1998 / 1999
SPORTAGE SERVICE MANUAL
CONTENTS

GROUP 00

00

GENERAL INFORMATION

CONTENTS

FUNDAMENTAL PROCEDURES

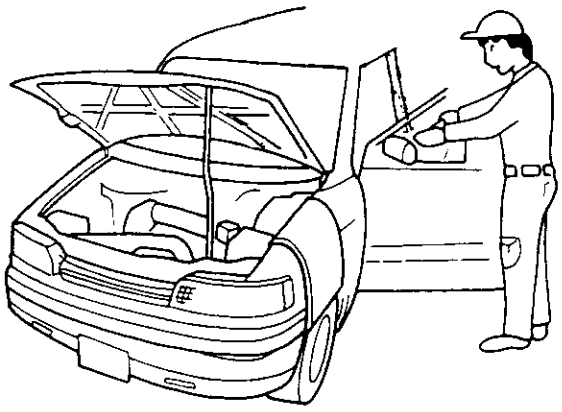
✱ NOTICES, ⁄ CAUTIONS AND ⚠ WARNINGS

As you read through the procedures, you will come across NOTICE's, CAUTION's, and WARNING's. Each one of these indicates a specific purpose. NOTICEs give information to prevent you from making an error that could damage the vehicle or components. CAUTION's remind you to be especially careful in those areas where carelessness can cause personal injury. WARNING's remind you to be extremely careful in those areas where carelessness can cause potential death. The following list contains some general WARNING's you should follow when working on the vehicle.

PROTECTION OF THE VEHICLE

✱ *Notice*

Use appropriate covers to protect fenders, carpeting, and upholstery of the vehicle prior to servicing or repair.

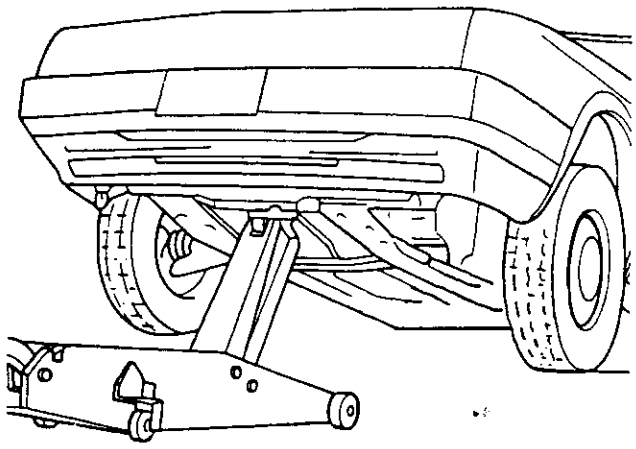


KIA-163-00-01-S

A WORD ABOUT SAFETY

The following precautions must be followed when jacking the vehicle:

1. Block the wheels.
2. Use only the specified jacking positions.
3. Support the vehicle with safety stands.



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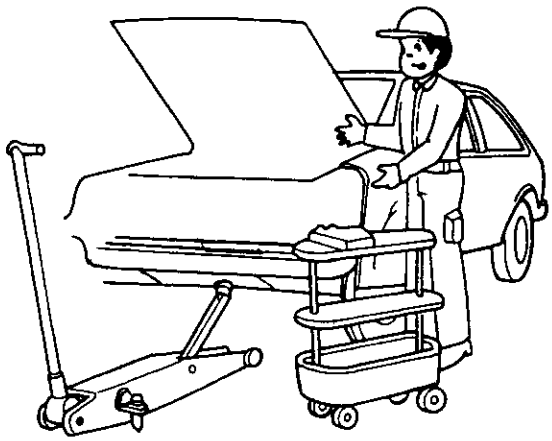
PREPARATION OF TOOLS AND MEASURING EQUIPMENT

Be sure all necessary tools and measuring equipment are available before starting any work.



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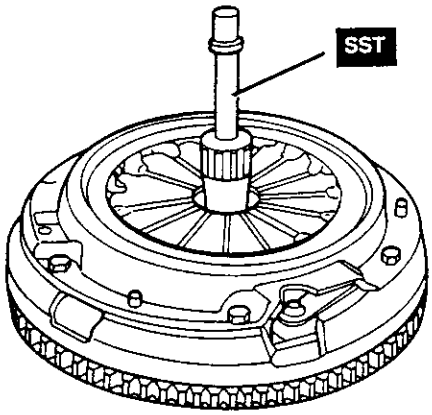
SPECIAL TOOLS

Use special tools when they are required.



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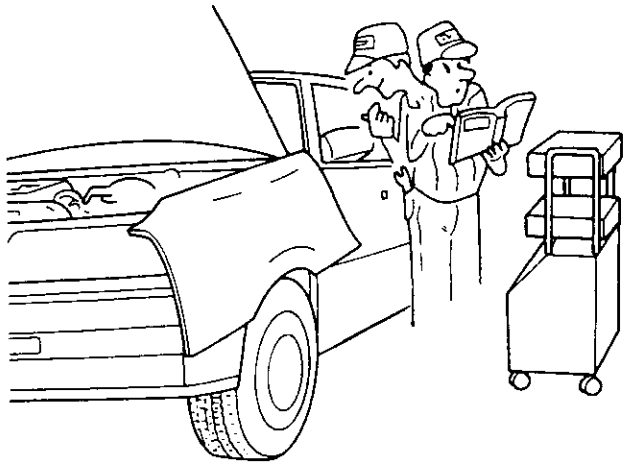
REMOVAL OF PARTS

While correcting a problem, also try to determine its cause. Begin work only after first learning which parts and sub assemblies must be removed and disassembled for replacement or repair.



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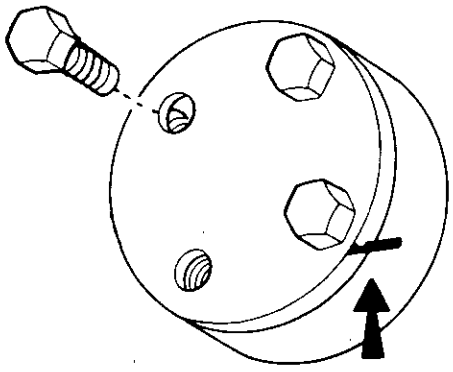
DISASSEMBLY

If disassembly requires many parts to be disassembled, they should be done so in a way that will not affect their performance or external appearance.

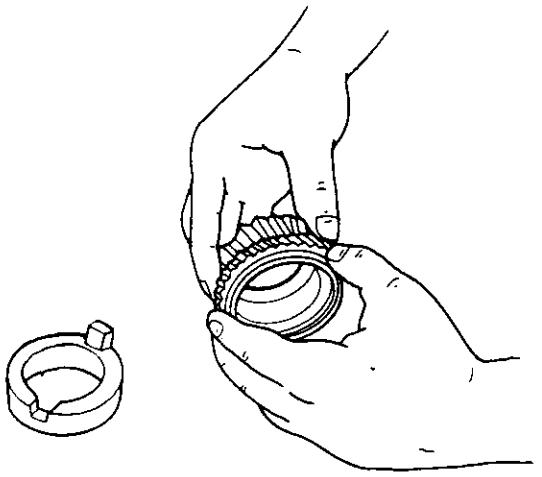
The parts should also be identified so that assembly can be performed easily and efficiently.



