subframe neck.

FRONT AXLE COMPONENTS

Front anti-roll bar: Removal - Refitting

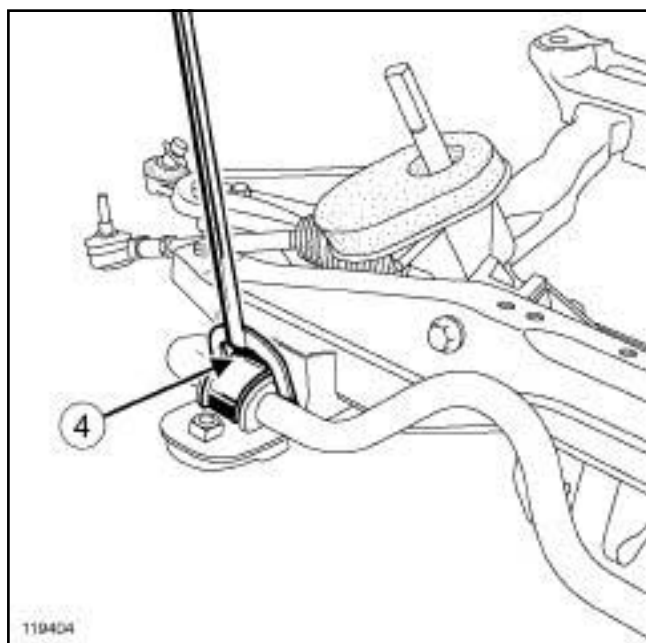
31A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119403

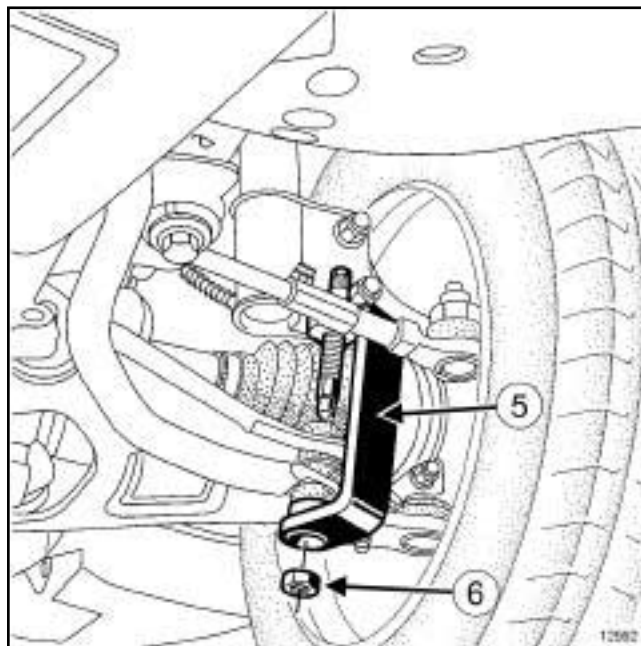
- ❑ Fit the (**Sus. 1824**) (3) on the anti-roll bar.



119404

- ❑ Lift the (**Sus. 1824**).
- ❑ Refit the anti-roll bar bearing bolts (4) .
- ❑ Torque tighten the **anti-roll bar bearing bolts on the subframe (35 Nm)**.
- ❑ Refit:
 - the anti-roll bar rubber mounting bush on the wheel side,
 - the anti-roll bar bolt on the wheel side.

- ❑ Refit the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-43**) .



12992

- ❑ Compress the anti-roll bar rubber mounting bush on the wheel side using the (**Sus. 1413**) (5) .
- ❑ Refit the anti-roll bar nut (6) on the wheel side.
- ❑ Torque tighten the **anti-roll bar bolt on the wheel side (14 Nm)**.

FRONT AXLE COMPONENTS

Front anti-roll bar: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

Special tooling required

Sus. 1824 Fork for fitting the anti-roll bar centre bearings.

Tightening torques

anti-roll bar bearing bolts 35 N.m

Anti-roll bar specifications:

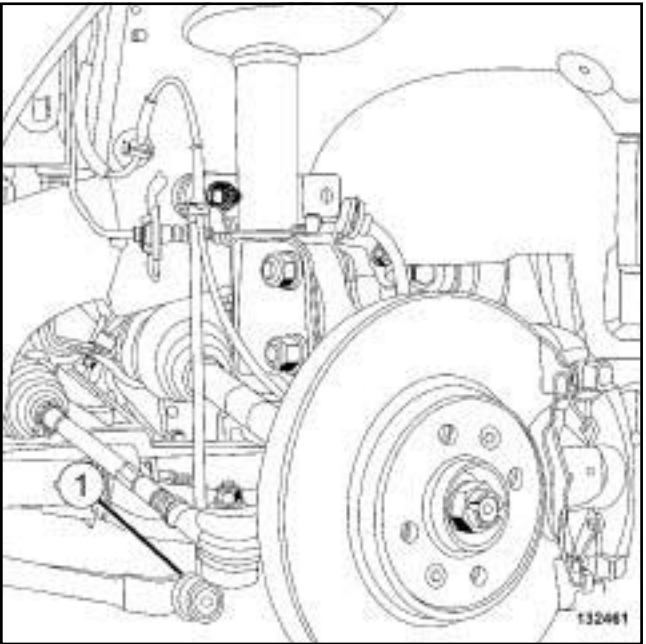
Colour	Ø of the strut in mm
Brown	21
Blue	20

REMOVAL

I - REMOVAL PREPARATION OPERATION

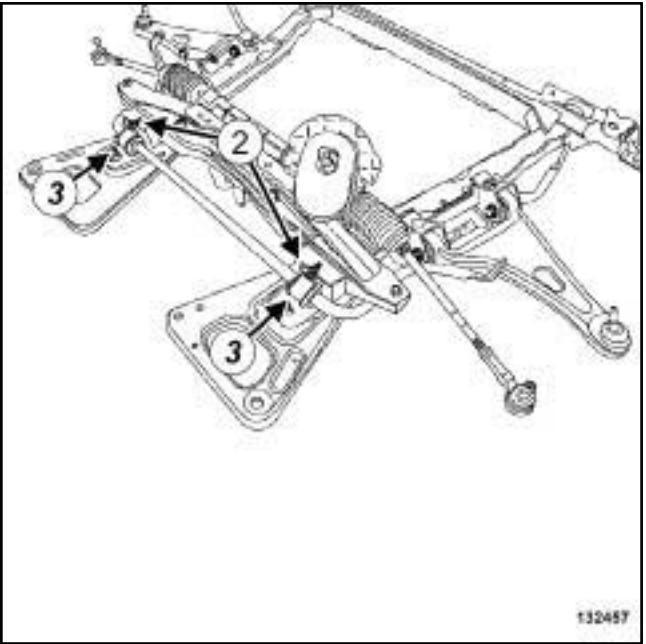
- ❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ❑ Remove:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-43) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132461

- ❑ Remove:
 - the nuts (1) of the anti-roll bar tie rods,
 - the anti-roll bar tie rods from the anti-roll bar.



132457

- ❑ Remove:
 - the anti-roll bar bearing bolts (2) ,
 - the anti-roll bar bearings (3) ,
 - the anti-roll bar,

FRONT AXLE COMPONENTS

Front anti-roll bar: Removal - Refitting

31A

EQUIPMENT LEVEL SPORT

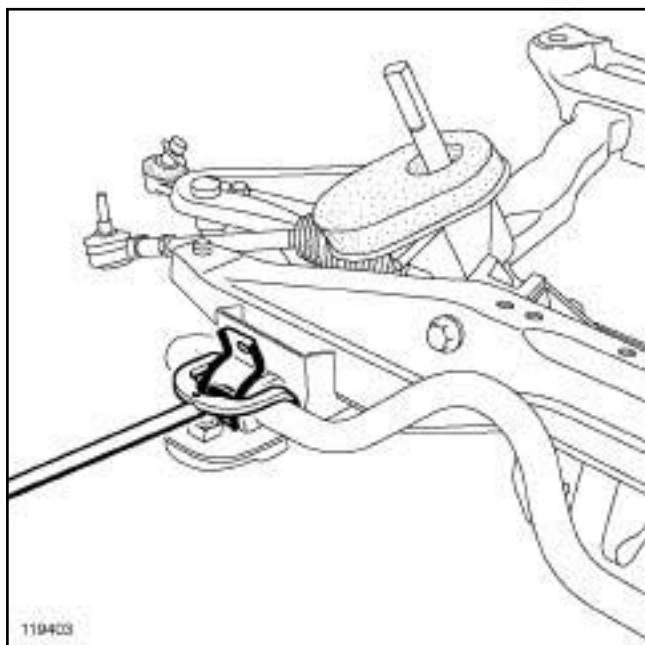
- the rubber mounting bushes of the anti-roll bar bearings.

REFITTING

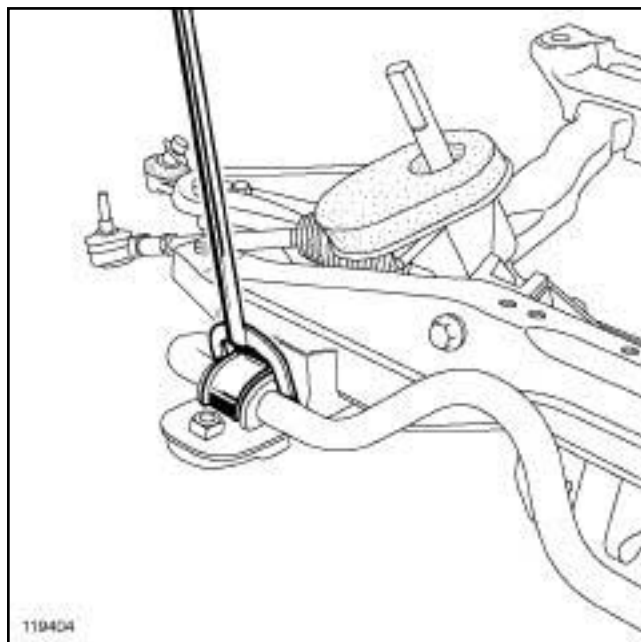
I - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- the rubber mounting bushes on the anti-roll bar bearings,
- the anti-roll bar,
- the anti-roll bar bearings.



- ☐ Fit the **(Sus. 1824)** on the anti-roll bar.



119404

- ☐ Lift the **(Sus. 1824)**.
- ☐ Refit the anti-roll bar bearing bolts.
- ☐ Torque tighten the **anti-roll bar bearing bolts (35 N.m)**.
- ☐ Refit the anti-roll bar tie rods on the anti-roll bar.

II - FINAL OPERATION.

☐ Refit:

- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-43) ,
- the wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

REAR AXLE COMPONENTS

Rear brake pads: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Tightening torques

new lower bolts of the calliper guide pins **35 N.m**

When replacing brake pads, be sure to replace the pads on the opposite side.

WARNING

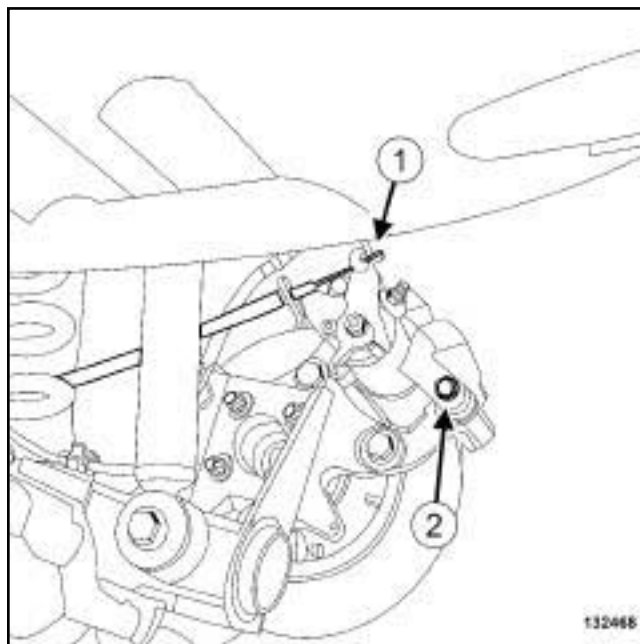
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

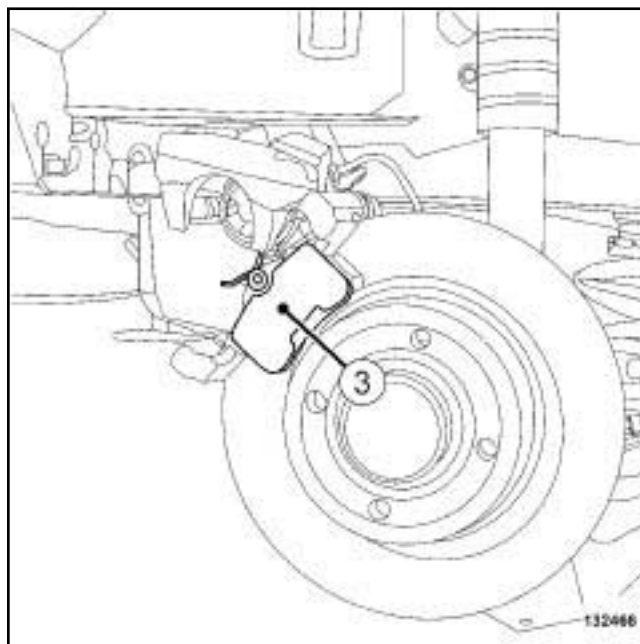
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Release the parking brake.
- ☐ Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132466

- ☐ Unclip the parking brake cable from the brake calliper at (1) .
- ☐ Move aside the parking brake cable.
- ☐ Remove the lower bolt (2) of the brake calliper guide pin.
- ☐ Tilt the brake calliper over.



132466

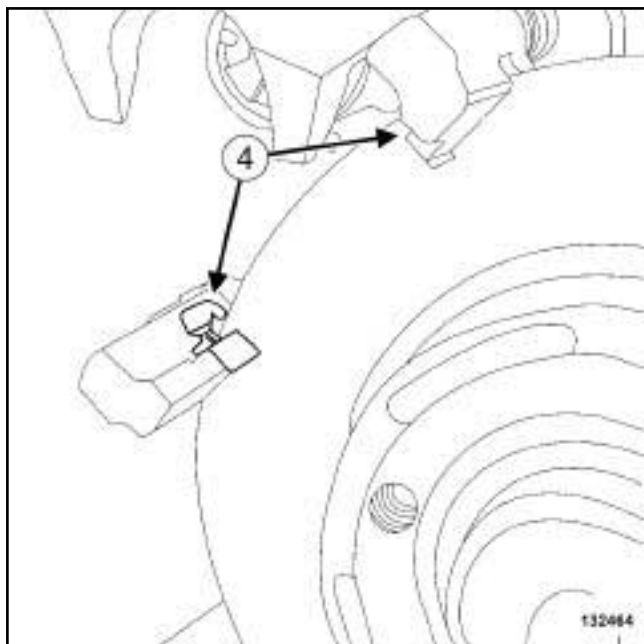
- ☐ Remove the brake pads (3) from the brake calliper mounting.

REAR AXLE COMPONENTS

Rear brake pads: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT



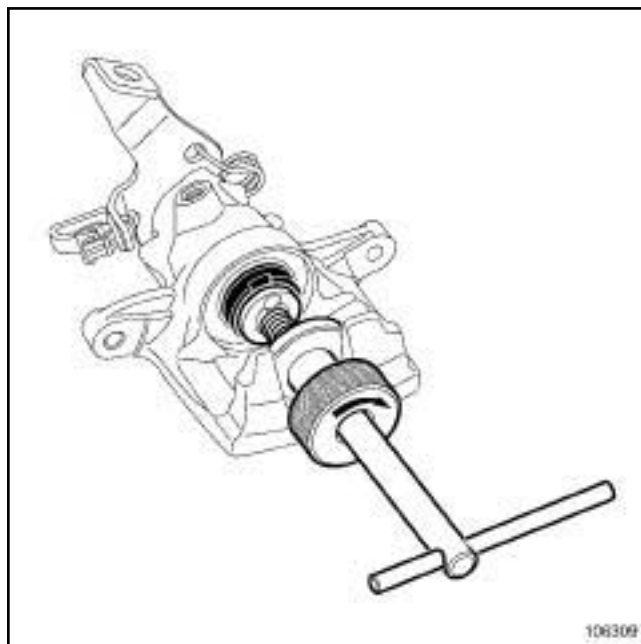
132464

- ❑ Remove the noise-reducing blades (4) from the brake calliper mounting.

REFITTING

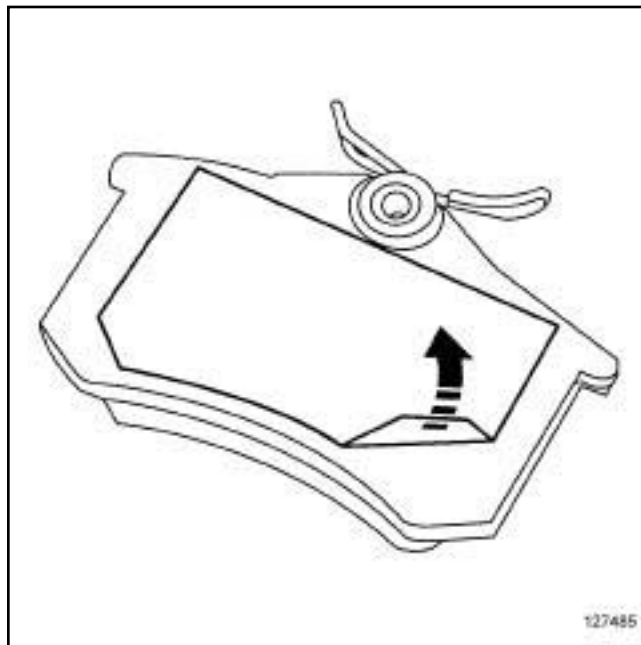
I - REFITTING PREPARATION OPERATION

- ❑ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper supports,
 - the callipers.
- ❑ Always replace the brake calliper guide pin bolts.



106309

- ❑ Push the piston to the bottom of its housing using the (**Fre. 1190-01**).



127485

- ❑ Remove the protective film from the brake pad.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit:
 - the noise-reducing fins onto the brake calliper mountings,
 - the brake pads onto the brake calliper mountings.

REAR AXLE COMPONENTS

Rear brake pads: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

- ☐ Fit:
 - the brake callipers,
 - the parking brake cables.
- ☐ Torque tighten the **new lower bolts of the calliper guide pins (35 N.m)**.
- ☐ Clip on the handbrake cables.

III - FINAL OPERATION

- ☐ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR AXLE COMPONENTS

Rear brake hose: Removal - Refitting

33A

Equipment required

pedal press

Tightening torques

rigid pipe unions on the rear brake hose concerned

17 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

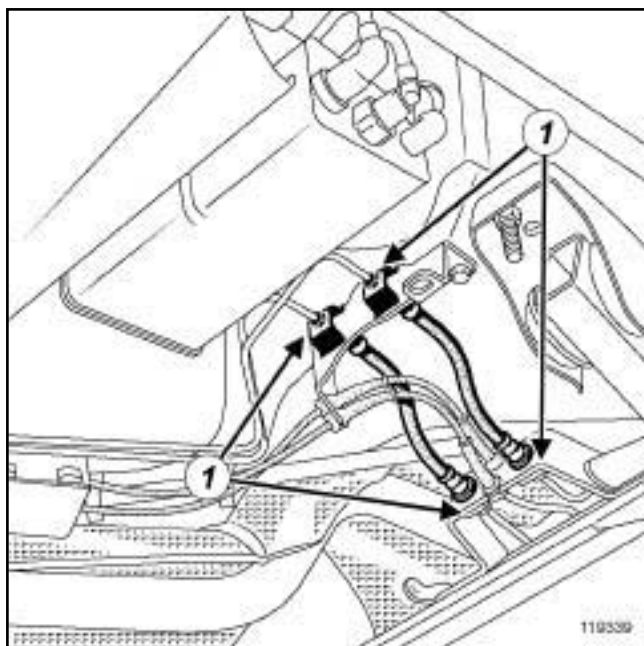
- ❑ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Fit the **pedal press** to the brake pedal to limit the outflow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED



119339

- ❑ Undo the rigid pipe unions (1) on the rear brake hose concerned.
- ❑ Remove the rear brake hose concerned.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❑

WARNING

In order to not damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the rear brake hose concerned,
- the rigid brake pipe unions on the rear brake hose concerned.

❑ Screw on the rigid brake pipe unions on the rear brake hose concerned without tightening them.

❑ Torque tighten the **rigid pipe unions on the rear brake hose concerned (17 Nm)**.

III - FINAL OPERATION.

❑ Remove the **pedal press** from the brake pedal to limit the outflow of brake fluid.

❑ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

REAR AXLE COMPONENTS

Rear brake hose: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

Equipment required

pedal press

Tightening torques

brake hose union on the master cylinder side	13 N.m

brake hose union on the brake calliper side	13 N.m

WARNING

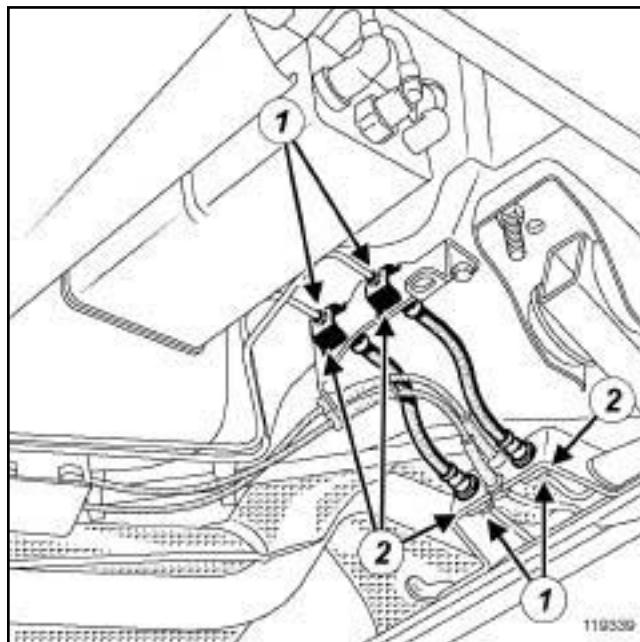
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED



119339

- ☐ Undo the brake pipe unions (1) .
- ☐ Remove:
 - the brake hose clips (2) ,
 - the brake hoses.

REFITTING

I - REFITTING PREPARATION OPERATION

☐

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the brake hose,
 - the brake hose clip.
- ☐ Tighten to torque:
 - the **brake hose union on the master cylinder side (13 N.m)**,

REAR AXLE COMPONENTS

Rear brake hose: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

- the **brake hose union on the brake calliper side (13 N.m)**.

III - FINAL OPERATION.

- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .

REAR AXLE COMPONENTS

Rear brake calliper: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

Tightening torques

new bolts on the brake calliper guide pins **35 N.m**

brake pipe union on the calliper **13 N.m**

WARNING

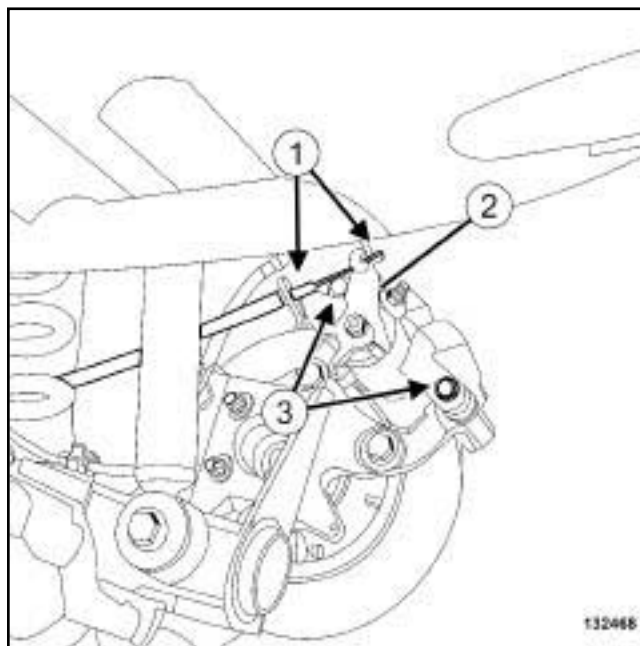
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Release the parking brake.
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132468

- ☐ Unclip the parking brake cable from the brake calliper at (1) .
- ☐ Move aside the parking brake cable.
- ☐ Loosen the calliper brake pipe union (2) .
- ☐ Remove:
 - the brake calliper guide pin bolts (3) ,
 - the brake calliper from the mounting,
 - the union between the brake pipe and the calliper,
 - the brake calliper.

REFITTING

I - REFITTING PREPARATION OPERATION

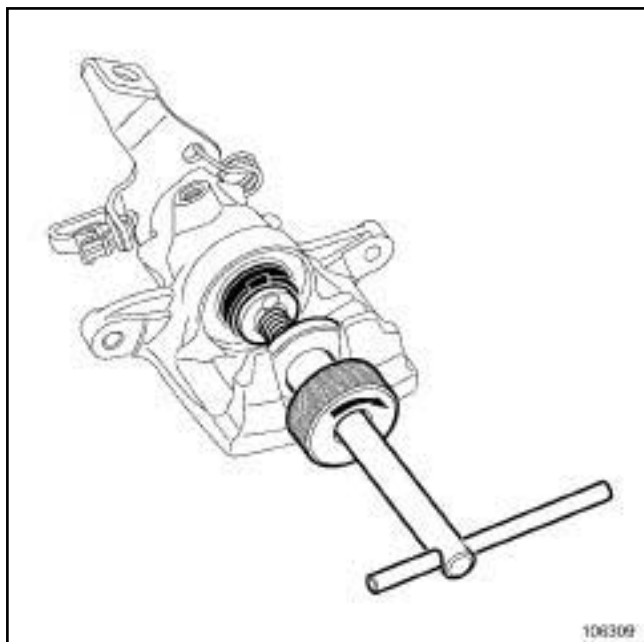
- ☐ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper supports,
 - the callipers.
- ☐ Always replace the brake calliper guide pin bolts.

REAR AXLE COMPONENTS

Rear brake calliper: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT



106309

- ☐ Push the piston to the bottom of its housing using the **(Fre. 1190-01)**.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the brake calliper on the calliper mounting.
- ☐ Torque tighten:
 - the **new bolts on the brake calliper guide pins (35 N.m)**,
 - the **brake pipe union on the calliper (13 N.m)**.
- ☐ Fit the parking brake cable.
- ☐ Clip the handbrake on the brake calliper.

III - FINAL OPERATION

- ☐ Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

EQUIPMENT LEVEL SPORT

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Tightening torques

bolts of the brake calliper mounting **XXX**

new bolts of the brake calliper guide pins **105 N.m**

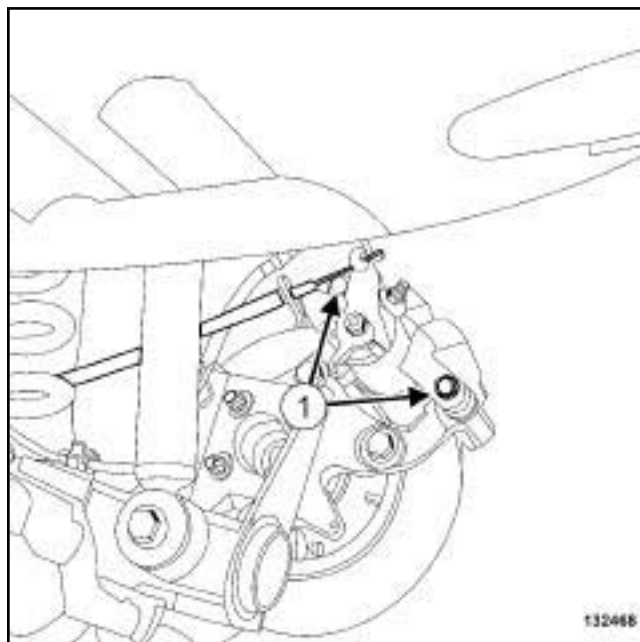
WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Release the parking brake.
- ☐ Remove:
 - the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the rear brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page 33A-1) .



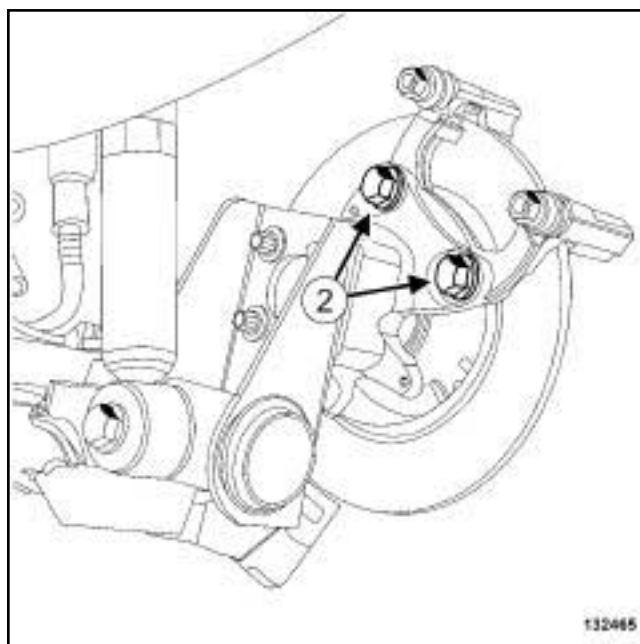
132465

☐ Remove:

- the brake calliper guide pin bolts (1) ,
- the brake calliper from the mounting.

- ☐ Attach the brake calliper to the suspension spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132465

☐ Remove:

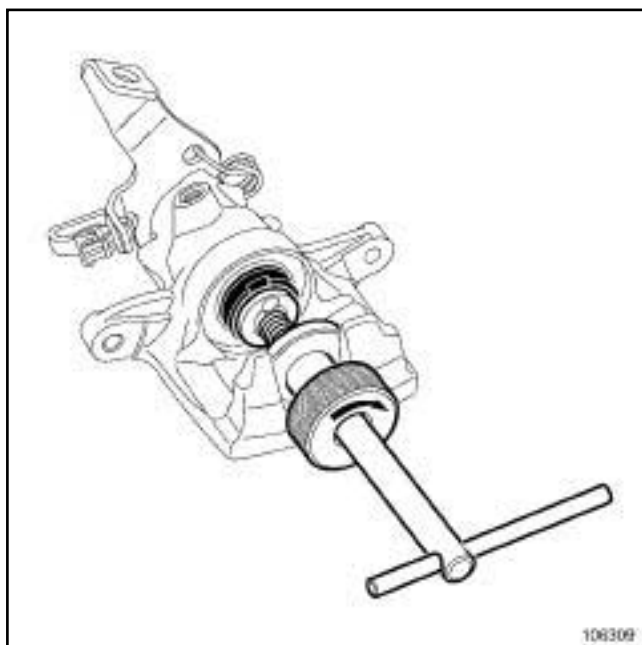
- the brake calliper mounting bolts (2) ,
- the brake calliper mounting.

EQUIPMENT LEVEL SPORT

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper supports,
 - the callipers.
- ☐ Always replace:
 - the calliper mounting bolts,
 - the calliper guide pin bolts.



106309

- ☐ Push the piston to the bottom of its housing using the **(Fre. 1190-01)**.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the brake calliper mounting.
- ☐ Torque tighten the **bolts of the brake calliper mounting (XXX)**.

III - FINAL OPERATION.

- ☐ Refit:
 - the brake calliper,
 - the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-1**).
- ☐ Torque tighten the **new bolts of the brake calliper guide pins (105 N.m)**.

- ☐ Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR AXLE COMPONENTS

Rear brake disc: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

Equipment required

parts washer

Tightening torques

new hub nut	175 N.m
brake calliper mounting bolts	105 N.m

Brake discs cannot be reground. If there is excessive scoring or wear, they will need to be replaced (see **30A, General information, Brake: Specifications**, page **30A-19**).

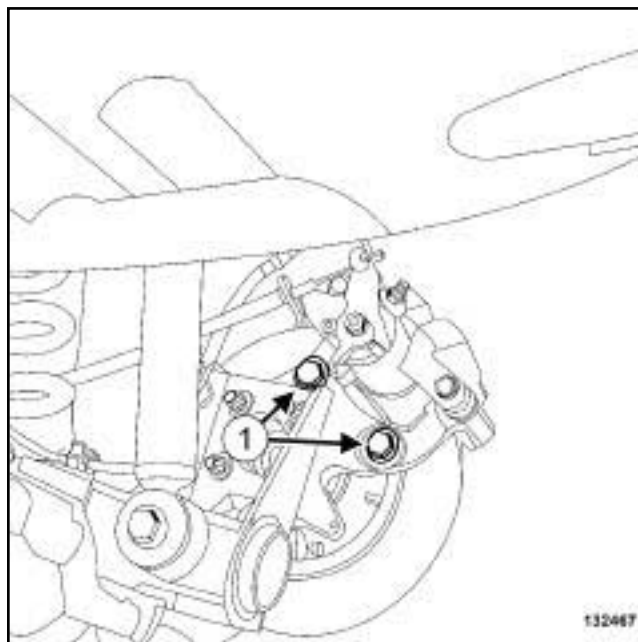
WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the rear brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-1**).



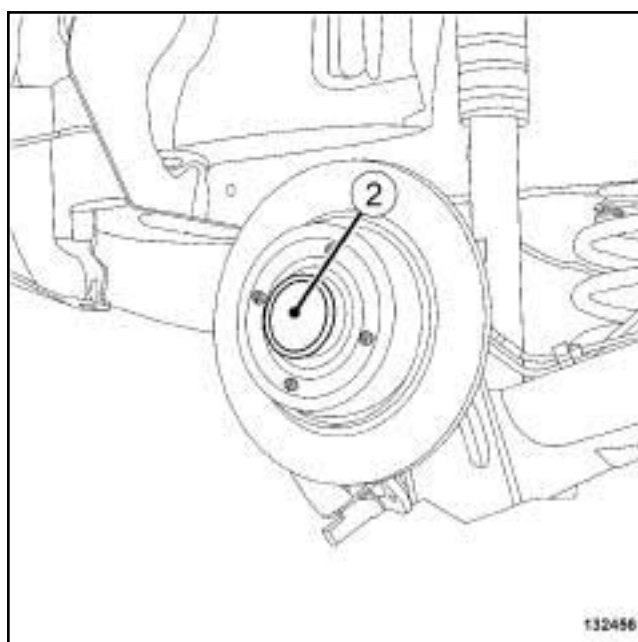
132467

☐ Remove:

- the brake calliper mounting bolts (1),
- the "brake calliper mounting - brake calliper" assembly.

- ☐ Attach the "calliper mounting - brake calliper" to the shock absorber spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132456

132456

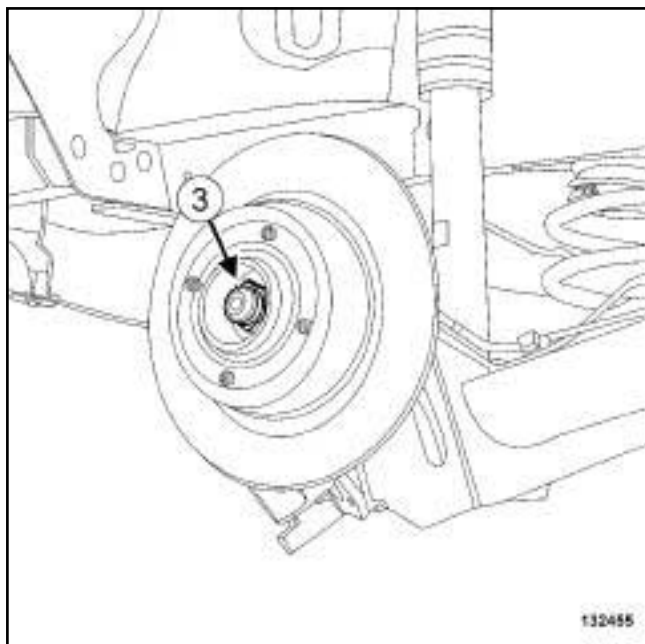
- ☐ Remove the hub's nut cover (2).

REAR AXLE COMPONENTS

Rear brake disc: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT



132455

❑ Remove:

- the nut (3) from the hub,
- the brake disc.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Always replace the hub nut.
- ❑ Clean the brake discs using a **parts washer**.
- ❑ Dry the disc surfaces.
- ❑ Clean the stub axle using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the brake disc.
- ❑ Torque tighten the **new hub nut (175 N.m)**.
- ❑ Refit the hub's nut cover.

III - FINAL OPERATION.

- ❑ Refit:
 - the "calliper mounting - brake calliper" assembly,
 - the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-1**) .

- ❑ Torque tighten the **brake calliper mounting bolts (105 N.m)**.
- ❑ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

EQUIPMENT LEVEL SPORT

I - PREPARATION OPERATION FOR CHECK

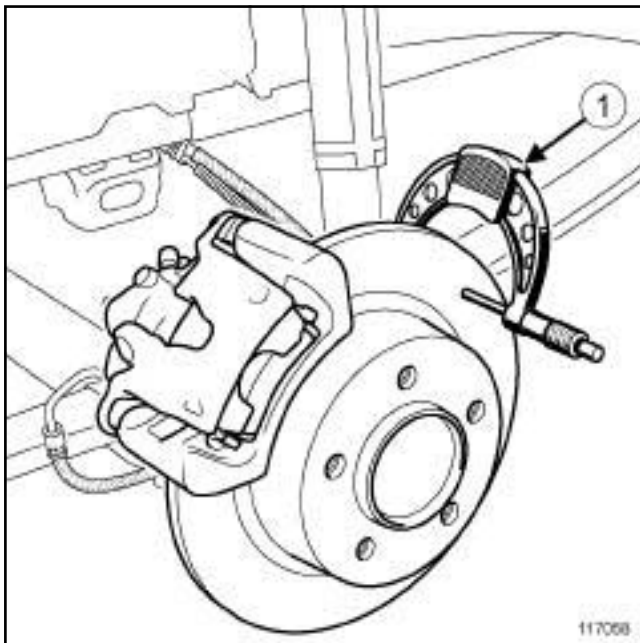
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Remove the rear wheel concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

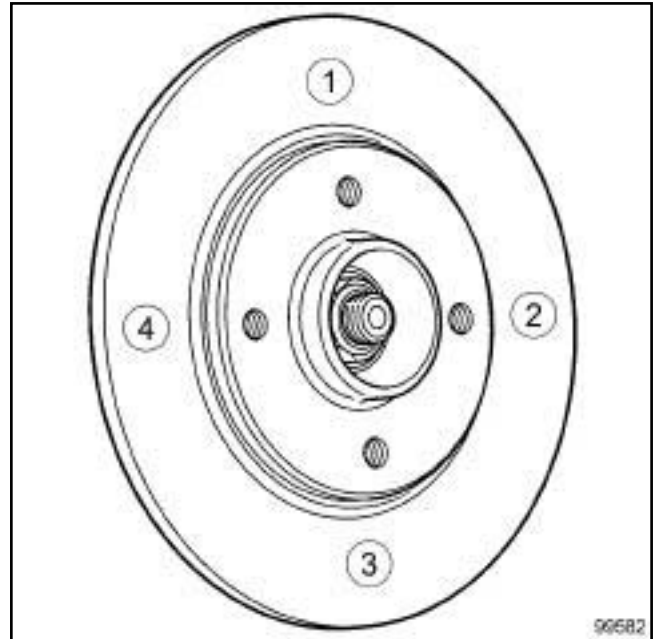
II - CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool (1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90° apart).

Compare the values with those recommended by the manufacturer (see **30A, General information, Brake: Specifications**, page 30A-19) .

III - FINAL OPERATION

Replace the discs if necessary (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page 33A-11) .

Refit the rear wheel concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

REAR AXLE COMPONENTS

Rear brake lining: Removal - Refitting

33A

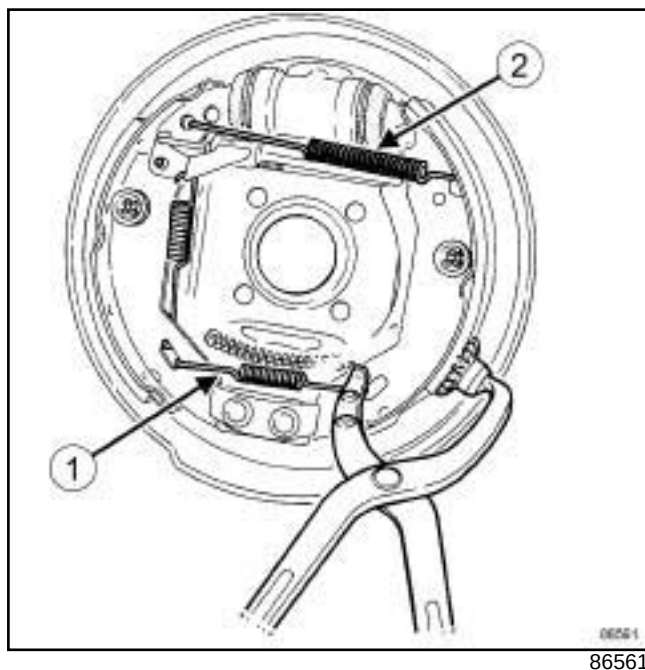
Replace all the brake pads on one axle at the same time. Never mix brake pads of different brands or qualities.

REMOVAL

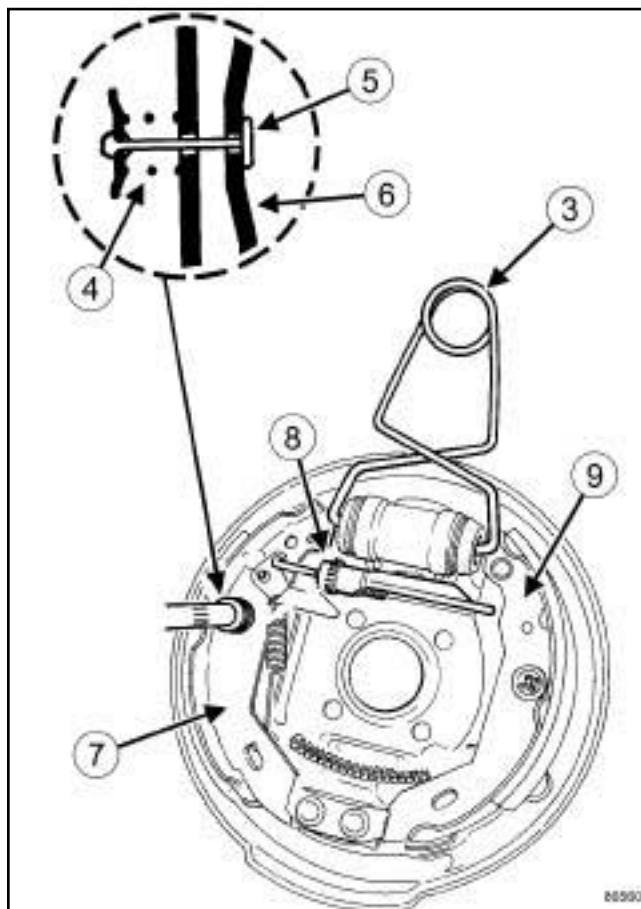
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Release the parking brake.
- ☐ Remove:
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the rear brake drums (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove the lower return spring (1) , then the upper return spring (2) using brake shoe pliers.

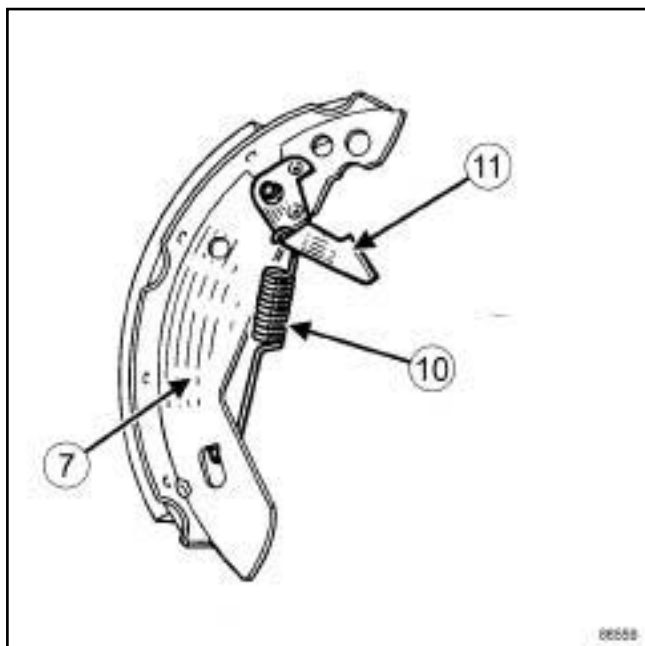


- ☐ Fit pliers (3) onto the slave cylinder pistons.
- ☐ Remove:
 - the side retainer springs (4) of the segments, keeping the connecting rod (5) in contact with the brake backing plate (6) ,
 - the leading shoe (7) ,
 - the link rod (8) ,
 - the trailing shoe (9) .
- ☐ Uncouple the parking brake cable from the parking brake lever.

REAR AXLE COMPONENTS

Rear brake lining: Removal - Refitting

33A



- ☐ Remove the leading shoe:
 - the spring (10) ,
 - the adjustment lever (11) .

REFITTING

I - REFITTING PREPARATIONS OPERATION



- ☐ Remove any dust from the drums and the flanges using the cleaning station.
- ☐ Lightly grease the support linkage thread.

Note:

The brake mechanism components are different on the left and right-hand sides, so it is important not to confuse them.

Note:

On the left-hand brake: the bolt thread has a right-hand thread.

On the right-hand brake: the bolt has a left-hand thread.

II - REFITTING OPERATION FOR PART CONCERNED

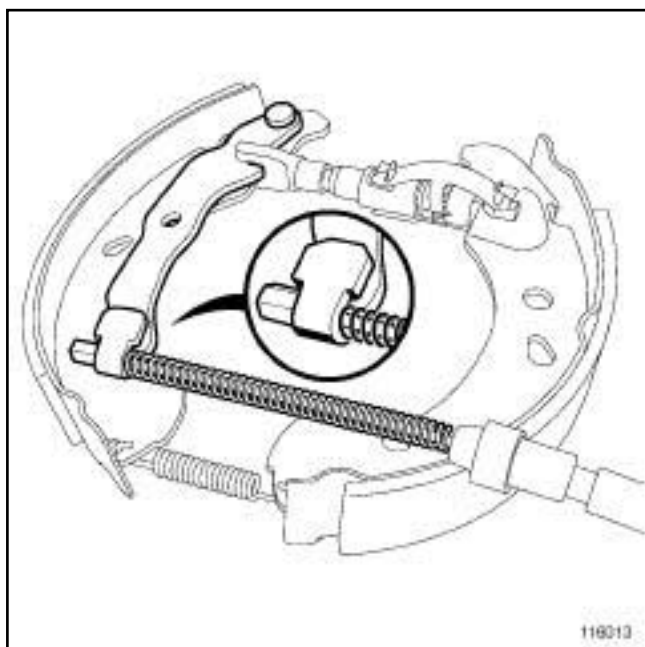
- ☐ Refit the leading shoe:
 - the adjustment lever,
 - the spring.
- ☐ Connect the parking brake cable to the parking brake lever.
- ☐ Refit:
 - the trailing shoe.

REAR AXLE COMPONENTS

Rear brake lining: Removal - Refitting

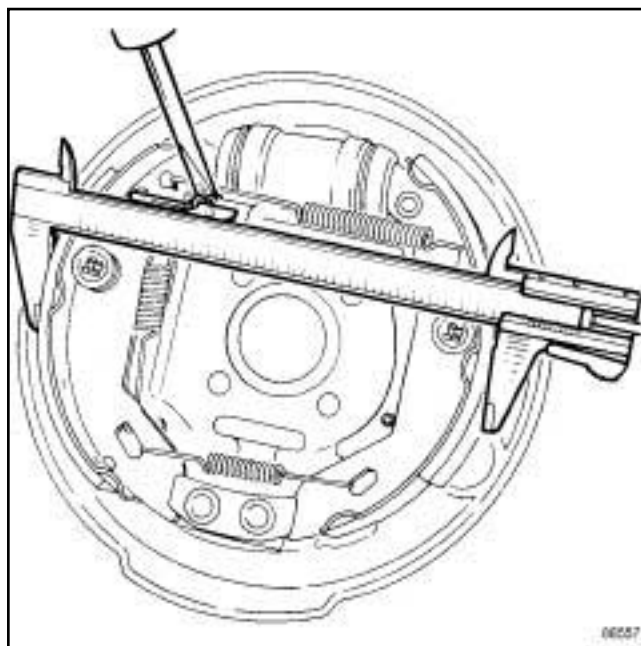
33A

- the linkage,
 - the leading shoe,
 - the side retainer springs of the segments, keeping the connecting rod in contact with the brake backing plate,
- ☐ Refit the lower return spring, then the upper return spring using brake shoe pliers.



116013

- ☐ Check that the parking brake cable is correctly positioned on the parking brake lever.
- ☐ Remove the pliers from the slave cylinder pistons.



86557

- ☐ Use a screwdriver to adjust the piston ring diameter with the linkage to obtain a diameter of **202.45 mm $\pm$ 0.25**.
- ☐ Carry out the same adjustment on the other side.
- ☐ Adjust the handbrake if the lever stops between the first and second positions of the parking brake lever's travel (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page **37A-48**).

III - FINAL OPERATION.

- ☐ Refit:
- the rear brake drums (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page **33A-19**),
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- ☐ Adjust the brake pads by depressing the brake pedal repeatedly.
- ☐ Check that the automatic wear take up system is working properly (characteristic «click» from the drums when the brake pedal is repeatedly depressed).

REAR AXLE COMPONENTS

Rear brake cylinder: Removal - Refitting

33A

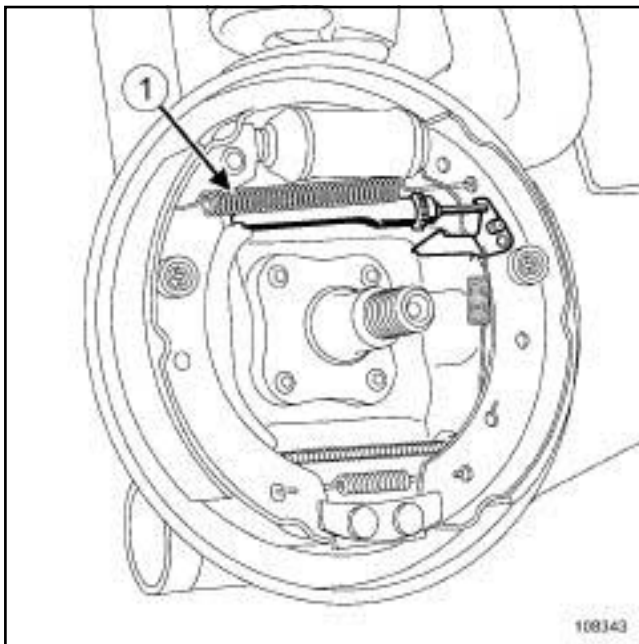
Tightening torques 	
rear brake cylinder bolt on the flange	14.5 Nm
rigid brake pipe union on the rear brake cylinder	15 Nm

REMOVAL

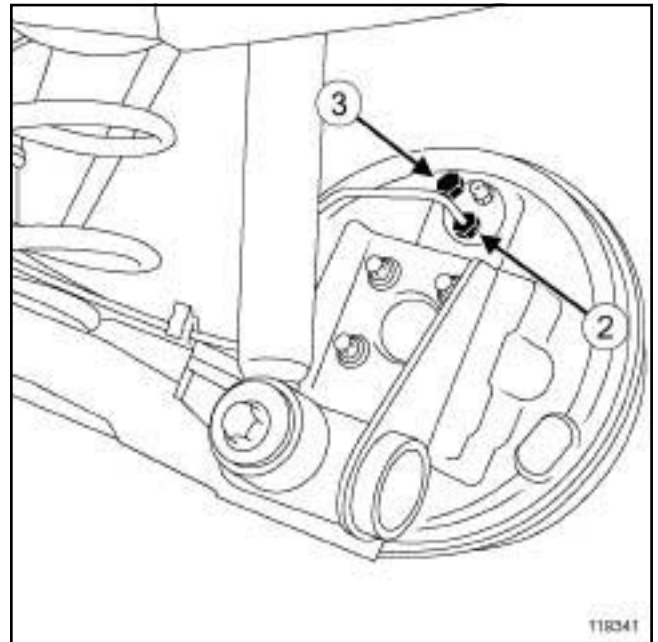
I - OPERATION FOR PREPARATION OF PART CONCERNED

- ☐ Position the vehicle on a lift ((see **Vehicle: Towing and lifting**)).
- ☐ Release the parking brake.
- ☐ Remove:
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the rear brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) .

II - REMOVAL OPERATION FOR PART CONCERNED



- ☐ Remove the upper return spring (1) using brake shoe pliers.
- ☐ Remove the brake shoes.



- ☐ Undo the rigid brake pipe union (2) on the rear brake cylinder.

Note:

Expect some brake fluid to run out.

- ☐ Fit a cap on the rigid brake pipe union.
- ☐ Remove:
 - the rear brake cylinder bolt (3) on the flange,
 - the rear brake cylinder.

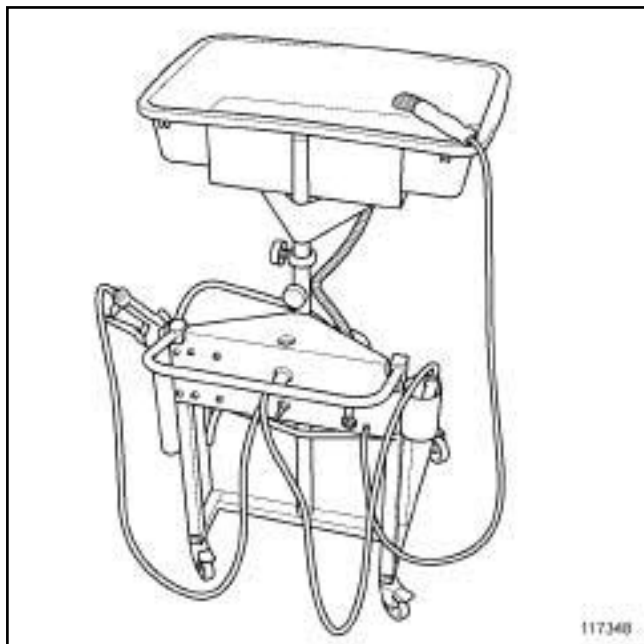
REAR AXLE COMPONENTS

Rear brake cylinder: Removal - Refitting

33A

REFITTING

I - REFITTING PREPARATIONS OPERATION



117348

- ☐ Remove any dust from the drums and the flanges using the cleaning station.
- ☐ Check the condition of the brake cylinder boots and pistons (replace any faulty parts).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the rear brake cylinder,
 - the rear brake cylinder bolt on the flange,
 - the rigid brake pipe union on the rear brake cylinder,
 - the upper return spring using brake shoe pliers.
- ☐ Torque tighten:
 - the **rear brake cylinder bolt on the flange (14.5 Nm)**,
 - the **rigid brake pipe union on the rear brake cylinder (15 Nm)**.

III - FINAL OPERATION.

- ☐ Refit:
 - the rear brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting, page 33A-19**),

- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed, page 30A-4**).
- ☐ Adjust the brake pads by depressing the brake pedal repeatedly.

REAR AXLE COMPONENTS

Rear brake drum: Removal - Refitting

33A

Equipment required

parts washer

Tightening torques

brake drum nuts	175 N.m

When a brake drum is replaced, the brake drum on the opposite side must be replaced as well.

Always replace the brake pads if the brake drums are being replaced.

IMPORTANT

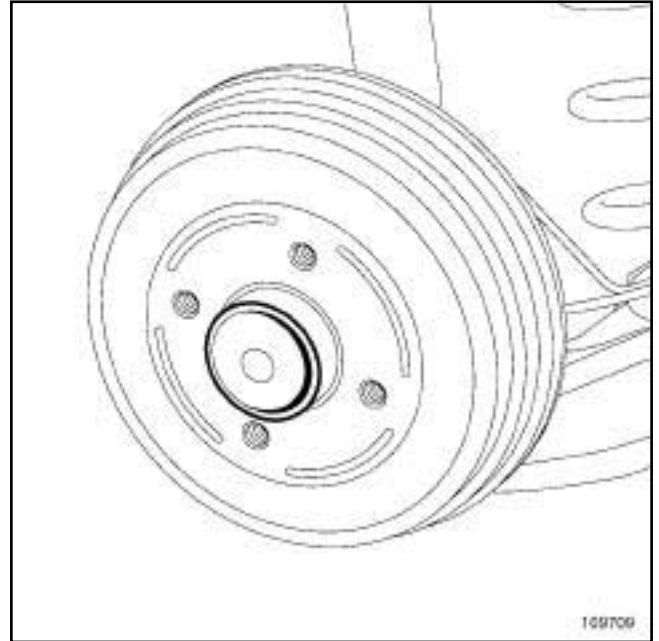
To avoid brake imbalance, both drums must be of the same diameter. Regrinding one drum necessitates regrinding of the opposite drum.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Release the parking brake.
- ☐ Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



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- ☐ Remove:
 - the drum caps,
 - the brake drum nuts,
 - the brake drums.

REFITTING

I - REFITTING PREPARATION OPERATION

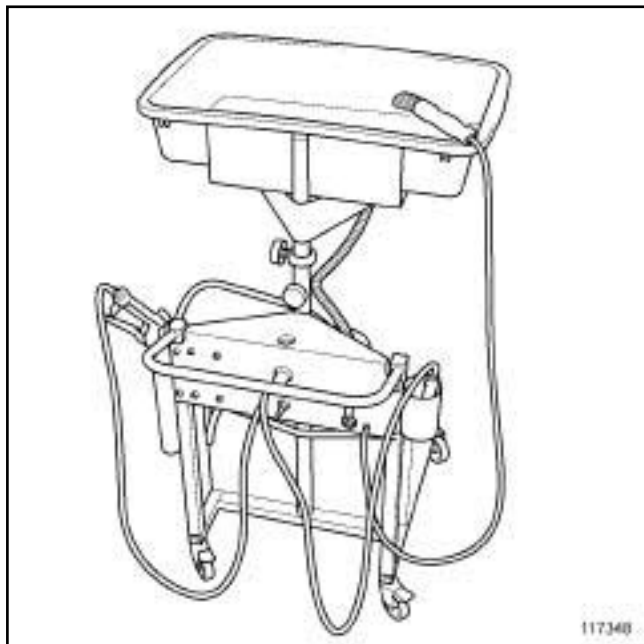
- ☐ Check the internal diameter of the drum.

REAR AXLE COMPONENTS

Rear brake drum: Removal - Refitting

33A

- ☐ Always replace the brake drum nuts.
- ☐ **parts always to be replaced: rear drum cap.**
- ☐ Replace any faulty parts.



117348

- ☐ Using a **parts washer**, clean:
 - the brake linings,
 - the brake drums.
 - the stub axle.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Adjust the parking brake if the lever stops between the first and second position of the parking brake lever's travel (see **37A, Mechanical component controls, Parking brake lever: Removal - Refitting, page 37A-46**) .
- ☐ Refit:
 - the brake drums.
 - the brake drum nuts.
- ☐ Torque tighten the **brake drum nuts (175 N.m)** by turning the drum while tightening the nut.
- ☐ Refit new brake drum caps.

III - FINAL OPERATION

- ☐ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**) .
- ☐ Adjust the brake linings by depressing the brake pedal repeatedly.

REAR AXLE COMPONENTS

Rear brake drum: Description

33A

Equipment required

sliding calliper

I - PREPARATION OPERATION FOR CHECK

Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

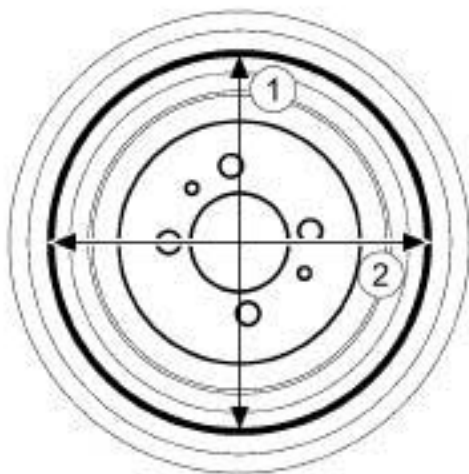
Remove:

- the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
- the rear brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) .

II - TEST OPERATION

Note:

To check the internal diameter of the drum, use a **sliding calliper** type tool for drums.



116995

Position the **sliding calliper** to measure the internal diameters of the brake drum.

Measure the interior diameters of the brake drum on the perpendicular axes (1) and (2) .

Compare the values with those recommended by the manufacturer (see **30A, General information, Brake: Specifications**, page 30A-19) .

III - FINAL OPERATION

Replace the rear drums if necessary (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) .

Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

REAR AXLE COMPONENTS

Rigid brake pipe: Removal - Refitting

33A

C44

Equipment required

pedal press

Tightening torques

rigid brake pipe unions on the rear brake cylinders	15 Nm

rigid brake pipe unions on the rear brake hoses	17 Nm

The pipes have a rigid section and a flexible section.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

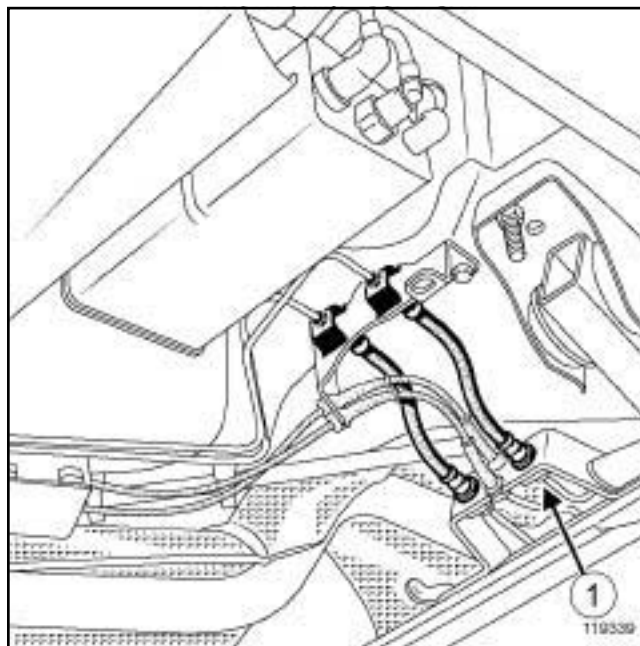
WARNING

Prepare for the flow of fluid, and protect the surrounding components.

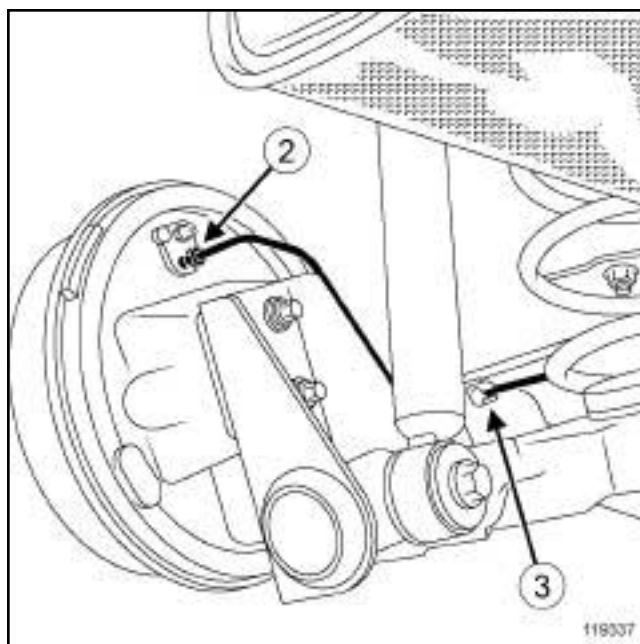
- ☐ Fit the **pedal press** tool to the brake pedal to limit the escape of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Rear left-hand rigid brake pipe



119339



119337

- ☐ Unscrew:
 - the rigid brake pipe union at the brake hose (1) .
 - the rigid brake pipe union on the rear brake cylinder (2) .
- ☐ Unclip the rear axle rigid brake pipe (3) .
- ☐ Remove the rigid brake pipe.

