

RENAULT

3 Chassis

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EDITION ANGLAISE

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

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

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LAGUNA III - Section 3

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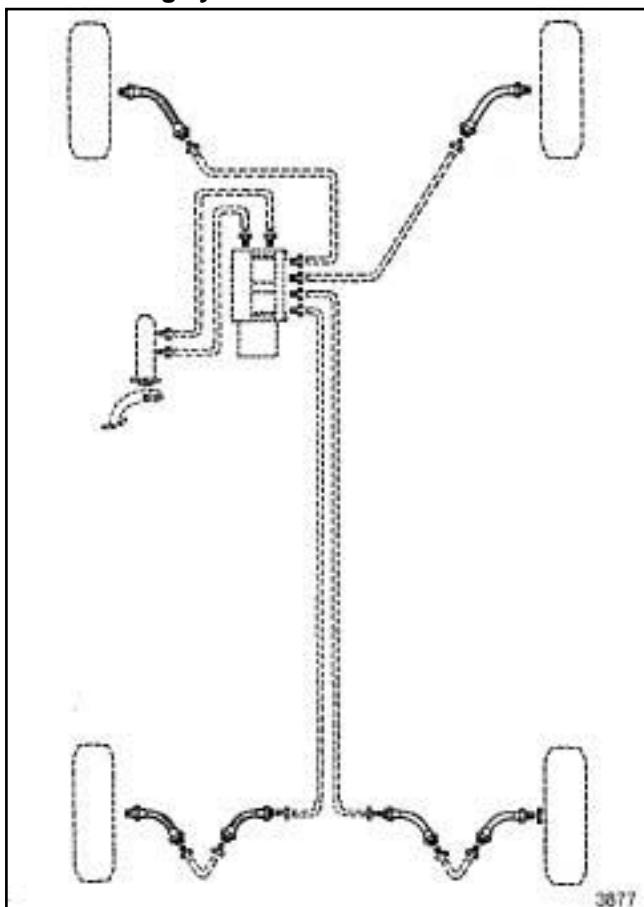
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« X » braking system with ABS



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IMPORTANT

This is a diagram of the general principle, do not use it as a reference for take-off points or circuit allocation. When replacing components in a vehicle's braking circuit, always mark the pipes before removing them.

I - SAFETY**1 - Advice to be followed before any operation**

For an operation requiring the use of a lift, follow the safety advice (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

The brake regulation circuit must be free of all hydraulic and electrical faults.

In case of incorrect handling, the brake fluid can cause serious injury and damage. Follow the manufacturer's instructions for brake fluid.

To prevent dust from entering the master cylinder reservoir and the brake circuit, the plug must be removed just before filling and closed immediately afterwards,

2 - Instructions to be followed during the operation

Do not press on the brake pedal during work on the brake system.

If, during work on the brake system, any damage on any part is observed, it must be repaired before driving the vehicle again.

Brake fluid is highly corrosive. Ensure any brake fluid spilt on parts of the vehicle is cleaned off.

Use brake fluids that comply with the Renault standard (see **Vehicle: Parts and consumables for the repair**)

Check the brake fluid levels in the braking circuit and the bleeding device.

Check that the pressure of the bleeding device is between **1.5 bar and 2 bar**.

II - CLEANLINESS**1 - Advice to be followed before any operation**

Protect any bodywork components that risk being damaged by brake fluid with a cover.

2 - Instructions to be followed during the operation

Fit blanking plugs recommended for the Siemens K9K injection system at the end of each pipe and in all the openings of the disconnected components of the brake circuit.

Clean around the braking system with **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

III - GENERAL RECOMMENDATIONS

When replacing brake pads, always replace the pads on the other side as well.

When replacing a disc, always replace the disc on the opposite side.

When replacing brake discs, you must replace the brake pads.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

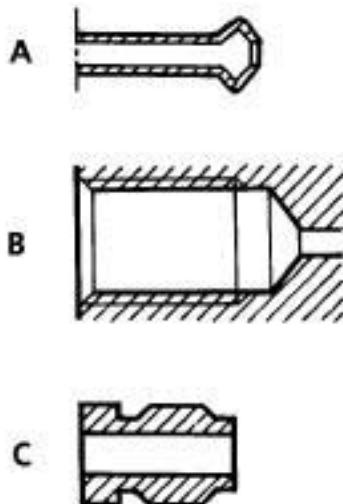
IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Always replace the rigid brake pipe clips.

Reminder:

- The pipes between the master cylinder, callipers and the hydraulic assembly are connected using threaded unions with a metric thread.
- Therefore, only parts specified in the Parts Catalogue for this vehicle should be used.

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Parts identification:

- shape of steel or copper pipe end piece (A),
- shape of connecting points on components (B),
- shape of unions (C): **11 mm** hexagonal.

Precautions to be taken before and during the brake circuit bleeding operation:

- use brake fluid which conforms to the Renault standard (see **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products)),
- check the brake fluid levels in the brake circuit and the bleeding device,
- the braking regulation circuit must be free from all hydraulic and electrical faults,
- check that the pressure of the bleeding device is between **1.5 bars and 2 bars**.

Equipment required

pedal press

brake circuit bleeding device

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **30A, General information, Brake circuit: Precautions for the repair**, page **30A-2**).

This procedure must be applied after one of the following components has been removed or replaced:

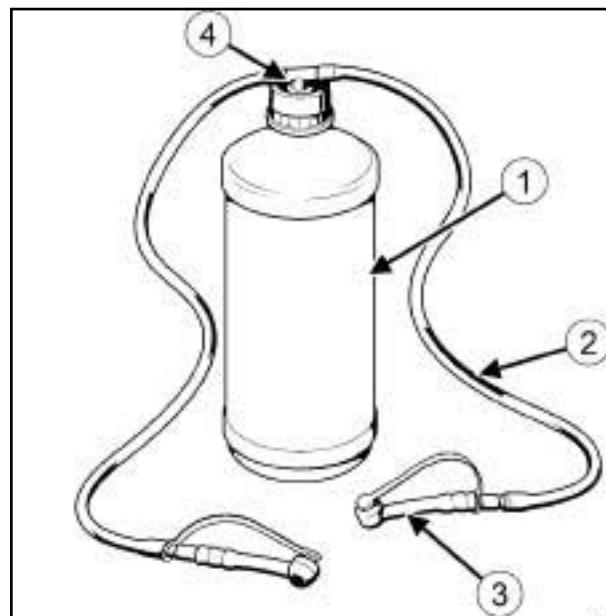
- the master cylinder,
- the brake fluid,
- the hydraulic unit,
- a rigid pipe,
- a hose,
- the reservoir,
- a calliper.

WARNING

Switch off the vehicle ignition so as not to activate the hydraulic unit solenoid valves when bleeding the brake circuit.

WARNING

The level must be between the «MIN» and «MAX» markings on the reservoir.



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- Use locally produced containers to collect the used brake fluid.

Front and rear callipers:

- 2 washer fluid containers (1) (1 litre),
- **4 mm** diameter transparent pipes (2) ,
- 4 pipettes (3) ,
- 2 T-unions (4) .

Note:

The new hydraulic unit is pre-filled.

When working on one of the following components, position a **pedal press** to limit the outflow of brake fluid and prevent any air from entering the master cylinder and the circuits downstream of the master cylinder:

- hydraulic unit,
- pipes between the hydraulic unit and brake callipers,
- brake hoses,
- brake calliper.

Remove the **pedal press** before carrying out the braking system bleeding procedure.

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Switch off the vehicle ignition.

- Connect the **brake circuit bleeding device** (after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).
- Pressurise the brake circuit.
- Adjust the pressure to between **1.5 bar < P < 2 bar** for **3 minutes** to stabilise it in the braking circuit.
- Close the circuit between the bleed screw and brake fluid reservoir without dumping the pressure.

Note:

The circuit between the bleed screw and brake fluid reservoir is closed in different ways depending on the type of equipment used:

- valve,
- switch.

- Fit the bleed containers to the four bleed screws of the callipers.
- Undo the calliper bleed screws:
 - front left-hand,
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- Open the circuit between the bleed screw and brake fluid reservoir and allow the liquid to run until all the air bubbles have been released.
- Tighten the bleed screws in the following order:
 - front left-hand,
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- Undo the calliper bleed screw:
 - front left-hand,
 - allow the fluid to run until all the air bubbles have been released,
 - tighten the bleed screw on the calliper.
- Carry out the previous operation on the callipers:
 - front right-hand,
 - rear left-hand,
 - rear right-hand.
- Close the bleed screw to dump the pressure in the brake circuit.

- Remove the **brake circuit bleeding device** from the master cylinder reservoir.

- Check pedal travel and resistance. If it is not correct, finish bleeding the brake circuit with the help of a second operator. Start the bleed operation by bleeding the calliper that is the furthest away from the master cylinder:

- hold down the brake pedal,
- open the circuit bleed screw to release the air from the brake circuit,
- close the circuit bleed screw,
- release the brake pedal.

- Top up the brake fluid level in the reservoir, if necessary. Check the sealing of the front and rear bleed screws and ensure that the sealing covers are in place (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**).

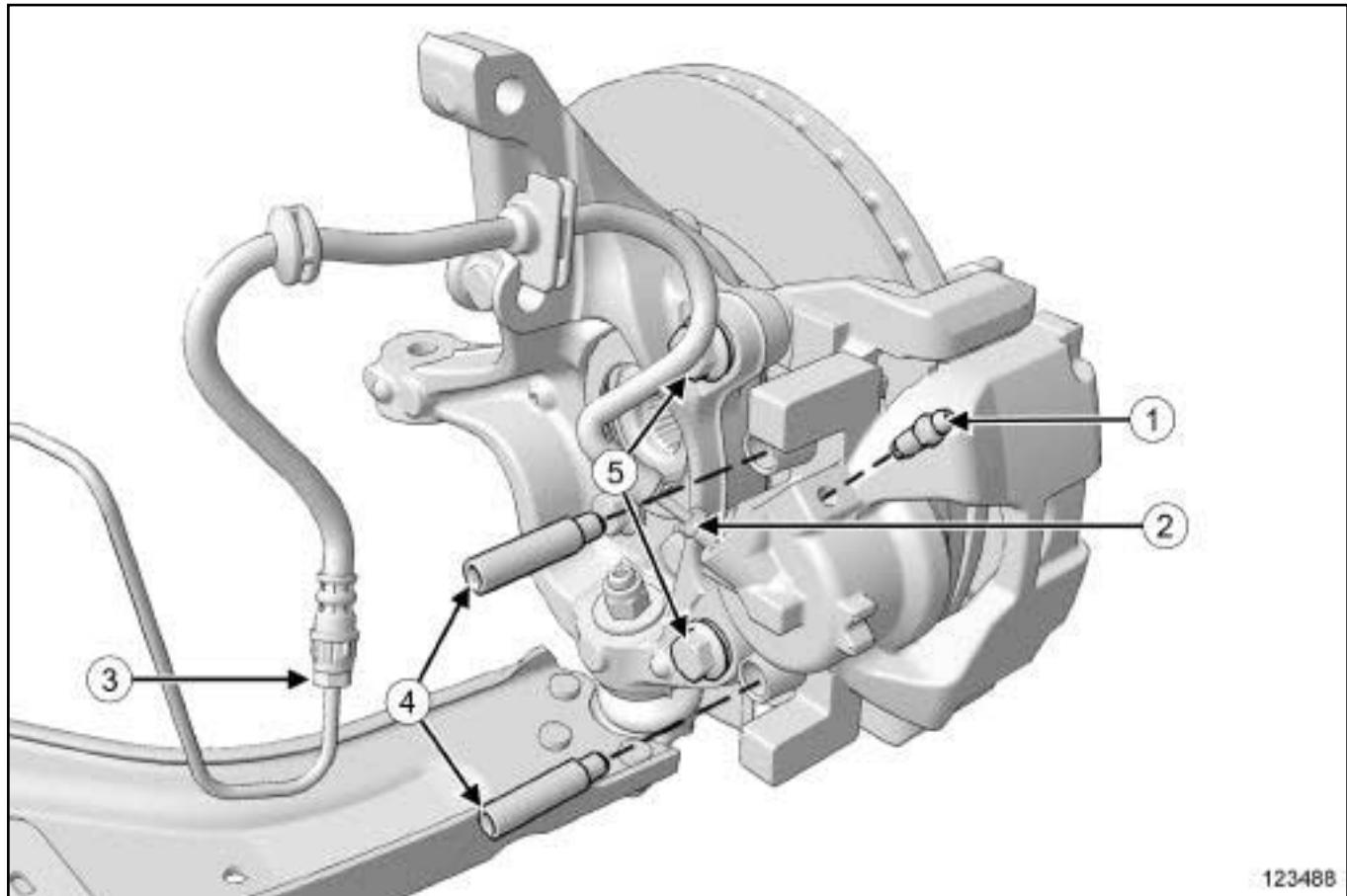
- During a road test, trigger braking regulation to confirm that the brake pedal travel is correct.

- Clean off any traces of brake fluid on the vehicle using **BRAKE CLEANING PRODUCT** (see **Vehicle: Parts and consumables for the repair**)

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

I - FRONT BRAKES



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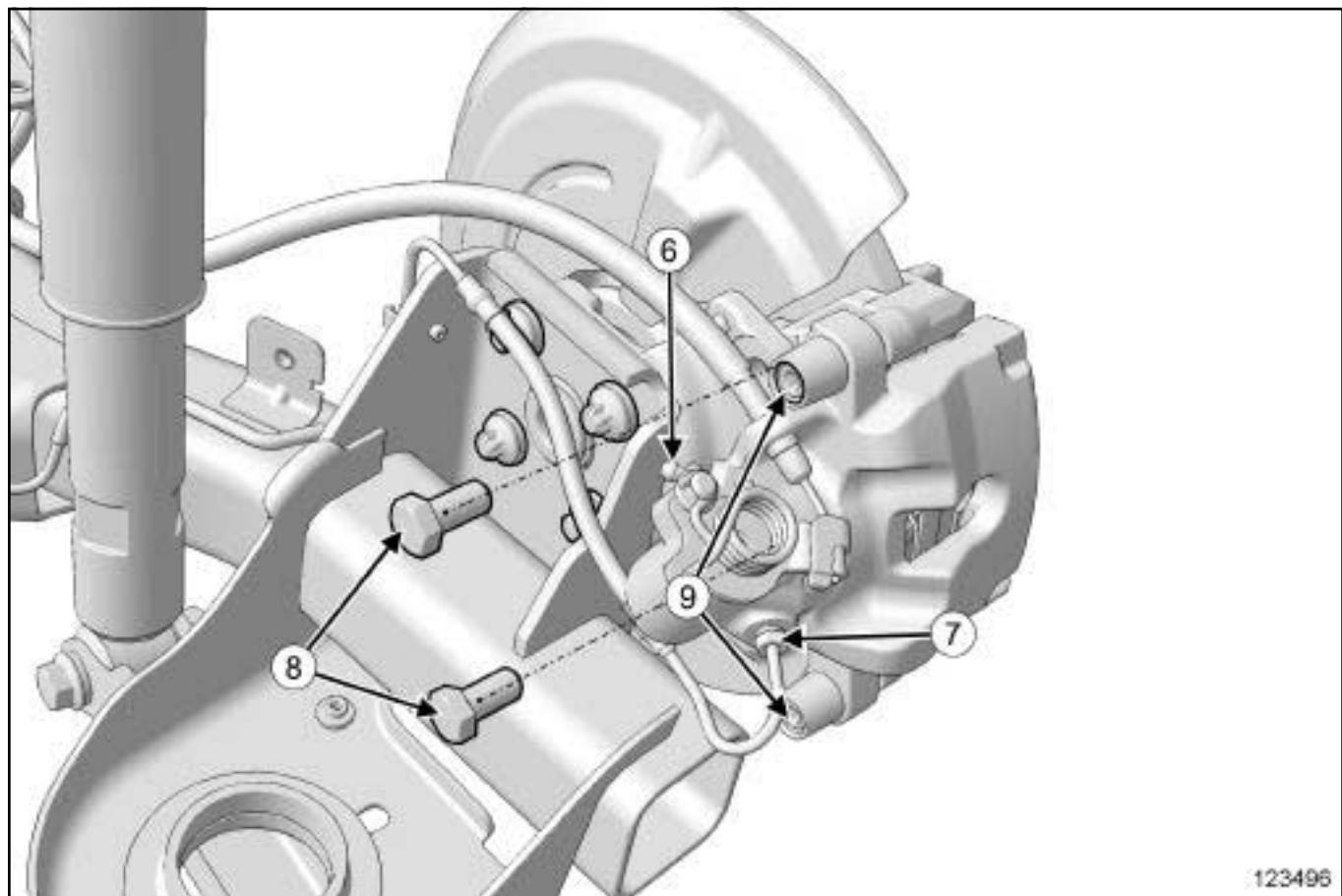
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No.	Description	Tightening torque (N.m)
(1)	Calliper bleed screw	10
(2)	Brake hose to the calliper	14
(3)	Brake hose on brake pipe	17
(4)	Guide pin bolts	28
(5)	Calliper support bolt	105
	Disc mounting bolt	20

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

II - REAR BRAKES



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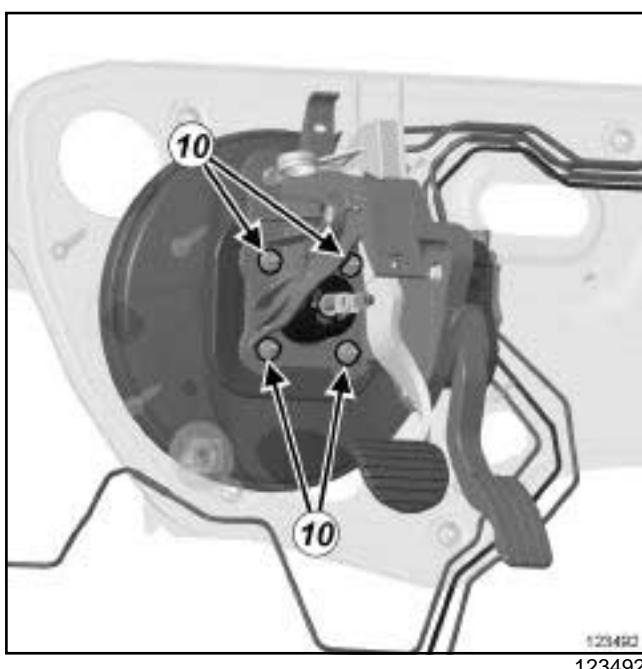
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No.	Description	Tightening torque (N.m)
(6)	Calliper bleed screw	14
(7)	Brake hose to the calliper	14
(8)	Calliper support bolt	105
(9)	Guide pin bolts	32

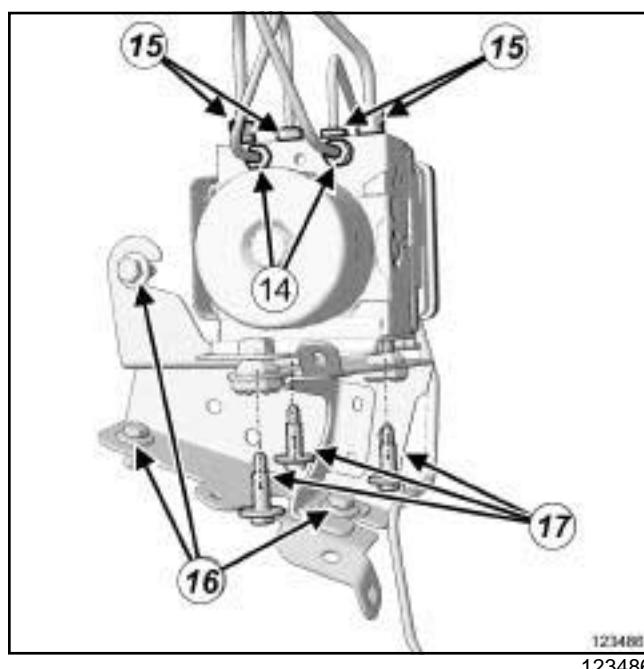
III - BRAKE CONTROL

GENERAL INFORMATION
Brake circuit: Tightening torque

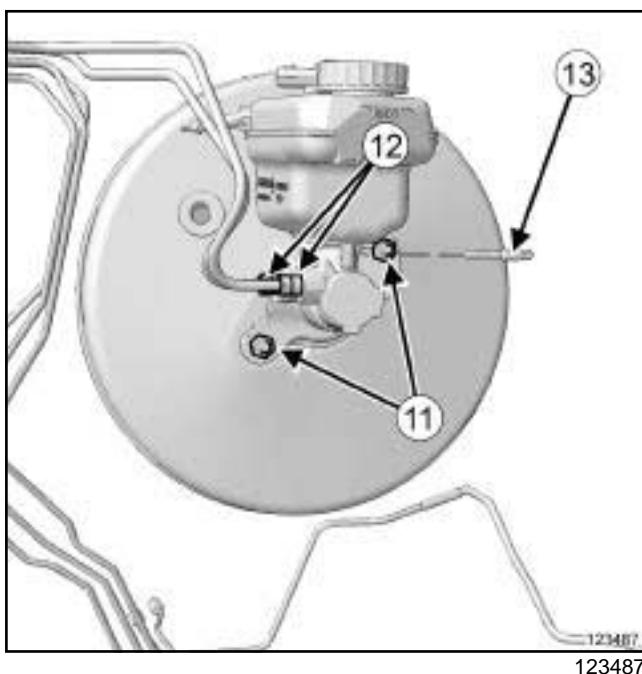
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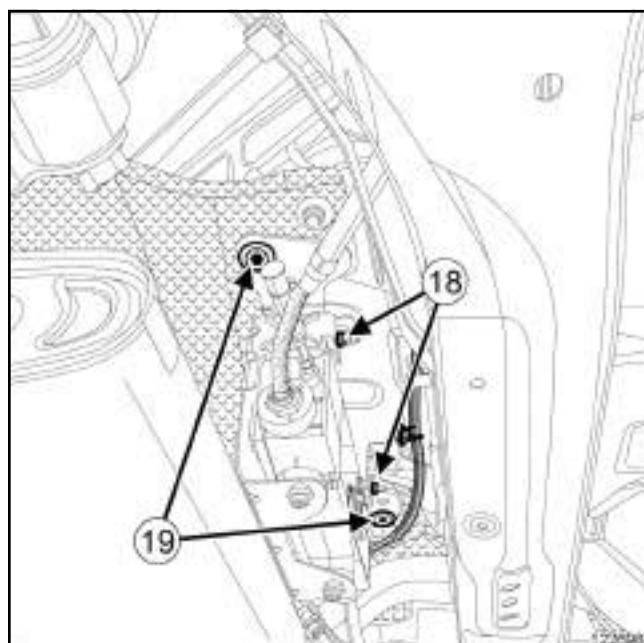
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	Description	Tightening torque (N.m)
(10)	Brake servo bolts	24
(11)	Master cylinder nuts	20
(12)	Master cylinder outlet pipe	14
(13)	Reservoir bolt on master cylinder	6.5

GENERAL INFORMATION
Brake circuit: Tightening torque

30A

	Description	Tightening torque (N.m)
(14)	Hydraulic unit inlet pipes	14
(15)	Hydraulic unit output pipes	14
(16)	Hydraulic unit mounting bolt on body	21
(17)	Hydraulic unit bolt on its mounting	8
(18)	Assisted parking brake control unit bolt	21
(19)	Assisted parking brake control unit mounting bolt	21

GENERAL INFORMATION

Rigid brake pipe: Repair

30A

Equipment required

compressed air nozzle

Tightening torques

brake pipe bolts **8 N.m**

underbody unions
(female/male) **6 N.m**

This procedure applies to copper pipes diameter **4.7 mm**.

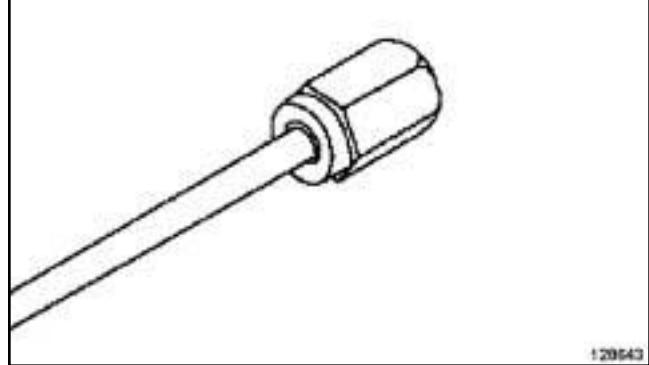


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Note:

This procedure does not apply to:

- hybrid pipes (pipe + hose),
- pipes with diameters **6 mm** and **8 mm**.



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REPAIR

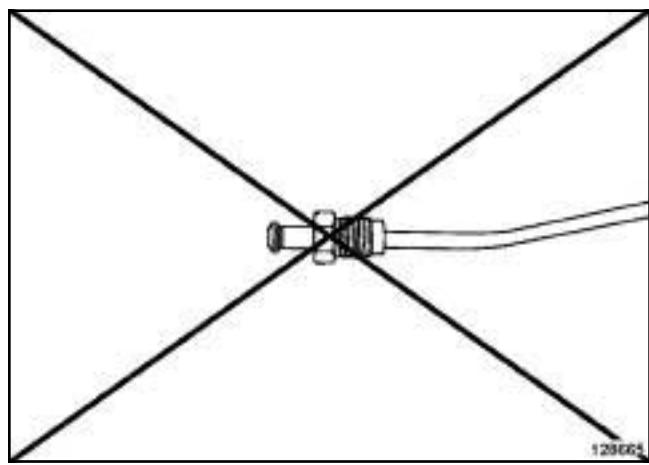
I - PIPE PREPARATION OPERATION



WARNING

To avoid causing a breakdown in hydraulic brake circuit , do not squash or bend the rigid pipe when cutting.

- Cut the pipe to the recommended length using a tube cutter (see **Garage equipment catalogue**).



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- Put the nuts or bolts on the pipe before forming the rivets.

II - MAKING THE RIVETS



Note:

To make the rivets, fit the rivet press in a vice.

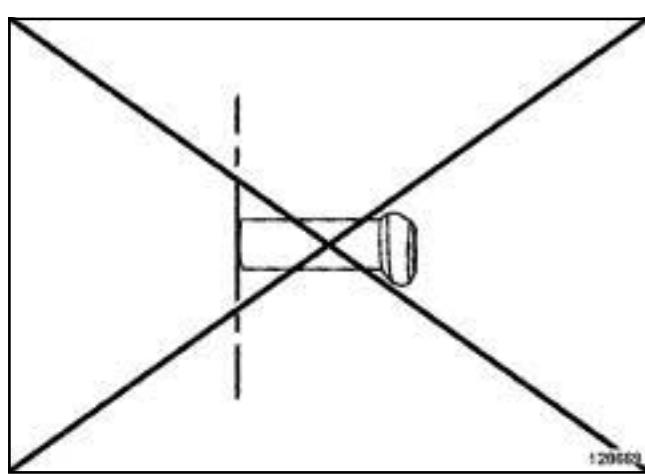
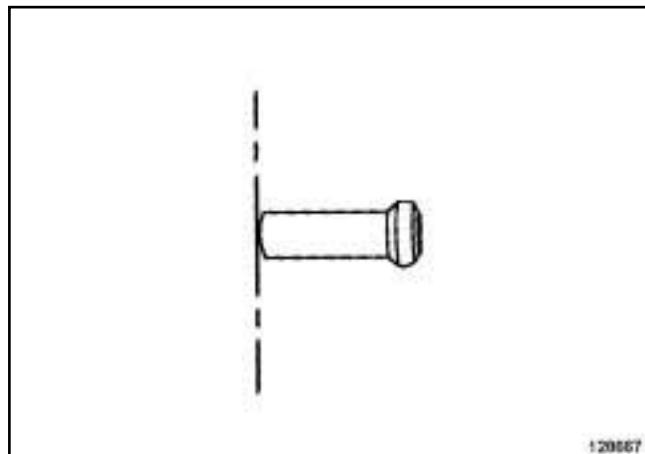
GENERAL INFORMATION

Rigid brake pipe: Repair

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- Fit the pipe in the rivet press (see **Garage Equipment Catalogue**).
- Adjust the length of the pipe to be shaped.
- Torque tighten the press end piece(40 N.m).

III - CHECKING THE RIVETS

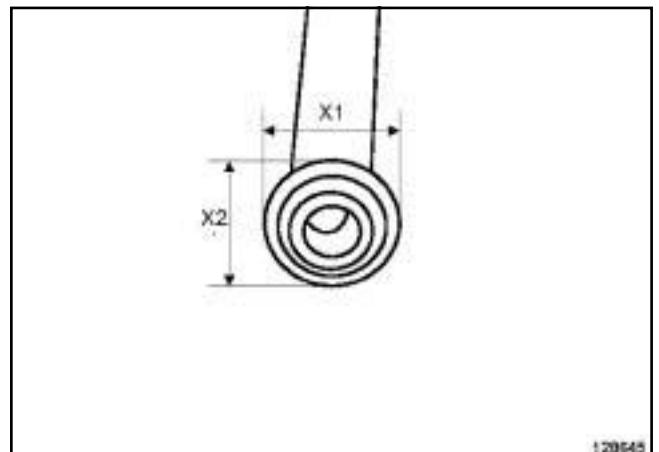


- Visually inspect:
 - the uniformity of the rivets' diameter,
 - the rivet centring in relation to the pipe shaft.



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- Visually check that the internal diameter of the pipe is not oval-shaped.



- Check that the diameter of the end panel is not oval shaped using a sliding calliper.

Correct diameter if $(X1) = (X2)$

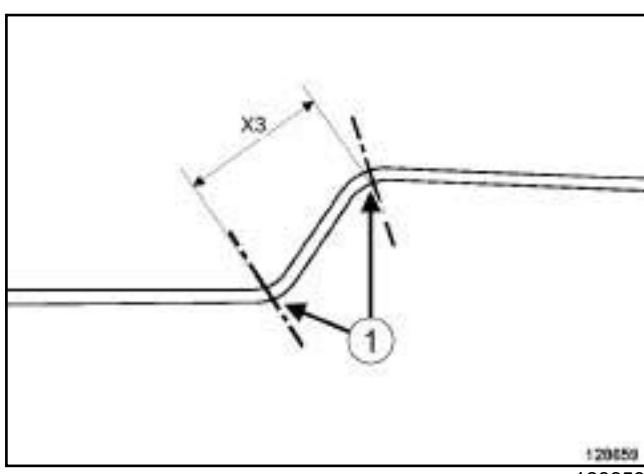
IV - PREPARATION OF THE PIPE BEFORE BENDING

-

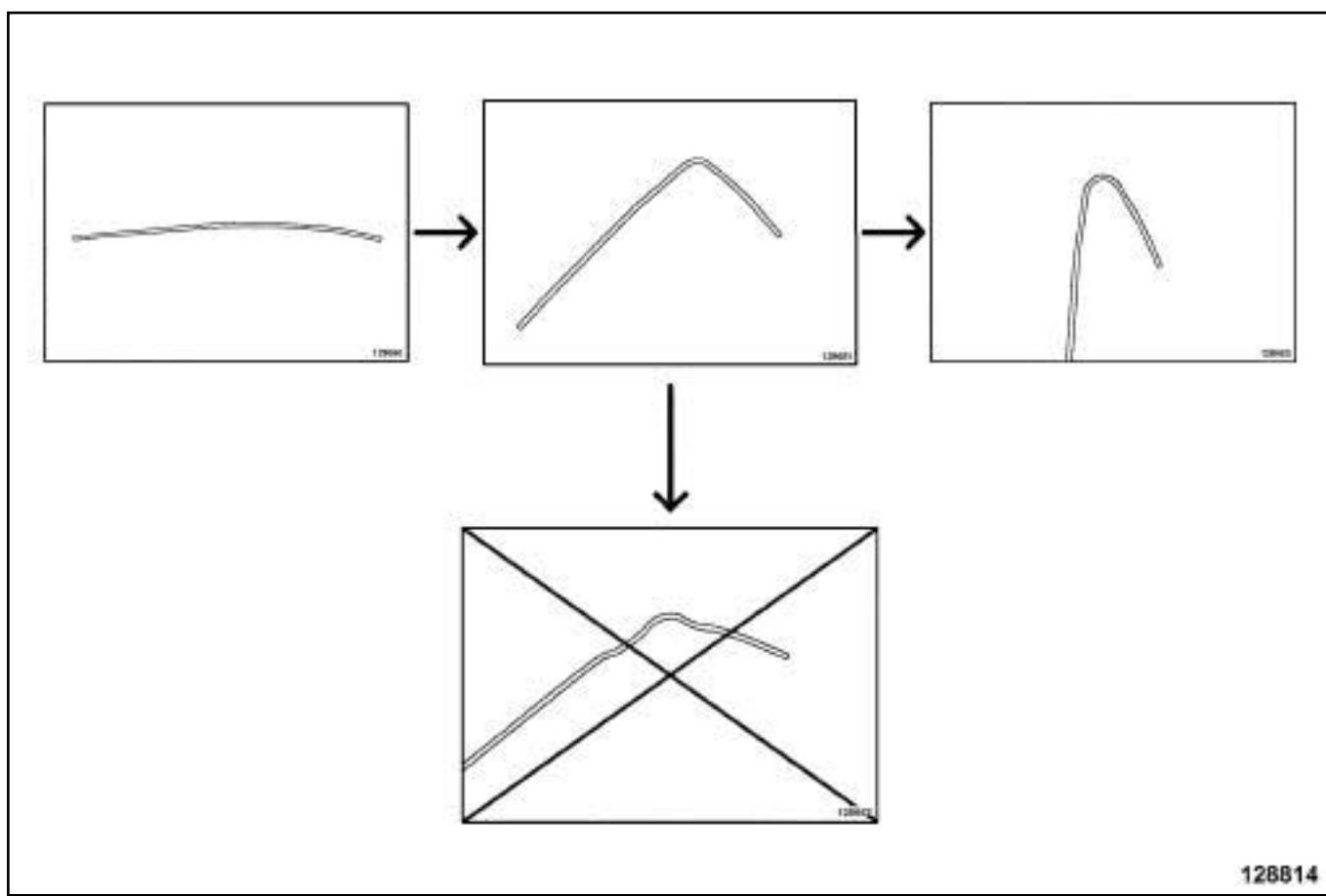
Note:

Impurities may spread inside the pipe while the rivets are being made.

- Blow inside the pipe in both directions using a **compressed air nozzle**.
- Put plugs on the bolts or nuts at the ends of the pipe.
- Put the original pipe on a flat base plate that is the length of the pipe.



- Measure the dimensions (X3) (in mm) curve after curve, between each curve radius « centre » (1) of the old pipe.



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WARNING

To avoid weakening the pipe, either bend once or bend progressively by increasing the bend (that is, by continually decreasing the curve radius). Do not install a rigid pipe on a vehicle that may have been bended and then unbended alternatively to reach the correct curve radius.

Note:

During the bending operation, the required angle should be passed slightly in order to compensate for material elasticity.

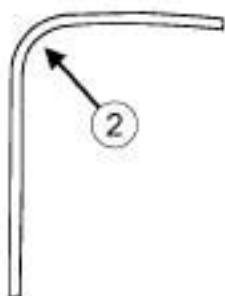
- Shape the pipe using a bender, curve after curve, while respecting the original shape of the pipe.

GENERAL INFORMATION

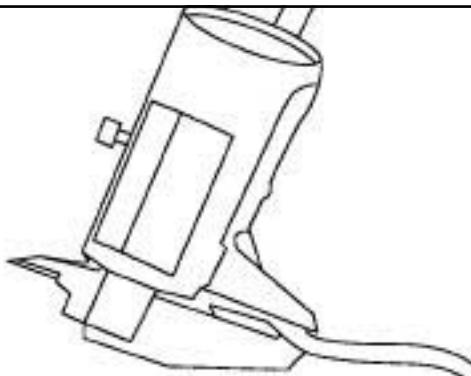
Rigid brake pipe: Repair

30A

V - CHECKING BENDING



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- Check the out-of-roundness of the outer diameter at the centre of the curve radius (2) using a sliding caliper (the out-of-roundness of the outer diameter is correct if it is less than 10% flattening):
 - nominal diameter of the pipe: **4.75 mm**,
 - minimum diameter after bending: **4.30 mm**.

VI - REFITTING THE PIPE



Note:

When refitting the rigid brake pipe:

- respect the original routing as much as possible,
- adjust the pipe routing by hand when fitting inside the clips.

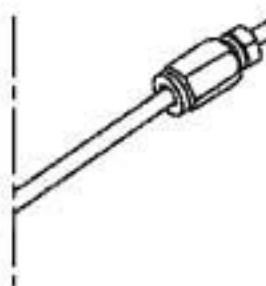
WARNING

Contact points between the rigid brake pipe and the surrounding components could cause damage to the pipe. In order to avoid these contacts, adjust the pipe routing by hand.



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- Torque tighten the **brake pipe bolts (8 N.m)**.



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- Torque tighten the **underbody unions (female/male) (6 N.m)**.

BRAKE FLUID REPLACEMENT INTERVAL

Our braking technology, and in particular the disc brakes (hollow pistons which conduct little heat, have a low volume of fluid in the cylinder, sliding callipers avoiding the need for a fluid reserve in the least cooled area of the wheel), has allowed us to prevent the risk of « vapour lock » as far as possible, even with heavy braking (mountainous area). However, current brake fluids are subject to minor deterioration during the first months of use due to slight humidity intake. This is why it is recommended that you change the brake fluid: see **maintenance booklet for the vehicle**.

1 - Topping up the level

Wear of the brake pads will result in a gradual drop in the fluid level in the reservoir.

Do not top up the fluid, as the level will rise again when the pads are next changed. The brake fluid level must not fall below the minimum mark.

2 - Approved brake fluid

Mixing two incompatible brake fluids in the brake circuit may lead to:

- serious risk of leakage due mainly to deterioration of the cups,
- deterioration in the operation of the ESP system.

To prevent such risks, it is essential to use only brake fluids that comply with the RENAULT standard (see **Vehicle: Parts and consumables for the repair**).

GENERAL INFORMATION

Brake: Specifications

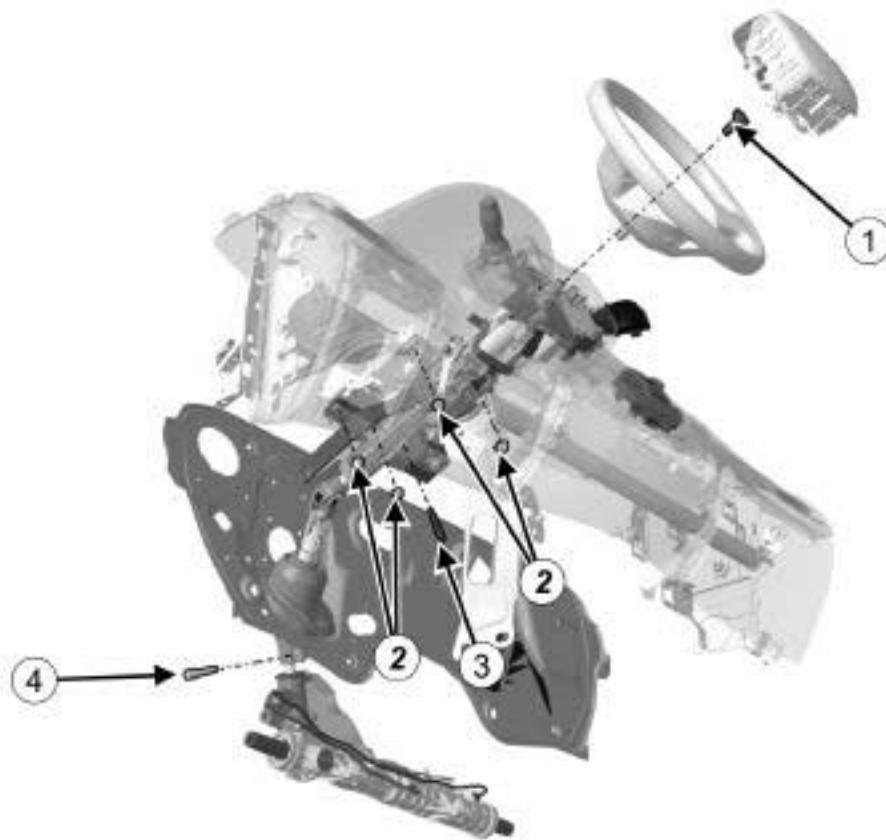
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Engines	K4M/K9K	F4R/M4R/M9R	V4Y/V9X
Front brakes (mm)			
Piston diameter		57	60
Disc diameter	280	296	320
Disc thickness	24	26	28
Minimum disc thickness (1)	21.8	23.4	25.4
Maximum disc run-out	0.024	0.025	0.03
Brake pad thickness (including backplate)		17.5	
Minimum brake pad thickness (including backplate)		8.2	
Rear brakes (mm)			
Piston diameter		38	
Disc diameter		300	
Disc thickness		11	
Minimum disc thickness (1)		9.5	
Maximum disc run-out		0.08	
Brake pad thickness (including backplate)		15.55	
Minimum brake pad thickness (including backplate)		7.45	

(1) the brake discs cannot be repaired. If they are excessively worn or scratched they must be replaced.

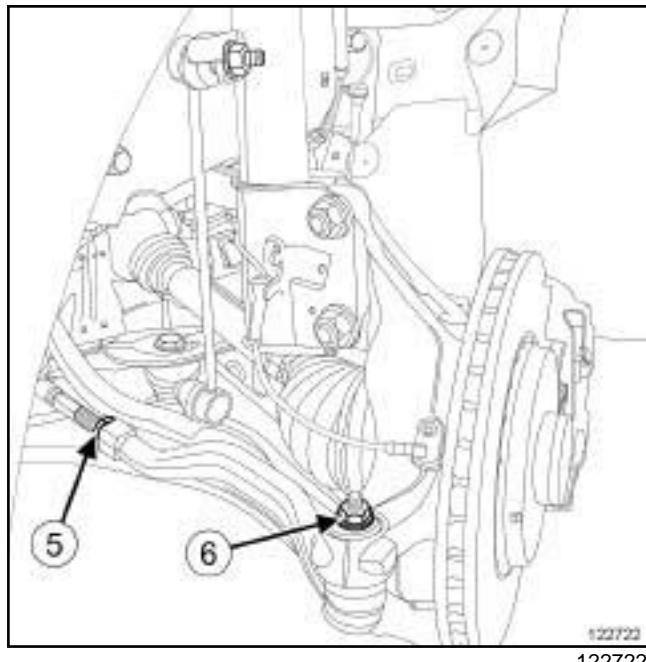
GENERAL INFORMATION
Steering: Tightening torque

30A



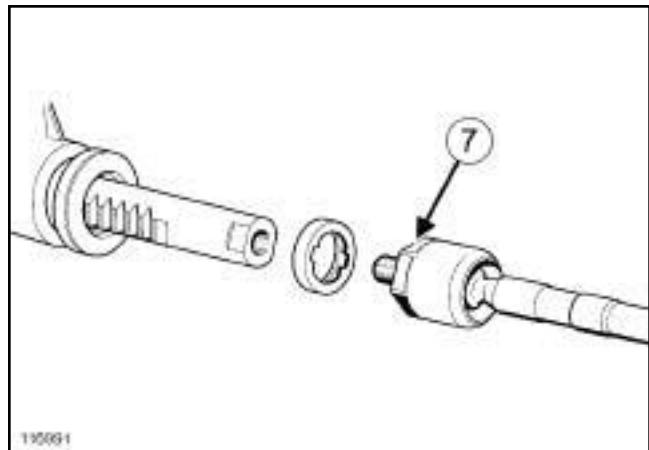
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GENERAL INFORMATION
Steering: Tightening torque

30A

	Description	Tightening torque (Nm)
(1)	Steering wheel bolt	44
(2)	Steering column nuts	21
(3)	Electric steering column lock	8
(4)	Universal joint bolt on the steering box	24
(5)	Wheel alignment lock nut	53
(6)	Track rod ball joint nut	37
(7)	Axial ball joint	75

GENERAL INFORMATION

Axle assemblies: Check

30A

2-WHEEL STEERING

- Lock the slip plates of the lift.
- Position the vehicle on a lift (see **Vehicle: Towing and lifting**).
- Check the condition of the following components:
 - track rods,
 - axial ball joint linkages,
 - subframe,
 - lower arm rubber bushes,
 - lower arm ball joints (see **31A, Front axle components, Front driveshaft lower arm ball joint: Check**, page 31A-57),
 - shock absorbers,
 - tyres,
- Check:
 - the tyre size (see **35A, Wheels and tyres, Tyres: Identification**, page 35A-10),
 - the tyre inflation pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page 35A-16).
- Put the vehicle in the VODM position (vehicle in running order) (see **30A, General information, Underbody heights: Adjustment value**, page 30A-21):
 - tank full,
 - vehicle empty (without luggage, etc.).
- Consult:
 - the front axle geometry values (see **30A, General information, Front axle assembly: Adjustment values**, page 30A-26),
 - the rear axle geometry values (see **30A, General information, Rear axle assembly: Adjustment values**, page 30A-31).
- Refer to the user manual for the geometry tester.
- Check the geometry using the geometry tester.
- If there is an inconsistency between the manufacturer's values and the measured values:
- Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page 30A-28)

GENERAL INFORMATION

Axle assemblies: Check

30A

4-WHEEL STEERING

- Lock the slip plates of the lift.
- Position the vehicle on a lift (see **Vehicle: Towing and lifting**).
- Before stopping the engine, insert the Renault Card in the reader.

Note:

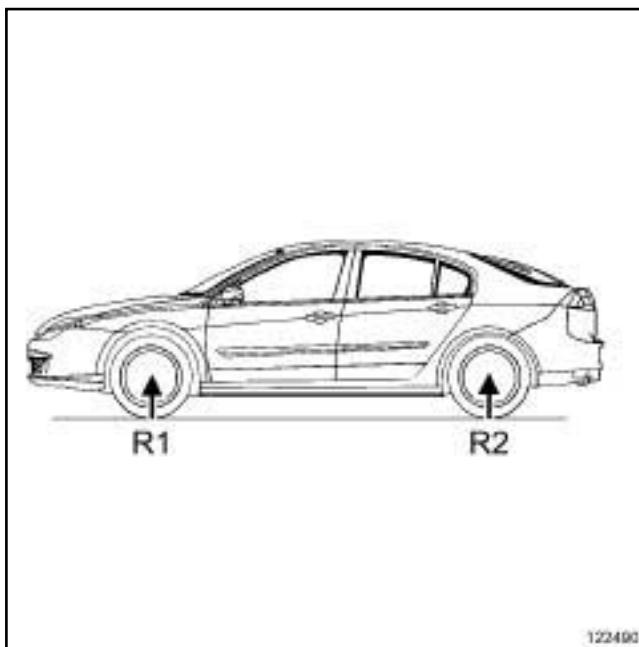
Throughout the axle assembly checking and adjustment process:

- the Renault Card must remain in the reader,
- do not press the « START » button.

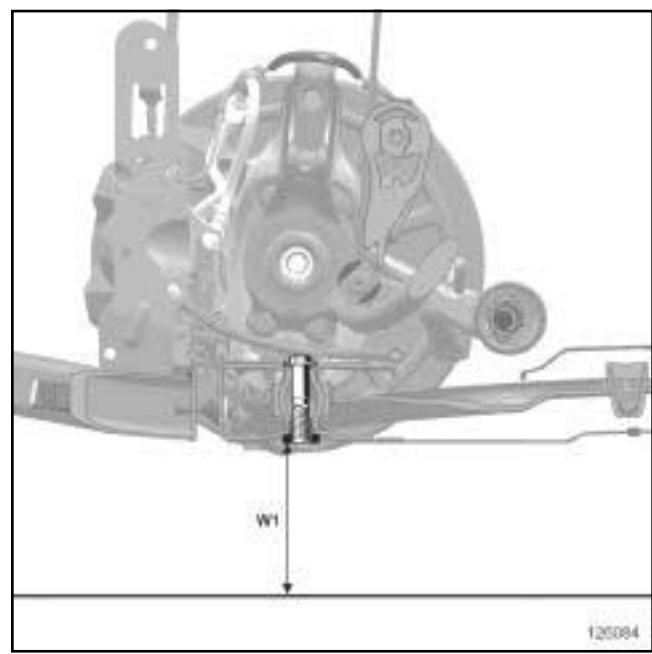
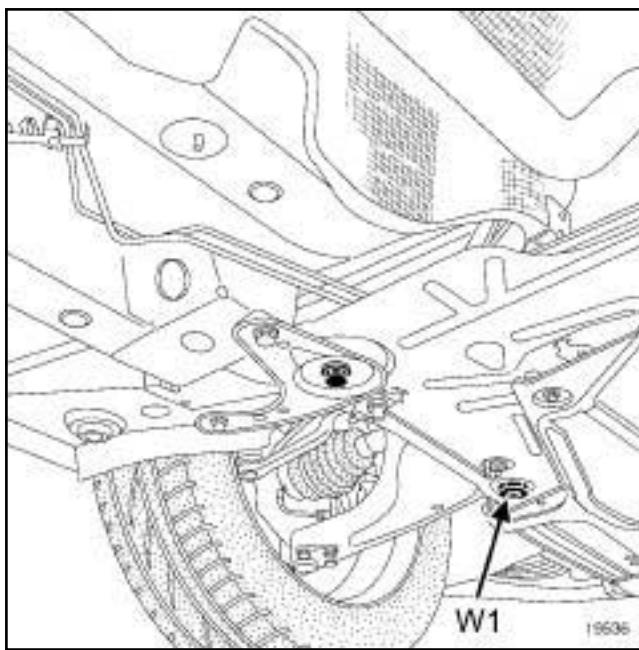
- Switch off the engine.
- Check that there is no fault present on the instrument panel.
- Put the 4WS actuator in position **0**.
Apply the before repair procedure:
 - connect the diagnostic tool,
 - select "4WS computer",
 - go to repair mode,
 - display the "Before/after repair procedure" for the computer selected,
 - select "4WS actuator" in the "List of components controlled by this computer" section,
 - carry out the operations described in the "Before repair procedure" section.
- Check the condition of the following components:
 - track rods,
 - axial ball joint linkages,
 - subframe,
 - lower arm rubber bushes,
 - lower arm ball joints (see **31A, Front axle components, Front driveshaft lower arm ball joint: Check**, page 31A-57),
 - shock absorbers,
 - tyres,
- Check:
 - the tyre size (see **35A, Wheels and tyres, Tyres: Identification**, page 35A-10),
 - the tyre inflation pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page 35A-16).

- Put the vehicle in the VODM position (vehicle in running order) (see **30A, General information, Underbody heights: Adjustment value**, page 30A-21):
 - tank full,
 - vehicle empty (without luggage, etc.).
- Consult:
 - the front axle geometry values (see **30A, General information, Front axle assembly: Adjustment values**, page 30A-26),
 - the rear axle geometry values (see **30A, General information, Rear axle assembly: Adjustment values**, page 30A-31).
- Refer to the user manual for the geometry tester.
- Check the geometry using the geometry tester.
- If there is an inconsistency between the manufacturer's values and the measured values:
 - Adjust the rear axle (see **30A, General information, Rear axle system: Adjustment**, page 30A-32).
 - Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page 30A-28).

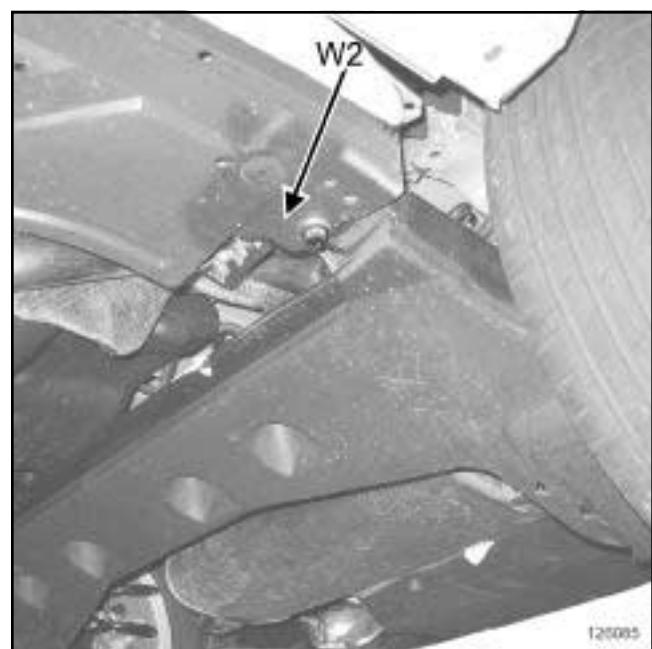
I - MEASURING POINTS

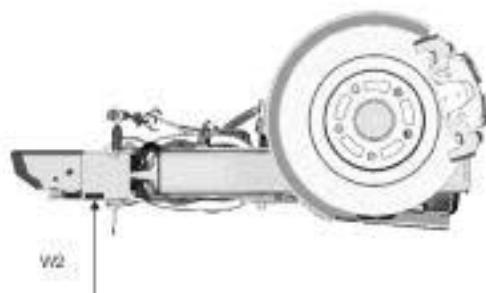
**Radius under load:**

- : (R1) Distance between the ground and the front wheel axle.
- : (R2) Distance between the ground and the rear wheel axle.

1 - Front height (W1)

: (W1) Height between the ground and the surface of the front nut of the arm.

2 - Rear height (W2)



126086

: (W2) Height between the ground and the surface of the rear axle bearing, in front of the head of the bolt of the rubber bush.

Note:

For vehicles fitted with acoustic tie-rods, the measurement should be taken on the tie-rod end.

II - MEASUREMENT METHOD**Note:**

For the measurements of W1 and W2, take into account the height difference between the plates and the lift.

Measure the heights:

- R1,
- R2,
- W1 right-hand and left-hand,
- W2 right-hand and left-hand.

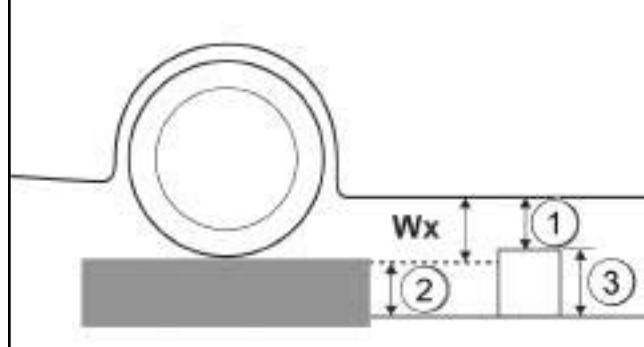
Note:

The value of Wx to be entered into the geometry bench is the average of the W1 heights, right-hand and left-hand and of the W2 heights, right-hand and left-hand.

Special cases:**Note:**

If the measuring points are located in empty space (between the rails of the lift), use a bar.

Fit a bar across the lift.

1 - Plate higher than the lift:

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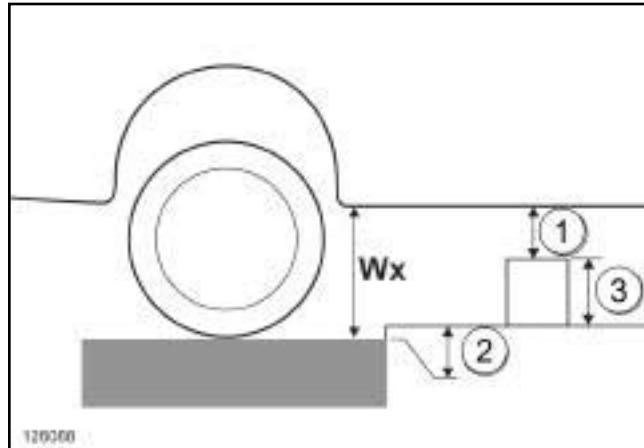
Measure the heights (1) , (2) and (3) .

Example: (1) = 13 cm, (2) = 8 cm, (3) = 10 cm.

Calculate the height Wx:

$$Wx = \text{height (1)} + \text{height (3)} - \text{height (2)} ,$$

$$Wx = 15 \text{ cm}.$$

2 - Plate lower than the lift:

126088

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Measure the heights (1) , (2) and (3) .

Example: (1) = 8 cm (2) , = 10 cm (3) , = 4 cm.

Calculate the height Wx:

$$Wx = \text{height (1)} + \text{height (2)} + \text{height (3)} ,$$

$$Wx = 22 \text{ cm}.$$

III - VEHICLE IN RUNNING ORDER POSITION

Note:

The position of the vehicle varies according to:

- the weight of the engine,
- the springs and shock absorbers,
- the tyres,
- the amount of fuel in the tank.

B91 or K91, and EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA2 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA4 or EQUIPMENT LEVEL EA5, and NORMAL SUSPENSION

VODM (Vehicle in working order) position:

- tank full,
- vehicle empty (without luggage, etc.).

(W1) = 147 ± 15 mm

(W2) = 197 ± 15 mm

B91 or K91, and EQUIPMENT LEVEL EAG, and NORMAL SUSPENSION – D91, and EQUIPMENT LEVEL AS1 or EQUIPMENT LEVEL AS2, and NORMAL SUSPENSION

VODM (Vehicle in working order) position:

- tank full,
- vehicle empty (without luggage, etc.).

(W1) = 145 ± 15 mm

(W2) = 193 ± 15 mm

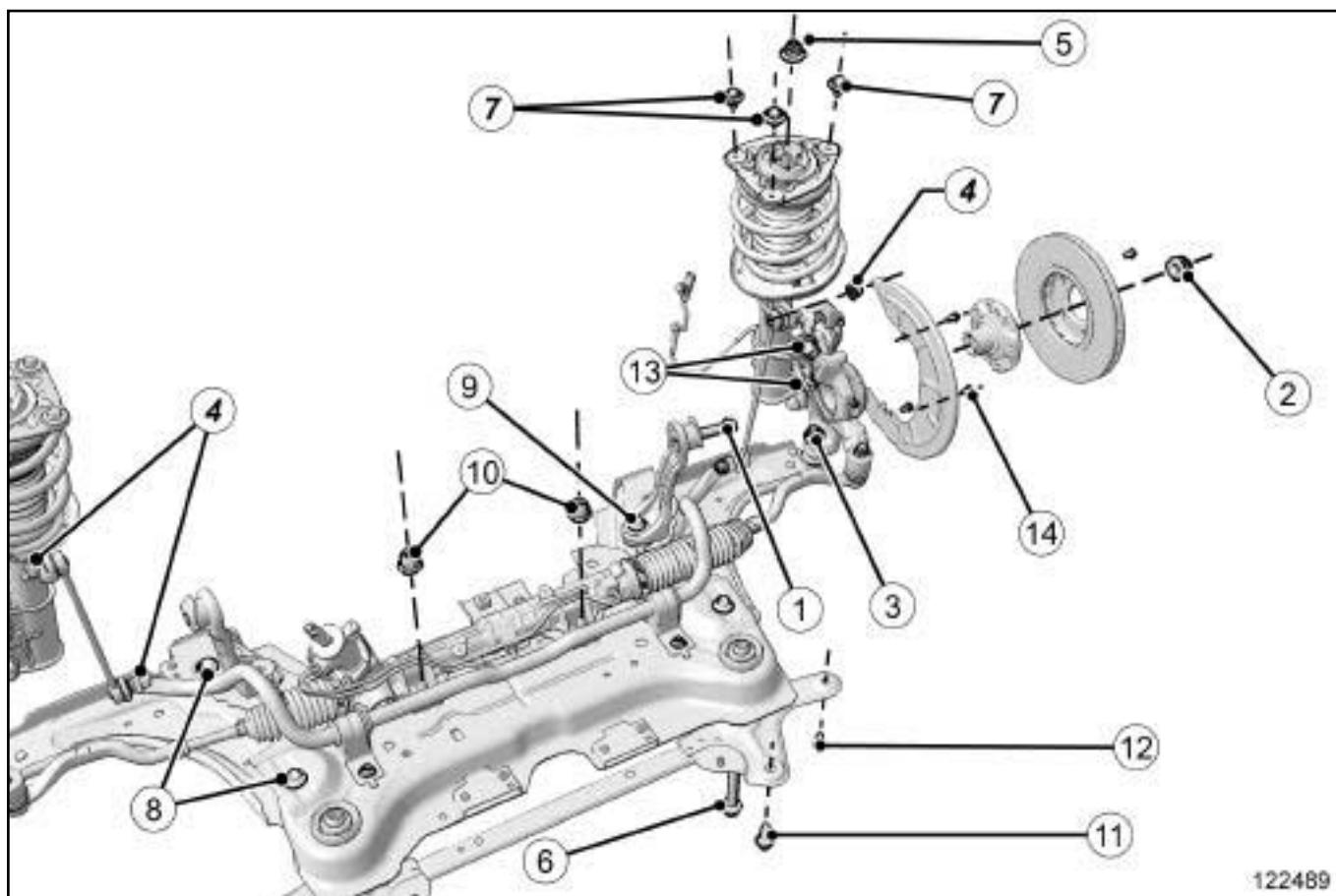
B91 or K91, and REINFORCED SUSPENSION

VODM (Vehicle in working order) position:

- tank full,
- vehicle empty (without luggage, etc.).

(W1) = 156 ± 15 mm

(W2) = 208 ± 15 mm



122489

No.	Description	Tightening torque (N.m)
(1)	Subframe mounting bolt on body	105
(2)	Hub nut (K9K and K4M)	280
(2)	Hub nut (F4R, M9R, M4R, V4Y and V9X)	150
(3)	Lower ball joint nut	62
(4)	Anti-roll bar link rod nuts	44
(5)	Rebound stop nut	62
(6)	Rear subframe bolt	180
(7)	Damper unit bolts on body	21
(8)	Lower arm bolt	180
(9)	Subframe mounting bolt on subframe	62
(10)	Steering box bolt on the subframe	180
(11)	Stay rear bolt	105
(12)	Stay exterior bolt	21

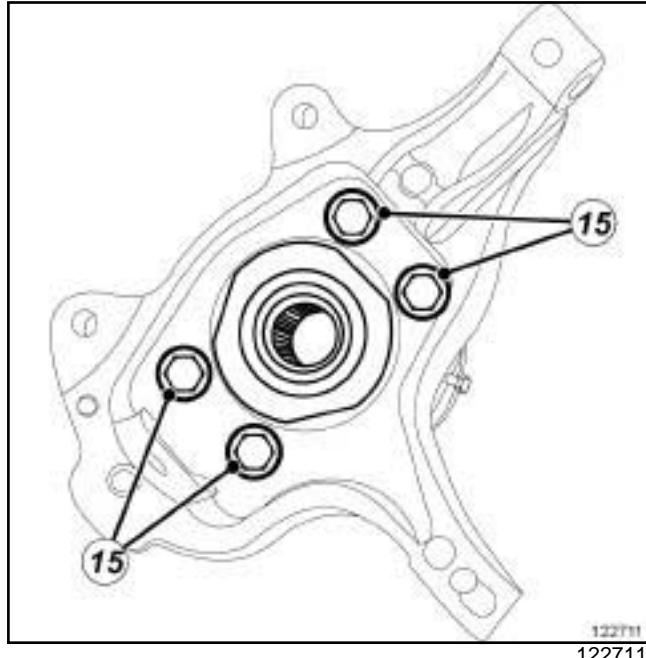
GENERAL INFORMATION

Front axle system: Tightening torque

30A

No.	Description	Tightening torque (N.m)
(13)	Shock absorber base bolts	180
(14)	Brake disc protector or ball joint protector bolt	8

F4R or M4R or M9R or V4Y or V9X



No.	Description	Tightening torque (N.m)
(15)	Wheel bearing bolts	105

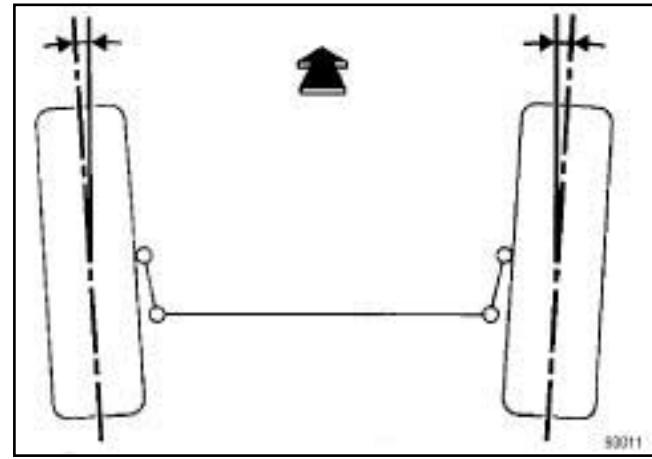
I - WHEEL ALIGNMENT SYMBOL MEANINGS

WARNING

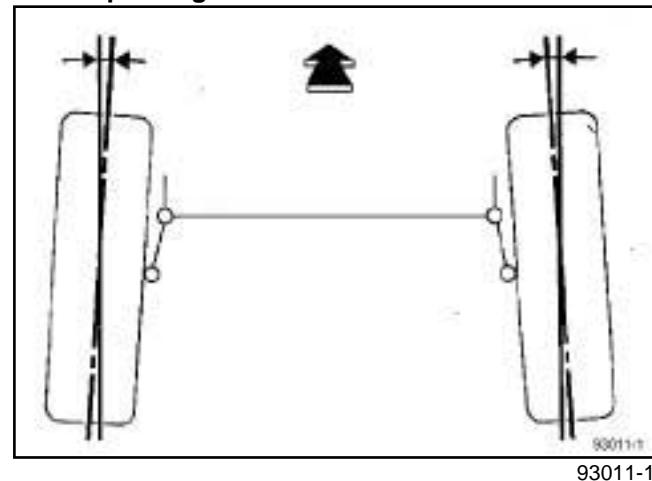
Symbols used by RENAULT:

- toe-out: -,
- toe-in: +.

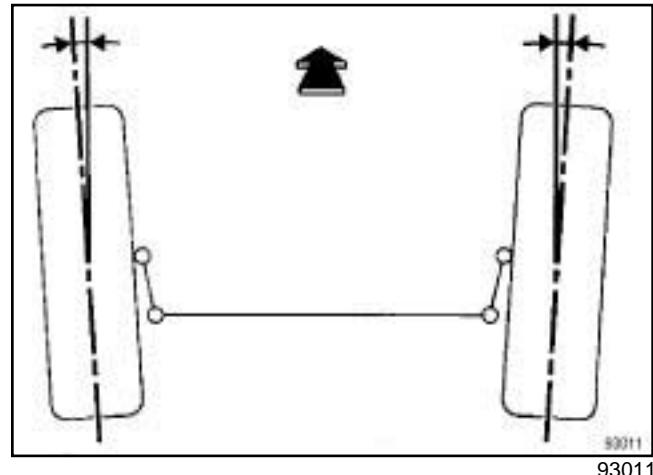
Toe-out: minus sign



Toe-in: plus sign



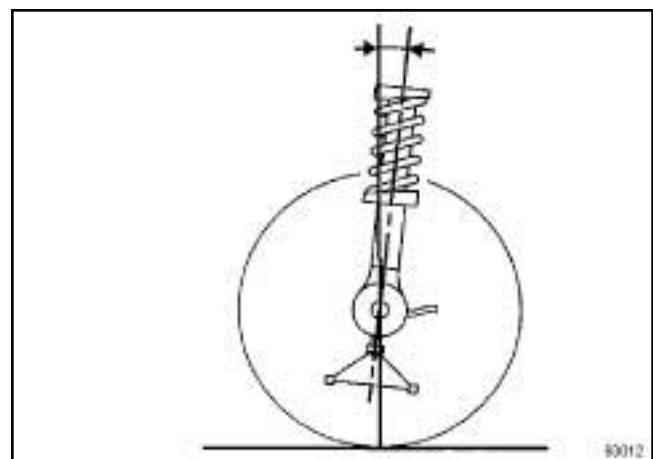
II - WHEEL ALIGNMENT



Value (for two wheels)	Position of vehicle
$0^\circ \pm 10'$	Vehicle in running order

III - CASTOR ANGLE

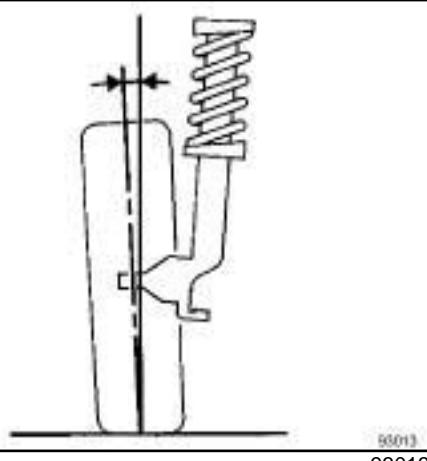
Not adjustable.



Value	Position of vehicle
$+4^\circ 30' \pm 30'$ Maximum left - right difference = 30'	Vehicle in running order

IV - CAMBER

Not adjustable.

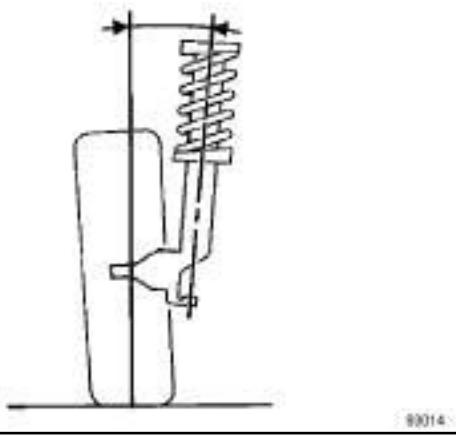


93013

Value	Position of vehicle
-0°15' ± 30' Maximum left - right difference = 30'	Vehicle in running order

V - PIVOT

Not adjustable.



93014

Value	Position of vehicle
+12°40' ± 30' Maximum left - right difference = 30'	Vehicle in running order

Tightening torques 

wheel alignment adjustment lock nuts	53 N.m
--------------------------------------	--------

Note:

Throughout the axle assembly checking and adjustment process:

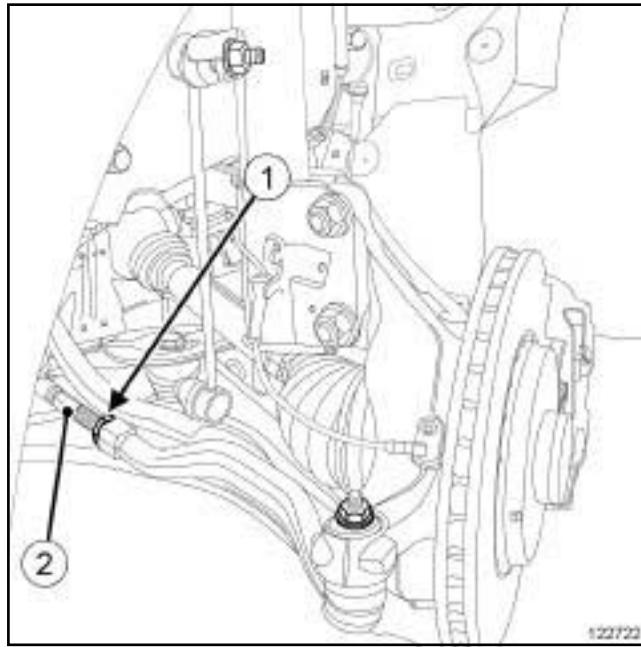
- the Renault Card must remain in the reader,
- do not press the « START » button.

ADJUSTMENT PREPARATION STAGE

- Check the geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

1 - Wheel alignment

- Adjust the wheel alignment by rotating the track rod sleeves.



122722

- Loosen the wheel alignment adjustment lock nut (1)
- Turn the track rod sleeve (2) to the required value.
- After adjustment, torque tighten the **wheel alignment adjustment lock nuts (53 N.m)**.

2 - Castor angle

- Not adjustable.

3 - Camber

- Not adjustable.

4 - Pivot

- Not adjustable.

ELECTRONIC STABILITY PROGRAM

- Carry out calibration of the steering wheel angle sensor.

Apply the after repair procedure:

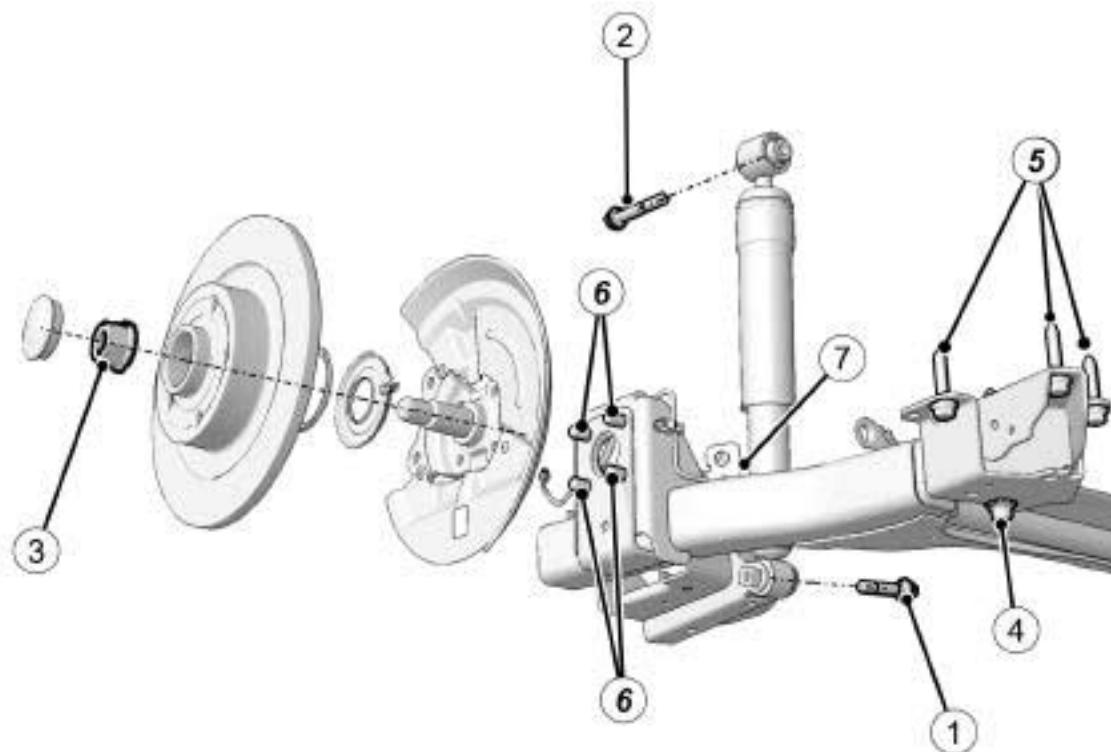
- connect the diagnostic tool,
- select "Braking computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "Steering wheel angle sensor" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

GENERAL INFORMATION

Rear axle system: Tightening torque

30A

2-WHEEL STEERING



123499

123499

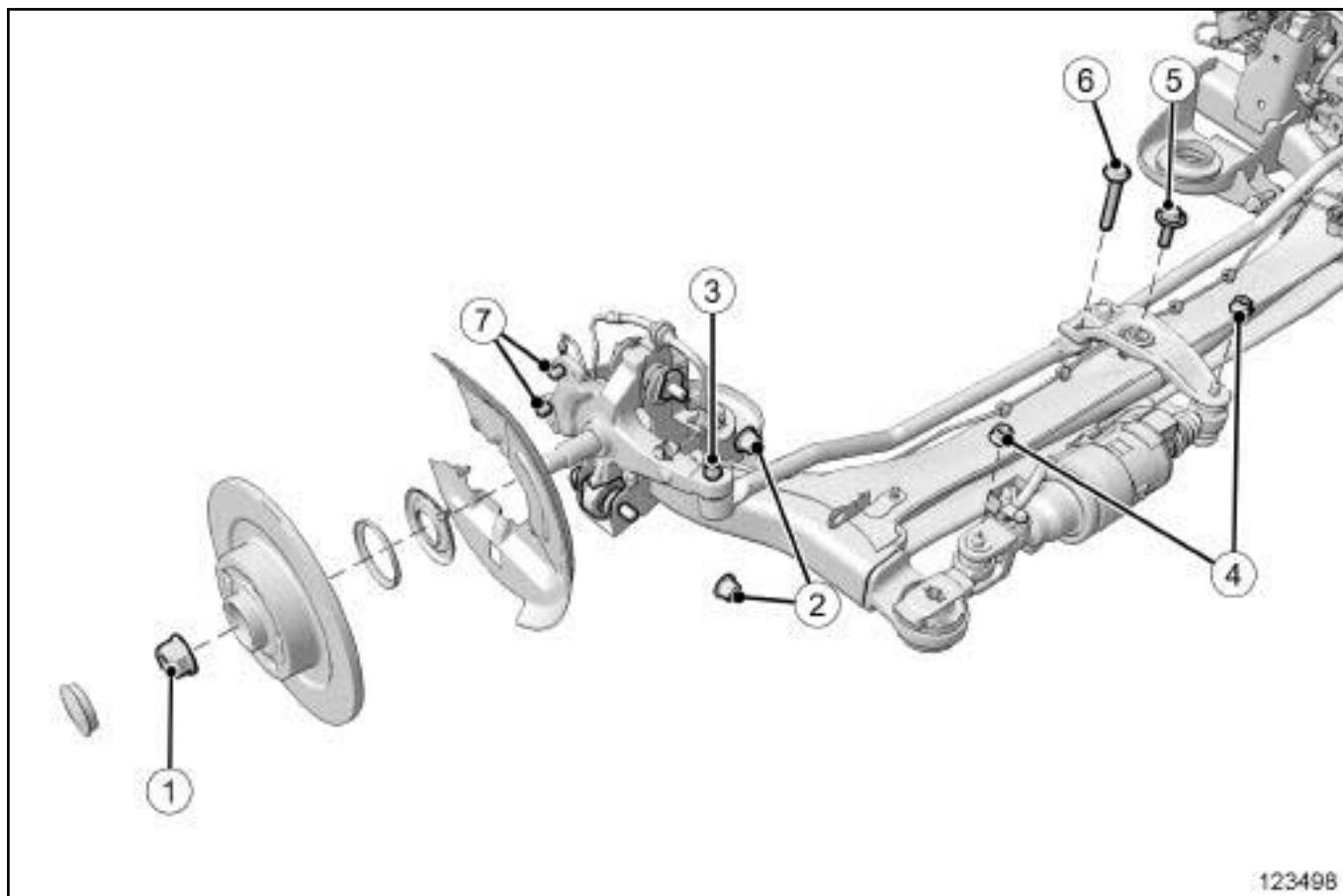
No.	Description	Tightening torque (N.m)
(1)	Shock absorber lower bolt	115
(2)	Shock absorber upper bolt	110
(3)	Stub-axle nut	280
(4)	Longitudinal suspension arm bearing bolts on axle	180
(5)	Longitudinal suspension arm bearing bolts on body	62
(6)	Stub-axle bolt	115
(7)	Multifunction support nut	21

GENERAL INFORMATION

Rear axle system: Tightening torque

30A

4-WHEEL STEERING



123498

123498

No.	Description	Tightening torque (N.m)
(1)	Stub axle nut	280
(2)	Stub axle carrier nuts	190
(3)	Track rod nut on stub axle carrier	37
(4)	Actuator nuts	84
(5)	Compensator bolt	105
(6)	Track rod bolt on compensator	90
(7)	Brake disc protector bolts	8

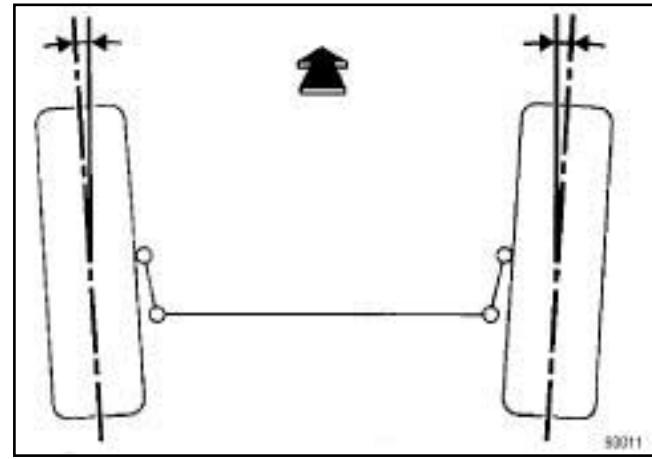
I - WHEEL ALIGNMENT SYMBOL MEANINGS

WARNING

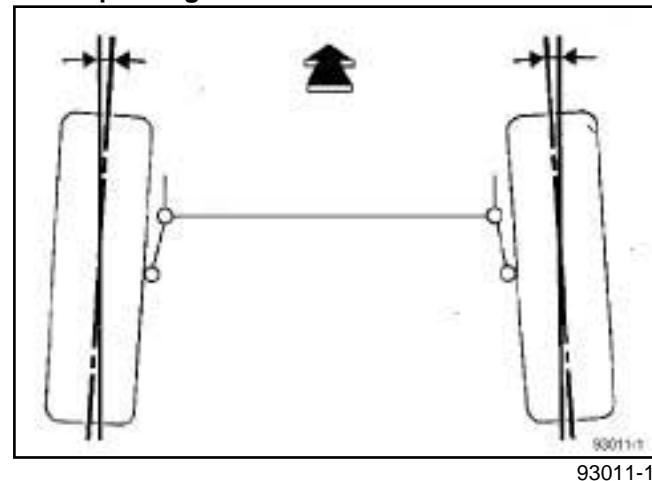
Symbols used by RENAULT:

- toe-out: -,
- toe-in: +.

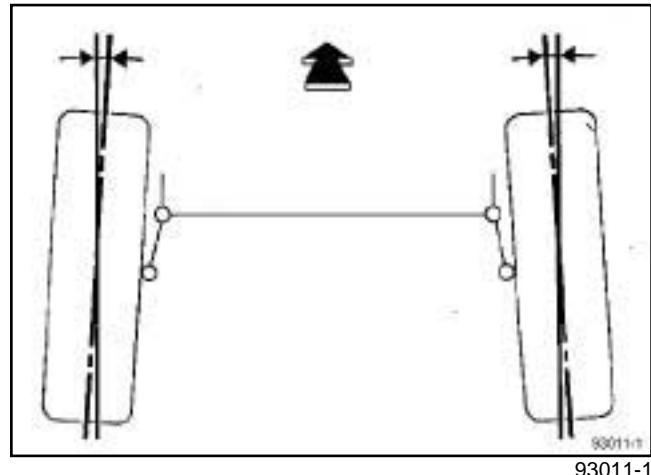
toe-out: minus sign



toe-in: plus sign

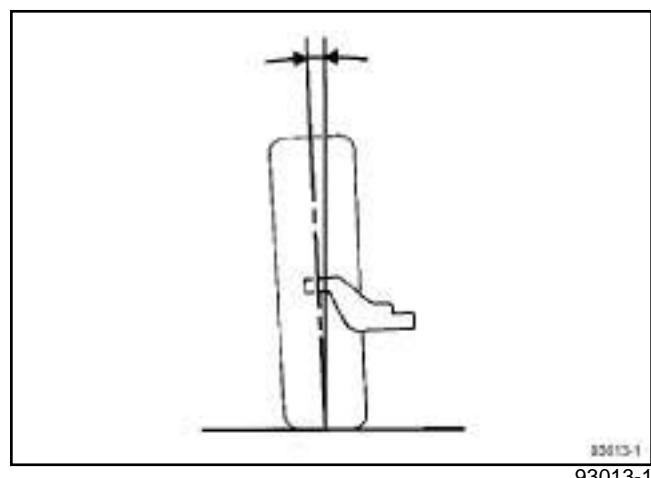


II - WHEEL ALIGNMENT



Value (for two wheels)	Position of vehicle
$0^{\circ}27' \pm 15'$	Vehicle in running order

III - CAMBER



Value	Position of vehicle
$-0^{\circ}50' \pm 20'$	Vehicle in running order

GENERAL INFORMATION

Rear axle system: Adjustment

30A

4-WHEEL STEERING

Tightening torques

nut of the stub axle carrier while holding the eccentric	190 N.m
nut of the steering con rod while holding the eccentric	90 N.m

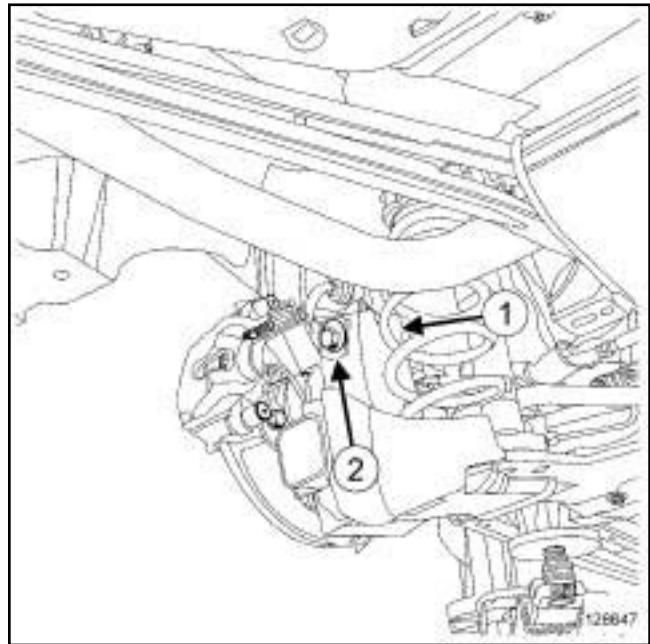
Note:

Throughout the axle assembly checking and adjustment process:

- the Renault Card must remain in the reader,
- do not press the « START » button.

II - REAR AXLE ADJUSTMENT

1 - Camber adjustment



ADJUSTMENT

I - ADJUSTMENT PREPARATION OPERATION

- Check the geometry of the axle assemblies (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

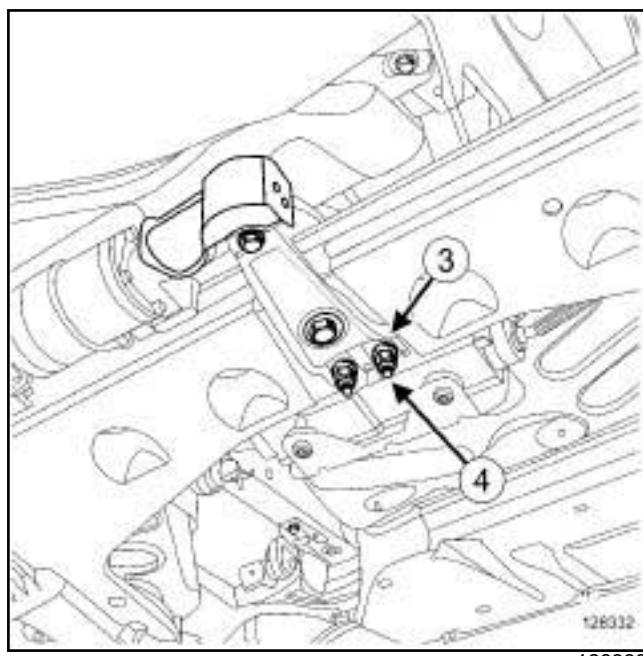
IMPORTANT

Wear protective gloves during the operation.

- Undo the stub axle carrier upper nut (1) .
- Adjust the camber angle using the eccentric bolt (2) according to the values measured at the time of the check.
- Torque tighten the upper **nut of the stub axle carrier while holding the eccentric** (190 N.m).
- Check the camber values.

4-WHEEL STEERING

2 - Adjustment of the wheel alignment



128332

- carry out the operations described in the "After repair procedure" section.

- Loosen the nut (3) of the steering con rod.
- Adjust the wheel alignment using the eccentric bolt (4) according to the values measured at the time of the check.
- Torque tighten the **nut of the steering con rod while holding the eccentric** (90 N.m).
- Check the wheel alignment values.
- Calibrate the steering wheel angle sensor.

Apply the after repair procedure:

- connect the diagnostic tool,
- select "Braking computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "Steering wheel angle sensor" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

Apply the after repair procedure:

- connect the diagnostic tool,
- select "4WS computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "4WS actuator" in the "List of components controlled by this computer" section,

I - SAFETY**1 - Advice to be followed before any operation**

For an operation requiring the use of a lift, follow the safety advice (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

2 - Instructions to be followed during the operation

Do not press on the brake pedal during work on the brake system.

If, during work on the brake system, any damage on any part is observed, it must be repaired before driving the vehicle again.

Brake fluid is highly corrosive. Ensure any brake fluid spilt on parts of the vehicle is cleaned off.

In case of incorrect handling, the brake fluid can cause serious injury and damage. Follow the manufacturer's instructions for brake fluid.

II - CLEANLINESS**1 - Advice to be followed before any operation**

Protect any bodywork components that risk being damaged by brake fluid with a cover.

2 - Instructions to be followed during the operation

Clean around the braking system with **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

III - GENERAL RECOMMENDATIONS**1 - Bearing, hub carrier****WARNING**

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

When removing a hub, it is essential to replace the bearing with a new one.

WARNING

Do not press the bearing's internal bush so as to avoid damaging the bearing (very high shrink-fitting force).

It is essential to check the condition of the hub and bearing surface and the hub carrier bore before refitting the bearing.

Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the new bearing's internal and external surfaces which are in contact with the hub carrier and the hub,
- the hub carrier surfaces in contact with the new bearing,
- the hub surfaces in contact with the new bearing.

Always check the surface condition of the hub carrier before refitting the "hub - bearing" assembly.

Clean the surfaces of the hub carrier that are in contact with the "hub - bearing" assembly using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products)

Replace any component whose contact surfaces have deep scratches or cracks.

2 - Suspension spring

When replacing the spring, ensure that the positioning and orientation of the spring and the tool cups are correct.

When replacing a spring, always replace the spring on the opposite side.

If a shock absorber is replaced, the shock absorber on the opposite side must also be replaced.

Check that the spring compressor tool is operating correctly.

In the interests of safety, do not leave a spring compressed in the spring compressor tool.

During assembly and removing operations, the surface and the protection paint must not be damaged.

There must be no impacts during operations. Any handling hooks and tightening or positioning clamps should be equipped with rubber or plastic in order to avoid damage on the springs.

It is recommended to replace springs if:

- the paint is damaged,
- the spring has dents in it.

They are not usually symmetrical in shape and care should be taken to assemble them the right way round. This can be done using the coloured marking's position.

WARNING

To prevent the suspension spring from prematurely breaking, do not damage the anti-corrosion protection.

3 - Anti-roll bar

During assembly and removing operations, the surface and the protection paint must not be damaged.

There must be no impacts during operations. Any handling hooks, tightening or positioning clamps should be equipped with rubber or plastic parts so as to avoid damaging the anti roll bar.

It is recommended to replace the anti-roll bar if:

- the paint is damaged,
- the anti-roll bar has dents in it.

Note:

the most critical and sensitive zones are in the main elbows.

4 - Front axle

WARNING

To prevent any damage, do not use the lower arm as support for the lifting system.

Check the condition of all the gaiters before refitting. Always replace any damaged components with new ones.

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Tightening torques 

guide pin bolts	28 N.m
-----------------	---------------

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**).

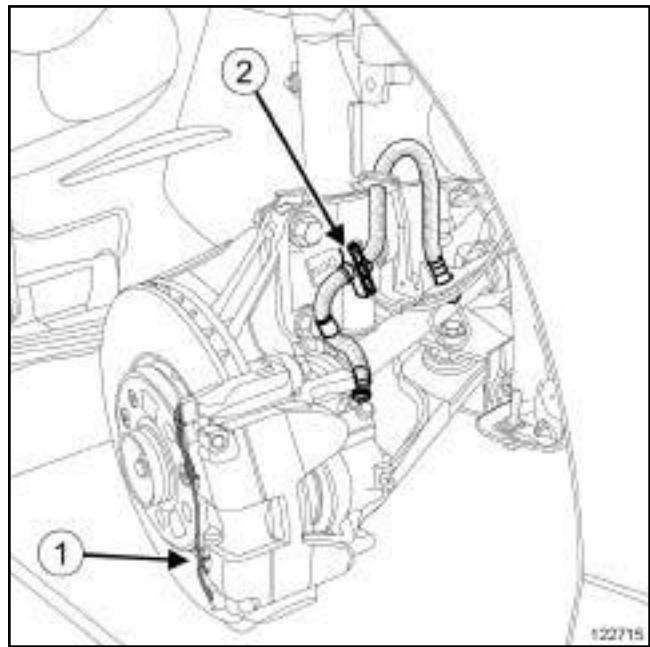
WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

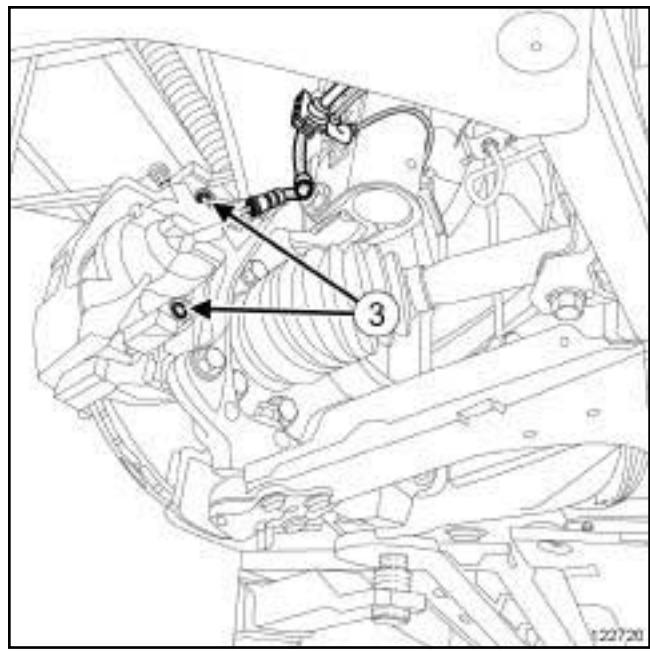
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

II - OPERATION FOR REMOVAL OF PART CONCERNED

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- Remove the retaining spring (1) using a wide, flat-blade screwdriver.
- Unclip the brake hose (2) from the shock absorber.

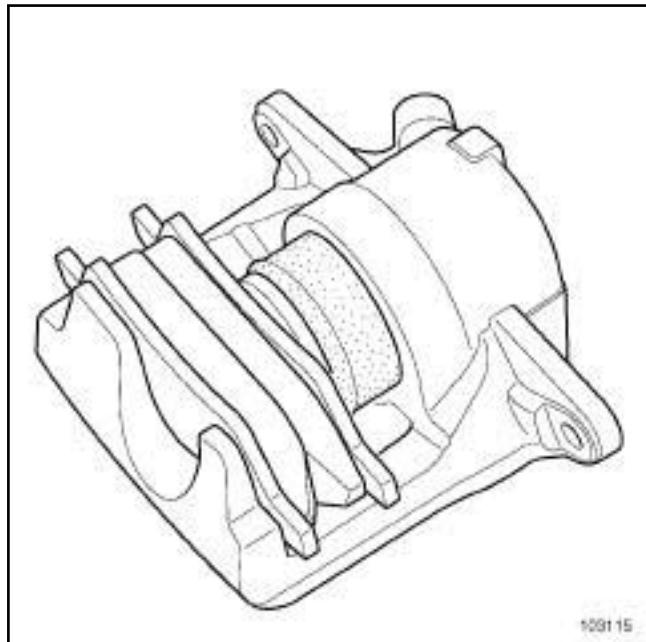


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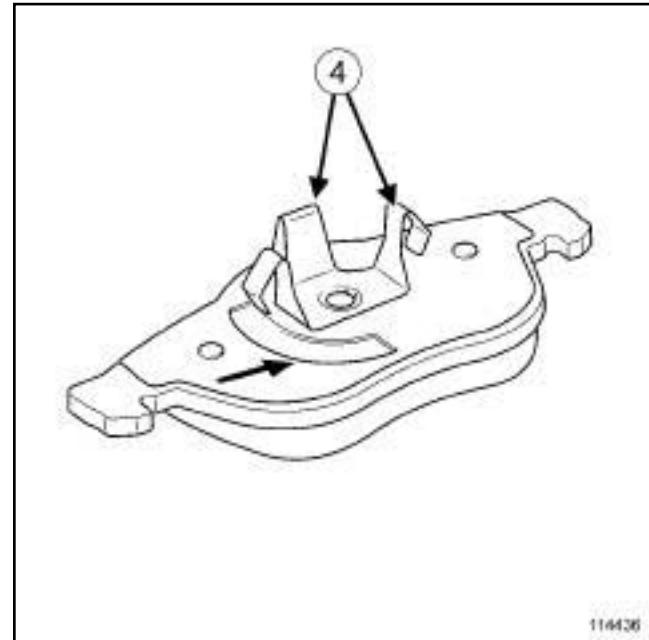
- Remove:
 - the plugs at the end of the guide pins,
 - the guide pin bolts (3).
- Hang the brake calliper from the suspension spring.
- Remove the brake pads.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Measure the thickness of the pads and then compare them to the minimum values (see **30A, General information, Brake: Specifications**, page **30A-16**).
- Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper supports,
 - the callipers,
 - the guide pin bolts,
 - the brake discs.



- Push the piston fully into its housing using the tool (**Fre. 1190-01**) part number **77 11 223 715**.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the inner brake pad with the lugs (4) in the calliper piston.
- Refit:
 - the outer brake pad on the calliper mounting,
 - the calliper with the inner brake pad on the calliper mounting,
 - the guide pin bolts.
- Torque tighten the **guide pin bolts (28 N.m)**.
- Refit:
 - the plugs at the end of the guide pins,
 - the retaining spring on the front end of the calliper using a large flat-blade screwdriver.
- Set the wheels straight ahead.
- Attach the brake hose to the shock absorber.

III - FINAL OPERATION

- Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Equipment required

pedal press

IMPORTANT

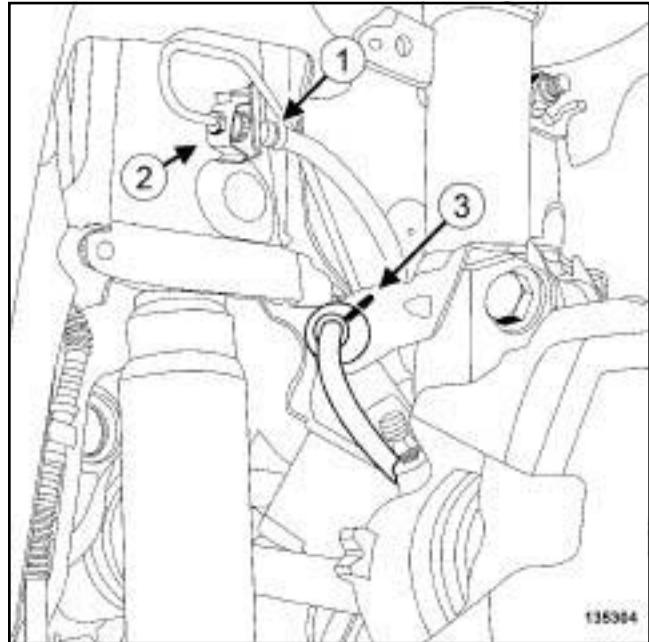
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 31A, **Front axle components**, **Front axle components: Precautions for the repair**, page 31A-1).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**).
- Set the wheels straight ahead.
- Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Remove the front wheel (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

II - OPERATION FOR REMOVAL OF PART CONCERNED

135304

- Loosen the hose union (1) on the rigid pipe union.
- Remove the retaining (2) fork from the hose.
- To avoid the premature damage of the brake hose by friction, observe the following procedure before unclipping the hose:
 - Set the wheels straight ahead.
 - Mark the position of the cap on the base of the shock absorber using a permanent marker.
 - Unclip the brake hose cap (3) from the shock absorber base.
 - Loosen the hose union on the brake calliper.
 - Remove the brake hose.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

-

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- Set the wheels straight ahead.
- Refit the brake hose at the calliper end.
- Torque tighten the brake hose (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**)
- Clip the brake hose cap on to the base of the shock absorber, aligning the marks made using a permanent marker.
- Refit:
 - the brake hose on the rigid pipe union,
 - the hose retaining fork.
- Torque tighten the brake hose union on the rigid pipe union. (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**)

II - FINAL OPERATION

- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- Remove the **pedal press** from the brake pedal.
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**) .

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

Diagnostic tool

pedal press

Tightening torques 

guide pin bolts **28 N.m**

brake pipe union **14 N.m**

Note:

The callipers supplied as replacement parts are pre-filled.

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 31A, **Front axle components**, **Front axle components: Precautions for the repair**, page 31A-1).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

Note:

it is necessary to lock the airbag computer in order to unlock the steering column.

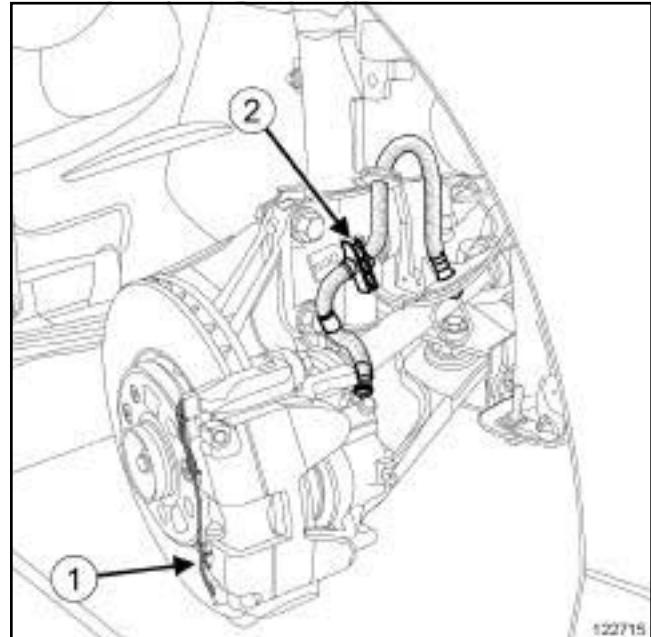
Apply the before repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,

- select the airbag computer,
- go to repair mode,
- apply the "Before repair procedure".

Remove the front wheel (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1).

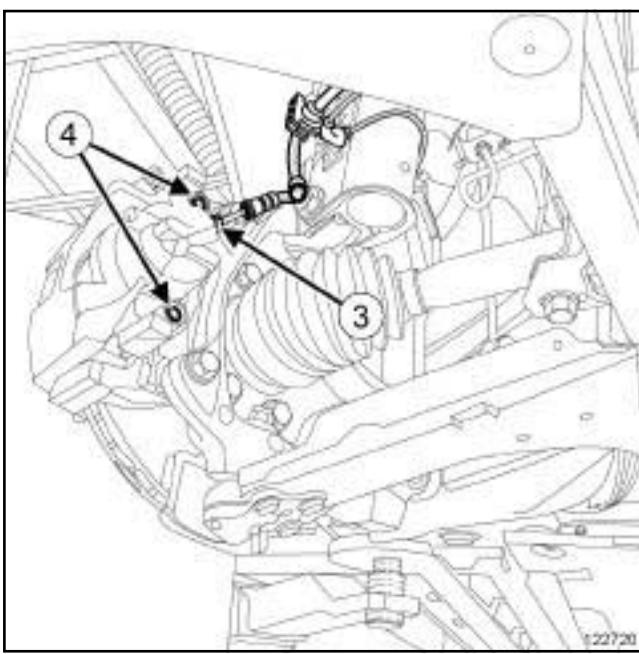
Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED

122715

Remove the retaining spring (1) using a wide, flat-blade screwdriver.

Unclip the brake hose (2) from the shock absorber.



Undo the brake hose union (3) slightly on the brake calliper.

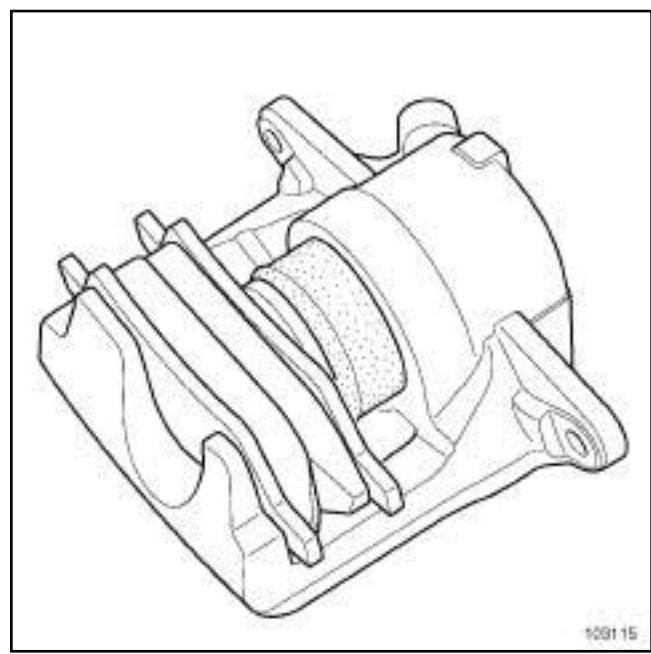
Remove:

- the plugs at the end of the guide pins,
- the guide pin bolts (4) ,
- the brake pads,
- the brake pipe union (3) on the brake calliper,
- the brake calliper,

REFITTING

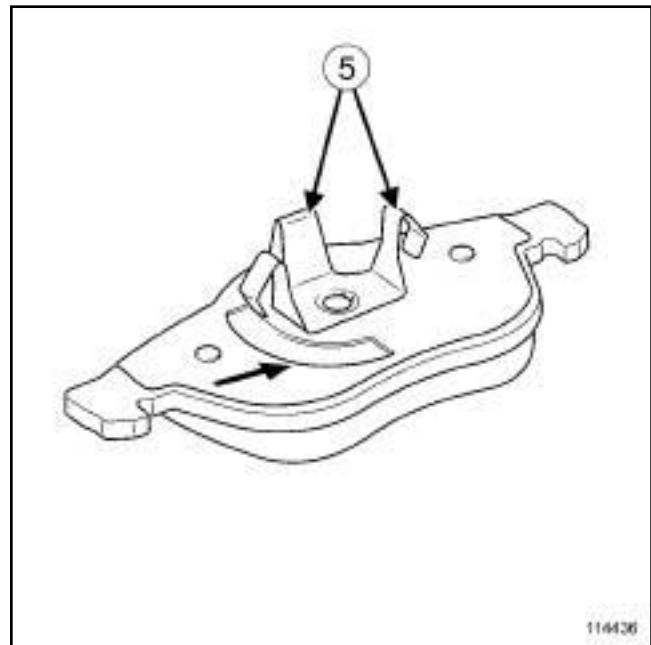
I - REFITTING PREPARATION OPERATION

- Check the condition of the calliper garter.
- Check the condition of the calliper piston and replace it if there are deep scratches or cracks.
- Replace any faulty parts (see **31A, Front axle components, Front brake calliper: Repair**, page **31A-10**).
- Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products):
 - the calliper supports,
 - the callipers,
 - the guide pin bolts.



Push the piston fully into its housing using the tool (**Fre. 1190-01**) part number (**77 11 223 715**).

II - REFITTING OPERATION FOR PART CONCERNED



- Fit the inner brake pad with the lugs (5) in the calliper piston.
- Screw the brake pipe union onto the calliper.
- Refit:
 - the outer brake pad on the calliper mounting,

- the calliper with the inner brake pad on the calliper mounting,
- the guide pin bolts.

Tighten to torque:

- the **guide pin bolts** (28 N.m),
- the **brake pipe union** (14 N.m).

Refit:

- the plugs at the end of the guide pins,
- the retaining spring using a large flat-blade screwdriver.

Set the wheels straight ahead.

Secure the brake hose to the shock absorber.

III - FINAL OPERATION

Remove the **pedal press**.

Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

Apply the after repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "After repair procedure".

FRONT AXLE COMPONENTS

Front brake calliper: Repair

31A

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 31A, **Front axle components, Front axle components: Precautions for the repair**, page 31A-1).

WARNING

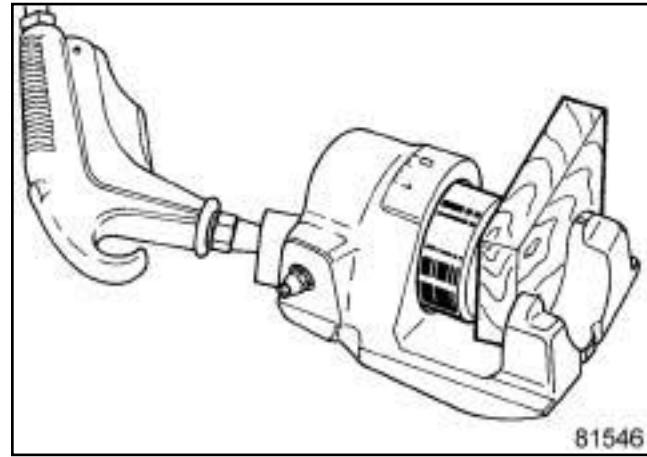
Prepare for the flow of fluid, and protect the surrounding components.

REPAIR

I - REPAIR PREPARATION OPERATION

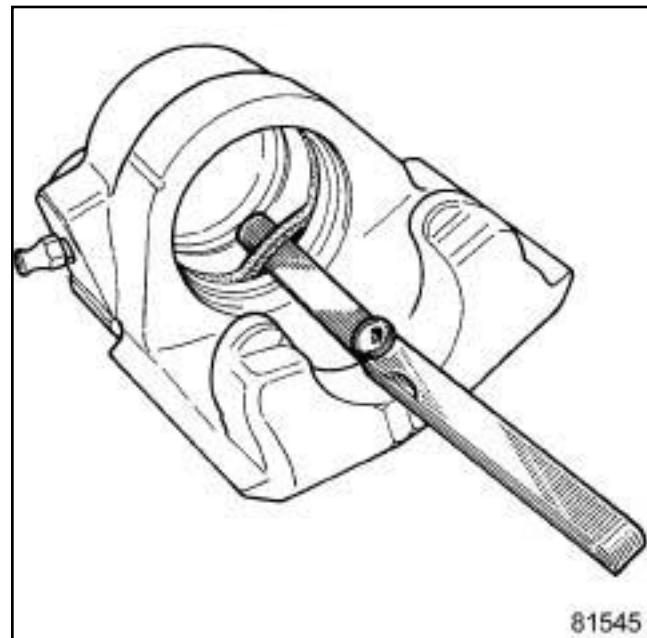
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Remove:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
 - the front brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page 31A-7) .

II - REPAIR OPERATION FOR PART CONCERNED



81546
81546

- Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston to avoid damaging it. Any trace of impact on the end panel will render the piston unfit for use.
- Remove the dust seal.



81545
81545

- Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

WARNING

The whole calliper must systematically be replaced if there are any scratches in the calliper bore.

- Clean the parts using methylated spirit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

Refit:

- the new rectangular section seal in the calliper groove,
- the piston (after having smeared it with the grease supplied in the repair kit) using the (**Fre. 1190-01**),
- the dust seal.

II - FINAL OPERATION.

Refit:

- the brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting, page 31A-7**) ,
- the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1**) .

Remove the **pedal press**.

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

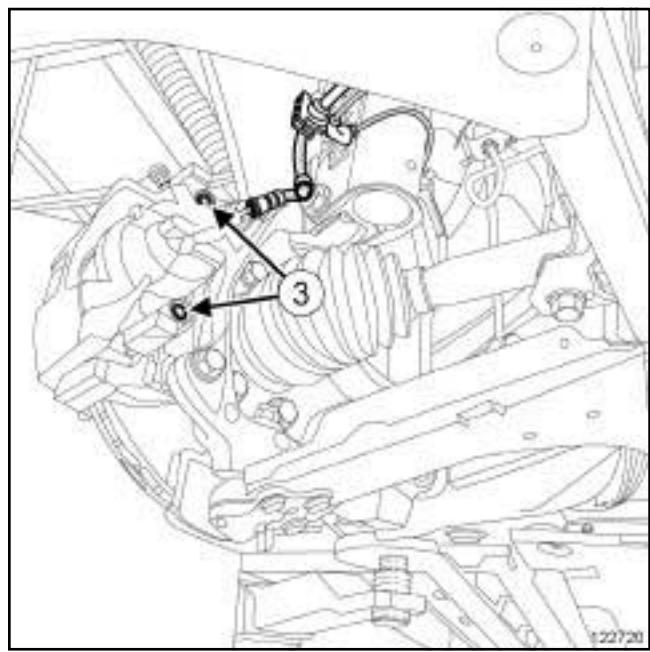
Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed, page 30A-4**).

Tightening torques 

calliper mounting bolts	105 N.m
guide pin bolts	28 N.m

IMPORTANT

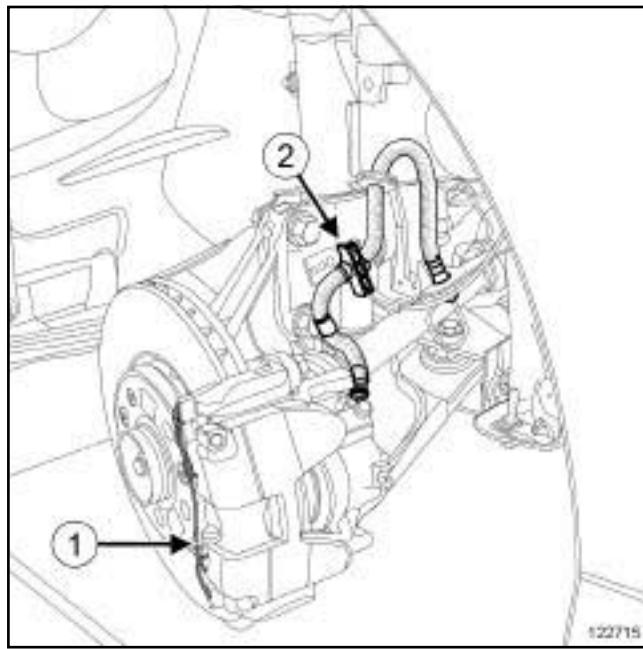
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 31A, **Front axle components**, **Front axle components: Precautions for the repair**, page 31A-1).



122720

REMOVAL**I - REMOVAL PREPARATION OPERATION**

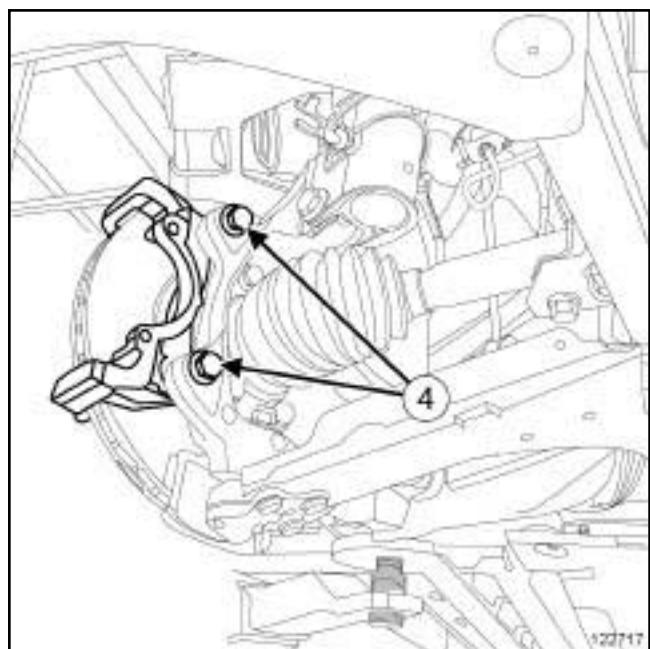
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheel (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1) .



122715

- Remove the retaining spring (1) using a wide, flat-blade screwdriver.
- Unclip the brake hose (2) from the shock absorber.

- Remove:
 - the plugs at the end of the guide pins,
 - the guide pin bolts (3) .
- Attach the brake calliper to the shock absorber.

II - OPERATION FOR REMOVAL OF PART CONCERNED

122717

- Remove:
 - the calliper mounting bolts (4) ,
 - the calliper mounting.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper mounting,
 - the calliper,
 - the guide pin bolts,
 - the hub carrier.
- Always replace the calliper support bolts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the calliper mounting,
 - the calliper mounting bolts.
- Torque tighten the **calliper mounting bolts (105 N.m)**.

III - FINAL OPERATION

- Refit the brake calliper with the inner brake pad on the calliper mounting.
- Torque tighten the **guide pin bolts (28 N.m)**.

- Refit:
 - the plugs at the end of the guide pins,
 - the retaining spring on the front end of the calliper using a large flat-blade screwdriver.

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- Set the wheels straight ahead.
- Attach the brake hose to the shock absorber.
- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Tightening torques 

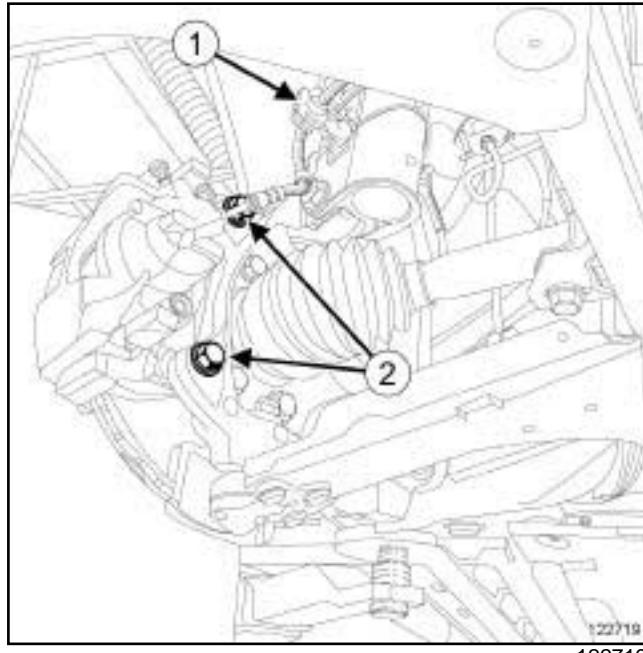
ball joint protector bolt	8 N.m
brake disc protector bolts	8 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 31A, Front axle components, **Front axle components: Precautions for the repair**, page 31A-1).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

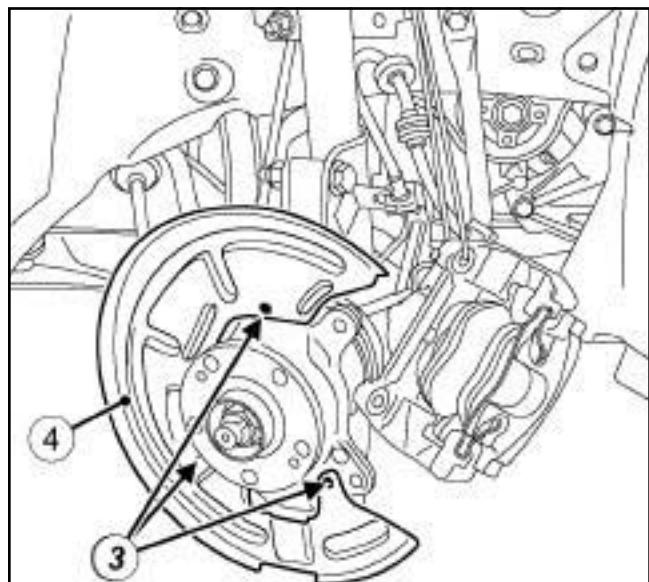
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheel (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).



122719

- Unclip the brake hose (1) from the shock absorber.
- Remove the bolts (2) from the "calliper mounting - calliper" assembly (see 31A, **Front axle components, Front brake calliper mounting: Removal - Refitting**, page 31A-12).
- Suspend the calliper and calliper support assembly on the suspension spring.

- Remove the brake disc (see 31A, **Front axle components, Front brake disc: Removal - Refitting**, page 31A-16).

II - OPERATION FOR REMOVAL OF PART CONCERNED**WHEEL DISC PROTECTOR**

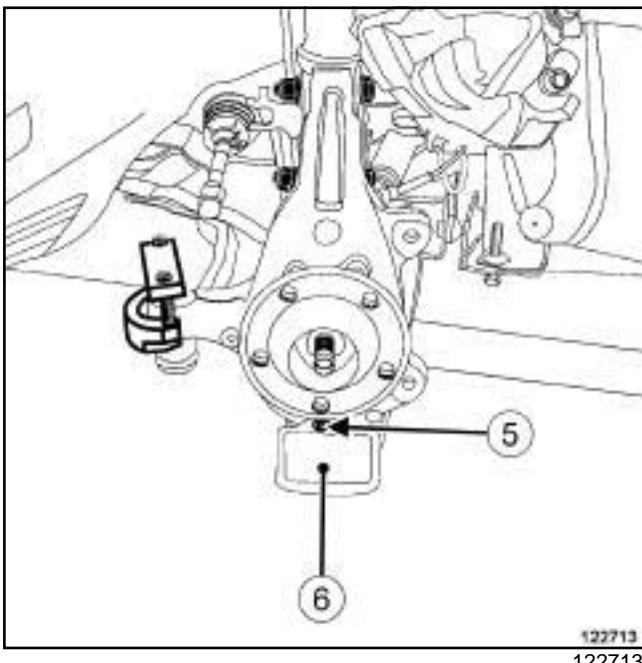
112076

- Remove:

- the brake disc protector bolts (3) ,
- the brake disc protector (4) .

112076

WITHOUT WHEEL DISC PROTECTOR

 Remove:

- the ball joint protector bolt (5) ,
- the ball joint protector (6) .

REFITTING

I - REFITTING PREPARATION OPERATION

- Using a wire brush and **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) clean the hub carrier.

II - REFITTING OPERATION FOR PART CONCERNED

WITHOUT WHEEL DISC PROTECTOR

 Refit:

- the ball joint protector,
 - the ball joint protector bolt.
- Torque tighten the **ball joint protector bolt (8 N.m)**.

WHEEL DISC PROTECTOR

 Refit:

- the brake disc protector,
- the disc protector bolts.

- Torque tighten the **brake disc protector bolts (8 N.m)**.

III - FINAL OPERATION

 Refit:

- the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-16**) ,
- the calliper and calliper support assembly (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-12**) .

- Set the wheels straight ahead.

- Attach the brake hose to the shock absorber.

- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

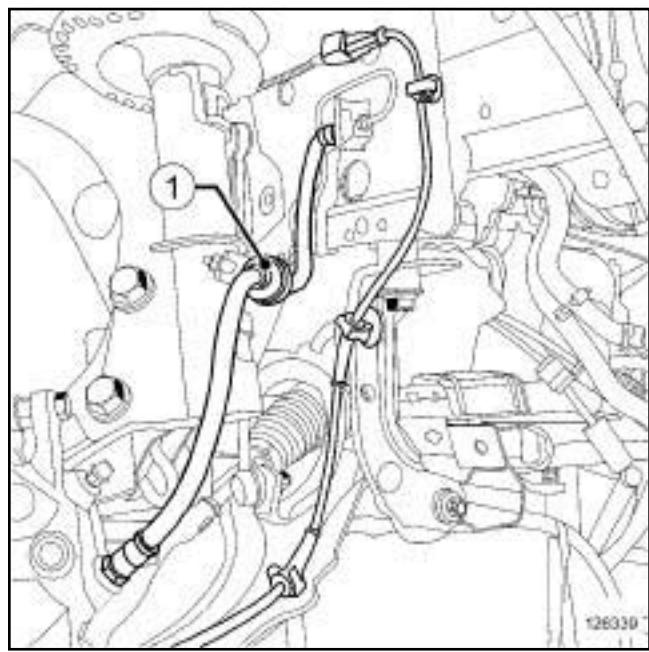
Equipment required
indelible pencil
parts washer

Brake discs cannot be reground. If there is excessive scoring or wear, they will need to be replaced (see **30A, General information, Brake: Specifications**, page **30A-16**).

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **30A, General information, Brake circuit: Precautions for the repair**, page **30A-2**) (**30A, General information**),
- (see **Vehicle: Precautions for the repair**) (**01D, Mechanical introduction**).



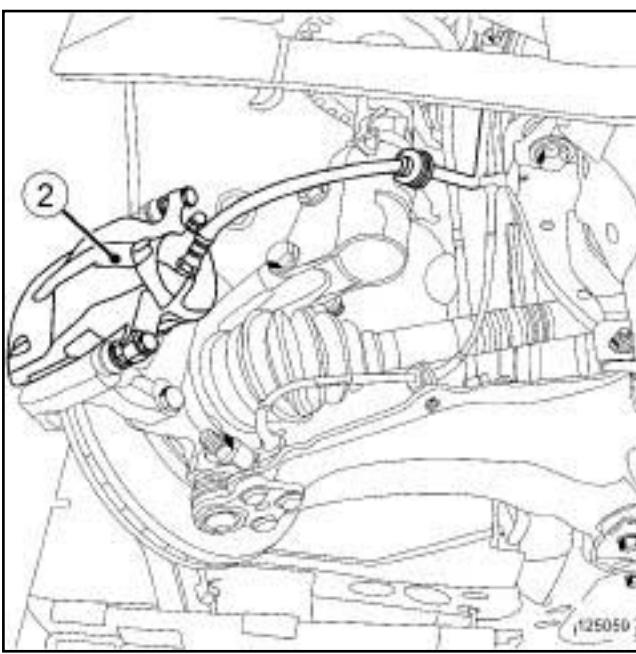
126339

- Mark the position of the cap (1) on the base of the shock absorber using a **indelible pencil**.
- Unclip the cap (1) from the base of the shock absorber.

REMOVAL

I - REMOVAL PREPARATION OPERATION

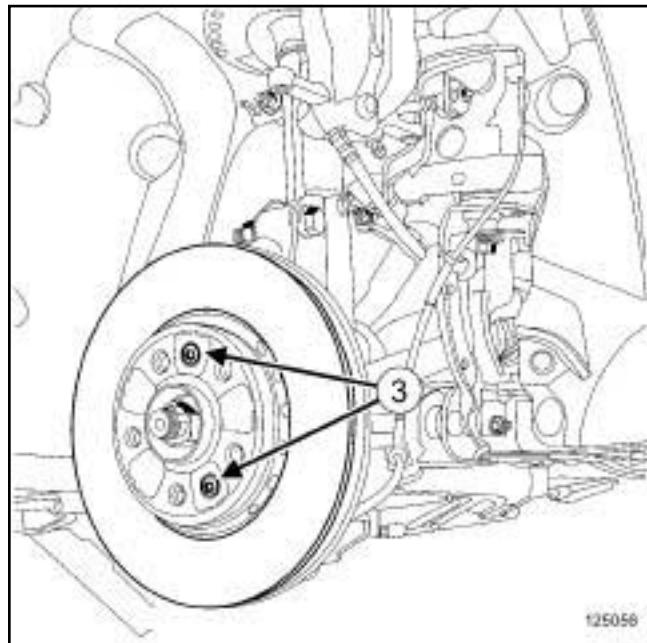
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (**02A, Lifting equipment**).
- Set the wheels straight ahead.
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



125059

- Remove the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-3**)
- Remove the "brake calliper mounting - brake calliper" assembly (2) (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-12**) .
- Hang the "brake calliper mounting - brake calliper" assembly (2) on the suspension spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED



125056

Remove:

- the brake disc bolt or bolts (3) ,
- the brake disc.

REFITTING

I - REFITTING PREPARATION OPERATION

- Clean the brake discs using a **parts washer**.
- Dry the surface of the discs.
- Clean the mating faces of the disc on the hub using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products)).
- parts always to be replaced: Front brake disc bolt (13,03,03,11)**

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the brake disc with new bolts.
- Torque tighten the new disc mounting bolts (see **30A, General information, Brake circuit: Tightening torque**, page **30A-6**)

III - FINAL OPERATION

- Refit the "brake calliper mounting - brake calliper" assembly (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-12**).
- Refit the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-3**)
- Set the wheels straight ahead.
- Clip the cap on the base of the shock absorber while aligning the marks made with a **indelible pencil**.

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- Advise the customer to run-in the brake pads (no harsh braking).

I - PREPARATION OPERATION FOR CHECK

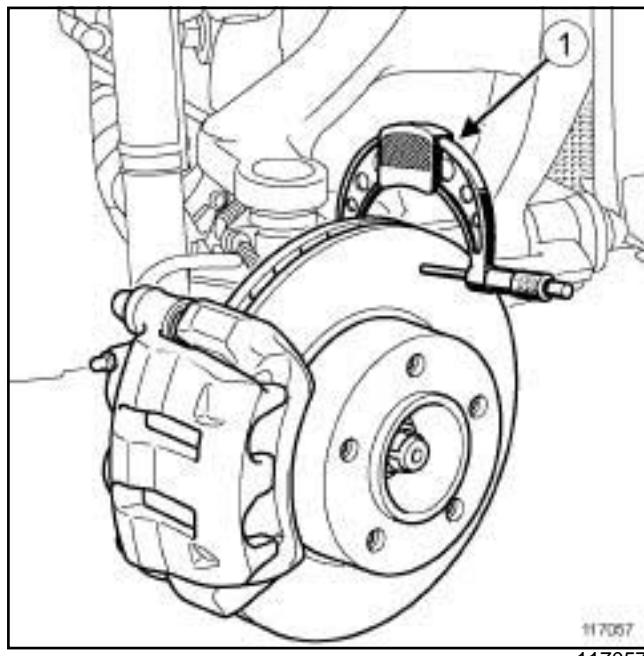
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).

Remove the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

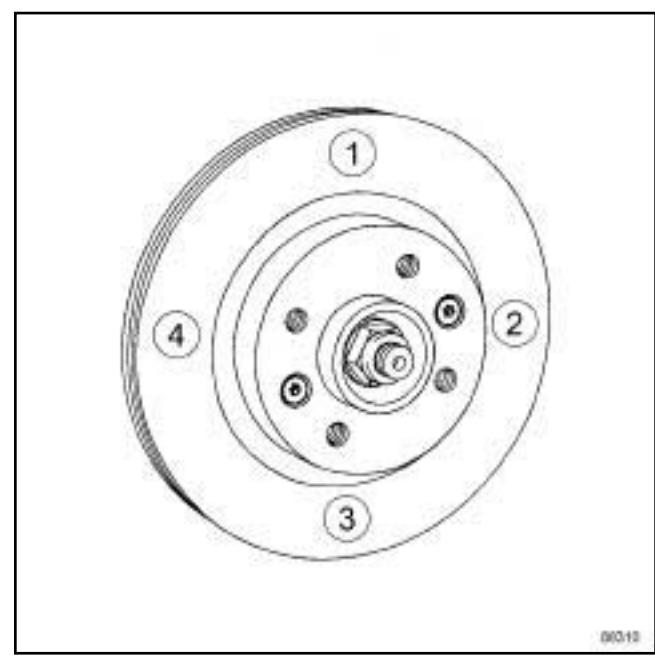
II - CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool (1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90° apart).

Compare the values with those recommended by the manufacturer (see **30A, General information, Brake: Specifications**, page 30A-16).

III - FINAL OPERATION

Replace the discs if necessary (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-16).

Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

Equipment required

Diagnostic tool

pedal press

Tightening torques brake pipe unions **14 Nm**engine subframe tie rod bolts **62 Nm****WARNING**

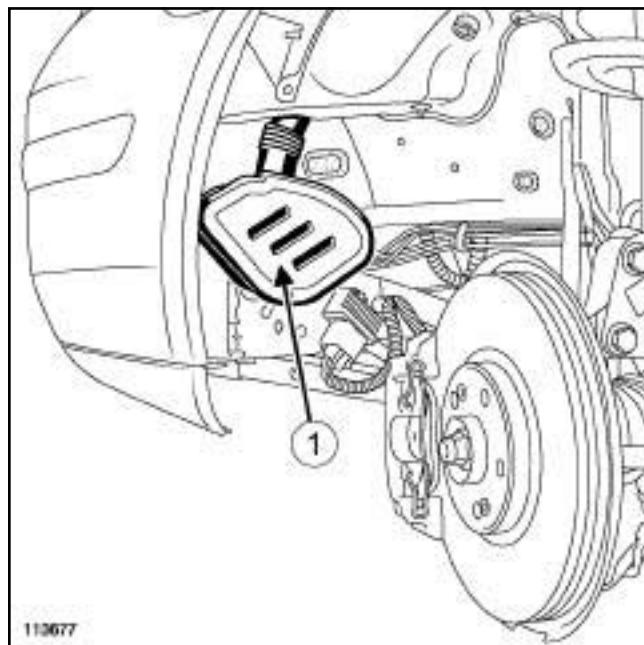
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Lock the airbag computer to unlock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
 - the engine undertray.
- Open a bleed screw.
- Fit the **pedal press** to the brake pedal to reduce the amount of brake fluid running out.
- Close the bleed screw.

II - REMOVAL OPERATION FOR PART CONCERNED

M9R

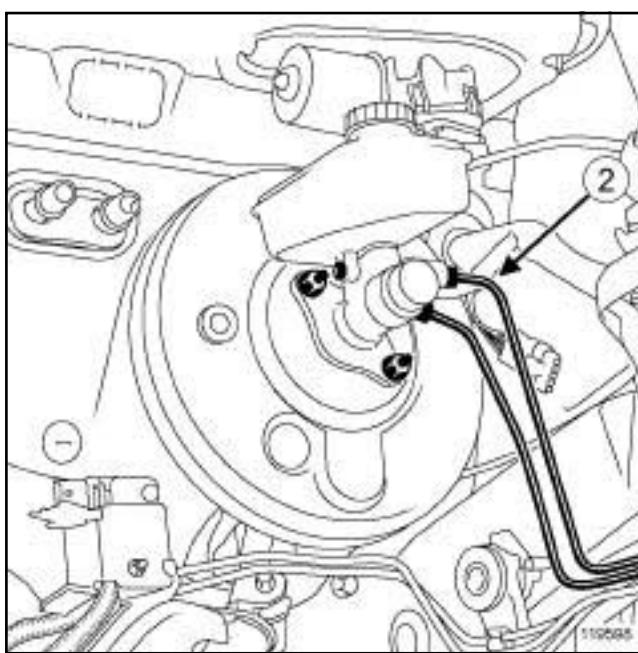


113677

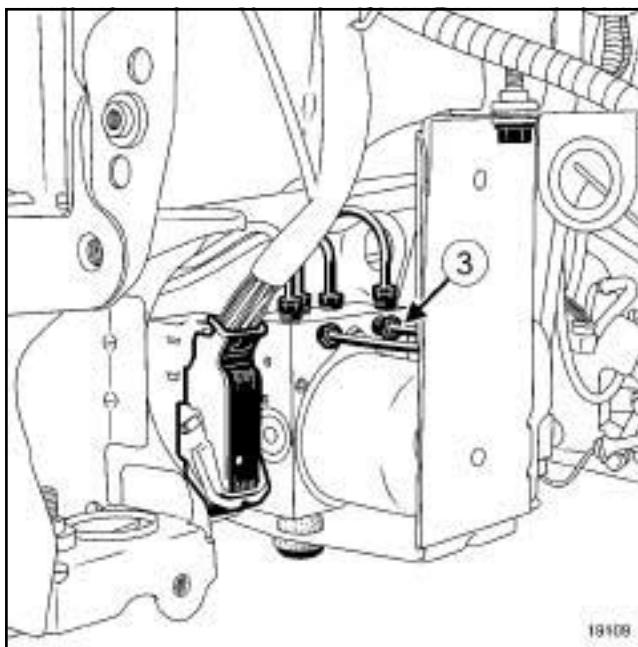
- Remove the air resonator (1) .

- Remove:

- the battery (see **80A, Battery, Battery: Removal - Refitting**),
- the battery tray (see **80A, Battery, Battery tray: Removal - Refitting**),
- the air filter unit.



119598



19109

Detach the brake pipe.

Undo:

- the union (2) on the master cylinder,
- the brake pipe union (3) on the hydraulic unit.

Remove:

- the engine subframe retaining tie rod,
- the brake pipe.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the brake pipe,
 - the engine subframe retaining tie rod.
- Torque tighten:
 - the **brake pipe unions (14 Nm)**,
 - the **engine subframe tie rod bolts (62 Nm)**.
- Attach the brake pipe.

II - FINAL OPERATION.

M9R

- Refit the air resonator.

Refit:

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
- the engine undertray,
- the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
- the air filter box air outlet pipe,
- the battery tray (see **80A, Battery, Battery tray: Removal - Refitting**),
- the engine compartment connection unit,
- the battery (see **80A, Battery, Battery: Removal - Refitting**).

Unlock the airbag computer to lock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).

Remove the **pedal press**

Perform the following operations:

- fill up with brake fluid,
- bleed the circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

FRONT AXLE COMPONENTS

Hydraulic unit - underbody union brake pipe: Removal - Refitting

31A

Equipment required

Diagnostic tool

pedal press

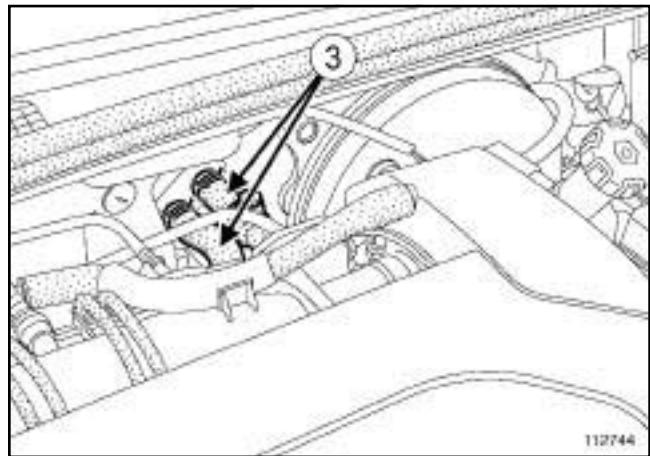
refrigerant charging station

Tightening torques

brake pipe unions on the hydraulic unit **14 Nm**

underbody pipe unions **14 Nm**

pipe union mounting bolts **8 Nm**



112744

112744

Fit hose clamps (3) .

Disconnect the heater matrix hoses.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Lock the airbag computer to unlock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Open a bleed screw.
- Fit the **pedal press** to the brake pedal to reduce the amount of brake fluid running out.
- Close the bleed screw.
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

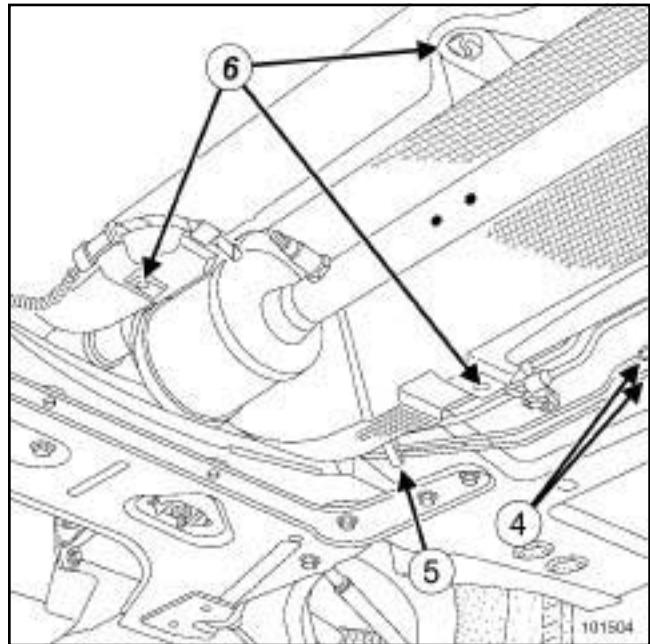
K9K

- Remove the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

- Remove:

- the engine cover (if fitted to the vehicle),
 - the air filter box (see **Air filter unit: Removal - Refitting**).

II - REMOVAL OPERATION FOR PART CONCERNED



101504

Undo the brake pipe unions (4) from the underbody unions.

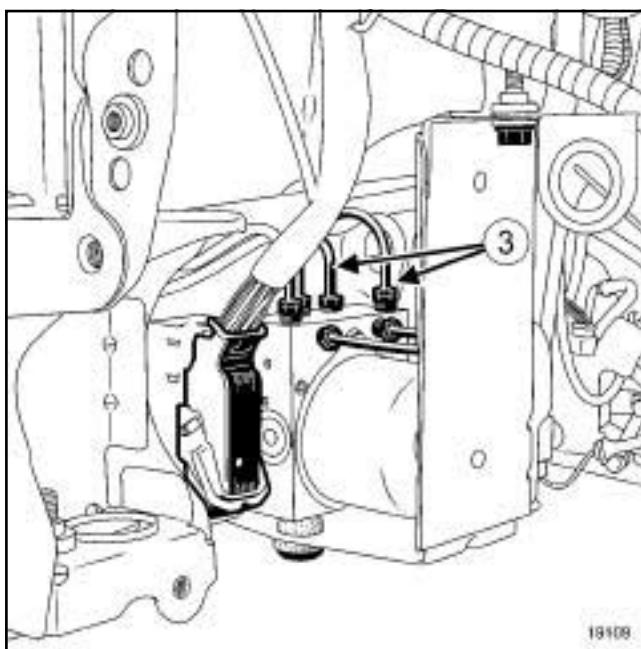
Detach the brake pipes from the clips (5) .

Remove the mountings (6) from the heat shield.

FRONT AXLE COMPONENTS

Hydraulic unit - underbody union brake pipe: Removal - Refitting

31A



19109

- Detach the brake pipe.
- Undo:
 - the brake pipe unions (3) on the hydraulic unit.
- Remove the brake pipes between the hydraulic unit and underbody unions.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- Replace the seals on the expansion valve pipes.
- Lubricate the seals using recommended air conditioning oil to make fitting easier.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the brake pipes between the hydraulic unit and underbody unions.
- Refit the heat shield mountings.
- Clip the brake pipes into position.
- Torque tighten:
 - the **brake pipe unions on the hydraulic unit (14 Nm)**,
 - the **underbody pipe unions (14 Nm)**.

III - FINAL OPERATION.

- Connect the heater matrix hoses.
- Remove the hose clamps.

- Torque tighten the **pipe union mounting bolts (8 Nm)**.

Refit:

- the soundproofing on the bulkhead,
- the soundproofing mounting clips,
- the air filter box (see **Air filter unit: Removal - Refitting**) ,
- the front engine cover (if fitted to the vehicle).

K9K

- Refit the battery (see **Battery: Removal - Refitting**)

- Remove the **pedal press** from the brake pedal.
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).
- Top up the coolant level.
- Fill the coolant circuit using the **refrigerant charging station**.
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

FRONT AXLE COMPONENTS

Hydraulic unit - front left-hand calliper brake pipe: Removal - Refitting

31A

Equipment required

Diagnostic tool

pedal press

Tightening torques

brake pipe unions **14 Nm**

engine subframe tie rod bolts **62 Nm**

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

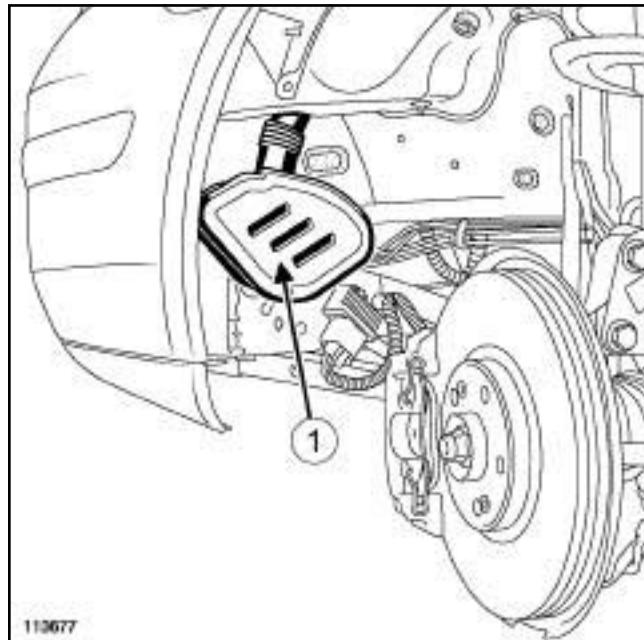
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Lock the airbag computer to unlock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
 - the engine undertray.
- Open a bleed screw.
- Fit the **pedal press** to the brake pedal to reduce the amount of brake fluid running out.
- Close the bleed screw.

II - REMOVAL OPERATION FOR PART CONCERNED

M9R



113677

- Remove the air resonator (1) .

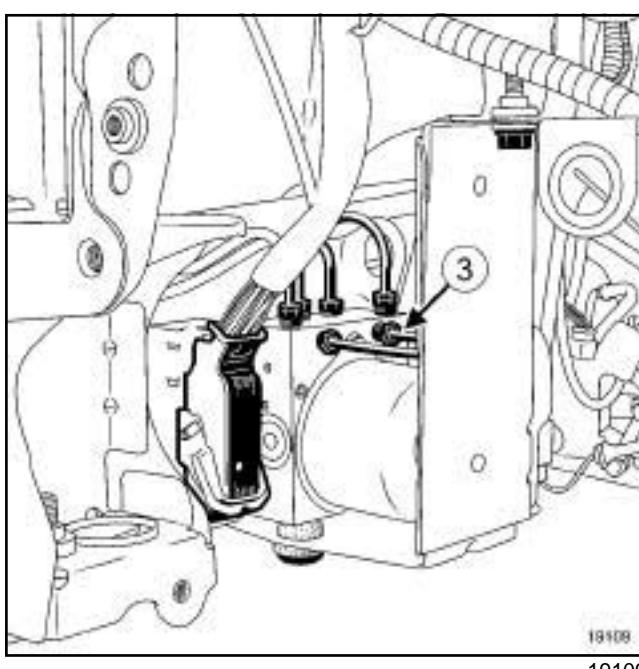
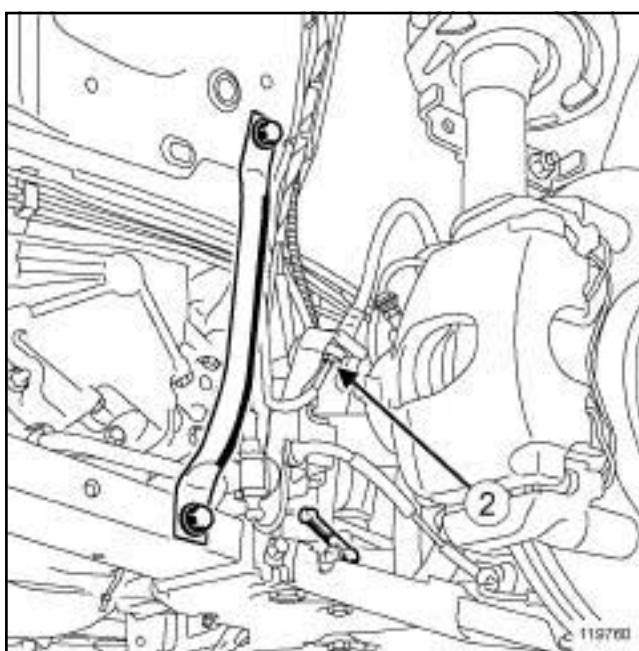
- Remove:

- the battery (see **80A, Battery, Battery: Removal - Refitting**),
 - the battery tray (see **80A, Battery, Battery tray: Removal - Refitting**),
 - the air filter unit.

FRONT AXLE COMPONENTS

Hydraulic unit - front left-hand calliper brake pipe: Removal - Refitting

31A



Detach the brake pipe.

Undo:

- the union (2) on the master cylinder,
- the brake pipe union (3) on the hydraulic unit.

Remove:

- the brake pipe.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the brake pipe,
 - the engine subframe retaining tie rod.
- Torque tighten:
 - the **brake pipe unions (14 Nm)**,
 - the **engine subframe tie rod bolts (62 Nm)**.
- Attach the brake pipe.

II - FINAL OPERATION.

M9R

- Refit the air resonator.
- Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
 - the engine undertray,
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the air filter box air outlet pipe,
 - the battery tray (see **80A, Battery, Battery tray: Removal - Refitting**),
 - the engine compartment connection unit,
 - the battery (see **80A, Battery, Battery: Removal - Refitting**).
- Unlock the airbag computer to lock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Remove the **pedal press**
- Perform the following operations:
 - fill up with brake fluid,
 - bleed the circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

FRONT AXLE COMPONENTS

Hydraulic unit - front right-hand calliper brake pipe: Removal - Refitting

31A

Equipment required

Diagnostic tool
pedal press

Tightening torques

brake pipe unions	14 Nm
engine subframe tie rod bolts	62 Nm

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

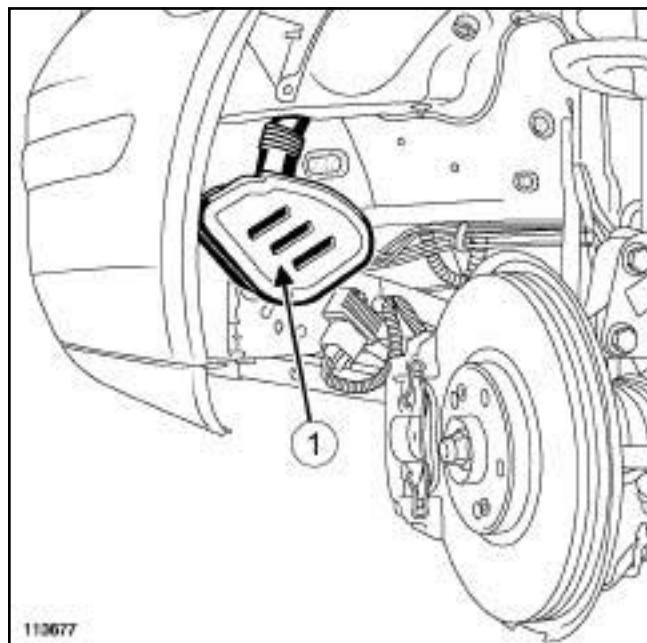
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Lock the airbag computer to unlock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
 - the engine undertray.
- Open a bleed screw.
- Fit the **pedal press** to the brake pedal to reduce the amount of brake fluid running out.
- Close the bleed screw.

II - REMOVAL OPERATION FOR PART CONCERNED

M9R



113677

- Remove the air resonator (1) .

