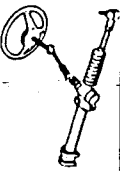




# technical bulletin

# 23



### INFORMATION

MODELS/IDENTIFICATION N. 155 (vehicles without Air-bag)	SERIAL NUMBER 93.5 DISTRIBUTION CODE E est	<p style="text-align: center;"><b>STEERING COLUMN</b></p> <p>A new steering column coupled with a new steering wheel and pedal row are installed during production for vehicles without Air-bag.</p> <p>These components are described in the attached update to the *155 REPAIR MANUAL - MECHANICAL UNITS*. Group 23 repair manual.</p>	FUNCT. GRP.
REMARK			PAGE





# STEERING COLUMN AND STEERING WHEEL

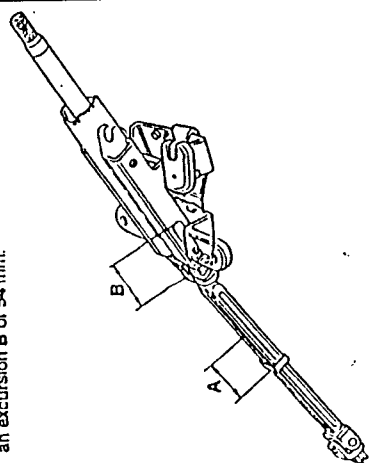
## (Versions without Air Bag)

For the versions without air bag the new collapsible type of steering column has been introduced together with the modified pedal support and a new energy absorbing steering wheel.

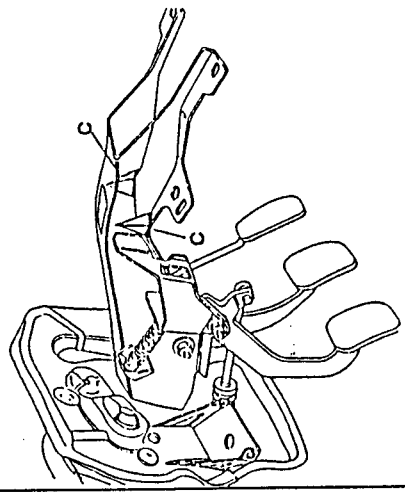
The new steering column does not interfere with the adjustment of the height of the steering wheel and is of the double cardan joint type.

The lower part of the steering column is now in two parts coupled telescopically with each other (travel A = 100 mm).

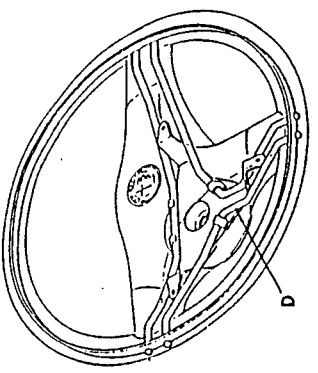
The steering column support is fitted with an attachment to the body which has a controlled crumpling action with an excursion B of 54 mm.



The pedal support to which the steering column is fixed has been modified to introduce the weakened point C which forces the steering column downwards in the event of an impact.



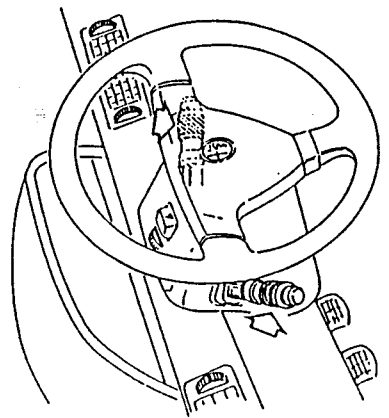
The structure of the new steering wheel is of the controlled crumpling type which allows any impact with the driver to be absorbed. The entire structure D, composed of hub, spokes and rim, has areas which are able to absorb the pressure arising from the impact by bending or collapsing.



**N.B.** The procedures for REMOVAL AND REFITTING of the steering column and wheel are the same as those for previous vehicles already dealt with in the manual "155 - REPAIR INSTRUCTIONS - MECHANICAL GROUPS" Group 23.



As a consequence of these modifications a stalk unit has been introduced which is more tilted to compensate for the greater axial size of the new steering wheel (see Group 40).



# TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

## TIGHTENING TORQUES

DESCRIPTION	N·m	kg·m
Self-locking nut for securing steering column cardan joint forks	17 - 21	1.7 - 2.1
Self-locking nut securing steering wheel to column	42.5 - 52.5	4.3 - 5.4
Screws securing steering column to body	21.2 - 26.2	2.1 - 2.7
Screw securing steering wheel adjustment lever	15.3 - 18.9	1.6 - 1.9



GROUP 23

STEERING

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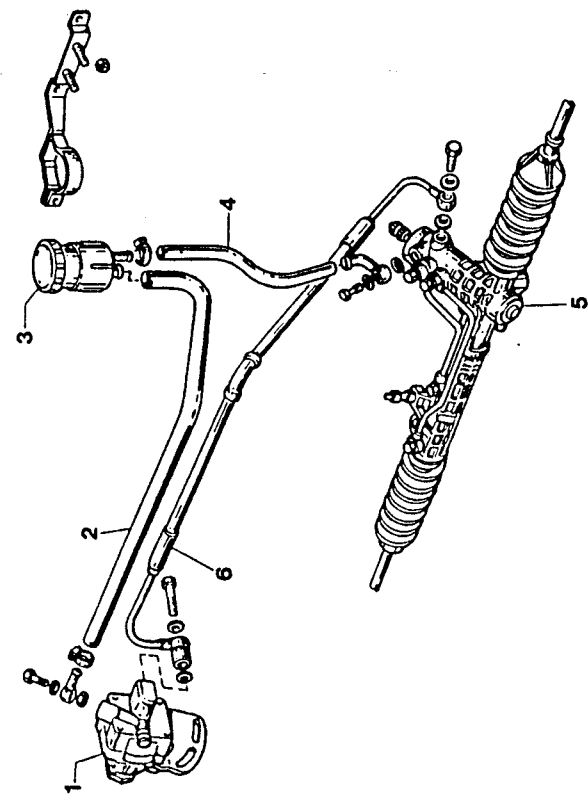
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- STEERING WHEEL .....	23-5	AND AIR BLEED .....	23-10
- Removal and refitting .....	23-5	FRONT WHEEL ALIGNMENT .....	23-11
- STEERING BOX .....	23-5	TECHNICAL CHARACTERISTICS AND	
- Removal and refitting .....	23-5	SPECIFICATIONS .....	23-12
- Disassembly and reassembly .....	23-6	- GENERAL SPECIFICATIONS .....	23-12
- Checks and inspections .....	23-7	- Fluids and lubricants .....	23-12
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- Disassembly and reassembly .....	23-9	FAULT DIAGNOSIS AND CORRECTIVE	
- Checks and inspections .....	23-9	INTERVENTIONS .....	23-14
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impact. The system is composed of a pump (1) directly powered by the engine through a belt. The pump, drawing fluid from the reservoir (3) (located in the engine compartment) through the delivery hose (2) sends it under pressure through hose (6) to the distribution valve located on the steering box (5). The distribution valve, connected by hose (4) to the reservoir permits the fluid to return in output from the operating cylinder to the reservoir itself.

### STEERING

#### DESCRIPTION

The power steering system fitted to all vehicles in the 167 range enables the effort required to turn the steering wheel to be reduced when maneuvering at low speeds and keeps the steering steady at high speeds. The position of the steering column, articulated in two parts ensures greater passive safety in the event of a frontal



- 4. Hose returning fluid to reservoir
- 5. Steering box
- 6. Hose carrying pressurized fluid

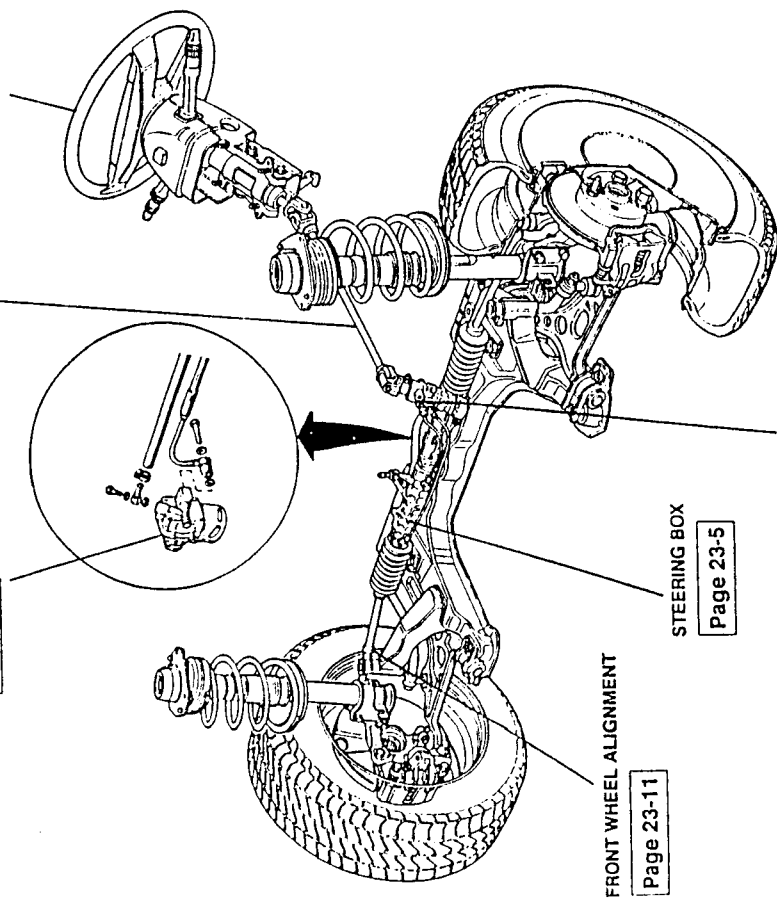
- 1. Pump
- 2. Hose carrying fluid to pump
- 3. Reservoir

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POWER STEERING PUMP [Page 23-9](#)

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FRONT WHEEL ALIGNMENT [Page 23-11](#)

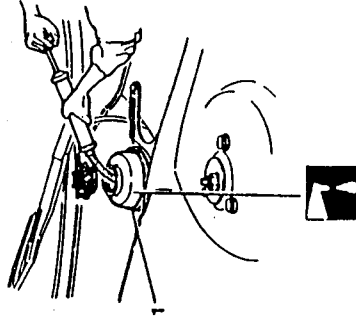
STEERING BOX [Page 23-5](#)

REFILLING HYDRAULIC SYSTEM AND AIR BLEED [Page 23-10](#)

**STEERING BOX**

**Removal and refitting**

1. Using a syringe, empty the power steering fluid reservoir.

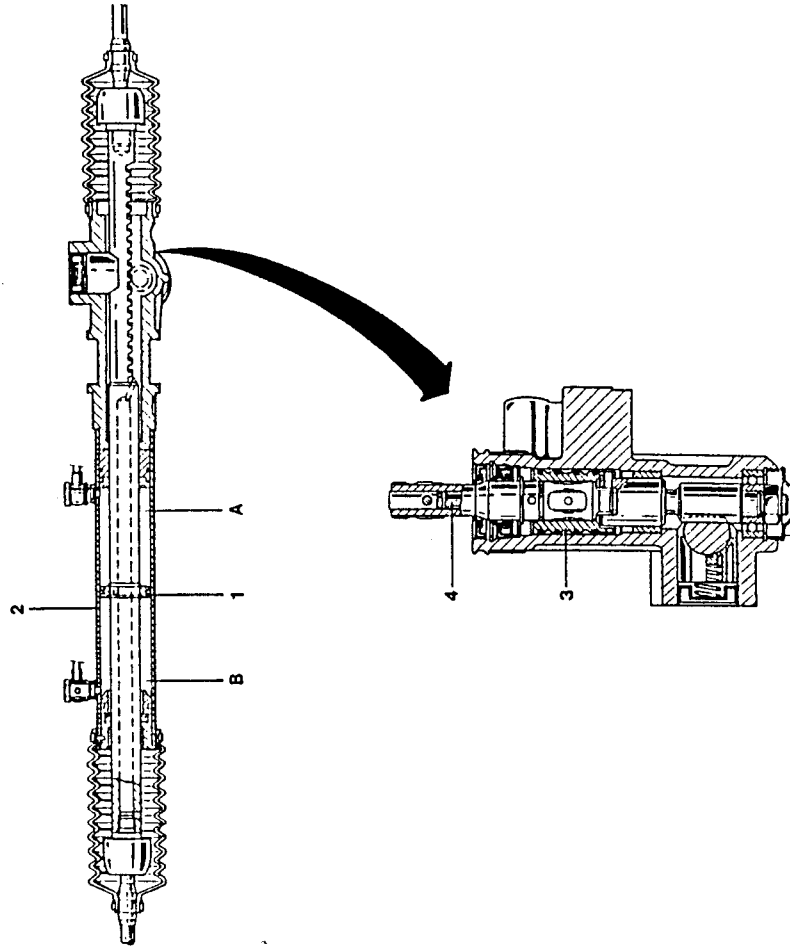


1. Unscrew the nut securing the tie-rod ball joint to the wheel hub.
  2. Using tool No. 1.821.169.000 disconnect the ball joint from the hub.
- Place a container under the vehicle.

The steering box assembly is similar to the traditional mechanical rack steering box apart from the following:

- an operating cylinder (2) has been integrated with the steering box with a double action piston (1) machined onto the rack rod;
- a distribution valve (3) with relative ducts is located in the worm screw sealing and is controlled by a torsion device (4) located at the tip of the worm

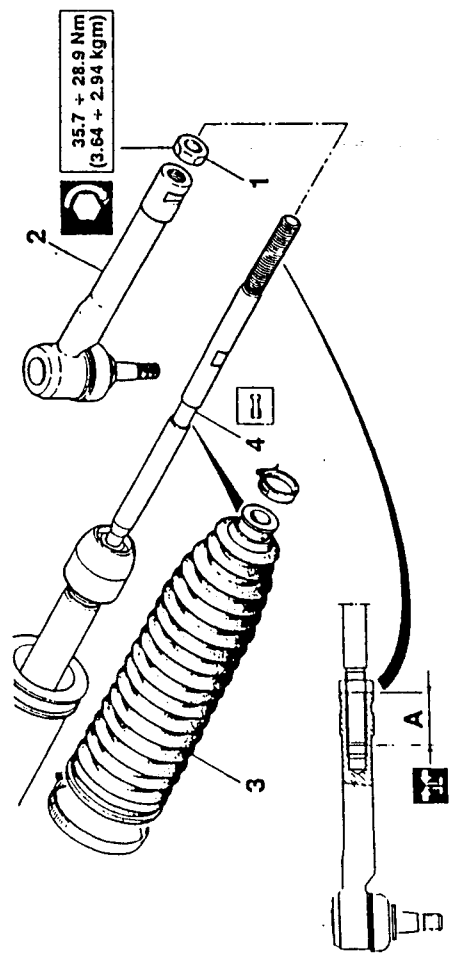
Depending on the torsion transmitted by the steering wheel to the device, the fluid from the pump is sent to the reservoir or to one of the two chambers A or B of the operating cylinder. Force generated by the fluid pressure on the lateral surface of the piston determines its movement and hence of the rack.



1. Double action piston
2. Operating cylinder
3. Distribution valve
4. Torsion device
  - A. Right-hand chamber of the operating cylinder
  - B. Left-hand chamber of the operating cylinder

the bellows and the shaft are lubricated with silicone grease. When the clamp is installed and closed to the second or third from last tooth, this will enable the lateral arm to rotate freely in the bellows.

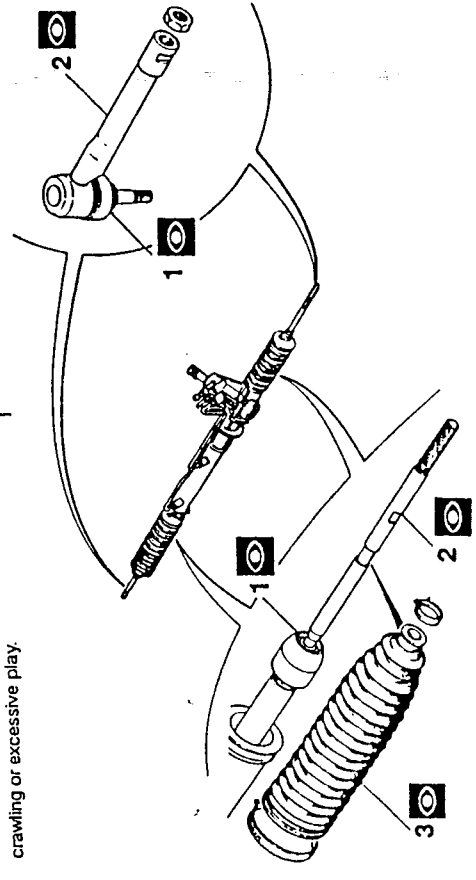
- Loosen the lateral tie-rod and remove it from the arm.
- Loosen the clamps and remove the bellows.
- Refit by tightening the counter nut to the correct torque ensuring that the contact surfaces between



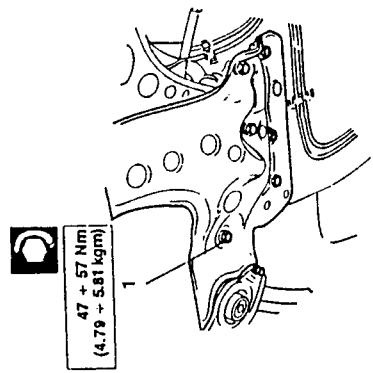
- Check that the lateral tie-rods are not damaged or deformed.
- Check that the ball joints are not damaged or worn and that they rotate freely in their seating without crawling or excessive play.
- Ensure that the rubber bellows is not damaged.

Checks and inspections

- Check that the lateral tie-rods are not damaged or deformed.
- Check that the ball joints are not damaged or worn and that they rotate freely in their seating without crawling or excessive play.
- Ensure that the rubber bellows is not damaged.



- Loosen the two screws securing the steering box to the front crossmember.



Remove the front crossmember (see: GR. 21 - FRONT CROSSMEMBER AND ANTIROLL BAR) and remove the steering box.

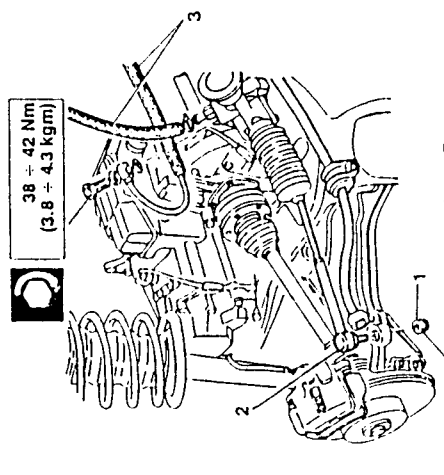
Refit by reversing the procedure followed for removal and tighten the nuts, screws and bolts to the correct torque. Ensure that the reservoir has been topped up with the specified fluid and check the sealing after connecting the hoses.

Disassembly and reassembly

- Loosen the counter nut securing the lateral tie-rod.

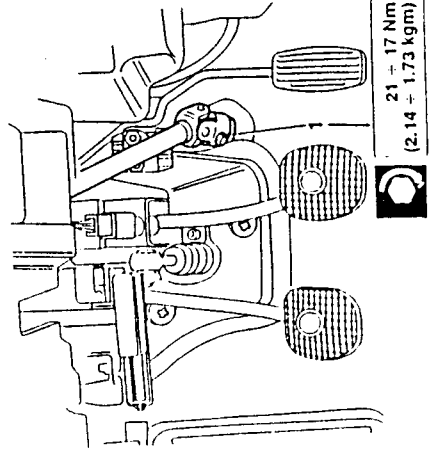
**NOTE:** Before proceeding to the next stage measure value "A" shown in the illustration in order to carry out the successive installation correctly.

- Unscrew the connections from the delivery and return hoses connected to the steering box and let the fluid drain off for at least five minutes.



(only for 1.8 - 2.0 T.S.) disconnect the speed engagement tie-rods (see: GR. 13 - GEARBOX OUTER LINK-AGE).

- Working from within the vehicle, unscrew the bolt securing the lower section of the steering column to the steering box pinion.







**BLEEDING**

1. Turn the steering wheel to the right to the maximum level mark.
2. Turn the steering wheel to the left to the maximum level mark.
3. Turn the steering wheel to the right to the maximum level mark.
4. Turn the steering wheel to the left to the maximum level mark.

**WARNING:**  
 The power steering system should be bled after any repair. The oil should be added to the system in the correct amount. The oil should be added to the system in the correct amount. The oil should be added to the system in the correct amount.

With the engine running at idle speed, move the steering wheel fully to the right and to the left to bleed the system. Refill the reservoir to the maximum level mark.

**NOTE:** A steering column bearing may need to be replaced if the pump drive belt is loose. Reinstall the motor cylinder or if the steering valve cannot work, the power steering system will operate as a simple mechanical steering box.

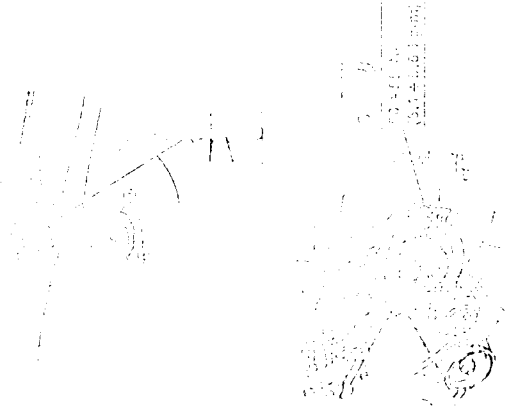
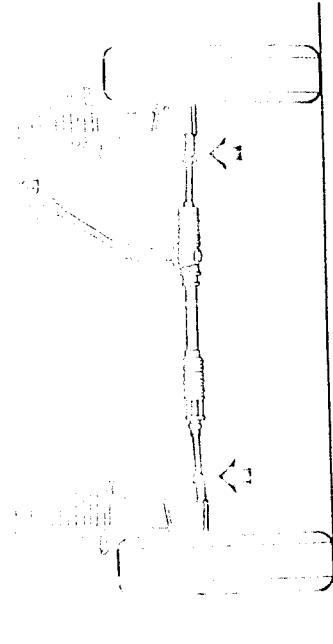


Fig. 1



**STEERING CHARACTERISTICS AND SPECIFICATIONS**

Steering wheel free play: 10-15 mm (0.4-0.6 in.)

Steering wheel effort: 15-20 N (3.5-4.5 lb)

Steering wheel return: 10-15 sec

Steering wheel lock: 10-15 sec

Steering wheel lock force: 10-15 N (2.2-3.3 lb)



## TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

## GENERAL SPECIFICATIONS

## FLUIDS AND LUBRICANTS

APPLICATION	TYPE	NAME
Refilling power steering system	OIL	TUTELA G1/A
Steering wheel height adjustment lever	GREASE	TUTELA Jota 1X
Seatings of roller bushings on steering column support	GREASE	SPCA Spagroph ISECO Ergon Rubber Grease REINACH Sferal B2 AR

## TIGHTENING TORQUES

Description	kg·m	N·m
Self-braking nut securing steering wheel to column	5.3 - 4.4	52.5 - 42.5
Self-braking nut securing steering tie-rod spherical pin to wheel support	2.95 - 3.64	28.9 - 35.7
Power steering fluid delivery and return hose connection funnel	3.8 - 4.3	38 - 42
Bolt securing steering column to power steering pinion	2.14 - 1.73	21 - 17
Screw securing steering box to front crossmember	4.79 - 5.81	47 - 57
Nut for securing lateral tie-rod	3.64 - 2.94	35.7 - 28.9
Nuts securing steering column to body	0.57 - 0.9	5.6 - 8.8
Nut securing adjustable guide	2.5 + 2.1	25.2 - 20.4
Screw securing steering column to support	2.5 - 2.1	25.2 - 20.4
Funnel of fluid hose from reservoir to pump (on pump)	5.1 - 5.6	50 - 56



## SPECIFIC TOOLS

TOOL NUMBER	DESCRIPTION
1.821.105.000	Puller for steering wheel
1.821.169.000	Puller for lateral tie-rod pin

**FAULT DIAGNOSIS AND CORRECTIVE ACTION**

**PRELIMINARY CHECKS:**

- Check tyre pressure and wear
- Check wheel attitude and characteristic angles
- Position vehicle on level, dry surface with engine at idle rpm

SYMPTOMS AND ANOMALIES	CHECK	TEST REFERENCE
LOW RESERVOIR LEVEL/LEAKS	Visible leaks are generally present in connection with the various components and hoses of the power steering system, resulting in a decrease in the level of fluid in the reservoir	<b>A</b>
GRADUAL STIFFENING OF THE STEERING ACTION	As the steering angle increases the steering action becomes stiffer	<b>B</b>
SUDDEN STIFFENING OF STEERING ACTION	Sudden stiffening of steering action during normal operation of steering	<b>C</b>
NOISE/KNOCKS DURING STEERING ACTION		<b>D</b>
CONTINUOUS NOISE		<b>E</b>
DAMAGED STEERING BOX BELLOWS		<b>F</b>
NOISY/INTERMEDIATE STEERING SPINDLE		<b>G</b>
NOISY STEERING COLUMN		<b>H</b>
DIFFICULT SLIDING OR MISSED LOCKING OF STEERING COLUMN		<b>I</b>

**DIAGNOSIS**

**LOW RESERVOIR FLUID LEVEL/LEAKS**

TEST A

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
<b>A1</b>	<b>CHECK STEERING BOX SEALING RINGS</b> - Check steering box sealing rings for wear or damage	<input checked="" type="radio"/> OK <input checked="" type="radio"/> OK	Carry out step A2 Replace steering box
<b>A2</b>	<b>VISUAL CHECK FOR OIL LEAKS</b> - Check for leaks from steering box, pump or reservoir	<input checked="" type="radio"/> OK <input checked="" type="radio"/> OK	Carry out step A3 Tighten fittings to prescribed torque; replace fitting seals if necessary
<b>A3</b>	<b>CHECK PUMP SEALING RINGS</b> - Check pump shaft sealing rings for wear or damage	<input checked="" type="radio"/> OK	Replace power steering pump

GRADUAL STIFFENING OF STEERING ACTION TEST B

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
<b>B1</b> CHECK DISTRIBUTOR VALVE - Check distributor for damage and efficiency of seals	OK OK	Carry out step B2 Replace steering box
<b>B2</b> CHECK FOR OIL LEAKS - Check steering box for oil leakage	OK OK	Carry out step B3 Replace steering box
<b>B3</b> CHECK SYSTEM PRESSURE - Check that pump supply pressure does not fall below 49.7 psi (3.5 bars) with steering in neutral position	OK OK	Carry out step B4 Replace power steering pump
<b>B4</b> CHECK PUMP BELT - Check pump drive belt is not loose, damaged or broken	OK	Restore belt to correct tension; replace belt if necessary

SUDDEN STIFFENING OF STEERING ACTION TEST C

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
<b>C1</b> CHECK HOSES - Check hoses for breakage	OK	Replace affected hoses

	TEST E
--	--------

NOISE/KNOCKING DURING STEERING OPERATION		TEST D
--	--	--------

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
E1	CHECK PUMP	OK	Replace pump
- Disconnect belt from steering pump and note whether noise is still present		OK	

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
D1	CHECK OIL LEVEL	OK	Carry out step D2 Top-up oil to correct level
- Check level of oil in circuit		OK	
D2	CHECK FOR TRAPPED AIR IN THE SYSTEM	OK	Carry out step D3 Bleed system by rotating the steering wheel several times to end of travel in both directions; if noise is still present replace steering box
- Check for presence of air in the system		OK	
D3	CHECK RESERVOIR FILTER	OK	Carry out step D4 Replace reservoir
- Check reservoir filter for excessive dirt or obstruction		OK	
D4	CHECK ATTACHMENTS	OK	Carry out step D5 Tighten screws to prescribed torque
- Check steering component attaching screws for looseness		OK	
D5	CHECK RODS AND JOINTS	OK	Replace rods or joints
- Check steering rods or spherical joints for damage or wear		OK	



DAMAGED STEERING BOX BELLOWS		TEST F
------------------------------	--	--------

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
F1	CHECK BELLOWS	<input checked="" type="checkbox"/> OK <input type="checkbox"/>	Replace bellows
	- Check steering box bellows for damage or aging		