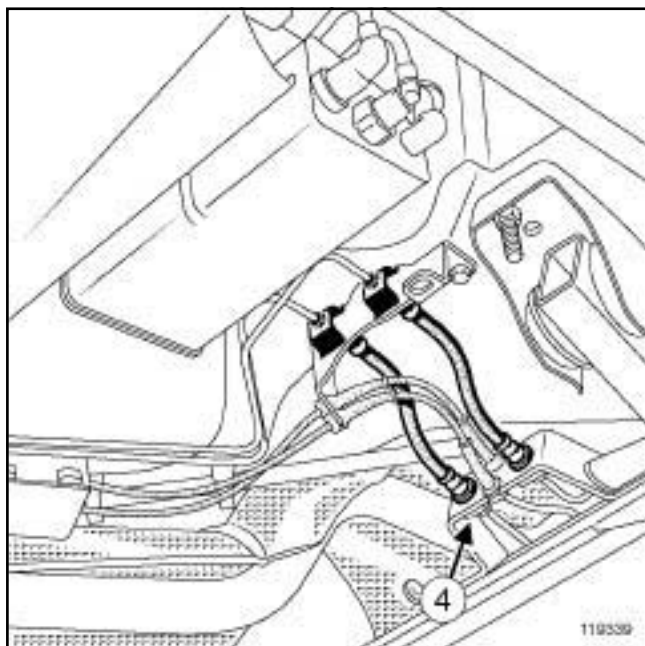
REAR AXLE COMPONENTS

Rigid brake pipe: Removal - Refitting

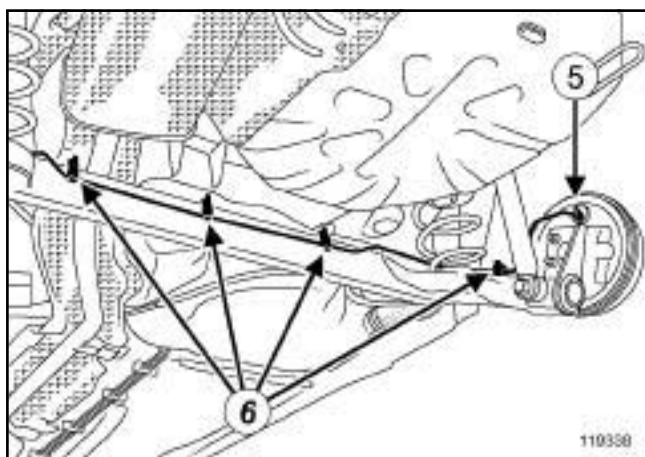
33A

C44

2 - Rear right-hand rigid brake pipe



119339



119338

- ☐ Unscrew:
 - the brake pipe union (4) at the brake hose,
 - the rigid brake pipe union on the rear brake cylinder (5) .
- ☐ Unclip the rear axle rigid brake pipe (6) .
- ☐ Remove the rigid brake pipe.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace the rigid brake pipe clips.

WARNING

In order to not damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the rigid pipes in their original positions.
- ☐ Clip the rigid brake pipes of the rear axle.
- ☐ Fit without tightening:
 - the rigid brake pipe unions on the rear brake cylinders.
 - the rigid brake pipe unions on the rear brake hoses.
- ☐ Tighten to torque:
 - the **rigid brake pipe unions on the rear brake cylinders (15 Nm)**,
 - the **rigid brake pipe unions on the rear brake hoses (17 Nm)**,

III - FINAL OPERATION.

- ☐ Remove the **pedal press** from the brake pedal to limit the outflow of brake fluid.
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

Equipment required

component jack

Tightening torques

shock absorber lower bolt	105 Nm

shock absorber upper nut	21 Nm

If a shock absorber is replaced, the shock absorber on the opposite side must also be replaced.

WARNING

To prevent any damage, do not use the rear axle as support for the lifting system.

WARNING

To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

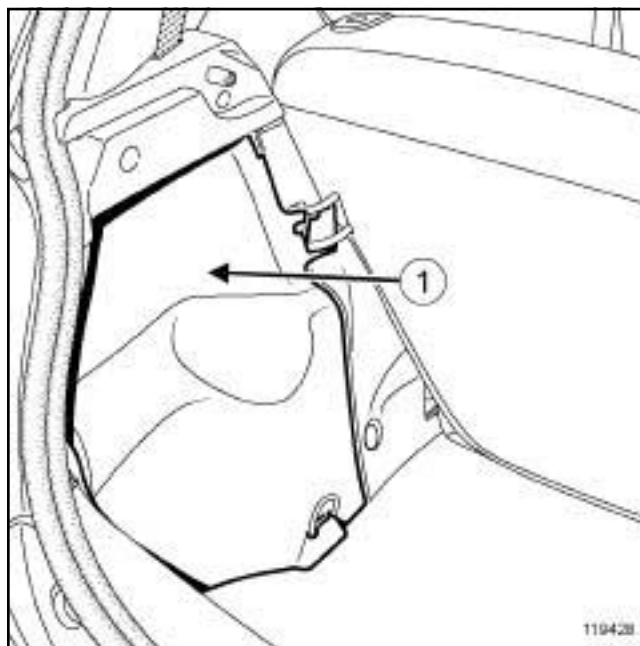
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

WARNING

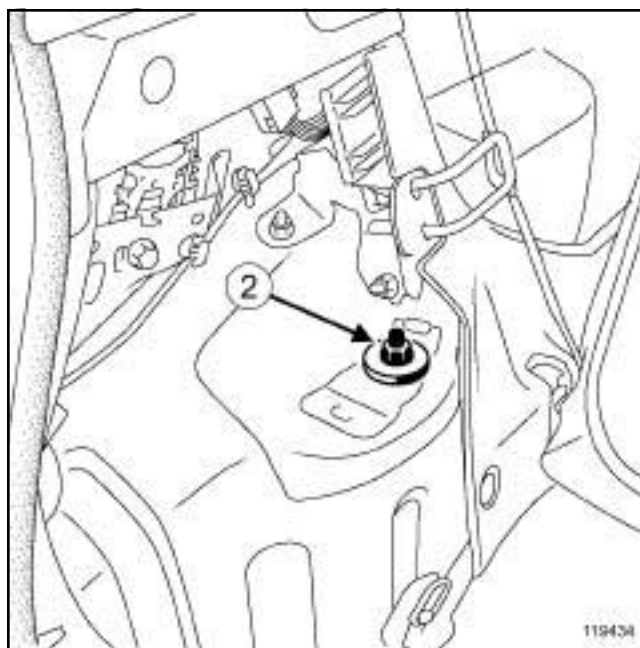
To avoid damaging the rear axle components (elastic joints, brake hoses etc.) do not remove both shock absorbers at the same time. Proceed one side at a time.



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- ❑ Remove the luggage compartment internal trim (1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



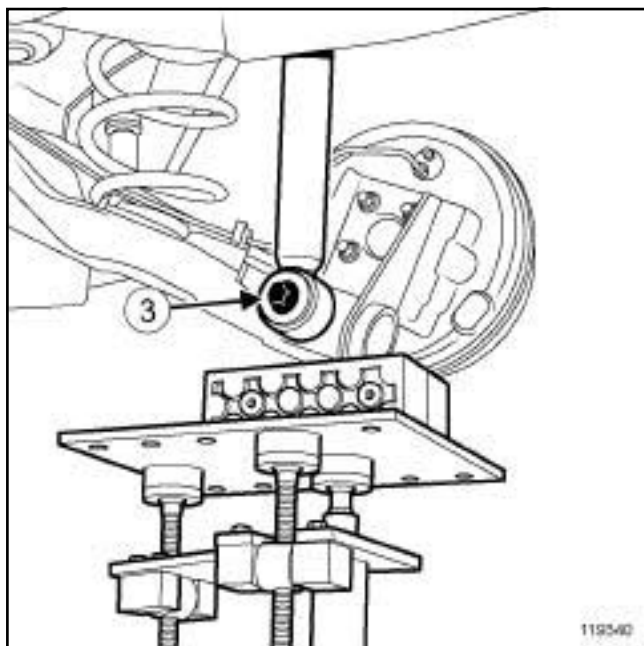
119434

- ❑ Undo the upper shock absorber nut (2) when the wheels are on the ground.
- ❑ Raise the vehicle.

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A



119340

- ☐ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.
- ☐ Remove the lower shock absorber bolt (3) .
- ☐ Remove the **component jack**.
- ☐ Remove:
 - the shock absorber upper nut while holding the shock absorber rod end,
 - the shock absorber.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ The upper lock nut on the shock absorber must always be replaced.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the shock absorber,
 - the new upper nut on the shock absorber.
- ☐ Raise the vehicle.
- ☐ Refit the shock absorber lower bolt with the **component jack** in contact with a block under the rear axle near the shock absorber.
- ☐ Torque tighten:
 - the **shock absorber lower bolt (105 Nm)** with the **component jack** in position,

- the **shock absorber upper nut (21 Nm)** while holding the shock absorber rod end, with the wheels on the ground.

III - FINAL OPERATION.

- ☐ Refit the luggage compartment internal trim.

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

G44

Equipment required

component jack

Tightening torques

lower shock absorber bolt	105 Nm

shock absorber upper nut	21 Nm

WARNING

To prevent any damage, do not use the rear axle as support for the lifting system.

WARNING

To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

REMOVAL

I - REMOVAL PREPARATION OPERATION

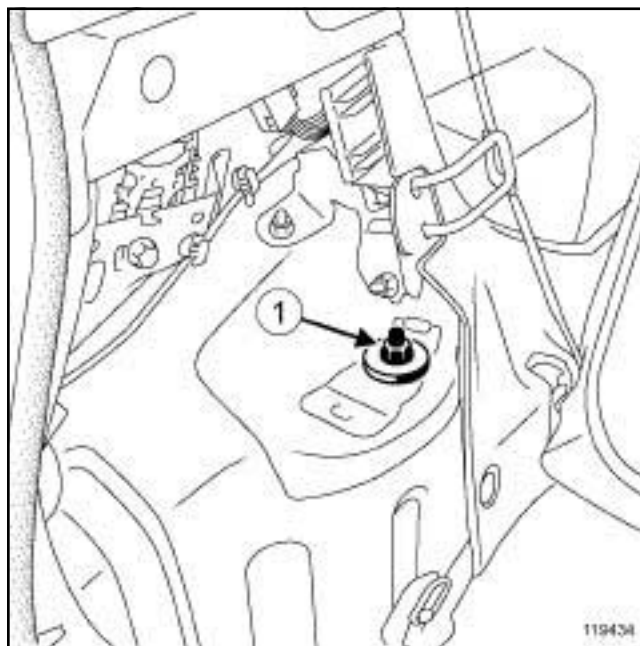
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

WARNING

To avoid damaging the rear axle components (elastic joints, brake hoses etc.) do not remove both shock absorbers at the same time. Proceed one side at a time.

- ☐ Remove the luggage compartment interior trim (see **Rear loading trim: Removal - Refitting**) (MR 412, 71A, Body internal trim).

II - OPERATION FOR REMOVAL OF PART CONCERNED



119434

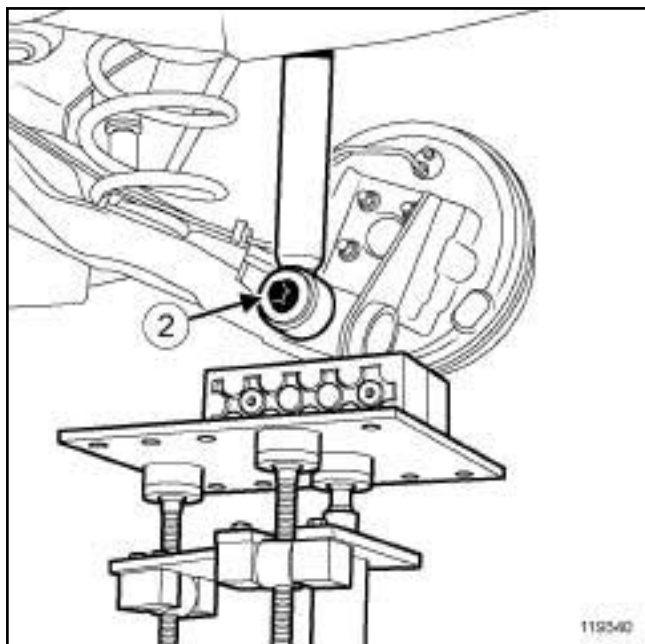
- ☐ Undo the upper shock absorber nut (1) when the wheels are on the ground.
- ☐ Raise the vehicle.

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

G44



119340

- ☐ Fit a **component jack** until contact is made with a shim, under the rear axle near the shock absorber.
- ☐ Remove the lower shock absorber bolt (2) .
- ☐ Remove the **component jack**.
- ☐ Remove:
 - the shock absorber upper nut while holding the shock absorber rod end,
 - the shock absorber.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ The upper lock nut on the shock absorber must always be replaced.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the shock absorber,
 - the new upper nut on the shock absorber.
- ☐ Raise the vehicle.
- ☐ Refit the shock absorber lower bolt using a **component jack** in contact with a shim, under the rear axle near the shock absorber.
- ☐ Torque tighten:
 - the **lower shock absorber bolt (105 Nm)** with a **component jack**,

- the **shock absorber upper nut (21 Nm)** while holding the shock absorber rod end, with the wheels on the ground.

III - FINAL OPERATION.

- ☐ Refit the luggage compartment interior trim (see **Rear loading trim: Removal - Refitting**) (MR 412, 71A, Body internal trim).

REAR AXLE COMPONENTS

Rear suspension spring: Removal - Refitting

33A

Equipment required

component jack

Tightening torques

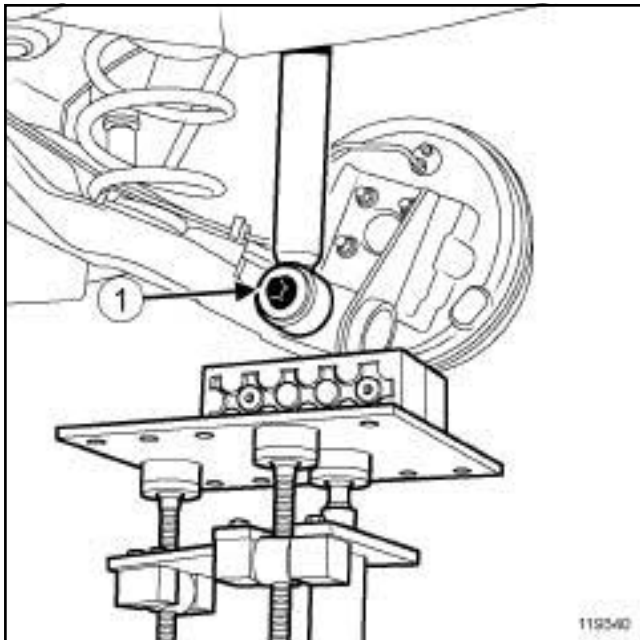
shock absorber lower bolts	105 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

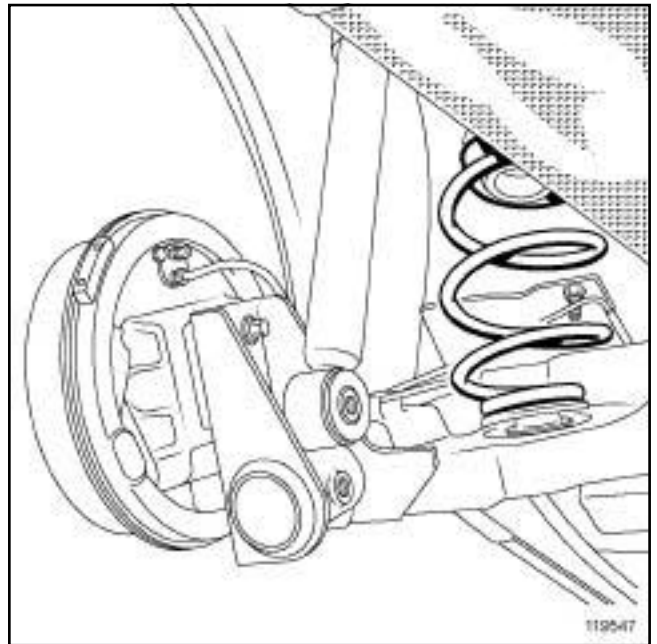
- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



119340

- ☐ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.
- ☐ Mark the position where the springs are fitted.
- ☐ Remove the lower bolt (1) from the shock absorber.
- ☐ Remove the **component jack**.
- ☐ Repeat these operations on the opposite side.

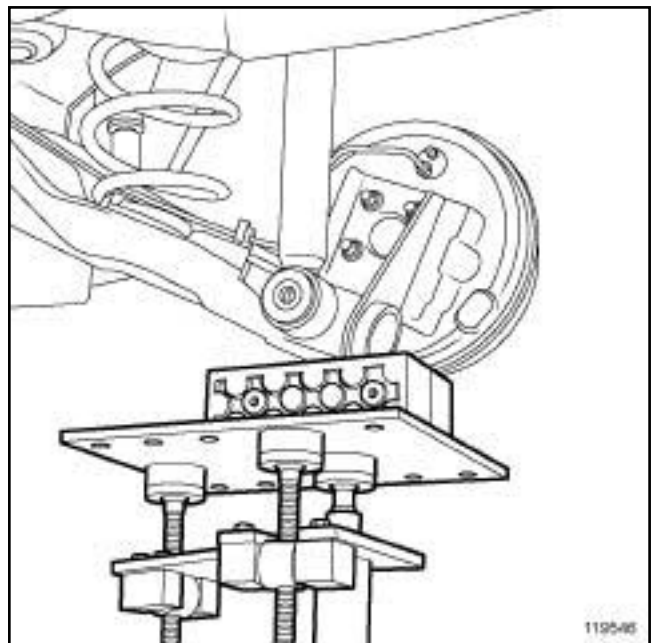


119547

- ☐ Remove the springs by removing the **component jack**.
- ☐ Leave the rear axle suspended.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



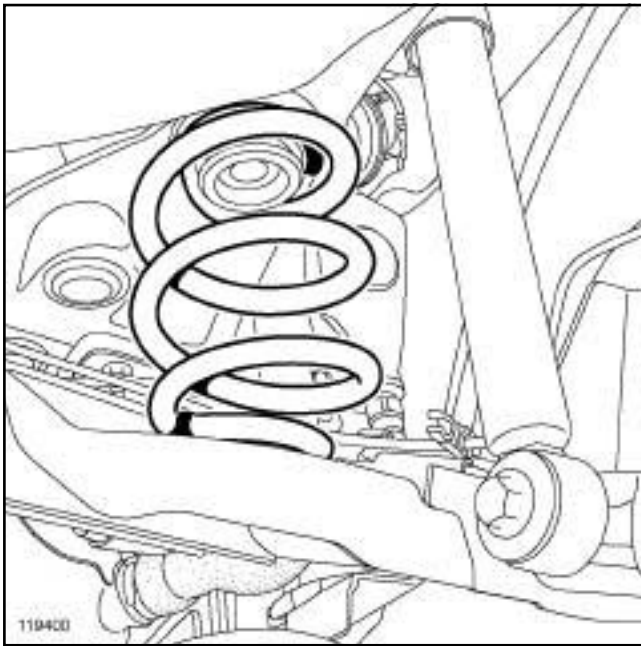
119546

- ☐ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.

REAR AXLE COMPONENTS

Rear suspension spring: Removal - Refitting

33A



119400

- ☐ Refit the shock absorber springs into their housings.
- ☐ Compress the rear axle.
- ☐ Refit the lower shock absorber mounting bolts.
- ☐ Torque tighten the **shock absorber lower bolts (105 Nm)**.

II - FINAL OPERATION.

- ☐ Remove the **component jack**.
- ☐ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

REAR AXLE COMPONENTS

Rear drum bearing: Removal - Refitting

33A

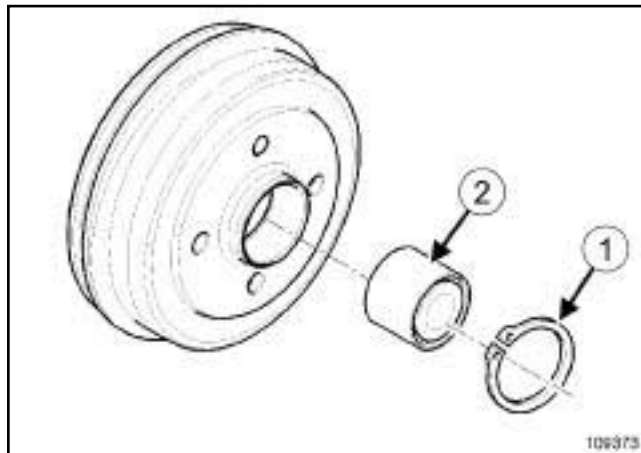
Using a dial gauge connected to the drum, check that the end float is greater than **0.03 mm**.

REMOVAL

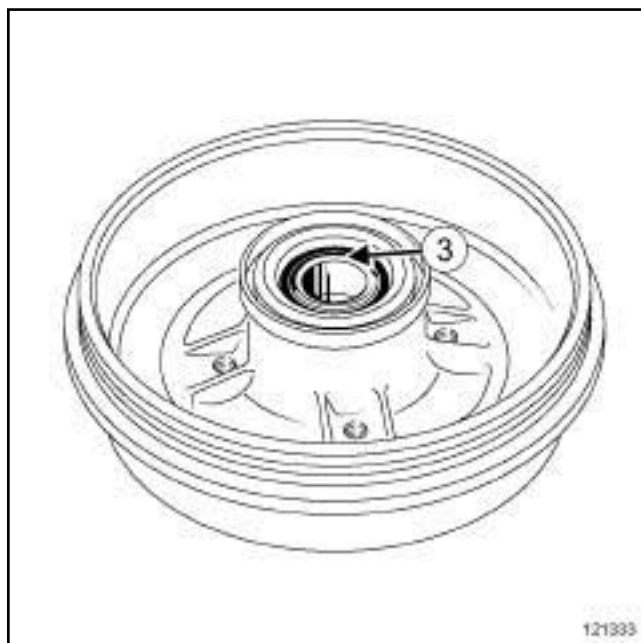
I - REMOVAL PREPARATION OPERATION

- ❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ❑ Remove:
 - the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the rear brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page **33A-19**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



109373



121333

- ❑ From the drum, remove:
 - the rubber ring (1) from the rear drum bearing,
 - the bearing (2) from the rear drum using a tube with a diameter between **25 mm** and **40 mm** and using a hydraulic press, supporting the bearing internal bush (3).

REAR AXLE COMPONENTS

Rear drum bearing: Removal - Refitting

33A

REFITTING

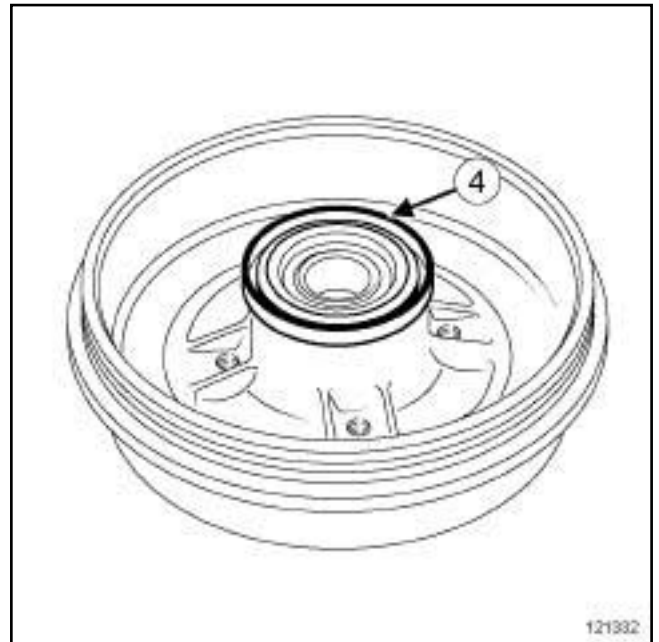
I - REFITTING PREPARATIONS OPERATION



- ☐ Clean:
 - the internal and external surfaces of the new bearing in contact with the drum,
 - the drum surfaces in contact with the new bearing.
- ☐ It is essential to check the condition of the surface of the bore of the drum before refitting the bearing. It is essential to replace the stub axle carrier if it is faulty.

WARNING

Do not press the bearing's inner bush so as to avoid damaging the bearing (very high shrink-fitting force).



121332



Note:

Take care not to press the ABS target (4) when refitting the bearing.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the bearing until it presses the shoulder using a tube with a diameter between **51 mm** and **54 mm** and using a hydraulic press.
- ☐ Refit the rubber ring.

III - FINAL OPERATION.

- ☐ Refit:
 - the rear brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting, page 33A-19**),
 - the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

REAR AXLE COMPONENTS

Rear stub axle carrier: Removal - Refitting

33A

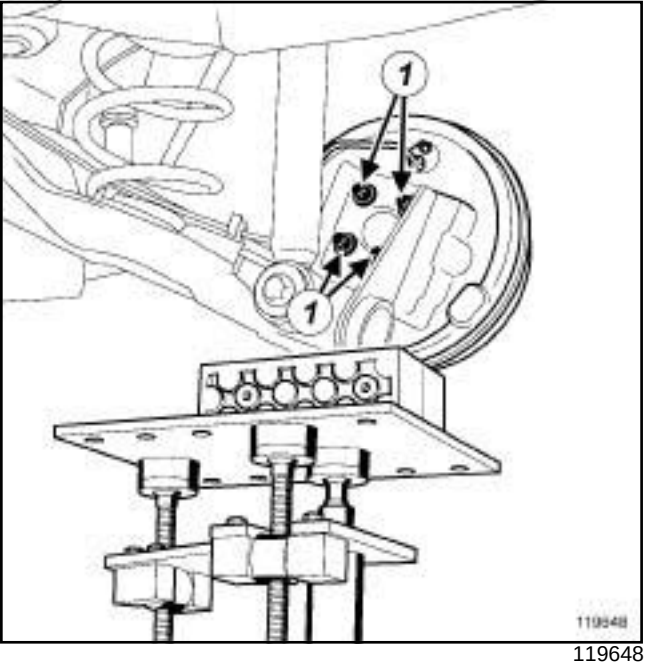
Equipment required	
component jack	
Tightening torques 	
stub axle carrier bolts	53 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Release the parking brake.
- ☐ Remove:
 - the rear wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**) ,
 - the brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting, page 33A-19**) .
- ☐ Fit the **component jack** to undo the shock absorber mountings.
- ☐ Remove the shock absorber lower bolt.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Adjust the **component jack**.

Note:

Mark the position of the stub axle carrier writing.

- ☐ Remove:
 - the stub axle carrier bolts (1) ,
 - the stub axle carrier.

REAR AXLE COMPONENTS

Rear stub axle carrier: Removal - Refitting

33A

REFITTING

I - REFITTING PREPARATIONS OPERATION



117348

- ☐ Clean the stub axle carrier using the cleaning station.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the stub axle carrier,
 - the stub axle bolts.
- ☐ Torque tighten the **stub axle carrier bolts (53 Nm)**.
- ☐ Remove the **component jack**.

III - FINAL OPERATION.

- ☐ Refit:
 - the brake drum (see **33A, Rear axle components, Rear brake drum: Removal - Refitting, page 33A-19**) ,
 - the rear wheel on the side concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**) .

REAR AXLE COMPONENTS

Rear stub axle carrier: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

Equipment required

component jack

Tightening torques

new bolts of the rear stub axle carrier **53 N.m**

lower bolt of the rear shock absorber **105 N.m**

new bolts of the brake calliper mounting **105 Nm**

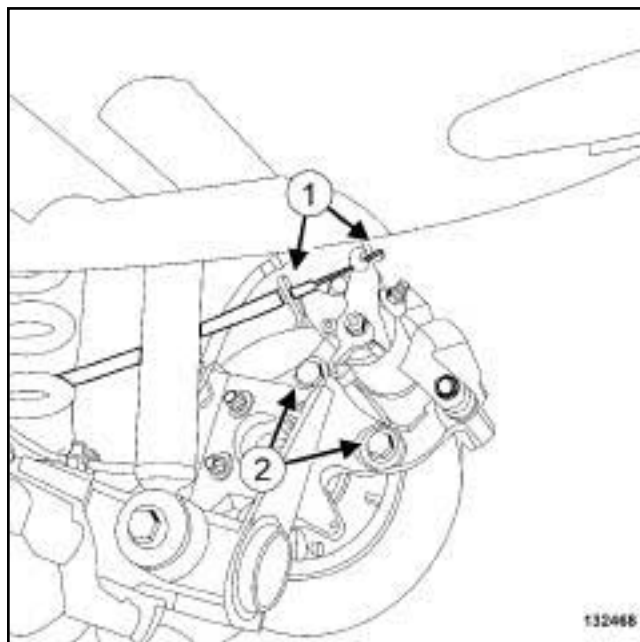
WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



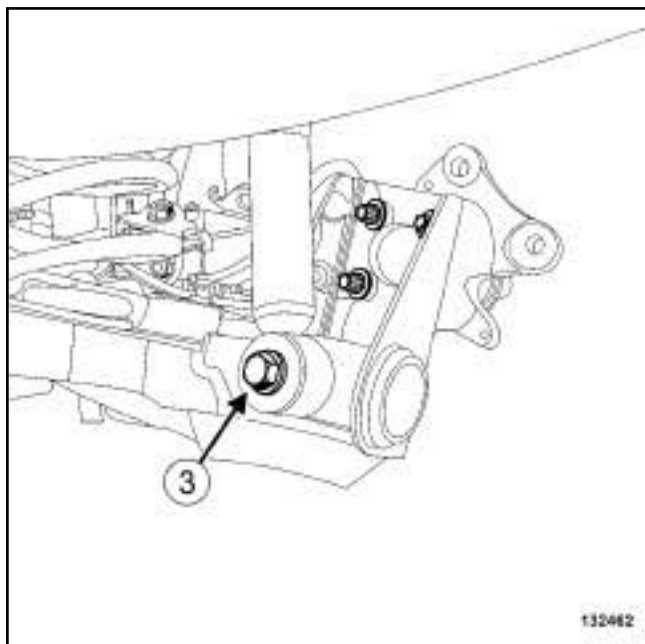
- ☐ Unclip the parking brake cable from the calliper at (1).
- ☐ Remove:
 - the brake calliper mounting bolts (2),
 - the "brake calliper mounting - brake calliper" assembly.
- ☐ Attach the "brake calliper mounting - brake calliper" assembly to the suspension spring.
- ☐ Remove the rear brake disc (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-11**).

REAR AXLE COMPONENTS

Rear stub axle carrier: Removal - Refitting

33A

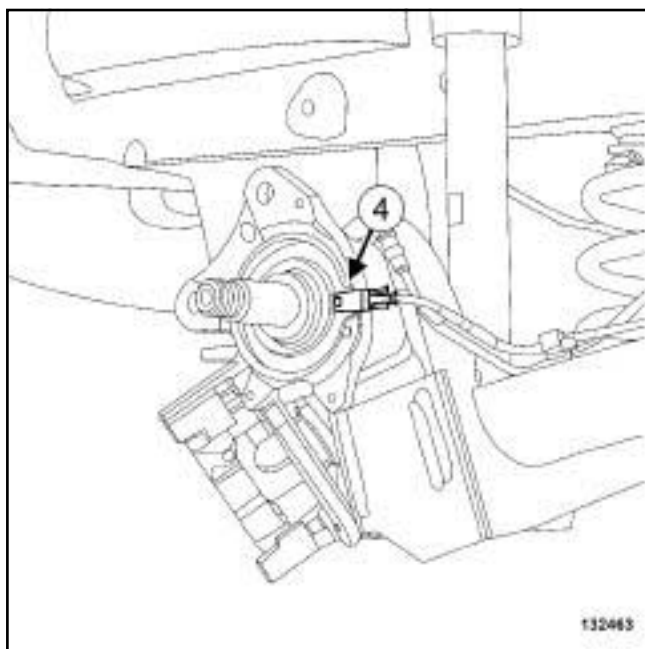
EQUIPMENT LEVEL SPORT



132462

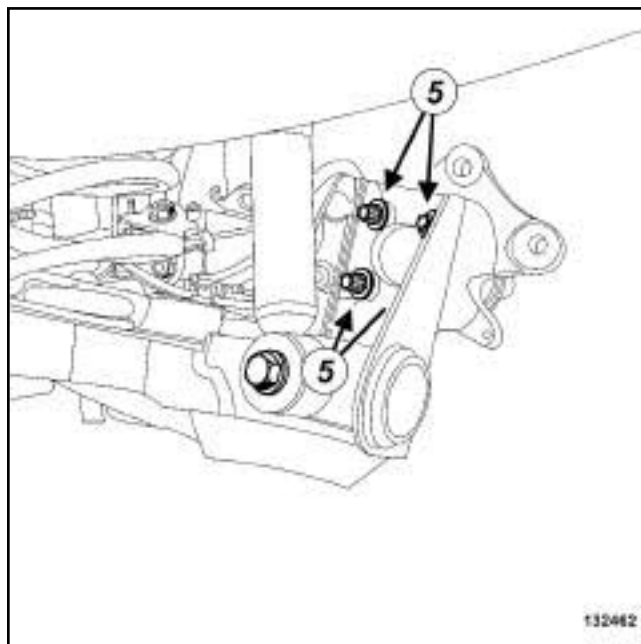
- ☐ Fit a **component jack**.
- ☐ Remove the lower bolt (3) from the rear shock absorber.
- ☐ Tip the rear shock absorber.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132463

- ☐ Unclip the wheel speed sensor (4) .



132462

- ☐ Remove:
 - the bolts (5) of the rear stub axle carrier,
 - the rear stub axle carrier.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the brake calliper mounting bolts,
 - the stub axle carrier bolts,
 - the stub-axle nut.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the rear stub axle carrier.
- ☐ Torque tighten the **new bolts of the rear stub axle carrier (53 N.m)**.
- ☐ Clip on the wheel speed sensor.

III - FINAL OPERATION.

- ☐ Refit the rear shock absorber.
- ☐ Torque tighten the **lower bolt of the rear shock absorber (105 N.m)**.
- ☐ Remove the **component jack**.

REAR AXLE COMPONENTS

Rear stub axle carrier: Removal - Refitting

33A

EQUIPMENT LEVEL SPORT

- ☐ Refit:
 - the brake disc (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-11**) ,
 - the "brake calliper mounting - brake calliper" assembly.
- ☐ Torque tighten the **new bolts of the brake calliper mounting (105 Nm)**.
- ☐ Clip the parking brake cable onto the brake calliper.
- ☐ Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR AXLE COMPONENTS

Complete rear axle system: Removal - Refitting

33A

Special tooling required	
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required	
pedal press	
safety strap(s)	

Tightening torques 	
rear axle bearing bolts	62 Nm
brake hose lower unions	17 Nm

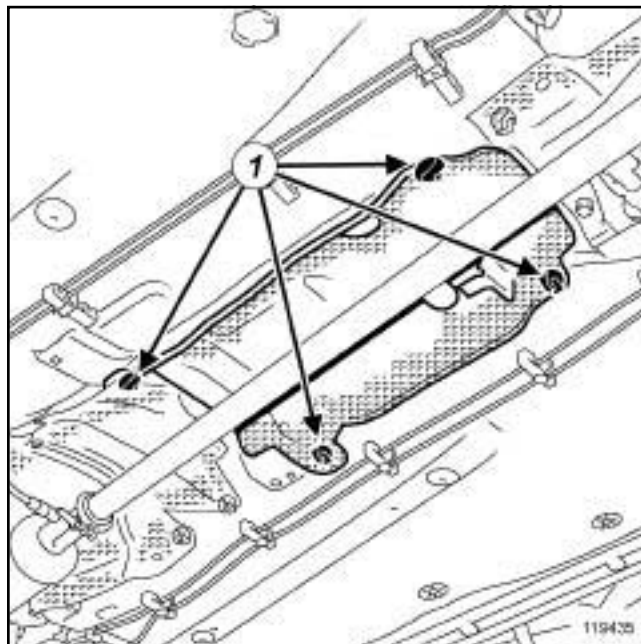
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Release the parking brake.
- ☐ Fit the **pedal press** on the brake pedal to limit the amount of brake fluid running out.
- ☐ Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

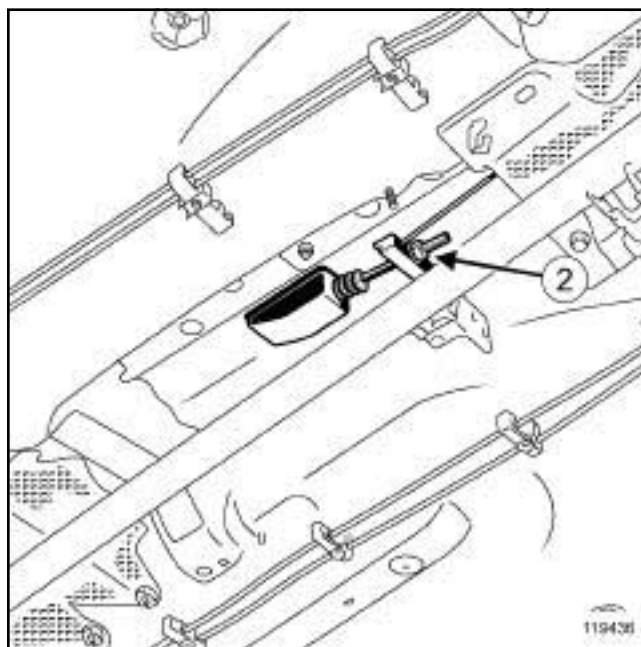
II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Removal



119435

- ☐ Remove:
 - the heat shield clips (1) ,
 - the heat shield.



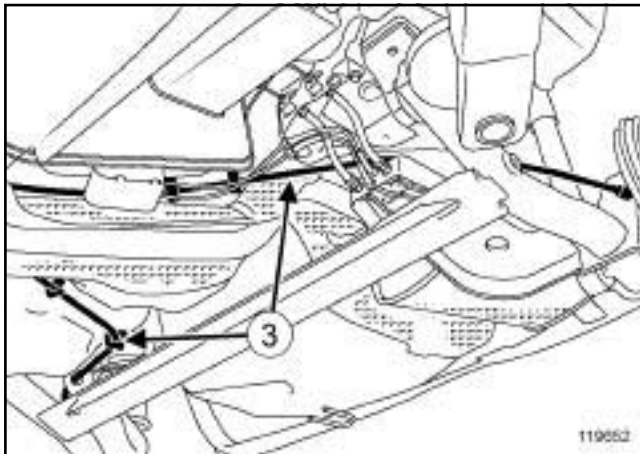
119436

- ☐ Undo the adjusting screw (2) of the parking brake compensator.
- ☐ Remove the parking brake compensator brake cables.

REAR AXLE COMPONENTS

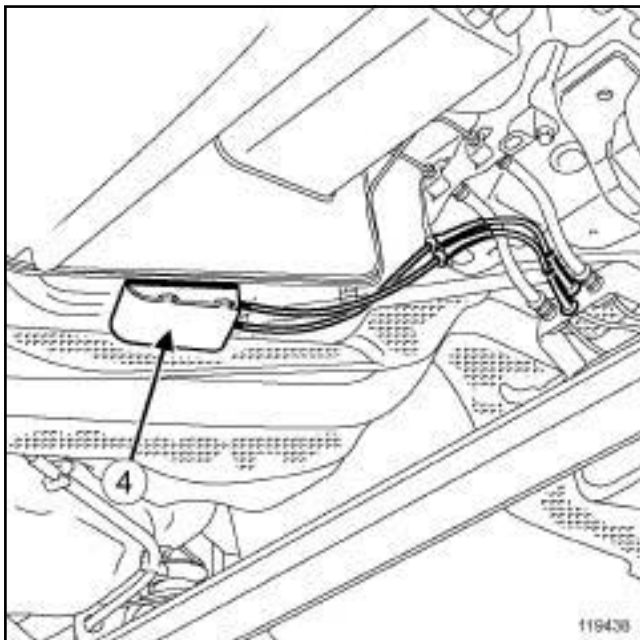
Complete rear axle system: Removal - Refitting

33A



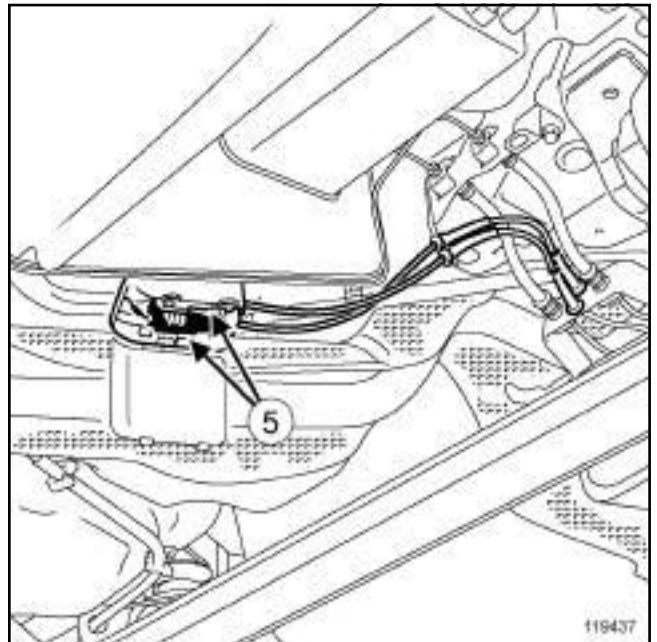
119652

- Unclip the parking brake cables (3) on the reservoir.



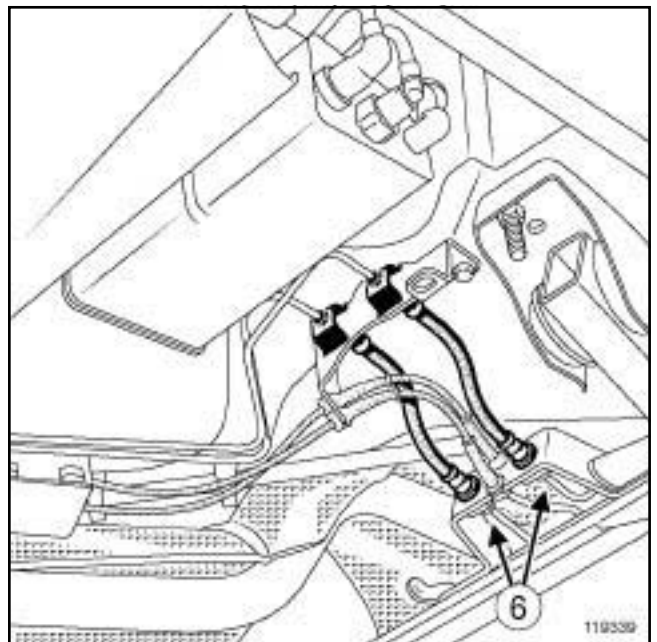
119438

- Open the ABS sensor connector protective unit (4) .



119437

- Disconnect the ABS sensor connectors (5) .



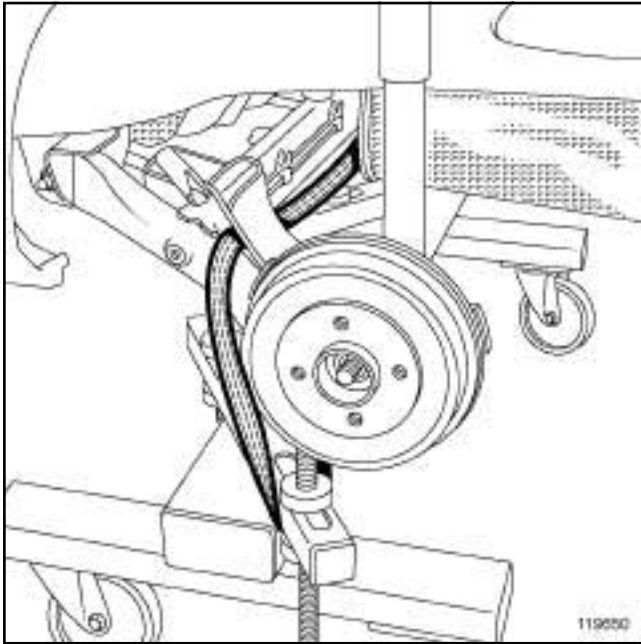
119339

- Remove:
 - the brake hose lower unions (6) ,
 - the rear suspension springs (see **33A, Rear axle components, Rear suspension spring: Removal - Refitting**, page 33A-28) .

REAR AXLE COMPONENTS

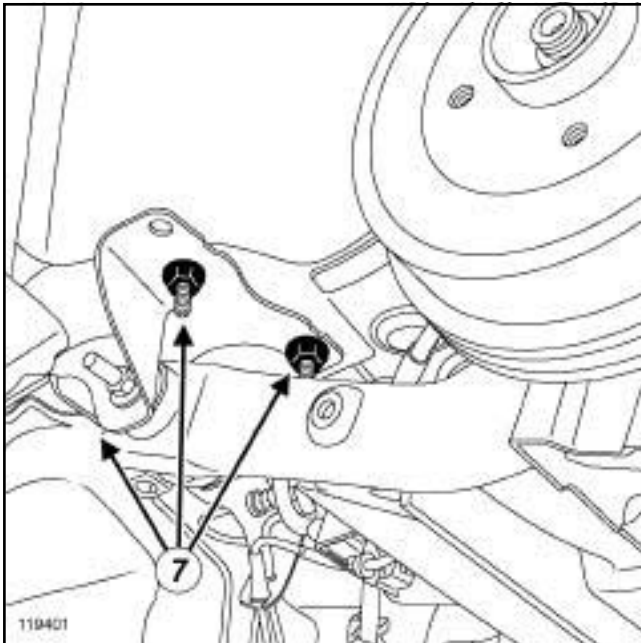
Complete rear axle system: Removal - Refitting

33A



119650

- ☐ Fit the (**Mot. 1390**) under the rear axle.
- ☐ Put a **safety strap(s)** around the rear axle.



119401

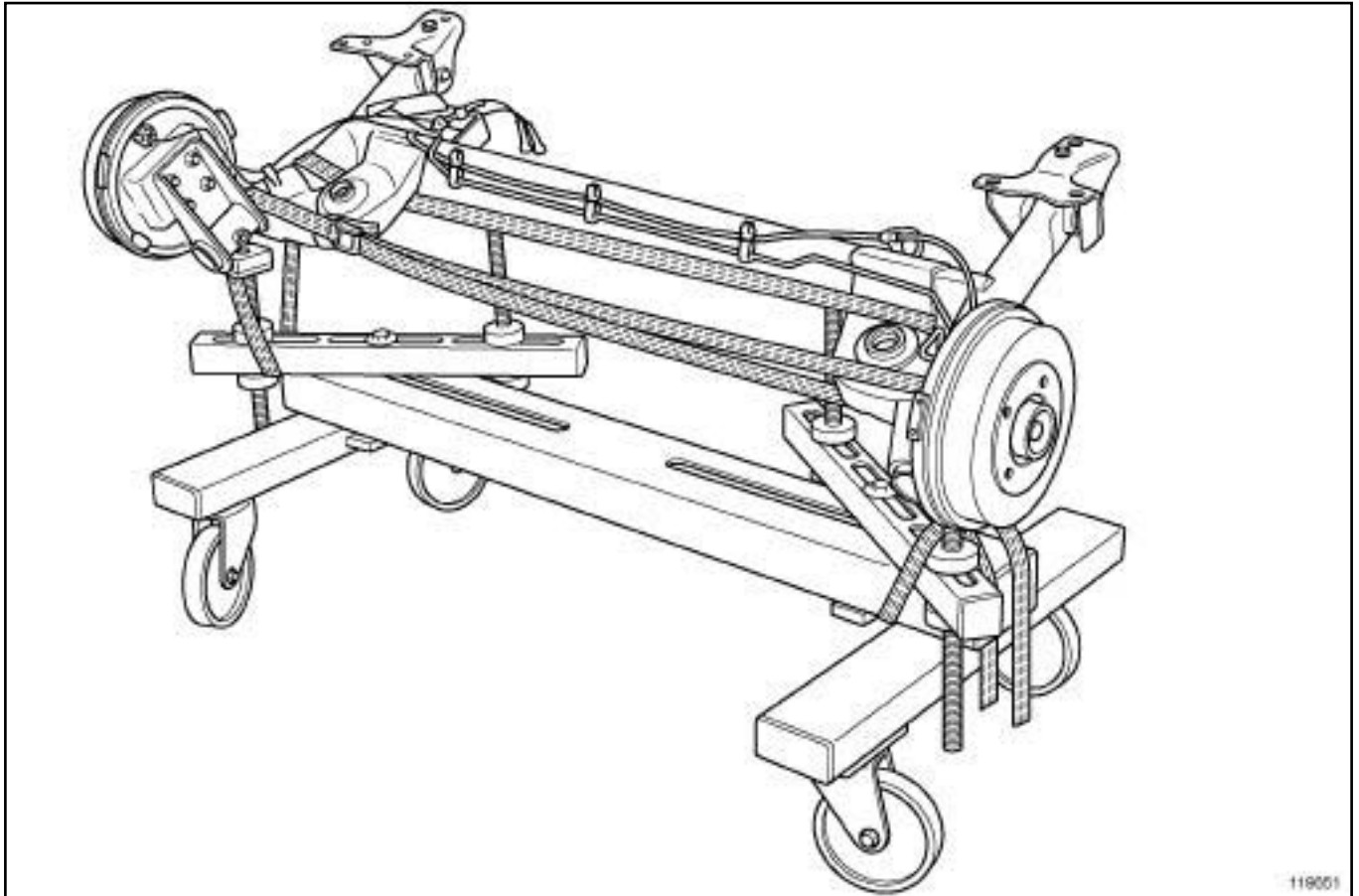
- ☐ Remove the rear axle bearing bolts (7) .
- ☐ Raise the vehicle.

REAR AXLE COMPONENTS

Complete rear axle system: Removal - Refitting

33A

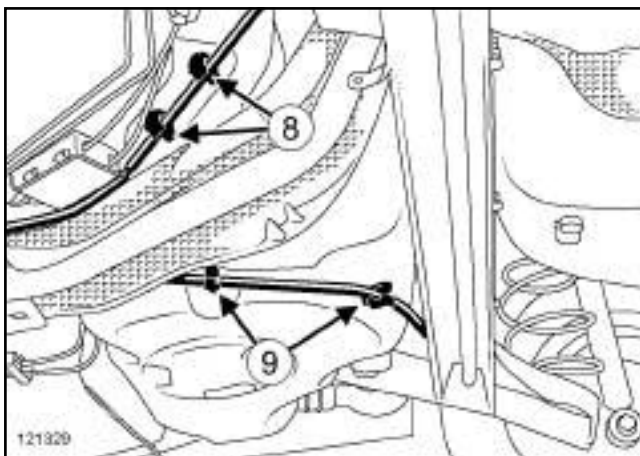
2 - Replacement



119001

119651

- ❑ Remove the rear brake drums (see 33A, **Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) .



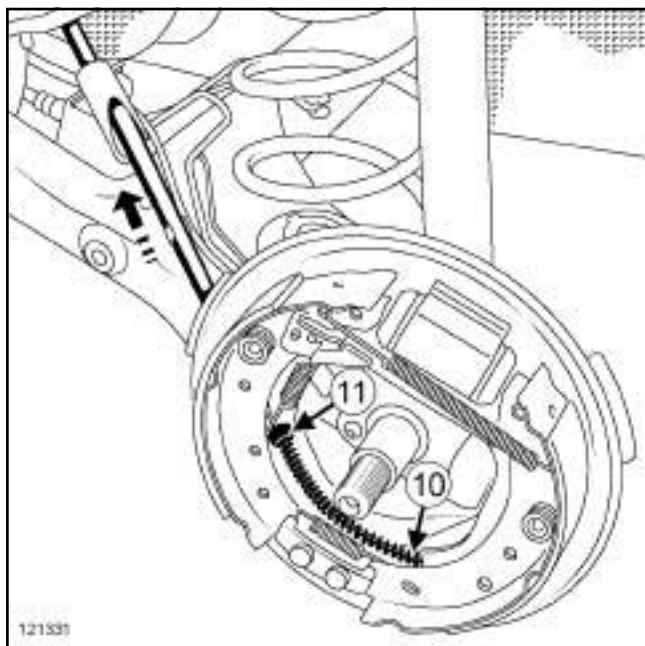
121329

- ❑ Unclip the parking brake cables at (8) and at (9) .

REAR AXLE COMPONENTS

Complete rear axle system: Removal - Refitting

33A



121331

- ☐ Unclip the end of the parking brake cables at (10) .
- ☐ Unclip the cable sleeve stops at (11) and extract the parking brake cables from the rear drum flanges.
- ☐ Remove:
 - the rear brake pads (see **33A, Rear axle components, Rear brake lining: Removal - Refitting**, page **33A-14**) ,
 - the rear brake cylinders (see **33A, Rear axle components, Rear brake cylinder: Removal - Refitting**, page **33A-17**) ,
 - the rear wheel speed sensors (see **38C, Anti-lock braking system, Rear wheel speed sensor: Removal - Refitting**, page **38C-17**) ,
 - the rear rigid brake pipes from the rear axle,
 - the rear rigid brake pipe clips from the rear axle,
 - the rear stub axle carriers (see **33A, Rear axle components, Rear stub axle carrier: Removal - Refitting**, page **33A-32**) ,
 - the rear brake drum flanges,

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Strap the rear axle onto the (**Mot. 1390**).
- ☐ Position the rear axle under the vehicle.

II - REFITTING OPERATION FOR PART CONCERNED

1 - Replacement

☐ Refit:

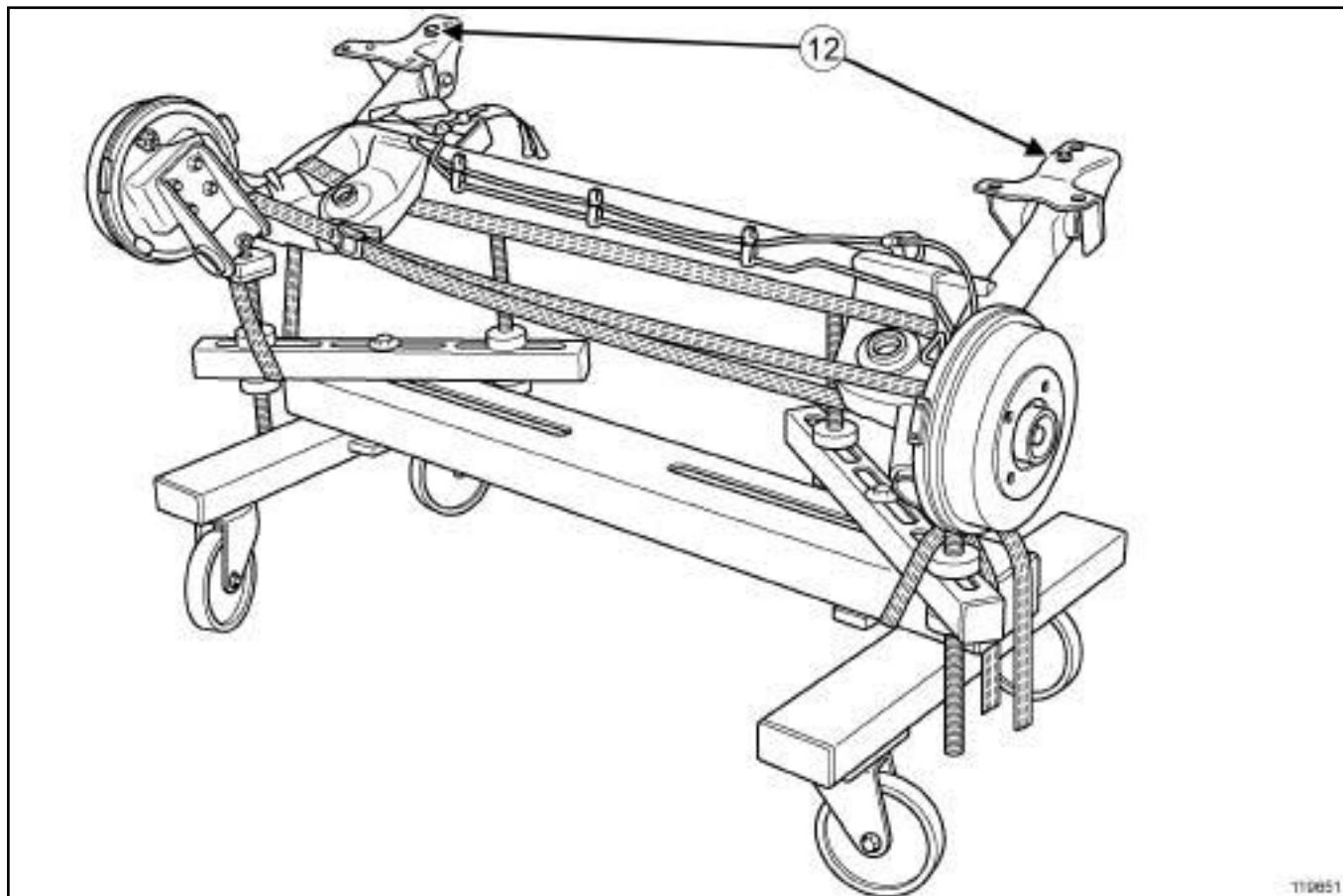
- the rear brake drum flanges,
- the rear stub axle carriers (see **33A, Rear axle components, Rear stub axle carrier: Removal - Refitting**, page **33A-32**) ,
- the rigid brake pipe clips on the rear axle,
- the rear rigid brake pipes from the rear axle,
- the rear wheel speed sensors (see **38C, Anti-lock braking system, Rear wheel speed sensor: Removal - Refitting**, page **38C-17**) ,
- the rear brake cylinders (see **33A, Rear axle components, Rear brake cylinder: Removal - Refitting**, page **33A-17**) ,
- the rear brake pads (see **33A, Rear axle components, Rear brake lining: Removal - Refitting**, page **33A-14**) .
- the parking brake cables (see **37A, Mechanical component controls, Parking brake cables: Removal - Refitting**, page **37A-74**) ,
- the rear brake drums (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page **33A-19**) .

REAR AXLE COMPONENTS

Complete rear axle system: Removal - Refitting

33A

2 - Refitting



119651

- ☐ Lower the lift.
- ☐ Position the bearing centring devices (12) opposite the centring holes.
- ☐ Refit the rear axle bearing bolts.
- ☐ Torque tighten the **rear axle bearing bolts (62 Nm)**.
- ☐ Remove the **safety strap(s)**.
- ☐ Raise the lift.
- ☐ Refit:
 - the rear suspension springs (see **33A, Rear axle components, Rear suspension spring: Removal - Refitting**, page 33A-28) ,
 - the brake hose lower unions.
- ☐ Torque tighten the **brake hose lower unions (17 Nm)**.
- ☐ Connect the ABS sensor connectors.
- ☐ Close the ABS sensor connector protective unit.
- ☐ Clip the parking brake cables onto the reservoir.
- ☐ Position the parking brake cables on the parking brake compensator.
- ☐ Check that the parking brake cable stops are proper-

ly inserted in their housings.

III - FINAL OPERATION.

- ☐ Adjust the parking brake cables (see **37A, Mechanical component controls, Parking brake lever: Removal - Refitting**, page 37A-46) .
- ☐ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Remove the **pedal press**.
- ☐ Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

WHEELS AND TYRES

Wheel: Removal - Refitting

35A

The removal - refitting procedure is the same for all wheels.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Release the parking brake.
- ☐ Remove the trim.
- ☐ Position the wheel so that the valve is at the top.
- ☐ Mark the position of the wheel on the hub.

Note:

This mark is required in order to:

- Note the original position of the wheel on the hub,
- perform the balancing operation.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- ☐ Loosen the wheel bolts with the wheel on the ground.

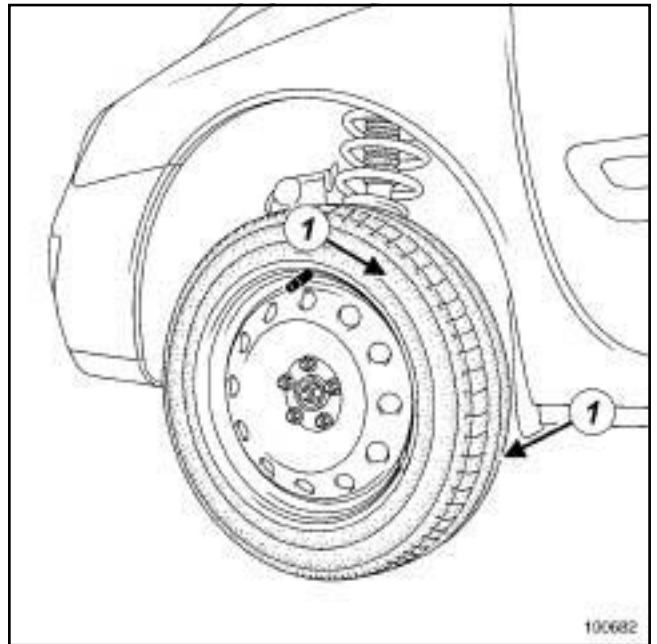
Note:

Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- ☐ Raise the lift.
- ☐ Remove:
 - the wheel bolts,
 - the wheel.

If the wheel cannot be removed after the bolt has been undone:

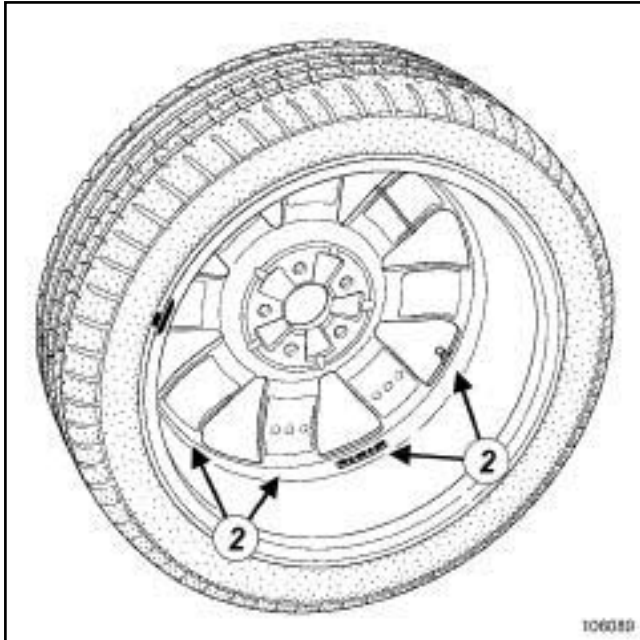
- ☐ Position all the wheel bolts.
- ☐ Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.
- ☐ Undo the wheel bolts by one turn.



100682

- ☐ Strike around the edge of the tyre walls (1) several times using a mallet on the inner and outer surfaces of the wheel to detach the wheel.
- ☐ Remove:
 - the wheel bolts,
 - the wheel.

If this procedure does not work:



- ☐ Strike the inner surface of the wheel (2) using a mallet and a wooden block to detach it.

Note:

Do not strike the surface of the wheel using excessive force as this may damage it.

- ☐ Remove:
 - the wheel bolts,
 - the wheel.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean the hub carrier using a wire brush.

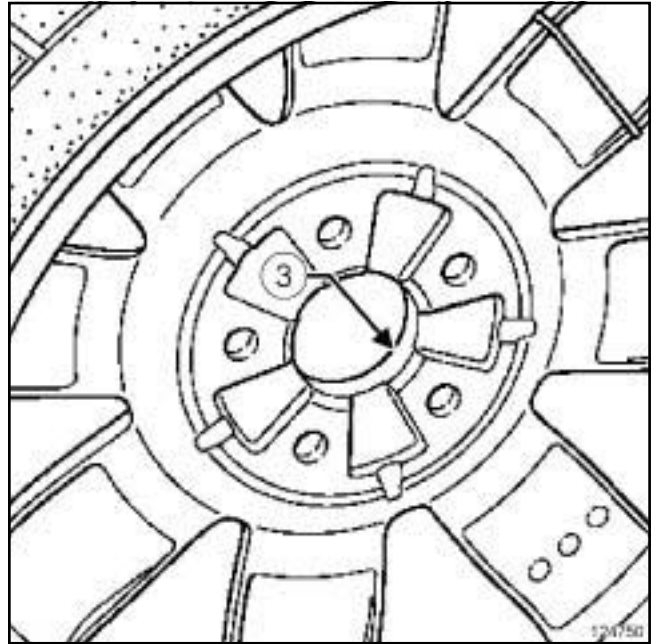
Note:

there are two types of wheel bolts for alloy and steel wheel rims; do not swap them.

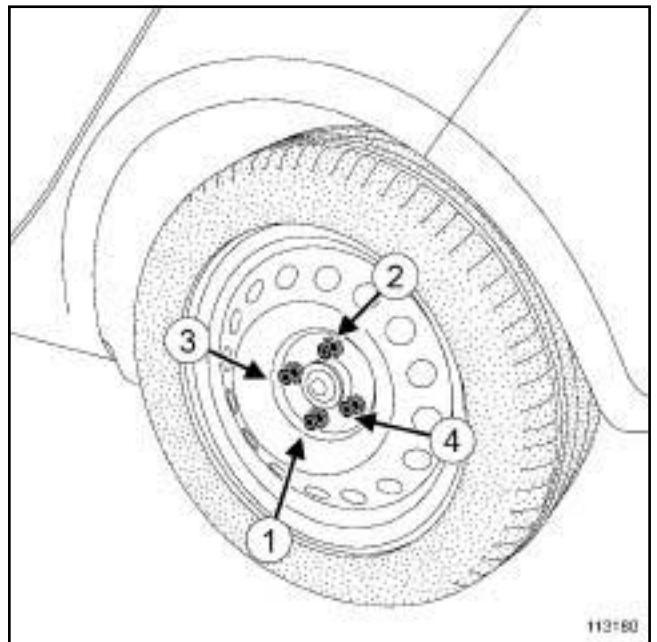
- ☐ Check the condition of the tyre.
- ☐ Do not move or remove the balance weights.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Clean the mating surfaces between the wheel and the hub carrier using a wire brush.



- ☐ Coat the wheel-mating face (3) with **COPPER ANTI-SEIZE AGENT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Align the mark on the wheel with the mark made on the hub when it was removed.
- ☐ Fit the wheel to the vehicle, positioning the valve at the top.
- ☐ Insert the wheel bolts.



- ☐ Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.

WHEELS AND TYRES

Wheel: Removal - Refitting

35A

- ☐ Pretighten the wheel bolts to **30 N.m**, with the wheel suspended, starting with the bolts at the bottom.
- ☐ Rotate the wheel through **180°** to bring the valve into the bottom position.
- ☐ Position the vehicle on its wheels.