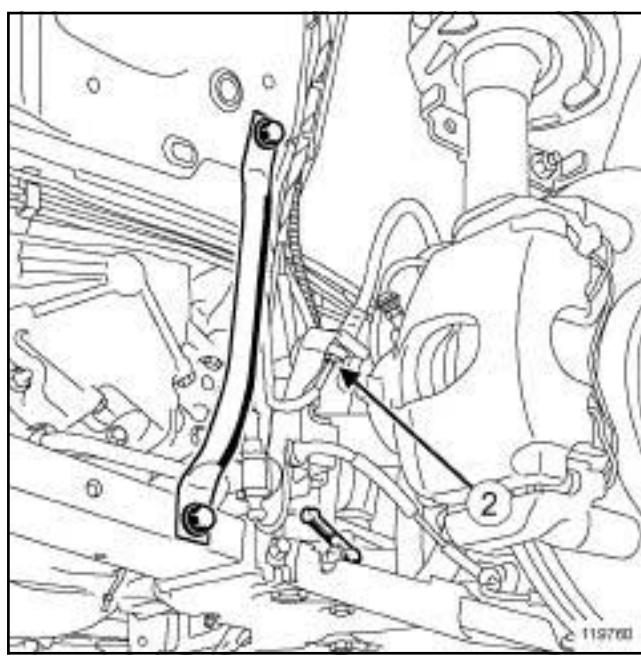
- Remove:

- the battery (see **80A, Battery, Battery: Removal - Refitting**),
- the battery tray (see **80A, Battery, Battery tray: Removal - Refitting**),
- the air filter unit.

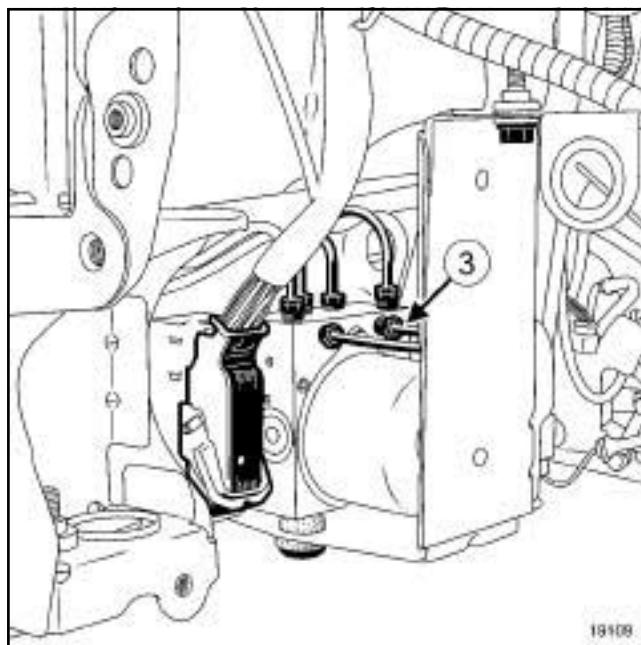
FRONT AXLE COMPONENTS

Hydraulic unit - front right-hand calliper brake pipe: Removal - Refitting

31A



119760



19109

Detach the brake pipe.

Undo:

- the brake pipe union (2) on the right-hand side retaining bracket,
- the brake pipe union (3) on the hydraulic unit.

Remove:

- the rear suspended engine mounting (see 19D, **Engine mounting, Suspended engine mounting**),
- the linkage reinforcing bracket.
- the brake pipe.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the brake pipe,
 - the engine subframe retaining tie rod.
- Torque tighten:
 - the **brake pipe unions (14 Nm)**,
 - the **engine subframe tie rod bolts (62 Nm)**.
- Attach the brake pipe.

II - FINAL OPERATION.

M9R

- Refit the air resonator.
- Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416 Bodywork, 55A, Exterior protection),
 - the engine undertray,
 - the front left-hand wheel (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
 - the air filter box air outlet pipe,
 - the battery tray (see 80A, **Battery, Battery tray: Removal - Refitting**),
 - the engine compartment connection unit,
 - the battery (see 80A, **Battery, Battery: Removal - Refitting**).
- Unlock the airbag computer to lock the steering column using the **Diagnostic tool** (see **Airbag and pretensioners: Precautions for the repair**) (MR 417 Fault finding, 88C, Airbags and pretensioners).
- Remove the **pedal press**
- Perform the following operations:
 - fill up with brake fluid,
 - bleed the circuit (see 30A, **General information, Braking circuit: Bleed**, page 30A-4) .

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

K4M or K9K

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques 	
ball joint protector bolt	8 N.m
brake disc protector bolts	8 N.m
lower ball joint nut	62 N.m
lower shock absorber bolts	180 N.m
track rod end nut	37 N.m
hub nut	150 N.m
brake calliper mounting bolts	105 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

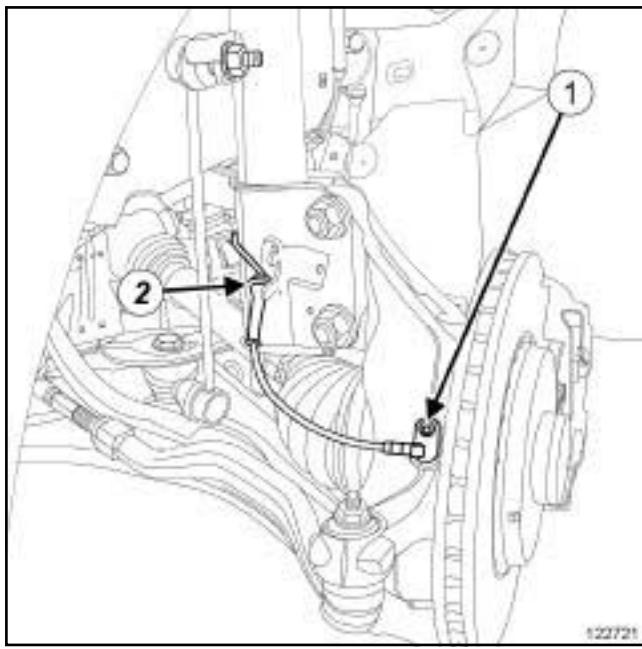
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

FRONT AXLE COMPONENTS

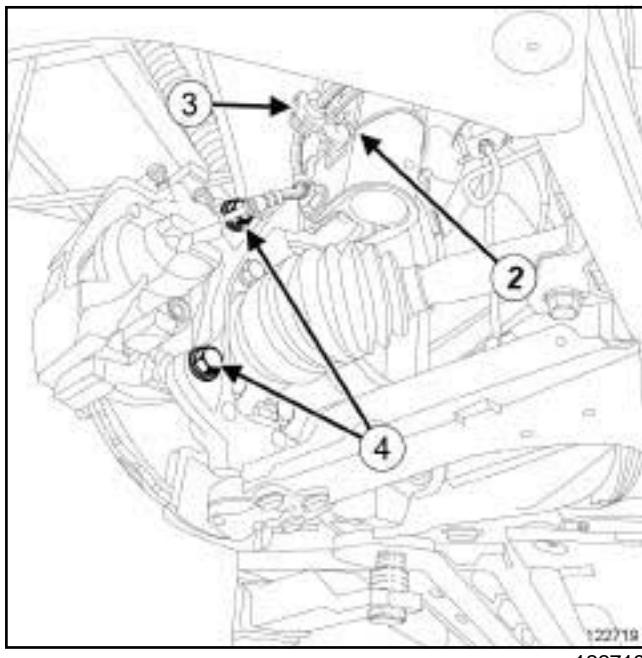
Front driveshaft hub carrier: Removal - Refitting

31A

K4M or K9K



122721

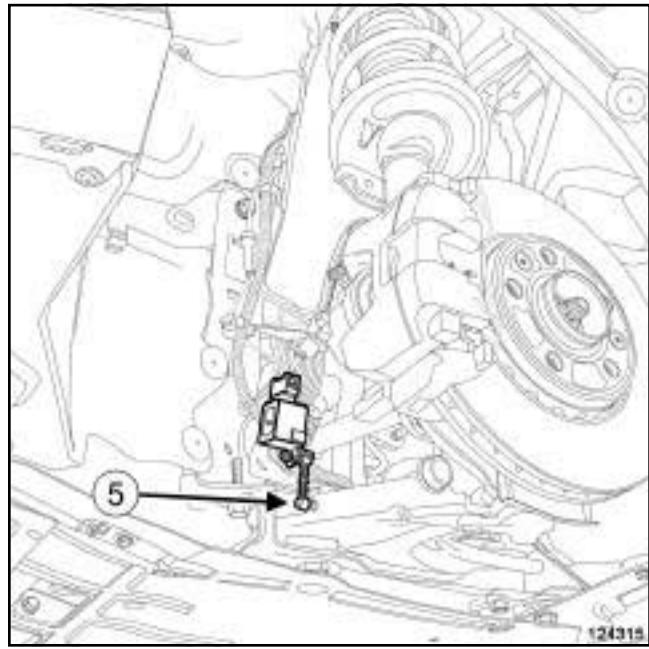


122719

- Remove the wheel speed sensor bolt (1).
- Remove the wheel speed sensor from its housing.
- Unclip:
 - the wheel speed sensor wiring at (2),
 - the brake hose from the shock absorber at (3).
- Remove the brake calliper mounting bolts (4).
- Hang the "front brake calliper mounting - front brake calliper" assembly on the suspension spring.

- Remove the brake disc (see 31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-16).

DISCHARGE LAMPS



124315

- Unclip the headlight beam adjustment front sensor linkage at (5).

II - OPERATION FOR REMOVAL OF PART CONCERNED

-

WARNING

In order to prevent irreversible damage to the front hub bearing:

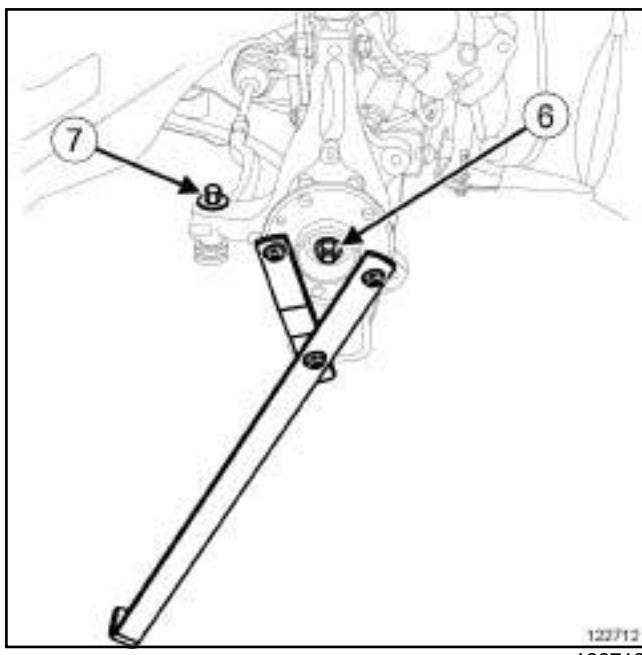
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

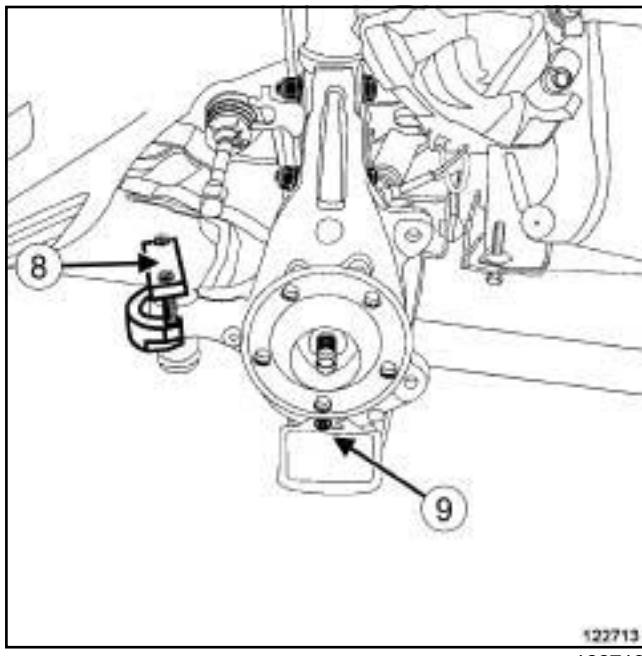
31A

K4M or K9K



Remove:

- the hub nut (6) using a wheel hub locking tool (**Rou. 604-01**),
- the track rod end nut (7) .



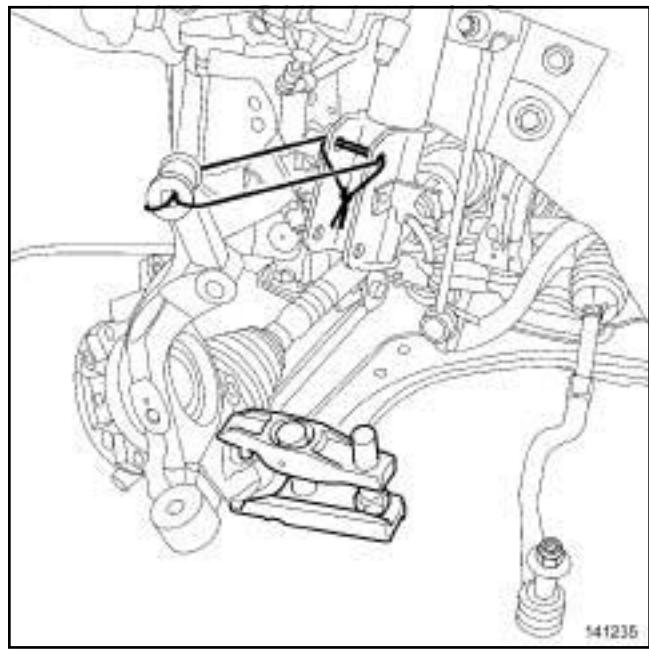
- Detach the track rod end using the tool (8) (**Tav. 476**).

- the ball joint protector bolt (9) ,
- the ball joint protector.

WHEEL DISC PROTECTOR

Remove:

- the lower ball joint nut,
- the brake disc protector bolts,
- the brake disc protector.



- Remove the bolts from the shock absorber base.
- Push the driveshaft back from the hub carrier by pivoting the hub carrier.
- Attach the hub carrier to the base of the shock absorber.
- Extract the lower ball joint from the hub carrier using a ball joint extractor.
- Remove the hub carrier.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Front brake calliper mounting bolt (13,03,03,08).

WITHOUT WHEEL DISC PROTECTOR

Remove:

- the lower ball joint nut,

K4M or K9K

- parts always to be replaced: Track rod end nut (13,04,02,03).
- parts always to be replaced: Front driveshaft lower arm ball joint nut (13,02,03,19).
- parts always to be replaced: Front wheel hub nut (13,02,03,20).
- parts always to be replaced: front shock absorber lower nut (13,02,04,11).

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the hub carrier.

WITHOUT WHEEL DISC PROTECTOR

- Refit:
 - the ball joint protector,
 - the ball joint protector bolt.
- Torque tighten the **ball joint protector bolt (8 N.m)**.

WHEEL DISC PROTECTOR

- Refit:
 - the brake disc protector,
 - the disc protector bolts.
- Torque tighten the **brake disc protector bolts (8 N.m)**.

- Refit:
 - the lower ball joint nut,
 - the shock absorber lower bolts,
 - the track rod end nut.

- Torque tighten:

- the **lower ball joint nut (62 N.m)**,
- the **lower shock absorber bolts (180 N.m)**,
- the **track rod end nut (37 N.m)**.

- Apply a few drops of **HIGH RESISTANCE THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) to the splines of the driveshaft and the driveshaft nut.

- Refit the hub nut.

- Torque tighten the **hub nut (150 N.m)** using a hub locking tool (**Rou. 604-01**).

III - FINAL OPERATION

- Refit:
 - the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-16**) ,
 - the "front brake calliper mounting - front brake calliper" assembly.
 - the brake calliper mounting bolts.
- Torque tighten the **brake calliper mounting bolts (105 N.m)**.

DISCHARGE LAMPS

- Clip on the headlight beam adjustment front sensor linkage.
- Set the wheels straight ahead.
- Refit:
 - the wheel speed sensor,
 - the wheel speed sensor bolt.
- Clip:
 - the brake hose to the shock absorber,
 - the wheel speed sensor wiring.
- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

K4M or K9K

- Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment, page 30A-28**).

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

F4R or M4R or M9R or V4Y or V9X

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques 	
ball joint protector bolt	8 N.m
brake disc protector bolts	8 N.m
lower ball joint nut	62 N.m
lower shock absorber bolts	180 N.m
track rod end nut	37 N.m
hub nut	150 N.m
brake calliper mounting bolts	105 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

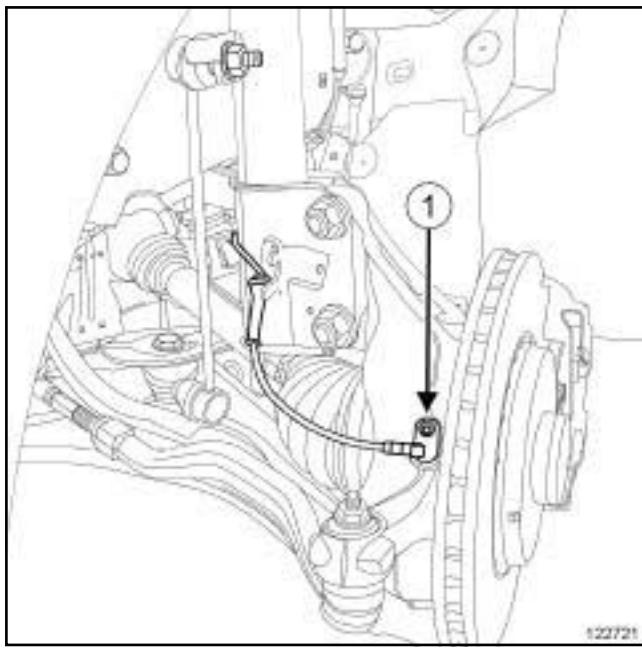
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

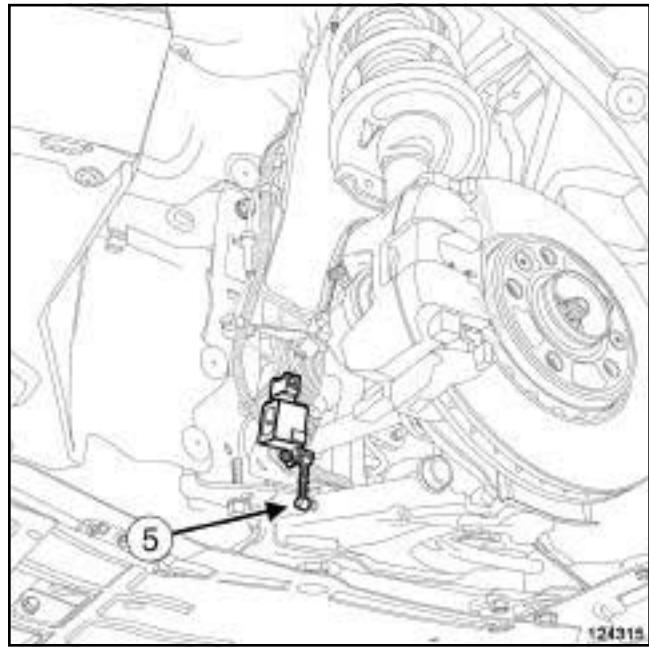
31A

F4R or M4R or M9R or V4Y or V9X

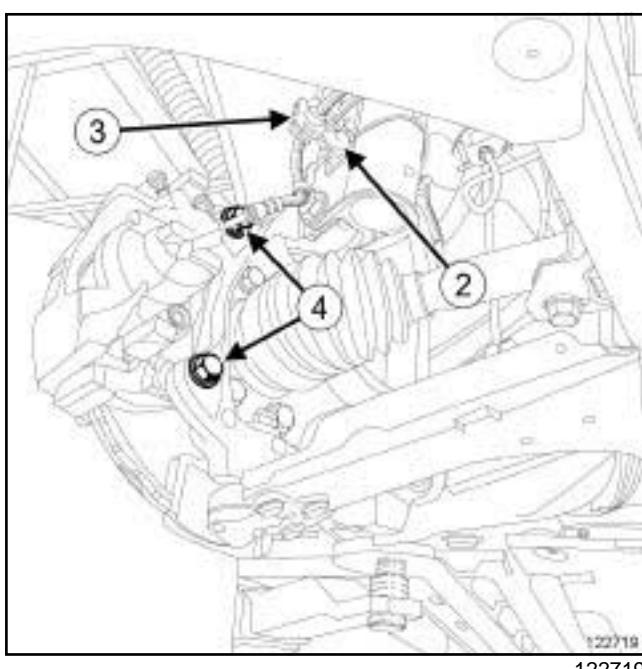


- Remove the brake disc (see 31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-16) .

DISCHARGE LAMPS



- Unclip the headlight beam adjustment front sensor linkage at (5) .



- Remove the wheel speed sensor bolt (1) .
- Remove the wheel speed sensor from its housing.
- Unclip:
 - the wheel speed sensor wiring at (2) ,
 - the brake hose from the shock absorber at (3) .
- Remove the brake calliper mounting bolts (4) .
- Hang the "front brake calliper mounting - front brake calliper" assembly on the suspension spring.

WARNING

In order to prevent irreversible damage to the front hub bearing:

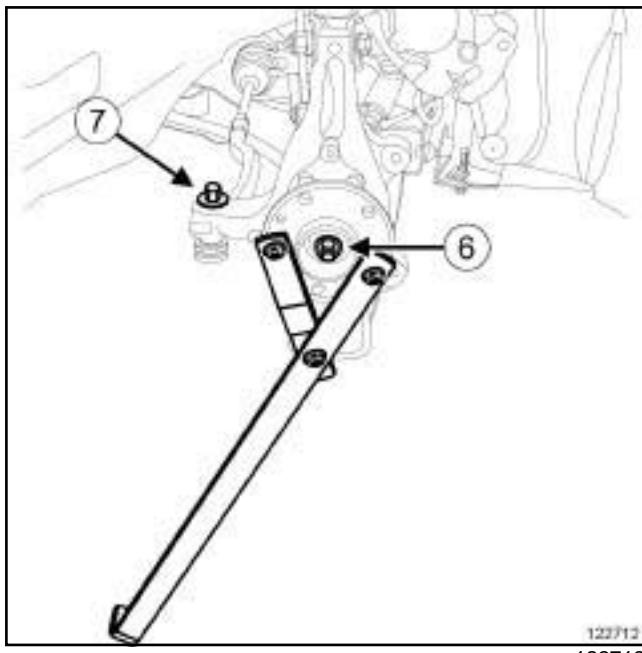
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

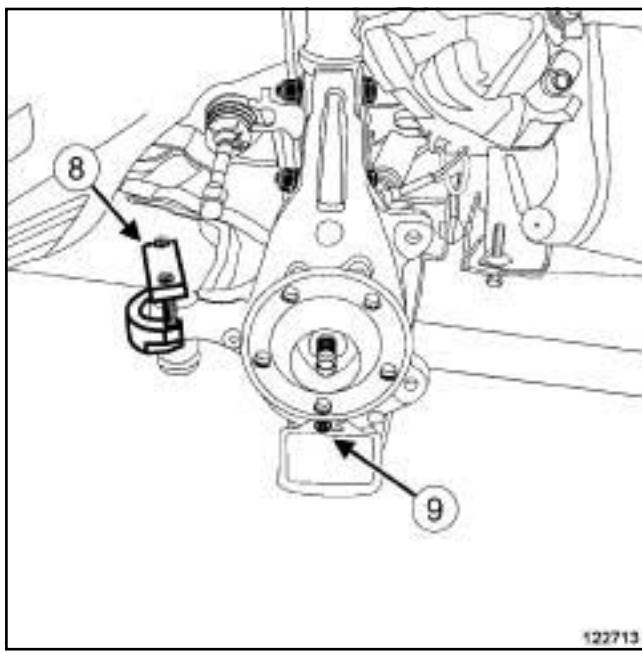
F4R or M4R or M9R or V4Y or V9X



122712

Remove:

- the hub nut (6) using a wheel hub locking tool (**Rou. 604-01**),
- the track rod end nut (7) .



122713

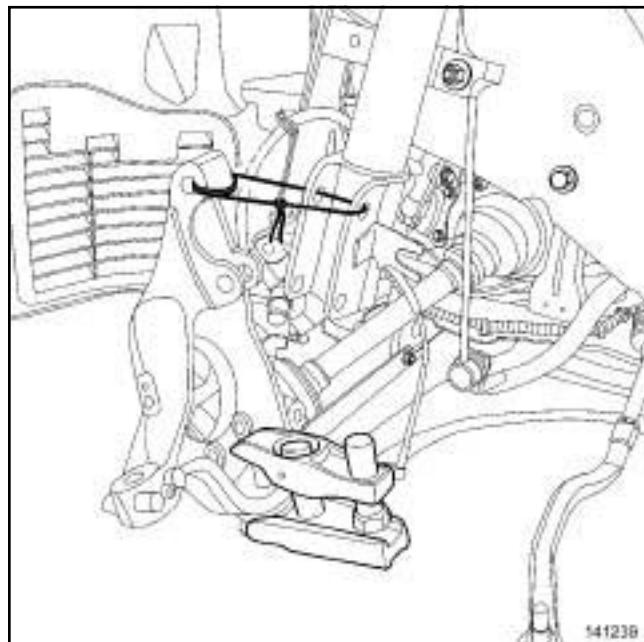
Detach the track rod end using the tool (8) (**Tav. 476**).

- the ball joint protector bolt (9) ,
- the ball joint protector.

WHEEL DISC PROTECTOR

Remove:

- the lower ball joint nut,
- the brake disc protector bolts,
- the brake disc protector.



541236

141239

- Remove the bolts from the shock absorber base.
- Push the driveshaft back from the hub carrier by pivoting the hub carrier.
- Attach the hub carrier to the base of the shock absorber.
- Extract the lower ball joint from the hub carrier using a ball joint extractor.
- Remove the hub carrier.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Front brake calliper mounting bolt (13,03,03,08).

WITHOUT WHEEL DISC PROTECTOR

Remove:

- the lower ball joint nut,

F4R or M4R or M9R or V4Y or V9X

- parts always to be replaced: Track rod end nut (13,04,02,03).
- parts always to be replaced: Front driveshaft lower arm ball joint nut (13,02,03,19).
- parts always to be replaced: Front wheel hub nut (13,02,03,20).
- parts always to be replaced: front shock absorber lower nut (13,02,04,11).

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the hub carrier.

WITHOUT WHEEL DISC PROTECTOR

- Refit:
 - the ball joint protector,
 - the ball joint protector bolt.
- Torque tighten the **ball joint protector bolt (8 N.m)**.

WHEEL DISC PROTECTOR

- Refit:
 - the brake disc protector,
 - the disc protector bolts.
- Torque tighten the **brake disc protector bolts (8 N.m)**.

- Refit:
 - the lower ball joint nut,
 - the shock absorber lower bolts,
 - the track rod end nut.

- Torque tighten:

- the **lower ball joint nut (62 N.m)**,
- the **lower shock absorber bolts (180 N.m)**,
- the **track rod end nut (37 N.m)**.

- Apply a few drops of **HIGH RESISTANCE THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) to the splines of the driveshaft and the hub nut.

- Refit the hub nut.

- Torque tighten the **hub nut (150 N.m)** using a hub locking tool (**Rou. 604-01**).

III - FINAL OPERATION

- Refit:
 - the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-16**) ,
 - the "front brake calliper mounting - front brake calliper" assembly.
 - the brake calliper mounting bolts.
- Torque tighten the **brake calliper mounting bolts (105 N.m)**.

DISCHARGE LAMPS

- Clip on the headlight beam adjustment front sensor linkage.
- Set the wheels straight ahead.
- Refit:
 - the wheel speed sensor,
 - the wheel speed sensor bolt.
- Clip:
 - the brake hose to the shock absorber,
 - the wheel speed sensor wiring.
- Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

F4R or M4R or M9R or V4Y or V9X

- Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**) .

FRONT AXLE COMPONENTS

Front hub carrier bearing: Removal - Refitting

31A

K4M or K9K

Equipment required

Diagnostic tool

Tightening torques

brake calliper mounting bolts **105 N.m**

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 31A, **Front axle components**, **Front axle components: Precautions for the repair**, page 31A-1).

WARNING

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

Note:

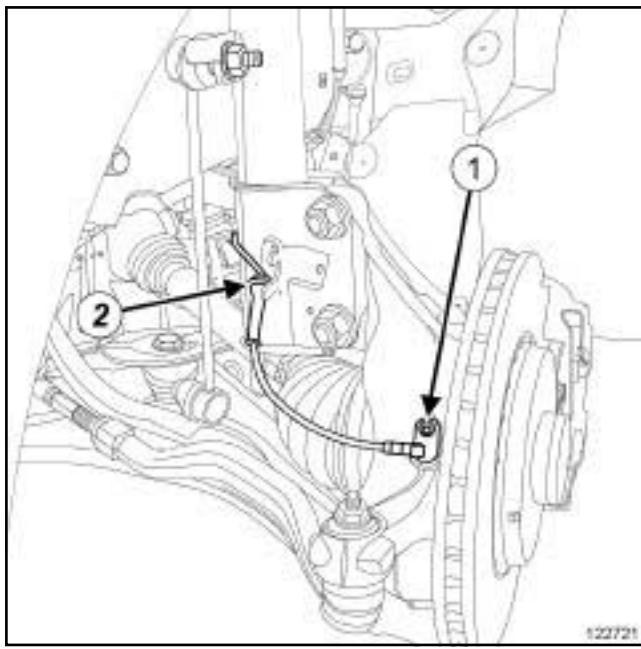
it is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the before repair procedure using the **Diagnostic tool**:

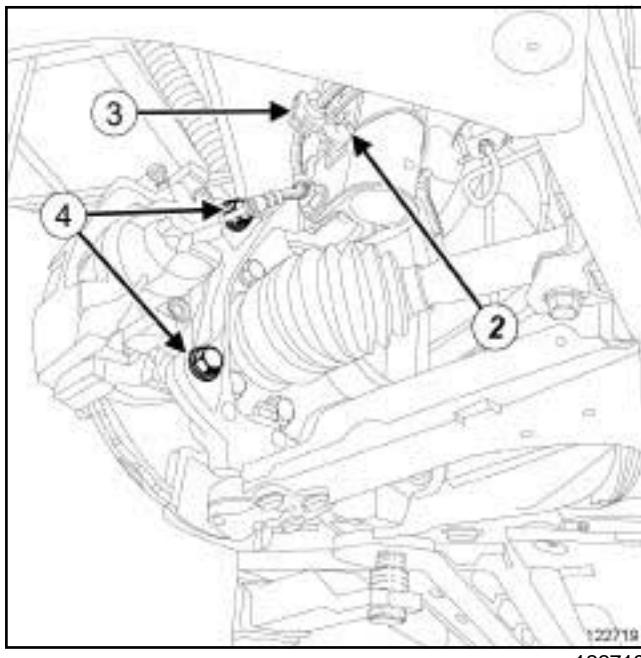
- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "Before repair procedure".

- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

K4M or K9K



122721



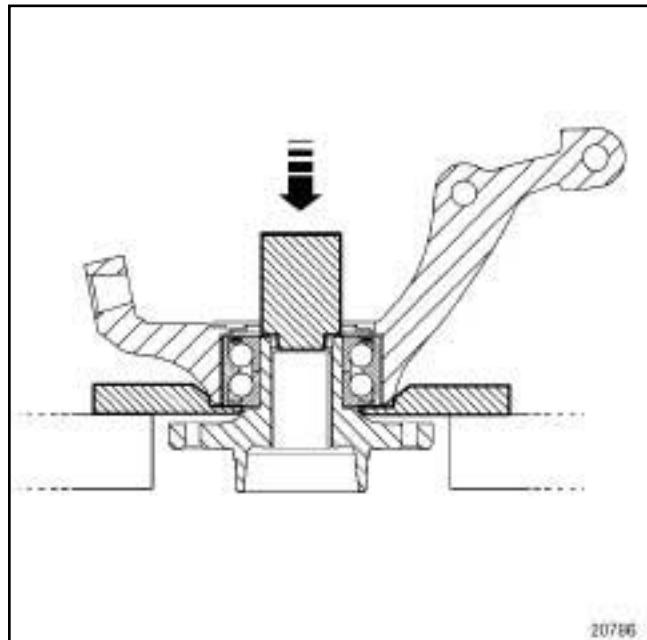
122719

- Remove the wheel speed sensor bolt (1) .
- Remove the wheel speed sensor from its housing.
- Unclip:
 - the wheel speed sensor wiring at (2) ,
 - the brake hose from the shock absorber at (3) .
- Remove the brake calliper mounting bolts (4) .
- Hang the "front brake calliper mounting - front brake calliper" assembly on the suspension spring.

Remove:

- the front brake disc (see 31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-16) ,
- the front driveshaft hub carrier (see 31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting, page 31A-28) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

20786
20786

- Remove the hub with a press, applying pressure with a tube with an outer diameter of 43 mm.

K4M or K9K

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:

- the brake calliper mounting bolts,
- the track rod end nut,
- the lower ball joint nut,
- the hub nut,
- the shock absorber lower nuts.

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

WARNING

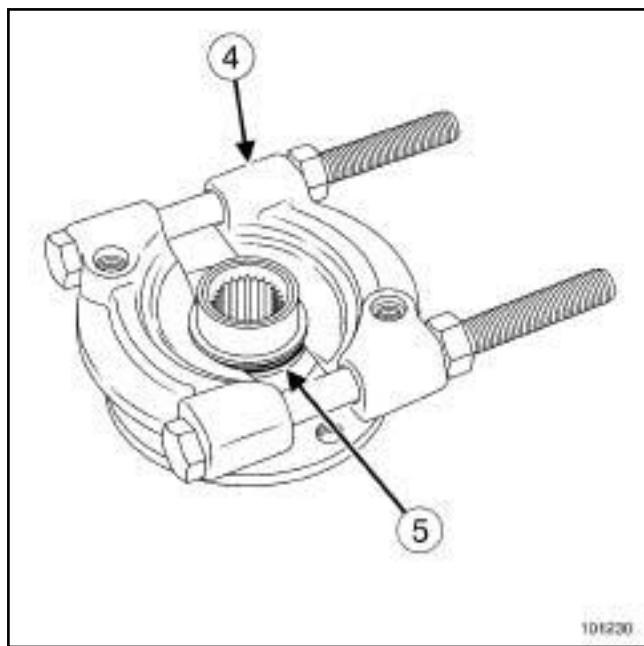
Do not press the bearing's internal bush so as to avoid damaging the bearing (very high shrink-fitting force).

- Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products) to clean:

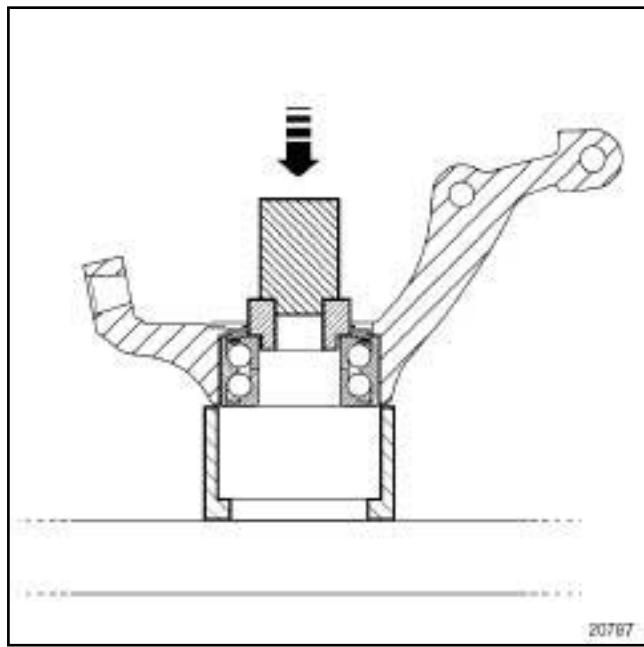
- the internal and external surfaces of the bearing, in contact with the hub carrier and the hub,
- the hub carrier surfaces in contact with the hub carrier bearing,
- the hub surfaces in contact with the bearing.

- Check the condition of the hub surface and the bore of the hub carrier in contact with the bearing.

- Replace any component whose contact surfaces have deep scratches or cracks.

101230
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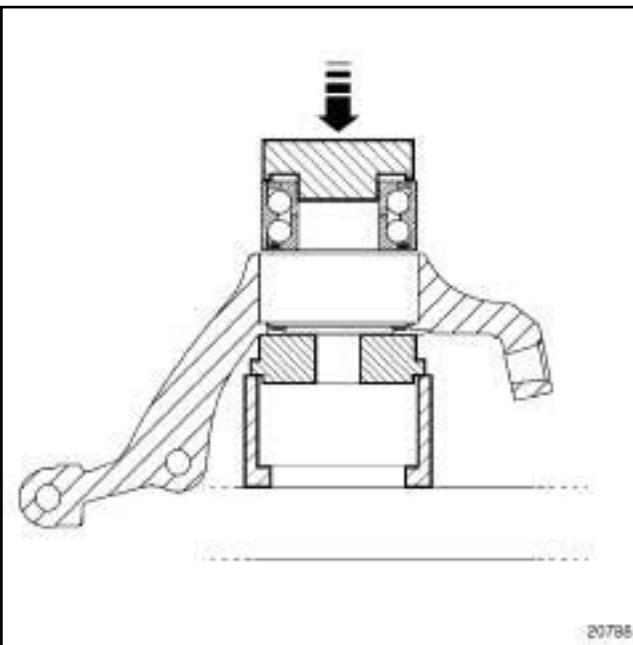
- Place the extractor jaws (4) in the groove of the internal bush (5).
- Remove the internal bush (5) from the hub, applying pressure on the hub with a tube with an outer diameter of **43 mm**.

20787
20787

- Remove the bearing from the front hub carrier by applying pressure to the internal bush with a tube with an outer diameter of **59 mm**.

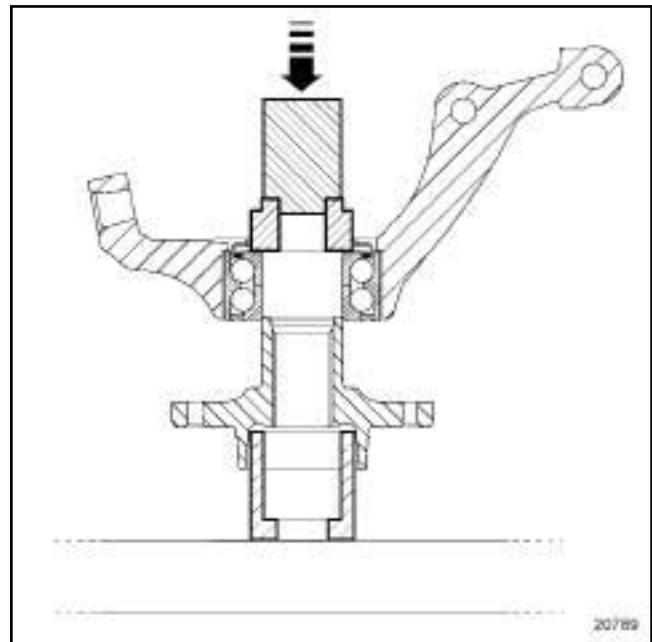
K4M or K9K

II - REFITTING OPERATION FOR PART CONCERNED



of **77 mm** (old bearing).

- Apply a fitting force of **50,000 N** to ensure that the bearing is correctly fitted on the hub carrier shoulder.



- Refit the hub using a tube with an outer diameter of **58 mm**.

III - FINAL OPERATION

Refit:

- the front driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page **31A-28**) ,
- the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-16**) ,
- the "front brake calliper mounting - front brake calliper" assembly,
- the brake calliper mounting bolts.

- Torque tighten the **brake calliper mounting bolts** (**105 N.m**).

- Set the wheels straight ahead.

Refit:

- the wheel speed sensor,
- the wheel speed sensor bolt.

Clip:

- the brake hose on the shock absorber,
- the wheel speed sensor wiring.



WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target (6) on the bearing.

- Position the sensor target on the bearing on the vehicle interior side.
- Apply pressure to the external bush with a tube with an outer diameter of **82 mm** and an inner diameter

K4M or K9K

- Refit the front wheel (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "After repair procedure".
- Adjust the front axle (see 30A, **General information, Front axle system: Adjustment**, page 30A-28) .

DISCHARGE LAMPS

- It is essential to initialise the discharge bulbs, if fitted to the vehicle (see **Headlight: Adjustment**) (MR 415, 80B, Headlights).
-

FRONT AXLE COMPONENTS

Front hub carrier bearing: Removal - Refitting

31A

F4R or M4R or M9R or V4Y or V9X

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).
Ms. 580	Inertia weight.

Equipment required	
Diagnostic tool	

Tightening torques 	
« hub - bearing » assembly bolts	105 N.m
track rod end nut	37 N.m
shock absorber base bolts	180 N.m
hub nut	150 N.m
brake calliper mounting bolts	105 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Note:

It is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the procedure before repair using the **Diagnostic tool** :
- connect the **Diagnostic tool**,
 - select « Airbag computer » ,
 - go to repair mode,
 - display the « before/after repair procedure » for the computer selected,
 - carry out the operations described in the « Before repair procedure » section.
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

WARNING

In order not to damage the brake hose:

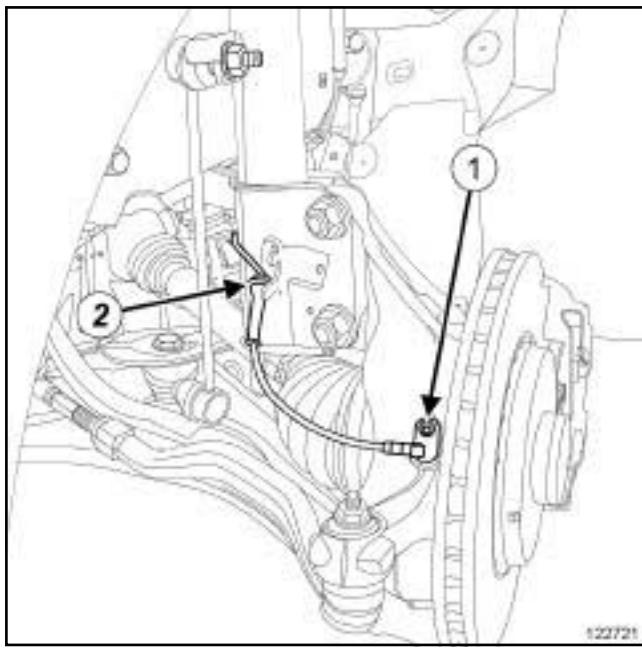
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

FRONT AXLE COMPONENTS

Front hub carrier bearing: Removal - Refitting

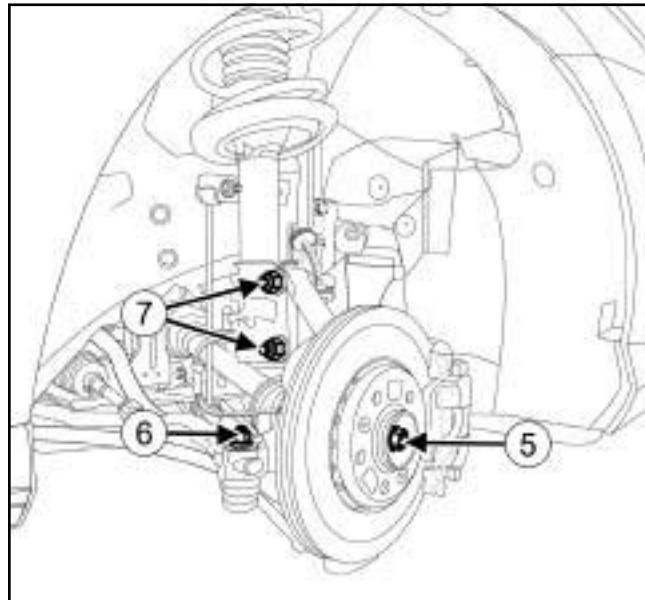
31A

F4R or M4R or M9R or V4Y or V9X



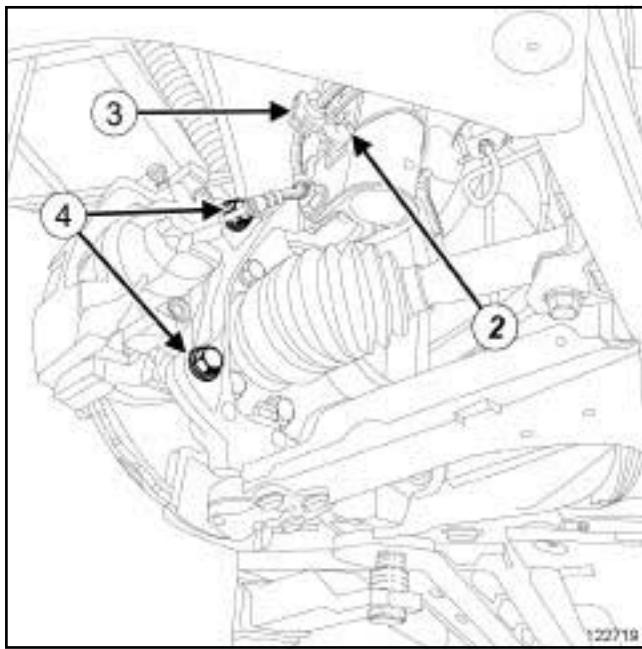
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- ❑ Remove the front brake disc (see 31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-16) .



122654

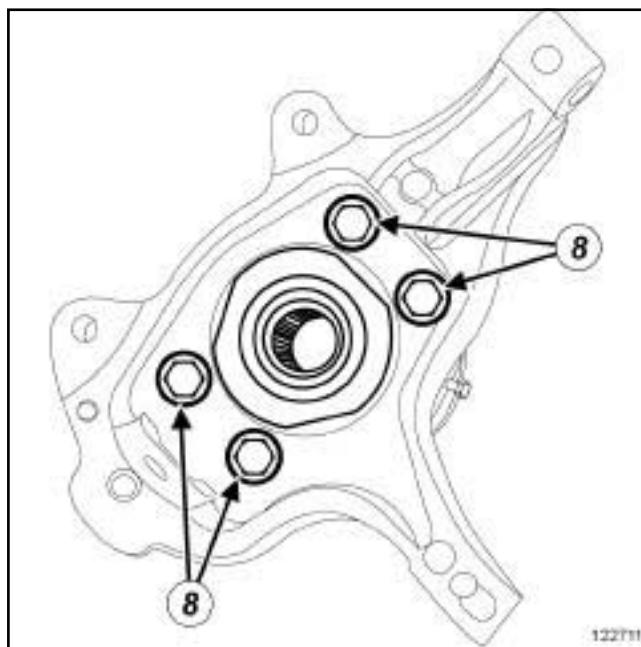
- ❑ Remove:
 - the hub nut (5) using the (Rou. 604-01),
 - the track rod end nut (6) .
- ❑ Detach the track rod end using the (Tav. 476).
- ❑ Remove the shock absorber base bolts (7) .
- ❑ Push the driveshaft back from the hub carrier by pivoting the hub carrier.
- ❑ Refit the bolts to the shock absorber base.



122719

- ❑ Remove the wheel speed sensor bolt (1) .
- ❑ Remove the wheel speed sensor from its housing.
- ❑ Unclip:
 - the wheel speed sensor wiring at (2) ,
 - the brake hose from the shock absorber at (3) .
- ❑ Remove the brake calliper mounting bolts (4) .
- ❑ Hang the « front brake calliper mounting - front brake calliper » assembly on the suspension spring.

F4R or M4R or M9R or V4Y or V9X

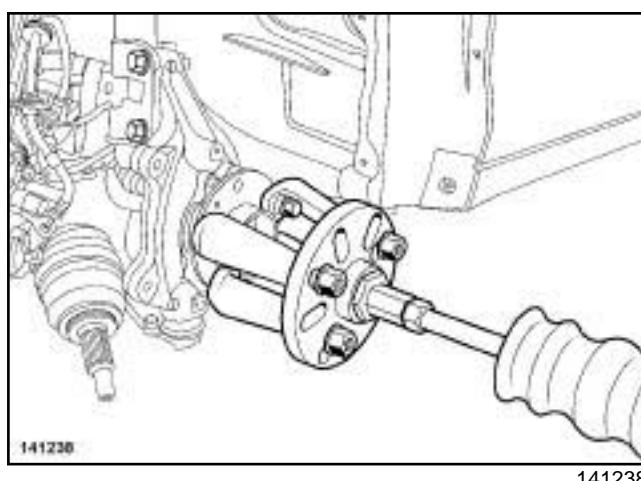
II - OPERATION FOR REMOVAL OF PART CONCERNED


- Remove the bolts (8) from the hub carrier « hub - bearing » assembly.

- parts always to be replaced: Track rod end nut (13,04,02,03).
- parts always to be replaced: Front wheel hub nut (13,02,03,20).
- parts always to be replaced: front shock absorber lower nut (13,02,04,11).
- Always replace the bolts of the « hub - bearing » assembly.
- It is essential to check the surface condition of the hub carrier before refitting the « hub - bearing » assembly.
- Replace the hub carrier if it has deep scratches or cracks.
- Clean the hub carrier surfaces in contact with the new « hub - bearing » assembly using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products)).

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.



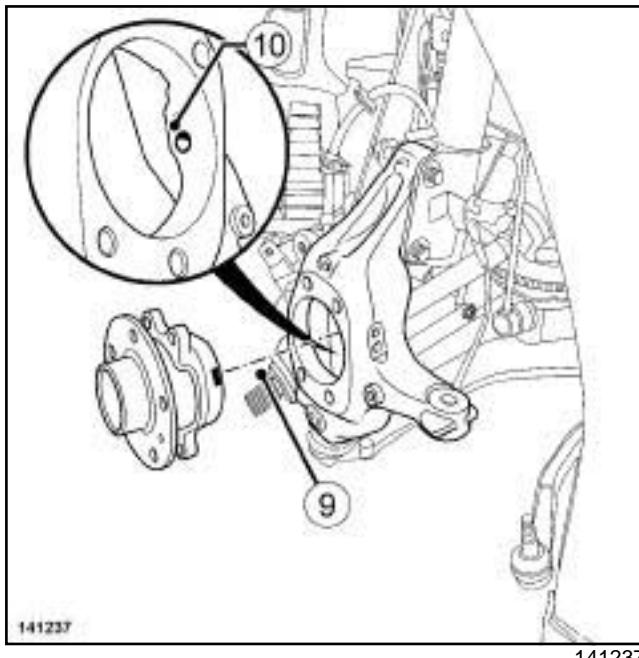
- Fit the tool (**Tav. 1050-04**) and the tool (**Ms. 580**) on the « hub - bearing » assembly.
- Use the tool (**Ms. 580**) to extract the « hub - bearing » assembly from the hub carrier.
- Remove the « hub - bearing » assembly.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: Front brake calliper mounting bolt (13,03,03,08).

F4R or M4R or M9R or V4Y or V9X

II - REFITTING OPERATION FOR PART CONCERNED



Refit:

- the « hub - bearing » assembly to the hub-carrier assembly,
- the « hub - bearing » assembly bolts.

Note:

Fit the « hub - bearing » assembly so that the slit (9) is opposite the hole (10) of the hub carrier.

Torque tighten the « hub - bearing » assembly bolts (105 N.m).

III - FINAL OPERATION

Remove the bolts from the shock absorber base.

Refit:

- the driveshaft in the hub carrier,
- the shock absorber base bolts,
- the track rod end on the hub carrier.

Apply a few drops of **HIGH RESISTANCE THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) to the splines of the driveshaft and the hub nut.

Torque tighten:

- the **track rod end nut** (37 N.m),
- the **shock absorber base bolts** (180 N.m),
- the **hub nut** (150 N.m), using the (Rou. 604-01).

Refit:

- the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-16**),
- the « front brake calliper mounting - front brake calliper » assembly.
- the brake calliper mounting bolts.

Torque tighten the **brake calliper mounting bolts** (105 N.m).

Set the wheels straight ahead.

Refit:

- the wheel speed sensor,
- the wheel speed sensor bolt.

Clip:

- the brake hose on the shock absorber,
- the wheel speed sensor wiring.

Refit the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

Apply the after repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,
- select « Airbag computer »,
- go to repair mode,
- display the « before/after repair procedure » for the computer selected,
- carry out the operations described in the « After repair procedure » section.

Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

Equipment required

spring compressor

spanner for shock absorber rod nut

Diagnostic tool

Tightening torques 

new shock absorber rod nut **62 N.m**

filter block bolts on the body **21 N.m**

shock absorber base bolts **180 N.m**

track rod nut **37 N.m**

anti-roll bar tie rod nut **44 N.m**

IMPORTANT

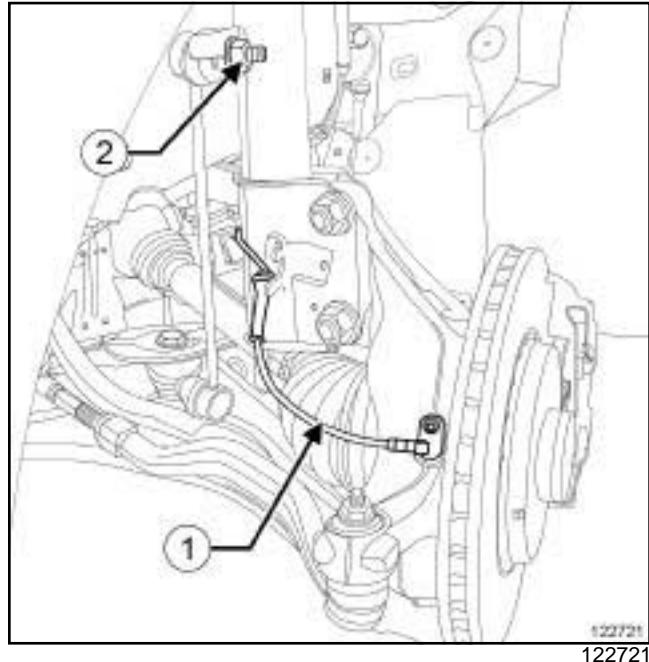
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

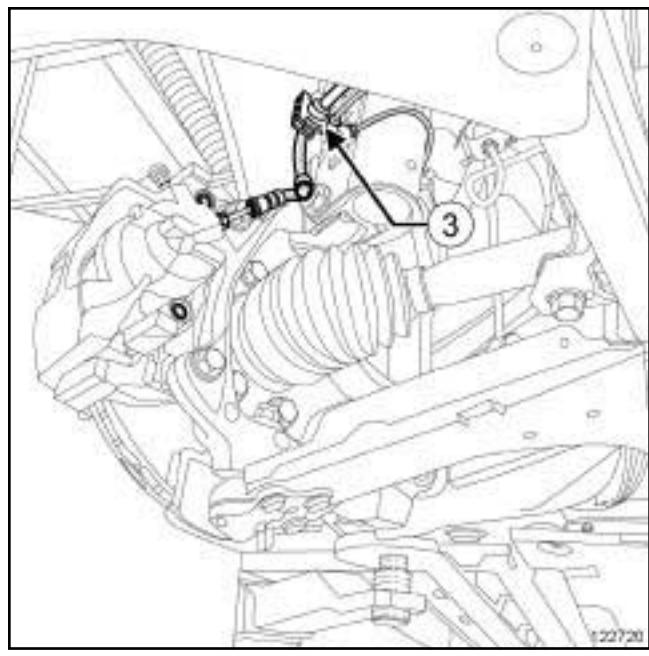
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Remove:

- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

II - OPERATION FOR REMOVAL OF PART CONCERNED122721
122721

- Detach the wiring from the wheel speed sensor (1).
- Remove the nut (2) of the anti-roll bar linkage on the base of the shock absorber.

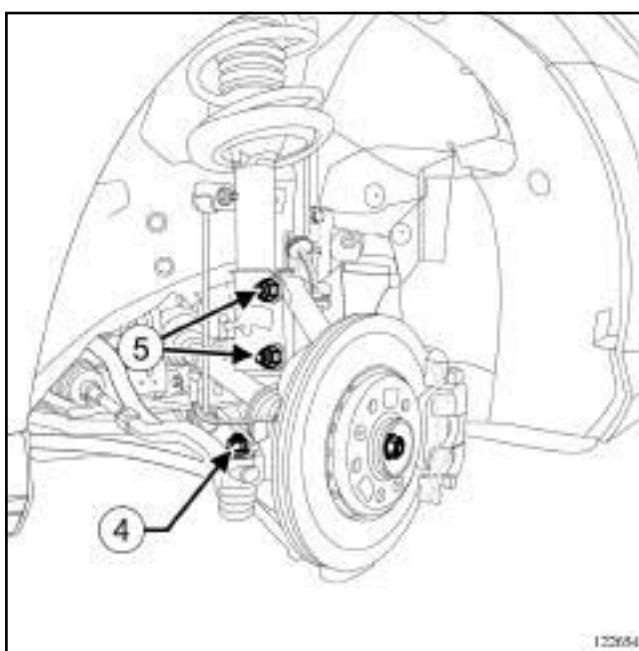
122720
122720

- Unclip the brake hose (3) from the base of the shock absorber.

FRONT AXLE COMPONENTS

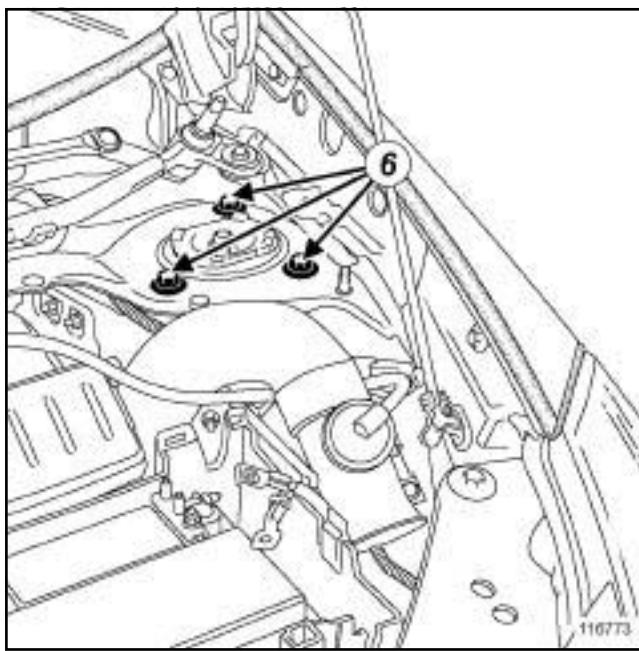
Front shock absorber and spring: Removal - Refitting

31A



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122654

□

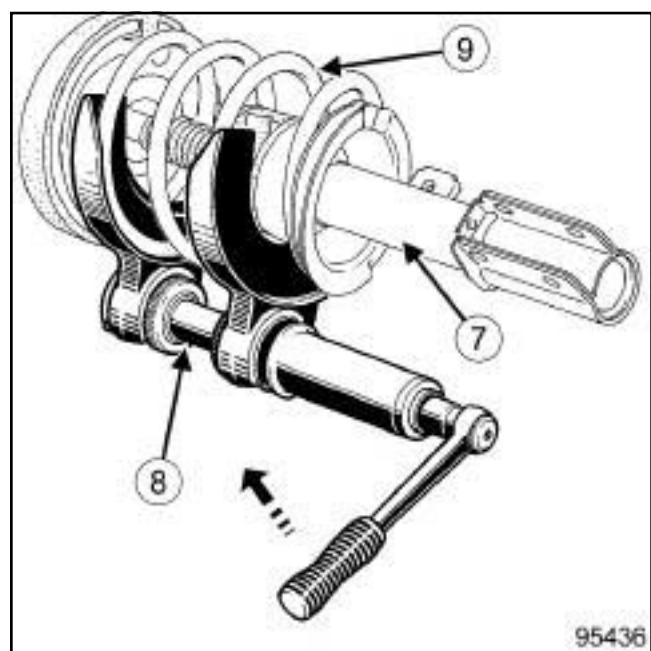


116773

□ Remove:

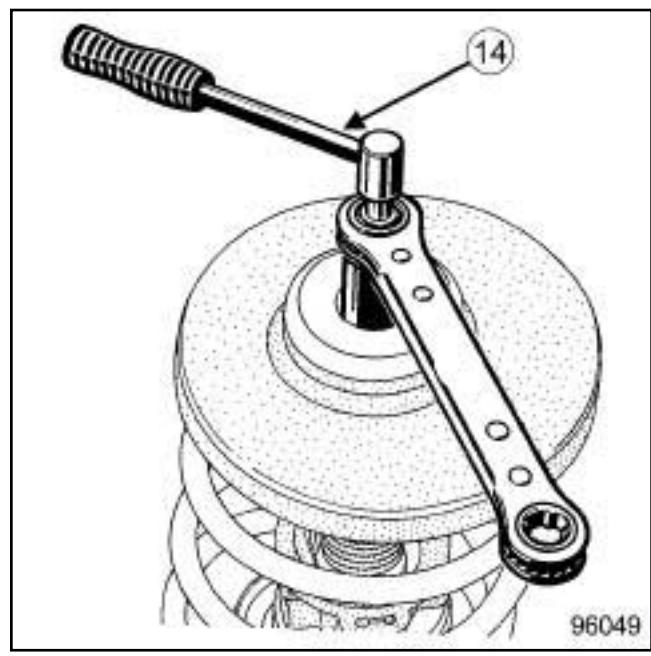
- the track rod nut (4),
- the shock absorber base nuts (5),
- the shock absorber base bolts,
- the filter block bolts (6) on the body,
- The "spring - shock absorber" assembly.

□ Attach the hub carrier.



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- Position the appropriate cups on the tool **spring compressor** (8).
- Position the spring compressor on the spring.
- Put the « spring compressor - spring » assembly in a vice equipped with jaws.
- Compress the spring using the (8) until the spring is released (9).



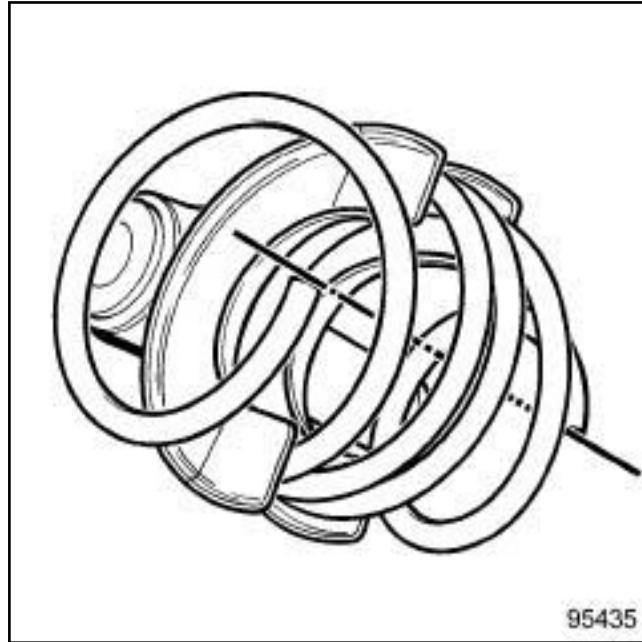
96049

- Remove the shock absorber rod nut using the **spanner for shock absorber rod nut** (14).
- Separate the components which make up the "spring-shock absorber" unit.

- Decompress the spring.

REFITTING

I - REFITTING PREPARATION OPERATION

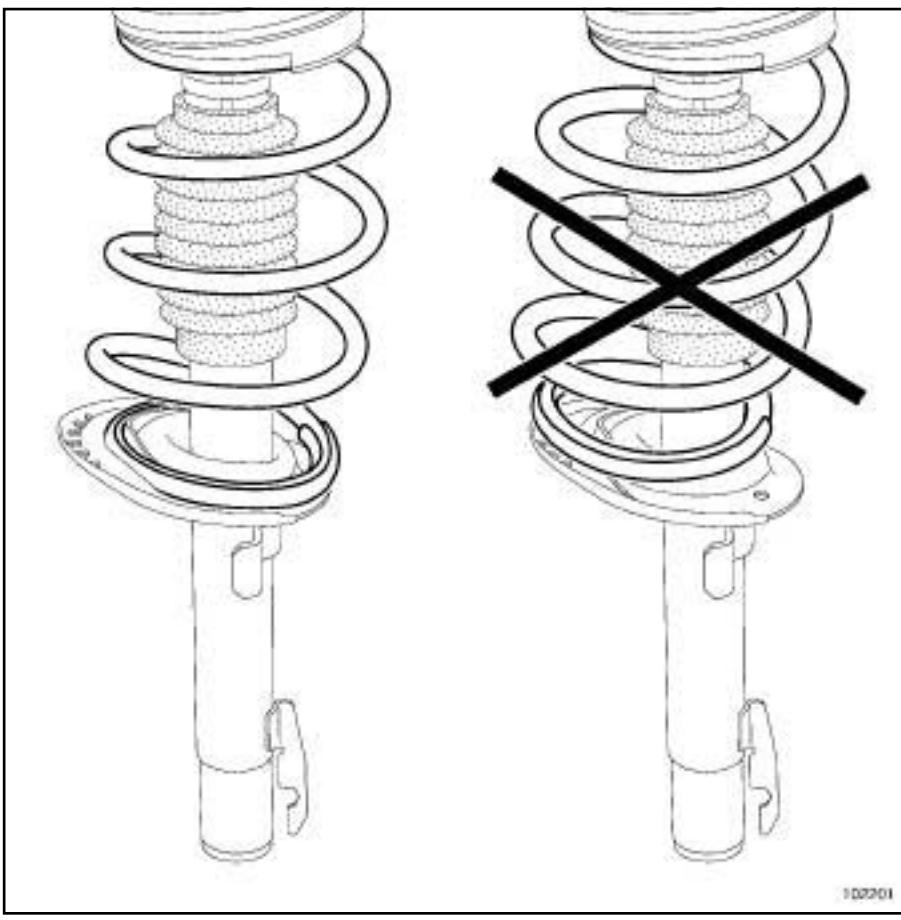


- If necessary, replace any faulty filter unit components (see **31A, Front axle components, Filter unit assembly: Removal - Refitting**, page 31A-53)
- Place the tool **spring compressor** in a vice equipped with jaws.
- Compress the spring.

FRONT AXLE COMPONENTS

Front shock absorber and spring: Removal - Refitting

31A



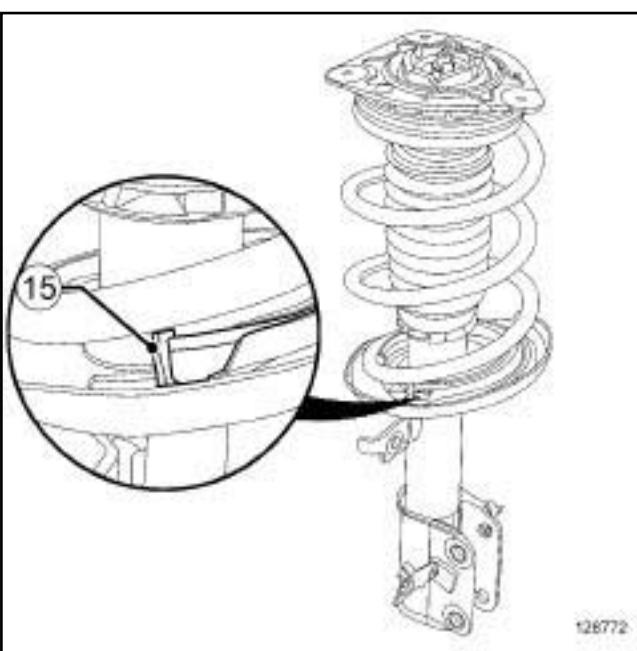
- Insert the spring in the neck of the cup.

|

FRONT AXLE COMPONENTS

Front shock absorber and spring: Removal - Refitting

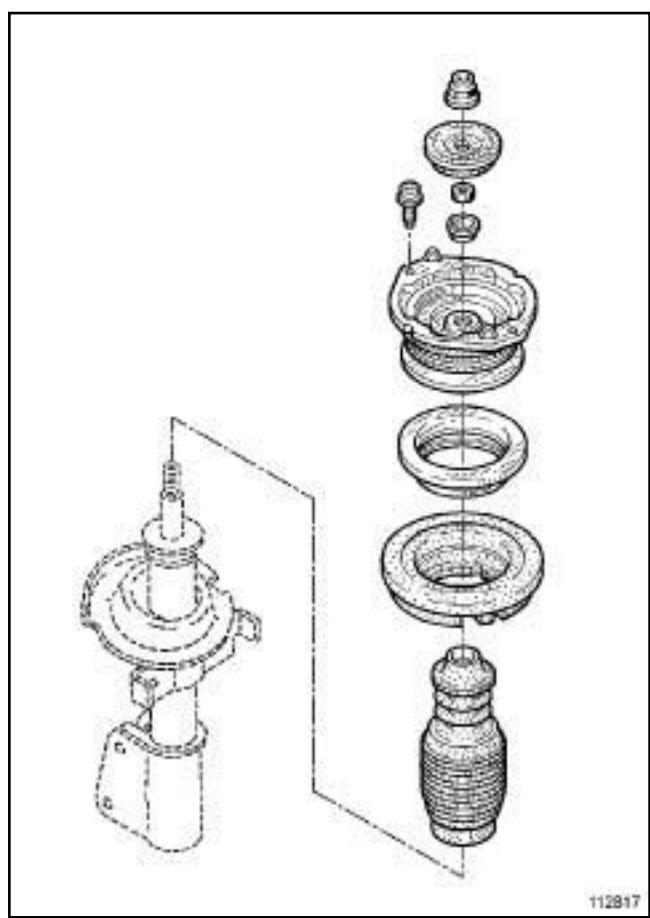
31A



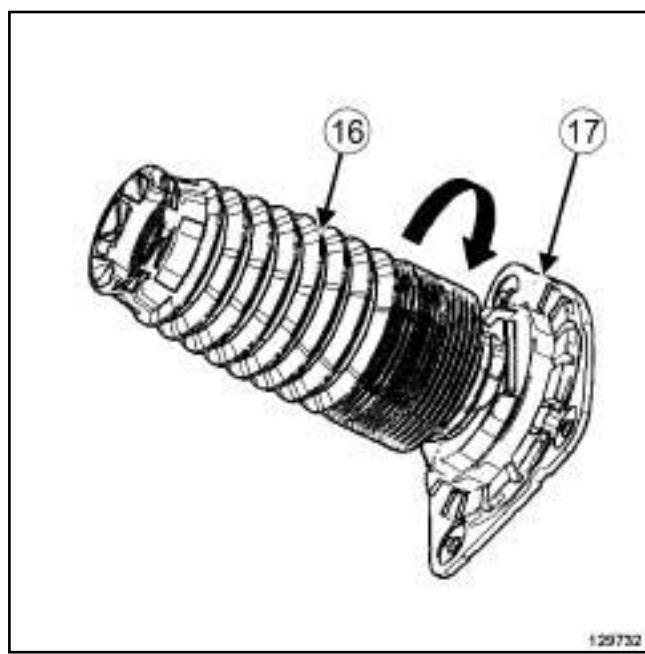
- Check that the spring is in contact against the stop (15).

Note:

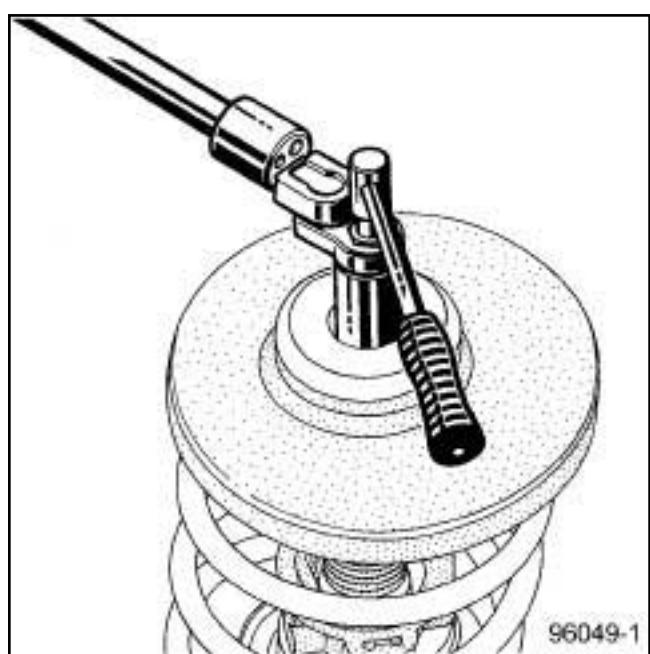
A maximum clearance of 5 mm is permitted.



- Refit the « impact stop - filter block » assembly on the shock absorber.



- Insert the end piece (16) in the filter block (17).
- Perform a quarter of a turn to lock the end piece in the filter block.



- The shock absorber rod nut must always be replaced.

- Torque tighten the **new shock absorber rod nut** (**62 N.m**).
- Decompress the spring.
- Remove the spring compressor.

II - REFITTING OPERATION FOR PART CONCERNED

- Detach the hub carrier from the body.
- Refit the "spring - shock absorber" assembly.
- Tighten to torque:
 - the **filter block bolts on the body** (**21 N.m**),
 - the **shock absorber base bolts** (**180 N.m**).
- Refit:
 - the nut of the anti-roll bar linkage on the base of the shock absorber,
 - the track rod.
- Tighten to torque:
 - the **track rod nut** (**37 N.m**),
 - the **anti-roll bar tie rod nut** (**44 N.m**).
- Clip:
 - the wheel speed sensor wiring,
 - the brake hose onto the shock absorber.

III - FINAL OPERATION

- Refit:
 - the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (**56A, Exterior equipment**),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (**56A, Exterior equipment**).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « airbag computer » ,
 - go to repair mode,
 - apply the “After repair procedure”.

- Adjust the axle assemblies (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

DISCHARGE LAMPS

- Adjust the headlights (see **Headlight: Adjustment**).

Equipment required

Diagnostic tool

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 31A, Front axle components, **Front axle components: Precautions for the repair**, page 31A-1).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).



Note:

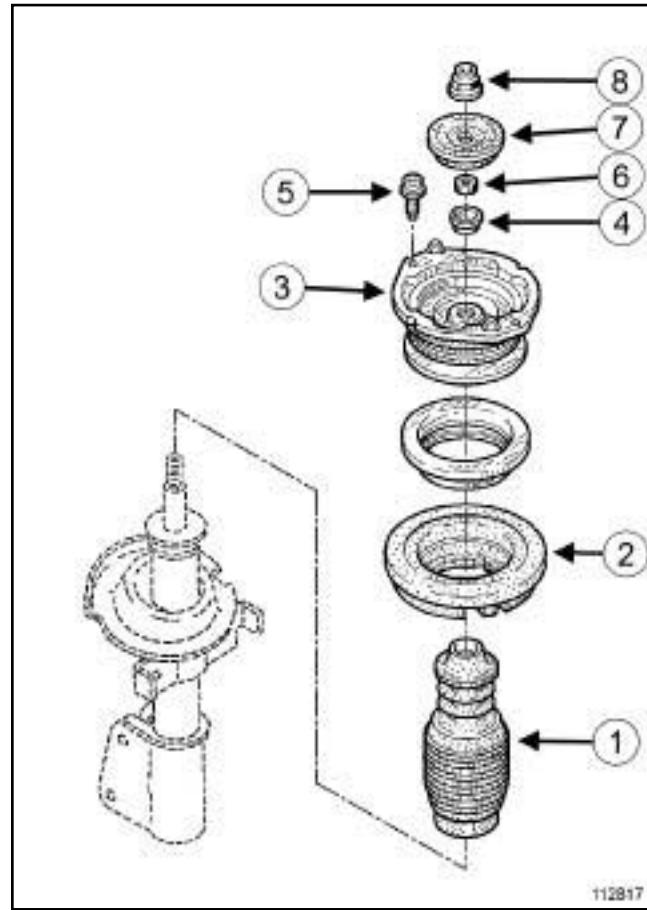
It is necessary to lock the airbag computer in order to unlock the steering column.

Lock the airbag computer. Apply the before repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select « Airbag computer » ,
- go to repair mode,
- apply the « Before repair procedure » .

- Remove:

- the front wheels (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
- the shock absorber (see 31A, **Front axle components, Front shock absorber and spring: Removal - Refitting**, page 31A-47) .

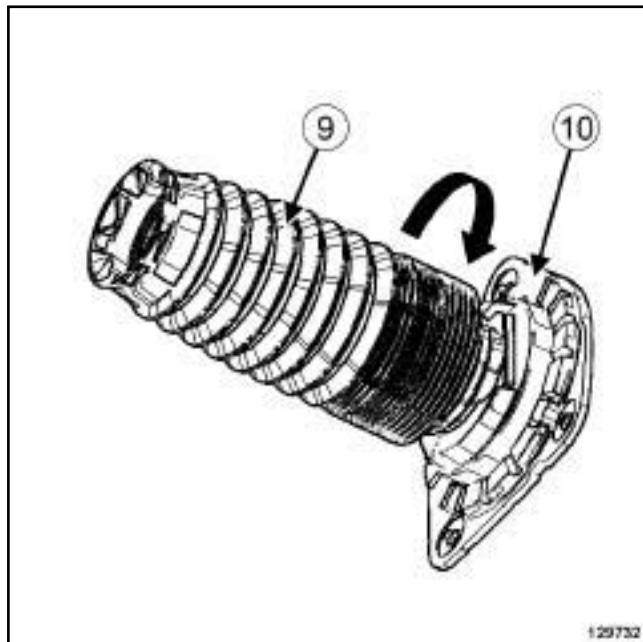
II - OPERATION FOR REMOVAL OF PART CONCERNED

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- | | |
|-----|---------------------|
| (1) | frontal impact stop |
| (2) | upper cup |
| (3) | front filter unit |
| (4) | retainer cup |
| (5) | bolt |
| (6) | nut |
| (7) | rebound cup |
| (8) | nut |

- Separate the various components of the « spring - shock absorber » assembly.
- Visually check the condition of the component parts of the filter unit.
- All faulty components must be replaced.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Insert the end piece (9) in the filter block (10).
- Perform a quarter of a turn to lock the end piece in the filter block.
- Fit the components in the order indicated in the illustration.

II - FINAL OPERATION

- Refit:
 - the shock absorber spring (see **31A, Front axle components, Front shock absorber and spring: Removal - Refitting**, page 31A-47),
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

Apply the after repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "After repair procedure".

Equipment required

Diagnostic tool

Tightening torques 

lower arm front and rear bolts on the subframe **180 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

Note:

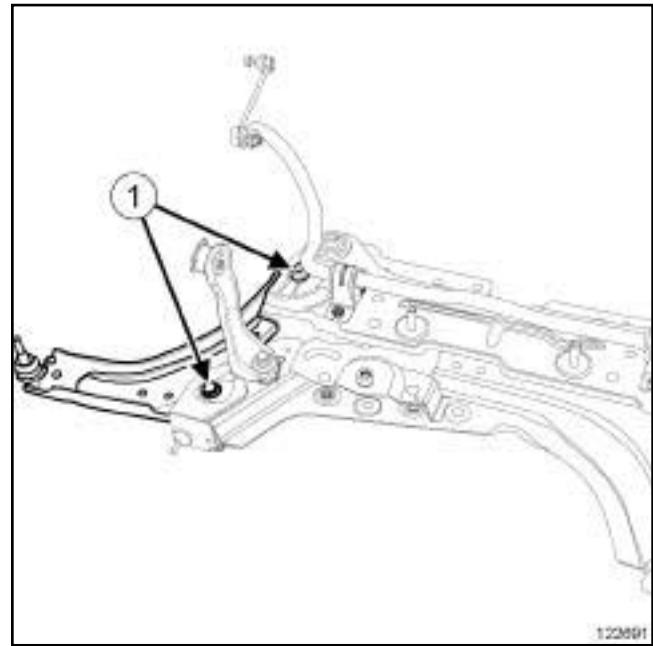
it is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the before repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "Before repair procedure".

- Remove:

- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
- the engine undertray,
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
- the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**).

II - REMOVAL OPERATION FOR PART CONCERNED

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- Remove:

- the bolts (1) from the lower arm,
- the lower arm.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Always replace:
 - the arm bolts,
 - the track rod end nut,
 - the lower ball joint nut,
 - the hub nut (if removed),
 - the shock absorber lower nuts,
 - the subframe bolts,
 - the universal joint nut and bolt,
 - the power-assisted steering pipe O-rings,
 - the power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the lower arm,
 - the lower arm bolts.



124695

124695

- Respecting the dimension of **(14 mm)**, torque tighten the **lower arm front and rear bolts on the sub-frame (180 Nm)**.

III - FINAL OPERATION.

□ Refit:

- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**) ,
- the front and side wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
- the engine undertray,
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- select the airbag computer,
- go to repair mode,
- apply the "After repair procedure".

- Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

DISCHARGE LAMPS

- It is essential to initialise the xenon bulb system (see **Headlight: Adjustment**) (MR 415, 80B, Headlights).

□ Apply the after repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,

CHECK**CHECKING THE FRONT DRIVESHAFT LOWER ARM BALL JOINT**

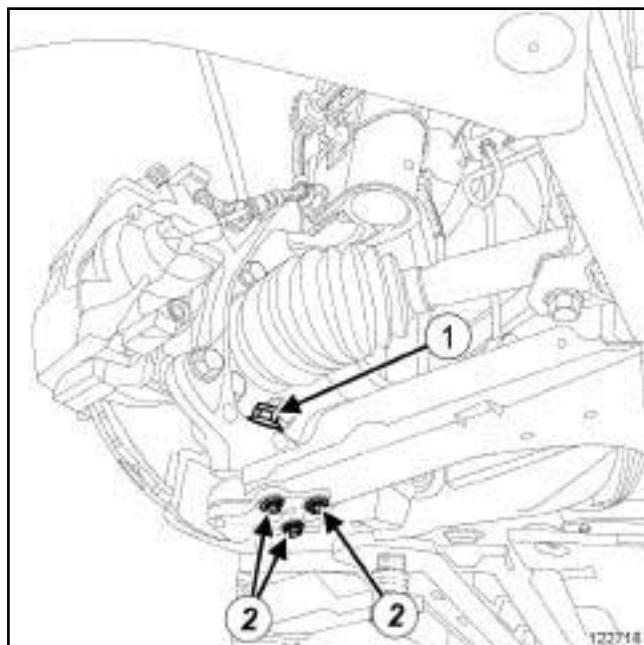
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).

1 - Check the condition of the lower arm ball joint gaiter

- Check:

- the gaiter crimping on the front driveshaft lower arm ball joint,
- that the gaiter is not torn.

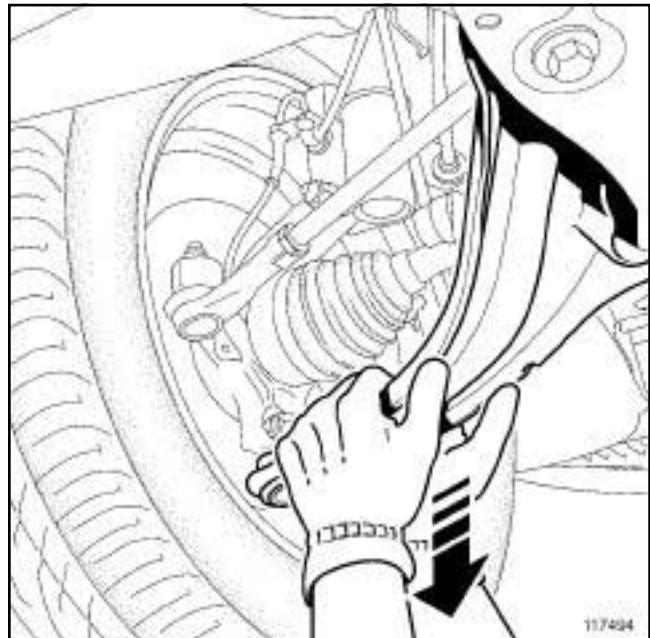
If the lower arm ball joint gaiter of the front driveshaft is in poor condition or not crimped, replace the lower arm of the front driveshaft (see **31A, Front axle components, Front driveshaft lower arm: Removal - Refitting**, page **31A-55**).

2 - Check the fitting of the lower arm ball joint

122718

- Check:

- the "front driveshaft lower arm ball joint - front driveshaft lower arm bolt - front driveshaft hub carrier" assembly is correctly positioned,
- the tightening torque of the lower arm ball joint nut (1) for the front driveshaft (see **30A, General information, Front axle system: Tightening torque**, page **30A-24**) ,
- that the rivets of the lower arm ball shaft for the front driveshaft are held in place (2) .

3 - Checking the play of the lower arm ball joint

117494

- Check that there is no play in the front driveshaft lower arm ball joint:

- from a position underneath the vehicle,
- using both hands, hold the front driveshaft lower arm as close as possible to the wheel,
- push downwards several times.

If there is play in the front driveshaft lower arm ball joint, replace the front driveshaft lower arm (see **31A, Front axle components, Front driveshaft lower arm: Removal - Refitting**, page **31A-55**).

Special tooling required	
Ms. 583	Pipe clamps.
Tav. 476	Ball joint extractor.
Rou. 604-01	Hub locking tool.

Equipment required	
Diagnostic tool	
component jack	
safety strap(s)	

Tightening torques 	
subframe bolts	180 N.m
attachment bolts on the subframe	62 N.m
attachment bolts on the body	105 N.m
tie-rod rear bolts	105 N.m
tie-rod outer bolts	21 N.m
universal joint bolt	24 N.m
lower ball joint nut	62 N.m
anti-roll bar tie rod nut	44 N.m
track rod end nut	37 N.m
shock absorber base bolts	180 N.m
hub nut	280 N.m
hub nut	150 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **31A, Front axle components, Front axle components: Precautions for the repair**, page **31A-1**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

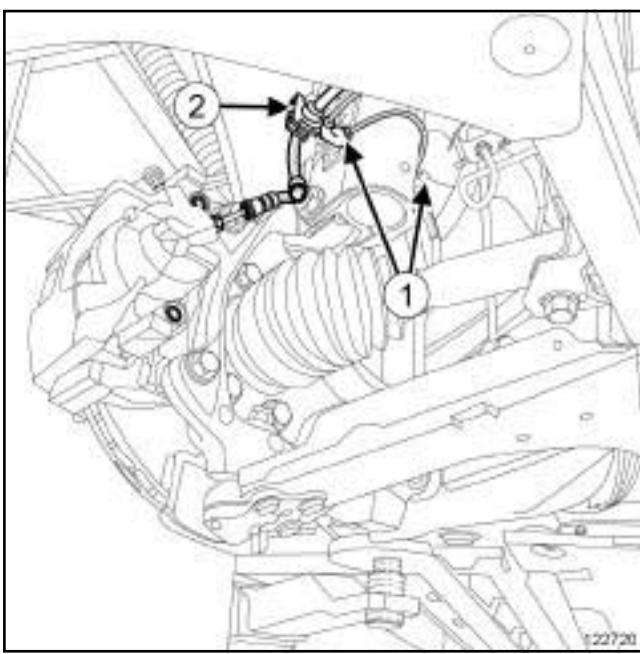
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Note:

It is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the procedure before repair using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the « Airbag computer » ,
 - display the « before/after repair procedure » for the computer selected,
 - go to repair mode,
 - carry out the operations described in the « Before repair procedure » section.
- Set the wheels straight ahead.
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the engine undertray bolts,
 - the engine undertray,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).
- Fit a hose clamp (**Ms. 583**) on the low pressure pipe to restrict the flow of power-assisted steering fluid.

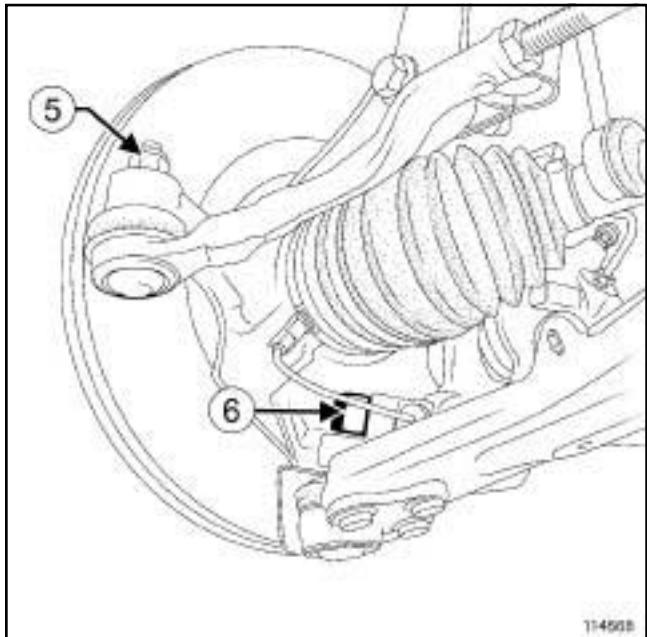


122720

Unclip:

- the wheel speed sensor wiring at (1) ,
- the brake hose from the shock absorber at (2) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

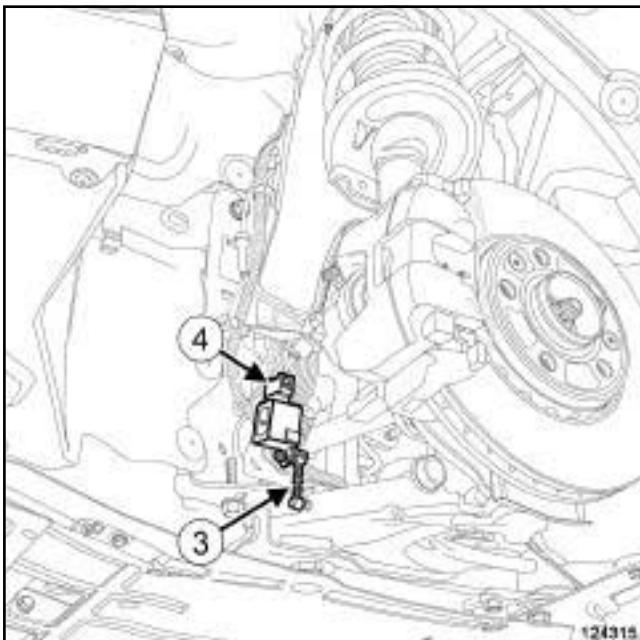


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Remove:

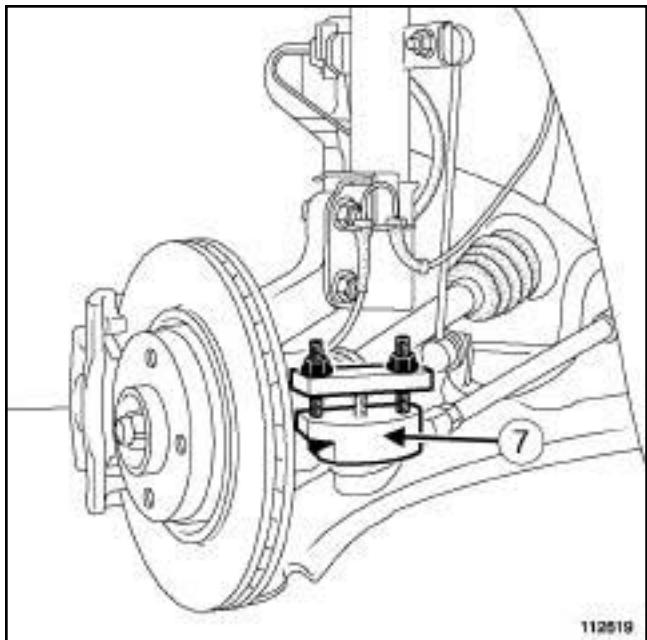
- the track rod end nuts (5) ,
- the lower ball joint nuts (6) .

DISCHARGE LAMPS



124315

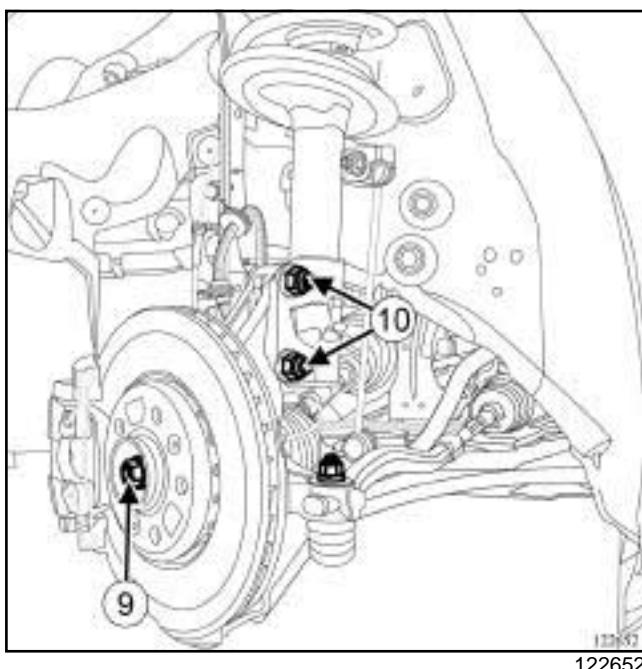
- Unclip the headlight beam adjustment front sensor linkage at (3) .
- Disconnect the headlight beam adjustment front sensor connector (4) .



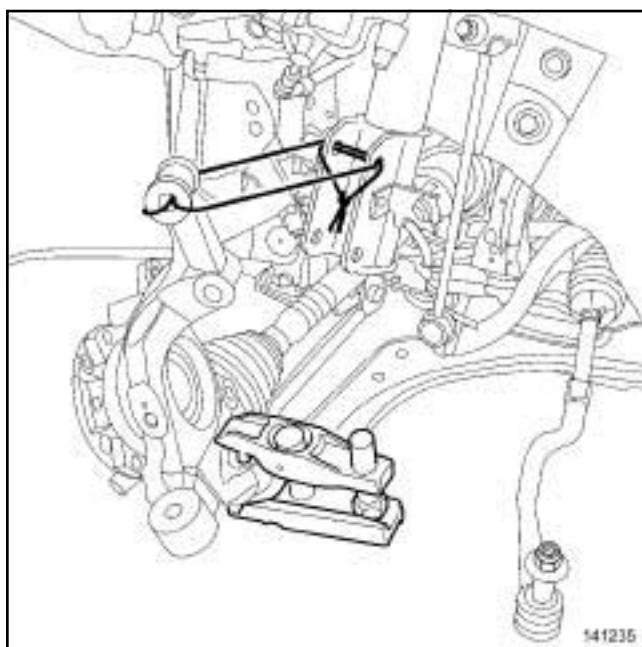
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Detach the track rod end using the tool (**Tav. 476**).



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**WARNING**

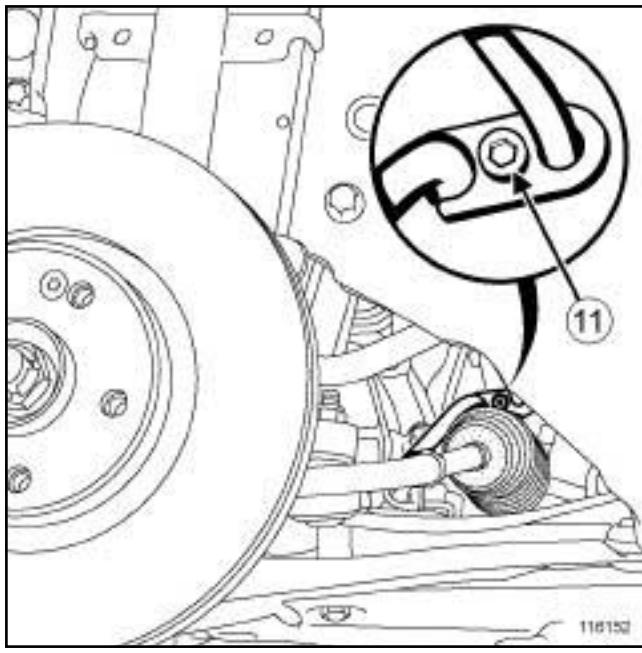
In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

- Remove the hub nut (9) using the tool (Rou. 604-01).
- Remove the shock absorber base bolts (10).
- Push the driveshaft back from the hub carrier by pivoting the hub carrier.

- Attach the hub carrier to the base of the shock absorber.
- Extract the lower ball joint from the hub carrier using a ball joint extractor.
- Refit:
 - the driveshaft in the hub carrier,
 - the shock absorber base bolts.

LEFT-HAND DRIVE

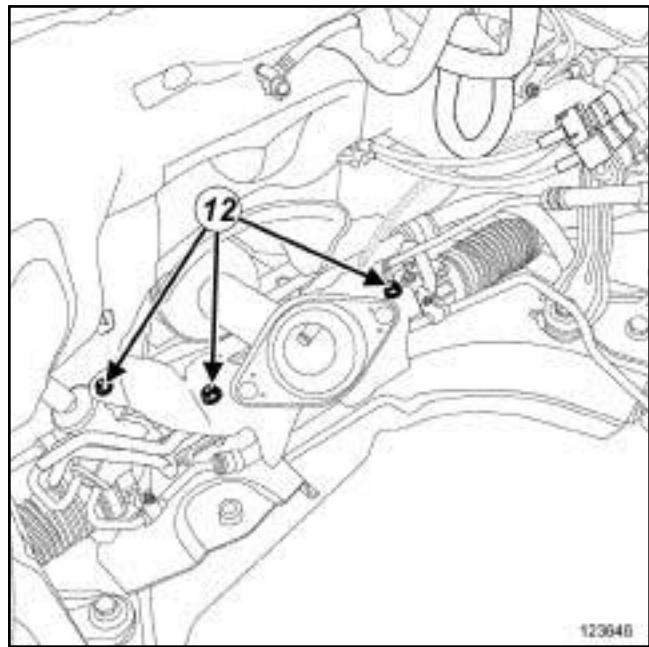


- Remove the power-assisted steering pipe bracket bolt (11).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

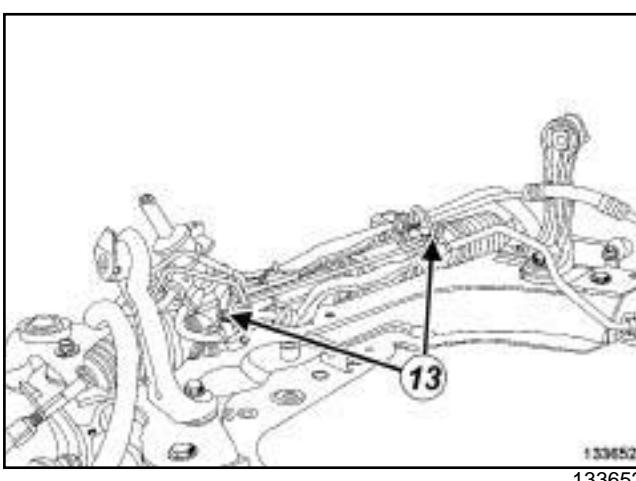
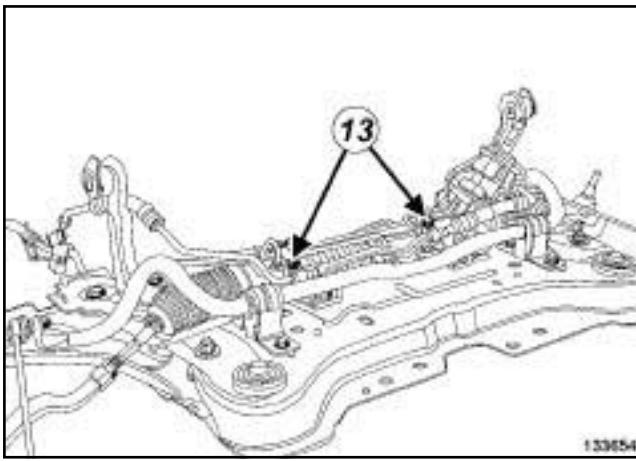
RIGHT-HAND DRIVE



- Remove:

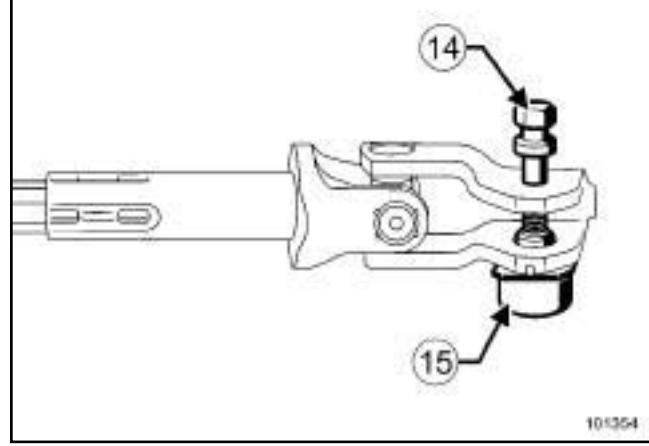
- the bolts (12) from the heat shield,
- the heat shield.

RIGHT-HAND DRIVE

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

- Remove the power-assisted steering pipe nuts (13) on the subframe.
- Move the power-assisted steering pipes out of the way.

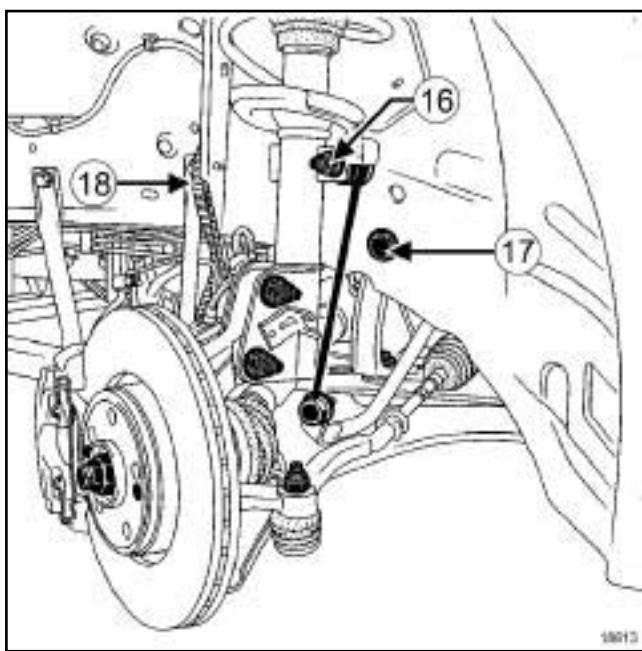


- Remove the bolt (14) from the universal joint.

Note:

For the original fitting, the steering box universal joint stud nut is held inside a cover (15), which must be ejected and discarded.

- For original fitting:
 - tighten the steering box universal joint stud by a few turns,
 - strike the bolt head to eject the cover.
- Remove:
 - the steering box universal joint bolt,
 - the steering box universal joint nut.
- Tilt the universal joint.
- Unclip the power-assisted steering high pressure pipe on the subframe attachment.



- Remove the nuts (16) from the anti-roll bar tie rods.
- Loosen the upper bolts (17) from the attachments.

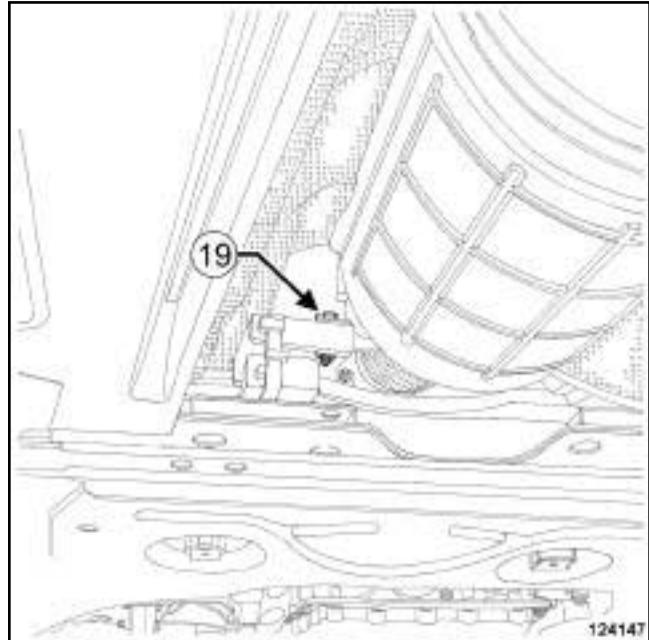
F4R – M9R, and 802 or 805 or 816

- Disconnect the wiring connector (18) of the variable power-assisted steering.
- Unclip the wiring of the variable power-assisted steering.

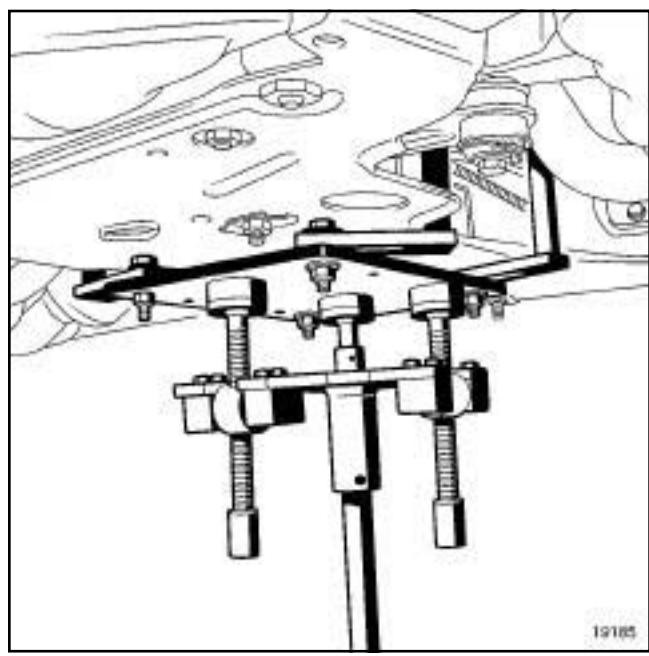
F4R or K4M or M4R or V4Y

- Disconnect the oxygen sensor connector.

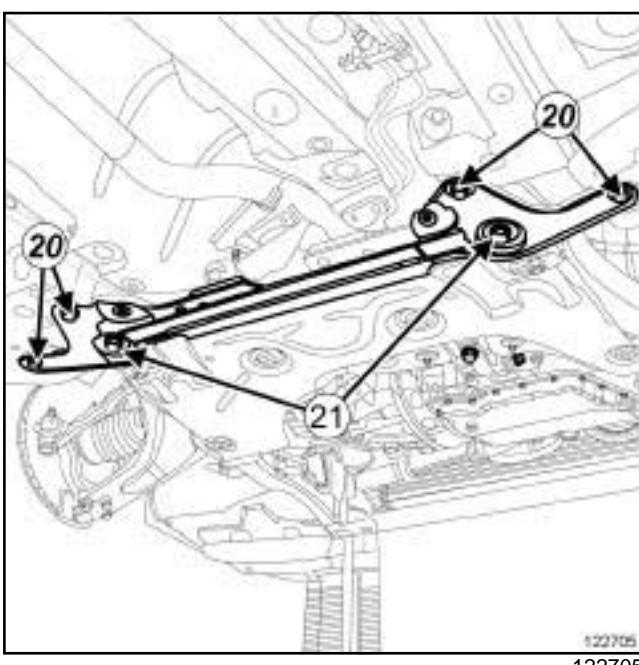
M9R, and 802 or 805 or 809 or 816 – V9X



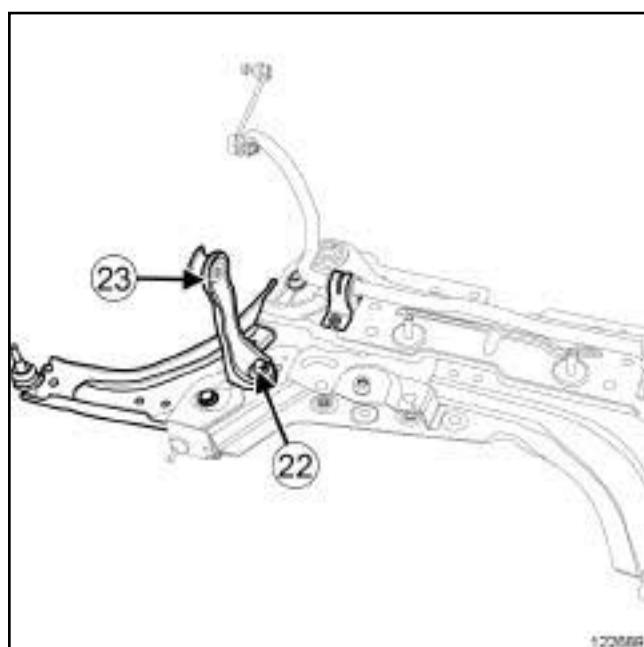
- Remove the particle filter bolt (19) from the rubber mounting bush.



- Place a **component jack** under the sub-frame.
- Fit a **safety strap(s)**.



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Remove:

- the upper bolts from the attachment,
- the tie-rod bolts (20) ,
- the subframe bolts (21) ,
- the tie rod,
- the subframe.

III - STRIPPING THE PART CONCERNED

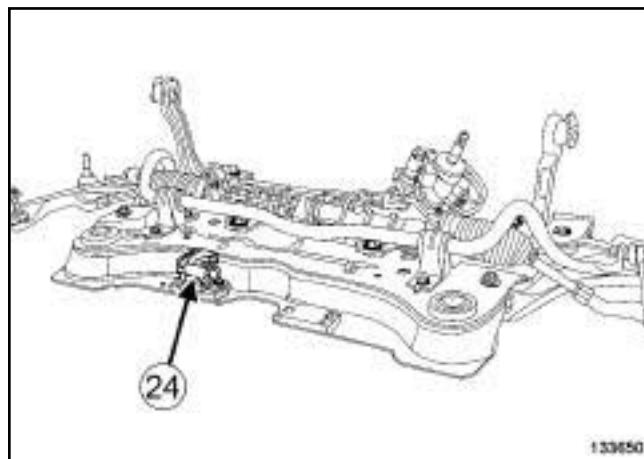
DISCHARGE LAMPS

- Remove the headlight beam adjustment front sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).

Remove:

- the anti-roll bar (see **31A, Front axle components, Front anti-roll bar: Removal - Refitting**, page **31A-68**),
- the steering box (see **36A, Steering assembly, Steering box: Removal - Refitting**, page **36A-6**),
- the lower arms (see **31A, Front axle components, Front driveshaft lower arm: Removal - Refitting**, page **31A-55**),
- the lower bolts (22) from the attachments,
- the attachments (23) .

M9R, and 802 or 805 or 809 or 816 – V9X



133650

Remove:

- the rubber mounting bush bolt,

- the rubber mounting bush (24) .

M9R, and 802 or 805 or 809 or 816 – V9X

Refit the rubber mounting bush on the subframe.

REFITTING

I - REFITTING PREPARATION OPERATION

- Degrease the body surfaces that make contact with the sub-frame and cross member using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- parts always to be replaced: **Track rod end nut (13,04,02,03)**.
- parts always to be replaced: **Front driveshaft lower arm ball joint nut (13,02,03,19)**.
- parts always to be replaced: **Front sub-frame bolt (13,02,02,03)**.
- parts always to be replaced: **Steering shaft yoke bolt (13,04,01,07)**.
- parts always to be replaced: **Steering shaft yoke nut (13,04,01,08)**.
- parts always to be replaced: **Power-assisted steering pipe seal (13,04,04,22)**.
- parts always to be replaced: **front shock absorber lower nut (13,02,04,11)**.
- parts always to be replaced: **Front wheel hub nut (13,02,03,20)**.

Refit:

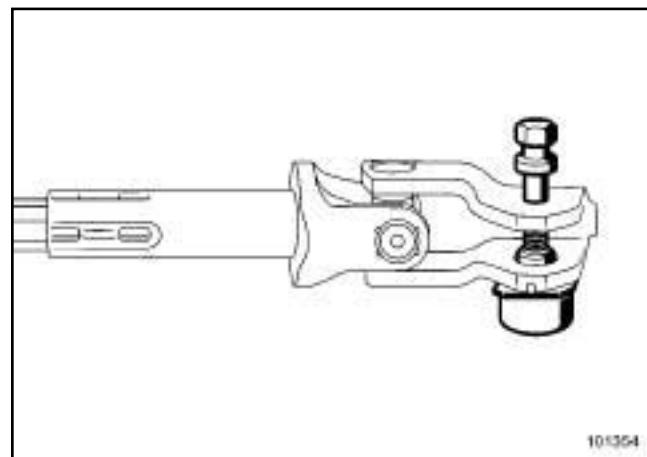
- the attachments,
- the lower arms (see **31A, Front axle components, Front driveshaft lower arm: Removal - Refitting, page 31A-55**),
- the steering box (see **36A, Steering assembly, Steering box: Removal - Refitting, page 36A-6**),
- the anti-roll bar (see **31A, Front axle components, Front anti-roll bar: Removal - Refitting, page 31A-68**).

II - REFITTING OPERATION FOR PART CONCERNED

Refit:

- the sub-frame using the **component jack**,
- the tie rod,
- the engine tie-bar.

Remove the **component jack**.



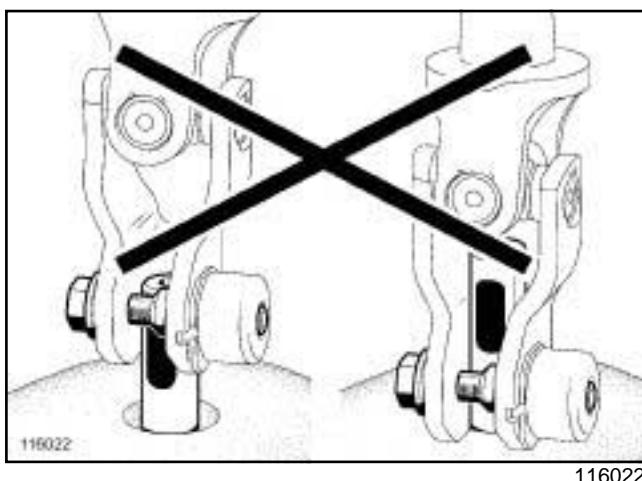
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- Observe the direction of fitting for the universal joint cam nut and bolt.
- Fit the universal joint.
- Refit the universal joint cam nut and bolt.
- Position the universal joint cam nut and bolt.
- Lock the cam nut in its housing (on the universal joint).
- Pretighten the universal joint bolt.

DISCHARGE LAMPS

- Refit the headlight beam adjustment front sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).



- Check that the universal joint is in the correct position.
- Tighten to torque and in order:
 - the **subframe bolts (180 N.m)**,
 - the **attachment bolts on the subframe (62 N.m)**,
 - the **attachment bolts on the body (105 N.m)**,
 - the **tie-rod rear bolts (105 N.m)**,
 - the **tie-rod outer bolts (21 N.m)**,
 - the **universal joint bolt (24 N.m)**.

F4R or K4M or M4R or V4Y

- Connect the oxygen sensor connector.

F4R or V4Y or V9X – M9R, and 802 or 805 or 816

- Connect the wiring connector of the variable power-assisted steering.
- Clip on the wiring of the variable power-assisted steering.

RIGHT-HAND DRIVE

- Refit:
 - the power-assisted steering pipes on the steering rack,
 - the heat shield.

Refit:

- the power-assisted steering pipe bracket bolt on the steering box,
- the lower ball joints in the hub carrier housing,
- the track rod end in the hub-carrier housing.
- the anti-roll bar tie rods.

Torque tighten:

- the **lower ball joint nut (62 N.m)**,
- the **anti-roll bar tie rod nut (44 N.m)**,
- the **track rod end nut (37 N.m)**.

Refit new bolts for the shock absorber base

Torque tighten the **shock absorber base bolts (180 N.m)**.

Apply a few drops of **HIGH RESISTANCE THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) to the splines of the driveshaft and the hub nut.

Refit the hub nut.

K4M or K9K

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

- Torque tighten the **hub nut (280 N.m)** using the tool (**Rou. 604-01**).

F4R or M4R or M9R or V4Y or V9X



WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

Torque tighten the **hub nut (150 N.m)** using the tool (**Rou. 604-01**).

III - FINAL OPERATION

Set the wheels straight ahead.

Clip:

- the brake hose to the shock absorber,
- the wheel speed sensor wiring.

Refit:

- the engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray,
- the wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Remove the hose clamp (**Ms. 583**) from the low pressure pipe.

Fill the power-assisted steering oil circuit (see **Véhicule: Parts and consumables for the repair**) (04B, Consumables - Products).

Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select the « Airbag computer » ,
- display the « before/after repair procedure » for the computer selected,
- go to repair mode,
- carry out the operations described in the « After repair procedure » section.

Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-19) .

Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page 30A-28) .

Equipment required

Diagnostic tool

Tightening torques 

anti-roll bar bearing bolts	21 Nm
-----------------------------	-------

The diameter of the front anti-roll bar is 24 mm.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 31A, **Front axle components**, **Front axle components: Precautions for the repair**, page 31A-1).

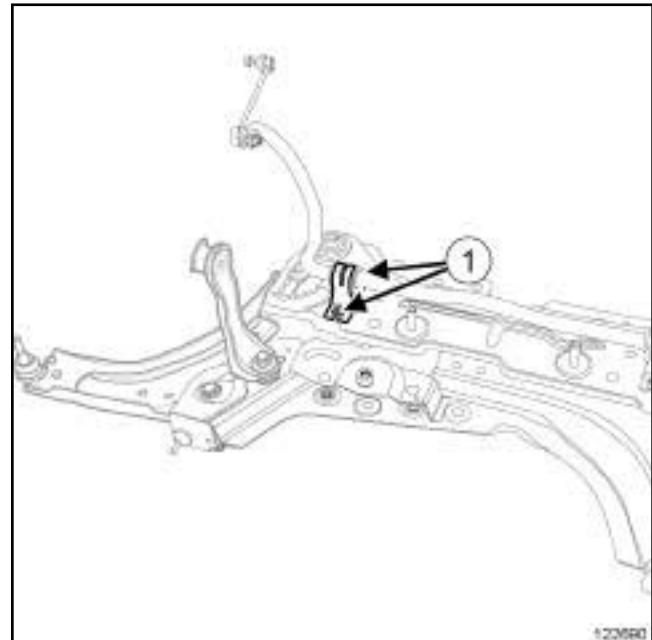
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

Note:

it is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the before repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the airbag computer,
 - go to repair mode,
 - apply the "Before repair procedure".
- Remove:
 - the front wheels (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1),
 - the engine undertray bolts,
 - the engine undertray,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front axle subframe (see 31A, **Front axle components**, **Front axle subframe: Removal - Refitting**, page 31A-58).

II - OPERATION FOR REMOVAL OF PART CONCERNED

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- Remove:
 - the anti-roll bar bearing bolts (1) ,
 - the anti-roll bar.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Clean the surfaces of the subframe resting against the anti-roll bar bearings using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).
- Always replace:
 - the track rod end nut,
 - the lower ball joint nut,
 - the hub nut (if removed),
 - the shock absorber lower nuts.
 - the subframe bolts,
 - the universal joint nut and bolt,
 - the power-assisted steering pipe O-rings,
 - the power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the anti-roll bar,
 - the anti-roll bar bearing bolts.
- Torque tighten the **anti-roll bar bearing bolts (21 Nm)**.

III - FINAL OPERATION.

- Refit:
 - the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**) ,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the engine undertray,
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the airbag computer,
 - go to repair mode,
 - apply the "After repair procedure".
- Adjust the front axle (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

DISCHARGE LAMPS

- It is essential to initialise the xenon bulb system (see **Headlight: Adjustment**) (MR 415, 80B, Headlights).

I - SAFETY

1 - Advice to be followed before any operation

For an operation requiring the use of a lift, follow the safety advice (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

2 - Instructions to be followed during the operation

Do not press on the brake pedal during work on the brake system.

If, during work on the brake system, any damage on any part is observed, it must be repaired before driving the vehicle again.

Brake fluid is highly corrosive. Ensure any brake fluid spilt on parts of the vehicle is cleaned off.

In case of incorrect handling, the brake fluid can cause serious injury and damage. Follow the manufacturer's instructions for brake fluid.

II - CLEANLINESS

1 - Advice to be followed before any operation

Protect any bodywork components that risk being damaged by brake fluid with a cover.

2 - Instructions to be followed during the operation

Clean around the braking system with **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

III - GENERAL RECOMMENDATIONS

1 - Bearing, stub axle carrier

During the bearing replacement operation, it is essential to check the surface condition of the hub, bearing and stub axle carrier before refitting the bearing.

Replace any damaged hub carrier.

Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the inner and outer surfaces of the new bearing in contact with the stub axle carrier and the hub,
- the stub axle carrier surfaces in contact with the new bearing,
- the hub surfaces in contact with the new bearing.

2 - Suspension spring

When replacing the spring, ensure that the positioning and orientation of the spring and the tool cups are correct.

Check correct operation of the spring compressor.

In the interests of safety, do not leave a spring compressed in the spring compressor tool.

When replacing a spring, always replace the spring on the opposite side.

During assembly and removing operations, the surface and the protection paint must not be damaged.

There must be no impacts during operations. Any handling hooks and tightening or positioning clamps should be equipped with rubber or plastic in order to avoid damage on the springs.

It is recommended to replace springs if:

- the paint is damaged,
- there are dents on the spring.

WARNING

To prevent the suspension spring from prematurely breaking, do not damage the anti-corrosion protection.

3 - Rear axle

WARNING

To prevent any damage, do not use the rear axle as support for the lifting system.

WARNING

To prevent damage to the components of the rear axle (rubber bushes, brake hoses, etc.) do not remove both shock absorbers together. Proceed one side at a time.

REAR AXLE COMPONENTS

Rear axle components: Precautions for the repair

33A

Check that the ball joint cover is present and in good condition.

No operations should be carried out on the following components:

- the ball joint cover,
- the ball joint,
- the ball joint gaiter,
- the wiring.

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Tightening torques 

guide pin bolts	32 Nm
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IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

WARNING

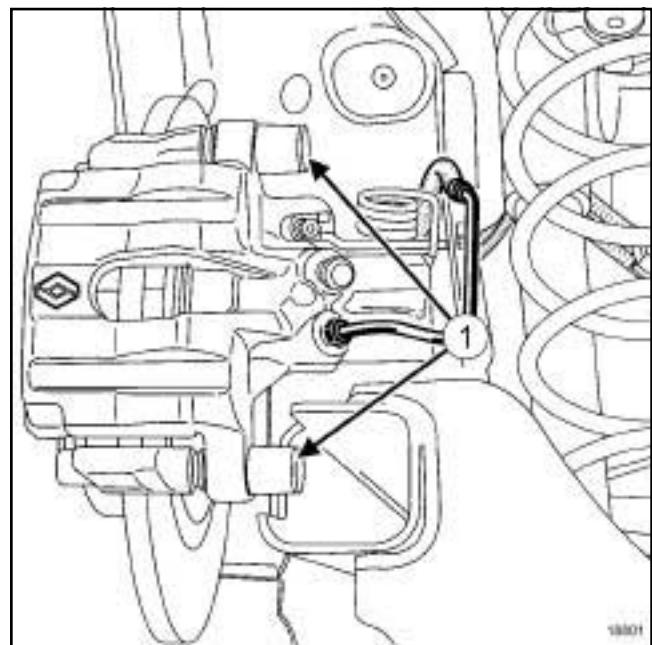
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Release the parking brake.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Unhook the parking brake cables from the callipers.
- Remove the retaining spring using a wide, flat-blade screwdriver.

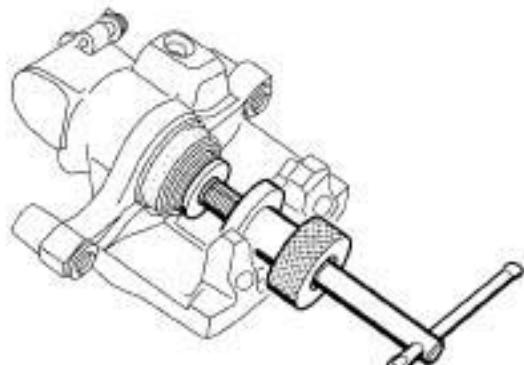


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- Remove:
 - the plugs at the end of the guide pins,
 - the guide pin bolts (1),
 - the brake pads.
- Hang the brake calliper from the suspension spring.

REFITTING**I - REFITTING PREPARATIONS OPERATION**

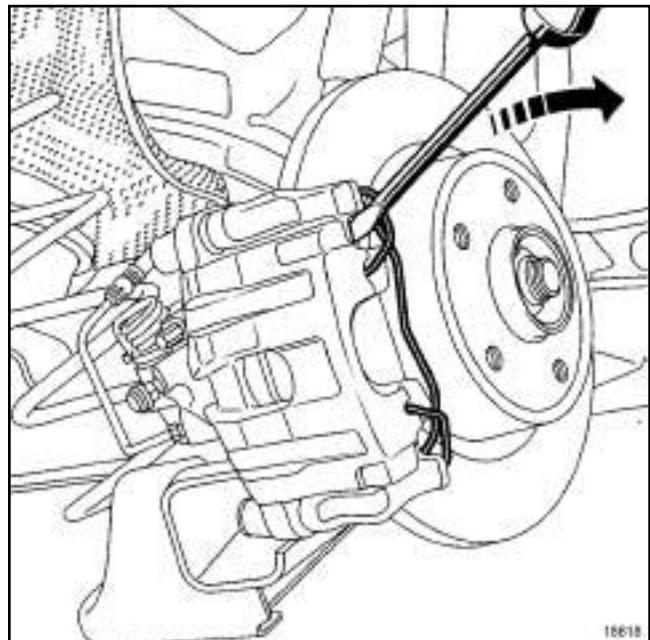
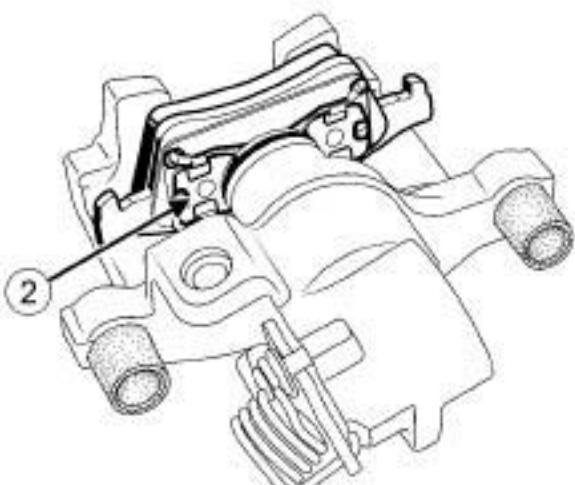
- Measure the thickness of the pads and then compare them to the minimum values (see **30A, General information, Brake: Specifications**, page **30A-16**).
- Use a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products) to clean:
 - the calliper supports,
 - the callipers,
 - the guide pin bolts.

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- Push the piston fully into its housing using the (**Fre. 1190-01**) part number **77 11 223 715**.

- the lower guide pin bolt,
- the upper guide pin bolt.

- Torque tighten the **guide pin bolts (32 Nm)**.

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- Fit the inner pad fitted with a retaining spring (2). It is essential to engage the spring on the calliper piston.
- Refit the outer plate onto the calliper mounting.

- Fit the retaining spring into the base of the brake caliper.

- Fit the retaining spring in place at the top of the brake calliper using a flat-blade screwdriver.

Refit:

- the plugs at the end of the guide pins,
- the parking brake cables onto the callipers.

ELECTRONIC PARKING BRAKE

- With the ignition on, release the electronic parking brake:

- pull the handle,
- press the button.

The parking brake system can be heard locking, the play compensation is set automatically.

- Check that the brake cables are correctly fitted in their housing.

- With the parking brake released, pull on the end of the cable; there must be a residual play of **1 to 2 mm**.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:

- the calliper onto its mounting,

FOOT BRAKE MANUAL CONTROL

- Adjust the parking brake if it does not operate correctly (see 37A, Mechanical component controls, **Parking brake lever: Adjustment**, page 37A-33) .



III - FINAL OPERATION.

- Refit the rear wheels (see 35A, Wheels and tyres, **Wheel: Removal - Refitting**, page 35A-1) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

- Check the brake fluid level.

Equipment required

pedal press

Tightening torques 

brake hose unions

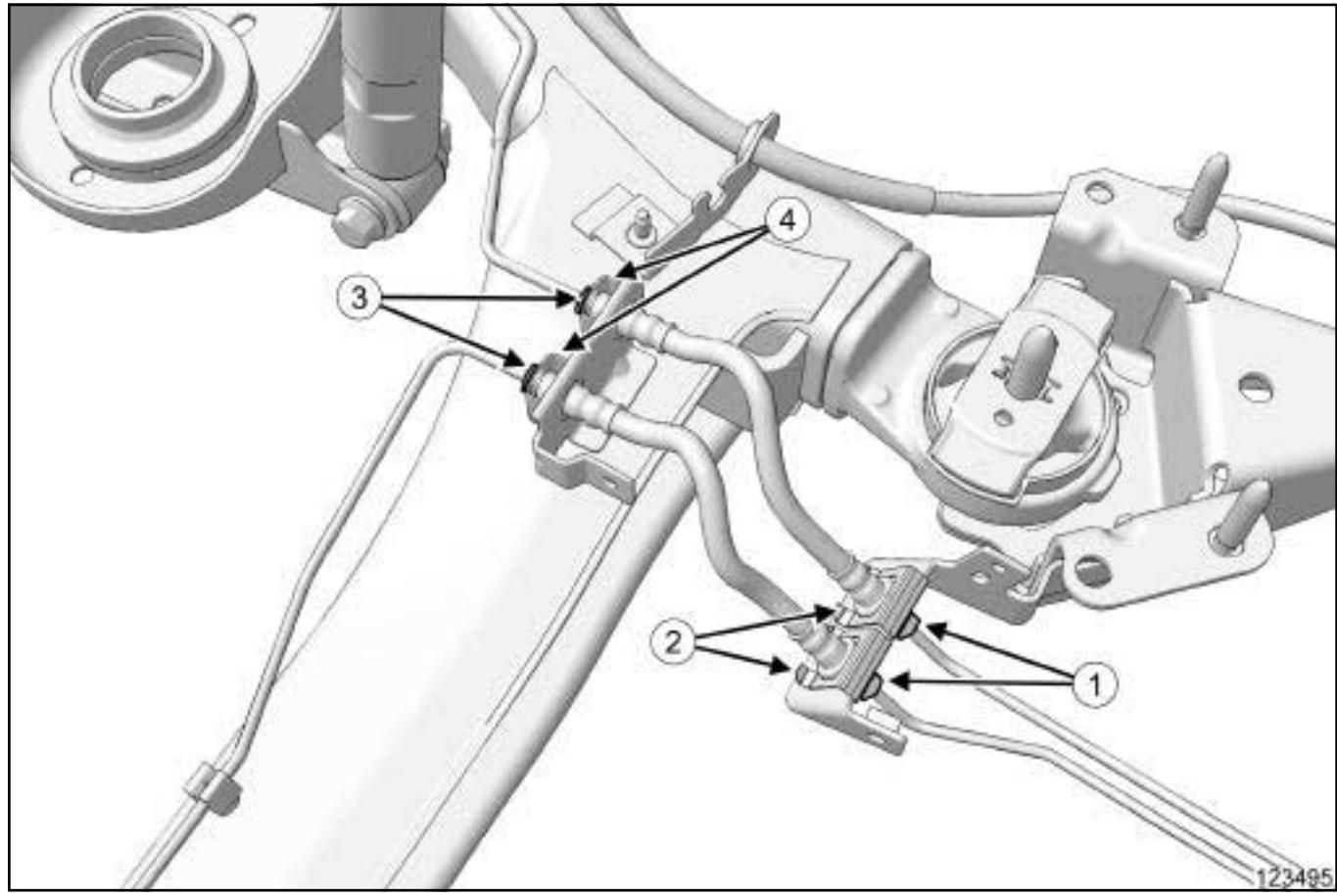
14 Nm

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Undo the brake hose at the pipe connection (1).
- Remove the retaining fork (2).
- Undo the brake hose at the pipe connection (3).
- Remove:
 - the retaining fork (4),
 - the brake hose.

REFITTING

I - REFITTING PREPARATIONS OPERATION



WARNING

In order to not damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

II - REFITTING OPERATION FOR PART CONCERNED

Refit:

- the brake hose,
- the retaining fork (4),
- the retaining fork (2).

Torque tighten the **brake hose unions (14 Nm)**.

III - FINAL OPERATION.

Remove the **pedal press** from the brake pedal.

Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

Tightening torques 

guide pin bolts **32 Nm**

rigid brake pipe **14 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

WARNING

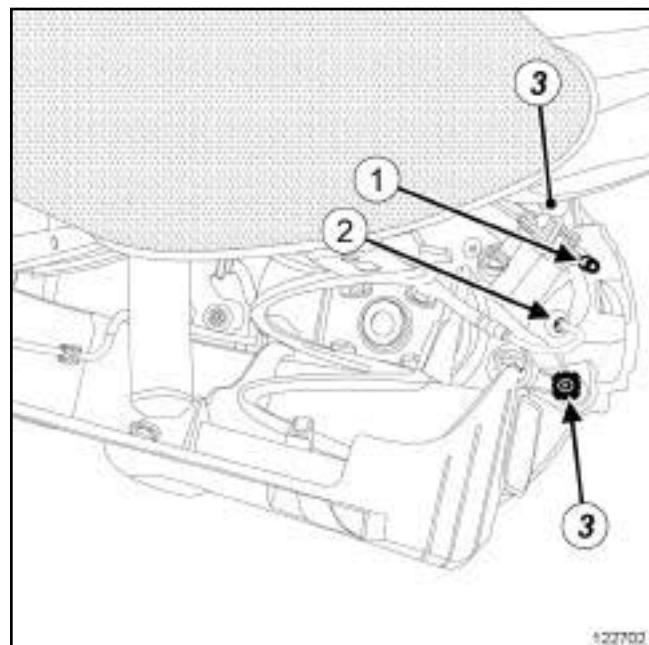
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Release the parking brake.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the retaining spring using a wide, flat-blade screwdriver.

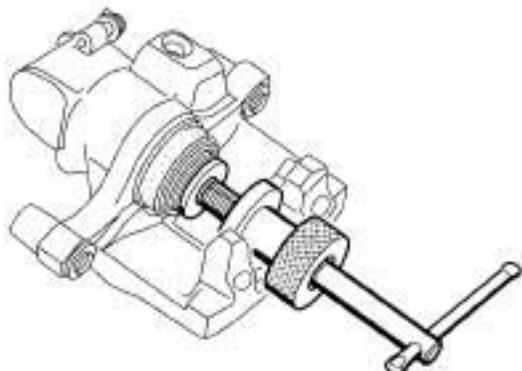
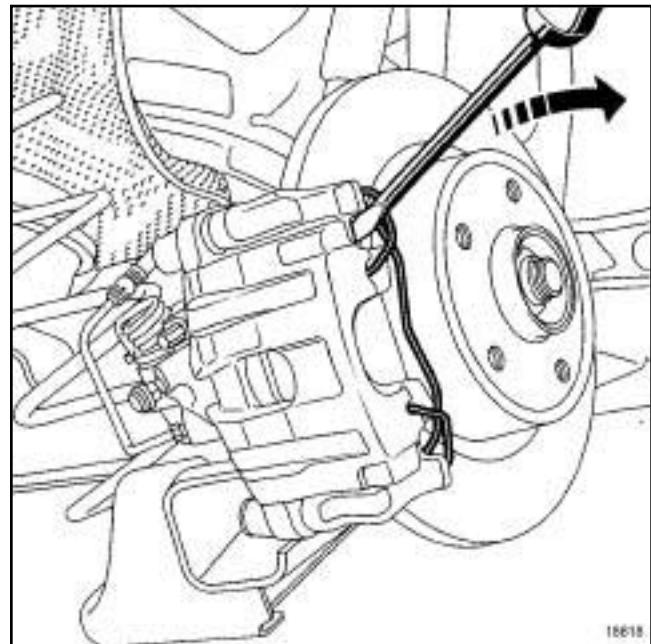


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- Unclip the parking brake cables from the callipers at (1).
- Undo the rigid brake pipe (2) on the brake calliper.
- Remove:
 - the plugs (3) at the end of the guide pins,
 - the guide pin bolts,
 - the brake calliper,
 - the brake pads.

REFITTING**I - REFITTING PREPARATIONS OPERATION**

- Check the condition of the calliper gaiter.
- Check the condition of the calliper piston: if it is severely scratched or cracked, replace the calliper.
- Replace any faulty parts.
- Use a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products) to clean:
 - the calliper supports,
 - the callipers,
 - the guide pin bolts.

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- Push the piston fully into its housing using the (**Fre. 1190-01**) part number **77 11 223 715**.
- Fit the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-3**).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the calliper,
 - the guide pin bolts,
 - the rigid brake pipe on the calliper.
- Torque tighten:
 - the **guide pin bolts (32 Nm)**,
 - the **rigid brake pipe (14 Nm)**.

- Fit the retaining spring into the base of the brake caliper.
- Fit the retaining spring in place at the top of the brake calliper using a flat-blade screwdriver.
- Refit:
 - the plugs at the end of the guide pins,
 - the parking brake cables onto the callipers.

ELECTRONIC PARKING BRAKE

- With the ignition on, release the electronic parking brake:
 - pull the handle,
 - press the button.

The parking brake system can be heard locking, the play compensation is set automatically.
- Check that the brake cables are correctly fitted in their housing.
- With the parking brake released, pull on the end of the cable; there must be a residual play of **1 to 2 mm**.

FOOT BRAKE MANUAL CONTROL

- Adjust the parking brake if it does not operate correctly (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page **37A-33**).



III - FINAL OPERATION.

- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).
- Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Special tooling required

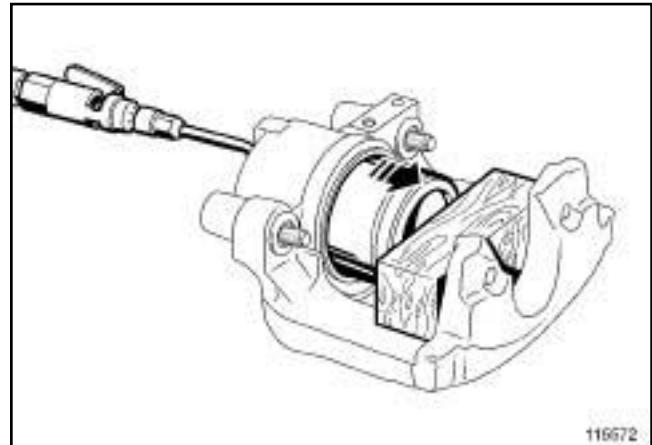
Fre. 1190-01 Brake calliper piston return tool.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **30A, General information, Brake circuit: Precautions for the repair**, page **30A-2**).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.



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REMOVAL

I - REMOVAL PREPARATION OPERATION

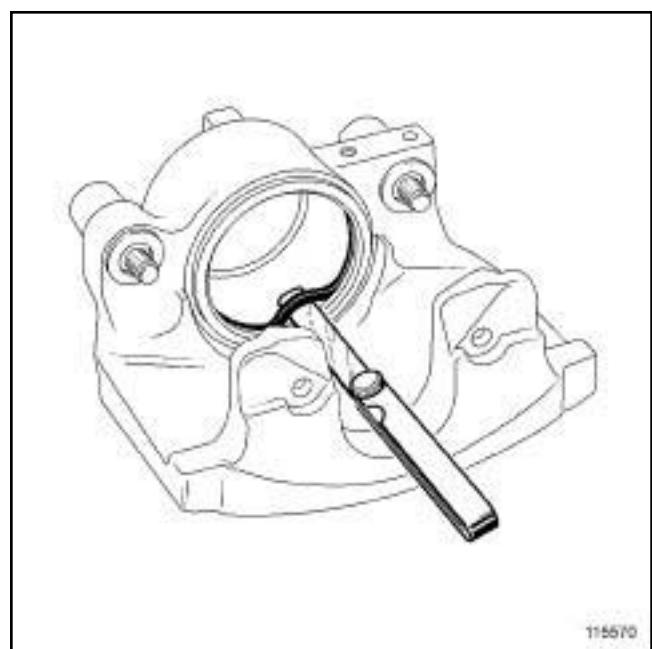
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove:

- the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
- the brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page **31A-7**)

- Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston to avoid damaging it. Any trace of impact on the end panel will render the piston unfit for use.
- Remove the dust seal.



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- Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

WARNING

The whole calliper must systematically be replaced if there are any scratches in the calliper bore.

- Clean the parts using methylated spirit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Always replace seals with the seals supplied in the repair kit.
- Refit:
 - the rectangular section seal in the calliper groove,
 - the piston (after having smeared it with the grease supplied in the repair kit) using tool (**Fre. 1190-01**) (part no. **77 11 223 715**),
 - the dust seal.

II - FINAL OPERATION.

- Refit:
 - the brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page **31A-7**) ,
 - the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

Tightening torques 

calliper mounting bolts	105 Nm
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IMPORTANT

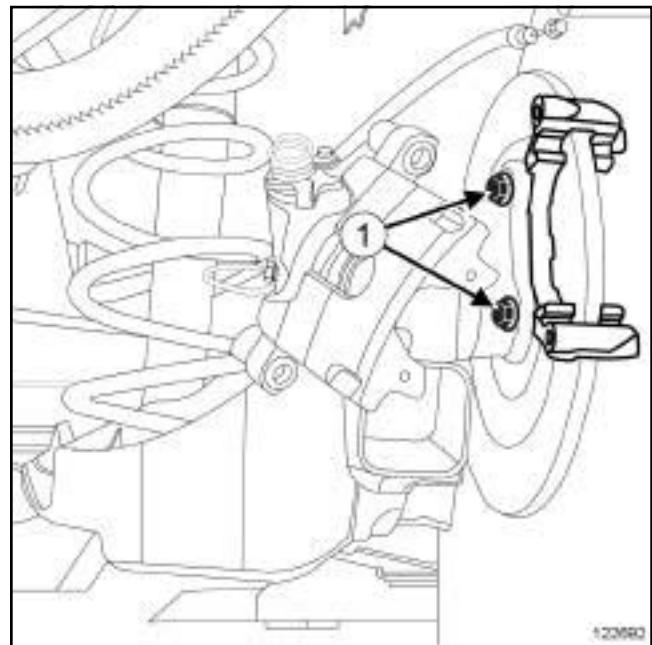
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 33A, **Rear axle components**, **Rear axle components: Precautions for the repair**, page 33A-1).

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove:
 - the rear wheel (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1),
 - the brake pads (see 33A, **Rear axle components**, **Rear brake pads: Removal - Refitting**, page 33A-3).

II - OPERATION FOR REMOVAL OF PART CONCERNED

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- Remove:
 - the two calliper mounting bolts (1) ,
 - the calliper mounting.

REFITTING**I - REFITTING PREPARATIONS OPERATION**

- Use a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products) to clean:
 - the calliper mounting,
 - the calliper,
 - the guide pin bolts,
 - the stub axle carrier.
- Always replace the calliper mounting bolts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the calliper mounting,
 - the calliper mounting bolts.
- Torque tighten the **calliper mounting bolts (105 Nm)**.

III - FINAL OPERATION.

Refit:

- the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page 33A-3) ,
- the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Special tooling required

Rou. 604-01 Hub locking tool.

Equipment required

parts washer

Tightening torques 

stub axle nuts 280 Nm

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 33A, **Rear axle components**, **Rear axle components: Precautions for the repair**, page 33A-1).

Brake discs cannot be reground. If there is excessive scoring or wear, they will need to be replaced (see 30A, **General information**, **Brake: Specifications**, page 30A-16).

WARNING

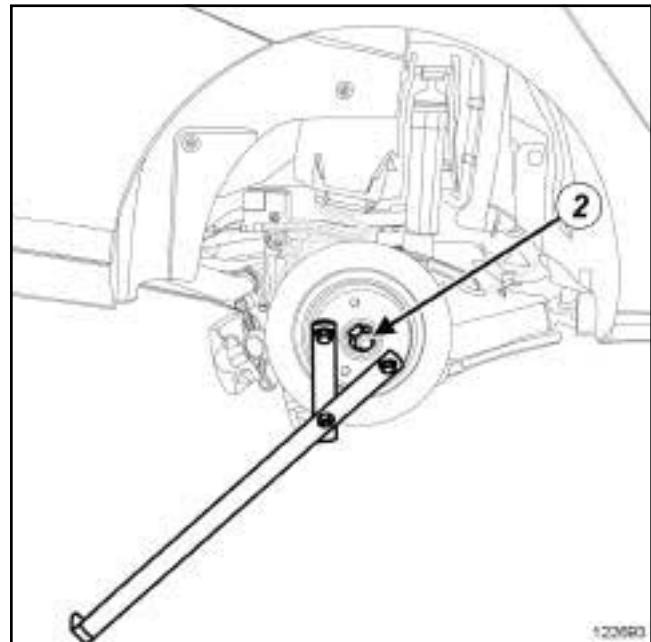
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

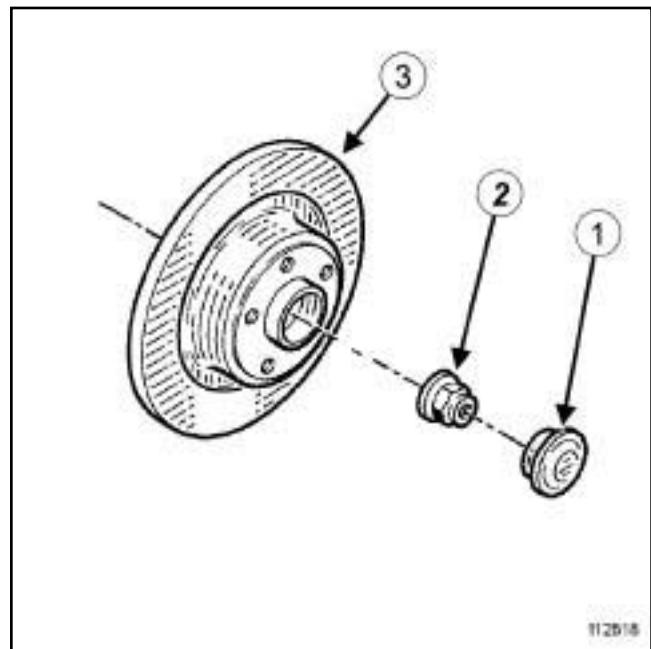
Remove:

- the rear wheels (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1),
- the brake pads (see 33A, **Rear axle components**, **Rear brake pads: Removal - Refitting**, page 33A-3),
- the calliper mountings (see 33A, **Rear axle components**, **Rear brake calliper mounting: Removal - Refitting**, page 33A-13).

II - OPERATION FOR REMOVAL OF PART CONCERNED

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Remove:

- the disc covers (1),
- the stub axle nuts (2) using the (Rou. 604-01),
- the « hub - disc » assemblies (3) .

REFITTING**I - REFITTING PREPARATIONS OPERATION**

Always replace the stub-axle nuts.

- Clean the brake discs using a **parts washer**.
- Dry the surface of the discs.
- Use a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products) to clean the stub-axle.

II - REFITTING OPERATION FOR PART CONCERNED

- refit:
 - the « bearing - disc » assemblies,
 - the stub axle nuts.
- Torque tighten the **stub axle nuts (280 Nm)** using the (**Rou. 604-01**).
- Refit the disc covers.

III - FINAL OPERATION.

- refit:
 - the calliper brackets (see **33A, Rear axle components, Rear brake calliper mounting: Removal - Refitting**, page 33A-13) ,
 - the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page 33A-3) ,
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

I - PREPARATION OPERATION FOR CHECK

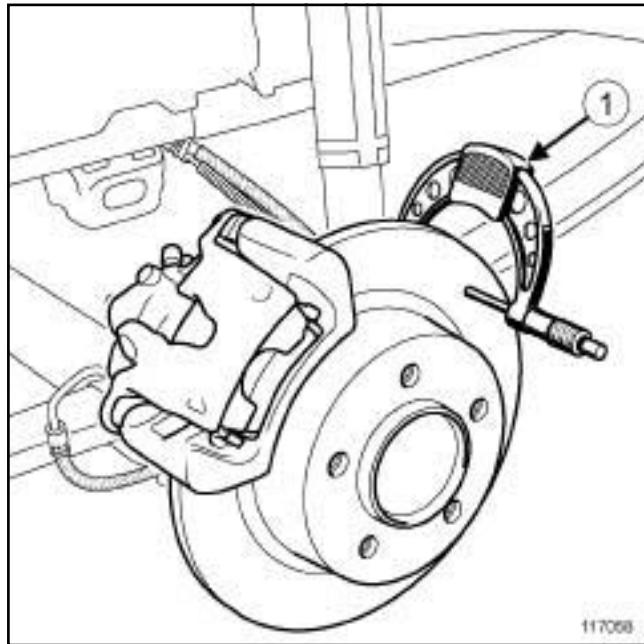
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).

Remove the rear wheel concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

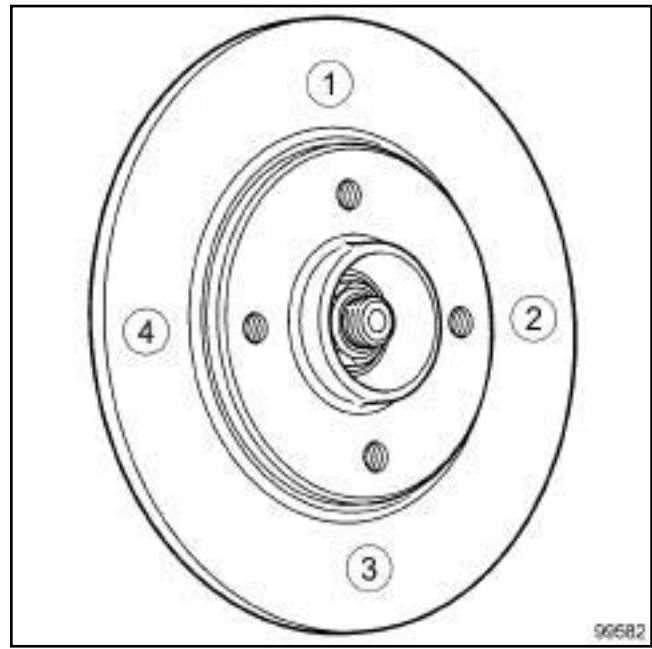
II - CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool (1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90° apart).