KIA-163-00-06-S

1. Inspection of parts

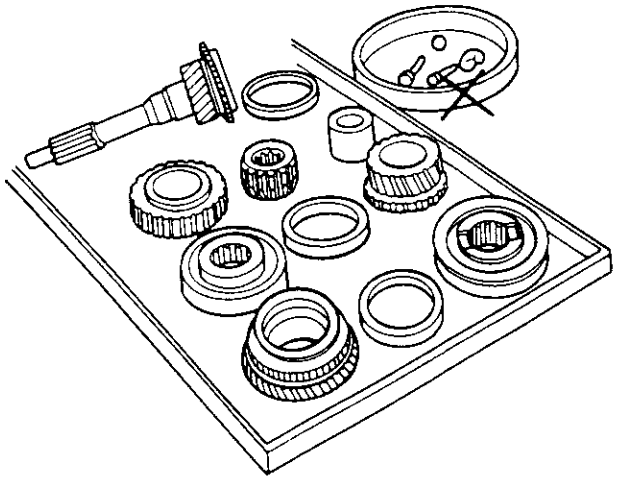
When removed, each part should be carefully inspected for malfunction, deformation, damage, or other problems.



KIA-163-00-07-S

2. Arrangement of parts

All disassembled parts should be carefully arranged for assembly. Identify then separate the parts to be replaced from those that will be reused.



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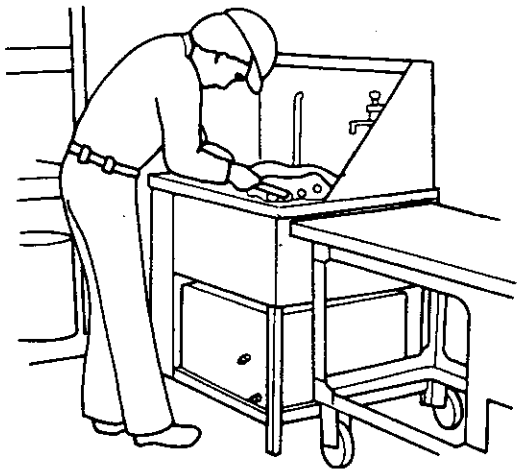
3. Cleaning parts for reuse

All parts to be reused should be carefully and thoroughly cleaned according to the appropriate method.



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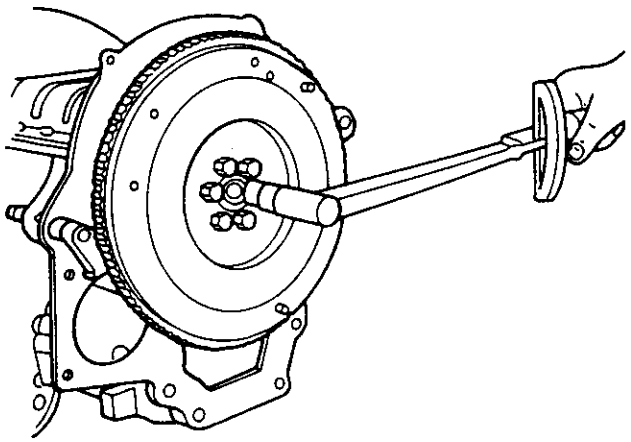
ASSEMBLY

Standard values, such as torques and certain adjustments, must be strictly observed in the assembly of all parts. When removed, the following parts should be replaced with new ones:

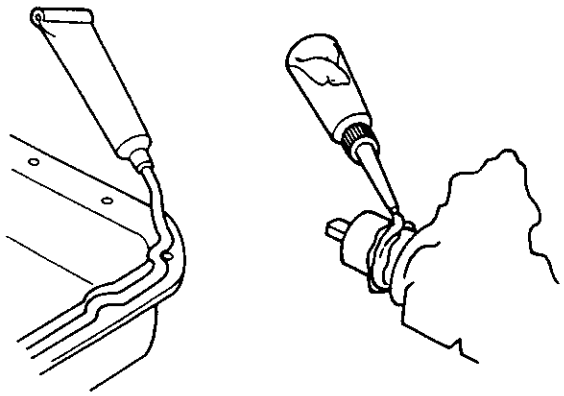
1. Oil seals
2. Gaskets
3. O-rings
4. Spring washers
5. Cotter pins
6. Nylon nuts



KIA-163-00-10-S

Depending on location:

1. Sealant should be applied or new gaskets used.
2. Oil should be applied to the moving components of parts.
3. Specified oil or grease should be applied at the prescribed locations (such as oil seals) before assembly.



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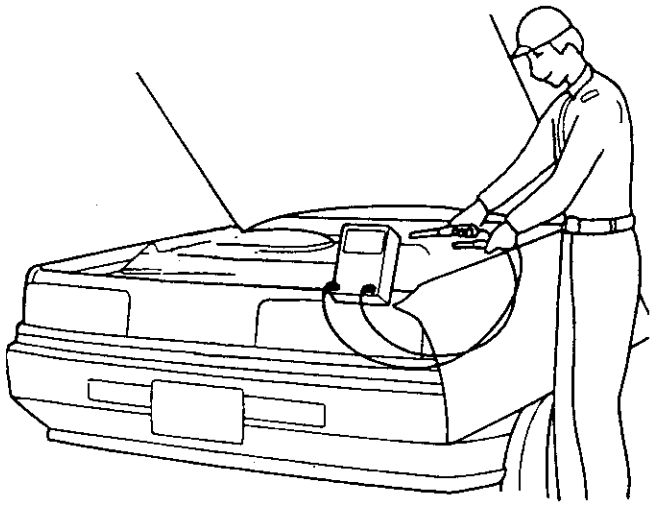
ADJUSTMENTS

Use calibrated gauges/testers/torque wrenches when making adjustments.



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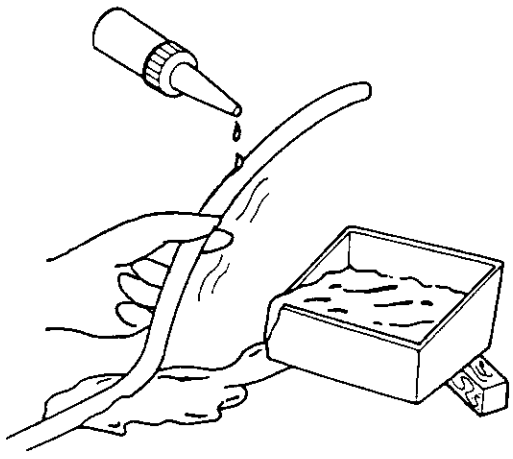
RUBBER PARTS AND TUBING

Prevent gasoline or oil from getting on rubber parts or tubing.



