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7090 Body panels - replacement and repair

# GENERAL INFORMATION AND TECHNICAL DATA

## USE OF THE MANUAL

### Tests

This section contains a series of tests on systems or components taken as being tests of efficiency and functionality, or as a comparison with the correct functional parameters.

This section too is divided into Groups - Subgroups - Assemblies in the same way as the sections "Descriptions and operation" and "Procedures for repairs" in order to make it possible to rapidly navigate among the sections.

The tests can be defined at an assembly level (e.g. 5040B - Test A - Checking functionality of 3-level pressure switch), a subgroup level (e.g. 5040 - Test A - Checking functionality of conditioner system) or a group level (e.g. 70 - Test A - Location of noise). Consultation should therefore be started from the group and then be continued through the subgroups and assemblies, if present, following the specific indices to the groups and subgroups.

**GROUP**

TESTS  
BODY  
[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**70**

**List of group**

**List of subgroups**

Sig.	Description	Validity
7005	Passenger compartment front side doors	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]
7010	Passenger compartment rear side doors	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]
7025	Component cover lids	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]
7035	Body window glasses	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**ATTENTION**  
All operations must be performed with utmost care and attention to prevent personal injury.

**CAUTION**  
All operations must be performed with utmost care and attention to prevent damage to the appliance.

**List of group tests**

Test	Description	Validity
A	A location of noise (preliminary location)	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**GROUP TESTS**

**A A location of noise (preliminary location)**

Perform a road test by taking the motorcar gradually to the speed at which the noise occurs.

Locate the area where the noise comes from.

**Model**

**SUBGROUP**

TESTS  
BODY WINDOWS AND GLASSES  
[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**7035**

**List of subgroup**

**List of assembly**

Assy	Description	Validity
7035A	Windshield	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**List of subgroup tests**

Test	Description	Validity
A	Glass infiltration test (windshield and rear window)	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**SUBGROUP TESTS**

**A Glass infiltration test (windshield and rear window)**


1. Place a watery soap solution around the outside perimeter of the glass.  
2. From inside the passenger compartment blow compressed air into the wind deflector perimeter. If necessary, move it up, downwards and upwards.

Visually check for formation of air bubbles on the outside glass surface. This allows identification of any points where sealant is insufficient or damaged. If needed, with a screwdriver, remove the lining and inject "rubber type" sealant from inside the compartment.

If the defects occurred on the upper part of the glass, catch the roof lining and inject "rubber type" sealant from inside the compartment.

If the defect is located on the lower part of the glass, detach the windshield headlining for the front glass, and if it tracks for the rear glass, and inject "rubber type" sealant from inside the compartment.

If the defect is generated and spread over a wide area, overall glass seal cannot be guaranteed. The glass requires removal and complete rescaling. See PROCEDURES OR on the windshield and 7035A.4 for the rear glass.



TESTS  
BODY WINDOWS AND GLASSES  
[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**7035**

**7035A Windshield**

**List of assembly tests**

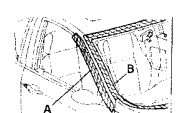
Test	Description	Validity
A	Location of windshield noise	[XXX] [XXY] [XTX] [YXX] [XTY] [YYY]

**ASSEMBLY TESTS**

**A Location of windshield noise**

Cover the various areas indicated in the illustration with body-maker sticky paper.

Perform a road test by taking the motorcar gradually to the speed at which the noise occurs. If a definite sound, check that the windshield is properly fastened and whether noise can be coming from the sun top.



NOTE: Some tests, being coded as operations in the "Repair Flat-rate manual" (e.g. 0510A10 "Cylinder compression - checks") are treated in the section "Procedures for repairs" which illustrates the operations defined in the flat-rate manual.

### VALIDITY

In the section "Tests" the same rules of validity apply as those illustrated in the section "Procedures for repairs" (see further on).