Compare the values with those recommended by the manufacturer (see **30A, General information, Brake: Specifications**, page 30A-16).

III - FINAL OPERATION

Replace the discs if necessary (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page 33A-15).

Refit the rear wheel concerned (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

Equipment required

component jack

Tightening torques shock absorber upper bolts **110 Nm**shock absorber lower bolts **115 N.m**rear axle guard bolts **8 N.m****IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

WARNING

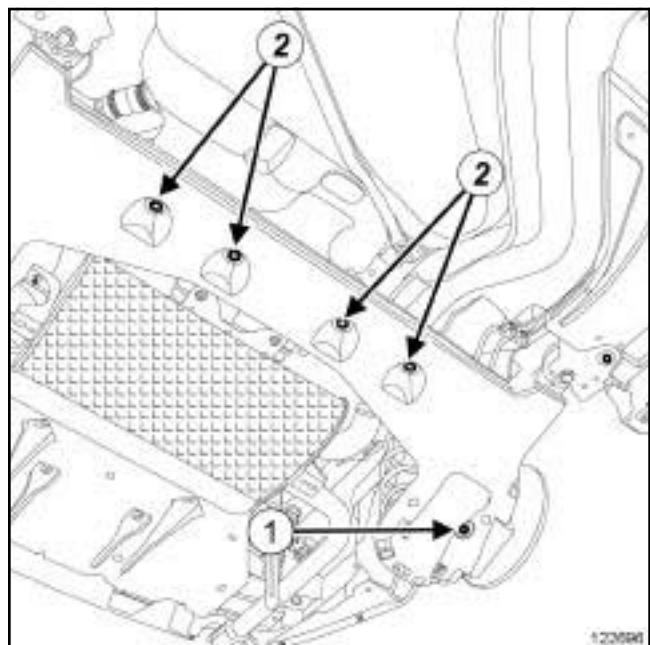
To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

WARNING

To prevent the components of the rear axle from deteriorating (rubber bushes, brake hoses, etc.) do not remove the two shock absorbers at the same time. Proceed one side at a time.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

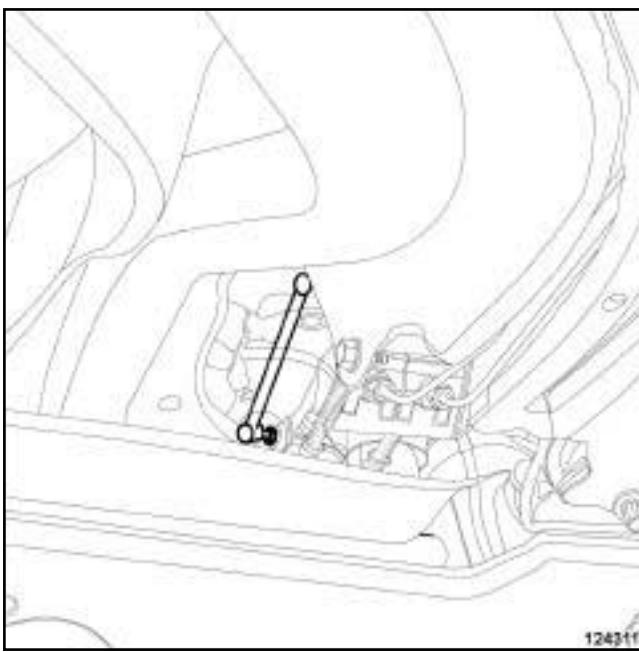


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 Remove:

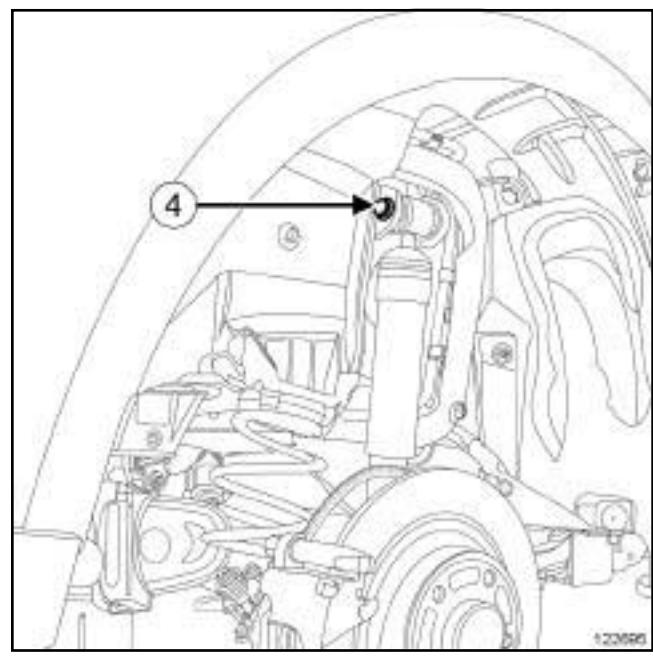
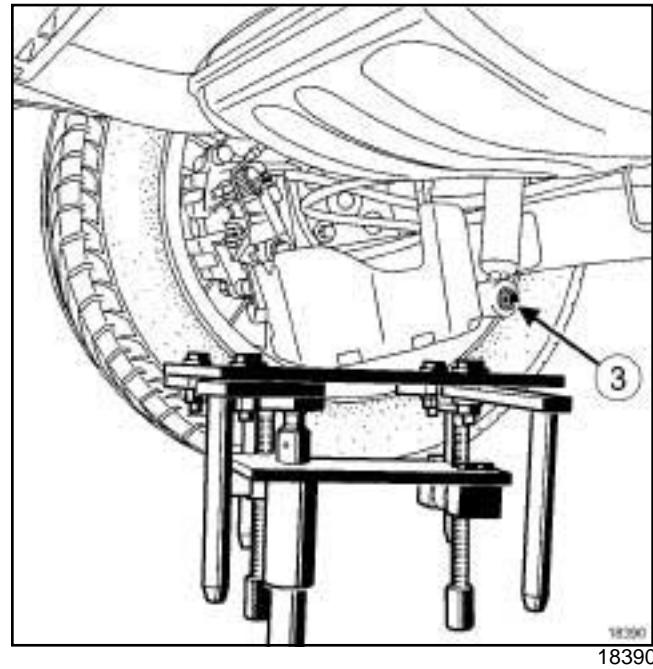
- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear axle guard bolts (1) ,
- the rear axle guard clips (2) ,
- the rear axle guard.

DISCHARGE LAMPS



- Unclip the headlight beam adjustment sensor linkage.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Position a **component jack** under the lower cup of the spring.
- Remove:
 - the shock absorber lower bolt (3) ,
 - the shock absorber upper bolt (4) ,
 - the shock absorber.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the shock absorber bolts,
 - the rear axle guard clips.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the shock absorber,
 - the shock absorber upper bolt,
 - the shock absorber lower bolt.
- Compress the spring using the **30 mm component jack** in relation to the suspended wheel position.

Note:

It is possible to torque tighten the shock absorber lower bolts in vehicle in running order position (wheels on the ground).

- Tighten to torque:
 - the **shock absorber upper bolts (110 Nm)**,
 - the **shock absorber lower bolts (115 N.m)**.

III - FINAL OPERATION

DISCHARGE LAMPS

- Clip on the headlight beam adjustment sensor linkage.
- Refit:
 - the rear axle guard,
 - the rear axle guard clips,
 - the rear axle guard bolts.
- Torque tighten the **rear axle guard bolts (8 N.m)**.
- Refit the rear wheels (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

Equipment required

component jack

Tightening torques 

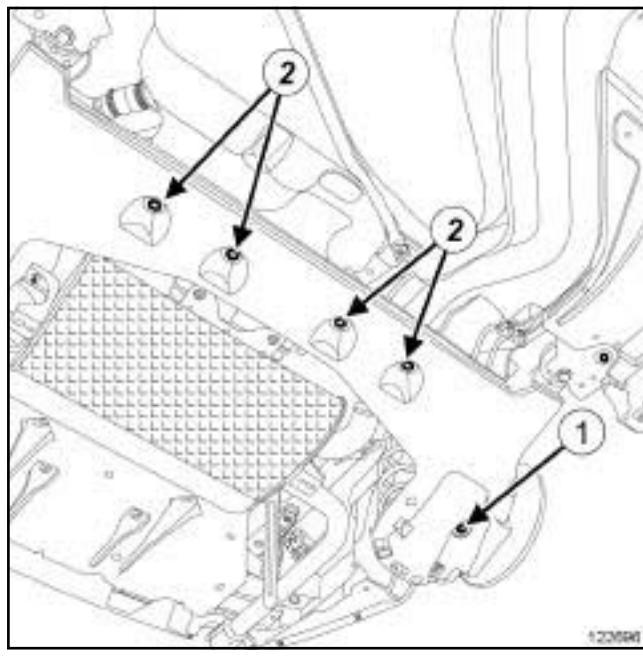
rear axle guard bolts	8 N.m
shock absorber lower bolts	115 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 33A, **Rear axle components**, **Rear axle components: Precautions for the repair**, page 33A-1).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).

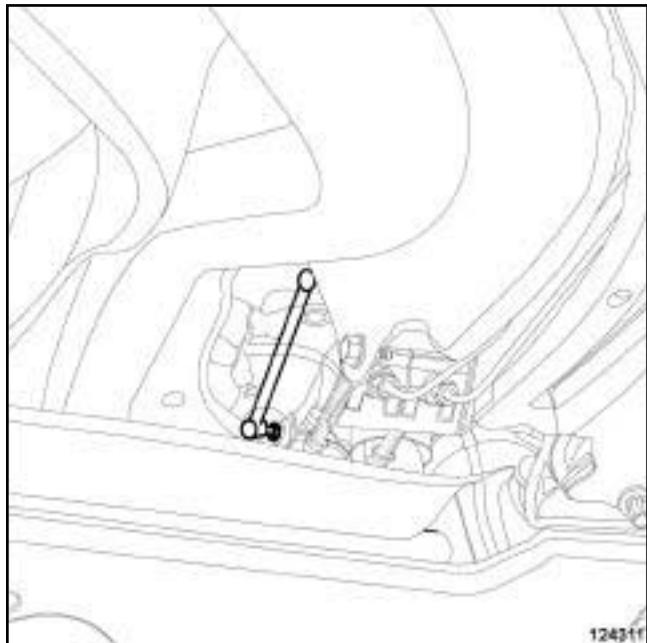


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- Remove:

- the rear wheels (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1) ,
- the rear axle guard bolts (1) ,
- the rear axle guard clips (2) ,

- the rear axle guard.

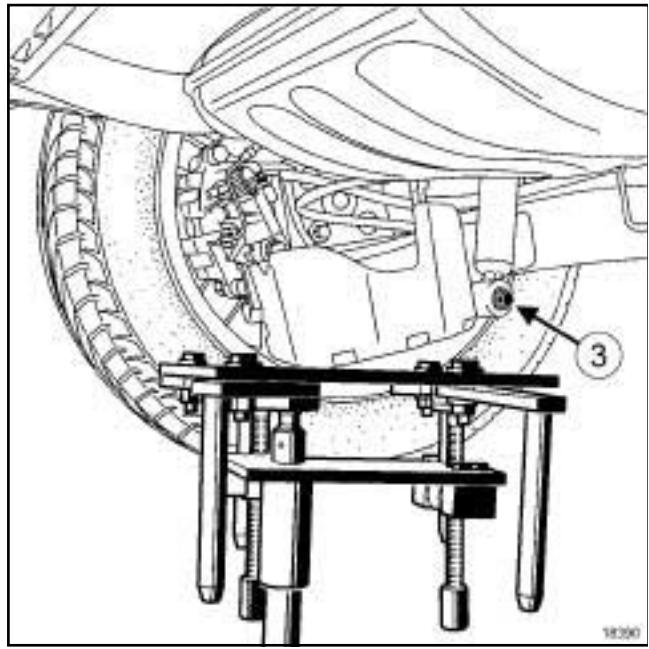
DISCHARGE LAMPS

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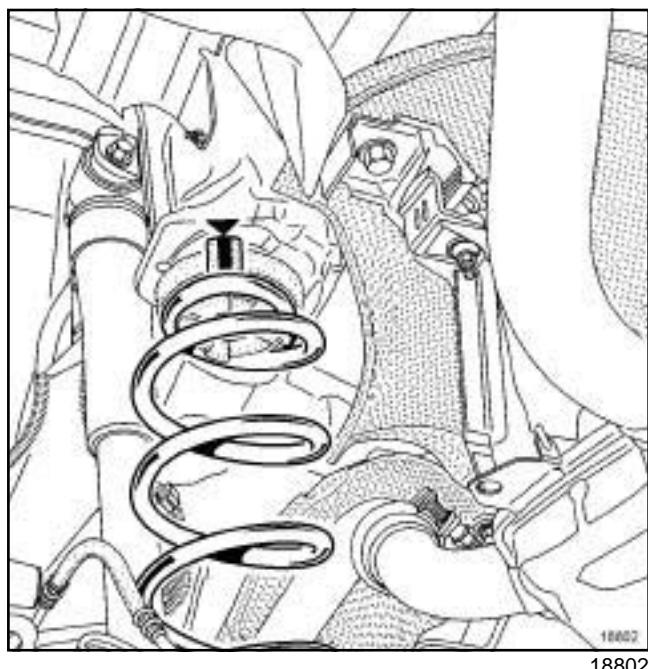
124311

- Unclip the headlight beam adjustment sensor linkage.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Position a **component jack** under the lower cup of the spring.
- Remove the shock absorber lower bolt (3).
- Repeat the operation on the opposite side.



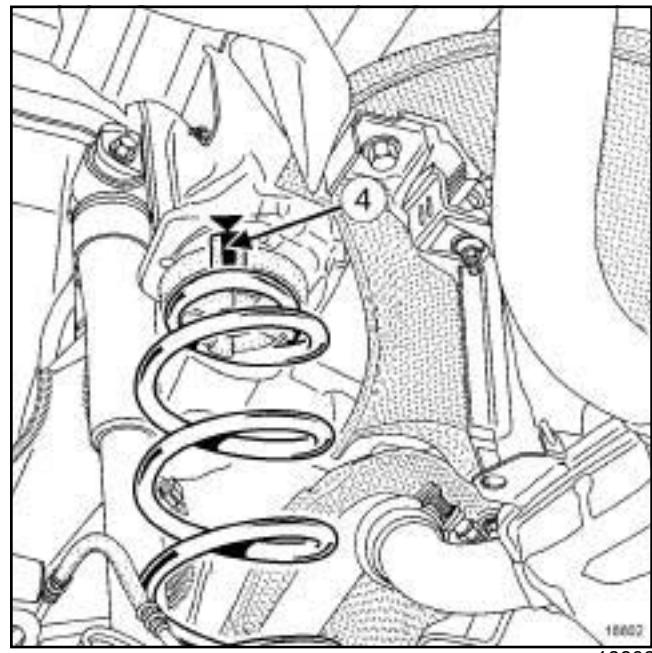
- Remove the **component jack** to decompress the rear axle.
- Remove the suspension springs.
- Fit the **component jack** under the lower cup of the spring to avoid applying pressure to the rubber bushes.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the shock absorber bolts,
 - the rear axle guard clips.

II - REFITTING OPERATION FOR PART CONCERNED



- Fit the damper component (4) fully against the end of the non sheathed spiral.
- Position the « damper component - spring » assembly towards the rear of the vehicle to show the colour on the spring spirals.
- Refit the shock absorber lower bolts using the **component jack**.

III - FINAL OPERATION

DISCHARGE LAMPS

- Clip on the headlight beam adjustment sensor linkage.
- Refit:
 - the rear axle guard,
 - the rear axle guard clips,
 - the rear axle guard bolts.

Rear suspension spring: Removal - Refitting

33A

- Torque tighten the **rear axle guard bolts (8 N.m)**.
- Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- With the vehicle on the ground, torque tighten the **shock absorber lower bolts (115 N.m)**.

2-WHEEL STEERING

Tightening torques 

stub axle carrier bolts	115 N.m
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IMPORTANT

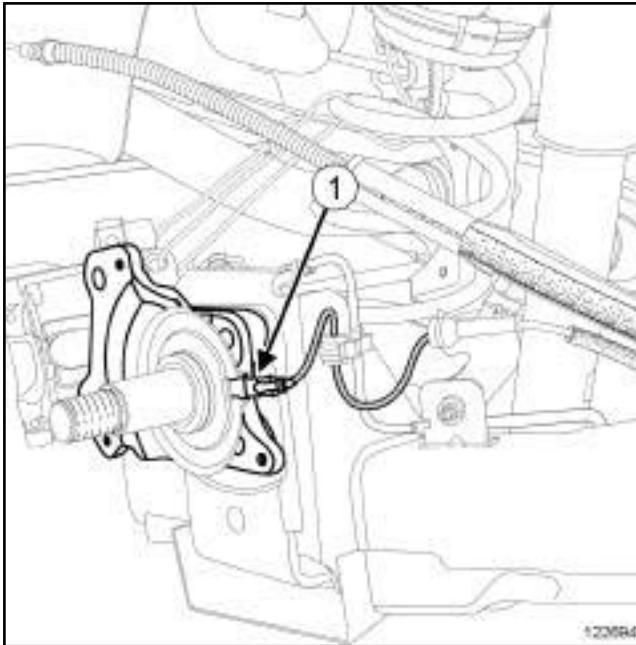
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

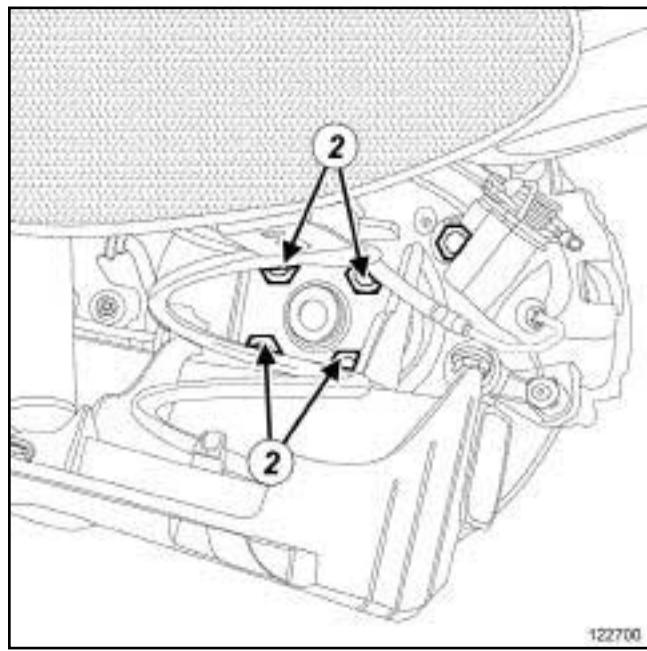
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**)



- Unlock the wheel speed sensor by pressing carefully on the tab (1) of the sensor holder using a flat-blade screwdriver.

 Remove:

- the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-3**) ,
- the calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-12**) ,
- the brake disc (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-15**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED Remove:

- the stub axle carrier bolts (2) ,
- the stub axle carrier.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Refit:
 - the stub axle carrier,
 - the stub axle bolts.
- Torque tighten the **stub axle carrier bolts (115 N.m)**.

2-WHEEL STEERING

II - FINAL OPERATION

Refit:

- the brake disc (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-15**) ,
- the calliper mounting (see **31A, Front axle components, Front brake calliper mounting: Removal - Refitting**, page **31A-12**) ,
- the brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-3**) ,
- the wheel speed sensor,
- the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

4-WHEEL STEERING

Special tooling required

Tav. 476 Ball joint extractor.

Tightening torques 

nut of the eccentric bolt of the stub axle carrier while aligning the marks	190 N.m
bolt of the stub axle car- rier	190 N.m
nut of the ball joint of the con rod	37 N.m
brake disc protector bolts	8 N.m

IMPORTANT

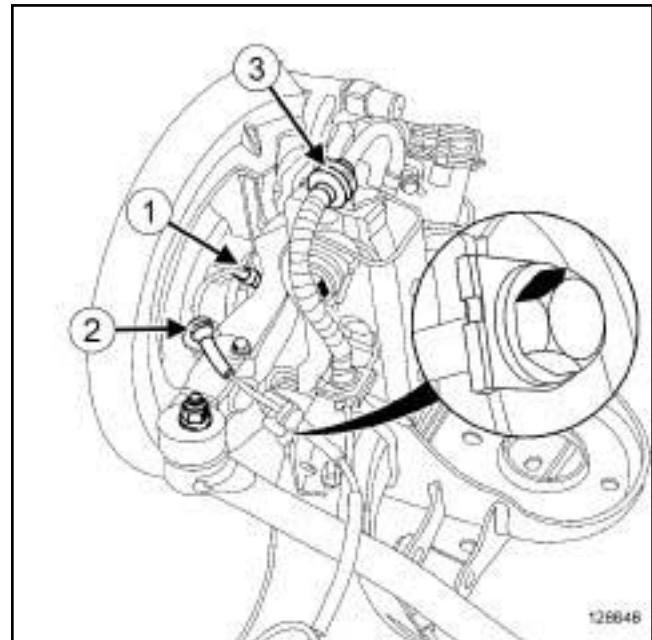
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**) .

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



128648

 Unclip:

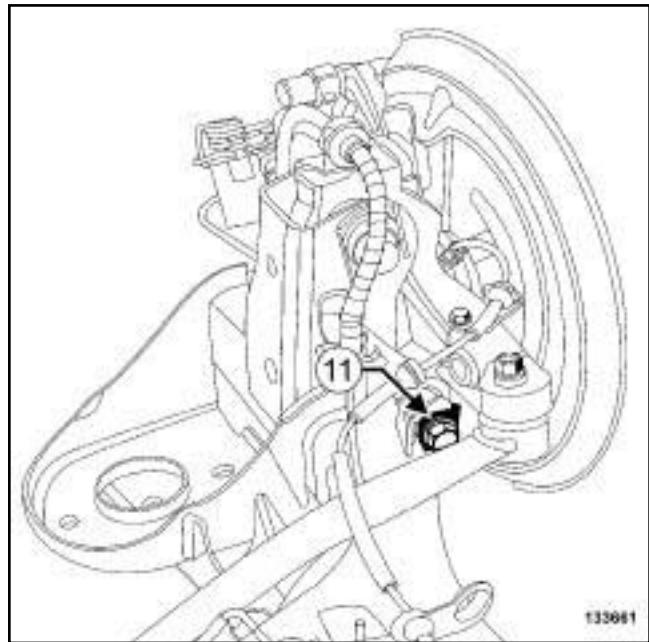
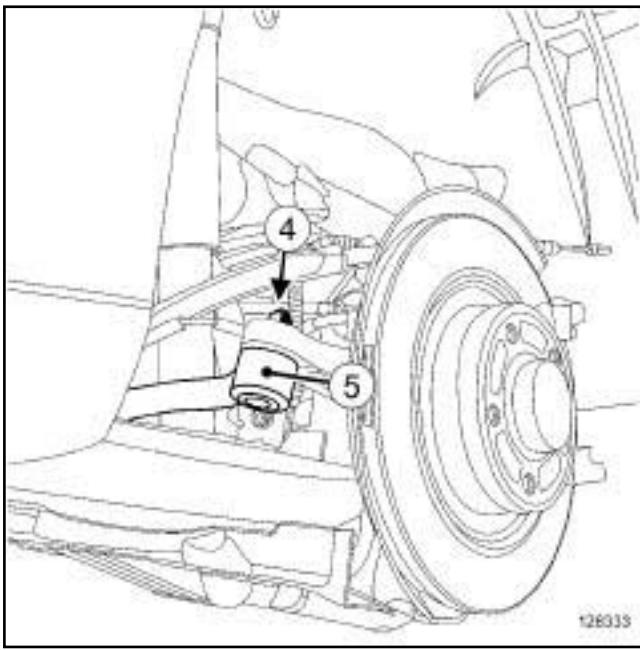
- Unclip the wheel speed sensor at (1) ,
- the wheel speed sensor wiring at (2) ,
- the front brake hose at (3) .

 Remove:

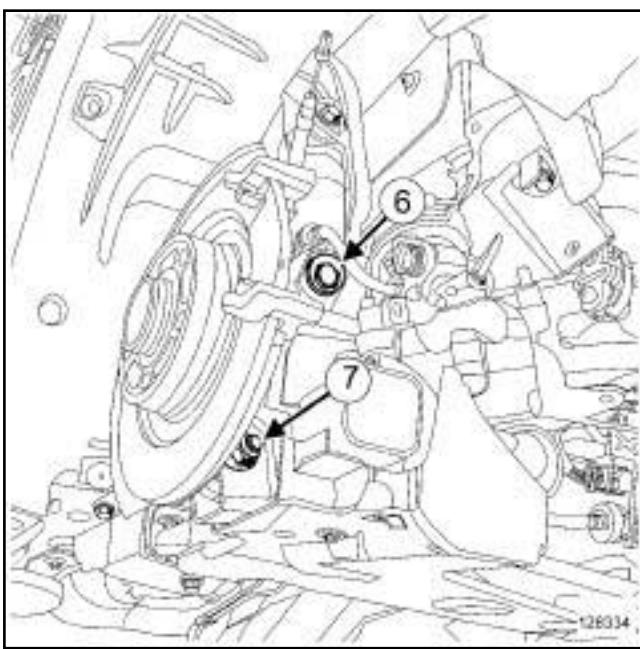
- the rear brake pads (see **33A, Rear axle compo-
nents, Rear brake pads: Removal - Refitting**,
page **33A-3**) ,
- the brake calliper mounting (see **33A, Rear axle
components, Rear brake calliper mounting: Re-
moval - Refitting**, page **33A-13**) ,
- the rear brake disc (see **33A, Rear axle compo-
nents, Rear brake disc: Removal - Refitting**,
page **33A-15**) ,
- the brake disc protector (see **Rear brake disc pro-
tector: Removal - Refitting**) .

4-WHEEL STEERING

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the nut (4) of the ball joint (5) .
- Extract the ball joint (5) using the tool (**Tav. 476**).



- Mark the position of the eccentric bolt (6) on the rear axle.

WARNING

Certain vehicles possess a shim (11) on the stub axle carrier yoke.

Do not throw away this shim.

If the shim (11) must be replaced, replace it with a shim having the same engraved dimension.

The shim (11) is positioned with the engraved face towards the front of the vehicle, on the front side of the vehicle.

 Remove:

- the nut of the eccentric bolt (6) ,
- the eccentric bolt (6) ,
- the rear stub axle carrier bolt (7) ,
- the rear stub axle carrier.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Always replace the nuts of the stub axle carrier.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the stub axle carrier, by fitting the ball joint of the steering con rod.

4-WHEEL STEERING

- Align the marks on the eccentric bolt and rear axle.
- Check the positioning of the eccentric bolts and eccentric washers in their guides.
- Tighten to torque:
 - the new **nut of the eccentric bolt of the stub axle carrier while aligning the marks** (190 N.m),
 - the lower **bolt of the stub axle carrier** (190 N.m),
 - the new **nut of the ball joint of the con rod** (37 N.m).

III - FINAL OPERATION

- Refit the brake disc protector.
- Torque tighten the **brake disc protector bolts** (8 N.m).
- Refit:
 - the rear brake disc (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page 33A-15) ,
 - the brake calliper mounting (see **33A, Rear axle components, Rear brake calliper mounting: Removal - Refitting**, page 33A-13) ,
 - the rear brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page 33A-3) .
- Clip:
 - the brake hose,
 - the wheel speed sensor wiring,
 - the wheel speed sensor.
- Refit the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-19) .
- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page 30A-32) .

IMPORTANT

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Special tooling required	
Tar. 1850	RR axle bearing removal - refitting tool
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav. 1050-04 , Tar. 1454, Tar. 1850.

WARNING

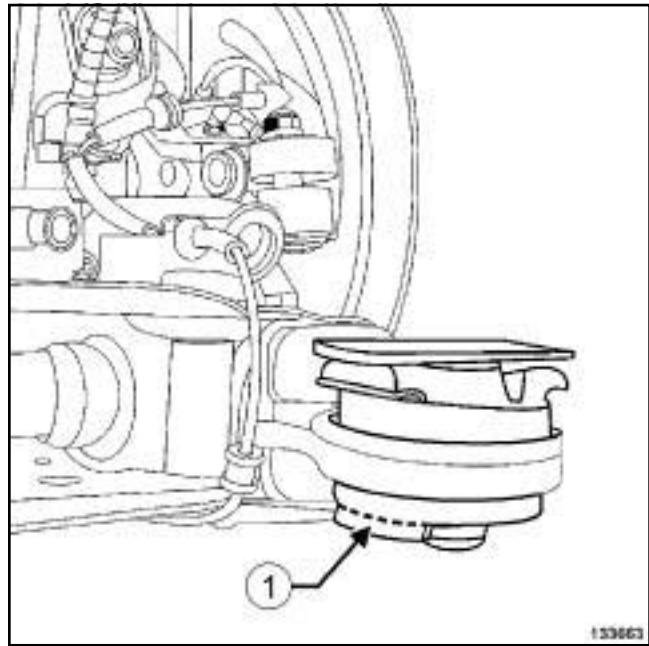
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 33A, **Rear axle components, Rear axle components: Precautions for the repair**, page 33A-1).

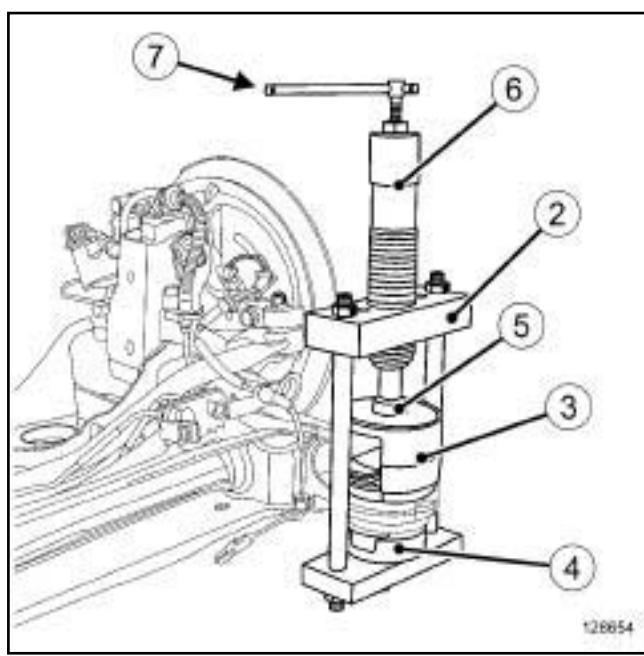
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the complete rear axle (see 33A, **Rear axle components, Complete rear axle system: Removal - Refitting**, page 33A-33) ,
 - the hinges one by one.

II - OPERATION FOR REMOVAL OF PART CONCERNED

133663

- Cut the rubber part (1) at the edge of the metal part of the rubber bearing.



128654

- Assemble the support (2) of the tool (**Tar. 1850**).
- Fit the components of the tool (**Tar. 1850**) in the following order:
 - the cup A1 (3) of the tool (**Tar. 1850**) on the rubber bush,
 - the cup A2 (4) of the tool (**Tar. 1850**) under the rubber bush,
 - the cup centring shaft (5) ,
 - the support of the jack (2) ,
 - the jack (6) of the tool (**Tav. 1420-01**) on its support (2) .
- Bring the jack (6) into contact with the cup centring shaft (5) .
- Lower the jack fully using the handle (7) .
- Raise the jack fully using the handle (7) .

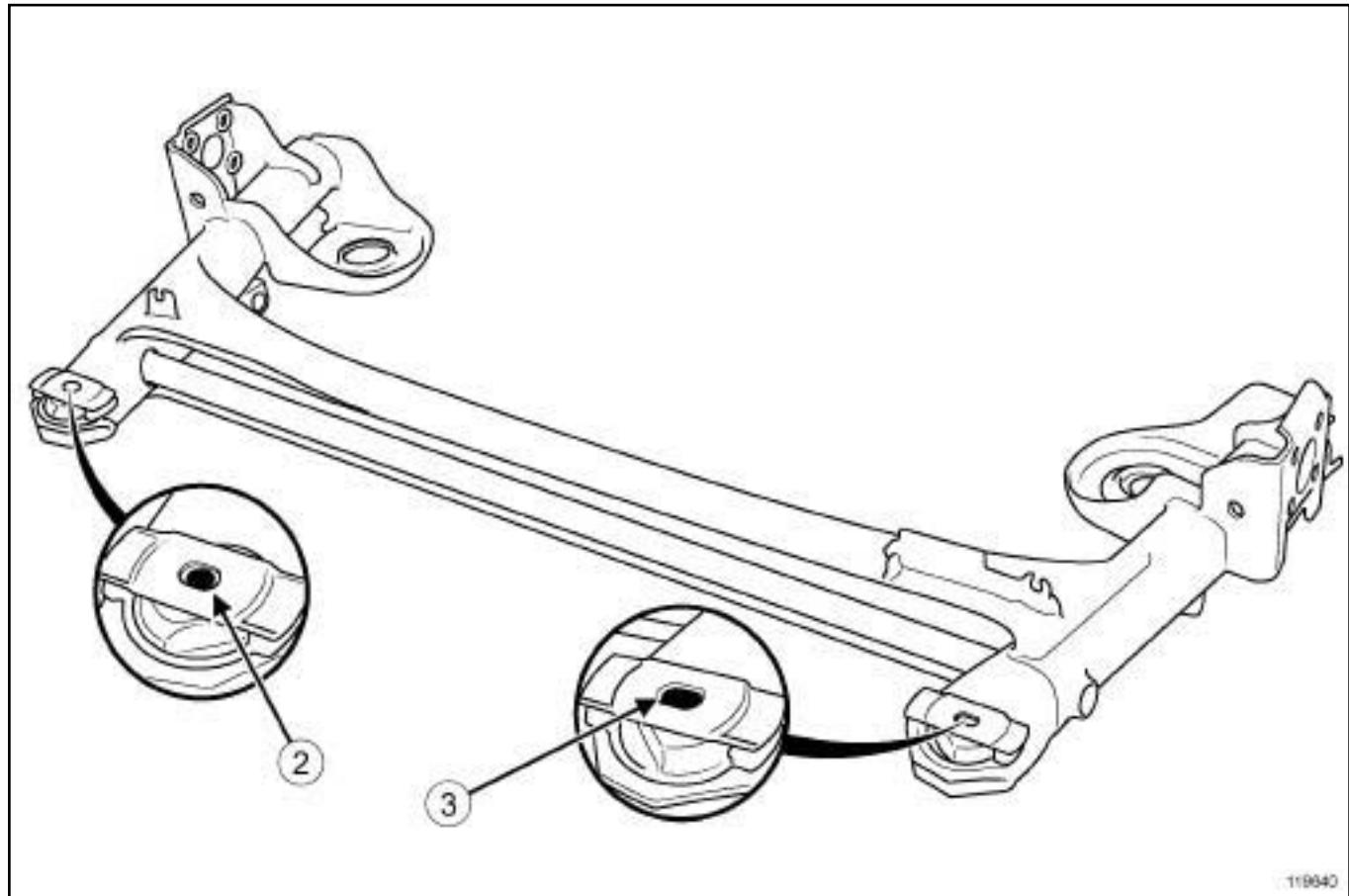
Note:

If the movement of the jack is too short, repeat the previous three steps.

- Remove:
 - the (**Tar. 1850**),
 - the rear axle rubber bush.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



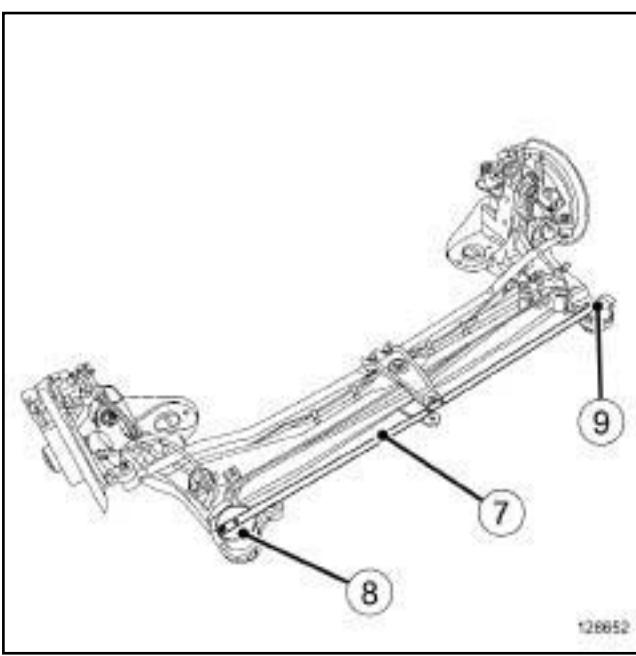
119640

119640

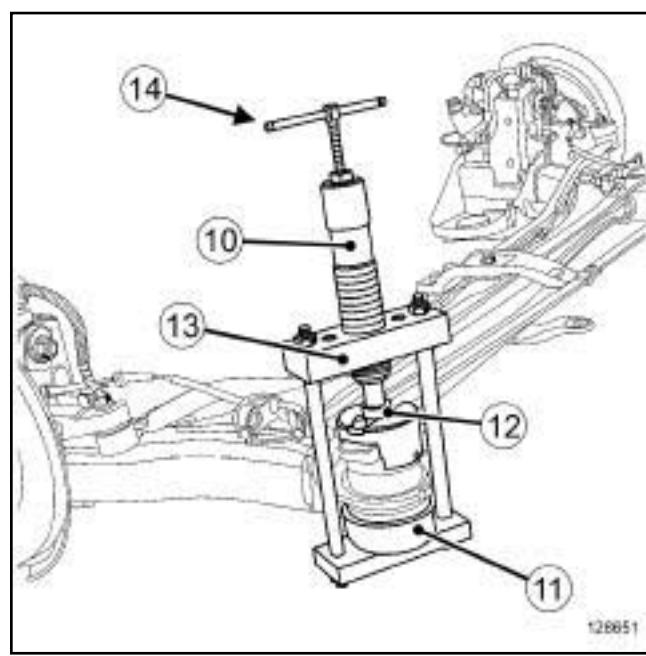
- (2) Rubber bush with cylindrical hole on right side of vehicle
- (3) Rubber bush with oblong hole on left side of vehicle

Note:

It is essential to replace the two rubber bushes.



128652



128651

- Fit the rubber bush on the rear axle.
- Assemble the bar (7) and the cup B2 (8) of the tool (**Tar. 1850**)
- Fit:
 - the "bar and cup" assembly on the rubber bush,
 - the indexing pin (9) in the hole of the rubber bush.

- Refit the jack (10) on its support (11) as far as possible.
- Fit the components of the tool (**Tar. 1850**) in the following order:
 - the cup B1 (11) under the rubber bush,
 - the cup centring shaft (12) ,
 - the support (13) with the jack (10) .
- Bring the jack into contact with the cup centring shaft.
- Lower the jack (10) fully using the handle (14) .
- Raise the jack (10) fully using the handle (14) .

Note:

If the movement of the jack is too short, repeat the previous three steps.

- Remove the tool (**Tar. 1850**).

II - FINAL OPERATION

- Refit the complete rear axle (see **33A, Rear axle components, Complete rear axle system: Removal - Refitting**, page 33A-33) .
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-19) .
- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page 30A-32) .

2-WHEEL STEERING

Equipment required
pedal press
component jack
safety strap(s)

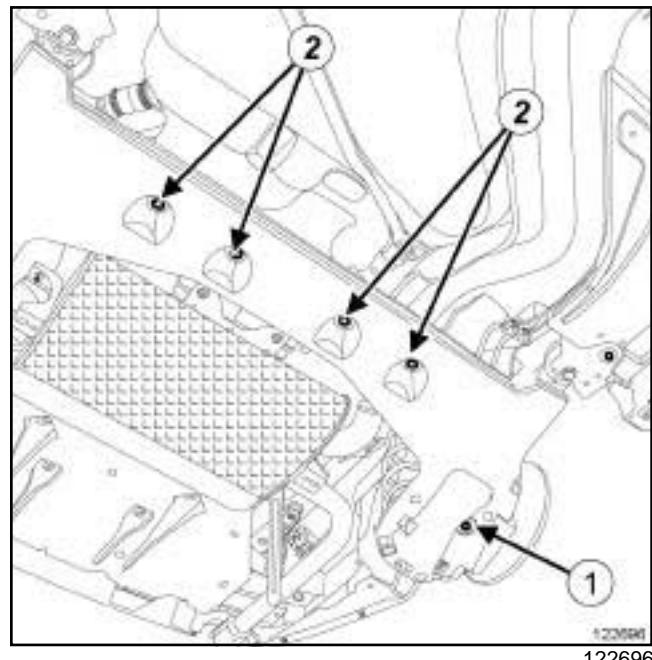
Tightening torques 	
rear axle bolts	180 N.m
brake pipe unions on the rear axle	14 N.m
bolts on the "stub axle carrier - disc - calliper" assemblies	115 N.m
brake pipe unions on the callipers	14 N.m
rear axle guard bolts	8 N.m
shock absorber lower bolts	115 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.



122696

 Remove:

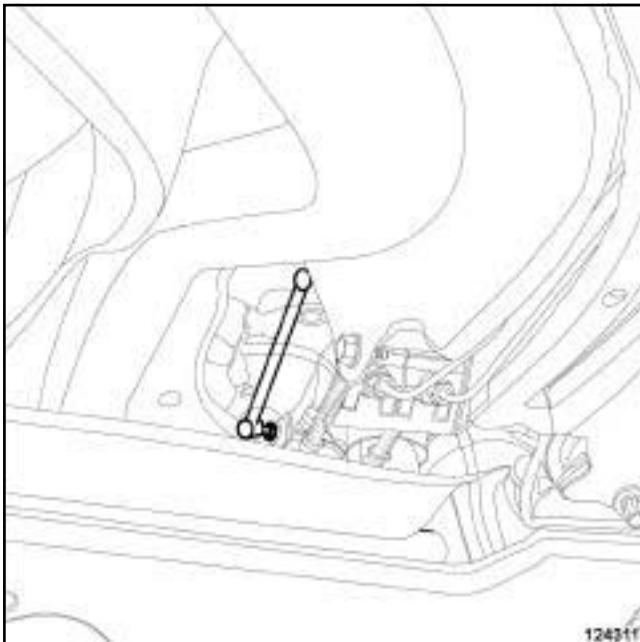
- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear axle guard bolts (1) ,
- the rear axle guard clips (2) ,
- the rear axle guard.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Release the parking brake.
- Fit the **pedal press** on the brake pedal to limit the amount of brake fluid running out.

2-WHEEL STEERING

DISCHARGE LAMPS

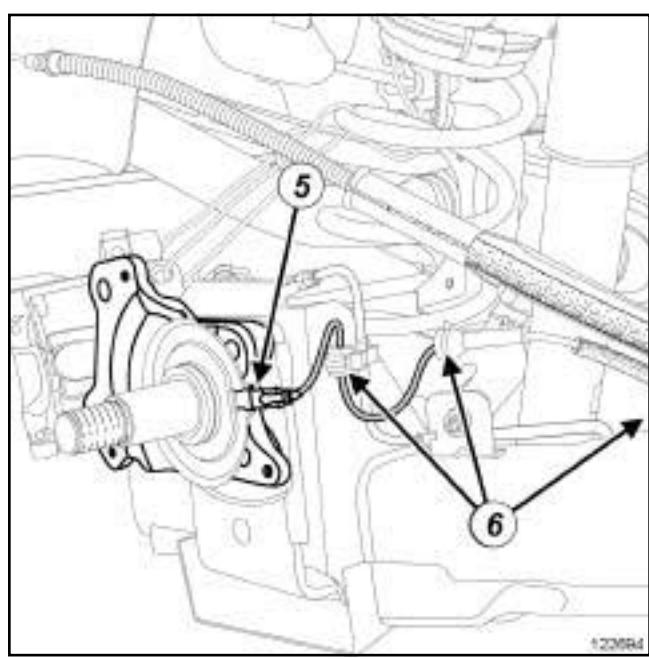
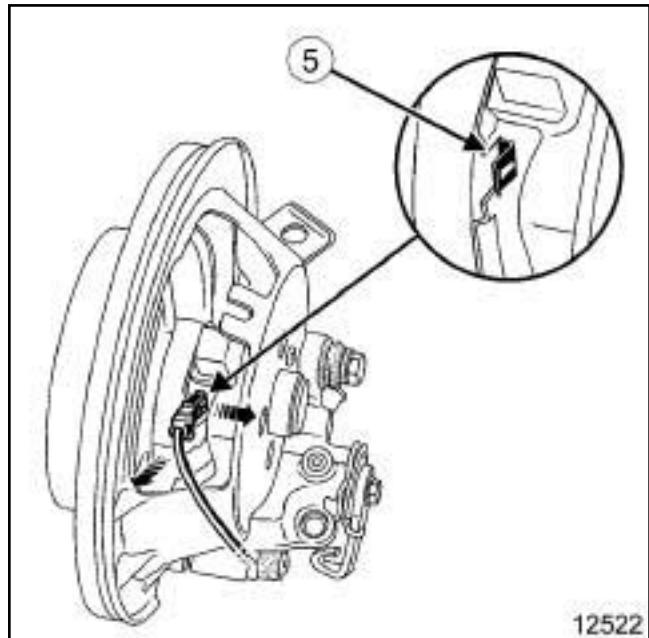


- Unclip the headlight beam adjustment sensor linkage.

- Remove the rear suspension springs (see **33A, Rear axle components, Rear suspension spring: Removal - Refitting**, page **33A-21**).
- Place a **component jack** under the lower cup of the left-hand spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Unhook the parking brake cables from the callipers.
- Note the routing for refitting.
- Remove the parking brake cables from the stub axle carriers without damaging the cable protectors.
- Let the parking brake cables hang freely.

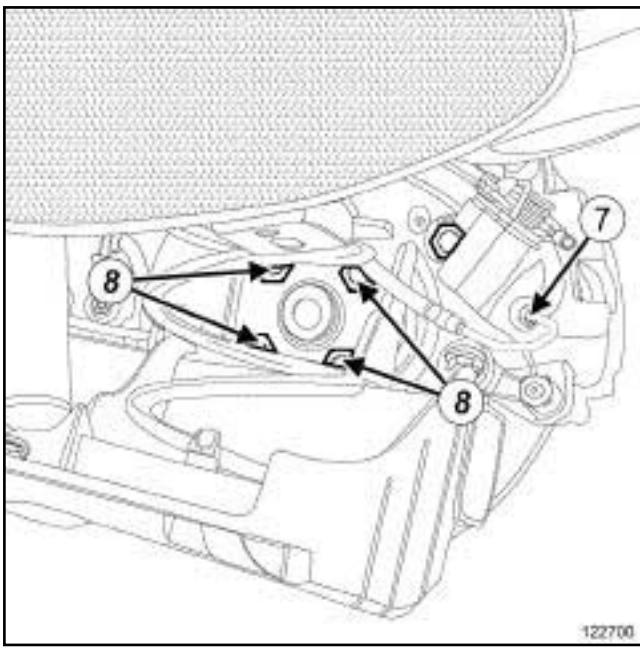


IMPORTANT

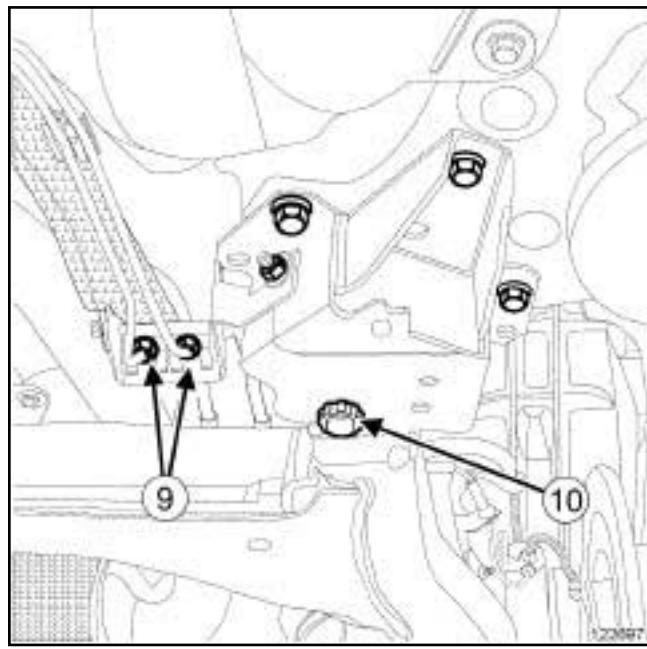
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

- Unlock the wheel speed sensors by pressing carefully on the tab (5) of the sensor holder using a flat-blade screwdriver.
- Unclip the wheel speed sensor wiring at (6).

2-WHEEL STEERING



122700



122697

- Unscrew the brake pipe unions (7) on the callipers.
- Remove:
 - the bolts (8) securing the "stub axle carrier - disc - calliper" assemblies,
 - the "stub axle carrier - disc - calliper" assemblies.

- Unscrew the brake pipe unions (9) .
- Move the **component jack** with its mounting to the centre of the rear axle.
- Place a **safety strap(s)** to attach the rear axle to the **component jack**.
- Remove:
 - the rear axle bolts (10) positioning the rear axle arms horizontally,
 - the rear axle (this operation requires two people),
 - the parking brake cable supports,
 - the rigid brake pipes.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the rear axle bolts,
 - the shock absorber lower bolts,
 - the rear axle guard clips.

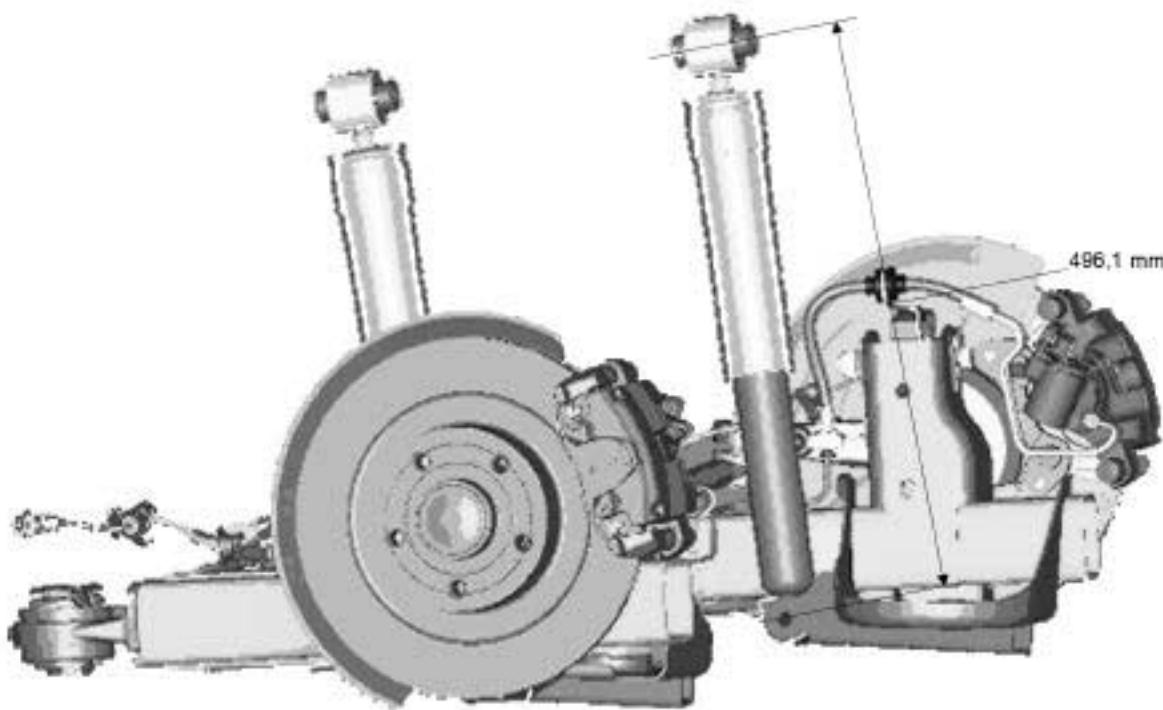
II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the rigid brake pipes on the rear axle,
 - the parking brake cable supports on the rear axle,

2-WHEEL STEERING

- the rear axle positioning the rear axle arms horizontally (this operation requires two people),
- the two rear axle bolts.

- Remove the **safety strap(s)** from the rear axle.
- Move the **component jack** with its support under the lower cup of the spring.



124696

124696

- Place the rear axle in a "half-load" position.

Note:

The "half-load" position corresponds to a length of (**496,1 mm**) between the shock absorber upper bolt and the shock absorber lower bolt.

- Torque tighten the **rear axle bolts (180 N.m)** in the "half-load" position.
- Screw on the brake pipe unions (**9**).
- Torque tighten the **brake pipe unions on the rear axle (14 N.m)**.
- Refit:
 - the "stub axle carrier - disc - calliper" assemblies,
 - the bolts (**8**) securing the "stub axle carrier - disc - calliper" assemblies.
- Screw the brake pipe unions (**7**) on the callipers.

- Tighten to torque:

- the **bolts on the "stub axle carrier - disc - calliper" assemblies (115 N.m)**,
- the **brake pipe unions on the callipers (14 N.m)**.

- Fit the wheel speed sensors.
- Clip on the wheel speed sensor wiring at (**6**).
- Refit the two parking brake cables back in their mounting.

Note:

Follow the routing noted during removal.

- Refit the parking brake cables at the brake callipers.

2-WHEEL STEERING

ELECTRONIC PARKING BRAKE

- With the ignition on, release the electronic parking brake:
 - pull the handle,
 - press the button.The parking brake system can be heard locking, the play compensation is set automatically.
- Check that the brake cables are correctly fitted in their housings.
- With the parking brake released, pull on the end of the cable; there must be a residual play of **1 to 2 mm**.

FOOT BRAKE MANUAL CONTROL

- Adjust the parking brake if not working properly (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page **37A-33**).

III - FINAL OPERATION

- Refit the rear suspension springs (see **33A, Rear axle components, Rear suspension spring: Removal - Refitting**, page **33A-21**).

DISCHARGE LAMPS

- Clip on the headlight beam adjustment sensor linkage.
- Refit:
 - the rear axle guard,
 - the rear axle guard clips (2),
 - the rear axle guard bolts (1),
 - the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Torque tighten the **rear axle guard bolts (8 N.m)**.
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).
- With the vehicle on the ground, torque tighten the **shock absorber lower bolts (115 N.m)**.

4-WHEEL STEERING

Special tooling required

Mot. 1390 Support for removal - refitting of engine - gearbox assembly

Equipment required

pedal press

component jack

safety strap(s)

Tightening torques 

brake pipe unions **14 N.m**

earth strap bolt **8 N.m**

bolts of the fuel tank **21 N.m**

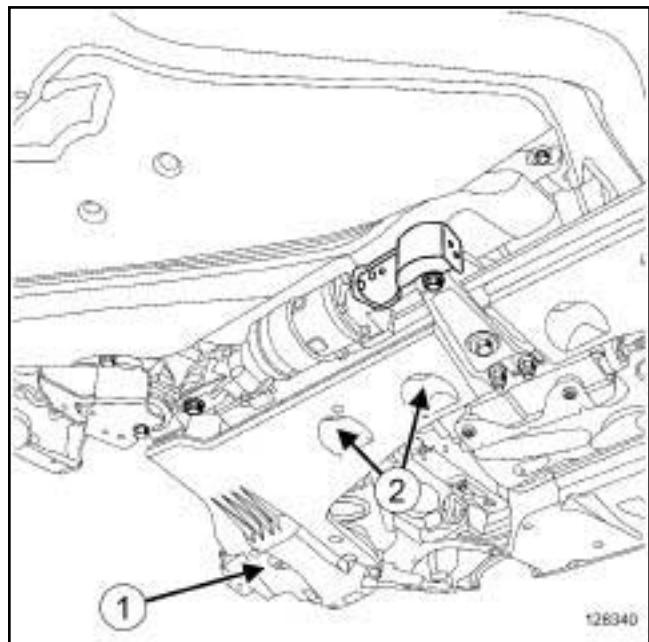
bolt of the fuel tank filler neck **21 N.m**

bolts of the automatic-parking brake mounting **21 N.m**

new bolts of the rear axle in «half-load position» **180 N.m**

new lower bolts of the shock absorber **115 N.m**

rear guard bolts **8 N.m**



128340

 Remove:

- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the exhaust silencer (see **Silencer: Removal - Refitting**) (19B, Exhaust),
- the bolts (1) of the rear axle guards,
- the clips (2) of the rear axle guards,
- the rear axle guards.

IMPORTANT

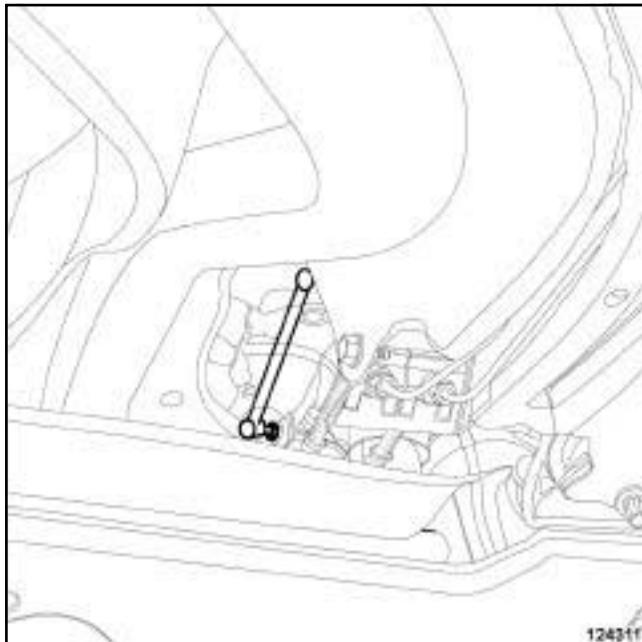
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**) .

REMOVAL**I - REMOVAL PREPARATION OPERATION**

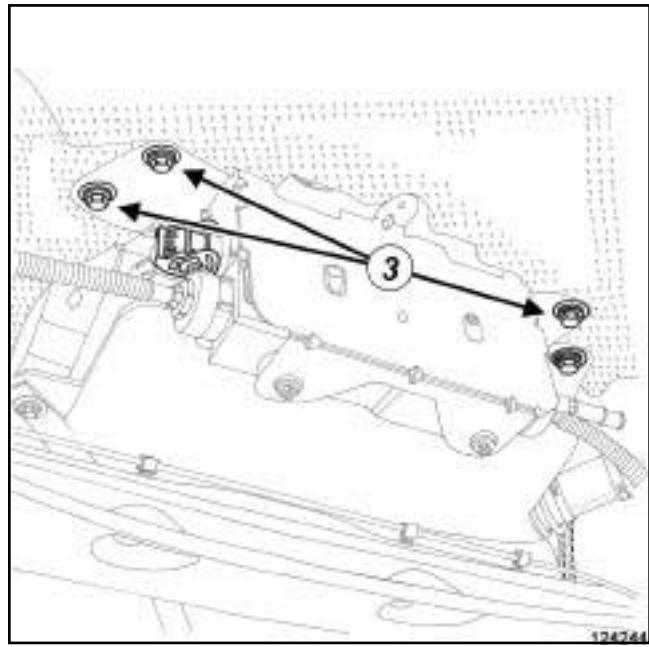
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Release the parking brake.
- Fit the **pedal press** on the brake pedal to limit the amount of brake fluid running out.

4-WHEEL STEERING

DISCHARGE LAMPS



124311



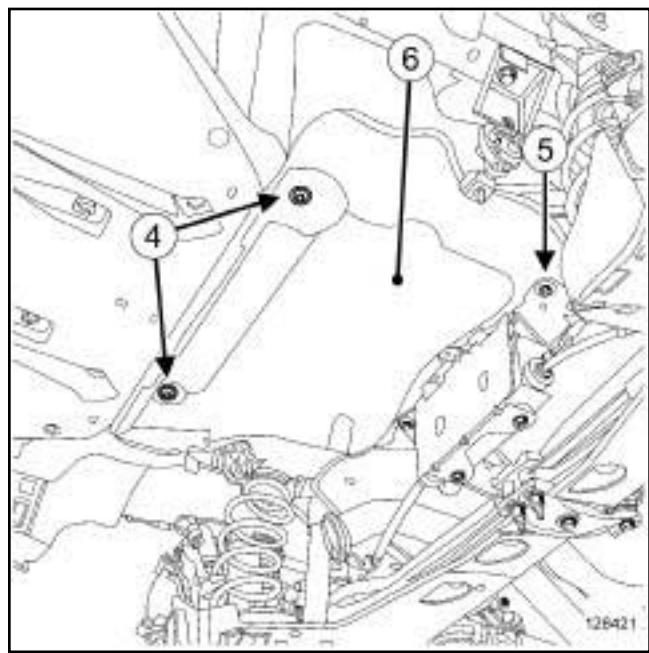
124244

124244

- Remove the bolts (3) from the support of the control unit of the automatic parking brake.

- Unclip the headlight beam adjustment sensor linkage.

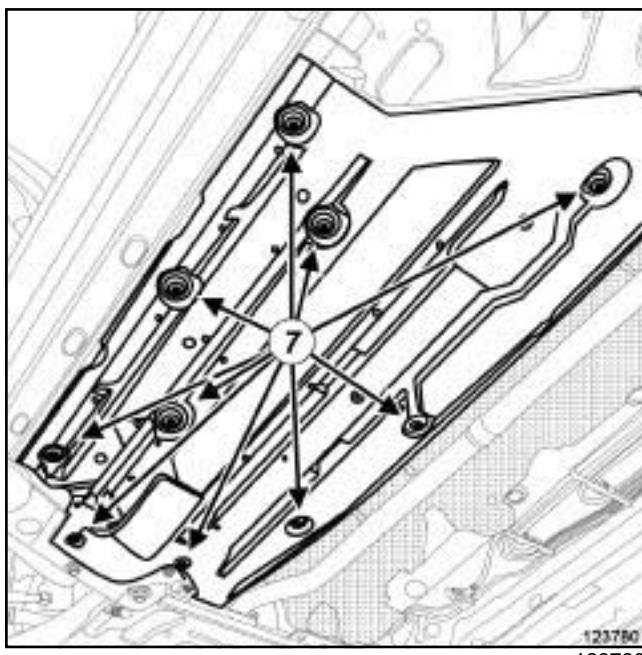
- Place a **component jack** under the lower cup of the left-hand spring.
- Remove the rear suspension springs (see 33A, **Rear axle components, Rear suspension spring: Removal - Refitting**, page 33A-21).



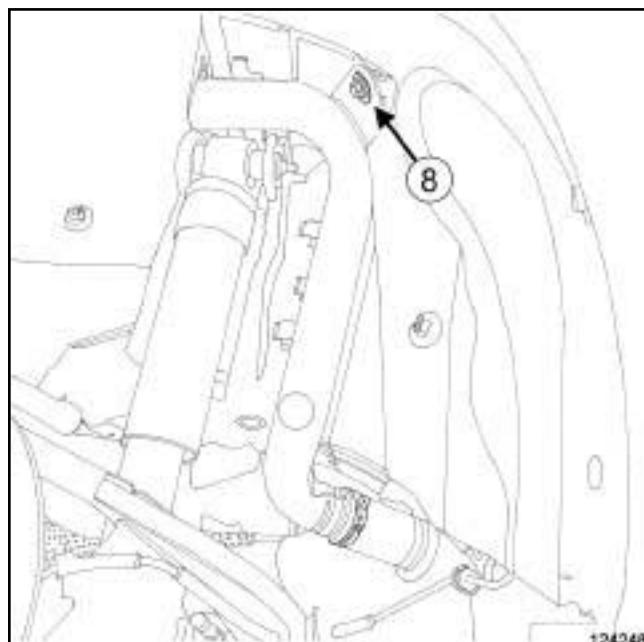
128421

- Remove:
 - the silencer heat shield clips (4) ,
 - the bolt (5) from the silencer heat shield,
 - the silencer heat shield (6) .

4-WHEEL STEERING



123780

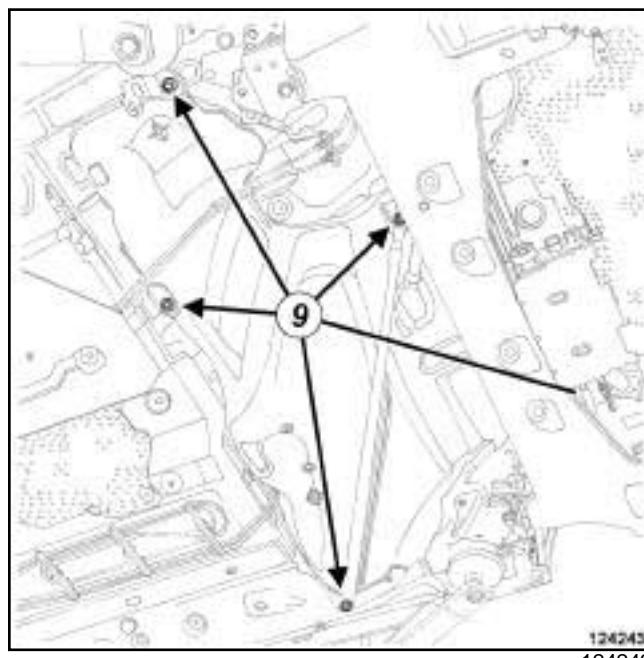


124248

124248

 Remove:

- the nuts (7) from the left underbody protectors,
- the left underbody protectors.

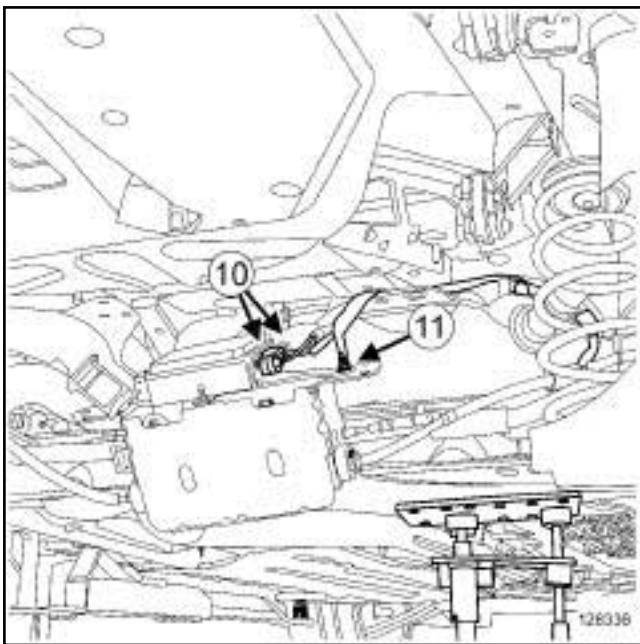


124245

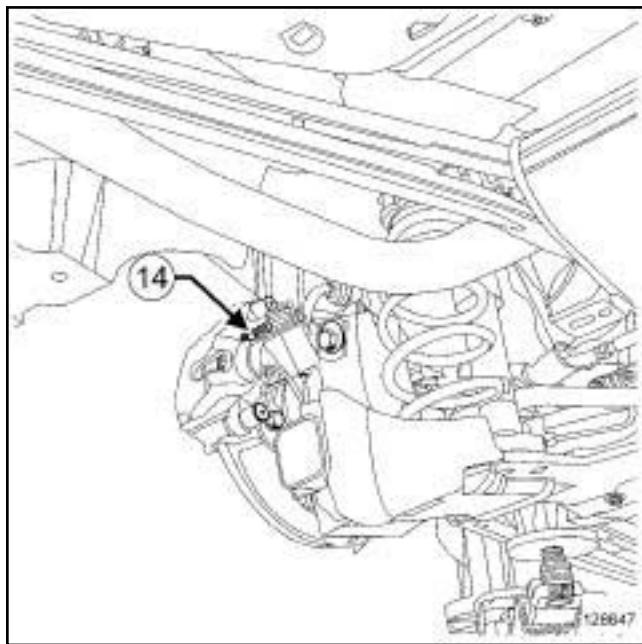
124243

- Fit a **component jack** under the fuel tank.
- Remove the bolt (8) from the fuel tank filler neck.
- Loosen the bolts (9) of the fuel tank to access the wiring of the four wheel steering actuator.

4-WHEEL STEERING



128336



128647

- Mark the tracks of the wiring of the four wheel steering actuator.
- Disconnect the connectors (10) .
- Remove the nut (11) from the earth strap.

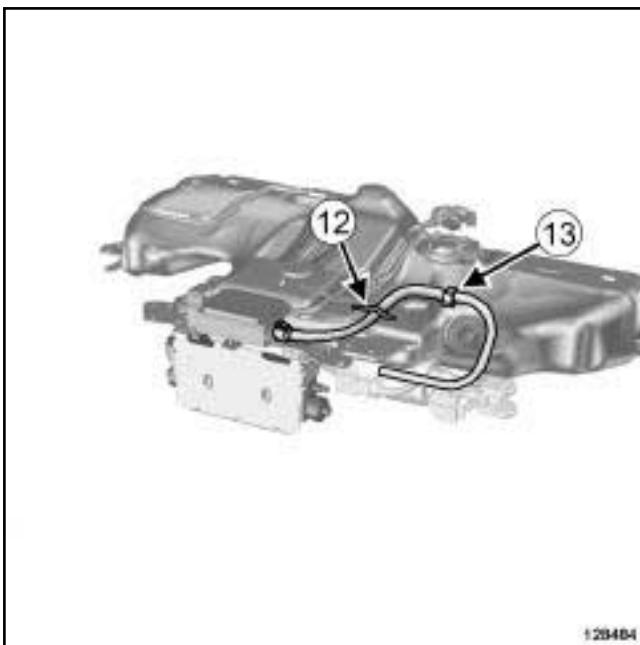
WARNING

The earth strap nut is specific. Do not swap it with other nuts.

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

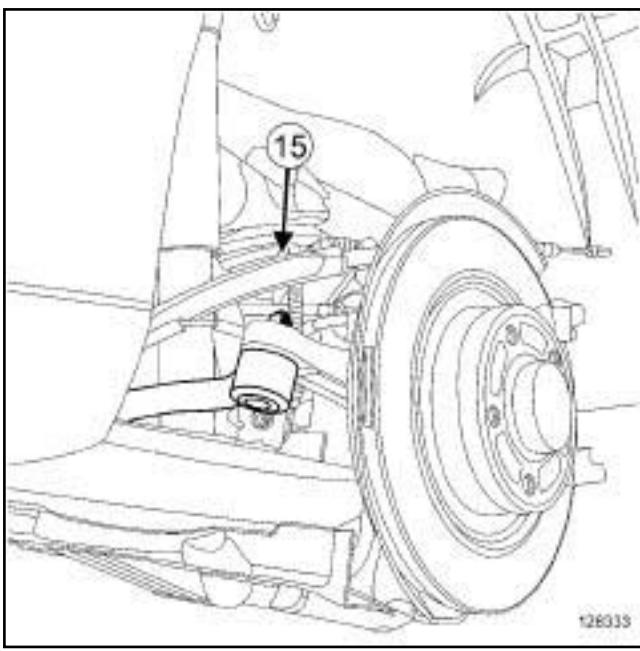
- Mark the tracks of the parking brake cables.
- Unhook the parking brake cables from the callipers at (14) .



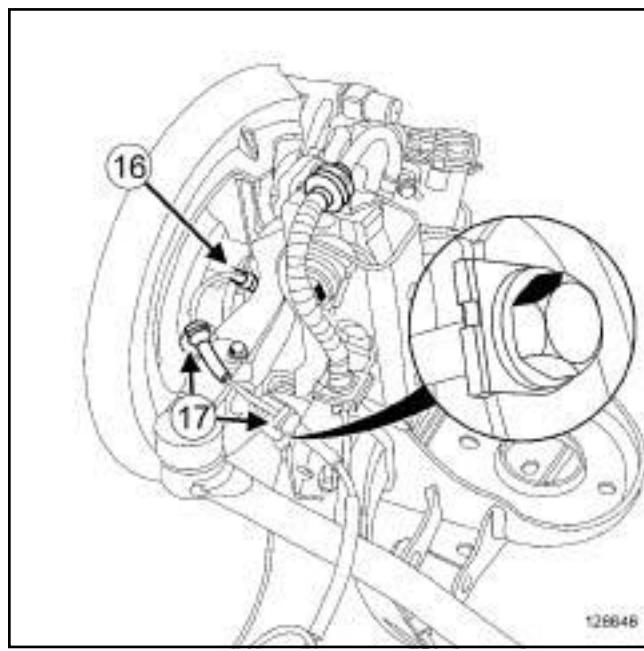
128484

- Unclip the wiring strap (12) .
- Unclip the wiring at (13) .

4-WHEEL STEERING



128333



128648

- Remove the parking brake cables from the stub axle carriers and the guides (15) , without damaging the cable protectors.
- Let the parking brake cables hang freely.

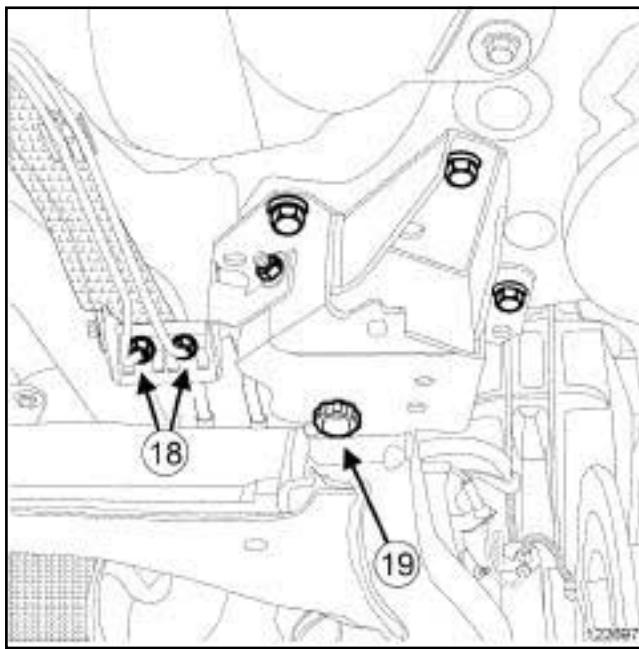
IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page 38C-3) .

- Unlock the wheel speed sensors by pressing carefully on the tab (16) of the sensor holder using a flat-blade screwdriver.
- Unclip the wheel speed sensor wiring at (17) .

4-WHEEL STEERING

II - OPERATION FOR REMOVAL OF PART CONCERNED



122697

- Remove the unions (18) from the rear brake pipes.
- Fit the tool (**Mot. 1390**) under the vehicle.
- Lower the lift and put the rear axle horizontally on the tool (**Mot. 1390**).
- Put on a **safety strap(s)** to attach the rear axle to the tool (**Mot. 1390**).
- Remove:
 - the rear axle bolts (19) .
 - the rear axle.

III - STRIPPING OPERATION FOR PART CONCERNED

- Remove:
 - the four wheel steering actuator (see **33A, Rear axle components, 4-wheel steering actuator: Removal - Refitting**, page **33A-47**),
 - the rear (see **33A, Rear axle components, Rear track rod: Removal - Refitting**, page **33A-51**) steering con rods,
 - the compensators (see **33A, Rear axle components, Compensator: Removal - Refitting**, page **33A-56**),
 - the rear brake callipers (see **33A, Rear axle components, Rear brake calliper: Removal - Refitting**, page **33A-8**),

- the rear brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-3**),
- the calliper mountings (see **33A, Rear axle components, Rear brake calliper mounting: Removal - Refitting**, page **33A-13**),
- the rear brake discs (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-15**),
- the rear stub axle carriers (see **33A, Rear axle components, Rear stub axle carrier: Removal - Refitting**, page **33A-24**),
- the guides of the parking brake cables,
- the rigid brake pipes.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the rear axle bolts,
 - the shock absorber lower bolts,
 - the rear axle guard clips.

II - REBUILDING OPERATION FOR PART CONCERNED

- Refit:
 - the rigid brake pipes,
 - the guides of the parking brake cables,
 - the rear stub axle carriers (see **33A, Rear axle components, Rear stub axle carrier: Removal - Refitting**, page **33A-24**),
 - the rear brake discs (see **33A, Rear axle components, Rear brake disc: Removal - Refitting**, page **33A-15**),
 - the calliper mountings (see **33A, Rear axle components, Rear brake calliper mounting: Removal - Refitting**, page **33A-13**),
 - the rear brake pads (see **33A, Rear axle components, Rear brake pads: Removal - Refitting**, page **33A-3**),
 - the rear brake callipers (see **33A, Rear axle components, Rear brake calliper: Removal - Refitting**, page **33A-8**),
 - the compensators (see **33A, Rear axle components, Compensator: Removal - Refitting**, page **33A-56**),

4-WHEEL STEERING

- the rear (see 33A, Rear axle components, **Rear track rod: Removal - Refitting**, page 33A-51) steering con rods,
- the four wheel steering actuator (see 33A, **Rear axle components, 4-wheel steering actuator: Removal - Refitting**, page 33A-47).

- Refit the rear suspension springs (see 31A, **Front axle components, Front shock absorber and spring: Removal - Refitting**, page 31A-47).

III - REFITTING OPERATION FOR PART CONCERNED

- Fit the rear axle while positioning the axle arms horizontally.
- Fit the rear axle bolts.
- Remove the **safety strap(s)** from the rear axle.
- Refit the rigid brake pipe unions.
- Torque tighten the **brake pipe unions (14 N.m)**.

IV - FINAL OPERATION

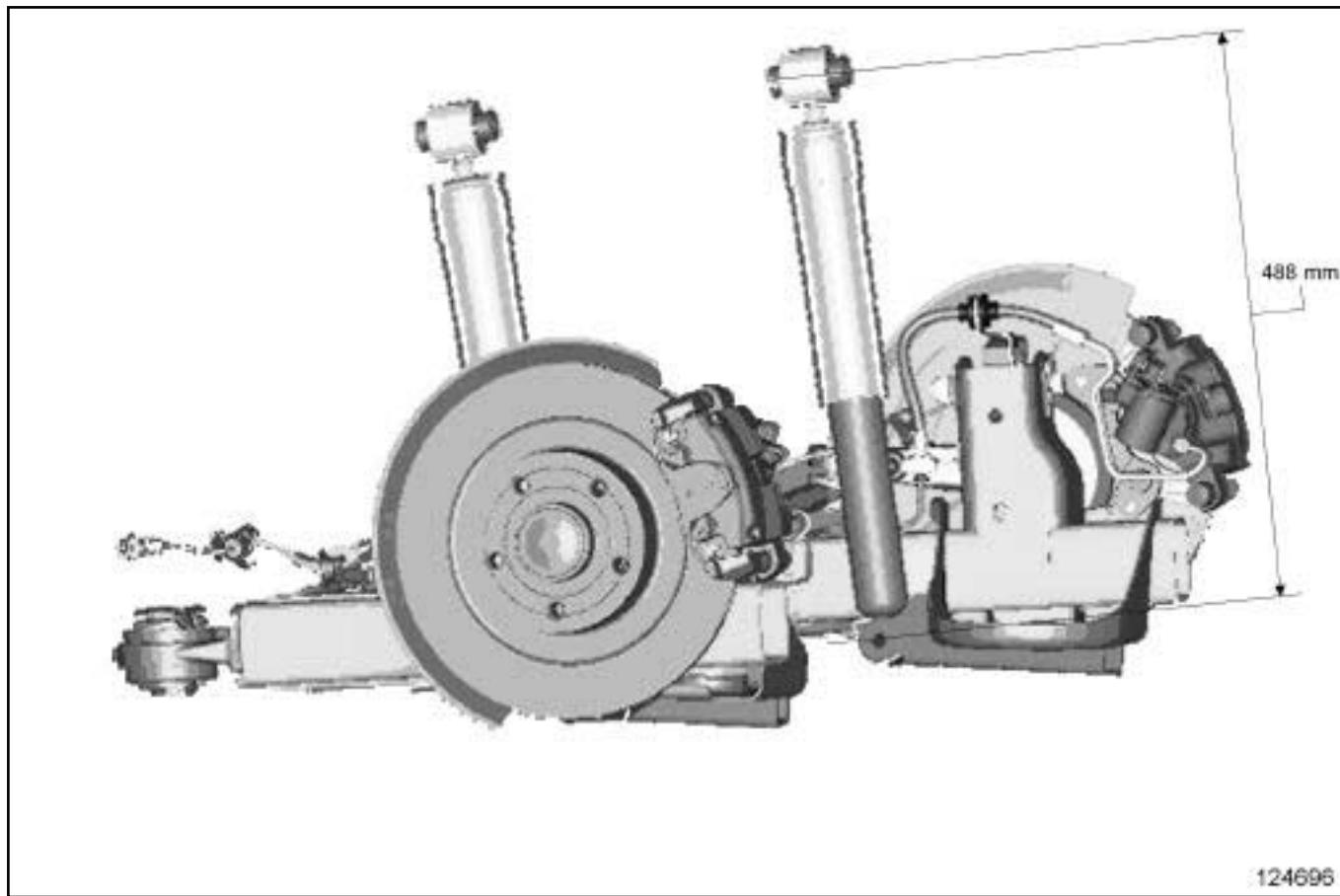
- Clip the wiring of the wheel speed sensors onto the rear axle.
- Clip the wheel speed sensors onto the stub axle carriers.
- Refit the parking brake cables into their guide.
- Refit the parking brake cables on the brake callipers.
- Refit the wiring of the four wheel steering actuator.

Note:

Follow the routing noted during removal.

- Clip the wiring onto the fuel tank.
- Clip the wiring strap.
- Connect the connectors of the four wheel steering actuator.
- Refit the earth strap.
- Torque tighten the **earth strap bolt (8 N.m)**.
- position the **component jack** under the tank.
- Tighten to torque:
 - the **bolts of the fuel tank (21 N.m)**,
 - the **bolt of the fuel tank filler neck (21 N.m)**.
- Refit:
 - the left underbody protectors,
 - the silencer heat shield,
 - the automatic parking brake mounting.
- Torque tighten the **bolts of the automatic parking brake mounting (21 N.m)**.

4-WHEEL STEERING



124696

- Put the rear axle in « half-load » position.

Note:

The «half-load» position corresponds to a length of (**488 mm**) between the upper shock absorber bolt and the rear axle opening of the lower shock absorber bolt.

- the exhaust silencer (see **Silencer: Removal - Refitting**) (19B, Exhaust),

- the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

- Torque tighten the **rear guard bolts (8 N.m)**.

- Tighten to torque:

- the **new bolts of the rear axle in « half-load position » (180 N.m)**,

- the **new lower bolts of the shock absorber (115 N.m)**.

DISCHARGE LAMPS

- Clip on the headlight beam adjustment sensor linkage.

- Refit:

- the rear axle guards,

4-WHEEL STEERING

ELECTRONIC PARKING BRAKE

- With the ignition on, release the automatic parking brake:
 - pull the handle,
 - press the button.

Note:

The parking brake system can be heard locking,
the play compensation is set automatically

- Check that the brake cables are correctly fitted in their housings.
- With the parking brake released, pull on the end of the cable; there must be a residual play of **1 to 2 mm**.

FOOT BRAKE MANUAL CONTROL

- Adjust the parking brake if not working properly (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page 37A-33) .
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page 30A-19) .
- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page 30A-32) .

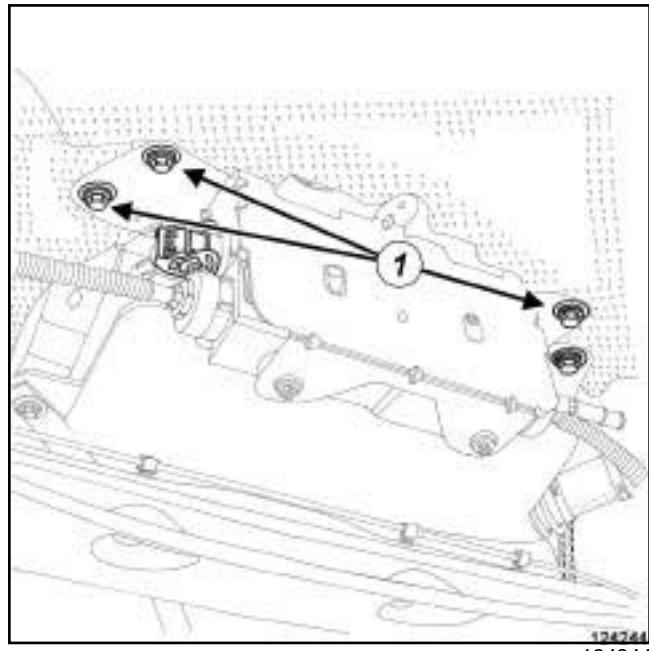
4-WHEEL STEERING

Equipment required

component jack

Tightening torques 

four wheel drive actuator's new nuts	84 N.m
earth strap nut	8 N.m
fuel tank bolts	21 N.m
fuel tank neck's earth bolt	21 N.m
bolts on the automatic parking brake control unit support	21 N.m



124244

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IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**).

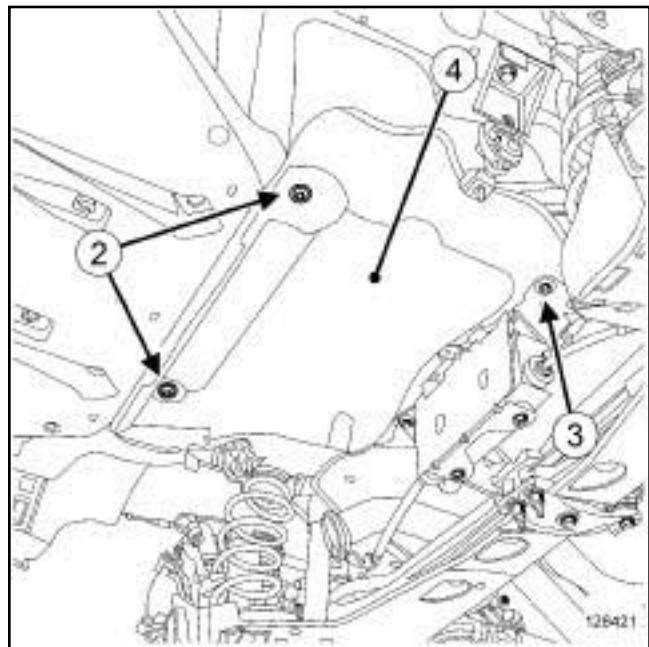
WARNING

If the actuator is dropped or if there is a trace of impact on its body or on one of its components (sensor, ball joint, connectors), the actuator should be replaced.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the silencer (see **Silencer: Removal - Refitting**) (19B, Exhaust).

- Remove the bolts (1) from the support of the control unit of the automatic parking brake.



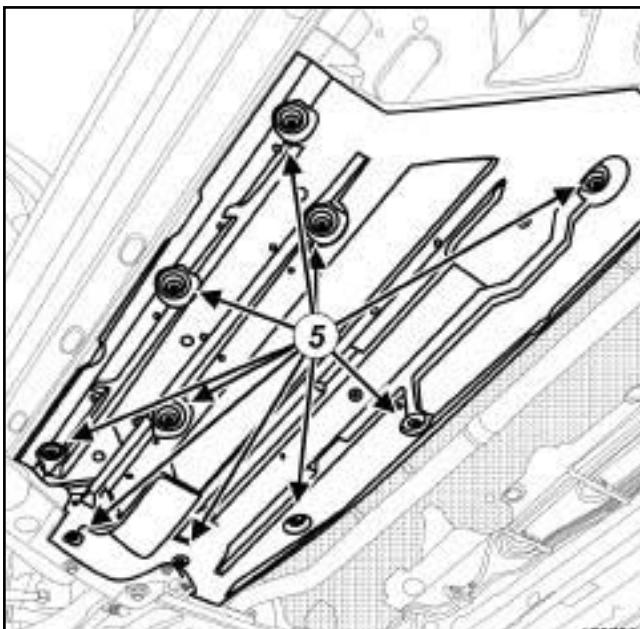
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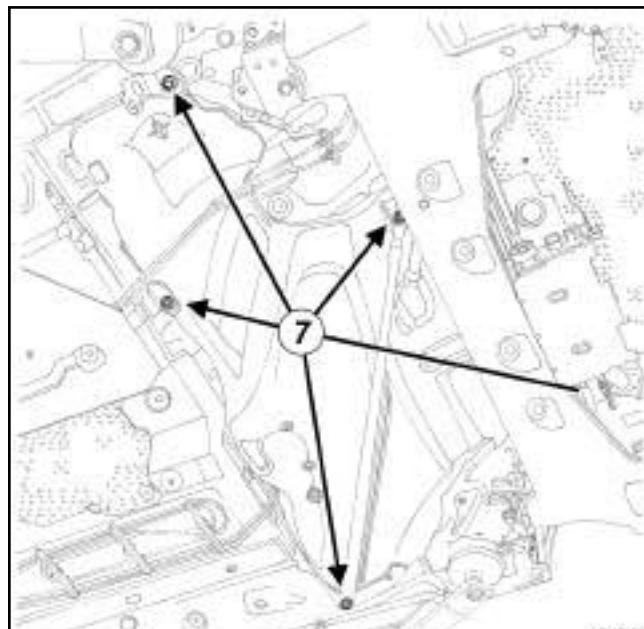
- Remove:

- the silencer heat shield clips (2) ,
- the bolt (3) from the silencer heat shield,
- the silencer heat shield (4) .

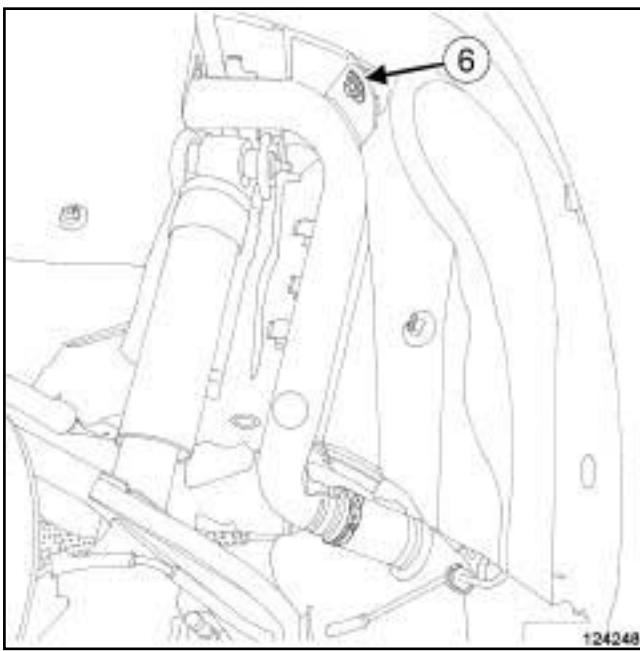
4-WHEEL STEERING



123780

124243
124243 Remove:

- the left-hand underbody protector nuts (5) ,
- the left-hand underbody protectors.

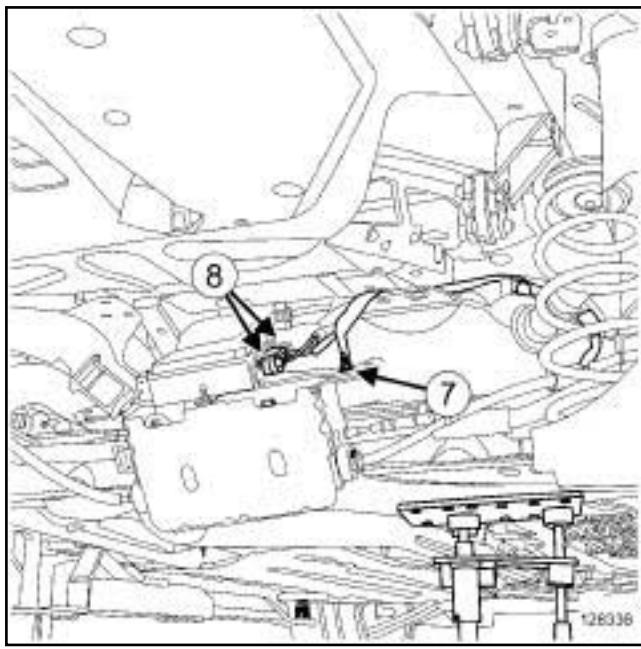


124248

 Remove the bolt (6) from the fuel tank filler neck. Position a **component jack** under the tank. Undo the fuel tank bolts (7) . Lower the tank to gain access to the four wheel drive actuator wiring.**II - OPERATION FOR REMOVAL OF PART CONCERNED** Mark:

- the routing of the four-wheel drive actuator wiring,
- the position of the four-wheel drive actuator linkage, on the compensator side,
- the position, head down, of the four-wheel drive actuator bolts.

4-WHEEL STEERING

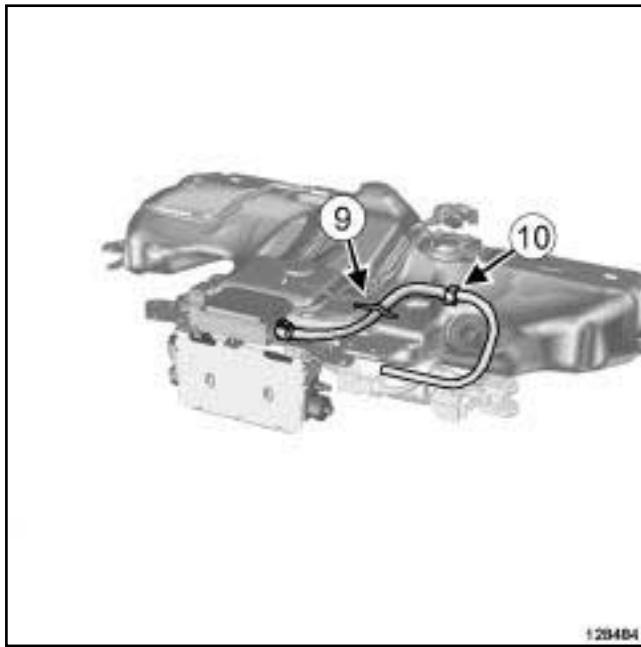


- Remove the nut (7) from the earth strap.

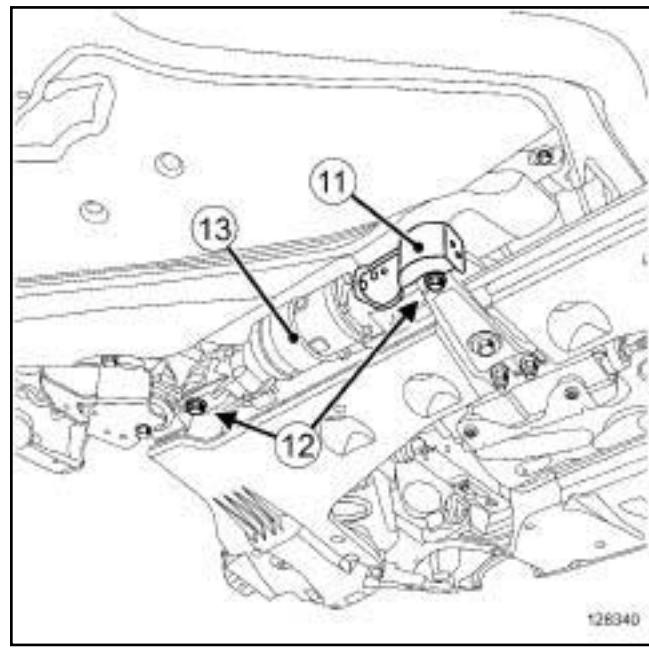
WARNING

The earth strap nut is specific. Do not swap it with other nuts.

- Disconnect the connectors (8) .



- Unclip the wiring strap (9) .
- Unclip the wiring at (10) .



- Remove the ball joint protector (11) .
- Mark the location of the bolts (12) on the four-wheel drive actuator.

Note:

The wiring and the actuator garter are areas which should not be touched. Handle the actuator by its casing.

- Remove:
 - the bolts (12) from the four-wheel drive actuator,
 - the four wheel steering actuator (13) .

REFITTING**I - REFITTING PREPARATION OPERATION**

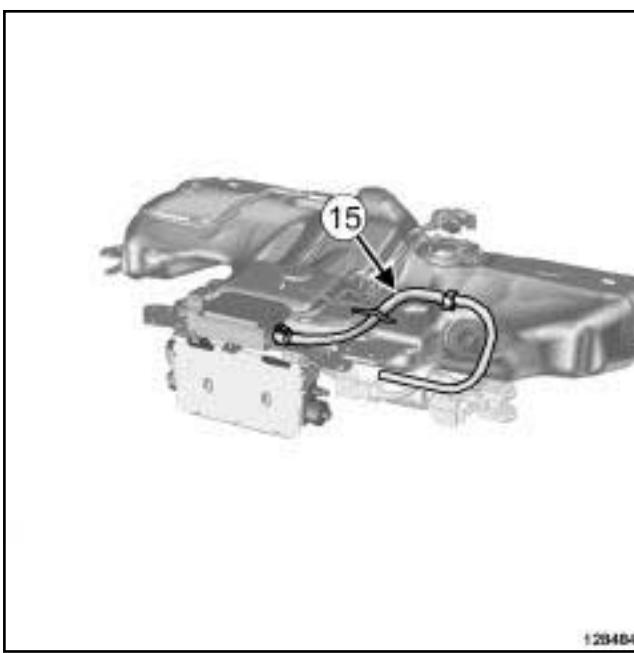
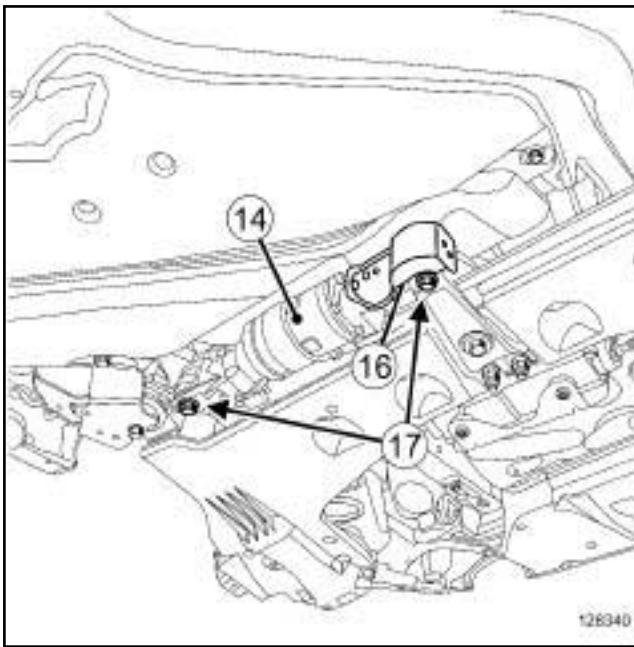
- Always replace the four wheel drive actuator nuts.
- Check the condition of the rubber bush between the rear axle and the four wheel drive actuator. If the rubber bush in the forged wrench is damaged, replace the rubber bush (see 33A, Rear axle components, Rear axle rubber bush - 4-wheel steering actuator: Removal - Refitting, page 33A-53) .

128484

128340

4-WHEEL STEERING

II - REFITTING OPERATION FOR PART CONCERNED

 Ensure:

- the position of the four wheel drive actuator (14) ,
 - the routing of the wiring (15) ,
 - the position of the actuator (16) linkage on the compensator,
 - the position, head down, of the actuator bolts (17) .
- Refit the four wheel drive actuator by starting with the linkage on the rear axle side and then on the compensator side.

- Clip the wiring strap.
- Attach the actuator wiring on the fuel tank.
- Connect the connectors.
- Refit the earth strap.
- Tighten to torque:
 - the **four wheel drive actuator's new nuts (8 N.m)**,
 - the **earth strap nut (8 N.m)**.
- Refit the ball joint protector.

III - FINAL OPERATION

- Refit the fuel tank.
- Tighten to torque:
 - the **fuel tank bolts (21 N.m)**,
 - the **fuel tank neck's earth bolt (21 N.m)**.
- Refit:
 - the underbody protectors,
 - the silencer heat shield,
 - the automatic parking brake control unit support,
 - the silencer (see **Silencer: Removal - Refitting (19B, Exhaust)**) .
- Torque tighten the **bolts on the automatic parking brake control unit support (21 N.m)**.
- Connect the battery (see **Battery: Removal - Refitting (80A, Battery)**).
- Check the geometry of the axle assemblies (see **30A, General information, Axle assemblies: Check**, page 30A-19) .

4-WHEEL STEERING

Special tooling required

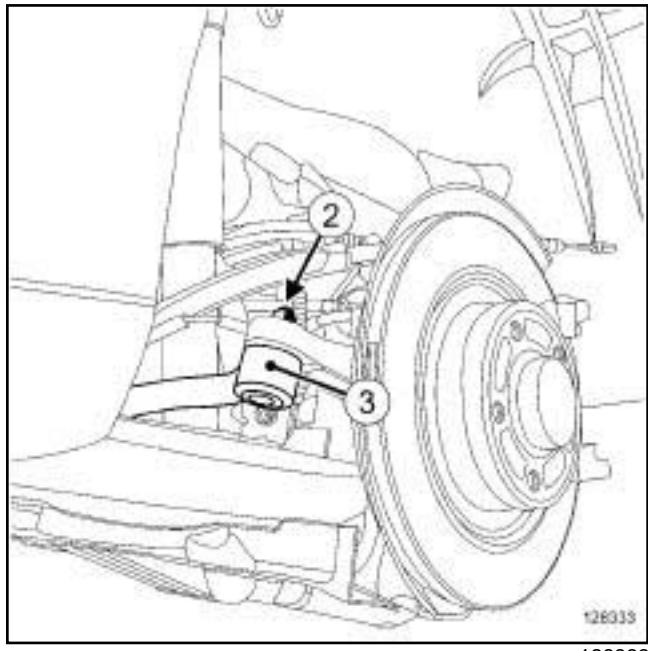
Tav. 476 Ball joint extractor.

Tightening torques eccentric bolt new nuts 90 N.m
while aligning the marks

track rod ball joint new nut 37 N.m

IMPORTANT

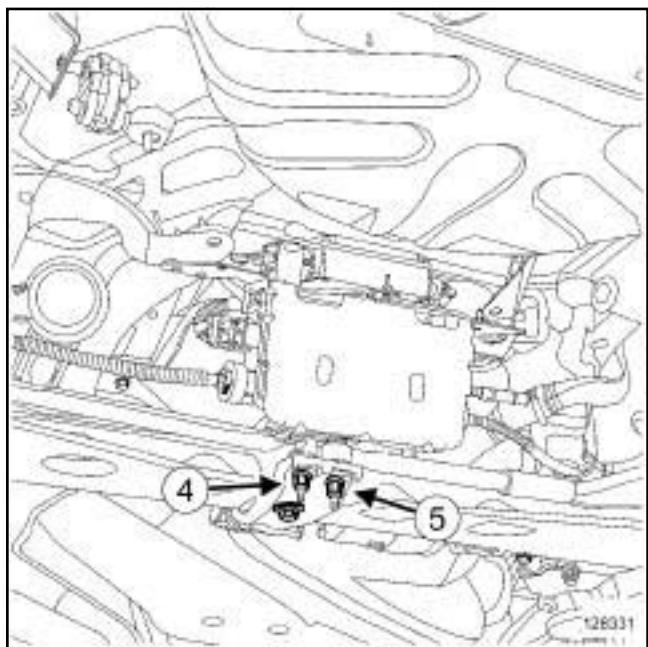
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 33A, **Rear axle components**, **Rear axle components: Precautions for the repair**, page 33A-1).



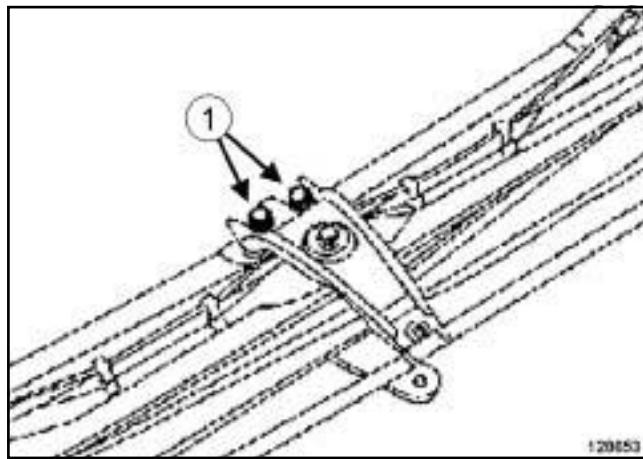
128333

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).
- Disconnect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Remove the wheel (see 35A, **Wheels and tyres**, **Wheel: Removal - Refitting**, page 35A-1).



128331

II - OPERATION FOR REMOVAL OF PART CONCERNED

128653

- Note the position of the eccentric bolts (1) on the compensator.

- Loosen without removing:
 - the ball joint (2) nut (3) ,
 - the nuts (4) and (5) of the con rods, compensator side.
- Remove the ball joint (2) nut.
- Extract the ball joint (3) using the tool (**Tav. 476**).
- Remove:
 - the « bolt - nut » assembly from the track rod,
 - the track rod.

REAR AXLE COMPONENTS

Rear track rod: Removal - Refitting

33A

4-WHEEL STEERING

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the ball joint nut,
 - the track end nut.
- Depending on their condition, replace the bolts and the eccentric washers.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the track rod.
- Align the eccentric bolt and compensator marks.
- Tighten to torque:
 - the **eccentric bolt new nuts while aligning the marks (90 N.m)**,
 - the **track rod ball joint new nut (37 N.m)**.

III - FINAL OPERATION.

- Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Run a check on the axle assemblies' geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**) .

REAR AXLE COMPONENTS

Rear axle rubber bush - 4-wheel steering actuator: Removal - Refitting

33A

4-WHEEL STEERING

Special tooling required	
Tar. 1850	RR axle bearing removal - refitting tool
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.

IMPORTANT

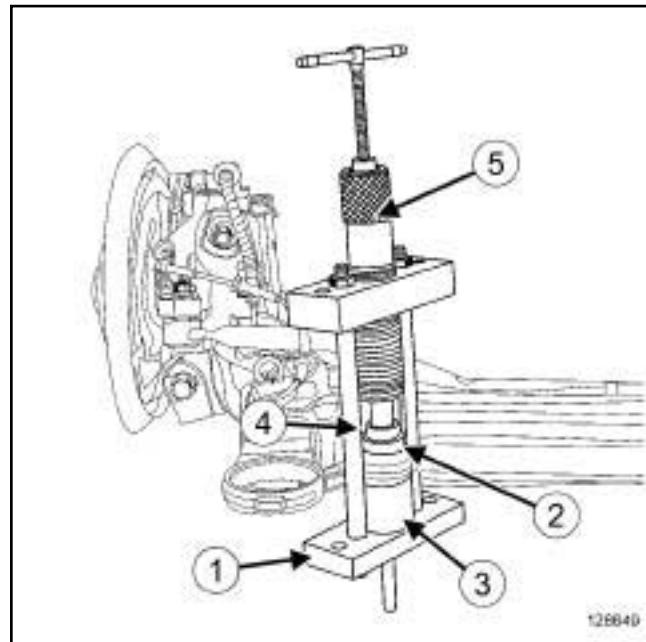
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **33A, Rear axle components, Rear axle components: Precautions for the repair, page 33A-1**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the silencer (see **Silencer: Removal - Refitting**) (19B, Exhaust),
 - the rear axle (see **33A, Rear axle components, Complete rear axle system: Removal - Refitting, page 33A-33**),
 - the four wheel drive actuator (see **33A, Rear axle components, 4-wheel steering actuator: Removal - Refitting, page 33A-47**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



128649

- Assemble the jack's support (1) of the tool (**Tar. 1850**).
 - Fit the tool's (**Tar. 1850**) components in the following order:
 - the tool (**Tar. 1850**) cup (2) on the rubber bush « marking C1 » ,
 - the tool (**Tar. 1850**) cup (3) under the rubber bush « marking C3 » ,
 - the cup's centring shaft (4) ,
 - the jack's support (1) ,
 - the jack (5) (**Tav. 1420-01**) on its support.
 - Bring the jack's rod into contact with the cups centring shaft.
 - Lower the jack's rod using the handle.
 -
- Note:

When the jack's rod reaches end of travel, loosen the handle, then repeat the two previous steps.
- Remove:
 - the rubber bush,
 - the (**Tar. 1850**).

REAR AXLE COMPONENTS

Rear axle rubber bush - 4-wheel steering actuator: Removal - Refitting

33A

4-WHEEL STEERING

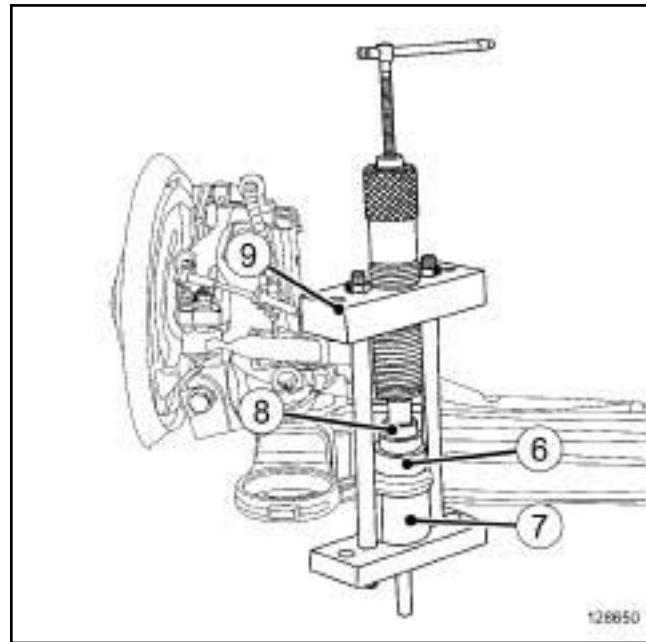
REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the four wheel drive actuator nuts.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the rubber bush on the rear axle.



128650

- Refit the jack on its support as far as possible.
- Fit the tool's (Tar. 1850) components in the following order:
 - the tool (Tar. 1850) cup (6) on the rubber bush, « marking C2 »
 - the tool (Tar. 1850) cup (7) under the rear axle, « marking C3 »
 - the cup's centring shaft (8) ,
 - the support (9) with the jack.
- Bring the jack's rod into contact with the cups' centring shaft.
- Lower the jack's rod using the handle.
-

Note:

The fitting dimension of the rubber bush is determined by the depth of the cup (6) , « marking C2 » .

- Turn the jack handle to bring the cup into contact with the cup (6) , « marking C2 » into contact with the forged wrench.
- Remove the (Tar. 1850).

III - FINAL OPERATION.

- Refit:
 - the four wheel drive actuator (see 33A, Rear axle components, 4-wheel steering actuator: Removal - Refitting, page 33A-47) ,

REAR AXLE COMPONENTS

Rear axle rubber bush - 4-wheel steering actuator: Removal - Refitting

33A

4-WHEEL STEERING

- the rear axle (see **33A, Rear axle components, Complete rear axle system: Removal - Refitting, page 33A-33**) ,

- the silencer (see **Silencer: Removal - Refitting** (19B, Exhaust).

Connect the battery (see **Battery: Removal - Refitting** (80A, Battery).

Run a check on the axle assemblies geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

REAR AXLE COMPONENTS

Compensator: Removal - Refitting

33A

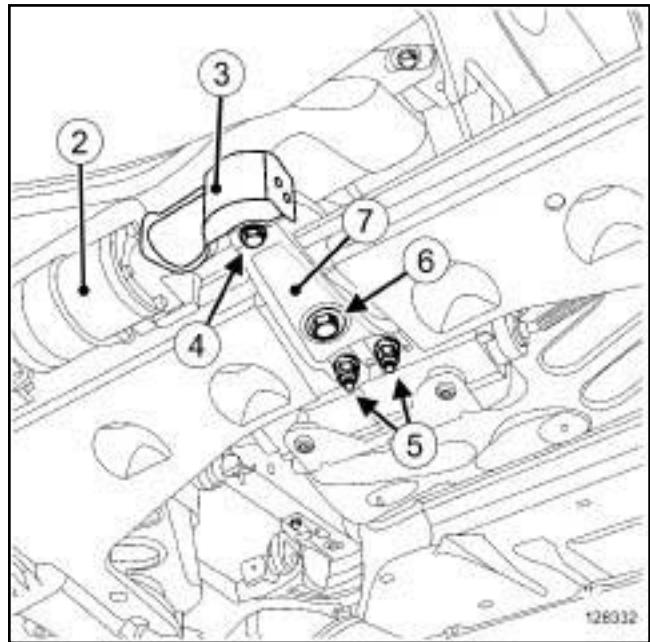
4-WHEEL STEERING

Tightening torques

new bolts of the compensator	105 N.m
new nut of the four wheel drive actuator	84 N.m
eccentric bolt new nuts by lining up the marks	90 N.m

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 33A, Rear axle components, Rear axle components: Precautions for the repair, page 33A-1).



128332

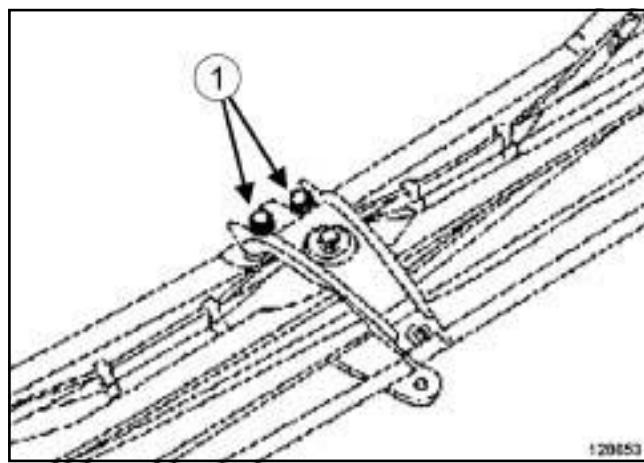
128332

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Switch off the ignition.
- Disconnect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

II - OPERATION FOR REMOVAL OF PART CONCERNED



128653

- Mark the position of the eccentric bolts (1) on the compensator.

- Attach the four wheel drive actuator.
- Remove:
 - the ball joint cover (3),
 - the four wheel drive actuator bolt (4).
- Attach the track rods.
- Remove:
 - the bolts (5) from the track rods,
 - the compensator bolts (6),
 - the compensator (7).

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the four wheel drive actuator nut,
 - the track rod nuts,
 - the compensator bolts.
- Note:
 - Visually check the condition of the compensator rubber bushes.
 - If a bush is damaged, replace the compensator.
- Clean the cage bolt threads of the compensator bolts.

REAR AXLE COMPONENTS

Compensator: Removal - Refitting

33A

4-WHEEL STEERING

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the compensators.

Note:

The compensator torque tightening is carried out with:

- the track rod eccentric bolts in the central housing position,
- the actuator bolts in place.

- Tighten to torque and in order:

- the **new bolts of the compensator (105 N.m)**,
- the **new nut of the four wheel drive actuator (84 N.m)**,
- the **eccentric bolt new nuts by lining up the marks (90 N.m)**.

- Refit the four wheel drive actuator ball joint cover.

III - FINAL OPERATION.

- Connect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Run a check on the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

4-WHEEL STEERING

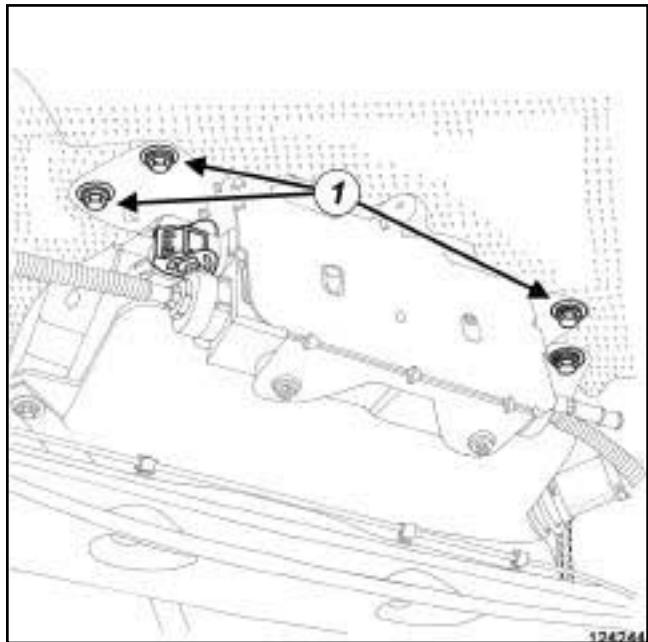
Tightening torques 

four wheel steering computer nuts	8 N.m
earth strap nut	8 N.m
bolts on the automatic parking brake control unit support	21 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair

- (see **33A, Rear axle components, Rear axle components: Precautions for the repair**, page **33A-1**) ,
- (see **Vehicle: Precautions for the repair**) .

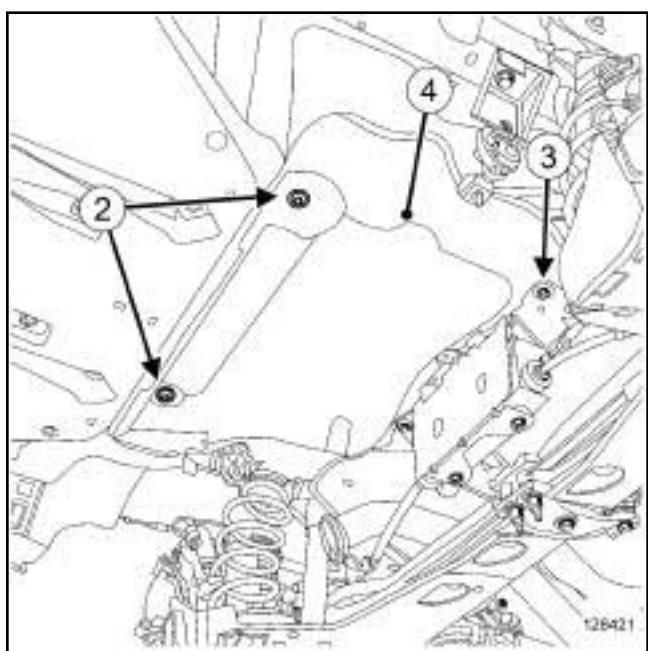


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 Remove:

- the bolts (1) from the automatic parking brake control unit support,
- the exhaust silencer (see **Silencer: Removal - Re-fitting**) (19B, Exhaust).



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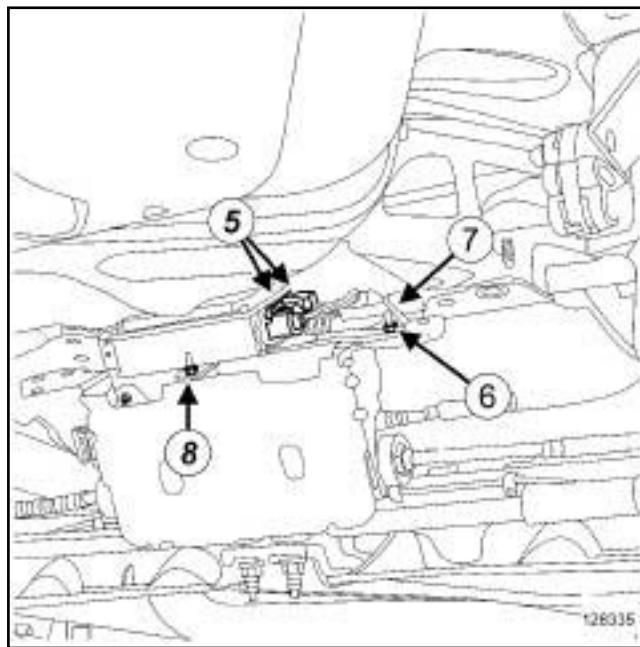
128421

 Remove:

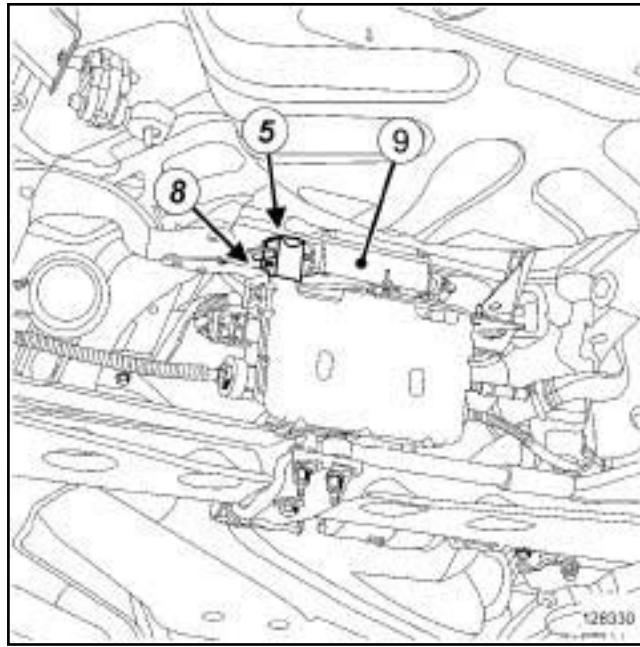
- the silencer heat shield clips (2) ,
- the bolt (3) from the silencer heat shield,
- the silencer heat shield (4) .

4-WHEEL STEERING

II - OPERATION FOR REMOVAL OF PART CONCERNED



128335



128330

- Disconnect the connectors (5) from the four wheel steering computer.

**WARNING**

The earth strap nut is specific. Do not swap it with other nuts.

Remove:

- the earth strap nut (6) ,

- the earth strap (7) ,
- the nuts (8) from the four wheel steering computer,
- the four wheel steering computer (9) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the four wheel steering computer,
 - the earth strap.
- Tighten to torque:
 - the **four wheel steering computer nuts (8 N.m)**,
 - the **earth strap nut (8 N.m)**.
- Check the sealing of the connectors of the four wheel steering computer (**see Connector: Check**) (Technical Note 6015A, 88A, Repairing electrical wiring).
- Connect the four wheel steering computer connectors.

II - FINAL OPERATION

- Refit:
 - the silencer heat shield,
 - the exhaust silencer (**see Silencer: Removal - Refitting**) (19B, Exhaust),
 - the automatic parking brake control unit support.
- Torque tighten the **bolts on the automatic parking brake control unit support (21 N.m)**.
- Connect the battery (**see Battery: Removal - Refitting**) (80A, Battery).

16" ALUMINIUM WHEELS or 17" ALUMINIUM WHEELS or 18" ALUMINIUM WHEELS

Tightening torques

wheel bolts	145 N.m
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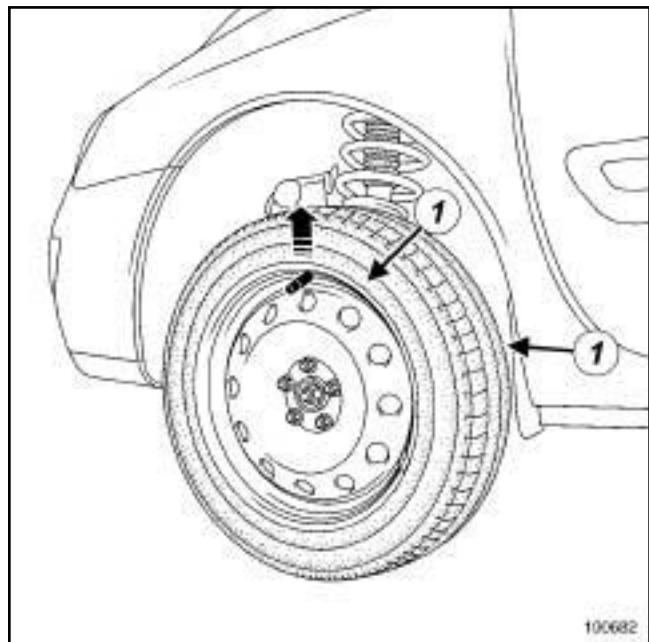
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**).
- Release the parking brake.
- Position the wheel so that the valve is at the top.
- Mark the position of the wheel on the hub.

Note:

This mark is required in order to:

- Note the original position of the wheel on the hub,
- perform the balancing operation.



100682

- Strike around the edge of the tyre walls (1) several times using a mallet on the inner and outer surfaces of the wheel to detach the wheel.
- Remove:
 - the wheel bolts,
 - the wheel.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Loosen the wheel bolts with the wheel on the ground.

Note:

Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- Raise the lift.

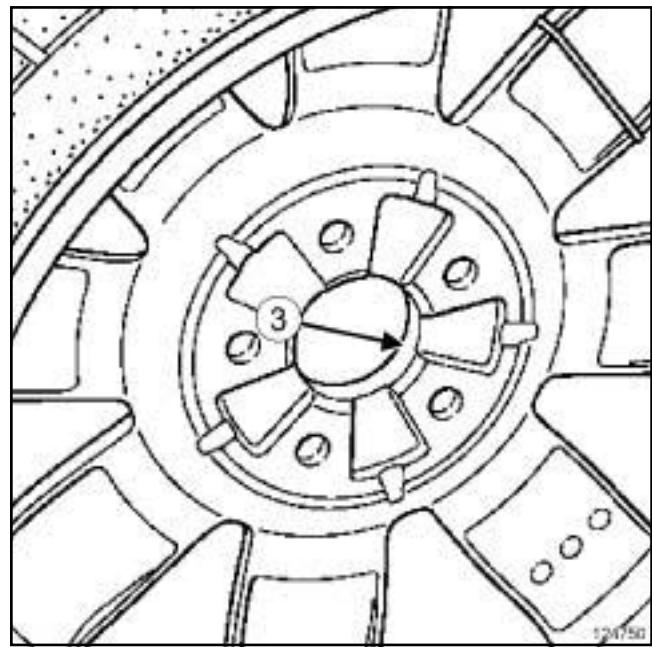
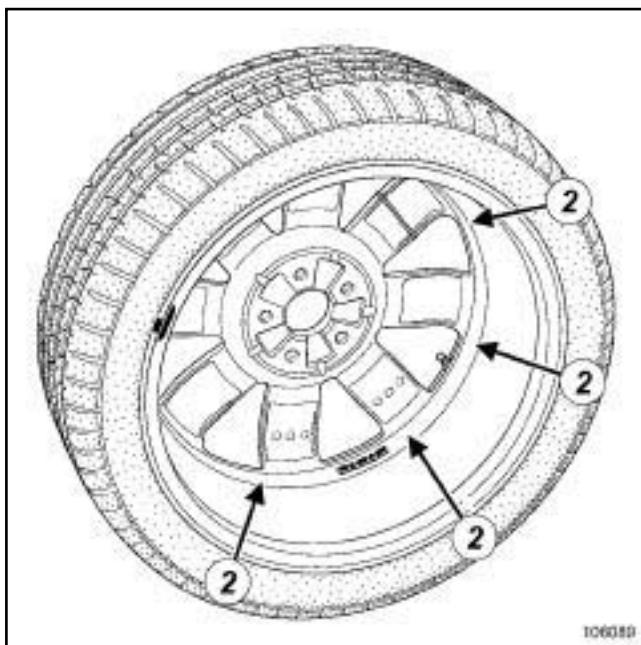
Remove:

- the wheel bolts,
- the wheel.

If the wheel cannot be removed after the bolt has been undone:

- Position all the wheel bolts.
- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.
- Undo the wheel bolts by one turn.

16" ALUMINIUM WHEELS or 17" ALUMINIUM WHEELS or 18" ALUMINIUM WHEELS

If this procedure does not work:

- Strike the inner surface of the wheel (2) using a mallet and a wooden block to detach it.

Note:

Do not strike the surface of the wheel using excessive force as this may damage it.

- Remove:

- the wheel bolts,
- the wheel.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Clean the hub carrier using a wire brush.

Note:

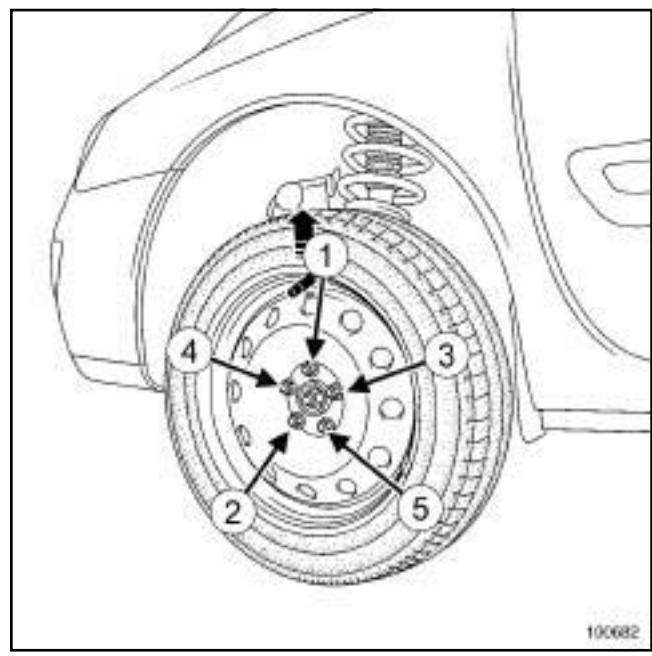
there are two types of wheel bolts for aluminium and steel wheel rims; do not swap them.

- Check the condition of the tyre.
- Do not move or remove the balance weights.

II - REFITTING OPERATION FOR PART CONCERNED

- Clean the mating surfaces between the wheel and the hub carrier using a wire brush.

- Coat the wheel mating face (3) with **COPPER ANTI-SEIZURE GREASE** (see **Vehicle: Parts and consumables for the repair**)
- Align the mark on the wheel with the mark made on the hub when it was removed.
- Fit the wheel to the vehicle, positioning the valve at the top.
- Insert the wheel bolts.



- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.

WHEELS AND TYRES

Wheel: Removal - Refitting

35A

16" ALUMINIUM WHEELS or 17" ALUMINIUM WHEELS or 18" ALUMINIUM WHEELS

- Pretighten the wheel bolts to **30 N.m**, with the wheel suspended, starting with the bolts at the bottom.
- Rotate the wheel through **180°** to bring the valve into the bottom position.
- Position the vehicle on its wheels.
- Torque tighten in order the **wheel bolts (145 N.m)**.

16" STEEL WHEELS or 17" STEEL WHEELS

Tightening torques

wheel bolts	130 N.m
-------------	---------

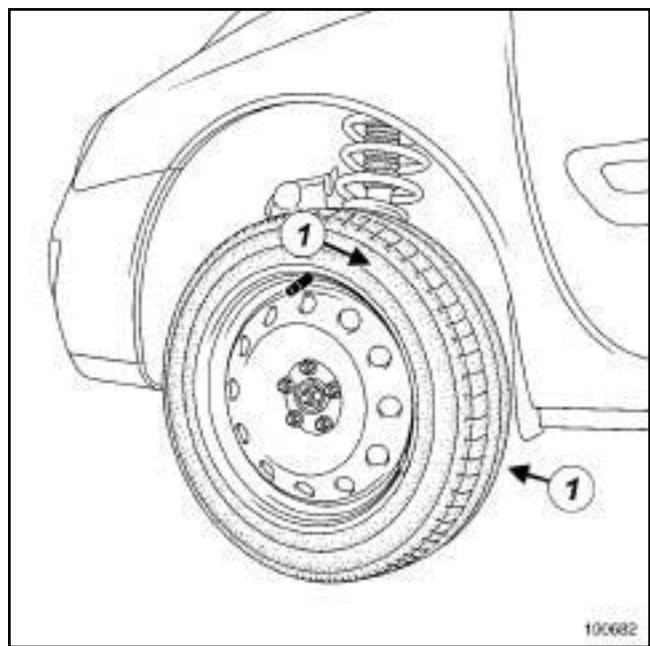
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Release the parking brake.
- Remove the trim.
- Position the wheel so that the valve is at the top.
- Mark the position of the wheel on the hub.

Note:

This mark is required in order to:

- Note the original position of the wheel on the hub,
- perform the balancing operation.



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- Strike around the edge of the tyre walls (1) several times using a mallet on the inner and outer surfaces of the wheel to detach the wheel.
- Remove:
 - the wheel bolts,
 - the wheel.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Loosen the wheel bolts with the wheel on the ground.

Note:

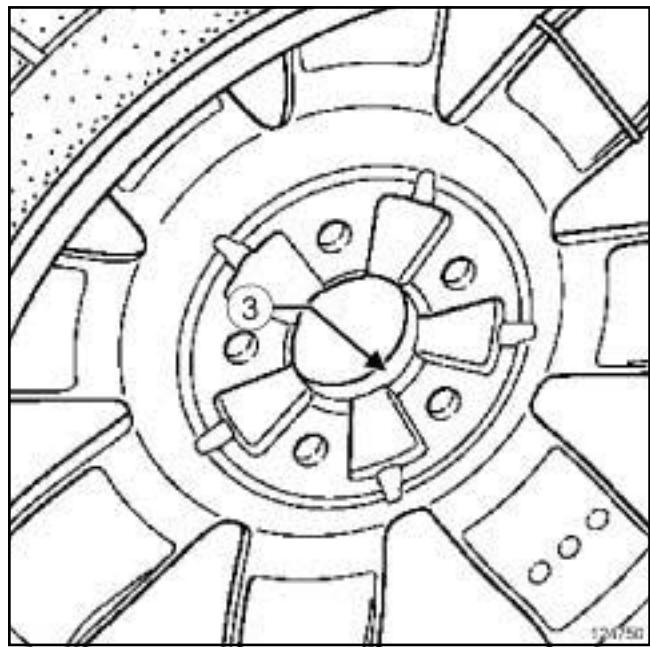
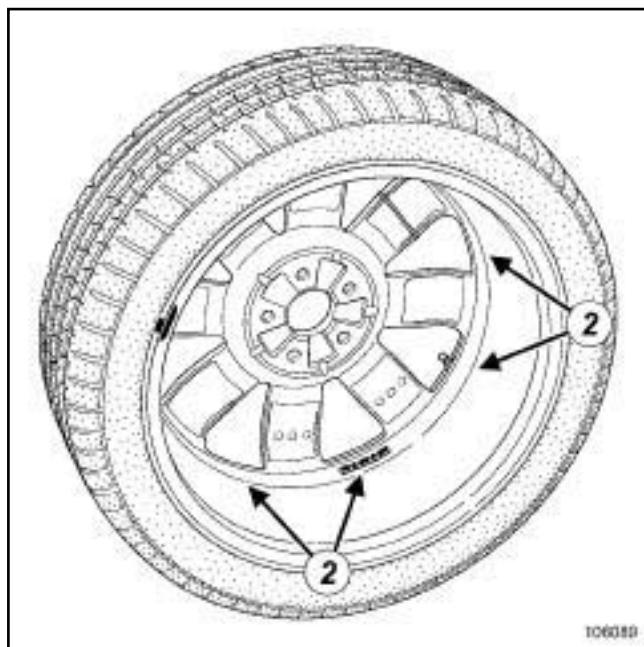
Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- Raise the lift.
- Remove:
 - the wheel bolts,
 - the wheel.

If the wheel cannot be removed after the bolt has been undone:

- Position all the wheel bolts.
- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.
- Undo the wheel bolts by one turn.

16" STEEL WHEELS or 17" STEEL WHEELS

If this procedure does not work:

- Strike the inner surface of the wheel (2) using a mallet and a wooden block to detach it.

Note:

Do not strike the surface of the wheel using excessive force as this may damage it.

- Remove:

- the wheel bolts,
- the wheel.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Clean the hub carrier using a wire brush.

Note:

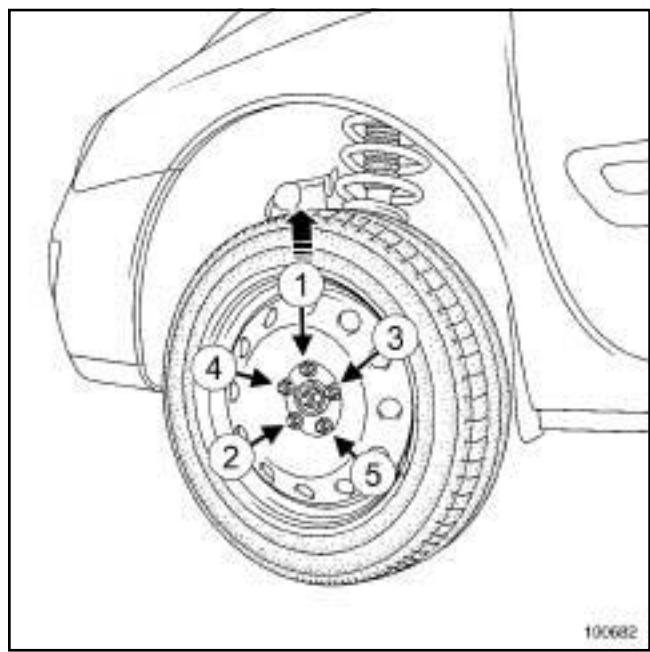
there are two types of wheel bolts for alloy and steel wheels; do not swap them.

- Check the condition of the tyre.
- Do not move or remove the balance weights.

II - REFITTING OPERATION FOR PART CONCERNED

- Clean the mating surfaces between the wheel and the hub carrier using a wire brush.

- Coat the wheel mating face (3) with **COPPER ANTI-SEIZURE GREASE** (see **Vehicle: Parts and consumables for the repair**)
- Align the mark on the wheel with the mark made on the hub when it was removed.
- Fit the wheel to the vehicle, positioning the valve at the top.
- Insert the wheel bolts.



- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.

WHEELS AND TYRES

Wheel: Removal - Refitting

35A

16" STEEL WHEELS or 17" STEEL WHEELS

- Pretighten the wheel bolts to **30 N.m**, with the wheel suspended, starting with the bolts at the bottom.
- Rotate the wheel through **180°** to bring the valve into the bottom position.
- Position the vehicle on its wheels.
- Tighten in order and to torque the **wheel bolts (130 N.m)**.
- Refit the trim piece.

I - PREREQUISITES FOR WHEEL BALANCING

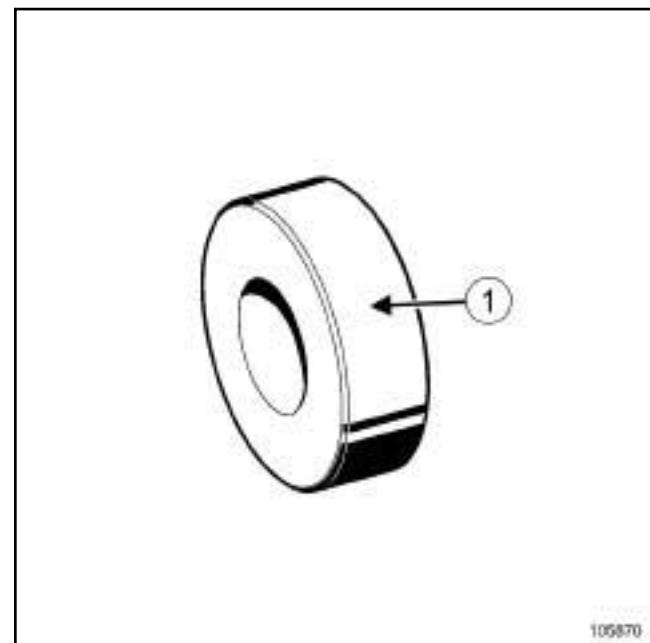
- Wheel balancing is a measurement operation.
Several conditions must be met to achieve a reliable result in a single operation.
- The wheel balancer must be installed in accordance with the manufacturer's instructions.
- It is essential to calibrate the balancer according to the frequency recommended by the manufacturer.
- Do not grease the threaded shaft.
- Check the condition of the supports, centring components and mountings.
- Replace any faulty parts (see manufacturer's instructions).
- The wheel and the wheel balancer must be clean.

Driver's perception

- If the wheels are not correctly balanced this causes the steering wheel and/or the vehicle floor to vibrate.
These vibrations appear between **54 mph (90 km/h)** and **90 mph (150 km/h)**.

II - BALANCING PREPARATION OPERATION

- Adjust the tyre pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page **35A-16**).
- Always carry out a road test for a minimum distance of **1 mile (2 km)** before balancing the wheels, in order to remove any flat spots on the tread caused by the vehicle being immobilised.
- Actions to be carried out immediately after the test drive:
 - Position the vehicle on a two-post vehicle lift (see **Vehicle: Towing and lifting**) ,
 - raise the vehicle,
 - leave the four wheels hanging free,
 - release the parking brake.



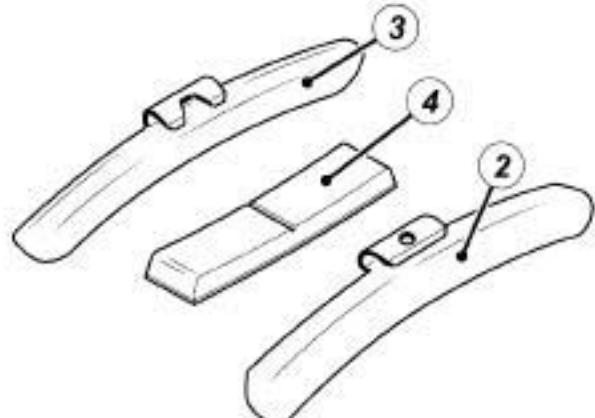
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Note:

The ring is available from the supplier of the equipment used.

To reproduce the exact vehicle wheel assembly, use a ring (1) of diameter:

- 66 mm**
- There are three types of weight:



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- (2) Steel wheel with flange
- (3) Alloy wheel with flange
- (4) Alloy wheel without flange

In some countries, the use of lead weights is forbidden; in this case it is recommended to use **ZAMAK** weights instead.

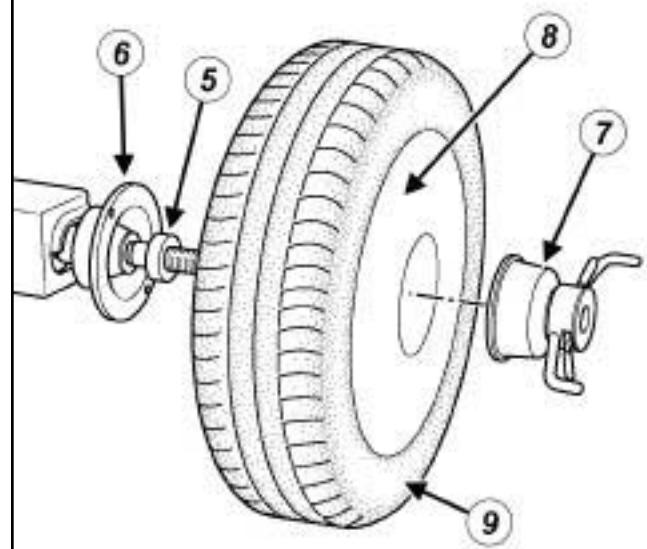
Only use weights provided by the Parts Department.

Remove the wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Always clean the wheel, disc, and hub bearing surfaces.

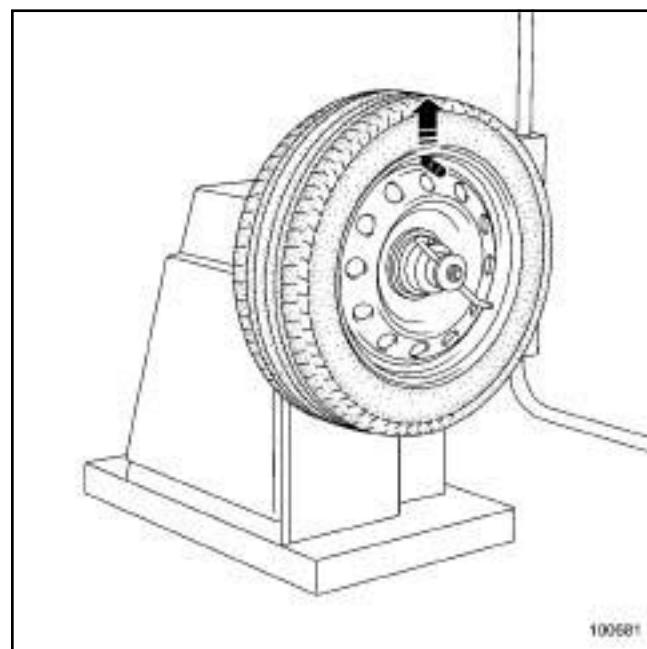
III - PROCEDURE FOR BALANCING THE WHEEL IN QUESTION

- Make sure that the wheel balancer bearing surface and all the centring equipment (ring, thrust plate, etc.) are kept clean.
- Try not to scratch the (alloy) wheel rim with the wheel tightening device.



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- The wheel is fitted on the wheel balancer as follows:
 - (5) ring,
 - (6) wheel balancer back-plate,
 - (7) wheel tightening device (certain alloy wheels require a device 200 mm in diameter to ensure that the wheel has been correctly tightened),
 - (8) outer wheel plane,
 - (9) wheel.



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- Place the wheel on the wheel balancer, with the valve at the top, then lock the wheel in place.
- Remove any stones trapped in the tyre tread.

- Enter the specific wheel parameters when starting the wheel balancer.
- Start the wheel balancer and check the wheel balance, which should be **0 g** on each plane of the wheel.
- If this is not the case, remove the old wheel balancing weights and repeat the wheel balancing procedure, checking that the wheel balance equals **0** on each wheel plane.

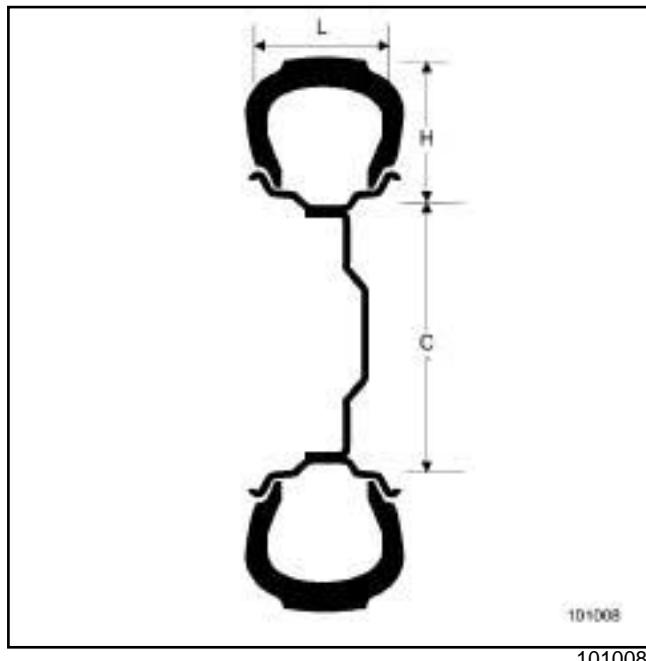
WARNING

To avoid detachment of the balance weights, use only weights which correspond to the vehicle wheel rims.

IV - FINAL OPERATION

- Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

Example of a tyre identification mark: 205/65 R 15 91 V.



Speed code table:

Code	Maximum speed in mph (km/h)
R	170
S	180
T	190
U	200
H	210
V	240
ZR	above 240
W	270
Y	300



205	Tyre width in mm (L)
65	Height/width ratio
R	Radial structure
15	Internal diameter in inches (C)
91	Load index
V	Speed code

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the wheel in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1),
 - the balance weights,
 - the valve mechanism.

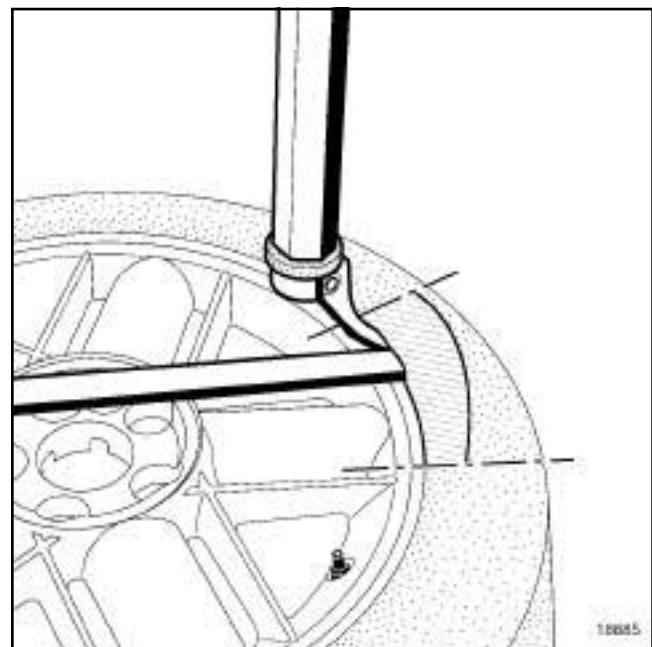
II - OPERATION FOR REMOVAL OF PART CONCERNED

TYRE PRESSURE SENSOR

-

WARNING

To avoid any damage to the sensor, make sure the tyre bead never presses on the sensor.



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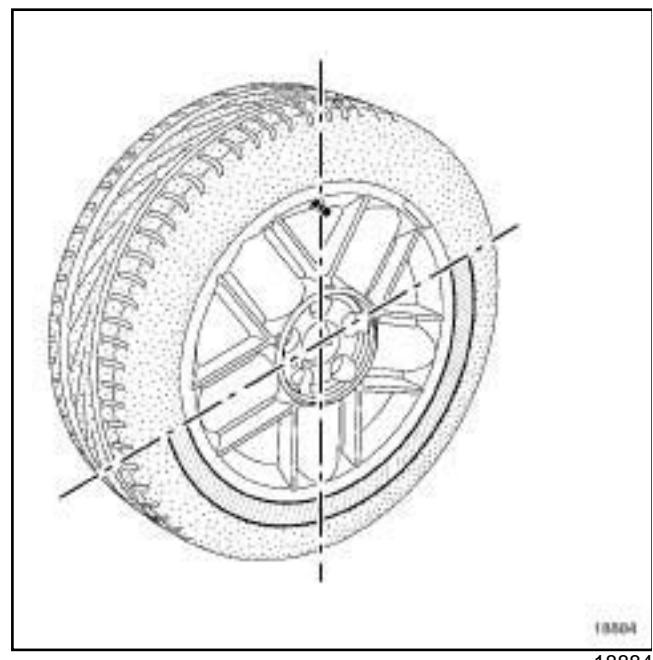
- Position the tyre lever approximately **15 cm** from the valve on the outside of the wheel rim in order to remove the exterior bead from the tyre.
- Remove the exterior bead of the tyre, finishing at the valve.
- Position the tyre lever approximately **15 cm** from the valve on the outside of the wheel rim in order to remove the bead from inside the tyre.
- Remove the interior bead of the tyre, finishing at the valve.