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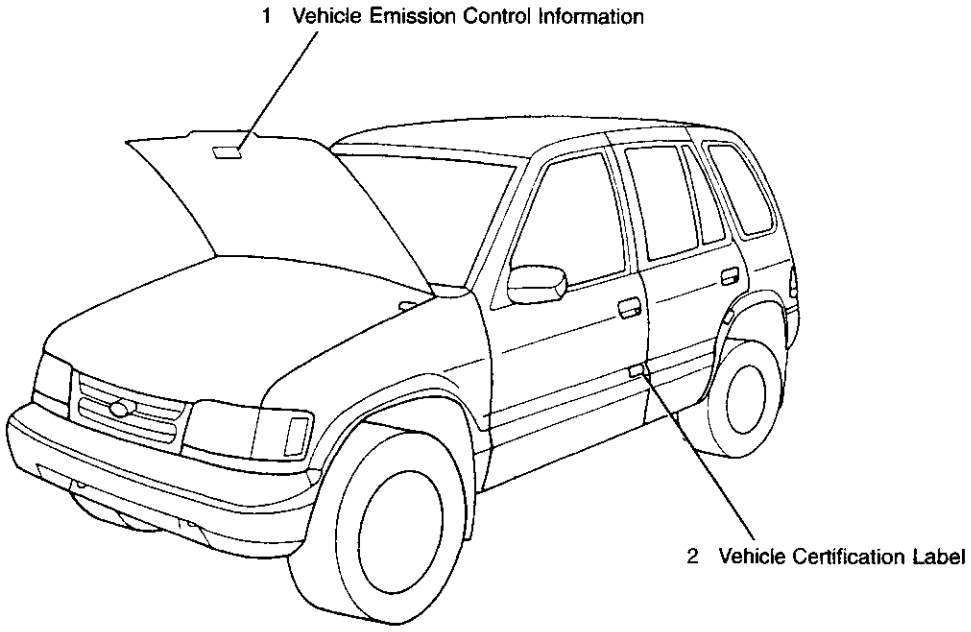
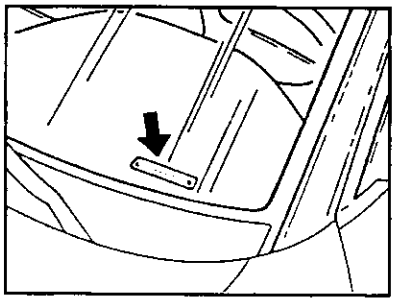
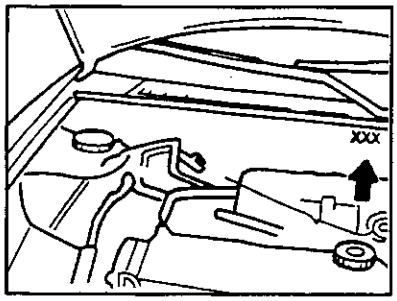
VEHICLE IDENTIFICATION INFORMATION



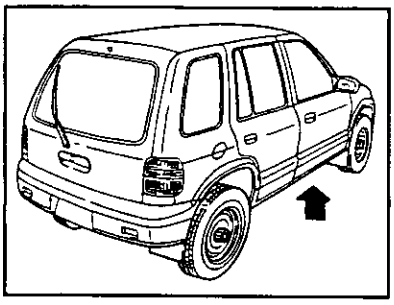
VEHICLE IDENTIFICATION NUMBER (VIN) LOCATIONS



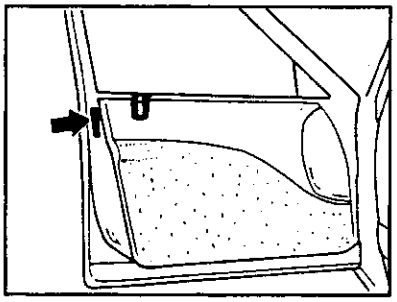
Instrument Panel - Driver Side



Bulkhead - Engine Compartment, Passenger Side



Frame Rail - Passenger Side



FMVSS label - Driver's Door Jamb

KIA-163-00-14-S

VEHICLE IDENTIFICATION SYSTEM

VEHICLE CERTIFICATION LABEL

The vehicle certification label indicates Gross Vehicle Weight Rating (GVWR), Gross Axle (for front and rear axle separately) Weight Rating (GAWR), and Payload Rating. It also shows the original tire size and recommended inflation pressure.

Gross Vehicle Weight (GVW)

Gross Vehicle Weight is the original weight of the vehicle along with the cargo and passenger weight. GVW must not exceed GVWR.

Gross Axle Weight (GAVV)

Gross Axle Weight is the weight of the front and the rear axle. GAW must not exceed GAWR.

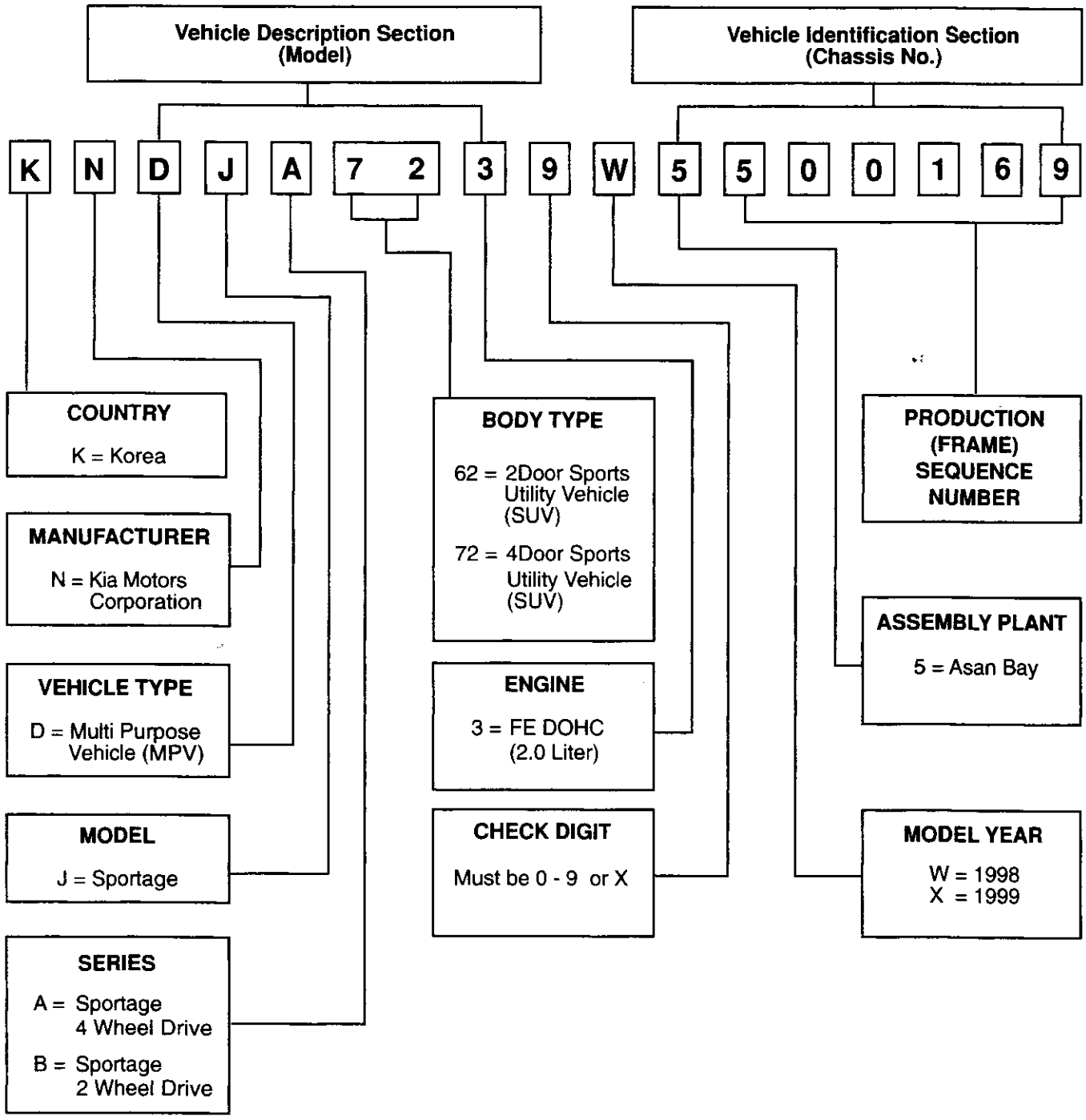
MODEL	ENGINE	GVWR	GAWR (front)	GAWR (rear)
4-DOOR	2.0L Gasoline	4,204 lbs. 1,907 kg	2,040 lbs. 950 kg	2,279 lbs. 1,030 kg

Payload Rating

Payload rating is the maximum allowable cargo load. This allowable cargo load includes driver and passenger weight. The tire size and the inflation pressure should always be proper for the vehicle load.