187A1C15HEN



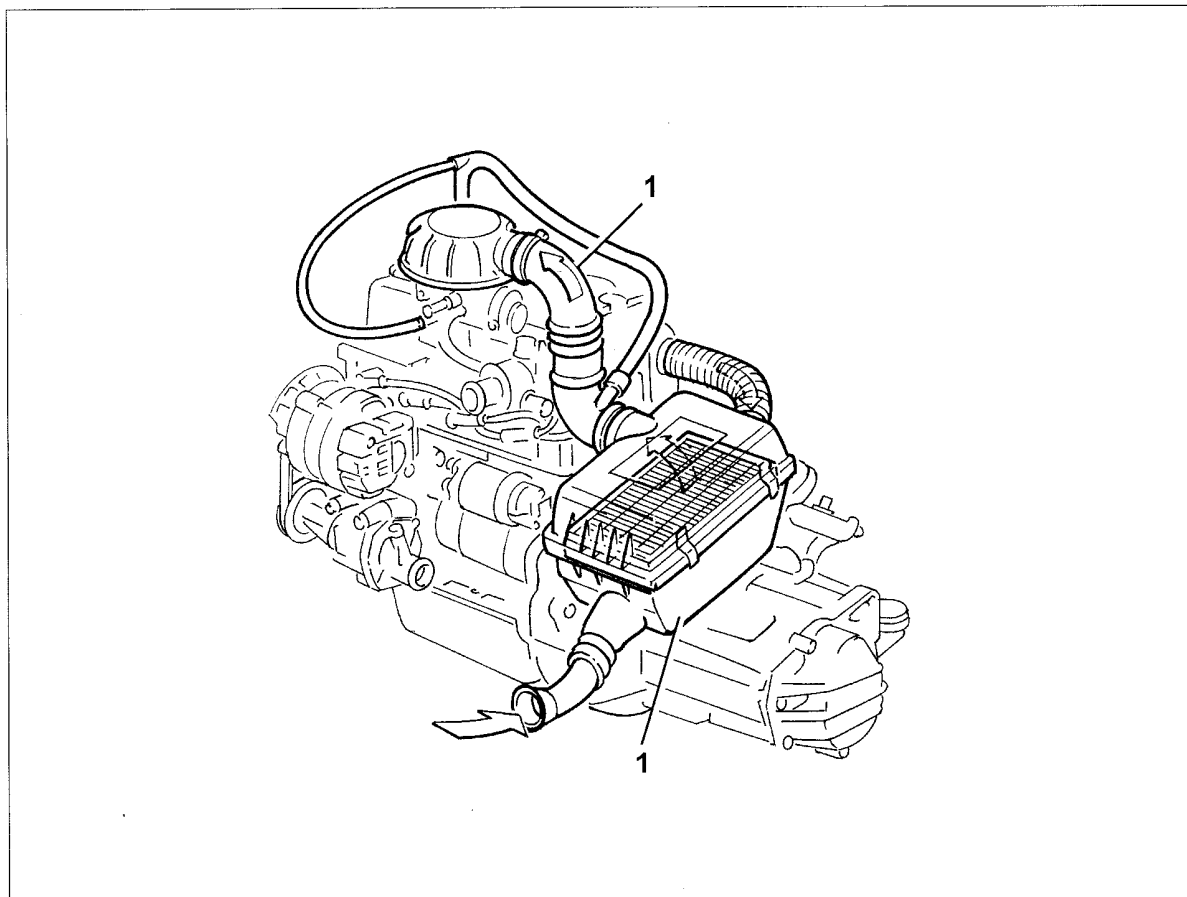
**Subgroup contents**

- GRAPHIC SUBGROUP CONTENTS

**Group contents**

<i>Grp.</i>	<i>Description</i>	<i>Validity</i>
1048A	VACUUM CIRCUIT	899

**GRAPHIC SUBGROUP CONTENTS**



107B1048T51H

<i>Ref.</i>	<i>Description</i>	<i>Grp.</i>
1	VACUUM CIRCUIT	1048A



C.514.5

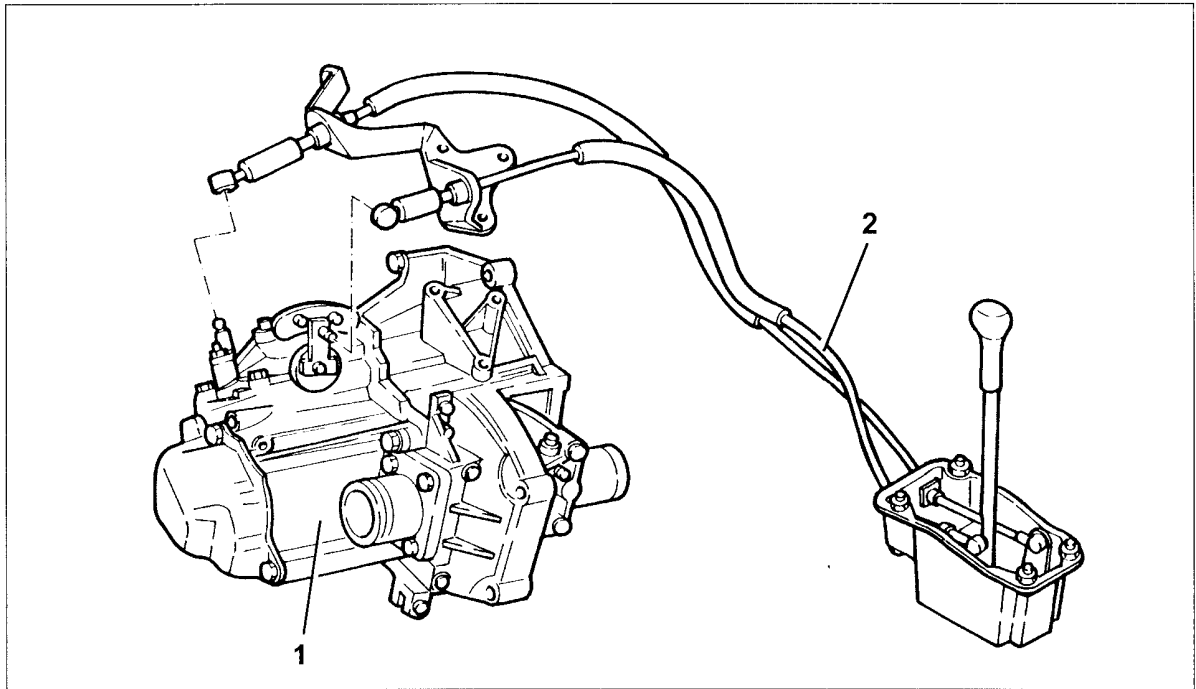
**Group contents**

- GRAPHIC GROUP CONTENTS
- MANUFACTURING FEATURES

**Subgroup contents**

Sgr.	Description	Validity
2110	Manual gearbox with differential	C.514.5

**GRAPHIC GROUP CONTENTS**



187821701G

Ref.	Name	Sgr.
1	MANUAL GEARBOX WITH DIFFERENTIAL	2110
2	EXTERNAL GEARBOX CONTROLS (*)	2125

(\*): Subgroup not described

**MANUFACTURING FEATURES**

Transverse, five speed gearbox. Three cascade shafts supported by bearings. Permanently engaged gears and cylindrical bevel gear.

External dual flexible external control made in high performance plastic (stress resistant, self lubricating, low weight).

Diagnosis  
table

Symptom / conditions




## D02 Engine running irregularly ( missing strokes)

The engine is running irregularly under all conditions (load, speed, etc.).  
In particular, irregular falls in performance are noted, also prolonged ones

- Preliminarily check:
- lack of water, fluid or dirt in the fuel tank
- condition of spark plugs
- fuel filter clogged up
- condition of fuel delivery pipe