REFITTING

I - REFITTING PREPARATION OPERATION

WITHOUT TYRE PRESSURE SENSOR

- parts always to be replaced:** Tyre valve (13,05, 02,02)



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- Detach:

- the bead from the outside of the tyre, starting with the side opposite the valve,
- the bead from the inside of the tyre.

- Lubricate the two tyre beads correctly using the **TYRE PASTE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- Engage the lower tyre bead approximately **15 cm** after the valve.

- Finish fitting the tyre at the valve.
- Fit the exterior bead approximately **15 cm** after the valve using the tyre lever.
- Inflate the tyre to **3.5 bar** to press the tyre beads against the wheel rim.

III - FINAL OPERATION

- Refit the valve mechanism.
- Inflate the tyre to the recommended pressure (see **35A, Wheels and tyres, Tyre pressure: Identification**, page **35A-16**).

Note:

It is not necessary to drive the vehicle before and after a new wheel is balanced.

- Balance the wheel (see **35A, Wheels and tyres, Wheel: Balancing**, page **35A-7**).
- Refit the wheel in question (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

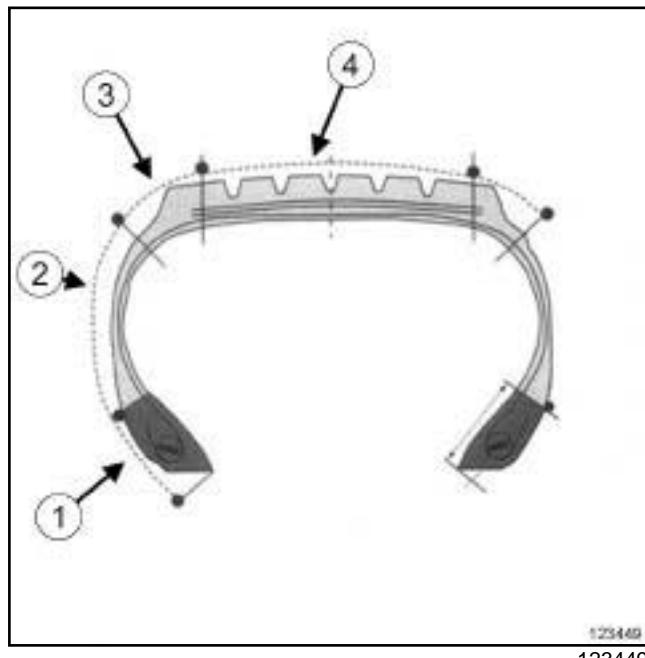
Perforation

There are two types of perforation:

- single perforation: perforation caused by nail etc. not requiring a reinforced tyre boot and which can be repaired when the tyres are cold,
- damage: rubber detachment etc. requiring repair and reinforcement of damaged plies.

This repair method only covers single perforations.

Tyre areas



Areas which cannot be repaired:

- tyre bead (1) ,
- shoulder (3) .

Areas which can be repaired:

- sidewall (2) ,
- crown (4) .

Perforation table *

	Area	
	Crown: max Ø in mm	Sidewall: max Ø in mm
LV speed rating less than or equal to T	6	3
LV speed rating greater than or equal to H	6	0

LCV load index less than or equal to 121	6	3
HGV load index 122 to 177 (inc.)	10	3

LV: Light Vehicle

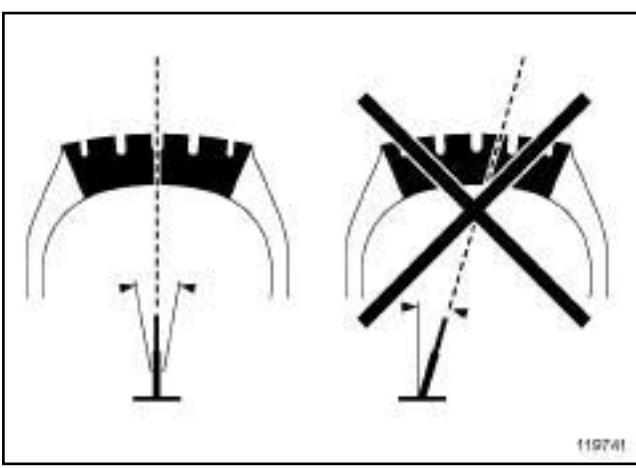
LCV: Light Commercial Vehicle

HGV: Heavy Goods Vehicle

* If the diameter of the puncture is greater than these figures, replace the tyre.

The tyre cannot be repaired if:

- a compulsory marking has been worn away (see **35A, Wheels and tyres, Tyres: Identification**, page **35A-10**) ,
- the interior of the tyre shows signs of under-inflation or overloading,
- the rubber shows signs of chemical damage (hydrocarbons and other corrosive substances),
- incorrect and irreversible repairs have previously been made to the tyre,
- the carcass has been damaged,
- cuts or circumferential wear (cracks) are visible on the interior or exterior of the tyre,
- the tyre bead has been damaged (ply visible),
- the tyre's bead wires are visible, damaged or deformed,
- the tyre shows an irregular wear pattern which may impair vehicle handling,
- the repair requires two tyre boots to be overlapped,
- the manufacturer has expressly prohibited any repairs, in writing,
- there is damage to the shoulder area (junction between the sidewall and the crown),
- the angle of the perforation channel (hole) is greater than 15°.



Tyre inflation kit

using the tyre inflation kit, supplied with vehicles or available from retailers, will leave a film on the inner surface of the tyre.

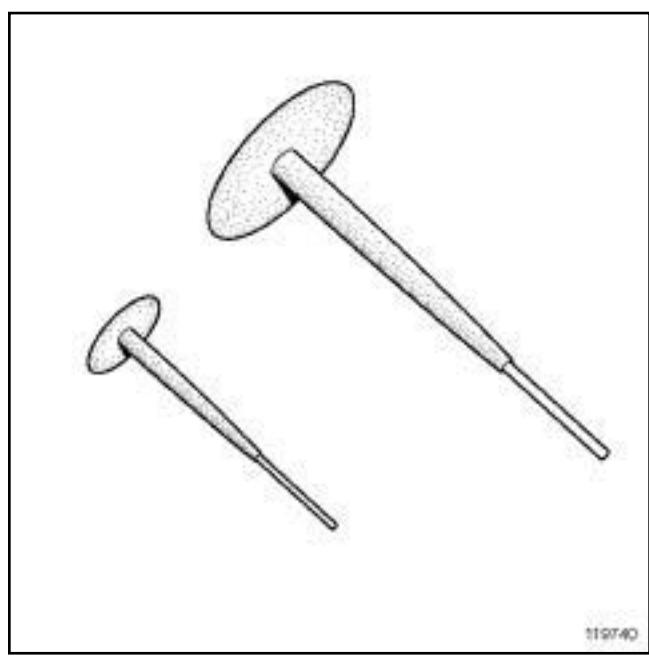
Before carrying out the repair, clean the inner surface of the tyre and the valve with water.

If the tyre cannot be cleaned in this way, contact the tyre supplier for details of cleaning products which can be used.

REPAIR

I - REPAIR PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .
- Inflate the tyre.
- Locate the perforation on the exterior of the tyre and mark it with chalk.
- Remove the tyre.
- Locate the perforation on the interior of the tyre and mark it with chalk.
- Remove the foreign body which caused the puncture.
- Determine the direction of the perforation channel.
- Determine the size of the hole:
 - measure the size of the foreign body,
 - measure the extent of the damage to the tyre.

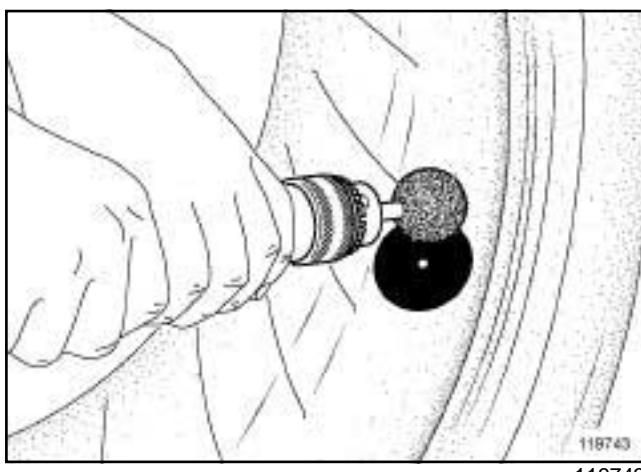


- Choose the size of plug (mushroom type plug) depending on the size of the hole.

II - REPAIR OPERATION



- Use a drill fitted with a suitable bit, perpendicular to the surface of the tyre, to bore the interior then the exterior of the perforation channel.



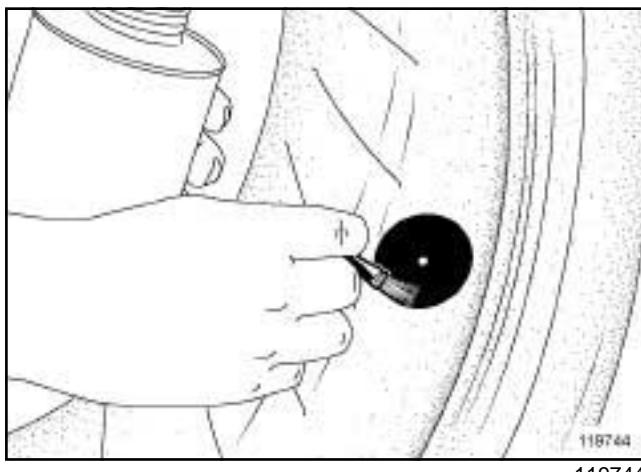
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- Carefully scrape the rubber seal around the perforation, to the size of the base of the plug (mushroom type plug).

Note:

If the rubber seal is damaged during this operation, replace the tyre.

- Remove any dust and remaining particles of rubber using a clean, dry cloth.

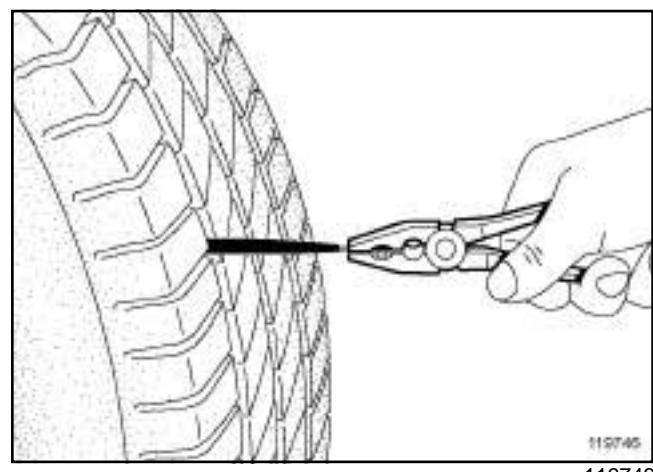


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- Apply the solution to the scraped surface.

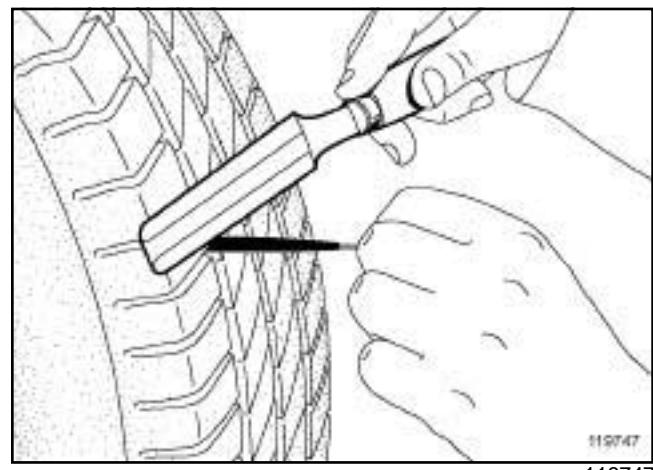
Note:

Respect the required drying time for the solution.



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- Fit the (mushroom type) plug via the interior of the tyre by pulling on it using pliers.
- Press gently on the base of the mushroom plug, inside the tyre.
- Refit the tyre.
- Inflate the tyre (see **35A, Wheels and tyres, Tyre pressure: Identification**, page 35A-16).



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- Cut the protruding end of the stalk without pulling on it.
- Check the tyre seal.

III - FINAL OPERATION.

- Balance the wheel (see **35A, Wheels and tyres, Wheel: Balancing**, page 35A-7).
- Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1).

WHEELS AND TYRES

Tyre pressure: Identification

35A

I - INFLATION

WARNING

If checking the pressure when hot, increase the tyre inflation pressure by **0.2** to **0.3** bar above the recommended pressure.

Engine	Gearbox	Tyre	Tyre inflation pressure when cold (bar)				
			Front		Rear		Emergency spare wheel
			Normal	Motorway	Normal	Motorway	
K4M		195/60 R 16 89H	2.3	2.5	2.0	2.1	2.5
		205/60 R 16 92H	2.1	2.3	2.0	2.0	2.3
		215/50 R 17 95W	2.1	2.3	2.0	2.0	2.3
		215/60 R 16 95V	2.1	2.3	2.0	2.0	2.3
		215/55 R 17 94V	2.1	2.3	2.0	2.0	2.3
M4R		195/60 R 16 89H	2.3	2.5	2.0	2.1	2.5
		205/60 R 16 92H	2.1	2.3	2.0	2.0	2.3
		215/50 R 17 95W	2.1	2.3	2.0	2.0	2.3
		225/45 R 18 95W	2.1	2.3	2.0	2.0	2.3
		215/60 R 16 95V	2.1	2.3	2.0	2.0	2.3
		215/55 R 17 94V	2.1	2.3	2.0	2.0	2.3
F4Rt		215/55 R 16 93 V	2.3	2.6	2.0	2.2	2.6
		215/50 R 17 95 W	2.3	2.6	2.0	2.2	2.6
		225/45 R 18 95 W	2.3	2.6	2.0	2.2	2.6
		215/60 R 16 95 V	2.3	2.5	2.0	2.1	2.5
		215/55 R 17 94 V	2.3	2.5	2.0	2.1	2.5
V4Y		215/50 R 17 95 W	2.3	2.8	2.0	2.3	2.8
		225/45 R 18 95 W	2.3	2.8	2.0	2.3	2.8
K9K		195/60 R 16 89 H	2.3	2.5	2.0	2.1	2.5
		205/60 R 16 92 H	2.1	2.3	2.0	2.0	2.3
		215/50 R 17 95 W	2.1	2.3	2.0	2.0	2.3
		215/60 R 16 95 V	2.1	2.3	2.0	2.0	2.3
		215/55 R 17 94 V	2.1	2.3	2.0	2.0	2.3

WHEELS AND TYRES
Tyre pressure: Identification

35A

Engine	Gearbox	Tyre	Tyre inflation pressure when cold (bar)				
			Front		Rear		Emergency spare wheel
			Normal	Motorway	Normal	Motorway	
M9Ra		205/60 R 16 92 H	2.3	2.5	2.0	2.1	2.5
		215/50 R 17 95 W	2.3	2.5	2.0	2.1	2.5
		225/45 R 18 95 W	2.3	2.5	2.0	2.1	2.5
M9Rb		205/60 R 16 92 H	2.3	2.5	2.0	2.1	2.5
		215/50 R 17 95 W	2.3	2.5	2.0	2.1	2.5
		225/45 R 18 95 W	2.3	2.5	2.0	2.1	2.5
		215/60 R 16 95 V	2.1	2.3	2.0	2.0	2.3
		215/55 R 17 94 V	2.1	2.3	2.0	2.0	2.3
M9R-k	PK4	215/55 R 16 93 V	2.3	2.6	2.0	2.2	2.6
		215/50 R 17 95 W	2.4	2.7	2.0	2.2 (B91) 2.3 (K91, D91)	2.7
		225/45 R 18 95 W	2.4	2.7	2.0	2.2 (B91) 2.3 (K91, D91)	2.7
		215/60 R 16 95 V	2.3	2.5	2.0	2.1	2.5
		215/55 R 17 94 V	2.3	2.5	2.0	2.1	2.5
	AJ0	215/55 R 16 93 V	2.3	2.5	2.0	2.1	2.5
		215/50 R 17 95 W	2.4	2.7	2.0	2.2 (B91) 2.3 (K91) 2.1 (D91)	2.7
		225/45 R 18 95 W	2.4	2.7	2.0	2.2 (B91) 2.3 (K91) 2.1 (D91)	2.7
		215/60 R 16 95 V	2.3	2.5	2.0	2.1	2.5
		215/55 R 17 94 V	2.3	2.5	2.0	2.1	2.5
V9X		215/50 R 17 95 W	2.6	3.0	2.2	2.3	3.0
		225/45 R 18 95 W	2.6	3.0	2.2	2.3	3.0

Wheel offset:

- 16-inch alloy wheel rim: **47 mm**,

- 16-inch steel wheel rim fitted except on 195/60 R 16
89H tyres: **47 mm**,

WHEELS AND TYRES

Tyre pressure: Identification

35A

- 16-inch steel wheel rim fitted on 195/60 R16 89H tyres: **42 mm**,
- emergency spare wheel: **33 ± 1 mm**.

II - SPECIAL NOTES ON VEHICLES FITTED WITH TYRE PRESSURE MONITORING SYSTEM

The UCH is programmed for each set of four tyres.

When assembling a set of "winter" tyres, if the programming has already been carried out, the "summer" or "winter" mode is automatically detected.

IDENTIFICATION

1 - Marking

There are two types of identification marking on the wheel rims:

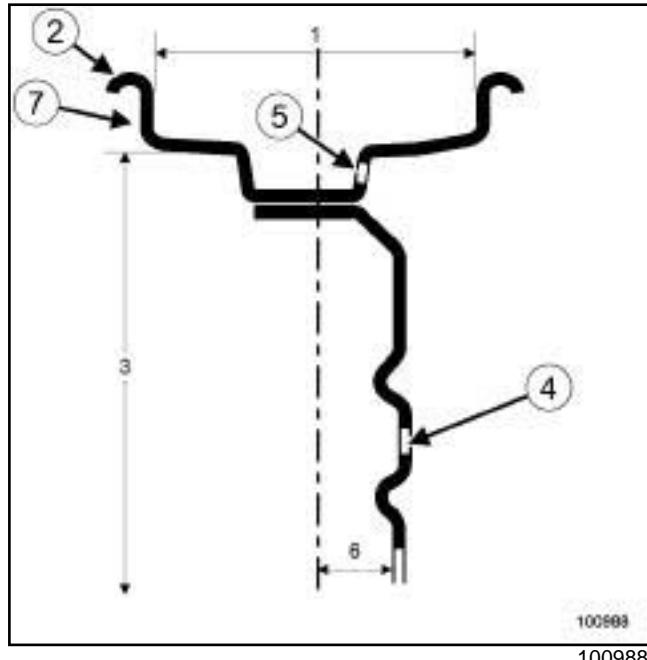
- engraved marking for steel wheel rims,
- cast marking for alloy wheel rims.

The marking gives the main dimensional specifications of the wheel rim.

This marking may be:

- complete, for example **6 J 15 5 CH 36**,
- simplified, for example **6 J 15**.

	Wheel type	6 J 15
1	Width (in inches)	6
2	Rim edge profile	J
3	Nominal diameter (in inches)	15
4	Number of holes	5
5	Anchorage profile of the tyre	CH
6	Offset (in mm)	36



There are 3 types of wheel rim edges (2) :

- those with two flat edges,
- those with two raised edges,
- those with one flat edge and one raised edge.

2 - Installation diameter for the wheel bolts

The wheel bolts are positioned with a pitch circle diameter of **114.3 mm** (5 holes).

3 - Rim run-out

The maximum run-out is measured at the wheel rim edge (7) .

Steel wheel rims: **0.8 mm**

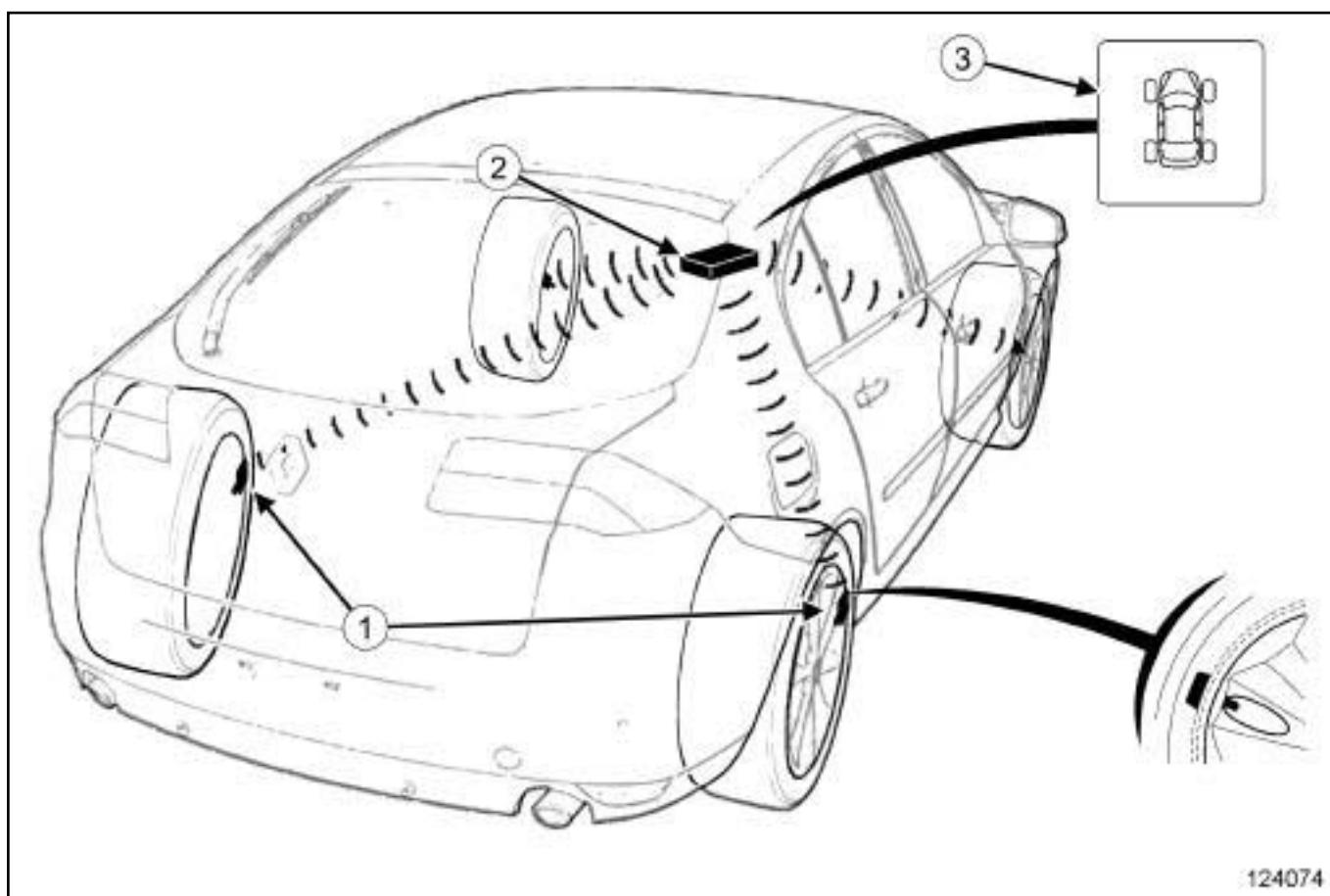
Alloy wheel rims: **0.3 mm**

4 - Out-of-roundness

The maximum out-of-round value is measured on the tyre bead bearing surface.

Steel wheel rims: **0.7 mm**

Alloy wheel rims: **0.3 mm**



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The system consists of:

- four pressure sensors (1) built into the valves (one per wheel); the sensors emit a radiofrequency signal,
- a computer (2) which collects, decodes and processes sensor signals, and then determines which message to display,
- a display (3) integrated to the instrument panel.

Note:

Each sensor is identified by a coloured marking round the valve:

- green = front left-hand,
- yellow = front right-hand,
- red = rear left-hand,
- black = rear right-hand.

I - CLEANLINESS

Clean the bearing faces on the tyre pressure monitor valve.

II - GENERAL RECOMMENDATIONS

Do not swap the wheels if they have been removed.

WARNING

Hold the sensor in position on the wheel to prevent it from turning during tightening.

WARNING

To avoid any damage to the sensor, make sure the tyre bead never presses on the sensor.

Equipment required

Diagnostic tool

Tightening torques 

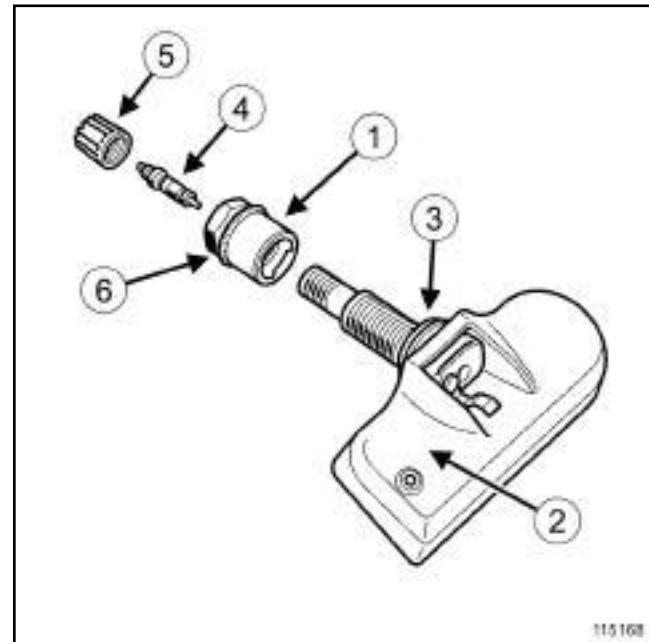
pressure sensor nut	8 N.m
pressure sensor nut	8 N.m

IMPORTANT

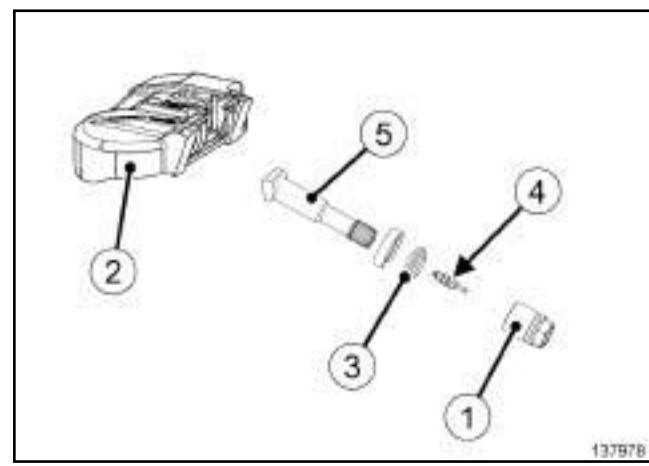
Consult the safety and cleanliness instructions and operation recommendations before carrying out any repair ((see 35B, Tyre pressure monitor, Tyre pressure monitor: Precautions for the repair, page 35B-2)).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the wheels (see 35A, **Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the tyres (see 35A, **Wheels and tyres, Tyres: Removal - Refitting**, page 35A-11) .

II - OPERATION FOR REMOVAL OF PART CONCERNED**1 - TG1 B sensor****□ Remove:**

- the nut (1) whilst holding the pressure sensor on the wheel rim,
- the pressure sensor (2) .

2 - TG1 C sensor**□ Remove:**

- the nut (1) whilst holding the pressure sensor on the wheel rim,
- the pressure sensor (2) .

REFITTING**I - REFITTING PREPARATION OPERATION****1 - TG1 B sensor**

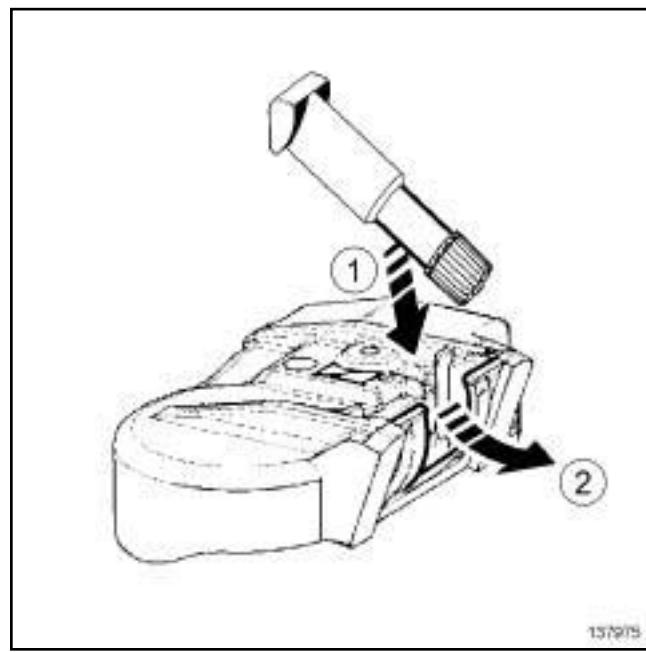
- Always replace:
- the seal with the metal ring (3),
 - the mechanism (4),
 - the nut (1),
 - the cap (5).
- If necessary, replace the coloured marker (6).

2 - TG1 C sensor**a - When replacing the valve only**

- Always replace the pressure sensor valve (5).
- parts always to be replaced: tyre pressure monitor valve seal (13,05,03,05) (3).

b - When replacing the pressure sensor

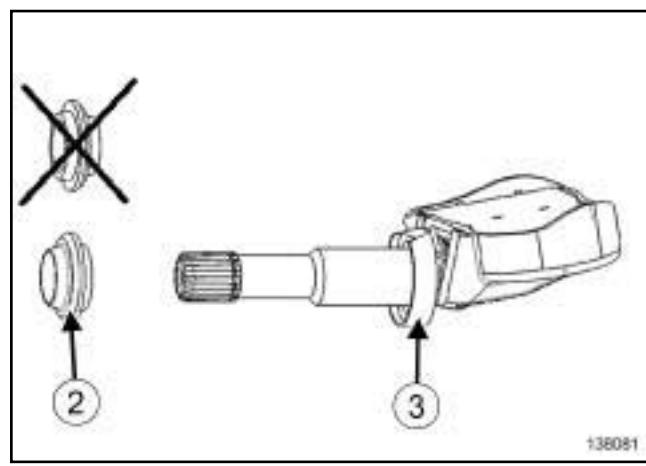
- parts always to be replaced: Pressure sensor (13,05,03,01) (2).
- parts always to be replaced: tyre pressure monitor valve seal (13,05,03,05) (3).

II - REFITTING OPERATION FOR PART CONCERNED**1 - TG1 C sensor****a - When replacing the valve only**

137975

137975

- Refit the new valve in accordance with the order of the arrows.

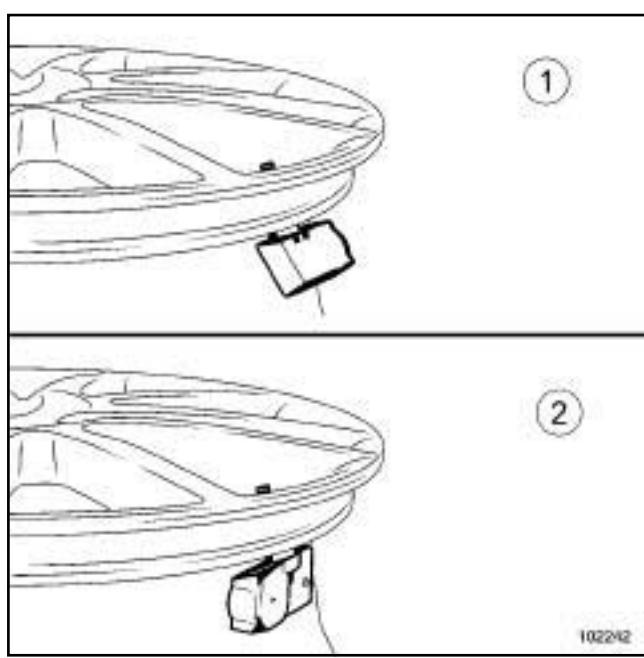
b - Refitting the pressure sensor

138081

138081

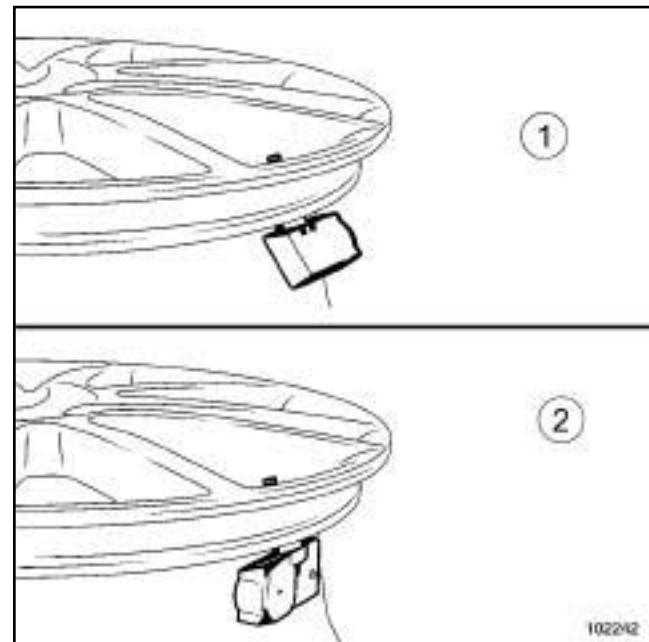
- Refit:

- the cup (3) on the pressure sensor, ensuring that the bevel of the cup is facing towards the bottom of the wheel,
- the seal (2) on the cup by placing the conical face on the wheel rim side,
- the pressure sensor on the wheel rim.



- Make sure that the sensor is correctly positioned on the wheel rim:
 - (1) : incorrectly fitted,
 - (2) : correctly fitted.
- Check that the cup is completely pressed around the wheel hole.
- Pretighten the nut of the pressure sensor while keeping the sensor in contact on the bottom of the wheel rim.
- Torque tighten the **pressure sensor nut (8 N.m)**.

2 - First fitting



- Make sure that the sensor is correctly positioned on the wheel rim:
 - (1) : incorrectly fitted,
 - (2) : correctly fitted.
- Refit the seal with the metallic ring on the pressure sensor.
- Position the pressure sensor in the valve opening, checking that the seal is attached all around the edge of the opening.
- Manually tighten the nut whilst gently pressing the plug towards the centre of the wheel and keeping the pressure sensor against the rim in order to modify the valve/sensor angle to the rim profile.
- Torque tighten the **pressure sensor nut (8 N.m)**.

III - FINAL OPERATION

- Refit the tyres (see **35A, Wheels and tyres, Tyres: Removal - Refitting**, page **35A-11**).
- Balance the wheels (see **35A, Wheels and tyres, Wheel: Balancing**, page **35A-7**).
- Refit the wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Special notes on the first fitting

Note:

If replacing the pressure sensor, carry out the necessary operations using the **Diagnostic tool**.

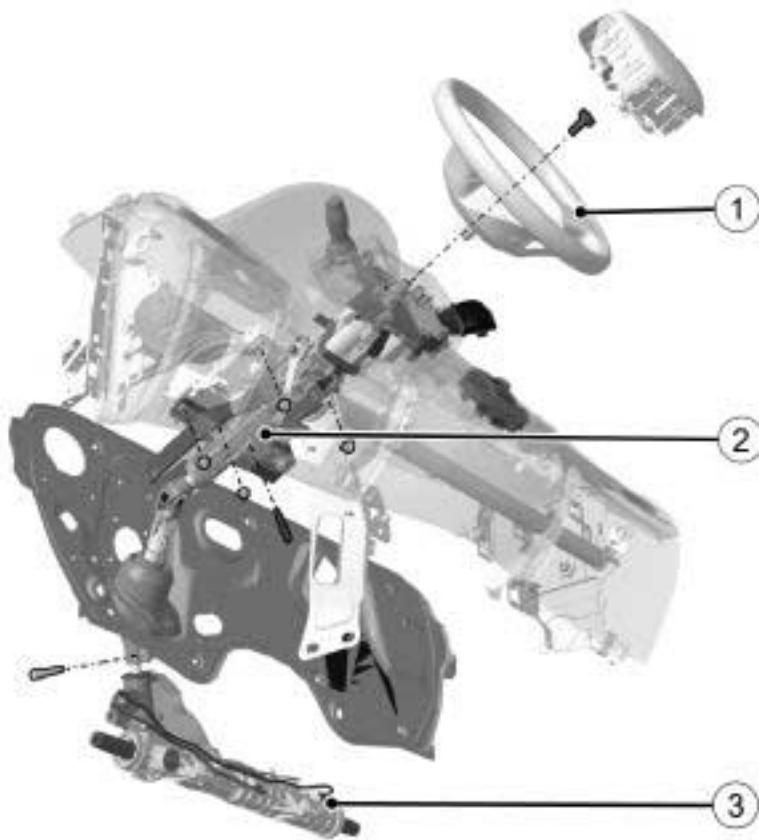
 Apply the after repair procedure using the **Diagnostic tool** :

- connect **Diagnostic tool**,
- select « UCH » ,
- go to repair mode,
- display the « before/after repair procedure » for the computer selected,
- select « Tyre pressure monitor valve » in the « List of components controlled by this computer » section,
- carry out the operations described in the « After repair procedure » section.

STEERING ASSEMBLY

Steering: List and location of components

36A

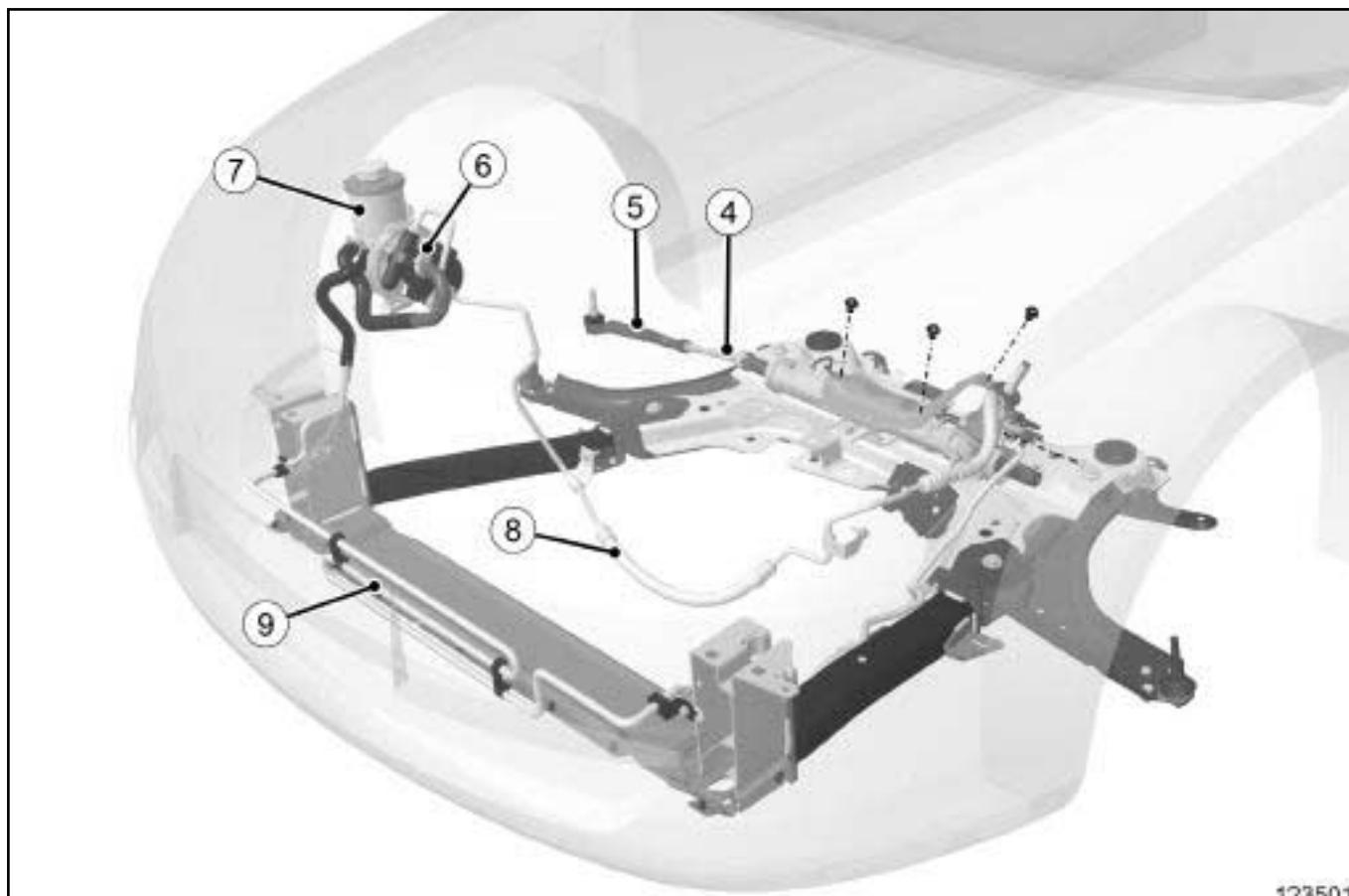


123497

123497

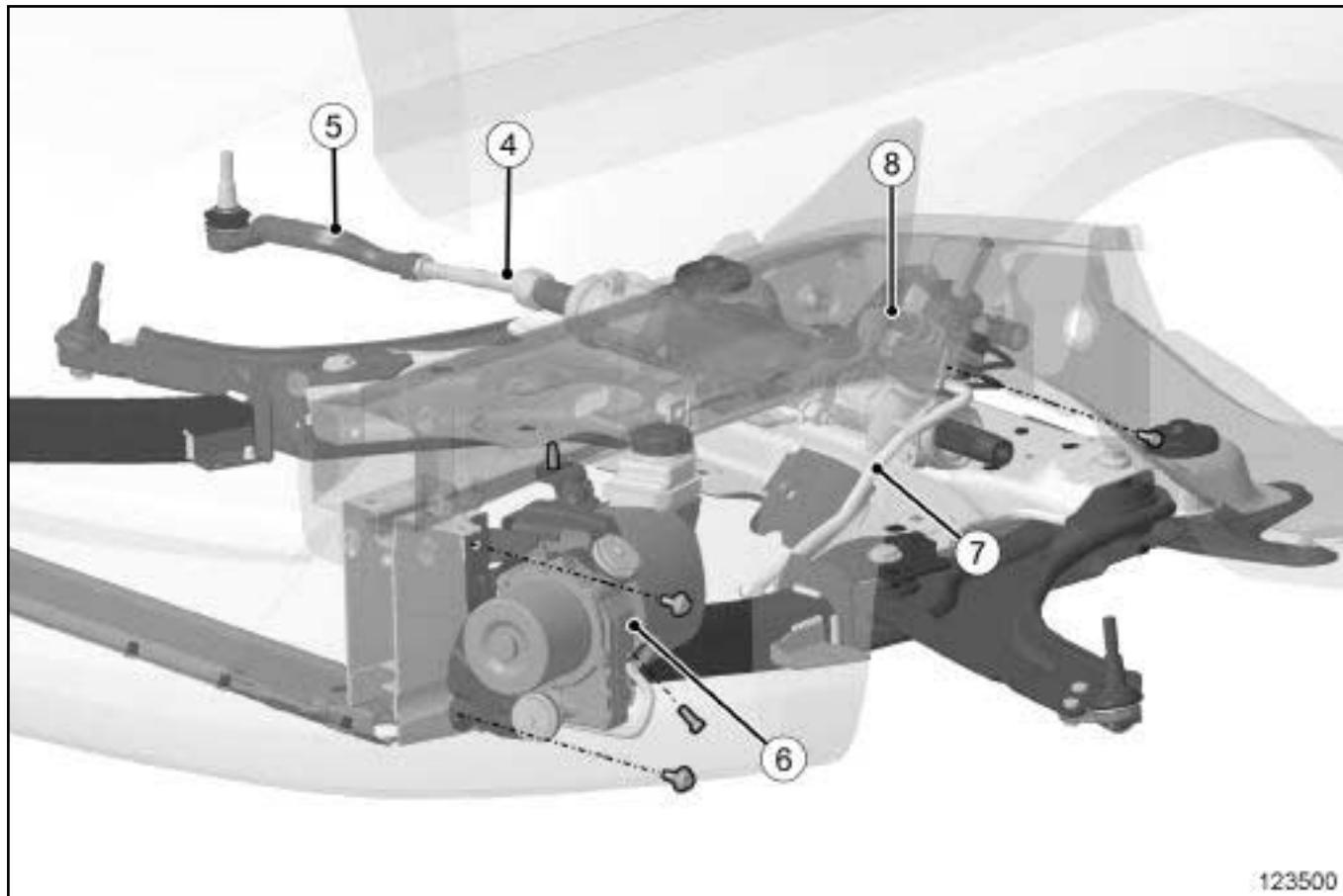
- | | |
|-----|-----------------|
| (1) | Steering wheel |
| (2) | Steering column |
| (3) | Steering box |

F4R or M9R, and 802 or 805

123501
123501

- (4) Axial ball joint linkage
- (5) Track rod
- (6) Power-assisted steering pump
- (7) Power-assisted steering reservoir
- (8) « Power-assisted steering pump - steering box » supply pipe
- (9) « Steering box - power-assisted steering reservoir » return pipe

K9K or M4R or M9R, and 742



123500

123500

- (4) Axial ball joint linkage
- (5) Track rod
- (6) Power-assisted steering pump assembly
- (7) « Pump assembly - steering box » supply pipe
- (8) « Steering box - pump assembly reservoir » return pipe

I - SAFETY**1 - Advice to be followed before any operation**

For an operation requiring the use of a lift, follow the safety advice (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

2 - Instruction to be followed during the operation**IMPORTANT**

Wear protective gloves during the operation.

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

II - CLEANLINESS**1 - Advice to be followed before any operation**

Use a cover to protect any chassis elements that may be contaminated with power-assisted steering fluid.

2 - Instruction to be followed during the operation

Clean around the power-assisted steering system using **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

III - GENERAL RECOMMENDATIONS

To ensure correct operation and performance of the system, do not attempt to repair any components other than those supplied in After-Sales.

To ensure the quality of the repair, only use the tooling recommended by the manufacturer.

1 - Power assisted steering circuit:**a - Power-assisted steering fluid**

Only use the fluid recommended by the manufacturer, in order to ensure correct system performance (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

b - Blanking plugs

To prevent impurities from entering the power assisted steering circuit, use blanking plugs on the various dismantled parts.

2 - Seals

To ensure a sound power-assisted steering circuit seal, replace the power-assisted steering pipe seals each time a pipe is removed.

3 - Steering column**WARNING**

In order not to damage the steering wheel or steering column, the steering wheel-column foolproofing devices must be aligned.

Do not rest the steering column on the adjustment handle.

Do not handle the steering column by the adjustment handle or by the wiring.

Manoeuvre the «steering column - intermediate shaft» assembly by holding each section (one hand on the column and the other on the intermediate shaft). If the steering column is not handled correctly, there is a risk that the steering column or intermediate shaft could fall, which could destroy the system.

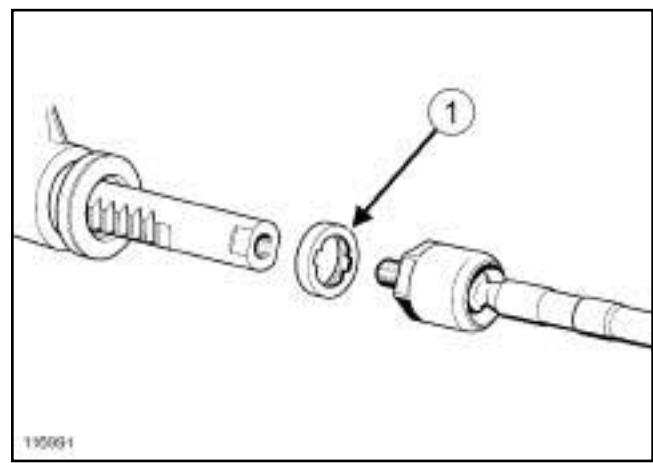
Always replace the steering column if it is dropped or in the event of an impact.

4 - Steering box

The steering box should not be carried by the gaiters or pipes, as this may damage them.

When the vehicle is positioned with the wheels suspended, the steering rack must not be subjected to violent movements from lock to lock.

Risks: Damage to the teeth of the steering rack and pinion may cause a **safety risk** relating to the steering unexpectedly locking.

5 - Axial ball joint

116991

The axial ball joint limiters (1) are colour coded for fool-proofing purposes. When removing or replacing the axial ball joint, check that the limiter with the correct colour code is refitted.

6 - Power-assisted steering pump

Do not run the engine without steering fluid in the circuit.

7 - Pump assembly

Do not run the engine without steering fluid in the circuit.

8 - Wiring harnesses

Ensure that the electrical wiring is clean and correctly routed.

Tightening torques 

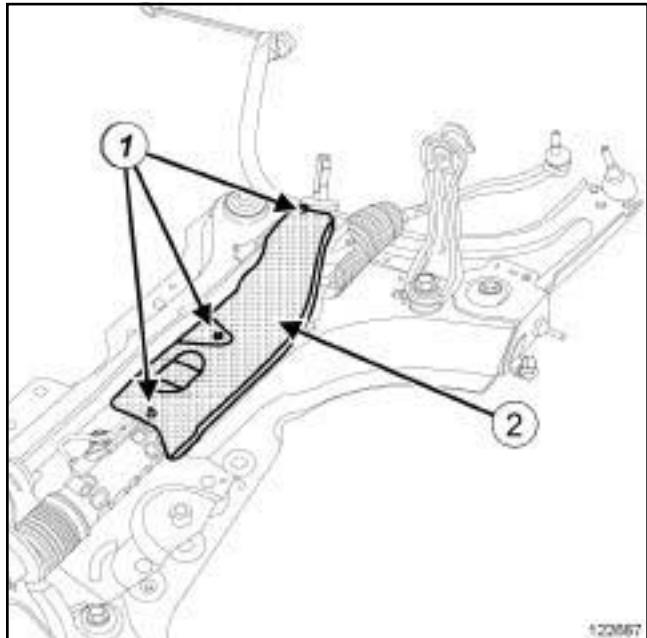
steering box nuts	180 N.m
-------------------	---------

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

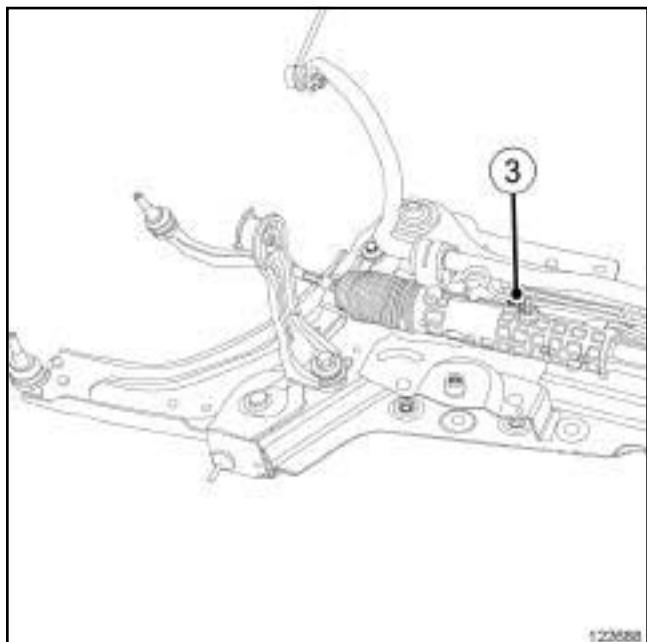
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the engine undertray bolts,
 - the engine undertray,
 - the front and side wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**).

II - OPERATION FOR REMOVAL OF PART CONCERNED**LEFT-HAND DRIVE**

122687

- Remove:

- the bolts (1) from the heat shield,
- the heat shield (2) .



122688

- Remove:

- the steering box nuts (3) ,

- the steering box.

REFITTING

I - REFITTING PREPARATION OPERATION

Always replace:

- the steering box nuts,
- the subframe bolts,
- the track rod nuts,
- the anti-roll bar tie-rod nuts,
- the lower ball joint nut,
- the universal joint nut and bolt,
- the power-assisted steering pipe O-rings.

4-WHEEL STEERING

Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page **30A-32**) .

II - REFITTING OPERATION FOR PART CONCERNED

Refit:

- the steering box,
- the steering box nuts.

Torque tighten the **steering box nuts (180 N.m)**.

LEFT-HAND DRIVE

Refit:

- the heat shield,
- the heat shield bolts.

III - FINAL OPERATION

Refit:

- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**) ,
- the front and side wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray,
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**) .

Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**) .

STEERING ASSEMBLY

Track rod: Removal - Refitting

36A

Special tooling required

Tav. 476 Ball joint extractor.

Tightening torques

track rod ball joint nut 37 N.m

wheel alignment adjusting lock nut 53 N.m

IMPORTANT

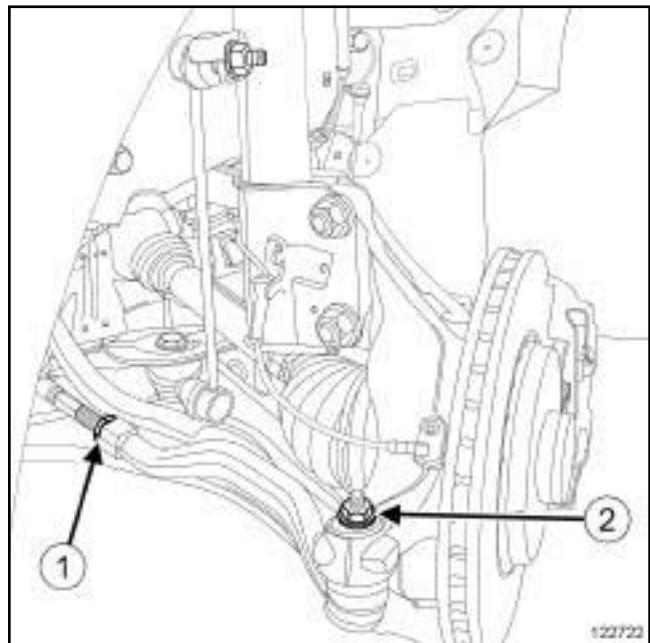
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

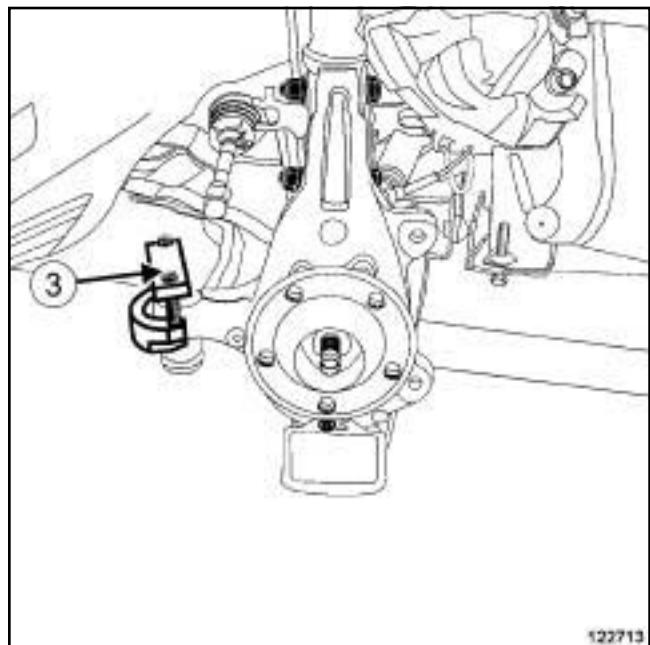
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122722

- Loosen the wheel alignment adjustment lock nut (1).
- Remove the track rod ball joint nut (2).



122713
122713

- Extract the ball joint using (3) (**Tav. 476**).
- Unscrew the track rod anti-clockwise and note the number of turns for refitting.
- Remove the track rod.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Screw the track rod back in place by the number of turns noted during removal.
- Fit the track rod end in the hub carrier.
- Refit the track rod ball joint nut.
- Tighten to torque:
 - the **track rod ball joint nut (37 N.m)**,
 - the **wheel alignment adjusting lock nut (53 N.m)**.

II - FINAL OPERATION

- Refit the wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**) .
- If necessary, adjust the geometry of the axle assemblies (see **30A, General information, Front axle system: Adjustment**, page **30A-28**) .

STEERING ASSEMBLY

Axial ball joint linkage: Removal - Refitting

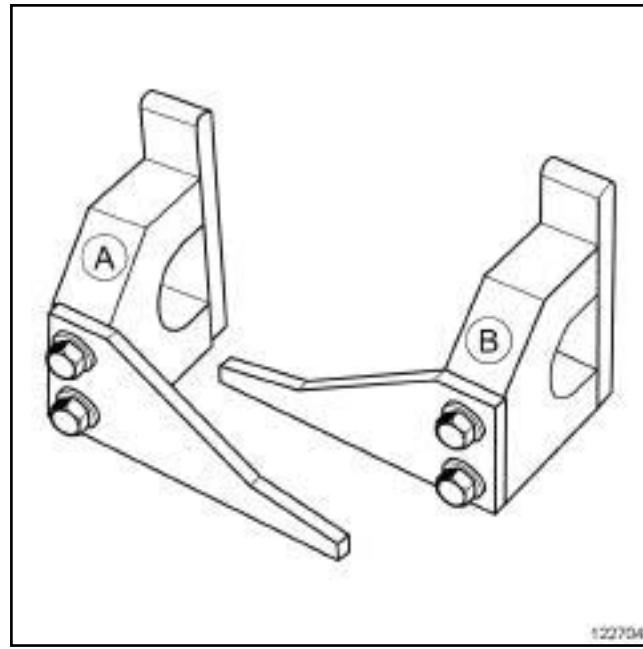
36A

LEFT-HAND DRIVE

Special tooling required	
Dir. 1833	Steering rack locking tool
Tav. 476	Ball joint extractor.
Dir. 1305-01	Tool for removal - refitting of the axial ball joint (diameter 35 mm to 41 mm).
Tav. 1168	"Clic" type clip pliers for drive-shafts with a thermoplastic gaiter.

Equipment required
Diagnostic tool

Tightening torques 	
axial ball joint	75 N.m
left-hand track rod ball joint nut	37 N.m
anti-roll bar tie rod upper nuts	44 N.m



The **(Dir. 1833)** should be in position **(A)** for a left-hand drive vehicle.

The **(Dir. 1833)** should be in position **(B)** for a right-hand drive vehicle.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

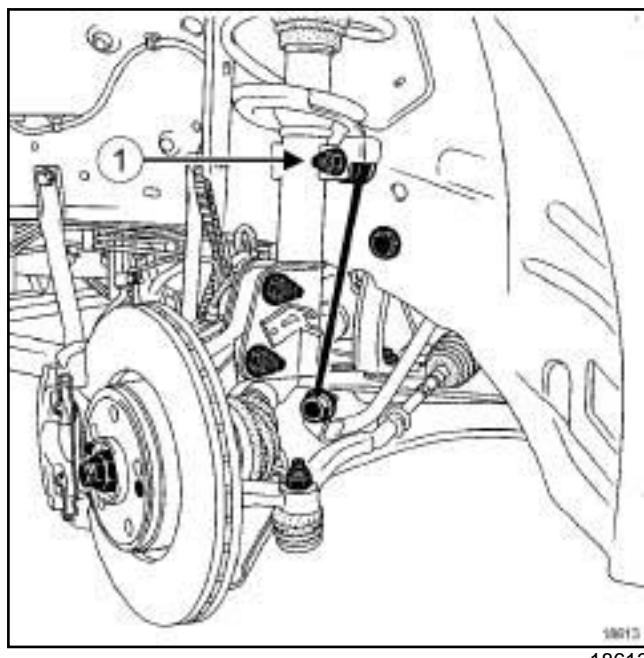
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Note:

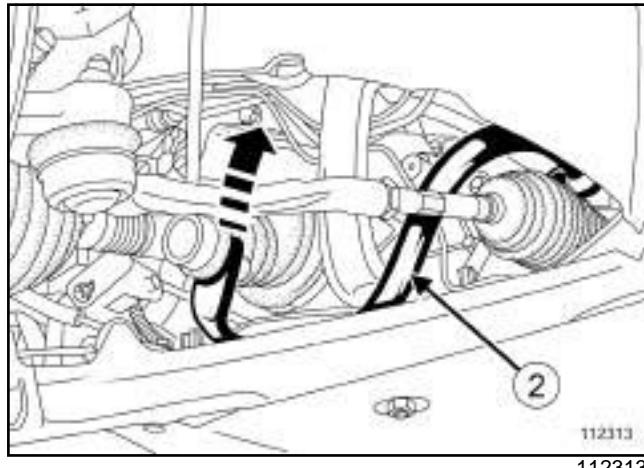
It is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the procedure before repair using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Airbag computer » ,
 - go to repair mode,
 - apply the "Before/after repair procedure" for the computer selected,
 - carry out the operations described in the « Before repair procedure » section.
- Remove the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

LEFT-HAND DRIVE



- Remove the upper nuts (1) from the front anti-roll bar tie-rods.



- Pivot the anti-roll bar (2) towards the rear of the vehicle.

II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Removing the left-hand axial ball joint linkage

- Remove:

- the left-hand track rod (see 36A, Steering assembly, Track rod: Removal - Refitting, page 36A-8)
- ,
- the wheel alignment adjustment lock nut,

- the left-hand steering box gaiter (see 36A, Steering assembly, Steering box gaiter: Removal - Refitting, page 36A-24).

2 - Removing the right-hand axial ball joint linkage

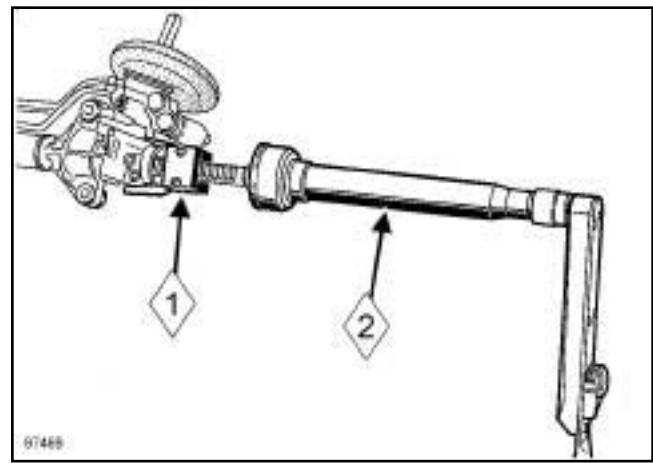
- Remove:

- the right-hand track rod (see 36A, Steering assembly, Track rod: Removal - Refitting, page 36A-8),
- the wheel alignment adjustment lock nut,
- the steering box right-hand gaiter (see 36A, Steering assembly, Steering box gaiter: Removal - Refitting, page 36A-24),
- the large clip on the steering box left-hand gaiter,
- the left-hand track rod ball joint nut.

- Remove the ball joint from the left-hand track rod using the (Tav. 476).

- Move aside the steering rack left-hand gaiter and fit the (Dir. 1833) to the rack teeth on the rotary valve side.

3 - Removing the left- and/or right-hand axial ball joint linkage



- Fit the (Dir. 1833) (1) to the rack teeth on the rotary valve side.

Note:

To prevent swarf entering from the (Dir. 1833). Do not push the steering rack when tightening or loosening the axial ball joint linkage.

- Unlock the axial ball joint using tool (Dir. 1305-01) (2).
- Remove the axial ball joint.

LEFT-HAND DRIVE

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the gaiter from the removed axial ball joint linkage,
 - the track rod nuts,
 - the anti-roll bar tie-rod nuts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the axial ball joint linkage.
- Torque tighten the **axial ball joint (75 N.m)** using the (**Dir. 1305-01**).
- Remove the tool (**Dir. 1833**).

1 - Refitting the right-hand axial ball joint linkage

- Clean the « gaiter - steering box » contact surfaces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

 Fit:

- the steering box left-hand gaiter,
- a new large clip on the steering box left-hand gaiter using the tool (**Tav. 1168**),
- the left-hand track rod ball joint on the hub carrier.

 Refit:

- the left-hand track rod ball joint nut.
- the steering box right-hand gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-24**),
- the wheel alignment adjustment lock nut,
- the right-hand track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**).

- Torque tighten the **left-hand track rod ball joint nut (37 N.m)**.

2 - Refitting the left-hand axial ball joint linkage

- Clean the « gaiter - steering box » contact surfaces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

 Refit:

- the steering box left-hand gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-24**),
- the wheel alignment adjustment lock nut,
- the left-hand track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**)
-

III - FINAL OPERATION

- Pivot the anti-roll bar towards the front of the vehicle.
- Refit the anti-roll bar tie rod upper nuts.
- Torque tighten the **anti-roll bar tie rod upper nuts (44 N.m)**.
- Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Airbag computer » ,
 - go to repair mode,
 - apply the "Before/after repair procedure" for the computer selected,
 - carry out the operations described in the « After repair procedure » section.
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).
- Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

4-WHEEL STEERING

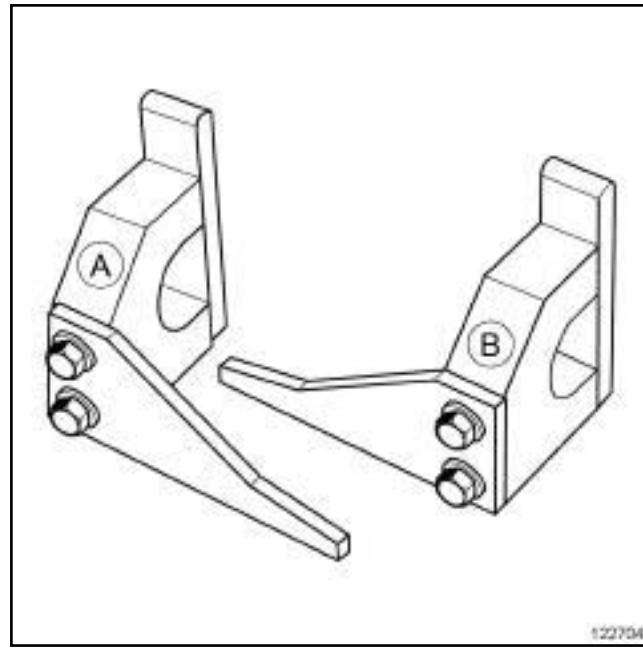
- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page **30A-32**).

RIGHT-HAND DRIVE

Special tooling required	
Dir. 1833	Steering rack locking tool
Tav. 476	Ball joint extractor.
Dir. 1305-01	Tool for removal - refitting of the axial ball joint (diameter 35 mm to 41 mm).
Tav. 1168	"Clic" type clip pliers for drive-shafts with a thermoplastic gaiter.

Equipment required	
Diagnostic tool	

Tightening torques 	
axial ball joint	75 N.m
right-hand track rod ball joint nut	37 N.m
anti-roll bar tie rod upper nuts	44 N.m



The (Dir. 1833) should be in position (A) for a left-hand drive vehicle.

The (Dir. 1833) should be in position (B) for a right-hand drive vehicle.

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 36A, Steering assembly, Steering: Precautions for the repair, page 36A-4).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

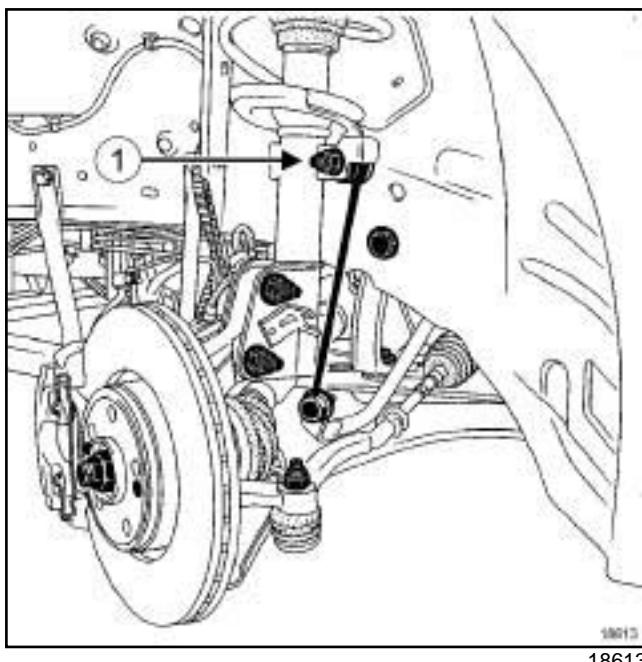
Note:

it is necessary to lock the airbag computer in order to unlock the steering column.

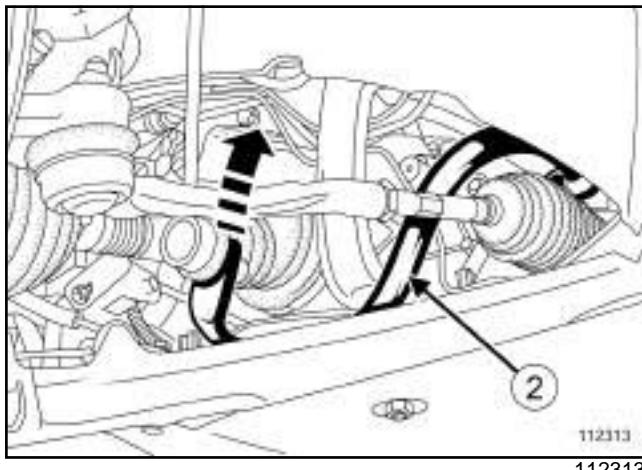
- Apply the before repair procedure using the Diagnostic tool :
- connect the Diagnostic tool,
 - select « Airbag computer » ,
 - go to repair mode,
 - display the « Before/After repair procedure » for the computer selected,
 - carry out the operations described in the « Before repair procedure » section.

- Remove the front wheels (see 35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1).

RIGHT-HAND DRIVE



- Remove the upper nuts (1) from the front anti-roll bar tie-rods.



- Pivot the anti-roll bar (2) towards the rear of the vehicle.

II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Removing the right-hand axial ball joint linkage

- Remove:

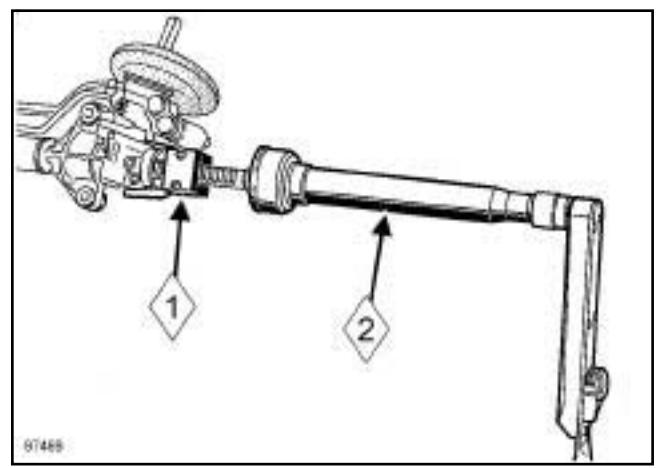
- the right-hand track rod (see 36A, Steering assembly, Track rod: Removal - Refitting, page 36A-8),
- the wheel alignment adjustment lock nut,

- the steering box right-hand garter (see 36A, Steering assembly, Steering box garter: Removal - Refitting, page 36A-24).

2 - Removing the left-hand axial ball joint linkage

- Remove:
 - the left-hand track rod (see 36A, Steering assembly, Track rod: Removal - Refitting, page 36A-8)
 - ,
 - the wheel alignment adjustment lock nut,
 - the steering box left-hand garter (see 36A, Steering assembly, Steering box garter: Removal - Refitting, page 36A-24),
 - the large clip on the steering box right-hand garter,
 - the right-hand track rod ball joint nut.
- Remove the ball joint from the right-hand track rod using the (Tav. 476).
- Move aside the steering box right-hand garter and fit the (Dir. 1833) to the rack teeth on the rotary valve side.

3 - Removing the left- and/or right-hand axial ball joint linkage



- Fit the (Dir. 1833) (1) to the rack teeth on the rotary valve side.

Note:

To prevent swarf entering from the (Dir. 1833).
Do not push the steering rack when tightening or loosening the axial ball joint linkage.

- Unlock the axial ball joint using tool (Dir. 1305-01) (2).
- Remove the axial ball joint.

RIGHT-HAND DRIVE

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the gaiter from the removed axial ball joint linkage,
 - the track rod nuts,
 - the anti-roll bar tie-rod nuts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the axial ball joint linkage.
- Torque tighten the **axial ball joint (75 N.m)** using the (**Dir. 1305-01**).
- Remove the tool (**Dir. 1833**).

1 - Refitting the left-hand axial ball joint linkage

- Clean the « gaiter - steering box » contact surfaces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

 Fit:

- the steering box right-hand gaiter,
- a new large clip on the steering box right-hand gaiter using the tool (**Tav. 1168**),
- the right-hand track rod ball joint on the hub carrier.

 Refit:

- the right-hand track rod ball joint nut.
 - the steering box left-hand gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-24**),
 - the wheel alignment adjustment lock nut,
 - the left-hand track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**)
- Torque tighten the **right-hand track rod ball joint nut (37 N.m)**.

2 - Refitting the right-hand axial ball joint linkage

- Clean the « gaiter - steering box » contact surfaces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

 Refit:

- the steering box right-hand gaiter (see **36A, Steering assembly, Steering box gaiter: Removal - Refitting**, page **36A-24**),
- the wheel alignment adjustment lock nut,
- the right-hand track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**).

III - FINAL OPERATION

- Pivot the anti-roll bar towards the front of the vehicle.
- Refit the anti-roll bar tie rod upper nuts.
- Torque tighten the **anti-roll bar tie rod upper nuts (44 N.m)**.
- Refit the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Airbag computer » ,
 - go to repair mode,
 - display the « Before/After repair procedure » for the computer selected,
 - carry out the operations described in the « After repair procedure » section.
- Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).
- Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

4-WHEEL STEERING

- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page **30A-32**).

LEFT-HAND DRIVE

Equipment required

Diagnostic tool

Tightening torques 

steering universal joint stud	24 Nm
-------------------------------	--------------

steering column nuts	21 Nm
----------------------	--------------

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

IMPORTANT

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

- select the airbag computer,

- go to repair mode,

- apply the "Before repair procedure".

Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

Remove the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 415, 88C, Airbags and seat belt pretensioners).

Set the wheels straight ahead.

Remove:

- the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page **36A-27**),

- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 415, 84A, Control - Signals),

- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Interior equipment),

- the engine undertray bolts,

- the engine undertray.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

IMPORTANT

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

Note:

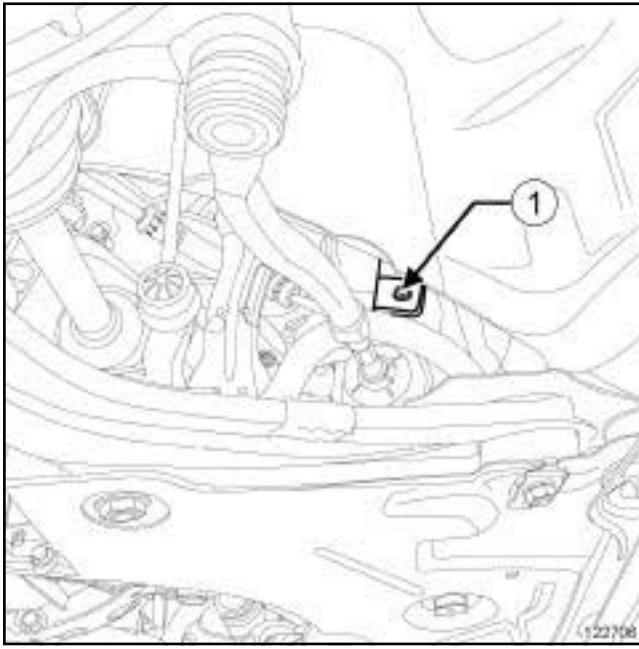
it is necessary to lock the airbag computer in order to unlock the steering column.

Apply the before repair procedure using the **Diagnostic tool**:

- connect the **Diagnostic tool**,

LEFT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED

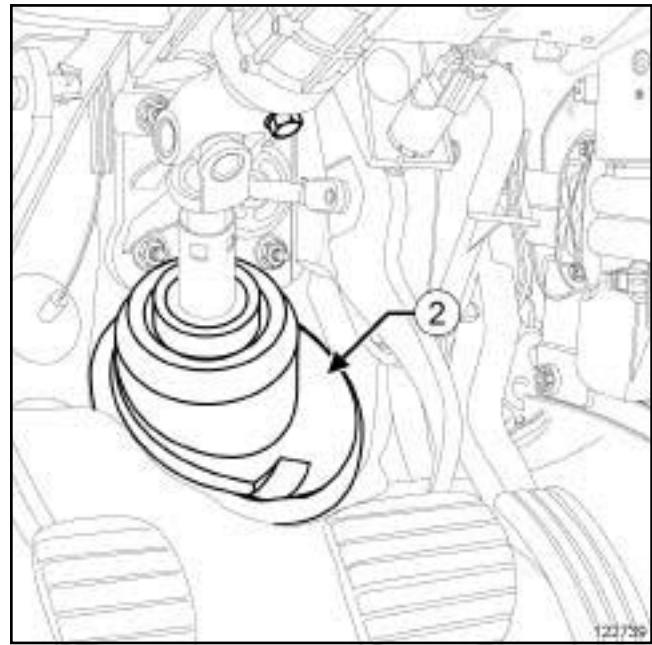


- Remove the universal joint bolt (1) (do not keep).

Note:

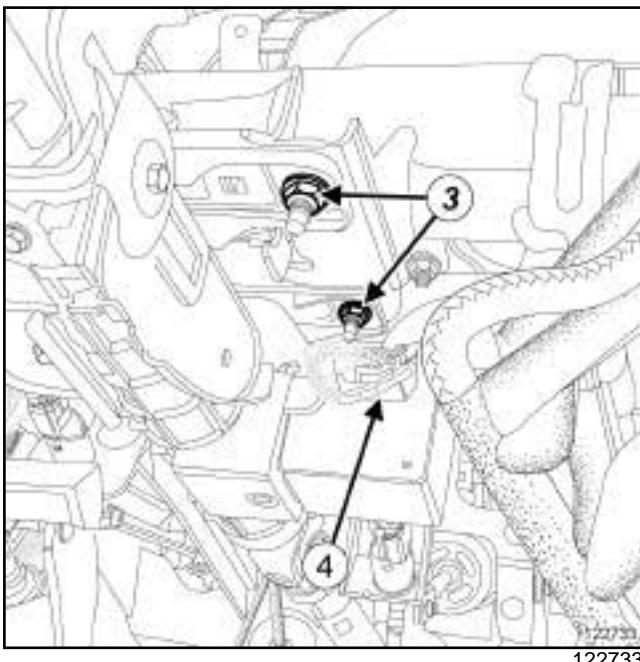
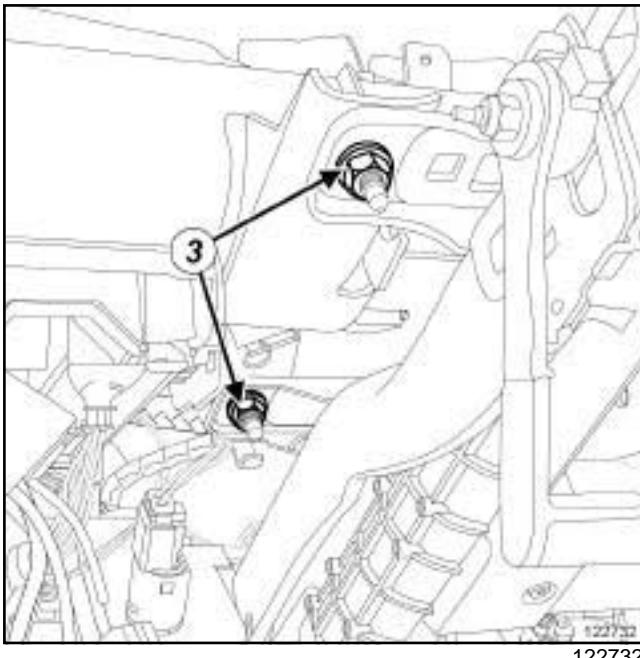
For the original fitting, the steering box universal joint stud nut is held inside a cover, which must be ejected and discarded.

- For original fitting:
 - tighten the steering box universal joint stud by a few turns,
 - strike the bolt head to eject the cover.
- Remove:
 - the steering box universal joint stud bolt,
 - the steering box universal joint stud nut.
- Tilt the universal joint.



- Unclip the steering column gaiter (2) .
- Push the steering column gaiter into the passenger compartment.

LEFT-HAND DRIVE



- Remove the nuts (3) from the steering column.
- Disconnect the connector (4) from the electric steering column lock.
- Unclip the wiring harness from the steering column.

- Extract the steering column without uncoupling the intermediate shaft.

Note:

Manoeuvre the "steering column - intermediate shaft" assembly by holding each section (one hand on the column and the other on the intermediate shaft).

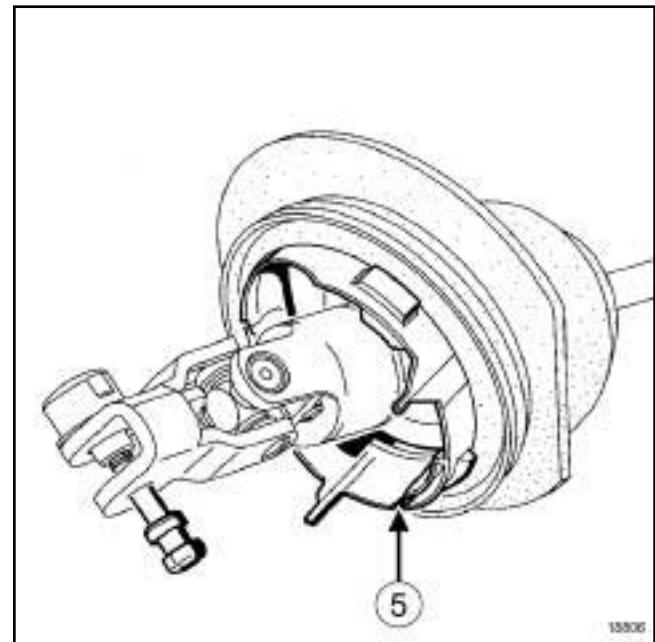
Do not rest the steering column on the adjustment handle.

- Remove the electric steering column lock (see **Electric steering column lock: Removal - Refitting**) (MR 415, 82A, Immobiliser).

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace:
 - the steering box universal joint bolt and nut,
 - the steering wheel bolt.
- Refit the electric steering column lock (see **Electric steering column lock: Removal - Refitting**) (MR 415, 82A, Immobiliser).

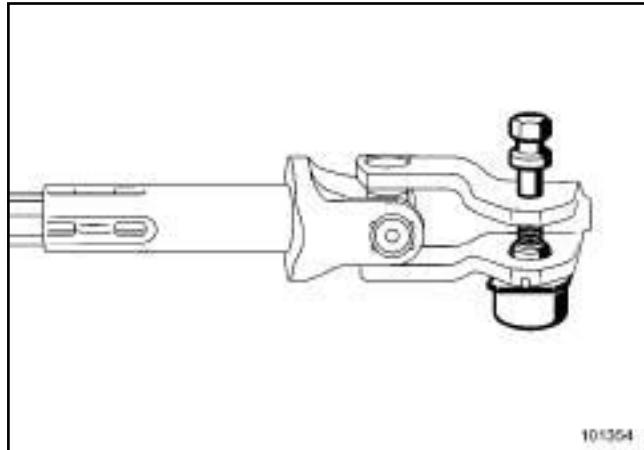


- Check:
 - that the ring (5) on the steering column gaiter is correctly positioned,
 - that the wheels are still straight.

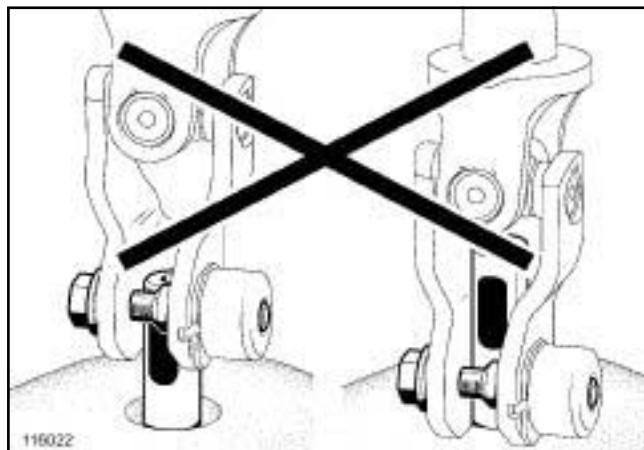
LEFT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED

- Mount the steering column.
- Clip the wiring harness onto the steering column.
- Connect the connector to the electric steering column lock.
- Screw without tightening the steering column nuts.



- Observe the direction of fitting for the universal joint cam nut.
- Fit the universal joint.
- Refit the universal joint cam nut and bolt.
- Offer up the universal joint cam nut and bolt.
- Lock the cam nut in its housing (on the universal joint).
- Pretighten the universal joint bolt.



- Check that the universal joint is in the correct position.
- Tighten to torque:
 - the steering universal joint stud (24 Nm),

- the steering column nuts (21 Nm).

- Clip the steering garter on the front bulkhead.

III - FINAL OPERATION.

- Refit:
 - the engine undertray,
 - the engine undertray bolts,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 415, 84A, Control - Signals),
 - the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page 36A-27) ,
 - the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 415, 88C, Airbags and seat belt pretensioners).

- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the airbag computer,
 - go to repair mode,
 - apply the "After repair procedure".

RIGHT-HAND DRIVE

Equipment required

Diagnostic tool

Tightening torques 

steering universal joint stud	24 Nm
-------------------------------	--------------

steering column nuts	21 Nm
----------------------	--------------

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

IMPORTANT

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

- select the airbag computer,

- go to repair mode,

- apply the "Before repair procedure".

Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

Remove the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 415, 88C, Airbags and seat belt pretensioners).

Set the wheels straight ahead.

Remove:

- the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page **36A-27**),

- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 415, 84A, Control - Signals),

- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Interior equipment),

- the engine undertray bolts,

- the engine undertray.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).

IMPORTANT

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

Note:

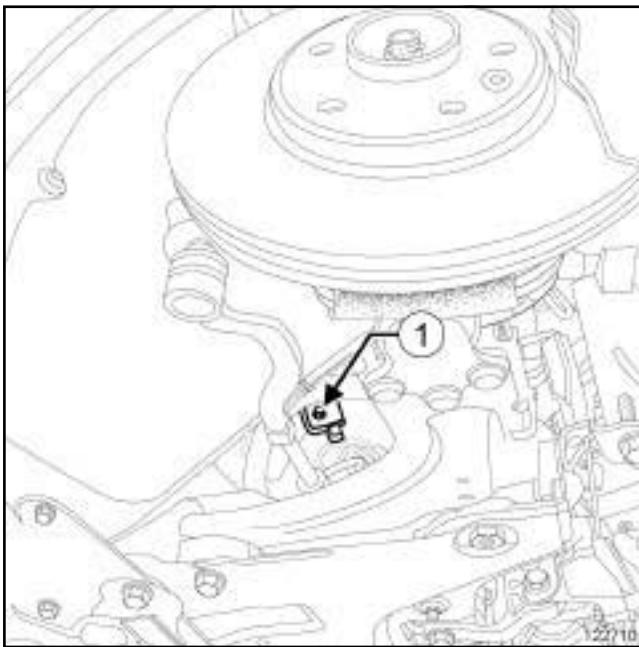
it is necessary to lock the airbag computer in order to unlock the steering column.

Apply the before repair procedure using the **Diagnostic tool**:

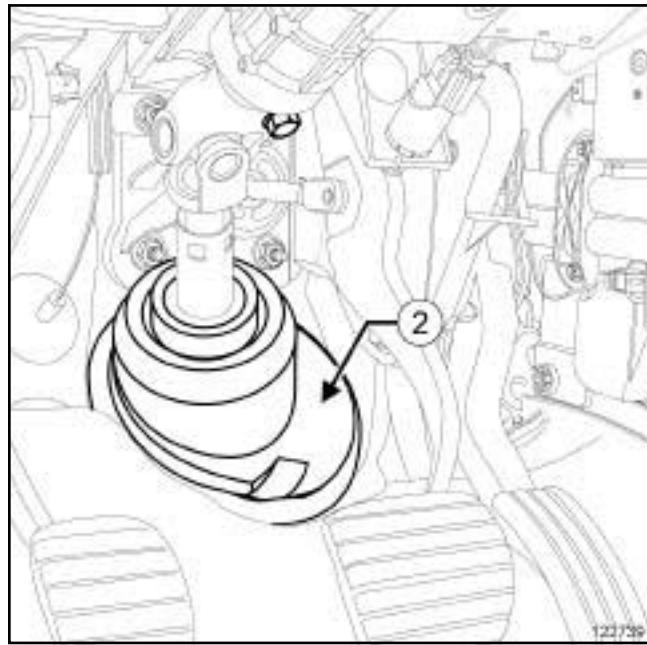
- connect the **Diagnostic tool**,

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



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- Remove the universal joint bolt (1) (do not keep).

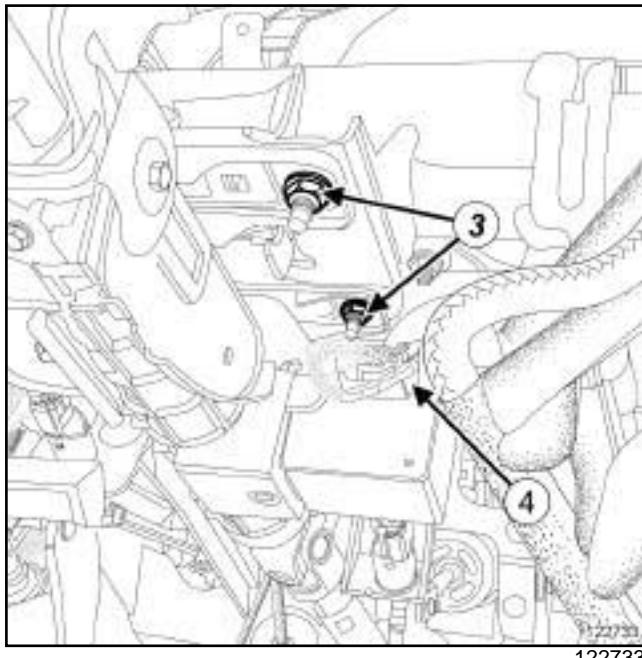
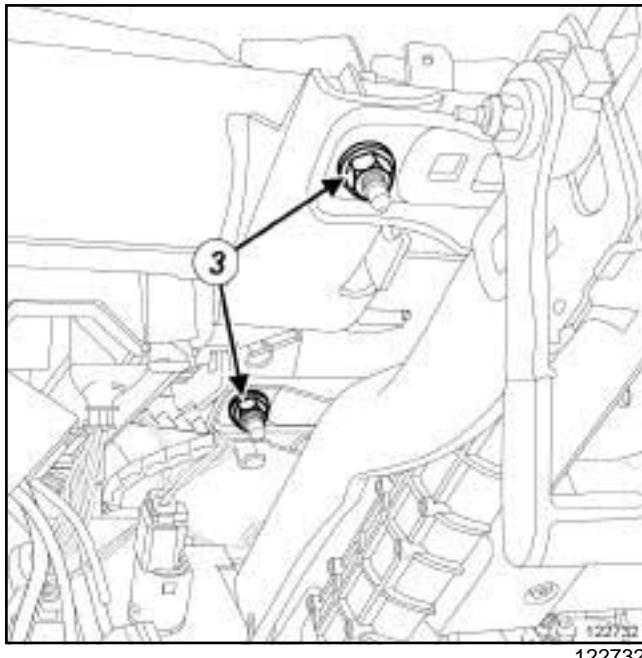
Note:

For the original fitting, the steering box universal joint stud nut is held inside a cover, which must be ejected and discarded.

- For original fitting:
 - tighten the steering box universal joint stud by a few turns,
 - strike the bolt head to eject the cover.
- Remove:
 - the steering box universal joint stud bolt,
 - the steering box universal joint stud nut.
- Tilt the universal joint.

- Unclip the steering column gaiter (2) .
- Push the steering column gaiter into the passenger compartment.

RIGHT-HAND DRIVE



- Remove the nuts (3) from the steering column.
- Disconnect the connector (4) from the electric steering column lock.
- Unclip the wiring harness from the steering column.

- Extract the steering column without uncoupling the intermediate shaft.

Note:

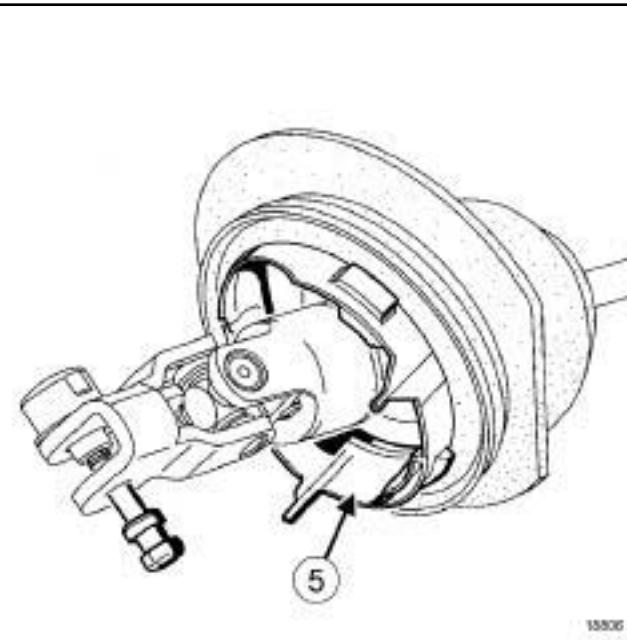
Manoeuvre the "steering column - intermediate shaft" assembly by holding each section (one hand on the column and the other on the intermediate shaft).

Do not rest the steering column on the adjustment handle.

- Remove the electric steering column lock (see **Electric steering column lock: Removal - Refitting**) (MR 415, 82A, Immobiliser).

REFITTING**I - REFITTING PREPARATION OPERATION**

- Always replace:
 - the steering box universal joint bolt and nut,
 - the steering wheel bolt.
- Refit the electric steering column lock (see **Electric steering column lock: Removal - Refitting**) (MR 415, 82A, Immobiliser).

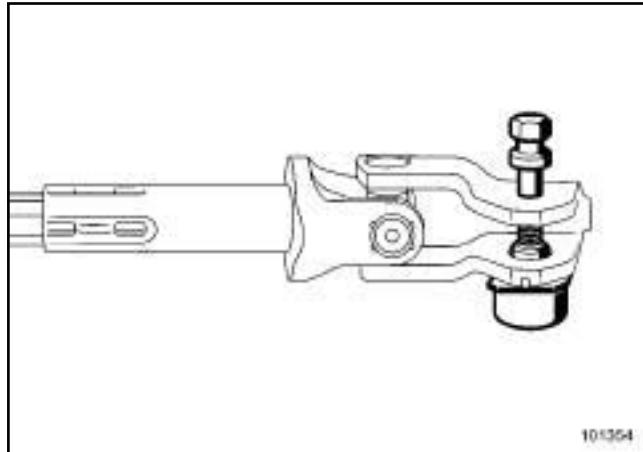


- Check:
 - that the ring (5) on the steering column gaiter is correctly positioned,
 - that the wheels are still straight.

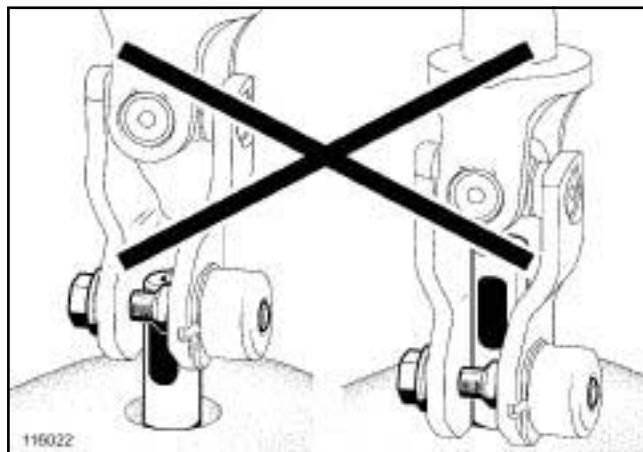
RIGHT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED

- Mount the steering column.
- Clip the wiring harness onto the steering column.
- Connect the connector to the electric steering column lock.
- Screw without tightening the steering column nuts.



- Observe the direction of fitting for the universal joint cam nut.
- Fit the universal joint.
- Refit the universal joint cam nut and bolt.
- Offer up the universal joint cam nut and bolt.
- Lock the cam nut in its housing (on the universal joint).
- Pretighten the universal joint bolt.



- Check that the universal joint is in the correct position.
- Tighten to torque:
 - the steering universal joint stud (24 Nm),

- the steering column nuts (21 Nm).

- Clip the steering garter on the front bulkhead.

III - FINAL OPERATION.

 Refit:

- the engine undertray,
- the engine undertray bolts,
- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Interior equipment),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 415, 84A, Control - Signals),
- the steering wheel (see **36A, Steering assembly, Steering wheel: Removal - Refitting**, page 36A-27) ,
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 415, 88C, Airbags and seat belt pretensioners).

- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

Note:

it is necessary to unlock the airbag computer in order to lock the steering column.

- Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select the airbag computer,
- go to repair mode,
- apply the "After repair procedure".

Equipment required

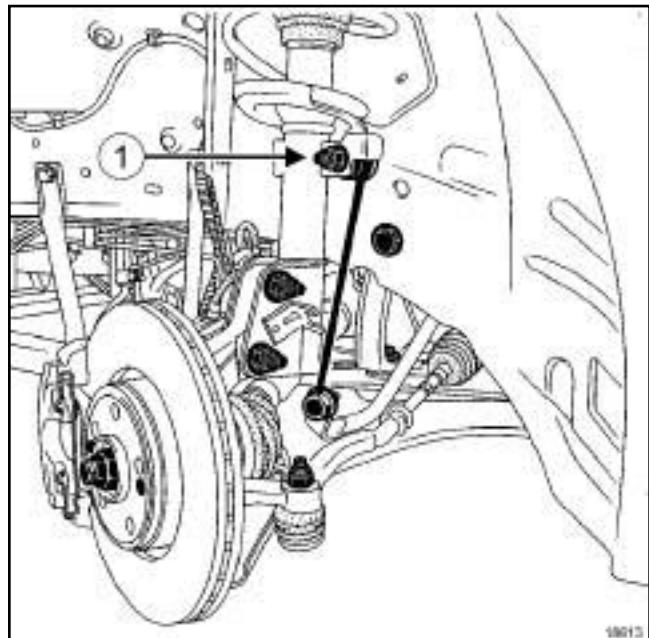
Diagnostic tool

Tightening torques 

front anti-roll bar tie rod **44 N.m**
upper nuts

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).



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REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Note:

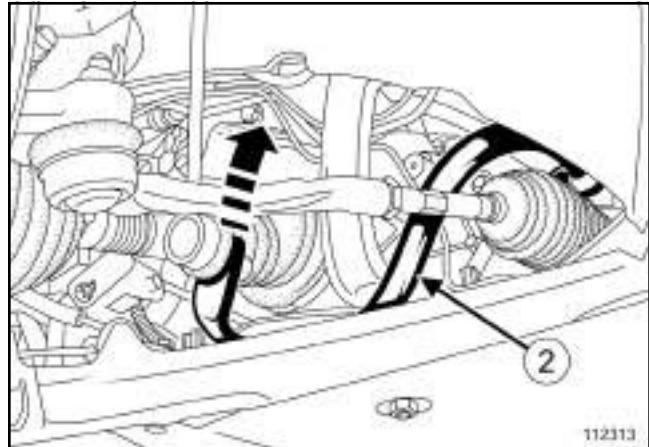
It is necessary to lock the airbag computer in order to unlock the steering column.

- Apply the before repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select « Airbag computer » ,
- go to repair mode,
- display the « Before/After repair procedure » for the computer selected,
- carry out the operations described in the « Before repair procedure » section.

- Remove:

- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**) ,
- the wheel alignment adjustment lock nut.



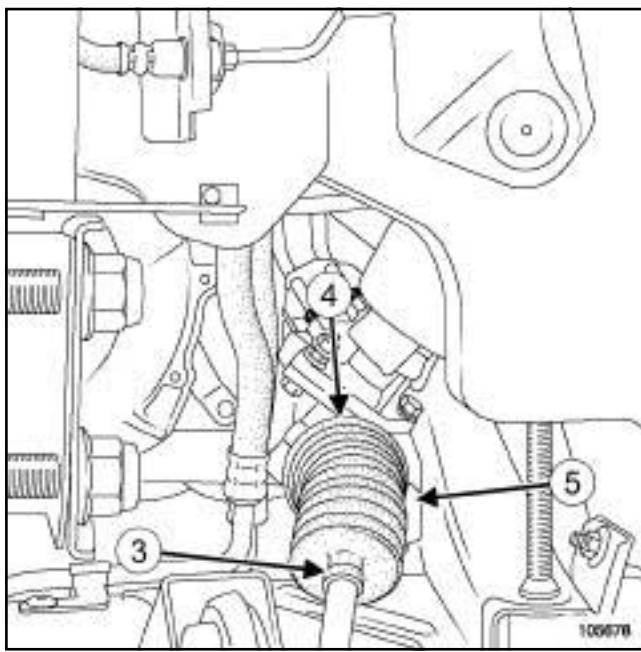
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- Pivot the anti-roll bar (2) towards the rear of the vehicle.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Clean the axial ball joint linkage using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).



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Remove:

- the small clip (3) from the steering box gaiter,
- the large clip (4) from the steering box gaiter.

Remove the steering box gaiter (5).

REFITTING

I - REFITTING PREPARATION OPERATION

Always replace:

- the steering gaiter,
- the anti-roll bar tie-rod nuts,
- the clips (supplied in the steering box gaiter kit).

Coat the bearing face of the steering box gaiter with **SILICONE GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to facilitate fitting on the axial ball joint linkage.

Note:

Be sure to centre the steering to ensure the air in the gaiters is equalised.

Note:

Be careful not to damage the gaiters: risk of irreversible damage.

II - REFITTING OPERATION FOR PART CONCERNED

Clean the « gaiter - steering box » contact surfaces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Fit:

- the steering box gaiter,
- the steering box gaiter clips.

III - FINAL OPERATION

Pivot the anti-roll bar towards the front of the vehicle.

Refit the anti-roll bar tie rod upper nuts.

Torque tighten the **front anti-roll bar tie rod upper nuts (44 N.m)**.

Refit:

- the wheel alignment adjustment lock nut,
- the track rod (see **36A, Steering assembly, Track rod: Removal - Refitting**, page **36A-8**),
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select « Airbag computer » ,
- go to repair mode,
- display the « Before/After repair procedure » for the computer selected,
- carry out the operations described in the « After repair procedure » section.

Check the axle geometry (see **30A, General information, Axle assemblies: Check**, page **30A-19**).

Adjust the front axle, if necessary (see **30A, General information, Front axle system: Adjustment**, page **30A-28**).

4-WHEEL STEERING

- Adjust the rear axle, if necessary (see **30A, General information, Rear axle system: Adjustment**, page **30A-32**) .

Tightening torques 

new steering wheel bolt	44 N.m
-------------------------	--------

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

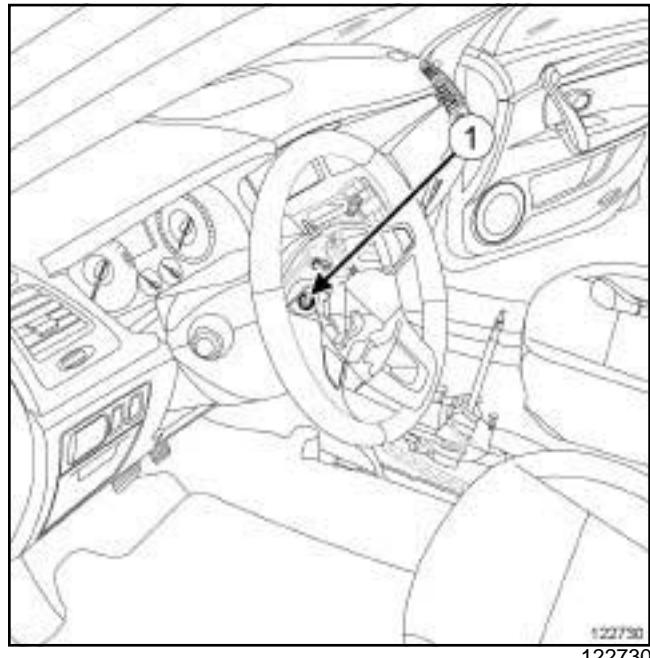
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Apply the procedure for deactivating the safety systems. (see **Airbag and pretensioners: Precautions for the repair**)
-

WARNING

Incorrect wheel alignment may damage the rotary switch.

- Remove the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**).
- Set the wheels straight ahead.
- Disconnect the connectors.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the steering wheel bolt (1).

WARNING

To ensure that the electronic systems operate correctly, do not damage the locking systems of the connectors.

- Remove the steering wheel.
-

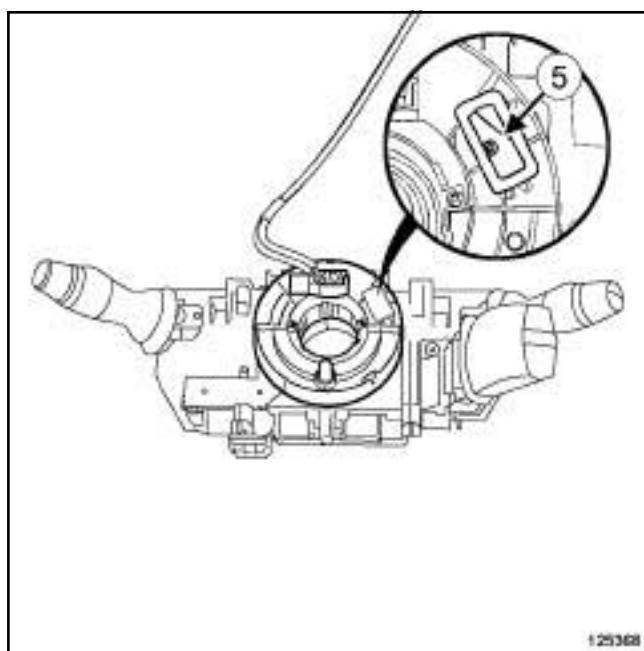
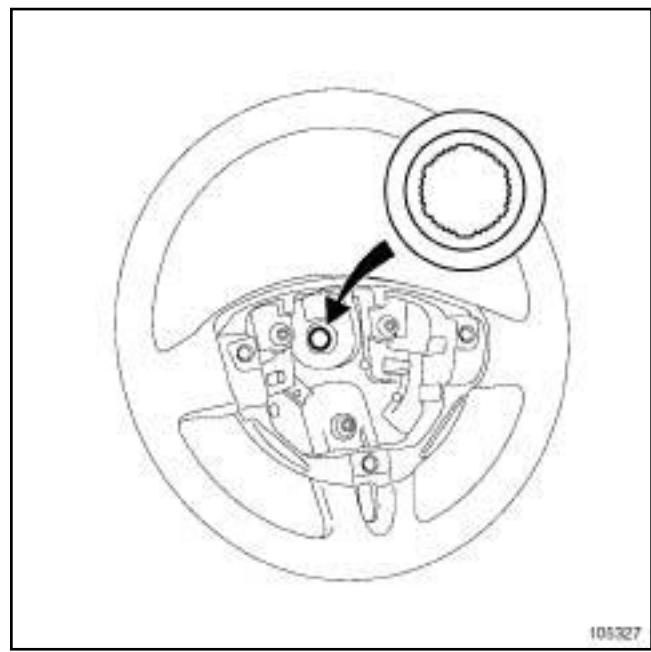
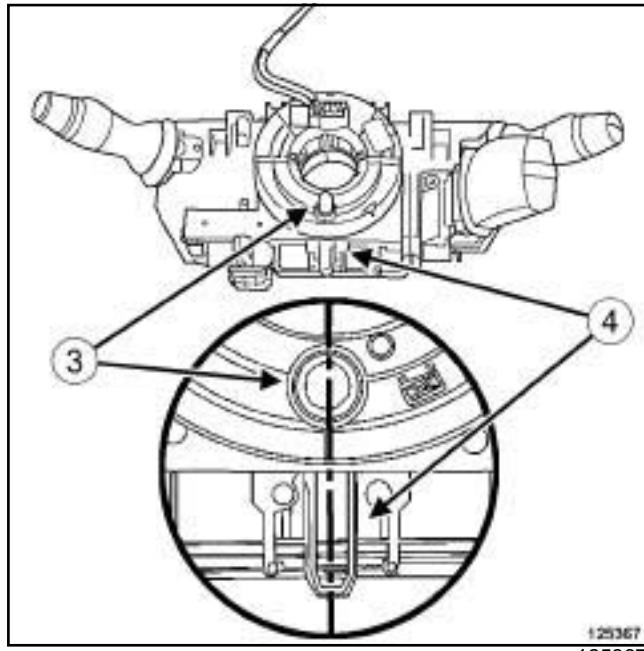
WARNING

To prevent damaging the rotary switch, do not turn the mobile section of the rotary switch.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: **Steering wheel bolt (13,04,01,09)**.

II - REFITTING OPERATION FOR PART CONCERNED



WARNING

In order not to damage the steering wheel or steering column, the steering wheel-column fool-proofing devices must be aligned.

- Refit the steering wheel.
- Connect the connectors.
- Refit the new steering wheel bolt.
- Torque tighten the **new steering wheel bolt (44 N.m)**.

III - FINAL OPERATION

- Refit the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**).

IV - CHECKING AFTER REPAIR

- Check that the index (3) is aligned with the clips (4).
- Check that the index appears in the little window (5).

- Switch on the ignition.

- Check the operation of the rotary switch:

- turn the steering wheel to the left until it stops,
- turn the steering wheel to the right until it stops,
- check that there are no faults on the instrument panel.

Power-assisted steering pump: Removal - Refitting**36B**

F4R

Special tooling required**Ms. 583** Pipe clamps.**Mot. 1448** Remote operation pliers for hose clips.**Tightening torques** 

high pressure pipe union on the power-assisted steering pump **21 Nm**

high pressure pipe bracket bolt on the power-assisted steering pump **8 N.m**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

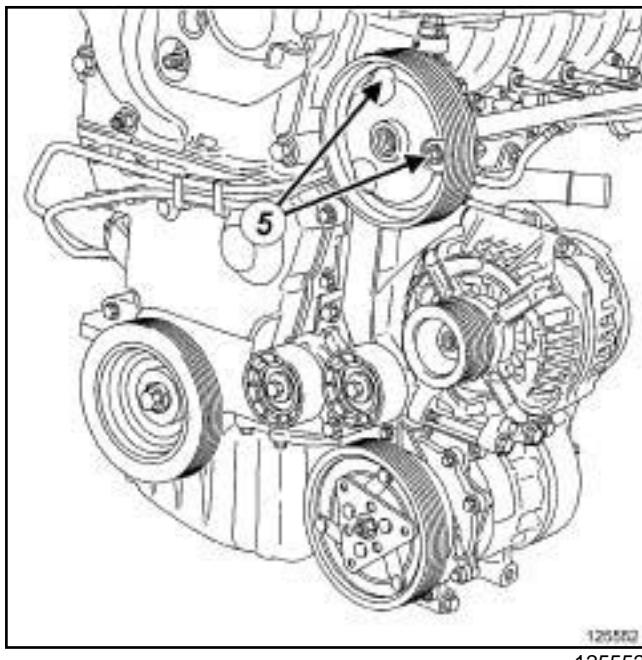
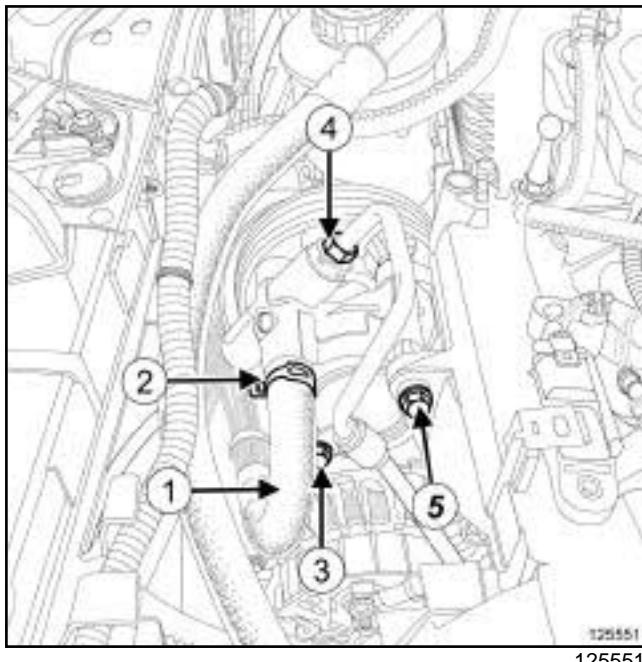
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Unclip the power-assisted steering fluid reservoir.
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front right-hand wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).

Power-assisted steering pump: Removal - Refitting

F4R

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Fit the hose clamp (**Ms. 583**) on the low pressure pipe (1).
- Remove:
 - the clip (2) using the (**Mot. 1448**),
 - the low pressure pipe (1) from the power-assisted steering pump.
- Fit a blanking plug on the opening of the power-assisted steering pump.
- Remove:

- the high pressure pipe bolt (3) ,
- the power-assisted steering pump high pressure pipe union (4) ,
- Fit blanking plugs on the high-pressure pipe union and on the opening of the power-assisted steering pump.
- Remove:
 - the bolts (5) from the power-assisted steering pump,
 - the power-assisted steering pump.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the high pressure pipe's O-ring.
- Before refitting the belt, clean the crankshaft pulley V-grooves with a brush to remove any deposits.

WARNING

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

II - REFITTING OPERATION FOR PART CONCERNED

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

 Refit:

- the power steering pump,
- the high-pressure pipe equipped with a new seal on the power-assisted steering pump,
- the high pressure pipe clamp on the power-assisted steering pump.

 Tighten to torque:

- the **high pressure pipe union on the power-assisted steering pump (21 Nm)**.
- the **high pressure pipe bracket bolt on the power-assisted steering pump (8 N.m)**.

Power-assisted steering pump: Removal - Refitting

36B

F4R

Refit:

- the low pressure pipe on the power-assisted steering pump,
- the low pressure pipe clip using the tool (**Mot. 1448**),

Remove the hose clamp (**Ms. 583**) from the low pressure pipe.

III - FINAL OPERATION.

Refit:

- the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine),
- the front right-hand wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
- the engine undertray,
- the engine cover.

Fit the power-assisted steering fluid reservoir.

Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page **36B-54**).

Check that there are no leaks.

Power-assisted steering pump: Removal - Refitting

M9R, and 802 or 805 or 816, and LEFT-HAND DRIVE

Special tooling required	
Ms. 583	Pipe clamps.
Mot. 1448	Remote operation pliers for hose clips.

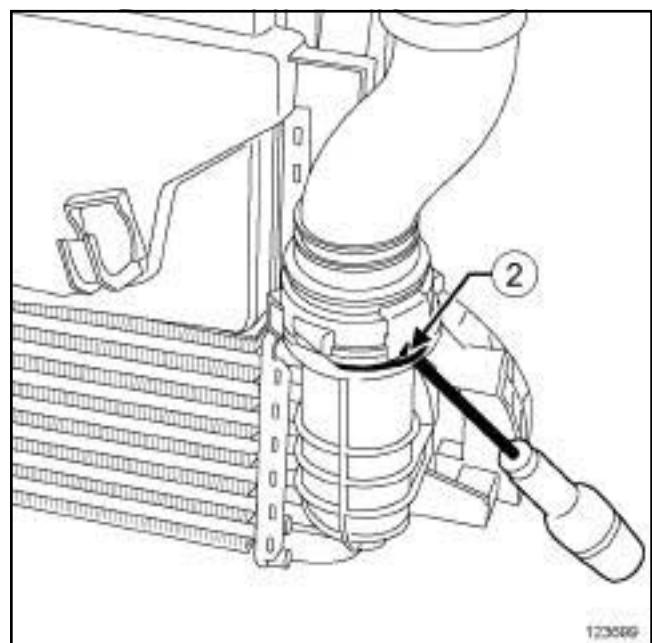
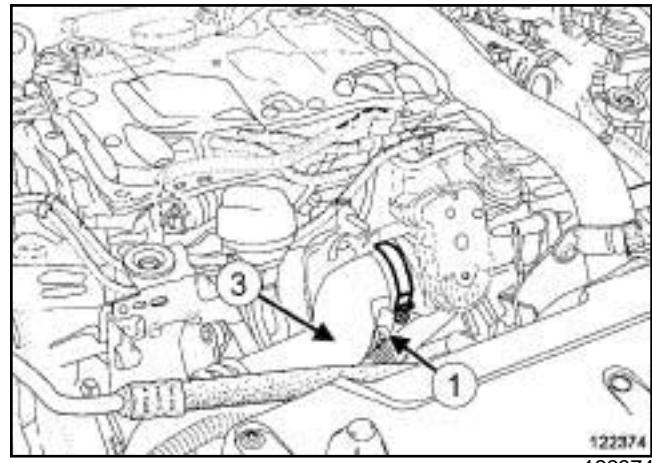
Tightening torques 	
high pressure pipe union on the power-assisted steering pump	23 N.m
high pressure pipe bracket nut	8 N.m
high pressure pipe bracket bolt on the oil filter unit	8 N.m
power-assisted steering pump pulley bolts	8 Nm

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Move the power-assisted steering fluid reservoir to one side.
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the engine cover.

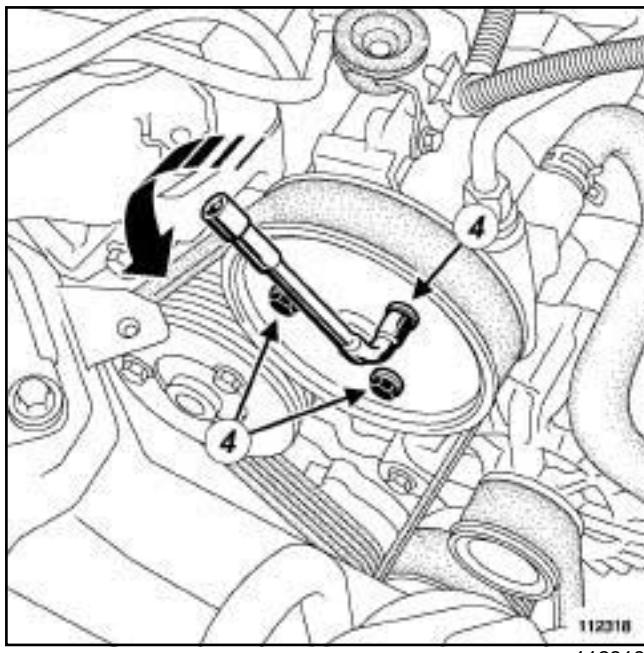


- Remove:

- the clamp (1) on the intercooler air outlet pipe,
- the clip (2) on the intercooler air outlet pipe,
- the air pipe (3) at the intercooler outlet.

Power-assisted steering pump: Removal - Refitting

M9R, and 802 or 805 or 816, and LEFT-HAND DRIVE



112318

Slightly loosen the power-assisted steering pump pulley bolts (4).

Remove:

- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the front right-hand wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (**55A, Exterior protection**),
- the accessories belt (see **Accessories belt: Removal - Refitting**) (**11A, Top and front of engine**).

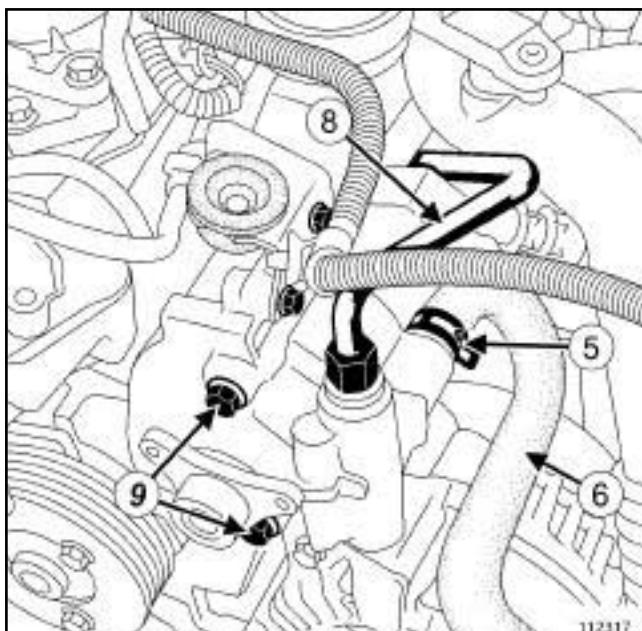
II - OPERATION FOR REMOVAL OF PART CONCERNED

Remove:

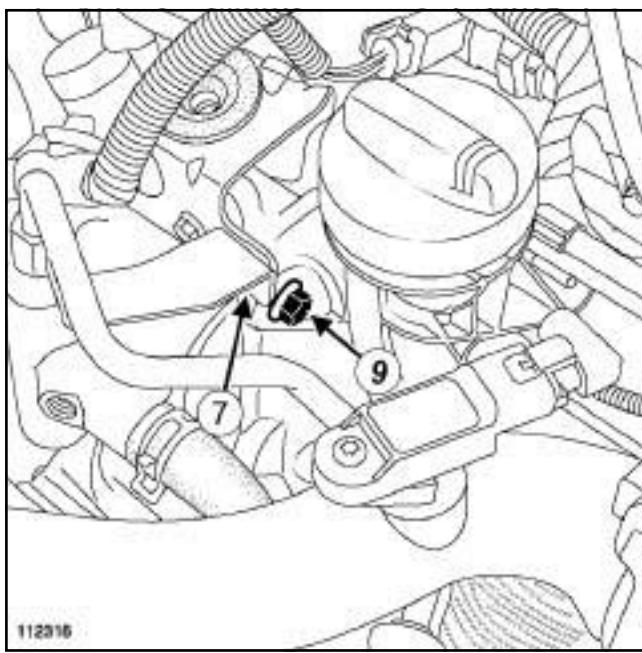
- the power-assisted steering pump pulley bolts,
- the power-assisted steering pump pulley.

Power-assisted steering pump: Removal - Refitting

M9R, and 802 or 805 or 816, and LEFT-HAND DRIVE



112317



112316

- Fit a hose clamp (**Ms. 583**) on the low pressure pipe between the reservoir and the power-assisted steering pump.

 Remove:

- the clip (5) using the (**Mot. 1448**),
- the low pressure pipe (6) from the power-assisted steering pump.

 Fit a blanking plug. Remove:

- the high pressure pipe nut (7) ,

- the bolt securing the high pressure pipe bracket on the oil filter unit,

- the pump high pressure pipe (8) from the power assisted steering pump.

Insert the blanking plugs.

Remove:

- the bolts (9) from the power-assisted steering pump,
- the power-assisted steering pump.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the high pressure pipe's O-ring.
- Before refitting the belt, clean the crankshaft pulley V-grooves with a brush to remove any deposits.

WARNING

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

II - REFITTING OPERATION FOR PART CONCERNED

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Refit:

- the power steering pump,
- the high-pressure pipe equipped with a new seal on the power-assisted steering pump,
- the high pressure pipe brackets on the oil filter unit.

Tighten to torque:

- the **high pressure pipe union on the power-assisted steering pump (23 N.m)**.
- the **high pressure pipe bracket nut (8 N.m)**,
- the **high pressure pipe bracket bolt on the oil filter unit (8 N.m)**.

Refit the low pressure pipe on the power-assisted steering pump.

Power-assisted steering pump: Removal - Refitting

36B

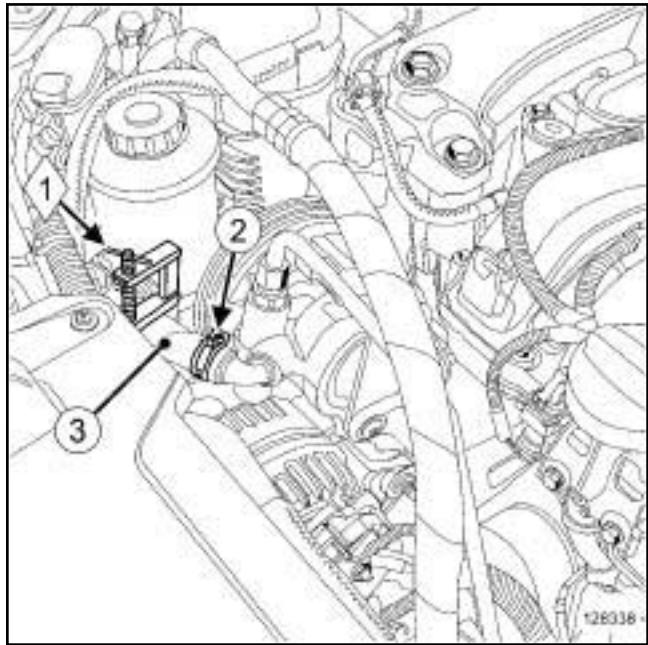
M9R, and 802 or 805 or 816, and LEFT-HAND DRIVE

- Remove the hose clamp (**Ms. 583**) from the low pressure pipe.
- Refit the power-assisted steering pump pulley.

III - FINAL OPERATION.

- Refit the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).
- Torque tighten the **power-assisted steering pump pulley bolts (8 Nm)**.
- Refit:
 - the front right-hand wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) ,
 - the engine undertray.
- Fit the power-assisted steering fluid reservoir.
- Refit:
 - the intercooler air outlet pipe,
 - the engine cover.
- Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .
- Check that there are no leaks.

K4M

Special tooling required**Ms. 583** Pipe clamps.**Mot. 1448** Remote operation pliers for hose clips.**Tightening torques** high pressure pipe union **21 N.m**high-pressure pipe bracket nut **8 N.m**high-pressure pipe bracket bolt **8 N.m****II - OPERATION FOR REMOVAL OF PART CONCERNED**

128338

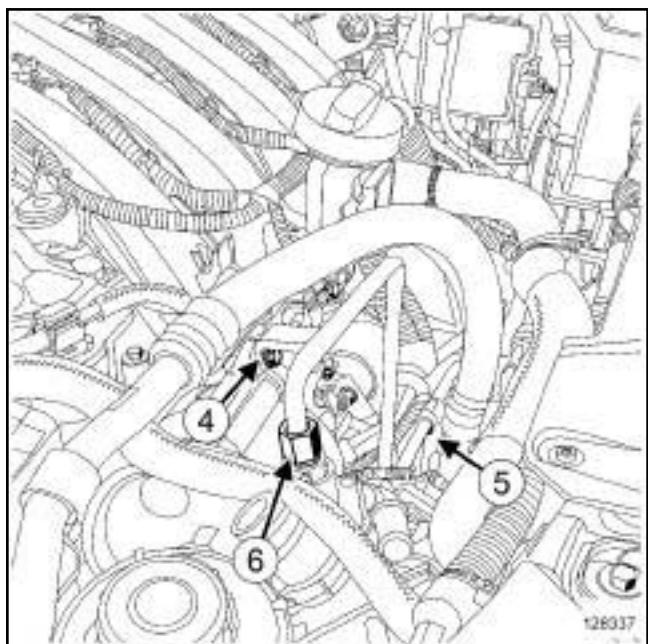
IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the engine cover,
 - the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).
- Move the power-assisted steering fluid reservoir to one side.

- Fit the tool (**Ms. 583**) (1) on the power-assisted steering pump's supply pipe.
- Remove:
 - the clip (2) using the (**Mot. 1448**),
 - the low pressure pipe (3) from the power-assisted steering pump.



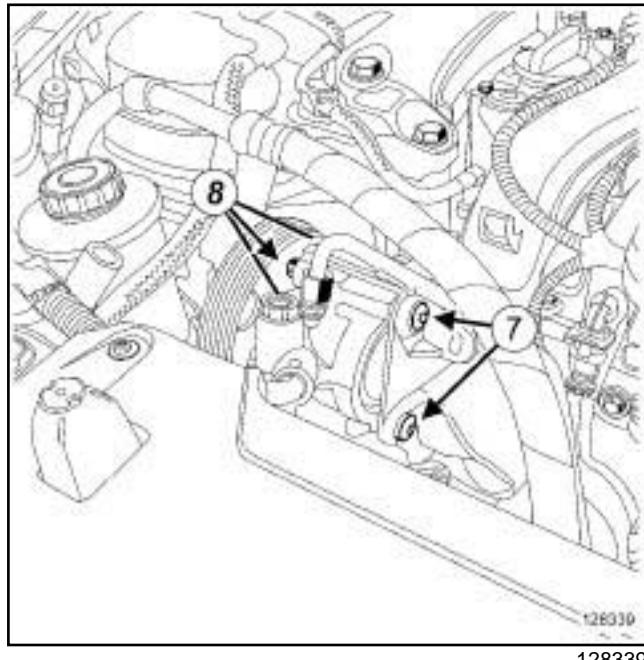
128337

- Remove:
 - the bolt (4) from the power-assisted steering pipe bracket,

K4M

- the nut (5) from the power-assisted steering pipe bracket,
- the union (6) from the power-assisted steering pump high pressure pipe.

- Remove the power-assisted steering high pressure pipe.



- Remove:
- the bolts (7) from the power-assisted steering pump,
 - the power-assisted steering pump.
- Insert the blanking plugs.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the O-ring of the high pressure pipe.
- Before refitting the belt, clean the crankshaft pulley V-grooves with a brush to remove any deposits.

WARNING

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

II - REFITTING OPERATION FOR PART CONCERNED

-

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Remove the blanking plugs.
- Refit the power assisted steering pump.
- Refit:
 - the power-assisted steering pump
 - the high-pressure pipe union equipped with a new seal,
 - the high pressure pipe brackets,
 - the low pressure pipe.
- Remove the (Ms. 583).
- Tighten to torque:
 - the **high pressure pipe union (21 N.m)**,
 - the **high-pressure pipe bracket nut8 (N.m)**,
 - the **high-pressure pipe bracket bolt (8 N.m)**.

III - FINAL OPERATION.

- Fit the power-assisted steering fluid reservoir.
- Refit:
 - the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine),
 - the engine undertray,
 - the engine cover.
- Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .
- Check that there are no leaks.

Power-assisted steering pump: Removal - Refitting

D91, and V9X

Special tooling required

Ms. 583 Pipe clamps.

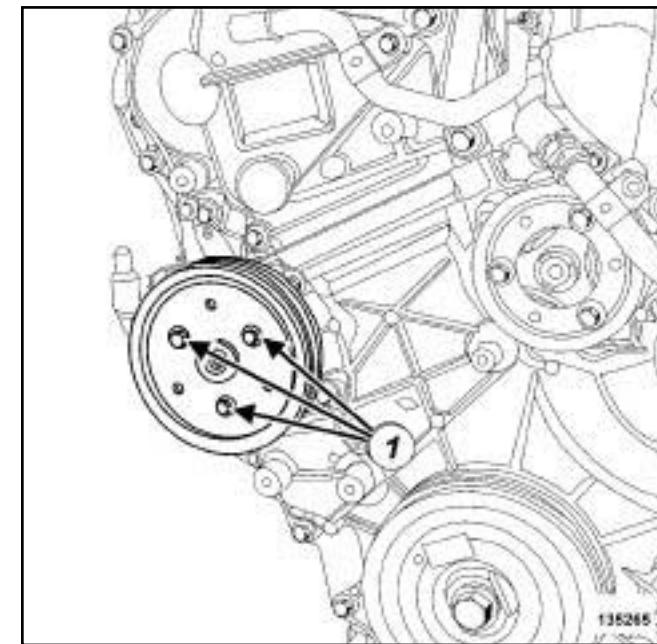
Mot. 1448 Remote operation pliers for hose clips.

Tightening torques 

power-assisted steering pump bolts 25 N.m

high pressure pipe union on the power-assisted steering pump 21 N.m

power-assisted steering pulley bolts 10 N.m



135265

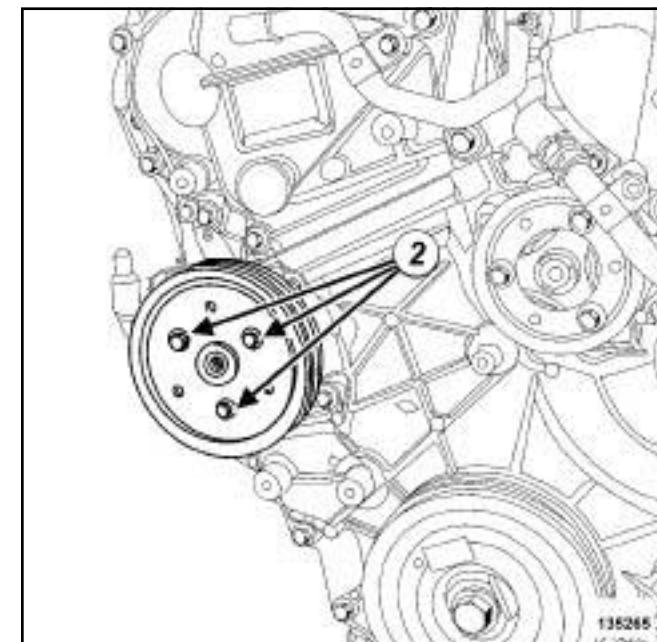
IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

- Loosen the power-assisted steering pump pulley bolts slightly (1).
- Remove the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**) ,
 - the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

II - OPERATION FOR REMOVAL OF PART CONCERNED

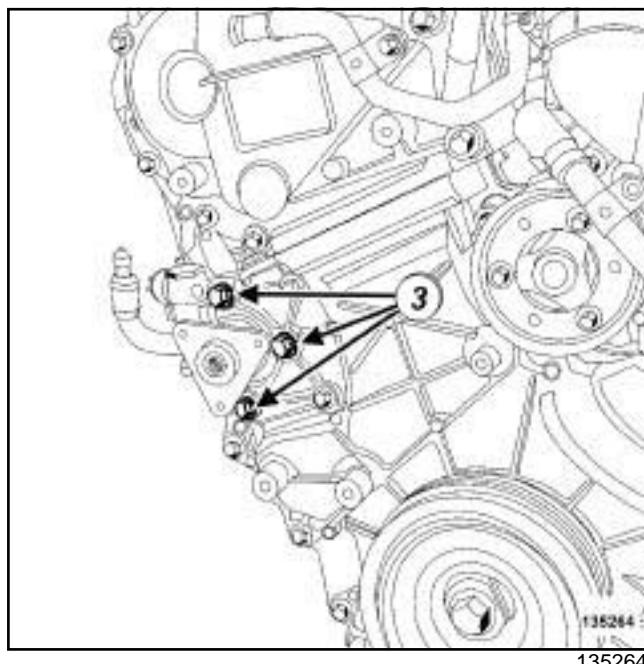
135265

- Remove:
 - the power-assisted steering pulley bolts (2) ,
 - the power-assisted steering pulley.

Power-assisted steering pump: Removal - Refitting**36B**

D91, and V9X

- Fit the tool (**Ms. 583**) on the low pressure pipe between the reservoir and the power-assisted steering pump.
- Remove:
 - the clip of the low pressure pipe using the tool (**Mot. 1448**),
 - the power assisted steering pump low pressure pipe,
 - the power-assisted steering pump high pressure pipe.
- Insert the blanking plugs.



- Remove:
 - the bolts (3) from the power-assisted steering pump,
 - the power-assisted steering pump.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: Power-assisted steering pipe seal (13,04,04,22).
- Before refitting the belt, clean the crankshaft pulley V-grooves with a brush to remove any deposits.

WARNING

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

II - REFITTING OPERATION FOR PART CONCERNED

-

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Refit:

- the power-assisted steering pump,
- the high pressure pipe on the power-assisted steering pump,
- the low pressure pipe on the power-assisted steering pump.

- Tighten to torque:

- the **power-assisted steering pump bolts** (25 N.m),
- the **high pressure pipe union on the power-assisted steering pump** (21 N.m).

- Remove the tool (**Ms. 583**).

- Refit the power-assisted steering pulley.

III - FINAL OPERATION

- Refit the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).
- Torque tighten the **power-assisted steering pulley bolts** (10 N.m).

- Refit:

- the front right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

- Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page **36B-54**).

- Check that there are no leaks.

POWER ASSISTED STEERING

Power-assisted steering pump: Removal - Refitting

36B

D91, and V9X

Refit:

- the engine undertray,
- the engine cover.

Power-assisted steering pump: Removal - Refitting

D91, and V4Y

Special tooling required

Ms. 583 Pipe clamps.

Mot. 1448 Remote operation pliers for hose clips.

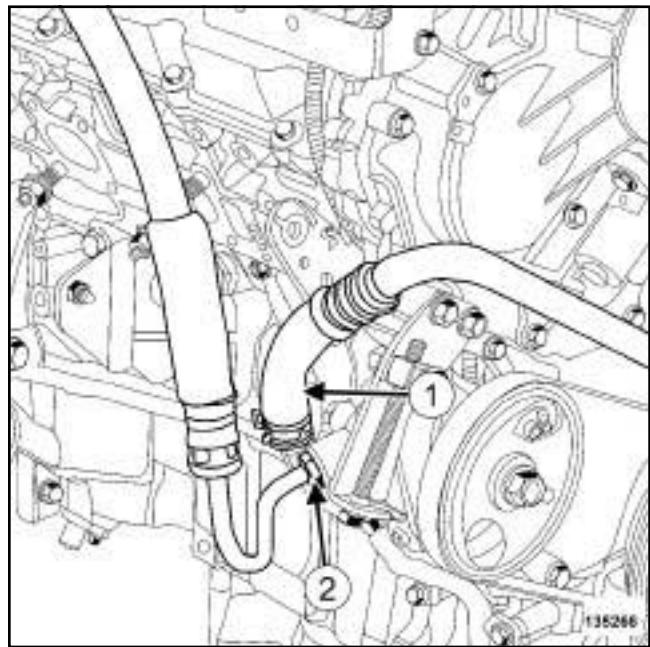
Tightening torques 

high pressure pipe union on the power-assisted steering pump **21 N.m**

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



135266

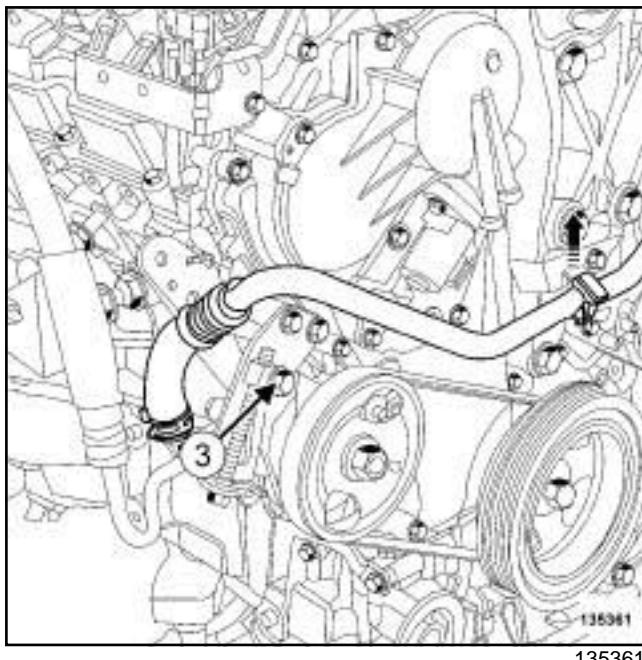
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- Remove the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine).

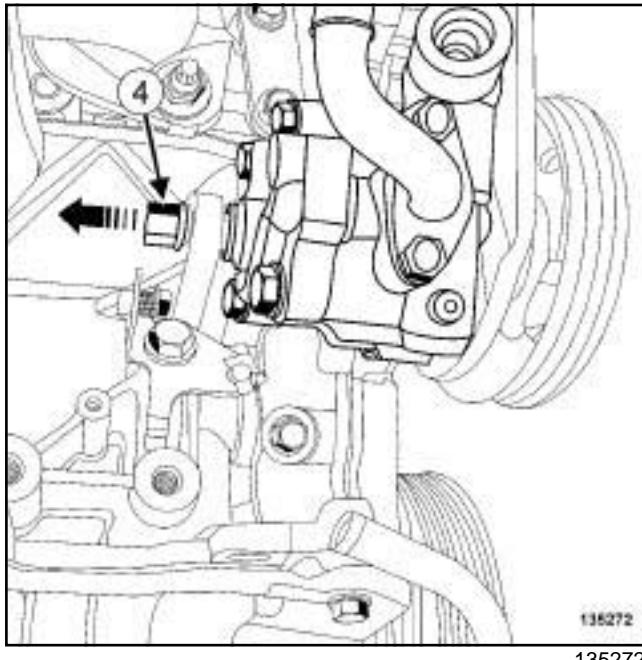
- Fit the tool (**Ms. 583**) on the low pressure pipe between the reservoir and the power-assisted steering pump.
- Remove:
 - the clip using the (**Mot. 1448**),
 - the low pressure pipe (1) from the power-assisted steering pump,
 - the high pressure pipe (2) from the power assisted steering pump.
- Insert the blanking plugs.

Power-assisted steering pump: Removal - Refitting

D91, and V4Y



- Remove the accessories belt adjustment bolt (3) .



- Remove:
 - the power-assisted steering pump bolt (4) ,
 - the power-assisted steering pump.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: Power-assisted steering pipe seal (13,04,04,22)

- Before refitting the accessories belt, clean the V-grooves of the crankshaft pulley with a brush to remove any deposits.

WARNING

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

II - REFITTING OPERATION FOR PART CONCERNED

-

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Refit:

- the power-assisted steering pump,
- the high-pressure pipe equipped with a new seal on the power-assisted steering pump,
- the low pressure pipe on the power-assisted steering pump.

- Torque tighten the **high pressure pipe union on the power-assisted steering pump** (21 N.m).

- Remove the tool (**Ms. 583**).

III - FINAL OPERATION

- Refit:

- the accessories belt (see **Accessories belt: Removal - Refitting**) (11A, Top and front of engine),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

- Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .

- Check that there are no leaks.

- Refit:

- the engine undertray,
- the engine cover.

POWER ASSISTED STEERING

Power-assisted steering pump assembly: Removal - Refitting

36B

K9K or M4R – M9R, and 742

Special tooling required	
Ms. 583	Pipe clamps.
Mot. 1448	Remote operation pliers for hose clips.
Equipment required	
Diagnostic tool	

Tightening torques 	
hydraulic unit mounting bolts	21 Nm
high pressure pipe bracket bolt on the pump assembly	21 Nm

IMPORTANT

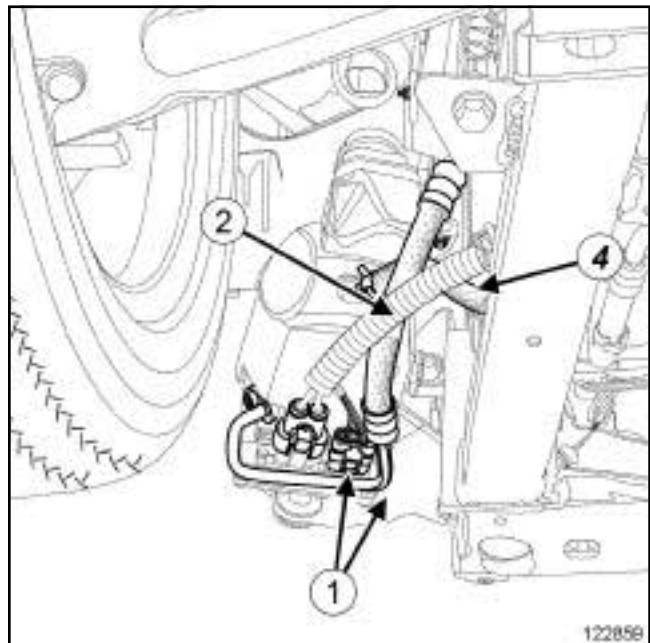
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

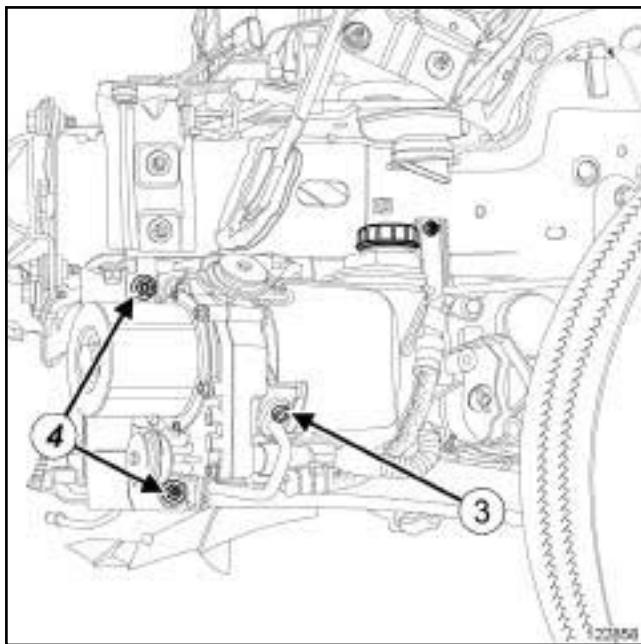
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the engine undertray bolts,
 - the engine undertray,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



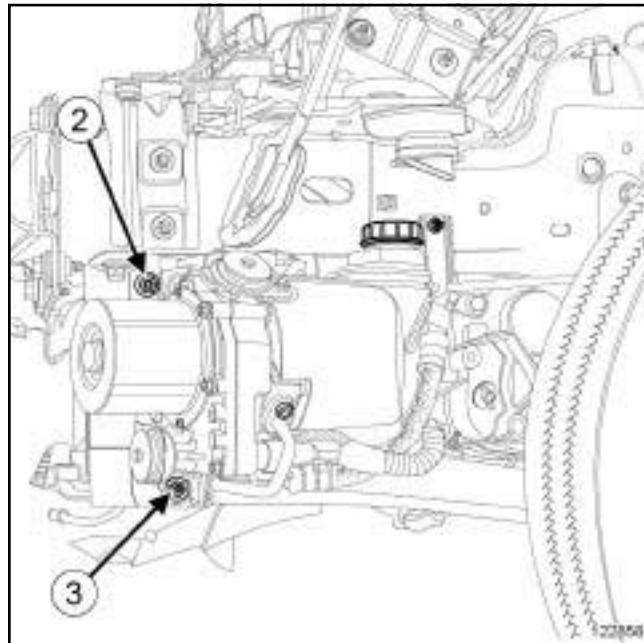
- Carefully disconnect the connectors (1) from the pump assembly to prevent damaging the locking systems.
- Position the (**Ms. 583**) on the low pressure pipe.
- Loosen the clip (2) from the low pressure pipe on the pump assembly reservoir using the (**Mot. 1448**).
- Disconnect the low pressure pipe and drain the pump assembly reservoir.

K9K or M4R – M9R, and 742



122858

II - REFITTING OPERATION FOR PART CONCERNED



122858

- Remove the bolt (3) from the high pressure pipe bracket on the pump assembly.
- Disconnect the pump assembly high pressure pipe.
- Remove:
 - the bolts (4) from the pump assembly mounting,
 - the pump assembly with its mounting.

Note:

Do not remove the pump assembly from its mounting.

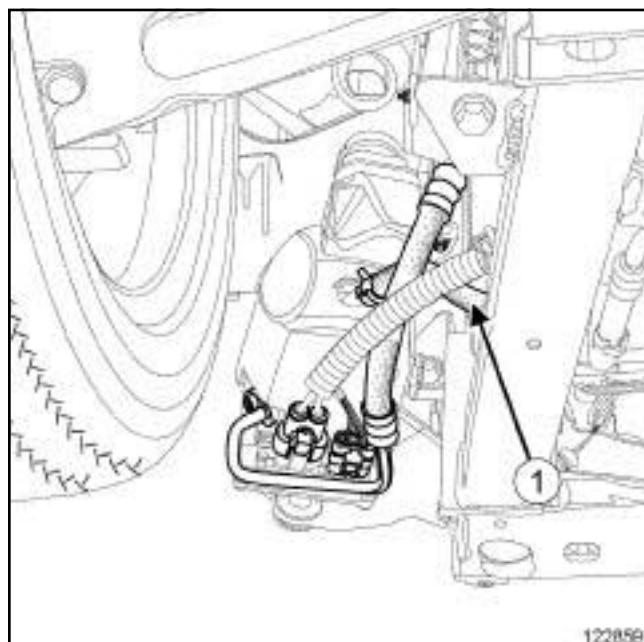
REFITTING

I - REFITTING PREPARATIONS OPERATION

- Always replace the high pressure pipe O-ring.

Note:

The pump assembly is supplied with its mounting.



122859

- Refit:
 - the pump assembly with its mounting,
 - the pump assembly mounting bolts.
- Tighten the **hydraulic unit mounting bolts** (21 Nm) in the following order:
 - (1), (2), (3).
- Fit an O-ring on the high pressure pipe.

K9K or M4R – M9R, and 742

- Connect the high pressure pipe to the pump assembly.
- Refit the bolt to the high pressure pipe bracket on the pump assembly.
- Tighten the **high pressure pipe bracket bolt on the pump assembly (21 Nm)**.
- Connect the low pressure pipe to the pump assembly reservoir by aligning the mark on the pipe with that on the reservoir outlet.
- Refit the low pressure pipe clip using the **(Mot. 1448)**.
-

Note:

Respect the original routing of the wiring harnesses to prevent water retention.

