RENAULT

3 Chassis

X44

NOVEMBER 2009 **EDITION ANGLAISE**

TWINGO - Chapitre 3

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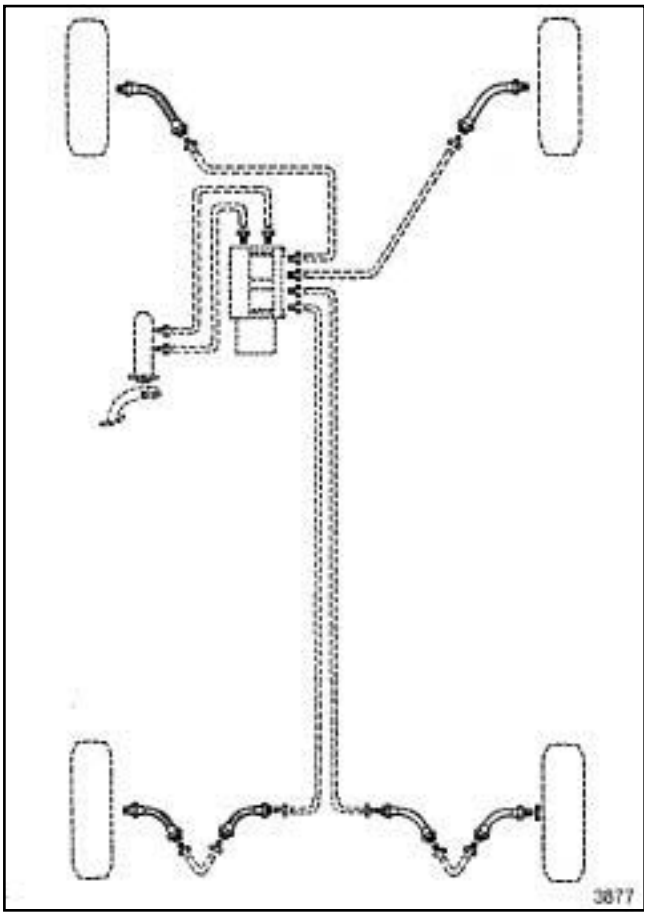
« X » braking system with ABS



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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, regardless of the position of the wheels.

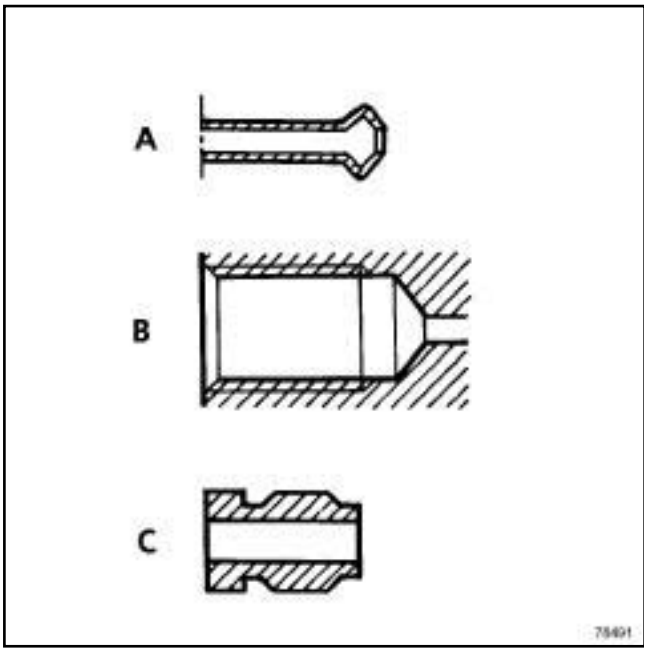
IMPORTANT

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:

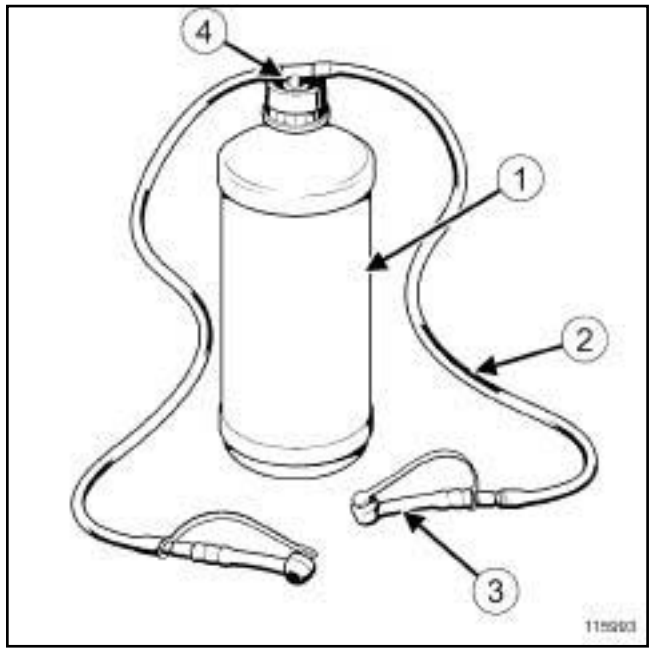
- the master cylinder,
- the brake fluid,
- the hydraulic unit,
- a rigid pipe,
- a hose,
- the reservoir,
- a calliper.

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.

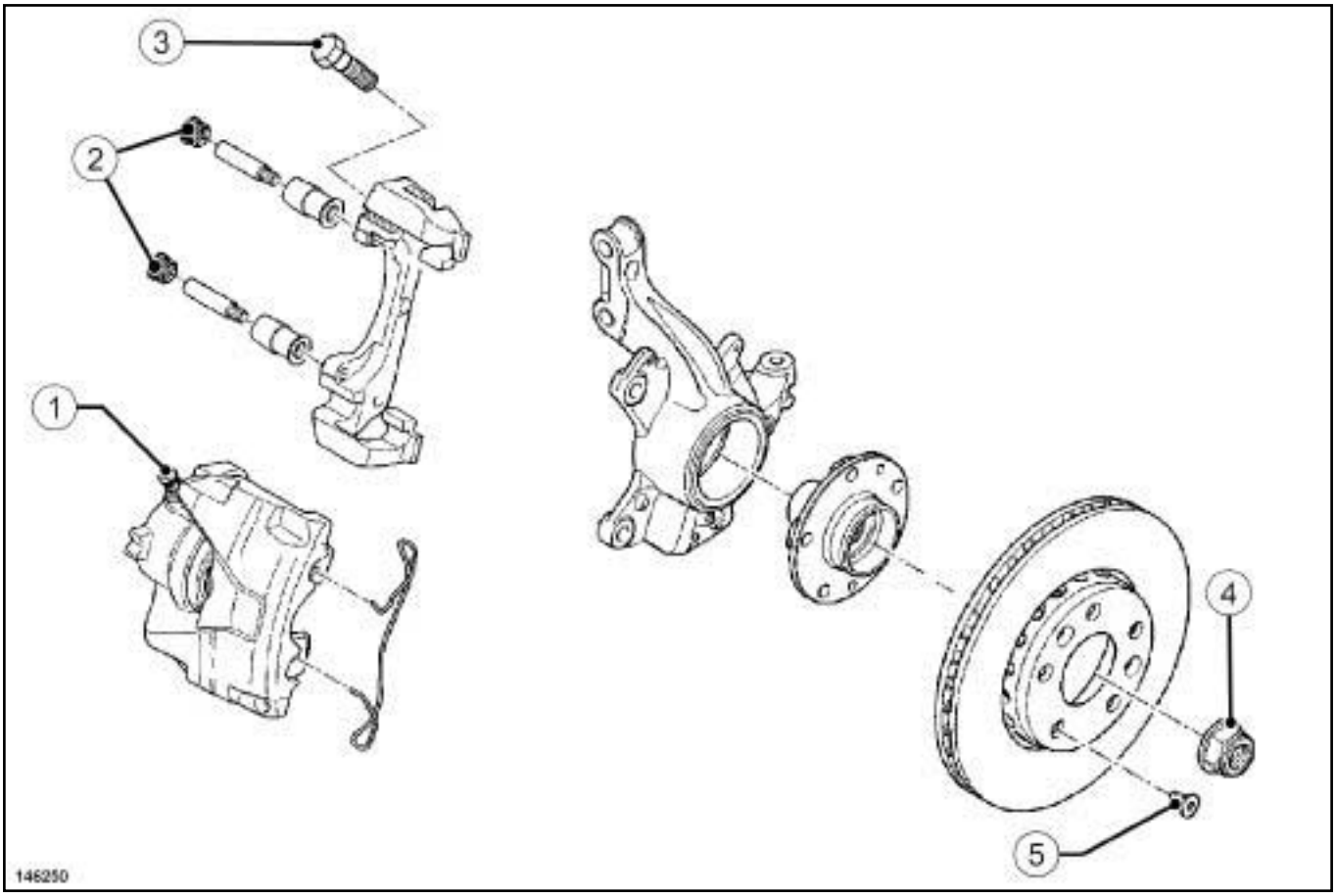
❏ Top up the brake fluid level in the reservoir, if necessary. Check the sealing of the front and rear bleed screws and ensure that the sealing covers are in place (see **30A**, **General information**, **Brake circuit: Tightening torque**, page **30A-6**) .

❏ 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**)

I - FRONT BRAKES

EQUIPMENT LEVEL SPORT



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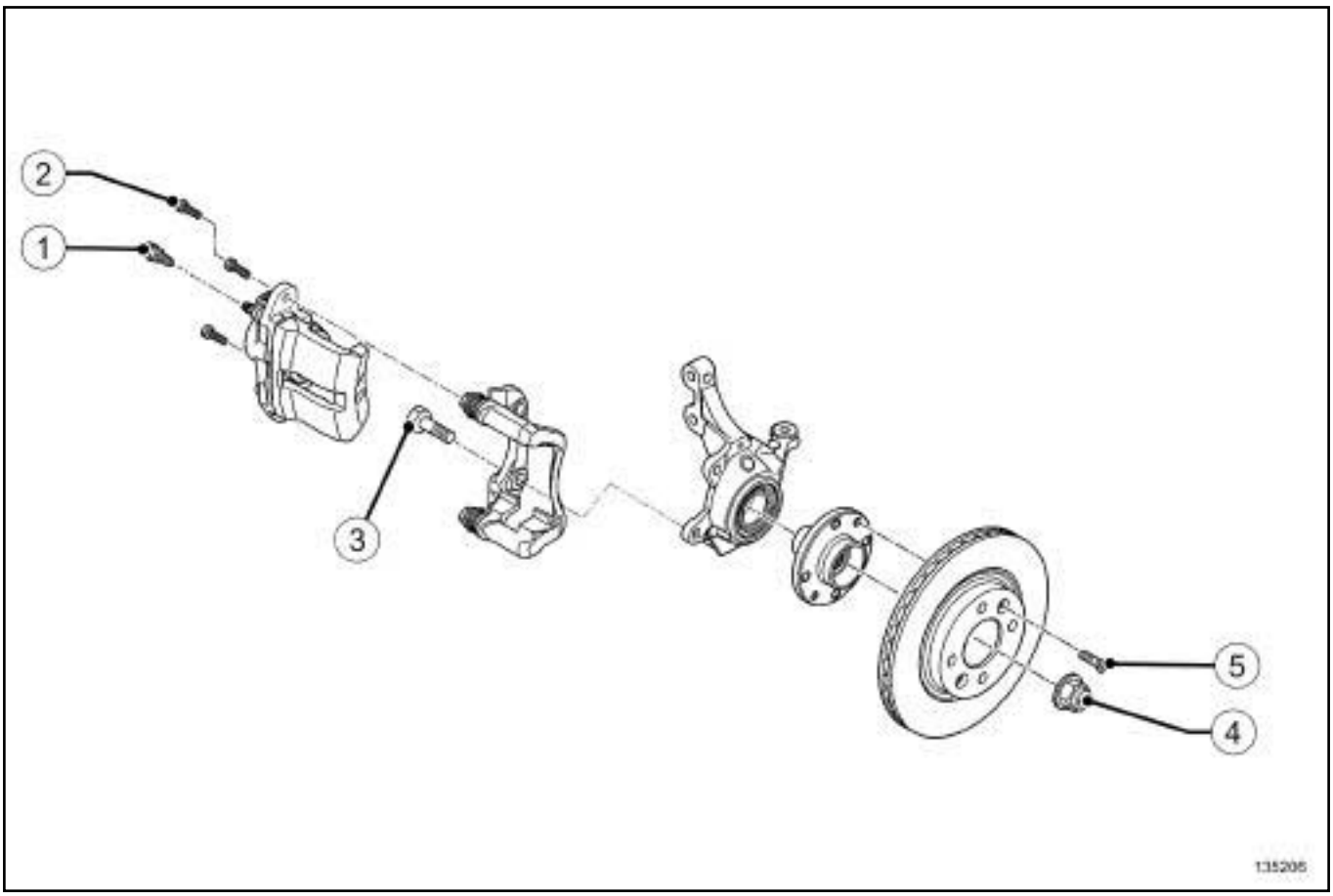
No.	Description	Tightening torque (N.m)
(**1**)	Calliper bleed screw	**10**
(**2**)	Guide pin bolts	**28**
(**3**)	Calliper support bolt	**100**
(**4**)	Hub nut	**280**
(**5**)	Brake disc bolt	**14**
-	Brake pipe union on the calliper	**17**

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



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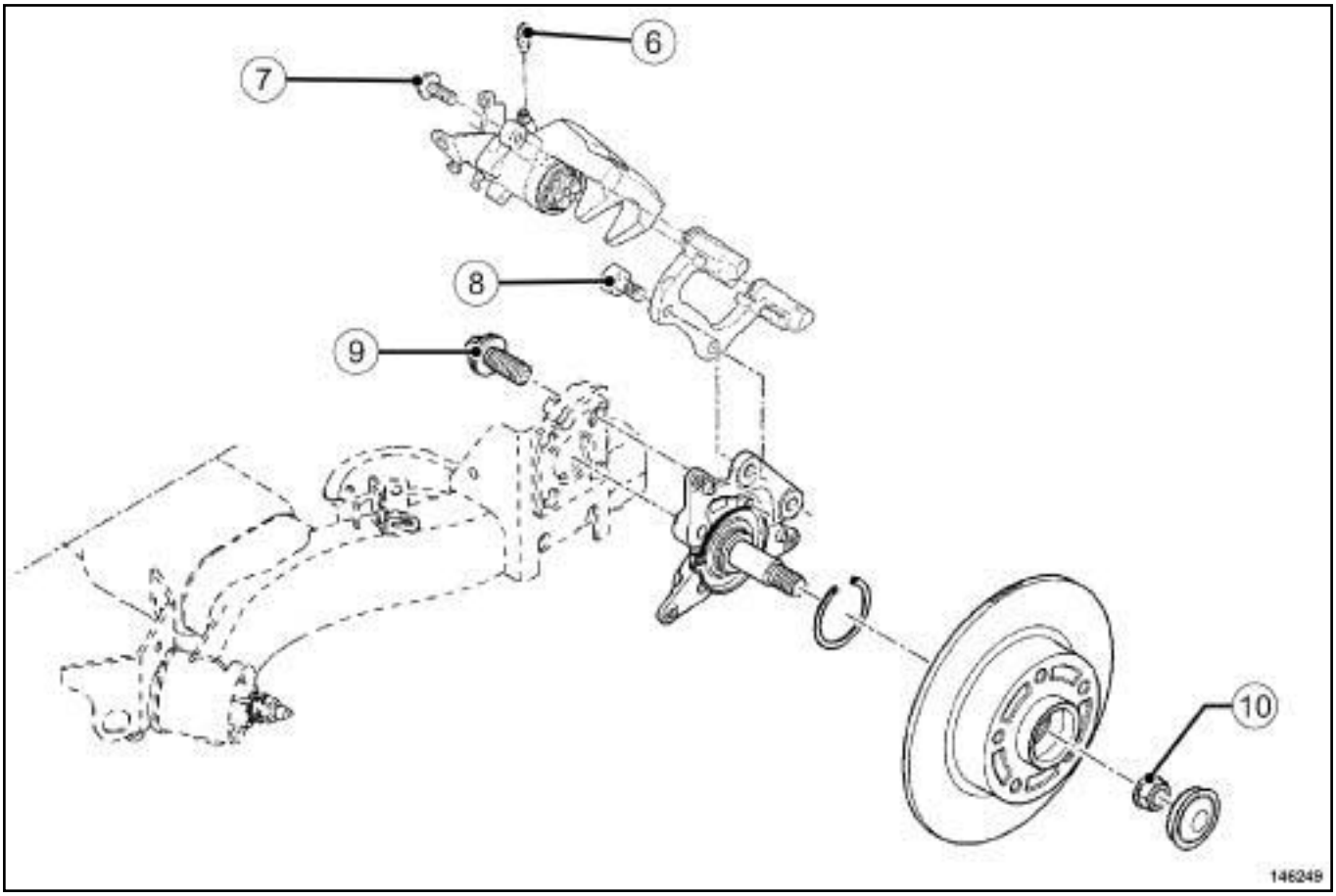
No.	Description	Tightening torque (N.m)
(**1**)	Calliper bleed screw	**11**
(**2**)	Guide pin bolts	**35**
(**3**)	Calliper support bolt	**100**
(**4**)	Hub nut	**280**
(**5**)	Brake disc bolt	**14**
-	Brake pipe union on the calliper	**17**

II - REAR BRAKES

EQUIPMENT LEVEL SPORT



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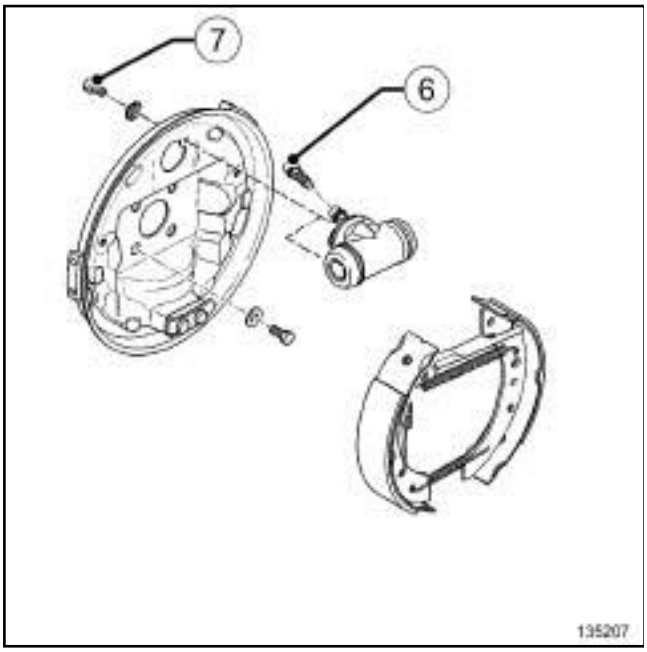
No.	Description	Tightening torque (N.m)
(**6**)	Calliper bleed screw	**11**
(**7**)	Guide pin bolts	**35**
(**8**)	Calliper support bolt	**105**
(**9**)	Stub-axle carrier bolt	**53**
(**10**)	Brake disc nut	**175**



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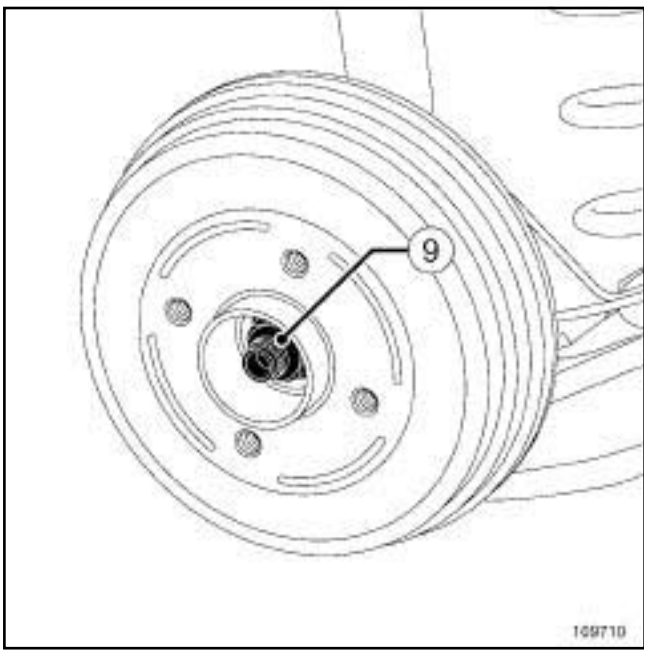
No.	Description	Tightening torque (N.m)
(**6**)	Calliper bleed screw	**6**
(**7**)	Guide pin bolts	**15**



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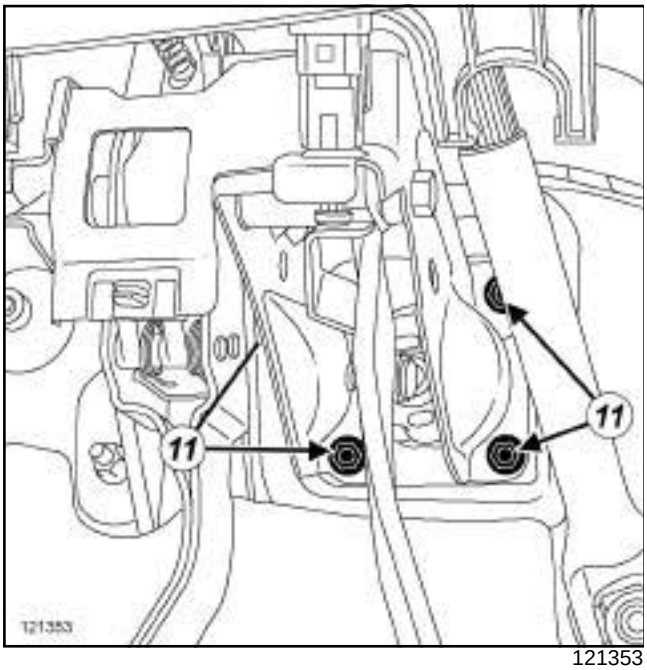
No.	Description	Tightening torque (N.m)
(**9**)	Drum nut	**175**

III - BRAKE CONTROL



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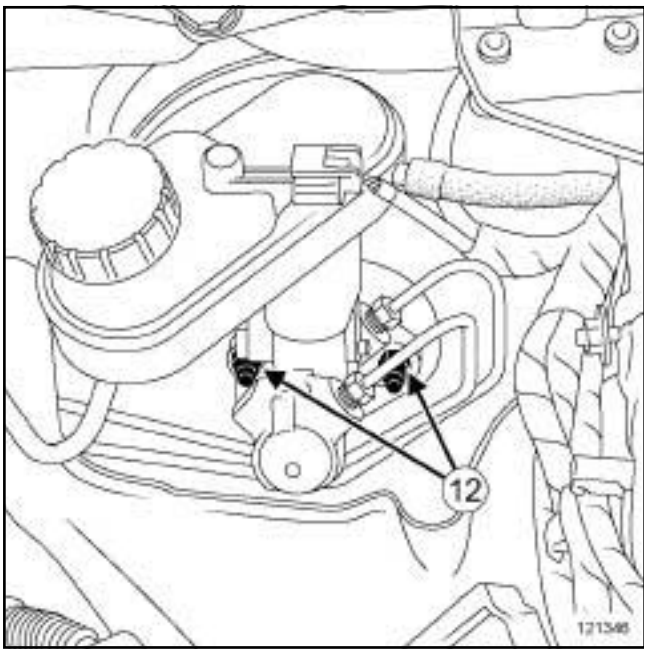

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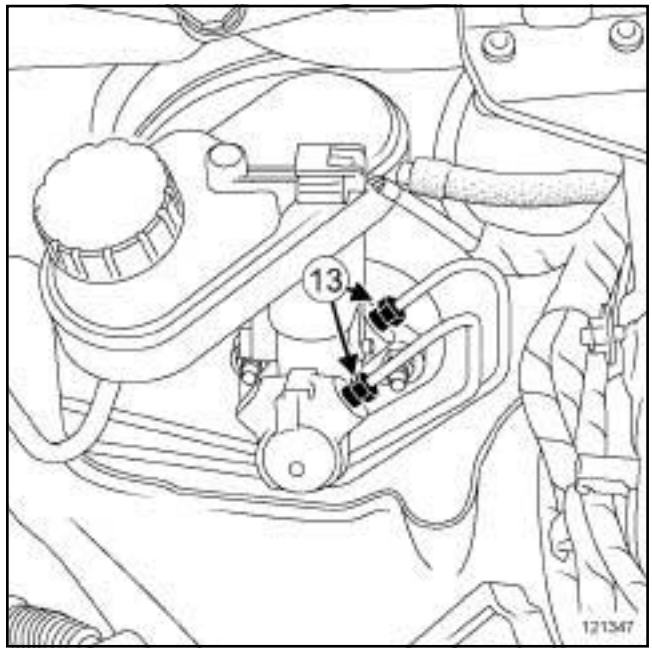

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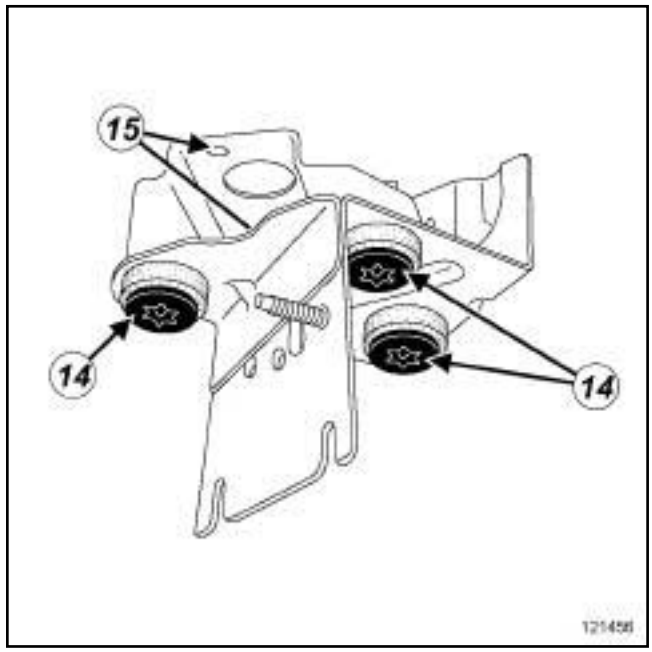

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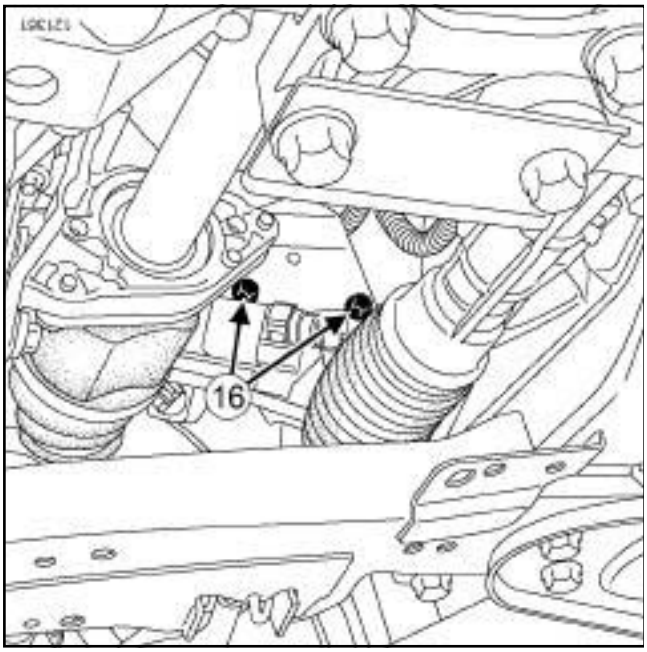

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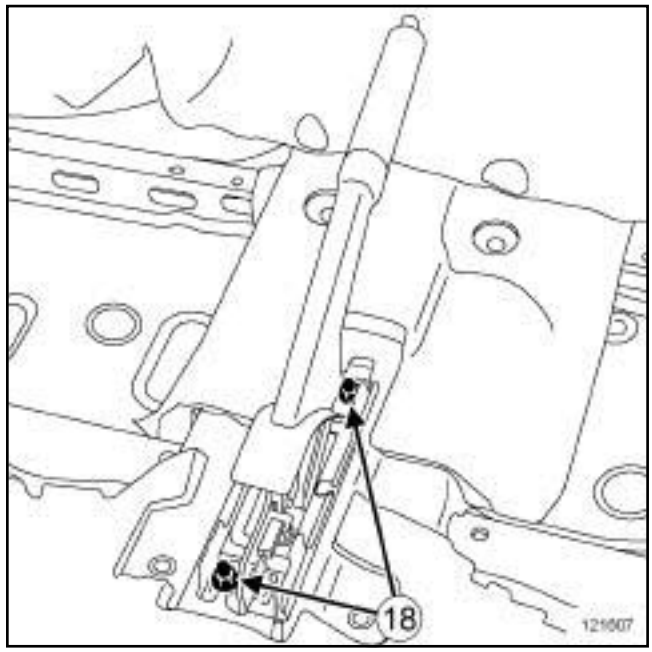

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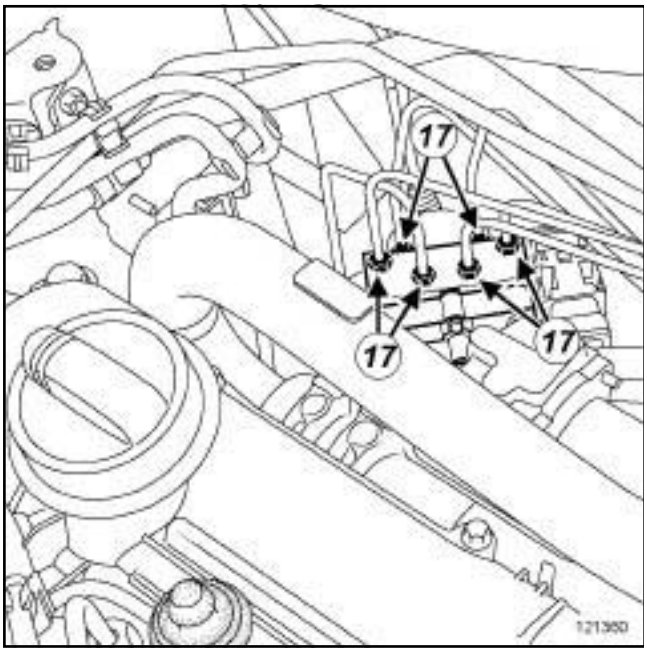

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No.	Description	Tightening torque (N.m)
(11)	Brake servo bolts	25
(12)	Master cylinder nuts	25
(13)	Master cylinder outlet pipe unions	15
(14)	Hydraulic unit bolt on its intermediate bracket	8

No.	Description	Tightening torque (N.m)
(15)	Hydraulic unit intermediate bracket bolt on the main mounting	6.5
(16)	Hydraulic unit main mounting bolt on the body	8
(17)	Hydraulic unit pipe unions	13
(18)	Parking brake control nuts	8

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.**

Note:

This procedure does not apply to:

- hybrid pipes (pipe + hose),

- pipes with diameters **6 mm** and **8 mm.**

REPAIR

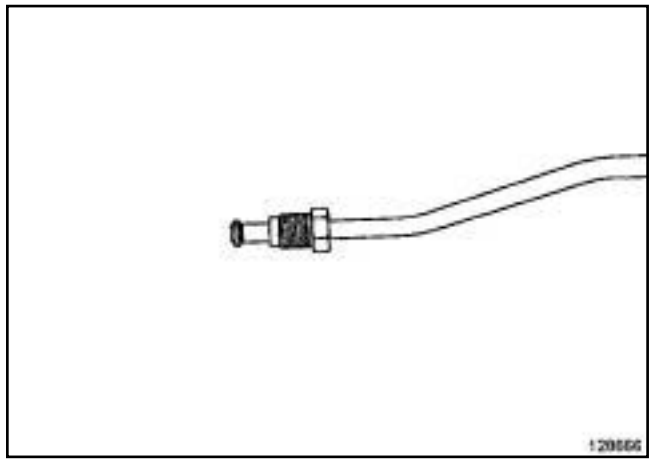
I - PIPE PREPARATION OPERATION

❑

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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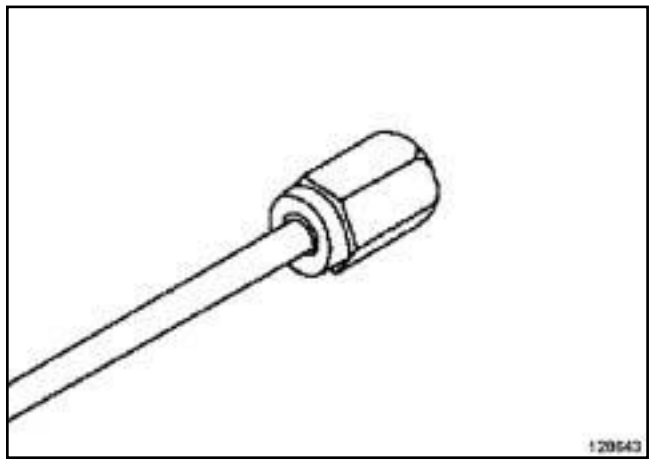

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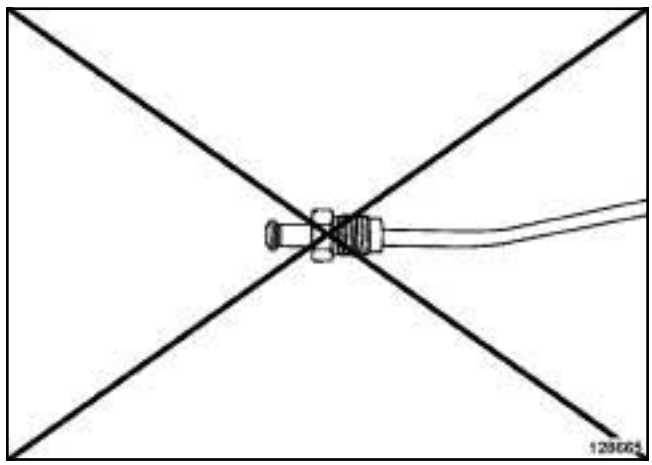

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❑ Put the nuts or bolts on the pipe before forming the rivets.

II - MAKING THE RIVETS

❑

Note:

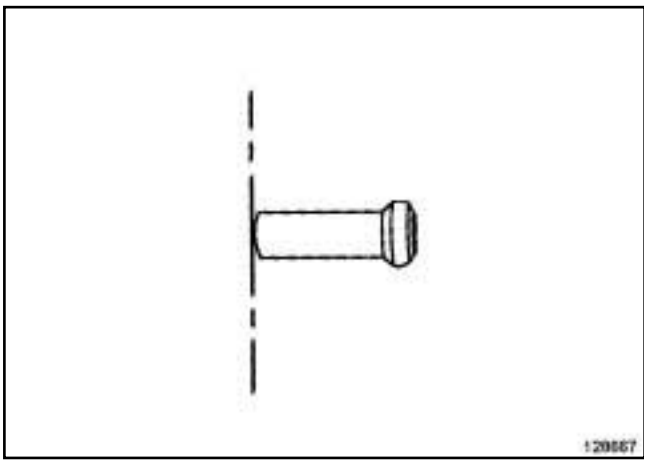
To make the rivets, fit the rivet press in a vice.

❏ 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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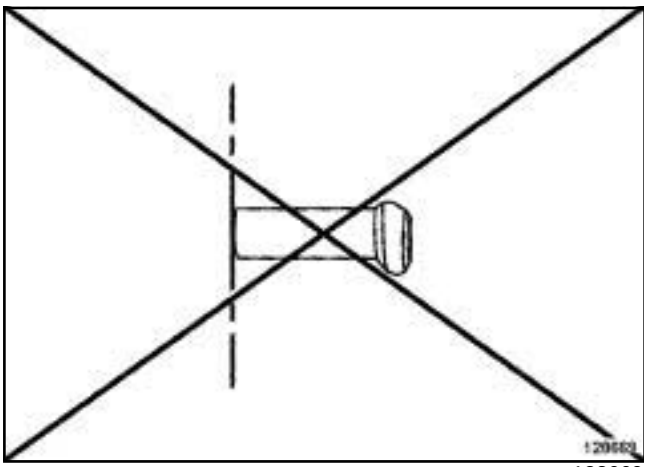
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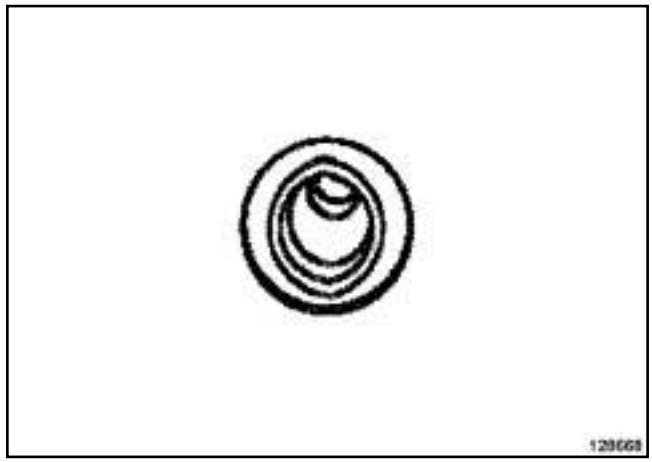
❏ Visually inspect:

- the uniformity of the rivets' diameter,
- the rivet centring in relation to the pipe shaft.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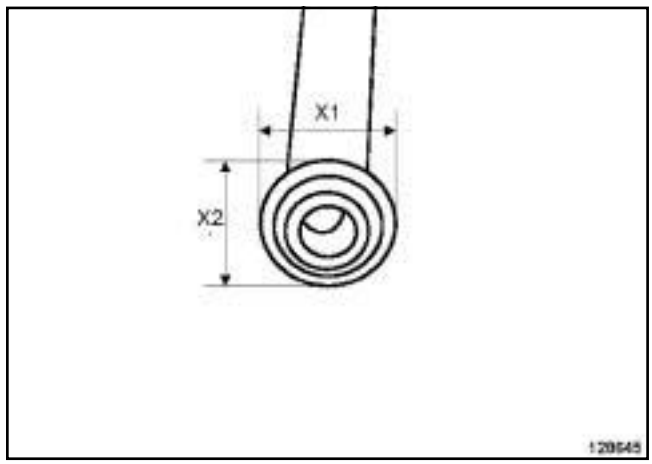
❏ Visually check that the internal diameter of the pipe is not oval-shaped.



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❏ 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

❏

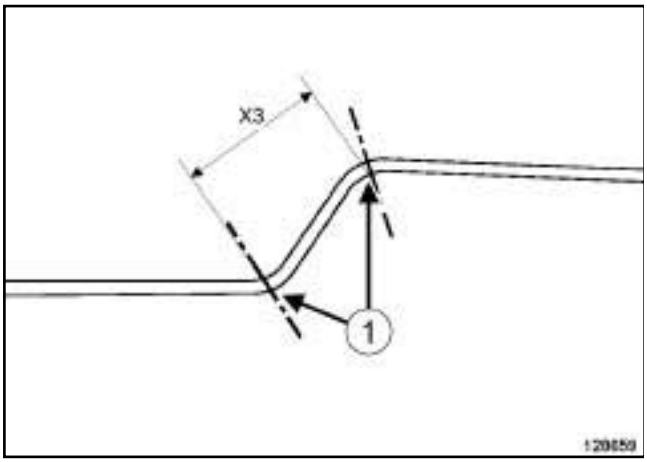
Note:

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.



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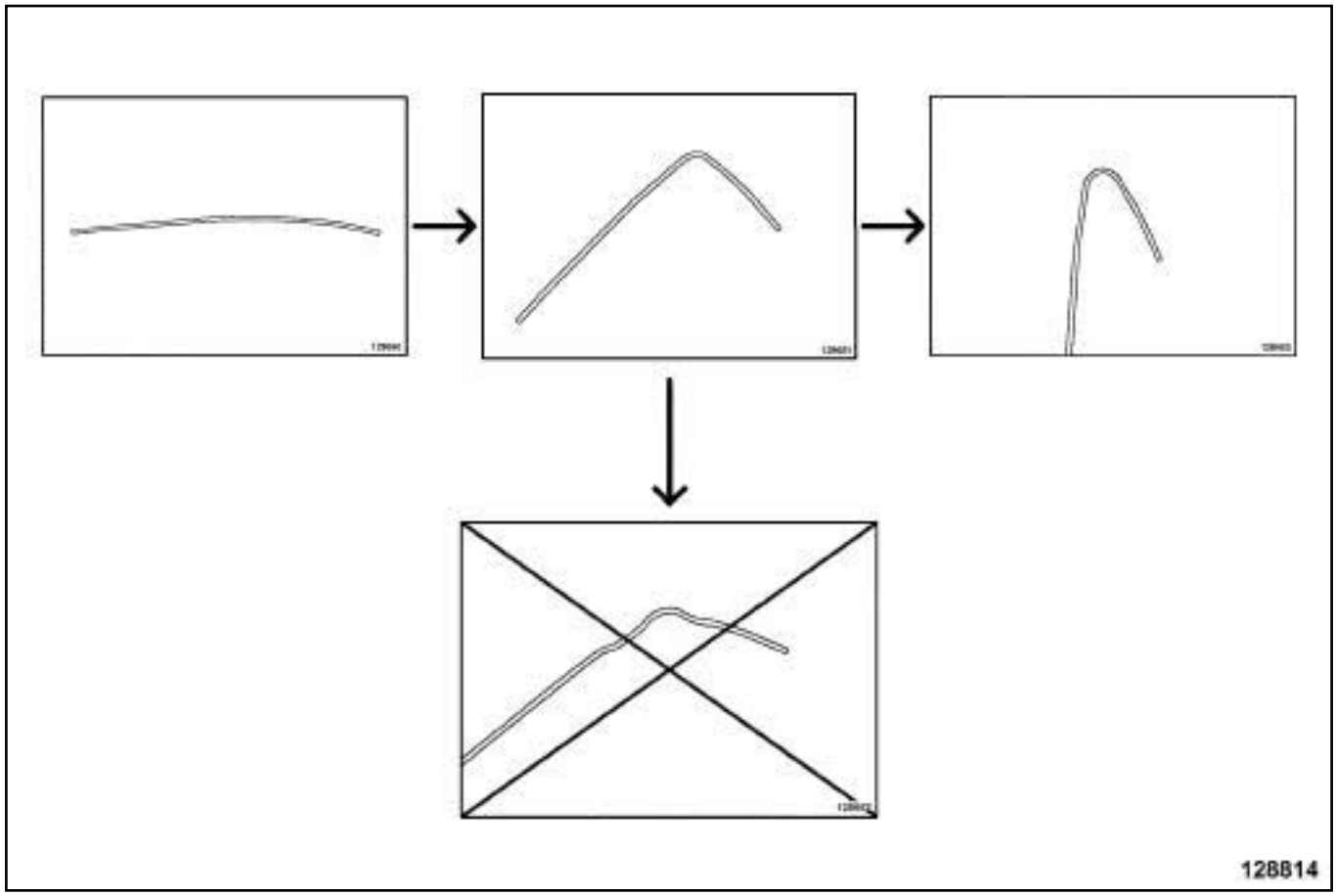
❑ Measure the dimensions (**X3**) (in mm) curve after curve, between each curve radius « centre » (**1**) of the old pipe.



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❑

WARNING

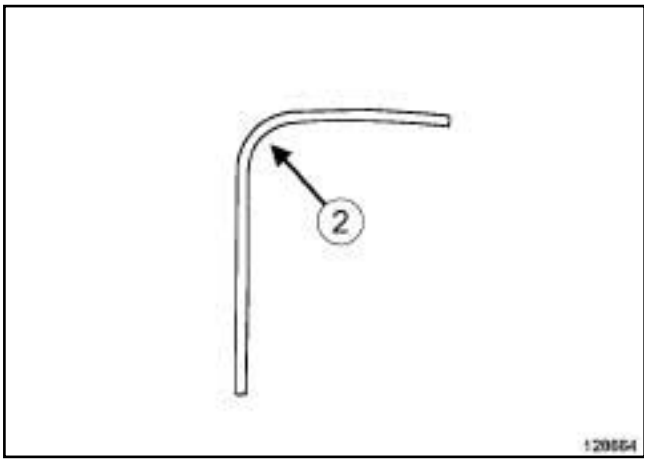
To avoid weakening the pipe, either bend once or bend progressively by increasing the bend (that is, by continually decreasing the curve radius). Do not install a rigid pipe on a vehicle that may have been bended and then unbended alternatively to reach the correct curve radius.

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.

V - CHECKING BENDING



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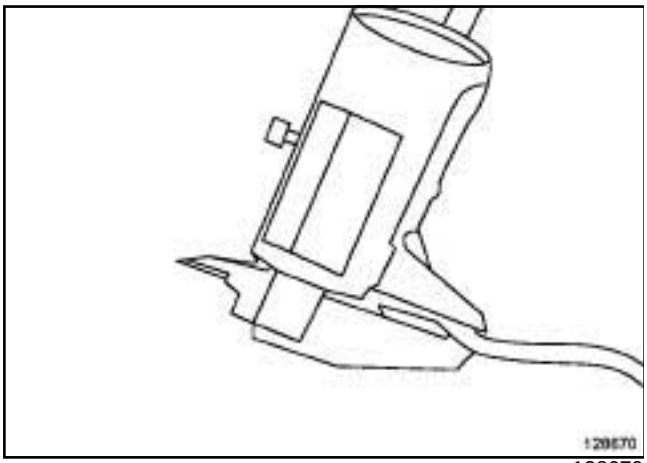
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❑ Check the out-of-roundness of the outer diameter at the centre of the curve radius (**2**) using a sliding calliper (the out-of-roundness of the outer diameter is correct if it is less than 10% flattening):

- nominal diameter of the pipe: **4.75 mm**,
- minimum diameter after bending: **4.30 mm**.

VI - REFITTING THE PIPE

❑

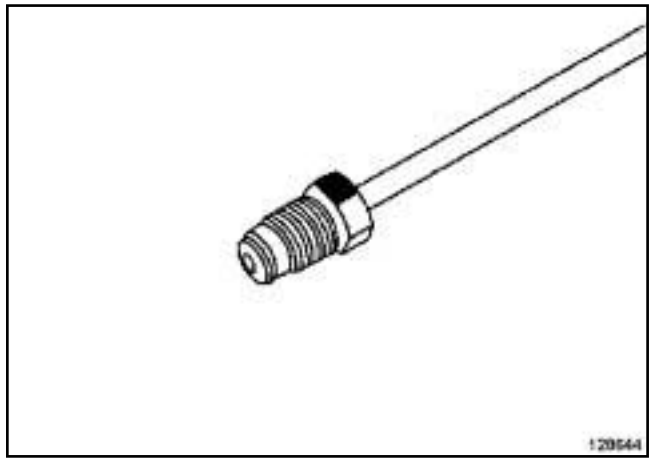
Note:

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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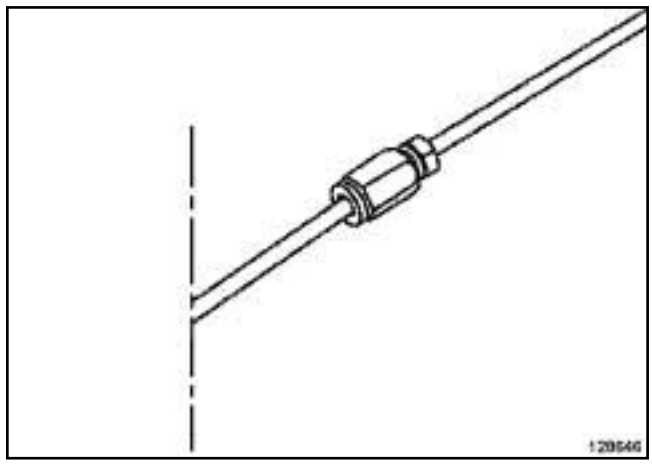
❑ Torque tighten the **brake pipe bolts (8 N.m)**.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❑ Torque tighten the **underbody unions (female/male) (6 N.m)**.

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

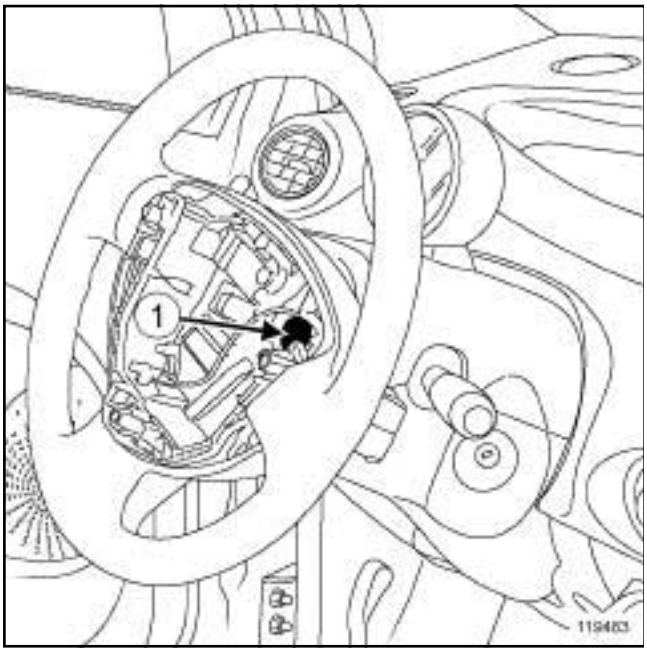
Mixing two incompatible brake fluids in the brake circuit may lead to:

- 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**) .

	Full front brake discs	Ventilated front brake discs	
Front brake (mm)			
Piston diameter	48	48	57
Disc diameter	259	259	280
Disc thickness	12	20.6	24
Minimum disc thickness (1)	10.6	17.7	21.8
Maximum disc run-out	0.03		
Brake pad thickness (including backplate)	18		17.5
Minimum pad thickness (including backplate)	6		8.2
Rear drum brake (mm)			
Slave cylinder diameter	17.5		
Drum diameter	203.2		
Maximum diameter of drum wear	204.45		
Drum pad thickness (including support)	5.5		
Minimum drum lining thickness (including mounting)	2.4		
Rear disc brake (mm)			
Piston diameter	34		
Disc diameter	240		
Disc thickness	8		
Minimum disc thickness (1)	7		
Maximum disc run-out	0.06		
Brake pad thickness (including backplate)	16		
Minimum pad thickness (including backplate)	6		

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



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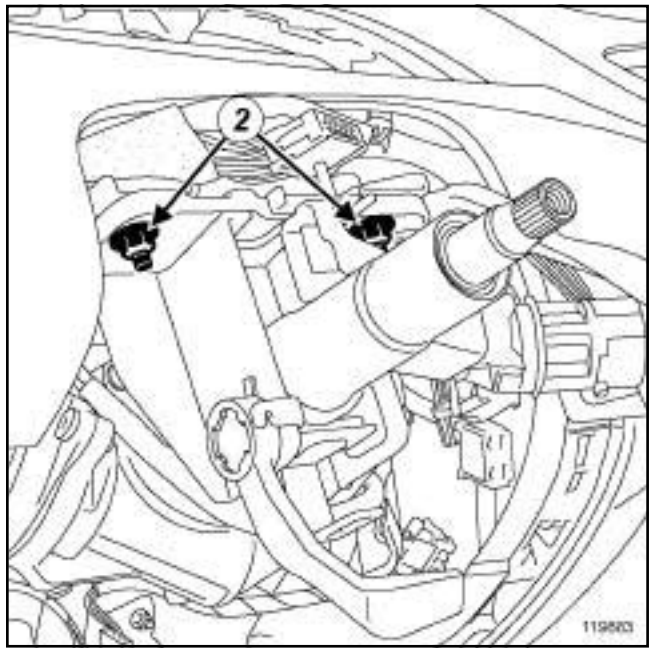

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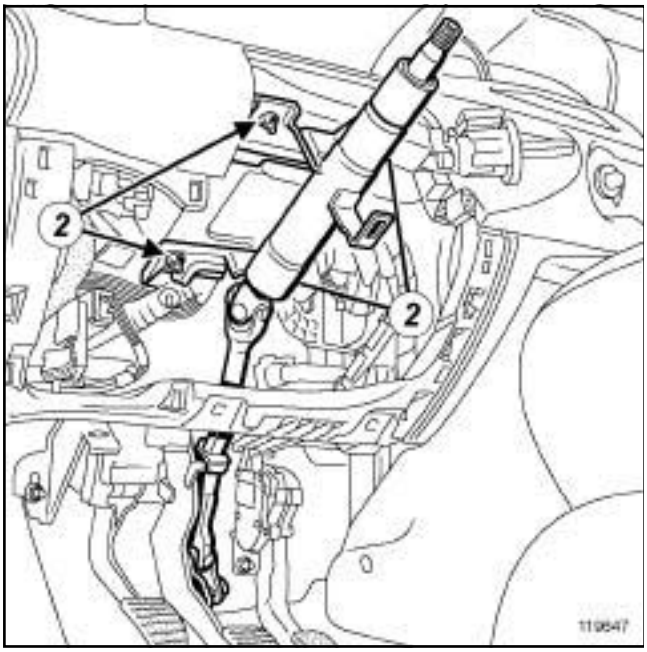

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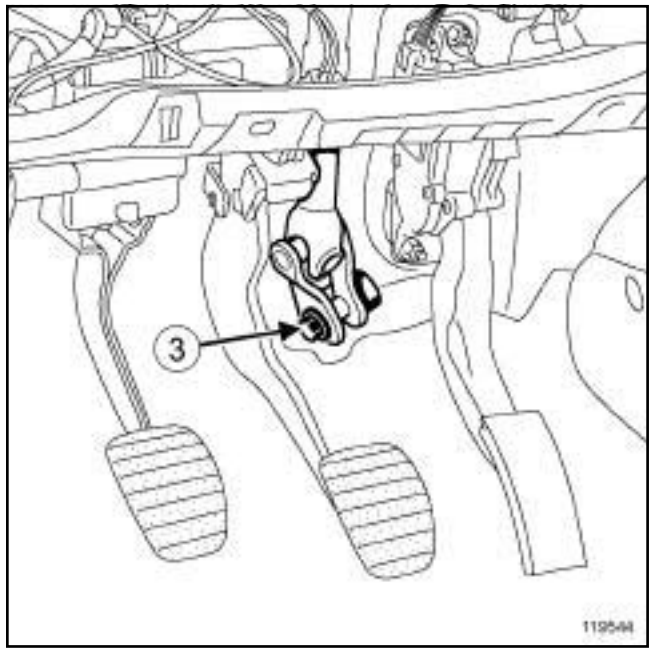

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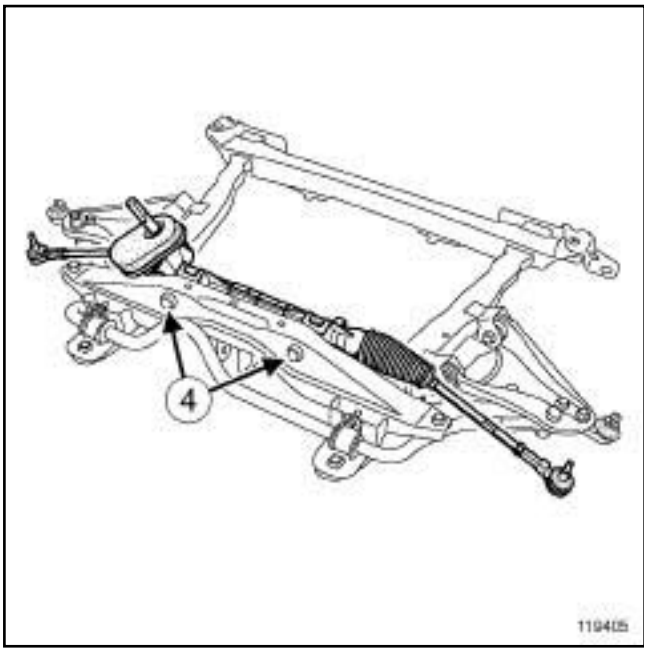

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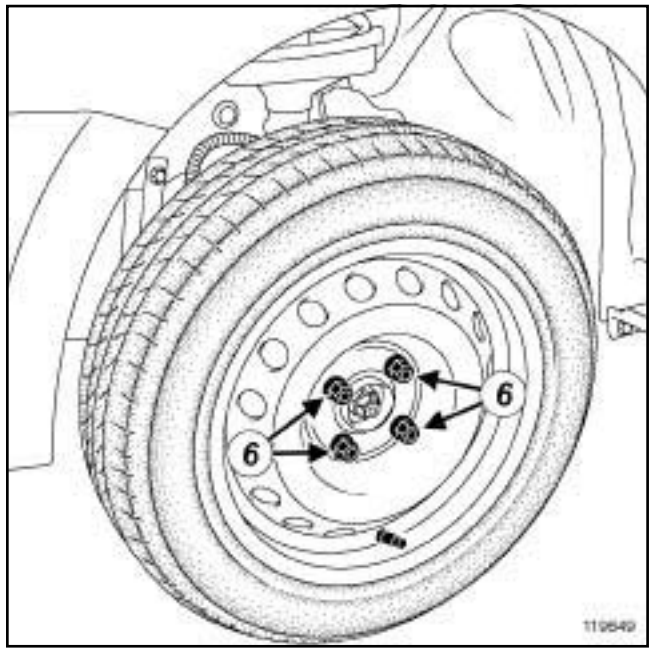

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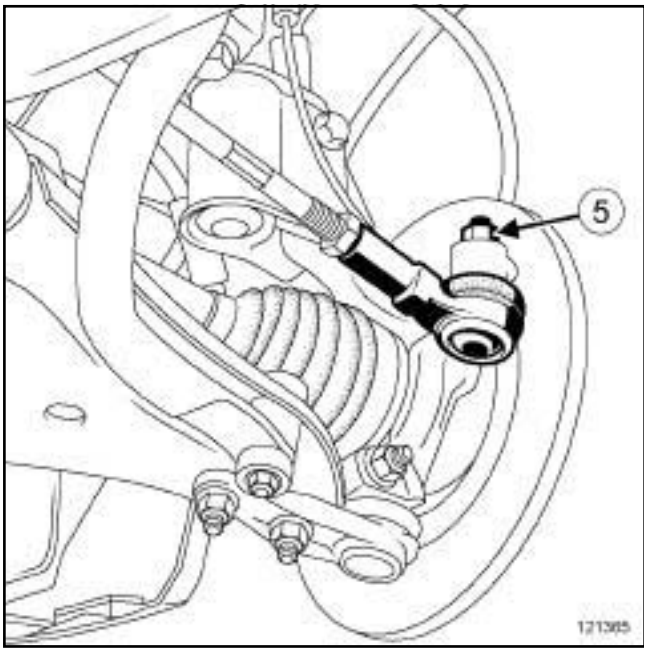
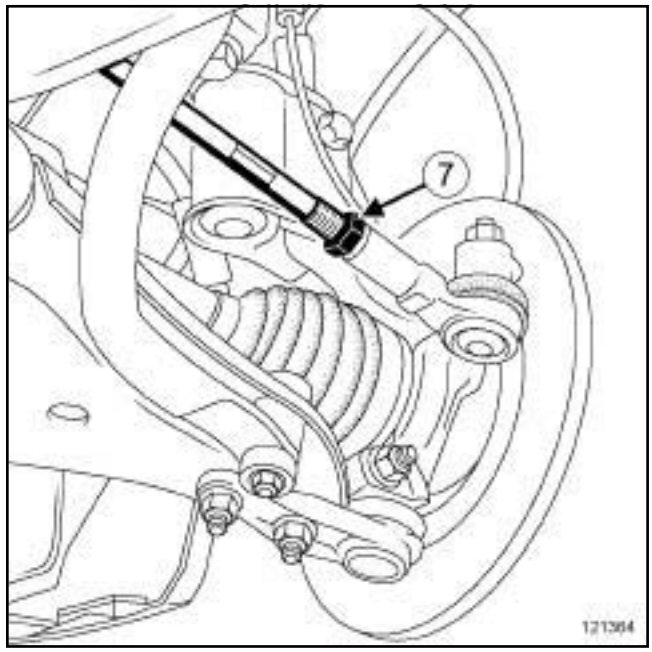


121365



121364

No.	Description	Tightening torque (Nm)
(1)	Steering wheel bolt	44
(2)	Steering column nuts	21
(3)	Universal joint bolts on the steering box	24
(4)	Steering box bolt	105
(5)	Track rod nuts	37

No.	Description	Tightening torque (Nm)
(6)	Wheel bolt	105
(7)	Wheel alignment lock nut	53

❏ 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 **Front driveshaft lower arm ball joint: Check**) ,
- shock absorbers,
- tyres,

❏ Check:

- the tyre size (see **35A**, **Wheels and tyres**, **Tyres: Identification**, page **35A-7**) ,
- the tyre inflation pressure (see **35A**, **Wheels and tyres**, **Tyre pressure: Identification**, page **35A-10**) .

❏ Put the vehicle in the VODM position (vehicle in running order) (see **30A**, **General information**, **Underbody heights: Adjustment value**, page **30A-24**) :

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

❏ Consult:

- the front axle geometry values (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) ,
- the rear axle geometry values (see **30A**, **General information**, **Rear axle assembly: Adjustment values**, page **30A-38**) .

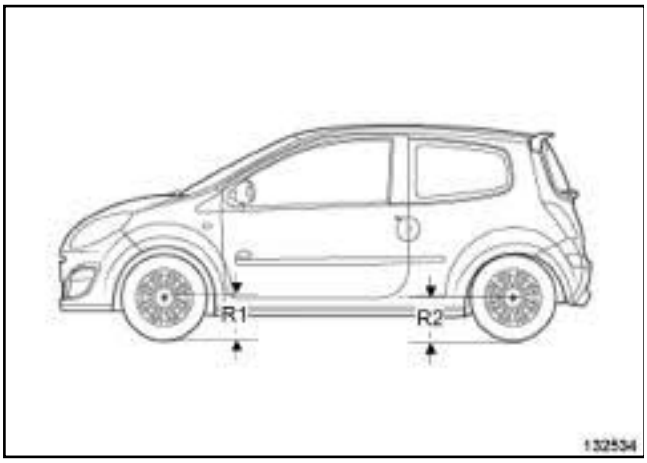
❏ Refer to the user manual for the geometry tester.

❏ 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-36**)

I - MEASURING POINT

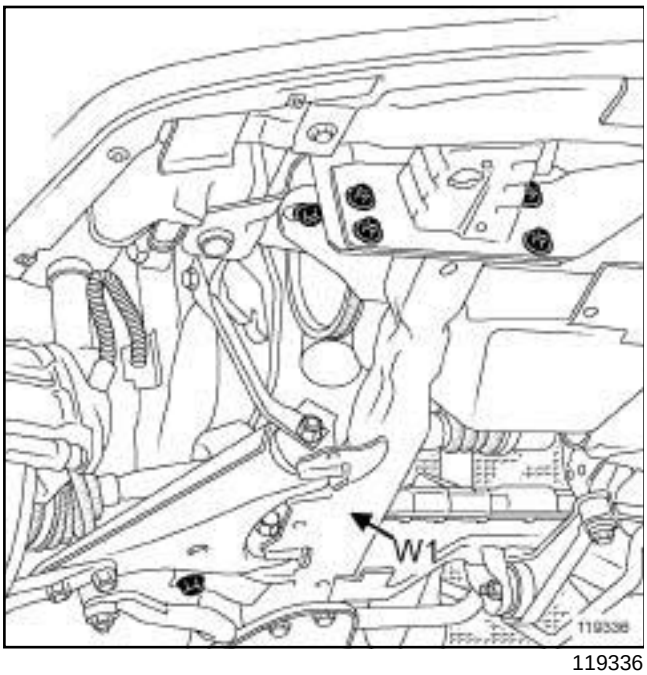


132534

Radius under load:

- R1: Distance between the ground and the front wheel shaft.
- R2: Distance between the ground and the rear wheel shaft.

1 - Front height (W1):



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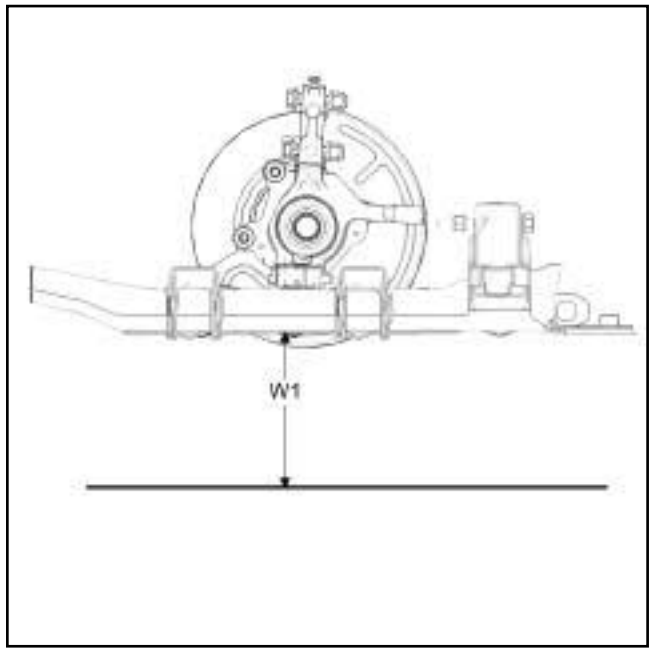
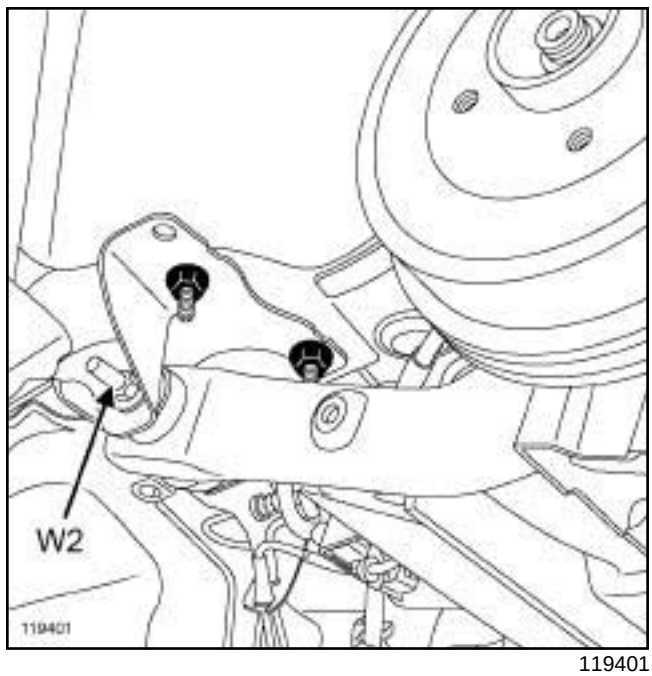


(**W1**) : Height between the ground and the side member (the measuring point is located 23 mm from point B of the yoke)

2 - Rear height (W2)



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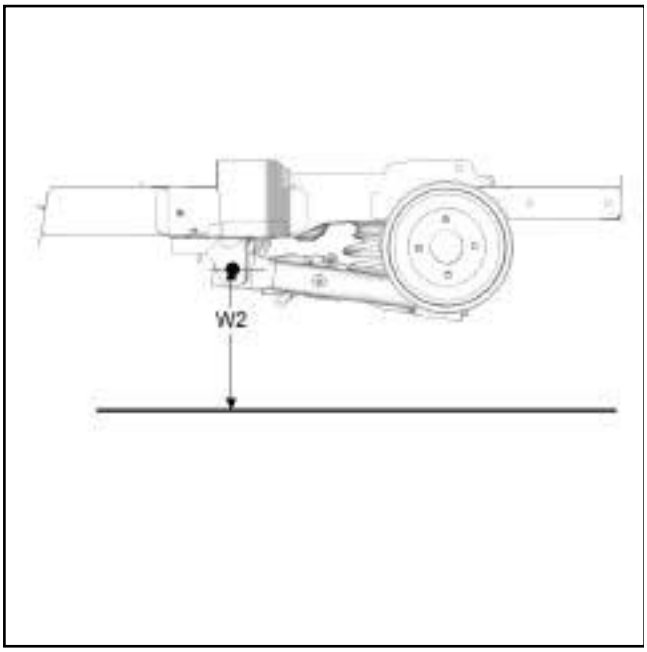


139112

(**W2**) : Height between the ground and the bolt shaft of the rear axle bearing

II - MEASURING METHODS

Note:

For the measurement of W1 and W2, take into account the height differences between the plates and the final drive.

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.

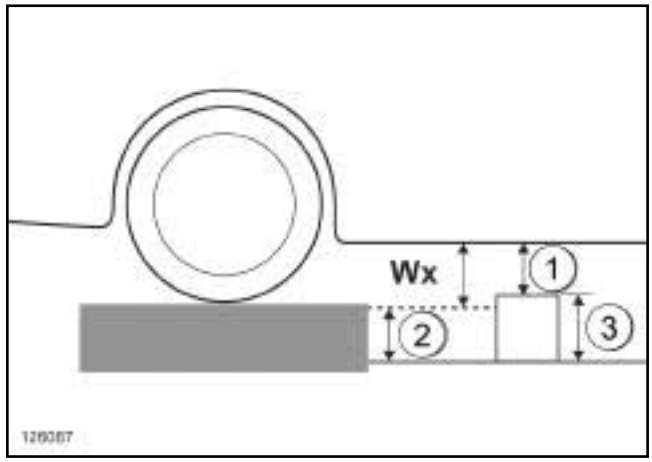
Special cases:

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:



126087

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

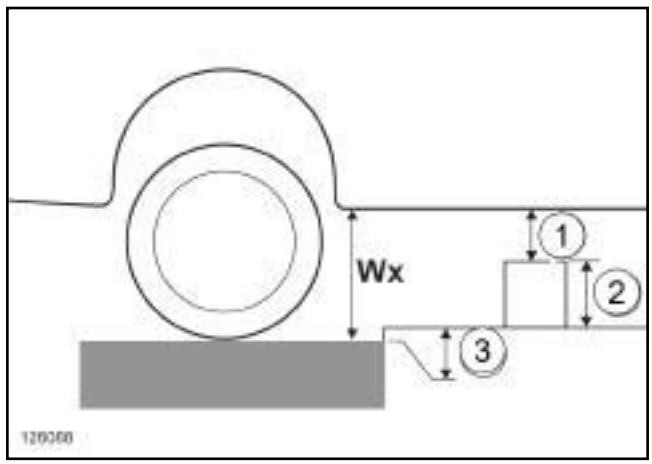
Example: (**1**) = 6 cm, (**2**) = 8 cm, (**3**) = 10 cm.

Calculate the height Wx:

Wx = height (**1**) + height (**3**) - height (**2**) ,

Wx = 8 cm.

2 - Plate lower than the lift:



126088

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

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

Calculate the height Wx:

Wx = height (**1**) + height (**2**) + height (**3**) ,

Wx = 22 cm.

III - VEHICLE IN RUNNING ORDER POSITION

VODM (Vehicle in working order) position:

- Tank full,
- Empty vehicle (without luggage, etc.).

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

W1 = **158 mm ± 8 mm**

W2 = **270.7 mm ± 12 mm**

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

W1 = **163.5 mm ± 8 mm**

W2 = **275.1 mm ± 12 mm**

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

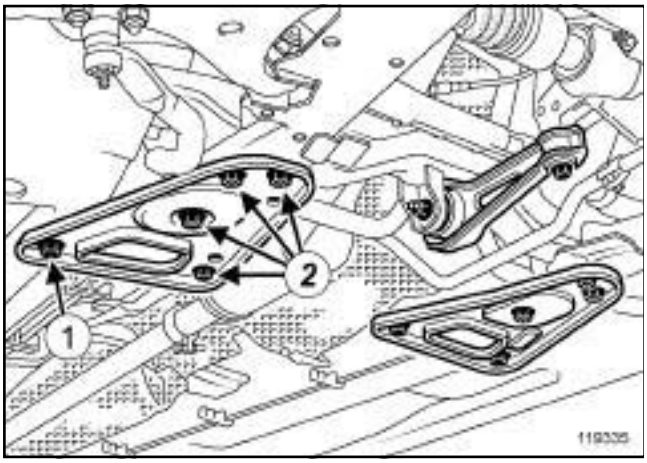
W1 = **157.7 mm ± 8 mm**

W2 = **270.3 mm ± 12 mm**

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.



