

# AVANTIME

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## **3** Chassis

**30** GENERAL INFORMATION

**31** FRONT AXLE

**33** REAR AXLE

**36** STEERING ASSEMBLY

**37** MECHANICAL ELEMENT CONTROLS

**38** ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEMS

This document refers to the specifications for the **AVANTIME**. For all information on sections in common with the **ESPACE**, refer to Workshop Repair Manual 315.

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EDITION ANGLAISE

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

The methods 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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## Contents

	Page
<b>30 GENERAL INFORMATION</b>	
Checking - Axle adjustment	30-1
<b>31 FRONT AXLE</b>	
Anti-roll bar	31-1
<b>33 REAR AXLE</b>	
Transverse guide bar	33-1
<b>36 STEERING ASSEMBLY</b>	
Power assisted steering rack	36-1
Steering column	36-2
Yaw sensor	36-3
<b>37 MECHANICAL ELEMENT CONTROLS</b>	
Clutch slave cylinder	37-1
Clutch master cylinder	37-3
External gear control	37-5
<b>38 ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM</b>	
BOSCH anti-lock braking system	38-1

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Adjusting the axle angles on the **AVANTIME** is done in the same way as for the **ESPACE** (see **Workshop Repair Manual 315** Section 3).

### **IMPORTANT**

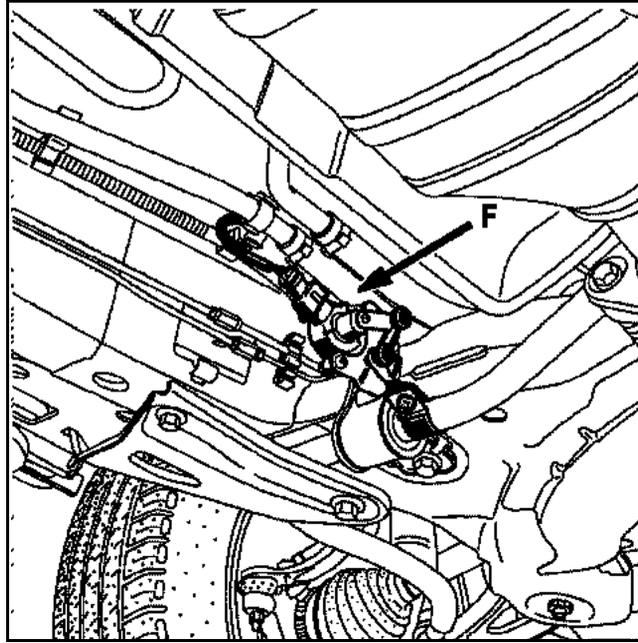
For vehicles fitted with the electronic stability program (**ESP**), reset the steering wheel angle sensor to point "0" after replacing, checking and adjusting the front or rear axles.

This procedure is described in **section 38 of the Fault finding document**.

**IF THE PROCEDURE IS NOT STRICTLY OBSERVED, IT MAY CAUSE SEVERE OPERATING FAULTS IN THE ELECTRONIC STABILITY PROGRAM.**

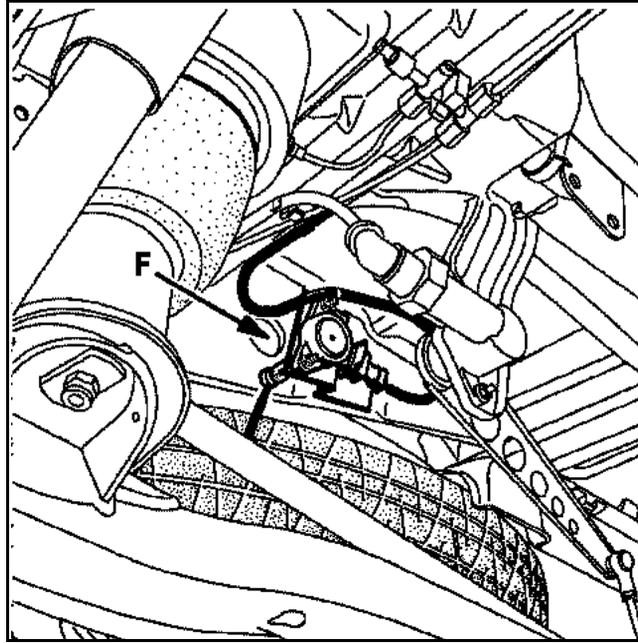
### Vehicle fitted with discharge bulbs

For each operation on the front axle elements, the height sensor linkage (F) must be removed.



### Vehicle fitted with discharge bulbs

For each operation on the rear axle elements, the height sensor linkage (F) must be removed.



### REMOVAL

The method for removing/refitting the steering rack on the **AVANTIME** is the same as for the **ESPACE**, except for the assistance rule change actuator fixed to the unit (variable power assisted steering system option).

Disconnect the actuator connector located above the rack on the left-hand side and work on the wiring at the steering rack output.

See **ESPACE** Workshop Repair Manual **315**, page **36-5**.

**ALWAYS ADJUST THE FRONT AXLE ANGLES AND RESET THE ELECTRONIC STABILITY PROGRAM TO "0" AFTER REPLACING THE POWER ASSISTED STEERING UNIT.**

# STEERING ASSEMBLY

## Steering column

36

### SPECIAL TOOLING REQUIRED

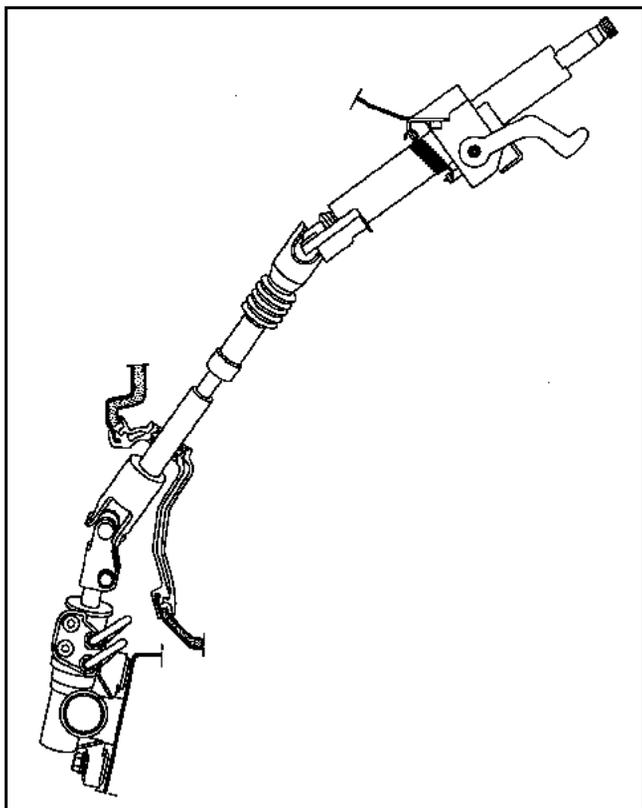
Dir. 1408      Steering column adjustment tool

### TIGHTENING TORQUES (in daNm)



Steering wheel nut	4.5
Air bag bolt	0.5
Steering column universal joint eccentric bolt	2.5
Column mounting nut	1.5

The steering column is sold complete.  
Components are not sold separately.