NOISY INTERMEDIATE STEERING SPINDLE		TEST G
-------------------------------------	--	--------

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
G1	CHECK UNIVERSAL JOINTS	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step G2 Replace intermediate steering spindle
	- Check intermediate steering spindle universal joint spiders for excessive play		
G2	CHECK SPLINED COUPLING	<input checked="" type="checkbox"/> OK	Replace faulty parts
	- Check splined coupling of steering column and intermediate steering spindle for excessive play		

NOISY STEERING COLUMN		TEST H
-----------------------	--	--------

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
H1	CHECK BEARINGS - Check steering column support bearings for wear or damage	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step H2 Replace affected bearings
H2	CHECK STEERING COLUMN - Check steering column for interference with multiple switch shells	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step H3 Correctly install multiple switch shells
H3	CHECK JOINT ATTACHMENTS - Check universal joint attachment nuts at ends of spindle for proper torque	<input checked="" type="checkbox"/> OK	Torque nuts to prescribed values

DIFFICULT SLIDING OR MISSED LOCKING OF STEERING COLUMN		TEST I
--	--	--------

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
I1	CHECK STEERING COLUMN SUPPORT ATTACHMENT - Check for excessive torque of steering column to car body attachment screw	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step I2 Re-torque screw to correct value
I2	CHECK ADJUSTMENT LEVER ATTACHMENT - Check steering wheel axial adjustment lever attaching nut for excessive torque	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step I3 Re-torque nut to correct value
I3	CHECK LUBRICATION OF SPLINED COUPLING - Check for proper lubrication of splined coupling of steering column and intermediate steering spindle	<input checked="" type="checkbox"/> OK	Lubricate splined coupling as required

GROUP 25

REAR SUSPENSION

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### ILLUSTRATED INDEX

SHOCK ABSORBERS  
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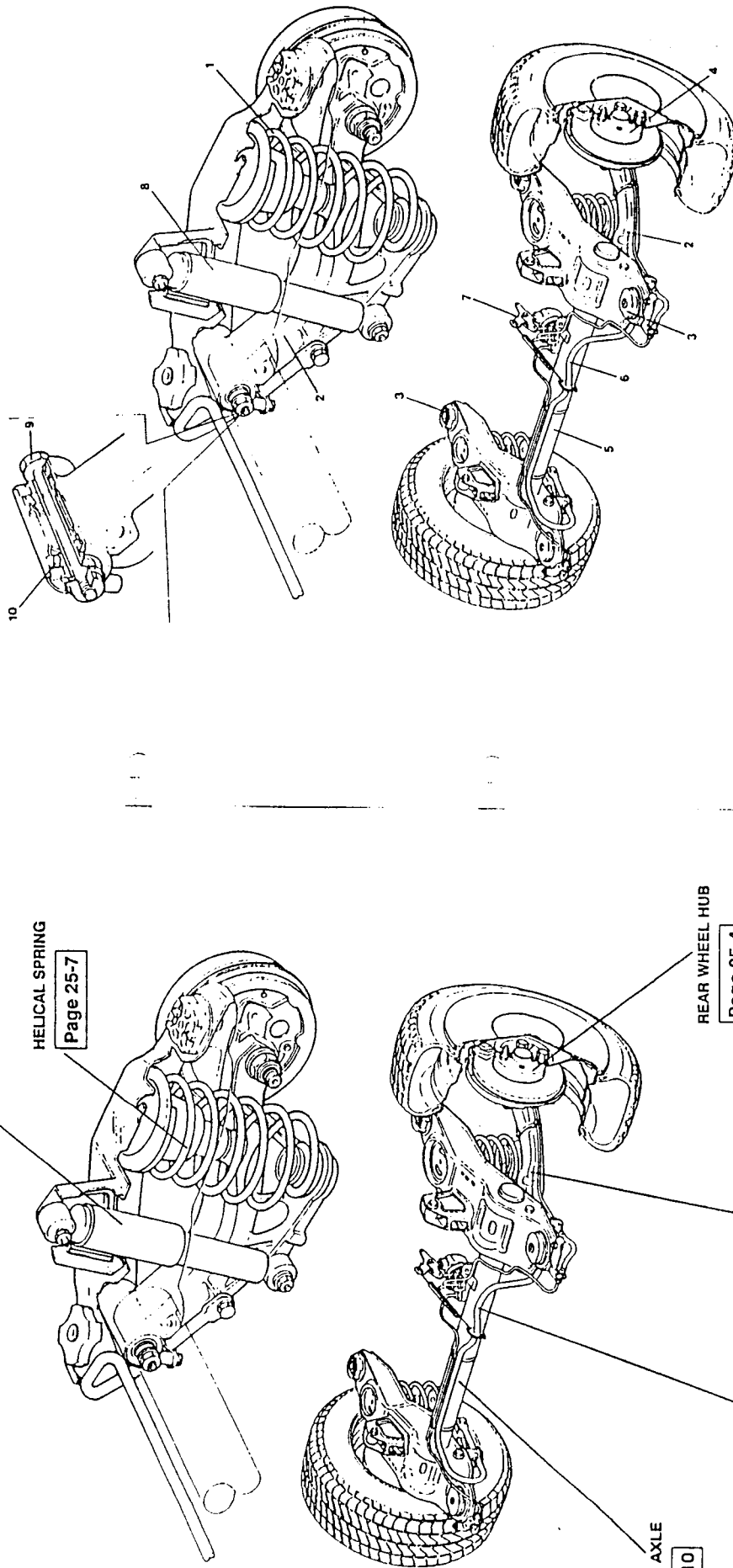
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RIGID REAR AXLE  
Page 25-10

STABILIZING BAR  
Page 25-9

LONGITUDINAL ARM  
Page 25-8

REAR WHEEL HUB  
Page 25-4



- 1. Helical spring
- 2. Swinging arm
- 3. Flexible plug
- 4. Wheel hub
- 5. Rear rigid axle

- 6. Stabilizer bar
- 7. Braking regulator
- 8. Shock absorber
- 9. Screw securing swinging arm
- 10. Tapered roller bearings

### REAR SUSPENSION

#### DESCRIPTION

The rear suspension, of the independent wheel type with longitudinal swinging arms, has been significantly reduced in size enabling as a consequence, the adoption

of a particularly low and wide luggage compartment. This type of suspension is common to all the vehicles in the 167 range. For the models equipped with controlled damping suspension, variable "setting" shock absorbers have been adopted (see: CONTROLLED DAMPING SUSPENSION) though the overall structure of the assembly remains unaltered.



The inherent problem with this type of suspension, is that the wheels vary their inclination in accordance with the rolling of the vehicle. This has been resolved by the integration of a stabilizing bar with the longitudinal arms. The rear suspension assembly can be broken down into the following main components.

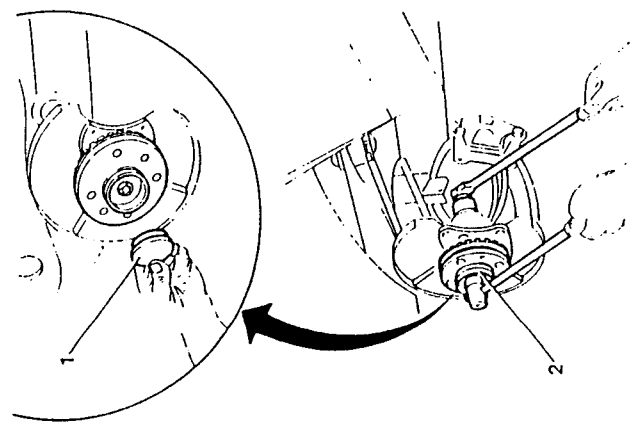
- Rear rigid axle (5), in tubular sheet metal secured to the body by flexible plugs (3).
- Swinging arms (2) integrated with the axle by screws (9) and hinged on the tapered roller bearings (10). They support the wheel hub (4) and the parts of the braking system.
- A stabilizing bar (6) which, connected to the swinging arms, limits the transversal inclination of the vehicle and by its own rotation also controls the operation of the braking distributor (7) which is also connected to it.
- Helical springs (1) which limit the thrust on the shock absorber strut.
- Shock absorbers (8) which are pressurized with lamellar intake valves and ensure a high degree of driving comfort.

### REAR WHEEL HUB

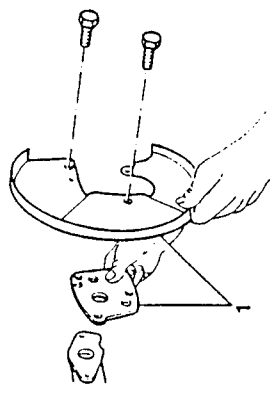
#### REMOVAL

- Remove the rear wheel
  - Remove the rear brakes together with callipers and discs (see: GR. 22 - REMOVING AND REFITTING REAR BRAKES)
1. Remove the dust guard from the rear spindle.
  2. Unscrew the nut securing the spindle and remove the wheel hub and pin.

**NOTE:** For models equipped with an ABS system the wheel hub includes the phonic wheel.



1. If necessary loosen the screws securing the brake disc protective sheet to the suspension arm and remove it together with the underlying stiffening plate.

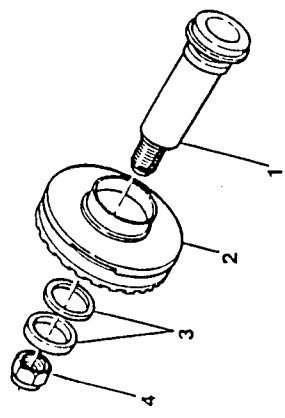


#### CHECKS AND INSPECTIONS



**WARNING:**  
The nut securing the spindle must be substituted when the pin is refitted.

1. Check the spindle for wear, cracks and deformation. Replace it if necessary.
2. Check that the wheel bearings machined onto the inside of the hub are not worn. If excessive play is found or the assembly is excessively noisy substitute the entire hub.
3. Check the spacers for wear and replace if necessary.
4. Substitute the nut securing the wheel hub.



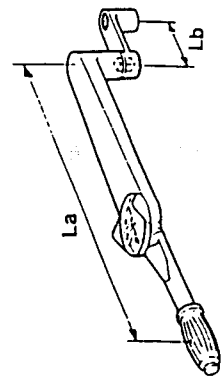
#### REFITTING

**NOTE:** Using spanner No.1.822.005.000 coupled with a dynamometer spanner, the tightening torque is altered and the real torque must be calculated by applying the following formula:

$$\frac{L_a \times C_n}{L_a + L_b} = C_r$$

where:

- $L_a$  = Length of the dynamometer spanner (in metres)
- $L_b$  = Length of spanner No. 1.822.005.000 (in metres)
- $C_n$  = Nominal torque (in Nm)
- $C_r$  = Real closing torque (in Nm)



The inherent problem with this type of suspension, is that the wheels vary their inclination in accordance with the rolling of the vehicle. This has been resolved by the integration of a stabilizing bar with the longitudinal arms. The rear suspension assembly can be broken down into the following main components.

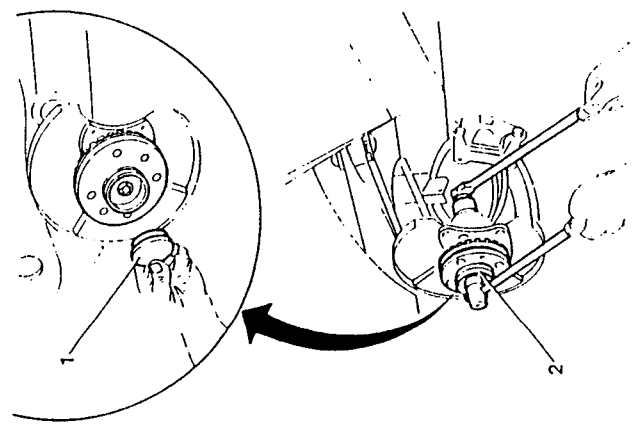
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- Swinging arms (2) integrated with the axle by screws (9) and hinged on the tapered roller bearings (10). They support the wheel hub (4) and the parts of the braking system.
- A stabilizing bar (6) which, connected to the swinging arms, limits the transversal inclination of the vehicle and by its own rotation also controls the operation of the braking distributor (7) which is also connected to it.
- Helical springs (1) which limit the thrust on the shock absorber strut.
- Shock absorbers (8) which are pressurized with lamellar intake valves and ensure a high degree of driving comfort.

### REAR WHEEL HUB

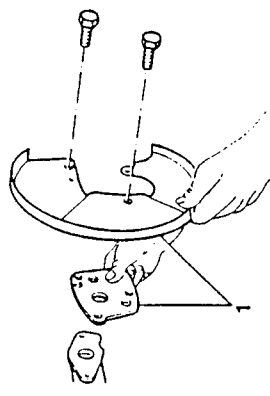
#### REMOVAL

- Remove the rear wheel
  - Remove the rear brakes together with callipers and discs (see: GR. 22 - REMOVING AND REFITTING REAR BRAKES)
1. Remove the dust guard from the rear spindle.
  2. Unscrew the nut securing the spindle and remove the wheel hub and pin.

**NOTE:** For models equipped with an ABS system the wheel hub includes the phonic wheel.



1. If necessary loosen the screws securing the brake disc protective sheet to the suspension arm and remove it together with the underlying stiffening plate.

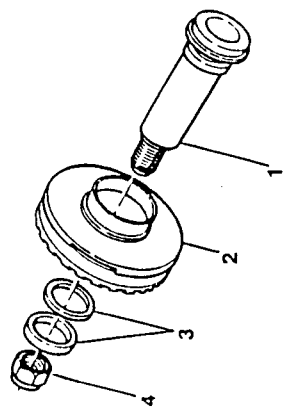


#### CHECKS AND INSPECTIONS



**WARNING:**  
The nut securing the spindle must be substituted when the pin is refitted.

1. Check the spindle for wear, cracks and deformation. Replace it if necessary.
2. Check that the wheel bearings machined onto the inside of the hub are not worn. If excessive play is found or the assembly is excessively noisy substitute the entire hub.
3. Check the spacers for wear and replace if necessary.
4. Substitute the nut securing the wheel hub.



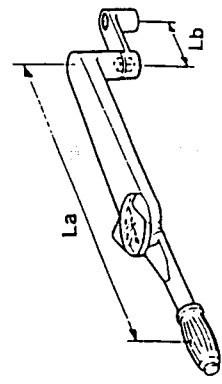
#### REFITTING

**NOTE:** Using spanner No.1.822.005.000 coupled with a dynamometer spanner, the tightening torque is altered and the real torque must be calculated by applying the following formula:

$$\frac{L_a \times C_n}{L_a + L_b} = C_r$$

where:


- $L_a$  = Length of the dynamometer spanner (in metres)
- $L_b$  = Length of spanner No. 1.822.005.000 (in metres)
- $C_n$  = Nominal torque (in Nm)
- $C_r$  = Real closing torque (in Nm)

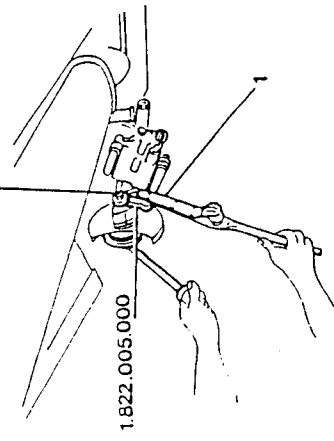



### SHOCK ABSORBERS

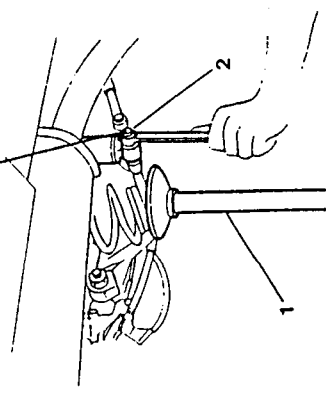
#### REMOVAL AND REFITTING

- Remove the wheel.
- 1. Using a hydraulic jack placed under the longitudinal arm of the suspension, pre-load the spring.
- 2. Unscrew and remove the lower nut securing the shock absorber to the longitudinal arm of the suspension.

 304 + 336 Nm  
(30.99 + 34.25 kgm)



 74.8 + 92.4 Nm  
(7.62 + 9.42 kgm)




### HELICAL SPRING

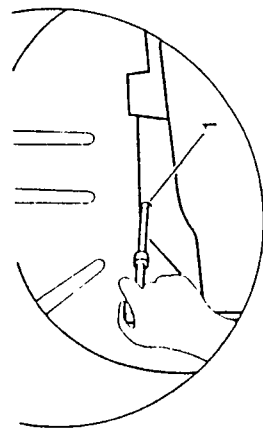
#### REMOVAL AND REFITTING

- 1. Using a hydraulic jack pre-load the suspension arm.
- 2. Remove the lower part of the shock absorber after unscrewing and removing the retaining nut.
- 3. Loosen the screws securing the brake lines and handbrake cable supporting brackets.

**NOTE:** On models fitted with ABS, the brackets mentioned above also support the r.p.m. sensor wiring.

- 4. Loosen the screws securing the stabilizing bar to the swinging arm so that the arm can be lowered.
- 5. Lower the hydraulic jack and remove the spring together with the stop-limit buffers underneath.

 47.6 + 58.8 Nm  
(4.85 + 5.99 kgm)

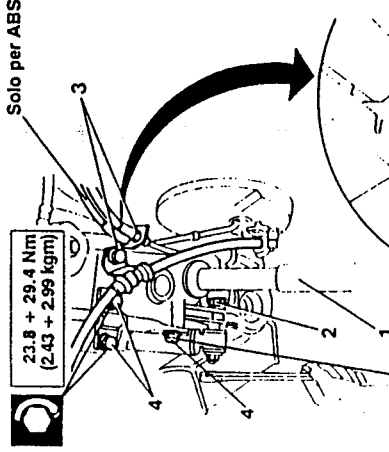



- 2. Remove the shock absorber.

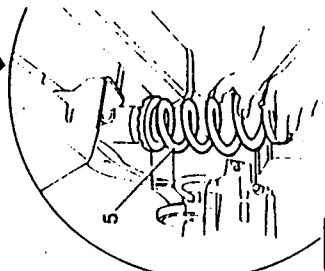
**NOTE:** As the body is boxed around the area affected by the operation pay particular attention to avoid letting the screw fall inside the compartments.

- Remove the protective cap covering the access hole containing the screw securing the shock absorber.
- 1. Working through the wheel arch unscrew through the hole in the body, the upper screw securing the shock absorber.

 23.8 + 29.4 Nm  
(2.43 + 2.99 kgm)



 47.6 + 58.8 Nm  
(4.85 + 5.99 kgm)



Refit by reversing the procedure followed for removal and tighten the screw to the correct torque paying close attention in order to prevent the screw from falling into the boxed parts.

#### CHECKS AND INSPECTIONS

- Check that the shock absorbers are working correctly and are not leaking oil. If any faults are detected replace the shock absorber.



Refit by reversing the procedure followed for removal and tighten the screws to the correct torque.

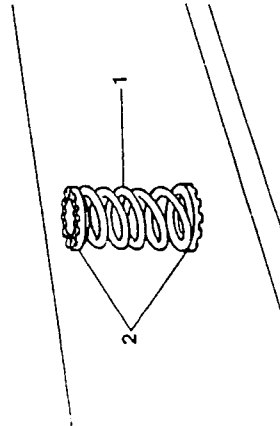


**CHECKS AND INSPECTIONS**

1. Visually check that the springs are not cracked, deformed or generally defective.

**NOTE:** The helical springs are divided into classes and marked with coloured paint. If one or both of the springs is removed check that the new spring(s) have the same colour code as the old ones.

2. Check the rubber elements for damage. If they are deformed, obviously worn are in any way damaged they must be replaced.

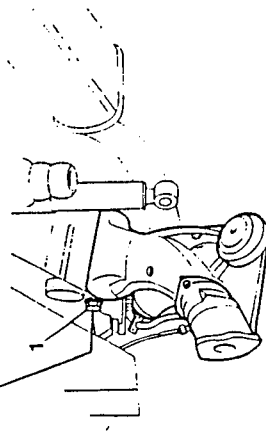


**LONGITUDINAL ARM**

**REMOVAL AND REFITTING**

- Remove the rear brakes (see: GR. 22 - REAR BRAKES - Removal and refitting).
  - Remove the wheel hub (see: REAR WHEEL HUB - Removal and refitting).
  - disconnect the shock absorber from the longitudinal arm by unscrewing the lower retaining nut (see: SHOCK ABSORBER - Removal and refitting).
  - Remove the helical spring (see: HELICAL SPRING - Removal and refitting).
1. Unscrew the bolt securing the longitudinal arm to the rear axle and remove the arm.

**142.5 ± 157.5 Nm  
(14.53 ± 16.05 kgm)**

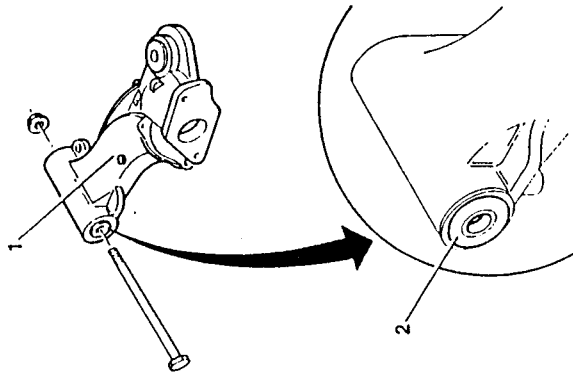


Refit by reversing the procedure followed for removal and tighten the bolt securing the longitudinal arm to the correct torque. Take note of the indications given in the preceding paragraphs relative to the refitting operations.

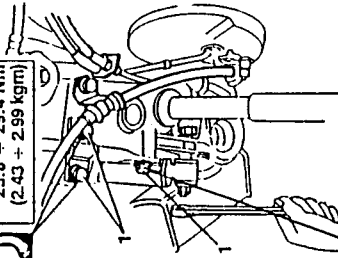


**CHECKS AND INSPECTIONS**

1. Visually check that the longitudinal arm is not cracked, deformed or worn on the surfaces of the wheel side.
2. Check the state of the bearings and spacer. If there is excessive noise or play replace the swinging arm.



**23.8 ± 29.4 Nm  
(2.43 ± 2.99 kgm)**



**47.6 ± 58.8 Nm  
(4.85 ± 5.99 kgm)**

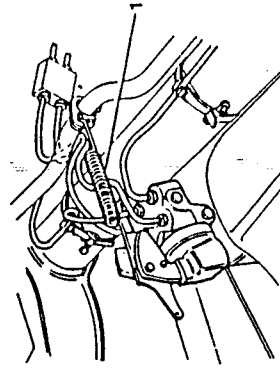


1. Disconnect the spring operating the braking regulator from the stabilizing bar and remove the bar.

**STABILIZING BAR**

**REMOVAL AND REFITTING**

- Remove the rear section of the exhaust pipe (see: REPAIR MANUAL - ENGINES - GR. 04).
  - Remove the fuel tank (see: REPAIR MANUAL - ENGINES - GR. 04).
1. Loosen the three screws securing the stabilizing bar to the longitudinal arm on both sides.

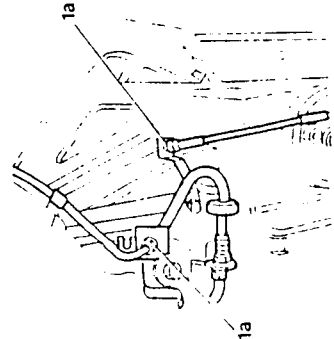


Refit by reversing the procedure followed for removal and tighten the screws to the correct torque. Take note of the information given previously regarding the specific techniques and devices to be used during the refitting operations and in particular adjust the braking regulator (see: GR. 22 - BRAKING REGULATOR - Adjustment).

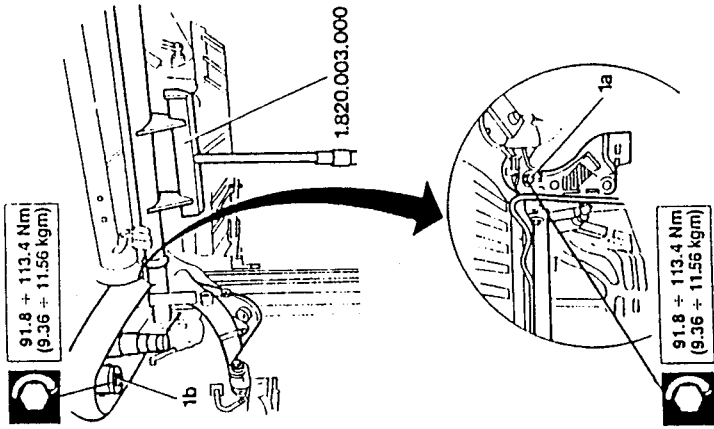
### RIGID REAR AXLE

#### REMOVAL AND REFITTING

- Remove the rear section of the exhaust pipe (see: REPAIR MANUAL - ENGINES - GR. 04).
- Remove the fuel tank (see: REPAIR MANUAL - ENGINES - GR. 04).
- Disconnect the longitudinal arm by unscrewing the lower nut (see: SHOCK ABSORBER - Removal and refitting).
- Remove the helical spring (see: HELICAL SPRING - Removal and refitting).
- Disconnect the stabilizing bar from the longitudinal arm (see: HELICAL SPRING - Removal and refitting).
- 1. Disconnect the brake line support brackets (1a) (and for models fitted with ABS, the electrical wiring (1b) of the r.p.m. sensor) and move them to one side so that they do not obstruct the successive operations when removing the axle.



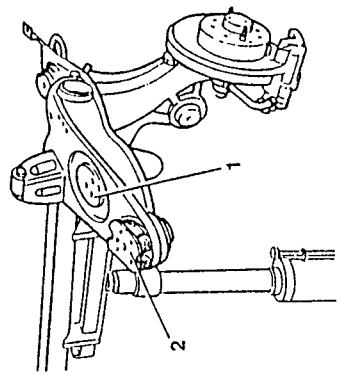
1. Place a hydraulic jack fitted with tool No. 1.820.003.000, under the rear axle and loosen the screws securing the front (1a) and rear (1b) flexible blocks to the body and, lowering the jack, remove the rigid rear axle.



Refit by reversing the procedure followed for removal and tighten the screws securing the flexible blocks to the correct torque. Take note of the information given previously regarding the specific techniques and devices to be used during the refitting operations and in particular adjust the braking regulator (see: GR. 22 - ADJUSTMENT OF BRAKING REGULATOR).

#### CHECKS AND INSPECTIONS

1. Check that the rigid rear axle is not distorted or cracked and that there is no misalignment between the two lateral arms.
2. Check the condition of the stop-limit buffers.





The vehicle was driven on a test track at a speed of 100 km/h. The suspension system was inspected and found to be in good condition. The following table shows the measured values for the rear wheel alignment.

Wheel: Rear (Left)	Value: 0.3	Unit: mm
Wheel: Rear (Right)	Value: 0.4	Unit: mm

The alignment values are within the specified tolerance range. The vehicle is suitable for normal road use.

Wheel: Rear (Left)	Value: 0.3	Unit: mm
Wheel: Rear (Right)	Value: 0.4	Unit: mm

The vehicle was driven on a test track at a speed of 100 km/h. The suspension system was inspected and found to be in good condition. The following table shows the measured values for the rear wheel alignment.

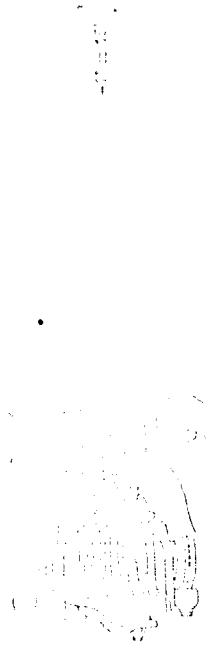
Wheel: Rear (Left)	Value: 0.3	Unit: mm
Wheel: Rear (Right)	Value: 0.4	Unit: mm

The alignment values are within the specified tolerance range. The vehicle is suitable for normal road use.

Wheel: Rear (Left)	Value: 0.3	Unit: mm
Wheel: Rear (Right)	Value: 0.4	Unit: mm

REAR WHEEL ALIGNMENT

1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8



The alignment values are within the specified tolerance range. The vehicle is suitable for normal road use.

REAR TRIM

(see GR. 21 - Front suspension - Technical characteristics and specifications).