Note:

Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- ☐ Torque tighten the wheel bolts in order (see **30A, General information, Front axle system: Tightening torque**, page **30A-27**) (30A, General information).
- ☐ Refit the trim piece.

I - PREREQUISITES FOR WHEEL BALANCING

- ☐ Wheel balancing is a measurement operation.

Several conditions must be met to achieve a reliable result in a single operation.

The wheel balancer must be installed in accordance with the manufacturer's instructions.

It is essential to calibrate the balancer according to the frequency recommended by the manufacturer.

Do not grease the threaded shaft.

Check the condition of the supports, centring components and mountings.

Replace any faulty parts (see manufacturer's instructions).

The wheel and the wheel balancer must be clean.

Driver's perception

- ☐ If the wheels are not correctly balanced this causes the steering wheel and/or the vehicle floor to vibrate.

These vibrations appear between **54 mph (90 km/h)** and **90 mph (150 km/h)**.

II - BALANCING PREPARATION OPERATION

- ☐ Adjust the tyre pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page **35A-10**) .

- ☐ Always carry out a road test for a minimum distance of **1 mile (2 km)** before balancing the wheels, in order to remove any flat spots on the tread caused by the vehicle being immobilised.

- ☐ Actions to be carried out immediately after the test drive:
 - Position the vehicle on a two-post vehicle lift (see **Vehicle: Towing and lifting**) ,
 - raise the vehicle,
 - leave the four wheels hanging free,
 - release the parking brake.



105870

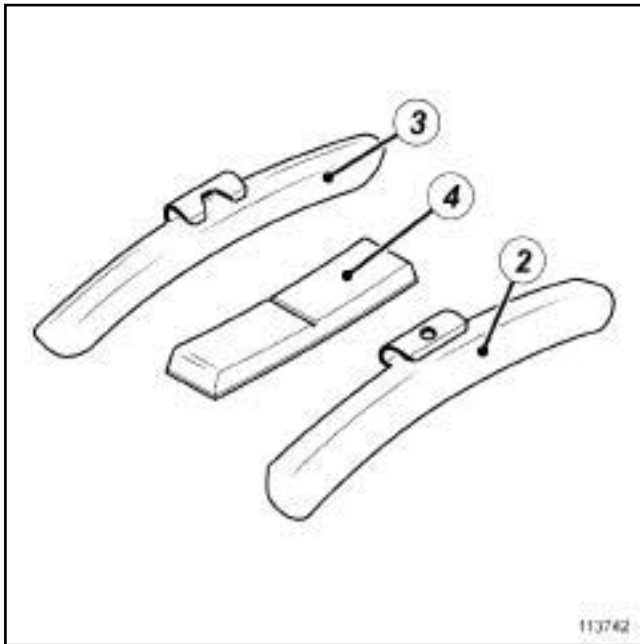
- ☐

Note:

The ring is available from the supplier of the equipment used.

To reproduce the exact vehicle wheel assembly, use a ring (1) of diameter:

- ☐ **60 mm**
- ☐ There are three types of weight:



113742

- (2) Steel wheel with flange
- (3) Alloy wheel with flange
- (4) Alloy wheel without flange

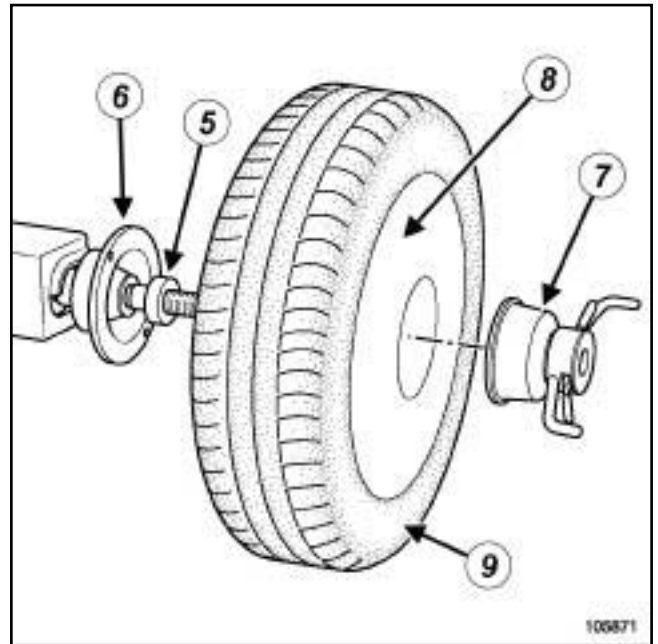
❑ In some countries, the use of lead weights is forbidden; in this case it is recommended to use **ZAMAK** weights instead.

Only use weights provided by the Parts Department.

- ❑ Remove the wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ❑ Always clean the wheel, disc, and hub bearing surfaces.

III - PROCEDURE FOR BALANCING THE WHEEL IN QUESTION

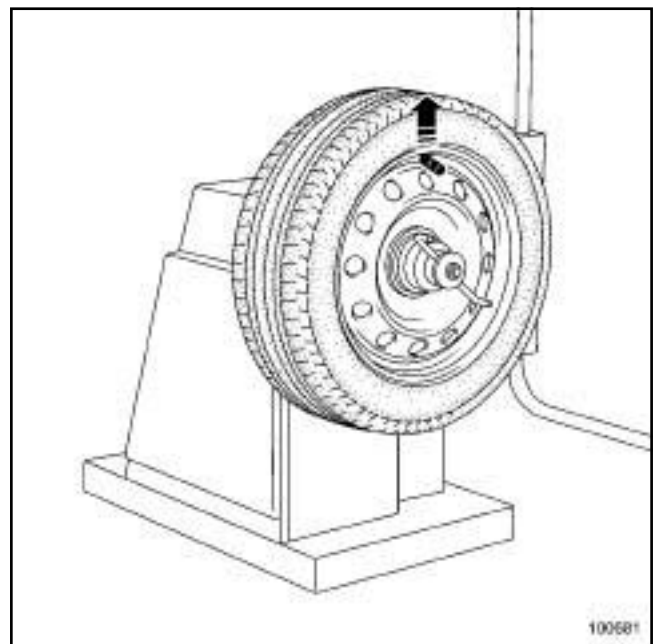
- ❑ Make sure that the wheel balancer bearing surface and all the centring equipment (ring, thrust plate, etc.) are kept clean.
- ❑ Try not to scratch the (alloy) wheel rim with the wheel tightening device.



105871

❑ The wheel is fitted on the wheel balancer as follows:

- (5) ring,
- (6) wheel balancer back-plate,
- (7) wheel tightening device (certain alloy wheels require a device 200 mm in diameter to ensure that the wheel has been correctly tightened),
- (8) outer wheel plane,
- (9) wheel.



100681

- ❑ Place the wheel on the wheel balancer, with the valve at the top, then lock the wheel in place.
- ❑ Remove any stones trapped in the tyre tread.

Wheel: Balancing

- ☐ Enter the specific wheel parameters when starting the wheel balancer.
- ☐ Start the wheel balancer and check the wheel balance, which should be **0 g** on each plane of the wheel.
- ☐ If this is not the case, remove the old wheel balancing weights and repeat the wheel balancing procedure, checking that the wheel balance equals **0** on each wheel plane.

WARNING

To avoid detachment of the balance weights, use only weights which correspond to the vehicle wheel rims.

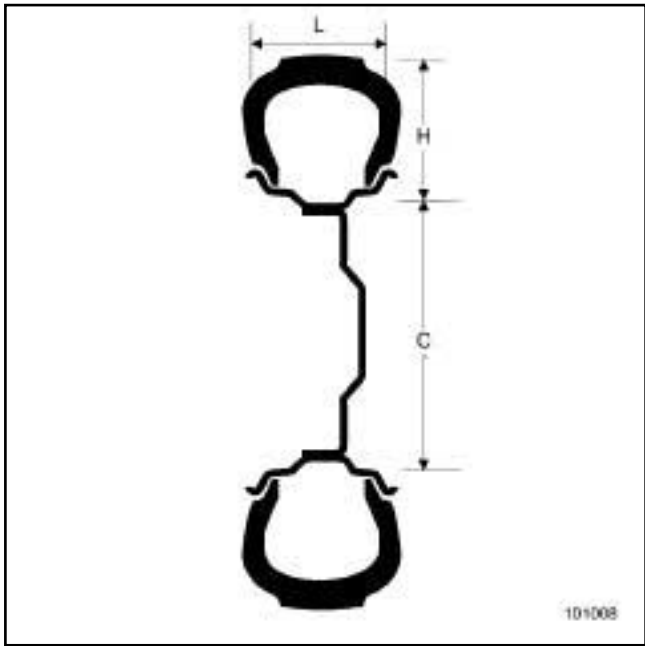
IV - FINAL OPERATION

- ☐ Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

WHEELS AND TYRES

Tyres: Identification

Example of a tyre identification mark: 205/65 R 15 91 V.



Speed code table:

Code	Maximum speed in mph (km/h)
R	170
S	180
T	190
U	200
H	210
V	240
ZR	above 240
W	270
Y	300



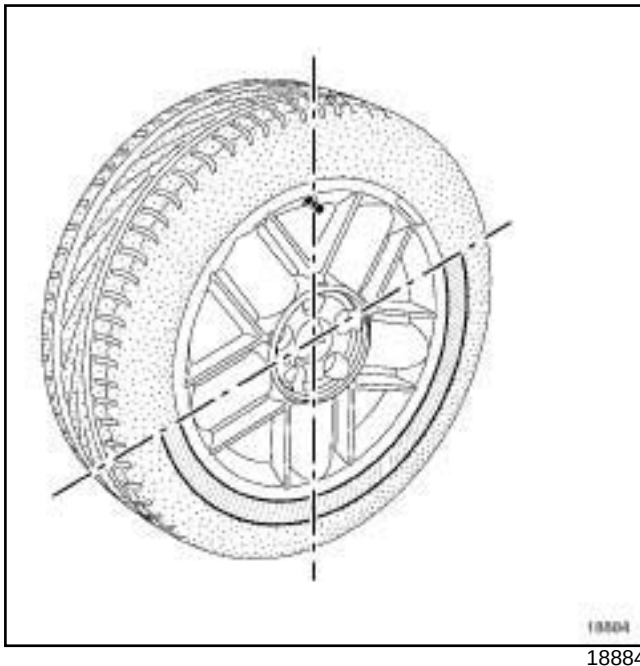
205	Tyre width in mm (L)
65	Height/width ratio
R	Radial structure
15	Internal diameter in inches (c)
91	Load index
V	Speed code

REMOVAL

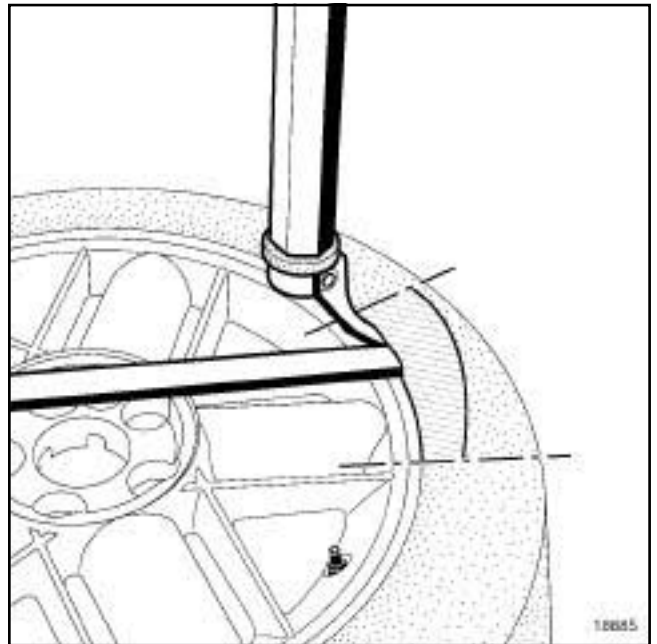
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the wheel in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the balance weights,
 - the valve mechanism.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Detach:
 - the bead from the outside of the tyre, starting with the side opposite the valve,
 - the bead from the inside of the tyre.



- ☐ Position the tyre lever approximately **15 cm** from the valve on the outside of the wheel rim in order to remove the exterior bead from the tyre.
- ☐ Remove the exterior bead of the tyre, finishing at the valve.
- ☐ Position the tyre lever approximately **15 cm** from the valve on the outside of the wheel rim in order to remove the bead from inside the tyre.
- ☐ Remove the interior bead of the tyre, finishing at the valve.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Tyre valve**
- ☐ Lubricate the two tyre beads correctly using the **TYRE PASTE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Engage the lower tyre bead approximately **15 cm** after the valve.
- ☐ Finish fitting the tyre at the valve.
- ☐ Fit the exterior bead approximately **15 cm** after the valve using the tyre lever.
- ☐ Inflate the tyre to **3.5 bar** to press the tyre beads against the wheel rim.

III - FINAL OPERATION

- ☐ Refit the valve mechanism.
- ☐ Inflate the tyre to the recommended pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page **35A-10**) .

Note:

It is not necessary to drive the vehicle before and after a new wheel is balanced.

- ☐ Balance the wheel (see **35A, Wheels and tyres, Wheel: Balancing**, page **35A-4**) .
- ☐ Refit the wheel in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

WHEELS AND TYRES

Tyre pressure: Identification

35A

INFLATION

WARNING

If checking the pressure when hot, increase the tyre inflation pressure by **0.2** to **0.3** bar above the recommended pressure.

Engine	Wheel rim	Tyre	Tyre inflation pressure when cold (bar)		
			Front	Rear	emergency spare wheel
D4F D7F	5.5 J 14	165/65 R14 79T	2.2	2.0	2.2
		175/65 R14 82 T			
	6 J 15	185/55 R15 82H			
K9K	5.5 J 14	165/65 R14 79T	2.3	2.1	2.3
		175/65 R14 82 T	2.2	2.0	2.2
	6 J 15	185/55 R15 82H			

The pressure values given are « motorway » pressures.

IDENTIFICATION

1 - Marking

There are two types of identification marking on the wheel rims:

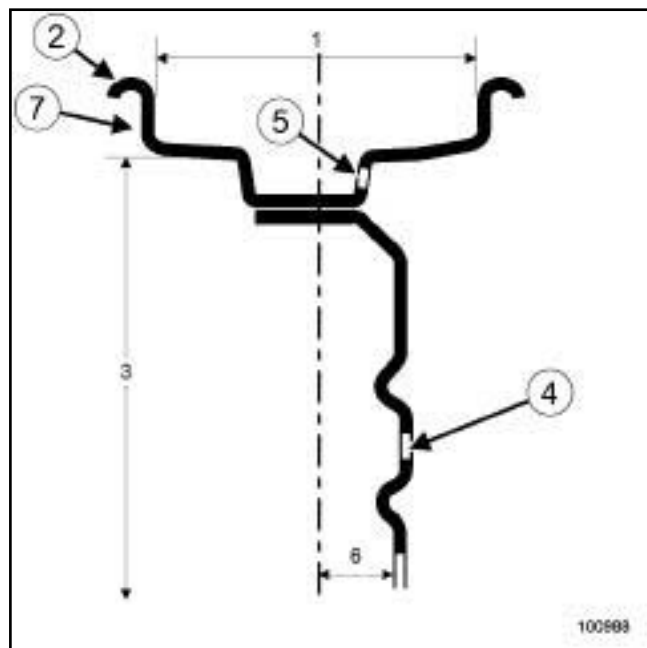
- engraved marking for steel wheel rims,
- cast marking for alloy wheel rims.

The marking gives the main dimensional specifications of the wheel rim.

This marking may be:

- complete, for example **6 J 15 5 CH 36**,
- simplified, for example **6 J 15**.

	Wheel type	6 J 15
1	Width (in inches)	6
2	Rim edge profile	J
3	Nominal diameter (in inches)	15
4	Number of holes	5
5	Anchorage profile of the tyre	CH
6	Offset (in mm)	36



There are 3 types of wheel rim edges (2) :

- those with two flat edges,
- those with two raised edges,
- those with one flat edge and one raised edge.

2 - Installation diameter for the wheel bolts

The wheel bolts are positioned with a pitch circle diameter of:

- 5 holes: **108 mm**,
- 4 holes: **100 mm**.

3 - Rim run-out

The maximum run-out is measured at the wheel rim edge (7) .

Steel wheel rims: **0.8 mm**

Alloy wheel rims: **0.3 mm**

4 - Out-of-roundness

The maximum out-of-round value is measured on the tyre bead bearing surface.

0.7 mm

STEERING ASSEMBLY

Steering box: Removal - Refitting

36A

Tightening torques

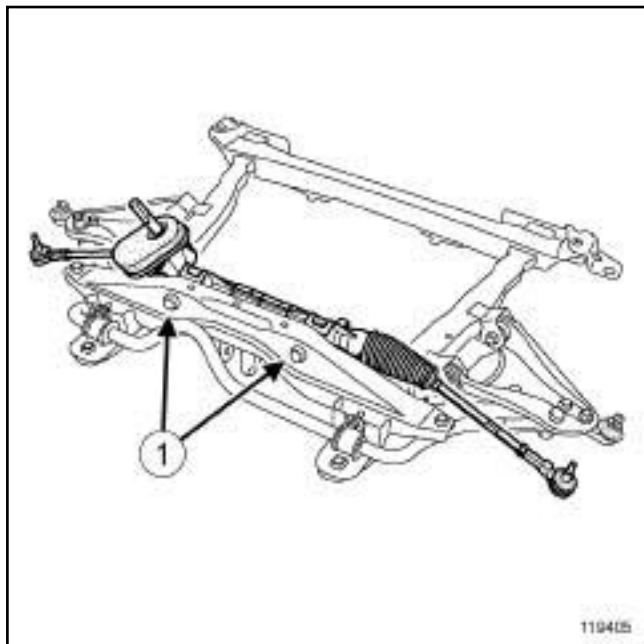
power-assisted steering box bolts	105 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Remove:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-43) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119405

- ☐ Remove:
 - the power-assisted steering box bolts (1) ,
 - the power-assisted steering box.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the power-assisted steering box,
 - the power-assisted steering box bolts.
- ☐ Torque tighten the **power-assisted steering box bolts (105 Nm)**.

II - FINAL OPERATION.

- ☐ Refit:
 - the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-43) ,
 - the wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-23) .
- ☐ If necessary, adjust the axle assemblies' geometry (see **30A, General information, Front axle system: Adjustment**, page 30A-36) .

STEERING ASSEMBLY

Track rod: Removal - Refitting

36A

Special tooling required

Tav. 476 Ball joint extractor.

Tightening torques

track rod ball joint nut **37 N.m**

wheel alignment adjusting lock nut **53 N.m**

IMPORTANT

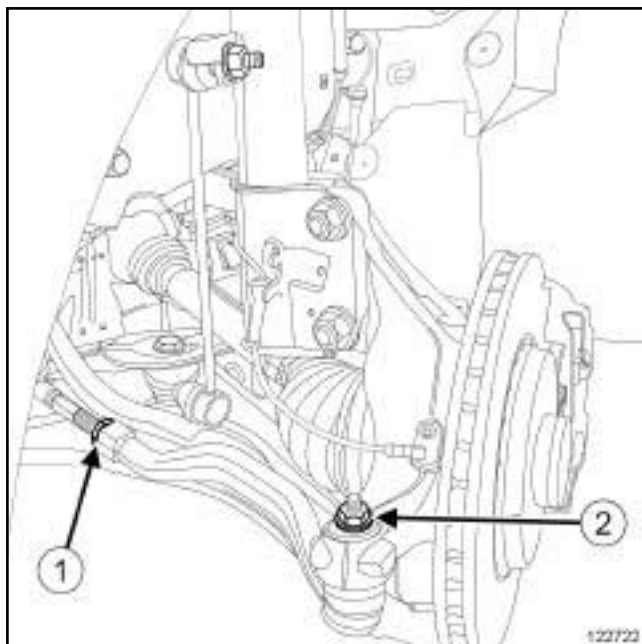
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Steering: Precautions for the repair**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

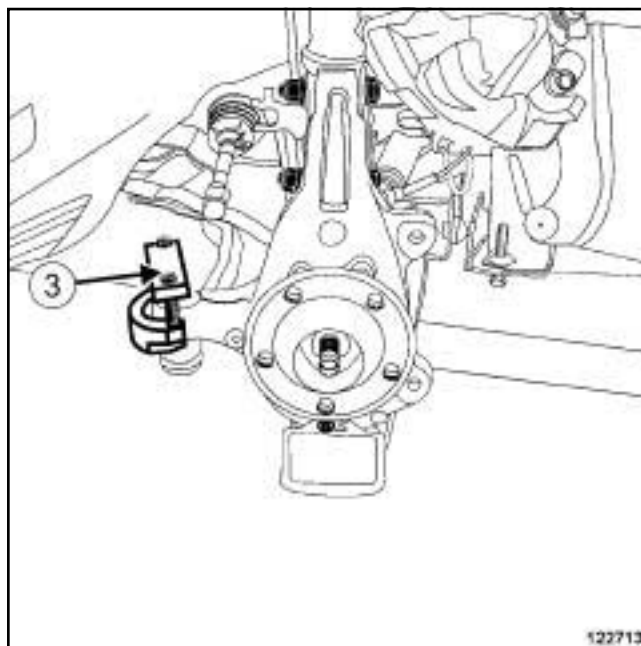
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122722

- ☐ Loosen the wheel alignment adjustment lock nut (1).
- ☐ Remove the track rod ball joint nut (2).



122713

- ☐ Extract the ball joint using (3) (**Tav. 476**).
- ☐ Unscrew the track rod anti-clockwise and note the number of turns for refitting.
- ☐ Remove the track rod.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Screw the track rod back in place by the number of turns noted during removal.
- ☐ Fit the track rod end in the hub carrier.
- ☐ Refit the track rod ball joint nut.
- ☐ Tighten to torque:
 - the **track rod ball joint nut (37 N.m)**,
 - the **wheel alignment adjusting lock nut (53 N.m)**.

II - FINAL OPERATION

- ☐ Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).
- ☐ Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-23).
- ☐ If necessary, adjust the geometry of the axle assemblies (see **30A, General information, Front axle system: Adjustment**, page 30A-36).

STEERING ASSEMBLY
Track rod: Removal - Refitting

36A



STEERING ASSEMBLY

Axial ball joint linkage: Removal - Refitting

36A

Special tooling required

Dir. 1306-03	Steering rack locking tool.
Dir. 1305-01	Tool for removal - refitting of the axial ball joint (diameter 35 mm to 41 mm).

Tightening torques

axial ball joint	50 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

☐

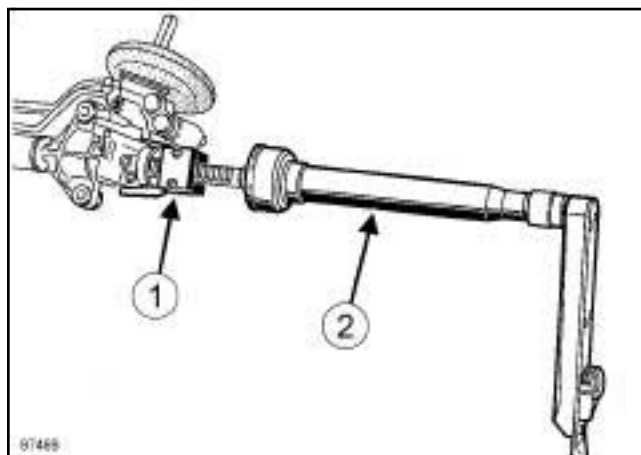
Note:

It is necessary to lock the airbag computer in order to unlock the steering column.

- ☐ Apply the before repair procedure using the diagnostic tool:
 - connect the diagnostic tool,
 - select the airbag computer,
 - go to repair mode,
 - apply the "before repair procedure".
- ☐ Remove:
 - the front wheel on the side in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-2**) ,
 - the steering box gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-16**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

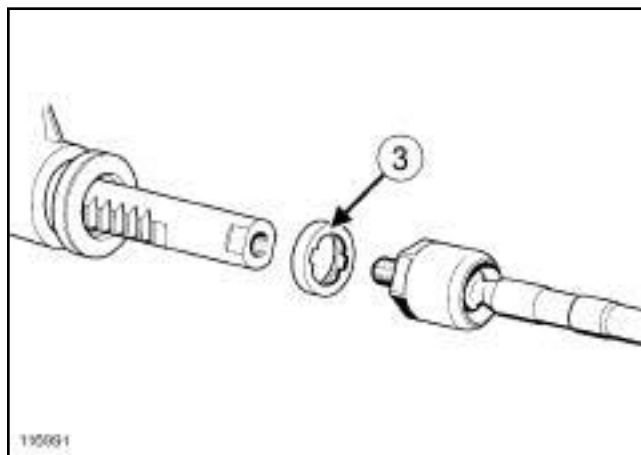
- ☐ Lock the wheels to disengage the rod teeth on the valve side.



- ☐ Set up the (**Dir. 1306-03**) (1) on the steering rack, at the pinion end.
- ☐ Unlock the axial ball joint using tool (**Dir. 1305-01**) (2) .
- ☐ Remove the axial ball joint.

REFITTING

I - REFITTING PREPARATION OPERATION



- ☐ Always replace the following after each removal operation:
 - the limiter (3) ,
 - the steering box gaiter.

Note:

Before refitting the new track rods, insert a **12 x 100** tap into the threading at the ends of the steering rack in order to remove any trace of **FRENETANCHE** from the original fitting and so prevent seizure of the threaded sections on refitting.

STEERING ASSEMBLY

Axial ball joint linkage: Removal - Refitting

36A

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit on the steering rack:
 - the limiter,
 - the axial ball joint whose threading has been coated with **HIGH RESISTANCE THREAD LOCK**.
- ☐ Torque tighten the **axial ball joint (50 Nm)** using the **(Dir. 1305-01) (2)** .
- ☐ Remove the **(Dir. 1306-03) (1)** from the steering rack on the pinion end.

III - FINAL OPERATION

- ☐ Refit:
 - the steering box gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-16**) ,
 - the track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-2**) ,
 - the front wheel on the side in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

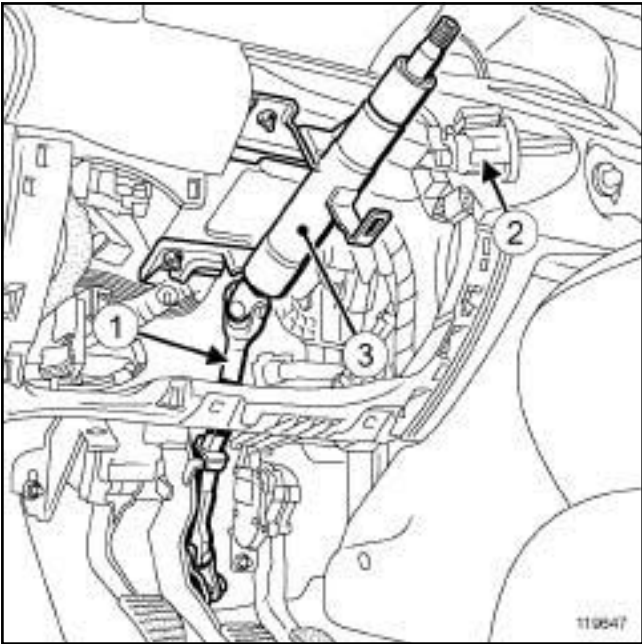
☐

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

- ☐ Apply the before repair procedure using the diagnostic tool:
 - connect the diagnostic tool,
 - select the airbag computer,
 - go to repair mode,
 - apply the "after repair procedure".
- ☐ Check the settings of the axle assemblies (see **30A, General information, Front axle system: Adjustment**, page **30A-36**) .
- ☐ If necessary, adjust the geometry of the axle assemblies (see **30A, General information, Front axle system: Adjustment**, page **30A-36**) .

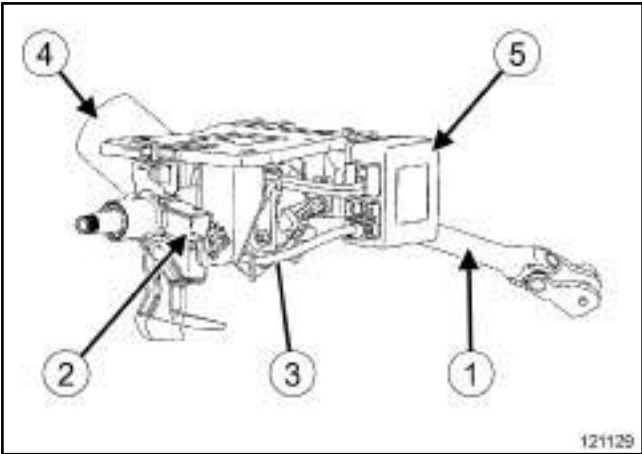
MANUAL STEERING



119647

- (1) intermediate shaft
- (2) key-operated switch
- (3) the steering column

POWER ASSISTED STEERING



121129

- (1) intermediate shaft
- (2) location of key-operated switch
- (3) the steering column
- (4) Power-assisted steering electric motor
- (5) Power-assisted steering computer

STEERING ASSEMBLY

Steering column: Removal - Refitting

36A

LEFT-HAND DRIVE

Equipment required

Diagnostic tool

Tightening torques

bolt connecting the steering column to the intermediate shaft	30 Nm

steering column bolts	21 Nm

universal joint bolt	24 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Unlock the steering column.

IMPORTANT

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

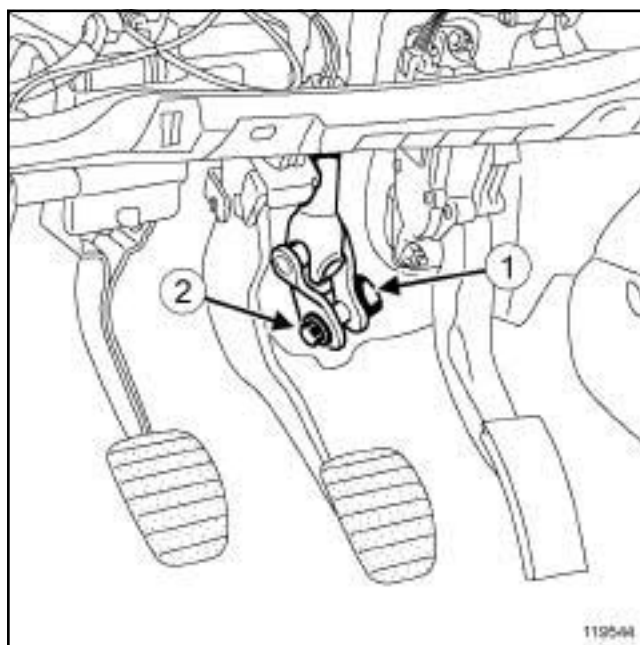
IMPORTANT

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

- ☐ Lock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags - Pretensioners).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Set the wheels straight ahead.
- ☐ Remove:
 - the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags - Pretensioners),
 - the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page **36A-23**),

- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Steering column switch assembly),
- the immobiliser antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser).

II - REMOVAL OPERATION FOR PART CONCERNED



119544

- ☐ Remove the cover from the universal joint (1) (do not keep).
- ☐ Remove:
 - the universal joint bolt (2) (do not keep),
 - the universal joint nut (do not keep).

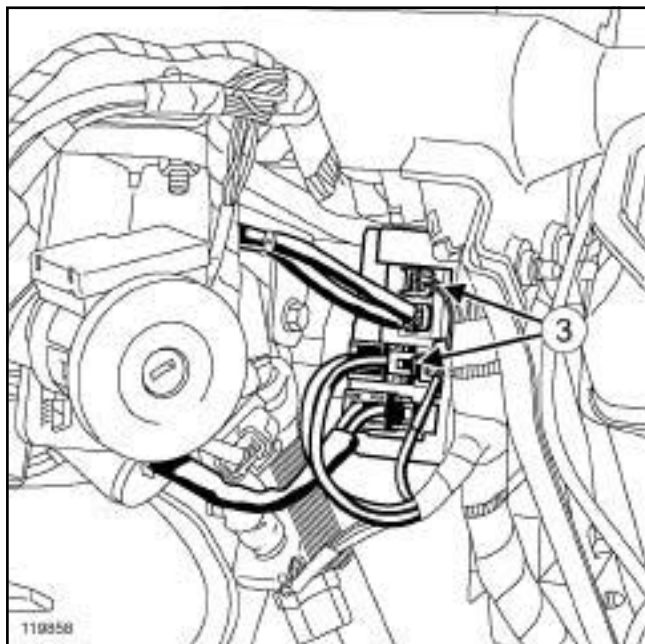
STEERING ASSEMBLY

Steering column: Removal - Refitting

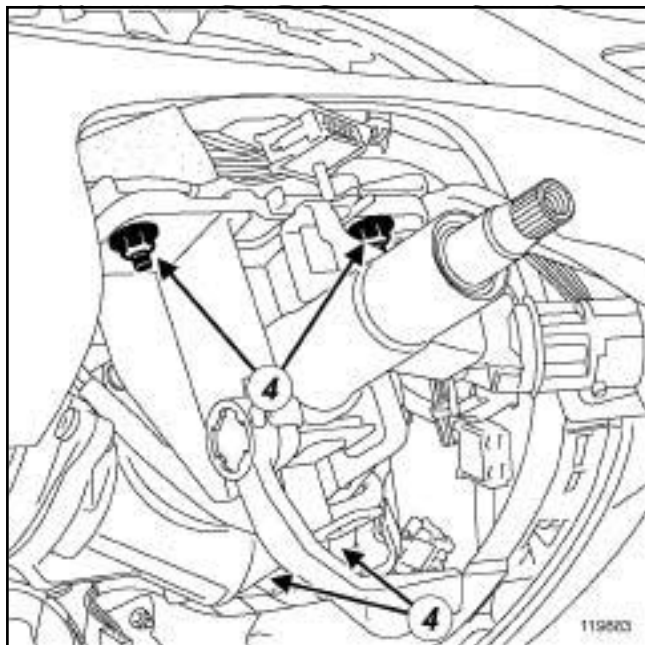
36A

LEFT-HAND DRIVE

POWER ASSISTED STEERING



119858

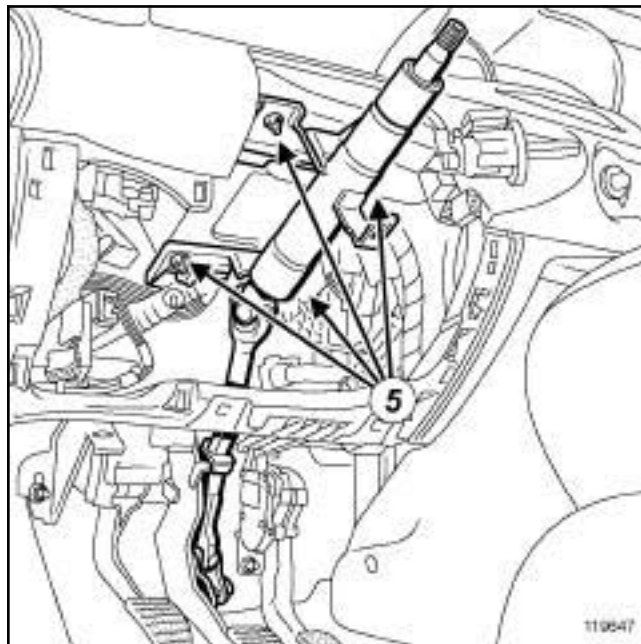


119883

- ☐ Disconnect the power-assisted steering computer connectors (3) .
- ☐ Remove:
 - the steering column bolts (4) ,
 - the steering column with the intermediate shaft,
 - the bolt connecting the steering column to the intermediate shaft,

- the steering column intermediate shaft.

MANUAL STEERING



119647

- ☐ Remove:
 - the steering column bolts (5) ,
 - the steering column with the intermediate shaft,

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Always replace:
 - the steering wheel bolt after each removal,
 - the universal joint bolt and cam nut after each removal.

STEERING ASSEMBLY

Steering column: Removal - Refitting

36A

LEFT-HAND DRIVE

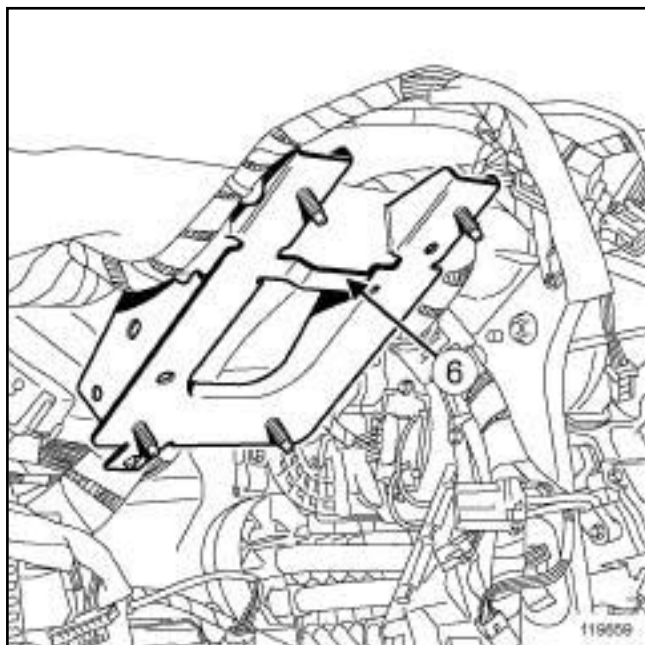
II - REFITTING OPERATION FOR PART CONCERNED

POWER ASSISTED STEERING

❑ Refit:

- the intermediate shaft to the steering column,
- the bolt connecting the steering column to the intermediate shaft.

❑ Torque tighten the **bolt connecting the steering column to the intermediate shaft (30 Nm)**.



119859

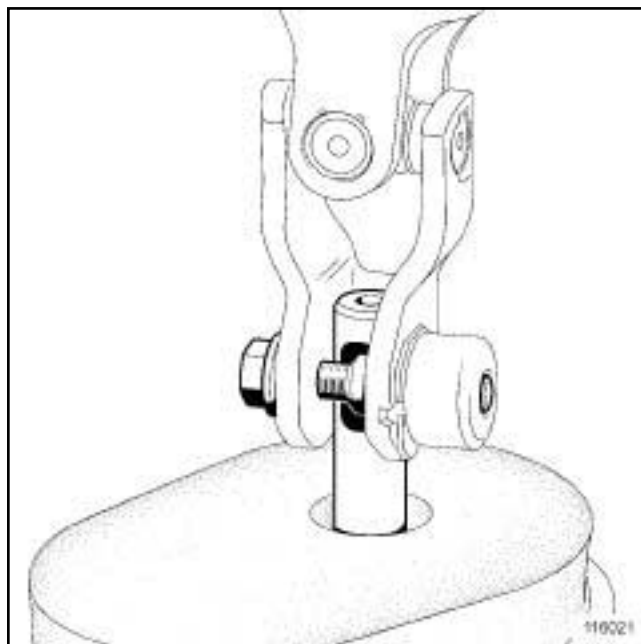
❑ Refit:

- the steering column with the intermediate shaft on the cross member using the retainer (6) ,
- the bolts on the steering column.

❑ Torque tighten the **steering column bolts (21 Nm)**.

POWER ASSISTED STEERING

❑ Connect the power-assisted steering computer connectors.



116021

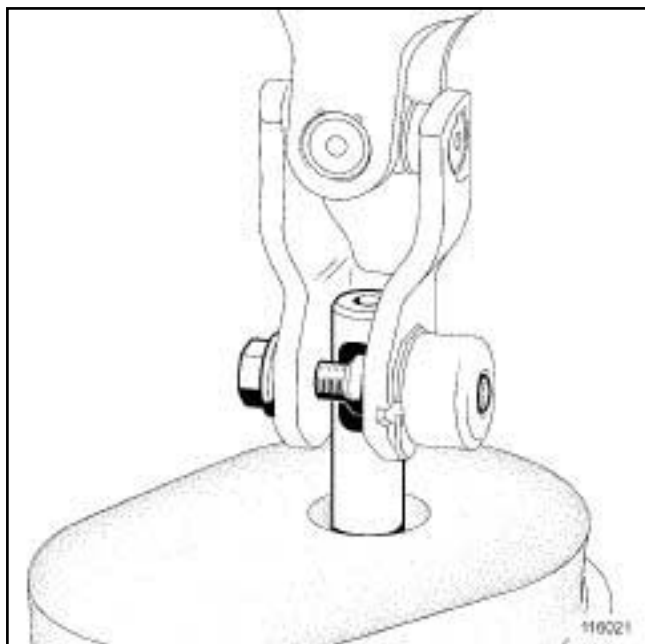
- ❑ Observe the direction of fitting for the universal joint cam nut and bolt.
- ❑ fit the universal joint to the steering box.
- ❑ Refit the universal joint cam nut and bolt.
- ❑ Position the universal joint cam nut and bolt.
- ❑ Immobilise the cam nut in its housing (on the universal joint).
- ❑ Pretighten the universal joint cam nut and bolt.

STEERING ASSEMBLY

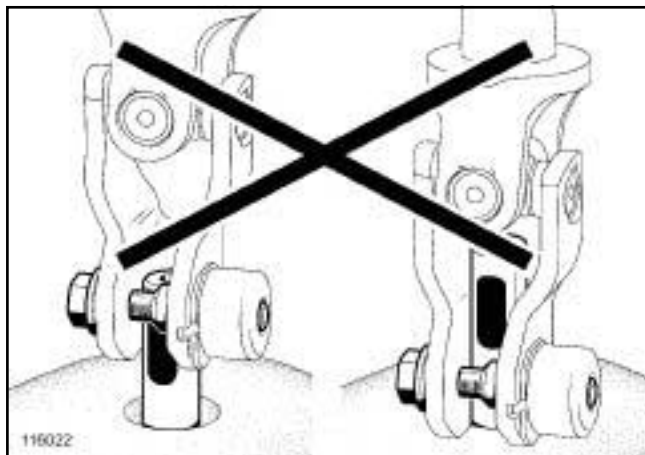
Steering column: Removal - Refitting

36A

LEFT-HAND DRIVE



116021



116022

- ☐ Check that the universal joint is in the correct position.
- ☐ Torque tighten the **universal joint bolt (24 Nm)**.

III - FINAL OPERATION.

- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Refit:
 - the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser),
 - the immobiliser antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),

- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Steering column switch assembly),
 - the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page 36A-23),
 - the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags - Pretensioners).
- ☐ Unlock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags - Pretensioners).

STEERING ASSEMBLY

Steering column: Removal - Refitting

36A

RIGHT-HAND DRIVE

Equipment required

Diagnostic tool

Tightening torques

bolt connecting the steering column and the intermediate shaft	30 Nm

steering column bolts	21 Nm

universal joint bolt	24 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Unlock the steering column.

☐

IMPORTANT

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

IMPORTANT

Never handle the pyrotechnic systems (pretensioners or airbags) near a source of heat or naked flame - they may be triggered.

Lock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags and seat belt pretensioners).

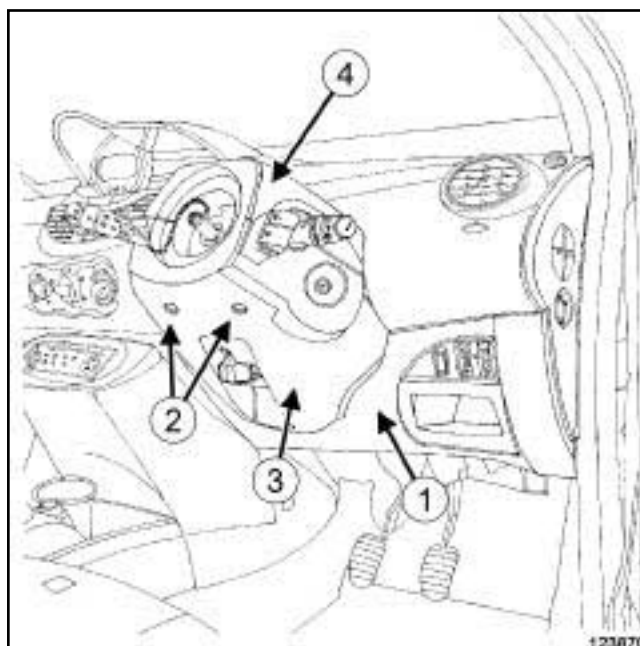
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐ Remove:

- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags and pretensioners),
- the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page **36A-23**).

ENGINE REV COUNTER

- ☐ Remove the rev counter (see **Rev counter: Removal - Refitting**) (MR 411, 83A, Instrument panel).



123870

- ☐ Remove:

- the dashboard lower cover (1),
- the bolts (2) from the steering wheel lower cover,
- the steering wheel lower cover (3),
- the steering wheel upper cover (4),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Control - Signals),
- the antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser).

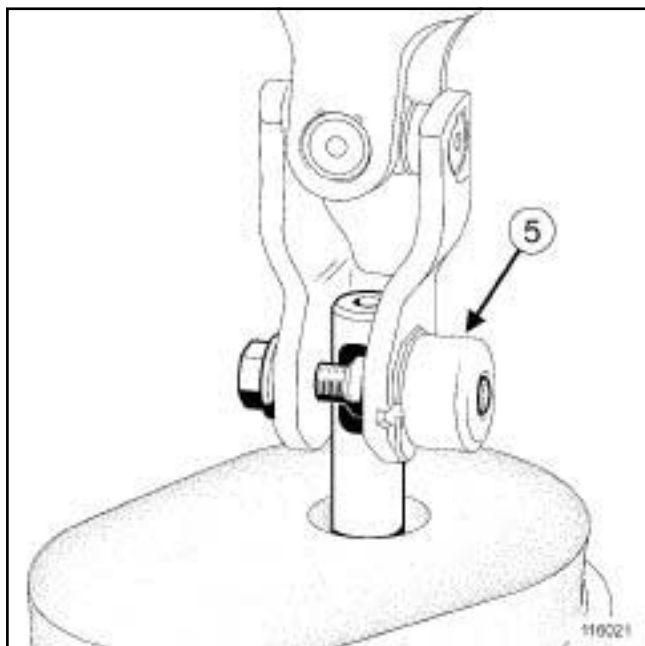
STEERING ASSEMBLY

Steering column: Removal - Refitting

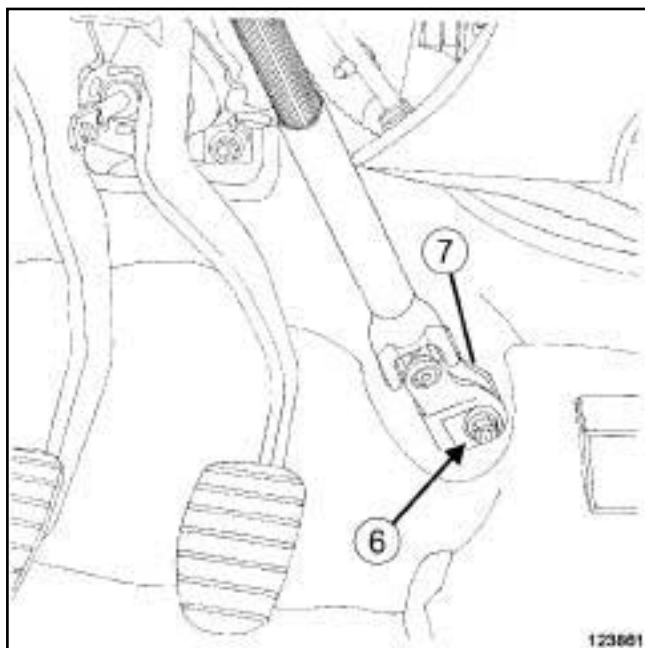
36A

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



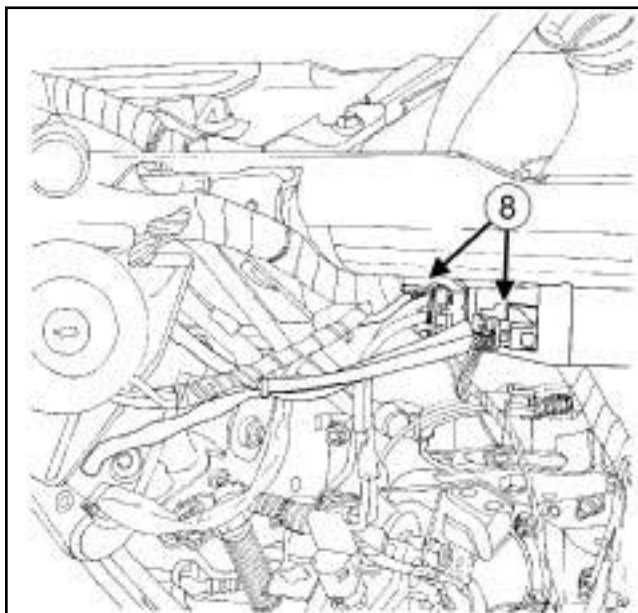
116021



123861

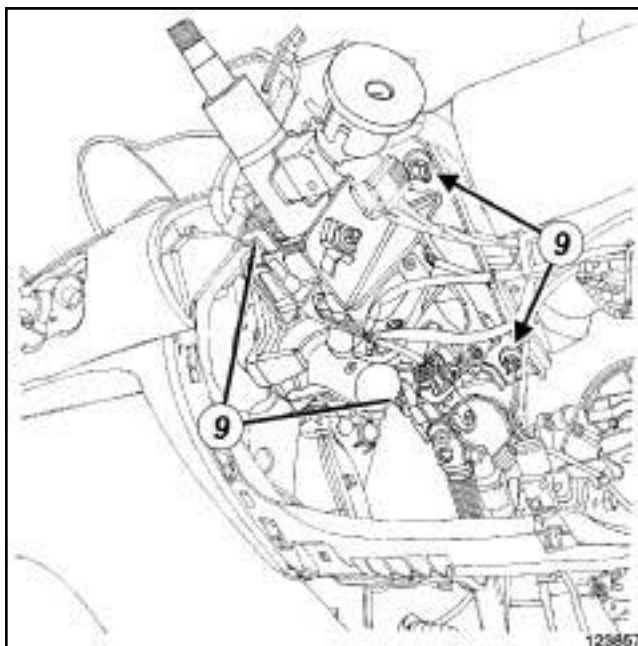
- ☐ Remove the universal joint cover (5) (do not keep).
- ☐ Set the wheels straight ahead.
- ☐ Remove:
 - the universal joint bolt (6) (do not keep),
 - the universal joint nut (7) (do not keep).

POWER ASSISTED STEERING



123858

- ☐ Disconnect the power-assisted steering computer connectors (8) .



123857

- ☐ Remove:
 - the steering column bolts (9) ,
 - the steering column with the intermediate shaft,

STEERING ASSEMBLY

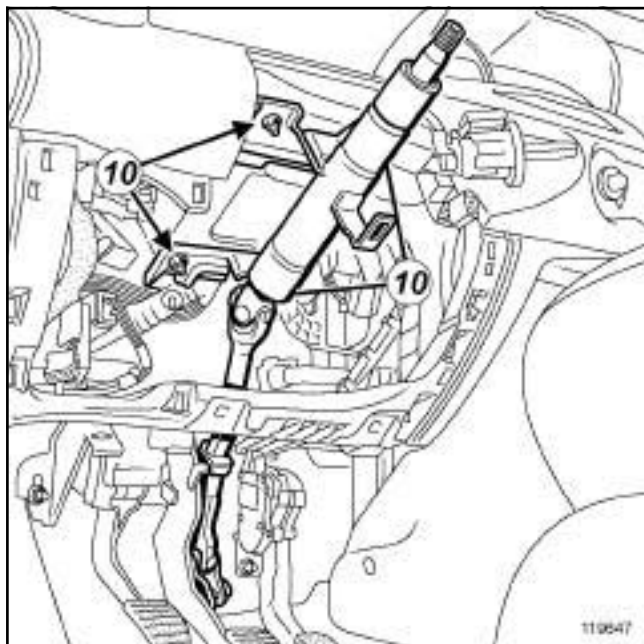
Steering column: Removal - Refitting

36A

RIGHT-HAND DRIVE

- the bolt connecting the steering column and the intermediate shaft,
- the steering column intermediate shaft.

MANUAL STEERING



119647

Remove:

- the steering column bolts (10) ,
- the steering column with the intermediate shaft,

REFITTING

I - REMOVAL PREPARATION OPERATION

Always replace:

- the steering wheel bolt,
- the universal joint cam nut and bolt.

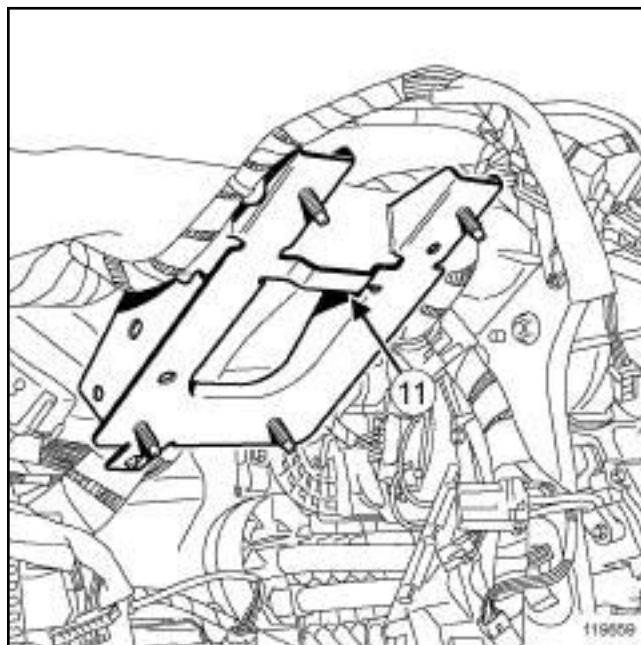
II - REFITTING OPERATION FOR PART CONCERNED

POWER ASSISTED STEERING

Refit:

- the intermediate shaft of the steering column,
- the bolt connecting the steering column and the intermediate shaft.

- Torque tighten the **bolt connecting the steering column and the intermediate shaft (30 Nm)**.



119859

Refit:

- the steering column with the intermediate shaft on the cross member using the retainer (11) ,
- the bolts on the steering column.

- Torque tighten the **steering column bolts (21 Nm)**.

POWER ASSISTED STEERING

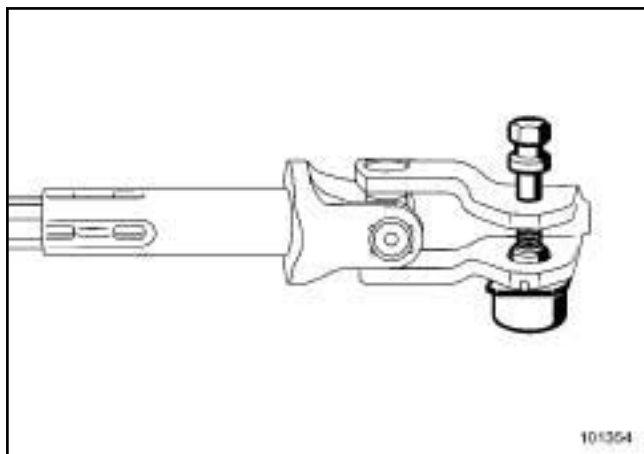
- Connect the power-assisted steering computer connectors.

STEERING ASSEMBLY

Steering column: Removal - Refitting

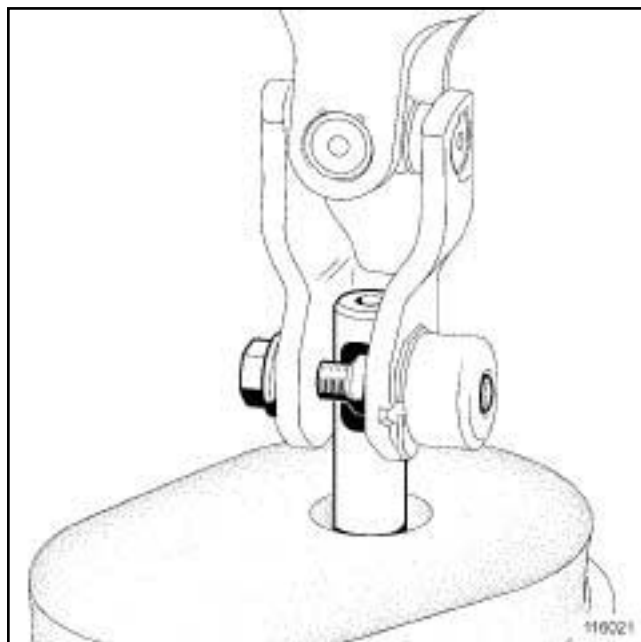
36A

RIGHT-HAND DRIVE

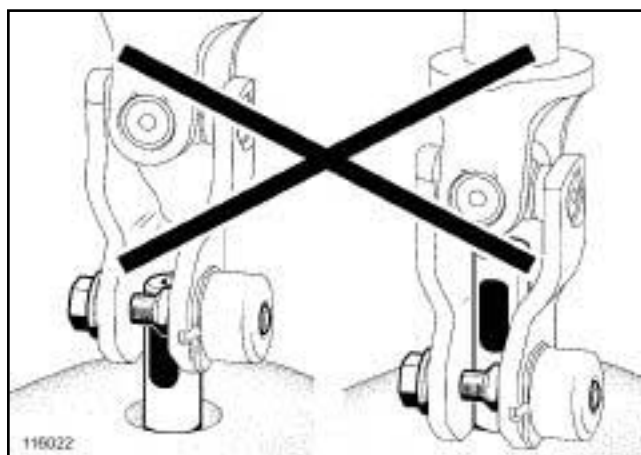


101354

- ☐ Observe the direction of fitting for the universal joint cam nut and bolt.
- ☐ fit the universal joint to the steering box.
- ☐ Refit the universal joint cam nut and bolt.
- ☐ Position the universal joint cam nut and bolt.
- ☐ Immobilise the cam nut in its housing (on the universal joint).
- ☐ Pretighten the universal joint cam nut and bolt.



116021



116022

- ☐ Check that the universal joint is in the correct position.
- ☐ Torque tighten the **universal joint bolt (24 Nm)**.

III - FINAL OPERATION.

- ☐ Refit:
 - the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser),
 - the antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
 - the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Control - Signals),
 - the steering wheel upper cover,

STEERING ASSEMBLY

Steering column: Removal - Refitting

36A

RIGHT-HAND DRIVE

- the steering wheel lower cover,
- the steering wheel lower cover bolts,
- the dashboard lower cover.

ENGINE REV COUNTER

- ☐ Refit the rev counter (see **Rev counter: Removal - Refitting**) (MR 411, 83A, Instrument panel).

- ☐ Refit:

- the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page 36A-23) ,
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags and pretensioners).

- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

- ☐

IMPORTANT

To avoid a fault with or even triggering of pyrotechnic components (airbags or pretensioners), check the airbag computer using the diagnostic tool.

Unlock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags and pretensioners).

STEERING ASSEMBLY

Steering box gaiter: Removal - Refitting

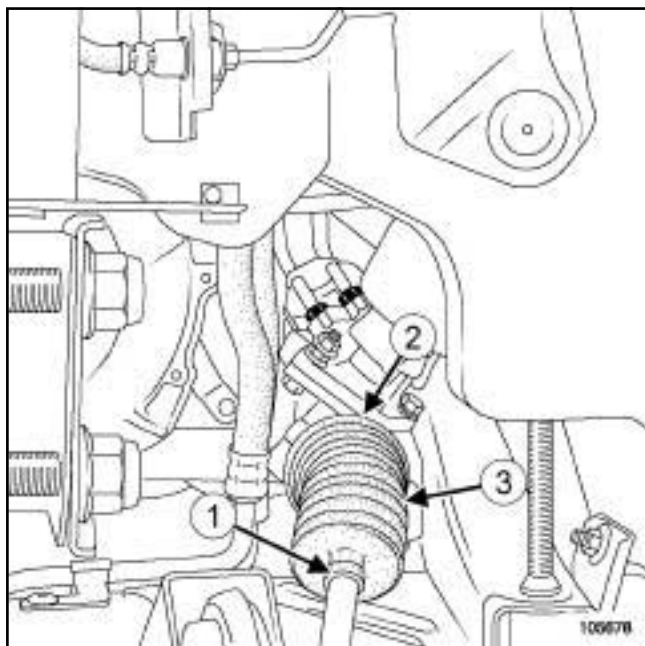
36A

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the track rod, (see **36A, Steering assembly, Track rod: Removal - Refitting**, page 36A-2)
 - the wheel alignment adjusting lock nut.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐

Note:

When removing the steering gaiter, blast the gaiter surfaces with compressed air to eliminate any impurities that could enter the steering box.

- ☐ Remove the gaiter retaining clip (1)
- ☐ Cut the gaiter retaining clip (2) .
- ☐ Remove the gaiter (3) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the steering box gaiter,
 - the retaining clips.
- ☐ Clean the contact surfaces between the steering box and the gaiter using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) .
- ☐ Coat the gaiter bearing face on the axial ball joint with **SILICONE LUBRICANT** (see **Vehicle: Parts and consumables for the repair**) to prevent the gaiter from twisting.

Note:

Be sure to centre the steering to ensure the air in the gaiters is equalised.

Note:

Be careful not to damage the gaiters: risk of irreversible damage.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - a new steering box gaiter,
 - new retaining clips.

III - FINAL OPERATION.

- ☐ Refit:
 - the wheel alignment adjustment lock nut,
 - the track rod, (see **36A, Steering assembly, Track rod: Removal - Refitting**, page 36A-2)
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ☐ Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-23) .
- ☐ If necessary, adjust the axle assemblies' geometry (see **30A, General information, Front axle system: Adjustment**, page 30A-36) .

STEERING ASSEMBLY

Bulkhead seal: Removal - Refitting

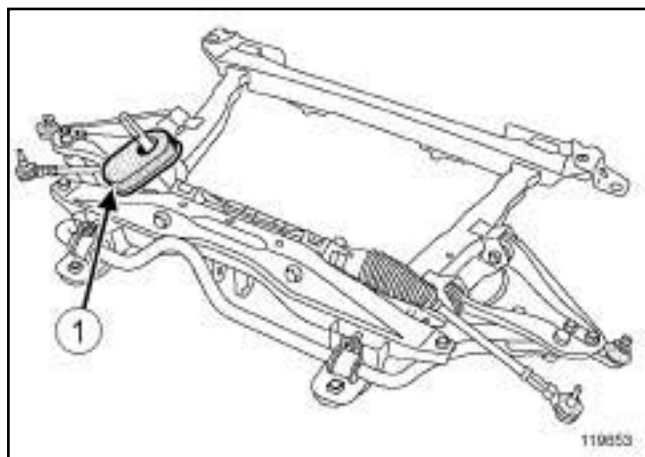
36A

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).
- ☐ Remove:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front wheel arch liners ((see **Front wheel arch liner: Removal - Refitting**)),
 - the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-43**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Detach the steering box bulkhead seal (1) .

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Degrease the surface in contact with the bulkhead seal using **SURFACE CLEANER**.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Remove the safety film from the adhesive section of the new bulkhead seal.
- ☐ Bond the new bulkhead seal on the steering box.

III - FINAL OPERATION.

