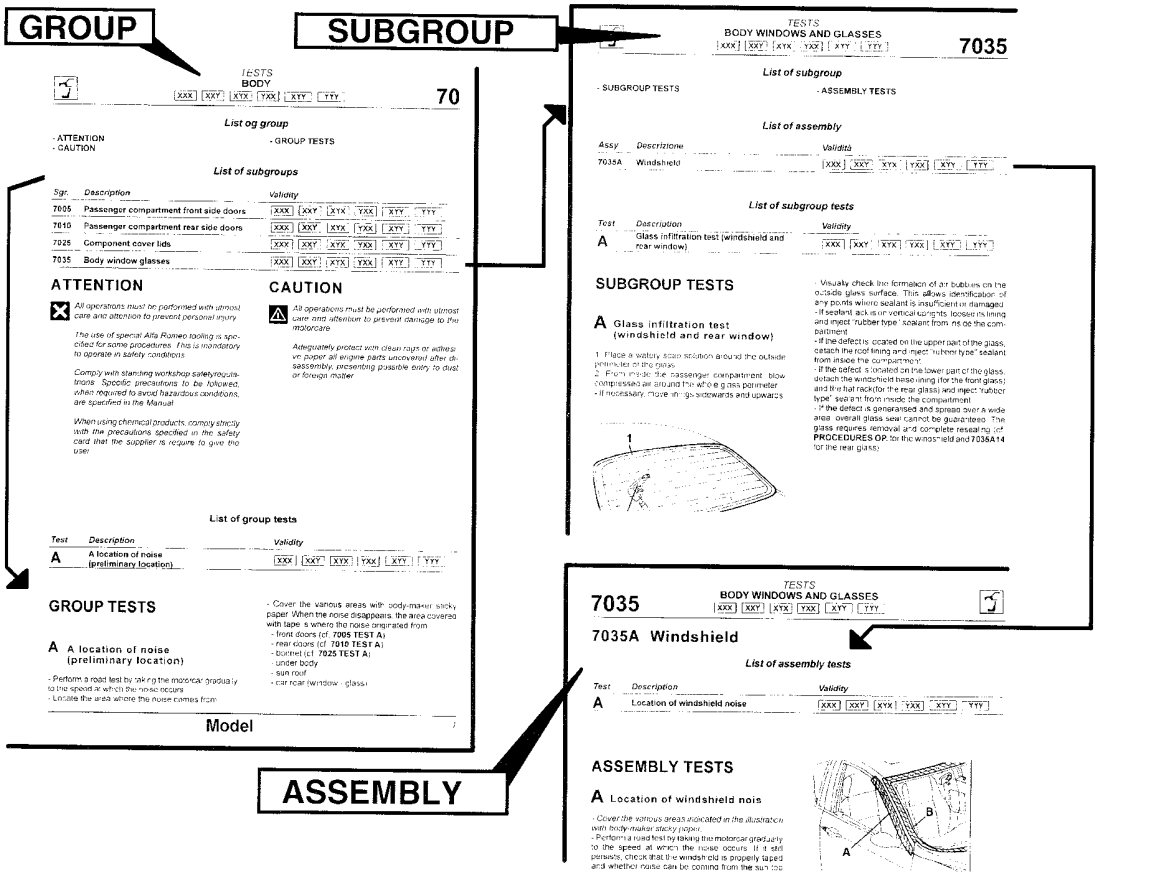
GROUP AND SUBGROUP CONTENTS

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.



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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).