- Connect the pump assembly connectors.
- Lock the connectors.
- Push and pull the connectors to check the condition of the connection.

III - FINAL OPERATION.

- Fill the pump assembly reservoir with power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Bleed the power-assisted steering circuit:
 - lift the vehicle so that the wheels are off the ground,
 - start the engine,
 - turn the steering wheel so the wheels lock left then right (repeat this operation three times).

Note:

Monitor the fluid level in the reservoir during the power-assisted steering circuit bleed operation.

- Top up the power-assisted steering fluid level if necessary.
- Check that there are no leaks.

- If the pump assembly is replaced, program the power-assisted steering pump assembly computer. Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select « Power-assisted steering pump assembly computer » ,
- go to repair mode,
- apply the « After repair procedure » .

- Refit:

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
- the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
- the engine undertray,
- the engine undertray bolts.

Power-assisted steering pipes: Removal - Refitting

K9K or M4R, and LEFT-HAND DRIVE – M9R, and 742, and LEFTHAND DRIVE

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
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IMPORTANT

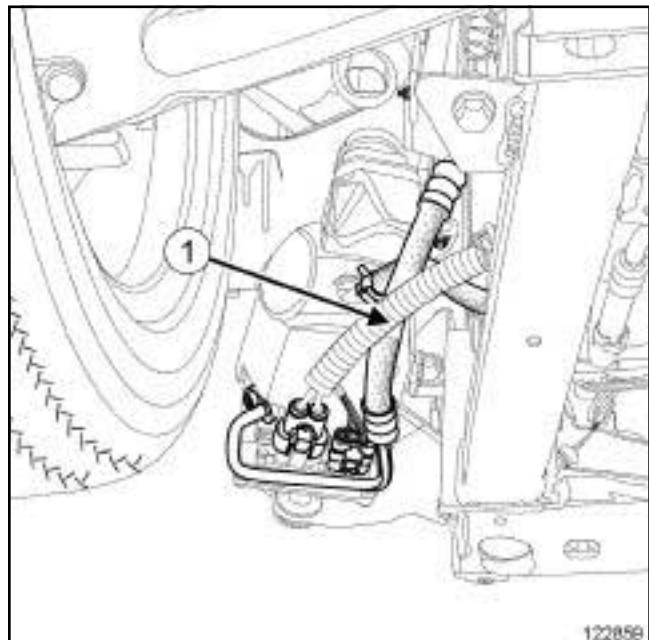
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (see MR 415, 02A, Lifting equipment).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED

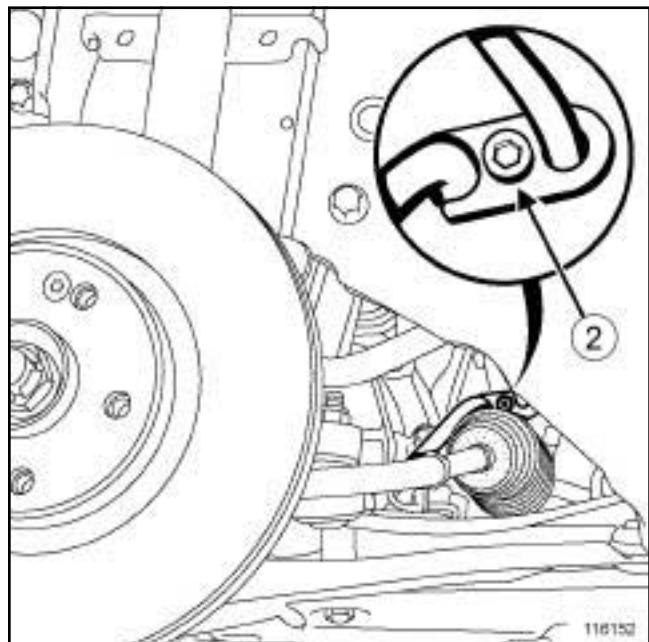
- 1 - Low pressure pipe between the pump assembly and the steering box



122859

122859

- Loosen the clip (1) from the low pressure pipe on the pump assembly reservoir using the (**Mot. 1448**).
- Disconnect the low pressure pipe and drain the pump assembly reservoir.



116152

- Remove the power-assisted steering pipe bracket bolt (2) on the steering box.

Power-assisted steering pipes: Removal - Refitting

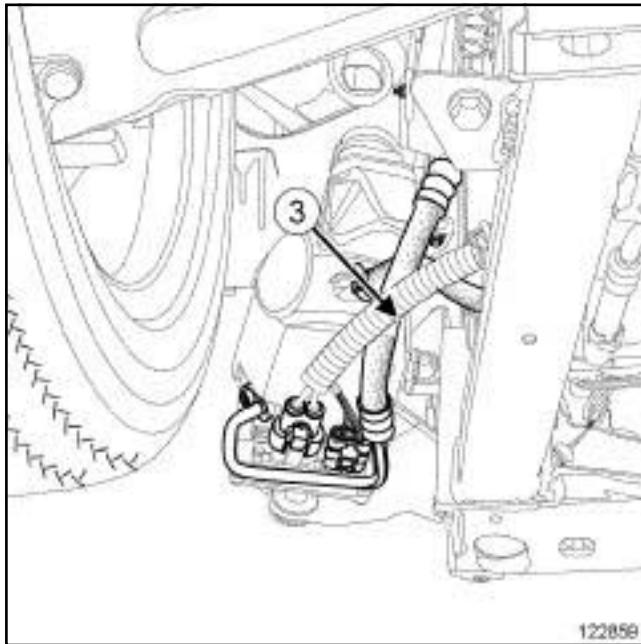
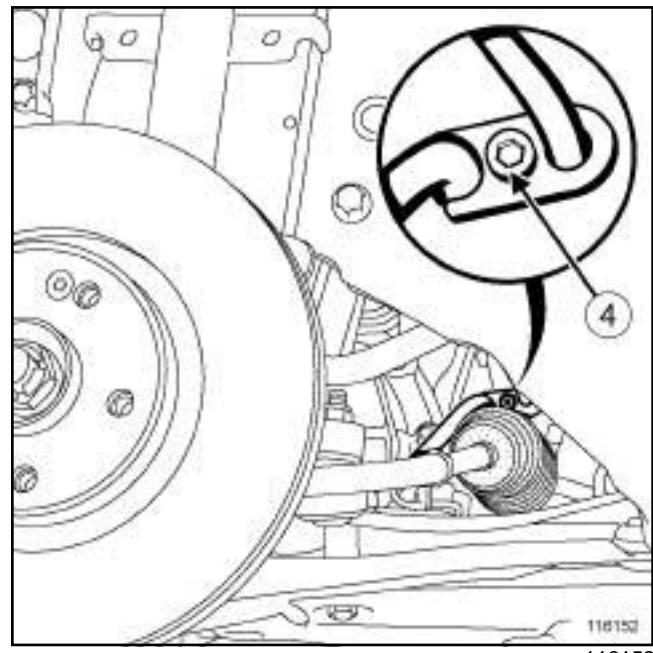
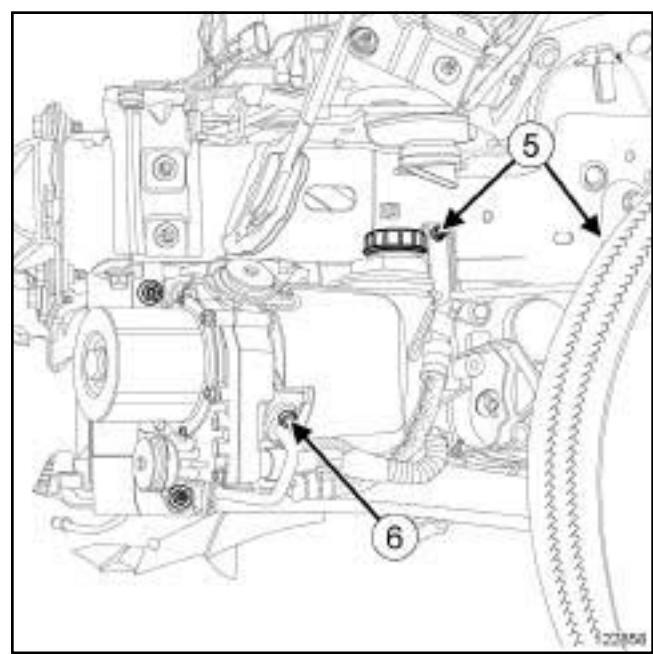
K9K or M4R, and LEFT-HAND DRIVE – M9R, and 742, and LEFTHAND DRIVE

 Detach the low pressure pipe:

- on the lower side member,
- on the subframe.

 Remove the low pressure pipe between the pump assembly reservoir and the steering box.

2 - High pressure pipe between the pump assembly and the steering box

 Loosen the clip (3) from the low pressure pipe on the pump assembly reservoir using the (Mot. 1448). Disconnect the low pressure pipe and drain the pump assembly reservoir. Remove the power-assisted steering pipe bracket bolt (4) on the steering box. Remove:

- the nuts (5) from the high pressure pipe brackets on the body,
- the bolt (6) from the high pressure pipe bracket on the pump assembly,
- the high pressure pipe between the pump assembly and the steering box.

Power-assisted steering pipes: Removal - Refitting

K9K or M4R, and LEFT-HAND DRIVE – M9R, and 742, and LEFTHAND DRIVE

REFITTING**I - REFITTING PREPARATIONS OPERATION**

- Always replace the O-rings on the power assisted steering pipes.

II - REFITTING OPERATION FOR PART CONCERNED**1 - Low pressure pipe between the pump assembly and the steering box**

- Refit:
 - the low pressure pipe between the pump assembly and the steering box,
 - the bolt to the power-assisted steering pipe bracket on the steering box.
- Tighten the bolt of the power-assisted steering pipe bracket on the steering box.
- Clip on the low pressure pipe:
 - on the lower side member,
 - on the subframe.

2 - High pressure pipe between the pump assembly and the steering box

- Refit:
 - the high pressure pipe between the pump assembly and the steering box,
 - the bolt to the power-assisted steering pipe bracket on the steering box,
 - the bolt to the high pressure pipe bracket on the pump assembly,
 - the high pressure pipe bracket nuts on the body.
- Tighten:
 - the bolt to the power-assisted steering pipe bracket on the steering box,
 - the bolt to the high pressure pipe bracket on the pump assembly,
 - the high pressure pipe bracket nuts on the body.

III - FINAL OPERATION.

- Connect the low pressure pipe to the pump assembly reservoir.
- Refit the low pressure pipe clip using the (**Mot. 1448**).

- Fill the pump assembly reservoir with power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Bleed the power-assisted steering circuit:
 - lift the vehicle so that the wheels are off the ground,
 - start the engine,
 - turn the steering wheel so the wheels lock left then right (repeat this operation three times).

Note:

Monitor the fluid level in the reservoir during the power-assisted steering circuit bleed operation.

- Top up the power-assisted steering fluid level if necessary.
- Check that there are no leaks.
- Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the engine undertray,
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

POWER ASSISTED STEERING

Power-assisted steering pipes: Removal - Refitting

36B

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHHAND DRIVE

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
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Tightening torques

universal joint bolt	24 Nm
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IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 36A, Steering assembly, Steering: Precautions for the repair, page 36A-4).

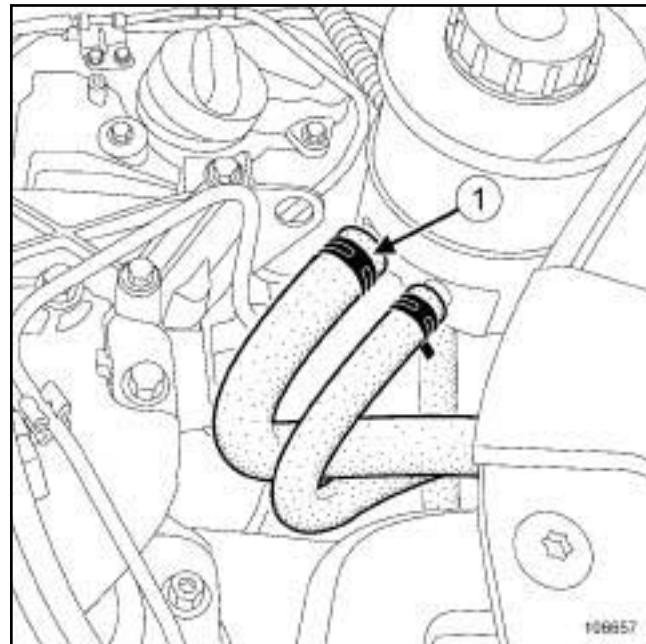
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (see MR 415, 02A, Lifting equipment).
- Remove:
 - the engine undertray bolts,
 - the engine undertray.

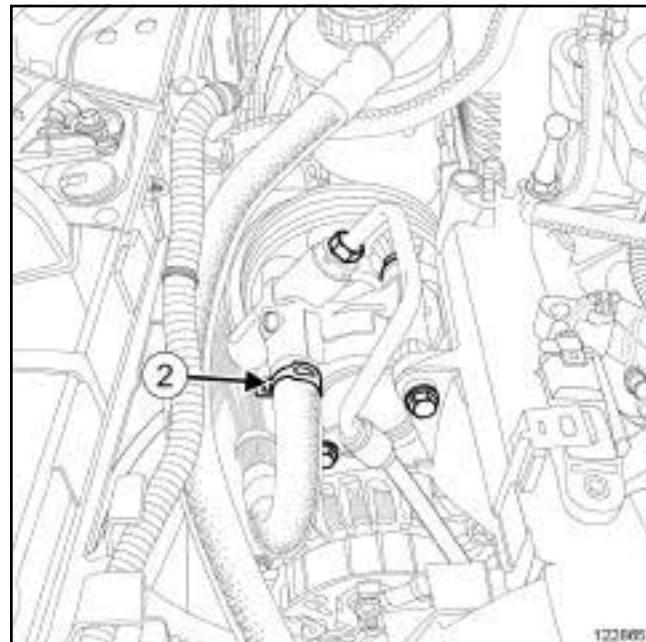
II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Low pressure pipe between the power-assisted steering pump and the reservoir



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- Undo the clip (1) on the low pressure pipe using the (**Mot. 1448**),
- Drain the power-assisted steering fluid reservoir.



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- Undo the clip (2) on the low pressure pipe using the (**Mot. 1448**),
- Remove the low pressure pipe.

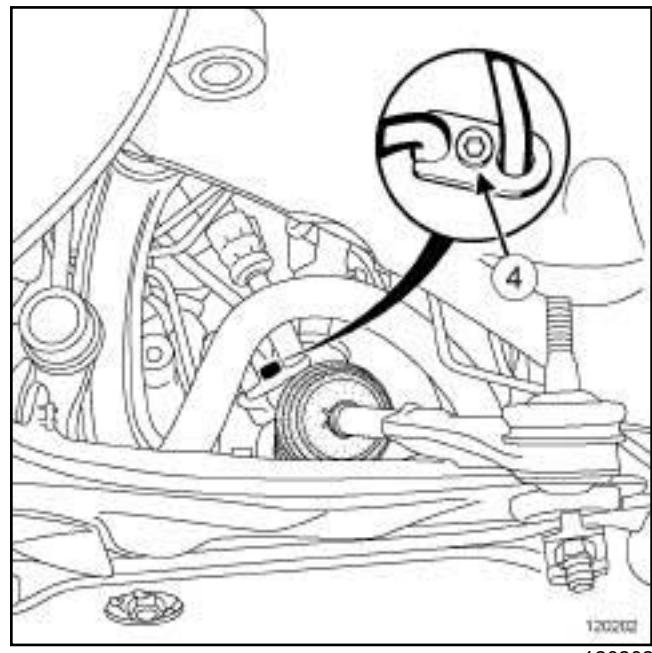
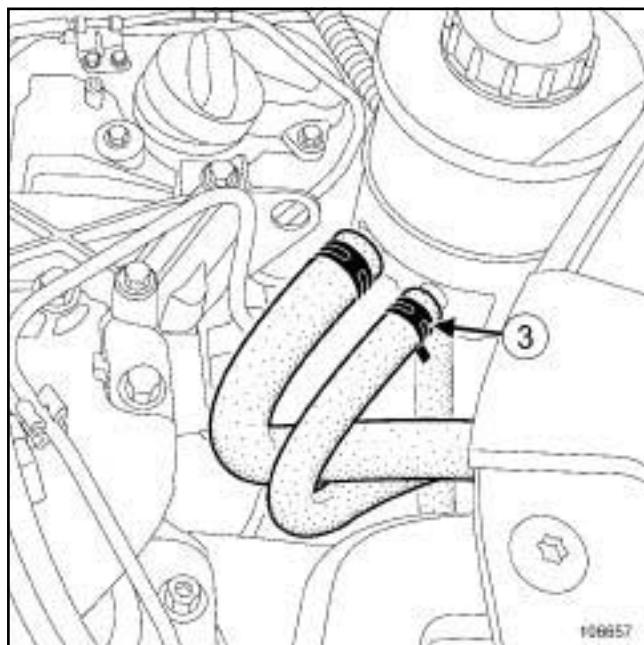
Power-assisted steering pipes: Removal - Refitting

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHFHAND DRIVE

2 - Low pressure pipe between the power-assisted steering reservoir and the steering box

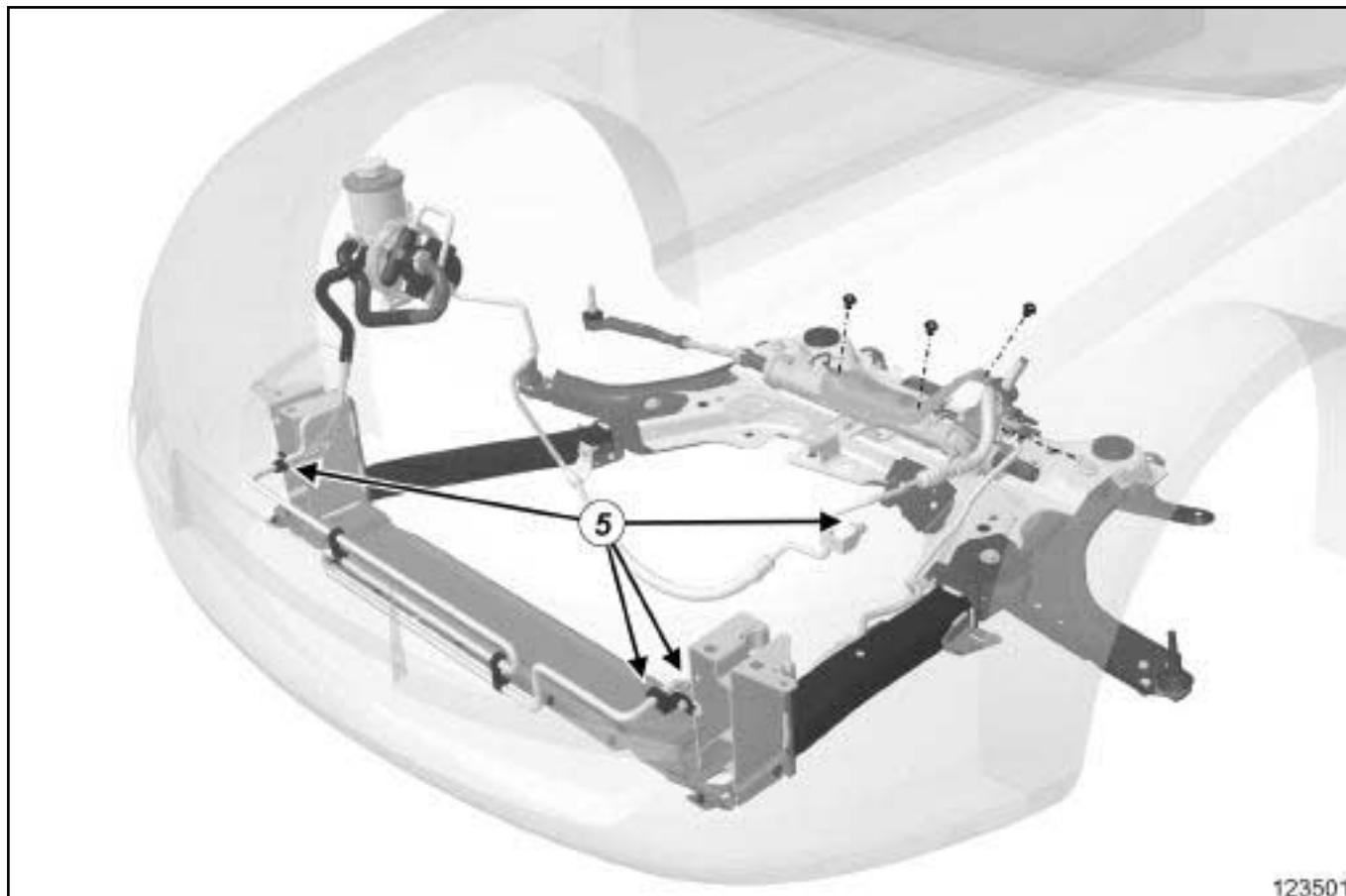
 Remove:

- the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liners partially (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection).

 Remove the power-assisted steering pipe bracket bolt (4) .

- Undo the low pressure pipe clip (3) on the power-assisted steering fluid reservoir using the (**Mot. 1448**).
- Drain the power-assisted steering fluid reservoir.

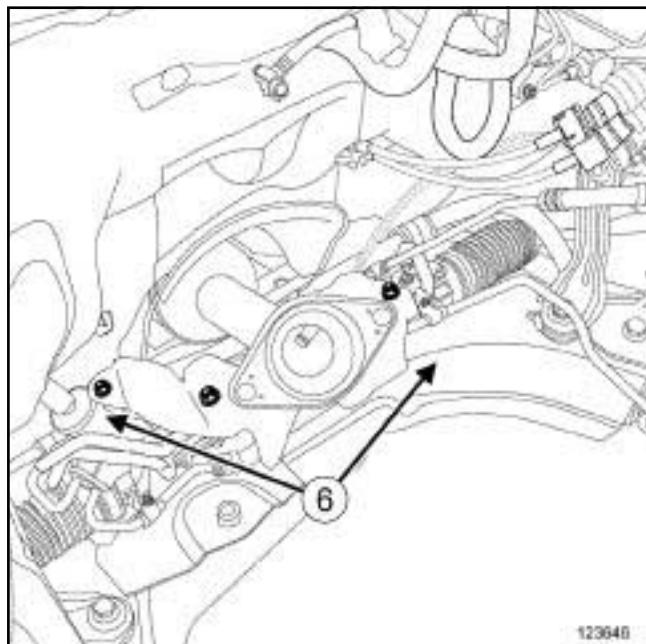
F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHFHAND DRIVE



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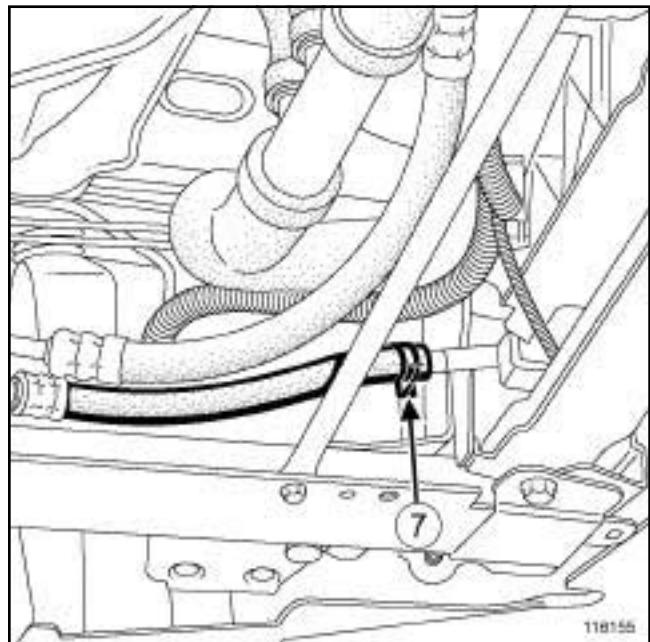
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- Unclip the low pressure pipe at (5).



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- Remove the nuts (6) from the brackets securing the low pressure pipe between the power-assisted steering fluid reservoir and the steering box.



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- Remove:

- the clip (7) using the (**Mot. 1448**),
- the low pressure pipe between the power-assisted steering reservoir and the steering box

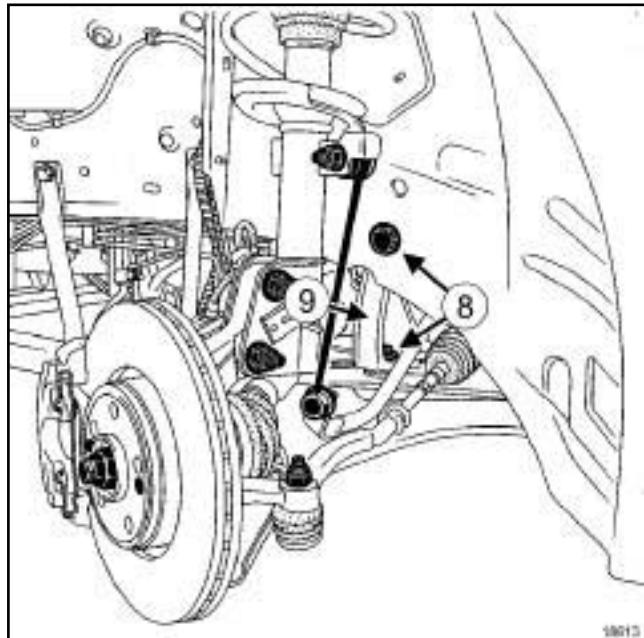
Power-assisted steering pipes: Removal - Refitting

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHFHAND DRIVE

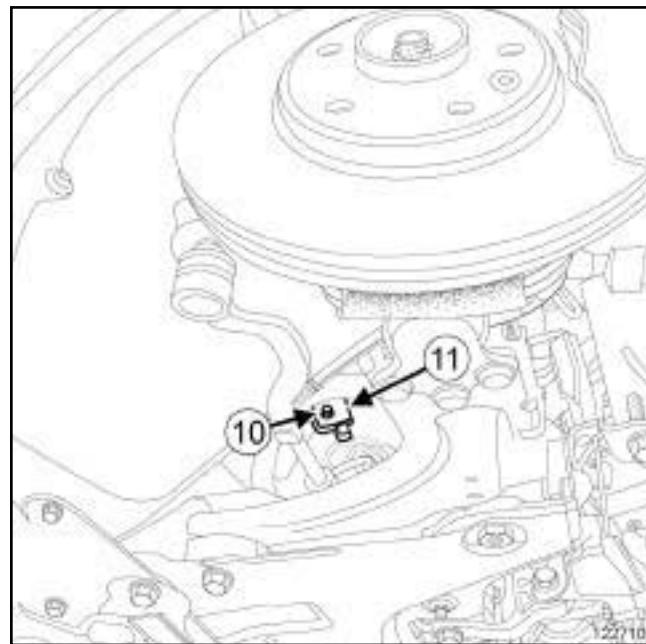
3 - High pressure pipe between the power-assisted steering pump and the steering box

 Remove:

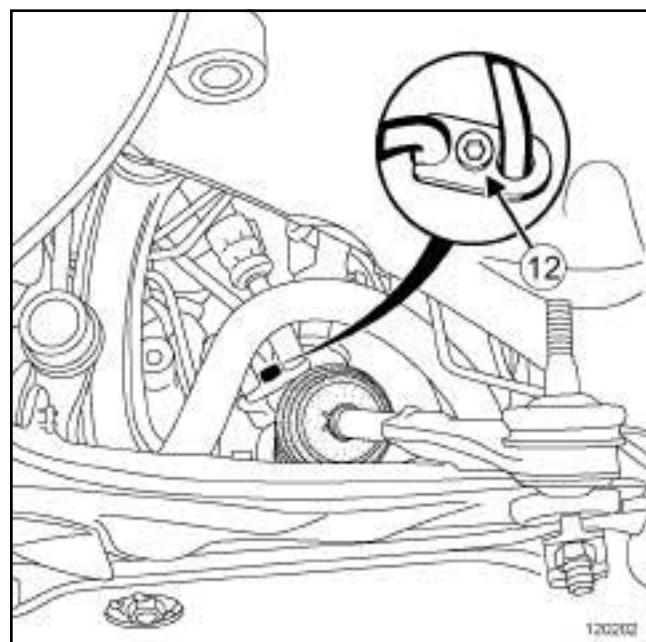
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the front left-hand wheel arch (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 56A, Exterior protection).

 Remove:

- the tie rod bolts (8) ,
- the tie rod (9) .

 Remove:

- the bolt (10) from the universal joint,
- the universal joint nut cover,
- the universal joint nut.

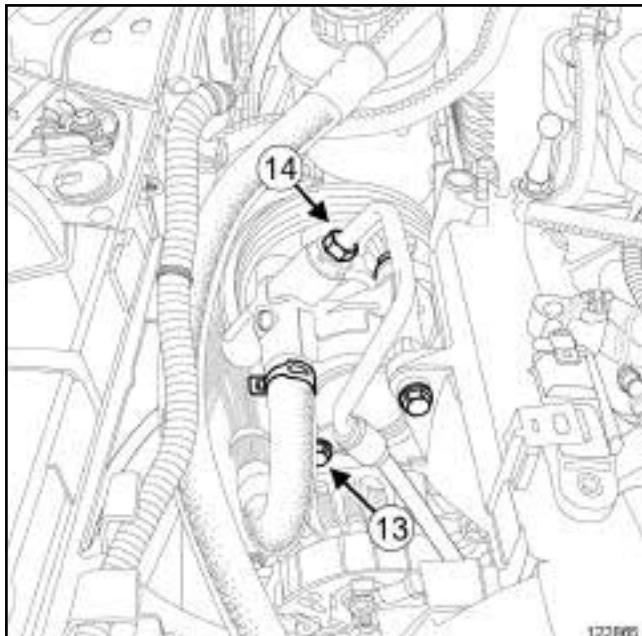
 Tilt the steering box universal joint (11) . Remove the power-assisted steering pipe bracket bolt (12) .

POWER ASSISTED STEERING

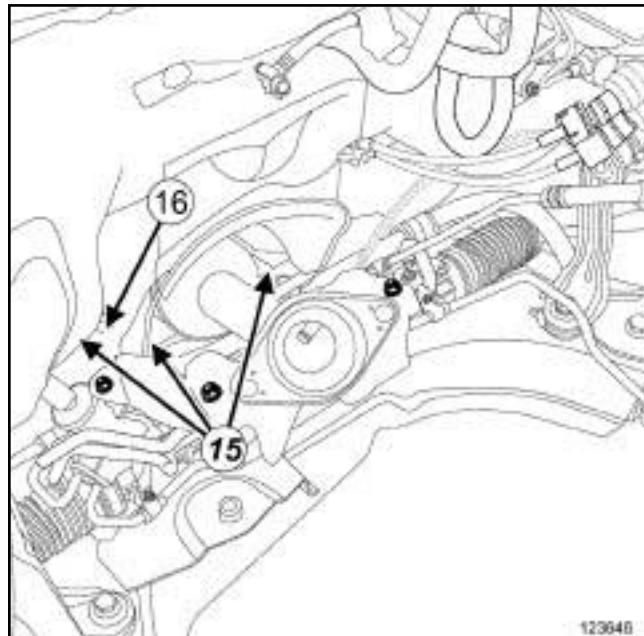
Power-assisted steering pipes: Removal - Refitting

36B

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHFHAND DRIVE



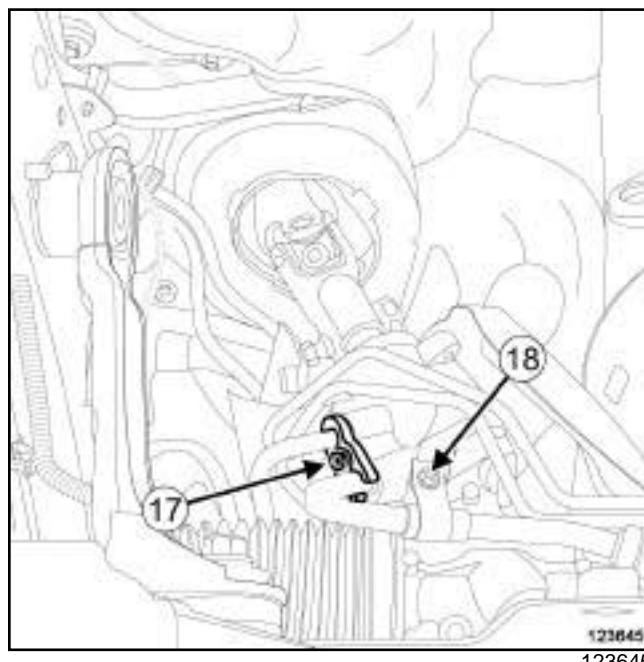
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Remove:

- the pipe bolt (13) ,
- the high pressure pipe union (14) .

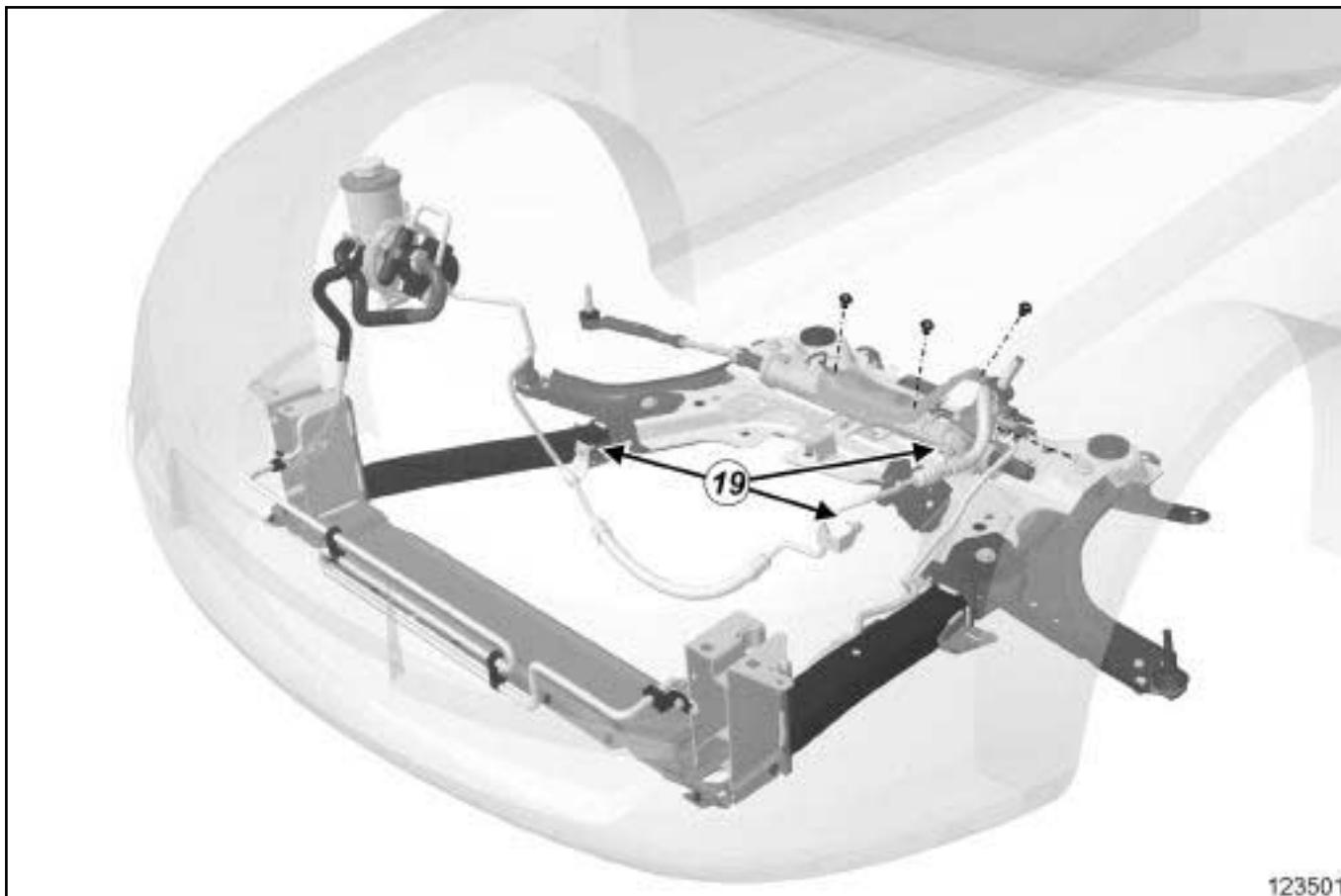


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Remove:

- the power-assisted steering box heat shield bolts (15) ,
- the power-assisted steering box heat shield (16) ,
- the high pressure pipe bolt (17) ,
- the high pressure pipe nut (18) .

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHHAND DRIVE

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Remove:

- the pipe nuts (19) ,
- the high pressure pipe between the power-assisted steering pump and the steering box.

REFITTING

I - REFITTING PREPARATIONS OPERATION

1 - Low pressure pipe between the power-assisted steering reservoir and the steering box

- Always replace the O-rings on the power assisted steering pipes.

2 - High pressure pipe between the power-assisted steering pump and the steering box

- Always replace:
- the power-assisted steering pipe O-rings,
 - the universal joint bolt and nut.

II - REFITTING OPERATION FOR PART CONCERNED

1 - Low pressure pipe between the power-assisted steering pump and the reservoir

- Refit the low pressure pipe.

Fit:

- the low pressure pipe clip on the power-assisted steering reservoir using the (**Mot. 1448**),
- the low pressure pipe clip on the power-assisted steering pump using the (**Mot. 1448**).

2 - Low pressure pipe between the power-assisted steering reservoir and the steering box

Refit:

- the low pressure pipe,
- the clip using the (**Mot. 1448**),
- the low pressure pipe bracket nuts between the power-assisted steering fluid reservoir and the steering box.

- Clip on the low pressure pipe.

Power-assisted steering pipes: Removal - Refitting**36B**

F4R, and RIGHT-HAND DRIVE – M9R, and 802 or 805, and RIGHHAND DRIVE

- Refit the power-assisted steering pipe bracket bolt.
- Fit the low pressure pipe clip on the power-assisted steering fluid reservoir using the **(Mot. 1448)**,
- Refit:
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front right-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

3 - High pressure pipe between the power-assisted steering pump and the steering box

- Refit:
 - the high pressure pipe,
 - the high pressure pipe union **(14)**,
 - the power-assisted steering pipe bracket bolt **(12)**,
 - the high pressure pipe nut **(18)**,
 - the high pressure pipe bolt **(17)**,
 - the steering box heat shield **(16)**,
 - the steering box heat shield bolts **(15)**,
 - the pipe nuts **(19)**.
 - the pipe bolt **(13)**,
 - the tie rod **(9)**,
 - the tie rod bolts **(8)**,
 - the universal joint **(11)** on the steering box,
 - the universal joint nut,
 - the universal joint bolt **(10)**.
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Torque tighten the **universal joint bolt (24 Nm)**.

III - FINAL OPERATION.

- Fill the pump assembly reservoir with power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Bleed the power-assisted steering circuit:
 - lift the vehicle so that the wheels are off the ground,
 - start the engine,
 - turn the steering wheel so the wheels lock left then right (repeat this operation three times).

Note:

Monitor the fluid level in the reservoir during the power-assisted steering circuit bleed operation.

- Top up the power-assisted steering fluid level if necessary.
- Check that there are no leaks.
- Refit:
 - the engine undertray,
 - the engine undertray bolts.

Power-assisted steering pipes: Removal - Refitting

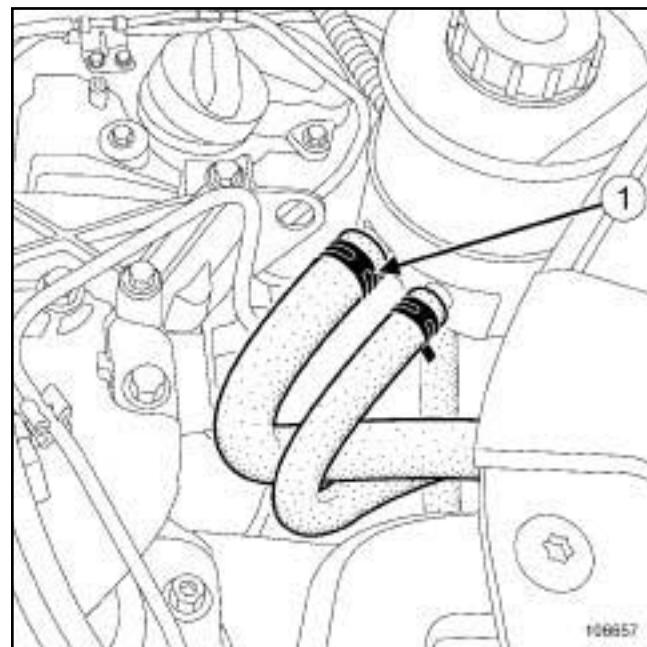
F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
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II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Low pressure pipe between the power-assisted steering pump and the reservoir



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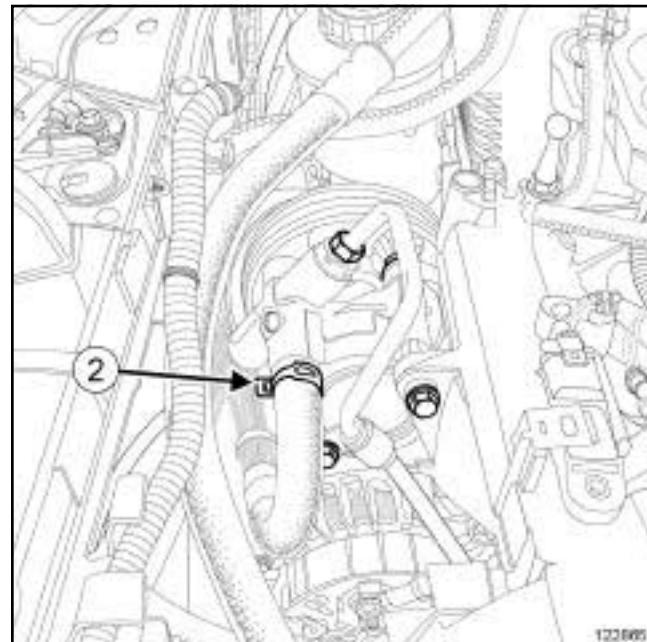
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (see MR 415, 02A, Lifting equipment).
- Remove:
 - the engine undertray bolts,
 - the engine undertray.

- Undo the clip (1) on the low pressure pipe using the (**Mot. 1448**),

- Drain the power-assisted steering fluid reservoir.



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- Undo the clip (2) on the low pressure pipe using the (**Mot. 1448**),
- Remove the low pressure pipe.

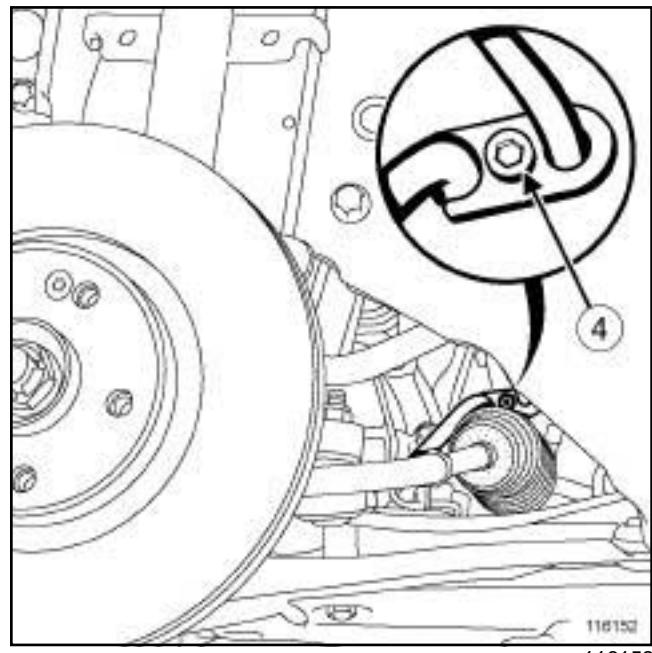
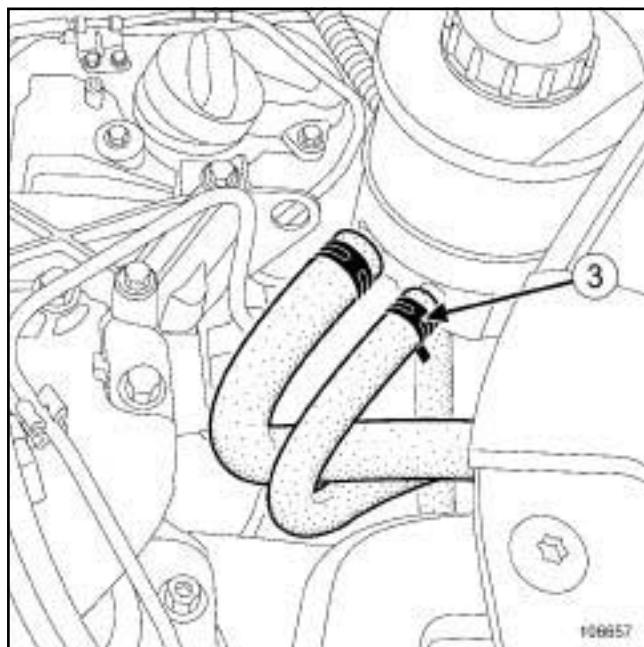
Power-assisted steering pipes: Removal - Refitting

F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE

2 - Low pressure pipe between the power-assisted steering reservoir and the steering box

 Remove:

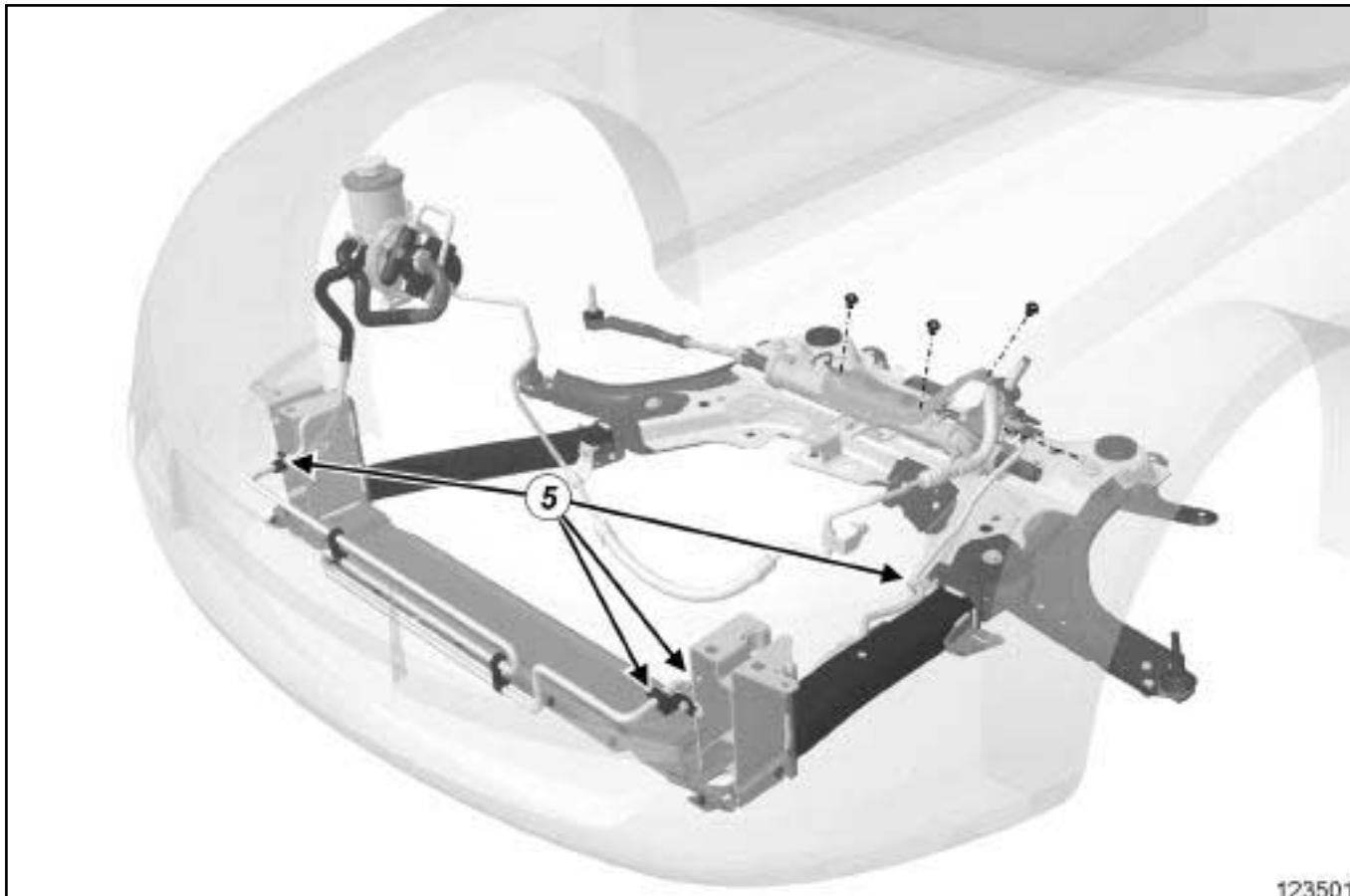
- the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liners partially (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection).

 Remove the power-assisted steering pipe bracket bolt (4) .

- Undo the clip (3) on the low pressure pipe using the (**Mot. 1448**),
- Drain the power-assisted steering fluid reservoir.

Power-assisted steering pipes: Removal - Refitting

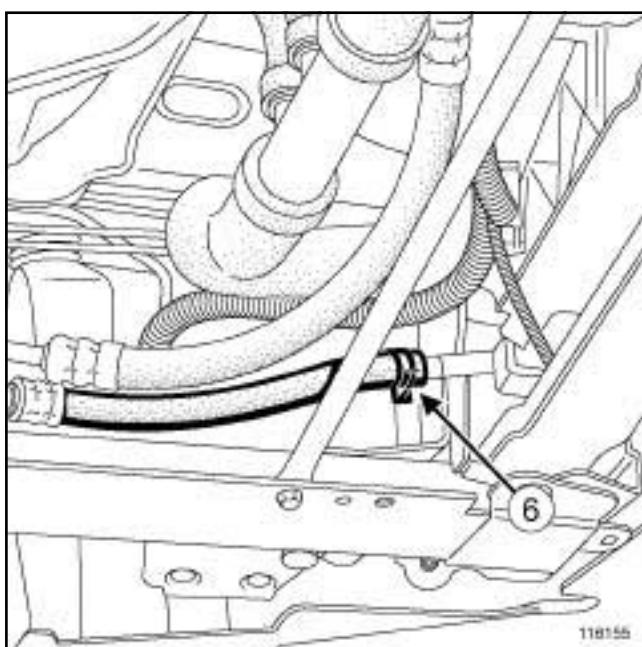
F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE



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- Unclip the low pressure pipe at (5).



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- Remove:

- the clip (6) using the **(Mot. 1448)**,
- the low pressure pipe.

3 - High pressure pipe between the power-assisted steering pump and the steering box

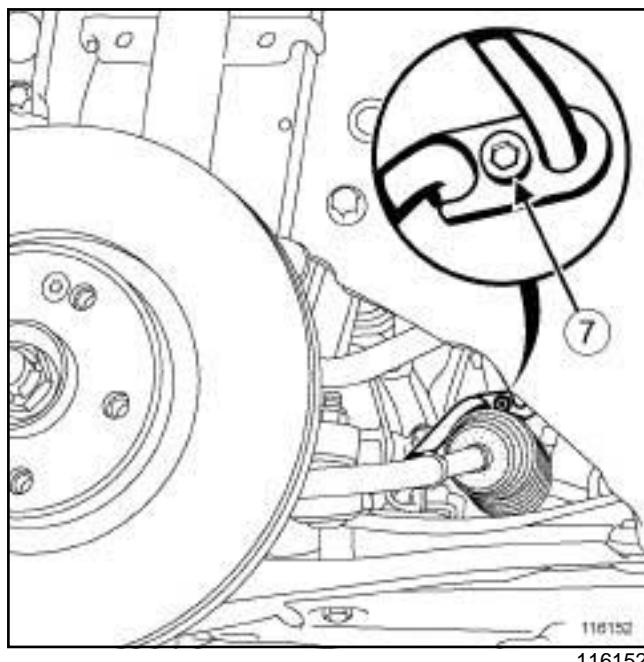
- Remove the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

POWER ASSISTED STEERING

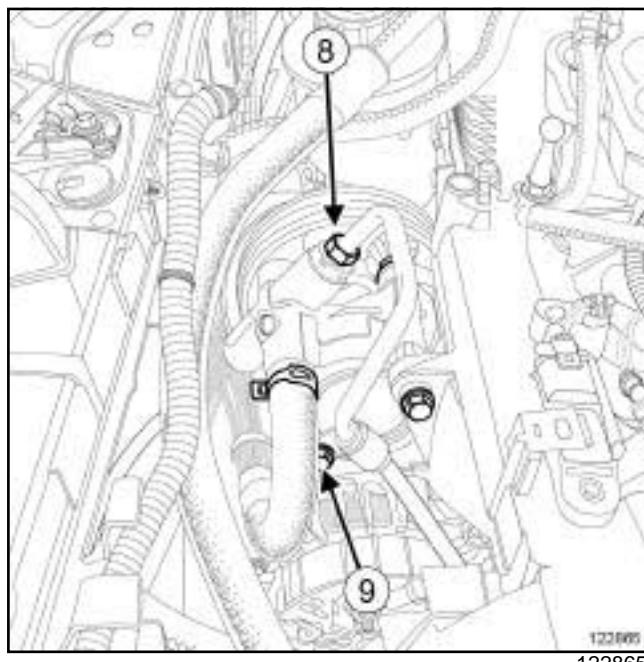
Power-assisted steering pipes: Removal - Refitting

36B

F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE



- Remove the power-assisted steering pipe bracket bolt (7).



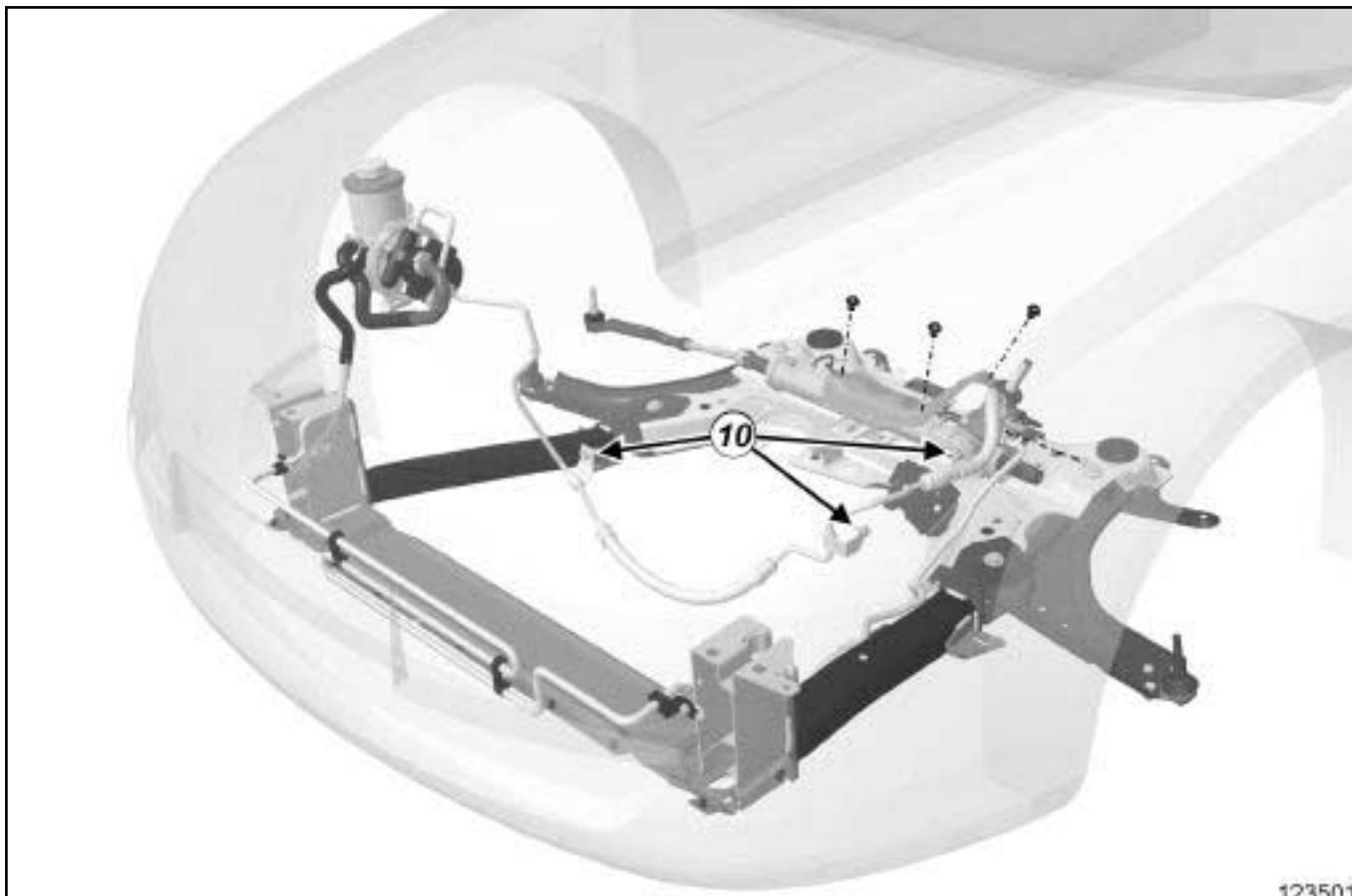
- Remove the high pressure pipe union (8).

F4R

- Remove the bolt (9) from the pipe.

Power-assisted steering pipes: Removal - Refitting

F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE



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 Remove:

- the pipe nuts (10) ,
- the high pressure pipe.

REFITTING**I - REFITTING PREPARATIONS OPERATION**

- Always replace the O-rings on the power assisted steering pipes.

II - REFITTING OPERATION FOR PART CONCERNED**1 - Low pressure pipe between the power-assisted steering pump and the reservoir**

- Refit the low pressure pipe.
- Fit:
- the clip (2) on the low pressure pipe using a (Mot. 1448),
 - the clip (1) on the low pressure pipe using the (Mot. 1448),

2 - High pressure pipe between the power-assisted steering pump and the steering box Refit:

- the high pressure pipe,
- the high pressure pipe union (8) ,
- the power-assisted steering pipe bracket bolt (7) ,
- the high pressure pipe nuts (10) .

F4R

- Refit the pipe bolt (9) .

- Refit the front left-hand wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1) .

3 - Low pressure pipe between the power-assisted steering reservoir and the steering box Refit:

- the low pressure pipe,

Power-assisted steering pipes: Removal - Refitting**36B**

F4R, and LEFT-HAND DRIVE – M9R, and 802 or 805, and LEFT-HAND DRIVE

- the clip (6) using the (**Mot. 1448**).

Clip on the low pressure pipe at (5).

Refit the power-assisted steering pipe bracket bolt (4).

Fit the low pressure pipe clip (3) using the (**Mot. 1448**).

Refit:

- the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection),

- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),

- the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

III - FINAL OPERATION.

Fill the power-assisted steering circuit reservoir (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

Bleed the power-assisted steering circuit:

- lift the vehicle so that the wheels are off the ground,
- start the engine,
- turn the steering wheel so the wheels lock left then right (repeat this operation three times).

Note:

Monitor the fluid level in the reservoir during the power-assisted steering circuit bleed operation.

Top up the power-assisted steering fluid level if necessary.

Check that there are no leaks.

Refit:

- the engine undertray bolts,

- the engine undertray.

Power-assisted steering pipes: Removal - Refitting

K9K or M4R, and RIGHT-HAND DRIVE – M9R, and 742, and RIGHT-HAND DRIVE

Special tooling required

Mot. 1448 Remote operation pliers for hose clips.

Tightening torques 

universal joint bolt **24 Nm**

IMPORTANT

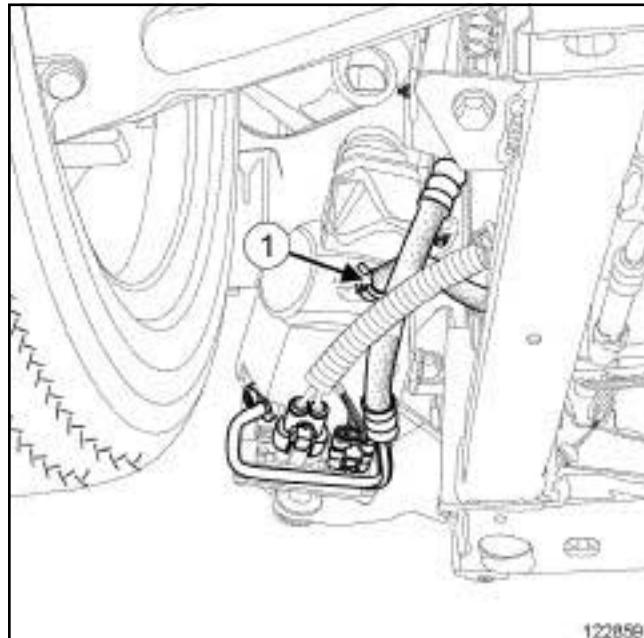
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (see MR 415, 02A, Lifting equipment).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (see MR 416, 55A, Exterior protection),
 - the engine undertray bolts,
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED

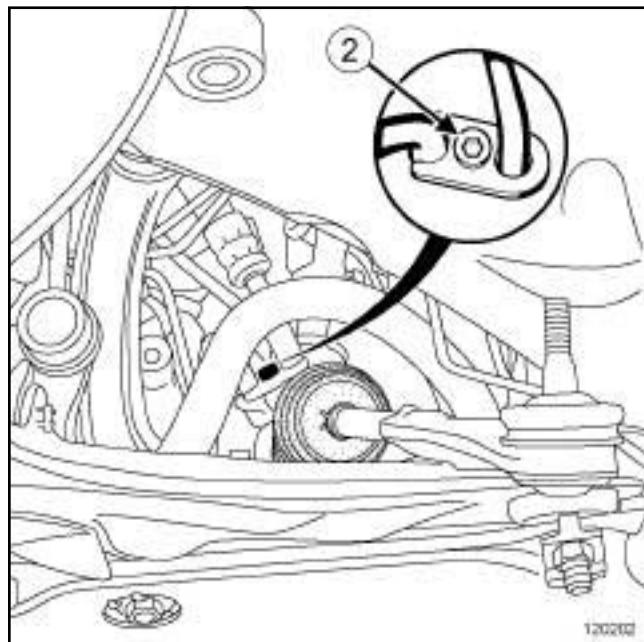
- 1 - Low pressure pipe between the pump assembly and the steering box**



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- Loosen the low pressure pipe clip (1) on the pump assembly reservoir using the tool (**Mot. 1448**).
- Remove the low pressure pipe to drain the pump assembly reservoir.



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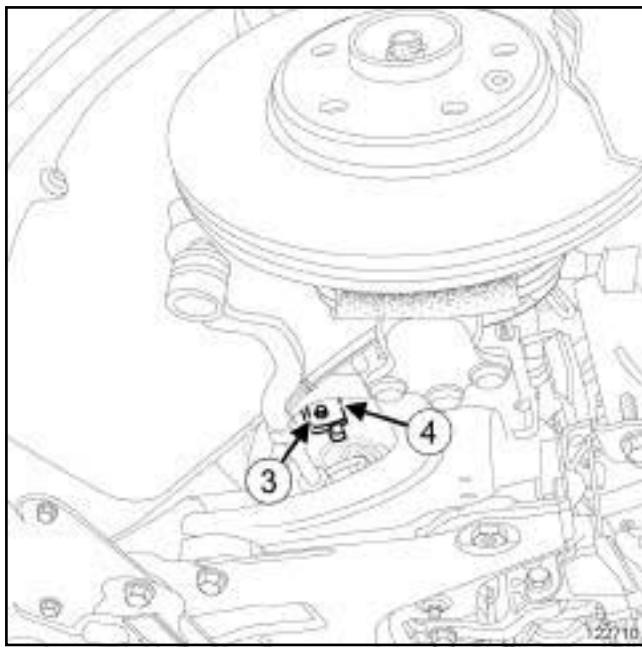
- Remove the power-assisted steering pipe bracket bolt (2) on the steering box.

POWER ASSISTED STEERING

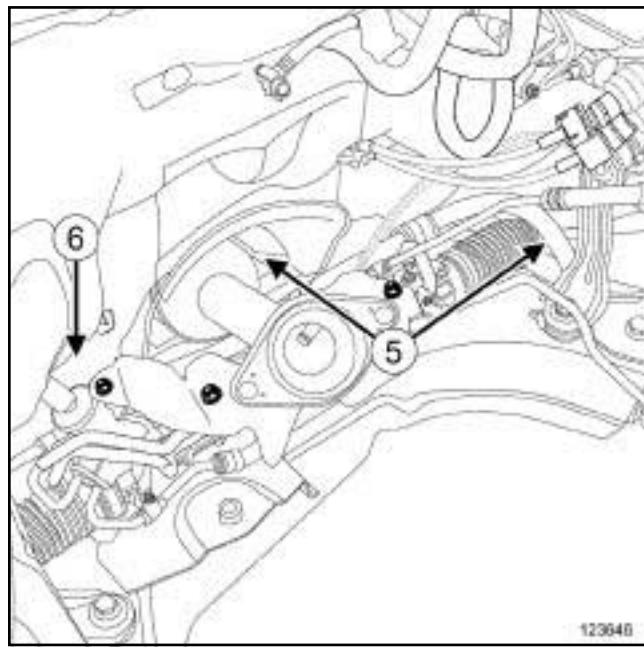
Power-assisted steering pipes: Removal - Refitting

36B

K9K or M4R, and RIGHT-HAND DRIVE – M9R, and 742, and RIGHT-HAND DRIVE



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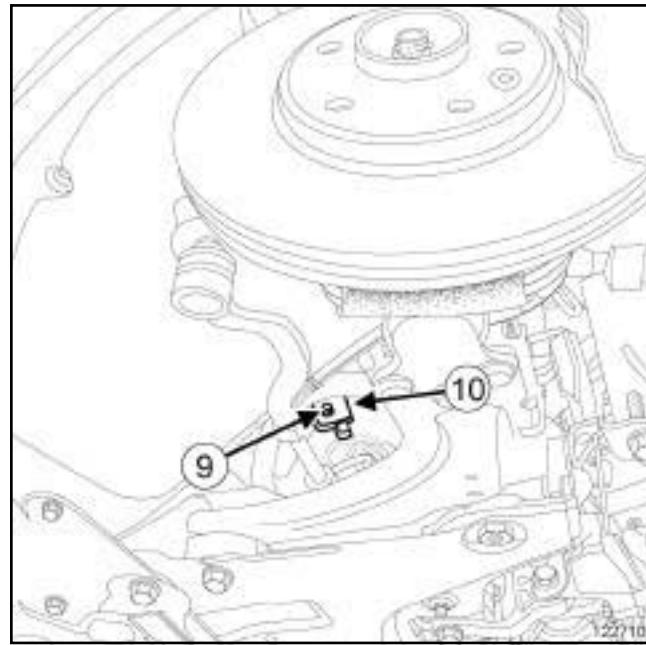
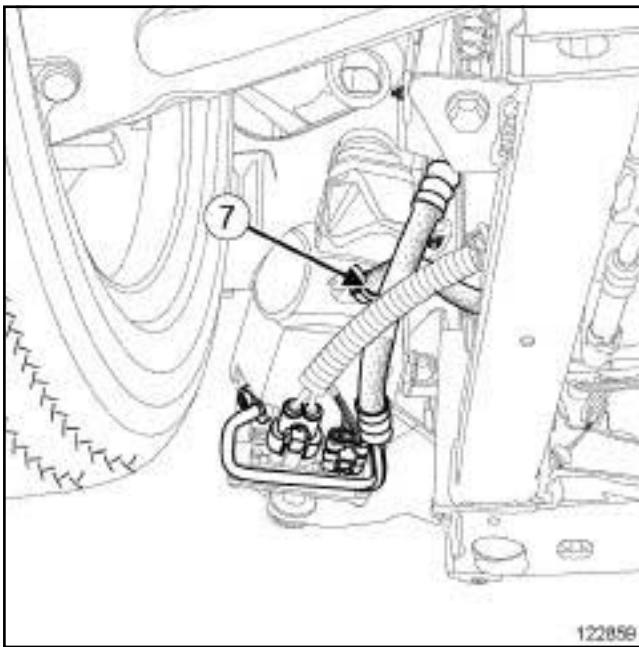
- Remove:
 - the universal joint bolt (3) (do not keep),
 - the cover from the universal joint nut (do not keep),
 - the universal joint nut (do not keep).
- Tilt the universal joint (4) away from the steering box.

- Remove the nuts (5) from the low pressure pipe.
- Unclip the low pressure pipe:
 - on the side member,
 - on the subframe at (6) .
- Remove the low pressure pipe between the pump assembly reservoir and the steering box.

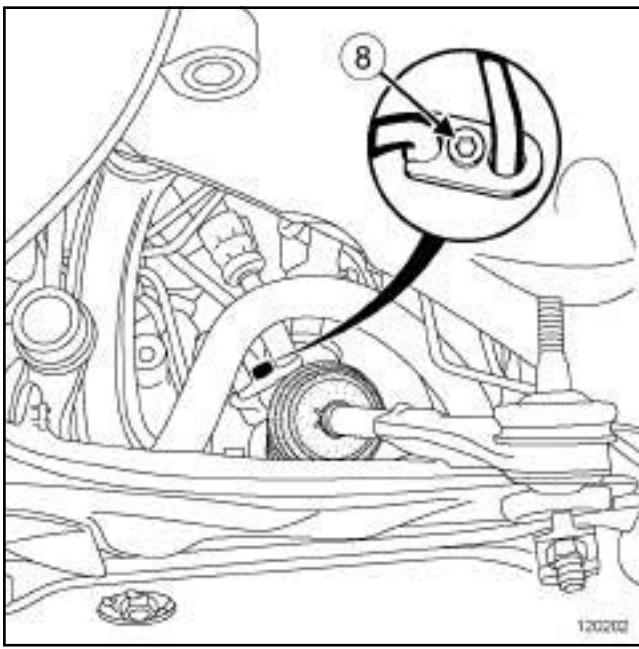
Power-assisted steering pipes: Removal - Refitting

K9K or M4R, and RIGHT-HAND DRIVE – M9R, and 742, and RIGHT-HAND DRIVE

- 2 - High pressure pipe between the pump assembly and the steering box.**



- Loosen the low pressure pipe clip (7) on the pump assembly reservoir using the tool (**Mot. 1448**).
- Remove the low pressure pipe to drain the pump assembly reservoir.



- Remove the power-assisted steering pipe bracket bolt (8) on the steering box.

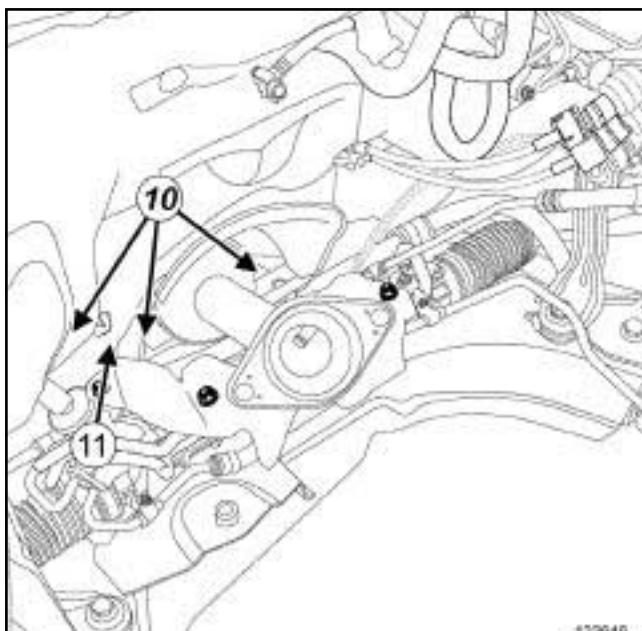
Remove:

- the universal joint bolt (9) (do not keep),
 - the cover from the universal joint nut (do not keep),
 - the universal joint nut (do not keep).
- Tilt the universal joint (10) away from the steering box.

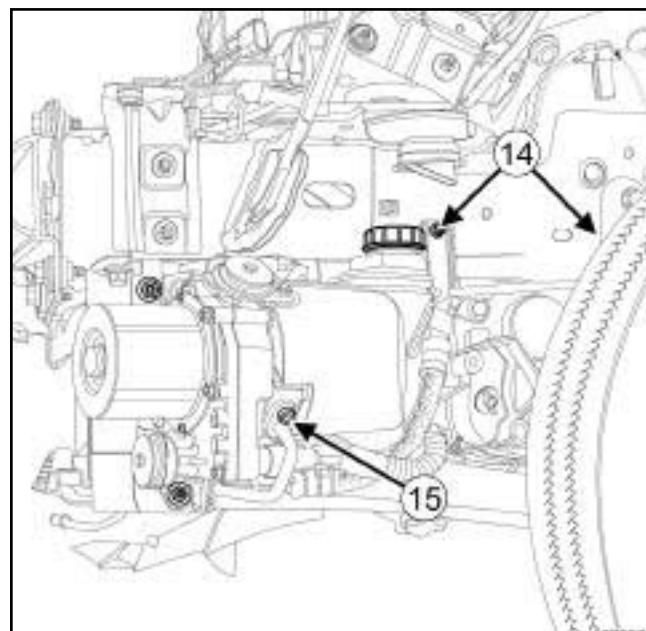
Power-assisted steering pipes: Removal - Refitting

36B

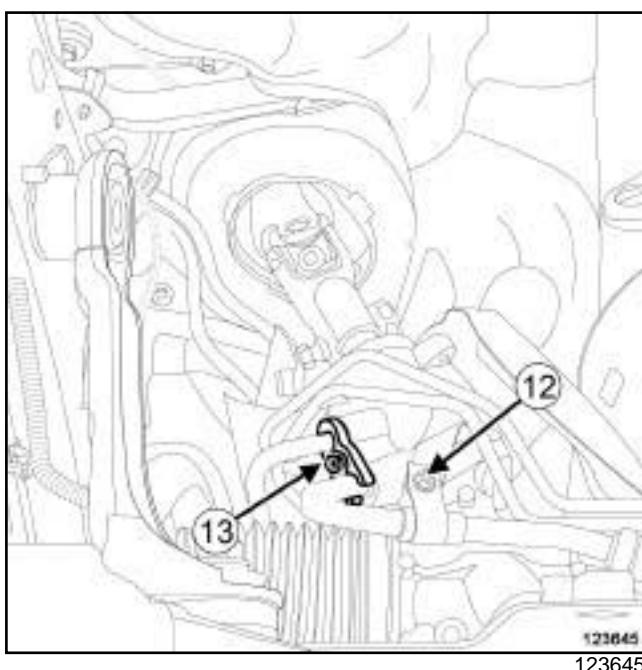
K9K or M4R, and RIGHT-HAND DRIVE – M9R, and 742, and RIGHT-HAND DRIVE



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Remove:

- the bolts (10) securing the steering box heat shield,
- the steering box heat shield (11),
- the high pressure pipe nut (12),
- the high pressure pipe bolt (13).

Remove:

- the nuts (14) securing the high pressure pipe brackets on the body,
- the bolt (15) securing the high pressure pipe bracket on the pump assembly,
- the high pressure pipe between the pump assembly and the steering box.

REFITTING

I - REFITTING PREPARATION OPERATION

Always replace:

- the power-assisted steering pipe O-rings,
- the universal joint nut and bolt.

II - REFITTING OPERATION FOR PART CONCERNED

1 - Low pressure pipe between the pump assembly and the steering box

Refit:

- the low pressure pipe between the pump assembly and the steering box,
- the power-assisted steering pipe bracket bolt on the steering box,
- the low pressure pipe nuts.

Power-assisted steering pipes: Removal - Refitting

K9K or M4R, and RIGHT-HAND DRIVE – M9R, and 742, and RIGHT-HAND DRIVE

- Clip the low pressure pipe:
 - on the side member,
 - on the sub-frame.
- 2 - High pressure pipe between the pump assembly and the steering box**
- Refit:
 - the high pressure pipe between the pump assembly and the steering box,
 - the power-assisted steering pipe bracket bolt on the steering box,
 - the bolt securing the high pressure pipe bracket on the pump assembly,
 - the nuts securing the high pressure pipe brackets on the body,
 - the high pressure pipe nut on the steering box,
 - the high pressure pipe bolt on the steering box,
 - the steering rack heat shield,
 - the bolts securing the steering box heat shield.
- Bleed the power-assisted steering circuit:
 - raise the vehicle so that the wheels are not in contact with the ground,
 - start the engine,
 - turn the steering wheel full lock to the left and then full lock to the right (repeat this operation three times).

Note:

Monitor the level of fluid in the reservoir while bleeding the power-assisted steering circuit.

- Top up the power-assisted steering fluid level if necessary.
- Check that there are no leaks.
- Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the engine undertray,
 - the bolts on the heat shield,
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

III - FINAL OPERATION.

- Connect the low pressure pipe on the pump assembly reservoir.
- Refit:
 - the low pressure pipe clip using the tool (**Mot. 1448**),
 - the universal joint on the steering box,
 - the universal joint nut,
 - the bolt from the universal joint.
- Torque tighten the **universal joint bolt (24 Nm)**.
- Fill the pump assembly reservoir with power-assisted steering fluid (see **Vehicle: Parts and consumables for the repair**) (MR 415, 04B, Consumables - Products).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and LEFT-HAND DRIVE

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.
Ms. 583	Pipe clamps.

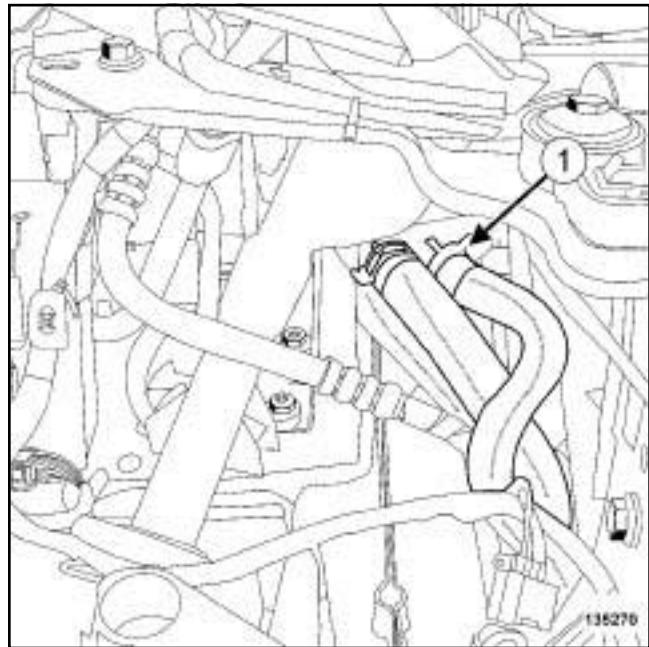
Tightening torques 	
high pressure pipe union on the power-assisted steering pump	21 N.m
high pressure pipe nut on the rocker cover	8 N.m
high pressure pipe bolts on the gearbox	8 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

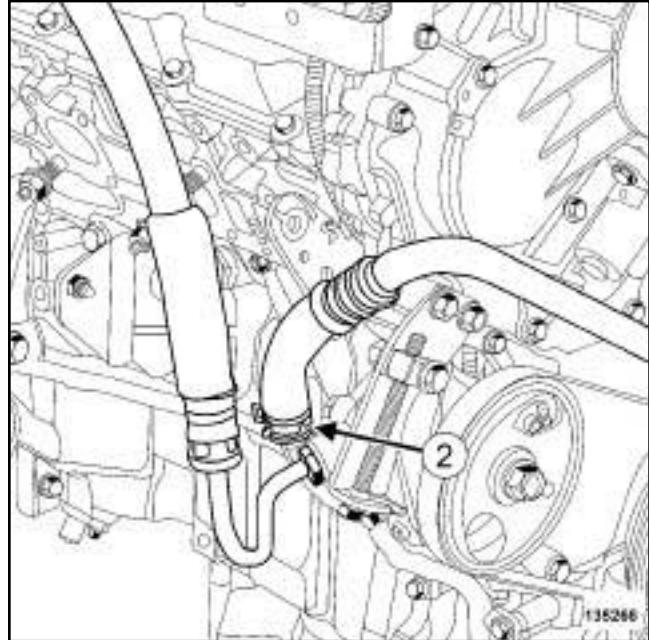
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the engine cover,
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights).

II - OPERATION FOR REMOVAL OF PART CONCERNED**1 - Low pressure pipe between the power-assisted steering pump and the reservoir**

135270

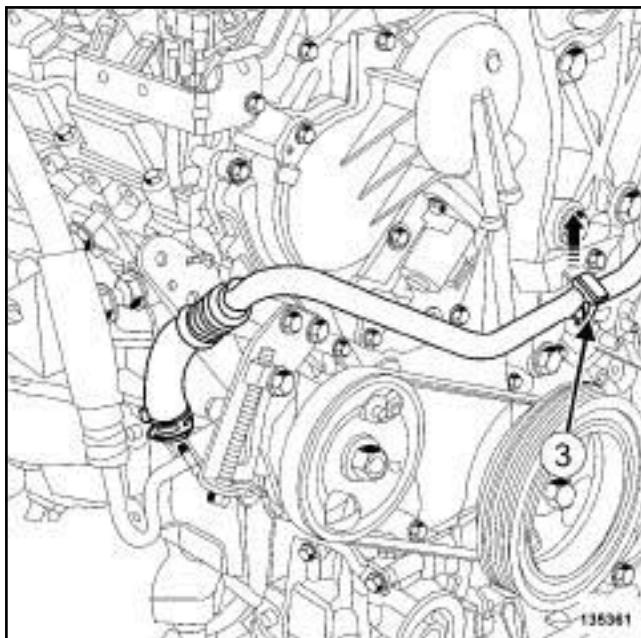
- Loosen the clip (1) of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Drain the power-assisted steering reservoir.



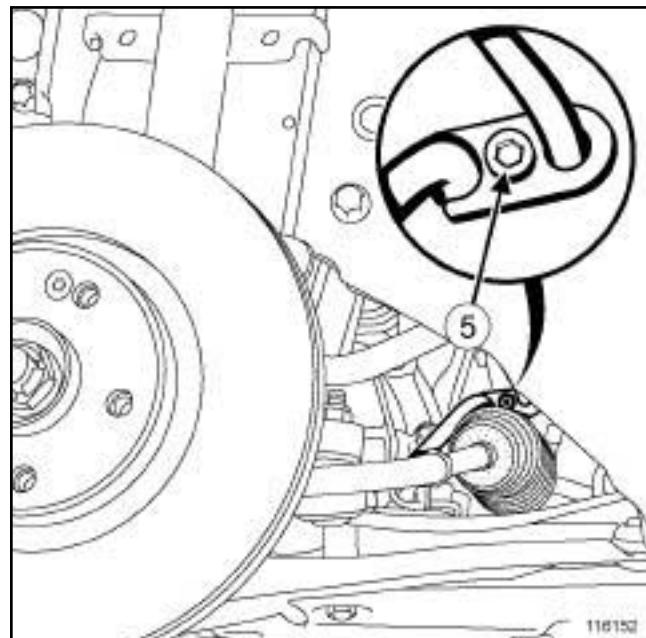
135266

- Loosen the clip (2) of the low pressure pipe on the power-assisted steering pump using the tool (**Mot. 1448**).

D91, and V4Y, and LEFT-HAND DRIVE



135361

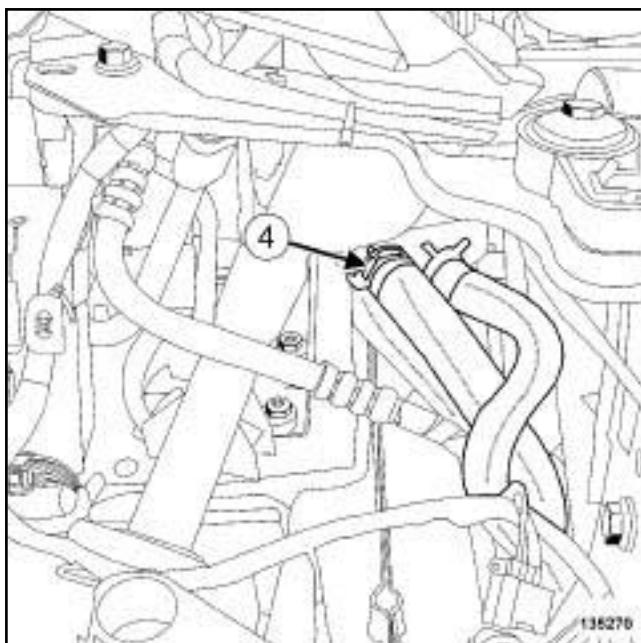


116152

Remove:

- the clip (3) of the low pressure pipe on the timing cover,
- the power-assisted steering low pressure pipe.

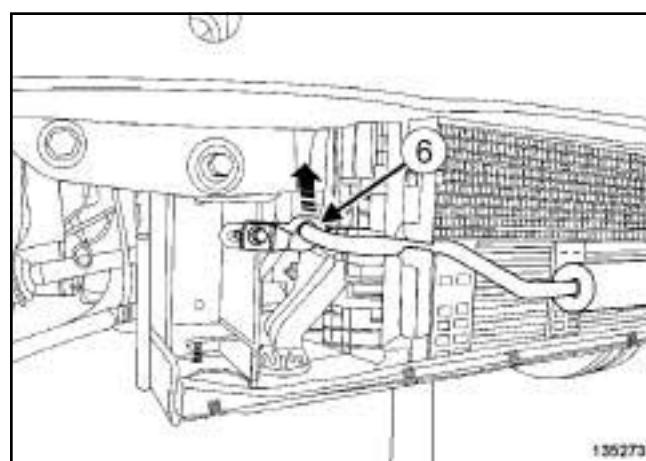
2 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box



135270

- Loosen the clip (4) of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Drain the power-assisted steering reservoir.

Remove the power-assisted steering pipe bracket bolt (5) on the steering box.



135273

- Unclip the power-assisted steering low pressure pipe at (6) from the front end panel.

- Remove the power-assisted steering low pressure pipe.

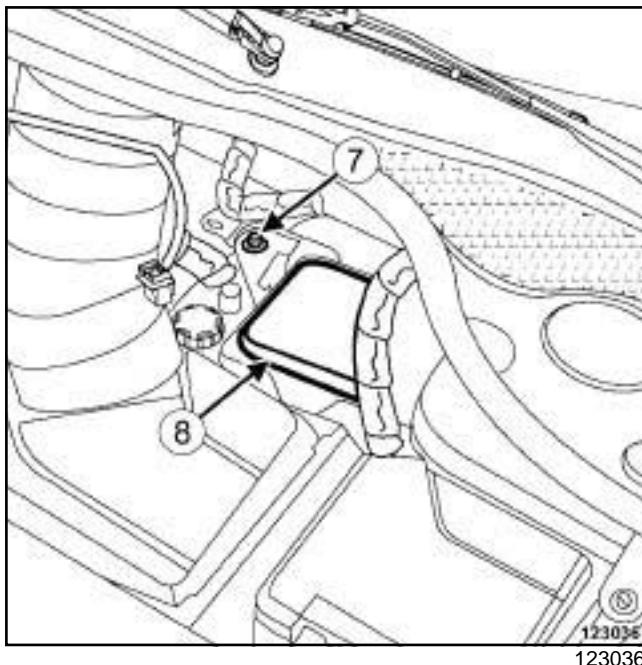
3 - High pressure pipe between the power-assisted steering pump and the steering box

Remove:

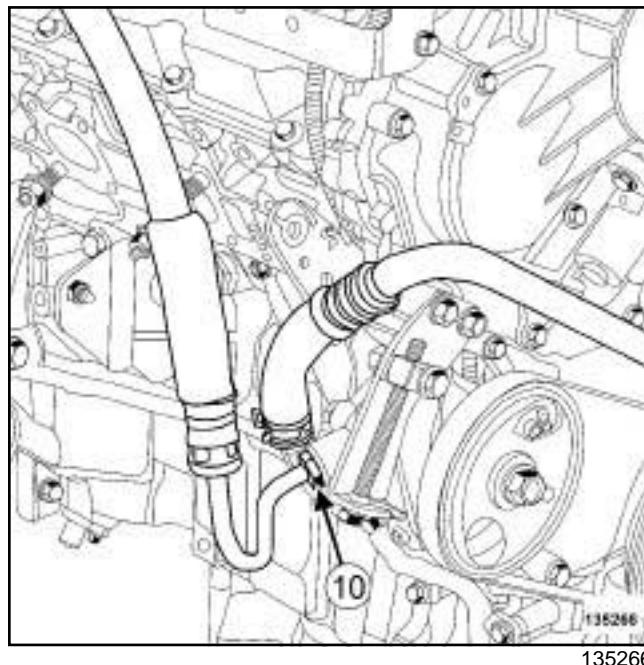
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the air inlet duct (see **Inlet duct: Removal - Refitting**) (12A, Fuel mixture).

Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and LEFT-HAND DRIVE



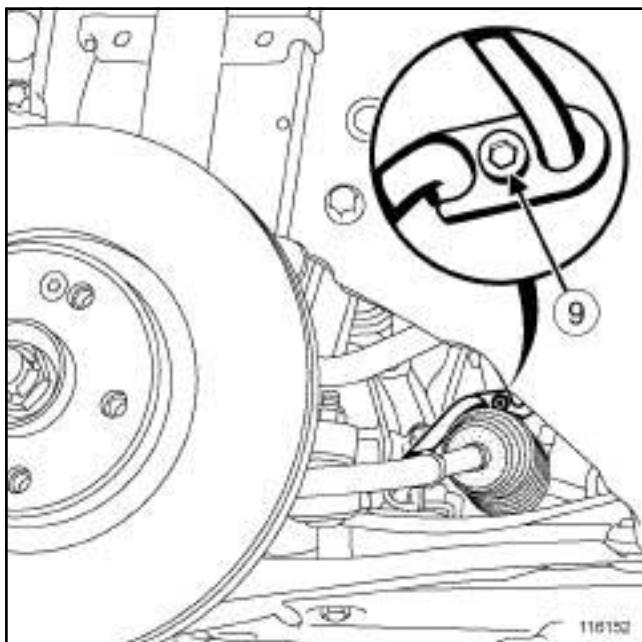
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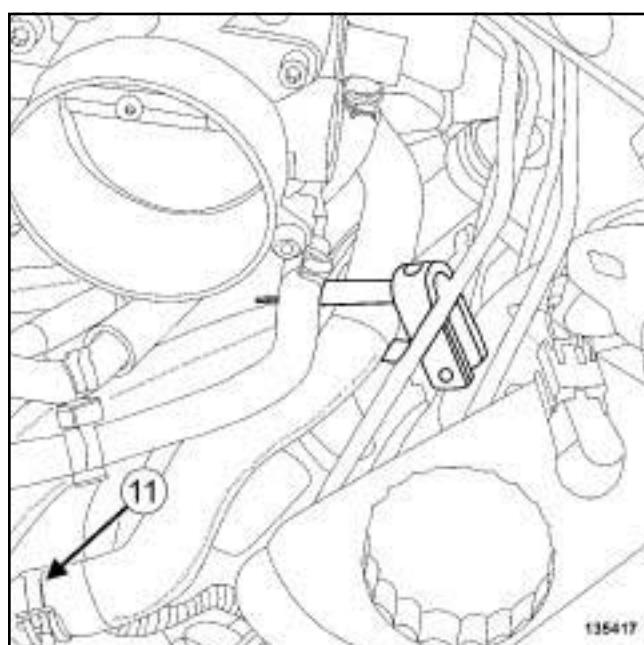
135266

 Remove:

- the bolt (7) from the max fuse box (8) ,
- the max fuse box.



116152

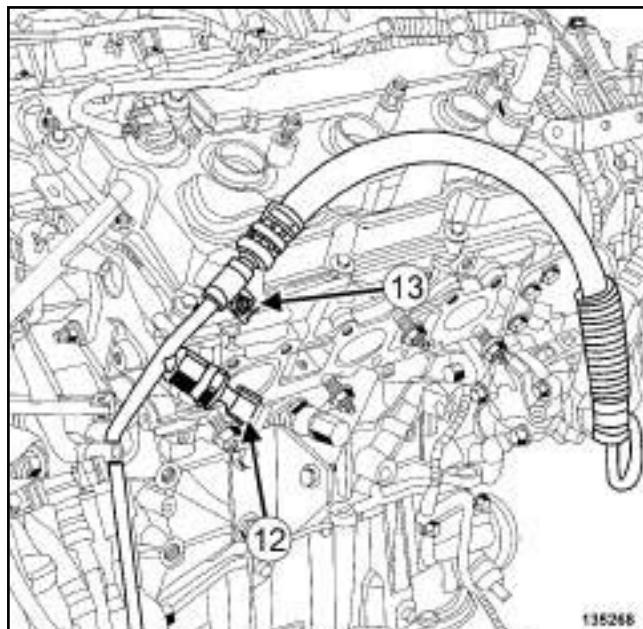
 Remove the power-assisted steering pipe bracket bolt (9) on the steering box.

135417

- Fit a hose clamp (**Ms. 583**) on the heater matrix pipe.
- Loosen the clip (11) on the heater matrix pipe.
- Disconnect the heater matrix pipe from the rigid pipe.

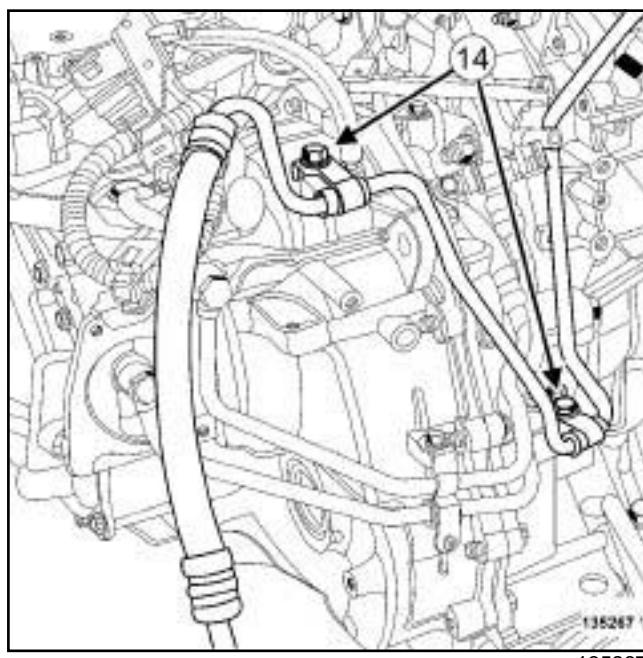
Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and LEFT-HAND DRIVE



135268

- Disconnect the pressostat connector (12) .
- Remove the nut (13) for the power-assisted steering high pressure pipe on the rocker cover.



135267

- Remove:
 - the high pressure pipe bolts (14) from the gearbox,
 - the power-assisted steering high pressure pipe.
- Fit blanking plugs into all openings.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Power-assisted steering pipe seal (13,04,04,22).

II - REFITTING OPERATION FOR PART CONCERNED

-

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

1 - Low pressure pipe between the power-assisted steering pump and the reservoir

- Refit the power-assisted steering low pressure pipe.
- Fit:
 - the low pressure pipe clip on the power-assisted steering pump using the tool (**Mot. 1448**),
 - the clip of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Clip the power-assisted steering low pressure pipe onto the timing cover.

2 - High pressure pipe between the power-assisted steering pump and the steering box

- Refit:
 - the power-assisted steering high pressure pipe,
 - the high pressure pipe union on the power-assisted steering pump.
- Tighten to torque:
 - the high pressure pipe union on the power-assisted steering pump (21 N.m),
 - the high pressure pipe nut on the rocker cover (8 N.m),
 - the high pressure pipe bolts on the gearbox (8 N.m).
- Refit the power-assisted steering pipe bracket on the steering box.
- Connect:
 - the pressostat connector,

Power-assisted steering pipes: Removal - Refitting

36B

D91, and V4Y, and LEFT-HAND DRIVE

- the heater matrix pipe on the rigid pipe.

Remove the hose clamps.

Refit:

- the max fuse box,

- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),

- the air inlet duct (see **Inlet duct: Removal - Refitting**) (12A, Fuel mixture).

3 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box

Refit:

- the power-assisted steering low pressure pipe,

- the power-assisted steering pipe bracket on the steering box,

- the low pressure pipe clip on the reservoir using the tool (**Mot. 1448**).

Clip the power-assisted steering low pressure pipe onto the front end panel of the vehicle.

III - FINAL OPERATION

Refit:

- the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),

- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),

- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .

Check that there are no leaks.

Refit:

- the engine undertray,

- the engine cover.

Power-assisted steering pipes: Removal - Refitting

K4M, and LEFT-HAND DRIVE

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.

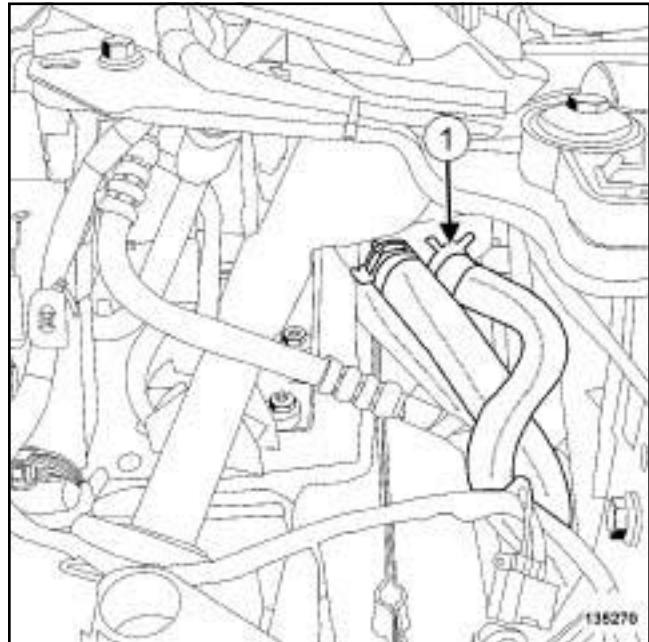
Tightening torques 	
high pressure pipe union on the power-assisted steering pump	21 N.m
high pressure pipe bolt on the cylinder head	8 N.m
high pressure pipe nut on the gearbox	8 N.m
high pressure pipe bolt on the gearbox	8 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

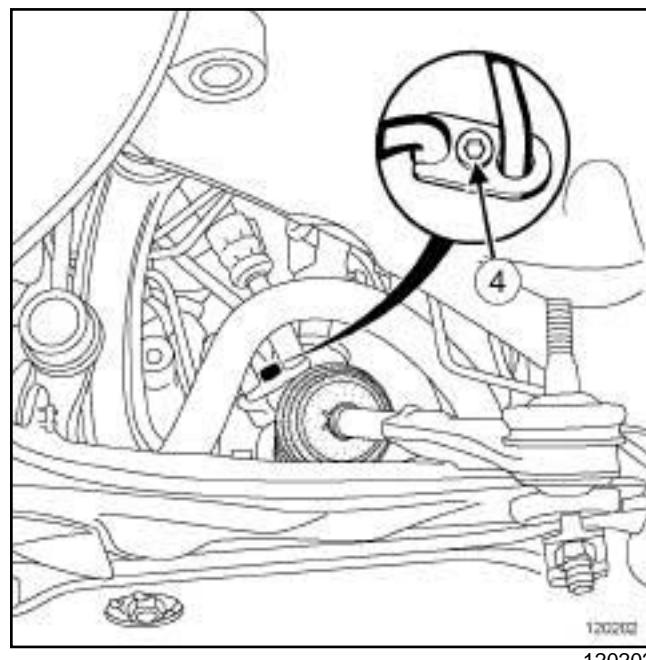
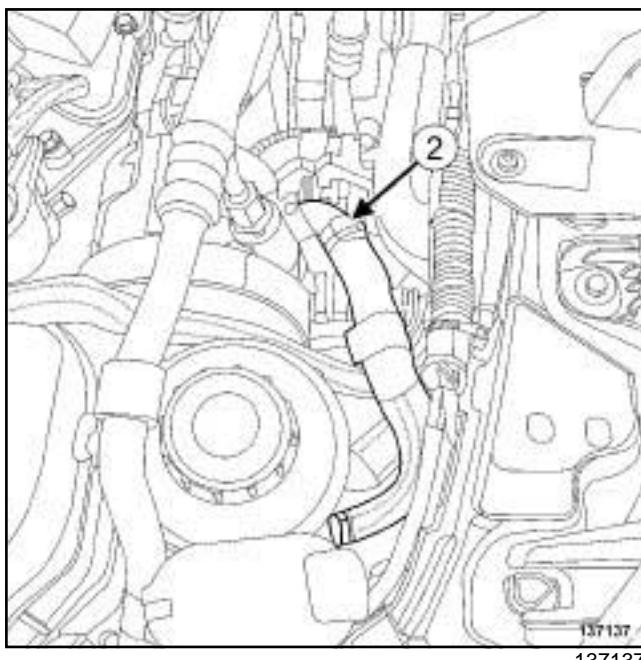
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights).

II - OPERATION FOR REMOVAL OF PART CONCERNED**1 - Low pressure pipe between the power-assisted steering pump and the reservoir**

135270

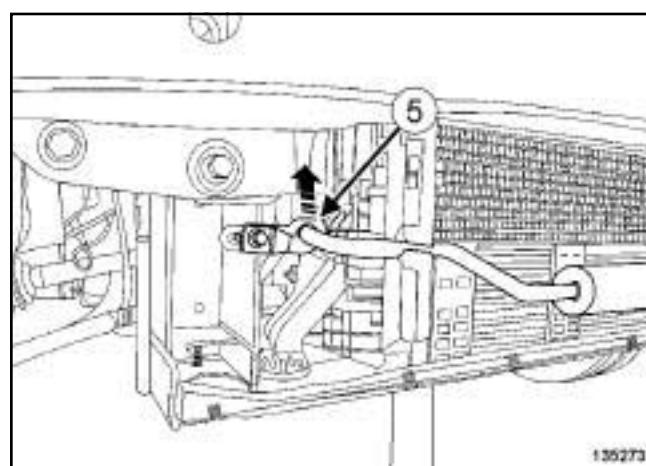
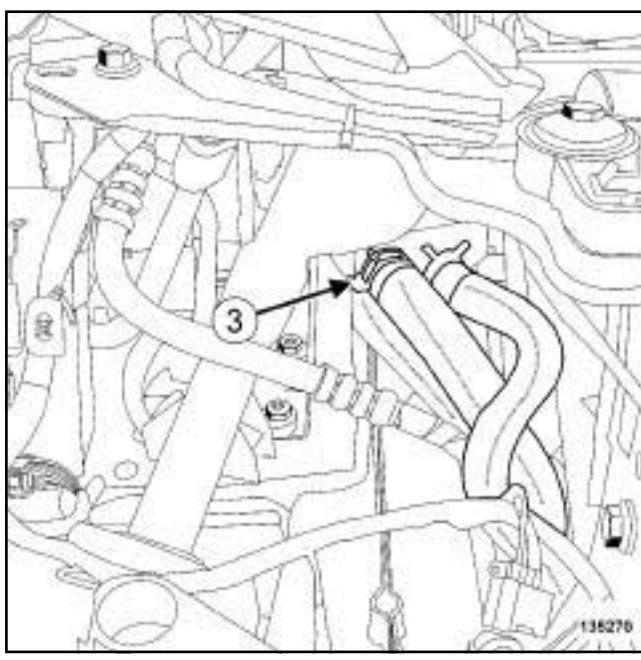
- Loosen the clip (1) of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Drain the power-assisted steering reservoir.

K4M, and LEFT-HAND DRIVE



- Loosen the clip (2) of the low pressure pipe on the power-assisted steering pump using the tool (**Mot. 1448**).
- Remove the power-assisted steering low pressure pipe.

2 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box



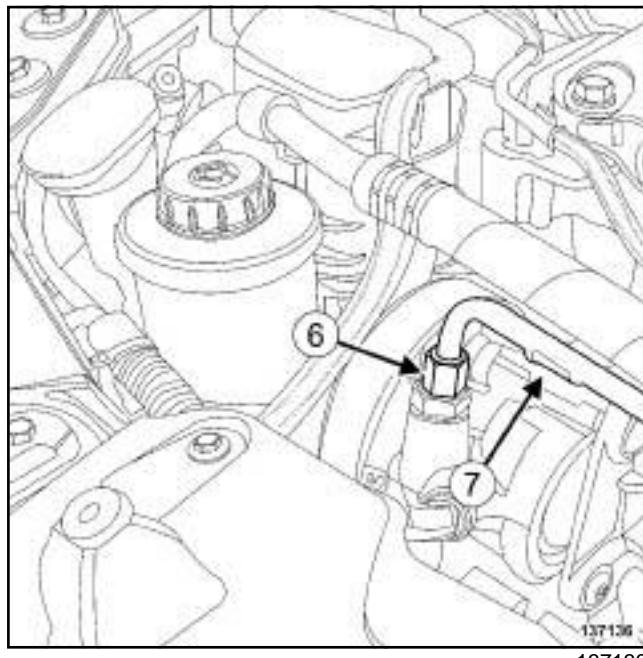
- Unclip the power-assisted steering low pressure pipe at (5) from the front end panel.

- Loosen the clip (3) of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Drain the power-assisted steering reservoir.

Power-assisted steering pipes: Removal - Refitting

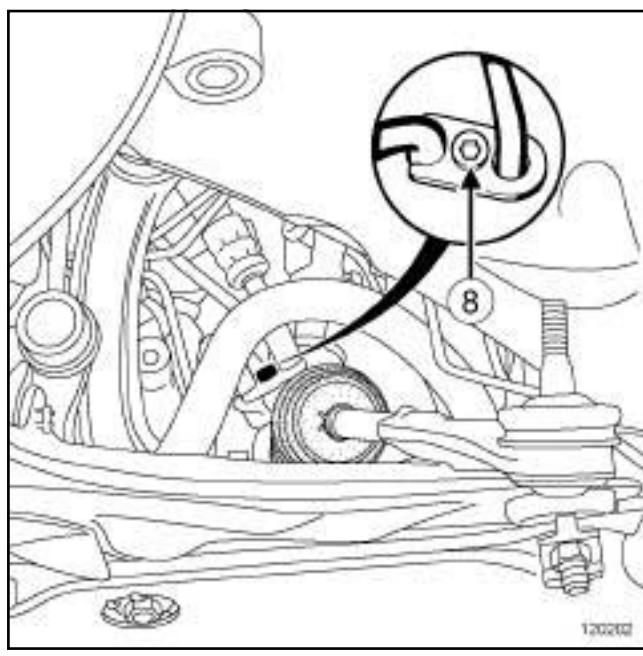
K4M, and LEFT-HAND DRIVE

- 3 - High pressure pipe between the power-assisted steering pump and the steering box**

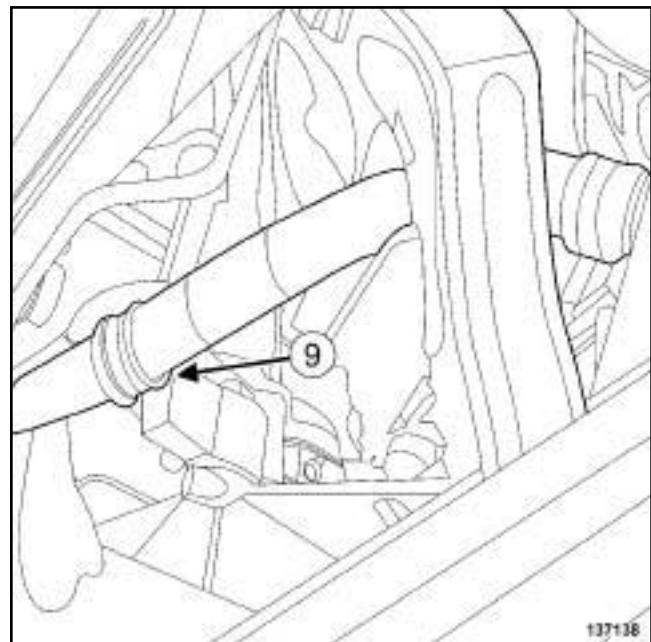
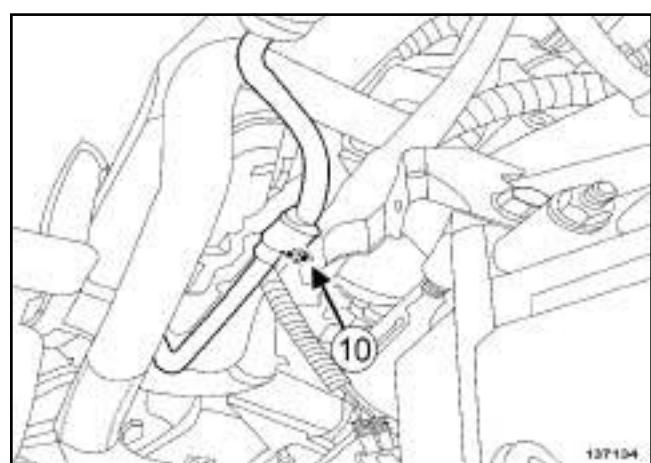


Remove:

- the high pressure pipe union (6) from the power-assisted steering pump,
- the nut at (7) on the power-assisted steering high pressure pipe from the cylinder head.



- Remove the power-assisted steering pipe bracket bolt (8) on the steering box.

137138
137138137134
137134

Remove:

- the high pressure pipe bolt from the gearbox at (9) ,
- the high pressure pipe nut (10) on the gearbox,
- the power-assisted steering high pressure pipe.

- Fit blanking plugs into all openings.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Power-assisted steering pipe seal (13,04,04,22).

Power-assisted steering pipes: Removal - Refitting**36B**

K4M, and LEFT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED**WARNING**

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

1 - Low pressure pipe between the power-assisted steering pump and the reservoir

- Refit the power-assisted steering low pressure pipe.
- Fit:
 - the low pressure pipe clip on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**),
 - the low pressure pipe clip on the power-assisted steering pump using the tool (**Mot. 1448**).

2 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box

- Refit:
 - the power-assisted steering low pressure pipe,
 - the low pressure pipe clip on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**),
 - the power-assisted steering pipe bracket on the steering box.
- Clip the power-assisted steering low pressure pipe onto the front end panel.

3 - High pressure pipe between the power-assisted steering pump and the steering box

- Refit:
 - the power-assisted steering high pressure pipe,
 - the high pressure pipe union on the power-assisted steering pump,
 - the bracket on the steering box.
- Tighten to torque:
 - the **high pressure pipe union on the power-assisted steering pump (21 N.m)**,
 - the **high pressure pipe bolt on the cylinder head (8 N.m)**,
 - the **high pressure pipe nut on the gearbox (8 N.m)**,

- the **high pressure pipe bolt on the gearbox (8 N.m)**.

III - FINAL OPERATION

- Refit:
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page **36B-54**).

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Check that there are no leaks.
- Refit:
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the engine undertray.

Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and RIGHT-HAND DRIVE

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.
Ms. 583	Pipe clamps.

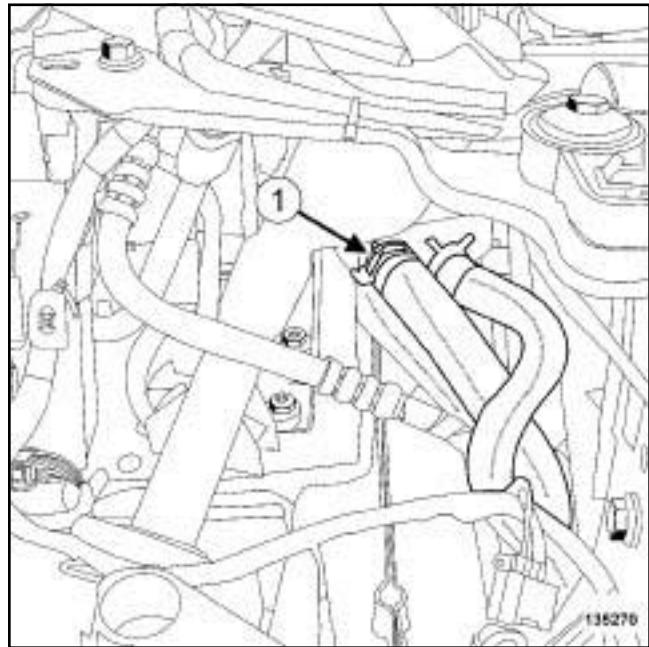
Tightening torques 	
high pressure pipe union on the power-assisted steering pump	21 N.m
high pressure pipe bolts on the steering box	8 N.m
high pressure pipe bolts on the gearbox	8 N.m
high pressure pipe nut on the rocker cover	8 N.m

IMPORTANT

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **36A, Steering assembly, Steering: Precautions for the repair**, page **36A-4**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

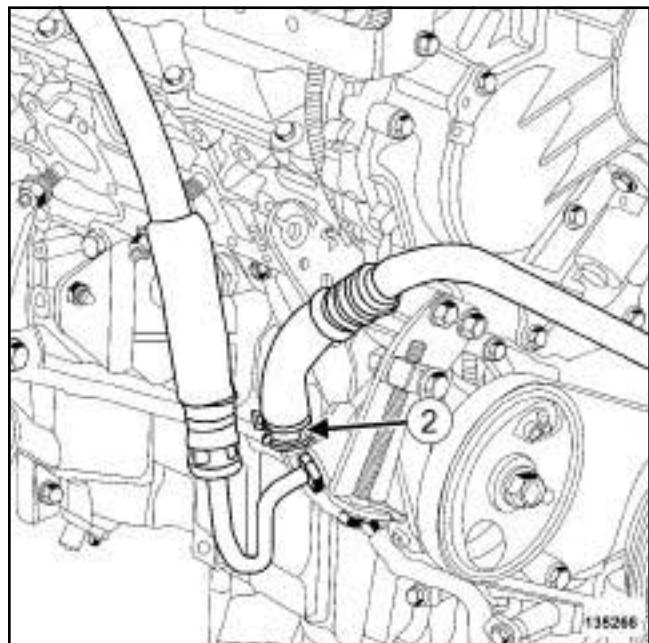
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the engine cover,
 - the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**),
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights).

II - OPERATION FOR REMOVAL OF PART CONCERNED**1 - Low pressure pipe between the power-assisted steering pump and the reservoir**

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135270

- Undo the clip (1) of the low pressure pipe using the tool (**Mot. 1448**).
- Drain the power-assisted steering reservoir.



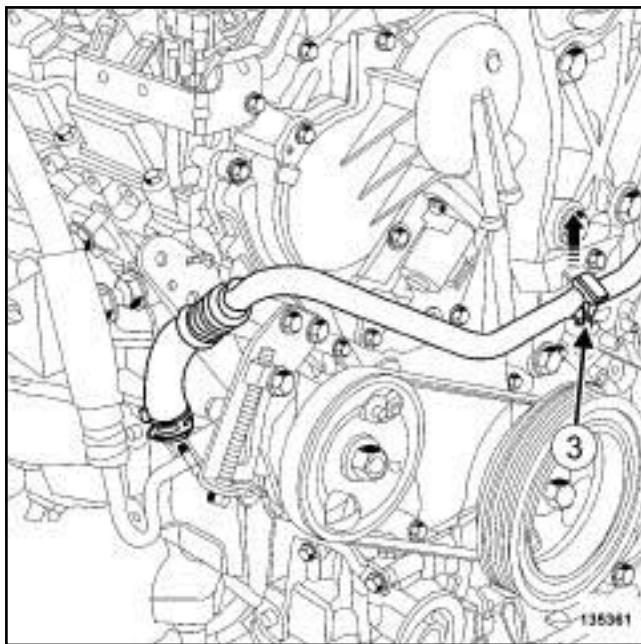
135266

135266

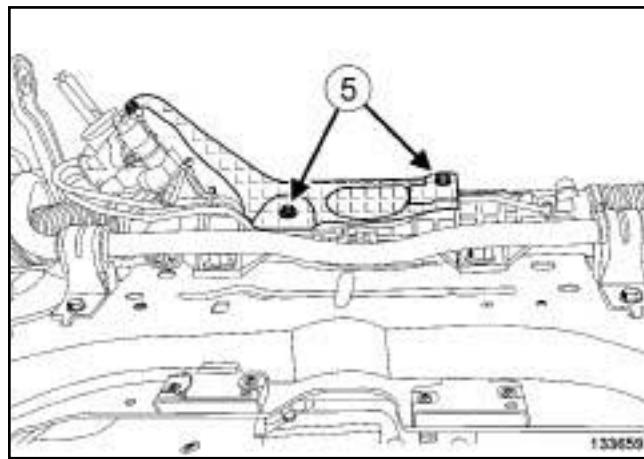
- Loosen the clip (2) of the low pressure pipe on the power-assisted steering pump using the tool (**Mot. 1448**).

Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and RIGHT-HAND DRIVE



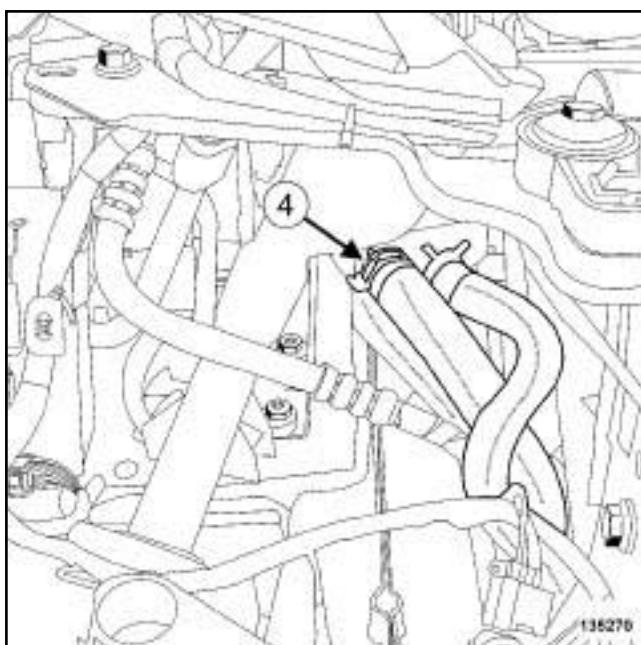
135361



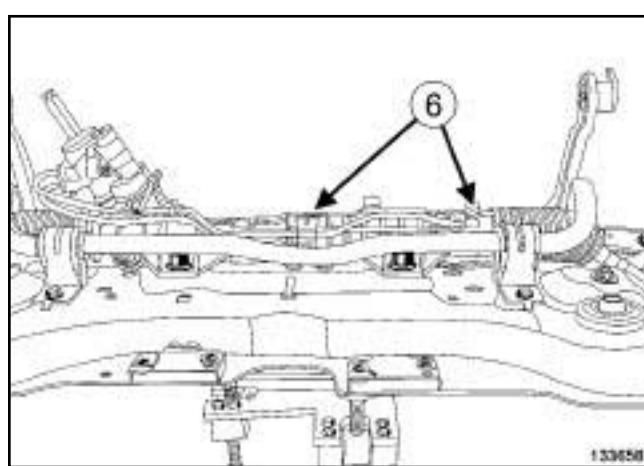
133659

 Remove:

- the clip (3) of the low pressure pipe on the timing cover,
- the power-assisted steering low pressure pipe.

2 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box

135270



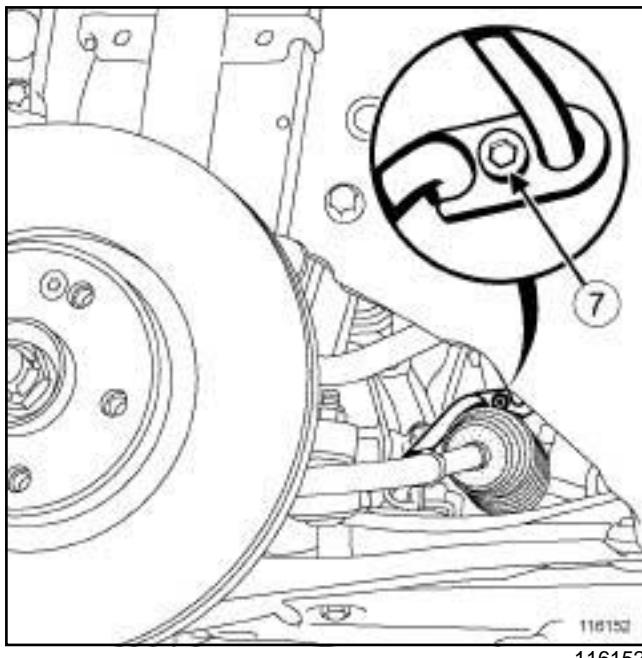
133658

 Remove the bolts (6) of the low pressure pipe on the steering box.

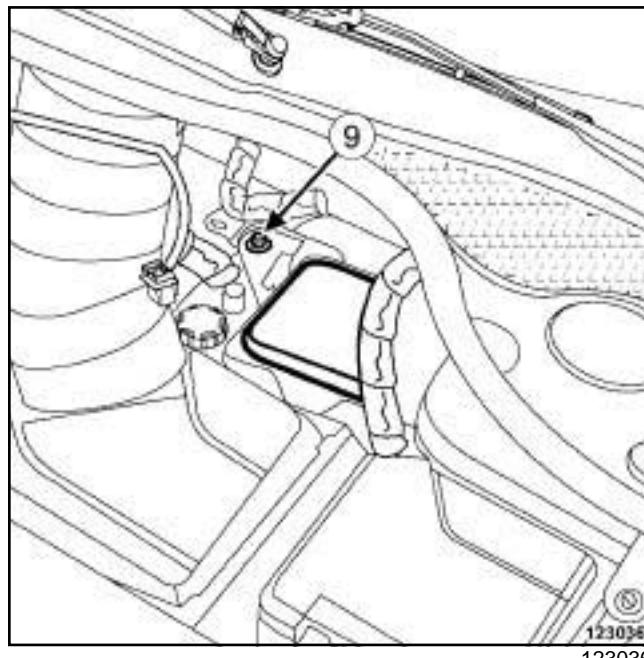
- Loosen the clip (4) of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Drain the power steering circuit.

Power-assisted steering pipes: Removal - Refitting

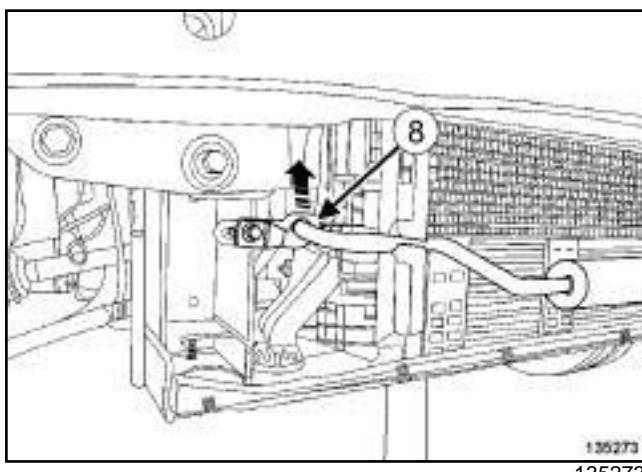
D91, and V4Y, and RIGHT-HAND DRIVE



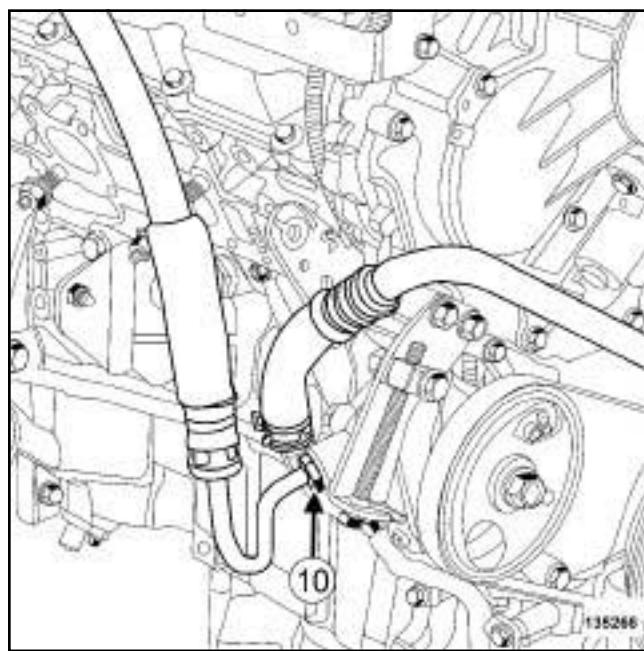
- Remove the power-assisted steering pipe bracket bolt (7) on the steering box.



- Remove:
 - the bolt (9) from the max fuse box,
 - the max fuse box.



- Unclip the power-assisted steering low pressure pipe at (8) from the front end panel.
- Remove the power-assisted steering low pressure pipe.

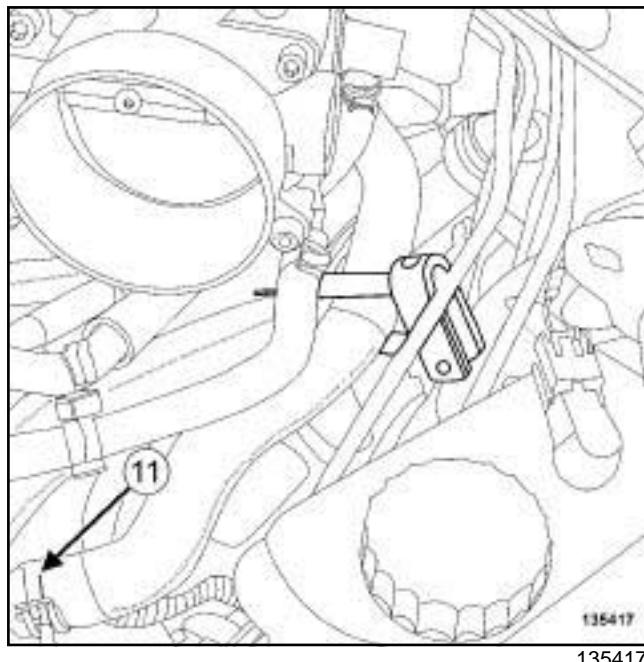
**3 - High pressure pipe between the power-assisted steering pump and the steering box**

- Remove:
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the air inlet duct (see **Inlet duct: Removal - Refitting**) (12A, Fuel mixture).

- Remove the high pressure pipe union (10) on the power-assisted steering pump.

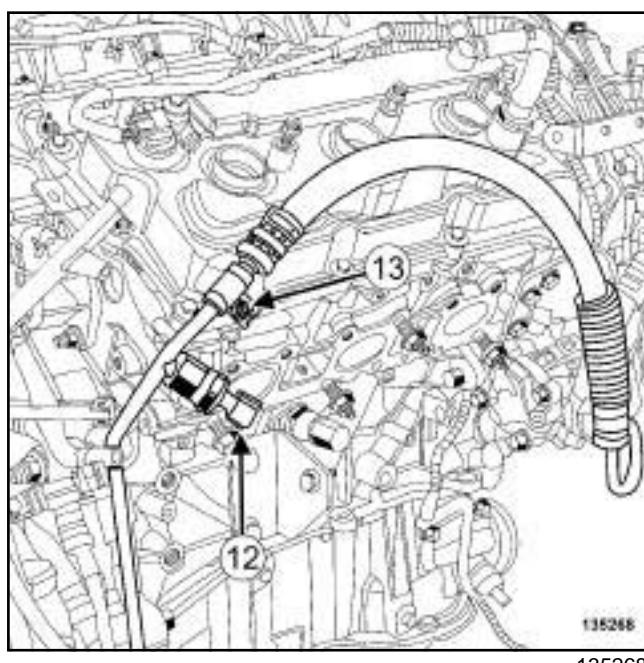
Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and RIGHT-HAND DRIVE



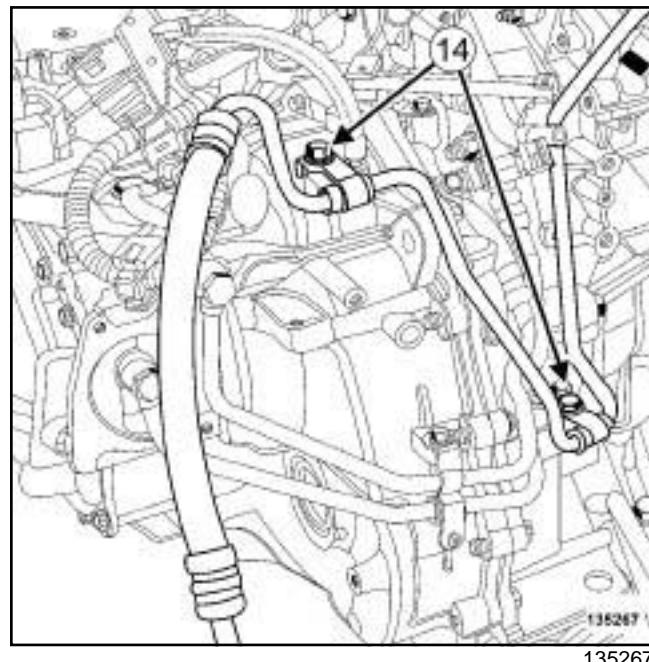
135417

- Fit a hose clamp (**Ms. 583**) on the heater matrix pipe.
- Loosen the clip (11) on the heater matrix pipe.
- Disconnect the heater matrix pipe from the rigid pipe.



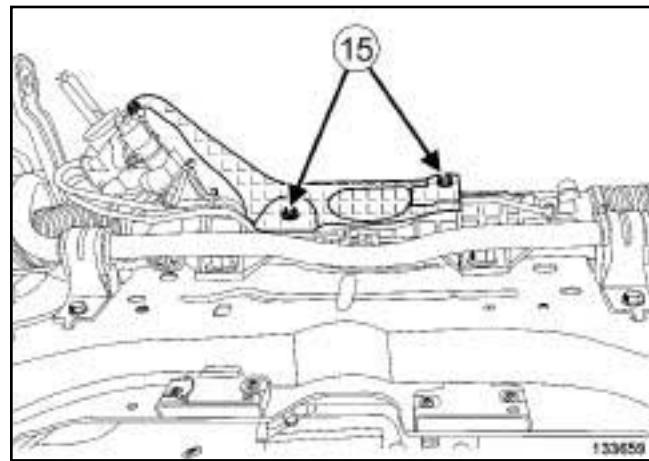
135268

- Disconnect the pressostat connector (12).
- Remove the nut (13) for the power-assisted steering high pressure pipe on the rocker cover.



135267

- Remove the high pressure pipe bolts (14) from the gearbox.

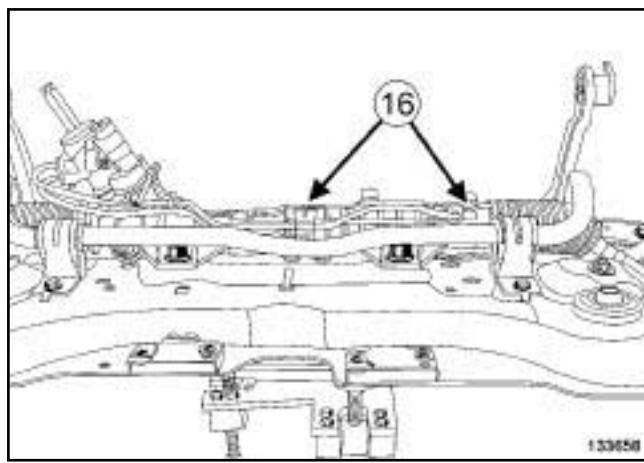


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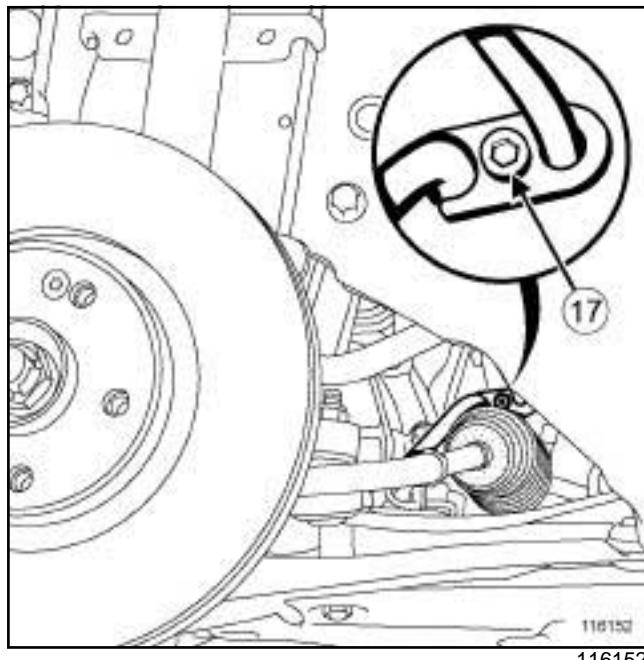
- Remove:
 - the heat shield bolts (15) from the steering box,
 - the heat shield for the steering box.

Power-assisted steering pipes: Removal - Refitting

D91, and V4Y, and RIGHT-HAND DRIVE



- Remove the bolts (16) of the high pressure pipe on the steering box.



- Remove:
 - the power-assisted steering pipe bracket bolt (17) on the steering box,
 - the power-assisted steering high pressure pipe.
- Fit blanking plugs into all openings.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: Power-assisted steering pipe seal (13,04,04,22).

II - REFITTING OPERATION FOR PART CONCERNED**WARNING**

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

1 - Low pressure pipe between the power-assisted steering pump and the reservoir

- Refit the power-assisted steering low pressure pipe.
- Fit:
 - the clip of the low pressure pipe on the power-assisted steering pump using the tool (**Mot. 1448**),
 - the clip of the low pressure pipe on the power-assisted steering fluid reservoir using the tool (**Mot. 1448**).
- Clip the low pressure pipe onto the timing cover.

2 - High pressure pipe between the power-assisted steering pump and the steering box

- Refit:
 - the power-assisted steering high pressure pipe,
 - the high pressure pipe union on the power-assisted steering pump.
- Tighten to torque:
 - the **high pressure pipe union on the power-assisted steering pump (21 N.m)**,
 - the **high pressure pipe bolts on the steering box (8 N.m)**,
 - the **high pressure pipe bolts on the gearbox (8 N.m)**,
 - the **high pressure pipe nut on the rocker cover (8 N.m)**.

- Refit:
 - the bracket on the steering box,
 - the heat shield for the steering box.

- Connect:
 - the pressostat connector,
 - the heater matrix pipe on the rigid pipe.
- Remove the hose clamps.

Power-assisted steering pipes: Removal - Refitting

36B

D91, and V4Y, and RIGHT-HAND DRIVE

Refit:

- the max fuse box,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the air inlet duct (see **Inlet duct: Removal - Refitting**) (12A, Fuel mixture).

3 - Low pressure pipe between the power-assisted steering fluid reservoir and the steering box

Refit:

- the power-assisted steering low pressure pipe,
- the power-assisted steering pipe bracket on the steering box,
- the low pressure pipe clip on the reservoir using the tool (**Mot. 1448**),
- the heat shield for the steering box.

Clip the power-assisted steering low pressure pipe onto the front end panel of the vehicle.

III - FINAL OPERATION

Refit:

- the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

Bleed the power-assisted steering circuit (see **36B, Power assisted steering, Power-assisted steering circuit: Bleeding**, page 36B-54) .

Check that there are no leaks.

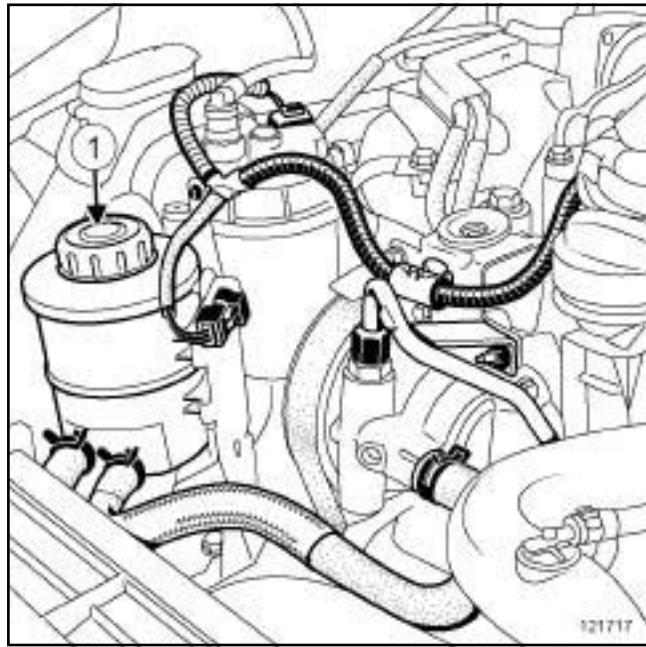
Refit:

- the engine undertray,
- the engine cover.

BLEEDING

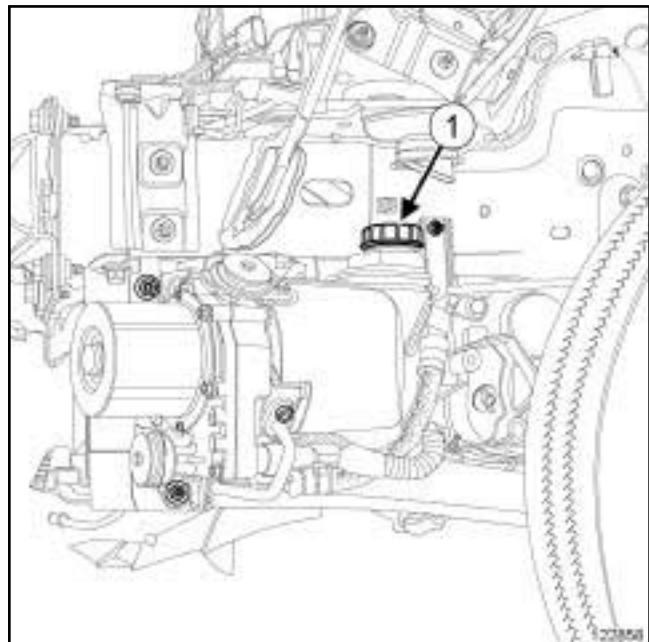
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Raise the vehicle until the front wheels are lifted off the ground.

M9R, and 802 or 816 – F4R or K4M



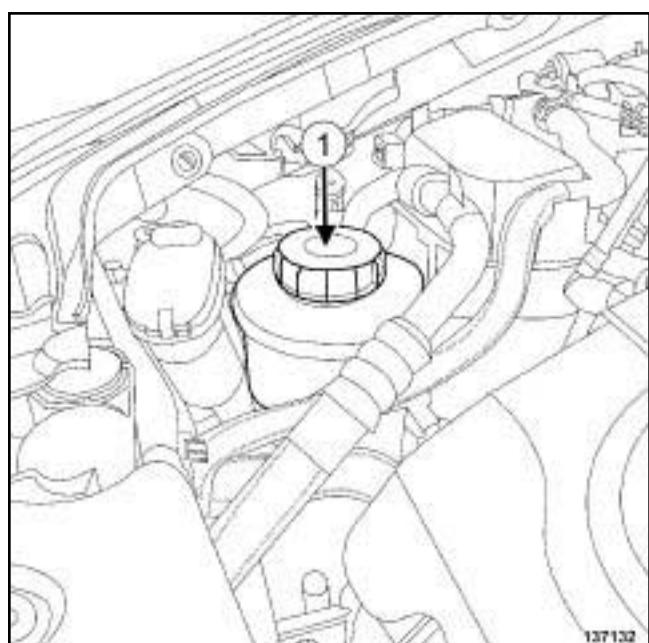
- Fill the power-assisted steering fluid reservoir (1) .

K9K or M4R – M9R, and 742



- Fill the power-assisted steering reservoir (1) .

V4Y or V9X



- Fill the power-assisted steering fluid reservoir at (1) .
- Start the vehicle.

- Top up the power-assisted steering fluid.

WARNING

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Repeat the following operation three times:
 - turn the steering wheel to the left to lock the steering,
 - turn the steering wheel to the right to lock the steering.
- Top up the power-assisted steering fluid.

WARNING

The level must be between the « MIN » and « MAX » markings on the reservoir.

Tightening torques 

master cylinder nuts	20 N.m
brake pipes	14 Nm
brake fluid reservoir bolt	7 N.m

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

PK4 or TL4

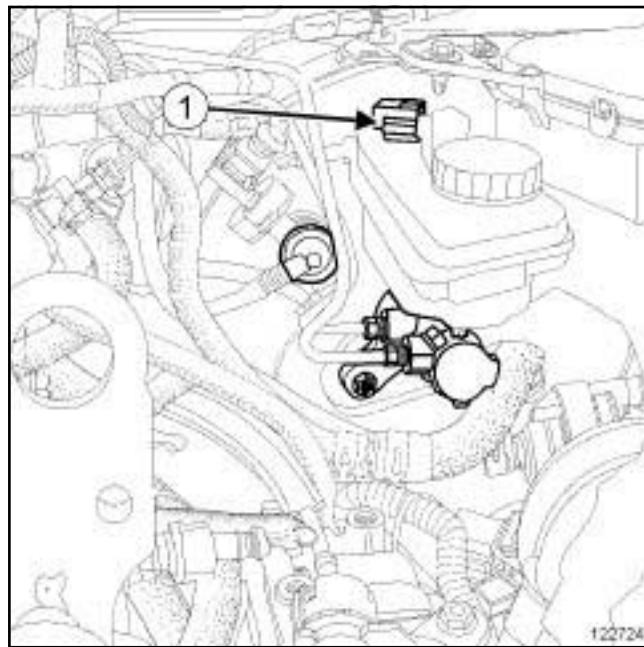
- Disconnect the clutch master cylinder pipe on the brake fluid reservoir at (4).

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

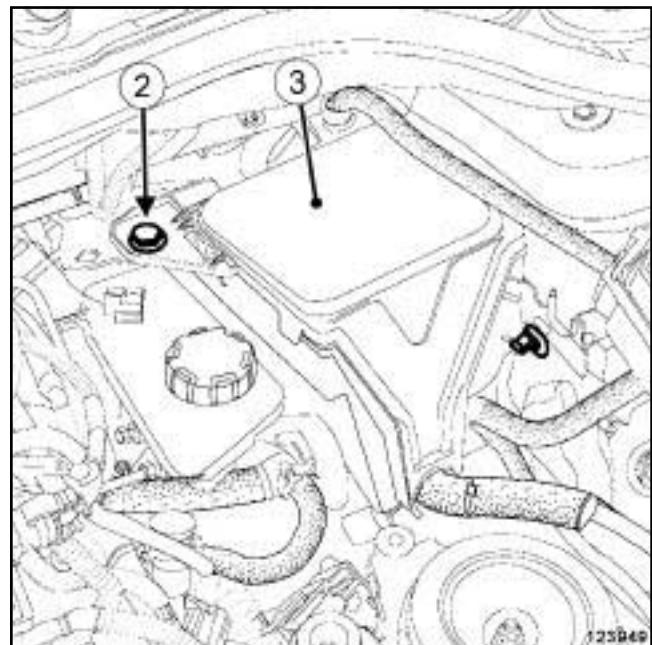
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front engine cover.
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

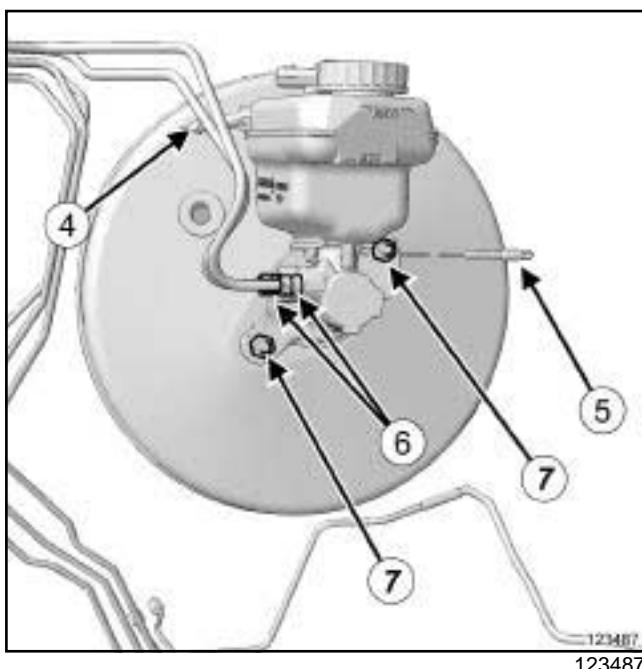
II - OPERATION FOR REMOVAL OF PART CONCERNED

122724

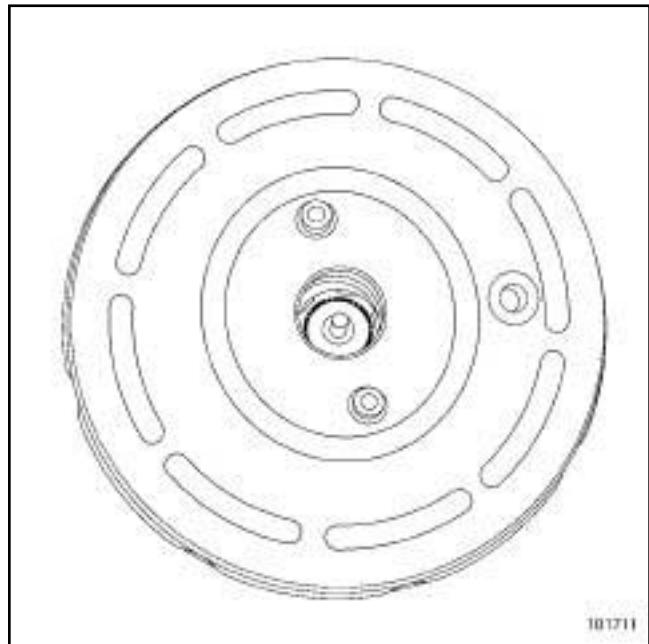
- Disconnect the brake fluid reservoir connector (1).
- Drain the brake fluid reservoir.



- Remove the bolt (2) from the max fuse box (3).
- Move the max fuse box to one side (3).



II - REFITTING OPERATION FOR PART CONCERNED

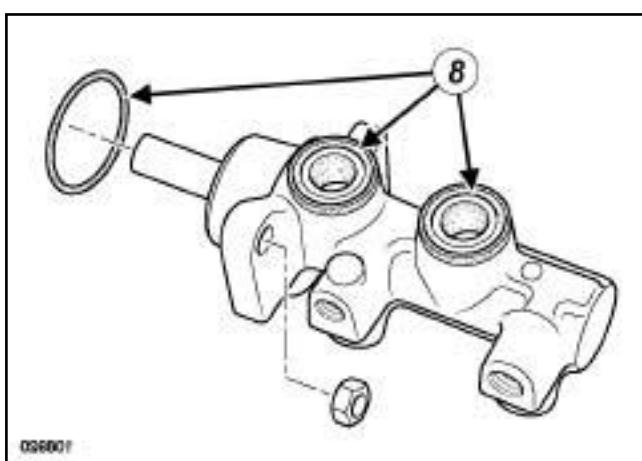


Remove:

- the brake fluid reservoir bolt (5) on the master cylinder,
- the brake fluid reservoir,
- the brake pipes (6) on the master cylinder, after you have marked them,
- the master cylinder nuts (7) on the brake servo,
- the master cylinder.

REFITTING

I - REFITTING PREPARATION OPERATION



- Always replace the master cylinder seals (8).

- Line up the master cylinder with the brake servo so that the pushrod goes into the master cylinder housing.
- Torque tighten the **master cylinder nuts (20 N.m)** on the brake servo.
- Refit the brake pipes.
- Torque tighten the **brake pipes (14 Nm)**.
- Refit the brake fluid reservoir onto the master cylinder.
- Torque tighten the **brake fluid reservoir bolt (7 N.m)**.
- Fit the max fuse box.
- Tighten the max fuse box bolt.

PK4 or TL4

- Connect the clutch master cylinder pipe on the brake fluid reservoir.
- Connect the connector on the brake fluid reservoir.

III - FINAL OPERATION

- Refit the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

- Refit the engine cover.
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

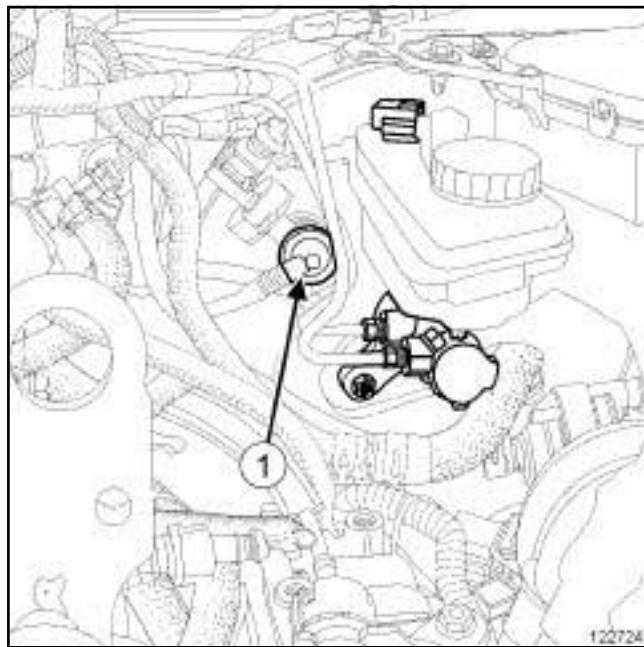
PK4 or TL4

- Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page 37A-47) .