		FE DOHC (4WD)
Towing Capacity lb (kg)	Without Trailer Brakes	1,000 (450) Tongue Weight: 100 (45)
	With Trailer Brakes	2,000 (900) Tongue Weight: 200 (90)
Payload Capacity lb (kg)		838 (380)

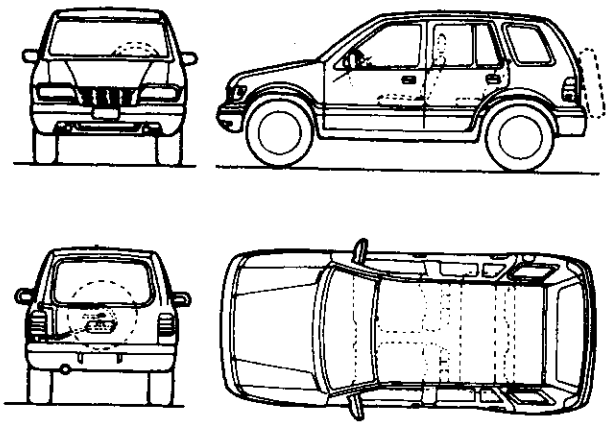
VEHICLE IDENTIFICATION SYSTEM FOR KIA SPORTAGE



The Vehicle Identification Number (VIN) for the Kia Sportage is comprised of seventeen (17) digits and is stamped on a metal plate that is located on the drivers side of the instrument panel visible from outside of the vehicle through the windshield. The VIN is also stamped into the center of the engine compartment bulkhead, into the passenger side of the frame (forward section) and it is printed on the Federal Motor Vehicles Safety Standards (FMVSS) label which is attached to the driver's door jamb.

MODEL IDENTIFICATION

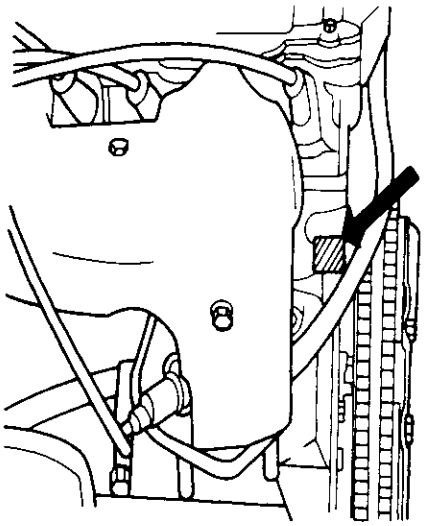
The 1998/1999 4-door, 4WDSportage features a 2.0L gasoline engine with electronic multiport fuel injection, rear-wheel antilock braking system (rearwheel ABS) and a 5-speed manual transmission.



KIA-163-00-16-S

ENGINE IDENTIFICATION

All engines are stamped with an engine identification number. The engine identification number is located on the left side at the rear of the engine block. The eighth character of the vehicle identification number indicates the type of engine utilized in the vehicle.



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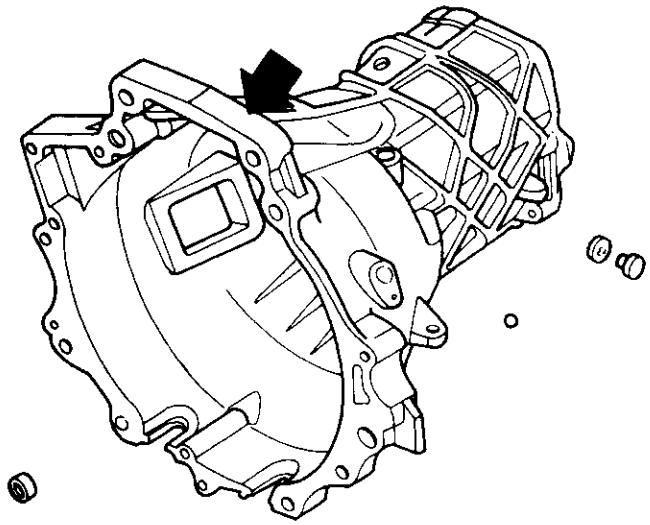
TRANSMISSION IDENTIFICATION

The transmission identification number is located on the transmission case on a label or a tag. This identifies the manual transmission model.



KIA-163-00-18-S

GENERAL VEHICLE LIFTING AND JACKING

⚠ WARNING

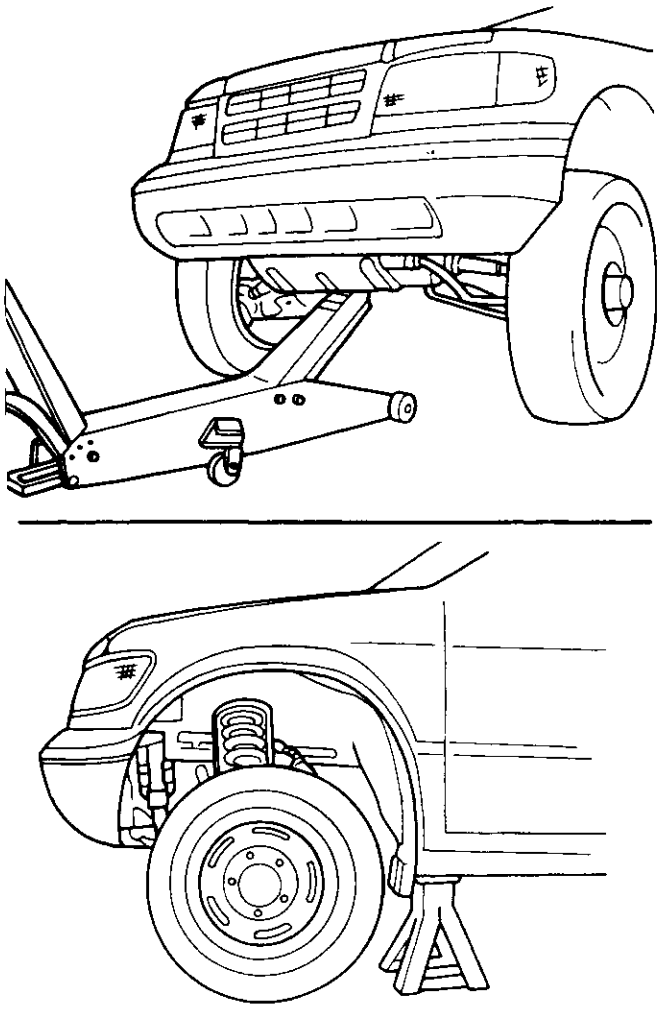
- **DO NOT GET UNDER THE VEHICLE WHEN IT IS SUPPORTED BY THE JACK ONLY. ALWAYS USE SAFETY STANDS TO SUPPORT THE VEHICLE WEIGHT, AND WHEEL CHOCKS TO KEEP THE VEHICLE FROM ROLLING. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**
- **BEFORE LIFTING THE VEHICLE WITH A HOIST, MAKE SURE THAT THE FRONT AND REAR OF THE VEHICLE ARE PROPERLY POSITIONED AND THE HOIST ARMS ARE SET AS WIDE AS POSSIBLE.**

VEHICLE JACKING

When vehicle is jacked with a vehicle jack or floor jack (workshop jack), appropriate safety procedures should be followed. See page 00-10 for vehicle lift points.

