



Technical Note 3681A

CB1U

Basic document: Workshop Repair Manual 348 -
TECHNICAL NOTE 3700A

Special features for CLIO V6 phase 2 equipped with L7X 762 engine

This note cancels and replaces the Technical Note 3681A from September 2002.

77 11 319 282

Edition 2 - MAY 2003

EDITION ANGLAISE

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

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All copyrights reserved by RENAULT.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of RENAULT.

© RENAULT 2003

Contents

	Page		Page
01A TECHNICAL SPECIFICATIONS		14A ANTIPOLLUTION	
Engine - Clutch - Gearbox	01A-1	Fuel vapour rebreathing	14A-1
Dimensions	01A-2	Oil vapour rebreathing	14A-4
02A LIFTING		16A STARTING - CHARGING	
Trolley jack - Axle stands	02A-1	Alternator	16A-1
04A LUBRICANTS		17A IGNITION	
Capacities - Grades	04A-1	Static ignition	17A-1
10A ENGINE AND PERIPHERALS		17B PETROL INJECTION	
Identification	10A-1	Special notes	17B-1
Engine/gearbox assembly	10A-2	Immobiliser function	17B-2
11A TOP AND FRONT OF ENGINE		Location of components	17B-3
Cylinder head gaskets	11A-1	Computer	17B-9
Camshafts	11A-14	Wiring diagram	17B-12
12A FUEL MIXTURE		Injection fault warning light	17B-14
Specifications	12A-1	Special notes for the	
Throttle valve	12A-3	"On Board Diagnostic" system	17B-15
Inlet manifold	12A-5	On Board Diagnostic Conditions	17B-17
Air inlet	12A-8	Misfire fault finding	17B-18
13A FUEL SUPPLY		Catalytic converter fault finding	17B-19
Fuel pressure	13A-1	Lambda sensor fault finding	17B-20
		Adaptive richness correction	17B-21
		Injection programming/air-conditioning	17B-22
		Idle speed correction	17B-23
		Richness regulation	17B-24
		Accelerator pedal potentiometer	17B-26
		Motorised throttle valve	17B-27
		Centralised coolant temperature management	17B-28
		Camshaft phase shifter	17B-29
		Cruise control/Speed limiter	17B-30

	Page		Page
19C TANK		35A WHEELS AND TYRES	
Fuel tank	19C-1	Specifications	35A-1
19D ENGINE MOUNTING		38C ANTI-LOCK BRAKING SYSTEM	
Suspended engine mounting	19D-1	Introduction	38C-1
20A CLUTCH		Wiring diagram	38C-3
Plate mechanism	20A-1	Computer connector	38C-5
Flywheel	20A-2	Braking circuit bleed	38C-6
21A MANUAL GEARBOX		62A AIR CONDITIONING	
Gearbox (ratio)	21A-1	General Vehicle Information	62A-1
Gearbox (Removal - Refitting)	21A-2	Wiring diagram	62A-2
30A GENERAL INFORMATION		80B FRONT HEADLIGHTS	
Tightening torques (in daNm)	30A-1	Automatic turning on of lights	80B-1
Structure and dimensions of the main braking components	30A-5	Headlight units and direction indicators	80B-3
Underbody height	30A-6	Headlight beam adjustment	80B-5
Front axle geometry checking value	30A-7	Daytime running lights	80B-6
Rear axle geometry checking value	30A-8	Fog lights	80B-7
31A FRONT AXLE		80C DISCHARGE BULB	
Lower arm	31A-1	General Vehicle Information	80C-1
Lower arm ball joint	31A-2	Bulbs	80C-4
33A REAR AXLE COMPONENTS		Computer (Ballast)	80C-5
Rear sub-frame	33A-1	81A REAR LIGHTS	
Axial ball joint	33A-3	Rear lights	81A-1
		High level brake light	81A-2
		81C FUSES	
		Passenger compartment fuse box	81C-1

	Page		Page
82A ENGINE IMMOBILISER		88A WIRING HARNESS	
Encrypted key engine immobiliser	82A-1	Diagnostic socket	88A-1
83A INSTRUMENT PANEL		88B MULTIPLEXING	
Dashboard	83A-1	Description	88B-1
Instrument panel	83A-10	Location of computers	88B-3
Display	83A-18	88C AIR BAG AND PRETENSIONERS	
83D CRUISE CONTROL		General Vehicle Information	88C-1
Cruise control/Speed limiter	83D-1	Airbag computer	88C-7
84A SIGNALLING CONTROLS		Side impact sensor	88C-11
Lighting switch	84A-1	Seat belt pretensioners	88C-12
Wiper control switch	84A-2	Driver's airbag	88C-14
Electric window switch	84A-3	Passenger airbag module	88C-15
85A WIPERS/WASHERS		Side airbag module	88C-17
Windscreen wipers	85A-1	Destruction procedure	88C-19
86A RADIO			
Radio	86A-1		
Display	86A-6		
CD changer	86A-7		
87B PASSENGER COMPARTMENT CONNECTION UNIT			
UCH	87B-1		

TECHNICAL SPECIFICATIONS

Engine - Clutch - Gearbox

01A

Vehicle type	Engine		Clutch type	Manual gearbox type
	Type	Cubic capacity (cc)		
CB1U	L7X 762	2946	Self-adjusting	PK6 - 017

MANUFACTURER'S PLATE

Example: CB1U

C: Body type (3-door)

B: Project code

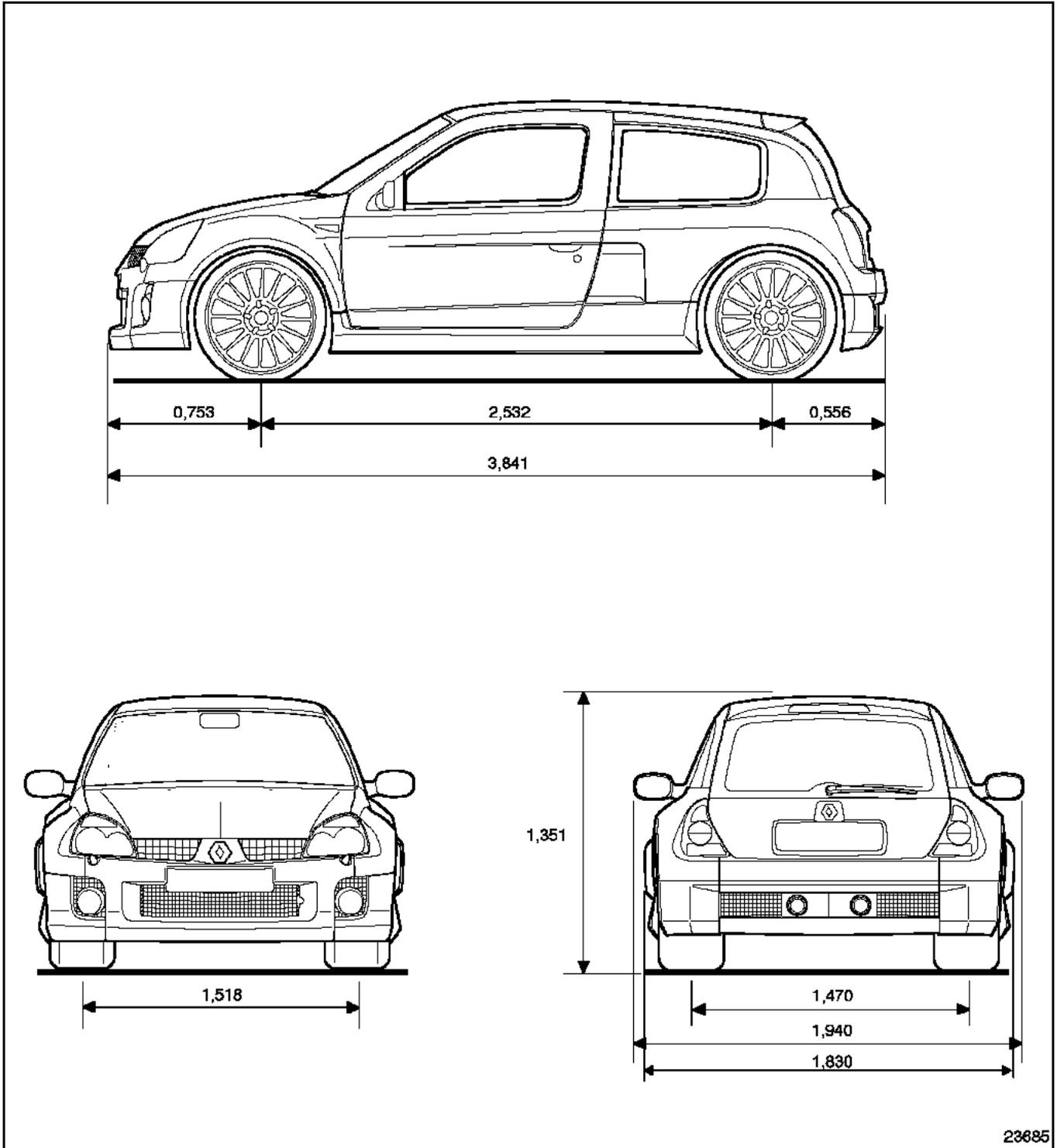
1U: Engine suffix

VALUES AND SETTINGS

Dimensions

01A

Dimensions in metres



LIFTING

Trolley jack - Axle stand

02A

IMPORTANT

If a trolley jack is used, appropriate axle stands must always be used.

WARNING

The sub-frame of this vehicle is protected by products providing a twelve-year anti-perforation warranty.

Never use equipment which is not fitted with rubber pads, to avoid the direct metal to metal contact which could damage the protection originally applied.

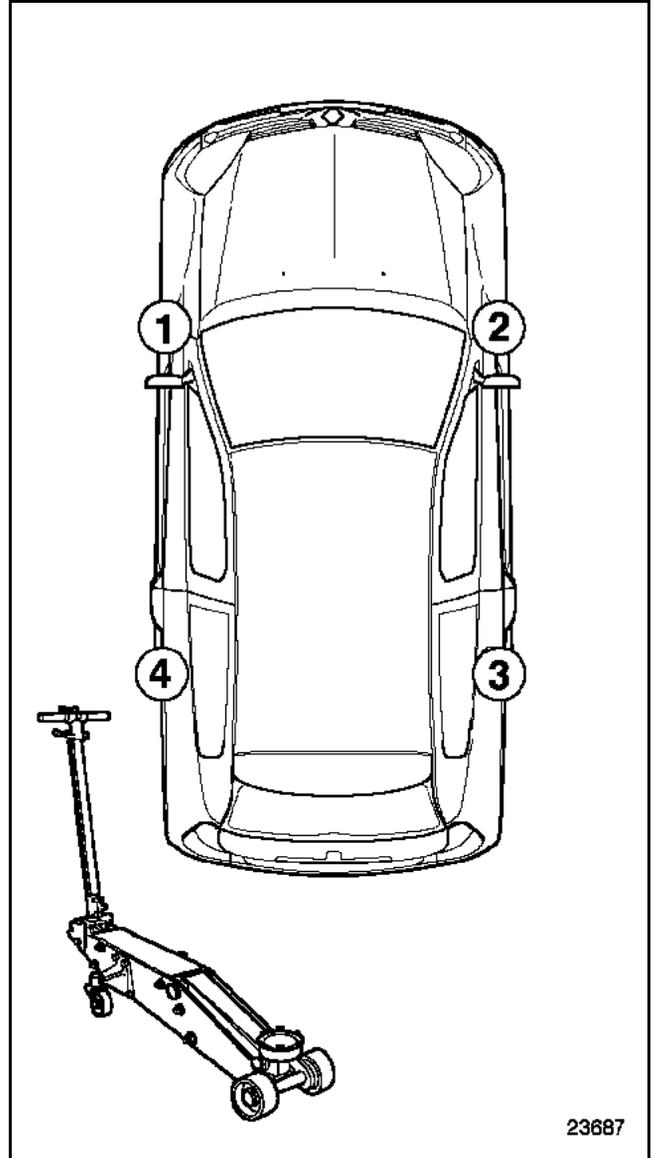
Never raise the vehicle by placing the jack beneath the front suspension arms or under the rear axle.

To raise a front or rear wheel, place the tool kit jack beneath the jacking points (1), (2), (3) and (4).

AXLE STANDS

The axle stands must be placed under the contacts located beneath the reinforcements before being used to support the vehicle.

Axle stands are positioned at the rear by raising the vehicle at the sides.



23687

LUBRICANTS

Capacities - Grades

04A

Engine	Average oil capacity (adjust with gauge) (in litres)	
	Draining	Draining with oil filter replacement
L7X 762	5.2	5.5
Gearbox	Capacity (in litres)	
PK6	2.4*	

* approximately - adjust the level using the tool (B. Vi. 1675) ref. (C).

Components	Capacity in litres	Grade
Brake circuit	1	SAE J 1703 and DOT 4

Note:
Brake fluids must be approved by the design office.

Components	Capacity in litres	Grade
Fuel tank	Approximately 61	Unleaded petrol
Cooling circuit L7X 762	15	GLACEOL RX (type D) Add coolant only
Power assisted steering	Separate reservoir 1.1	ELF RENAULT MATIC D2

ENGINE AND PERIPHERALS Identification

10A

Vehicle type	Engine	Manual gearbox	Capacity (cc)	Bore (mm)	Stroke (mm)	Compression
CB1U	L7X 762	PK6 017	2946	87	82.6	11.4/1

The basic documents used for engine maintenance and repair are:

- Workshop Repair Manual **348 CLIO V6 RS phase 1**,
- part **Mot. L7X**.

Special tooling required

Mot. 453-01	Set of 2 hose clamps for general use
Mot. 1202	Hose clip pliers
Mot. 1390	Support for removing and refitting the engine and transmission assembly
T. Av. 476	Ball joint extractor

Tightening torques



wheel bolt	11 daNm
lower ball joint nut	5.5 daNm
propeller shaft nuts	28 daNm
steering ball joint nuts	3.7 daNm
lower chassis bolt	9 daNm
primary catalytic converter bolt	3.5 daNm
engine assembly bolt and nut, RH side	4 daNm
engine assembly nut, LH side	8 daNm

REMOVAL

Put the vehicle on a two-post lift.

Remove the tray under the bonnet.

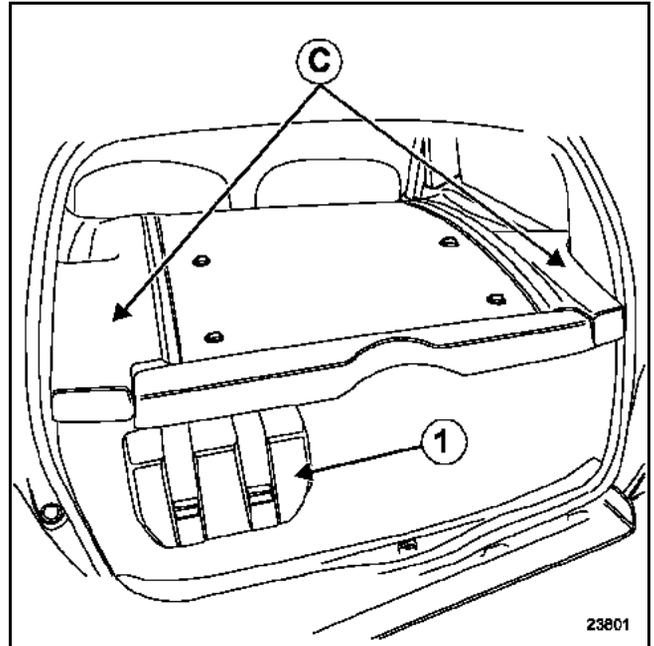
Disconnect the battery.

Drain the air conditioning circuit.

Remove the engine covers.

Remove:

- the rear trim,
- the right- and left-hand pillar (C) trims,
- the toolbox lid and the toolbox (1),
- the rear carpet.



23801

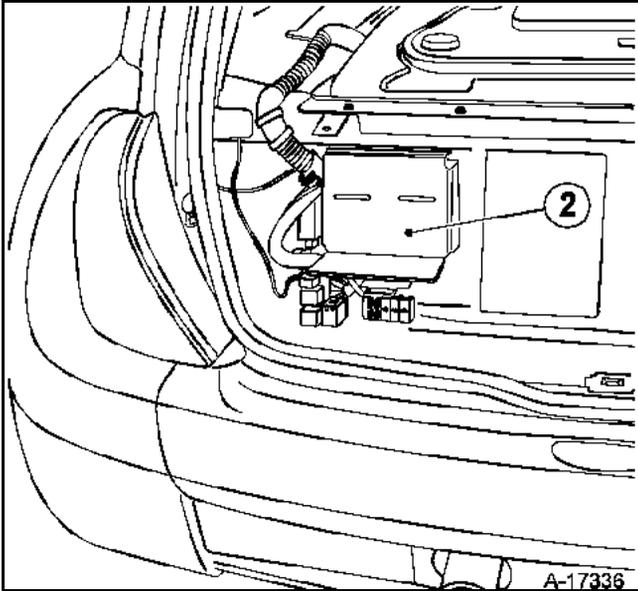
ENGINE AND PERIPHERALS

Engine/Gearbox assembly

10A

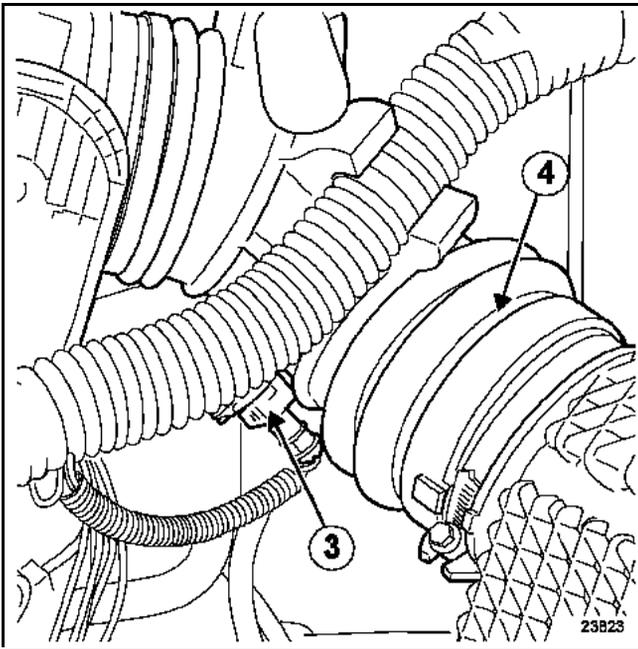
Remove the coolant expansion bottle from the fire wall and place it above the engine.

Remove the cover from the supporting frame (2).



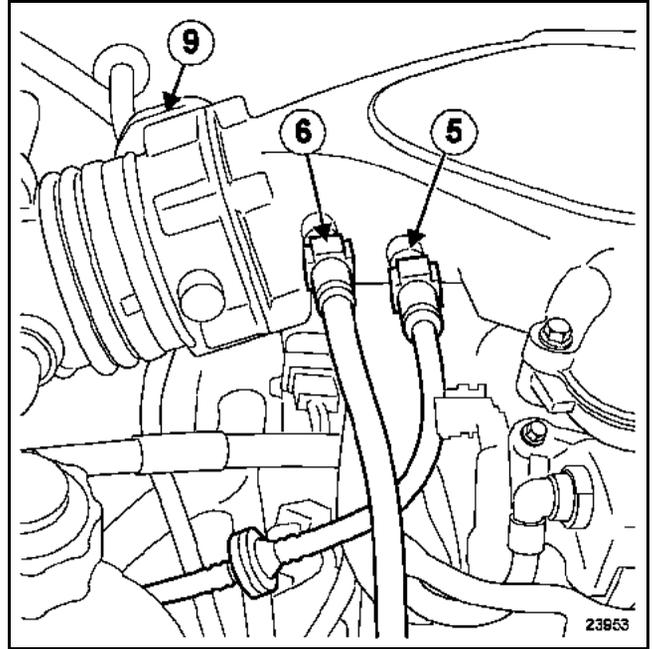
Disconnect:

- the relays and fuse holders from the supporting frame,
- the earth connection from the fire wall,
- the engine harness from the vehicle wiring harness,
- the engine harness from the ventilation cooling fans.



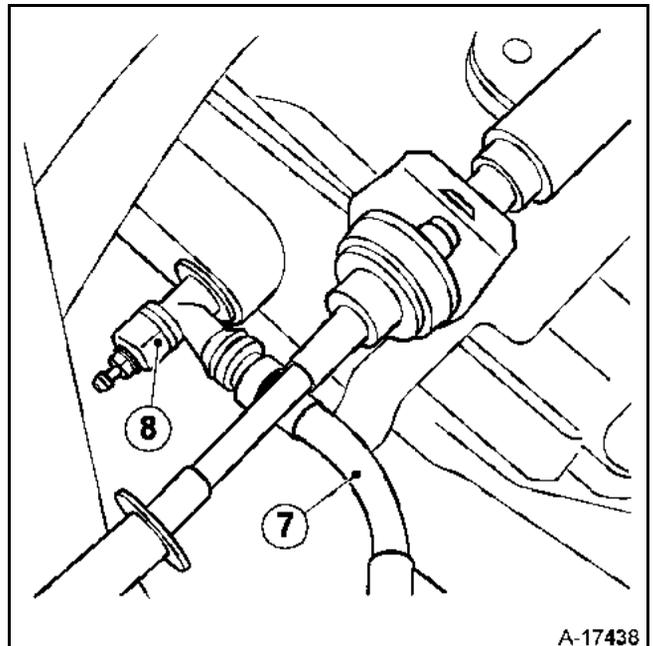
Disconnect:

- the air temperature sensor (3) from the air intake pipe,
- the air intake pipe (4) from the throttle valve unit,
- the oil vapour rebreathing pipe from the air intake pipe.



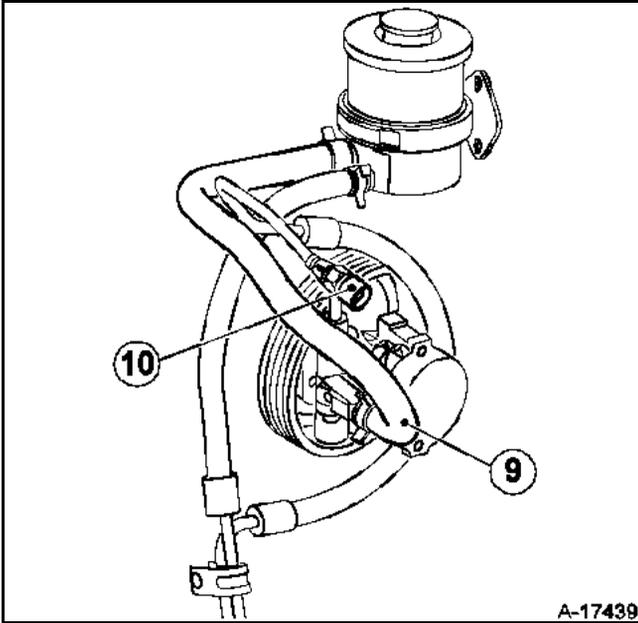
Disconnect:

- the pipe from the brake servo (5),
- the bleed pipe (6) from the fuel vapour absorber,
- the wiring harness connector from the petrol vapour recirculation solenoid valve,
- the connector from the throttle valve (9),
- the gear selection cables from the gearbox.



Pinch the tube on the clutch (7) using the tool (Mot. 453-01).

Disconnect the caliper piston clutch tube (8).



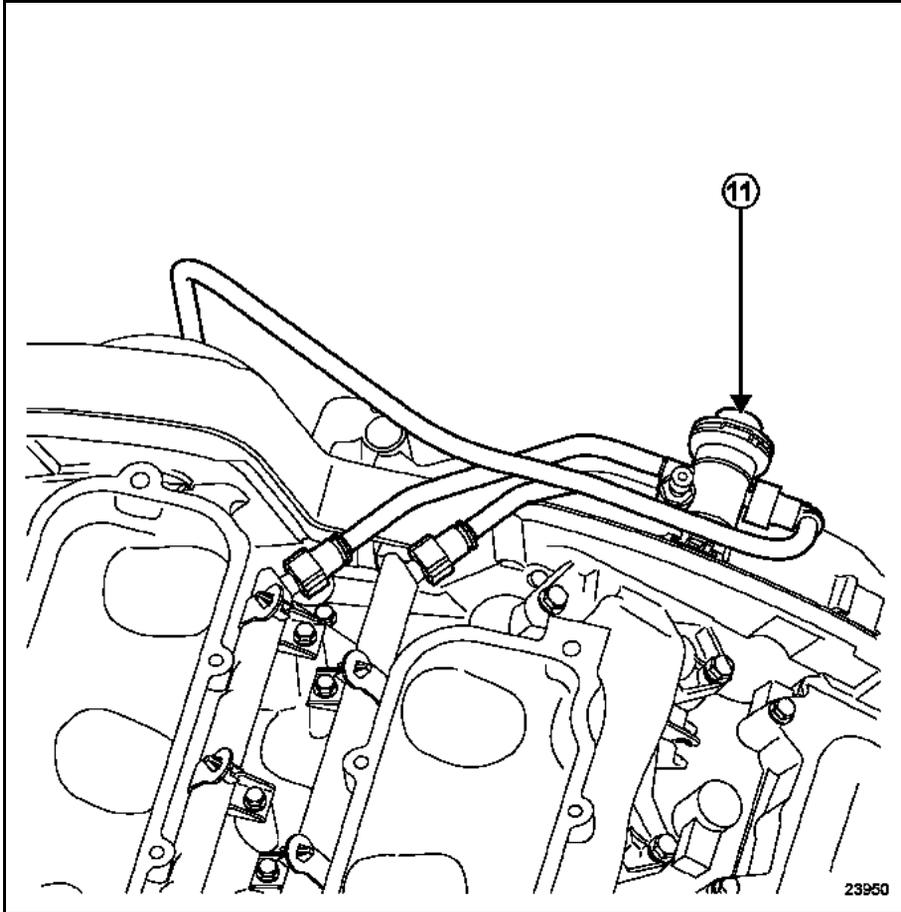
Pinch the low pressure pipe (9) on the power assisted steering pump using the tool (Mot. 453-01).
Disconnect the fuel pipe.

Disconnect the connector from the pressostat (10).

Note:

Make sure not to damage the connection between the high pressure pipe and the power assisted steering pump.

Tighten the mounting nut to a torque of **2.1 daNm**.



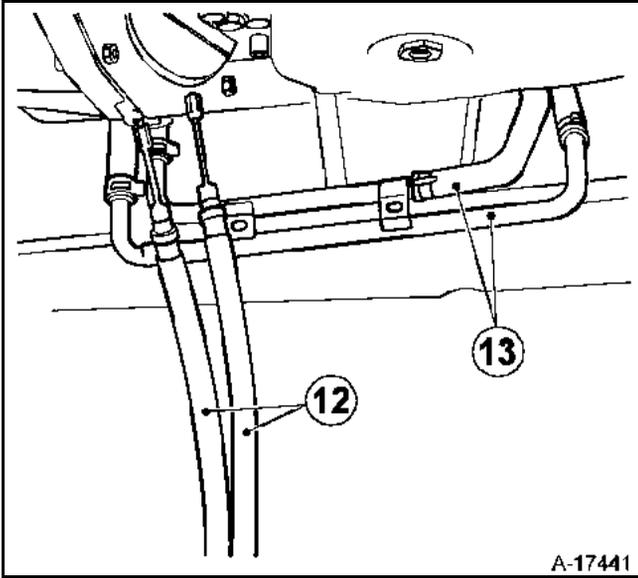
Disconnect the fuel pipe from the pulse damper (11).

Raise the vehicle.

Remove:

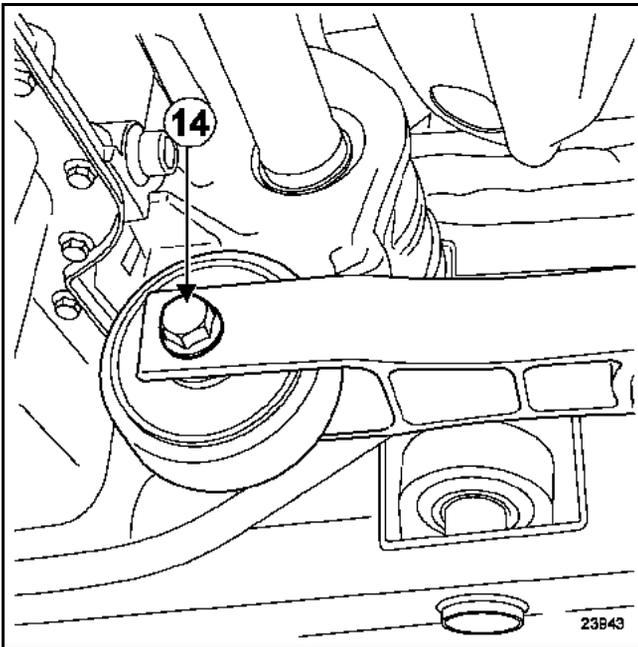
- the rear wheels,
- the rear bumper,
- the interior engine cover assembly.

Drain the cooling circuit through the bottom hose and through the drain plug on the cylinder block.



Disconnect:

- the pipes from the radiator,
- the handbrake cables (12) from the rear calipers,
- the cooling pipes (13) from the sub-frame,
- the ABS system electrical harness from the sub-frame.



Remove:

- the driveshafts,
- the screw (14) from the travel limiter at the end of the engine,
- the rear stub axle carriers,
- the lower ball joints.

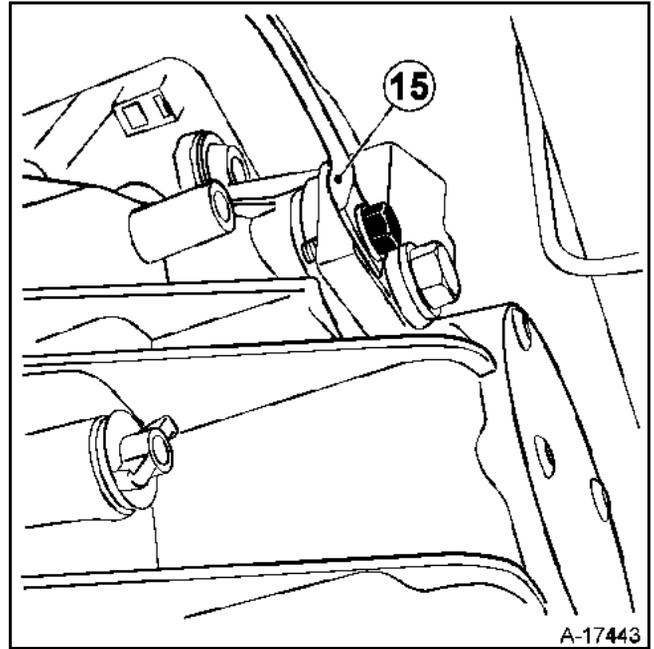
Lower the vehicle.

Position the tool (Mot. 1390) under the sub-frame, making sure that the sub-frame screws are accessible.

Remove the four screws from the sub-frame.

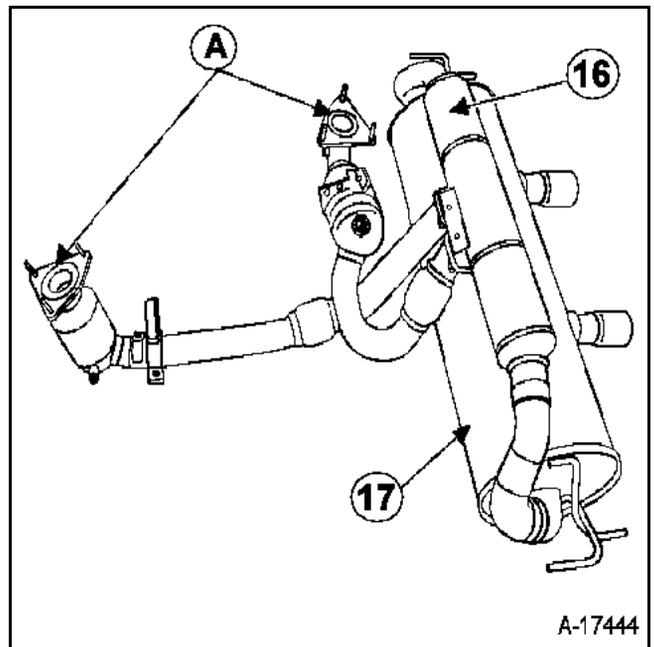
Raise the vehicle.

Remove the sub-frame through the underbody of the vehicle.



Disconnect:

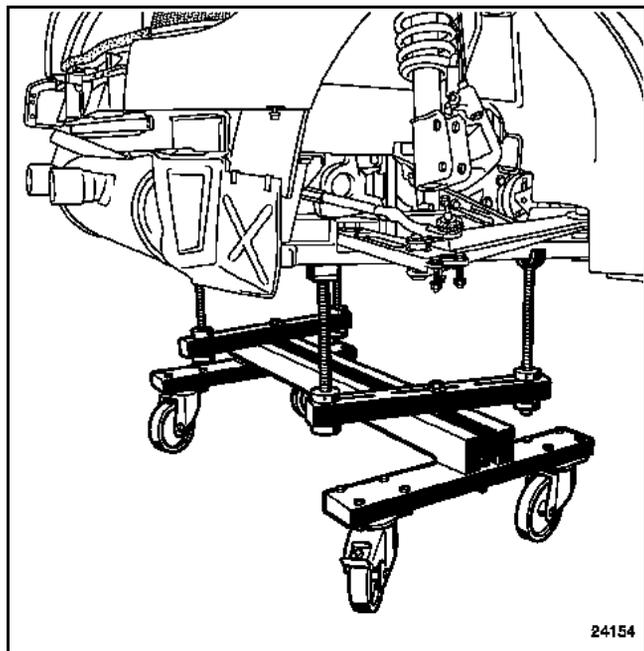
- the engine earth strap (15),
- the starter electrical harness.



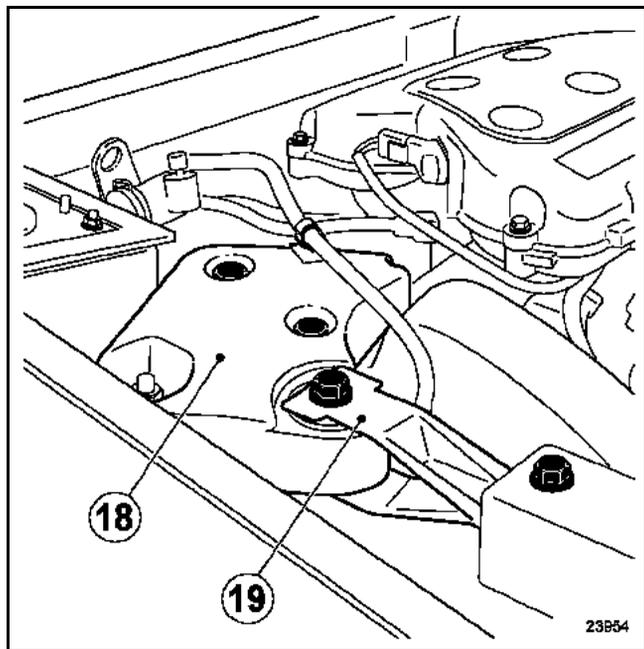
Separate the secondary catalytic converter (16) from the silencer (17).

The flanges (A) remain attached to the exhaust manifolds.

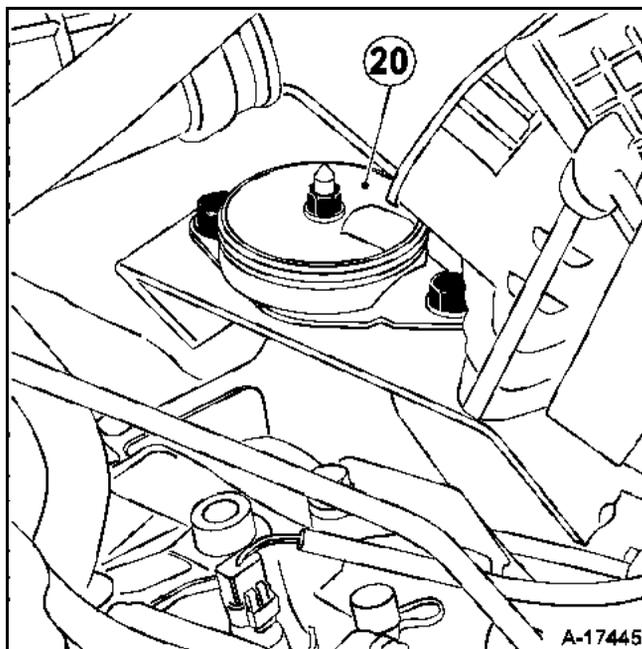
Remove the silencer.



Position the tool (Mot. 1390) beneath the engine/gearbox assembly, making sure that the engine mountings are accessible from the vehicle interior.



Remove the engine mounting bracket (18) and the travel limiter (19).



Remove the left-hand engine mounting (20).

Raise the vehicle.

Remove the engine-gearbox assembly through the underbody of the vehicle.

REFITTING

Proceed in the reverse order to removal.

Perform the following:

- Filling the engine and gearbox with oil, if necessary.
- Filling and bleeding of the cooling circuit (see **Section 19**).
- Filling of the power assisted steering circuit.
- Filling of the refrigerant circuit using a filling station.
- Bleeding of the clutch system.
- Bleeding of the braking circuit.

TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Special tooling required

Mot. 1505	Timing belt tension controller
Mot. 1428	Exhaust camshaft hub locking tool
Mot. 1555	Intake camshaft hub locking tool
Mot. 1430	Crankshaft and camshaft sprocket timing pins
Mot. 1430-01	Crankshaft and camshaft sprocket timing check pin
Mot. 1436	Timing belt retaining clip

Equipment required

Tool for testing cylinder head
Angular tightening wrench

Tightening torques

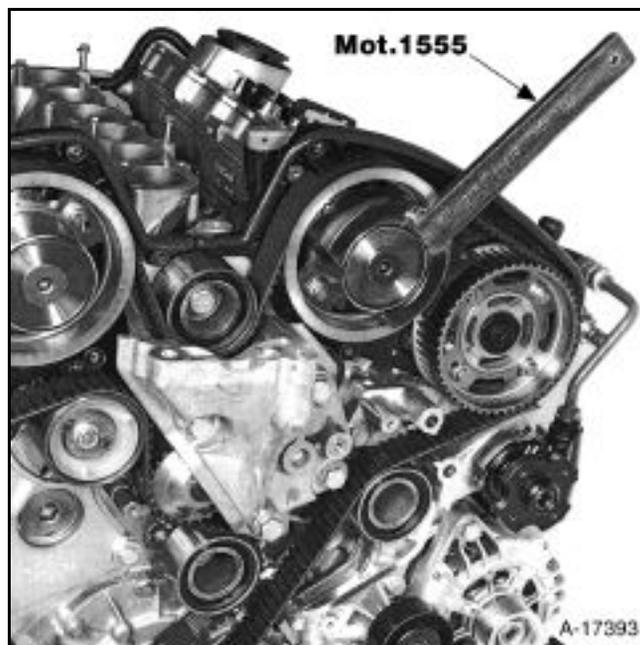
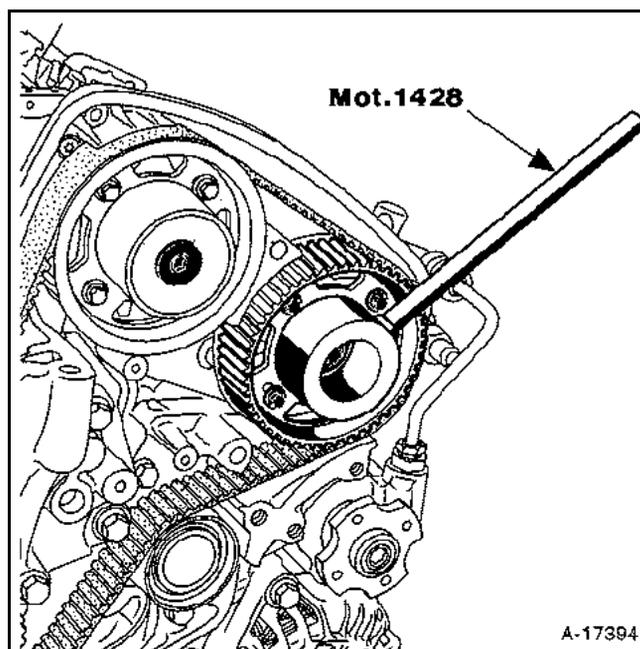


Timing belt tension wheel pulley nut.	2.5 daNm
Camshaft hub bolt	8 daNm
Timing belt tension wheel bolt	2.5 daNm
Camshaft sprocket bolt	1 daNm
Crankshaft pulley bolt	2.5 daNm
wheel bolt	11 daNm
RH engine mounting bracket bolt and nut	6.2 daNm
Travel limiter bolt	8 daNm

REMOVAL

Remove:

- the engine (see Section 10A, Engine and gearbox),
- the timing belt (see Section 11, Timing belt, in Workshop Repair Manual 348 or Mot.L7X manual),
- the timing pins,
- the "camshaft sprocket-hub" assembly, immobilising the hubs with tools (Mot. 1428) and (Mot. 1555).

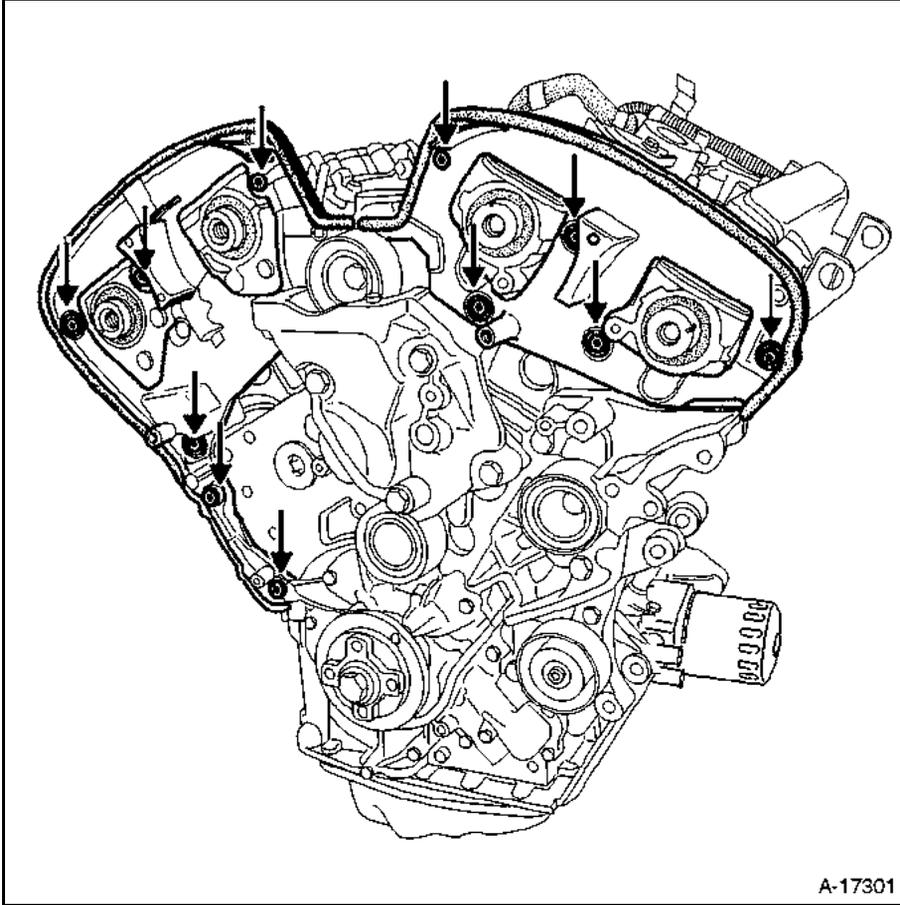


TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

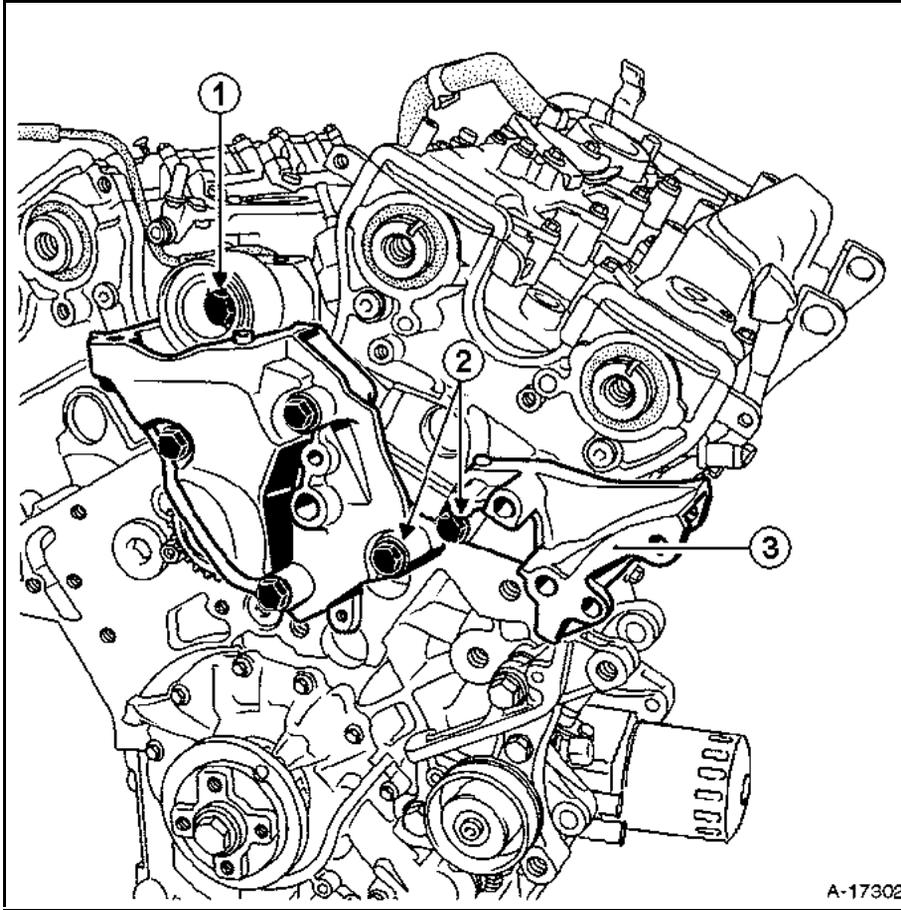
Remove the inner timing covers.



TOP AND FRONT OF ENGINE

Cylinder head gasket

11A



A-17302

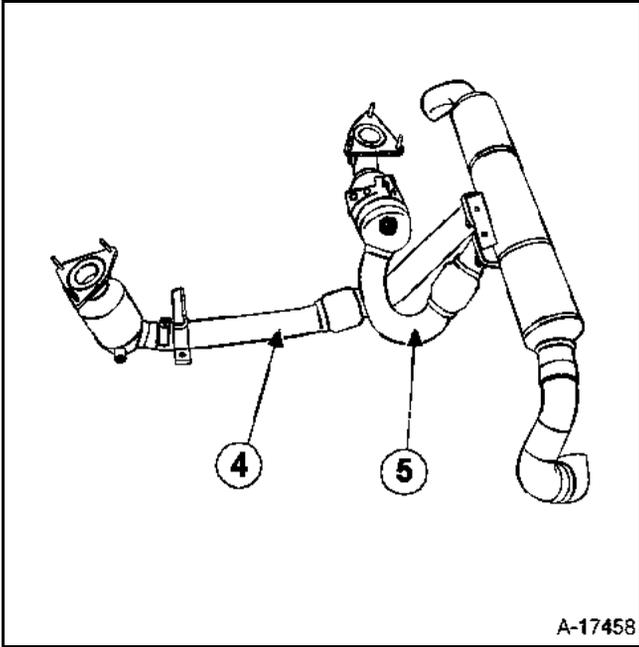
Remove:

- the pulley (1),
- the bolts (2) and the mounting (3) with the power assisted steering pump.

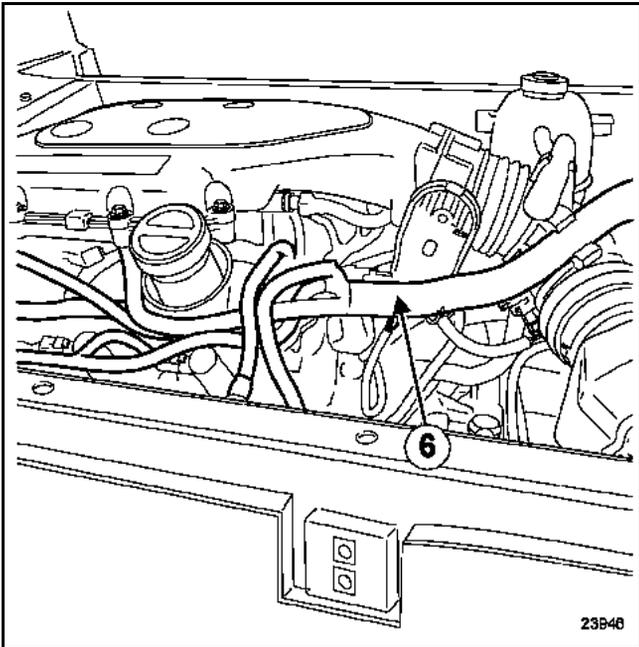
TOP AND FRONT OF ENGINE

Cylinder head gasket

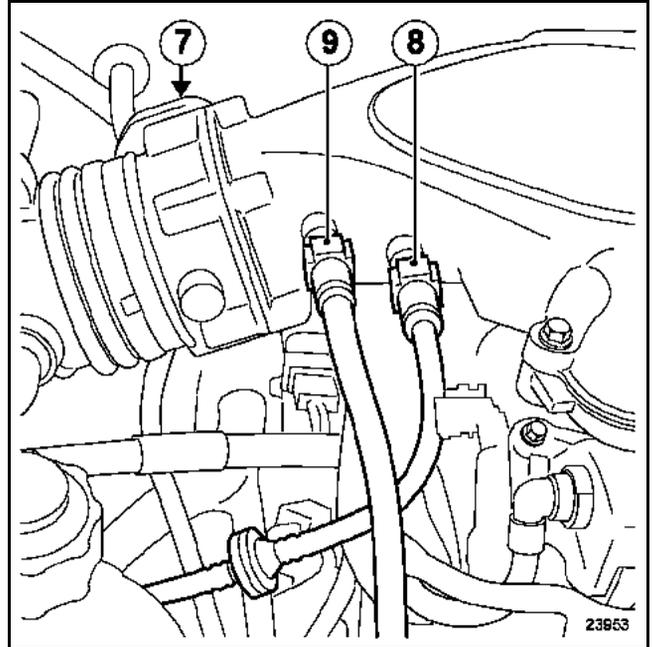
11A



Remove the primary catalytic converters (4) and (5) from the exhaust manifolds.

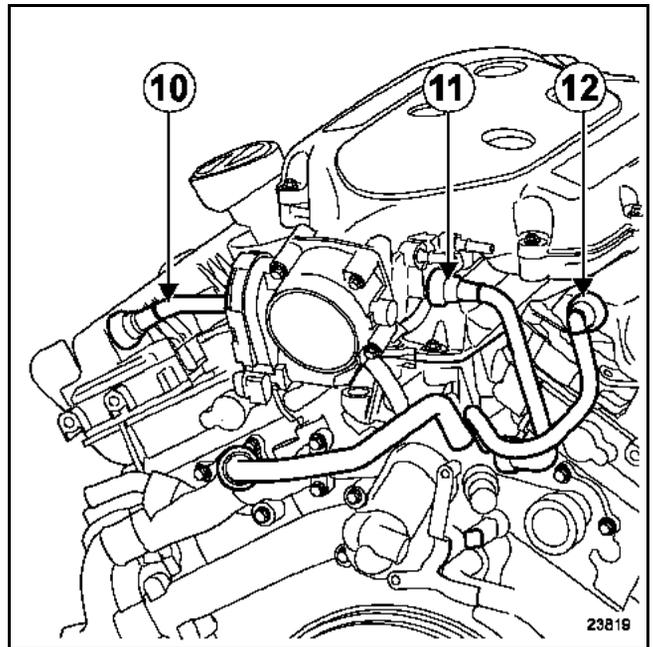


Remove the engine wiring harness from the harness mounting (6) and separate it.



Disconnect:

- the connector (7) from the throttle valve,
- the brake servo pipe (8) and the petrol tank vapour bleed hose (9) from the inlet manifold.

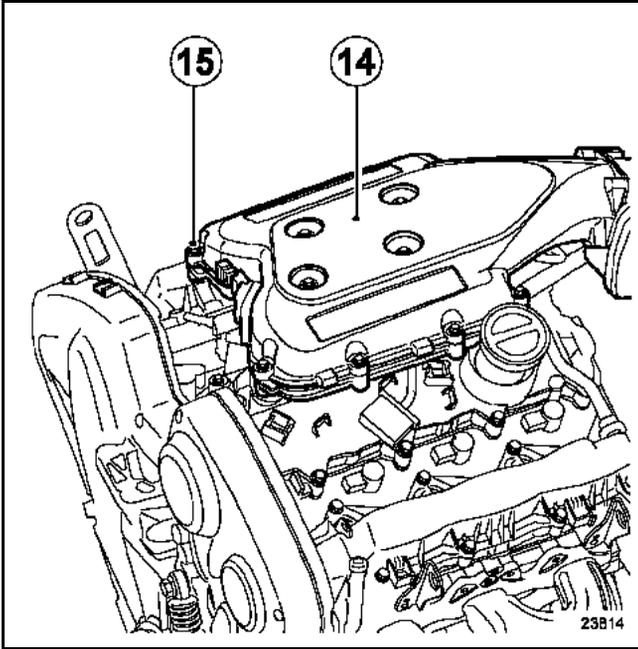


Disconnect the oil vapour rebreathing pipes (10), (11) and (12) from the rocker box covers, the throttle valve and the air duct.

TOP AND FRONT OF ENGINE

Cylinder head gasket

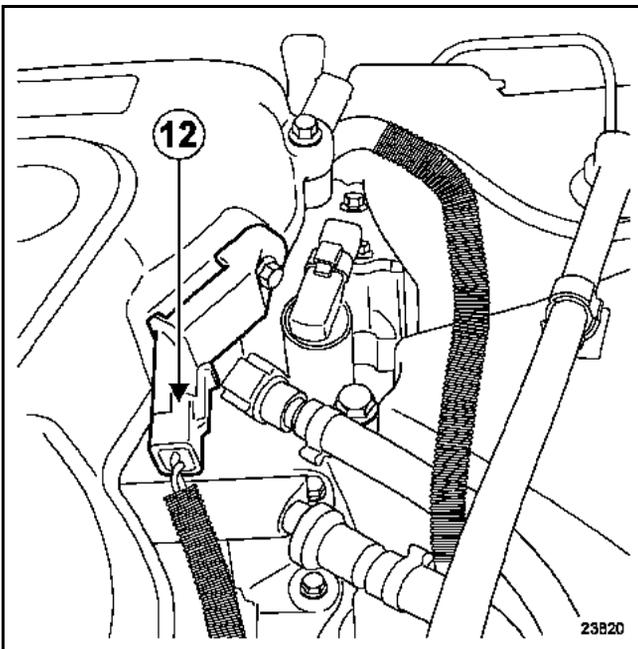
11A



Remove the mounting bolt from the upper air casing (15), disconnect it and raise it to obtain access to the pressure sensor.

Disconnect the pressure sensor connector (12).

Remove the upper air casing (14).



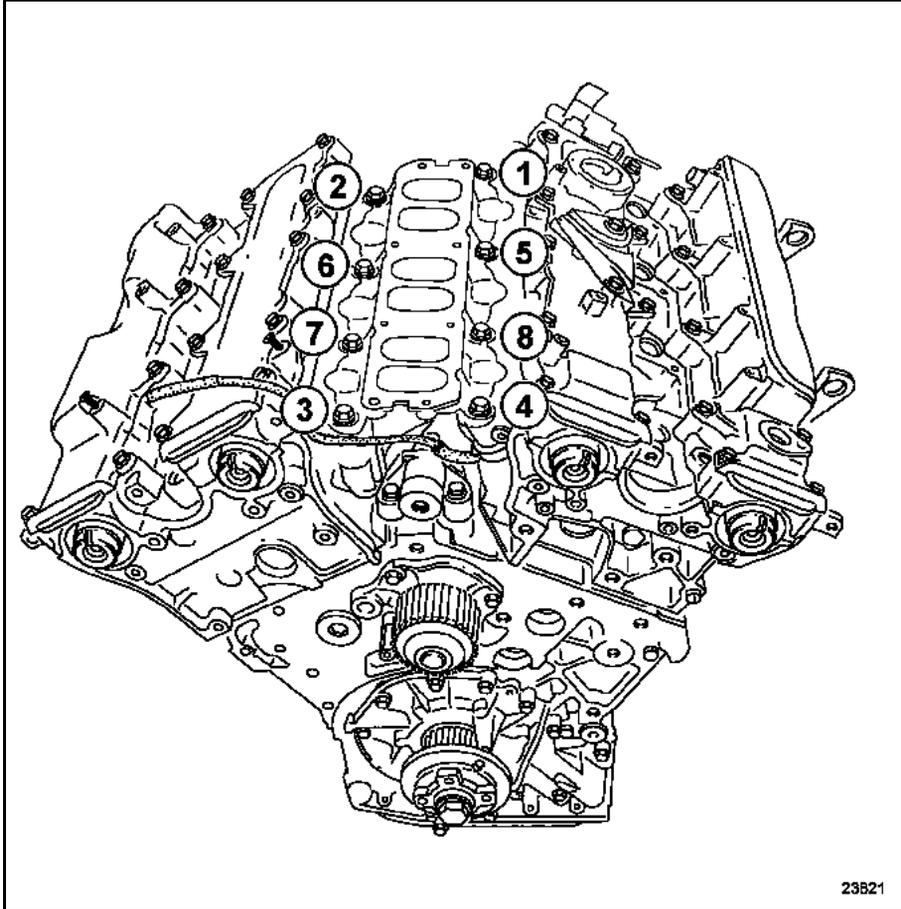
TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Loosen and remove gradually the air inlet distributor bolts in the recommended order.

Carefully remove the "air inlet distributor/injection rail" assembly, making sure not to damage the rubber seals.



23821

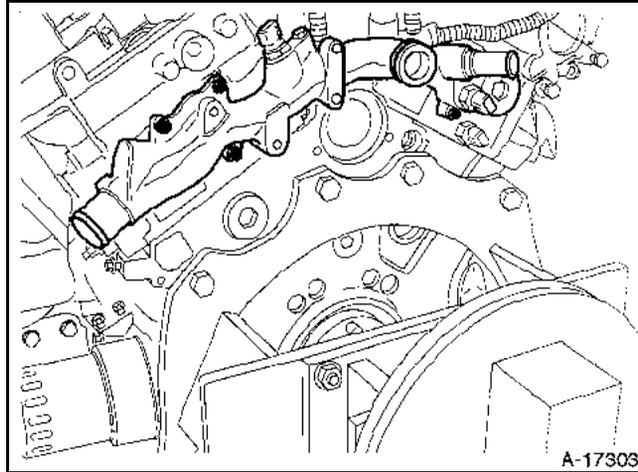
TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

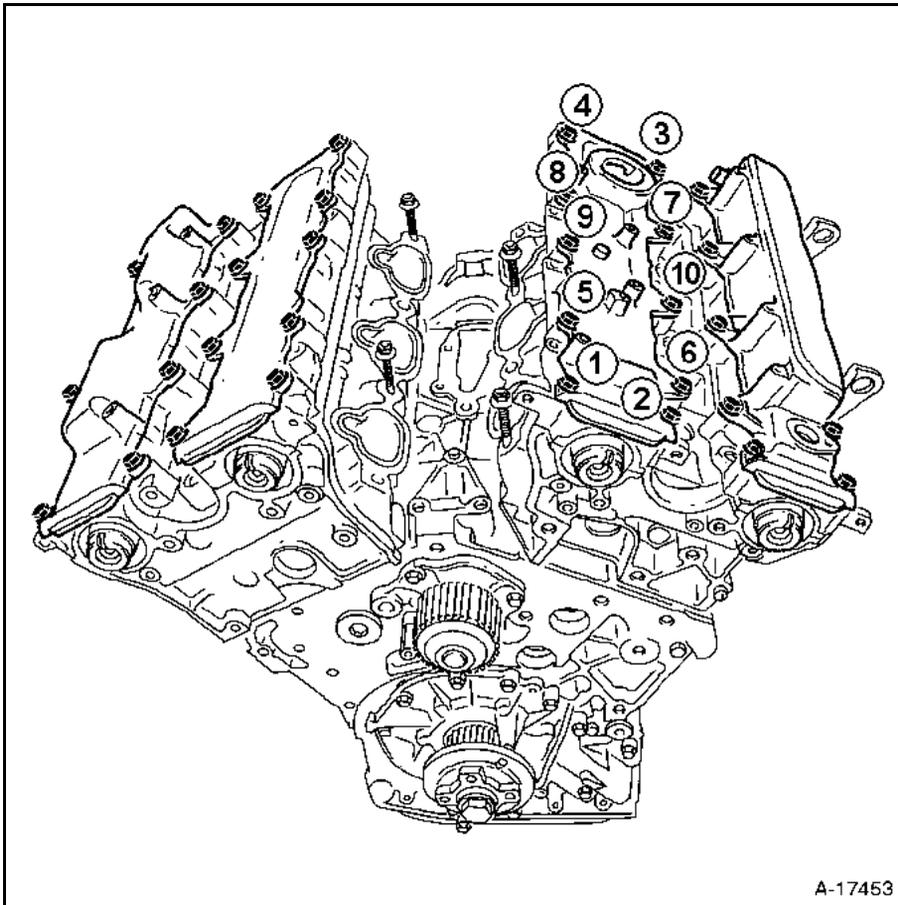
Remove:

- the front lifting bracket and the mounting bolt from the gauge guide tube,
- the coolant manifold attachments on the two cylinder heads.



Loosen gradually and remove the camshaft cover mounting bolts in the recommended order.

Remove the camshaft covers.



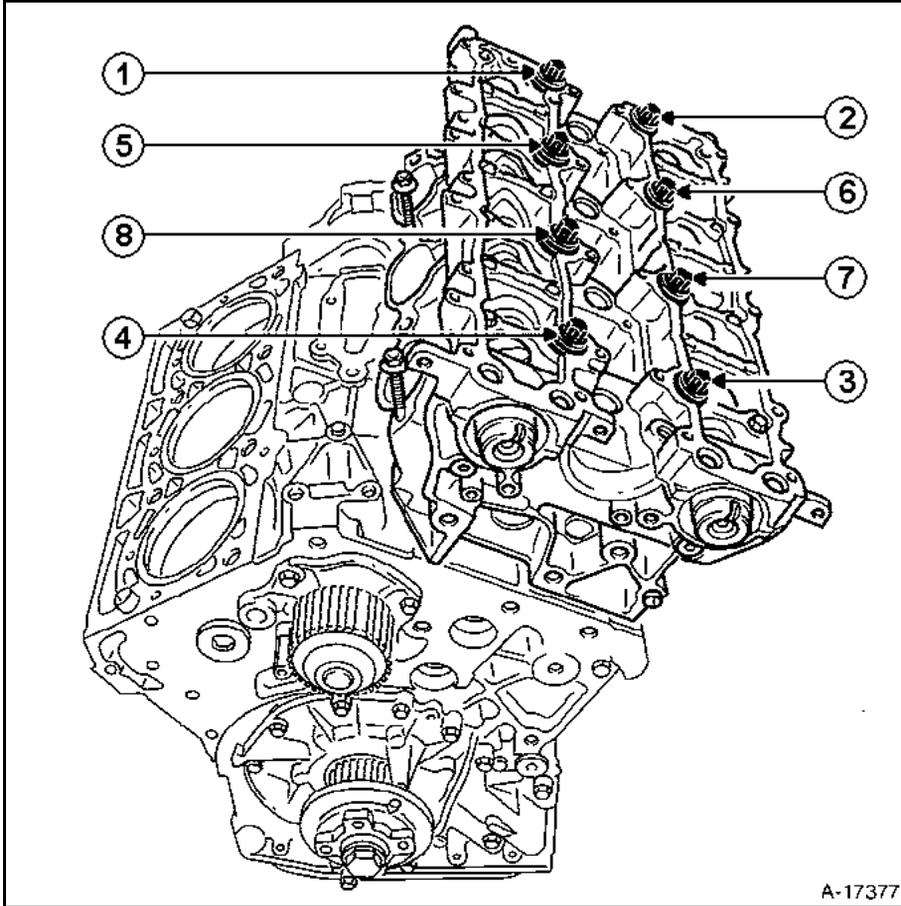
TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Remove:

- the cylinder head bolts in the recommended order,
- the cylinder head.



IMPORTANT

- Do not scratch the aluminium gasket faces.
- Put on goggles.
- Wear gloves during this operation.
- Clean the sealing faces with **DECAPJOINT** compound to dissolve any pieces of seal which are still attached.
- Apply the product to the part to be cleaned, wait approximately 10 minutes, then remove the residue using a wooden spatula.

Care must be taken when carrying out this operation, to prevent any foreign bodies entering the oil galleries supplying oil under pressure to the camshafts (oil galleries are located in the cylinder block and in the cylinder heads).

CHECKING THE GASKET FACE

Check for gasket face deformation using a ruler and a set of shims.

Maximum bow: **0.05 mm**.

Test the cylinder head for possible cracks with the cylinder head test kit (see **Garage equipment catalogue**).

Cylinder heads undergoing repair may be ground by up to **0.20 mm**.

The regrinding must be carried out on both cylinder heads.

The ground cylinder heads must be marked with the letter **R** using an electric engraving tool (refer to **Mot. L7X** manual to locate the areas to be engraved).

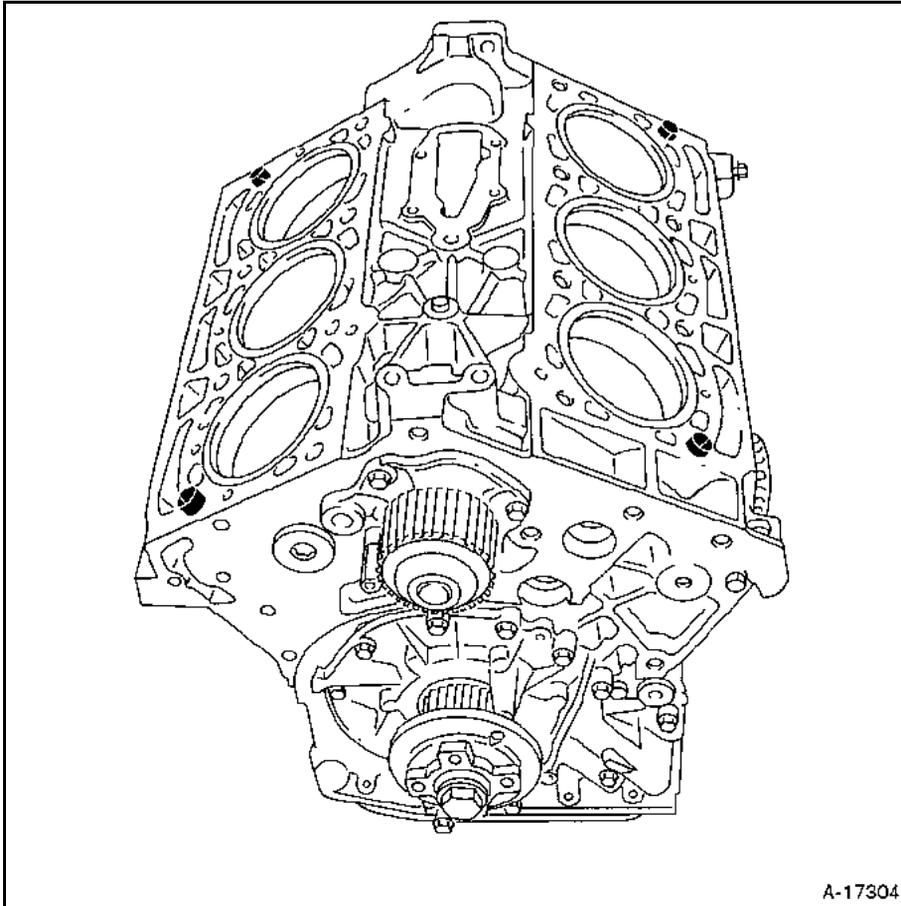
TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

REMOVAL

The cylinder heads are centred using two centring dowels each.

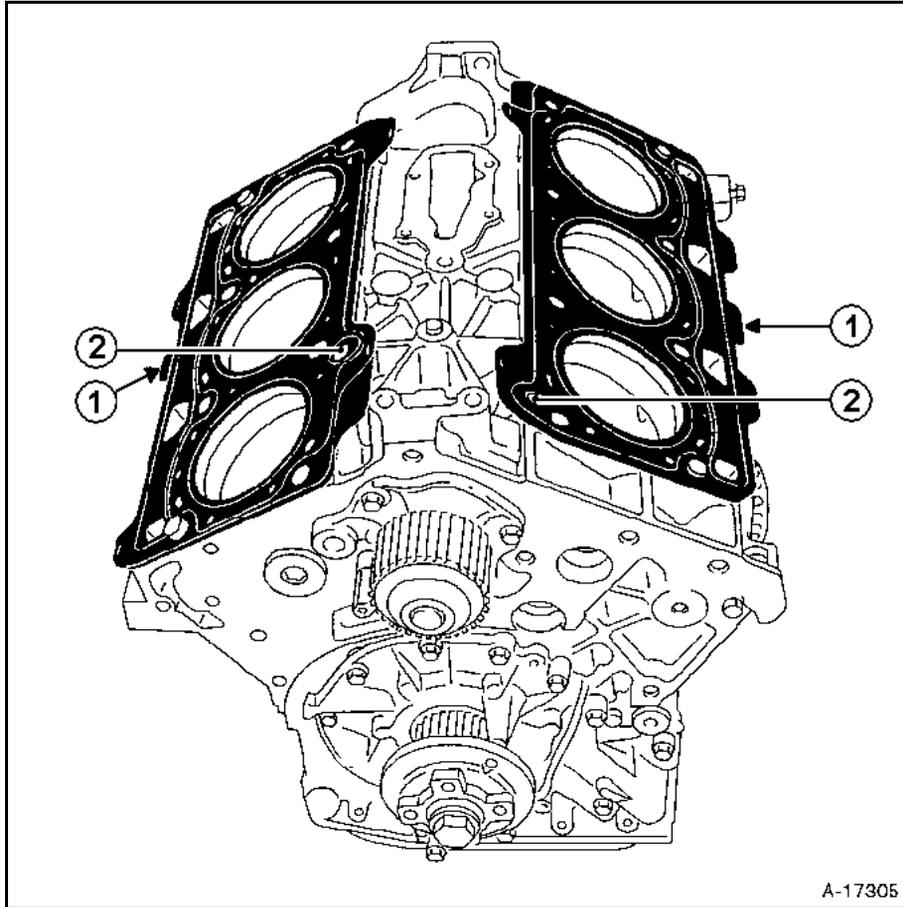


TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Fit the new cylinder head gaskets, ensuring that the tabs (1) are facing outward and verify the correct positioning of the oil flow holes (2).



Check the maximum length under head of the bolts: 149.5 mm.

In order to ensure that the bolts are correctly tightened, use a syringe to remove any oil which could be in the cylinder head mounting holes.

Coat the bolt threads and bolt head pressure faces with engine oil.

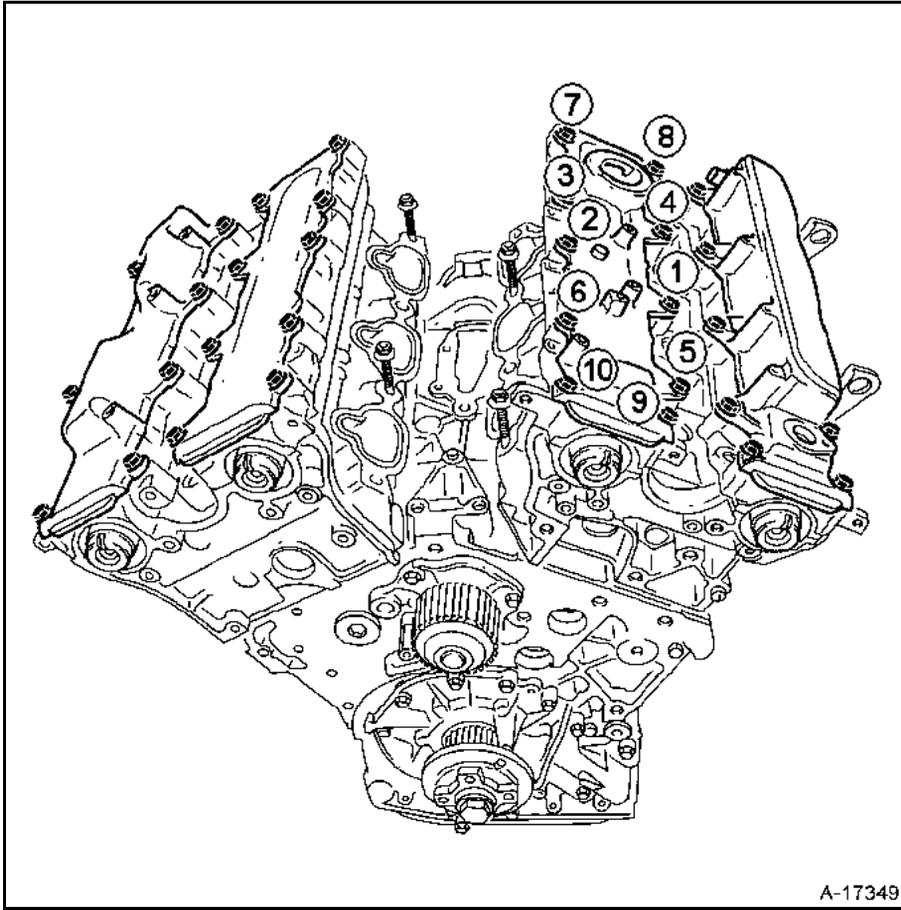
Tighten the cylinder head bolts with a cylinder head bolt tightening gauge (angular measuring type) (see **Cylinder head bolt tightening** in the **Mot. L7X** manual).

TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Finger tighten, then progressively tighten the camshaft cover mounting bolts in the recommended order.



Torque tighten the **bolts** to (1 daNm).

Note:

The camshaft covers are fitted with a composite seal allowing several removal/refitting operations. If the seal is damaged, it can be partially repaired using the **AUTOJOINT OR** sealing product.

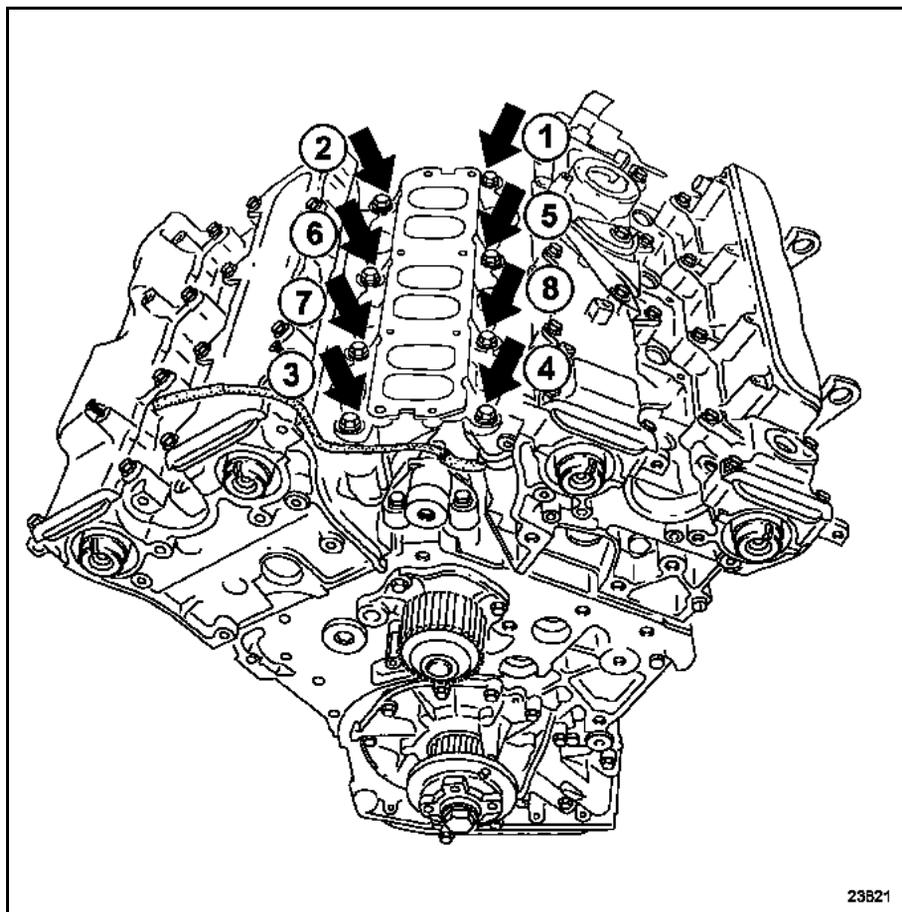
TOP AND FRONT OF ENGINE

Cylinder head gasket

11A

Replace the air intake distributor seal.

Finger tighten the air intake manifold/injector rail assembly bolts, pre-tighten them in order to a torque of **1 daNm**, then tighten them in order to a torque of **2.5 daNm**.



Proceed in the reverse order to removal.

Refit the timing belt (see Section 11, **Timing belt**, in the **Mot. L7X** manual).

Refit the engine (see Section 10A, **Engine and gearbox**).

Top up the engine oil level, if necessary.

TOP AND FRONT OF ENGINE

Camshaft

11A

Special tooling required

Mot. 1505	Timing belt tension controller
Mot. 1428	Exhaust camshaft hub locking tool
Mot. 1555	Intake camshaft hub locking tool
Mot. 1430	Crankshaft and camshaft sprocket timing pins
Mot. 1430-01	Crankshaft and camshaft sprocket timing check pin
Mot. 1432	Camshaft seal fastening tool
Mot. 1436	Timing belt retaining clip

Tightening torques

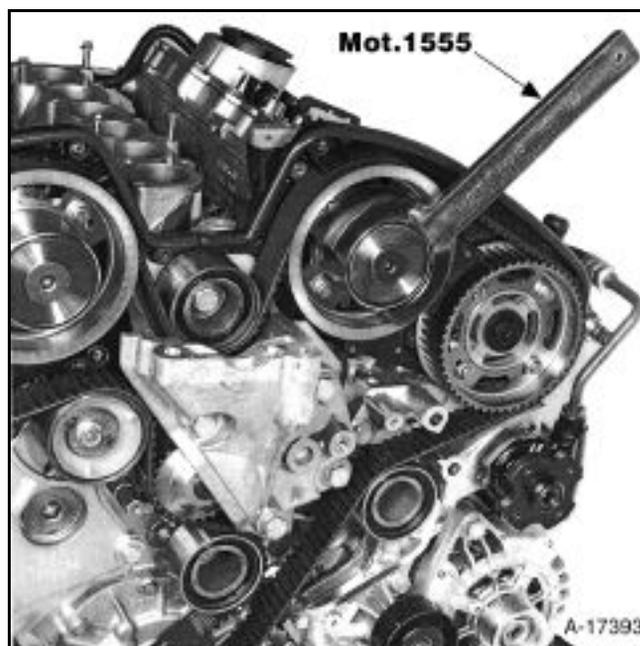
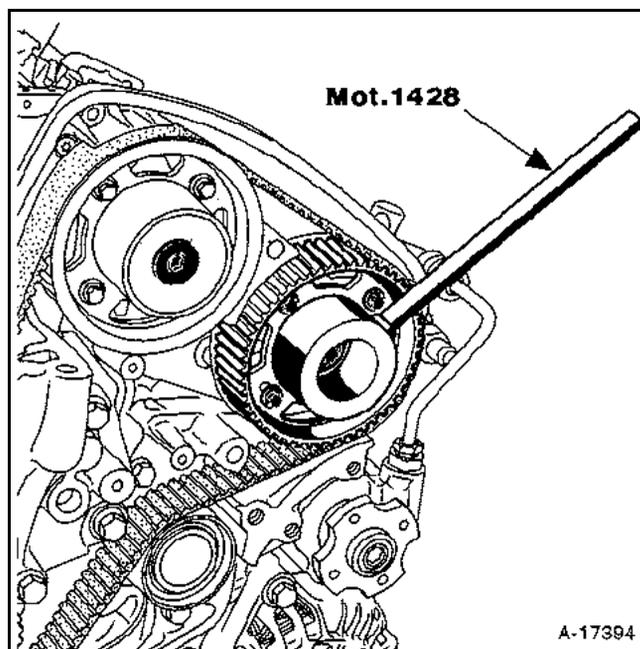


Timing belt tension wheel pulley nut	2.5 daNm
Camshaft hub bolt	8 daNm
Timing belt tension wheel bolt	2.5 daNm
Camshaft sprocket bolt	1 daNm
Crankshaft pulley bolt	2.5 daNm
wheel bolt	11 daNm
RH engine mounting bracket bolt and nut	6.2 daNm
Travel limiter bolt	8 daNm

REMOVAL

Remove:

- the engine (see Section **10A, Engine and gearbox**),
- the timing belt (see Section **11, Timing belt**, in Workshop Repair Manual **348**),
- the camshaft pins only,
- the "camshaft sprocket-hub" assembly, immobilising the hubs with tools (Mot. 1428) and (Mot. 1555).

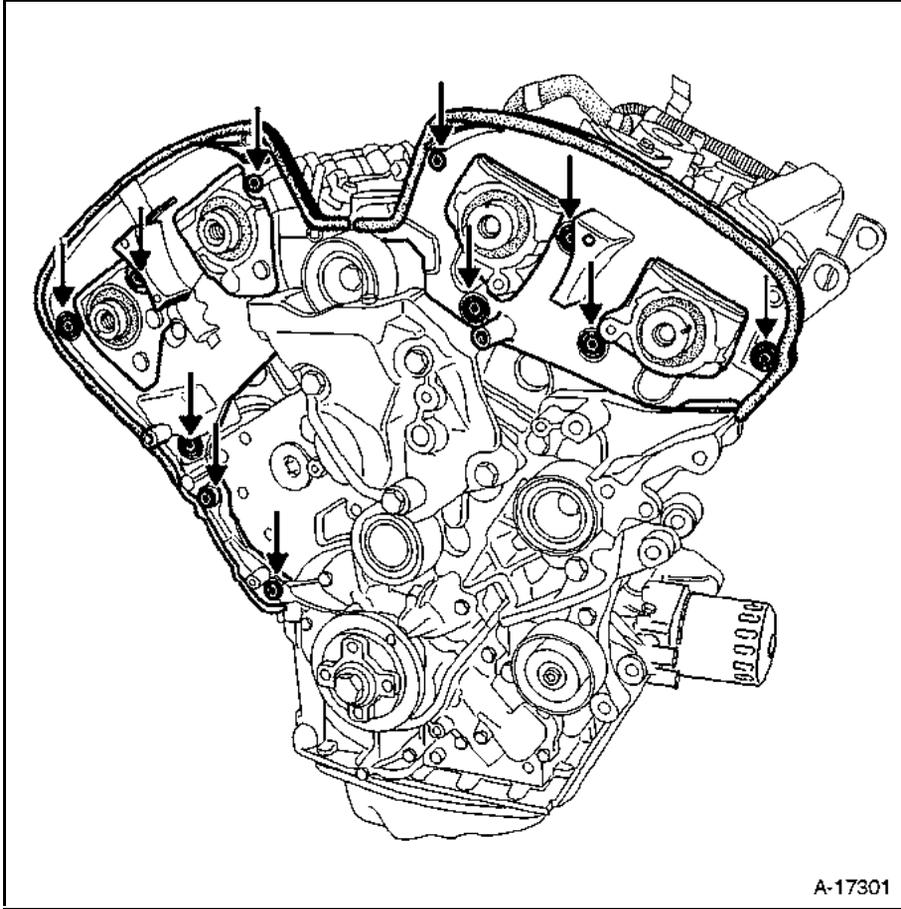


TOP AND FRONT OF ENGINE

Camshaft

11A

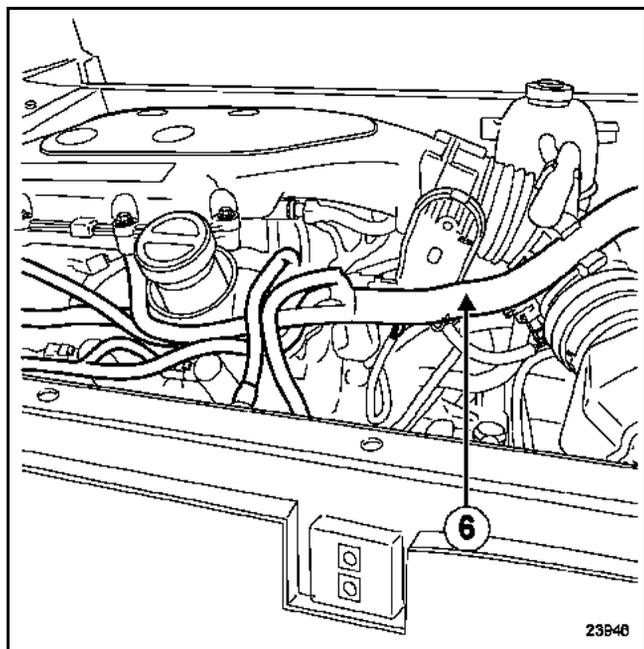
Remove the inner timing covers.



TOP AND FRONT OF ENGINE

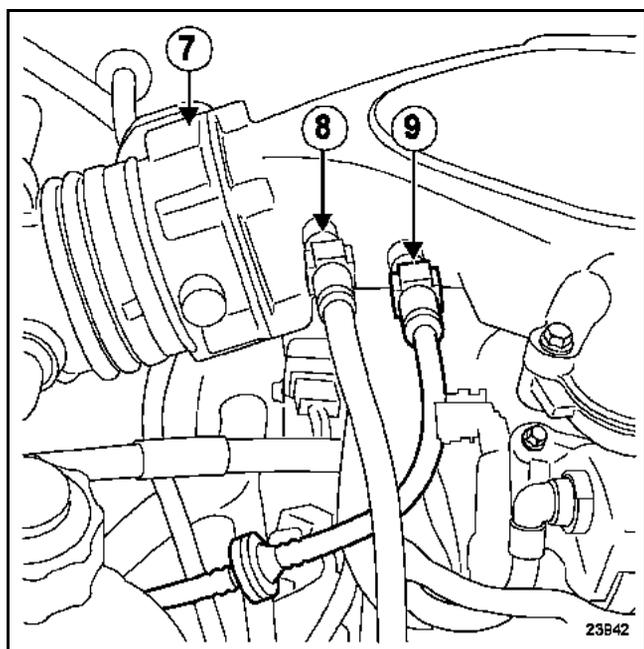
Camshaft

11A



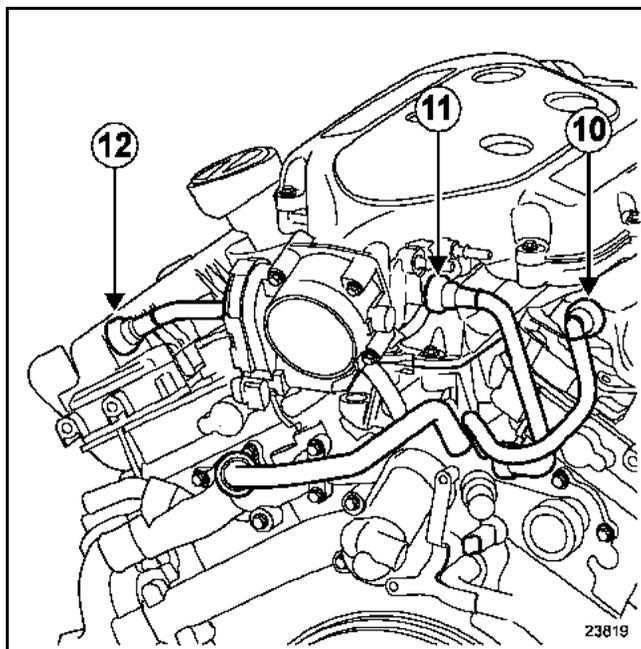
Disconnect:

- the air duct from the throttle valve,
- the engine wiring harness from the harness mounting (6) and separate it.

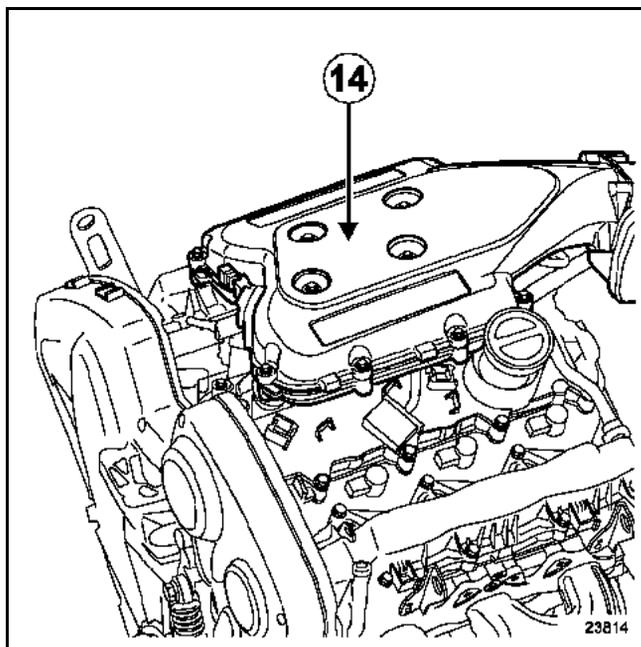


Disconnect:

- the connector (7) from the throttle valve,
- the pipe from the brake servo (8),
- the petrol tank vapour bleed hose (9) from the inlet manifold.



Disconnect the oil vapour rebreathing pipes (10), (11) and (12), from the rocker box covers and the throttle valve.



Remove the mounting bolt from the inlet manifold (14), disconnect it and raise it to obtain access to the pressure sensor.

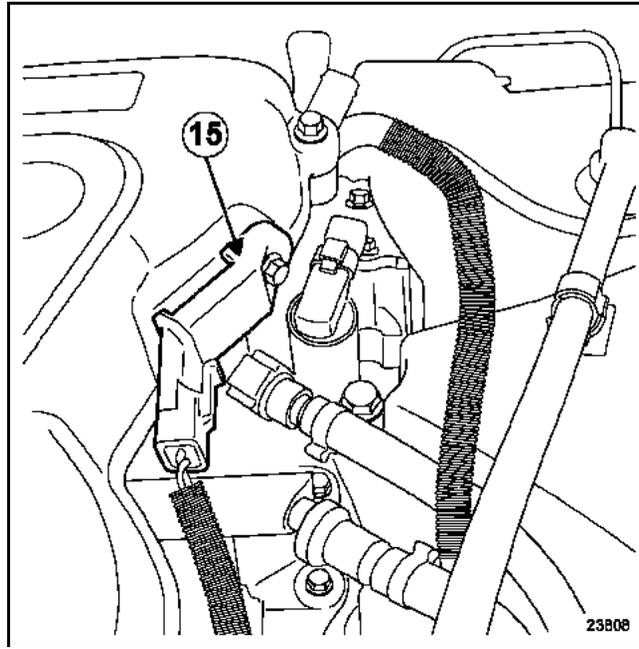
TOP AND FRONT OF ENGINE

Camshaft

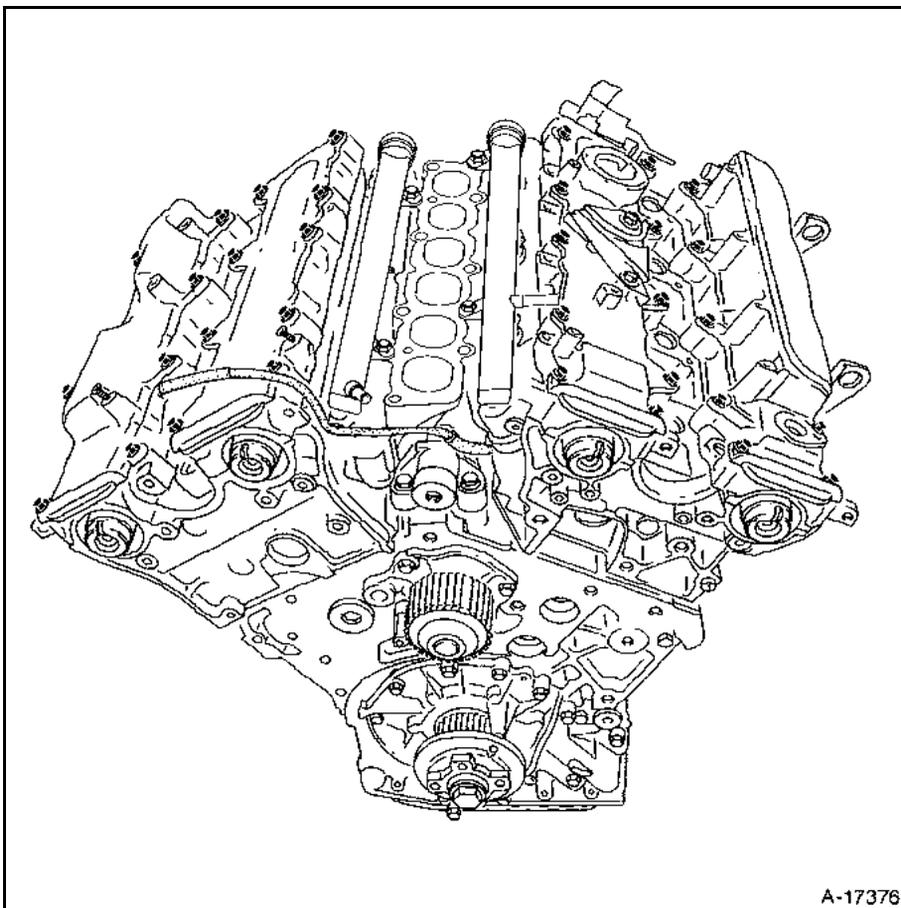
11A

Disconnect the pressure sensor connector (15).

Remove the inlet manifold.

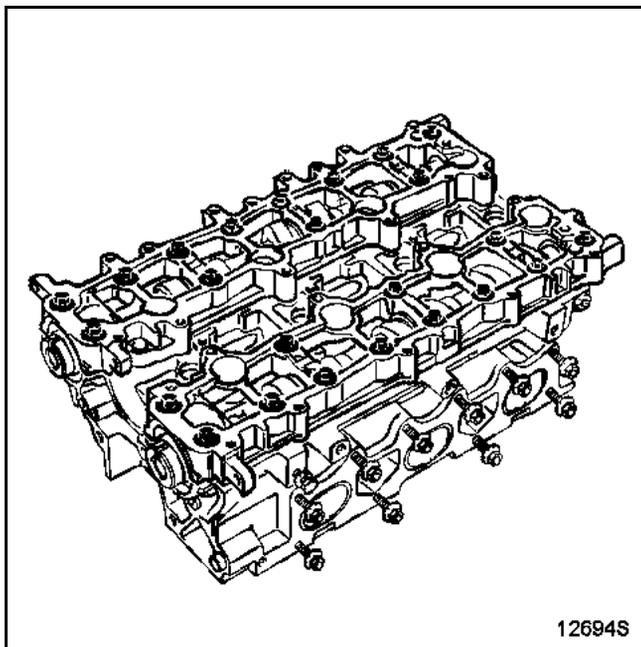


Loosen and remove gradually the camshaft cover mounting bolts, then remove the camshaft covers.



A-17376

Proceed in the same way for the camshaft bearing cap bolts.



Carefully remove the camshaft bearings to avoid damaging the seal mating faces.

Remove the camshafts and the camshaft seals.

CLEANING

IMPORTANT

- Do not scratch the aluminium gasket faces.
- Put on goggles.
- Wear gloves during this operation.
- Clean the sealing faces with **DECAPJOINT** compound to dissolve any pieces of seal which are still attached.
- Apply the product to the part to be cleaned, wait approximately 10 minutes, then remove the residue using a wooden spatula.

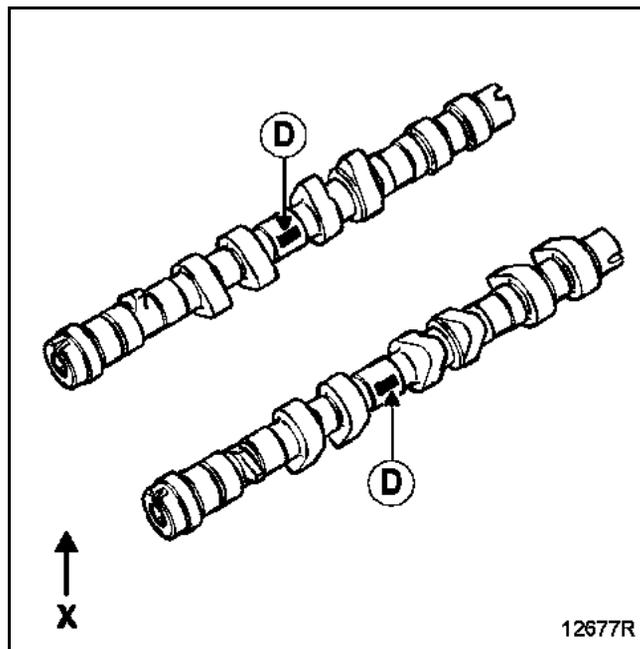
REFITTING

Lubricate the cam lobes and bearings.

Fit the camshafts.

IDENTIFICATION OF THE CAMSHAFTS

The **long** camshafts are fitted to the **front cylinder head** and are identified by a mark (D).



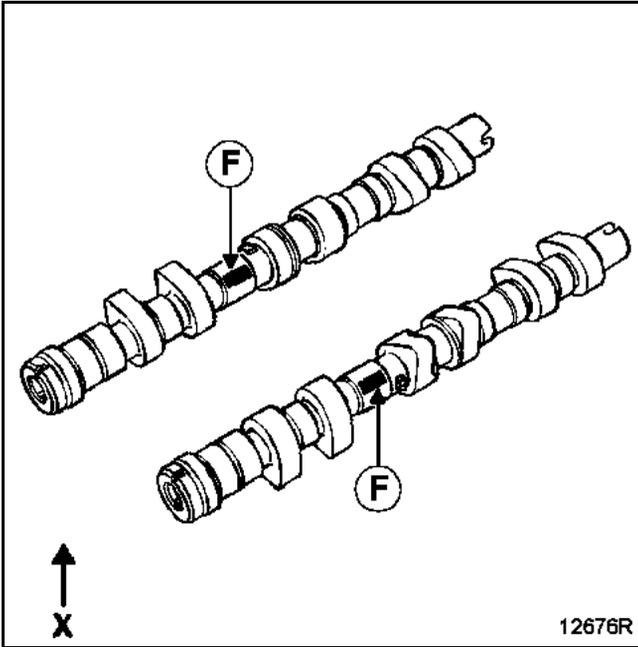
Inlet: D = A865
Exhaust: D = E389
X: timing end

TOP AND FRONT OF ENGINE

Camshaft

11A

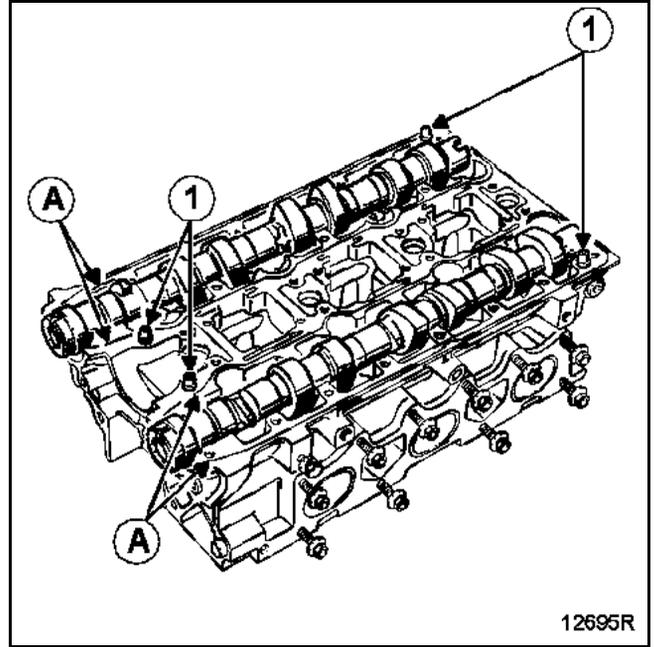
The **short** camshafts are fitted to the **rear cylinder head** and are identified by a mark (F).



Inlet: F = A866
Exhaust: F = E388
X: timing end

Verify the presence and correct positioning of the centring dowels (1).

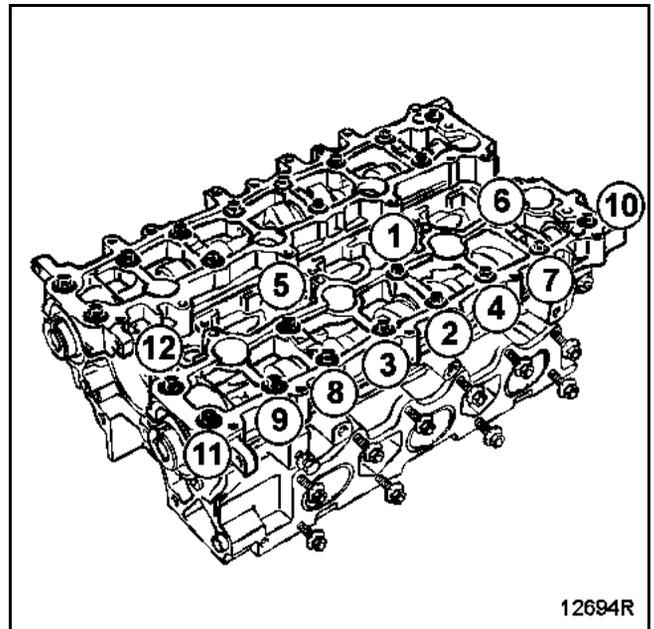
Check the end play of the camshafts (see **Mot. L7X** manual).



Apply a line (A) of **AUTOJOINT OR** paste to the gasket face.

Position the camshaft bearing cap covers.

Finger tighten then tighten the **camshaft bearing cap mounting bolts** in order, to a torque of **0.8 daNm**.



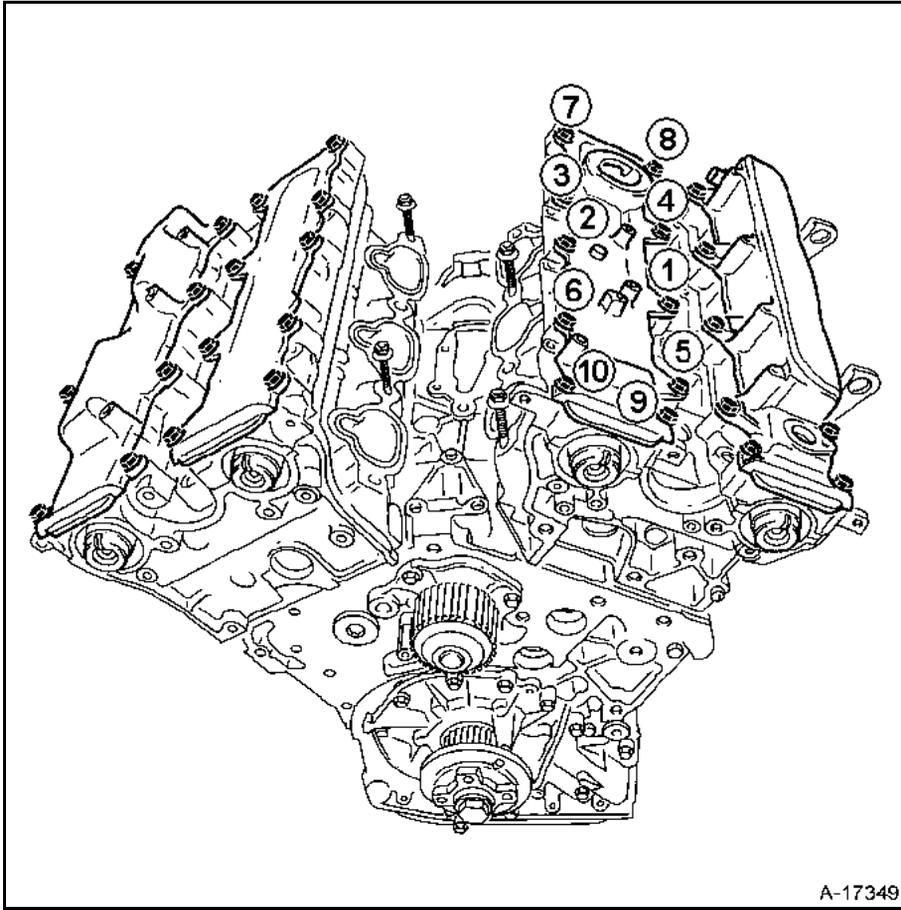
Refit the camshaft covers after cleaning the seals and sealing surfaces.

TOP AND FRONT OF ENGINE

Camshaft

11A

Finger tighten then gradually tighten the camshaft cover mounting bolts in order, to a torque of **1 daNm**.



A-17349

Note:

The camshaft covers are fitted with a composite seal allowing several removal/refitting operations. If the seal is damaged, it can be partially repaired using the **AUTOJOINT OR** sealing product.

TOP AND FRONT OF ENGINE

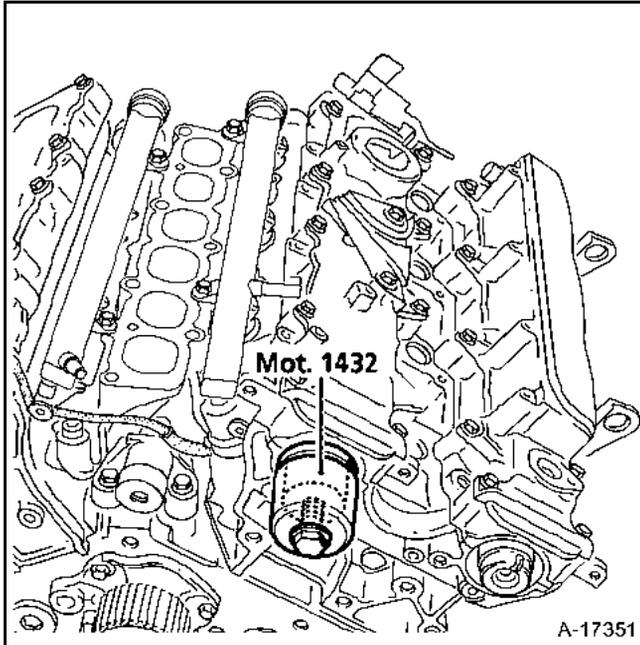
Camshaft

11A

Note:

Before fitting the camshaft seals, verify that seal seatings are clean and contain no traces of jointing compound.

Position the camshaft seals using the tool (Mot. 1432).



Proceed in the reverse order to removal.

Refit the timing belt (see Section 11, **Timing belt**, in Workshop Repair Manual 348 or **Mot. L7X** manual).

FUEL MIXTURE Specifications

12A

Vehicle	Gearbox	Engine							Emission control standard
		Type	Index	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	Compression ratio	Catalytic converter	
CB1U	PK6 017	L7X	762	87	82.6	2946	11.4/1	◆ C128 ◆ C224	EU 2005

Engine		Tests carried out at idle speed*					Fuel*** (minimum octane rating)
Type	Index	Engine speed (rpm)	Pollutant emissions **				
			open circuit (%) (1)	CO2 (%)	HC (ppm)	Lambda (λ)	
L7X	762	650 \pm 50	0.5 max	14.5 min	100 max	0.97 < λ < 1.03	Unleaded (95 RON)

(1) at **2500 rpm**, the open circuit content should be **0.3 %** at a maximum.

* At a coolant temperature greater than **80 °C** and at a steady engine speed of **2500 rpm**. for approximately **30 seconds**.

Test to be carried out after return to idle speed.

** For legal values refer to your country specification.

*** Super unleaded, 98 RON, recommended.

Temperature in °C ($\pm 1^\circ$)	0	20	40	80	90
Air temperature sensor air sensor ; Resistance in Ω	5000 to 7000	2000 to 3000	1000 to 1500	-	-
Water temperature sensor water sensor , green 2-track connector; Resistance in Ω	-	6150 to 6350	2630 to 2690	624 to 632	455 to 460

FUEL MIXTURE Specifications

12A

DESCRIPTION	MANUFACTURER/ TYPE	SPECIAL NOTES
Computer	BOSCH/ME 7.4.6	128 tracks
Injection		Multipoint with sequential regulation
Ignition		Static with six upper spark plug coils Power module integral with computer Two pinking sensors Tightening torque: 2 daNm Firing order: 1 - 6 - 3 - 5 - 2 - 4 Resistance (coil) = 0.8 Ω ± 0.2 at ambient temperature Secondary resistance: 11 ± 1 kΩ
TDC sensor		Resistance of tracks 1-2: 375 Ω
Spark plugs	BOSCH FGR 7 MQPE	Gap: (not adjustable) Tightening torque: 2.5 to 3 daNm
Fuel filter		Mounted on the upper right-hand side of the fuel tank Replaced during major service
Fuel pump	BITRON	Immersed in the tank Delivery: 80 l/h minimum at a regulated pressure of 3.5 bar and a voltage of 12 V
Pressure regulator	PIERBURG	Regulated pressure 3.5 ± 0.2 bar
Pulse damper	BOSCH	
Solenoid injector	BOSCH	Voltage: 12 V Resistance: 14.5 ± 0.7 Ω at 20 °C
Throttle body	BOSCH	Motorised
Fuel vapour absorber solenoid valve	-	Voltage: 12 V (control by Opening Cyclic Ratio) Resistance 30 ± 5 Ω
Heated lambda sensor	-	Voltage at 850 °C Rich mixture > 625 mV Lean mixture: 0 to 80 mV Heating resistance, tracks 1-2: 2 to 15 Ω Tightening torques: 4 to 6 daNm

Tightening torques



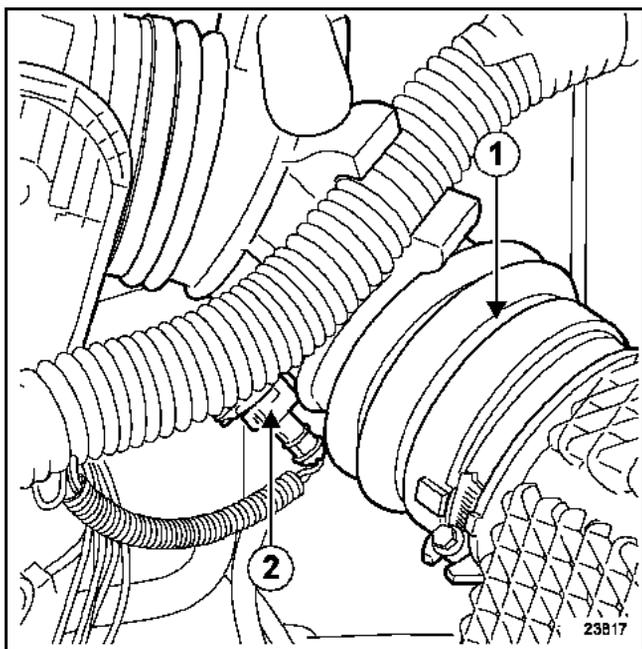
Throttle valve mounting bolt on the inlet manifold

0.8 to 1 daNm

REMOVAL

Remove the tray under the bonnet.

Disconnect the battery.



Remove:

- the two clips attaching the air filter box,
- on the air duct (1), the oil vapour rebreathing pipe.

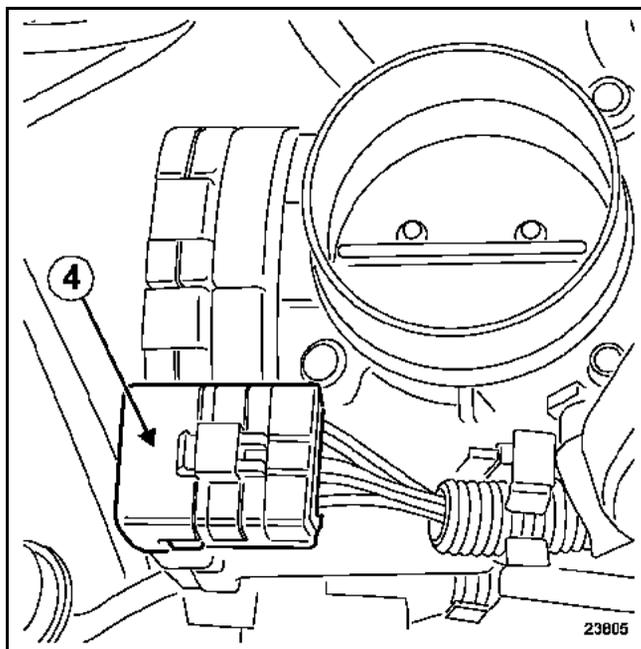
Disconnect the air temperature sensor (2).

Unscrew the clip attaching the air duct.

Disconnect the air duct from the throttle valve.

Remove the coolant expansion bottle from the fire wall and place it apart.

Remove the air duct.



Disconnect the throttle valve wiring harness connector (4).

Remove the throttle valve mounting bolts, then remove the throttle valve.

Note:

The throttle valve cannot be repaired.

REFITTING

Replace the rubber seal.

Proceed in the reverse order to removal.

CONNECTION

Throttle valve connector

Track	Description
1	Engine - control
2	Potentiometer sensor earth
3	Potentiometer + 5 V power supply
4	Engine + control
5	Potentiometer track 1 signal
6	Potentiometer track 2 signal

Accelerator potentiometer connector

Track	Description
1	Potentiometer track 2 earth
2	Potentiometer track 1 earth
3	Potentiometer track 1 signal
4	Potentiometer track 1 supply
5	Potentiometer track 2 supply
6	Potentiometer track 1 signal

Tightening torques



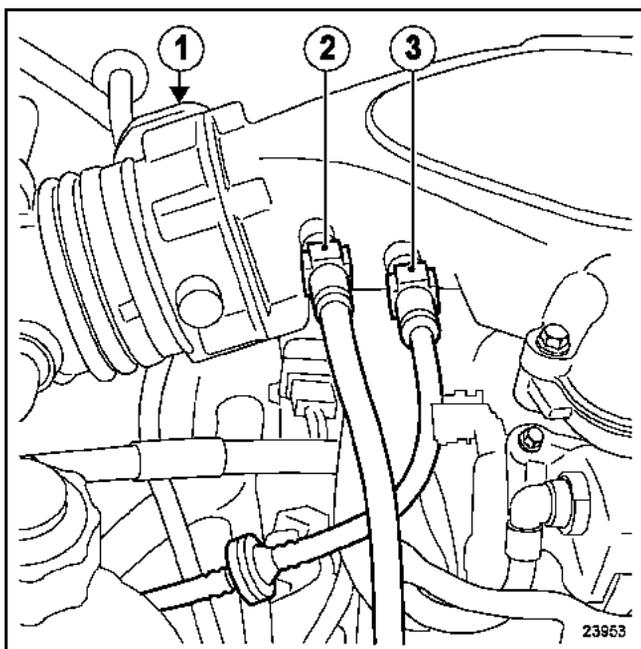
Manifold mounting bolt	0.8 to 1.0 daNm
Distributor mounting	0.8 to 1.0 daNm

REMOVAL

Remove the tray under the bonnet.

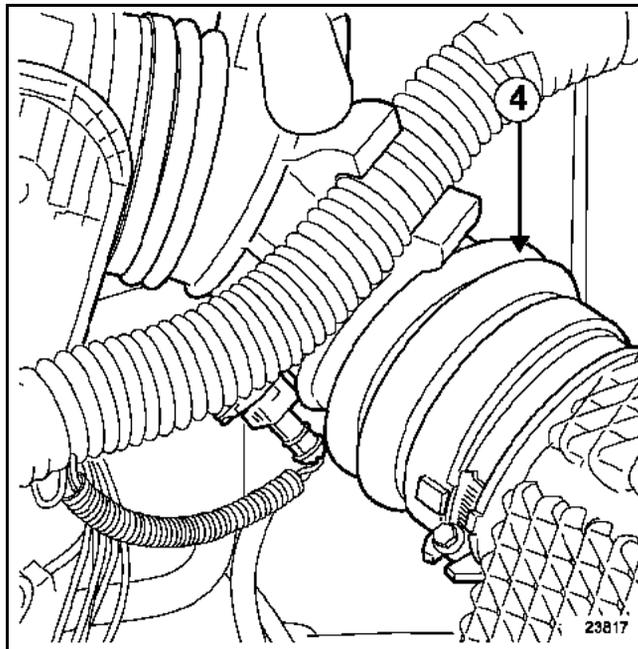
Disconnect the battery.

Remove the engine cover.



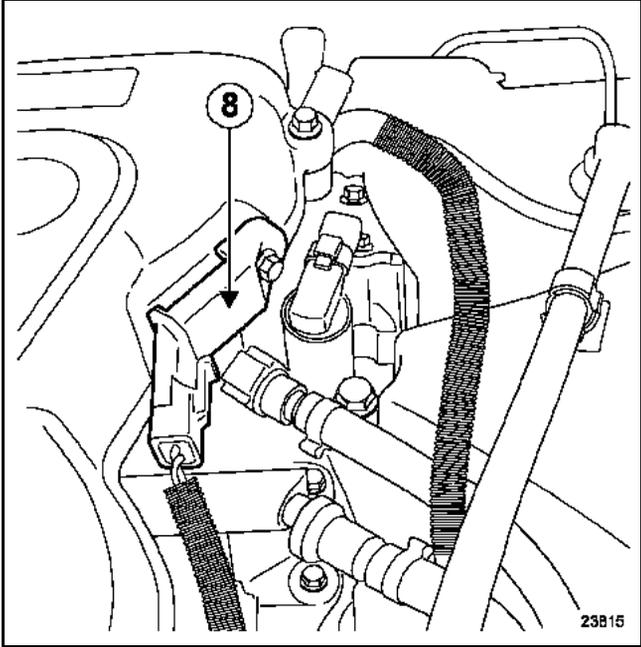
Disconnect:

- the connector (1) from the throttle valve,
- the pipe from the brake servo (2),
- the bleed hose (3) from the inlet manifold,
- the oil vapour rebreathing pipe from the throttle valve unit.

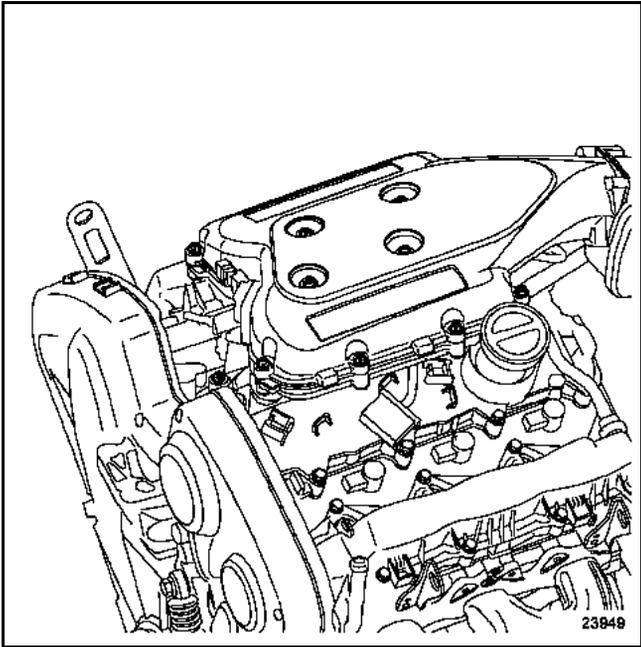


Unscrew the clip attaching the air duct (4) to the throttle valve.

Remove the coolant expansion bottle from the fire wall and place it apart.



Disconnect the pressure sensor connector (8).



Dismount the manifold mounting bolts and then remove it.

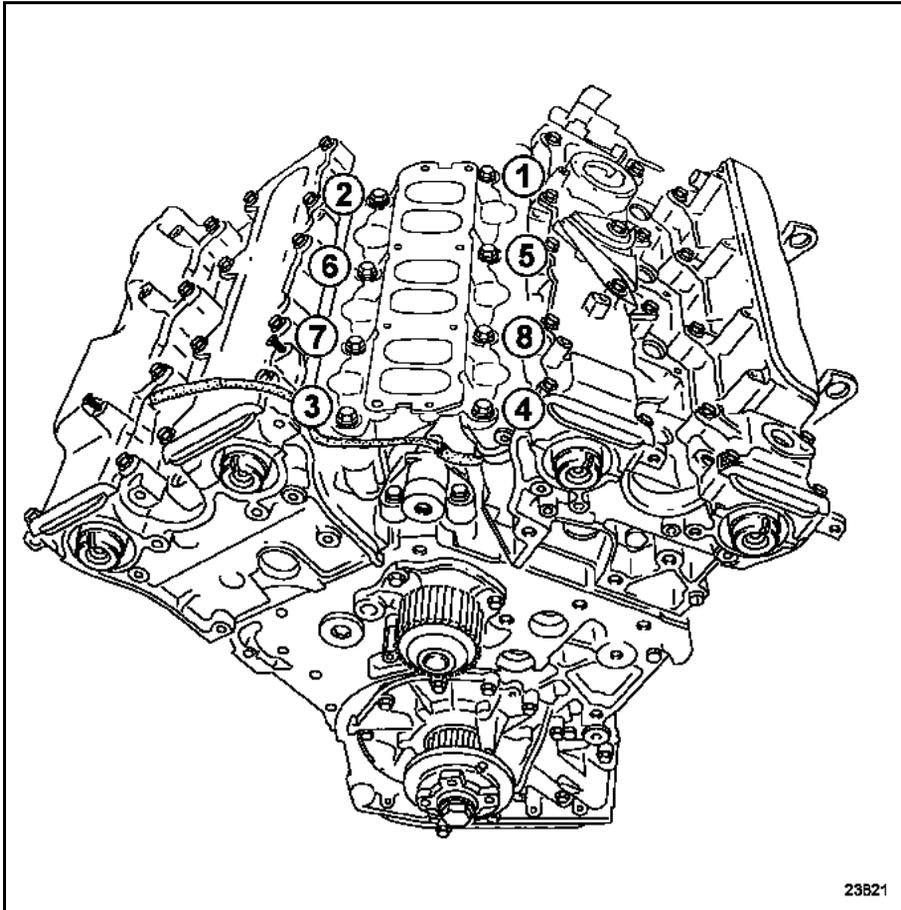
REMOVAL OF THE "AIR INTAKE DISTRIBUTOR - INJECTION RAIL" ASSEMBLY

Disconnect the fuel supply lines from the injection rails.
Remove the plastic rail common to the two petrol rails.

WARNING

Check that the fuel inlets on the injection rails are protected.

Remove the bolts attaching the rail to the upper inlet manifold.
Carefully remove each rail to avoid damaging the seals.
Disconnect the wiring harness from the supports on the injection rails.
Remove the rails.
Dismount the support from the oil vapour rebreathing system on the lower inlet manifold.
Loosen and remove the bolts from the upper manifold and remove the manifold.
Loosen and remove the bolts from the lower manifold in the order recommended below, taking care with the rubber seals.



23821

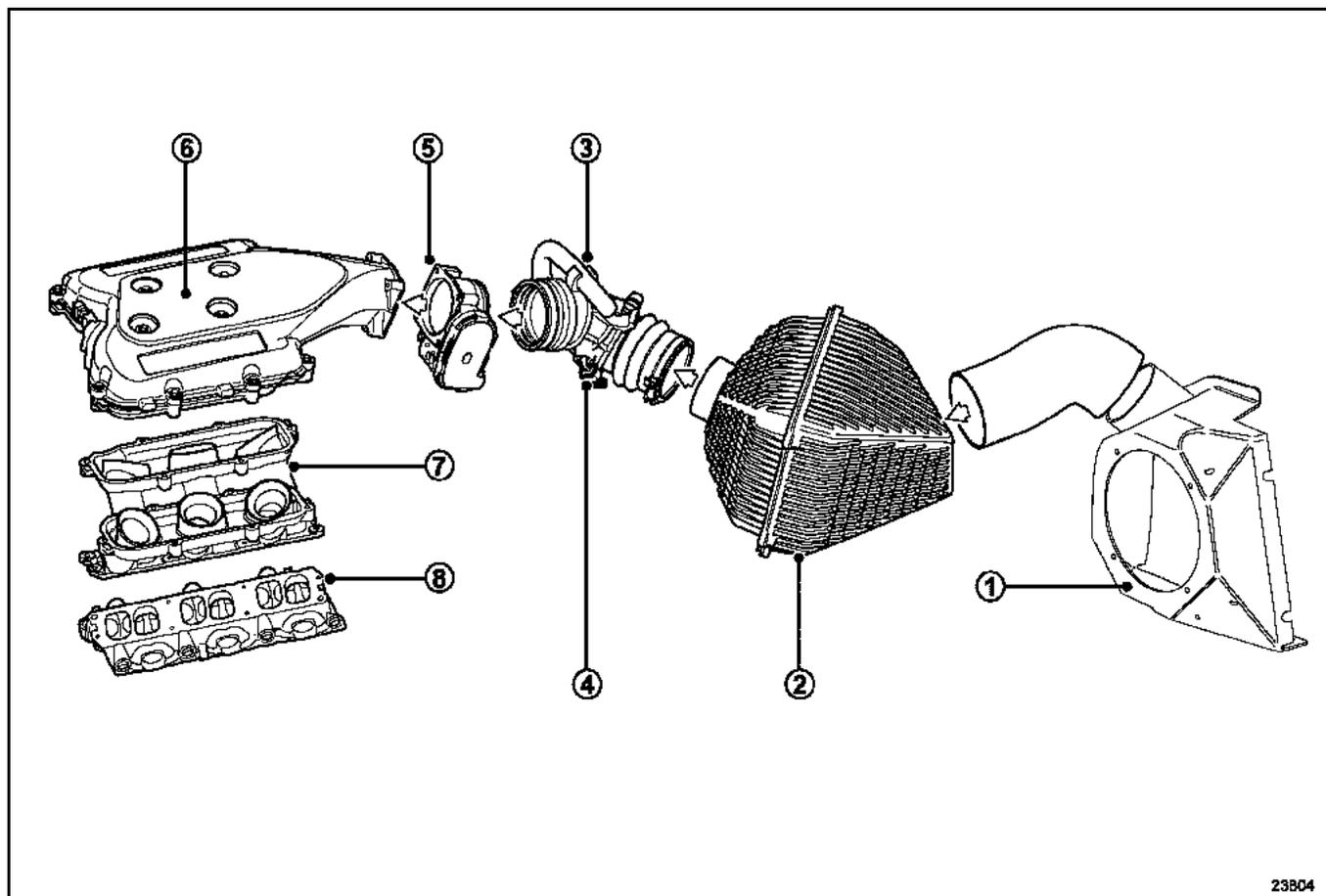
REFITTING

Replace the seals.
Proceed in the reverse order to removal.

Note:

For refitting the air inlet distributor/injection rail assembly, see Section 11, **Cylinder head gasket**.

INTAKE CIRCUIT



23804

- 1 Vehicle side air intake
- 2 Air filter
- 3 Air duct
- 4 Air temperature sensor
- 5 Throttle valve
- 6 Upper air casing
- 7 Upper inlet manifold
- 8 Lower inlet manifold

CHECKING THE FUEL PRESSURE

Special tooling required

Mot. 1311-01 Fuel pressure test kit

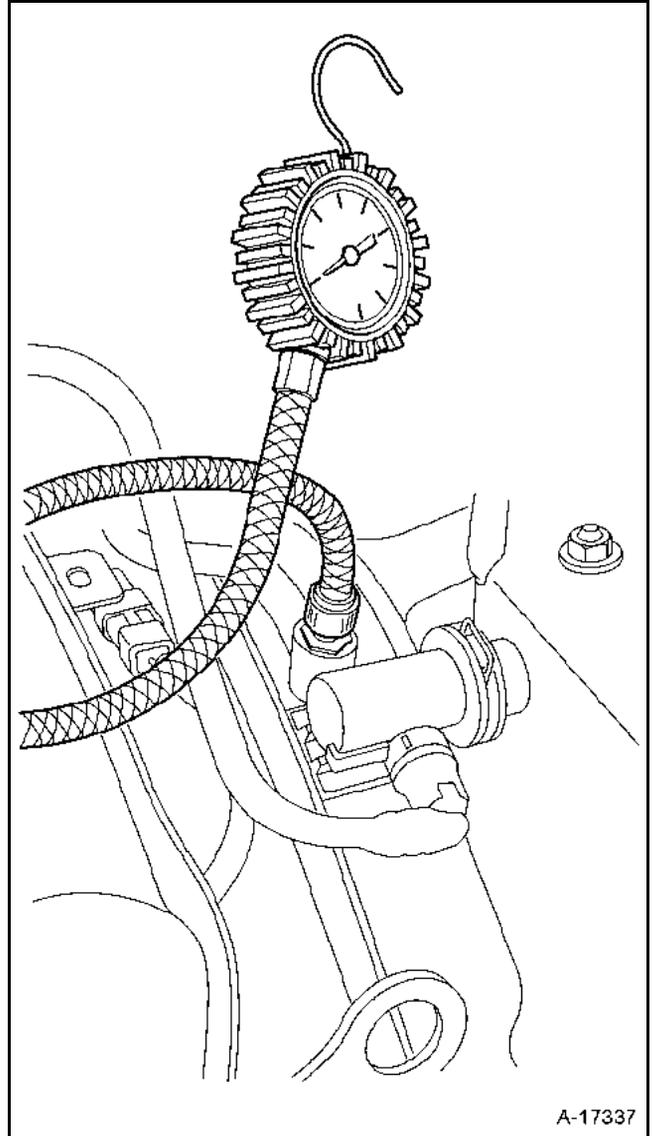
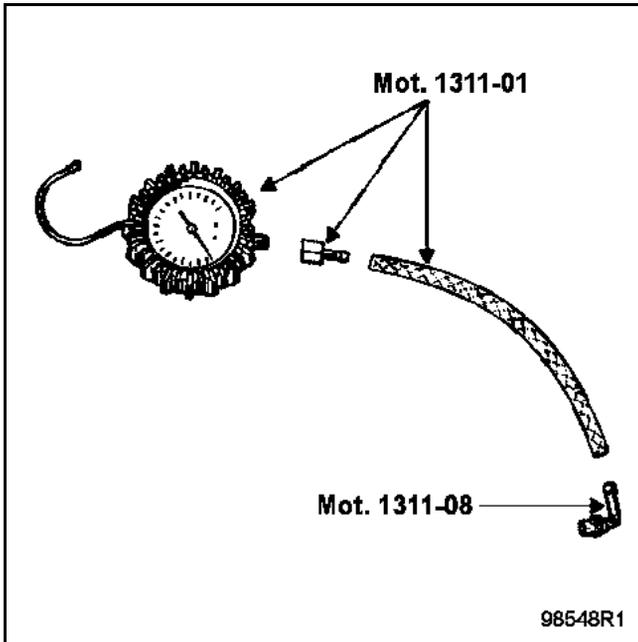
Mot. 1311-08 "T" adaptors

Remove the upper protective plastic cover from the rocker cover.

A quick-release union specially designed to perform pressure measurements is located at the end of the injection rail.

Use the tool (Mot. 1311-08) to connect to this union. The tool (Mot. 1311-08) shall be included in the kit (Mot. 1311-01).

Join (Mot. 1311-08) to the pressure gauge (0; +10 bar) using the kit (Mot. 1311-01).



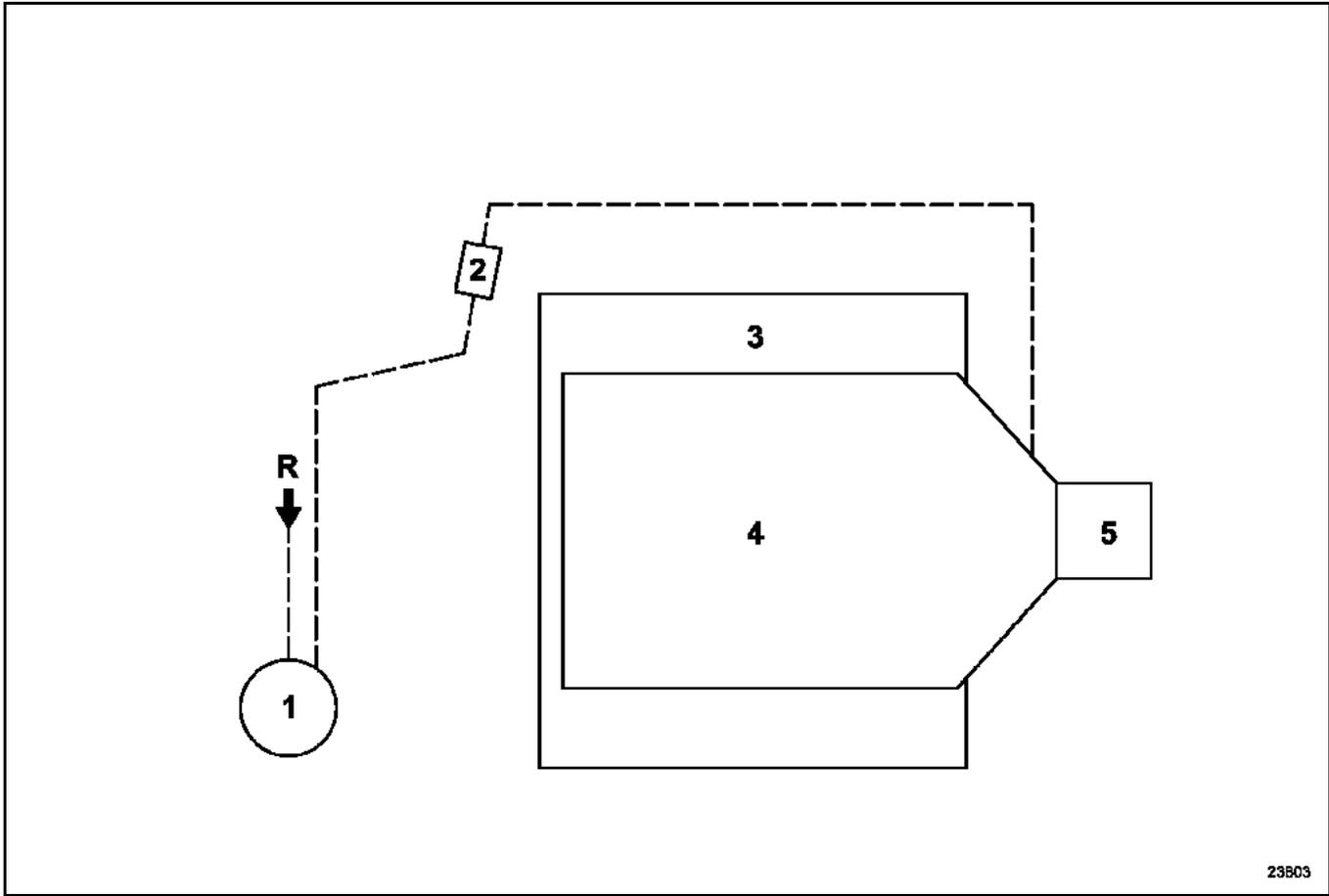
Turn the ignition key to "ON" to activate the fuel pump.

Measure the pressure, which should be 3.5 ± 0.2 bar.

ANTIPOLLUTION Fuel vapour rebreathing

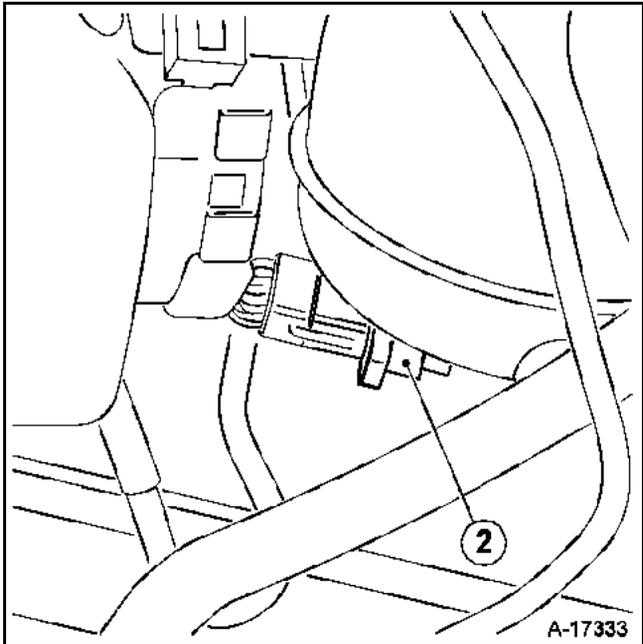
14A

OPERATING DIAGRAM OF THE CIRCUIT



23803

- 1 Fuel vapour absorber
- 2 Solenoid valve
- 3 Engine
- 4 Inlet manifold
- 5 Throttle valve
- R Pipes from fuel tank



A-17333

OPERATING PRINCIPLE

Air is released from the reservoir through the fuel vapour absorber.

The vapours from the petrol tank are trapped by the active charcoal contained in the absorber as they pass.

So that the vapour from the petrol tank contained in the absorber may not volatilise in the atmosphere when the tank is opened, a valve isolates the absorber from the tank when the cap is removed.

The vapour from the petrol tank trapped in the absorber are flushed out and burnt by the engine.

This is done by connecting the absorber and the inlet manifold using pipes. A solenoid valve which permits absorber bleeding is located on these pipes.

The purpose of the solenoid valve is to open a passage of variable size (as a function of the OCR signal sent by the injection computer).

The variation in the passage made available to the vapour from the petrol tank in the solenoid valve is a result of the balance between the magnetic field created by the electrical supply to the coil and the return spring force attempting to close the solenoid valve.

BLEEDING CONDITION THE FUEL VAPOUR ABSORBER

In richness regulation, if the coolant temperature is greater than **60 °C**, then bleeding is performed for one minute, and then prohibited for one minute. This takes place several times, then the bleed time is increased to **5 minutes** and **30 seconds** for a bleeding prohibition still of one minute.

Outside of richness regulation, bleeding is performed if the full load position is recognised.

The opening cyclic ratio of the absorber's bleed solenoid valve can be visualised by means of the diagnostic tool.

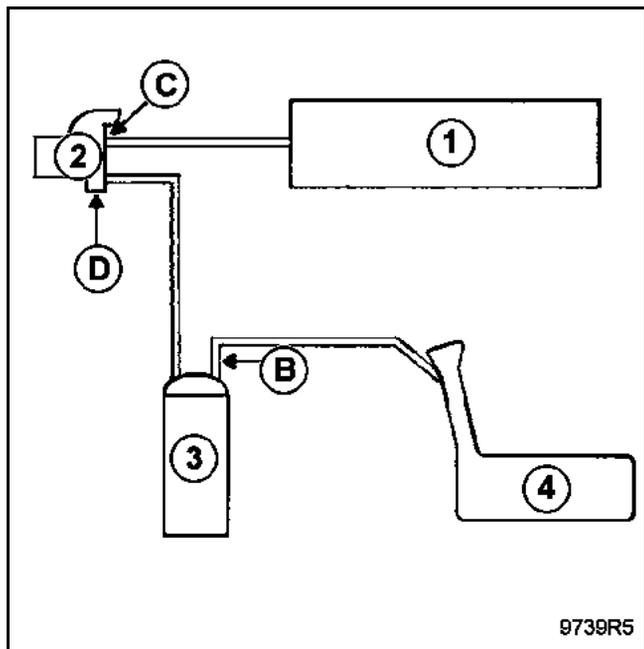
The solenoid valve is closed for a reading value of **0 %**.

FUEL VAPOUR ABSORBER BLEED CHECKING OPERATION

Incorrect operation of the system may result in rough idle or engine stalling.

Check the conformity of the circuit (see operating diagrams)

Check the condition of the pipes to the fuel tank.



- 1 Upper inlet manifold
- 2 Petrol vapour absorber bleed solenoid valve
- 3 Fuel vapour absorber
- 4 Reservoir

At idle speed, connect a pressure gauge (-3; +3 bar) (Mot. 1311-01) to the (D) outlet on the solenoid valve, to check there is no vacuum (likewise, the command value read by the diagnostic tool remains minimal: **X = 0 %**). **Is there a vacuum?**

YES With the ignition off, use a vacuum pump to apply a vacuum of **500 mbar** to the solenoid valve at (C). This should not vary by more than **10 mbar** in **30 seconds**. **Does the pressure vary?**

YES The solenoid valve is faulty, replace it. Moreover, you must blow in the pipe connecting the solenoid valve to the fuel vapour absorber to eliminate any pieces of activated carbon.

NO There is an electrical problem, check the circuit.

NO When bleeding conditions occur (not at idle speed and with warm engine), an increase in the vacuum should be detected (at the same time, an increase in this value should be detected on the diagnostic tool).

Check the pipes used for the release of air from the reservoir. After removing the filler cap, use a vacuum pump to apply a vacuum to the pipe at (B). The fact that a vacuum can be maintained in this pipe shows that the overfill prevention valve is correctly sealed.

On the other hand, when the cap is fitted again, the vacuum should be eliminated rapidly, showing that the pipe is not clogged and that there is indeed communication with the rebreathing volumes inside the tank.

REMOVAL

Put the vehicle on a two-post lift.

Remove the tray under the bonnet.

Disconnect the battery.

Drain the air conditioning circuit.

Remove:

- the protector from under the engine and the engine covers;
- the accessories belt (see Section **07**, "**Accessories belt tension**", in Workshop Repair Manual **348**),
- the power assisted steering pump pulley,
- the air conditioning compressor,
- the electrical connections to the alternator,
- the alternator.

REFITTING

Proceed in the reverse order to removal.

Fill the air conditioning circuit.

Check that the assembly works correctly.

Ignition is controlled by the injection computer.

The firing order is 1 - 6 - 3 - 5 - 2 - 4.

PRESENTATION

The system comprises:

- the injection computer (the ignition power stage is integrated into the computer),
- six spark plug control coils,
- six spark plugs,
- two pinking detectors located under the inlet manifolds.

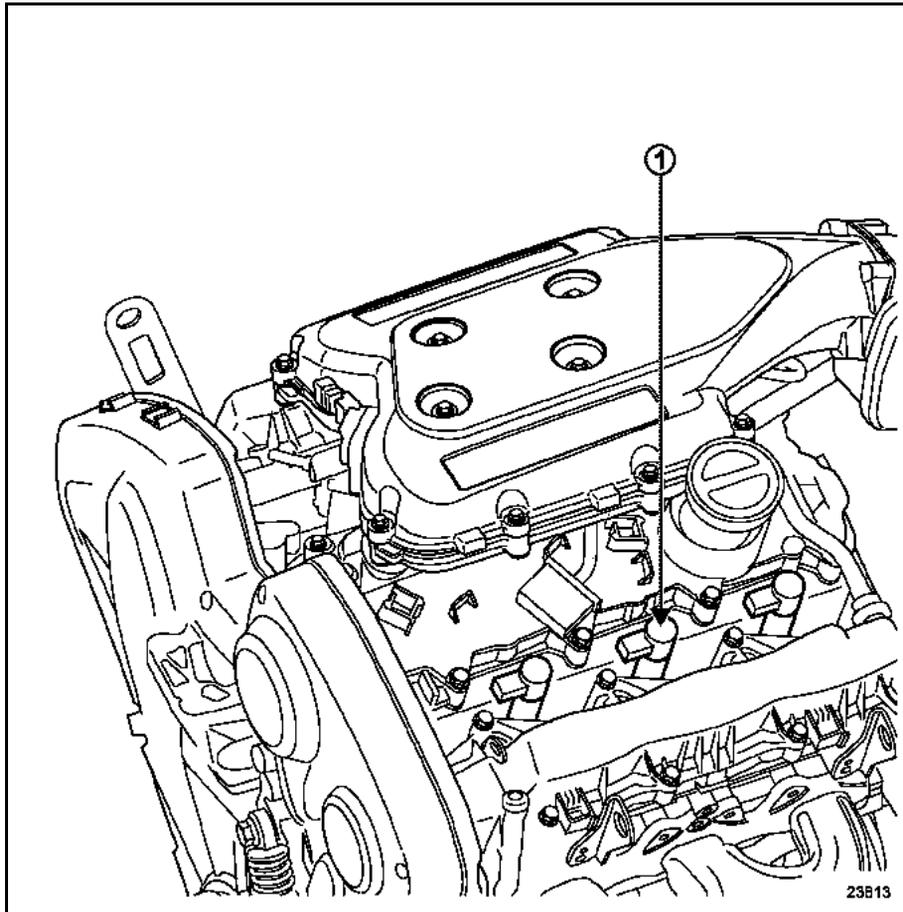
SPARK PLUGS

Bosch FGR 7 MQPE

Gap: (not adjustable)

Tightening torque: **2.5 to 3 daNm**.

FRONT AND REAR CYLINDERS



The spark plugs can be dismantled after removing the engine cover and the coils (1).

Coil tightening torque: **1.5 daNm**.

SPECIAL FEATURES OF THE BOSCH MULTIPOINT INJECTION

- BOSCH ME7.4.6 128-track computer.
- Sequential multipoint injection controls the injectors one at a time in firing order (1-6-3-5-2-4).
- Static ignition with six pencil coils.
- Injection warning light on the instrument panel.
- Installation of a specific injection warning light (**OBD** light "**O**n **B**oard **D**iagnostic") which is illuminated for three seconds after the engine is started. Its presence is due to fitting of the **OBD "O**n **B**oard **D**iagnostic" diagnostic system (CAN multiplexed system).
- Special precautions relating to the engine immobiliser:
Installation of a 3rd generation engine immobiliser which requires a special method for replacing the computer.
- Fuel circuit without return to the tank (the pressure regulator is located on the "pump - gauge"/sender unit).
- Idling speed
 - nominal idle speed **650 rpm ± 50**
- Idling speed corrected according to: **720 rpm**
 - the air conditioning
 - the power assisted steering pressure switch
 - battery voltage
- Maximum speed: **7200 rpm ± 50**
- Fuel vapour absorber bleed solenoid valve controlled by **Opening Cyclic Ratio (OCR)** depending on engine operation.
- The fan assembly and the coolant temperature warning light on the instrument panel are controlled by the injection computer (Centralised Coolant Temperature Management).
- Anti-percolation function (fan assemblies controlled at slow speed for **10 minutes** at a maximum).
- Automatic configuration for the operation of the cruise control/speed limiter and for air conditioning operation.
- Air conditioning compressor clutch controlled by the injection computer.
- Use of four lambda sensors located upstream and downstream of the pre-catalytic converters.
- Inlet camshaft phase shifters controlled by two solenoid valves managed by the computer according to engine speed and engine load.