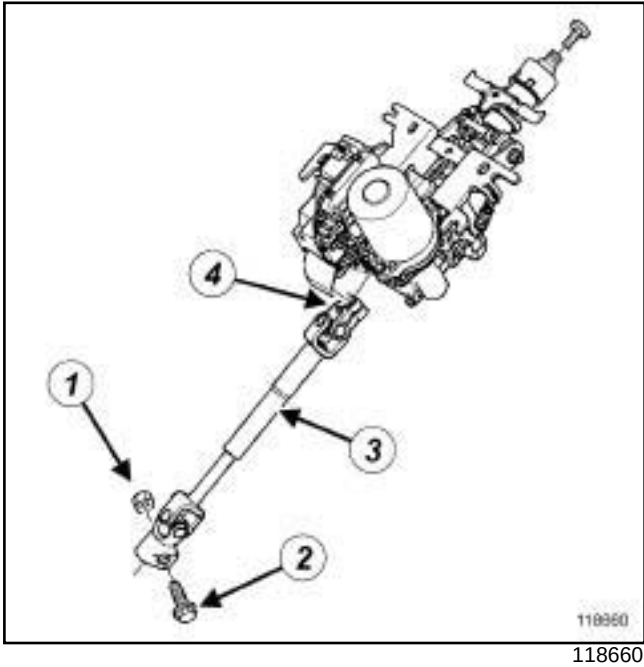
- ☐ Refit:
 - the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-43**) ,
 - the front wheel arch liners ((see **Front wheel arch liner: Removal - Refitting**)),
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

STEERING ASSEMBLY

Intermediate shaft: Removal - Refitting

36A

Tightening torques 	
intermediate shaft bolt on the steering column side	29 Nm
universal joint bolt	24 Nm



- (1)

Cover of universal joint cam nut
- (2)

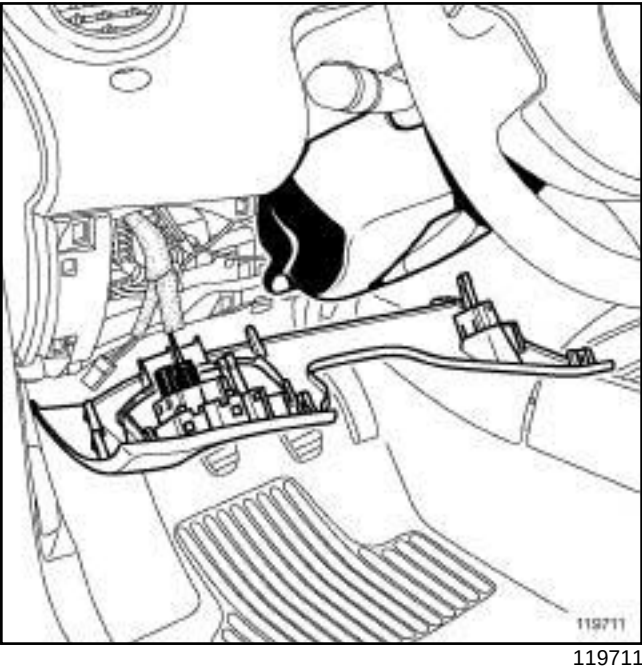
Universal joint bolt
- (3)

Intermediate shaft
- (4)

Intermediate shaft bolt on steering column side

REMOVAL

I - REMOVAL PREPARATION OPERATION



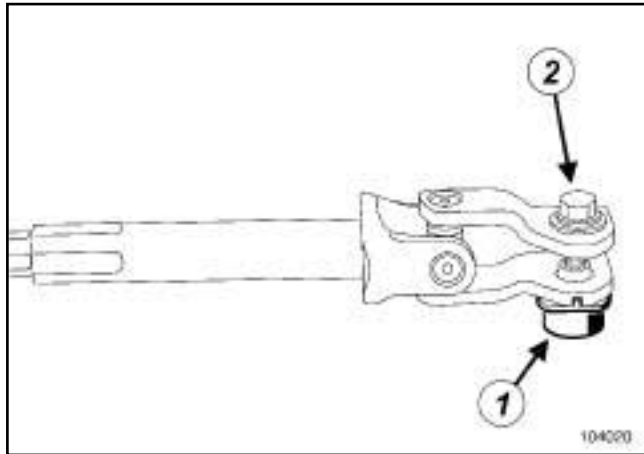
- ☐ Remove the dashboard lower trim.
- ☐ Disconnect the various connectors.
- ☐ Unblock then loosen the intermediate shaft on the steering column side, without removing it.
- ☐ Put the steering wheel straight with the axle in line.
- ☐ Lock the steering wheel.
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

STEERING ASSEMBLY

Intermediate shaft: Removal - Refitting

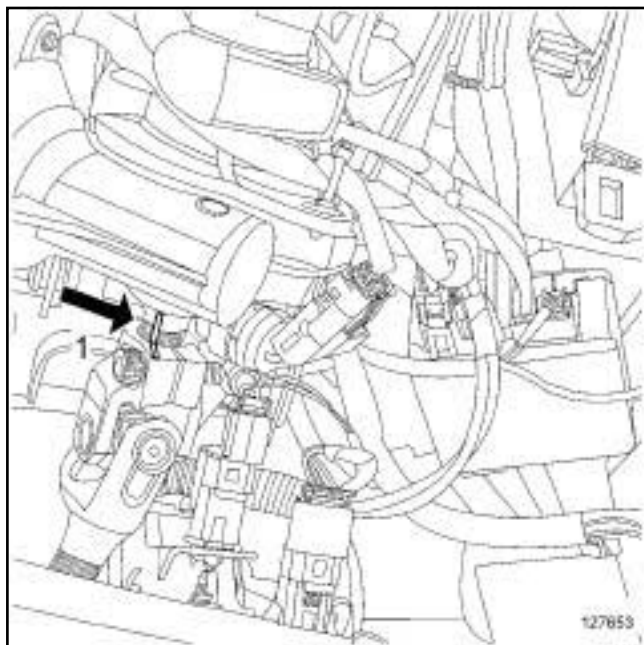
36A

II - OPERATION FOR REMOVAL OF PART CONCERNED



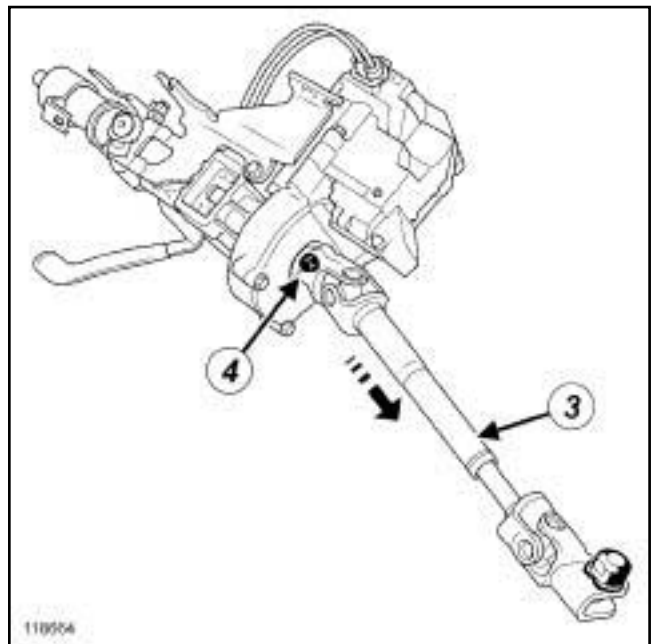
104020

- ☐ Eject the cover (1) using a hammer.
- ☐ Remove:
 - the universal joint bolt (2) (do not keep),
 - the cam nut from the universal joint.
- ☐ Remove the intermediate shaft from the steering box.



127653

- ☐ Mark the position of the intermediate shaft on the column.



118664

- ☐ Remove:
 - the bolt (4) from the intermediate shaft on the steering column side.
 - the intermediate shaft (3) by pulling it in the direction of the arrow.

REFITTING

I - REFITTING PREPARATION OPERATION

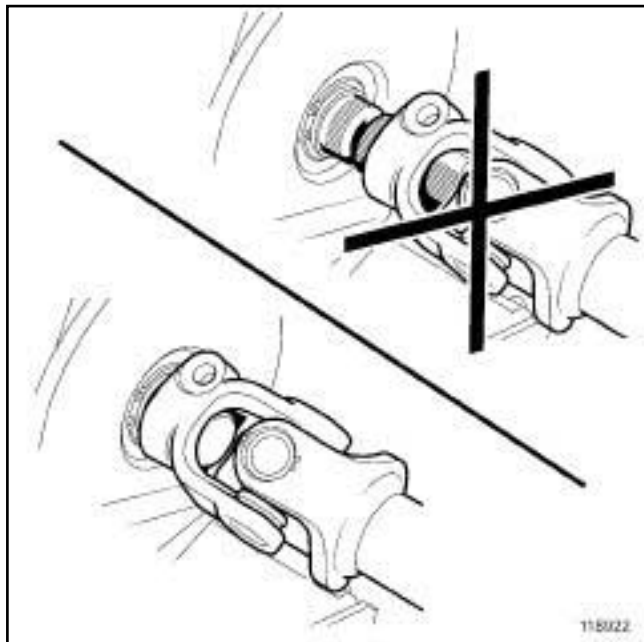
- ☐ Always replace:
 - the universal joint bolt and cam nut,
 - the bolt from the intermediate shaft on the steering column side.

STEERING ASSEMBLY

Intermediate shaft: Removal - Refitting

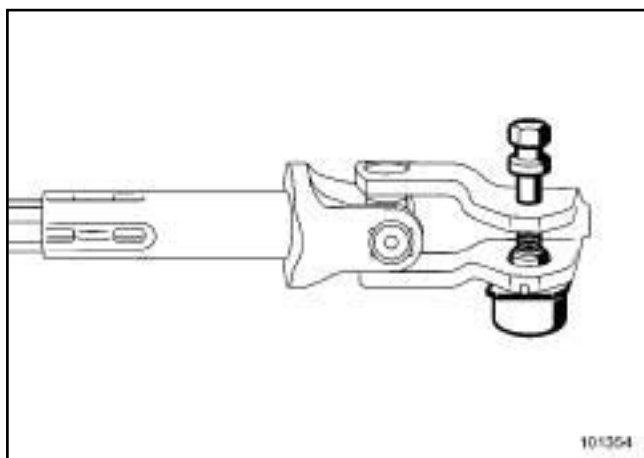
36A

II - REFITTING OPERATION FOR PART CONCERNED



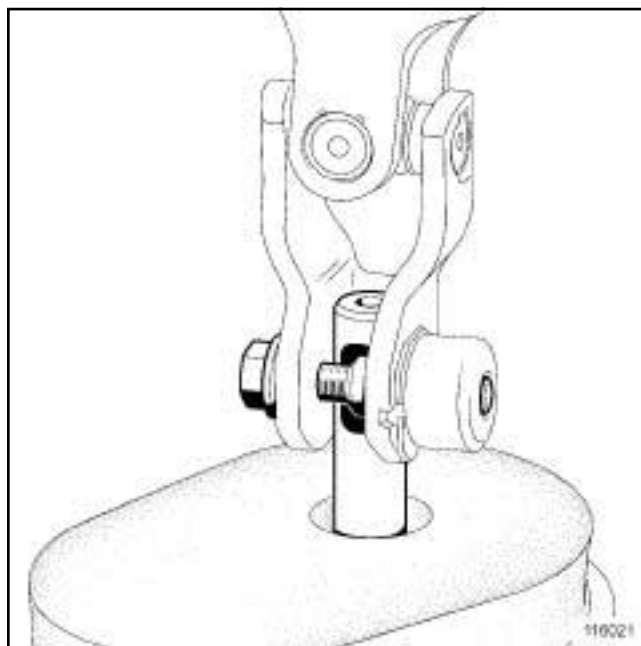
118922

- ☐ Fit the intermediate shaft on the steering column while taking care not to shift it more than one tooth in relation to its initial position.
- ☐ Check that the intermediary shaft on the steering column side is in the correct position.
- ☐ Pretighten the intermediate shaft bolt on the steering column side.
- ☐ Pull on the intermediate shaft of the steering column to check presence of the bolt in the neck.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Unlock the steering wheel.

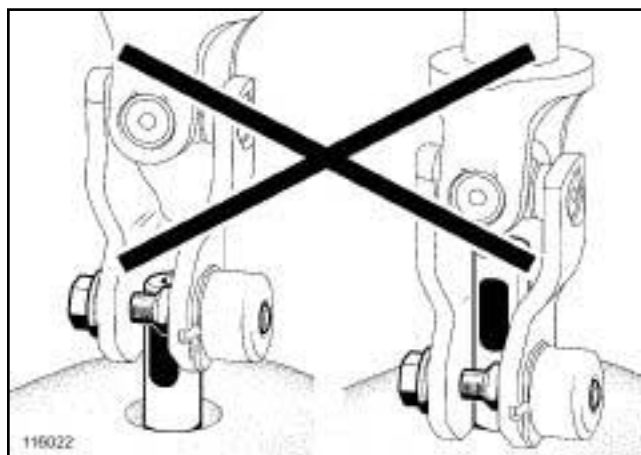


101354

- ☐ Observe the direction of fitting for the universal joint cam nut.
- ☐ Refit the universal joint.



116021



116022

- ☐ Check that the universal joint is in the correct position on the steering rack attack pinion stem.
- ☐ Pretighten the universal joint bolt.
- ☐ Tighten to torque:
 - the **intermediate shaft bolt on the steering column side (29 Nm)**,
 - the **universal joint bolt (24 Nm)**.

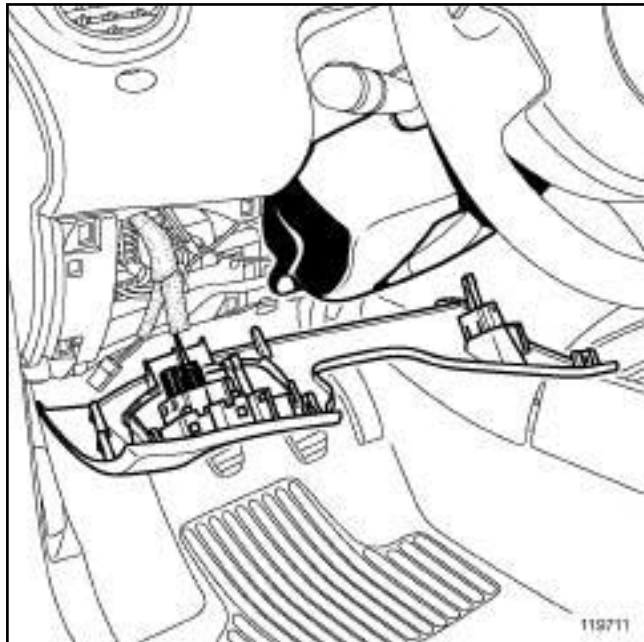
III - FINAL OPERATION.

- ☐ Connect the various connectors.
- ☐ Refit the dashboard lower trim.
- ☐ Check that correct alignment of the steering wheel then perform a geometry of the front axle if necessary (see **30A, General information, Front axle assembly: Adjustment values**, page 30A-31) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ❑ Disconnect the battery (see) (80A, Battery).



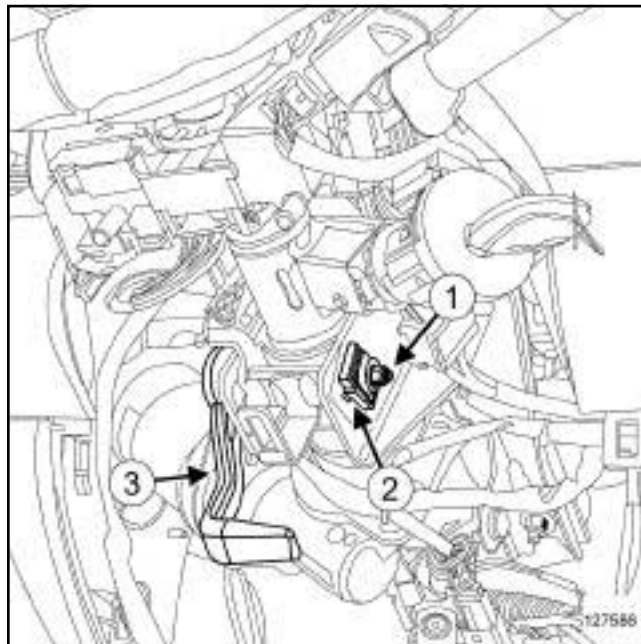
119711

- ❑ Unclip the dashboard lower trim.
- ❑ Disconnect the various connectors.
- ❑ Put the handle in the low position (to prevent the mobile part of the column dropping during dismantling).
- ❑ Remove:
 - the bolts on the steering wheel lower cover,
 - the steering wheel lower cover.

Note:

The removal of the steering wheel is not necessary.

II - OPERATION FOR REMOVAL OF PART CONCERNED



127586

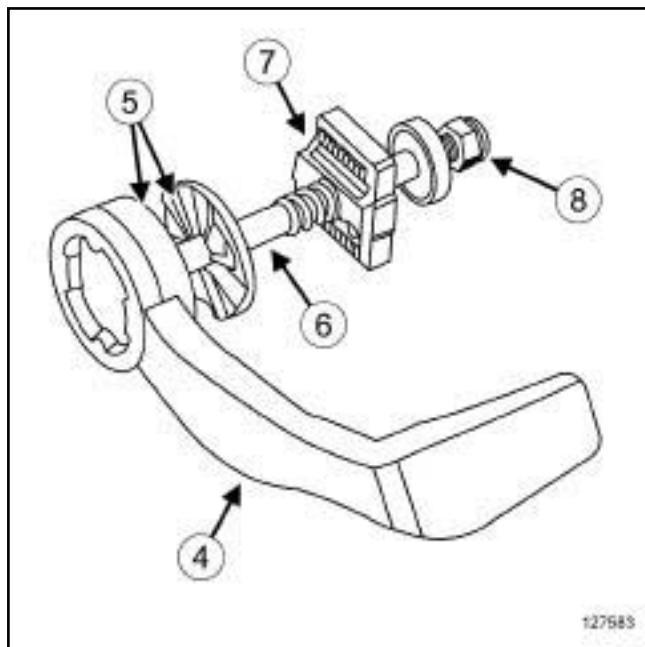
- ❑ Remove:
 - the nut (1) of the adjustment handle shaft while holding the handle during unscrewing,
 - the locking mechanism (2) of the adjustment handle,
 - the adjustment handle (3) .

Note:

Do not keep the components of the locking mechanism and scrap all of its constituent parts, as well as the adjustment handle.

REFITTING

I - REFITTING PREPARATION OPERATION



127583

- (4) Handle
- (5) Indexed adjustment plates
- (6) Connection shaft
- (7) Locking mechanism
- (8) Adjustment handle shaft nut

□

Note:

When refitting the handle, ensure that the retaining spring and the two notched segments are correctly positioned. Check that the teeth are interlocked and not in the tooth on tooth position.

II - REFITTING OPERATION FOR PART CONCERNED

□ Refit:

- the adjustment handle,
- the locking mechanism, taking care to correctly index the cam and the toothed plate in the bracket opening,
- the nut on the adjustment handle.

Note:

The amount of effort required to operate the handle is determined by how much it is tightened. Test to determine the correct tightening. The measurement of effort must be made with a torque wrench (Unlocking effort - 10N minimum / Locking effort - 60N maximum).

III - FINAL OPERATION

- Refit the steering wheel lower cover.
- Connect the various connectors.
- Clip on the dashboard lower trim.
- Connect the battery (see) (80A, Battery).

STEERING ASSEMBLY

Steering wheel: Removal - Refitting

36A

Tightening torques

new steering wheel bolt	44 N.m

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Steering: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Apply the procedure for deactivating the safety systems. (see **Airbag and pretensioners: Precautions for the repair**)

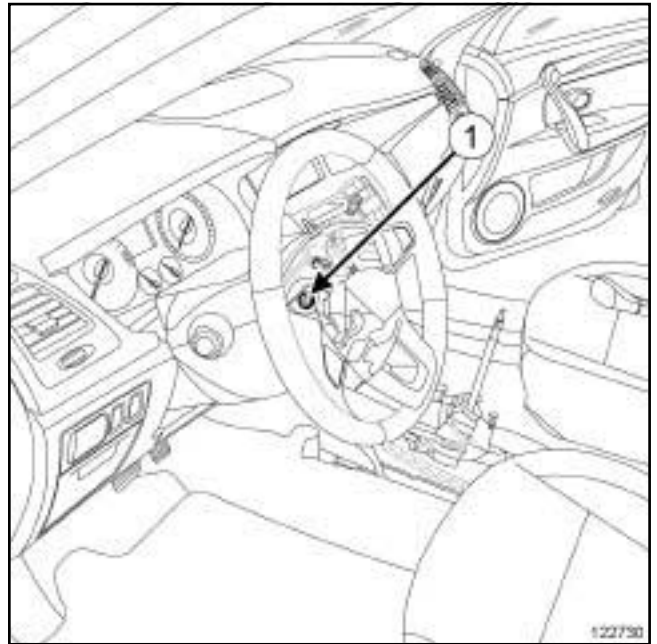
- ☐

WARNING

Incorrect wheel alignment may damage the rotary switch.

- ☐ Remove the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) .
- ☐ Set the wheels straight ahead.
- ☐ Disconnect the connectors.

II - OPERATION FOR REMOVAL OF PART CONCERNED



122730

- ☐ Remove the steering wheel bolt (1) .

WARNING

To ensure that the electronic systems operate correctly, do not damage the locking systems of the connectors.

- ☐ Remove the steering wheel.

- ☐

WARNING

To prevent damaging the rotary switch, do not turn the mobile section of the rotary switch.

REFITTING

I - REFITTING PREPARATION OPERATION

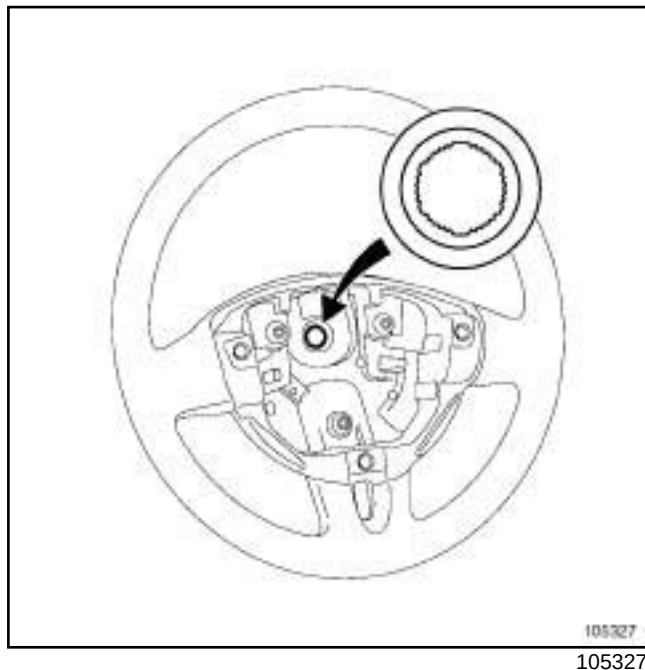
- ☐ parts always to be replaced: Steering wheel bolt.

STEERING ASSEMBLY

Steering wheel: Removal - Refitting

36A

II - REFITTING OPERATION FOR PART CONCERNED



WARNING

In order not to damage the steering wheel or steering column, the steering wheel-column fool-proofing devices must be aligned.

- ☐ Refit the steering wheel.
- ☐ Connect the connectors.
- ☐ Refit the new steering wheel bolt.
- ☐ Torque tighten the **new steering wheel bolt (44 N.m)**.

III - FINAL OPERATION

- ☐ Refit the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) .

IV - CHECKING AFTER REPAIR

- ☐ Switch on the ignition.
- ☐ Check the operation of the rotary switch:
 - turn the steering wheel to the left until it stops,
 - turn the steering wheel to the right until it stops,
 - check that there are no faults on the instrument panel.

LEFT-HAND DRIVE

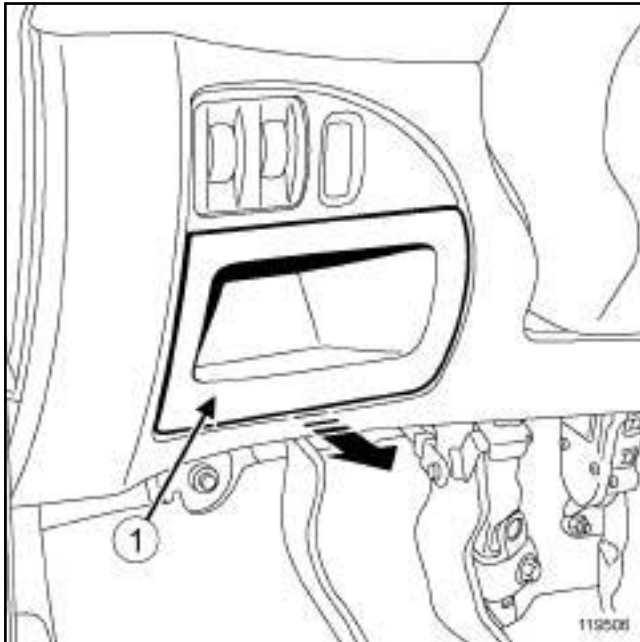
Equipment required

Diagnostic tool

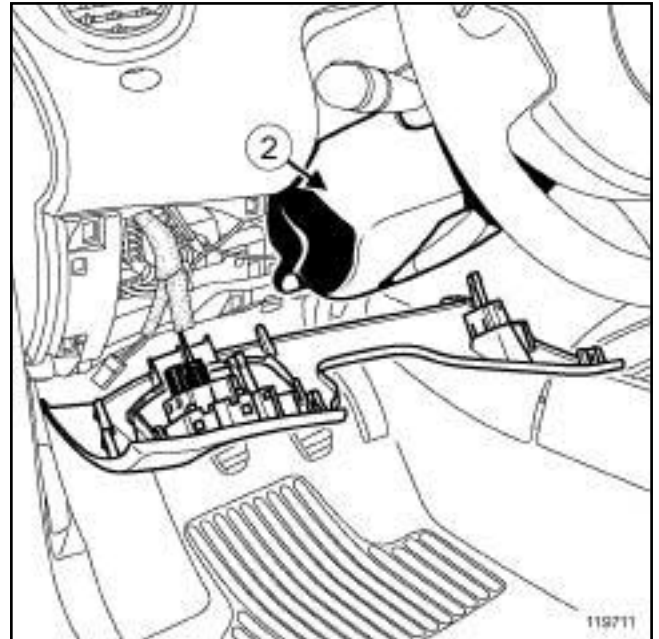
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

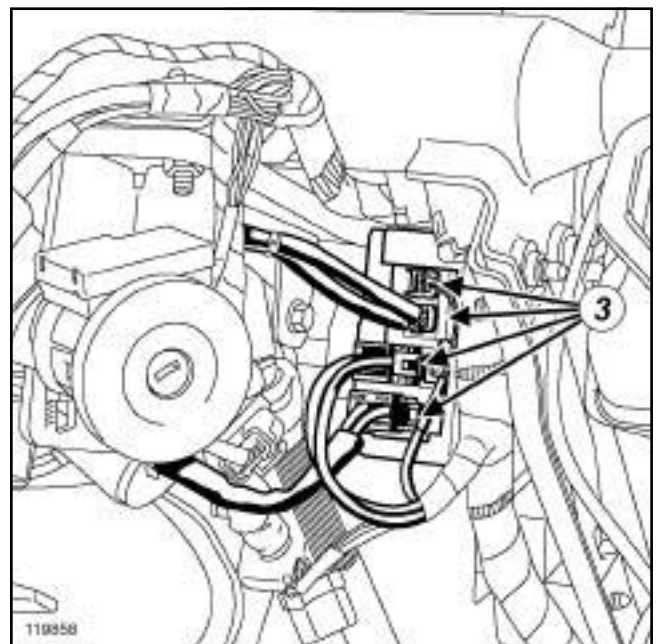


- ☐ Unclip:
 - the fuse access flap (1) ,
 - the dashboard lower trim.



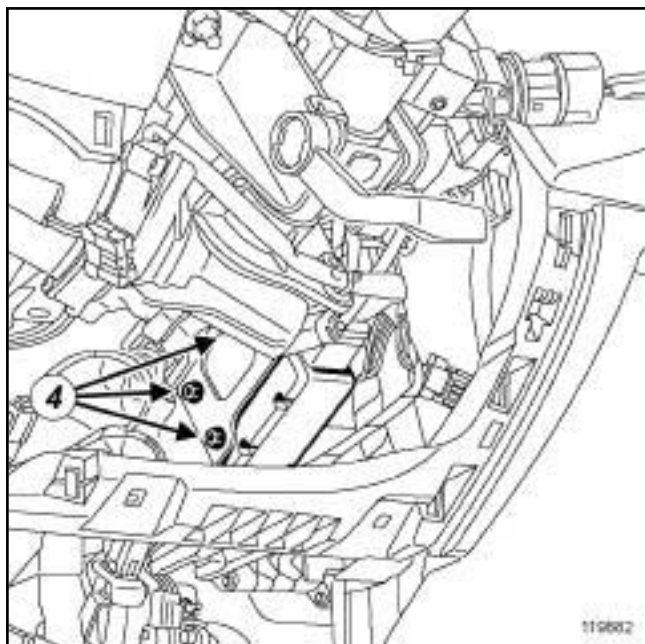
- ☐ Disconnect the various connectors.
- ☐ Remove:
 - the steering wheel lower cover bolt,
 - the steering wheel lower cover (2) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Unclip the locking clips of the connectors of the power-assisted steering computer.
- ☐ Disconnect the connectors (3) of the power-assisted steering computer.

LEFT-HAND DRIVE



119882

☐ Remove:

- the power-assisted steering computer bolts (4) ,
- the power-assisted steering computer,

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the power-assisted steering computer.
- ☐ Connect the power-assisted steering computer connectors.
- ☐ Fasten the locking clips of the connectors of the power-assisted steering computer.

II - FINAL OPERATION.

- ☐ Refit the steering wheel lower cover.
- ☐ Connect the various connectors.
- ☐ Clip:
 - the dashboard lower trim,
 - the fuse access flap.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ When replacing the electric power-assisted steering computer, perform the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (36B, Power-assisted steering).

RIGHT-HAND DRIVE

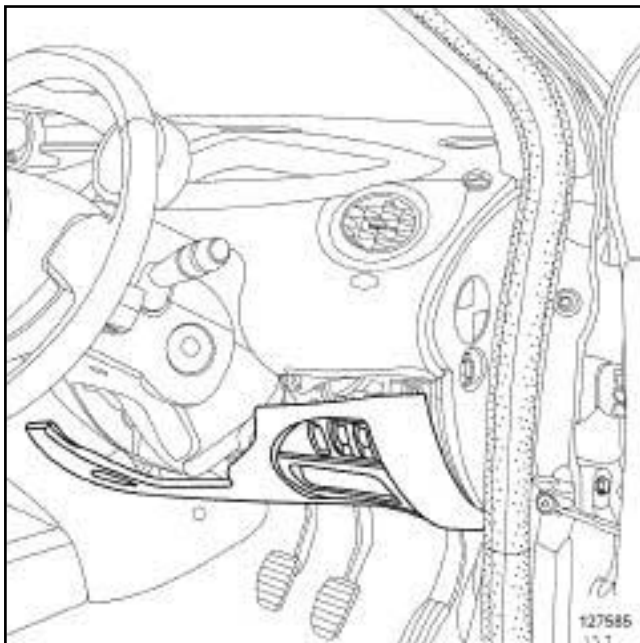
Equipment required

Diagnostic tool

REMOVAL

I - REMOVAL PREPARATION OPERATION

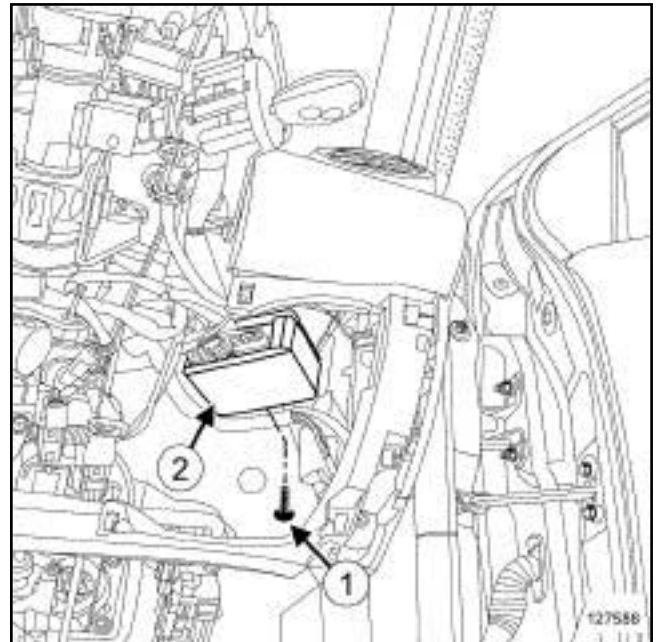
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).



127585

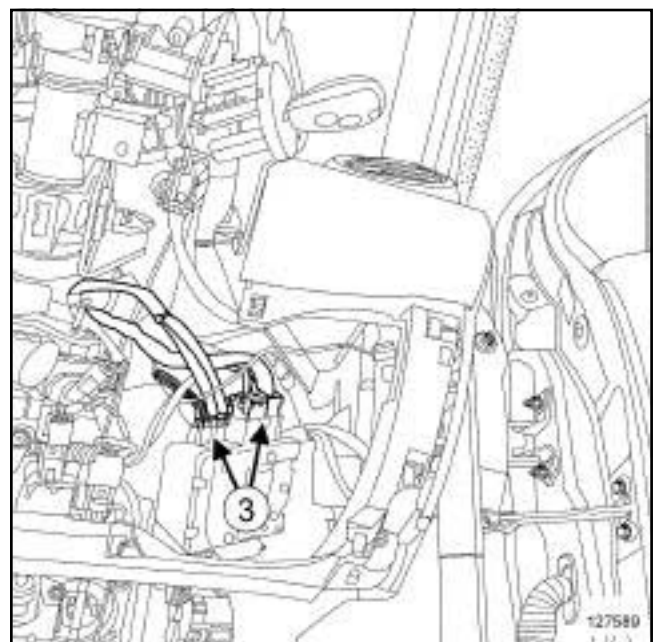
- ☐ Unclip the dashboard lower trim
- ☐ Disconnect the various connectors.

II - OPERATION FOR REMOVAL OF PART CONCERNED



127588

- ☐ Remove the bolt (1) of the support of the power-assisted steering computer.
- ☐ Separate the "support - computer" assembly (2) .



127589

- ☐ Unclip the locking clips of the connectors of the power-assisted steering computer.
- ☐ Disconnect the connectors (3) of the power-assisted steering computer.
- ☐ Remove the "support - computer" assembly.

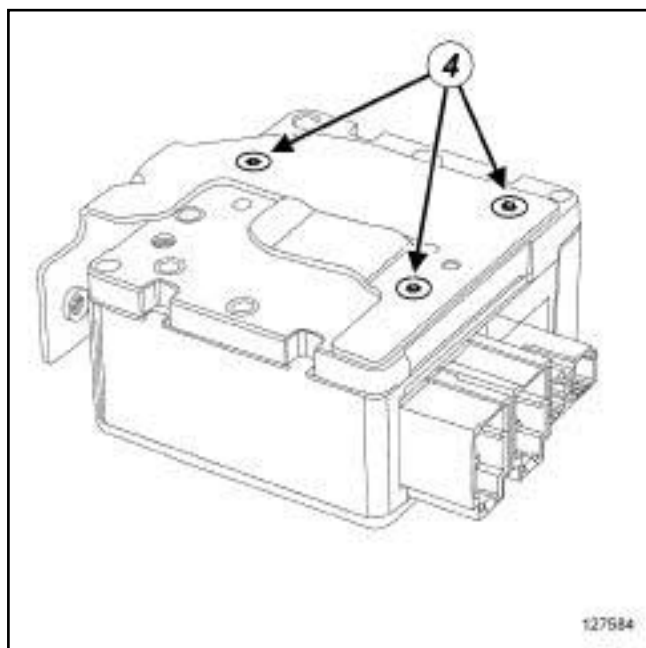
RIGHT-HAND DRIVE

For replacing the computer:



Note:

The support of the power-assisted steering computer is not sold as a spare part. Always reuse the support with the new computer.



Remove:

- the power-assisted steering computer bolts (4) ,
- the power-assisted steering computer from its support.

REFITTING

I - REFITTING PREPARATION OPERATION

For replacing the computer:

- ☐ Refit the computer on its support.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Connect the power-assisted steering computer connectors.
- ☐ Fasten the locking clips of the connectors of the power-assisted steering computer.
- ☐ Refit the "support - computer" assembly.

III - FINAL OPERATION.

- ☐ Connect the various connectors.
- ☐ Clip on the dashboard lower trim.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ When replacing the power-assisted steering computer, perform the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (36B, Power-assisted steering).

Master cylinder: Removal - Refitting

JB1 or JH1 or JH3 or JR5

Tightening torques

brake fluid reservoir bolt	4 Nm
master cylinder nuts on the brake servo	25 Nm
rigid brake pipe unions on the master cylinder	15 Nm

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

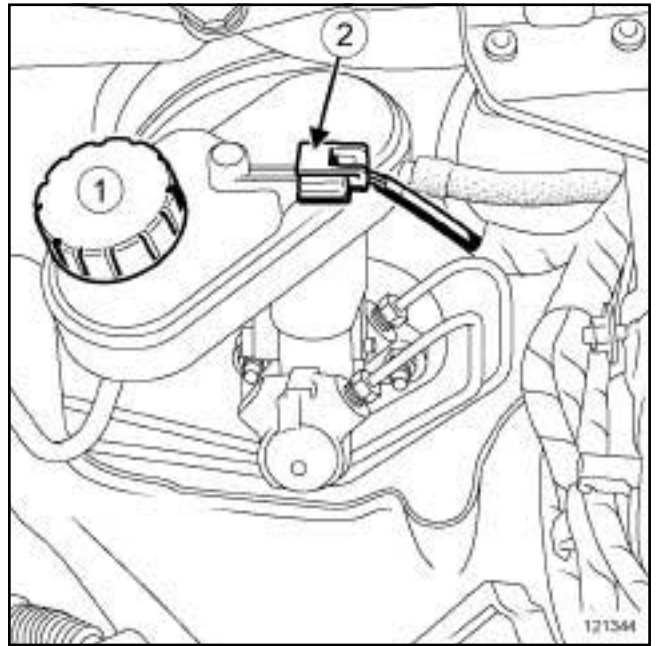
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery)
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

K4M

- ☐ Remove:
 - the injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
 - the injection computer support.

II - OPERATION FOR REMOVAL OF PART CONCERNED

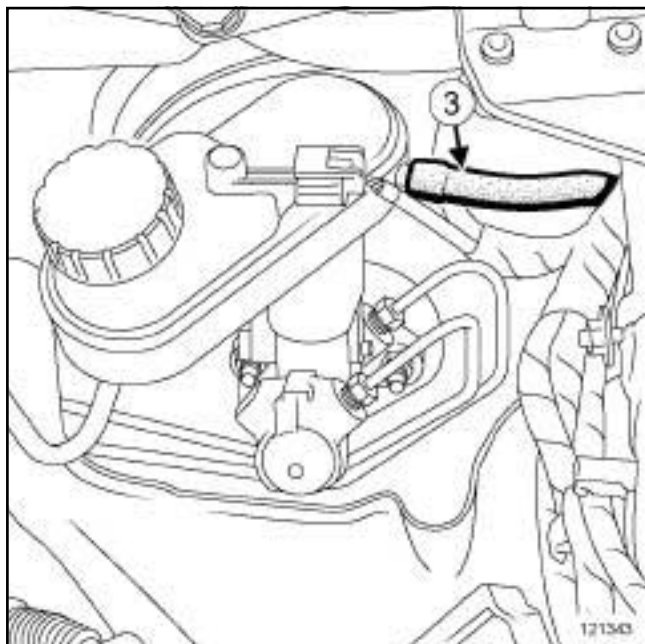


121344

- ☐ Remove the fuel filler cap from the brake fluid reservoir (1) .
- ☐ Disconnect the brake fluid level sensor connector (2)
- ☐ Drain the brake fluid reservoir with a syringe.

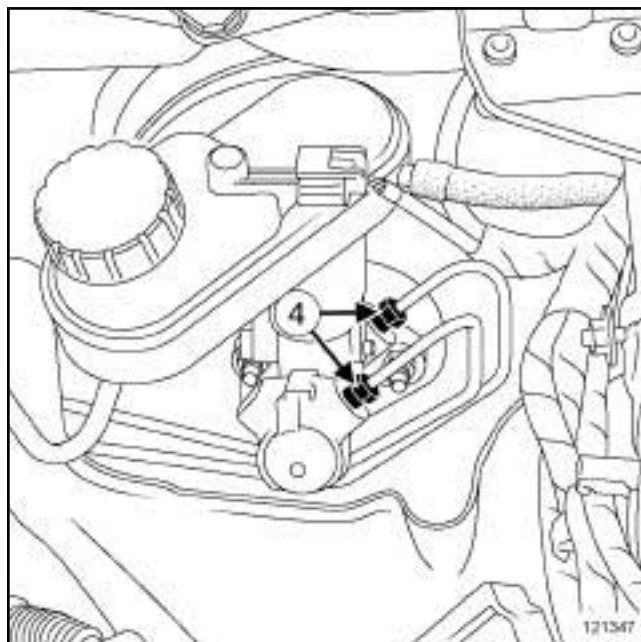
JB1 or JH1 or JH3 or JR5

JH3 or JR5

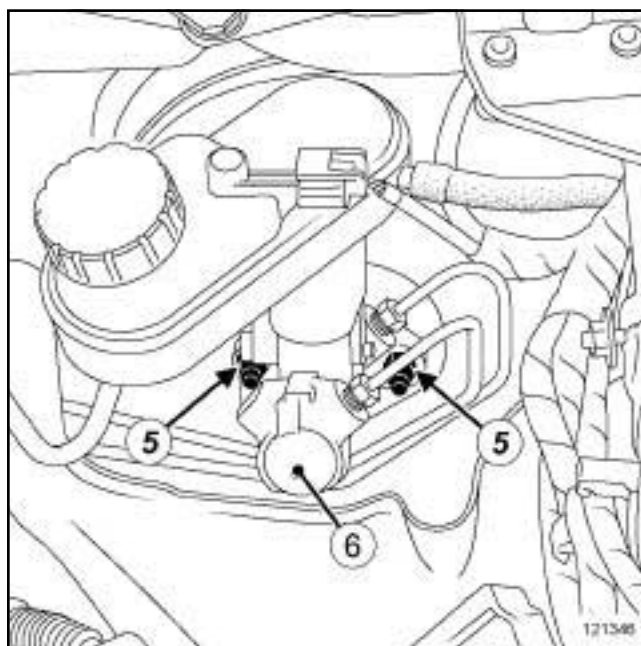


121343

- ☐ Remove the clutch master cylinder supply pipe (3) .
- ☐ Fit blanking plugs to the brake fluid reservoir and the clutch master cylinder supply pipe.



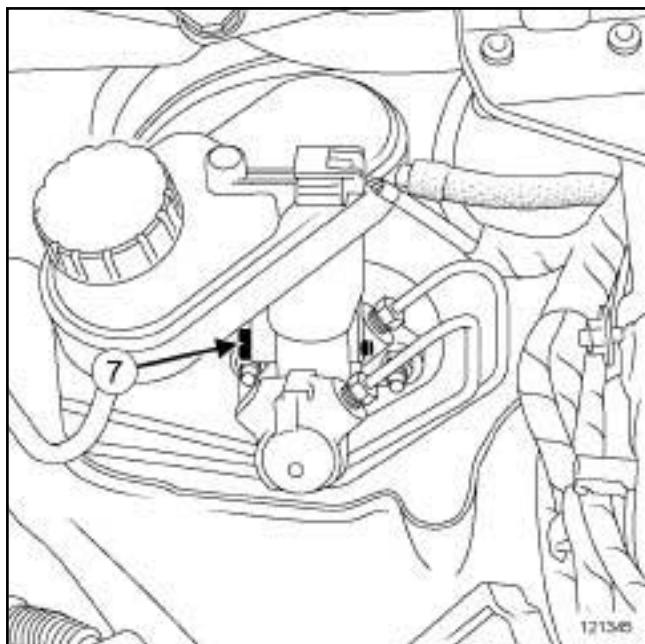
121347



121346

- ☐ Place a container under the master cylinder to collect the brake fluid.
- ☐ Remove:
 - the rigid brake pipe unions (4) on the master cylinder,
 - the master cylinder nuts (5) on the brake servo,
 - the master cylinder (6) and the brake fluid reservoir.

JB1 or JH1 or JH3 or JR5

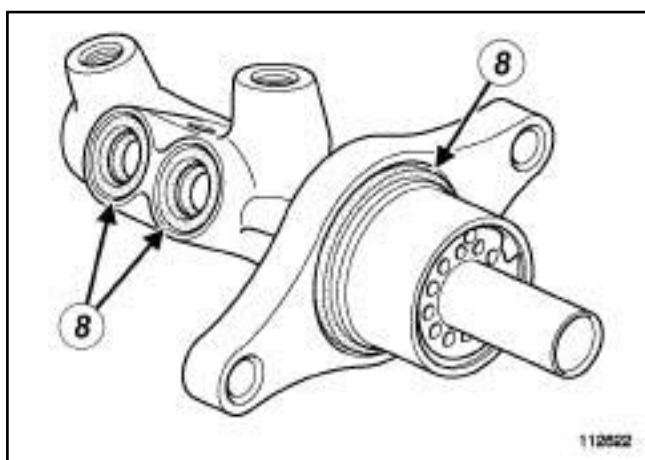


121345

- ☐ Using the workbench, remove:
 - the brake fluid reservoir bolt (7) ,
 - the brake fluid reservoir.
- ☐ Fit blanking plugs on the master cylinder.

REFITTING

I - REFITTING PREPARATION OPERATION



112622

- ☐ Always replace the master cylinder seals (8) .
- ☐ Remove the blanking plugs from the master cylinder.
- ☐ Carefully pre-fill the master cylinder with the recommended brake fluid (see **30A, General information, Brake fluid: Specifications**, page **30A-18**) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the brake fluid reservoir,
 - the master cylinder making sure that the brake servo shaft is correctly aligned with the master cylinder shaft,
 - the rigid brake pipe unions on the master cylinder.
- ☐ Tighten to torque:
 - the **brake fluid reservoir bolt (4 Nm)**,
 - the **master cylinder nuts on the brake servo (25 Nm)**,
 - the **rigid brake pipe unions on the master cylinder (15 Nm)**.

JH3 or JR5

- ☐ Remove the blanking plugs from the brake fluid reservoir supply pipe and the clutch master cylinder.
- ☐ Refit the clutch master cylinder supply pipe.

- ☐ Connect the brake fluid level sensor connector.

III - FINAL OPERATION.

K4M

- ☐ Refit:
 - the injection computer mounting,
 - the injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

- ☐ Fill up the brake fluid reservoir.
- ☐ Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .

JH3 or JR5

- ☐ Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-54**) .

- ☐ Refit:
 - the filler cap of the brake fluid reservoir.

Master cylinder: Removal - Refitting

JB1 or JH1 or JH3 or JR5

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
-

RIGHT-HAND DRIVE

Tightening torques

brake fluid reservoir bolt	4 Nm
master cylinder bolts on the brake servo	25 Nm
rigid brake pipe unions on the master cylinder	15 Nm

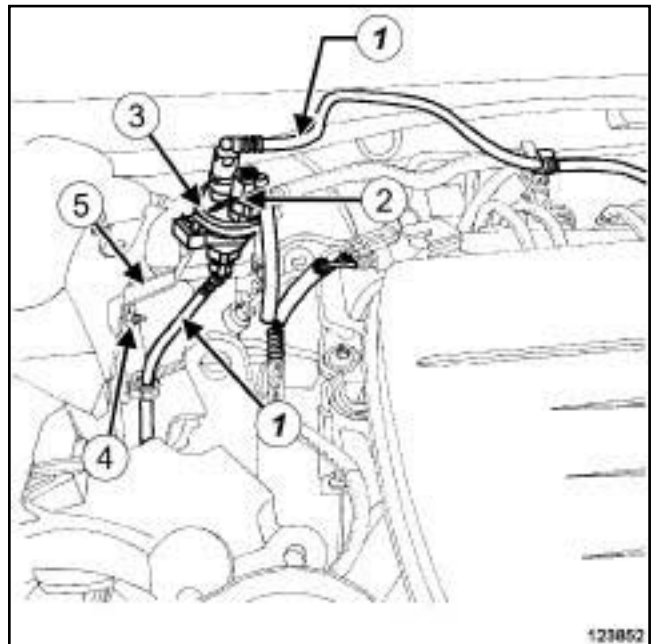
WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

D4F or D7F or K4M

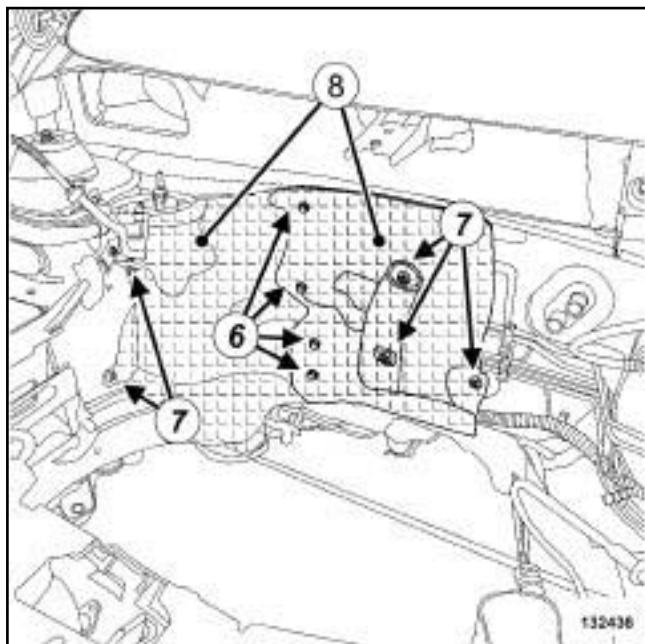


123852

- ☐ Remove:
 - the fuel vapour recirculation solenoid valve pipes (1) ,
 - the fuel vapour recirculation solenoid valve connector (2) ,
 - the fuel vapour recirculation solenoid valve (3) ,
 - the fuel vapour recirculation solenoid valve support nut (4) ,
 - the fuel vapour recirculation solenoid valve support (5) .

RIGHT-HAND DRIVE

K4M

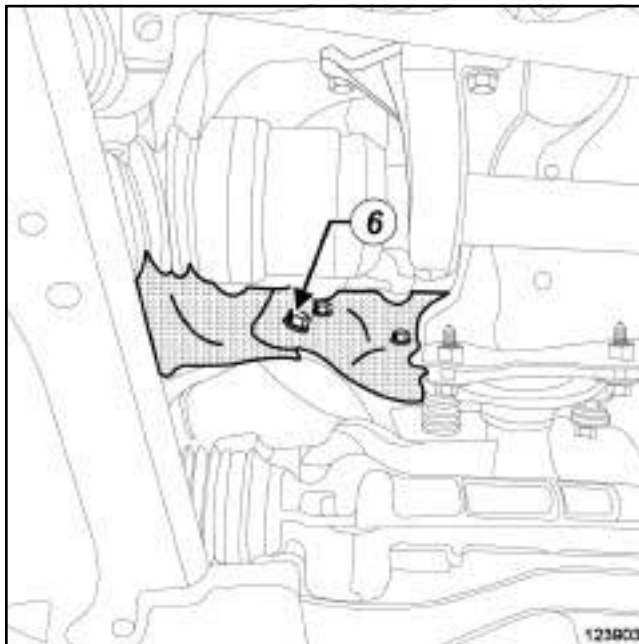


132436

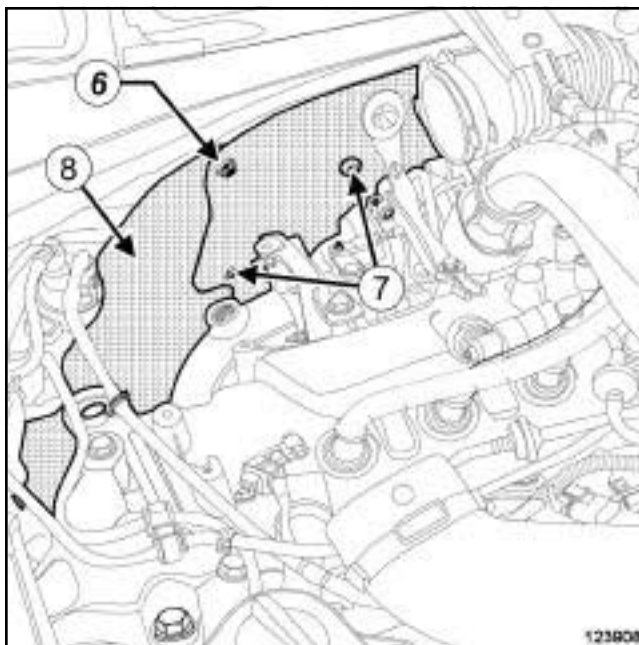
□ Remove:

- the bolts (6) from the bulkhead heat-resistant protectors,
- the nuts (7) from the bulkhead heat-resistant protectors,
- the bulkhead heat-resistant protectors (8) .

D4F, and 780



123903



123908

□ Remove:

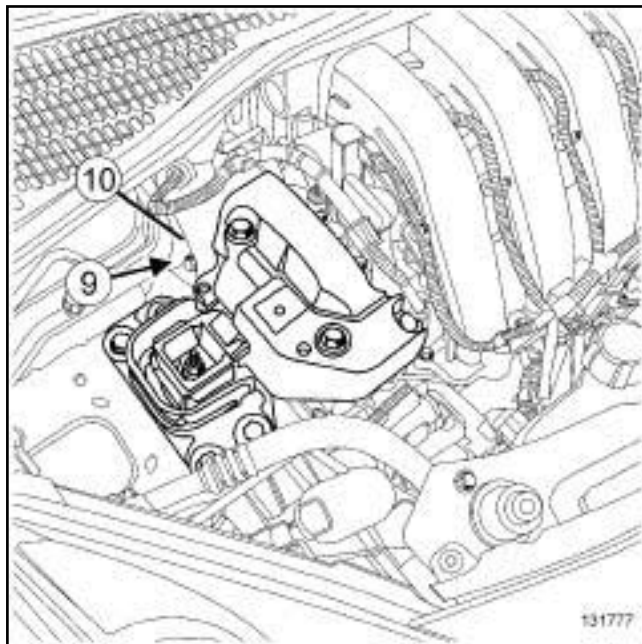
- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
- the bolts (6) from the bulkhead heat-resistant protector,
- the nuts (7) from the bulkhead heat-resistant protector,

Master cylinder: Removal - Refitting

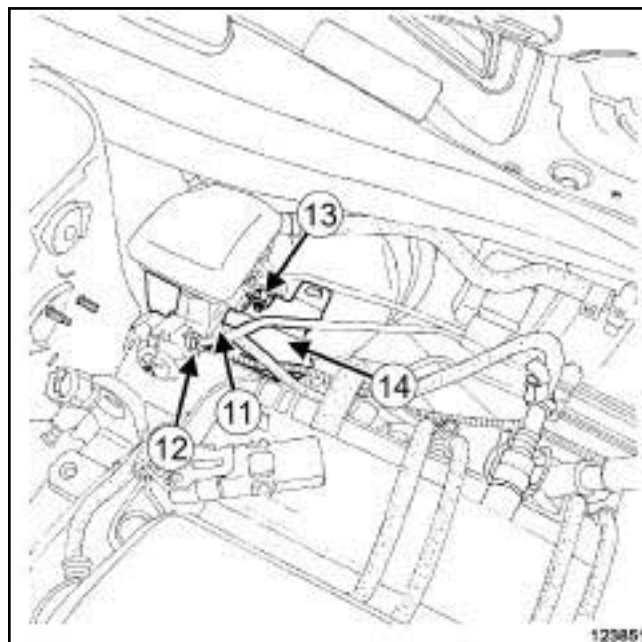
RIGHT-HAND DRIVE

- the bulkhead heat-resistant protector (8) .

K4M

☐ Remove:

- the timing cover bolt (9) ,
- the timing cover (10) .

☐ Unclip:

- the non-return valve from the support at (11) ,
- the ABS wiring from the support at (12) .

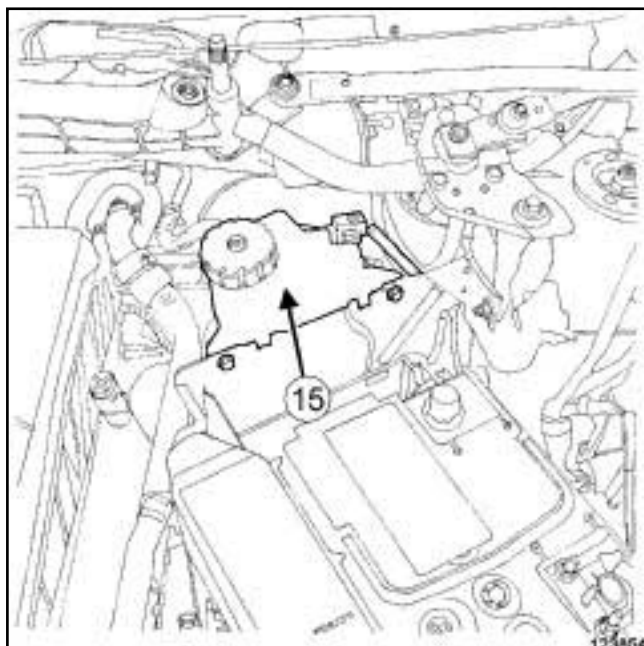
☐ Remove:

- the nut (13) from the non-return valve and ABS wiring support,
- the non-return valve and ABS wiring support (14) .

Master cylinder: Removal - Refitting

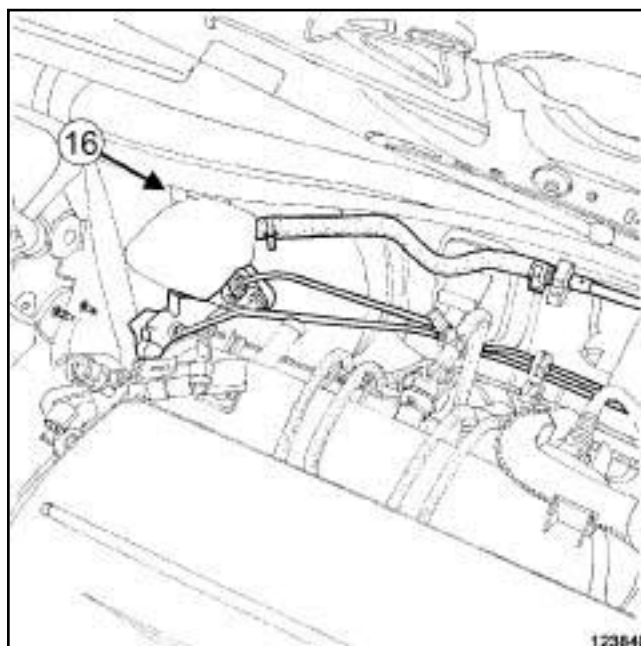
RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



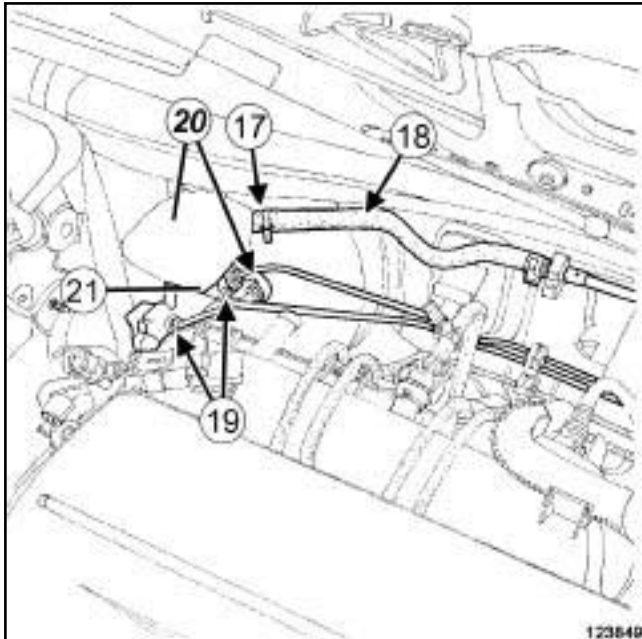
- ☐ Drain the secondary brake fluid reservoir (15) with a syringe.
- ☐ Place a container under the brake master cylinder to collect the brake fluid from the main reservoir.

JH3 or JR5



- ☐ Remove the supply pipe (16) from the clutch master cylinder.
- ☐ Fit blanking plugs to the brake fluid reservoir and the clutch master cylinder supply pipe.

RIGHT-HAND DRIVE



123849

❑ Remove:

- the clip (17) from the reservoir connecting pipe,
- the reservoir connecting pipe (18) ,
- the rigid brake pipe unions (19) on the master cylinder,
- the master cylinder nuts (20) on the brake servo,
- the "master cylinder - reservoir" assembly.

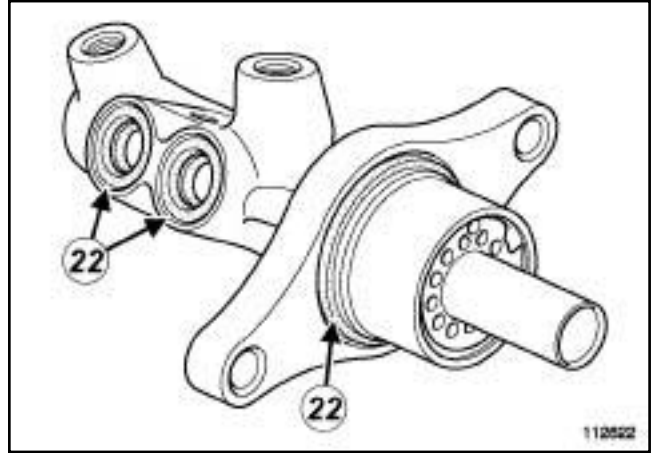
❑ Fit blanking plugs to the master cylinder, the main brake fluid reservoir supply pipe and the brake fluid reservoir connecting pipe.

❑ Remove:

- the bolt (21) from the main brake fluid reservoir,
- the main brake fluid reservoir from the master cylinder.

REFITTING

I - REFITTING PREPARATION OPERATION



112622

❑ Always replace the master cylinder seals (22) .

❑ Remove the blanking plugs from the master cylinder, the main brake fluid reservoir supply pipe and the brake fluid reservoir connecting pipe.

❑ Carefully pre-fill the master cylinder with the recommended brake fluid (see 30A, **General information, Brake fluid: Specifications**, page 30A-18) .

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the brake fluid reservoir to the master cylinder,
- the "master cylinder - reservoir" assembly, aligning the brake servo shaft with the master cylinder shaft,
- the rigid brake pipe unions on the master cylinder.

❑ Tighten to torque:

- the **brake fluid reservoir bolt (4 Nm)**,
- the **master cylinder bolts on the brake servo (25 Nm)**,
- the **rigid brake pipe unions on the master cylinder (15 Nm)**.

❑ Refit:

- the brake fluid reservoir connecting pipe,
- the brake fluid reservoir connecting pipe clip.

RIGHT-HAND DRIVE

JH3 or JR5

- ☐ Remove the blanking plugs from the brake fluid reservoir and the clutch master cylinder supply pipe.
- ☐ Refit the clutch master cylinder supply pipe.

III - FINAL OPERATION.

K4M

- ☐ Refit:
 - the timing cover,
 - the bulkhead heat-resistant protectors.

D4F, and 780

- ☐ Refit the bulkhead heat-resistant protector.
- ☐ Clip onto the support:
 - the ABS wiring,
 - the non-return valve.
- ☐ Refit the support of the non-return valve and the ABS wiring.

D4F or D7F or K4M

- ☐ Refit:
 - the fuel vapour recirculation solenoid valve support,
 - the fuel vapour recirculation solenoid valve,
 - the petrol vapour recirculation solenoid valve connector,
 - the fuel vapour recirculation solenoid valve pipes.
- ☐ Refit:
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

- ☐ Fill up the secondary brake fluid reservoir.
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

MECHANICAL COMPONENT CONTROLS

Brake servo non-return valve: Removal - Refitting

37A

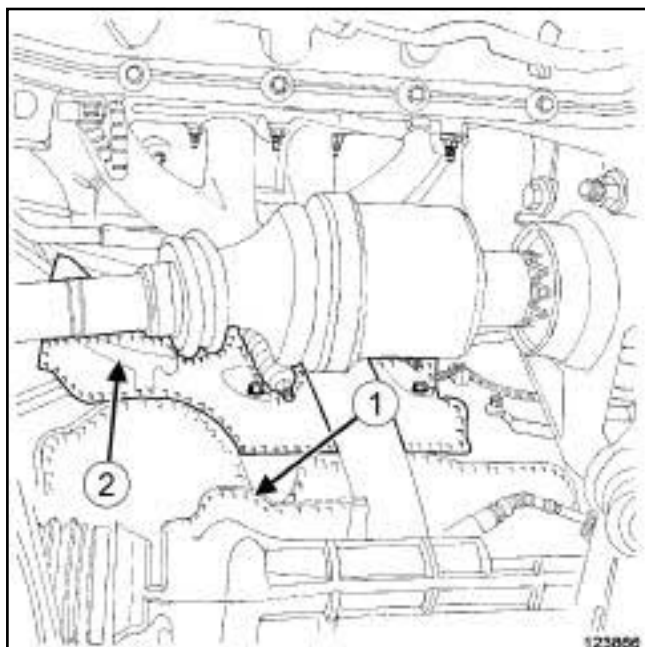
RIGHT-HAND DRIVE

REMOVAL

I - REMOVAL PREPARATION OPERATION

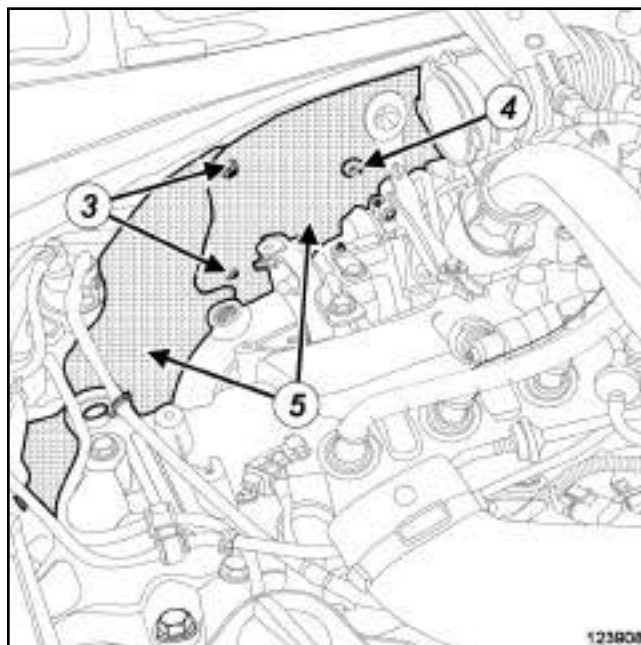
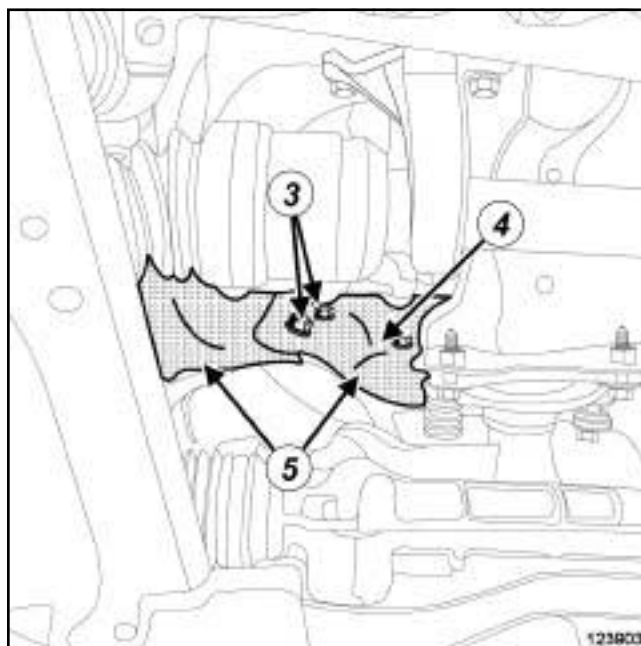
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

D4F or D7F



- ☐ Remove:
 - the bolts (1) from the bulkhead heat-resistant protector,
 - the bulkhead heat-resistant protector (2) .