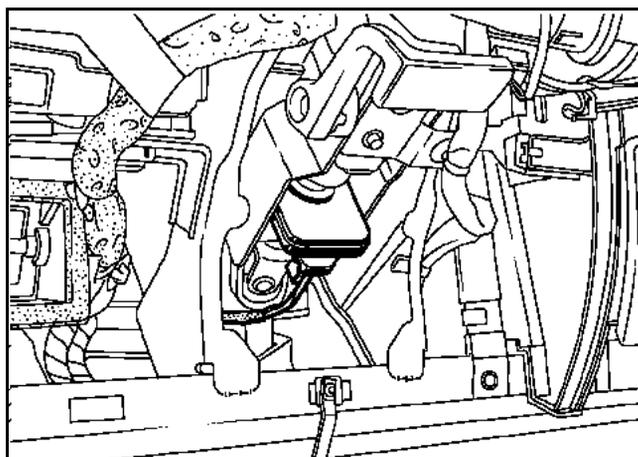
#### IMPORTANT:

You must deactivate the air bag/pretensioner system before removing the steering wheel (see the steering wheel section on page 37-17 in ESPACE Workshop Repair Manual 315).

If these instructions are not followed the system may not operate normally and could even be triggered accidentally.

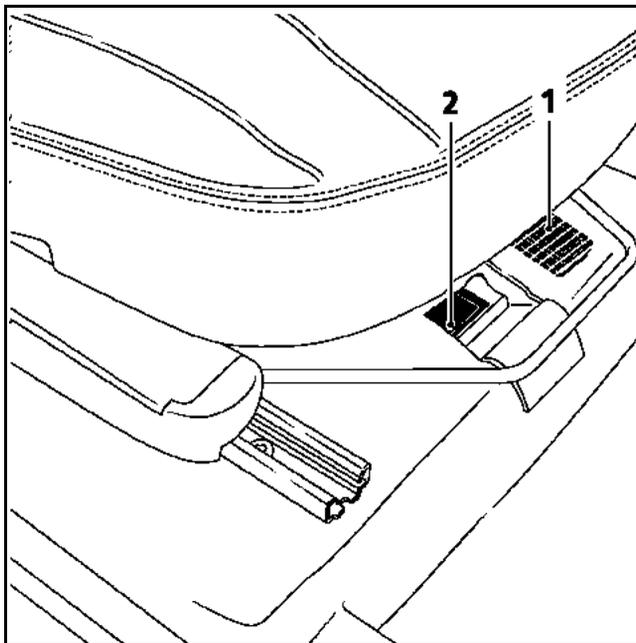
### REMOVAL - REFITTING

The method for removing/refitting the steering column is the same as for the **ESPACE** (see **Workshop Repair Manual 315, page 36-12**) except for the steering wheel angle sensor (ESP option) that has to be disconnected and reconnected during the operation.



The steering wheel angle sensor cannot be separated from the steering column. You cannot replace the sensor without also replacing the column.

The yaw sensor (1) is located under the front right-hand seat next to the vehicle identification plate (2).



### REMOVAL

You may have to carefully cut the carpet around the sensor location.

Remove the two mounting bolts and disconnect the sensor.

### REFITTING

Proceed in the reverse order to removal.

## Clutch slave cylinder

### TIGHTENING TORQUES (in daNm)



Retaining bolt of the slave cylinder on the clutch housing

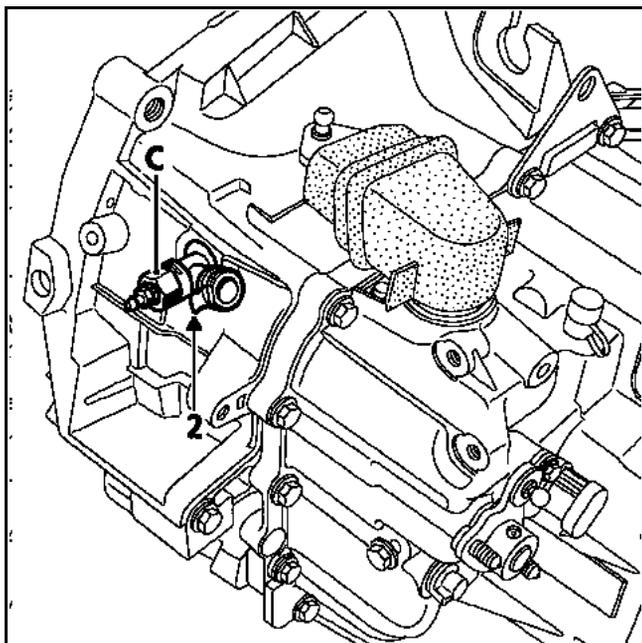
0.9

### REMOVAL

Disconnect the battery.

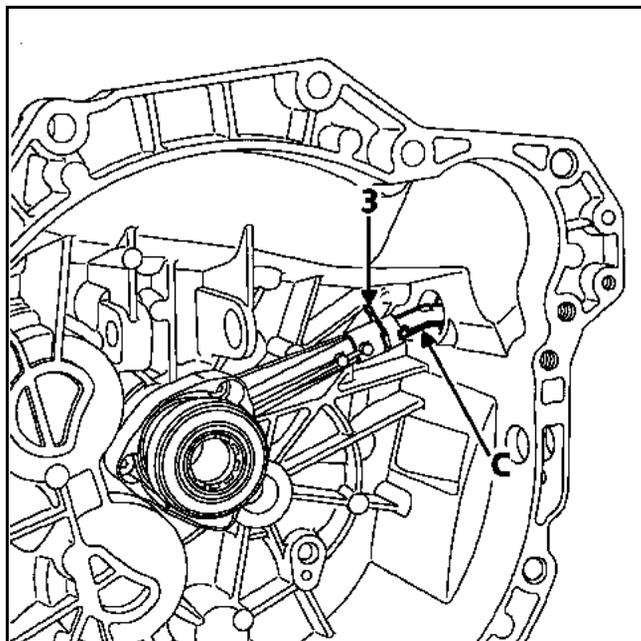
The clutch slave cylinder can only be removed after the gearbox has been removed (see **section 21 in Workshop Repair Manual 315**).