This car is fitted with a 3rd generation engine immobiliser system, which requires a special method for replacing the computer.

REPLACING THE INJECTION COMPUTER

See Section **17, injection "Computer"**, for the method of removing and refitting the computer.

See Section **82, "Immobiliser"**, for the method of programming the immobiliser code.

See Technical Notes **3474A, 3560A** and **3700A**.

WARNING:

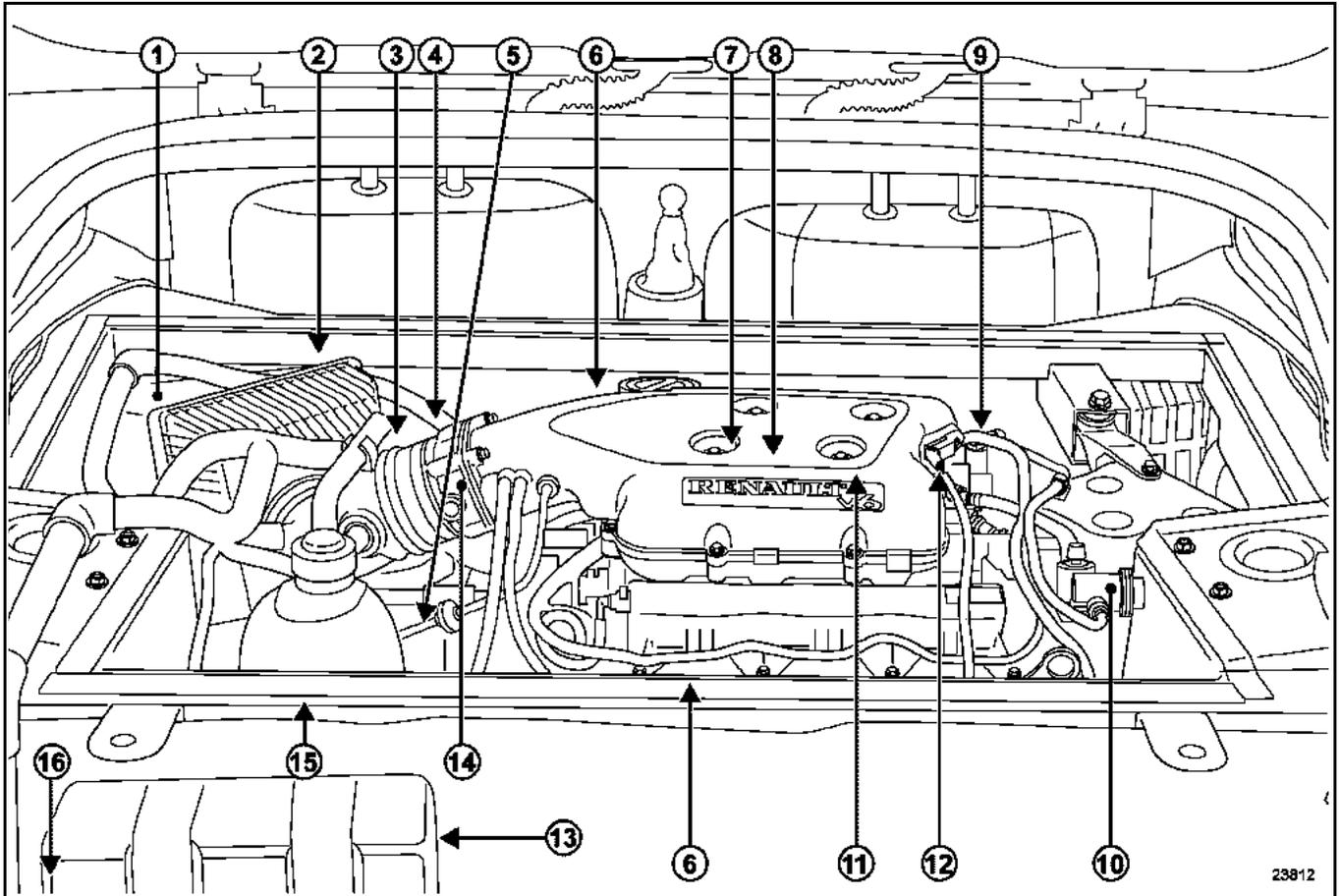
- The injection computer retains the engine immobiliser code for life.
- The system has no security code.
- It is forbidden to perform tests with computers borrowed from the Parts Department or from another vehicle which must then be returned. These computers are hard-coded.

When problems arise which could be due to a faulty computer, see **Technical Note 3700A "DIAGNOSTIC SHEET"** or a replacement note.

PETROL INJECTION

Location of components

17B



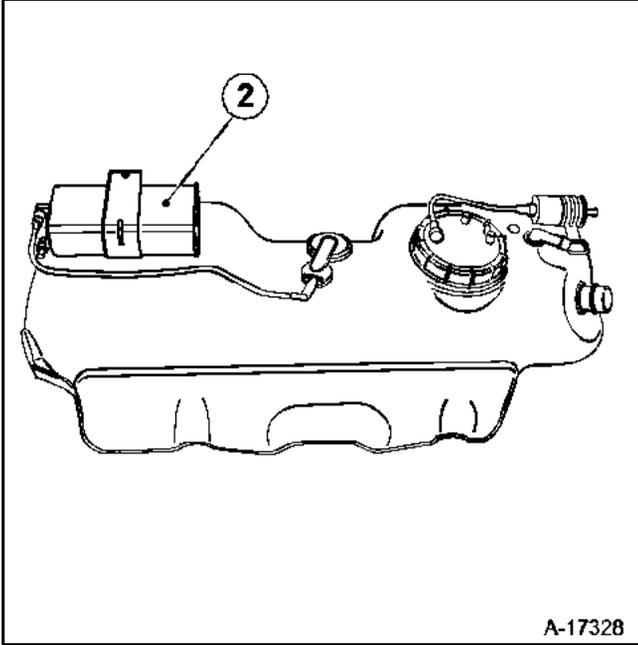
23812

- | | | | |
|----|---|----|---------------------------------------|
| 1 | Air filter | 11 | Injector rail |
| 2 | Fuel vapour absorber | 12 | Absolute pressure sensor |
| 3 | Air temperature sensor | 13 | Injection computer |
| 4 | Coolant temperature sensor | 14 | Motorised throttle valve |
| 5 | TDC sensor | 15 | Petrol vapour absorber solenoid valve |
| 6 | lambda sensors (four) | 16 | Relays and fuses |
| 7 | Pinking sensors (two) | | |
| 8 | Coils (six) | | |
| 9 | Power assisted steering pressure switch | | |
| 10 | Pulse damper | | |

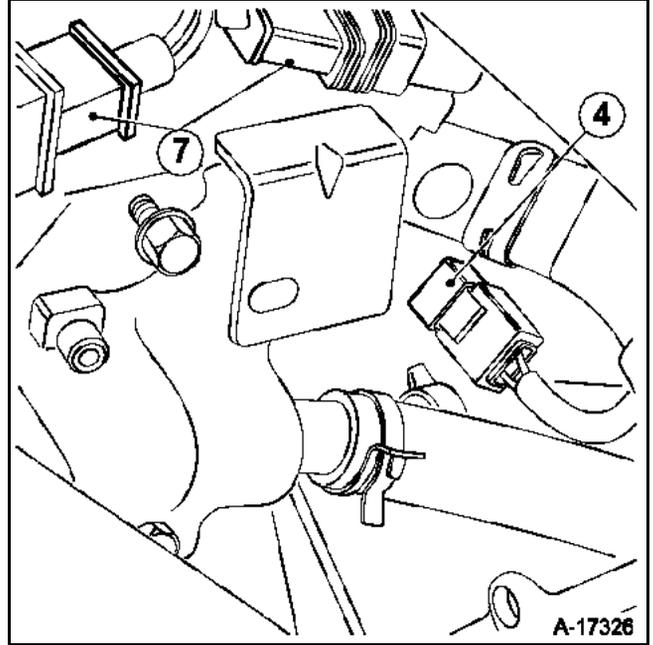
PETROL INJECTION

Location of components

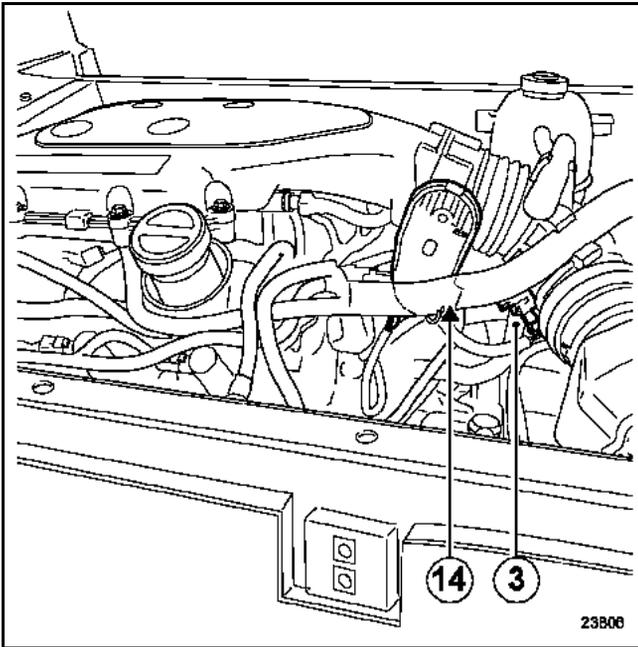
17B



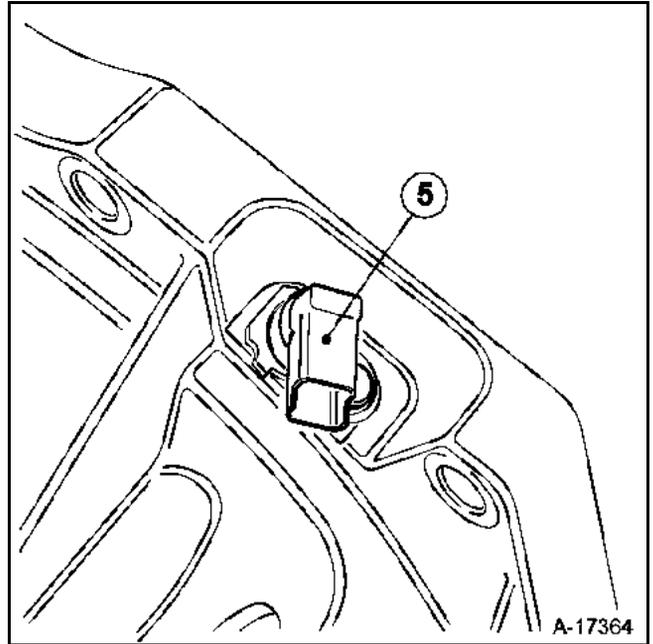
2 Petrol vapour absorber



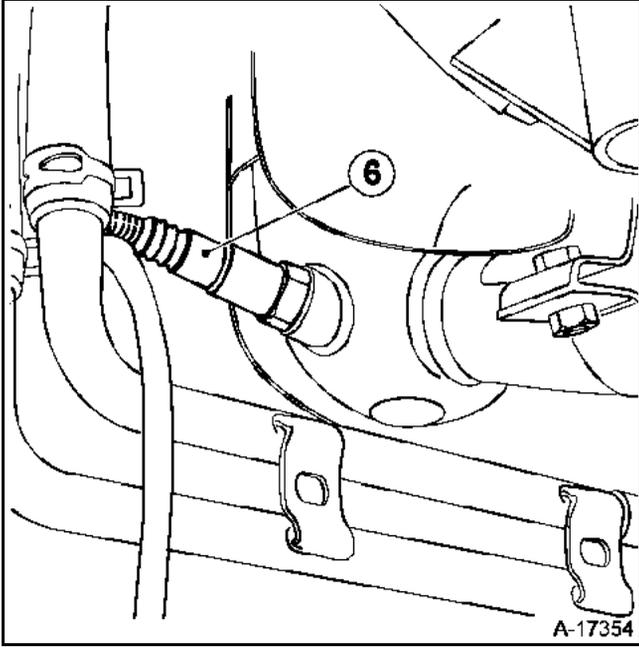
4 Water temperature sensor
7 Pinking sensor connectors



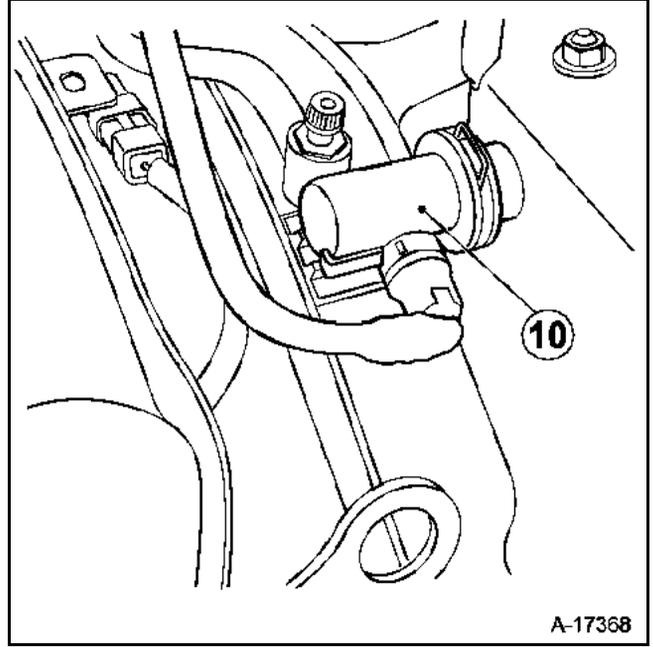
3 Air temperature sensor
14 Throttle valve control with memory



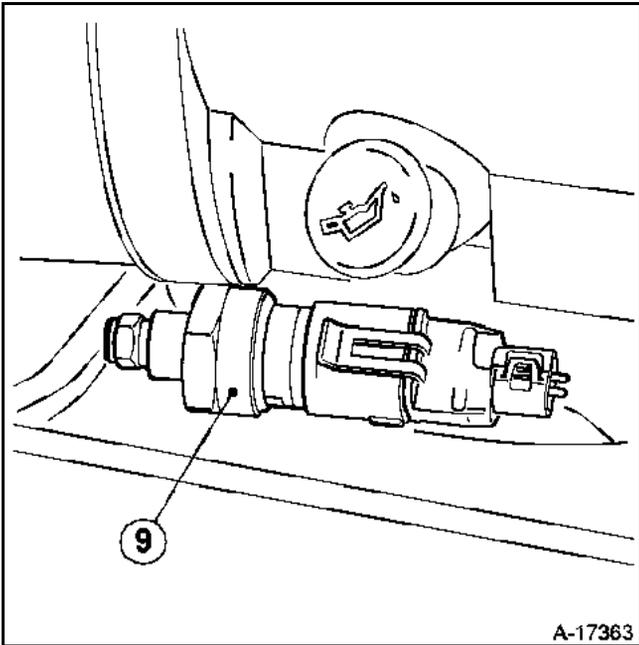
5 TDC sensor



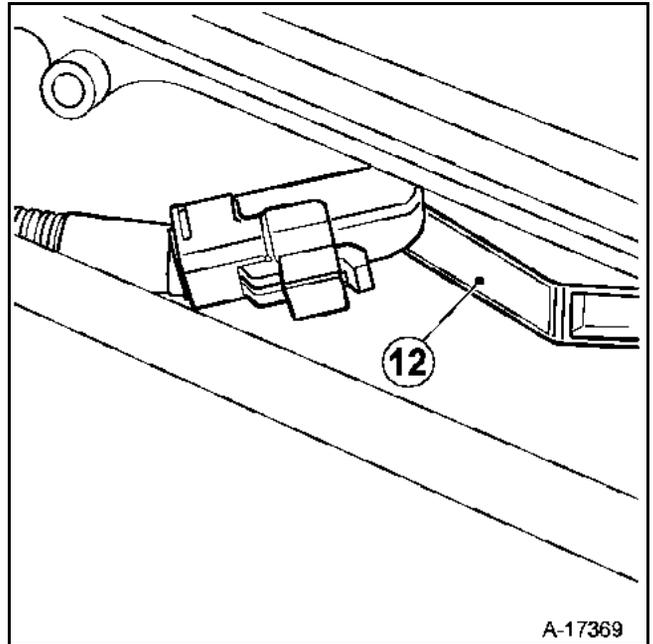
6 lambda sensor (1 of 4); one at each end of the two primary catalytic converters



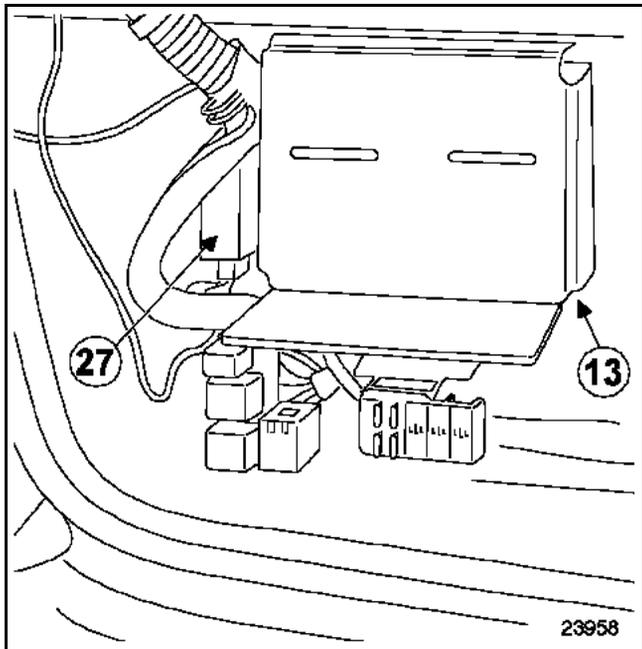
10 Pulse damper



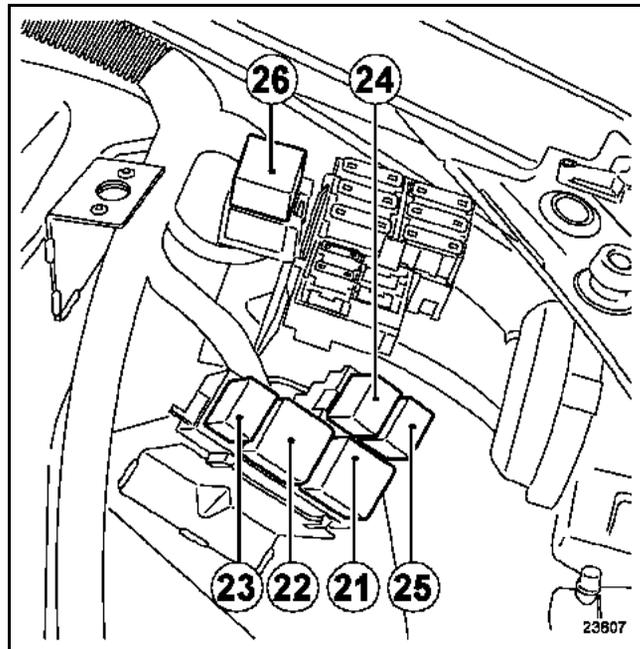
9 Power assisted steering pressure switch



12 Pressure sensor

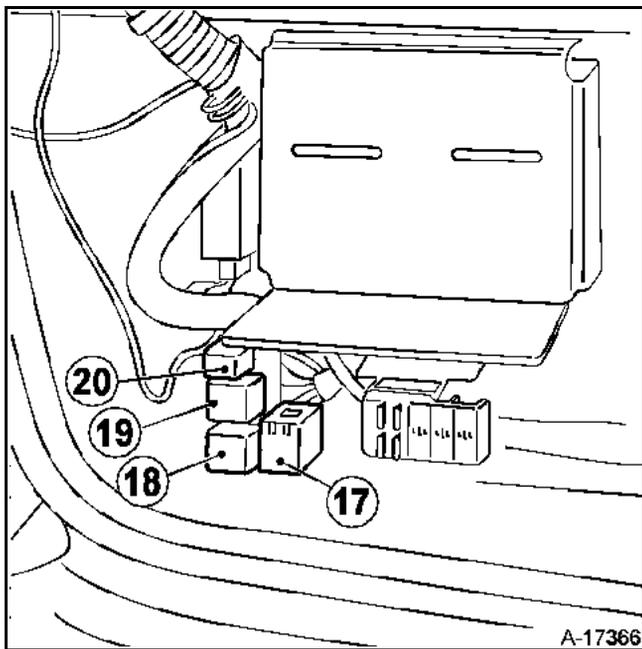


- 13 Injection computer
- 27 Vehicle speed interface unit

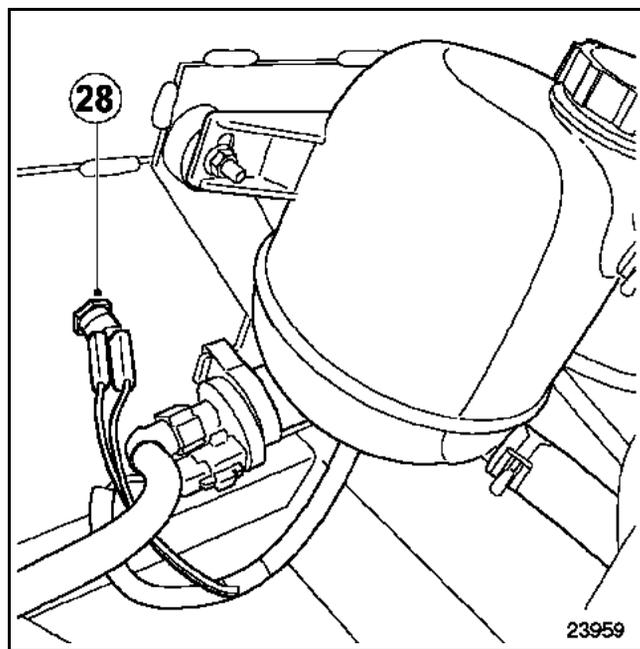


The following relays are located in the front compartment:

- 21 Operation in series and parallel for the front engine cooling fan relay (purple)
- 22 Fuel pump relay (yellow)
- 23 ABS warning light relay (black)
- 24 Fan 1 relay (black)
- 25 Fan 2 relay (black)
- 26 Passenger compartment fan relay (purple)



- 17 Side intake engine cooling fan relay (black)
- 18 lambda sensor heating relay and ignition coil relay (purple)
- 19 Computer locking relay (yellow)
- 20 Air conditioning compressor control relay (black)

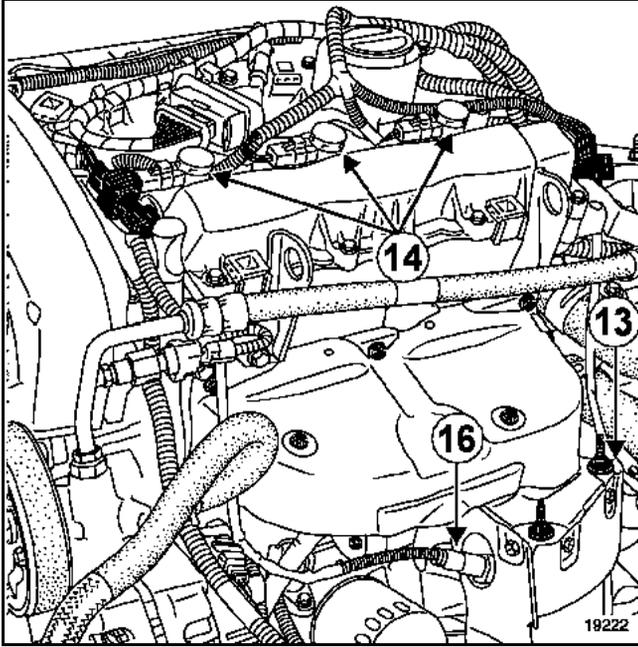


- 28 Thermal switch, temperature under bonnet

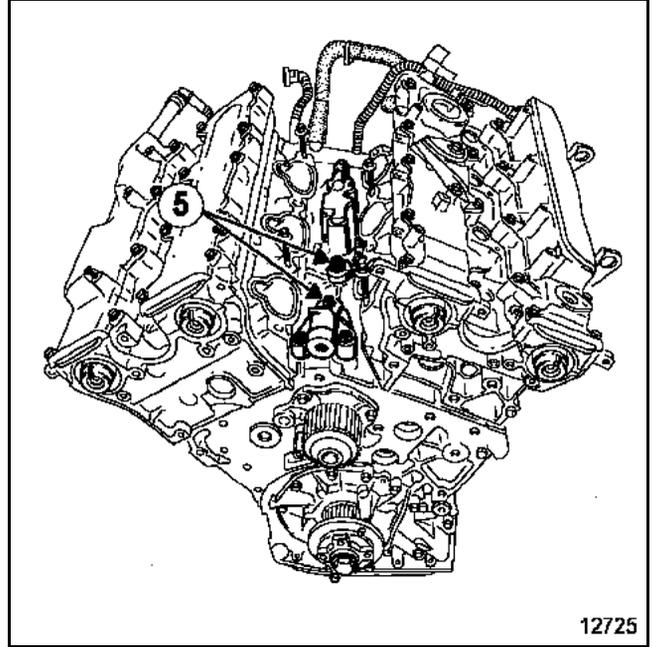
PETROL INJECTION

Location of components

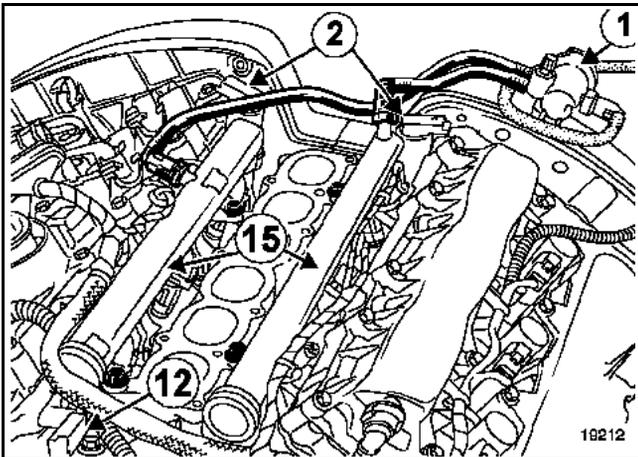
17B



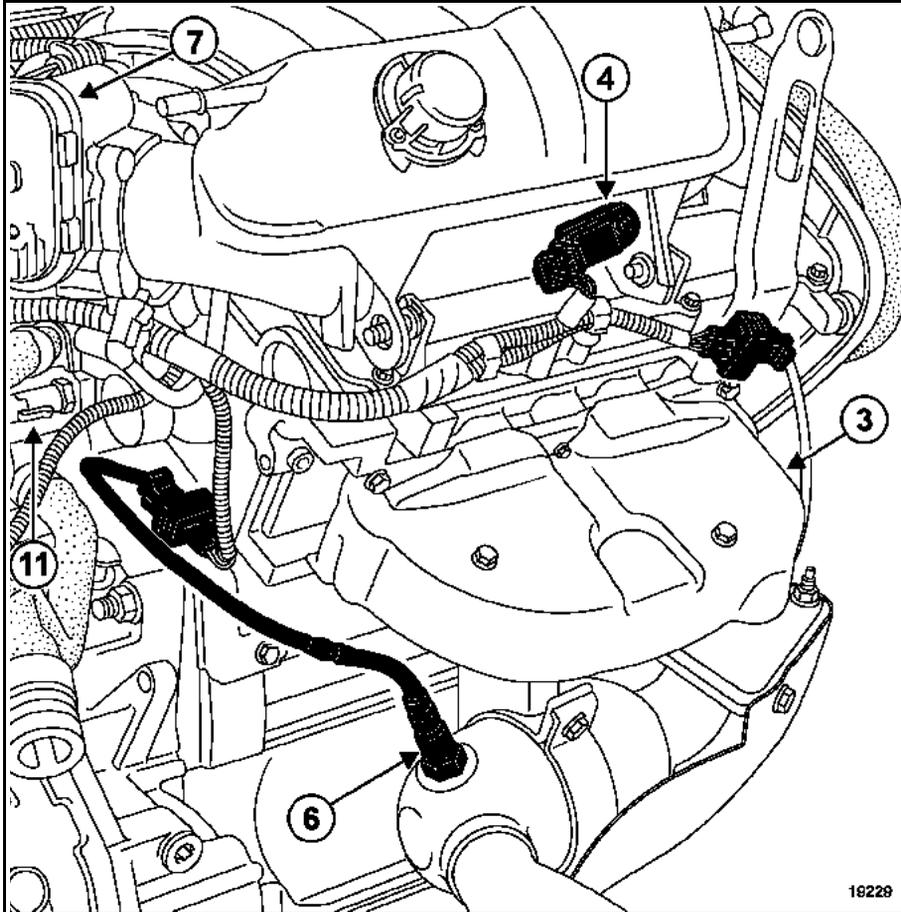
- 13 Downstream lambda sensor (front cylinders)
- 14 Ignition coils
- 16 Upstream lambda sensor (front cylinders)



- 5 Pinking sensors



- 2 Camshaft phase shifter solenoid valve (two)
- 12 Cylinder marking sensors (two).
- 15 Injector rail
- 1 Pulse damper



- 3 Upstream lambda sensor (rear cylinders)
- 4 Manifold pressure sensor
- 6 Downstream lambda sensor (rear cylinders)
- 7 Motorised throttle valve
- 11 Coolant temperature sensor

REMOVAL

The injection computer is located at the rear of the vehicle.

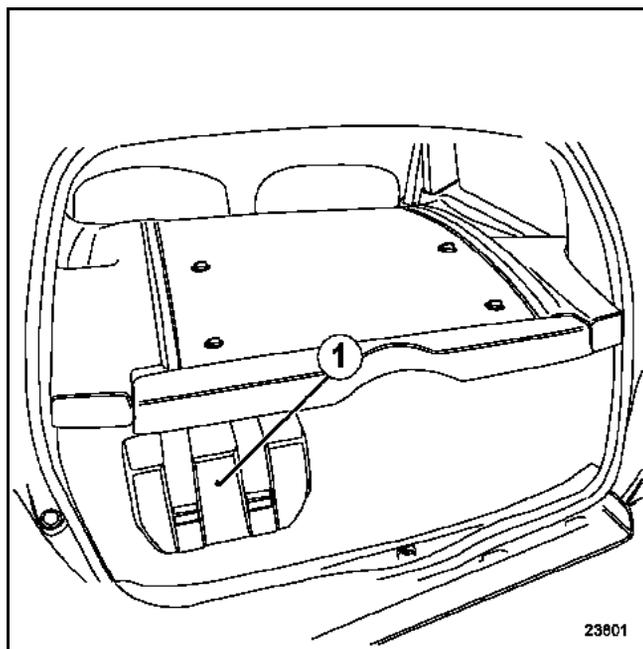
Remove the engine undertray.

Remove the vehicle lifting kit (1).

Raise the carpet.

Remove:

- the computer mountings,
- the computer.



WARNING:

After removing and refitting the injection computer, check that the cruise control/speed limiter is working correctly (see Section 17B, **Speed limiter/Cruise control**).

REFITTING

Proceed in the reverse order to removal.

Replace the computer mounting nuts.

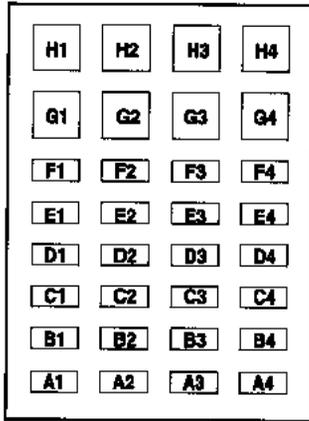
Program the immobiliser code following the procedure described in Section 82A, "**Immobiliser**".

When the ignition is switched on, the throttle valve should go through a cycle of programming for its MIN and MAX positions.

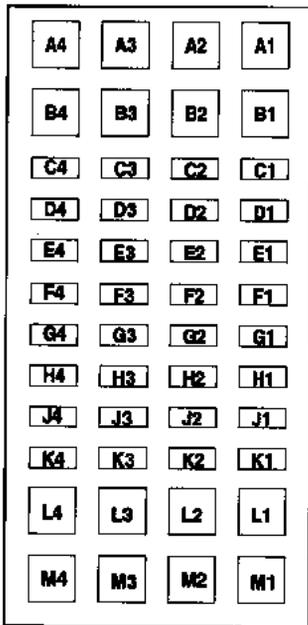
Use the diagnostic tool to check that the programming has been carried out correctly.

If this programming has not been performed, see fault finding manual **DIAG 4, Throttle Valve**.

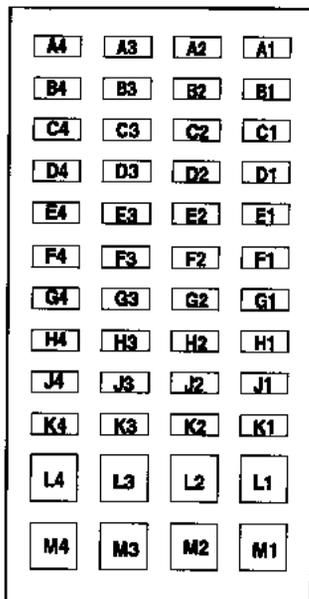
A



B



C



CONNECTION

Connector A, grey

A3	---	MANIFOLD PRESSURE SENSOR POWER SUPPLY
B2	---	CRUISE CONTROL /SPEED LIMITER POWER SUPPLY
B3	←	MANIFOLD PRESSURE SENSOR SIGNAL
C3	---	MANIFOLD PRESSURE SENSOR EARTH
C4	---	AIR TEMPERATURE SENSOR POWER SUPPLY
D1	←	OIL TEMPERATURE SENSOR SIGNAL
D2	---	WATER TEMPERATURE SENSOR POWER SUPPLY
D3	←	WATER TEMPERATURE SENSOR SIGNAL
D4	←	AIR TEMPERATURE SENSOR SIGNAL
E1	←	REAR CYLINDER DOWNSTREAM lambda sensor SIGNAL
E2	←	REAR CYLINDER UPSTREAM lambda sensor SIGNAL
E3	←	FRONT CYLINDER DOWNSTREAM lambda sensor SIGNAL SIGNAL
E4	←	FRONT CYLINDER UPSTREAM lambda sensor SIGNAL
F1	---	REAR CYLINDER UPSTREAM lambda sensor SIGNAL EARTH
F2	---	REAR CYLINDER DOWNSTREAM lambda sensor SIGNAL EARTH
F3	---	FRONT CYLINDER DOWNSTREAM lambda sensor SIGNAL EARTH
F4	---	FRONT CYLINDER UPSTREAM lambda sensor SIGNAL EARTH
G1	←	CRUISE CONTROL/SPEED LIMITER SIGNAL
G2	→	CYLINDER 6 IGNITION COIL COMMAND
G3	→	CYLINDER 5 IGNITION COIL COMMAND
G4	→	CYLINDER 4 IGNITION COIL COMMAND
H1	---	POWER EARTH
H2	→	CYLINDER 1 IGNITION COIL COMMAND
H3	→	CYLINDER 3 IGNITION COIL COMMAND
H4	→	CYLINDER 2 IGNITION COIL COMMAND
A2	→←	CAN L MULTIPLEX LINK (MULTIPLEXED)
C2	→←	CAN H MULTIPLEX LINK (MULTIPLEXED)

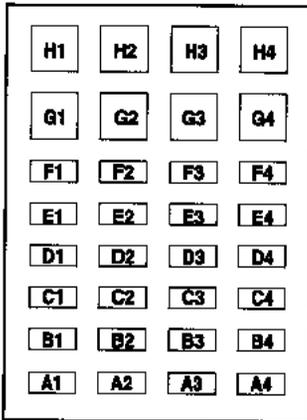
Connector B, brown

A1	←	PEDAL POTENTIOMETER SIGNAL (TRACK 1)
A2	←	PEDAL POTENTIOMETER SIGNAL (TRACK 2)
A3	---	PEDAL POTENTIOMETER EARTH (TRACK 2)
B1	---	PEDAL POTENTIOMETER POWER SUPPLY (TRACK 1)
B2	←	BRAKE LIGHT SWITCH SIGNAL
B4	---	+ AFTER IGNITION
C1	←	SPEED LIMITER ON/OFF COMMAND
E3	←	POWER ASSISTED STEERING PRESSURE SWITCH SIGNAL
H1	---	PEDAL POTENTIOMETER POWER SUPPLY (TRACK 2)
H2	→←	DIAGNOSTIC
J4	→	SLOW-SPEED FAN ASSEMBLY RELAY COMMAND
K1	---	PEDAL POTENTIOMETER EARTH (TRACK 1)
K4	→	HIGH-SPEED FAN ASSEMBLY RELAY COMMAND
L1	←	CRUISE CONTROL ON/OFF COMMAND
L4	---	POWER EARTH
M4	---	POWER EARTH
H3	→←	CAN H MULTIPLEX LINK WITH PASSENGER COMPARTMENT UCH
H4	→←	CAN H MULTIPLEX LINK WITH PASSENGER COMPARTMENT UCH

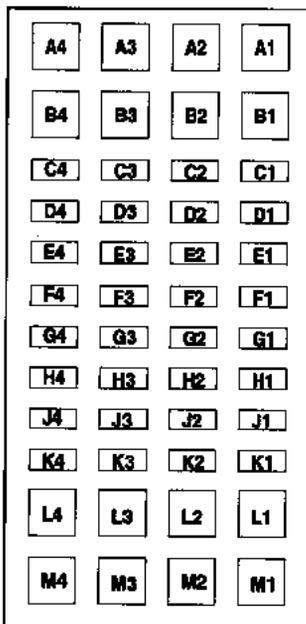
PRO16020

Connector C, black

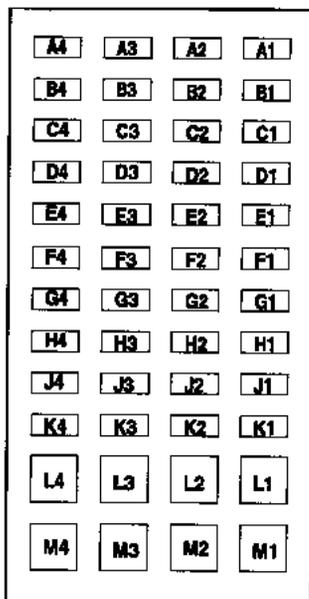
A



B



C



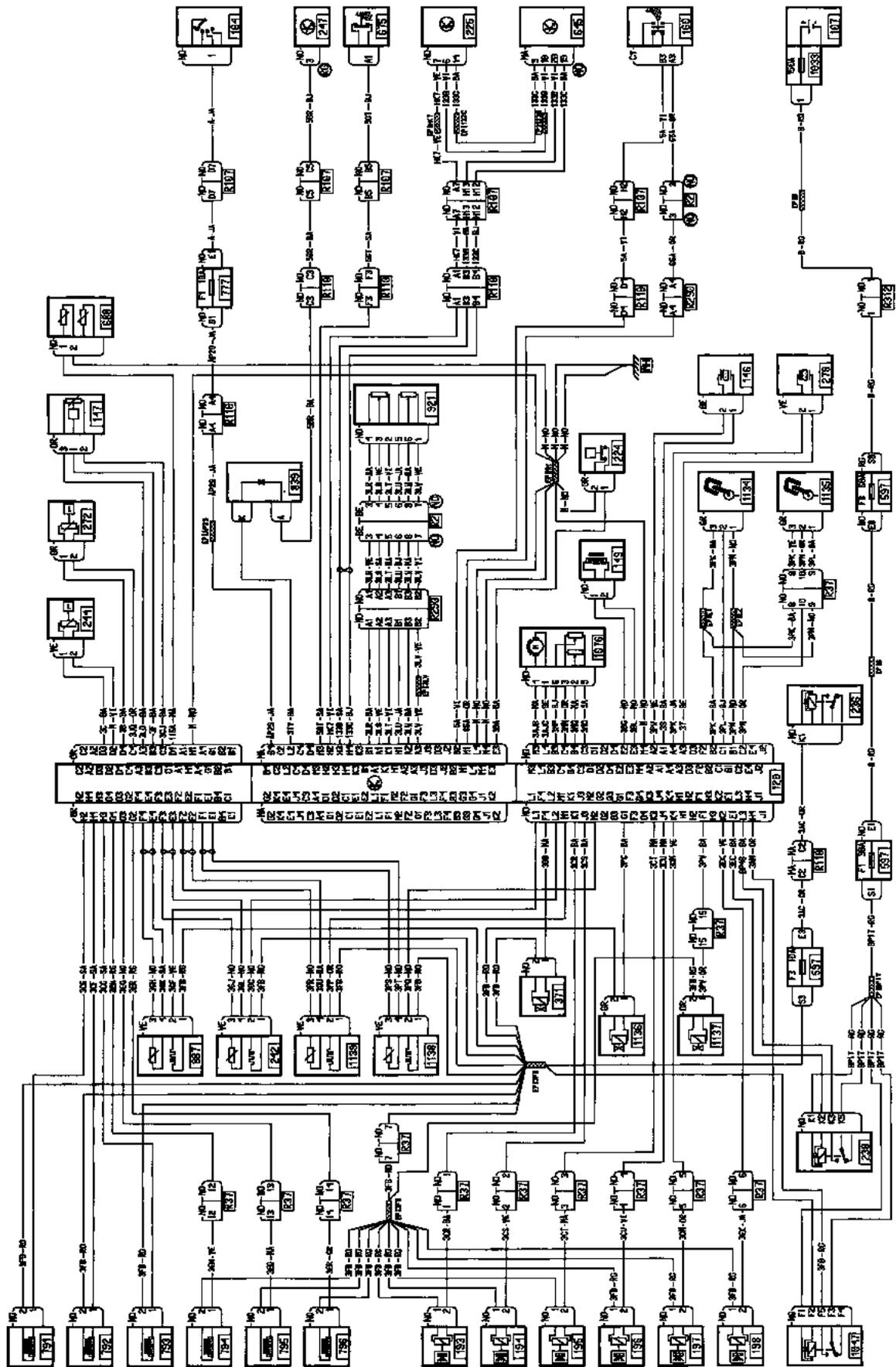
A1	←	FRONT CYLINDER PINKING SENSOR SIGNAL
A2	---	FRONT CYLINDER PINKING SENSOR EARTH
A3	←	REAR CYLINDER PINKING SENSOR SIGNAL
A4	---	REAR CYLINDER PINKING SENSOR EARTH
B1	---	FRONT AND REAR CYLINDER CAMSHAFT SENSOR EARTH
B2	---	FRONT AND REAR CYLINDER CAMSHAFT SENSOR POWER SUPPLY
B3	←	MOTORISED THROTTLE VALVE POTENTIOMETER SIGNAL (TRACK 1)
B4	←	MOTORISED THROTTLE VALVE POTENTIOMETER SIGNAL (TRACK 2)
C1	←	FRONT CYLINDER CAMSHAFT SENSOR SIGNAL
C2	←	REAR CYLINDER CAMSHAFT SENSOR SIGNAL
C3	---	MOTORISED THROTTLE VALVE POTENTIOMETER EARTH (TRACKS 1 AND 2)
C4	---	MOTORISED THROTTLE VALVE POTENTIOMETER +5 V POWER SUPPLY (TRACKS 1 AND 2)
E1	→	ACTUATOR RELAY COMMAND
E2	←	ENGINE SPEED SENSOR SIGNAL
E3	←	ENGINE SPEED SENSOR SIGNAL
F1	→	REAR CYLINDER CAMSHAFT PHASE SHIFTER COMMAND
F4	→	FUEL VAPOUR ABSORBER BLEED SOLENOID COMMAND
G1	→	FRONT CYLINDER CAMSHAFT PHASE SHIFTER COMMAND
H4	---	INJECTOR POWER SUPPLY
J3	→	INJECTOR 2 COMMAND
J4	→	INJECTOR 4 COMMAND
K1	→	INJECTOR 1 COMMAND
K2	→	INJECTOR 6 COMMAND
K3	→	INJECTOR 3 COMMAND
K4	→	INJECTOR 5 COMMAND
L1	→	FRONT CYLINDER UPSTREAM lambda sensor HEATING COMMAND
L2	→	FRONT CYLINDER DOWNSTREAM lambda sensor HEATING COMMAND
L3	---	+ AFTER RELAY POWER SUPPLY
L4	→	MOTORISED THROTTLE COMMAND (-)
M1	→	FRONT AND REAR CYLINDER UPSTREAM lambda sensor HEATING COMMAND
M2	→	REAR CYLINDER DOWNSTREAM lambda sensor HEATING COMMAND
M3	→	MOTORISED THROTTLE COMMAND (+)
M4	---	POWER EARTH

PRO16020

PETROL INJECTION

Wiring diagram

17B



WIRING DIAGRAM KEY

104	Ignition switch
107	Battery
146	Pinking sensor 1
147	Atmospheric pressure sensor
149	TDC sensor
160	Brake switch
193	Injector 1
194	Injector 2
195	Injector 3
196	Injector 4
197	Injector 5
198	Injector 6
224	Power assisted steering pressure switch
225	Diagnostic socket
236	Fuel pump relay
238	Injection locking relay
242	Downstream lambda sensor
244	Injection coolant temperature sensor
272	Injection air temperature sensor
278	Pinking sensor 2
371	Fuel vapour absorber
597	Engine fuse box and relays
645	UCH
675	Clutch pedal switch
688	Oil level gauge and temperature sensor
777	Power supply fuse board
791	Ignition coil, cylinder 1
792	Ignition coil, cylinder 2
793	Ignition coil, cylinder 3
794	Ignition coil, cylinder 4
795	Ignition coil, cylinder 5
796	Ignition coil, cylinder 6
887	Upstream lambda sensor
921	Accelerator potentiometer
1047	Injection relay
1076	Motorised throttle body
1134	Camshaft sensor, row A
1135	Camshaft sensor, row B
1136	Camshaft phase shifter, row A
1137	Camshaft phase shifter, row B
1138	Downstream lambda sensor, row B
1139	Upstream lambda sensor, row B

CONNECTIONS

R2	33-track connector, instrument panel wiring to rear wiring
R37	Engine/Injection
R107	Instrument panel/Front of engine
R110	38-track connector to engine harness
R290	10-track connector to engine harness
R312	Passenger compartment single unit/Left rear

PRINCIPLE FOR ILLUMINATION OF INJECTION FAULT WARNING LIGHT ON INSTRUMENT PANEL

● Vehicles with immobiliser function deactivated

When the ignition is switched on, the injection warning light illuminates constantly for **3 seconds** and then extinguishes.

When the doors are unlocked, the red immobiliser light, which was previously flashing, extinguishes. When ignition is switched on, it illuminates for **3 seconds**, then extinguishes.

● Vehicles with immobiliser function activated

When the ignition is switched on, the computer does not recognise the code, and stops the engine from starting. The injection warning light remains illuminated for **3 seconds** and then extinguishes.

Before the ignition is switched on, the red immobiliser light flashes. When the ignition is switched on, this same indicator light flashes twice as fast.

If a fault is detected in the immobiliser system whilst the engine is running, the injection warning light flashes in the engine speed range between idle speed and approximately **1,500 rpm**.

● Fault in a component of the injection system

Faults causing illumination of the injection warning light:

- incident on the throttle valve potentiometer;
- incident on the accelerator pedal potentiometer.

WARNING

For sake of information, in general, approximately **60%** of the faults detected are due to the connections.

Before replacing parts, make sure that the connections of components which could be faulty are in sound condition.

Features of the On board diagnostic system

This vehicle is equipped with the OBD (On Board Diagnostic) system which features the illumination of an indicator light on the instrument panel (the OBD warning light) when an anomaly causing excessive pollution is detected. This warning light informs the driver that he must have the vehicle repaired.

This new computer diagnostic strategy operates as follows:

Only engine misfires are the subject of continuous fault finding. The other emission control components are tested once while driving (fault finding is not continuous). However, these test sequences are not always performed. The car must be driven under certain conditions for the test sequences to be executed:

- temperature conditions,
- speed conditions (threshold, stability, etc.),
- delay after start,
- engine conditions (manifold pressure, engine speed, throttle angle, etc.).

The OBD management program supplements the management of conventional electrical breakdowns. To meet this standard the requirements are:

- illumination of the OBD warning light (or, for some faults, causing it to flash),
- storing OBD faults.

CONSEQUENCES FOR FAULT FINDING AND REPAIRS

Special care is required when working on the car to prevent the OBD warning light from illuminating after the car has been returned to the customer.

Some faults only appear when the car is being driven, when the adaptives are programmed: **it is therefore essential to validate the repair.**

In addition, the complexity of the system means that the customer has to be asked about the conditions which led to the illumination of the warning light. This information will enable faults to be found more quickly.

The circumstances in which the fault occurred are recorded the computer's memory.

Note:

All electrical faults which result in exceeding the pollution limit cause the On Board Diagnostic warning light to come on.

The operational diagnoses used for OBD are:

- diagnostics of combustion misfires which destroy the catalytic converter,
- diagnostics of polluting combustion misfires,
- fault finding for the upstream and downstream lambda sensors,
- fault finding for the catalytic converter.

Note:

Misfire fault finding takes precedence over all other fault finding. They are performed practically continuously as soon as the driving conditions are reached.

WARNING:

Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition causes incorrect interpretation of the results and loss of the information that the diagnostics have been performed.

CONDITIONS WHICH CAUSE ILLUMINATION OF "ON BOARD DIAGNOSTIC" WARNING LIGHT

● ELECTRICAL FAULT

Permanent illumination of the light after several consecutive detections of a fault (depending on the component).

● LEVEL OF MISFIRES WHICH WILL DESTROY THE CATALYTIC CONVERTER

Immediate illumination and flashing of the warning light.

● CATALYTIC CONVERTER, LAMBDA SENSOR, POLLUTING MISFIRES

Illumination of the light after a fault is detected three times consecutively.

WARNING

The catalytic converter and the upstream lambda sensor diagnostics are sequential and take place:

- once when driving (they last several seconds per test),
- only under certain specific driving conditions.

During a road test, it may be the case that diagnostics for certain functions are not performed (e.g. when in a traffic jam).

⇒ **The warning light illuminates**

If the same "**On Board Diagnostic**" fault is detected during three consecutive journeys or if the fault is electrical.

⇒ **The warning light flashes**

If combustion misfires which could destroy the catalytic converter are detected.

⇒ **The warning light extinguishes**

If the "**On Board Diagnostic**" fault does not recur during three consecutive journeys, the warning light extinguishes (but the fault remains stored in the injection computer's memory).

To reset the fault memorised on the computer without a diagnostic tool, a fault must not be detected for **40 consecutive tests**.

NOTE: the fault may not be detected:

- if the fault is temporary,
- due to the way the customer drives, which does not include all of the fault detection conditions.

FAULT FINDING CONDITIONS

In order for the OBD (On Board Diagnostic) system to function correctly, there must be no electrical faults in the injection system, even if the OBD warning light is not on.

When the catalytic converter and lambda sensor fault finding procedures are in progress, the fuel vapour absorber bleed is closed and the richness adaptations are locked at their last value.

TEST PROCEDURE

- repair all electrical faults
- erase all faults
- program the injection
- check the OBD diagnostic system

FULL OBD INITIALISATION

- erasure of faults stored in memory
- erasure of OBD faults
- erasure of programming

PROGRAMMING REQUIRED FOR "ON BOARD DIAGNOSTIC" FAULT FINDING

Engine target programming

Engine target programming takes place automatically and cannot be carried out with the diagnostic tool.

Richness adjustment programming

To carry out this programming, drive the car while complying with the throttle opening angle and engine speed ranges specified in the "**Injection: Adaptive mixture adjustment**" Section.

The aim of detecting combustion misfires is to detect a malfunction which would cause destruction of the catalytic converter and would cause the pollutant emission threshold to be exceeded (OBD limit).

The diagnostic can detect:

- fouling or flooding of a spark plug,
- clogging of the injectors or an injector flow fault,
- a fault in the supply system (pressure regulator, fuel pump, etc.),
- a bad connection in the petrol or injection circuits,
- a malfunction of the ignition coils.

Fault finding is carried out by measuring instantaneous variations in engine speed.

Observation of a drop in torque detects combustion misfires.

This fault finding is performed practically continuously while the car is being driven.

This diagnostic strategy makes it possible to diagnose two types of fault:

- combustion misfires resulting in destruction of the catalytic converter. These cause the OBD warning light to illuminate immediately and flash,
- polluting misfires which cause the On Board Diagnostic pollution limit to be exceeded. These cause the OBD warning light to illuminate if they are detected during three consecutive journeys.

WARNING

Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition causes incorrect interpretation of the results and loss of the "diagnostics performed" signal.

CONFIRMATION OF THE REPAIR

- Polluting combustion misfires
No fault detected
- Destructive combustion misfires
No fault detected

If diagnostics have found combustion misfires at the end of the test, refer to the fault finding method associated with this symptom.

The aim of catalytic converter fault finding is to detect a malfunction which would cause pollutant emissions to exceed the "**On Board Diagnostic**" limit.

The ability of the catalytic converter to store oxygen indicates its condition. As the catalytic converter ages, its ability to store oxygen reduces along with its ability to treat pollutant gases.

CONDITIONS FOR STARTING FAULT FINDING

Catalytic converter fault finding can only be carried out if the conditions required prior to switching on the ignition are met and maintained.

- no electrical faults,
- no combustion misfires detected,
- programming done,
- main loop and double loops active,
- engine speed read on the diagnostic tool is between **1120** and **1840 rpm**.
- the diagnostic on the four lambda sensors must be completed.

FAULT DETECTION

Fault finding is carried out at a steady speed at between **20 %** and **30 %** load and an engine speed between **1120** and **1840 rpm**. When the conditions for starting fault finding are satisfied, richness excitation peaks are applied, having the effect of sending bursts of oxygen into the catalytic converter. If the catalytic converter is in good condition it will absorb the oxygen and the downstream lambda sensor value will remain at its average value. If it is ageing, it will reject the oxygen and the lambda sensor will start to vibrate. The voltage of the lambda sensor will fluctuate.

The "**On Board Diagnostic**" warning light will illuminate after three journeys.

Catalytic converter fault finding takes **60 seconds**.

WARNING

Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition causes incorrect interpretation of the results and loss of the "diagnostics performed" signal.

CONFIRMATION OF THE REPAIR

- "On Board Diagnostic Catalytic converter fault finding: done" ACTIVE
- "Catalytic converter functional fault" INACTIVE

If the diagnostic tool shows "On Board Diagnostic: not done... ACTIVE", then the control cycle has not been carried out correctly. In this case, repeat the cycle ensuring that the detection conditions are complied with.

If after the test, the diagnostic fault shows "Catalytic converter functional fault... ACTIVE" or "Validation of catalytic converter repair... 2.DEF", refer to the fault finding method associated with this symptom.

The aim of lambda sensor fault finding is to detect a problem which would cause the **"On Board Diagnostic"** limit to be exceeded by pollutant emissions.

There are two types of possible faults of the upstream lambda sensor:

- mechanical damage to an electrical component (breakage, cut in wire) which leads to an electrical fault.
- chemical damage to the component which causes the response time of the sensor to slow down, thus increasing its switching period.

When the required test conditions are met, the average of the sensor periods read is taken, subtracting the effects of interference, then compared with an average period of the On Board Diagnostic threshold.

TEST CONDITIONS

Upstream lambda sensor fault finding can only be carried out if the conditions required prior to switching on the ignition are met and maintained.

- no electrical faults detected,
- programming done,
- no combustion misfires detected,
- coolant temperature above **40 °C**,
- average engine speed between **650** and **6200 rpm**,
- engine load ranging between **20 %** and **30 %**,
- all speeds.

FAULT DETECTION

Fault finding takes place during use by the customer, according to conditions previously described. The computer shows **"Lambda sensor fault finding: done"**.

WARNING

Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition causes incorrect interpretation of the results and loss of the "diagnostics performed" signal.

CONFIRMATION OF THE REPAIR

- "On Board Diagnostic lambda sensor fault finding: done" ACTIVE
- "lambda sensor functional fault" INACTIVE
- "Validation of the repair to the lambda sensor" OK

If the diagnostic tool shows "lambda sensor On Board Diagnostic: not done... ACTIVE" or "Validation of the lambda sensor repair... 1.DEF", the control cycle has not been carried out correctly. In this case, repeat the cycle ensuring that the detection conditions are complied with.

If after the test, the diagnostic tool shows "Catalytic converter operating fault... ACTIVE" or "Validation of catalytic converter repair... 2.DEF", refer to the fault finding method associated with this symptom.

PRINCIPLE

In closed loop phase, richness regulation (PR035) adjusts the injection timing so as to obtain a mixture as close as possible to richness 1. The adjustment value is close to 1, with limits of 0.75 and 1.25.

Adaptive mixture adjustment makes it possible to offset the injection mapping to reset the richness regulation to 1. The adjustment value is close to 0 with limits of **- 11%** and **+ 11%**.

Adaptive adjustments take 1 and 0 as average values after initialisation (erasing the memory) and have the following limit values:

Mixture adjustment	$0.75 \leq PR\ 035 \leq 1.25$
Operating adaptive richness	$0.75 \leq PR\ 185$ and $186 \leq 1.25$
Idle adaptive richness	$- 11\% \leq PR\ 125 \leq 11\%$

Conditions:

- hot engine (coolant temperature above **70 °C** and air temperature below **55 °C**),
- disconnect the fuel vapour absorber by the solenoid valve or block the inlet pipe on the engine,
- do not exceed the throttle opening angle for the particular engine speed (see table).

Pressure zones which must be passed through during the test

Engine speed in rpm	Less than 800 rpm	More than 1200 rpm
Throttle opening angle value which must not be exceeded	60%	70%

Following this test the adjustments will be operational. The test must be continued by normal smooth and varied driving for a distance of **5 to 10 kilometres**. After the test, record the values of the adaptive programs. Initially 1 and 0, they should have changed. If not, repeat the readings taking care to observe the test conditions strictly.

INTERPRETATION OF VALUES OBTAINED FROM A ROAD TEST

If there is a lack of fuel, richness regulation (in PR035) increases to obtain a richness as close as possible to 1 and the adaptive mixture adjustment increases until the mixture adjustment again fluctuates around 1.

If there is excess fuel, the program works in reverse.

THE COMPRESSOR IS OF VARIABLE DISPLACEMENT TYPE

AIR CONDITIONING - INJECTION COMPUTER CONNECTION

The injection computer controls the compressor clutch, taking into account the power absorbed by the compressor and the pressure of the refrigerant fluid in the system.

The data used for the air conditioning function is exchanged via the multiplex network:

- track B H3 multiplex link CAN H (passenger compartment),
- track B H4 multiplex link CAN L (passenger compartment).

When the air conditioning is switched on, the air conditioning control panel requests authorisation to engage the compressor clutch. The injection computer either authorises or inhibits engagement of the compressor clutch, controls the fan unit and orders fast idle speed. This speed is **700 rpm**.

WARNING

The refrigerant fluid pressure and absorbed power values are never equal to zero, whatever the state of the compressor, engaged or not.

COMPRESSOR OPERATION PROGRAMMING

During certain stages of operation, the injection computer prevents the compressor from operating.

Engine starting program

The compressor is prevented from functioning for **10 seconds** after the engine is started.

Thermal protection program

The compressor does not engage if the coolant temperature is above **+ 115 °C**.

ENGINE IDLE SPEED MANAGEMENT:

- Compressor clutch engaged: **700 ± 50 rpm**.

IDLE SPEED CORRECTION ACCORDING TO COOLANT TEMPERATURE

Temperature (°C)	-30°	20°	35°	75°	100°	120°
rpm	1100	1000	950	650	650	800

ELECTRICAL CORRECTION ACCORDING TO BATTERY VOLTAGE AND ELECTRIC POWER BALANCE

The purpose of this adjustment is to compensate for the drop in voltage due to a power consumer being switched on when the battery is not charged sufficiently. It starts when the voltage falls below **12 V** and the engine speed may reach a maximum of **800 rpm** when hot.

POWER ASSISTED STEERING PRESSURE SWITCH / INJECTION COMPUTER LINK

The injection computer receives a signal from the power steering pressure switch and may increase the idle speed to compensate for this power consumption. The idle speed changes to **720 rpm** if the car speed is below **5 kph**.

The electrical signal arrives at track E3 of the injection computer's B connector.

WARNING

At each vehicle maintenance operation, check that the pressure switch is working correctly using the diagnostic tool.

IDLE SPEED ADJUSTMENT WHEN THERE IS AN ACCELERATOR PEDAL POTENTIOMETER FAULT

If there is a fault on the two accelerator pedal position potentiometers, then the engine speed rises to about **1200 rpm**.

ADJUSTMENT OF THE IDLE SPEED WHEN THERE IS A MOTORISED THROTTLE BODY FAULT

If there is a fault on the two throttle position potentiometers, the throttle body goes into "limp-home" mode (throttle body mechanical stop). The engine speeds are then **900 and 1400 rpm**.

ADAPTIVE IDLE SPEED CORRECTION

An adaptive adjustment of the idle speed exists, but the diagnostic tool cannot interpret this function.

An engine operating with the "BOSCH ME7.4.6" computer is equipped with two lambda sensors called the upstream sensor and the downstream sensor for each bank of cylinders.

SENSOR HEATING

Heating of the lambda sensors is controlled by the computer:

- the voltage is lower than **15 V**,
- after a starting period of **4 seconds**.

Heating of the lambda sensors stops if:

- controlled by the temperature, so as to maintain the temperature at **750 °C**.

UPSTREAM SENSOR VOLTAGE

Read the "upstream sensor voltage" parameter on the diagnostic tool: the value read represents the voltage supplied to the computer by the lambda sensor located upstream of the catalytic converter. It is expressed in millivolts. When the engine is operating in a closed loop, the voltage must oscillate rapidly between two values:

- **100 mV ± 100** for a lean mixture,
- **800 mV ± 100** for a rich mixture.

The smaller the difference between the minimum and maximum values, the poorer the signal from the sensor (the difference is usually at least **500 mV**).

DOWNSTREAM SENSOR VOLTAGE

Read the downstream lambda sensor voltage parameter on the diagnostic tool: the value read represents the voltage supplied to the computer by the lambda sensor located downstream of the catalytic converter. It is expressed in millivolts.

The function of this sensor is to locate faults on the catalytic converter and to perform a second more precise check on the richness (slow regulation loop). This function is activated only after the engine has been operating for a certain time.

When the engine is operating in a closed loop, the voltage should vary within the range **600 mV ± 100**. When the engine is decelerating, the voltage should be less than **200 mV**.

The voltage read on the diagnostic tool at idling speed should be ignored.

Note:

If the difference is small, check the sensor heater.

MIXTURE CORRECTION

The value read on the diagnostic tool for the "mixture adjustment" parameter represents the average of the richness adjustments made by the computer according to the richness of the fuel mixture detected by the lambda sensor located upstream of the catalytic converter (in fact, the lambda sensor analyses the concentration of oxygen in the exhaust gases).

The adjustment value has a midpoint of **1**:

- value less than **1** = request for mixture to be made leaner,
- value greater than **1** = request for mixture to be made richer.

ENTRY INTO RICHNESS REGULATION MODE

Entry into richness regulation mode takes place after an initial timed period irrespective of the coolant temperature.

The initial timed period can vary from **0** to **70 seconds**.

Unlooping phase

In mixture regulation mode, the phases of operation during which the computer ignores the value of the voltage from the sensor are:

- at full load,
- under heavy acceleration,
- during deceleration with injection cut-off,
- when the lambda sensor is faulty.

DEFECT MODE WHEN THE LAMBDA SENSOR IS FAULTY

When the voltage from the lambda sensor is incorrect (varying only slightly or not at all) during mixture regulation, the computer will only enter defect mode if the fault has been recognised as present for **3 minutes**. Only in that case will the fault be memorised. In that case the "mixture adjustment" parameter is **1**.

If a lambda sensor fault is present and recognised and if the fault has already been memorised, the system enters the open loop mode directly.

GENERAL INFORMATION

The accelerator pedal potentiometer is incorporated in the accelerator pedal. Its replacement therefore requires replacement of the accelerator pedal.

There are two types of pedal: **with or without kickdown point**.

These cars equipped with cruise control/speed limiter have an accelerator pedal with a point of resistance at the end of their travel (kickdown).

This point of resistance makes it possible to quit the speed limiter function if the driver has to speed up.

REMOVAL

Disconnect:

- the battery,
- the accelerator pedal connector.

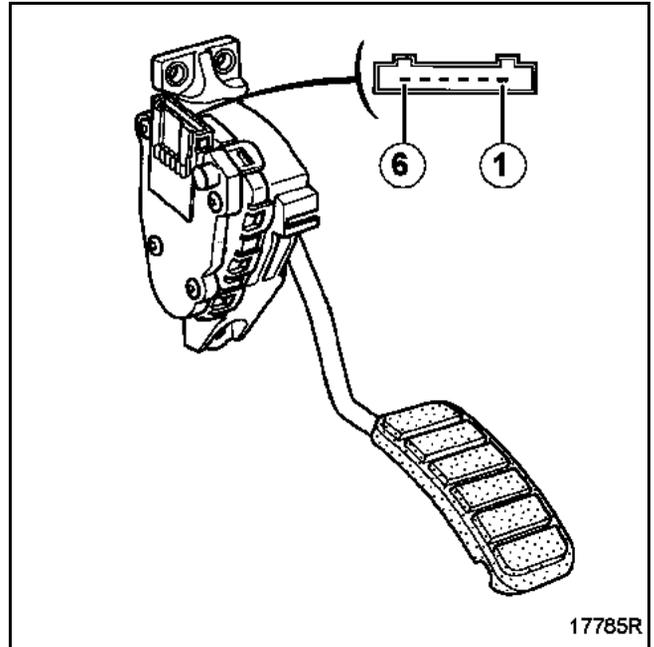
Remove:

- the three pedal mounting bolts,
- the pedal.

REFITTING

Refitting is the reverse of removal.

CONNECTION



Track	Description
1	Track 2 earth
2	Track 1 earth
3	Track 1 signal
4	Track 1 feed
5	Track 2 feed
6	Track 2 signal

Note:

A fault on the accelerator position potentiometer causes changes in the idle speed or engine operation (see Section **17B, Idle speed correction**).

MOTORISED THROTTLE VALVE

The motorised throttle body carries out idle speed regulation and engine air intake modulation functions. It is composed of an electric motor and two throttle position potentiometers.

When the engine is idling, the throttle position is adjusted according to the idle speed setting. This setting takes into account the major power consumers (air conditioning) and operating conditions (air temperature and coolant temperature).

When the driver moves the accelerator pedal, his request is translated as a call for torque which causes the throttle to open and the ignition to advance.

To eliminate misfires, facilitate gear changes and perform the safety functions, the throttle valve modulates the engine torque.

MOTORISED THROTTLE BODY DEFECT MODES

The motorised throttle body has three types of defect mode.

- **Reduced Performance Mode:** this mode covers electrical faults for which there is a viable backup solution for the injection system (loss of one of the two tracks on the pedal or the throttle body). This mode results in reduced acceleration and limits the maximum opening of the throttle.
- **Driver Override Mode:** this mode is also called "**Electrical Limp-Home**". This mode is applied when the accelerator pedal signal disappears completely, but the injection computer still controls the intake of air to the engine (automatic throttle control is still operational). In this mode, the injection computer imposes a set engine speed for each gear ratio and imposes the idle speed when the brake pedal is pressed.

- **Mechanical Limp-home Mode:** this mode covers breakdowns which result in loss of the automatic throttle control (the throttle can no longer be controlled).

In this case the throttle is in the mechanical rest position and the injection computer limits the engine speed by cutting off the injection.

Note:

Each of these modes results in illumination of the injection fault warning light on the instrument panel.

The fan unit is controlled by the injection computer.

ANTI-PERCOLATION FUNCTION

The anti-percolation system is controlled by the injection computer.

The coolant temperature signal used is the one from the injection system.

After the engine is switched off the system enters standby mode. If the coolant temperature exceeds the limit of **102 °C** during the **10 minutes** after the engine is switched off, the front fan unit is controlled at slow speed.

If the coolant temperature falls below **95 °C**, the front fan unit relay is cut off. The fan unit cannot be switched on for more than **10 minutes**.

Likewise, if the temperature in the engine compartment is greater than **70 °C ± 10** after stopping the engine, the rear fans are actuated.

OPERATION OF THE FRONT FAN UNITS

- The fan unit is controlled at slow speed if the coolant temperature exceeds **99 °C** and is switched off when the temperature falls below **96 °C**.
- the fan unit is controlled at high speed if the coolant temperature exceeds **102 °C** and is switched off when the temperature falls below **99 °C**.

OPERATION OF THE TEMPERATURE WARNING LIGHT

The coolant temperature warning light comes on if the coolant temperature exceeds **118 °C** and goes out when the temperature falls below **115 °C**.

The camshaft phase shifters are located on the inlet camshaft. Their function is to modify the timing adjustment.

They are controlled (all-or-nothing) by the injection computer via two solenoid valves located on the rocker cover.

The solenoids allow oil to flow through to control the phase shifters as a function of engine operation:

- if the coolant temperature is above - **10 °C**,
- during the catalytic converter warming phase, i.e. just after engine starting with a coolant temperature in the range between - **10 °C** and **32 °C**,
- if the engine speed is in the range between **920** and **5500 rpm**, with an engine oil temperature in the range between - **10 °C** and **110 °C**,
- if the engine speed is in the range between **1200** and **5500 rpm** with an engine oil temperature above **120 °C**,
- if there is no injection fault.

WARNING

During a check with the diagnostic tool, a pressure fault on the solenoid valves can be detected.

Before replacing them, it is **ESSENTIAL** to check with the diagnostic tool that the camshaft phase shifters are working properly.

If this is not the case, the solenoid valve is faulty.

GENERAL INFORMATION

Cruise control: allows the driver maintain a selected speed. This function can be switched off at any moment by depressing the brake pedal or the clutch pedal, or by using one of the system buttons.

Speed limiter: allows the driver to set a speed limit. The accelerator pedal has no effect above the set speed. The speed limit selected can be exceeded at any time by pressing the accelerator pedal beyond its point of resistance.

A warning light on the instrument panel informs the driver of the status of the cruise control/speed limiter:

- Green light: cruise control in operation,
- Amber light: speed limiter in operation,
- Speed setting flashing: the set speed cannot be maintained (e.g. going downhill).

To control these functions, the injection computer receives the following signals on the following tracks:

- B C1: Speed limiter On/Off
- B L1: Cruise control On/Off
- A B2: Steering wheel switch earth
- A G1: Steering wheel switch signal
- B B2: Stop switch open input
- B B1: Pedal potentiometer 1 power supply
- B H1: Pedal potentiometer 2 power supply
- B K1: Pedal potentiometer 1 earth
- B A3: Pedal potentiometer 2 earth
- B A1: Pedal potentiometer 1 signal
- B A2: Pedal potentiometer 2 signal
- B H3: Multiplex link CAN L (passenger compartment)
- B H4: Multiplex link CAN H (passenger compartment)

The following signals are received by the injection computer via the multiplex network:

- the vehicle speed given by the instrument panel
- stop switch closed signal (ABS)

The instrument panel receives an average vehicle speed coming from the interface unit located near the injection computer (see location of components).

This signal itself comes from the ABS system, which receives the speed signal from the sensors located on the front wheels.

The injection computer sends the following signals over the multiplex network:

- cruise control or speed limit setting to the instrument panel,
- warning light illumination (amber, green or flashing).

The injection computer receives:

- signals from the accelerator pedal,
- brake switch signal,
- clutch switch signal,
- signals from the steering wheel switches,
- signals from the ABS computer.

Using these signals, the injection computer controls the motor-driven throttle unit so as to maintain the set speed in the case of cruise control and not to exceed the set speed in the case of speed limitation.

CRUISE CONTROL OPERATION

Operation conditions:

- switch on "cruise control",
- gearbox ratio > 2nd gear,
- car speed > **20 mph (30 kph)**,
- cruise control warning light illuminated (green),
- press on "+", "-" or "recall" button.

Conditions for exiting cruise control mode:

- brief sharp depression of the accelerator pedal (does not deactivate the function),
- pressing the brake or clutch pedal,
- "0" button pressed,
- switch set to "off",
- no gear engaged,
- injection computer operation.

Note:

The speed setting flashes to inform the driver that the set speed cannot be maintained.

SPEED LIMITER OPERATION

Operation conditions:

- switch on "speed limiter",
- gearbox ratio > 2nd gear,
- car speed > **20 mph (30 kph)**,
- limiter warning light illuminated (amber),
- press "+", "-" or "recall" button.

Conditions for exiting cruise control mode:

- brief sharp pressure on the accelerator pedal past the point of resistance (does not deactivate the function),
- "0" button pressed,
- switch set to "off",
- no gear engaged,
- injection computer operation.

Defect mode

If one of the components is faulty, the cruise control/speed limiter system cannot be activated.

WARNING

After a disconnection of the injection computer, and following its reconnection, the cruise control/speed limiter function will become operational again only after about **15 minutes** with the ignition on.

Tightening torques



reservoir bolt	bolts 1 to a torque of
mounting bolt underneath the reservoir	2.5
filler cap ring bolt	to 0.2 daNm.

IMPORTANT

During this operation, it is essential to:

- refrain from smoking or bringing incandescent objects close to the work area,
- be careful of carbon projections when disconnecting the union,
- protect sensitive areas from the direction of fuel flow.