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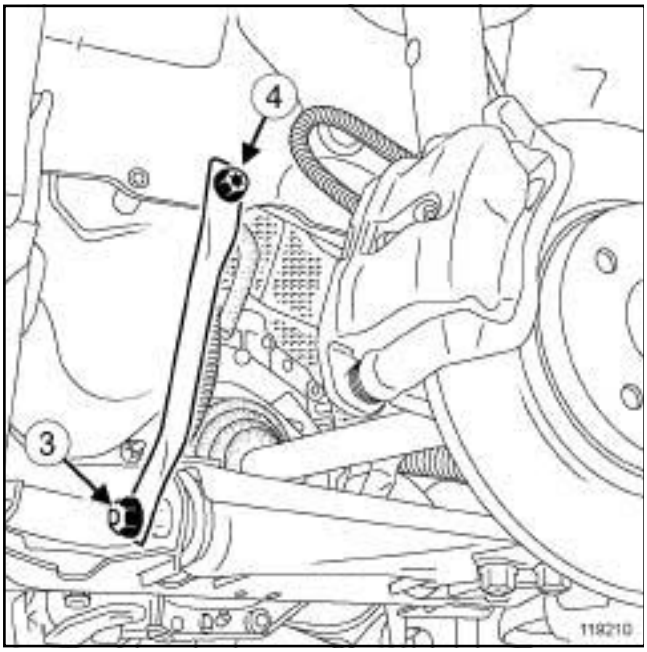

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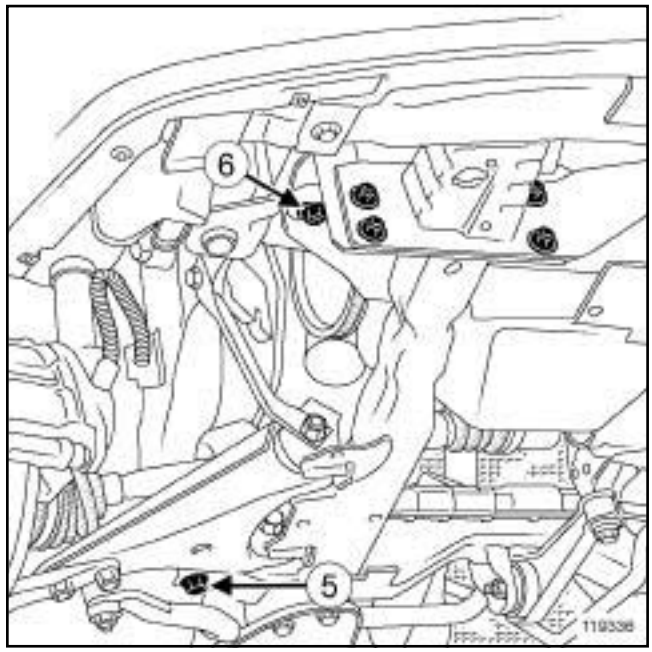

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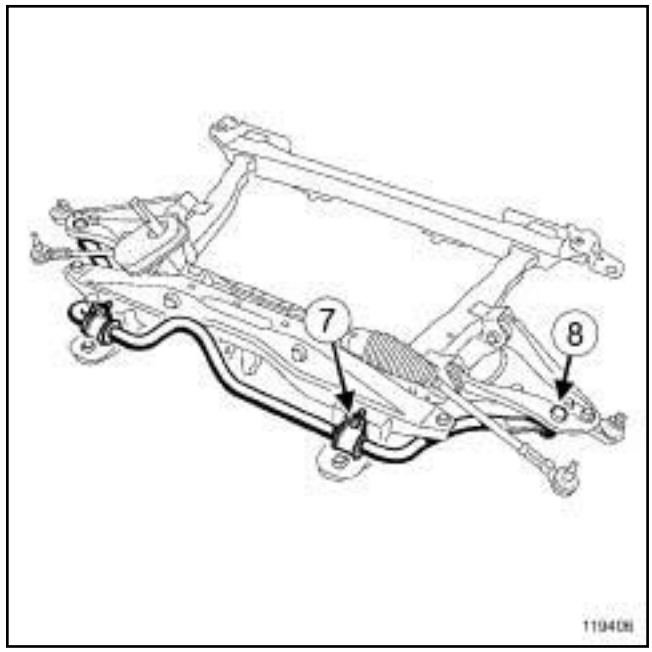

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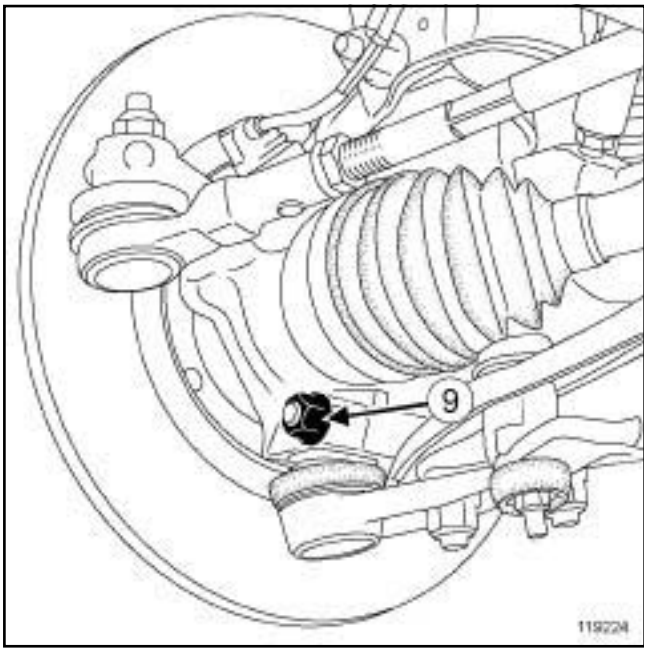

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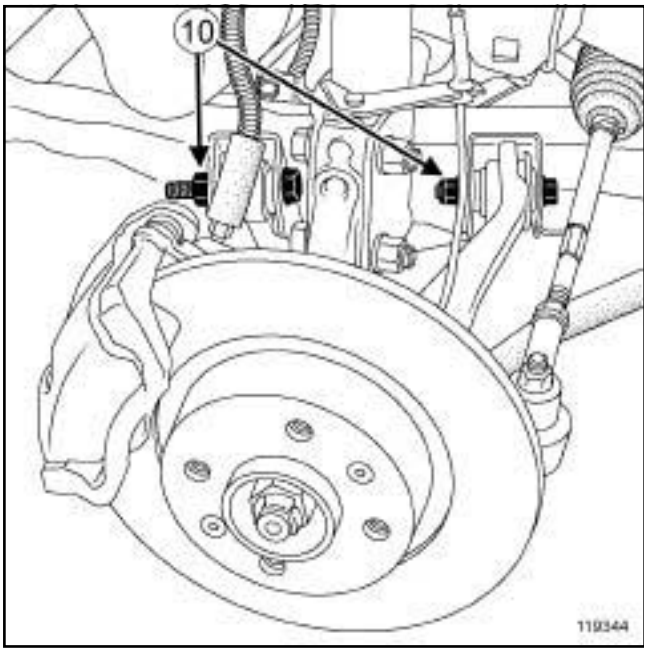

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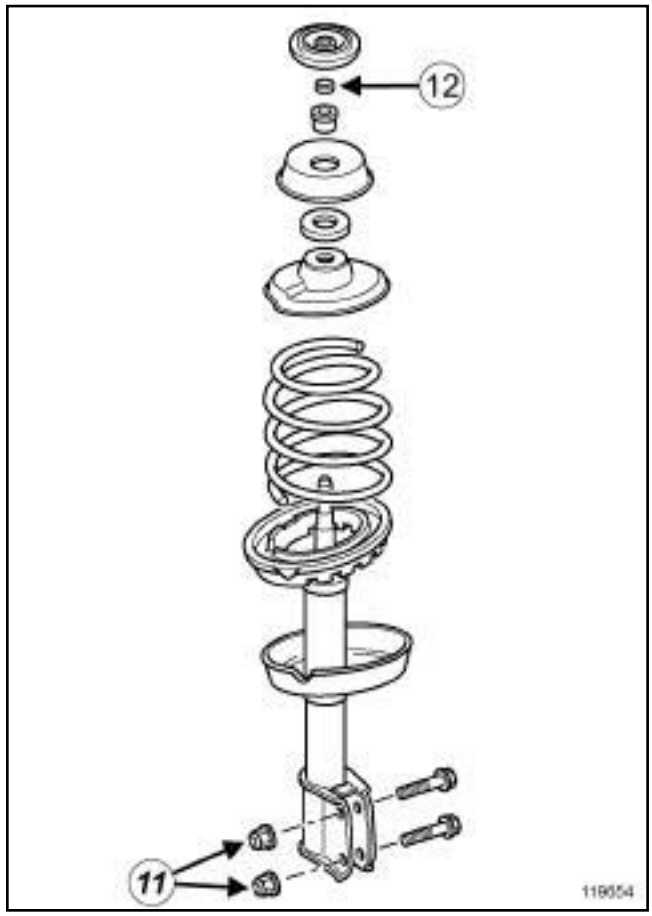

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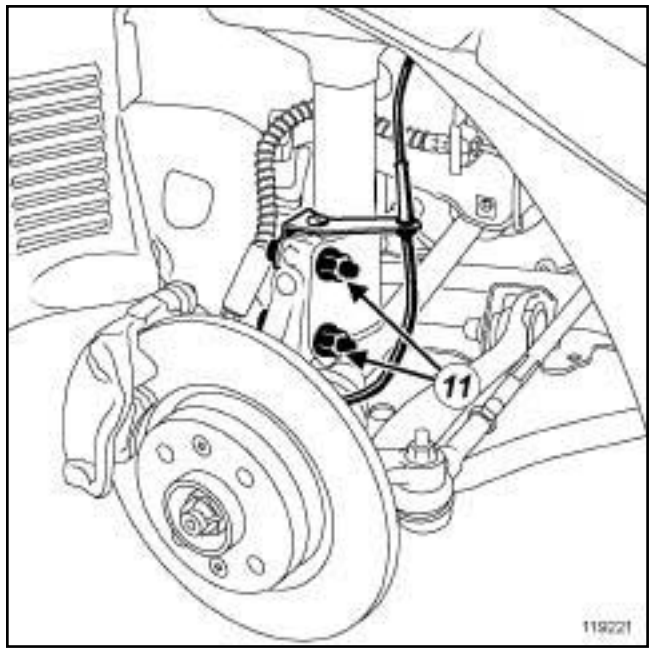

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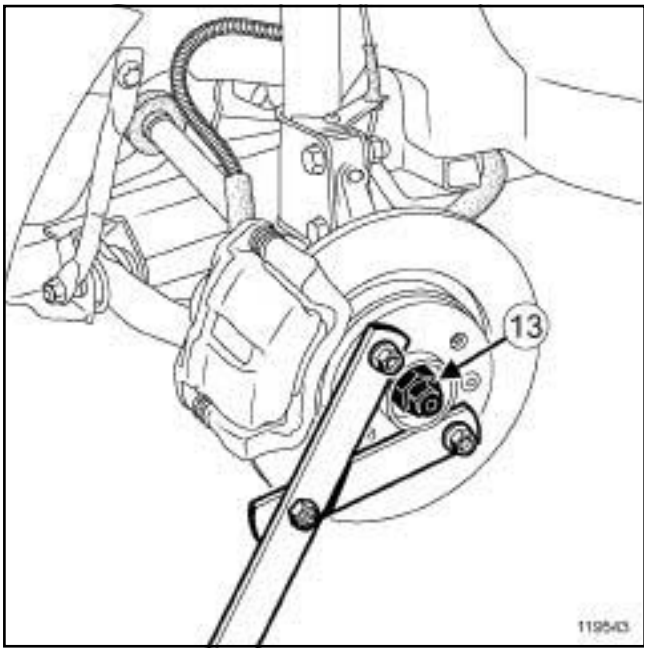

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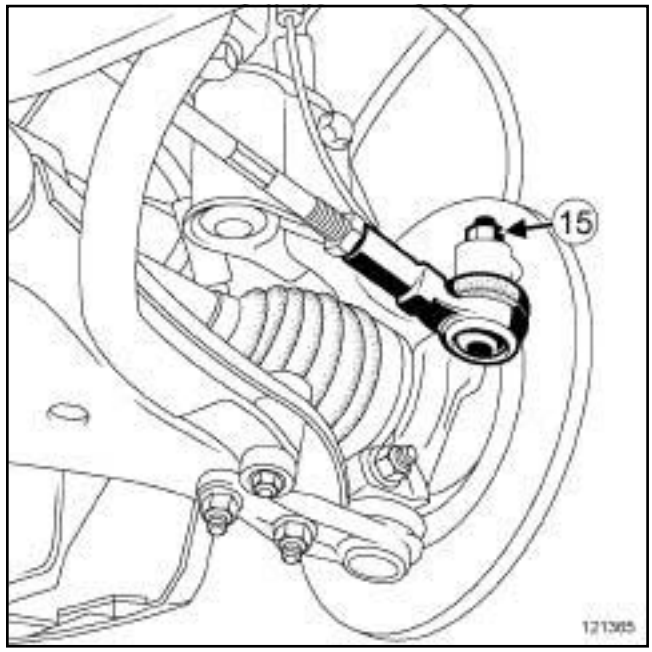

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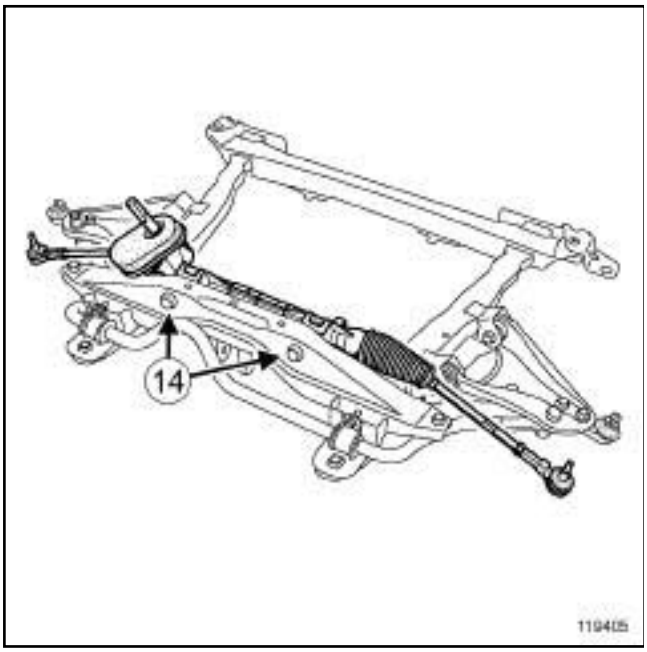

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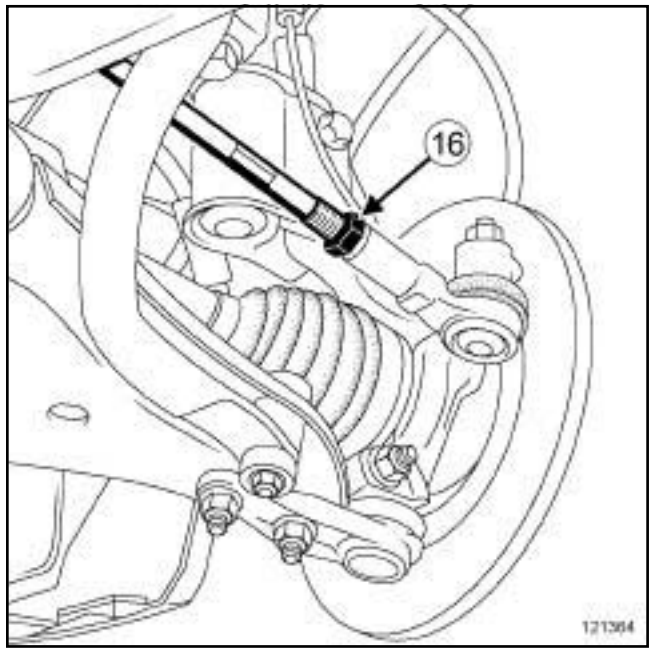

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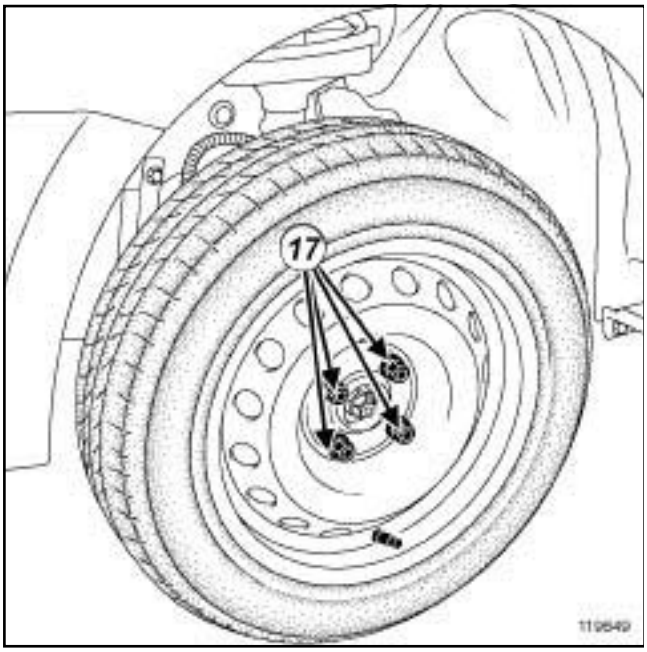


119649

No.	Description	Tightening torque (N.m)
(1)	Impact bracket bolts	21
(2)	Impact bracket bolts	90
(3)	Acoustic tie-rod nuts	62
(4)	Acoustic tie-rod bolts	21
(5)	Subframe rear bolt	105
(6)	Subframe front bolts	62
(7)	Anti-roll bar bearing bolts on the subframe	35
(8)	Anti-roll bar bolt on the wheel side	14
(9)	Lower ball joint bolt	62
(10)	Front driveshaft lower arm bolts	105
(11)	Shock absorber lower bolts	105
(12)	Shock absorber rod nut	21
(13)	Hub nut	280
(14)	Steering box bolts	105
(15)	Track rod end nut	37
(16)	Wheel alignment lock nut	53
(17)	Wheel bolts	105

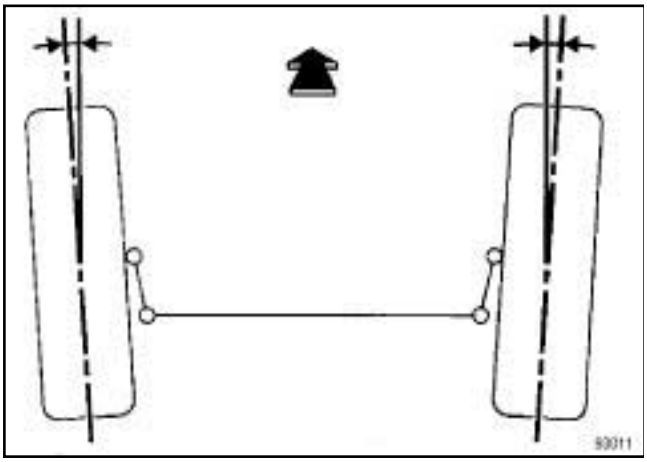
I - WHEEL ALIGNMENT: MEANING OF SYMBOLS

WARNING

Symbols used by RENAULT:

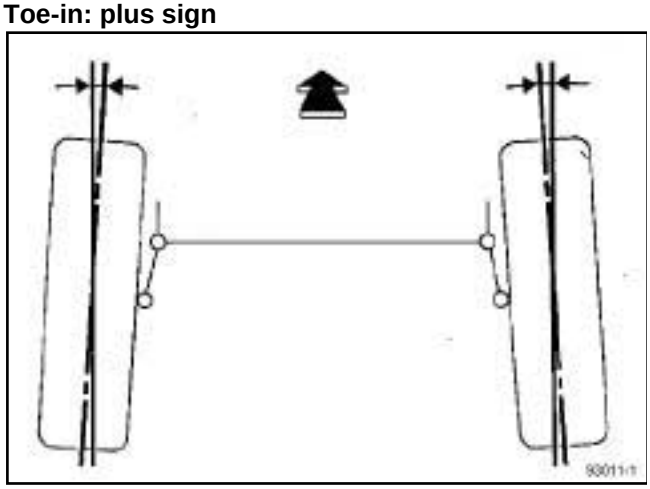
- toe-out: -
- toe-in: +

Toe-out: minus sign



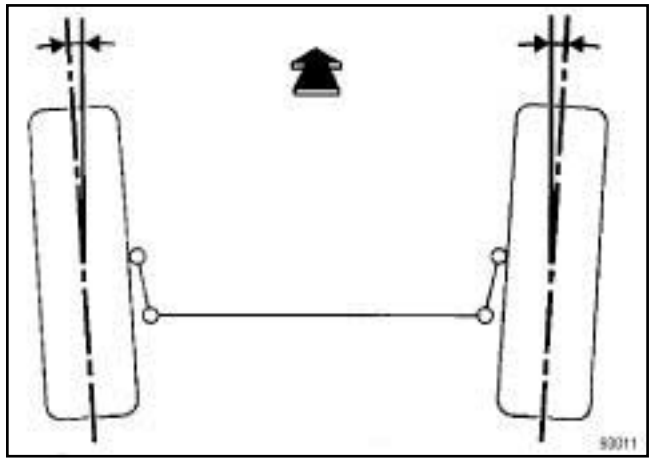
93011

Toe-in: plus sign



93011-1

II - WHEEL ALIGNMENT



93011

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value (for two wheels)	Position of vehicle
-0°10' ± 15'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value (for two wheels)	Position of vehicle
-0°10' ± 9'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

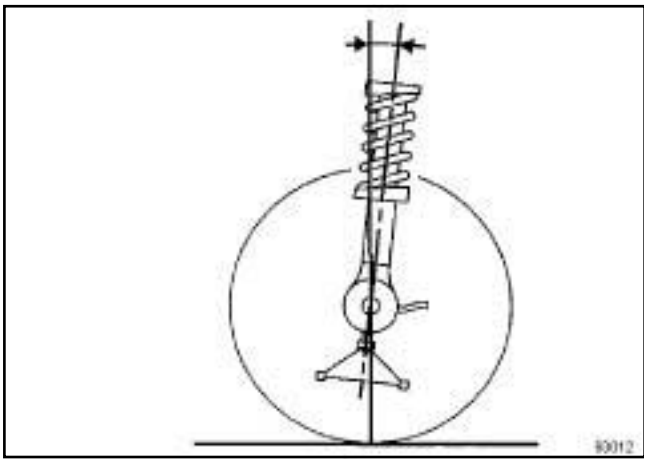
Value (for two wheels)	Position of vehicle
-0°10' ± 9'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value (for two wheels)	Position of vehicle
-0°11' ± 9'	Vehicle in running order

III - CASTOR ANGLE

Not adjustable.


93012

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4, and MANUAL STEERING

Value	Vehicle position (mm)
1°52' ± 30'	W2 - W1 = 112
1°53' ± 30'	W2 - W1 = 113
1°50' ± 30'	W2 - W1 = 114
1°44' ± 30'	W2 - W1 = 117
1°41' ± 30'	W2 - W1 = 119
1°38' ± 30'	W2 - W1 = 120
1°40' ± 30'	W2 - W1 = 121
1°37' ± 30'	W2 - W1 = 122
1°33' ± 30'	W2 - W1 = 125
1°29' ± 30'	W2 - W1 = 127
Maximum left - right difference = 30'	

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4, and POWER ASSISTED STEERING

Value	Vehicle position (mm)
2°40' ± 30'	W2 - W1 = 112
2°41' ± 30'	W2 - W1 = 113
2°38' ± 30'	W2 - W1 = 114
2°32' ± 30'	W2 - W1 = 117
2°29' ± 30'	W2 - W1 = 119
2°26' ± 30'	W2 - W1 = 120
2°28' ± 30'	W2 - W1 = 121
2°25' ± 30'	W2 - W1 = 122
2°21' ± 30'	W2 - W1 = 125
2°17' ± 30'	W2 - W1 = 127
Maximum left - right difference = 30'	

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value	Max difference Left/ Right
2°57' ± 18'	30'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

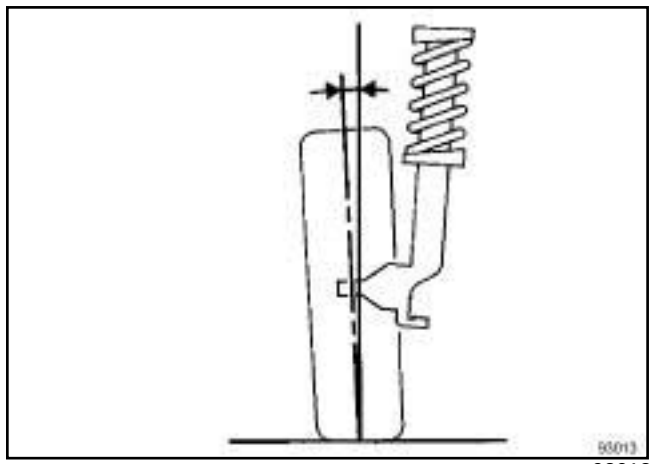
Value	Max difference Left/ Right
2°57' ± 18'	30'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Max difference Left/ Right
3° ± 18'	30'

IV - CAMBER

Not adjustable.


93013

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Vehicle position (mm)
-0°45' ± 60'	R1 - W1 = 100
-0°46' ± 60'	R1 - W1 = 103
-0°47' ± 60'	R1 - W1 = 105
-0°49' ± 60'	R1 - W1 = 109
-0°49' ± 60'	R1 - W1 = 111
-0°50' ± 60'	R1 - W1 = 112
-0°50' ± 60'	R1 - W1 = 113
-0°50' ± 60'	R1 - W1 = 114
-0°51' ± 60'	R1 - W1 = 115

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value
-0°50' ± 1°

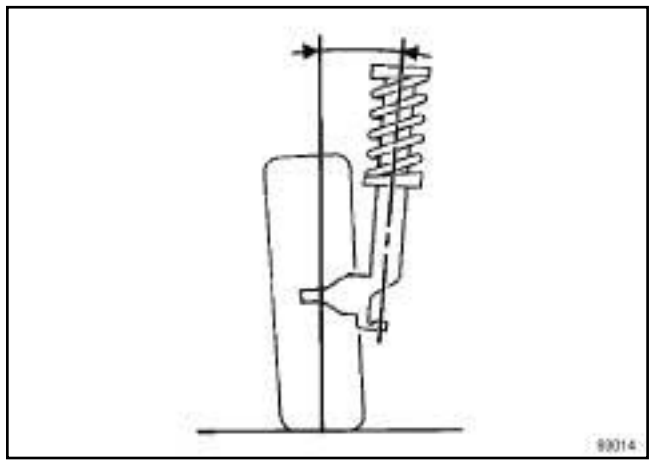
EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value
-0°50' ± 1°

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value
-0°54' ± 18'

V - PIVOT



93014

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Vehicle position (mm)
11˚40' ± 30'	R1 - W1 = 100
11˚80' ± 30'	R1 - W1 = 103
11˚11' ± 30'	R1 - W1 = 105
11˚16' ± 30'	R1 - W1 = 109
11˚18' ± 30'	R1 - W1 = 111
11˚19' ± 30'	R1 - W1 = 112
11˚21' ± 30'	R1 - W1 = 113
11˚22' ± 30'	R1 - W1 = 114
11˚23' ± 30'	R1 - W1 = 115
Maximum left - right difference = 40'	

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value	Max difference Left/ Right
13˚20' ± 18'	± 24'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value	Max difference Left/ Right
13˚20' ± 18'	± 24'

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Max difference Left/ Right
13˚30' ± 18'	± 24'

Equipment required
flywheel immobiliser

Tightening torques ▽	
wheel alignment adjustment lock nuts	**53 N.m**

I - ADJUSTMENT PREPARATION STAGE

❏ Check the geometry (see **30A**, **General information**, **Axle assemblies: Check**, page **30A-23**) .

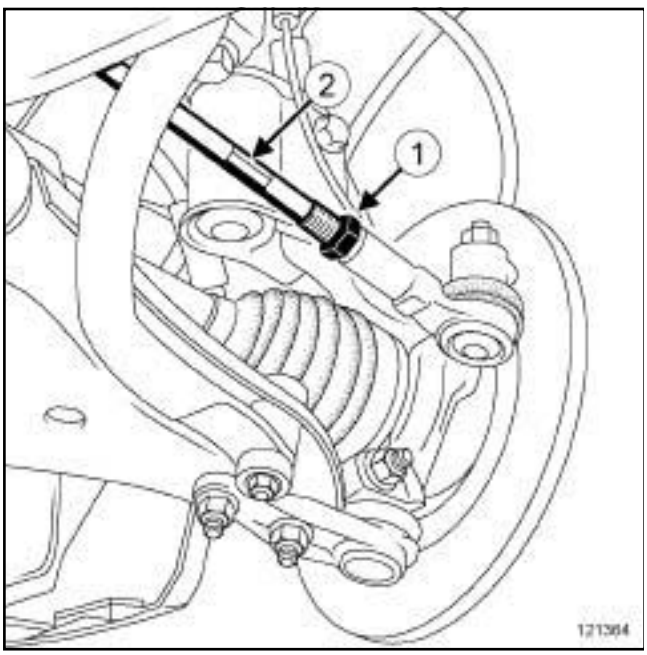
II - ADJUSTMENT OPERATION

1 - Wheel alignment

❏ Set the wheels straight ahead.

❏ Lock the steering wheel using a **flywheel immobiliser**.

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



121364

❏ 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

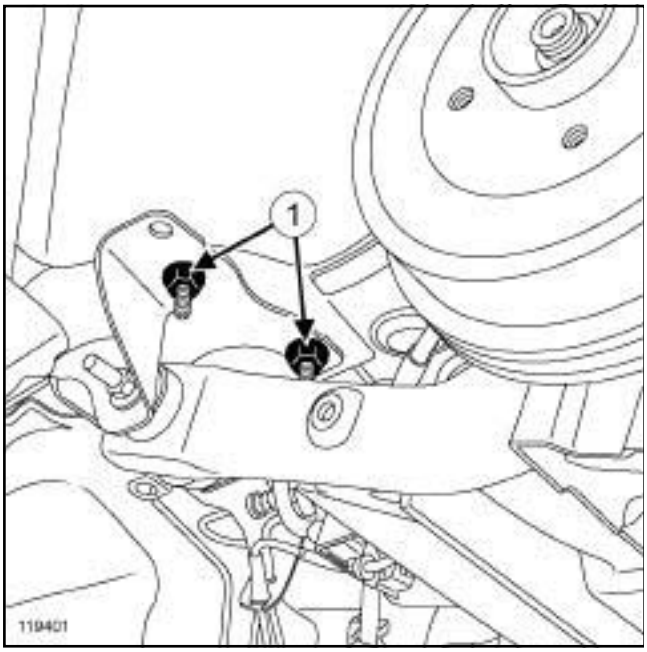
❏ Not adjustable.

3 - Camber

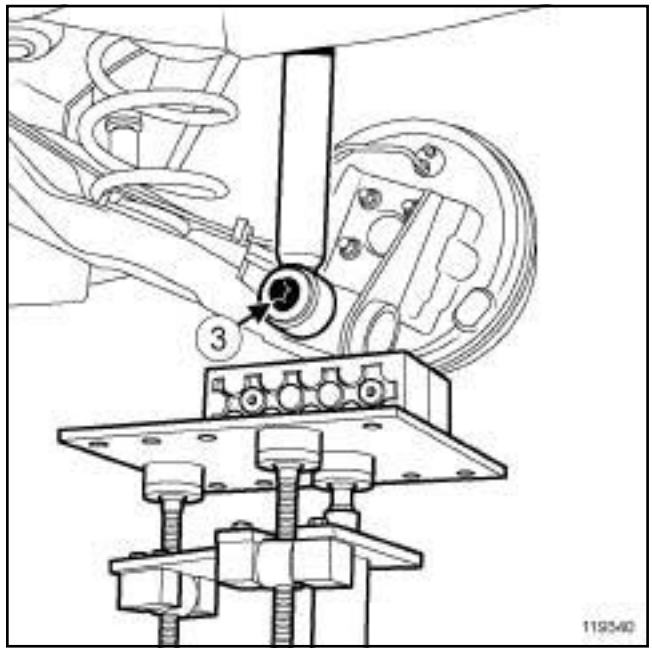
❏ Not adjustable.

4 - Pivot

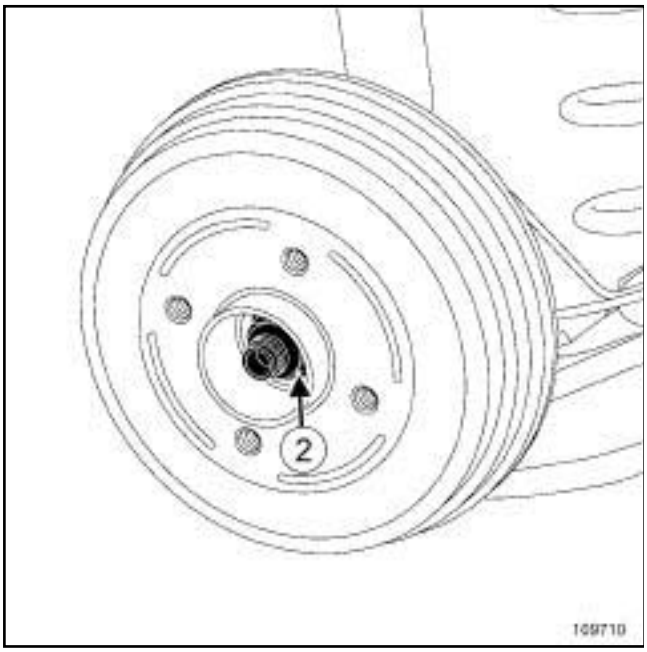
❏ Not adjustable.



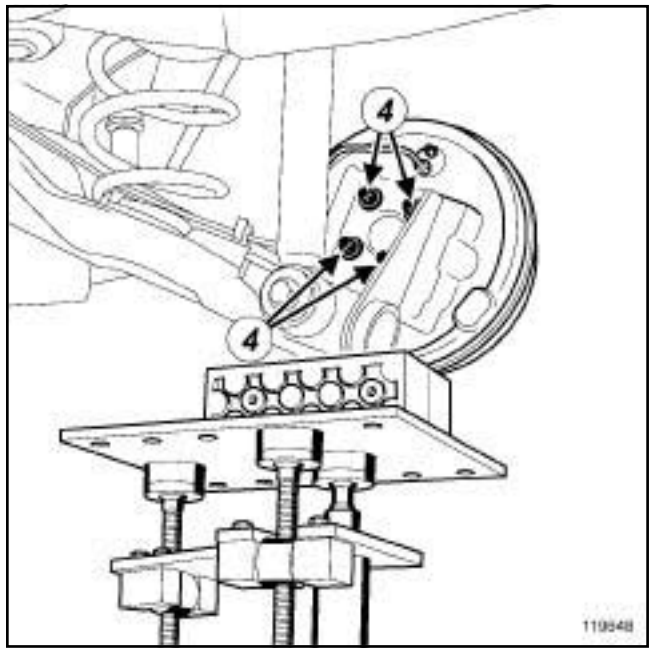
119401



119340



109710



119648

No.	Description	Tightening torque (Nm)
(**1**)	Rear axle bearing bolts	62
(**2**)	Rear brake drum nut	175
(**3**)	Rear shock absorber lower bolt	105
(**4**)	Front stub-axle carrier bolts	53

I - WHEEL ALIGNMENT: MEANING OF SYMBOLS

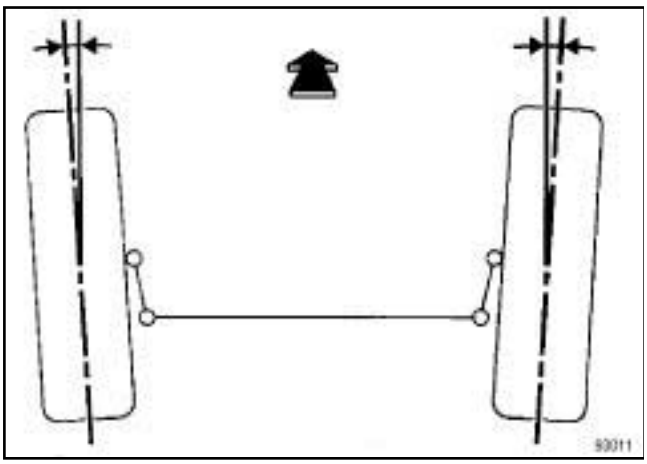
WARNING

Symbols used by RENAULT:

- toe-out: -

- toe-in: +

II - WHEEL ALIGNMENT



93011

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value (for both wheels)	Position of vehicle
0°30' ± 15'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value (for both wheels)	Position of vehicle
0°20' ± 15'	Vehicle in running order

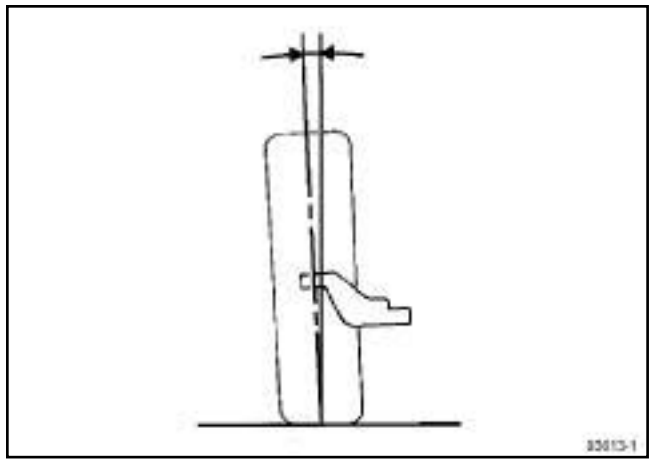
EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value (for both wheels)	Position of vehicle
0°20' ± 15'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value (for both wheels)	Position of vehicle
0°22' ± 15'	Vehicle in running order

III - CAMBER



93013-1

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Value	Position of vehicle
-1°05' ± 19'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 16" ALUMINIUM WHEELS

Value	Position of vehicle
-0°50' ± 15'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and WITHOUT ADDITIONAL SPORT PACK

Value	Position of vehicle
-0°50' ± 15'	Vehicle in running order

EQUIPMENT LEVEL SPORT, and 17" ALUMINIUM WHEELS, and ADDITIONAL EXTREME PACK

Value	Position of vehicle
-0°49' ± 15'	Vehicle in running order

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Tightening torques ▽	
guide pin bolt	**34 N.m**

When replacing brake pads, be sure to replace the pads on the opposite side.

REMOVAL

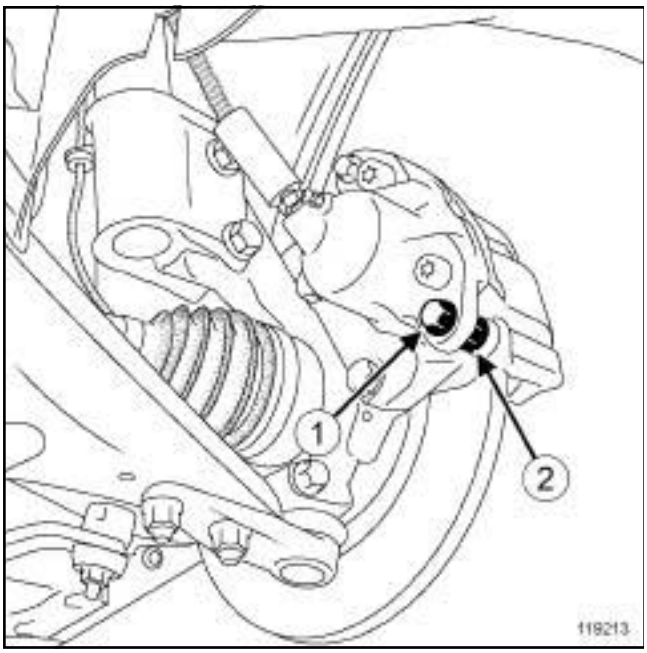
I - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

❏ Switch off the ignition without removing the key to keep the steering column unlocked.

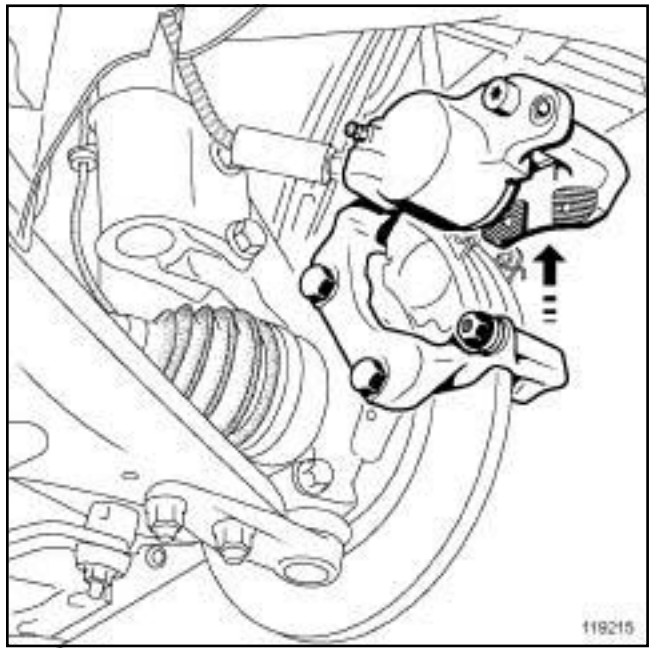
❏ Remove the front wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



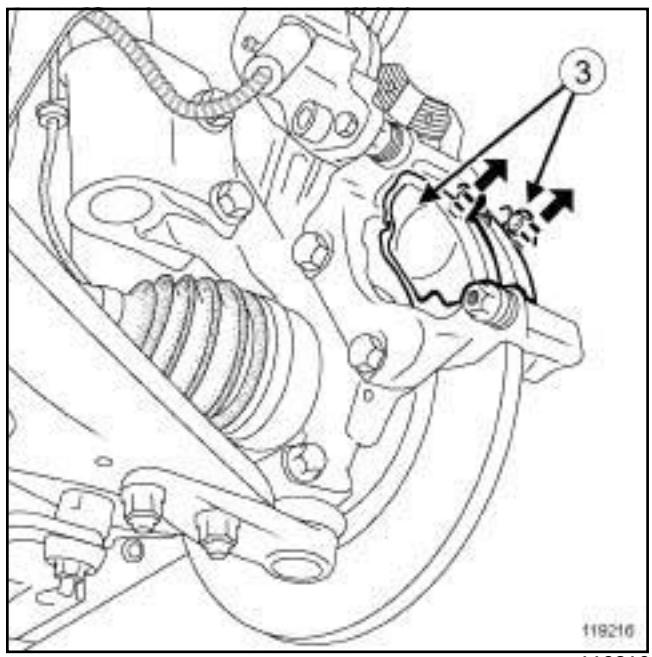
119213

❏ Remove the guide pin lower bolt (**1**) while holding the nut (**2**) .



119215

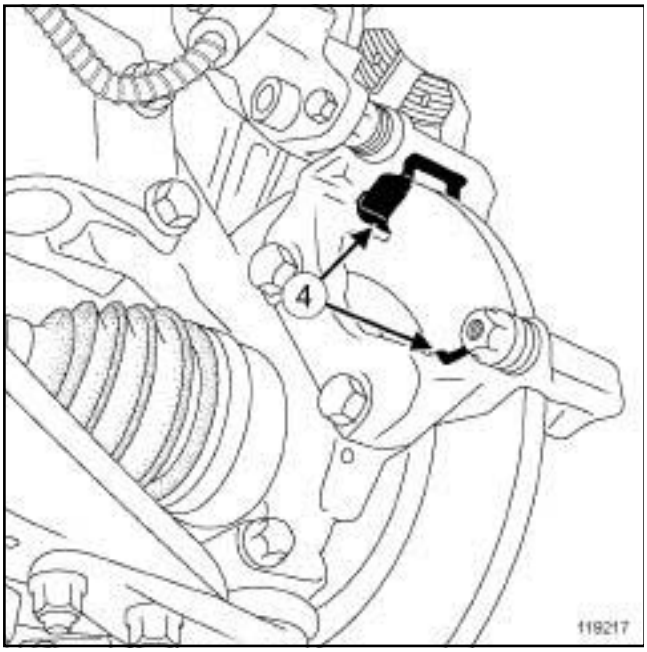
❏ Rotate the calliper upwards.



119216

❏ Remove the pads (**3**) .

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119217

❏ Remove the noise reducing fins (**4**) .

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Check the thickness of the pads (see **30A**, **General information**, **Brake: Specifications**, page **30A-19**) .

❏ Replace any faulty parts.

❏ Clean:

- the calliper supports,
- the callipers.

❏ Push the piston.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the new noise reducing fins.

❏ Fit the front brake pads starting from the inside.

❏ Pivot the calliper downwards to return it to its original position.

❏ Refit the new guide pin bolt.

❏ Torque tighten the **guide pin bolt (34 N.m)**.

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.

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 LEVEL SPORT

Special tooling required	
Fre. 1190-01	Brake calliper piston return tool.

Equipment required
indelible pencil

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 **Front axle components: Precautions for the repair**) ,
- (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

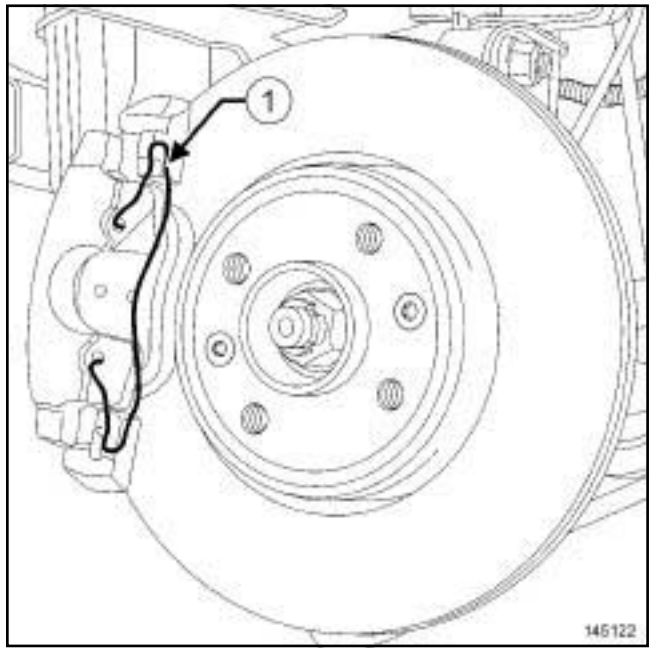
I - REMOVAL PREPARATION OPERATION

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

❏ Set the wheels straight ahead.

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

II - REMOVAL OPERATION



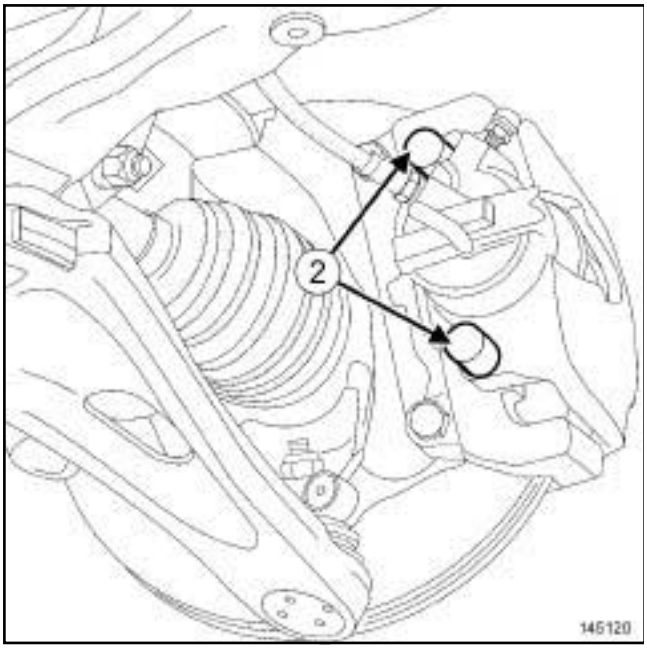
145122

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

❏ Mark the position of the cap on the base of the shock absorber using a **indelible pencil**.

❏ Unclip the cap from the base of the shock absorber.

EQUIPMENT LEVEL SPORT



145120

❏ Remove:

- the guide pin bolt caps (**2**) ,
- the guide pin bolts.

❏ Suspend the brake calliper on the subframe.

❏ Remove the brake pads.

REFITTING

I - REFITTING PREPARATION OPERATION

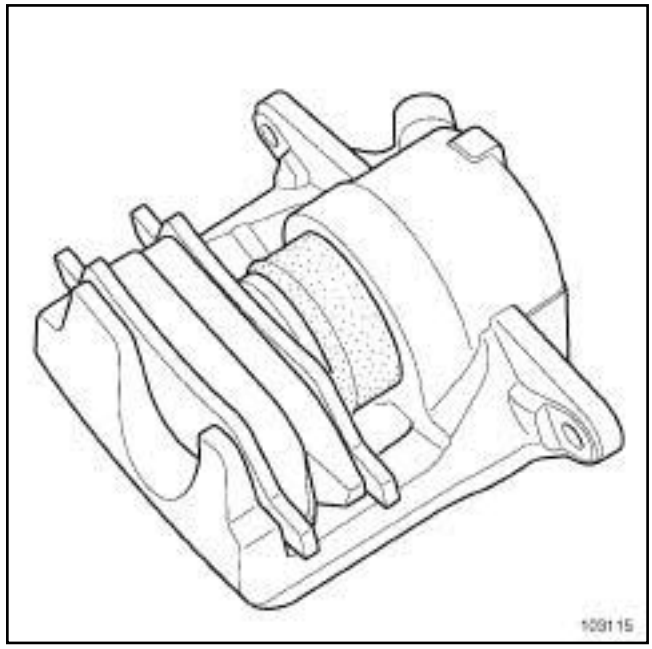
❏ Measure the thickness of the pads and then compare them to the minimum values (see **30A**, **General information**, **Brake: Specifications**, page **30A-19**) .

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

❏ **parts always to be replaced: Front brake calliper guide pin bolt**.

❏ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the calliper supports,
- the callipers.

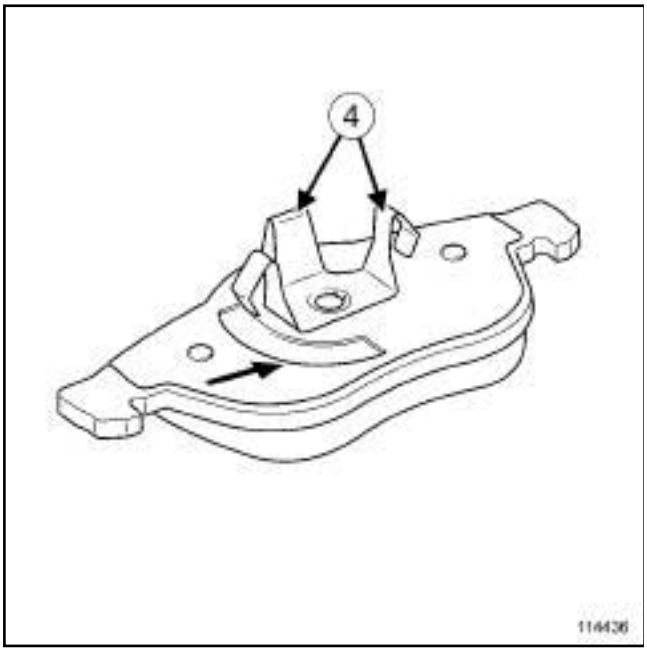


103115

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

EQUIPMENT LEVEL SPORT

II - REFITTING OPERATION



114436

❑ 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.

❑ Torque tighten the **guide pin bolts (28 N.m)**.

❑ Refit:

- the guide pin caps,
- the retaining spring.

❑ Set the wheels straight ahead.

❑ Clip the cap on the shock absorber base by aligning the marks made on **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.

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 **Front axle components: Precautions for the repair**) .

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

REMOVAL

I - REMOVAL PREPARATION OPERATION

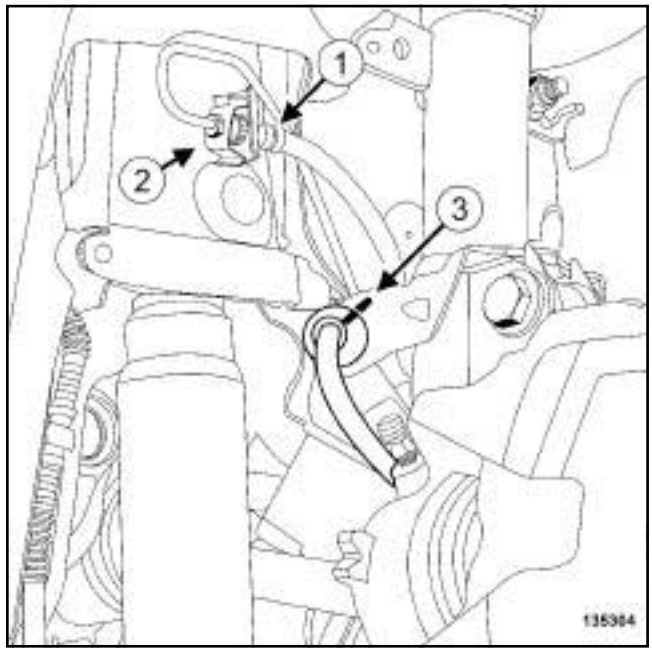
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

❏ 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**) .

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Equipment required
pedal press

Tightening torques ▽	
guide pin bolts	**34 N.m**
brake hose	**17 N.m**

Note:

The callipers supplied as spare parts are pre-filled with brake fluid.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

WARNING

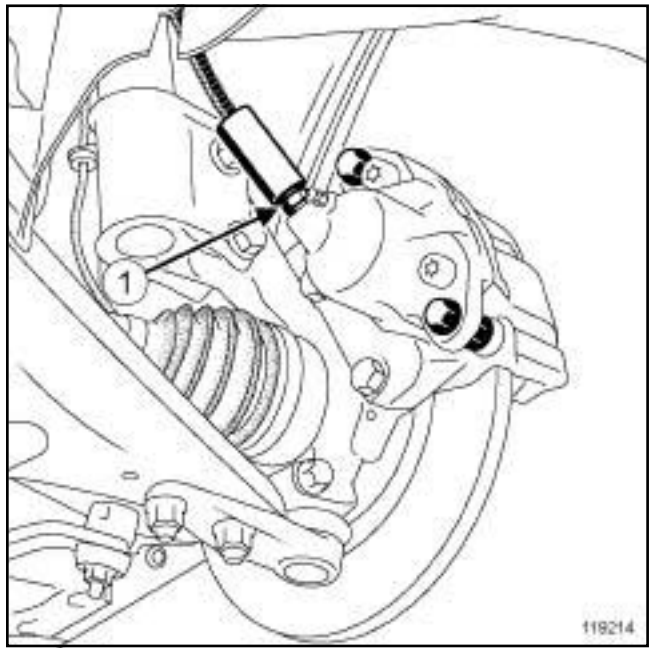
Prepare for the flow of fluid, and protect the surrounding components.

❏ Fit the **pedal press** to the brake pedal to limit the outflow of brake fluid.

❏ Unlock the steering column.

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



119214

❏ Unlock the brake hose (**1**) on the brake calliper.

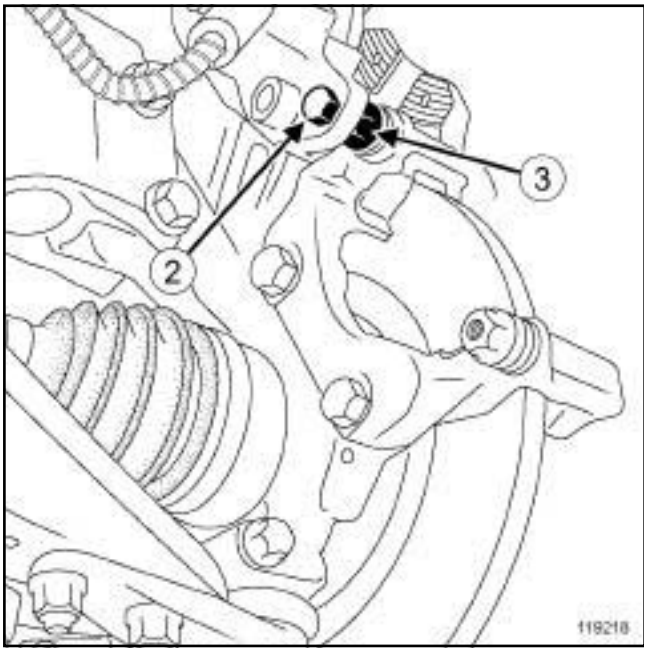
❏ Remove the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) .

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.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119218

❑ Remove:

- the bolts from the guide pins (**2**) while holding the nut (**3**) ,
- the brake calliper from the hose,
- the brake calliper.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Check the condition of the gaiter and calliper piston (replace defective parts).

❑ Push the piston back until it is at the end of its bore.

❑ Using the cleaning station, clean:

- the calliper mounting,
- the calliper.

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.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Set the front wheels straight.

❑ Without using a tool, screw the calliper to the brake hose as tightly as possible.

❑ Refit:

- the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the calliper,
- the new guide pin bolts.

❑ Torque tighten:

- the **guide pin bolts (34 N.m)**,
- the **brake hose (17 N.m)**.

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**) .

IMPORTANT

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

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

EQUIPMENT LEVEL SPORT

Special tooling required	
Fre. 1190-01	Brake calliper piston return tool.

Equipment required
pedal press

Tightening torques ▽	
brake hose union	**13 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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

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

REMOVAL

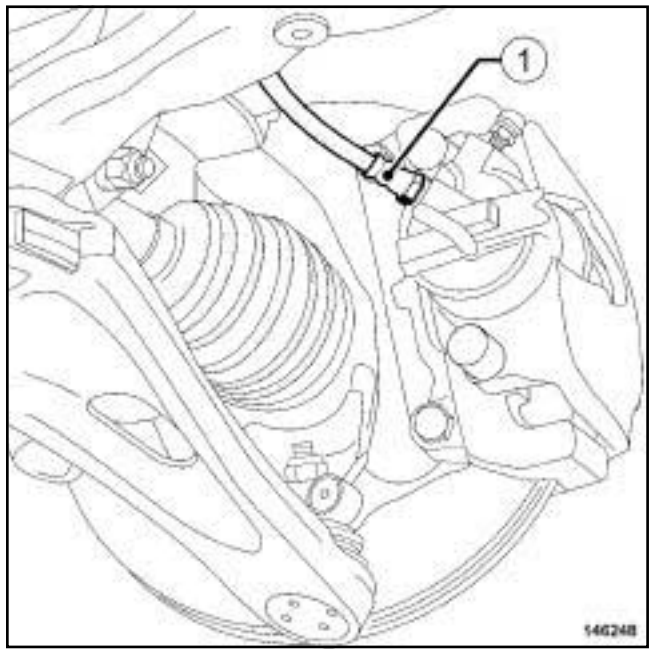
I - REMOVAL PREPARATION OPERATION

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

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

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

II - REMOVAL OPERATION



146248

❏ Slightly loosen the brake hose union (**1**) of the calliper.

❏ Remove:

- the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the brake hose union on the brake calliper.

❏ Fit blanking plugs on the ends of the openings.

❏ Remove the brake calliper.

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Check:

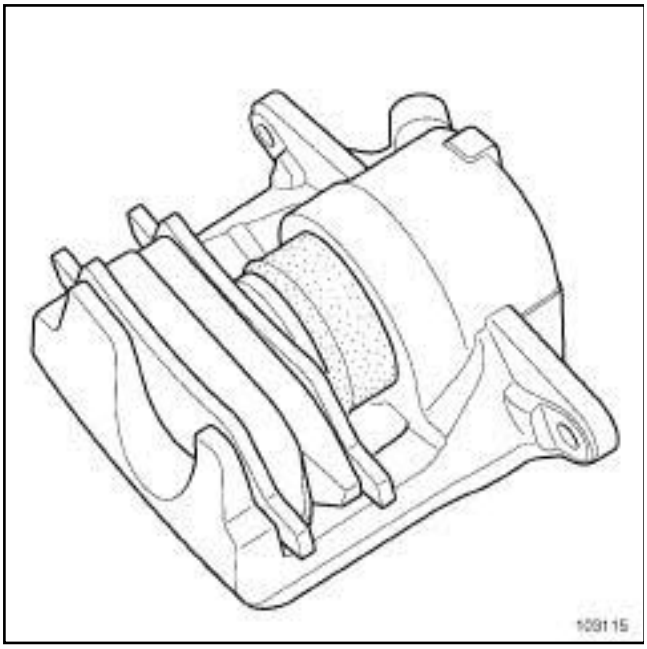
- the condition of the calliper gaiter,
- the condition of the calliper piston; replace it if there are deep scratches or cracks.

❏ Replace any faulty parts (see **31A**, **Front axle components**, **Front brake calliper: Repair**, page **31A-12**) .

❏ Clean using a wire brush and **BRAKE CLEANER** (see) (04B, Consumables - Products):

- the calliper mounting,
- the calliper.

EQUIPMENT LEVEL SPORT



103115

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

II - REFITTING OPERATION

❑

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.

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.

❑ Screw the brake hose union onto the calliper.

❑ Refit the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) .

❑ Torque tighten the **brake hose union (13 N.m)**.

❑ Clean the drips using **BRAKE CLEANER** (see) (04B, Consumables - Products).

III - FINAL OPERATION

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

❑ Refit the front 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**) .

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.

Equipment required
pedal press

IMPORTANT

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

WARNING

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

REPAIR

I - REPAIR PREPARATION OPERATION

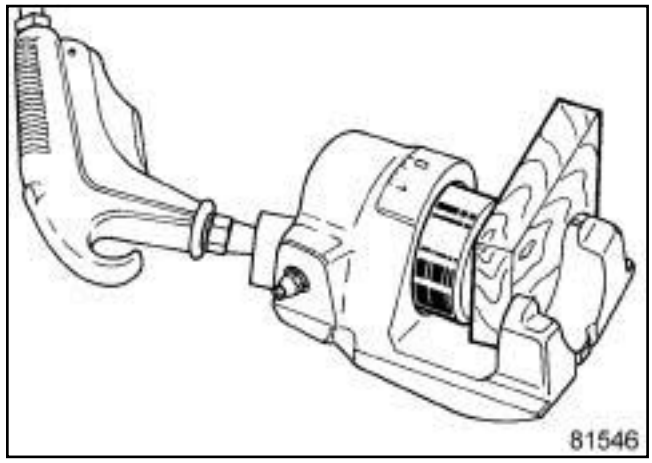
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ 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-8**) .

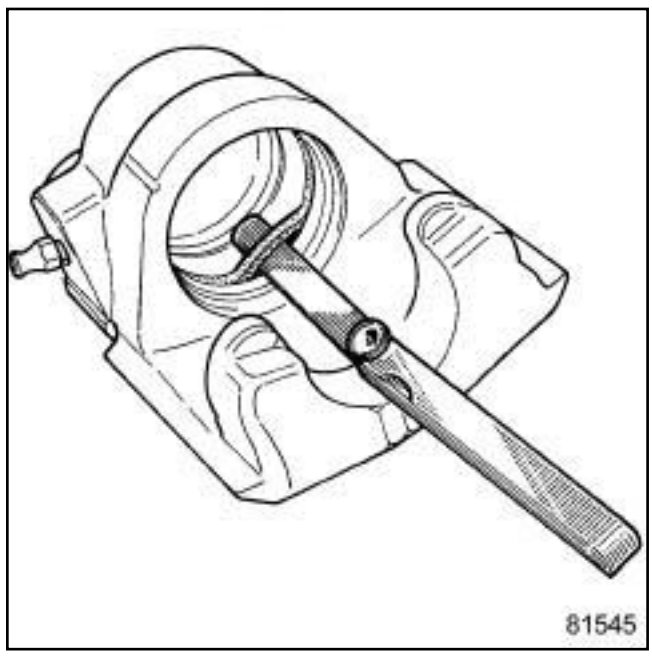
II - REPAIR OPERATION FOR PART CONCERNED



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

❏ 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-8**) ,
- 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**) .

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Equipment required
safety strap(s)

Tightening torques ▽	
brake calliper mounting bolts	**100 N.m**
guide pin upper bolt	**29 N.m**

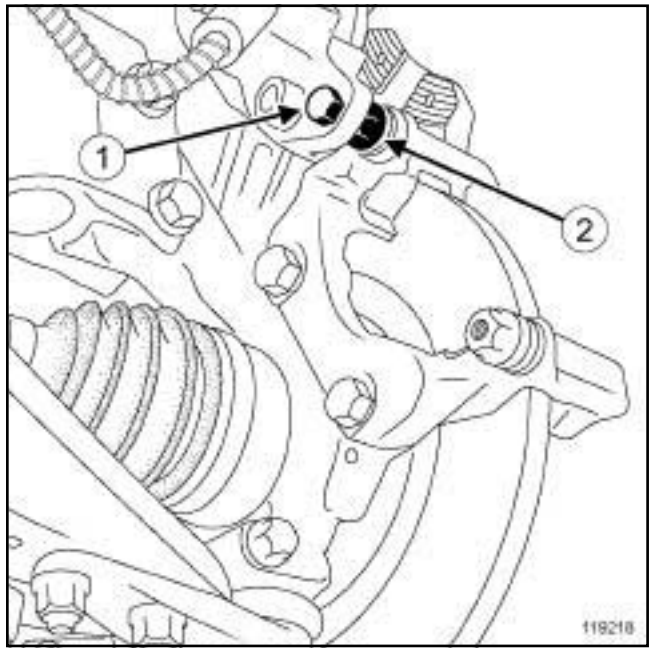
REMOVAL

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**) ,
- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) .



119218

❑ Remove the guide pin upper bolt (**1**) while holding the nut (**2**) .

WARNING

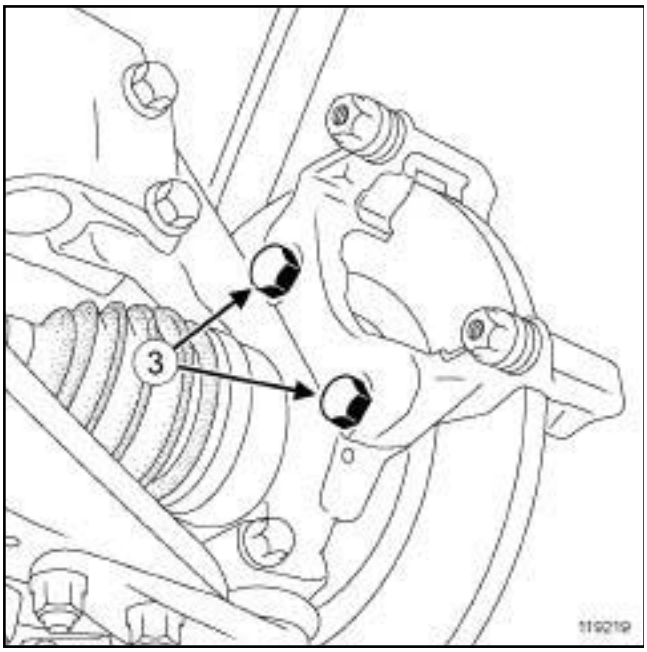
In order not to damage the brake hose:

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

❑ Hang the brake calliper on the shock absorber spring using a **safety strap(s)**.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

II - REMOVAL OPERATION



119219

❑ Remove:

- the brake calliper mounting bolts (**3**) ,
- the brake calliper mounting.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the guide pin upper bolt.

❑ Using the cleaning station, clean:

- the brake calliper mounting,
- the brake calliper.

❑ Coat the brake calliper mounting bolts with **HIGH STRENGTH THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) before refitting them.

II - REFITTING OPERATION

❑ Refit:

- the brake calliper mounting,
- the brake calliper mounting bolts.

❑ Torque tighten the **brake calliper mounting bolts (100 N.m)**.

III - FINAL OPERATION

❑ Fit the front brake calliper.

❑ Refit the upper bolt on the guide pin while holding the nut.

❑ Torque tighten the **guide pin upper bolt (29 N.m)** while holding the nut.

❑ Refit:

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

EQUIPMENT LEVEL SPORT

Tightening torques ▽	
calliper mounting bolts	**100 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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

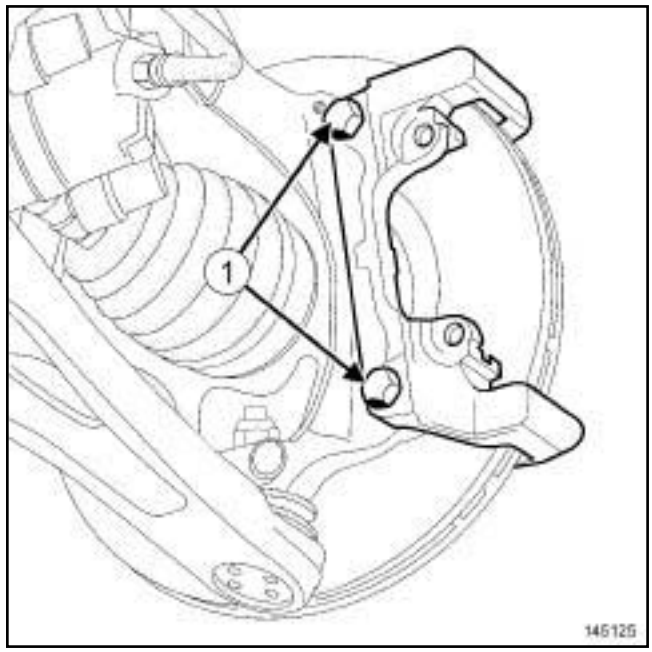
I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

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

II - REMOVAL OPERATION



145125

❏ Remove:

- the calliper mounting bolts (**1**) ,
- 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 hub carrier.

❏ **parts always to be replaced: Front brake calliper mounting bolt**.

II - REFITTING OPERATION

❏ Refit the calliper mounting.

❏ Torque tighten the **calliper mounting bolts (100 N.m)**.

III - FINAL OPERATION

❏ Refit:

- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,

EQUIPMENT LEVEL SPORT

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

Tightening torques ▽	
brake disc protector bolts	8 Nm

REMOVAL

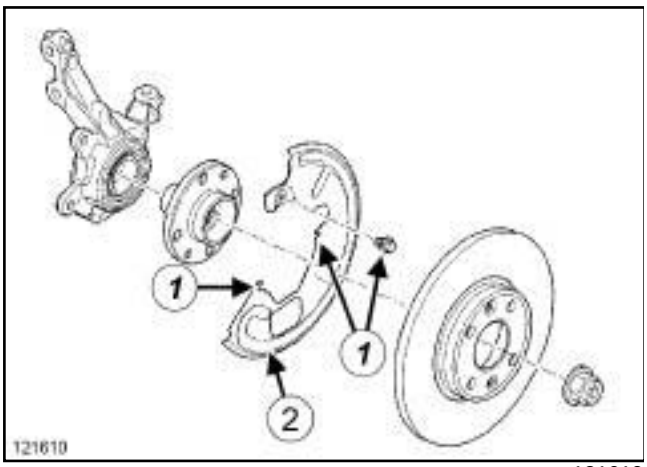
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

- the front wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
- the front brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the hub carrier (see **31A**, **Front axle components**, **Front driveshaft hub carrier: Removal - Refitting**, page **31A-23**) ,
- the hub carrier bearing (see **31A**, **Front axle components**, **Front hub carrier bearing: Removal - Refitting**, page **31A-26**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



121610

❏ Remove:

- the brake disc protector bolts (**1**) ,
- the brake disc protector (**2**) .

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ Always replace the hub carrier bearing when a hub is removed (see **31A**, **Front axle components**, **Front hub carrier bearing: Removal - Refitting**, page **31A-26**) .

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

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

❏ Torque tighten the **brake disc protector bolts (8 Nm)**.

III - FINAL OPERATION.

❏ Refit:

- the hub carrier bearing (see **31A**, **Front axle components**, **Front hub carrier bearing: Removal - Refitting**, page **31A-26**) ,
- the hub carrier (see **31A**, **Front axle components**, **Front driveshaft hub carrier: Removal - Refitting**, page **31A-23**) ,
- the front brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the front wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

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-19**) .

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).

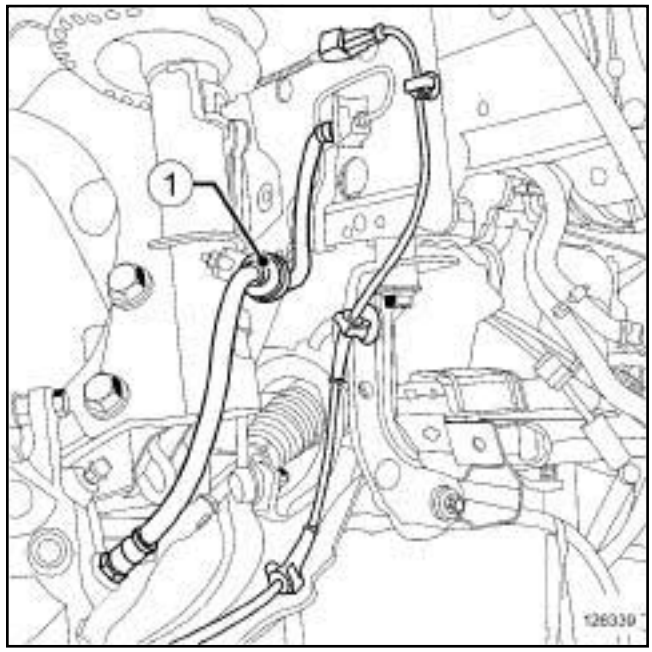
REMOVAL

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.

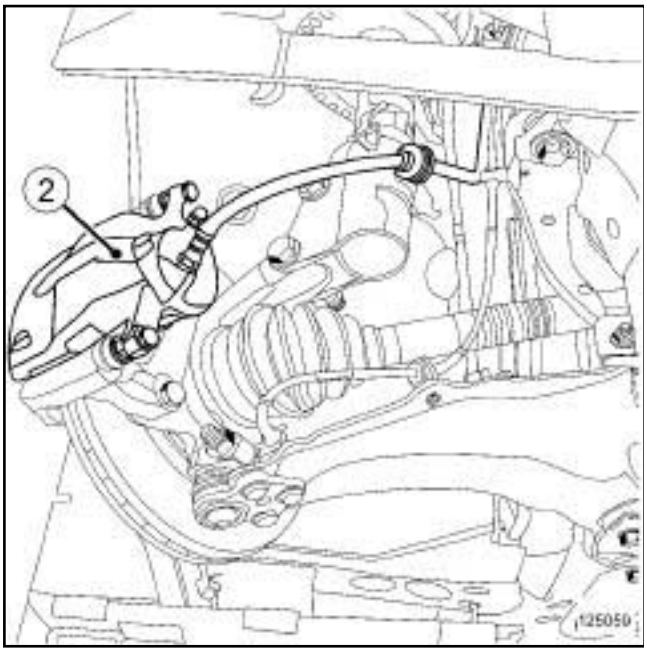
❏ Remove the front wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .



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.



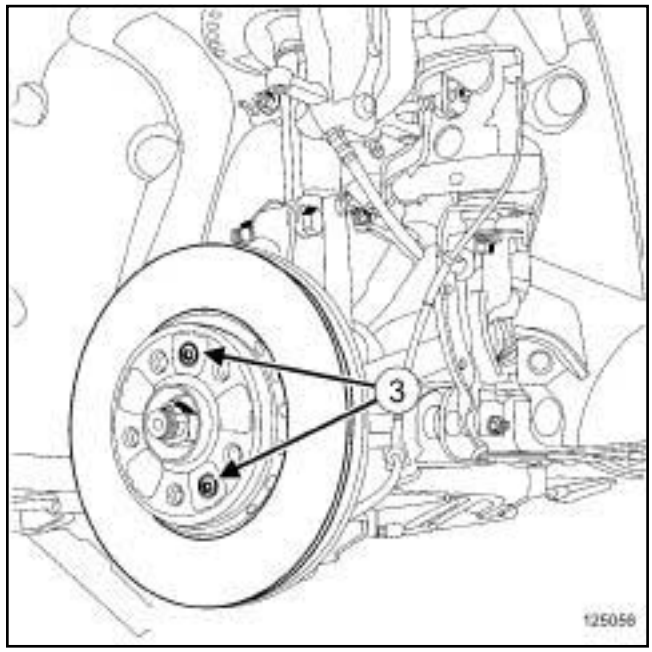
125059

❏ Remove the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**)

❏ Remove the "brake calliper mounting - brake calliper" assembly (**2**) (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) .

❏ 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**

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-14**) .

❏ Refit the brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**)

❏ 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

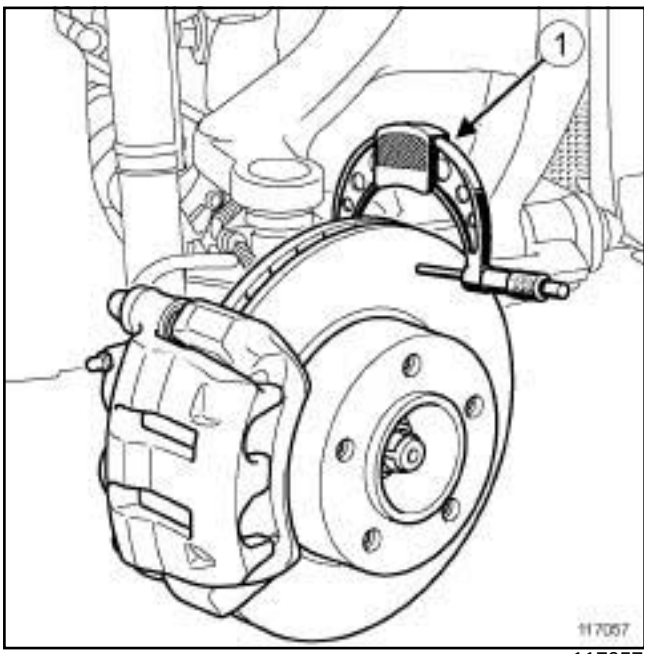
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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

II - CHECKING OPERATION FOR PART CONCERNED

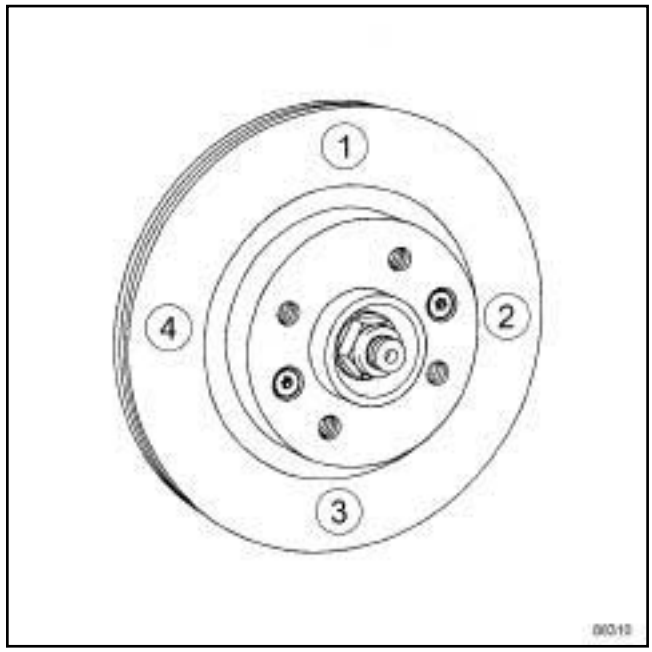
Note:

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



117057

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



88310

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-19**) .

III - FINAL OPERATION

Replace the discs if necessary (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) .

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

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.

Tightening torques ▽	
shock absorber lower bolts	**105 Nm**
front driveshaft lower arm ball joint bolt	**105 Nm**
ABS wiring bracket bolt	**8 Nm**
track rod end nut	**37 N.m**
hub nut	**280 Nm**
guide pin upper bolt	**29 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

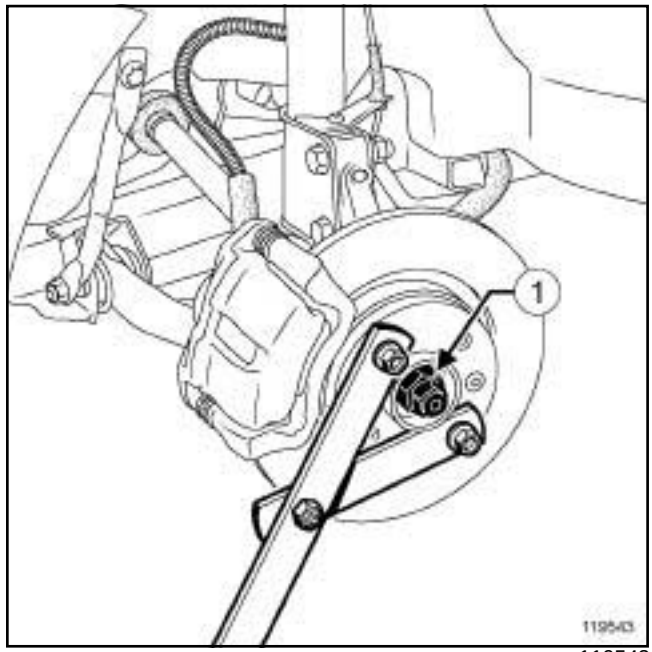
❏ Remove:

- the front wheel on the side in question (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front brake pads of the side in question (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,

❏ Remove:

- the front brake calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
- the front brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the front wheel speed sensor on the hub carrier (see **38C**, **Anti-lock braking system**, **Front wheel speed sensor: Removal - Refitting**, page **38C-15**) .

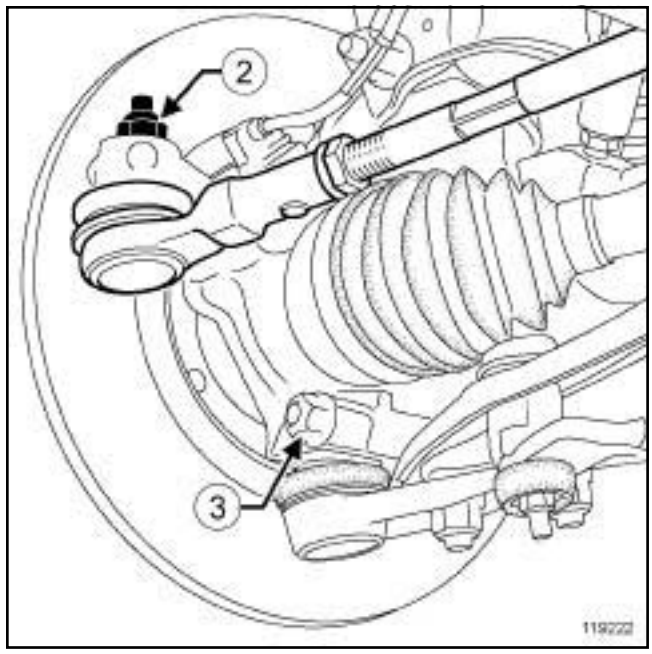
II - OPERATION FOR REMOVAL OF PART CONCERNED



119543

❏ Position the **(Rou. 604-01)**.

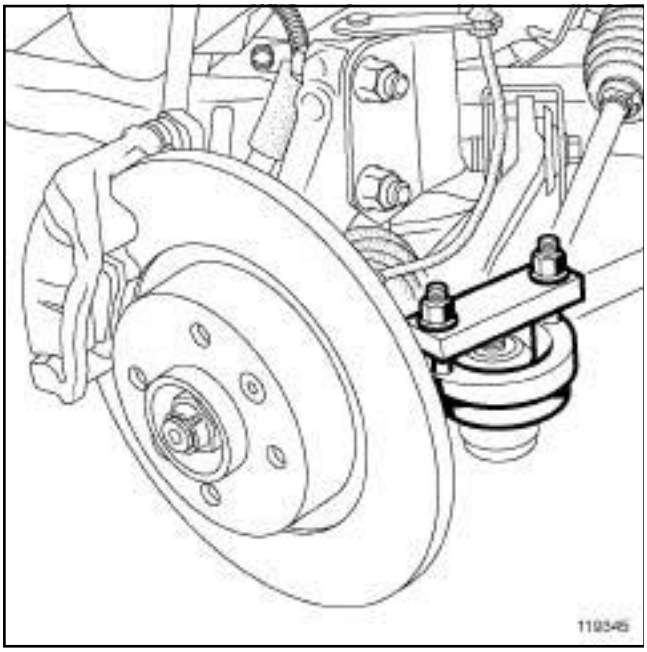
❏ Remove the hub nut (**1**) .



119222

❏ Remove:

- the nut (**2**) from the track rod end,
- the bolt (**3**) from the lower ball joint.

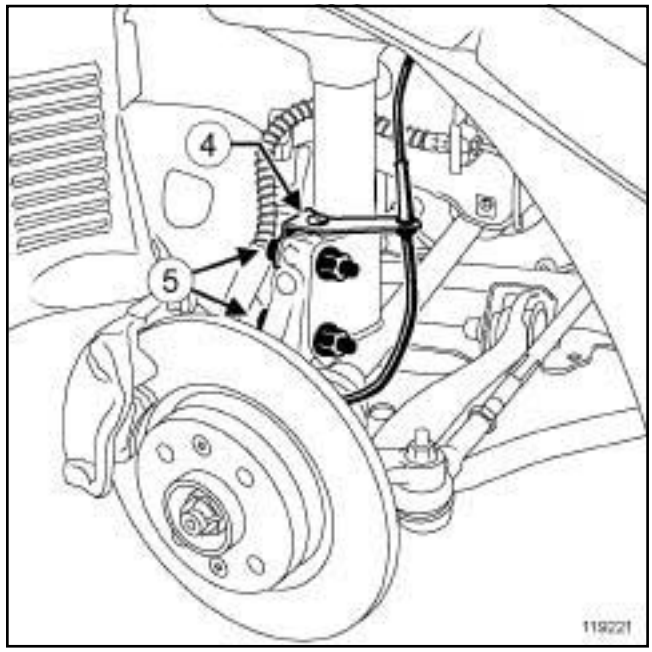


119345

❑ Remove:

- the track rod end using the **(Tav. 476)**,
- the front driveshaft lower arm ball joint.

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



119221

❑ Remove:

- the bolt (**4**) from the ABS wiring bracket,
- the ABS wiring bracket,
- the shock absorber lower studs (**5**) .

❑ Separate the driveshaft from the hub carrier using the **(Tav. 1420-01)**.

❑ Remove the front driveshaft hub carrier.

REFITTING

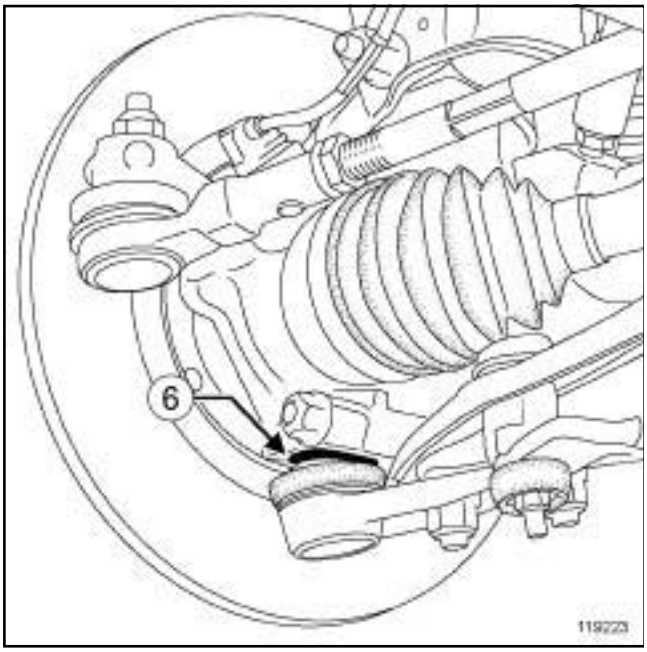
I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the front driveshaft hub carrier,
- the driveshaft into the front driveshaft hub-carrier,
- the shock absorber lower bolts.

❑ Torque tighten the **shock absorber lower bolts (105 Nm)**.

❑ Fit the front driveshaft lower arm ball joint.



119223

❏ Check that the bush (**6**) is correctly fitted on the front driveshaft lower arm ball joint.

❏ Refit the front driveshaft lower arm ball joint bolt.

❏ Torque tighten the **front driveshaft lower arm ball joint bolt (105 Nm)**.

❏ Refit:

- the ABS wiring bracket,
- the ABS wiring bracket bolt.

❏ Torque tighten the **ABS wiring bracket bolt (8 Nm)**.

❏ Position the track rod.

❏ Refit the track rod end nut.

❏ Torque tighten the **track rod end nut (37 N.m)**.