Disconnect the master-slave connecting pipe by releasing the clip (2) located on the union (C).

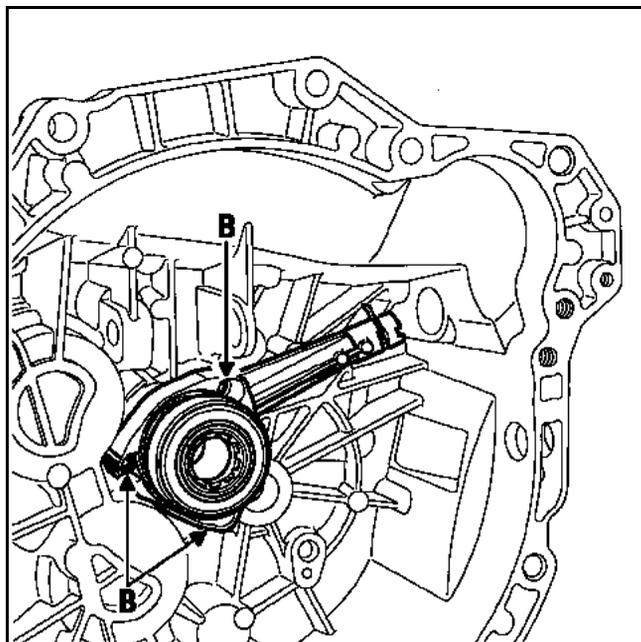


Remove the gearbox.

Disconnect the clutch slave cylinder union (C) by removing the clip (3).



Remove the three mounting bolts (B) of the clutch slave cylinder then remove the cylinder.

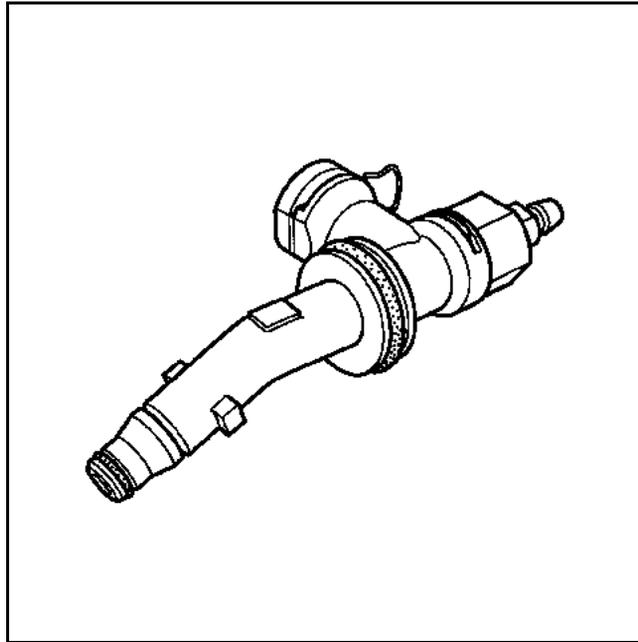


### REFITTING

Check the condition of the seals.

Refit in the reverse order to removal.

When refitting, connect the union to the slave cylinder before tightening the three cylinder mounting bolts on the clutch housing, to allow the union to be inserted into the bore of the clutch housing at the O-ring level.



Torque tighten the three cylinder mounting bolts (B) (0.9 daNm).

**NOTE: to avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.**

**NOTE: to avoid leaks, always replace the slave cylinder after replacing the clutch mechanism.**

**VERY IMPORTANT:**

**Bleed the clutch hydraulic circuit in accordance with the instructions on the following pages.**

### REMOVAL

Place the vehicle on a lift.

Disconnect the battery.

#### In the engine compartment

Drain the clutch hydraulic circuit by opening the bleed screw on the slave cylinder and fitting a transparent fuel return pipe.

**IMPORTANT: read the instructions on the following pages carefully before opening the bleed screw.**

Disconnect the fuel supply pipe from the master cylinder at the brake tank; tying a string to the pipe makes this process easier.

#### In the passenger compartment

Pump the clutch pedal by hand to drain the circuit.

Remove the cowlings under the steering wheel.

Disconnect the master cylinder ball joint from the clutch pedal.

Remove:

- the left-hand front wheel,
- the front left wheel arch,
- the axle fairing, if necessary.

Operating from underneath the vehicle, cut the plastic clip on the wiring harness under the brake servo.

Detach the clutch master cylinder high pressure pipe from its static fixings on the vehicle (the clip is located towards the rear of the battery tray).

Unlock the master cylinder from its plate by turning it 1/8 of a turn, anti-clockwise **from the passenger compartment**.

Move the carpet and soundproofing around the area to make the operation easier.

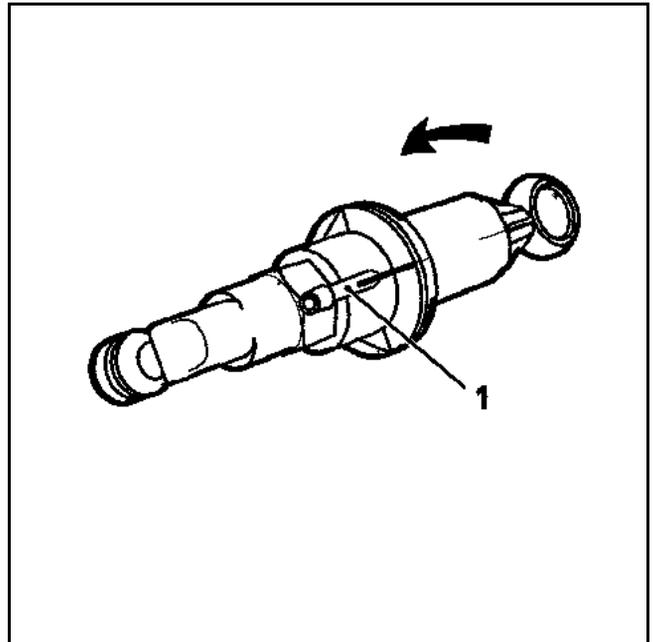
Release the master cylinder and remove it from the engine compartment side.

Disconnect the master cylinder fuel supply pipe (**watch out for drips**).