Front End Jack Position

When vehicle is jacked from front crossmember only, safety stands should be placed at the second crossmember on both sides of the body frame.



KIA163-00-19-S

Rear End Jack Position

When vehicle is jacked from the center of rear crossmember, safety stands should be placed at the forward spring hanger of the rear spring on both sides of the body frame.

Left Hand Front Wheel Jack Position

When vehicle is jacked from LEFT HAND FRONT WHEEL, wheel chocks should be placed on both sides of the RIGHT HAND REAR WHEEL.

Right Hand Front Wheel Jack Position

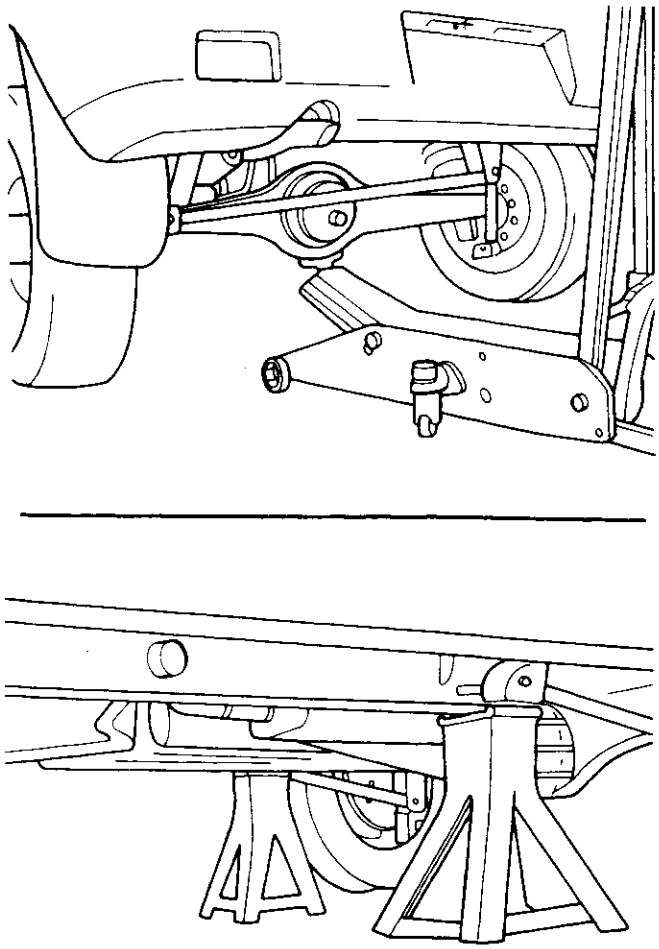
When vehicle is jacked from RIGHT HAND FRONT WHEEL, wheel chocks should be placed on both sides of the LEFT HAND REAR WHEEL.

Left Hand Rear Wheel Jack Position

When vehicle is jacked from LEFT HAND REAR WHEEL, wheel chocks should be placed on both sides of the RIGHT HAND FRONT WHEEL.

Right Hand Rear Wheel Jack Position

When vehicle is jacked from RIGHT HAND REAR WHEEL, wheel chocks should be placed on both sides of the LEFT HAND FRONT WHEEL.



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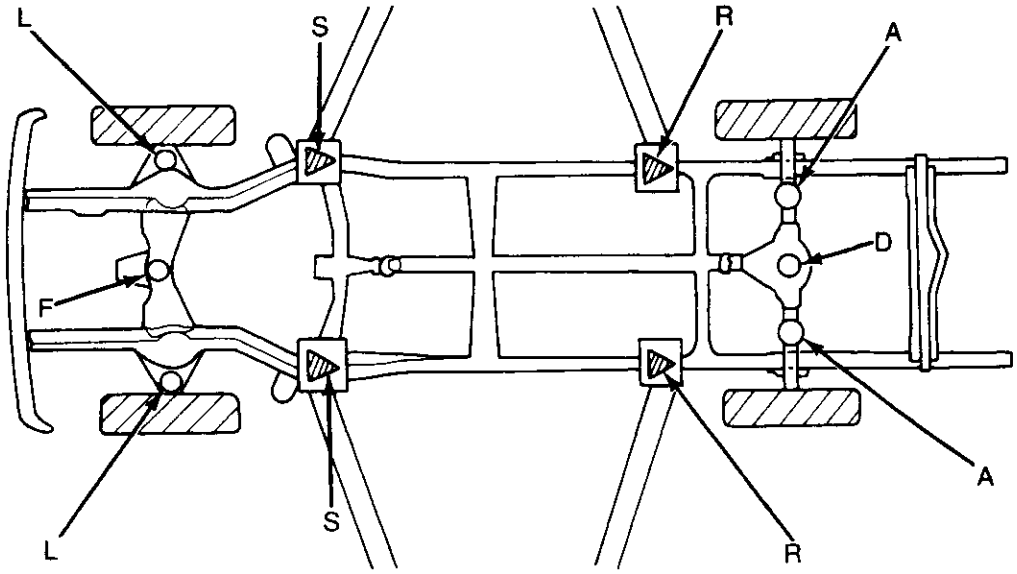
Vehicle Lift Points



Vehicle Jack or Floor Jack

Floor Jack

Hoist - 2 Pole Lift

L At the Lower Control Arm, inboard of the Ball Joint.
F At the center of Front Crossmember.
S At the second Crossmember.
R At the Forward Spring Hanger of the Rear Spring.
A At the inboard of the Shock Absorber Hanger of the Axle.
D At the center of the Differential.

KIA-163-00-21-S

VEHICLE TOWING - EMERGENCIES

TOW TRUCK TOWING

All state or provincial (in Canada) laws and local laws regarding towing should be obeyed.

⚠ **WARNING**
SAFETY CHAINS SHOULD BE USED FOR ALL TOWING OPERATIONS.

✱ *Notice*
Proper towing equipment should be used to avoid possible damage to the vehicle during towing operation.

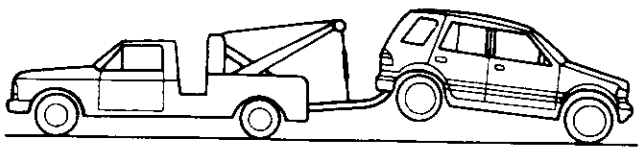
Prior to towing, make sure that steering system, transmission, and rear axle are in good condition. If any unit is damaged, use a towing dolly.

Towing With Rear Wheels Off the Ground

When being towed by a commercial tow truck, the rear of the Sportage should always be lifted, not the front.

✱ *Notice*
Both the transmission shift lever and the transfer case shift lever must be in "NEUTRAL." Failure to do so may cause internal damage to the transmission.