D4F, and 780



- ☐ Remove:
 - the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) (MR 411, 17B, Petrol injection),
 - the bolts (3) from the bulkhead heat-resistant protectors,
 - the nuts (4) from the bulkhead heat-resistant protectors,

MECHANICAL COMPONENT CONTROLS

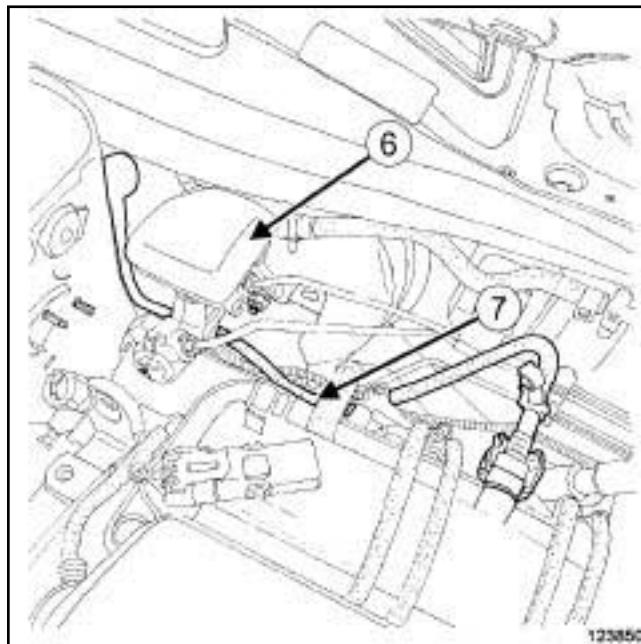
Brake servo non-return valve: Removal - Refitting

37A

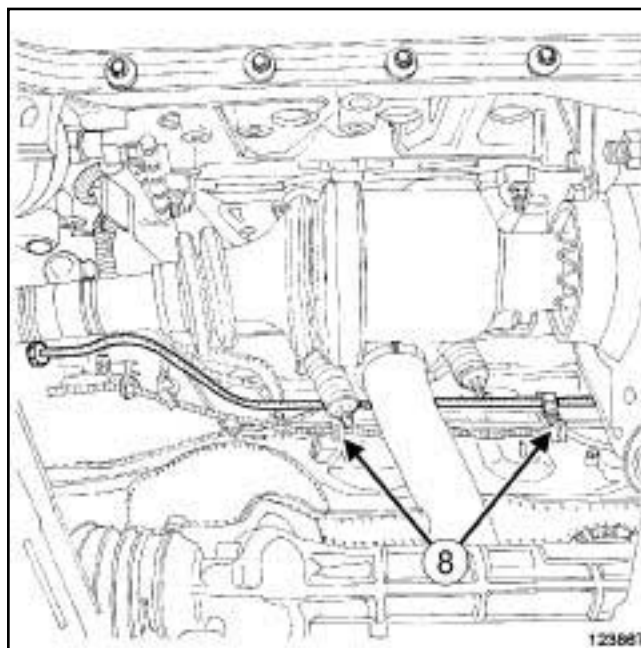
RIGHT-HAND DRIVE

- the bulkhead heat-resistant protectors (5) .

II - REMOVAL OPERATION FOR PART CONCERNED



123850



123867

- ☐ Disconnect the non-return valve pipe:
 - from the brake servo at (6) ,
 - from the intake distributor at (7) .
- ☐ Unclip the non-return valve at (8) .
- ☐ Remove the non-return valve from the vehicle.

MECHANICAL COMPONENT CONTROLS

Brake servo non-return valve: Removal - Refitting

37A

RIGHT-HAND DRIVE

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the non-return valve.
- ☐ Clip on the non-return valve.
- ☐ Connect the non-return valve pipe:
 - to the brake servo,
 - to the intake distributor.

II - FINAL OPERATION.

D4F, and 780

- ☐ Refit:
 - the bulkhead heat-resistant protectors,
 - the bulkhead heat-resistant protector nuts,
 - the bulkhead heat-resistant protector bolts,
 - the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .

D4F or D7F

- ☐ Refit:
 - the bulkhead heat-resistant protector,
 - the bulkhead heat-resistant protector bolts.

- ☐ Refit:
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

Tightening torques

brake servo nuts	25 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the battery (see **Battery: Removal - Refitting**) (80A, Battery).

JH1

- ☐ Remove the gearbox computer (see **Sequential gearbox converter: Removal - Refitting**) (21B, Sequential gearbox).

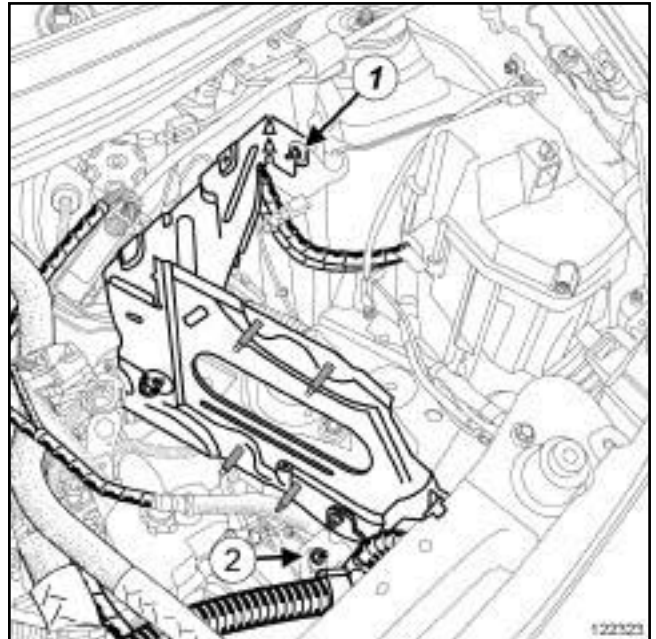
- ☐ Remove the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

D4F or D7F or K4M

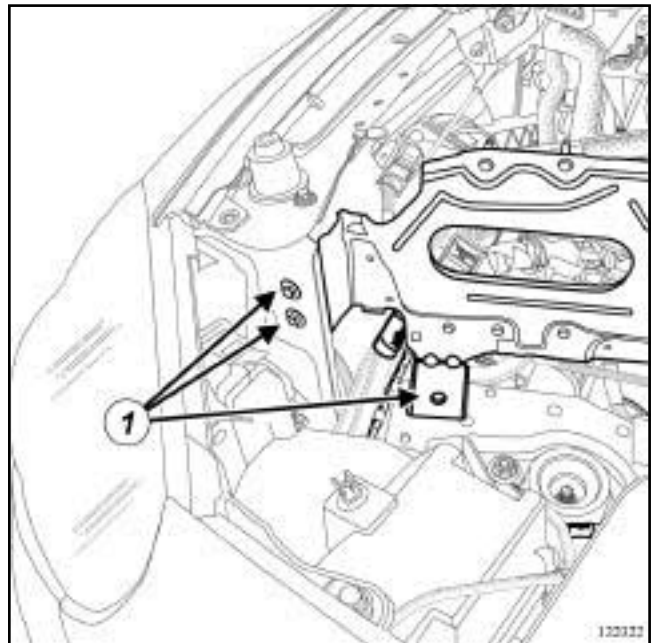
- ☐ Remove the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

K9K

- ☐ Remove the diesel injection computer (see **Diesel injection computer: Removal - Refitting**) (13B, Diesel injection).



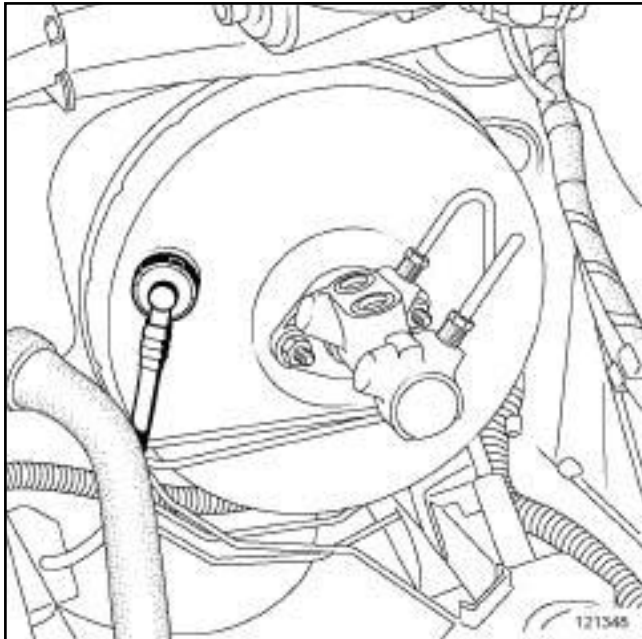
122323



122322

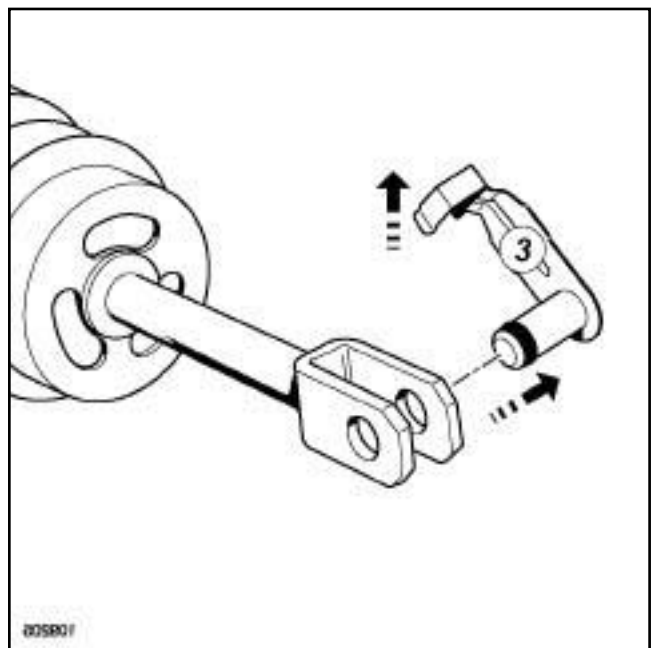
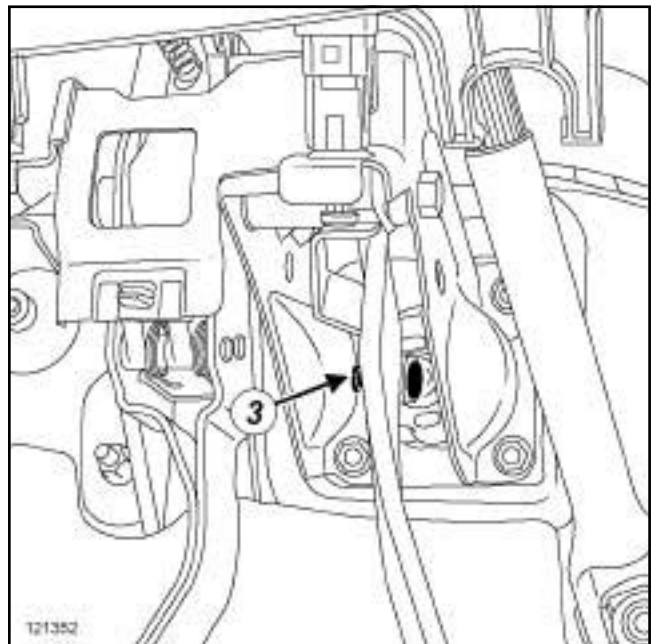
- ☐ Remove:
 - the injection computer mounting bolts (1) ,
 - the engine harness bracket nut (2) ,
 - the injection computer mounting,
 - the master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting, page 37A-1**) .

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE



- Disconnect the brake servo non-return valve.

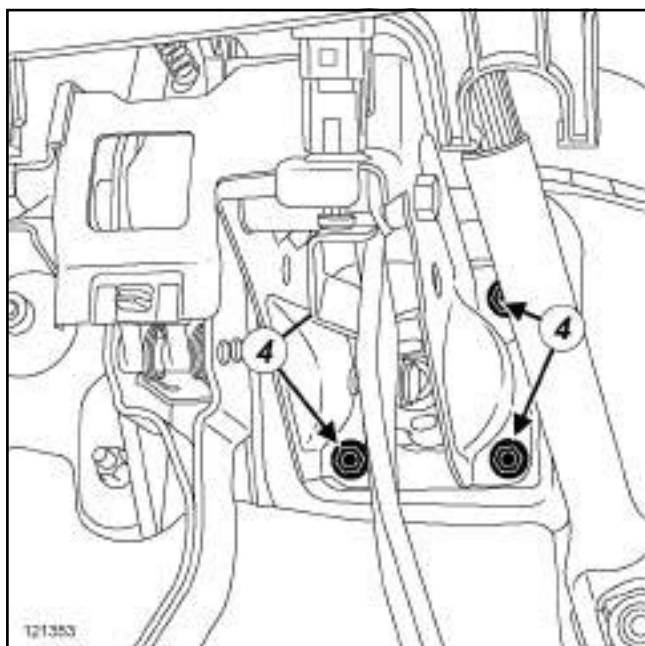
II - OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the connecting shaft (3) between the brake pedal and the brake servo rod, after tilting the connecting shaft upwards, move the ring with a flat-blade screwdriver.

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

JB1 or JH3 or JR5

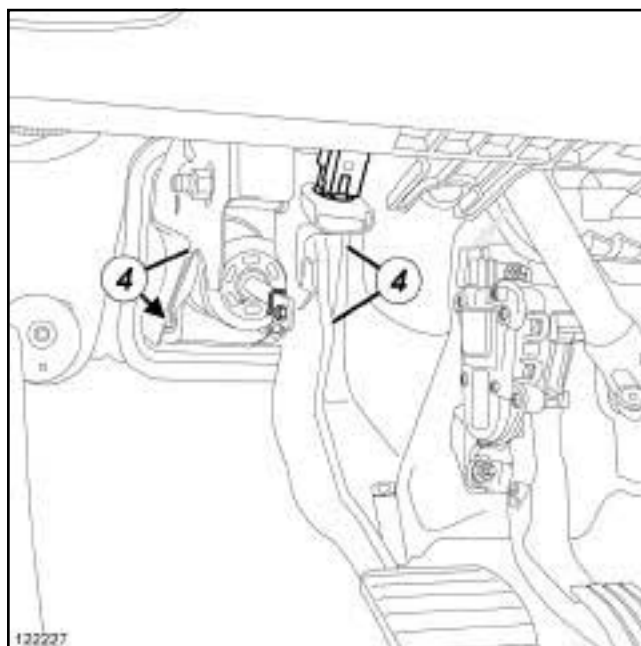


121353

☐ Remove:

- the nuts (4) from the brake servo on the « brake pedal - clutch » assembly,
- the brake servo.

JH1



122227

☐ Remove:

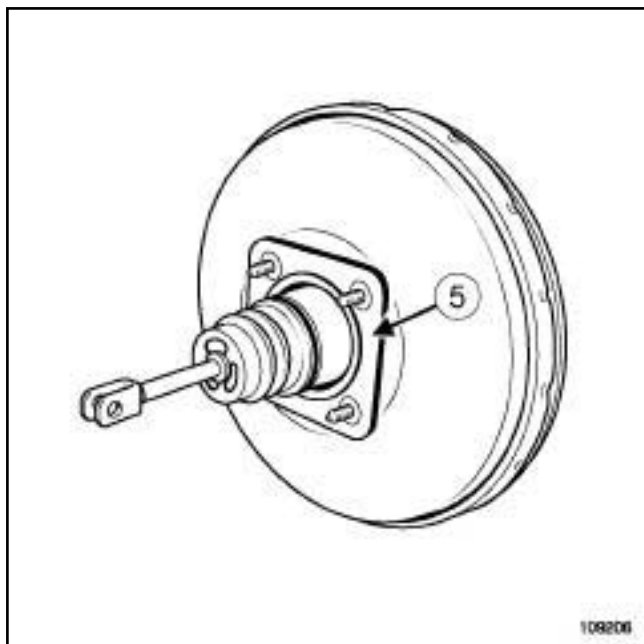
- the brake servo nuts (4) from the brake pedal plate,
- the brake servo.

REFITTING

I - REFITTING PREPARATION OPERATION

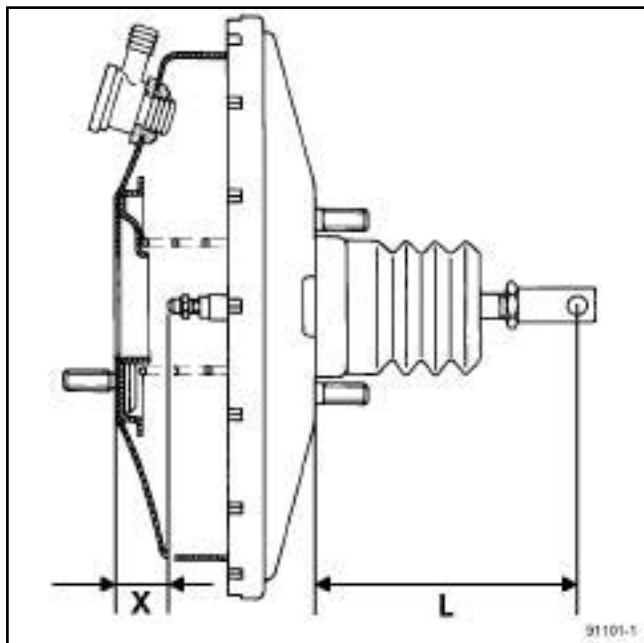
- ☐
- The shaft connecting the brake servo pushrod and the brake pedal must be replaced every time it is removed.

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE



109206

- ☐ Check that the brake servo seal (5) is in place and replace the seal if it is faulty.



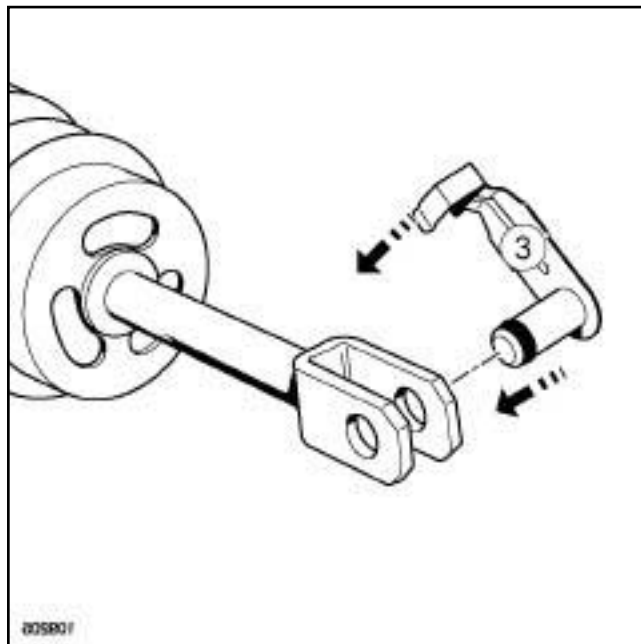
91101-1

- ☐ Before refitting, check the dimension $L = 153.3 \text{ mm}$.
- ☐ If the dimension is not correct, replace the brake servo.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the brake servo,
 - the brake servo nuts (3) .

- ☐ Torque tighten the **brake servo nuts (25 Nm)**.



109205

- ☐ Refit the new connecting shaft (3) between the brake pedal and the brake servo rod from right to left and from top to bottom.

III - FINAL OPERATION.

- ☐ Refit:
 - the non-return valve on the brake servo,
 - the master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting**, page **37A-1**) ,
 - the injection computer mounting,
 - the engine wiring bracket.

D4F or D7F or K4M

- ☐ Refit the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

K9K

- ☐ Refit the diesel injection computer (see **Diesel injection computer: Removal - Refitting**) (13B, Diesel injection).

Brake servo: Removal - Refitting

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

- ☐ Refit the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

JH1

- ☐ Refit the gearbox computer (see **Sequential gearbox converter: Removal - Refitting**) (21B, Sequential gearbox).
-
- ☐ Refit the battery (see **Battery: Removal - Refitting**) (80A, Battery).

RIGHT-HAND DRIVE

Special tooling required**Mot. 1672** Lower engine support.**Equipment required**

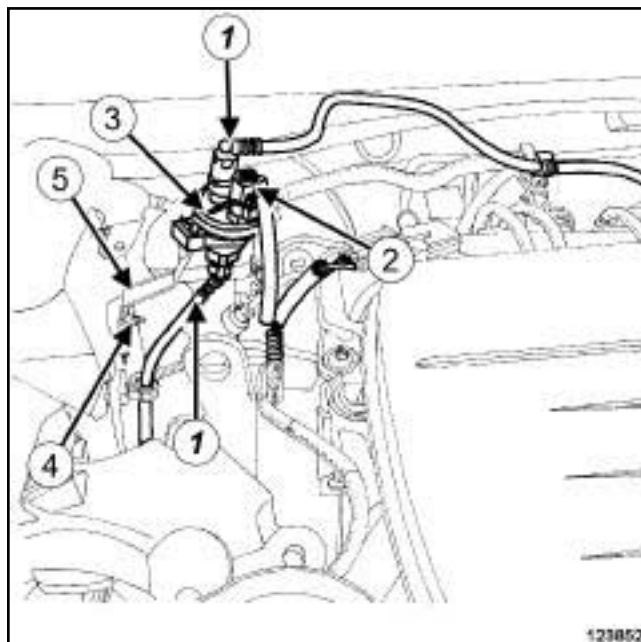
refrigerant charging station

Tightening torques **"brake - clutch pedal"** **assembly nuts** **21 Nm****brake servo nuts** **21 Nm****REMOVAL****I - REMOVAL PREPARATION OPERATION**

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Remove:

- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).



123852

☐ Remove:

- the fuel vapour recirculation solenoid valve pipes (1) ,
- the fuel vapour recirculation solenoid valve connector (2) ,
- the fuel vapour recirculation solenoid valve (3) ,
- the fuel vapour recirculation solenoid valve support bolt (4) ,
- the fuel vapour recirculation solenoid valve support (5) ,
- the brake master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting**, page 37A-1) ,
- the brake servo non-return valve (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page 37A-11) .

D4F or D7F

☐ Remove the ignition coil (see **Coils: Removal - Refitting**) (17A, Ignition).

Brake servo: Removal - Refitting

RIGHT-HAND DRIVE

AIR CONDITIONING or CLIMATE CONTROL

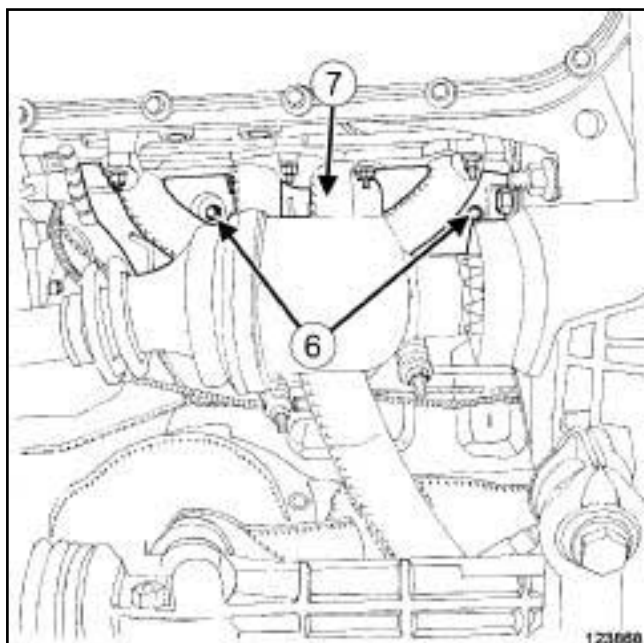
- ☐ Drain the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ☐ Remove the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

- the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

D4F, and 780

- ☐ Remove the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust).

D7F



123868

- ☐ Remove:
 - the air filter (see **Air filter: Removal - Refitting**) (12A, Fuel mixture),
 - the bolts (6) of the air filter unit heat-resistant protector,
 - the air filter unit heat-resistant protector (7) .

K4M

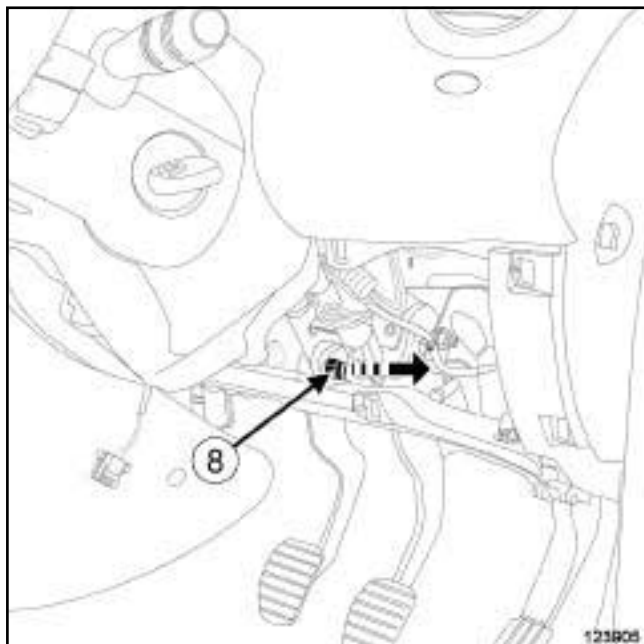
- ☐ Remove the exhaust manifold (see **Exhaust manifold: Removal - Refitting**) (12A, Fuel mixture).

D4F

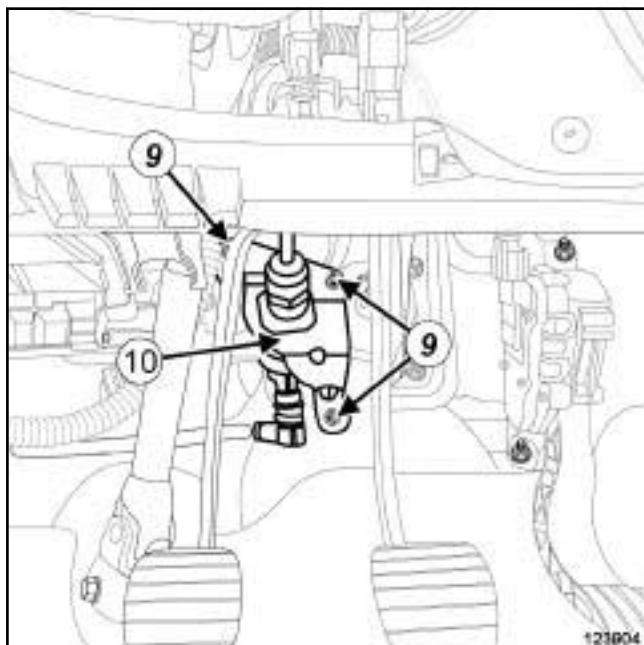
- ☐ Remove:
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),

RIGHT-HAND DRIVE

JH3 or JR5



123905

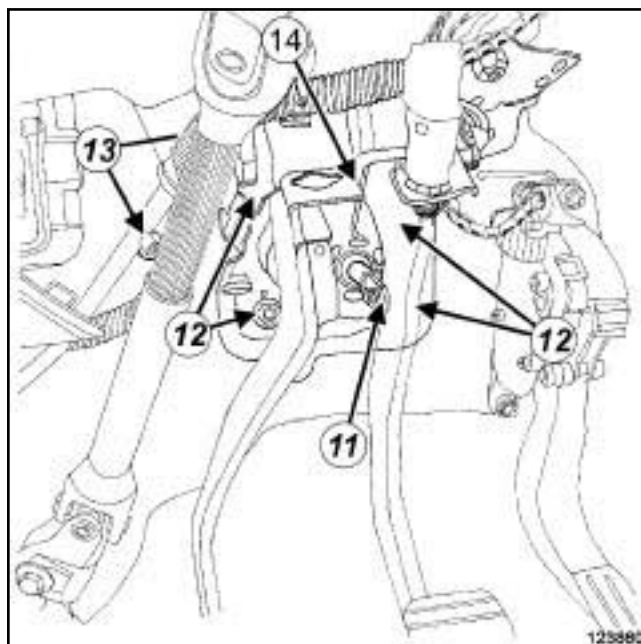


123904

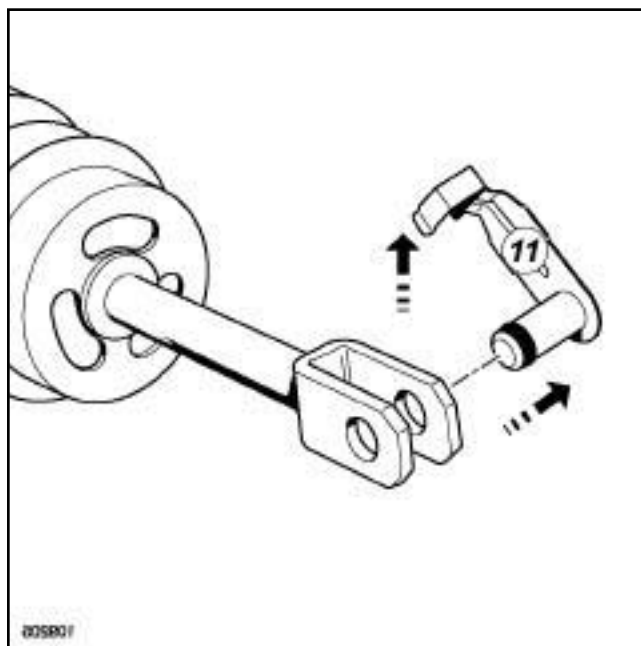
❑ Remove:

- the clutch master cylinder rod (8) from the clutch pedal,
- the clutch master cylinder support bolts (9) ,
- the clutch master cylinder support (10) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



123860



109205

❑ Remove:

- the dual safety connecting shaft (11) between the brake servo pushrod and the brake pedal; after tilting the connecting shaft upwards, move the ring using a flat screwdriver,
- the brake servo nuts (12) .

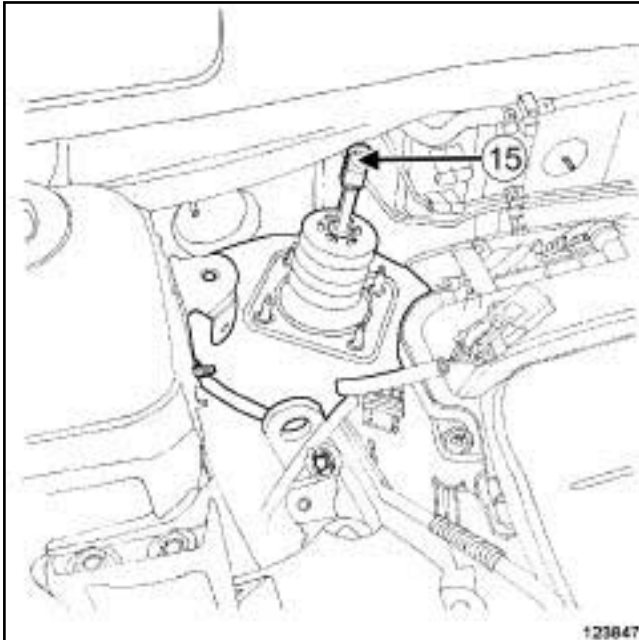
❑ Undo the "brake - clutch pedal" assembly nuts (13) as far as possible.

❑ Move the (14) "brake - clutch pedal" assembly away from the bulkhead.

RIGHT-HAND DRIVE

D4F

- Fully lower the engine using the (Mot. 1672).



123847

- Pivot the brake servo so that the servo pushrod (15) is oriented upwards.

D4F

- Remove the brake servo by moving the engine forward as far as possible.

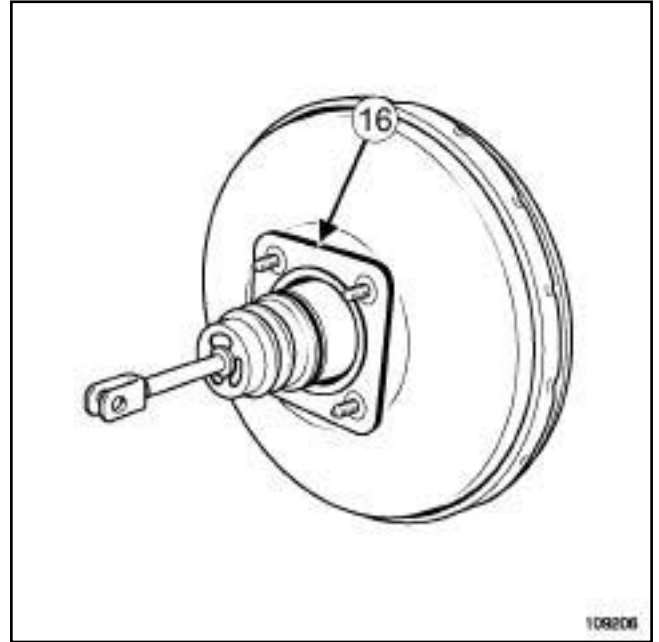
K4M

- Remove the brake servo from underneath the vehicle.

- Remove the brake servo.

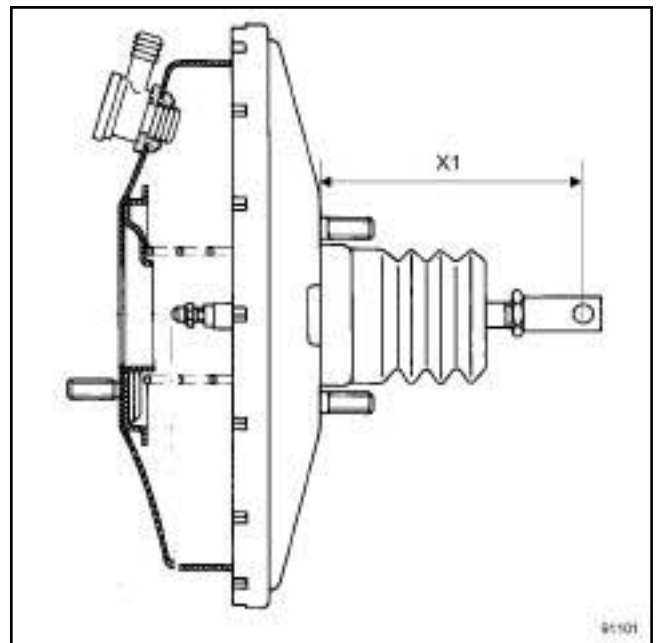
REFITTING

I - REFITTING PREPARATION OPERATION



109206

- Check that the brake servo seal (16) is in place and replace the seal if it is faulty.
- The dual safety connecting shaft between the brake servo pushrod and the brake pedal must be replaced every time it is removed.



91101

- Check the following dimension before refitting: (X1) = 132.6 mm.

Brake servo: Removal - Refitting

RIGHT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED

D4F

- ☐ Position the brake servo by moving the engine forward as far as possible and tilting the pushrod upwards.

K4M

- ☐ Refit the brake servo from underneath the vehicle.
- ☐ Refit the brake servo.
- ☐ Position the "brake - clutch pedal" assembly on the bulkhead.
- ☐ Torque tighten the "brake - clutch pedal" assembly nuts (21 Nm).
- ☐ Refit:
 - the new dual safety connecting shaft between the brake servo pushrod and the brake pedal from right to left and from top to bottom,
 - the brake servo nuts.
- ☐ Torque tighten the **brake servo nuts (21 Nm)**.

III - FINAL OPERATION.

JH3 or JR5

- ☐ Refit:
 - the clutch master cylinder support,
 - the clutch master cylinder support bolts,
 - the clutch master cylinder rod on the clutch pedal.

K4M

- ☐ Refit the exhaust manifold (see **Exhaust manifold: Removal - Refitting**) (12A, Fuel mixture).

D4F, and 780

- ☐ Refit the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust).

D4F

- ☐ Refit:
 - the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

D7F

- ☐ Refit:
 - the air filter box heat-resistant protector,
 - the air filter box heat-resistant protector bolts,
 - the air filter (see **Air filter: Removal - Refitting**) (12A, Fuel mixture).

AIR CONDITIONING or CLIMATE CONTROL

- ☐ Refit the "dehydrator reservoir - expansion valve" connection (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).
- ☐ Fill the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

D4F or D7F

- ☐ Refit the ignition coil (see **Coils: Removal - Refitting**) (17A, Ignition).

RIGHT-HAND DRIVE

□ Refit:

- the brake servo non-return valve (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-11**) ,
- the brake master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting**, page **37A-1**) ,
- the fuel vapour recirculation solenoid valve support,
- the fuel vapour recirculation solenoid valve,
- the fuel vapour recirculation solenoid valve pipes,
- the fuel vapour recirculation solenoid valve connector,
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

K9K

Tightening torques

vacuum pump bolts

25 Nm

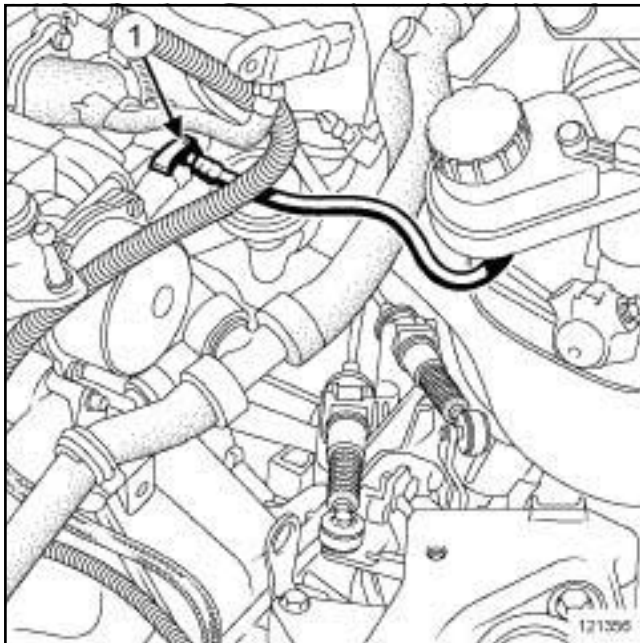
REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Remove:

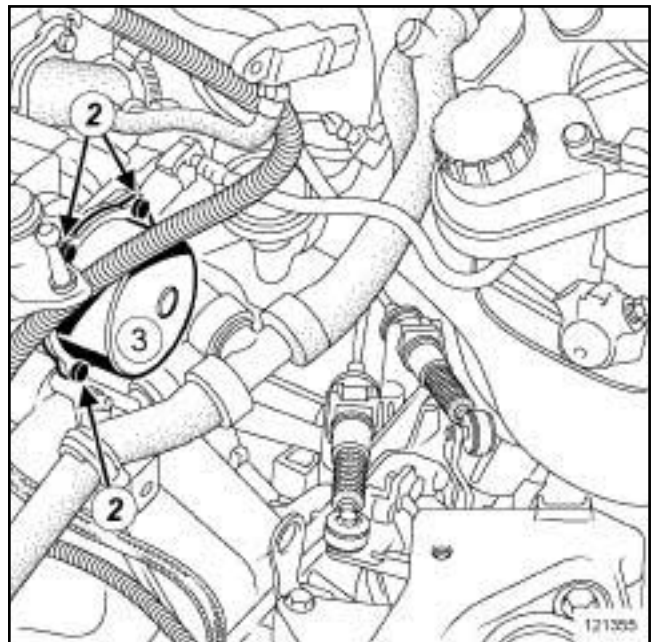
- the engine cover,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).

II - OPERATION FOR REMOVAL OF PART CONCERNED



121356

- ☐ Disconnect the brake servo pipe (1) from the vacuum pump.



121355

☐ Remove:

- the vacuum pump bolts (2) ,
- the vacuum pump (3) ,
- the vacuum pump seal.

WARNING

The seals must always be replaced.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Clean the vacuum pump sealing surface.

II - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- the vacuum pump seal,
- the vacuum pump,
- the vacuum pump bolts.

- ☐ Torque tighten the **vacuum pump bolts (25 Nm)**.

- ☐ Connect the brake servo pipe onto the vacuum pump.

Vacuum pump: Removal - Refitting

K9K

III - FINAL OPERATION.

☐ Refit:

- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the engine cover.

I - LIST OF COMPONENTS

The pedal assembly consists of:

- an accelerator pedal (see 37A, **Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-29)
- a brake pedal switch (see 37A, **Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42)

5-SPEED MANUAL SEQUENTIAL GEARBOX

- a brake pedal (see 37A, **Mechanical component controls, Brake pedal: Removal - Refitting**, page 37A-31)

5-SPEED MANUAL GEARBOX

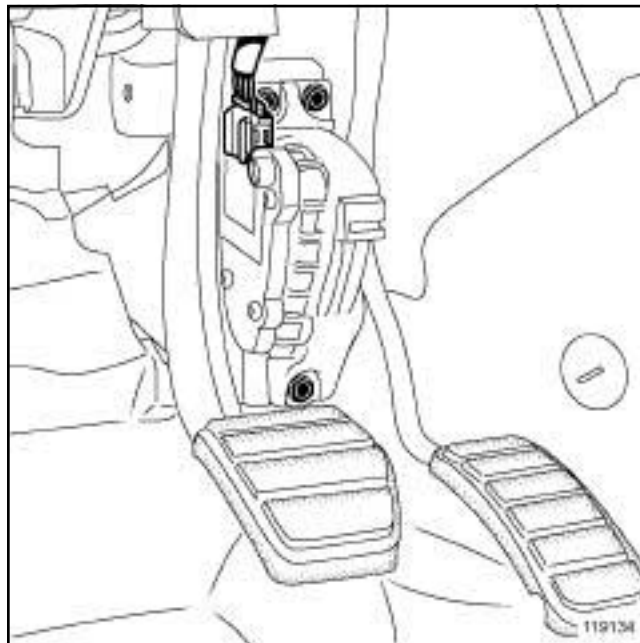
- a brake - clutch pedal assembly (see 37A, **Mechanical component controls, Brake pedal: Removal - Refitting**, page 37A-31)

CRUISE CONTROL

- a clutch pedal switch (see 37A, **Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page 37A-52)

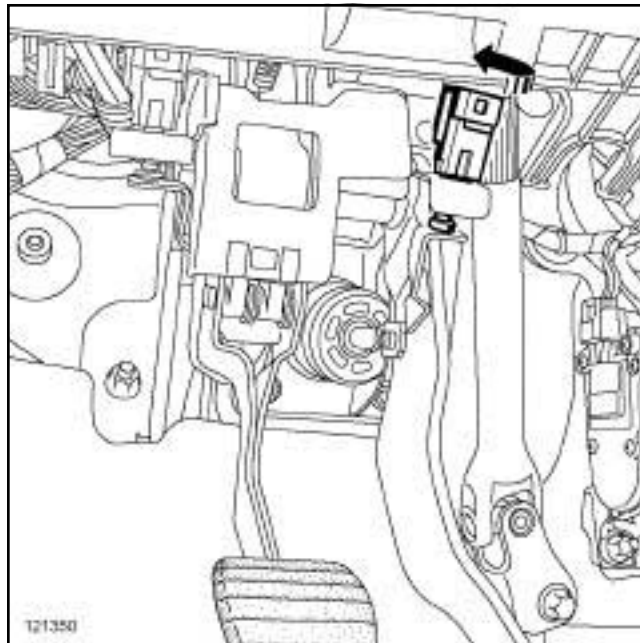
II - LOCATION OF COMPONENTS

Accelerator pedal



119134

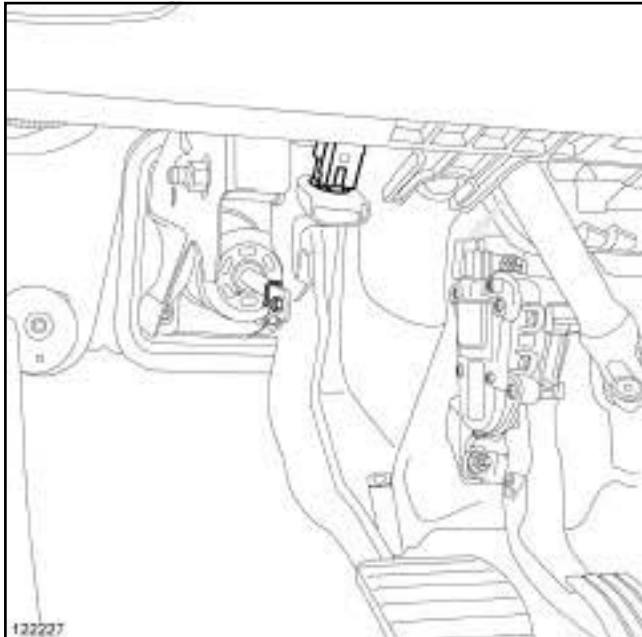
Brake pedal switch



121350

5-SPEED MANUAL SEQUENTIAL GEARBOX

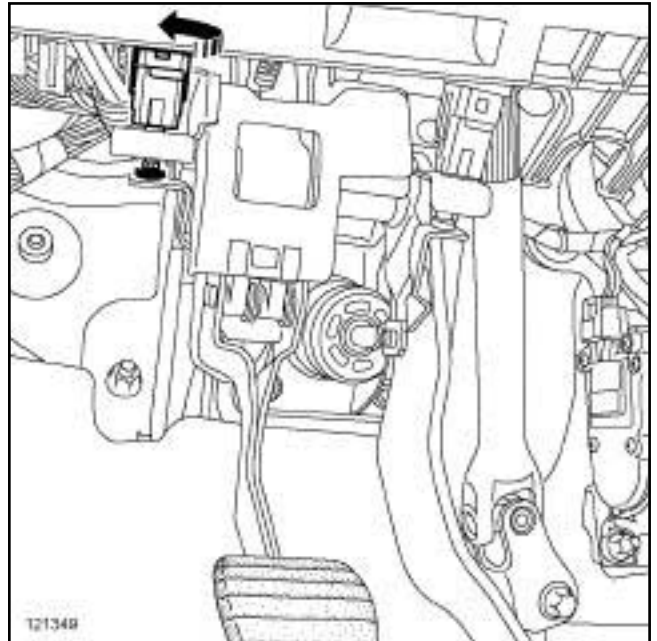
Brake pedal



122227

CRUISE CONTROL

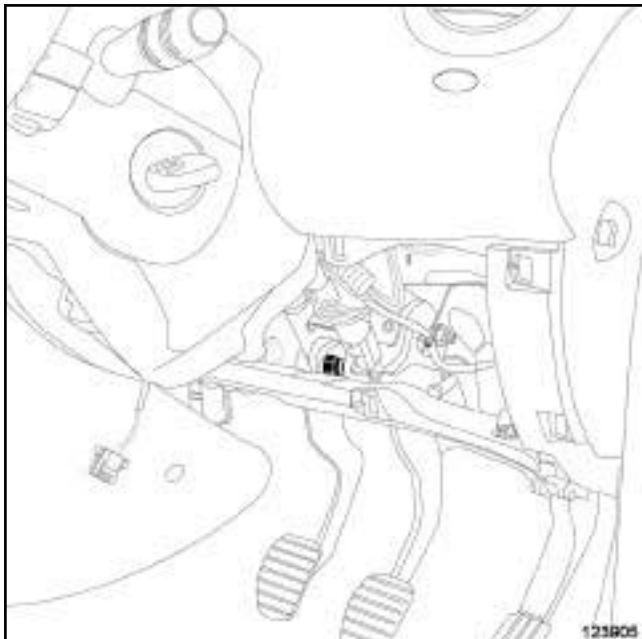
Clutch pedal switch



121349

5-SPEED MANUAL GEARBOX

Brake - clutch pedal assembly



123805

MECHANICAL COMPONENT CONTROLS

Accelerator pedal: Removal - Refitting

37A

Equipment required

heat stripper

Tightening torques

accelerator pedal nuts

8 N.m

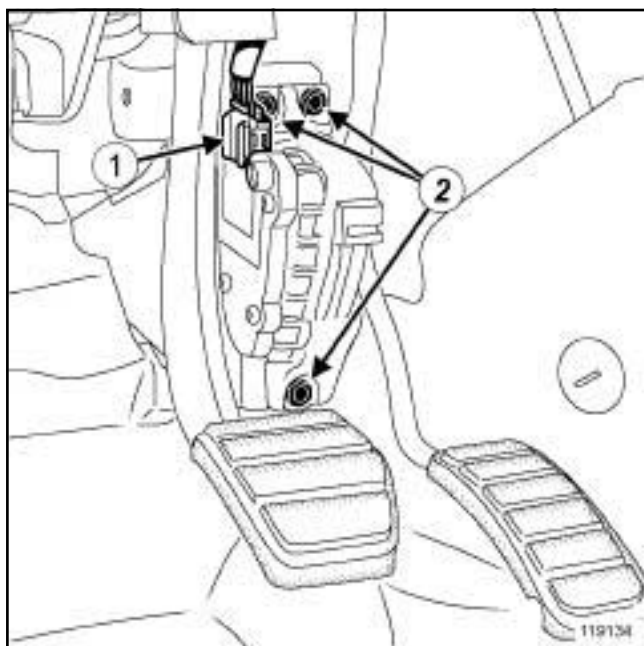
REMOVAL

I - REMOVAL OPERATION FOR ALUMINIUM PEDAL PAD

EQUIPMENT LEVEL SPORT

- ☐ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80°C.
- ☐ Remove the pad using a pair of pliers.
- ☐ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119134

- ☐ Disconnect the accelerator pedal potentiometer connector (1) .
- ☐ Remove:
 - the accelerator pedal nuts (2) ,

- the accelerator pedal.

REFITTING

I - REFITTING PREPARATION OPERATION

EQUIPMENT LEVEL SPORT

- ☐ Always replace the aluminium pedal pad each time it is removed.

II - REFITTING OPERATION FOR ALUMINIUM PEDAL PAD

EQUIPMENT LEVEL SPORT

- ☐ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

- ☐ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

- ☐ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

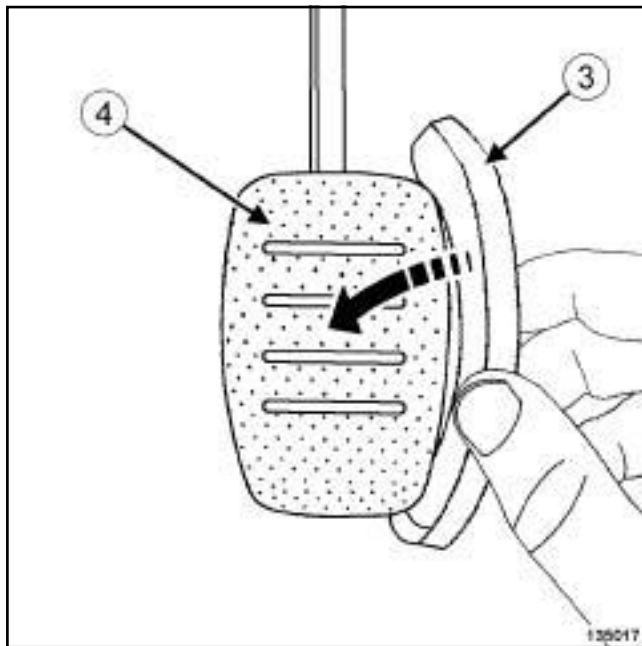
It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.



135017

- ☐ Bond the pedal pad (3) to the pedal (4) by pressing on the right-hand side.

Note:

Respect the range of motion when fitting.

Press the pad to ensure bonding.

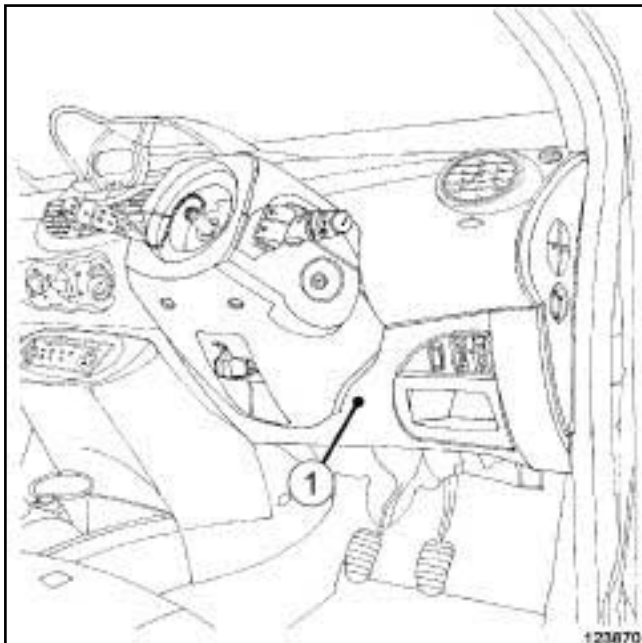
III - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the accelerator pedal,
 - the accelerator pedal nuts.
- ☐ Torque tighten the **accelerator pedal nuts (8 N.m)**.
- ☐ Connect the accelerator pedal potentiometer connector.

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

Equipment required

heat stripper

Tightening torques bolts of the «brake -
clutch pedal assembly »**21 N.m****REMOVAL****I - REMOVAL PREPARATION OPERATION**

123870

☐ Remove:

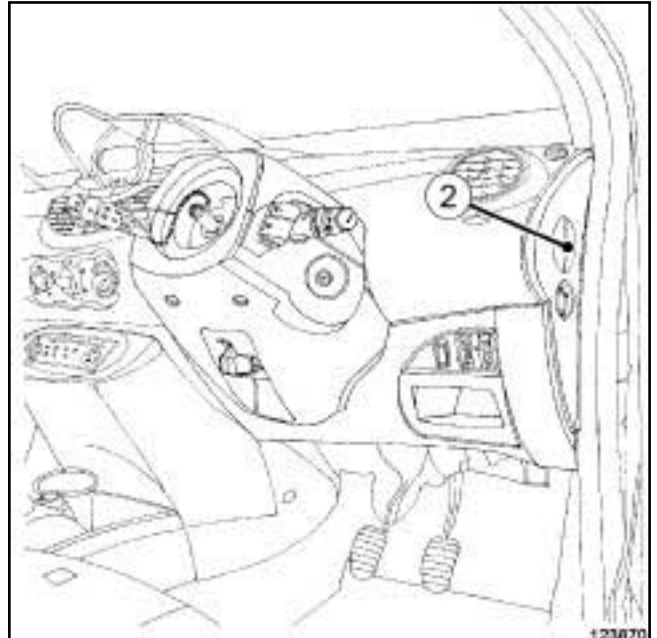
- the dashboard lower trim (1) ,
- the brake pedal switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42) .

JB1

- ☐
- Remove the accelerator pedal (see
- 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**
- , page 37A-29) .

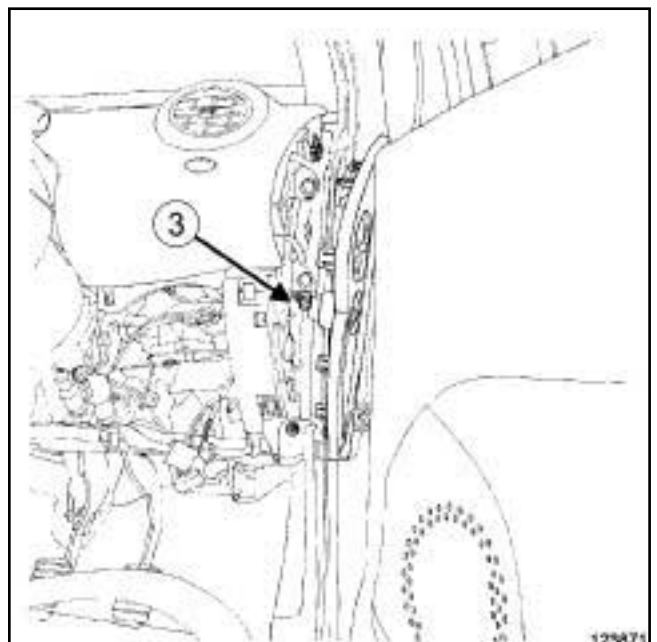
CRUISE CONTROL

- ☐
- Remove the clutch pedal switch (see) .



123870

- ☐
- Remove the dashboard side face (2) .

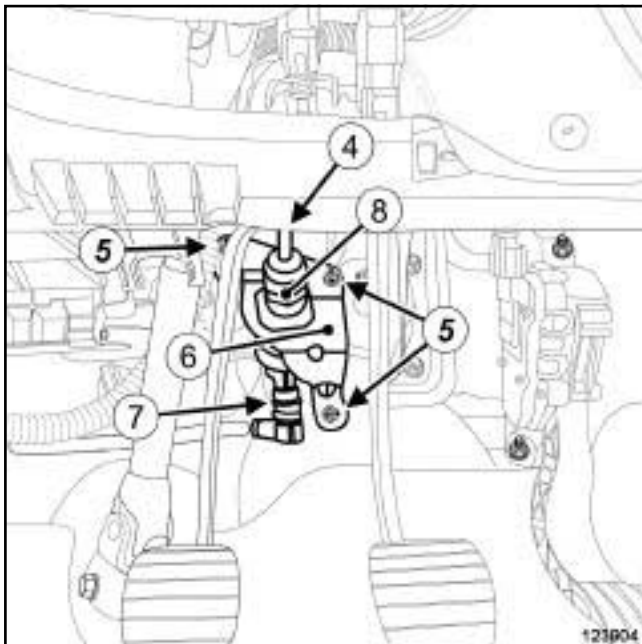


123871

- ☐
- Disconnect the airbag inhibitor switch connector (3) .

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

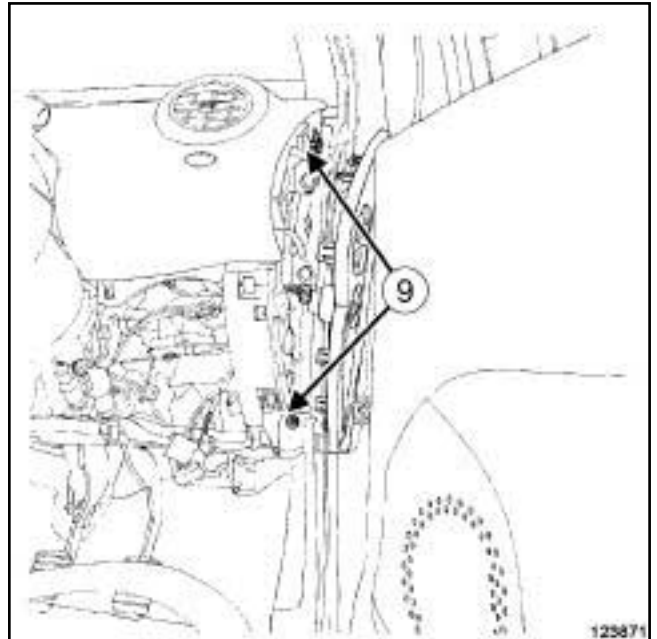
JH3 or JR5



123904

❑ Remove:

- the clutch master cylinder rod (4) ,
- the nuts (5) from the clutch master cylinder support,
- the clutch master cylinder support (6) ,
- the connecting clip (7) between the outlet pipe and the clutch master cylinder,
- the clutch master cylinder (8) .



123871

- ❑ Remove the dashboard bolts (9) .

- ❑ Move the dashboard away slightly.

II - REMOVAL OPERATION FOR THE ALUMINIUM PEDAL PADS

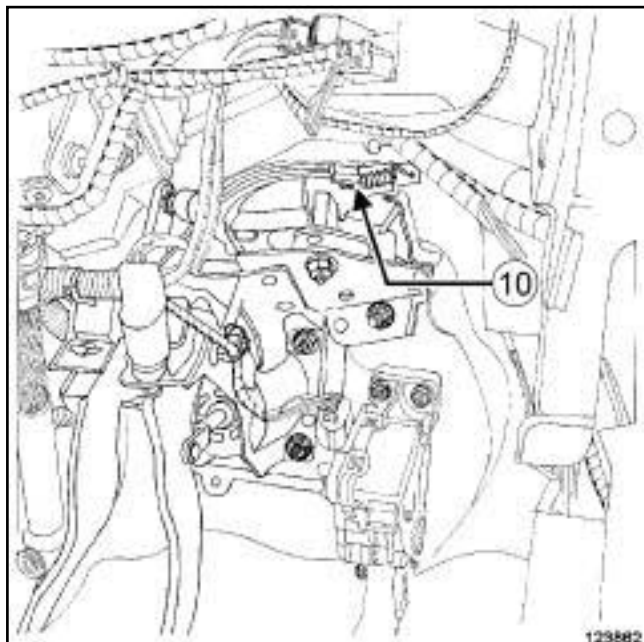
EQUIPMENT LEVEL SPORT

- ❑ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80°C.
- ❑ Remove the pad using a pair of pliers.
- ❑ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

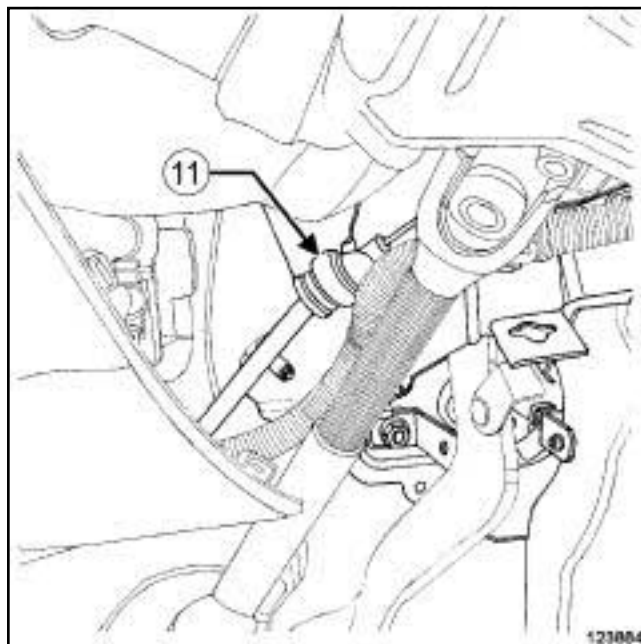
III - OPERATION FOR REMOVAL OF PART CONCERNED

JB1

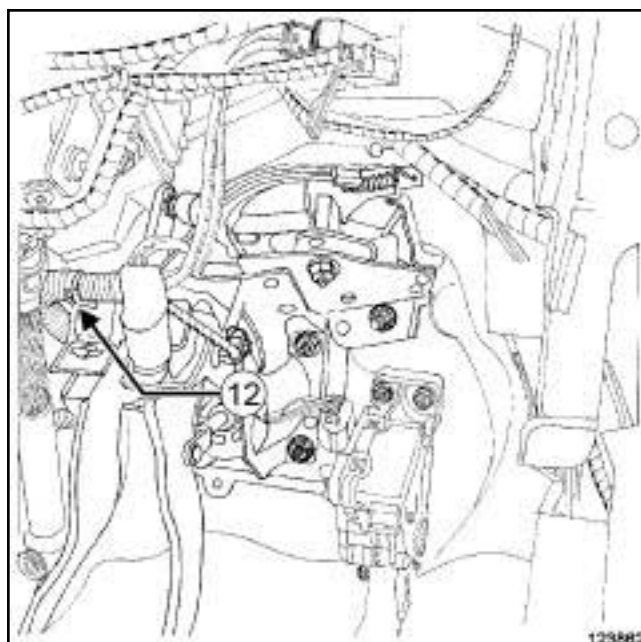


- Remove the clutch cable (10)

JB1

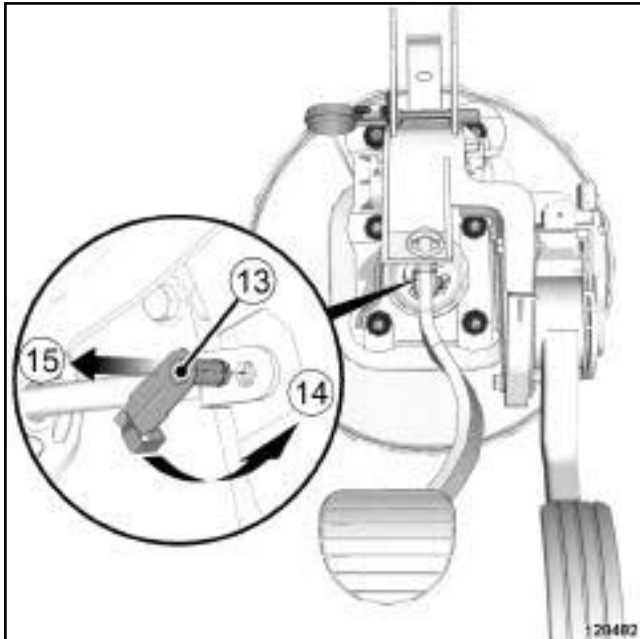


- Remove the sleeve stop (11)



- Unclip the passenger compartment wiring (12) .