❏ Refit the hub nut using the **(Rou. 604-01)**.

❏ Torque tighten the **hub nut (280 Nm)**.

II - FINAL OPERATION

❏ Refit:

- the front wheel speed sensor on the hub carrier,
- the front brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the front brake calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) .

❏ Fit the front brake calliper.

❏ Refit the upper bolt on the guide pin while holding the nut.

❏ Torque tighten the **guide pin upper bolt (29 Nm)**.

❏ Refit:

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

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.

REMOVAL

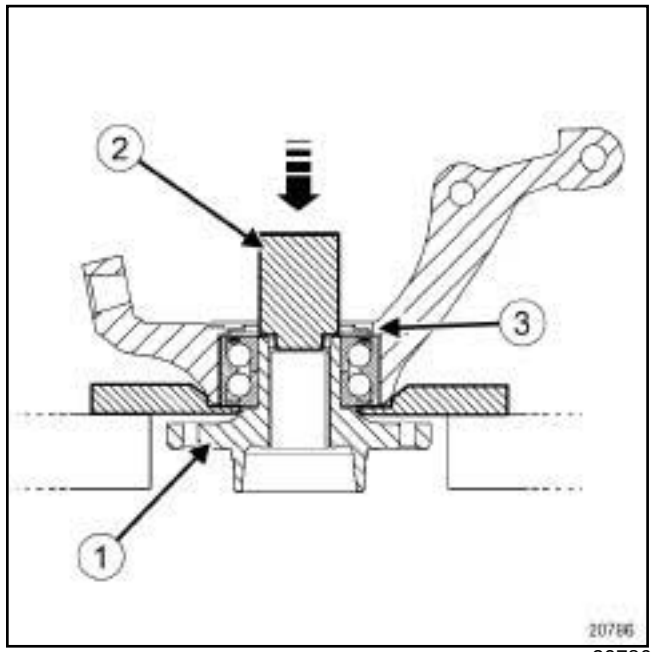
I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❑ Remove:

- the front wheel on the side in question (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
- the brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the front driveshaft hub carrier (see **31A**, **Front axle components**, **Front driveshaft hub carrier: Removal - Refitting**, page **31A-23**) .

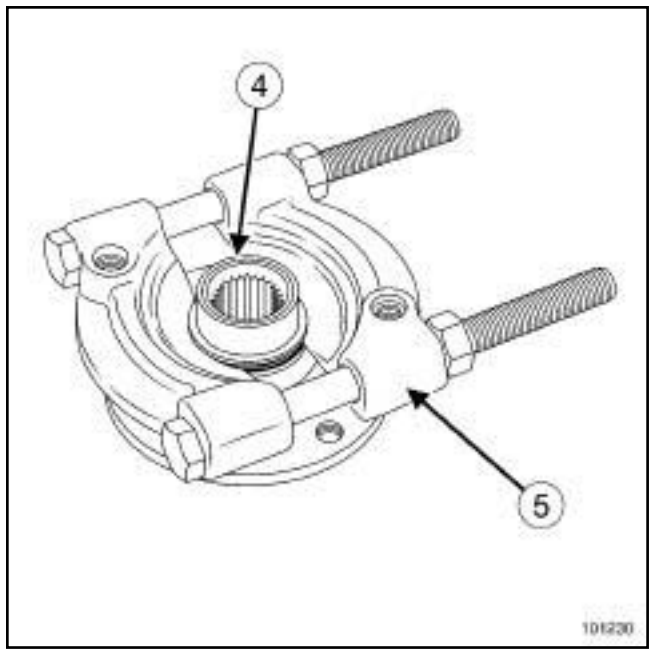
II - OPERATION FOR REMOVAL OF PART CONCERNED



20786

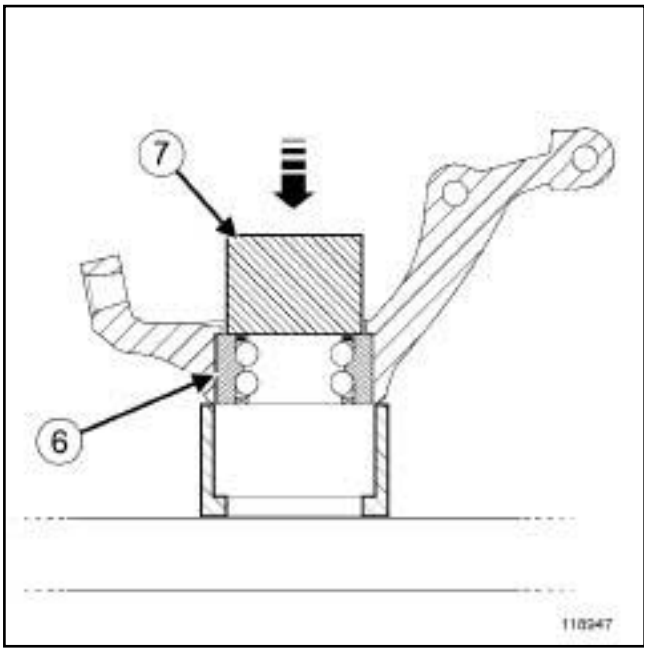
❑ Remove:

- the hub (**1**) using a hydraulic press, applying force with a pipe **65 mm** (**2**) in diameter,
- the circlip (**3**) .



101230

❑ Remove the internal bush (**4**) from the hub using an extractor with jaws (**5**) .



118947

❏ Remove the bearing (**6**) using a hydraulic press, taking hold of the outer bush with a **pipe 65 mm in diameter** (**7**) .

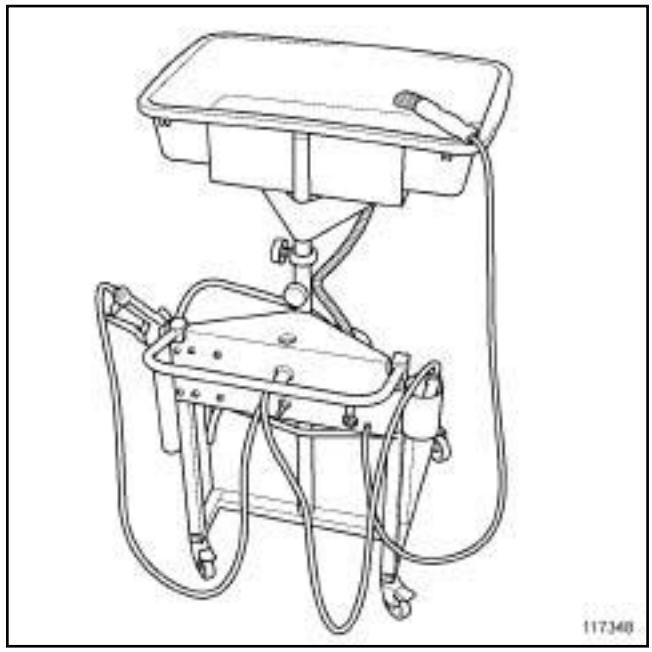
REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ Always replace:

- the front hub carrier bearing,
- the circlip.

❏ Use a degreasing product to clean the inner and outer surfaces of the new bearing which are in contact with the stub axle carrier and the hub.



117348

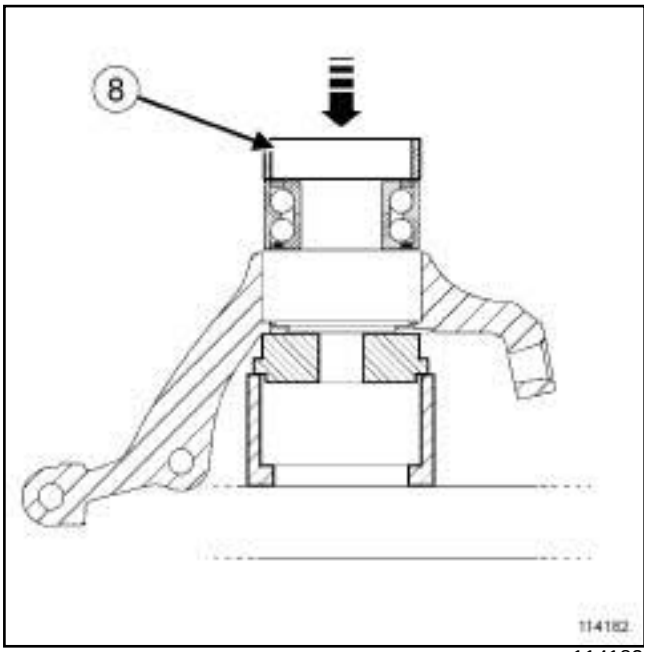
❏ Using the cleaning station, clean:

- the stub axle carrier surfaces in contact with the new bearing,
- the hub surfaces in contact with the new bearing.

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

> Note:
>
> Replace the bearing if the hub carrier is faulty.

II - REFITTING OPERATION FOR PART CONCERNED



114182

❏ Refit the bearing using a hydraulic press, taking hold of the outer bush with a **pipe with an outer diameter of 70 mm** (**8**) .

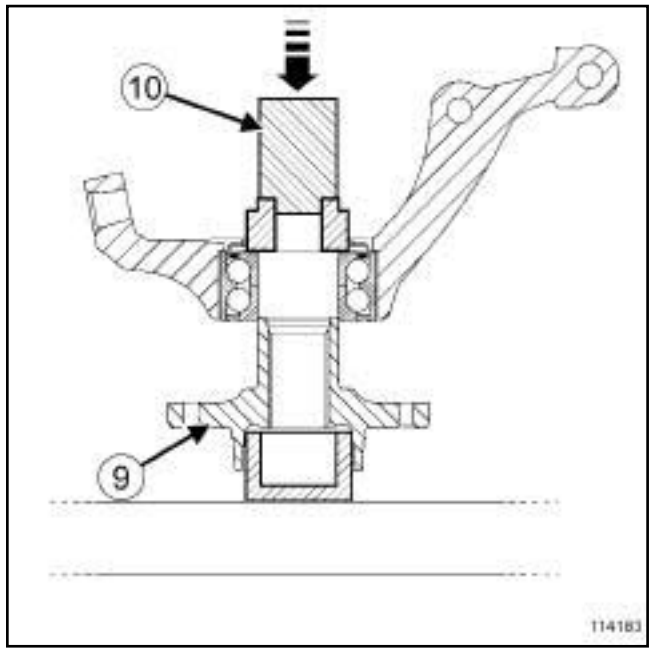
WARNING

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

Note:

the black side of the bearing must be fitted on the circlip side.

❏ Refit the circlip.



114183

❏ Refit the hub (**9**) using a hydraulic press, taking hold of the bearing's internal bush with a **pipe with an outer diameter of 50 mm** (**10**) .

III - FINAL OPERATION.

❏ Refit:

- the front driveshaft hub carrier (see **31A**, **Front axle components**, **Front driveshaft hub carrier: Removal - Refitting**, page **31A-23**) ,
- the brake disc (see **31A**, **Front axle components**, **Front brake disc: Removal - Refitting**, page **31A-19**) ,
- the calliper mounting (see **31A**, **Front axle components**, **Front brake calliper mounting: Removal - Refitting**, page **31A-14**) ,
- the front brake pads (see **31A**, **Front axle components**, **Front brake pads: Removal - Refitting**, page **31A-1**) ,
- the front wheel on the side in question (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

Equipment required
safety strap(s)
spanner for shock absorber rod nut

Tightening torques ▽	
new shock absorber rod nut	**62 N.m**
new shock absorber base nuts	**105 N.m**
wheel speed sensor wiring bracket bolt	**8 N.m**

REMOVAL

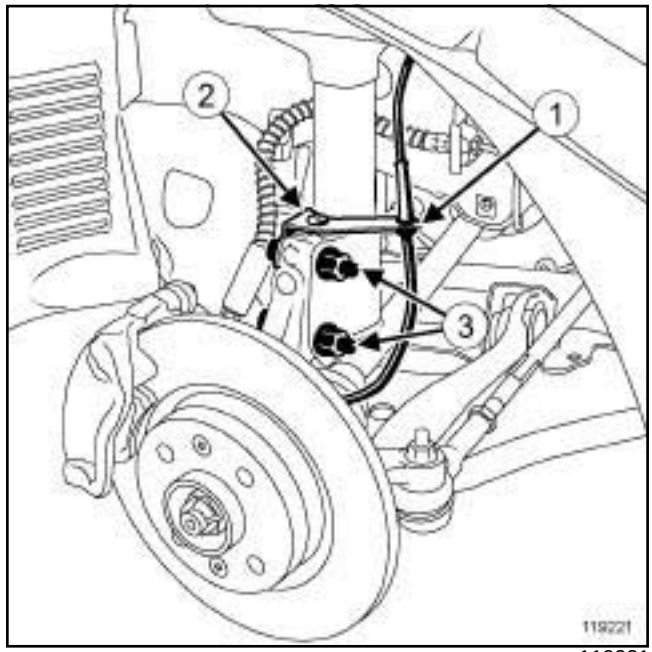
I - REMOVAL PREPARATION OPERATION

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

❏ Disconnect the battery (see) (80A, Battery).

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



119221

❏ Detach the wiring (**1**) from the wheel speed sensor.

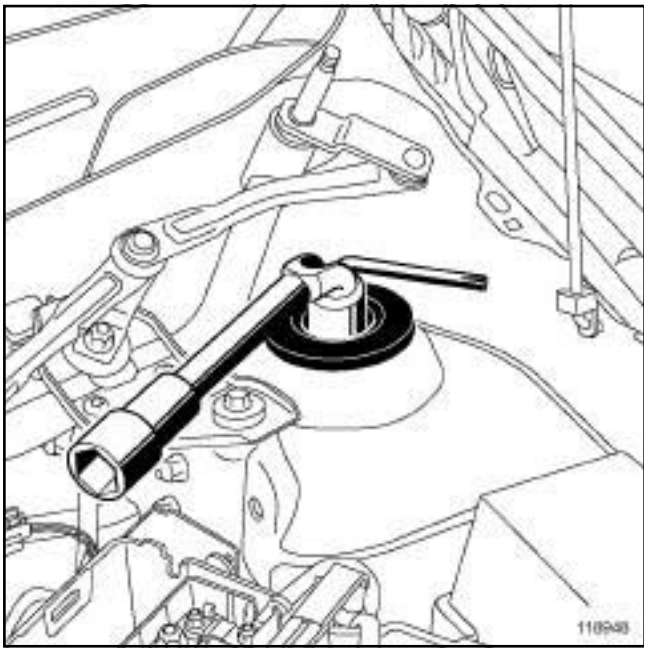
❏ Remove:

- the bolt (**2**) of the wheel speed sensor wiring bracket,
- the wheel speed sensor wiring bracket,
- the shock absorber base nuts (**3**) ,
- the shock absorber base bolts.

❏ Hang the hub carrier on the body using a **safety strap(s)**.

❏ Remove:

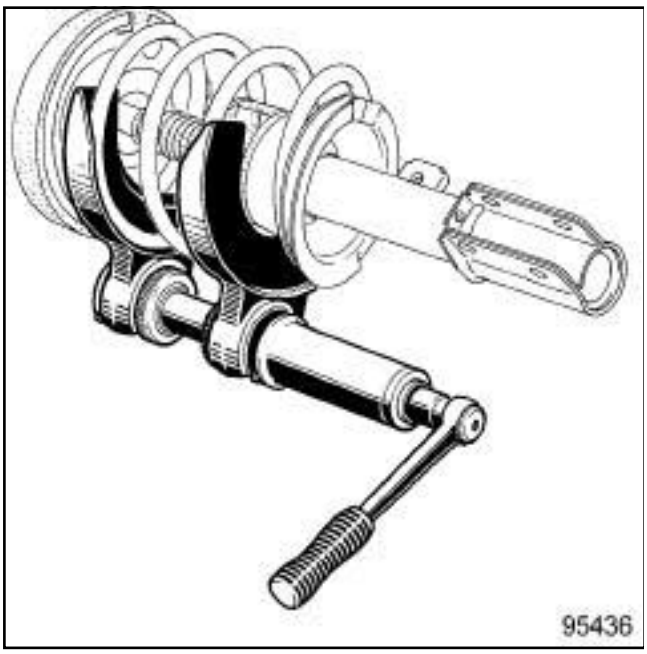
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) ,
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the shock absorber nut cover.



118948

❏ Remove:

- the shock absorber cup nut,
- the shock absorber cup,
- the « spring - shock absorber » assembly.

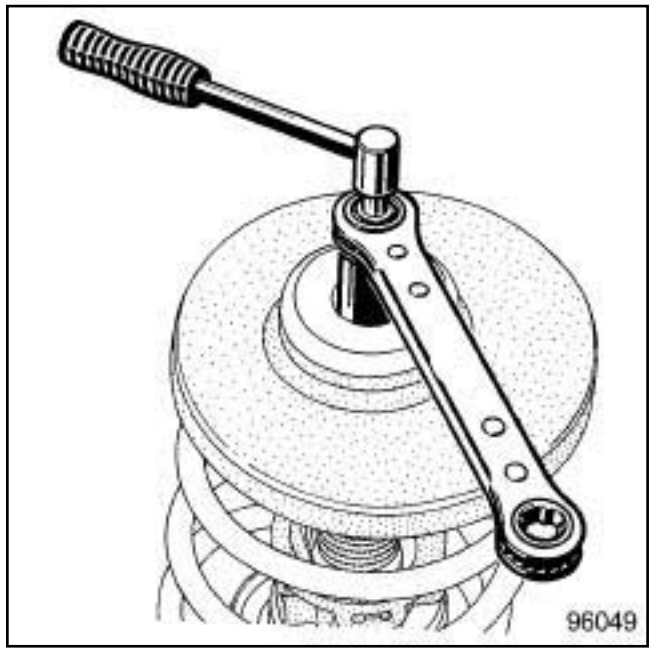


95436

❏ Position the appropriate cups on the **spring compressor**.

❏ Position the assembly on the spring.

❏ Detach the spring from the cups by compressing the spring.



96049

❏ Remove the shock absorber rod nut using the **spanner for shock absorber rod nut**.

❏ Separate the various components which make up the « spring/shock absorber » assembly.

❏ Decompress the spring.

REFITTING

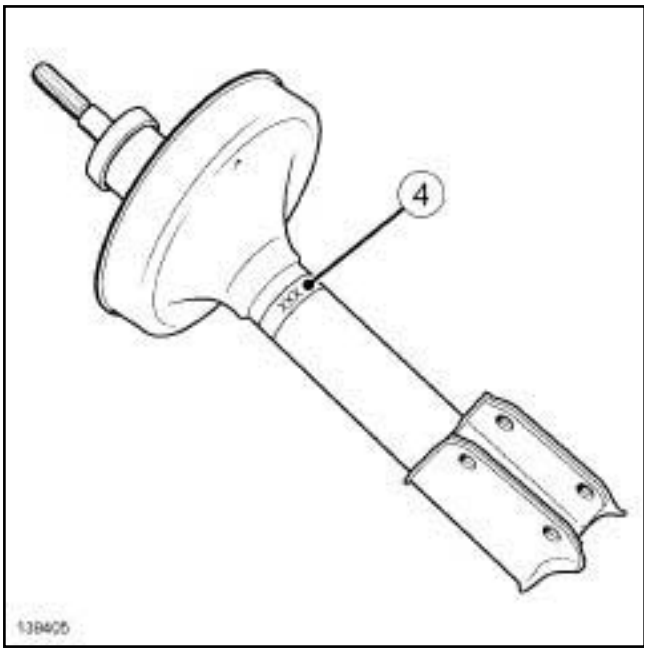
I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: front shock absorber rod nut**.

> Note:
>
> When removing/refitting springs, you must not strike the springs as this could damage their surface treatments.

❏ **parts always to be replaced: front shock absorber lower nut**.

RIGHT-HAND DRIVE



139405

❑

WARNING

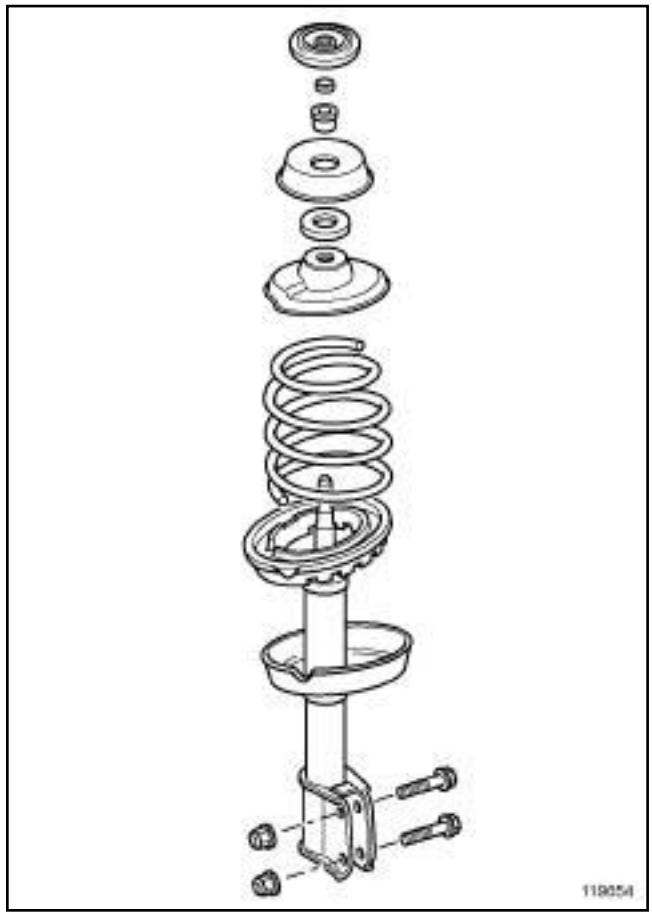
Only the left-hand shock absorber is supplied with its marking to prevent the left and right-hand shock absorbers from being mixed up.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Place the **spring compressor** tool in the vice fitted with jaws.

❑ Compress the spring.

❑ Insert the spring in the neck of the cup.



119654

❑ Respect the order and direction of fitting for the constituent parts.

❑ Torque tighten the **new shock absorber rod nut (62 N.m)**.

❑ Decompress the spring.

❑ Remove the **spring compressor** tool.

❑ Refit:

- the « spring/shock absorber » assembly,
- the shock absorber cup,
- the shock absorber nut cover.

❑ Remove the **safety strap(s)**.

❑ Refit:

- the shock absorber base bolts,
- the shock absorber base nuts,
- the wheel speed sensor wiring bracket,
- the bolt of the wheel speed sensor wiring bracket.

❑ Tighten to torque:

- the **new shock absorber base nuts (105 N.m)**,
- the **wheel speed sensor wiring bracket bolt (8 N.m)**.

❑ Clip on the wheel speed sensor wiring harness.

❑ Refit:

- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).

III - FINAL OPERATION

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

❑ Connect the battery (see) (80A, Battery).

❑ Adjust the front axle (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Special tooling required	
Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).

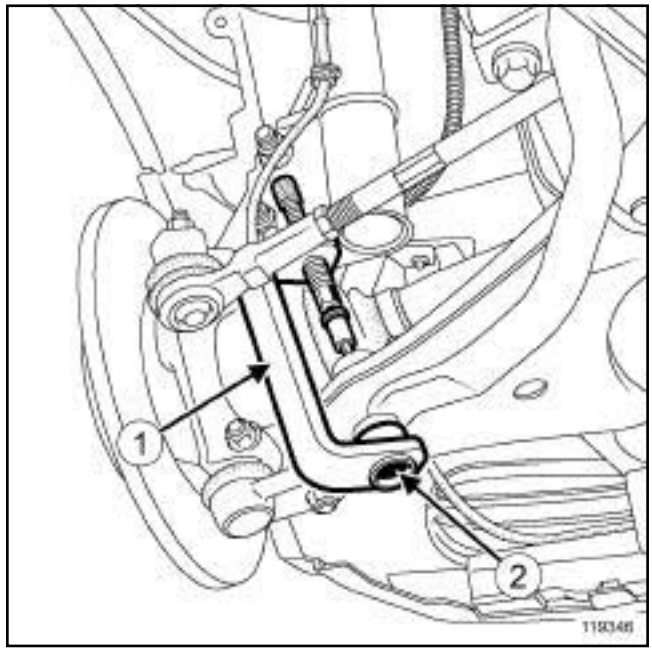
Tightening torques ▽	
front driveshaft lower arm bolts	**105 Nm**
lower ball joint bolt	**105 Nm**
acoustic tie-rod nut	**62 Nm**
acoustic tie-rod bolt	**21 Nm**
anti-roll bar bolt on the wheel side	**14 Nm**

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



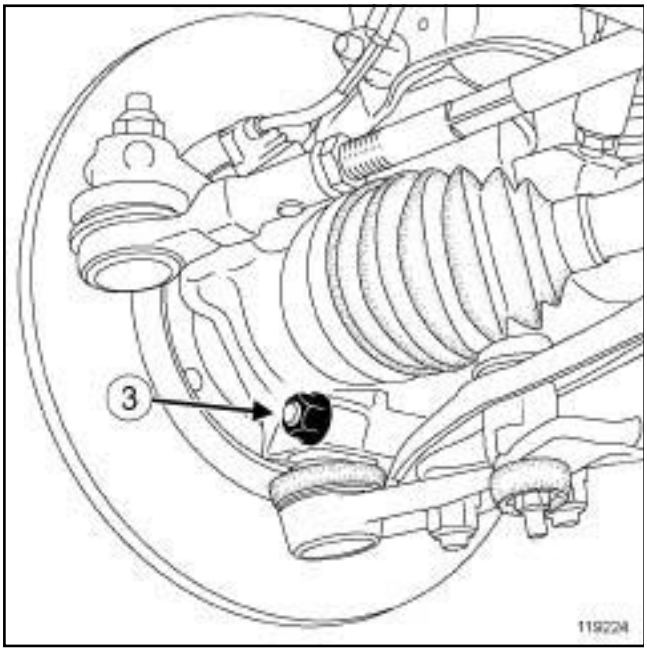
119346

❏ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)** (**1**) .

❏ Remove:

- the bolt (**2**) from the anti-roll bar on the wheel side,
- the rubber mounting bush from the anti-roll bar on the wheel side.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



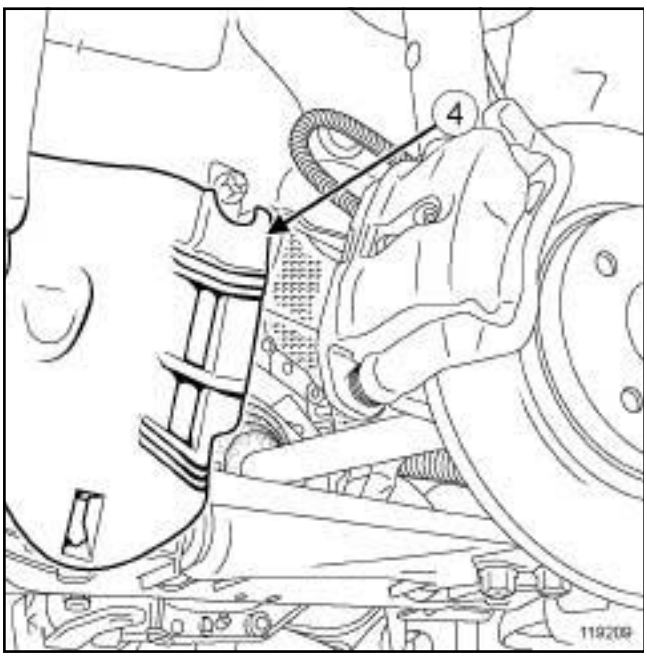
119224

❏ Remove the bolt (**3**) from the lower ball joint.

❏ Remove the lower ball joint from the front driveshaft hub carrier.

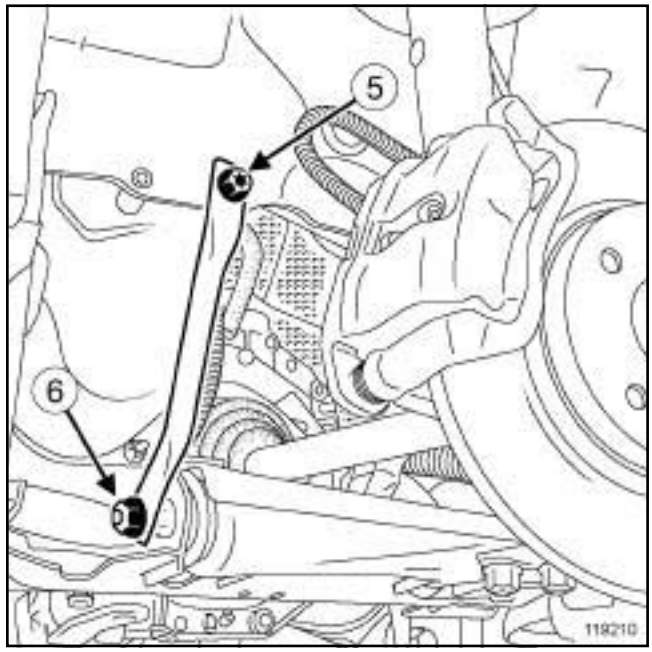
WARNING

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



119209

❏ Detach the wheel arch liner (**4**) .



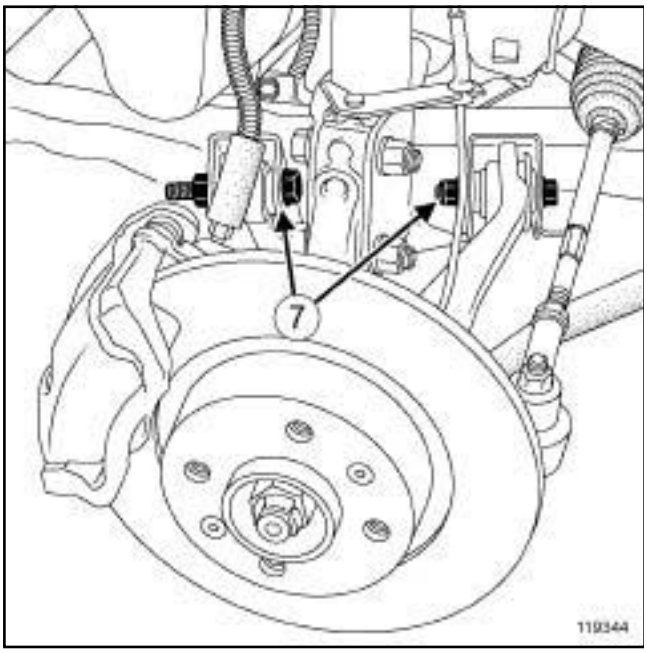
119210

❏ Remove:

- the bolt (**5**) from the acoustic tie-rod,
- the nut (**6**) from the acoustic tie-rod,
- the acoustic tie-rod.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

II - OPERATION FOR REMOVAL OF PART CONCERNED



119344

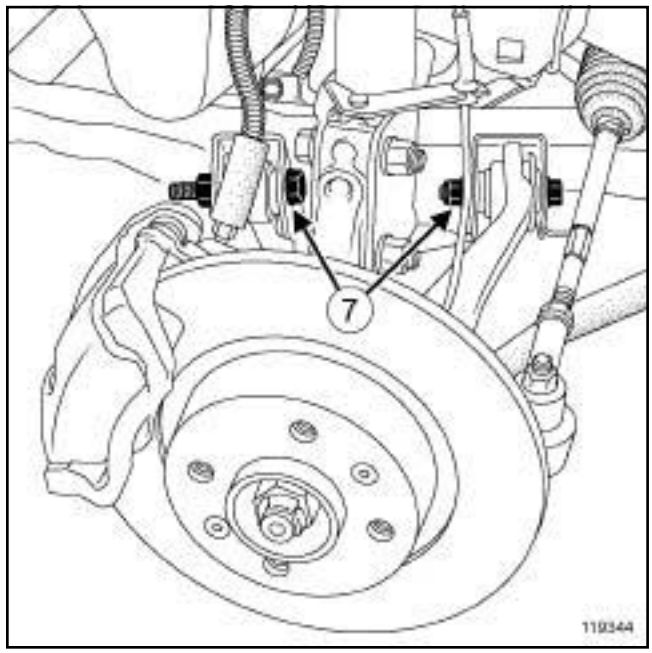
❑ Remove:

- the bolts (**7**) from the front driveshaft lower arm,
- the front driveshaft lower arm.

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

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



119344

❑ Refit:

- the front driveshaft lower arm,
- the front driveshaft lower arm bolts.

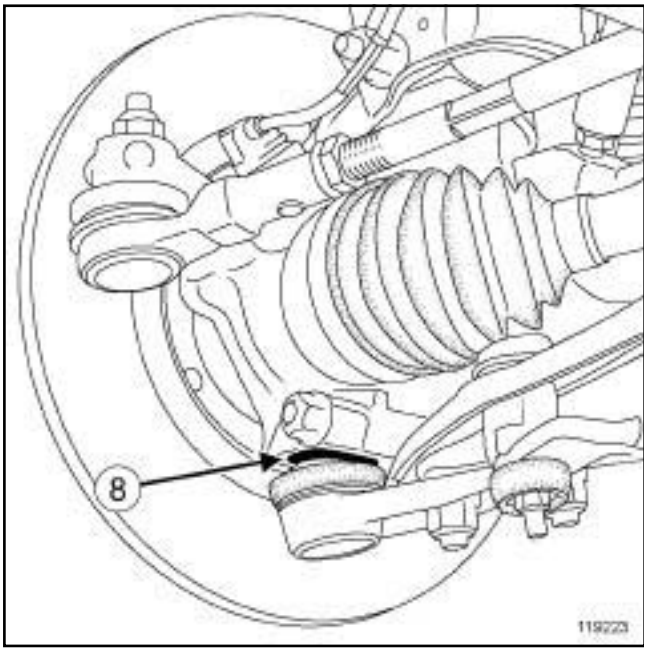
Note:
Observe the direction of fitting for the front driveshaft lower arm bolts (**7**) .

❑ Torque tighten the **front driveshaft lower arm bolts (105 Nm)**.

II - FINAL OPERATION.

❑ Fit the lower ball joint on the front driveshaft hub carrier.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119223

- ❏ Ensure that the ring (**8**) is correctly positioned on the lower ball joint.
- ❏ Refit the lower ball joint stud.
- ❏ Torque tighten the **lower ball joint bolt (105 Nm)**.
- ❏ Refit:
  - the acoustic tie-rod,
  - the acoustic tie-rod nut,
  - the acoustic tie-rod bolt.
- ❏ Tighten to torque:
  - the **acoustic tie-rod nut (62 Nm)**,
  - the **acoustic tie-rod bolt (21 Nm)**.
- ❏ Refit:
  - the anti-roll bar rubber mounting bush on the wheel side,
  - the anti-roll bar bolt on the wheel side.
- ❏ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.
- ❏ Refit the anti-roll bar nut on the wheel side.
- ❏ Torque tighten the **anti-roll bar bolt on the wheel side (14 Nm)**.
- ❏ Refit the front wheel on the side concerned (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .
- ❏ Check the front axle geometry (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) .

EQUIPMENT LEVEL SPORT

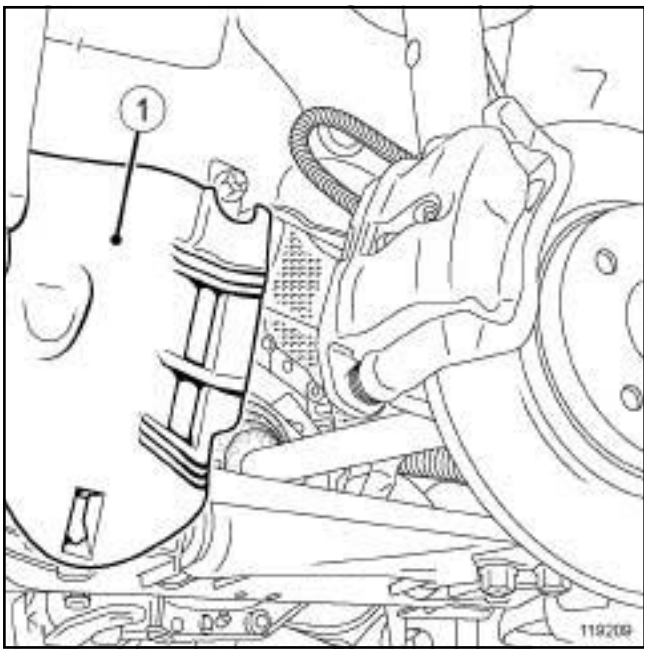
Tightening torques ▽	
front driveshaft lower arm bolts	**105 N.m**
lower ball joint nut	**62 N.m**
acoustic tie-rod nut	**62 N.m**
acoustic tie-rod bolt	**21 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

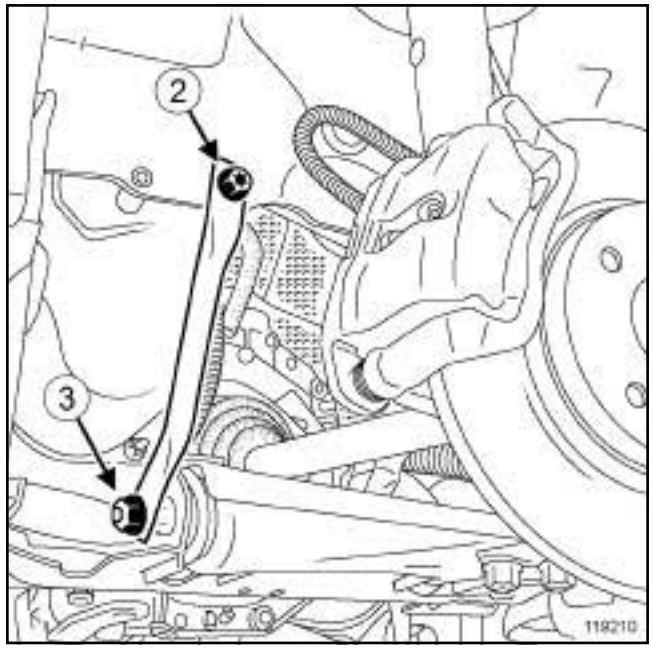
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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



119209

❏ Detach the wheel arch liner (**1**) .



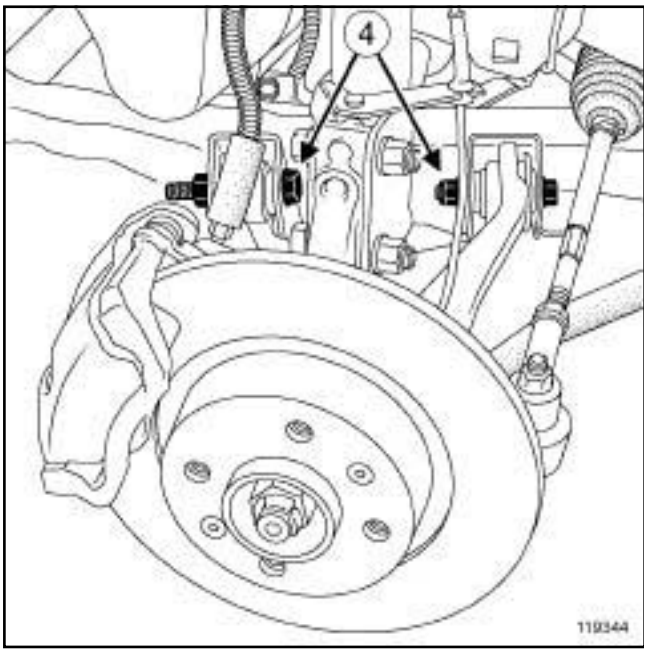
119210

❏ Remove:

- the bolt (**2**) from the acoustic tie-rod,
- the nut (**3**) from the acoustic tie-rod,
- the acoustic tie-rod.

EQUIPMENT LEVEL SPORT

II - OPERATION FOR REMOVAL OF PART CONCERNED

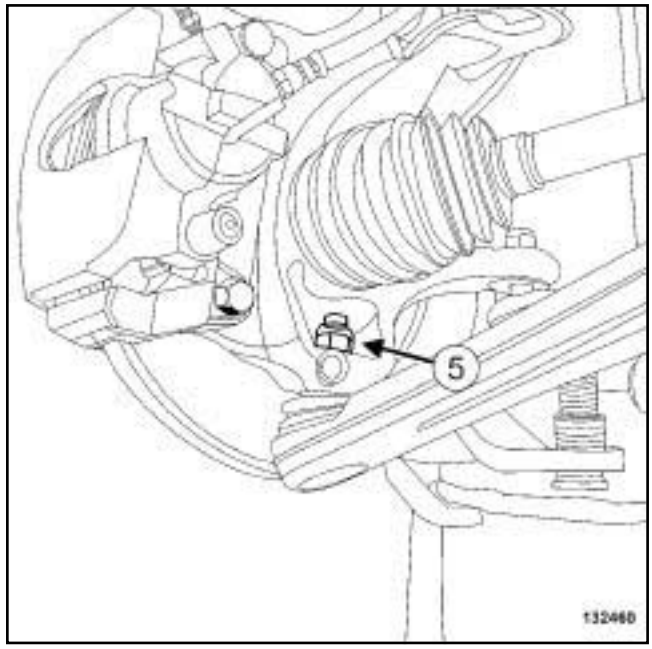


119344

❏ Remove the studs (**4**) from the front driveshaft lower arm.

WARNING

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



132460

❏ Remove the lower ball joint nut (**5**) .

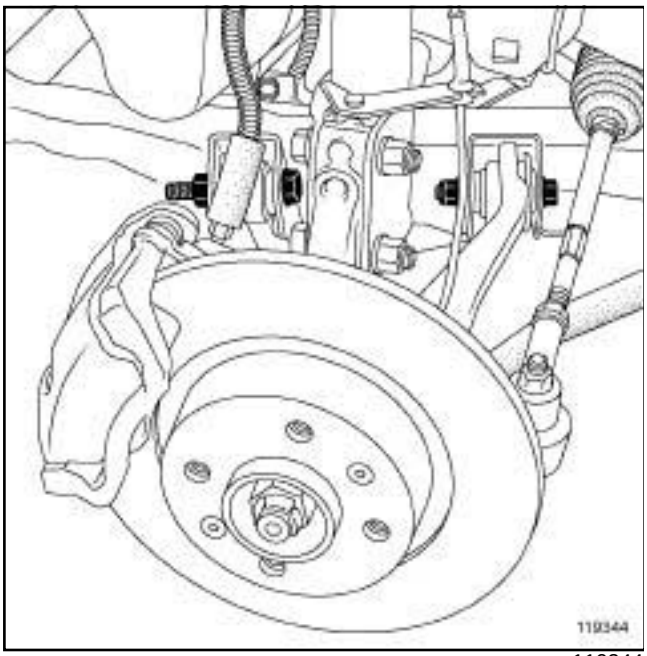
❏ Remove the lower ball joint from the front driveshaft hub carrier.

❏ Remove the lower arm.

EQUIPMENT LEVEL SPORT

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



119344

❏ Refit the front driveshaft lower arm.

> Note:
>
> Ensure that direction of fitting for the front driveshaft lower arm bolts is correct.

❏ Fit the lower ball joint on the front driveshaft hub carrier.

❏ Torque tighten the **front driveshaft lower arm bolts (105 N.m)**.

❏ Torque tighten the **lower ball joint nut (62 N.m)**.

II - FINAL OPERATION

❏ Refit the acoustic tie-rod.

❏ Torque tighten:

- the **acoustic tie-rod nut (62 N.m)**,
- the **acoustic tie-rod bolt (21 N.m)**.

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

❏ Check the front axle geometry (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) .

Special tooling required	
Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).

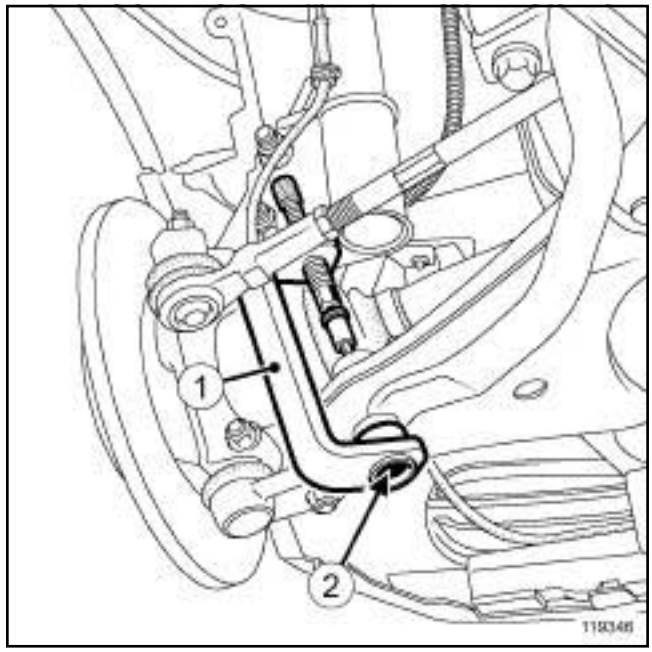
Tightening torques ▽	
lower ball joint nuts on the front driveshaft lower arm	**113 Nm**
lower ball joint nut on the front driveshaft hub-carrier	**62 Nm**
front driveshaft lower arm nuts	**105 Nm**
acoustic tie-rod nut	**62 Nm**
acoustic tie-rod bolt	**21 Nm**
anti-roll bar nut on the wheel side	**14 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

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

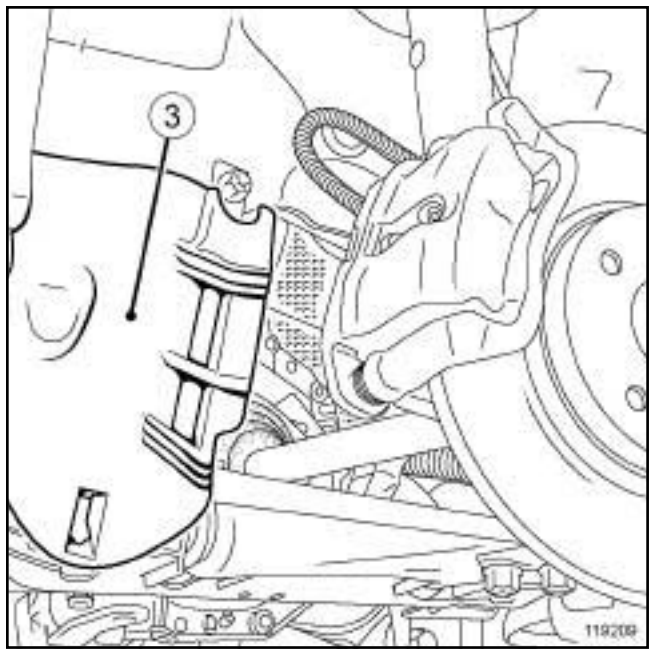


119346

❏ Compress the rubber mounting bush on the anti-roll bar on the wheel side using the **(Sus. 1413)** (**1**) .

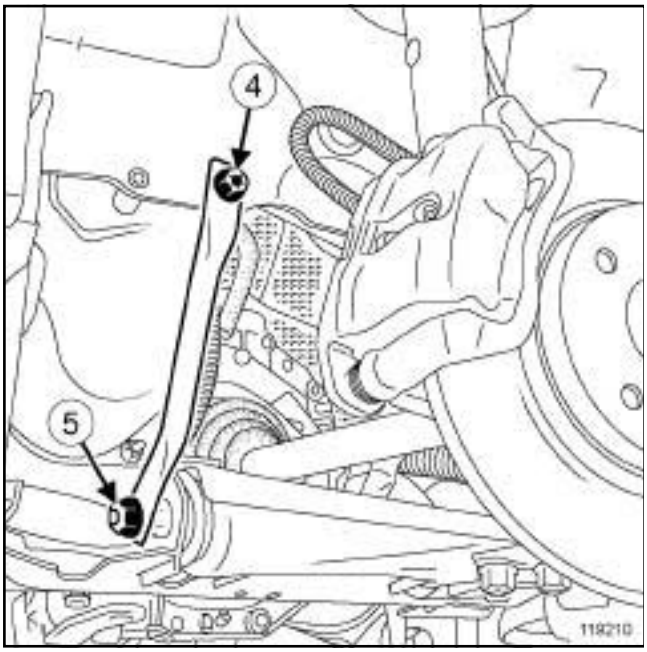
❏ Remove:

- the nut (**2**) from the anti-roll bar on the wheel side,
- the rubber mounting bush from the anti-roll bar on the wheel side.



119209

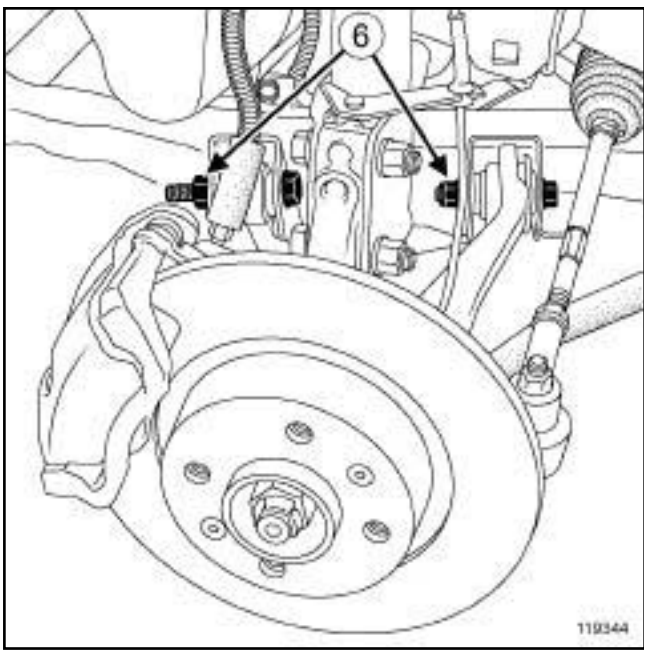
❏ Detach the wheel arch liner (**3**) .



119210

❑ Remove:

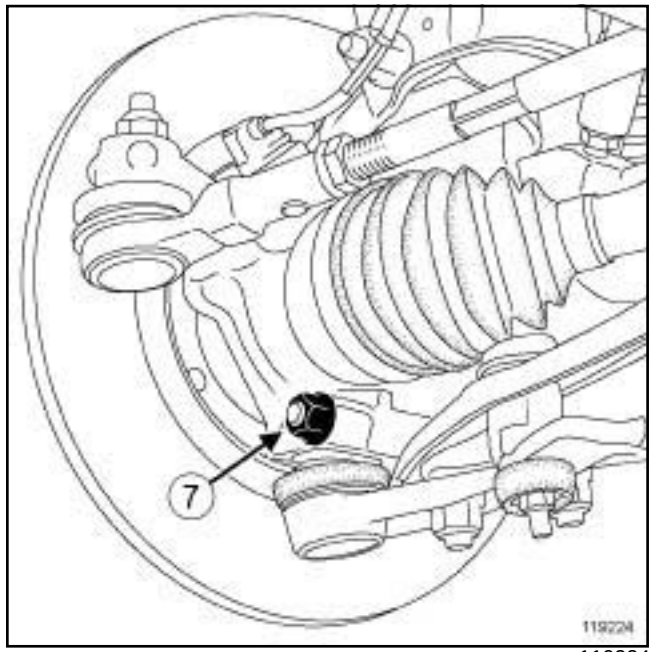
- the bolt (**4**) from the acoustic tie-rod,
- the nut (**5**) from the acoustic tie-rod,
- the acoustic tie-rod.



119344

❑ Undo the front driveshaft lower arm nuts (**6**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119224

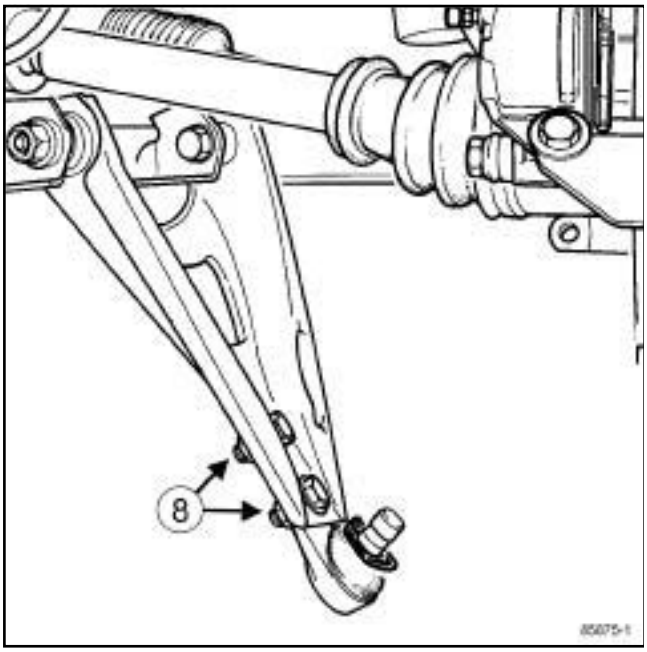
❑ Remove:

- the lower ball joint nut (**7**) ,
- the lower ball joint bolt.

❑ Remove the lower ball joint from the front driveshaft hub carrier.

WARNING

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



85875-1

❑ Remove:

- the lower ball joint nuts (**8**) ,
- the lower ball joint.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the lower ball joint,
- the lower ball joint nuts.

❑ Torque tighten the **lower ball joint nuts on the front driveshaft lower arm (113 Nm)**.

❑ Fit the lower ball joint on the front driveshaft hub carrier.

❑ Check that the plastic ring is correctly positioned on the lower arm ball joint.

❑ Refit:

- the lower ball joint bolt on the front driveshaft hub carrier,
- the lower ball joint nut on the front driveshaft hub-carrier.

❑ Torque tighten the **lower ball joint nut on the front driveshaft hub-carrier (62 Nm)**.

II - FINAL OPERATION.

❑ Torque tighten the **front driveshaft lower arm nuts (105 Nm)**.

❑ Refit:

- the acoustic tie-rod,
- the acoustic tie-rod nut,
- the acoustic tie-rod bolt.

❑ Torque tighten:

- the **acoustic tie-rod nut (62 Nm)**,
- the **acoustic tie-rod bolt (21 Nm)**.

❑ Attach the wheel arch liner.

❑ Refit:

- the front anti-roll bar rubber mounting bush on the wheel side,
- the front anti-roll bar bolt on the wheel side.

❑ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.

❑ Refit the front anti-roll bar nut on the wheel side.

❑ Torque tighten the **anti-roll bar nut on the wheel side (14 Nm)**.

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

❑ Check the front axle geometry (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) .

Special tooling required	
Tav. 476	Ball joint extractor.
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required
flywheel immobiliser

Tightening torques ▽	
rear subframe bolts	**105 Nm**
front subframe bolts	**62 Nm**
front end cross member bolts	**21 Nm**
acoustic tie-rod bolts	**21 Nm**
acoustic tie-rod bolts	**90 Nm**
subframe tie-rod bolts	**21 Nm**
subframe tie-rod nuts	**62 Nm**
gear lever arm nut	**28 Nm**
nuts of the lower arm ball joints	**62 N.m**
bolts of the lower ball joints	**62 N.m**
nuts of the track rod ends	**37 N.m**
universal joint bolt	**24 Nm**

REMOVAL

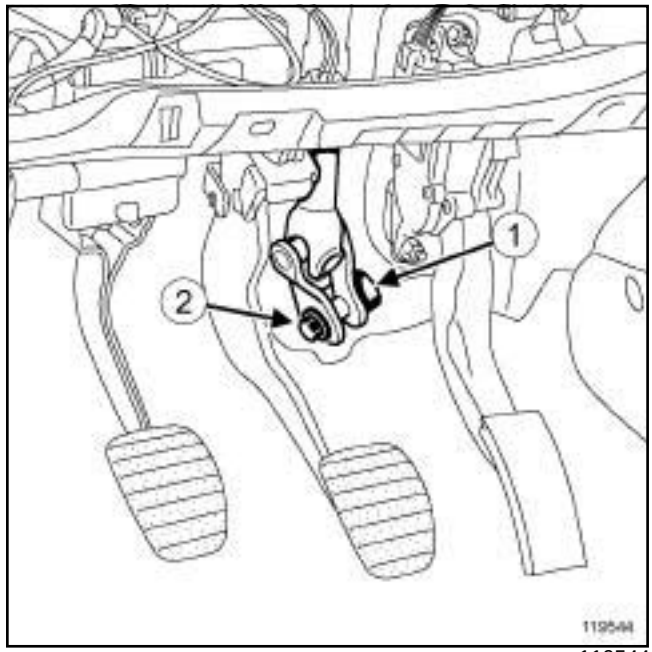
I - REMOVAL PREPARATION OPERATION

❏ 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 front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



119544

❏ Remove the universal joint cover (**1**) (do not keep).

❏ Set the wheels straight ahead.

❏ Fit a **flywheel immobiliser**.

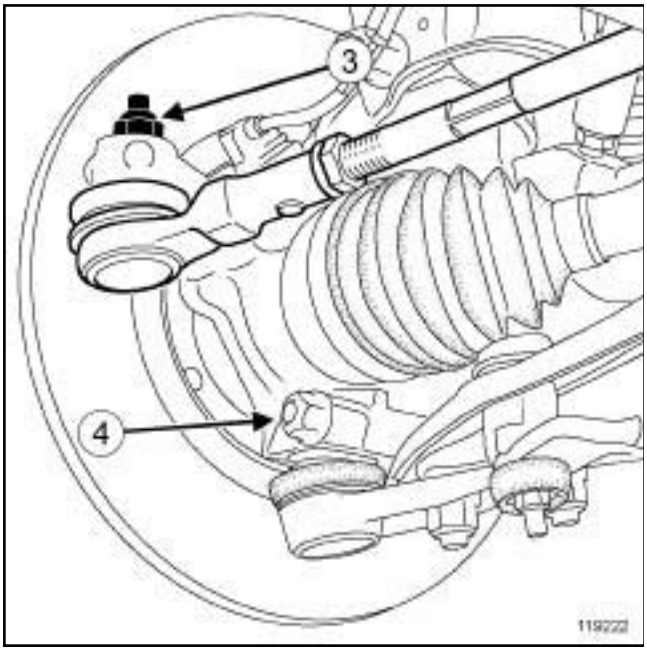
❏ Remove the bolt (**2**) from the universal joint (do not keep).

❏ Tilt the universal joint on the steering box to detach it from the pinion.

Note:

Do not pull the intermediate shaft out.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG

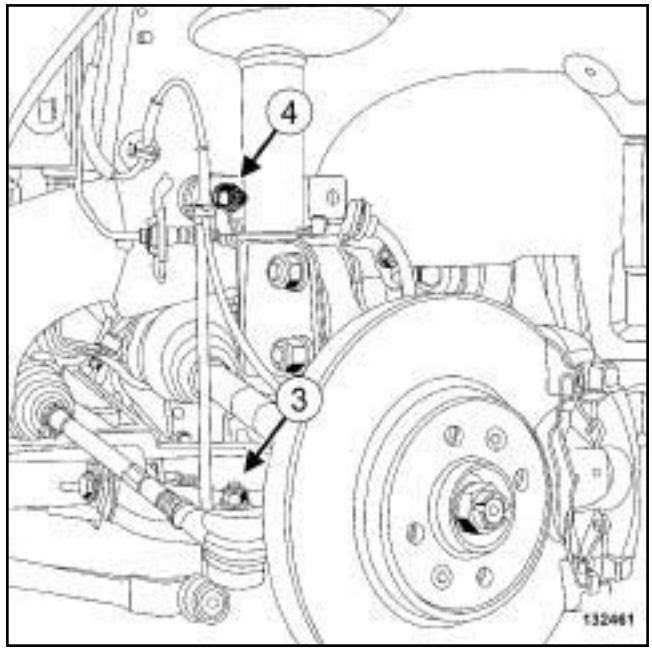


119222

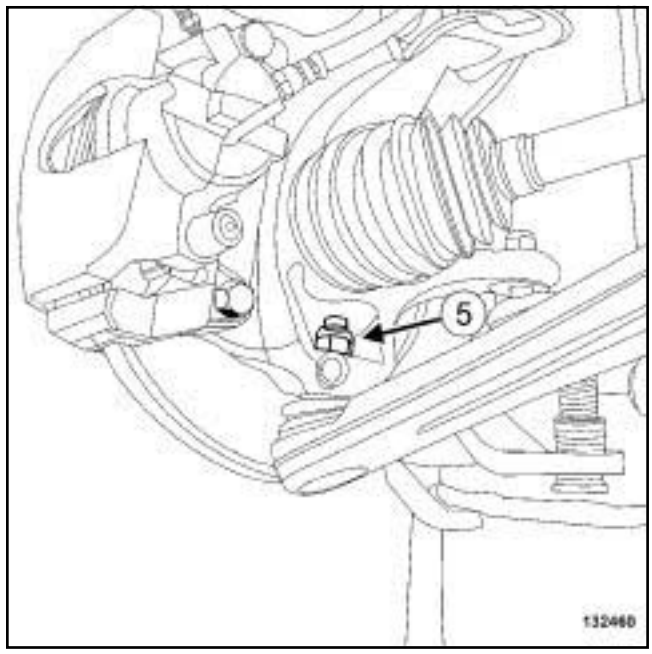
❑ Remove:

- the nuts (**3**) from the track rod ends,
- the bolts (**4**) from the lower ball joints.

EQUIPMENT LEVEL SPORT



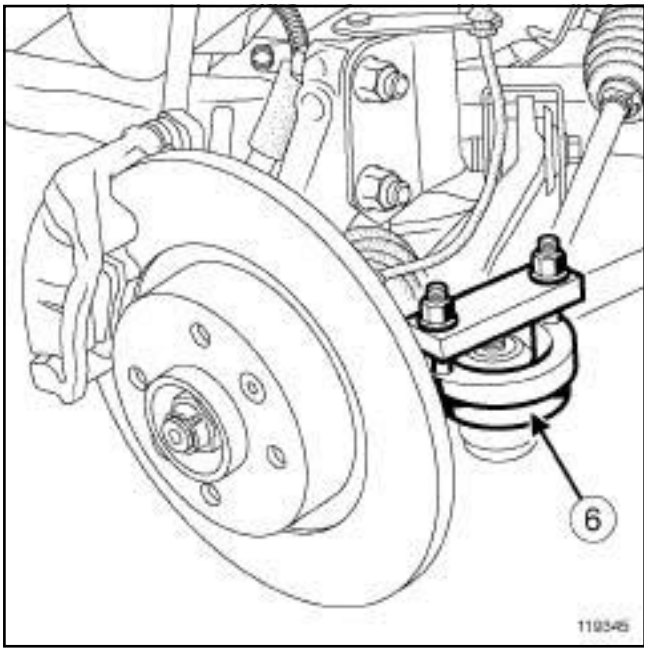
132461



132460

❑ Remove:

- the nuts (**3**) from the track rod ends,
- the nuts (**4**) from the anti-roll bar tie rods,
- the anti-roll bar tie rods from the shock absorbers,
- the nuts (**5**) from the lower arm ball joints.

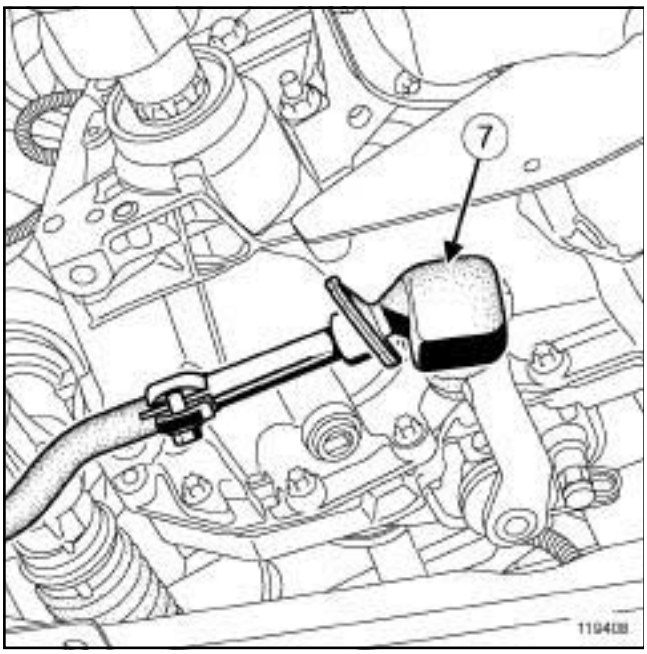


119345

❏ Remove:

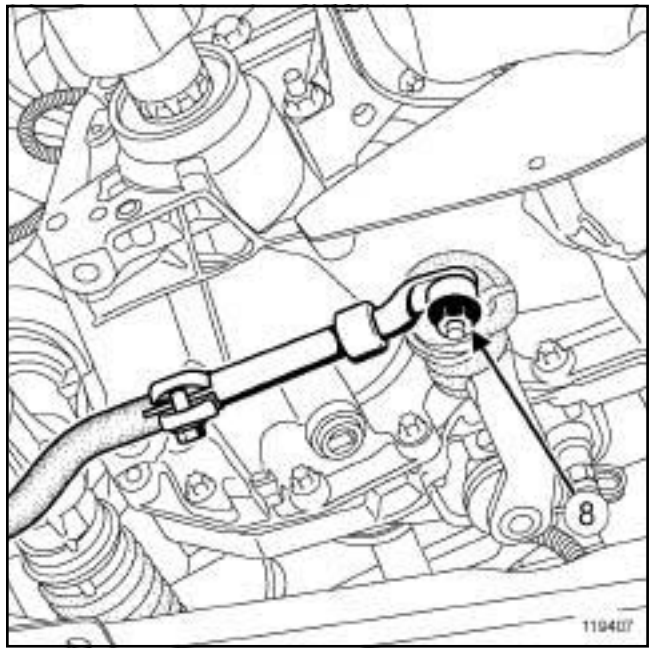
- the track rod ends using the **(Tav. 476)** (**6**) ,
- the lower arm ball joints.

JB1



119408

❏ Remove the rubber protector (**7**) from the gear lever arm.



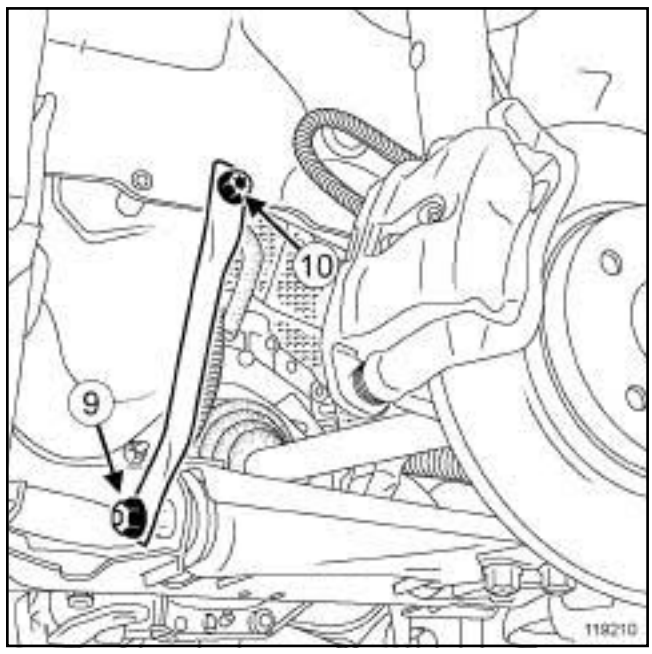
119407

❏ Remove the nut (**8**) from the gear lever arm.

❏ Remove the gear lever arm from the gearbox control.

❏ Remove:

- the heat shield under the gear lever,
- the gearbox control lever arm.

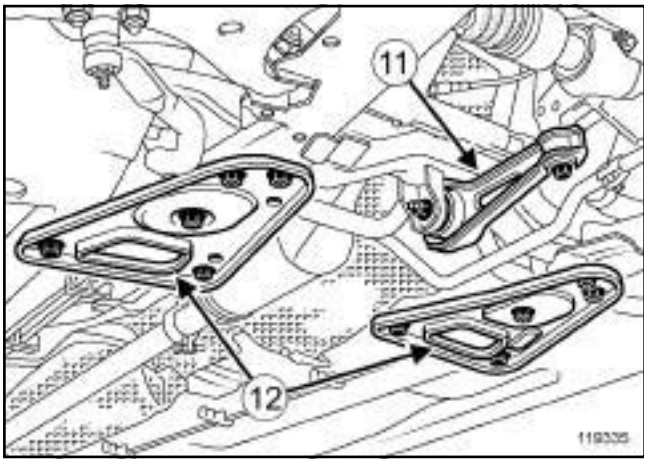


119210

❏ Remove:

- the subframe tie-rod nuts (**9**) ,

- the subframe tie-rod bolts (**10**) ,
- the subframe tie-rods.

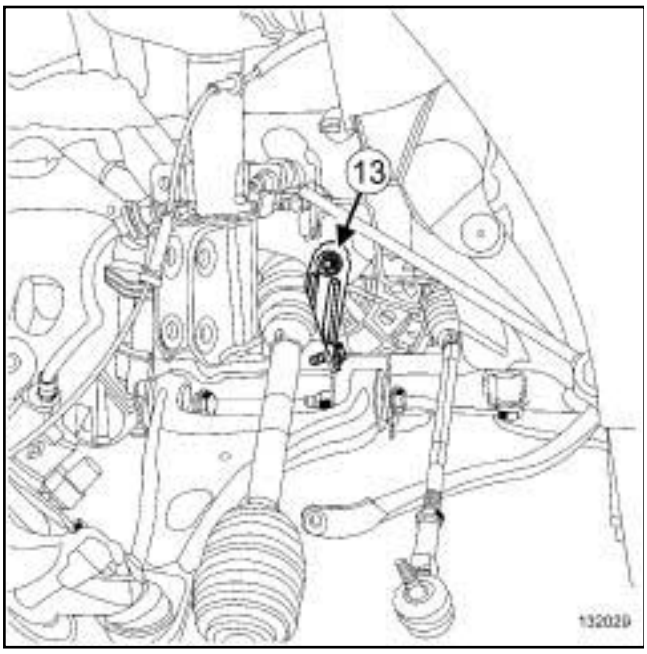


119335

❏ Remove:

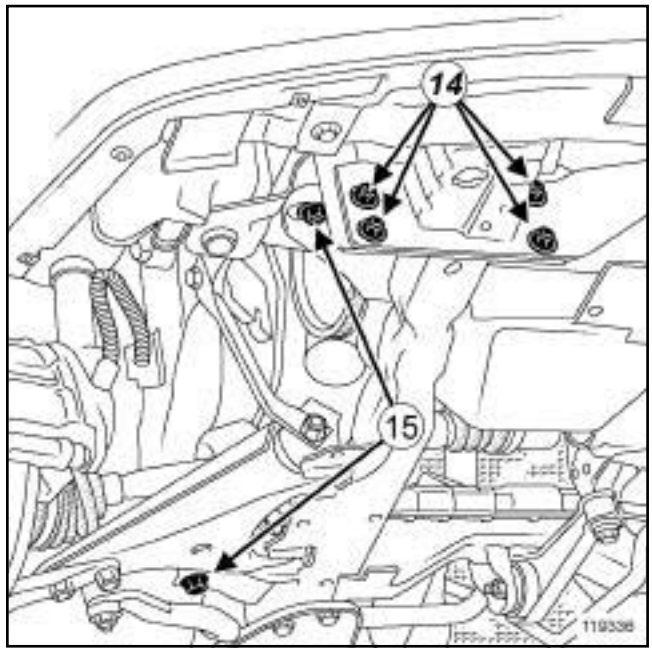
- the rear suspended engine mounting (**11**) (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the acoustic tie-rod bolts (**12**) ,
- the acoustic tie rods.

❏ Position the **(Mot. 1390)**.



132029

❏ Remove the left-hand tie-rod bolt (**13**) .



119336

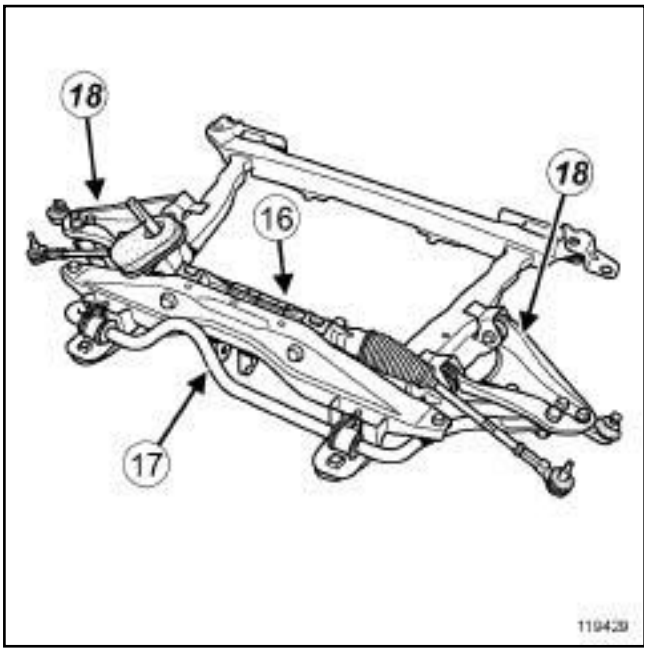
❏ Attach the cooling radiator to the upper cross member.

Note:

This operation requires two people.

❏ Remove:

- the bolts (**14**) from the front end cross member,
- the subframe bolts (**15**) ,
- the « subframe - front driveshaft lower arm - steering box - front anti-roll bar » assembly with the **(Mot. 1390)**.

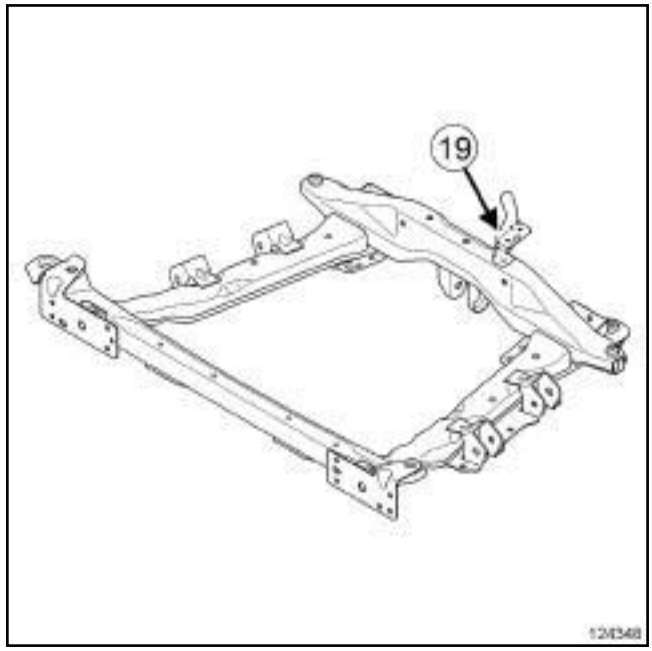


119429

❑ Remove:

- the steering box (**16**) (see **36A**, **Steering assembly**, **Steering box: Removal - Refitting**, page **36A-1**) ,
- the front anti-roll bar (**17**) (see **31A**, **Front axle components**, **Front anti-roll bar: Removal - Refitting**, page **31A-52**) ,
- the lower arms from the front driveshaft (**18**) (see **31A**, **Front axle components**, **Front driveshaft lower arm: Removal - Refitting**, page **31A-33**) .

K9K



124348

❑ Remove:

- the gear selection cable guide bolt (**19**) from the subframe,
- the gear selection cable guide (**19**) from the subframe.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace:

- the subframe bolts,
- the bolt from the universal joint.

❑ Degrease the contact surface areas of the subframe and the body using surface cleaner (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

K9K

❑ Refit the speed selection cable guide on the sub-frame.

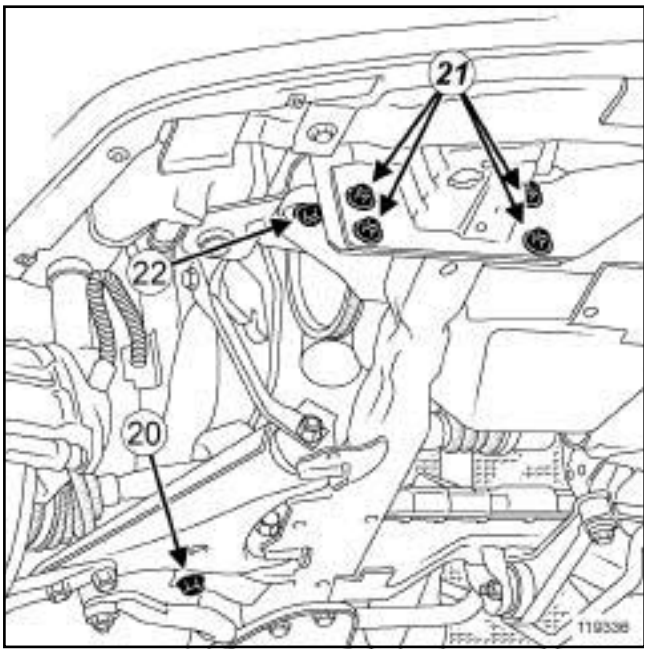
❑ Refit:

- the front driveshaft lower arms (see **31A**, **Front axle components**, **Front driveshaft lower arm: Removal - Refitting**, page **31A-33**) ,
- the front anti-roll bar (see **31A**, **Front axle components**, **Front anti-roll bar: Removal - Refitting**, page **31A-52**) ,
- the steering box (see **36A**, **Steering assembly**, **Steering box: Removal - Refitting**, page **36A-1**) .

Note:

Be careful with the guide of the lower or upper radiator when fitting the subframe. There is a risk of the radiator guides breaking.

❑ Refit the « subframe - front driveshaft lower arm - steering box - front anti-roll bar » assembly with the **(Mot. 1390)**.



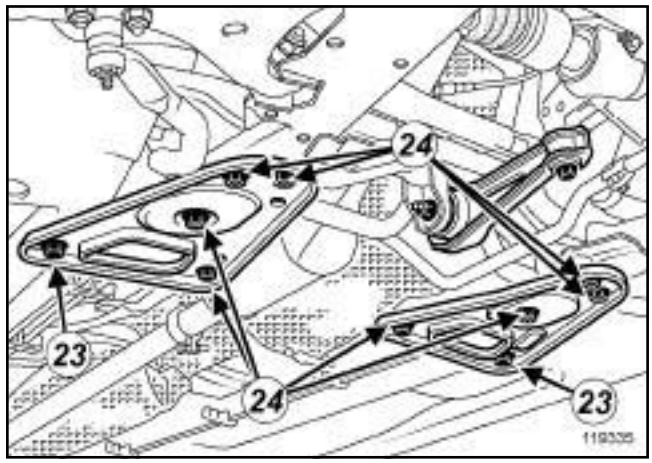
119336

❑ Tighten to torque:

- the **rear subframe bolts (105 Nm)** (**20**) ,
- the **front subframe bolts (62 Nm)** (**22**) ,
- the **front end cross member bolts (21 Nm)** (**21**) .

❑ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the acoustic tie rods.



119335

❑ Tighten to torque:

- the **acoustic tie-rod bolts (21 Nm)** (**23**) ,
- the **acoustic tie-rod bolts (90 Nm)** (**24**) .

❑ Refit the sub-frame tie-rods.

❑ Tighten to torque:

- the **subframe tie-rod bolts (21 Nm)**,
- the **subframe tie-rod nuts (62 Nm)**.

K9K

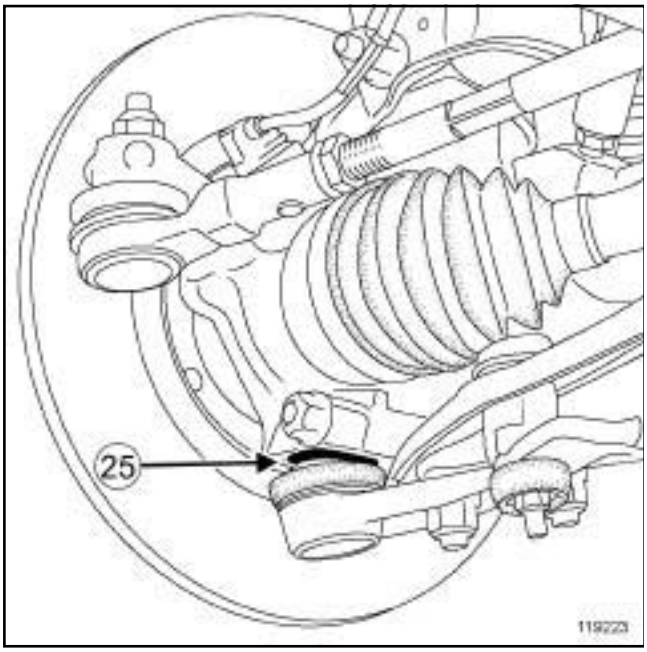
❑ Check the position of the gear selection cables in the guide.