K9K or M4R or M9R

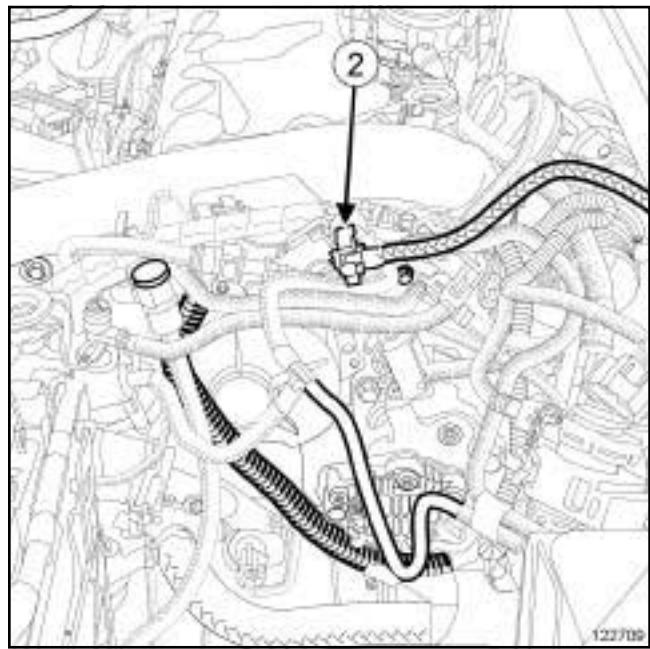
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove the front engine cover.

II - REMOVAL OPERATION FOR PART CONCERNED

- Remove the non-return valve (1) from the brake servo, turning the non-return valve to extract the rubber sealing washer.

K9K or M9R



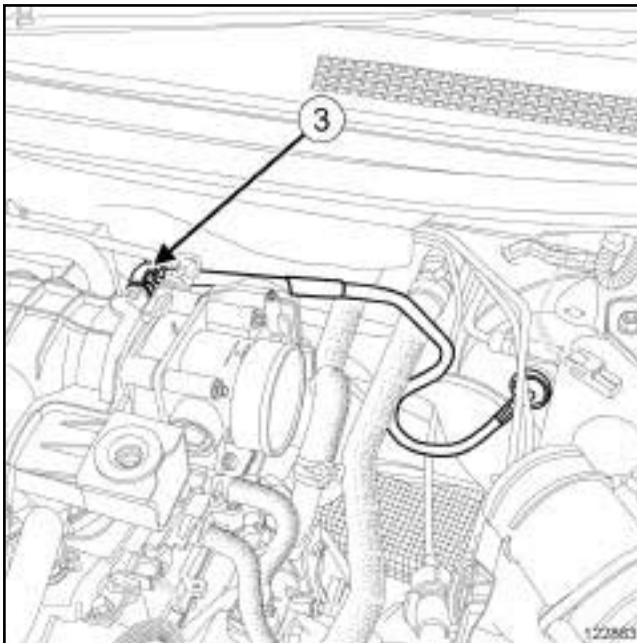
- Disconnect the non-return valve pipe (2) at the vacuum pump.

Brake servo non-return valve: Removal - Refitting

37A

K9K or M4R or M9R

M4R



122863

M4R

- Connect the non-return valve pipe to the intake distributor.

- Connect the non-return valve to the brake servo.

III - FINAL OPERATION.

- Refit the engine cover.

- Disconnect the non-return valve pipe (3) at the intake distributor.

- Remove the non-return valve.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- Check the condition of the sealing washer and the non-return valve.
- Replace any faulty parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the non-return valve.

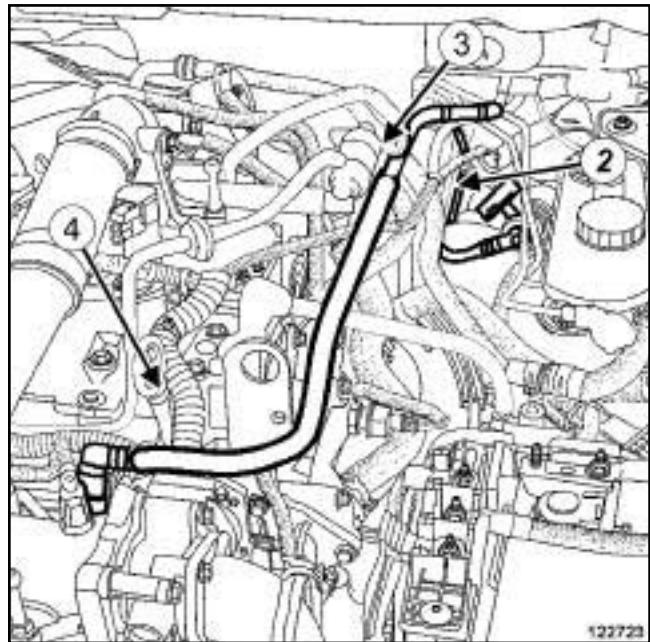
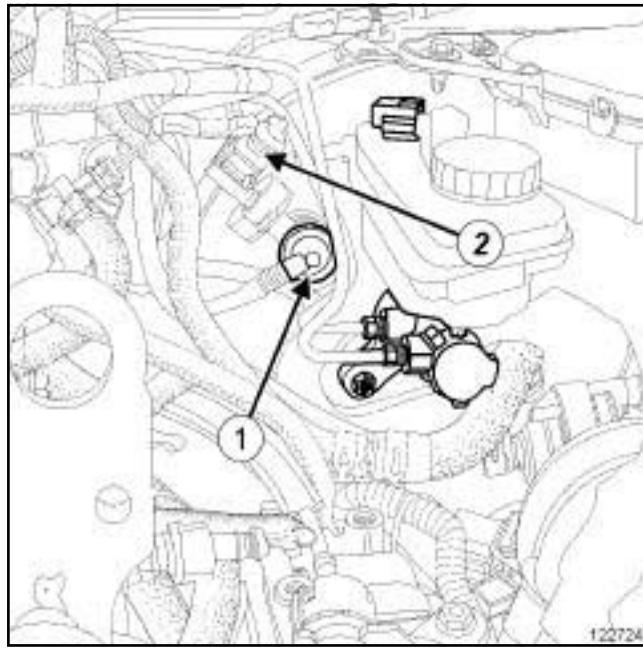
K9K or M9R

- Connect the non-return valve pipe to the vacuum pump.

F4R

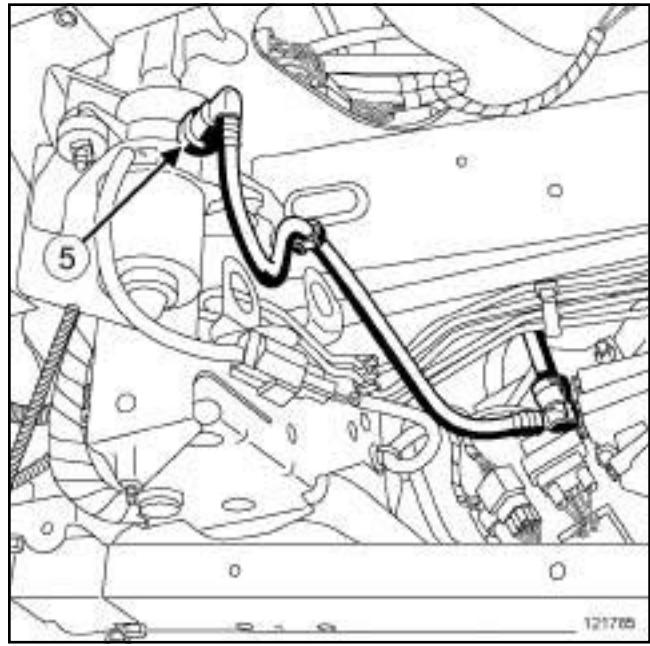
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the engine cover.

122723
122723**II - REMOVAL OPERATION FOR PART CONCERNED**

122724

- Remove the non-return valve (1) from the brake servo, turning the non-return valve to extract the rubber sealing washer.

121785
121785

- Disconnect the non-return valve pipe (5) at the vacuum pump.
- Remove the non-return valve.

F4R

REFITTING

I - REFITTING PREPARATIONS OPERATION

- Check the condition of the sealing washer and the non-return valve.
- Replace any faulty parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the non-return valve.
- Connect the non-return valve on:
 - the vacuum pump,
 - the intake distributor,
 - the union (3) ,
 - the pressure sensor connector,
 - the brake servo.

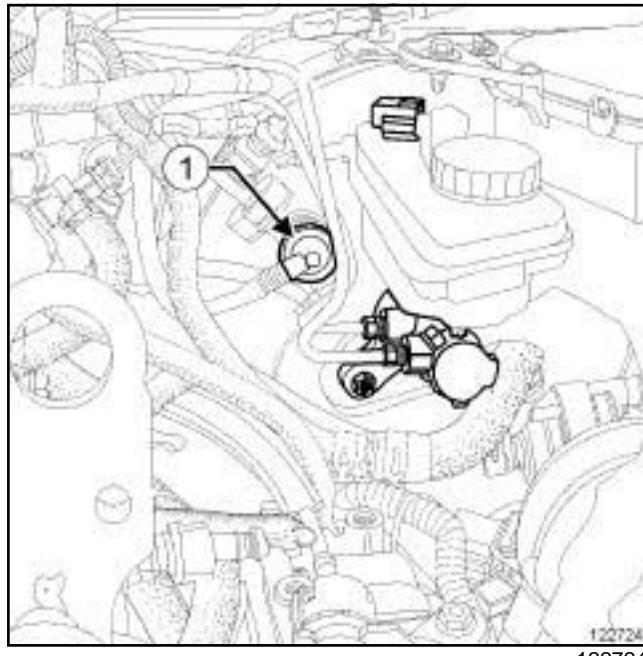
III - FINAL OPERATION.

- Refit:
 - the engine cover,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

V4Y or V9X

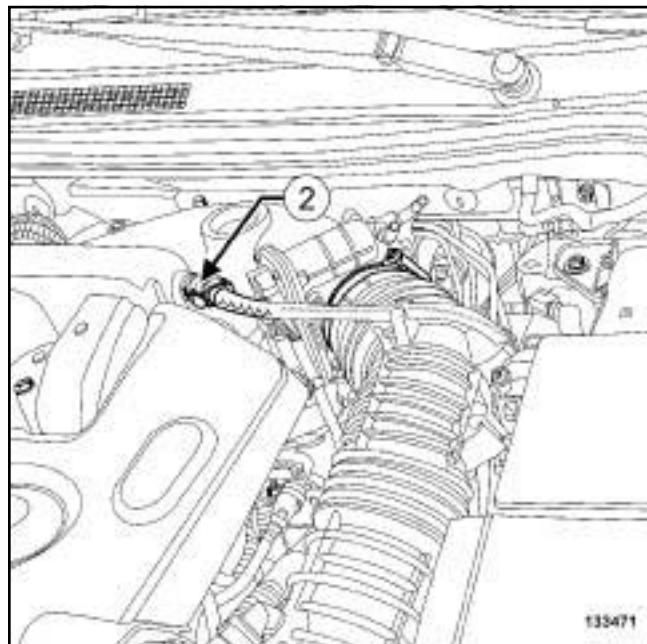
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove:
- the engine cover,
 - the air filter unit (see **Air filter unit: Removal - Refitting** (12A, Fuel mixture)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the non-return valve (1) from the servo, turning the non-return valve to extract it from the rubber washer.

V4Y



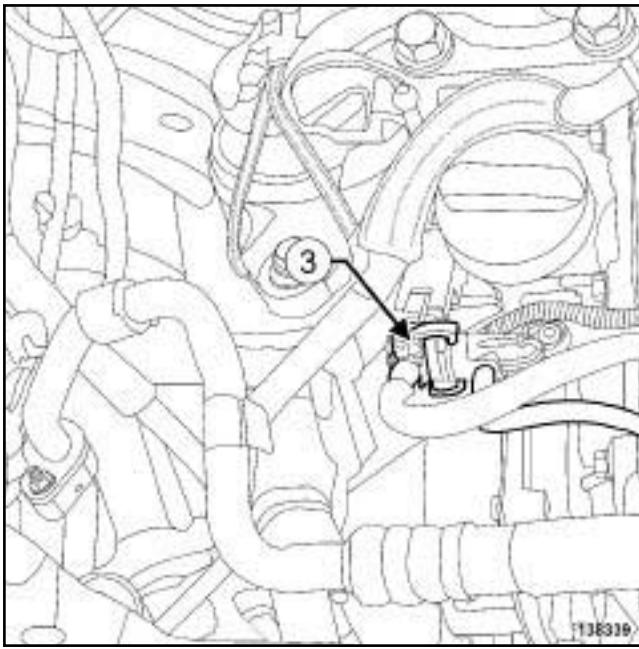
- Disconnect the non-return valve pipe (2) from the intake distributor.

Brake servo non-return valve: Removal - Refitting

37A

V4Y or V9X

V9X



138339

- Disconnect the non-return valve pipe (3) from the vacuum pump.

- Remove the non-return valve.

REFITTING

I - REFITTING PREPARATION OPERATION

- Check the condition of the sealing washer and the non-return valve.
- Replace any faulty parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the non-return valve.

V4Y

- Connect the non-return valve pipe to the intake distributor.

V9X

- Connect the non-return valve pipe to the vacuum pump.

- Connect the non-return valve to the brake servo.

III - FINAL OPERATION

- Refit:
 - the air filter unit (see **Air filter unit: Removal - Re-fitting**) (12A, Fuel mixture),
 - the engine cover.

Special tooling required	
Mot. 1852	Conversion support studs for Mot. 1720 tool
Mot. 1720	Engine stand.
Mot. 1672	Lower engine support.

Tightening torques 	
brake servo nuts	24 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine cover,
 - the max fuse box bolt,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the air outlet pipe of the air filter unit,
 - the master cylinder (see **37A, Mechanical component controls, Master cylinder: Removal - Refitting**, page 37A-1) ,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
 - the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-29) .

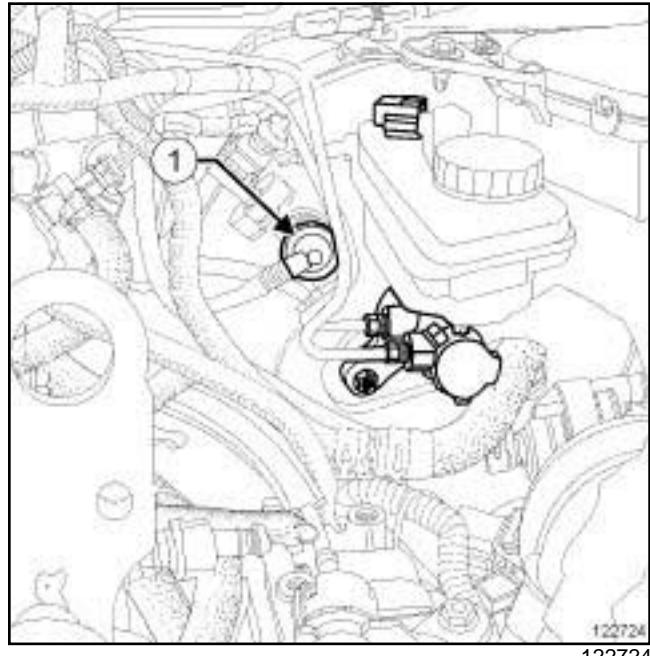
D91, and V4Y, and AJ0

- Fit the tools:
 - (**Mot. 1852**),
 - (**Mot. 1720**),
 - (**Mot. 1672**).
- Remove the left-hand side suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

D91, and V9X, and AJ0

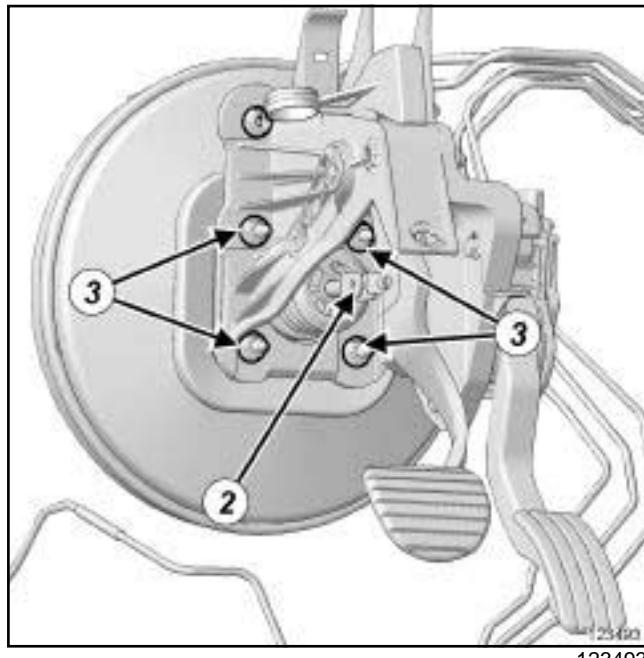
- Remove the catalytic pre-converter (see **Catalytic pre-converter: Removal - Refitting**) (19B, Exhaust).

II - OPERATION FOR REMOVAL OF PART CONCERNED

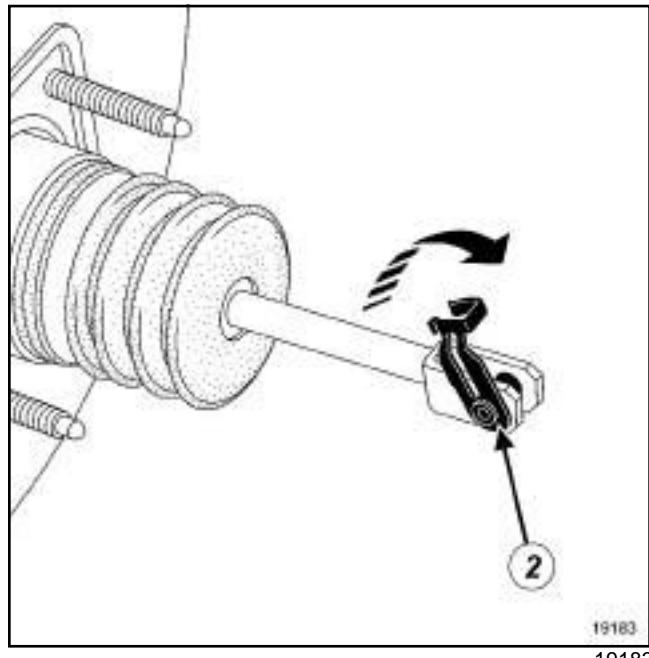


- Disconnect the brake servo non-return valve (1) .

Left-hand drive



123493

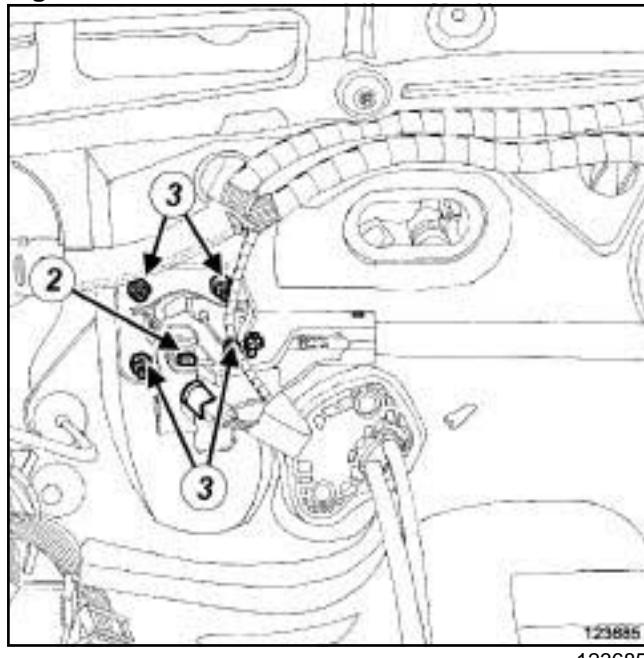


19183

 Remove:

- the double safety connecting piece (2) between the brake servo pushrod and the brake pedal,
- the brake servo nuts (3) ,
- the brake servo.

Right-hand drive

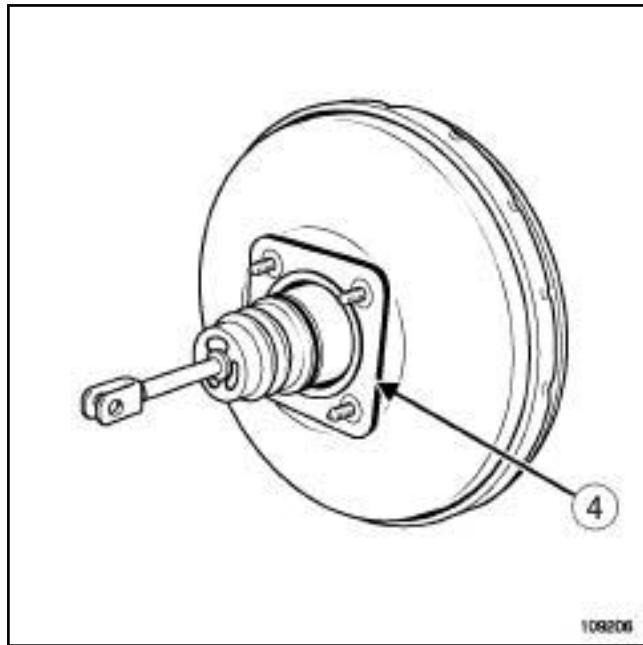


123685

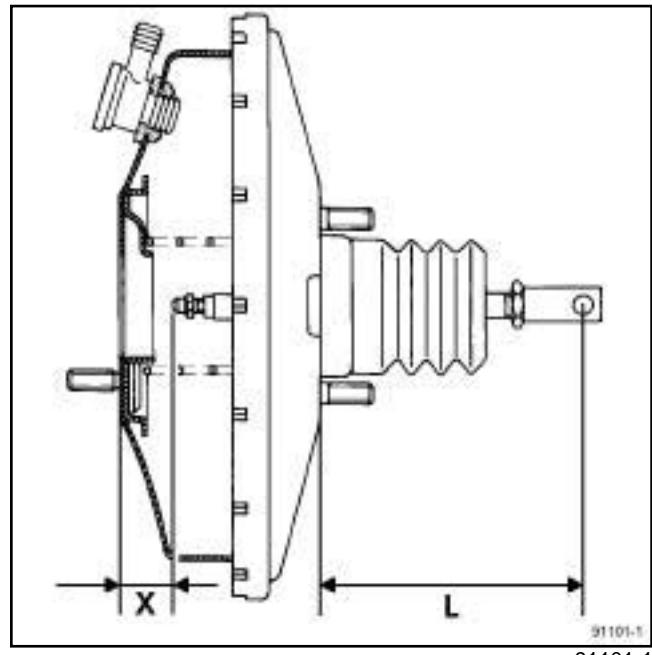
123685

REFITTING

I - REFITTING PREPARATION OPERATION



- Check the presence and condition of the brake servo seal (4).
- Replace the brake servo seal if necessary.
- The shaft of the double safety connecting piece between the brake servo pushrod and the brake pedal must be replaced.



- Before refitting, check dimension L :
 - 167.3 mm for left-hand drive vehicles,
 - 118.5 mm for right-hand drive vehicles.
- If the dimension is not correct, replace the brake servo.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the brake servo,
 - the brake servo nuts.
- Torque tighten the **brake servo nuts (24 N.m)**.
- Refit the double safety connecting piece between the brake servo pushrod and the brake pedal.
- Connect the non-return valve onto the brake servo.

III - FINAL OPERATION

D91, and V4Y, and AJ0

- Refit the left-hand side suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).
- Remove the following tools:
 - (Mot. 1852),
 - (Mot. 1720),

- . (Mot. 1672)

D91, and V9X, and AJ0

- Refit the catalytic pre-converter (see **Front catalytic pre-converter: Removal - Refitting**) (19B, Exhaust).

Refit:

- the air outlet pipe of the air filter unit,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the max fuse box bolt,
 - the engine cover,
 - the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-29) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
 - Check that the connecting pin between the brake servo pushrod and the brake pedal is locked in place.
 - Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

PK4 or TL4

- Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page 37A-47) .

- Refit the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).

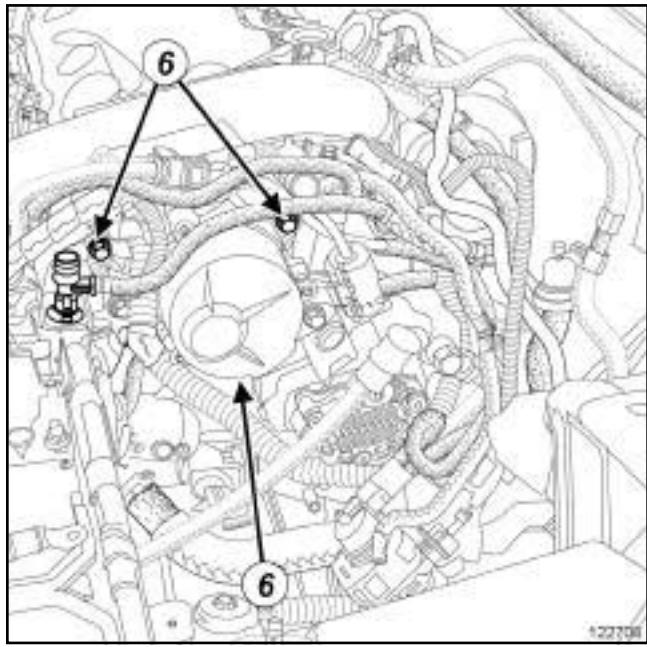
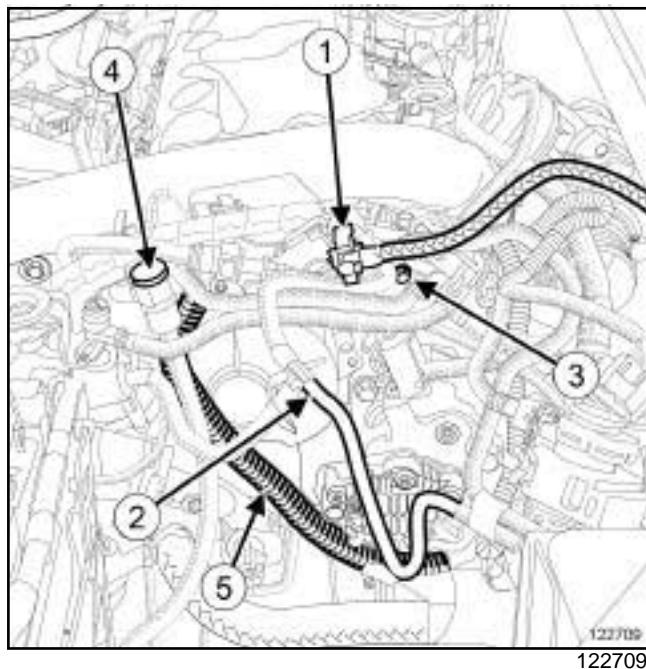
M9R

Tightening torques 

vacuum pump bolts	21 Nm
fuel pipe retaining bracket bolt	14 Nm

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove:
- the engine cover,
 - the air filter box (see **Air filter unit: Removal - Refitting** (12A, Fuel mixture)).

**II - OPERATION FOR REMOVAL OF PART CONCERNED**

- Disconnect:
- the non-return valve pipe (1) on the vacuum pump,
 - the vacuum pipe (2) on the vacuum pump.
- Remove:
- the bolt (3) from the fuel pipe retaining bracket,
 - the fuel pipe retaining bracket.
- Unclip:
- the gearbox breather pipe (4) ,
 - the wiring (5) .

- Remove:

- the vacuum pump bolts (6) ,
- the vacuum pump.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Be sure to replace the vacuum pump seal.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the vacuum pump fitted with a new seal.
- Torque tighten the **vacuum pump bolts (21 Nm)**.
- Clip:
- the gearbox breather pipe,
 - the wiring (5) .
- Refit the fuel pipe retaining bracket.
- Torque tighten the **fuel pipe retaining bracket bolt (14 Nm)**.
- Connect:
- the vacuum pressure pipe (2) from the vacuum pump,
 - the non-return valve (1) on the vacuum pump.

M9R

III - FINAL OPERATION.

Refit:

- the air filter box (see **Air filter unit: Removal - Re-fitting**) (12A, Fuel mixture),
- the engine cover.

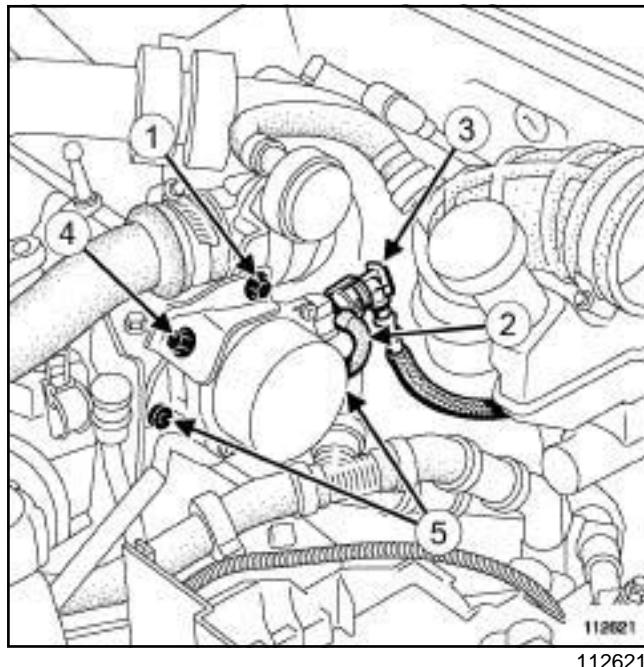
K9K

Tightening torques

vacuum pump bolts	21 Nm
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REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove:
- the engine cover,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture).

II - REMOVAL OPERATION FOR PART CONCERNED

- Undo the vacuum pump retaining bracket bolt (1) .
- Disconnect:
- the vacuum pressure pipe (2) from the vacuum pump,
 - the non-return valve pipe (3) to the vacuum pump.
- Remove:
- the bolt (4) from the retaining bracket on the vacuum pump,
 - the vacuum pump bolts (5) ,
 - the vacuum pump.

REFITTING**I - REFITTING PREPARATIONS OPERATION**

- Be sure to replace the vacuum pump seal.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
- the vacuum pump,
 - the vacuum pump bolts.
- Torque tighten the **vacuum pump bolts (21 Nm)**.
- Connect:
- the vacuum pipe on the vacuum pump,
 - the non-return valve pipe to the vacuum pump.
- Refit the vacuum pump retaining bracket bolt.
- Tighten the vacuum pump retaining bracket bolts.

III - FINAL OPERATION.

- Refit:
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture),
 - the engine cover.

F4R

REFITTING

Tightening torques 

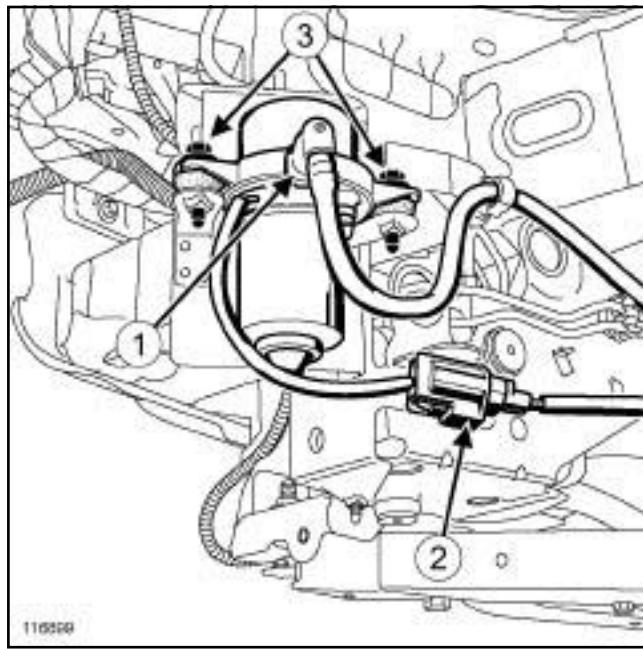
vacuum pump bolts	8 N.m
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REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove:
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) ,
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



116899

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the vacuum pump,
 - the vacuum pump bolts,
 - the vacuum pump connector,
 - the non-return valve pipe on the vacuum pump.
- Torque tighten the **vacuum pump bolts (8 N.m)**.

II - FINAL OPERATION.

- Refit:
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 416, 55A, Exterior protection),
 - the front left-hand wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**) .

- Remove:

- the non-return valve pipe (1) on the vacuum pump,
- the vacuum pump connector (2) ,
- the vacuum pump bolts (3) ,
- the vacuum pump.

V9X

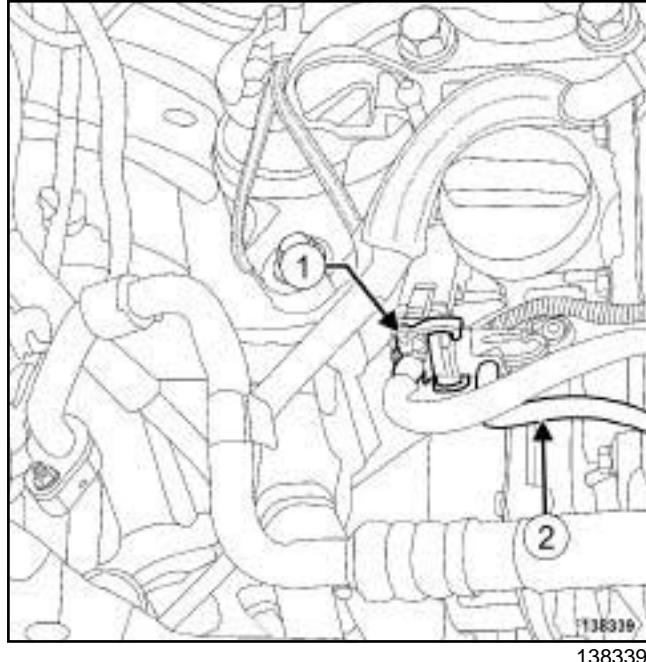
Tightening torques

vacuum pump bolts

10 N.m

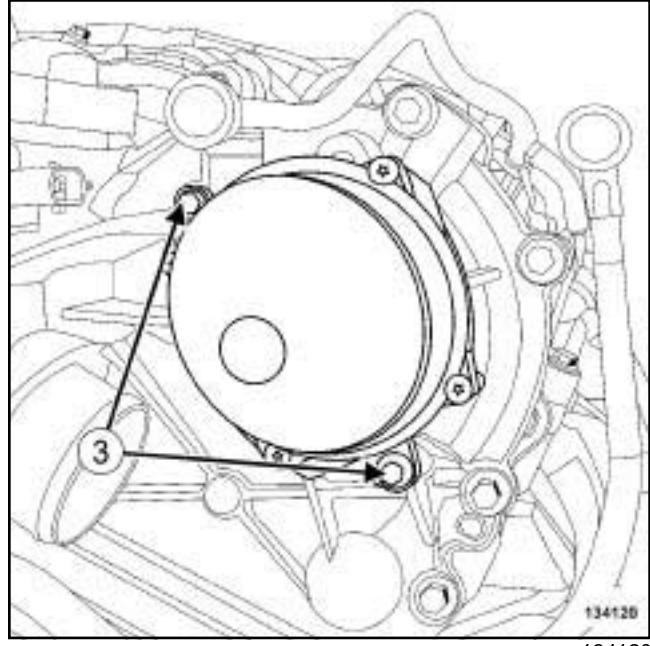
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove:
- the engine cover,
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the power-assisted steering fluid reservoir.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect:

- the non-return valve pipe (1) on the vacuum pump,
- the vacuum pipe (2) on the vacuum pump.



- Remove:

- the vacuum pump bolts (3) ,
- the vacuum pump.

REFITTING**I - REFITTING PREPARATION OPERATION**

- parts always to be replaced: Brake servo vacuum pump seal (13,03,07,02).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the vacuum pump fitted with a new seal.
- Torque tighten the **vacuum pump bolts (10 N.m)**.
- Connect:
- the vacuum pipe on the vacuum pump,
 - the non-return valve to the vacuum pump.

III - FINAL OPERATION

- Refit:
- the power assisted steering fluid reservoir,
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the engine cover.

MECHANICAL COMPONENT CONTROLS

Accelerator pedal: Removal - Refitting

37A

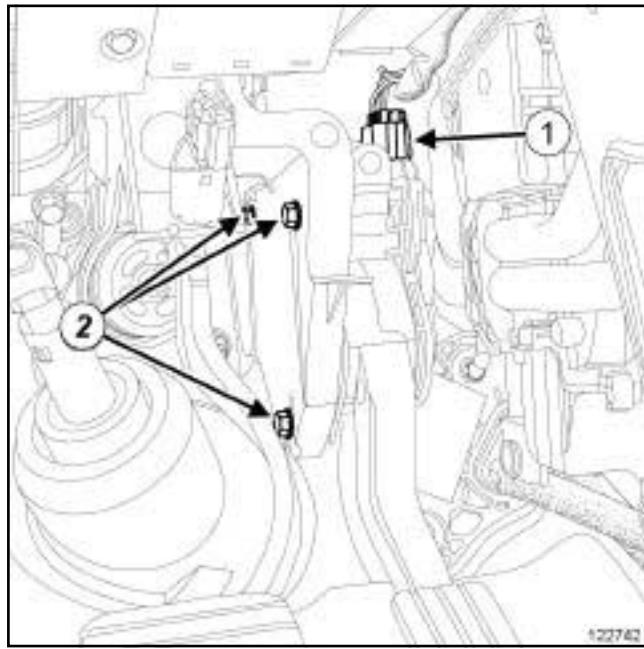
LEFT-HAND DRIVE

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Exterior equipment).

II - REMOVAL OPERATION FOR PART CONCERNED



- Disconnect the accelerator pedal potentiometer connector (1) .
- Remove:
 - the accelerator pedal bolts (2) ,
 - the accelerator pedal.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the accelerator pedal,
 - the accelerator pedal bolts,
 - the accelerator pedal potentiometer connector.
- Tighten the accelerator pedal bolts.

II - FINAL OPERATION.

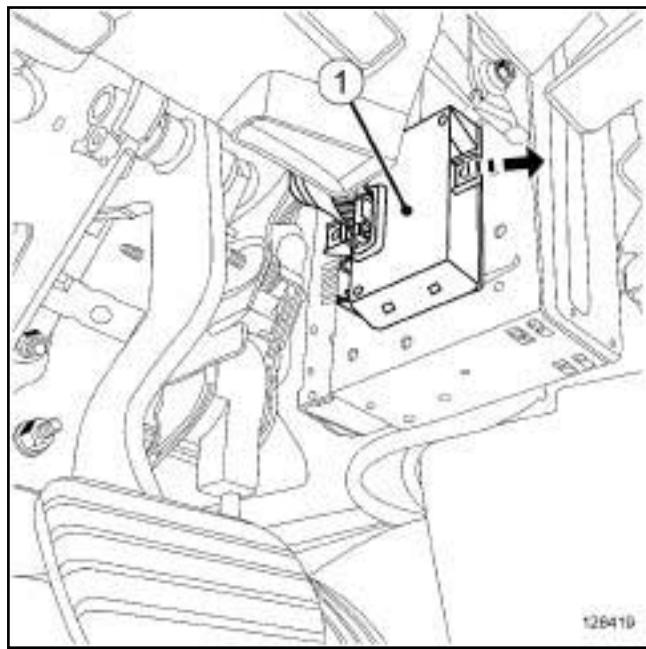
- Refit the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (MR 416, 57A, Exterior equipment).

RIGHT-HAND DRIVE

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Switch off the ignition.
- Remove the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting** (57A, Interior equipment)).

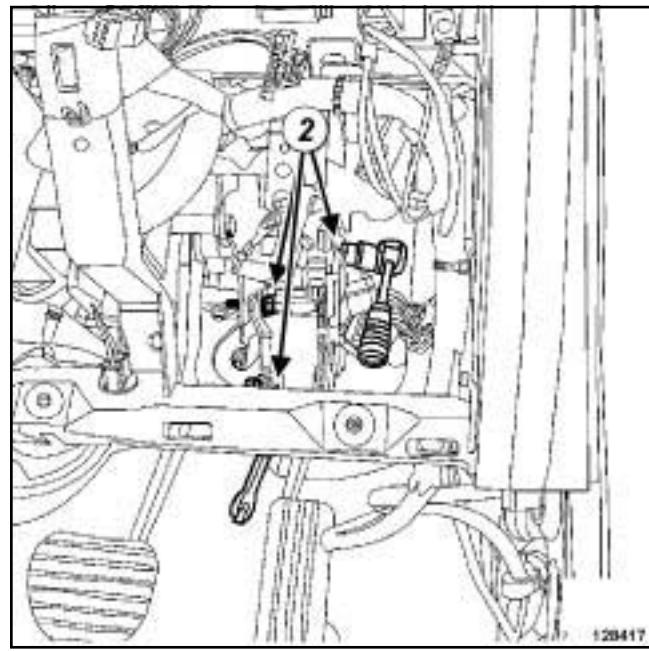
NAVIGATION AID 4 or NAVIGATION AID 6



- Unclip the multimedia network interface unit (1).

RADIO NO. 03

- Remove the receiver (see **Receiver: Removal - Refitting** (86A, Radio)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect the accelerator pedal connector.
- Remove:
 - the accelerator pedal bolt (2),
 - the accelerator pedal.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Refit the accelerator pedal.
- Connect the accelerator pedal connector.

II - FINAL OPERATION.

RADIO NO. 03

- Refit the receiver (see **Receiver: Removal - Refitting** (86A, Radio)).

NAVIGATION AID 4 or NAVIGATION AID 6

- Clip on the multimedia network interface unit.

RIGHT-HAND DRIVE

- Refit the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).

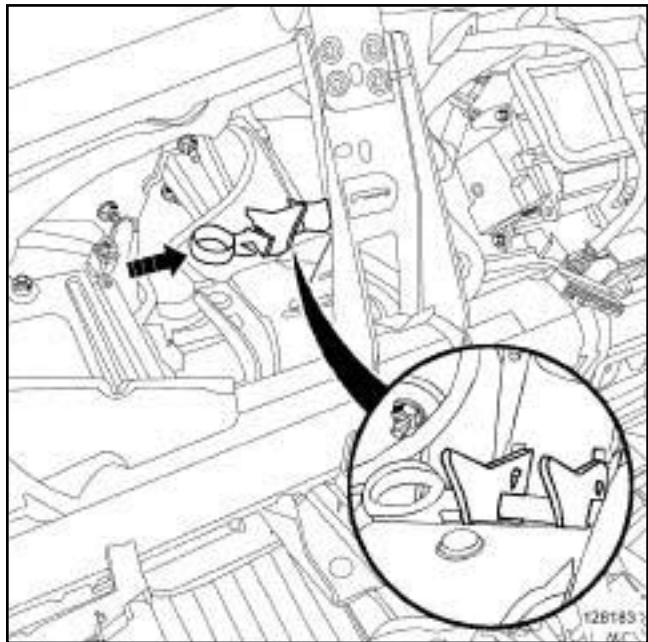
LEFT-HAND DRIVE

Special tooling required

Fre. 1752 Safety pin

Tightening torques 

brake pedal nuts 21 Nm

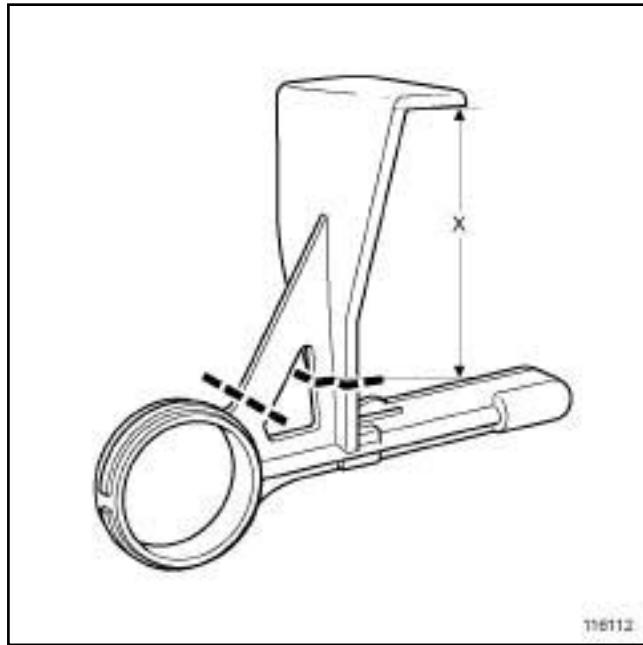


128183

REMOVAL

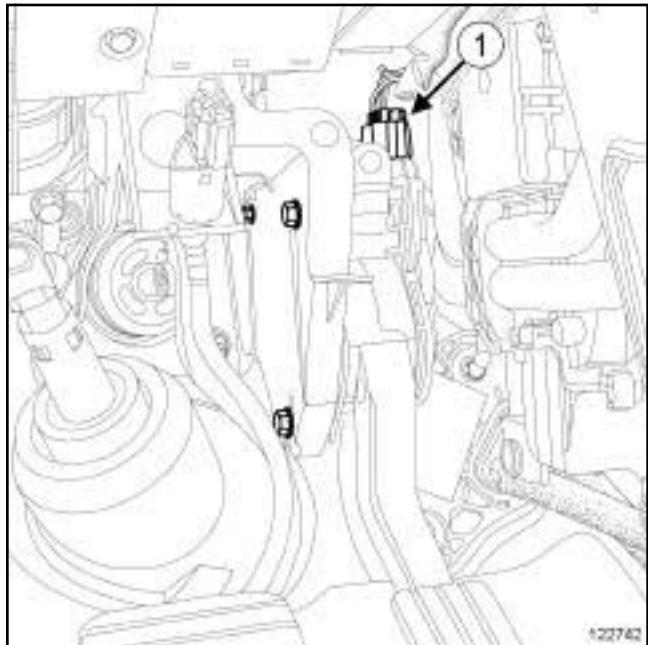
I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting** (02A, Lifting equipment)).
- Disconnect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Remove:
 - the dashboard (see **Dashboard: Removal - Refitting** (57A, Interior equipment)),
 - the steering column (see **36A, Steering assembly, Steering column: Removal - Refitting**, page 36A-16) .



116112

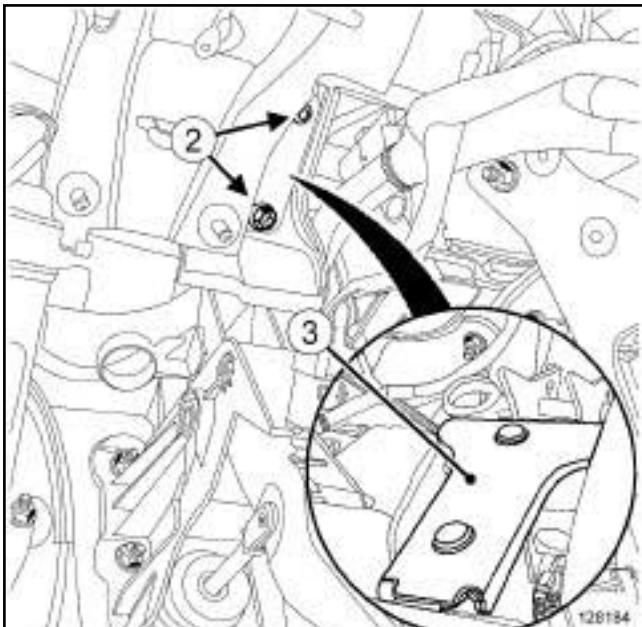
- Cut the tool (**Fre. 1752**) along the dotted lines, respecting the dimension (X) of **68 mm**.



122742

- Disconnect the accelerator pedal potentiometer connector (1) .
- Remove the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-29) .

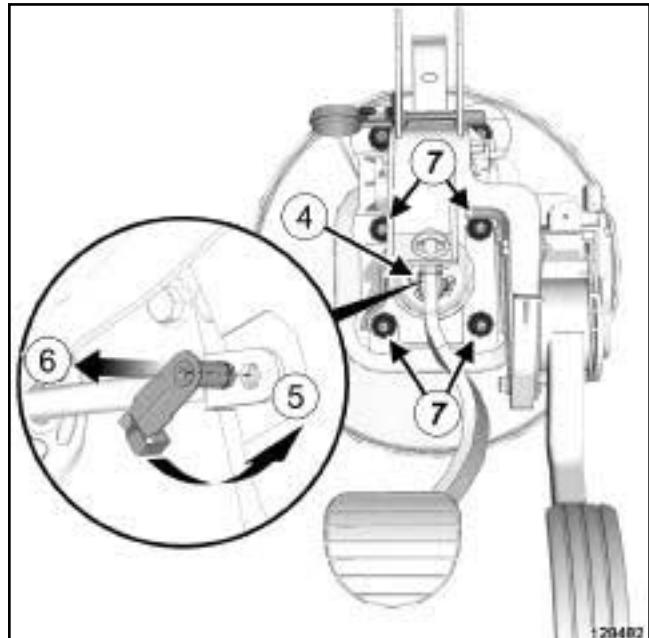
LEFT-HAND DRIVE



128184

 Remove:

- the brake pedal impacter nuts (2) ,
- the brake pedal impacter (3) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

128482

 Remove the dual safety connecting shaft (4) :

- unlock the shaft in accordance with (5) ,
- extract the shaft in accordance with (6) .

 Remove:

- the nuts (7) from the brake pedal,
- the brake pedal - accelerator pedal assembly.

In the event of a replacement operation, remove the accelerator pedal (see 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting, page 37A-19) .

REFITTING**I - REFITTING PREPARATION OPERATION**

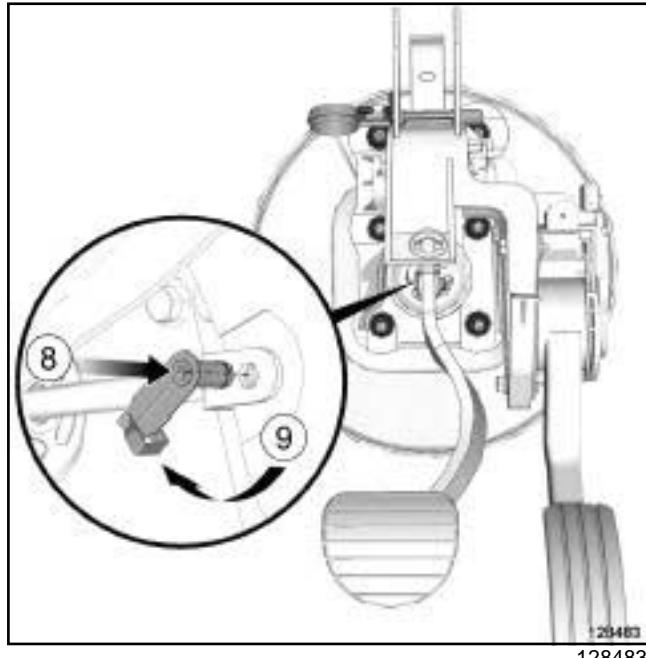
- Always replace the dual safety connecting shaft.
- In the event of a replacement operation, remove the securing pin fitted on the new pedal and immediately refit the tool (**Fre. 1752**) which was cut beforehand.

II - REFITTING OPERATION FOR PART CONCERNED Refit:

- the accelerator pedal (see 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting, page 37A-19) ,
- the brake pedal - accelerator pedal assembly.

LEFT-HAND DRIVE

- Torque tighten the **brake pedal nuts (21 Nm)**.



128483

- Refit a new dual safety connecting shaft:

- insert the shaft in accordance with (8) ,
- lock the shaft in accordance with (9) .

III - FINAL OPERATION.

- Refit:

- the brake pedal impacter,
- the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page **37A-29**) .

- Connect the accelerator pedal potentiometer connector.

- Remove the (**Fre. 1752**).

- Refit:

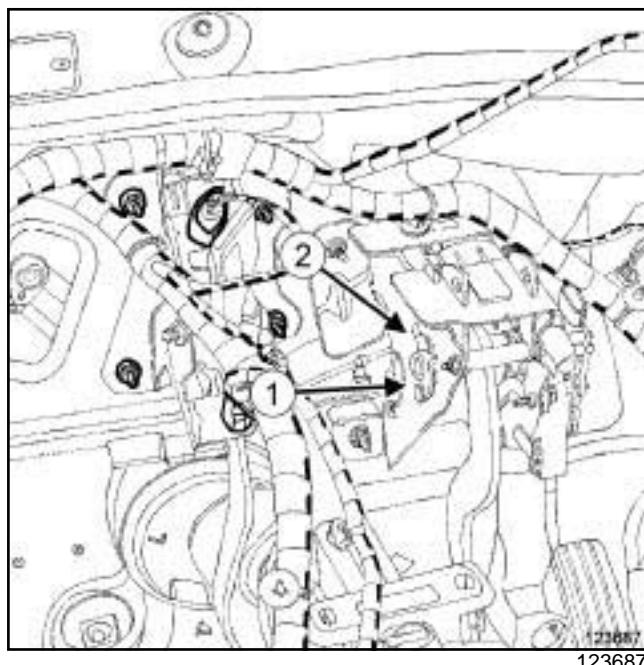
- the steering column (see **36A, Steering assembly, Steering column: Removal - Refitting**, page **36A-16**) ,
- the dashboard (see **Dashboard: Removal - Refitting**) (57A, Interior equipment).

- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

RIGHT-HAND DRIVE

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Remove:
 - the dashboard (see **Dashboard: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the dashboard cross member (see **Dashboard cross member: Removal - Refitting**) (MR 416, 42A, Upper front structure),
 - the brake pedal link rod (see **37A, Mechanical component controls, Brake pedal link rod: Removal - Refitting**, page 37A-26).

II - REMOVAL OPERATION FOR PART CONCERNED

- Remove:
 - the nut (1) from the brake pedal link rod connecting shaft,
 - the link rod connecting shaft.
- Turn the brake pedal shaft (2) to release the lug.
- Remove:
 - the brake pedal shaft,
 - the brake pedal.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Refit:
 - the brake pedal,
 - the brake pedal shaft.
- Lock the brake pedal shaft into the lug.
- Refit:
 - the brake pedal link rod shaft,
 - the brake pedal link rod shaft nut.

II - FINAL OPERATION.

- Refit:
 - the link rod (see **37A, Mechanical component controls, Brake pedal link rod: Removal - Refitting**, page 37A-26),
 - the dashboard cross member (see **Dashboard cross member: Removal - Refitting**) (MR 416, 42A, Upper front structure),
 - the dashboard (see **Dashboard: Removal - Refitting**) (MR 416, 57A, Interior equipment).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

MECHANICAL COMPONENT CONTROLS

Brake pedal link rod: Removal - Refitting

37A

RIGHT-HAND DRIVE

Special tooling required

Fre. 1752 Safety pin

Tightening torques

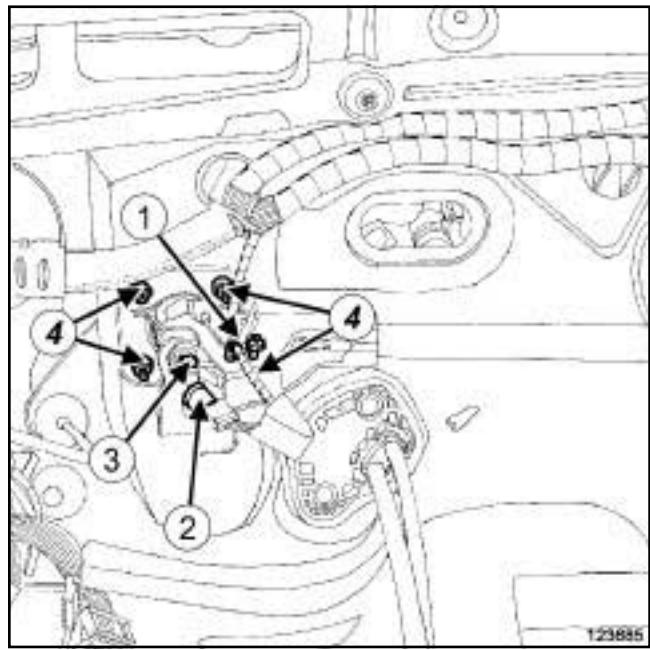
brake pedal plate nuts	21 Nm
brake pedal link rod plate nuts	21 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Remove:
 - the dashboard (see **Dashboard: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the dashboard cross member (see **Dashboard cross member: Removal - Refitting**) (MR 416, 42A, Upper front structure),
 - the clutch pedal (see **37A, Mechanical component controls, Clutch pedal: Removal - Refitting**, page 37A-39) .

II - REMOVAL OPERATION FOR PART CONCERNED

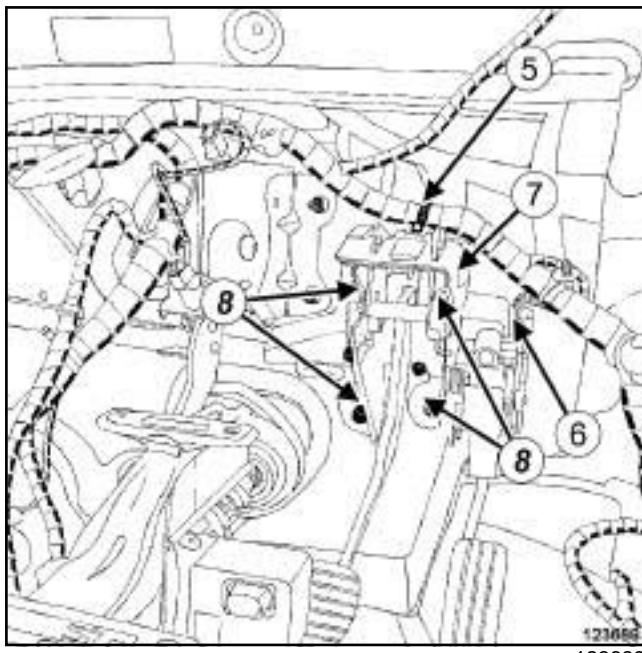


- Unclip the wiring at (1) .

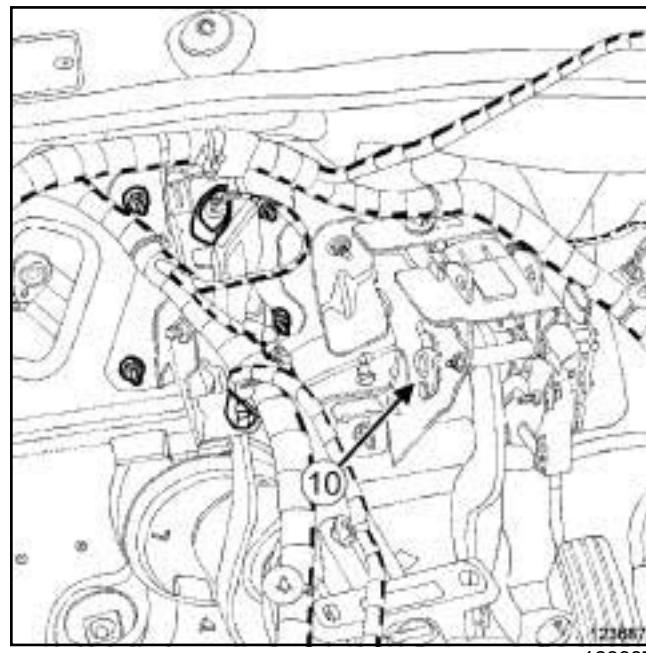
- Remove:

- the brake light switch (2) (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page 37A-29) ,
- the double safety connecting piece (3) ,
- the brake pedal link plate nuts (4) .

RIGHT-HAND DRIVE



123689



123687

- Unclip the wiring at (5).
- Disconnect the accelerator pedal potentiometer connector (6).
- Insert the (Fre. 1752), from left to right at (7) to lock the brake pedal safety system.
- Remove:
 - the brake pedal plate nuts (8),
 - the « brake pedal link rod - brake pedal » assembly.

- Remove:
 - the nut (10) from the brake pedal link rod shaft,
 - the brake pedal link rod shaft,
 - the brake pedal link rod.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- Always replace the double safety connecting piece.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the brake pedal link rod,
 - the brake pedal link rod shaft,
 - the brake pedal link rod shaft nut.
- Tighten the brake pedal link rod shaft nut.
- Refit:
 - the « brake pedal link rod - brake pedal » assembly,
 - the brake pedal plate nuts,
 - the brake pedal link rod plate nuts.
- Torque tighten:
 - the **brake pedal plate nuts (21 Nm)**,
 - the **brake pedal link rod plate nuts (21 Nm)**.

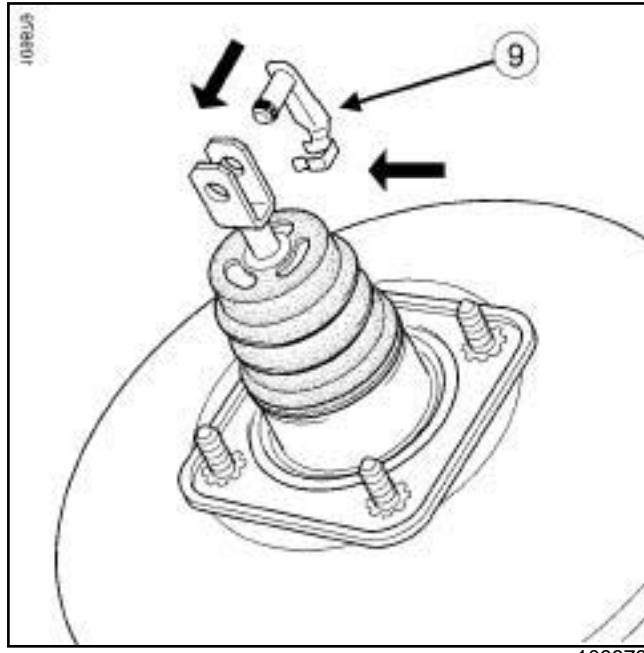
MECHANICAL COMPONENT CONTROLS

Brake pedal link rod: Removal - Refitting

37A

RIGHT-HAND DRIVE

- Connect the accelerator pedal potentiometer connector.
- Clip on the wiring.



109879

- Refit the shaft (9) :
 - insert the shaft upwards,
 - lock the shaft by clipping it to the left.
- Remove the securing pin (**Fre. 1752**).
- Refit the brake light switch (see **37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**, page **37A-29**).

III - FINAL OPERATION.

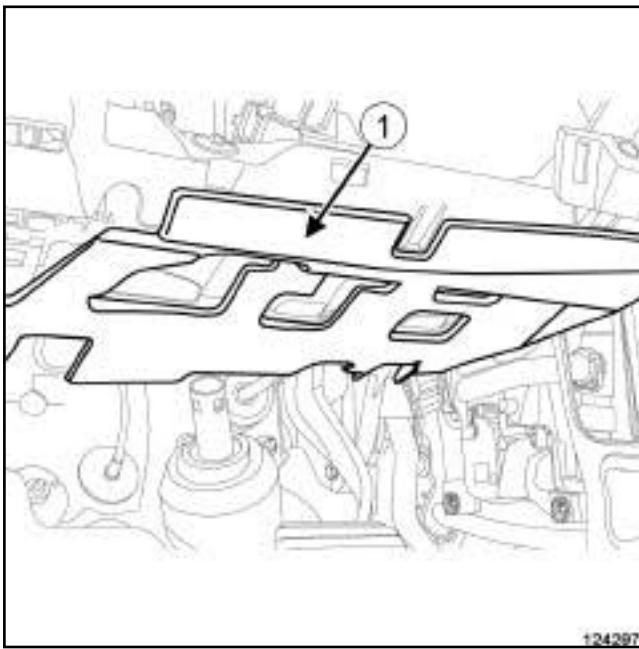
- Refit:
 - the clutch pedal (see **37A, Mechanical component controls, Clutch pedal: Removal - Refitting**, page **37A-39**) ,
 - the dashboard cross member (see **Dashboard cross member: Removal - Refitting**) (MR 416, 42A, Upper front structure),
 - the dashboard (see **Dashboard: Removal - Refitting**) (MR 416, 57A, Interior equipment).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Switch off the ignition.

LEFT-HAND DRIVE



124297
124297

- Remove the absorbent material (1) .

RIGHT-HAND DRIVE

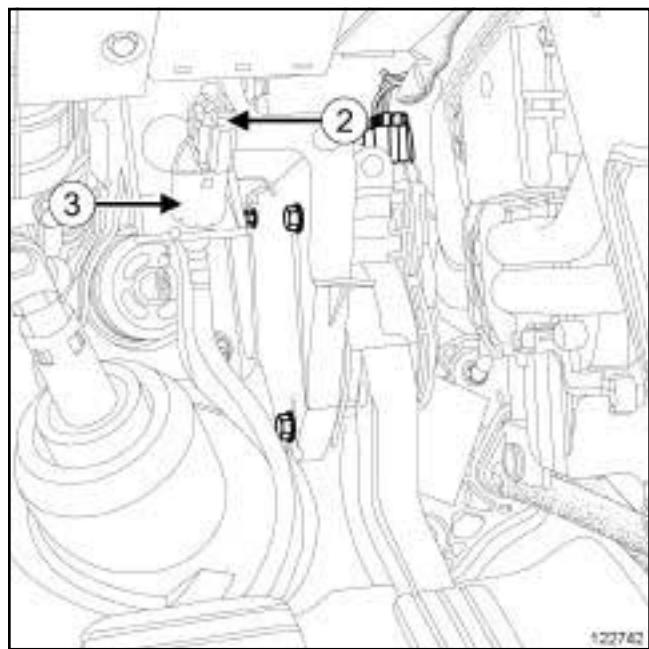
- Remove the glovebox (see **Glovebox: Removal - Refitting**) (57A, Interior equipment).

II - OPERATION FOR REMOVAL OF PART CONCERNED

-

WARNING

Handle the multifunction sensor with care to prevent modifying the piston adjustment.

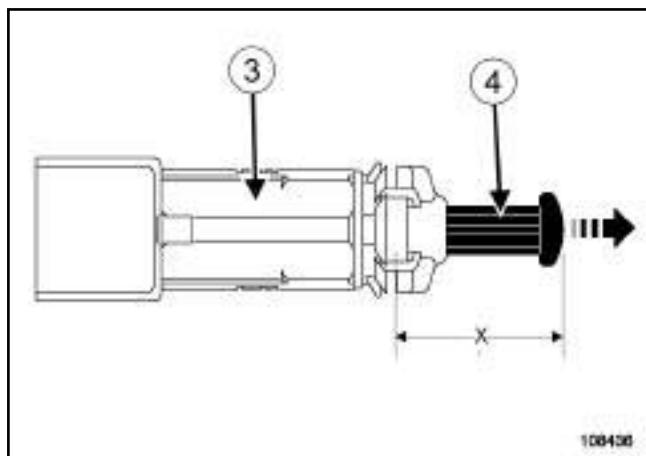


122742

- Disconnect the brake light switch connector (2) .
- Turn the brake light switch (3) a quarter of a turn anti-clockwise.
- Remove the brake light switch.

REFITTING

I - REFITTING PREPARATION OPERATION



-

WARNING

To avoid damaging the multifunction switch (3) :

- handle the switch (3) with care,
- only activate the piston (4) during the adjustment phase,
- do not perform more than 3 adjustments to dimension (X),
- do not separate the piston (4) from the switch (3) .

Replace the switch (3) :

- if the piston (4) is separated from the switch (3)
- if more than 3 consecutive adjustments to dimension (X) have been performed.

- Measure dimension (X) of the piston (4) . If the dimension (X) is less than **12 mm**, carefully pull on the end of the piston to adjust the dimension (X) to between a minimum of **12 mm** and a maximum of **20 mm**.

II - REFITTING OPERATION FOR PART CONCERNED

- Depress the brake pedal by hand.
- Refit the brake light switch.

- Lock the brake light switch by turning it a quarter of a turn clockwise.
- Connect the connector.
- Carefully support the return of the brake pedal.

Note:

The brake pedal switch has an automatic adjustment feature, adapting to the pedal position.
The automatic adjustment makes a clicking noise when in operation.

III - FINAL OPERATION.

- Check that the brake light switch is operating correctly:
 - depress the brake pedal to switch on the lights,
 - release the brake pedal to switch off the lights.

LEFT-HAND DRIVE

- Refit the absorbent material.

RIGHT-HAND DRIVE

- Refit the glovebox (see **Glovebox: Removal - Refitting**) (57A, Interior equipment).

MECHANICAL COMPONENT CONTROLS

Parking brake lever: Removal - Refitting

37A

FOOT BRAKE MANUAL CONTROL

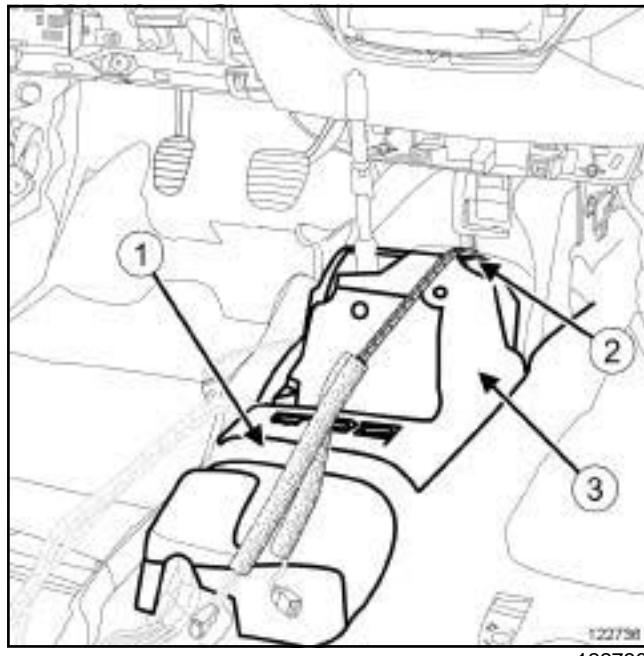
Tightening torques

parking brake lever bolts	21 Nm
---------------------------	-------

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove:
 - the centre console (see **Centre console: Removal - Refitting** (MR 416, 57A, Interior equipment)),
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting** (MR 415, 61A, Heating system)).

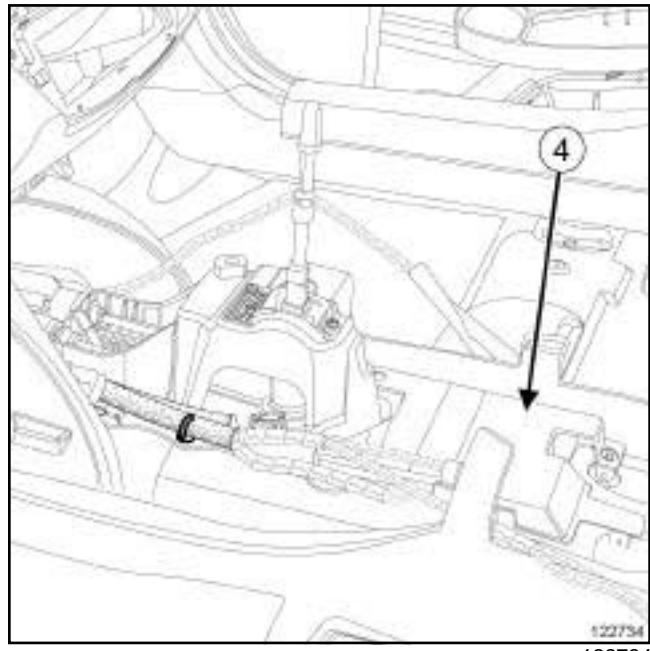


- Cut the carpet at (1).
- Unclip the wiring harness on the control unit at (2).

Note:

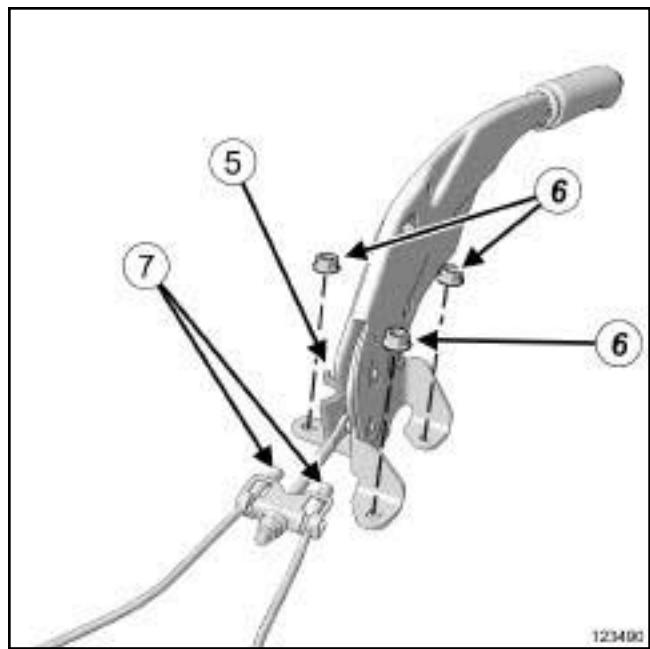
Do not damage the control unit soundproofing.

- Remove the soundproofing (3) from the control unit.



- Remove the airbag computer protector (4).

II - REMOVAL OPERATION FOR PART CONCERNED



- Disconnect the wire at (5).
- Remove:
 - the nuts (6) from the parking brake lever under the soundproofing,
 - the compensator parking brake cables (7) ,
 - the parking brake lever.

FOOT BRAKE MANUAL CONTROL

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the parking brake lever,
 - the compensator parking brake cables,
 - the parking brake lever nuts.
- Torque tighten the **parking brake lever bolts (21 Nm)**.
- Connect the wire at **(5)**.
- Adjust the parking brake (see **37A, Mechanical component controls, Parking brake lever: Adjustment**, page 37A-33).

II - FINAL OPERATION.

- Refit the control unit soundproofing.
- Clip the wiring harness on the control unit.
- Clip the carpet at the cutting point.
- Refit:
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (MR 415, 61A, Heating system),
 - the centre console (see **Centre console: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the gear lever knob.

FOOT BRAKE MANUAL CONTROL

A poorly adjusted parking brake:

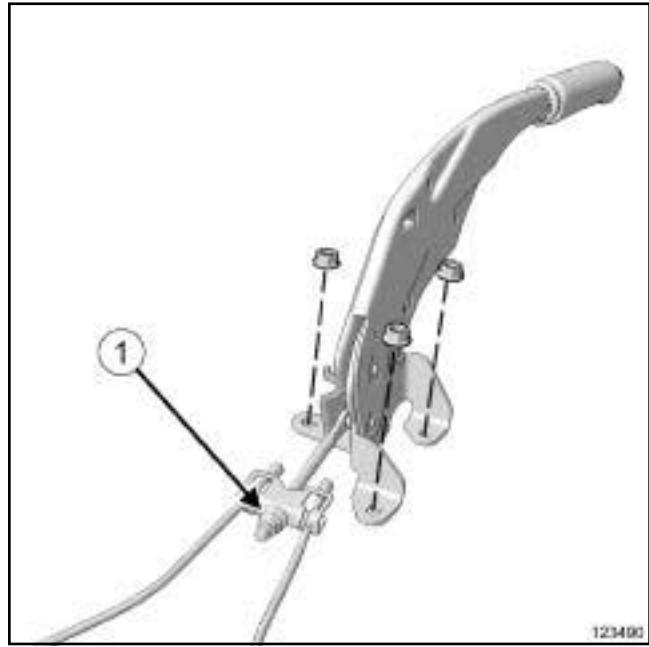
- prevents correct operation of the automatic compensation system for the brake shoes,
- causes premature wear of brake shoes.

ADJUSTMENT

I - ADJUSTMENT PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**).
- Apply the parking brake five times to condition the cables for normal use.
- Put the parking brake lever into the released position.
- Check that the rear wheels turn freely. If they do not, check the following components and if necessary repair:
 - the parking brake cables,
 - the calliper piston,
 - the automatic compensation system,
 - calliper
- Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Remove the centre console (see **Centre console: Removal - Refitting**).

II - OPERATION FOR ADJUSTMENT OF PART CONCERNED



123490

- Loosen the nut (1) to release the cables.
- Position the parking brake lever at the 2nd notch.
- Move the adjustment nut until the disc or drum can no longer be turned by hand.
- Pull the brake lever several times.
- Put the parking brake lever into the released position.
- The disc or the drum must be able to turn freely. If not, move the nut gradually until the disc or drum can turn freely.
- Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



122228

There is no "RENAULT" tool to check the braking assistance circuit.

Use a vacuum pump, adapting the end pieces, part number **7701349942** and **7700105874** with a pipe, part number **8200027352** or **8200376245**.

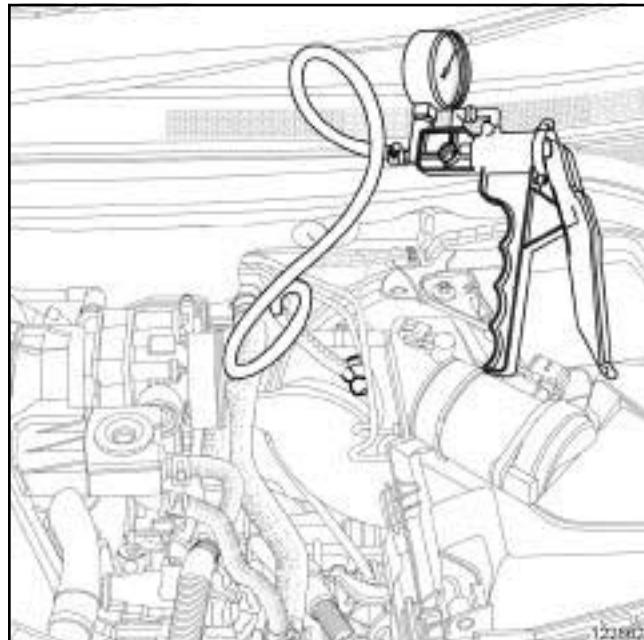
I - CHECKING THE SEALS

When checking the brake servo seal, ensure that there is a perfect seal between this and the master cylinder.

If there is a leak in this area, replace the seal between the master cylinder and the brake servo.

The brake servo seal must be checked on the vehicle. The hydraulic circuit must be in operation.

II - CHECKING THE BRAKE SERVO



122862

- Connect a vacuum pump directly to the brake servo.
- Activate the vacuum pump a few times.
- Check that the vacuum does not fall by more than **33 mbar in 15 seconds**. If it does, the leak may be located:
 - on the non-return valve seal, in this case change the non-return valve seal (see **37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting**, page **37A-4**) ,
 - on the pushrod membrane; in this case, replace the brake servo (see **37A, Mechanical component controls, Brake servo: Removal - Refitting**, page **37A-10**) .

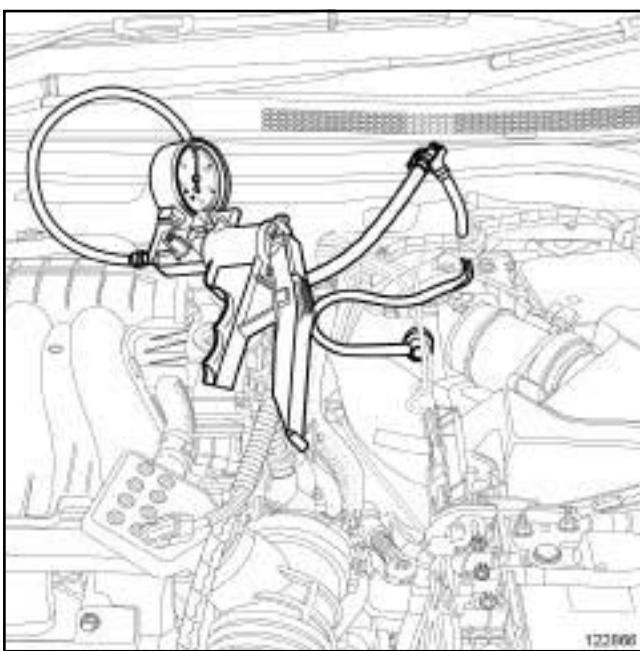
III - CHECKING THE BRAKE SERVO NON-RETURN VALVE.

K9K or M9R or V9X – F4R

- Disconnect the non-return valve on the vacuum pump side but leave it connected to the brake servo.

F4R, and 800 – K4M or M4R or V4Y

- Disconnect the non-return valve on the intake distributor side but leave it connected to the brake servo.



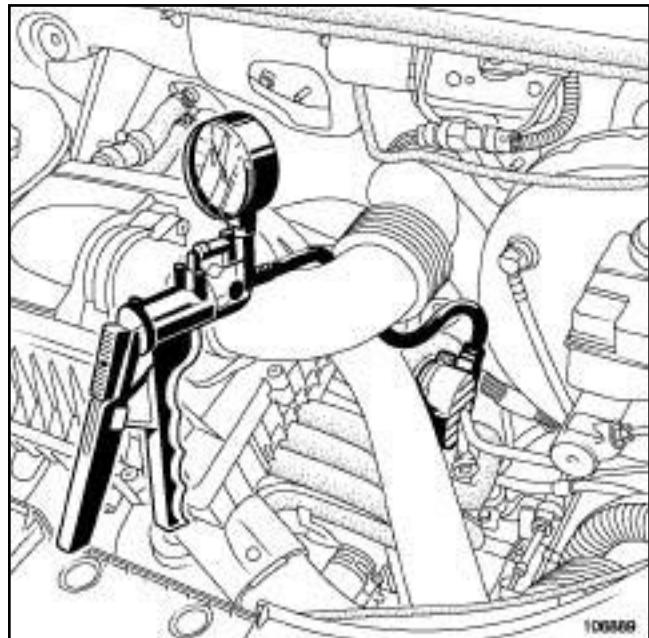
- Connect a vacuum pump to the end of the non-return valve.
- Activate the vacuum pump a few times.
- Check to see if the pressure drops. If it does, there is a hole in the non-return valve. Change the non-return valve (see 37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting, page 37A-4) .

F4R, and 800 – K4M or M4R or V4Y

- Connect the non-return valve to the intake distributor.

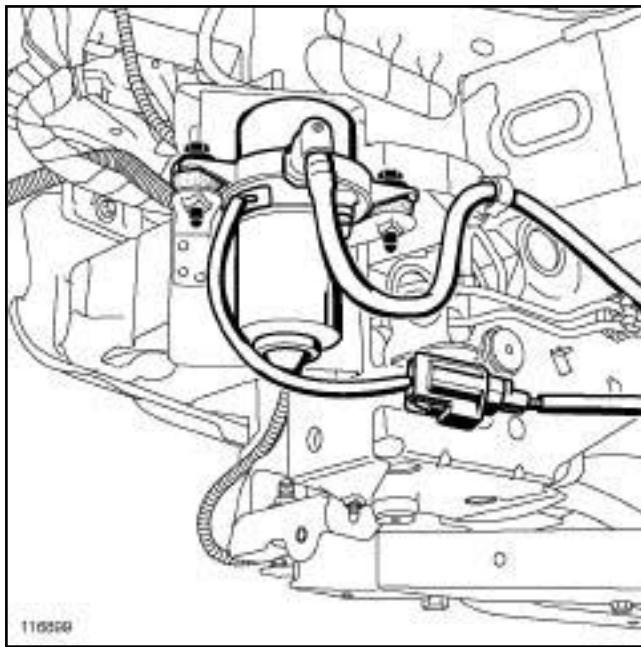
IV - CHECKING THE VACUUM PUMP

K9K or M9R or V9X



- Connect the external vacuum pump to the engine vacuum pump.
- Start the engine.
- Check the following values:
 - **550 mbar in 5 seconds** at an engine speed of **700 rpm**,
 - **700 mbar in 3 seconds** and **900 mbar in 5 seconds** at an engine speed of **4050 rpm**.
- Replace the vacuum pump if the values are different (see 37A, Mechanical component controls, Vacuum pump: Removal - Refitting, page 37A-14) .
- Connect the non-return valve to the vacuum pump.

F4R, and 811



- Connect the external vacuum pump to the engine vacuum pump.
- Start the engine.
- Check that the vacuum value at the vacuum pump outlet is **XXX mbar**.
- Replace the vacuum pump if the values are different (see **37A, Mechanical component controls, Vacuum pump: Removal - Refitting, page 37A-14**).
- Refit the non-return valve pipe onto the vacuum pump.

MECHANICAL COMPONENT CONTROLS

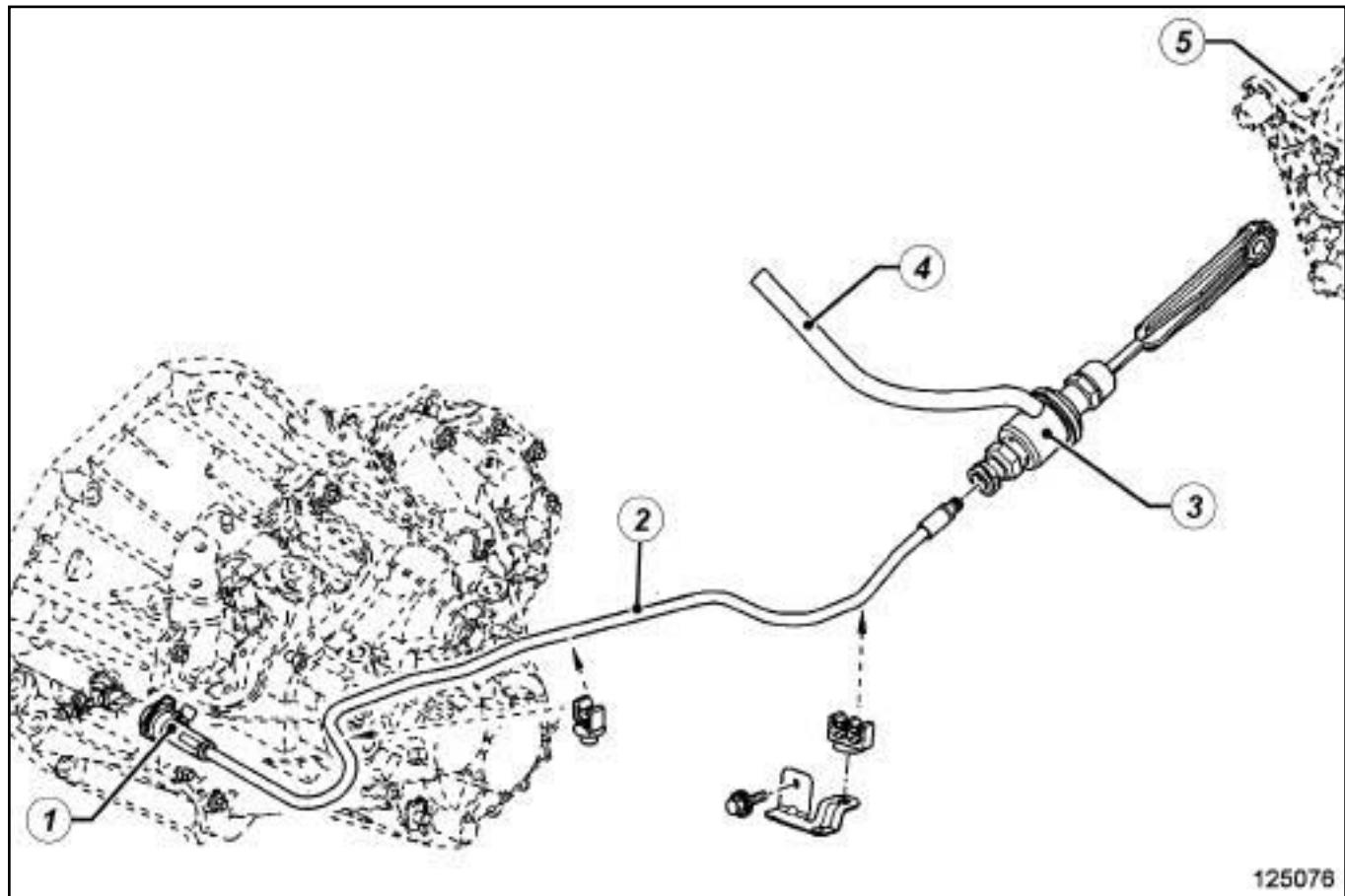
Clutch control: List and location of components

37A

6-SPEED MANUAL GEARBOX

No.	Description
(1)	Clutch slave cylinder (clutch thrust bearing)
(2)	Hydraulic clutch control pipes
(3)	Clutch master cylinder
(4)	Brake fluid supply duct
(5)	Clutch pedal

LEFT-HAND DRIVE



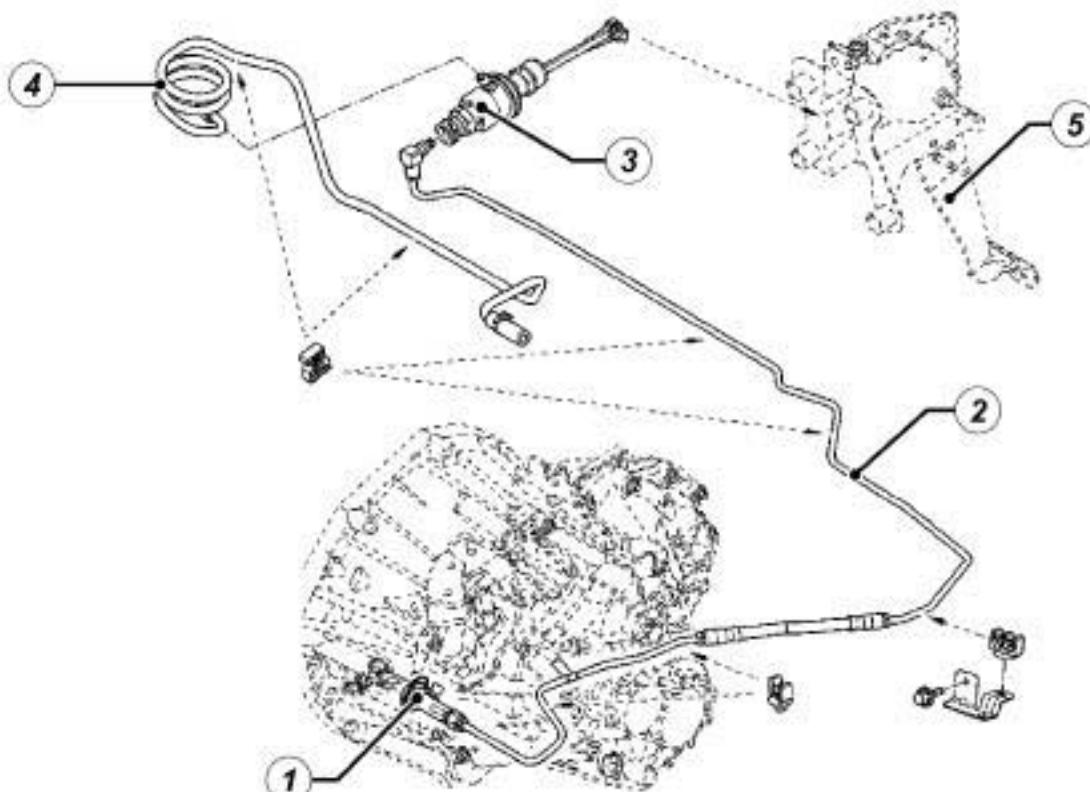
MECHANICAL COMPONENT CONTROLS

Clutch control: List and location of components

37A

6-SPEED MANUAL GEARBOX

RIGHT-HAND DRIVE



125077

125077

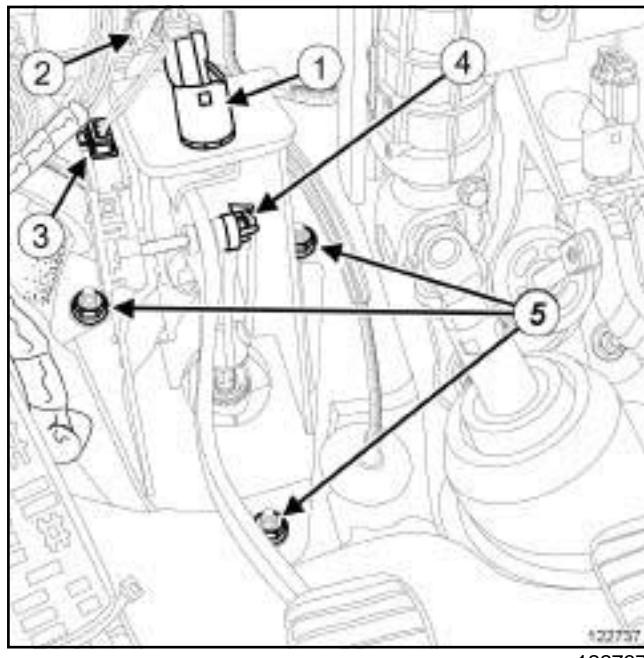
LEFT-HAND DRIVE

Tightening torques 

plate nuts	21 N.m
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REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
 - the driver's side footwell air distribution duct (see **Front footwell air distribution duct: Removal - Refitting**) (61A, Heating).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove:
 - the clutch start of travel switch (1) (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page 37A-45)
 - ,
 - the clutch end of travel switch (2) (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page 37A-45)

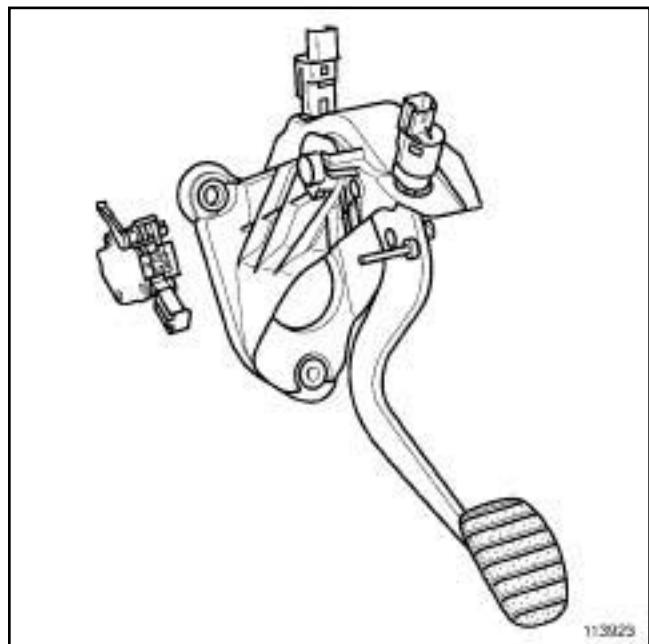
ELECTRONIC PARKING BRAKE

- Disconnect the clutch pedal position sensor connector (3).

- Unclip the wiring from the clutch pedal plate.

- Remove:

- the clutch master cylinder ball joint (4),
- the clutch pedal plate nuts (5).



- Remove:
 - the clutch pedal plate,
 - the clutch pedal plate spacers.

ELECTRONIC PARKING BRAKE

- Remove the clutch pedal position sensor (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page 37A-45).

REFITTING**I - REFITTING PREPARATION OPERATION**

- Replace the clips if they are damaged.

LEFT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED

ELECTRONIC PARKING BRAKE

- Refit the clutch pedal position sensor (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page **37A-45**).

- Refit:

- the clutch pedal plate spacers,
 - the clutch pedal plate.
- Clip the wiring onto the clutch pedal plate.
 - Refit the clutch pedal plate nuts.
 - Torque tighten the **plate nuts (21 N.m)**.
 - Place the clutch cylinder ball joint on the pedal.

ELECTRONIC PARKING BRAKE

- Reconnect the clutch pedal position sensor connector.

- Refit:

- the clutch end of travel switch (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page **37A-45**),
- the clutch start of travel switch (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page **37A-45**).

III - FINAL OPERATION

- Refit:

- the driver's side footwell air distribution duct (see **Front footwell air distribution duct: Removal - Refitting**) (61A, Heating),
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

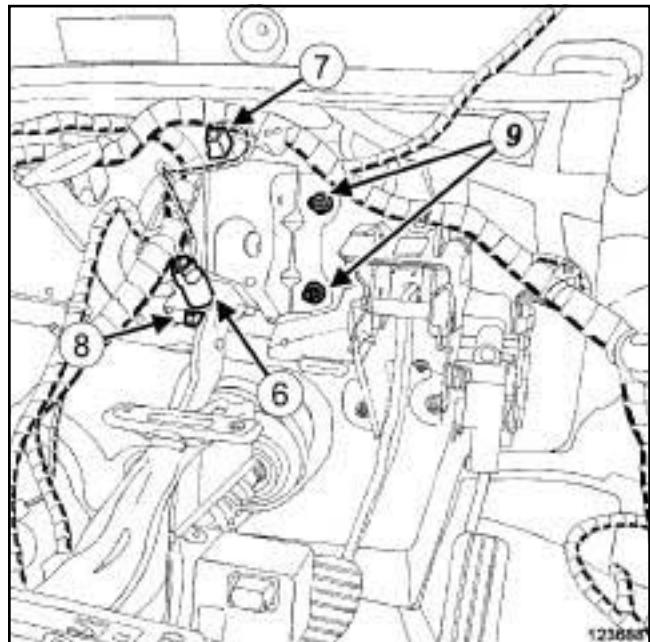
RIGHT-HAND DRIVE

Tightening torques 

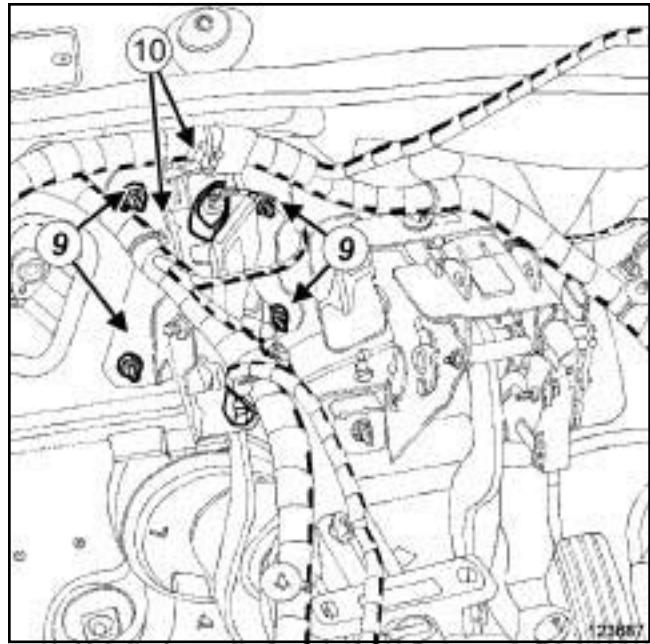
clutch pedal plate nuts	21 N.m
-------------------------	--------

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Disconnect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Remove:
 - the dashboard (see **Dashboard: Removal - Refitting** (57A, Interior equipment)),
 - the dashboard cross member (see **Dashboard cross member: Removal - Refitting** (42A, Upper front structure)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

123688



123687

- Remove:

- the clutch start of travel switch (6) (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page 37A-45)
- ,
- the clutch end of travel switch (7) (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page 37A-45)

RIGHT-HAND DRIVE

- Unclip the clutch master cylinder ball joint (8) from the pedal.
- Remove the clutch pedal plate nuts (9).

ELECTRONIC PARKING BRAKE

- Disconnect the clutch pedal position sensor connector.

- Unclip the clutch pedal plate wiring at (10).

- Remove:
 - the clutch pedal plate,
 - the clutch pedal plate spacers.

ELECTRONIC PARKING BRAKE

- Remove the clutch pedal position sensor (see 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting, page 37A-45).

REFITTING

I - REFITTING PREPARATION OPERATION

- Replace the clips if they are damaged.

II - REFITTING OPERATION FOR PART CONCERNED

ELECTRONIC PARKING BRAKE

- Refit the clutch pedal position sensor (see 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting, page 37A-45).

- Refit:
 - the clutch pedal plate spacers,
 - the clutch pedal plate.

- Clip the wiring onto the clutch pedal plate.
- Refit the clutch pedal plate nuts.
- Torque tighten the **clutch pedal plate nuts (21 N.m)**.
- Place the clutch cylinder ball joint on the pedal.

ELECTRONIC PARKING BRAKE

- Reconnect the clutch pedal position sensor connector.

- Refit:
 - the clutch end of travel switch (see 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting, page 37A-45),
 - the clutch start of travel switch (see 37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting, page 37A-45).

III - FINAL OPERATION

- Refit:
 - the dashboard cross member (see Dashboard cross member: Removal - Refitting) (42A, Upper front structure),
 - the dashboard (see Dashboard: Removal - Refitting) (57A, Interior equipment).
- Connect the battery (see Battery: Removal - Refitting) (80A, Battery).

MECHANICAL COMPONENT CONTROLS

Clutch pedal switch: Removal - Refitting

37A

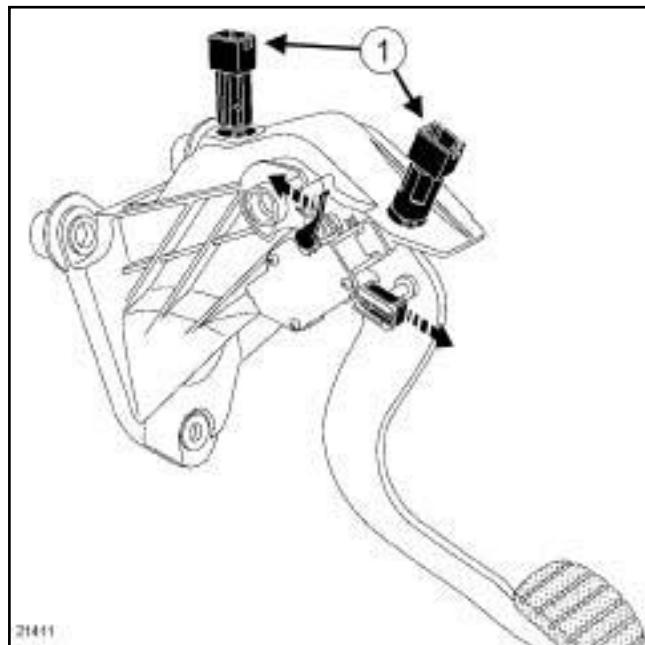
6-SPEED MANUAL GEARBOX

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Switch off the ignition.
- Remove the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting** (57A, Interior equipment)).

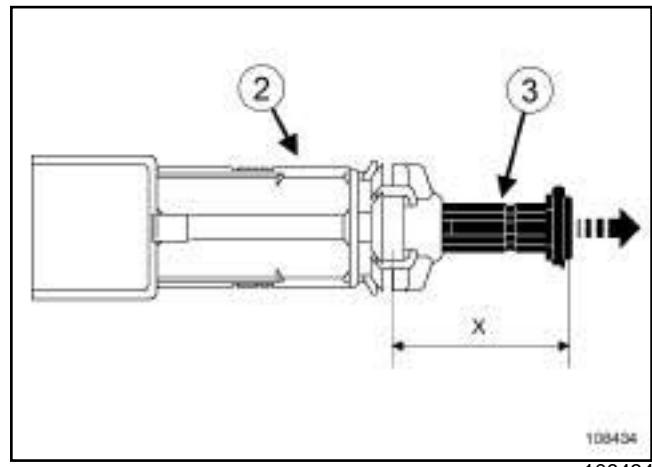
II - OPERATION FOR REMOVAL OF PART CONCERNED



- Disconnect the connectors from the brake pedal switches.
- Turn the clutch pedal switches (1) a quarter of a turn anti-clockwise.
- Remove the clutch pedal switches (1).

REFITTING

I - REFITTING PREPARATION OPERATION



WARNING

- To avoid damaging the multifunction switch (2) :
- handle the switch (2) with care,
 - only activate the piston (3) during the adjustment phase,
 - do not perform more than 3 adjustments to dimension (X),
 - do not separate the piston (3) from the switch (2) .

Replace the switch:

- if the piston (3) is separated from the switch (2)
- if more than 3 consecutive adjustments to dimension (X) have been performed.

- Measure dimension (X) of the piston (3) . If the dimension (X) is less than **12 mm**, carefully pull on the end of the piston to adjust the dimension (X) to between a minimum of **15 mm** and a maximum of **20 mm**.

II - REFITTING OPERATION FOR PART CONCERNED

- Depress the clutch pedal by hand.
- Refit the clutch pedal switches to the pedal assembly.
- Lock the clutch pedal switches by turning one quarter of a turn clockwise.

MECHANICAL COMPONENT CONTROLS

Clutch pedal switch: Removal - Refitting

37A

6-SPEED MANUAL GEARBOX

- Support the return of the clutch pedal.

Note:

The clutch pedal switches have an automatic adjustment feature which adapts to the pedal position.

The automatic adjustment makes a clicking noise when in operation.

- Connect the clutch pedal switch connectors.

III - FINAL OPERATION.

- Refit the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).

ELECTRONIC PARKING BRAKE, and 6-SPEED MANUAL GEARBOX

Equipment required

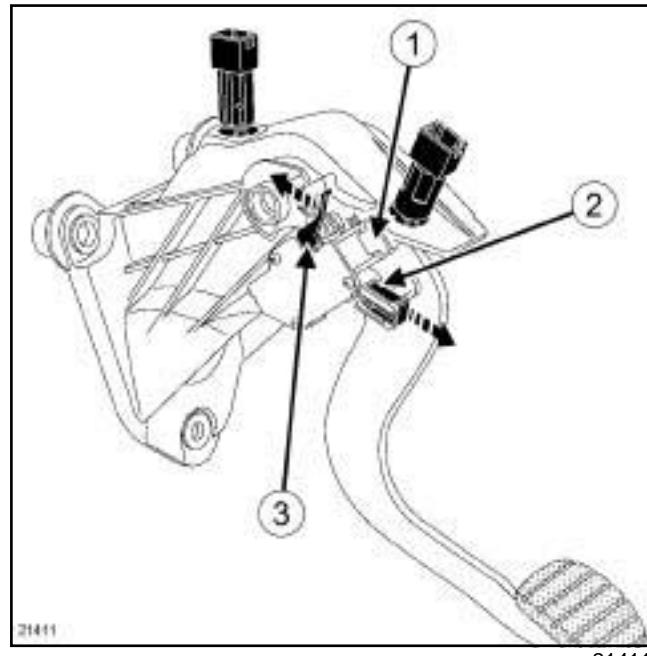
Diagnostic tool

REMOVAL

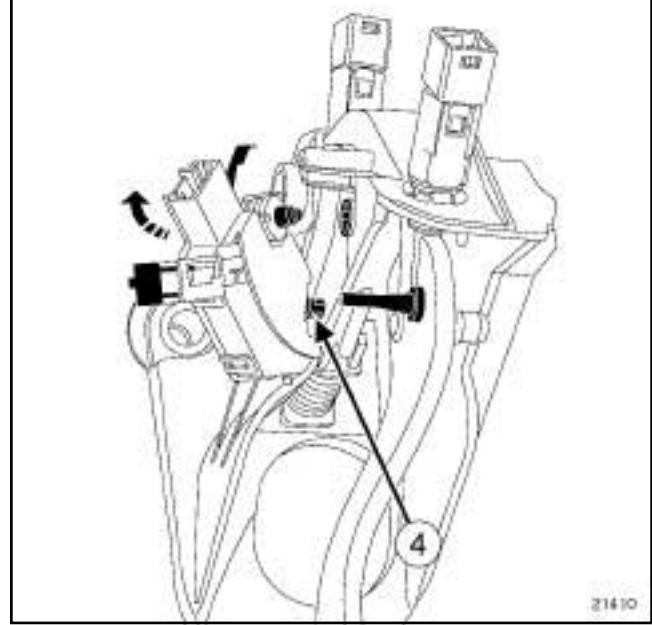
I - REMOVAL PREPARATION OPERATION

- Remove the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).
- Switch on the ignition.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Disconnect the clutch pedal position sensor connector (1) .
- Unlock:
 - the section connected to the pedal by undoing lock (2) ,
 - the sensor body by undoing lock (3) .



- Tilt the sensor to the left taking care not to damage the sensor lower mounting bracket (4) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit the clutch pedal position sensor.
- Lock:
 - the sensor body by using the lock,
 - the section connected to the pedal by using the lock.
- Reconnect the clutch pedal position sensor connector.

II - FINAL OPERATION

- Refit the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).
- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Electronic parking brake computer » ,
 - go to repair mode,
 - display the « Before/After repair procedure » for the computer selected,
 - select « Clutch pedal switch » in the « List of components controlled by this computer » section,

Clutch pedal position sensor: Removal - Refitting

37A

ELECTRONIC PARKING BRAKE, and 6-SPEED MANUAL GEARBOX

- carry out the operations described in the « After repair procedure » section.

Switch off the ignition.

PK4 or TL4

Equipment required
brake circuit bleeding device
hydraulic circuit bleed syringe

Bleed in the event of:

- dead travel,
- pedal at mid-travel,
- pedal to the floor,
- poor gear changing.

I - PRECAUTIONS DURING REPAIR**Risks relating to contamination.**

- The hydraulic clutch system is very sensitive to contamination. The risks caused by contamination are:
- impossible to change gears,
 - damage to or destruction of the clutch system,
 - leaks on the hydraulic circuit.

All the operations on the hydraulic clutch circuit system must be carried out under excellent cleanliness conditions. This ensures that no impurities enter the hydraulic circuit during the operation.

The cleanliness principles apply to all components of the hydraulic clutch circuit.

Items causing contamination are:

- metal or plastic swarf,
- fibres:
 - cardboard,
 - brushes,
 - paper,
 - clothing,
 - cloth,
 - dust and particles in the air,
 - etc.

Cleaning cloths.

- Use lint-free cleaning cloths (see **Products recommended for the repair**) (04B, Consumables - Products).

Each cloth must only be used once.

There are two types of equipment used to bleed the clutch circuit:

- ARC50 via the brake fluid reservoir.
- Syringe via the bleed hole located on the clutch slave cylinder.

There are two procedures used to bleed the clutch circuit:

- If no parts of the hydraulic clutch circuit are removed:
 - Carry out the bleed operation using the ARC50 via the brake fluid reservoir or using a new syringe via the bleed hole located on the clutch slave cylinder.
- If no parts of the hydraulic clutch circuit are removed:
 - Only carry out the bleed operation using a new syringe by injecting the brake fluid via the bleed hole on the clutch slave cylinder.

Note:

- Even the tiniest air bubble in the circuit can cause faulty operation (pedal failing to return properly, crunching sound when changing gear, etc.).
- Incorrect bleeding can lead to incorrect detection of faults and unnecessary part replacements.

Consumables required for the repair:

- Bleed the clutch circuit using approved (see **Vehicle: Parts and consumables for the repair**) brake fluid (04B, consumables - products).

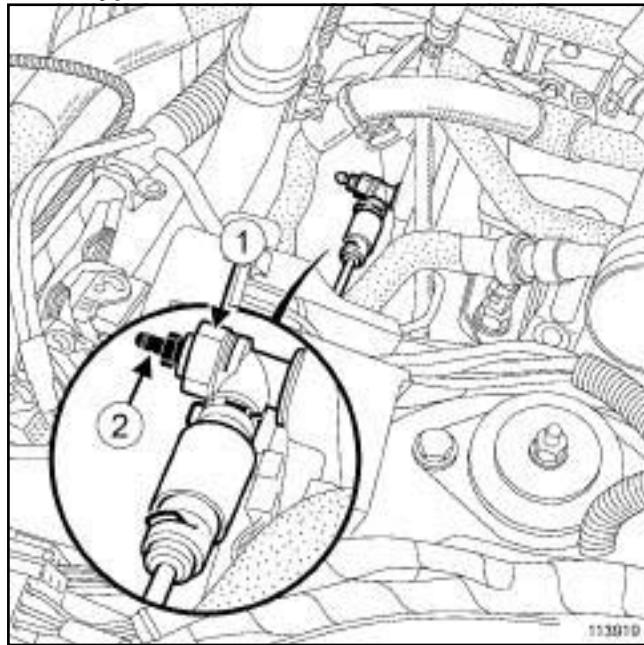
II - PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the engine undertray.

PK4 or TL4

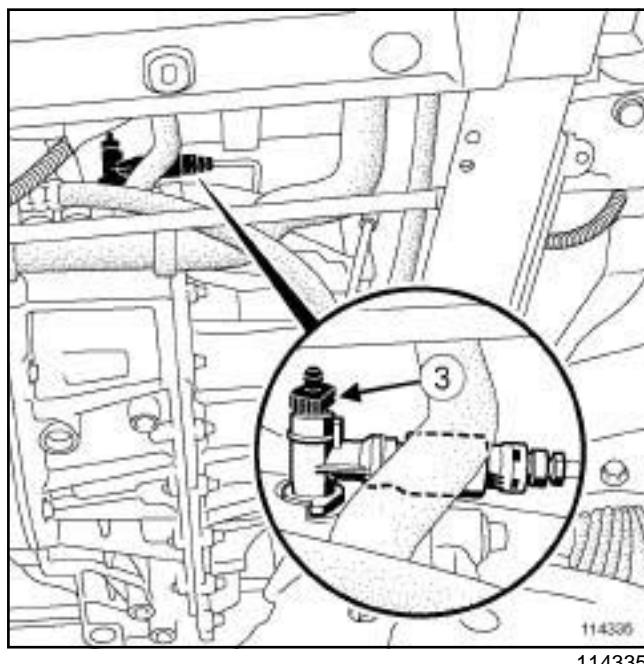
There are several versions of bleed screw:

Screw type bleed screw.



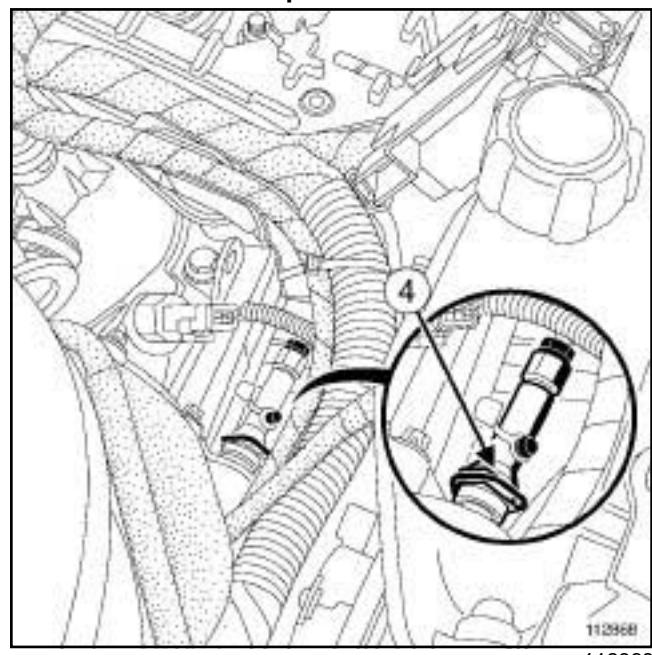
- To open the bleed screw, hold the plastic union (1) using a ring spanner and undo the bleed screw (2).

Half-turn bleed screw.



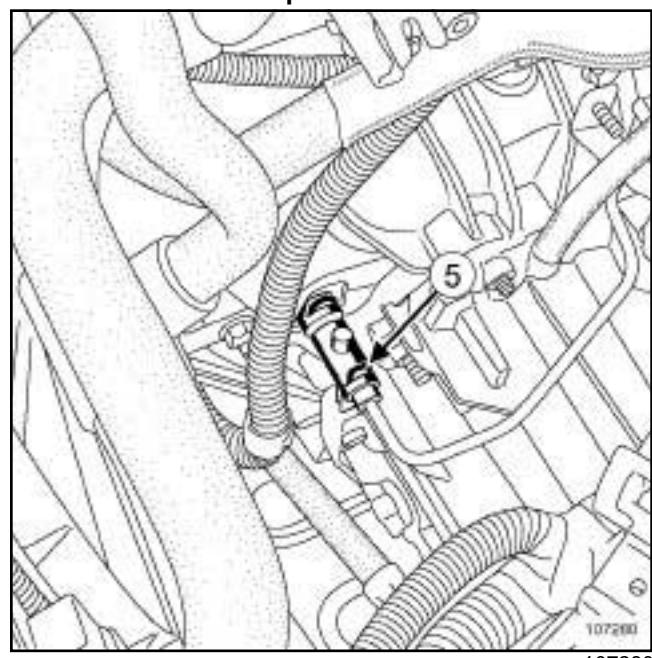
- To open the bleed screw, fully turn the bleed screw (3) by hand.

Bleed screw with a clip.



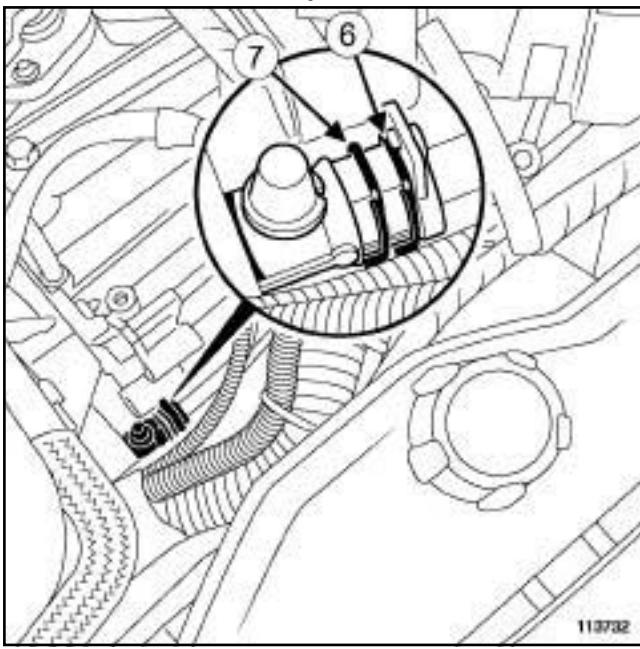
- To open the bleed screw, press and hold the clip (4) while pulling by one notch.

Bleed screw with a clip.



- To open the bleed screw, lift the clip (5) while pulling by one notch.

PK4 or TL4

Bleed screw with two clips.

- To open the bleed screw, lower the clip (6) and lift the clip (7) while pulling by one notch.

III - BLEED PROCEDURE IF NO PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED**1 - Bleed using the ARC50.**

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Connect the **brake circuit bleeding device** (after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).
- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Open the bleed screw.
- Open the circuit between the bleeding device and the brake fluid reservoir.
- Let the brake fluid run until all air bubbles have been released.
- Stop the bleeding device to dump the pressure in the clutch circuit.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir after disconnecting the bleed device.
- Disengage and engage the clutch quickly around twenty times.
- Check that the clutch system is operating correctly.
- Repeat the bleed operation if necessary.
- Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-43**) (37A, mechanical control elements).

PK4 or TL4

2 - Bleed using a new syringe.

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- Open the bleed screw.
- Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- Connect a new **hydraulic circuit bleed syringe** filled with a useful volume of **60 ml** of approved brake fluid to the end of the transparent pipe.
- Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir.
- Disengage and engage the clutch quickly around twenty times.
- Check that the clutch system is operating correctly.
- Repeat the bleed operation if necessary.
- Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-43**) (37A, mechanical control elements).

IV - BLEED PROCEDURE IF PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED.

-

WARNING

The master cylinder pipe must be disconnected from its take-off point on the brake fluid reservoir, to avoid any foreign matter penetrating inside the hydraulic brake circuit.

WARNING

Prepare for the flow of fluid and protect the surrounding components.

Note:

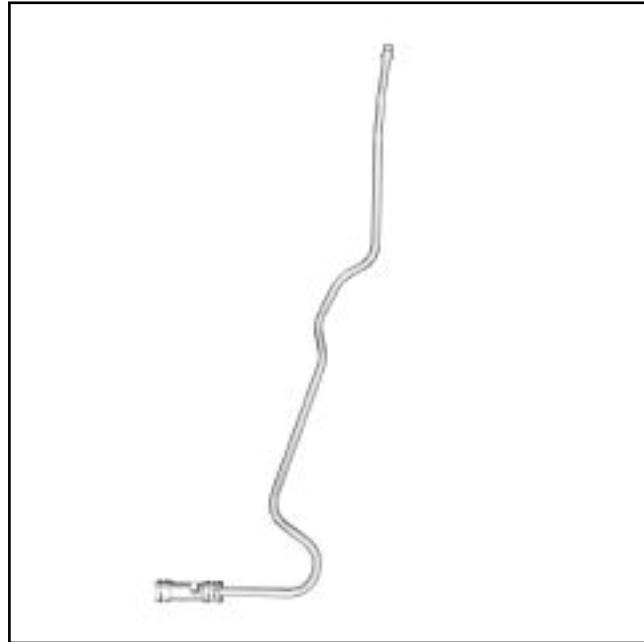
Prefill the hydraulic circuit pipe equipped with a filter.

Position the filter head facing downwards to ensure that it fills.

PK4 or TL4

There are several versions of pipe with and without a filter:

Pipe without filter.



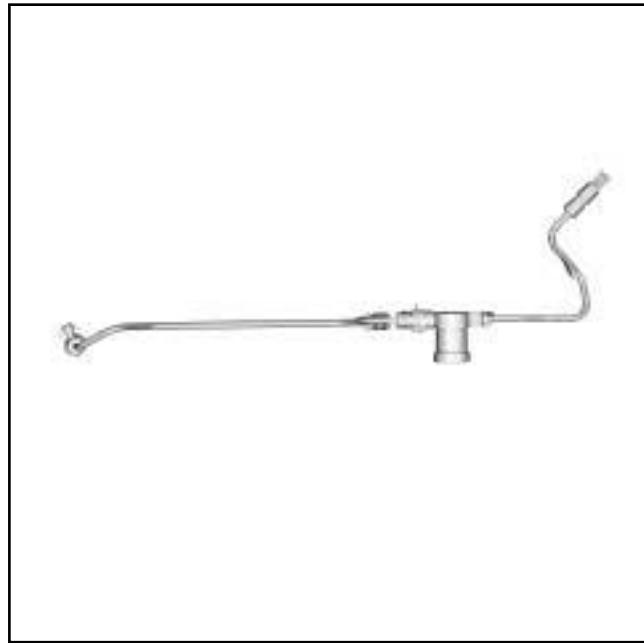
141812

Filling position for pipe with filter.



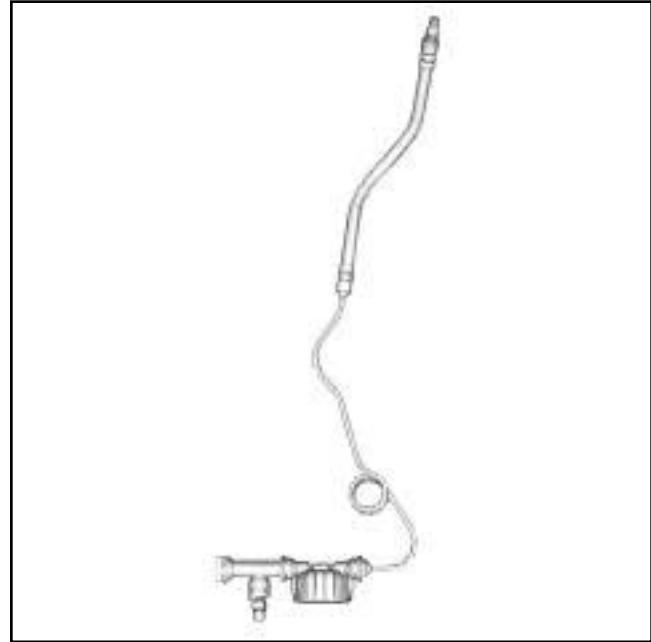
141810

Filling position for pipe with filter.



141811

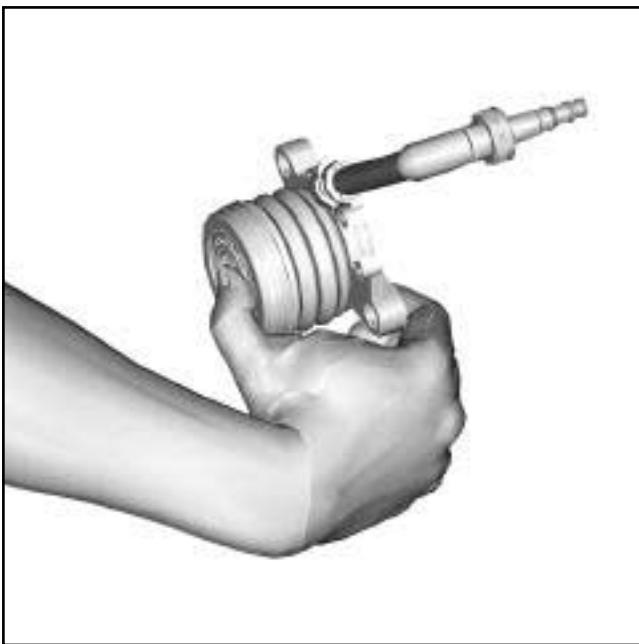
Filling position for pipe with filter.



141813

- Prefill the clutch pipe using the syringe.
- Plug the prefilled pipe on the master cylinder end to stop any brake fluid from escaping.

PK4 or TL4



141809

- Prefill the hydraulic tappet using the new syringe (by gravity).
- Refit the part(s) concerned.

V - BLEED PROCEDURE AFTER A REMOVING A COMPONENT OF THE HYDRAULIC CIRCUIT.

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- Open the bleed screw.
- Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- Connect a new syringe containing **60 ml** of approved brake fluid to the end of the transparent pipe.
- Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir.
- Disengage and engage the clutch quickly around twenty times.
- Check that the clutch system is operating correctly.
- Repeat the bleed operation if necessary.
- Check the adjustment of the switch. (see **37A, Mechanical component controls, Clutch pedal switch: Removal - Refitting**, page **37A-43**) (37A, mechanical control elements).

PK4 or TL4

VI - FINAL OPERATION

- Refit the engine undertray.
- Remove the vehicle from the two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

LEFT-HAND DRIVE

Special tooling required

Emb. 1797	Socket (24 mm) for removal - refitting of the clutch master cylinder
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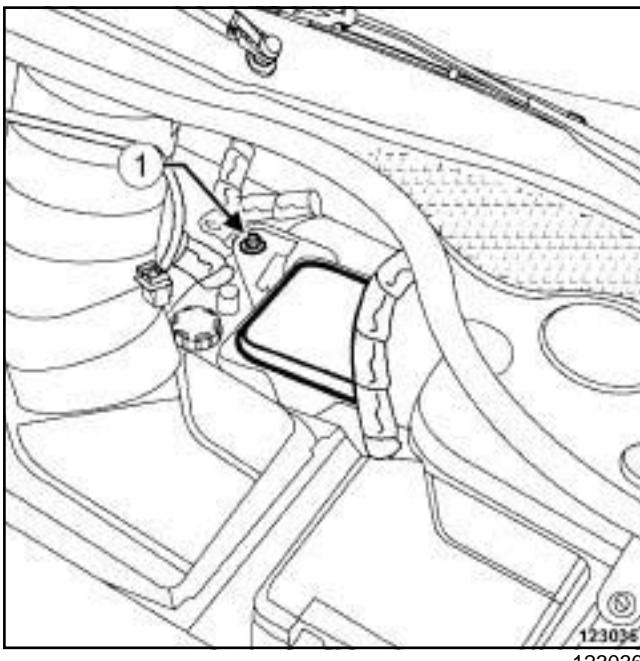
WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

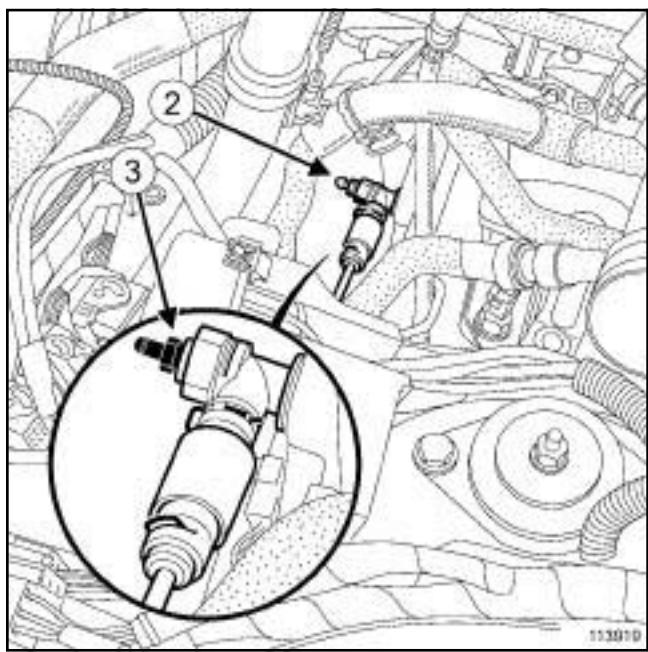
I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).



- Remove:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture),
 - the bolt (1) from the max fuse box.
- Move the max fuse box to one side.
- Remove:
 - the engine undertray bolts,
 - the engine undertray.

PK4



- Remove the bleed plug (2) .
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Slightly loosen the bleed screw (3) .

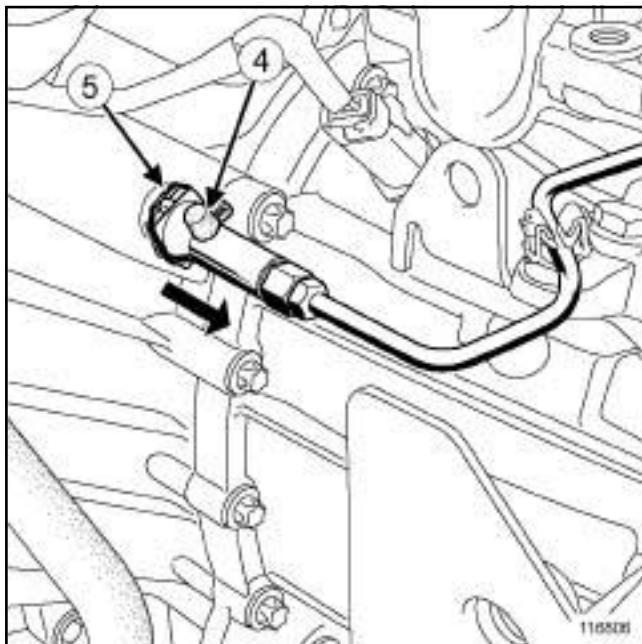
MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

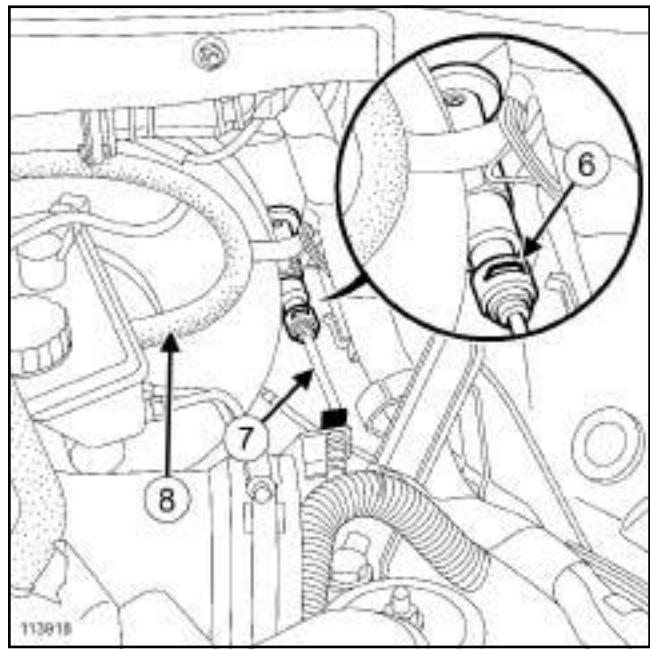
LEFT-HAND DRIVE

TL4



- Remove the bleed plug (4).
 - Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
 - Push and hold the metal clip (5).
 - Pull out the hydraulic clutch control pipe by one notch to release the bleed opening.
 - Release the metal clip.
-
- Depress the clutch pedal with your hand (to drain the reservoir, the master cylinder and the clutch pipe).

II - OPERATION FOR REMOVAL OF PART CONCERNED



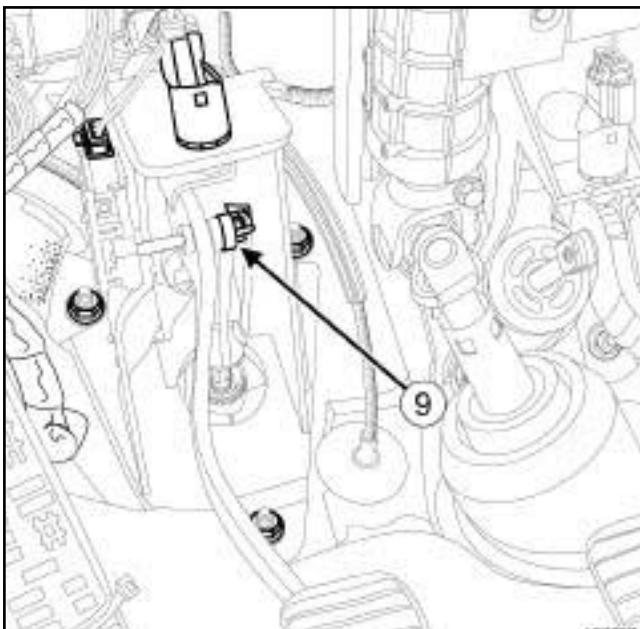
- Lift the retaining clip (6) from the clutch control pipe on the master cylinder.
- Disconnect the clutch control pipe (7).
- Fit plugs into the openings.
- Disconnect the supply pipe (8) at the master cylinder.
- Remove the dashboard lower trim on the driver's side.

MECHANICAL COMPONENT CONTROLS

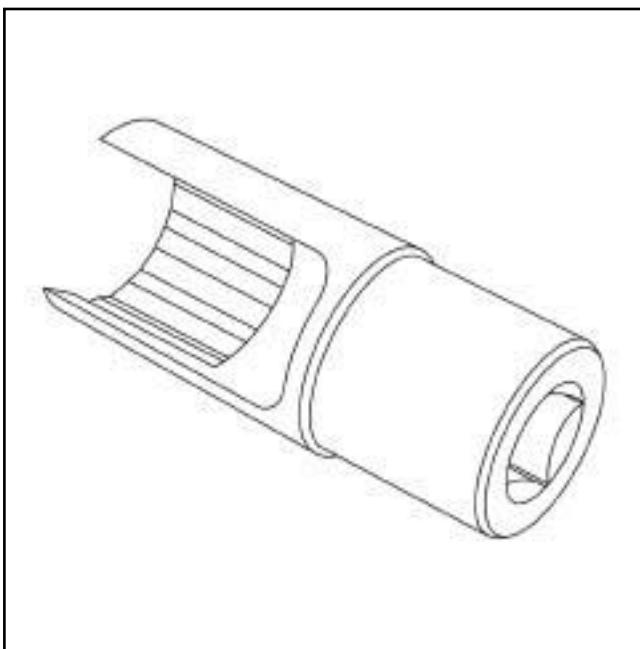
Clutch master cylinder: Removal - Refitting

37A

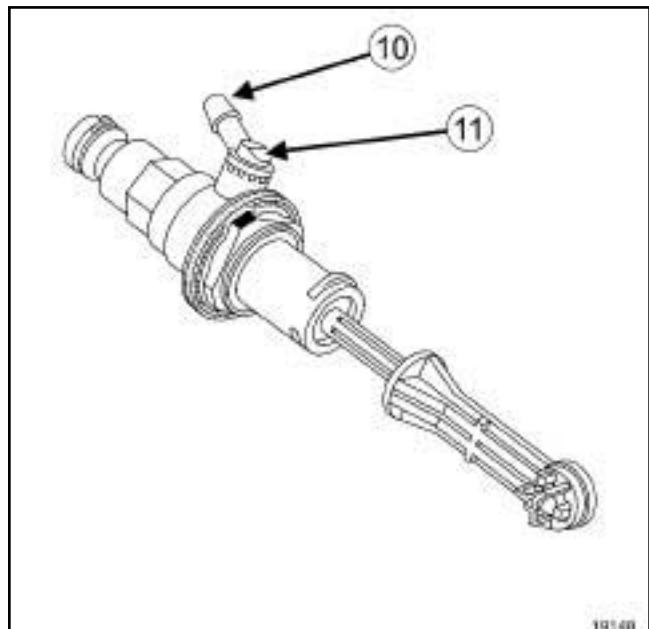
LEFT-HAND DRIVE



- Disconnect the clutch master cylinder ball joint (9) from the clutch pedal.



- Remove the clutch master cylinder by turning it a quarter of a turn clockwise using the (Emb. 1797).



- Disconnect the master cylinder supply pipe at (10) .

Note:

Do not apply any force to the supply christmas tree (11) .

REFITTING

I - REFITTING PREPARATION OPERATION

- Check the condition of the seals
- The cut used to receive the "bayonet" connection on the bulkhead must be clean, free of grease and without any burrs.
- The routing of the supply pipe must always ascend from the master cylinder to the reservoir, as any low points may cause air pockets.
Any pinching of the pipe is prohibited.
- Dismantling the components of the master cylinder is prohibited.
- The blanking cover caps must be removed when connecting the adjacent parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Connect the supply pipe to the master cylinder.
- Refit the clutch master cylinder using the (Emb. 1797).

MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

LEFT-HAND DRIVE

- Connect the clutch control pipe on the side of the slave cylinder.
- Press the retaining clip of the clutch control pipe on the master cylinder.
- Connect the clutch master cylinder ball joint on the clutch pedal.
- Refit the dashboard lower trim on the driver's side.
- Connect the supply pipe at the master cylinder.

III - FINAL OPERATION.

- Bleed the hydraulic circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-47**).
- Refit:
 - the engine undertray,
 - the engine undertray bolts.
- Fit the max fuse box.
- Refit:
 - the max fuse box bolt,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

37A

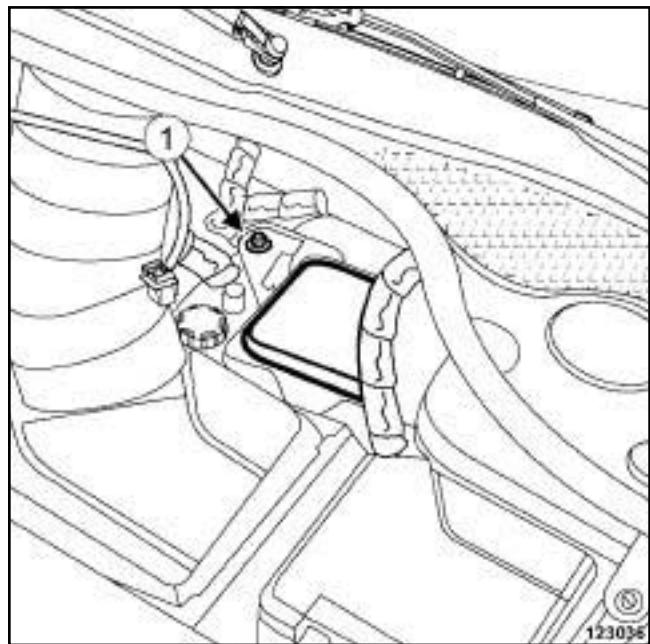
D91, and PK4, and LEFT-HAND DRIVE

Special tooling required

Emb. 1797	Socket (24 mm) for removal - refitting of the clutch master cylinder
-----------	--

WARNING

Prepare for the flow of fluid, and protect the surrounding components.



REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the engine undertray bolts,
 - the engine undertray,
 - the dashboard lower trim on the driver's side (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment).

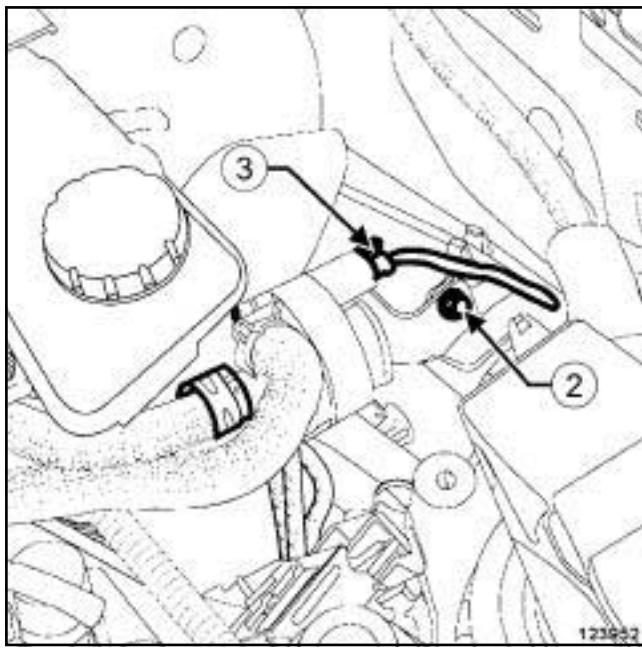
- Remove the bolt (1) from the max fuse box.
- Move the max fuse box to one side.

MECHANICAL COMPONENT CONTROLS

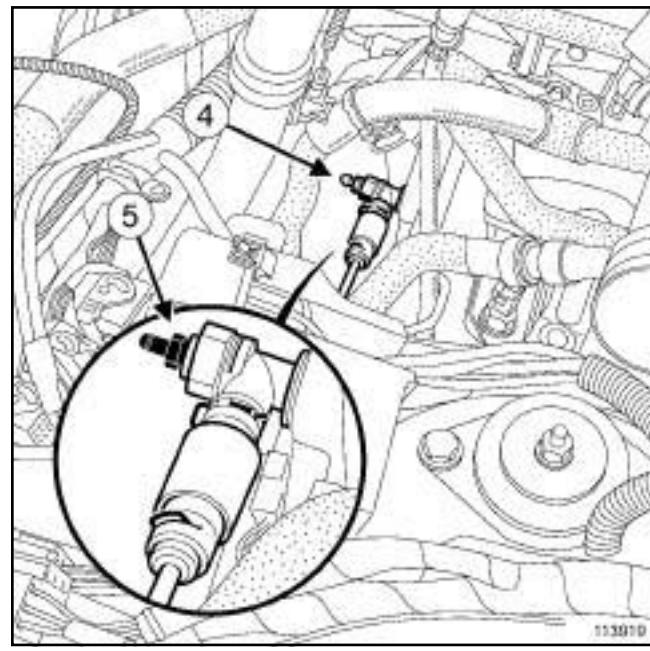
Clutch master cylinder: Removal - Refitting

37A

D91, and PK4, and LEFT-HAND DRIVE



- Remove the electric coolant pump mounting bolt (2)
- Disconnect the connector (3) from the electric coolant pump.
- Unclip:
 - the bonnet unlocking cable from the electric coolant pump support,
 - the clutch circuit pipe from the electric coolant pump support.
- Separate the « support - electric coolant pump » assembly.



- Remove the bleed plug (4).
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Slightly loosen the bleed screw (5).
- Depress the clutch pedal with your hand (to drain the reservoir, the master cylinder and the clutch pipe).

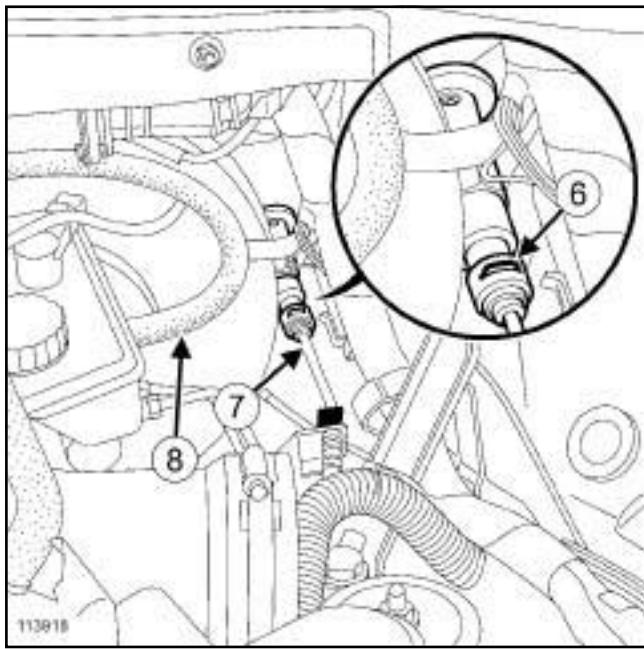
MECHANICAL COMPONENT CONTROLS

Clutch master cylinder: Removal - Refitting

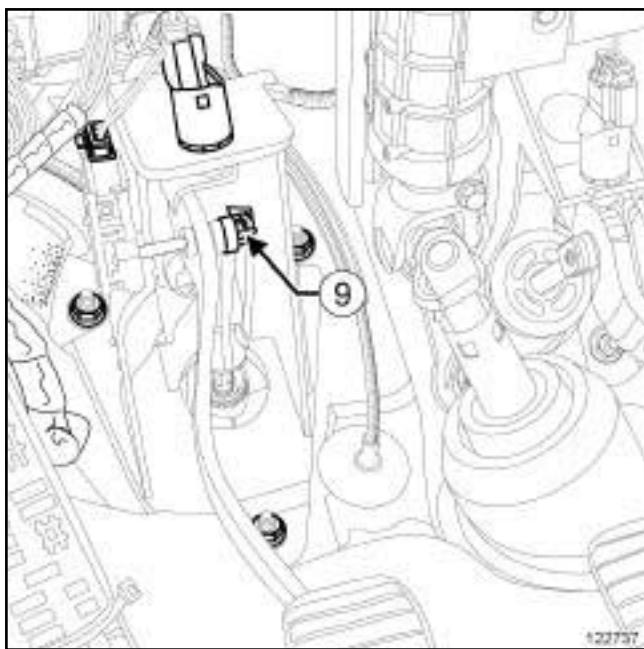
37A

D91, and PK4, and LEFT-HAND DRIVE

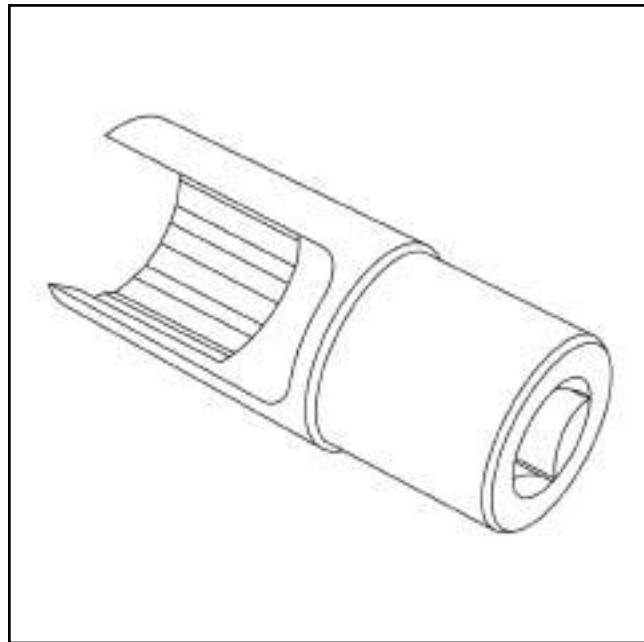
II - OPERATION FOR REMOVAL OF PART CONCERNED



- Lift the retaining clip (6) from the clutch control pipe on the master cylinder.
- Disconnect the clutch control pipe (7) .
- Fit blanking plugs into the openings.
- Disconnect the brake fluid reservoir supply pipe (8) .

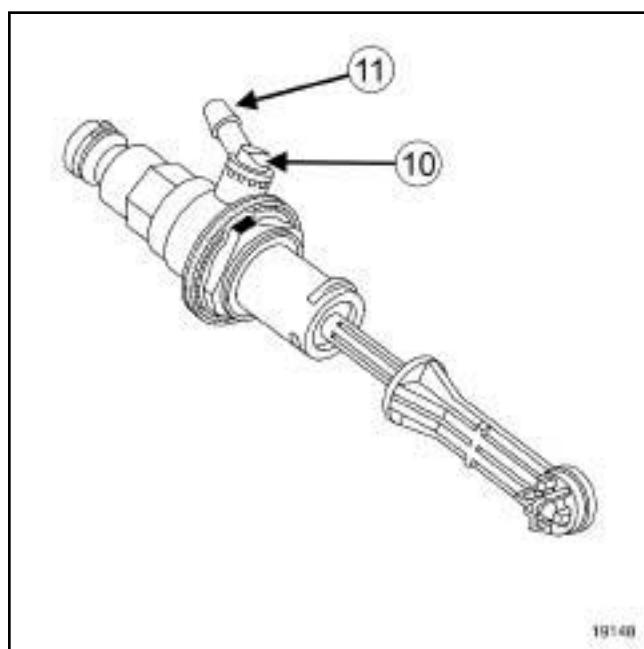


- Disconnect the clutch master cylinder ball joint (9) from the clutch pedal.



122131

- Remove the clutch master cylinder by turning it a quarter of a turn clockwise using the socket (**Emb. 1797**).



19148

- Disconnect the master cylinder supply pipe at (11) .

Note:

Do not apply any force to the supply christmas tree (10) .

D91, and PK4, and LEFT-HAND DRIVE

REFITTING**I - REFITTING PREPARATION OPERATION**

- Check the condition of the seals.
- The cut that receives the "bayonet" connection on the bulkhead must be clean, free of grease and without any burrs.
- The routing of the supply pipe must always ascend from the master cylinder to the reservoir, as any low points may cause air pockets.
Any pinching of the pipe is prohibited.
- Dismantling the components of the master cylinder is prohibited.

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

II - REFITTING OPERATION FOR PART CONCERNED

- Connect the supply pipe to the master cylinder.
- Refit the clutch master cylinder anti-clockwise using the socket (**Emb. 1797**).
- Connect the clutch control pipe on the slave cylinder side.
- Press the retaining clip of the clutch control pipe on the master cylinder.
- Connect the clutch master cylinder ball joint on the clutch pedal.
- Connect the brake fluid reservoir supply pipe.

III - FINAL OPERATION

- Clip:
 - the clutch circuit pipe on the electric coolant pump support,
 - the bonnet unlocking cable on the electric coolant pump support.
- Connect the electric coolant pump connector.
- Refit the « support - electric coolant pump » assembly.