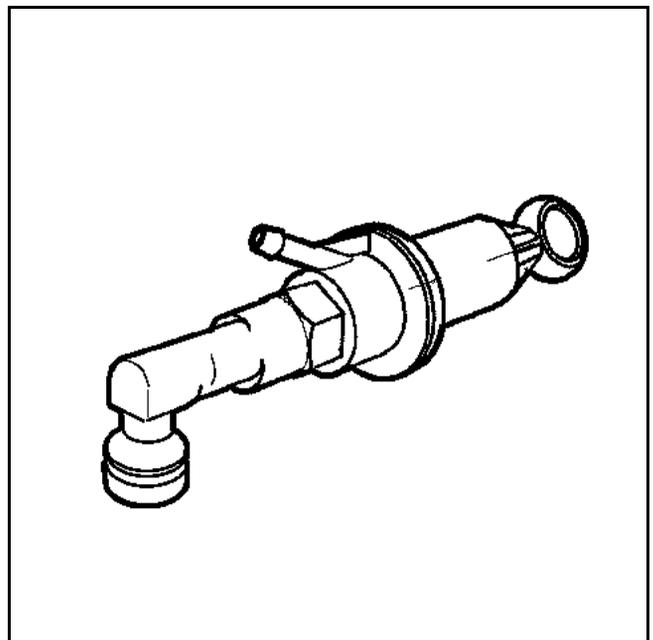
### REFITTING (two-man job)

Before refitting, clearly mark the position of the fuel supply pipe union on the master cylinder.

Fit the master cylinder in its housing with the union (1) fitted with its fuel supply pipe pointing at a 45° angle to the left of the vehicle.



Operating from the passenger compartment, turn the master cylinder clockwise until it locks with the union pointing upwards.



## Clutch master cylinder

This position should align the mark on the master cylinder with the mark on the scuttle panel (opposite the union (1) and slightly to the right of the vehicle).

One operator should push the cylinder into the scuttle panel from the engine compartment side, while the other turns it from the passenger compartment.

To make it easier to insert the master cylinder into the panel, clip the cylinder ball joint on to the pedal (lightly grease the ball joint).

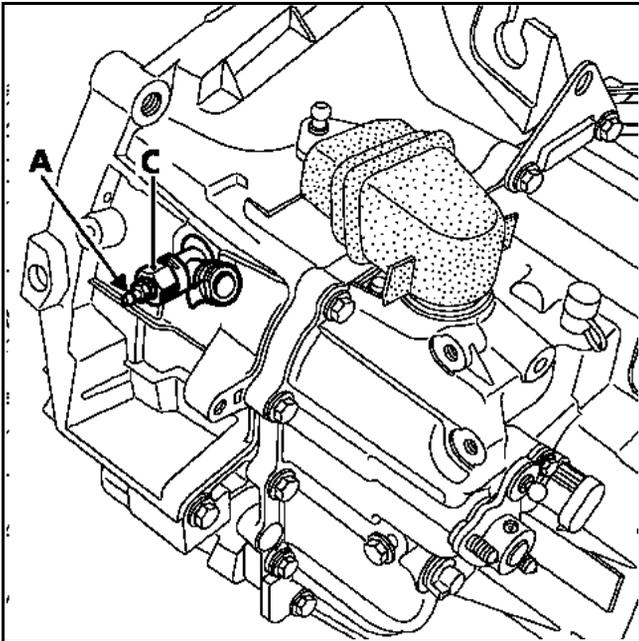
Fit the remaining components in the reverse order to removal.

Bleed the circuit using the bleed screw (A) located on the slave cylinder connection union in accordance with the following instructions.

**VERY IMPORTANT:**

When bleeding, use a 19 mm ring spanner to immobilise the rotating union (C) while tightening and loosening the bleed screw (A) so as not to damage the slave cylinder and the union.

If the union leads are damaged, replace the master cylinder, and remove/refit the gearbox.

**COMPULSORY BLEEDING METHOD**

(two-man job).

1) Filling the circuit:

Check that the clutch pedal is in the top position; put it in this position and hold it by hand if necessary. Fill the hydraulic circuit by connecting a filling system and applying pressure to the tank. Open the bleed screw (A) (always compensate for the force using a counter-spanner) and allow a little fluid to escape (approximately 0.5 l) through a transparent tube connected to the bleed screw. Close the bleed screw.

2) Final bleeding of the circuit:

One operator applies the clutch pedal **slowly** until it is fully depressed. Wait approximately ten seconds in this position. With the pedal still depressed, a second operator briefly opens the bleed screw (A).

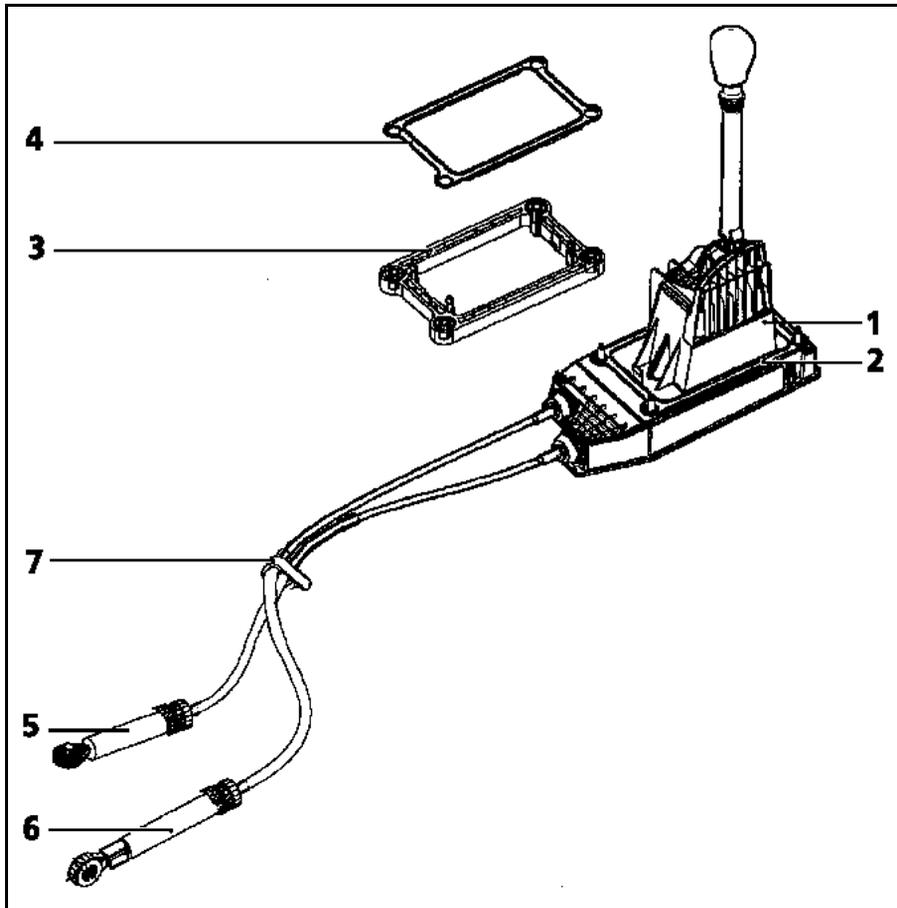
With the bleed screw closed again, the operator inside the vehicle releases the clutch pedal and slowly lifts it by hand to the top position (*It is normal for the pedal not to return independently in this configuration*).