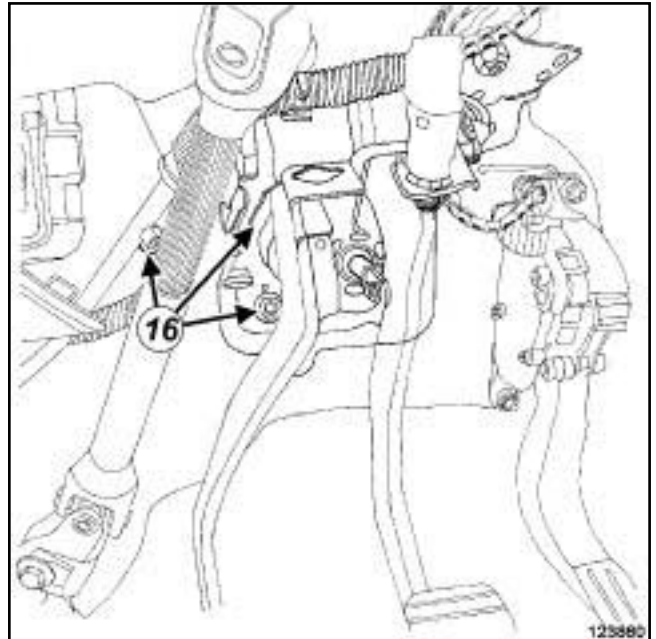
RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



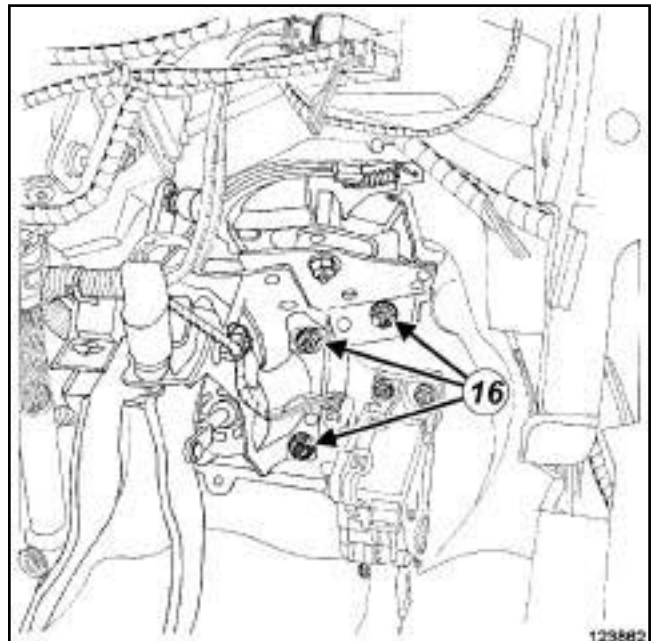
128482

- ❑ Remove the connecting shaft (13) between the brake pedal and the brake servo pushrod:

- unlock the shaft in accordance with (14) ,
- extract the shaft in accordance with (15) .



123860



123862

- ❑ Remove:

- the bolts (16) from the «brake - clutch pedal assembly» ,
- « the brake - clutch pedal assembly » .

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Always replace the **parts always to be replaced:**
Connecting shaft between the brake pedal and the brake servo pushrod.

Brake pedal: Removal - Refitting

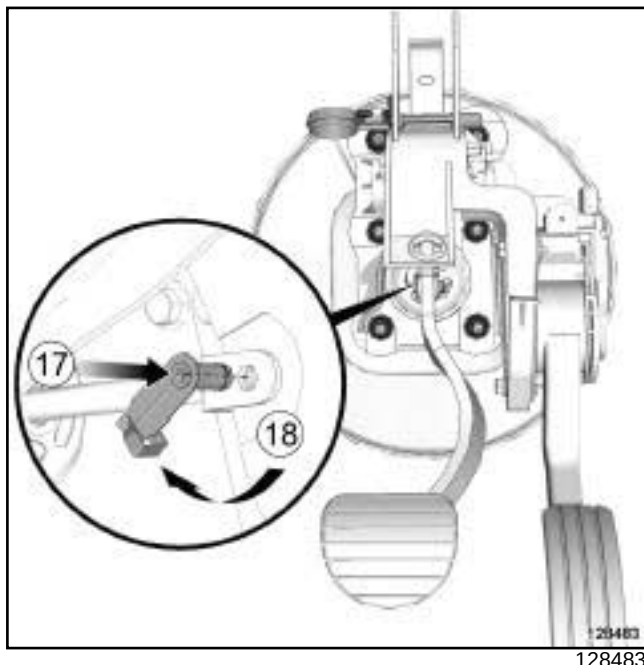
RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

EQUIPMENT LEVEL SPORT

- ☐ Always replace the aluminium pedal pads after removing them.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the « brake - clutch pedal assembly » ,
- ☐ Torque tighten the **bolts of the « brake - clutch pedal assembly » (21 N.m).**



- ☐ Refit a new connecting shaft between the brake pedal and the brake servo pushrod:
 - insert the shaft in accordance with (17) ,
 - lock the shaft in accordance with (18) .
- ☐ Clip the passenger compartment wiring onto « the brake - clutch pedal assembly » .

JB1

- ☐ Refit:
 - the clutch cable sleeve stop to the « brake - clutch pedal assembly » ,
 - the clutch cable to the clutch pedal.

III - REFITTING OPERATION FOR THE ALUMINIUM PEDAL PADS

EQUIPMENT LEVEL SPORT

- ☐ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

- ☐ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

- ☐ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

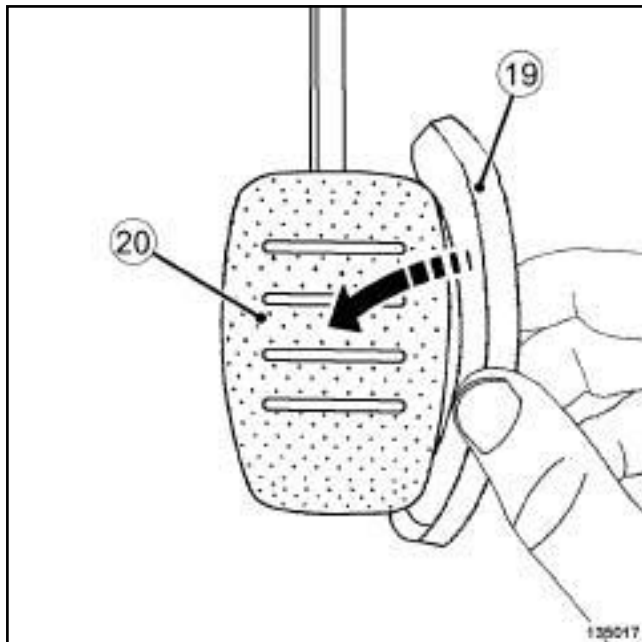
Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



135017

- ☐ Bond the pedal pad (19) to the pedal (20) by pressing on the right-hand side.

Note:

Respect the range of motion when fitting.

Press the pad to ensure bonding.

IV - FINAL OPERATION

- ☐ Fit the dashboard.
- ☐ Refit the dashboard bolts.
- ☐ Connect the airbag inhibition switch connector.
- ☐ Refit the dashboard side panel.

JH3 or JR5

- ☐ Refit:
 - the clutch master cylinder,
 - the connecting clip between the outlet pipe and the clutch master cylinder,
 - the clutch master cylinder support,
 - the clutch support bolts,
 - the clutch master cylinder rod.

CRUISE CONTROL

- ☐ Refit the clutch pedal switch (see) .

JB1

- ☐ Refit the accelerator pedal (see 37A, **Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-29) .

- ☐ Refit:

- the brake pedal switch (see 37A, **Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42) ,
- the dashboard lower trim.

Tightening torques

brake pedal plate nuts	21 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

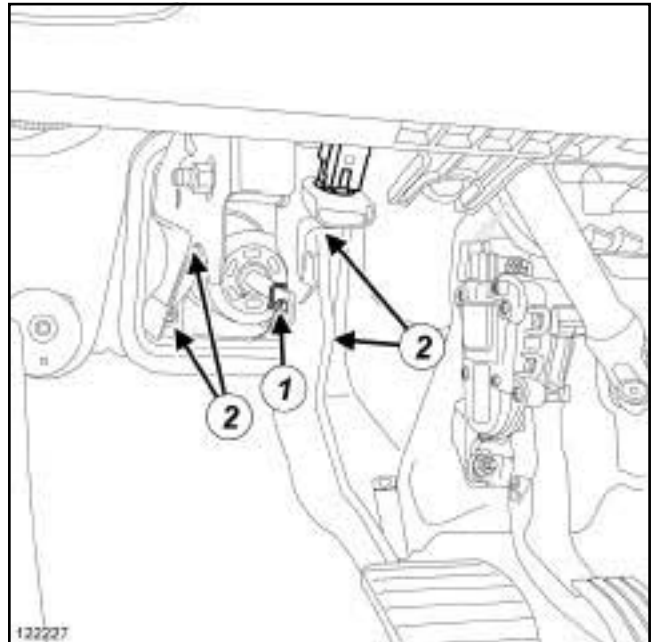
RIGHT-HAND DRIVE

- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) .
- ☐ Mark the routing of the dashboard wiring harness on the pedals.
- ☐ Disconnect:
 - the accelerator pedal potentiometer connector,
 - the electric steering computer supply connector.
- ☐ Detach the dashboard wiring harness from the pedals.

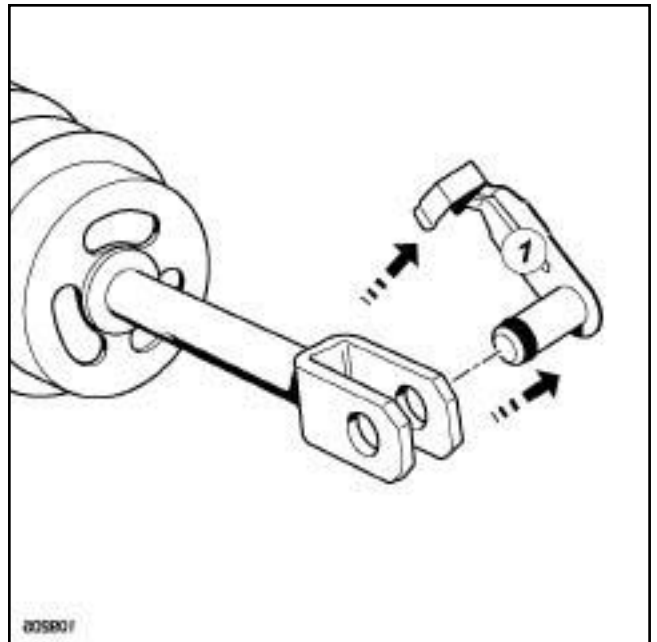
LEFT-HAND DRIVE

- ☐ Mark the brake light switch wiring routing on the pedals.
- ☐ Detach the brake light switch wiring from the pedals.
- ☐ Remove the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42) .

II - REMOVAL OPERATION FOR PART CONCERNED



122227



109205

☐ Remove:

- the connecting shaft (1) between the brake pedal and the brake servo rod, after tilting the connecting shaft upwards, move the ring using a flat-blade screwdriver,
- the brake pedal plate nuts (2) ,
- the « brake pedal - brake pedal plate » assembly.

Brake pedal: Removal - Refitting

5-SPEED MANUAL SEQUENTIAL GEARBOX

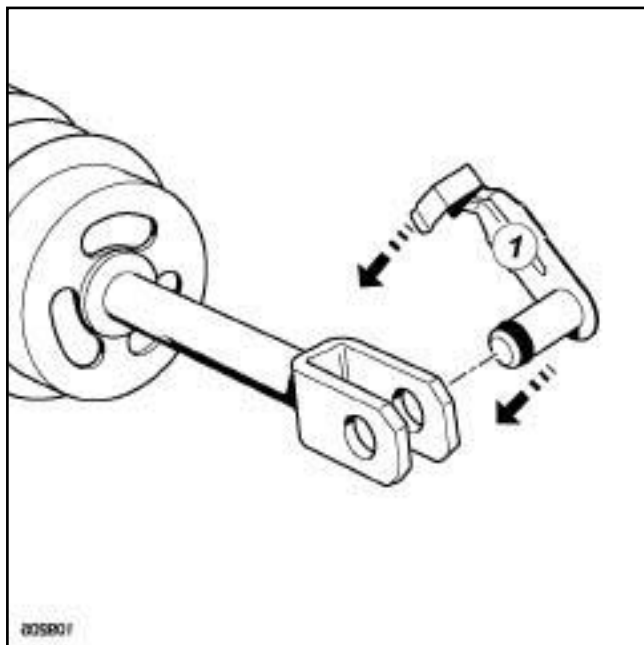
REFITTING

I - REFITTING PREPARATIONS OPERATION

- ❑ The shaft connecting the brake servo pushrod and the brake pedal must be replaced every time it is removed.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit:
 - the « brake pedal - brake pedal plate » assembly,
 - the brake pedal plate nuts (2) .
- ❑ Torque tighten the **brake pedal plate nuts (21 Nm)**.



109205

- ❑ Refit the connecting shaft (1) between the brake pedal and the brake servo rod from right to left and from top to bottom.

III - FINAL OPERATION.

- ❑ Refit the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42) .

LEFT-HAND DRIVE

- ❑ Refit the brake light switch wiring in the position marked during the removal operation.

RIGHT-HAND DRIVE

- ❑ Connect:
 - the accelerator pedal potentiometer connector,
 - the electric steering computer supply connector.
- ❑ Refit the dashboard wiring harness in the position marked during removal.
- ❑ Connect the battery (see **Battery: Removal - Refitting**) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

Equipment required

heat stripper

Tightening torques nuts on the «brake -
clutch pedal assembly »**25 N.m****REMOVAL****I - REMOVAL PREPARATION OPERATION**

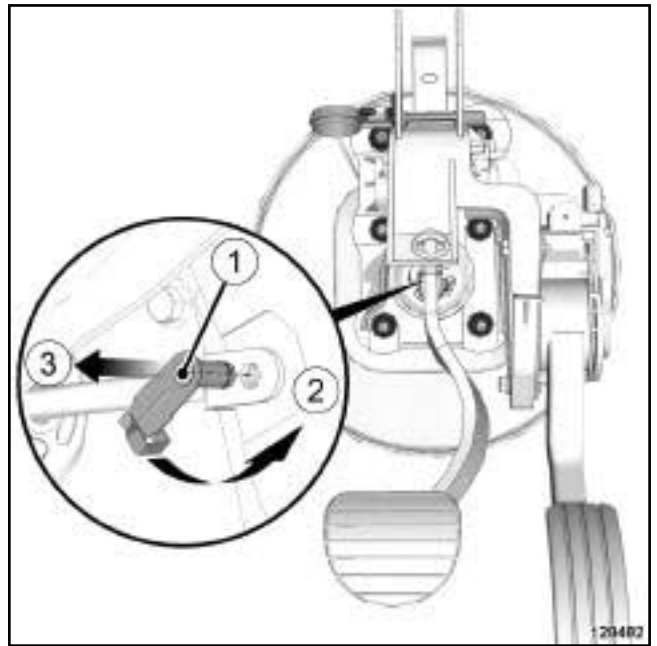
- ☐ Mark the switch wiring routing on the pedals.
- ☐ Unclip the switch wiring from the pedal assembly.
- ☐ Remove the brake pedal switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42) .

CRUISE CONTROL

- ☐ Remove the clutch pedal switch (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page 37A-52) .

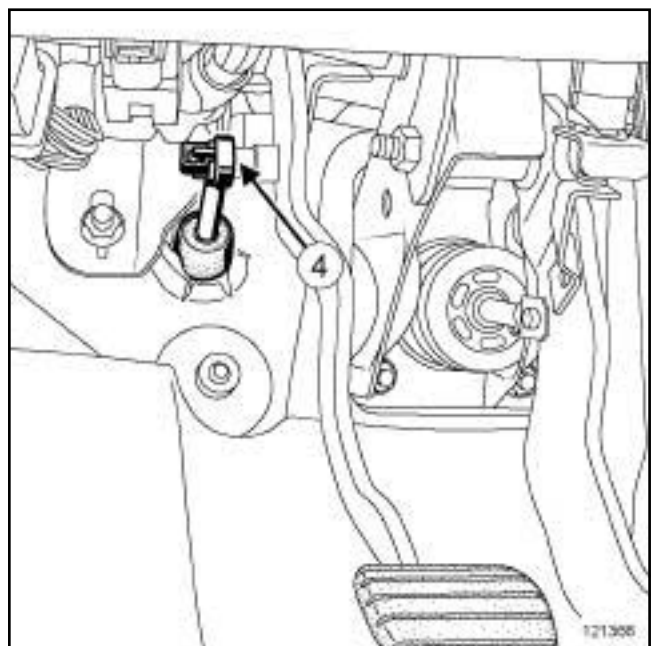
II - REMOVAL OPERATION FOR THE ALUMINIUM PEDAL PADS**EQUIPMENT LEVEL SPORT**

- ☐ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80°C.
- ☐ Remove the pad using a pair of pliers.
- ☐ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

III - OPERATION FOR REMOVAL OF PART CONCERNED

128482

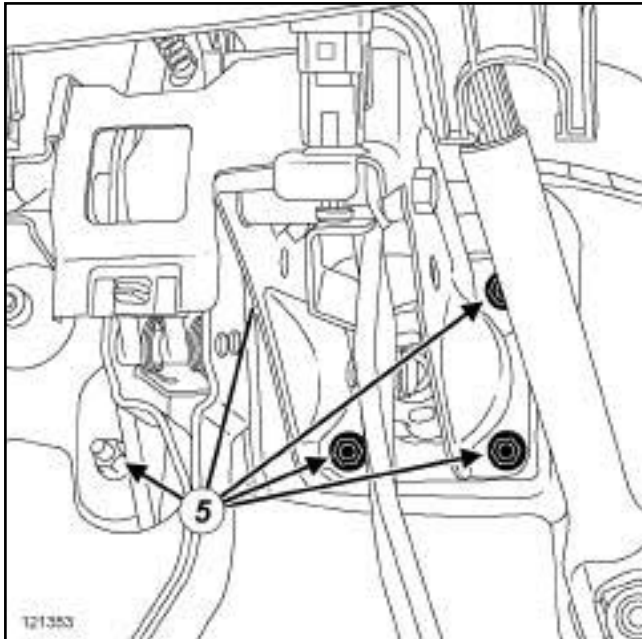
- ☐ Remove the connecting shaft (1) between the brake pedal and the brake servo pushrod:
 - unlock the shaft in accordance with (2) ,
 - extract the shaft in accordance with (3) .

JH3 or JR5

121366

- ☐ Unclip the clutch master cylinder (4) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



121353

- ☐ Remove the nuts (5) of the « brake - clutch pedal assembly » .

JB1

- ☐ Gently lower the « brake - clutch pedal assembly » .
- ☐ Detach the clutch cable from the clutch pedal by tilting the automatic compensation system.

- ☐ Remove « the brake - clutch pedal assembly » .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace the **parts always to be replaced: Connecting shaft between the brake pedal and the brake servo pushrod.**

EQUIPMENT LEVEL SPORT

- ☐ Always replace the aluminium pedal pads after removing them.

II - REFITTING OPERATION FOR PART CONCERNED

JB1

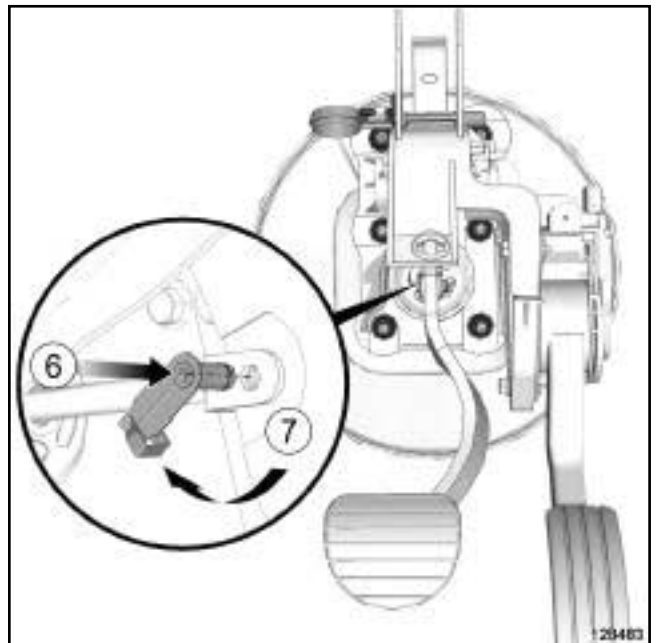
- ☐ Attach the clutch cable to the clutch pedal by tilting the automatic compensation system.

- ☐ Refit the « brake - clutch pedal assembly » .

- ☐ Torque tighten the **nuts on the « brake - clutch pedal assembly » (25 N.m).**

JH3 or JR5

- ☐ Clip the clutch master cylinder onto the clutch pedal.



128483

- ☐ Refit a new connecting shaft between the brake pedal and the brake servo pushrod:

- insert the shaft in accordance with (6) ,
- lock the shaft in accordance with (7) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

III - REFITTING OPERATION FOR THE ALUMINIUM PEDAL PADS**EQUIPMENT LEVEL SPORT**

- ☐ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

- ☐ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

- ☐ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

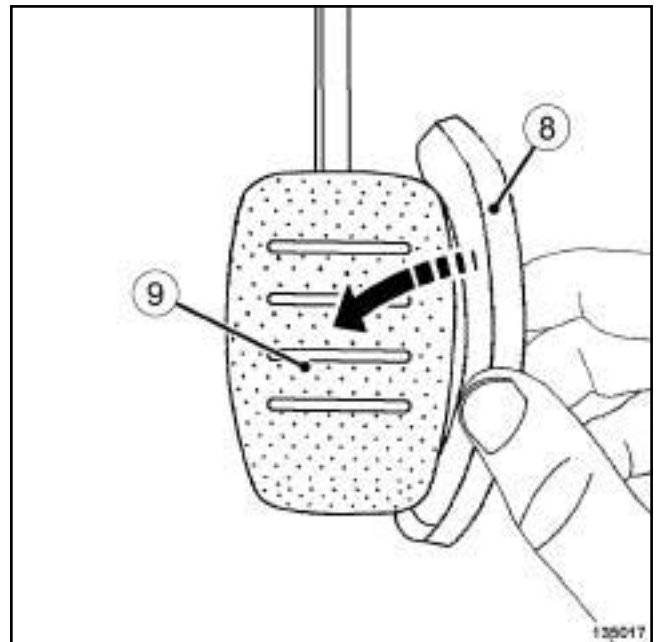
It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.



135017

- ☐ Bond the pedal pad (8) to the pedal (9) by pressing on the right-hand side.

Note:

Respect the range of motion when fitting.

Press the pad to ensure bonding.

IV - FINAL OPERATION**CRUISE CONTROL**

- ☐ Refit the clutch pedal switch (see 37A, **Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page 37A-52) .

- ☐ Refit the brake pedal switch (see 37A, **Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-42)

- ☐ Refit the switch wiring on the pedals in the position marked during the removal operation.

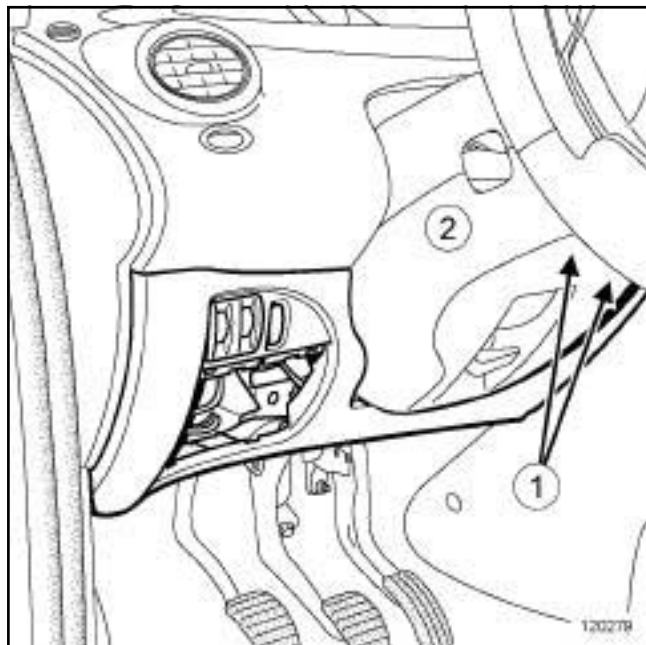
Equipment required

set of feeler gauges

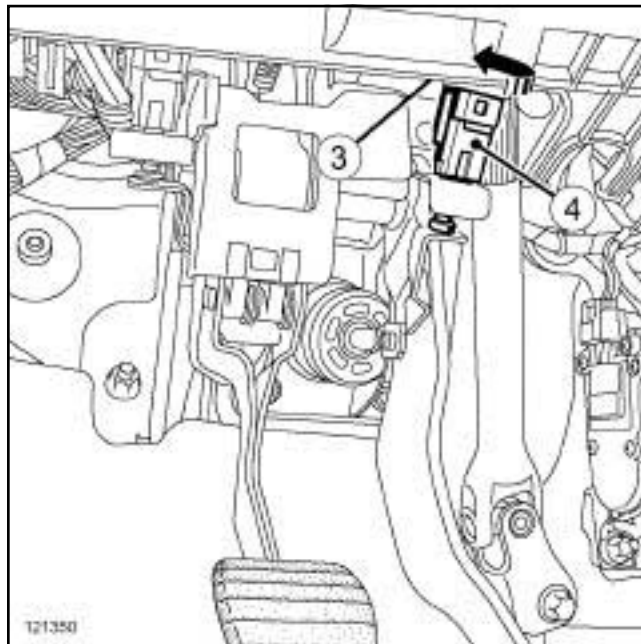
Diagnostic tool

WARNING

The brake pedal position switch must be replaced if the notched segment is pulled completely out of the switch.

REMOVAL**I - REMOVAL PREPARATION OPERATION**
☐ Remove:

- the bolts (1) of the steering wheel cover,
- the steering wheel cover (2) .

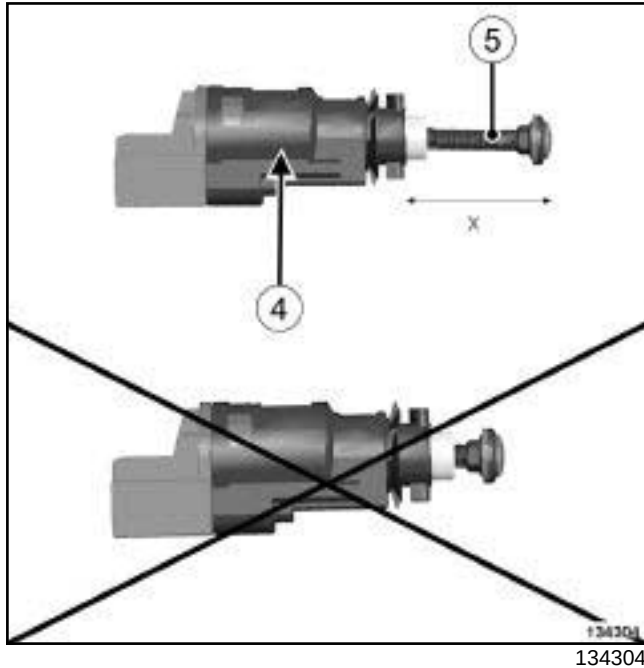
II - OPERATION FOR REMOVAL OF PART CONCERNED

121350

- ☐ Disconnect the brake light switch connector (3) .
- ☐ Turn the brake light switch (4) a quarter of a turn anti-clockwise.
- ☐ Remove the switch from the pedal assembly.

REFITTING

I - REFITTING PREPARATION OPERATION

**WARNING**

The brake pedal position switch must be replaced if the notched segment is pulled completely out of the switch.

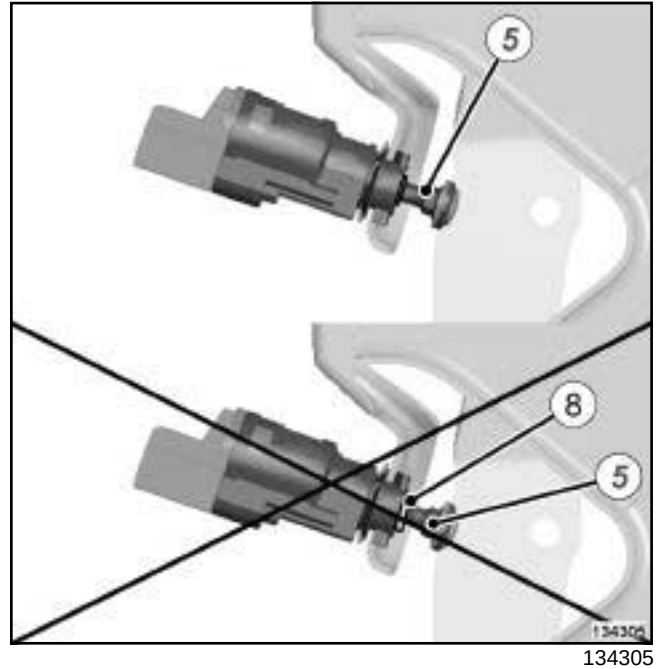
WARNING

The switch must be replaced if the notched segment is adjusted three times.

- ☐ Measure dimension X of the notched segment (5). If dimension X is less than **28 mm**, pull carefully on the end of the notched segment (5) to adjust the dimension X between **28 mm** minimum and **29 mm** maximum.

Visual inspection of the switch during the operation

Position of the notched segment and the flange

**Note:**

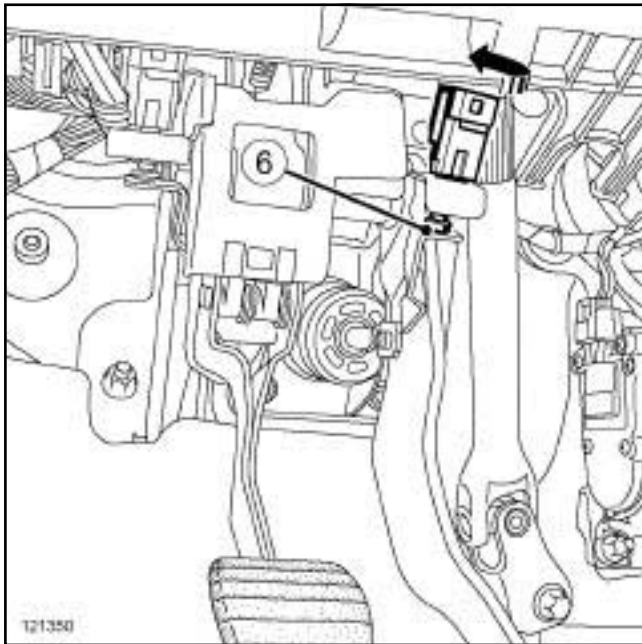
With the pedal in the highest position, check that the flange (8) is not visible.

If the flange is visible, repeat the adjustment of X.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Depress the brake pedal by hand.
- ☐ Fit the brake light switch to the pedal assembly.

LEFT-HAND DRIVE



121350

(6) Position of the adjusting shim.

- ☐ Take a **set of feeler gauges**
- ☐ Put a « **1 mm** » shim on the switch support bracket on the brake pedal (6) .
- ☐ Lock the brake light switch by turning it a quarter of a turn clockwise.
- ☐ Carefully support the return of the brake pedal while checking that the shim remains correctly in place.

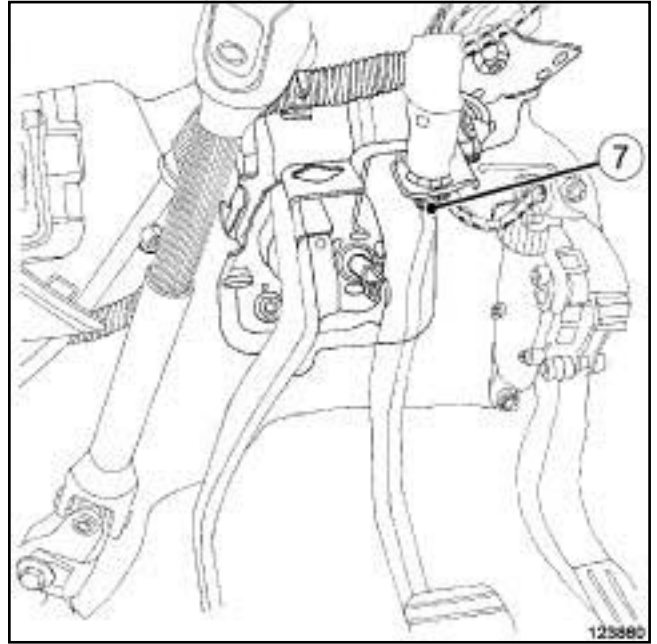
Note:

The brake pedal switch has an automatic adjustment feature, adapting to the pedal position.

The automatic adjustment makes a clicking noise when in operation.

- ☐ With the shim in place, check that the flange (8) is not visible.
- ☐ Depress the brake pedal by hand.
- ☐ Remove the adjusting shim.
- ☐ Carefully support the return of the brake pedal.

RIGHT-HAND DRIVE



123860

(7) Position of the adjusting shim.

- ☐ Take a **set of feeler gauges**
- ☐ Put a **1 mm** shim on the brake pedal (7) .
- ☐ Lock the brake light switch by turning it a quarter of a turn clockwise.
- ☐ Carefully support the return of the brake pedal while checking that the shim remains correctly in place.

Note:

The brake pedal switch has an automatic adjustment feature, adapting to the pedal position.

The automatic adjustment makes a clicking noise when in operation.

- ☐ With the shim in place, check that the flange (8) is not visible.
- ☐ Depress the brake pedal by hand.
- ☐ Remove the adjusting shim.
- ☐ Carefully support the return of the brake pedal.
- ☐ Connect the brake light switch connector.

III - CHECKING THE ELECTRICAL OPERATION OF THE PART

- ☐ Check that the brake light switch is operating correctly:
 - depress the brake pedal to switch on the lights,
 - release the brake pedal to switch off the lights.
- ☐ Connect the **Diagnostic tool**
- ☐ Depress the brake pedal by 10 mm.
- ☐ Check that the first signal of the switch has not switched (the first signal does not illuminate the bulbs).

IV - FINAL OPERATION

- ☐ Refit:
 - the steering wheel cover,
 - the bolts on the steering wheel cover.

Tightening torques

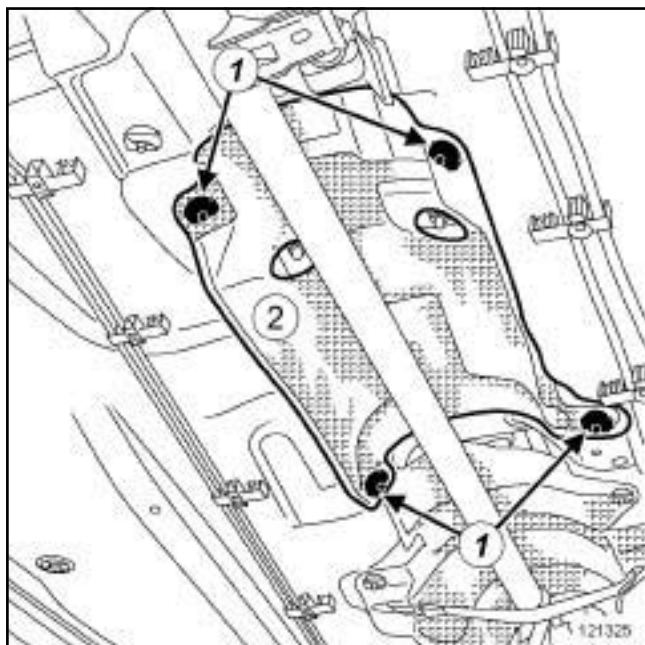
parking brake lever nuts

8 Nm

REMOVAL

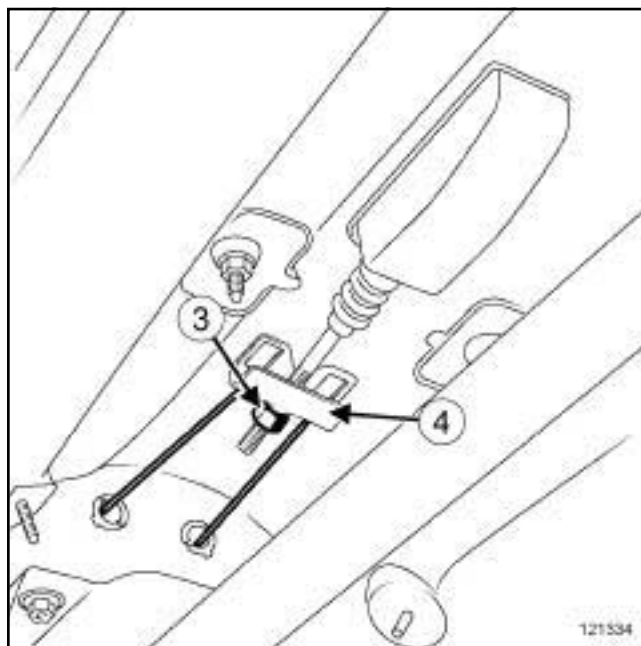
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Release the parking brake lever.



121325

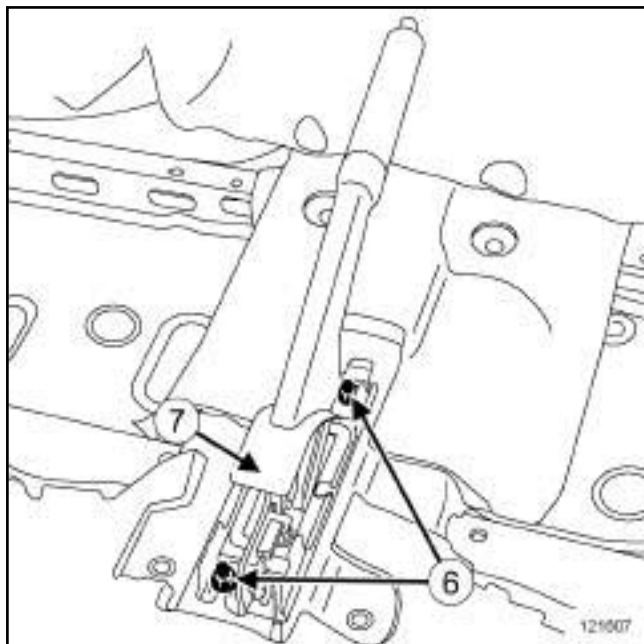
- ☐ Remove:
 - the heat shield clips (1) ,
 - the heat shield (2) .



121334

- ☐ Remove the parking brake lever adjusting nut (3) .
- ☐ Detach the parking brake cables from the compensator.
- ☐ Remove:
 - the parking brake lever compensator (4) ,
 - the front seats, completely (see **Complete front seat: Removal - Refitting**) (MR 412 Bodywork, 75A, Front seat frames and runners).
- ☐ Depending on the equipment level, remove:
 - the rear bench seatback (see **Rear bench seatback: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),
 - the rear bench seat base (see **Rear bench seat base: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners)
 - the rear seats, completely (see **Complete rear seat: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners).
- ☐ Partially remove the floor carpet to access the parking brake lever (see **Floor carpet: Removal - Refitting**) (MR 412 Bodywork, 71A, Body internal trim).

II - OPERATION FOR REMOVAL OF PART CONCERNED



121607

❑ Remove:

- the nuts (6) from the parking brake lever,
- the parking brake lever (7) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the parking brake lever,
- the parking brake lever nuts.

❑ Torque tighten the **parking brake lever nuts (8 Nm)**.

II - FINAL OPERATION.

❑ Fit the floor carpet (see **Floor carpet: Removal - Refitting**) (MR 412 Bodywork, 71A, Body internal trim).

❑ Refit (depending on equipment level):

- the rear seats, completely (see **Complete rear seat: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),
- the rear bench seat base (see **Rear bench seat base: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),

- the rear bench seatback (see **Rear bench seatback: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners).

❑ Refit the front seats, completely (see **Complete front seat: Removal - Refitting**) (MR 412 Bodywork, 75A, Front seat frames and runners).

❑ Attach the parking brake cables to the compensator.

❑ Refit the parking brake lever adjusting nut.

❑ Adjust the parking brake lever (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page 37A-48) .

❑ Refit:

- the heat shield,
- the heat shield clips.

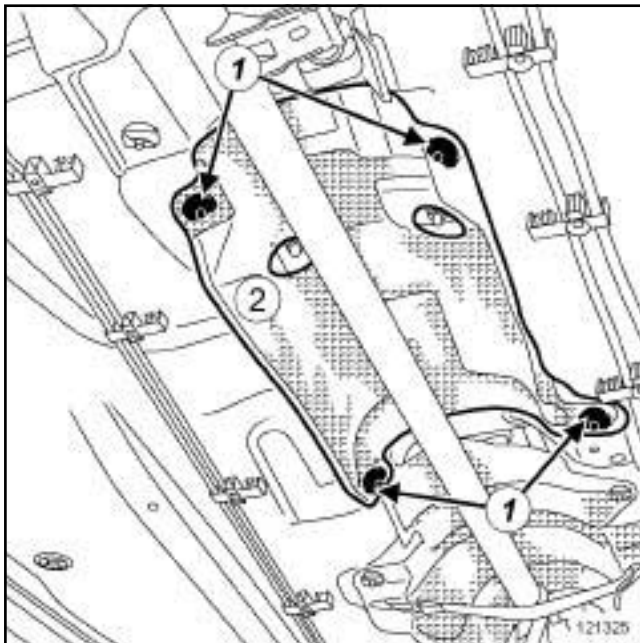
A poorly adjusted parking brake:

- prevents correct operation of the automatic compensation system for the brake shoes,
- causes premature wear of brake shoes.

ADJUSTMENT

I - ADJUSTMENT PREPARATION OPERATION

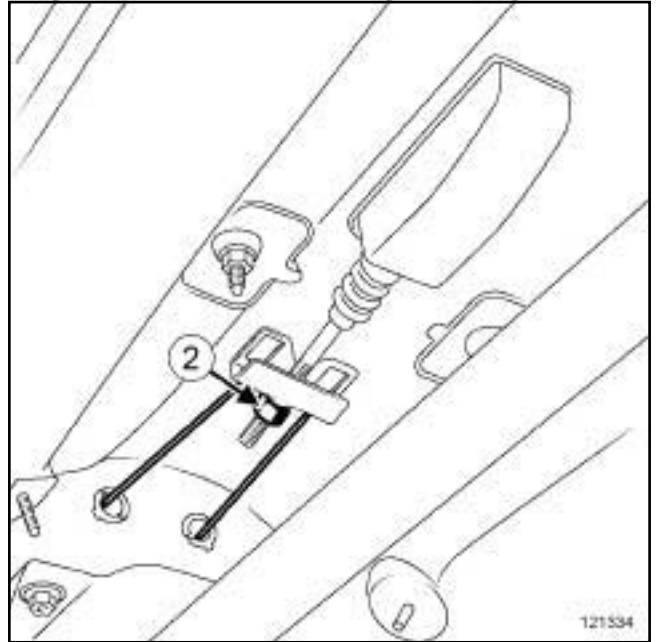
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .
- ☐ Apply the parking brake five times to condition the cables for normal use.
- ☐ Put the parking brake lever into the released position.
- ☐ Check that the rear wheels turn freely. If they do not, check the following components and if necessary repair:
 - the parking brake cables,
 - the calliper piston,
 - the automatic compensation system,
 - calliper
- ☐ Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .



121325

- ☐ Remove:
 - the heat shield clips (1) ,
 - the heat shield (2) .

II - OPERATION FOR ADJUSTMENT OF PART CONCERNED



121334

- ☐ Loosen the nut (2) to release the cables.
- ☐ Position the parking brake lever at the 2nd notch.
- ☐ Move the adjustment nut until the disc or drum can no longer be turned by hand.
- ☐ Pull the brake lever several times.
- ☐ Put the parking brake lever into the released position.
- ☐ The disc or the drum must be able to turn freely. If not, move the nut gradually until the disc or drum can turn freely.
- ☐ Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

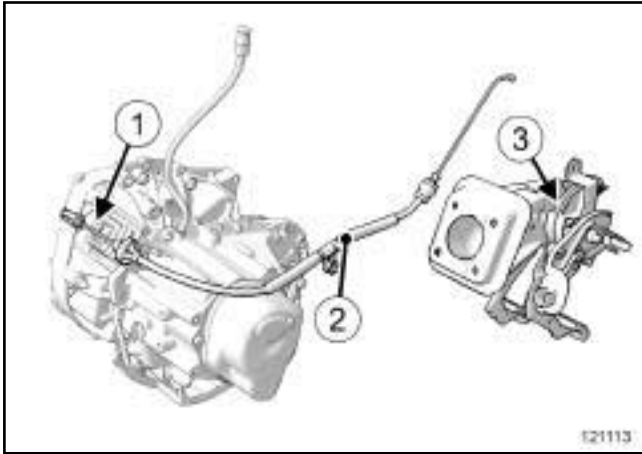
MECHANICAL COMPONENT CONTROLS

Clutch control: List and location of components

37A

JB1

No.	Description
(1)	Clutch fork
(2)	Clutch control cable
(3)	Brake - clutch pedal



121113

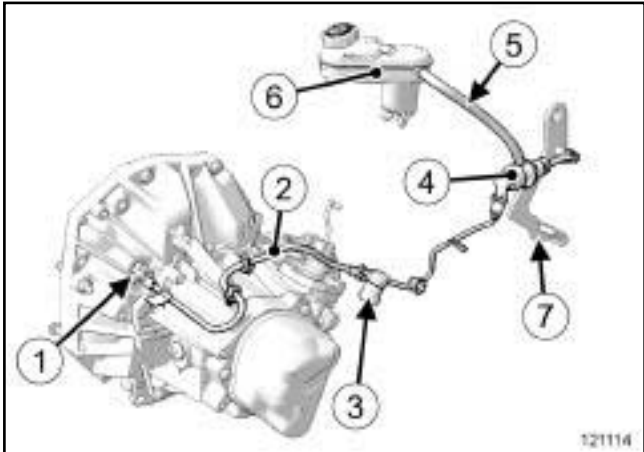
MECHANICAL COMPONENT CONTROLS

Clutch control: List and location of components

37A

JH3

No.	Description
(1)	Clutch slave cylinder (clutch thrust bearing)
(2)	Hydraulic clutch control pipes
(3)	Filter
(4)	Clutch master cylinder
(5)	Brake fluid supply duct
(6)	Brake fluid reservoir
(7)	Clutch pedal

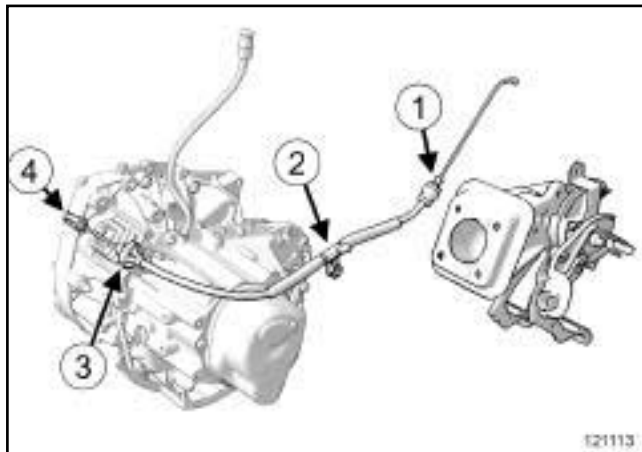


121114

JB1

REMOVAL**I - REMOVAL PREPARATION OPERATION**☐ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the « brake pedal - clutch » assembly (see) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

121113

- ☐ Unclip the cable sleeve stop (1) from the bulkhead and remove the passenger compartment cable.
- ☐ Detach the clutch cable at (2) .
- ☐ Detach the cable sleeve stop (3) from the fork on the gearbox.
- ☐ Detach the clutch cable from the clutch fork at (4) .
- ☐ Remove the clutch cable.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- ☐ Refit the clutch cable.
- ☐ Attach the clutch cable to the clutch fork.
- ☐ Fit the cable sleeve stop to the fork on the gearbox.
- ☐ Attach the clutch cable.
- ☐ Fit the clutch cable through the opening in the bulkhead and clip on the cable sleeve stop.

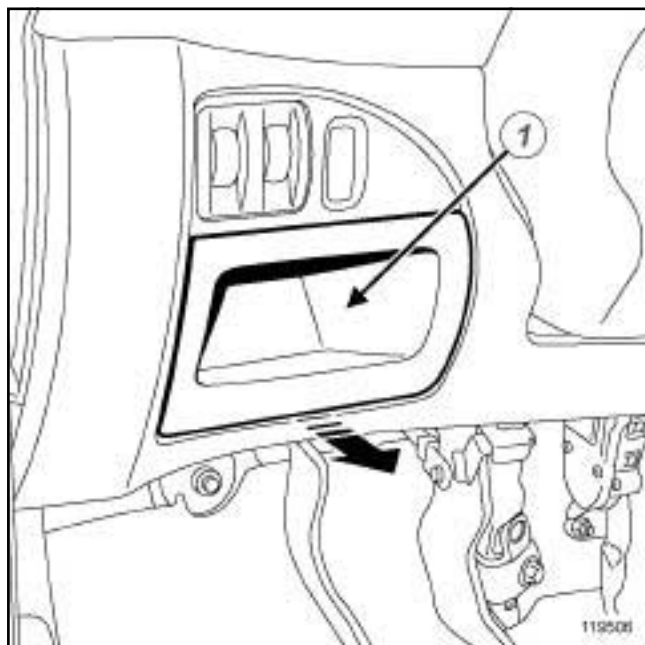
II - FINAL OPERATION.☐ Refit:

- the « brake pedal - clutch » assembly (see) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

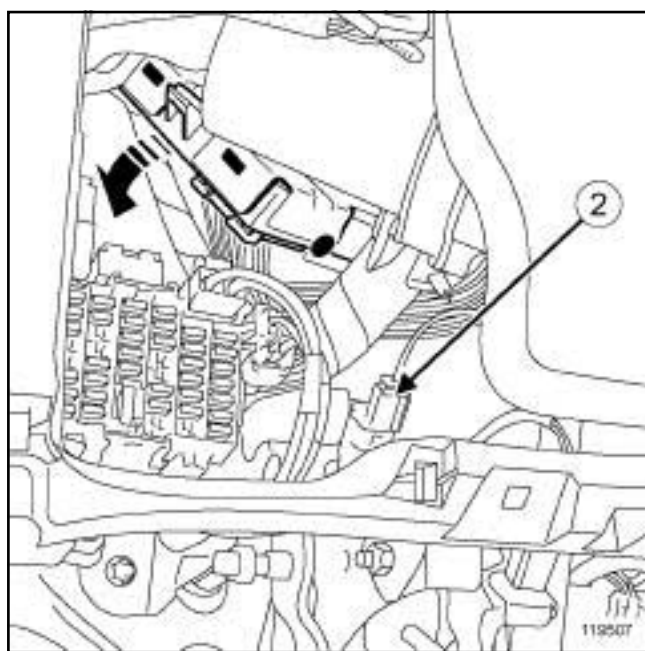
CRUISE CONTROL, and 5-SPEED MANUAL GEARBOX

Equipment required

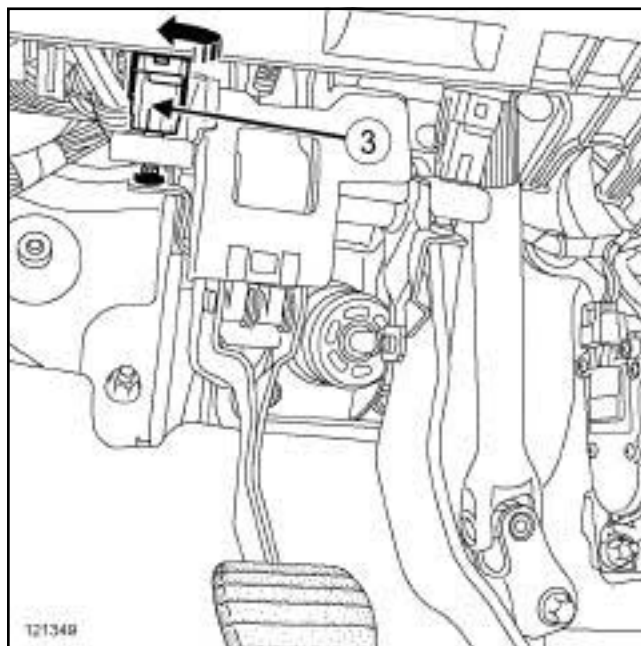
Diagnostic tool

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- ☐ Remove the dashboard glovebox.



- ☐ Disconnect the connector (2) from the clutch pedal switch.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- ☐ Turn the clutch pedal switch (3) a quarter of a turn anti-clockwise
- ☐ Remove the clutch pedal switch from the pedal.

MECHANICAL COMPONENT CONTROLS

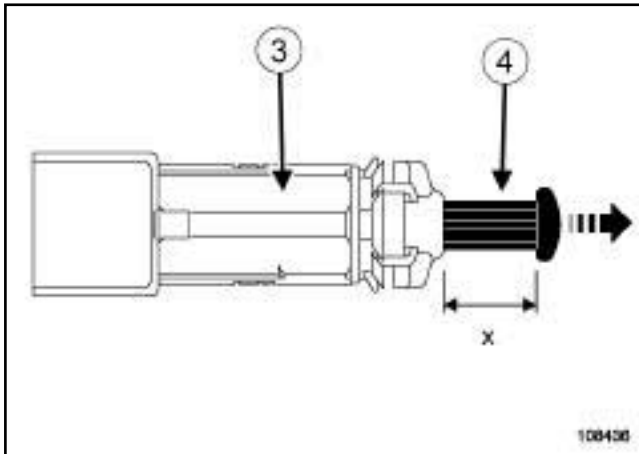
Clutch pedal switch: Removal - Refitting

37A

CRUISE CONTROL, and 5-SPEED MANUAL GEARBOX

REFITTING

I - REFITTING PREPARATIONS OPERATION



108436



WARNING

Whenever the clutch pedal switch piston is completely removed, the switch must be replaced.

WARNING

The switch must be replaced if handling of the piston results in three adjustments being made.

- ☐ Measure dimension of the piston (4) . If the dimension (x) is less than **15 mm**, carefully pull the end of the piston (4) to adjust the dimension to between **15 mm** minimum and **17 mm** maximum.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Depress the clutch pedal by hand.
- ☐ Fit the clutch pedal switch to the pedal.
- ☐ Lock the clutch pedal switch by turning it a quarter of a turn clockwise.
- ☐ At the same time, carefully return the clutch pedal.

Note:

The clutch pedal switch has an automatic adjustment feature, adapting to the pedal position.

The automatic adjustment makes a clicking noise when in operation.

III - FINAL OPERATION.

- ☐ Connect the clutch pedal switch connector.

- ☐ Be sure to carry out a repair check using **Diagnostic tool**.
- ☐ Refit the dashboard glovebox.

Clutch circuit: Bleed

JH3 or JR5

Equipment required

brake circuit bleeding device

hydraulic circuit bleed syringe

Bleed in the event of:

- dead travel,
- pedal at mid-travel,
- pedal to the floor,
- poor gear changing.

I - PRECAUTIONS DURING REPAIR

Risks relating to contamination.

- ☐ The hydraulic clutch system is very sensitive to contamination. The risks caused by contamination are:
 - impossible to change gears,
 - damage to or destruction of the clutch system,
 - leaks on the hydraulic circuit.

All the operations on the hydraulic clutch circuit system must be carried out under excellent cleanliness conditions. This ensures that no impurities enter the hydraulic circuit during the operation.

The cleanliness principles apply to all components of the hydraulic clutch circuit.

Items causing contamination are:

- metal or plastic swarf,
- fibres:
 - cardboard,
 - brushes,
 - paper,
 - clothing,
 - cloth,
 - dust and particles in the air,
 - etc.

Cleaning cloths.

- ☐ Use lint-free cleaning cloths (see **Products recommended for the repair**) (04B, Consumables - Products).

Each cloth must only be used once.

There are two types of equipment used to bleed the clutch circuit:

- ☐ ARC50 via the brake fluid reservoir.
- ☐ Syringe via the bleed hole located on the clutch slave cylinder.

There are two procedures used to bleed the clutch circuit:

- ☐ If no parts of the hydraulic clutch circuit are removed:
 - Carry out the bleed operation using the ARC50 via the brake fluid reservoir or using a new syringe via the bleed hole located on the clutch slave cylinder.
- ☐ If no parts of the hydraulic clutch circuit are removed:
 - Only carry out the bleed operation using a new syringe by injecting the brake fluid via the bleed hole on the clutch slave cylinder.

Note:

- Even the tiniest air bubble in the circuit can cause faulty operation (pedal failing to return properly, crunching sound when changing gear, etc.).
- Incorrect bleeding can lead to incorrect detection of faults and unnecessary part replacements.

Consumables required for the repair:

- ☐ Bleed the clutch circuit using approved (see **Vehicle: Parts and consumables for the repair**) brake fluid (04B, consumables - products).

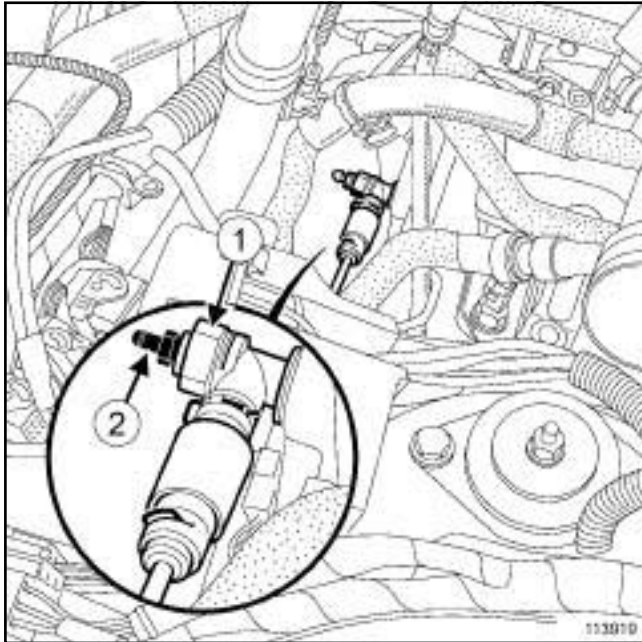
II - PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the engine undertray.

JH3 or JR5

There are several versions of bleed screw:

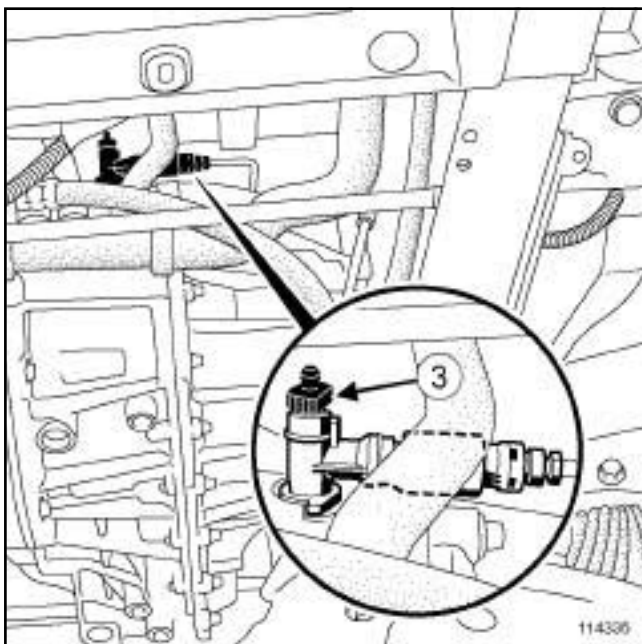
Screw type bleed screw.



113919

- ❑ To open the bleed screw, hold the plastic union (1) using a ring spanner and undo the bleed screw (2) .

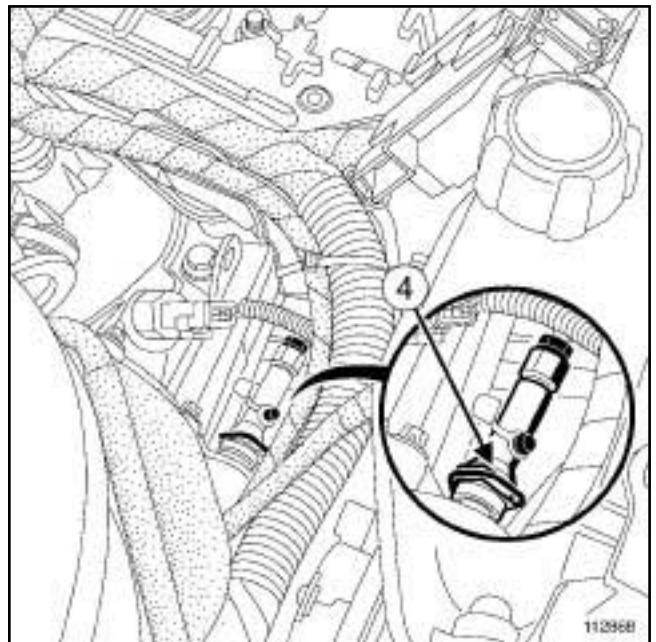
Half-turn bleed screw.



114335

- ❑ To open the bleed screw, fully turn the bleed screw (3) by hand.

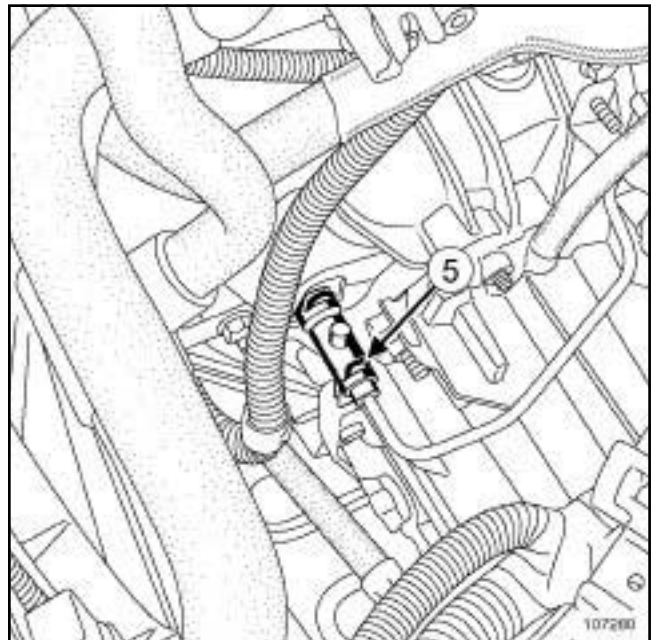
Bleed screw with a clip.



112868

- ❑ To open the bleed screw, press and hold the clip (4) while pulling by one notch.

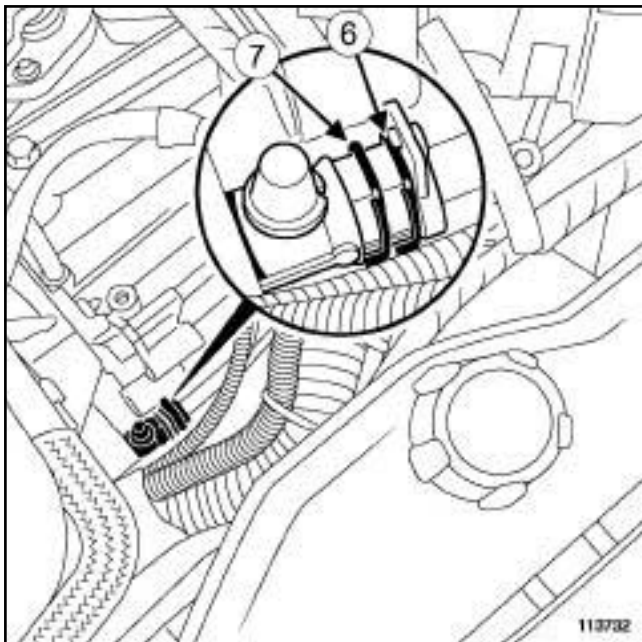
Bleed screw with a clip.



107280

- ❑ To open the bleed screw, lift the clip (5) while pulling by one notch.

JH3 or JR5

Bleed screw with two clips.

113732

- ☐ To open the bleed screw, lower the clip (6) and lift the clip (7) while pulling by one notch.

III - BLEED PROCEDURE IF NO PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED**1 - Bleed using the ARC50.**

- ☐ Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- ☐ Connect the **brake circuit bleeding device** (after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).
- ☐ Remove the bleed plug from the clutch slave cylinder.
- ☐ Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- ☐ Open the bleed screw.
- ☐ Open the circuit between the bleeding device and the brake fluid reservoir.
- ☐ Let the brake fluid run until all air bubbles have been released.
- ☐ Stop the bleeding device to dump the pressure in the clutch circuit.
- ☐ Close the bleed screw.
- ☐ Remove the transparent pipe from the bleed hole.
- ☐ Refit the bleed plug.
- ☐ Top up the brake fluid level in the master cylinder reservoir after disconnecting the bleed device.
- ☐ Disengage and engage the clutch quickly around twenty times.
- ☐ Check that the clutch system is operating correctly.
- ☐ Repeat the bleed operation if necessary.
- ☐ Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-52**) (37A, mechanical control elements).

JH3 or JR5

2 - Bleed using a new syringe.