JB1

❑ Fit the gearbox control gear lever arm.

❑ Torque tighten the **gear lever arm nut (28 Nm)**.

❑ Fit the gear lever arm rubber protector.



119223

❏ Check that the bush (**25**) is correctly positioned on the lower arm ball joint.

❏ Refit:

- the lower arm ball joints,
- the track rod ends.

EQUIPMENT LEVEL SPORT

❏ Refit the anti-roll bar tie-rods to the shock absorbers.

❏ Torque tighten the **nuts of the lower arm ball joints (62 N.m)**.

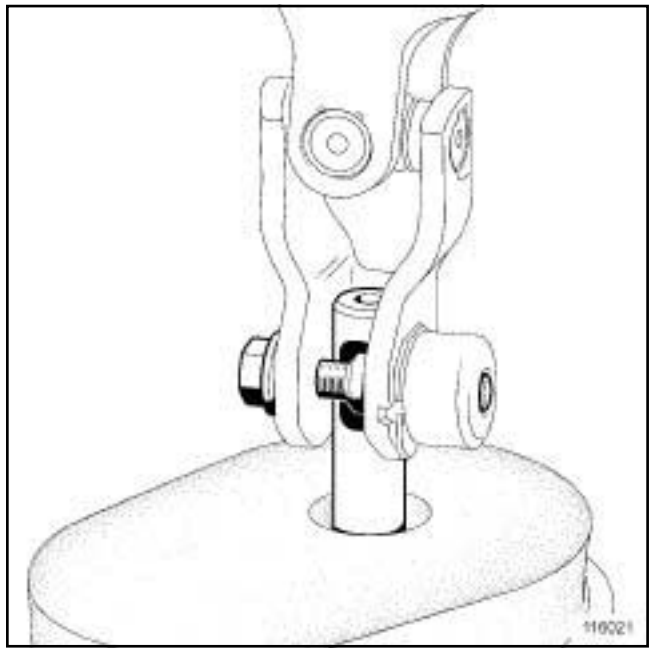
EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG

❏ Torque tighten the **bolts of the lower ball joints (62 N.m)**.

❏ Torque tighten the **nuts of the track rod ends (37 N.m)**.

❏ Observe the direction of fitting for the universal joint cam nut and bolt.

❏ fit the universal joint to the steering box.



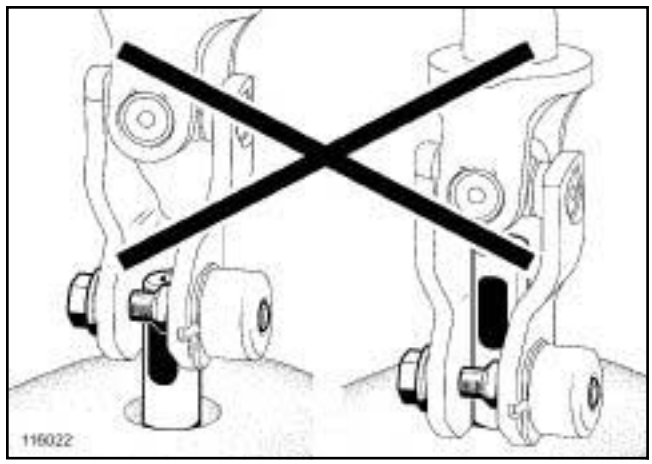
116021

❏ Refit the universal joint cam nut and a new bolt.

❏ Position the universal joint cam nut and bolt.

❏ Immobilise the cam nut in its housing (on the universal joint).

❏ Pretighten the universal joint cam nut and bolt.



116022

❏ Check that the universal joint is in the correct position.

❏ Torque tighten the **universal joint bolt (24 Nm)**.

❏ Remove the **flywheel immobiliser**.

III - FINAL OPERATION.

❏ Refit:

- 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**) .

❑ Check the front axle geometry (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) .

Tightening torques ▽	
radiator mounting cross member bolts	44 Nm

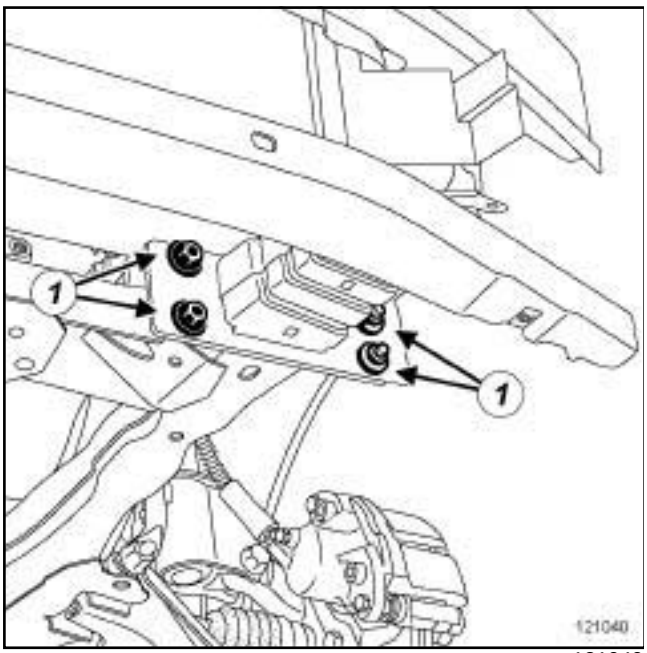
REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Remove the front bumper ((see **Front bumper: Removal - Refitting**)).

❏ Attach the radiator upper section.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121040

❏ Remove:

- the bolts (**1**) ,
- the radiator mounting cross member.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the radiator mounting cross member,
- the bolts ***(1)*** .

❏ Torque tighten the **radiator mounting cross member bolts (44 Nm)**.

II - FINAL OPERATION.

❏ Detach the radiator upper section.

❏ Refit the front bumper ((see **Front bumper: Removal - Refitting**)).

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

Special tooling required	
Sus. 1413	Rubber mounting compressor for fitting the anti-roll bar. (wheel end).
Sus. 1824	Fork for fitting the anti-roll bar centre bearings.

Tightening torques ▽	
anti-roll bar bearing bolts on the subframe	**35 Nm**
anti-roll bar bolt on the wheel side	**14 Nm**

Anti-roll bar specifications:

Engine	Ø of the strut in mm
D7F	25
D4F, K9K	26

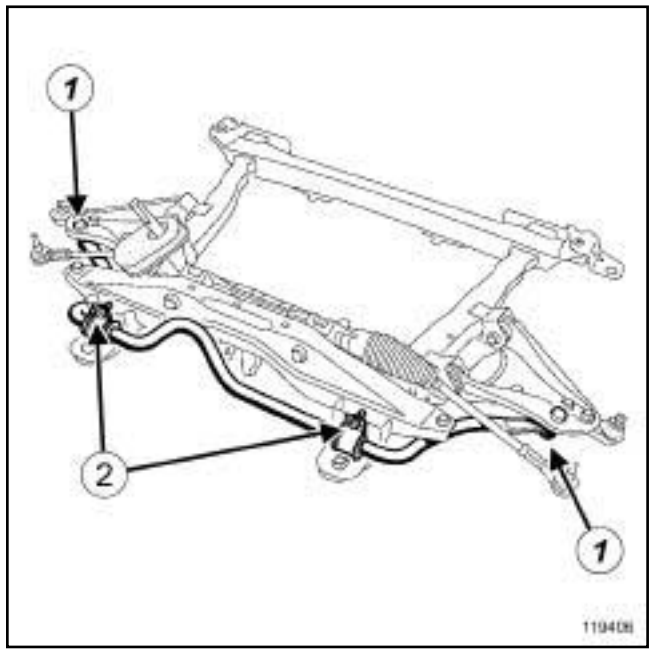
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❑ Remove the front axle subframe (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119406

❑ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)**.

❑ Remove:

- the bolt (**1**) from the anti-roll bar on the wheel side,
- the rubber mounting bush from the anti-roll bar,
- the anti-roll bar bearing bolts (**2**) ,
- the anti-roll bar bearings,
- the anti-roll bar,
- the rubber mounting bush from the anti-roll bar bearing.

REFITTING

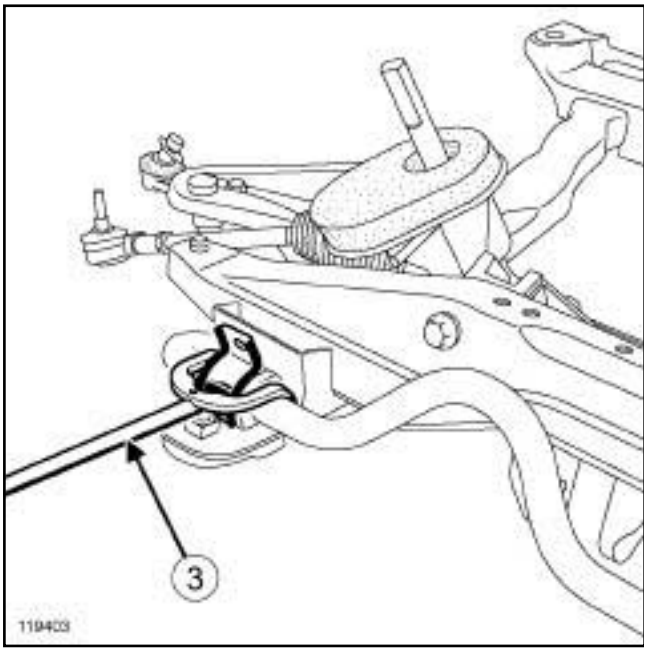
REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the anti-roll bar bearing rubber mounting bush,
- the anti-roll bar.

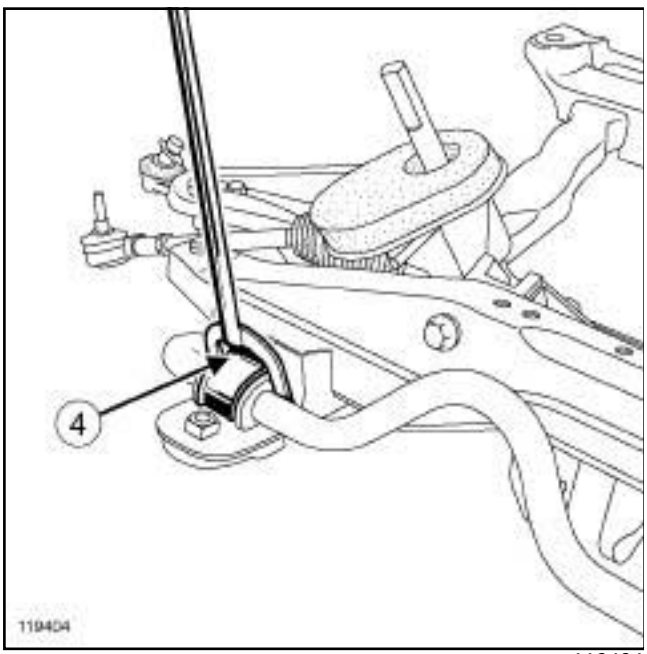
❑ Fit the anti-roll bar bearings into the subframe neck.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



119403

❏ Fit the **(Sus. 1824)** (**3**) on the anti-roll bar.



119404

❏ Lift the **(Sus. 1824)**.

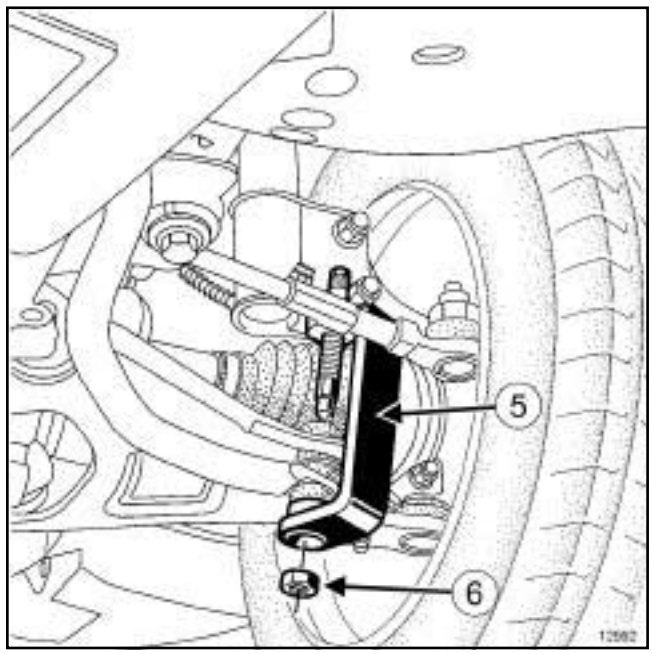
❏ Refit the anti-roll bar bearing bolts (**4**) .

❏ Torque tighten the **anti-roll bar bearing bolts on the subframe (35 Nm)**.

❏ Refit:

- the anti-roll bar rubber mounting bush on the wheel side,
- the anti-roll bar bolt on the wheel side.

❏ Refit the front axle subframe (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) .



12992

❏ Compress the anti-roll bar rubber mounting bush on the wheel side using the **(Sus. 1413)** (**5**) .

❏ Refit the anti-roll bar nut (**6**) on the wheel side.

❏ Torque tighten the **anti-roll bar bolt on the wheel side (14 Nm)**.

EQUIPMENT LEVEL SPORT

Special tooling required	
Sus. 1824	Fork for fitting the anti-roll bar centre bearings.

Tightening torques ▽	
anti-roll bar bearing bolts	**35 N.m**

Anti-roll bar specifications:

Colour	**∅ of the strut in mm**
Brown	21
Blue	20

REMOVAL

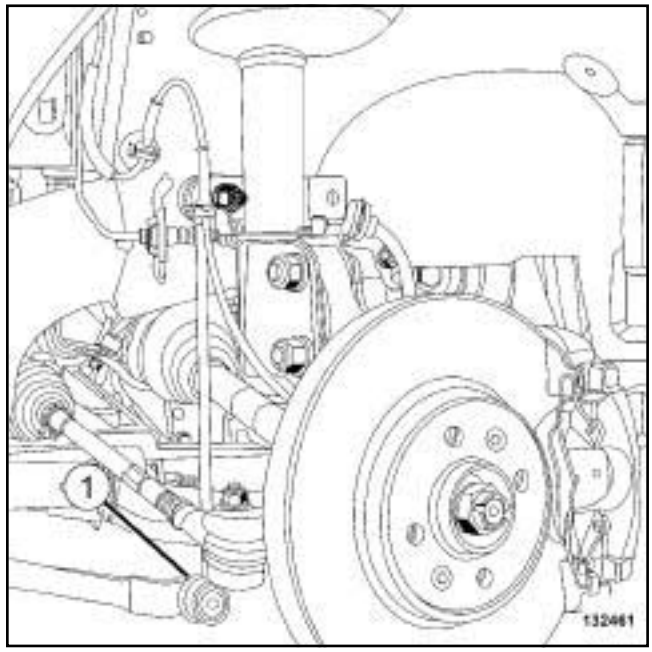
I - REMOVAL PREPARATION OPERATION

❏ 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 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-43**) .

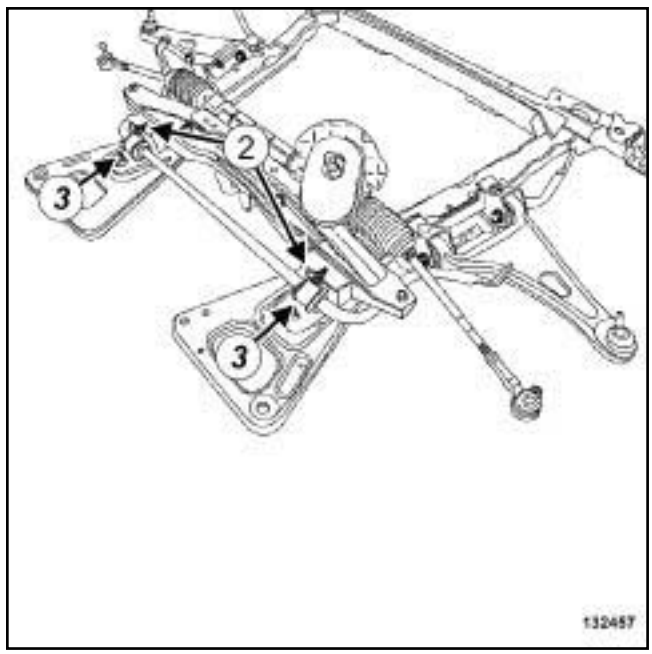
II - OPERATION FOR REMOVAL OF PART CONCERNED



132461

❏ Remove:

- the nuts (**1**) of the anti-roll bar tie rods,
- the anti-roll bar tie rods from the anti-roll bar.



132457

❏ Remove:

- the anti-roll bar bearing bolts (**2**) ,
- the anti-roll bar bearings (**3**) ,
- the anti-roll bar,

EQUIPMENT LEVEL SPORT

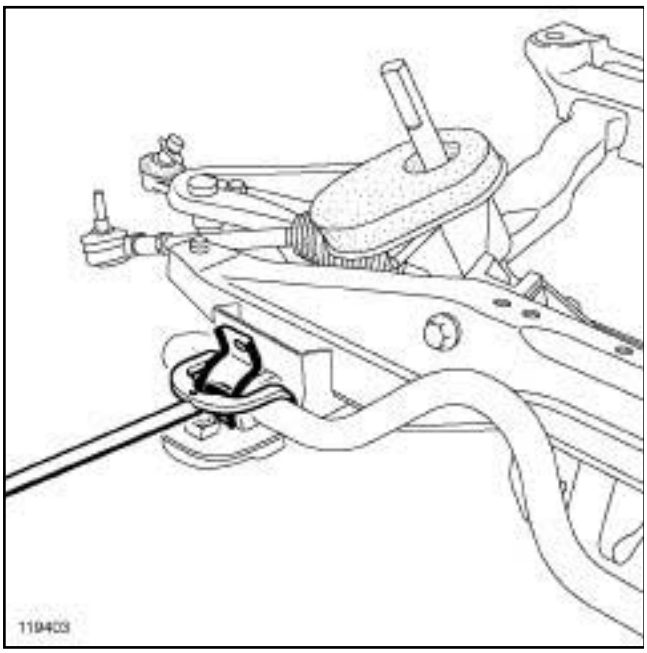
- the rubber mounting bushes of the anti-roll bar bearings.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

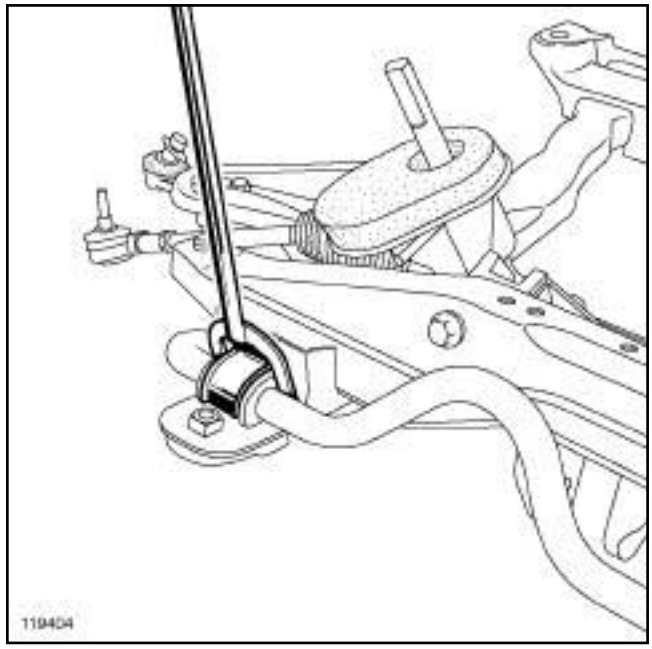
❏ Refit:

- the rubber mounting bushes on the anti-roll bar bearings,
- the anti-roll bar,
- the anti-roll bar bearings.



119403

❏ Fit the **(Sus. 1824)** on the anti-roll bar.



119404

❏ Lift the **(Sus. 1824)**.

❏ Refit the anti-roll bar bearing bolts.

❏ Torque tighten the **anti-roll bar bearing bolts (35 N.m)**.

❏ Refit the anti-roll bar tie rods on the anti-roll bar.

II - FINAL OPERATION.

❏ Refit:

- the front axle sub-frame (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) ,
- the 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**) .

EQUIPMENT LEVEL SPORT

Special tooling required	
Fre. 1190-01	Brake calliper piston return tool.

Tightening torques ▽	
new lower bolts of the calliper guide pins	**35 N.m**

When replacing brake pads, be sure to replace the pads on the opposite side.

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

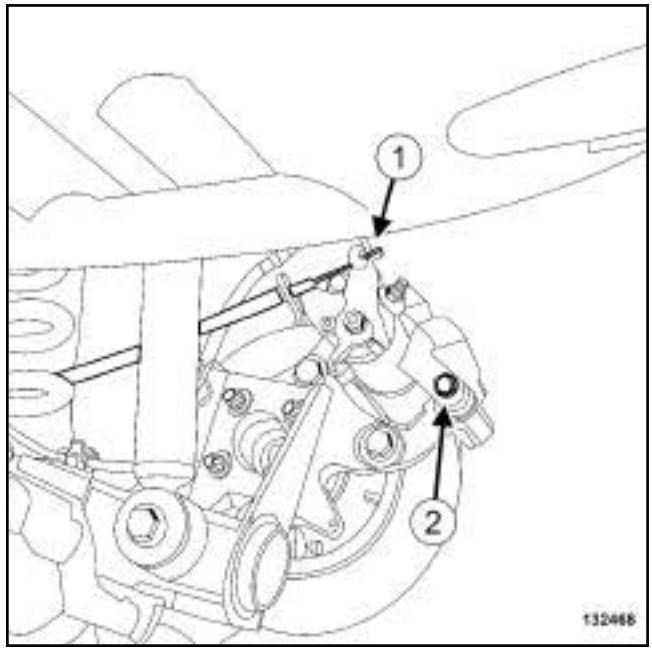
I - REMOVAL PREPARATION OPERATION

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

❏ Release the parking brake.

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



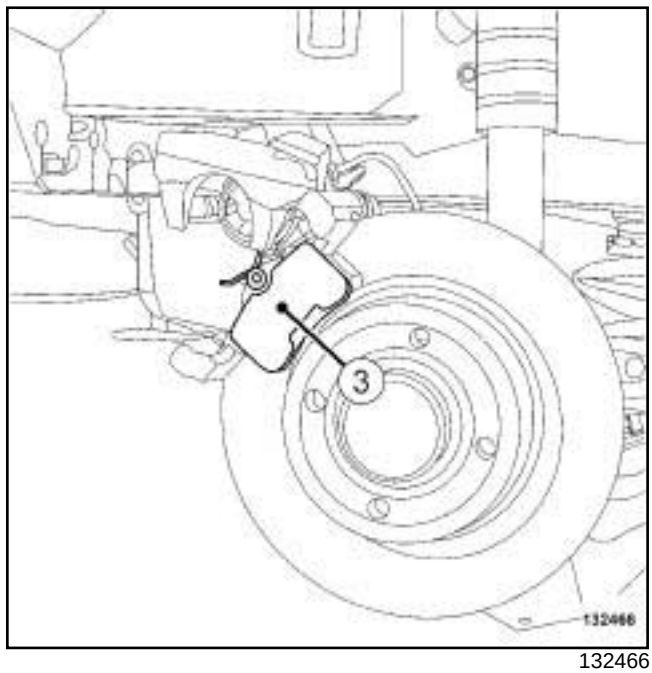
132468

❏ Unclip the parking brake cable from the brake calliper at (**1**) .

❏ Move aside the parking brake cable.

❏ Remove the lower bolt (**2**) of the brake calliper guide pin.

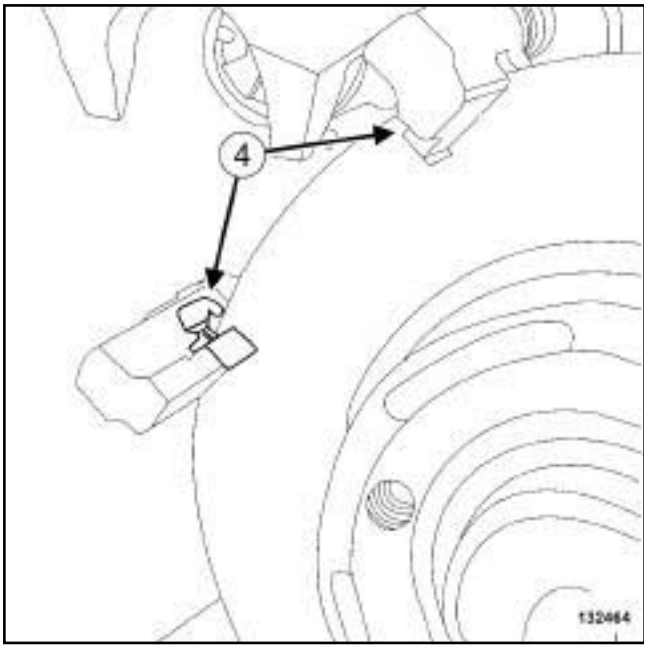
❏ Tilt the brake calliper over.



132466

❏ Remove the brake pads (**3**) from the brake calliper mounting.

EQUIPMENT LEVEL SPORT



132464

❏ Remove the noise-reducing blades (**4**) from the brake calliper mounting.

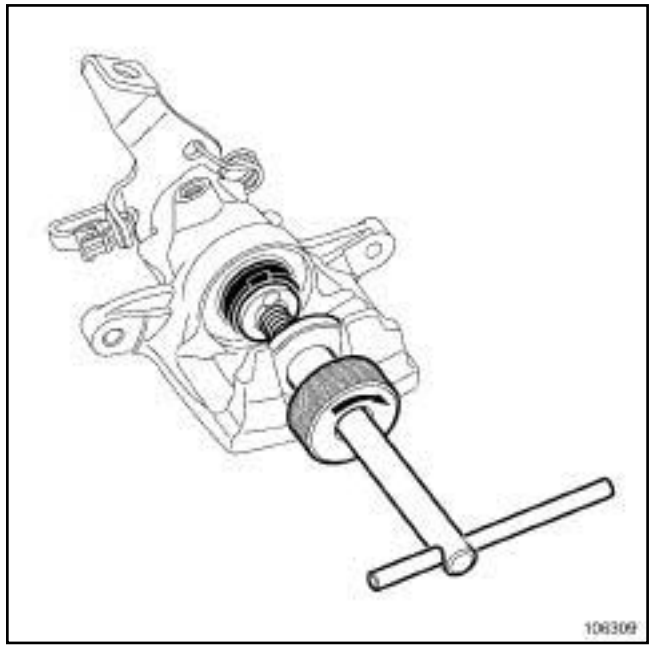
REFITTING

I - REFITTING PREPARATION OPERATION

❏ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

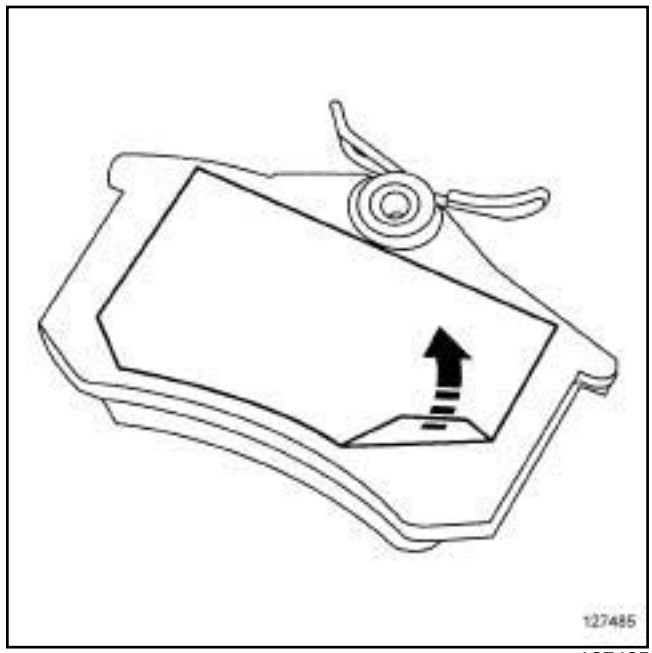
- the calliper supports,
- the callipers.

❏ Always replace the brake calliper guide pin bolts.



106309

❏ Push the piston to the bottom of its housing using the **(Fre. 1190-01)**.



127485

❏ Remove the protective film from the brake pad.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the noise-reducing fins onto the brake calliper mountings,
- the brake pads onto the brake calliper mountings.

EQUIPMENT LEVEL SPORT

❑ Fit:

- the brake callipers,
- the parking brake cables.

❑ Torque tighten the **new lower bolts of the calliper guide pins (35 N.m)**.

❑ Clip on the handbrake cables.

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.

Equipment required
pedal press

Tightening torques ▽	
rigid pipe unions on the rear brake hose concerned	**17 Nm**

REMOVAL

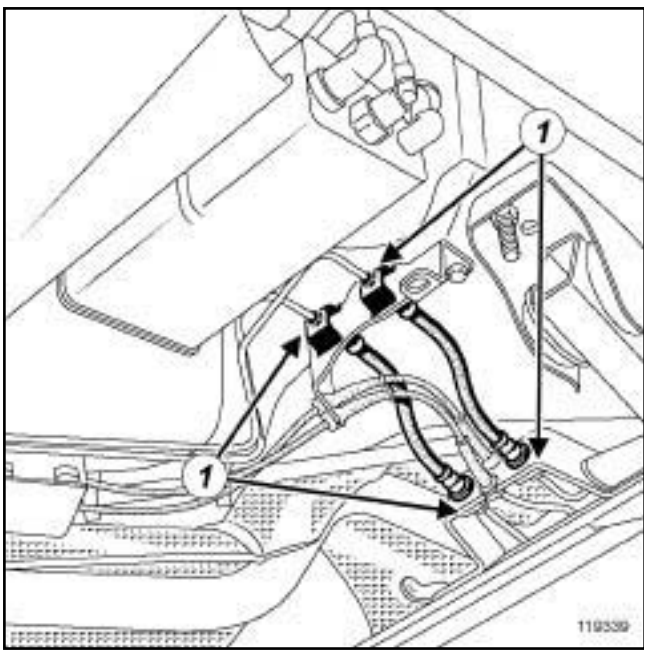
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

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

❏ Fit the **pedal press** to the brake pedal to limit the outflow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED



119339

❏ Undo the rigid pipe unions (**1**) on the rear brake hose concerned.

❏ Remove the rear brake hose concerned.

REMOVAL

I - REMOVAL PREPARATION 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 rear brake hose concerned,
- the rigid brake pipe unions on the rear brake hose concerned.

❏ Screw on the rigid brake pipe unions on the rear brake hose concerned without tightening them.

❏ Torque tighten the **rigid pipe unions on the rear brake hose concerned (17 Nm)**.

III - FINAL OPERATION.

❏ Remove the **pedal press** from the brake pedal to limit the outflow of brake fluid.

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

EQUIPMENT LEVEL SPORT

Equipment required
pedal press

Tightening torques ▽	
brake hose union on the master cylinder side	**13 N.m**
brake hose union on the brake calliper side	**13 N.m**

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

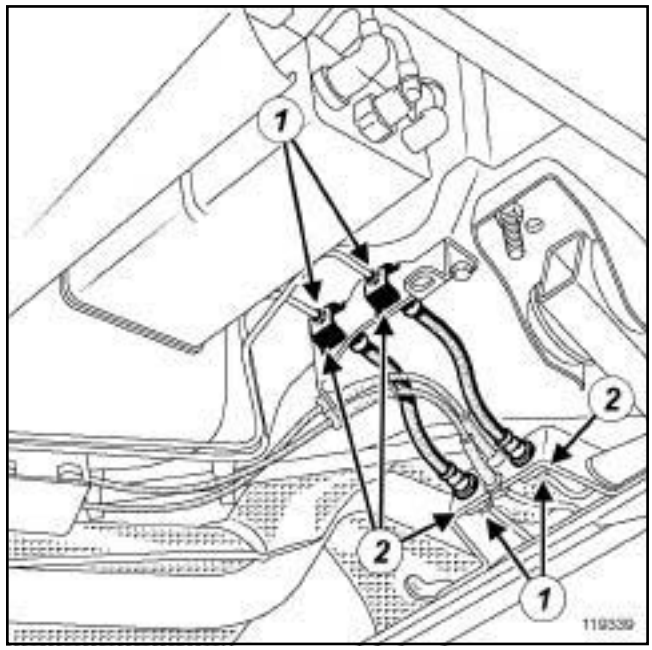
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



119339

❏ Undo the brake pipe unions (**1**) .

❏ Remove:

- the brake hose clips (**2**) ,
- the brake hoses.

REFITTING

I - REFITTING PREPARATION OPERATION

❏

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.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the brake hose,
- the brake hose clip.

❏ Tighten to torque:

- the **brake hose union on the master cylinder side (13 N.m)**,

EQUIPMENT LEVEL SPORT

- the **brake hose union on the brake calliper side (13 N.m)**.

III - FINAL OPERATION.

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

EQUIPMENT LEVEL SPORT

Special tooling required	
Fre. 1190-01	Brake calliper piston return tool.

Equipment required
pedal press

Tightening torques ▽	
new bolts on the brake calliper guide pins	**35 N.m**
brake pipe union on the calliper	**13 N.m**

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

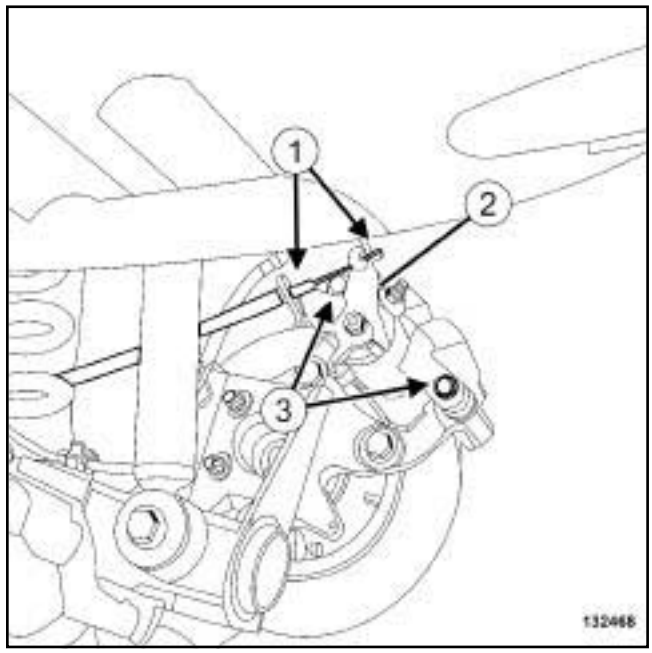
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Release the parking brake.

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

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



132468

❏ Unclip the parking brake cable from the brake calliper at (**1**) .

❏ Move aside the parking brake cable.

❏ Loosen the calliper brake pipe union (**2**) .

❏ Remove:

- the brake calliper guide pin bolts (**3**) ,
- the brake calliper from the mounting,
- the union between the brake pipe and the calliper,
- the brake calliper.

REFITTING

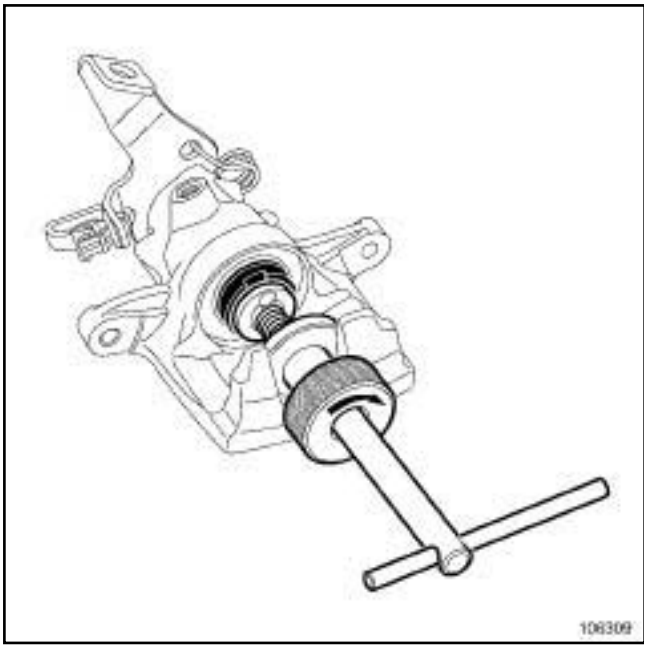
I - REFITTING PREPARATION OPERATION

❏ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the calliper supports,
- the callipers.

❏ Always replace the brake calliper guide pin bolts.

EQUIPMENT LEVEL SPORT



106309

❏ Push the piston to the bottom of its housing using the **(Fre. 1190-01)**.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the brake calliper on the calliper mounting.

❏ Torque tighten:

- the **new bolts on the brake calliper guide pins (35 N.m)**,
- the **brake pipe union on the calliper (13 N.m)**.

❏ Fit the parking brake cable.

❏ Clip the handbrake on the brake calliper.

III - FINAL OPERATION

❏ Refit the rear 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**) .

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

EQUIPMENT LEVEL SPORT

Special tooling required	
Fre. 1190-01	Brake calliper piston return tool.

Tightening torques ▽	
bolts of the brake calliper mounting	**XXX**
new bolts of the brake calliper guide pins	**105 N.m**

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

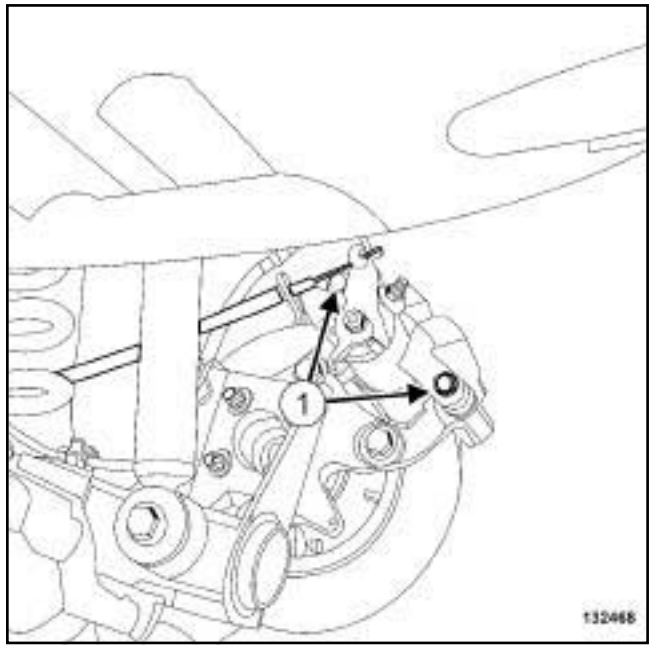
I - REMOVAL PREPARATION OPERATION

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

❏ Release the parking brake.

❏ Remove:

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



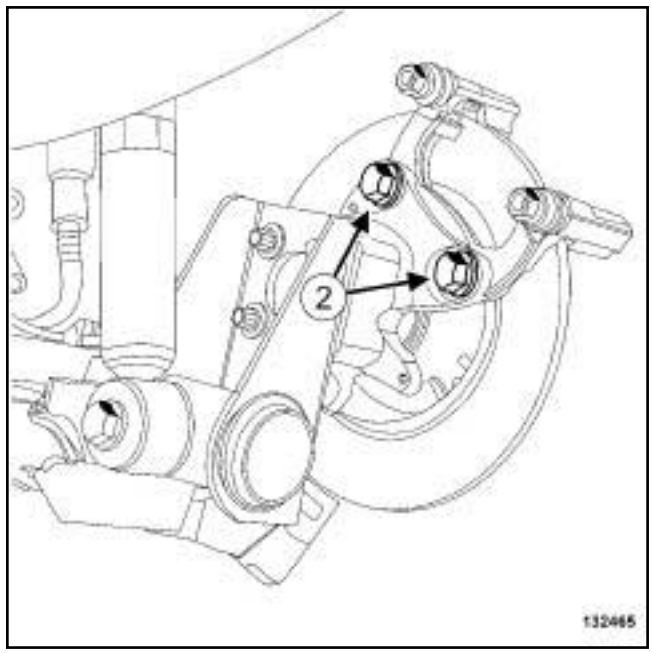
132468

❏ Remove:

- the brake calliper guide pin bolts (**1**) ,
- the brake calliper from the mounting.

❏ Attach the brake calliper to the suspension spring.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132465

❏ Remove:

- the brake calliper mounting bolts (**2**) ,
- the brake calliper mounting.

EQUIPMENT LEVEL SPORT

REFITTING

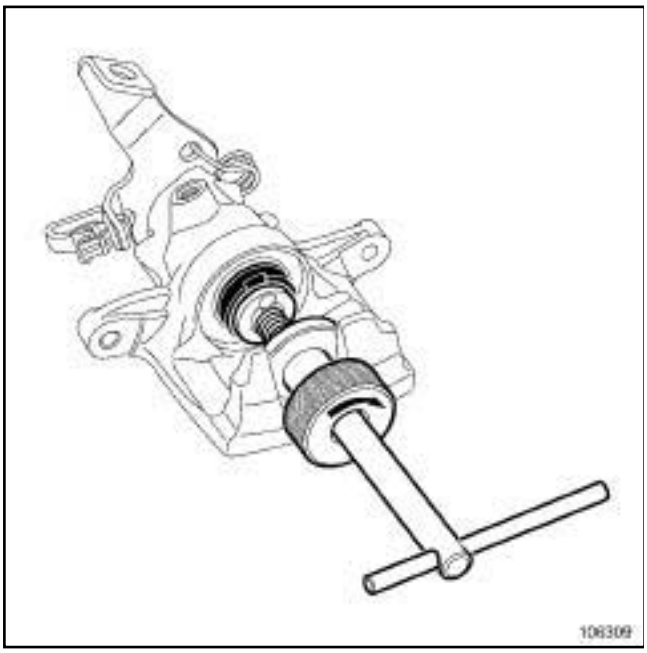
I - REFITTING PREPARATION OPERATION

❑ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the calliper supports,
- the callipers.

❑ Always replace:

- the calliper mounting bolts,
- the calliper guide pin bolts.



106309

❑ Push the piston to the bottom of its housing using the **(Fre. 1190-01)**.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the brake calliper mounting.

❑ Torque tighten the **bolts of the brake calliper mounting (XXX)**.

III - FINAL OPERATION.

❑ Refit:

- the brake calliper,
- the brake pads (see **33A**, **Rear axle components**, **Rear brake pads: Removal - Refitting**, page **33A-1**) .

❑ Torque tighten the **new bolts of the brake calliper guide pins (105 N.m)**.

❑ 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.

EQUIPMENT LEVEL SPORT

Equipment required
parts washer

Tightening torques ▽	
new hub nut	**175 N.m**
brake calliper mounting bolts	**105 N.m**

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-19**) .

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

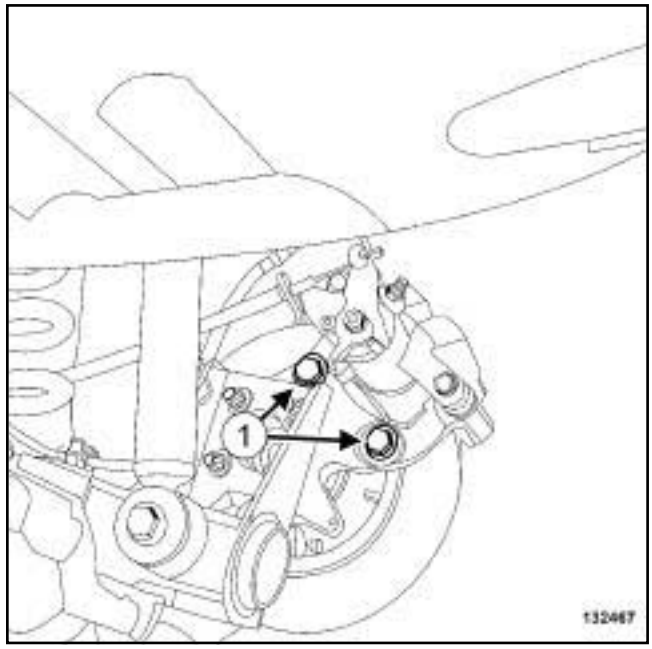
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

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



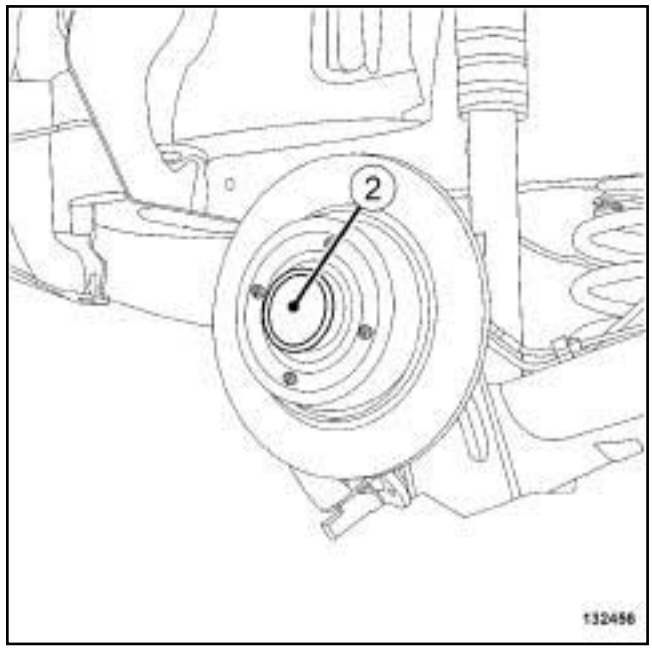
132467

❏ Remove:

- the brake calliper mounting bolts (**1**) ,
- the "brake calliper mounting - brake calliper" assembly.

❏ Attach the "calliper mounting - brake calliper" to the shock absorber spring.

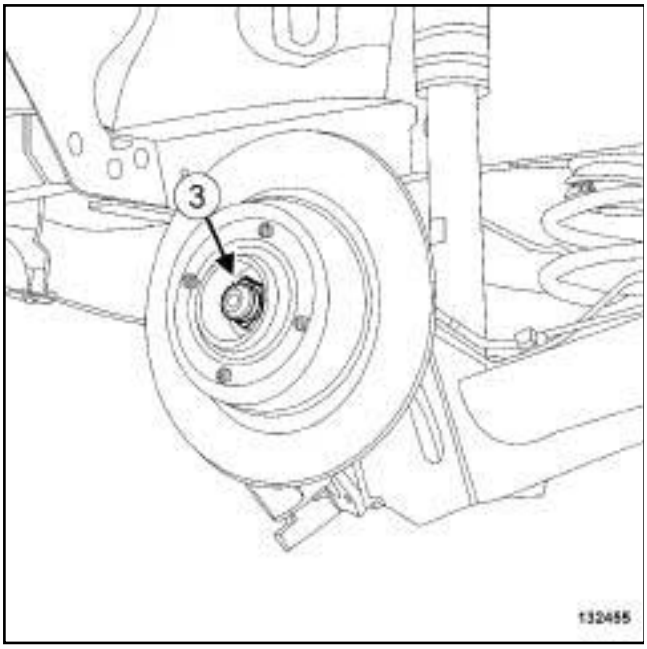
II - OPERATION FOR REMOVAL OF PART CONCERNED



132456

❏ Remove the hub's nut cover (**2**) .

EQUIPMENT LEVEL SPORT



132455

❑ Remove:

- the nut (**3**) from the hub,
- the brake disc.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the hub nut.

❑ Clean the brake discs using a **parts washer**.

❑ Dry the disc surfaces.

❑ Clean the stub axle using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the brake disc.

❑ Torque tighten the **new hub nut (175 N.m)**.

❑ Refit the hub's nut cover.

III - FINAL OPERATION.

❑ Refit:

- the "calliper mounting - brake calliper" assembly,
- the brake pads (see **33A**, **Rear axle components**, **Rear brake pads: Removal - Refitting**, page **33A-1**) .

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

❑ 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.

EQUIPMENT LEVEL SPORT

I - PREPARATION OPERATION FOR CHECK

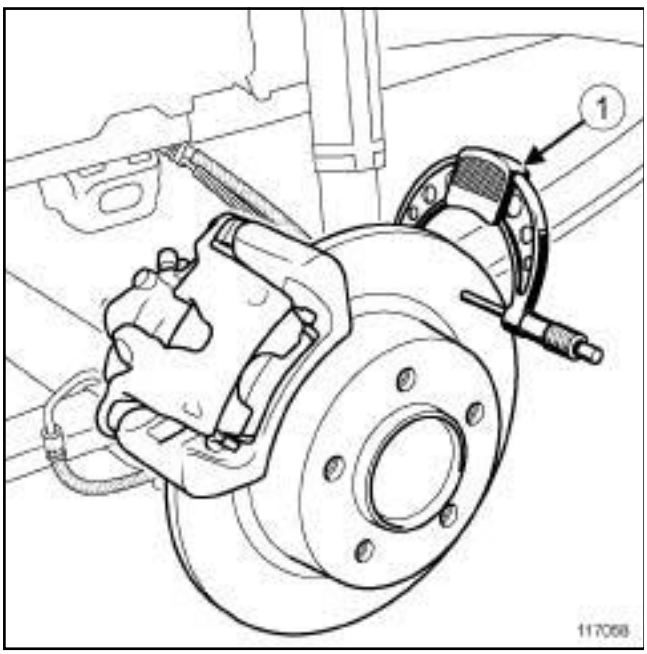
Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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

II - CHECKING OPERATION FOR PART CONCERNED

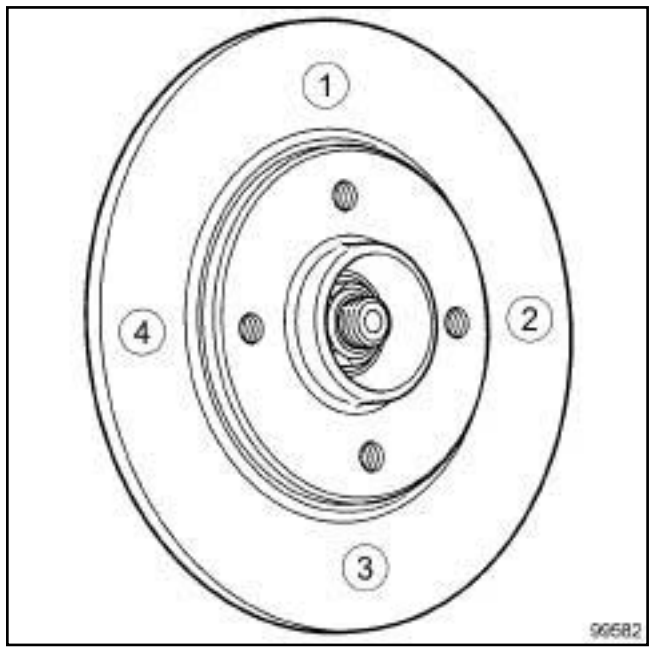
Note:

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



117058

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



99582

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-19**) .

III - FINAL OPERATION

Replace the discs if necessary (see **33A**, **Rear axle components**, **Rear brake disc: Removal - Refitting**, page **33A-11**) .

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

Replace all the brake pads on one axle at the same time. Never mix brake pads of different brands or qualities.

REMOVAL

I - REMOVAL PREPARATION OPERATION

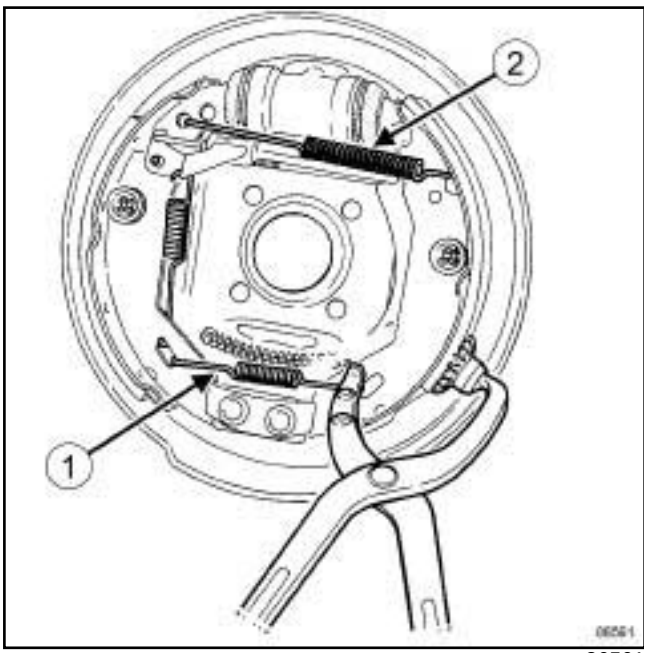
❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❏ Release the parking brake.

❏ Remove:

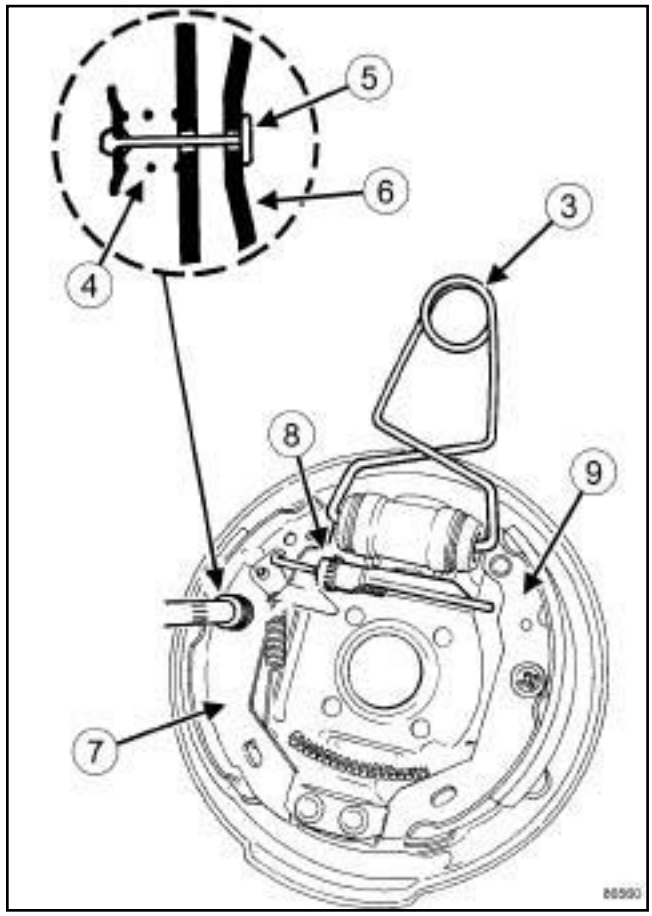
- the rear wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



86561

❏ Remove the lower return spring (**1**) , then the upper return spring (**2**) using brake shoe pliers.



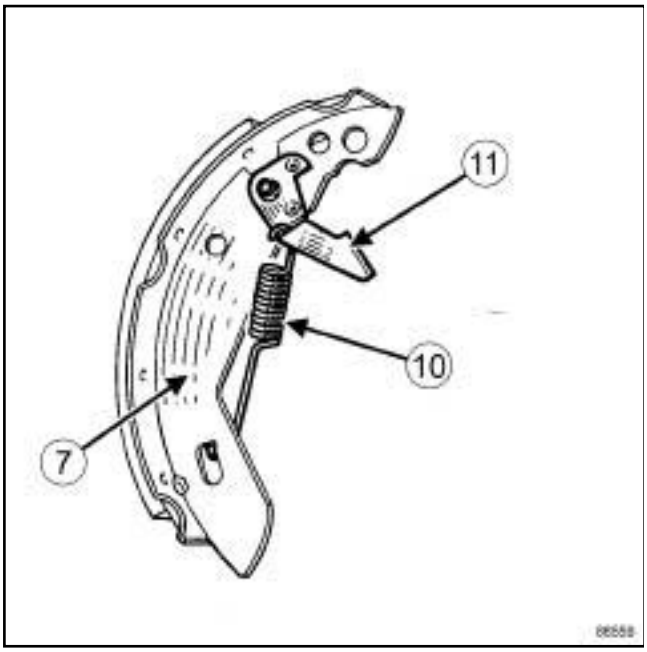
86560

❏ Fit pliers (**3**) onto the slave cylinder pistons.

❏ Remove:

- the side retainer springs (**4**) of the segments, keeping the connecting rod (**5**) in contact with the brake backing plate (**6**) ,
- the leading shoe (**7**) ,
- the link rod (**8**) ,
- the trailing shoe (**9**) .

❏ Uncouple the parking brake cable from the parking brake lever.



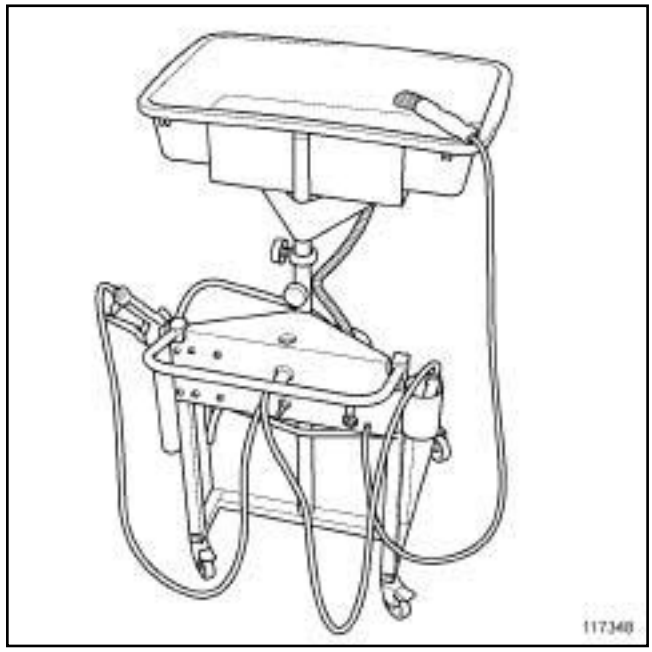
86559

❏ Remove the leading shoe:

- the spring (**10**) ,
- the adjustment lever (**11**) .

REFITTING

I - REFITTING PREPARATIONS OPERATION


117348

❏ Remove any dust from the drums and the flanges using the cleaning station.

❏ Lightly grease the support linkage thread.

> Note:
>
> The brake mechanism components are different on the left and right-hand sides, so it is important not to confuse them.

> Note:
>
> On the left-hand brake: the bolt thread has a right-hand thread.
>
> On the right-hand brake: the bolt has a left-hand thread.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the leading shoe:

- the adjustment lever,
- the spring.

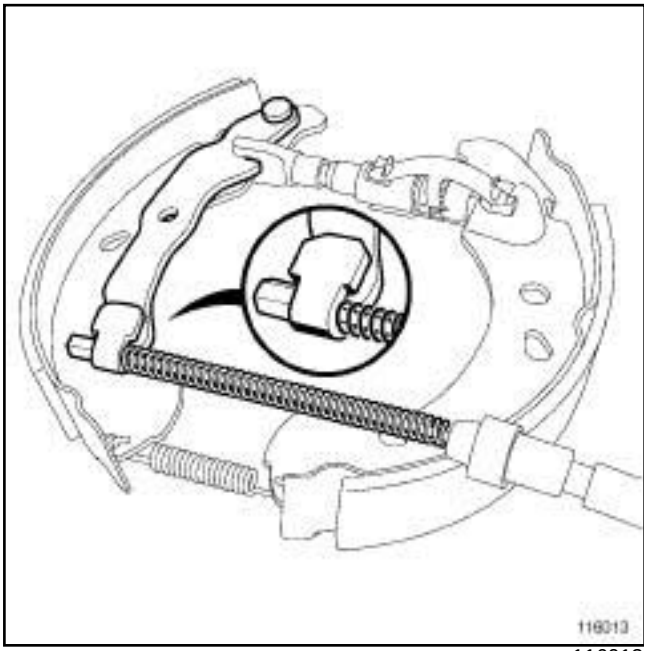
❏ Connect the parking brake cable to the parking brake lever.

❏ Refit:

- the trailing shoe.

- the linkage,
- the leading shoe,
- the side retainer springs of the segments, keeping the connecting rod in contact with the brake backing plate,

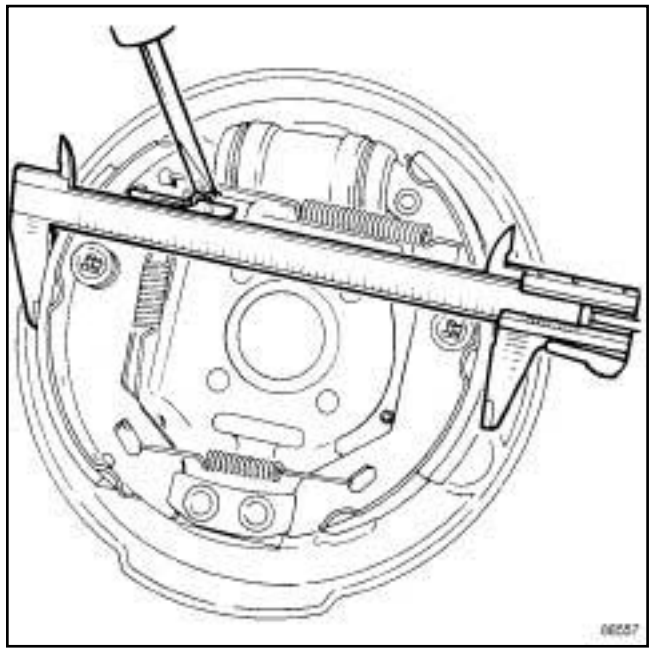
❏ Refit the lower return spring, then the upper return spring using brake shoe pliers.



116013

❏ Check that the parking brake cable is correctly positioned on the parking brake lever.

❏ Remove the pliers from the slave cylinder pistons.


86557

❏ Use a screwdriver to adjust the piston ring diameter with the linkage to obtain a diameter of **202.45 mm ± 0.25**.

❏ Carry out the same adjustment on the other side.

❏ Adjust the handbrake if the lever stops between the first and second positions of the parking brake lever's travel (see **37A**, **Mechanical component controls**, **Parking brake lever: Adjustment**, page **37A-48**) .

III - FINAL OPERATION.

❏ Refit:

- the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) ,
- the rear wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

❏ Adjust the brake pads by depressing the brake pedal repeatedly.

❏ Check that the automatic wear take up system is working properly (characteristic « click » from the drums when the brake pedal is repeatedly depressed).

Tightening torques ▽	
rear brake cylinder bolt on the flange	**14.5 Nm**
rigid brake pipe union on the rear brake cylinder	**15 Nm**

REMOVAL

I - OPERATION FOR PREPARATION OF PART CONCERNED

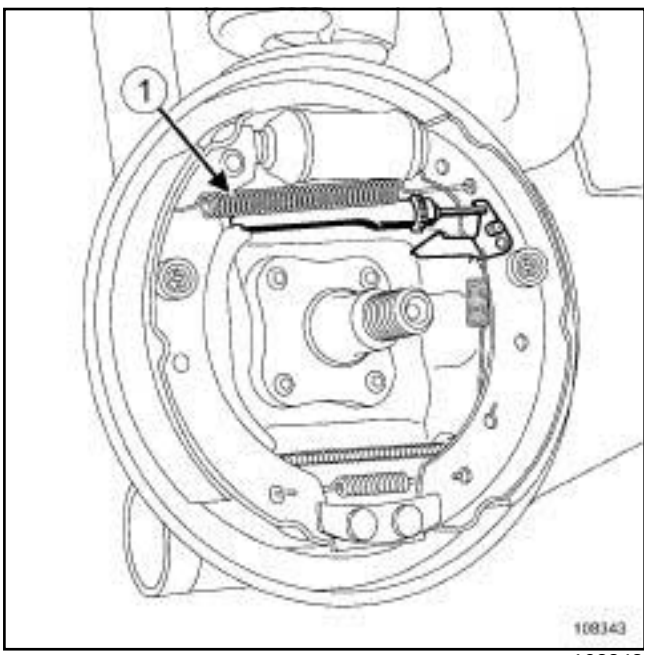
❏ Position the vehicle on a lift ((see **Vehicle: Towing and lifting**)).

❏ Release the parking brake.

❏ Remove:

- the rear wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

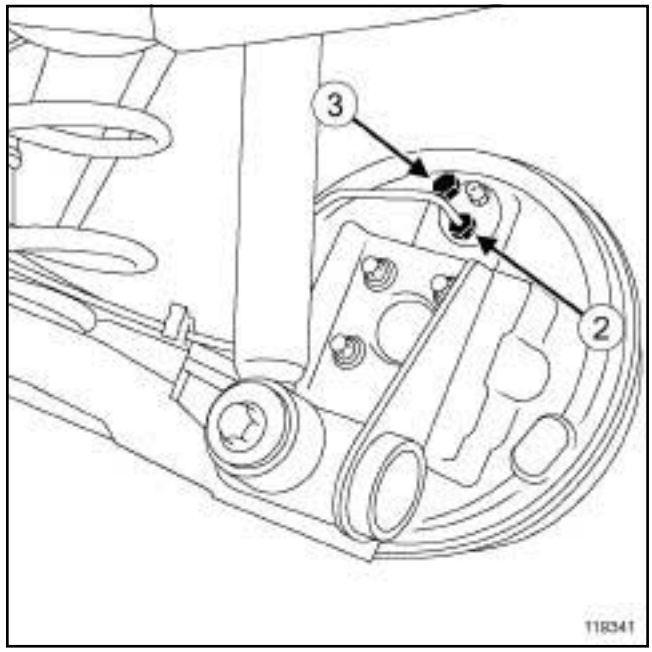
II - REMOVAL OPERATION FOR PART CONCERNED



108343

❏ Remove the upper return spring (**1**) using brake shoe pliers.

❏ Remove the brake shoes.



119341

❏ Undo the rigid brake pipe union (**2**) on the rear brake cylinder.

> Note:
> Expect some brake fluid to run out.

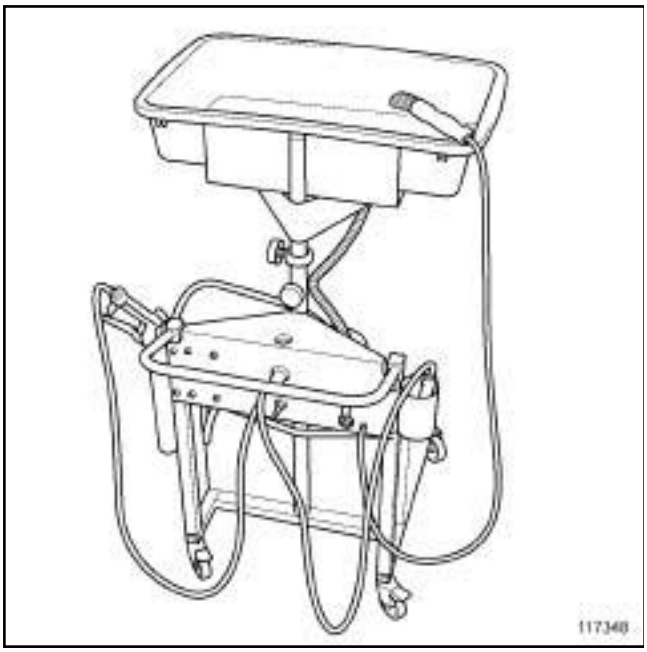
❏ Fit a cap on the rigid brake pipe union.

❏ Remove:

- the rear brake cylinder bolt (**3**) on the flange,
- the rear brake cylinder.

REFITTING

I - REFITTING PREPARATIONS OPERATION



117348

❏ Remove any dust from the drums and the flanges using the cleaning station.

❏ Check the condition of the brake cylinder boots and pistons (replace any faulty parts).

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the rear brake cylinder,
- the rear brake cylinder bolt on the flange,
- the rigid brake pipe union on the rear brake cylinder,
- the upper return spring using brake shoe pliers.

❏ Torque tighten:

- the **rear brake cylinder bolt on the flange (14.5 Nm)**,
- the **rigid brake pipe union on the rear brake cylinder (15 Nm)**.

III - FINAL OPERATION.

❏ Refit:

- the rear brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) ,
- the rear wheels (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**) .

❏ Adjust the brake pads by depressing the brake pedal repeatedly.

Equipment required
parts washer

Tightening torques ▽	
brake drum nuts	**175 N.m**

When a brake drum is replaced, the brake drum on the opposite side must be replaced as well.

Always replace the brake pads if the brake drums are being replaced.

IMPORTANT
To avoid brake imbalance, both drums must be of the same diameter. Regrinding one drum necessitates regrinding of the opposite drum.

REMOVAL

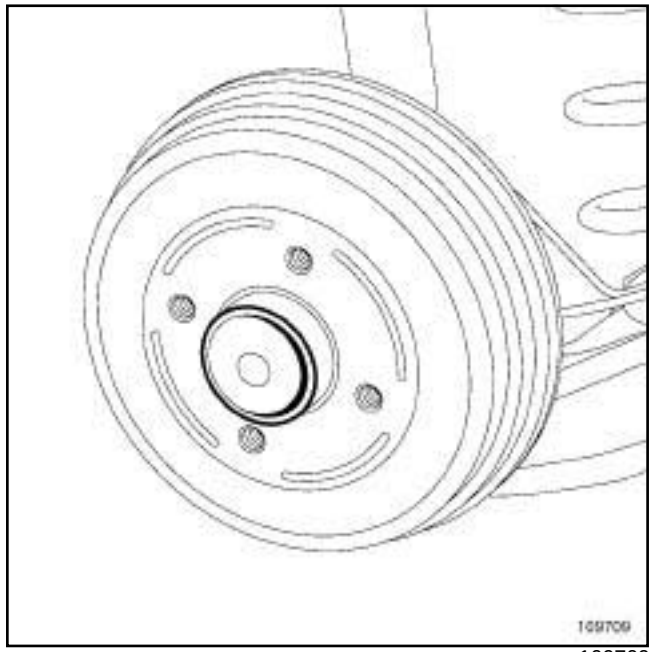
I - REMOVAL PREPARATION OPERATION

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

❏ Release the parking brake.

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



109709

109710

❏ Remove:

- the drum caps,
- the brake drum nuts,
- the brake drums.

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Check the internal diameter of the drum.

❏ Always replace the brake drum nuts.

❏ **parts always to be replaced: rear drum cap**.

❏ Replace any faulty parts.

117348

❏ Using a **parts washer**, clean:

- the brake linings,
- the brake drums.
- the stub axle.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Adjust the parking brake if the lever stops between the first and second position of the parking brake lever's travel (see **37A**, **Mechanical component controls**, **Parking brake lever: Removal - Refitting**, page **37A-46**) .

❏ Refit:

- the brake drums.
- the brake drum nuts.

❏ Torque tighten the **brake drum nuts (175 N.m)** by turning the drum while tightening the nut.

❏ Refit new brake drum caps.

III - FINAL OPERATION

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

❏ Adjust the brake linings by depressing the brake pedal repeatedly.

Equipment required
sliding calliper

I - PREPARATION OPERATION FOR CHECK

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

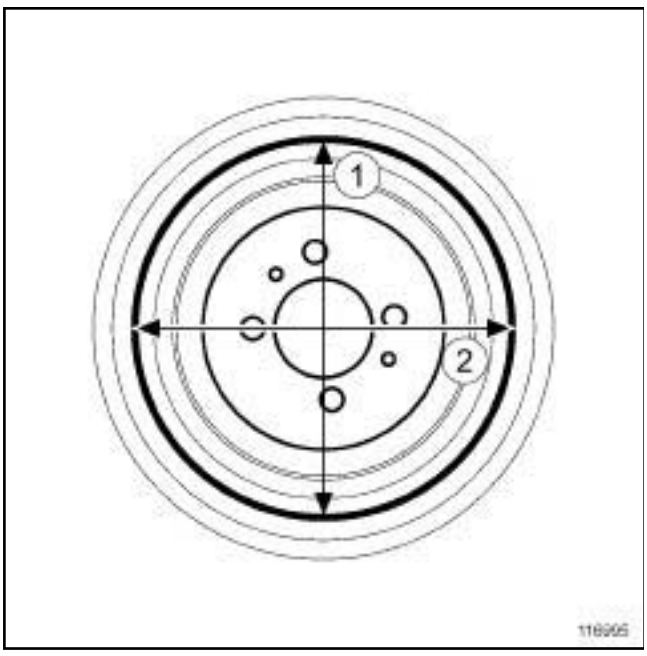
Remove:

- the rear wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

II - TEST OPERATION

Note:

To check the internal diameter of the drum, use a **sliding calliper** type tool for drums.



116995

Position the **sliding calliper** to measure the internal diameters of the brake drum.

Measure the interior diameters of the brake drum on the perpendicular axes (**1**) and (**2**) .

Compare the values with those recommended by the manufacturer (see **30A**, **General information**, **Brake: Specifications**, page **30A-19**) .

III - FINAL OPERATION

Replace the rear drums if necessary (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

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

C44

Equipment required
pedal press

Tightening torques ▽	
rigid brake pipe unions on the rear brake cylinders	**15 Nm**
rigid brake pipe unions on the rear brake hoses	**17 Nm**

The pipes have a rigid section and a flexible section.

REMOVAL

I - REMOVAL PREPARATION OPERATION

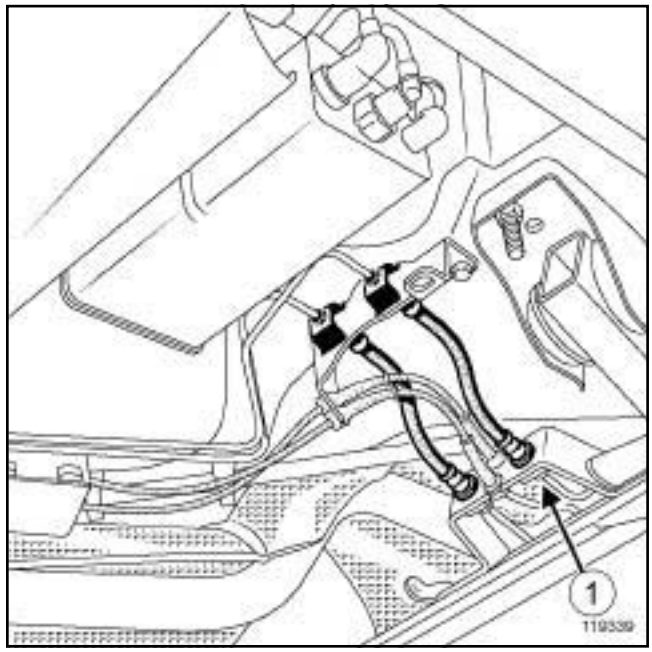
❑ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

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

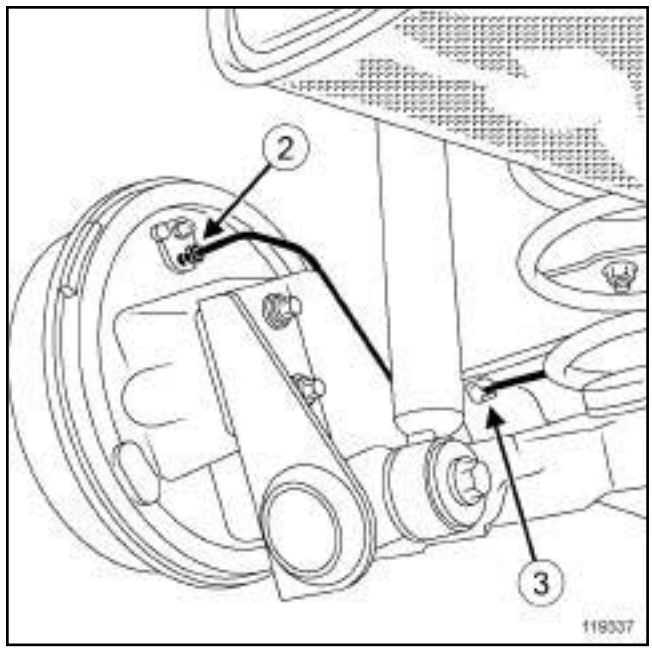
❑ Fit the **pedal press** tool to the brake pedal to limit the escape of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Rear left-hand rigid brake pipe



119339



119337

❑ Unscrew:

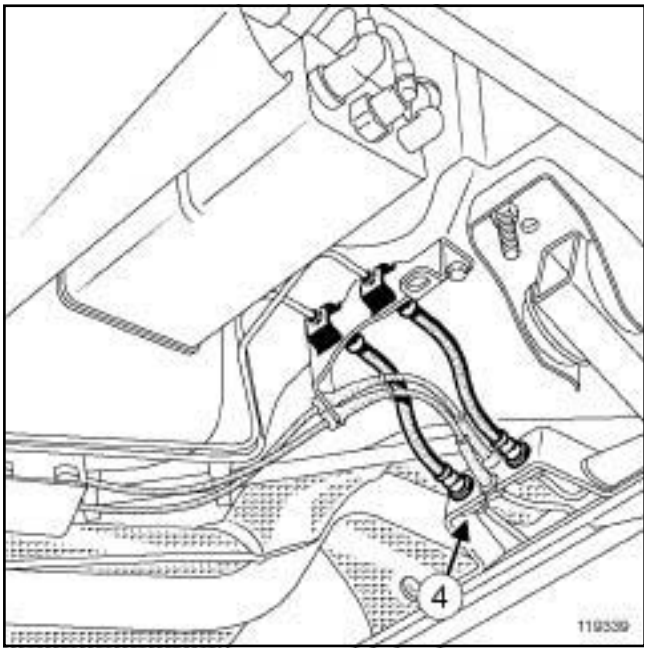
- the rigid brake pipe union at the brake hose (**1**) .
- the rigid brake pipe union on the rear brake cylinder (**2**) .

❑ Unclip the rear axle rigid brake pipe (**3**) .

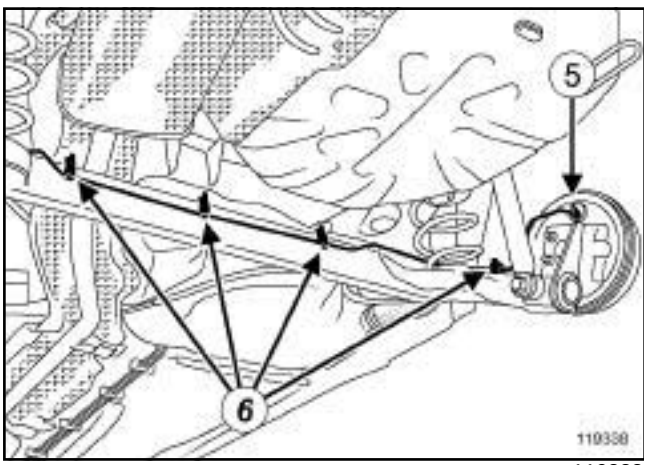
❑ Remove the rigid brake pipe.

C44

2 - Rear right-hand rigid brake pipe



119339



119338

❑ Unscrew:

- the brake pipe union (**4**) at the brake hose,
- the rigid brake pipe union on the rear brake cylinder (**5**) .

❑ Unclip the rear axle rigid brake pipe (**6**) .

❑ Remove the rigid brake pipe.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the rigid brake pipe clips.

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 rigid pipes in their original positions.

❑ Clip the rigid brake pipes of the rear axle.

❑ Fit without tightening:

- the rigid brake pipe unions on the rear brake cylinders.
- the rigid brake pipe unions on the rear brake hoses.

❑ Tighten to torque:

- the **rigid brake pipe unions on the rear brake cylinders (15 Nm)**,
- the **rigid brake pipe unions on the rear brake hoses (17 Nm)**,

III - FINAL OPERATION.

❑ Remove the **pedal press** from the brake pedal to limit the outflow of brake fluid.