After a few seconds repeat the operations described above in 2) as often as required until no more bubbles escape when bleeding. Then repeat these operations five times to ensure that the system has been bled correctly.

These repeated bleedings allow the slave cylinder to eject all the air trapped in any section between the stop and the bleed screw and which has not been cleaned by the flow of liquid when refilling using the traditional pressurisation system.

An air bubble in the circuit, no matter how small, may lead to operating faults such as: incorrect pedal return, crashing of the gears,...., which may lead to incorrect fault finding and unnecessary replacement of a component in the clutch circuit.

EXPLODED VIEW



- 1 Gear control unit
- 2 Lower unit seal
- 3 Spacer
- 4 Upper unit seal
- 5 Gear selection cable end piece
- 6 Adjustable gear selection cable end piece
- 7 Retaining clip for cables in the tunnel

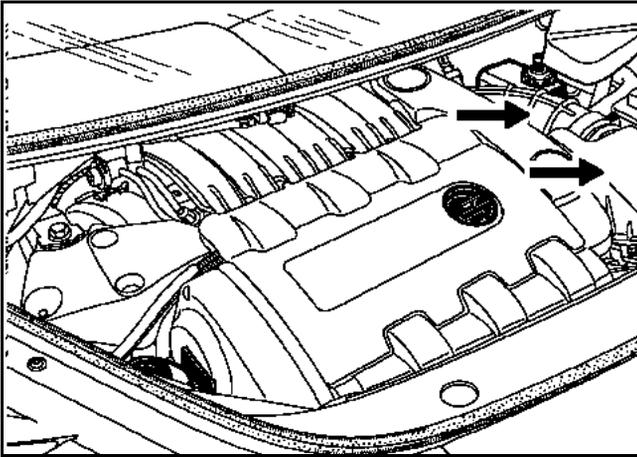
### REMOVAL OF THE CONTROL UNIT

Place the vehicle on a lift.

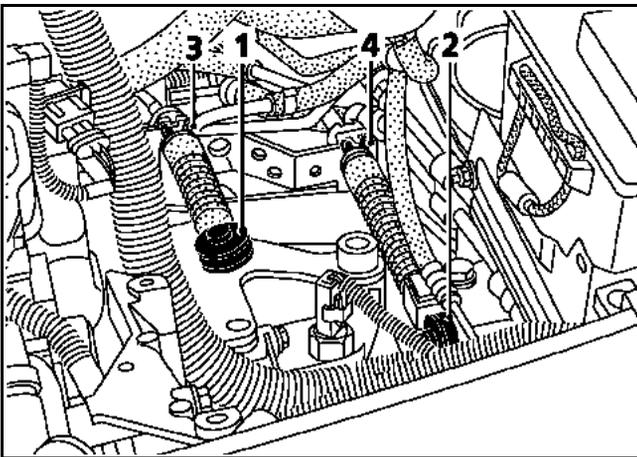
#### *In the engine compartment:*

Disconnect the battery.

Remove the air filter unit and its hose connecting to the inlet manifold.

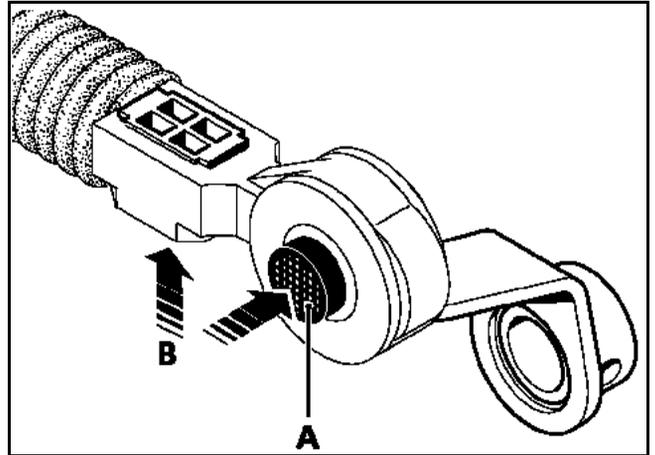


Unclip the gearbox ball joints (1) and (2) by pressing the central unlocking button (A).



Pinch the sleeve stop retaining clips (3) and (4) and pull upwards to remove them.

Press (B) on the selection cable end piece (2) to unlink the cable/ball joint end piece connection.

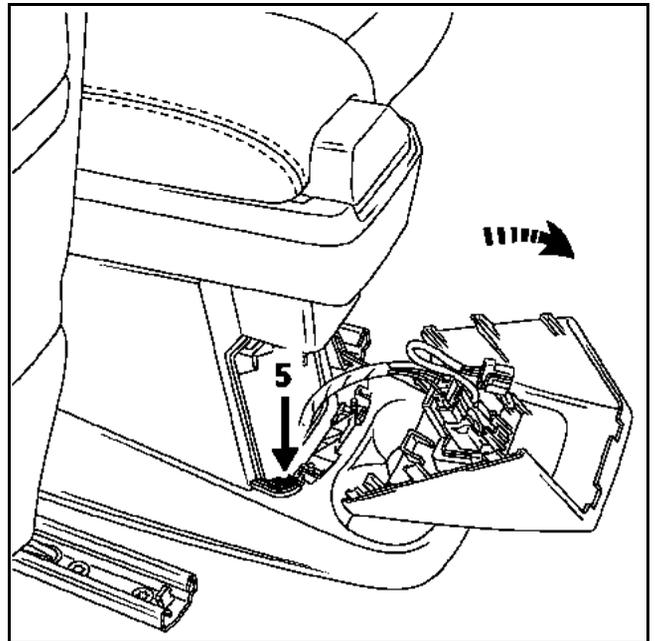


#### *In the passenger compartment:*

Push the seats forward as far as possible.