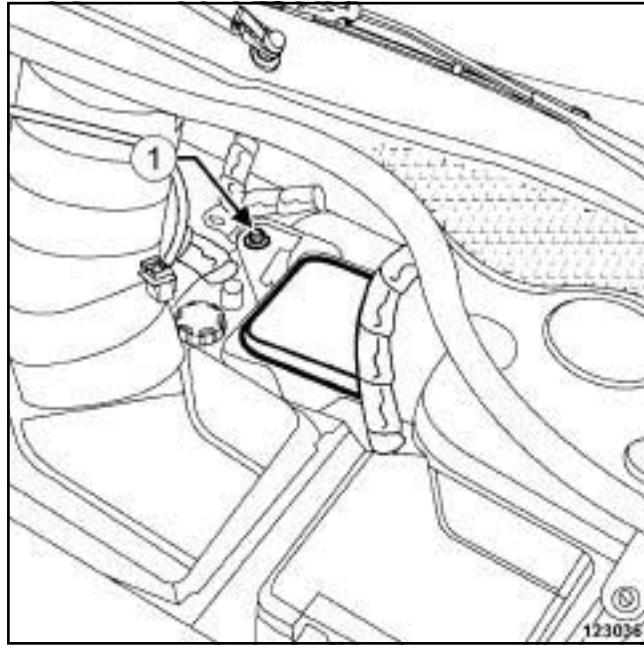
 Refit:

- the dashboard lower trim on the driver's side (see **Dashboard lower trim: Removal - Refitting** (57A, Interior equipment)),
 - the max fuse box,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page 37A-47).
- Refit the engine undertray.

PK4

REMOVAL**I - REMOVAL PREPARATION OPERATION**

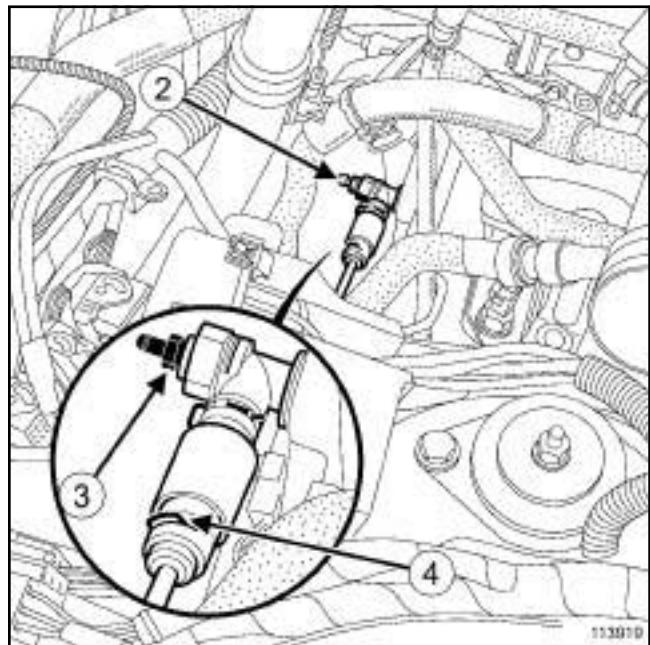
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).



- Remove:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture),
 - the bolt (1) from the max fuse box.
- Move the max fuse box.

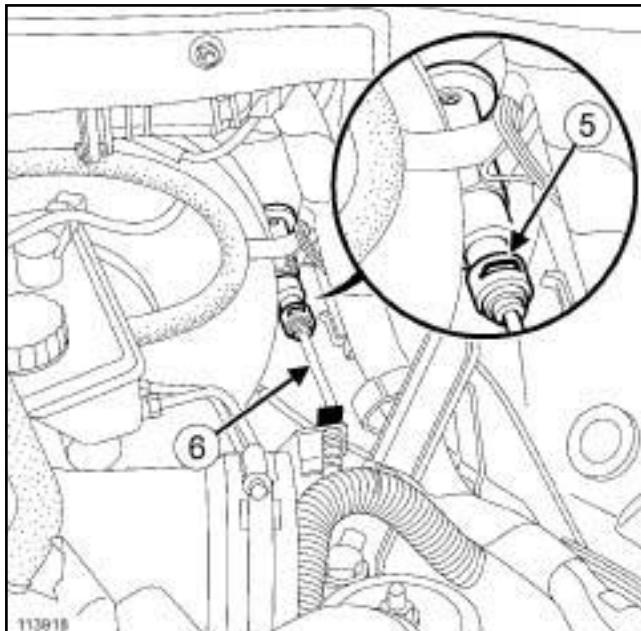
LEFT-HAND DRIVE

- Remove:
 - the engine undertray bolts,
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the bleed plug (2) .
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Slightly loosen the bleed screw (3) .
- Depress the clutch pedal with your hand (to drain the reservoir, the master cylinder and the clutch pipe).
- Remove the clip (4) from the connecting pipe between the master cylinder and the slave cylinder.
- Disconnect the clutch control pipe from the slave cylinder.
- Insert the plugs into each opening.

PK4



113918

- Lift the retaining clip (5) from the clutch control pipe on the master cylinder.
- Disconnect the master cylinder-slave cylinder connecting pipe (6).
- Fit plugs into the openings.
- Gently remove the clutch control pipe taking care not to damage anything.

REFITTING

I - REFITTING PREPARATION OPERATION

- Check the condition of the seals.
- The blanking cover caps must be removed when connecting the adjacent parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the clutch control pipe taking care not to damage anything.
- Connect the clutch control pipe on the side of the slave cylinder.
- Press the retaining clip of the clutch control pipe on the master cylinder.
- Connect the clutch control pipe to the master cylinder.
- Refit the retaining clip of the clutch control pipe on the master cylinder.

III - FINAL OPERATION.

- Bleed the hydraulic circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-47**).

LEFT-HAND DRIVE

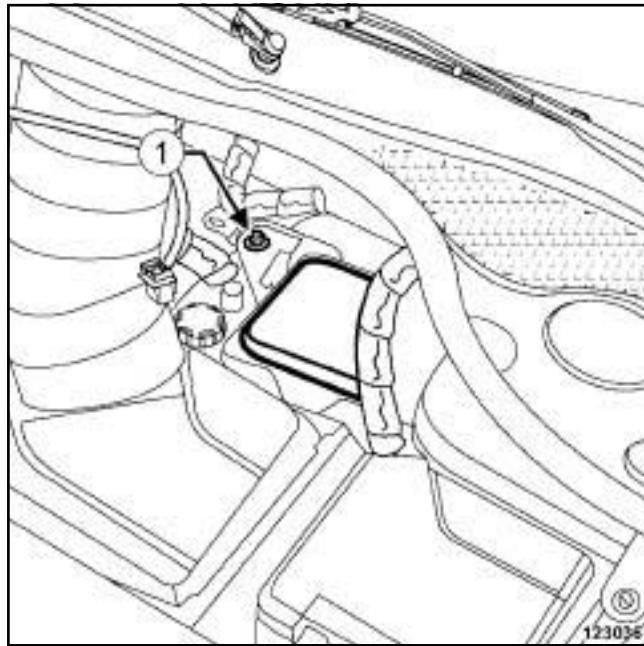
- Refit:
 - the engine undertray,
 - the engine undertray bolts.

- Fit the max fuse box.
- Refit:
 - the max fuse box bolt,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

TL4

REMOVAL**I - REMOVAL PREPARATION OPERATION**

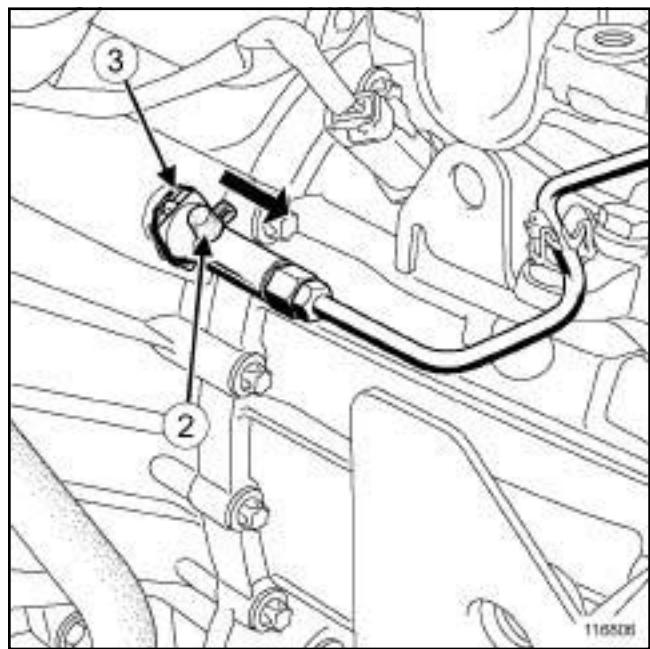
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).



- Remove:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture),
 - the bolt (1) from the max fuse box.
- Move the max fuse box.

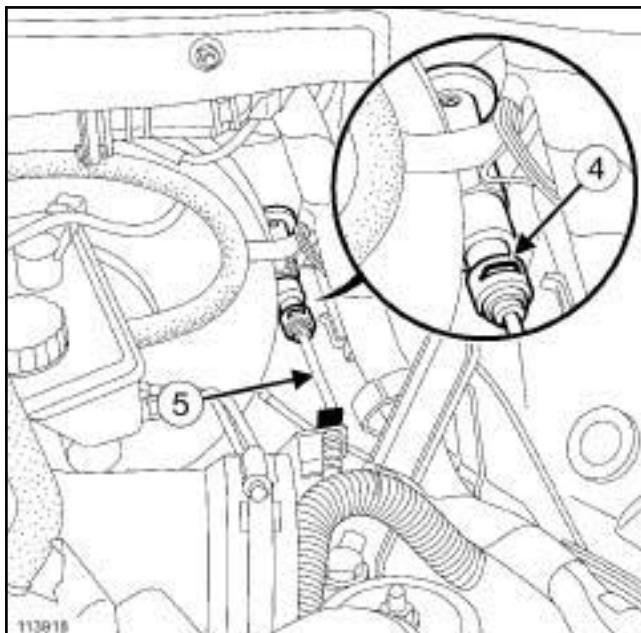
LEFT-HAND DRIVE

- Remove:
 - the engine undertray bolts,
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the bleed plug (2) .
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Push and hold the metal clip (3) .
- Pull out the hydraulic clutch control pipe by one notch to release the bleed opening.
- Release the metal clip.
- Depress the clutch pedal with your hand (to drain the reservoir, the master cylinder and the clutch pipe).
- Push and hold the metal clip (3) .
- Disconnect the hydraulic clutch control pipe from the slave cylinder.
- Insert the plugs into each opening.

TL4



113918

- Lift the retaining clip (4) from the hydraulic clutch control pipe on the master cylinder.
- Disconnect the hydraulic clutch control pipe (5).
- Fit plugs into the openings.
- Gently remove the hydraulic clutch control pipe taking care not to damage anything.

REFITTING

I - REFITTING PREPARATION OPERATION

- Check the condition of the seals.
- The blanking cover caps must be removed when connecting the adjacent parts.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the hydraulic clutch control pipe taking care not to damage anything.
- Connect the hydraulic clutch control pipe on the side of the slave cylinder.
- Press the retaining clip of the hydraulic clutch control pipe on the master cylinder.
- Connect the hydraulic clutch control pipe to the master cylinder.
- Refit the retaining clip of the hydraulic clutch control pipe on the master cylinder.

III - FINAL OPERATION.

- Bleed the hydraulic circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-47**).

LEFT-HAND DRIVE

- Refit:
 - the engine undertray,
 - the engine undertray bolts.

- Fit the max fuse box.
- Refit:
 - the max fuse box bolt,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (MR 415, 12A, Fuel mixture).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

D91, and PK4, and LEFT-HAND DRIVE

WARNING

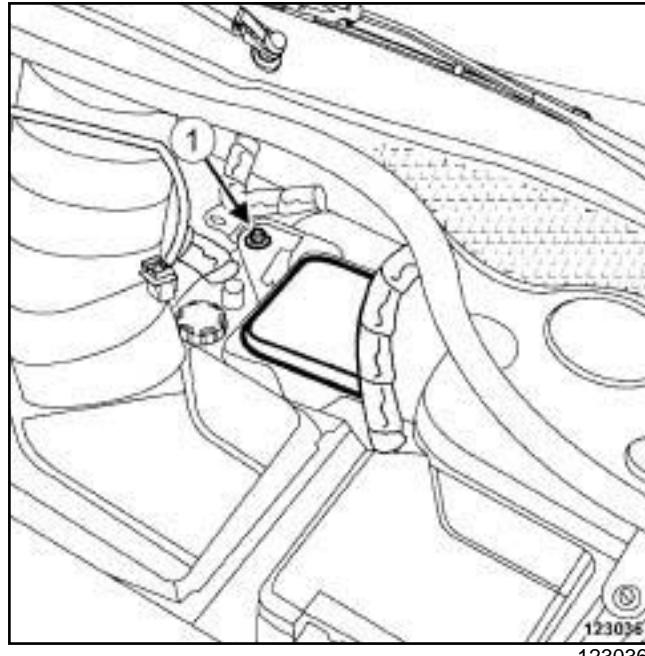
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

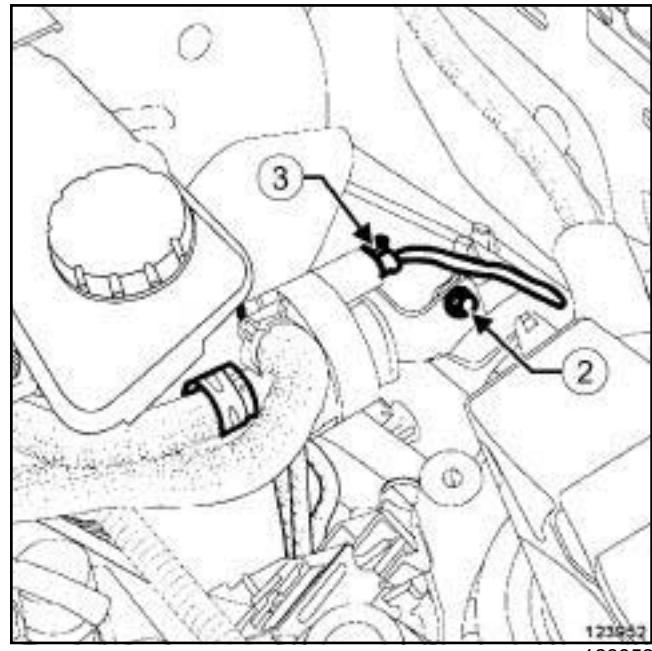
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

 Remove:

- the battery (see **Battery: Removal - Refitting** (80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting** (80A, Battery),
- the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting** (87G, Engine compartment connection unit),
- the air filter unit (see **Air filter unit: Removal - Refitting** (12A, Fuel mixture),
- the engine undertray bolts,
- the engine undertray.

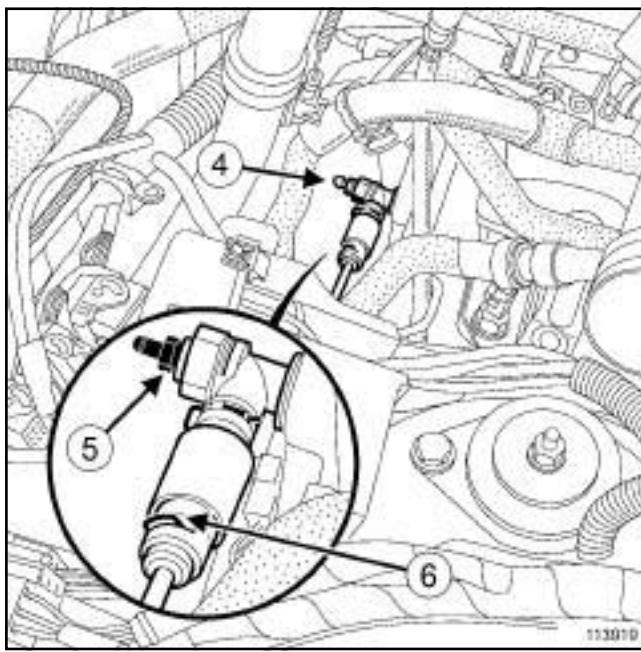


- Remove the bolt (1) from the max fuse box.
- Move the max fuse box to one side

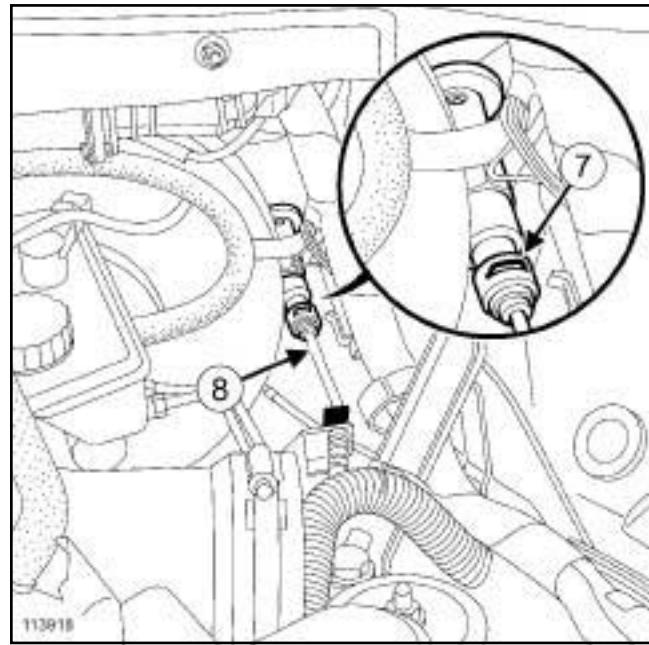


- Remove the electric coolant pump mounting bolt (2)
- Disconnect the connector (3) from the electric coolant pump.
- Unclip:
 - the bonnet unlocking cable from the electric coolant pump support,
 - the clutch circuit pipe from the electric coolant pump support.
- Separate the « support - electric coolant pump » assembly.

D91, and PK4, and LEFT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED


- Remove the bleed plug (4) .
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Slightly loosen the bleed screw (5) .
- Depress the clutch pedal with your hand (to drain the reservoir, the master cylinder and the clutch pipe).
- Remove the clip (6) from the connecting pipe between the master cylinder and the slave cylinder.
- Disconnect the clutch control pipe from the slave cylinder.
- Fit blanking plugs into each opening.



- Lift the retaining clip (7) from the clutch control pipe on the master cylinder.
- Disconnect the master cylinder - slave cylinder connecting pipe (8) .
- Plug the openings.
- Unclip the clutch control pipe.
- Gently remove the clutch control pipe taking care not to damage anything.

REFITTING
I - REFITTING PREPARATION OPERATION

- Check the condition of the seals.

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the clutch control pipe taking care not to damage anything.
- Clip on the clutch control pipe.
- Connect the control pipe on the slave cylinder side.

D91, and PK4, and LEFT-HAND DRIVE

- Press the retaining clip of the clutch control pipe on the slave cylinder.
- Connect the clutch control pipe to the master cylinder.
- Refit the retaining clip of the clutch control pipe on the master cylinder.

III - FINAL OPERATION

- Clip:
 - the clutch circuit pipe on the electric coolant pump support,
 - the bonnet unlocking cable on the electric coolant pump support.
- Connect the electric coolant pump connector.
- Refit:
 - the « support - electric coolant pump » assembly,
 - the max fuse box,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the clutch circuit (see **37A, Mechanical component controls, Clutch circuit: Bleed**, page **37A-47**).
- Refit the engine undertray.

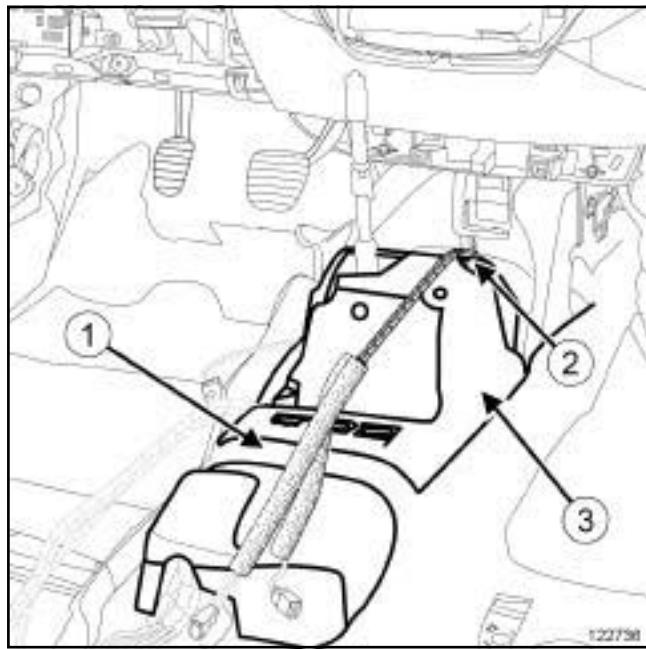
PK4 or TL4, and LEFT-HAND DRIVE

Tightening torques 

gear control unit nuts	21 N.m
------------------------	--------

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Put the gear lever in neutral.
- Remove:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).

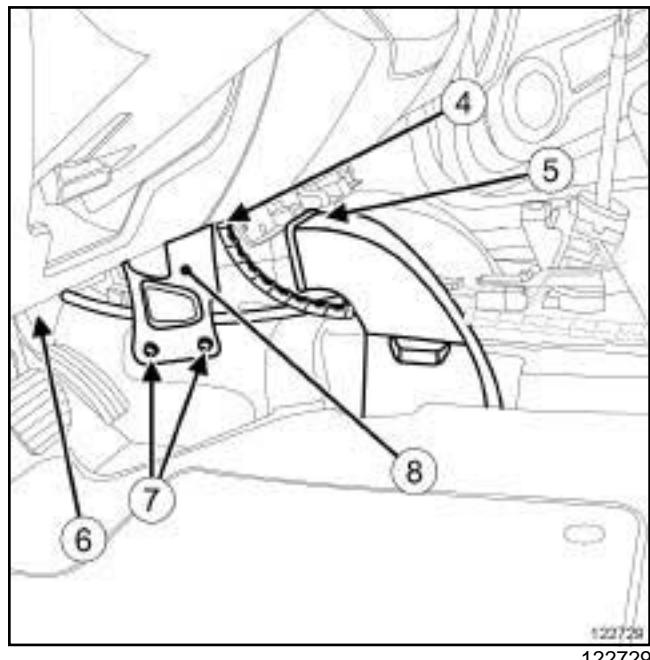


- Cut the carpet at (1).
- Unclip the wiring on the control unit at (2).

Note:

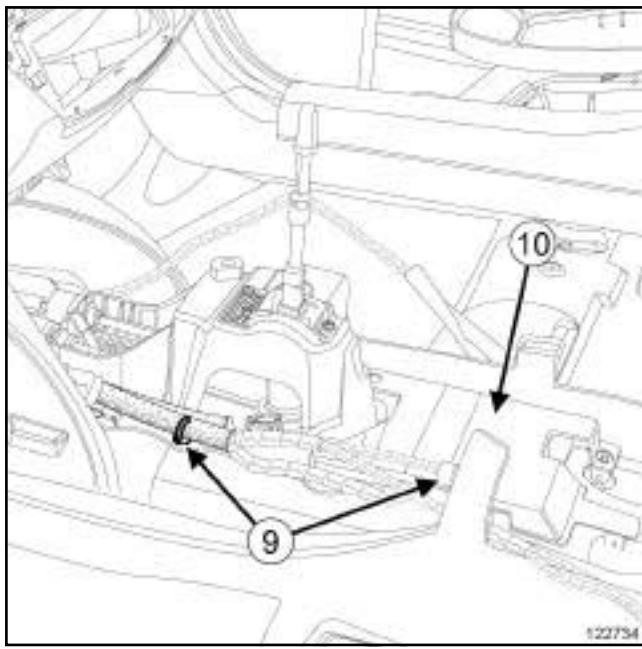
Do not damage the control unit soundproofing.

- Remove the soundproofing (3) from the control unit.



- Unclip:
 - the wiring on the reinforcement at (4),
 - the left-hand air duct (5).
- Remove:
 - the driver's side dashboard lower trim (6),
 - the reinforcement upper nuts,
 - the reinforcement lower nuts (7),
 - the reinforcement (8).

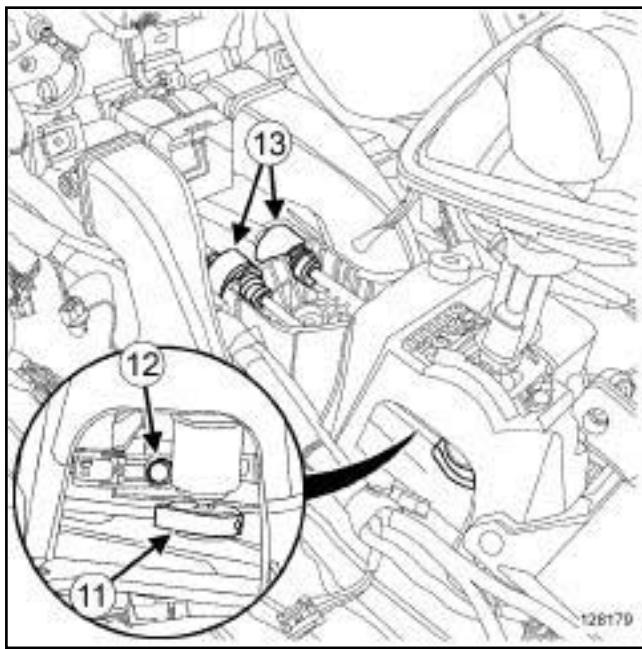
PK4 or TL4, and LEFT-HAND DRIVE



122734

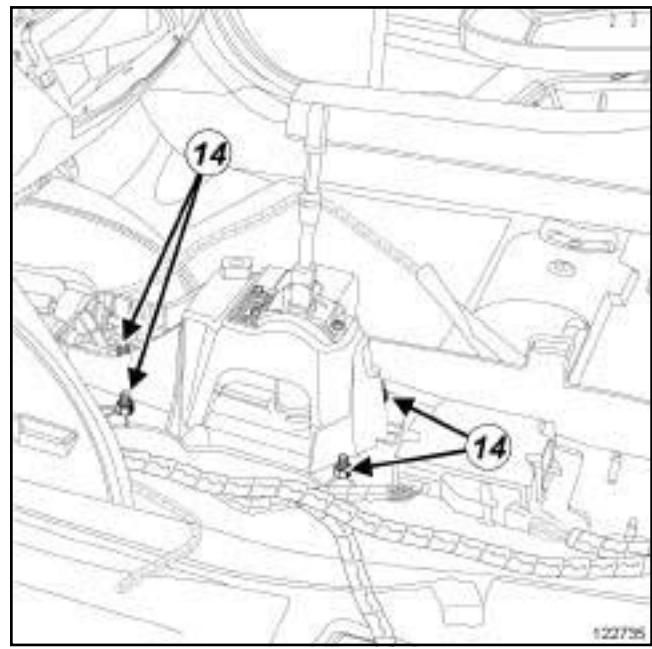
- Unclip the wiring at (9) .
- Remove the airbag computer protector (10) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



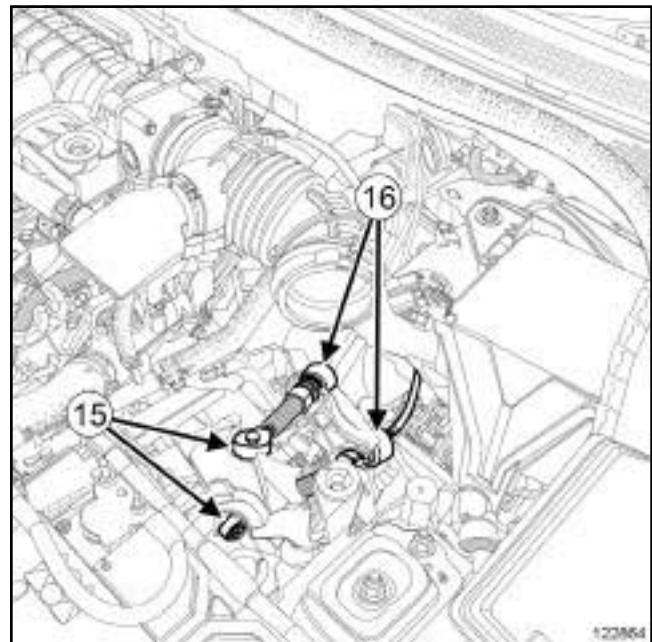
128179

- Unclip the control cables on the control unit at:
 - the anchoring ball joint (11) using an open-jawed spanner,
 - the anchoring ball joint by pressing the button (12) ,
 - the cable sleeve stops (13) .



122735

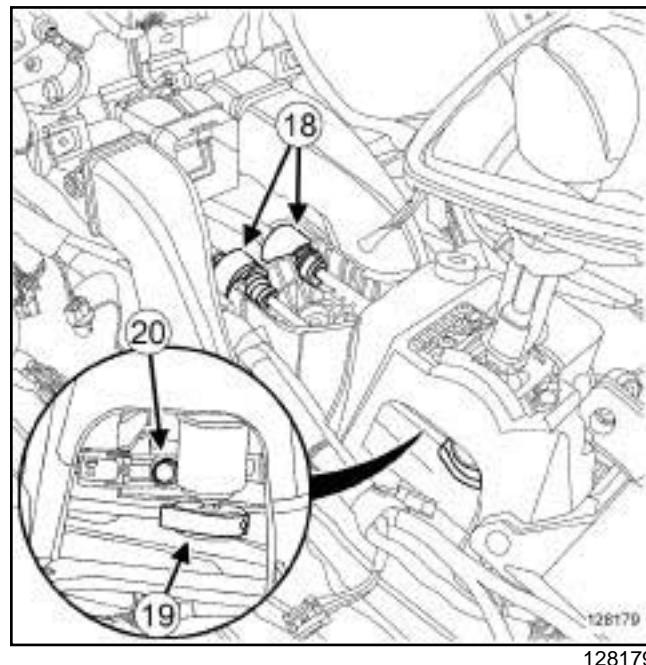
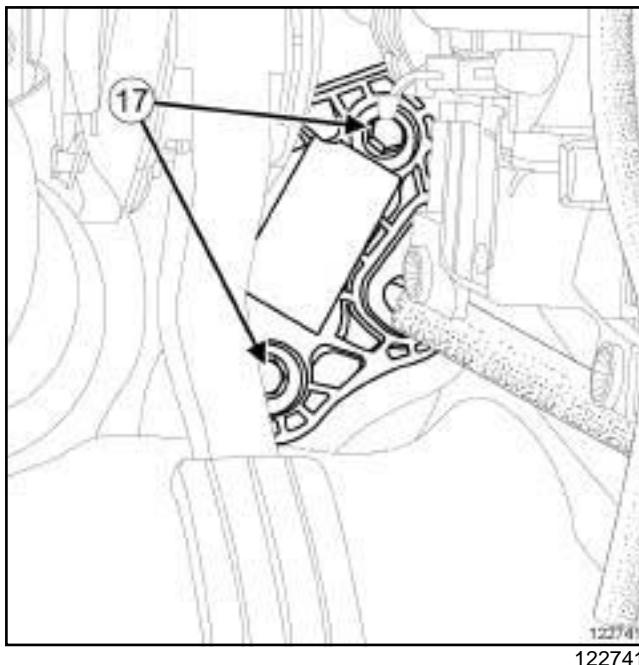
- Remove the nuts (14) from the gear control unit.



123864

- Unclip the control cables from the gearbox at:
 - the anchoring ball joints (15) using an open-jawed spanner,
 - the cable sleeve stops (16) .

PK4 or TL4, and LEFT-HAND DRIVE



Remove:

- the bulkhead seal bolts (17) ,
- the control cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the control cables,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

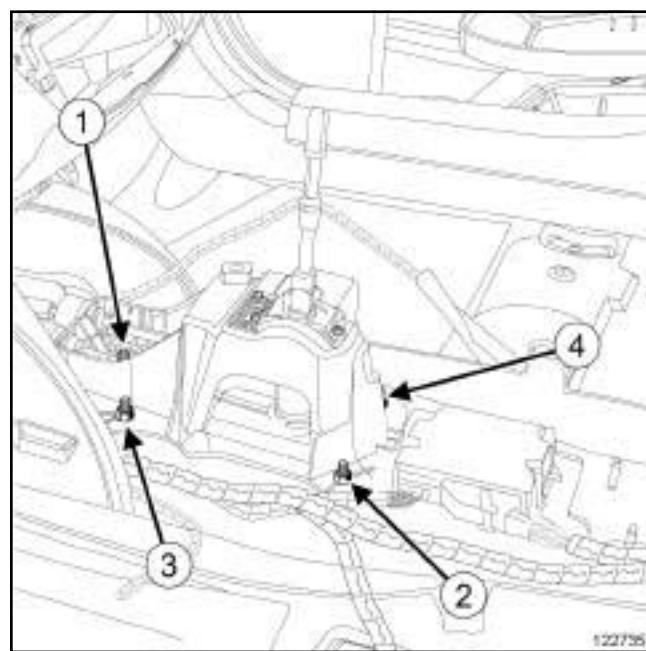
Clip:

- the gearbox control cable sleeve stops on the gearbox,
- the anchoring ball joints of the gear control cables on the gearbox using pliers.

Clip:

- the control cable sleeve stops (18) on the control unit,
- the anchoring ball joint (19) on the control unit using pliers,
- the anchoring ball joint by pressing the button (20) on the control unit.

Fit the control unit.



Refit:

- the gear control unit nut (4) ,

Manual gearbox control cable: Removal - Refitting

37A

PK4 or TL4, and LEFT-HAND DRIVE

- the gear control unit nuts (1) (2) (3) .
- Torque tighten in order the **gear control unit nuts (21 N.m)**.
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**) .
- Check that the system and gear selection are working correctly.

II - FINAL OPERATION.

- Refit:
 - the airbag computer protector,
 - the reinforcement,
 - the reinforcement lower bolts,
 - the reinforcement upper nuts,
 - the driver's side dashboard lower trim.
- Clip:
 - the wiring on the reinforcement,
 - the left-hand air duct,
 - the wiring on the airbag computer protector and on the control unit.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Refit:
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

PK4 or TL4, and RIGHT-HAND DRIVE

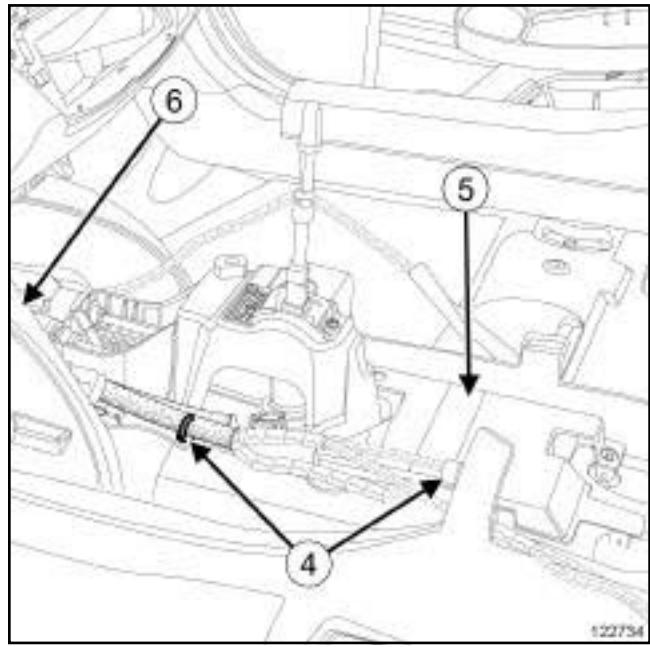
Tightening torques 

gear control unit nuts

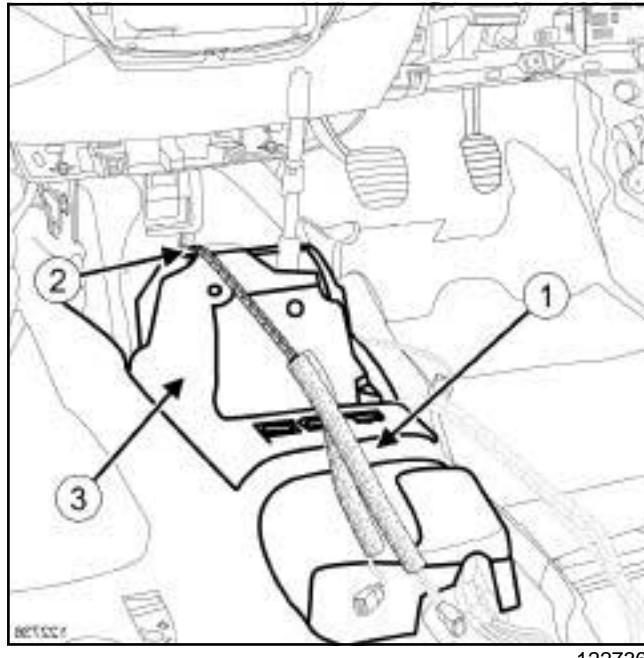
21 N.m

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Put the gear lever in neutral.
- Remove:
 - the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).



122734



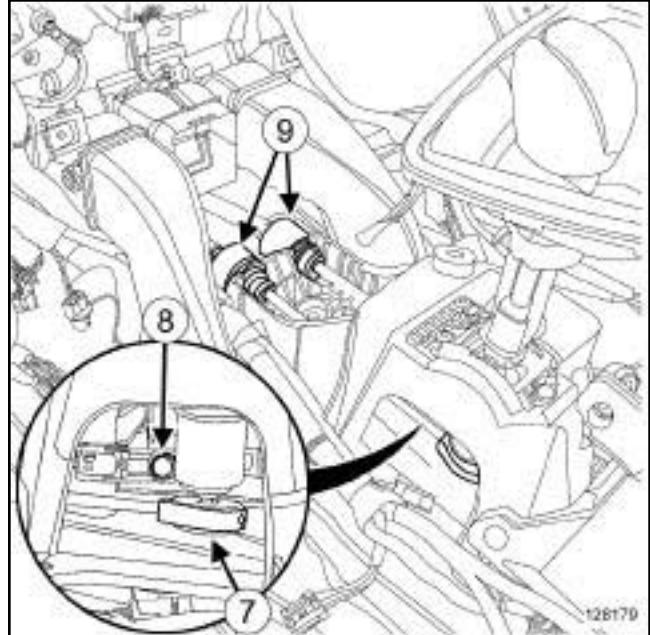
122736

- Cut the carpet at (1) .
- Unclip the wiring on the control unit at (2) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (3) from the control unit.

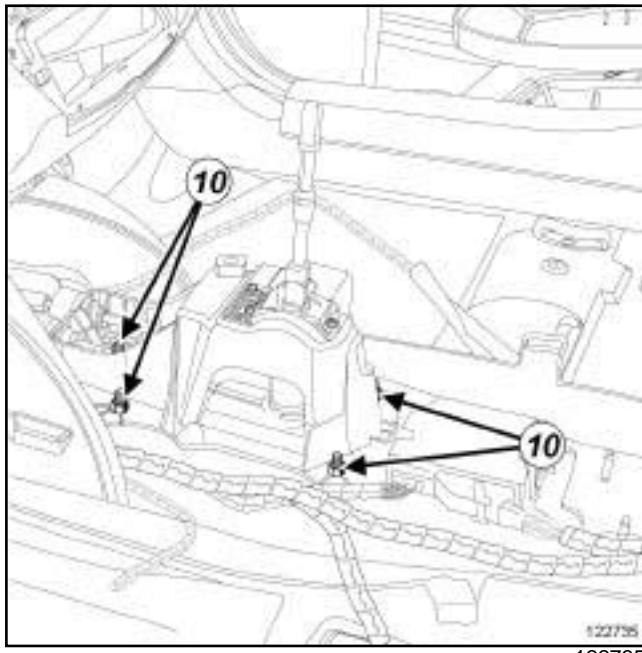


128179

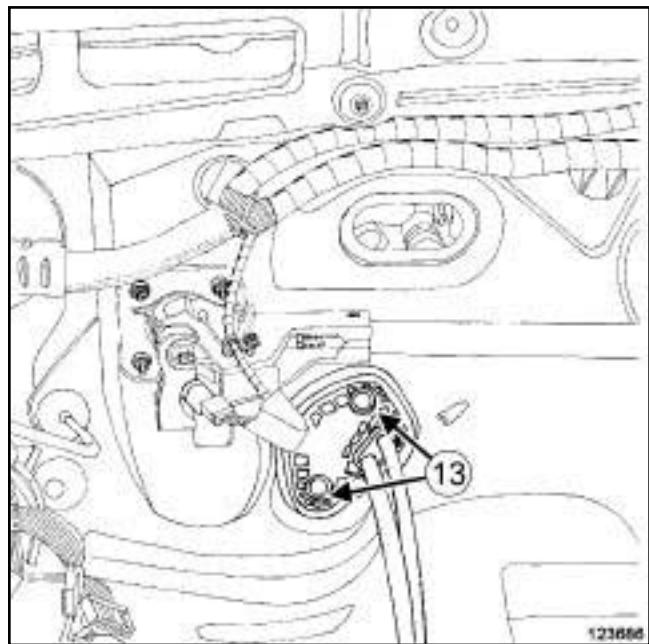
- Unclip the control cables on the control unit at:
 - the anchoring ball joint using an open-jawed spanner,
 - the anchoring ball joint by pressing the button,

PK4 or TL4, and RIGHT-HAND DRIVE

- the cable sleeve stops .

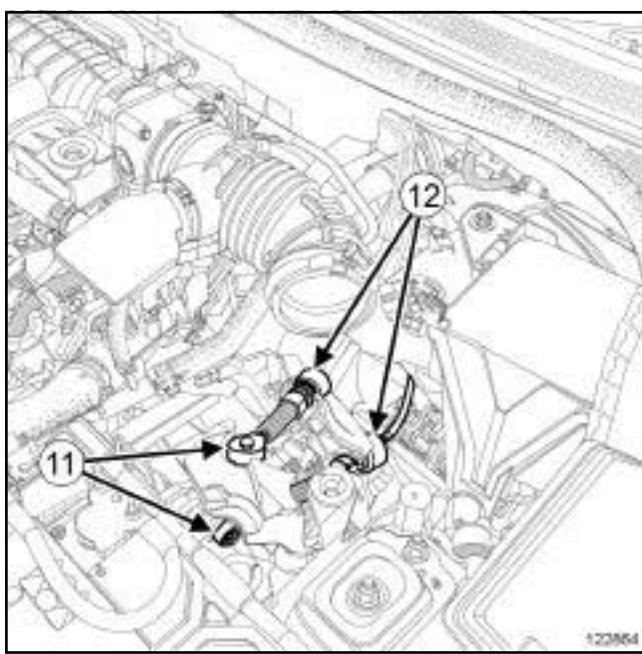


122735



123686

- Remove the nuts (10) from the gear control unit.



122864

- Unclip the control cable on the gearbox at:
 - the anchoring ball joint (11) using an open-jawed spanner,
 - from the cable sleeve stop (12) .
- Lift the passenger side carpet.
- Remove the polystyrene under the carpet.

Remove:

- the bulkhead seal bolts (13) ,
- the control cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the control cables,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

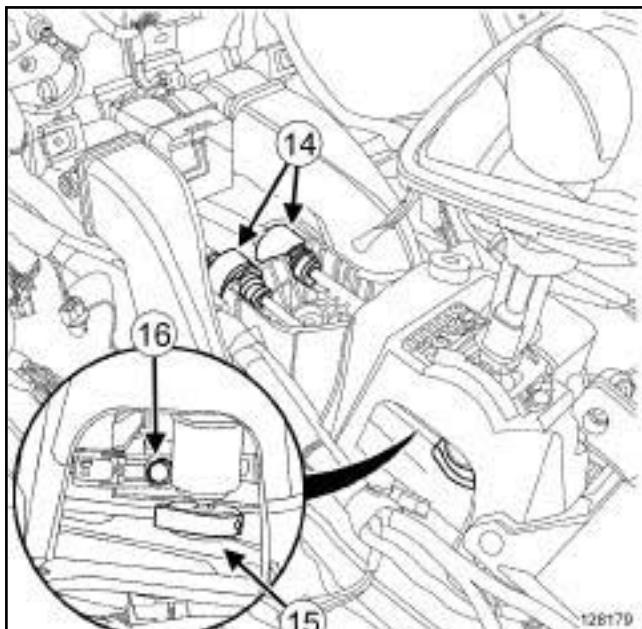
Refit the polystyrene under the carpet.

Position the passenger side carpet.

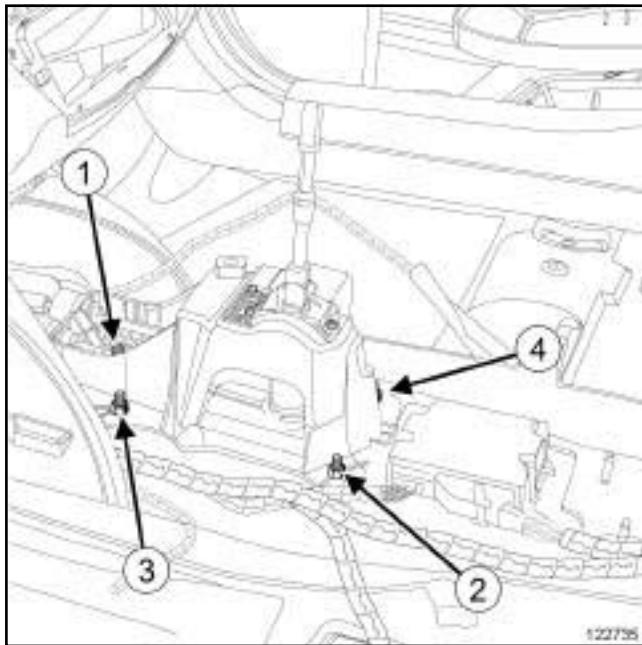
Clip:

- the gearbox control cable sleeve stops on the gearbox,
- the anchoring ball joints of the gear control cables onto the gearbox using pliers.

PK4 or TL4, and RIGHT-HAND DRIVE

 Clip:

- the control cable sleeve stops (14) onto the control unit,
- the anchoring ball joint (15) onto the control unit using pliers,
- the anchoring ball joint by pressing the button (16) on the control unit.

 Fit the control unit. Refit and finger tighten:

- the gear control unit nut (4) ,

- the gear control unit nuts (1) (2) (3) .

- Torque tighten in order the **gear control unit nuts** (21 N.m).
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**) .
- Check that the system and gear selection are working correctly.

II - FINAL OPERATION.

- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector and the control unit.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.

 Refit:

- the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the gear lever knob.

AJ0, and RIGHT-HAND DRIVE

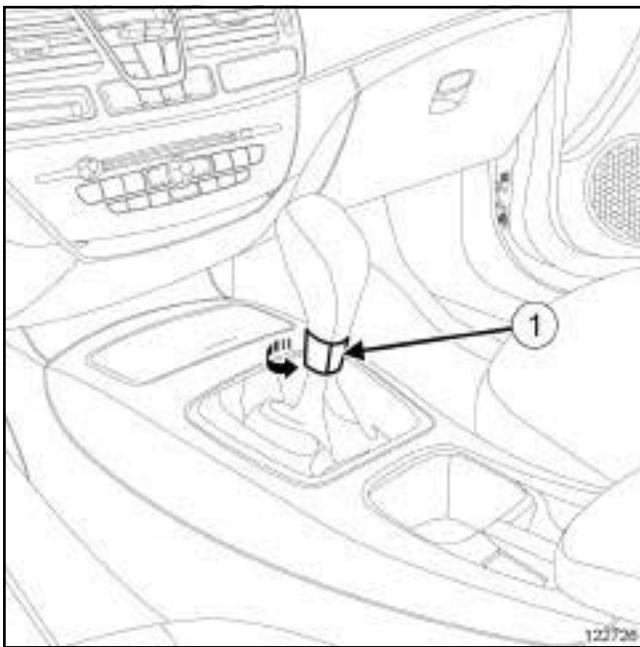
Tightening torques 

gear control unit nuts

21 N.m

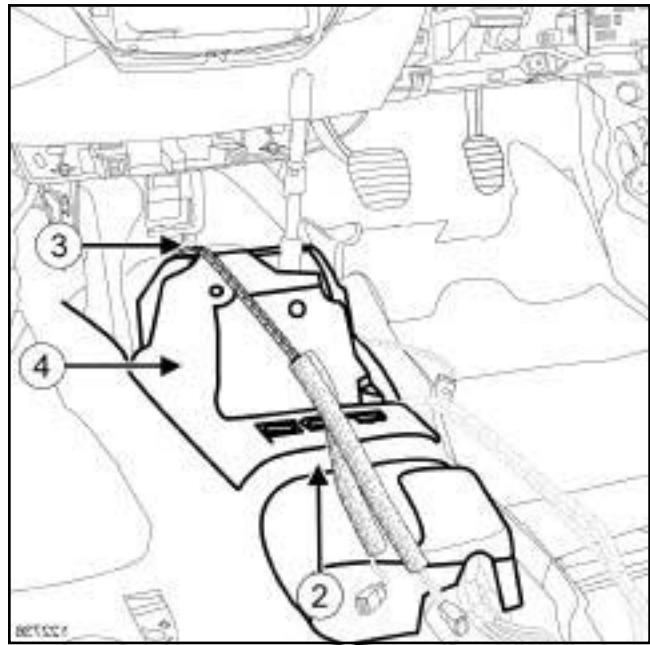
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



122736

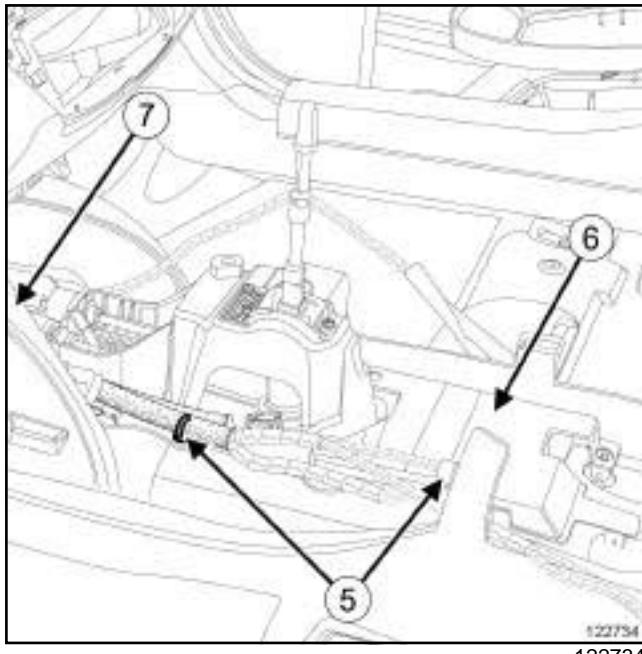
- Cut the carpet at (2) .
- Unclip the wiring on the control unit at (3) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

AJ0, and RIGHT-HAND DRIVE



122734

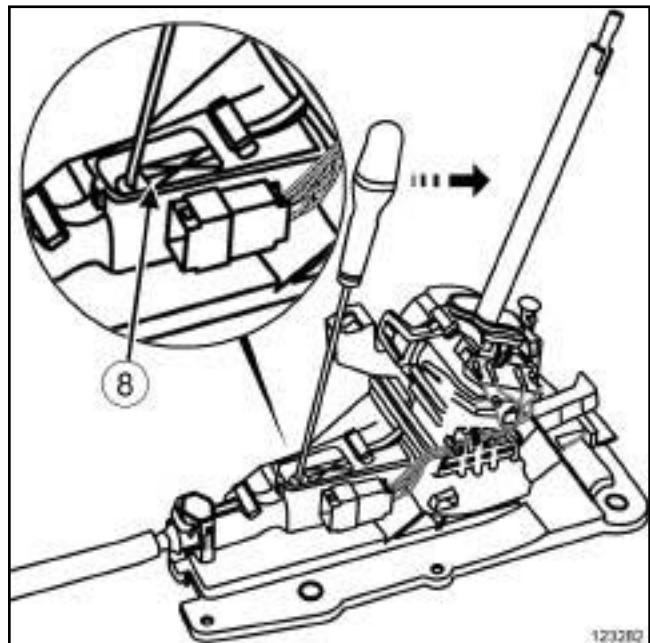
 Unclip:

- the wiring at (5),
- the left-hand air duct (7).

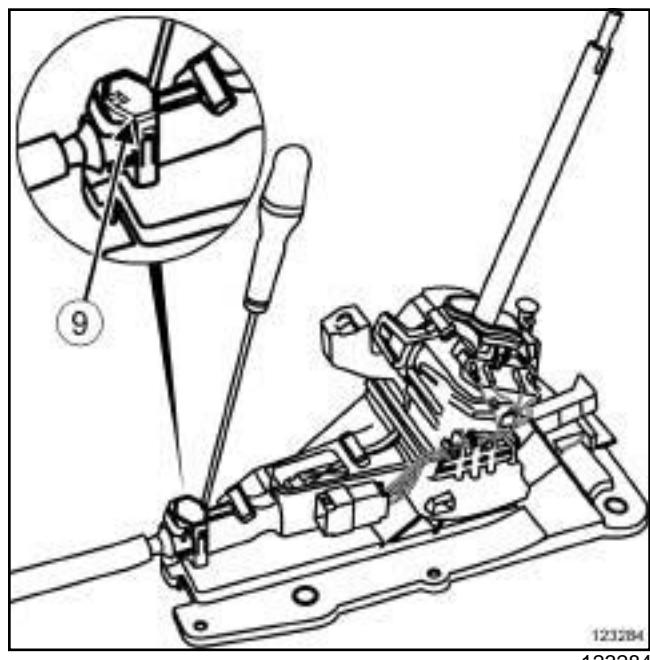
 Remove:

- the airbag computer protector (6),
- the control unit (see 37A, Mechanical component controls, Gear control unit: Removal - Refitting, page 37A-95).

II - OPERATION FOR REMOVAL OF PART CONCERNED



123282

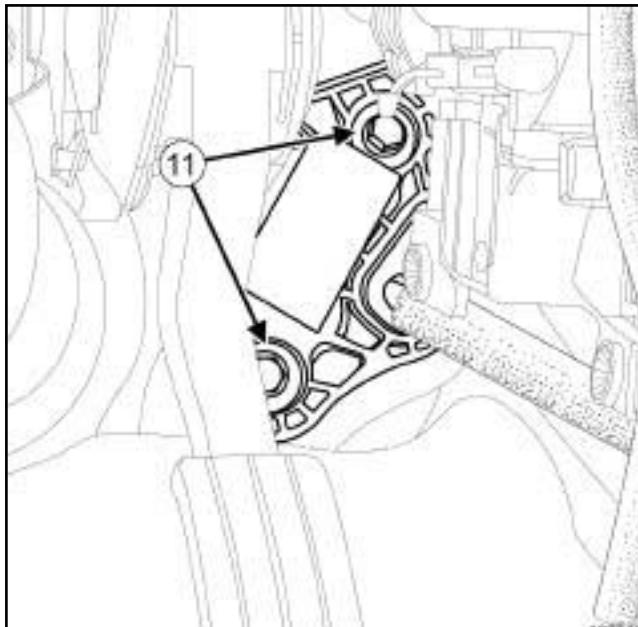
 Unlock the clip (8).

123284

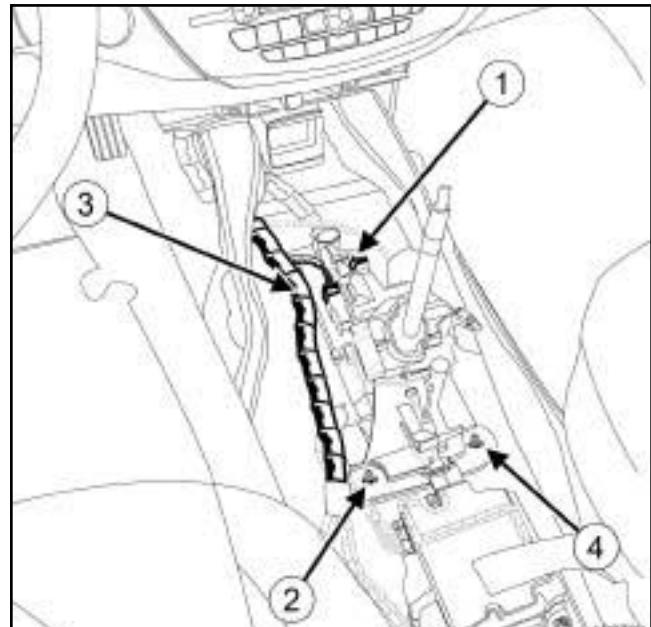
 Unlock the clip (9). Unclip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

AJ0, and RIGHT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (11) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

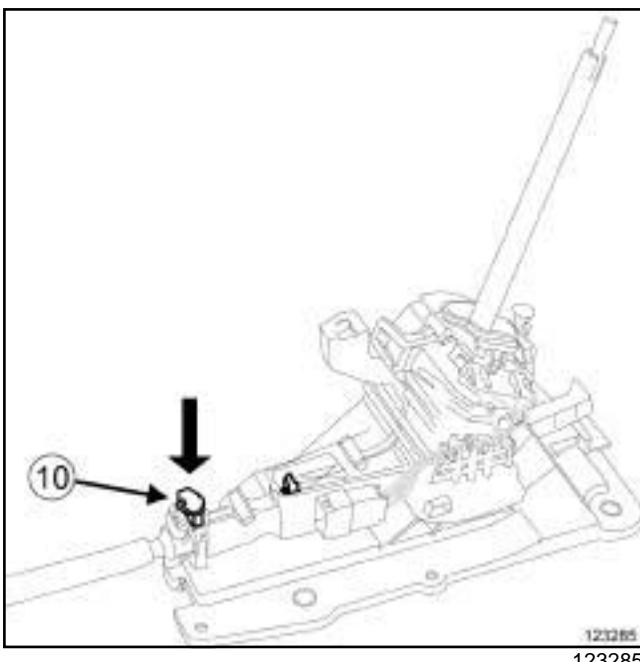
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

AJ0, and RIGHT-HAND DRIVE



- Press the clip (10) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position R.
- Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

AJ0, and LEFT-HAND DRIVE

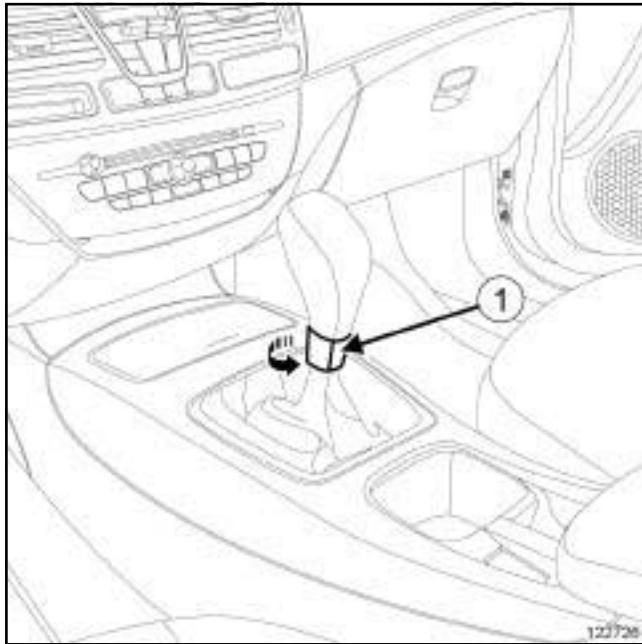
Tightening torques 

gear control unit nuts

21 N.m

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



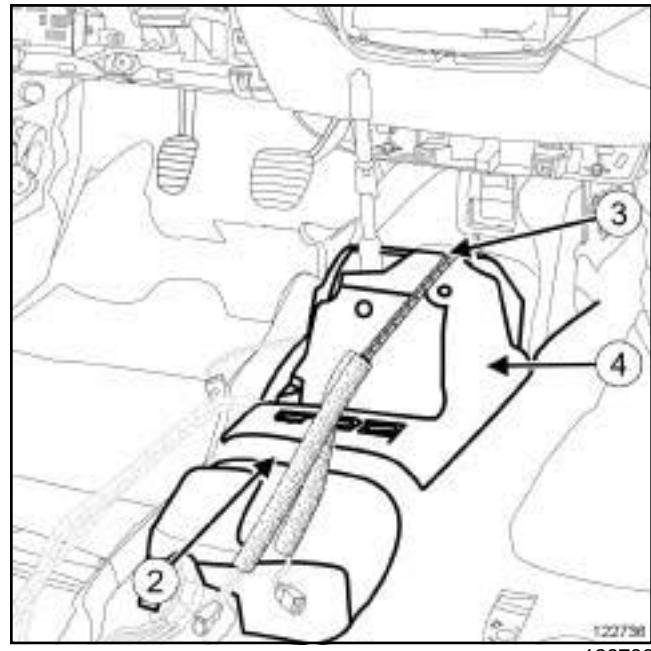
122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.

Remove:

- the gear lever knob, by lifting it upwards,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the middle centre air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).

- Place the gear selector in position **D**.



122736

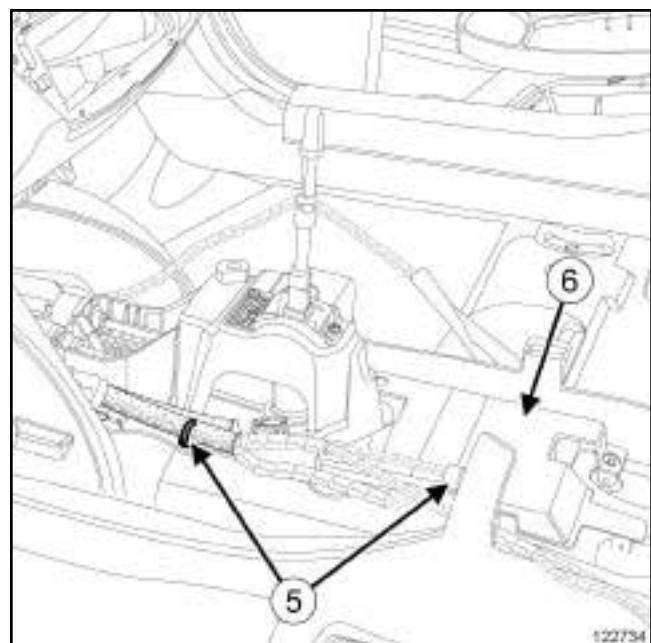
- Cut the carpet at (2).

- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

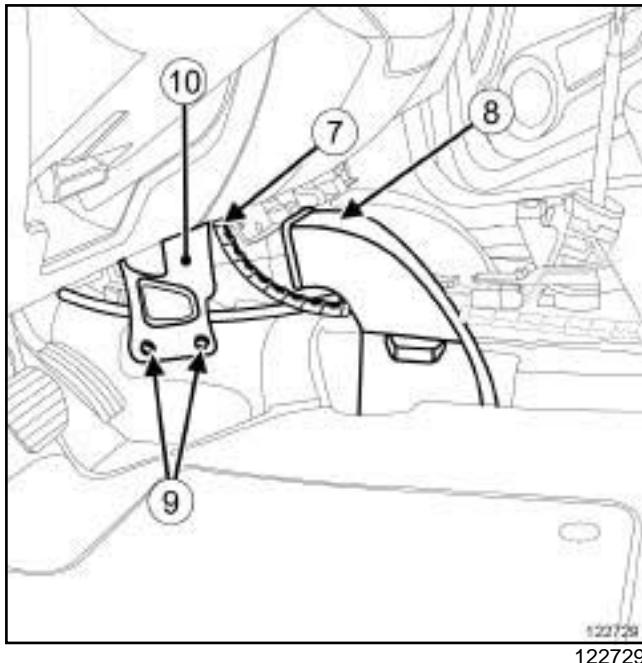


122734

- Unclip the wiring at (5).

- Remove the airbag computer protector (6).

AJ0, and LEFT-HAND DRIVE

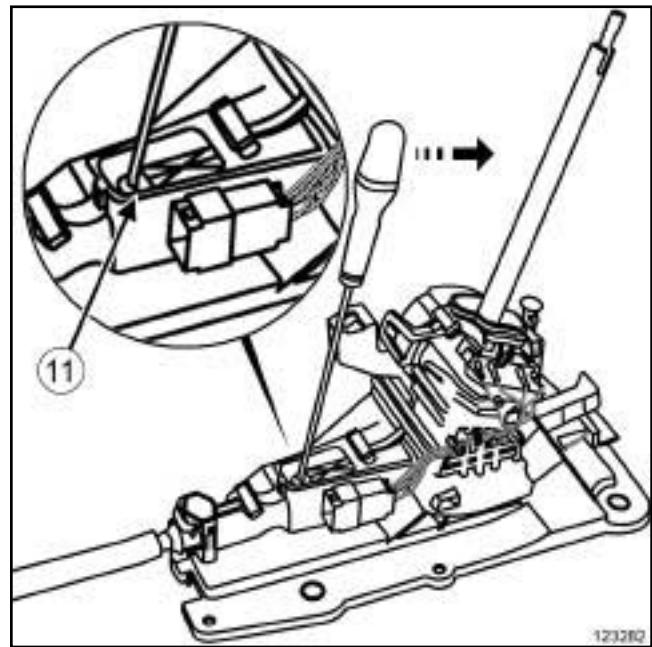
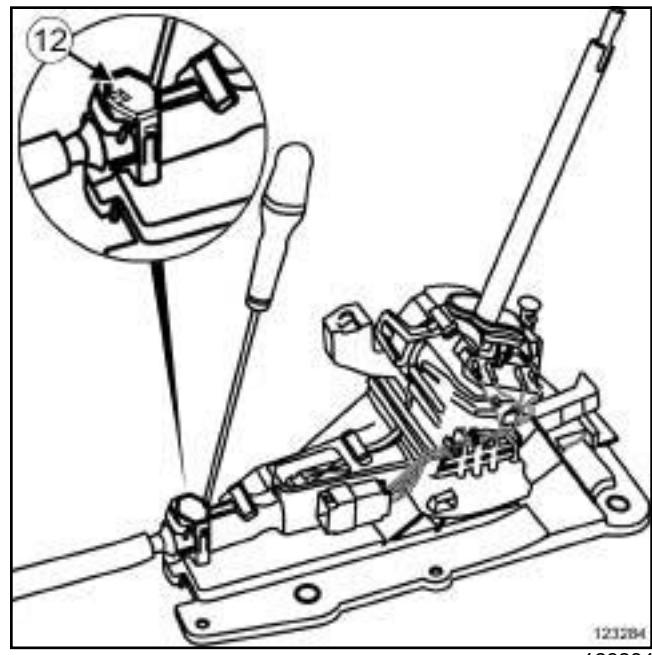
 Unclip:

- the wiring on the reinforcement at (7) ,
- the left-hand air duct (8) .

 Remove:

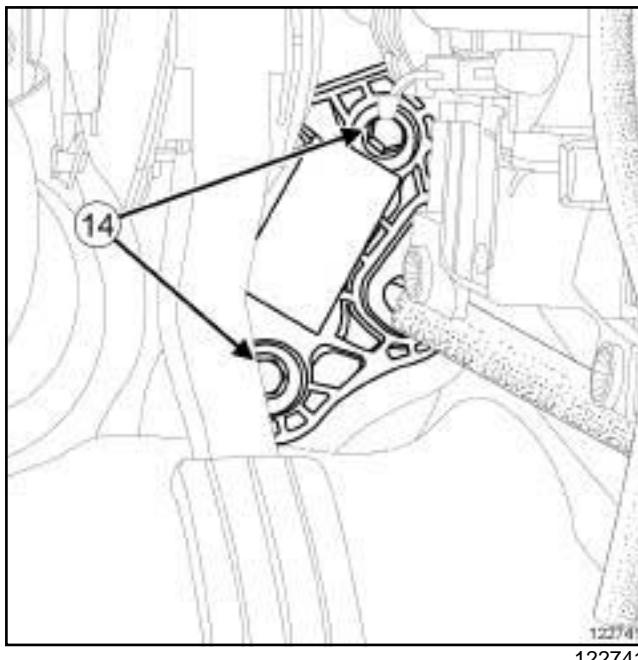
- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
- the reinforcement upper nuts,
- the reinforcement lower bolts (9) ,
- the reinforcement (10) ,
- the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-19) ,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting**, page 37A-95) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

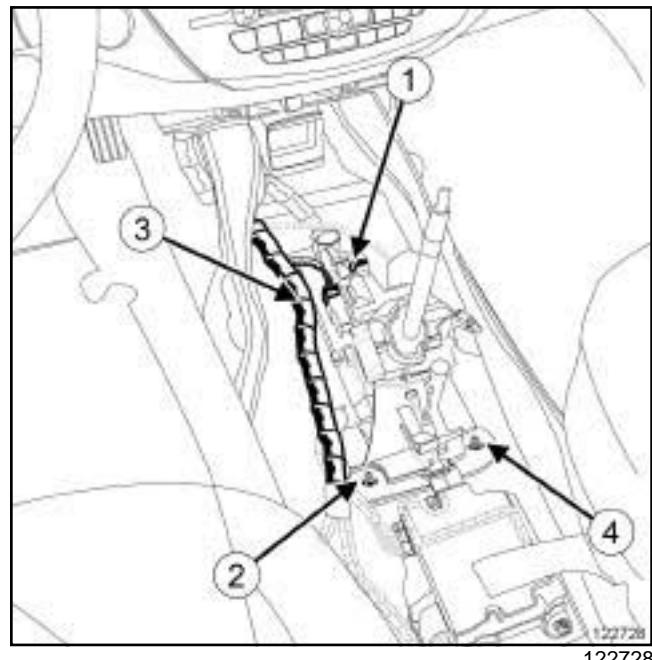
 Unlock the clip (11) . Unlock the clip (12) . Unclip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

AJ0, and LEFT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (14) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) ,and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

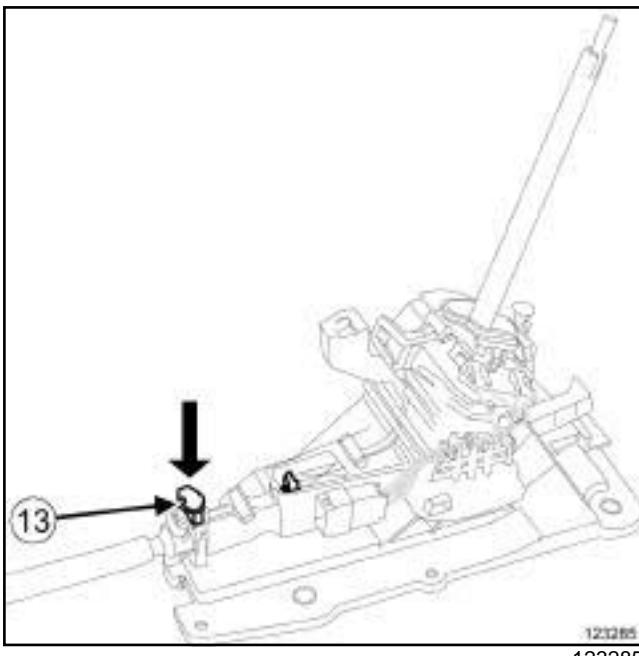
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

AJ0, and LEFT-HAND DRIVE



- Press the clip (13) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**) .
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Refit:
 - the air filter box (see **Air filter unit: Removal - Refitting** (12A, Fuel mixture)).
 - the reinforcement,
 - the reinforcement lower bolts,
 - the reinforcement upper nuts,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting** (57A, Interior equipment)),
 - the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page **37A-19**) .
- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector and onto the reinforcement.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.

Place the gear selector in position R.

Refit:

- the middle air duct (see **Rear air distribution duct: Removal - Refitting** (61A, Heating system)),
- the central console (see **Centre console: Removal - Refitting** (57A, Interior equipment)),
- the gear lever knob.

Turn the ring on the gear lever knob a sixteenth of a turn.

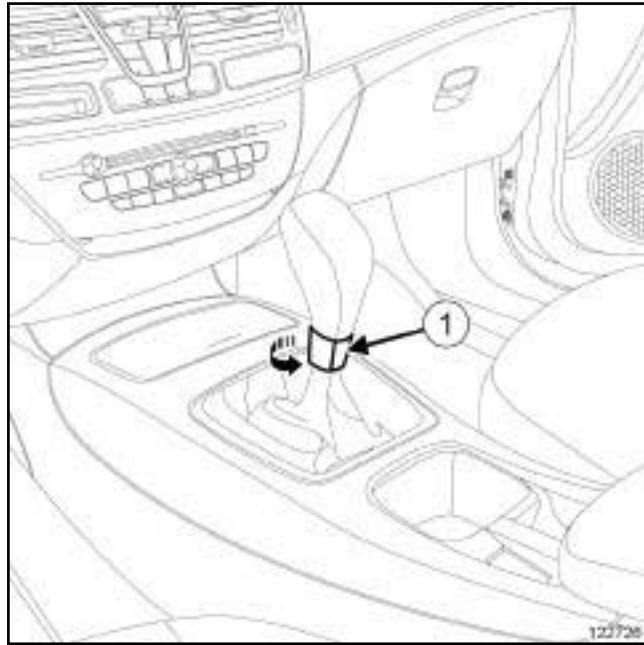
D91, and AJ0, and LEFT-HAND DRIVE

Tightening torques

gear control unit nuts	21 N.m
air filter unit air outlet pipe clip on the throttle valve	5.5 N.m
clip of the air filter unit air outlet pipe	6 N.m

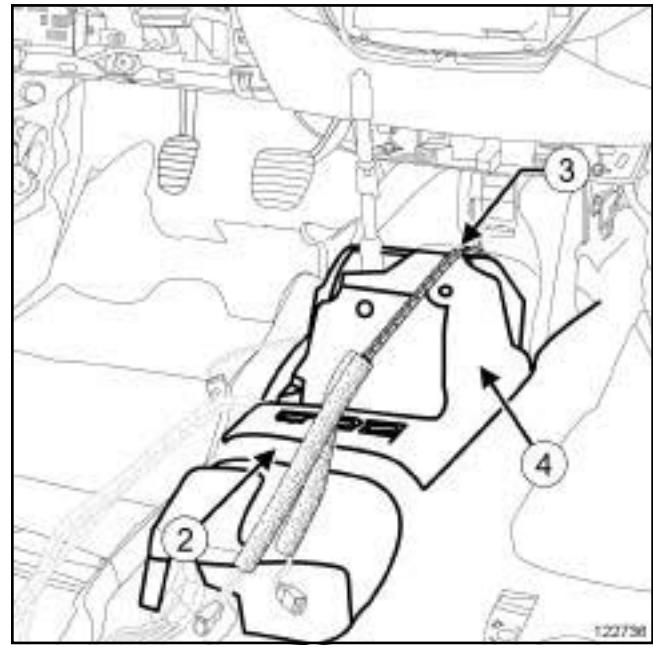
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
- the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



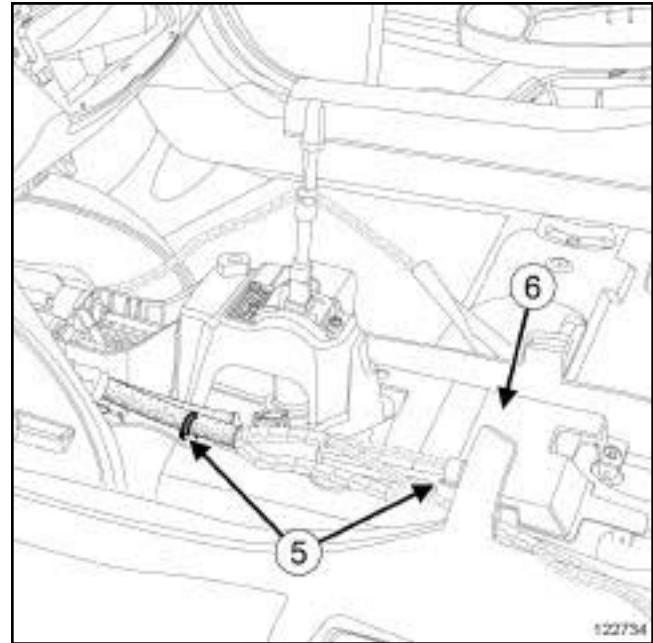
122736

- Cut the carpet at (2).
- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.



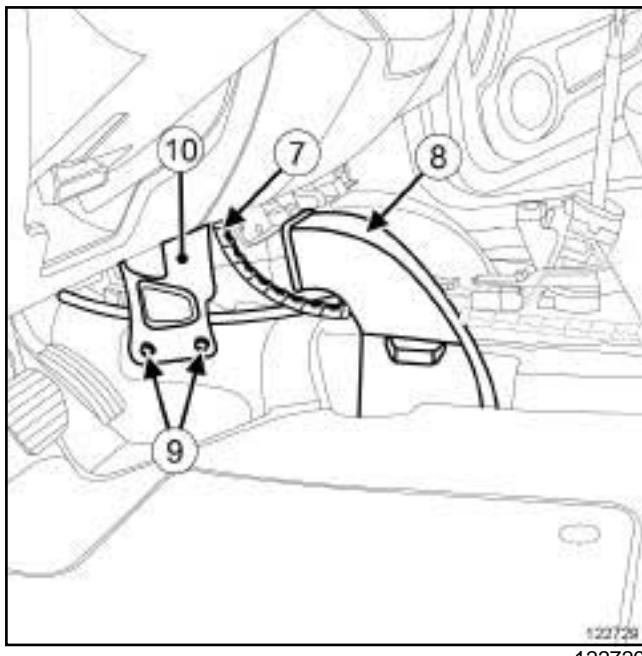
122734

- Unclip the wiring at (5).
- Remove the airbag computer protector (6).

Automatic gear control cable: Removal - Refitting

37A

D91, and AJ0, and LEFT-HAND DRIVE



122729

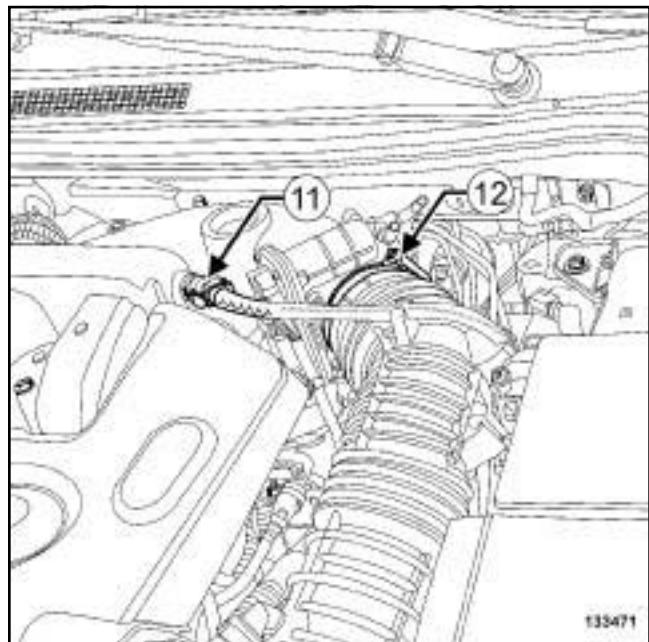
 Unclip:

- the wiring on the reinforcement at (7) ,
- the left-hand air duct (8) .

 Remove:

- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
- the reinforcement upper nuts,
- the reinforcement lower bolts (9) ,
- the reinforcement (10) ,
- the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-19) ,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting**, page 37A-95) .

V4Y



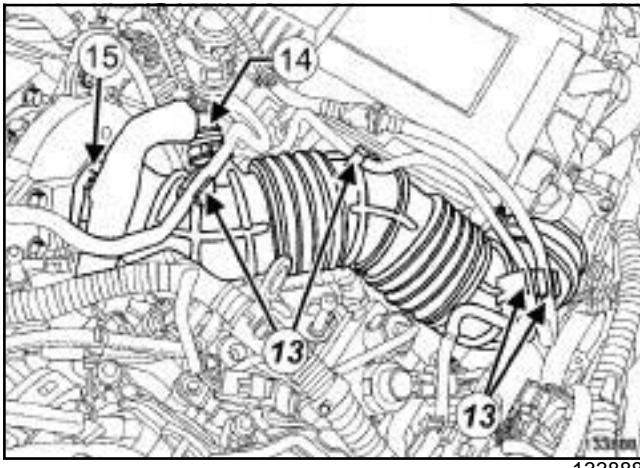
133471

 Remove the front engine cover.

- Disconnect the non-return valve pipe (11) from the intake distributor.
- Unclip the non-return valve pipe from the air filter unit air outlet pipe.
- Loosen the clip (12) on the air filter unit air outlet pipe on the throttle valve.
- Remove the air outlet pipe from the air filter box.

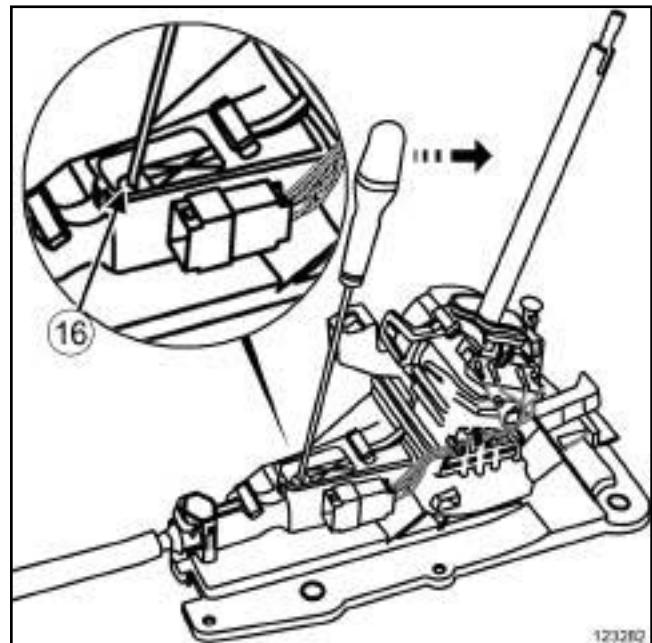
D91, and AJ0, and LEFT-HAND DRIVE

V9X

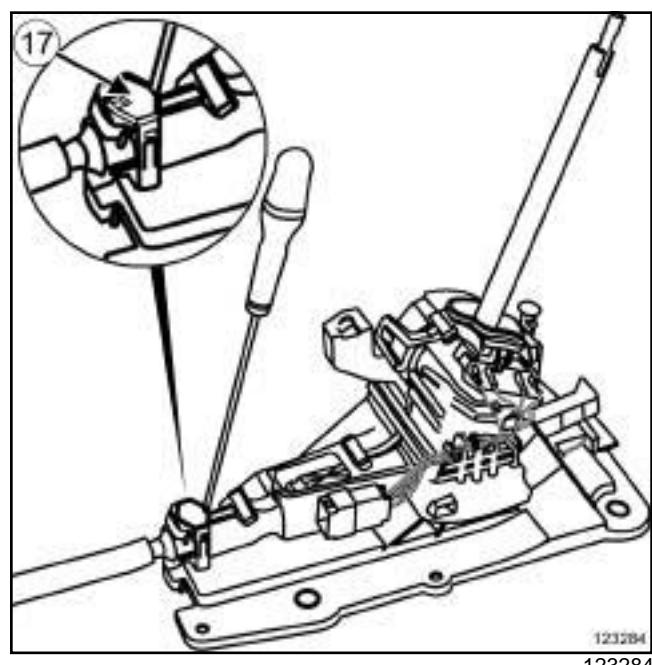


- Unclip the vacuum pipes (13) from the air filter unit air outlet pipe.
- Disconnect the oil vapour rebreathing pipe (14).
- Loosen the clip (15) of the air outlet pipe on the air filter unit.
- Remove:
 - the air outlet pipe to the air filter unit,
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit).

II - OPERATION FOR REMOVAL OF PART CONCERNED

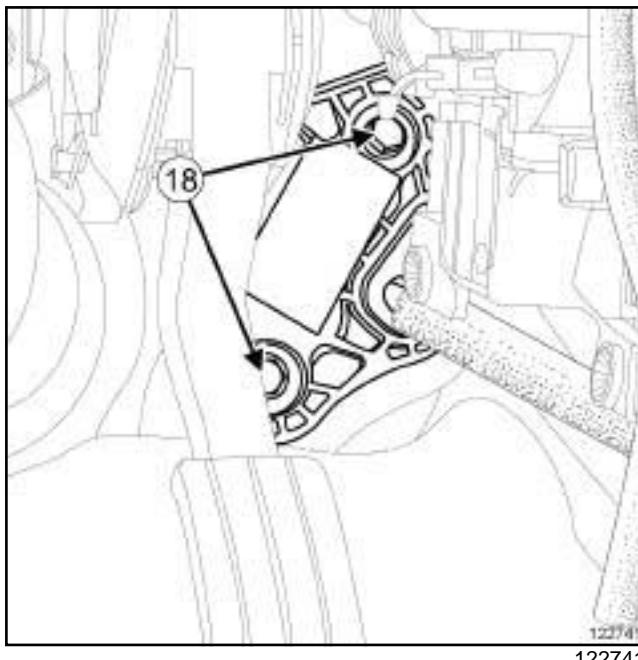


- Unlock the clip (16).

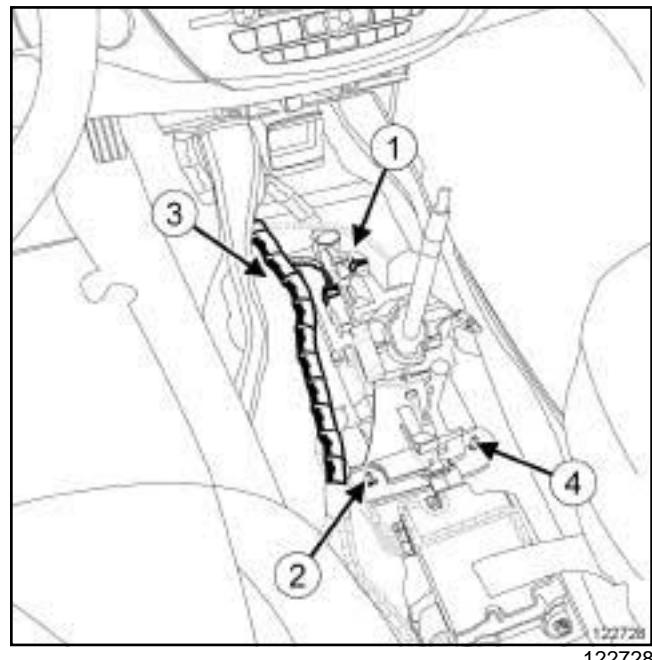


- Unlock the clip (17).
- Unclip:
 - the control cable sleeve stop on the gearbox,
 - the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

D91, and AJ0, and LEFT-HAND DRIVE



122741



122728

Remove:

- the bolts (18) of the control cable seal on the bulkhead,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

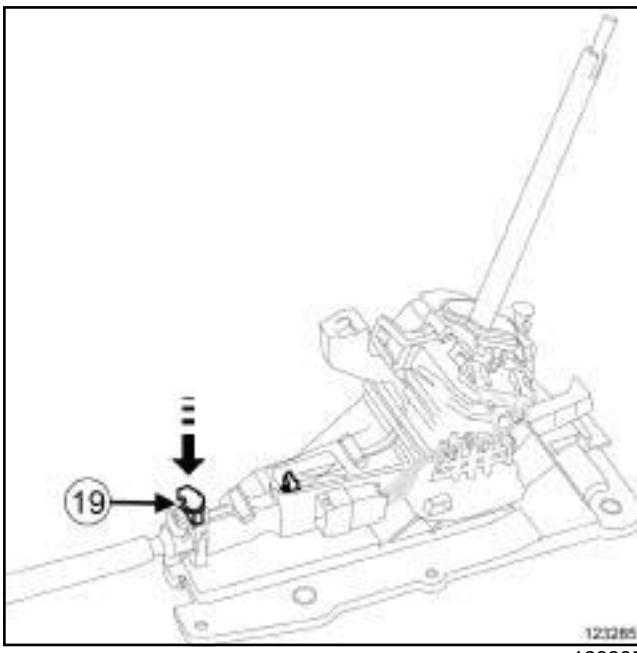
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

D91, and AJ0, and LEFT-HAND DRIVE



- Press the clip (19) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Refit:
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the reinforcement,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
 - the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page **37A-19**).
-
- V4Y**

 - Refit the air filter unit air outlet pipe on the throttle valve.
 - Torque tighten the **air filter unit air outlet pipe clip on the throttle valve (5.5 N.m)**.
 - Connect the non-return valve pipe on the intake distributor.
 - Clip the non-return valve pipe onto the air filter unit air outlet pipe.
 - Refit the engine cover.
- V9X**

 - Refit:
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the air outlet pipe of the air filter unit.
 - Torque tighten the **clip of the air filter unit air outlet pipe (6 N.m)**.
 - Connect the oil vapour rebreathing pipe.
 - Clip the vacuum pipes onto the air filter unit air outlet pipe.
- Clip on the left-hand air duct.
 - Refit the airbag computer protector.
 - Clip the wiring onto the airbag computer protector and onto the reinforcement.
 - Refit the control unit soundproofing.
 - Clip the wiring onto the control unit.
 - Clip the carpet at the cutting point.
 - Place the gear selector in position **R**.
 - Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
 - Turn the ring on the gear lever knob a sixteenth of a turn.

MECHANICAL COMPONENT CONTROLS

Automatic gear control cable: Removal - Refitting

37A

D91, and AJ0, and LEFT-HAND DRIVE

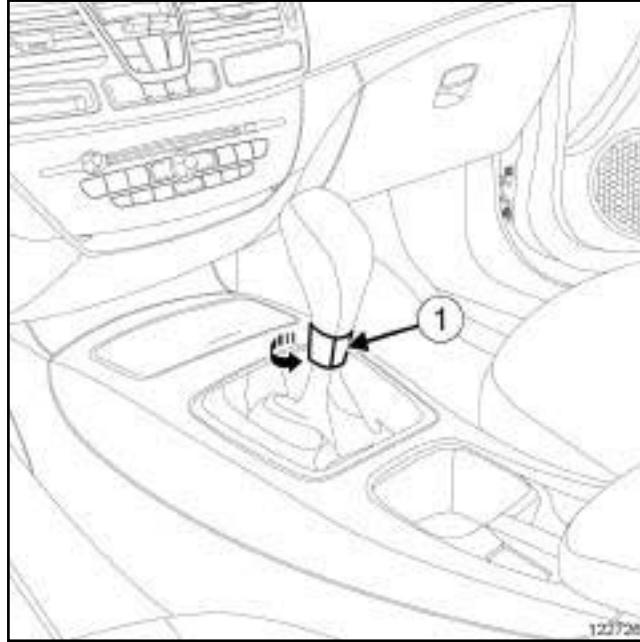


D91, and AJ0, and RIGHT-HAND DRIVE

Tightening torques 	
gear control unit nuts	21 N.m
air filter unit air outlet pipe clip on the throttle valve	5.5 N.m
clip of the air filter unit air outlet pipe	6 N.m

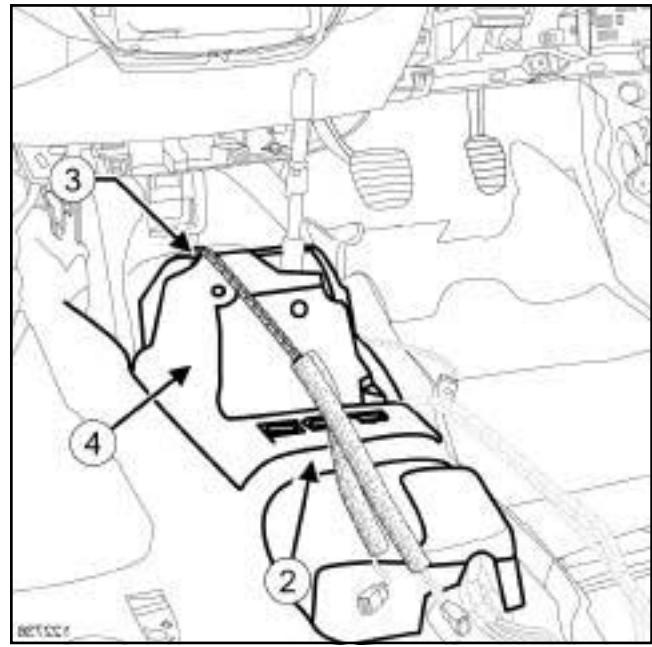
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
- the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



122736

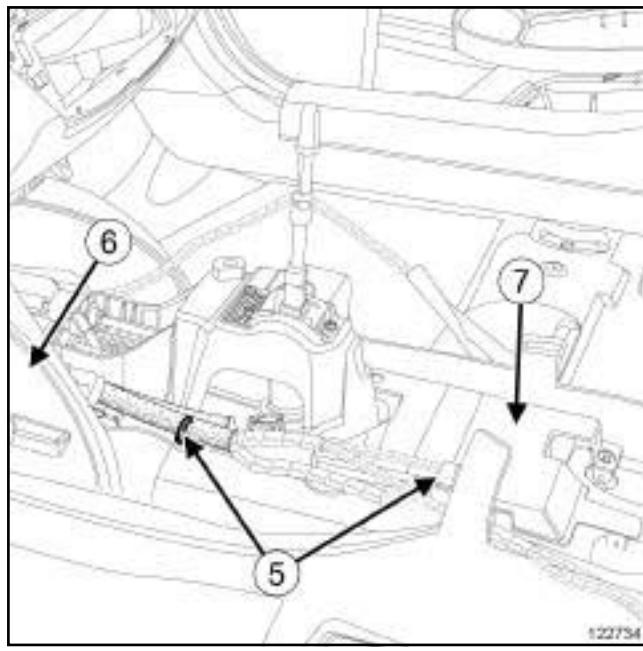
- Cut the carpet at (2) .
- Unclip the wiring on the control unit at (3) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

D91, and AJ0, and RIGHT-HAND DRIVE

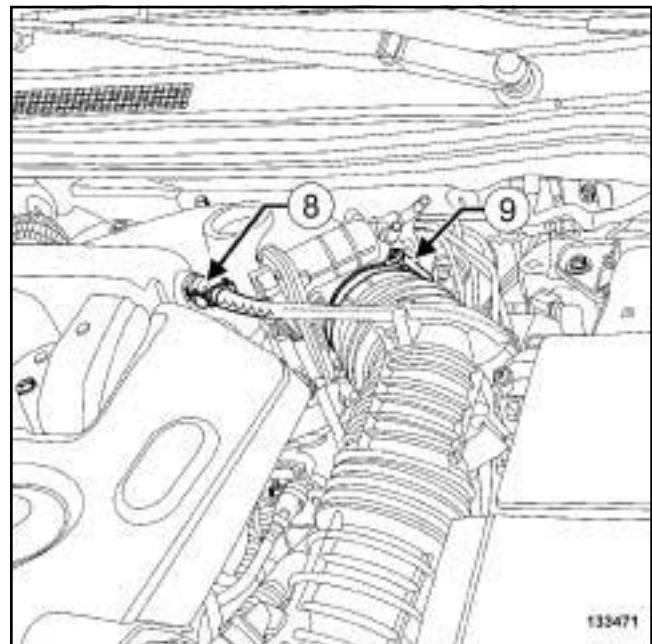
 Unclip:

- the wiring at (5),
- the left-hand air duct (6).

 Remove:

- the airbag computer protector (7),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting, page 37A-95**).

V4Y

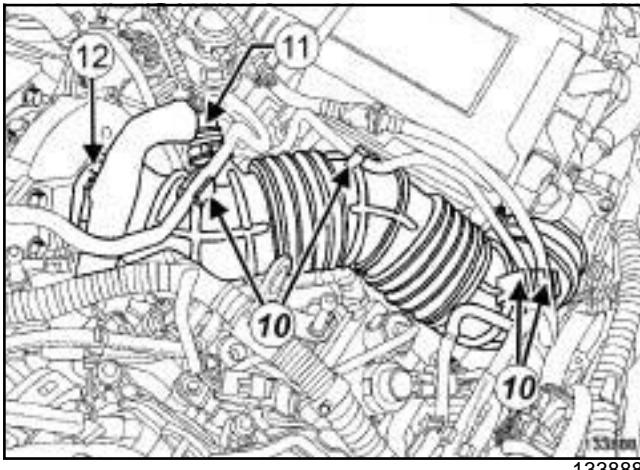


- Remove the front engine cover.

- Disconnect the non-return valve pipe (8) from the intake distributor.
- Unclip the non-return valve pipe from the air filter unit air outlet pipe.
- Loosen the clip (9) of the air filter unit air outlet pipe on the throttle valve.
- Remove the air outlet pipe from the air filter unit.

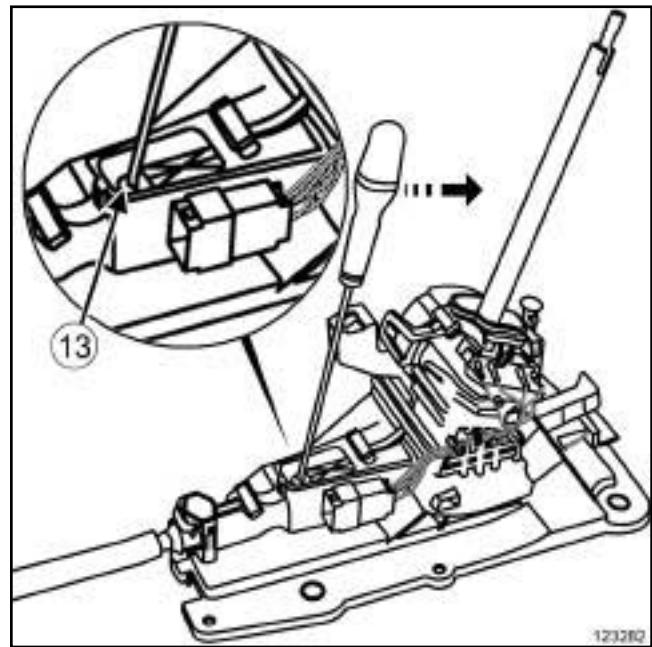
D91, and AJ0, and RIGHT-HAND DRIVE

V9X

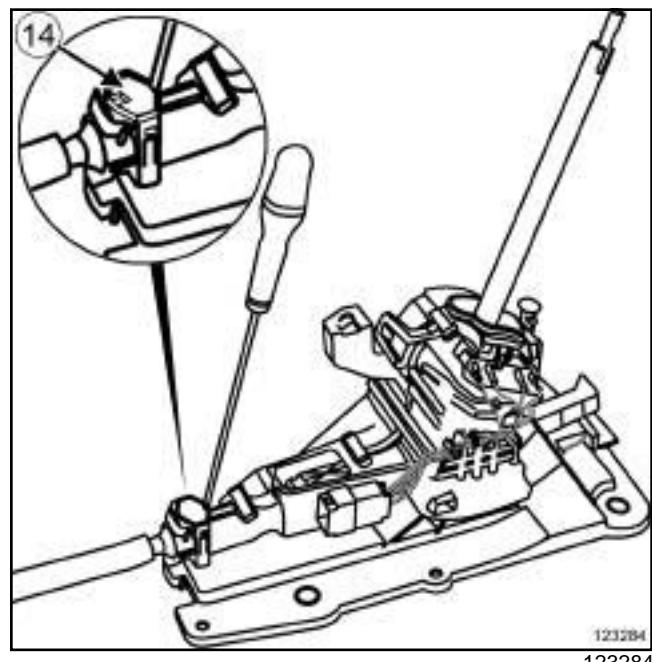


- Unclip the vacuum pipes (10) from the air filter unit air outlet pipe.
- Disconnect the oil vapour rebreathing pipe (11).
- Loosen the clip (12) of the air outlet pipe on the air filter unit.
- Remove:
 - the air outlet pipe to the air filter unit,
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit).

II - OPERATION FOR REMOVAL OF PART CONCERNED

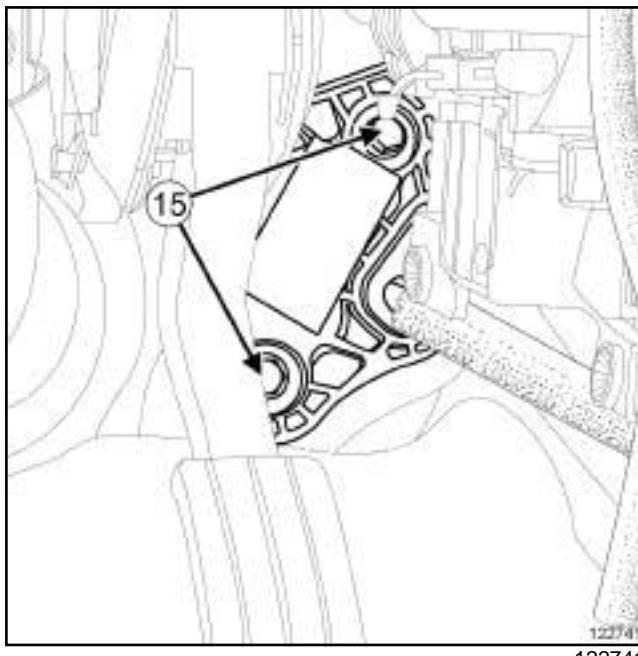


- Unlock the clip (13).

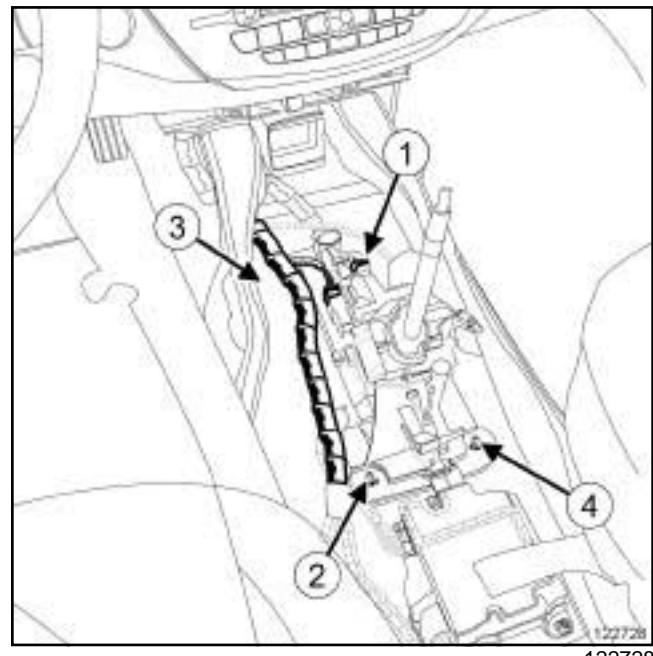


- Unlock the clip (14).
- Unclip:
 - the control cable sleeve stop on the gearbox,
 - the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

D91, and AJ0, and RIGHT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (15) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

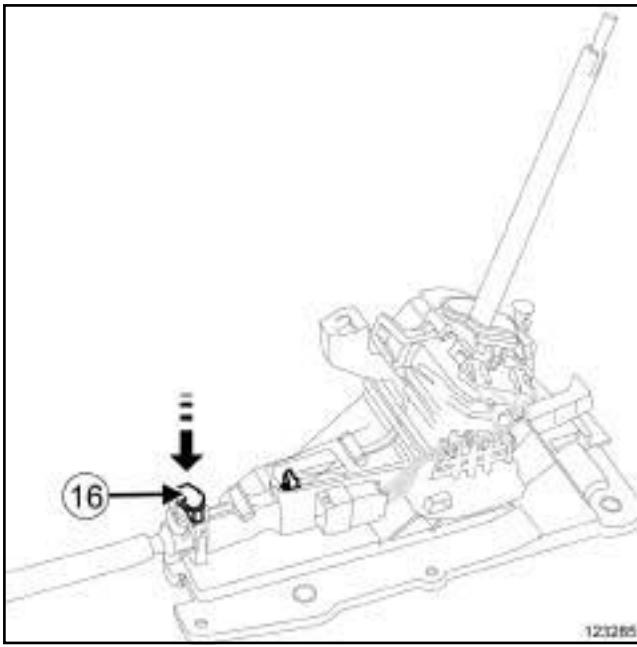
Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

Automatic gear control cable: Removal - Refitting

37A

D91, and AJ0, and RIGHT-HAND DRIVE



- Press the clip (16) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position **R**.
- Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

V4Y

- Refit the air filter unit air outlet pipe on the throttle valve.
- Torque tighten the **air filter unit air outlet pipe clip on the throttle valve (5.5 N.m)**.
- Connect the non-return valve pipe on the intake distributor.
- Clip the non-return valve pipe onto the air filter unit air outlet pipe.
- Refit the engine cover.

V9X

- Refit:
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the air outlet pipe of the air filter unit.
- Torque tighten the **clip of the air filter unit air outlet pipe (6 N.m)**.
- Connect the oil vapour rebreathing pipe.
- Clip the vacuum pipes onto the air filter unit air outlet pipe.

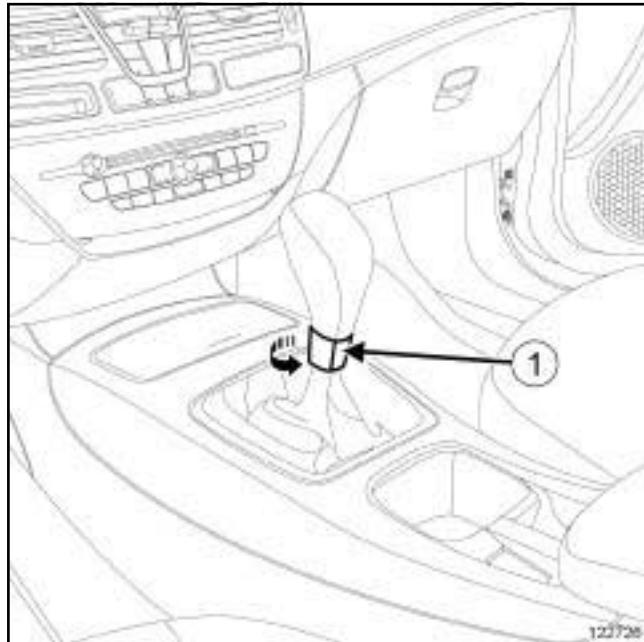
AJ0, and RIGHT-HAND DRIVE

Tightening torques 

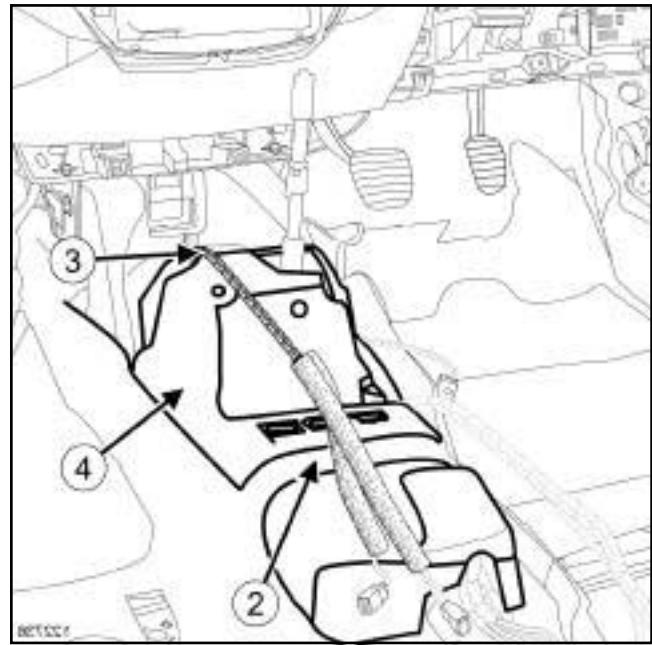
gear control unit nuts	21 Nm
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REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, by lifting it upwards,
 - the centre console (see **Centre console: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the clip from the rear centre air duct above the soundproofing,
 - the rear centre air duct above the soundproofing.
- Place the gear selector in position **D**.



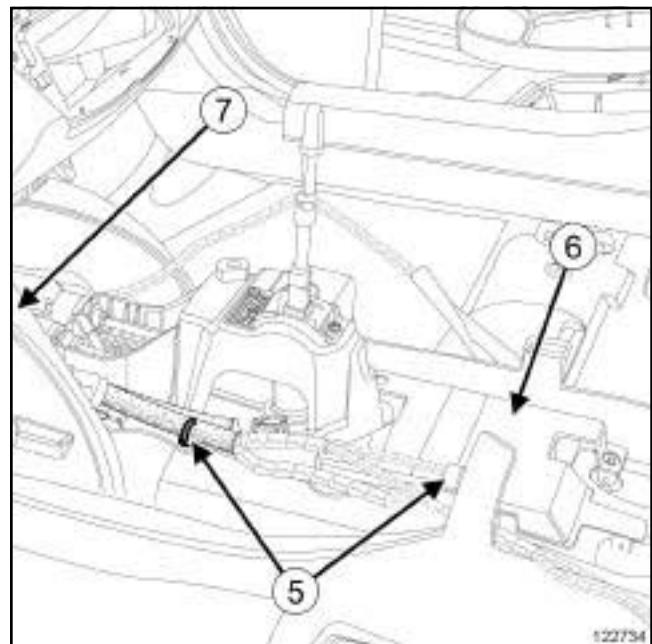
122736

- Cut the carpet at (2).
- Unclip the wiring harness on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.



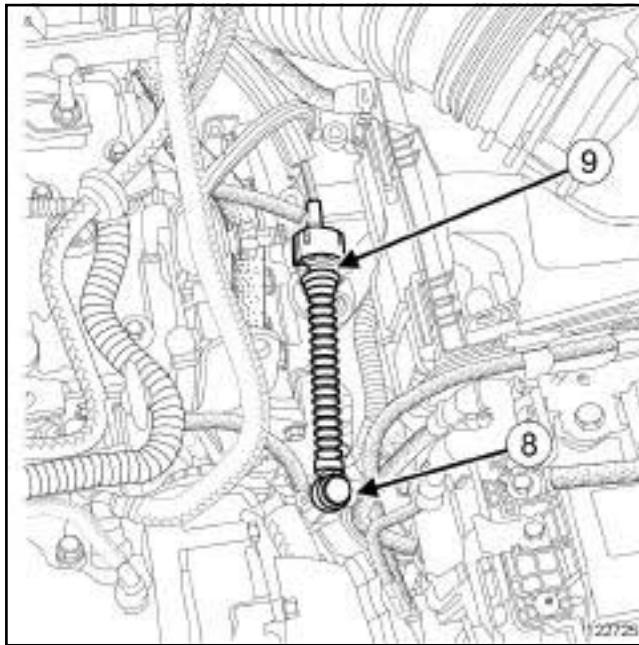
122734

- Unclip the harness at (5).
- Remove the airbag computer protector (6).
- Unclip the left-hand air duct (7).

Gear control unit: Removal - Refitting

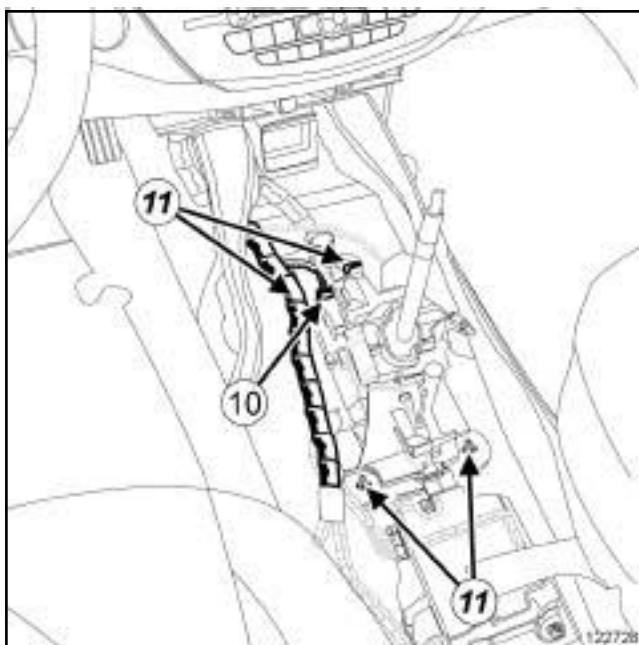
AJ0, and RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



122725

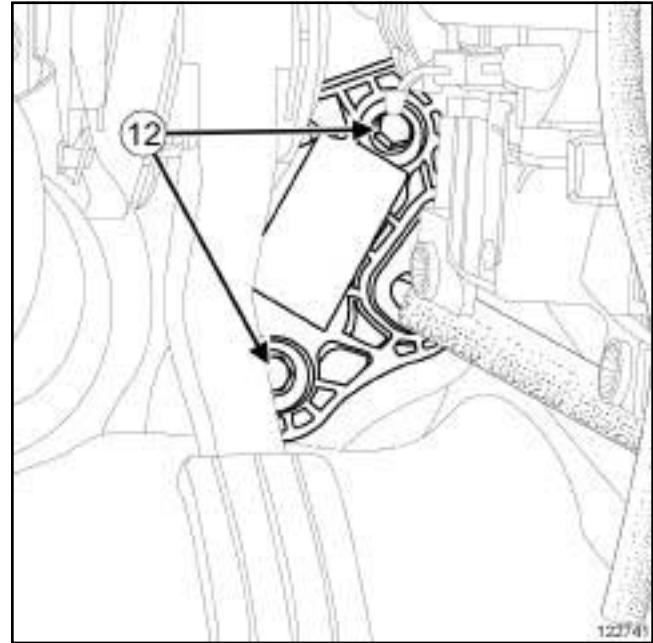
- Unclip the control cable on the gearbox at:
 - the anchoring ball joint (8) using an open-jawed spanner,
 - from the cable sleeve stop (9) .



122728

- Remove:
 - the connector (10) from the gear control unit,
 - the gear control unit nuts (11) .
- Lift the passenger side carpet.

- Remove the polystyrene under the carpet.



122741

- Remove:
 - the bulkhead seal bolts (12) ,
 - the gear control unit.

REFITTING

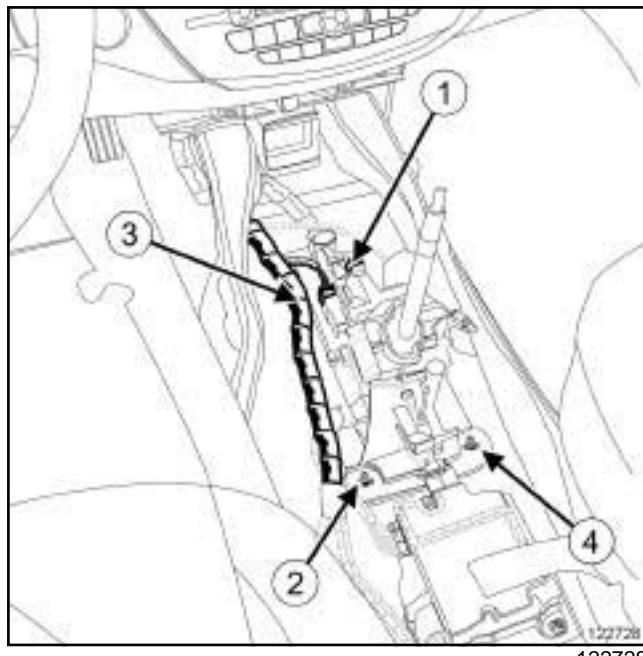
I - REFITTING PREPARATIONS OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D** to allow the control cables to be anchored on the gearbox.

II - REFITTING OPERATION FOR PART CONCERNED

- Fit:
 - the gear control unit,
 - the bulkhead seal bolts.
- Tighten the bulkhead seal bolts.
- Refit the polystyrene under the carpet.
- Position the passenger side carpet.
- Clip on:
 - the control cable sleeve stop on the gearbox,
 - the gear control cable anchoring ball joint on the gearbox using pliers.

AJ0, and RIGHT-HAND DRIVE



122728

- the centre console (see **Centre console: Removal - Refitting** (MR 416, 57A, Interior equipment)),
- the gear lever knob.

- Turn the ring on the gear lever knob a sixteenth of a turn.

Refit and finger tighten:

- the gear control unit nut (4) ,
- the gear control unit nuts (3) (1) (2) .

Torque tighten in order the **gear control unit nuts (21 Nm)**.

Connect the connector to the gear control unit.

Clip the wiring harness on the control unit.

Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).

Check that the system and gear selection are working correctly.

III - FINAL OPERATION.

Clip on the left-hand air duct.

Refit the airbag computer protector.

Clip the wiring harness on the airbag computer protector.

Refit the control unit soundproofing.

Clip the wiring harness on the control unit.

Clip the carpet at the cutting point.

Place the gear selector in position R.

Refit:

- the rear centre air duct above the soundproofing,
- the clip from the rear centre air duct above the soundproofing,

AJ0, and LEFT-HAND DRIVE

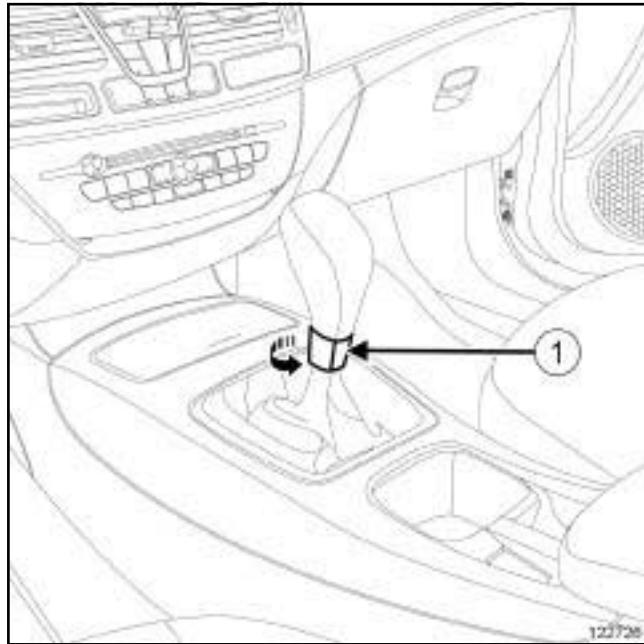
Tightening torques 

gear control unit nuts

21 N.m

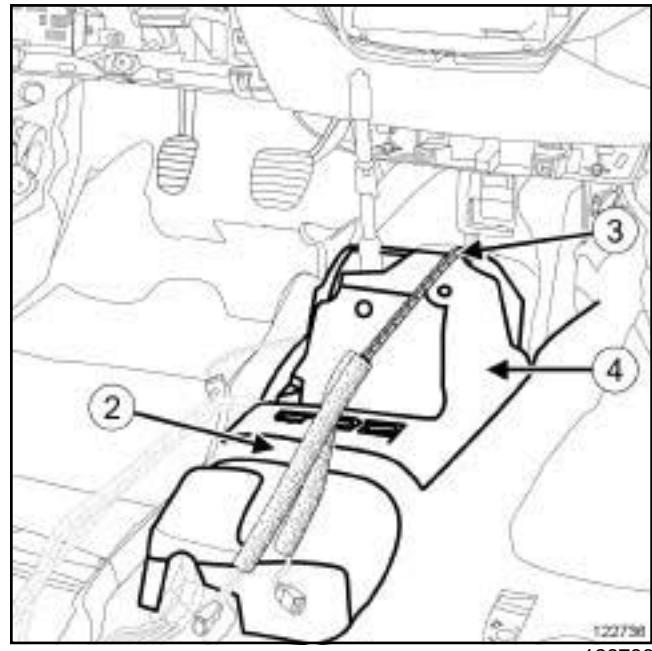
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the clip of the rear centre air duct above the soundproofing,
 - the rear centre air duct above the soundproofing.
- Place the gear selector in position **D**.



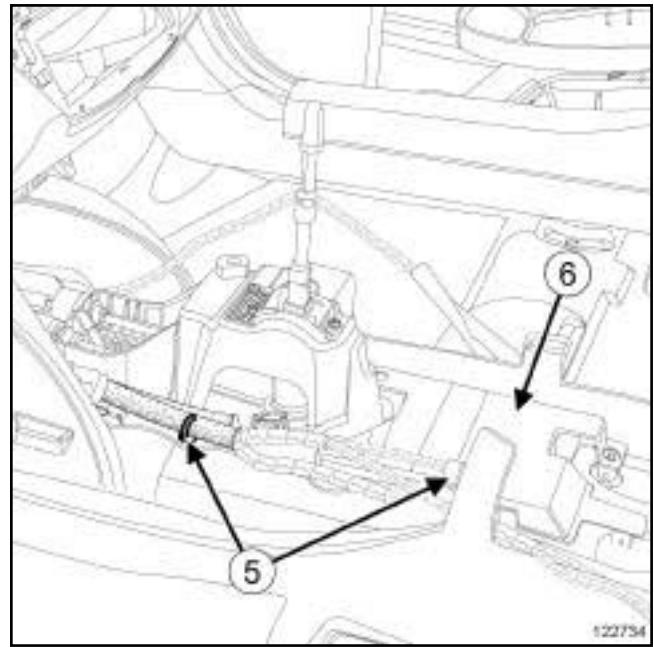
122736

- Cut the carpet at (2).
- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

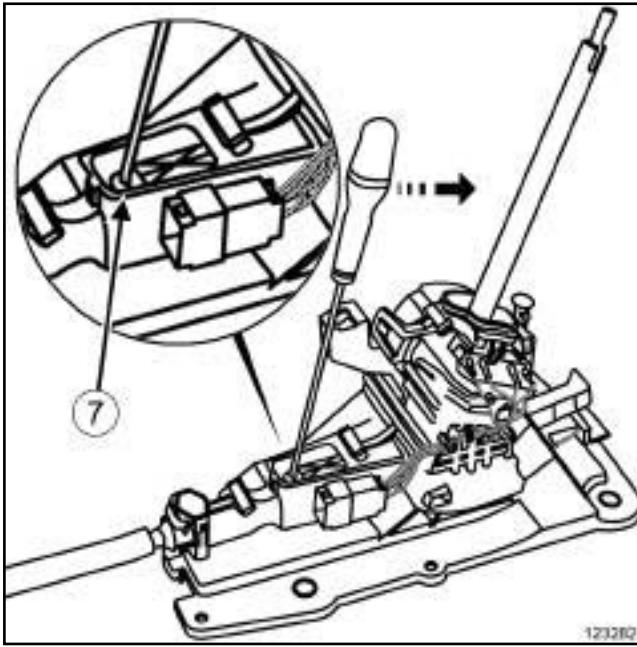


122734

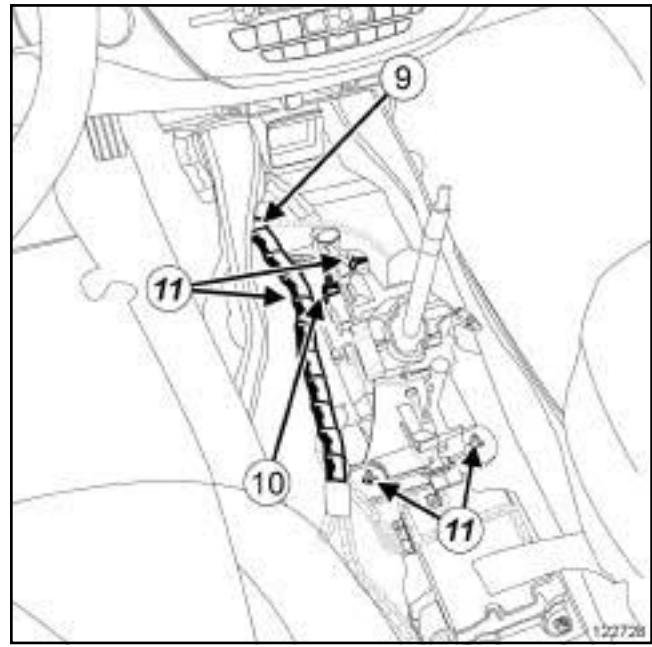
- Unclip the wiring at (5).
- Remove the airbag computer protector (6).

AJ0, and LEFT-HAND DRIVE

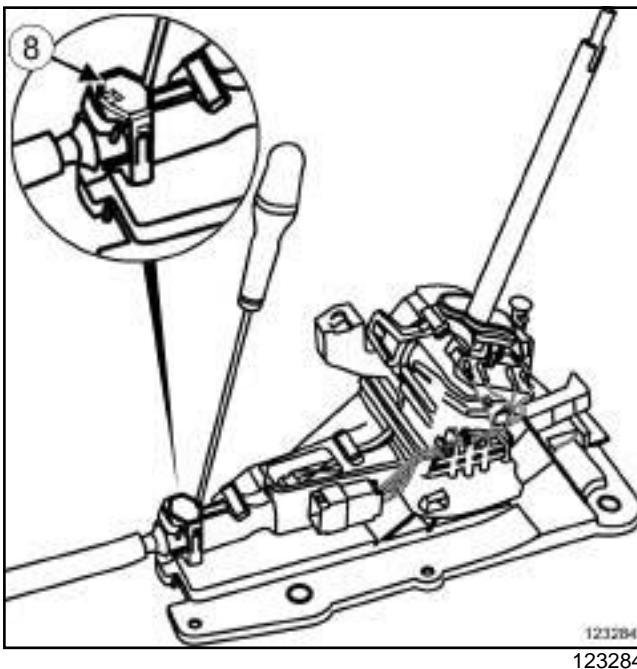
II - OPERATION FOR REMOVAL OF PART CONCERNED



- Unlock the clip (7) .



- Unclip the wiring on the control unit at (9) .
- Disconnect the connector (10) from the gear control unit.
- Remove:
 - the gear control unit nuts (11) ,
 - the gear control unit.



- Unlock the clip (8) .

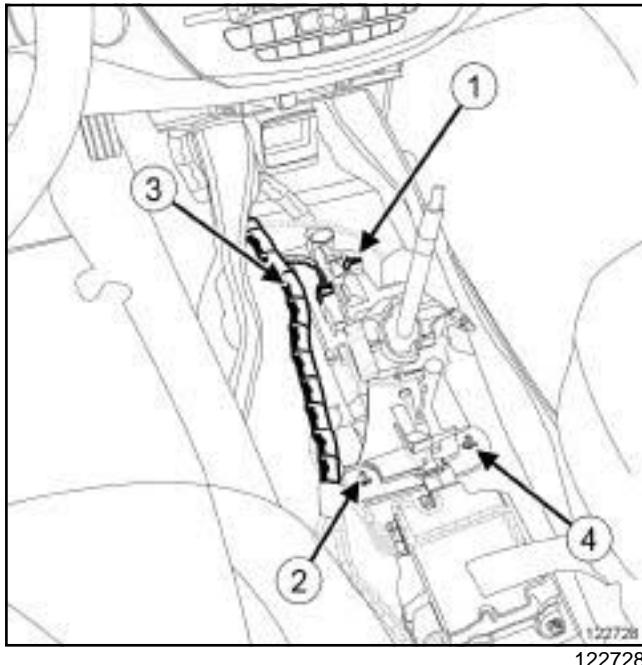
REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position D to allow the control cables to be anchored on the gearbox.

AJ0, and LEFT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED



Refit:

- the rear centre air duct above the soundproofing,
- the clip of the rear centre air duct above the soundproofing,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the gear lever knob.

Turn the ring on the gear lever knob a sixteenth of a turn.

Refit:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) ,and (3) .

Torque tighten in order the **gear control unit nuts (21 N.m)**.

Connect the connector to the gear control unit.

Clip:

- the wiring on the control unit,
- the gearbox control cable.

Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**) .

Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector and onto the reinforcement.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position **R**.

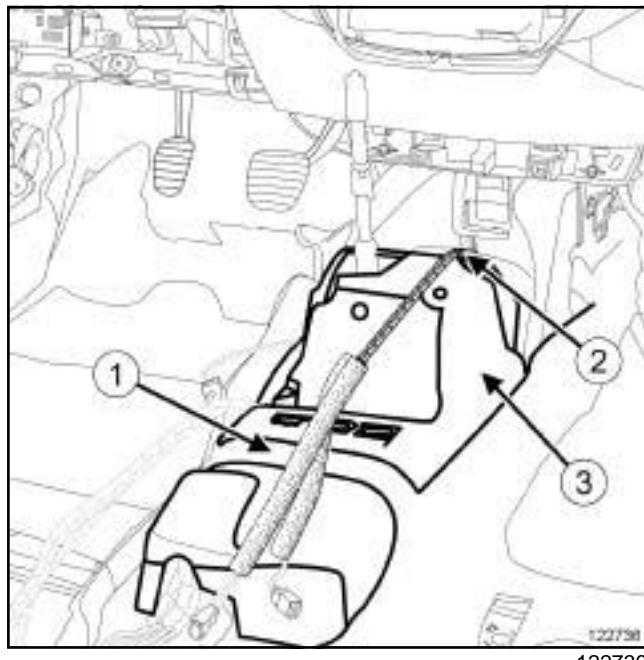
PK4 or TL4

Tightening torques 

gear control unit nuts	21 Nm
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REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Remove:
- the gear lever knob, by lifting it upwards,
 - the centre console (see **Centre console: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (MR 415, 61A, Heating system).

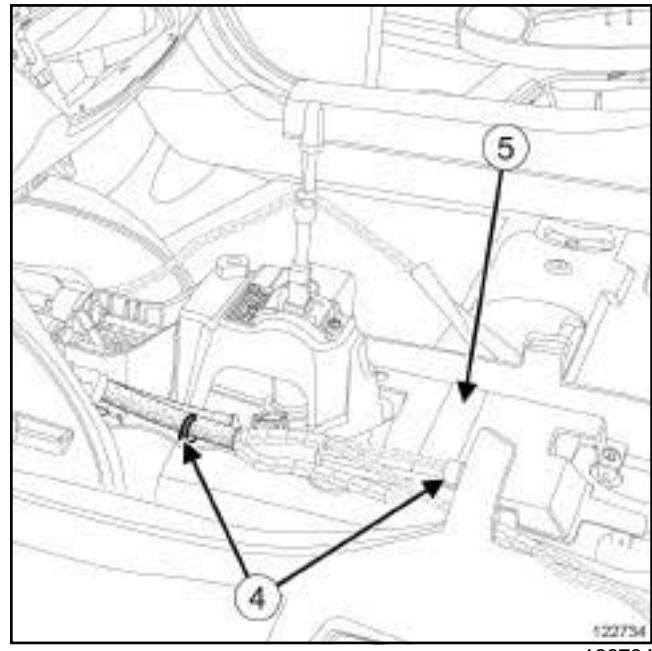


- Cut the carpet at (1) .
 Unclip the wiring harness on the control unit at (2) .

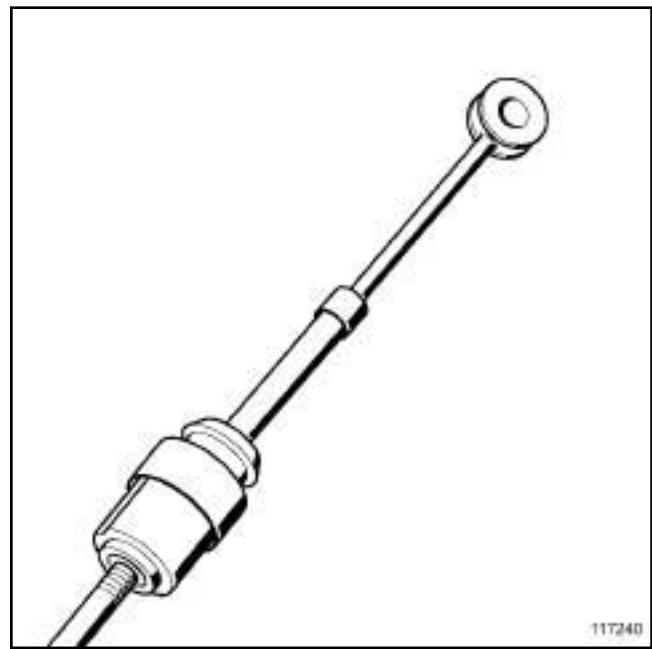
Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (3) from the control unit.

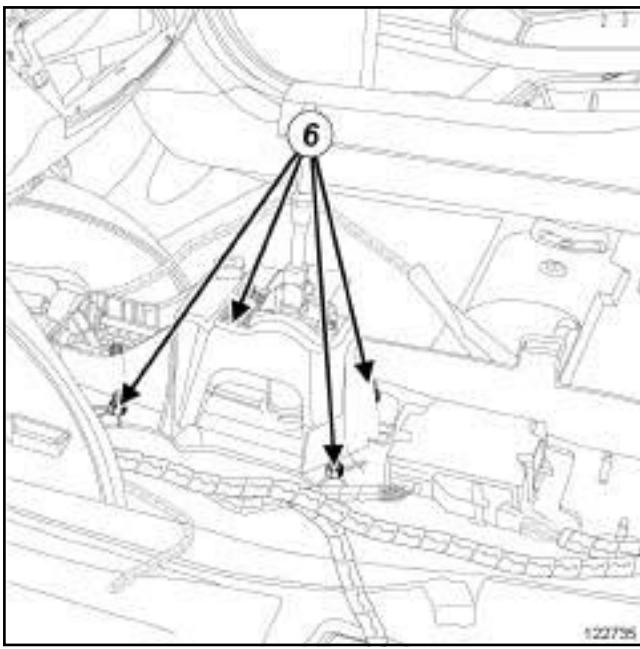


- Unclip the harness at (4) .
 Remove the airbag computer cover (5) .

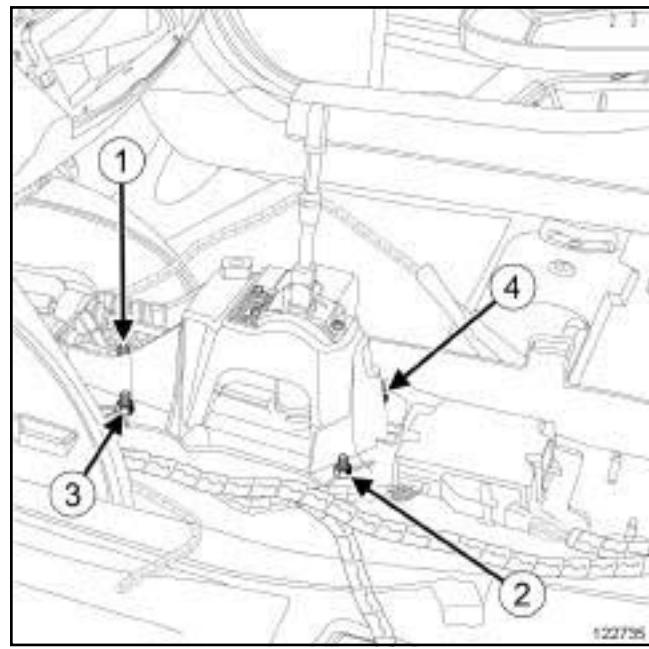
II - REMOVAL OPERATION FOR PART CONCERNED

- Unclip the control cables on the control unit at:
- the anchoring ball joint using an open-jawed spanner,
 - the anchoring ball joint by pressing the button,
 - the cable sleeve stops.

PK4 or TL4



122735



122735

- Remove the gear control unit nuts (6) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Clip on:

- the control cable sleeve stops on the control unit,
- the anchoring ball joint using an open-jawed spanner on the control unit,
- the anchoring ball joint by pressing the button on the control unit.

- Refit:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) (2) (3) .

- Tighten to torque and in order the **gear control unit nuts (21 Nm)**.

- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**) .

- Check that the system and gear selection are working correctly.

II - FINAL OPERATION.

- Refit the airbag computer protector.
- Clip the wiring harness onto the airbag computer protector and onto the control unit.
- Refit the control unit soundproofing.
- Clip the wiring harness on the control unit.
- Clip the carpet at the cutting point.
- Refit:
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**)
 - the centre console (see **Centre console: Removal - Refitting**) (MR 416, 57A, Interior equipment),
 - the gear lever knob.

D91, and AJ0, and RIGHT-HAND DRIVE

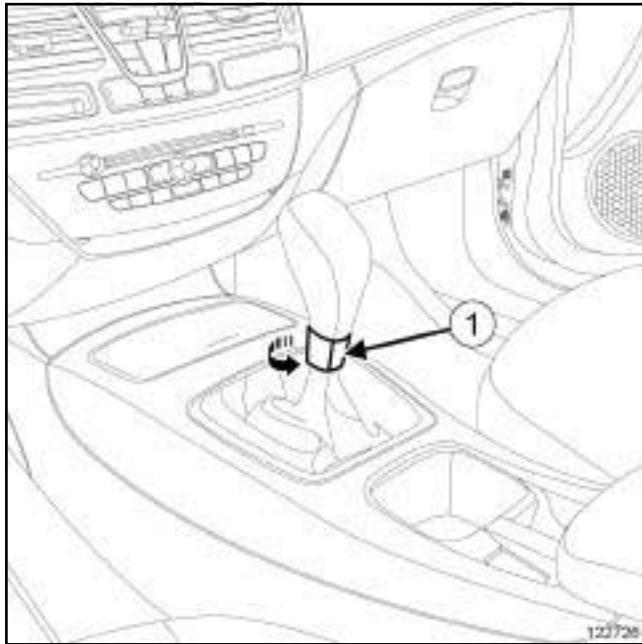
Tightening torques 

gear control unit nuts

21 N.m

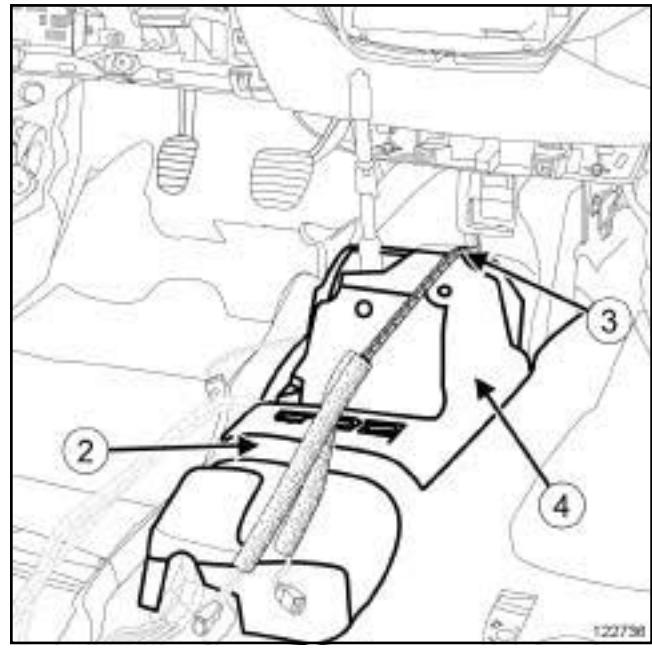
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position R.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, lifting it up and off,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the clip from the rear centre air duct above the soundproofing,
 - the rear centre air duct above the soundproofing.
- Place the gear selector in position D.



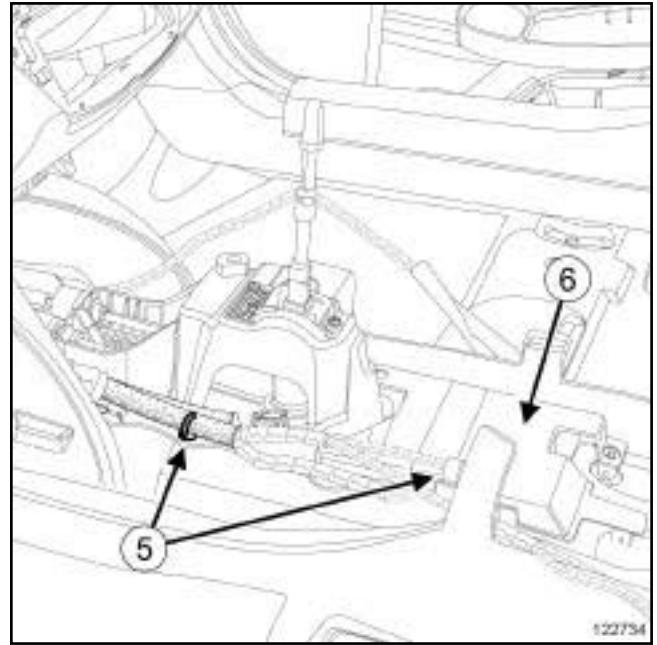
122736

- Cut the carpet at (2).
- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

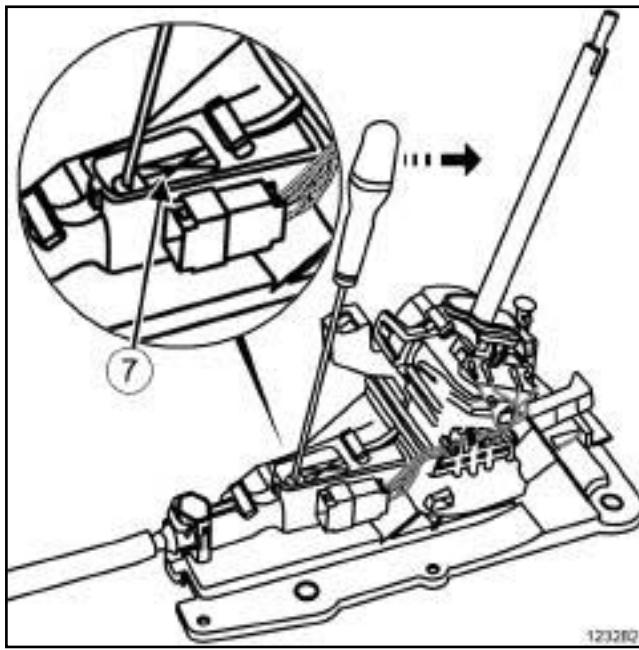


122734

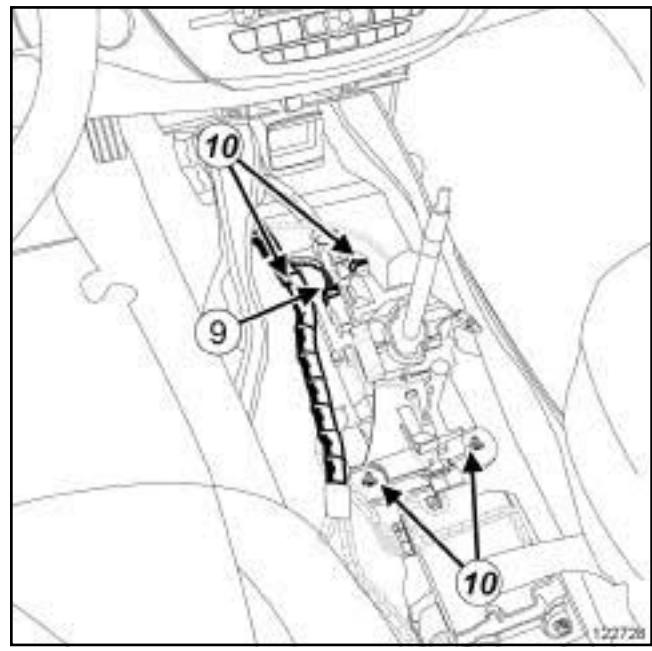
- Unclip the wiring at (5).
- Remove the airbag computer protector (6).

D91, and AJ0, and RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Release the white clip (7) using a screwdriver.



- Disconnect the gear control unit connector (9).

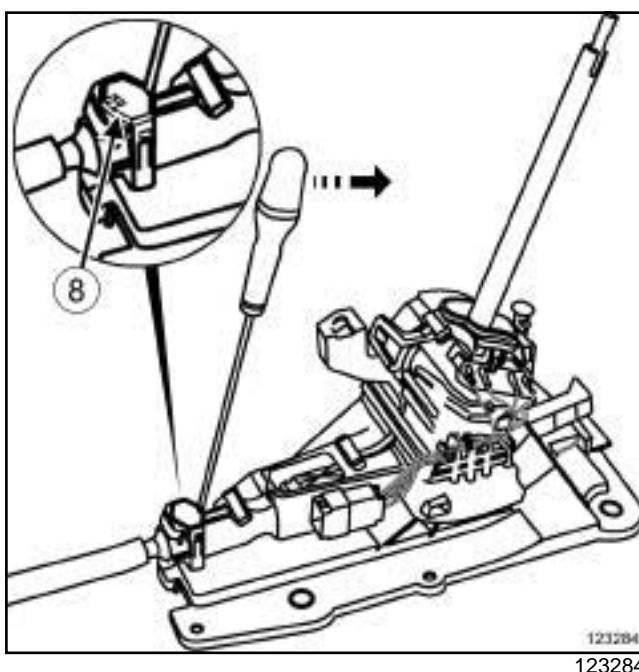
- Remove:

- the gear control unit nuts (10),
- the gear control unit.

REFITTING

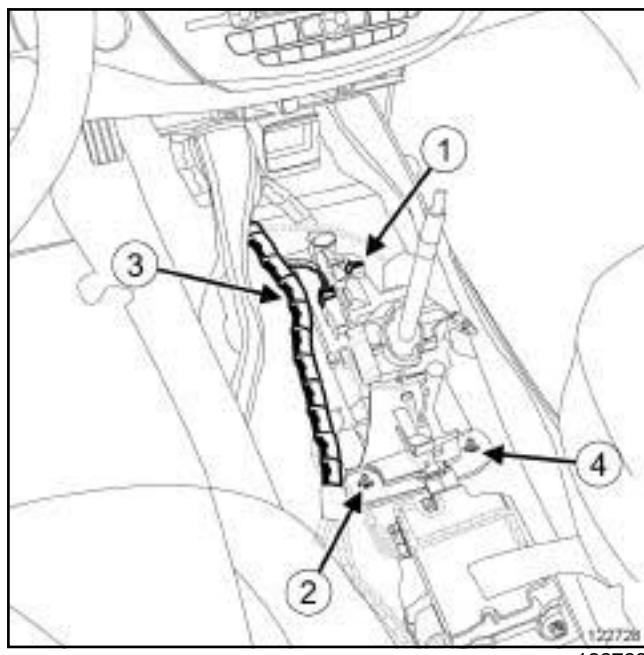
I - REFITTING OPERATION FOR PART CONCERNED

- Position the gear control unit.



- Release the white clip (8).

D91, and AJ0, and RIGHT-HAND DRIVE



122728

- Refit, without tightening, the gear control unit nuts (1) (2) (3) (4).
- Torque tighten in order the **gear control unit nuts (21 N.m)**.
- Connect the connector to the gear control unit.
- Clip the wiring onto the control unit.
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

II - FINAL OPERATION

- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position R.
- Refit:
 - the rear centre air duct above the soundproofing,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

D91, and AJ0, and LEFT-HAND DRIVE

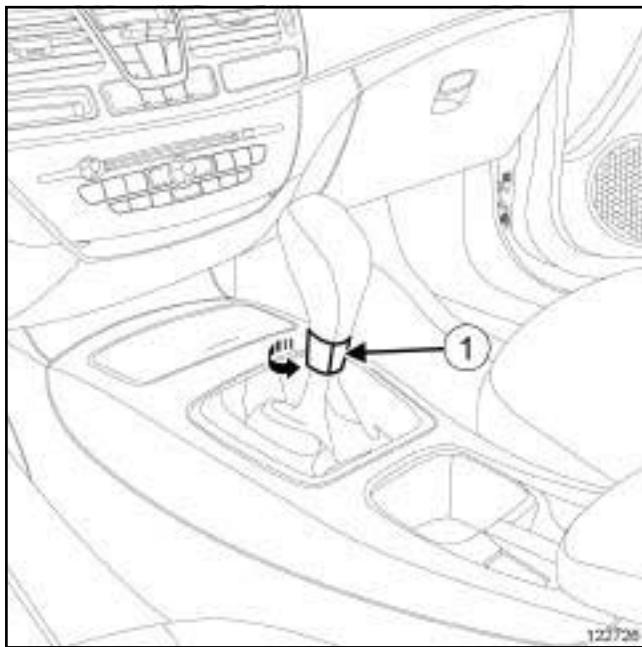
Tightening torques 

gear control unit nuts

21 N.m

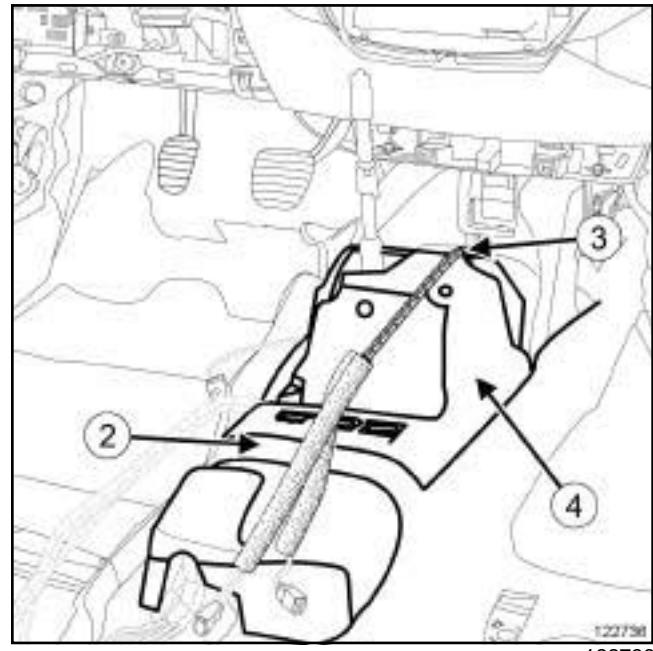
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position R.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, lifting it up and off,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the clip from the rear centre air duct above the soundproofing,
 - the rear centre air duct above the soundproofing.
- Place the gear selector in position D.



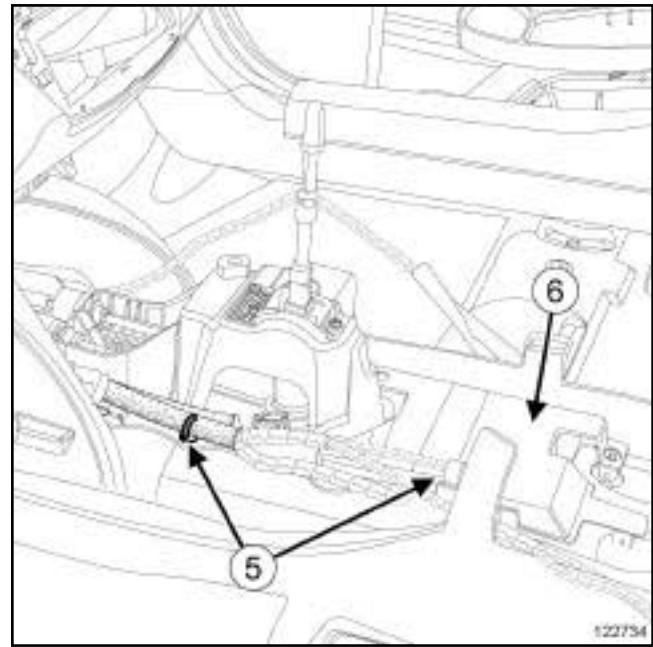
122736

- Cut the carpet at (2).
- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

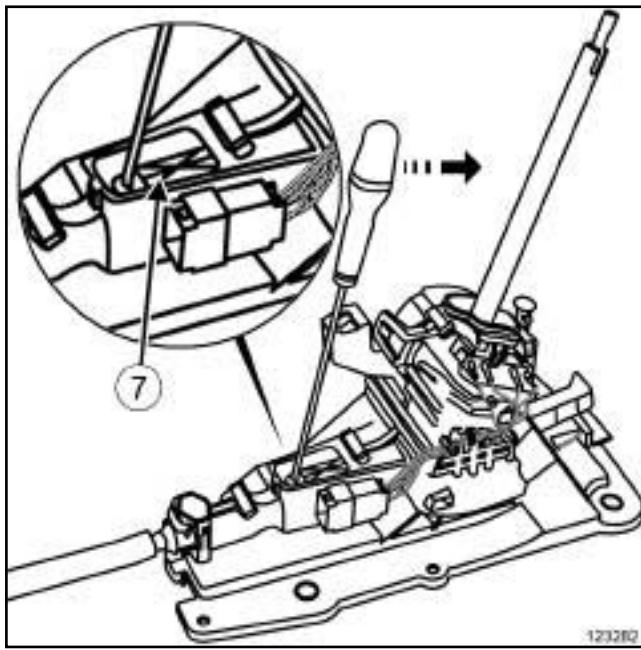
- Remove the soundproofing (4) from the control unit.