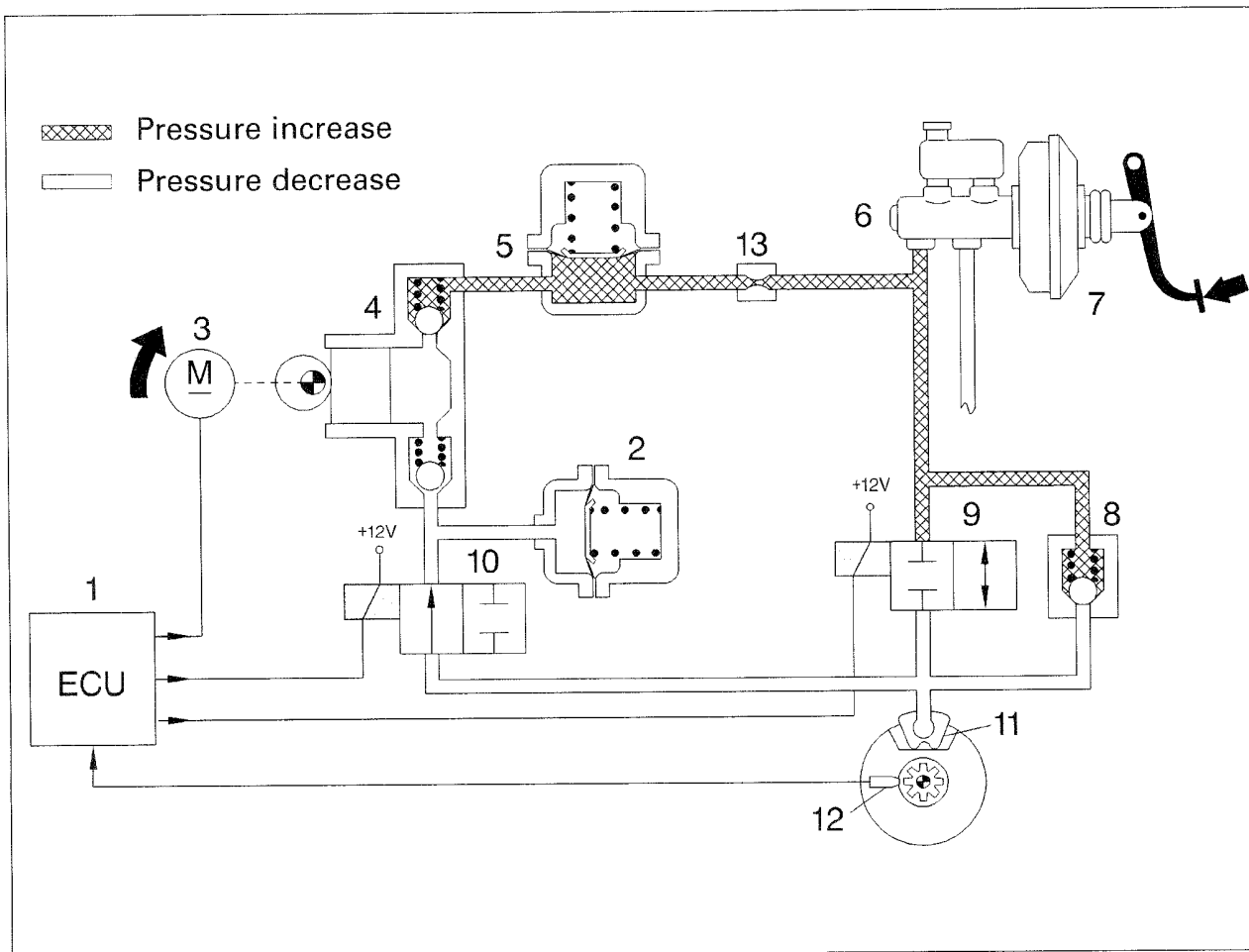
### DIAGNOSIS

#### Test results

Step	Validity	Operation to be performed			
1		<b>CHECK WITH DIAGNOSTIC TOOL</b> Connect the diagnostic tool (Examiner or other tool) to the diagnostic socket. Check for: - absence of faults in the engine ECU - plausibility of all parameters	All OK		
			Go to Step 2	Failed conversation with the ECU	Restore connection between engine ECU and diagnostic socket <b>(Wiring diagram: E5030 "PETROL ENGINE ELECTRONIC MANAGEMENT")</b>
			Error detected in the ECU	Continue as shown by the diagnostic tool	
2		<b>CHECK INJECTOR</b> With the diagnostic tool (Examiner or other tool) carry out active tests of the injector	All OK		
			Go to Step 3	Injector fault	Restore connection between injector and ECU, <b>(Wiring diagram: E5030 "PETROL ENGINE ELECTRONIC MANAGEMENT")</b> or replace the injector <b>PROCEDURE OP. 1056A70</b>

(Cont..)

Pressure reduction stage



Ref.	Description
1	ECU
2	LOW PRESSURE ACCUMULATOR (RESERVOIR)
3	RECOVERY CYLINDER MOTOR
4	RECOVERY PUMP
5	HIGH PRESSURE ACCUMULATOR (DAMPER CHAMBER)
6	BRAKE CYLINDER
7	BRAKE BOOSTER
8	RAPID PRESSURE RELIEF VALVE
9	CHARGING SOLENOID VALVE
10	DISCHARGING SOLENOID VALVE
11	BRAKE CALLIPER
12	REVOLUTION SENSOR
13	BOTTLENECK

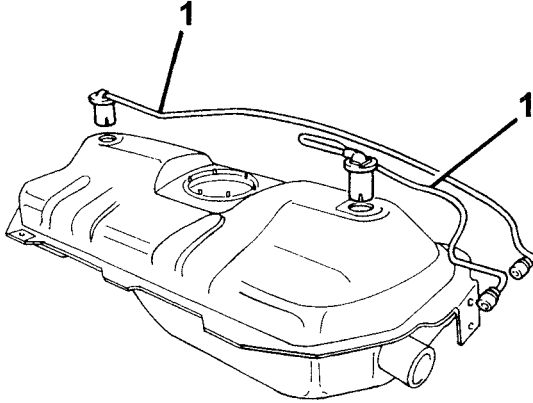
When the ECU (1) acknowledges the tendency of the wheels to lock it controls the electric-hydraulic unit to contain wheel deceleration within the allowed thresholds.

The ECU (1) closes the solenoid valve on the delivery line (9) and opens the solenoid valve on the re-



1108 Euro 3

1. Disconnect the pipes from the fuel tank and remove them, complete with valves.



167 00 00 PR V 10 05 2 \_ 00 \_ A 22 C 03 B 01 2 TIF

### Installation

1108 Euro 3

- Connect the pipes to the fuel tank complete with valves.
- Fit the two valves located on the fuel tank and rotate them in a clockwise direction.
- Fit the fuel pump with the gasket and fuel gauge sender unit.
- Fit the ring nut.
- Tighten the nuts securing the fuel pump to the fuel tank.
- **See Op. 1040A20** Fuel tank - r + r and decant fuel for versions with evaporation control system
- Connect the negative (-) battery terminal.



#### Description

#### Connector

- Battery	A1
-----------	----

- Close the bonnet lid.
- Remove the car from the ramp.
- Refill the vehicle using the recommended fuel.

1108

## 1040A30 - FUEL FILLER PIPE - R + R

### Removal

1108 Euro 3

- Position the vehicle on the ramp.
- Open the bonnet.
- Disconnect the battery negative (-) terminal.