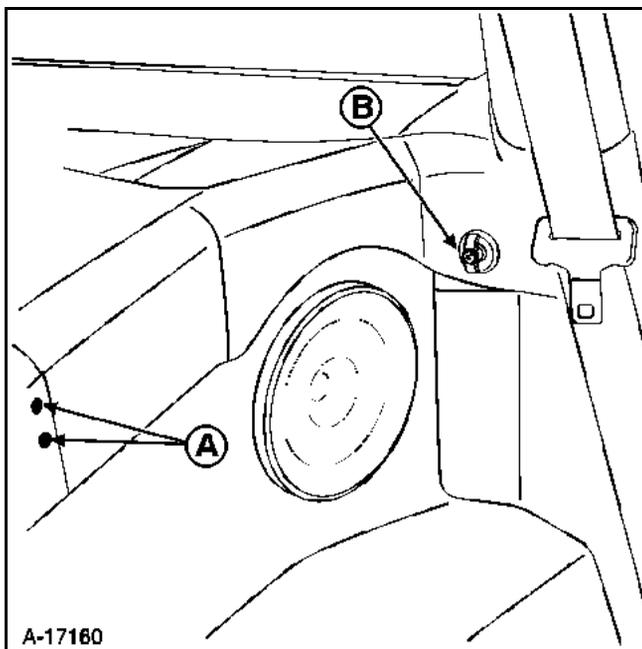
REMOVAL

Put the car on a two-post lift.

Disconnect the battery.

Release the handbrake.

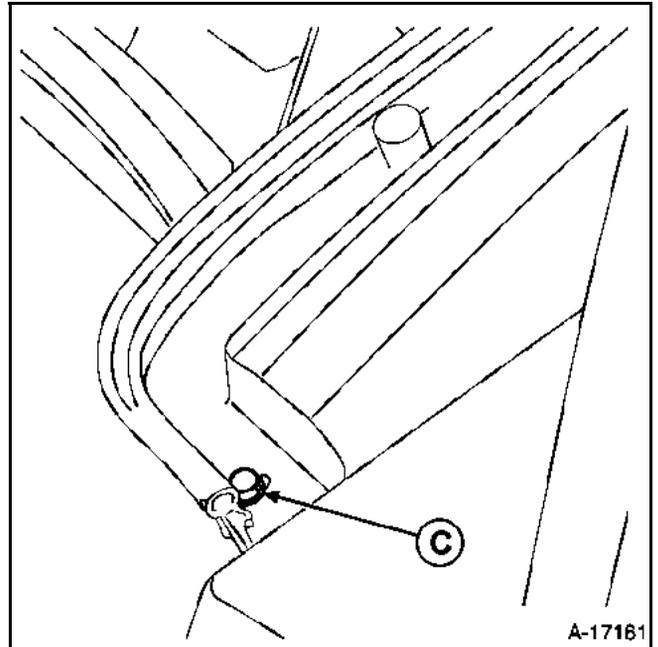
Remove the soundproofing cover.



Remove the central trim assembly bolts (A).

Lift the central trim to detach it from the engine partition.

Remove the luggage compartment net crochet bolts (B).



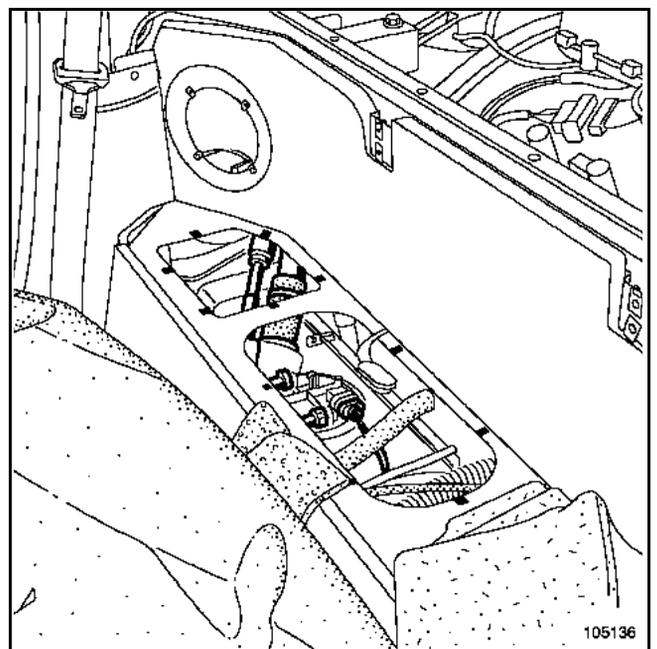
Remove the rear mounting bolt (C).

Remove:

- the side soundproofing covers,
- the foam,
- the engine cover,
- the speakers.

Remove the engine separation rear floor carpet.

Meticulously release the foam.



Remove the plate on the engine separation to access the fuel pump.

Disconnect:

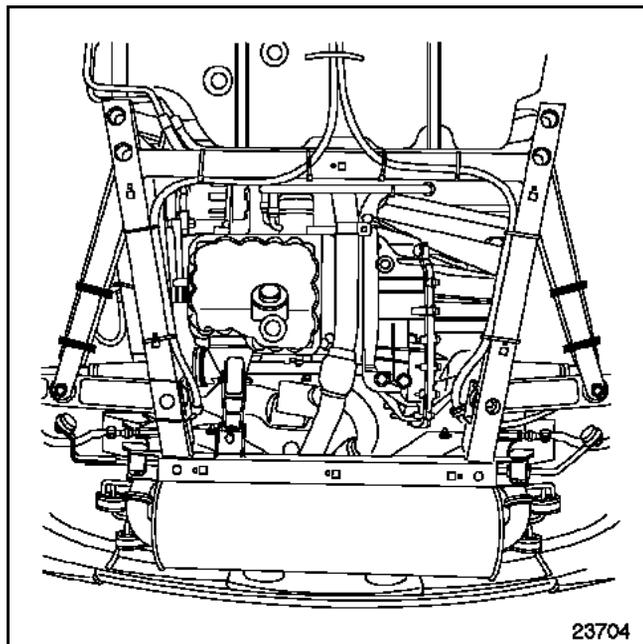
- the quick-release union(s) of the pump/sender assembly,
- the electrical connector.

If necessary, drain the reservoir.

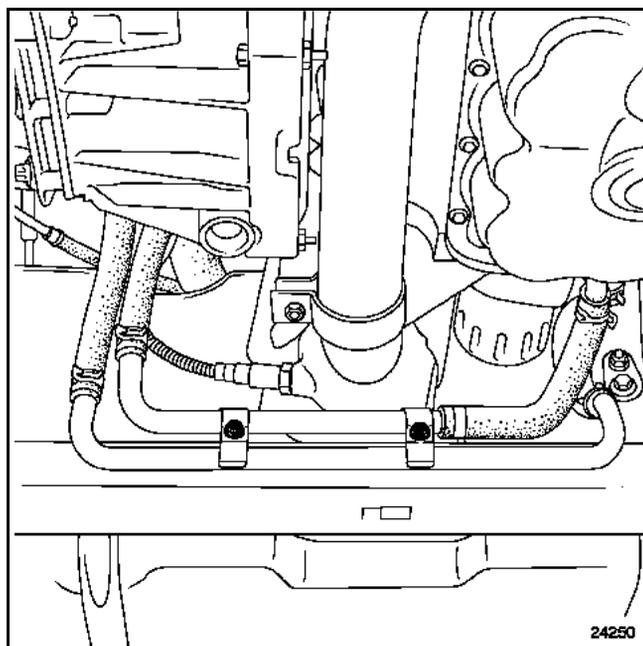
Disconnect:

- the rear wheels,
- the underbody protectors.

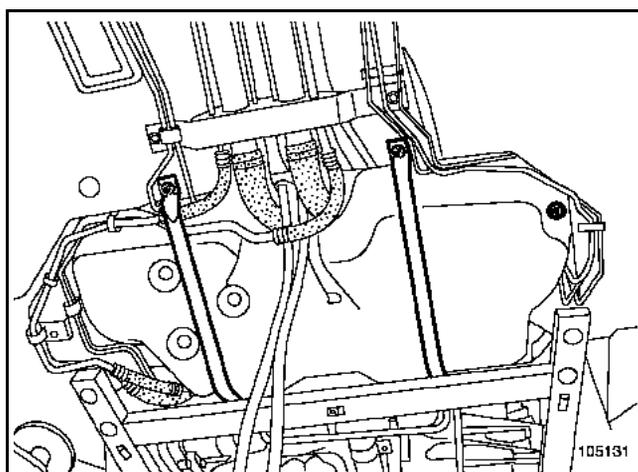
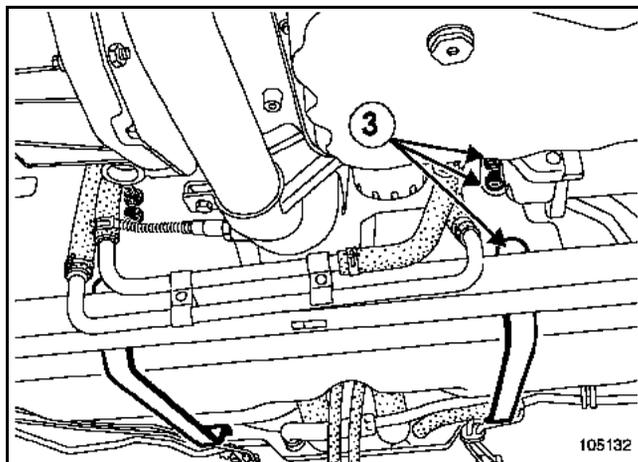
Disconnect the handbrake cables and unclip them from the sub-frame.



Cut the handbrake cable clips on the rear sub-frame, and remove them from the sub-frame.



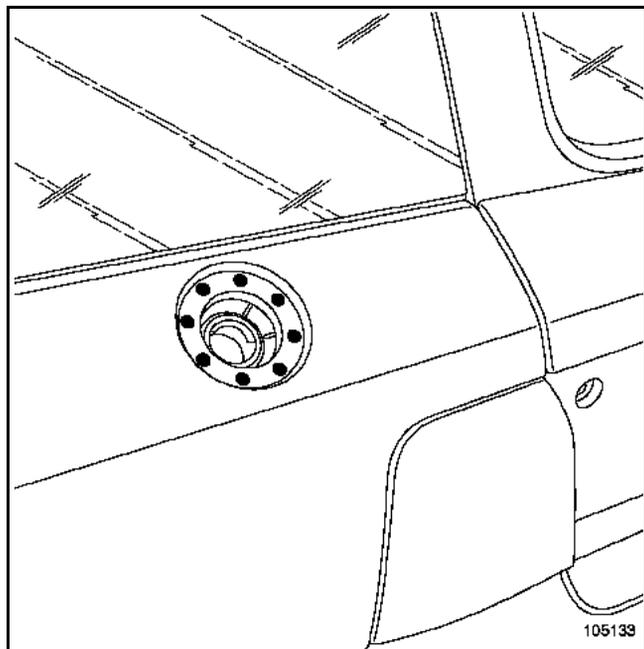
Remove both mounting bolts from the oil cooler pipes on the sub-frame.



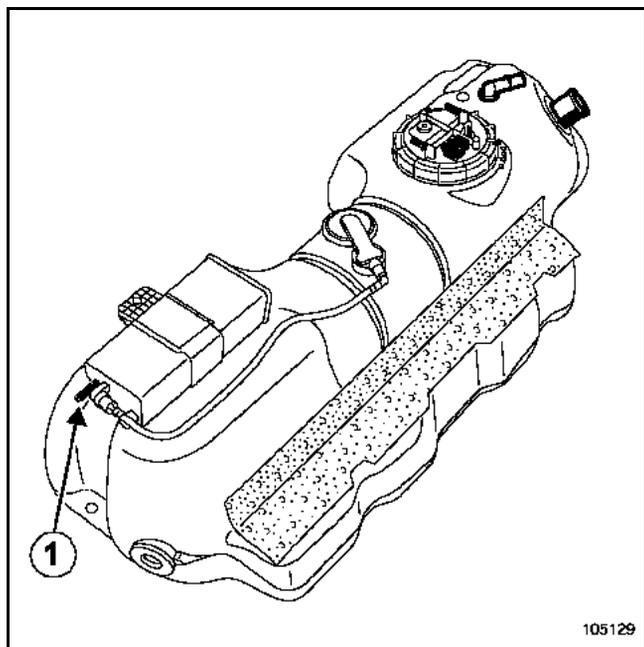
Remove the two reservoir support bars.

Loosen the reservoir retaining bolts before removing them.

Remove the filler cap.



Remove the filler cap ring.



Remove:

- the filler neck,
- anti-splashback pipe,
- the fuel vapour rebreathing pipe (1).

Remove the reservoir (this step requires two workers).

REFITTING

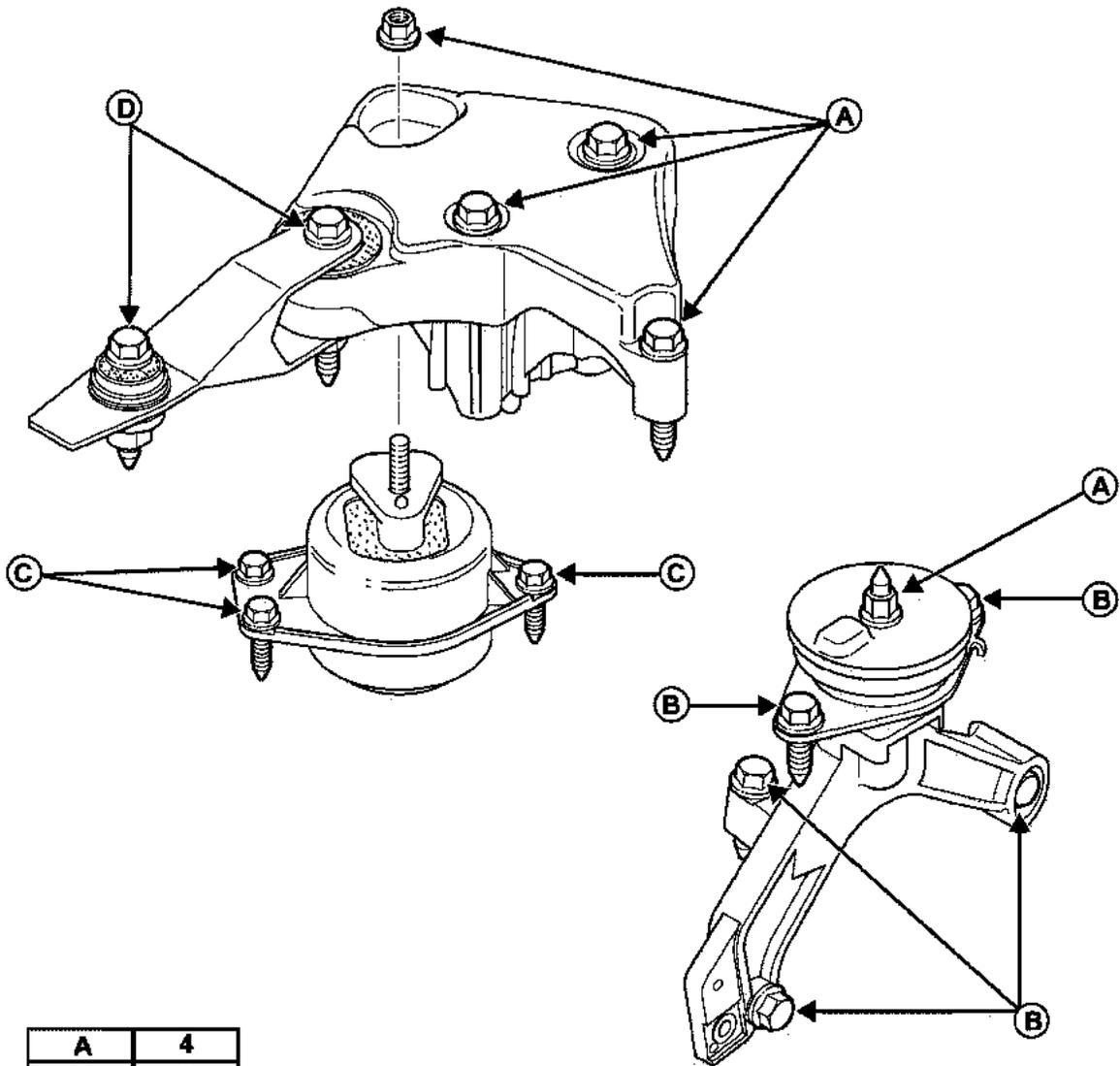
Proceed in the reverse order to removal.

ENGINE MOUNTING

Suspended engine mounting

19D

TIGHTENING TORQUES (in daNm)



A	4
B	7
C	2,7
D	8

23948

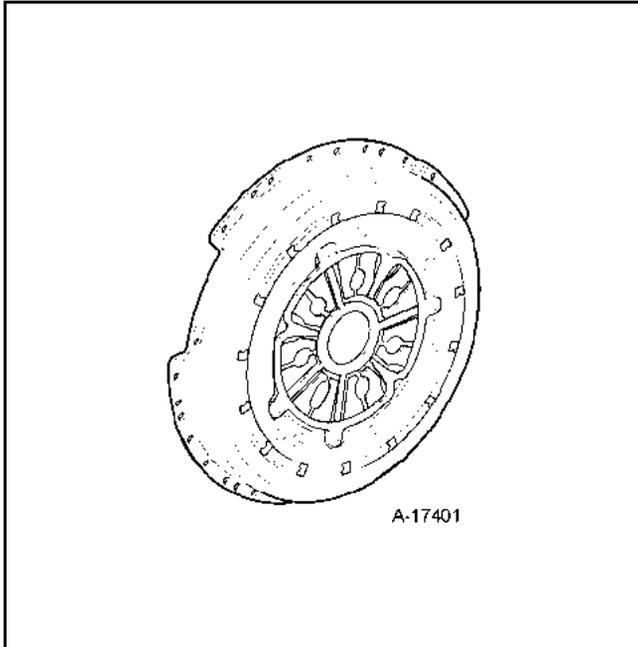
CLUTCH Mechanism / Plate

20A

VEHICLE	ENGINE
CB1U	L7X 762

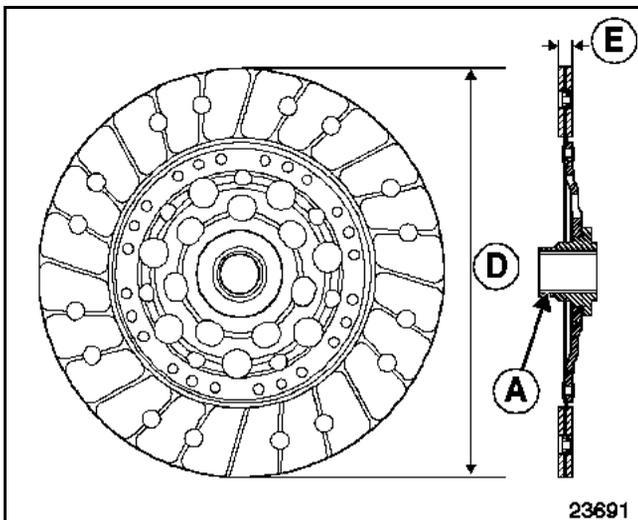
Single plate dry clutch.
Clutch stop hydraulic control.
Clutch self-adjuster mechanism.

MECHANISM



Diameter of mechanism plate **200 mm**.

PLATE



21 splines
D = **228 mm**
E = **8.4 mm**
A = flywheel end

Special tooling required

Mot. 1431 Flywheel locking tool

Tightening torques



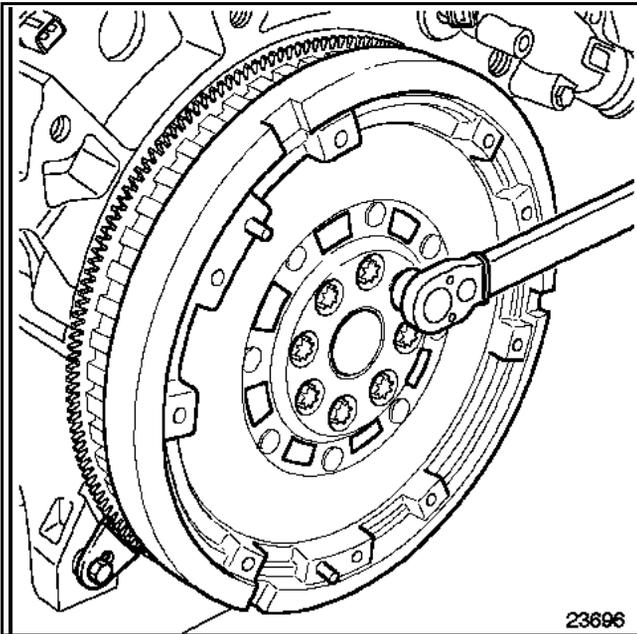
Flywheel bolts **3 daNm + 60°**

REMOVAL

- Fit the tool (Mot. 1431).
- Having removed the friction plate, remove the flywheel mounting bolts. Do not reuse the bolts.

Note:

- The friction face cannot be straightened.
- Replace the flywheel if it has been damaged.



REFITTING

Clean the holes for the flywheel mounting bolts on the crankshaft.

Degrease the pressure face of the flywheel on the crankshaft.

Refit the engine flywheel.

Fit the tool (Mot. 1431).

Tighten the new bolts to the recommended torque

Note:

- When mounting the flywheel, the bolts must be uniformly tightened.
- The bolts are of the pre-glued type.

Remove tool (Mot. 1431).

MANUAL GEARBOX

Suffix

21A

Ratios	Vehicle	Torque	Speedometer	1 st	2 nd	3 rd	4 th	5 th	6 th	Reverse gear
017	CB1U	$\frac{16}{67}$	Not applicable	$\frac{13}{40}$	$\frac{21}{40}$	$\frac{31}{43}$	$\frac{39}{43}$	$\frac{39}{35}$	$\frac{41}{31}$	$\frac{27}{47}$

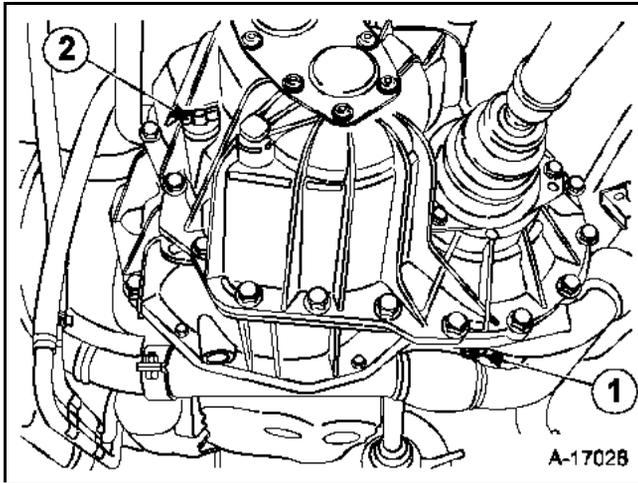
Capacities - Lubricants

CAPACITY (in litres)

6-speed gearbox	
PK6	2.4

Oil
ELF TRP75W80

CHECKING LEVEL



- 1 Drain plug
- 2 Filling hole

Fill with **2.4 litres**.

Top up the level using the tool (B. Vi. 1675), ref. (C) on the tool (see Technical Note **3697A**)

WARNING

The breather **MUST NOT** be removed when filling the gearbox with oil.

Essential equipment

Hydraulic jack

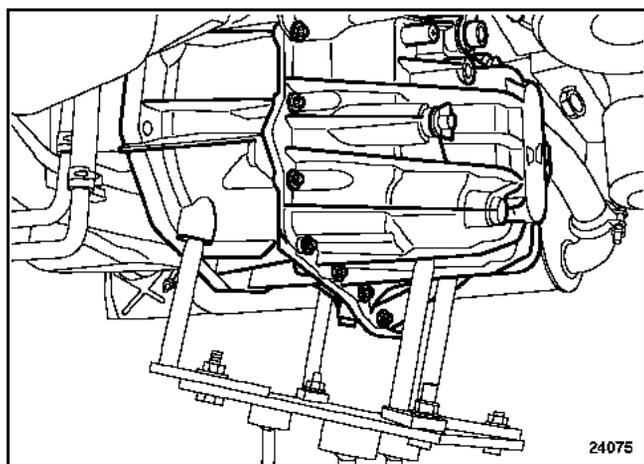
Tightening torques



Gearbox edge bolts

6.2 daNm

The gearbox is removed separately, through the underbody of the vehicle.



Put the vehicle on a lift.

Remove the tray under the bonnet.

Disconnect the battery.

Remove:

- the engine covers,
- the rear wheels,
- the TDC sensor.

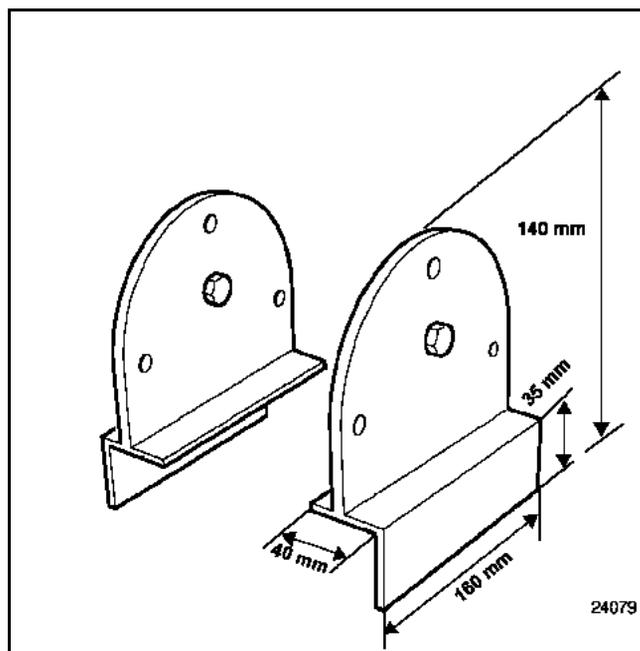
Remove the expansion bottle.

Disconnect:

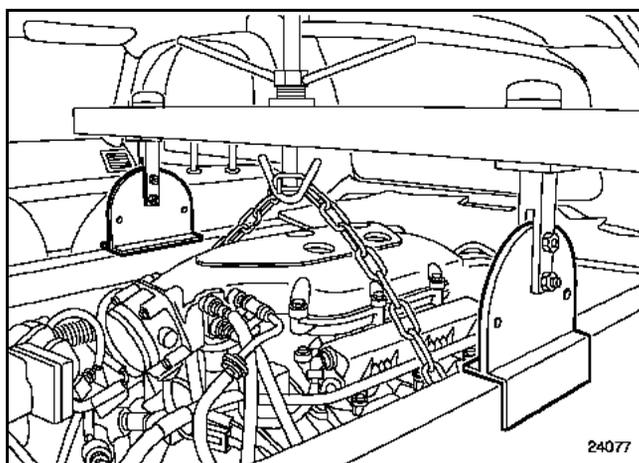
- the gearbox control cables,
- the clutch slave cylinder,
- the handbrake cables,
- the earthing braid.

Fit the engine mounting by means of locally manufactured reinforcements.

Example:



Fit the tool (Mot. 1453).



Drain the gearbox.

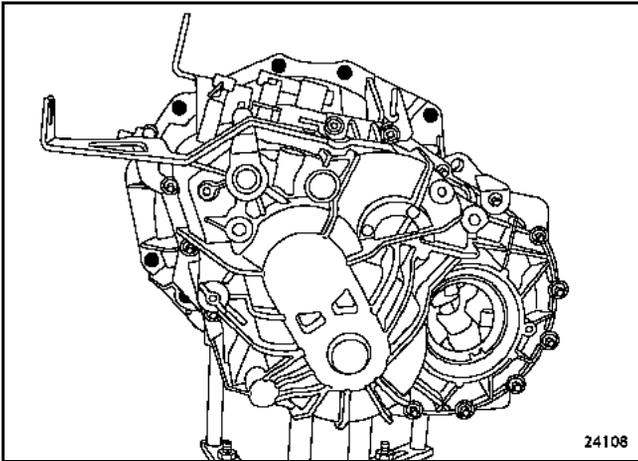
Remove:

- the two rear half-axes with their driveshafts,
- the rear sub-frame.

Position the hydraulic jack.

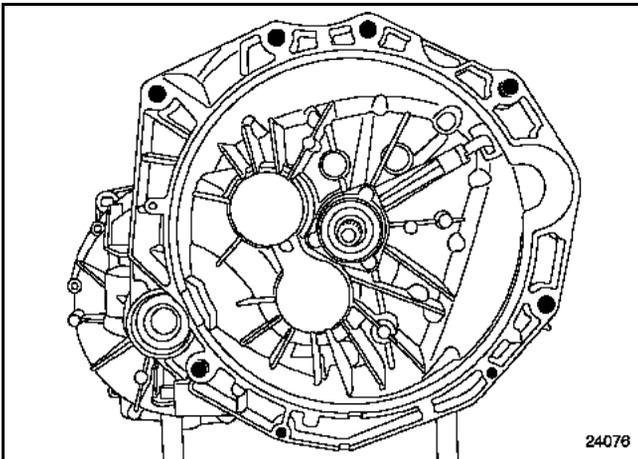
Loosen, then remove the gearbox edge bolts.

Remove the gearbox.



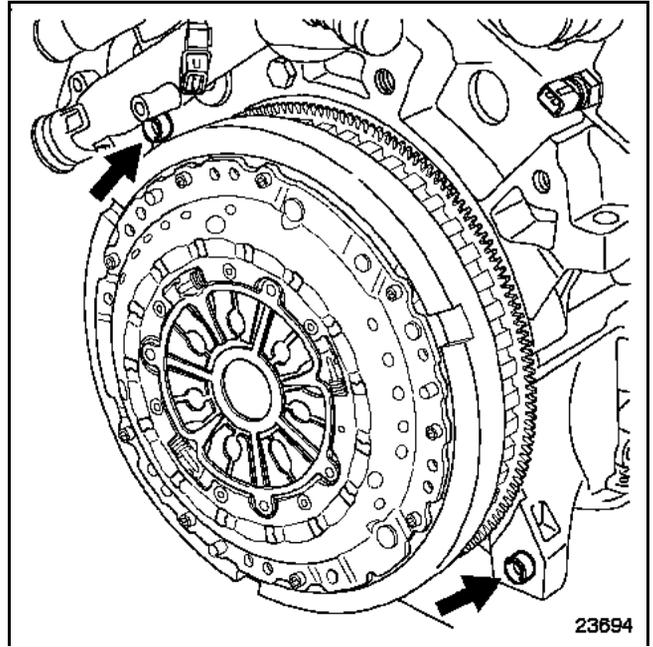
Note:

- The differential output lip seal must always be replaced.
- Do not grease the clutch shaft splines.



REFITTING

Ensure that the centring dowels are present.



Proceed in the reverse order to removal.

Tighten the bolts and nuts to the recommended torque values (see relevant sections).

Top up the gearbox.

IMPORTANT

Depress the brake pedal several times to bring the pistons into contact with the brake pads and discs.

WARNING

Connect the battery; carry out the necessary programming (see Section 8).

GENERAL INFORMATION

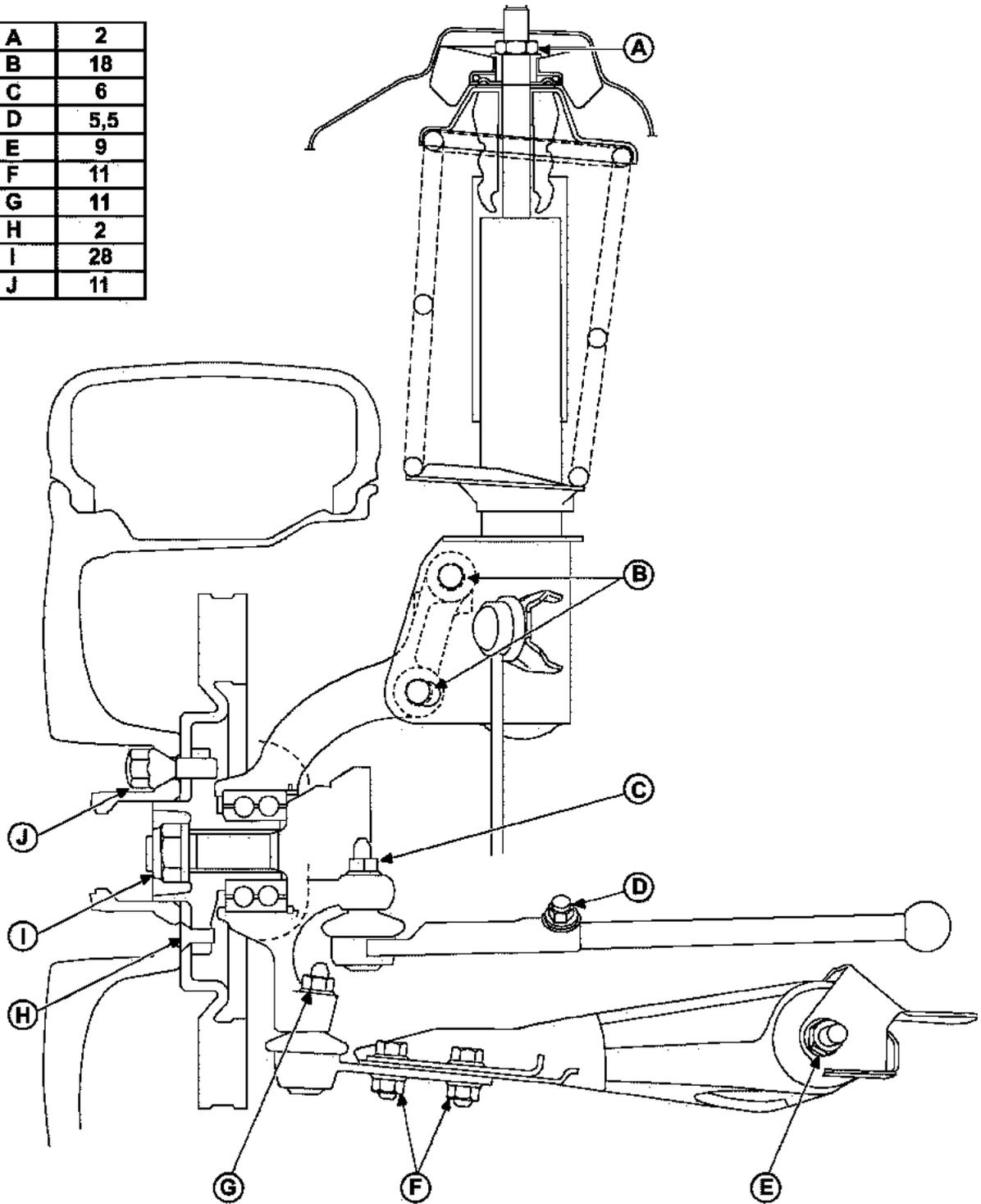
Tightening torques (in daNm)



30A

FRONT
AXLE

A	2
B	18
C	6
D	5,5
E	9
F	11
G	11
H	2
I	28
J	11



23709

Any operation on the bolts (**B**) requires inspection and adjustment of:

- camber
- wheel alignment

GENERAL INFORMATION

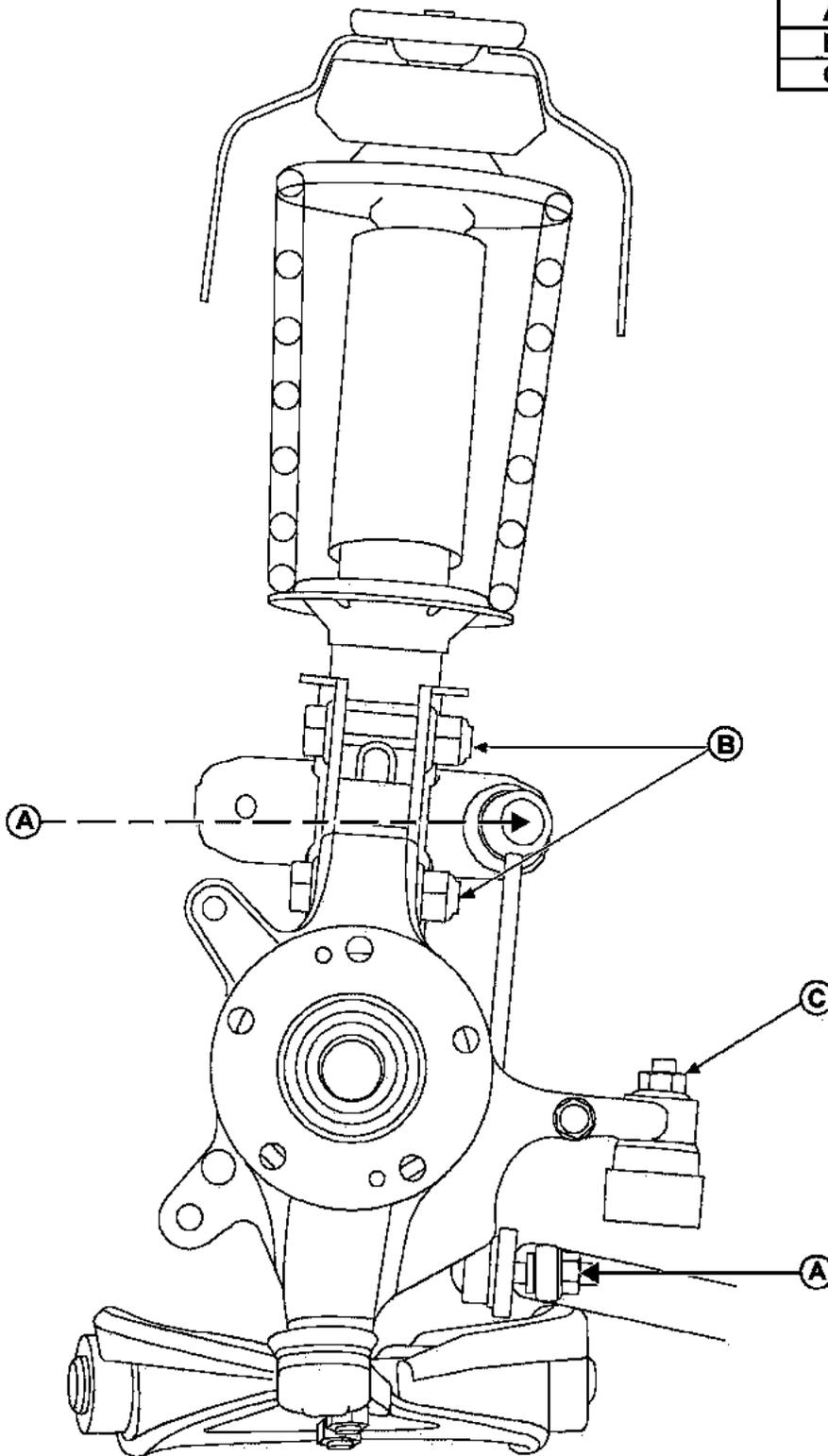
Tightening torques (in daNm)



30A

FRONT
AXLE

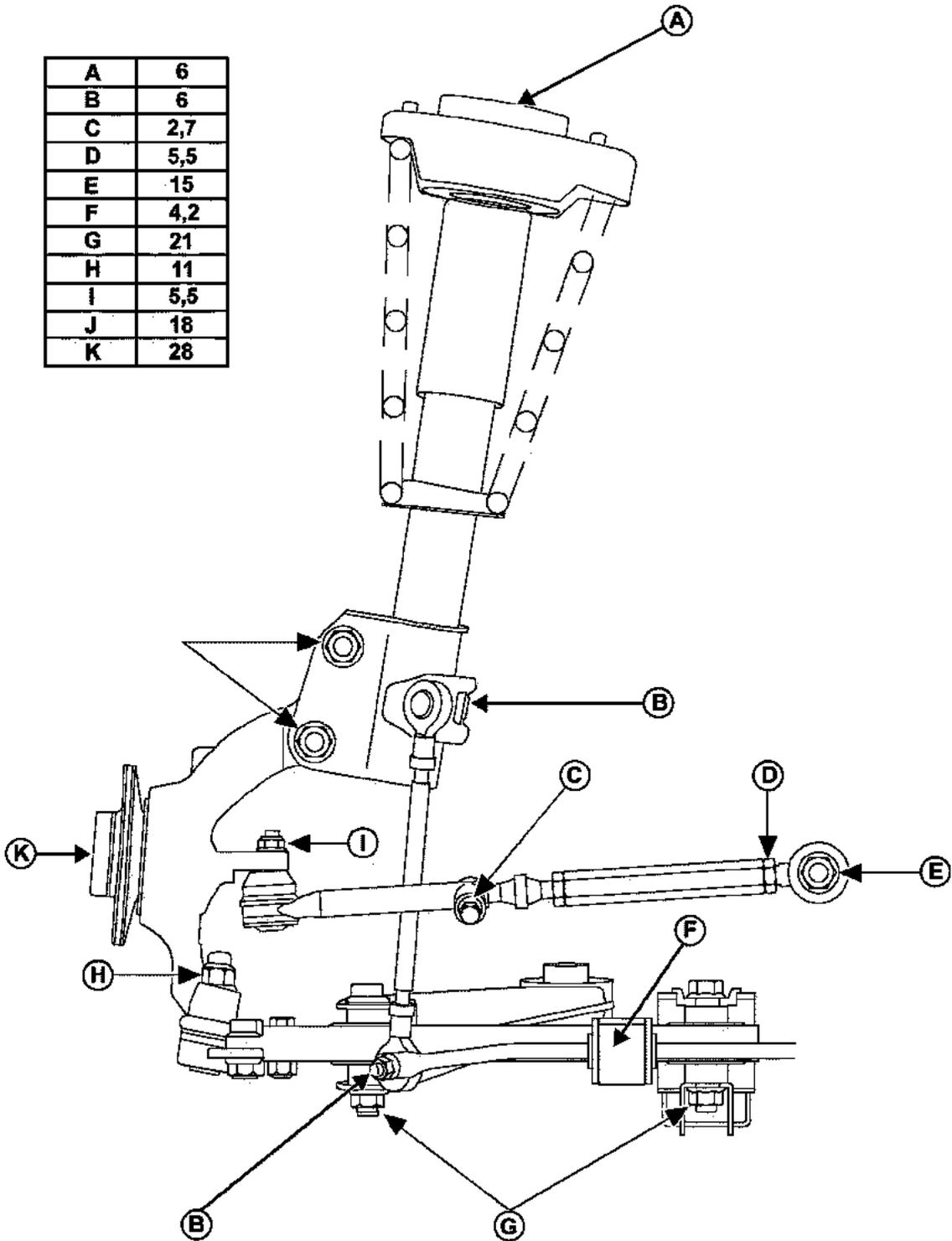
A	3,7
B	18
C	6



23702



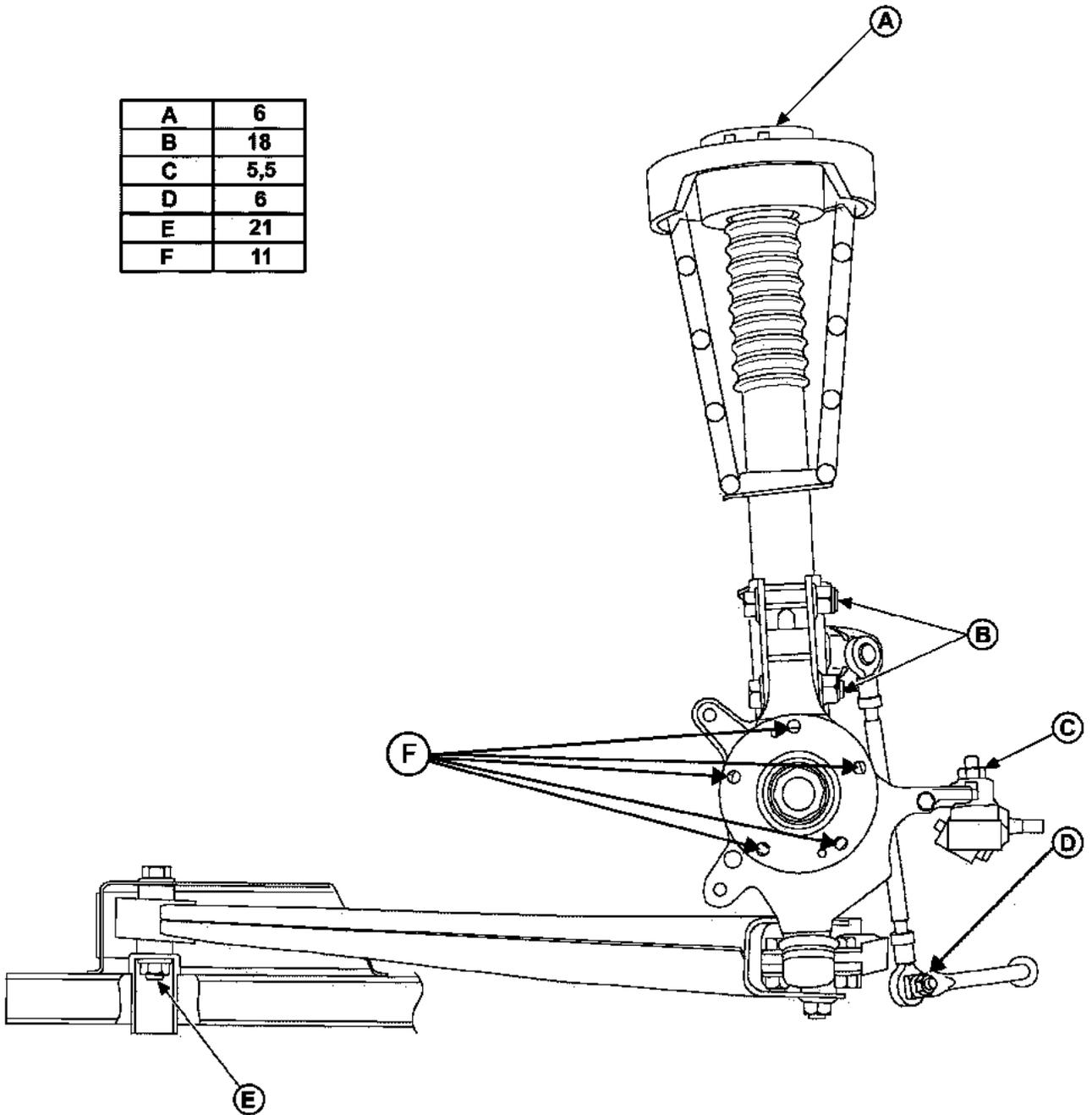
A	6
B	6
C	2,7
D	5,5
E	15
F	4,2
G	21
H	11
I	5,5
J	18
K	28



23699

L: Presence or absence of these "bar-linkrod" assemblies according to the vehicle equipment level.

A	6
B	18
C	5,5
D	6
E	21
F	11



23696

Any operation on the bolts (**B**) requires inspection and adjustment of:

- camber
- wheel alignment

Dimensions and structure of main braking components

FRONT BRAKES (in mm)	
Slave cylinder diameter	41.3 - 38.1
Disc diameter	330
Disc thickness	30
Minimum disc thickness	28
Thickness of pads (including support)	17.75
Minimum pad thickness (including support)	9
Maximum brake disc run-out	0.5
REAR BRAKES (in mm)	
Slave cylinder diameter	57
Disc diameter	300
Disc diameter	24
Minimum disc thickness	22
Thickness of pads (including support)	18
Minimum pad thickness (including support)	10
Maximum brake disc run-out	0.5
MASTER CYLINDER (in mm)	
Diameter	25.4

GENERAL INFORMATION

Underbody height

30A

Vehicle	At the front R1 - W1 (mm)	At the rear R2 - W2 (mm)
CB1U	160	160

Tolerance: ± 5 mm

The difference between the right-hand side and the left-hand side of the same axle of a vehicle must not exceed **5 mm**, the driver's side always being higher.

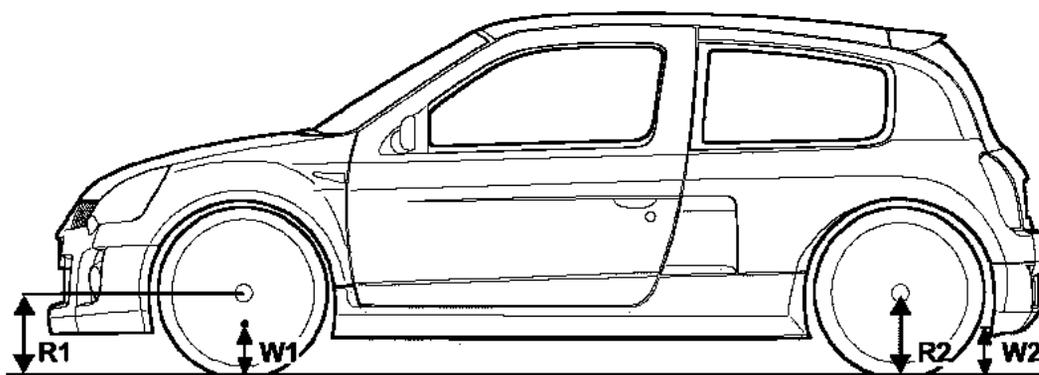
All underbody height operations involve adjusting the headlight beam height.

Note:

Any operation on the bolts (**B**) requires inspection and adjustment of:

- camber
- wheel alignment (see pages 30A-1 and 30A-4)

MEASUREMENT POINTS



23683

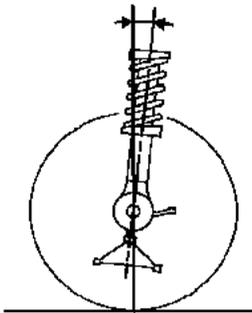
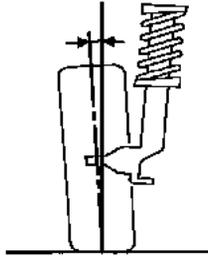
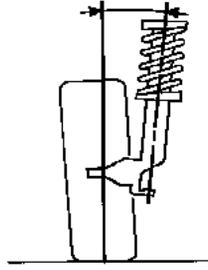
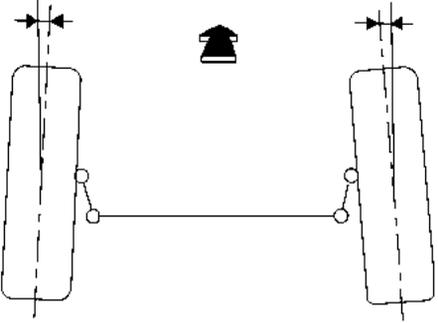
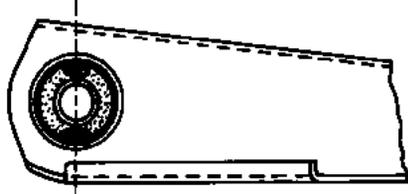
Note:

- Dimension **W1** is measured between the lower surface of the sub-frame (on the wheel axis level) and the ground. Its value must be **135 mm \pm 5 mm**.
- Dimension **W2** is measured between the outer corner of the rear of the bodyshell and the ground. Its value must be **154 mm \pm 5 mm**.

GENERAL INFORMATION

Front axle geometry checking values

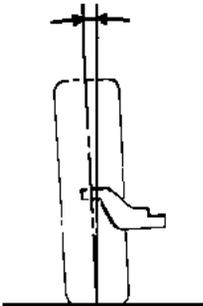
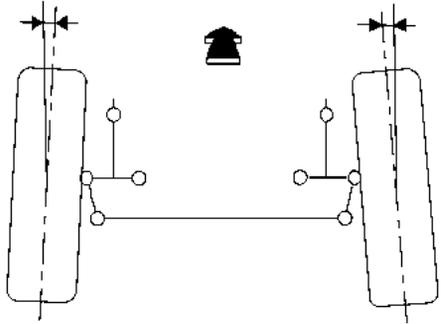
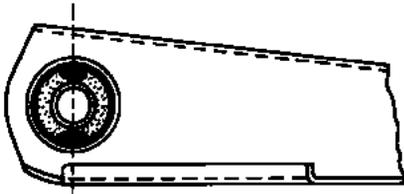
30A

ANGLES	VALUES	POSITION OF FRONT AXLE	ADJUSTMENT
<p>CASTOR</p>  <p style="text-align: right;">93012-1S</p>	<p>$+ 6^{\circ} \pm 30'$</p> <p>Max. right/left variance = 1°</p>	<p>UNLADEN</p>	<p>NOT ADJUSTABLE</p>
<p>CAMBER</p>  <p style="text-align: right;">93013-1S</p>	<p>$- 0^{\circ} 45' \pm 30'$</p> <p>Max. right/left variance = 1°</p>	<p>UNLADEN</p>	<p>Adjustable by acting on the shock absorber bolts (B) (see page 30A-1)</p>
<p>PIVOT</p>  <p style="text-align: right;">93014-1S</p>	<p>$13^{\circ} \pm 30'$</p> <p>Max. right/left variance = 1°</p>	<p>UNLADEN</p>	<p>NOT ADJUSTABLE</p>
<p style="text-align: center;">PARALLELISM</p>  <p style="text-align: right;">A-17279</p>	<p>(For 2 wheels) toe-out $- 30' \pm 15'$</p> <p>$4 \text{ mm} \pm 1$</p>	<p>UNLADEN</p>	<p>Adjustable by rotating track rod sleeves</p> <p>1 turn = $30'$ (3 mm)</p>
<p>POSITION FOR TIGHTENING RUBBER BUSHES</p>  <p style="text-align: right;">81603S1</p>	<p>-</p>	<p>UNLADEN</p>	<p>-</p>

GENERAL INFORMATION

Rear axle geometry checking values

30A

ANGLES	VALUES	POSITION OF REAR AXLE	ADJUSTMENT
<p>CAMBER</p>  <p style="text-align: right;">93013-2S</p>	$-1^{\circ} 30' \pm 20'$	UNLADEN	<p>Adjustable by acting on the shock absorber bolts (B) (see page 30A-4)</p>
<p>PARALLELISM</p>  <p style="text-align: right;">A-17280</p>	<p>(For 2 wheels) toe-in $+ 0^{\circ} 45' \pm 15'$ 6 mm ± 1</p>	UNLADEN	<p>Adjustable by turning the connecting bar sleeves 1 turn = 1° (6 mm)</p>
<p>POSITION FOR TIGHTENING RUBBER BUSHES</p>  <p style="text-align: right;">81603S1</p>	-	UNLADEN	-

Note:
 The camber can be adjusted on the front and rear axles by the action of tilting the stub-axles on the shock absorber lower bolt **(B)** (see pages 30A-1, 30A-4).
 The maximum value that can be set between travel limits is $1^{\circ} 30'$.

FRONT AXLE

Lower suspension arm

31A

Tightening torques	
wheel bolt	11 daNm
lower arm nut to chassis subframe	9 daNm
ball joint for stub-axle support nut	28 daNm
lower wishbone bolt	9 daNm
stabiliser bar tie-rod nut	6 daNm

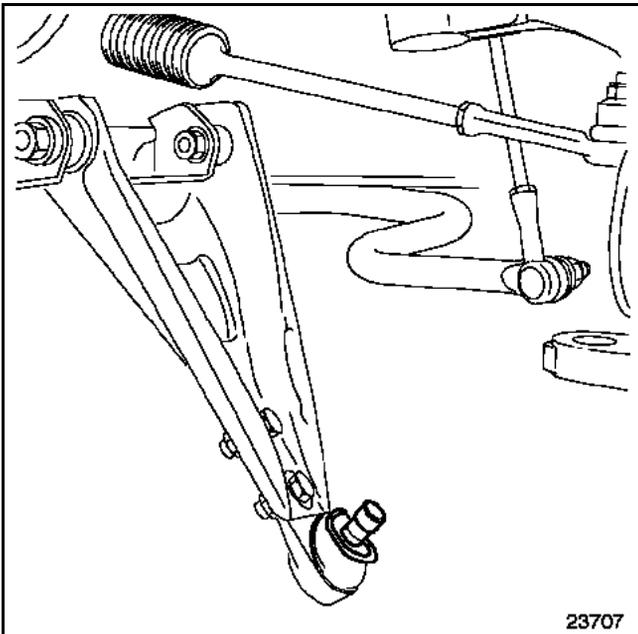


REMOVAL

Put the car on a two-post lift.

Remove:

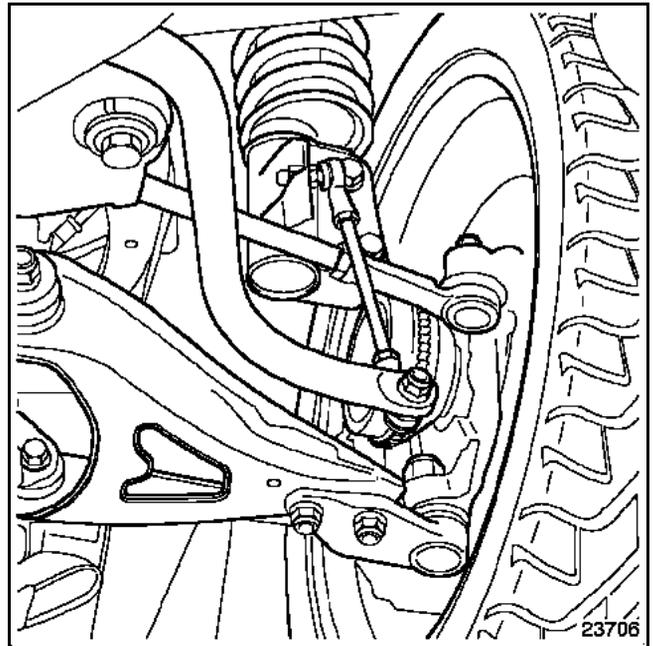
- the two wheels,
- the ABS wiring from the lower wishbone (cable tie),
- the stub-axle support nut,
- the two mounting bolts of the wishbone on the chassis subframe,
- the wishbone.



REFITTING

Refit:

- the wishbone,
- the two bolts, without tightening them,
- the shaft of the ball joint in the stub-axle support and tighten the nut to the recommended torque,
- the ABS wiring to the lower wishbone (cable ties).



WARNING

Comply carefully with the tightening torque values indicated in Section 30A.

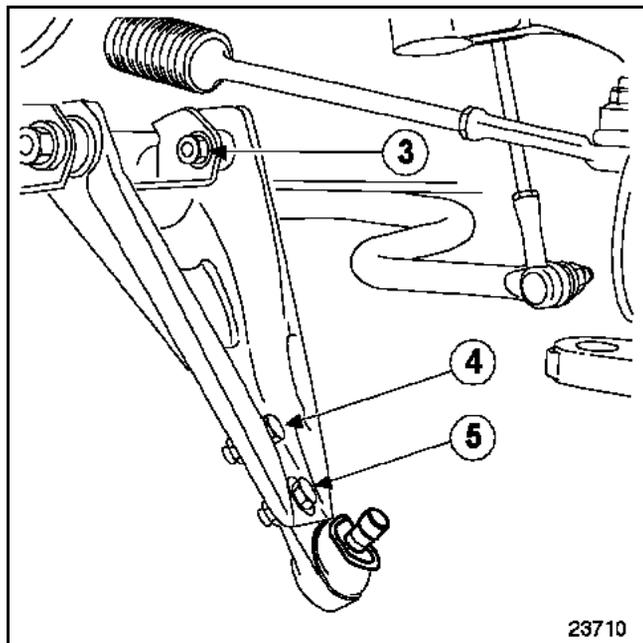
Note:

Allow the suspension to rebound and tighten the nuts of the wishbone and the anti-roll bar linkage to the recommended torque (tightening position: vehicle not loaded).

REMOVAL

If the gaiter is damaged the ball joint must be replaced.

Proceed in the same way as for removing the lower wishbone.



Loosen but do not remove the two mounting bolts (3) attaching the wishbone to the front sub-frame.

Remove:

- the ABS sensor from the lower wishbone (cable tie),
- the two ball joint mounting bolts (4) and (5),
- the ball joint.

REFITTING

Refit the ball joint and tighten to a torque of **11 daNm**.

Note:

Fit the ball joint marked "L" (near the hole (5)) on the left-hand side of the vehicle. Fit the ball joint marked "R" to the right-hand side of the vehicle.

Proceed in the same way as when refitting the lower wishbone.

Tightening torques



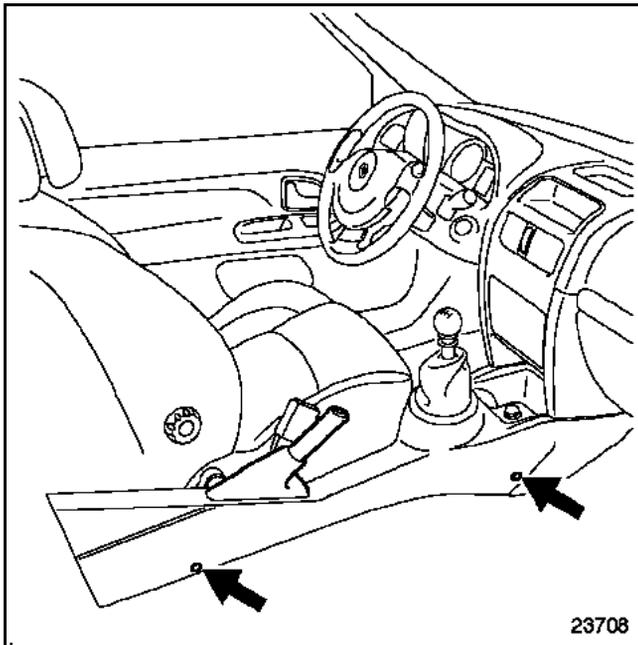
wheel bolt	11 daNm
rear sub-frame mounting bolt	9 daNm

REMOVAL

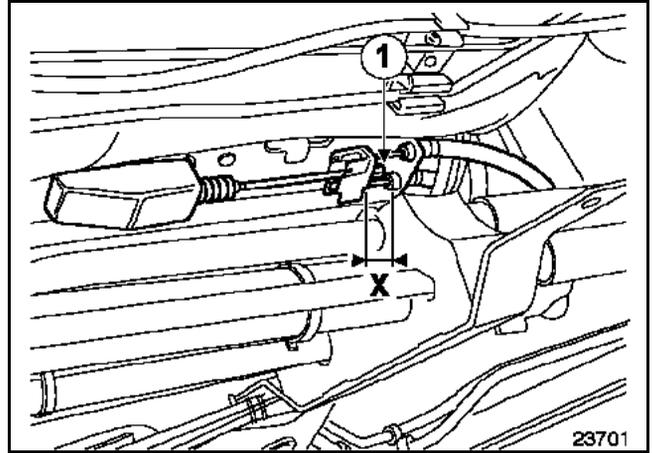
Put the vehicle on a two-post lift.

Release the handbrake.

Dismount the centre console and the gear lever trim (four mounting bolts for the console).



23708



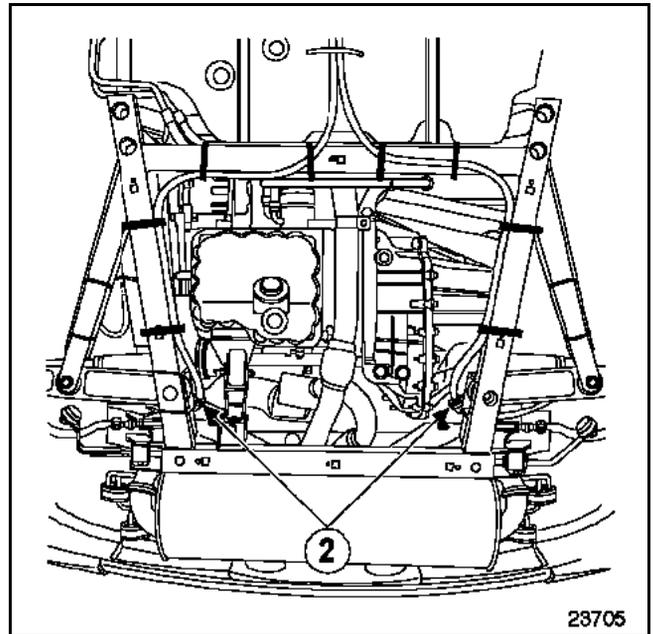
23701

Loosen the handbrake adjusting nut (1).

Note the value (X) to facilitate refitting.

Remove:

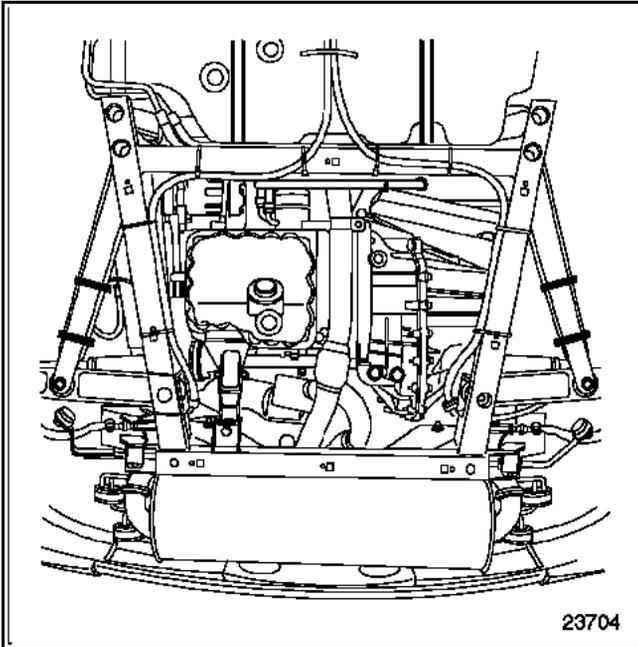
- the rear wheels,
- the cables (2) from the handbrake and brake callipers.



23705

Remove the brake cables from the sub-frame.

Remove the wheel speed sensor cables from the suspension arm.



Remove the mounting nut of the suspension arm ball joint.

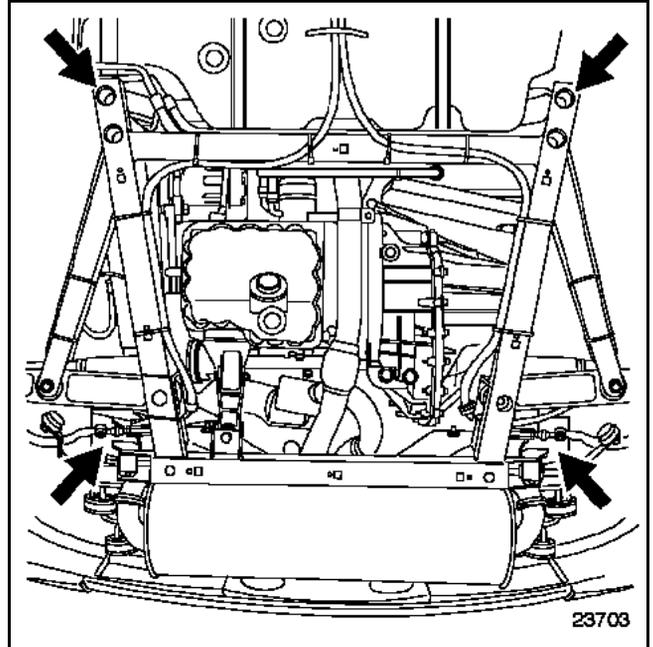
Disconnect the reaction links.

Remove the suspension arms from the stub-axle carrier.

Insert a shim between the shock absorber and the chassis to keep the suspension and the hub/brake assembly of the subframe separate.

Remove the mounting bolt of the lower torque reaction arm.

Support the subframe and remove the mounting bolts, then detach it from the body.



REFITTING

Proceed in the reverse order to removal.

Observe the tightening torques and fit new clips to hold the handbrake cables and the wheel speed sensor wiring in place.

Perform checking and adjustment of rear axle angles (see Section 30A).

Special tooling required

T. Av. 476 Ball joint extractor

Tightening torques



wheel alignment ball joints mounting bolts **5.5 daNm**

connecting clips for the catalytic converter chamber / silencer **3.5 daNm**

rear wheel alignment tie-rod bolt **15daNm**

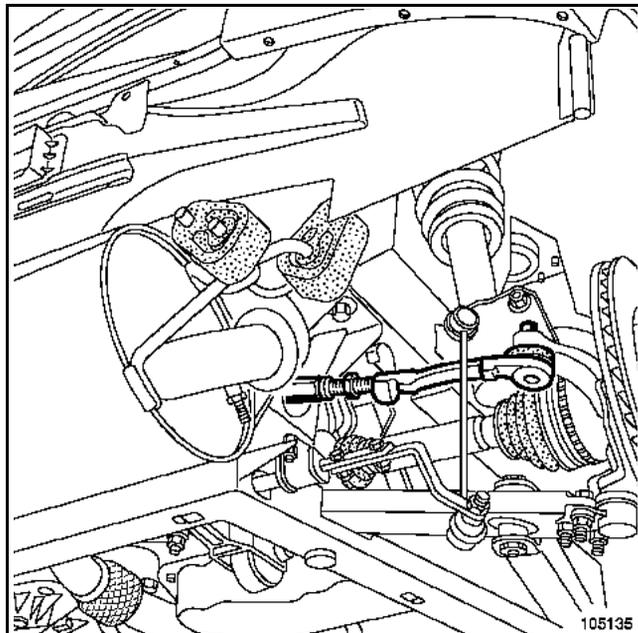
wheel bolt **11 daNm**

REMOVAL

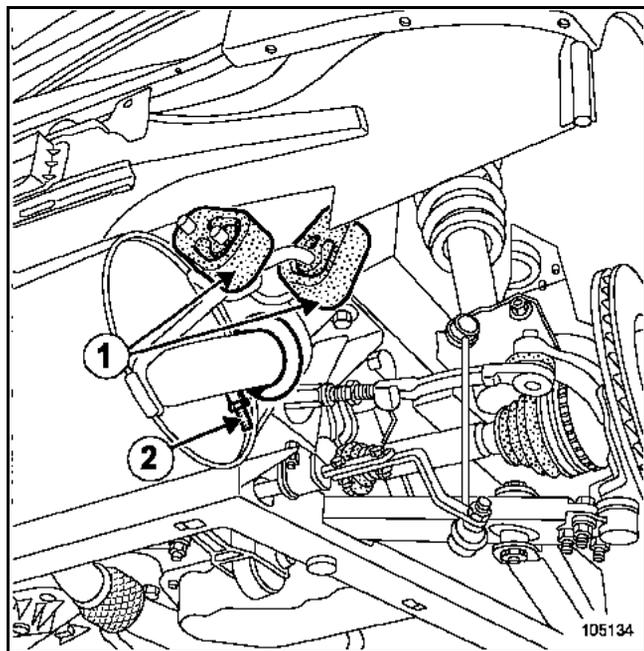
Put the car on a two-post lift.

Remove:

- the underbody protectors
- the rear wheels,



Remove the wheel alignment linkages using a tool T. Av. 476.



- the rubber mountings (1).

Loosen the connecting clips for the exhaust chamber/ catalytic converter (2).

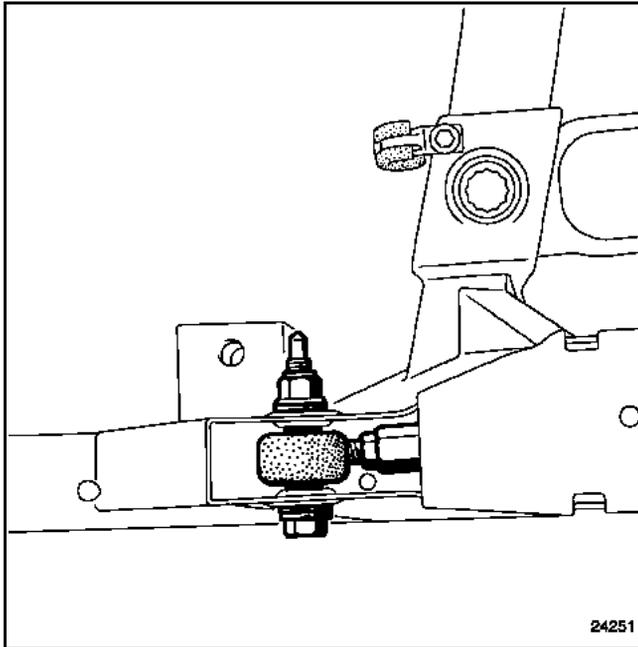
Remove the exhaust chamber silencer (this requires two workers).

REFITTING

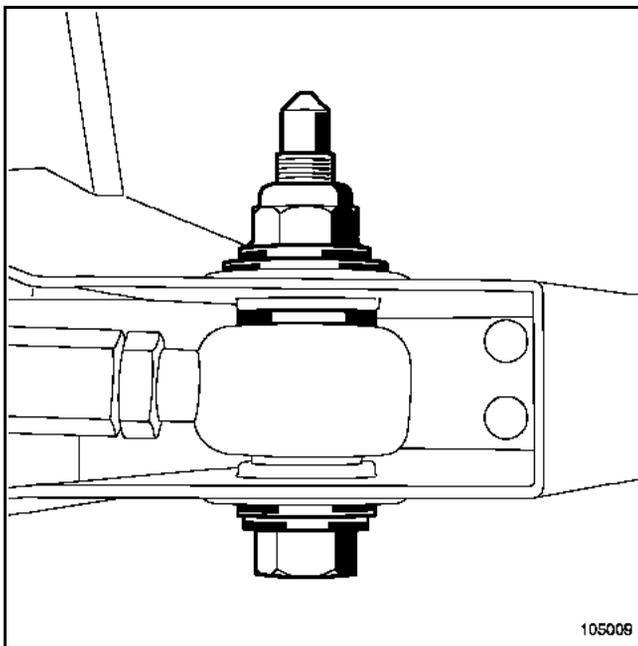
Proceed in the reverse order to removal.

Note:
There are three different wheel alignment linkage types.