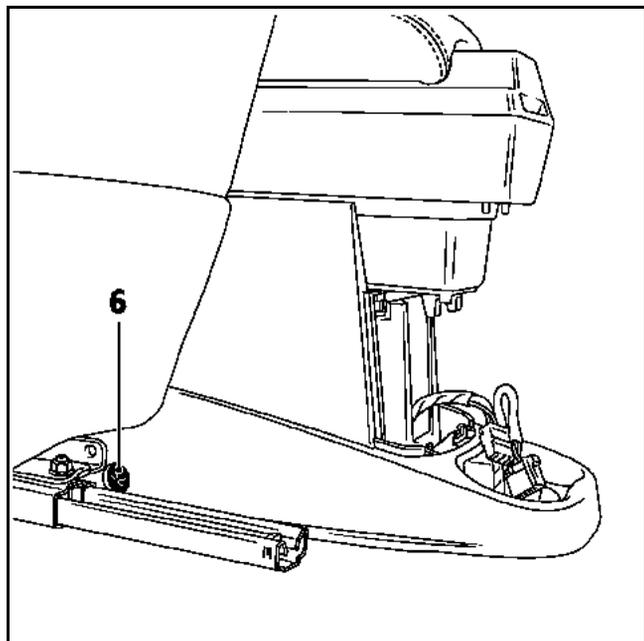
Pull the accessories socket mounting towards the rear and disconnect the electric wiring harness.

Remove the rear mounting bolts (5).

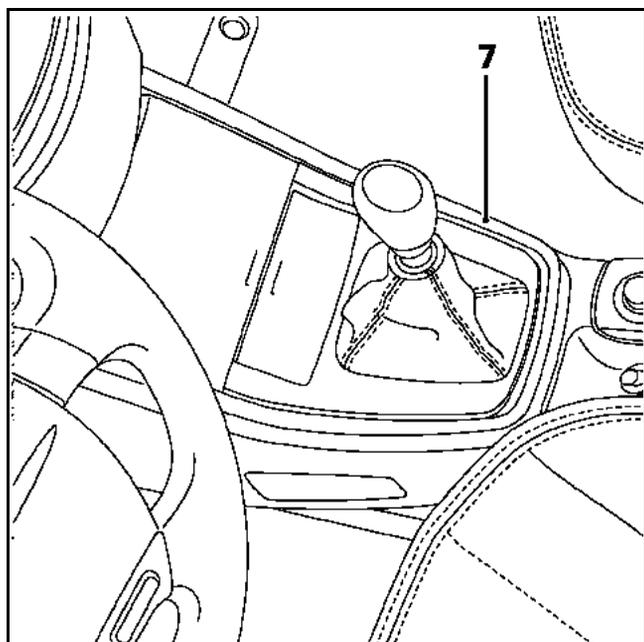


## External gear control

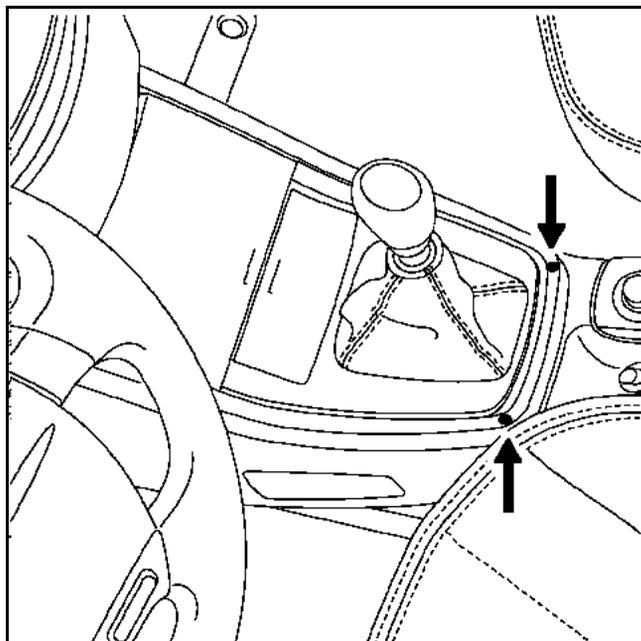
Remove the two star-shaped bolts (6) on each side of the console.



Detach the trim strip from the front central console (7) by holding the rear section and pulling upwards and then to the rear.



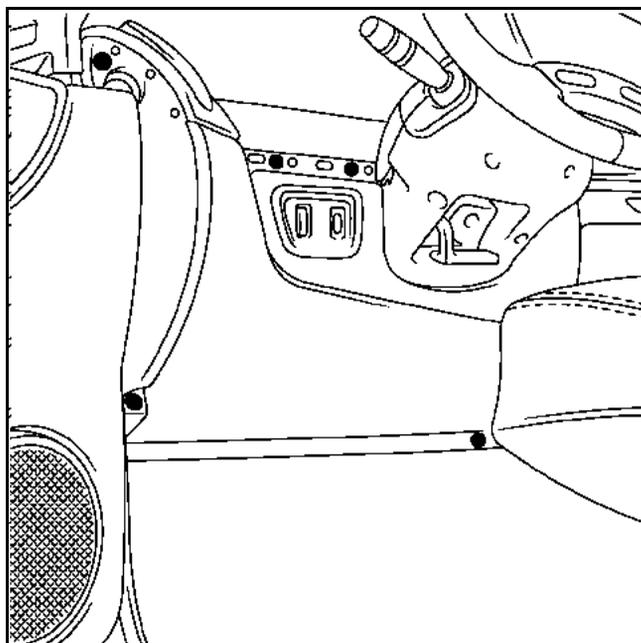
Unclip the gear shift lever gaiter and remove the two rear console mounting bolts.



Unclip the support plate from the rear-view mirror adjustment button, and disconnect the connector.

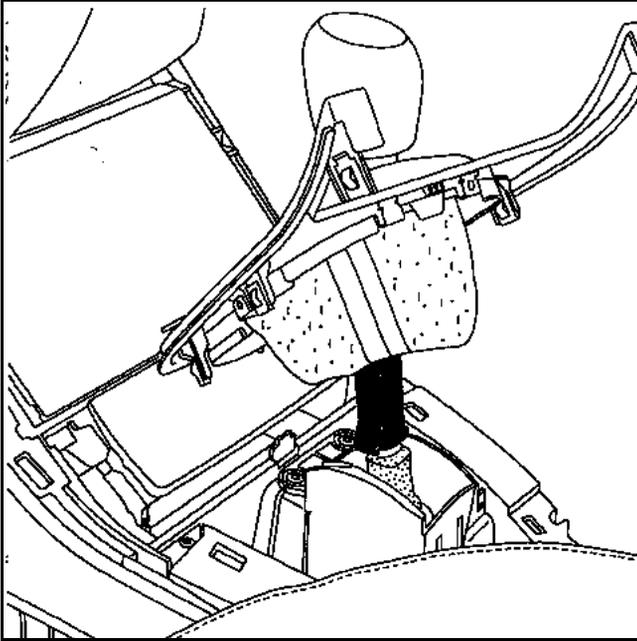
Remove the rear section of the console by pulling it upwards.

Remove the lower left and right consoles.