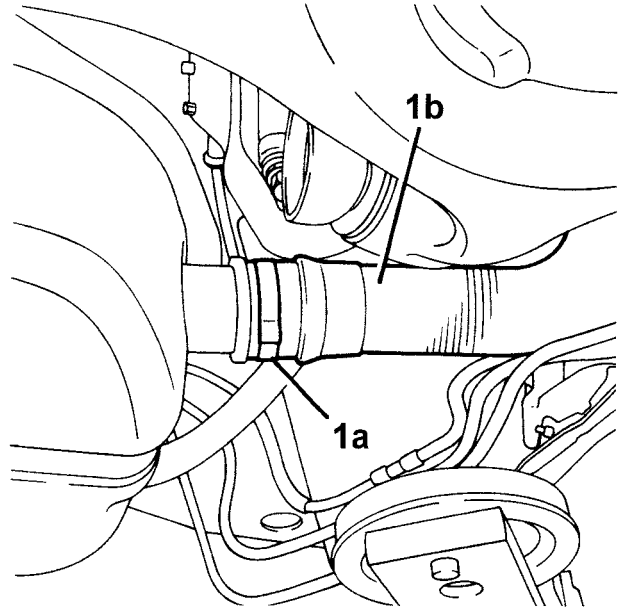


#### Description

#### Connector

- Battery	A1
-----------	----

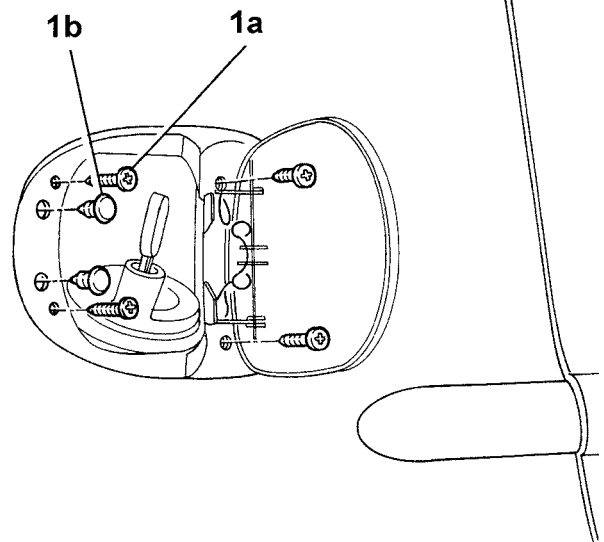
- Drain the fuel from the tank using suitable equipment.
  - **See Op. 4450B11** Rear wheel (one) - r r
  - **See Op. 7055B42** Supplementary wheel arch (one) - r+r
1. Loosen the fixing band (1a) and disconnect the fuel filler pipe (1b) from the tank.



167 00 00 PR V 10 05 2 \_ 00 \_ A 30 C 02 B 01 2 TIF

1108 Euro 3

1. Undo the bolts (1a) and remove the rubbers (1b) in the seating of the fuel cap flap.



167 00 00 PR V 10 05 2 \_ 00 \_ A 30 C 02 B 01 2 TIF

1108 Euro 3

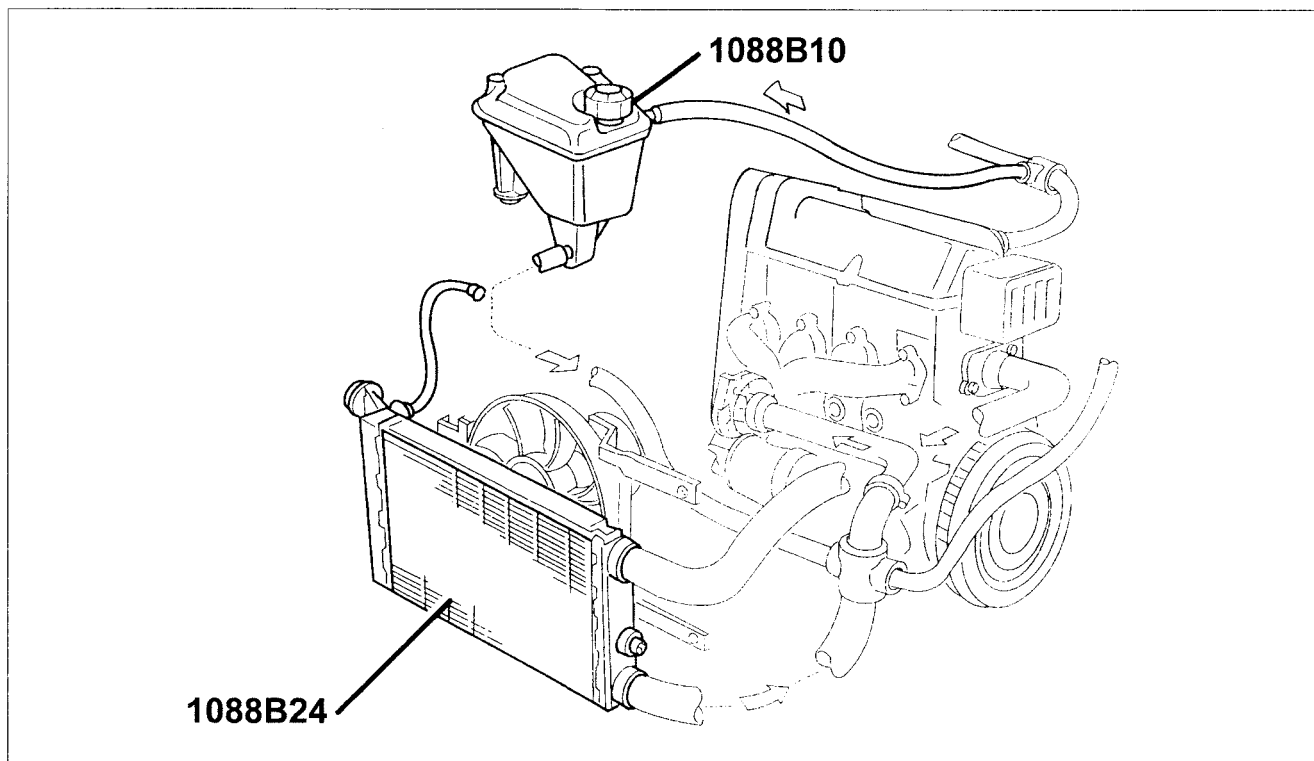
- Remove the fuel filler pipe and the fuel vapour reservoir.
1. Disconnect from the rapid attachment the pipes (two) from the fuel tank valves to the fuel vapour recovery reservoir.
  2. Disconnect the pipe from the fuel vapour recovery tank to the active charcoal filter.



1108

## 1088B - Engine cooling tank - r + r

### VIEW OF ASSEMBLY



18/02/00 PR V.10/059 \_02\_ \_E\_ C.010 \_ 7/F

### Operations index

Code	Operation	Validity
1088B10	Engine cooling tank - r + r	1108
1088B24	Engine cooling radiator - r r for air conditioned versions	1108

## OPERATIONS

1108

### 1088B10 - ENGINE COOLING TANK - R + R

#### Removal

1108 Euro 3

- Open the bonnet.
- Fit the protective bodywork covers.
- 1. Remove from the reservoir the engine coolant return pipe.
- 2. Undo the bolts securing the reservoir and remove it from the mounting.
- 3. Remove the coolant supply pipe from the reservoir, and collect the coolant in a suitable container.
- 4. Remove the engine coolant reservoir.