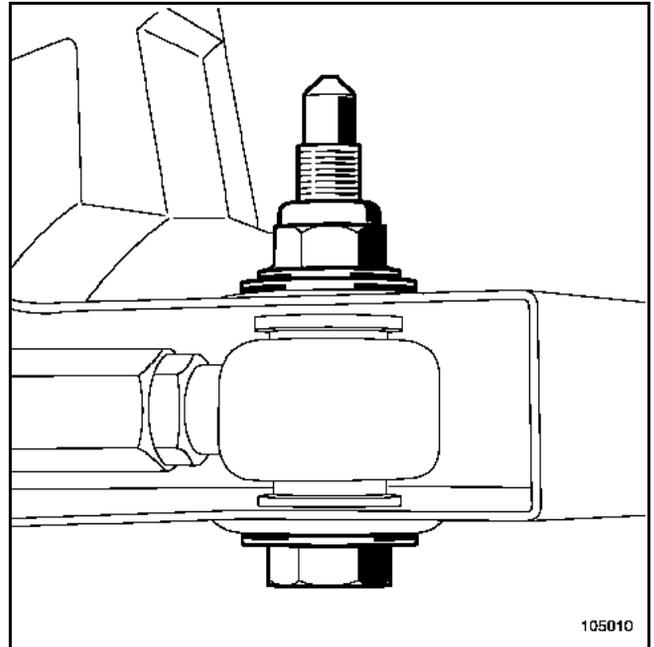
1st type



2nd type



3rd type



WHEELS AND TYRES Specifications

35A

Vehicle	Rim		MICHELIN PILOT SPORT tyre		Tyre pressure when cold (in bar) (1)	
CB1U	Front	7 J 18	Front	205/40 ZR18	Front	2
	Rear	8.5 J 18	Rear	245/40 ZR18	Rear	2.1

(1) Normal use

Tightening torques	
wheel bolts	11 daNm

Rim run-out: **1.2 mm**

Tyre pressures must be checked when cold. The rise in temperature during driving increases the pressure by **0.2 to 0.3 bar**.

If the pressure is checked when warm, take into account this increase in pressure and **never deflate the tyres**.

<p>Note: The size of "WINTER" tyres is: Front tyres: 205/45 - 17 Rear tyres: 225/45 - 17 Recommended pressure: 2.1 bar.</p>

Equip the four wheels to preserve the vehicle's road grip qualities insofar as possible.

These tyres sometimes have a defined direction of rotation and a maximum operating speed that is lower than the maximum speed of the vehicle.

This vehicle is fitted with a BOSCH 5.3 ABS of the four channel additional type; the conventional braking equipment and the ABS equipment are separate.

SPECIAL NOTES

The system comprises four speed sensors. Each hydraulic braking channel is associated with a sensor at each wheel. The front wheels are therefore regulated separately. The rear wheels however are regulated at the same time and in the same way according to the **select low** principle (the first wheel tending to lock causes immediate regulation on the complete axle assembly).

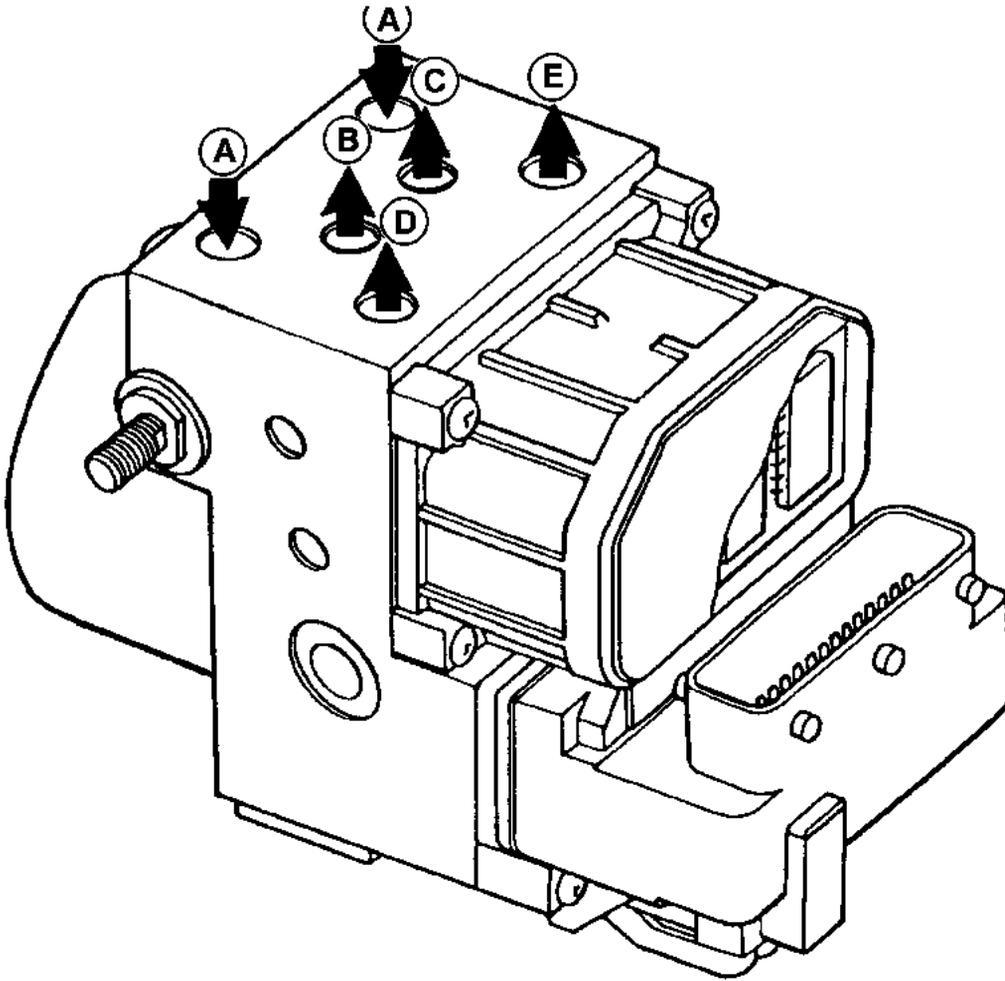
On this vehicle, the brake limiter is not fitted and its role is performed by a specific program located in the ABS unit computer called EBD (Electronic Braking Distribution).

WARNING

If the ABS fuse is removed, do not brake sharply during road tests as the electronic braking distribution function is no longer active (the pressure is the same in the front and rear) and there is a risk of slewing.

The system equipping this vehicle has neither the electronic stability program (ESP) function nor the anti-spin regulation (ASR) function.

HYDRAULIC REGULATION UNIT



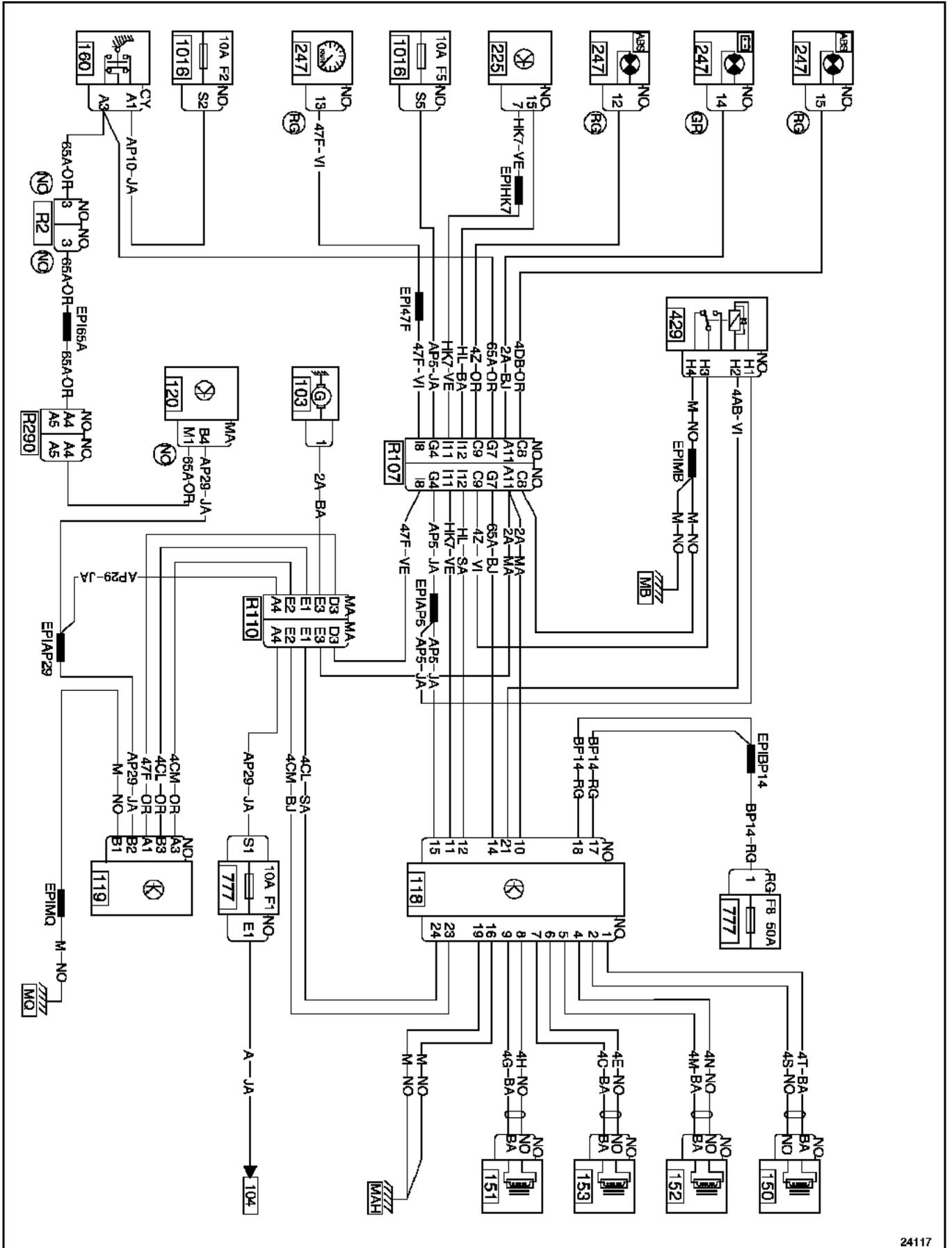
PRN3819

- A Inlet from rear master cylinder
- B Left rear wheel
- C Right rear wheel
- D Right front wheel
- E Left front wheel

ANTI-LOCK BRAKING SYSTEM

Wiring diagram

38C



ANTI-LOCK BRAKING SYSTEM

Wiring diagram

38C

PARTS LIST

103	Alternator
104	Ignition switch
118	ABS computer
119	Speed signal interface unit
120	Injection computer
150	Rear right wheel sensor
151	Left rear wheel sensor
152	Front right wheel sensor
153	Front left wheel sensor
160	Brake switch
225	Diagnostic socket
247	Instrument panel
429	Spare wheel ABS system relay
645	Passenger compartment connection unit
777	Rear power supply fuse rack
1016	Passenger compartment fuse box

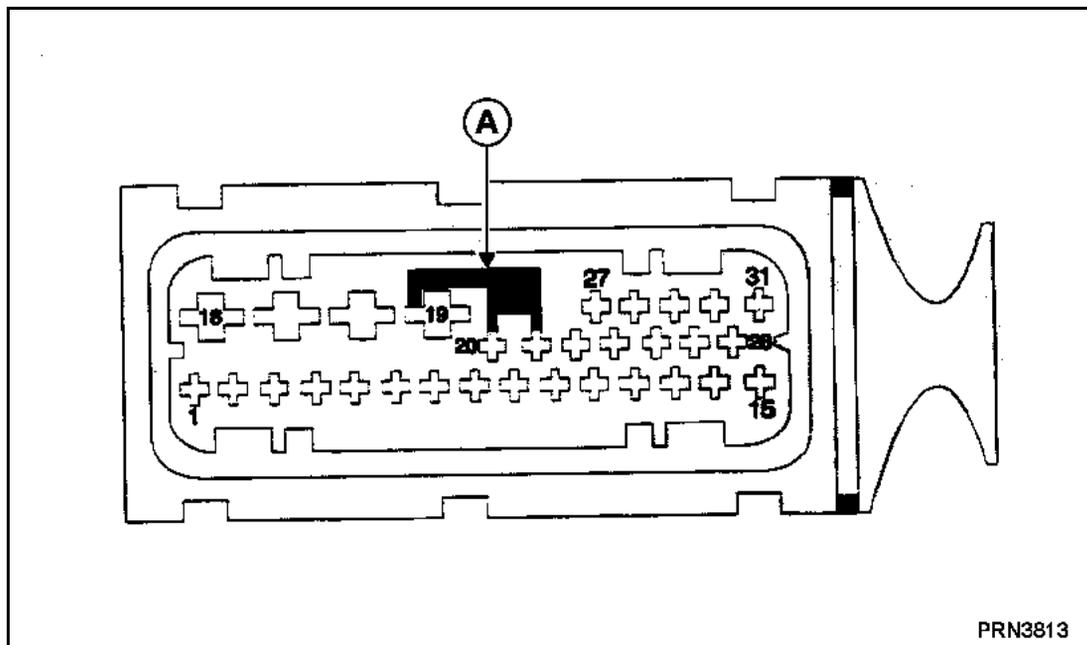
CONNECTIONS

R2	33-track connector, instrument panel wiring to rear wiring
R107	Instrument panel/Front of engine
R110	38-track connector to engine harness
R290	10-track connector to engine harness

Note:

The electrical resistance of the front and rear wheel sensors is **1600 Ω \pm 320 Ω** .

Connection of 31-track connector



A Micro-spring connecting to earth (terminal 19) pins 20 and 21 (**ABS** and **brake fluid level** indicator lights) in the event of connector becoming disconnected.

Track	Description	Track	Description
1	Rear right-hand earth sensor	17	+ before ignition
2	Rear right-hand sensor signal	18	+ before ignition
3	Not used	19	Earth
4	Front right-hand earth sensor	20	Not connected
5	Front right-hand sensor signal	21	ABS relay earth
6	Front left-hand sensor signal	22	Not connected
7	Front left-hand sensor signal	23	Left rear speed signal output
8	Rear left-hand earth sensor	24	Right rear speed signal output
9	Rear left-hand sensor signal	25	Not used
10	Alternator charge signal	26	Not used
11	Diagnostic line K	27	Not used
12	Diagnostic line L	28	Not used
13	Not used	29	Not used
14	Information on brake light switch	30	Not used
15	+ after ignition	31	Not used
16	Pump motor earth		

Essential equipment

Brake circuit bleeding device (approved by RENAULT)

WARNING

To ensure its correct operation, a brake circuit must be free of gas (external air, water vapour, etc.). Whenever the circuit is opened, the air penetrating the circuit must therefore be bled out after it is closed.

When the brake fluid is old (see service intervals), this leads to a high level of humidity which may create steam in the circuit, in certain extreme conditions. This ageing process means that the circuit must be drained completely and then the air contained in it must be bled.

- Prerequisites for bleeding air from the brake circuit:
 - make sure that there are no leaks in the fuel system,
 - fill brake fluid reservoir (1) to maximum level,
 - depress the brake pedal several times, so that the pistons, linings, discs or drums come into contact),
 - add brake fluid (1) to adjust the level in the reservoir,
 - prepare the **brake circuit bleeding device (approved by RENAULT)** and top up the brake fluid level (1) to its maximum (refer to the driver's handbook, the advised pressure being between **2 bar** and **2.5 bar**).
- There are two types of air bleeding from the brake circuit:
 - bleeding the circuit outside the regulation circuit; in this case it is not possible to bleed air from the secondary circuit (2) of the ABS hydraulic assembly,
 - bleeding air from the brake regulation circuit; this bleed should be performed only if the brake pedal travel, considered correct following so-called "conventional" bleeding (3), becomes incorrect.

(1) Brake fluid **SAEJ 1703 DOT4**.

(2) The regulation circuit is inside the hydraulic assembly. It is isolated from the conventional braking circuit insofar as the solenoid valves are not controlled by the computer or the **diagnostic tool**.

(3) Confirmed by a road test having led to regulation by the hydraulic assembly.

I - BLEEDING THE CIRCUIT OUTSIDE THE REGULATION CIRCUIT

- This procedure must be programmed after one of the following components has been removed or replaced:
 - the master cylinder,
 - the hydraulic assembly (new and pre-filled),
 - a rigid pipe,
 - a hose,
 - a calliper.
- Precautions to be taken during this brake circuit bleeding operation:
 - the ignition must be switched off to ensure that the hydraulic unit solenoid valves do not operate,
 - check the brake fluid levels of the braking circuit and the bleeding device.
- Connect the bleeding device to the braking circuit, paying attention to the features of this equipment (refer to the operating instructions).
- Bleed the circuit by opening the bleed screws in the following order (remember to close them after the operation):
 - the rear right-hand circuit,
 - the front left-hand circuit,
 - the rear left-hand circuit,
 - the front right-hand circuit.With the engine switched off, check the pedal travel, if it is not correct, restart the bleeding procedure.
- Top up the brake fluid level in the reservoir after disconnecting the bleeding device. Check the tightness of the bleed screws and that the sealing caps are all present.
- Confirm the efficient regulation of the hydraulic assembly by performing a road test.

The effectiveness and balance of the vehicle braking system may be checked on a brake test bench or by performing a road test.

Note:

The brake circuit is the X type, therefore it is possible to carry out an isolated bleeding operation on a single circuit (when the hose, calliper, etc. are being replaced).

II - BLEEDING THE REGULATION CIRCUIT

Note:

This bleed must only be carried out if the brake pedal travel, judged to be correct at the end of a conventional bleed (confirmed by a road test with hydraulic assembly regulation in operation), becomes incorrect.

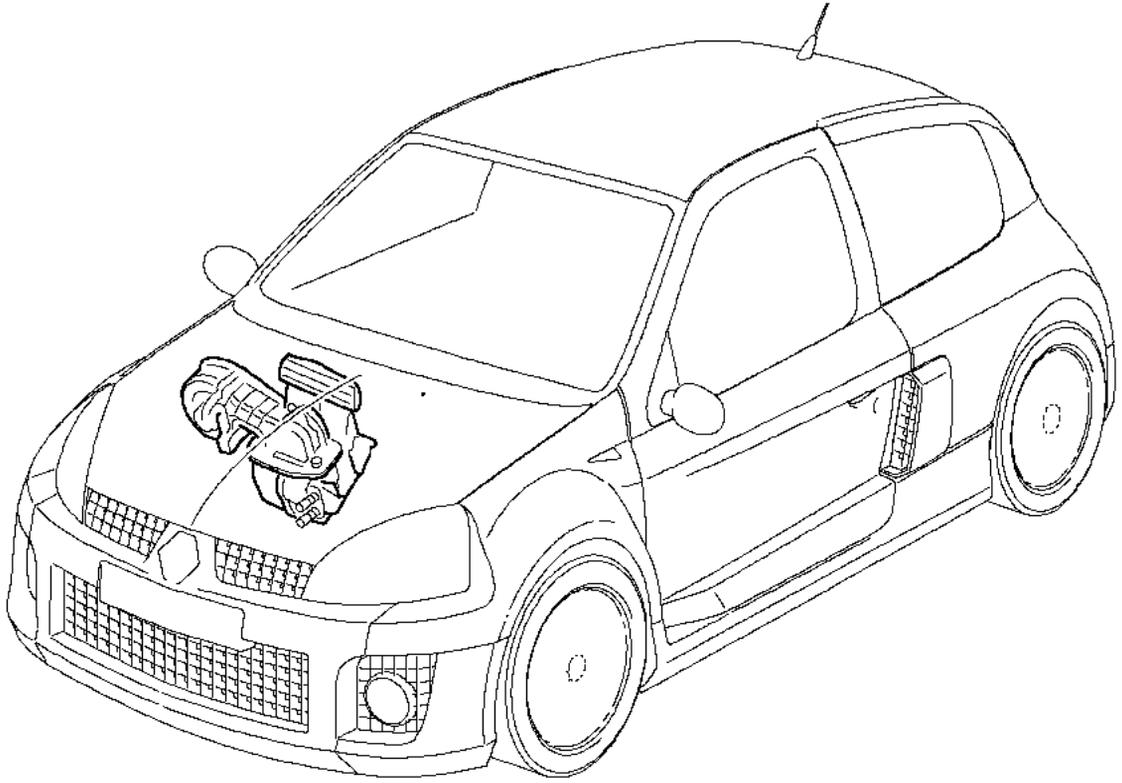
This procedure must be used if it is suspected that the hydraulic assembly has let in air (whether or not it has been removed).

1 - Precautions to be taken during this brake circuit bleeding operation

- Check the brake fluid levels of the braking circuit and the bleeding device.
- Connect (see operator manual for the device):
 - the **Brake circuit bleeding device (approved by RENAULT)** on the vehicle brake circuit,
 - the **Diagnostic tool**.
- For each circuit, in the following order:
 - rear right-hand (diagnostic tool command **AC156**),
 - front left-hand (diagnostic tool command **AC153**),
 - rear left-hand (diagnostic tool command **AC155**),
 - front right-hand (diagnostic tool command **AC154**).Repeat these operations:
 - Depress the brake pedal several times.
 - Activate the circuit solenoid valve using the **Diagnostic tool**.
 - Open the bleed screw*. Once the air has been removed, close the bleed screw again.

* While the solenoid valve is being activated, keep the pedal fully depressed.

- Top up the brake fluid level in the reservoir after disconnecting the bleeding device. Check the tightness of the bleed screws and that the sealing caps are all present.
- During a road test, trigger brake control to confirm that the brake pedal travel is correct. If it is not correct, bleed the regulation circuit again. The effectiveness and balance of the vehicle braking system may be checked on a suitable brake test bench.



23766

PARTS LIST

120	Injection computer
171	Air conditioning clutch
225	Diagnostic socket
234	Fan assembly relay
245	External temperature sensor
262	Cooling and air conditioning fan assembly
418	External temperature sensor
419	Air conditioning unit
584	Air conditioning clutch compressor relay
597	Engine fuses and relay
653	Radio display
777	Power supply fuse board
944	Engine cooling fan temperature switch
1010	Engine compartment cooling fan
1016	Passenger compartment fuse box
1047	Injection relay
1111	Interior moisture sensor
1160	Air conditioning unit power supply relay
1202	Coolant pressure sensor

CONNECTIONS

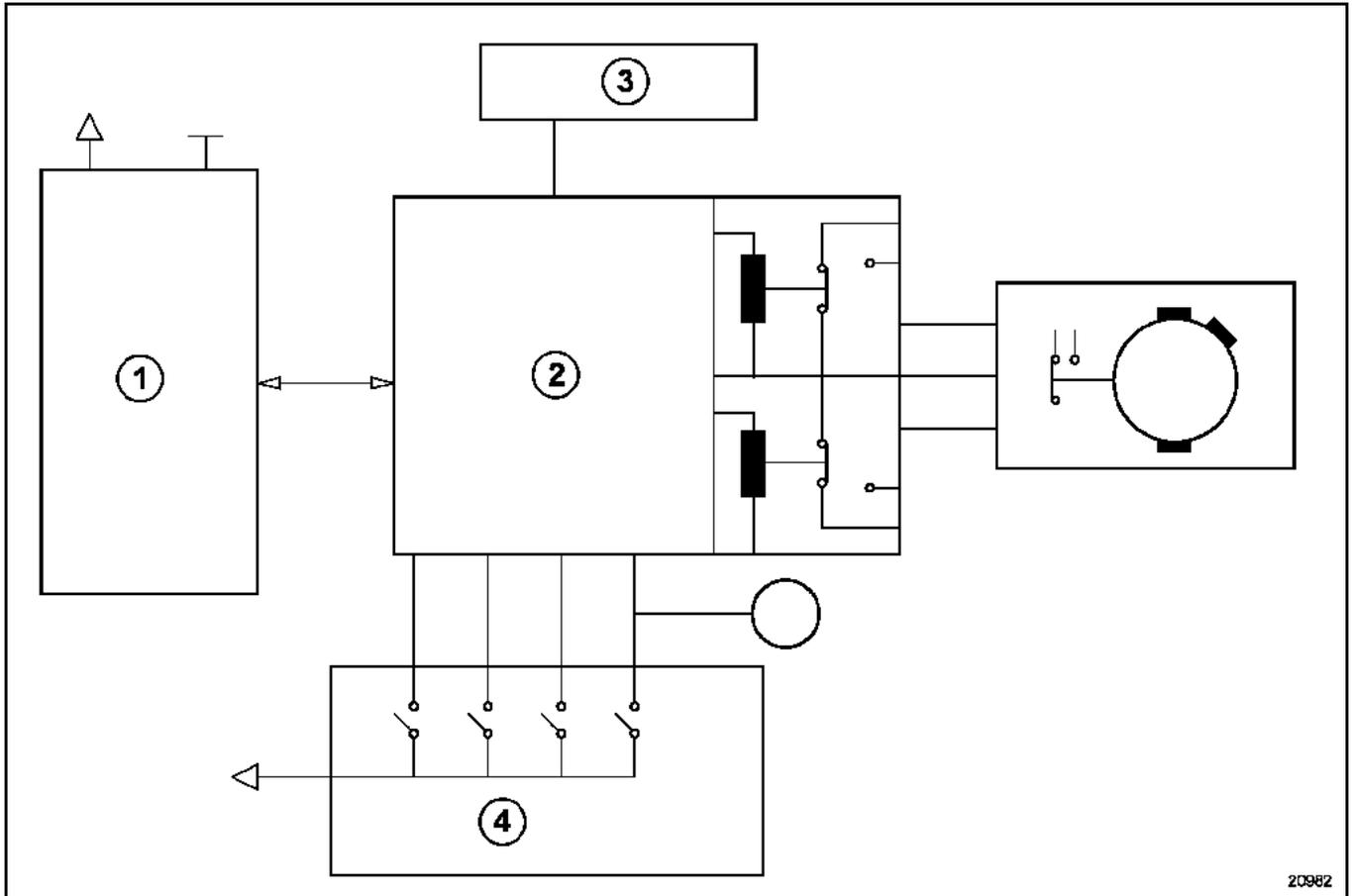
R20	Engine/dashboard connection
R99	Dashboard/air conditioning unit connection
R107	Instrument panel/Front of engine
R110	Engine - engine wiring

AUTOMATIC HEADLIGHTS WHEN DRIVING

These vehicles are fitted with automatic dipped headlights and sidelights that turn on automatically when daylight fades (if the engine is running).

Activation

The function is operated via the light detector (built in to the rain detector) and the UCH.



- 1 Rain detector
- 2 UCH
- 3 Headlights
- 4 Lighting stalk

The function can be switched on or off with the lighting stalk, if the UCH is correctly configured (see Section **87B**):

- Switch on the ignition.
- Using the stalk, turn the ignition on and off twice in under **4 seconds**.
- If the function has changed state, the instrument panel beeps.

For details on replacing the light detector (see Section **85A, Rain sensor**).

AUTOMATIC VEHICLE LIGHTS ("Follow me home" function)

These vehicles are fitted with dipped headlights that come on automatically (when the engine is switched off). This function operates for **30-second** periods and only when the ignition is switched off.

Activation

It is switched on with the lighting stalk:

- switch off the ignition,
- turn on the main beam headlights twice using the stalk,
- the instrument panel beeps,
- the lights will be power for **30 seconds**,
- another **30 seconds** are added each time the main beam headlights are turned on with the stalk.

FRONT HEADLIGHTS

Headlight units and direction indicators

80B

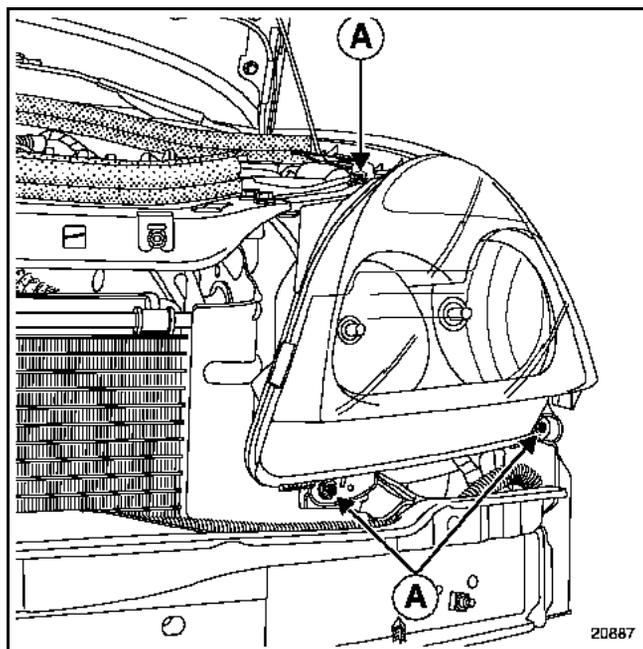
The lens unit and the indicator are one part.

REMOVAL

IMPORTANT

- Never switch on a bulb when it is not in the headlight unit (dangerous to the eyes).
- Discharge bulbs light up at a voltage of **20000 V**, then operate at **85 V AC**.
- Wait until the "computers-power units" are cold before disassembly.
- The battery must be disconnected before carrying out any operation.

After disconnecting the battery and the lens unit connectors.



Remove:

- the bumper with the radiator grille (see Technical Note on **Bodywork**),
- the headlight unit mounting screws (**A**).

Disconnect the connector and take out the lens unit.

REFITTING

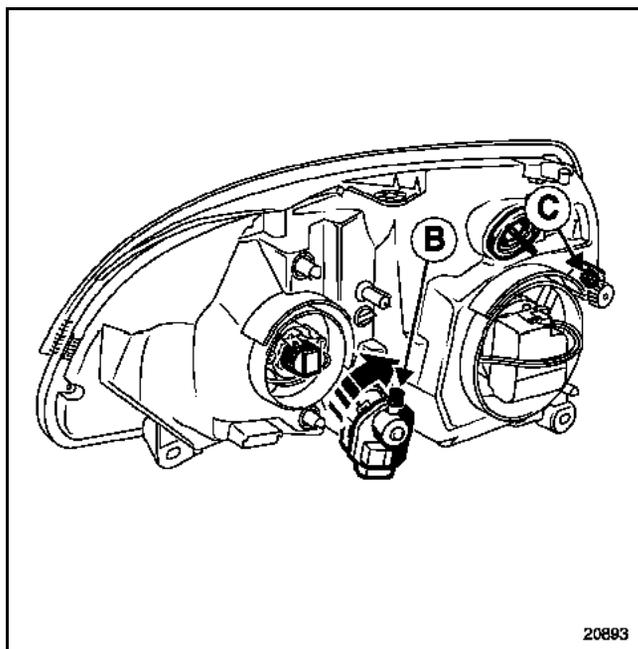
Connect the connectors.

Fit the headlight unit then tighten the bolts to the recommended torque (**0.4 daNm**).

WARNING

After refitting the headlight units, adjust them:

- park the vehicle on level ground (without applying the handbrake),
- ensure that the vehicle is empty with a full tank if possible,
- set the adjustment control to 0,
- actuate the screw (**B**) for height adjustment,
- actuate the screw (**C**) for direction adjustment.

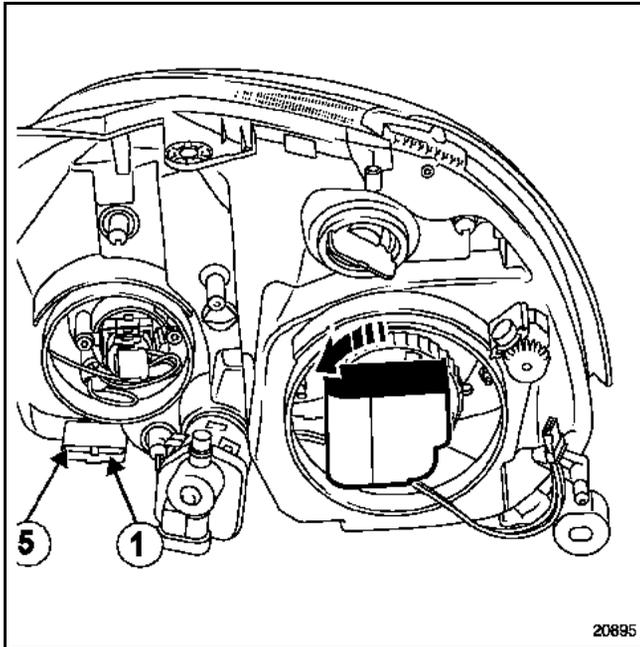


FRONT HEADLIGHTS

Headlight units and direction indicators

80B

CONNECTION



Track	Description
1	Earth
2	Dipped headlights
3	Indicator
4	Main beam headlight
5	Side lights

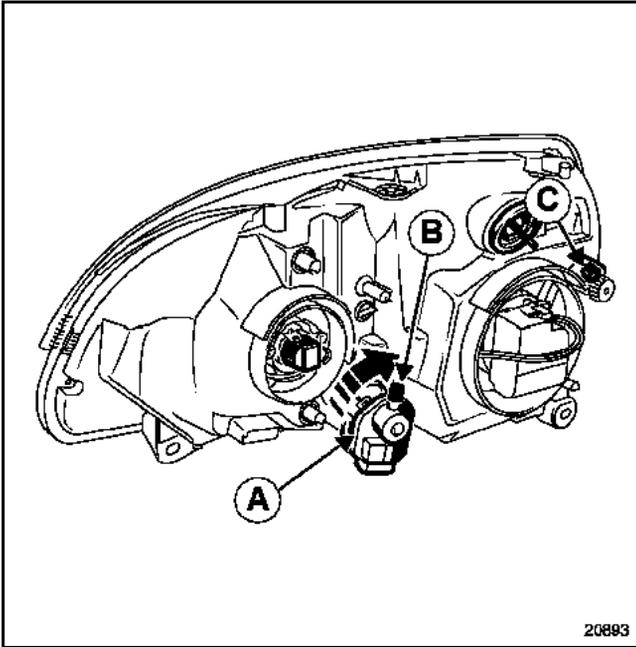
Note:
Track numbers are read from right to left on all headlights.

REMOVING THE ACTUATOR

Remove the headlight.

Turn the actuator one eighth of a turn and remove it from the headlight unit.

Then disconnect the ball joint from the reflector shell, tilting the actuator slightly.



REFITTING

To assist removal of the actuator, remove the sealed cover and hold the headlight reflector. Then click the ball joint into its housing.

Refit the actuator to the headlight, turning it one-eighth of a turn.

Remount the headlight.

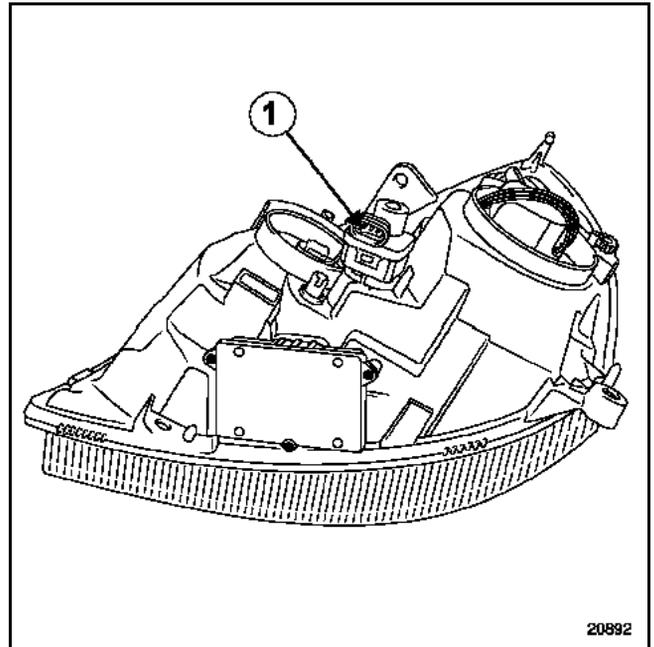
carry out the adjustment.

Adjustment procedure

WARNING

After refitting the headlight units, adjust them:

- park the vehicle on level ground (without applying the handbrake),
- ensure that the vehicle is empty with a full tank if possible,
- set the adjustment control to 0,
- actuate the screw (B) for height adjustment,
- actuate the screw (C) for direction adjustment.



FRONT HEADLIGHTS

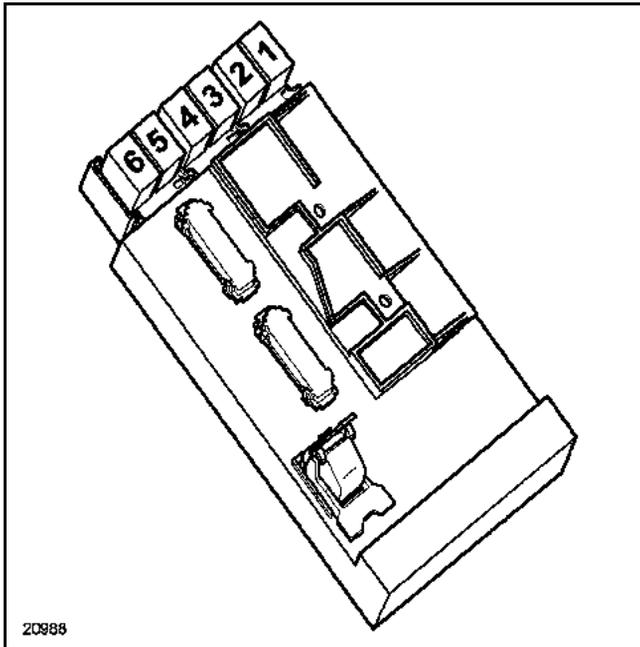
Daytime running lights

80B

The daytime running lights function, for some countries, is operated by the UCH.

Note:
The daytime running lights are supplied with power via relays attached to the UCH.

The daytime running lights can be configured with the fault finding tool using the menu. Go to the **Command, System configuration** menu, then select **with** or **without daytime running lights** (see Section 87).



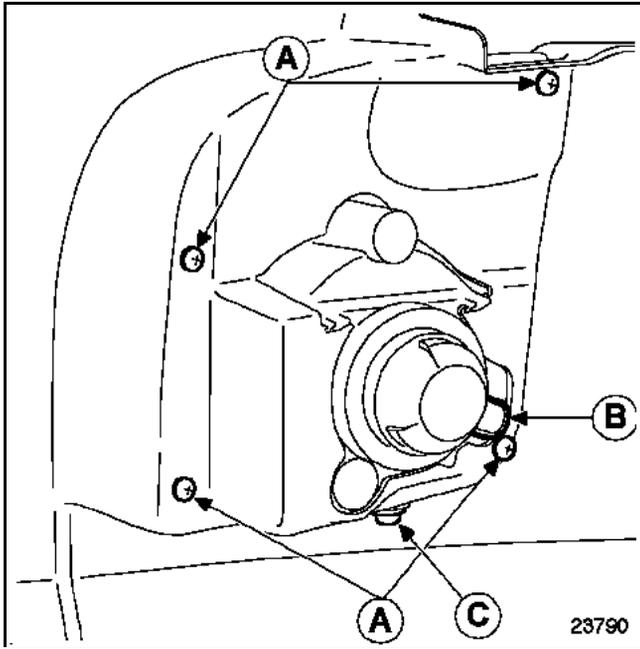
Relays	Description
1	Main daytime running lights relay
2	Daytime running lights side lights relay
3	Front fog lights relay
4	Dipped beam relays for daytime running lights
5	Headlight washer pump relay
6	Headlight washer pump relay

FRONT HEADLIGHTS

Fog lights

80B

REMOVAL



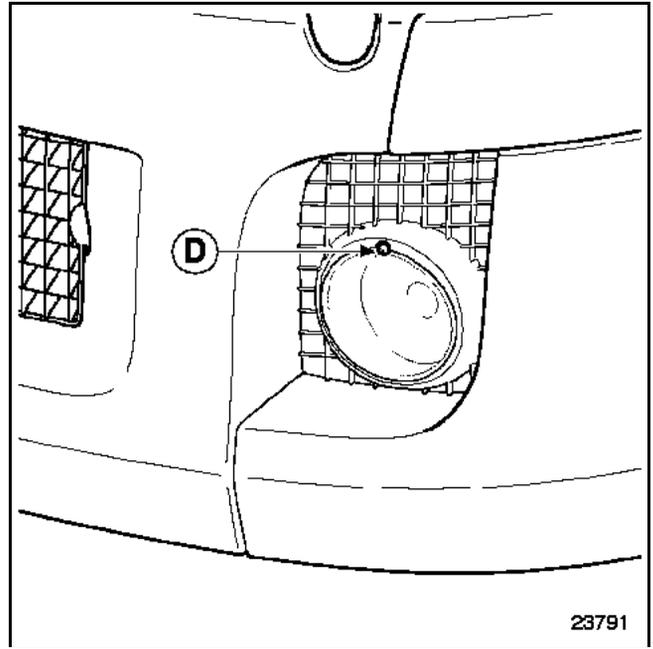
Remove the internal side sheath.

Remove the four screws (A) while holding the mounting on the side panel.

Disconnect the fog light connector (B).

Withdraw the fog light, removing the mounting nut (C).

REFITTING



Proceed in the reverse order to removal.

Adjust the fog light using the adjusting screws located in the opening (D).

XENON LAMPS

General information

80C

These bulbs do not contain a filament. The light from the bulbs is generated by two electrodes in a quartz bulb which contains the high pressure gas xenon.

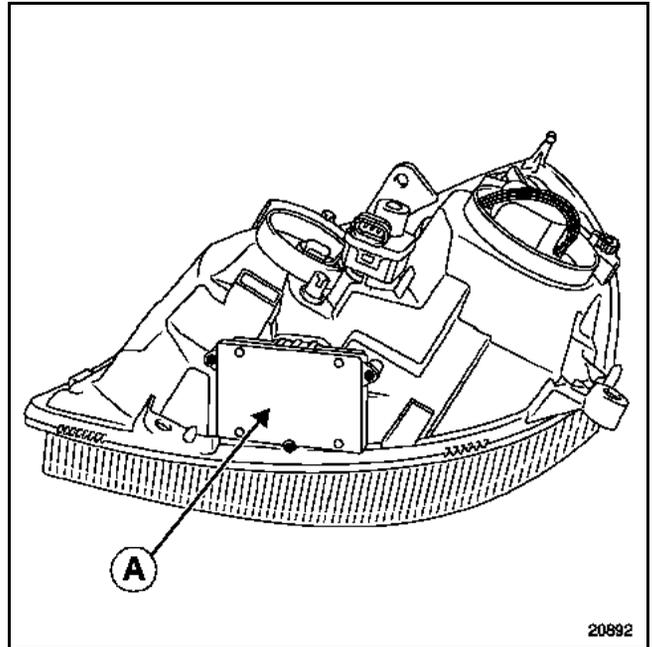
WARNING

These vehicles have no automatic headlight height adjustment system.

IMPORTANT

- Never switch on a bulb when it is not in the headlight unit (dangerous to the eyes).
- Discharge bulbs light up at a voltage of **20000 V**, then operate at **85 V AC**.
- Wait until the "computers-power units" are cold before disassembly.
- The battery must be disconnected before carrying out any operation.

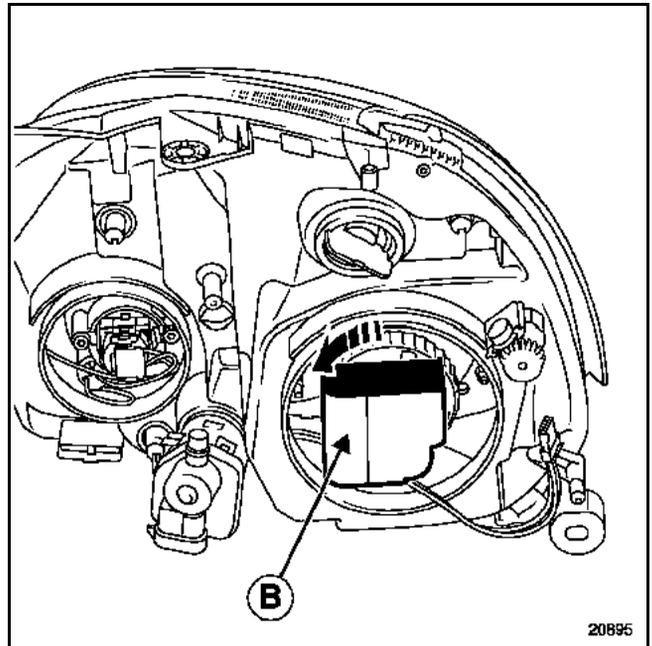
DESCRIPTION



20892

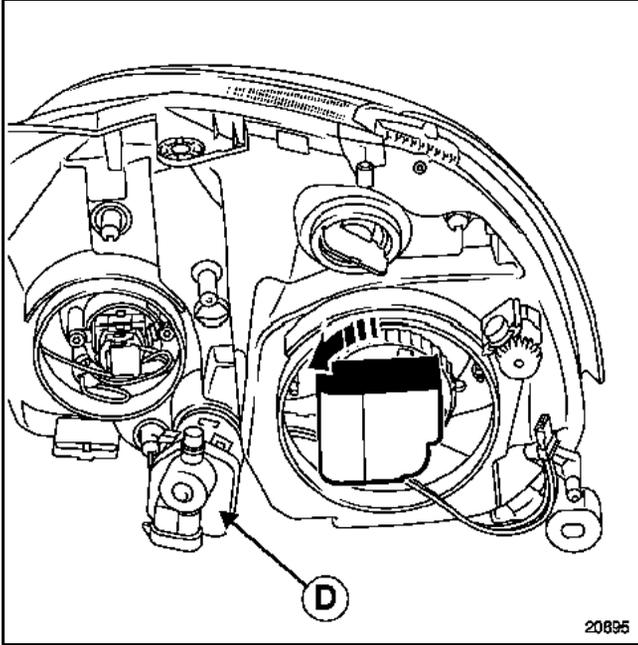
The system consists of:

- two headlight units fitted with a conventional side light bulb,
- a main beam headlight bulb, type **H7 55W**,
- a dipped beam headlight xenon bulb, type **D2S**,
- a direction indicator bulb, type **PY 21W**,
- two electronic units (Ballasts) integral with the headlights (**A**) (one per headlight),



20895

- two high voltage units (**B**) to which the bulbs are attached,



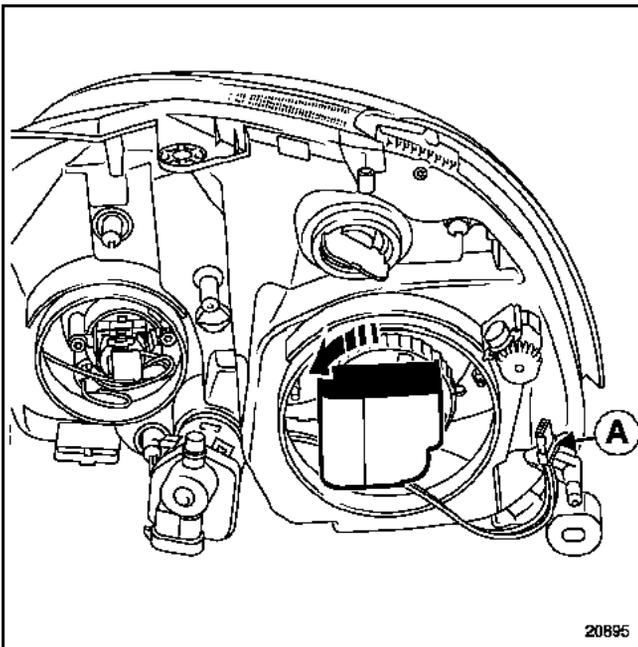
- two adjustment actuators (D) attached to the back of each light.

REMOVAL

IMPORTANT

- Never switch on a bulb when it is not in the headlight unit (dangerous to the eyes).
- Discharge bulbs light up at a voltage of **20000 V**, then operate at **85 V AC**.
- Wait until the "computers-power units" are cold before disassembly.
- The battery must be disconnected before carrying out any operation.

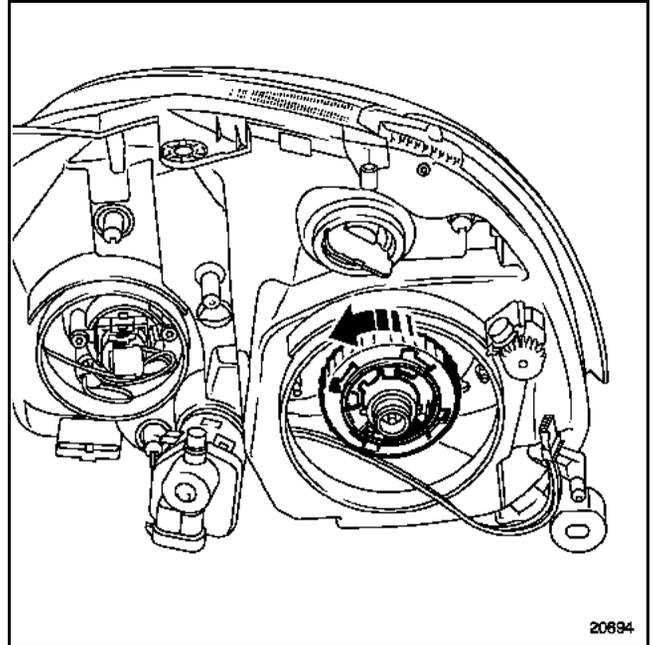
To replace a discharge bulb, remove the headlight.



Remove the high voltage unit by turning it one-eighth of a turn direction shown above.

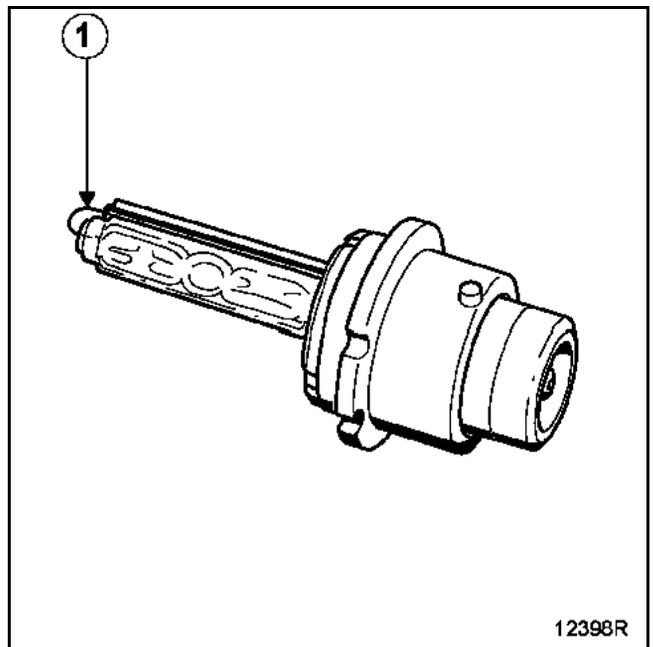
Note:

The connector (A) that supplies power to the high voltage unit is automatically disconnected by a safety system. This prevents the high voltage unit from being connected if there is no bulb present.



Remove:

- the bulb locking bolt, by turning it one-eighth of a turn in the direction shown above,
- the bulb.

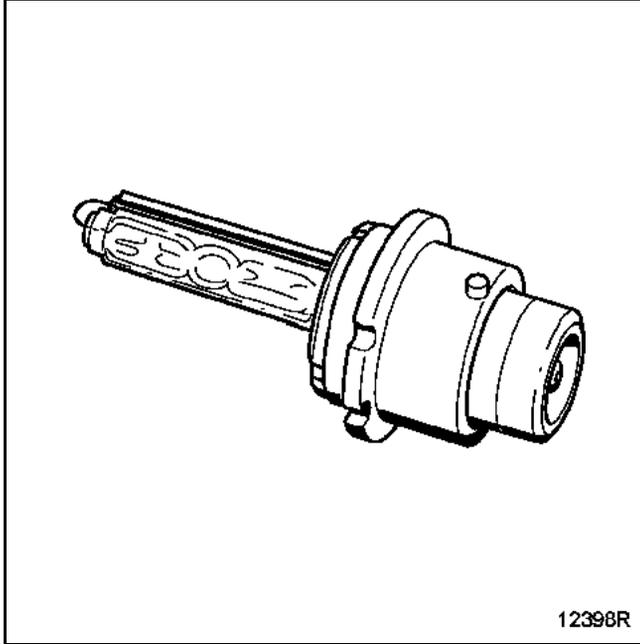


WARNING

Do not jolt or knock the bulb as the external conductor (1) is very fragile and must not be damaged.

REFITTING

Hold the bulb by the cap (if you touch the bulb, you must clean it with alcohol and a soft lint-free cloth).



Fit:

- the bulb. The lug must be opposite the groove in the headlight,
- the bulb locking bolt,
- the high voltage unit,
- the supply connector.

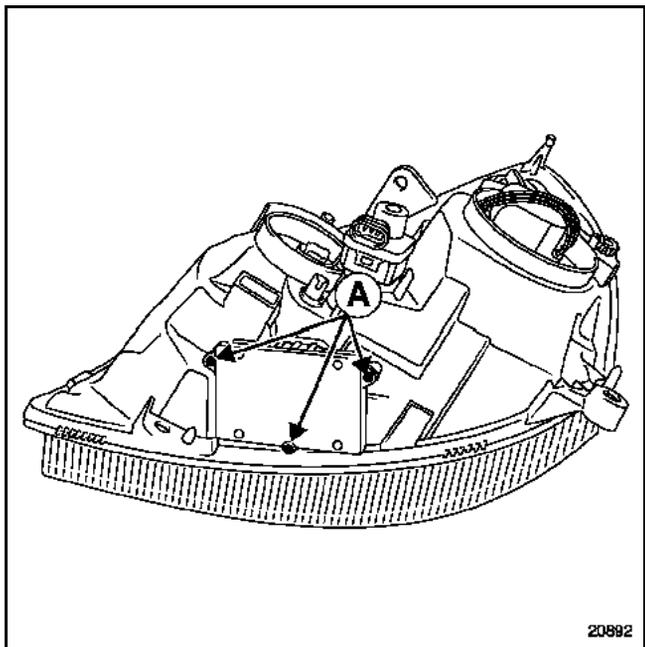
Check the headlight settings.

WARNING
Discharge bulbs light up at a voltage of **20000 V**, then operate at **85 V AC**.
It is therefore essential to disconnect the headlight unit and wait until the computers (ballast and module) have cooled down before removal.
Never switch the bulb on when it is not in the headlight unit (dangerous to the eyes).

REMOVAL

Remove the relevant headlight.

Place the headlight on a clean cloth so as not to scratch it.



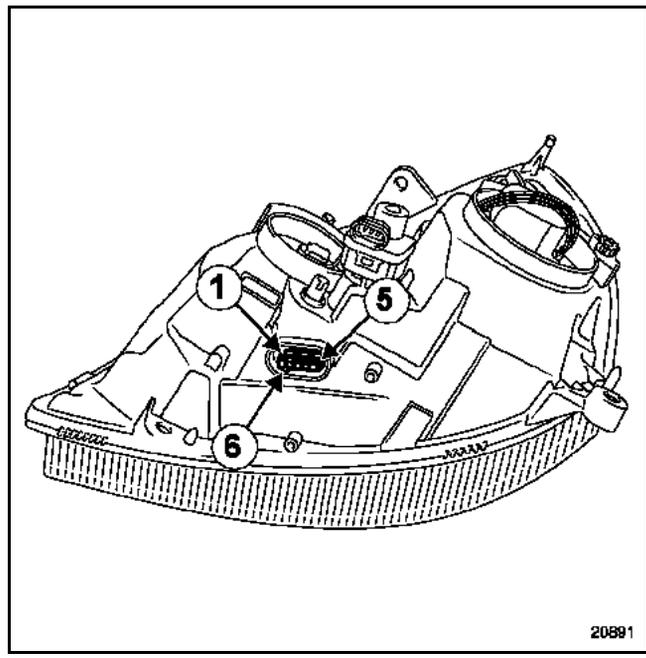
Remove the Torx bolts (A).

REFITTING

Tighten the **electronics unit** to a torque of **1 daNm**.

Check the headlight settings.

CONNECTION

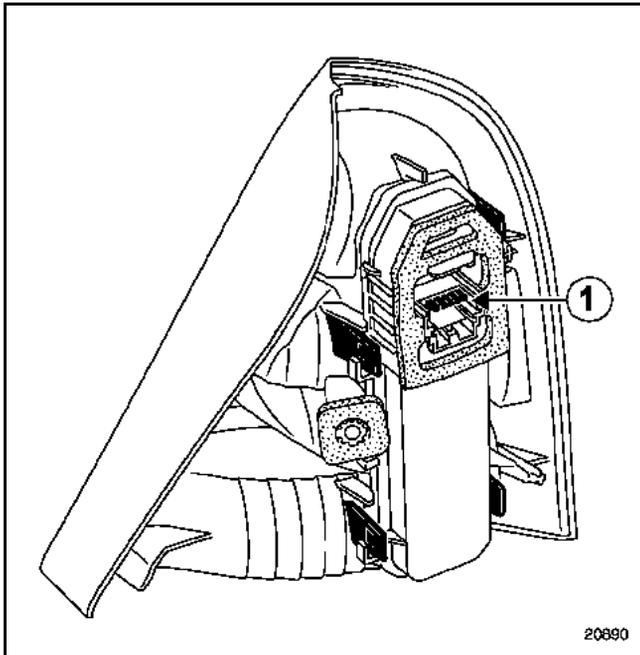


Track	Description
1	Dipped headlights signal
2	Earth
3	Connection with high voltage module (track No. 4)
4	Connection with high voltage module (track No. 2)
5	Connection with high voltage module (track No. 1)
6	Bulb earth

REMOVAL - REFITTING

Remove the mounting bolt located in the luggage compartment then disconnect the connector from the outside.

CONNECTION



Track	Description
1	Earth
2	Reversing light
3	Indicator
4	Fog light
5	Brake light
6	Side light

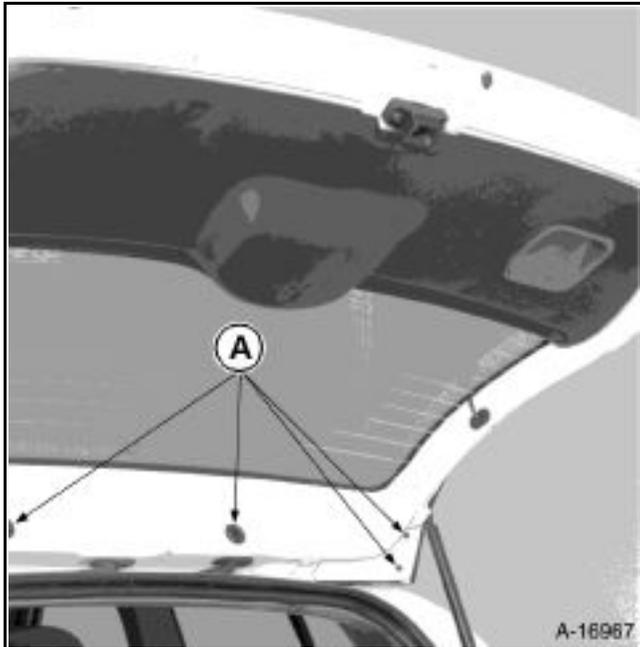
Note:
Track numbers are read from right to left.

REAR LIGHTS

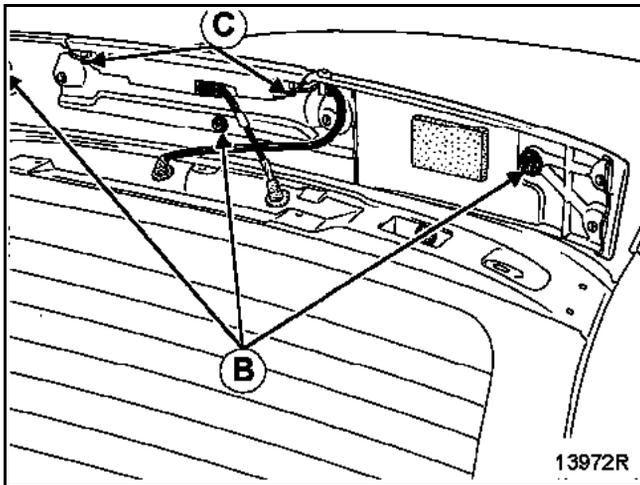
High level brake light

81A

REMOVAL - REFITTING



With the tailgate raised, remove the six bolts (A) securing the upper trim.



With the tailgate lowered, unclip the upper trim (three clips (B)).

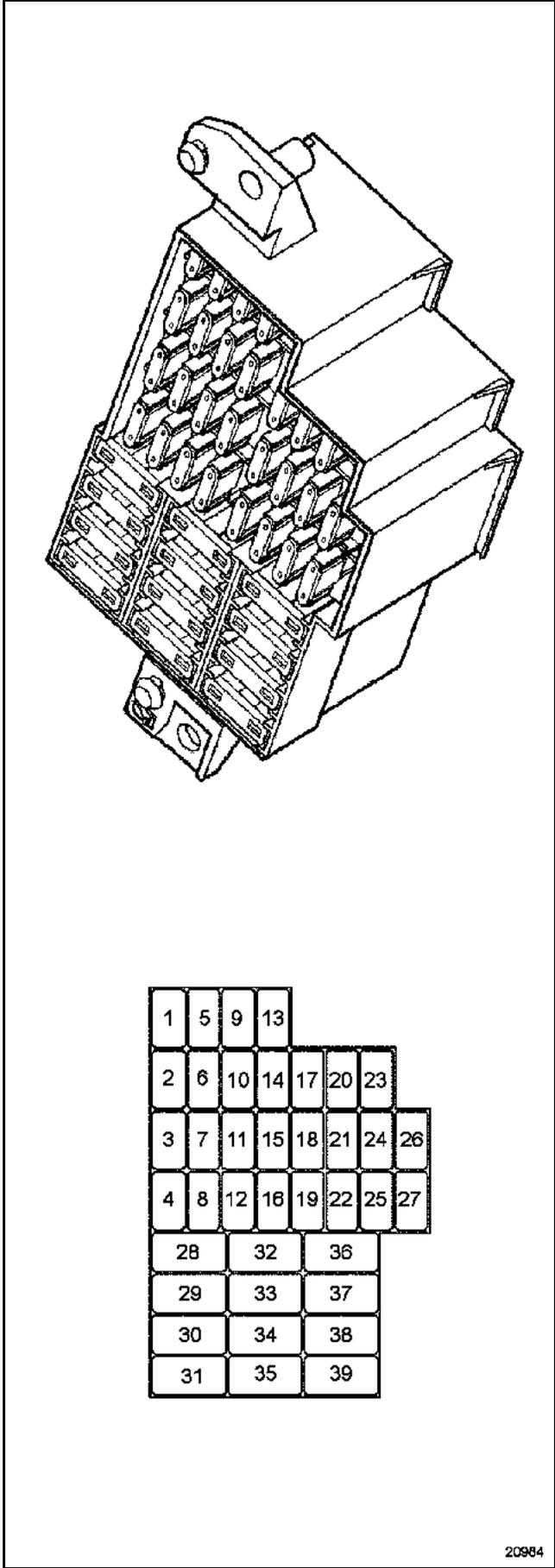
Disconnect the connector and remove the two bolts (C) securing the light.

Note:
The bulbs cannot be removed. If there is a fault, replace the whole light.

FUSES

Passenger compartment fuse box

81C



1	5	9	13				
2	6	10	14	17	20	23	
3	7	11	15	18	21	24	26
4	8	12	16	19	22	25	27
	28		32		36		
	29		33		37		
	30		34		38		
	31		35		39		

20954

No.	Rating	Description
F1	15A	Airbags and pretensioners
F2	15A	Brake lights - Diagnostic socket - Instrument panel - Cruise control
F3	15A	Air conditioning - Rear screen wiper - Reversing lights
F4	20A	Windscreen wiper
F5	10A	Anti-lock braking system
F6	10A	Air conditioning
F7	15A	Radio - Clock - Cigarette lighter
F8	15A	Audible alarm (beeper)
F9	15A	left hand dipped headlight
F10	15A	right hand dipped headlight
F11	10A	Right-hand main beam headlight
F12	10A	Left hand main beam headlight - Instrument panel warning light
F13	20A	Rear screen wiper
F14	-	Not used
F15	20A	Electric windows
F16	-	Not used
F17	10A	Heated rearview mirrors
F18	20A	Front fog light
F19	-	Not used
F20	20A	UCH

No.	Rating	Description
F21	5A	Instrument panel - Door locking - Diagnostic socket
F22	15A	Turn signals
F23	15A	Rear fog light
F24	-	Not used
F25	-	Not used
F26	10A	Left hand side lights
F27	10A	Right-hand side light
F28	2A	Immobiliser transponder ring
F29	20A	Radio - Clock - Roof-mounted courtesy lamps - Electric rearview mirrors
F30	30A	Heated rear screen
F31	20A	Locking of the opening elements
F32	-	Not used
F33	20A	Headlight washers
F34	20A	Air conditioning
F35	-	Not used
F36	30A	Electric windows
F37	10A	UCH
F38	-	Not used
F39	-	Not used

This fuse box is located in the passenger compartment on the driver's side (at the end of the dashboard).

SPECIAL NOTES

- The security code no longer exists but has been replaced by a repair code allocated to the vehicle for life during manufacture.
 - there is no number marked on the key,
 - at the time of delivery, the vehicle does not have a label showing the code.

For any servicing operation on this system, this repair code number can be asked for from the local assistance network (see Technical Note **3315E** or else the **Techline**).

When requesting the code number, it is now essential to provide the vehicle's VIN as well as its production number. This allows the operator to identify the vehicle in order to provide the correct code.

- Spare keys are supplied uncoded, without a number and without metal insert.
- This system can have up to four keys. The remote control function and the battery have no effect on the immobiliser.
- In the event of a key being stolen or lost, or at the customer's request, one or more of the vehicle's keys can be deallocated. They can be reallocated to the same vehicle if necessary.

WARNING

With this system, it is not possible to replace several components (UCH and keys or UCH and injection computer) at the same time. These parts are sold uncoded.

This is because, when replacing these components, they will not be able to be coded if none of them has the vehicle's original code in its memory (see allocation table).

- There is no way of erasing the code programmed in the system components. **The programmed code cannot be erased.**

GENERAL INFORMATION

The engine immobiliser on the Clio V6 phase 2 is an immobiliser controlled by a key recognition system with a random (encrypted) rolling code.

The immobiliser is activated a few seconds after the ignition is switched off. This may be indicated by the flashing of the red warning light located on the instrument panel.

During manufacture, a 12-character hexadecimal code is allocated to the vehicle to make the engine immobiliser operational.

This repair code is required in after-sales in order to:

- add keys,
- replace one or more keys,
- deallocate one or more keys (e.g. if lost or stolen),
- replace a UCH.

Note:

To obtain the repair code, the vehicle identification number is necessary. There are several possible ways depending on country (see Technical Note **3315E**):

- Minitel,
- voice server,
- Techline.

IMMOBILISER

Coded key immobiliser system

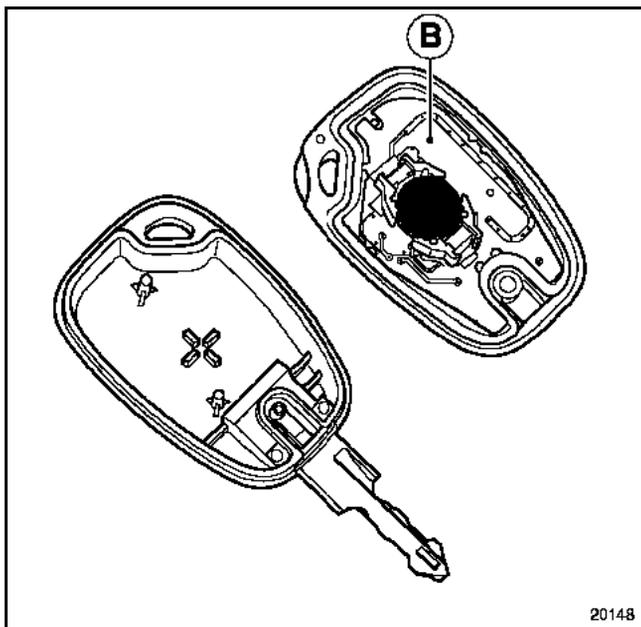
82A

SYSTEM DESCRIPTION

With this system, the engine immobiliser is activated a few seconds after the ignition is switched off (shown by the red engine immobiliser warning light flashing).

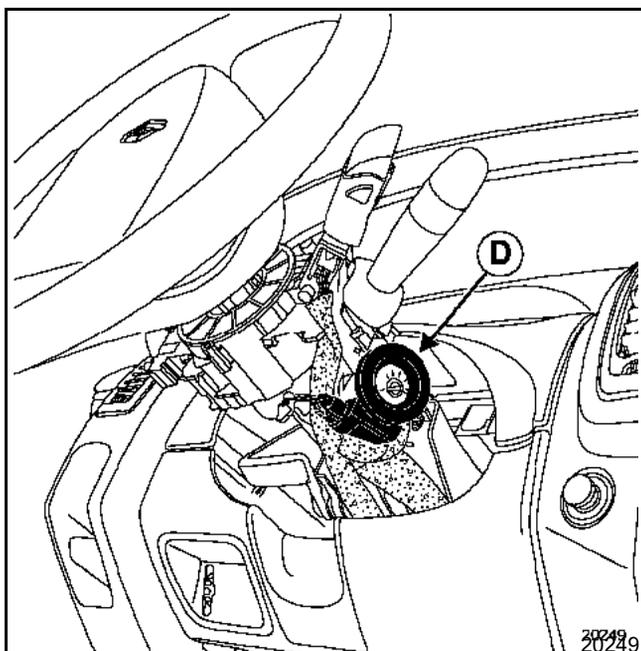
It comprises:

- an electronically coded key head (B), that controls the immobiliser and remote control door locking by radiofrequency,



Note:

The immobiliser chip is now integrated in the remote control printed circuit.



- an aerial ring (D) located around the ignition switch, fitted with a chip to transmit the key codes to the UCH.

Note:

This aerial ring is not coded.

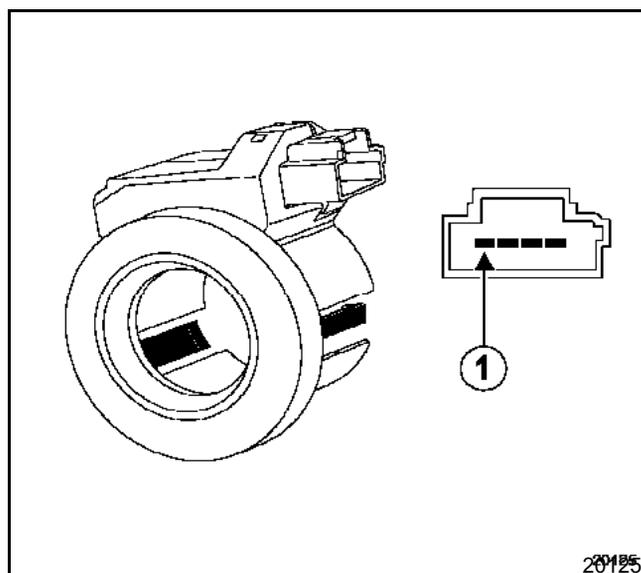
REMOVAL - REFITTING

Remove the two half cowlings under the steering wheel.

Remove bolt from the ignition switch.

Disconnect the connector.

CONNECTION

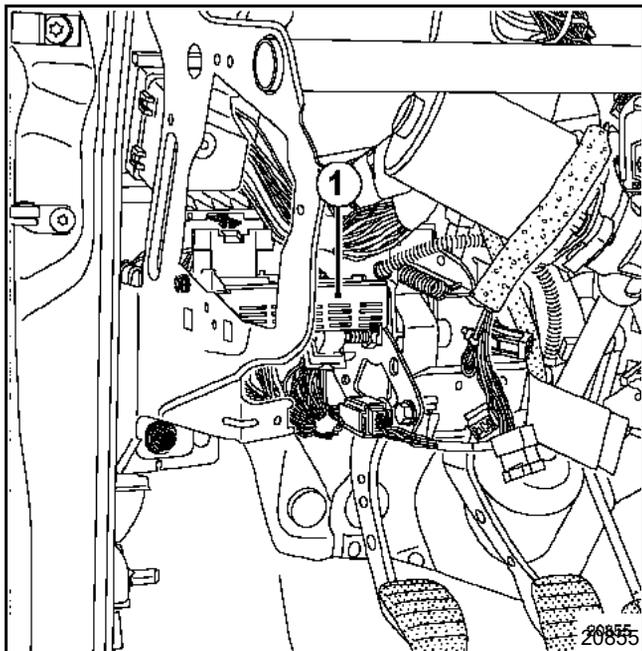


Track	Description
1	Not used
2	Earth
3	+ Before ignition
4	Output signal

- a UCH.

For the engine immobiliser function, the UCH carries out the following functions:

- decodes the key signal,
- communicates with the injection computer,
- controls the red warning light on the instrument panel,
- communicates with the diagnostic tool.