PA455C1 Attached to T.B. 25, 92-02, E

4

25-15

REAR SUSPENSION

SPECIFIC TOOLS

TOOL NUMBER	DESCRIPTION
1.820.003.000	Tool for removing and refitting rear axle
1.822.005.000	Extension spanner for tightening nut securing rear wheel hub

25-15

REAR SUSPENSION

SPECIFIC TOOLS

TOOL NUMBER	DESCRIPTION
1.820.003.000	Tool for removal/refitting rear axle
1.822.005.000	Spanner extension for tightening nut securing rear wheel hub



**FAULT DIAGNOSIS AND CORRECTIVE ACTION**

ANOMALIES AND SYMPTOMS	CHECK	TEST REFERENCE
KNOCKING	- Knocking on the rearcarriage while driving on rough roads (holes, hollows, asphalt rises, etc.)	A
CONSTANT NOISE	- Constant noise from rearcarriage while driving on a straight and even road; the noise increases as the speed of the vehicle increases.	B
VIBRATIONS	- Vibrations increase as vehicle speed increases	C

**KNOCKING**

**TEST A**

A1	TEST PROCEDURE	RESULT	CORRECTIVE ACTION
- Check shock absorber attachments for correct torque - Also check the efficiency of the shock absorbers		<input checked="" type="radio"/> OK ▲	Carry out step A2
		<input type="radio"/> <del>OK</del> ▲	Tighten attachments or replace affected shock absorber as required
A2	CHECK RUBBER BUSHINGS - Check longitudinal and cross beam rubber bushings for wear or damage	<input checked="" type="radio"/> OK ▲	Carry out step A3
		<input type="radio"/> <del>OK</del> ▲	Replace rubber bushings
A3	CHECK WHEEL BEARINGS - Check wheel hub inner bearing for wear or damage	<input type="radio"/> <del>OK</del> ▲	Replace wheel hub bearing

CONSTANT NOISE	TEST B
----------------	--------

VIBRATIONS	TEST C
------------	--------

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
B1 CHECK TYRES - Check tyres for correct pressure	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step B2 Service tyres to correct pressure
B2 CHECK WHEEL BEARINGS - Check wheel hub inner bearing for wear or damage	<input checked="" type="checkbox"/> OK	Replace wheel hub bearing

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
C1 CHECK WHEEL BALANCING - Check wheels for correct balancing	<input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK	Carry out step C2 Balance wheels
C2 CHECK WHEEL RIMS - Check rims for dents or distortion	<input checked="" type="checkbox"/> OK	Replace flexible bushings



GROUP 28

WHEELS AND TYRES

INDEX

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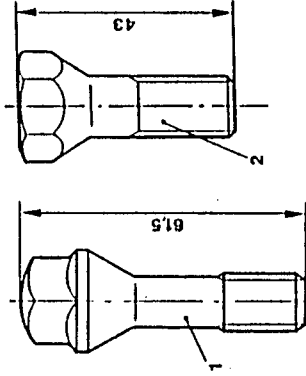
### WHEELS

#### GENERALITIES

The wheels (rims and tyres) fitted to the vehicle are those which are the most suited to its characteristics and guarantee the highest degree of safety and comfort under all normal driving conditions. Before replacing rims and tyres check the CHARACTERISTIC DATA table. The original rim-tyre arrangement should be maintained when replacing wheels.

#### RIMS

Steel and alloy wheels must be fitted to the vehicle using the bolts which are specific to each type of rim.



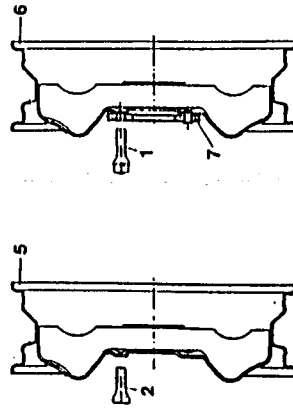
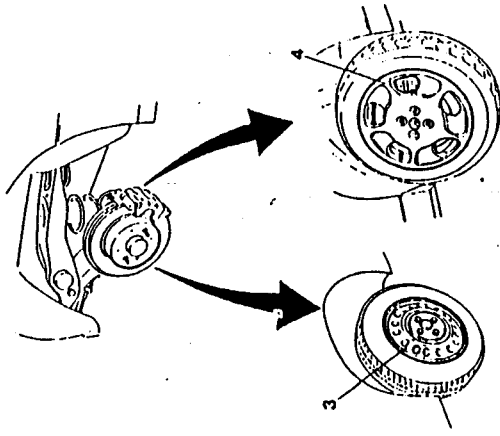
1. Bolt for alloy rims.
2. Bolt for steel rims.

When replacing steel rims with alloy rims or vice-versa:

- use the specific bolts (type 1 or 2) depending on the type of rims fitted.
- the rims of the compact spare wheel must also be replaced with those of the specific type.

#### SPARE WHEEL

The rim of the spare wheel (steel only) and the relative bolts are specific to the type of rim (steel or alloy) of the wheels fitted to the vehicle.



1. Bolts for alloy rims
2. Bolts for steel rims
3. Wheel with steel rim
4. Wheel with alloy rim
5. Spare wheel for steel rims
6. Spare wheel for alloy rims
7. Rivetted spacer

Therefore:

- When replacing steel rims with alloy rims or vice-versa, the rim of the spare wheel must be replaced with the corresponding type, (6) or (5).
- When fitting the spare wheel the specific bolts (1) or (2) must be used.



- make the tyre more vulnerable to knocks.

### WHEEL BALANCING

Each wheel, excluding the spare wheel, has been statically and dynamically balanced in the factory. When the tyres are changed the wheels must be rebalanced to prevent instability, wearing of the steering components and irregular tyre wear.

**NOTE:** The spare wheel must not be balanced.



**WARNING:**  
When balancing the wheels with alloy rims, only original Alfa Romeo counter weights must be used.



- Light and precise steering.
- Lower fuel consumption as the wheel rolls without resistance.

**B.** Pressure too low

A low tyre pressure will cause the tread to wear unevenly (greater on the walls) and overhead which may lead to the loss of pieces of tyre and cause damage to the structure of the tyre resulting in a greater risk of sudden deflation or blow-out.

**C.** Pressure too high

An excessive tyre pressure will:
 

- cause uneven wear of the tread especially in the central part
- reduce comfort

#### CAUTION:

Do not cross the tyres over when replacing.



Some types of tyres are fitted with wear detectors and as soon as these indicators can be seen on the tread the tyre must be replaced. Check that the tread is evenly worn.

Worn tyres increase the risk of aquaplaning on wet roads.

Violent knocks against kerb stones, holes in the road surface and various other obstacles and when the vehicle is driven for long periods on badly made roads may result in small cuts on the tyre which are often difficult to see. These result in deformation, swelling and cuts on the side of the tyre which can cause sudden deflation or blow-outs.

### TYRE PRESSURE AND WEAR

The correct tyre pressure influences both the duration of the tyre and its road-holding characteristics and consequently the safety of the vehicle and its passengers.

The pressure of each tyre, including the spare wheel, must be checked regularly and especially before long journeys.

When checking the tyre pressure the tyres must be cold. Use a pressure gauge and inflate to the specified pressure.

If the tyre is not at the correct pressure it will not wear correctly:

#### A. Normal pressure

A correct pressure ensures that the tyre will have a longer life and give better results as the tread will use its entire width and the wear pattern will be more uniform.

This condition leads to:

- Better road holding.

#### CAUTION:

The spare wheel must only be used in an emergency and its use must be reduced to a minimum. The speed of the vehicle must not exceed 80 kph. The vehicle will handle differently when the spare wheels are used.

Ensure that the tyre pressure of the spare wheel is 4.2 bars (kg/cm<sup>2</sup>). The wheel must only be used for a total of 3,000 kilometers and then replaced with another of the same type.

**RIM:** 4Jx15"

**TYRE:** 115/70 R15 90M.

Never fit a traditional tyre to the rim of the compact spare wheel.

No more than one compact spare wheel must be used at any time.

### TYRES

#### GENERALITIES

The tyres fitted to the vehicle are of the tubeless type and do not contain an inner tube. To maintain the characteristics of comfort and safety and to ensure that the tyres last, the following should be observed:

- The wheels should be balanced and the front and rear suspension adjusted correctly.
- Do not insert any object between the rim and the tyre.
- If the rims are bent or damaged, replace it.
- When balancing the wheels, counter-weights which are specific for tubeless tyres must be used.
- The tyre pressure (including the compact spare wheel) must be as specified (see: TECHNICAL CHARACTERISTICS AND SPECIFICATIONS - CHARACTERISTIC DATA).
- Inner tubes must not be fitted to tubeless tyres.

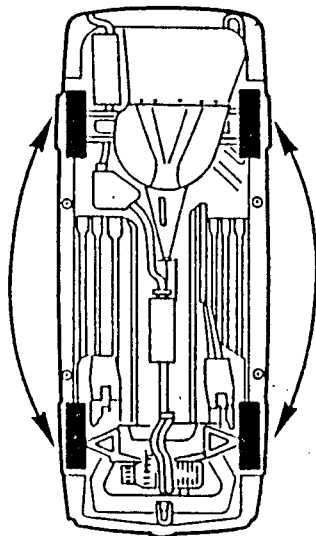
Obtain a uniform wear pattern between the tyres on the front and those on the rear axle, the wheels should be swapped round every 10,000 - 15,000 kilometers, however, so that the direction of rotation is not changed, the tyres must remain on the same side of the vehicle.



# TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

## GENERAL SPECIFICATIONS

### TYRE ROTATION



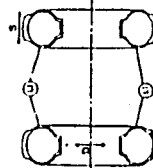
### FLUIDS AND LUBRICANTS

APPLICATION	TYPE	NAME
Claw for fitting tyre to rim	FLUID	MILLOIL SC40/R MASCO 203SVA (* (6 parts of water to 1 of fluid)

### CHECKS AND ADJUSTMENTS

#### DYNAMIC WHEEL BALANCING

Maximum residual imbalance permitted ..... 10 g (5 per side)  
Balancing weights ..... 70 g max per side (with no more than two weights per side)



L1 = location of balancing weights  
D = direction of stacking  
S = direction of shimmy\*

#### NOTE:

- Locate the balancing weights on the edge of the rim.
- No not fit more than two weights per side.
- Two types of weights are used: one to be used on wheels with steel wheels and one for wheels with light alloy rims. Avoid mixing the two types.
- The wheel must be balanced each time a hole is repaired.
- The spare wheel must not be balanced.



## TIGHTENING TORQUES

DESCRIPTION	N · m	kg · m
Screws securing wheel	83.3 - 102.9	8.49 - 10.49
Screws securing spare wheel	83.3 - 102.9	8.49 - 10.49

## CHARACTERISTIC DATA

### Dimensions

VEHICLE	RIM - TYRE DIMENSIONS	MAKE/TYPE	PRESSURE			
			REDUCED LOAD (2 PEOPLE)		FULL LOAD	
			FRONT	REAR	FRONT	REAR
1.8 T.S.	6Jx14" - 195/60R14"82H	Pirelli/P-4000E Michelin/MXY2 Good Year/NCT2	2.2	2.0	2.5	2.5
	OPTIONALS 6Jx14" - 195/60R14"85V	Pirelli/P-4000E Michelin/MXY2 Good Year/NCT2				
2.0 T.S.	6Jx14" - 195/60R14"85V	Pirelli/P-4000E Michelin/MXY2 Good Year/NCT2	2.2	2.0	2.5	2.5
2.4 V6	6Jx15" - 195/55R15"84V 6Jx15" - 195/55ZR15"*	Pirelli/P-4000E Michelin/MXY2 Good Year/GSD	2.5	2.3	2.8	2.5
	OPTIONALS 6Jx15" - 205/50R15"86V**	Pirelli/P700Z Michelin/MXY2 Good Year/GSD				
ALL	SPARE WHEEL 4Jx15" - T115/70R15"	MICHELIN/TEX	4.2			

\* In countries where this type of tyre has been homologated (see vehicle documents) the 195/55R15"84V must not be fitted to the vehicle.

\*\* At present it is not possible to fit snow-chains to these tyres.



'95 VERSIONS

MODEL	RIM SIZE	TYRE SIZE	PRESSURES (Bar)			
			REDUCED LOAD (2 PERSONS)		FULL LOAD	
			FRONT	REAR	FRONT	REAR
T.SPARK 1.7 (167A4H) (167A4G) (167A4L)	6Jx14"	185/60 HR14	2.2	2.0	2.5	2.5
			2.2	2.0	2.5	2.5
					2.5	2.5
T.SPARK 1.8 (167A4E) (167A4M)	6Jx14"	185/60 HR14 195/60 VR14*	2.2	2.0	2.5	2.5
	6.5Jx15"	205/50 VR15	2.5	2.3	2.8	2.5
	7Jx16**	205/45 ZR16	2.5	2.3	2.8	2.5
V6 (167A1E)	6.5Jx15"	205/50 VR15	2.5	2.3	2.8	2.5
	7Jx16*	205/45 ZR16	2.5	2.3	2.8	2.5
ALL	SPARE WHEEL (compact) 4Jx15" for steel rims 4Bx15" for alloy rims	115/70 R15 90M	4.2			

(\* ) Optional

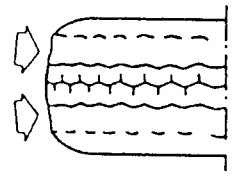
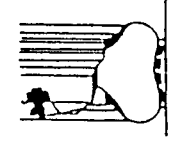
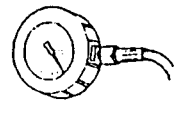
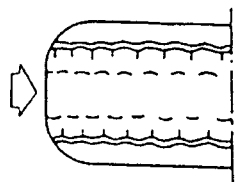
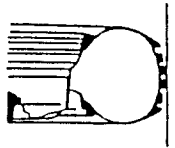
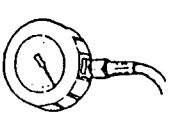
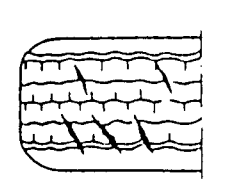
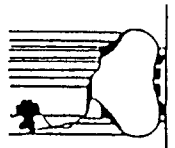
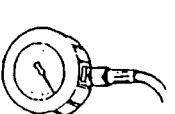
**WARNING:** In the event of continued driving at top speed the pressures should be increased by 0.3 bar.

**NOTE:** To improve mating between the wheels and the car body the rims have a specific camber for each rim size. Therefore in addition to the correct rim and tyre match it is also necessary to check and maintain the camber of the rim.

RIM SIZE	RIM CAMBER
6Jx14"	31.5 mm
6.5Jx15"	37 mm
7Jx16"	41 mm

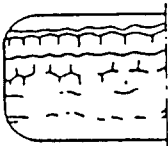
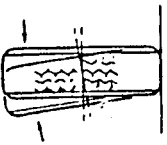
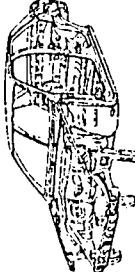
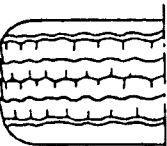
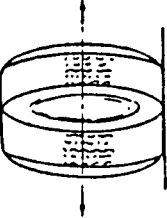
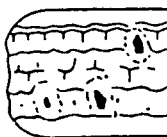
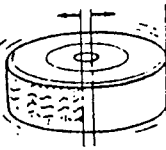


TYRE WEAR

DEFECT	CAUSE	CORRECTIVE ACTION
 RAPID SHOULDER WEAR	 Pressure too low	 Service to correct pressure (cold) and replace both tyres of affected axle if necessary
 RAPID WEAR OF CENTRE	 Pressure too high	 Service to correct pressure (cold) and replace both tyres of affected axle if necessary
 CRACKS IN TREAD	 Pressure too low or tyres do not correspond to prescribed type	 Service to correct pressure (cold) and replace both tyres of affected axle if necessary



TYRE WEAR (cont.d)

DEFECT	CAUSE	CORRECTIVE ACTION
<p>UNEVEN WEAR</p> 	 <p>Incorrect camber</p>	 <p>Check underbody for damage; if necessary replace both tyres of affected axle</p>
<p>FEATHERED WEAR</p> 	 <p>Incorrect toe-in</p>	<p>Service to correct toe-in value (see: GR. 21); replace both tyres of affected axle if necessary</p>
<p>WEAR SPOTS</p> 	 <p>Incorrect balancing or defective tyre</p>	<p>Correctly balance the wheel; if necessary replace both tyres of the affected axle</p>



# 1515

## REPAIR MANUAL

### ● BODY



GROUP 40 - ELECTRICAL SYSTEM



GROUP 43 - INSTRUMENT PANEL AND  
ELECTRONIC INSTRUMENTS



GROUP 49 - BODYWORK



GROUP 55 - DOORS



GROUP 56 - BOOT AND BONNET



GROUP 66 - INTERIOR TRIM



GROUP 75 - EXTERNAL TRIM



GROUP 80 - HEATING AND VENTILATION



## GROUP 40

## ELECTRICAL SYSTEM

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 • (Chapter not available at time of publication)



# technical bulletin

# 40

### INFORMATION

MODELS/IDENTIFICATION N. 155 - (All types)	SERIAL NUMBER	93-02	FUNCT. CORR/COMP
	DISTRIBUTION CODE	E-est	

## ELECTRICAL SYSTEM

### Heated electric seats

To complete the information given in the "REPAIR MANUAL - GROUP 40 - ELECTRICAL SYSTEM" the following is the updating which supercedes the previous edition of 07/1991.

REMARK	PAGE
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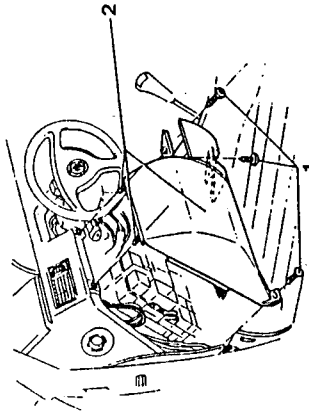
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The fuses pertaining to the devices fitted as optionals are contained within an auxiliary fusebox located under the dashboard to the left of the main fusebox. To gain access it is necessary to remove the cover as follows:

1. Loosen the three screws securing the cover to the stanchion.
  2. Detach the buttons and remove the cover by freeing it from the clips.
- Before refitting the cover ensure that the anti-friction pads have been correctly fitted in order to prevent squeaking.



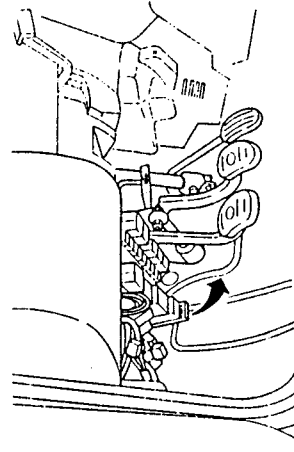
### FUSES

To facilitate location these have been grouped in the following housings:

- in the passenger compartment in the main fusebox;
- in the passenger compartment, in an auxiliary fusebox;
- in the engine compartment.

### LOCATION AND ACCESS WITHIN THE PASSENGER COMPARTMENT

The fuses pertaining to the main devices are arranged in the main fusebox which is located under the dashboard to the left of the steering column. To gain access to the fusebox, pull the lever marked "FUSE" downwards so that the fusebox can easily be reached.



## ELECTRICAL SYSTEM

### STANDARDS AND PRECAUTIONS

#### CAUTION

Read the STANDARDS AND PRECAUTIONS section before removing or refitting the components of the electrical system.



Before beginning work ensure that the ignition key is at the "parking" position and that the earth cable of the battery has been disconnected and:

- avoid connecting the control unit outputs directly to the power supply;
- avoid working on devices when cables are connected to "positive" or earth without having previously disconnected the control units;
- avoid short-circuiting the sensors unless otherwise specified;
- before carrying out electrical welding, disconnect the control units in order to avoid damaging the electrical components by induced current.

#### WARNING

Calculate the possible outcome of any interventions and avoid working on components when the characteristics are not perfectly understood.

When reassembling and/or refitting, reverse the procedures given for disassembly and/or removing unless otherwise specified and reconnect the battery.

Components of the electrical system should only be substituted with genuine Alfa Romeo spare parts. Using non-specified spares with slightly different characteristics may affect the operational reliability and safety of the vehicle.

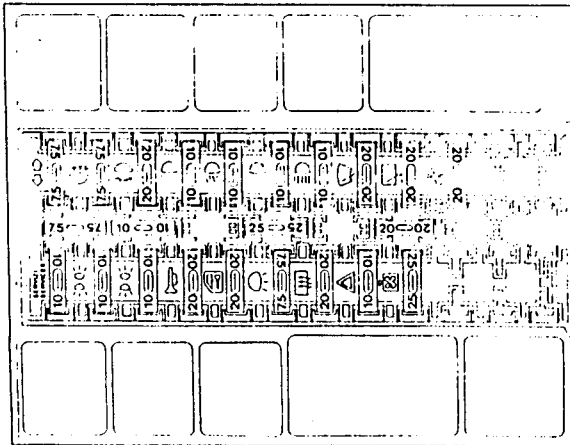
Never touch the halogen light bulbs. When replacing handle by the metal parts only.



**LOCATION WITHIN THE MAIN FUSEBOX**

Some electromechanical devices, timers and flasher units\* have been installed in the main fusebox. For information regarding these, refer to the relative paragraph.

The ideograms representing the electrical component protected by the fuse are stamped onto the fuse itself. In the centre of the fusebox, in a vertical position in relation to the installed fuses, are four spare fuses.



**List of fuses**

**SERVICES**

(10 A) Power supply for instrument panel, wipers/headlight washer pump, reversing lights.



(10 A) Dashboard lighting, rear left-hand sidelight, left-hand numberplate light, front right-hand sidelight.



(10 A) Dashboard lighting, rear right-hand sidelight, right-hand numberplate light, front left-hand sidelight.



(20 A) Horns, cigar lighter, stoplights.



(20 A) Door locking system.



(7.5 A) Internal lights, clock.



(20 A) Heated rear window and relative warming lamp, door mirror defroster device.



(10 A) Hazard warning lights.



(25 A) Electric fan for radiator cooling.



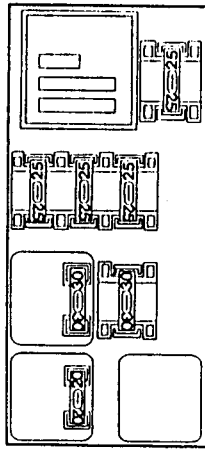
(7.5 A) Direction indicators, adjustment of electric door mirrors.



**LOCATION IN THE AUXILIARY FUSEBOX**

Some electromechanical devices and timers are located in the auxiliary fusebox. Information regarding these can be found in the relative paragraph.

To identify the fuse, refer to the colour of the base, given in brackets in the key.



Fuse 20 A (black) Headlight washer intermittence.

Fuse 25 A (brown) Passenger side power window.

Fuse 25 A (white) Front power window.

Fuse 10 A (red) ABS.

Fuse 25 A (blue) Rear power windows.

Fuse 30 A (green) Electric seat adjustment.

(7.5 A) Rear foglights and relative warning lamp



(20 A) Front foglights and relative warning lamp



(10 A) Right-hand dipped-beam headlight.



(10 A) Left-hand dipped-beam headlight.



(10 A) Left-hand main-beam headlight and warming lamp.



(10 A) Right-hand main-beam headlight.



(20 A) Windscreen wiper.



(20 A) Rear-windscreen wiper.



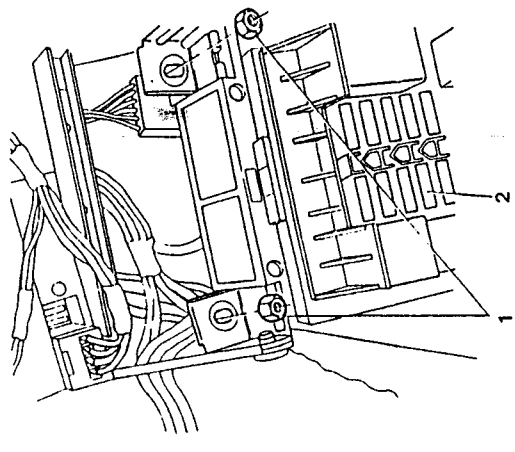
(20 A) Electric passenger compartment fan-heater.



**REMOVAL AND REFITTING OF MAIN FUSEBOX**

**Removal**

1. Loosen the two nuts securing the brackets to the chassis.
2. Remove the fusebox.



**Refitting**

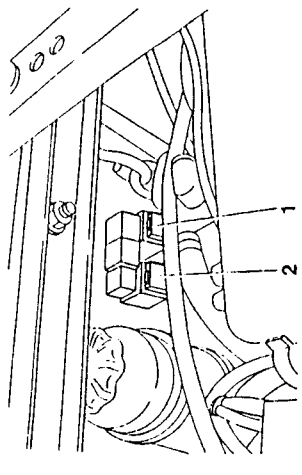


To refit, reverse the procedure followed for removal.

**2.4 V6 model**

The following fuses are located in a box located on the rear wall of the engine compartment next to the tank:

1. Fuse for Lambda probe (for vehicles equipped with catalytic converter).
2. Fuse for fuel pump.

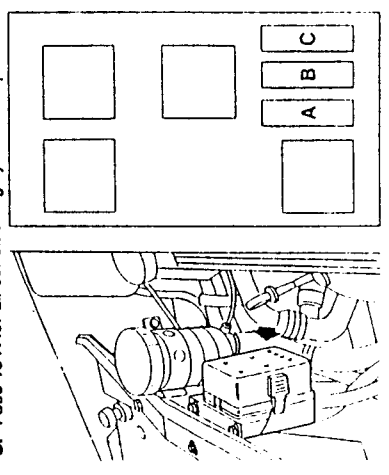


**HEATING-VENTILATION SYSTEM**

For vehicles equipped with a heating-ventilation system, the fuses relating to the specific parts are housed in a container located on the front wall of the engine compartment. To remove the cover from the container, pull on the cover at the same time as holding the two lateral tabs down.

Some electromechanical devices and limiters are located in the container. For further information regarding these, refer to the relative paragraph.

- A. Fuse 30 A (blade type) for passenger compartment electric fan.
- B. Fuse 40 A (blade type) for engine cooling liquid radiator electric fan (only for 2.4 V6 model).
- C. Fuse 15 A for air conditioning system compressor.



**LOCATION IN ENGINE COMPARTMENT**

The fuses relevant to the following systems are located in the engine compartment:

- Ignition and injection system.
- Heating-ventilation system.
- Heating-ventilation control unit and radiator cooling fan.

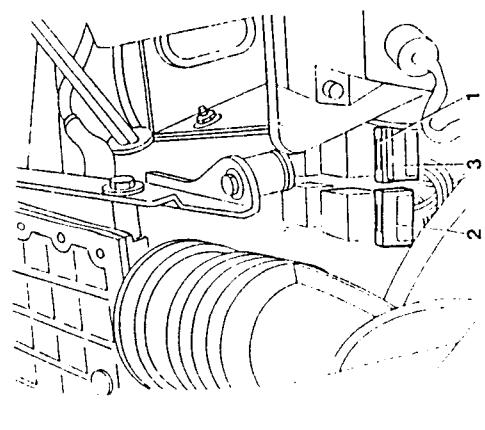
**INJECTION AND IGNITION SYSTEM**

Depending on the model the fuses relative to the injection-ignition system are arranged as follows:

**1.8 - 2.0 TS Model**

The following fuses are housed on a bracket located between the battery and the air-flow meter.

1. Fuse for control unit power supply.
2. Fuse for lambda probe (for vehicles equipped with catalytic converter).
3. Fuse for fuel pump.





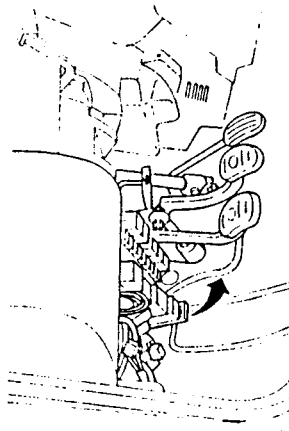
### ELECTROMECHANICAL DEVICES, TIMERS AND FLASHER UNITS

To facilitate location, most of these have been installed in the following housings:

- in the passenger compartment in the main fusebox;
- in the passenger compartment, in the auxiliary fuse box;
- in the engine compartment.

#### LOCATION AND ACCESS IN THE PASSENGER COMPARTMENT

The protection and control relays of the main users are arranged in the main fusebox located under the dashboard to the left of the steering column. To gain access, pull the lever marked "FUSE" downwards so that the box can be reached easily.