**Groups contents**

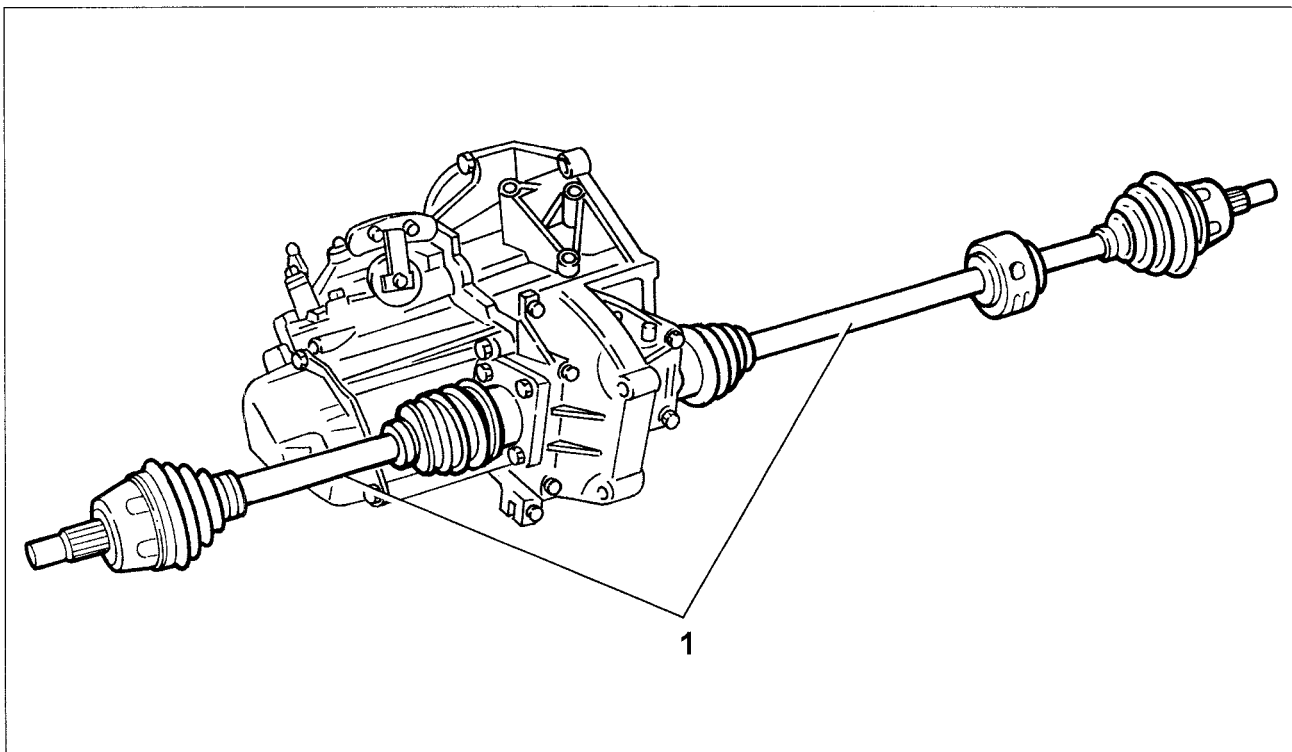
- GRAPHIC GROUP CONTENTS
- WARNINGS

- IMPORTANT NOTES

**Subgroups contents**

<i>Sgr.</i>	<i>Description</i>	<i>Validity</i>
2710	Front axle	1108

**GRAPHIC GROUP CONTENTS**



187F27P01G

<i>Ref.</i>	<i>Description</i>	<i>Sgr.</i>
1	FRONT AXLE	2710

# 3320



(Op. 3320B20 continued)

- Torque the pipe to the rear drum brake cylinder



Name	Code
Wrench	1.856.132.000



Fastener	Component	Ø	Value (daNm)
Union pipe	REAR CONTROL M10 CYLINDER PIPE	1.1	

- Fit the rear drum brake shoes.
- Fit the rear brake shoe retaining devices.
- Fit the end of the handbrake cable to the rear drum handbrake control.
- Fit the upper rear brake shoe return spring with the following tool.



Name	Code
Tool	1.881.136.000

- Fit the lower shoe return spring with the following tool.



Name	Code
Tool	1.881.136.000

- Remove the rear drum brake cylinder piston retaining device.
- Remove any traces of rust from the hub contact surfaces and the drum.
- Fit the rear brake drum and torque the pin



Fastening	Component	Ø	Value (daNm)
Screw	REAR BRAKE DRUM	M8	1.2
Pin	REAR BRAKE DRUM	M8	1.2

- **Complete with Op. 3330A18** Front or rear HYDRAULIC BRAKE SYSTEM - Bleeding.
- **Complete with Op. 3330A10** BRAKE FLUID - Checking level and topping-up (if required).
- **Complete with Op. 4450B11** Rear WHEEL (one) - R.R.
- Remove the vehicle from the shop jack.

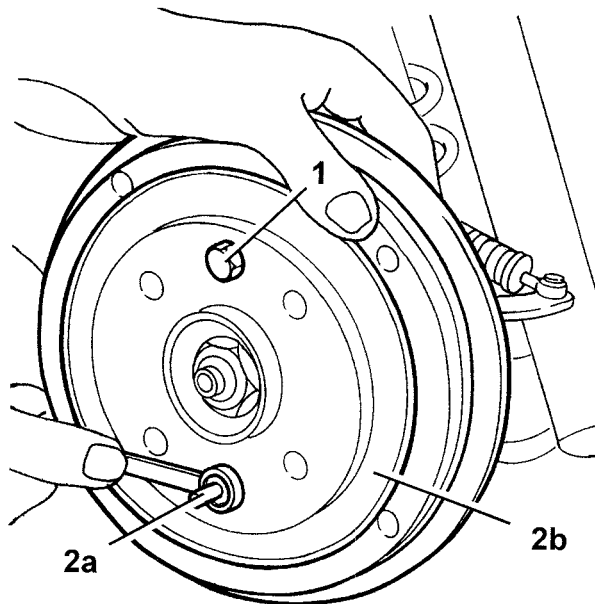
## 3320B22 - REAR BRAKE CALIPER CONTROL CYLINDERS- REPLACING - BLEEDING

- **Refer to Op. 3320B20** Rear brake caliper control CYLINDER, (one), LH or RH - Bleeding.

## 3320B30 - REAR BRAKE DRUM, (ONE), LH OR RH - R.R.

### Removal

- Position the vehicle on a shop jack.
- Check the handbrake is not engaged.
- **Perform Op. 4450B11** Rear WHEEL (one) - R.R.
- 1. Remove the screw.
- 2. Remove the pin (2a) and remove the rear brake drum (2b).