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

Equipment required
component jack

Tightening torques ▽	
shock absorber lower bolt	**105 Nm**
shock absorber upper nut	**21 Nm**

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

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

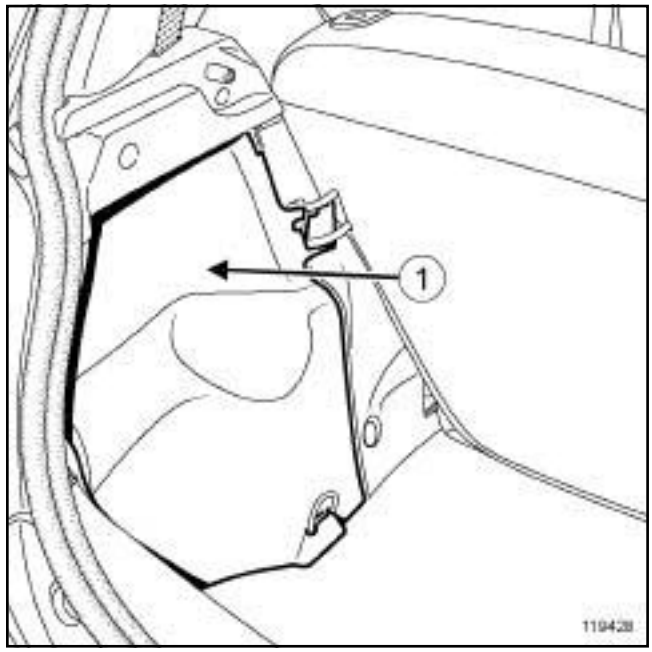
WARNING
To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

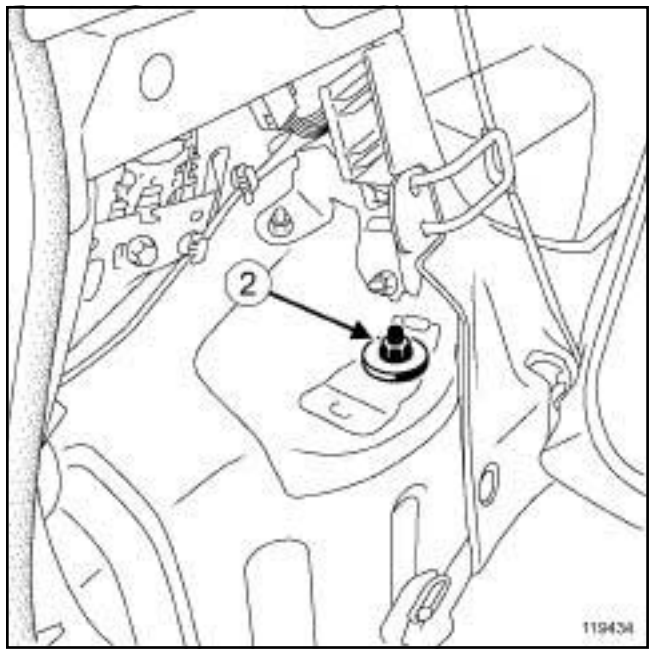
WARNING
To avoid damaging the rear axle components (elastic joints, brake hoses etc.) do not remove both shock absorbers at the same time. Proceed one side at a time.



119428

❏ Remove the luggage compartment internal trim (**1**) .

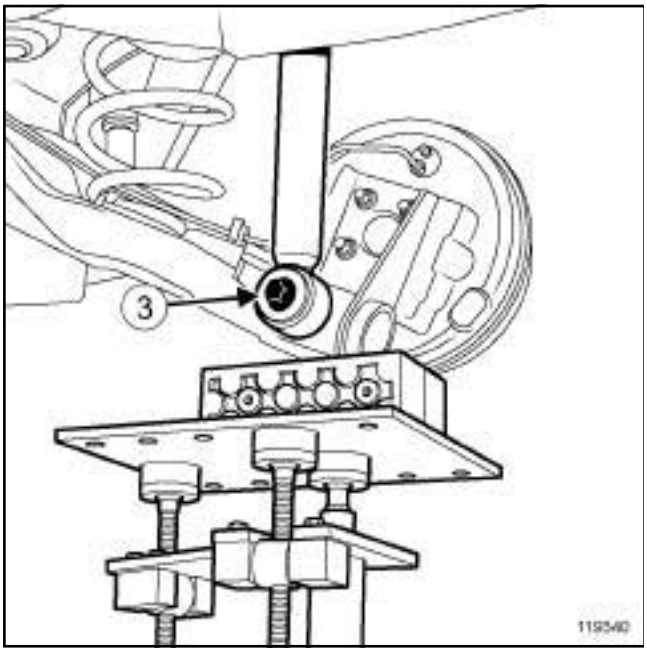
II - OPERATION FOR REMOVAL OF PART CONCERNED



119434

❏ Undo the upper shock absorber nut (**2**) when the wheels are on the ground.

❏ Raise the vehicle.



119340

❏ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.

❏ Remove the lower shock absorber bolt (**3**) .

❏ Remove the **component jack**.

❏ Remove:

- the shock absorber upper nut while holding the shock absorber rod end,
- the shock absorber.

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ The upper lock nut on the shock absorber must always be replaced.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the shock absorber,
- the new upper nut on the shock absorber.

❏ Raise the vehicle.

❏ Refit the shock absorber lower bolt with the **component jack** in contact with a block under the rear axle near the shock absorber.

❏ Torque tighten:

- the **shock absorber lower bolt (105 Nm)** with the **component jack** in position,
- the **shock absorber upper nut (21 Nm)** while holding the shock absorber rod end, with the wheels on the ground.

III - FINAL OPERATION.

❏ Refit the luggage compartment internal trim.

G44

Equipment required
component jack

Tightening torques ▽	
lower shock absorber bolt	**105 Nm**
shock absorber upper nut	**21 Nm**

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

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

REMOVAL

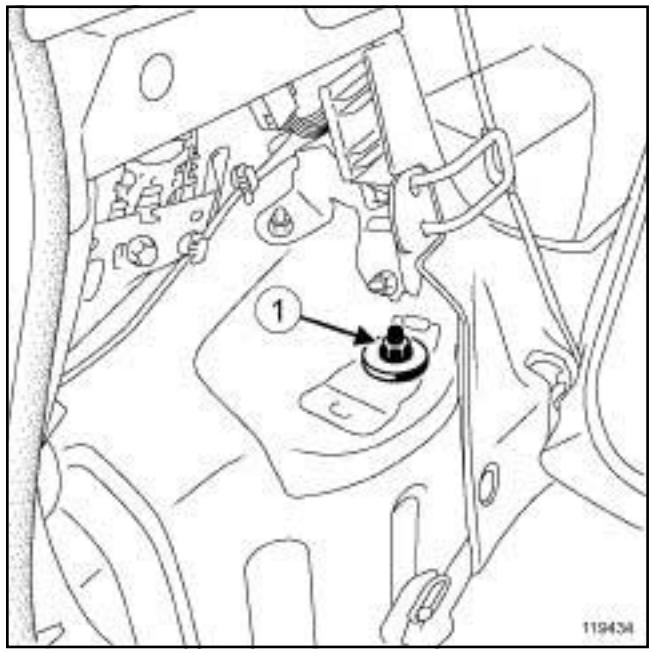
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

WARNING
To avoid damaging the rear axle components (elastic joints, brake hoses etc.) do not remove both shock absorbers at the same time. Proceed one side at a time.

❏ Remove the luggage compartment interior trim (see **Rear loading trim: Removal - Refitting**) (MR 412, 71A, Body internal trim).

II - OPERATION FOR REMOVAL OF PART CONCERNED

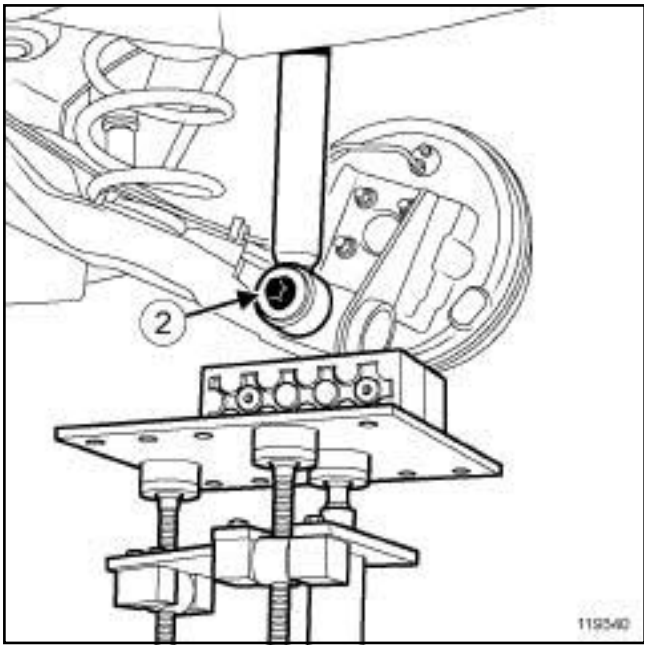


119434

❏ Undo the upper shock absorber nut (**1**) when the wheels are on the ground.

❏ Raise the vehicle.

G44



119340

❏ Fit a **component jack** until contact is made with a shim, under the rear axle near the shock absorber.

❏ Remove the lower shock absorber bolt (**2**) .

❏ Remove the **component jack**.

❏ Remove:

- the shock absorber upper nut while holding the shock absorber rod end,
- the shock absorber.

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ The upper lock nut on the shock absorber must always be replaced.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the shock absorber,
- the new upper nut on the shock absorber.

❏ Raise the vehicle.

❏ Refit the shock absorber lower bolt using a **component jack** in contact with a shim, under the rear axle near the shock absorber.

❏ Torque tighten:

- the **lower shock absorber bolt (105 Nm)** with a **component jack**,
- the **shock absorber upper nut (21 Nm)** while holding the shock absorber rod end, with the wheels on the ground.

III - FINAL OPERATION.

❏ Refit the luggage compartment interior trim (see **Rear loading trim: Removal - Refitting**) (MR 412, 71A, Body internal trim).

Equipment required
component jack

Tightening torques ▽	
shock absorber lower bolts	**105 Nm**

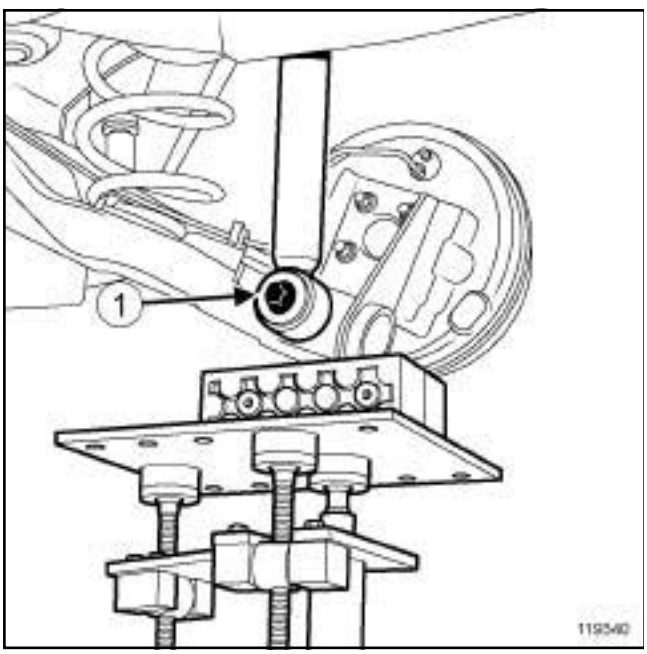
REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



119340

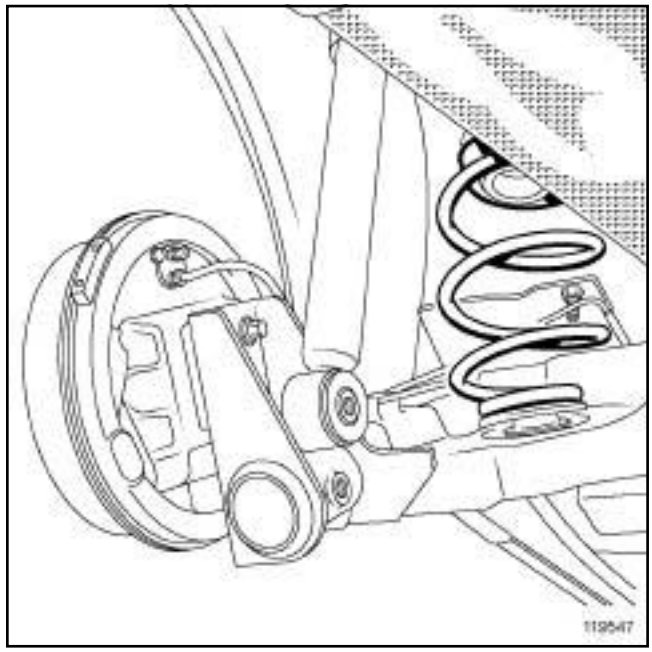
❏ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.

❏ Mark the position where the springs are fitted.

❏ Remove the lower bolt (**1**) from the shock absorber.

❏ Remove the **component jack**.

❏ Repeat these operations on the opposite side.



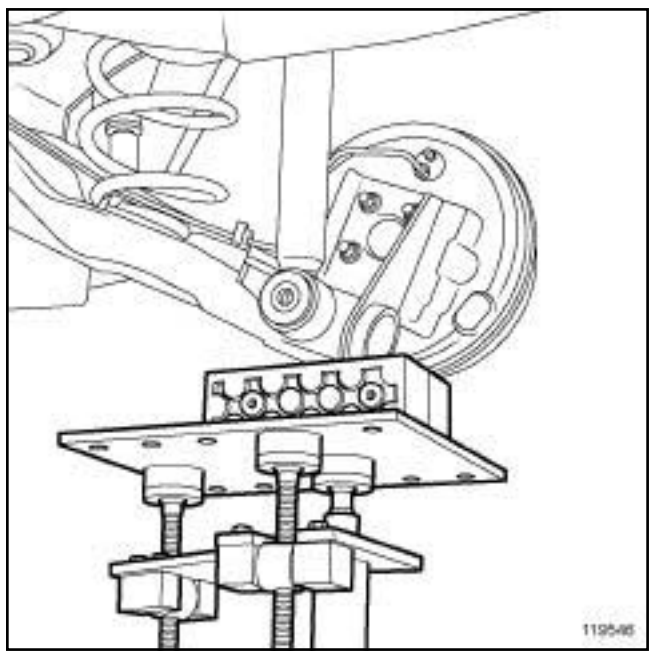
119547

❏ Remove the springs by removing the **component jack**.

❏ Leave the rear axle suspended.

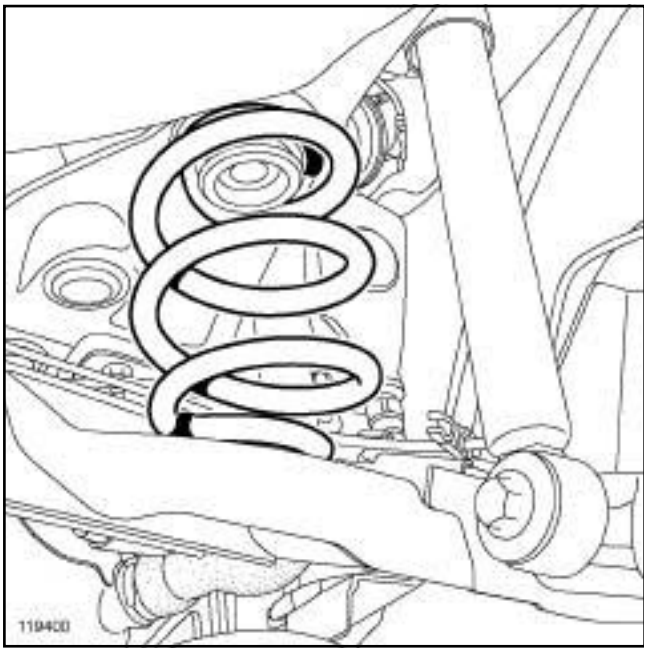
REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



119546

❏ Using a block, bring the **component jack** into contact under the rear axle, near the shock absorber.



119400

- ❏ Refit the shock absorber springs into their housings.
- ❏ Compress the rear axle.
- ❏ Refit the lower shock absorber mounting bolts.
- ❏ Torque tighten the **shock absorber lower bolts (105 Nm)**.

II - FINAL OPERATION.

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

Using a dial gauge connected to the drum, check that the end float is greater than **0.03 mm**.

REMOVAL

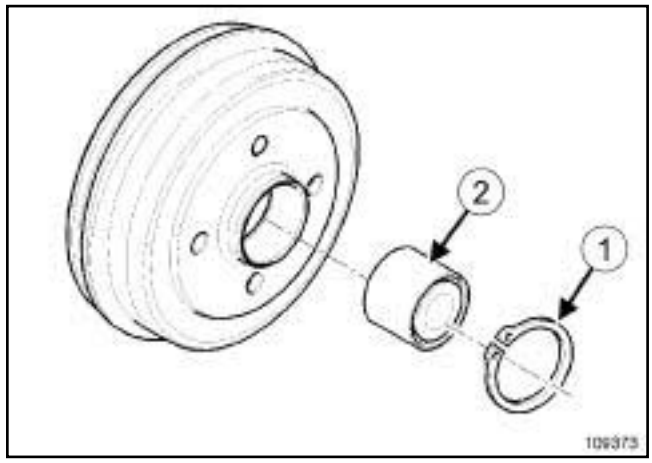
I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

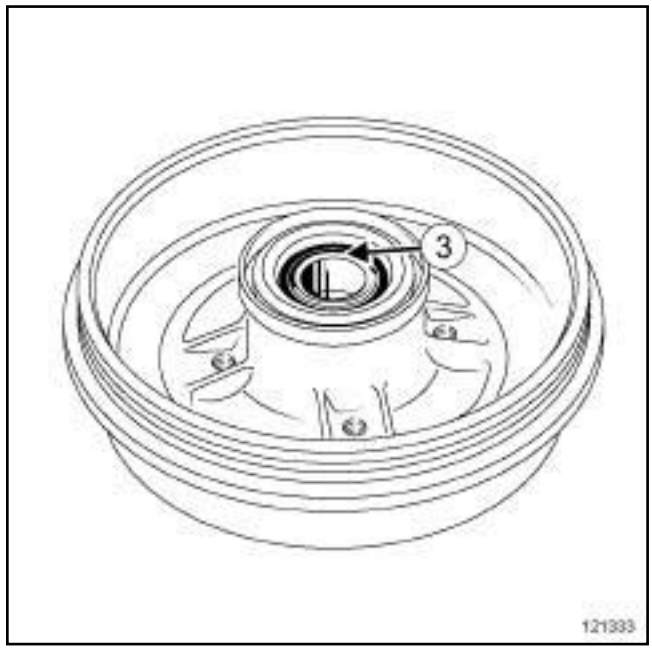
❑ Remove:

- the rear wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



109373



121333

❑ From the drum, remove:

- the rubber ring (**1**) from the rear drum bearing,
- the bearing (**2**) from the rear drum using a tube with a diameter between **25 mm** and **40 mm** and using a hydraulic press, supporting the bearing internal bush (**3**) .

REFITTING

I - REFITTING PREPARATIONS OPERATION

117348

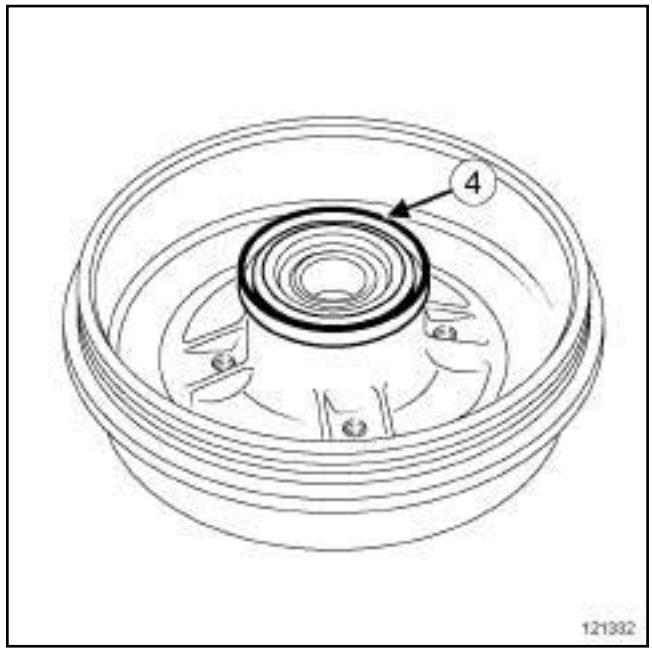
❏ Clean:

- the internal and external surfaces of the new bearing in contact with the drum,
- the drum surfaces in contact with the new bearing.

❏ It is essential to check the condition of the surface of the bore of the drum before refitting the bearing. It is essential to replace the stub axle carrier if it is faulty.

WARNING

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



121332

❏

Note:

Take care not to press the ABS target (**4**) when refitting the bearing.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Fit the bearing until it presses the shoulder using a tube with a diameter between **51 mm** and **54 mm** and using a hydraulic press.

❏ Refit the rubber ring.

III - FINAL OPERATION.

❏ Refit:

- the rear brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) ,
- the rear wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

Equipment required
component jack

Tightening torques ▽	
stub axle carrier bolts	**53 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❏ Release the parking brake.

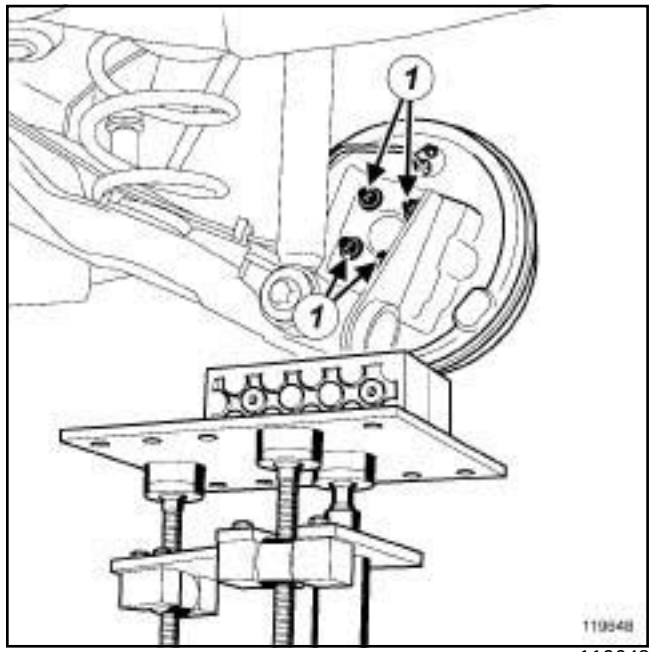
❏ Remove:

- the rear wheel on the side concerned (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

❏ Fit the **component jack** to undo the shock absorber mountings.

❏ Remove the shock absorber lower bolt.

II - OPERATION FOR REMOVAL OF PART CONCERNED



119648

❏ Adjust the **component jack**.

Note:

Mark the position of the stub axle carrier writing.

❏ Remove:

- the stub axle carrier bolts (**1**) ,
- the stub axle carrier.

REFITTING

I - REFITTING PREPARATIONS OPERATION

117348

❏ Clean the stub axle carrier using the cleaning station.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the stub axle carrier,
- the stub axle bolts.

❏ Torque tighten the **stub axle carrier bolts (53 Nm)**.

❏ Remove the **component jack**.

III - FINAL OPERATION.

❏ Refit:

- the brake drum (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) ,
- the rear wheel on the side concerned (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

EQUIPMENT LEVEL SPORT

Equipment required
component jack

Tightening torques ▽	
new bolts of the rear stub axle carrier	**53 N.m**
lower bolt of the rear shock absorber	**105 N.m**
new bolts of the brake calliper mounting	**105 Nm**

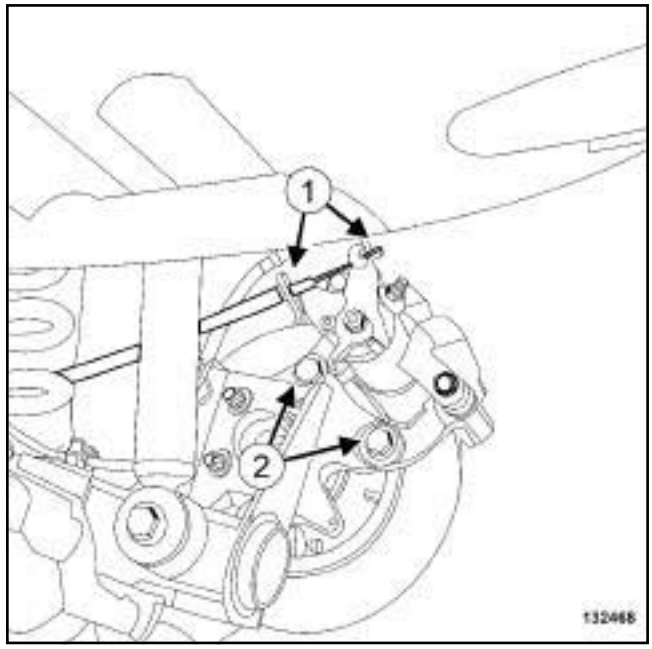
WARNING
To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

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**) .



132468

❏ Unclip the parking brake cable from the calliper at (**1**) .

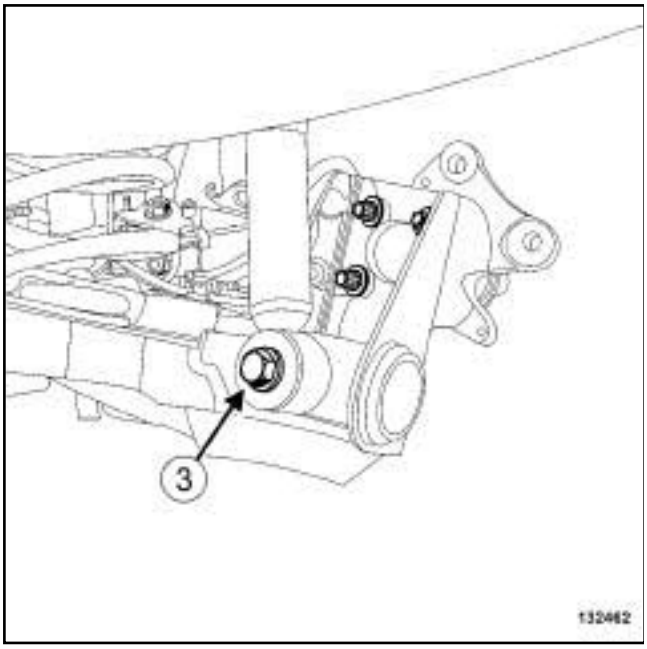
❏ Remove:

- the brake calliper mounting bolts (**2**) ,
- the "brake calliper mounting - brake calliper" assembly.

❏ Attach the "brake calliper mounting - brake calliper" assembly to the suspension spring.

❏ Remove the rear brake disc (see **33A**, **Rear axle components**, **Rear brake disc: Removal - Refitting**, page **33A-11**) .

EQUIPMENT LEVEL SPORT



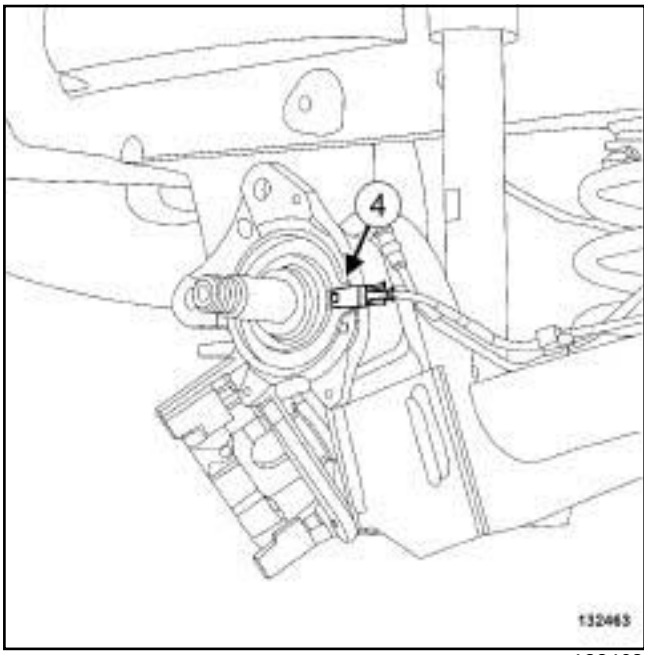
132462

❏ Fit a **component jack**.

❏ Remove the lower bolt (**3**) from the rear shock absorber.

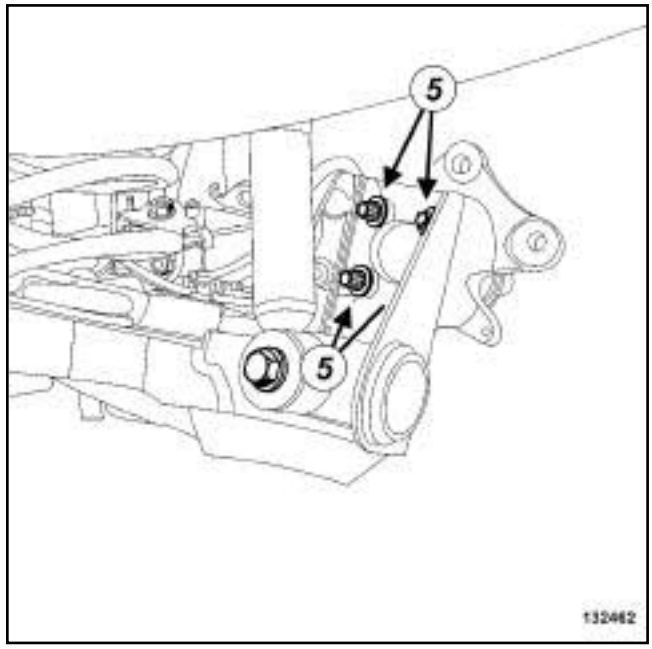
❏ Tip the rear shock absorber.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132463

❏ Unclip the wheel speed sensor (**4**) .



132462

❏ Remove:

- the bolts (**5**) of the rear stub axle carrier,
- the rear stub axle carrier.

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Always replace:

- the brake calliper mounting bolts,
- the stub axle carrier bolts,
- the stub-axle nut.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the rear stub axle carrier.

❏ Torque tighten the **new bolts of the rear stub axle carrier (53 N.m)**.

❏ Clip on the wheel speed sensor.

III - FINAL OPERATION.

❏ Refit the rear shock absorber.

❏ Torque tighten the **lower bolt of the rear shock absorber (105 N.m)**.

❏ Remove the **component jack**.

EQUIPMENT LEVEL SPORT

❏ Refit:

- the brake disc (see **33A**, **Rear axle components**, **Rear brake disc: Removal - Refitting**, page **33A-11**) ,
- the "brake calliper mounting - brake calliper" assembly.

❏ Torque tighten the **new bolts of the brake calliper mounting (105 Nm)**.

❏ Clip the parking brake cable onto the brake calliper.

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

Equipment required
pedal press
safety strap(s)

Tightening torques ▽	
rear axle bearing bolts	**62 Nm**
brake hose lower unions	**17 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

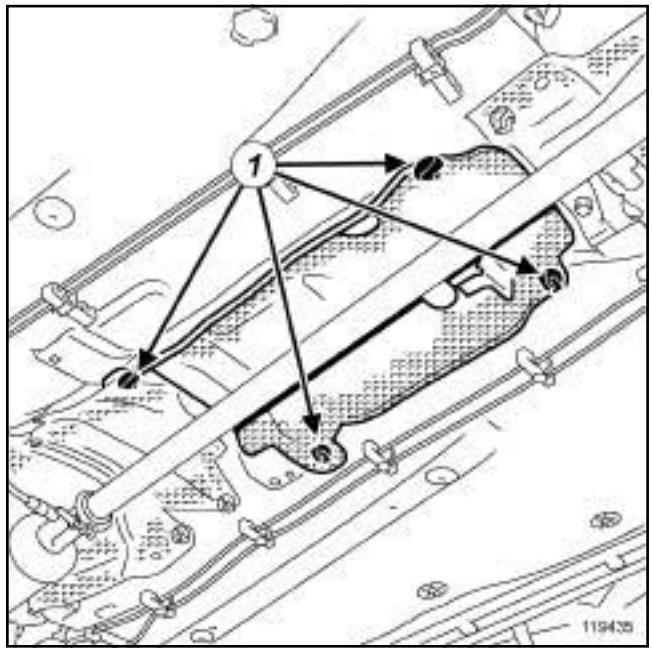
❏ Release the parking brake.

❏ Fit the **pedal press** on the brake pedal to limit the amount of brake fluid running out.

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

II - OPERATION FOR REMOVAL OF PART CONCERNED

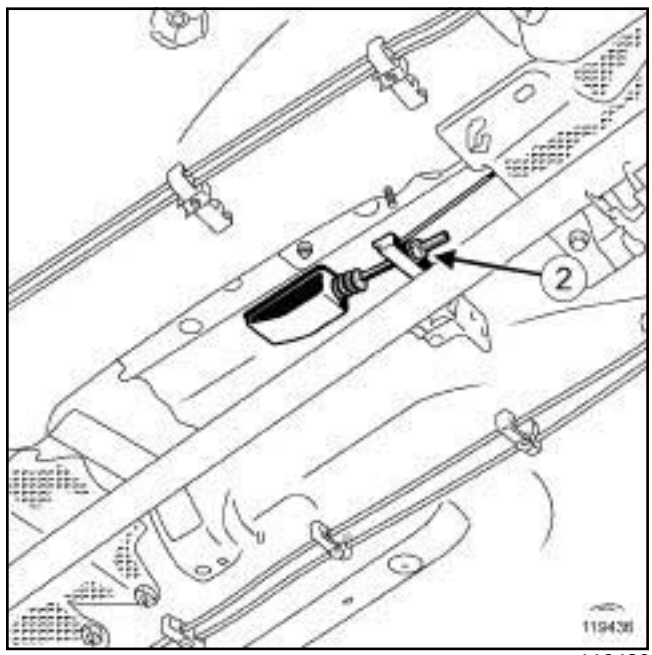
1 - Removal



119435

❏ Remove:

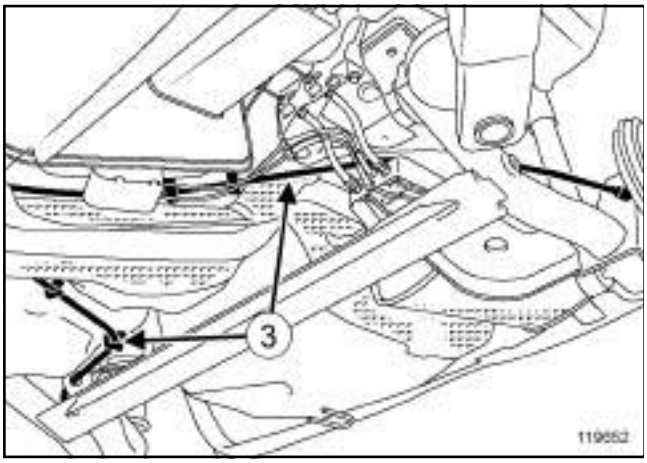
- the heat shield clips (**1**) ,
- the heat shield.



119436

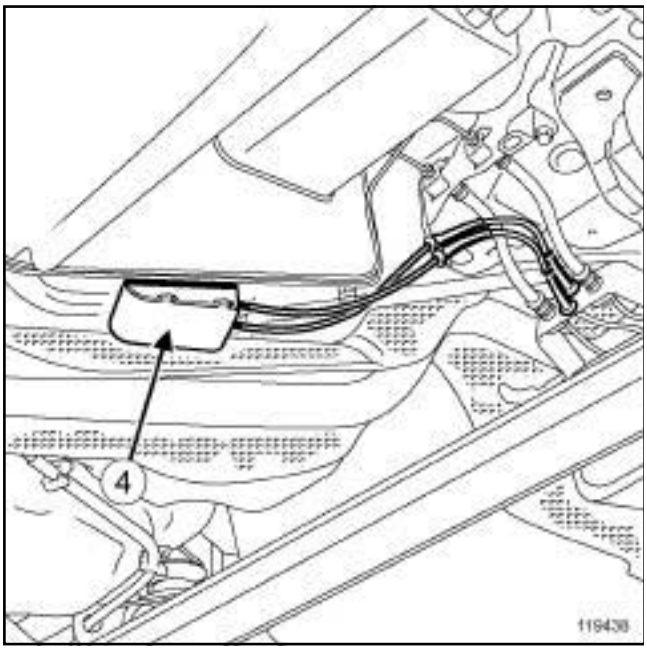
❏ Undo the adjusting screw (**2**) of the parking brake compensator.

❏ Remove the parking brake compensator brake cables.



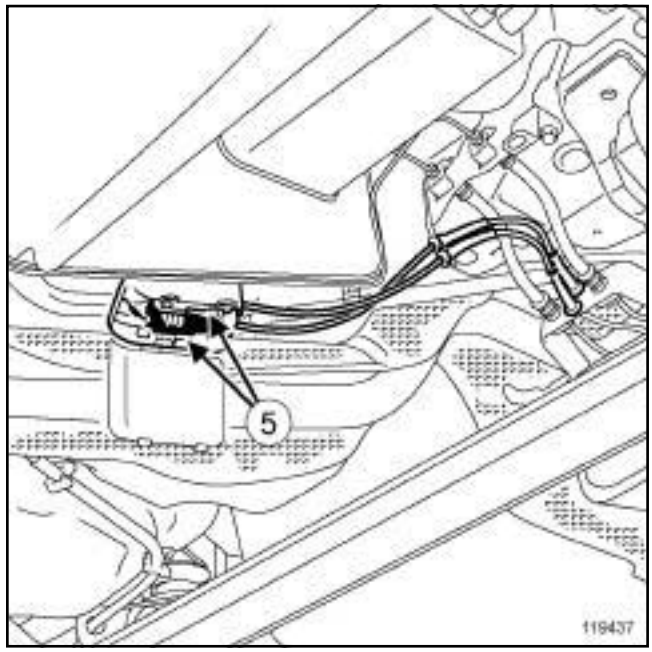
119652

❏ Unclip the parking brake cables (**3**) on the reservoir.



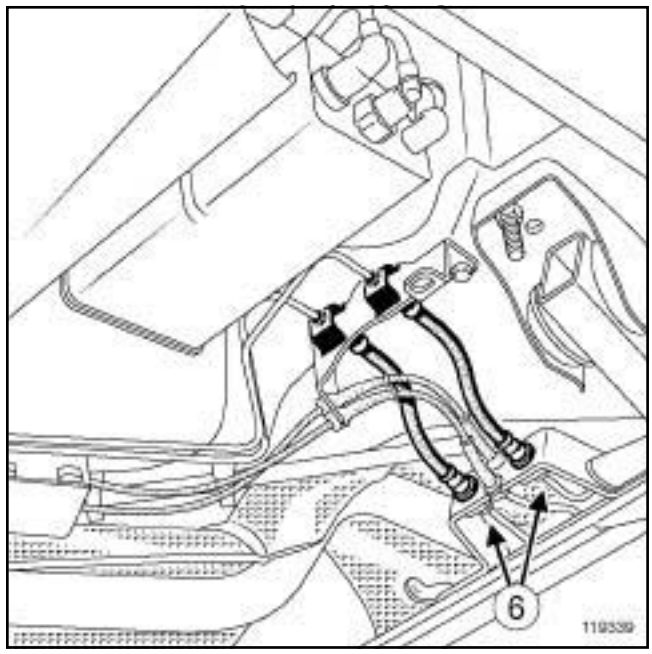
119438

❏ Open the ABS sensor connector protective unit (**4**) .



119437

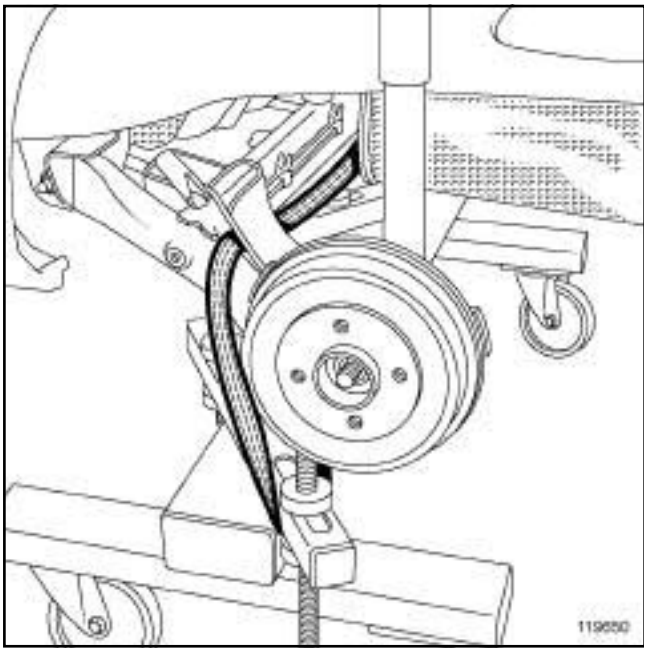
❏ Disconnect the ABS sensor connectors (**5**) .



119339

❏ Remove:

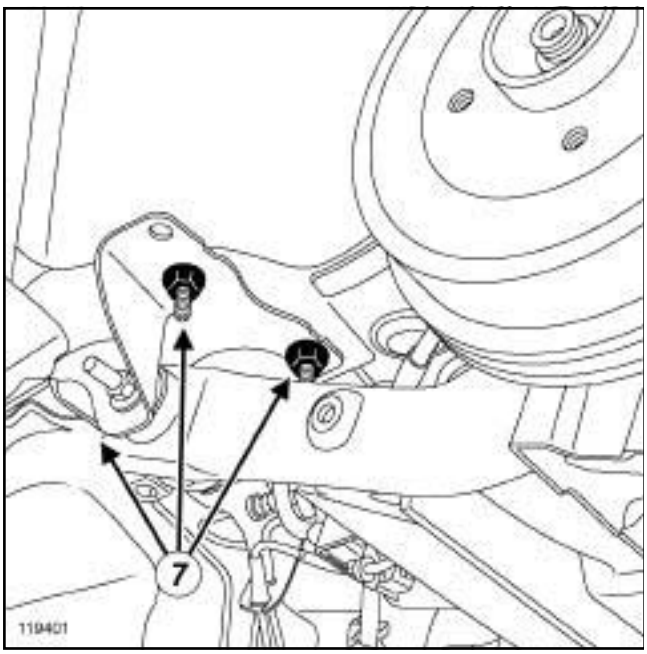
- the brake hose lower unions (**6**) ,
- the rear suspension springs (see **33A**, **Rear axle components**, **Rear suspension spring: Removal - Refitting**, page **33A-28**) .



119650

❏ Fit the **(Mot. 1390)** under the rear axle.

❏ Put a **safety strap(s)** around the rear axle.

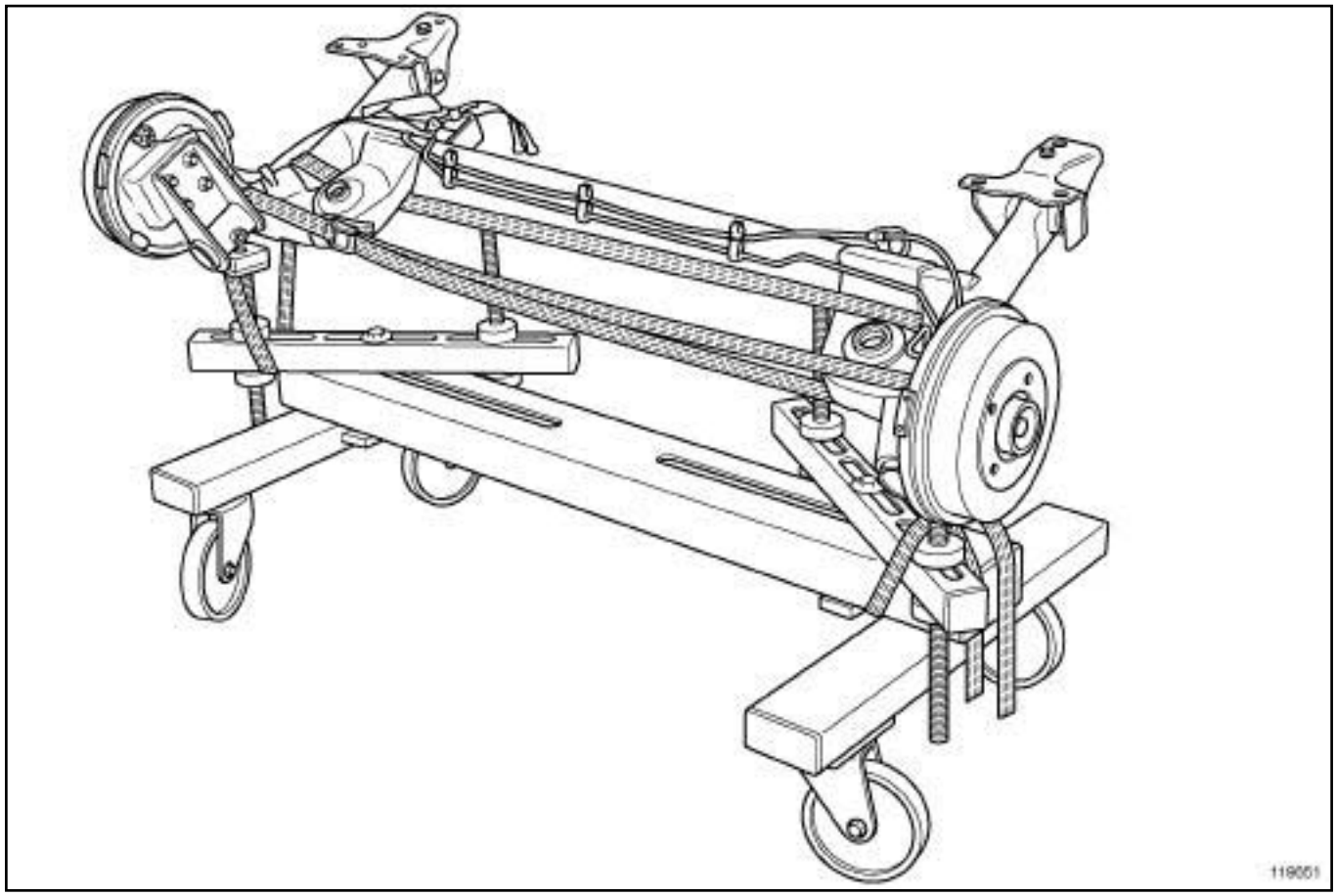


119401

❏ Remove the rear axle bearing bolts (**7**) .

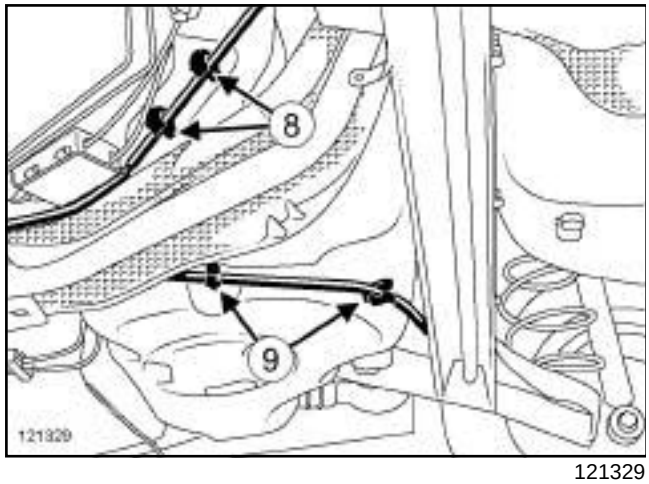
❏ Raise the vehicle.

2 - Replacement



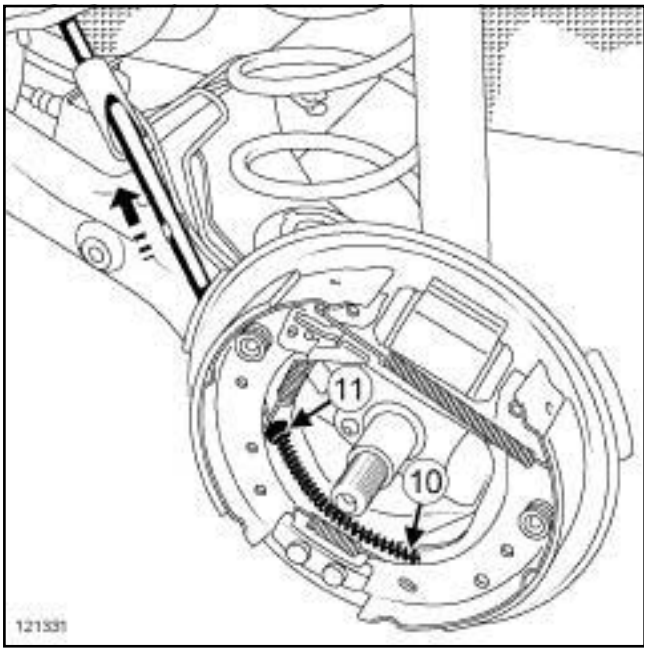
119651

❑ Remove the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .



121329

❑ Unclip the parking brake cables at (**8**) and at (**9**) .



121331

❏ Unclip the end of the parking brake cables at (**10**) .

❏ Unclip the cable sleeve stops at (**11**) and extract the parking brake cables from the rear drum flanges.

❏ Remove:

- the rear brake pads (see **33A**, **Rear axle components**, **Rear brake lining: Removal - Refitting**, page **33A-14**) ,
- the rear brake cylinders (see **33A**, **Rear axle components**, **Rear brake cylinder: Removal - Refitting**, page **33A-17**) ,
- the rear wheel speed sensors (see **38C**, **Anti-lock braking system**, **Rear wheel speed sensor: Removal - Refitting**, page **38C-17**) ,
- the rear rigid brake pipes from the rear axle,
- the rear rigid brake pipe clips from the rear axle,
- the rear stub axle carriers (see **33A**, **Rear axle components**, **Rear stub axle carrier: Removal - Refitting**, page **33A-32**) ,
- the rear brake drum flanges,

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ Strap the rear axle onto the **(Mot. 1390)**.

❏ Position the rear axle under the vehicle.

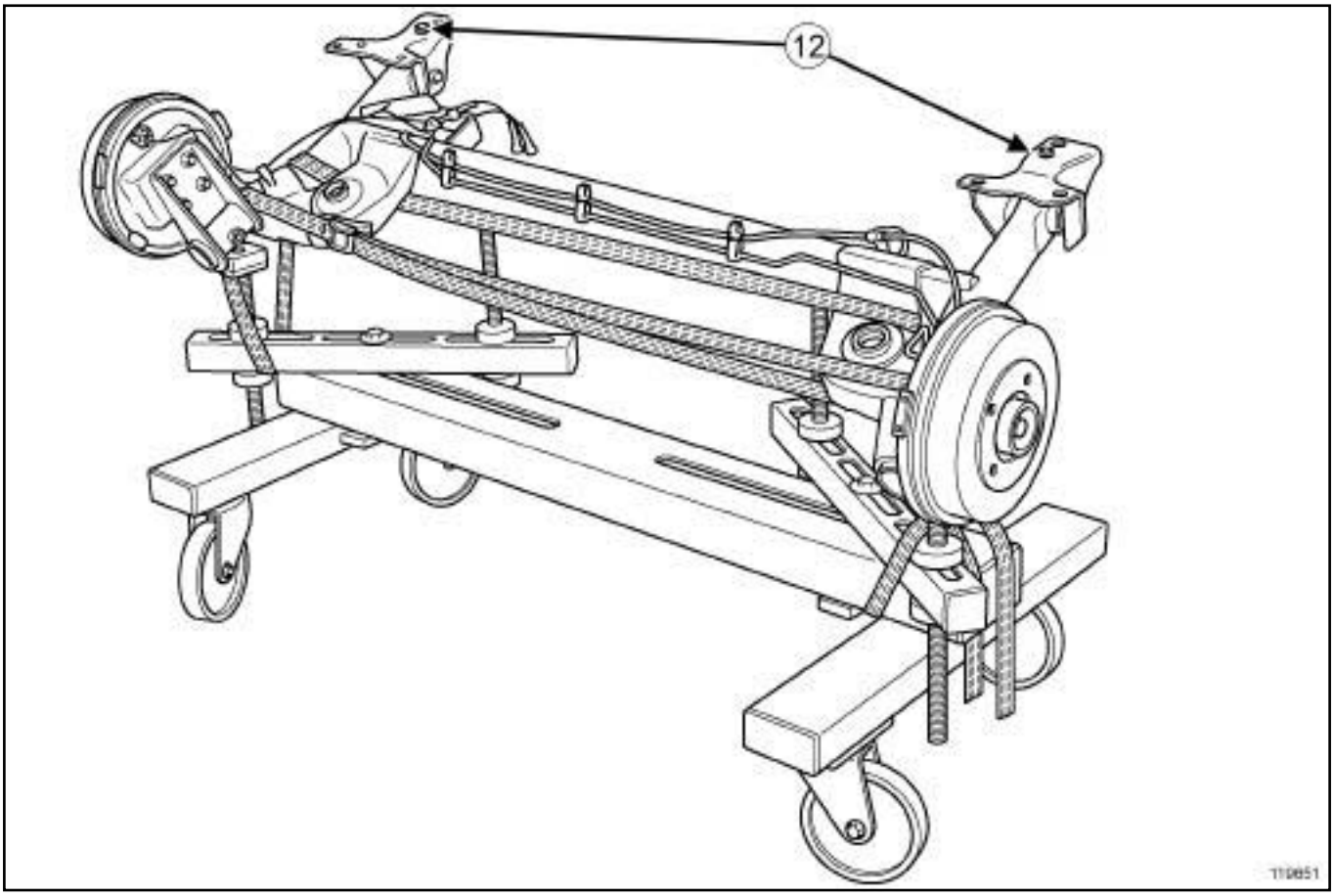
II - REFITTING OPERATION FOR PART CONCERNED

1 - Replacement

❏ Refit:

- the rear brake drum flanges,
- the rear stub axle carriers (see **33A**, **Rear axle components**, **Rear stub axle carrier: Removal - Refitting**, page **33A-32**) ,
- the rigid brake pipe clips on the rear axle,
- the rear rigid brake pipes from the rear axle,
- the rear wheel speed sensors (see **38C**, **Anti-lock braking system**, **Rear wheel speed sensor: Removal - Refitting**, page **38C-17**) ,
- the rear brake cylinders (see **33A**, **Rear axle components**, **Rear brake cylinder: Removal - Refitting**, page **33A-17**) ,
- the rear brake pads (see **33A**, **Rear axle components**, **Rear brake lining: Removal - Refitting**, page **33A-14**) .
- the parking brake cables (see **37A**, **Mechanical component controls**, **Parking brake cables: Removal - Refitting**, page **37A-74**) ,
- the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

2 - Refitting



119651

❏ Lower the lift.

❏ Position the bearing centring devices (**12**) opposite the centring holes.

❏ Refit the rear axle bearing bolts.

❏ Torque tighten the **rear axle bearing bolts (62 Nm)**.

❏ Remove the **safety strap(s)**.

❏ Raise the lift.

❏ Refit:

- the rear suspension springs (see **33A**, **Rear axle components**, **Rear suspension spring: Removal - Refitting**, page **33A-28**) ,
- the brake hose lower unions.

❏ Torque tighten the **brake hose lower unions (17 Nm)**.

❏ Connect the ABS sensor connectors.

❏ Close the ABS sensor connector protective unit.

❏ Clip the parking brake cables onto the reservoir.

❏ Position the parking brake cables on the parking brake compensator.

❏ Check that the parking brake cable stops are properly inserted in their housings.

III - FINAL OPERATION.

❏ Adjust the parking brake cables (see **37A**, **Mechanical component controls**, **Parking brake lever: Removal - Refitting**, page **37A-46**) .

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

❏ Remove the **pedal press**.

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

The removal - refitting procedure is the same for all wheels.

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.

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:

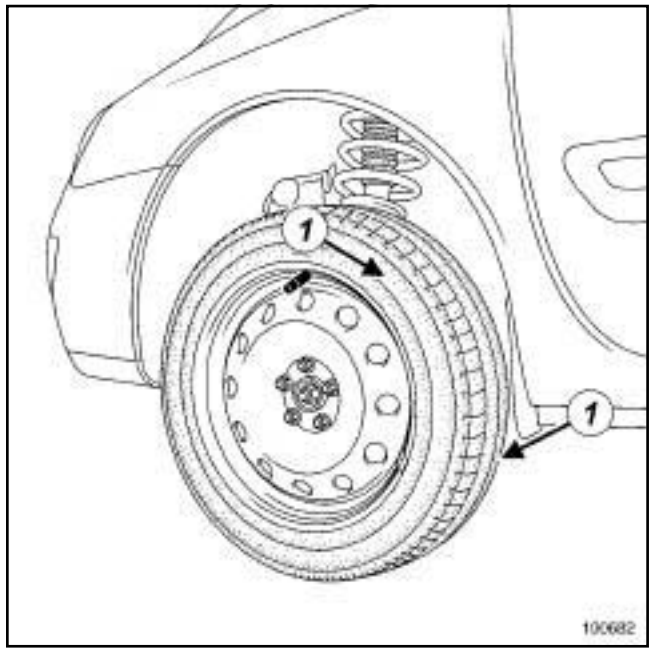
- the wheel bolts,
- the wheel.

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.



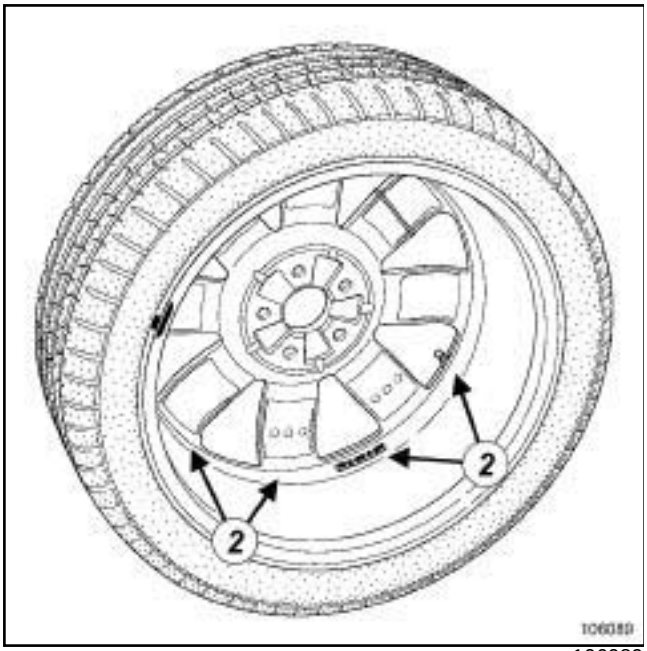
100682

❏ 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.

If this procedure does not work:



106089

❏ 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.

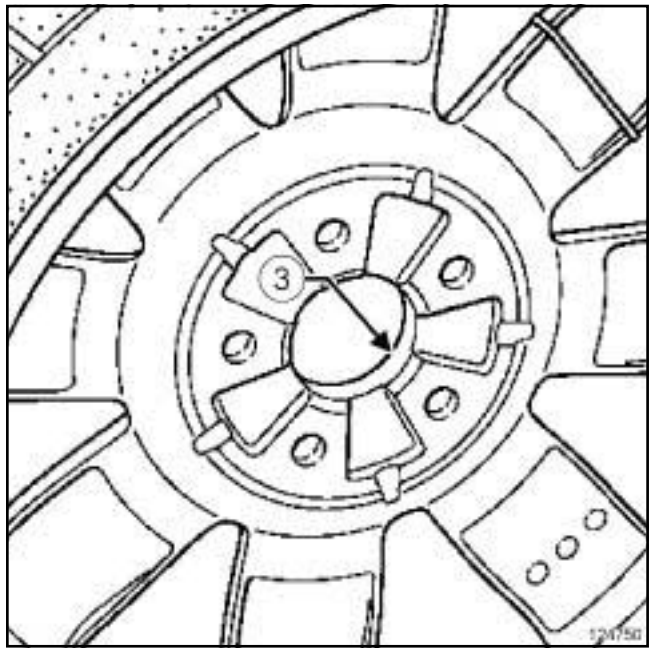
> Note:
>
> there are two types of wheel bolts for alloy and steel wheel rims; do not swap them.

❏ 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.



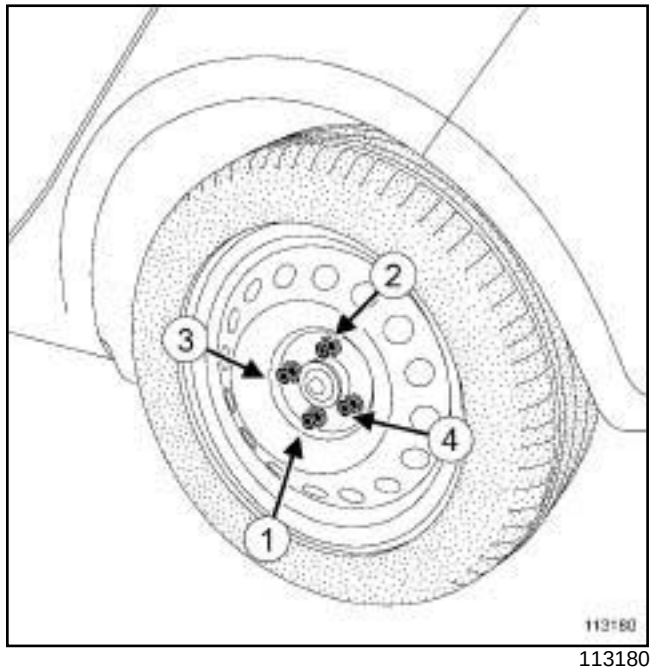
124750

❏ Coat the wheel-mating face (**3**) with **COPPER ANTI-SEIZE AGENT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❏ 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.



113180

❏ Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.

- ❏ 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.

> Note:
>
> Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- ❏ Torque tighten the wheel bolts in order (see **30A**, **General information**, **Front axle system: Tightening torque**, page **30A-27**) (30A, General information).
- ❏ 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)**.

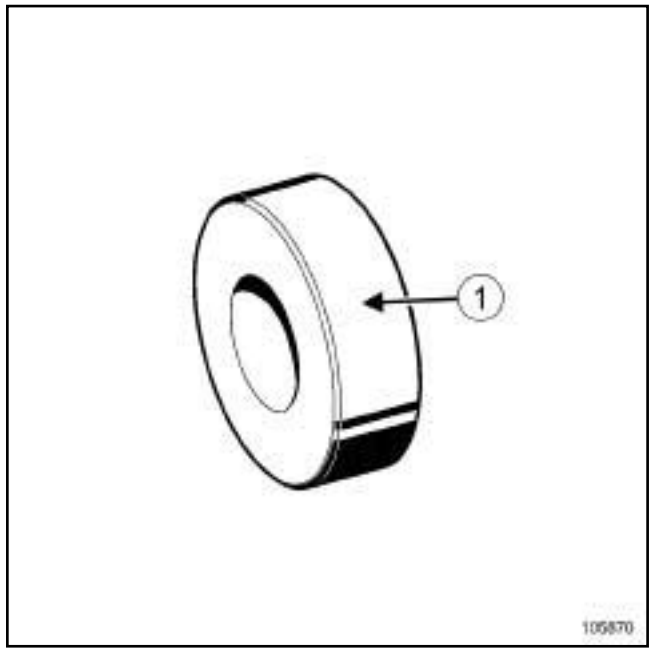
II - BALANCING PREPARATION OPERATION

❏ Adjust the tyre pressure (see **35A**, **Wheels and tyres**, **Tyre pressure: Identification**, page **35A-10**) .

❏ 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.



105870

❏

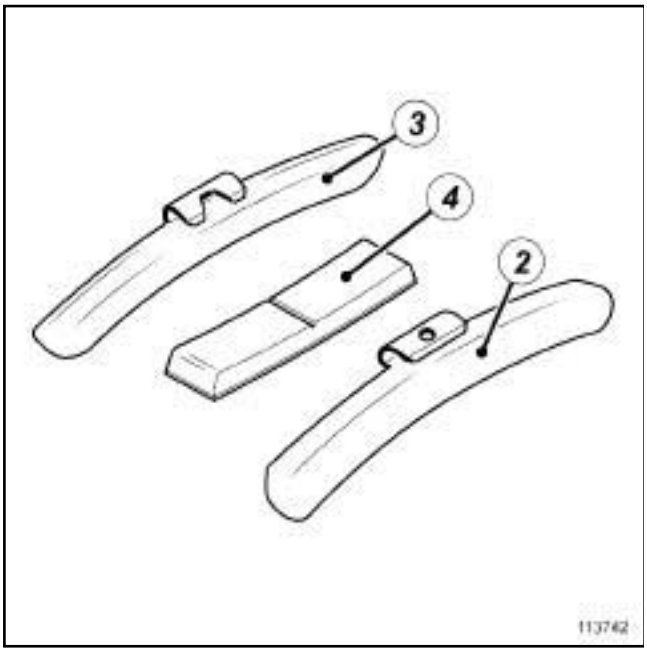
Note:

The ring is available from the supplier of the equipment used.

To reproduce the exact vehicle wheel assembly, use a ring (**1**) of diameter:

❏ **60 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.

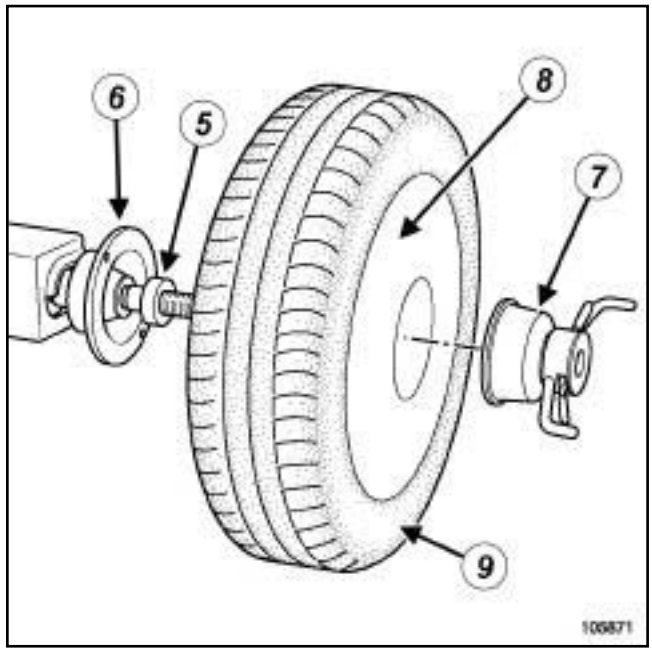
❏ Remove the wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

❏ 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.

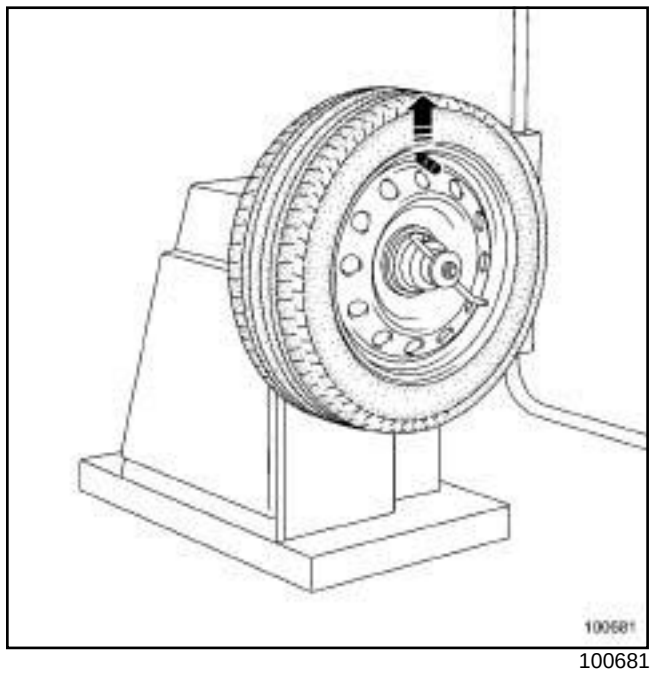
❏ Try not to scratch the (alloy) wheel rim with the wheel tightening device.



105871

❏ 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.



100681

❏ 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.

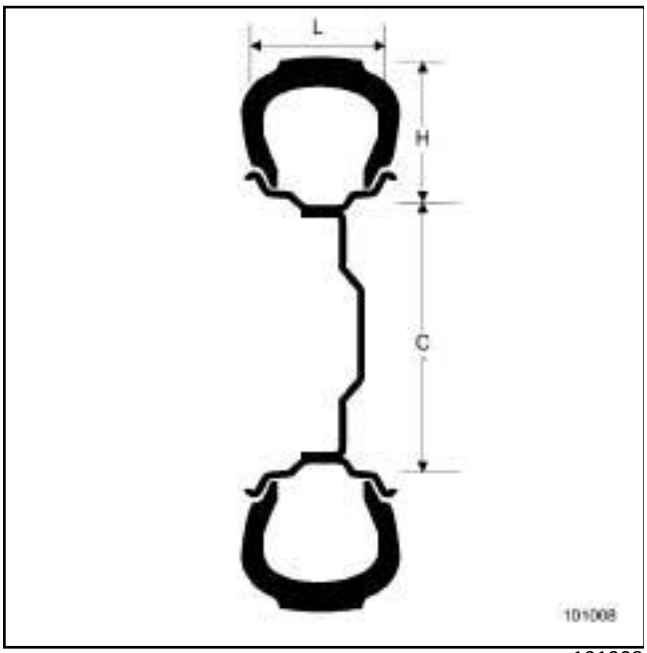
- ❏ Enter the specific wheel parameters when starting the wheel balancer.
- ❏ Start the wheel balancer and check the wheel balance, which should be **0 g** on each plane of the wheel.
- ❏ If this is not the case, remove the old wheel balancing weights and repeat the wheel balancing procedure, checking 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**.



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123448

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

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**

REMOVAL

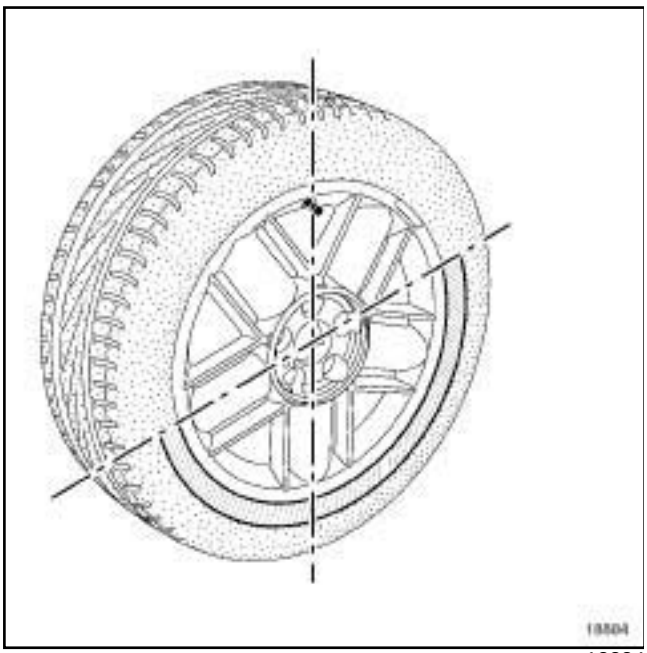
I - REMOVAL PREPARATION OPERATION

❏ 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.

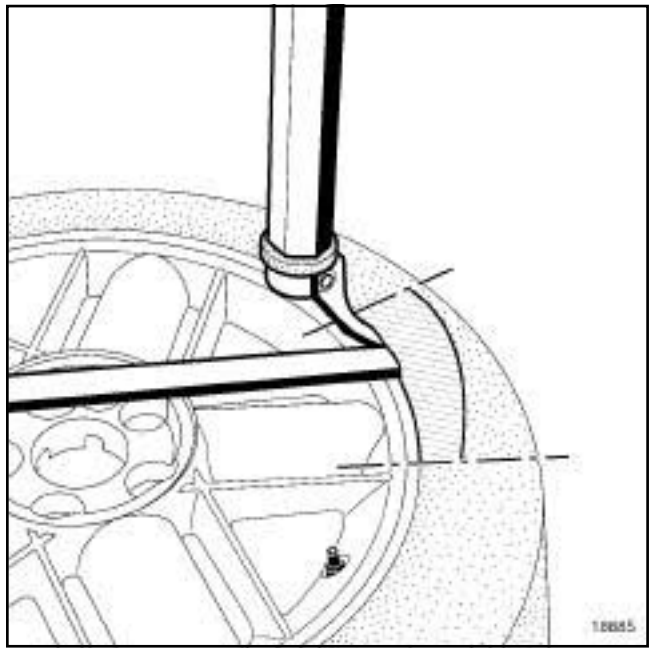
II - OPERATION FOR REMOVAL OF PART CONCERNED



18884

❏ Detach:

- the bead from the outside of the tyre, starting with the side opposite the valve,
- the bead from the inside of the tyre.



18885

❏ 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

❏ **parts always to be replaced: Tyre valve**

❏ 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-10**) .

> 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-4**) .

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

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	Wheel rim	Tyre	Tyre inflation pressure when cold (bar)		
			Front	Rear	emergency spare wheel
D4F D7F	5.5 J 14	165/65 R14 79T	2.2	2.0	2.2
		175/65 R14 82 T			
	6 J 15	185/55 R15 82H			
K9K	5.5 J 14	165/65 R14 79T	2.3	2.1	2.3
		175/65 R14 82 T	2.2	2.0	2.2
	6 J 15	185/55 R15 82H			

The pressure values given are « motorway » pressures.

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.

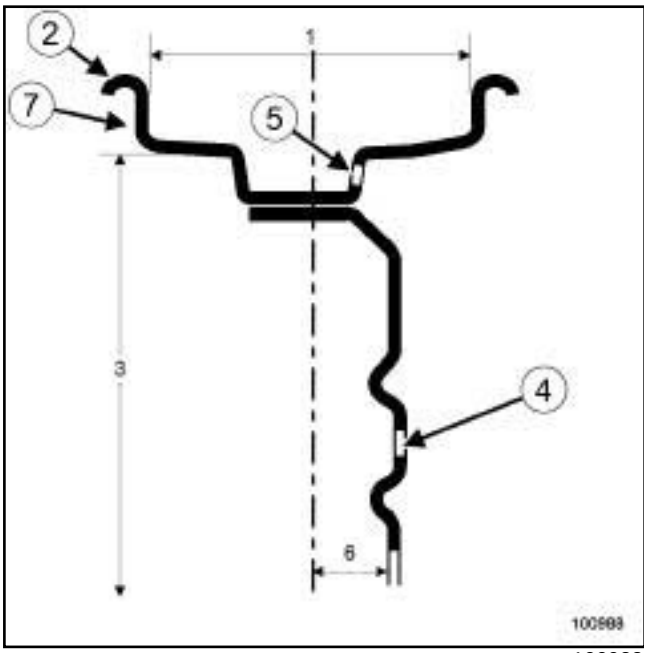
The marking gives the main dimensional specifications of the wheel rim.

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



100988

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:

- 5 holes: **108 mm**,

- 4 holes: **100 mm**.

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.

0.7 mm

Tightening torques ▽	
power-assisted steering box bolts	**105 Nm**

REMOVAL

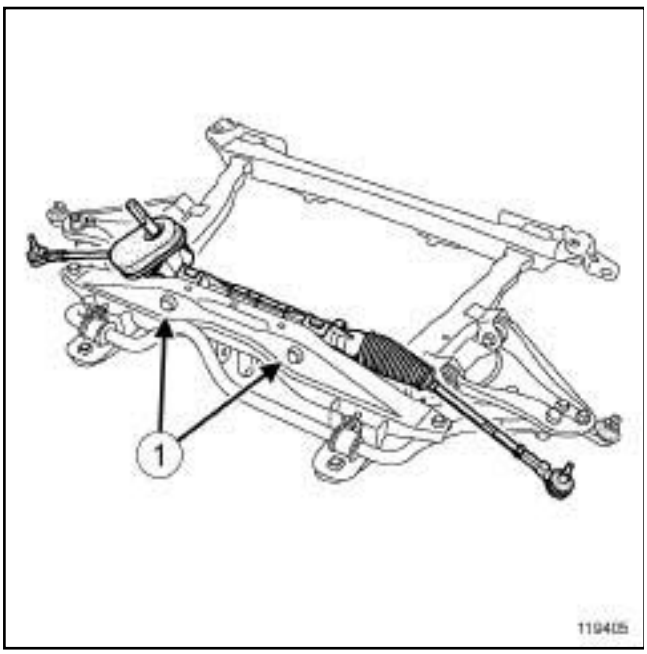
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❏ Remove:

- 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 « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



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❏ Remove:

- the power-assisted steering box bolts (**1**) ,
- the power-assisted steering box.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the power-assisted steering box,
- the power-assisted steering box bolts.

❏ Torque tighten the **power-assisted steering box bolts (105 Nm)**.

II - FINAL OPERATION.

❏ Refit:

- the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) ,
- the 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**) .

❏ Check the axle geometry (see **30A**, **General information**, **Axle assemblies: Check**, page **30A-23**) .

❏ If necessary, adjust the axle assemblies' geometry (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

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 **Steering: Precautions for the repair**) .

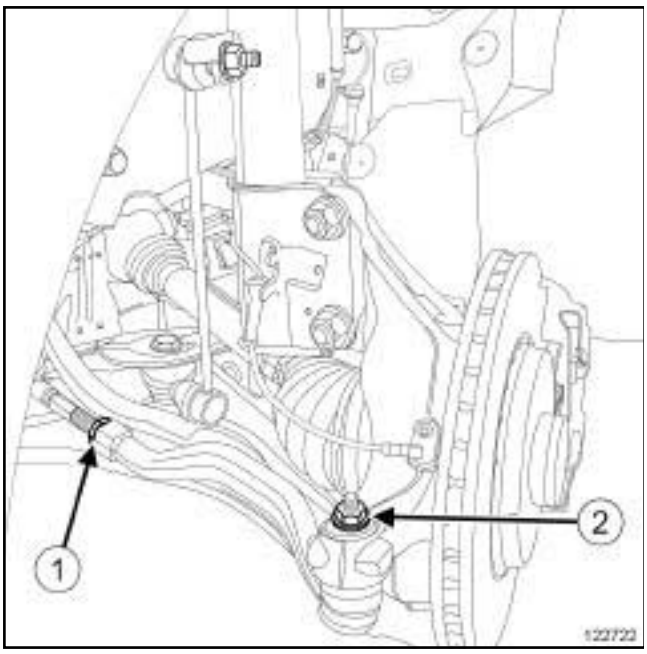
REMOVAL

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**) .

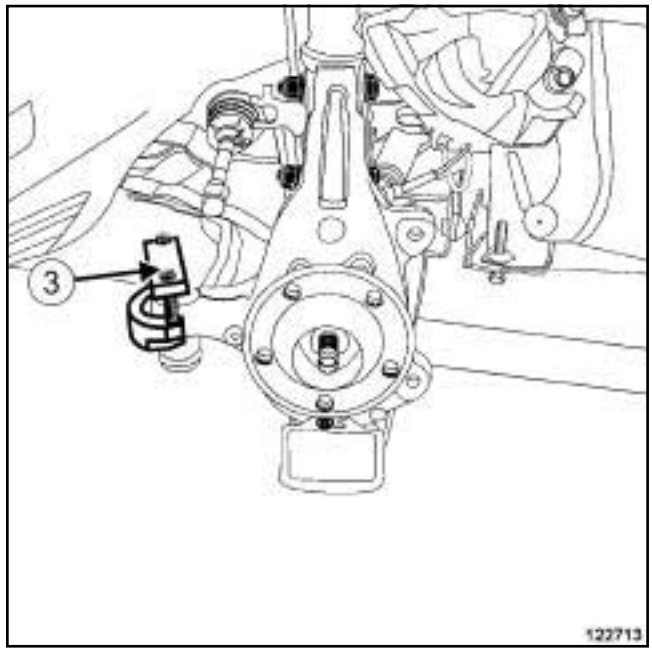
II - OPERATION FOR REMOVAL OF PART CONCERNED



122722

❏ Loosen the wheel alignment adjustment lock nut (**1**) .

❏ Remove the track rod ball joint nut (**2**) .



122713

❏ 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-23**) .

❏ If necessary, adjust the geometry of the axle assemblies (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

Special tooling required	
Dir. 1306-03	Steering rack locking tool.
Dir. 1305-01	Tool for removal - refitting of the axial ball joint (diameter 35 mm to 41 mm).

Tightening torques ▽	
axial ball joint	**50 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❏

> 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:

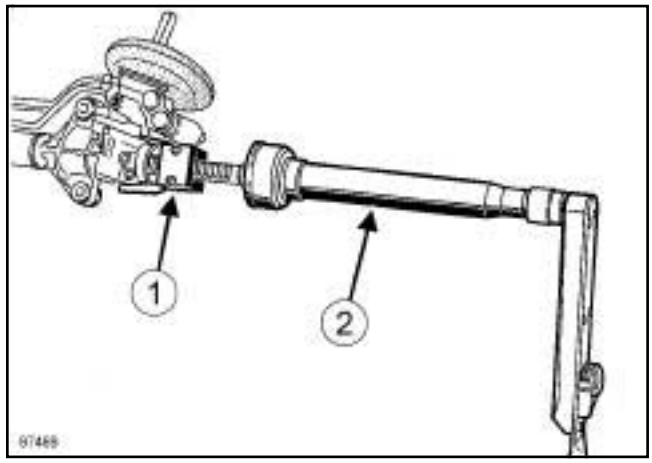
- connect the diagnostic tool,
- select the airbag computer,
- go to repair mode,
- apply the "before repair procedure".