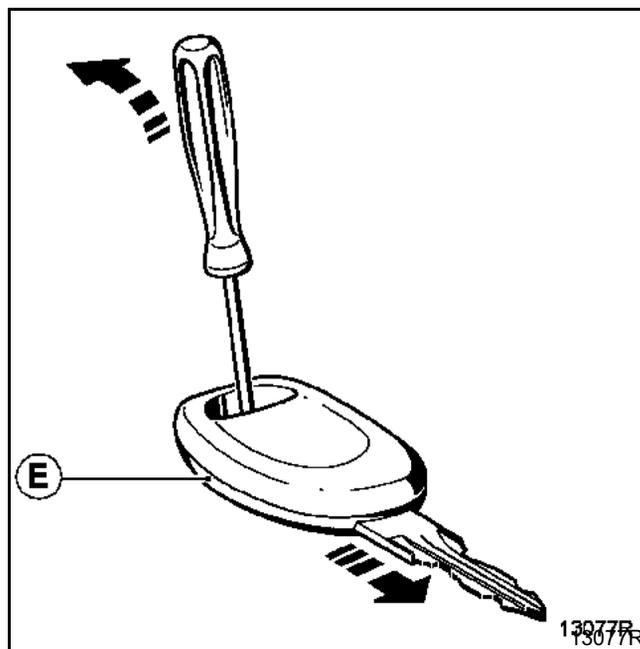


The UCH (1) is located under the dashboard.

To remove it, see Section **87B**.

- a red engine immobiliser indicator light located on the instrument panel used to signal:
 - activation of the engine immobiliser,
 - non-recognition of the key,
 - a system fault,
 - programming of a key.

OPENING A KEY HEAD



Place the key head on a table with the metal insert facing downwards.

Use a small screwdriver as a lever as shown below, ensuring that the end of the screwdriver bears suitably on the lower section (E) of the key head. This allows you to slide the upper section off the lower section.

OPERATION

When the immobiliser system is operational, the engine immobiliser indicator light flashes slowly (once per second).

- After the ignition is switched on, the key code is transmitted to the UCH.
- If the code is recognised by the UCH, the UCH and the injection computer send coded signals to each other via the multiplex network and turn off the immobiliser indicator light.
- If the signals transmitted by the UCH and the injection computer match, the UCH authorises the engine to start and the injection is unlocked.

SPECIAL CASES:

- The injection computer has no reference code in its memory: the code which is transmitted is stored.
- If the key code and the UCH code do not coincide, the system will remain locked. The engine immobiliser red indicator light flashes (quickly). The vehicle cannot be started.

WARNING

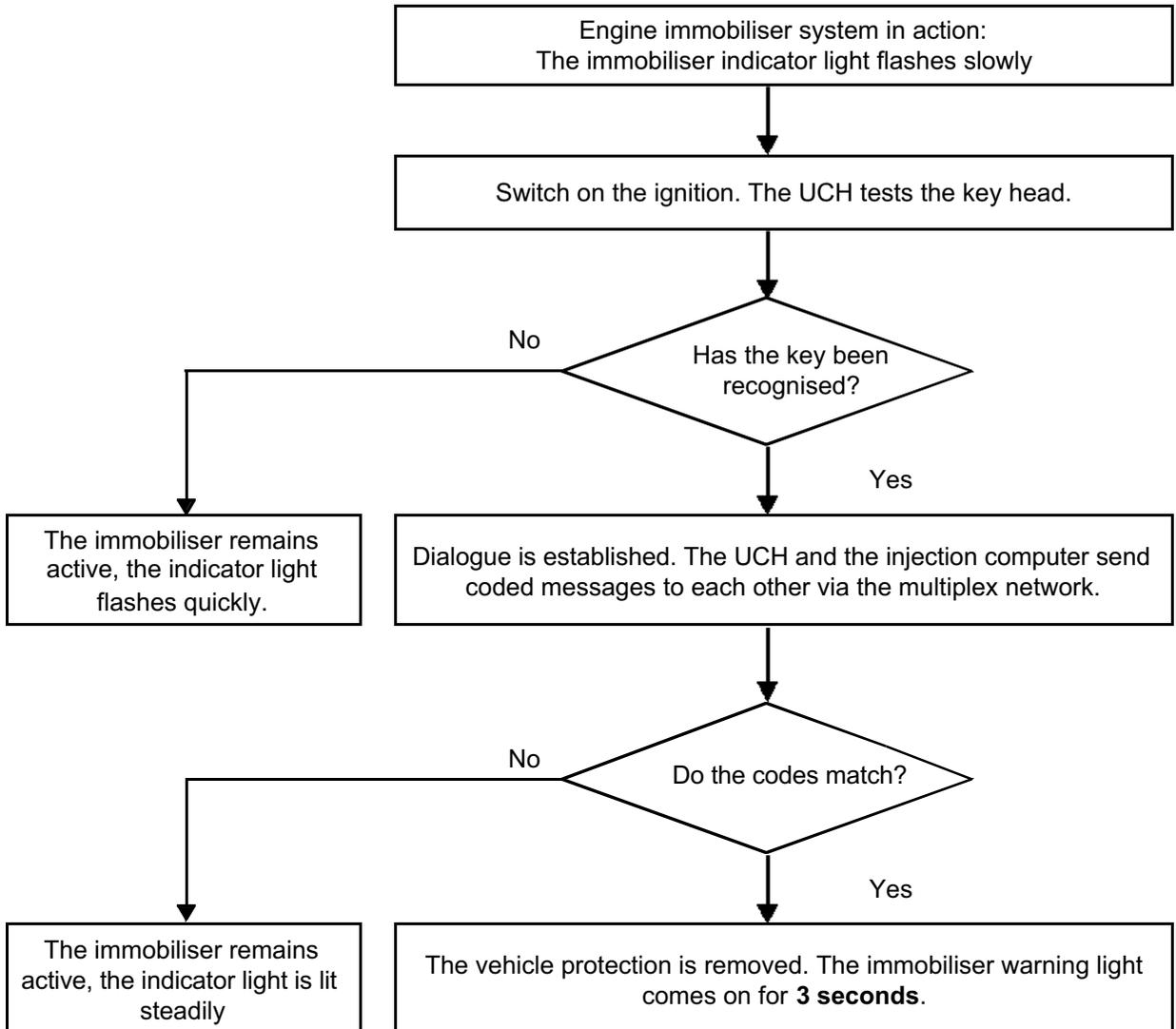
When the vehicle battery has a low charge, the drop in voltage caused by operating the starter could reactivate the immobiliser. If the voltage is too low, the engine cannot be started, even by pushing the vehicle.

IMMOBILISER

Coded key immobiliser system

82A

OPERATION



IMMOBILISER

Coded key immobiliser system

82A

REPLACEMENT AND CONFIGURATION

New parts are not coded. You must therefore program a code into such parts fitted to a vehicle to make them operational.

To perform this procedure, it is essential that some parts on the vehicle are already correctly coded (with the vehicle code). Refer to the allocation table.

WARNING

If a part is programmed with a code, the part is then allocated to the vehicle and it is not possible for the code to be erased or for the part to be programmed with a second code. **The programmed code cannot be erased.**

ALLOCATION TABLE

AFTER-SALES OPERATION	STATE OF COMPONENTS			REPAIR CODE NEEDED
	UCH	Key	Injection computer	
Programming the UCH	Blank	Coded	Coded	YES
Key allocation or cancellation	Coded	Blank*	-	YES
Programming the injection computer	Coded	Coded	-	NO

* A key allocated to a vehicle must be blank or already programmed to this vehicle.

Note:
The key can be programmed to a vehicle but is not operational (deallocated).

Note:
Only keys used in this procedure will work.

A new UCH is not programmed with a code. You must therefore program a code into a new UCH fitted to a vehicle to make the UCH operational.

To perform this procedure, at least one of the vehicle's old keys and the repair code are required, and the injection computer must be correctly coded (refer to the allocation table).

WARNING

If a code is programmed into the UCH, the UCH is allocated to the vehicle. It is not possible for the code to be erased or for the part to be programmed with a second code.

WARNING

The keys submitted during this procedure will only work if:

- they have already been coded on this vehicle, or
- they are new (not coded).

Note:

If only the UCH is replaced, there is no operation to be performed on the injection computer, as it retains the same immobiliser code.

UCH PROGRAMMING PROCEDURE

Using the diagnostic tool:

- Establish dialogue with the **Immobiliser** system.
- In the **Command, Specific command** menu, select and confirm **SC027: program UCH** line.
- The tool displays "**Remove the key from the anti theft device**".
- The tool displays **Please enter the After-Sales code**. With the ignition off, enter the secret After-Sales code (twelve hexadecimal digits) and press Confirm.

- If the code format is correct, the tool displays **Insert a key which has already been programmed to the vehicle** and the programming procedure starts.
- The tool displays **UCH programming completed, please start key programming procedure**, the UCH is coded. You must now enter key programming mode to allocate the other keys (maximum of four). Several seconds may elapse before this message appears.

WARNING

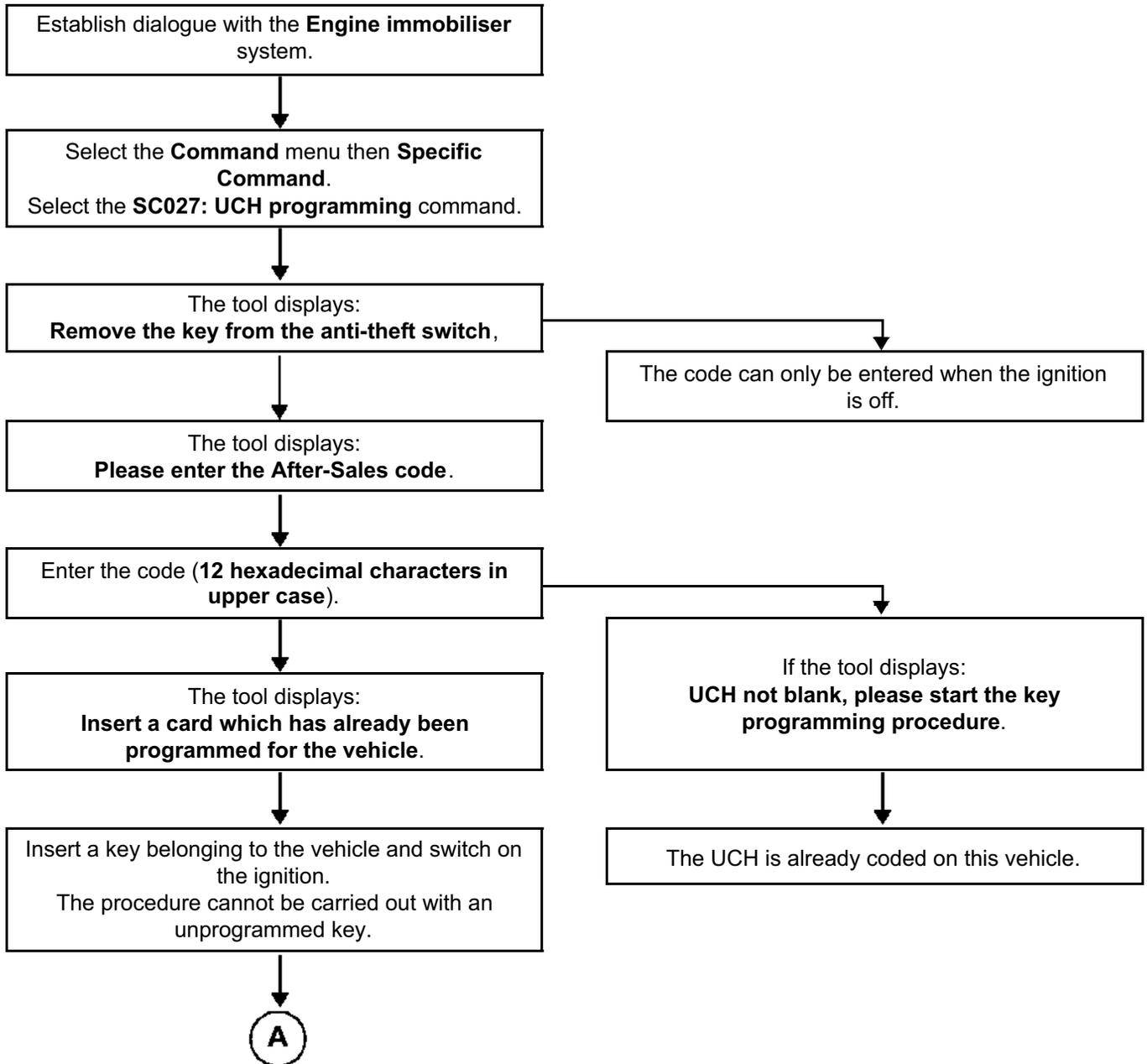
The maximum delay time between each operation is **5 minutes**, otherwise the procedure is cancelled.

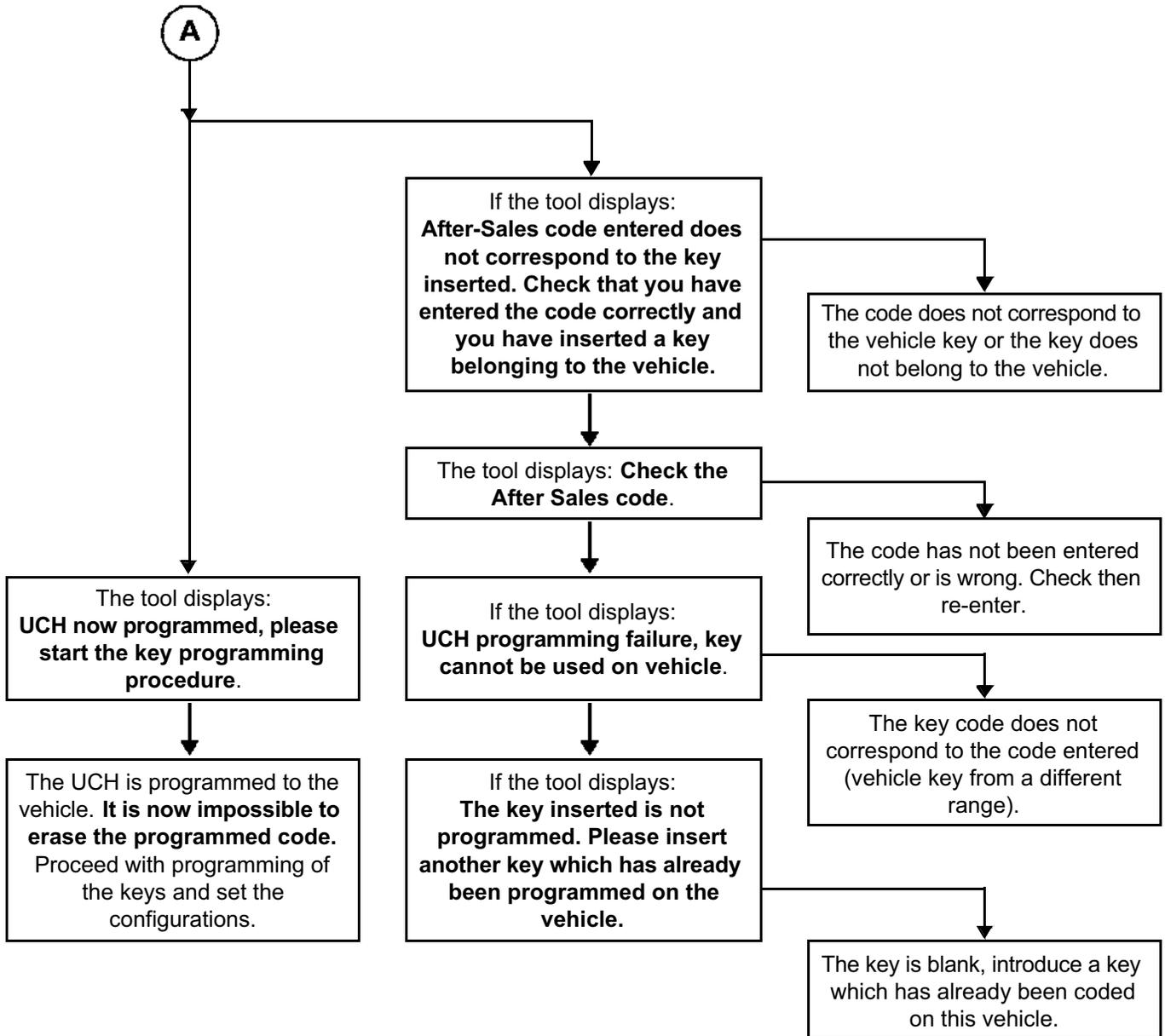
SPECIAL CASES

If the screen displays:

- **The After-Sales code entered does not match the key inserted. Check that you have entered the correct code and that you have inserted a key'** the code does not match the key or the key does not belong to the vehicle.
- **The UCH is not blank. Please start the key programming procedure:** The UCH has already been programmed for this vehicle.
- **Check the After-Sales code:** the code entered is incorrect. Check, then try entering the data again,
- **UCH programming failure, key cannot be used on this vehicle:** the key code does not correspond to the code entered (the key belongs to a vehicle from a different range).
- **The key inserted is blank. Please present another key which has already been programmed to this vehicle:** the key is blank, present a key which has already been coded on this vehicle.

UCH PROGRAMMING PROCEDURE





KEY PROGRAMMING PROCEDURE

WARNING

If none of the keys are available, a reallocation procedure will have to be carried out for all keys.

- Establish dialogue with the **Immobiliser** system.
- From the "**Command**" menu, select "**Specific Command**", select the "**SC028: card/key programming**" line and press Enter.
- The tool displays "**Remove the key from the anti-theft device**".
- The tool displays **Please enter the After-Sales code**. With the ignition off, enter the secret After-Sales code (twelve hexadecimal digits) and press Confirm.
- The tool displays **Warning, keys not inserted will no longer be operational. Restart the procedure to reallocate them**: programming is in progress.
- The tool displays **Insert the key in the anti-theft switch and turn on the ignition, then press Enter**: switch on the ignition with a key from the vehicle or an unprogrammed key. The screen displays "**1 key programmed**", then press Enter, then "**Remove the key from the anti-theft switch**".
- The tool asks: "**Would you like to program another key?**"
- To assign additional keys, switch on the ignition for a few seconds with the other vehicle keys to be programmed (four maximum), then press enter. The screen displays "**2, 3 or 4 keys programmed**" then "**remove the key from the anti-theft device**".

WARNING

The additional keys must be old keys for the vehicle or new keys not coded.

- The tool displays **Writing data to memory**, the UCH is coded and the keys are programmed. This message is displayed for several seconds, before exiting the reallocation mode.

WARNING

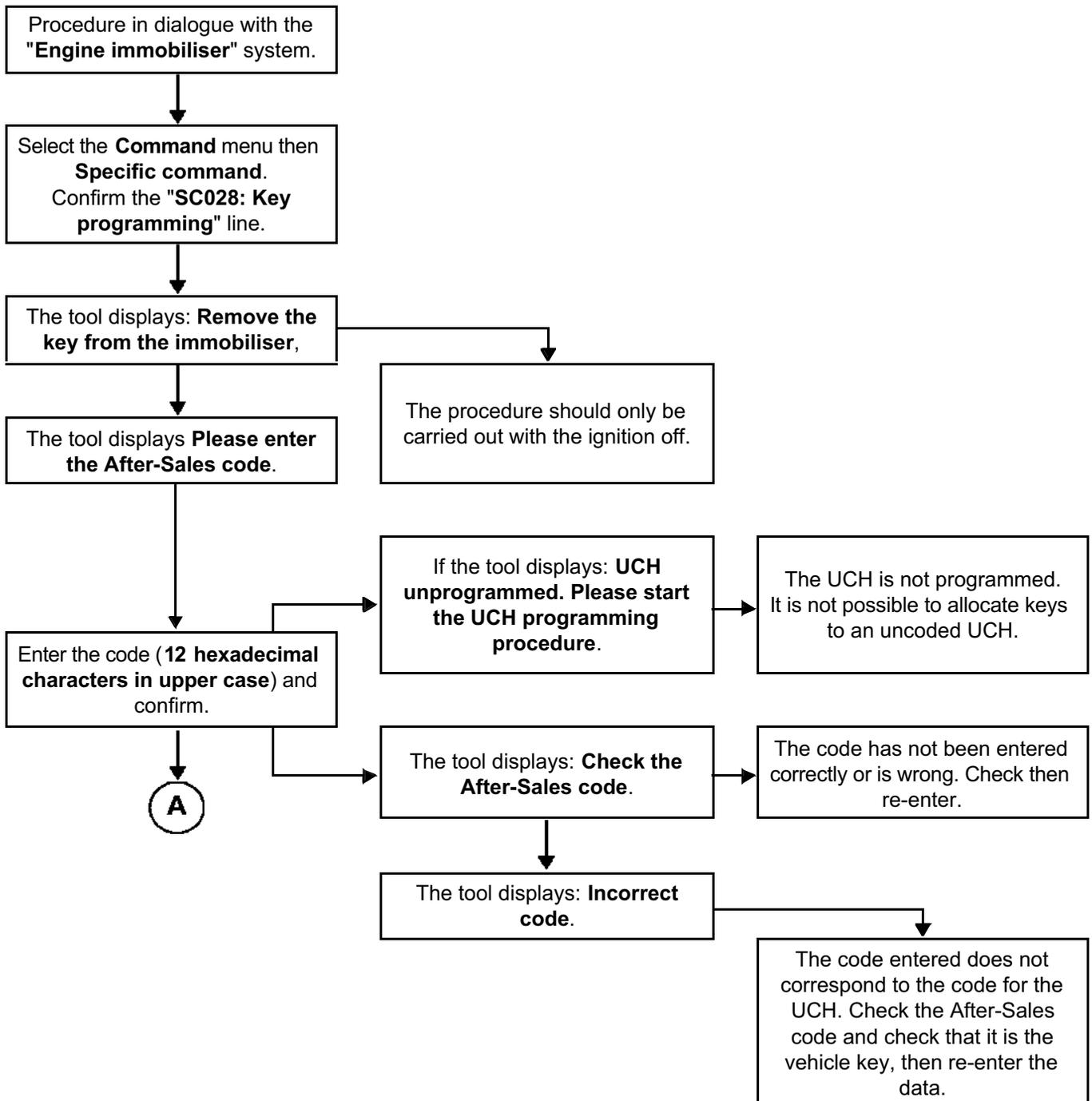
The maximum time between two operations is **5 minutes**, otherwise the procedure is cancelled and the tool displays the message "**Procedure interrupted: warning, the keys allocated to the vehicle are those that were allocated before starting the procedure. The keys submitted before the procedure was interrupted are no longer blank and can only be assigned to this vehicle**". This message also appears where dialogue with the UCH is lost or the battery power supply fails, for example.

SPECIAL CASES

If the screen displays:

- **The UCH is blank. Launch the UCH programming procedure**: the UCH is blank. It is impossible to allocate keys to an uncoded UCH.
- **Check the After-Sales code**: the code entered is incorrect. Check, then try entering the data again,
- If the key does not correspond to the vehicle UCH, the tool will display "**Procedure cancelled: warning, the keys assigned to the vehicle are those that were assigned before the procedure was started. The keys submitted before the procedure was interrupted are no longer blank and can only be assigned to this vehicle**".

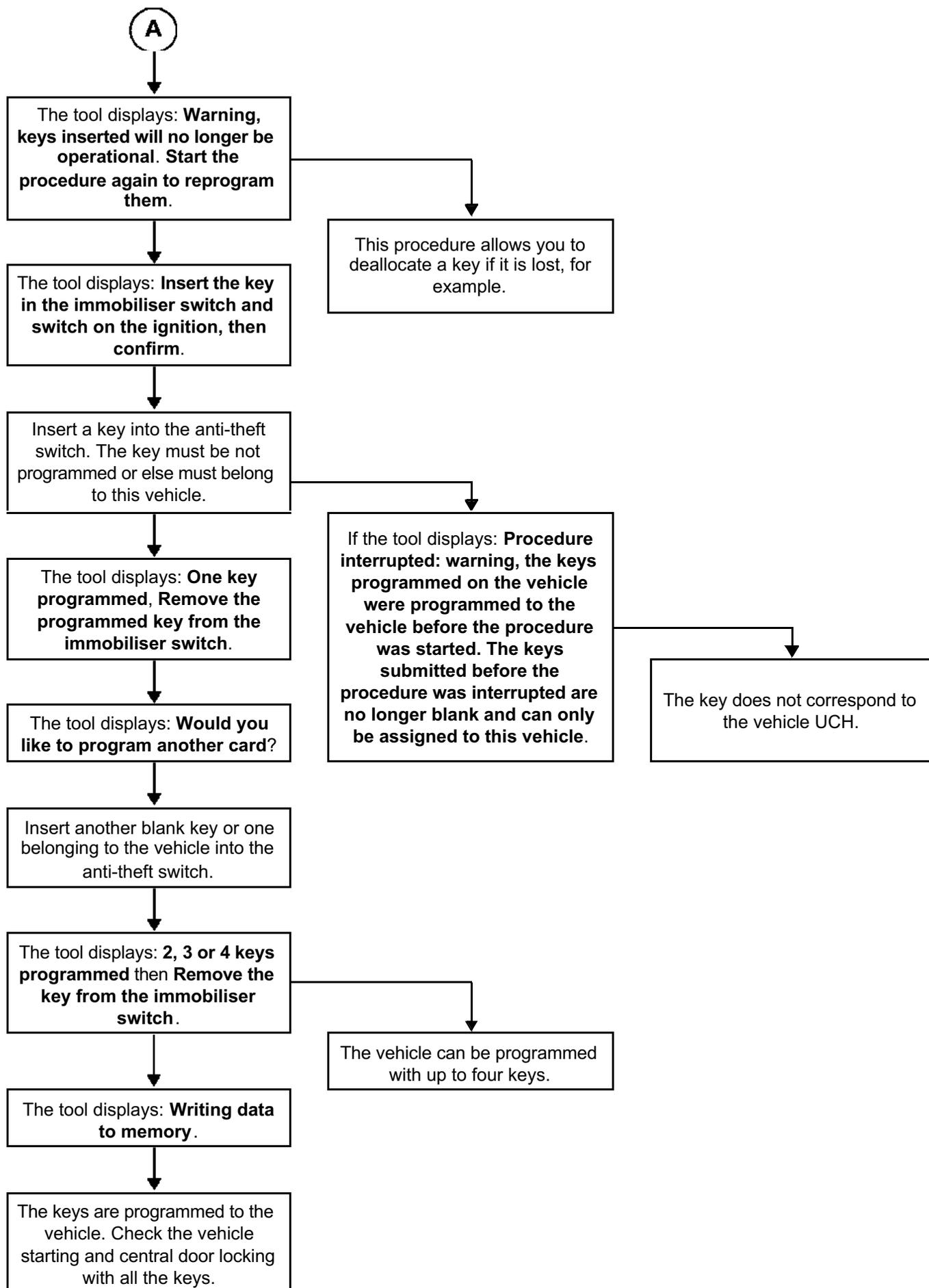
KEY PROGRAMMING PROCEDURE



IMMOBILISER

Coded key immobiliser system

82A



CODING THE INJECTION COMPUTER

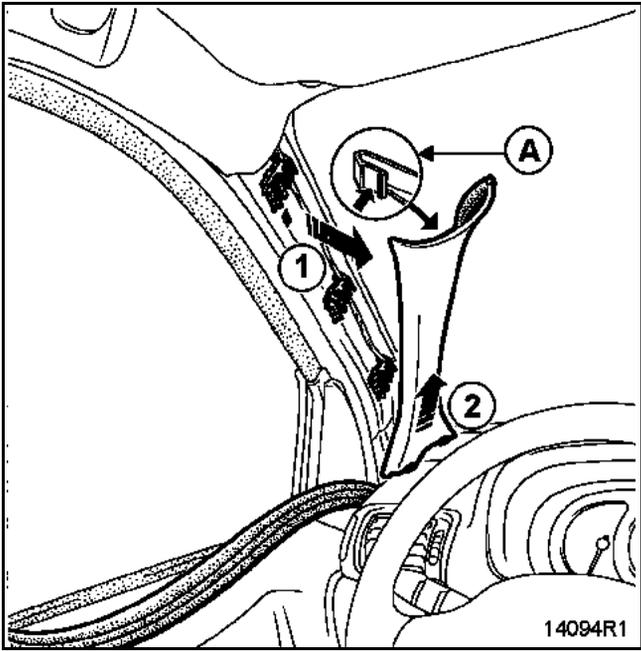
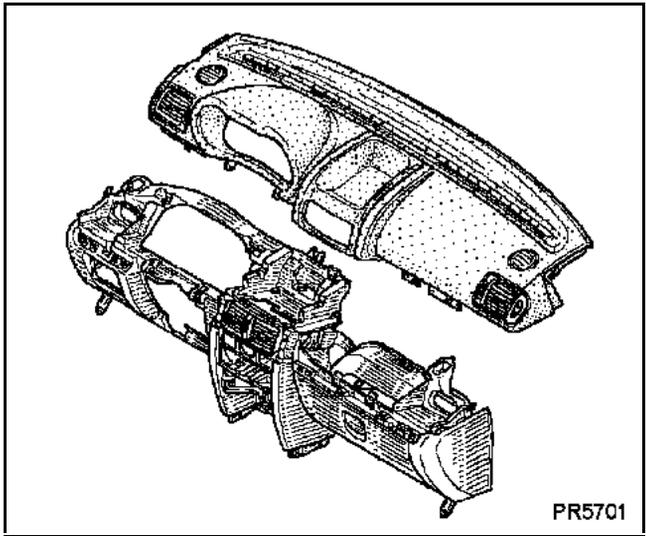
The injection computer is supplied uncoded. It must therefore be programmed with the code of the engine immobiliser system when it is fitted, to enable the vehicle to be started.

Switch on the ignition for a few seconds without starting the engine. Switch the ignition off, the immobiliser will be activated after a few seconds (engine immobiliser red indicator light flashes).

WARNING

- The injection computer retains the immobiliser code for life.
- The system has no security code.
- Never perform tests with computers borrowed from the Parts Department or from another vehicle, and which must subsequently be returned.
- These computers cannot be coded again.

Tightening torques	
steering wheel bolt	4.4 daNm
passenger airbag module mounting bolt	0.6 daNm



REMOVAL

IMPORTANT
Never handle pyrotechnic systems (airbags or pretensioners) near to a heat source or a flame, as they may be triggered.

WARNING
The airbag computer must be locked before starting removal. Locking the airbag computer also unlocks the electric steering column lock.

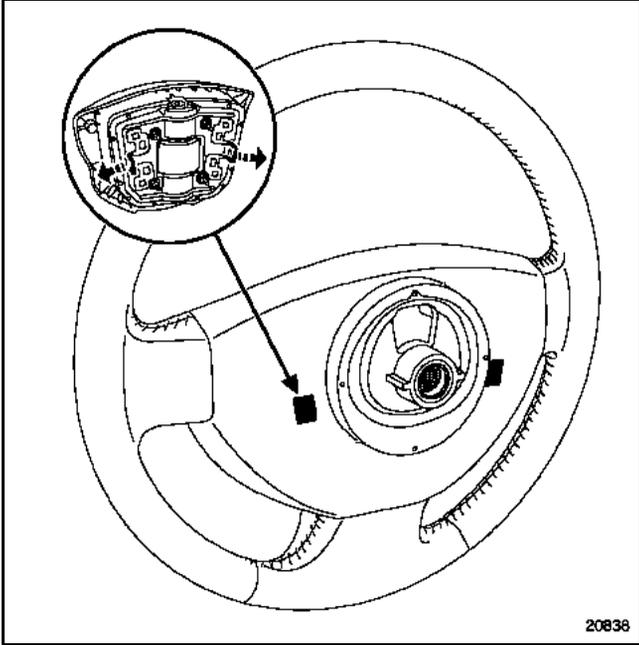
Disconnect the battery.

Partially remove the door seal.

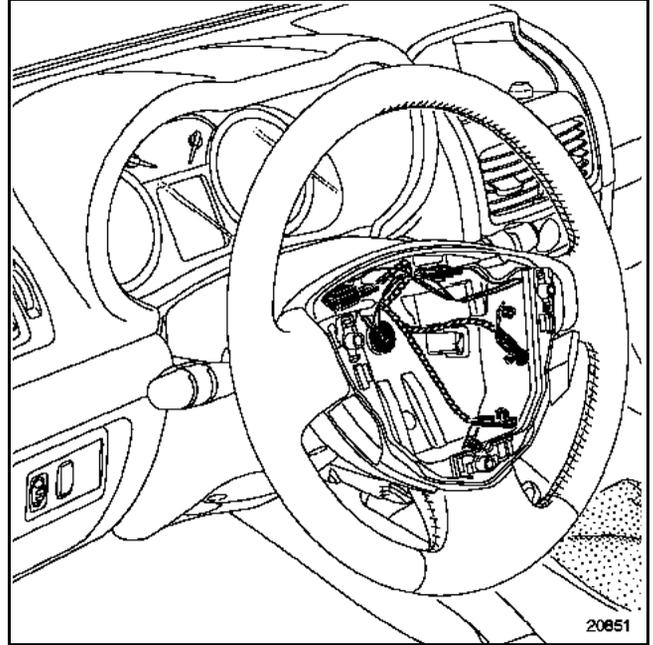
Gently move the upper part of the trim to one side and press the retaining clip (A).

Unclip trim (1).

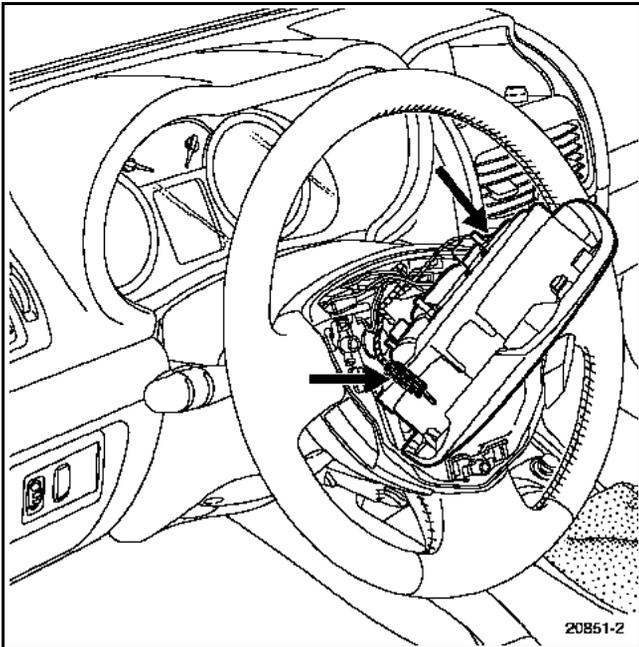
Release the trim from its housing on the dashboard (2).



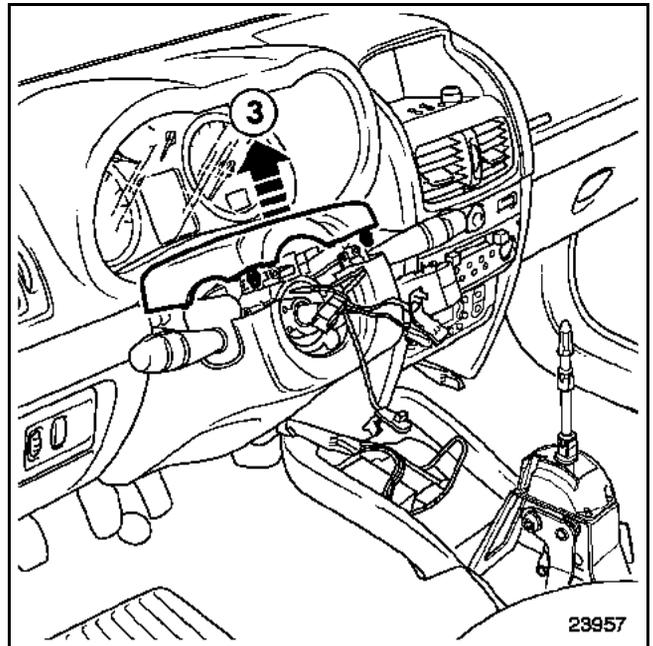
Unclip the airbag from the steering wheel using a flat screwdriver.



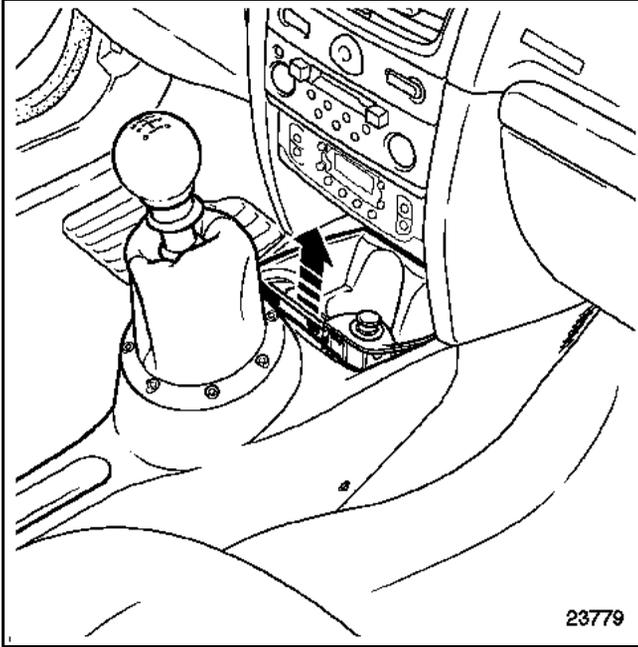
Remove:
– the steering wheel bolt,
– straighten the wheels and then remove the steering wheel.



Disconnect the two generator power supply connectors.



Remove:
– the steering column upper half cowling, as shown above (3).

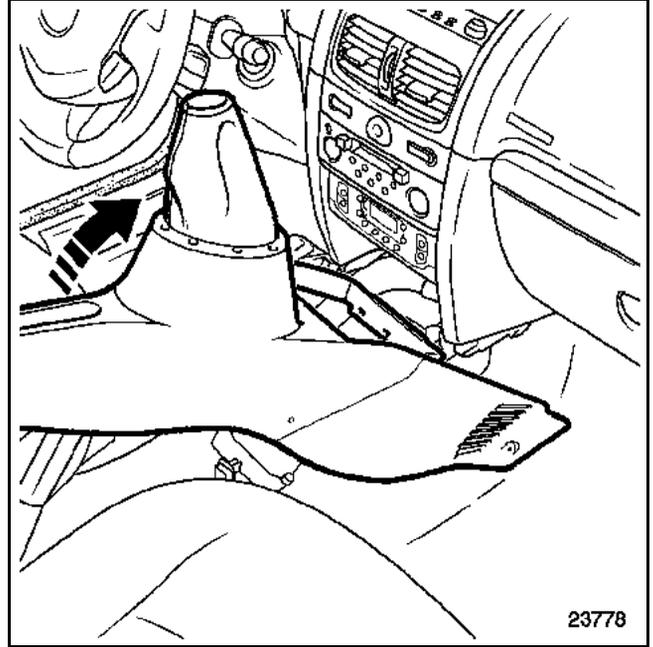


23779

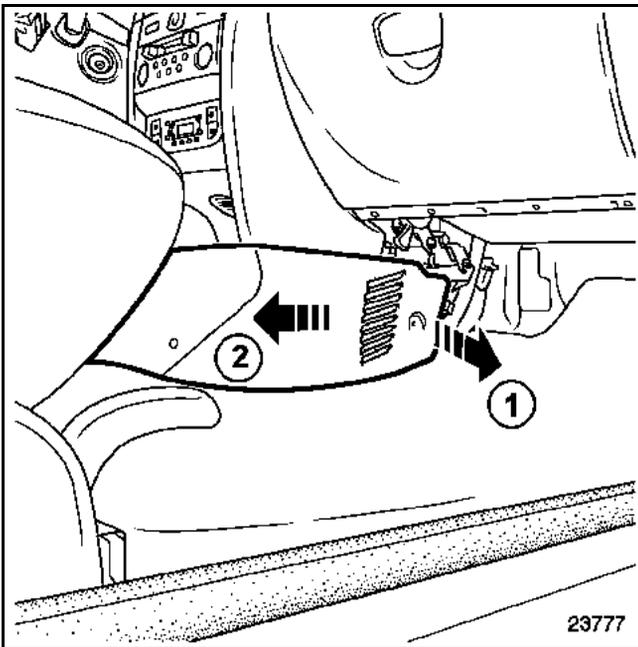
Remove the ashtray.

Release:

- the cigarette lighter support from its housing, then disconnect the connector,
- the gear lever gaiter.



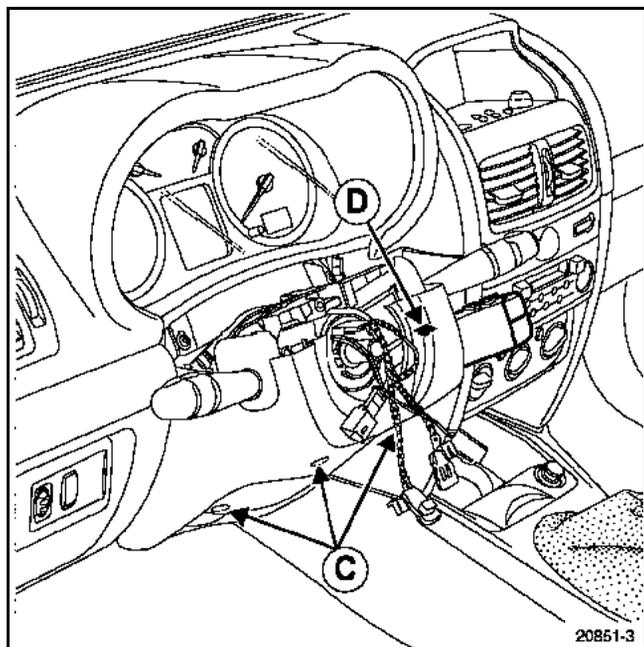
23778



23777

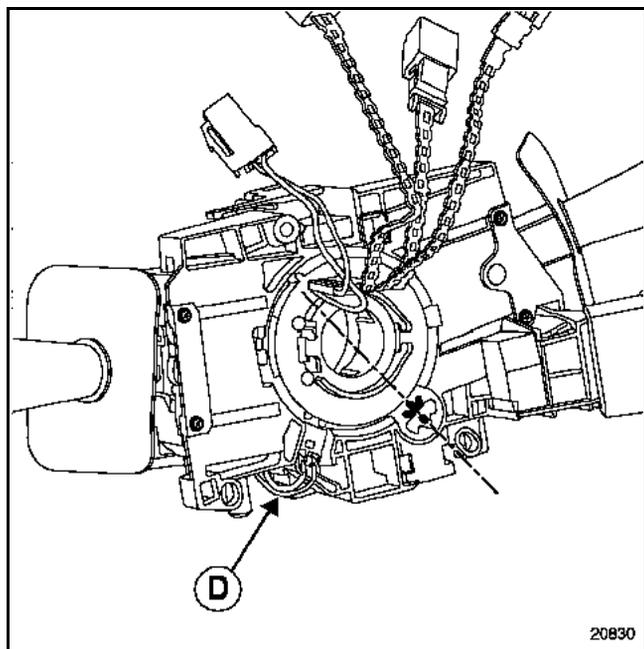
Release:

- the front of the console (1) and (2), and release it as shown below.



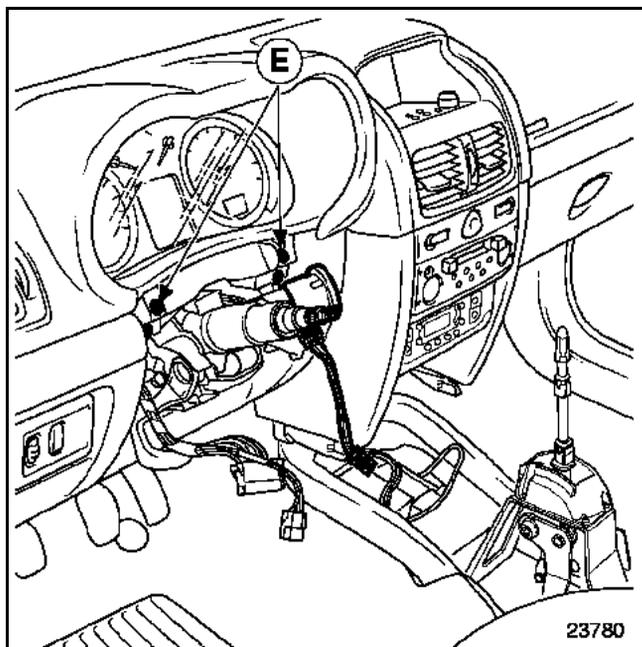
Press on clip (B) with a flat screwdriver, to release the radio finger-tip control.

Remove the three mounting bolts (C) from the steering wheel lower half cowling.



Remove the mounting bolt (D) from the rotary switch assembly.

Disconnect the connectors (windscreen wiper, lighting controls) and the rotary switch connectors (airbag and cruise control).



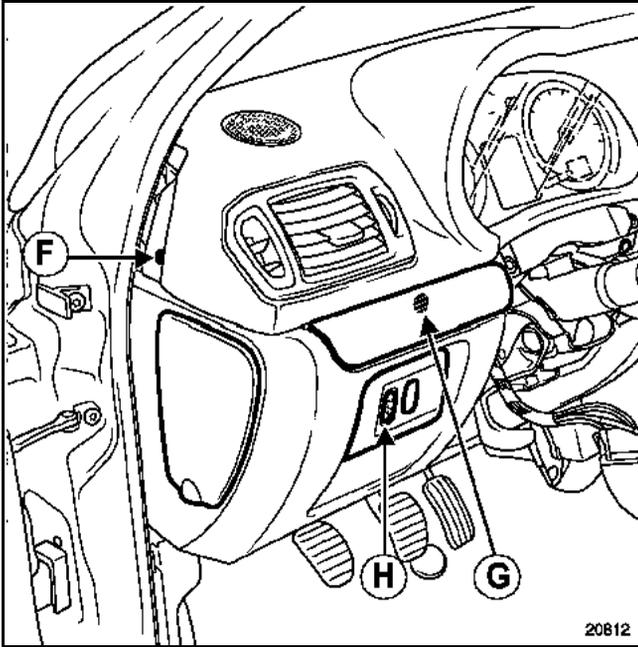
Remove:

- the rotary switch,
- the four screws (E),
- the transponder ring.

INSTRUMENT PANEL

Dashboard

83A



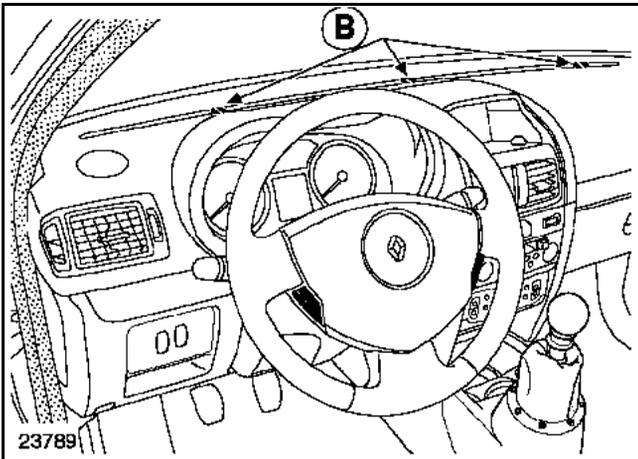
Remove the two clips (F).

Remove the cover by means of the tool (Car. 1597).

Remove bolt (G).

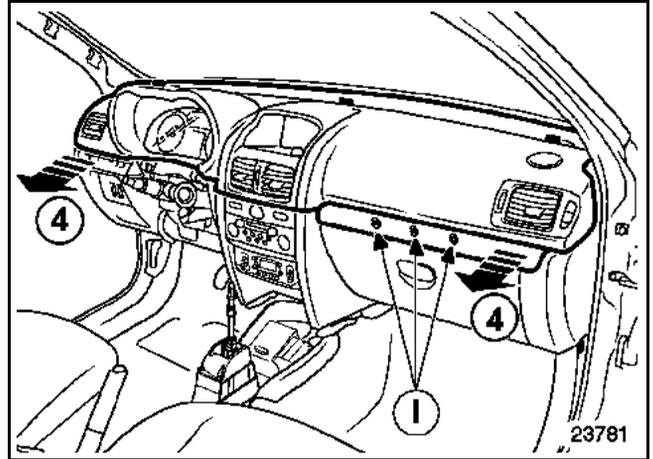
Release the headlight adjustment support (H) by means of the tool (Car. 1597).

Disconnect the connectors.



Remove:

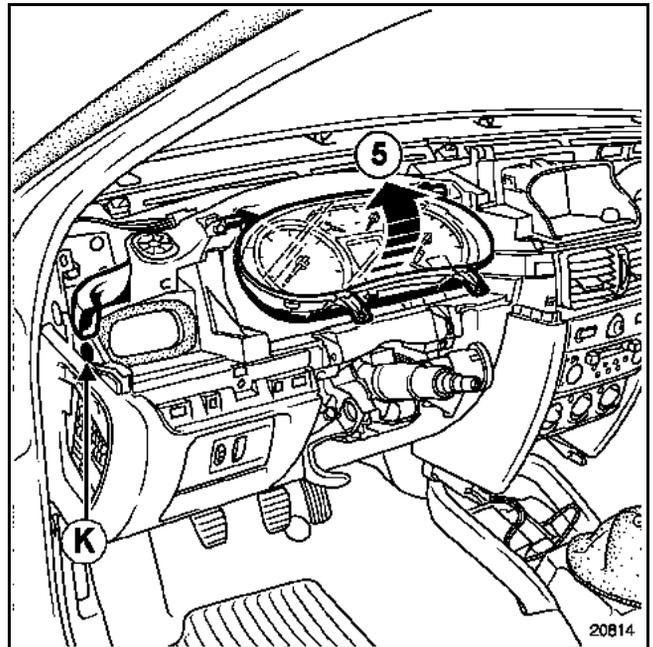
- the fuse box access flap,
- the three upper bolts (B).



Remove:

- the cover by means of the tool (Car. 1597),
- the three bolts (I).

Remove the top of the dashboard (4).



Remove:

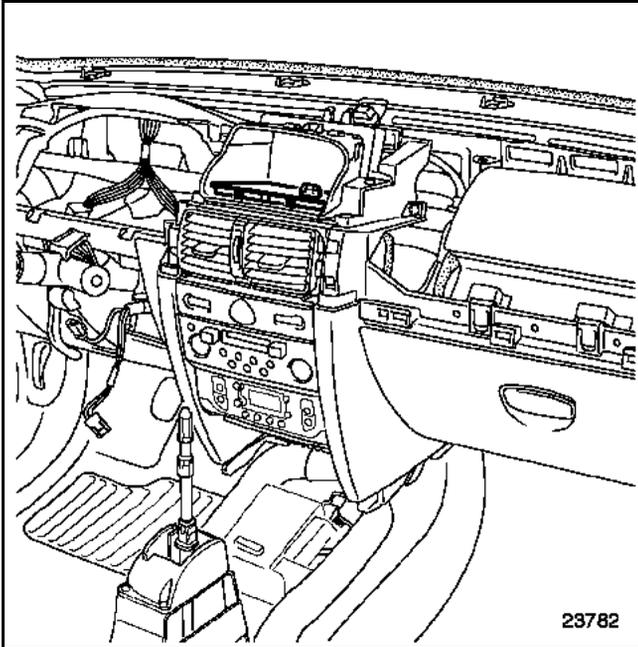
- the two clips (K), then release the air pipes,
- the instrument panel (5).

Disconnect:

- the connectors from the two tweeter speakers,
- the glove compartment light.

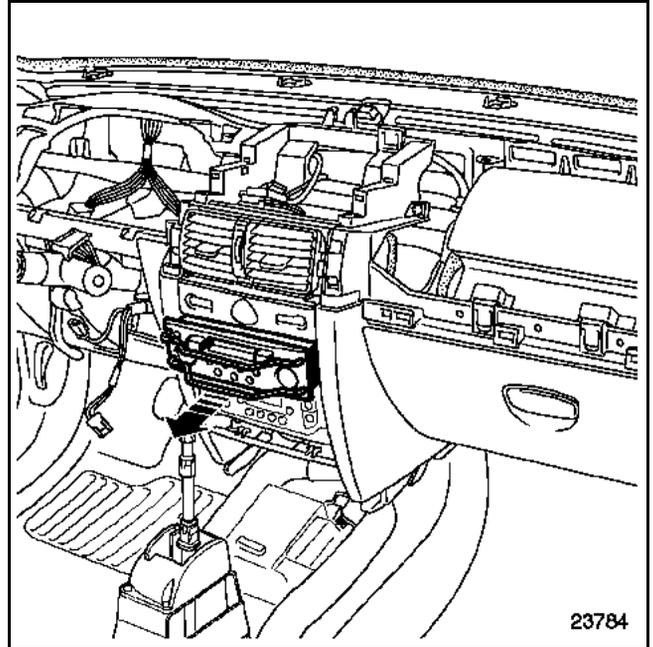
INSTRUMENT PANEL Dashboard

83A



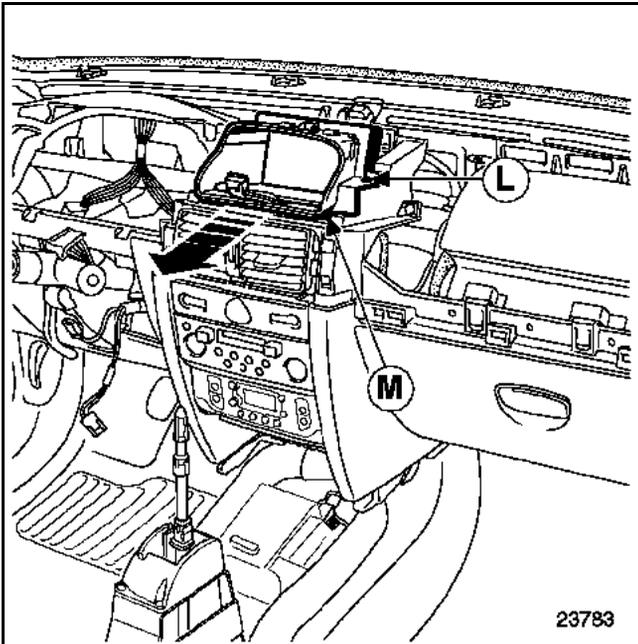
Unclip the coin tray by means of the tool (Car. 1597).

Disconnect the connectors.



Remove the radio with tool (MS. 1373).

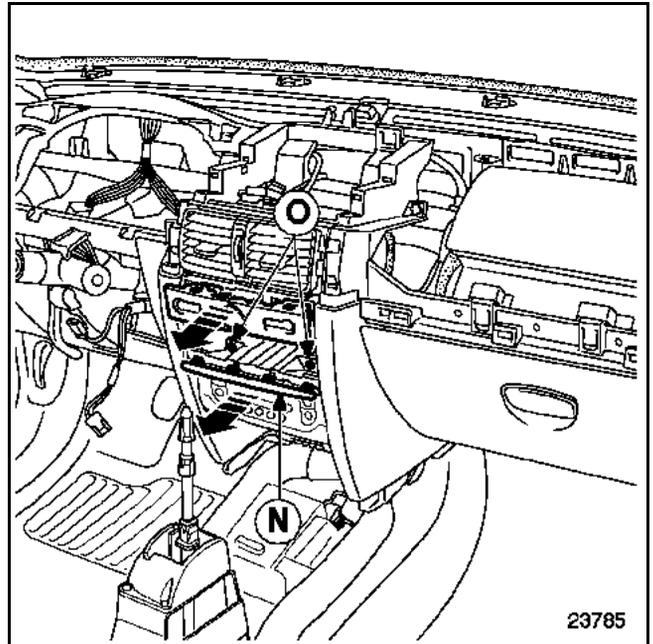
Disconnect the connectors.



Remove the two bolts (L).

Exert pressure on the two clips (M) and release the display.

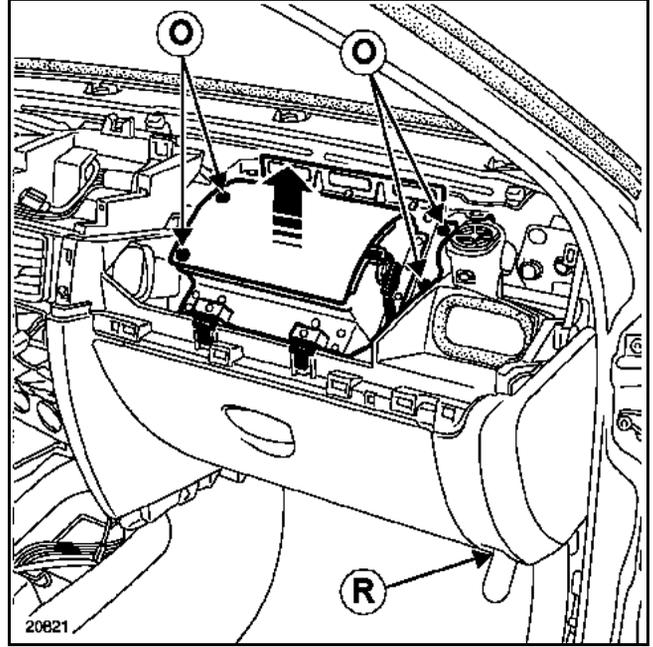
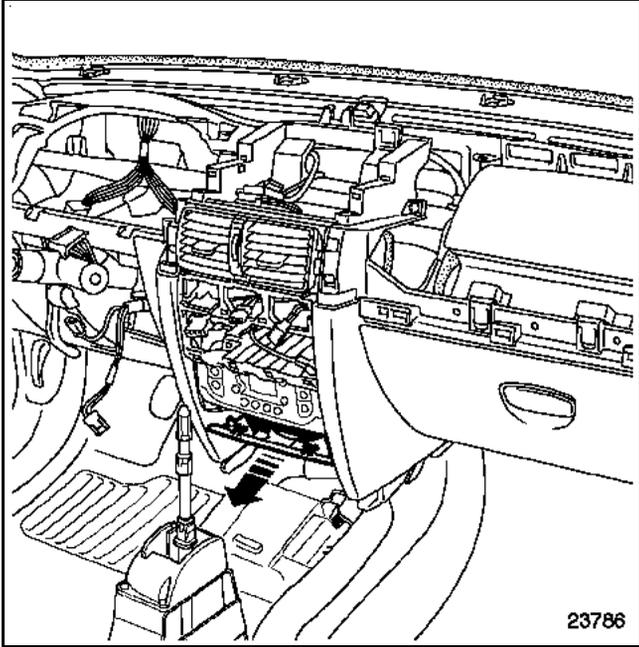
Disconnect the connector.



Unclip:

- the switch support and disconnect the connectors,
- the cover (N).

Remove the two mounting bolts from the heater control unit (O).

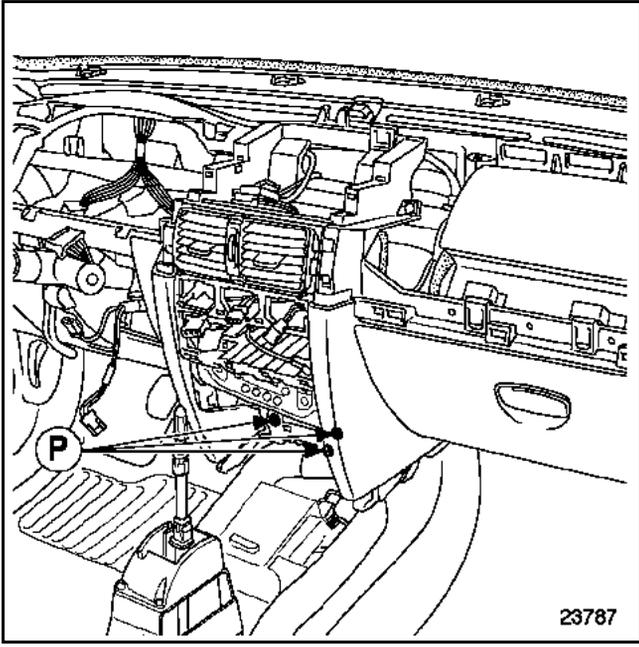


PASSENGER AIRBAG REMOVAL

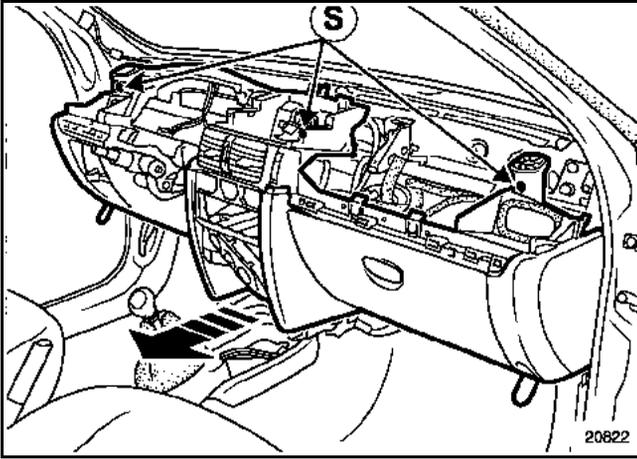
Disconnect the two airbag connectors.

Remove:

- the four mounting bolts (O), then release the airbag as shown above,
- the two lower bolts (R).



Remove the three bolts (P).



Remove the three mounting bolts from the upper section of the dashboard (S).

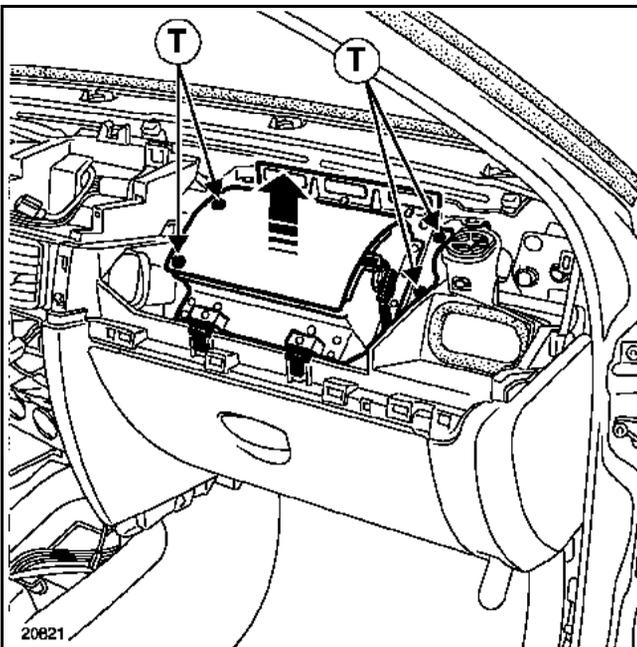
Lift the dashboard slightly to disengage the retaining pins on the mounting bolts (S).

REFITTING

Special notes on the passenger airbag

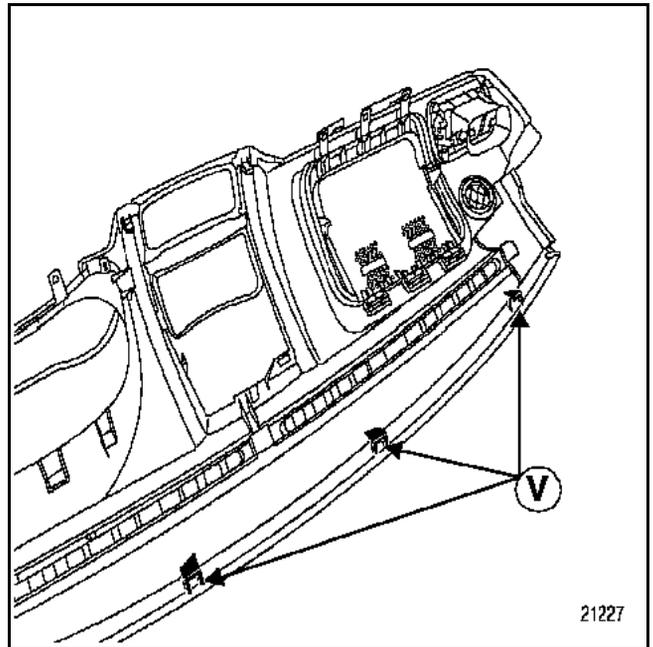
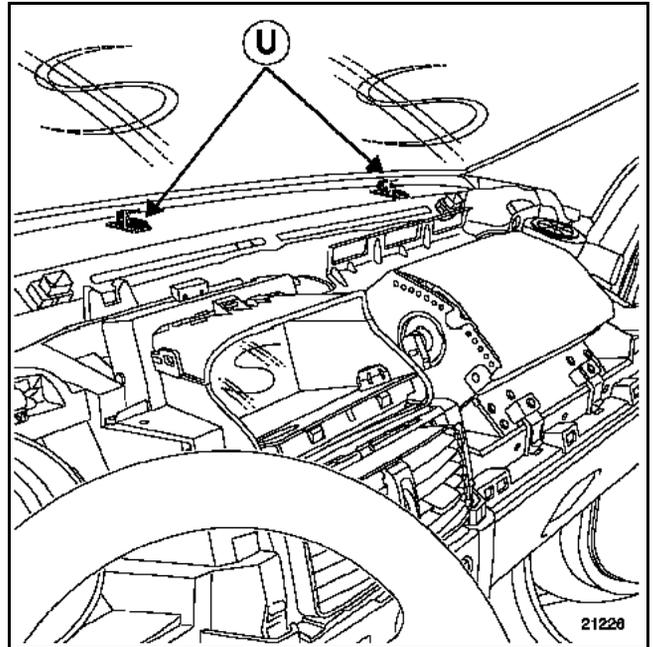
IMPORTANT

- Check for foreign bodies (bolts, clips, etc.) when fitting the airbag module.
- On the module side, make sure that the connector is properly clipped (powerful clip) and position the safety lock.



Position the mounting bolts (T) and tighten them to a torque of **0.6 daNm**.

Special note concerning the dashboard top



WARNING

Before refitting the dashboard top, it is essential to check that the retaining clips (U) and (V) are in sound condition.

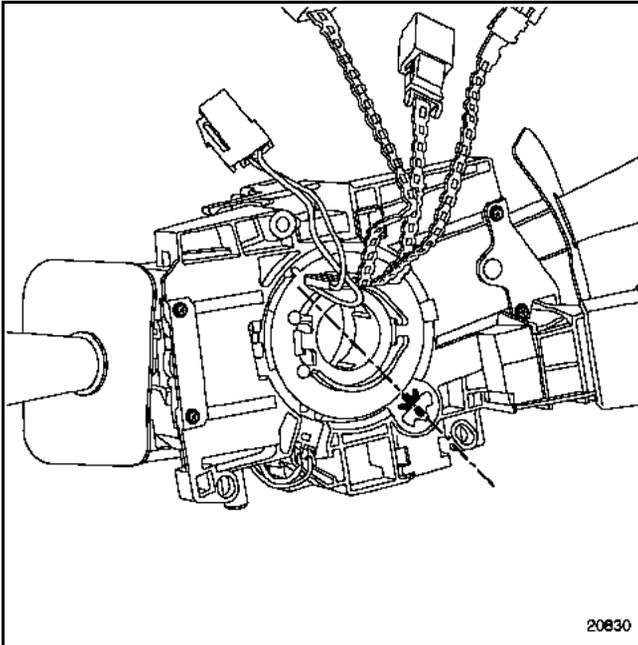
If the clips show the slightest trace of damage, the dashboard top must be replaced.

NOTE

The clips (U) are available from the Replacement Parts Store.

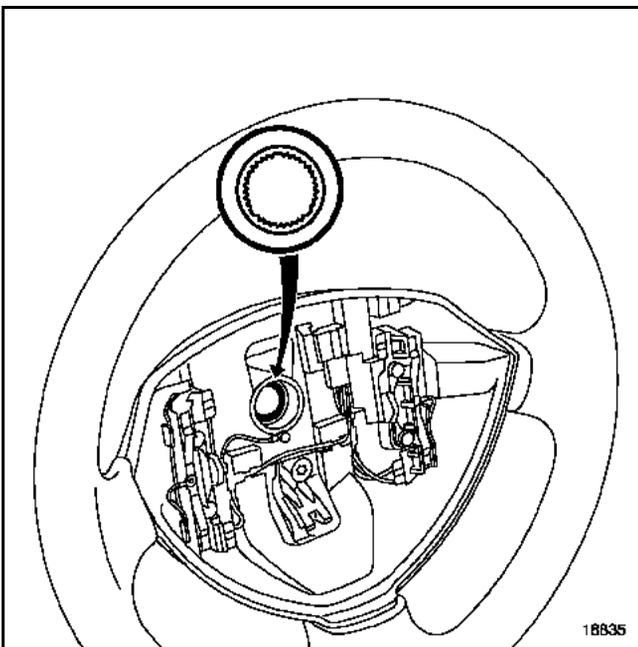
Special notes on the rotary switch

Ensure that the wheels are still straight.



Check that the rotary switch is correctly positioned by making sure that the mark 0 is located right on the steering column shaft.

Special notes on the steering wheel



WARNING

The steering wheel splines are made so that the wheel can be fitted in one position only. The steering wheel should be inserted freely into the splines.

Note:

The steering wheel bolt must be replaced and tightened to a torque of **44 N.m** whenever the steering wheel is removed.

Special notes on the driver's airbag

Connect the two airbag connectors and lock the safety clips.

Position the airbag on the steering wheel and press down on both sides to clip it in.

IMPORTANT

Before unlocking the airbag computer, test it using the diagnostic tool. If everything is correct, unlock the computer; if not, refer to the **Fault Finding** manual.

WARNING

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

When replacing a dashboard fitted with a passenger airbag, you must replace the original instructions sticker after refitting (on the side of the dashboard).

This sticker is available from the Replacement Parts Store (part number 77 01 207 257).

GENERAL INFORMATION

The instrument panel contains the following functions:

- Needle gauge functions
 - vehicle speed
 - tachometer
 - coolant temperature
 - fuel level
- audible function (ignition on)
 - indicators
 - "headlights on" reminder when a door is opened
 - automatic locking when driving confirmation
 - automatic headlight switch-on warning
 - cruise control indication, speed signal
- warning and indicator light function
- display function
 - oil level reading
 - odometer
 - total mileage
 - trip mileage
 - On-board computer
 - fuel consumed
 - average consumption
 - current consumption
 - fuel range
 - distance covered
 - average speed
 - speed setting for cruise control or speed limiting
(if the vehicle is fitted with cruise control/speed limiter)

Note:

The instrument panel cannot be diagnosed with the fault finding tools. It does however have a self-diagnostic mode.

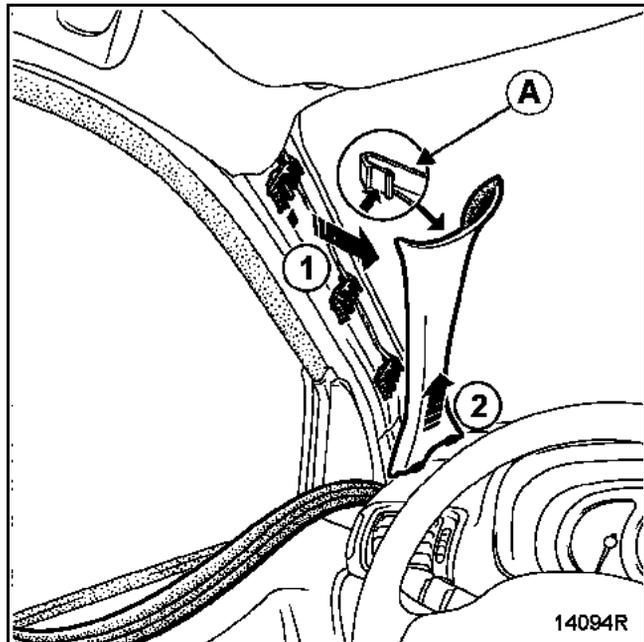
Note:

The instrument panel has specific configurations sent by the UCH. The instrument panel and the UCH can therefore not be replaced in a single operation.

REMOVAL

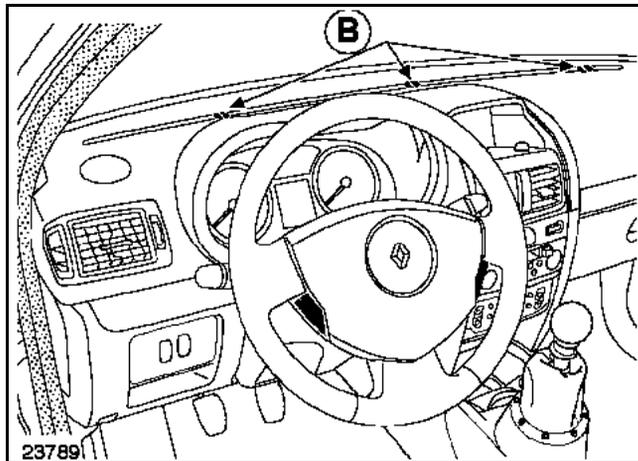
Disconnect the battery.

Partially remove the door seal.



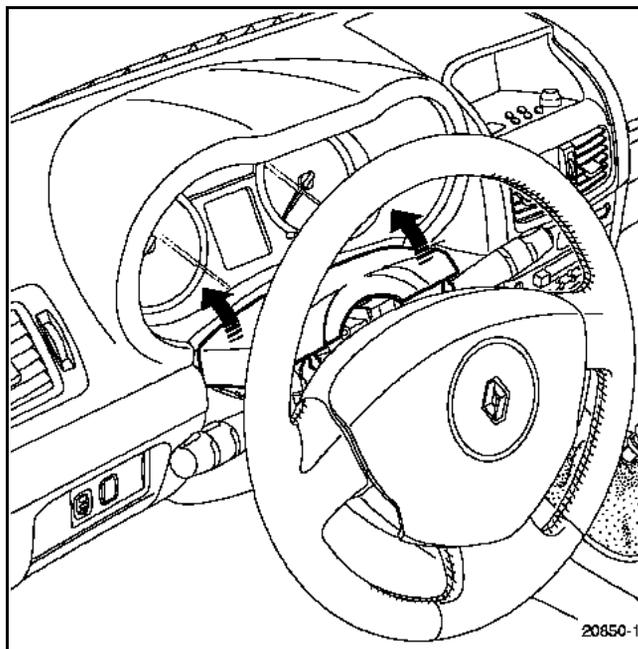
Remove the windscreen pillar trims, as follows:

- 1) gently move the upper part of the trim to one side and press the retaining clip (A),
- 2) unclip the trim from its housing by performing movements (1) and (2).