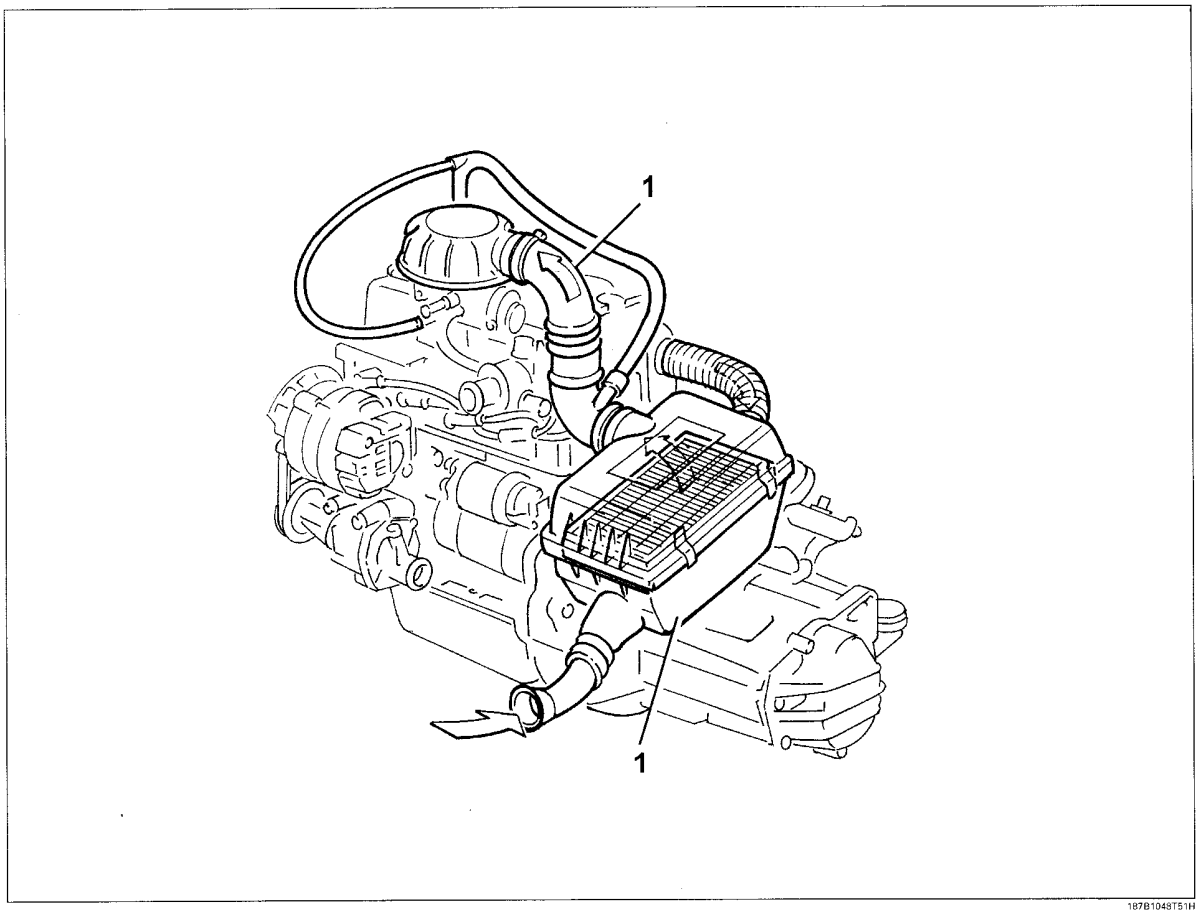
Subgroup contents

- GRAPHIC SUBGROUP CONTENTS

Group contents

Grp.	Description	Validity
1048A	VACUUM CIRCUIT	899

GRAPHIC SUBGROUP CONTENTS



187B1048T51H

Ref.	Description	Grp.
1	VACUUM CIRCUIT	1048A

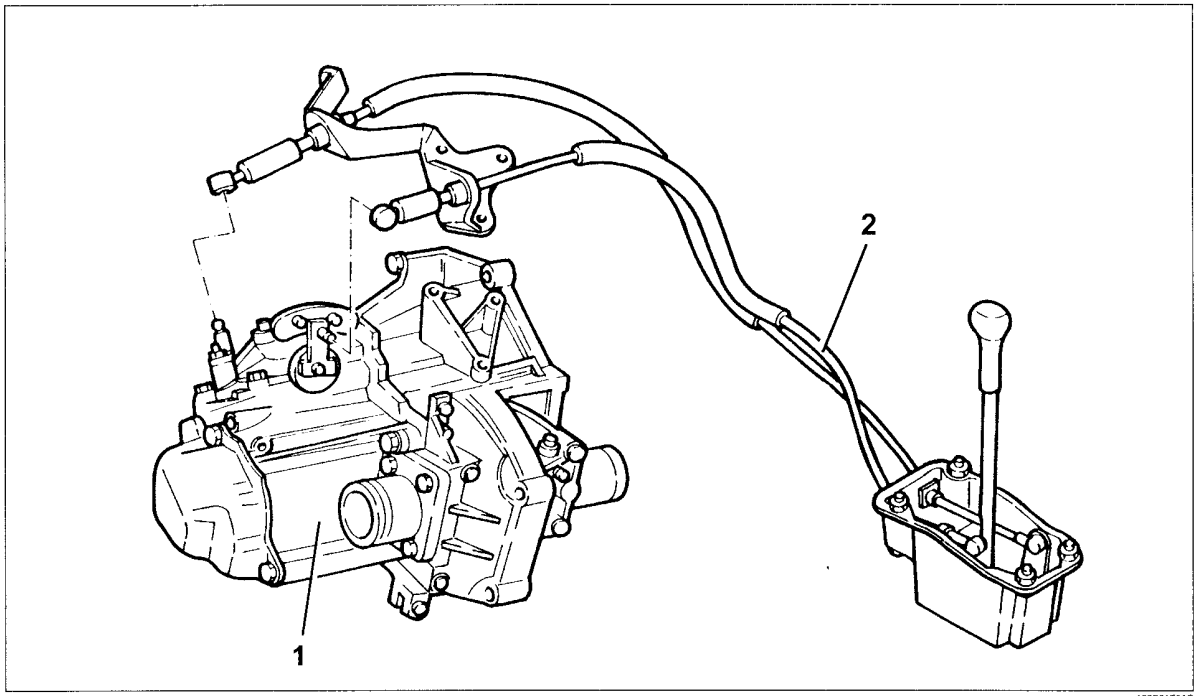
Group contents

- GRAPHIC GROUP CONTENTS
- MANUFACTURING FEATURES

Subgroup contents

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

GRAPHIC GROUP CONTENTS



187B21T01G

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

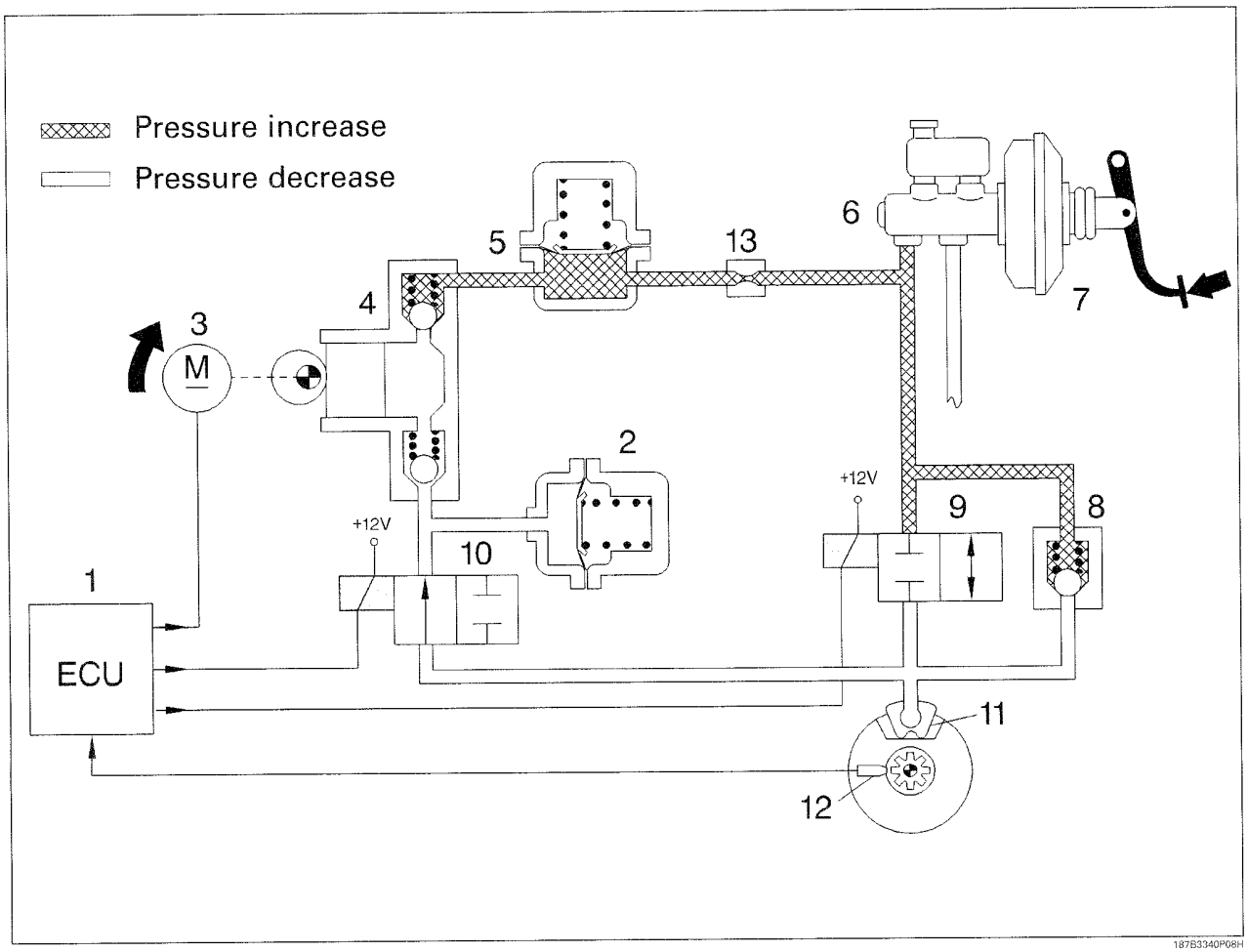
- Preliminarily check:
- lack of water, fluid or dirt in the fuel tank
- condition of spark plugs
- fuel filter clogged up
- condition of fuel delivery pipe

DIAGNOSIS

			Test results		
Step	*Validity*	*Operation to be performed*	OK	⚠	🔧
1		***CHECK WITH DIAGNOSTIC TOOL***	***All OK***	***Problems found***	***Intervention***
		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	Go to Step **2**	Failed conversation with the ECU	Restore connection between engine ECU and diagnostic socket **(Wiring diagram: E5030 "PETROL ENGINE ELECTRONIC MANAGEMENT")**
				Error detected in the ECU	Continue as shown by the diagnostic tool
2		***CHECK INJECTOR***	***All OK***	***Problems found***	***Intervention***
		With the diagnostic tool (Examiner or other tool) carry out active tests of the injector	Go to Step **3**	Injector fault	Restore connection between injector and ECU, **(Wiring diagram: E5030 "PETROL ENGINE ELECTRONIC MANAGEMENT")** or replace the injector **PROCEDURE OP. 1056A70**

(Cont..)