❏ Remove:

- the front wheel on the side in question (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the track rod (see **36A**, **Steering assembly**, **Track rod: Removal - Refitting**, page **36A-2**) ,
- the steering box gaiter (see **36A**, **Steering assembly**, **Steering box gaiter: Removal - Refitting**, page **36A-16**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Lock the wheels to disengage the rod teeth on the valve side.



97469

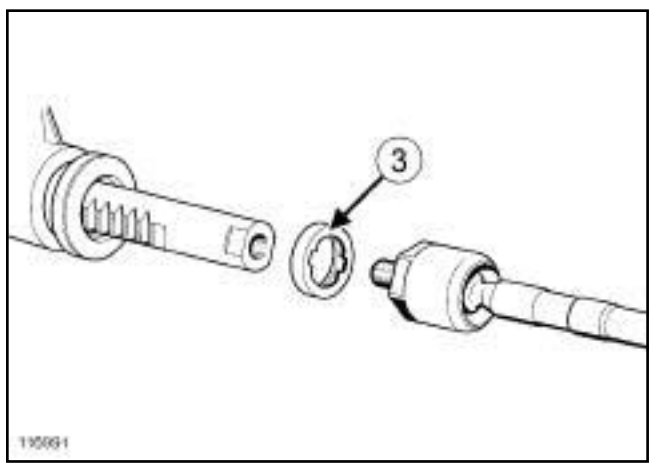
❏ Set up the **(Dir. 1306-03)** (**1**) on the steering rack, at the pinion end.

❏ Unlock the axial ball joint using tool **(Dir. 1305-01)** (**2**) .

❏ Remove the axial ball joint.

REFITTING

I - REFITTING PREPARATION OPERATION



116991

❏ Always replace the following after each removal operation:

- the limiter (**3**) ,
- the steering box gaiter.

> Note:
>
> Before refitting the new track rods, insert a **12 x 100** tap into the threading at the ends of the steering rack in order to remove any trace of **FRENETANCHE** from the original fitting and so prevent seizure of the threaded sections on refitting.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit on the steering rack:

- the limiter,
- the axial ball joint whose threading has been coated with **HIGH RESISTANCE THREAD LOCK**.

❑ Torque tighten the **axial ball joint (50 Nm)** using the **(Dir. 1305-01)** ***(2)*** .

❑ Remove the **(Dir. 1306-03)** (**1**) from the steering rack on the pinion end.

III - FINAL OPERATION

❑ Refit:

- the steering box gaiter (see **36A**, **Steering assembly**, **Steering box gaiter: Removal - Refitting**, page **36A-16**) ,
- the track rod (see **36A**, **Steering assembly**, **Track rod: Removal - Refitting**, page **36A-2**) ,
- the front wheel on the side in question (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.

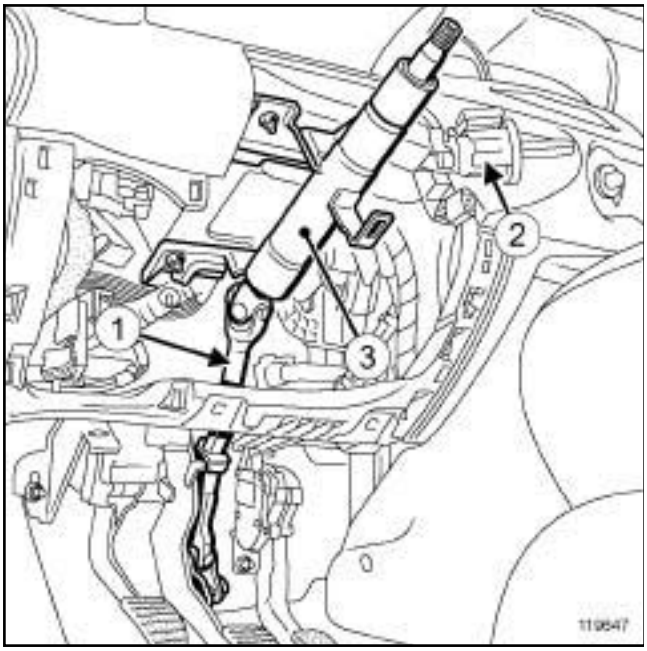
❑ Apply the before repair procedure using the diagnostic tool:

- connect the diagnostic tool,
- select the airbag computer,
- go to repair mode,
- apply the "after repair procedure".

❑ Check the settings of the axle assemblies (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

❑ If necessary, adjust the geometry of the axle assemblies (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

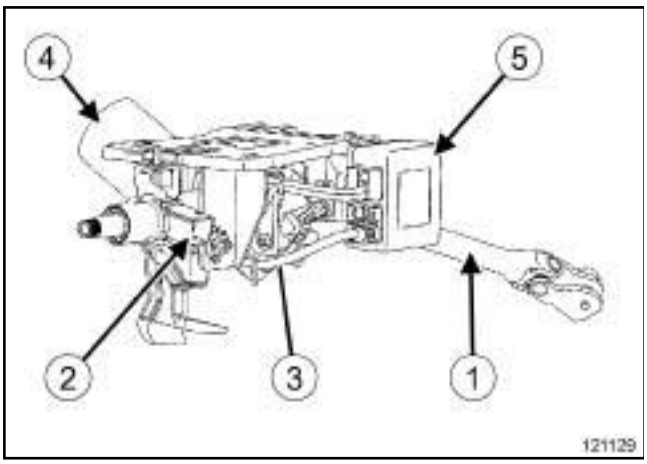
MANUAL STEERING



119647

(**1**) intermediate shaft
(**2**) key-operated switch
(**3**) the steering column

POWER ASSISTED STEERING



121129

(**1**) intermediate shaft
(**2**) location of key-operated switch
(**3**) the steering column
(**4**) Power-assisted steering electric motor
(**5**) Power-assisted steering computer

LEFT-HAND DRIVE

Equipment required
Diagnostic tool

Tightening torques ▽	
bolt connecting the steering column to the intermediate shaft	**30 Nm**
steering column bolts	**21 Nm**
universal joint bolt	**24 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Unlock the steering column.

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).

IMPORTANT

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

❏ Lock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags - Pretensioners).

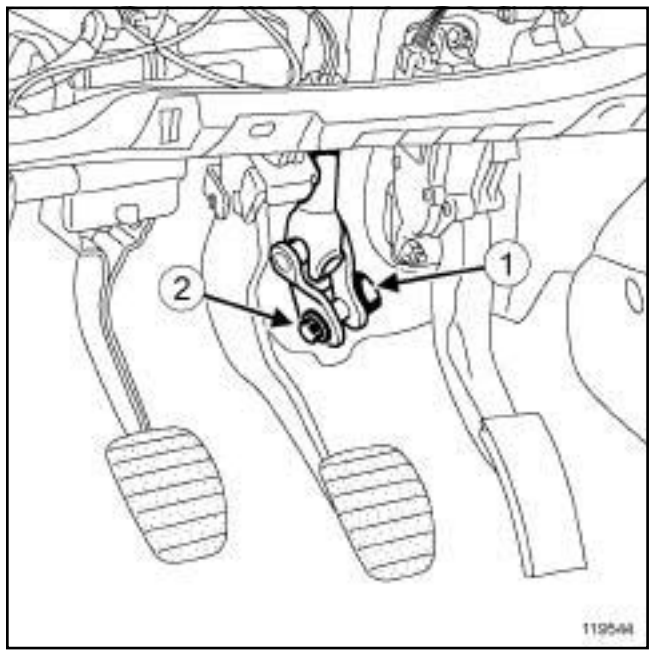
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Set the wheels straight ahead.

❏ Remove:

- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags - Pretensioners),
- the steering wheel (see **36A**, **Steering assembly**, **Steering wheel: Removal - Refitting**, page **36A-23**) ,
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Steering column switch assembly),
- the immobiliser antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser).

II - REMOVAL OPERATION FOR PART CONCERNED



119544

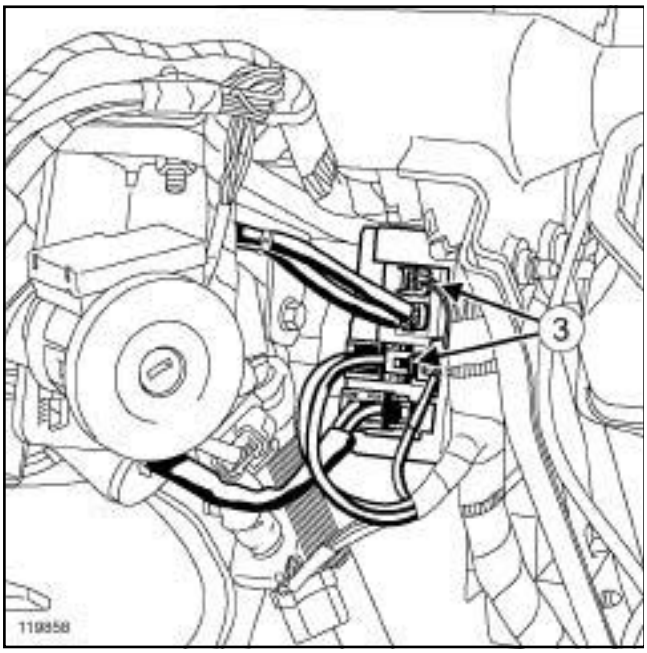
❏ Remove the cover from the universal joint (**1**) (do not keep).

❏ Remove:

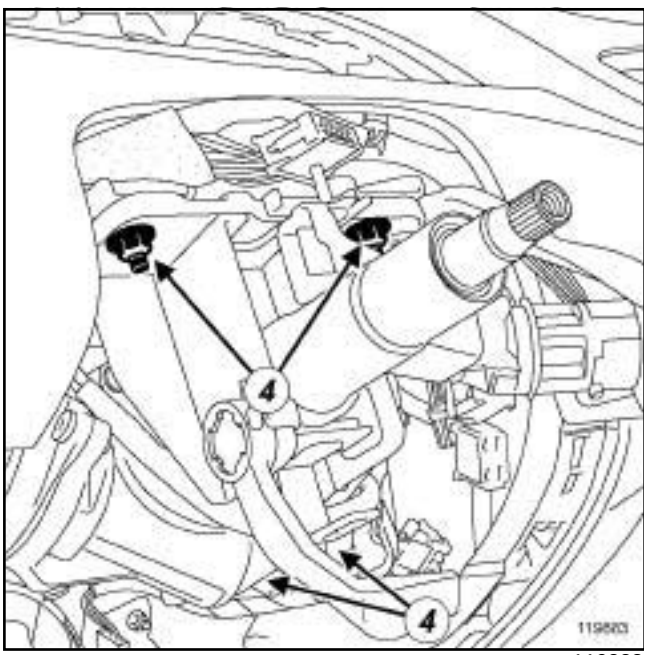
- the universal joint bolt (**2**) (do not keep),
- the universal joint nut (do not keep).

LEFT-HAND DRIVE

POWER ASSISTED STEERING



119858



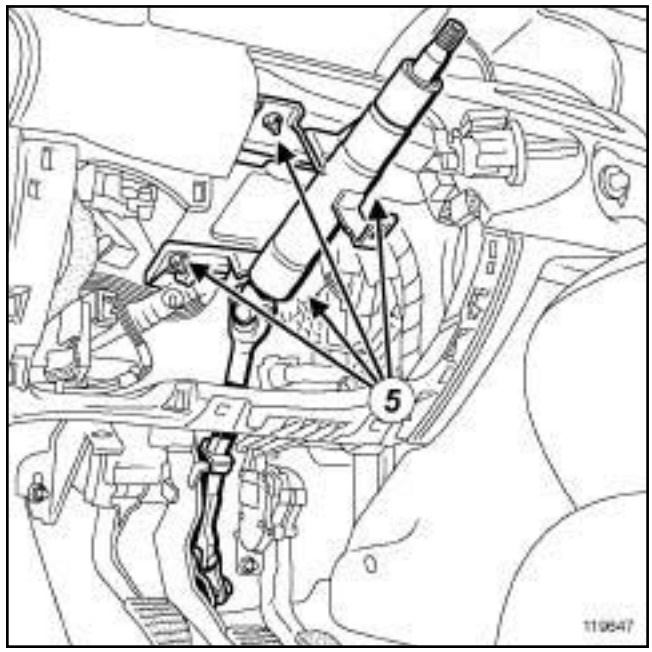
119883

❑ Disconnect the power-assisted steering computer connectors (**3**) .

❑ Remove:

- the steering column bolts (**4**) ,
- the steering column with the intermediate shaft,
- the bolt connecting the steering column to the intermediate shaft,
- the steering column intermediate shaft.

MANUAL STEERING



119647

❑ Remove:

- the steering column bolts (**5**) ,
- the steering column with the intermediate shaft,

REFITTING

I - REFITTING PREPARATIONS OPERATION

❑ Always replace:

- the steering wheel bolt after each removal,
- the universal joint bolt and cam nut after each removal.

LEFT-HAND DRIVE

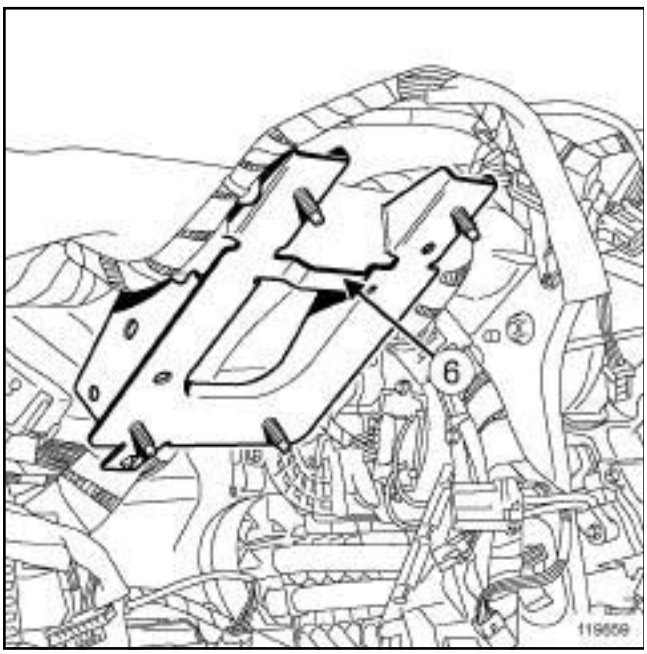
II - REFITTING OPERATION FOR PART CONCERNED

POWER ASSISTED STEERING

❑ Refit:

- the intermediate shaft to the steering column,
- the bolt connecting the steering column to the intermediate shaft.

❑ Torque tighten the **bolt connecting the steering column to the intermediate shaft (30 Nm)**.



119859

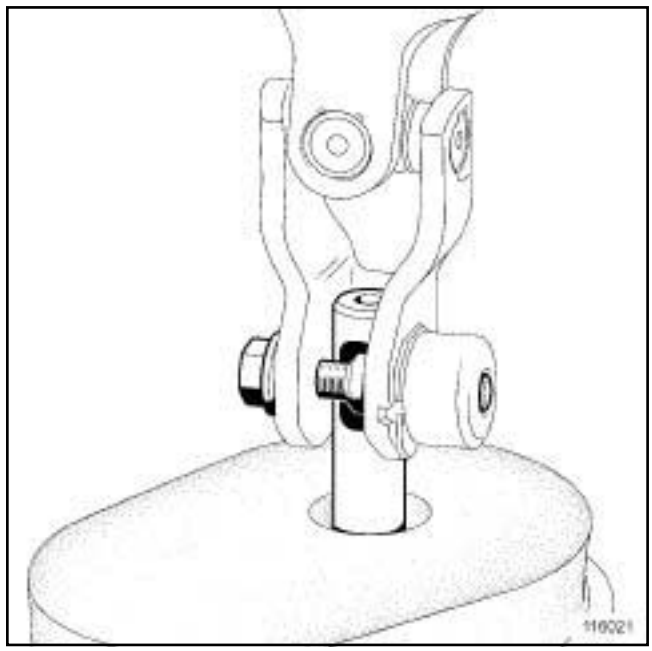
❑ Refit:

- the steering column with the intermediate shaft on the cross member using the retainer (**6**) ,
- the bolts on the steering column.

❑ Torque tighten the **steering column bolts (21 Nm)**.

POWER ASSISTED STEERING

❑ Connect the power-assisted steering computer connectors.


116021

❑ Observe the direction of fitting for the universal joint cam nut and bolt.

❑ fit the universal joint to the steering box.

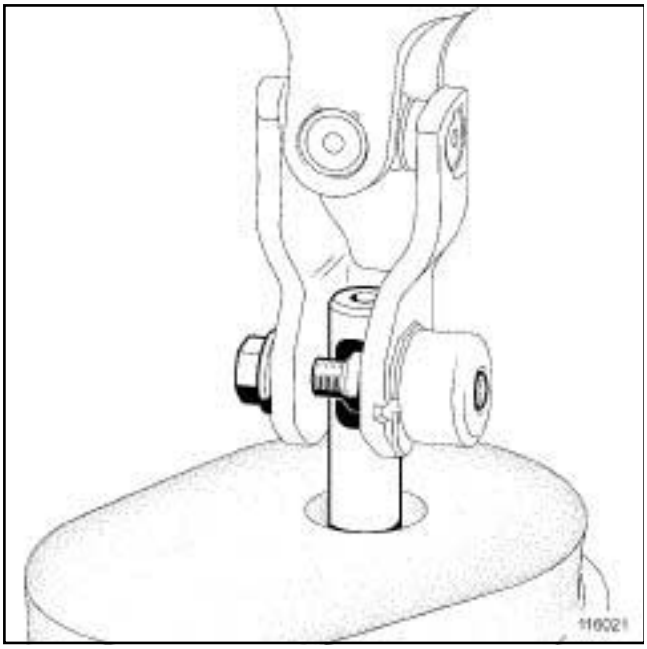
❑ Refit the universal joint cam nut and bolt.

❑ Position the universal joint cam nut and bolt.

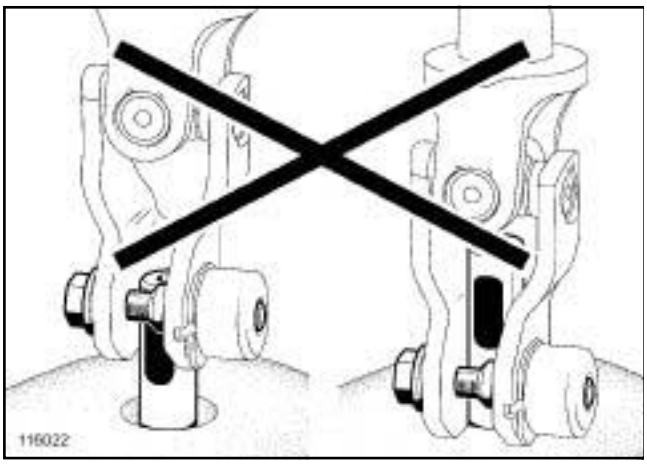
❑ Immobilise the cam nut in its housing (on the universal joint).

❑ Pretighten the universal joint cam nut and bolt.

LEFT-HAND DRIVE



116021



116022

❑ Check that the universal joint is in the correct position.

❑ Torque tighten the **universal joint bolt (24 Nm)**.

III - FINAL OPERATION.

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Refit:

- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the immobiliser antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Steering column switch assembly),
- the steering wheel (see **36A**, **Steering assembly**, **Steering wheel: Removal - Refitting**, page **36A-23**) ,
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags - Pretensioners).

❑ Unlock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags - Pretensioners).

RIGHT-HAND DRIVE

Equipment required
Diagnostic tool

Tightening torques ▽	
bolt connecting the steering column and the intermediate shaft	**30 Nm**
steering column bolts	**21 Nm**
universal joint bolt	**24 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Unlock the steering column.

❑

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).

IMPORTANT
Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

Lock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 88C, Airbags and seat belt pretensioners).

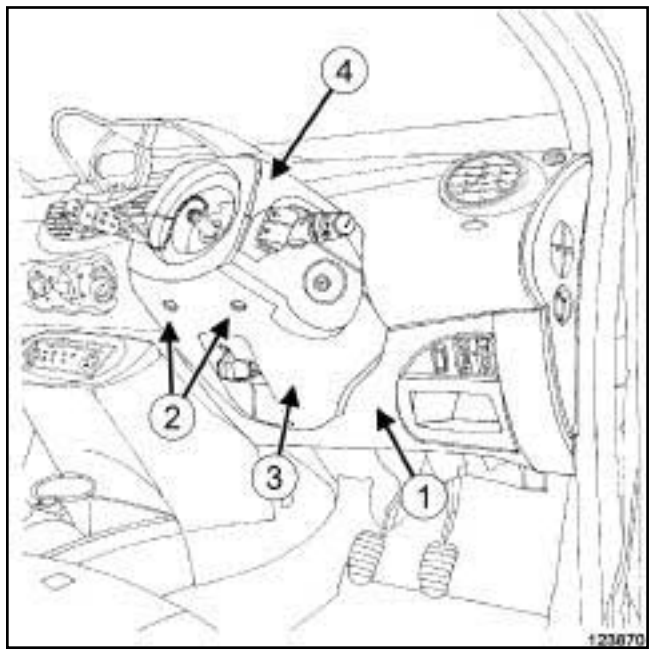
❑ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Remove:

- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags and pretensioners),
- the steering wheel (see **36A**, **Steering assembly**, **Steering wheel: Removal - Refitting**, page **36A-23**) .

ENGINE REV COUNTER

❑ Remove the rev counter (see **Rev counter: Removal - Refitting**) (MR 411, 83A, Instrument panel).



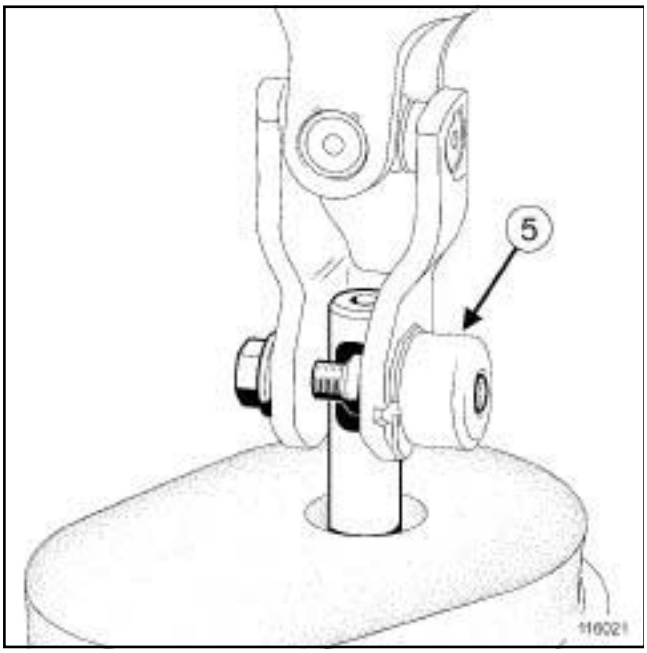
123870

❑ Remove:

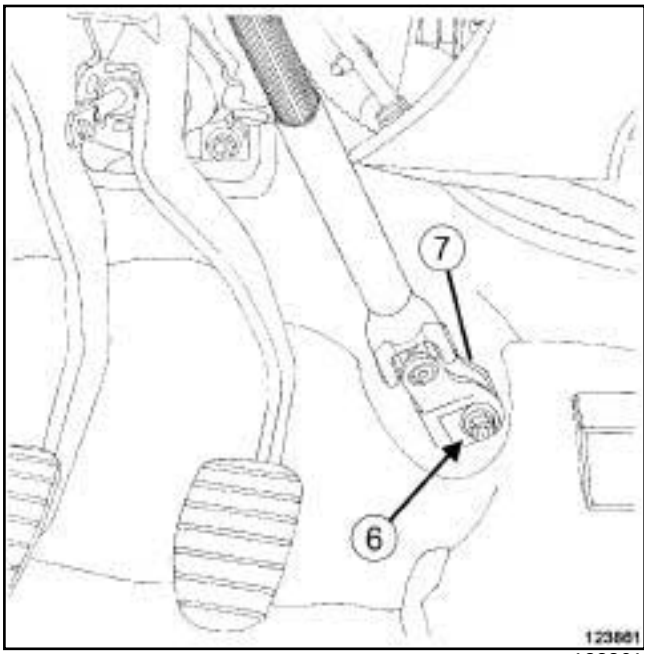
- the dashboard lower cover (**1**) ,
- the bolts (**2**) from the steering wheel lower cover,
- the steering wheel lower cover (**3**) ,
- the steering wheel upper cover (**4**) ,
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Control - Signals),
- the antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser).

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



116021



123861

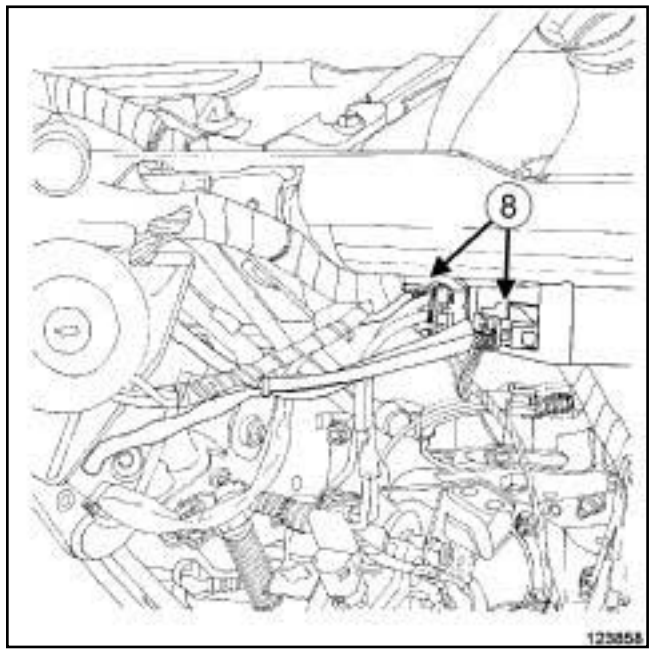
❏ Remove the universal joint cover (**5**) (do not keep).

❏ Set the wheels straight ahead.

❏ Remove:

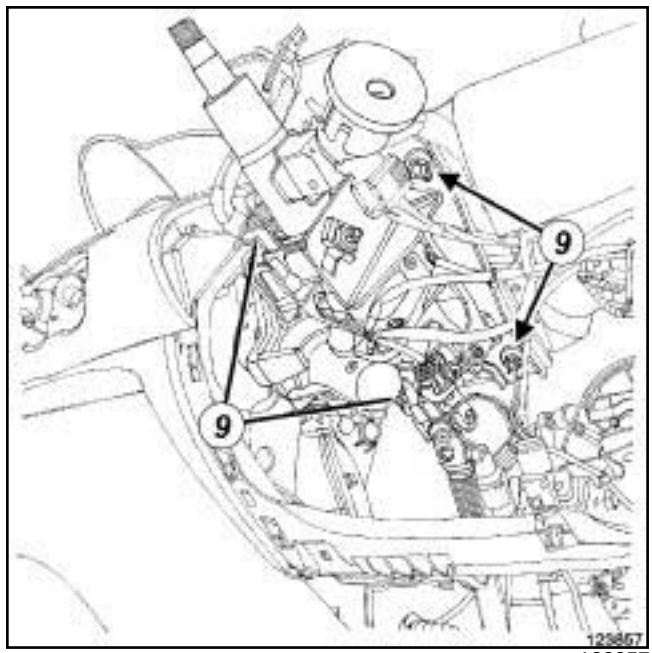
- the universal joint bolt (**6**) (do not keep),
- the universal joint nut (**7**) (do not keep).

POWER ASSISTED STEERING



123858

❏ Disconnect the power-assisted steering computer connectors (**8**) .



123857

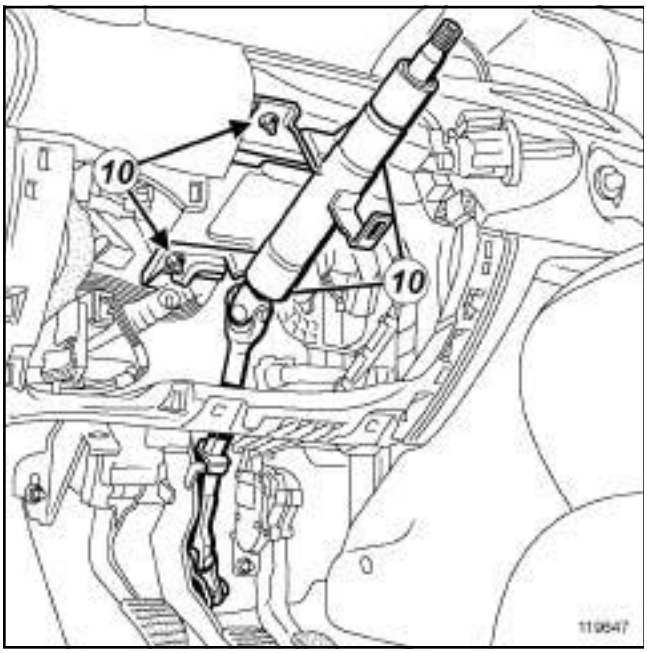
❏ Remove:

- the steering column bolts (**9**) ,
- the steering column with the intermediate shaft,

RIGHT-HAND DRIVE

- the bolt connecting the steering column and the intermediate shaft,
- the steering column intermediate shaft.

MANUAL STEERING



119647

❏ Remove:

- the steering column bolts (**10**) ,
- the steering column with the intermediate shaft,

REFITTING

I - REMOVAL PREPARATION OPERATION

❏ Always replace:

- the steering wheel bolt,
- the universal joint cam nut and bolt.

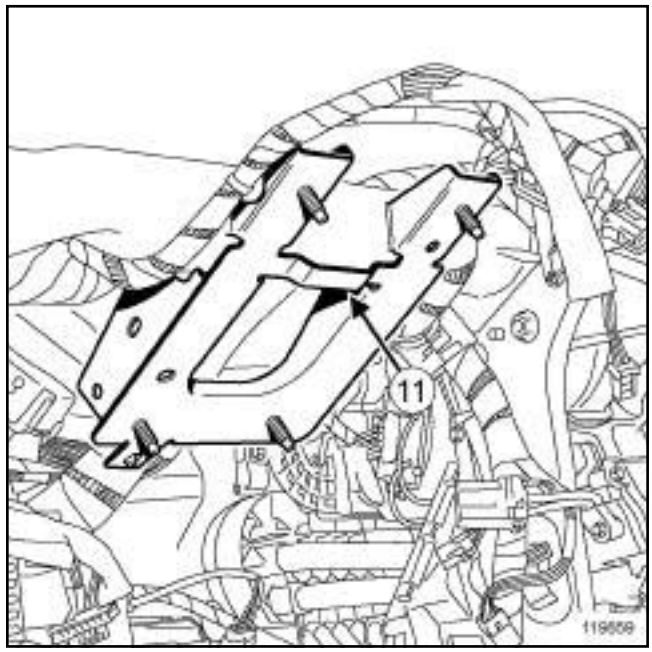
II - REFITTING OPERATION FOR PART CONCERNED

POWER ASSISTED STEERING

❏ Refit:

- the intermediate shaft of the steering column,
- the bolt connecting the steering column and the intermediate shaft.

❏ Torque tighten the **bolt connecting the steering column and the intermediate shaft (30 Nm)**.



119859

❏ Refit:

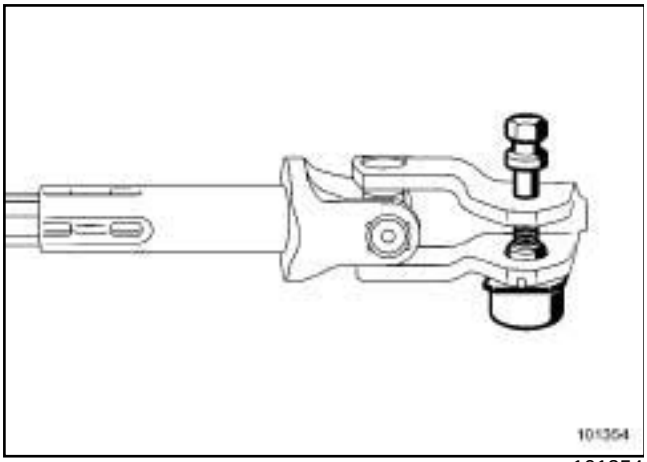
- the steering column with the intermediate shaft on the cross member using the retainer (**11**) ,
- the bolts on the steering column.

❏ Torque tighten the **steering column bolts (21 Nm)**.

POWER ASSISTED STEERING

❏ Connect the power-assisted steering computer connectors.

RIGHT-HAND DRIVE



101354

❏ Observe the direction of fitting for the universal joint cam nut and bolt.

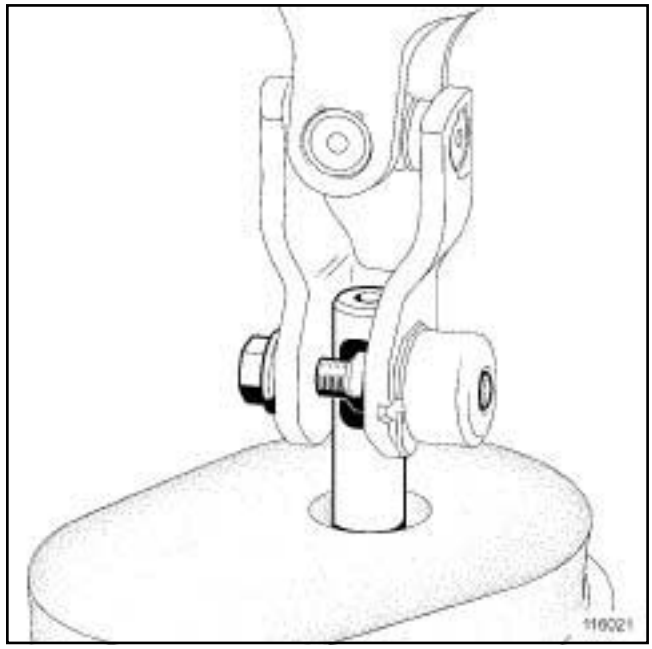
❏ fit the universal joint to the steering box.

❏ Refit the universal joint cam nut and bolt.

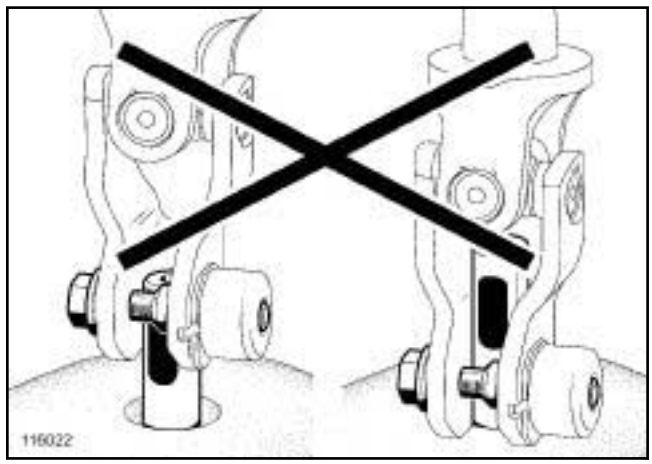
❏ Position the universal joint cam nut and bolt.

❏ Immobilise the cam nut in its housing (on the universal joint).

❏ Pretighten the universal joint cam nut and bolt.



116021



116022

❏ Check that the universal joint is in the correct position.

❏ Torque tighten the **universal joint bolt (24 Nm)**.

III - FINAL OPERATION.

❏ Refit:

- the ignition switch if the steering column is replaced (see **Ignition switch: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the antenna/transponder ring (see **Transponder ring: Removal - Refitting**) (MR 411, 82A, Immobiliser),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (MR 411, 84A, Control - Signals),
- the steering wheel upper cover,

RIGHT-HAND DRIVE

- the steering wheel lower cover,
- the steering wheel lower cover bolts,
- the dashboard lower cover.

ENGINE REV COUNTER

❑ Refit the rev counter (see **Rev counter: Removal - Refitting**) (MR 411, 83A, Instrument panel).

❑ Refit:

- the steering wheel (see **36A**, **Steering assembly**, **Steering wheel: Removal - Refitting**, page **36A-23**) ,
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (MR 411, 88C, Airbags and pretensioners).

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑

IMPORTANT

To avoid a fault with or even triggering of pyrotechnic components (airbags or pretensioners), check the airbag computer using the diagnostic tool.

Unlock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components)** (MR 413, 88C, Airbags and pretensioners).

REMOVAL

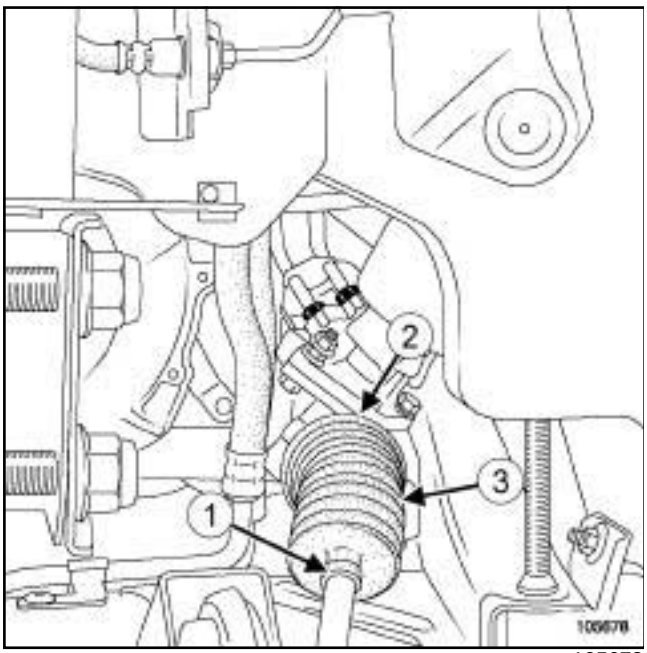
I - REMOVAL PREPARATION OPERATION

❏ 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**) ,
- the track rod, (see **36A**, **Steering assembly**, **Track rod: Removal - Refitting**, page **36A-2**)
- the wheel alignment adjusting lock nut.

II - OPERATION FOR REMOVAL OF PART CONCERNED



105678

❏

> Note:
>
> When removing the steering gaiter, blast the gaiter surfaces with compressed air to eliminate any impurities that could enter the steering box.

❏ Remove the gaiter retaining clip (**1**)

❏ Cut the gaiter retaining clip (**2**) .

❏ Remove the gaiter (**3**) .

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Always replace:

- the steering box gaiter,
- the retaining clips.

❏ Clean the contact surfaces between the steering box and the gaiter using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) .

❏ Coat the gaiter bearing face on the axial ball joint with **SILICONE LUBRICANT** (see **Vehicle: Parts and consumables for the repair**) to prevent the gaiter from twisting.

> 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

❏ Refit:

- a new steering box gaiter,
- new retaining clips.

III - FINAL OPERATION.

❏ Refit:

- the wheel alignment adjustment lock nut,
- the track rod, (see **36A**, **Steering assembly**, **Track rod: Removal - Refitting**, page **36A-2**)
- the front 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-23**) .

❏ If necessary, adjust the axle assemblies' geometry (see **30A**, **General information**, **Front axle system: Adjustment**, page **30A-36**) .

REMOVAL

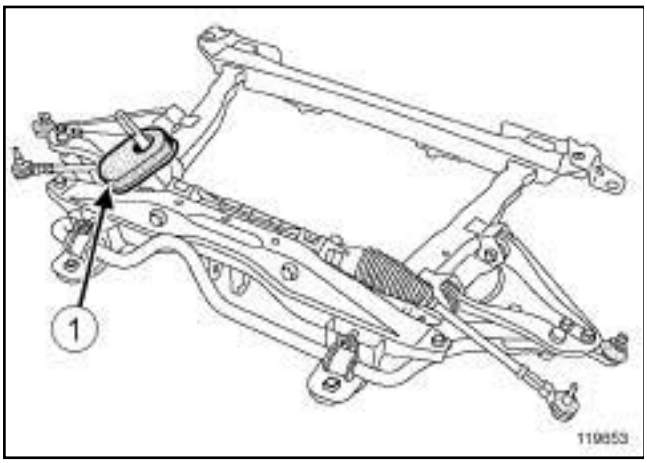
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift ((see **Vehicle: Towing and lifting**)).

❏ Remove:

- 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**)),
- the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119653

❏ Detach the steering box bulkhead seal (**1**) .

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ Degrease the surface in contact with the bulkhead seal using **SURFACE CLEANER**.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Remove the safety film from the adhesive section of the new bulkhead seal.

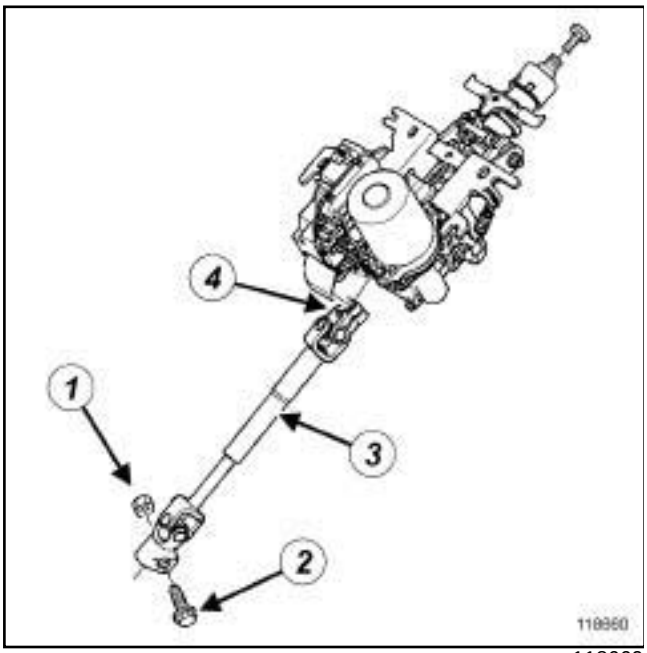
❏ Bond the new bulkhead seal on the steering box.

III - FINAL OPERATION.

❏ Refit:

- the « subframe - front driveshaft lower arm - power-assisted steering box - front anti-roll bar » assembly (see **31A**, **Front axle components**, **Front axle subframe: Removal - Refitting**, page **31A-43**) ,
- the front wheel arch liners ((see **Front wheel arch liner: Removal - Refitting**)),
- the front wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

Tightening torques ▽	
intermediate shaft bolt on the steering column side	**29 Nm**
universal joint bolt	**24 Nm**

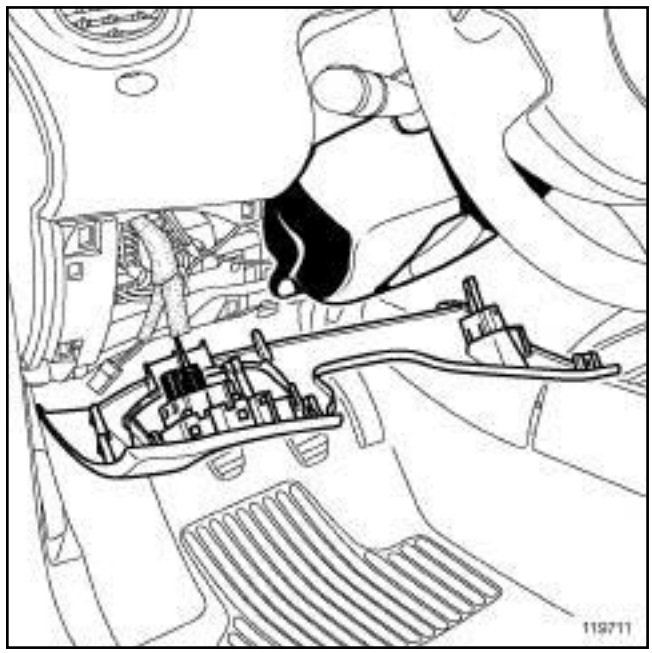


118660

(**1**) Cover of universal joint cam nut
(**2**) Universal joint bolt
(**3**) Intermediate shaft
(**4**) Intermediate shaft bolt on steering column side

REMOVAL

I - REMOVAL PREPARATION OPERATION



119711

❏ Remove the dashboard lower trim.

❏ Disconnect the various connectors.

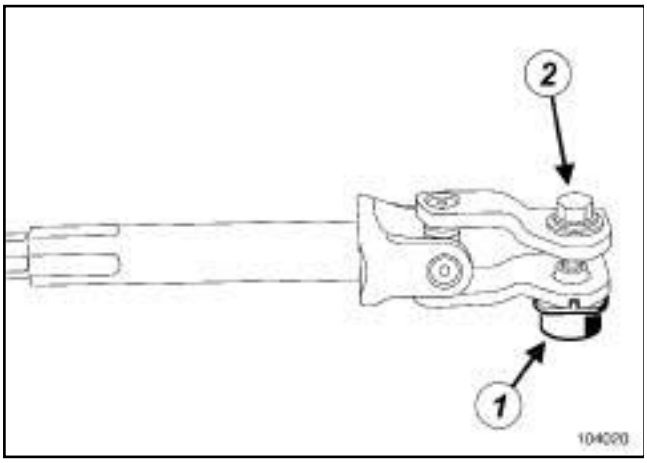
❏ Unblock then loosen the intermediate shaft on the steering column side, without removing it.

❏ Put the steering wheel straight with the axle in line.

❏ Lock the steering wheel.

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



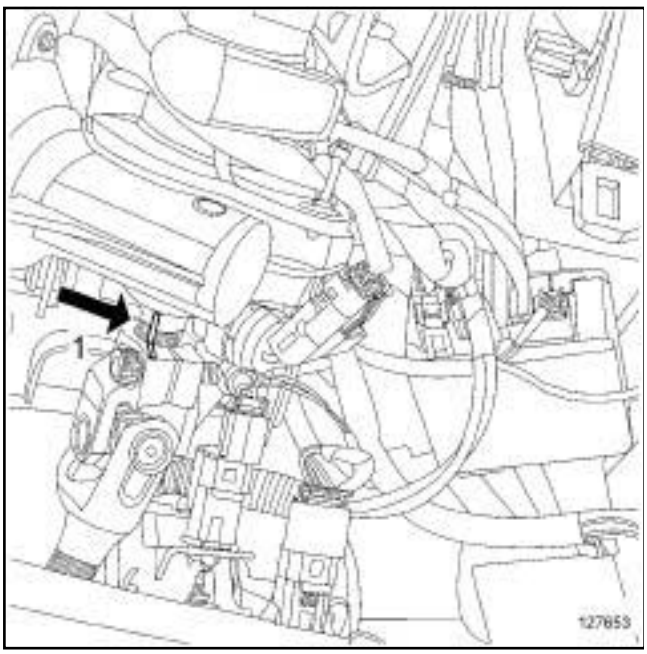
104020

❏ Eject the cover (**1**) using a hammer.

❏ Remove:

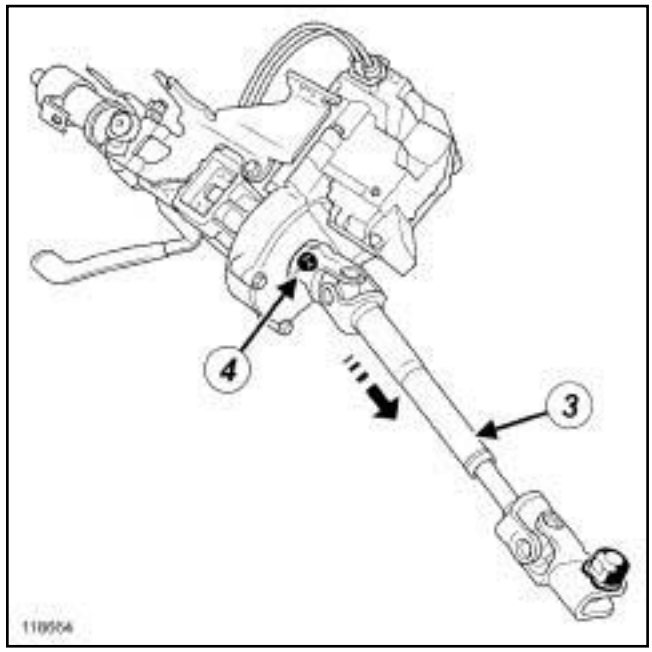
- the universal joint bolt (**2**) (do not keep),
- the cam nut from the universal joint.

❏ Remove the intermediate shaft from the steering box.



127653

❏ Mark the position of the intermediate shaft on the column.



118664

❏ Remove:

- the bolt (**4**) from the intermediate shaft on the steering column side.
- the intermediate shaft (**3**) by pulling it in the direction of the arrow.

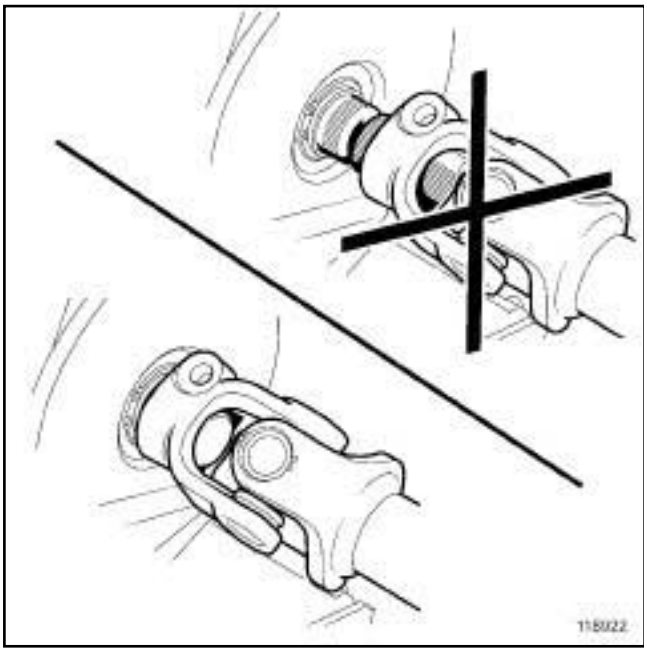
REFITTING

I - REFITTING PREPARATION OPERATION

❏ Always replace:

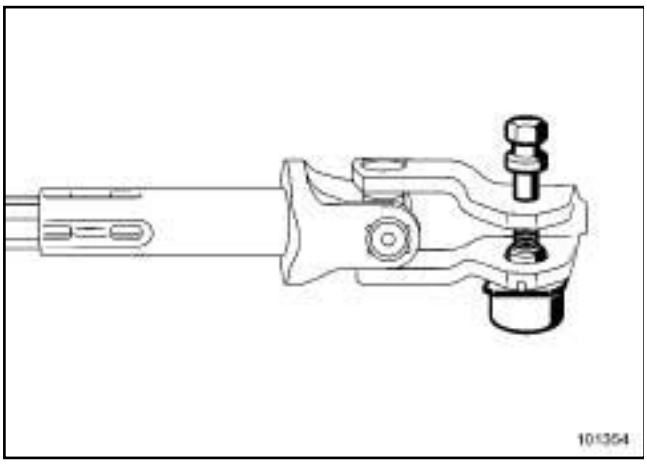
- the universal joint bolt and cam nut,
- the bolt from the intermediate shaft on the steering column side.

II - REFITTING OPERATION FOR PART CONCERNED



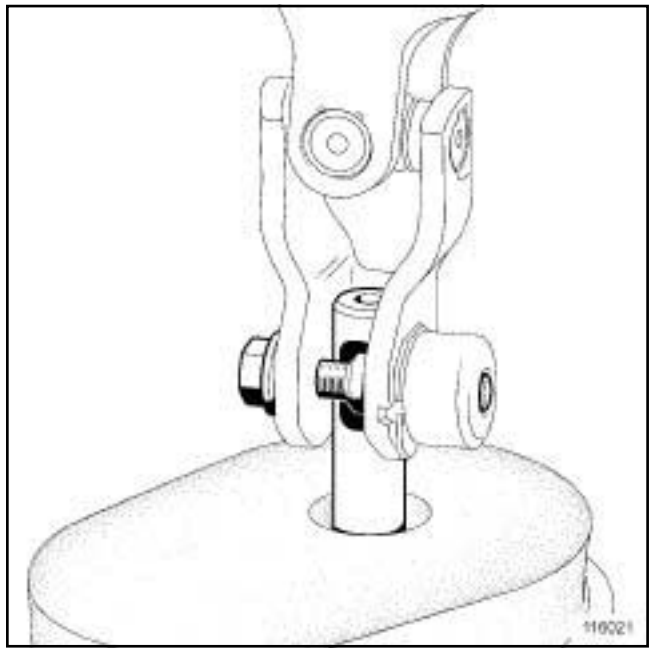
118922

- ❏ Fit the intermediate shaft on the steering column while taking care not to shift it more than one tooth in relation to its initial position.
- ❏ Check that the intermediary shaft on the steering column side is in the correct position.
- ❏ Pretighten the intermediate shaft bolt on the steering column side.
- ❏ Pull on the intermediate shaft of the steering column to check presence of the bolt in the neck.
- ❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ❏ Unlock the steering wheel.

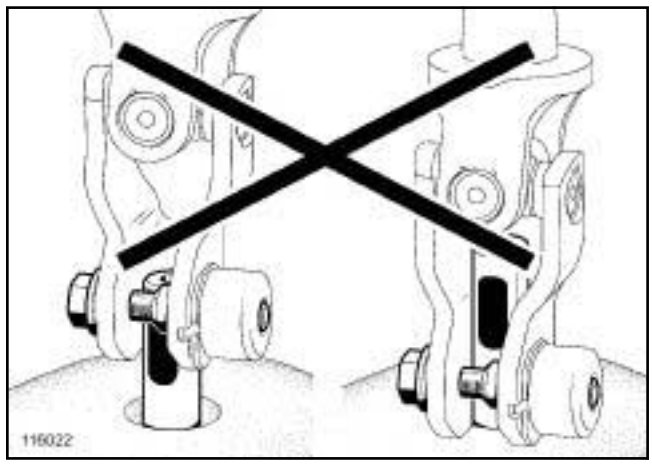


101354

- ❏ Observe the direction of fitting for the universal joint cam nut.
- ❏ Refit the universal joint.



116021



116022

- ❏ Check that the universal joint is in the correct position on the steering rack attack pinion stem.
- ❏ Pretighten the universal joint bolt.
- ❏ Tighten to torque:
  - the **intermediate shaft bolt on the steering column side (29 Nm)**,
  - the **universal joint bolt (24 Nm)**.

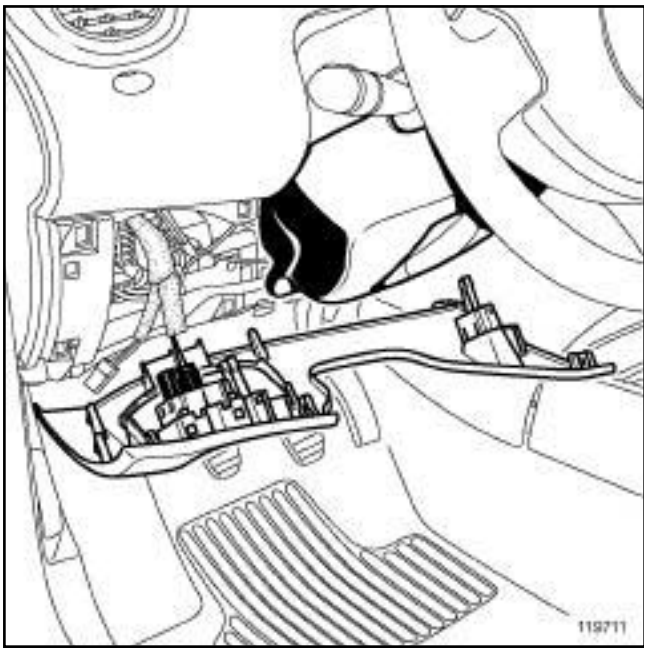
III - FINAL OPERATION.

- ❏ Connect the various connectors.
- ❏ Refit the dashboard lower trim.
- ❏ Check that correct alignment of the steering wheel then perform a geometry of the front axle if necessary (see **30A**, **General information**, **Front axle assembly: Adjustment values**, page **30A-31**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see) (80A, Battery).



119711

❏ Unclip the dashboard lower trim.

❏ Disconnect the various connectors.

❏ Put the handle in the low position (to prevent the mobile part of the column dropping during dismantling).

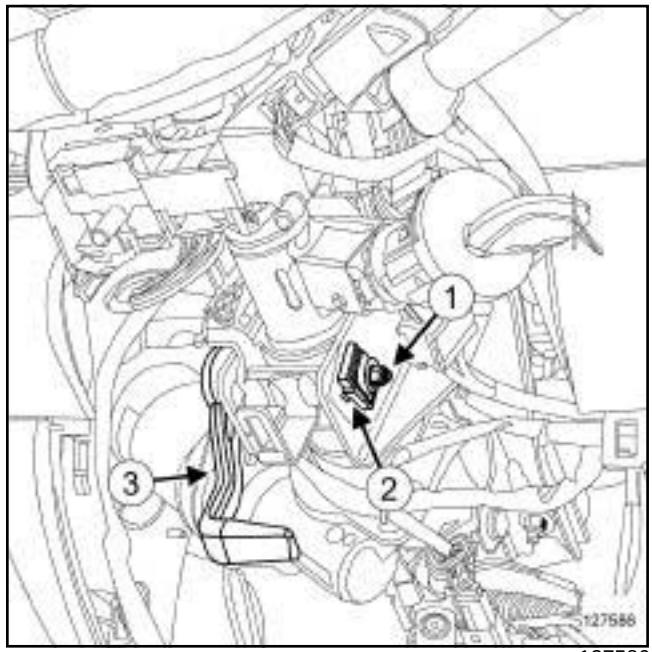
❏ Remove:

- the bolts on the steering wheel lower cover,
- the steering wheel lower cover.

Note:

The removal of the steering wheel is not necessary.

II - OPERATION FOR REMOVAL OF PART CONCERNED



127586

❏ Remove:

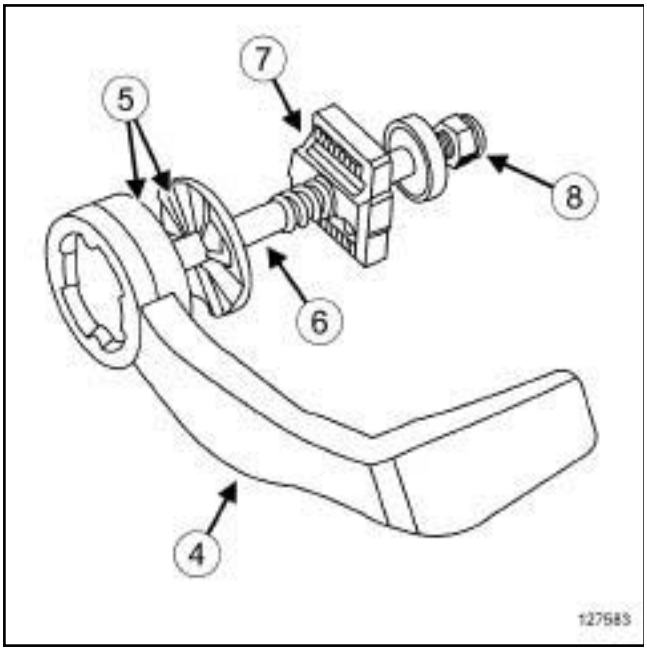
- the nut (**1**) of the adjustment handle shaft while holding the handle during unscrewing,
- the locking mechanism (**2**) of the adjustment handle,
- the adjustment handle (**3**) .

Note:

Do not keep the components of the locking mechanism and scrap all of its constituent parts, as well as the adjustment handle.

REFITTING

I - REFITTING PREPARATION OPERATION



127583

(**4**) Handle
(**5**) Indexed adjustment plates
(**6**) Connection shaft
(**7**) Locking mechanism
(**8**) Adjustment handle shaft nut

❑

Note:

When refitting the handle, ensure that the retaining spring and the two notched segments are correctly positioned. Check that the teeth are interlocked and not in the tooth on tooth position.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the adjustment handle,
- the locking mechanism, taking care to correctly index the cam and the toothed plate in the bracket opening,
- the nut on the adjustment handle.

Note:

The amount of effort required to operate the handle is determined by how much it is tightened. Test to determine the correct tightening. The measurement of effort must be made with a torque wrench (Unlocking effort - 10N minimum / Locking effort - 60N maximum).

III - FINAL OPERATION

❑ Refit the steering wheel lower cover.

❑ Connect the various connectors.

❑ Clip on the dashboard lower trim.

❑ Connect the battery (see) (80A, Battery).

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 **Steering: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Apply the procedure for deactivating the safety systems. (see **Airbag and pretensioners: Precautions for the repair**)

❏

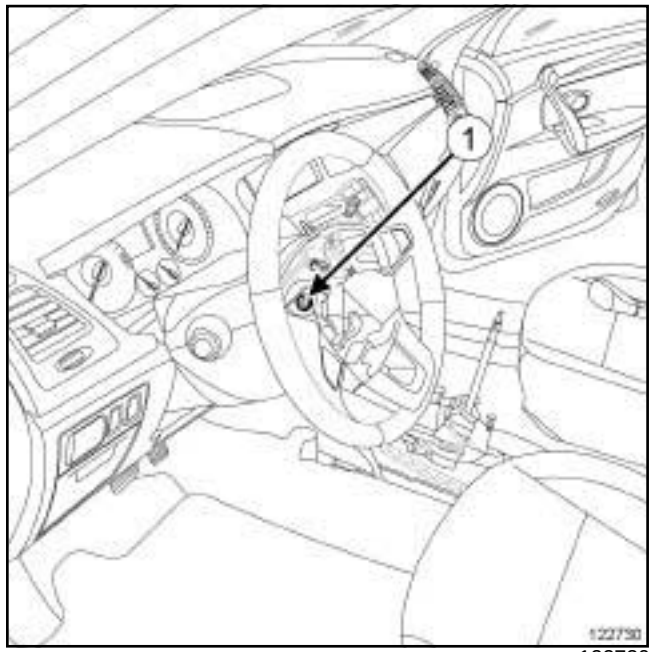
WARNING
Incorrect wheel alignment may damage the rotary switch.

❏ 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



122730

❏ 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.

❏

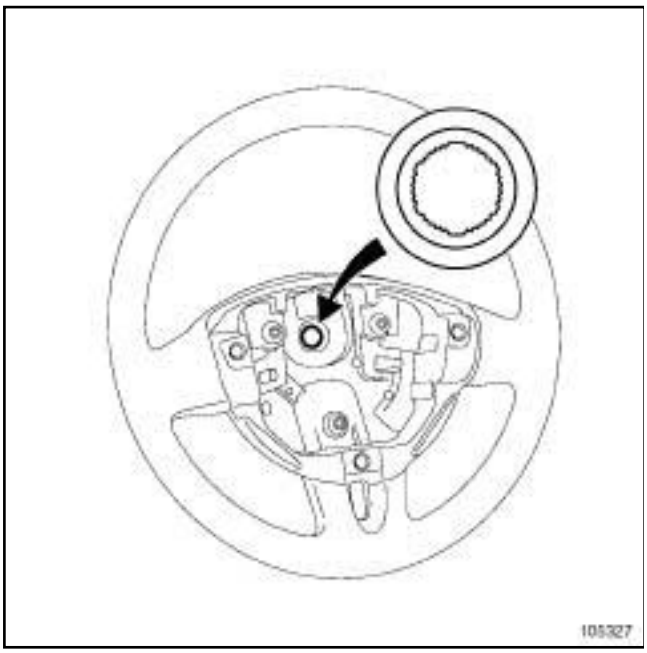
WARNING
To prevent damaging the rotary switch, do not turn the mobile section of the rotary switch.

REFITTING

I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Steering wheel bolt**.

II - REFITTING OPERATION FOR PART CONCERNED



105327

❑

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

❑ 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.

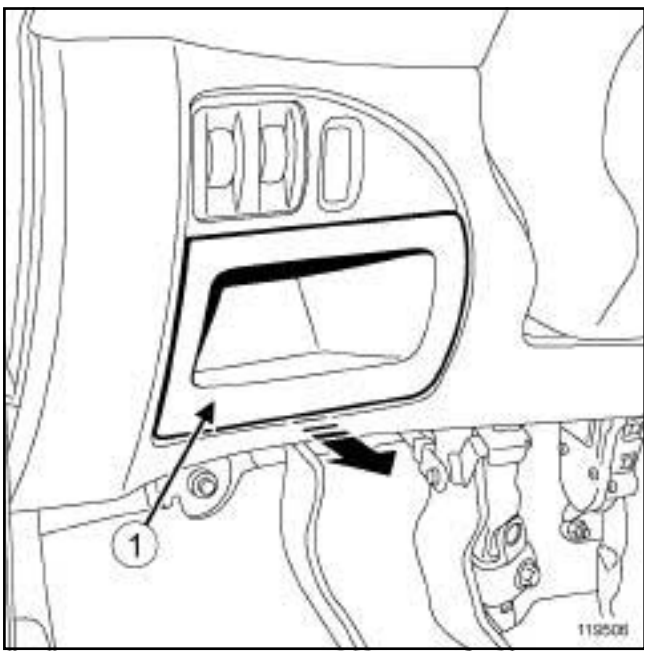
LEFT-HAND DRIVE

Equipment required
Diagnostic tool

REMOVAL

I - REMOVAL PREPARATION OPERATION

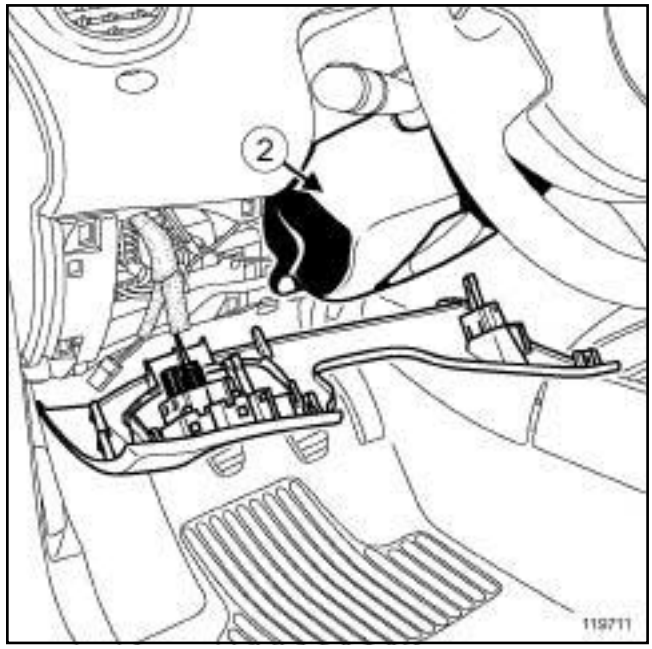
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).



119506

❏ Unclip:

- the fuse access flap (**1**) ,
- the dashboard lower trim.



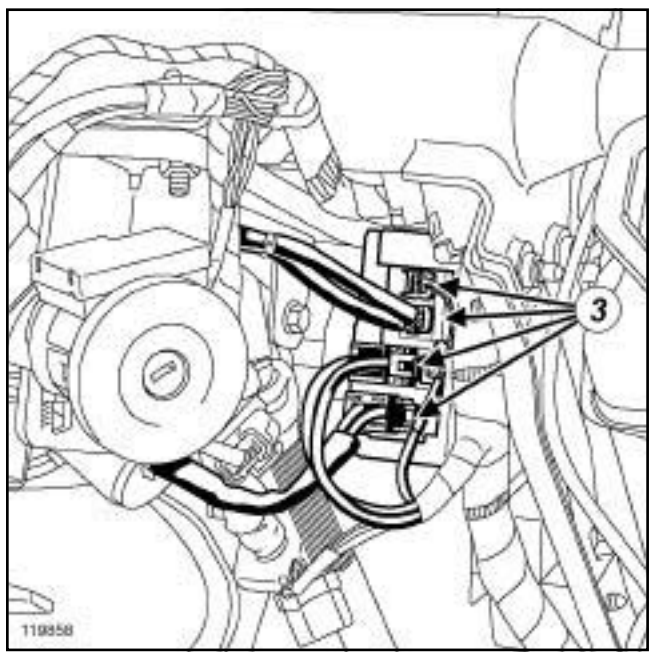
119711

❏ Disconnect the various connectors.

❏ Remove:

- the steering wheel lower cover bolt,
- the steering wheel lower cover (**2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

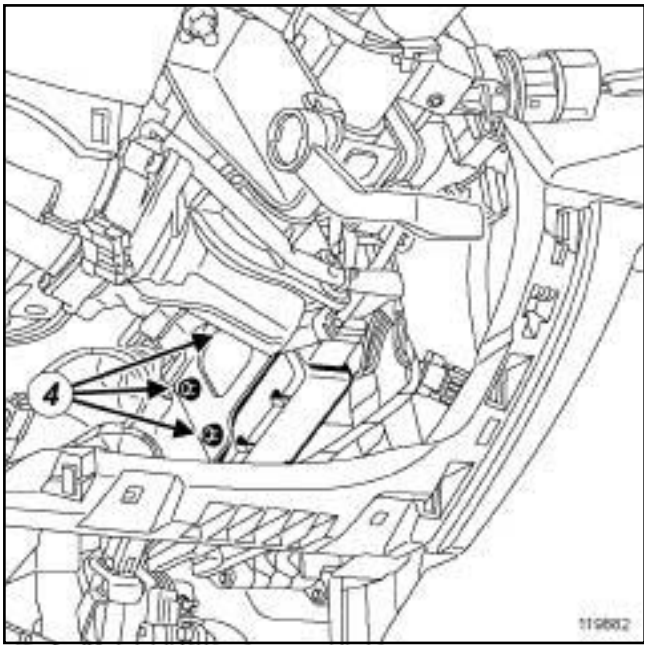


119858

❏ Unclip the locking clips of the connectors of the power-assisted steering computer.

❏ Disconnect the connectors (**3**) of the power-assisted steering computer.

LEFT-HAND DRIVE



119882

❏ Remove:

- the power-assisted steering computer bolts (**4**) ,
- the power-assisted steering computer,

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the power-assisted steering computer.

❏ Connect the power-assisted steering computer connectors.

❏ Fasten the locking clips of the connectors of the power-assisted steering computer.

II - FINAL OPERATION.

❏ Refit the steering wheel lower cover.

❏ Connect the various connectors.

❏ Clip:

- the dashboard lower trim,
- the fuse access flap.

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

❏ When replacing the electric power-assisted steering computer, perform the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (36B, Power-assisted steering).

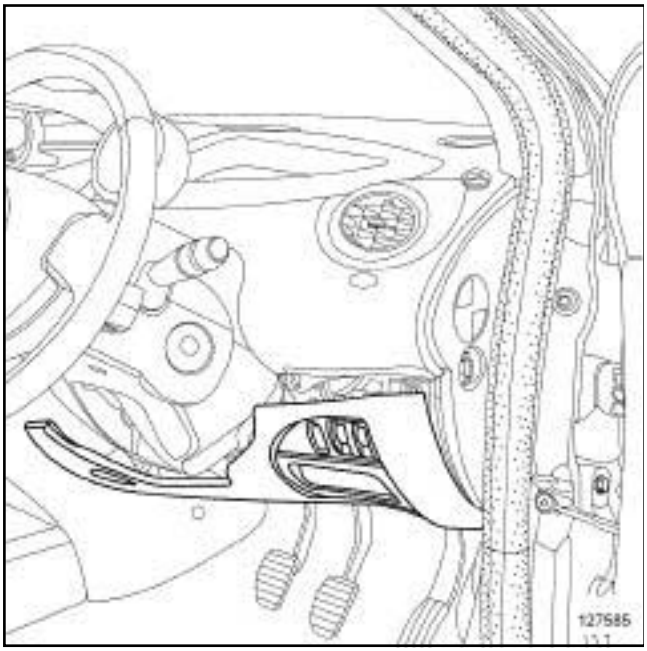
RIGHT-HAND DRIVE

Equipment required
Diagnostic tool

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

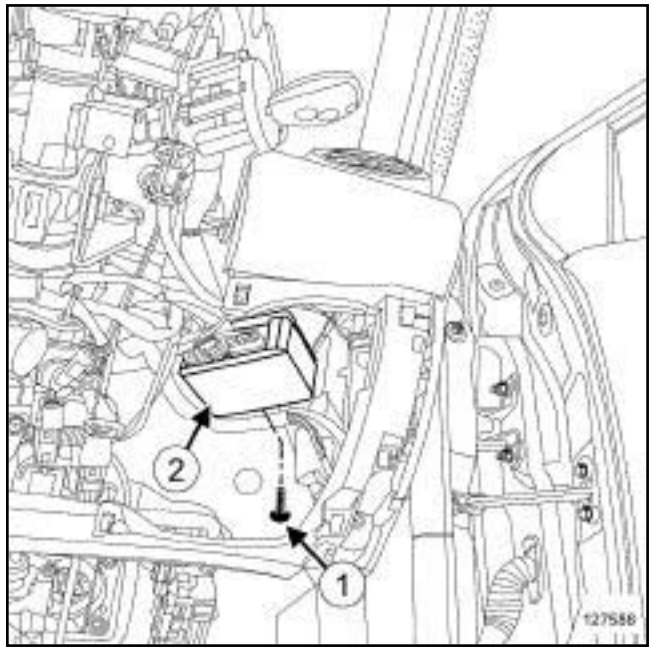


127585

❏ Unclip the dashboard lower trim

❏ Disconnect the various connectors.

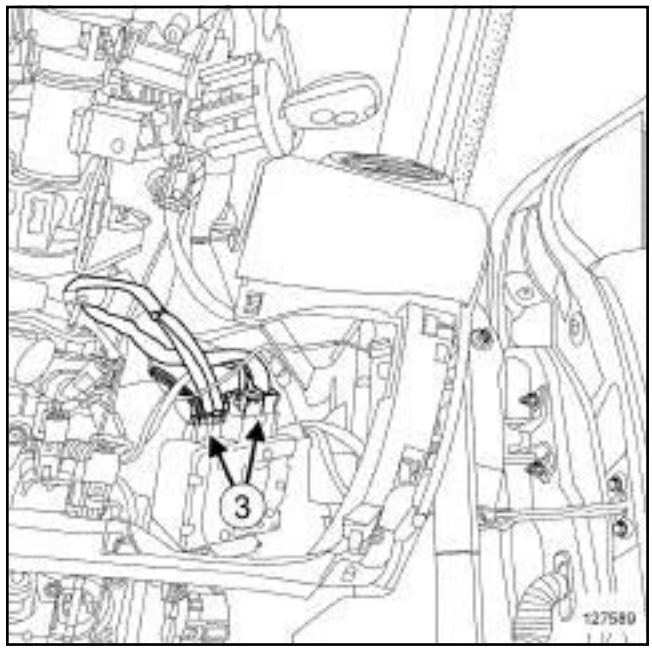
II - OPERATION FOR REMOVAL OF PART CONCERNED



127588

❏ Remove the bolt (**1**) of the support of the power-assisted steering computer.

❏ Separate the "support - computer" assembly (**2**) .



127589

❏ Unclip the locking clips of the connectors of the power-assisted steering computer.

❏ Disconnect the connectors (**3**) of the power-assisted steering computer.

❏ Remove the "support - computer" assembly.

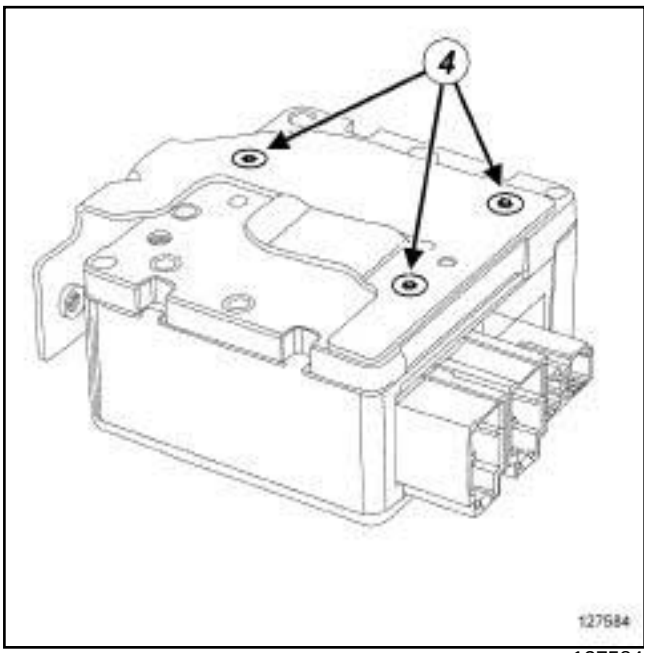
RIGHT-HAND DRIVE

For replacing the computer:

❑

Note:

The support of the power-assisted steering computer is not sold as a spare part. Always reuse the support with the new computer.



127584

❑ Remove:

- the power-assisted steering computer bolts (**4**) ,
- the power-assisted steering computer from its support.

REFITTING

I - REFITTING PREPARATION OPERATION

For replacing the computer:

❑ Refit the computer on its support.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Connect the power-assisted steering computer connectors.

❑ Fasten the locking clips of the connectors of the power-assisted steering computer.

❑ Refit the "support - computer" assembly.

III - FINAL OPERATION.

❑ Connect the various connectors.

❑ Clip on the dashboard lower trim.

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

❑ When replacing the power-assisted steering computer, perform the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (36B, Power-assisted steering).

JB1 or JH1 or JH3 or JR5

Tightening torques ▽	
brake fluid reservoir bolt	**4 Nm**
master cylinder nuts on the brake servo	**25 Nm**
rigid brake pipe unions on the master cylinder	**15 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**) (02A, Lifting equipment).

❏ Remove:

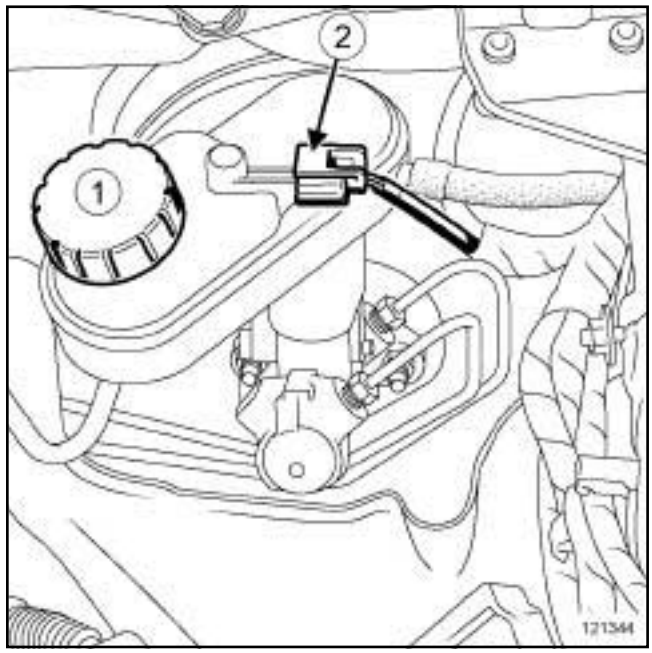
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

K4M

❏ Remove:

- the injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the injection computer support.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121344

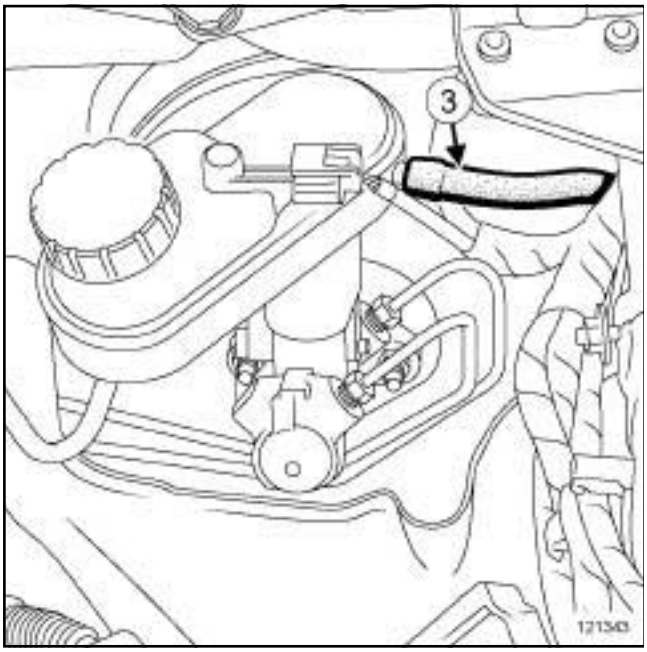
❏ Remove the fuel filler cap from the brake fluid reservoir (**1**) .