187F3320B30P01B

### Reassembly

- Remove any traces of rust from the hub contact surfaces and the drum.
- Fit the rear brake drum and torque the pin



Fastening	Component	Ø	Value (daNm)
Screw	REAR BRAKE DRUM	M8	1.2
Pin	REAR BRAKE DRUM	M8	1.2

- **Complete with Op. 4450B11** Rear WHEEL (one) - R.R.
- Remove the vehicle from the shop jack.

## 3320B34 - REAR BRAKE DRUMS - R.R.

- **Refer to Op. 3320B30** rear brake drum (one) LH or RH - R.R.



**Subgroup contents**

- DESCRIPTION
- FRONT HEADLIGHTS

- FOGLIGHTS

**Units contents**

<i>Grp.</i>	<i>Description</i>	<i>Validity</i>
-	-	-

**DESCRIPTION**

The external lighting system has been designed and manufactured pursuing two objectives:

- Ensure maximum efficiency while respecting international standards defining light features.
- Integrate vehicle design so that single components enhance vehicle image.

The front light clusters include the dipped beam headlights, the main beam headlights and the side lights.

The low beam can be adjusted in height according to the vehicle load conditions.

The front direction indicators, moreover, are secured to the front light clusters.

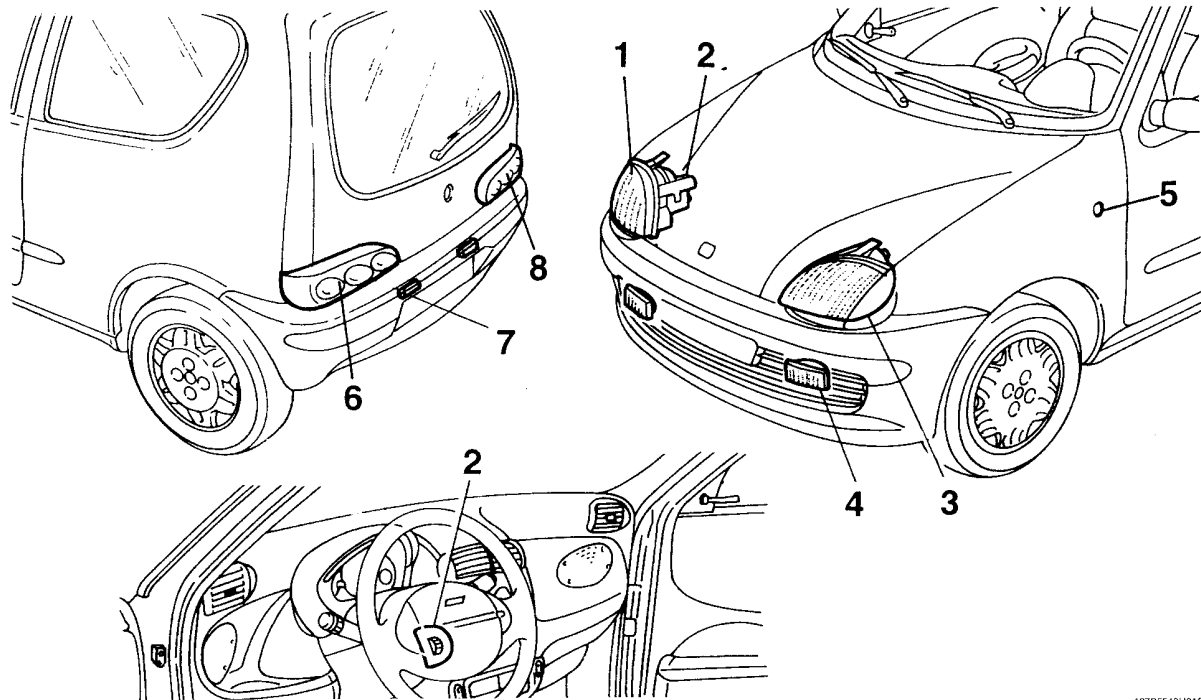
Foglights can be fitted, according to versions.

The rear light cluster is a single unit with the following functions:

- Brake lights, taillights, direction indicators and reversing light is the right-hand cluster.
- Brake lights, taillights, direction indicator and rear foglight in the left-hand cluster.

The number plate is lighted by means of two separate units to ensure maximum visibility.

Finally, two direction indicators are located on the front wheelhouse.



18785540U01G

<i>Ref.</i>	<i>Description</i>
1	FRONT LIGHT CLUSTER
2	HEADLIGHT BEAM SLANT ADJUSTMENT
3	FRONT DIRECTION INDICATOR
4	FOGLIGHT
5	SIDE DIRECTION INDICATORS
6	REAR LEFT-HAND LIGHT CLUSTER



## ECU

An ECU manages the system checking all the components and triggering the airbag modules when necessary (the pretensioners have mechanical triggering).

### Operation

Inside the ECU the following is installed:

- an accelerometric sensor, the signal from which, after processing by a microprocessor, can detect the entity of a crash and consequently trigger the airbags.
- A second safety sensor, mechanical, for checking, enables the triggering of the airbags.



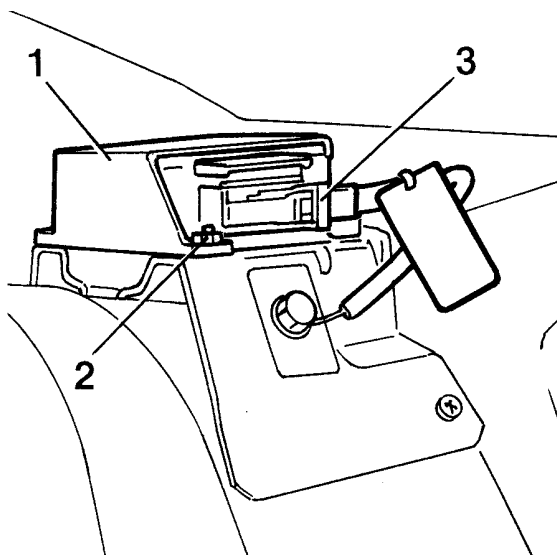
*The ECU only detects front crashes. It does not enable anything in the case of side crashes, nose-to-tail collisions or overturning of the vehicle.*

### LOCATION

The ECU is located under the vehicle and is rigidly fastened to the body: in this way the deceleration sensors inside it detect accurately the decelerations of the entire vehicle.



*The ECU must always be installed with the stamped arrow pointing in the direction of the car travel.*



187B5580CU10B

Ref.	Name
1	ECU
2	ATTACHMENTS
3	ELECTRICAL CONNECTION

## ECU characteristics

Energy accumulation:

- the ECU is supplied by 12 V with the key on MAR, but it can still operate for about 220 m/sec after the supply has been cut off. This is because there is a buffer condenser that accumulates sufficient energy to generate the triggering signal of the airbags. In this way the system operation is ensured even if the crash causes a system voltage blackout (for example battery damage or breakage, break on the supply cables, etc.).