1. Set the ignition switch to the "ACC" position.
2. Place the shift lever in "NEUTRAL."
3. Shift the transfer case lever to N (neutral).
4. Release the parking brake.



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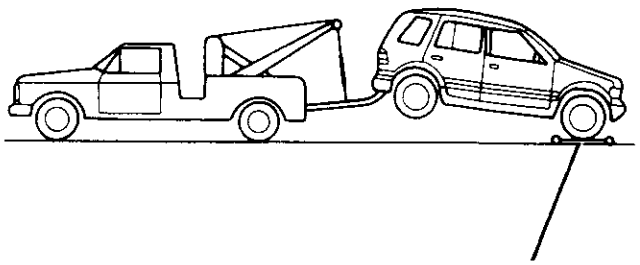
Towing With Towing Dollies

If the steering system, transmission, or rear axle is damaged, use a towing dolly.

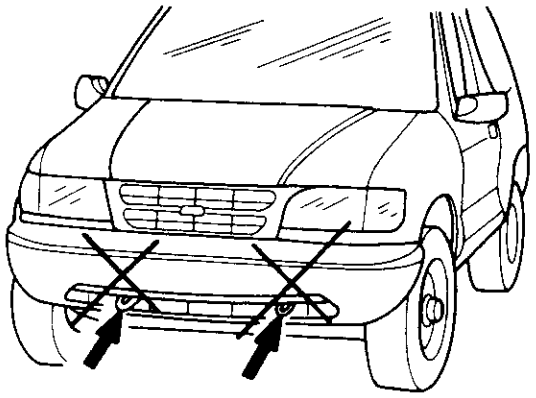


Wheel Dollies

KIA-163-00-24-S

✱ *Notice*
- *Remove the rear drive shaft if it is necessary to exceed 28 mph and/or 50 miles. If the drive shaft cannot be removed, stop every 50 miles and start the engine. Allow the engine to idle for a few minutes to ensure the Transmission is sufficiently lubricated.*
- *Do not tow the vehicle from hook loops. Hook loops are designed only for transport tiedown. If hook loops are used for towing, vehicle body will be damaged.*

Tie Down Hook-Front



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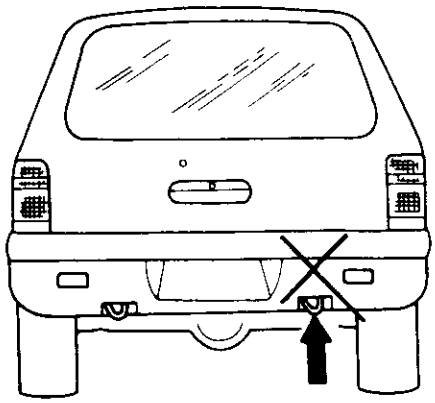
Tie Down Hook-Rear



KIA-163-00-27-S

UNIT CONVERSION TABLE

MULTIPLY	BY	TO GET
	LENGTH	
inch (")	25.4	millimeters (mm)
foot (ft.)	0.304 8	meters (m)
yard (yd.)	0.914 4	meters
mile	1.609	kilometers (km)
	AREA	
inch^2 (in^2)	645.2	millimeters^2 (mm^2)
	6.45	centimeters^2 (cm^2)
foot^2 (ft^2)	0.092 9	meters^2 (m^2)
yard^2 (yd^2)	0.836 1	meters^2 (m^2)
	VOLUME	
inch^3 (in^3)	16387	mm^3
	16.387	cm^3
	0.016 4	liters (l)
quart (qt.)	0.946 4	liters
gallon (gal.)	3.785 4	liters
yard^3 (yd^3)	0.764 6	meters^3 (m^3)
	WEIGHT	
pound (lb.)	0.453 6	kilograms (kg)
ton	907.18	kilograms
ton	0.907	tonne (t)
	FORCE	
kilogram	9.807	newtons (n)
ounce (oz.)	0.278 0	newtons
pound	4.448	newtons
	ANGLE	
degree	0.0175	radians (red)
	BALANCE	
ounce-inch	720.077 8	milligram-meter (mg•m)
	ACCELERATION	
foot/second^2 (ft/sec^2)	0.304 8	meter/second^2 (m/s^2)
inch/second^2 (in/sec^2)	0.025 4	meter/second^2
	TORQUE	
pound-inch (lb-in)	0.112 98	newton-meters (N•m)
pound-foot (lb-ft)	1.355 8	newton-meters
	POWER	
horsepower (hp)	0.746	kilowatts (kW)
	PRESSURE OR STRESS	
inches of mercury	3.377	kilopascals (kPa)
inches of water	0 249 1	kilopascals
pounds/square inch (psi)	6.895	kilopascals
	ENERGY OR WORK	
Btu	1055	joules (J)
pound-foot (lb-ft)	1.355 8	joules
kilowatt-hour	3.6 x 10^6	joules (J=one W•s)
	LIGHT	
footcandle	10.764	lumens/meter^2 (lm/m^2)
	FUEL PERFORMANCE	
miles/gallon (mpg)	0.425 1	kilometers/liter (km/l)
gallons/mile	2.352 7	liters/kilometer (l/km)
	VELOCITY	
miles/hour (mph)	1.609 3	kilometers (km/h)
	TEMPERATURE	
°F - 32	5/9	°C
°C	9/5 (+32)	°F

COMMON AUTOMOTIVE ABBREVIATIONS

ABDC	After bottom dead center
ABS	Antilock brake system
A/C	Air conditioner
ACC	Accessories
ATDC	After top dead center
ATF	Automatic transaxle fluid
BAC	Bypass air control
BBDC	Before bottom dead center
BTDC	Before top dead center
CPU	Central processing unit
DOHC	Dual overhead camshaft
DRL	Daytime running lights
EC-AT	Electronically-controlled automatic transaxle
ECM	Engine control module
E/L	Electrical load
EX	Exhaust
FA	Fixed advance
GND	Ground
HLA	Hydraulic lash adjuster
IGN	Ignition
IN	Intake
INT	Intermittent

IAC	Idle air control
LH	Left hand
M	Motor
MA	Maximum advance
MIL	Malfunction indicator light
M/S	Manual steering
M/T	Manual transmission
O/D	Overdrive
OFF	Switch off
ON	Switch on
PCV	Positive crankcase ventilation
P/S	Power steering
PRC	Pressure regulator control
P/W	Power window
RH	Right hand
SOHC	Single overhead camshaft
SST	Special service tool
ST	Start
SW	Switch
TDC	Top dead center
TNS	Tail number side

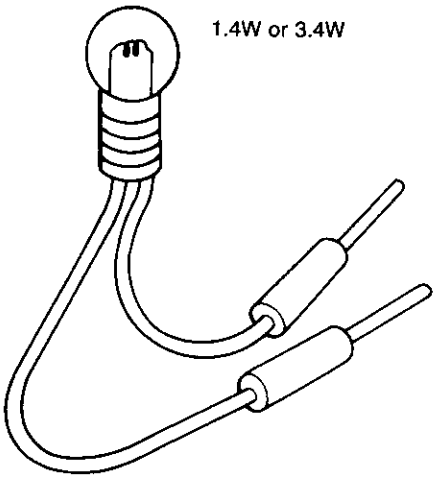
ELECTRICAL TROUBLESHOOTING TOOLS

TEST LIGHT

The test light, as shown in the figure, uses a 12V bulb. The two lead wires should be connected to probes.