122734

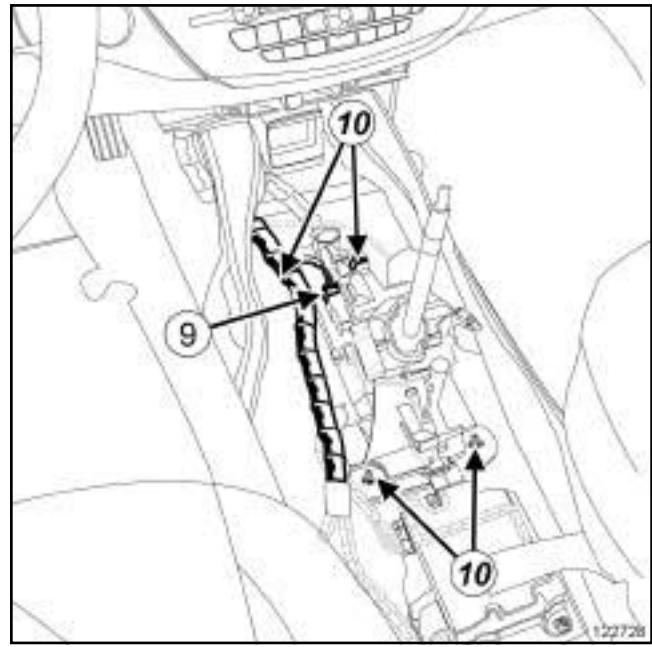
- Unclip the wiring at (5).
- Remove the airbag computer protector (6).

D91, and AJ0, and LEFT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED


123282

- Release the white clip (7) using a screwdriver.



122728

- Disconnect the gear control unit connector (9).

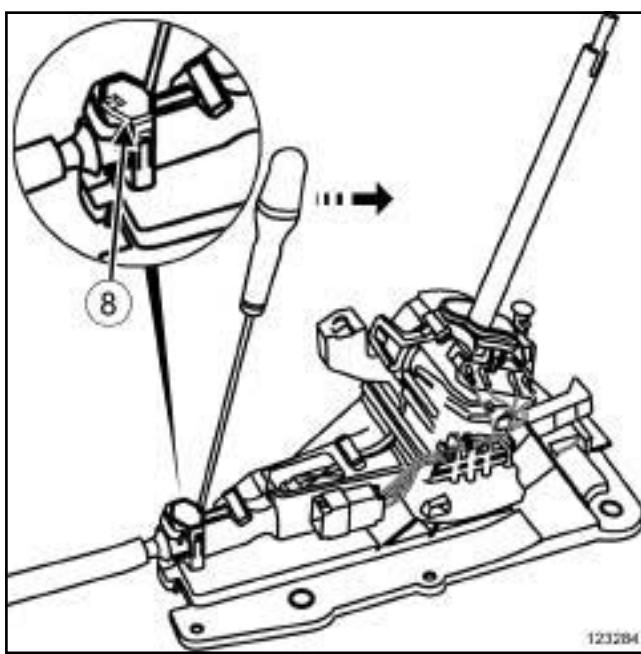
- Remove:

- the gear control unit nuts (10),
- the gear control unit.

REFITTING

I - REFITTING OPERATING FOR THE PART CONCERNED

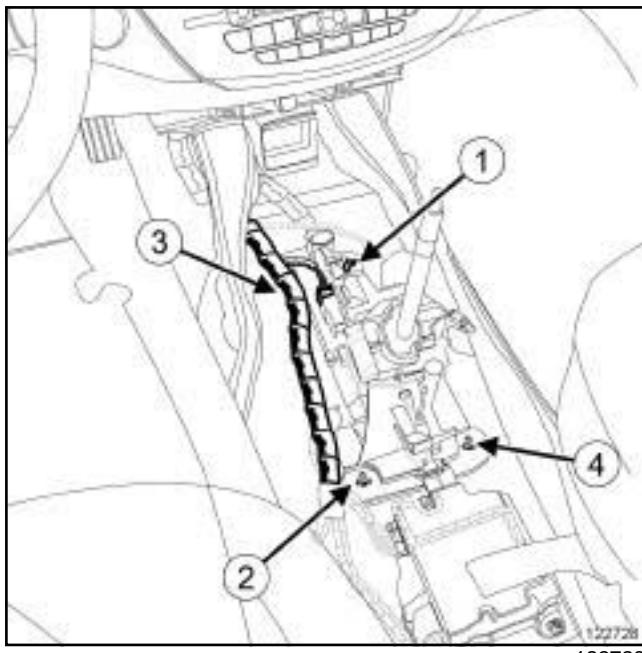
- Position the gear control unit.



123284

- Release the white clip (8).

D91, and AJ0, and LEFT-HAND DRIVE



122728

- Refit, without tightening, the gear control unit nuts (1) (2) (3) (4).
- Torque tighten in order the **gear control unit nuts (21 N.m)**.
- Connect the connector to the control unit.
- Clip the wiring onto the control unit.
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

II - FINAL OPERATION

- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position R.
- Refit:
 - the rear centre air duct above the soundproofing,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

AJ0

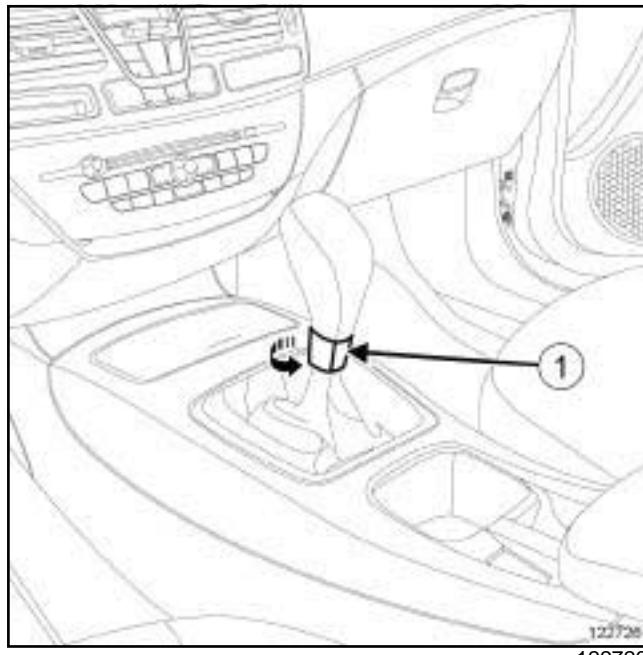
If replaced, adjust:

- the multifunction switch,
- the control unit cable,
- the gearbox,
- the control unit.

Vehicle	Type of gearbox	Adjustment values	Position of lever	Position on gearbox
X91	AJ0	Automatic	D	D

I - ADJUSTMENT PREPARATION OPERATION

- Place the gear selector in position R.



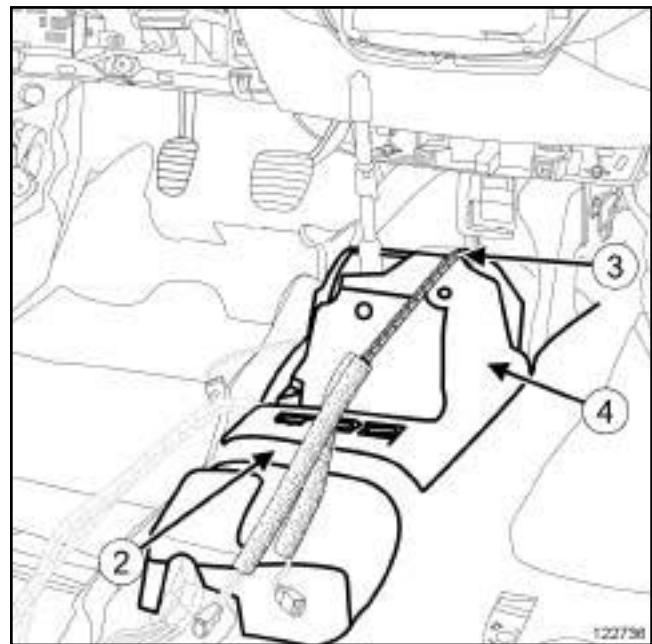
122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.

- Remove:

- the gear lever knob, by lifting it upwards,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the clip from the rear centre air duct above the soundproofing,
- the rear centre air duct above the soundproofing.

- Place the gear selector in position D.



122736

- Cut the carpet at (2).

- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

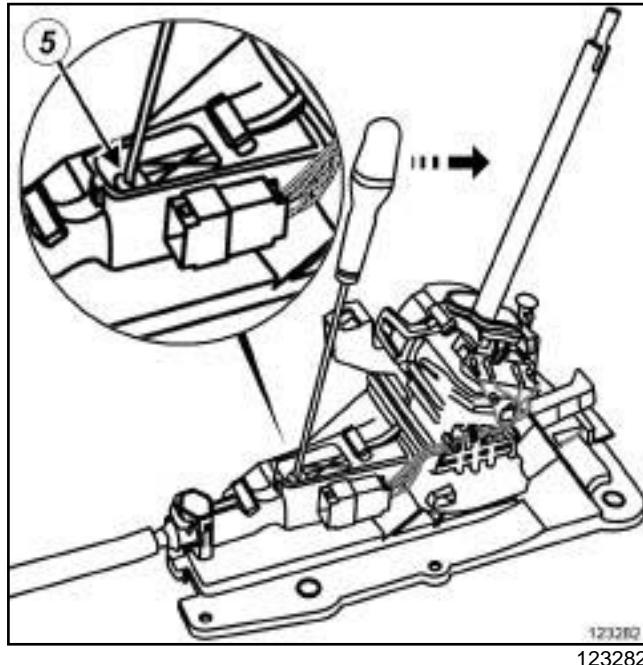
- Remove the soundproofing (4) from the control unit.

LEFT-HAND DRIVE

- Remove the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

AJ0

II - ADJUSTMENT OPERATION

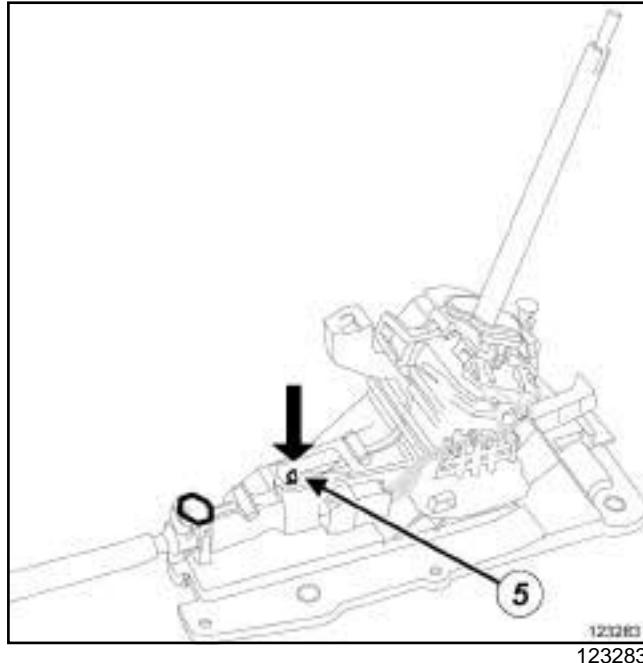


- Unlock the clip (5) using a screwdriver.

Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

- Check the position of the multifunction switch at **D**.



- Lock the clip (5).
- Engage several gears in order to check that the clip is correctly secured in its housing.

III - FINAL OPERATION

LEFT-HAND DRIVE

- Refit the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).
- Refit the control unit soundproofing.
- Clip the carpet at the cutting point.
- Clip the wiring onto the control unit.
- Place the gear selector in position **R**.
- Refit:
 - the rear centre air duct above the soundproofing,
 - the clip from the rear centre air duct above the soundproofing,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

PK4 or TL4

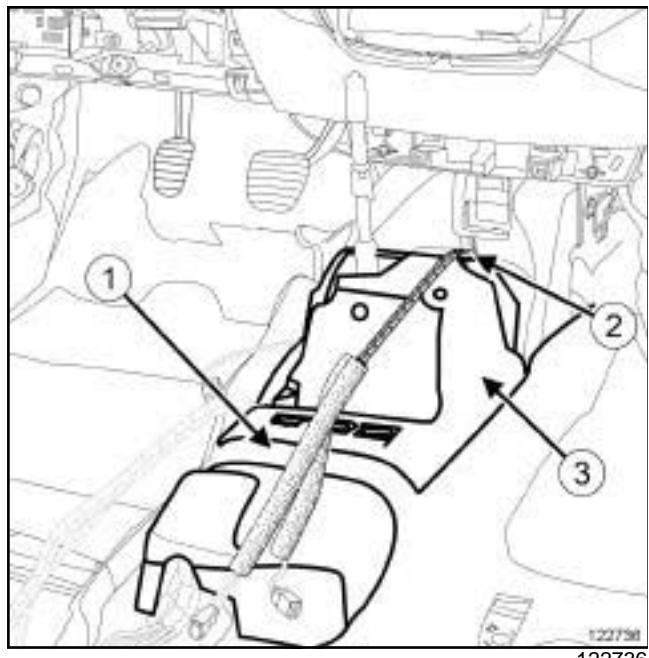
If replaced, adjust:

- the control unit cable,
- the gearbox,
- the control unit.

Vehicle	Type of gearbox	Adjustment values	Position of lever	Position on gearbox
X91	PK4	4.5 mm	Neutral	Neutral
X91	TL4	4.9 mm	Neutral	Neutral

I - ADJUSTMENT PREPARATION STAGE Remove:

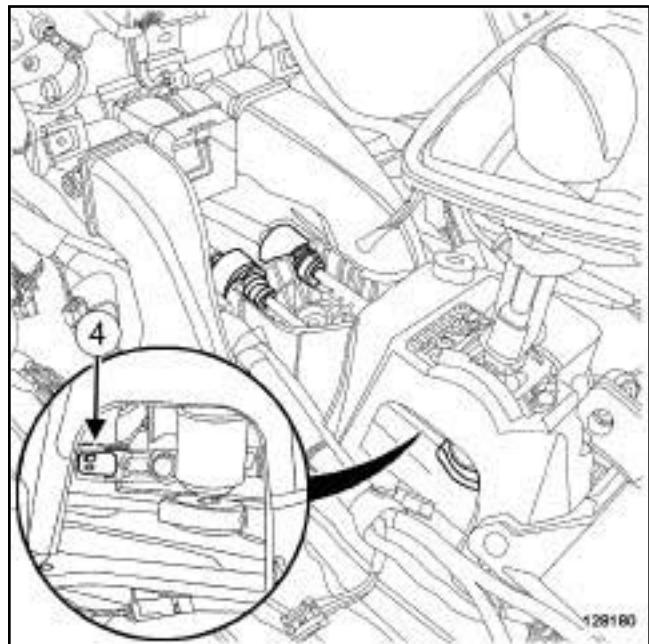
- the gear lever knob, by lifting it upwards,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).

 Cut the carpet at (1). Unclip the wiring on the control unit at (2).**Note:**

Do not damage the control unit soundproofing.

 Remove the soundproofing (3) from the control unit.**LEFT-HAND DRIVE**

- Remove the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

II - ADJUSTMENT OPERATION

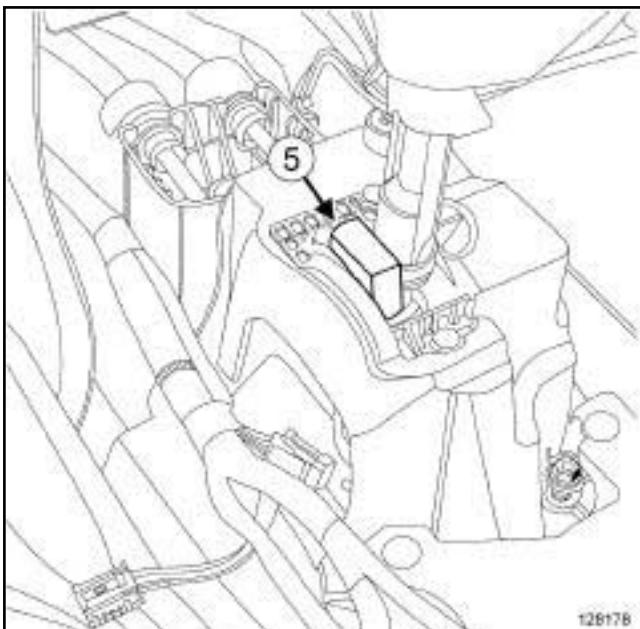
- Unlock the clip (4) using a screwdriver.

Note:

The external control unit lever and the levers on the gearbox must always be in the **neutral** position.

- Check the position of the levers on the gearbox.

PK4 or TL4



128178

- Put the permanent shim (5) between the trigger and the reverse gear interlock.

Note:

Do not apply pressure to the shims and to the lever during adjustment.

- Lock the clip with the shim in place.
- Engage several gears in order to check that the clip is correctly secured in its housing.

III - FINAL OPERATION.**LEFT-HAND DRIVE**

- Refit the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Refit:
 - the middle air distribution duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.

AJ0, and RIGHT-HAND DRIVE

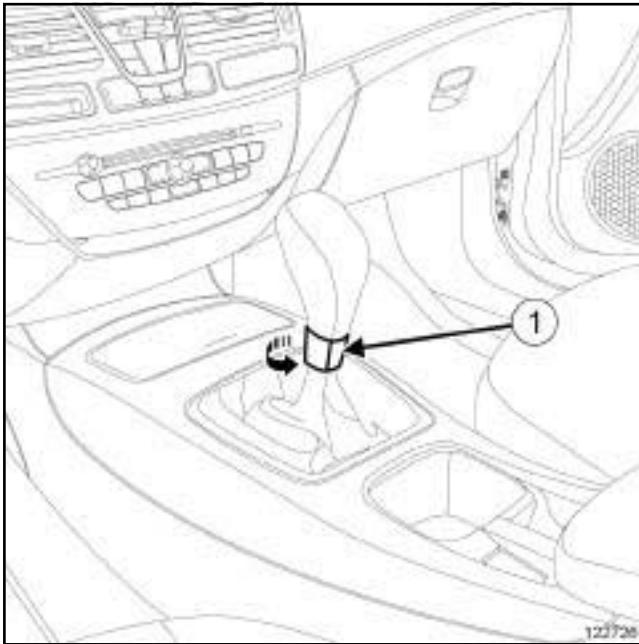
Tightening torques 

gear control unit nuts

21 N.m

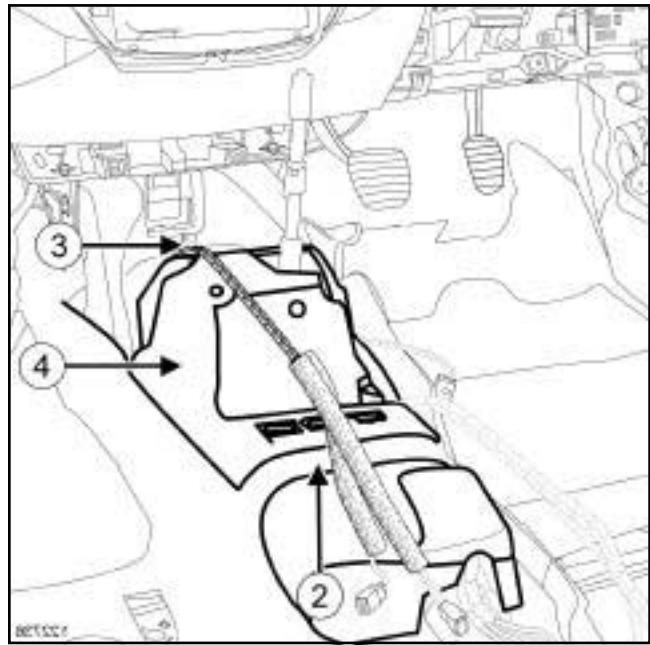
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
 - the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



122736

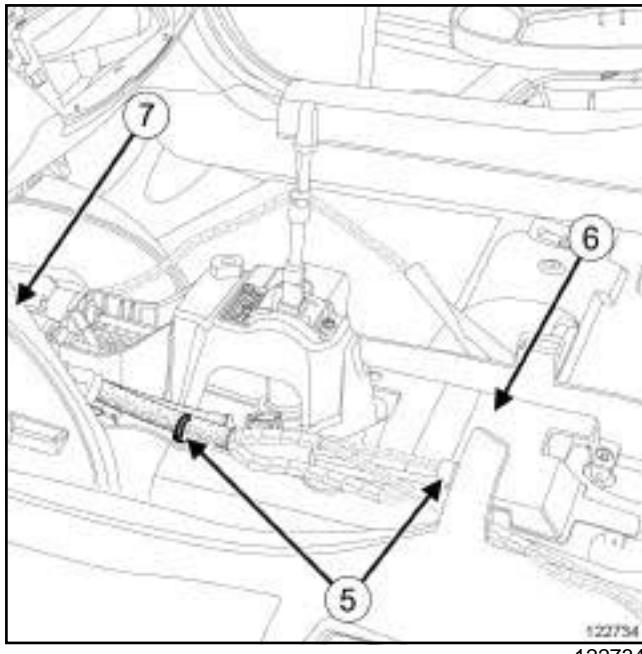
- Cut the carpet at (2) .
- Unclip the wiring on the control unit at (3) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

AJ0, and RIGHT-HAND DRIVE



122734

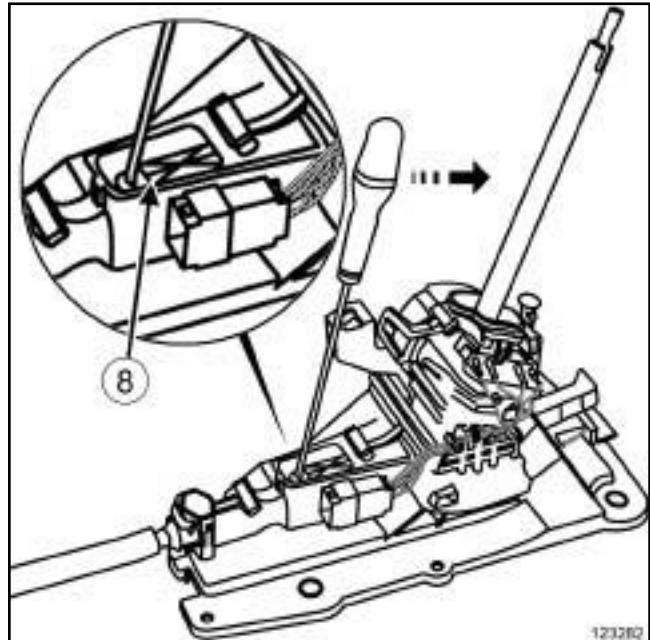
 Unclip:

- the wiring at (5),
- the left-hand air duct (7).

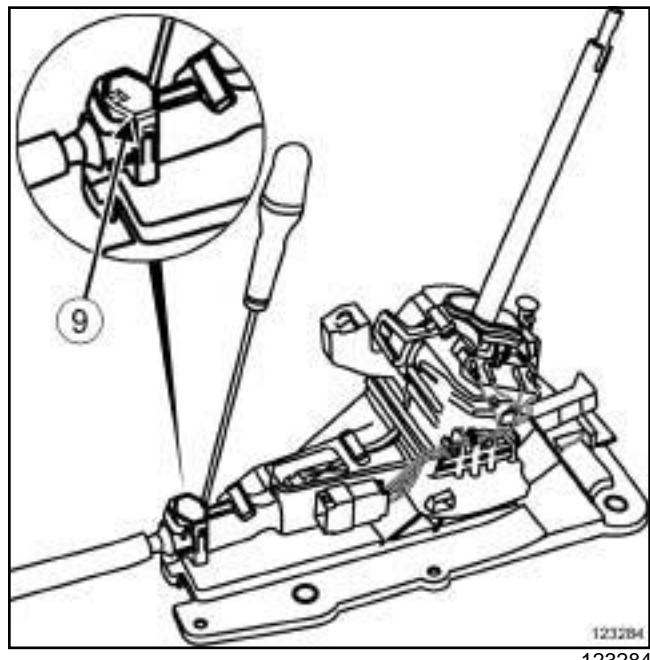
 Remove:

- the airbag computer protector (6),
- the control unit (see 37A, Mechanical component controls, Gear control unit: Removal - Refitting, page 37A-95).

II - OPERATION FOR REMOVAL OF PART CONCERNED



123282

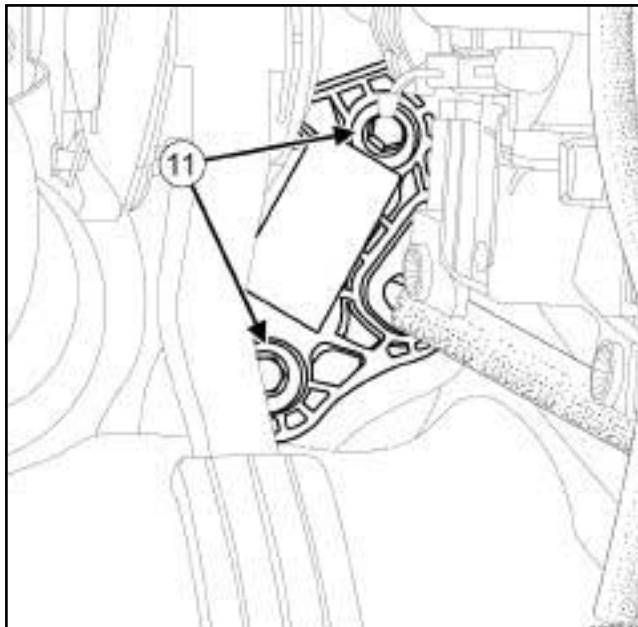
 Unlock the clip (8).

123284

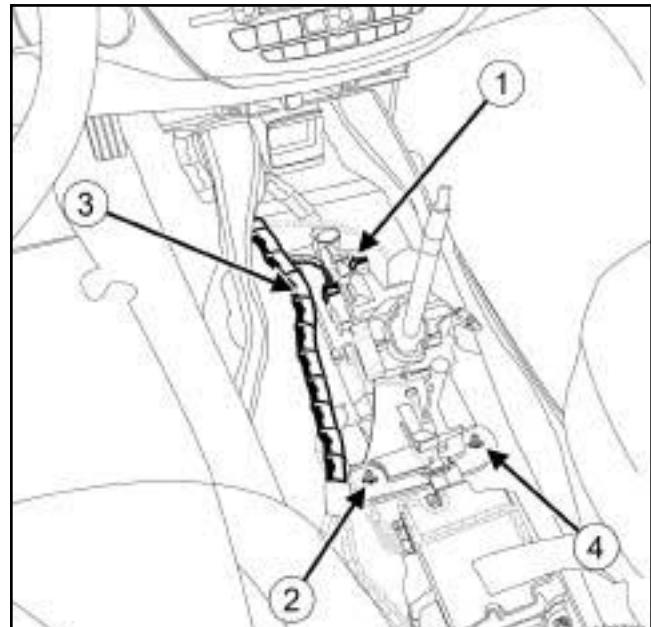
 Unlock the clip (9). Unclip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

AJ0, and RIGHT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (11) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

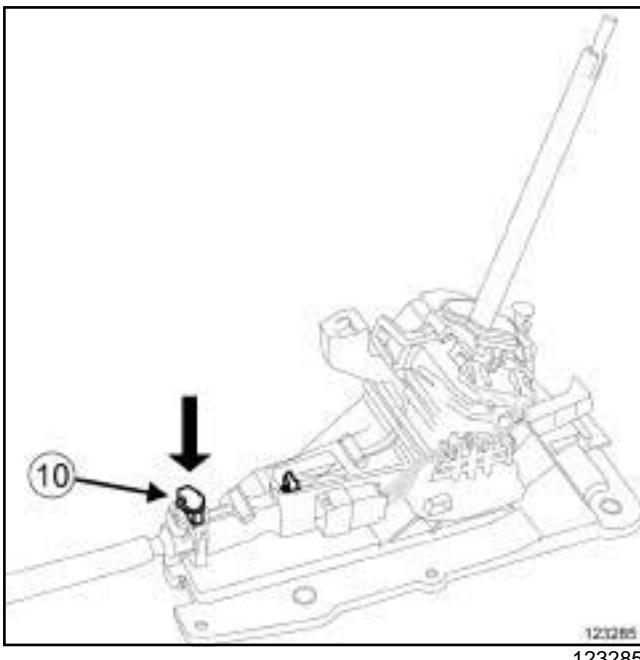
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

AJ0, and RIGHT-HAND DRIVE



- Press the clip (10) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position R.
- Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

AJ0, and LEFT-HAND DRIVE

Tightening torques 

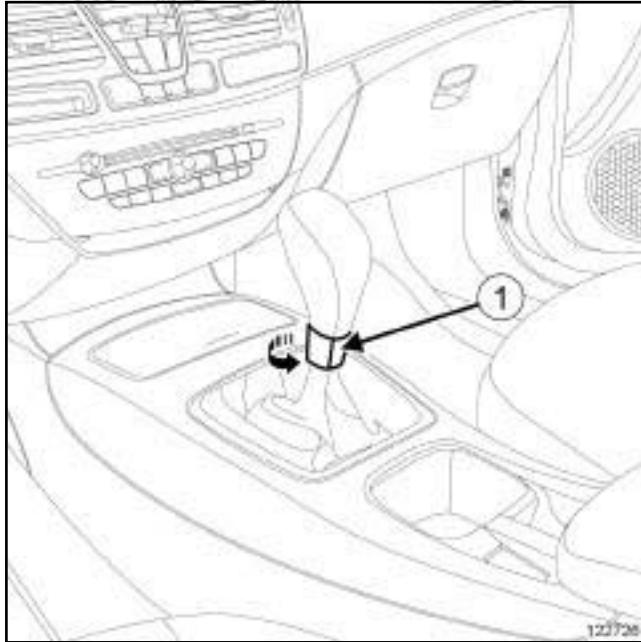
gear control unit nuts

21 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Place the gear selector in position **R**.



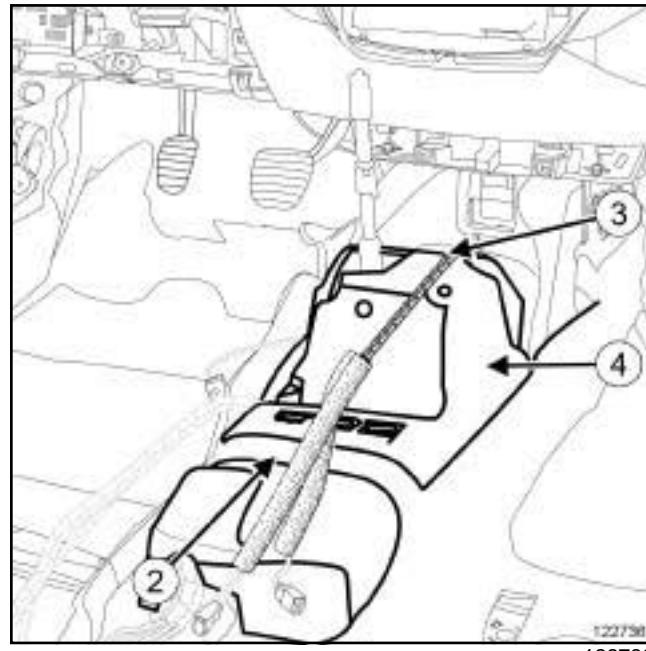
122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.

 Remove:

- the gear lever knob, by lifting it upwards,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the middle centre air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).

- Place the gear selector in position **D**.



122736

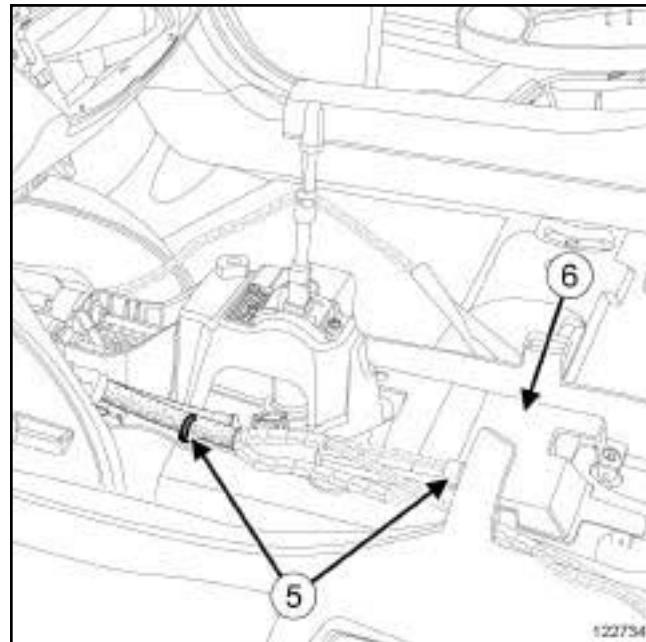
- Cut the carpet at (2) .

- Unclip the wiring on the control unit at (3) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

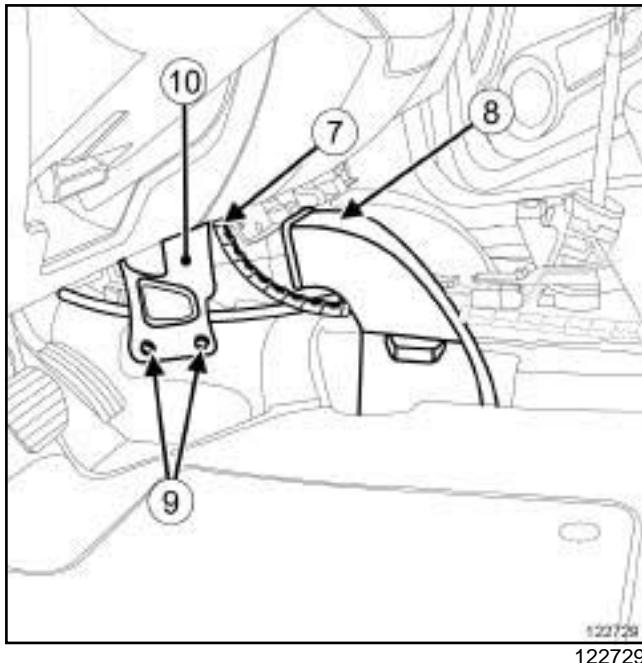


122734

- Unclip the wiring at (5) .

- Remove the airbag computer protector (6) .

AJ0, and LEFT-HAND DRIVE

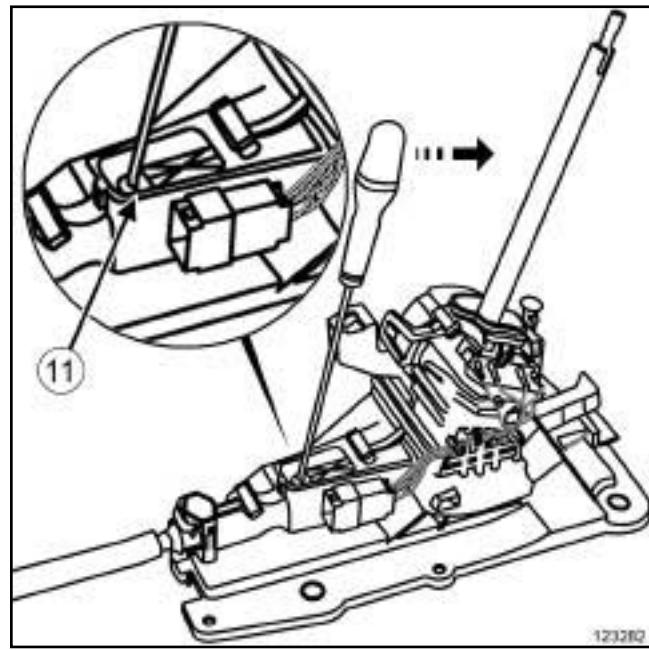
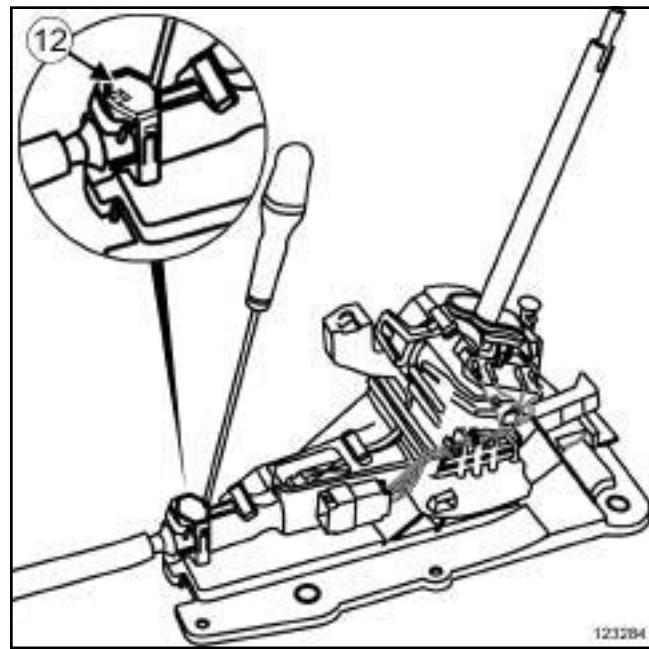
 Unclip:

- the wiring on the reinforcement at (7) ,
- the left-hand air duct (8) .

 Remove:

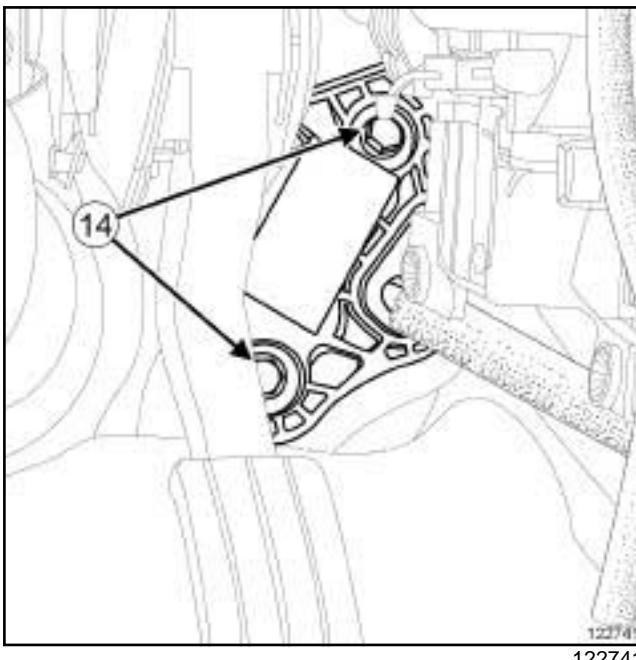
- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
- the reinforcement upper nuts,
- the reinforcement lower bolts (9) ,
- the reinforcement (10) ,
- the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-19) ,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting**, page 37A-95) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

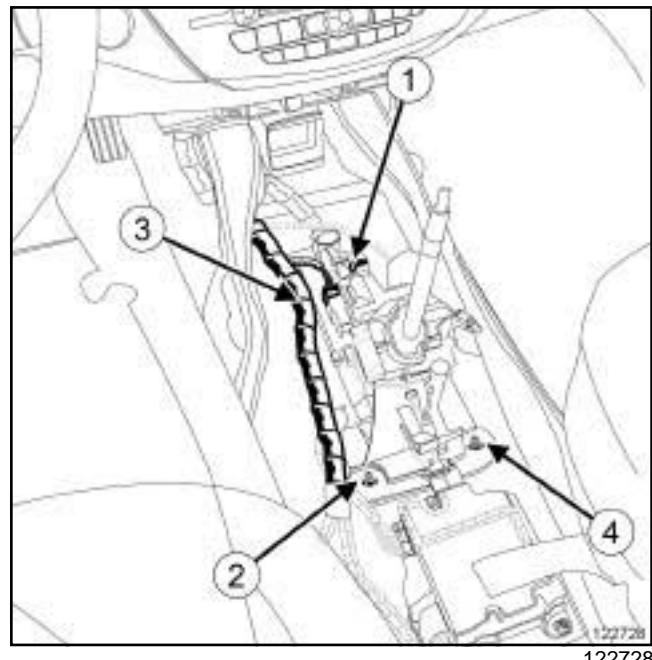
 Unlock the clip (11) . Unlock the clip (12) . Unclip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

AJ0, and LEFT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (14) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) ,and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

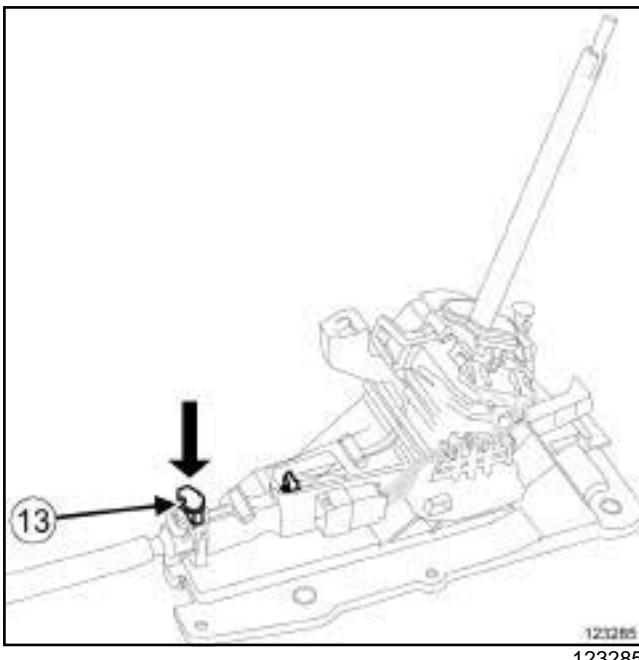
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

AJ0, and LEFT-HAND DRIVE



- Press the clip (13) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**) .
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Refit:
 - the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).
 - the reinforcement,
 - the reinforcement lower bolts,
 - the reinforcement upper nuts,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
 - the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page **37A-19**) .
- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector and onto the reinforcement.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.

Place the gear selector in position R.

Refit:

- the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
- the gear lever knob.

Turn the ring on the gear lever knob a sixteenth of a turn.

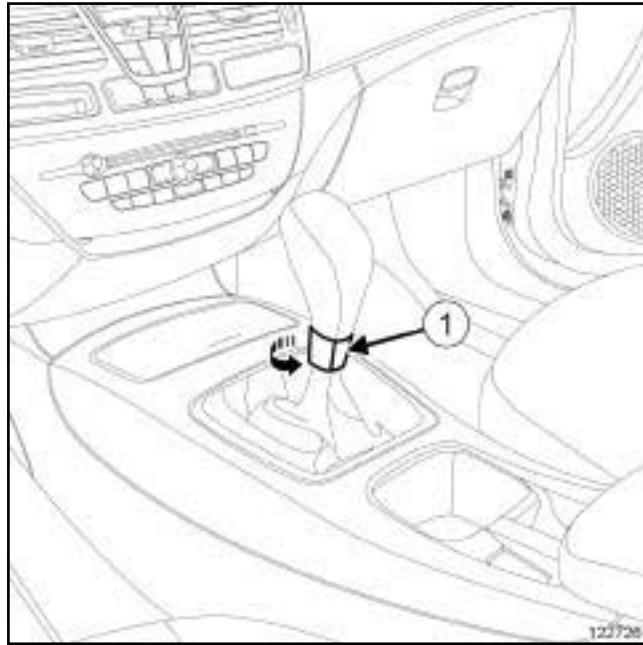
D91, and AJ0, and LEFT-HAND DRIVE

Tightening torques 

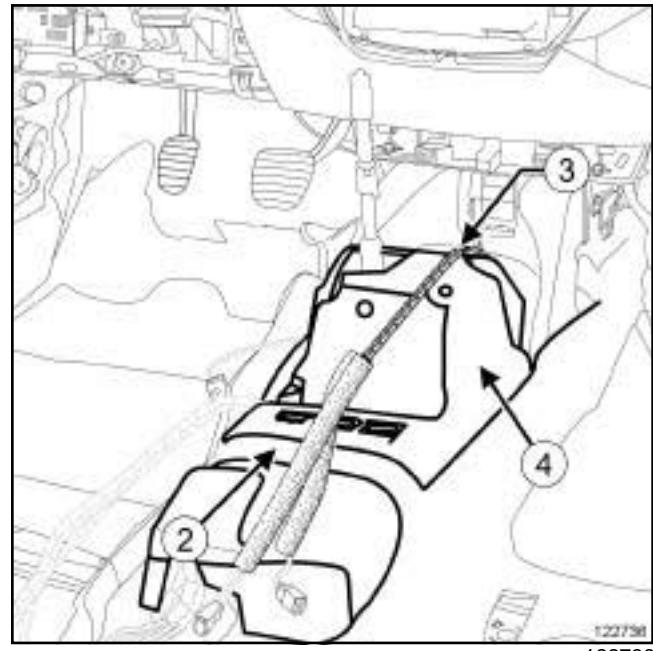
gear control unit nuts	21 N.m
air filter unit air outlet pipe clip on the throttle valve	5.5 N.m
clip of the air filter unit air outlet pipe	6 N.m

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
- the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



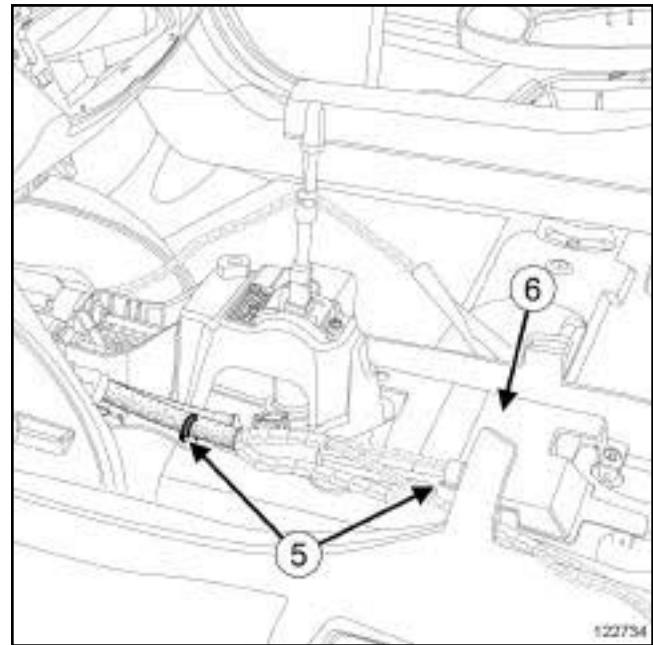
- Cut the carpet at (2).

- Unclip the wiring on the control unit at (3).

Note:

Do not damage the control unit soundproofing.

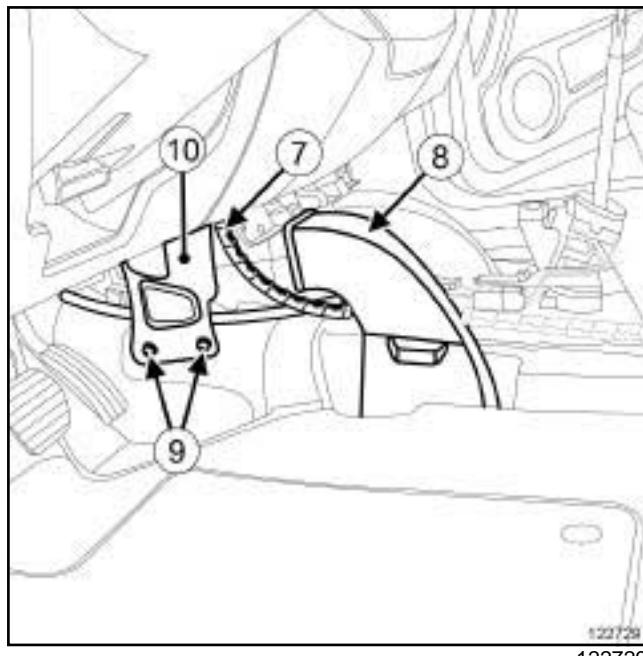
- Remove the soundproofing (4) from the control unit.



- Unclip the wiring at (5).

- Remove the airbag computer protector (6).

D91, and AJ0, and LEFT-HAND DRIVE



122729

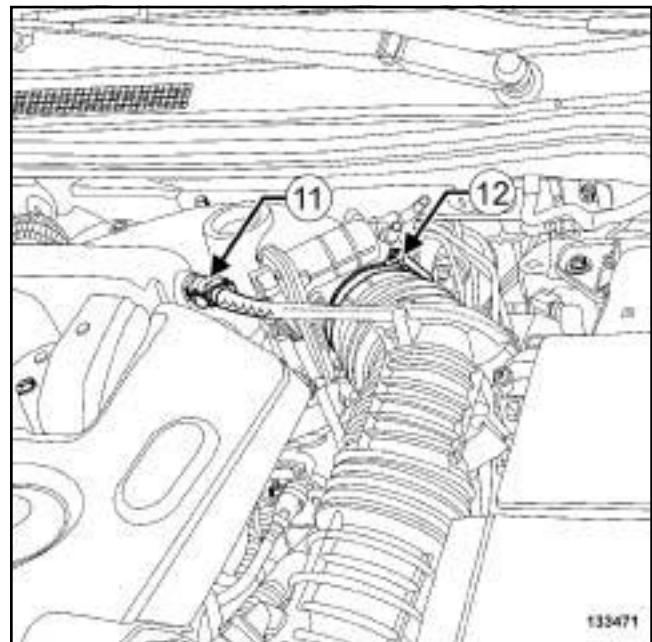
 Unclip:

- the wiring on the reinforcement at (7) ,
- the left-hand air duct (8) .

 Remove:

- the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
- the reinforcement upper nuts,
- the reinforcement lower bolts (9) ,
- the reinforcement (10) ,
- the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page 37A-19) ,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting**, page 37A-95) .

V4Y



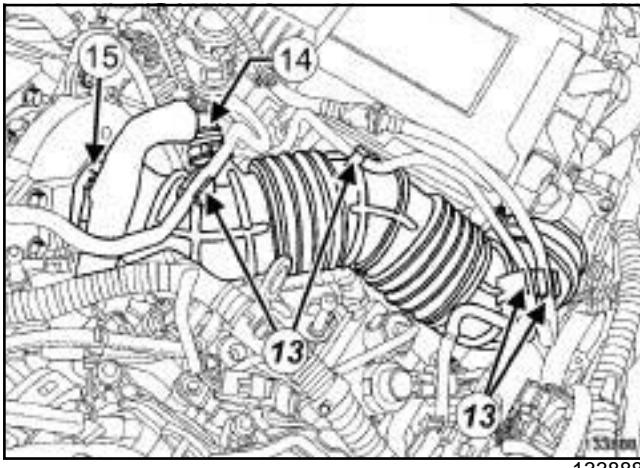
133471

 Remove the front engine cover.

- Disconnect the non-return valve pipe (11) from the intake distributor.
- Unclip the non-return valve pipe from the air filter unit air outlet pipe.
- Loosen the clip (12) on the air filter unit air outlet pipe on the throttle valve.
- Remove the air outlet pipe from the air filter box.

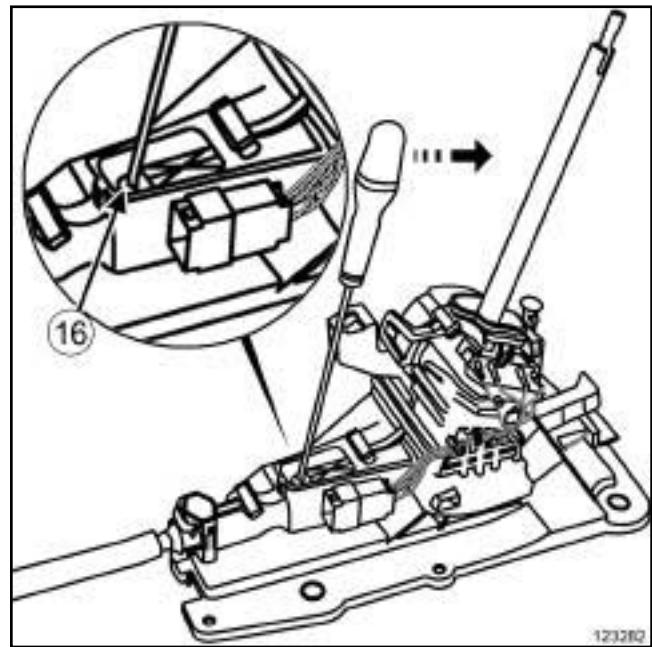
D91, and AJ0, and LEFT-HAND DRIVE

V9X

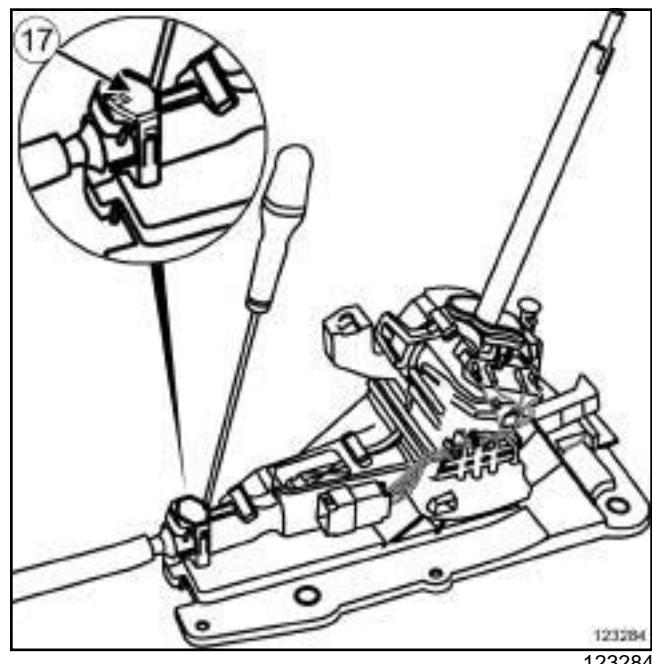


- Unclip the vacuum pipes (13) from the air filter unit air outlet pipe.
- Disconnect the oil vapour rebreathing pipe (14).
- Loosen the clip (15) of the air outlet pipe on the air filter unit.
- Remove:
 - the air outlet pipe to the air filter unit,
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit).

II - OPERATION FOR REMOVAL OF PART CONCERNED

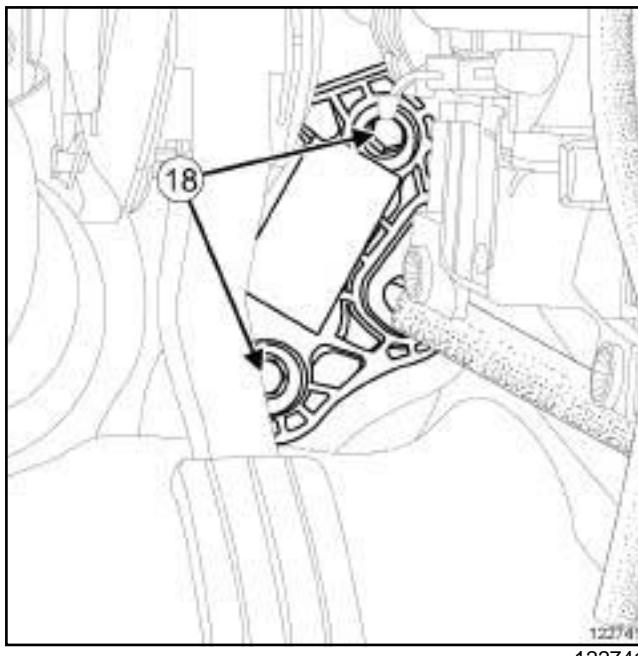


- Unlock the clip (16).

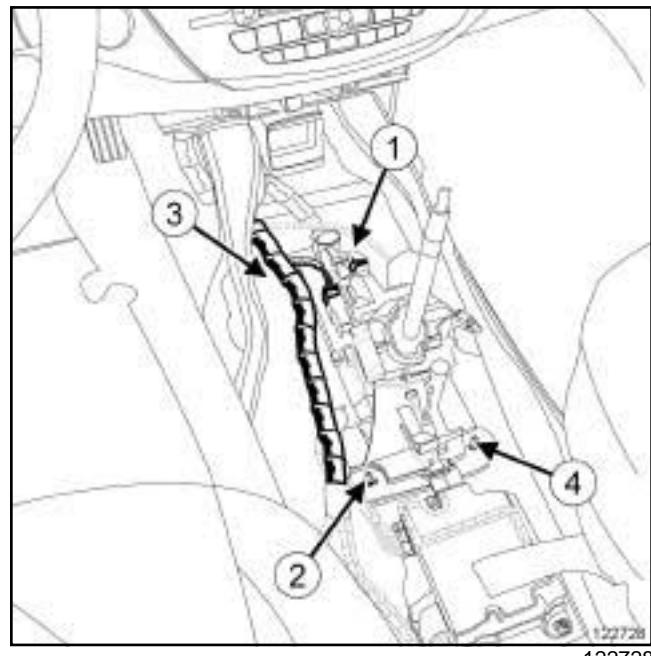


- Unlock the clip (17).
- Unclip:
 - the control cable sleeve stop on the gearbox,
 - the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

D91, and AJ0, and LEFT-HAND DRIVE



122741



122728

Remove:

- the bolts (18) of the control cable seal on the bulkhead,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts (21 N.m)**.

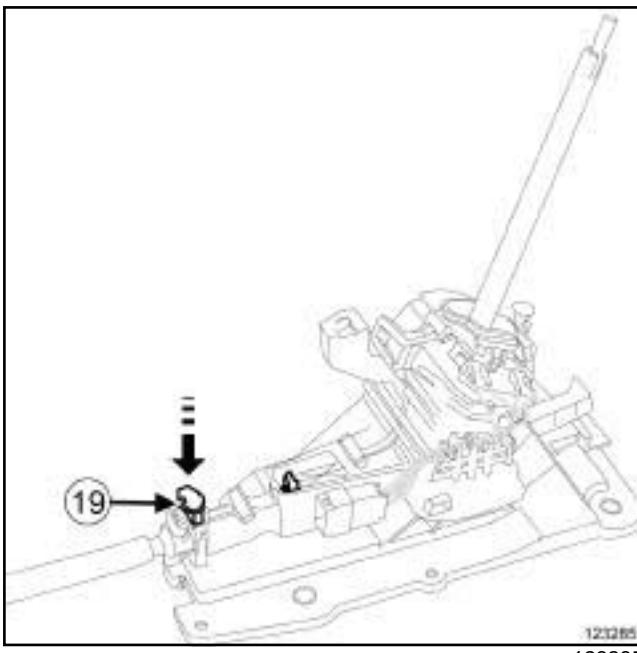
Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

D91, and AJ0, and LEFT-HAND DRIVE



- Press the clip (19) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment**, page **37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Refit:
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the reinforcement,
 - the dashboard lower trim (see **Dashboard lower trim: Removal - Refitting**) (57A, Interior equipment),
 - the accelerator pedal (see **37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**, page **37A-19**).
-
- V4Y**

 - Refit the air filter unit air outlet pipe on the throttle valve.
 - Torque tighten the **air filter unit air outlet pipe clip on the throttle valve (5.5 N.m)**.
 - Connect the non-return valve pipe on the intake distributor.
 - Clip the non-return valve pipe onto the air filter unit air outlet pipe.
 - Refit the engine cover.
- V9X**

 - Refit:
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the air outlet pipe of the air filter unit.
 - Torque tighten the **clip of the air filter unit air outlet pipe (6 N.m)**.
 - Connect the oil vapour rebreathing pipe.
 - Clip the vacuum pipes onto the air filter unit air outlet pipe.
- Clip on the left-hand air duct.
 - Refit the airbag computer protector.
 - Clip the wiring onto the airbag computer protector and onto the reinforcement.
 - Refit the control unit soundproofing.
 - Clip the wiring onto the control unit.
 - Clip the carpet at the cutting point.
 - Place the gear selector in position **R**.
 - Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
 - Turn the ring on the gear lever knob a sixteenth of a turn.

MECHANICAL COMPONENT CONTROLS

Automatic gear control cable: Removal - Refitting

37A

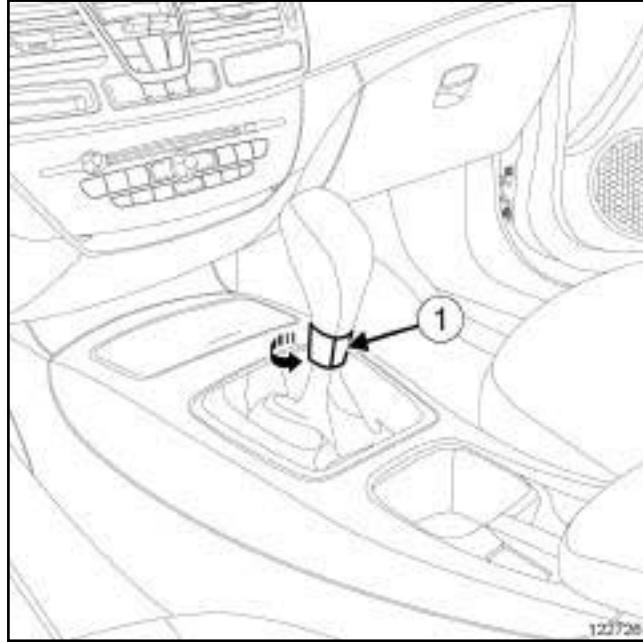
D91, and AJ0, and LEFT-HAND DRIVE

D91, and AJ0, and RIGHT-HAND DRIVE

Tightening torques 	
gear control unit nuts	21 N.m
air filter unit air outlet pipe clip on the throttle valve	5.5 N.m
clip of the air filter unit air outlet pipe	6 N.m

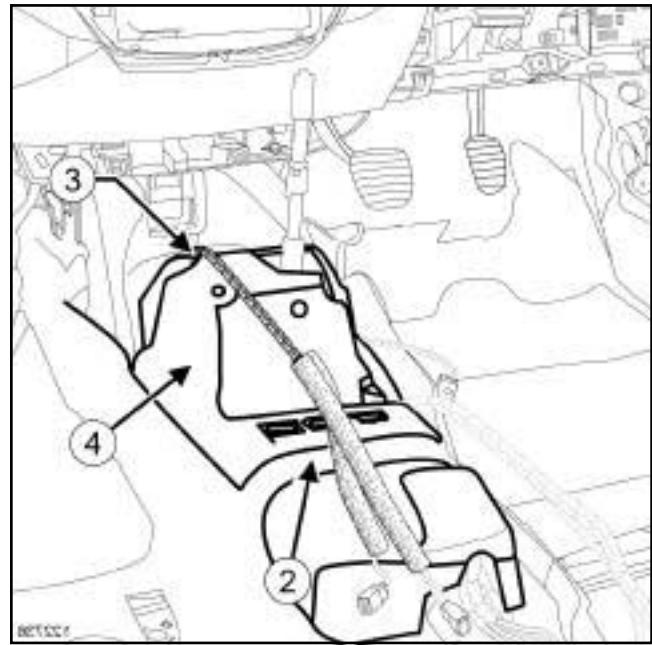
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Place the gear selector in position **R**.



122726

- Turn the ring on the gear lever knob (1) a sixteenth of a turn.
- Remove:
- the gear lever knob, by lifting it upwards,
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system).
- Place the gear selector in position **D**.



122736

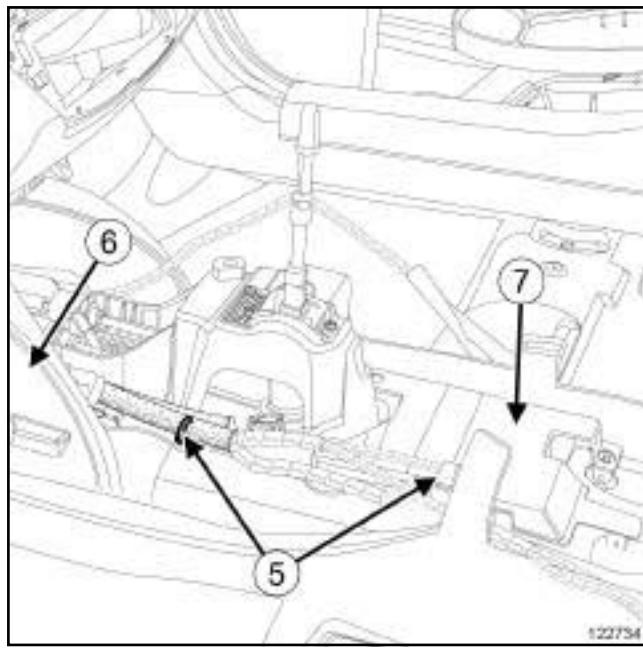
- Cut the carpet at (2) .
- Unclip the wiring on the control unit at (3) .

Note:

Do not damage the control unit soundproofing.

- Remove the soundproofing (4) from the control unit.

D91, and AJ0, and RIGHT-HAND DRIVE



122734

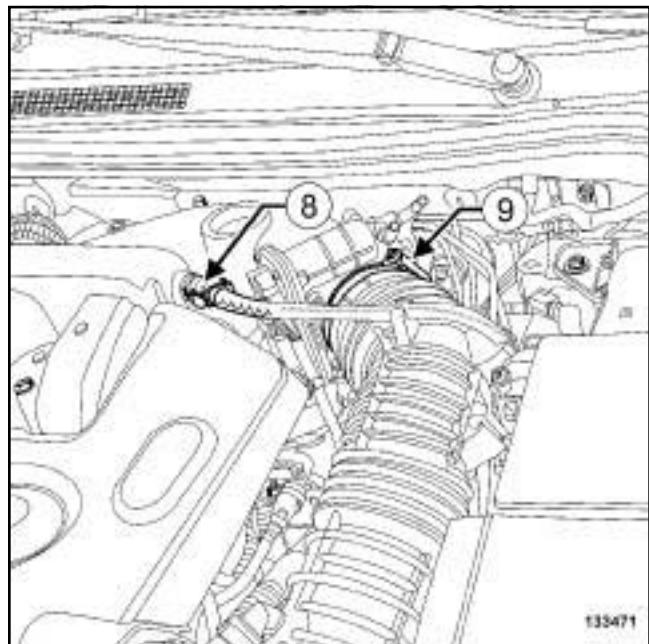
 Unclip:

- the wiring at (5),
- the left-hand air duct (6).

 Remove:

- the airbag computer protector (7),
- the control unit (see **37A, Mechanical component controls, Gear control unit: Removal - Refitting, page 37A-95**).

V4Y

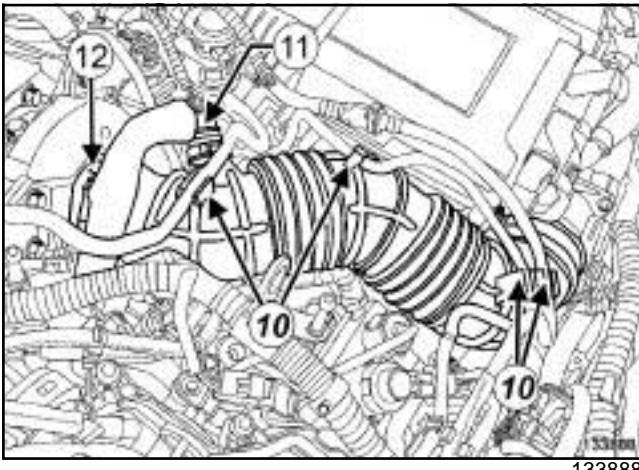


133471

- Remove the front engine cover.
- Disconnect the non-return valve pipe (8) from the intake distributor.
- Unclip the non-return valve pipe from the air filter unit air outlet pipe.
- Loosen the clip (9) of the air filter unit air outlet pipe on the throttle valve.
- Remove the air outlet pipe from the air filter unit.

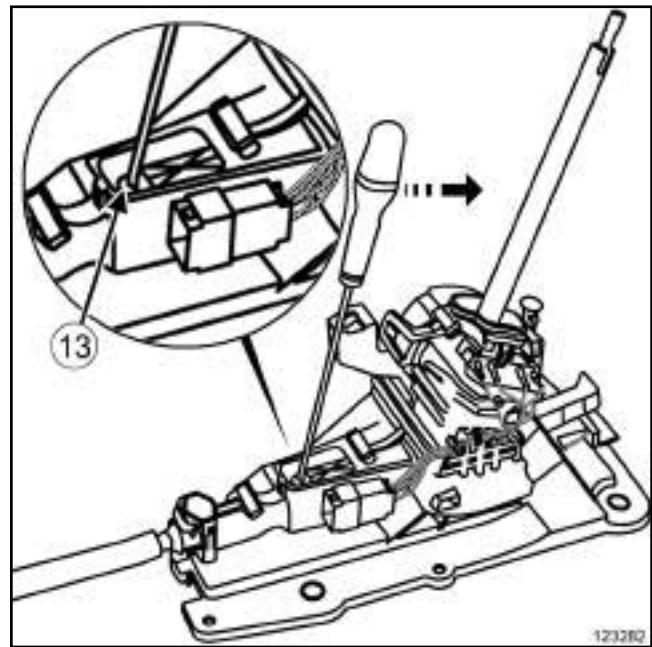
D91, and AJ0, and RIGHT-HAND DRIVE

V9X

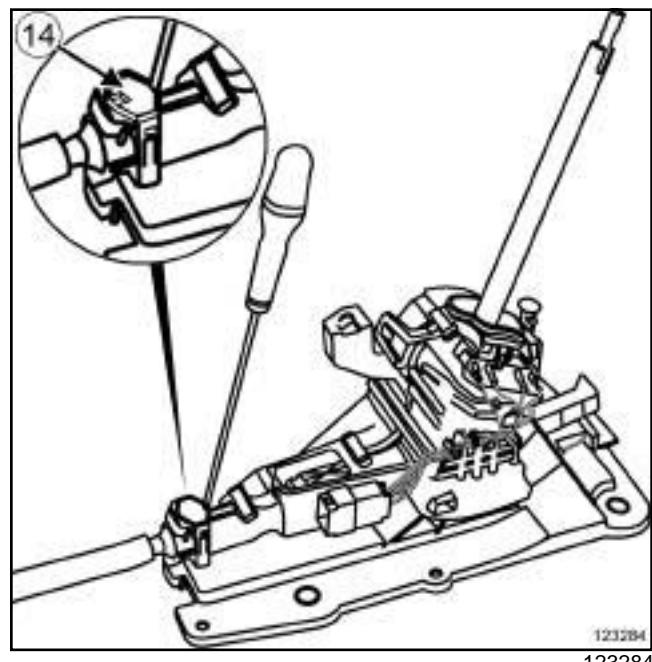


- Unclip the vacuum pipes (10) from the air filter unit air outlet pipe.
- Disconnect the oil vapour rebreathing pipe (11).
- Loosen the clip (12) of the air outlet pipe on the air filter unit.
- Remove:
 - the air outlet pipe to the air filter unit,
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit).

II - OPERATION FOR REMOVAL OF PART CONCERNED

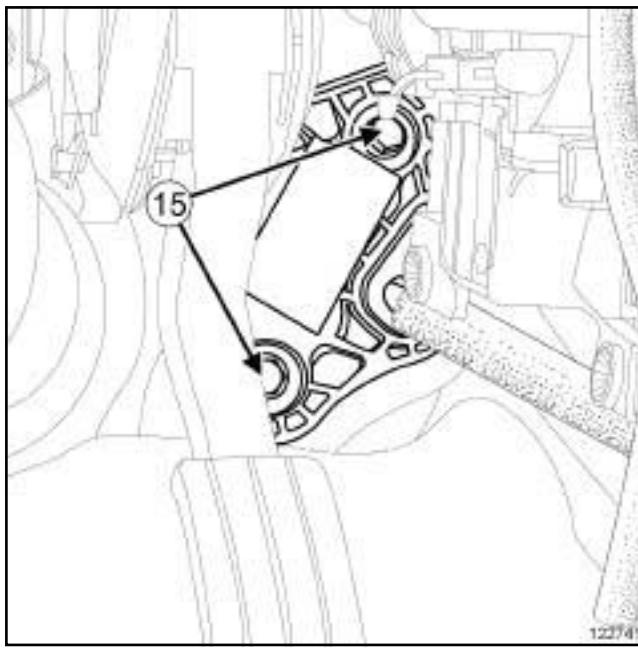


- Unlock the clip (13).

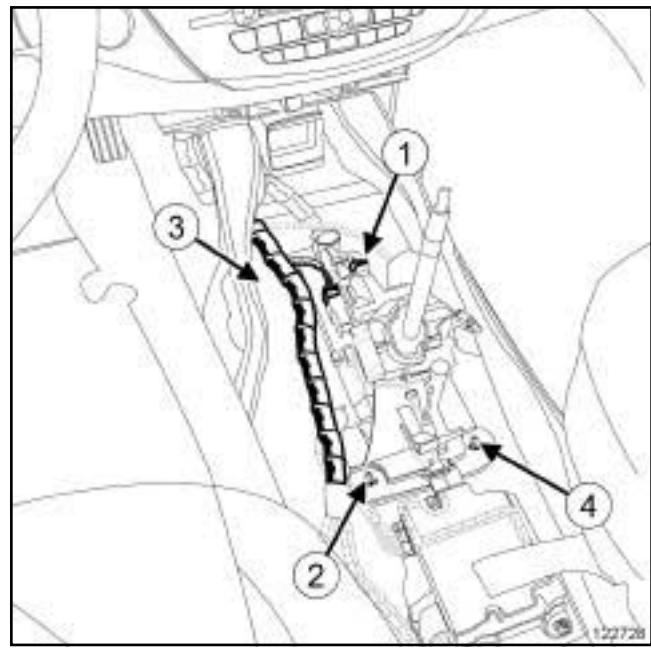


- Unlock the clip (14).
- Unclip:
 - the control cable sleeve stop on the gearbox,
 - the gear control cable anchoring ball joint on the gearbox using an open-jawed spanner.

D91, and AJ0, and RIGHT-HAND DRIVE



122741



122728

Remove:

- the bolts of the control cable seal on the bulkhead at (15) ,
- the control cable.

REFITTING

I - REFITTING PREPARATION OPERATION

- The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

II - REFITTING OPERATION FOR PART CONCERNED

Fit:

- the automatic gearbox control cable,
- the bulkhead seal bolts.

Tighten the bulkhead seal bolts.

Clip:

- the control cable sleeve stop on the gearbox,
- the gear control cable anchoring ball joint on the gearbox using pliers.

Engage the control cable in the control unit housing.

Fit the control unit.

Fit without tightening:

- the gear control unit nut (4) ,
- the gear control unit nuts (1) , (2) and (3) .

Torque tighten in order the **gear control unit nuts** (21 N.m).

Note:

The external control unit lever and the multifunction switch on the gearbox must be in position **D**.

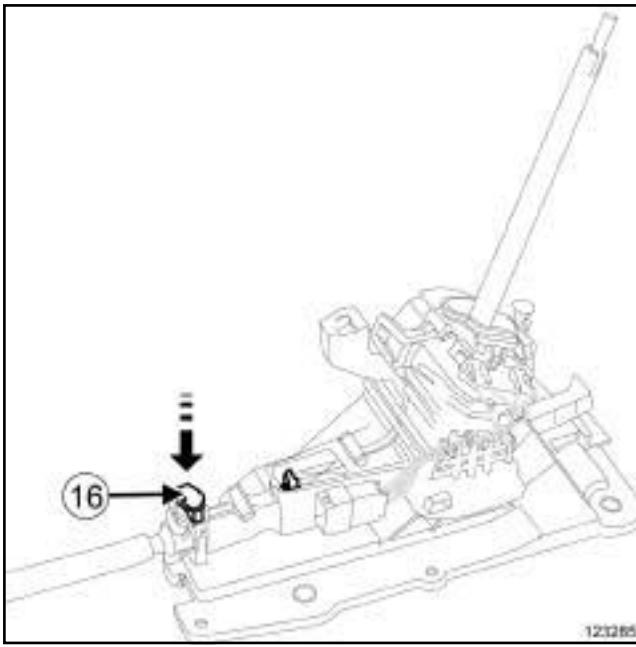
Connect the connector to the gear control unit.

Clip the wiring onto the control unit.

Automatic gear control cable: Removal - Refitting

37A

D91, and AJ0, and RIGHT-HAND DRIVE



- Press the clip (16) .
- Adjust the control unit (see **37A, Mechanical component controls, Gear control unit: Adjustment, page 37A-109**).
- Check that the system and gear selection are working correctly.

III - FINAL OPERATION

- Clip on the left-hand air duct.
- Refit the airbag computer protector.
- Clip the wiring onto the airbag computer protector.
- Refit the control unit soundproofing.
- Clip the wiring onto the control unit.
- Clip the carpet at the cutting point.
- Place the gear selector in position **R**.
- Refit:
 - the middle air duct (see **Rear air distribution duct: Removal - Refitting**) (61A, Heating system),
 - the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment),
 - the gear lever knob.
- Turn the ring on the gear lever knob a sixteenth of a turn.

V4Y

- Refit the air filter unit air outlet pipe on the throttle valve.
- Torque tighten the **air filter unit air outlet pipe clip on the throttle valve (5.5 N.m)**.
- Connect the non-return valve pipe on the intake distributor.
- Clip the non-return valve pipe onto the air filter unit air outlet pipe.
- Refit the engine cover.

V9X

- Refit:
 - the protection and switching unit (see **Protection and Switching Unit: Removal - Refitting**) (87G, Engine compartment connection unit),
 - the air outlet pipe of the air filter unit.
- Torque tighten the **clip of the air filter unit air outlet pipe (6 N.m)**.
- Connect the oil vapour rebreathing pipe.
- Clip the vacuum pipes onto the air filter unit air outlet pipe.

ELECTRONIC PARKING BRAKE

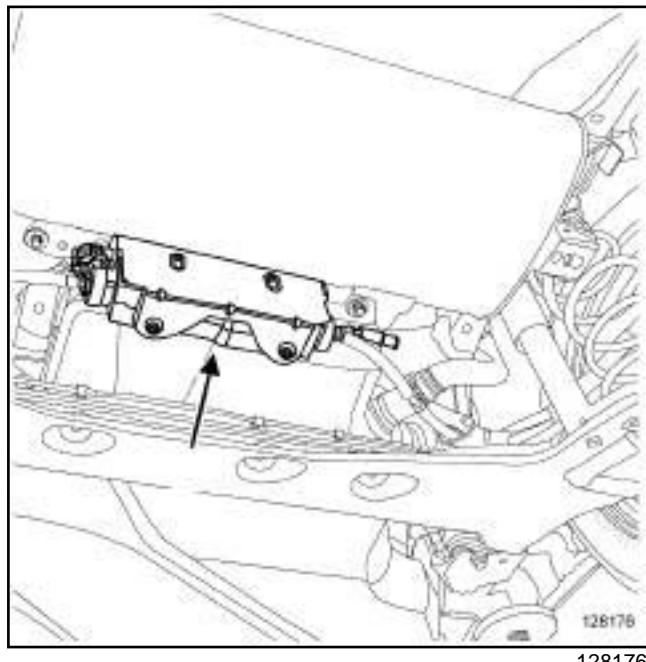
I - LIST OF COMPONENTS

The « assisted parking brake » is composed of:

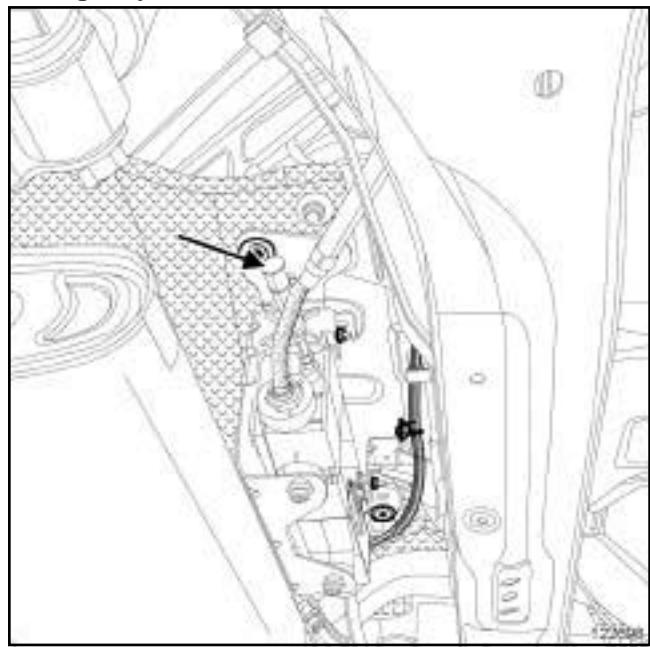
- a control unit
- an emergency handle
- a lever
- a clutch pedal position sensor

II - LOCATION OF COMPONENTS

Control unit



Emergency handle



The emergency handle must only be used if there is a battery fault or major assisted parking brake fault (red warning light).

Using the emergency handle:

- put the vehicle in first gear,
- chock the front wheels,
- raise the rear right-hand wheel (see **Vehicle: Towing and lifting**) (02A, Lifting equipment),
- remove the cap and pull on the cable using a trim removal tool.

Always replace the cap immediately after having activated the emergency handle.

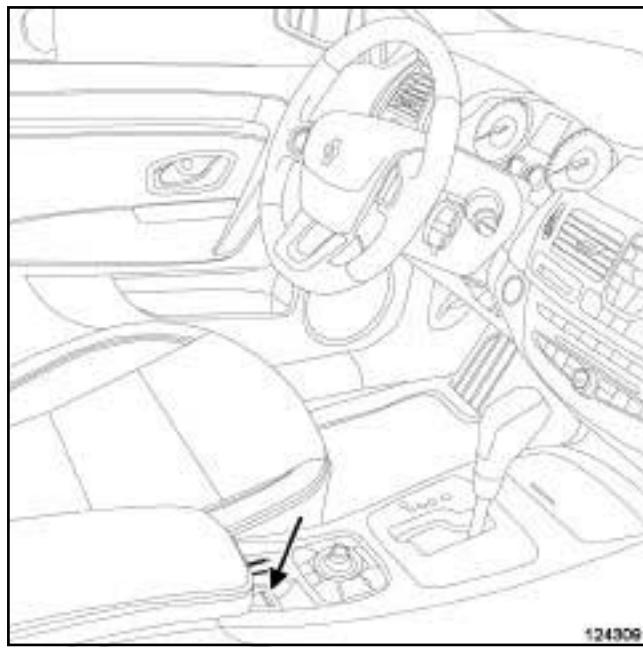
ELECTRONIC PARKING BRAKE

Electronic parking brake: List and location of components

37B

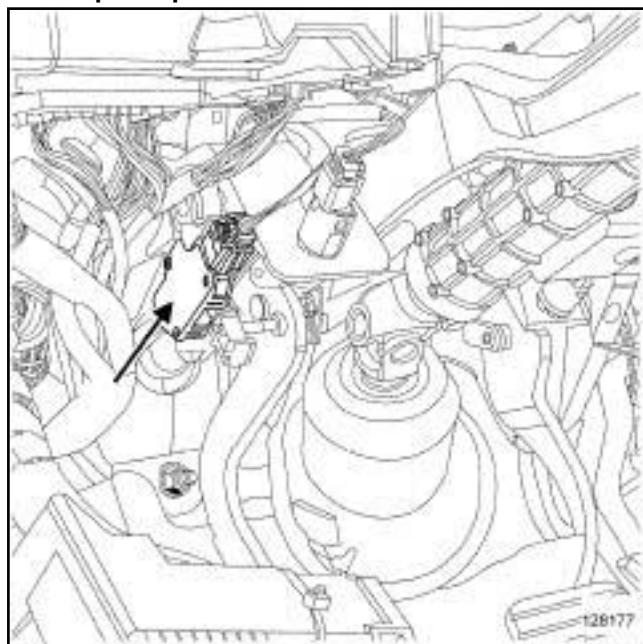
ELECTRONIC PARKING BRAKE

Lever



124309
124309

Clutch pedal position sensor



128177

To remove the clutch pedal position sensor (see **37A, Mechanical component controls, Clutch pedal position sensor: Removal - Refitting**, page **37A-45**).

ELECTRONIC PARKING BRAKE

It is essential to remove the RENAULT card to prevent discharging the battery and to avoid the assisted parking brake being accidentally released.

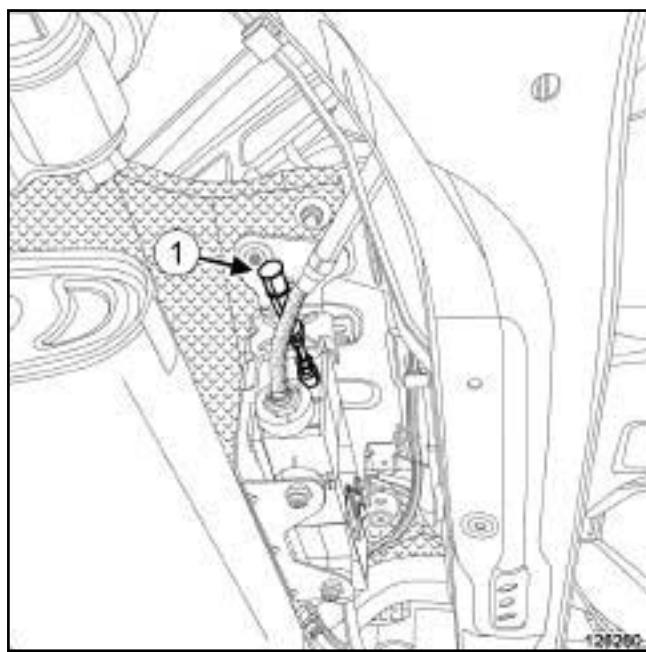
WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

Check that the brake cables are correctly fitted in their housings.

Do not refit a control unit which has been removed from another vehicle.

The components of the control unit cannot be removed separately.



Always replace the cap (1) immediately after having activated the emergency handle.

ELECTRONIC PARKING BRAKE

Equipment required

Diagnostic tool

IMPORTANT

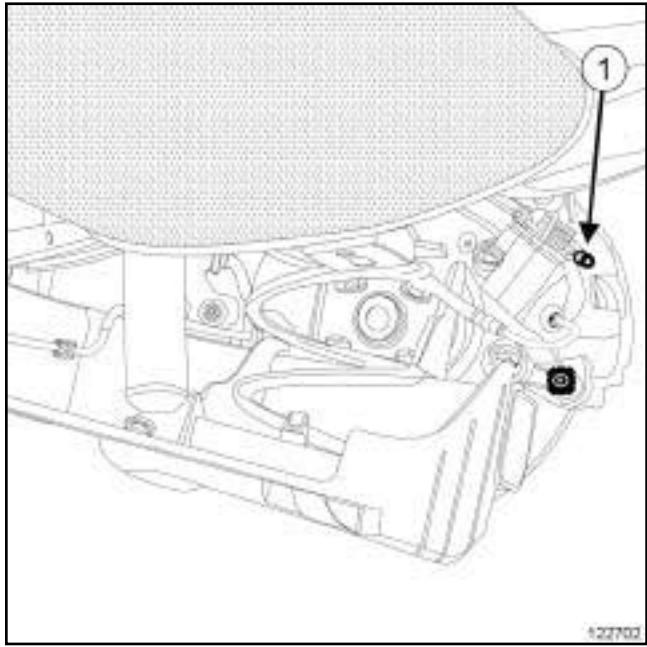
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see 37B, **Electronic parking brake, Electronic parking brake: Precautions for the repair**, page 37B-3).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Switch on the ignition.
- Apply the before repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select "Electronic parking brake computer",
 - go to repair mode,
 - display the "Before/after repair procedure" for the computer selected,
 - select "Electronic parking brake computer" in the "List of components controlled by this computer" section,
 - carry out the operations described in the "Before repair procedure" section.
- Switch off the ignition.
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page 35A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



122702

- Unclip the parking brake cables (1) from the brake callipers.

WARNING

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

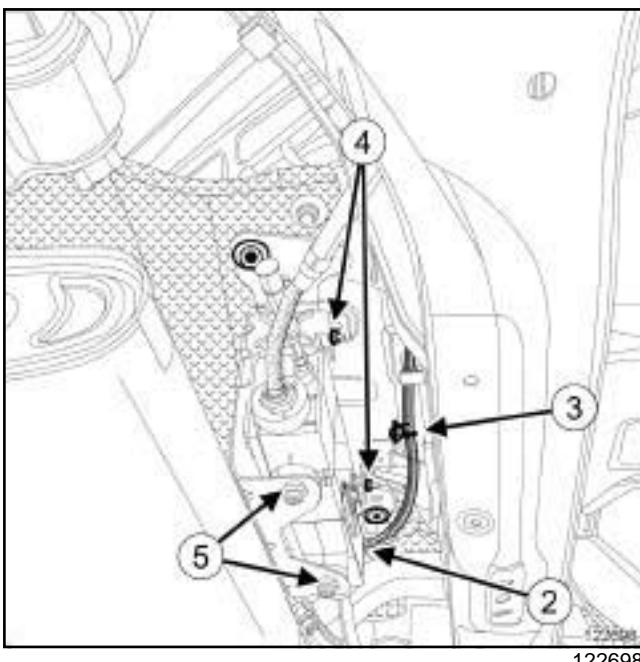
- Note the routing for refitting.
- Remove the parking brake cables from the stub axle carriers without damaging the cable protectors.
- Let the parking brake cables hang freely.

ELECTRONIC PARKING BRAKE

Control unit: Removal - Refitting

37B

ELECTRONIC PARKING BRAKE



- Disconnect the control unit connector (2).
- Unclip the control unit wiring at (3).
- Remove the nuts (4) from the control unit.
- Push the control unit upwards.
- Remove:
 - the control unit,
 - the rubber mounting bushes (5) from the control unit mounting.

REFITTING

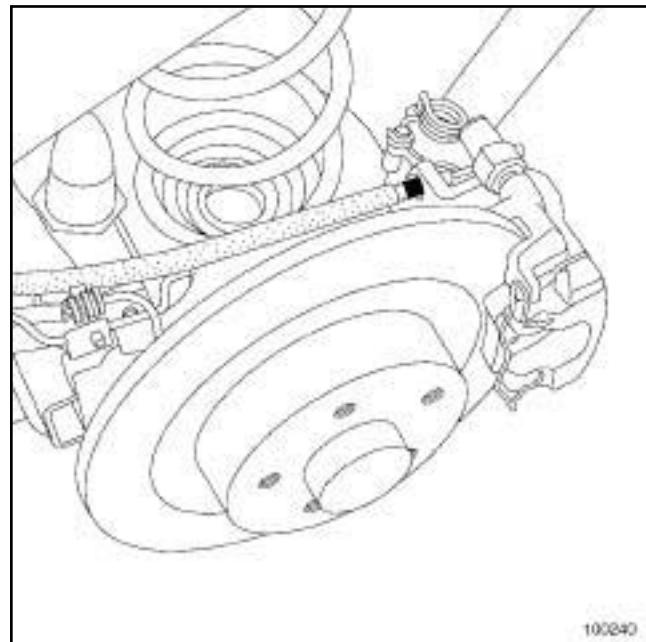
I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the rubber mounting bushes on the control unit,
 - the control unit.
- Push the control unit onto its mounting to position the rubber mounting bushes.
- Refit the control unit nuts.
- Tighten the control unit nuts.
- Clip on the wiring of the control unit connector.
- Connect the control unit connector.

- Refit the two parking brake cables back in their mounting.

Note:

Follow the routing noted during removal.



100840

- Refit the assisted parking brake cables at the brake callipers.
- Check that the brake cables are correctly fitted in their housings.

II - FINAL OPERATION

- Refit the rear wheels (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).
- Connect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Carry out a complete check and clear any faults using the **Diagnostic tool**.
- Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select "Electronic parking brake computer",
 - go to repair mode,
 - display the "Before/after repair procedure" for the computer selected,
 - select "Electronic parking brake computer" in the "List of components controlled by this computer" section,

ELECTRONIC PARKING BRAKE

Control unit: Removal - Refitting

37B

ELECTRONIC PARKING BRAKE

- carry out the operations described in the "After repair procedure" section.

ELECTRONIC PARKING BRAKE

REFITTING

IMPORTANT

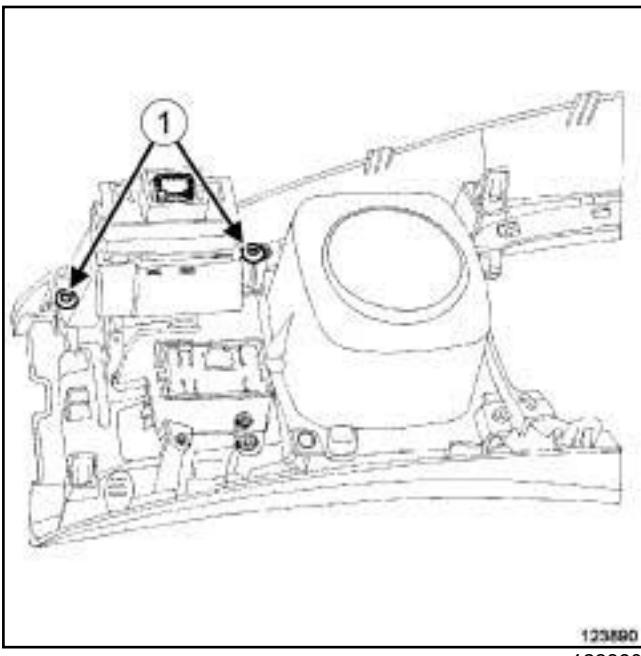
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **37B, Electronic parking brake, Electronic parking brake: Precautions for the repair**, page **37B-3**).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Remove the upper face of the centre console (see **Centre console upper front panel: Removal - Refitting**) (MR 416, 57A, Interior equipment).

II - REMOVAL OPERATION FOR PART CONCERNED



123890

123890

- Remove:
 - the bolts (1) from the handle,
 - the lever.

I - REFITTING OPERATION FOR PART CONCERNED

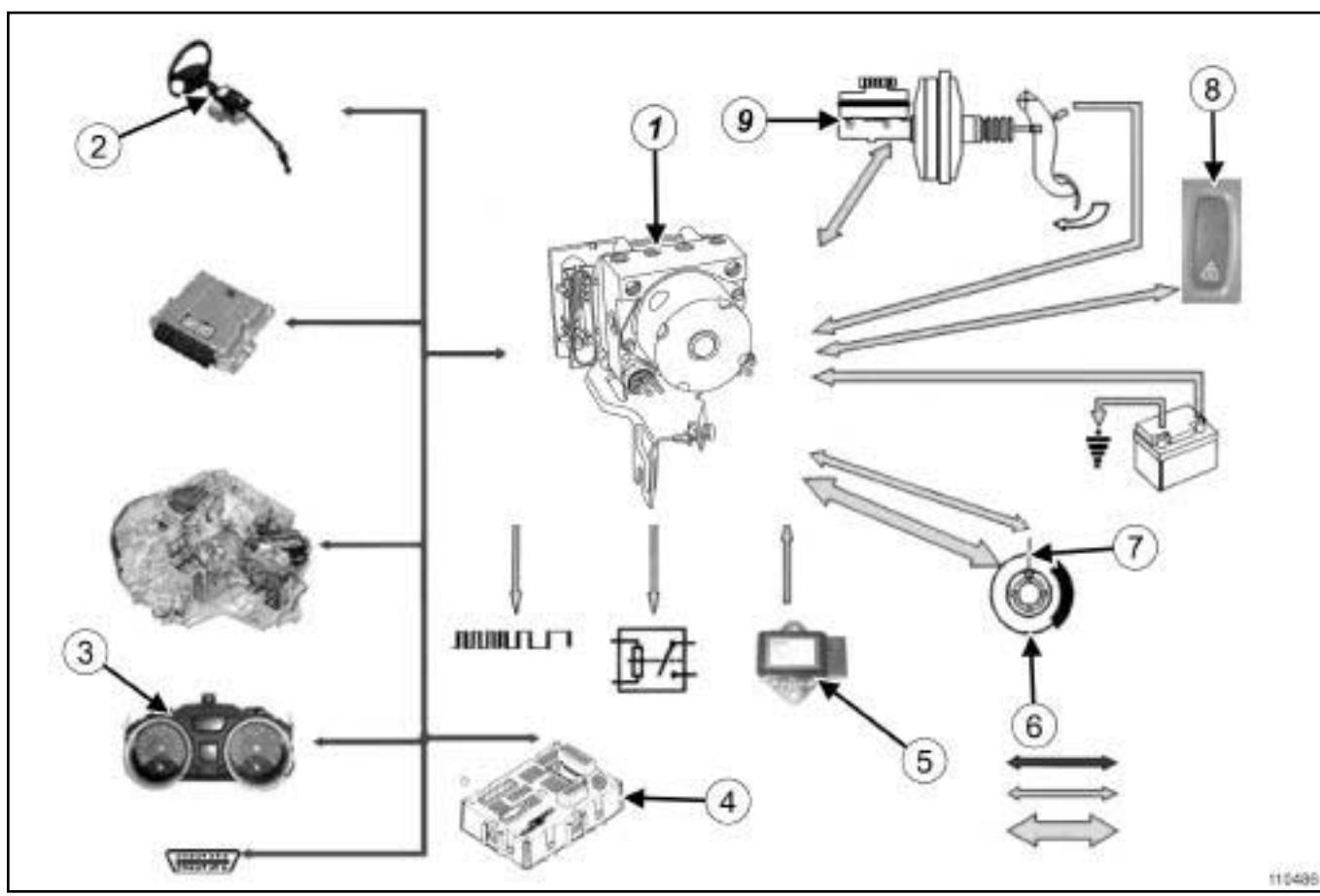
- Refit:
 - the handle,
 - the handle bolts.
- Tighten the handle bolts.

II - FINAL OPERATION.

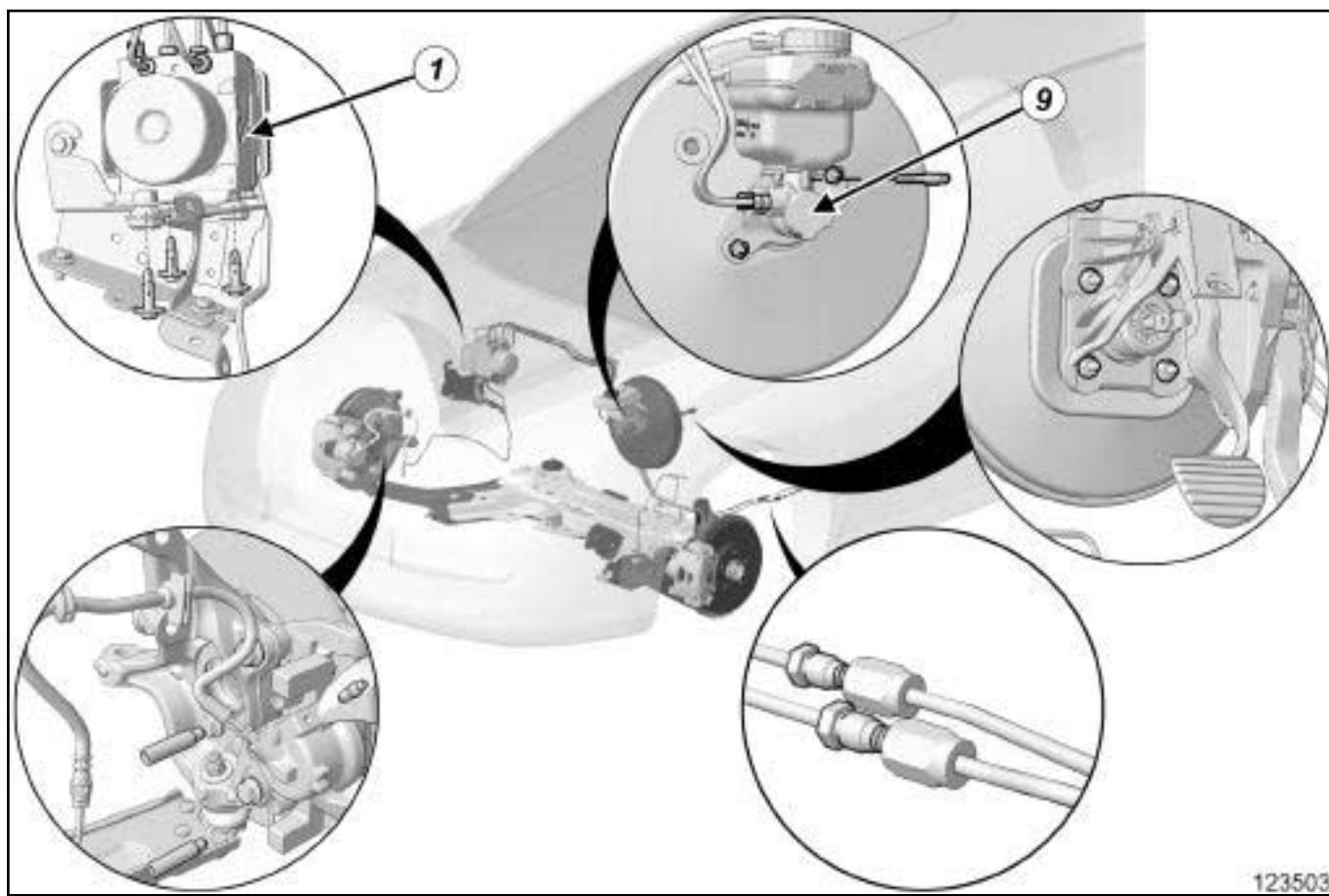
- Refit the upper face of the centre console (see **Centre console upper front panel: Removal - Refitting**) (MR 416, 57A, Interior equipment).
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).

ANTI-LOCK BRAKING SYSTEM
ABS: List and location of components

38C



t10486
110486



123503
123503

- | | |
|-----|---|
| (1) | Hydraulic unit |
| (2) | Steering wheel angle sensor |
| (3) | ESP warning light on the instrument panel |
| (4) | UCH |
| (5) | Yaw speed and lateral acceleration sensor |
| (6) | Brake disc with instrumented bearing |
| (7) | Wheel speed sensor |
| (8) | ESP deactivation switch |
| (9) | Master cylinder |

Equipment required

pedal press

Diagnostic tool

I - SAFETY

- If a lift must be used for an operation, respect the safety instructions (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Protect any bodywork components which could be damaged by brake fluid with covers.
- to ensure there is no risk of sparks, do not place any metallic objects on the battery.
- Brake fluid is highly corrosive. Carefully clean any brake fluid spilt on parts of the vehicle.

II - CLEANLINESS

- Clean around the braking system with **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- If a component is being replaced by a new one, do not remove the new component from its packaging until its is ready to be fitted onto the vehicle.

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

III - GENERAL RECOMMENDATIONS

- During an operation which requires the braking circuit to be opened, position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- After any operation on the ABS, it is essential to confirm the repair with a road test and a check using the **Diagnostic tool**.

1 - Yaw speed and lateral acceleration sensor

The sensor must be fitted facing the vehicle's direction of travel (as shown by the arrow).

Be sure to replace any sensor which has sustained an impact.

2 - Hydraulic unit

IMPORTANT

To avoid breaking the connection between the brake servo pushrod and the brake pedal, check that the safety clevis pin is locked onto the brake servo pushrod by tilting it from the top downwards.

WARNING

Switch off the vehicle ignition so as not to activate the hydraulic unit solenoid valves when bleeding the brake circuit.

3 - Wheel speed sensor

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

WARNING

In order to prevent irreversible damage to the front hub bearing:

- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

Note:

The rear wheel speed sensors are identified by 2 colours:

- black: 2-wheel steering rear axle,
- grey: 4-wheel steering rear axle.

K9K

Equipment required

pedal press

Tightening torques 

hydraulic unit bolts on the support **8 Nm**

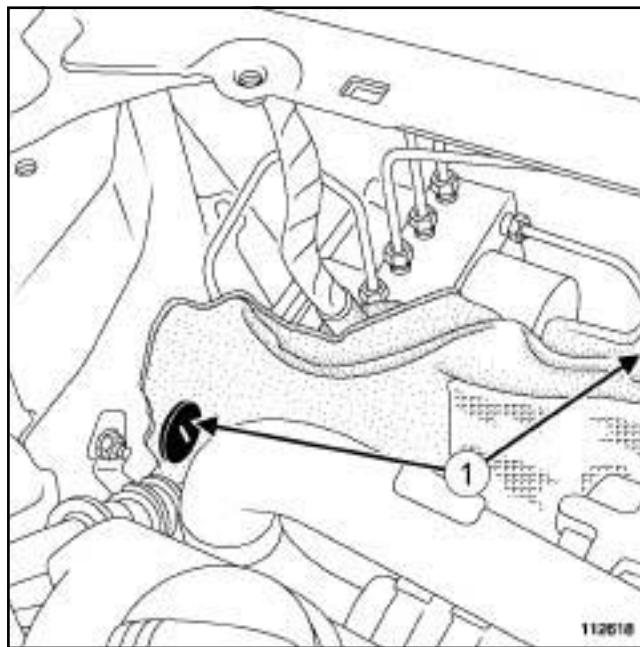
brake pipe unions on the hydraulic unit **14 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

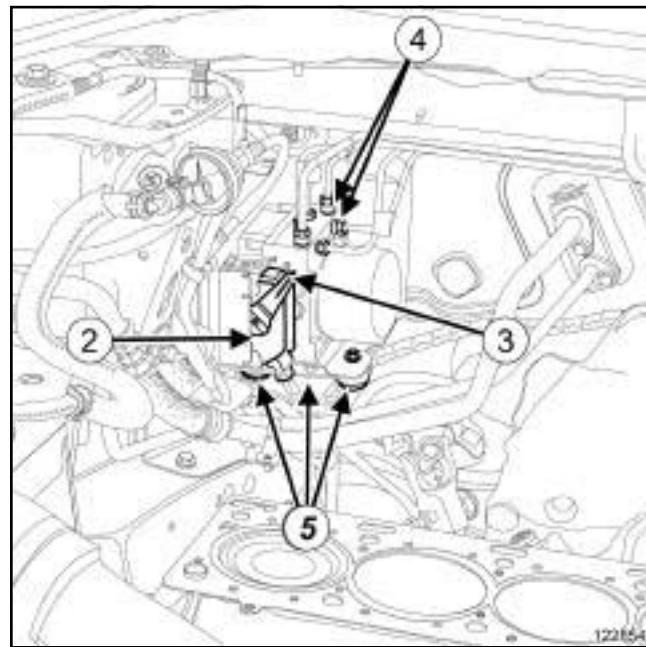
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Fit a **pedal press** on the brake pedal to limit the outflow of brake fluid.



112618

- Remove the clips (1) from the soundproofing.

- Remove the soundproofing to access the hydraulic unit.

II - REMOVAL OPERATION FOR PART CONCERNED

122854

- Disconnect the connector (2) from the hydraulic unit computer by lifting the lug (3).
- Remove:
 - the brake pipe unions (4) on the hydraulic unit,
 - the bolts (5) mounting the hydraulic unit on its support,
 - the hydraulic unit.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Refit:
 - the hydraulic unit,
 - the hydraulic unit bolts on its mounting,
 - the brake pipe unions on the hydraulic unit.
- Torque tighten:
 - the **hydraulic unit bolts on the support (8 Nm)**,
 - the **brake pipe unions on the hydraulic unit (14 Nm)**.
- Connect the computer connector on the hydraulic unit.

ANTI-LOCK BRAKING SYSTEM
Hydraulic brake unit: Removal - Refitting

38C

K9K

II - FINAL OPERATION.

- Refit:
 - the soundproofing,
 - the soundproofing clips.
- Remove the **pedal press**.
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

M4R or M9R

Special tooling required

Mot. 1390 Support for removal - refitting of engine - gearbox assembly

Equipment required

pedal press

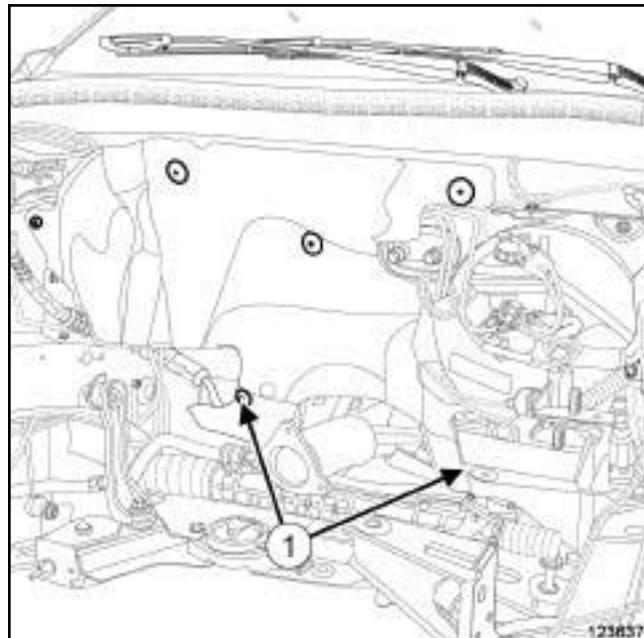
Tightening torques 

hydraulic unit bolts on the support **8 Nm**

brake pipe unions on the hydraulic unit **14 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

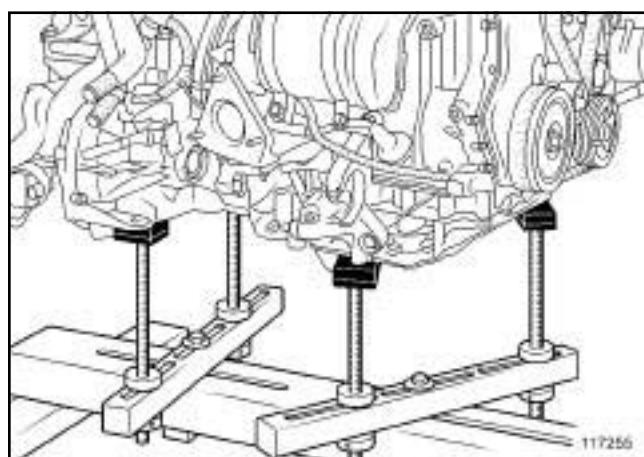


123637

123637

 Remove:

- the engine undertray bolts,
- the engine undertray,
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the clips (1) from the soundproofing.



117255

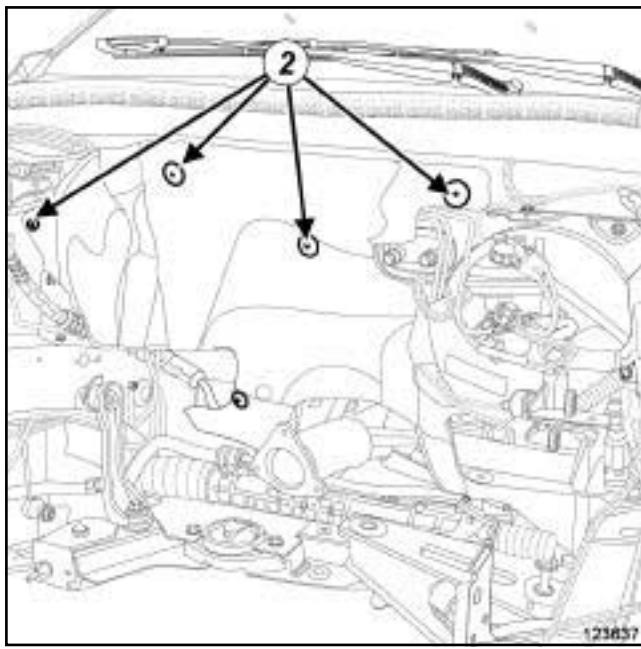
117255

 Position the (**Mot. 1390**).

- Remove the bolts from the right-hand suspended engine mounting on the engine (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

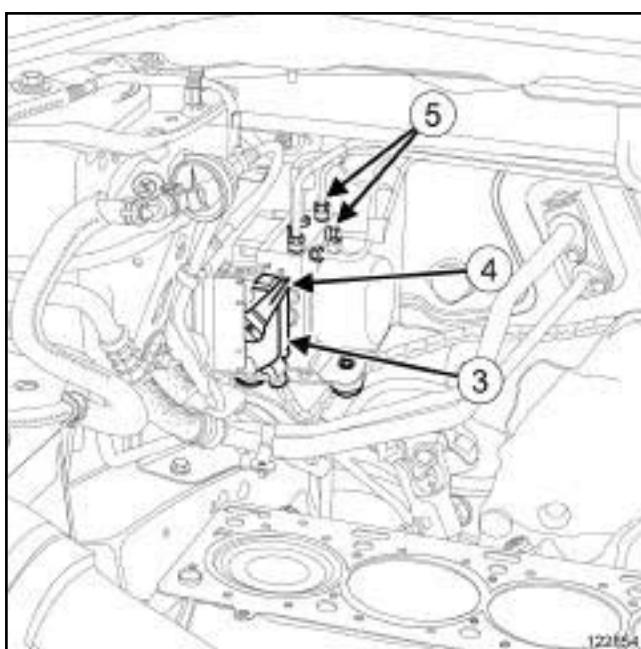
- Fully lower the engine using the (**Mot. 1390**).

M4R or M9R

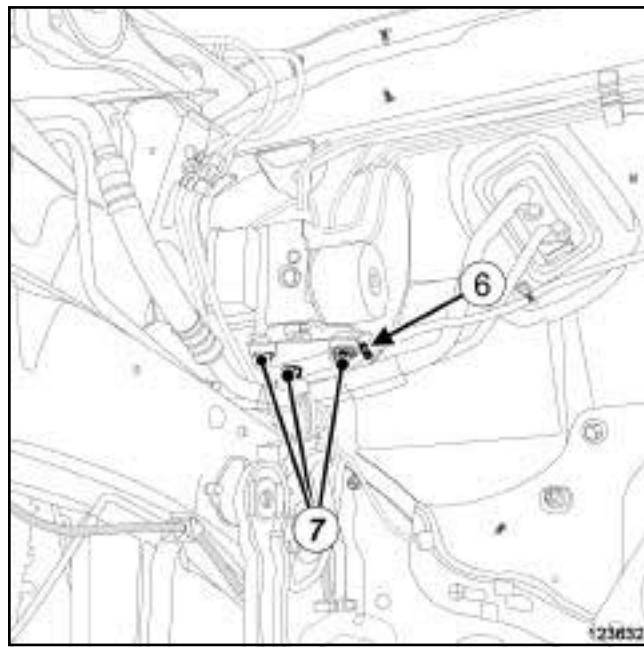


- Remove the clips (2) from the soundproofing.
- Remove the soundproofing to access the hydraulic unit.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- Disconnect the connector (3) from the hydraulic unit computer by lifting the lug (4).
- Remove the brake pipe unions (5) on the hydraulic unit.



- Unclip the wiring from the hydraulic unit connector at (6).
- Remove:
 - the hydraulic unit bolts (7) on its support,
 - the hydraulic unit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the hydraulic unit,
 - the brake pipe unions on the hydraulic unit.
- Tighten to torque:
 - the **hydraulic unit bolts on the support (8 Nm)**,
 - the **brake pipe unions on the hydraulic unit (14 Nm)**.
- Clip on the hydraulic unit connector wiring at (6).
- Connect the computer connector on the hydraulic unit.

II - FINAL OPERATION.

- Refit:
 - the soundproofing,
 - the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

ANTI-LOCK BRAKING SYSTEM
Hydraulic brake unit: Removal - Refitting

38C

M4R or M9R

- Remove the **(Mot. 1390)**.
- Refit:
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
 - the engine undertray.
- Remove the **pedal press**.
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

F4R

Equipment required

pedal press

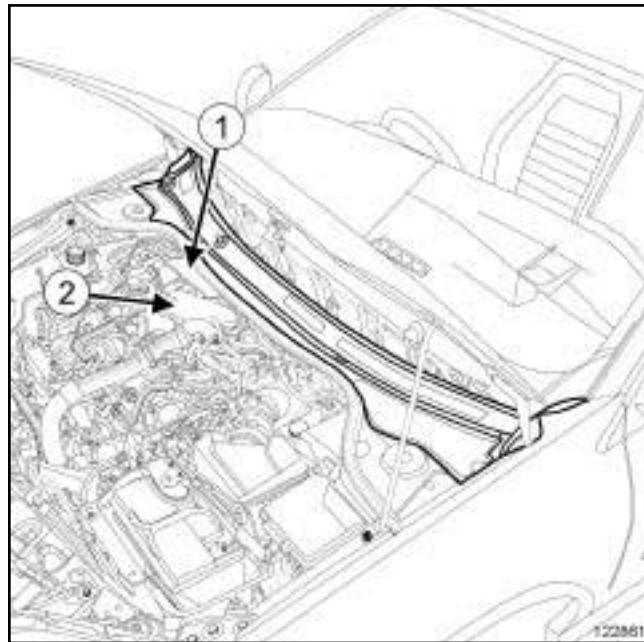
Tightening torques

hydraulic unit bolts on the support **8 Nm**

brake pipe unions on the hydraulic unit **14 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).



122861

REMOVAL

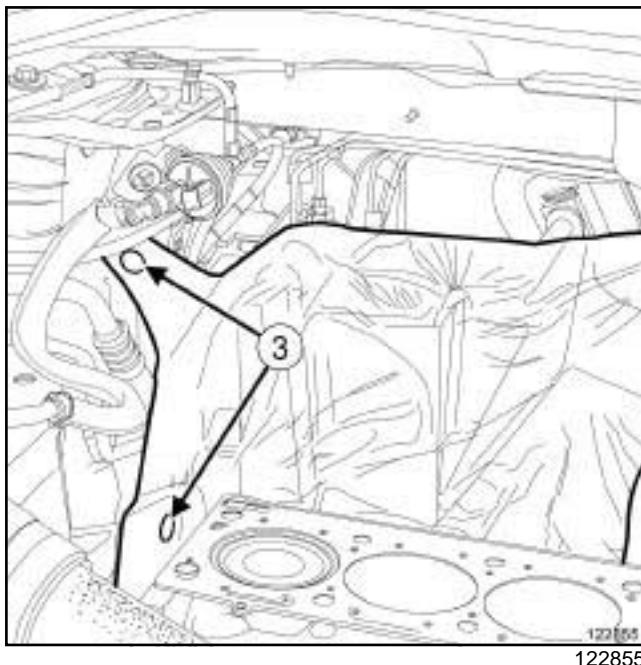
I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Fit a **pedal press** to the brake pedal to restrict the outflow of brake fluid.

Remove:

- the turbocharger heat shield bolts,
- the turbocharger heat shield (1) ,
- the bulkhead heat shield clips,
- the bulkhead heat shield (2) ,
- the engine undertray,
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust).

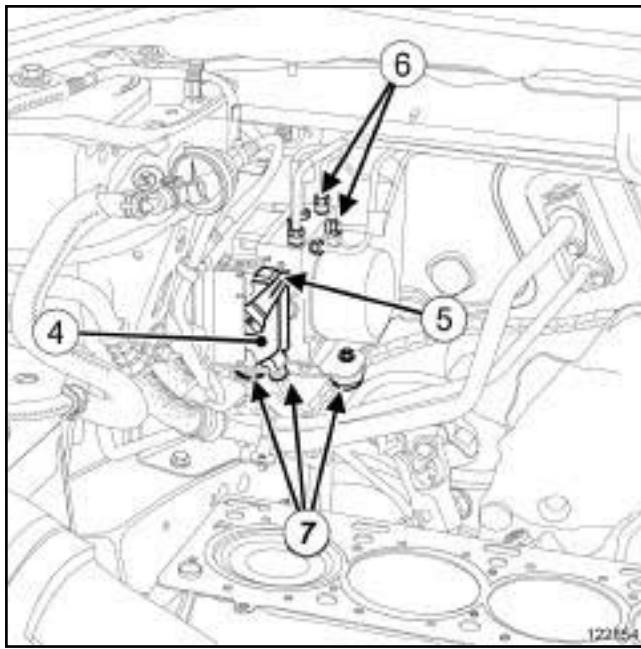
F4R



122855

- Remove the bulkhead lower heat shield clips (3) .
- Shift the lower heat shield backwards to access the hydraulic unit.

II - OPERATION FOR REMOVAL OF PART CONCERNED



122854

- Disconnect the connector (4) from the hydraulic unit computer by lifting the lug (5) .
- Remove:
 - the brake pipe unions (6) on the hydraulic unit,

- the bolts (7) mounting the hydraulic unit on its support,
- the hydraulic unit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the hydraulic unit,
 - the brake pipe unions on the hydraulic unit.
- Tighten to torque:
 - the **hydraulic unit bolts on the support (8 Nm)**,
 - the **brake pipe unions on the hydraulic unit (14 Nm)**.
- Connect the computer connector on the hydraulic unit.

II - FINAL OPERATION.

- Refit:
 - the bulkhead lower heat shield,
 - the bulkhead lower heat shield clips,
 - the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust),
 - the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
 - the engine undertray,
 - the bulkhead heat shield,
 - the turbocharger heat shield.
- Remove the **pedal press**.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page 30A-4) .

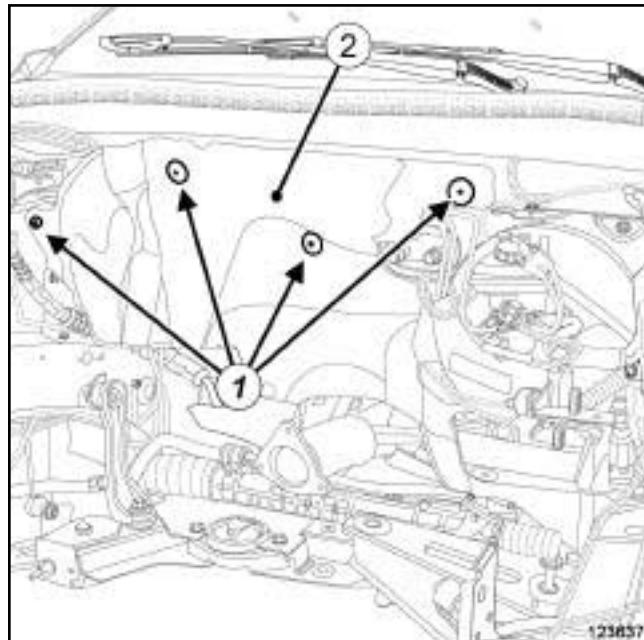
K4M

Equipment required

pedal press

Tightening torques hydraulic unit bolts on the support **8 Nm**brake pipe unions on the hydraulic unit **14 Nm****IMPORTANT**

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).



123637

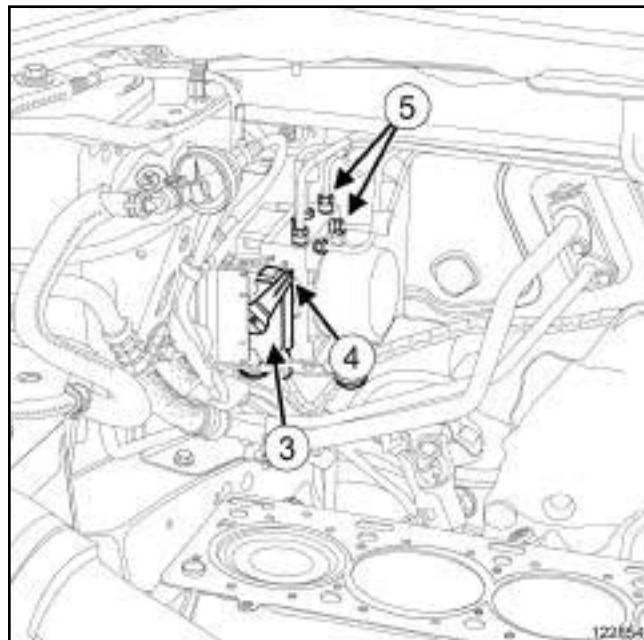
123637

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray.

Remove the bulkhead heat shield clips (1).

Move the bulkhead heat shield (2) to one side.

II - OPERATION FOR REMOVAL OF PART CONCERNED

122854

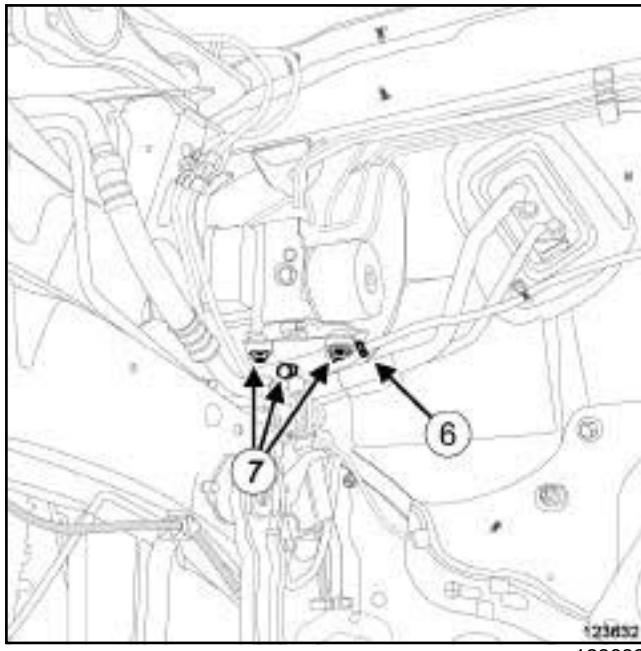
- Disconnect the connector (3) from the hydraulic unit computer by lifting the lug (4).
- Remove the brake pipe unions (5) on the hydraulic unit.

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

K4M



123632

- the engine undertray.

- Remove the **pedal press** from the brake pedal.
- Connect the battery (see **Battery: Removal - Refitting** (80A, Battery)).
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

- Unclip the wiring (6) from the hydraulic unit connector.
- Remove:
 - the bolts (7) mounting the hydraulic unit on its support,
 - the hydraulic unit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the hydraulic unit,
 - the brake pipe unions on the hydraulic unit.
- Tighten to torque:
 - the **hydraulic unit bolts on the support (8 Nm)**,
 - the **brake pipe unions on the hydraulic unit (14 Nm)**.
- Clip on the hydraulic unit connector wiring.
- Connect the computer connector on the hydraulic unit.

II - FINAL OPERATION.

- Refit:
 - the bulkhead heat shield,
 - the engine cover,

V4Y or V9X

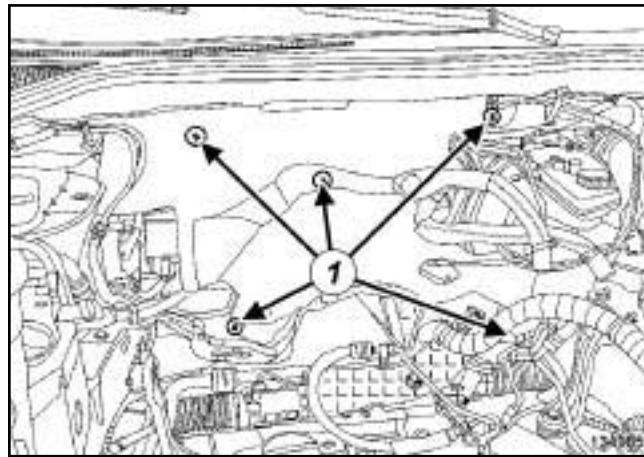
Equipment required

pedal press

Tightening torques 

hydraulic brake unit bolts on the support **8 N.m**

brake pipe unions on the hydraulic brake unit **13 N.m**



134985

IMPORTANT

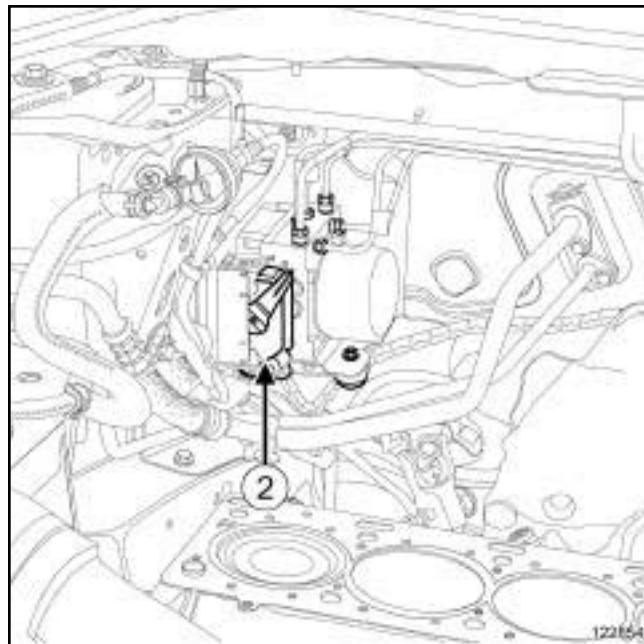
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL**I - REMOVAL PREPARATION OPERATION**

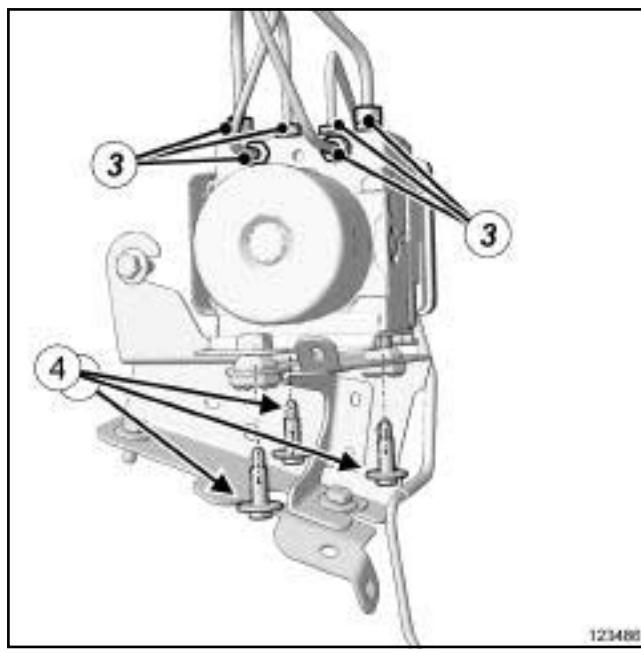
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals).

II - OPERATION FOR REMOVAL OF PART CONCERNED

122854

- Disconnect the hydraulic brake unit connector (2).

V4Y or V9X



123486

II - FINAL OPERATION

- Refit:
 - the bulkhead heat-resistant soundproofing,
 - the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
 - the engine undertray.
- Remove the **pedal press** from the brake pedal.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the braking circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).

- Remove the brake pipe unions (3) on the hydraulic brake unit.
- Unclip the wiring from the hydraulic brake unit connector.
- Remove:
 - the hydraulic unit bolts (4) on its support,
 - the hydraulic unit.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

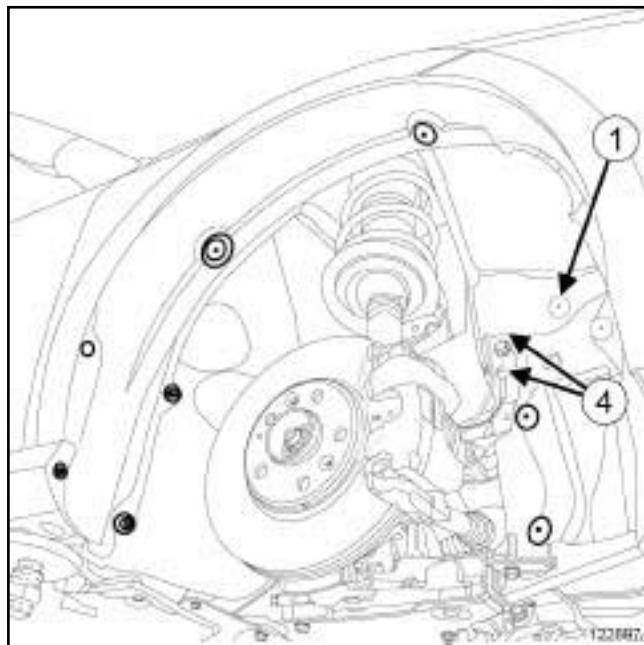
- Refit:
 - the hydraulic brake unit,
 - the brake pipe unions on the hydraulic brake unit,
 - the air conditioning pipes between the expansion valve and the condenser (see **Condenser - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).
- Tighten to torque:
 - the **hydraulic brake unit bolts on the support (8 N.m)**,
 - the **brake pipe unions on the hydraulic brake unit (13 N.m)**.
- Connect the hydraulic brake unit computer connector.
- Clip on the wiring of the hydraulic brake unit connector.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).

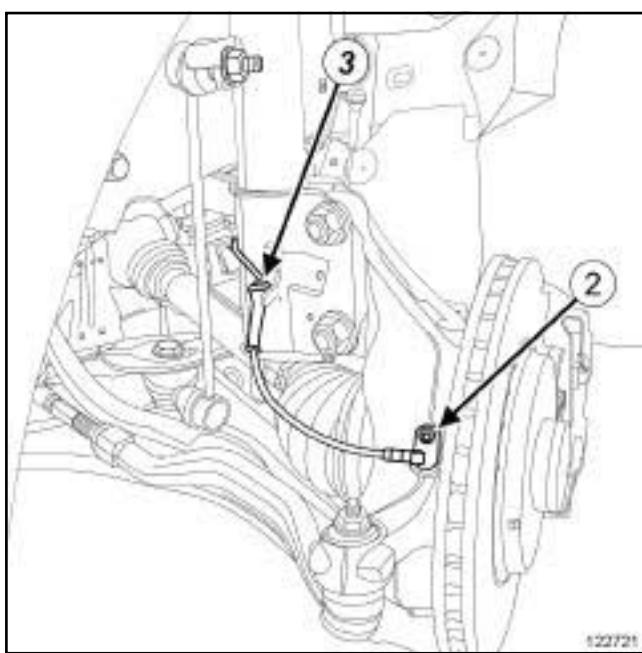


- Remove the clip (1) from the front wheel arch.

II - REMOVAL OPERATION FOR PART CONCERNED**WARNING**

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.

REFITTING

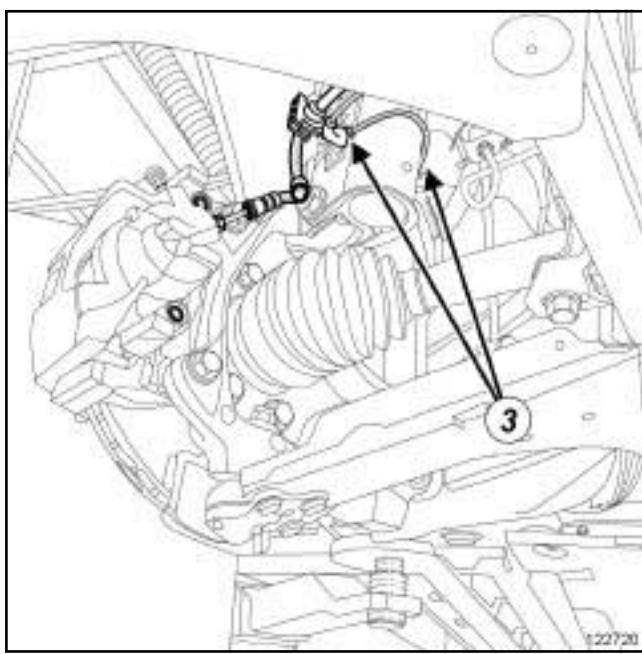
122721

I - REFITTING OPERATION FOR PART CONCERNED

- Refit the wheel speed sensor.
- Connect the speed sensor connector.
- Clip on the wheel speed sensor wiring at (4) .
- Refit the wheel speed sensor bolt.
- Clip on the wheel speed sensor wiring at (3) .

II - FINAL OPERATION. Refit:

- the front wheel arch clip,
- the front wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



122720

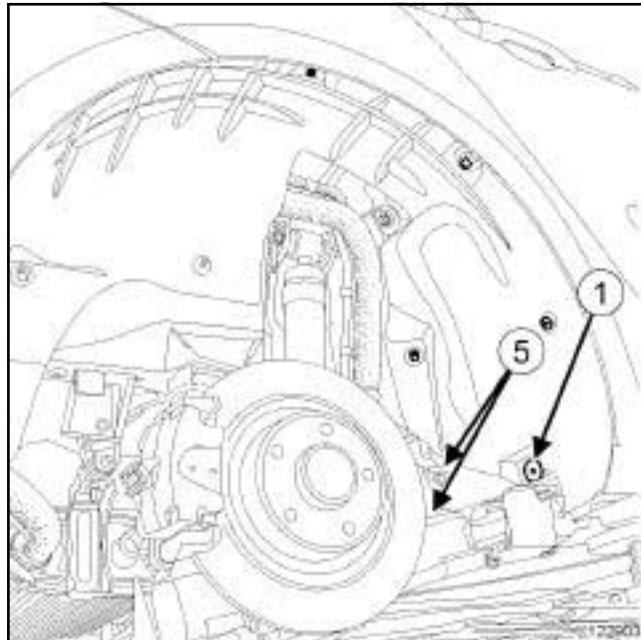
- Remove the wheel speed sensor bolt (2) .
- Unpick the wheel speed sensor wiring at (3) .
- Disconnect the wheel speed sensor connector behind the front wheel arch liner.
- Unpick the wheel speed sensor wiring at (4) .
- Remove the wheel speed sensor.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Remove the rear wheel (see **35A, Wheels and tyres, Wheel: Removal - Refitting**, page **35A-1**).



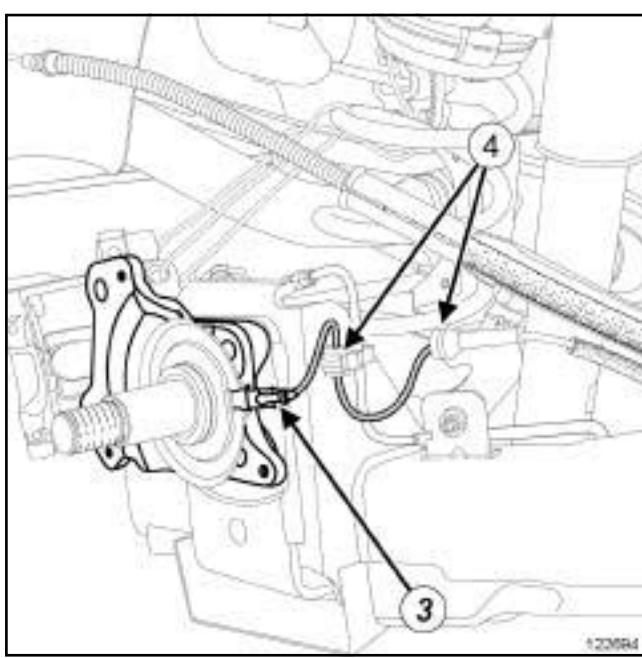
122903

- Remove the clip from the (1) rear wheel arch.

II - REMOVAL OPERATION FOR PART CONCERNED**WARNING**

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.



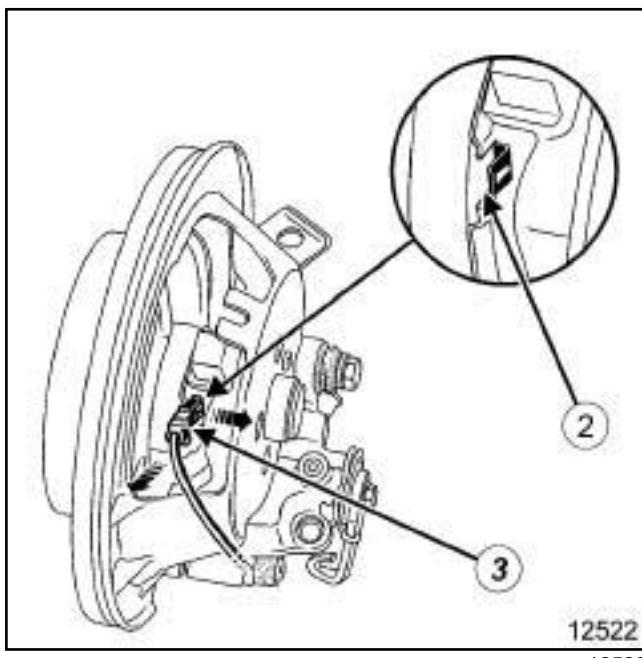
122694

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- Refit the wheel speed sensor onto the sensor holder.
- Connect the speed sensor connector.
- Clip on the wheel speed sensor wiring at (4) and (5).
- Check the air gap over one turn of the target with a set of feeler gauges (non adjustable): $0.6 \pm 0.5 \text{ mm}$.

II - FINAL OPERATION.

- Refit:
 - the rear wheel arch clip (1),
 - the rear wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting, page 35A-1).



12522

- Carefully move the tab on the sensor holder (2) using a flat-blade screwdriver to release the wheel speed sensor (3).
- Unpick the wheel speed sensor wiring at (4).
- Disconnect the wheel speed sensor connector behind the rear wheel arch liner.
- Unpick the wheel speed sensor wiring at (5).
- Remove the wheel speed sensor.

Equipment required

Diagnostic tool

Tightening torques 

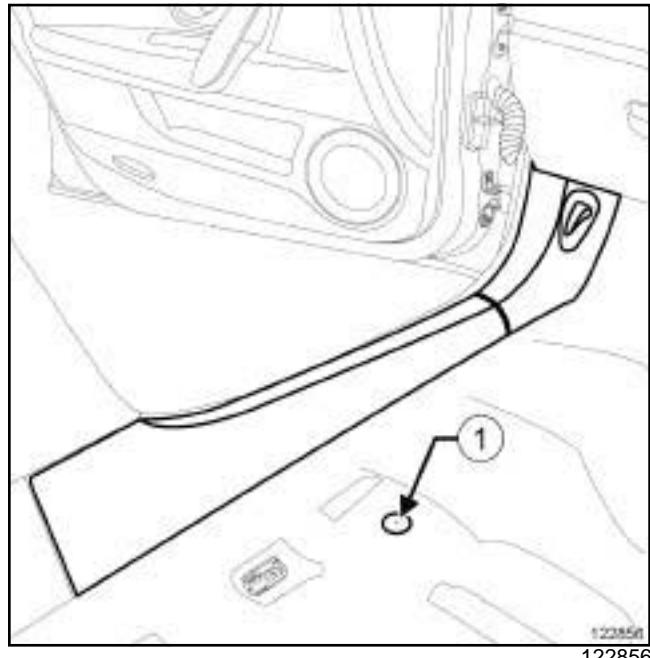
lateral acceleration and yaw sensor nuts	8 Nm
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IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

REMOVAL**I - REMOVAL PREPARATION OPERATION**

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Remove the front left-hand seat (see **Complete front seat: Removal - Refitting**) (MR 416, 75A, Front seat frames and runners).

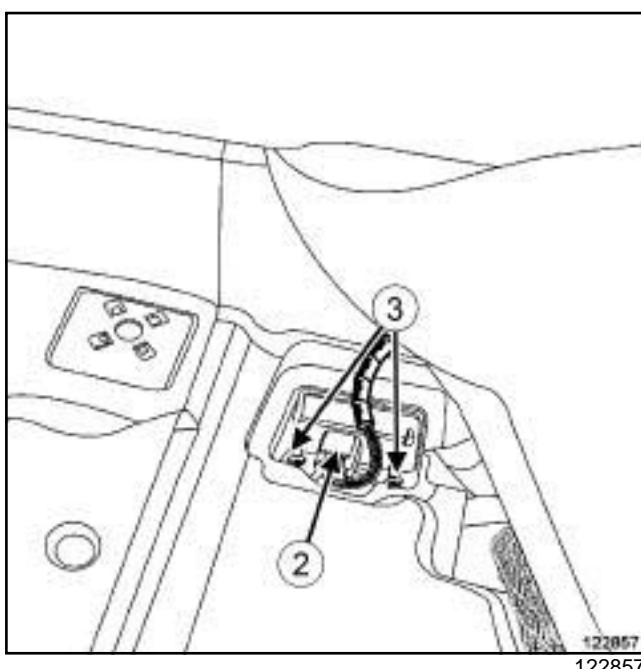
II - OPERATION FOR REMOVAL OF PART CONCERNED

122856

 Remove:

- the front left-hand door sill lining (see **Front door sill lining: Removal - Refitting**) (MR 416, 71A, Body internal trim),
- the floor carpet clip (1) .

 Partially lift the floor carpet.



- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Be sure to confirm the repair with a road test and a check using the **Diagnostic tool**.

- Disconnect the lateral acceleration and yaw sensor connector (2) .
- Remove:
 - the (3) lateral acceleration and yaw sensor nuts,
 - the lateral acceleration and yaw sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - the lateral acceleration and yaw sensor,
 - the lateral acceleration and yaw sensor nuts.
- Connect the lateral acceleration and yaw sensor connector.
- Torque tighten the **lateral acceleration and yaw sensor nuts (8 Nm)**.
- Position the floor carpet.
- Refit:
 - the floor carpet clip,
 - the front left-hand door sill lining (see **Front door sill lining: Removal - Refitting**) (MR 416, 71A, Body internal trim).

II - FINAL OPERATION.

- Refit the front left-hand seat (see **Complete front seat: Removal - Refitting**) (MR 416, 75A, Front seat frames and runners).

ANTI-LOCK BRAKING SYSTEM

Braking computer: Removal - Refitting

38C

Equipment required

pedal press

Diagnostic tool

Tightening torques

ABS computer bolts **8 Nm**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **38C, Anti-lock braking system, ABS: Precautions for the repair**, page **38C-3**).

The removal and refitting of the ABS computer requires the removal of the entire hydraulic unit.

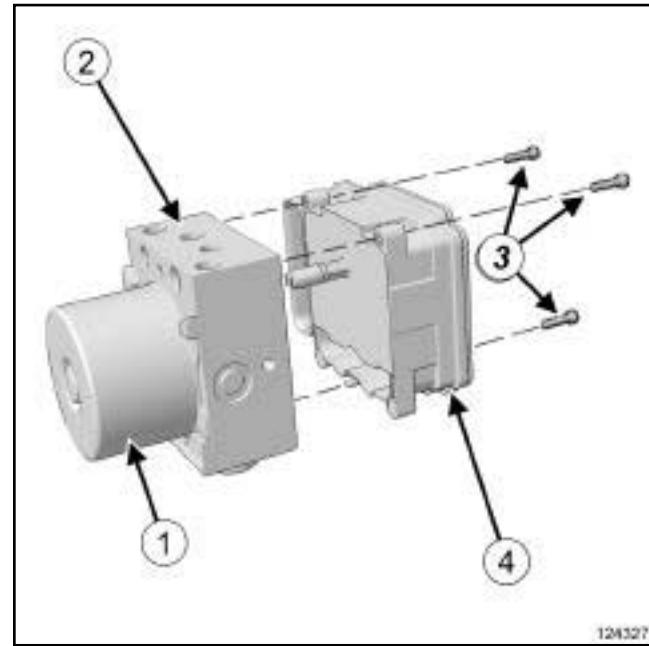
Do not remove the brake computer from a vehicle fitted with ESP.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 415, 02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Fit a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- Remove the hydraulic unit (see **38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**, page **38C-4**).

II - REMOVAL OPERATION FOR PART CONCERNED



124327

124327

Note:

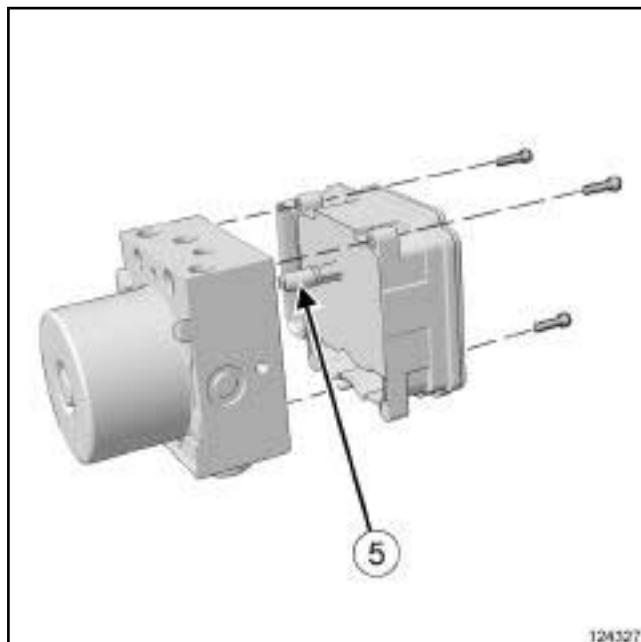
When the ABS computer is removed, the hydraulic pump (1) must remain pressed against the pressure modulation unit (2).

Remove:

- the ABS computer bolts (3),
- the ABS computer (4).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



124327

- Fit the new ABS computer taking care not to twist the connection fork (5) between the hydraulic pump and the computer.
- Refit the ABS computer bolts.
- Torque tighten the **ABS computer bolts (8 Nm)**.

II - FINAL OPERATION.

- Refit the hydraulic unit (see **38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**, page **38C-4**).
- Remove the **pedal press**.
- Connect the battery (see **Battery: Removal - Refitting**) (MR 415, 80A, Battery).
- Bleed the brake circuit (see **30A, General information, Braking circuit: Bleed**, page **30A-4**).
- Configure the brake computer, apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the brake computer,
 - go to repair mode,
 - apply the "After repair procedure".
- It is essential to confirm the repair with a road test and a check using the **Diagnostic tool**.