Remove:

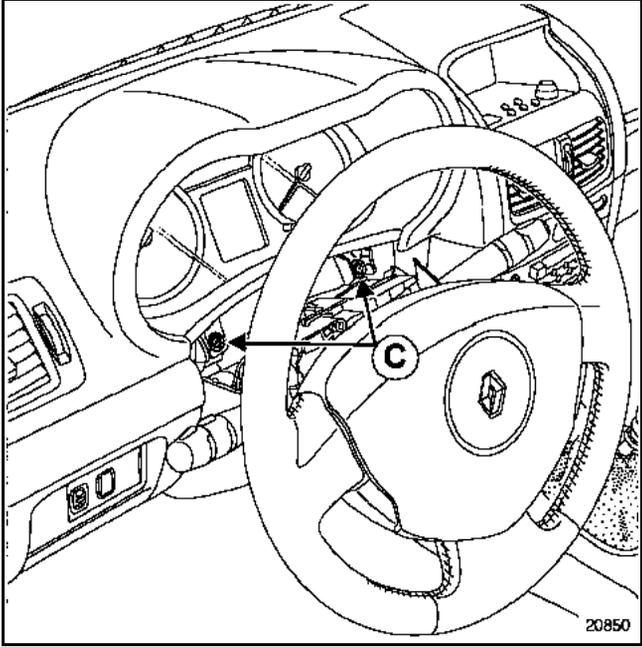
- the three bolts (B) attaching the upper section of the cap,
- the steering wheel upper half cowling, as shown below.



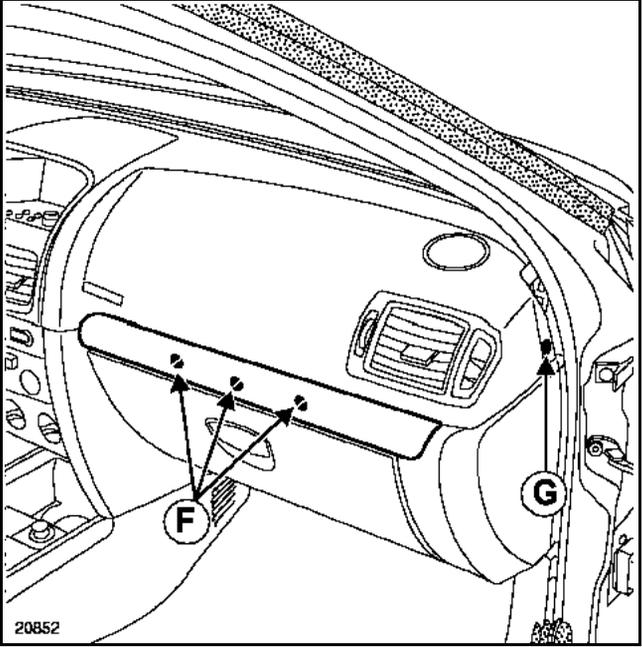
INSTRUMENT PANEL

Instrument panel

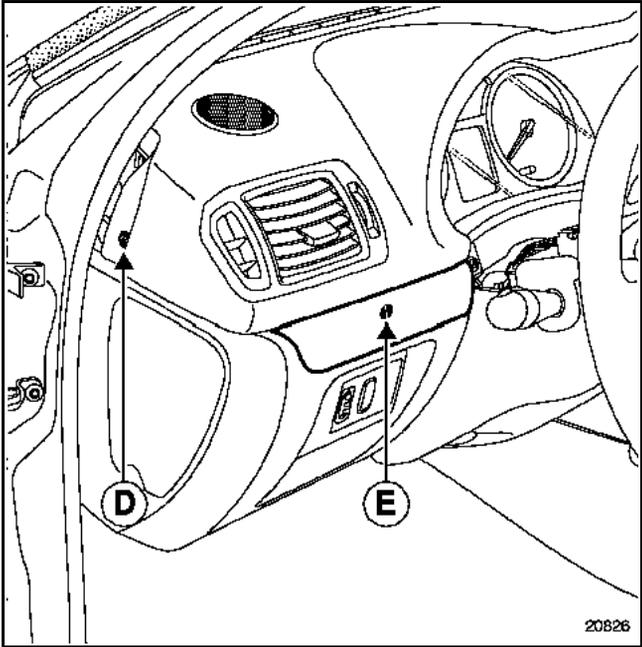
83A



Remove the two bolts (C) securing the instrument panel.



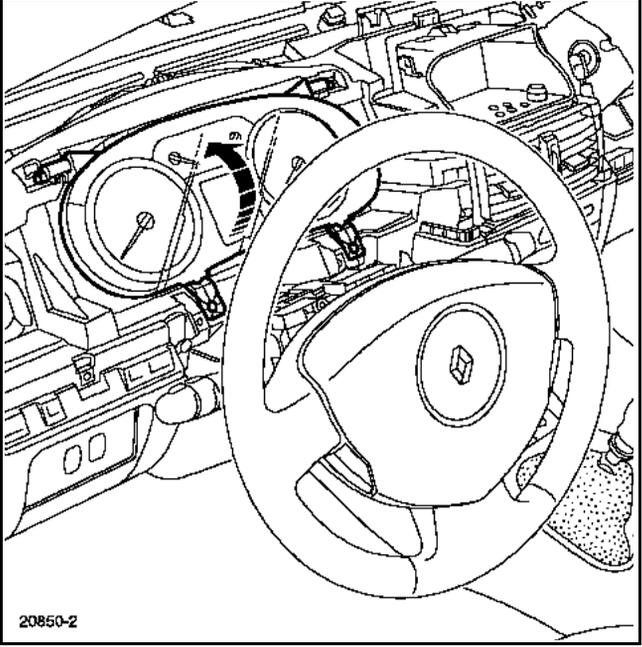
Remove the screw covers by means of the tool (Car. 1597).



Loosen the screws (D), (E), (F) and (G).

Release the top of the dashboard on the passenger side.

Turn the instrument panel around as shown below, then disconnect the connectors.



Instrument panel configuration

When the instrument panel is replaced it is configured automatically once the ignition is switched on. The UCH sends the configuration stored in the memory of the former instrument panel to the new instrument panel.

When the instrument panel has not been configured, an "**Instrument panel not configured**" fault will appear on the UCH.

Apply the following procedure using the diagnostic tool to change the instrument panel configurations:

- Test the multiplex network to check that it is in good condition, then exit the fault finding,
- Disconnect the battery (for at least 1 minute) then reconnect it,
- WITHOUT SWITCHING THE IGNITION BACK ON, test the multiplex network again (**ignore the segments that are faulty due to the ignition being switched off**),
- Establish a dialogue with the **UCH**,
- In the **Command, Specific command** menu, confirm **CF719 instrument panel type**,
- The tool displays "**are you sure you want to perform configuration?**",

YES or **NO**,

- **NO** exit procedure,
- **YES** The tool displays: "**Please switch off the ignition**",
- Switch off the ignition, then press Enter,
- Shows "**With**",
- "**ABS**" speed signal,
- Engine type "**Petrol**",
- LPG injection "**Without**"
- Electronic stability program system "**Without**"

When it is finished, the tool displays:

- "**Are the configurations correct?** "

YES or **NO**

If there is an error in operations, confirm "**NO**" to restart the procedure.

If the answer is "**YES**", switch off and restart the ignition twice to confirm the instrument panel configuration.

The tool displays: "**configuration complete**".

OPERATION OF THE DISPLAY

1 - Oil level reading

This function is displayed for approximately **30 seconds** when the ignition is switched on or after the engine is started.

If the level is between the permitted maximum and minimum, the display shows **oil OK**



13141a

If during this time, the **ADAC** or **RESET** buttons are pressed, the display shows **oil OK** then the oil level is indicated by squares. These disappear as the oil level drops and are replaced by dashes.



13141b

If the oil level is at a minimum when the ignition is switched on, the dashes and the word **oil** flash for **30 seconds**. The **service** warning light comes on and remains lit after the engine is started.



13141c

Note:

- under normal operating conditions, the oil level is only measured if the ignition has been switched off for over one minute; otherwise the old oil level value is redisplayed,
- however, when a fault in the gauge is detected, the display switches directly to the mileometer function when the ignition is switched on.

- Oil level irregularities are normal. Various parameters are involved:
 - parking on a slope,
 - too short a wait after running the engine for a short period of time (especially when the oil is cold).

2 - Odometer

Total mileage

The mileometer will be displayed approximately **30 seconds** after the ignition is switched on (after the oil level signal). Pressing the **ADAC** or **RESET** button reduces this display time.

Trip mileage

The trip meter is displayed instead in the place of the total mileage if the **ADAC** button is pressed briefly.

It is reset by pressing the **RESET** button. Resetting the trip mileometer is different to resetting the on-board computer.

Note:

Different instrument panels are required for a display in kilometres or miles.

3 - Trip Computer ("ADAC")

The various sequences of the on-board computer may be displayed instead of the mileage recorders by successively pressing the button on the end of the wiper stalk (**ADAC** button). It is reset by pressing the **RESET** button.

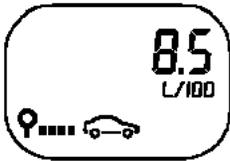
The information from the on-board computer is displayed after the trip meter as follows:

- **Fuel consumed** (in **l/100 km** or **mpg** *) since the last reset.



13141d

- **Average consumption** (in **L/62.14miles (100 km)** or **mpg***) since last reset.



13141e

This is only displayed after the car has travelled approximately **400 metres**. Below this, fixed dashes appear on the display.

This takes into consideration the distance covered and the fuel consumption since the last time the reset button was pressed.

* UK version.

- **Current consumption** (in **l/100 km**)



13141f

This is only displayed when the vehicle speed exceeds **18 mph (30 kph)**. Below this, fixed dashes appear on the display.

If the accelerator pedal is up and the speed exceeds **20 mph (30 kph)**, the current consumption is equal to **0**.

Note:

This function is not available on the UK version.

- **Estimated range with remaining fuel** (in **km** or **miles***)



13141g

This is only displayed after the car has travelled approximately **400 metres**. Below this, fixed dashes appear on the display.

The distance remaining is calculated by taking into account the distance travelled, the amount of fuel remaining in the tank and the fuel consumed.

Note:

The range remaining is not displayed when the low fuel warning light is lit.

- **Distance travelled** since the last reset (reset of the "Trip Computer").



13141h

- **Average speed** since the last reset.



13141j

This is displayed after the car has travelled approximately **400 metres**. Below this, fixed dashes appear on the display.

This is obtained by dividing the distance travelled by the time elapsed since the last time the reset button was pressed.

The time base is internal to the on-board computer.

- **Cruising speed**

If the vehicle has the cruise control or speed limiter function, the display shows the cruising speed in **kph** or **mph***. The screen returns to a **Trip Computer** page after approximately **15 seconds**.



13141k

If the function is not fitted, the **ADAC** page is inaccessible.

Every time the cruising speed is changed, this page replaces the **Trip Computer** page selected (see "**Cruise control/speed limiter**" section).

Note:

If the on-board computer displays flashing dashes, it has detected a fault. See "**Fault finding sequence**".

* UK version.

FAULT FINDING PROCEDURE

To access the fault finding procedure, press and hold the **ADAC** button on the end of the wiper stalk, with the ignition on but the engine off.

- All the warning lights light up and the needles on the four gauges move in steps.
- The **liquid crystal display** test appears.



13141l

All the segments on the display should be lit up.

To go to the next test, press the **ADAC** button.

- The **amount of fuel** remaining in the tank test appears.



13141m

The value displayed should correspond to the amount of fuel remaining in the tank in litres (even for the UK version).

To go to the next test, press the **ADAC** button.

- The **fuel flow** in litres/hour test appears (engine running).



13141n

A value should be displayed when the engine is running.

To go to the next test, press the **ADAC** button.

- Viewing stored faults.



13141o

If the letter **t** is displayed, this means that an **injection** signal fault has been stored for at least **4 seconds**.

If the letter **J** is displayed, this means that a fault has been detected on the fuel gauge (disconnected for more than **100 seconds**). The resistance should be between **5** and **350 Ω**.

If the letter **d** is displayed, this means that an **injection** signal fault has been detected

If the letter **h** is displayed, this means that an oil level sensor fault has been detected. The resistance should be between **6** and **20 Ω**.

If only fixed dashes are displayed, this means that no faults have been detected.

Press the **RESET** button to exit the fault finding procedure and erase any stored faults.

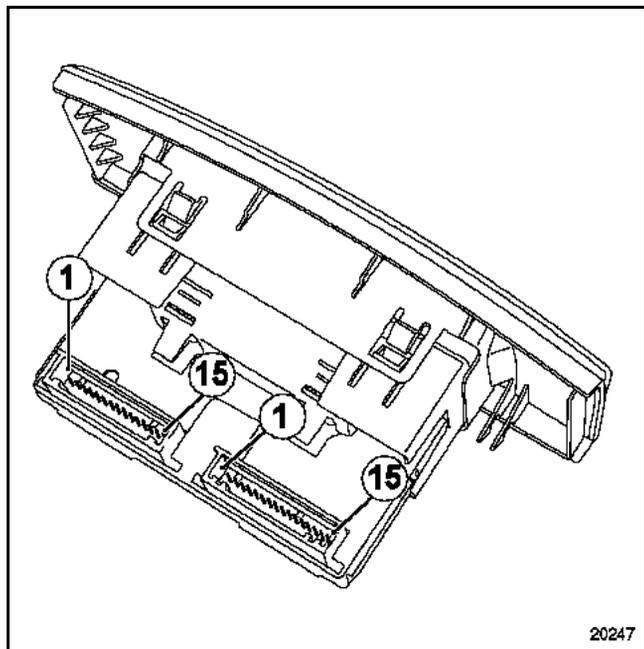
Note:

- The on-board computer shows a fault by displaying flashing dashes.
- If no information is received from the injection computer via the multiplex network, the rev counter, current consumption and fuel range functions will not work.
- If no information is received from the ABS computer via the multiplex network, the mileometer and mileage to next oil change functions will not work.

INSTRUMENT PANEL Display

83A

CONNECTION



Red 15-track connector

Track	Description
1	Not used
2	Not used
3	Not used
4	Not used
5	Not used
6	Not used
7	Not used
8	Not used
9	Audio equipment control connection (track B1)
10	Audio equipment control connection (track A3)
11	Audio equipment control connection (track B2)
12	Audio equipment control connection (track B3)
13	Audio equipment control connection (track A2)
14	Audio equipment control connection (track A1)
15	Not used

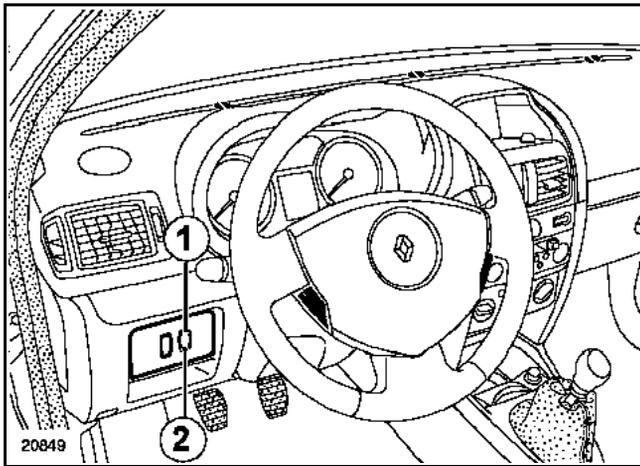
Grey 15-track switch

Track	Description
1	External temperature
2	External temperature
3	Not used
4	Not used
5	Earth
6	Lighting
7	Light supply
8	+ accessories
9	+ battery
10	External temperature output
11	Earth (radio track 6)
12	Radio on signal (radio track 5)
13	Radio connection (Track 1)
14	Radio connection (Track 2)
15	Radio connection (Track 3)

GENERAL INFORMATION

Those cars equipped with cruise control/speed limiter have two types of equipment:

- The **Cruise control** option allows the driver to maintain a speed he has selected. This function can be deactivated at any moment by depressing the brake pedal or the clutch pedal, or by using one of the system buttons.
- The **Speed limiter** allows the driver to set a speed limit. The accelerator pedal has no effect above the set speed. The speed limit selected can be exceeded at any time by pressing the accelerator pedal beyond its point of resistance.



- 1 Cruise control
- 2 Speed limiting

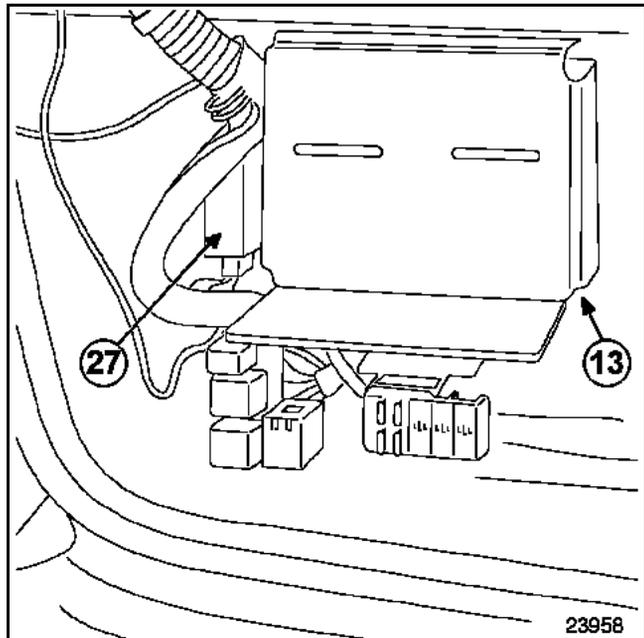
Both functions are controlled by the injection computer. The computer exchanges information with the instrument panel. It applies the reference values by acting on the motorised throttle body (see Section **17B**).

Note:

Flashing on the **trip computer** page warns the driver that the desired cruise control speed cannot be maintained (e.g. if the car is driving downhill).

DESCRIPTION

An interface unit (27), located near the injection computer (13), sends the speed signal to the instrument panel.



The instrument panel:

- displays the set value (cruise control or speed limiter) (see the "Instrument panel" Section),
- switches on a two-colour indicator light (green for cruise control, amber for speed limiter)

Each time these functions are switched on, the on-board computer display switches to the relevant page.

Note:

The cruise control and speed limiter functions have no fault warning light.

Controls:

- a three-position switch (off/cruise control/speed limiter),
- steering wheel switches that can be used to adjust the desired speed, cancel the function or recall the stored speed,
- accelerator and brake pedal switches used for injection and the brake lights,
- a clutch switch that is used only for the cruise control function.

Note:

The accelerator pedal must incorporate a point of resistance at the end of its travel.

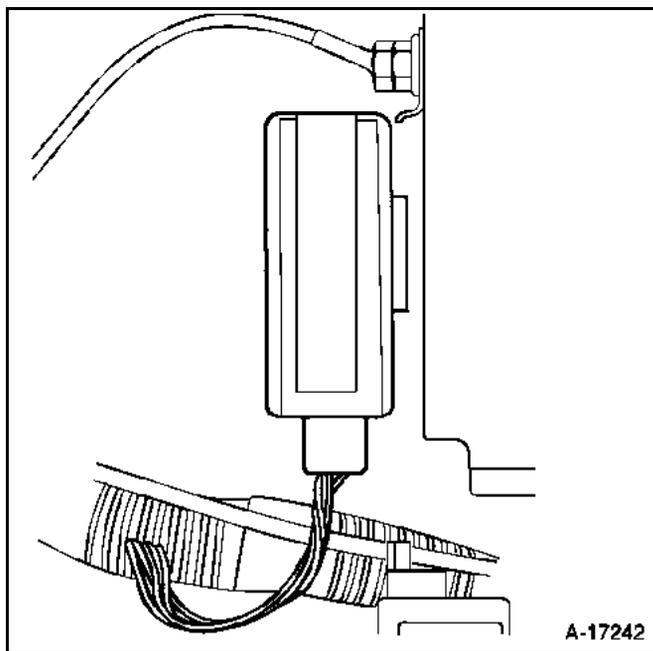
The injection computer:

- receives signals from the accelerator pedal,
- receives a signal from the brake switch,
- receives a signal from the clutch engagement switch,
- receives signals from the three-position switch,
- receives signals from the steering wheel switches,
- receives signals from the ABS computer (vehicle speed),
- sends signals to the instrument panel (recommended speed),
- controls the motorised throttle body.

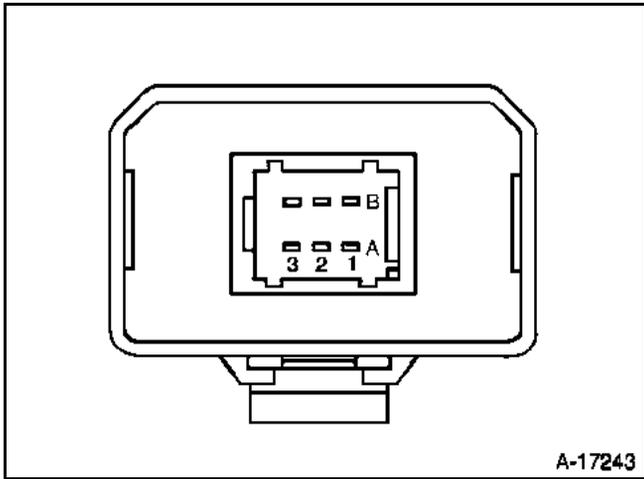
VEHICLE SPEED INFORMATION

The instrument panel (speedometer, mileometers and on-board computer) receives information about the vehicle's speed via an electronic speedometer interface unit located to the rear of the compartment, behind the engine, near the injection computer.

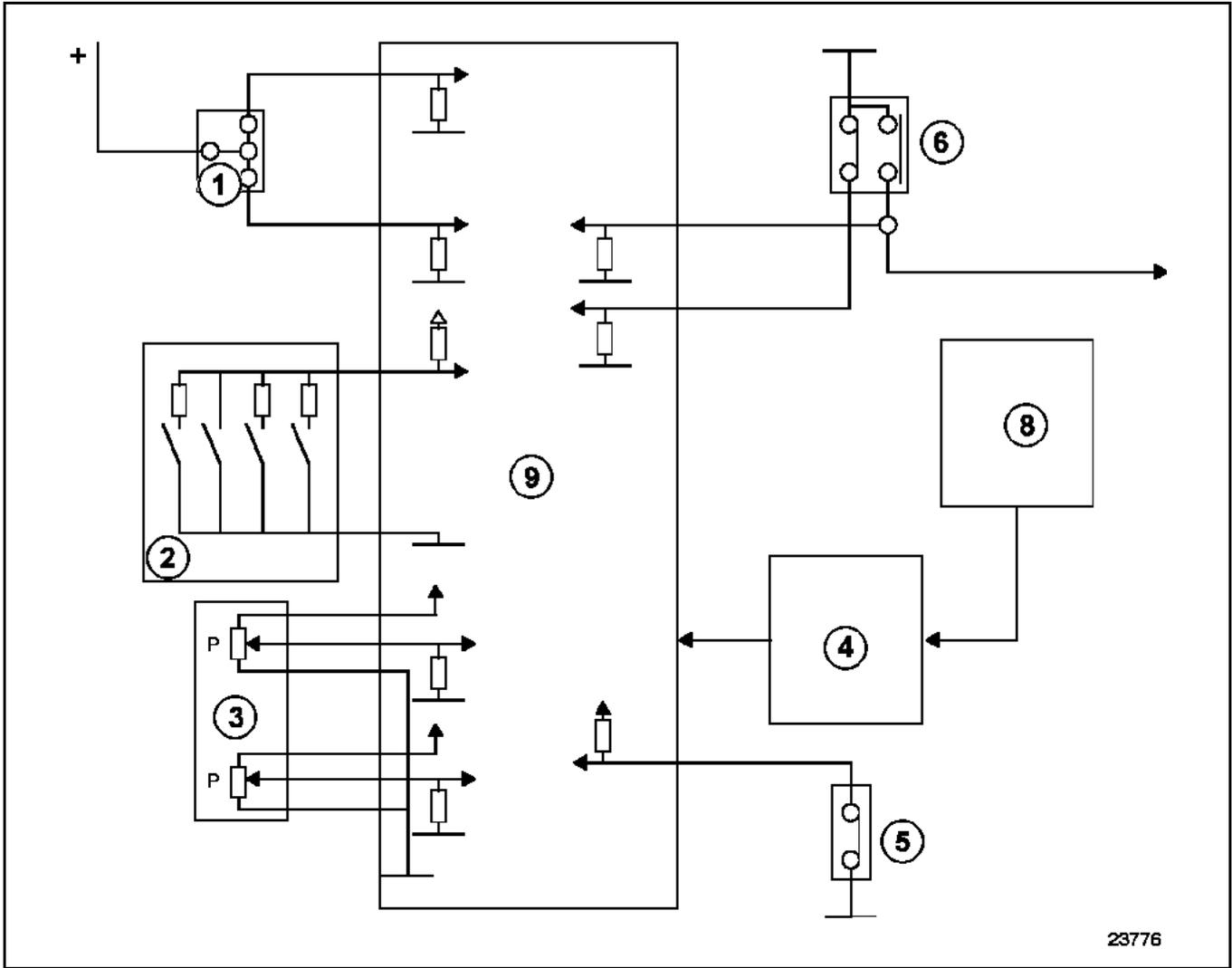
This information is also used by the injection computer.



CONNECTION



Track	Description
A1	Output
A2	Not connected
A3	Input 1
B1	Earth
B2	+12 V (Contact)
B3	Input 2



23776

List of components

- 1 Cruise control/speed limiter off switch
- 2 Steering wheel controls
- 3 Accelerator pedal
- 4 Instrument panel
- 5 Clutch contact (start of travel)
- 6 Brake pedal switch
- 8 ABS computer
- 9 Injection computer

CRUISE CONTROL OPERATION

Operation conditions:

- switch must be at **Cruise control**,
- vehicle must be in 2nd gear, detected by the computers,
- speed must be between **18 mph (30 kph)** minimum and **120 mph (200 kph)** maximum (for information purposes),
- green cruise control light must be switched on,
- press the "+" key, "-" or "**summary**".

Output conditions:

- accelerator pedal must be depressed
- brake or clutch pedal must be depressed
- the **0** key must be depressed
- switch must be at "**off**"
- injection computer must be switched on
- no gear should be engaged.

Depressing the accelerator pedal switches the system off temporarily. Release the accelerator to switch back on.

WARNING

After a disconnection of the engine injection computer, the cruise control/speed limiter system will become operational again only after about **15 minutes** with the ignition on.

Note:

The speed setting flashes to inform the driver that the set speed cannot be maintained.

SPEED LIMITER OPERATION

Operation conditions:

- switch must be at "**Speed limiter**"
- vehicle must be in 2nd gear, detected by the computers,
- speed must be between **18 mph (30 kph)** minimum and **120 mph (200 kph)** maximum (for information purposes),
- amber cruise control light must be switched on,
- press the "+" key, "-" or "**summary**".

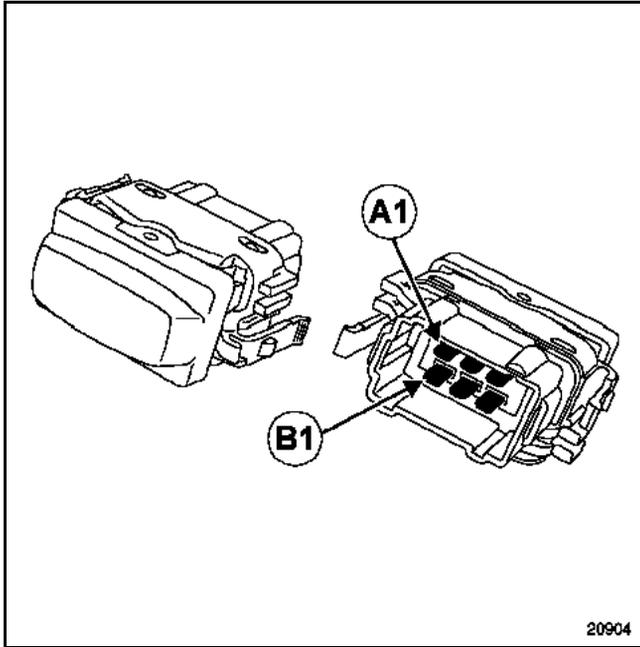
Output conditions:

- accelerator must be pressed quickly (beyond point of resistance)
- switch must be at "**off**"
- injection computer must be switched on
- the **0** key must be depressed

Depressing the accelerator pedal switches the system off temporarily. Release the accelerator to switch back on.

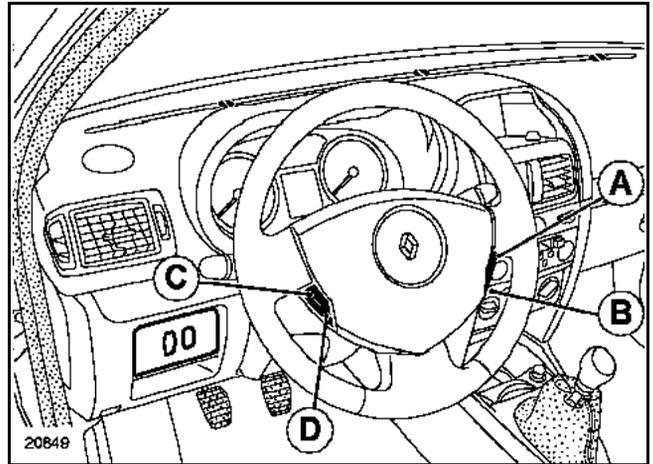
CONNECTION

Three-position switch



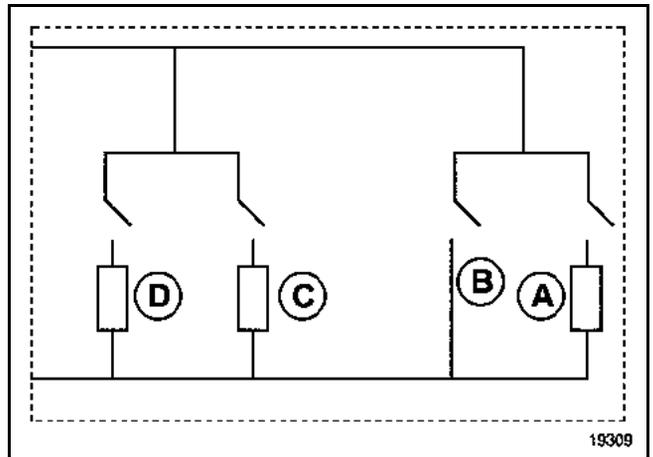
Track	Description
A1	+ Side lights
A2	+ After ignition (braking circuit)
A3	Cruise control On / Off switch
B1	Speed limiter On / Off switch
B2	Earth
B3	Not used

Steering wheel switches



- A "Resume" key = **approximately 900 Ω**
- B Cancel key = **0 Ω**
- C "+" key = **approximately 300 Ω**
- D "-" key = **approximately 100 Ω**

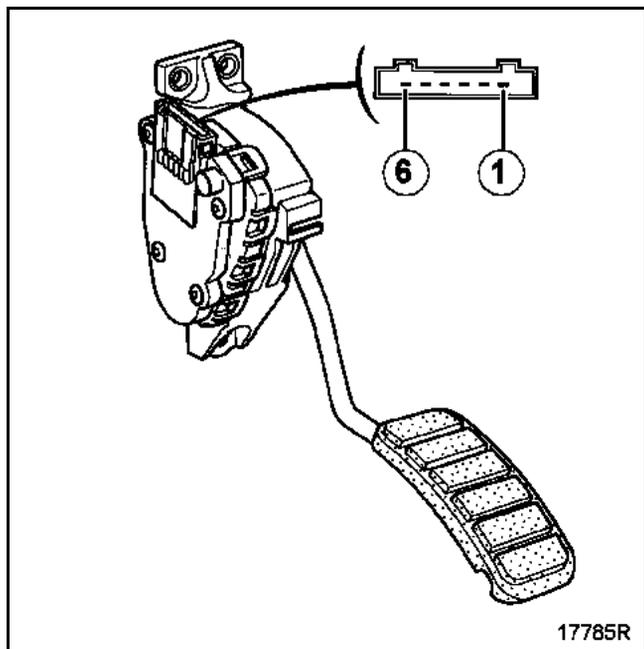
Note:
For information on removing the rotary switch, see the **Instrument Panel** Section.



You cannot replace the steering wheel switches.
The whole steering wheel must be replaced.

Accelerator pedal

The accelerator has a point of resistance for safety reasons.



Track	Description
1	Potentiometer earth 2
2	Potentiometer earth 1
3	Potentiometer pedal signal 1
4	Potentiometer power supply 1
5	Potentiometer power supply 2
6	Potentiometer pedal signal 2

Track 1 resistance = **1200 + 480 Ω** (for information)

Track 2 resistance = **1700 + 680 Ω**

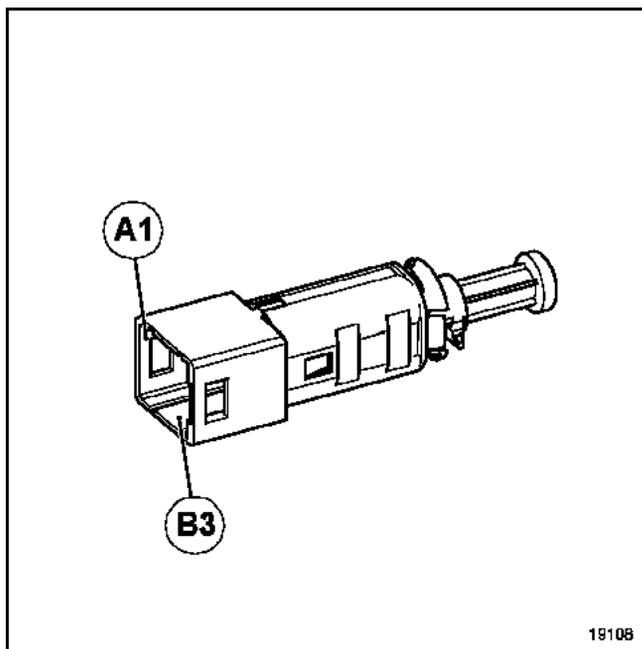
WARNING

The car must be fitted with an accelerator pedal incorporating a point of resistance at the travel mid-point.

Brake switch (dual)

The **cruise control** function uses the open contact (together with the lights), while the ABS computer uses the closure sensor.

The two signals are compared by the injection computer.



Track	Description
A1	Close contact
A3	Open contact
B1	Open contact
B1	Close contact

When fitting the switch on the pedals, pull the rod to adjust the clearance.

Clutch switch

This is start-of-travel switch.

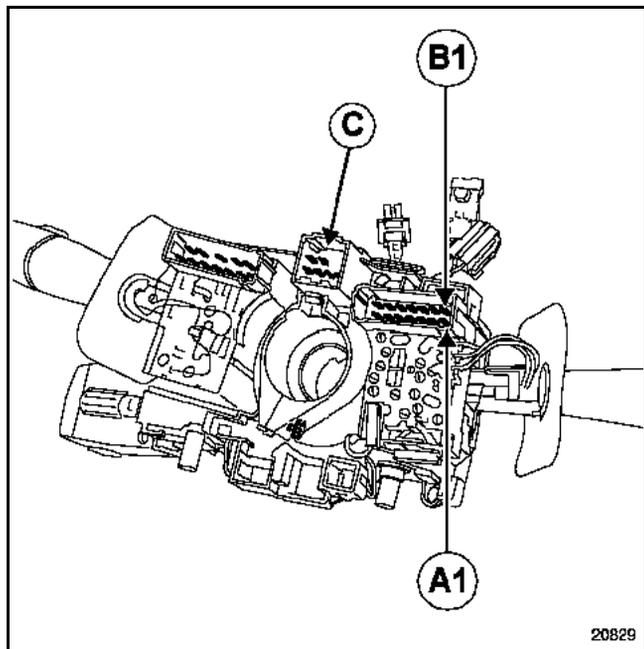
When fitting it, pull the rod to adjust the clearance.

CONTROLS - SIGNALS

Lighting stalk

84A

CONNECTION



Track (closed circuit)	Description
A6/A7	LH direction indicator
A6/A5	RH direction indicator
B1/B2	Side lights
B3/B4	Dipped headlights (dual lens)
B6/B7	Main beam headlights (on or flash)
A3/B1	Fog lights (rear)
A1/B1	Front fog lights

Track	Description
A1	Fog light control (front)
A2	Not used
A3	Fog light control (rear)
A4	Horn control
A5	RH direction indicator control
A6	Indicator supply
A7	LH direction indicator control
B1	Side lights
B2	Side lights supply (fuse)
B3	Dipped beam headlights supply (fuse)
B4	Dipped headlights
B5	Not used
B6	Main beam headlights supply (fuse)
B7	Main beam headlight

Note:

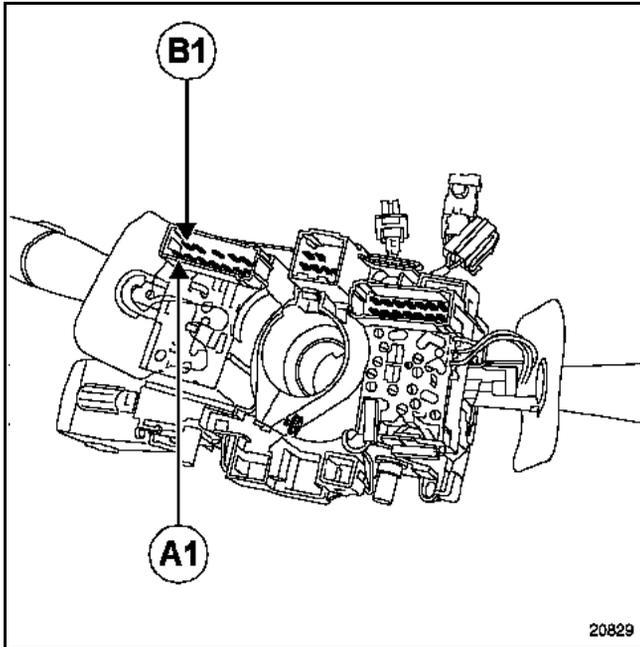
The lighting controls can be checked using an ohmmeter.
The horn is controlled by the connector (C) via the rotary union.

CONTROLS - SIGNALS

Wiper control stalk

84A

CONNECTION



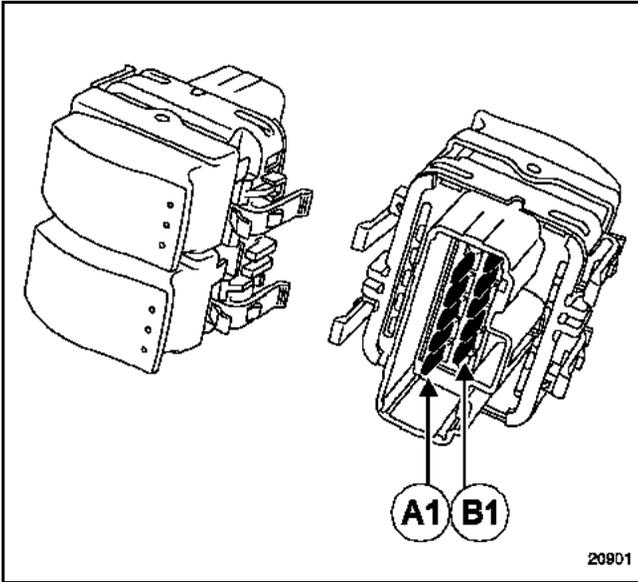
Track	Description	Values (Ω)
A4/B4	Windscreen washer pump	0
A2/A7	Windscreen wiper low-speed control	0
A1/A7	Windscreen wiper high-speed control	0
A6/A7	Rear screen wiper intermittent control:	
	Setting 1	8500
	Setting 2	6500
	Setting 3	4500
	Setting 4	2000
	Setting 5	0
B1/B4	Rear screen washer pump	0
B2/B4	Rear screen wiper intermittent facility	0
B5/ (B7 B6)	Trip Computer scrolling	0

Track	Description
A1	Windscreen wiper high speed control
A2	Windscreen wiper low speed control
A3	Not used
A4	Windscreen washer pump control
A5	Not used
A6	Windscreen wiper interval control
A7	+ After ignition
B1	Rear screen washer pump control
B2	Rear screen wiper control
B3	Park position
B4	+ After ignition
B5	Earth
B6	On-board computer
B7	On-board computer

Note:
The front and rear screen wiper and washer controls can be checked using an ohmmeter.

DRIVER'S ONE-TOUCH AND PASSENGER'S ELECTRIC WINDOW

Driver's side switch connection



Track	Description
A1	Connection with passenger's switch (A1)
A2	+ After ignition
A3	+ Lighting
A4	Not used
A5	Lower window control
A6	Not used
B1	Not used
B2	Connection with passenger's switch (B2)
B3	+ After ignition
B4	Earth
B5	Not used
B6	Raise window control

Driver's side switch operation

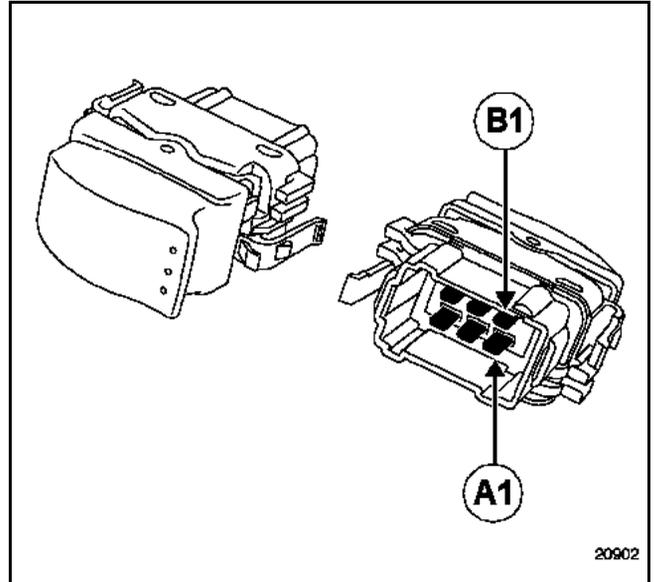
Driver's side electric window control

	A5/B5	B6/A4	B6/B4	A5/B4
Rest position	0 Ω	0 Ω	∞	∞
Open	∞	0 Ω	∞	0 Ω
Closed	0 Ω	∞	0 Ω	∞

Passenger window control

	A1/B3	B2/A2	B2/B4	A1/B4
Rest position	0 Ω	0 Ω	∞	∞
Open	∞	0 Ω	∞	0 Ω
Closed	0 Ω	∞	0 Ω	∞

Passenger's side switch connection



Track	Description
A1	+ driver's switch connection
A2	Earth
A3	Motor control
B1	Motor control
B2	+ driver's switch connection
B3	+ Lighting

Passenger's side switch operation

	A1/A3	B2/B1	A2/A3	A2/B1
Rest position	0 Ω	0 Ω	∞	∞
Open	∞	0 Ω	0 Ω	∞
Closed	0 Ω	∞	∞	0 Ω

GENERAL INFORMATION

Operating notes

In normal operation, the windscreen wiper works intermittently, at either high or low speed. This can be modified according to the vehicle speed by the ring located on the wiper control stalk and by the rain detector.

A wiper blade speed selected when the vehicle is moving will automatically be reduced when the vehicle stops, as follows:

- continuous fast wiping speed is switched to continuous slow wiping speed,
- continuous slow wiping speed is switched to intermittent wiping.

When the vehicle starts moving again, the speed reverts to the one originally selected.

Note:

- Any operation of the windscreen wiper control stalk takes priority and cancels out the UCH strategy.
- The automatic control will not function if the high or low speeds were selected when the vehicle was stationary.

If the wiper blades are subject to too great a force, the UCH automatically switches to a lower speed.

In the event of the wiper blades becoming blocked (e.g. if the windscreen freezes over), the UCH automatically cuts off the motor supply.

Note:

For special notes concerning the wiper control stalk, see Section **84**.

RAIN DETECTOR

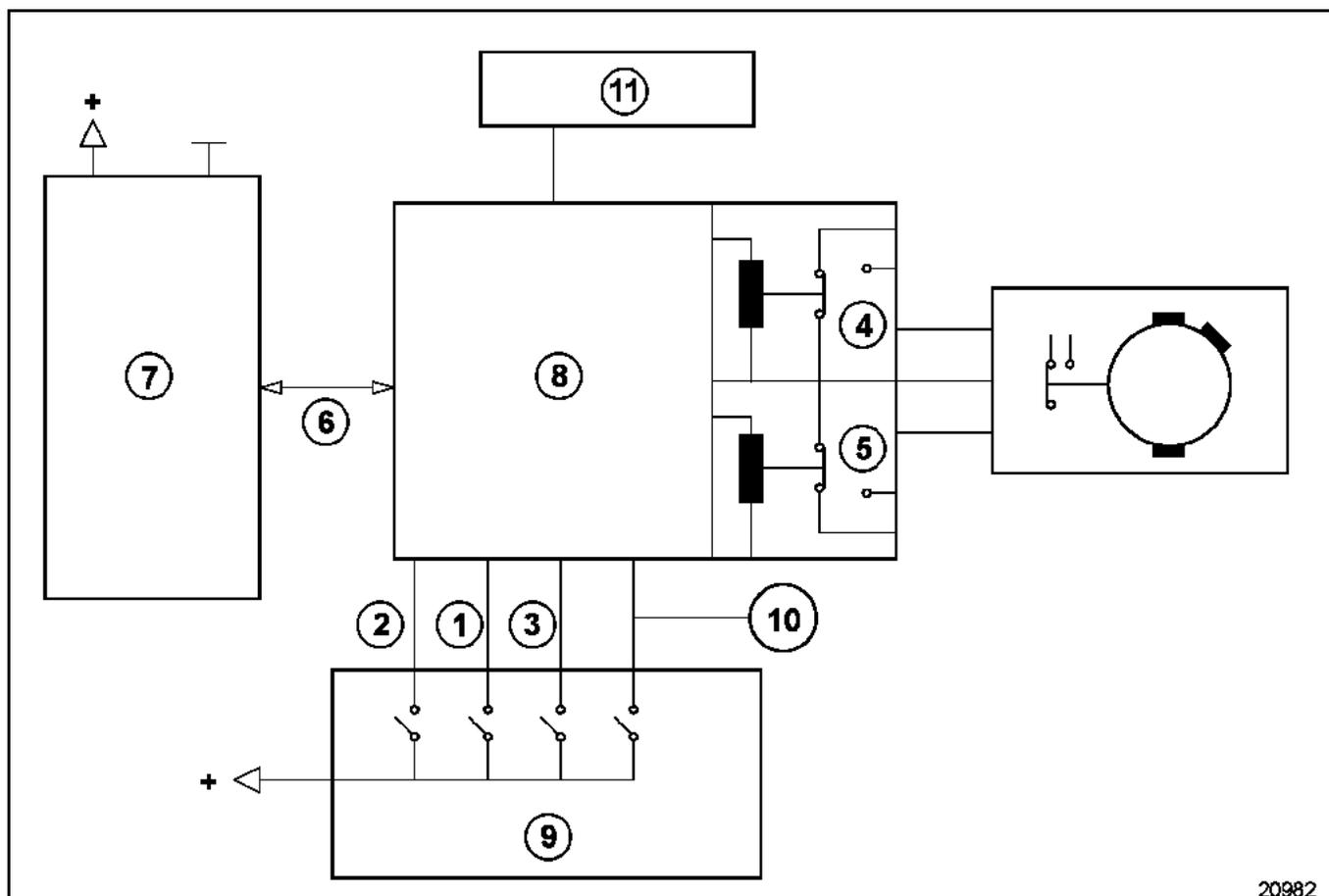
The vehicle is equipped with a rain detector which sends a signal to the UCH.

The timed signal from the wiper control stalk is not used to adjust the interval but to adjust detector sensitivity. In this case, the interval and the wiping speed are not varied according to the vehicle's speed. The ring on the wiper control stalk can vary the sensitivity of the rain detector.

Note:

For effective rain detector operation, regularly replace the wiper blade on the passenger side.

Operating diagram



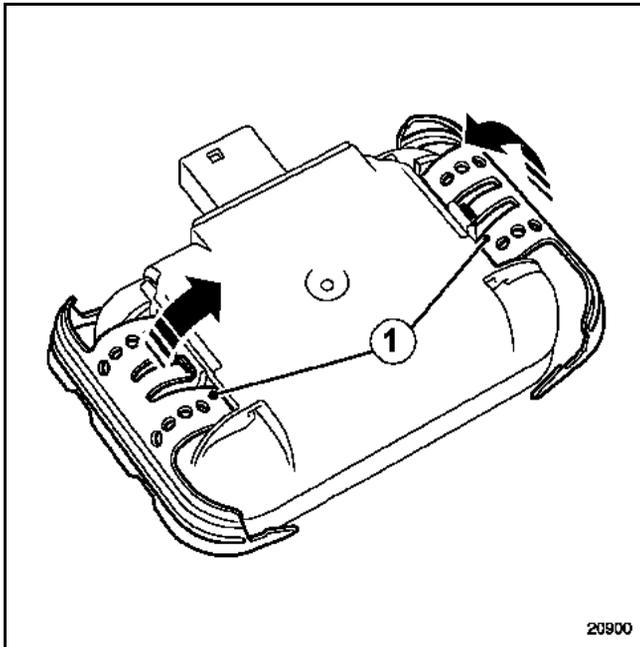
20982

List of components

- 1 High speed supply
- 2 Low speed supply
- 3 Automatic wipers supply
- 4 Wipers on/off relay
- 5 High speed/low speed relay
- 6 Rain sensor signal
- 7 Rain and light sensor
- 8 UCH
- 9 Wiper control stalk
- 10 Windscreen washer pump
- 11 Headlights

REMOVING THE RAIN DETECTOR

Remove the rearview mirror interior cover.



Unclip the two side clips (1) from the detector using a small screwdriver.

Disconnect the connector.

WARNING

Do not touch the light sensor. Fit it on the vehicle as soon as it is removed from its packaging.

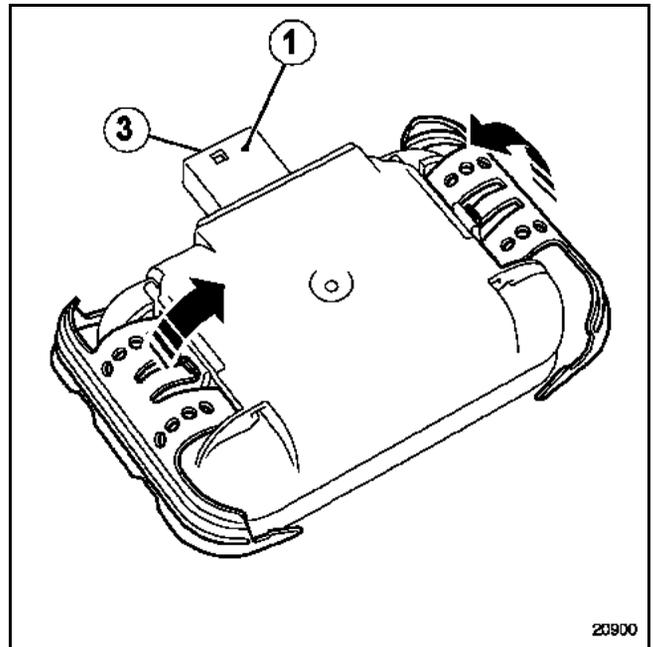
REFITTING THE RAIN DETECTOR

Clean the contact surface between the windscreen and the detector.

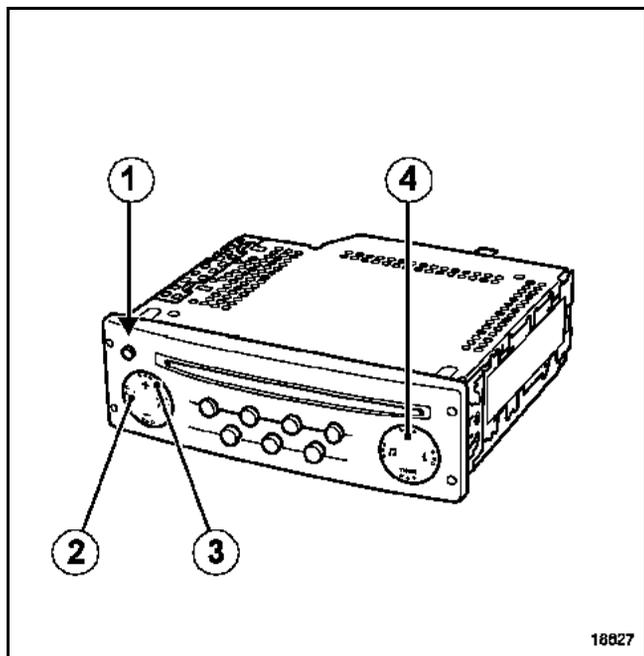
Place the detector on the mounting and pull back the clips.

Reconnect the connector and refit the rearview mirror cover.

CONNECTION



Track	Description
1	+ Battery supply
2	Earth
3	UCH connection



- 1 On/Off
- 2 <and> buttons enabling you to change the configuration mode
- 3 + and - buttons enabling you to make adjustments
- 4 **Source** button

The radio set is an integral radio + single- or multiple **CD-ROM** player with integral display.

The radio features allow you to:

- listen to the radio (four geographical zones can be programmed for **FM** radio),
- display the name of the station using **RDS**,
- switch automatically to the best transmitter (**AF**),
- receive road traffic and travel information (**AT**),
- receive news flashes and emergency bulletins (**PTY NEWS**).

Radio operation

REMINDER: four geographical zones can be programmed for **FM** radio.

The Tuner has three selection modes visible on the screen and accessible from the panel:

- manual mode (**MANU**),
- preselected mode (**PRESET**),
- alphabetical order mode (**LIST**).

CD function (SINGLE CD)

The **CD** player can play conventional **discs** and any audio tracks on a **CD-ROM**.

CDs can be played in order or tracks can be chosen at random.

Note:

If a **CD** changer is being used, random play is possible on one **compact disc** only.

Heat protection

If the radio temperature is too high for it to function properly, the volume is automatically lowered (without changing the volume shown on the display).

Code protection

The radio is protected by a four digit code. This code must be entered via the control satellite or the audio equipment keypad each time the battery is disconnected.

Entering the code with the control on the steering wheel:

to confirm a figure that has been entered, press the bottom key on the control.

Entering the code with the radio keypad:

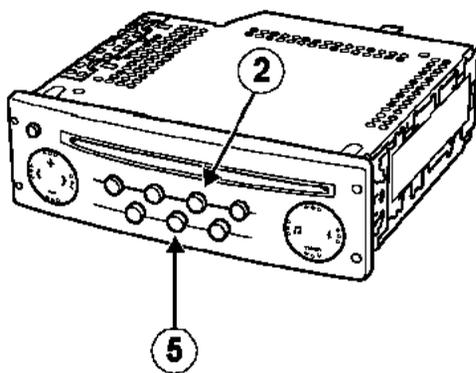
to confirm a figure that has been entered, press the next key on the keypad (see radio user's manual).

If the code is entered incorrectly, the radio will be locked (one minute for the first mistake, two minutes for the second mistake, four minutes for the third mistake, etc., with a maximum of 32 minutes).

Some configurations must be set after the code has been entered for the first time (see the "**Configuration**" Section). These settings are stored when the battery is disconnected.

Note:

The code scramble mode can be restored by pressing buttons **2** and **5**, at the same time as the equipment is switched on. Wait two minutes.



18827

Configuration

To select the zone in which the Tuner is to be used, press buttons **2** and **5**, at the same time as the equipment is switched on. Wait approximately two minutes. Enter the four digit code and then:

- Select the relevant zone:
 - America
 - Japan
 - Asia
 - Arabia
 - Others (Europe, Africa, etc.)
- select the volume control for the appropriate car model:
 - 0: no regulation
 - 1: Twingo
 - 2: Clio
 - 3: Megane
 - 4: Laguna
 - 5: Top of the range
- configuration of number of speakers:
REAR ON/OFF.

Note:

These configurations are not required when the secret code is entered after the power supply has been cut.

Expert mode

To move to configuration mode (**Expert** mode), press and hold the **source** key for about four seconds until you hear a beep. This allows you to adjust the following functions:

- **AF** mode activation (automatic retuning),
- volume control in relation to vehicle speed (**5** for maximum change, **0** for no change),
- activation of **Loudness** mode,
- activation of **Assisted tuner** mode
- configuration of number of **speakers** (**2** or **4**),
- selection of manual or dynamic list.

Note:

Pressing the **Source** button when entering the configurations cancels the changes.

Volume control

The volume can be configured in relation to the car speed. To commence this operation: select the desired volume control by using the "**expert**" mode (press and hold the "**source**" button until you hear a bleep): **5** for maximum change, **0** for no change.

Note:

The radio is equipped with tone modification according to the vehicle. To change vehicle type, see the "**Configuration**" Section.

Self-test mode

The self-test mode checks some of the main functions:

● **testing the speakers**

The speakers are fed one at a time if you press buttons **2** and **4** simultaneously. This is confirmed by the display.

● **testing the reception level (after display of the frequency)**

The display shows the radio reception information if you press buttons **1** and **6** simultaneously:

- **9** or letter: good reception
- if **3**: poor signal
- if **2**: no stereo

● **testing the buttons**

To enter this mode, press button **3** and the **on/off** button at the same time. Every time a button is pressed, it will appear on the display. The mode exits automatically once all the buttons have been pressed.

Note:

In the event of a speaker short circuit, the power supply to the radio will be cut off automatically.

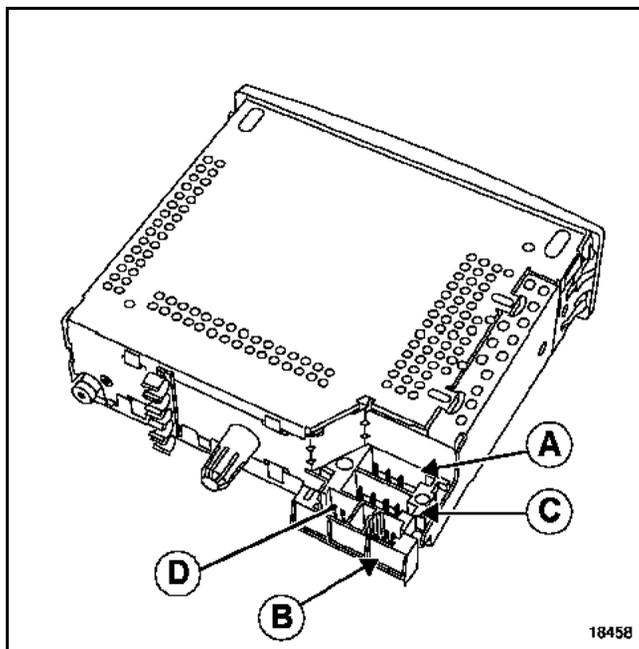
CONNECTION

Black connector (A)

Track	Description
1	Vehicle speed signal
2	Not used
3	Voice synthesiser signal (mute)
4	Battery supply
5	Aerial amplifier supply
6	Light supply
7	Accessories supply
8	Earth

Yellow connector (B)

Track	Description
1	Display connection (track 13)
2	Display connection (track 14)
3	Display connection (track 15)
4	Not used
5	Earth shielding (track 12)
6	Display connection (track 11)



Brown connector (C)

Track	Description
1	+ Rear right-hand speaker
2	- Rear right-hand speaker
3	+ Rear right-hand speaker
4	- Rear right-hand speaker
5	+ Front left-hand speaker
6	- Front left-hand speaker
7	+ Front left-hand speaker
8	- Front left-hand speaker

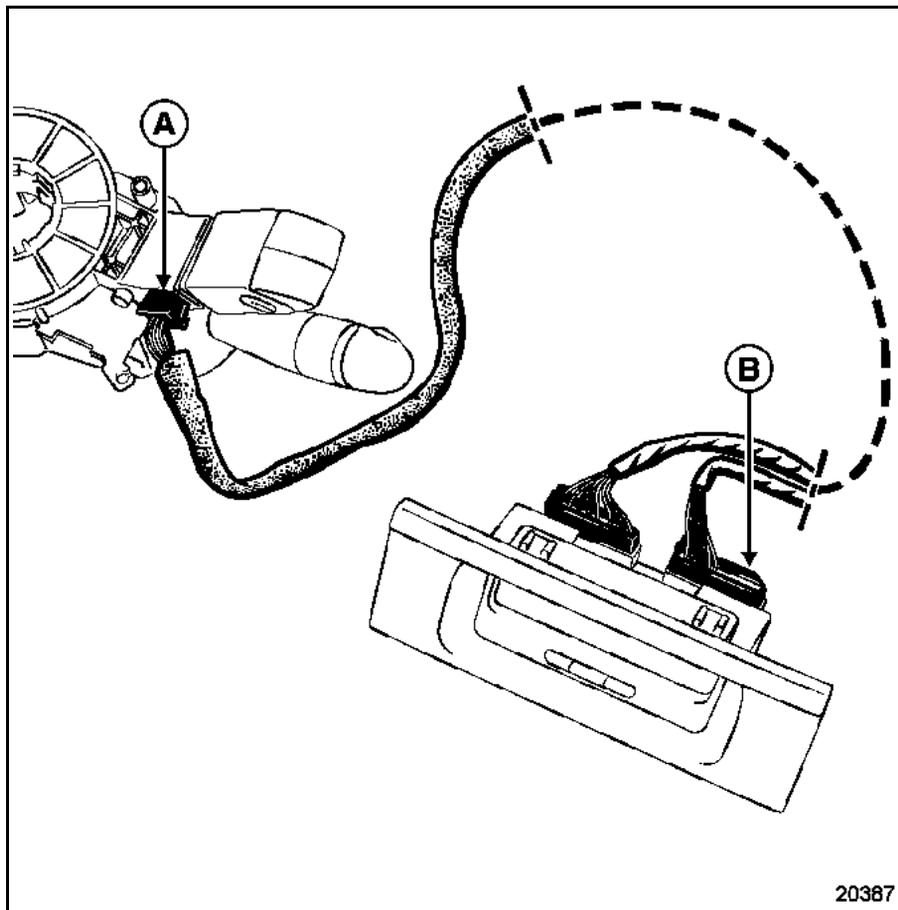
Note:

The speakers are connected in parallel on each output.

The connector (D) is used to connect a CD changer (if the vehicle is fitted with one).

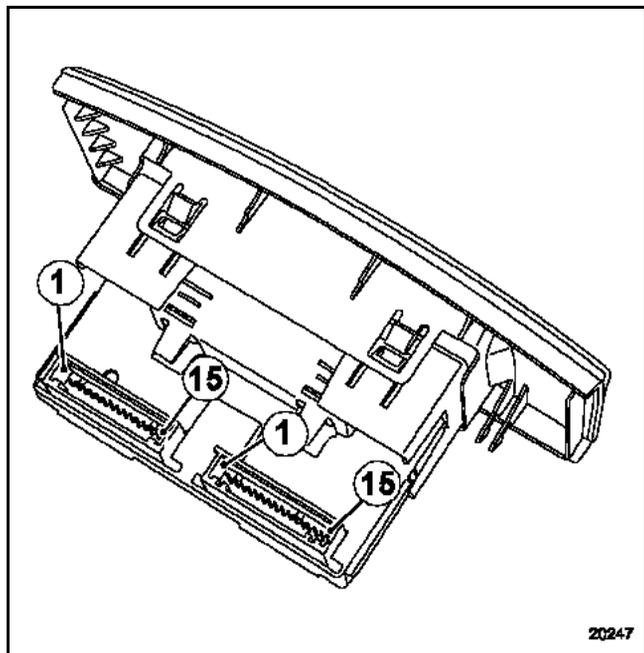
CONNECTION

The radio control on the steering wheel is linked to the display set into the dashboard.



CONTROL CONNECTION WITH DISPLAY	
Control (connector A)	Display (connector B)
Track (A1)	Track (14)
Track (A2)	Track (13)
Track (A3)	Track (10)
Track (B1)	Track (9)
Track (B2)	Track (11)
Track (B3)	Track (12)

CONNECTION



Grey 15-track connector

Track	Description
1	External temperature
2	External temperature
3	Not used
4	Not used
5	Earth
6	Lighting
7	Light supply
8	+ accessories
9	+ battery
10	External temperature output
11	Earth (radio track 6)
12	Radio on signal (radio track 5)
13	Radio connection (Track 1)
14	Radio connection (Track 2)
15	Radio connection (Track 3)

Red 15-track connector

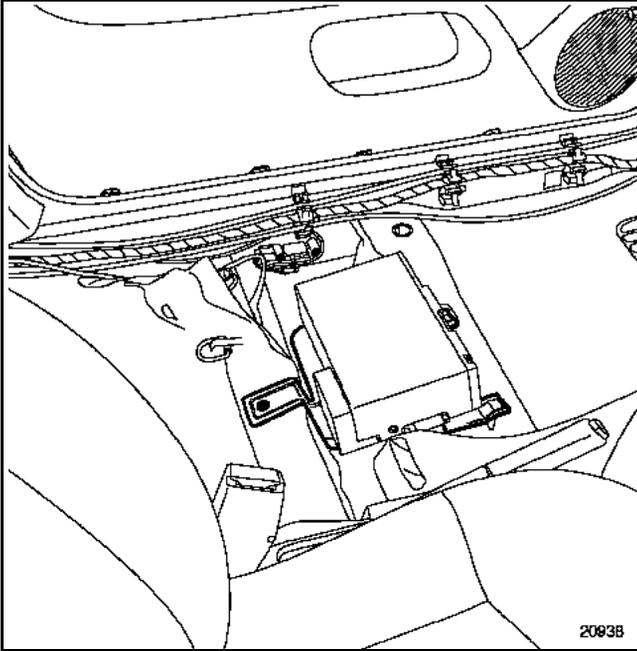
Track	Description
1	Not used
2	Not used
3	Not used
4	Not used
5	Not used
6	Not used
7	Not used
8	Not used
9	Audio equipment control connection (track B1)
10	Audio equipment control connection (track A3)
11	Audio equipment control connection (track B2)
12	Audio equipment control connection (track B3)
13	Audio equipment control connection (track A2)
14	Audio equipment control connection (track A1)
15	Not used

RADIO CD changer

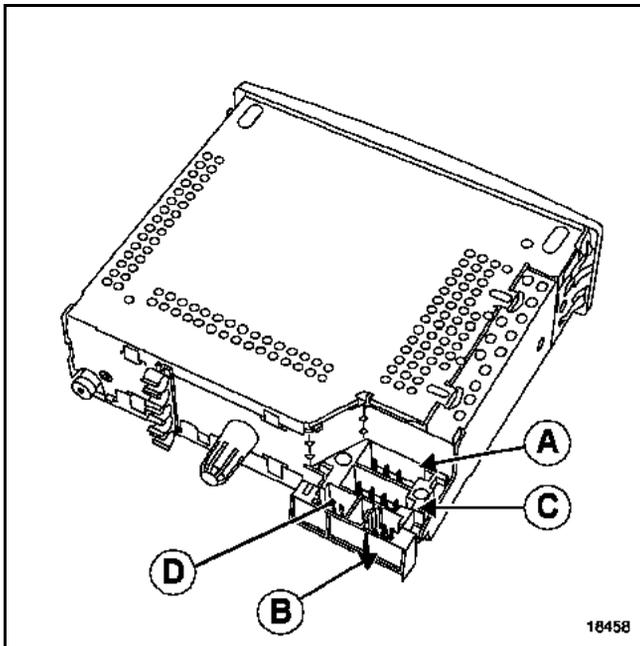
86A

The changer is located under the seat on the left.

Note:
Removing the changer does not entail removal of the seat.



Radio	CD changer
Track 13	Track 2
Track 14	Track 3
Track 15	Tracks 1 and 10
Track 16	Track 5
Track 17	Track 7
Track 18	Track 6
Tracks 19 and 20	Tracks 4 and 8



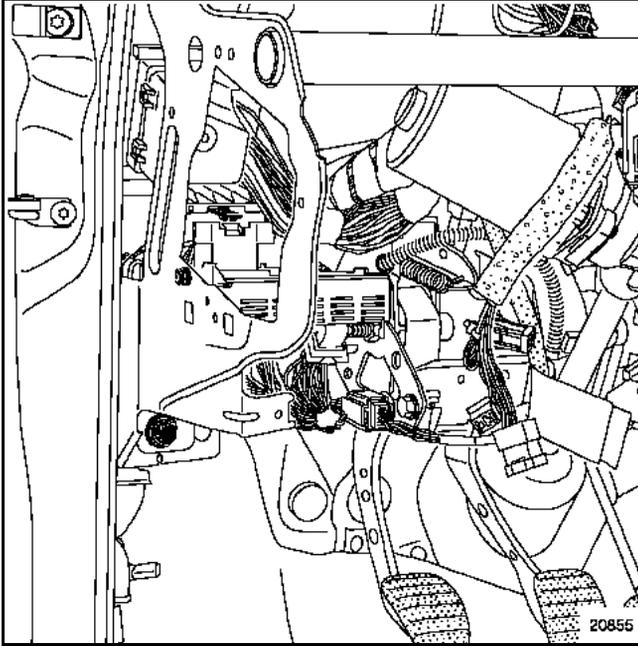
The CD changer is connected to audio equipment connector (D).

PASSENGER COMPARTMENT CONNECTION UNIT UCH

87B

DESCRIPTION

The UCH is located behind the dashboard on the left hand side.



This computer contains most of the computers, including the engine immobiliser decoder.

UCH versions	Top-of-range level N3	See section
Operation of indicators and hazard warning lights	X	-
Daytime running lights control	X	80B
Lights control	X	-
Light sensor	X	80B
Windscreen and rear screen wipers control	X	85A
Headlight washer control	X	85A
Rain detector	X	85A
Door and boot management	X	87B
Door locking when driving/unlocking on impact	X	87B
Door opening indicator light/Electric central door locking indicator light	X	-
Timed interior lighting control	X	81A
Radio frequency remote control	X	82A
Driver and passenger one-touch windows control	X/-	84A
Engine immobiliser control (V3 coded)	X	82A
+ after ignition supply/starter control	X	-
Passenger compartment buzzer (built into the instrument panel)	X	83A
Alarm connection (retrofitted)	X	-
Multiplex network interface	X	88A
Interface with diagnostic tool	X	88A
Heated rear screen timing	X	-

REMOVAL

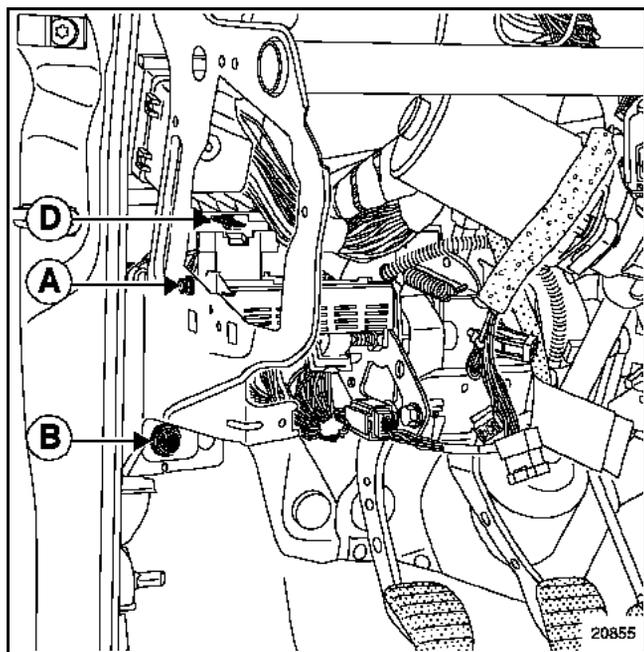
NOTE:

- Modification of or operations on the casing itself are not permitted; the UCH must be replaced instead.
- It is advisable to note down the configuration sequence before the UCH is removed. The different configurations can be implemented using the fault finding tool.

Disconnect the battery.

Partially remove:

- the door seal,
- the lining from the front door pillar.



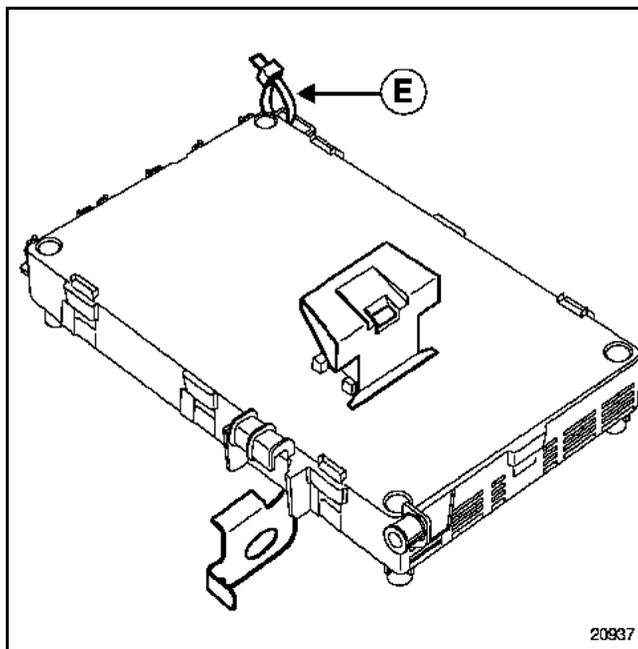
Remove:

- the fuse cover,
- the two bolts (A) and (B) attaching the UCH.