❏ Disconnect the brake fluid level sensor connector (**2**) .

❏ Drain the brake fluid reservoir with a syringe.

JB1 or JH1 or JH3 or JR5

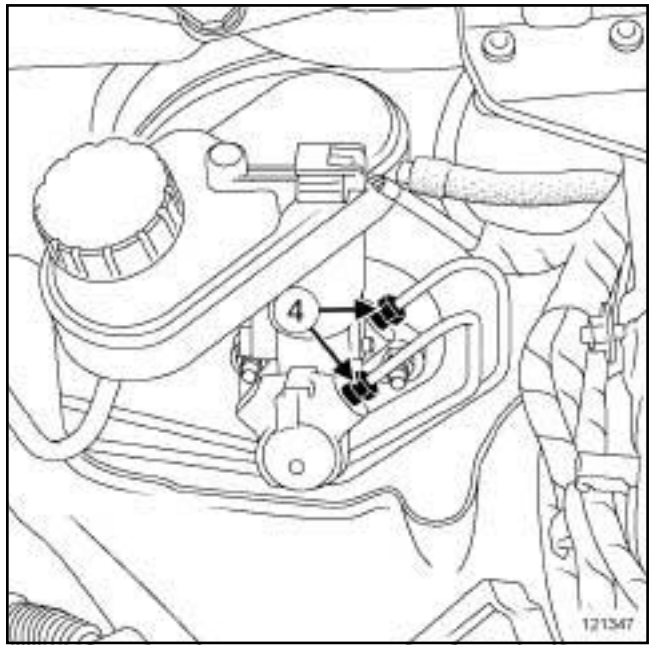
JH3 or JR5



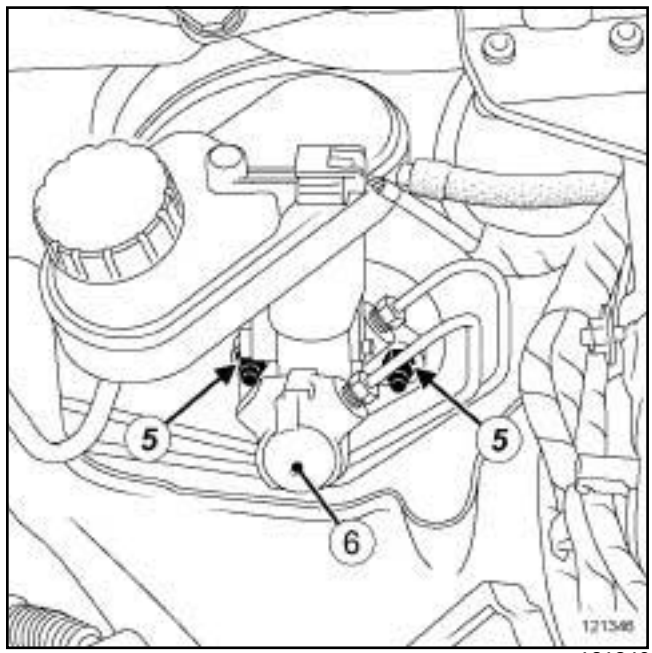
121343

❏ Remove the clutch master cylinder supply pipe (**3**) .

❏ Fit blanking plugs to the brake fluid reservoir and the clutch master cylinder supply pipe.



121347



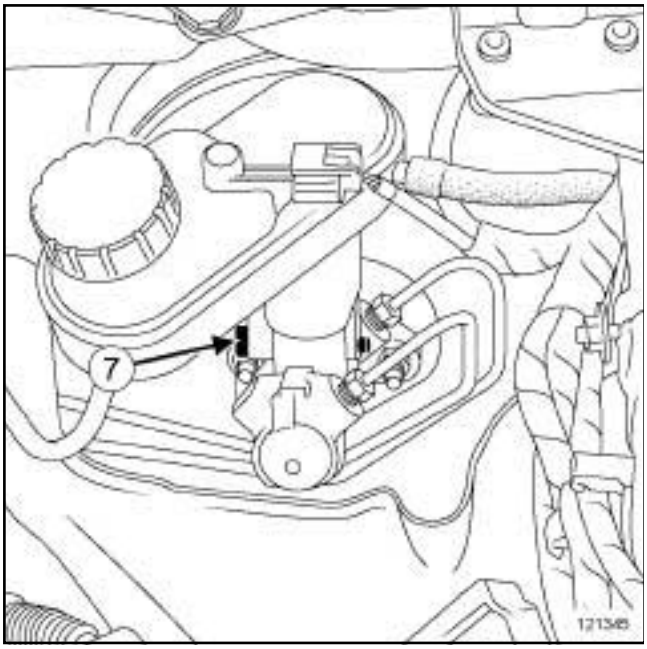
121346

❏ Place a container under the master cylinder to collect the brake fluid.

❏ Remove:

- the rigid brake pipe unions (**4**) on the master cylinder,
- the master cylinder nuts (**5**) on the brake servo,
- the master cylinder (**6**) and the brake fluid reservoir.

JB1 or JH1 or JH3 or JR5



121345

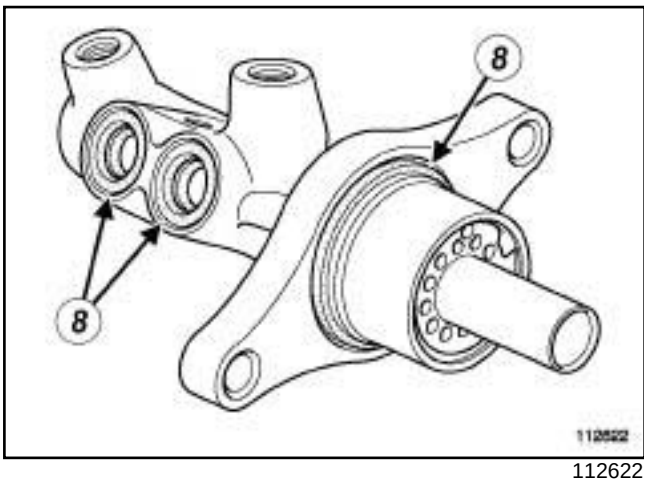
❏ Using the workbench, remove:

- the brake fluid reservoir bolt (**7**) ,
- the brake fluid reservoir.

❏ Fit blanking plugs on the master cylinder.

REFITTING

I - REFITTING PREPARATION OPERATION



112622

❏ Always replace the master cylinder seals (**8**) .

❏ Remove the blanking plugs from the master cylinder.

❏ Carefully pre-fill the master cylinder with the recommended brake fluid (see **30A**, **General information**, **Brake fluid: Specifications**, page **30A-18**) .

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the brake fluid reservoir,
- the master cylinder making sure that the brake servo shaft is correctly aligned with the master cylinder shaft,
- the rigid brake pipe unions on the master cylinder.

❏ Tighten to torque:

- the **brake fluid reservoir bolt (4 Nm)**,
- the **master cylinder nuts on the brake servo (25 Nm)**,
- the **rigid brake pipe unions on the master cylinder (15 Nm)**.

JH3 or JR5

❏ Remove the blanking plugs from the brake fluid reservoir supply pipe and the clutch master cylinder.

❏ Refit the clutch master cylinder supply pipe.

❏ Connect the brake fluid level sensor connector.

III - FINAL OPERATION.

K4M

❏ Refit:

- the injection computer mounting,
- the injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

❏ Fill up the brake fluid reservoir.

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

JH3 or JR5

❏ Bleed the clutch circuit (see **37A**, **Mechanical component controls**, **Clutch circuit: Bleed**, page **37A-54**) .

❏ Refit:

- the filler cap of the brake fluid reservoir.

JB1 or JH1 or JH3 or JR5

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

RIGHT-HAND DRIVE

Tightening torques ▽	
brake fluid reservoir bolt	**4 Nm**
master cylinder bolts on the brake servo	**25 Nm**
rigid brake pipe unions on the master cylinder	**15 Nm**

WARNING

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

REMOVAL

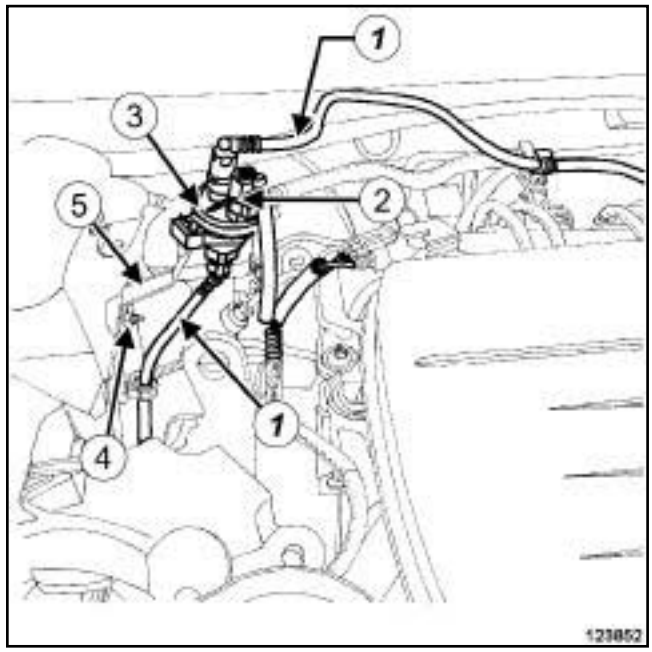
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (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).

D4F or D7F or K4M



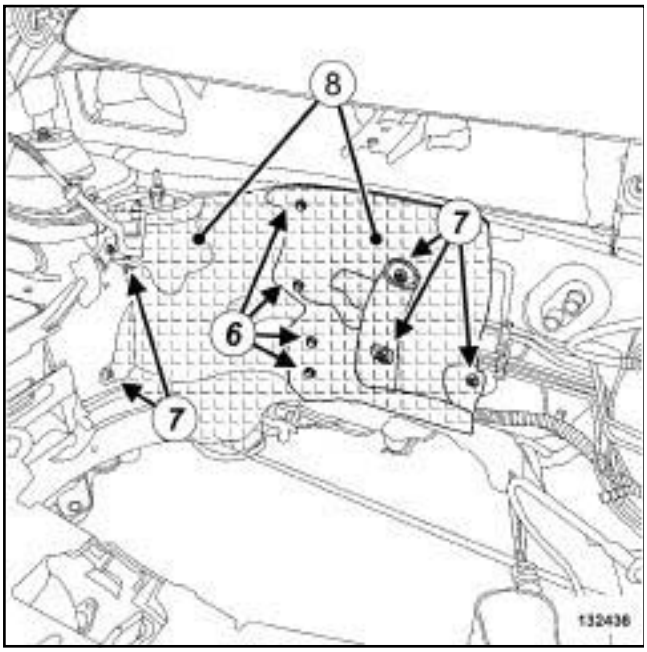
123852

❏ Remove:

- the fuel vapour recirculation solenoid valve pipes (**1**) ,
- the fuel vapour recirculation solenoid valve connector (**2**) ,
- the fuel vapour recirculation solenoid valve (**3**) ,
- the fuel vapour recirculation solenoid valve support nut (**4**) ,
- the fuel vapour recirculation solenoid valve support (**5**) .

RIGHT-HAND DRIVE

K4M

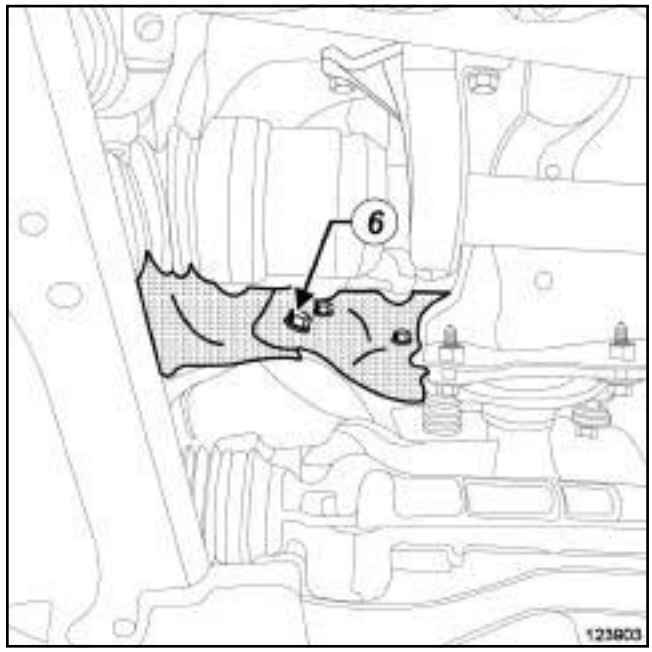


132436

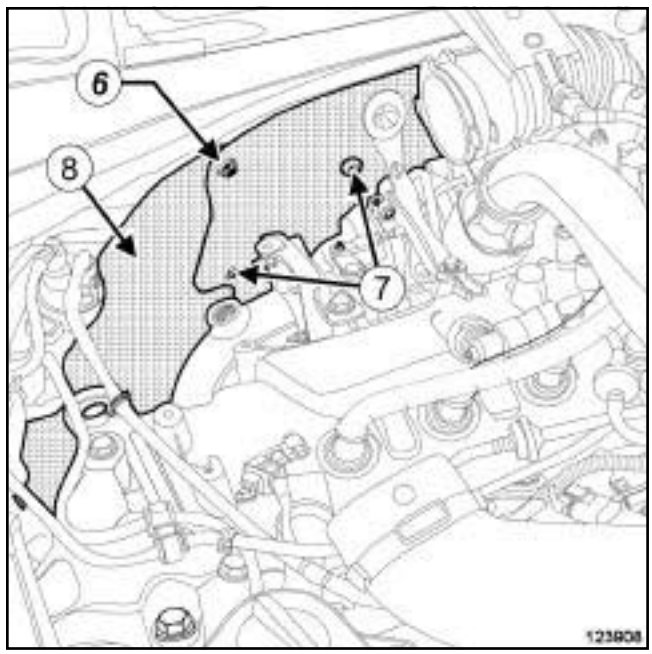
❑ Remove:

- the bolts (**6**) from the bulkhead heat-resistant protectors,
- the nuts (**7**) from the bulkhead heat-resistant protectors,
- the bulkhead heat-resistant protectors (**8**) .

D4F, and 780



123903



123908

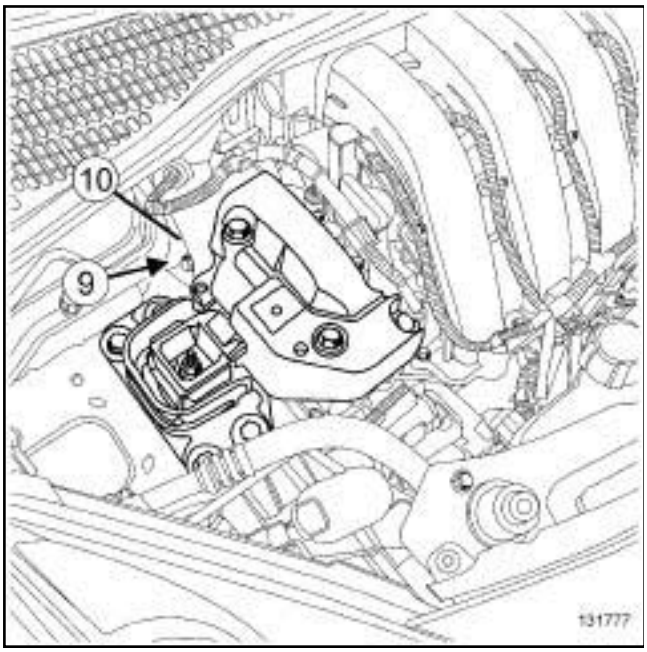
❑ Remove:

- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
- the bolts (**6**) from the bulkhead heat-resistant protector,
- the nuts (**7**) from the bulkhead heat-resistant protector,

RIGHT-HAND DRIVE

- the bulkhead heat-resistant protector (**8**) .

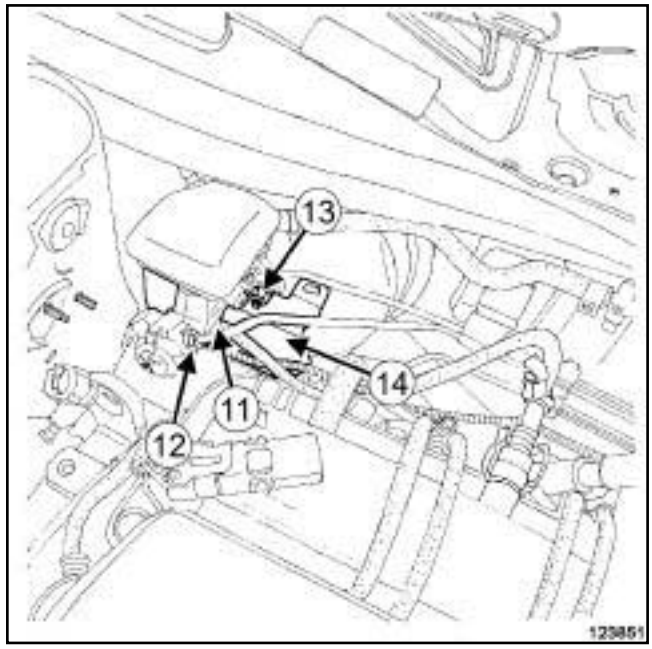
K4M



131777

❑ Remove:

- the timing cover bolt (**9**) ,
- the timing cover (**10**) .



123851

❑ Unclip:

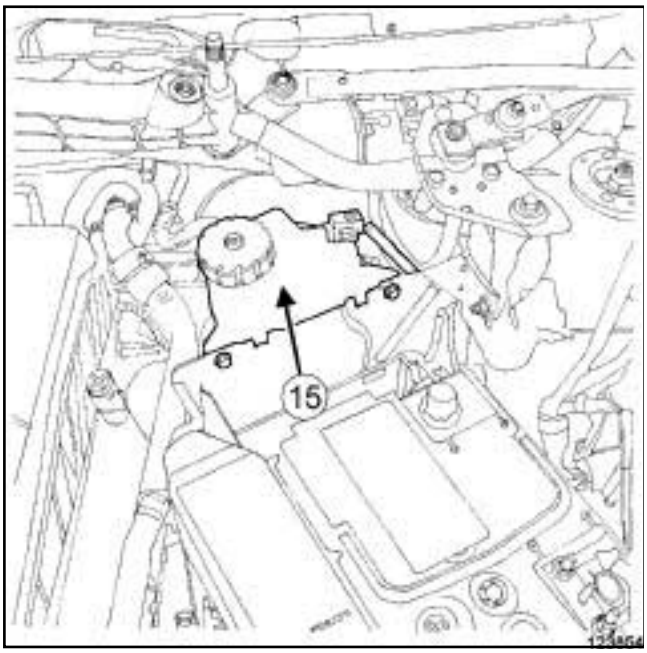
- the non-return valve from the support at (**11**) ,
- the ABS wiring from the support at (**12**) .

❑ Remove:

- the nut (**13**) from the non-return valve and ABS wiring support,
- the non-return valve and ABS wiring support (**14**) .

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED

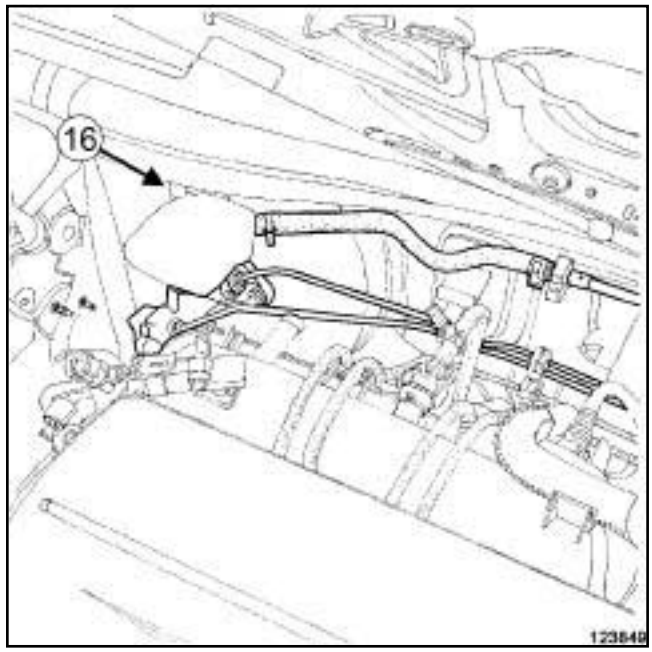


123854

❏ Drain the secondary brake fluid reservoir (**15**) with a syringe.

❏ Place a container under the brake master cylinder to collect the brake fluid from the main reservoir.

JH3 or JR5

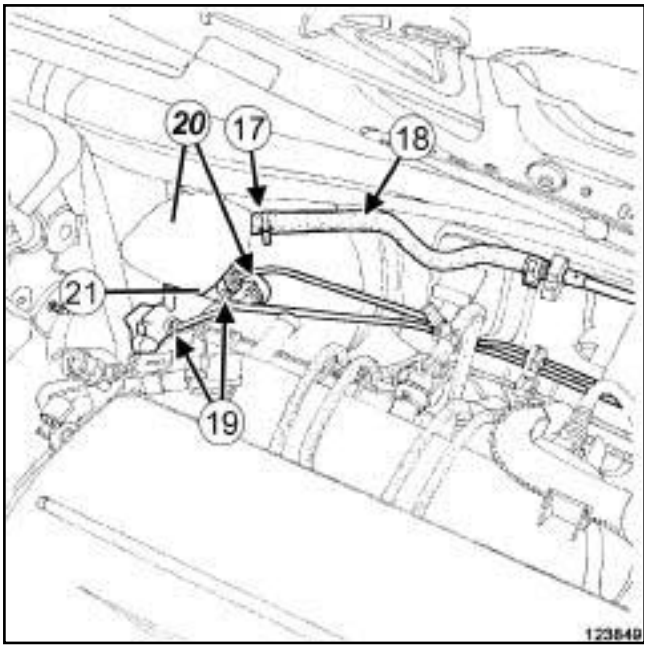


123849

❏ Remove the supply pipe (**16**) from the clutch master cylinder.

❏ Fit blanking plugs to the brake fluid reservoir and the clutch master cylinder supply pipe.

RIGHT-HAND DRIVE



123849

❏ Remove:

- the clip (**17**) from the reservoir connecting pipe,
- the reservoir connecting pipe (**18**) ,
- the rigid brake pipe unions (**19**) on the master cylinder,
- the master cylinder nuts (**20**) on the brake servo,
- the “master cylinder - reservoir” assembly.

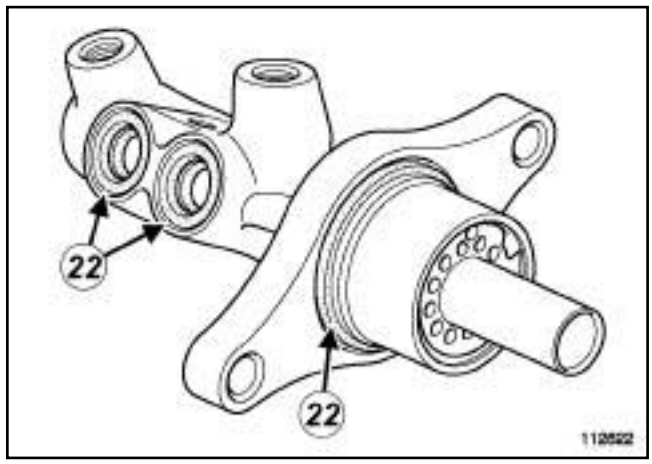
❏ Fit blanking plugs to the master cylinder, the main brake fluid reservoir supply pipe and the brake fluid reservoir connecting pipe.

❏ Remove:

- the bolt (**21**) from the main brake fluid reservoir,
- the main brake fluid reservoir from the master cylinder.

REFITTING

I - REFITTING PREPARATION OPERATION



112622

❏ Always replace the master cylinder seals (**22**) .

❏ Remove the blanking plugs from the master cylinder, the main brake fluid reservoir supply pipe and the brake fluid reservoir connecting pipe.

❏ Carefully pre-fill the master cylinder with the recommended brake fluid (see **30A**, **General information**, **Brake fluid: Specifications**, page **30A-18**) .

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the brake fluid reservoir to the master cylinder,
- the "master cylinder - reservoir" assembly, aligning the brake servo shaft with the master cylinder shaft,
- the rigid brake pipe unions on the master cylinder.

❏ Tighten to torque:

- the **brake fluid reservoir bolt (4 Nm)**,
- the **master cylinder bolts on the brake servo (25 Nm)**,
- the **rigid brake pipe unions on the master cylinder (15 Nm)**.

❏ Refit:

- the brake fluid reservoir connecting pipe,
- the brake fluid reservoir connecting pipe clip.

RIGHT-HAND DRIVE

JH3 or JR5

❏ Remove the blanking plugs from the brake fluid reservoir and the clutch master cylinder supply pipe.

❏ Refit the clutch master cylinder supply pipe.

III - FINAL OPERATION.

K4M

❏ Refit:

- the timing cover,
- the bulkhead heat-resistant protectors.

D4F, and 780

❏ Refit the bulkhead heat-resistant protector.

❏ Clip onto the support:

- the ABS wiring,
- the non-return valve.

❏ Refit the support of the non-return valve and the ABS wiring.

D4F or D7F or K4M

❏ Refit:

- the fuel vapour recirculation solenoid valve support,
- the fuel vapour recirculation solenoid valve,
- the petrol vapour recirculation solenoid valve connector,
- the fuel vapour recirculation solenoid valve pipes.

❏ Refit:

- 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).

❏ Fill up the secondary brake fluid reservoir.

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

RIGHT-HAND DRIVE

REMOVAL

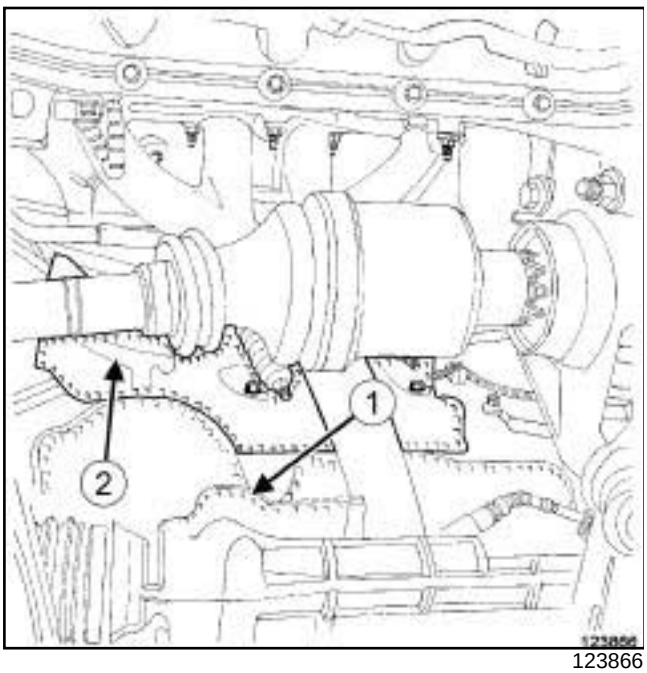
I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove:

- 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**) (MR 412, 55A, Exterior protection),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

D4F or D7F

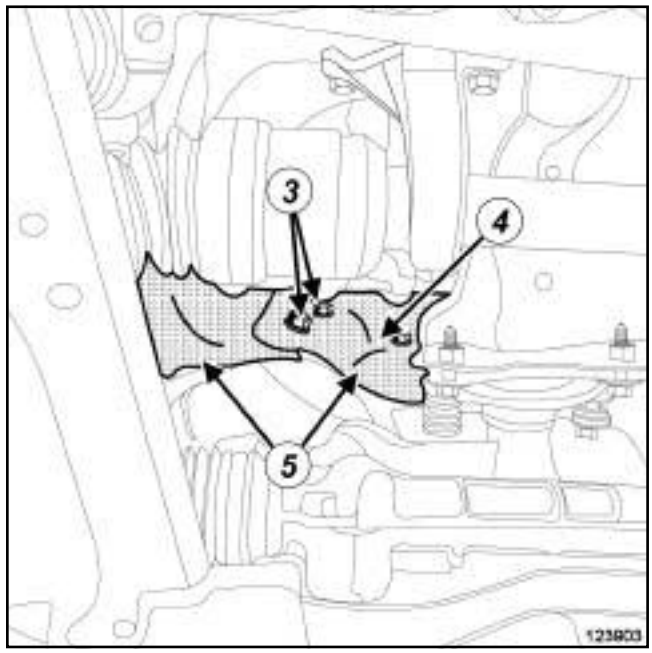


123866

❑ Remove:

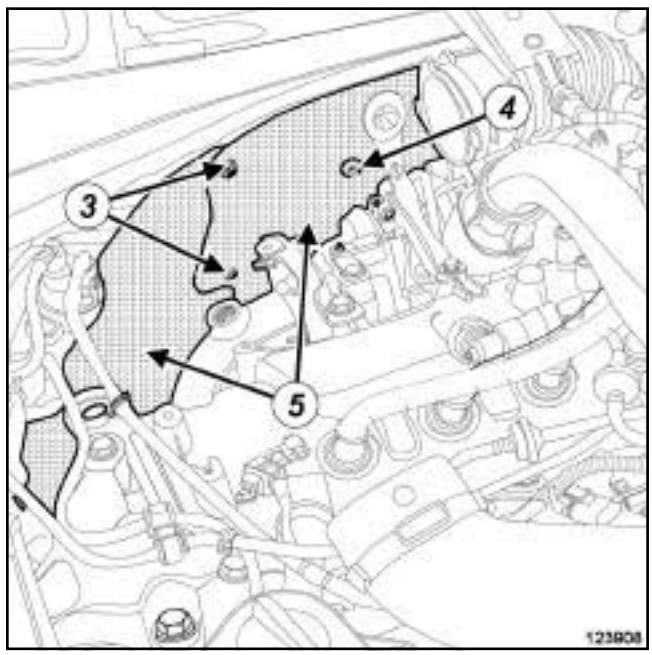
- the bolts (**1**) from the bulkhead heat-resistant protector,
- the bulkhead heat-resistant protector (**2**) .

D4F, and 780



123903

123903



123908

123908

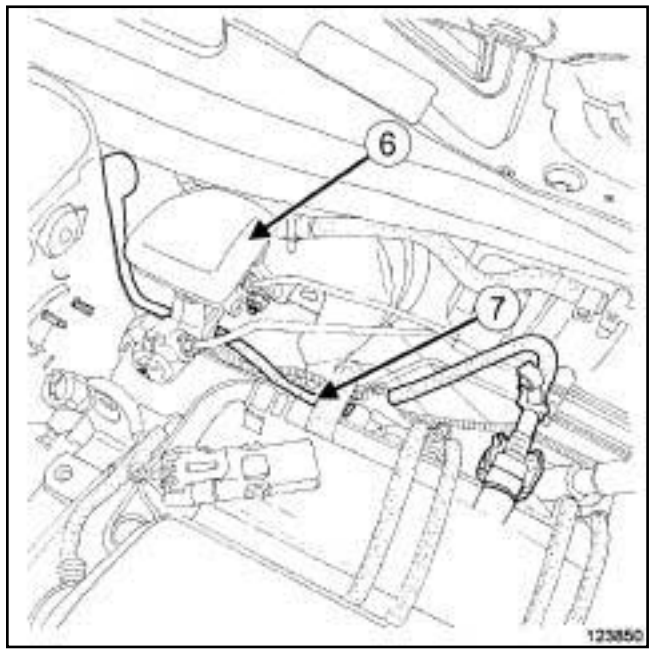
❑ Remove:

- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the bolts (**3**) from the bulkhead heat-resistant protectors,
- the nuts (**4**) from the bulkhead heat-resistant protectors,

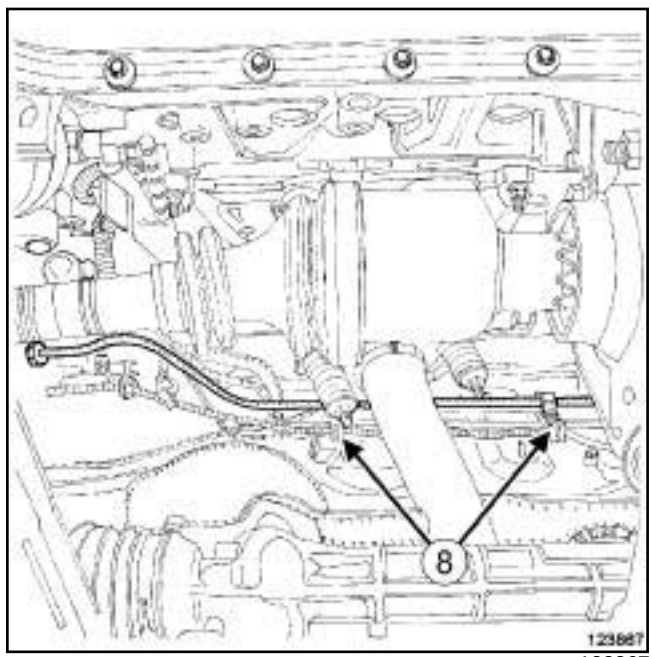
RIGHT-HAND DRIVE

- the bulkhead heat-resistant protectors (**5**) .

II - REMOVAL OPERATION FOR PART CONCERNED



123850



123867

❑ Disconnect the non-return valve pipe:

- from the brake servo at (**6**) ,
- from the intake distributor at (**7**) .

❑ Unclip the non-return valve at (**8**) .

❑ Remove the non-return valve from the vehicle.

RIGHT-HAND DRIVE

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the non-return valve.

❏ Clip on the non-return valve.

❏ Connect the non-return valve pipe:

- to the brake servo,
- to the intake distributor.

II - FINAL OPERATION.

D4F, and 780

❏ Refit:

- the bulkhead heat-resistant protectors,
- the bulkhead heat-resistant protector nuts,
- the bulkhead heat-resistant protector bolts,
- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .

D4F or D7F

❏ Refit:

- the bulkhead heat-resistant protector,
- the bulkhead heat-resistant protector bolts.

❏ Refit:

- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front right-hand wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

Tightening torques ▽	
brake servo nuts	**25 Nm**

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).

JH1

❏ Remove the gearbox computer (see **Sequential gearbox converter: Removal - Refitting**) (21B, Sequential gearbox).

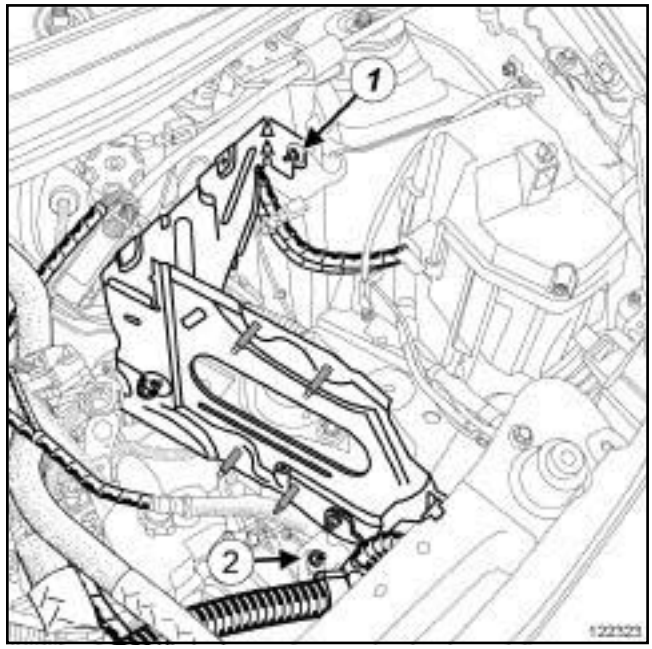
❏ Remove the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

D4F or D7F or K4M

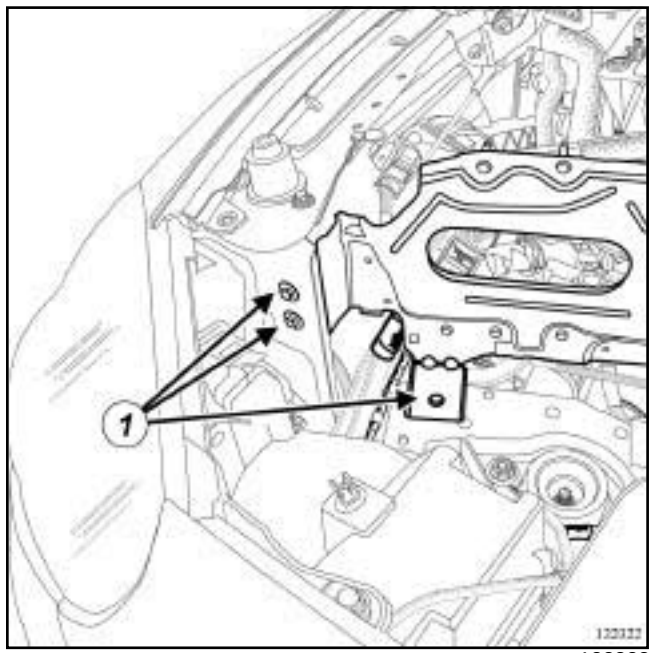
❏ Remove the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

K9K

❏ Remove the diesel injection computer (see **Diesel injection computer: Removal - Refitting**) (13B, Diesel injection).



122323

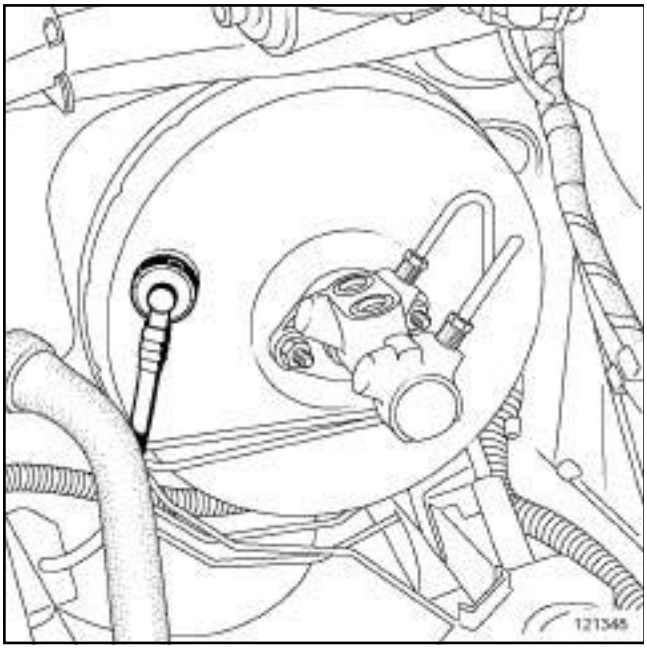


122322

❏ Remove:

- the injection computer mounting bolts (**1**) ,
- the engine harness bracket nut (**2**) ,
- the injection computer mounting,
- the master cylinder (see **37A**, **Mechanical component controls**, **Master cylinder: Removal - Refitting**, page **37A-1**) .

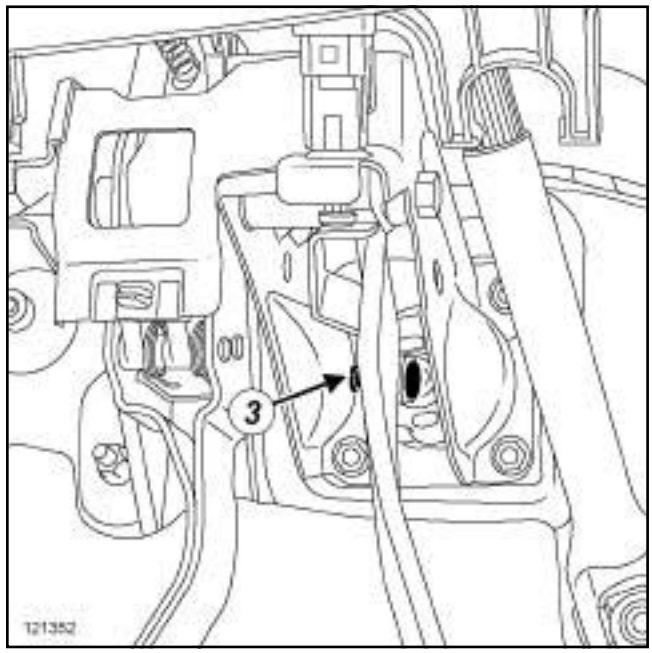
JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE



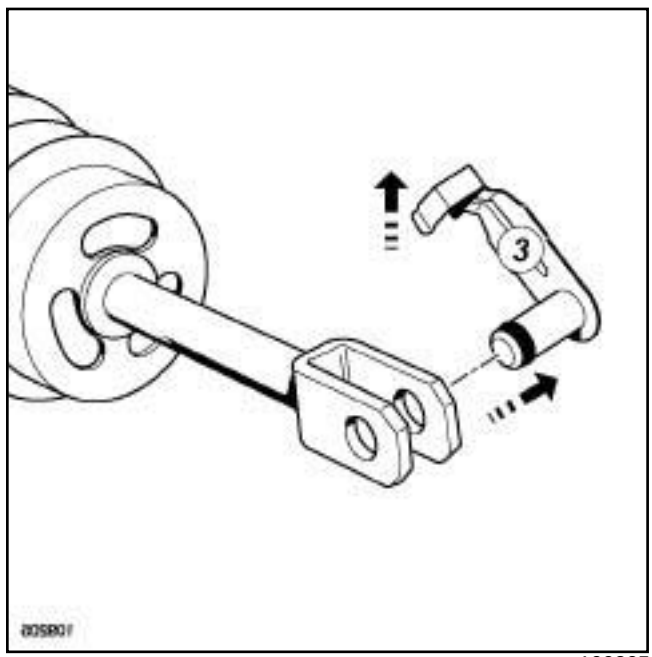
121348

❑ Disconnect the brake servo non-return valve.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121352

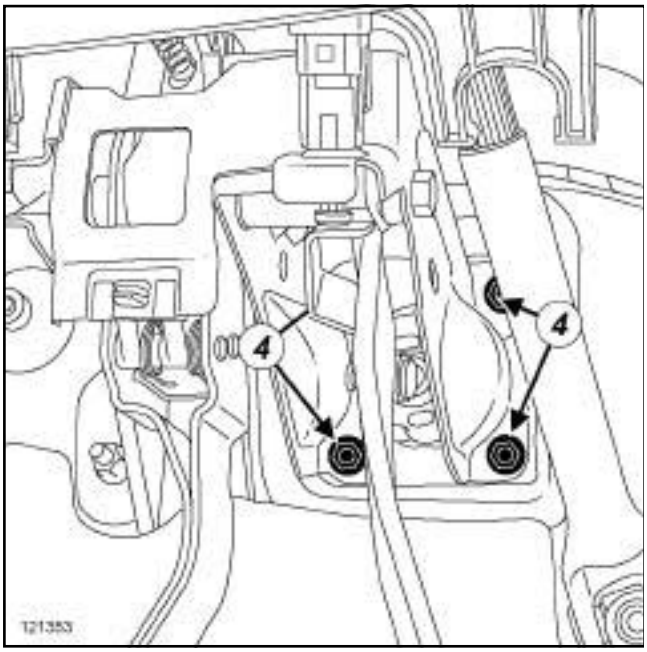


109205

❑ Remove the connecting shaft (**3**) between the brake pedal and the brake servo rod, after tilting the connecting shaft upwards, move the ring with a flat-blade screwdriver.

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

JB1 or JH3 or JR5

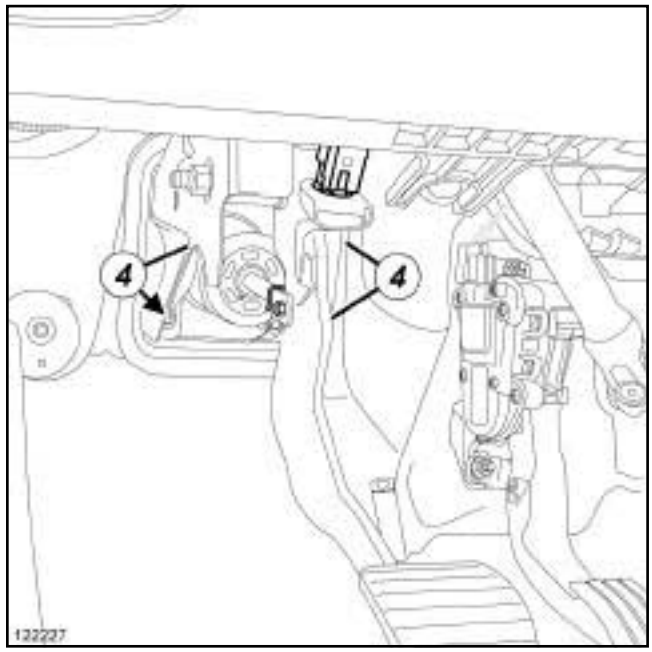


121353

❑ Remove:

- the nuts (**4**) from the brake servo on the « brake pedal - clutch » assembly,
- the brake servo.

JH1



122227

❑ Remove:

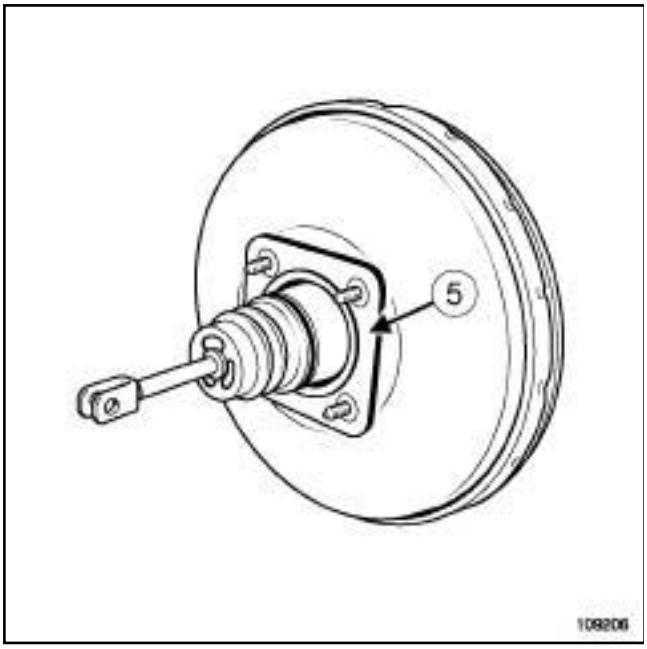
- the brake servo nuts (**4**) from the brake pedal plate,
- the brake servo.

REFITTING

I - REFITTING PREPARATION OPERATION

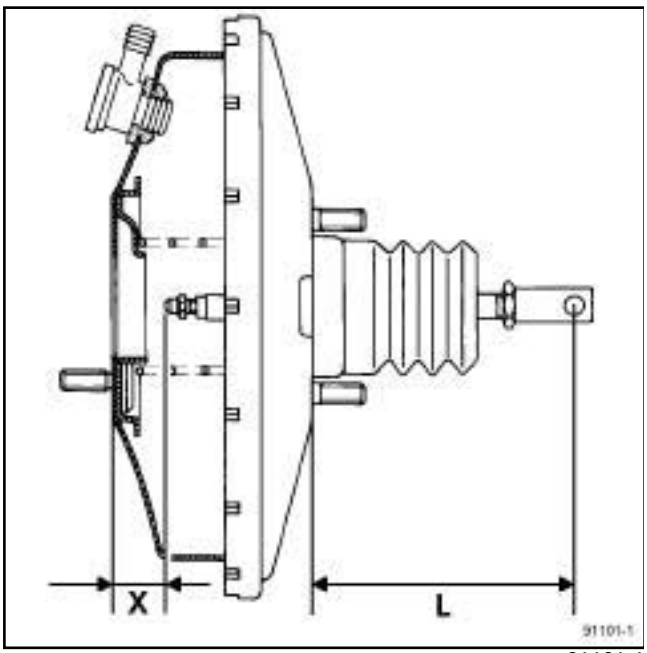
❑ The shaft connecting the brake servo pushrod and the brake pedal must be replaced every time it is removed.

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE



109206

❏ Check that the brake servo seal (**5**) is in place and replace the seal if it is faulty.



91101-1

❏ Before refitting, check the dimension **L = 153.3 mm**.

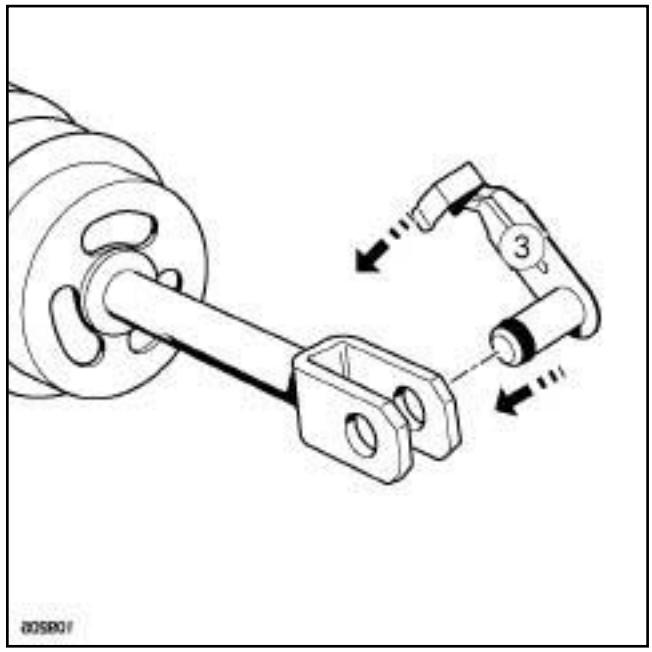
❏ If the dimension is not correct, replace the brake servo.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the brake servo,
- the brake servo nuts (**3**) .

❏ Torque tighten the **brake servo nuts (25 Nm)**.



109205

❏ Refit the new connecting shaft (**3**) between the brake pedal and the brake servo rod from right to left and from top to bottom.

III - FINAL OPERATION.

❏ Refit:

- the non-return valve on the brake servo,
- the master cylinder (see **37A**, **Mechanical component controls**, **Master cylinder: Removal - Refitting**, page **37A-1**) ,
- the injection computer mounting,
- the engine wiring bracket.

D4F or D7F or K4M

❏ Refit the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

K9K

❏ Refit the diesel injection computer (see **Diesel injection computer: Removal - Refitting**) (13B, Diesel injection).

JB1 or JH1 or JH3 or JR5, and LEFT-HAND DRIVE

❏ Refit the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

JH1

❏ Refit the gearbox computer (see **Sequential gearbox converter: Removal - Refitting**) (21B, Sequential gearbox).

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

RIGHT-HAND DRIVE

Special tooling required	
Mot. 1672	Lower engine support.

Equipment required
refrigerant charging station

Tightening torques ▽	
"brake - clutch pedal" assembly nuts	**21 Nm**
brake servo nuts	**21 Nm**

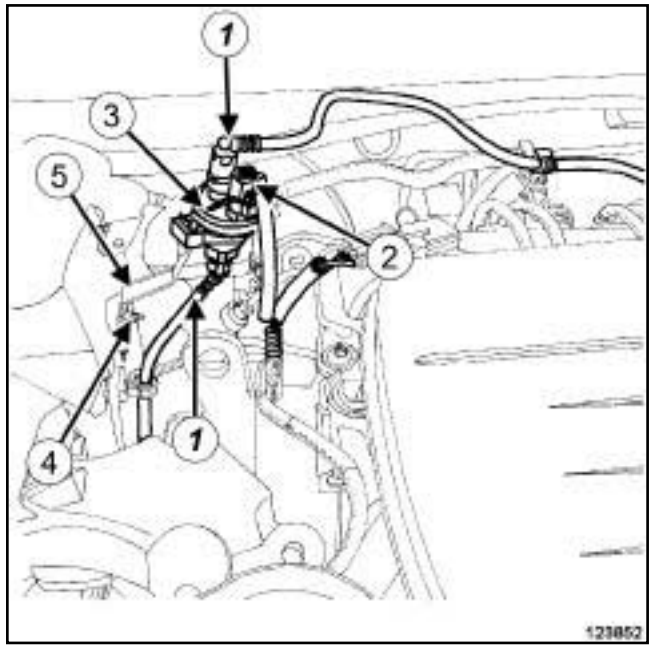
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

- 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 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).



123852

❏ Remove:

- the fuel vapour recirculation solenoid valve pipes (**1**) ,
- the fuel vapour recirculation solenoid valve connector (**2**) ,
- the fuel vapour recirculation solenoid valve (**3**) ,
- the fuel vapour recirculation solenoid valve support bolt (**4**) ,
- the fuel vapour recirculation solenoid valve support (**5**) ,
- the brake master cylinder (see **37A**, **Mechanical component controls**, **Master cylinder: Removal - Refitting**, page **37A-1**) ,
- the brake servo non-return valve (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

D4F or D7F

❏ Remove the ignition coil (see **Coils: Removal - Refitting**) (17A, Ignition).

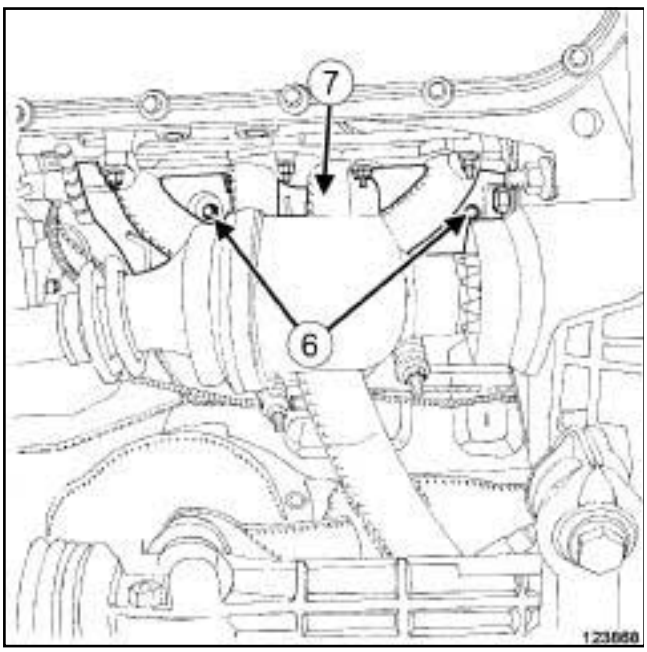
RIGHT-HAND DRIVE

AIR CONDITIONING or CLIMATE CONTROL

❑ Drain the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Remove the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

D7F



123868

❑ Remove:

- the air filter (see **Air filter: Removal - Refitting**) (12A, Fuel mixture),
- the bolts (**6**) of the air filter unit heat-resistant protector,
- the air filter unit heat-resistant protector (**7**) .

D4F

❑ Remove:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

D4F, and 780

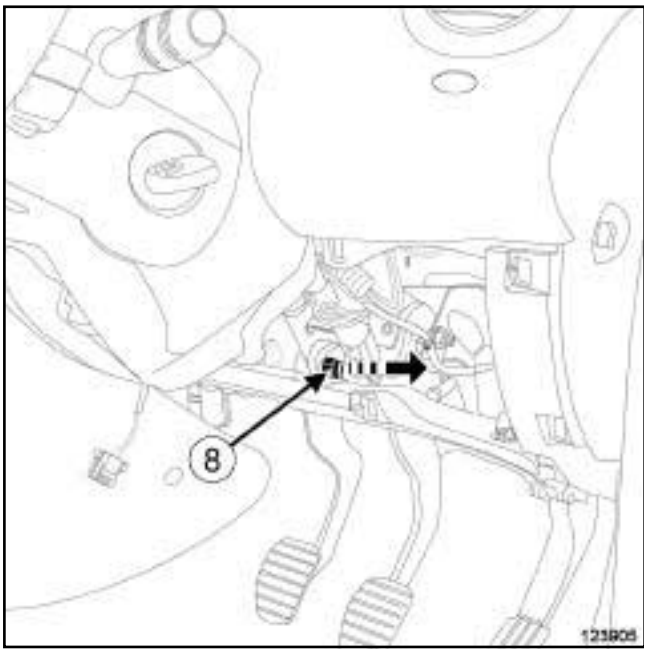
❑ Remove the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust).

K4M

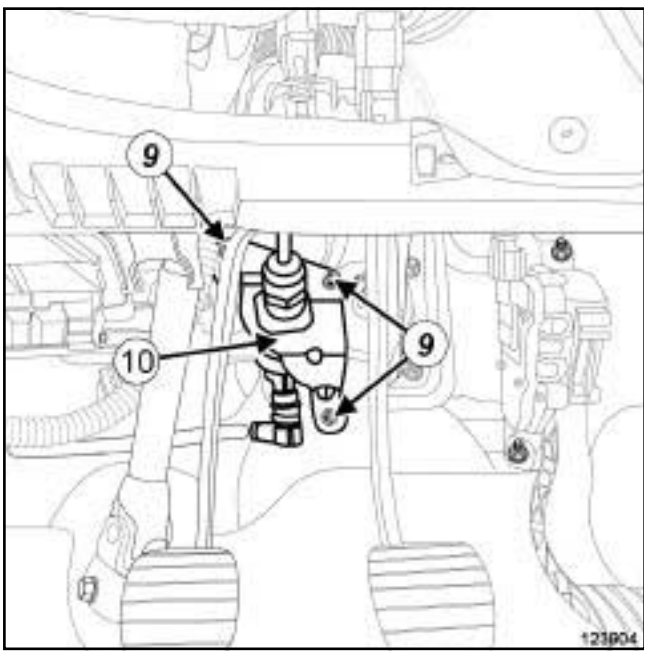
❑ Remove the exhaust manifold (see **Exhaust manifold: Removal - Refitting**) (12A, Fuel mixture).

RIGHT-HAND DRIVE

JH3 or JR5



123905

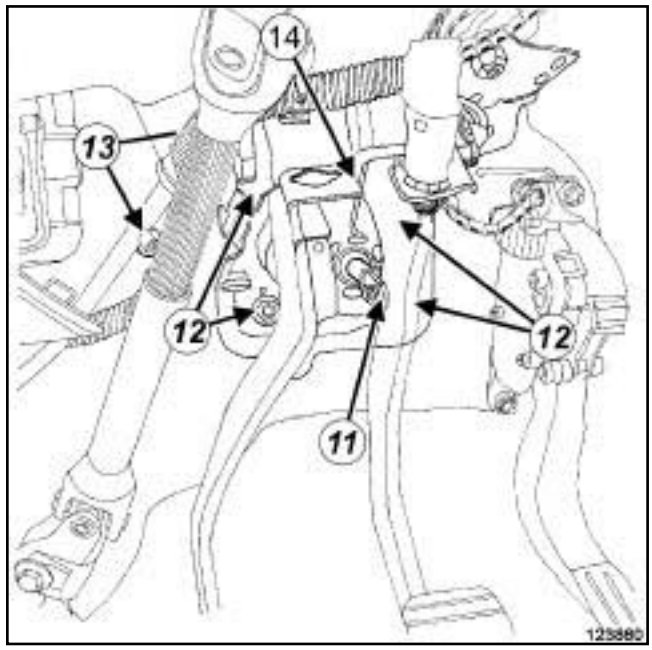


123904

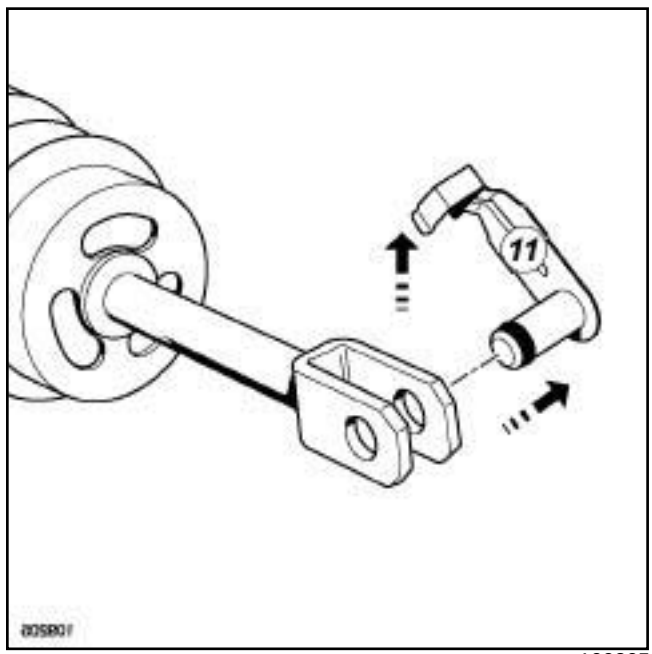
❏ Remove:

- the clutch master cylinder rod (**8**) from the clutch pedal,
- the clutch master cylinder support bolts (**9**) ,
- the clutch master cylinder support (**10**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



123860



109205

❏ Remove:

- the dual safety connecting shaft (**11**) between the brake servo pushrod and the brake pedal; after tilting the connecting shaft upwards, move the ring using a flat screwdriver,
- the brake servo nuts (**12**) .

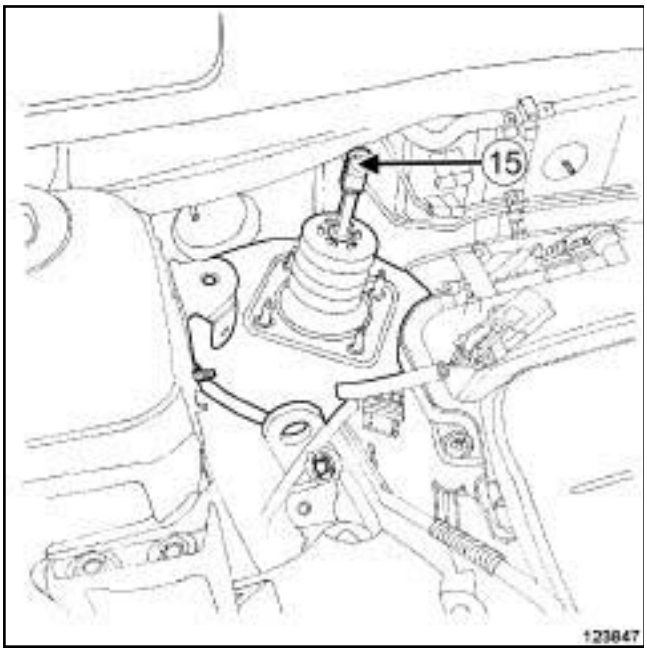
❏ Undo the “brake - clutch pedal” assembly nuts (**13**) as far as possible.

❏ Move the (**14**) “brake - clutch pedal” assembly away from the bulkhead.

RIGHT-HAND DRIVE

D4F

❑ Fully lower the engine using the **(Mot. 1672)**.



123847

❑ Pivot the brake servo so that the servo pushrod (**15**) is oriented upwards.

D4F

❑ Remove the brake servo by moving the engine forward as far as possible.

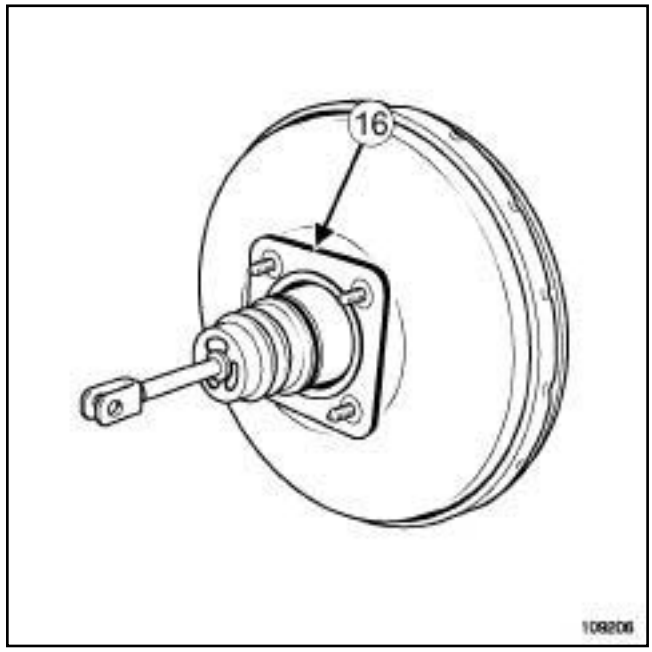
K4M

❑ Remove the brake servo from underneath the vehicle.

❑ Remove the brake servo.

REFITTING

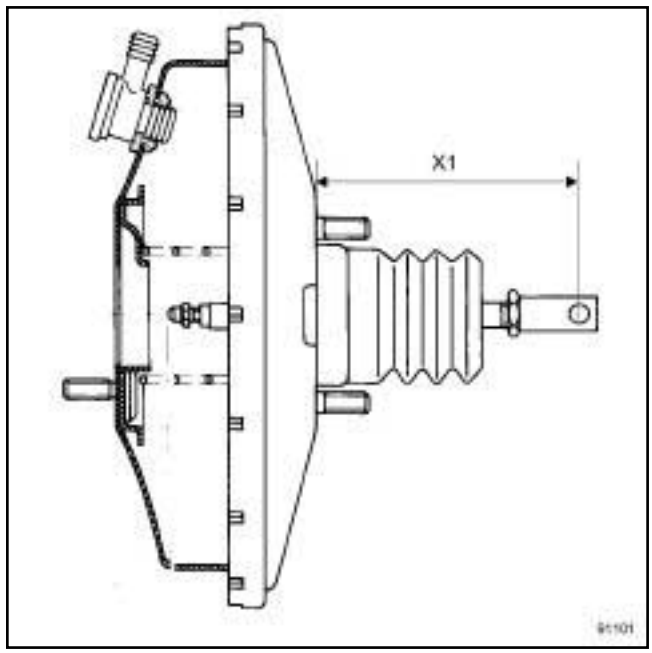
I - REFITTING PREPARATION OPERATION



109206

❑ Check that the brake servo seal (**16**) is in place and replace the seal if it is faulty.

❑ The dual safety connecting shaft between the brake servo pushrod and the brake pedal must be replaced every time it is removed.



91101

❑ Check the following dimension before refitting: (**X1**) = **132.6 mm**.

RIGHT-HAND DRIVE

II - REFITTING OPERATION FOR PART CONCERNED

D4F

❑ Position the brake servo by moving the engine forward as far as possible and tilting the pushrod upwards.

K4M

❑ Refit the brake servo from underneath the vehicle.

❑ Refit the brake servo.

❑ Position the “brake - clutch pedal” assembly on the bulkhead.

❑ Torque tighten the **“brake - clutch pedal” assembly nuts (21 Nm)**.

❑ Refit:

- the new dual safety connecting shaft between the brake servo pushrod and the brake pedal from right to left and from top to bottom,
- the brake servo nuts.

❑ Torque tighten the **brake servo nuts (21 Nm)**.

III - FINAL OPERATION.

JH3 or JR5

❑ Refit:

- the clutch master cylinder support,
- the clutch master cylinder support bolts,
- the clutch master cylinder rod on the clutch pedal.

K4M

❑ Refit the exhaust manifold (see **Exhaust manifold: Removal - Refitting**) (12A, Fuel mixture).

D4F, and 780

❑ Refit the catalytic converter (see **Catalytic converter: Removal - Refitting**) (19B, Exhaust).

D4F

❑ Refit:

- the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

D7F

❑ Refit:

- the air filter box heat-resistant protector,
- the air filter box heat-resistant protector bolts,
- the air filter (see **Air filter: Removal - Refitting**) (12A, Fuel mixture).

AIR CONDITIONING or CLIMATE CONTROL

❑ Refit the "dehydrator reservoir - expansion valve" connection (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

❑ Fill the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

D4F or D7F

❑ Refit the ignition coil (see **Coils: Removal - Refitting**) (17A, Ignition).

RIGHT-HAND DRIVE

❑ Refit:

- the brake servo non-return valve (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) ,
- the brake master cylinder (see **37A**, **Mechanical component controls**, **Master cylinder: Removal - Refitting**, page **37A-1**) ,
- the fuel vapour recirculation solenoid valve support,
- the fuel vapour recirculation solenoid valve,
- the fuel vapour recirculation solenoid valve pipes,
- the fuel vapour recirculation solenoid valve connector,
- 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),
- 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**) .

K9K

Tightening torques ▽	
vacuum pump bolts	**25 Nm**

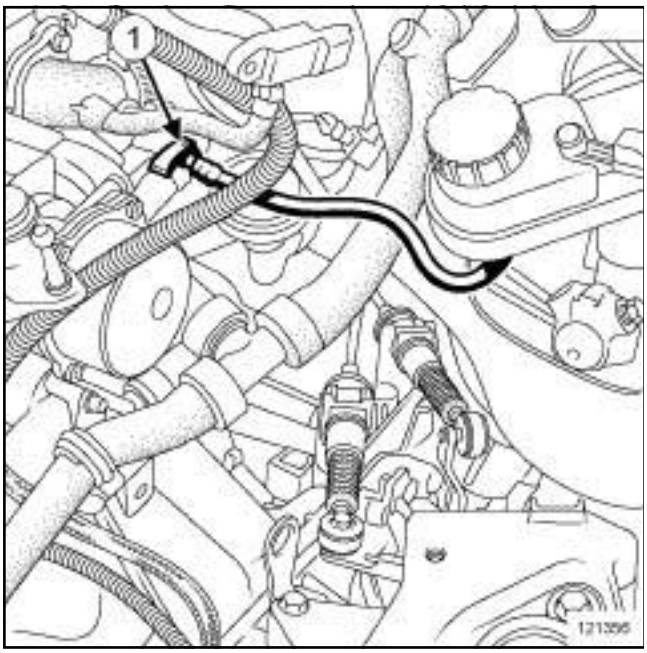
REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Remove:

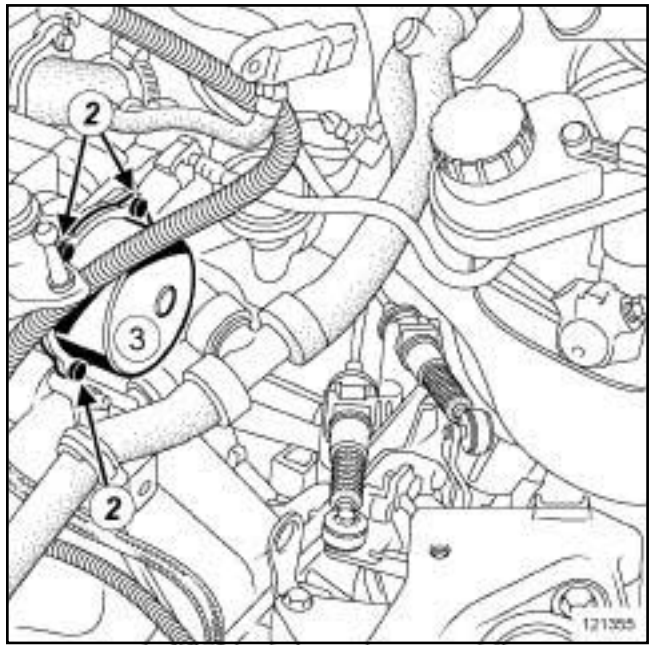
- the engine cover,
- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).

II - OPERATION FOR REMOVAL OF PART CONCERNED



121356

❏ Disconnect the brake servo pipe (**1**) from the vacuum pump.



121355

❏ Remove:

- the vacuum pump bolts (**2**) ,
- the vacuum pump (**3**) ,
- the vacuum pump seal.

WARNING
The seals must always be replaced.

REFITTING

I - REFITTING PREPARATIONS OPERATION

❏ Clean the vacuum pump sealing surface.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the vacuum pump seal,
- the vacuum pump,
- the vacuum pump bolts.

❏ Torque tighten the **vacuum pump bolts (25 Nm)**.

❏ Connect the brake servo pipe onto the vacuum pump.

K9K

III - FINAL OPERATION.

❑ Refit:

- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the engine cover.

I - LIST OF COMPONENTS

The pedal assembly consists of:

- an accelerator pedal (see **37A**, **Mechanical component controls**, **Accelerator pedal: Removal - Refitting**, page **37A-29**)
- a brake pedal switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**)

5-SPEED MANUAL SEQUENTIAL GEARBOX

- a brake pedal (see **37A**, **Mechanical component controls**, **Brake pedal: Removal - Refitting**, page **37A-31**)

5-SPEED MANUAL GEARBOX

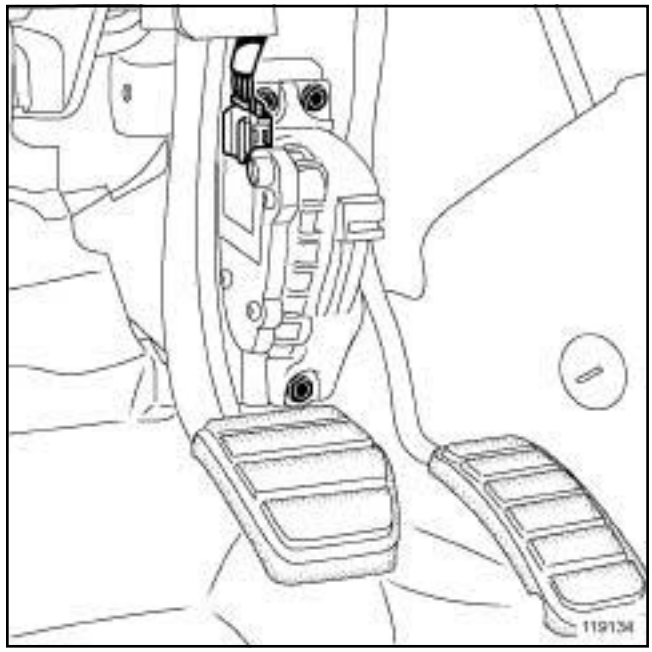
- a brake - clutch pedal assembly (see **37A**, **Mechanical component controls**, **Brake pedal: Removal - Refitting**, page **37A-31**)

CRUISE CONTROL

- a clutch pedal switch (see **37A**, **Mechanical component controls**, **Clutch pedal switch: Removal - Refitting**, page **37A-52**)

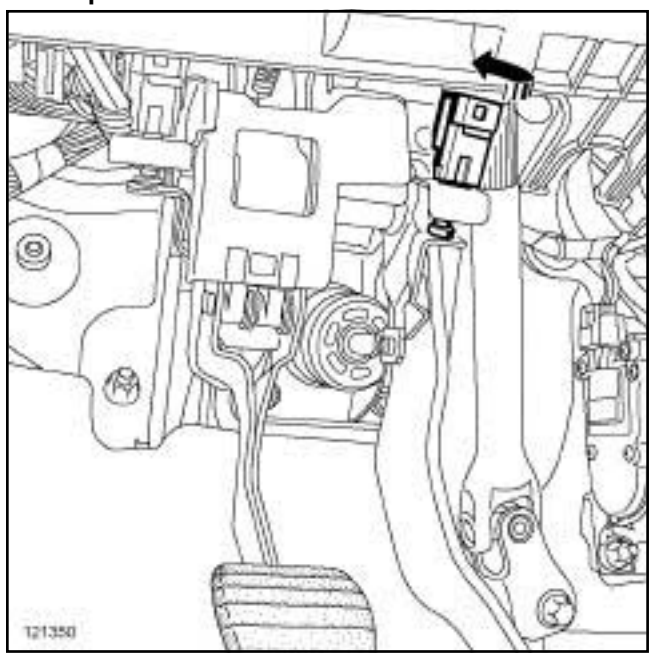
II - LOCATION OF COMPONENTS

Accelerator pedal



119134

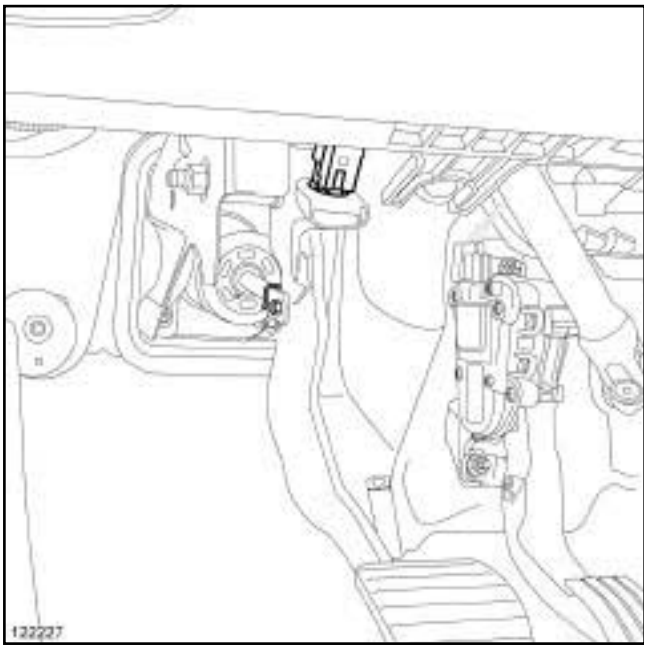
Brake pedal switch



121350

5-SPEED MANUAL SEQUENTIAL GEARBOX

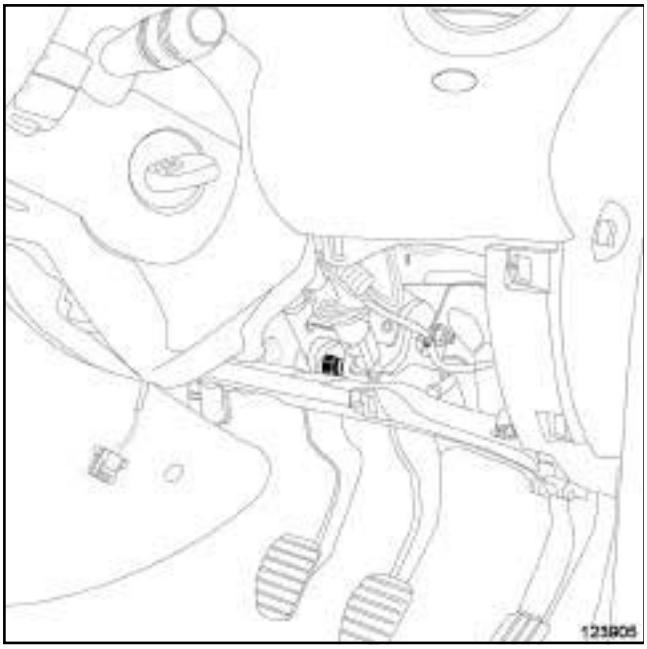
Brake pedal



122227

5-SPEED MANUAL GEARBOX

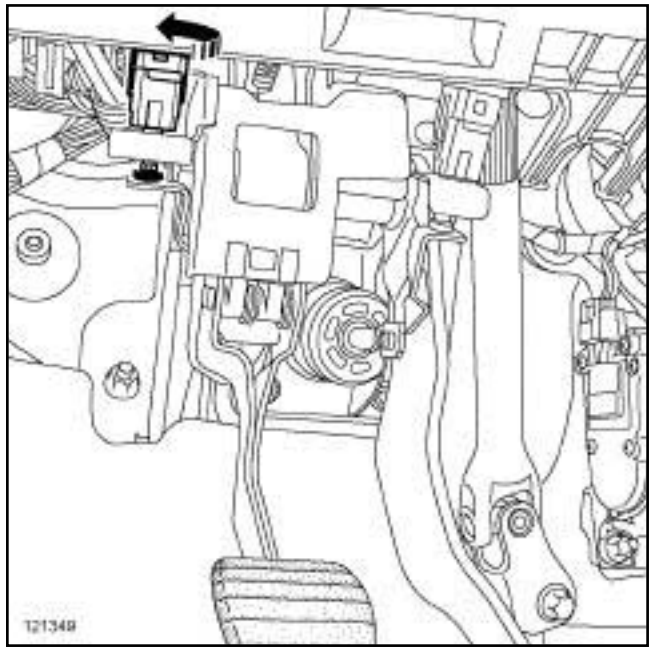
Brake - clutch pedal assembly



123905

CRUISE CONTROL

Clutch pedal switch



121349

Equipment required
heat stripper

Tightening torques ▽	
accelerator pedal nuts	**8 N.m**

REMOVAL

I - REMOVAL OPERATION FOR ALUMINIUM PEDAL PAD

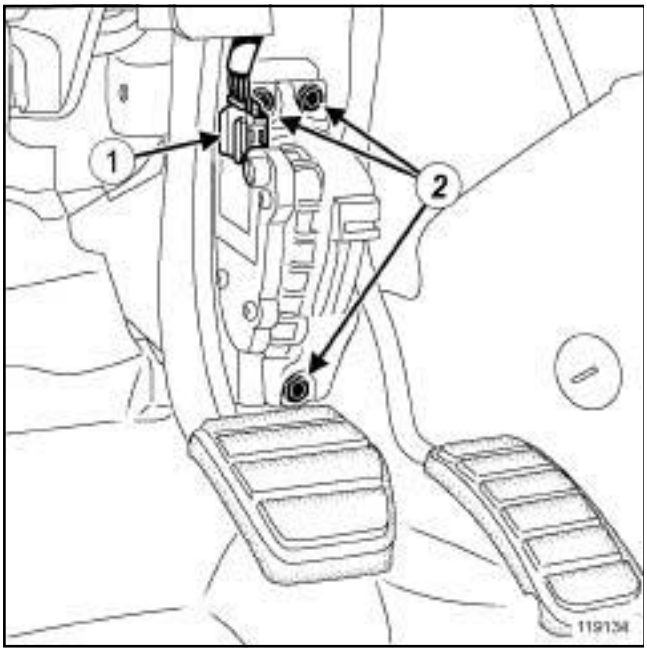
EQUIPMENT LEVEL SPORT

❏ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80°C.