The test light is used for simple voltage checks and for checking for short circuits.

✱ *Notice*
When checking the control unit, never use a bulb over 3.4W; to do so may cause damage to the unit.

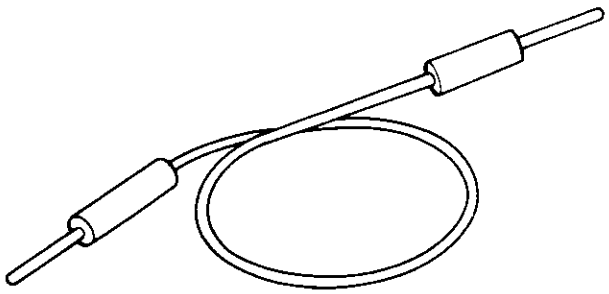


KIA-163-00-28-S

JUMPER WIRE

The jumper wire is used for testing by shorting across switch terminals and ground connections.

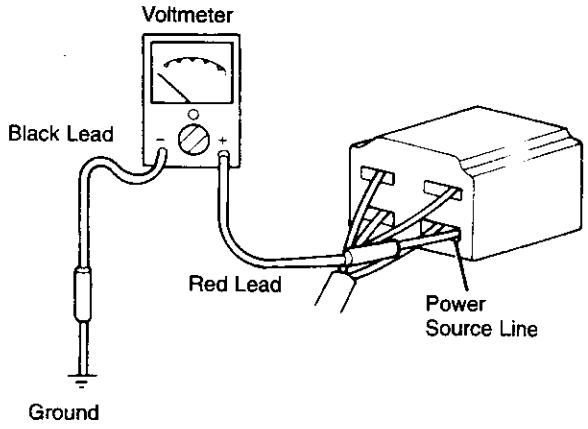
✱ *Notice*
Do not connect a jumper wire from the power source line to a body ground; this may cause burning or other damage to the harnesses or the electronic components.



KIA-163-00-29-S

VOLTMETER

The DC voltmeter is used to measure circuit voltage. A voltmeter with a range of 15V or more is used by connecting the positive (+) probe to the point where voltage is to be measured and the negative (–) probe to a body ground.

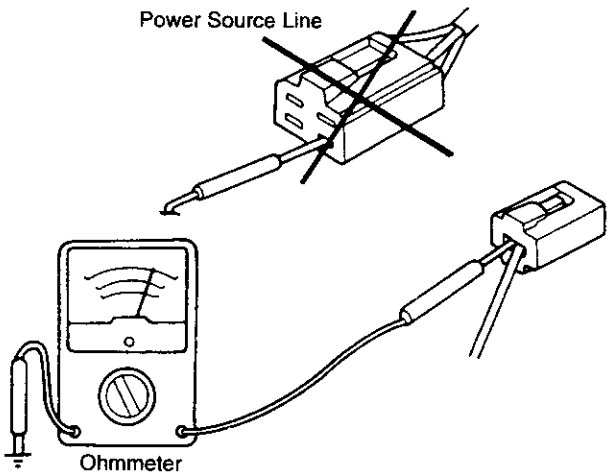


KIA-163-00-30-S

OHMMETER

The ohmmeter is used to measure the resistance between two points in a circuit to check for continuity, and in diagnosis of short circuits.

✱ *Notice*
Do not attempt to connect the ohmmeter to any circuit to which voltage is applied; this may burn or otherwise damage the ohmmeter.

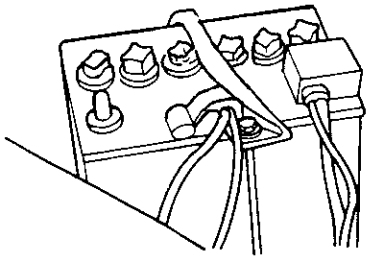


KIA-163-00-31-S

ELECTRICAL PARTS

BATTERY CABLE

Before disconnecting connectors or replacing electrical parts, disconnect the negative (–) battery terminal.

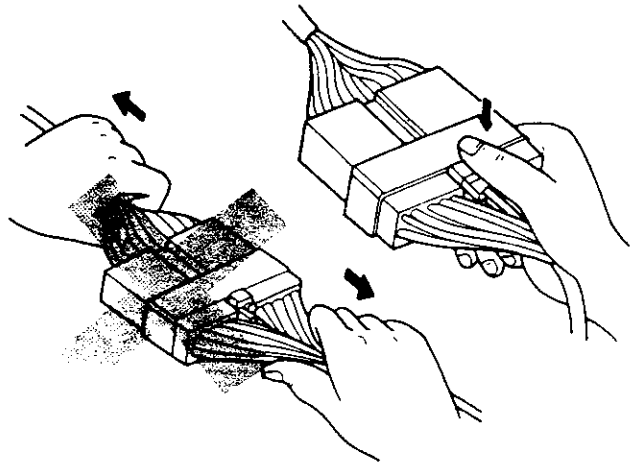


KIA-163-00-32-S

CONNECTORS

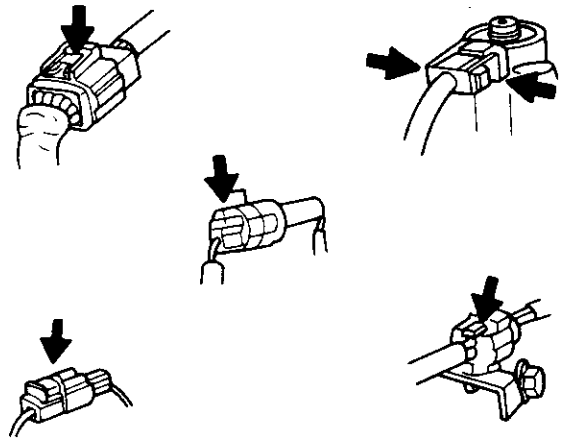
Removal

✱ *Notice*
Never pull on the wiring harness when disconnecting connectors.



KIA-163-00-33-S

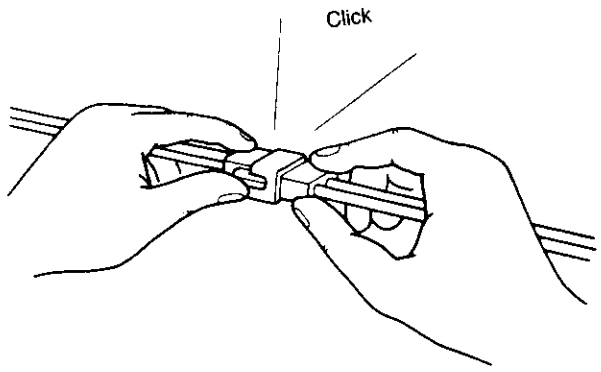
Connectors can be removed by pressing or pulling the lock lever as shown.



KIA-163-00-34-S

Locking

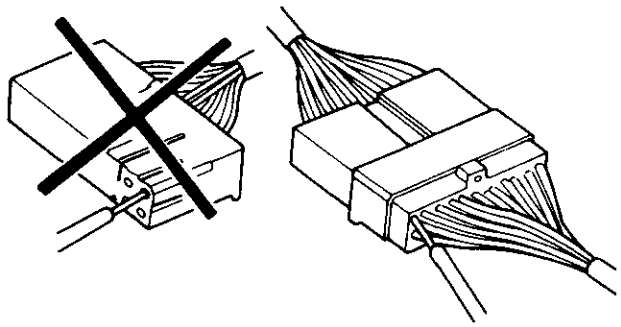
When locking connectors, make sure to listen for a click which indicates that they are securely locked.