Pressure reduction stage



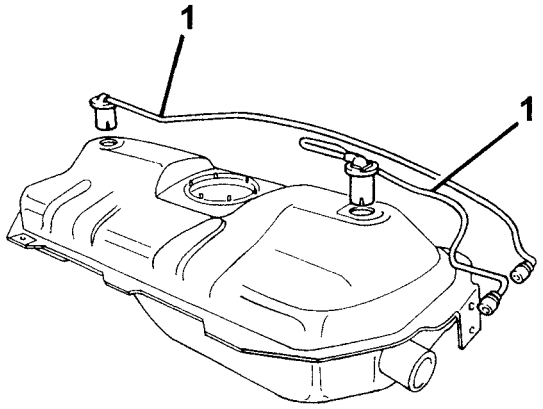
Ref.	Description
1	ECU
2	LOW PRESSURE ACCUMULATOR (RESERVOIR)
3	RECOVERY CYLINDER MOTOR
4	RECOVERY PUMP
5	HIGH PRESSURE ACCUMULATOR (DAMPER CHAMBER)
6	BRAKE CYLINDER
7	BRAKE BOOSTER
8	RAPID PRESSURE RELIEF VALVE
9	CHARGING SOLENOID VALVE
10	DISCHARGING SOLENOID VALVE
11	BRAKE CALLIPER
12	REVOLUTION SENSOR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



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

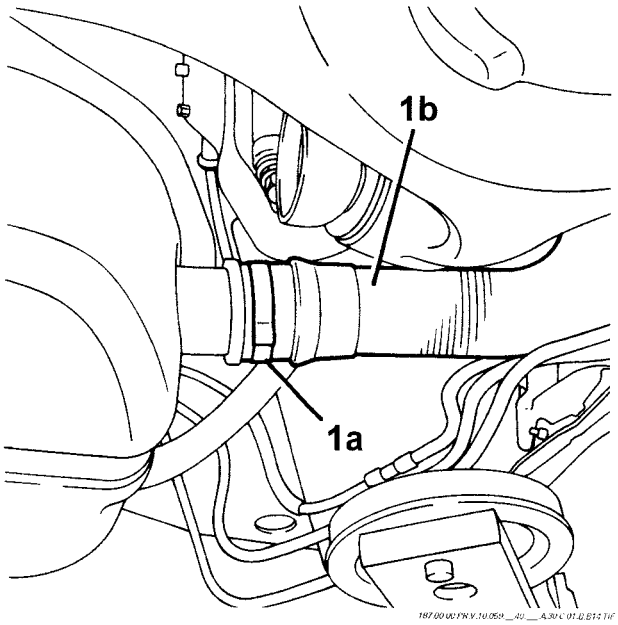
1108 Euro 3

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

Description	Connector
- Battery	A1

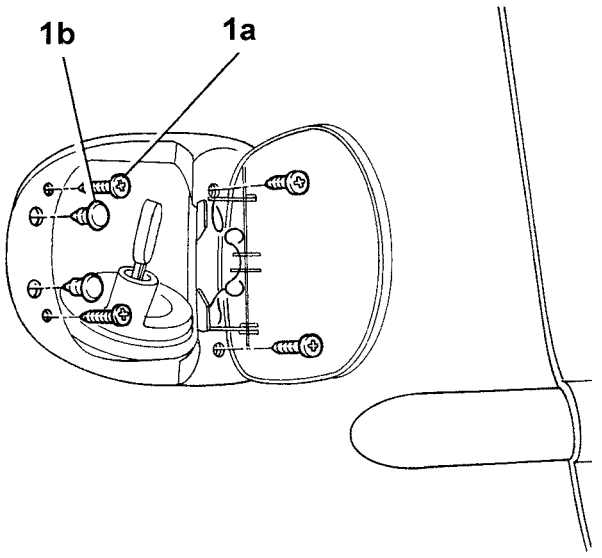
- Drain the fuel from the tank using suitable equipment.
- **See Op. 4450B11** Rear wheel (one) - r r
- **See Op. 7055B42** Supplementary wheel arch (one) - r+r

1. Loosen the fixing band (1a) and disconnect the fuel filler pipe (1b) from the tank.



1108 Euro 3

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



1108 Euro 3

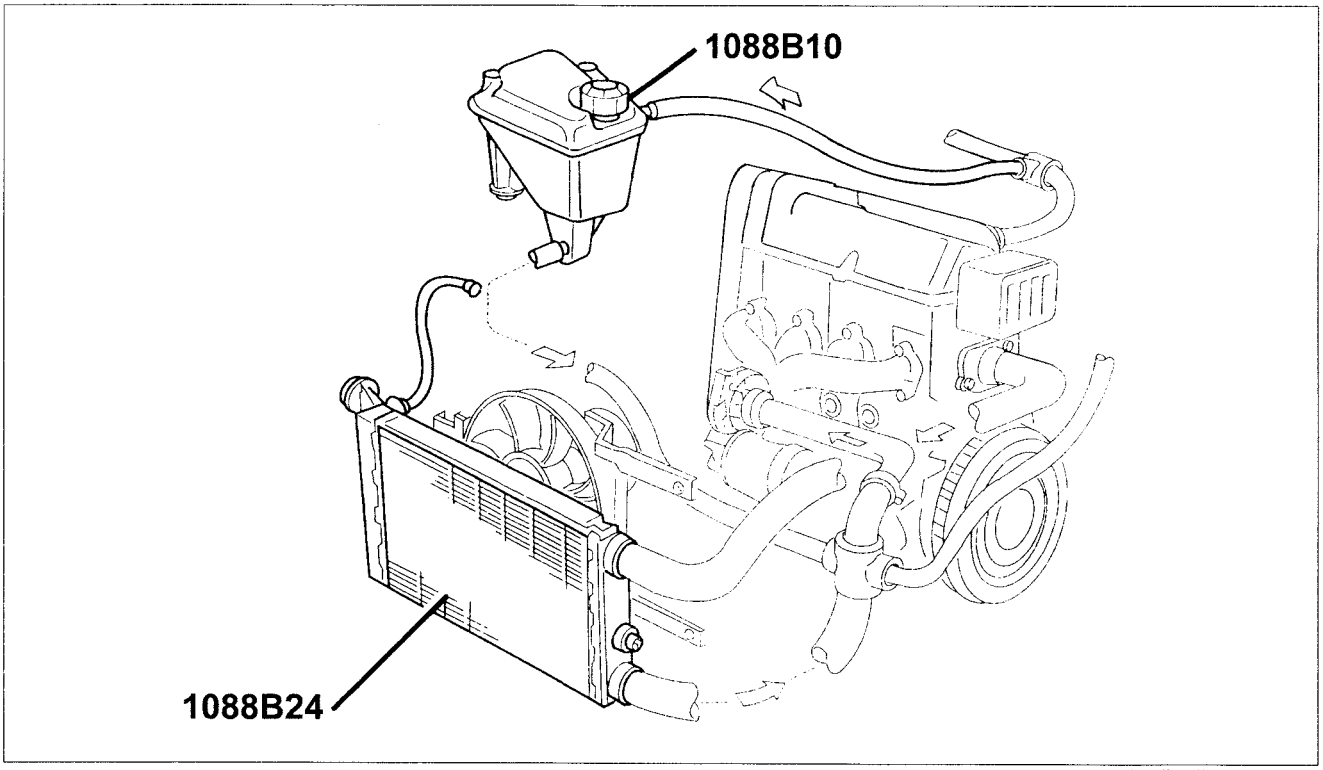
- Remove the fuel filler pipe and the fuel vapour reservoir.