Attachment check:

- the control logic also checks the electrical contact between the ECU box and the body.

Faults memory:

when the vehicle is running the ECU continually performs diagnosis of the system, thus checking the continuity of the circuits and its components. A fault detected is memorised and indicated by the simultaneous switching on of the "airbag fault" warning light on the instrument panel.

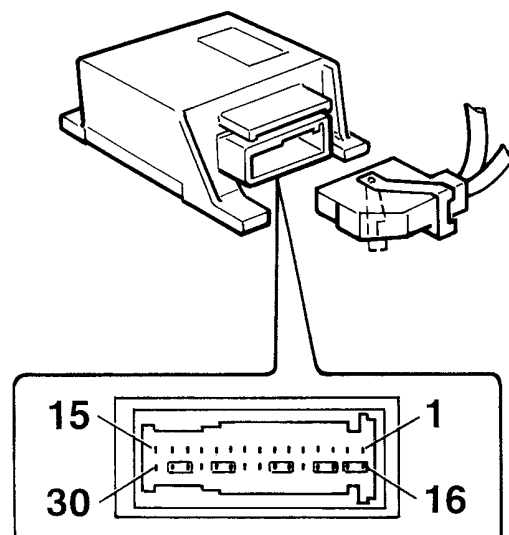
Fault memory:

- this can be consulted when servicing by connecting the equipment to the diagnostic socket.

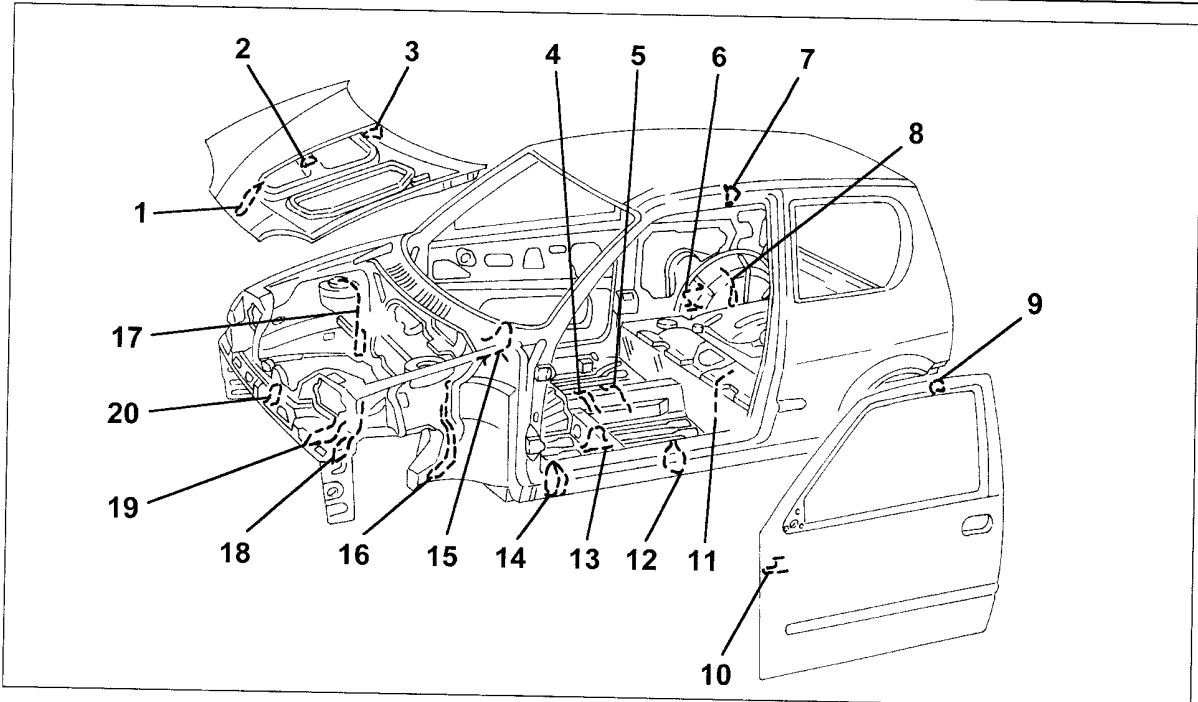
Crash memory:

- the ECU microprocessor makes complex calculation and control algorithms on the signal coming from the accelerometric sensor and determines the severity of a crash. According to the severity level found, and with the enabling of the safety sensor, it sends a triggering signal to the airbags. This triggering order is memorised in a special crash memory, that contains the information concerning the exceeding of the intervention thresholds and the safety sensor enabling.