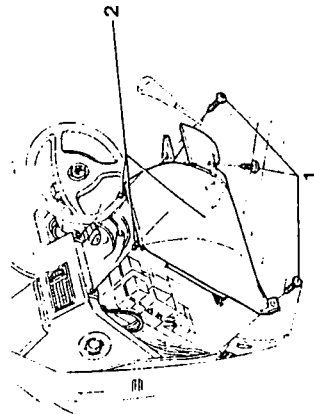


The control relays regarding the normal users and particular users supplied as an optional, are housed in the auxiliary fusebox located under the dashboard to the left of the main fusebox.

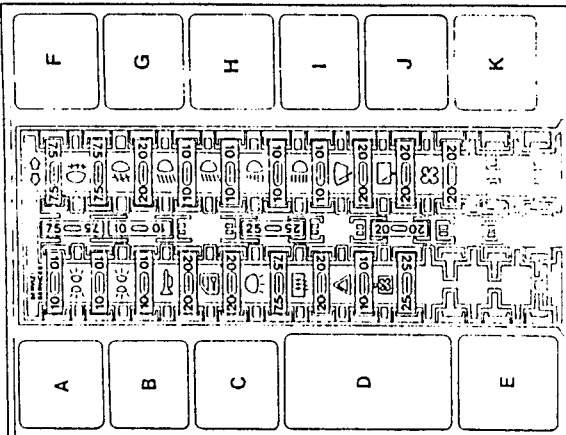
To gain access it is necessary to remove the cover as follows:

1. Loosen the three screws securing the cover to the stanchion.
2. Detach the buttons and remove the cover by freeing it from the clips.

Before refitting the cover ensure that the anti-friction pads have been correctly fitted in order to prevent squeaking.



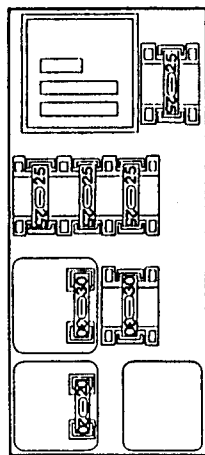
### LOCATION IN MAIN FUSEBOX



- A - Intermittence
- B - Sidelights
- C - Horns
- D - Door locking system control unit
- E - Timer for heated rear window
- F - Direction indicators - hazard warning lights
- G - Rear foglights
- H - Front foglights
- I - Dipped-beam headlights
- J - Main-beam headlights
- K - Starting services cut-off

### LOCATION IN AUXILIARY FUSEBOX

To identify each component refer to the colour on the base of the fuse given in brackets in the key.



Timer for headlight washer (black).

Relay for radiator fan (only for TS model) (green).

Relay with 30 A fuse (red) for boot release.

Relay with 20 A fuse (brown) for controlled damping suspension.

Relay with 30 A fuse (white) for sunroof.



**LOCATION AND ACCESS IN ENGINE COMPARTMENT**

The relays relative to the following systems are contained in the engine compartment:

- Injection and ignition system.
- Heating-ventilation system.
- Heating-ventilation system control unit and radiator fan.

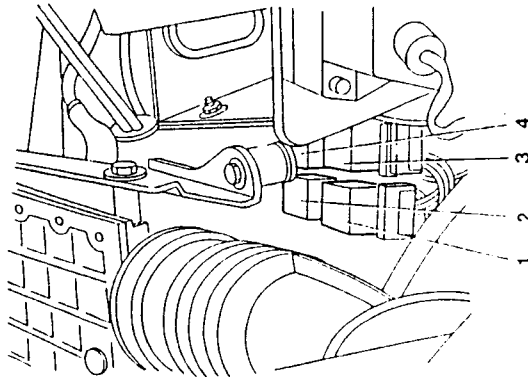
**INJECTION AND IGNITION SYSTEM**

Depending on the model, the relays relative to the injection and ignition system are arranged as follows:

**1.8 - 2.0 TS model**

The following relays are housed on a bracket located between the battery and the air-flow meter:

1. Fuel pump relay.
2. Main relay.
3. Timing variator relay.
4. Relay for services.



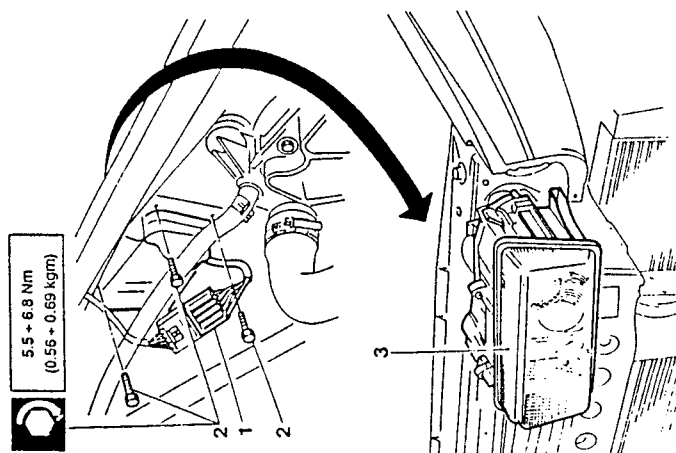
**EXTERNAL LIGHTING**

**FRONT HEADLIGHT**

**Removal**

- Remove the front direction indicator (see: FRONT DIRECTION INDICATOR).

1. Disconnect the headlight power supply connector.
2. Loosen the three screws securing the headlight to the headlight support crossmember.
3. Remove the headlight by withdrawing the centering pins from their seats.



**Refitting**



To refit, reverse the procedure followed for removal.

**Supplementary indications for refitting**

- For components and/or parts dealt with in other parts of this or other groups, refer to the relative warnings and procedures regarding refitting (see: FRONT DIRECTION INDICATOR).
- Before reconnecting the electrical connector, check that the cables have been correctly inserted.
- When refitting, tighten the screws to the correct torque.

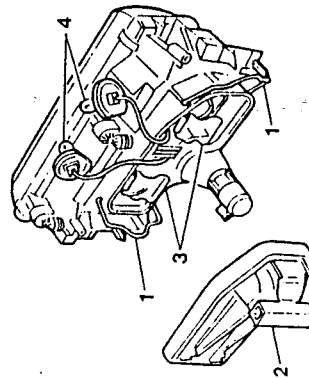
**REPLACING BULB OF FRONT HEADLIGHT**

1. Working from the engine compartment unhook the rear protection mountings.
2. Remove the rear protection.
3. Free the spring securing the bulb-holder and remove the bulb-holder.
4. Withdraw the bulb.

- Fit a new bulb and install by reversing the order followed for removal. Check that the electrical cables are correctly inserted in their connectors.



**WARNING**  
Never touch the glass of the headlight bulbs. If touched, clean with methylated spirit.

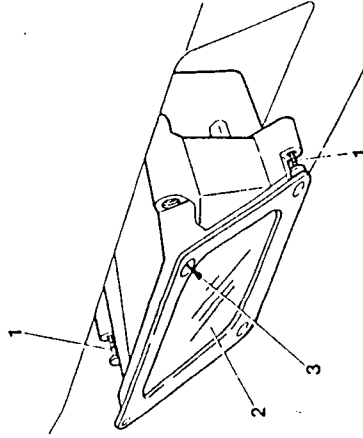




**FRONT FOGLIGHT UNIT**

**Removal**

1. Loosen the two retaining screws.
2. Remove the headlight and disconnect the electrical connectors.
3. To adjust the direction of the beam, act on the adjustment screw.



**Refitting**



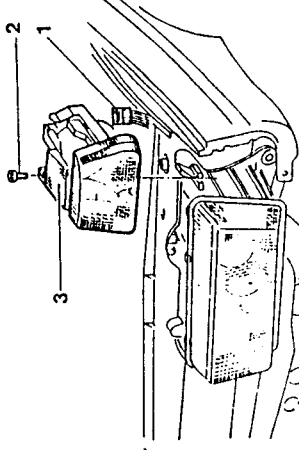
To refit, reverse the procedure followed for removal.



**FRONT DIRECTION INDICATOR**

**Removal**

1. Disconnect the indicator power supply connector.
2. Loosen the screw securing the front direction indicator.
3. Remove the indicator by acting on the relevant lever.



**Refitting**



To refit, reverse the procedure followed for removal.

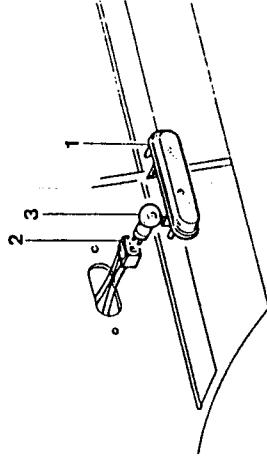
**Supplementary indications for refitting**

- Before reconnecting the electrical connectors check that the cables are fitted in correctly.

**SIDE DIRECTION INDICATORS**

**Removal**

1. Remove the side direction indicator from the front bumper by pressing downwards and pulling outwards.
2. Withdraw the bulb-holder from the direction indicator.
3. Withdraw the bulb by pulling on the glass.



**Refitting**

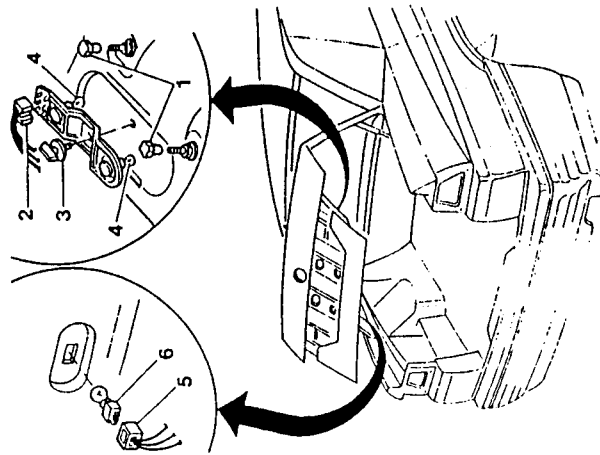


To refit, reverse the procedure followed for removal.

**REPLACING BULBS OF REAR LIGHT ASSEMBLY AND NUMBERPLATE HOLDER.**

Working from the inside of the luggage compartment lid, proceed as follows:

- Reversing light and rear foglight bulbs.
- 1. Loosen the two plastic nuts of the boot lid trim and lift it to gain access to the bulb-holders.
- 2. Disconnect the bulb-holder power supply connection.
- 3. Loosen the plastic fitting of the bulb-holder and remove the bulb-holder.
- 4. Withdraw the bulb.
- 5. Fit a new bulb and install by reversing the procedure followed for removal. Check that the electrical cables are correctly inserted in the power supply connector.
- Numberplate holder bulb.
- 5. Withdraw the bulb-holder from its seating.
- 6. Substitute the bulb and fit the bulb-holder back into its seating.

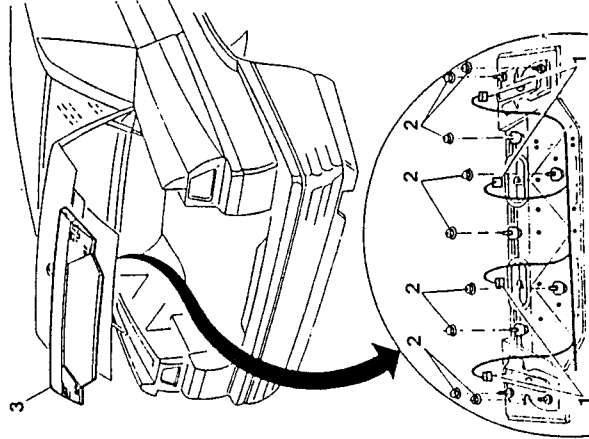


**REAR LIGHT ASSEMBLY WITH NUMBERPLATE HOLDER**

**Removal**

Operating from within the luggage compartment lid proceed as follows:

- Remove the boot lid trim (see GROUP 66 - BOOT LID TRIM).
- 1. Disconnect the four rear light assembly power supply connectors.
- 2. Loosen the nine nuts securing the rear light assembly to the boot lid.
- 3. Remove the rear light assembly.



**Refitting**

To refit, reverse the procedure followed for removal.

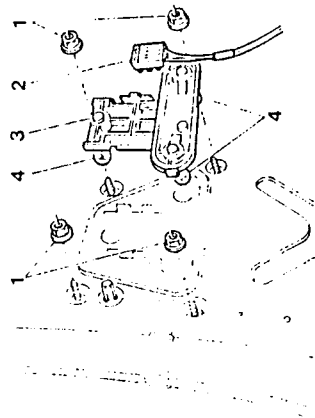
**Supplementary indications for refitting**

- Before reconnecting the electrical connectors check that the cables are correctly inserted in them.

**REPLACING BULBS OF REAR LIGHT ASSEMBLY**

1. Loosen the two plastic nuts of the luggage compartment inner rear trim and lift the trim to gain access to the bulb-holder unit.

- 2. Disconnect the rear light unit power supply connector.
  - 3. Unhook and remove the bulb-holder unit.
  - 4. Withdraw the bulb.
- Fit a new bulb and reinstall by reversing the procedure followed for removal. Check that the electrical cables are correctly fitted into the power supply connector.

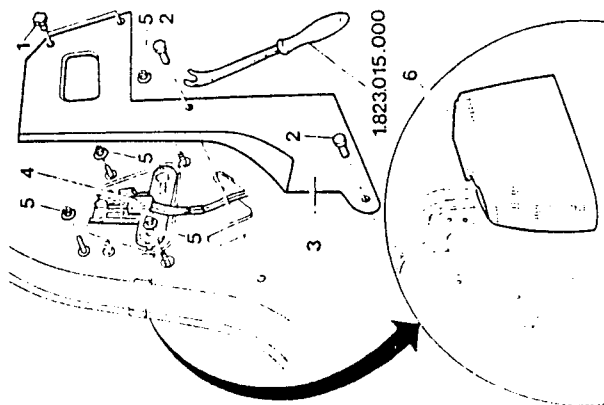


**REAR LIGHT ASSEMBLIES**

**Removal**

Working from inside the luggage compartment, proceed as follows:

- 1. Loosen the two plastic nuts of the luggage compartment rear interior trim.
- 2. Using tool No. 1.823.015.000, disconnect the plastic button of the luggage compartment rear interior trim.
- 3. Remove the luggage compartment rear interior trim.
- 4. Disconnect the rear light unit power supply connector.
- 5. Loosen the four nuts securing the rear light assembly.
- 6. Remove the rear light assembly.



**Refitting**

To refit, reverse the procedure followed for removal.

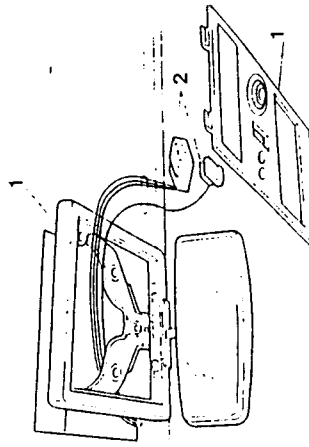
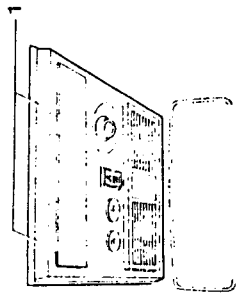


### INTERNAL LIGHTING

#### FRONT CENTRAL ROOF LIGHT

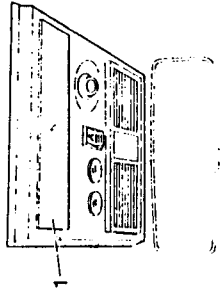
Removal and substitution of light diffuser bulb.

1. Detach the front central roof lamp from the moulding by applying leverage to the slots on the front or rear sides (not laterally).
2. Disconnect the bulb power supply connector and if present, the sunroof control switch connector.

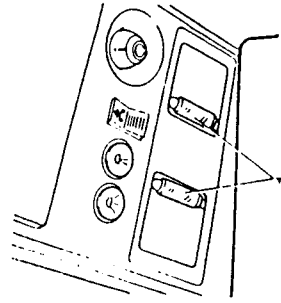


### REPLACING LIGHT DIFFUSOR BULB, FRONT CENTRAL ROOF LIGHT FOR VEHICLES EQUIPPED WITH SUNROOF

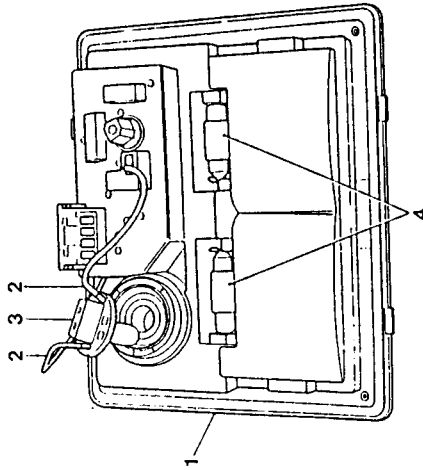
1. Remove the clear plastic from the roof light by applying leverage to one of the two lateral slots.



1. Remove the cylindrical-type bulb by pulling it outwards and freeing it from the lateral contacts. Insert a new bulb ensuring that that are correctly positioned and firmly fixed between the two contacts. Refit the clear plastic strip by pacing it in the correct position on one side and then pressing down the other until the retaining tabs click home.



1. Turn the roof light over.
2. Disconnect the two reading lamp bulb power supply cables.
3. Remove the reading lamp bulb-holder from its seat in the roof light by rotating it anti-clockwise. The all-glass bulb is held in the bulb-holder by pressure.
4. Withdraw the two tubular bulbs by pulling them outwards and freeing them from the lateral contacts.



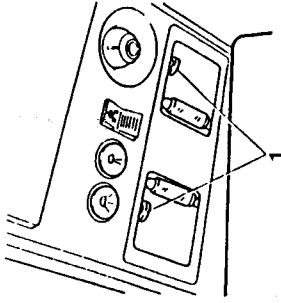
#### Refitting



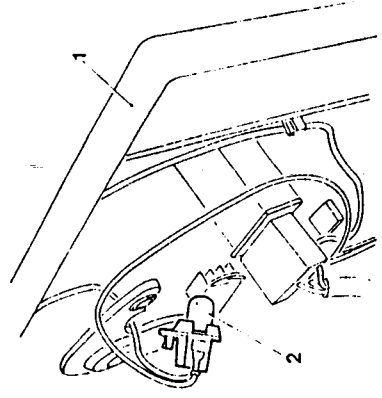
- Insert the two tube-type bulbs ensuring that they are correctly positioned and are locked between the contacts.
- Insert the all-glass spotlight bulb in the bulb-holder.
- Insert the bulb-holder and keeping it pushed against its seating, rotate it clockwise.
- Reinstall the roof light ensuring that the electrical cables are arranged correctly and are not pinched. Adjust the roof light to the correct position and press until the retaining tabs click home.

### REPLACING THE BULB OF THE READING LAMP

1. To substitute the bulb of the spotlight, detach the complete roof light by unscrewing the two screws located underneath the clear plastic strip.



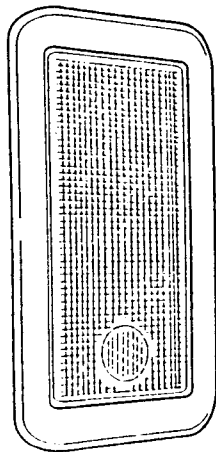
1. Turn the roof light over. Withdraw the bulb-holder by rotating it anticlockwise and removing it from its sealing.
2. The all-glass bulb is held in by pressure and should be removed by pulling on it. Insert a new bulb and install the bulb-holder keeping it pressed against its seating and rotating it clockwise. Refit the complete roof light and secure it by tightening the two screws. Ensure that the electrical cables are arranged correctly and do not get trapped between the edges of the roof light or by the screws. Refit the clear plastic strip placing it in the correct position on one side and pushing on the other until the retaining tabs click home.





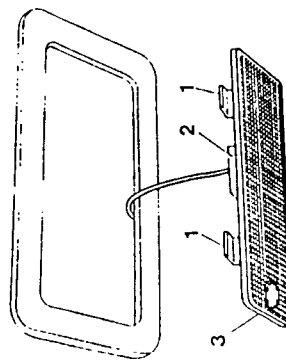
**REAR CENTRAL ROOF LIGHT**

The rear lighting is composed of a central roof light which comes on automatically for a pre-set time when any of the doors are opened.  
The roof light can be switched on and off manually by pressing the circular imprint on the clear plastic strip.



**Removal**

1. Using a thin-bladed screwdriver with a maximum thickness of 2 mm, press on the retaining tabs and detach the complete unit.
2. Disconnect the electrical connectors.
3. Remove the roof light.



**Refitting**

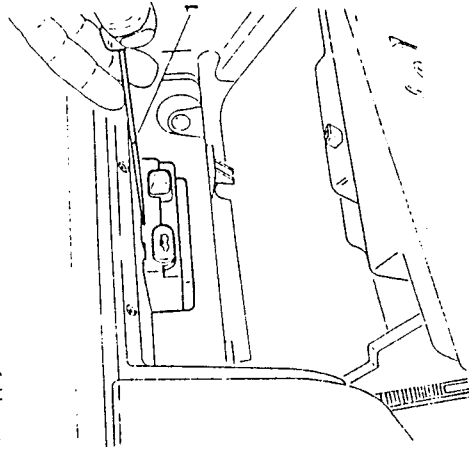
To refit, reverse the procedure followed for removal.



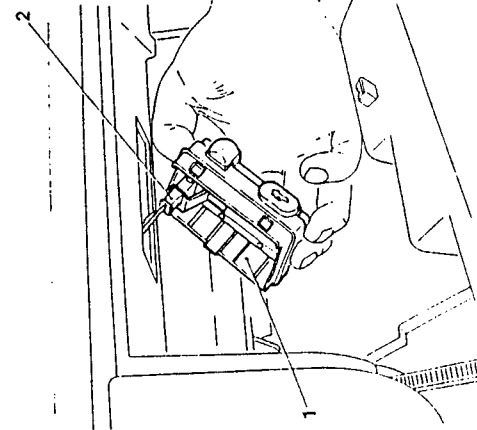
**GLOVEBOX LIGHT AND SWITCH**

**Removal**

1. Apply leverage with a thin bladed screwdriver.



1. Remove the light unit from its seating.
2. Disconnect the electrical connector.



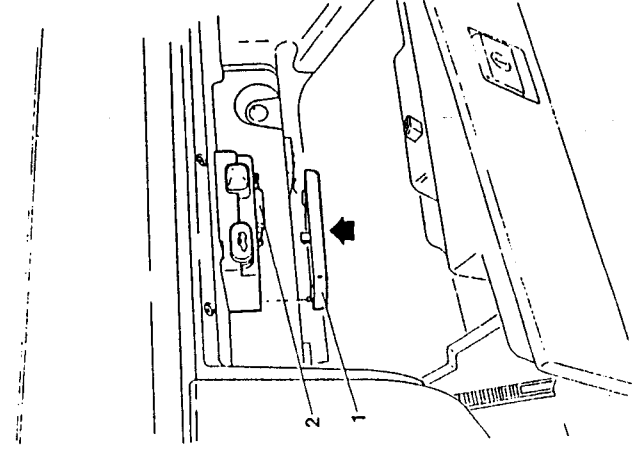
**Refitting**

To refit, reverse the procedure followed for removal.



**REPLACING THE BULB OF THE GLOVEBOX LIGHT**

1. Remove the clear plastic strip by exerting a light pressure on the front and rotating it downwards.
2. Remove the tubular-type bulb by pulling it outwards and freeing it from the contacts.  
Insert a new bulb and check that it is correctly positioned and fixed firmly in place.  
Refit the clear plastic strip by first inserting the rear edge and then pressing on the front edge until the retaining tabs click home.

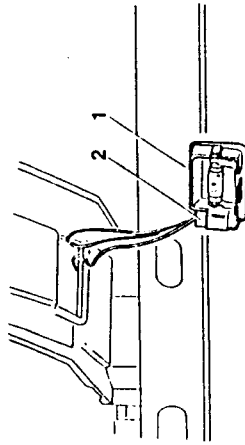




LUGGAGE COMPARTMENT LIGHT

Removal

1. From behind, press on the light unit located on the central part of the luggage compartment.
2. Disconnect the connector and remove the light unit.



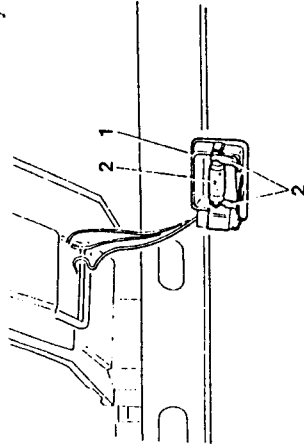
Refitting



To refit, reverse the procedure followed for removal.

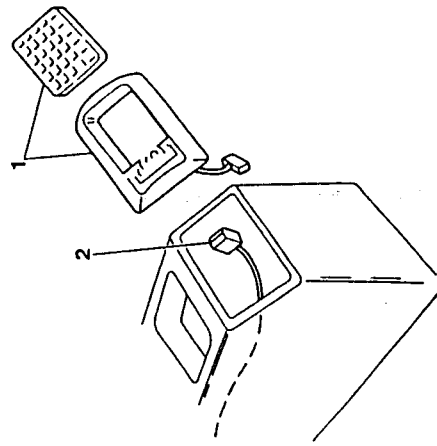
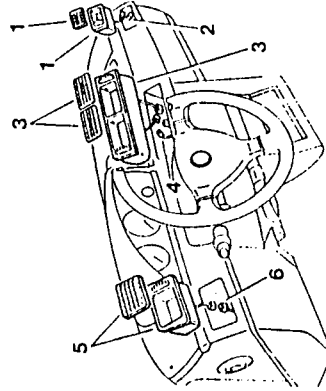
REPLACING THE BULB OF THE LUGGAGE COMPARTMENT LIGHT

1. Remove the clear plastic strip by applying leverage to the slot on the right-hand side.
  2. Remove the tubular bulb by pulling it outwards from the contacts.  
Insert a new bulb checking that it is correctly positioned and firmly fixed.
- Refit the clear plastic strip by pressing it into its sealing.



REPLACING BULBS ON RIGHT, LEFT, CENTRAL AND TUNNEL AIR VENTS

1. Apply leverage with a screwdriver to remove the right-hand air vent and grill.
2. Disconnect the connector and substitute the bulb.
3. Apply leverage with a screwdriver to remove the central air vent and grill.
4. Disconnect the connectors and substitute the bulbs.
5. Apply leverage with a screwdriver to remove the left-hand air vent and grill.
6. Disconnect the connector and substitute the bulb.

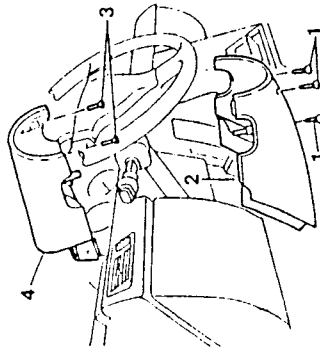


1. Apply leverage to remove the tunnel air vent and grill.
2. Disconnect the connector and substitute the bulb.



REPLACING THE BULB LIGHTING THE IGNITION SWITCH

1. Unscrew the three screws securing the lower steering column cover.
2. Remove the lower steering column cover.
3. Loosen the two screws securing the upper steering column cover.
4. Remove the upper steering column cover.



1. Acting on the tabs, remove the bulb-holder diffuser.
2. Disconnect the connector and replace the bulb.

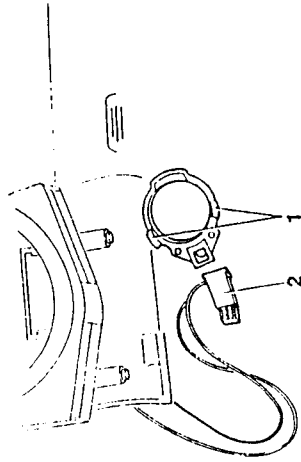
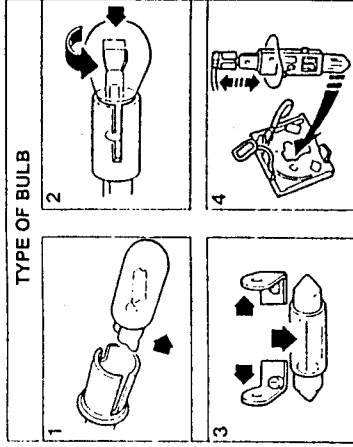


TABLE OF LIGHTING SYSTEM BULBS

SERVICE	ELECTRICAL POWER (W)	TYPE
MAIN-BEAM HEADLIGHT	55	4
DIPPED-BEAM HEADLIGHT	55	4
FRONT SIDELIGHT	5	1
FRONT DIRECTION INDICATOR	21	2
SIDE DIRECTION INDICATOR	5	1
REAR DIRECTION INDICATOR	21	2
STOPLIGHTS/SIDELIGHTS	21/5	2
EAR SIDELIGHTS	5	2
REVERSING LIGHT	21	2
REAR FOGLIGHT	21	2
ROOF LIGHTS	10	3
NUMBERPLATE LIGHT	5	1
FRONT FOGLIGHT	55	4
READING LAMP	5	1



Name	Type	Method of removing from bulb-holders
All-glass bulbs	1	These are held by pressure. Pull to release.
Bayonet-type bulbs	2	Press the bulb, rotate it anticlockwise and remove.
Cylindrical bulbs	3	Free them from the contacts.
Halogen bulbs	4	Release the retaining clip.