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



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 trom 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.

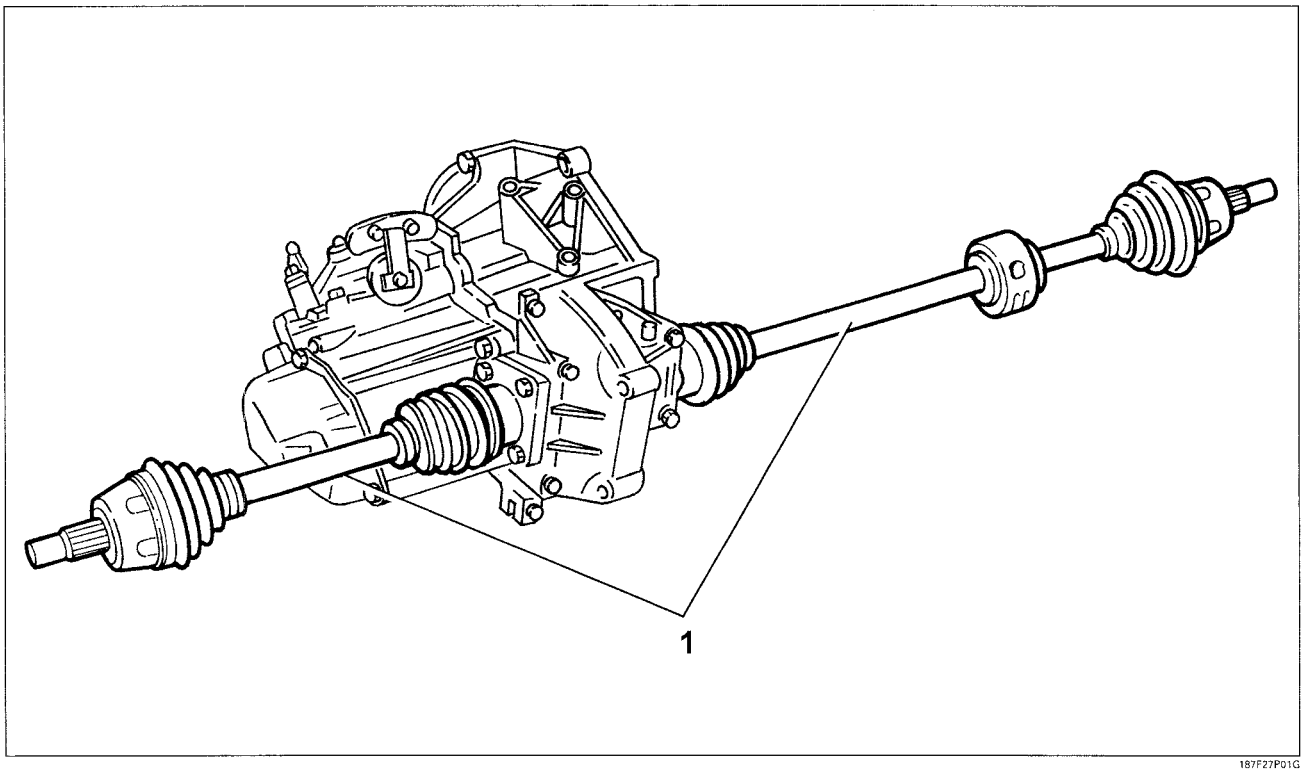
Groups contents

- GRAPHIC GROUP CONTENTS
- IMPORTANT NOTES
- WARNINGS

Subgroups contents

Sgr.	Description	Validity
2710	Front axle	1108

GRAPHIC GROUP CONTENTS



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Ref.	Description	Sgr.
1	FRONT AXLE	2710

(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 CYLINDER PIPE	M10	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