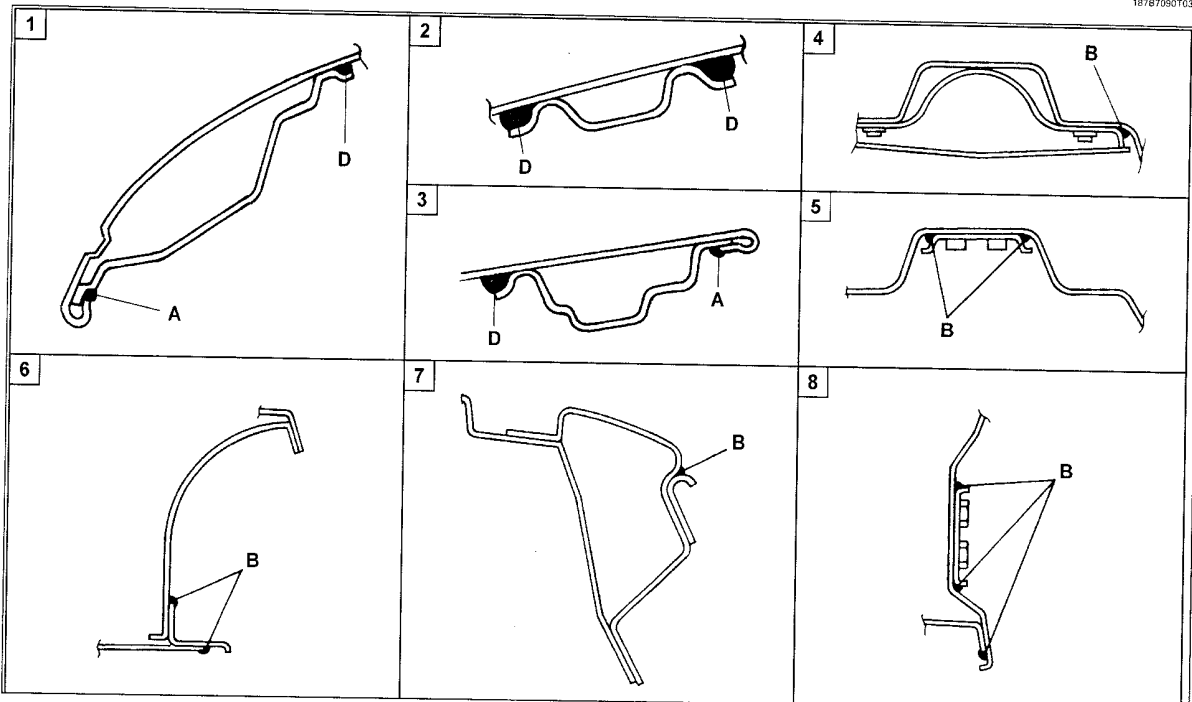
## ECU Pin out



187B5580CU11B



18787090T03G



18787090T04G

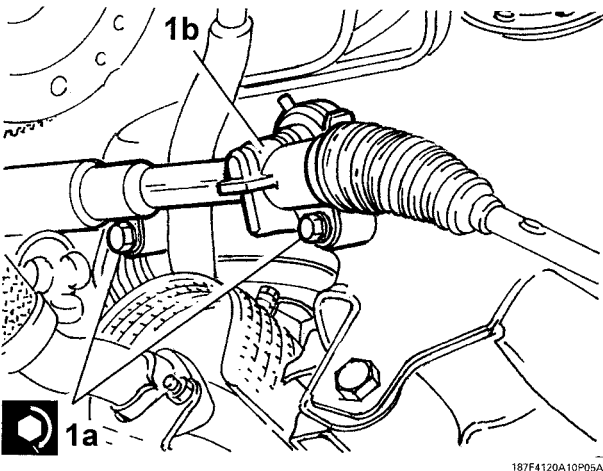
Ref.	Name
A	THERMOSETTING SEALANT, TYPE A
B	THERMOSETTING SEALANT, TYPE B
C	VINYL PROTECTION
D	THERMOSETTING SEALANT, TYPE A2

# 4120



(Cont.d Op. 4120A10)

	Fastening	Component	Ø	Value (daNm)
1a	Screw	STEERING BOX	M10	5.2



- Complete with Op. 1076B50 Exhaust PIPE connection to engine/manifold - R+R.
- Connect the adjustable track rod articulated joints to the front hub uprights and tighten the fastening nuts to the specified torque

	Fastening	Component	Ø	Value (daNm)
-	Nut	ADJUSTABLE TRACK ROD ARTICULATED JOINTS	M10	3.4

- Complete with Op. 4450B12 Front WHEELS (two) - R.R.
- Lower the car.
- Assemble the screw of the steering shaft joint fastening part and tighten the locknut.

**X** The screw of the steering shaft joint fastening piece must slot into the groove on the steering box pinion.

- Complete with Op. 4110A40 Steering shaft JOINTS - Locking screws.
- Connect the battery (-) terminal

	Description	Connector
-	Battery	A1

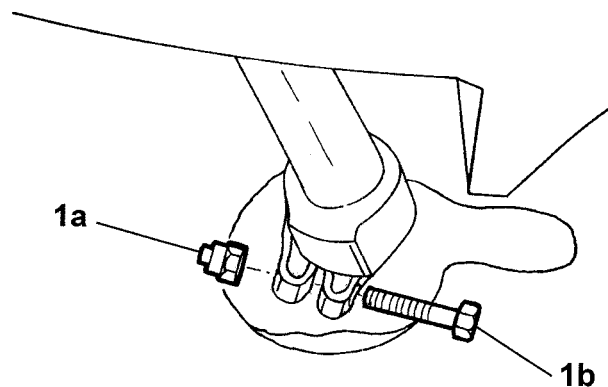
- Close the engine compartment.
- Remove the car from the car lift.

**Note:** Front wheel toe-in must be checked each time the steering box is removed/refitted.

## 4120A14 - STEERING BOX - R+R. WITH GEARBOX REMOVED - CHECKING WHEEL TOE-IN, IF NECESSARY, SEPARATELY

### Removal

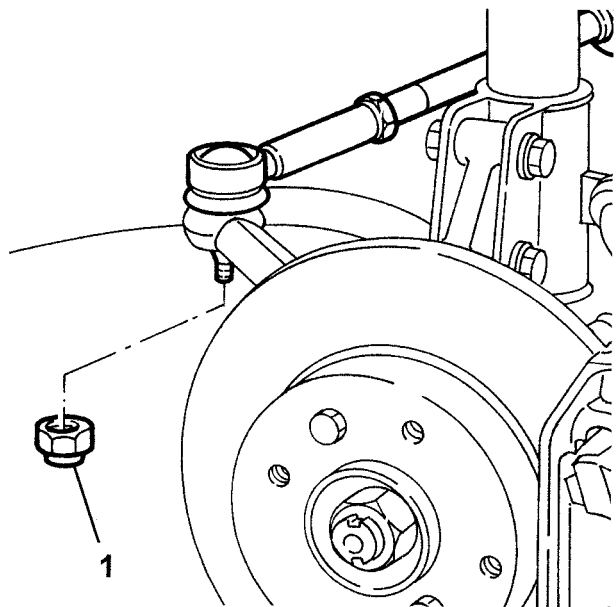
- Operation to be carried out with the car on a lift.
  - Mark the position of the steering shaft joint in relation to the steering box pinion.
1. Slacken the nut (1a) and remove the screw (1b) of the steering shaft joint fastening part.



- Raise the car.

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1. Slacken the nuts of the adjustable track rod articulated joints.



(Cont.d)




*Diagnosis table*      *Symptom / conditions*

## **L51 Fan does not work at all speeds**

*The passenger compartment fan works but not at all speeds.*

### **DIAGNOSIS**

*Test results*

<i>Step</i>	<i>Validity</i>	<i>Operation to be performed</i>			
<b>1</b>		<b>CHECK CLIMATE CONTROL FAN ELECTRIC CIRCUIT</b>	<b>All OK</b>	<b>Problems found</b>	<b>Intervention</b>
		Check in sequence: – fan adjustment resistance – fan controls – connection between fan and respective controls, via the adjustment resistance <b>(Wiring diagram: E6010 "Heater")</b>	Go to Step 2	Incorrect connections  Faulty fan  Faulty fan adjuster  Faulty fan controls	Restore connections  Replace fan <b>PROCEDURE OP. 5020A34</b>  Replace fan resistor <b>PROCEDURE OP. 5020A44</b>  Replace fan controls <b>PROCEDURE OP. 5020A40</b>
<b>2</b>		<b>CHECK CORRECT OPERATION</b>	<b>All OK</b>	<b>Problems found</b>	<b>Intervention</b>
		Check the fault is no longer present	End of test	–	–