**WARNING**  
Replace the bulbs with others of the same characteristics.

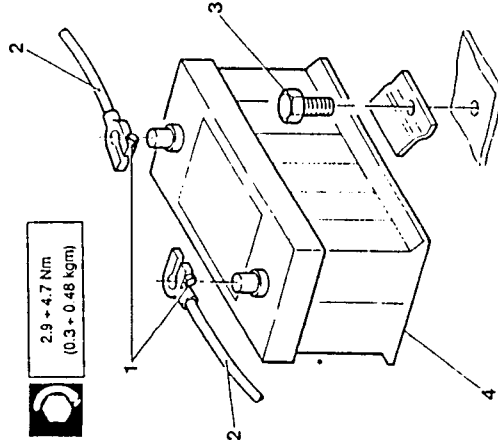
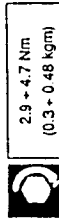


### ELECTRIC MOTORS AND BATTERY

#### BATTERY

##### Removal

1. Loosen the nuts securing the power supply cables.
2. Free the two power supply cables from the clamps.
3. Loosen the screw on the plate securing the battery to the support in the engine compartment.
4. Remove the battery.



##### Refitting

To refit, reverse the procedure followed for removal.



##### Supplementary indications for refitting

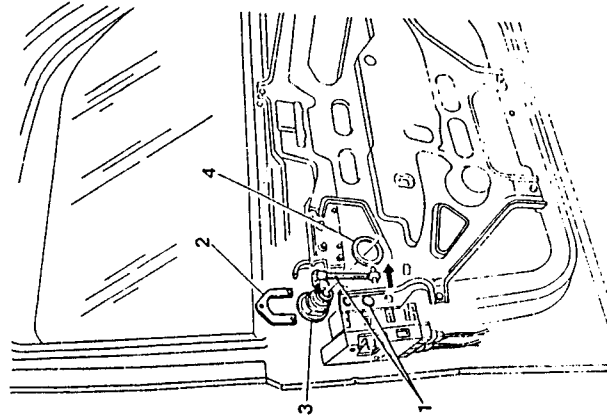
- Tighten the nuts to the correct torque.



#### LOCKS

##### Removal

- Remove the door panel (see: GROUP 55) and laterally remove the cellophane.
1. Disconnect the lock lever from the lock device. Using a screwdriver as a lever withdraw the lock retaining clip.
  3. Remove the lock from the outside of the door.
  4. Remove the catch ring-nut from the inside of the door.



##### Refitting



To refit, reverse the procedure followed for removal

##### Supplementary indications for refitting

- for components and/or parts dealt with in other pages of this or other groups, refer to the relevant warnings and procedures.





WINDOW AND RAISING DEVICE

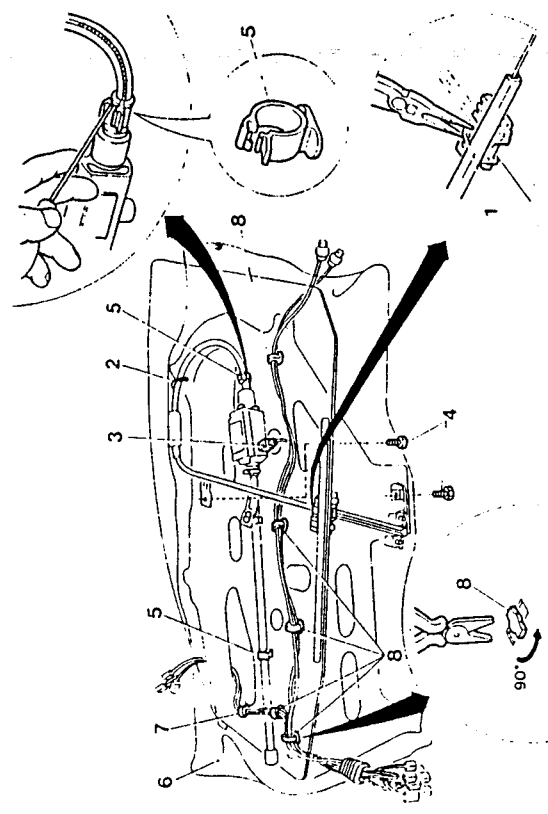
Removal

- Remove the door panel (see: GROUP 55) and laterally remove the cellophane.
- Remove the door frame (see: GROUP 49) and place on a bench.
- 1. Disconnect the window from the frame by acting on the button fixing it to the support using a pair of pliers.
- 2. Cut the clamp holding the window raising device to the frame.
- 3. Disconnect the window raising motor supply connector.
- 4. Loosen the two screws securing window raising device to the frame.
- 5. Using a screw driver, free the two supports and separate the window raising device from the frame.
- 6. Remove the cellophane protection.
- 7. Cut the clamp securing the the wiring to the frame.
- 8. Free the five clamps securing the wiring to the door frame by rotating them through 90°.

Refitting



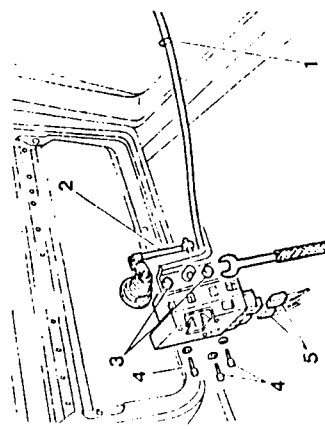
To refit, reverse the procedure followed for removal.



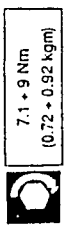
LOCKING DEVICE

Removal

- Remove the door panel (see: GROUP 55) and laterally remove the cellophane.
- 1. Cut the clamp securing the lock control rod to the frame.
- 2. Disconnect the lock rod from the lock.
- 3. Using tool No. 1.823.015.000 remove the two buttons connecting the lock device to the frame.
- 4. Loosen the three screws securing the lock device to the door and remove them together with their washers.
- 5. Disconnect the two door opening and Check Panel wiring connectors from the lock device and remove the lock device together with the rod.



1.823.015.000



7.1 ± 9 Nm  
(0.72 ± 0.92 kgm)

Refitting



To refit, reverse the procedure followed for removal

Supplementary Indications for refitting

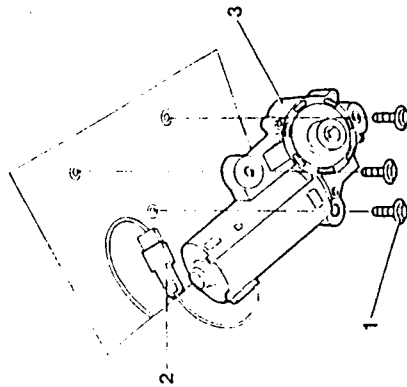
- Before reconnecting the electrical connectors, check that the cables are correctly fitted into them.
- Before installing the panel check that the buttons are not damaged.
- Tighten the screws to the correct torque.
- If necessary after refitting adjust the lock device on the door pillar.

**SUNROOF MOTOR**

**Removal**

- After removing the front central roof light perform the following operations in order:

1. Loosen the three screws securing the roof to the frame.
2. Disconnect the electrical connector.
3. Remove the motor.



**Refitting**

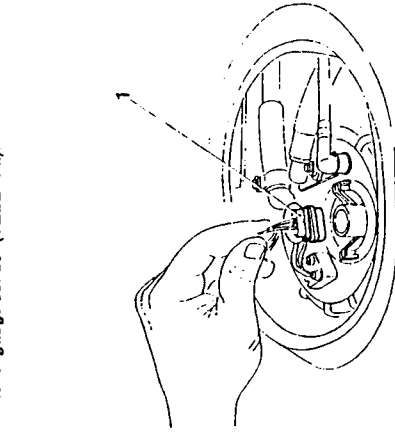


To refit, reverse the procedure followed for removal.

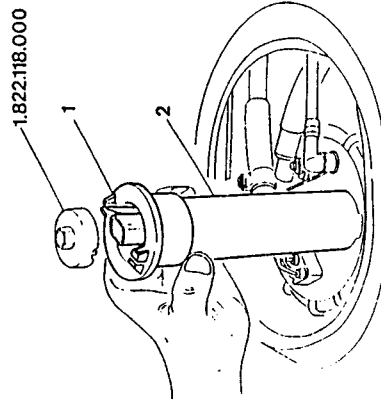
**ELECTRIC FUEL PUMP**

**Removal**

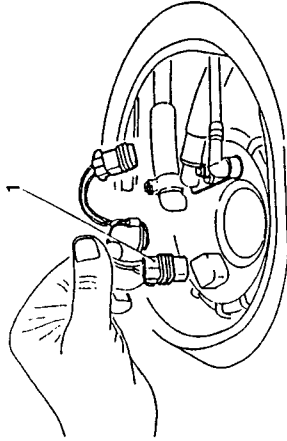
1. Disconnect the electrical connector from the fuel level gauge sender (TELEVEIL).



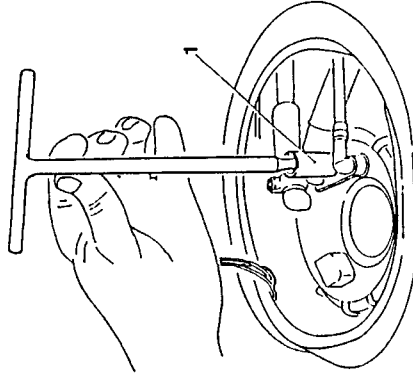
1. Loosen the ring-nut using tool No. 1.822.118.000.
2. Remove the sender.



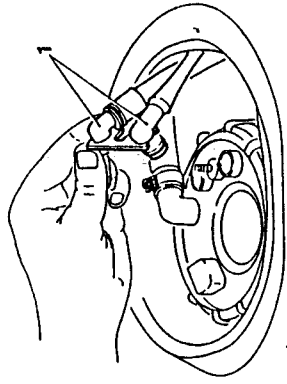
1. Disconnect the connector.



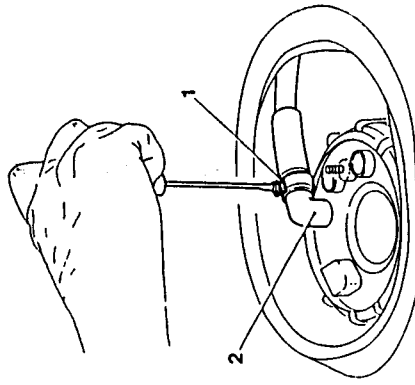
1. Loosen the nut securing the fuel tank delivery and return hoses clip.



1. Remove the hoses.

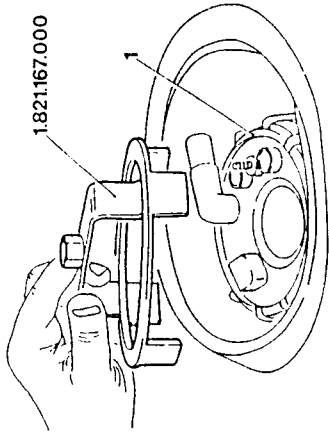


1. Loosen the metal clamp securing the breather pipe.
2. Remove the pipe.

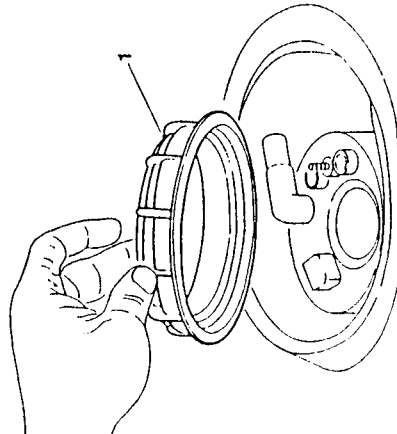




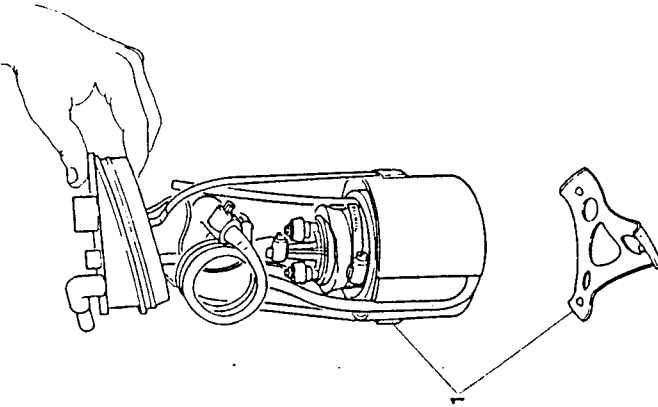
1. Loosen the ring-nut securing the pump using tool No. 1.821.167.000 and a 19 mm spanner.



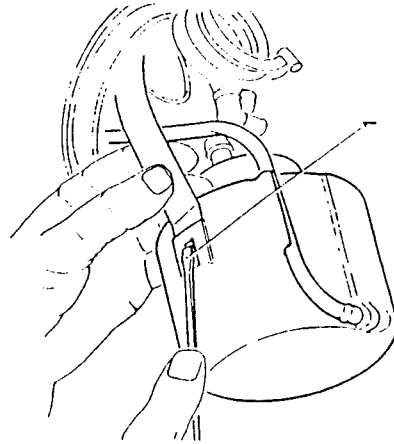
1. Remove the ring-nut.



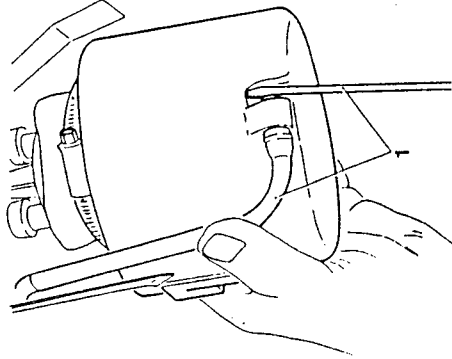
1. Remove the electric pump and rubber gasket.



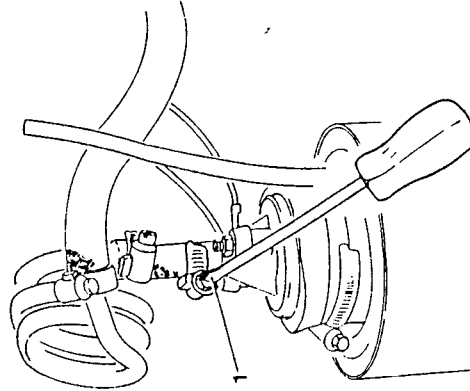
1. Free the container housing the pump from the metal levers by pressing on the retaining clips with a screwdriver.



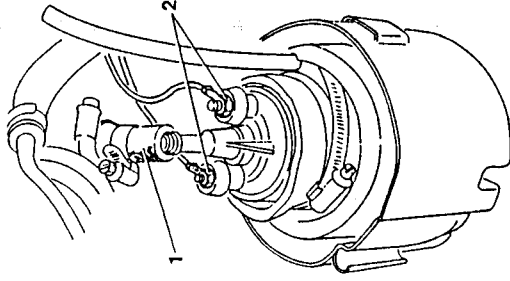
1. Remove the pump return hose by using a screwdriver as a lever.



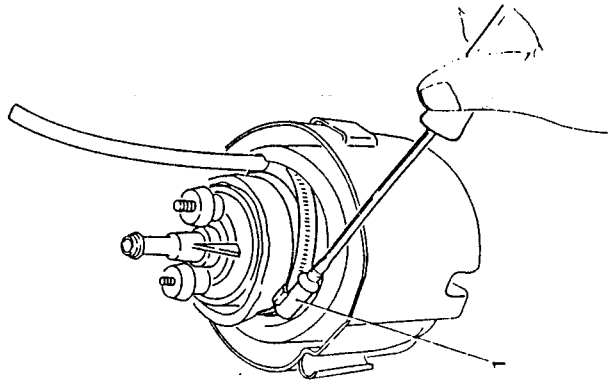
1. Loosen the metal clamp securing the pump delivery hose.



1. Remove the pump delivery hose.
2. Take note of the polarity of the electrical cables, unscrew the two nuts and disconnect the cables.

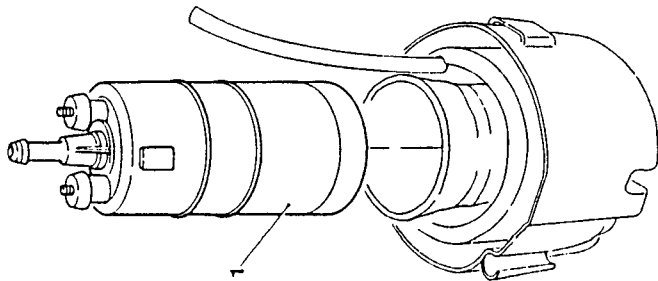


1. Loosen the metal clamp.





1. Remove the pump from the container.



**Refitting**



To refit, reverse the procedure followed for removal.

**Supplementary indications for refitting**

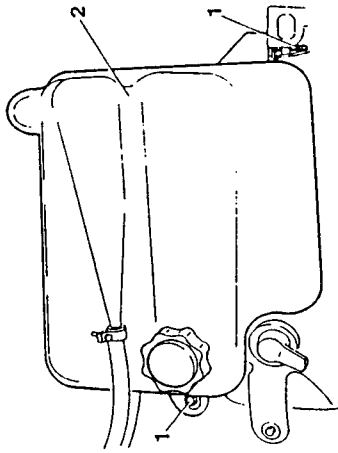
- The two connecting electric cables must be reconnected with the same polarity.



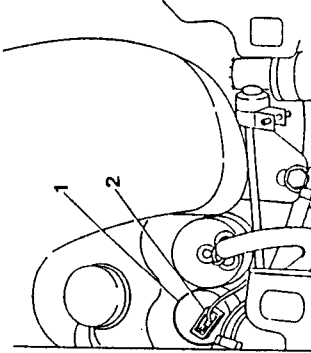
**ELECTRIC WINDSCREEN WASHER PUMP**

**Removal**

1. Loosen the screws securing the engine cooling liquid reservoir.
2. Remove the reservoir.



1. Remove the electric pump from its seating.
2. Disconnect the electrical connector.



**Refitting**



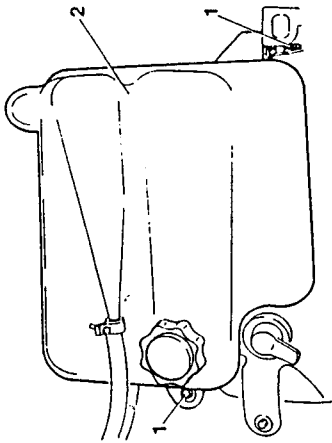
To refit, reverse the procedure followed for removal.



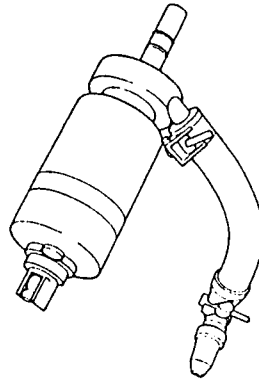
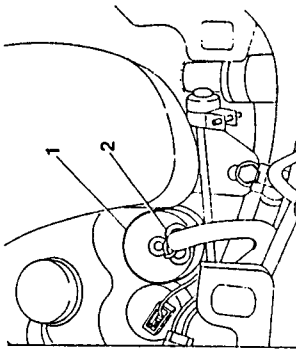
**ELECTRIC HEADLIGHT WASHER PUMP**

**Removal**

1. Loosen the screws securing the engine cooling liquid reservoir.
2. Remove the reservoir.



1. Remove the electric pump from its seating.
2. Disconnect the electrical connector.



**Refitting**



To refit, reverse the procedure followed for removal.

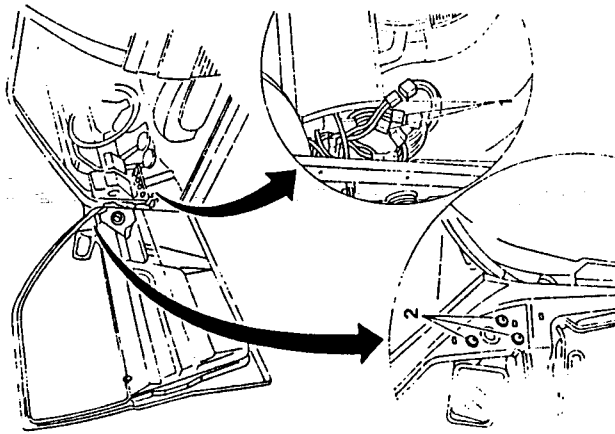


**DOOR MIRROR MOTOR, DOOR MIRROR DEFROSTER, EXTERNAL AIR TEMPERATURE SENSOR**

**Removal**

- If one of the components of a door mirror gets broken, the entire mirror must be replaced.
- Remove the door panel (see: GROUP 55) and laterally detach the cellophane.

  1. Working inside the vehicle, disconnect the connectors from the device located in the mirror (direction, heating and external air temperature sensor).
  - Free the electrical cables of the device working inside the door frame.
  2. Loosen the three screws and remove the mirror.



**Refitting**



To refit, reverse the procedure followed for removal.

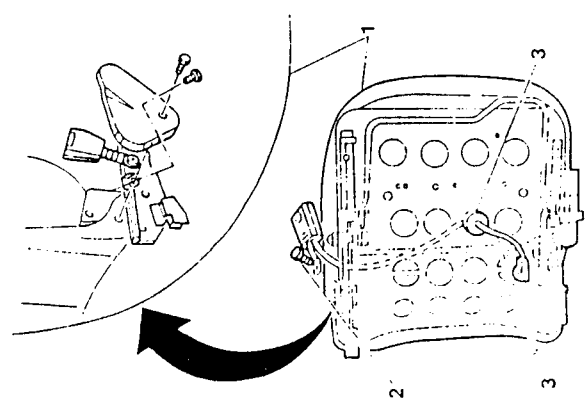




### SENSORS AND SENDERS, ELECTRICAL ACCESSORIES, USERS

#### SEAT BELT SENSOR Removal

- If a sensor gets broken it is necessary to replace the entire block.
- 1. Remove the seat (see: GROUP 66).
- 2. Loosen the retaining screw.
- 3. Disconnect the connector and free the seat cable (see: GROUP 66).



#### Refitting

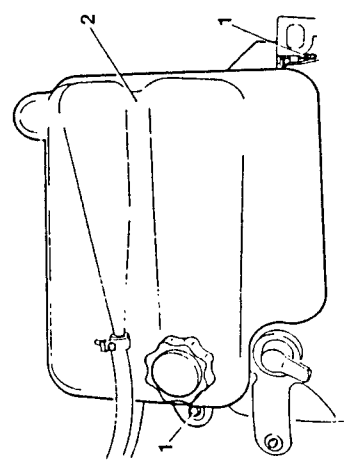


To refit, reverse the procedure followed for removal.

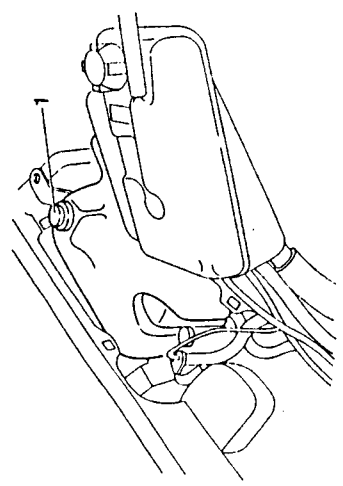


#### WINDSCREEN AND HEADLIGHT WASHER LIQUID LEVEL SENSOR Removal

1. Loosen the four screws securing the engine cooling liquid reservoir.
2. Remove the reservoir.



1. The sensor is installed in the reservoir. Pull upwards to remove.



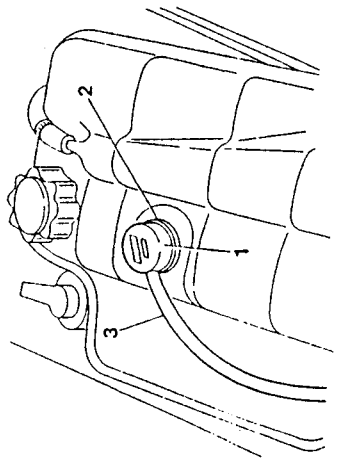
#### Refitting



To refit, reverse the procedure followed for removal.

#### RADIATOR LIQUID LEVEL SENSOR Removal

1. The sensor is fitted on the radiator liquid reservoir.
2. Remove by applying leverage with a screwdriver.
3. Disconnect the connector and remove the sensor.



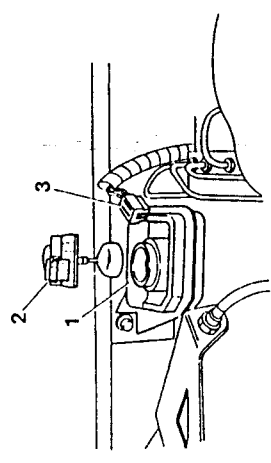
#### Refitting



To refit, reverse the procedure followed for removal.

#### BRAKE-CLUTCH FLUID MINIMUM LEVEL SENSOR Removal

1. Disconnect the connector from the brake-clutch fluid reservoir.
2. Unscrew and remove the sensor.
3. Disconnect the connector.



#### Refitting



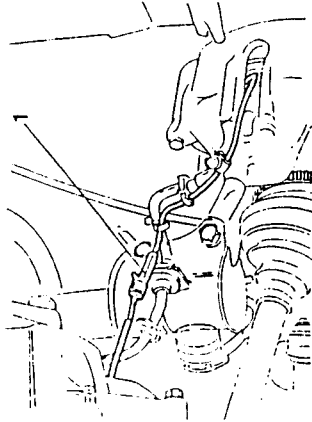
To refit, reverse the procedure followed for removal.



**FRONT LEFT BRAKE PAD SENSOR**

**Removal**

- The sensor is installed inside the brake pad.
- 1. Disconnect the connector and replace the brake pad (see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 22).



**Refitting**

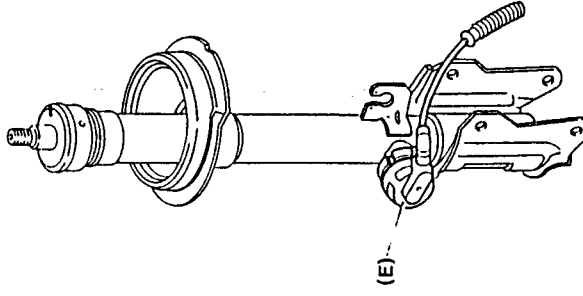


To refit, reverse the procedure followed for removal.

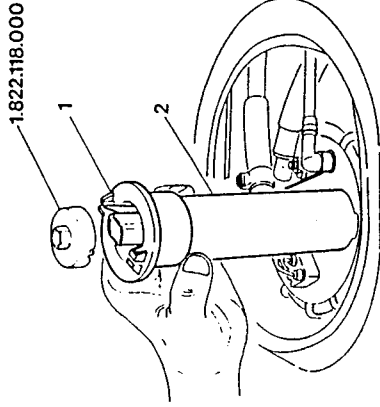


**CONTROLLED DAMPING SUSPENSION SOLENOID VALVES**

- If one of the solenoid valves installed on the shock absorbers is inefficient, (E) replace the entire shock absorber (see: REPAIR INSTRUCTIONS - MECHANICAL UNITS - GROUP 21 and GROUP 25).



1. Loosen the ring-nut using tool No. 1.822.118.000.
2. Remove the sender.



**Refitting**

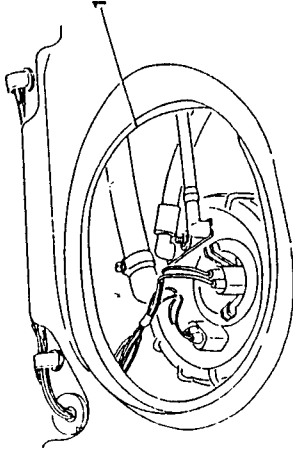


To refit, reverse the procedure followed for removal.