- ❑ Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- ❑ Remove the bleed plug from the clutch slave cylinder.
- ❑ Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- ❑ Open the bleed screw.
- ❑ Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- ❑ Connect a new **hydraulic circuit bleed syringe** filled with a useful volume of **60 ml** of approved brake fluid to the end of the transparent pipe.
- ❑ Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- ❑ Close the bleed screw.
- ❑ Remove the transparent pipe from the bleed hole.
- ❑ Refit the bleed plug.
- ❑ Top up the brake fluid level in the master cylinder reservoir.
- ❑ Disengage and engage the clutch quickly around twenty times.
- ❑ Check that the clutch system is operating correctly.
- ❑ Repeat the bleed operation if necessary.
- ❑ Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-52**) (37A, mechanical control elements).

IV - BLEED PROCEDURE IF PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED.

- ❑

WARNING

The master cylinder pipe must be disconnected from its take-off point on the brake fluid reservoir, to avoid any foreign matter penetrating inside the hydraulic brake circuit.

WARNING

Prepare for the flow of fluid and protect the surrounding components.

Note:

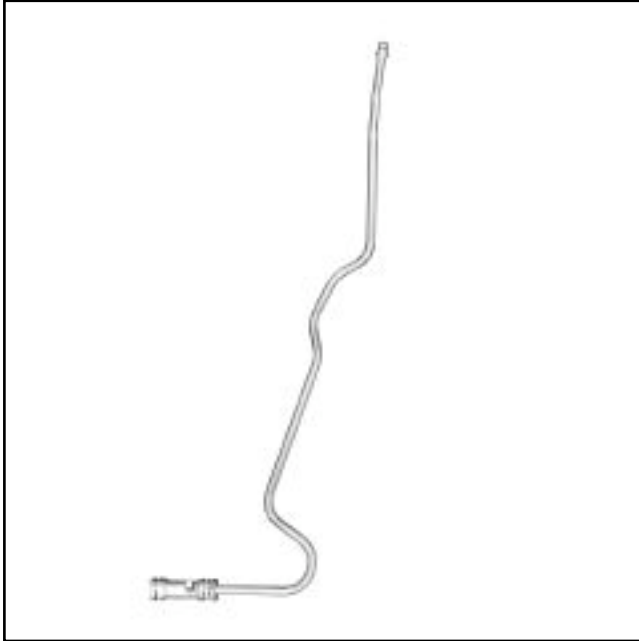
Prefill the hydraulic circuit pipe equipped with a filter.

Position the filter head facing downwards to ensure that it fills.

JH3 or JR5

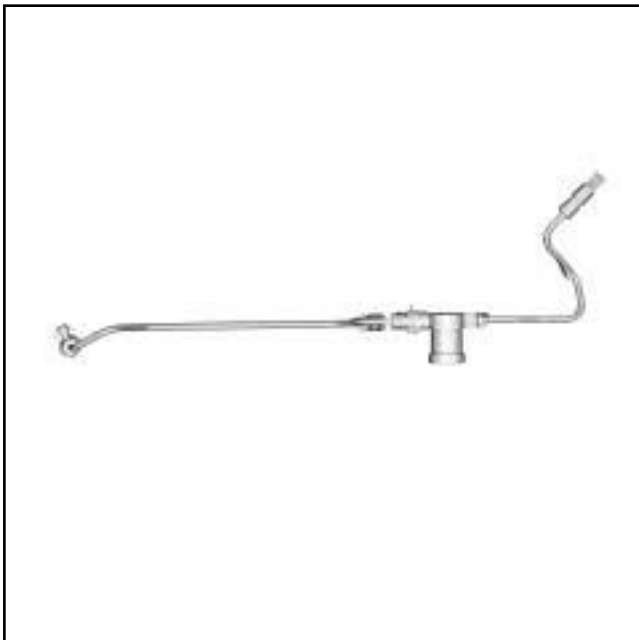
There are several versions of pipe with and without a filter:

Pipe without filter.



141812

Filling position for pipe with filter.



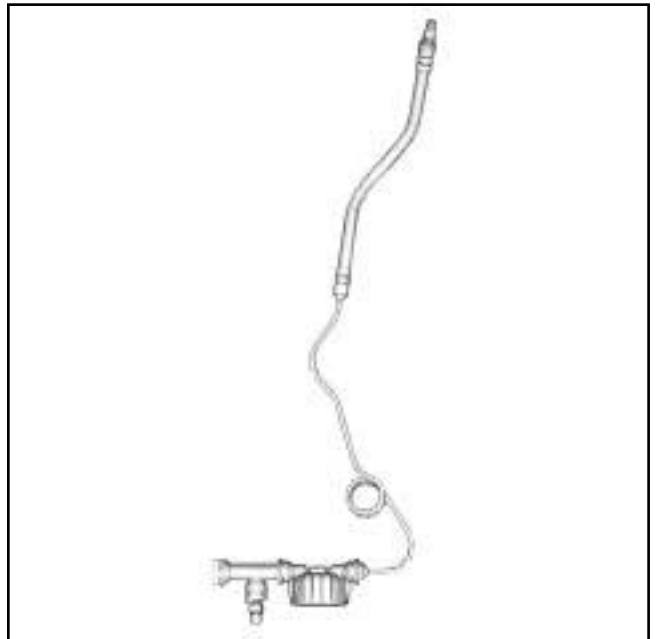
141811

Filling position for pipe with filter.



141810

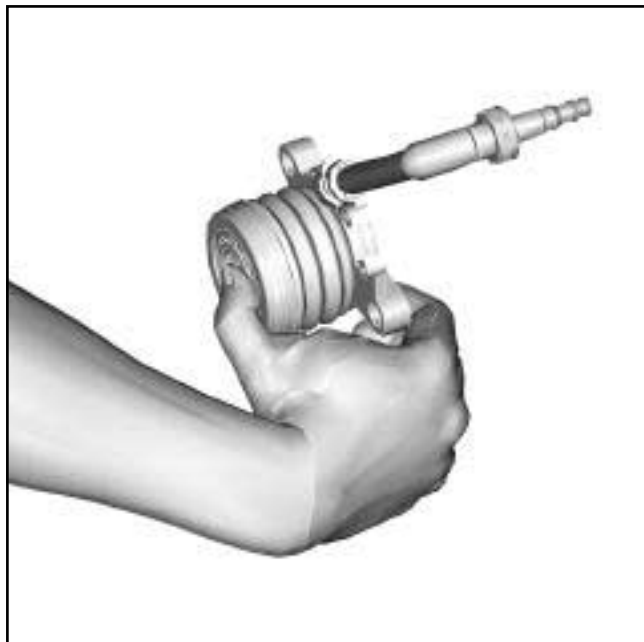
Filling position for pipe with filter.



141813

- ☐ Prefill the clutch pipe using the syringe.
- ☐ Plug the prefilled pipe on the master cylinder end to stop any brake fluid from escaping.

JH3 or JR5



141809

- ☐ Prefill the hydraulic tappet using the new syringe (by gravity).
- ☐ Refit the part(s) concerned.

V - BLEED PROCEDURE AFTER A REMOVING A COMPONENT OF THE HYDRAULIC CIRCUIT.

- ☐ Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- ☐ Remove the bleed plug from the clutch slave cylinder.
- ☐ Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- ☐ Open the bleed screw.
- ☐ Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- ☐ Connect a new syringe containing **60 ml** of approved brake fluid to the end of the transparent pipe.
- ☐ Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- ☐ Close the bleed screw.
- ☐ Remove the transparent pipe from the bleed hole.
- ☐ Refit the bleed plug.
- ☐ Top up the brake fluid level in the master cylinder reservoir.
- ☐ Disengage and engage the clutch quickly around twenty times.
- ☐ Check that the clutch system is operating correctly.
- ☐ Repeat the bleed operation if necessary.
- ☐ Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-52**) (37A, mechanical control elements).

JH3 or JR5

VI - FINAL OPERATION

☐ Refit the engine undertray. ☐ Remove the vehicle from the two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).	

MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

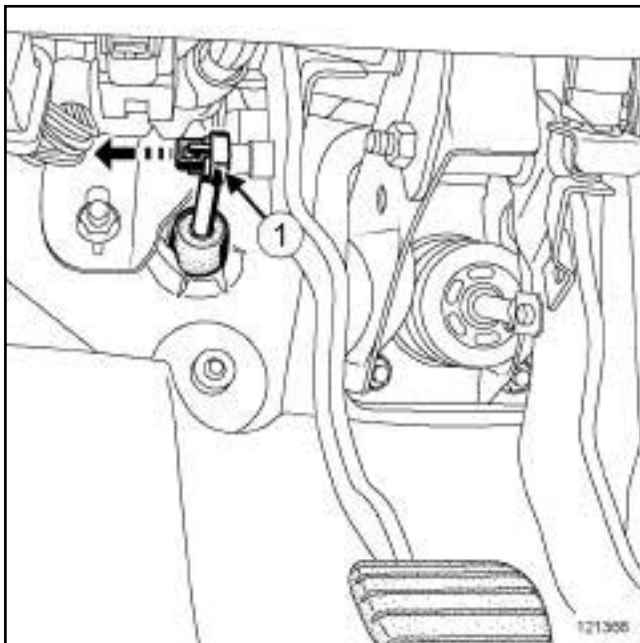
JH3

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front wheel on the driver's side (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).
- ☐ Use a syringe to empty the brake fluid reservoir.

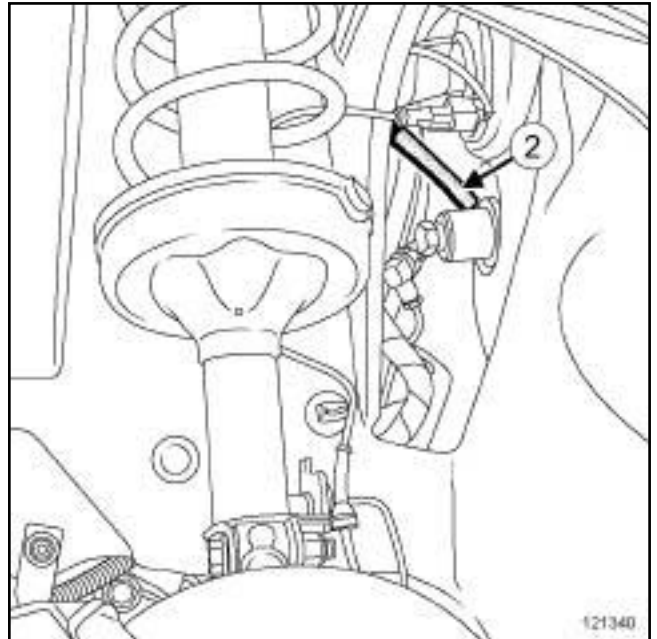
II - OPERATION FOR REMOVAL OF PART CONCERNED



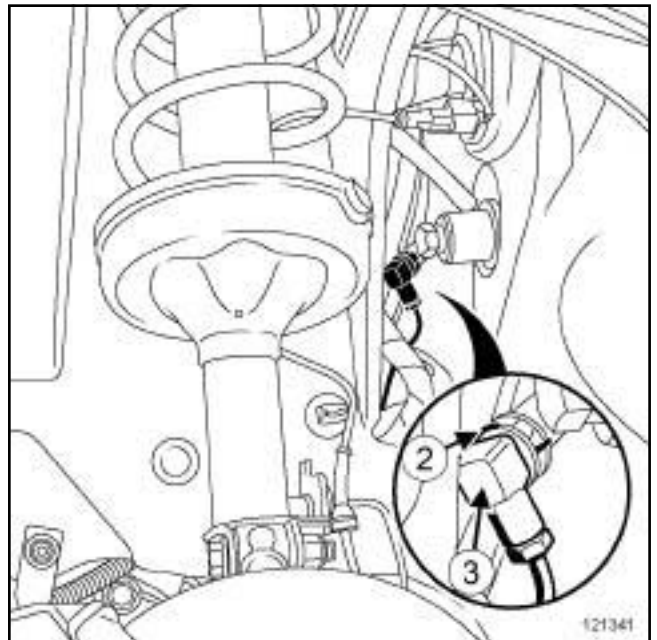
- ☐ Unclip the hydraulic clutch master cylinder rod (1) from the clutch pedal.

WARNING

Prepare for the flow of fluid, and protect the surrounding components.



- ☐ Disconnect the brake fluid fuel supply pipe (2) from the hydraulic clutch master cylinder.
- ☐ Insert the blanking plugs.



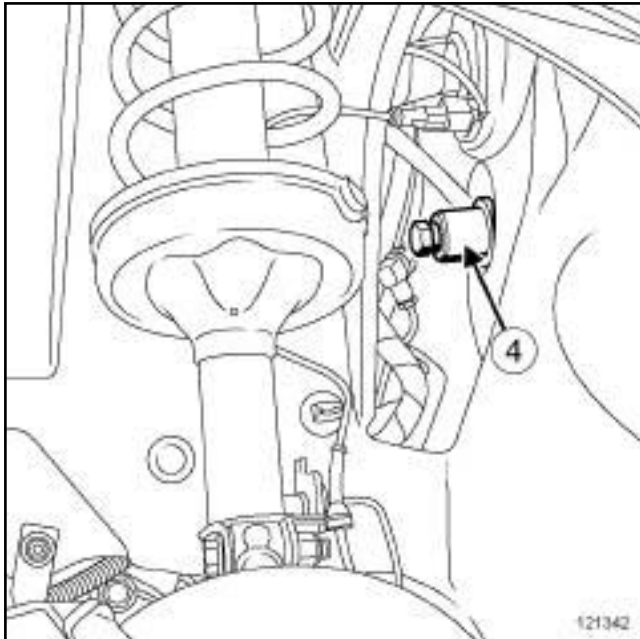
- ☐ Pull the clip (2).
- ☐ Detach the end (3) of the hydraulic clutch control pipe.
- ☐ Insert the blanking plugs.

MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

JH3



121342

- ☐ Undo and remove the hydraulic clutch master cylinder (4) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the hydraulic clutch master cylinder onto the bulk-head.
- ☐ Fit the hydraulic clutch master cylinder.
- ☐ Remove the blanking plugs.
- ☐ Fit the end of the hydraulic clutch control pipe onto the hydraulic clutch master cylinder.
- ☐ Push in the metal clip.
- ☐ Remove the blanking plugs.
- ☐ Connect the brake fluid supply pipe to the hydraulic clutch master cylinder.
- ☐ Clip the hydraulic clutch master cylinder rod onto the clutch pedal.

II - FINAL OPERATION.

- ☐ Top up the brake fluid reservoir.
- ☐ Bleed the hydraulic clutch control pipe (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-54**) .

☐ Refit:

- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the driver's side (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

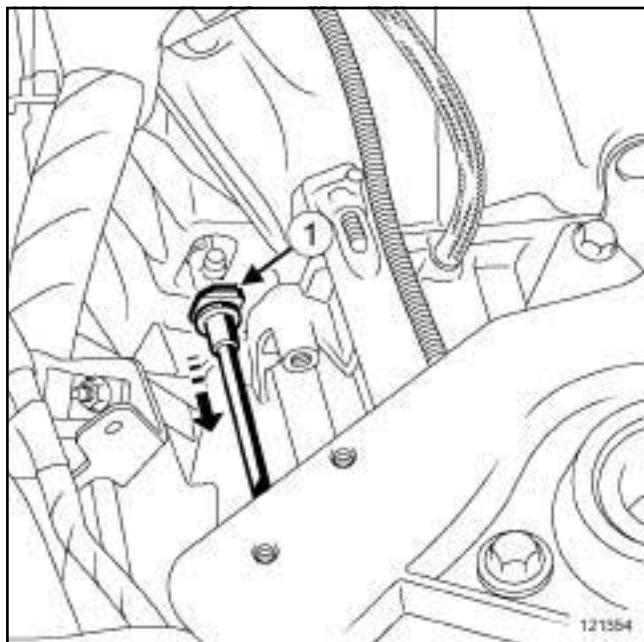
JH3

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front wheel on the driver's side (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Empty the brake fluid reservoir with a syringe.

II - OPERATION FOR REMOVAL OF PART CONCERNED

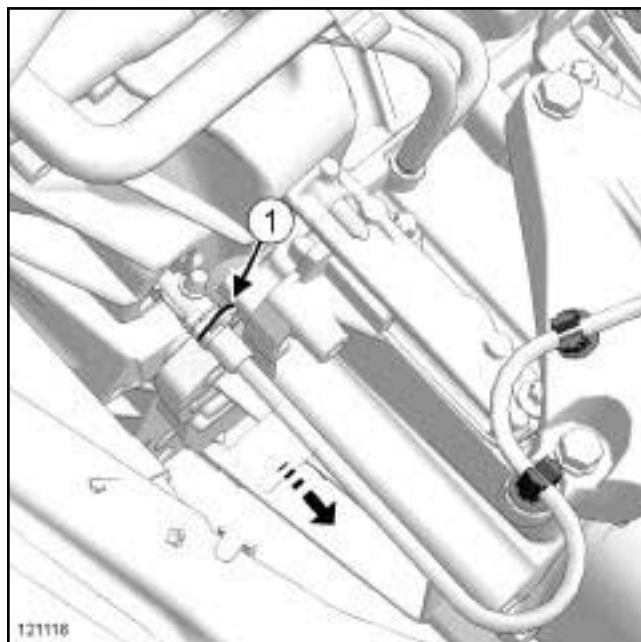


121354

- ☐ Press and hold the clip (1) .
- ☐ Pull out the hydraulic clutch control pipe by one notch.

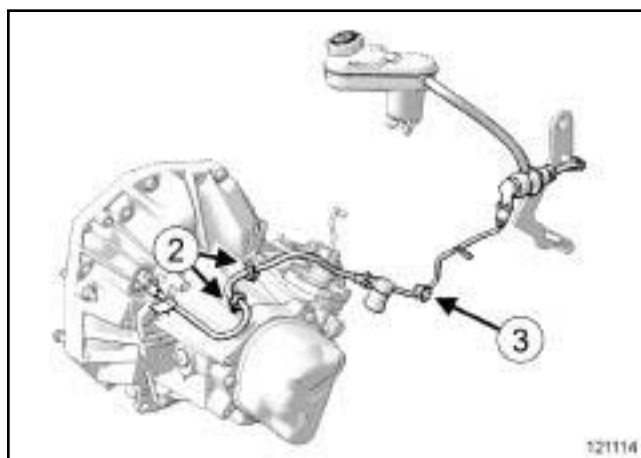
WARNING

Prepare for the flow of fluid, and protect the surrounding components.



121118

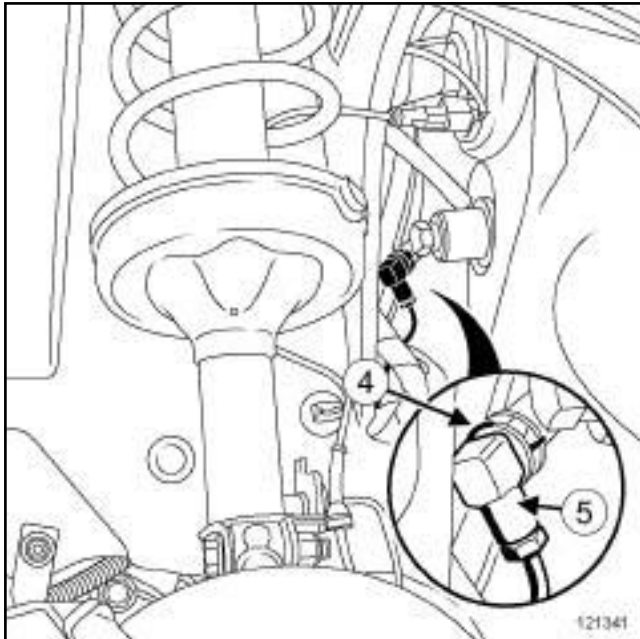
- ☐ Press and hold the clip (1) again.
- ☐ Pull the hydraulic clutch control pipe out another notch and collect the fluid in a container.
- ☐ Depress the clutch pedal to empty the hydraulic clutch control circuit.



121114

- ☐ Detach the pipe at (2) and (3) .

JH3



121341

- ☐ Pull the clip (4) .
- ☐ Unclip the end piece (5) .
- ☐ Remove the hydraulic clutch control pipe.
- ☐ Fit anti-contamination caps.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Remove the blanking plugs.
- ☐ Refit the clutch control pipe.
- ☐ Fit the clutch control clip.
- ☐ Connect the pipe to the master cylinder and slave cylinder.

II - FINAL OPERATION.

- ☐ Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-54**) .
- ☐ Top up the brake fluid reservoir.
- ☐ Check that the clutch system is operating correctly.
- ☐ Refit:
 - the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),

- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the driver's side (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

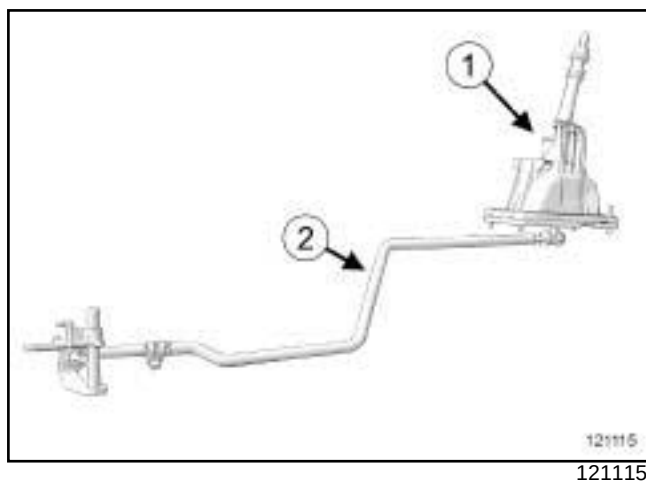
MECHANICAL COMPONENT CONTROLS

Manual gear control: List and location of components

37A

JB1

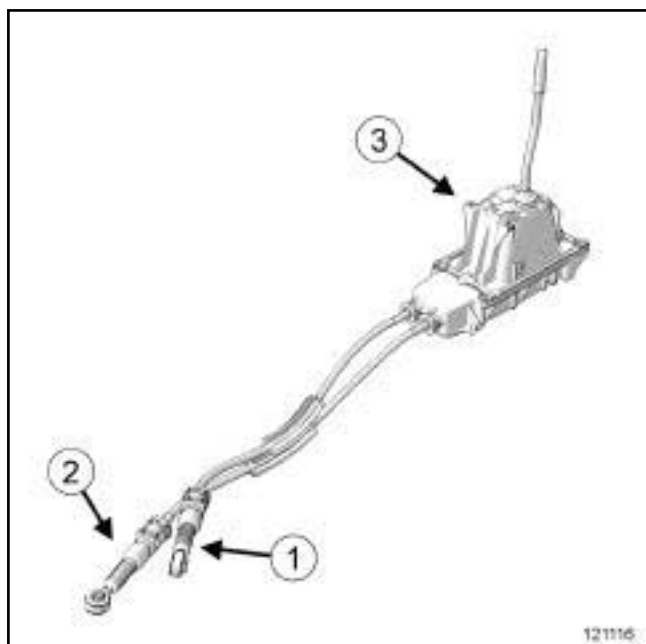
Gear control



- (1) « lever - mounting » assembly
- (2) control bar

JH3

Gear control



121116

- (1) gear selection cable
- (2) control cable
- (3) « lever - mounting » assembly

The control is only supplied as a « cable - lever - mounting » assembly.

JH3 or JR5

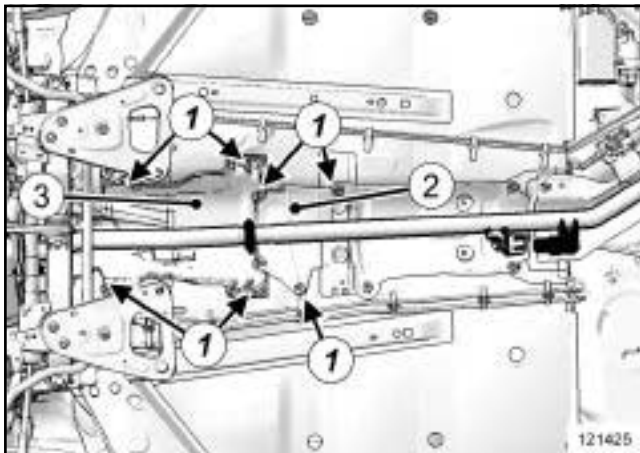
Tightening torques

gear control unit nuts	12 Nm
exhaust clip	21 Nm

REMOVAL

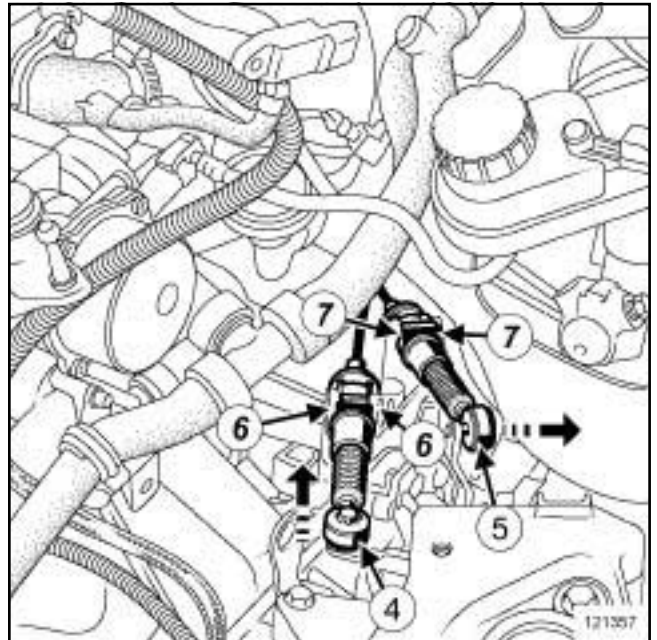
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the centre console (see **Centre console: Removal - Refitting**) (57A, Interior equipment).



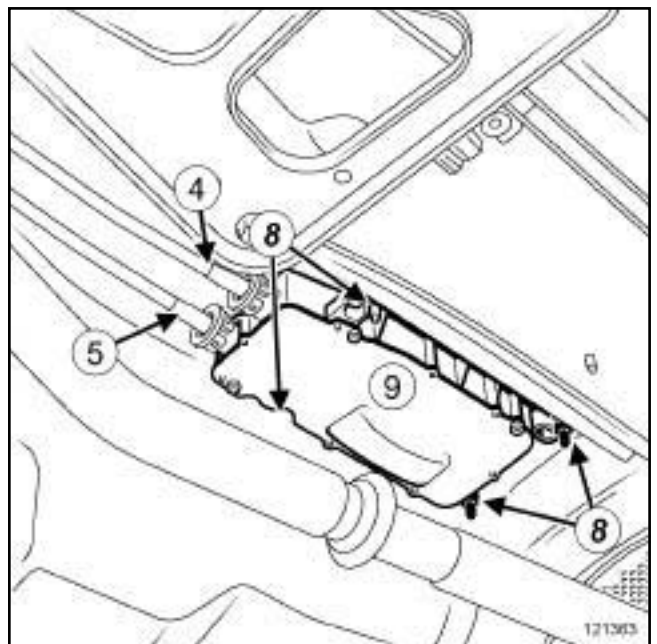
- ☐ Remove:
 - the clips (1) ,
 - the heat shields (2) and (3) .
- ☐ Release the exhaust pipe clamp.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121357

- ☐ Unclip the control cable (4) and selection cable (5) from the ball joints in the direction of the arrows, using the open-jawed spanner as a lever.
- ☐ Detach the cable sleeve stops by pressing on the tabs (6) and (7) .



121363

- (4) control cable
- (5) gear selection cable

Gear control unit: Removal - Refitting

JH3 or JR5

☐ Remove:

- the nuts **(8)** ,
- the gear control unit **(9)** by passing it between the exhaust system and the tunnel.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- ☐ Refit the gear control unit by passing it between the exhaust pipe and the tunnel
- ☐ Torque tighten the **gear control unit nuts (12 Nm)**.
- ☐ Attach the sleeve stops of the control cable and gear selection cable by clipping them to the gearbox.
- ☐ Attach the cables to the ball joints.

II - FINAL OPERATION.

- ☐ Torque tighten the **exhaust clip (21 Nm)**.
- ☐ Refit:
 - the heat shields,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment).

Note:

It is not necessary to adjust the control cable and gear selection cable.

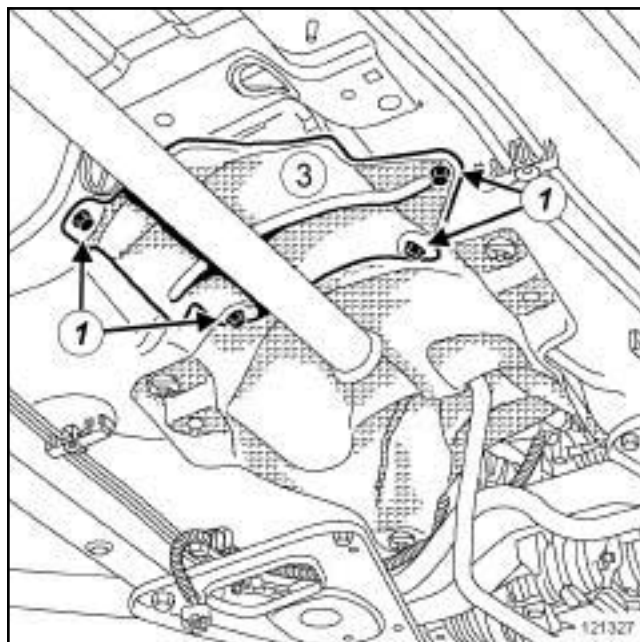
JB1

Tightening torques 	
gear control unit nuts	12 Nm
gear control linkage bolt	28 Nm

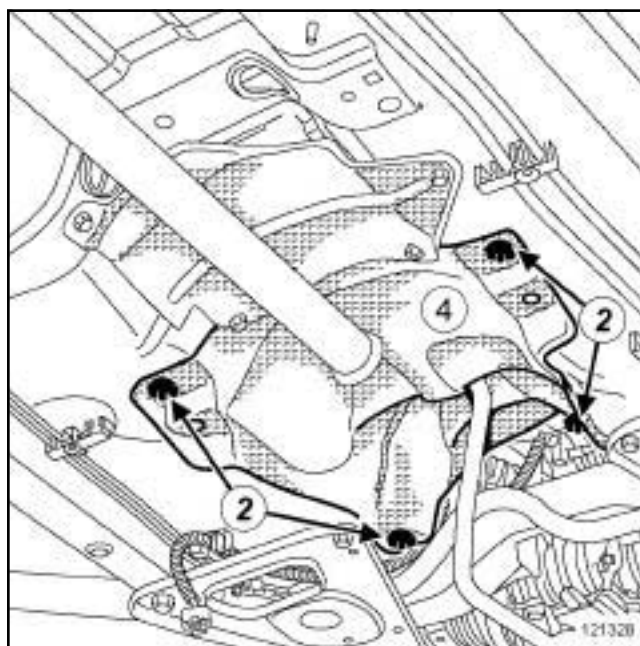
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the centre console (see **Centre console: Removal - Refitting**) (MR 412, 57A, Interior equipment),
 - the catalytic converter (see **Catalytic converter: Removal - Refitting**) (MR 411, 19B, Exhaust).



121327

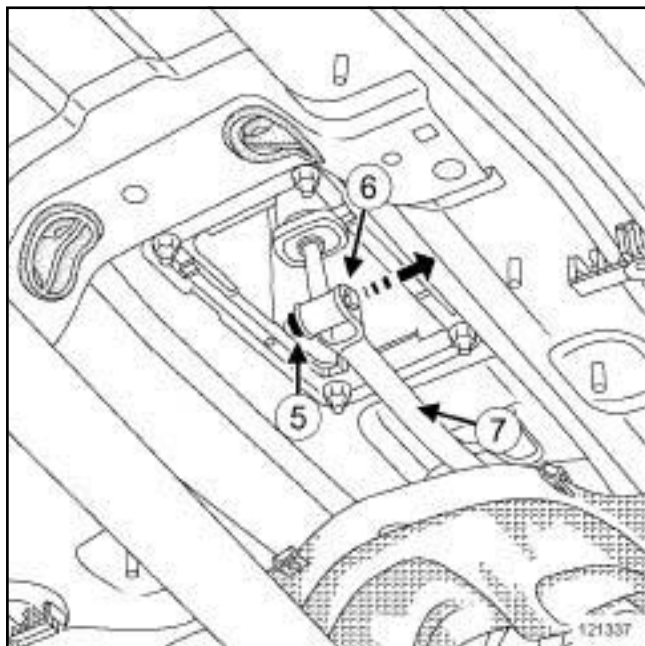


121328

- ☐ Remove:
 - the clips (1) and (2) ,
 - the rear heat shield (3) .
- ☐ Slide the heat shield towards the front of the vehicle (4) .

JB1

II - OPERATION FOR REMOVAL OF PART CONCERNED

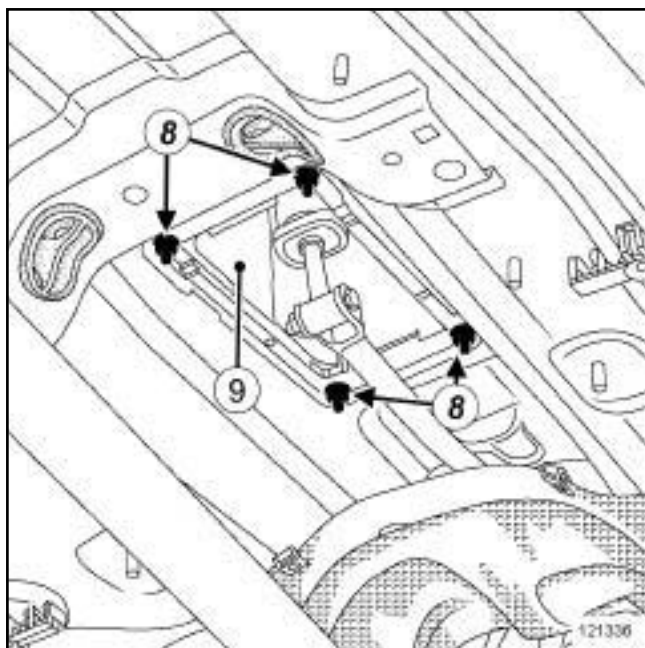


121337

❑ Remove:

- the nut (5) ,
- the bolt (6) .

❑ Remove the linkage (7) .



121336

❑ Remove:

- the nuts (8) ,
- the gear control unit (9) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the gear control unit,
- the gear control unit nuts.

❑ Torque tighten the **gear control unit nuts (12 Nm)**.

❑ Fit the gear control linkage.

❑ Refit the bolt between the gear control linkage and the gear control unit.

❑ Torque tighten the **gear control linkage bolt (28 Nm)**.

II - FINAL OPERATION.

❑ Fit the front heat shield.

❑ Refit:

- the rear heat shield,
- the front and rear heat shield clips,
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) (MR 411, 19B, Exhaust),
- the centre console (see **Centre console: Removal - Refitting**) (MR 412, 57A, Interior equipment).

JB1

Special tooling required

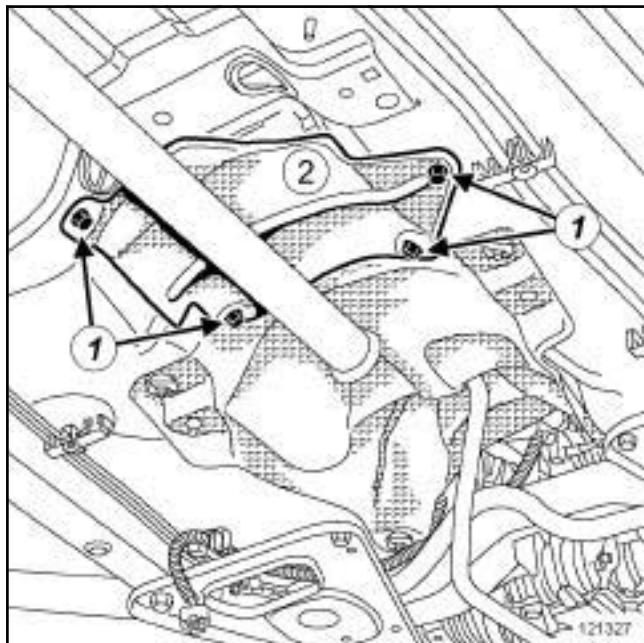
Bvi. 1133-01 1st gear locking shim for gearbox input lever.

Tightening torques

linkage adjusting nut

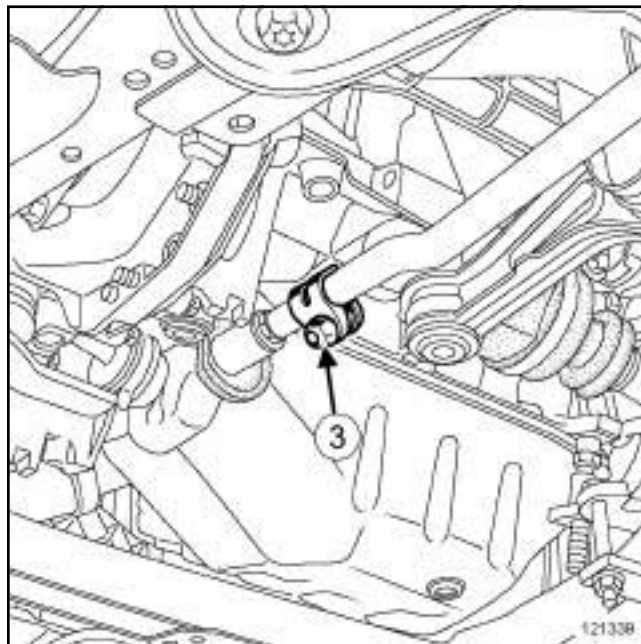
30 Nm**ADJUSTMENT****I - ADJUSTMENT PREPARATION STAGE**

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Engage first gear.



121327

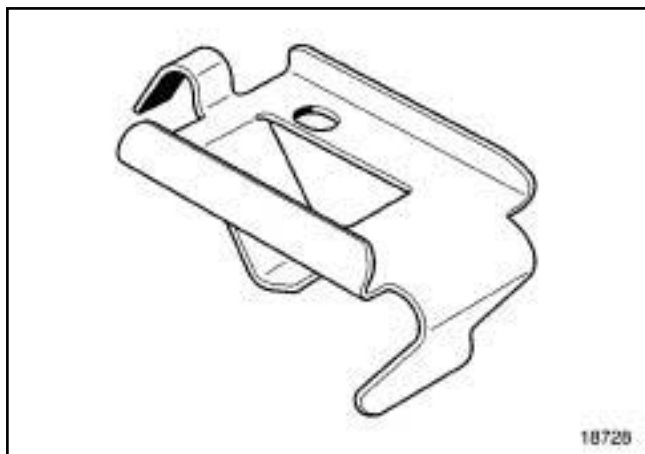
- ☐ Remove:
 - the clips (1) ,
 - the heat shield (2) .

II - OPERATION FOR ADJUSTMENT OF PART CONCERNED

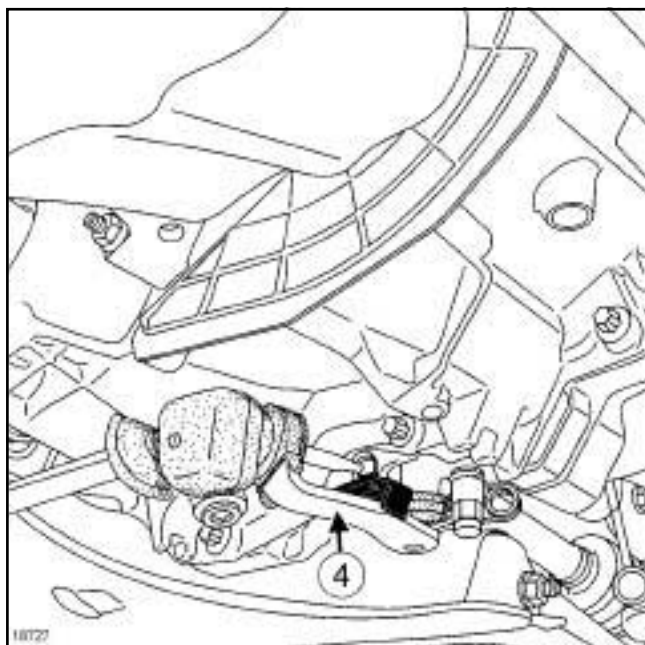
121339

- ☐ Unlock the nut (3) .

JB1

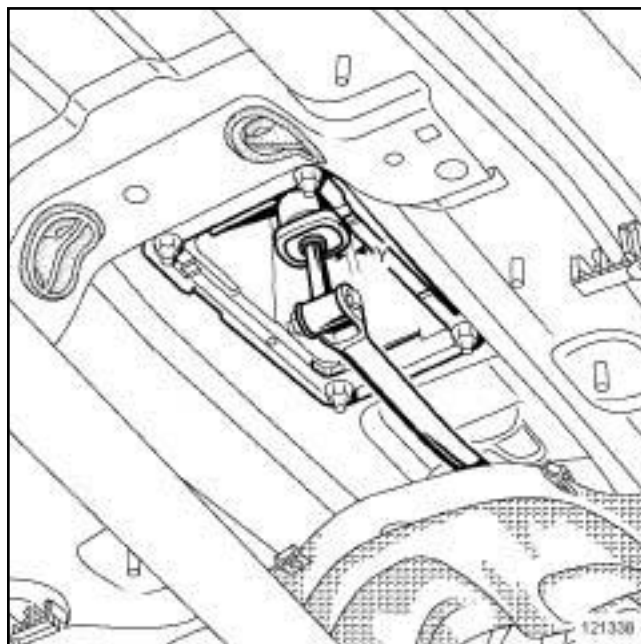


18728



18727

- ☐ Position the **(Bvi. 1133-01)** between the control lever (4) and the gearbox casing.



121338

- ☐ Position a **5 mm** thick adjustment shim between the gear lever lower thrust bearing and the lower rail on the unit.
- ☐ Hold the gear control lever against the shim.
- ☐ Torque tighten the **linkage adjusting nut (30 Nm)**.
- ☐ Check the adjustment value.
- ☐ Clearance noted at the bottom of the lever (**Y**) (in mm):
 - first gear engaged = **Y1** ,
 - second gear engaged = **Y2**,
$$Y_{\text{average}} = (Y1 + Y2) / 2$$

$$5 \leq Y_{\text{average}} \leq 8$$
 - adjustment shim = **5 mm**.

Note:

It is preferable to be closer to the maximum value of the adjustment interval.

- ☐ Remove the shim.

CHECK

I - CHECKING OPERATION FOR PART CONCERNED

- ☐ Check gear changes.

JB1

II - FINAL OPERATION.

- ☐ Refit:
 - the heat shield,
 - the heat shield clips.

MECHANICAL COMPONENT CONTROLS

Parking brake cables: Removal - Refitting

37A

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

REMOVAL

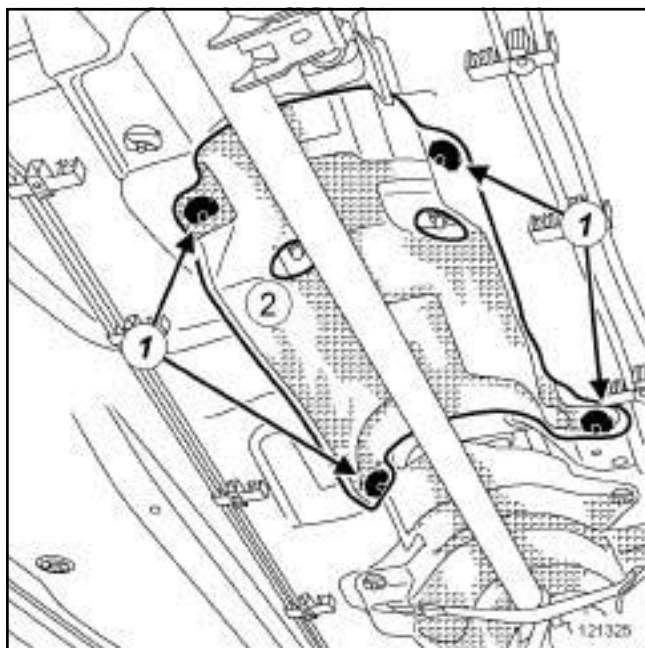
I - REMOVAL PREPARATION OPERATION

☐ Fit:

- the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment),
- the parking brake lever in the released position.

☐ Remove:

- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
- the rear brake drums (see **33A, Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19).

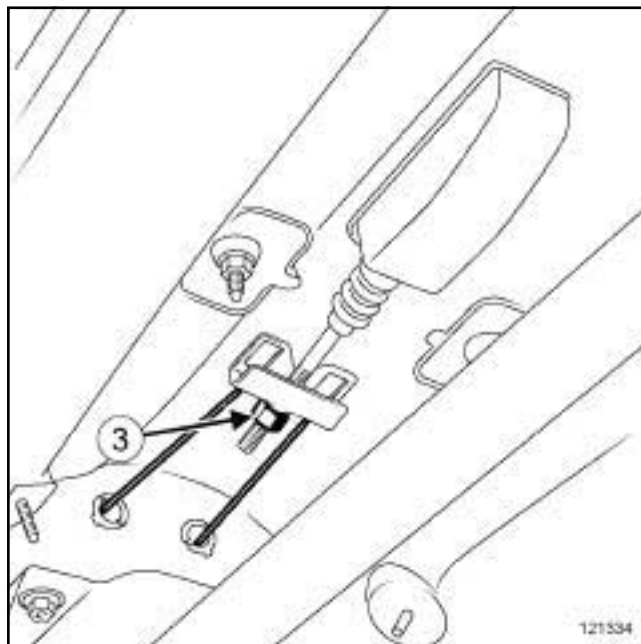


121325

☐ Removal:

- the clips (1),
- the heat shield (2).

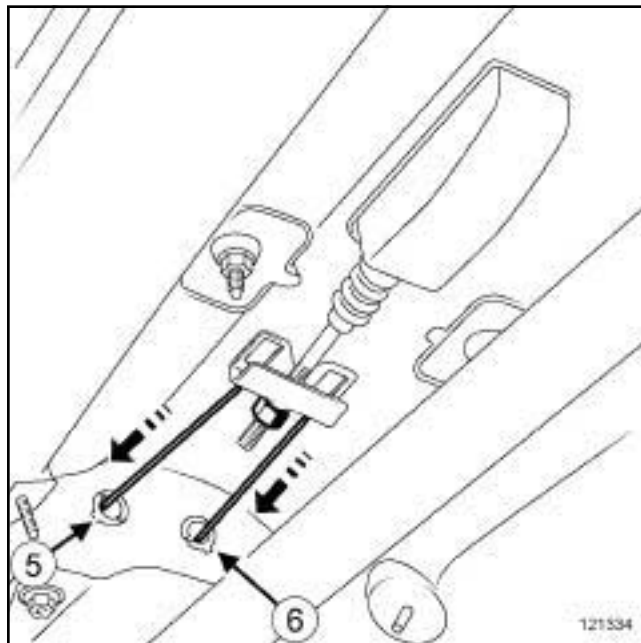
II - OPERATION FOR REMOVAL OF PART CONCERNED



121534

121334

☐ Loosen nut (3).

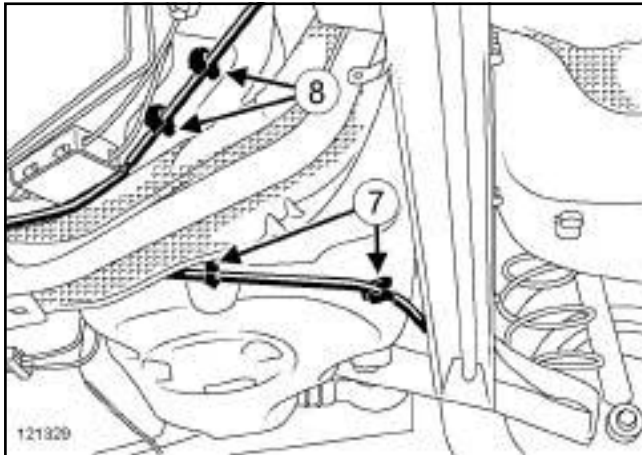


121534

121334

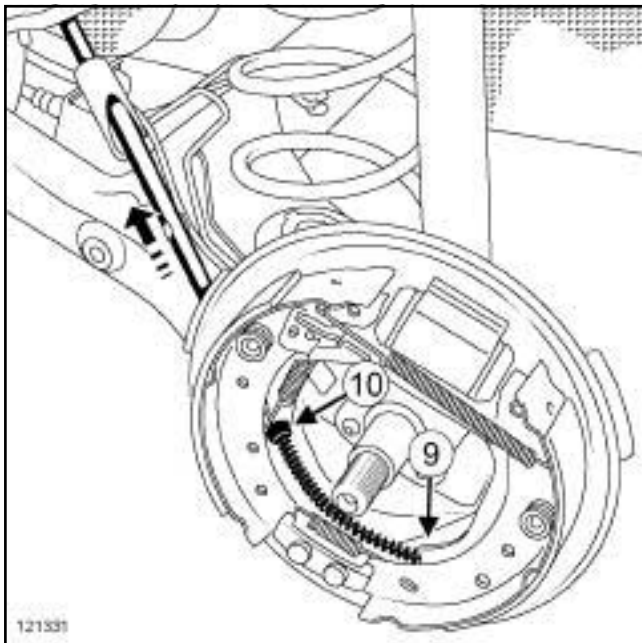
☐ Unclip the left-hand (5) and right-hand (6) parking brake cable sleeve stops.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



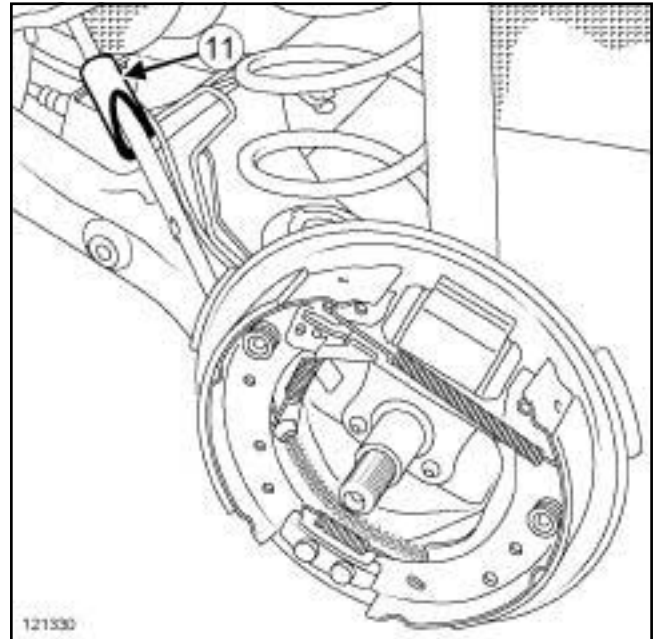
121329

- ❑ Detach the parking brake cables at (7) and (8) .



121331

- ❑ Unclip the end of the parking brake cables at (9) .
- ❑ Unclip the cable sleeve stops at (10) and remove the parking brake cables from the rear drum flanges.



121330

- ❑ Pass the parking brake cables into the guides (11) and remove the parking brake cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ❑ Fit the parking brake cables by passing them into the guides (11) and rear brake drum flanges.
- ❑ Attach the end of the parking brake cables to the rear brake pads.
- ❑ Clip on the cable sleeve stops.
- ❑ Attach the cables to the fuel tank.
- ❑ Fit the cables to the compensator.
- ❑ Refit the compensator nut.

II - FINAL OPERATION.

- ❑ Adjust the parking brake lever (see 37A, **Mechanical component controls, Parking brake lever: Adjustment**, page 37A-48) .
- ❑ Refit:
 - the heat shield,
 - the rear brake drums (see 33A, **Rear axle components, Rear brake drum: Removal - Refitting**, page 33A-19) ,
 - the rear wheels (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

MECHANICAL COMPONENT CONTROLS

Parking brake cables: Removal - Refitting

37A

EQUIPMENT LEVEL SPORT

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

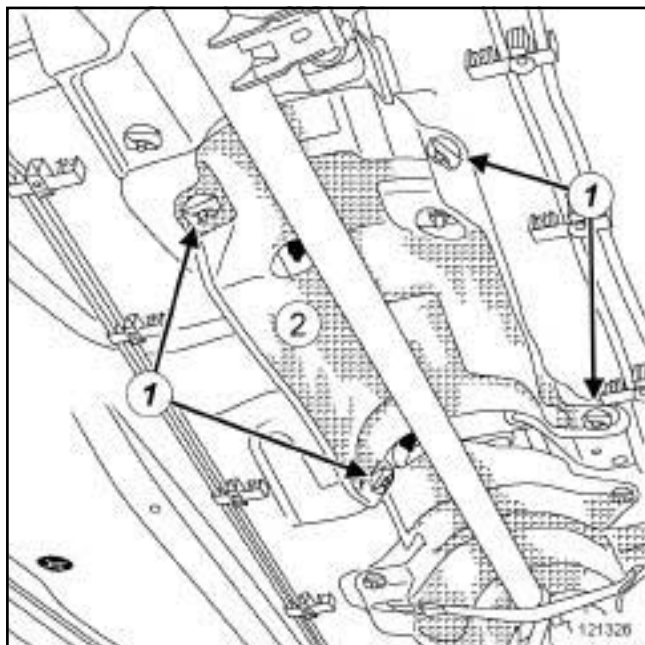
REMOVAL

I - REMOVAL PREPARATION OPERATION

Fit:

- the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment),
- the parking brake lever in the released position.

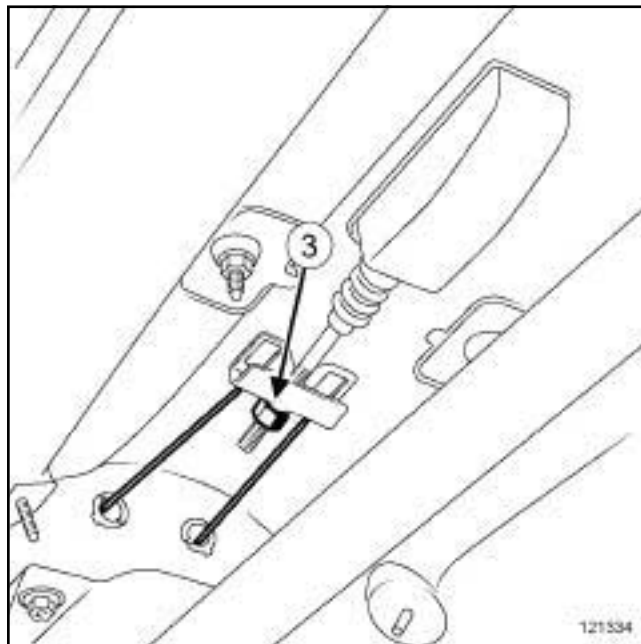
Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .



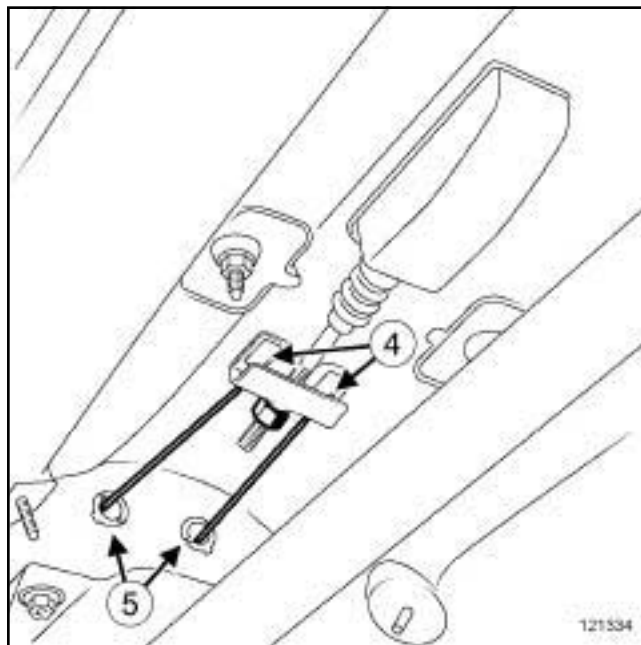
Remove:

- the clips (1) ,
- the heat shield (2) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



Loosen nut (3) .



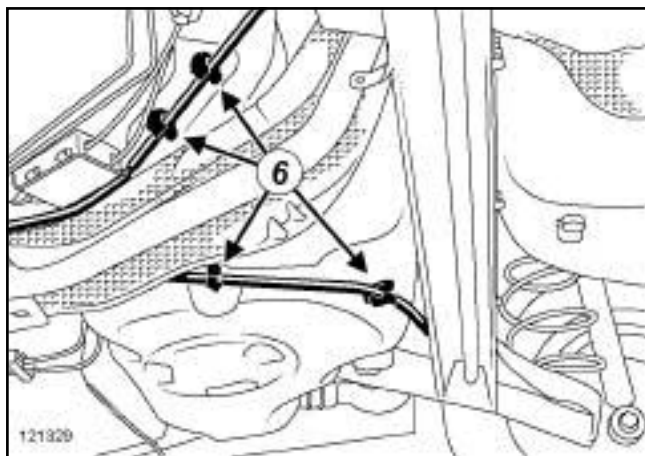
- Remove the handbrake cables from the compensator at (4) .
- Unclip the sleeve stops (5) from the parking brake cables.

MECHANICAL COMPONENT CONTROLS

Parking brake cables: Removal - Refitting

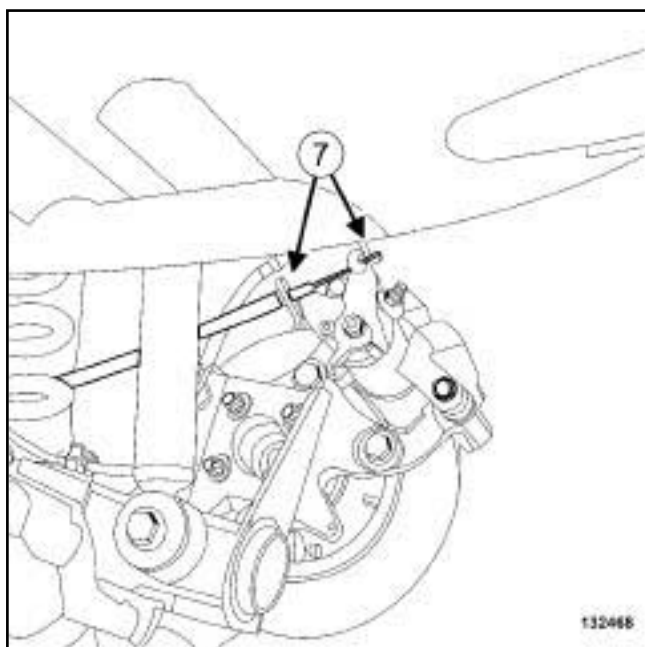
37A

EQUIPMENT LEVEL SPORT



121329

- ❑ Unclip the parking brake cables at (6) .



132468

- ❑ Unhook the parking brake cables from the callipers at (7) .
- ❑ Mark the tracks of the parking brake cables.
- ❑ Remove the parking brake cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the parking brake cables by following their routing.
- ❑ Clip the parking brake cables onto the brake callipers.
- ❑ Clip on the handbrake cables.

- ❑ Clip on the sleeve stops of the parking brake cables.
- ❑ Refit the parking brake cables on the compensator.
- ❑ Adjust the parking brake cables (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page 37A-48) .

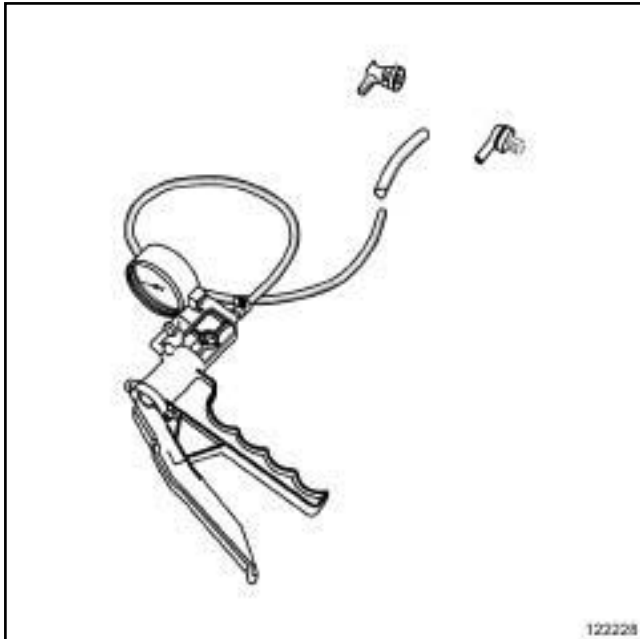
WARNING

To check the positioning of the parking brake cables in the compensator, engage and release the parking brake a number of times. If this fails to apply the parking brake, position the cables correctly in the brake compensator.

II - FINAL OPERATION.

- ❑ Refit:
 - the exhaust heat shield,
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

RIGHT-HAND DRIVE



122228

There is no "RENAULT" tool to check the braking assistance circuit.

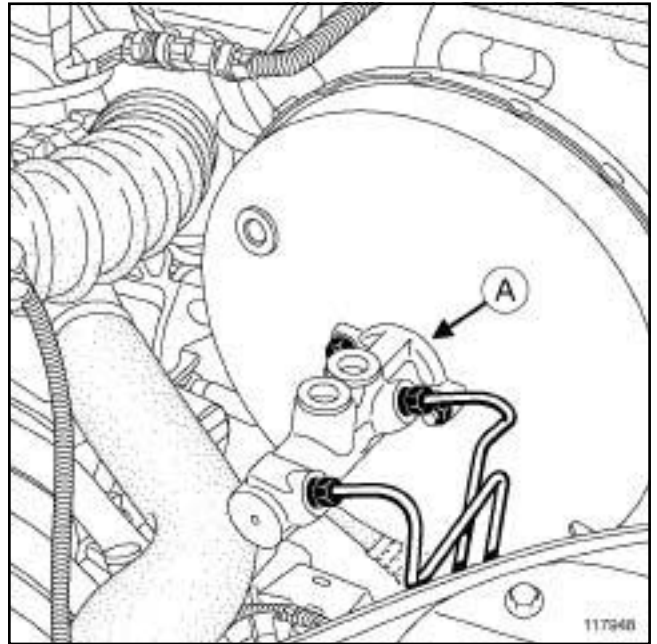
Use a vacuum pump, adapting the end pieces, part number **7701349942** and **7700105874** with a pipe, part number **8200027352** or **8200376245**.

CHECK

I - PREPARATION OPERATION FOR CHECK

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove:
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).

II - CHECKING THE SEALS



117948

- ☐ When checking the brake servo seal, ensure that there is a perfect seal between this and the master cylinder at (A) .

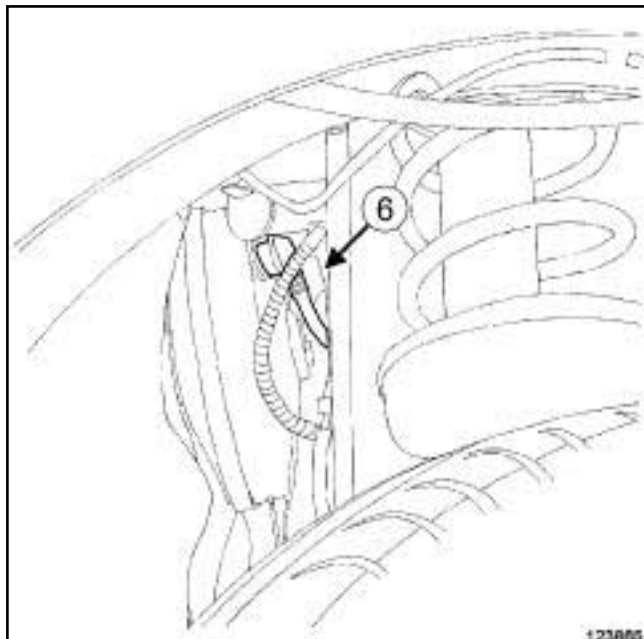
If there is a leak in this area, replace the seal between the brake servo and the master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting**, page 37A-1) .

The brake servo seals must be checked when fitted on the vehicle and when the braking circuit is operational.

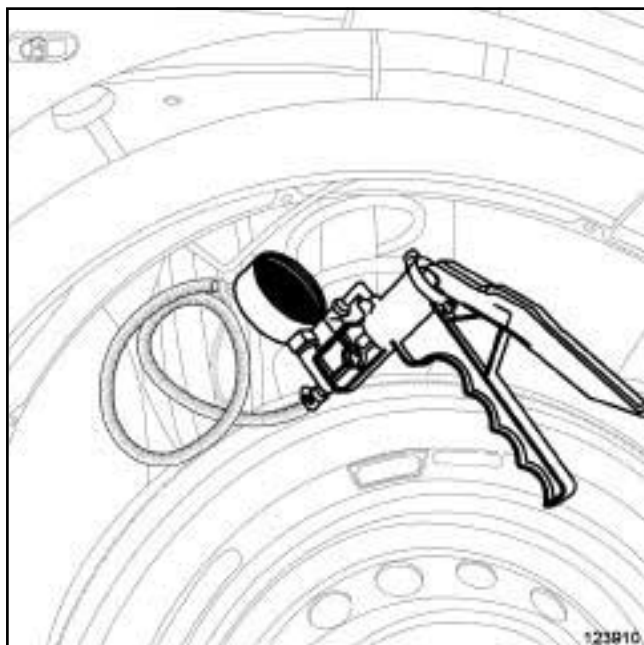
Brake servo: Check

RIGHT-HAND DRIVE

III - CHECKING THE BRAKE SERVO



123865



123910

- ☐ Remove the non-return valve (6) from the brake servo (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .
- ☐ Connect a vacuum pump directly to the brake servo.
- ☐ Activate the vacuum pump to obtain a vacuum of **500 mbar**.
- ☐ Check that the vacuum does not fall by more than **33 mbar** in **15 seconds**.