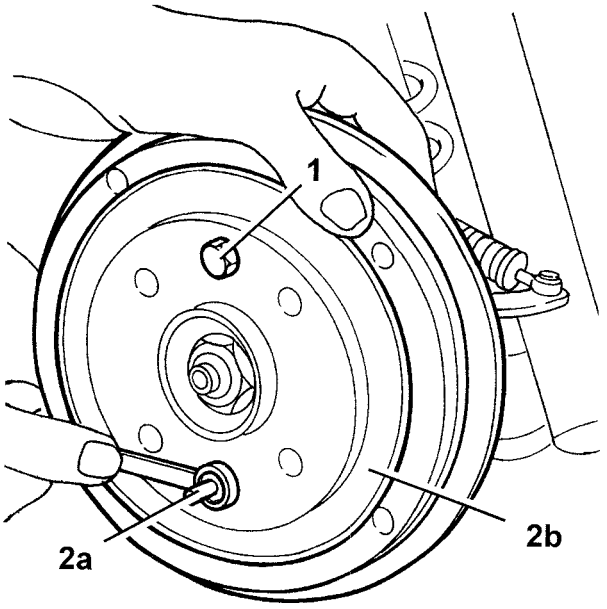
- **Refer to Op. 3320B20** Rear brake caliper control CYLINDER, (one), LH or RH - Bleeding.

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).



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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

Units contents

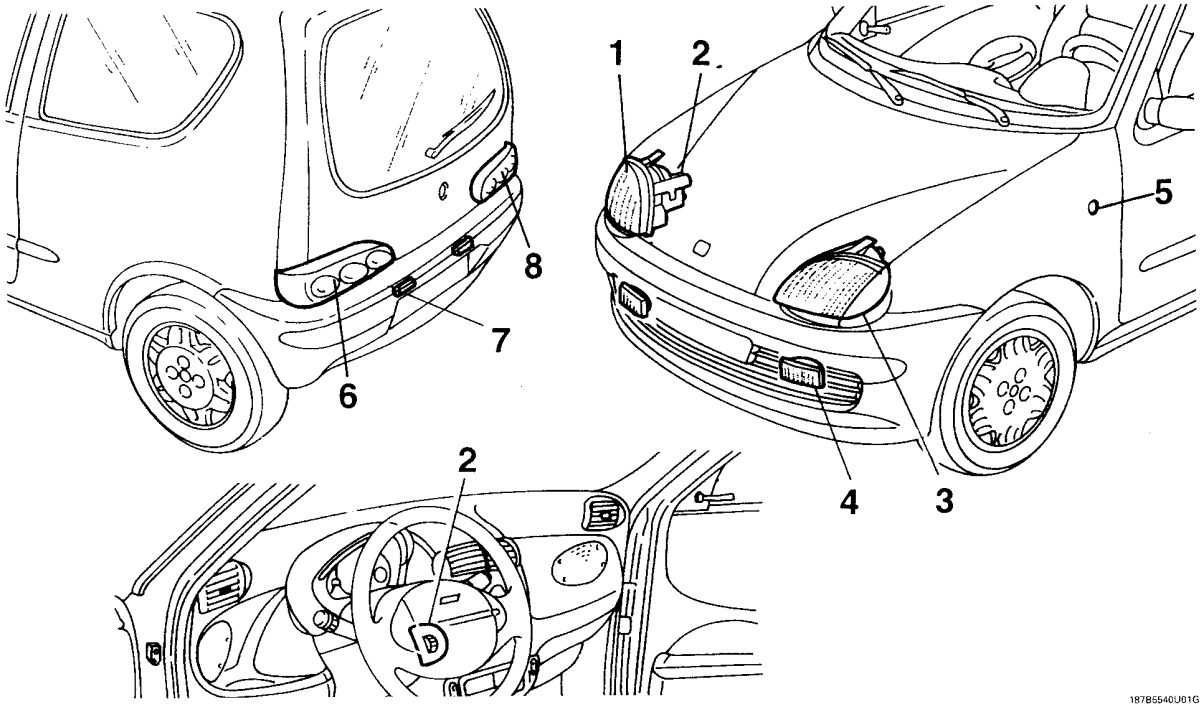
Grp.	Description	Validity
-	-	-

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.



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Ref.	Description
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).

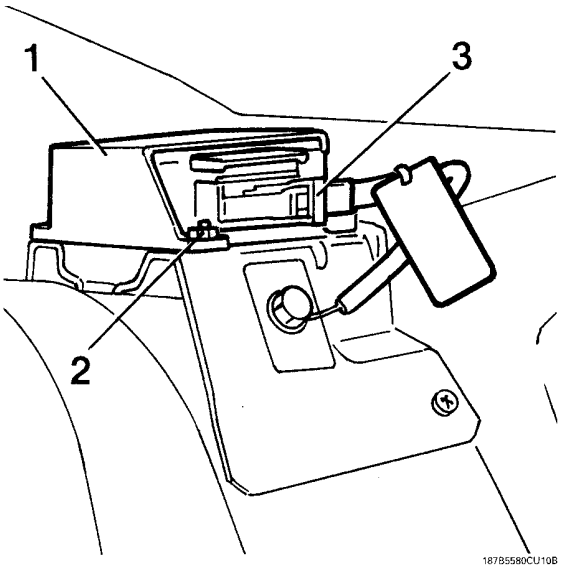
Operation

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.