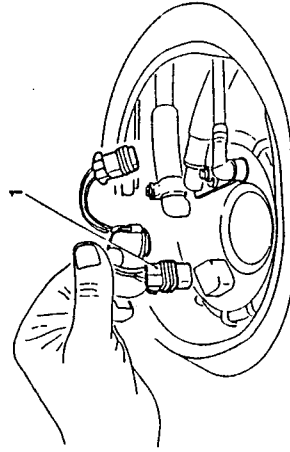
**SENDER FOR FUEL LEVEL GAUGE**

**Removal**

1. Working on the tank from the electric fuel pump side.



1. Disconnect the fuel level gauge sender electrical connector (TELEVEL).

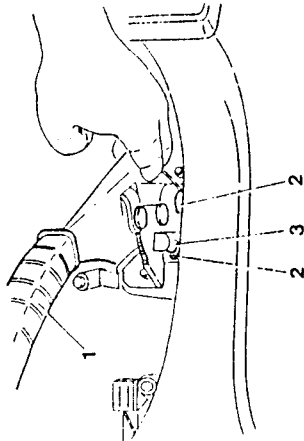




"HANDBRAKE ON" INDICATOR SWITCH

Removal

- Remove the tunnel covering (see: GROUP 66).
- 1. Pull the handbrake on to its maximum position.
- 2. Disconnect the electrical connector and loosen the two screws securing the switch.
- 3. Free the switch from its housing.



Refitting

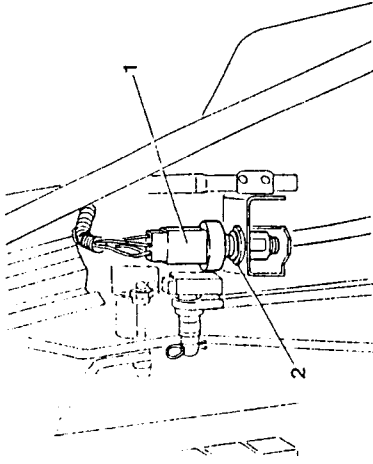


To refit, reverse the procedure followed for removal.

STOPLIGHT SWITCH

Removal

- 1. Disconnect the electrical connector.
- 2. Rotate the switch through 90° anticlockwise and remove it by pulling upwards.



Refitting



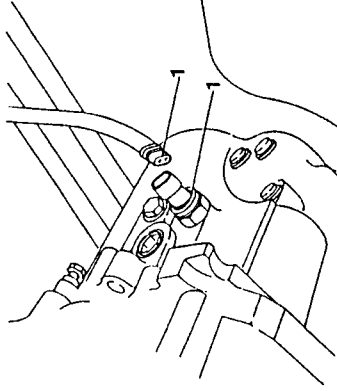
To refit, reverse the procedure followed for removal.



REVERSING LIGHT SWITCH

Removal

- The switch is located on the gearbox and access can only be gained when the vehicle is raised on a lift.
- 1. Disconnect the electrical connector; unscrew and remove the switch.



Refitting

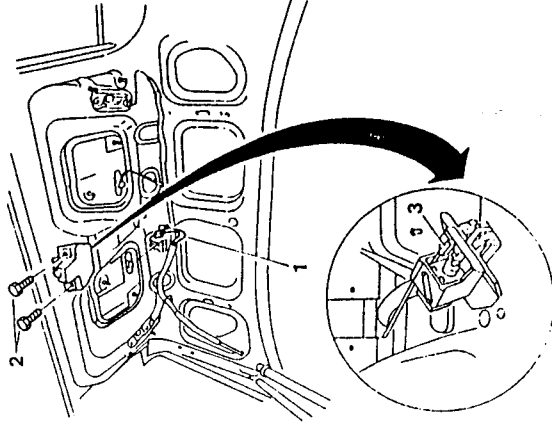


To refit, reverse the procedure followed for removal.

LUGGAGE COMPARTMENT LIGHT SWITCH

Removal

- 1. Disconnect the two electrical connectors located behind luggage compartment light switch.
- 2. Loosen the two boot lid retaining screws.
- 3. Remove the switch.



Refitting



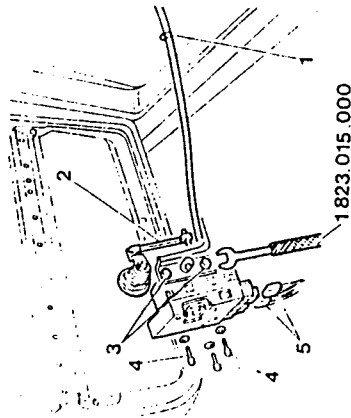
To refit, reverse the procedure followed for removal.




FRONT DOOR OPEN INDICATOR SWITCH

Removal

- If a fault is found in the front door switch the entire lock device must be replaced.
- Remove the door panel (see: GROUP 55) and laterally detach the cellophane.
- 1. Cut the clamp securing the lock control rod to the body.
- 2. Disconnect the lock rod from the lock device.
- 3. Using tool No. 1.823.015.000, remove the two buttons securing the lock device to the body.
- 4. Together with the washers, loosen and remove the three screws securing the lock device to the door.
- 5. Disconnect the two connectors of the door open and Check Panel wiring from the lock device and remove the device together with the rod.



 7.1 ± 9 Nm  
(0.72 ± 0.92 kgm)

Refitting



To refit, reverse the procedure followed for removal.

Supplementary indications for refitting

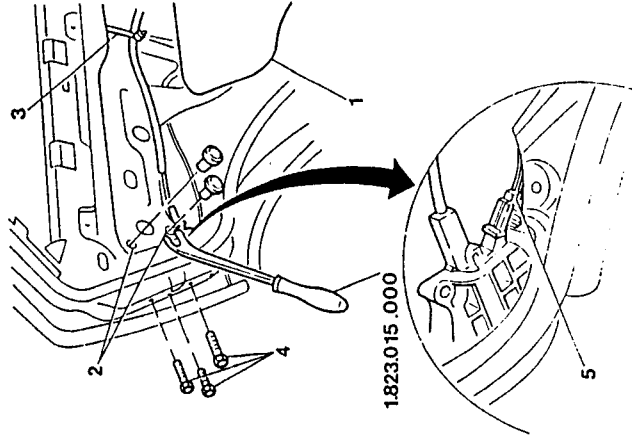
- Before reconnecting the electrical connectors check that the cables are correctly inserted in them.
- Before refitting the panel, check that the retaining buttons are not damaged.
- After refitting adjust the locks if necessary.
- Tighten the screws to the correct torque.




REAR DOOR OPEN INDICATOR SWITCH

Removal

- If a fault is found in the rear door switch the entire lock device must be replaced.
- 1. Remove the door panel (see: GROUP 55) and detach the upper edge of the cellophane.
- 2. Using tool No. 1.823.015.000, remove the two buttons securing the lock device to the body.
- 3. Cut the clamp securing the lock control rod to the body. Disconnect the handle rod from the lock device.
- 4. Together with the washers, loosen and remove the three screws securing the lock device to the door.
- 5. Disconnect the two connectors of the door open and Check Panel wiring from the lock device and remove the device together with the rod.



 7.1 ± 9 Nm  
(0.72 ± 0.92 kgm)

Refitting



To refit, reverse the procedure followed for removal.

Supplementary indications for refitting

- Before reconnecting the electrical connectors check that the cables are correctly inserted in them.
- Before refitting the panel, check that the retaining buttons are not damaged.
- After refitting adjust the locks if necessary.
- Tighten the screws to the correct torque.

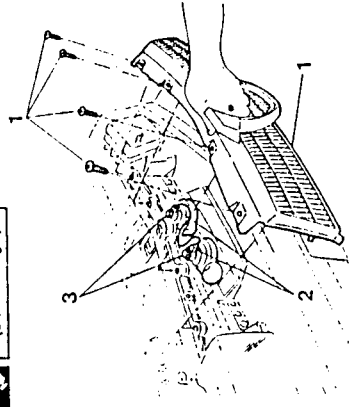
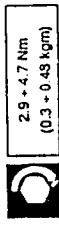




**HORNS**

**Removal**

1. Loosen the four screws securing the grill to the body and remove the grill.
2. Disconnect the two electrical connectors.
3. Loosen the two nuts securing the horns to the engine compartment frame and remove the two horns.



**Refitting**

To refit, reverse the procedure followed for removal.



**Supplementary indications for refitting**

- Tighten the nuts to the correct torque.

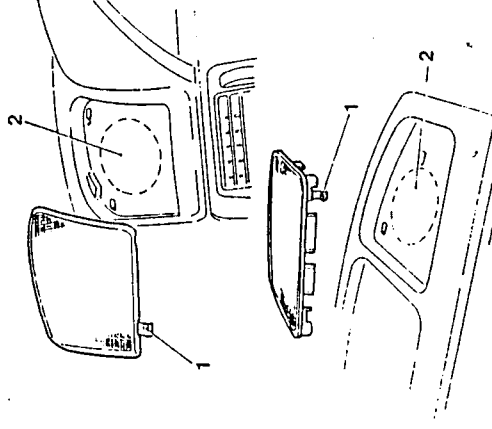


**FRONT LOUDSPEAKERS**

- The vehicle has provision for the installation of front loudspeakers.

**Initial installation and subsequent substitution**

1. Using a thin-bladed screwdriver apply leverage to the tabs in order to raise the speaker protection grill.
  2. Make a hole as shown in the diagram below.
- Connect the electrical connectors to the loud-speaker and install the speaker in the hole. Refit the grill. If it is necessary to replace an inefficient loud-speaker, remove the grill, disconnect the connectors, replace the speaker, connect the connectors and refit the grill.



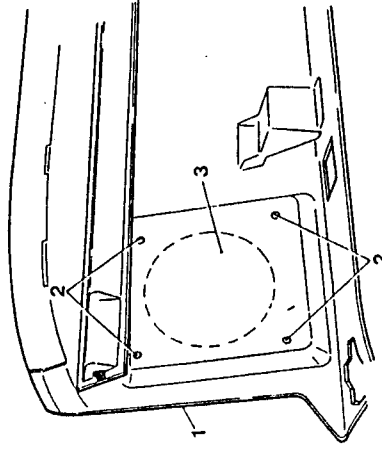
**REAR LOUDSPEAKERS**

- The vehicle has provision for the installation of rear loudspeakers.

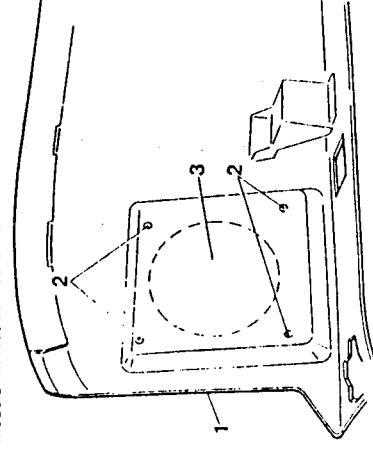
**Initial installation and subsequent substitution**

1. Remove the shelf.
  2. Loosen the four screws located under the moulding and remove the moulding.
  3. Make a hole as shown in the diagram below.
- Connect the electrical connectors to the loud-speaker and install the speaker in the hole. If it is necessary to replace an inefficient loud-speaker, remove the grill, disconnect the connectors, replace the speaker, connect the connectors and refit the grill.

Model with sun-screens



Models without sun-screens



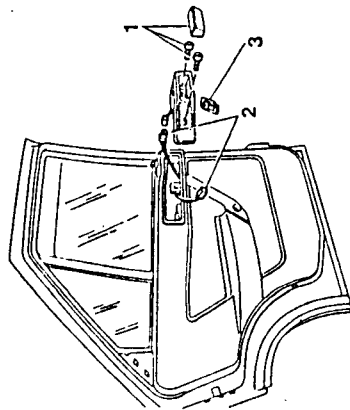


### MANUAL ELECTRICAL CONTROLS

#### REAR POWER WINDOW SWITCHES

##### Removal

1. Remove the ashtray by withdrawing it from its seating in the door opening control lever support moulding and loosen the screws securing the moulding.
2. Disconnect the electrical connector.
3. Remove the power window switch.



##### Refitting

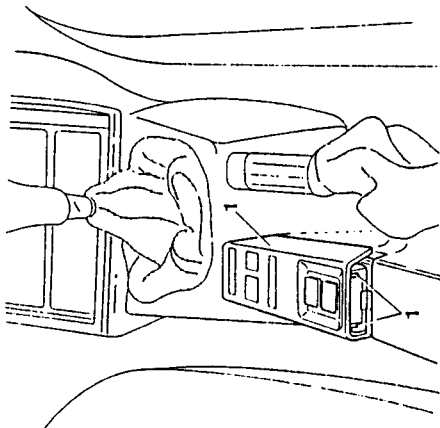
To refit, reverse the procedure followed for removal.



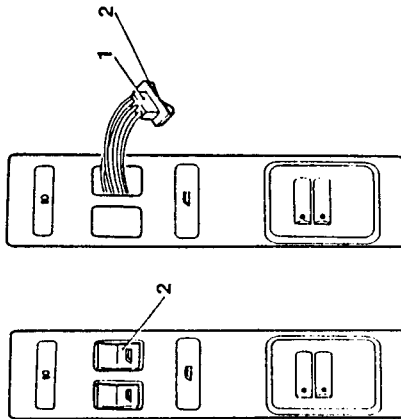
#### REAR POWER WINDOW SWITCHES LOCATED IN THE MOULDING ON THE TUNNEL

##### Removal

1. Using a thin-bladed screwdriver apply leverage to the edge of the moulding located on the tunnel to the left of the handbrake and remove the moulding.



1. Disconnect the electrical connectors.
2. Using a screwdriver, apply leverage to the retaining tabs and remove the switches.



##### Refitting

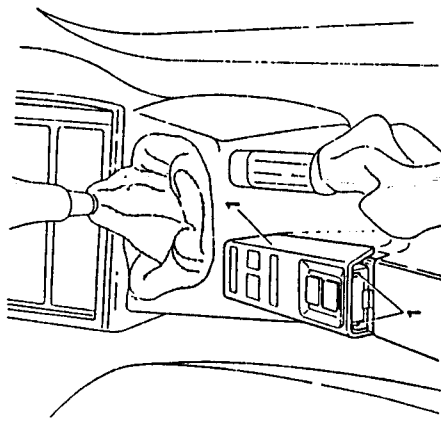
To refit, reverse the procedure followed for removal.



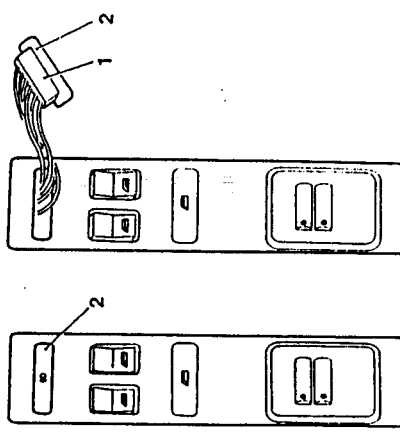
#### FOGLIGHT SWITCH

##### Removal

1. Using a thin-bladed screwdriver apply leverage to the edge of the moulding located on the tunnel to the left of the handbrake and remove the moulding.



1. Disconnect the electrical connector.
2. Using a screwdriver, apply leverage to the retaining tabs and remove the switch.



##### Refitting

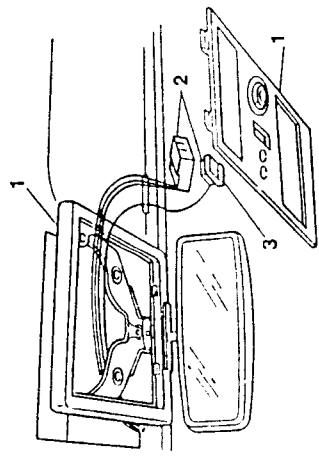
To refit, reverse the procedure followed for removal.



SUNROOF SWITCH

Removal

1. Apply leverage with a thin-bladed screwdriver to remove the front central roof light.
2. Disconnect the electrical connectors.
3. Remove the sunroof control switch.



Detail showing roof light moulding with sunroof control switch.



- A. Open roof
- B. Close roof

Refitting

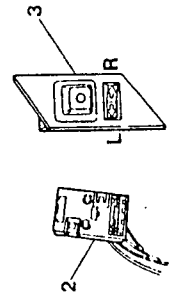
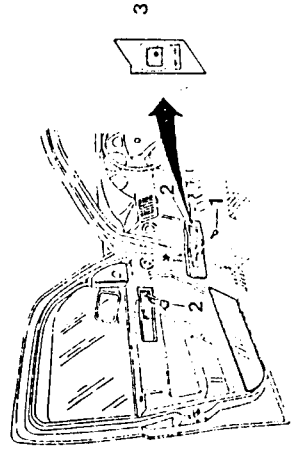


To refit, reverse the procedure followed for removal.

DOOR MIRROR ADJUSTMENT DOUBLE SWITCH

Removal

1. Loosen the screw securing the door panel moulding.
2. Withdraw the moulding from the panel and disconnect the electrical connectors of the door mirror adjustment button and the power window connectors.
3. Remove the switch from the moulding by applying leverage with a thin-bladed screwdriver.



Refitting

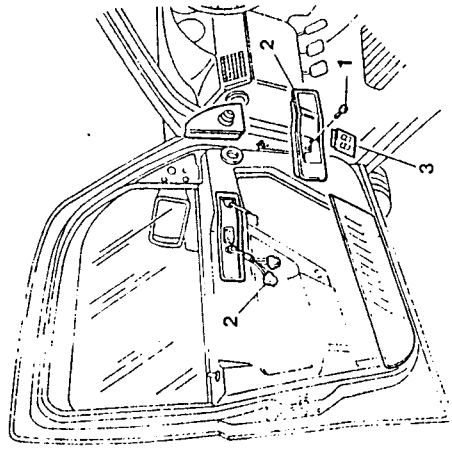


To refit, reverse the procedure followed for removal.

FRONT POWER WINDOW SWITCHES

Removal

1. Loosen the screw securing the door panel moulding.
2. Withdraw the moulding from the panel and disconnect the connectors from the power window control buttons.
3. Remove the switches from the moulding by applying leverage with a thin-bladed screwdriver.



Refitting



To refit, reverse the procedure followed for removal.

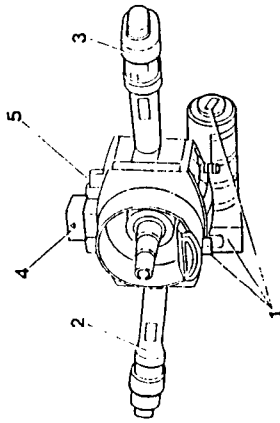


### STALK UNIT

#### FUNCTIONAL DESCRIPTION

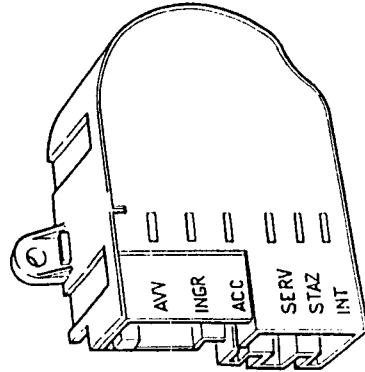
The controls relative to the following services are located on a single support on the steering column under the steering wheel:

1. Ignition switch and steering lock.
2. General control lever for external lights, direction indicators, rear foglights.
3. General control lever for windscreen wiper/washers (headlight washer optional), heated rear window and door mirror defroster.
4. Hazard warning light switch.
5. Instrument panel lighting rheostat.



### IGNITION SWITCH

Detail showing ignition switch



Ignition switch internal connections

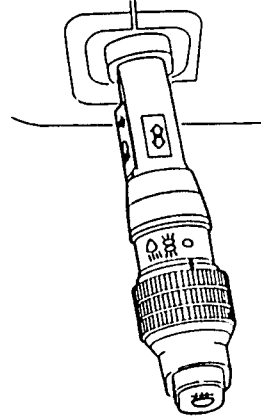
Blade identification codes	POSITION OF THE IGNITION KEY			
	PARK key can be withdrawn	STOP key can be withdrawn	MAR key cannot be withdrawn	AVV key cannot be withdrawn

### EXTERNAL LIGHTS, DIRECTION INDICATORS AND REAR FOGLIGHT CONTROL LEVER

The lever located on the left-hand side of the steering column enables the various functions to be used only when the ignition key is at the MAR position. When the ignition key is at the PARK position only the sidelights (parking) are switched on and are separate from all other systems.

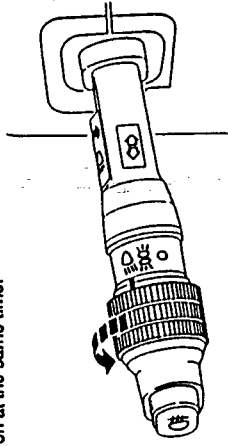
### Lights out

When the pointer of the knurled switch is at 0.



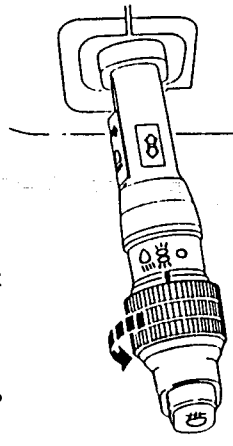
### Sidelights

Rotate the knurled switch so that the pointer is at 30°; the instrument panel and relative warning light will come on at the same time.



### Dipped-beam headlights

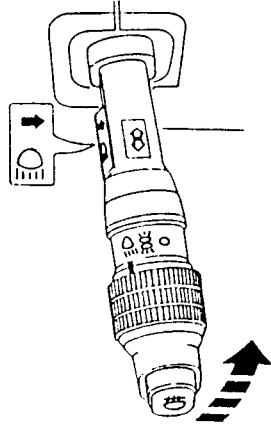
Rotate the knurled switch to the symbol . Both the sidelights and the dipped-beam headlights will come on.



**Main-beam headlights**

With the dipped-beam headlights on (pointer to **D**), pull the lever towards the steering wheel and release it. In this setting the main and dipped beams and the sidelights will be on.

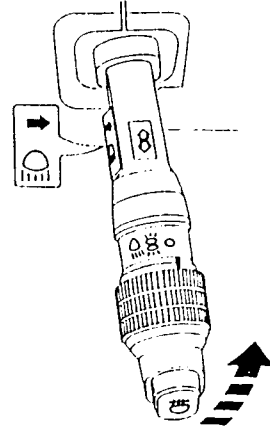
To return to the dipped-beam only setting, pull the lever towards the steering wheel and release it. When the dipped-beam headlights are on the instrument panel and relative warning lamp will also be on.



**Flashing**

This can be operated even when the lights are off by pulling the lever towards the steering wheel to the first detent (unstable position).

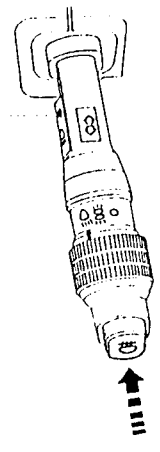
The relative warning lamp will come on on the instrument panel.



**Rear foglights**

To switch on the rear foglights, press the button at the tip of the lever when the dipped-beam lights are on. With the rear foglights on the relative warning lamp on the instrument panel will come on.

Press the button again to switch the lights off.



**Direction indicators**

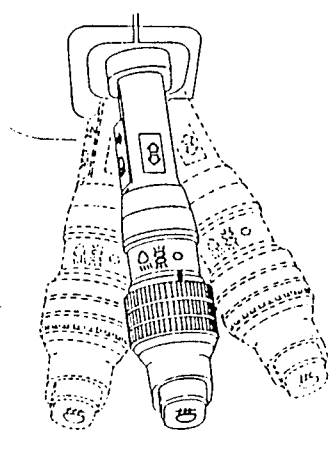
These are switched on by moving the lever vertically to one of the stable positions (stop limit):

Down: for the left-hand indicators.

Up: for the right-hand indicators.

With the direction indicators on one of the warning lamps on the instrument panel will flash on and off (◁ or ▷).

The lever is returned and the indicators switched off when the steering wheel is straightened. To indicate a brief change of direction involving only a minimum rotation of the steering wheel it is possible to move the lever to the first detent (unstable position). When released the lever will return to the central position.



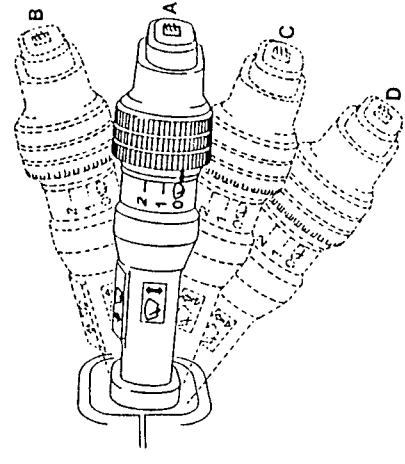
**WINDSCREEN WIPER-WASHER, HEATED REAR WINDOW (HEADLIGHT WASHERS AND DOOR MIRROR DEFROSTING)**

Only with ignition key at the MAR position.

**Windscreen wipers**

- A. Windscreen wiper stationary.
- B. Continuous operation (unstable position).
- C. Intermittent operation.
- D. Continuous operation.

The operation in position B is limited to the time the lever is held manually in position.



For the intermittent operation of the wipers, with the lever in position C, rotate the knurled switch to:

- 0 Slow intermittent operation.
- 1 Normal intermittent operation.
- 2 Fast intermittent operation.

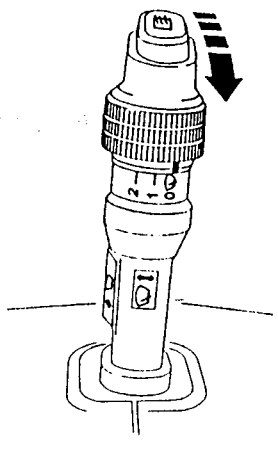
**Windscreen washer**

To activate the windscreen washer pull the lever towards the steering wheel. The windscreen wipers will also come on for a few seconds.

The windscreen washer will only work as long as the lever is held in position.

If the windscreen wipers are already operating it will briefly pass to the continuous operation mode whatever the position of the lever (A - B - C - D) or knurled switch (0-1-2).

The vehicle is also equipped with a headlight washing system employing pressurized jets which are activated when the sidelights are on and the windscreen washer is activated.



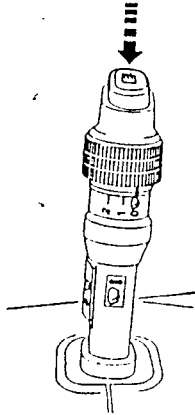


**Heated rear window**

To demist the rear window, press the button at the tip of the lever.

The relative warning lamp will come on on the instrument panel. The operation is timer controlled and will switch itself off after a few minutes.

To switch it off manually, press the button again.

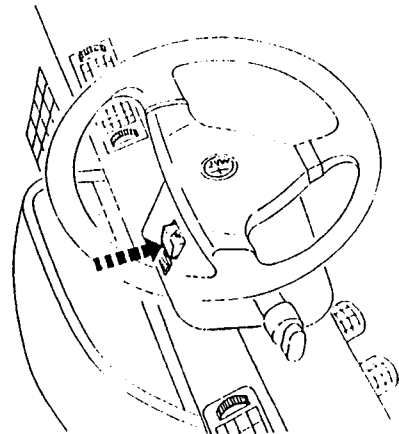


**HAZARD WARNING LIGHT SWITCH**

The hazard warning lights are switched on by pressing the red button located on the steering column, regardless of the position of the ignition key.

The relative hazard warning light warning lamps and the direction indicators on the instrument panel will come on when the hazard warning lights are switched on.

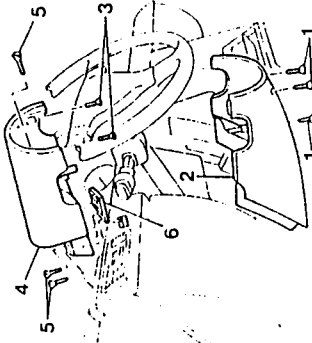
To switch the hazard warning lights off, press the button again.