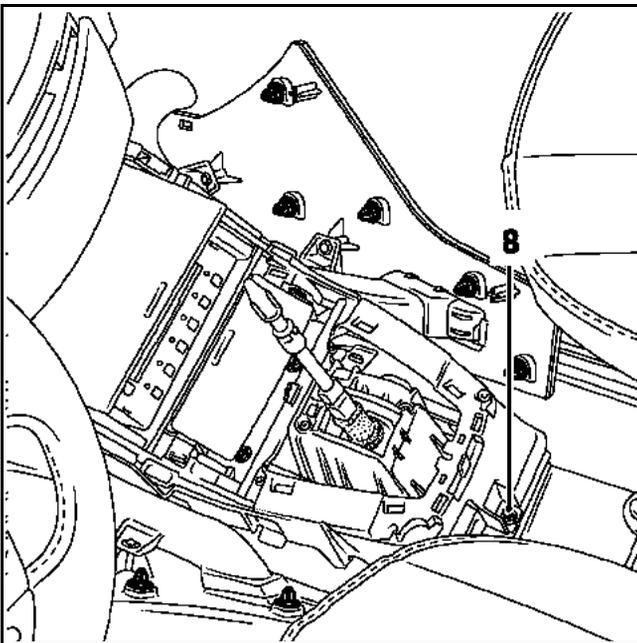


Turn and lift the gear lever knob to remove it.

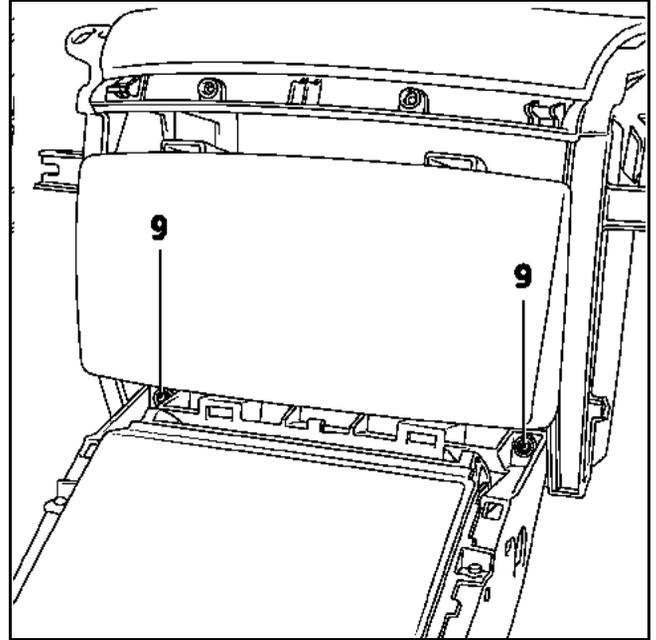
Remove the gear lever gaiter and its base.



Detach the sides from the central console front section and disconnect the ventilation ducts.



Unscrew the hexagonal nut (8) and the two upper mounting bolts (9).



Disconnect the radio and cigarette lighter connectors.

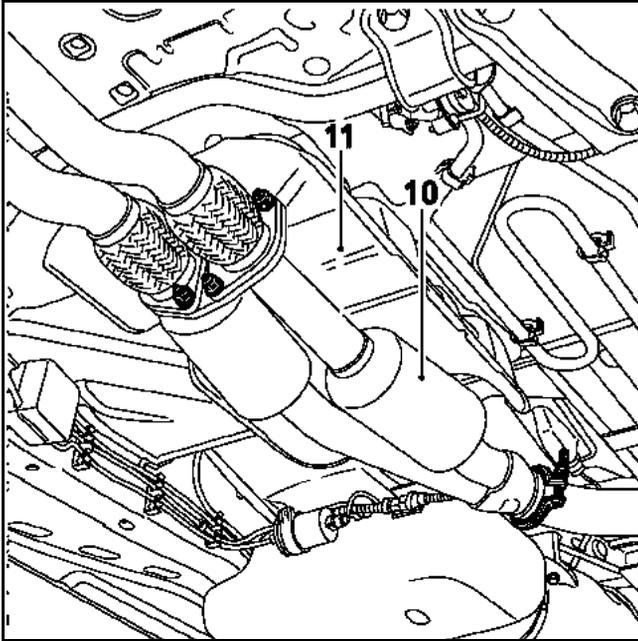
Remove the front section of the console by pulling it to the rear and then upwards.

Unscrew the four gear lever plate mounting nuts.

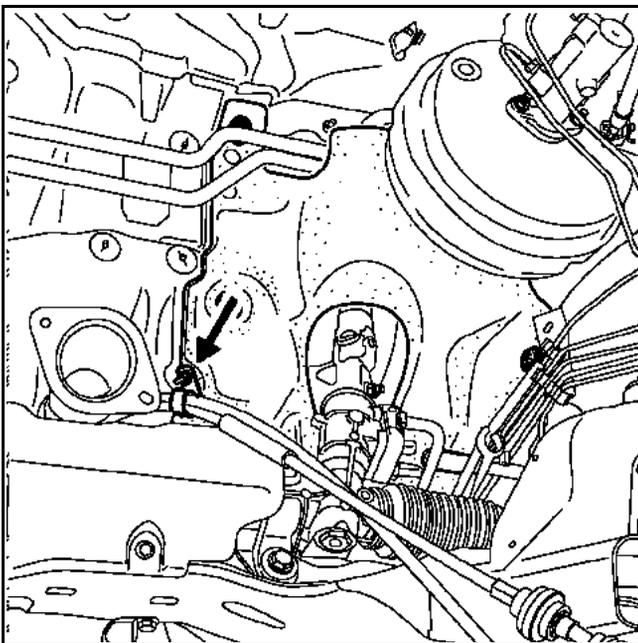
### Lift the vehicle:

#### Remove:

- the intermediate exhaust sleeve (10) fitted with two catalytic converters,
- the tunnel heat protector (11).



Detach the cables from a clip inside the exhaust tunnel, if necessary.



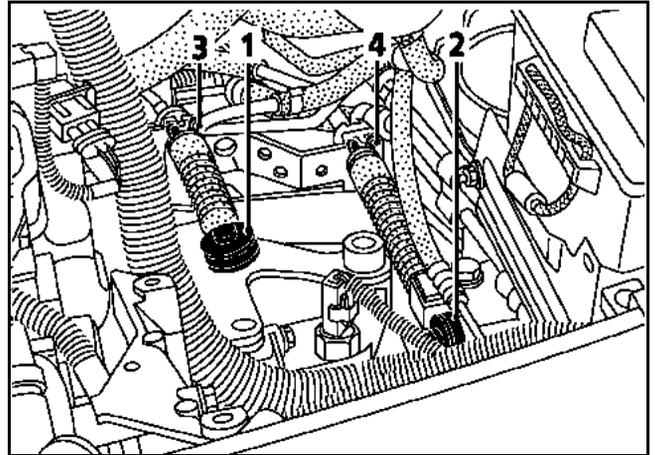
Remove the cable plate and clearly mark the position of the cables.