If the vacuum falls by more than **33 mbar** in **15 seconds**, there is a leak which may be:

- on the non-return valve seal; in this case replace the seal (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-11**) ,

- on the pushrod diaphragm; in this case, replace the brake servo (see **37A, Mechanical component controls, Brake servo: Removal - Refitting**, page **37A-14**) .

- ☐ Refit the non-return valve on the brake servo (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

IV - CHECKING THE NON-RETURN VALVE

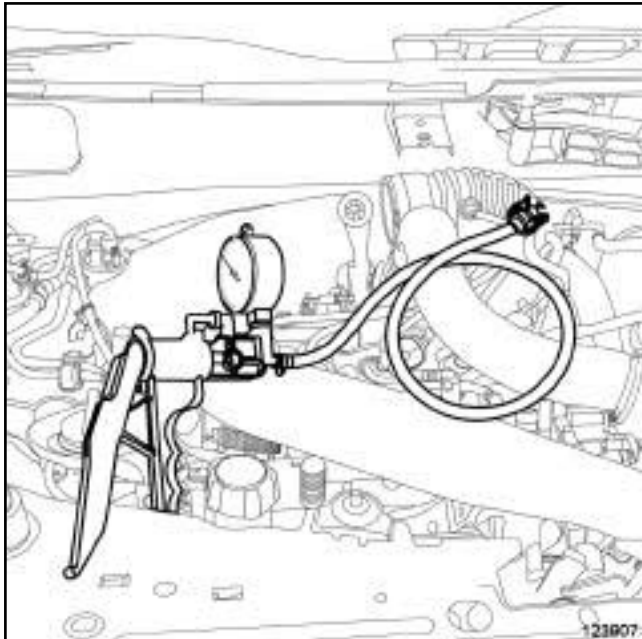
D4F or D7F

- ☐ Disconnect the non-return valve pipe on the intake distributor.

K9K

- ☐ Disconnect the non-return valve pipe on the vacuum pump.

RIGHT-HAND DRIVE



123907

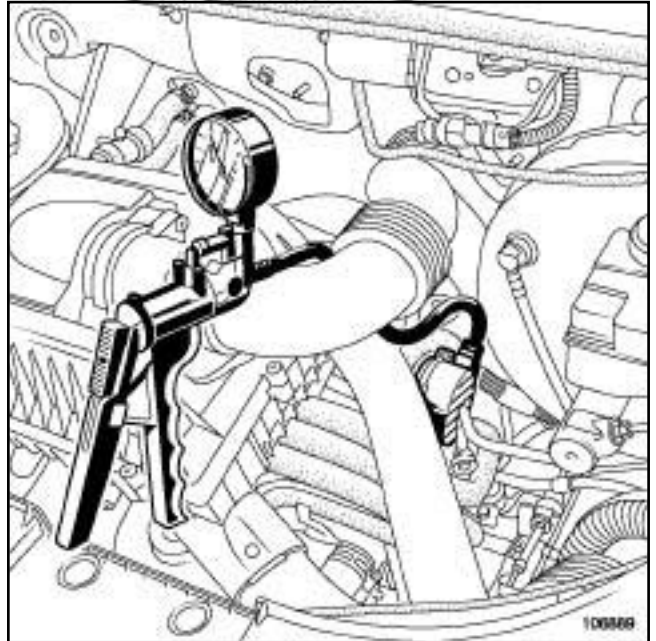
- ☐ Connect a vacuum pump to the end of the non-return valve.
- ☐ Activate the vacuum pump to obtain a vacuum of **500 mbar**.
- ☐ Check that the vacuum pressure does not drop. If it does, the non-return valve is pierced; replace the valve (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

D4F or D7F

- ☐ Refit the non-return valve pipe on the intake distributor.

V - CHECKING THE VACUUM PUMP

K9K



106889

- ☐ Connect the external vacuum pump to the engine vacuum pump.
- ☐ Start the engine.
- ☐ Check the following values:
 - **550 mbar** in **5 seconds** for an engine speed of **700 rpm**,
 - **700 mbar** in **3 seconds** and **900 mbar** in **5 seconds** for an engine speed of **4050 rpm**.
- ☐ Replace the vacuum pump if the values are different (see **37A, Mechanical component controls, Vacuum pump: Removal - Refitting**, page **37A-25**) .
- ☐ Refit the non-return valve pipe onto the vacuum pump.

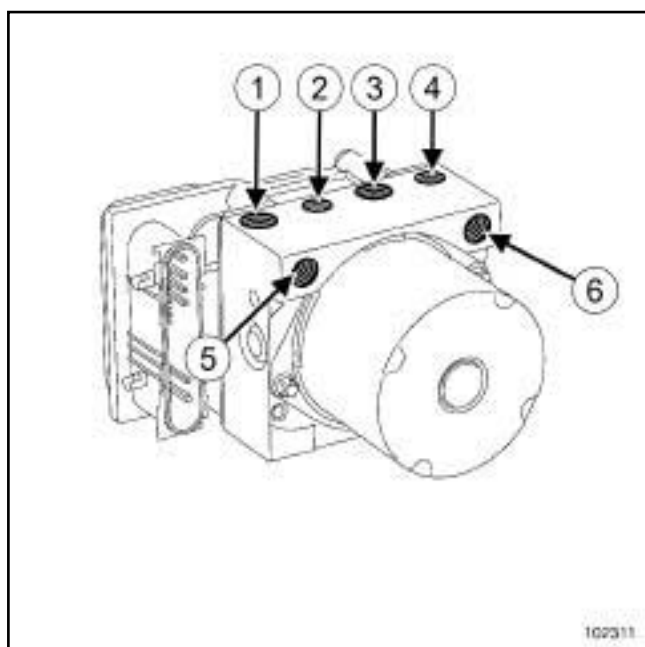
VI - FINAL OPERATION.

- ☐ Refit:
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: List and location of components

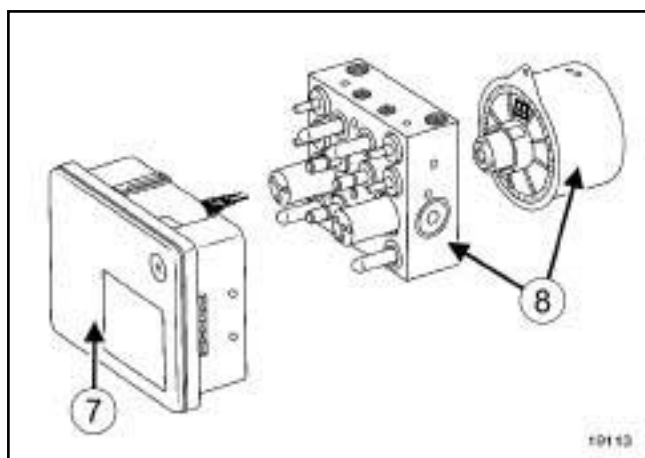
38C



102311

- (1) Master cylinder primary circuit
- (2) Circuit for front left-hand wheel
- (3) Circuit for front right-hand wheel
- (4) Master cylinder secondary circuit
- (5) Circuit for rear right-hand wheel
- (6) Circuit for rear left-hand wheel

The anti-lock braking system pump assembly is equipped with a **26-track** computer.



19113

- (7) Braking computer
- (8) Hydraulic assembly

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

K9K, and LEFT-HAND DRIVE

Equipment required

pedal press

Tightening torques

hydraulic unit bolts on its intermediate bracket	8 Nm

hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting	6.5 Nm

hydraulic unit main mounting bolts on the body	8 Nm

rigid brake pipe unions on the hydraulic unit	13 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.

☐ Remove:

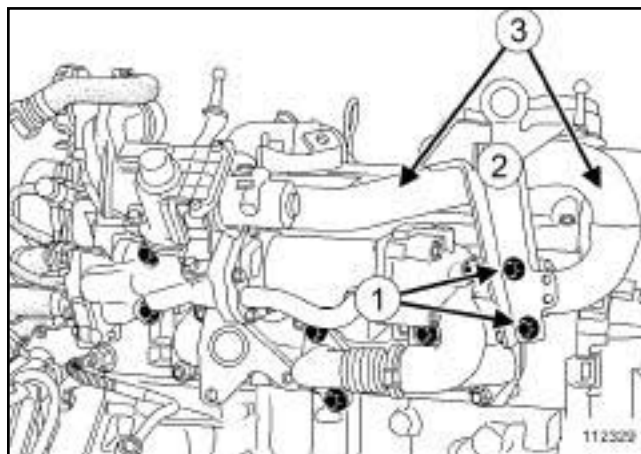
- the front wheel on the passenger side (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,

- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),

- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),

- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),

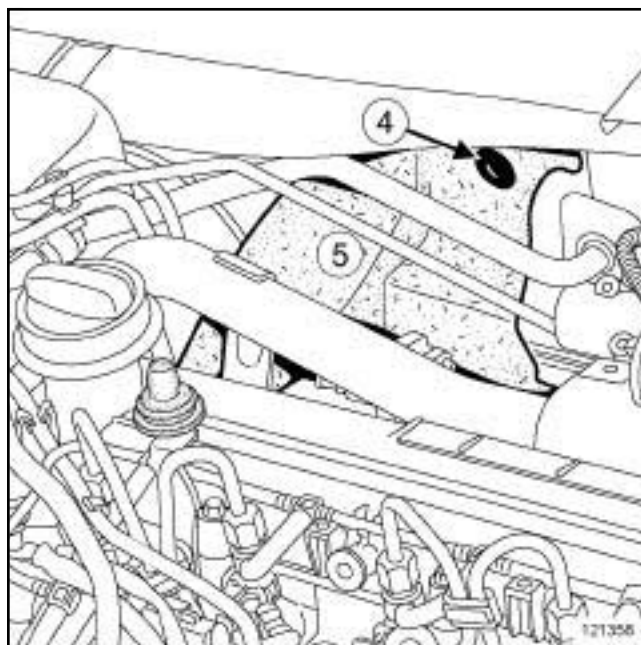
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).



112329

☐ Remove:

- the bolts (1) from the lifting eye on the right-hand side,
- the lifting eye on the right-hand side (2) ,
- the rigid pipe (3) from the EGR circuit.



121358

☐ Remove the clip (4) from the soundproofing.

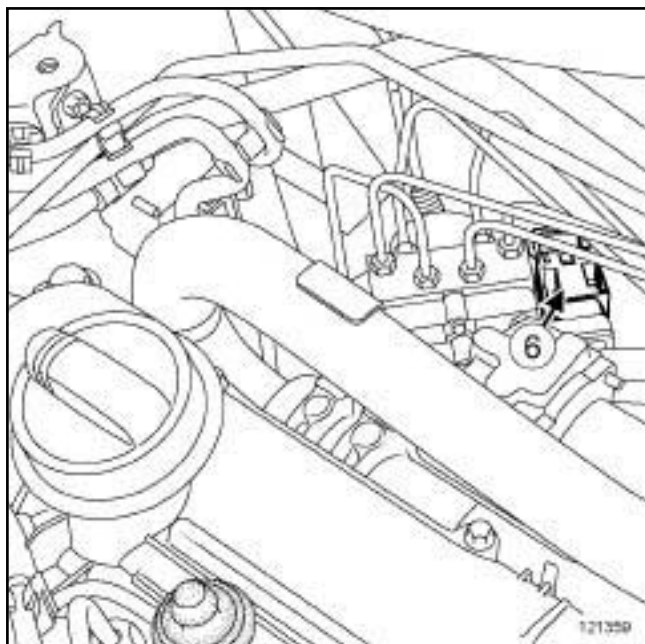
☐ Move the soundproofing aside (5) to access the hydraulic unit.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

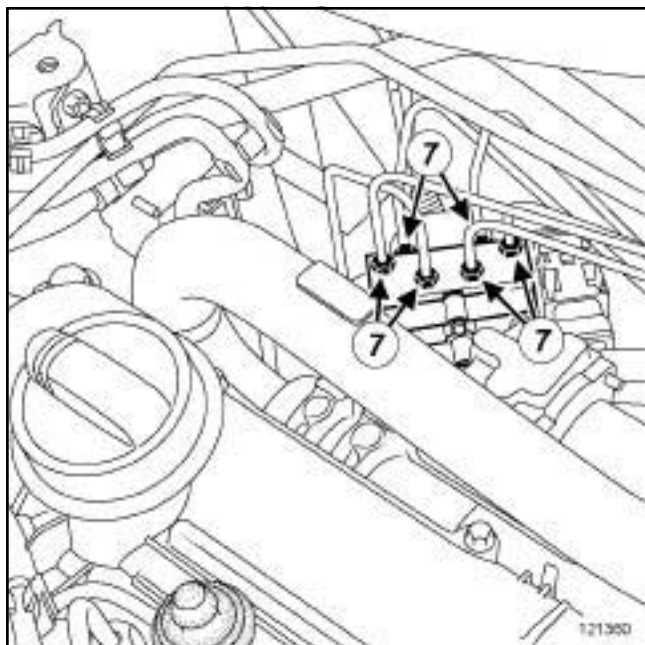
38C

K9K, and LEFT-HAND DRIVE



121359

- ❑ Disconnect the hydraulic unit computer connector (6) .



121360

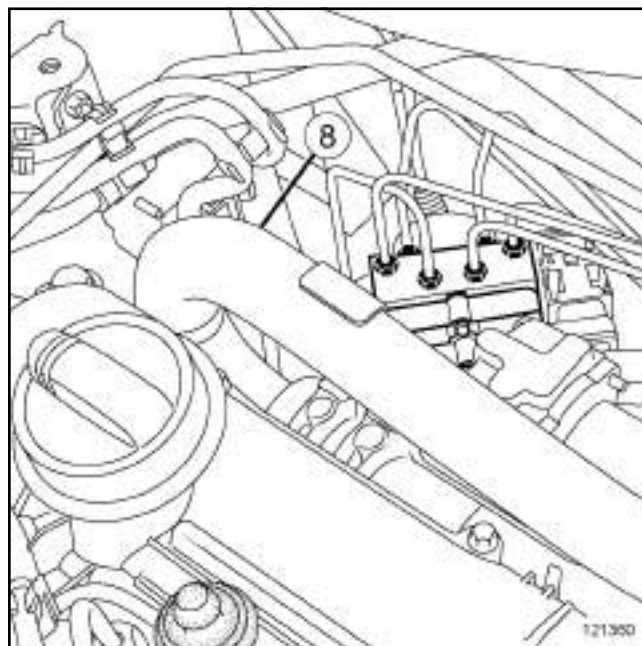
- ❑ Undo the rigid brake pipe unions (7) on the hydraulic unit.

WARNING

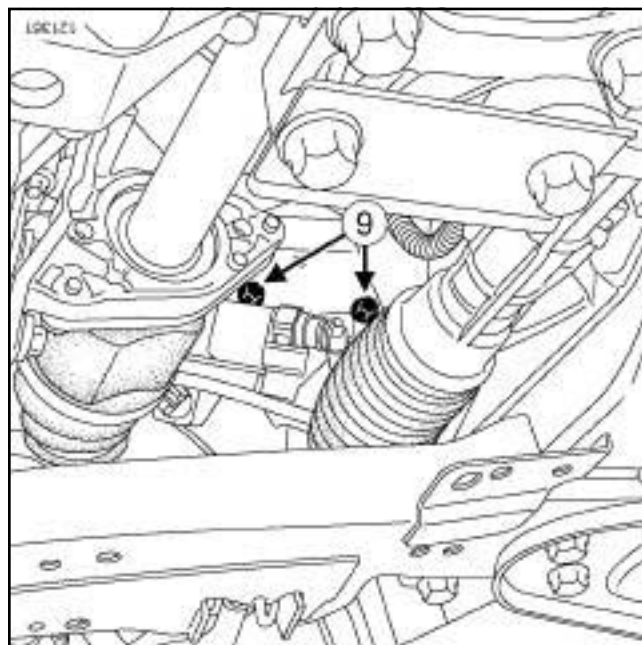
Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Insert the blanking plugs.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121360



121361

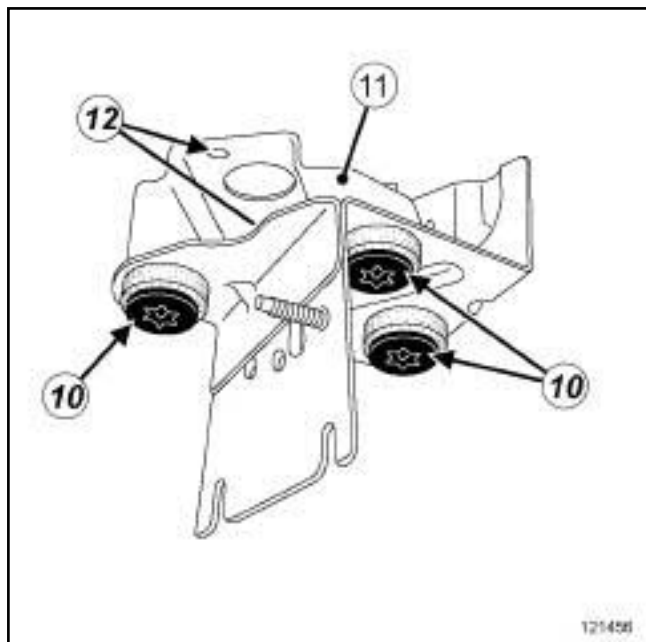
- ❑ Remove:
 - the hydraulic unit main mounting bolts (8) and (9) on the body,
 - the « hydraulic unit mounting - hydraulic unit » assembly from the body.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

K9K, and LEFT-HAND DRIVE



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (10) ,
- the « hydraulic unit intermediate bracket - hydraulic unit » assembly (11) from the main mounting,
- the hydraulic unit bolts (12) from its intermediate bracket,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the hydraulic unit onto its intermediate bracket,
- the hydraulic unit bolts onto its intermediate bracket.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.

❑ Refit:

- the « hydraulic unit intermediate bracket - hydraulic unit » assembly onto the main mounting,
- the hydraulic unit intermediate bracket bolts onto the main hydraulic unit mounting.

❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting (6.5 Nm)**.

❑ Refit:

- the « hydraulic unit mounting - hydraulic unit » assembly on the body,
- the hydraulic unit main mounting bolts on the body.

❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

II - FINAL OPERATION.

❑ Remove the blanking plugs.

❑ Fit and tighten the rigid brake pipe unions on the hydraulic unit.

❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.

❑ Connect the computer connector on the hydraulic unit.

❑ Fit the bulkhead soundproofing.

❑ Refit:

- the soundproofing clip,
- the rigid exhaust gas recirculation circuit pipe,
- the lifting eye on the right-hand side,
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the passenger side (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).

❑ Remove the **pedal press** from the brake pedal.

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed, page 30A-4**).

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

D4F or D7F, and LEFTHAND DRIVE

Equipment required

pedal press

Tightening torques

hydraulic unit bolts on its intermediate bracket	8 Nm

hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting	6.5 Nm

hydraulic unit main mounting bolts on the body	8 Nm

rigid brake pipe unions on the hydraulic unit	13 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.

☐ Remove:

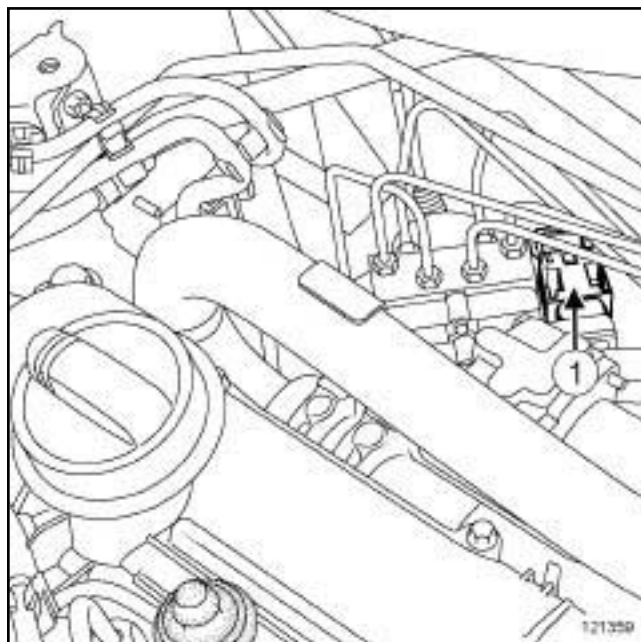
- the front wheel on the passenger side (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**),

- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),

- the ignition coil (see **Coils: Removal - Refitting**) (MR 411, 17A, Ignition),

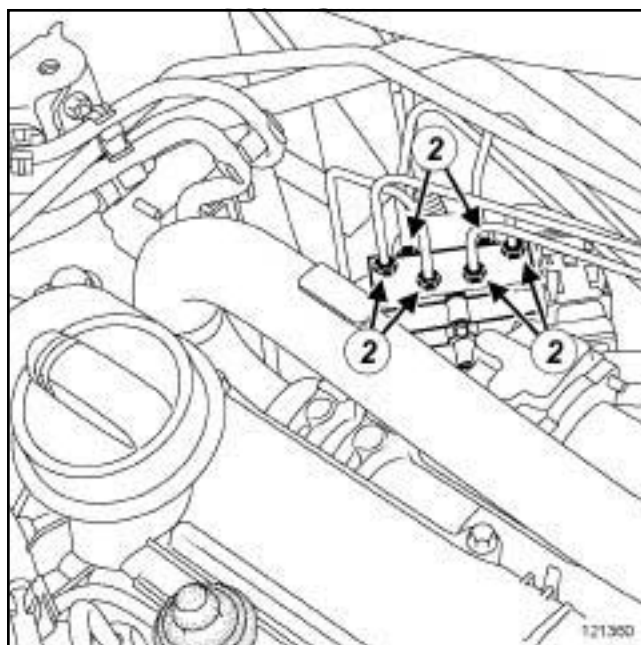
- the fuel vapour recirculation circuit solenoid valve (see **Fuel vapour absorber: Removal - Refitting**) (MR 411, 14A, Emission control),

- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).



121359

☐ Disconnect the hydraulic unit computer connector (1).



121360

☐ Undo the rigid brake pipe unions (2) on the hydraulic unit.

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

☐ Insert the blanking plugs.

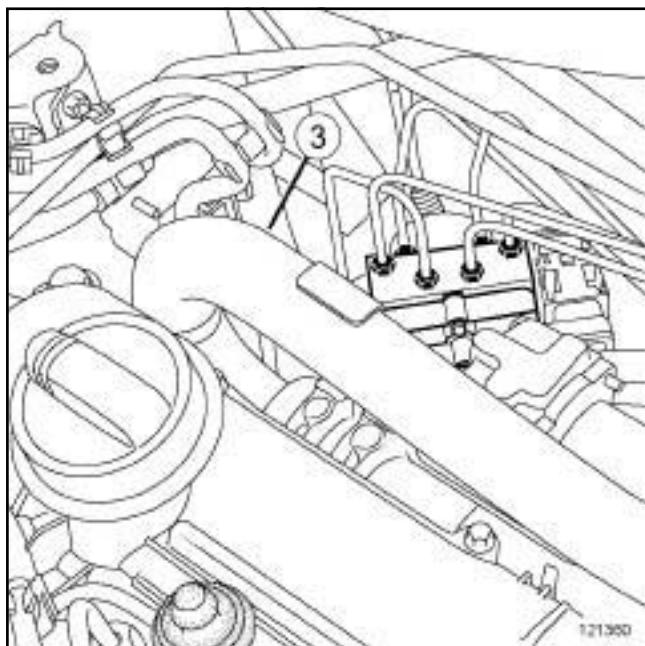
ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

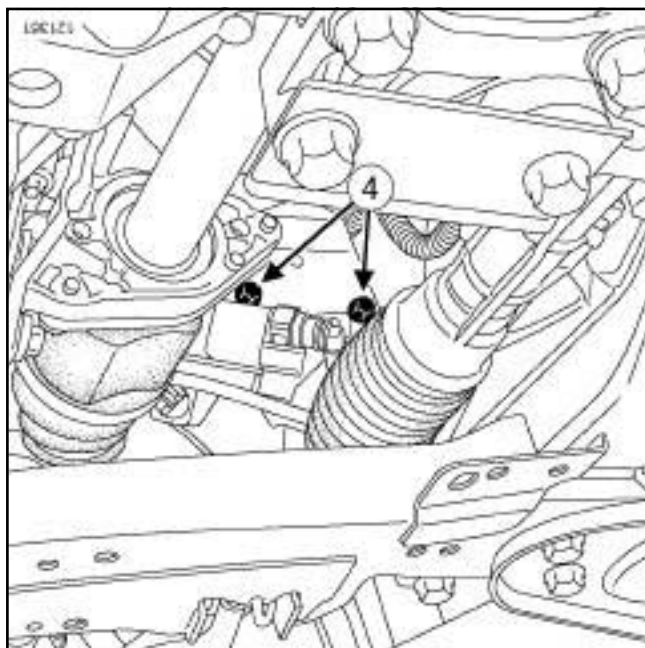
38C

D4F or D7F, and LEFTHAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



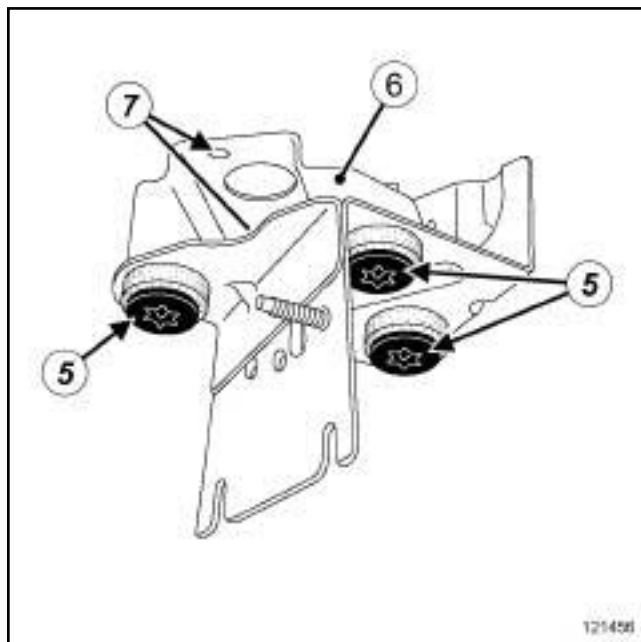
121360



121361

❑ Remove:

- the hydraulic unit main mounting bolts (3) and (4) on the body,
- the « hydraulic unit mounting - hydraulic unit » assembly from the body.



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (5) ,
- the « hydraulic unit intermediate bracket - hydraulic unit » assembly (6) from the main mounting,
- the hydraulic unit bolts (7) ,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the hydraulic unit onto its intermediate bracket,
- the hydraulic unit bolts.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm).**

❑ Refit:

- the « hydraulic unit intermediate bracket - hydraulic unit » assembly onto the main mounting,
- the hydraulic unit intermediate bracket bolts.

❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting (6.5 Nm).**

❑ Refit:

- the « hydraulic unit mounting - hydraulic unit » assembly on the body,

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

D4F or D7F, and LEFTHAND DRIVE

- the hydraulic unit main mounting bolts on the body.

- ☐ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

II - FINAL OPERATION.

- ☐ Remove the blanking plugs.
- ☐ Fit and tighten the rigid brake pipe unions on the hydraulic unit.
- ☐ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.
- ☐ Connect the computer connector on the hydraulic unit.
- ☐ Refit:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
 - the fuel vapour recirculation circuit solenoid valve (see **Fuel vapour absorber: Removal - Refitting**) (MR 411, 14A, Emission control),
 - the ignition coil (see **Coils: Removal - Refitting**) (MR 411, 17A, Ignition),
 - the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
 - the front wheel on the passenger side (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**).
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed, page 30A-4**).

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

D4F, and 780, and LEFTHAND DRIVE – K4M, and LEFT-HAND DRIVE

Equipment required

pedal press

refrigerant charging station

Tightening torques

hydraulic unit bolts on its intermediate bracket **8 Nm**

intermediate bracket bolts on the hydraulic unit main bracket **8 N.m**

hydraulic unit main mounting bolts on the body **8 Nm**

rigid brake pipe unions on the hydraulic unit **13 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.

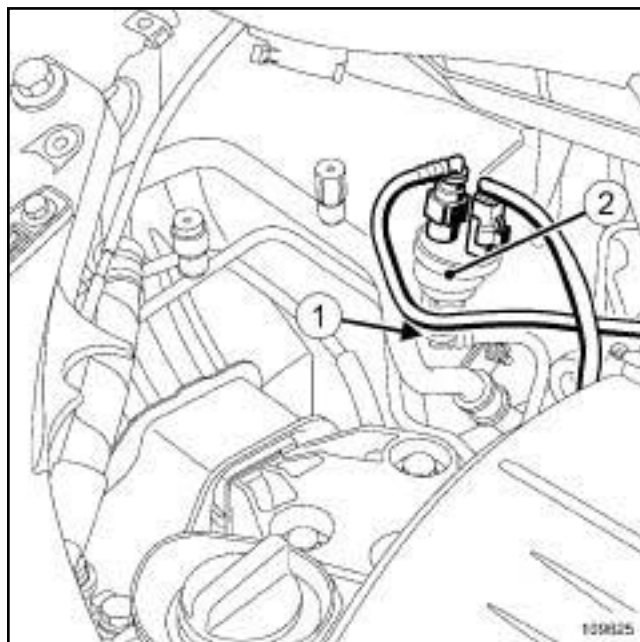
☐ Remove:

- the passenger side front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),

- the front wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

D4F, and 780

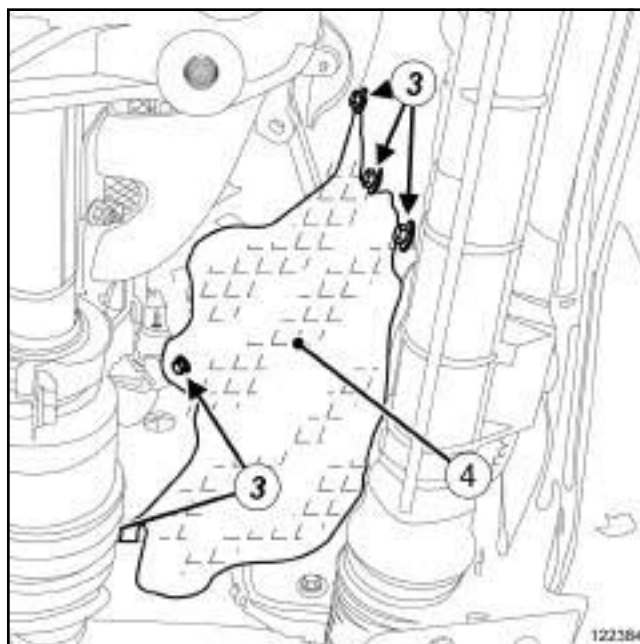
☐ Remove the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).



109625

☐ Disconnect the fuel vapour rebreathing solenoid valve union (1).

☐ Remove the fuel vapour rebreathing solenoid valve (2).



122384

☐ Remove the bolts (3) from the bulkhead heat shield.

☐ Move the bulkhead heat shield (4) to one side.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

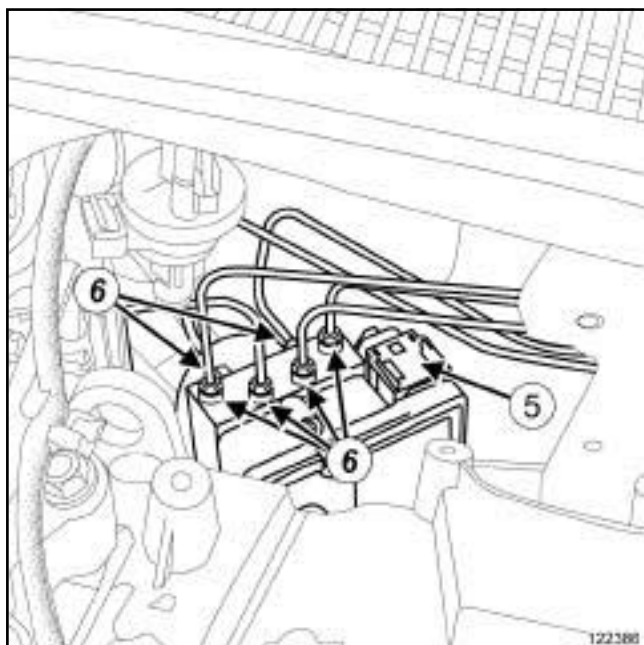
38C

D4F, and 780, and LEFTHAND DRIVE – K4M, and LEFT-HAND DRIVE

K4M, and AIR CONDITIONING or CLIMATE CONTROL

- ❑ Drain the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ❑ Remove the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

II - OPERATION FOR REMOVAL OF PART CONCERNED

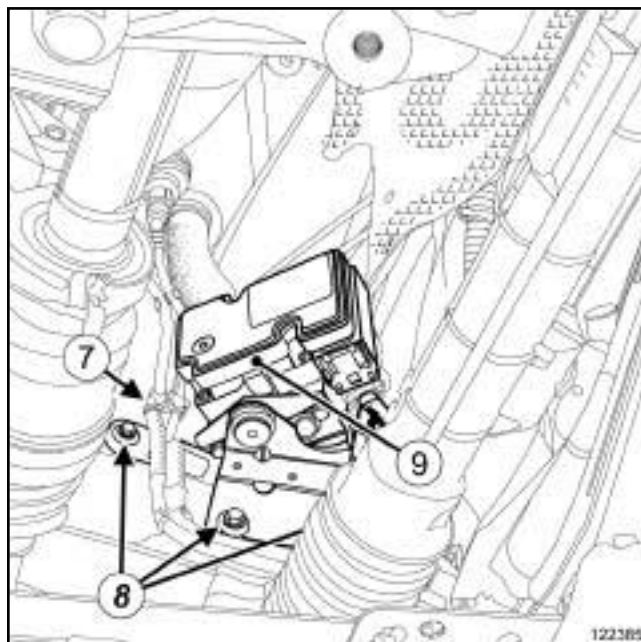


- ❑ Disconnect the hydraulic unit computer connector (5) .

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Undo the rigid brake pipe unions (6) on the hydraulic unit.
- ❑ Insert the blanking plugs.



- ❑ Unclip the fuel pipes (7) .
- ❑ Remove the bolts (8) from the hydraulic unit main bracket.

K4M

- ❑ Remove the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).
- ❑ Fit the under the engine.
- ❑ Remove the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).
- ❑ Tilt the engine towards the front of the vehicle.

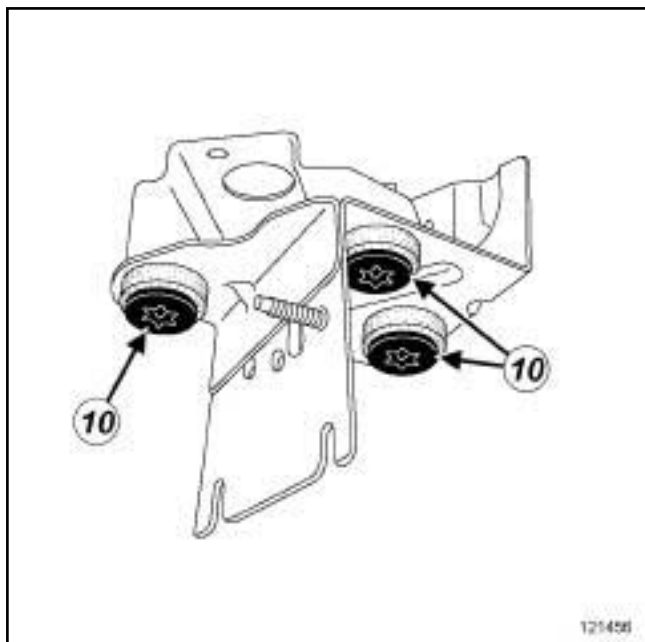
- ❑ Remove the "hydraulic unit bracket - hydraulic unit" assembly from the body.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

D4F, and 780, and LEFTHAND DRIVE – K4M, and LEFT-HAND DRIVE



❑ Remove:

- the hydraulic unit intermediate bracket bolts (10) ,
- the "intermediate bracket - hydraulic unit" assembly from the main bracket,
- the hydraulic unit bolts,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the hydraulic unit on its intermediate bracket.
- ❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.
- ❑ Refit the "hydraulic unit intermediate bracket - hydraulic unit" assembly on the main bracket.
- ❑ Torque tighten the **intermediate bracket bolts on the hydraulic unit main bracket (8 N.m)**.
- ❑ Refit the "main bracket - hydraulic unit" assembly on the body.

K4M

❑ Refit:

- the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

- ❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.
- ❑ Clip on the fuel pipes.
- ❑ Remove the blanking plugs.
- ❑ Fit and tighten the rigid brake pipe unions on the hydraulic unit.
- ❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.
- ❑ Connect the hydraulic unit connector.

II - FINAL OPERATION.

K4M, and AIR CONDITIONING or CLIMATE CONTROL

- ❑ Refit the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).
- ❑ Fill the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

- ❑ Refit the bulkhead heat shield.
- ❑ Fit the fuel vapour rebreathing solenoid valve.
- ❑ Refit the union on the fuel vapour rebreathing solenoid valve.

D4F, and 780

- ❑ Refit the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture)

❑ Refit:

- the front wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front passenger side wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- ❑ Remove the **pedal press** from the brake pedal.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

D4F, and 780, and LEFTHAND DRIVE – K4M, and LEFT-HAND DRIVE

- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

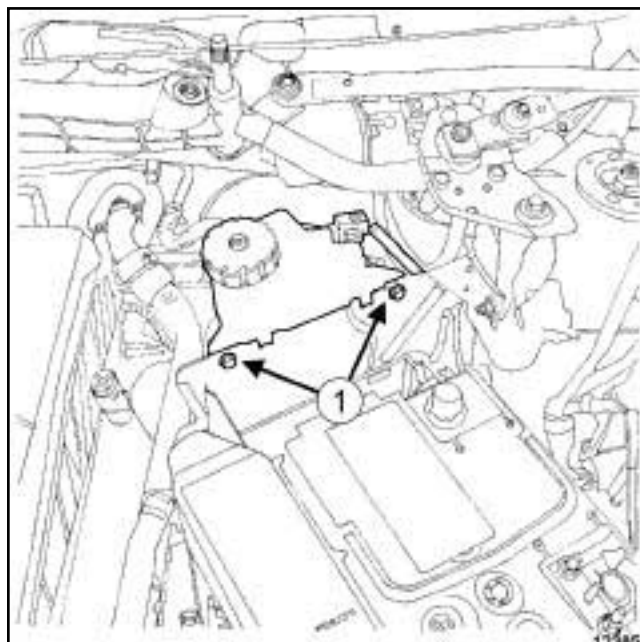
RIGHT-HAND DRIVE

Tightening torques 	
hydraulic unit bolts on its intermediate bracket	8 Nm
hydraulic unit intermediate bracket bolts on the main hydraulic unit bracket	8 Nm
hydraulic unit main mounting bolts on the body	8 Nm
rigid brake pipe unions on the hydraulic unit	14 Nm
secondary brake fluid reservoir bolts	8 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the battery (see **Battery: Removal - Refitting**) (80A, Battery).



123854

- ☐ Remove:
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the bolts (1) from the secondary brake fluid reservoir.
- ☐ Move aside the secondary brake fluid reservoir.

K4M

- ☐ Remove:
 - the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
 - the computer mounting bolts,
 - the computer bracket.

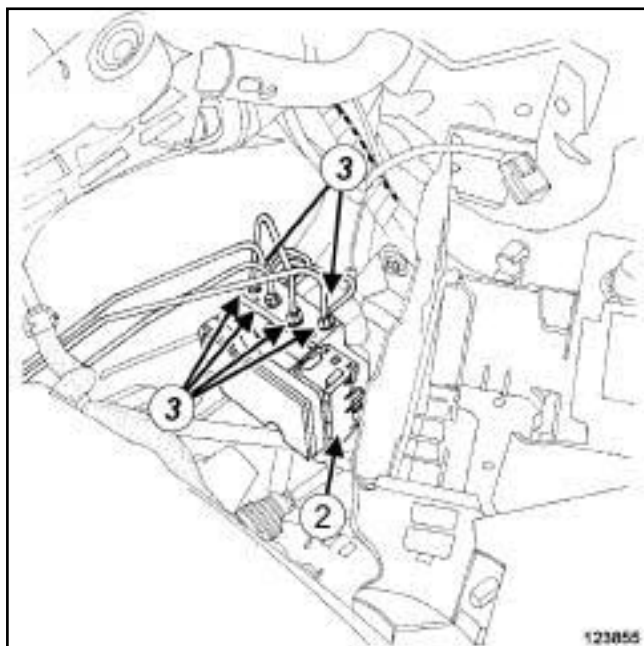
ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED

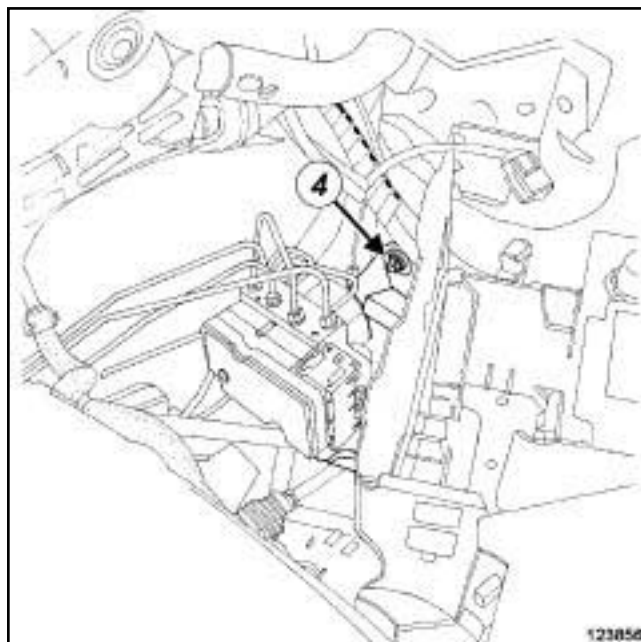


- ❑ Disconnect the braking hydraulic unit connector (2) .

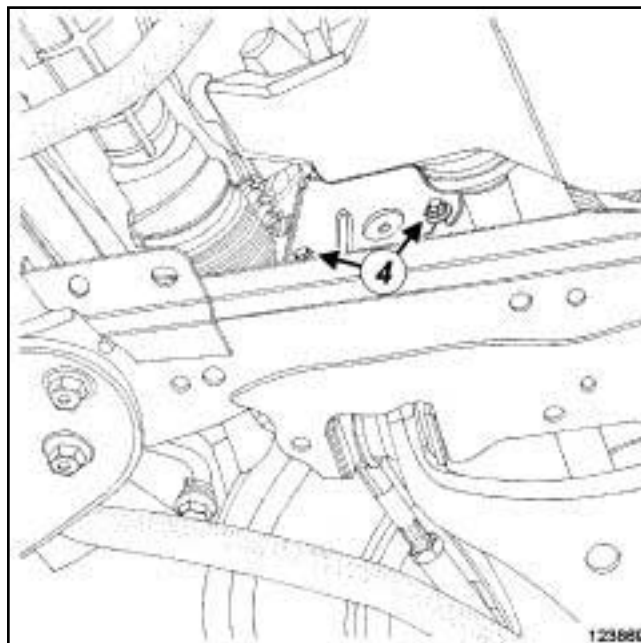
WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Remove the unions (3) of the rigid brake pipes on the hydraulic unit.
- ❑ Fit blanking plugs to the hydraulic unit.



123856



123869

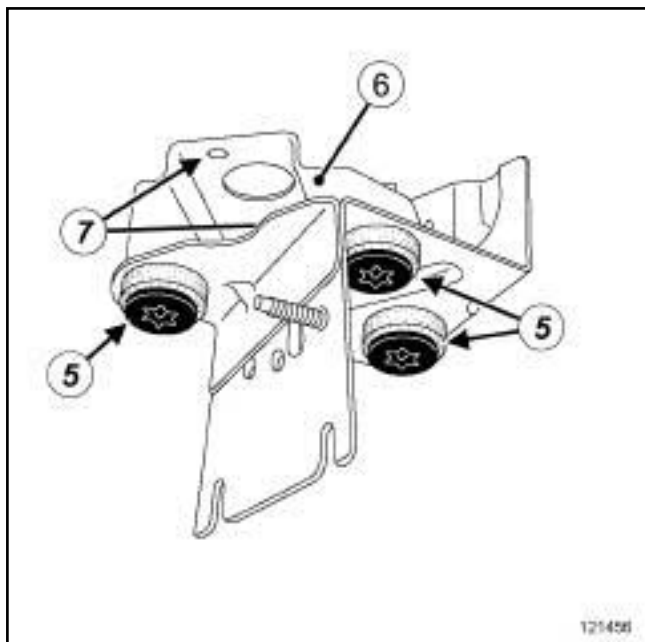
- ❑ Remove:
 - the bolts (4) from the hydraulic unit main bracket on the body,
 - the "hydraulic unit bracket - hydraulic unit" assembly.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

RIGHT-HAND DRIVE



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (5) ,
- the "hydraulic unit intermediate bracket - hydraulic unit" assembly (6) from the main bracket,
- the hydraulic unit bolts (7) ,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the hydraulic unit on its support.
- ❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.
- ❑ Refit the "hydraulic unit intermediate bracket - hydraulic unit" assembly on the main bracket.
- ❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit bracket (8 Nm)**.
- ❑ Refit the "hydraulic unit main bracket - hydraulic brake unit" assembly on the body.
- ❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.
- ❑ Refit the rigid brake pipe unions on the hydraulic unit.
- ❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (14 Nm)**.

- ❑ Connect the braking hydraulic unit connector.

II - FINAL OPERATION.

K4M

❑ Refit:

- the computer bracket.
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

- ❑ Fit the secondary brake fluid reservoir.

- ❑ Torque tighten the **secondary brake fluid reservoir bolts (8 Nm)**.

❑ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

- ❑ Refit the battery (see **Battery: Removal - Refitting**) (80A, Battery).

- ❑ Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

ANTI-LOCK BRAKING SYSTEM

Front wheel speed sensor: Removal - Refitting

38C

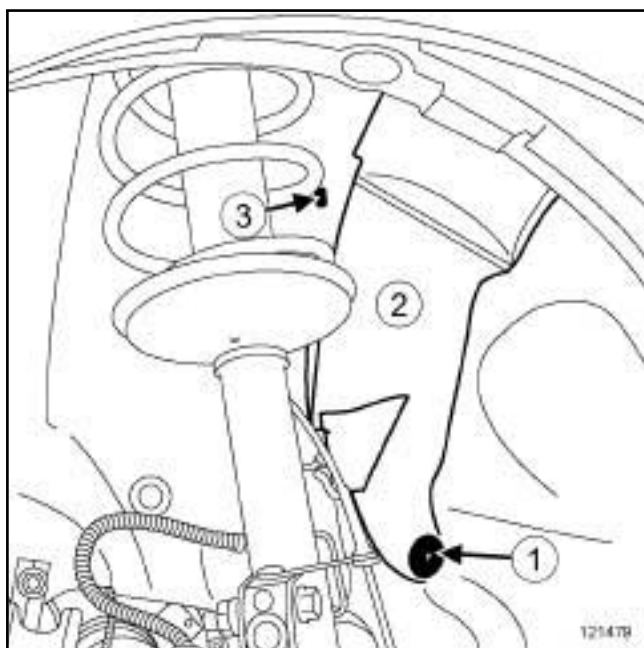
Tightening torques

front wheel speed sensor bolt	8 Nm

REMOVAL

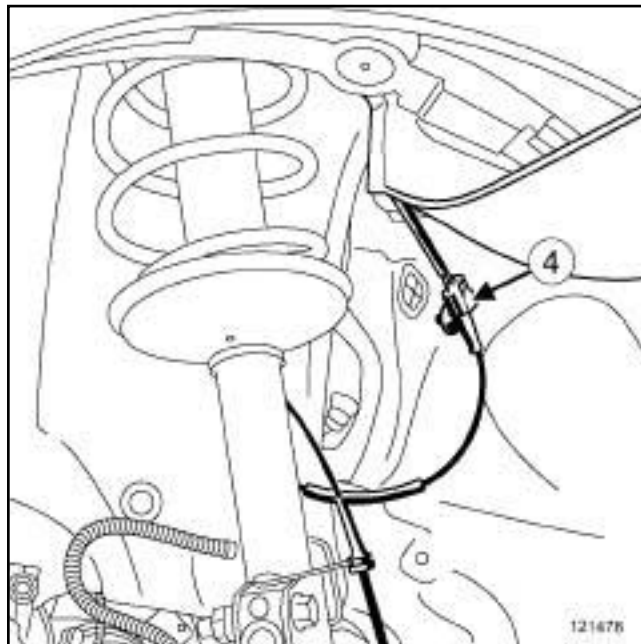
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

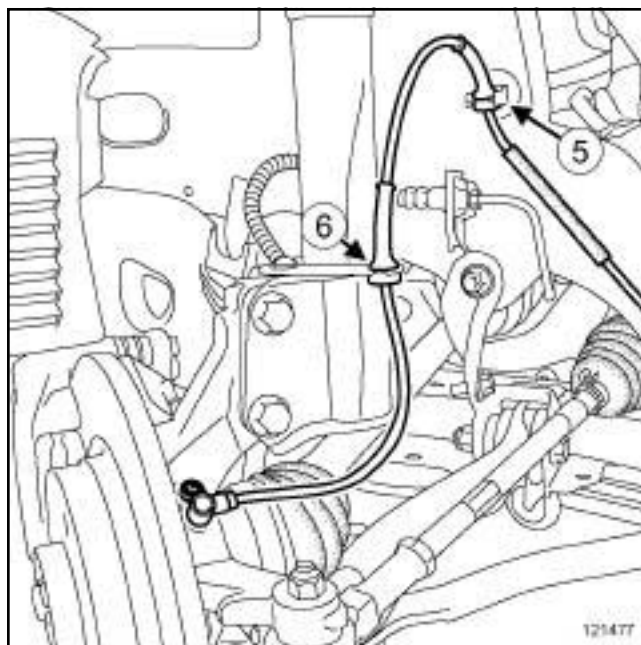


- ☐ Remove the clip (1).
- ☐ Lift part of the front wheel arch liner (2).
- ☐ Unclip the pin (3).

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Disconnect the front wheel speed sensor cable connector (4).

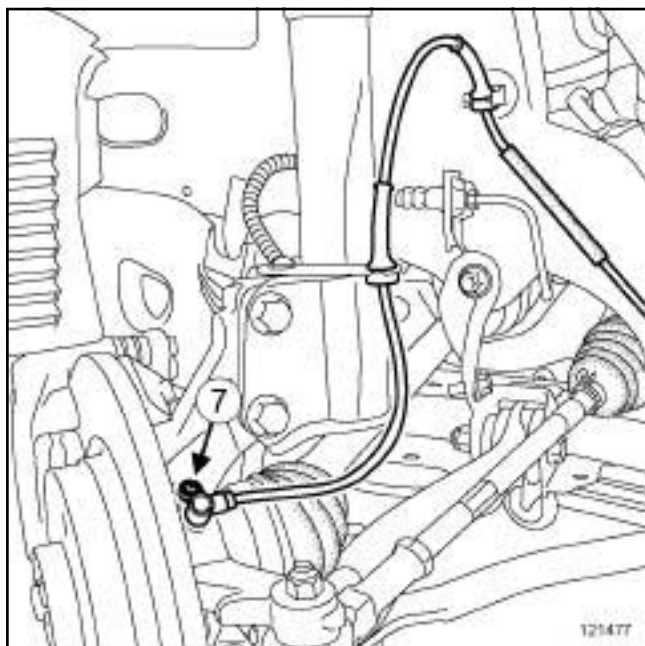


- ☐ Unclip the front wheel speed sensor cable at (5) and (6).

ANTI-LOCK BRAKING SYSTEM

Front wheel speed sensor: Removal - Refitting

38C



121477

❑ Remove:

- the front wheel speed sensor bolt (7) ,
- the front wheel speed sensor.

WARNING

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the front wheel speed sensor,
- the front wheel speed sensor bolt.

❑ Torque tighten the **front wheel speed sensor bolt (8 Nm)**.

❑ Connect the front wheel speed sensor cable connector.

❑ Clip on the front wheel speed sensor cable.

II - FINAL OPERATION.

- ❑ Refit the front wheel (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

ANTI-LOCK BRAKING SYSTEM

Rear wheel speed sensor: Removal - Refitting

38C

Tightening torques

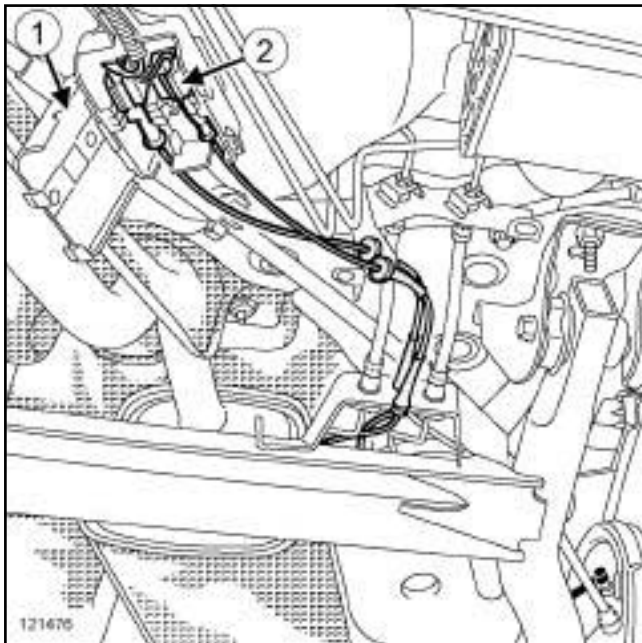
rear wheel speed sensor bolt	8 Nm

REMOVAL

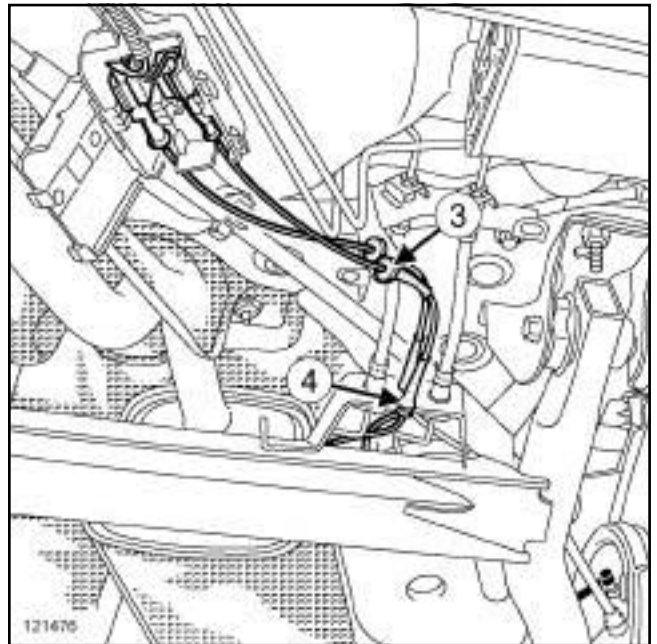
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).
- ☐ Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

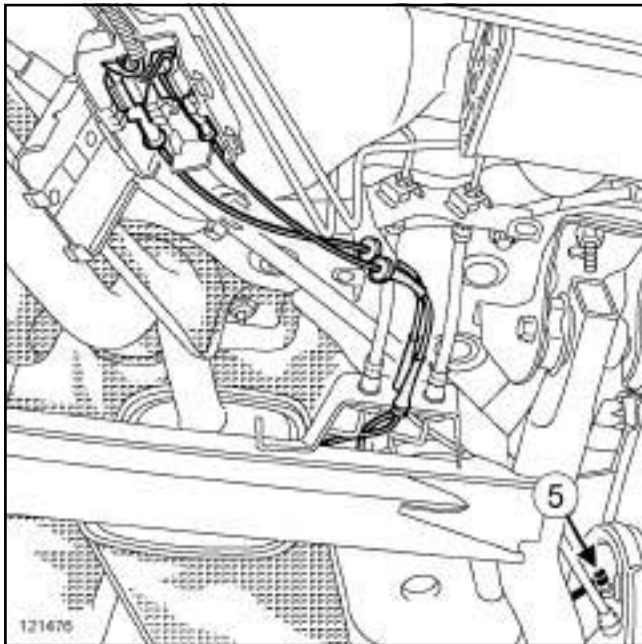
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Open the rear wheel speed sensor connector protection unit flap (1) .
- ☐ Disconnect the rear wheel speed sensor cable connector (2) .



- ☐ Unclip the rear wheel speed sensor cable at (3) and (4) .



121476

☐ Remove:

- the rear wheel speed sensor bolt (5) ,
- the rear wheel speed sensor.

WARNING

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- the rear wheel speed sensor,
- the rear wheel speed sensor bolt.

☐ Torque tighten the **rear wheel speed sensor bolt (8 Nm)**.

☐ Clip on the rear wheel speed sensor cable.

☐ Connect the rear wheel speed sensor cable connector.

II - FINAL OPERATION.

- ☐ Close the rear wheel speed sensor connector protection unit flap.
- ☐ Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

ELECTRONIC STABILITY PROGRAM

Tightening torques 	
lateral acceleration and yaw sensor nuts	8 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

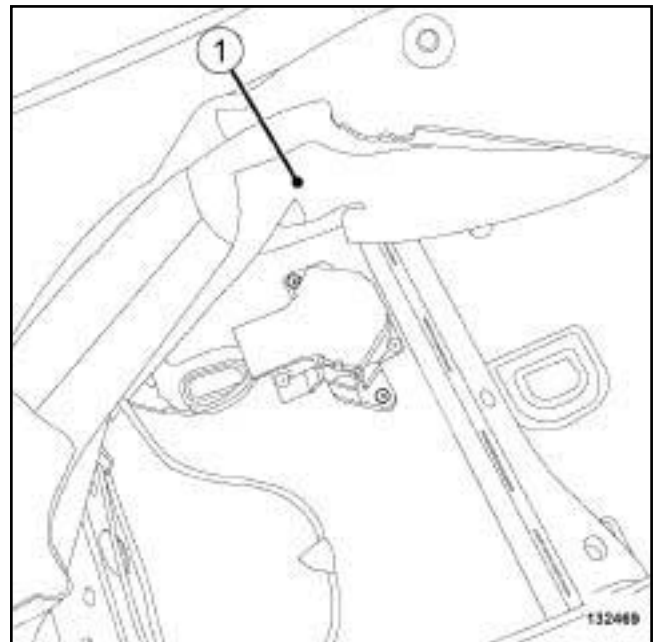
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

LEFT-HAND DRIVE

- ☐ Remove:
 - the front passenger seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners),
 - the passenger side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim).

RIGHT-HAND DRIVE

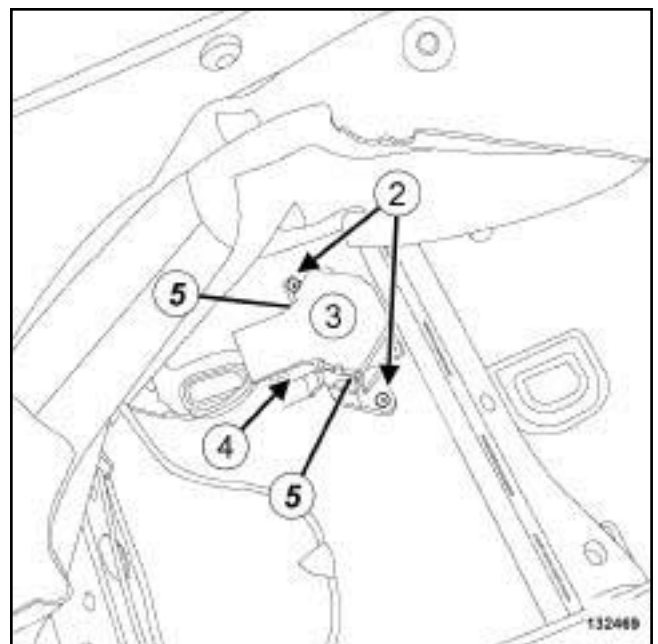
- ☐ Remove:
 - the driver's seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners),
 - the driver's side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim).



132469

- ☐ Remove the floor carpet (1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132469

- ☐ Drill the rivets (2) of the protection plate (3) ,
- ☐ Remove the protection plate (3) .
- ☐ Disconnect the lateral acceleration and yaw sensor connector (4) .
- ☐ Remove:
 - the (5) lateral acceleration and yaw sensor nuts,

ELECTRONIC STABILITY PROGRAM

- the lateral acceleration and yaw sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the lateral acceleration yaw sensor.
- ☐ Torque tighten the **lateral acceleration and yaw sensor nuts (8 Nm)**.
- ☐ Connect the lateral acceleration and yaw sensor connector.
- ☐ Refit:
 - the sensor protection plate,
 - the rivets of the sensor protection plate.

II - FINAL OPERATION.

- ☐ Refit the floor carpet.

RIGHT-HAND DRIVE

- ☐ Refit:
 - the driver's side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim),
 - the driver's seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners).

LEFT-HAND DRIVE

- ☐ Refit:
 - the passenger side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim),
 - the front passenger seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners).

ANTI-LOCK BRAKING SYSTEM

Braking computer: Removal - Refitting

38C

Special tooling required

Mot. 1608 Torque screwdriver 1 to 6.6 N.m.

Equipment required

Diagnostic tool

Tightening torques

braking computer bolts **3 Nm**

This repair method only relates to vehicles without **ESP**, equipped with **TEVES** brand hydraulic unit.

REMOVAL

I - REMOVAL PREPARATION OPERATION

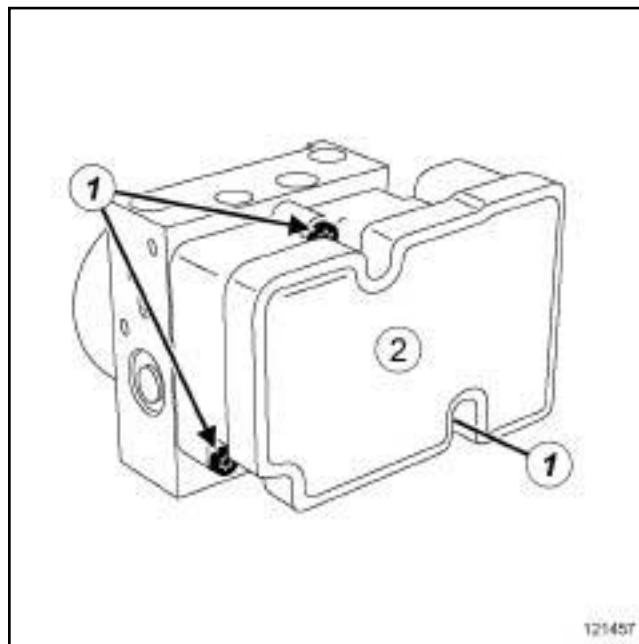
- ❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

- ❑ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ❑ Remove the entire hydraulic unit (see **38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**, page 38C-2) .

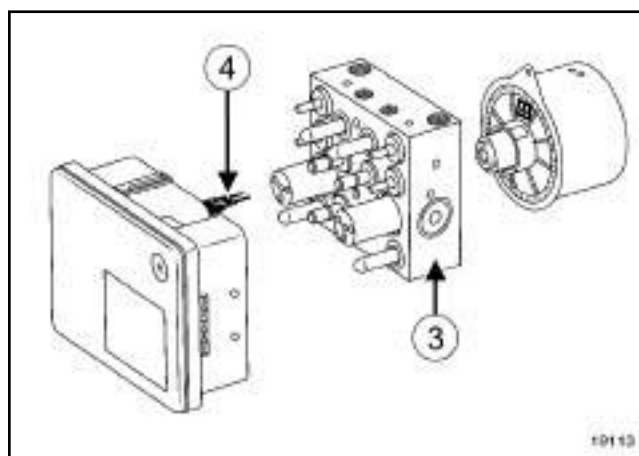
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ❑ Remove:
 - the braking computer bolts (1) on the hydraulic unit,
 - the braking computer (2) .

REFITTING

I - REFITTING PREPARATION OPERATION



- ❑ Do not clean the pressure modulation unit (3) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the braking computer **(2)** , holding it by its edge.

Note:

Do not try to force the braking computer into place when refitting; it should fit in without any resistance.

Note:

When a new braking computer is being fitted, remember to attach the interconnection fork **(4)** between the pressure modulation unit and the braking computer.

- ☐ Refit the braking computer bolts on the pressure modulation unit.
- ☐ Torque tighten the **braking computer bolts (3 Nm)** using the **(Mot. 1608)**.

III - FINAL OPERATION.

- ☐ Refit the entire hydraulic unit (see **38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**, page **38C-2**) .
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).
- ☐ Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .
- ☐ Configure the tachometric index using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413 Fault finding, 38C, Anti-lock braking system).
- ☐ Clear any faults stored by the braking computer.
- ☐ Carry out a road test to confirm the repair.