KIA-163-00-35-S

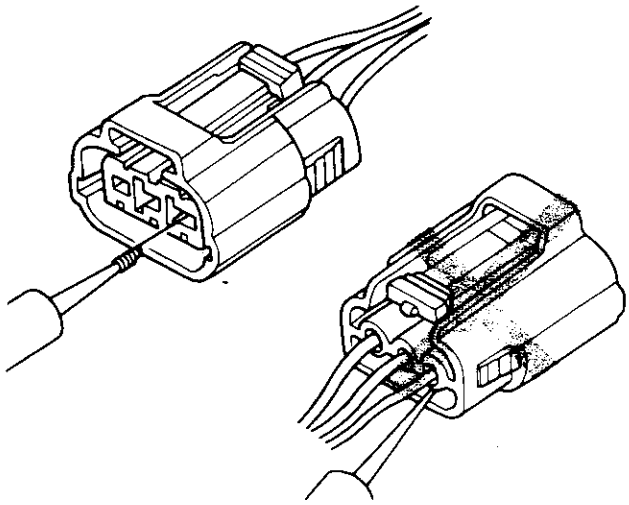
Inspection

When a tester is being used to check for continuity or to measure voltage, insert the tester probe from the wire harness side.



KIA-163-00-36-S

Check the terminals of waterproof connectors from the connector side, because they cannot be accessed from the wire harness side.



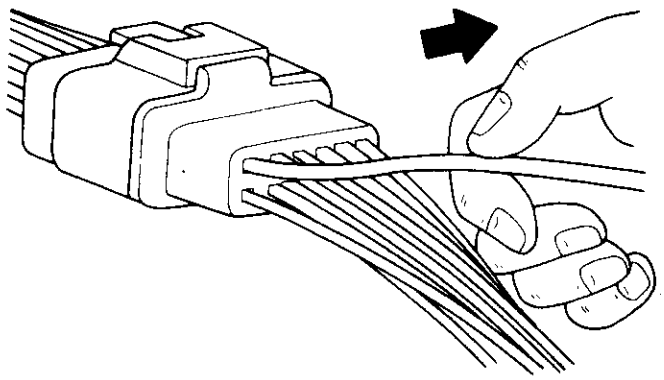
KIA-163-00-37-S

✱ *Notice*
Attach a small gauge wire (straightened paper clip) to the tester probe to prevent damage to the connector terminal. Do not damage the terminal when inserting the tester lead.

TERMINALS

Inspection

Pull lightly on individual wires to check that they are secured in the terminal.



KIA-163-00-38-S

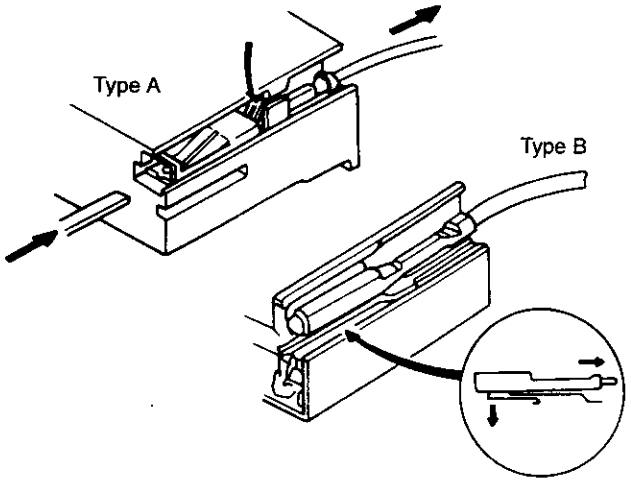
Replacement

Use the appropriate tools to remove the terminal as shown.

When installing the terminal, be sure to insert it until it locks securely.

Female

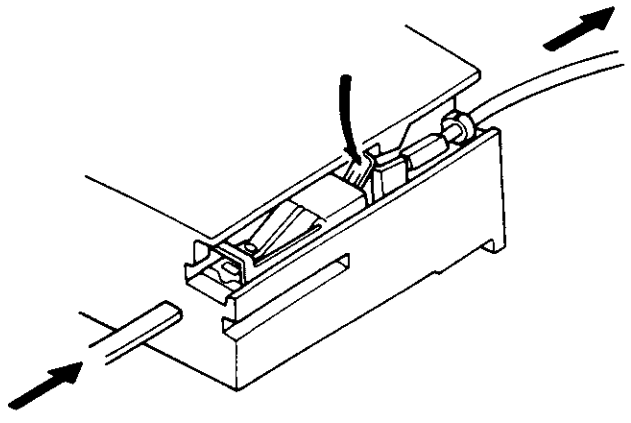
Insert a thin piece of metal from the terminal side of the connector, and with the terminal locking tab pressed down, pull the terminal out from the connector.



KIA-163-00-39-S

Male

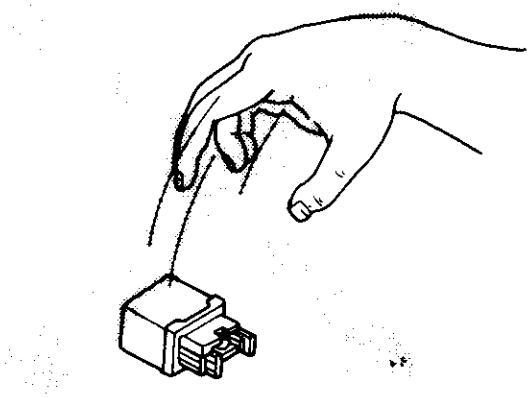
Insert a thin piece of metal from the terminal side of the connector, and with the terminal locking tab pressed down, pull the terminal out from the connector.



KIA-163-00-40-S

SENSORS, SWITCHES, AND RELAYS

✱ *Notice*
Handle sensors, switches and relays carefully. Do not drop them or strike them against other parts.



KIA-163-00-41-S

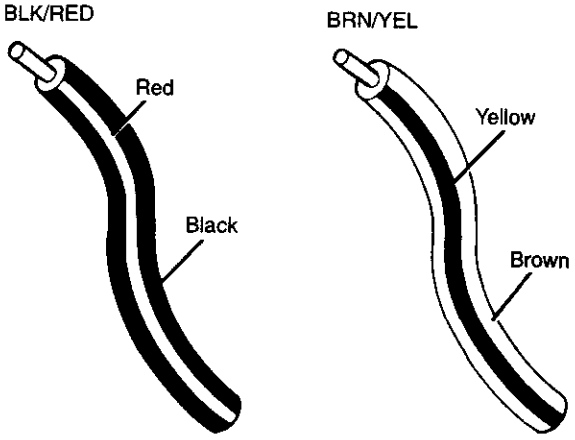
WIRING HARNESS

Wiring Color Codes

Two-color wires are indicated by two color code symbols. The first code symbol indicates the base color of the wire. The second indicates the color of the stripe on the base color.

Code	Color
BLK	Black
BRN	Brown
GRN	Green
GRY	Gray
BLU	Blue
LT BLU	Light Blue
LT GRN	Light Green

Code	Color
ORG	Orange
PNK	Pink
RED	Red
VIO	Violet
WHT	White
YEL	Yellow



KIA-163-00-42-S