### REFITTING

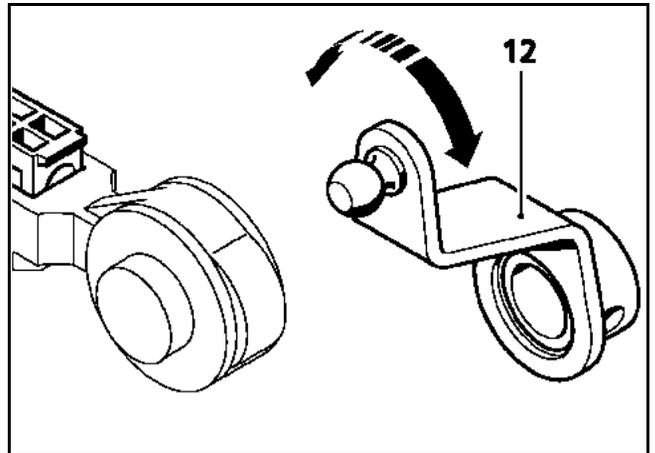
Put the cables back in position without connecting them to the gearbox, and refit the control plate.

Attach the sleeve stops (3) and (4) with their clip and refit ball joint (1) only.

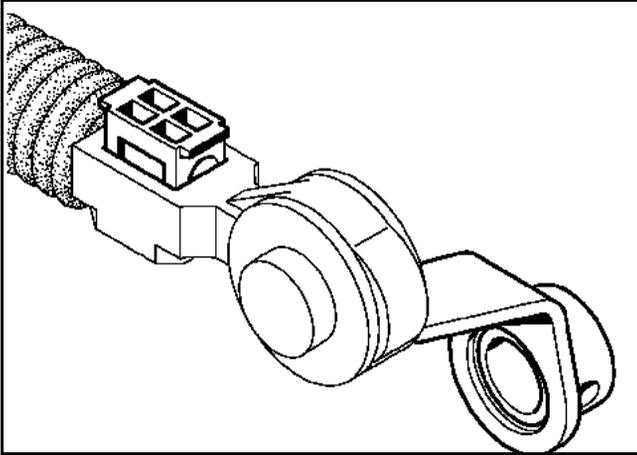
**IMPORTANT:** do not refit ball joint (2).



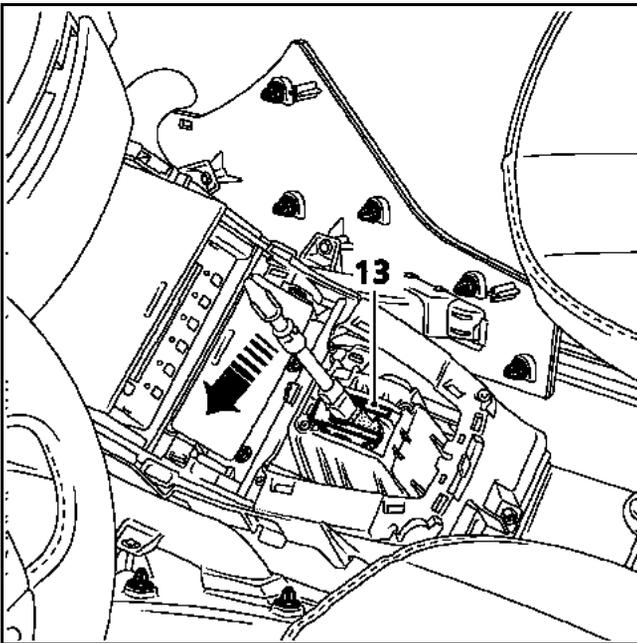
Ensure that the gear lever (12) is naturally positioned in neutral (roughly vertical).



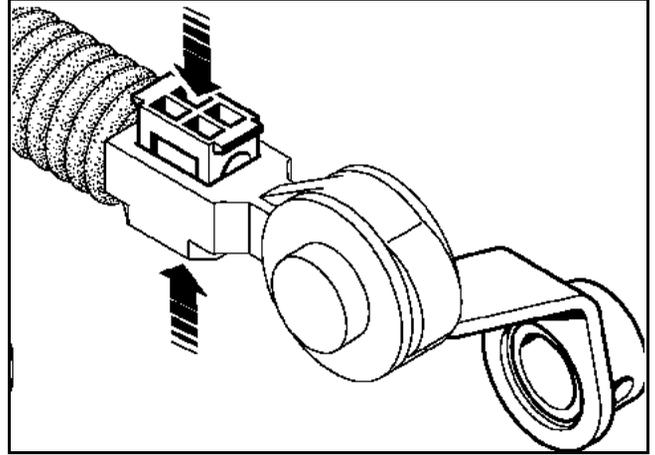
Clip the ball joint (2) to the gear lever without locking the cable/end-piece connection.



Place the gear lever setting jig (13) on the control lever, using the lever trim housing as support.



In the engine compartment, lock the end-piece/cable connection in this position, pressing on the movable arm and the underside of the connection at the same time to prevent damage to the cable.



Remove the setting jig.

Check that all the gears change correctly.

Refitting is the reverse of removal.

### **BLEEDING THE ABS/CT 5.7 CIRCUIT**

Follow the procedure described in section 80 to bleed the BOSCH 5.7. ABS + ESP braking circuit with the diagnostic tool. An operator must pump the pedal at the same time as pressurising the braking circuit with the tool to ensure that all the bubbles escape through the bleed screws.

### **ELECTRONIC STABILITY PROGRAM**

The electronic stability program is integrated in the computer. When the vehicle swerves and loses control, the computer authorises the ABS unit to supply the brake callipers one by one to straighten the trajectory within the limited roadholding.

This system receives information from the steering wheel angle and yaw sensors which measure the changing vehicle trajectory (see page 36-2). It does not require any maintenance.

For information about ABS system operation, handling and safety advice, consult **ESPACE Workshop Repair Manual 315**, page **38-12**.

**ALWAYS RESET THE STEERING CENTRE POINT TO "0" AFTER MODIFYING THE AXLE ANGLES. FAILURE TO DO SO MAY RESULT IN SEVERE DAMAGE TO THE ELECTRONIC STABILITY PROGRAM OPERATION (SEE SECTION 38 IN THE FAULT FINDING DOCUMENT).**