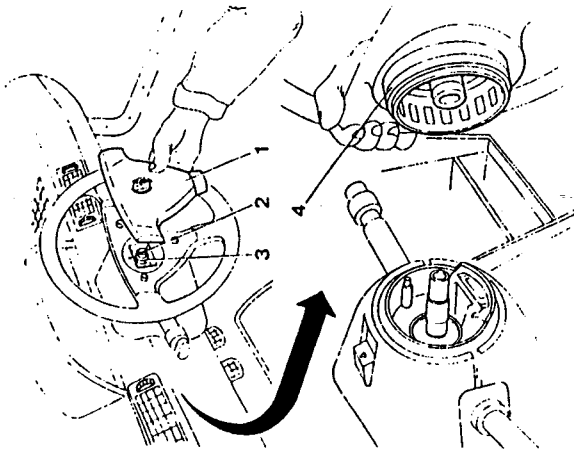
**DISASSEMBLY AND REASSEMBLY OF THE STALK UNIT**

**Disassembly**

1. Loosen the three lower screws securing the lower steering column cover.
2. Remove the steering column cover.
3. Loosen the two screws securing the upper steering column cover.
4. Remove the upper steering column cover.
5. Loosen the three screws securing the rheostat to the steering column cover.
6. Remove the rheostat and disconnect the relative connector.

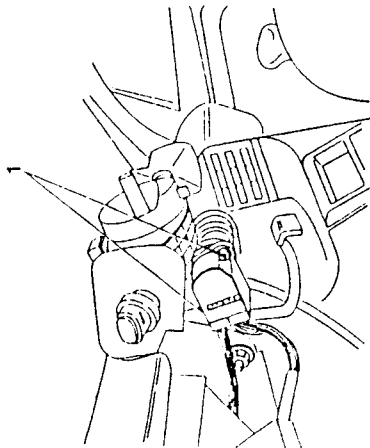


1. Applying leverage with a screwdriver remove the horn button.
2. Disconnect the underlying connector.
3. Loosen the nut securing the steering wheel.
4. Remove the steering wheel by pressing on each side alternately.

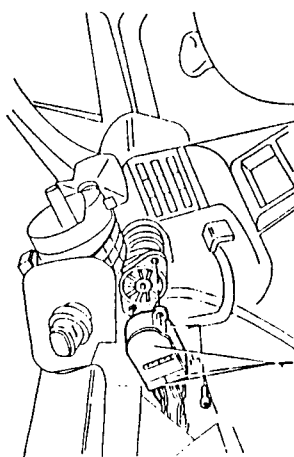


**Ignition switch**

1. Loosen the two screws securing the ignition switch to the stalk unit under the steering wheel.

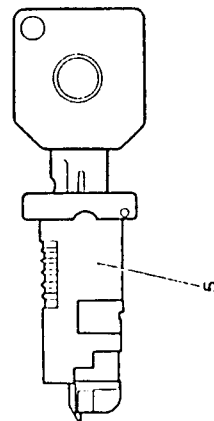
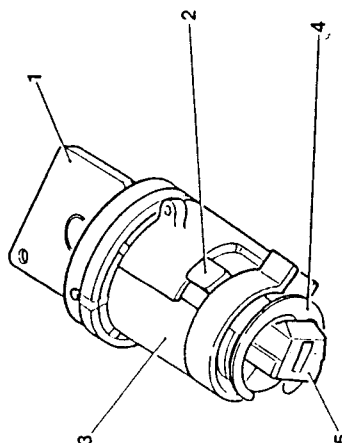
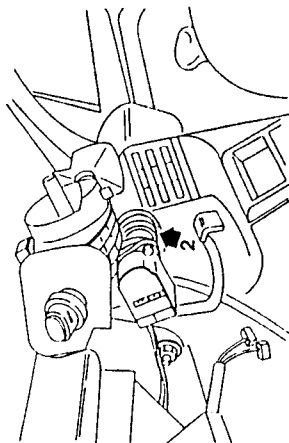


1. Disconnect the two connectors from the ignition switch.



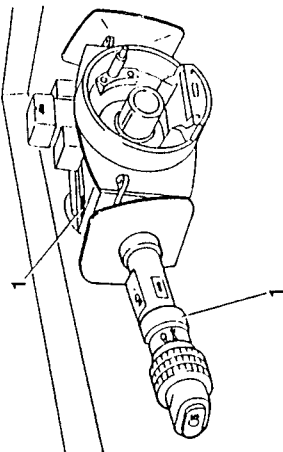
**Ignition key and steering lock**

1. Insert the key in the ignition and turn it to the MAR position.
2. Working through the opening located in the rear part of the cylinder housing the lock, press the teeth of the lock down.
3. Withdraw the lock from its housing.
4. Remove the Seeger ring.
5. Withdraw the cylinder with the key.



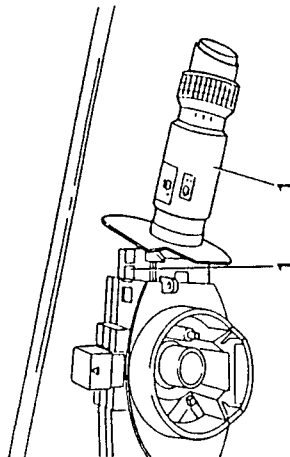
**Left-hand control lever**

1. Press both the retaining tabs down at the same time and pull the lever outwards to remove.



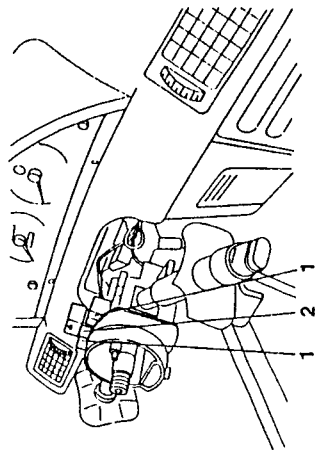
**Right-hand control lever**

1. Press both the retaining tabs down at the same time and pull the lever outwards to remove.



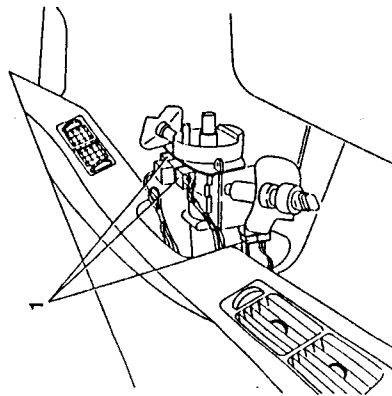
**Hazard warning light switch**

1. Disconnect the two lateral connectors.
2. Pull upwards and withdraw the switch.



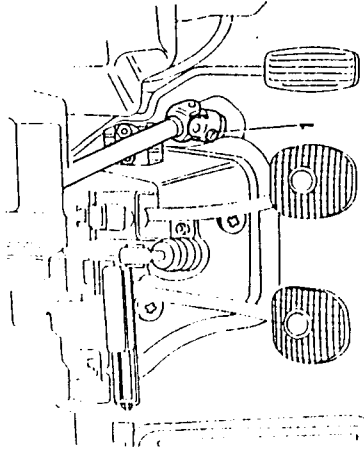
**Steering column and stalk unit**

1. Disconnect the connectors from the hazard warning lights, ignition block and ignition switch.

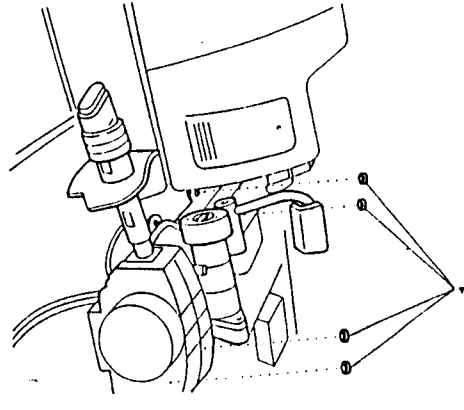






- 1. Remove the screw and the nut securing the lower shaft to the pin of the steering box.

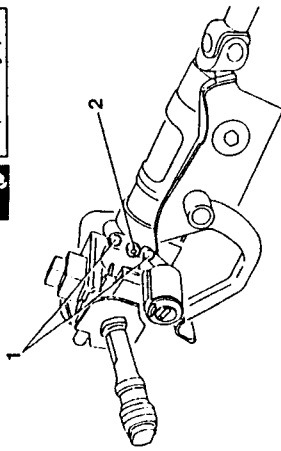


- 1. Loosen the four nuts securing the steering column to the body and remove the complete column.

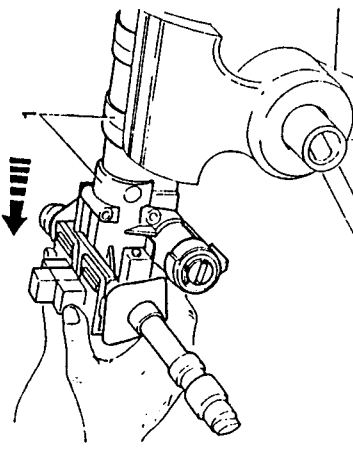


 5.6 - 8.8 Nm  
(0.57 - 0.9 kgm)

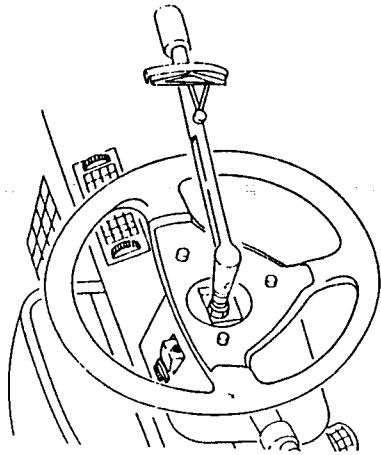
 23 - 29 Nm  
(2.3 - 3 kgm)




- 1. Remove the stalk unit from the upper steering control shaft support.



- When installing the steering wheel, tighten the nut to the correct torque.



 48 - 62 Nm  
(4.9 - 6.3 kgm)

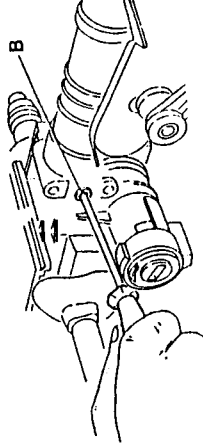
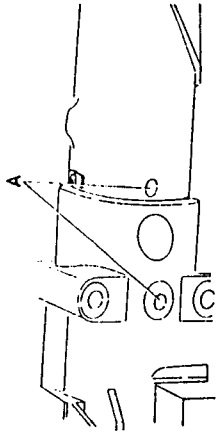
- When installing the steering column, tighten the nuts to the correct torque.

Refitting

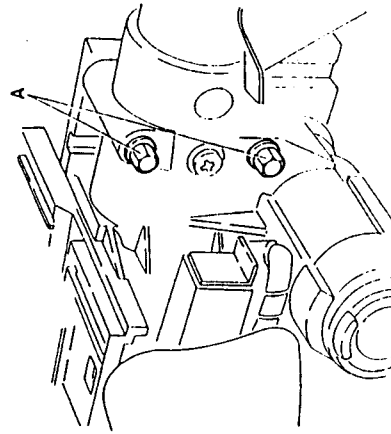


To refit reverse the procedure followed for removal and:

- When installing the stalk unit in the upper steering control shaft support, the clip located on support (A) must coincide with the hole of positioning screw (B) and be locked in place using this.



- When installing the fracture screws securing the stalk unit to the support they must be tightened until the hexagonal head (A) breaks off.







# TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

## TIGHTENING TORQUES

### STEERING

Description	N·m	kg·m
Self braking nut E with polyamide ring for securing steering wheel to steering column	48 + 62	4.9 + 6.3
TE conical tip screw with flexible washer securing steering column to support	5.6 + 8.8	0.57 + 0.9
EAUF nut for screws securing steering column to support	23 + 29	2.3 + 3

### MOBILE BODYWORK PARTS

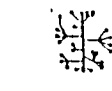
Description	N·m	kg·m
TE screw securing side door lock	7.1 + 9	0.72 + 0.92

### ELECTRICAL SYSTEM

Description	N·m	kg·m
Nut securing lead positive terminal to battery	2.9 + 4.7	0.3 + 0.48
Nut securing lead negative terminal to battery	2.9 + 4.7	0.3 + 0.48

### ELECTRICAL APPARATUS

Description	N·m	kg·m
Hexagonal nut securing fixed part of light unit	5.5 + 6.8	0.56 + 0.69
Nut securing horns to body	2.9 + 4.7	0.3 + 0.48
Nut securing windscreen wiper arm to unit	15 + 20	1.5 + 2



## FRONT ELECTRIC SEATS

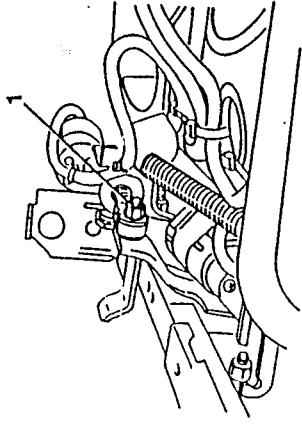
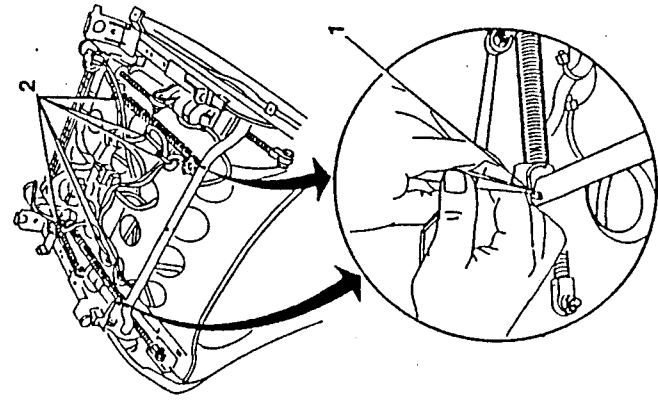
### SEAT HEIGHT ADJUSTMENT ELECTRIC MOTORS

#### Removal and refitting

- Remove the seat and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).

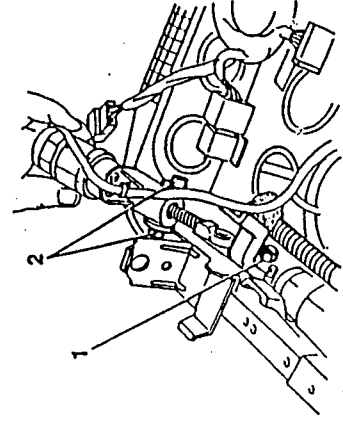
**NOTE:** The operations described below are applicable for each motor regardless of the intervention sequence.

1. Disconnect the sliding device return spring from the rear bar.
2. Cut the plastic clamp holding the wiring in place.



1. Unscrew the nut securing the eye at the end of the worm screw to the bracket of the sliding device.

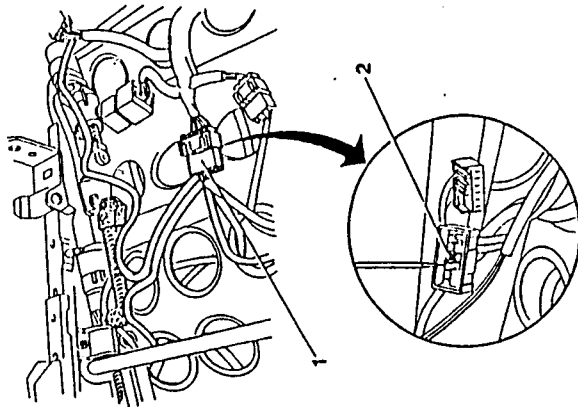
1. Loosen the nut securing the motor retaining clamp.
2. Withdraw the centering pins from the clamp and withdraw the electric motor controlling the seat height.



**SPECIFIC TOOLS**

TOOL NUMBER	DESCRIPTION
1.822.118.000	Spanner for TELEVEL ring nut
1.823.015.000	Puller for plastic buttons
1.821.167.000	Spanner for ring nut securing fuel pump.

1. Disconnect the main electrical wiring connector located in the lower part of the seat.
2. Withdraw the central pins corresponding to the two raising motors and remove the motor together with its wiring.



Refit by reversing the procedure followed for removal and check that the pins removed previously and the motor centering pins are correctly positioned.

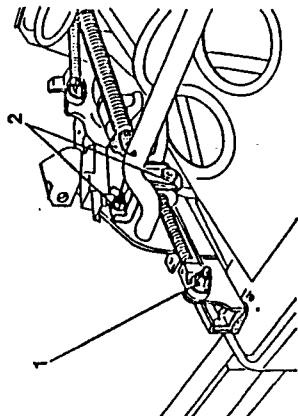
**SEAT POSITION ADJUSTMENT ELECTRIC MOTOR**

**Removal and refitting**

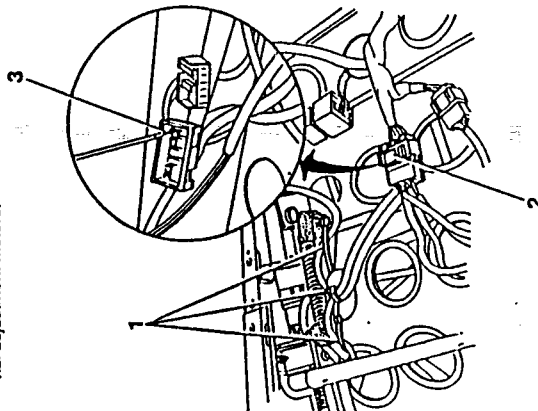
- Remove the seal and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).

**NOTE:** The operations described below are applicable for each motor regardless of the intervention sequence.

1. Unscrew the nut securing the worm screw to the bracket.
2. Unscrew the nut securing the motor retaining clamp and remove the clamp.

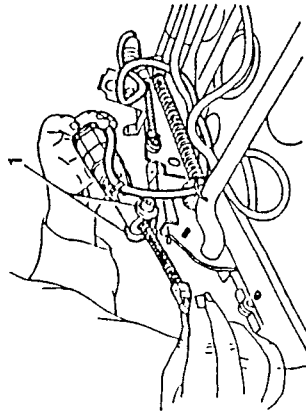


1. Remove the clamps securing the wiring.
2. Disconnect the main electrical wiring connector located in the lower part of the seat.
3. Withdraw the two pins located on the right-hand side of the connector corresponding to the two longitudinal adjustment motors.





1. Withdraw the centering pins from the clamp and remove the electric motor controlling the seat height together with the wiring.



Refit by reversing the procedure followed for removal and check that the pins removed previously and the motor centering pins are correctly positioned.



### BACKREST WARMING DEVICE

#### Removal and refitting

- Remove the seat and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).
- Remove the covering from the backrest (see GROUP 66 - FRONT SEATS - BACKREST - Replacing covering).
- Remove the heater (see GROUP 66 - FRONT SEATS - BACKREST - Replacing covering).



Refit by reversing the procedure followed for removal and check the wiring is correctly connected, that the resistance is operating efficiently and all the indications mentioned in the phase regarding refitting of the covering are followed.

### SEAT CUSHION WARMING DEVICE

#### Removal and refitting

- Remove the seat and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).
- Remove the covering from the backrest (see GROUP 66 - FRONT SEATS - CUSHION - Replacing covering).
- Remove the heater (see GROUP 66 - FRONT SEATS - CUSHION - Replacing covering).

Refit by reversing the procedure followed for removal and check the wiring is correctly connected, that the resistance is operating efficiently and all the indications mentioned in the phase regarding refitting of the covering are followed.



1. Slide the control panel out from it seating from one side.
2. As necessary disconnect the connector from the longitudinal adjustment control switch (A), the control panel lighting connector (B), the seat height adjustment control switch connector (C), the backrest tilt angle control switch connector (D), the seat warming device connector (E) and remove the relative switch.

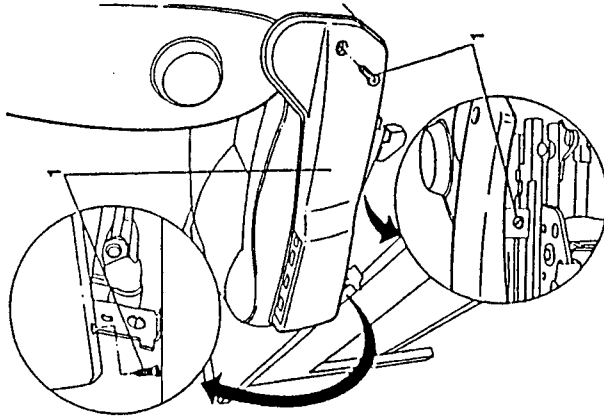
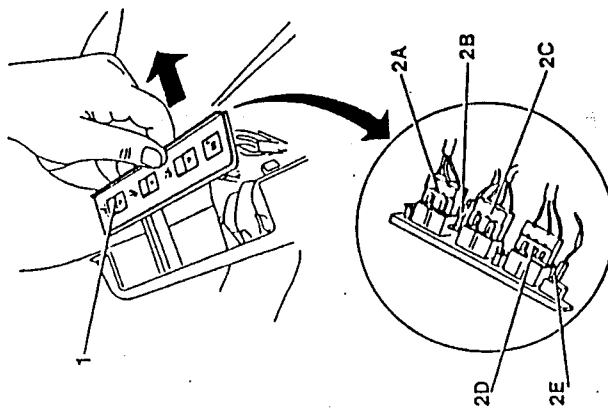
### ELECTRIC SEAT CONTROL PANEL

#### Removal and refitting

- Remove the seal and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).
- 1. Loosen the three screws securing the seal moulding and remove the moulding.



**WARNING:**  
Remove the moulding with care to avoid damaging the underlying wiring.



Refit by reversing the procedure followed for removal and check that the wiring is correctly connected and that the single switches are working correctly.

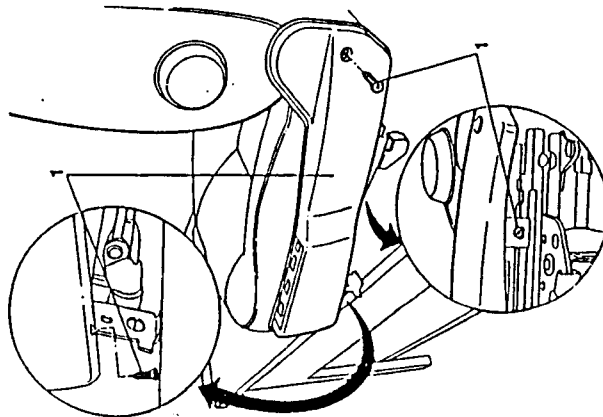
**ELECTRIC SEAT CONTROL PANEL**

**Removal and refitting**

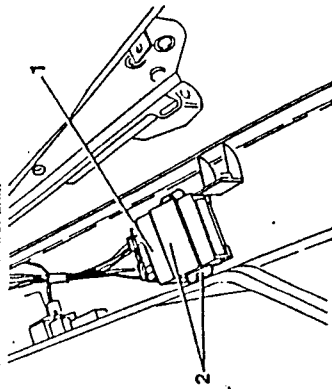
- Remove the seat and take it to a bench (see GROUP 66 - FRONT SEATS - COMPLETE SEAT).
- Loosen the three screws securing the seat moulding and remove the moulding.



**WARNING:**  
Remove the moulding with care to avoid damaging the underlying wiring.



- Disconnect the connector from the control unit.
- Loosen the screws securing the bracket and remove bracket and control unit.

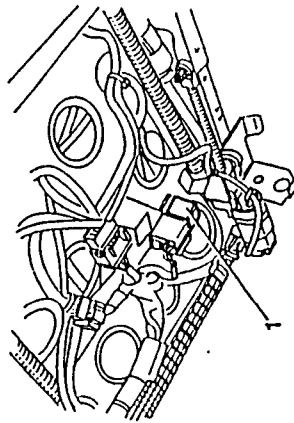


Refit by reversing the procedure followed for removal and check that the wiring is correctly connected and that the single switches function correctly.

**RELAY FOR SEAT HEATING DEVICE**

**Removal and refitting**

- Working on the right-hand side of the lower part of the seat, disconnect the timer from the base.



Refit by reversing the procedure followed for removal and check that the pin is correctly inserted in the base and that the seat warming device is functioning correctly.



**TECHNICAL DATA AND SPECIFICATIONS**

**TIGHTENING TORQUES**

**STEERING**

Description	N.m	kg.m
Friction nut E with polyamide ring for securing steering wheel to steering column	48 + 62	4.9 + 6.3
TE conical tip screw with flexible fixed washer for securing steering column to body	5.6 + 8.8	0.57 + 0.9
EAUF nut for screw securing steering column to support	23 + 29	2.3 + 3

**MOBILE BODYWORK PARTS**

Description	N.m	kg.m
TE screw securing side door lock	7.1 + 9	0.72 + 0.92

**ELECTRICAL SYSTEM**

Description	N.m	kg.m
Nut securing lead positive terminal to battery	2.9 + 4.7	0.3 + 0.48
Nut securing lead negative terminal to battery	2.9 + 4.7	0.3 + 0.48

**ELECTRICAL APPARATUS**

Description	N.m	kg.m
Hexagonal nut securing fixed part of light unit	5.5 + 6.8	0.56 + 0.69
Nut securing horns to body	2.9 + 4.7	0.3 + 0.48
Nut securing windscreen wiper arm to unit	15 + 20	1.5 + 2



SPECIFIC TOOLS

TOOL NUMBER	DESCRIPTION
1.822.118.000	Spanner for TELEVEL ring nut
1.823.015.000	Puller for plastic buttons
1.821.167.000	Spanner or ring nut securing fuel pump

GROUP 43

# INSTRUMENT PANEL AND ELECTRONIC INSTRUMENTS

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## INSTRUMENT PANEL AND ELECTRONIC INSTRUMENTS

### STANDARDS AND PRECAUTIONS



**CAUTION**

Before disconnecting or reconnecting the components of the electrical system read the section **STANDARDS AND PRECAUTIONS**.

Before beginning work ensure that the ignition key is at the "parking" position and that the earth cable of the battery has been disconnected and:

- avoid connecting the control unit outputs directly to the power supply;
- avoid working on devices when cables are connected to "positive" or earth without having previously disconnected the control units;
- avoid short-circuiting the sensors unless otherwise specified;
- before carrying out electrical welding, disconnect the control units in order to avoid damaging the electrical components by induced current.



**WARNING**

Calculate the possible outcome of any interventions and avoid working on components when the characteristics are not perfectly understood.

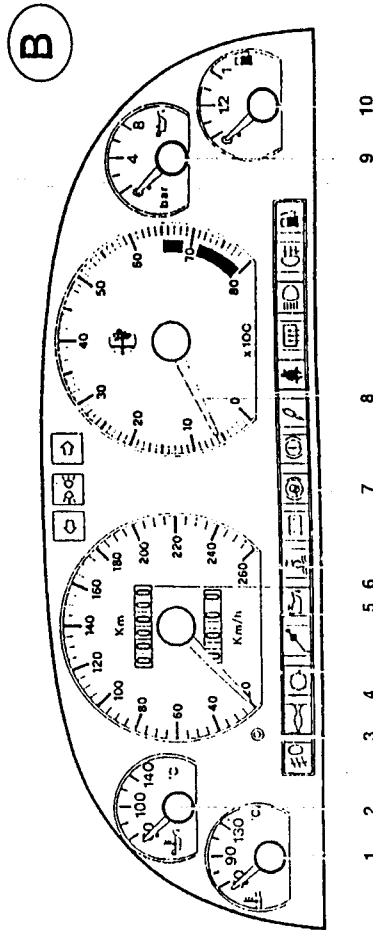
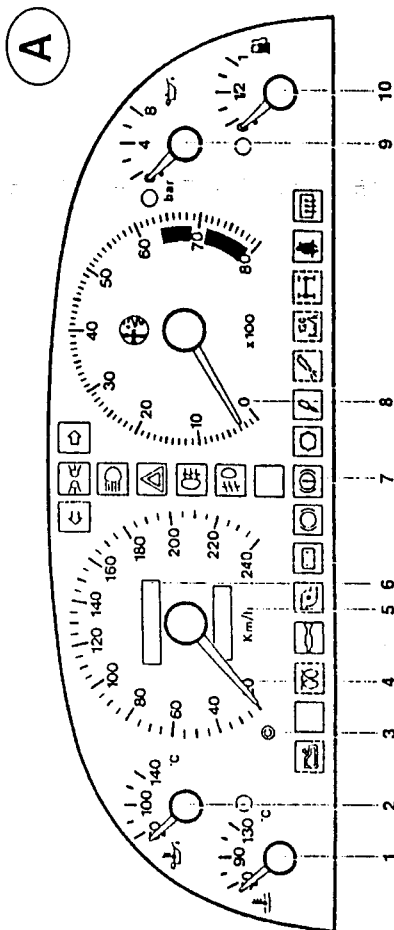
When reassembling and/or refitting, reverse the procedures given for disassembly and/or removing unless otherwise specified and reconnect the battery.