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.).

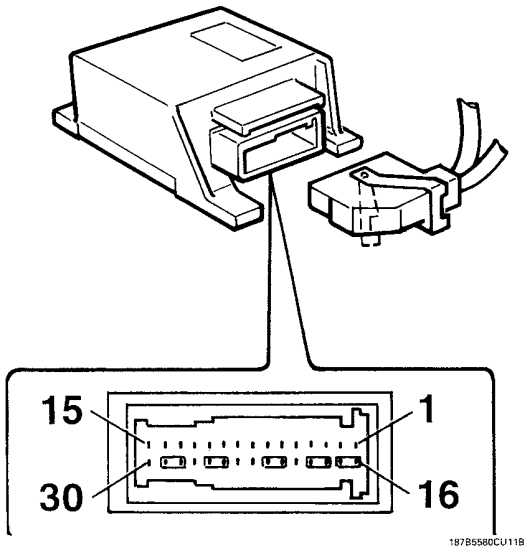
Attachment check:
- the control logic also checks the electrical contact between the ECU box and the body.

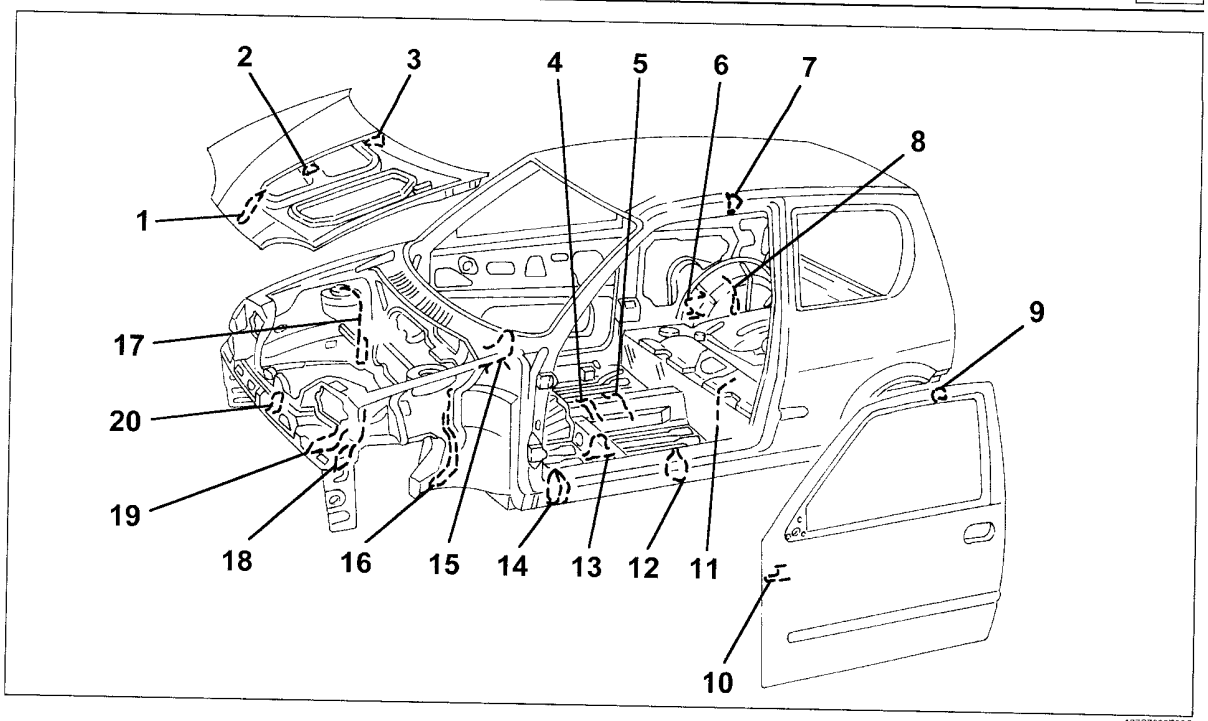
Faults memory:
when the vehicle is running the ECU continually performs diagnosis of the system, thus checking the continuity of the circuits and its components. A fault detected is memorised and indicated by the simultaneous switching on of the "airbag fault" warning light on the instrument panel.