Unclip the UCH by pressing on the lug (D).

Disconnect the connectors.

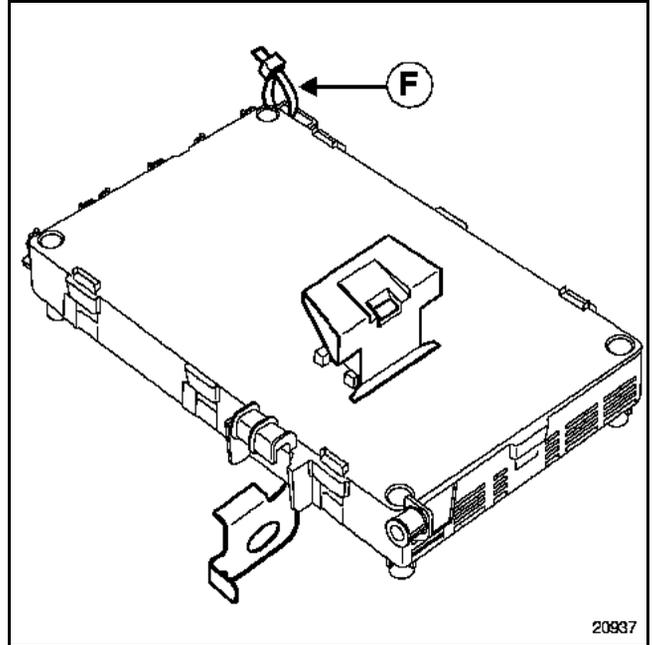
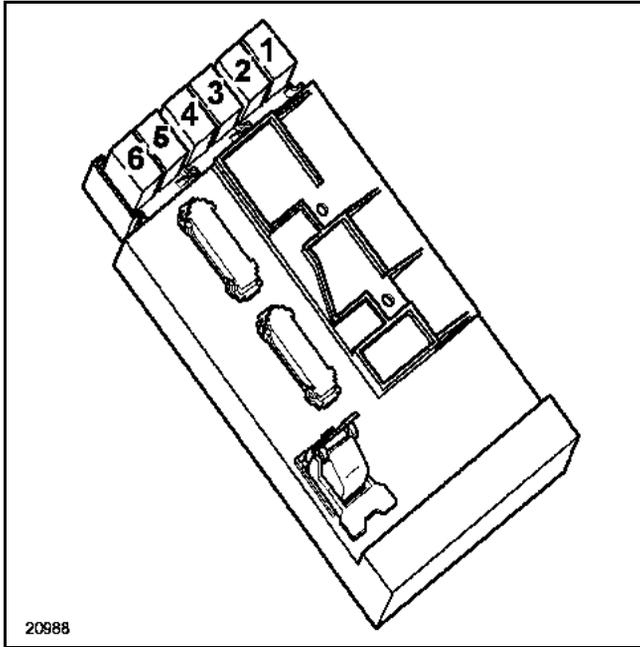
Separate the relay supports from the UCH.



Cut the plastic clip (E).

REFITTING

Adhere to the position of the relay supports on the UCH.



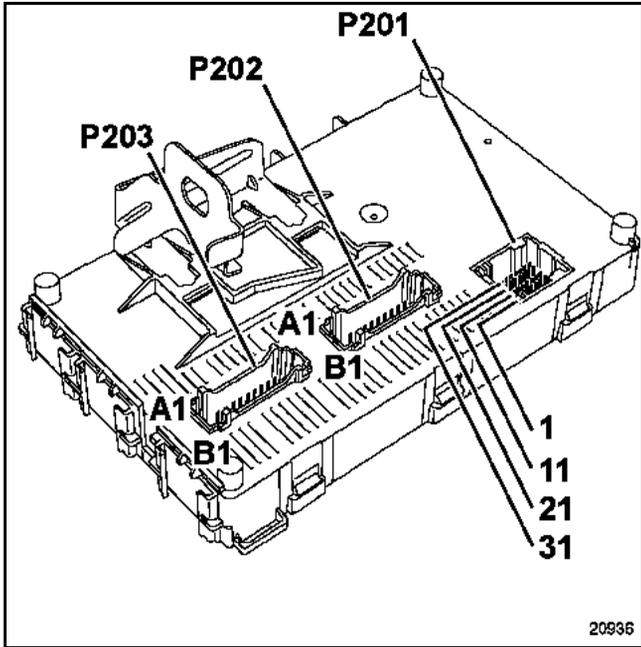
Refit a clip (F) to hold the wiring harness in place.

Then program the keys and configure the UCH.

Relays	Description
1	Main daytime running lights relay
2	Daytime running lights side lights relay
3	Fog light relays (front)
4	Dipped beam relays for daytime running lights
5	Headlight washer pump relay
6	Headlight washer pump relay

PASSENGER COMPARTMENT CONNECTION UNIT UCH

87B



20936

Black 40-track connector (P201)

Track	Description
21	Front high speed wiper input
22	Low speed windscreen wiper input
23	+ accessories power supply input
24	Rear screen washer control input
25	Windscreen washer control input
26	Side lights input
27	Left-hand side indicator input
28	Right-hand side indicator input
29	Hazard warning lights input
30	Rear door open signal input
31	Hazard warning lights warning light output
32	Reversing signal input
33	+ After ignition supply
34	Rear timer input
35	Heated rear screen input
36	Central door locking switch input
37	Driver's electric window lowering input
38	Driver's electric window raising input
39	Luggage compartment door switch input
40	Front door open signal input

Track	Description
1	Side lights relay output
2	Dipped beam headlight input
3	One-touch window lowering control input
4	One-touch window raising control input
5	Immobiliser warning light output
6	Front timer control input
7	+ Battery supply
8	Transponder connection
9	CAN L passenger compartment multiplexed connection
10	CAN H passenger compartment multiplexed connection
11	Dipped beam headlights relay control output
12	Main beam headlights input
13	Rain and light detector connection
14	Starter relay control output
15	Door locking warning light output
16	Rear park position signal input
17	Front park position signal input
18	Diagnostic line K
19	CAN L multiplex link
20	CAN H multiplex link

White 15-track connector (P202)

Track	Description
B1	Passenger's one-touch window raising output
B2	Driver's one-touch window lowering output
B3	Driver's one-touch window supply
B4	Electric window earth
B5	Driver's one-touch window raising output
B6	Earth
A1	Front windscreen wiper high speed output
A2	+ after ignition power supply (rear screen wiper)
A3	+ battery power supply (lighting)
A4	+ after ignition power supply (windscreen wiper)
A5	Headlight washer output
A6	Timed supply output
A7	Headlight washer output
A8	Courtesy lights output
A9	Under seat lighting output

Black 15-track connector (P203)

Track	Description
A1	Direction indicator + battery power supply
A2	Left hand direction indicator output
A3	Right hand direction indicator output
A4	Electric locking closing output
A5	Main beam headlights relay output
A6	Electric locking opening output
A7	Electric locking + battery power supply
A8	Rear screen wiper output
A9	Front wiper low speed output
B1	Heated rear screen + after ignition power supply
B2	Heated rear screen output
B3	Driver's electric window supply
B4	+ After ignition supply
B5	Passenger's electric one-touch window lowering control output
B6	Passenger's electric one-touch window + power supply

CONFIGURATION OF THE UCH

The configuration options for the UCH are:

Title and position on the diagnostic tool	Configuration	Type of UCH
Courtesy light (LC021)	automatic	N3
Saudi Arabian overspeed (LC068)	manual	N3
Side lights (Running lights) (LC049)	manual	N3
Rain sensor (LC051)	manual	N3
Light sensor (LC055)	manual	N3
Second assembly of alarm (LC066)	automatic	N3
Automatic relocking (LC069)	automatic	N3
Windscreen wiper timing (LC070)	manual (incompatible with the rain detector)	N3
Headlight washers (LC073)	manual	N3
Additional wiping after windscreen washer (LC071)	automatic	N3

CONFIGURATION OF THE CONNECTION UNIT

Using a diagnostic tool:

- With the ignition on, enter dialogue with the vehicle and perform the "**multiplexed network**" test,
- Select and confirm the "**Connection unit**" menu,
- In the "**Command mode**" menu, select and confirm the "**Configuration**" line,
- Select the command "**CF 718: UCH type**",
- Message: **Warning! the first stage of the procedure involves erasing the UCH configurations. If the procedure is interrupted after this stage, the computer will be completely deconfigured. Do you wish to proceed?** appears,
- Select "**yes**",
- The message: "**Erasing the computer memory**" appears,
- Select the type of UCH that corresponds to the vehicle, "**N3**". Refer to the operations table,
- Message: **Do you wish to proceed?** appears.

- Select **yes** then perform the manual configurations,
 - 1 Configuring the **Arabia overspeed**,
 - 2 Configuring the **variable timing** of the windscreen wiper (only if the vehicle is not fitted with a rain sensor),
 - 3 Configuring the **light detector** (integral with the rain detector if the vehicle is fitted with one),
 - 4 Configuring the **rain detector**,
 - 5 Configuring the headlight washers (specific to headlights with xenon bulbs),
 - 6 Configuring the **daytime running lights** for vehicles fitted with top-of-range wiring (discharge bulbs),
 - 7 Configuring the **passenger's one-touch window**.

- When changing option, select the line to be changed then confirm "**Reverse**",
- The desired configuration changes,
- Select "**Configuration**" then confirm,
- The message: "**Are the configurations correct?**" appears,
- Select "**yes**",
- Check that configuring has been carried out correctly using the configuration reader screens.

SPECIAL NOTES

- Courtesy light:
 - the courtesy light comes on when a door is opened and stays on for **15 seconds** after it is closed,
 - the courtesy light comes on for **15 seconds** after the doors are unlocked by remote control, except when they are locked again (the light goes out) or there is + after ignition power supply (the light dims gradually),
 - if a door is left open, the courtesy light stays on for **15 minutes**.

- Wipers/washers:
 - wipers can be timed by the stalk or the rain detector,
 - when the front wipers are operating, or in automatic mode (rain sensor) reversing activates the rear screen wiper,
 - when the vehicle speed decreases, the wiper control speed decreases. It returns to its initial position on moving off,
 - the headlight washer is controlled by the stalk when the main beam or dipped beam headlights are switched on.

- Electric window:
 - the driver's window control is in not in one-touch mode between switching off the ignition and opening the driver's door,
 - the electric windows only operate in one-touch mode when the engine is running.

- There is a buzzer on the instrument panel for the following functions:
 - indicator sound,
 - lights on reminder,
 - confirmation that automatic lights are activated,
 - confirmation that automatic locking is activated when driving.
 - "Arabia" overspeed function

WIRING

Diagnostic socket

88A

LOCATION

The diagnostic socket is located behind the ashtray.

CONNECTION

Track	Description
1	+ After ignition
2	Not used
3	Not used
4	Earth
5	Earth
6	Multiplex connection (CAN H)
7	Fault finding K signal
8	Not used
9	Not used
10	Not used
11	Not used
12	Not used
13	Not used
14	Multiplex connection (CAN L)
15	Fault finding L signal
16	+ Battery

The computers on modern vehicles are becoming increasingly powerful, and can perform increasingly complex calculations. To perform these calculations, they need to acquire information from sensors or from other computers.

The multiplex network allows the computers to:

- exchange signals through a two-wire connection common to all the computers known as the: **BUS**,
- reduce the number of cables and connectors.

In order to communicate with each other across the multiplex network, the computers need to speak the same language (protocol), RENAULT has chosen the **CAN** protocol.

● The CAN protocol

The bus consists of a twisted pair of non-interchangeable wires, called CAN H and CAN L. The information is transmitted in the form of long-tail pair square wave signals, which gives greater protection against electromagnetic interference and limits radiation. The signals travelling through the bus are clearly differentiated: **2.5 to 3.5 V** on the CAN H line, and **1.5 to 2.5 V** on the CAN L line.

At each end of the multiplex connections are impedance matches of **120 Ω**:

- UCH side **120 Ω** on the UCH CAN line (disconnected from the network),
- injection computer side **120 Ω** on the computer CAN line (disconnected from the network).

See the **Repairing the multiplex network** Section for measuring the line impedance and performing a multiplex network test.

● The CAN frame

The message sent on the multiplex network is called a **frame**. It consists of a series of logical levels organised into **5 fields**:

- an arbitration field indicating the destination(s) and the frame's priority of access to the network,
- a control field,
- a field containing the message data,
- a control field contributing to the security of the transmission,
- an acknowledgement field indicating that the frame has been correctly sent over the network.

SPECIAL CASES

- If several computers attempt to send a frame at the same time, the frame with the highest arbitration field value will have priority. The other transmissions (with lower priority) will be sent as soon as the most important frame has been sent. Each computer is able to send and receive.
- If a message is incorrect or incorrectly received by a computer, the acknowledgement field will not be validated and the whole message will be rejected.

● Repair of the multiplex network

The multiplex network is connected to each of the computers by means of cable joints in the harness.

The fault finding procedure for these lines consists of verifying:

- continuity line by line,
- insulation from earth and voltage,
- line impedance:
 - ≈ **60 Ω** between CAN H and CAN L (battery disconnected, between terminals **6** and **14** of the diagnostic socket),
 - ≈ **120 Ω** on the UCH CAN line (disconnected from the network),
 - ≈ **120 Ω** on the engine Electronic Central Unit CAN line, on the computer side (disconnected from the network),
- the frames can be displayed using an oscilloscope,
- the remaining fault finding operations can only be performed with the fault finding tools (actuator test, measurement of parameters, etc.).

● Fault finding

Multiplex computers fitted with a diagnostic connection incorporate a multiplex network fault finding procedure.

Each computer permanently monitors its capacity to transmit and the regular arrival of messages from other computers. Any fault detected results in one or more present or stored faults on the multiplex network. These faults are grouped in a frame dedicated to the multiplex network fault finding procedure, using a format common to all the computers.

After-Sales, these faults can be displayed on fault finding tools in order to identify the faulty inter-computer connection(s) and to locate and ascertain the nature of the fault.

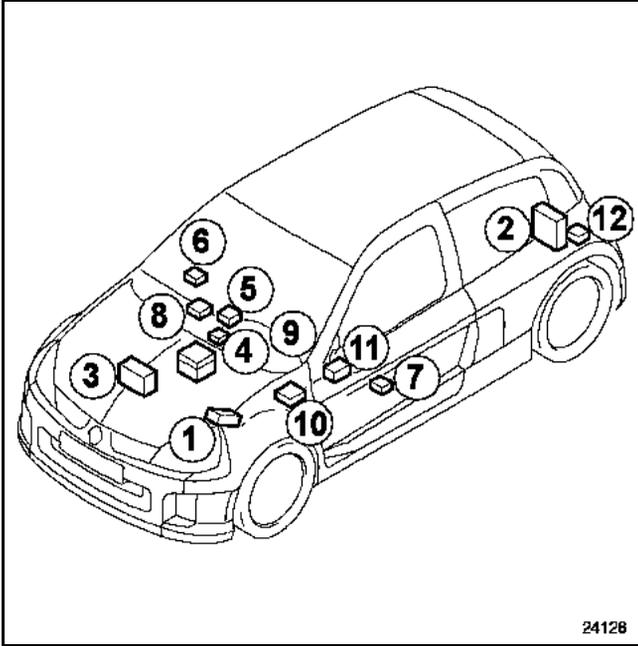
Each time a fault finding tool is connected to a vehicle, it performs a multiplex network test.

● The various multiplex connections on the vehicle

Several multiplex networks are present on the vehicle:

- Injection
- UCH
- Electric steering column lock
- Airbag
- Air conditioning
- Instrument panel
- The multiplex network for the navigation system.

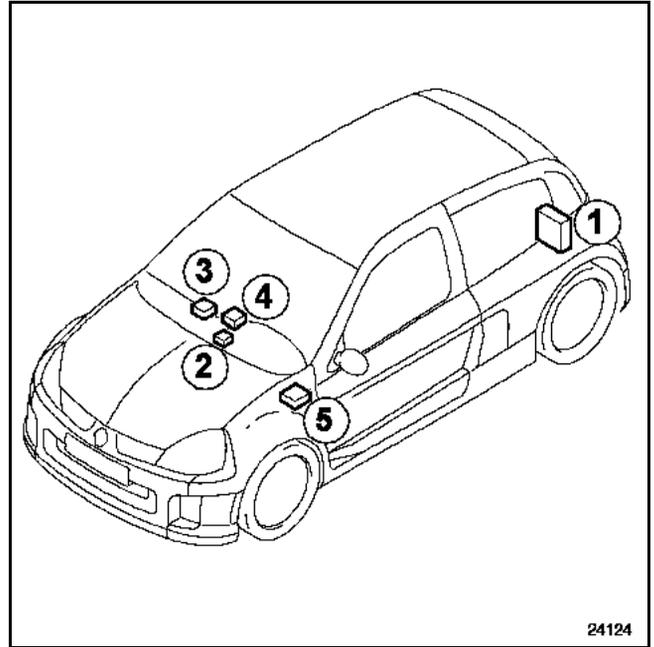
LOCATION OF THE COMPUTERS IN THE VEHICLE



List of components

- 1 Anti-lock braking system computer
- 2 Injection computer
- 3 Battery
- 4 Diagnostic socket
- 5 Air conditioning control panel
- 6 Radio
- 7 Side impact sensors
- 8 Airbag computer
- 9 Instrument panel
- 10 UCH
- 11 CD changer
- 12 Speed interface unit

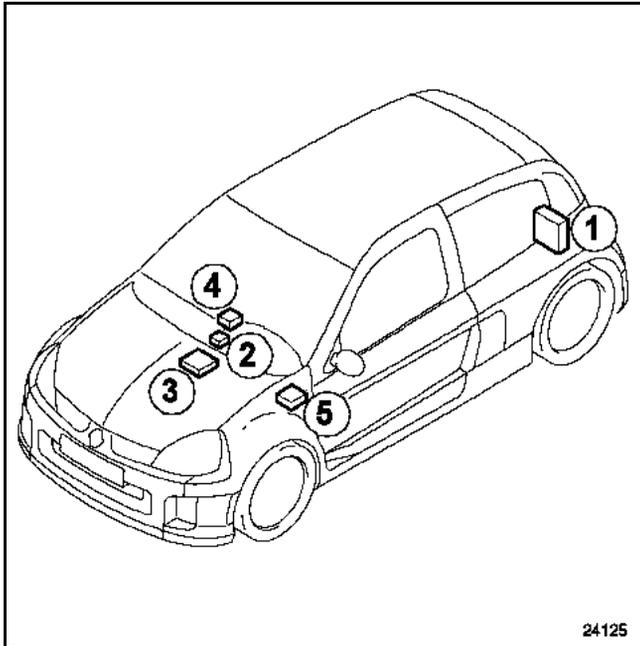
LOCATION OF THE COMPUTERS CONNECTED TO THE MULTIPLEX NETWORK



List of components

- 1 Injection computer
- 2 Diagnostic socket
- 3 Airbag computer
- 4 Instrument panel
- 5 UCH

LOCATION OF THE FAULT FINDING COMPUTERS IN THE VEHICLE



List of components

- 1 Injection computer
- 2 Diagnostic socket
- 3 Climate control
- 4 Airbag computer
- 5 UCH

These vehicles are fitted with a passive safety system of the Programmed Restraint System type, comprising:

- a driver's side front airbag system fitted with a PRS 2-generator airbag,
- a passenger's side front airbag system fitted with a PRS 2-generator airbag,
- front buckle pretensioners,
- specially designed front seat belts with PRS, (**400 daN**),
- a computer (**50 tracks**),
- a passenger airbag inhibitor system using a key,
- two side impact sensors,
- curtain airbags for the front seats,
- a driver's seat position sensor,
- a system fault warning light,
- an airbag inhibitor warning light **airbag OFF**.

IMPORTANT

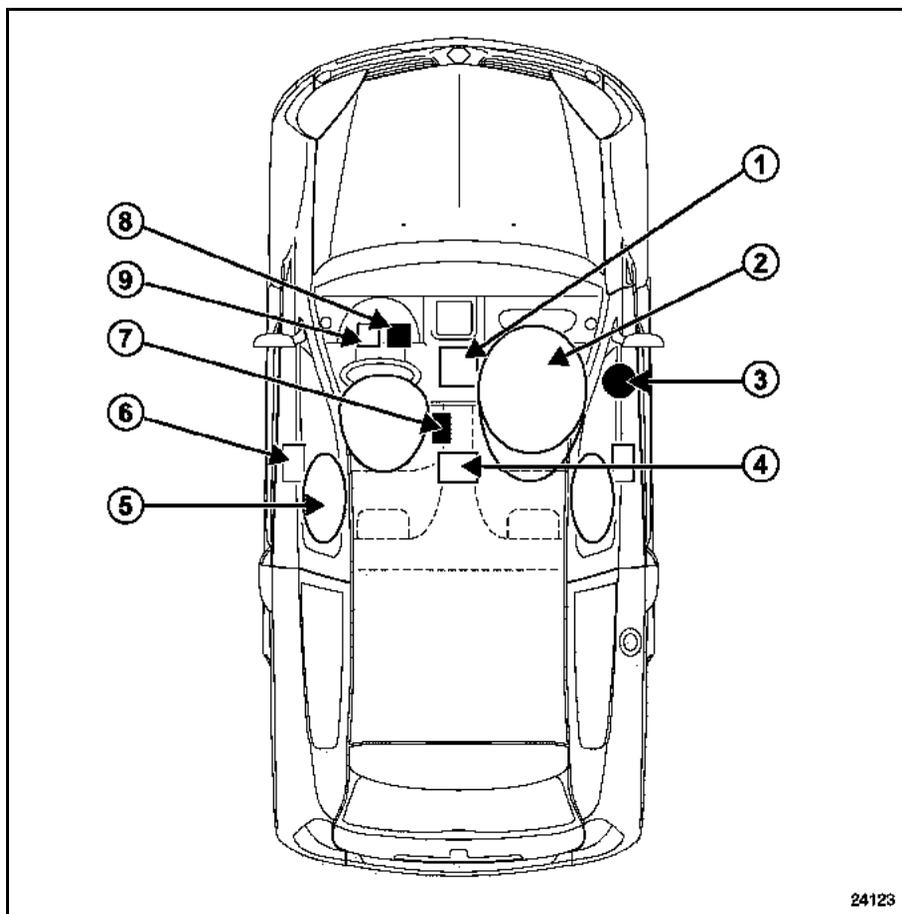
With this system (front PRS airbags), the seat belts are linked to the airbag function.

The programmed restraint system is calibrated differently depending on whether the seat belts are to be fitted in front of a PRS air bag or not (always check the part number for each component before replacement).

On these vehicles, never fit PRS airbags in a seat position not provided with an airbag, and do not disconnect the airbag.

IMPORTANT

Some connectors are fitted with a new generation locking system. It is essential to unclip the lock before removing the connector and ensure it is correctly positioned after fitting. An unlocked connector will not supply the trigger line.



- 1 Airbag computer
- 2 Dual-volume front airbag
- 3 Inhibitor key
- 4 Seat belt buckle pretensioner
- 5 Side airbag
- 6 Side sensor
- 7 Seat position sensor
- 8 Airbag warning light
- 9 Airbag OFF warning light

OPERATION OF AIRBAGS AND PRETENSIONERS

After ignition, the airbag and pretensioner warning light comes on for a few seconds and then goes out.

Note:
The airbag warning light may come on because of low battery voltage.

The computer and the side impact sensors will register the vehicle's deceleration by means of signals measured by the electronic decelerometers.

Frontal impact

- 1 During a frontal impact of sufficient severity, the decelerometer triggers simultaneous ignition of the **front seat-belt pretensioner** gas generators after receiving confirmation of impact detection from the electronic safety sensor.
- 2 If the frontal impact is more severe, in addition to the **pretensioners**, the electronic safety unit triggers the pyrotechnic generators of the **low volume frontal airbags**.
- 3 If the impact is extremely severe, the safety computer triggers the **pretensioner and large volume frontal airbag** pyrotechnic gas generators.

Note:
The frontal airbag inflation volume is adapted by the computer to the severity of the impact and the adjusted position of the driver's seat (see **Under-seat switch** Section).

Frontal side impact

If there is a side impact of a sufficient severity, the impact sensors send a signal to the computer. After receiving confirmation of impact detection from the electronic safety sensor (incorporated in the computer), the computer then triggers the pyrotechnic gas generators:

- of the **front pretensioner** (impact side),
- of the seat which inflates the front **curtain airbag** (on the impact side).

Note:
– The front pretensioners may be triggered in a rear impact (depending on the violence of impact).
– When triggered, the pyrotechnic gas generator produces an explosion and slight smoke.

Note:
Power supply to the computer and ignition modules is usually provided by the vehicle battery. Nevertheless, a power reserve capacity is incorporated into the computer in case of battery failure on impact.

PRECAUTIONS DURING REPAIR

All work on the airbag and pretensioner systems must be carried out by qualified personnel who have received training.

IMPORTANT

Never handle pyrotechnic systems (airbags or pretensioners) near to a heat source or a flame, as they may be triggered.

The airbags have a pyrotechnic gas generator with an igniter and airbag which must not be separated.

IMPORTANT

Before removing a pretensioner, airbag module, computer or side impact sensor, lock the computer using the fault finding tool.

When this function is activated all the ignition lines are disabled and the airbag warning light on the instrument panel lights up when the ignition is switched on.

When an airbag or seat belt pretensioner is triggered, the computer locks permanently and switches on the airbag warning light on the instrument panel. The side impact sensor and the computer must then be replaced (certain components lose their nominal settings after transmission of ignition power).

After everything has been refitted, carry out a check using the diagnostic tool. If everything is correct, unlock the computer or see the **Fault finding** manual.

IMPORTANT

Refer to the **Destruction procedure** section when scrapping a pyrotechnic system that has not been triggered.

WARNING

- The computer and impact sensors contain sensitive components, **do not drop them**.
- Do not put covers on the front seats (except for RENAULT products).
- Do not place objects in the airbag deployment area.
- When working under the vehicle (on the bodywork, sill panel etc.), it is vital that you lock the airbag computer using a diagnostic tool and switch off the ignition.
- For special features of seat trim removal and refitting operations, it is essential to refer to the **Bodywork** Technical Note.

IMPORTANT

It is vital that pyrotechnic systems (pretensioners, front and side airbags) are checked using the diagnostic tools:

- after an accident which has not caused triggering,
- after theft or attempted theft of the vehicle,
- before selling a used vehicle.

After an impact:

- if the pretensioners were triggered, the seat belts must be replaced if they were fastened,
- if the driver's front airbag was triggered, the steering wheel must be replaced,
- if the passenger front airbag was triggered, the dashboard and cross member lining must be replaced,
- if a seat side airbag was triggered, the frame must be replaced,
- it is essential to check that the inhibitor key and seat position sensor are working properly.

WARNING LIGHTS ON THE INSTRUMENT PANEL

The vehicle has two warning lights on the instrument panel:

- the "air bag fault" warning light
- the "passenger air bag locked (air bag OFF)" warning light

Note:

The two warning lights cannot be lit at the same time.

The "air bag fault" warning light warns of a fault in the safety system for the:

- computer,
- front pretensioners,
- the front airbags,
- side airbags,
- inhibitor system using a key,
- the battery (checking the supply voltage).

It should light up for a few seconds when the ignition is switched on, then switch off (and remain off).

If it does not come on when the ignition is switched on or if it comes on when the vehicle is in motion, this means there is a fault in the system (see "Fault finding" manual).

Note:

- Under certain starting conditions, the warning light may come on briefly and then go out.
- The airbag warning light is controlled by the multiplex network.

- The "air bag OFF" warning light shows whether the passenger air bag inhibitor system is activated or deactivated.

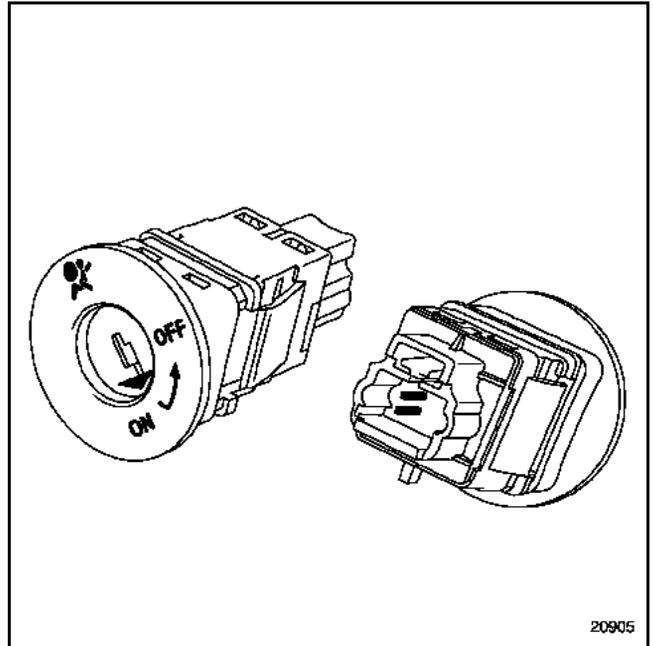
Note:

Any change in the position of the inhibitor key is only taken into account when the ignition is off.

FRONT PASSENGER AIRBAG DISABLEMENT KEY

The inhibitor key is located on the switch plate of the passenger door and has two positions:

- ON = passenger airbags operational (resistance = 400 Ω)
- OFF = passenger airbags (front and side) deactivated to accommodate a child seat. When the inhibitor key is in this position the "air bag OFF" warning light on the instrument panel comes on (resistance = 100 Ω)



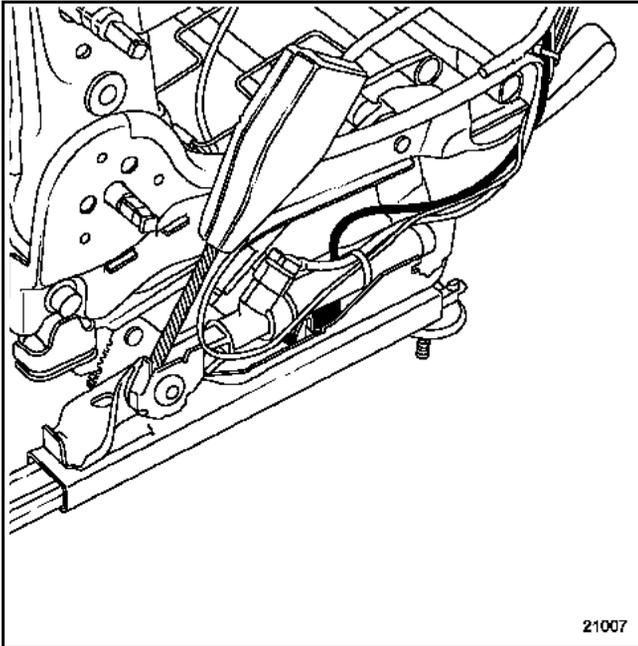
Note:

- The passenger seat belt is designed to work with the passenger airbag. Keep the same part number when it is being replaced.
- The position of the inhibitor switch is only taken into account if the ignition is switched off and the computer is configured correctly.

SEAT POSITION SWITCH

The driver's seat is fitted with a runner position sensor.

This affects the inflation of the driver's front airbag (high or low volume) according to the position of the driver's seat.



The seat position switch is linked to the seat wiring. If it is replaced, all the wiring must be replaced.

- Seat forward: sensor resistance = **400 Ω**
- Seat retracted: sensor resistance = **100 Ω**

PRS SEAT BELTS

The front seat belts are fitted with a specific programmed restraint system (PRS).

In this equipment, the seat belts are linked to the airbag function. (The programmed restraint system is calibrated differently depending on whether or not the seat belts are fitted opposite a PRS airbag).

When the pretensioners have been triggered the front seat belt or belts must always be replaced if they were being worn when pretensioning took place (if there is any doubt as to whether the belt was being worn it must be replaced). The physical stresses exerted on the buckle are transmitted to the inertia reel and may damage its mechanism.

Airbag computer

These computers consist of:

- an electronic safety sensor for the front airbags and the pretensioners,
- an electronic safety sensor for the side airbags,
- an electronic decelerometer,
- a connection with the side impact sensors,
- an ignition circuit for the various pyrotechnic systems,
- a power reserve for the various lines,
- a fault finding and detected fault memory circuit,
- a control circuit for the warning light on the instrument panel,
- a **K** communication interface via the diagnostic socket,
- a multiplex communication interface,
- an impact detection link (impact information).

IMPORTANT

Before removal, the computer must be locked using the diagnostic tool.

When this function is activated, all the ignition lines are disabled and the airbag warning light on the instrument panel illuminated when ignition is switched on (new computers are delivered in this condition).

Note:

- In the event of incorrect operation of these systems during an impact, it is possible, using the diagnostic tools, to verify that no fault was present before the impact.
- After locking following an impact, the trigger lines supplied by the command "**SC004, Reading breakdown contexts**" can be checked with the fault finding tool.

LOCKING PROCEDURE

Before removing the computer or before any operation on the air bag and pretensioner systems, it is vital that you lock the computer:

Using the NXR, CLIP or OPTIMA 5800 tools only.

- 1 Select the **Renault vehicle fault finding** menu.
- 2 Select and confirm the vehicle type.
- 3 Select and confirm the **Airbag** system to be checked.
- 4 Select the **Command** menu.
- 5 Select and confirm the **Parameter** (NXR) or **Actuators** (Clip) function.
- 6 Confirm the **VP006 Computer locking** line.
- 7 In the **State** menu, check that the unit is locked. The "**ET073 Computer locked with tool**" state must be active and the air bag warning light on the instrument panel must be on (new computers are delivered in this state).

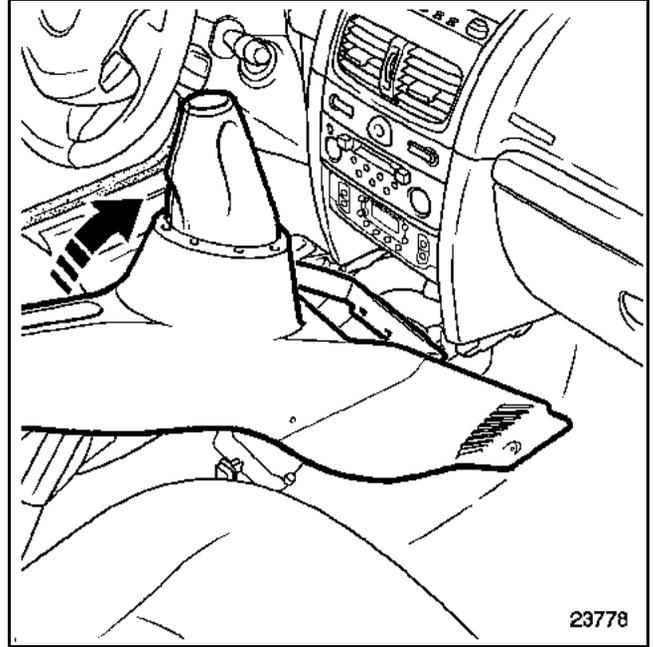
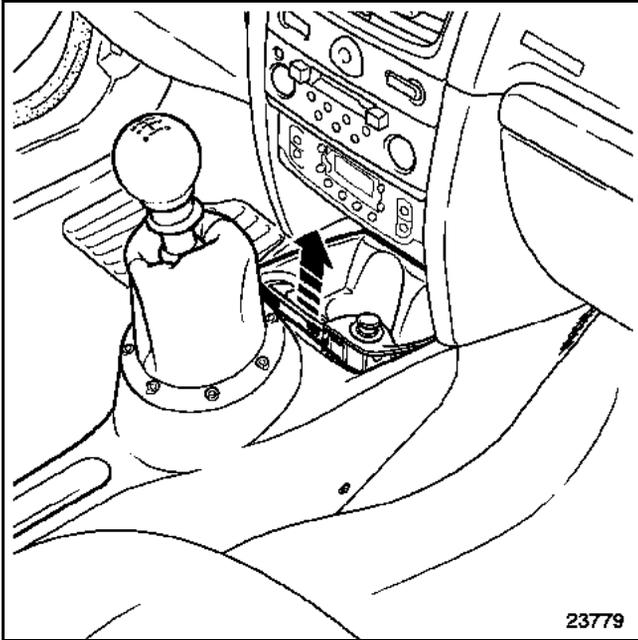
Note:

To unlock the computer, use the same method, confirming the "**Unlock computer VP007**" line. The "**ET073 Computer locked with tool**" state should no longer be active and the air bag warning light on the instrument panel should go out.

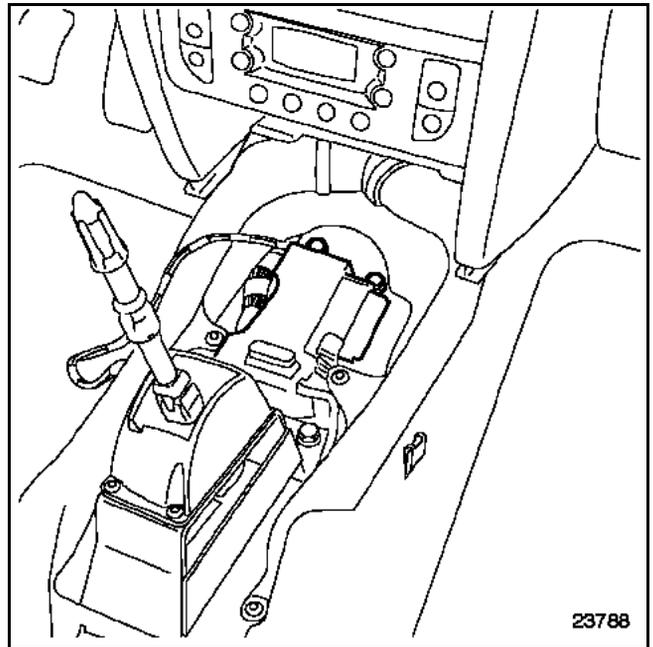
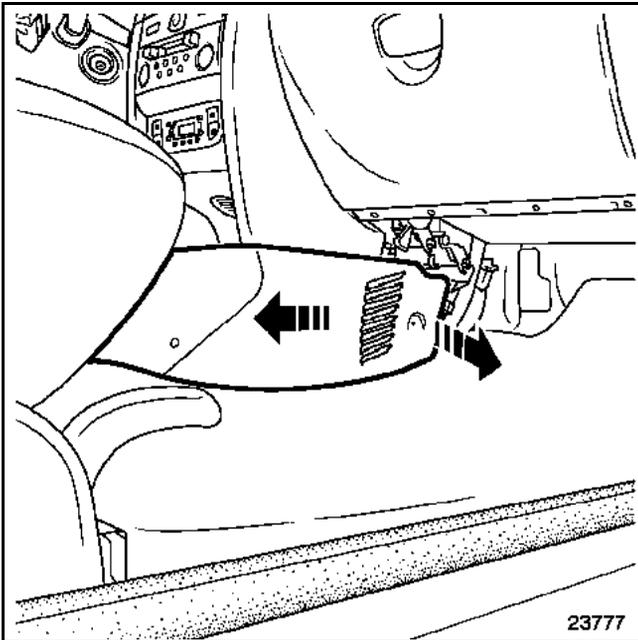
REMOVAL

The computer is located on the central console.

Remove the centre console.



Disconnect the computer then remove the mounting nuts.

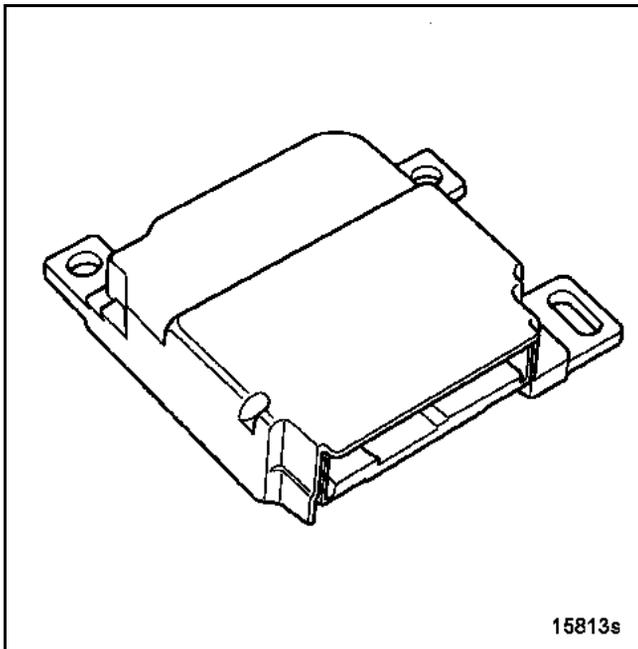


WARNING

- The computer contains sensitive components; **do not drop it** even if it needs to be assessed or returned under warranty.
- When working under the vehicle (exhaust system, bodywork, etc.), do not use a hammer or transmit impacts to the floor until the computer has been locked using the diagnostic tool.
- Electrical accessories fitted to the vehicle as aftermarket equipment (speaker, alarm unit and any device which could generate a magnetic field) must not be placed in the close vicinity of the airbag computer.

REFITTING

When refitting the computer, ensure that it is fitted the right way up and the right way round. The arrow must point towards the front of the vehicle.



Tighten the mountings to a torque of **0.8 daNm** before reconnecting the computer.

CONFIGURATION

The new units which can be recognised by the title "**AB8.2**" on the fault finding tools (except **XR25**) are delivered as configured pyrotechnic seatbelt retractors and without a bypass system.

If this configuration is not implemented, the airbag warning light remains lit:

- **Using the NXR, CLIP or OPTIMA 5800 tools only.**

- 1 Select the "**Fault finding**" menu,
- 2 Select and confirm the vehicle type.
- 3 Select and confirm the **Airbag** system to be checked.
- 4 Select the **Command** menu.
- 5 Select and confirm the "**Configuration**" function.
- 6 Check the configurations in the "**Configuration reading**" menu.

Note:

The vehicles should be configured "**with inhibition by key**", "**without side curtain air bags**" and "**without rear pyrotechnic inertia reels**".

AIRBAG AND PRETENSIONERS

Airbag computer

88C

CONNECTION

Orange 50-track connector

Track	Description
1	Multiplex connection
2	Low volume passenger front airbag
3	High volume passenger front airbag
4	Low volume driver's front airbag
5	High volume driver's front airbag
6	Earth
7	Fault finding line
8	Driver's curtain airbag
9	Passenger's curtain airbag
10	Driver's pretensioner
11	Passenger's pretensioner
12	Driver's side impact sensor
13	Driver's side impact sensor
14	Not used
15	Not used
16	Not used
17	Not used
18	Not used
19	Seat position sensor
20	Seat position sensor
21	Inhibitor key
22	Inhibitor key
23	Power supply
24	Not used
25	Not used
26	Multiplex connection
27	Low volume passenger front airbag
28	High volume passenger front airbag
29	Low volume driver's front airbag

Track	Description
30	High volume driver's front airbag
31	Not used
32	Not used
33	Driver's curtain airbag
34	Passenger's curtain airbag
35	Driver's pretensioner
36	Passenger's pretensioner
37	Passenger side impact sensor
38	Passenger side impact sensor
39	Not used
40	Not used
41	Not used
42	Not used
43	Not used
44	Not used
45	Not used
46	Not used
47	Not used
48	Earth
49	Not used
50	Not used

IMPORTANT

Before removal, lock the computer using the diagnostic tool.

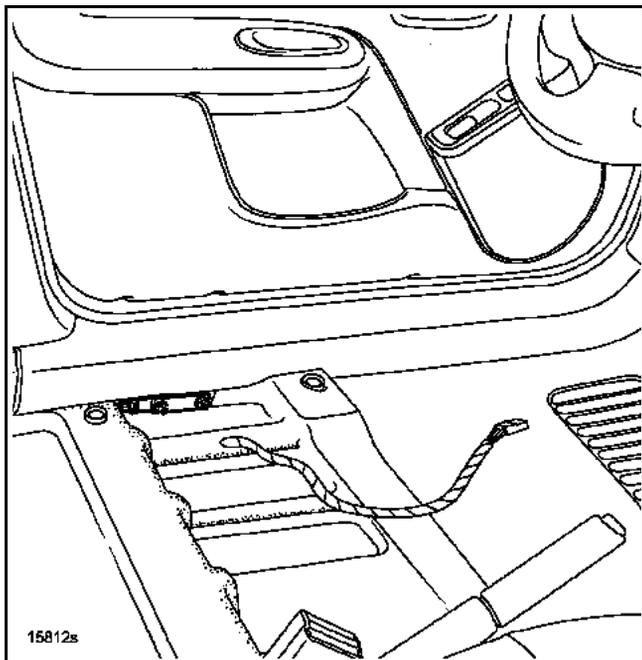
When this function is activated all the ignition lines are disabled and the airbag warning light on the instrument panel lights up when the ignition is switched on.

REMOVAL

The side impact sensors are located on either side under the door sill lining.

Remove the two mounting bolts from the sensor by passing the key under the seat runner.

Disconnect the sensor.

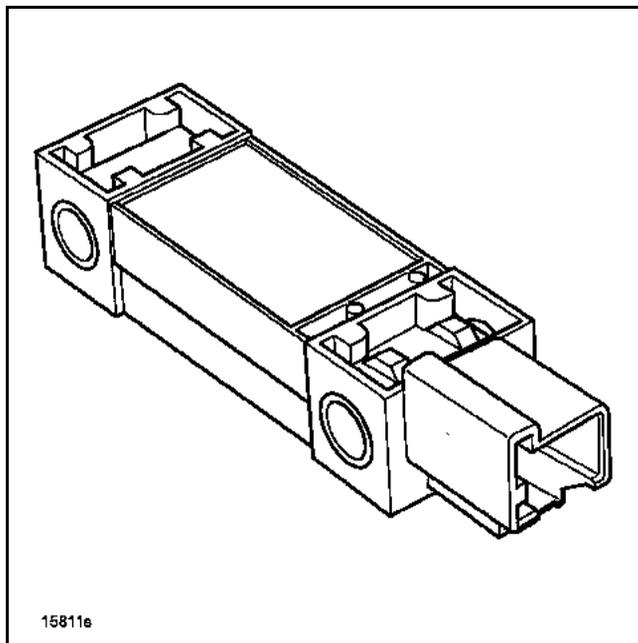


15812s

Note:

It is not necessary to remove the seat.

Sensor removed.



15811e

When an airbag or seat belt pretensioner is triggered, the computer locks permanently and switches on the airbag warning light on the instrument panel.

The side impact sensor and computer must then be replaced. (Some components lose their nominal specifications after experiencing trigger energy).

REFITTING

Position the sensor by means of its lug and attach it to the vehicle before reconnecting its connector (tightening torque: **0.7 daNm**).

After replacing faulty parts and reconnecting the connectors, carry out a check using the diagnostic tool.

If everything is correct, unlock the computer or see the **Fault finding** manual.

Note:

The side impact sensors do not require programming.

DESCRIPTION

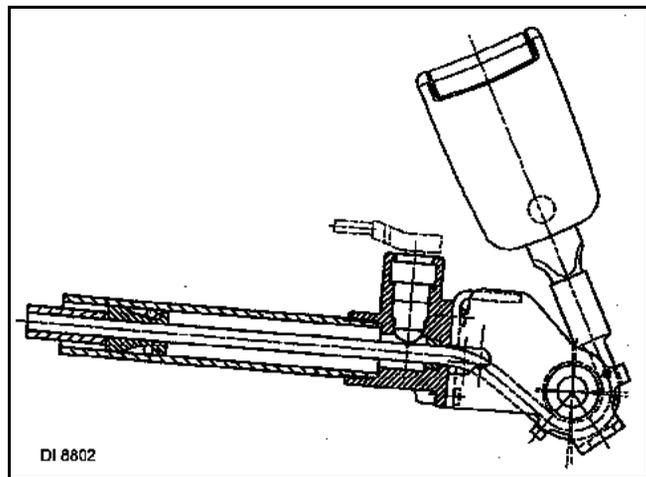
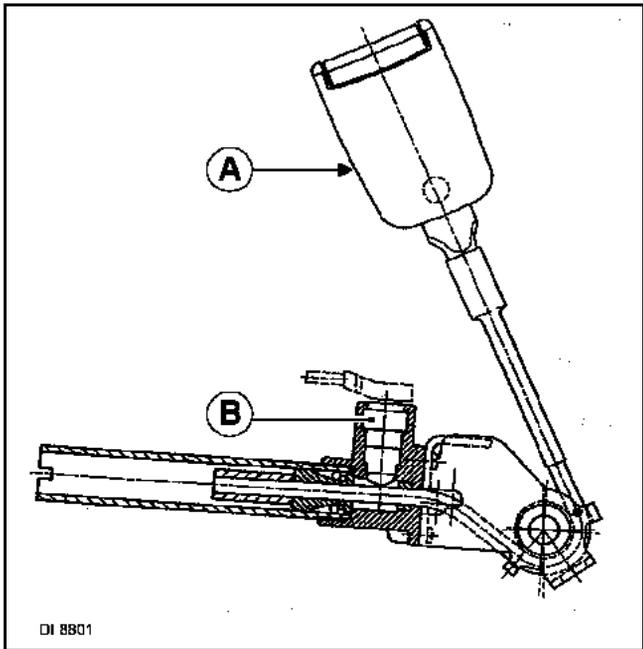
These vehicles are fitted with:

- pretensioners under the driver and passenger seats,

FRONT PRETENSIONERS

Note:
The system is operational after the ignition is switched on.

When it is triggered, the system can retract the seat belt catch by up to **100 mm** (maximum)



Seat belt pretensioners

REMOVAL

IMPORTANT

Before removing any safety system components, lock the air bag computer with the diagnostic tool. When this function is activated all the triggering lines are disabled and the airbag warning light on the instrument panel lights up (ignition on).

Note:

Removing pretensioners does not entail removal of the seats.

IMPORTANT

Refer to the destruction procedure section when scrapping a pyrotechnic seat belt retractor that has not been triggered (except for parts to be returned under warranty).

REFITTING

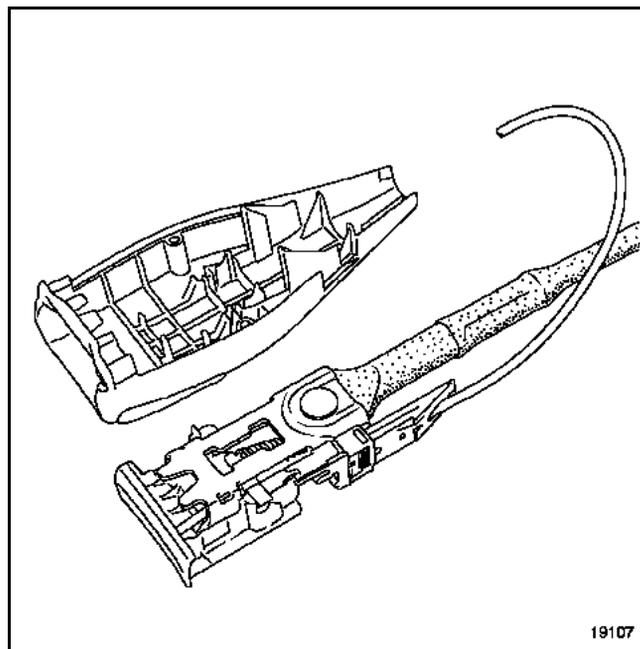
Ensure that the wiring is correctly routed using the wiring attachment points.

Tighten the mounting bolt to a torque setting of **2.1 daNm**.

FEATURES OF THE DRIVER'S SIDE

The seat belt catch on the driver's side has an electrical switch which operates a warning light on the instrument panel to indicate that the belt is not fastened.

To unclip the connector, remove the mounting bolts from the two buckle half-shells.



The driver's airbag is fitted with a dual volume airbag (with PRS marking) linked to the seat belt opposite it.

DESCRIPTION

It is located in the steering wheel. When triggered, the inflatable bag deploys by bursting through the steering wheel cover.

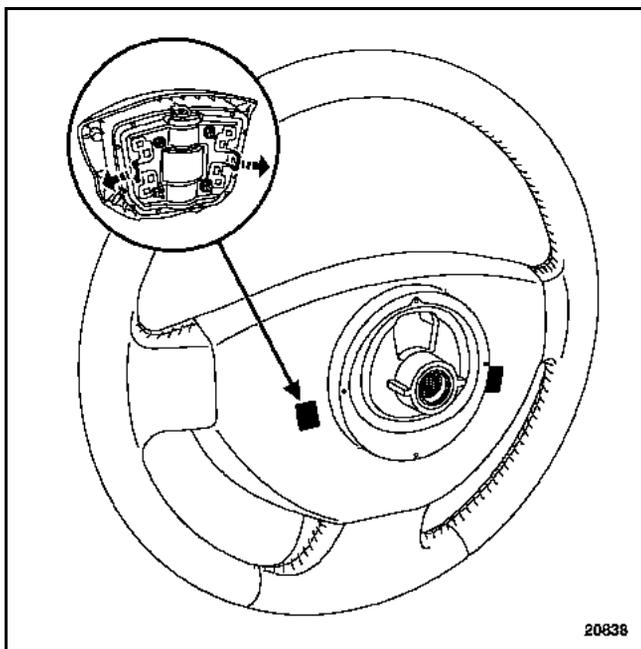
REMOVAL

IMPORTANT

Before removal, lock the computer using the diagnostic tool.

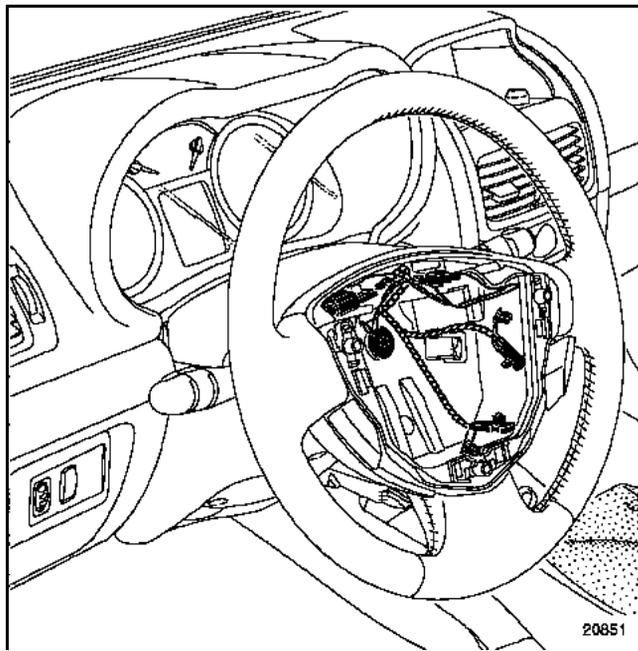
When this function is activated all the ignition lines are inhibited and the airbag warning light on the instrument panel lights up when the ignition is switched on.

Remove the clips behind the steering wheel using a screwdriver.



Unclip the connector safety clips.

Disconnect the two generator power supply connectors.



IMPORTANT

It is essential to refer to the "Destruction procedure" section when scrapping an airbag that has not been triggered.

REFITTING

Position the connectors and lock the safety clips.

Position the airbag on the steering wheel.

REMINDER:

When an airbag has been deployed, the steering wheel and its mounting bolts must be replaced (**tightening torque: 4.4 daNm**).

IMPORTANT

After refitting everything, carry out a check using the diagnostic tool.

If everything is correct, unlock the computer or see the **Fault finding** manual.

The passenger airbag (PRS) is fitted with a two-stage air bag linked to the seat belt opposite it.

The programmed restraint system for the seat belt is calibrated specifically and in complementary manner for this type of airbag.

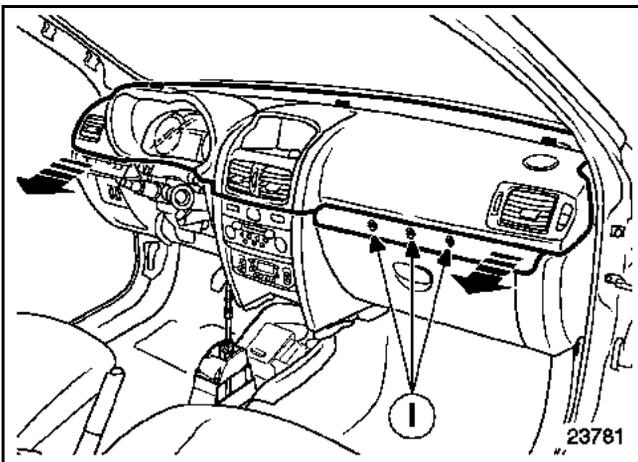
REMOVAL

The module is attached to the instrument panel opposite the front passenger but does not need to be removed.

IMPORTANT

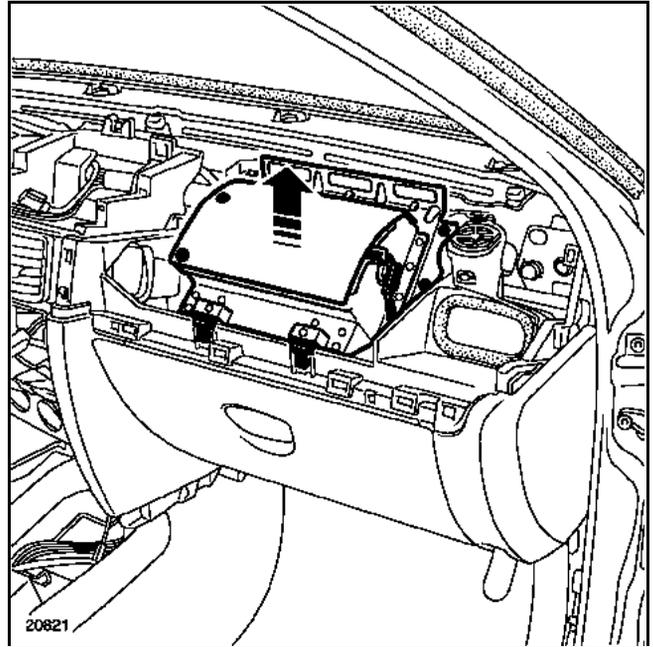
Before removing any safety system components, lock the air bag computer with the diagnostic tool. When this function is activated all the triggering lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

Remove the top of the dashboard (refer to the method in Section 83).



Disconnect the connectors.

Remove the module mounting bolts.



IMPORTANT

When the passenger airbag module is deployed, the resulting deformation and deterioration of the mountings always require replacement of the dashboard and cross member.

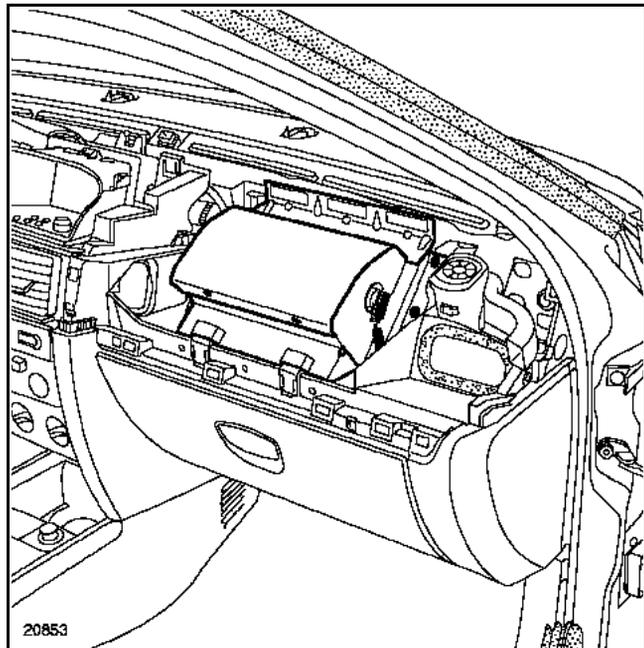
Do not forget to affix on the side of the new dashboard the label forbidding a child/baby seat to be fitted on the passenger seat with the back in the direction of travel (label available in the Parts Department collection under part number 77 01 206 809).

IMPORTANT

It is essential to refer to the "Destruction procedure" section when scrapping an airbag that has not been triggered.

REFITTING

Position the module and tighten the **mountings** to the recommended torque (**0.6 daNm**) before reconnecting the connectors.

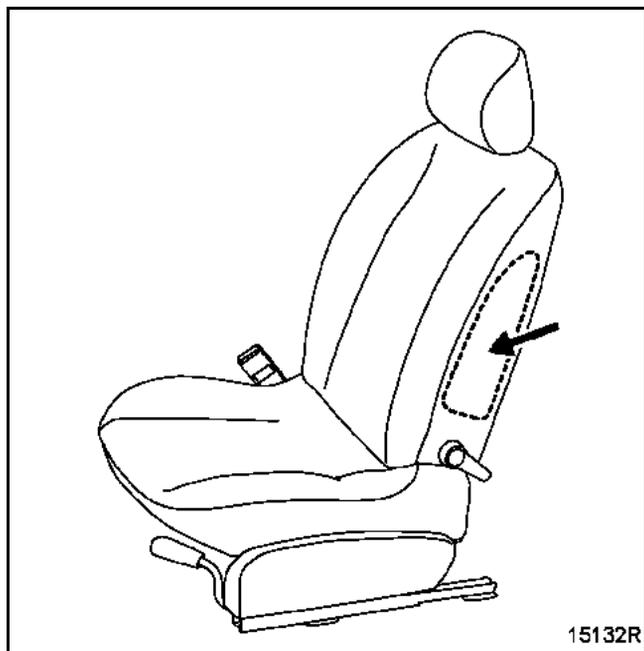


IMPORTANT

- Check for foreign bodies (bolts, clips, etc.) when fitting the airbag module.
- Attach a blue adhesive "Tamperproof system warning light" label sold under part no. **77 01 040 153** (other vehicles).

Perform a test using the diagnostic tool. If everything is correct, unlock the computer or see the **Fault finding** manual.

The **side airbag** module is attached to the back of the front seats on the door side. The inflatable bag tears the module cover, the foam and the lining of the seat when it deploys.



REMOVAL

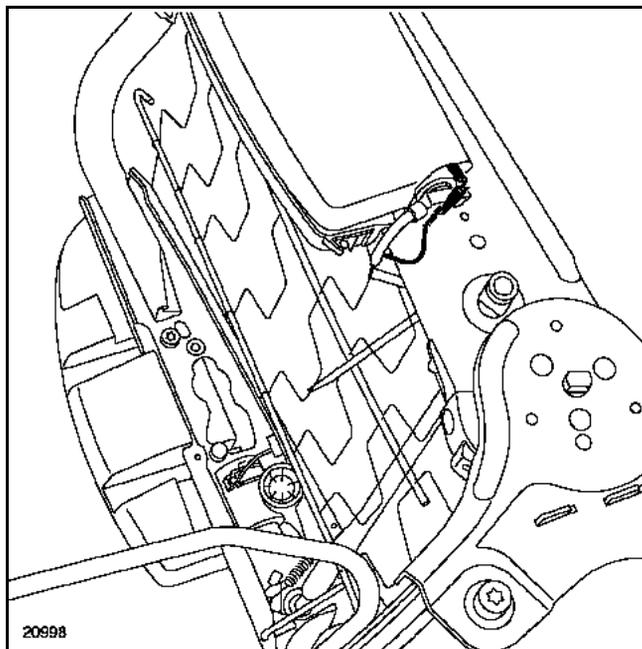
IMPORTANT

Before removal, lock the computer using the diagnostic tool.
When this function is activated all the ignition lines are inhibited and the airbag warning light on the instrument panel lights up when the ignition is switched on.

Remove the seat from the vehicle.

Strip the trim from the seat back (see **Bodywork** Technical Note).

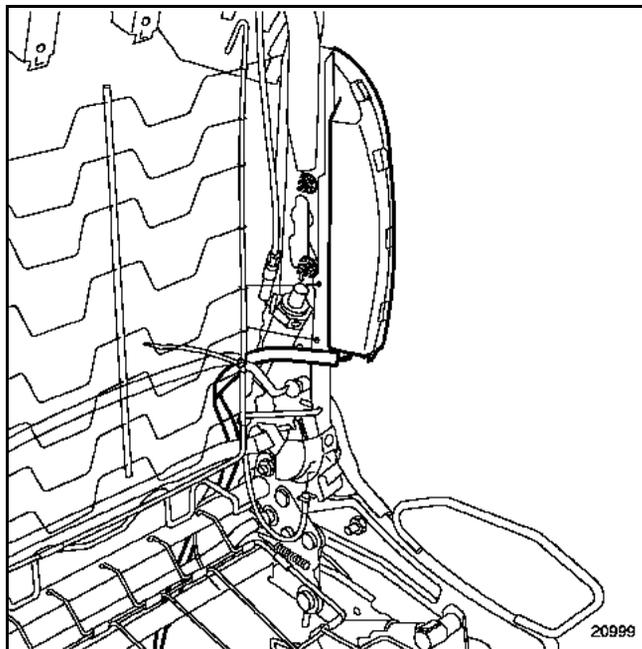
Undo the wiring from the airbag module and its earth wire. Mark the route of the wiring and its attachment points.



IMPORTANT

If the system has not been triggered and is to be refitted, operations on the cushion are prohibited.

Remove the airbag with its two nuts.



IMPORTANT

It is essential to refer to the "Destruction procedure" section when scrapping an airbag that has not been triggered.

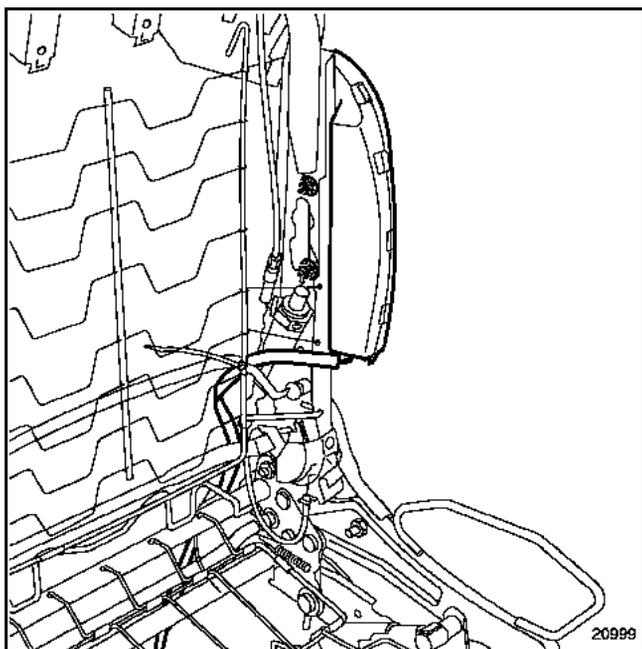
REFITTING

IMPORTANT

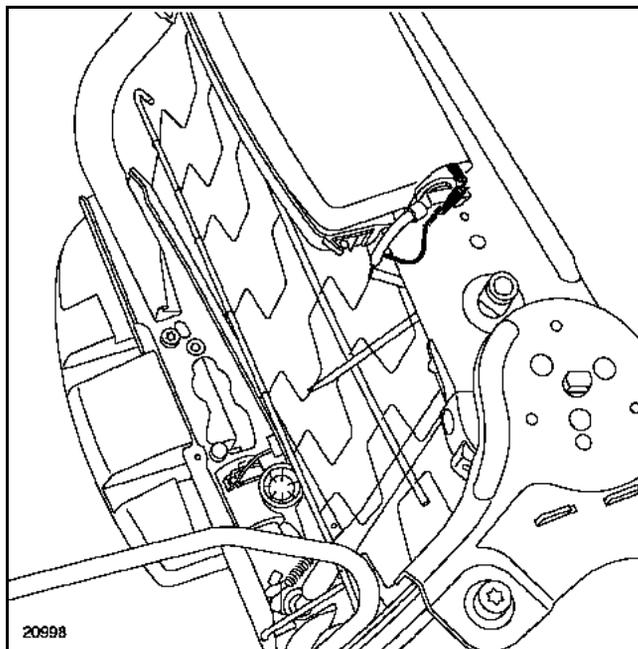
When a side airbag is triggered, the consequent deformation and damage caused to the mountings always require replacement of the seat frame.

Tighten the airbag on the seat backrest frame to the required torque (**0.8 daNm**).

Ensure that the earth wire is correctly connected to the airbag.



Refit the wiring under the seat cushion as before and keep the same routing and mounting points.



Replace the seat upholstery, complying with the recommendations described in the **Bodywork** Technical Note (type of clips, clip positions, etc.)

Refit the seat in the vehicle and reconnect the connectors.

Perform a test using the diagnostic tool. If everything is correct, unlock the computer or see the **Fault finding** manual.

IMPORTANT

To prevent any risk of an accident, the pyrotechnic gas generators must be triggered before the vehicle is scrapped or the part is scrapped.

WARNING

Do not carry the destruction procedure if the local regulations require a special procedure which is confirmed and circulated by the Diagnostic and Repair Methods Department.



The tool (Elé.1287) and cables (Elé. 1287-01) and (Elé. 1287-02) must be used.

IMPORTANT

Do not use pyrotechnic components as replacement parts. The pretensioners or airbags on a vehicle which is to be scrapped must be destroyed.

WARNING

- Each part is intended for a specific type of vehicle and should not be fitted onto another vehicle under any circumstances. The parts are not interchangeable.
- Do not trigger pretensioners which are to be returned under warranty because of a problem with the seat belt catch. This makes analysis of the part by the supplier impossible. Return the defective part to the techline in the packaging from the new part.

I - PYROTECHNIC PRETENSIONERS AND INERTIA REELS

1 - Destruction of the part mounted on the vehicle:

Move the vehicle outside the workshop.

Connect the destruction tool (Elé. 1287) to the pretensioner after removing the seat runner cover.

Unwind all the tool wiring so that it is far enough away from the vehicle (approx. **ten metres**) when triggering is performed.

Connect the two supply wires on the tool to a battery.

After checking that there is no-one nearby, destroy the pretensioner by pressing the two buttons on the tool at the same time.

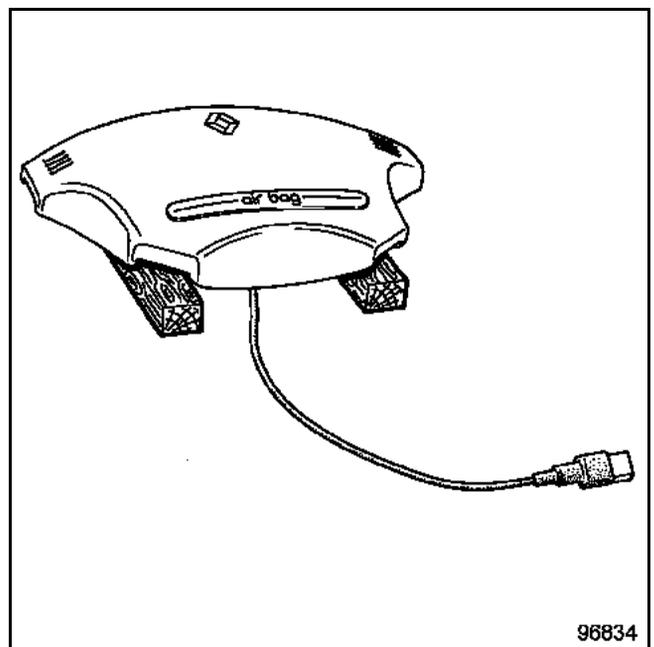
2 - Destruction of the part removed from the vehicle:

Proceed in the same way as for the front airbag, in a stack of old tyres.

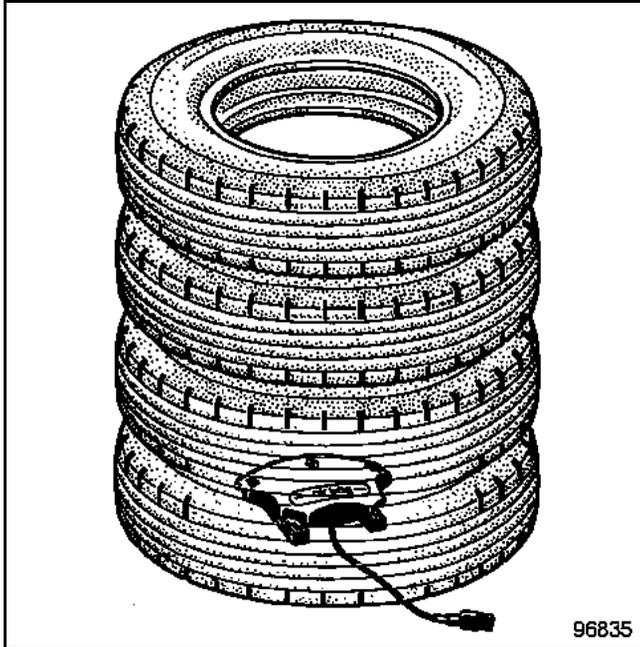
II - AIR BAGS

These components can only be destroyed after they have been removed from the vehicle. Destruction operations must take place outside the workshop.

Connect the corresponding wiring harness.



Put the airbag on two wooden blocks.



Destruction is carried out in a stack of old tyres.

Make sure that air bag deployment will not be hindered.

Unwind all the tool wiring so that it is far enough away from the unit (approx. ten metres) during triggering and connect it to the air bag.'

Connect the two supply wires on the destruction tool (Elé. 1287) to a battery.

After checking that there is no-one nearby, destroy the air bag by pressing the two tappets on the tool simultaneously.

Note:

If triggering is not possible (faulty ignition module) return the part to the techline.