Components of the electrical system should only be substituted with genuine Alfa Romeo spare parts. Using non-specified spares with slightly different characteristics may affect the operational reliability and safety of the vehicle.

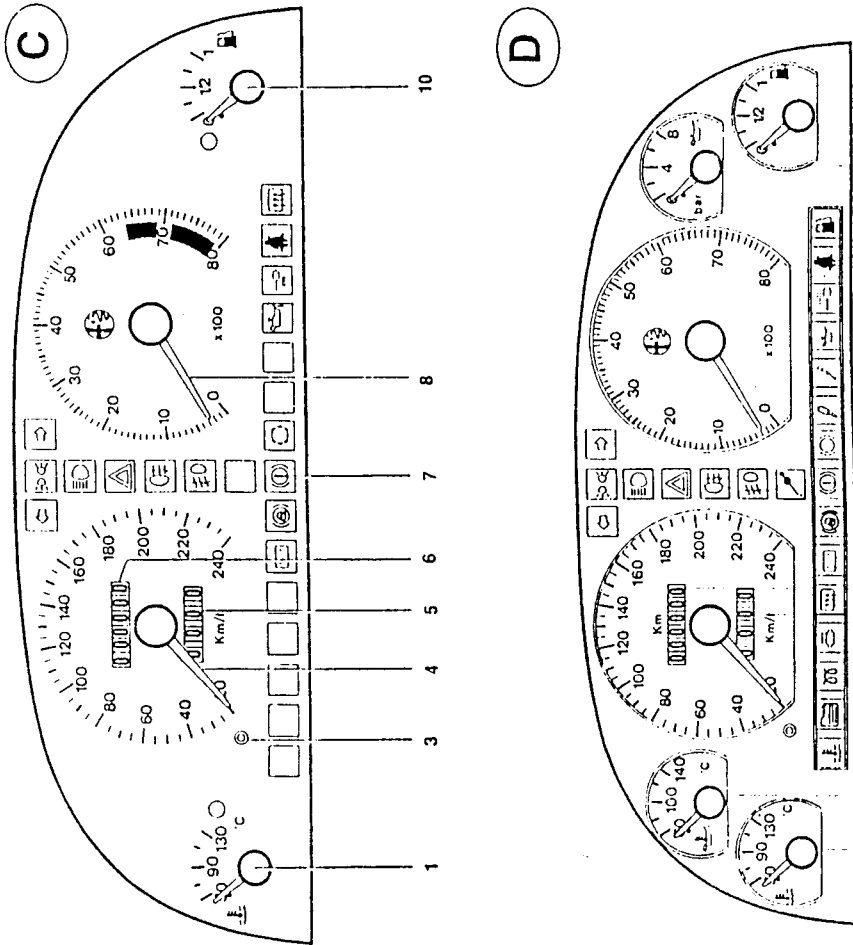
### ELECTRONIC INSTRUMENT CLUSTER

The 155 is fitted with different **ELECTRONIC INSTRUMENT CLUSTERS** depending on the versions: up to now the following 4 types have been defined:

- "Base" cluster (A): installed up to chassis no. ....
- "Sporty" cluster (B): with instruments with depth effect, installed on the "higher" versions.

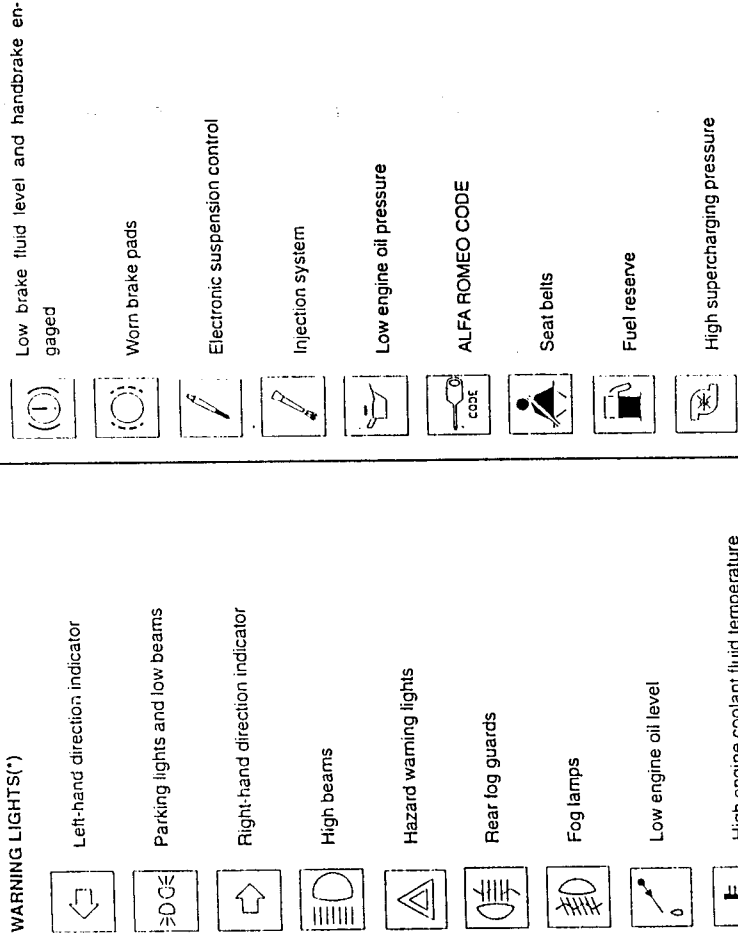


- Simplified cluster (C): with the number of warning lights and indicators reduced to the minimum, installed on the "lower" versions.
- Cluster for '95 Version (D): replaces cluster B for vehicles starting from chassis no. ....



- 1. Engine coolant temperature gauge
- 2. Oil temperature gauge (not included in cluster C)
- 3. Trip meter reset
- 4. Speedometer
- 5. Trip meter
- 6. Mileage recorder
- 7. Services warning lights (see details on next page)
- 8. Rev counter
- 9. Engine oil pressure gauge (not included in cluster C)
- 10. Fuel level gauge

N.B.: The different engines also differ with regard to the ratings on the speedometer and rev counter.

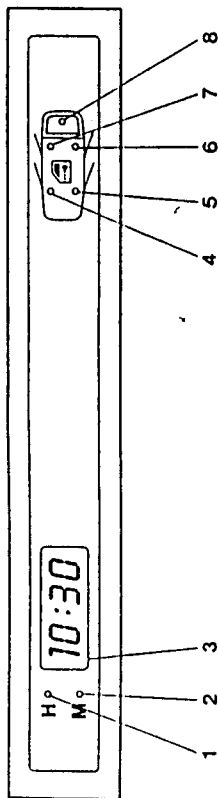


WARNING LIGHTS(\*)

(\*) NB: All the warning lights shown are present on the instrument cluster, but some of them may be disconnected depending on the version, engine and trim level.



**CHECK PANEL AND CLOCK**



- 5. Front left-hand door closed warning light
- 6. Rear left-hand door closed warning light
- 7. Rear right-hand door closed warning light
- 8. Boot lid closed warning light

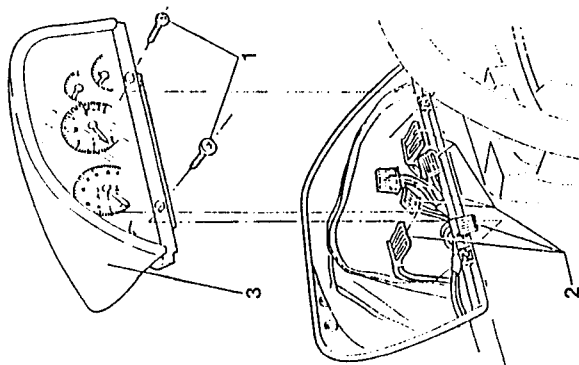
- 1. Button for setting hours
- 2. Button for setting minutes
- 3. "LCD" digital clock
- 4. Front right-hand door closed warning light



**REMOVAL AND REFITTING**

**Removal**

1. Loosen the two screws securing the central covering.
2. Disconnect the electrical connectors.
3. Remove the instrument panel.



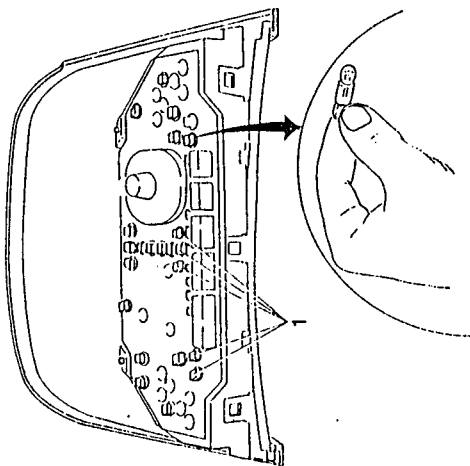
**Refitting**

To refit, reverse the procedures followed for removal.



**BULB REPLACEMENT**

1. Working from the rear of the instrument panel it is possible to replace all the bulbs. To extract them, rotate anticlockwise.



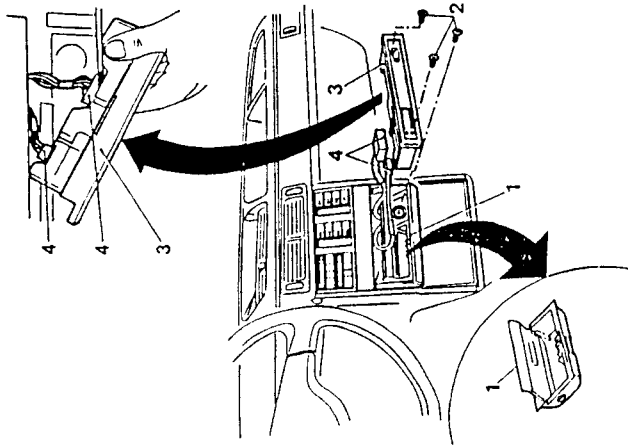




**REMOVAL AND REFITTING**

**Removal**

1. Remove the ashtray.
2. Loosen the three screws securing the Check Panel.
3. Remove the Check Panel.
4. Disconnect the two connectors and remove the Check Panel.

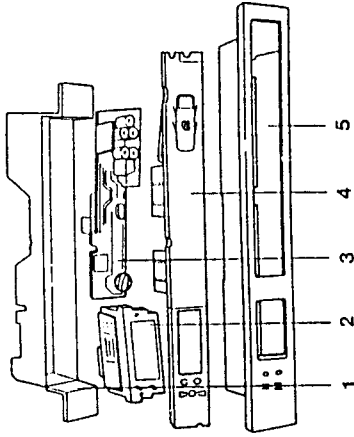


**Refitting**

To refit, reverse the procedures followed for removal.



**Disassembled Check Panel**



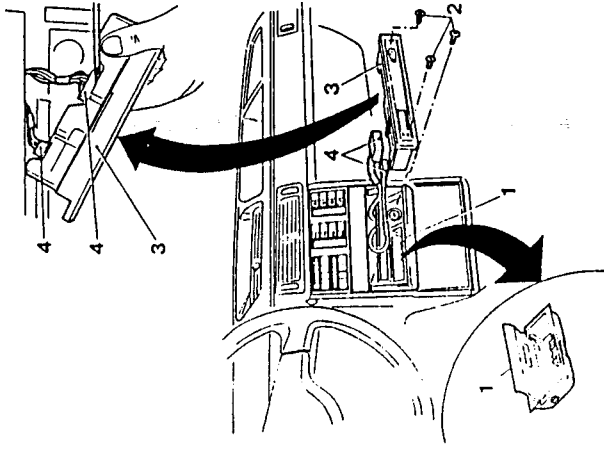
1. Rear cover
2. Clock
3. Printed circuit
4. Check Panel display glass
5. Front moulding

**HEATING-VENTILATION CONTROL UNIT**

**REMOVAL AND REFITTING**

**Removal**

1. Remove the ashtray.
2. Loosen the three screws securing the Check Panel.
3. Remove the Check Panel.
4. Disconnect the two connectors and remove the Check Panel.

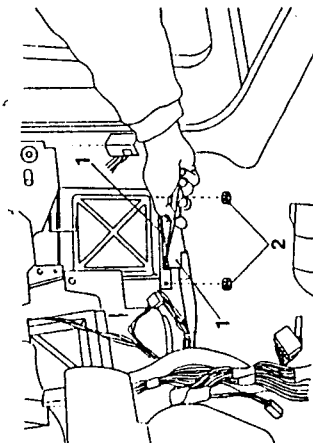


**"MOTRONIC" ELECTRONIC IGNITION CONTROL UNIT**

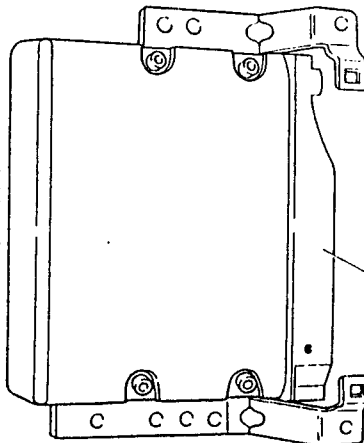
**REMOVAL AND REFITTING**

**Removal**

- The control unit is located under the dashboard on the passenger side.
- 1. Disconnect the electrical connector using a screwdriver as a lever.
- 2. Loosen the two nuts securing the brackets to the frame.



- 1. Remove the Motronic control unit.



Rear view of electrical connector attachment.



**Refitting**



To refit, reverse the procedures followed for removal.

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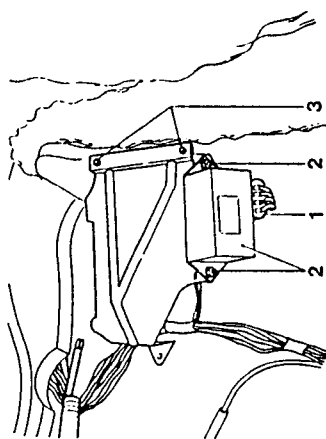
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**CONTROLLED DAMPING SUSPENSION CONTROL UNIT**

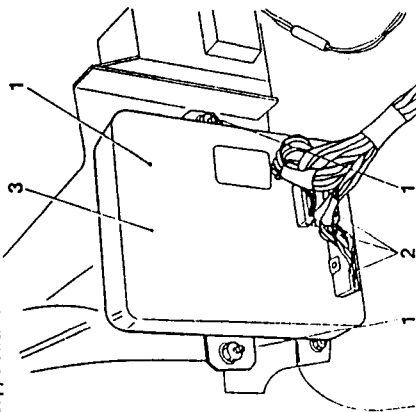
**REMOVAL AND REFITTING**

**Removal**

- The control unit is located under the rear seat.
- 1. Disconnect the connector.
- 2. Loosen the two nuts and remove the control unit first block.
- 3. Loosen the two bolts fixed to the support frame.



- 1. Lift the second control unit block from the support frame.
- 2. Disconnect the three connectors.
- 3. Remove the second control unit block from the support frame.

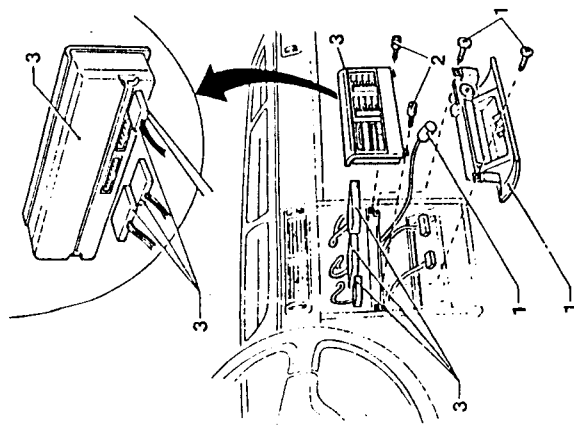


**Refitting**



To refit, reverse the procedures followed for removal.

- 1. Loosen the two screws securing the astray to the front covering forming the central tunnel. Disconnect the cigar-lighter connector and remove the astray unit.
- 2. Loosen the two screws securing the electronic control unit to the front covering.
- 3. Disconnect the three connectors and remove the electronic control unit.



**Refitting**



To refit, reverse the procedures followed for removal.

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07 - 1991

**Refitting**



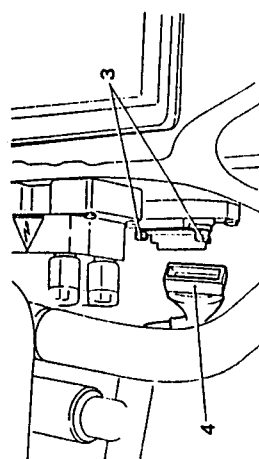
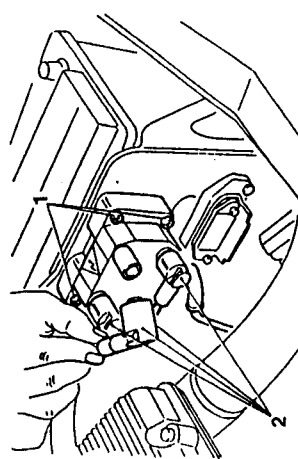
To refit, reverse the procedures followed for removal.

**ELECTRONIC IGNITION MODULE "A" AND MODULE "B"**

**REMOVAL AND REFITTING**

**Removal**

- The modules are located in the engine compartment to one side of the battery support.
- 1. Loosen the four screws securing the two ignition coils.
- 2. Disconnect the four connectors from the coils.
- 3. Loosen the two screws securing the two ignition modules.
- 4. Disconnect the two connectors from the modules.



**Refitting**



To refit, reverse the procedures followed for removal.

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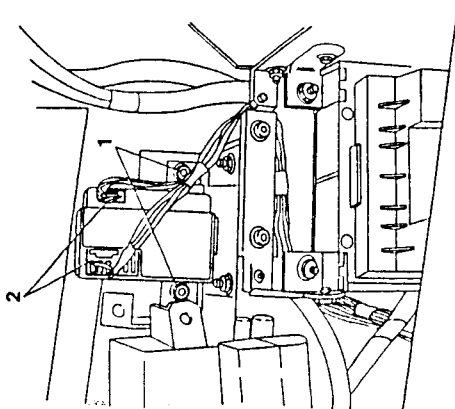
07 - 1991

### WINDOW RAISING DEVICE CONTROL UNIT

#### REMOVAL AND REFITTING

##### Removal

- The control unit is located in the passenger compartment above the main fusebox which can be found under the dashboard to the left of the steering column.
1. Loosen the two nuts securing the support.
  2. Disconnect the two electrical connectors and remove the control unit.



##### Refitting



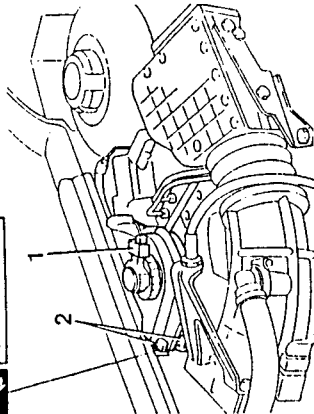
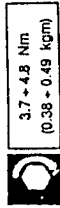
To refit, reverse the procedures followed for removal.

### "ABS" CONTROL UNIT

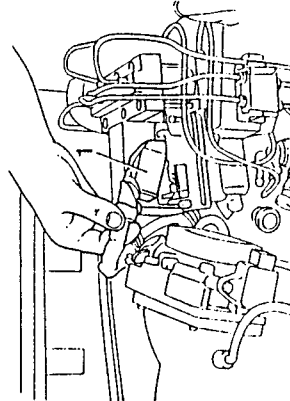
#### REMOVAL AND REFITTING

##### Removal

- The control unit is located in the engine compartment under the windscreen wiper unit.
  - Disconnect and remove the battery and the battery support. (see: GR. 40).
  - Remove air-flow meter (see: REPAIR INSTRUCTIONS - ENGINES - GROUP 04).
1. Disconnect the connector from the brake-clutch fluid level sensor.
  2. Loosen the two screws securing the brake-clutch fluid reservoir.



1. Remove the electrical connector comb from the control unit.

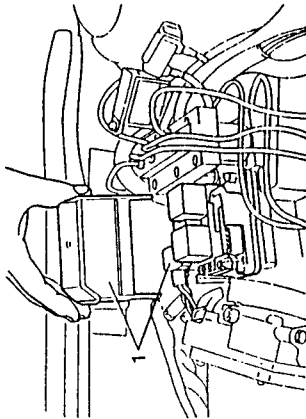


##### Refitting

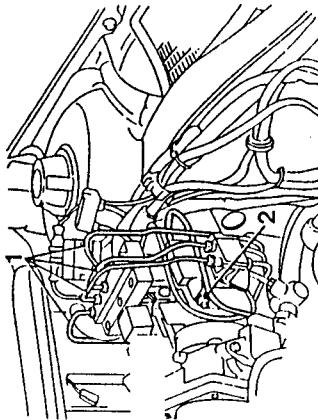


To refit, reverse the procedures followed for removal.

1. Loosen the screw securing the cover of the electronic control unit and remove the four-pin connector.



1. Disconnect the hydraulic connections from the control unit and from the four-way distributor.
2. Loosen the three nuts of the control unit support and remove the unit.



##### Refitting



To refit, reverse the procedures followed for removal.

#### Supplementary indications for refitting

- Tighten the screws and nuts to the correct torque.

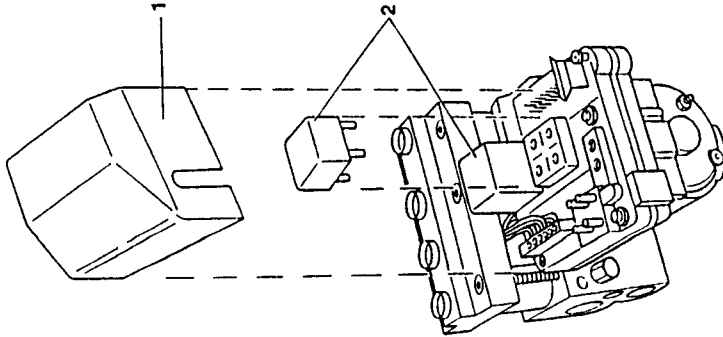


### "ABS" CONTROL UNIT RELAY

#### REMOVAL AND REFITTING

##### Removal

1. Remove the relay cover by lifting it upwards.
2. Disconnect the two relays.



##### Refitting



To refit, reverse the procedures followed for removal.

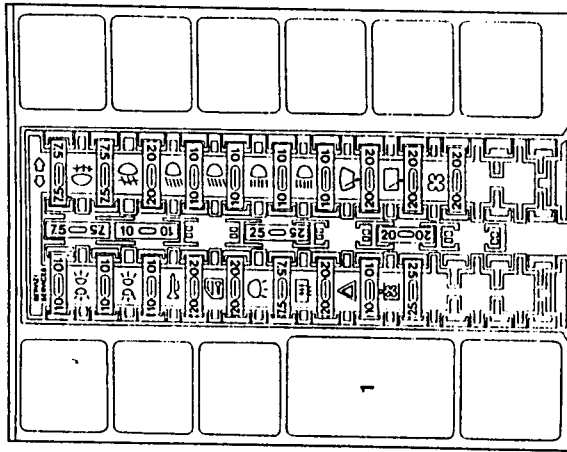
### DOOR LOCKING DEVICE

#### CONTROL UNIT

##### REMOVAL AND REFITTING

##### Removal

1. The control unit is located in the main fusebox. To remove pull upwards.



##### Refitting



To refit, reverse the procedures followed for removal.



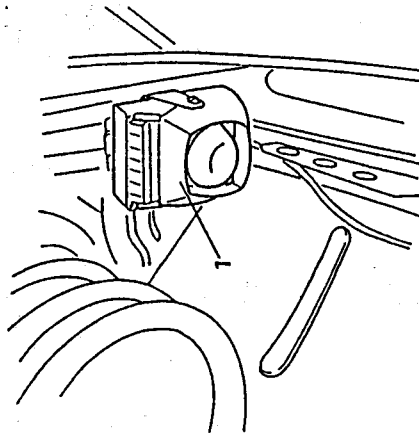
### ANTI-THEFT SYSTEM

#### CONTROL UNIT-SIREN ASSEMBLY

##### Removal

The integrated assembly which includes the control unit and the siren is located under the front left-hand wheel housing:

- Remove the front left-hand wheel.
  - Remove the lokarit.
1. Remove the control unit after disconnecting the two electrical connectors, by loosening the two screws which secure it to the support bracket.



##### Refitting



To refit, reverse the procedure followed for removal.

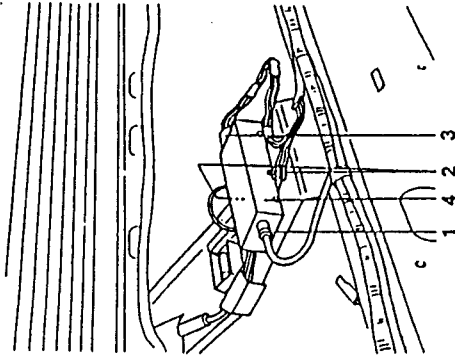
### HEATED REAR WINDSCREEN AND

#### ANTENNA CONTROL UNIT

##### REMOVAL AND REFITTING

##### Removal

- The control unit is located on the hat shelf.
1. Disconnect the antenna connector.
  2. Loosen the two nuts securing it to the support.
  3. Disconnect the electrical connector.
  4. Remove the control unit.



##### Refitting



To refit, reverse the procedure followed for removal.

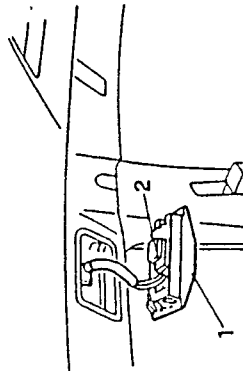


### VOLUMETRIC SENSORS

#### Removal

The two volumetric sensors are located on the roof panel above the rear doors:

1. Disconnect the sensor which is pressure fitted to the roof panel.
2. Remove the sensor by disconnecting the electrical connection.



#### Refitting

To refit, reverse the procedures followed for removal.

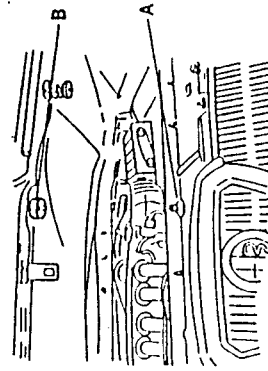


### SWITCHES ON DOORS AND BONNET/BOOT

The switches for the anti-theft system regarding the four doors and boot are the same as those used by the centralized locking system control unit.

Only the switch on the bonnet (A) is specific and is positioned as shown in the diagram. It can easily be removed by withdrawing it from its seating.

The switch on the crossmember corresponds to a catch (B on the bonnet)

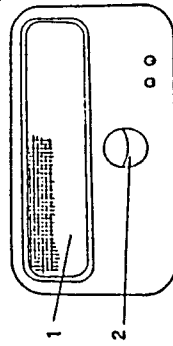


Attached to the T.B. 40.93.26



### ULTRASOUND RECEIVER

The ultrasound receiver is built into the rear roof light.

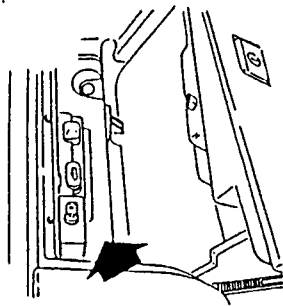


1. Roof light
2. Infrared receiver

For removal and refitting operations refer to the indications given in "REAR CENTRAL ROOF LIGHT" Group 40.

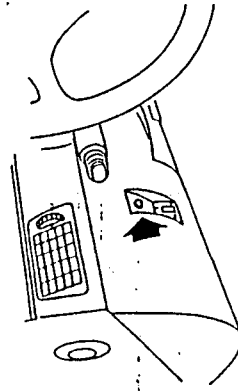
### EMERGENCY KEY

The lock for the emergency key is located in the glove compartment to the side of the light and the boot release switch.



### ANTI-THEFT DEVICE LED

The red led signalling the operation of the system is located on the left-hand side of the steering wheel on the lower part of the dashboard.



#### Removal

- Detach the trim from under the dashboard.
- Remove the led-holder by withdrawing it from its seating.

#### Refitting

To refit, reverse the procedure followed for removal.



Attached to the T.B. 40.93.26



## TECHNICAL CHARACTERISTICS AND SPECIFICATIONS

### TIGHTENING TORQUES

#### BOSCH ANTISKID (attachments)

Description	N·m	kg·m
Screw TE securing brake-clutch fluid reservoir to body (models with ABS)	3.7 + 4.8	0.38 + 0.49
Screw E securing hydraulic control unit to bracket	3.8 + 4.9	0.39 + 0.5