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





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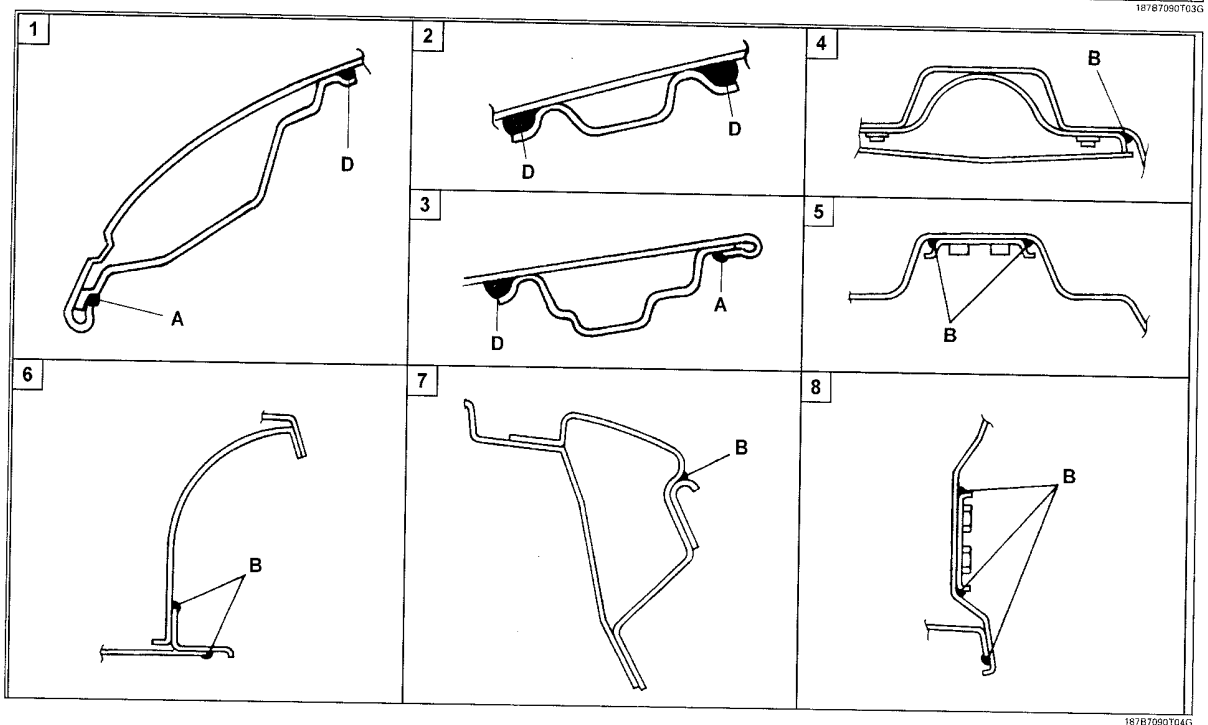

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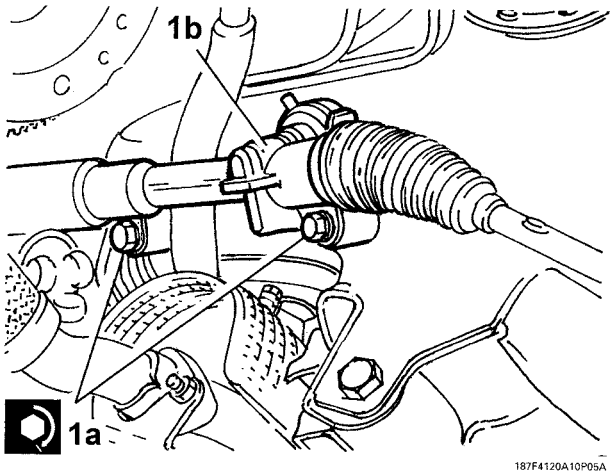
Ref.	Name
A	THERMOSETTING SEALANT, TYPE A
B	THERMOSETTING SEALANT, TYPE B
C	VINYL PROTECTION
D	THERMOSETTING SEALANT, TYPE A2

(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.

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.

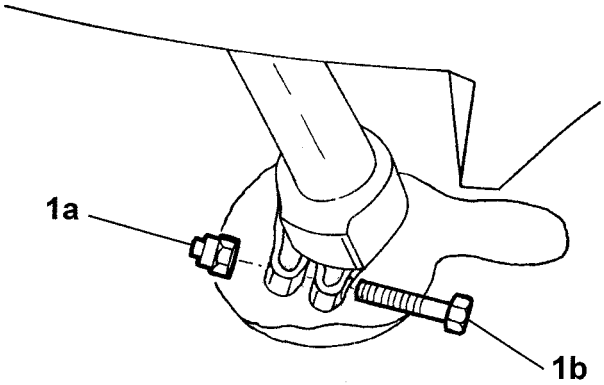
Note: *Front wheel toe-in must be checked each time the steering box is removed/refitted.*

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.

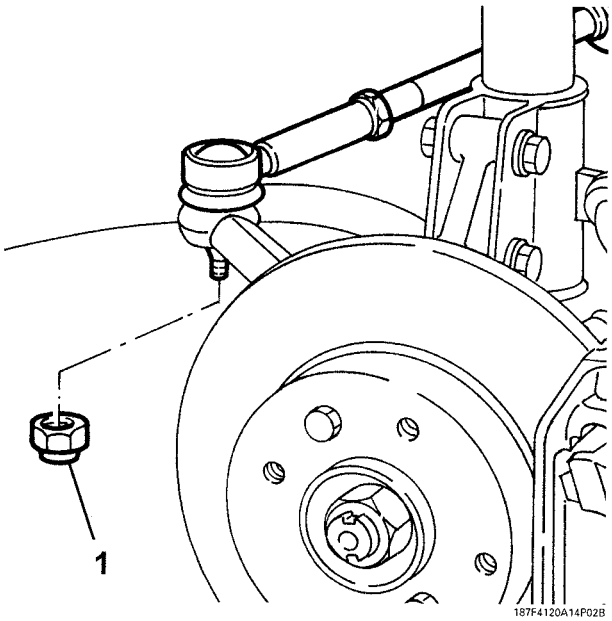
1. Slacken the nut (1a) and remove the screw (1b) of the steering shaft joint fastening part.



- Raise the car.

1108

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

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