❏ Remove the pad using a pair of pliers.

❏ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



119134

❏ Disconnect the accelerator pedal potentiometer connector (**1**) .

❏ Remove:

- the accelerator pedal nuts (**2**) ,
- the accelerator pedal.

REFITTING

I - REFITTING PREPARATION OPERATION

EQUIPMENT LEVEL SPORT

❏ Always replace the aluminium pedal pad each time it is removed.

II - REFITTING OPERATION FOR ALUMINIUM PEDAL PAD

EQUIPMENT LEVEL SPORT

❏ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

❏ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

❏ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

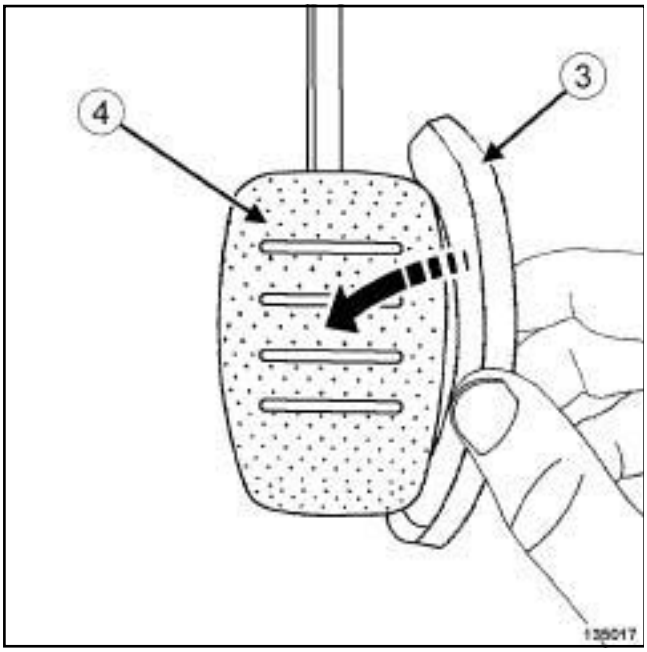
It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.



135017

❑ Bond the pedal pad (**3**) to the pedal (**4**) by pressing on the right-hand side.

Note:
Respect the range of motion when fitting.

Press the pad to ensure bonding.

III - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the accelerator pedal,
- the accelerator pedal nuts.

❑ Torque tighten the **accelerator pedal nuts (8 N.m)**.

❑ Connect the accelerator pedal potentiometer connector.

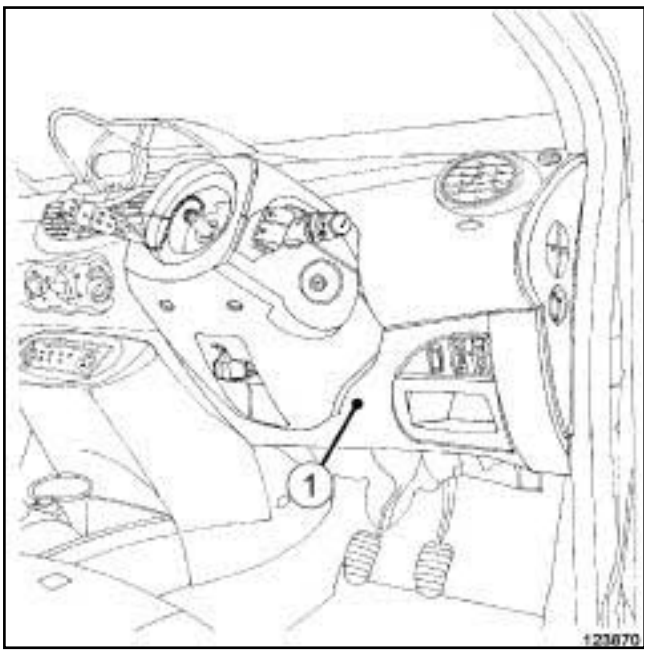
RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

Equipment required
heat stripper

Tightening torques ▽	
bolts of the « brake - clutch pedal assembly »	**21 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION



123870

❑ Remove:

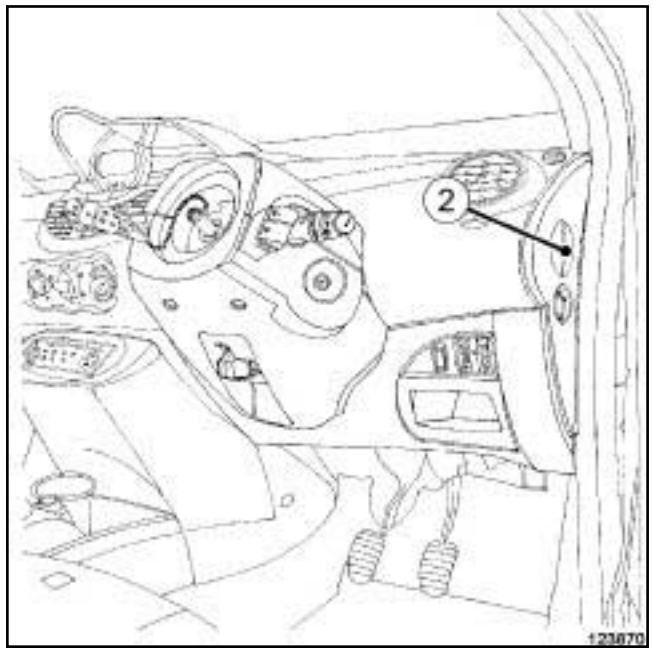
- the dashboard lower trim (**1**) ,
- the brake pedal switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**) .

JB1

❑ Remove the accelerator pedal (see **37A**, **Mechanical component controls**, **Accelerator pedal: Removal - Refitting**, page **37A-29**) .

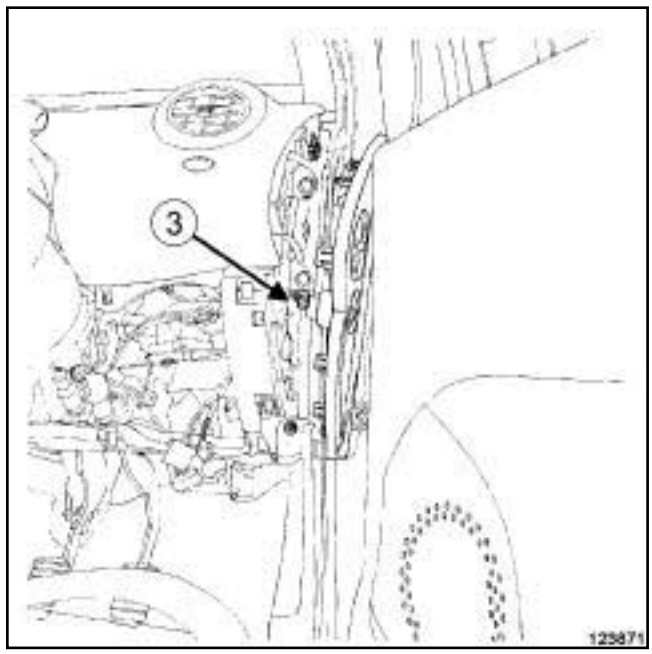
CRUISE CONTROL

❑ Remove the clutch pedal switch (see) .



123870

❑ Remove the dashboard side face (**2**) .

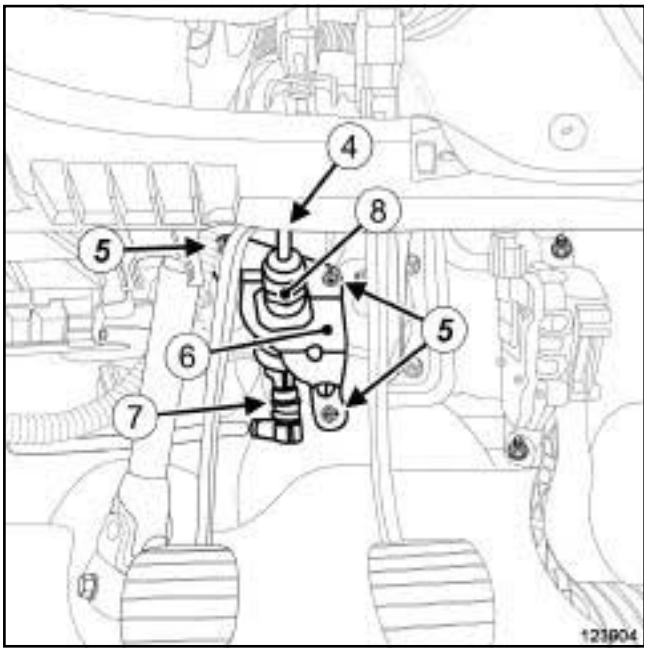


123871

❑ Disconnect the airbag inhibitor switch connector (**3**) .

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

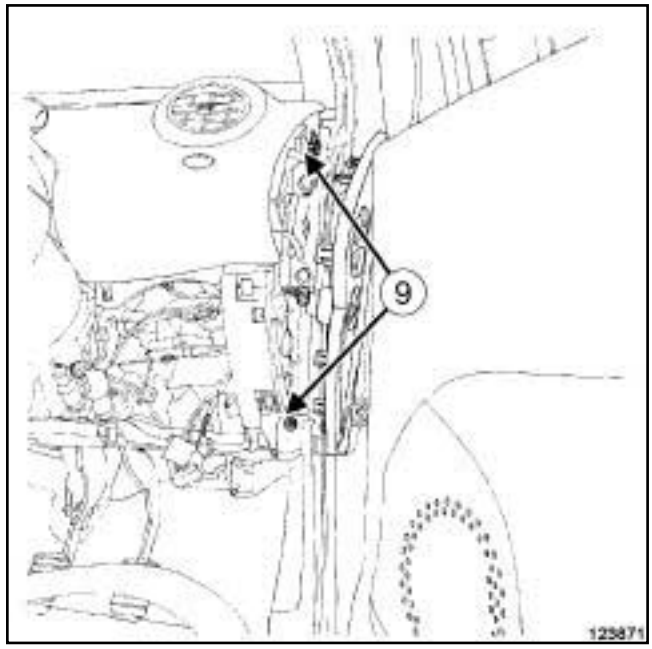
JH3 or JR5



123904

❑ Remove:

- the clutch master cylinder rod (**4**) ,
- the nuts (**5**) from the clutch master cylinder support,
- the clutch master cylinder support (**6**) ,
- the connecting clip (**7**) between the outlet pipe and the clutch master cylinder,
- the clutch master cylinder (**8**) .



123871

❑ Remove the dashboard bolts (**9**) .

❑ Move the dashboard away slightly.

II - REMOVAL OPERATION FOR THE ALUMINIUM PEDAL PADS

EQUIPMENT LEVEL SPORT

❑ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80˚C.

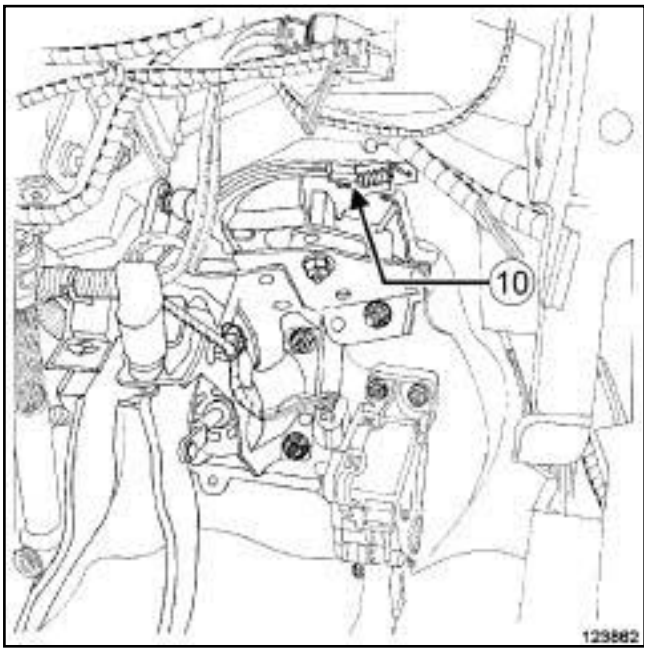
❑ Remove the pad using a pair of pliers.

❑ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

III - OPERATION FOR REMOVAL OF PART CONCERNED

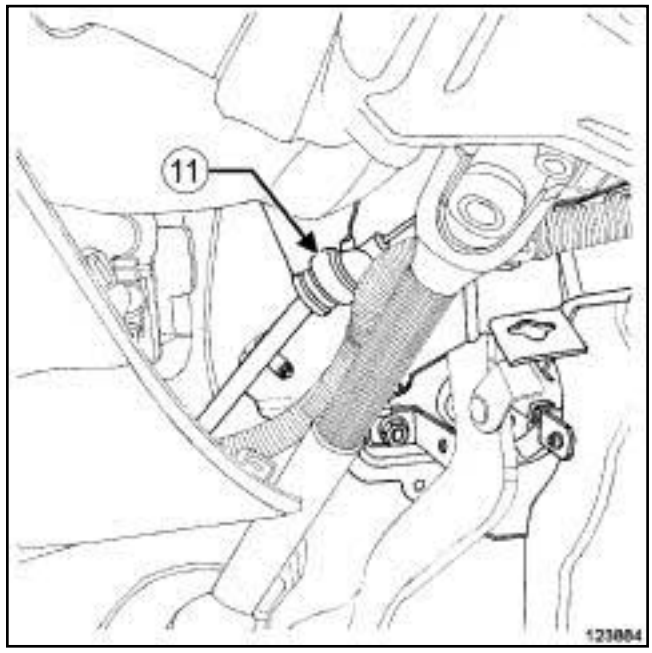
JB1



123862

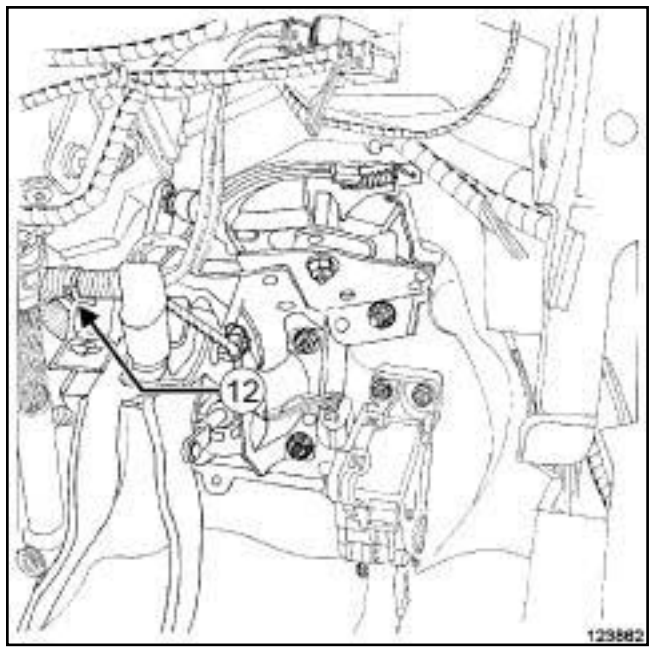
❑ Remove the clutch cable (**10**)

JB1



123864

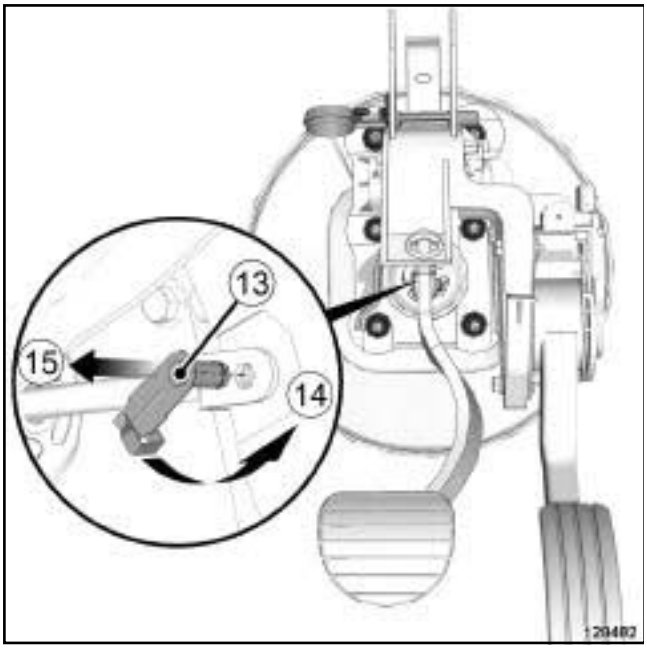
❑ Remove the sleeve stop (**11**)



123862

❑ Unclip the passenger compartment wiring (**12**) .

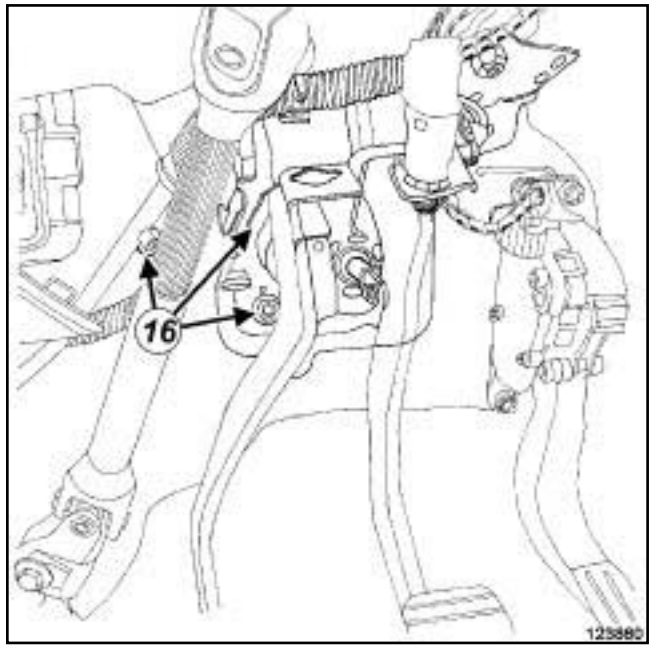
RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



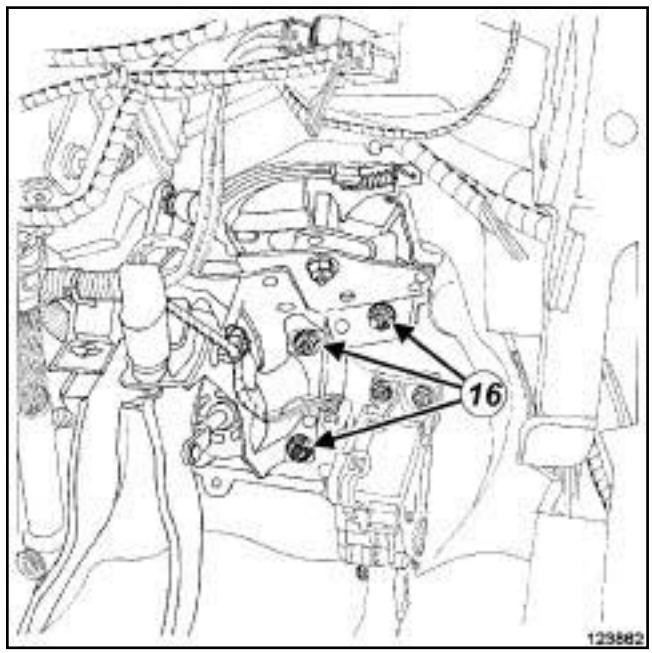
128482

❑ Remove the connecting shaft (**13**) between the brake pedal and the brake servo pushrod:

- unlock the shaft in accordance with (**14**) ,
- extract the shaft in accordance with (**15**) .



123860



123862

❑ Remove:

- the bolts (**16**) from the « brake - clutch pedal assembly » ,
- « the brake - clutch pedal assembly » .

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the **parts always to be replaced: Connecting shaft between the brake pedal and the brake servo pushrod**.

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

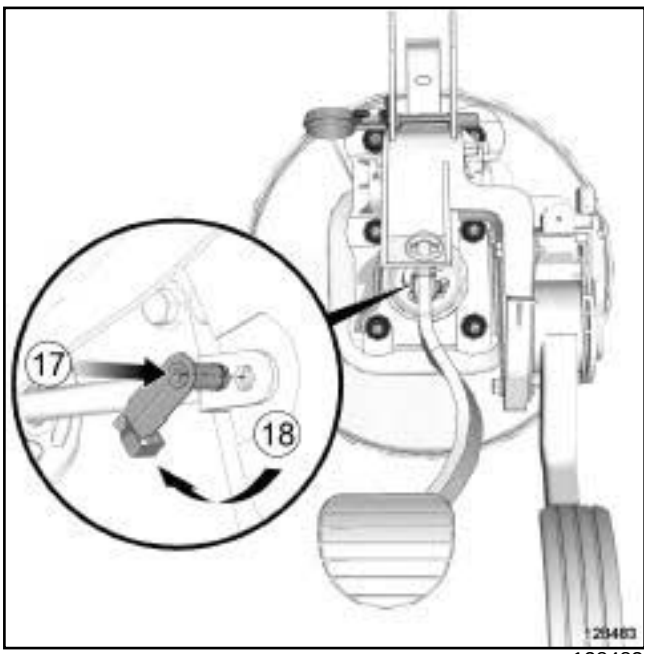
EQUIPMENT LEVEL SPORT

❑ Always replace the aluminium pedal pads after removing them.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the « brake - clutch pedal assembly » ,

❑ Torque tighten the **bolts of the « brake - clutch pedal assembly » (21 N.m)**.



128483

❑ Refit a new connecting shaft between the brake pedal and the brake servo pushrod:

- insert the shaft in accordance with (**17**) ,
- lock the shaft in accordance with (**18**) .

❑ Clip the passenger compartment wiring onto « the brake - clutch pedal assembly » .

JB1

❑ Refit:

- the clutch cable sleeve stop to the « brake - clutch pedal assembly » ,
- the clutch cable to the clutch pedal.

III - REFITTING OPERATION FOR THE ALUMINIUM PEDAL PADS

EQUIPMENT LEVEL SPORT

❑ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

❑ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

❑ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

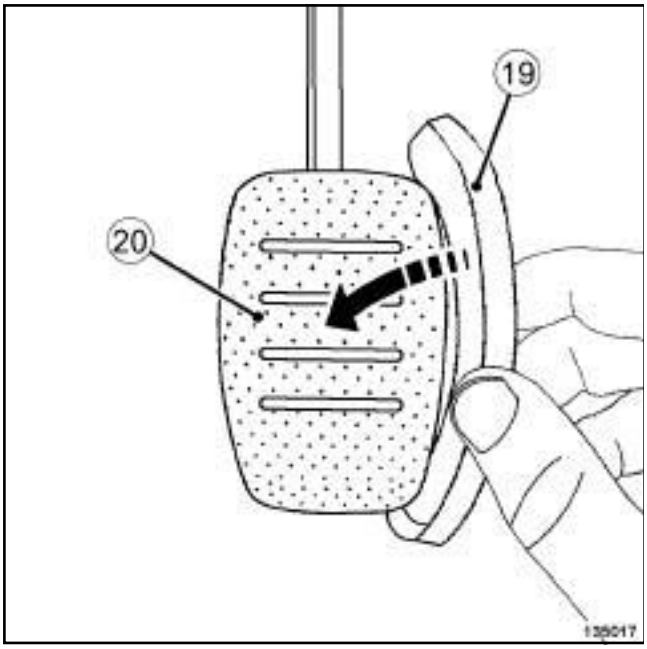
Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.

RIGHT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



135017

❏ Bond the pedal pad (**19**) to the pedal (**20**) by pressing on the right-hand side.

Note:
Respect the range of motion when fitting.

Press the pad to ensure bonding.

IV - FINAL OPERATION

❏ Fit the dashboard.

❏ Refit the dashboard bolts.

❏ Connect the airbag inhibition switch connector.

❏ Refit the dashboard side panel.

JH3 or JR5

❏ Refit:

- the clutch master cylinder,
- the connecting clip between the outlet pipe and the clutch master cylinder,
- the clutch master cylinder support,
- the clutch support bolts,
- the clutch master cylinder rod.

CRUISE CONTROL

❏ Refit the clutch pedal switch (see) .

JB1

❏ Refit the accelerator pedal (see **37A**, **Mechanical component controls**, **Accelerator pedal: Removal - Refitting**, page **37A-29**) .

❏ Refit:

- the brake pedal switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**) ,
- the dashboard lower trim.

Tightening torques ▽	
brake pedal plate nuts	**21 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

RIGHT-HAND DRIVE

❏ Disconnect the battery (see **Battery: Removal - Refitting**) .

❏ Mark the routing of the dashboard wiring harness on the pedals.

❏

Disconnect:

- the accelerator pedal potentiometer connector,
- the electric steering computer supply connector.

❏ Detach the dashboard wiring harness from the pedals.

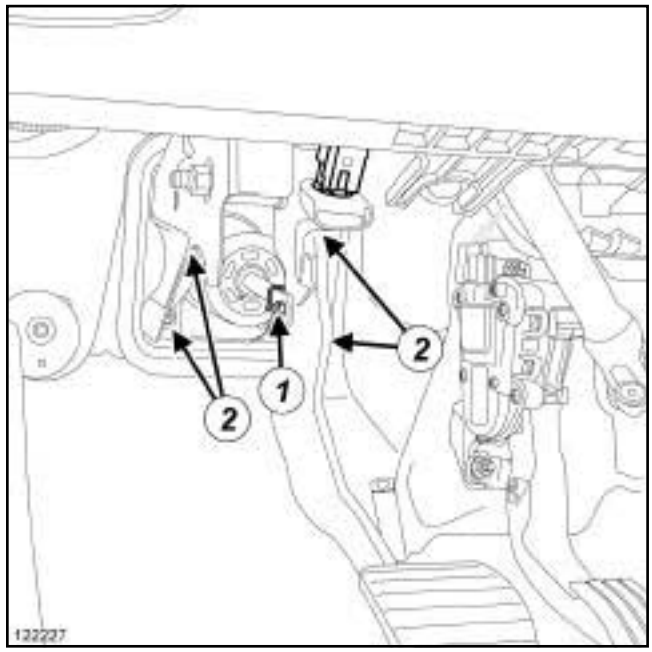
LEFT-HAND DRIVE

❏ Mark the brake light switch wiring routing on the pedals.

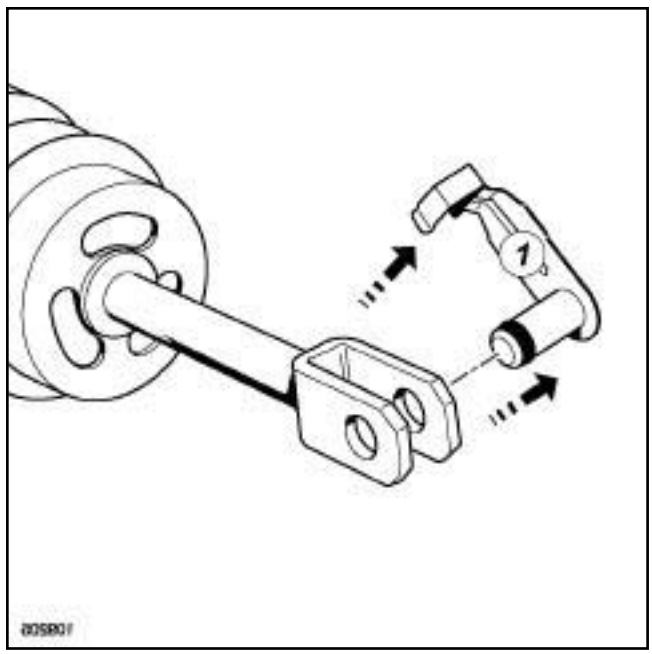
❏ Detach the brake light switch wiring from the pedals.

❏ Remove the brake light switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**) .

II - REMOVAL OPERATION FOR PART CONCERNED



122227



109205

❏ Remove:

- the connecting shaft (**1**) between the brake pedal and the brake servo rod, after tilting the connecting shaft upwards, move the ring using a flat-blade screwdriver,
- the brake pedal plate nuts (**2**) ,
- the « brake pedal - brake pedal plate » assembly.

5-SPEED MANUAL SEQUENTIAL GEARBOX

REFITTING

I - REFITTING PREPARATIONS OPERATION

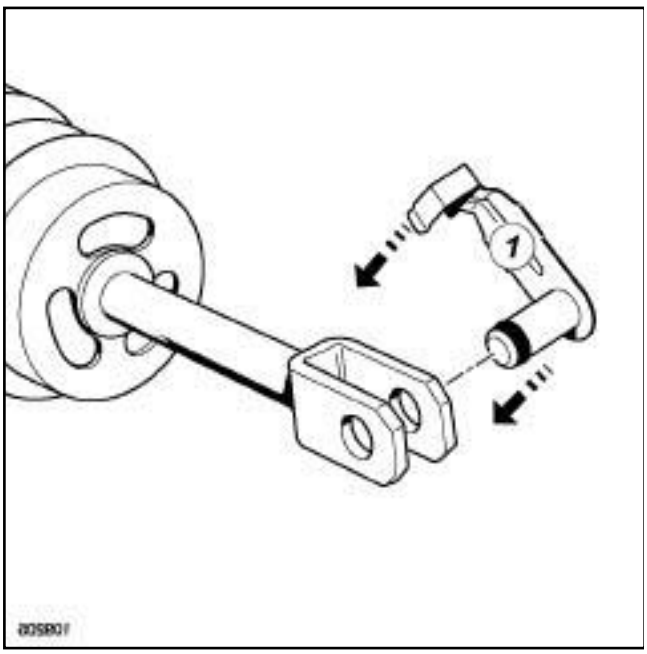
❏ The shaft connecting the brake servo pushrod and the brake pedal must be replaced every time it is removed.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the « brake pedal - brake pedal plate » assembly,
- the brake pedal plate nuts (**2**) .

❏ Torque tighten the **brake pedal plate nuts (21 Nm)**.



109205

❏ Refit the connecting shaft (**1**) between the brake pedal and the brake servo rod from right to left and from top to bottom.

III - FINAL OPERATION.

❏ Refit the brake light switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**) .

LEFT-HAND DRIVE

❏ Refit the brake light switch wiring in the position marked during the removal operation.

RIGHT-HAND DRIVE

❏

Connect:

- the accelerator pedal potentiometer connector,
- the electric steering computer supply connector.

❏ Refit the dashboard wiring harness in the position marked during removal.

❏ Connect the battery (see **Battery: Removal - Refitting**) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

Equipment required
heat stripper

Tightening torques ▽	
nuts on the «brake - clutch pedal assembly»	**25 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Mark the switch wiring routing on the pedals.

❏ Unclip the switch wiring from the pedal assembly.

❏ Remove the brake pedal switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**) .

CRUISE CONTROL

❏ Remove the clutch pedal switch (see **37A**, **Mechanical component controls**, **Clutch pedal switch: Removal - Refitting**, page **37A-52**) .

II - REMOVAL OPERATION FOR THE ALUMINIUM PEDAL PADS

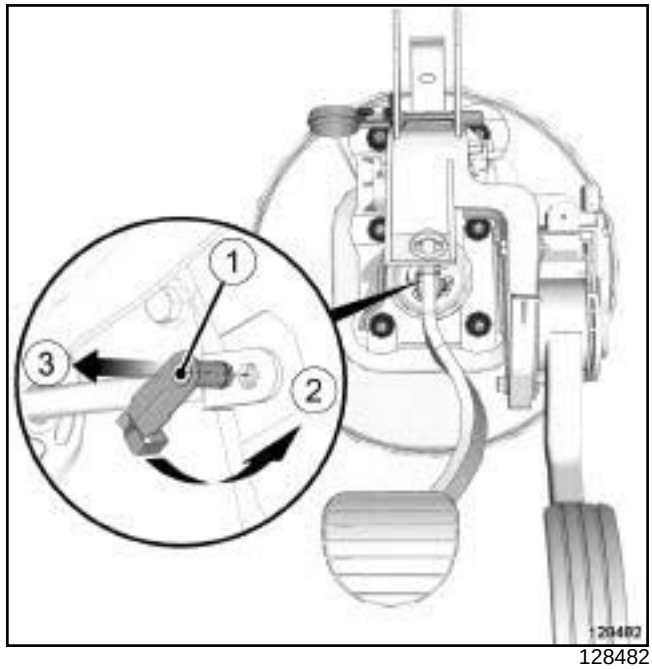
EQUIPMENT LEVEL SPORT

❏ Heat the pedal pad with a **heat stripper** to a maximum temperature of 80°C.

❏ Remove the pad using a pair of pliers.

❏ Clean the residue of adhesive on the pedal (see **Tools for stripping very thick soft mastic: Use**) .

III - OPERATION FOR REMOVAL OF PART CONCERNED

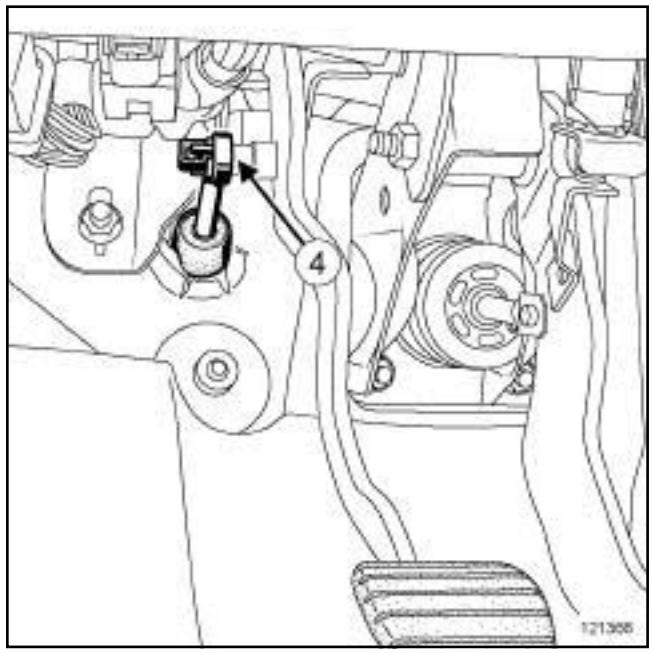


128482

❏ Remove the connecting shaft (**1**) between the brake pedal and the brake servo pushrod:

- unlock the shaft in accordance with (**2**) ,
- extract the shaft in accordance with (**3**) .

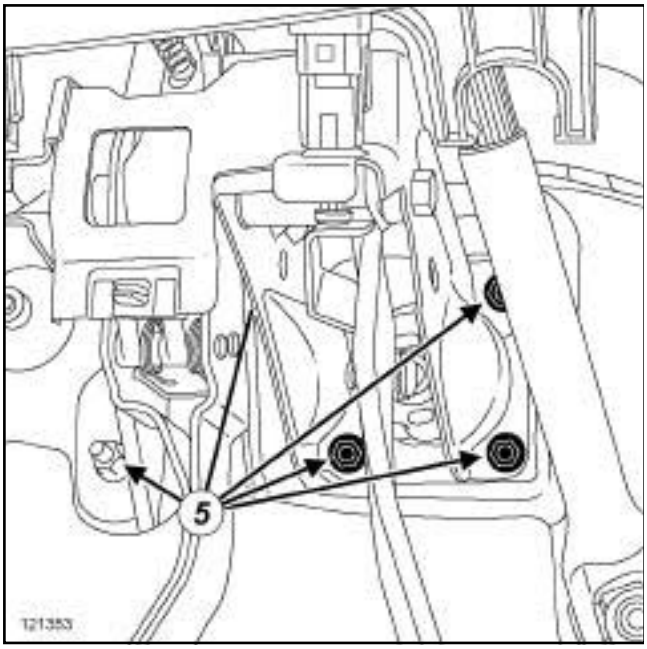
JH3 or JR5



121366

❏ Unclip the clutch master cylinder (**4**) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX



121353

❏ Remove the nuts (**5**) of the « brake - clutch pedal assembly » .

JB1

❏ Gently lower the « brake - clutch pedal assembly » .

❏ Detach the clutch cable from the clutch pedal by tilting the automatic compensation system.

❏ Remove « the brake - clutch pedal assembly » .

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Always replace the **parts always to be replaced: Connecting shaft between the brake pedal and the brake servo pushrod**.

EQUIPMENT LEVEL SPORT

❏ Always replace the aluminium pedal pads after removing them.

II - REFITTING OPERATION FOR PART CONCERNED

JB1

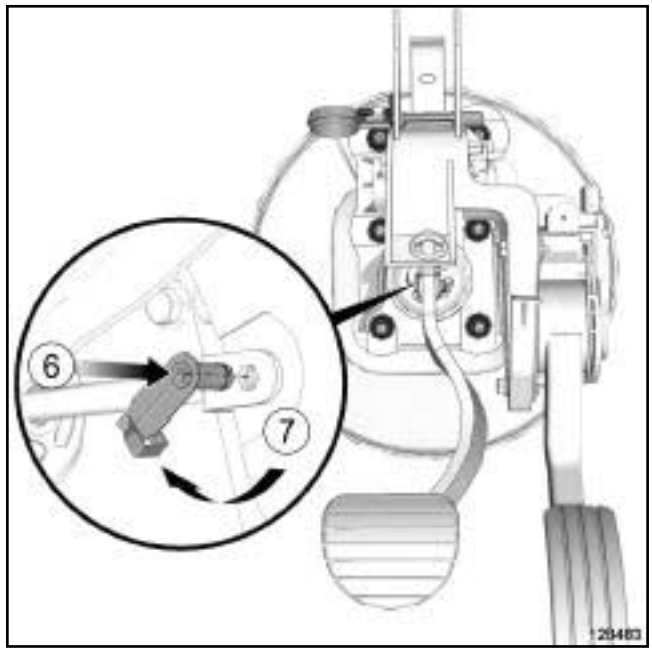
❏ Attach the clutch cable to the clutch pedal by tilting the automatic compensation system.

❏ Refit the « brake - clutch pedal assembly » .

❏ Torque tighten the **nuts on the « brake - clutch pedal assembly » (25 N.m)**.

JH3 or JR5

❏ Clip the clutch master cylinder onto the clutch pedal.



128483

❏ Refit a new connecting shaft between the brake pedal and the brake servo pushrod:

- insert the shaft in accordance with (**6**) ,
- lock the shaft in accordance with (**7**) .

LEFT-HAND DRIVE, and 5-SPEED MANUAL GEARBOX

III - REFITTING OPERATION FOR THE ALUMINIUM PEDAL PADS

EQUIPMENT LEVEL SPORT

❏ Check that the pedal is at ambient temperature.

Note:

If only the pad is being replaced, allow the pedal to cool.

❏ Check that the surface of the pedal is clean.

Note:

The bonding area must be clean, and free from finger marks and fabric deposits.

❏ Activate the pedal bonding surface with some paper soaked in **HEPTANE**.

Wipe immediately with a clean and dry cloth.

Note:

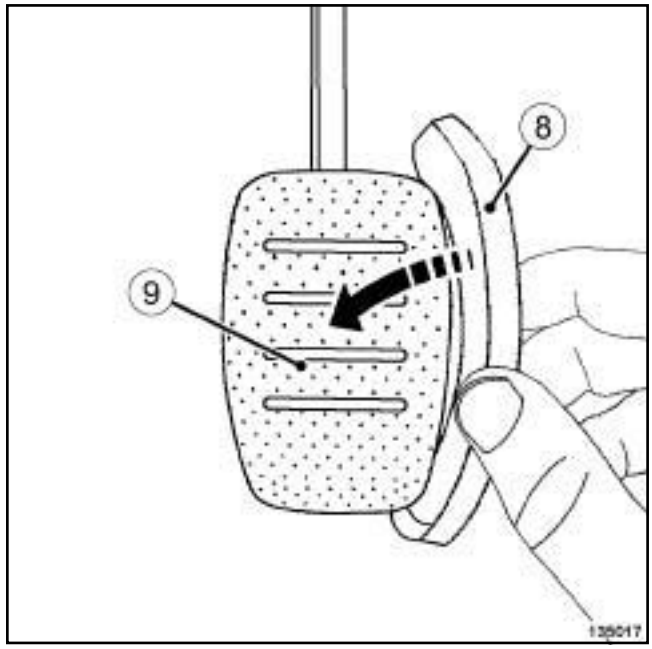
It is essential to activate the surface and to wipe in the same direction: there is a risk of contaminating the bonding surface when wiping.

Note:

Do not use the same paper to activate the surface and to wipe the surface.

Throw the paper away after each use.

Remove the protection around the pad.



135017

❏ Bond the pedal pad (**8**) to the pedal (**9**) by pressing on the right-hand side.

Note:

Respect the range of motion when fitting.

Press the pad to ensure bonding.

IV - FINAL OPERATION

CRUISE CONTROL

❏ Refit the clutch pedal switch (see **37A**, **Mechanical component controls**, **Clutch pedal switch: Removal - Refitting**, page **37A-52**) .

❏ Refit the brake pedal switch (see **37A**, **Mechanical component controls**, **Brake pedal switch: Removal - Refitting**, page **37A-42**)

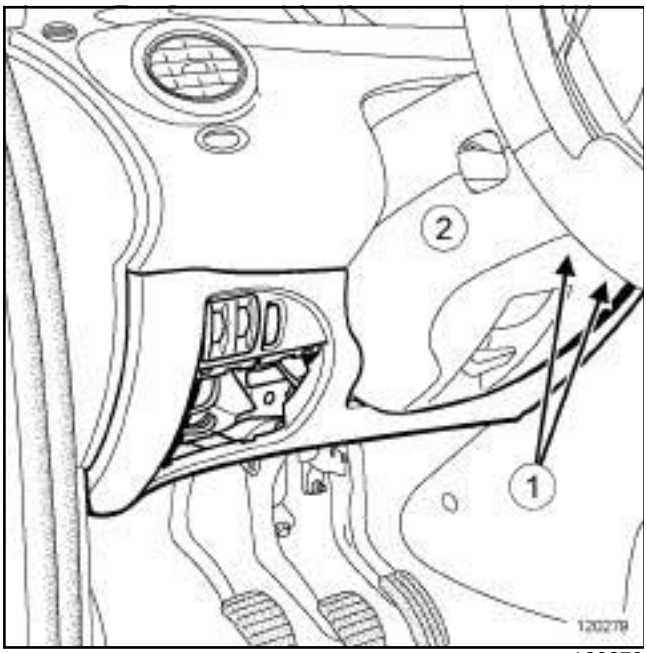
❏ Refit the switch wiring on the pedals in the position marked during the removal operation.

Equipment required
set of feeler gauges
Diagnostic tool

WARNING
The brake pedal position switch must be replaced if the notched segment is pulled completely out of the switch.

REMOVAL

I - REMOVAL PREPARATION OPERATION

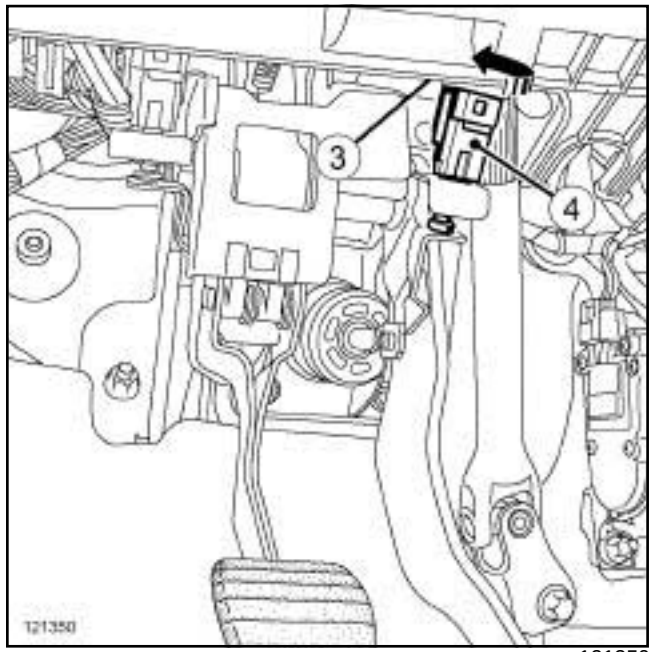


120279

❑ Remove:

- the bolts (**1**) of the steering wheel cover,
- the steering wheel cover (**2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



121350

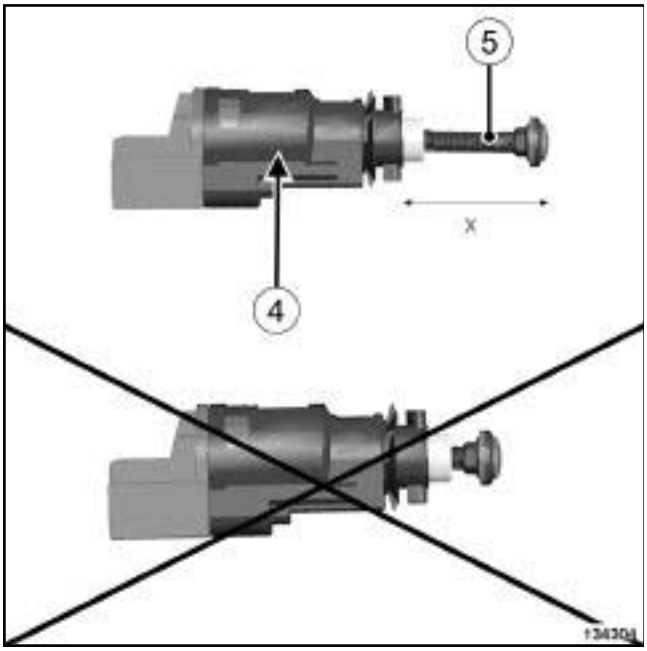
❑ Disconnect the brake light switch connector (**3**) .

❑ Turn the brake light switch (**4**) a quarter of a turn anti-clockwise.

❑ Remove the switch from the pedal assembly.

REFITTING

I - REFITTING PREPARATION OPERATION



134304

❑

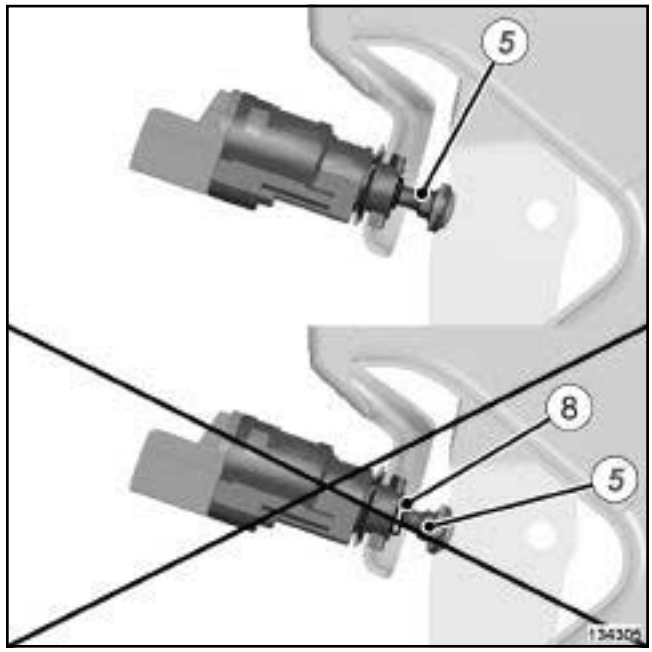
WARNING
The brake pedal position switch must be replaced if the notched segment is pulled completely out of the switch.

WARNING
The switch must be replaced if the notched segment is adjusted three times.

❑ Measure dimension X of the notched segment (**5**) . If dimension X is less than **28 mm**, pull carefully on the end of the notched segment (**5**) to adjust the dimension X between **28 mm** minimum and **29 mm** maximum.

Visual inspection of the switch during the operation

Position of the notched segment and the flange



134305

❑

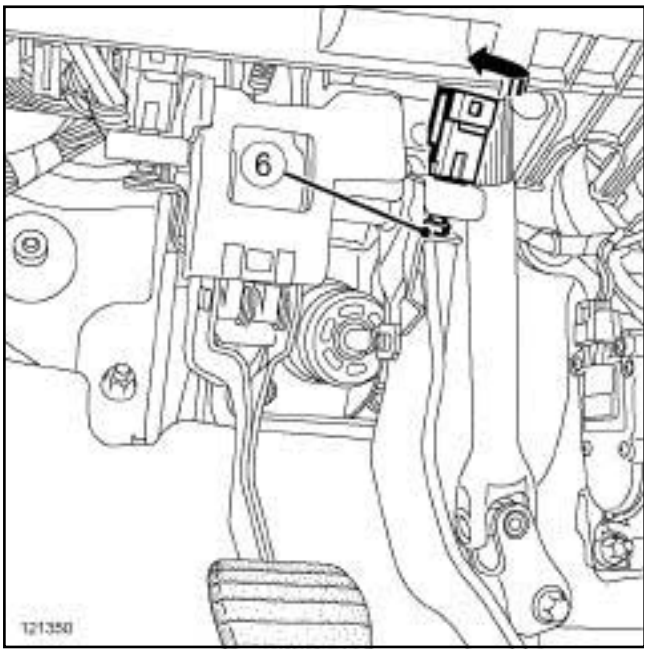
Note:
With the pedal in the highest position, check that the flange (**8**) is not visible.
If the flange is visible, repeat the adjustment of X.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Depress the brake pedal by hand.

❑ Fit the brake light switch to the pedal assembly.

LEFT-HAND DRIVE



121350

(**6**) Position of the adjusting shim.

❏ Take a **set of feeler gauges**

❏ Put a **« 1 mm »** shim on the switch support bracket on the brake pedal (**6**) .

❏ Lock the brake light switch by turning it a quarter of a turn clockwise.

❏ Carefully support the return of the brake pedal while checking that the shim remains correctly in place.

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.

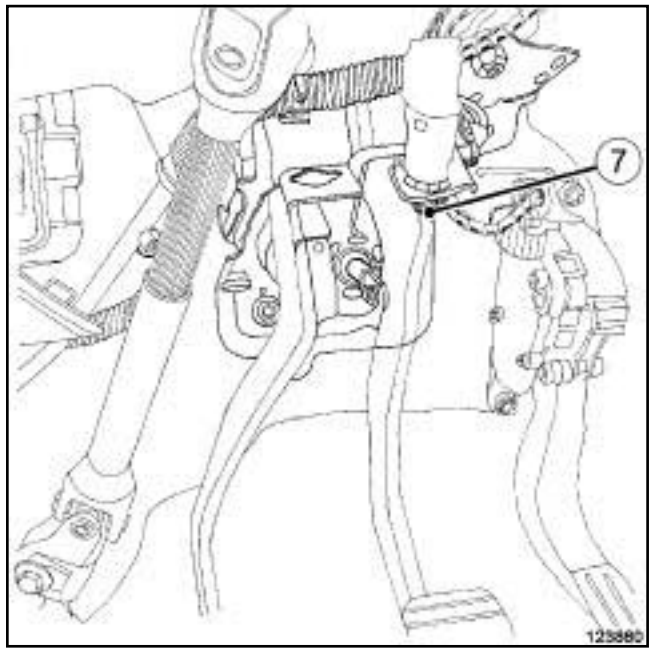
❏ With the shim in place, check that the flange ***(8)*** is not visible.

❏ Depress the brake pedal by hand.

❏ Remove the adjusting shim.

❏ Carefully support the return of the brake pedal.

RIGHT-HAND DRIVE



123860

(**7**) Position of the adjusting shim.

❏ Take a **set of feeler gauges**

❏ Put a **1 mm** shim on the brake pedal (**7**) .

❏ Lock the brake light switch by turning it a quarter of a turn clockwise.

❏ Carefully support the return of the brake pedal while checking that the shim remains correctly in place.

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.

❏ With the shim in place, check that the flange ***(8)*** is not visible.

❏ Depress the brake pedal by hand.

❏ Remove the adjusting shim.

❏ Carefully support the return of the brake pedal.

❏ Connect the brake light switch connector.

III - CHECKING THE ELECTRICAL OPERATION OF THE PART

❏ 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.

❏ Connect the **Diagnostic tool**

❏ Depress the brake pedal by 10 mm.

❏ Check that the first signal of the switch has not switched (the first signal does not illuminate the bulbs).

IV - FINAL OPERATION

❏ Refit:

- the steering wheel cover,
- the bolts on the steering wheel cover.

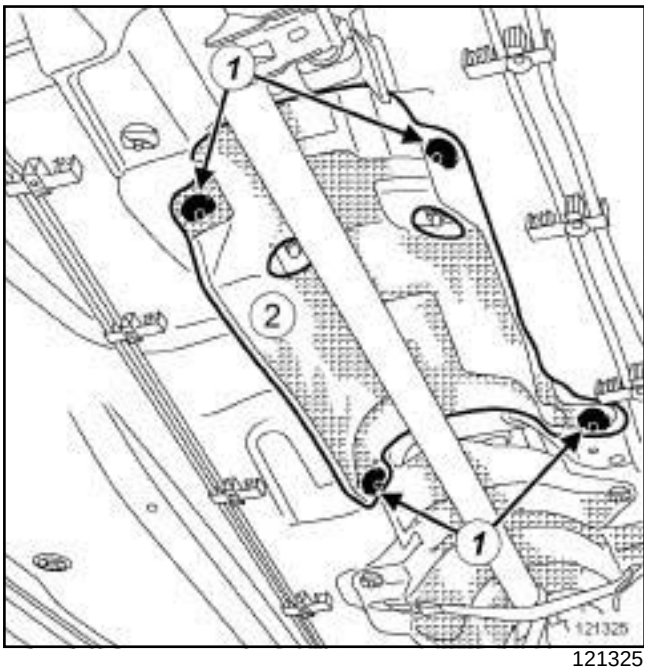
Tightening torques ▽	
parking brake lever nuts	**8 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

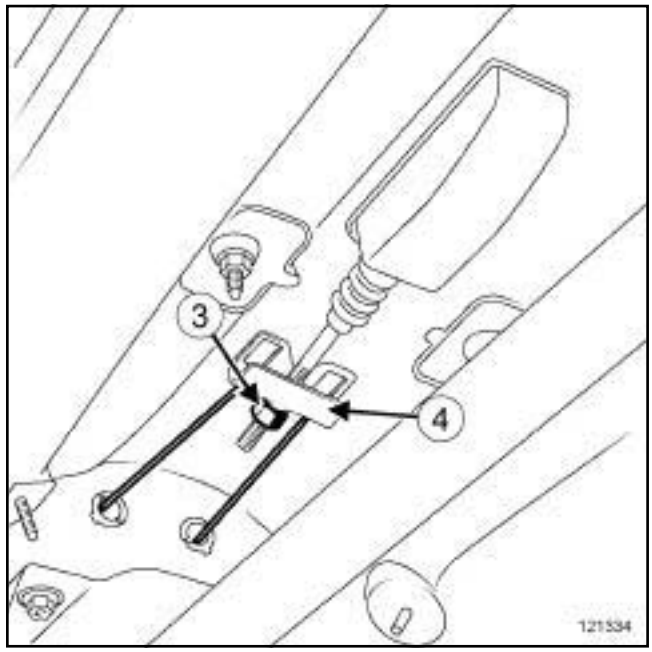
❏ Release the parking brake lever.



121325

❏ Remove:

- the heat shield clips (**1**) ,
- the heat shield (**2**) .



121334

❏ Remove the parking brake lever adjusting nut (**3**) .

❏ Detach the parking brake cables from the compensator.

❏ Remove:

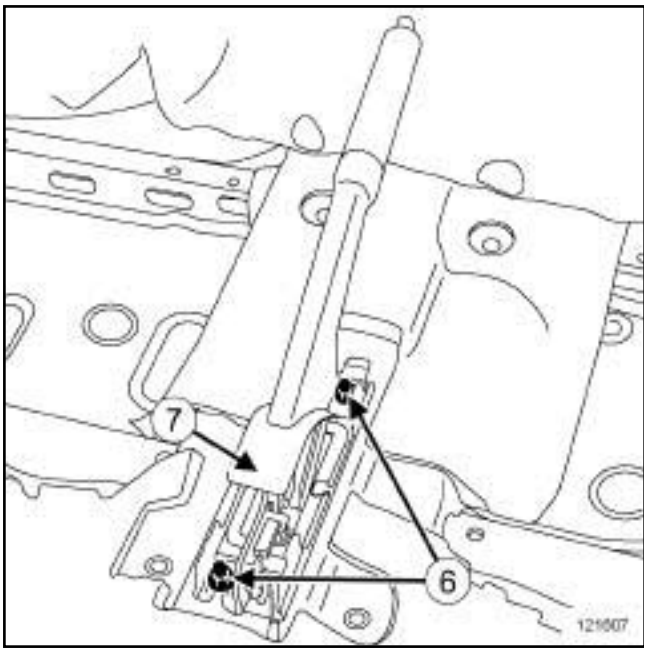
- the parking brake lever compensator (**4**) ,
- the front seats, completely (see **Complete front seat: Removal - Refitting**) (MR 412 Bodywork, 75A, Front seat frames and runners).

❏ Depending on the equipment level, remove:

- the rear bench seatback (see **Rear bench seatback: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),
- the rear bench seat base (see **Rear bench seat base: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners)
- the rear seats, completely (see **Complete rear seat: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners).

❏ Partially remove the floor carpet to access the parking brake lever (see **Floor carpet: Removal - Refitting**) (MR 412 Bodywork, 71A, Body internal trim).

II - OPERATION FOR REMOVAL OF PART CONCERNED



121607

❑ Remove:

- the nuts (**6**) from the parking brake lever,
- the parking brake lever (**7**) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the parking brake lever,
- the parking brake lever nuts.

❑ Torque tighten the **parking brake lever nuts (8 Nm)**.

II - FINAL OPERATION.

❑ Fit the floor carpet (see **Floor carpet: Removal - Refitting**) (MR 412 Bodywork, 71A, Body internal trim).

❑ Refit (depending on equipment level):

- the rear seats, completely (see **Complete rear seat: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),
- the rear bench seat base (see **Rear bench seat base: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners),
- the rear bench seatback (see **Rear bench seatback: Removal - Refitting**) (MR 412 Bodywork, 76A, Rear seat frames and runners).

❑ Refit the front seats, completely (see **Complete front seat: Removal - Refitting**) (MR 412 Bodywork, 75A, Front seat frames and runners).

❑ Attach the parking brake cables to the compensator.

❑ Refit the parking brake lever adjusting nut.

❑ Adjust the parking brake lever (see **37A**, **Mechanical component controls**, **Parking brake lever: Adjustment**, page **37A-48**) .

❑ Refit:

- the heat shield,
- the heat shield clips.

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**) .

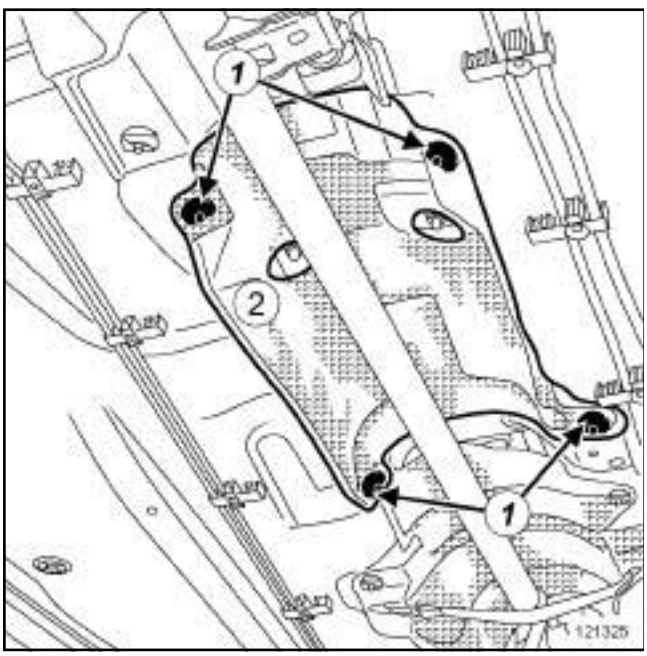
❏ Apply the parking brake five times to condition the cables for normal use.

❏ 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**) .

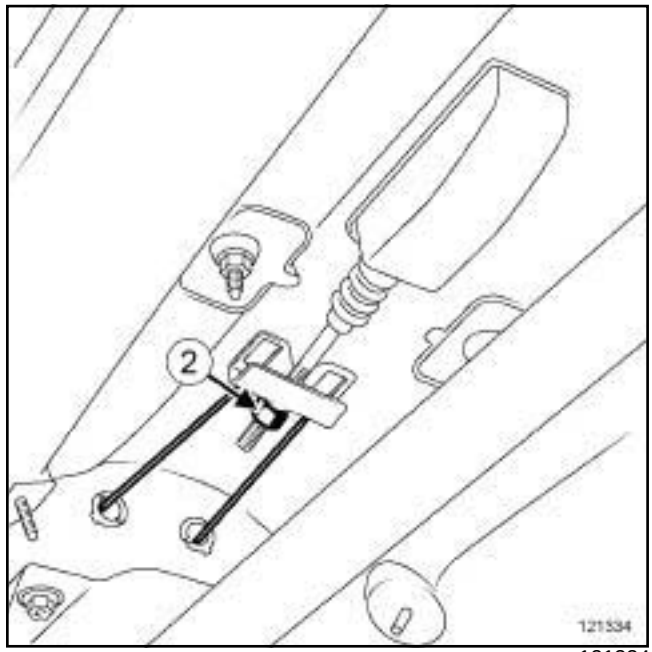


121325

❏ Remove:

- the heat shield clips (**1**) ,
- the heat shield (**2**) .

II - OPERATION FOR ADJUSTMENT OF PART CONCERNED



121334

❏ Loosen the nut (**2**) 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.

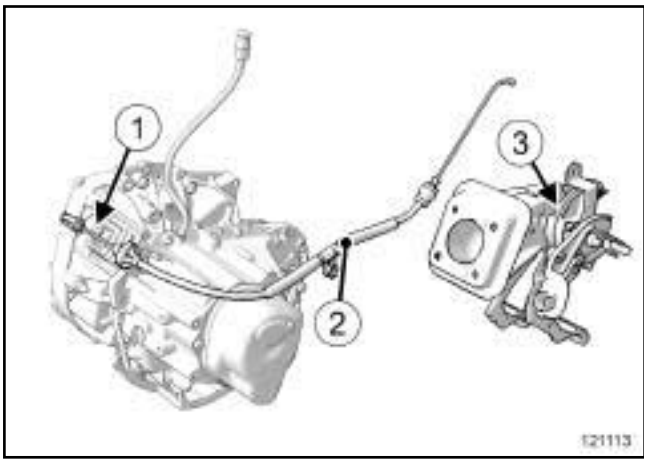
❏ Put the parking brake lever into the released position.

❏ 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**) .

JB1

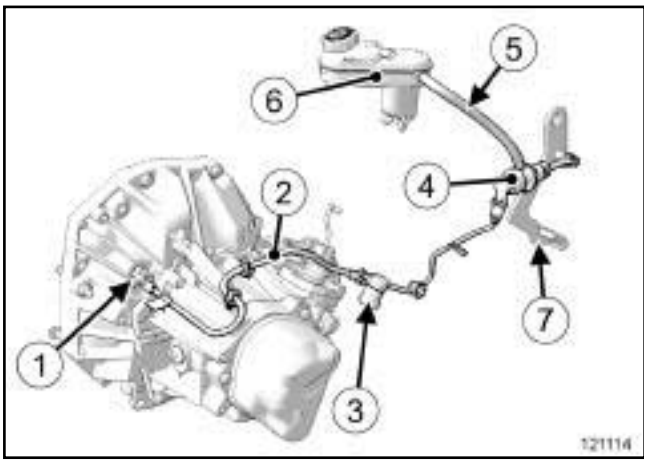
No.	Description
(1)	Clutch fork
(2)	Clutch control cable
(3)	Brake - clutch pedal



121113

JH3

No.	Description
(1)	Clutch slave cylinder (clutch thrust bearing)
(2)	Hydraulic clutch control pipes
(3)	Filter
(4)	Clutch master cylinder
(5)	Brake fluid supply duct
(6)	Brake fluid reservoir
(7)	Clutch pedal



121114

JB1

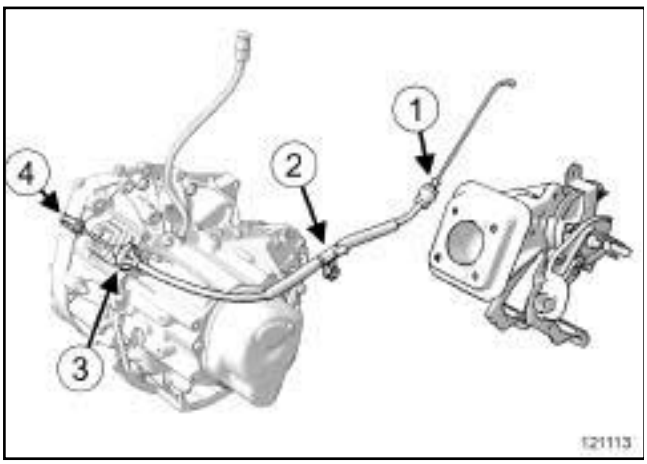
REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the « brake pedal - clutch » assembly (see) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



121113

❑ Unclip the cable sleeve stop (**1**) from the bulkhead and remove the passenger compartment cable.

❑ Detach the clutch cable at (**2**) .

❑ Detach the cable sleeve stop (**3**) from the fork on the gearbox.

❑ Detach the clutch cable from the clutch fork at (**4**) .

❑ Remove the clutch cable.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the clutch cable.

❑ Attach the clutch cable to the clutch fork.

❑ Fit the cable sleeve stop to the fork on the gearbox.

❑ Attach the clutch cable.

❑ Fit the clutch cable through the opening in the bulkhead and clip on the cable sleeve stop.

II - FINAL OPERATION.

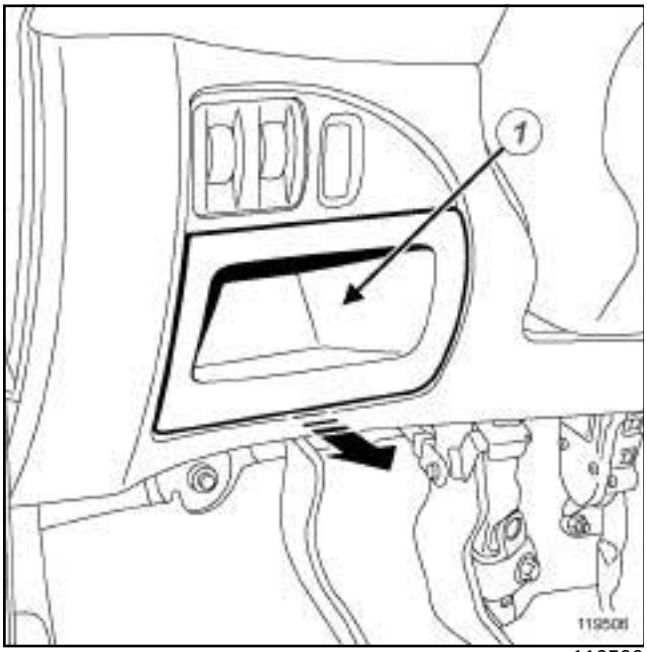
❑ Refit:

- the « brake pedal - clutch » assembly (see) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

Equipment required
Diagnostic tool

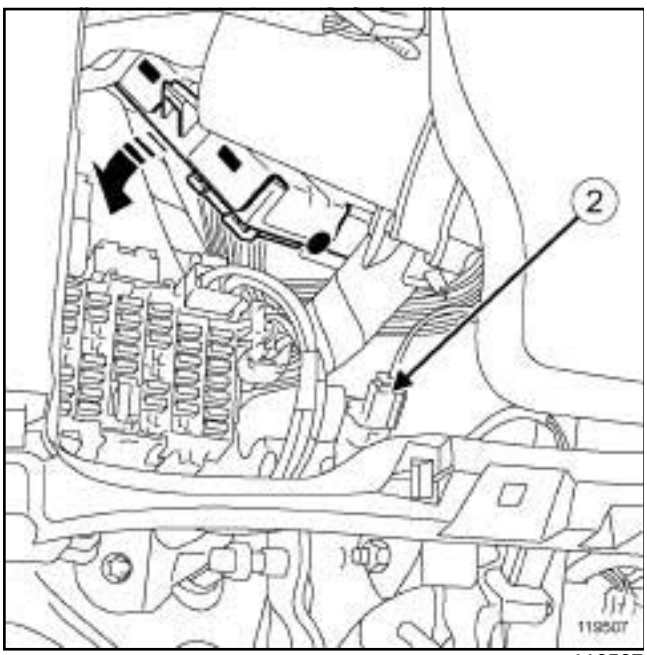
REMOVAL

I - REMOVAL PREPARATION OPERATION



119506

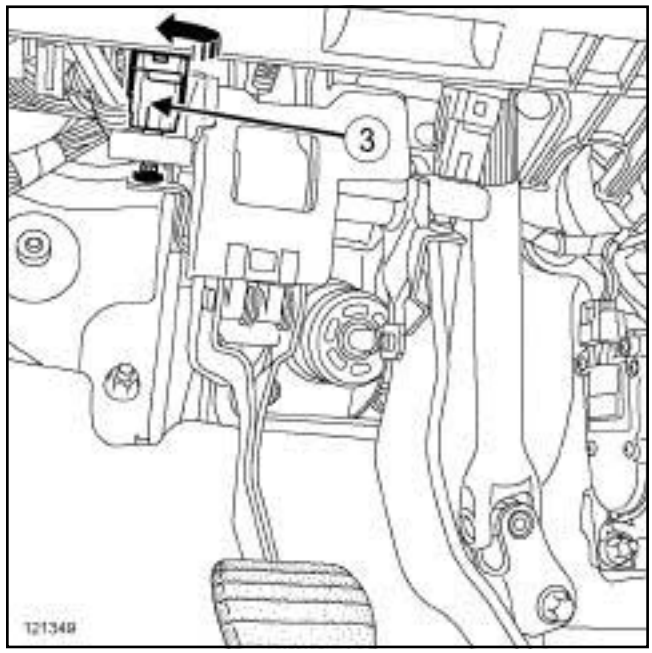
❑ Remove the dashboard glovebox.



119507

❑ Disconnect the connector (**2**) from the clutch pedal switch.

II - OPERATION FOR REMOVAL OF PART CONCERNED



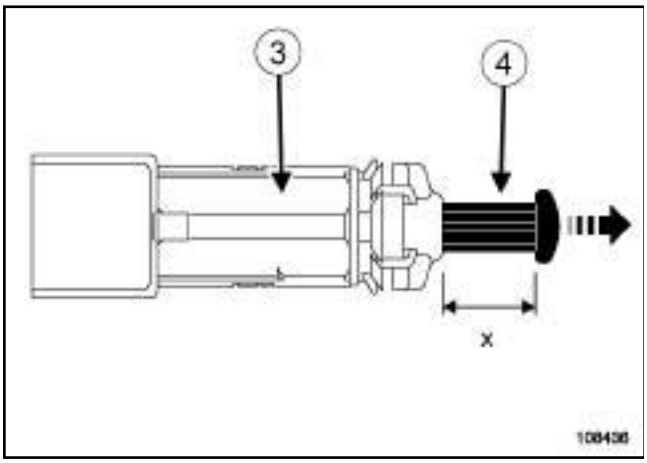
121349

❑ Turn the clutch pedal switch (**3**) a quarter of a turn anti-clockwise

❑ Remove the clutch pedal switch from the pedal.

REFITTING

I - REFITTING PREPARATIONS OPERATION



108436

❑

WARNING
Whenever the clutch pedal switch piston is completely removed, the switch must be replaced.

WARNING
The switch must be replaced if handling of the piston results in three adjustments being made.

❑ Measure dimension of the piston (**4**) . If the dimension (**x**) is less than **15 mm**, carefully pull the end of the piston (**4**) to adjust the dimension to between **15 mm** minimum and **17 mm** maximum.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Depress the clutch pedal by hand.

❑ Fit the clutch pedal switch to the pedal.

❑ Lock the clutch pedal switch by turning it a quarter of a turn clockwise.

❑ At the same time, carefully return the clutch pedal.

Note:

The clutch 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.

❑ Connect the clutch pedal switch connector.

❑ Be sure to carry out a repair check using **Diagnostic tool**.

❑ Refit the dashboard glovebox.

JH3 or JR5

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

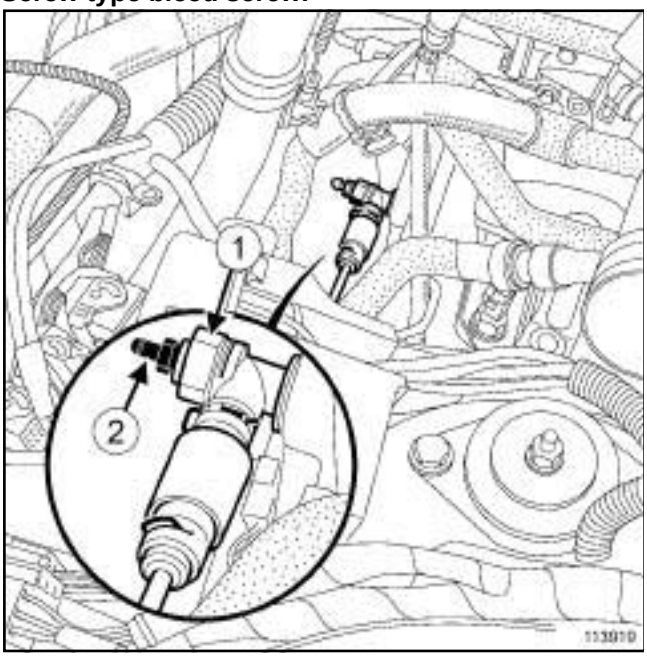
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Remove the engine undertray.

JH3 or JR5

There are several versions of bleed screw:

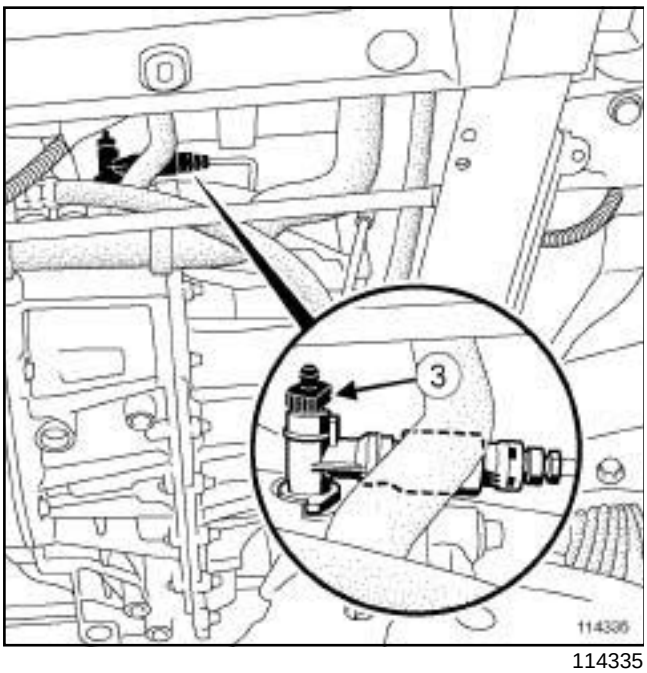
Screw type bleed screw.



113919

❏ To open the bleed screw, hold the plastic union (**1**) using a ring spanner and undo the bleed screw (**2**) .

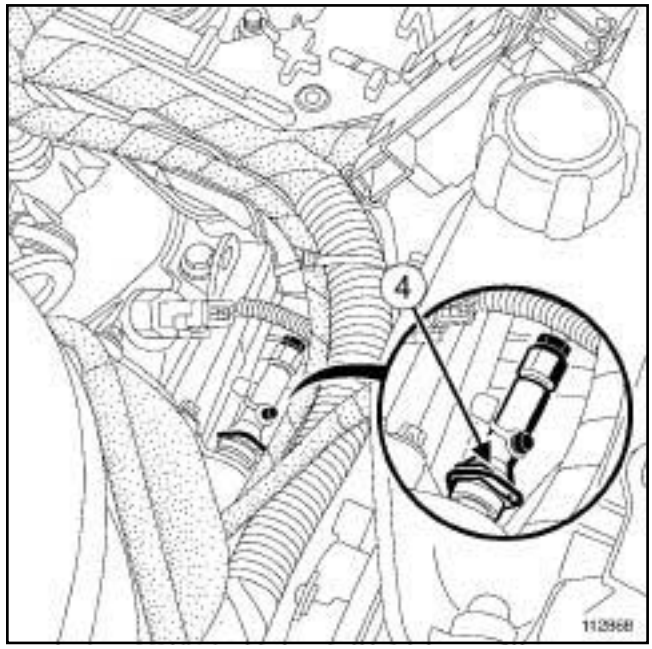
Half-turn bleed screw.



114335

❏ To open the bleed screw, fully turn the bleed screw (**3**) by hand.

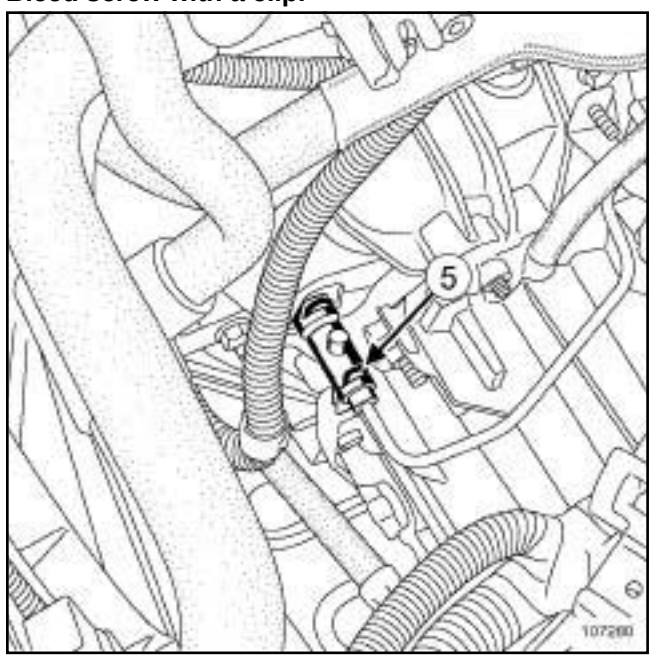
Bleed screw with a clip.



112868

❏ To open the bleed screw, press and hold the clip (**4**) while pulling by one notch.

Bleed screw with a clip.

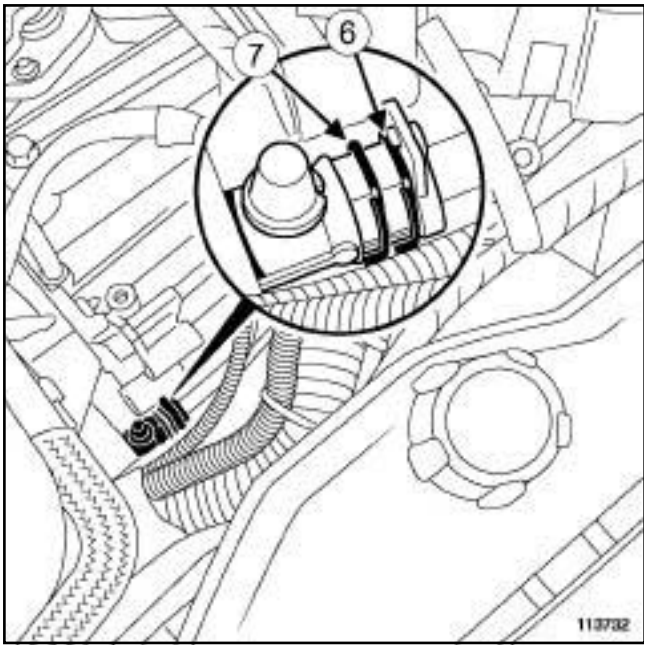


107280

❏ To open the bleed screw, lift the clip (**5**) while pulling by one notch.

JH3 or JR5

Bleed screw with two clips.



113732

❏ 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-52**) (37A, mechanical control elements).

JH3 or JR5

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-52**) (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:

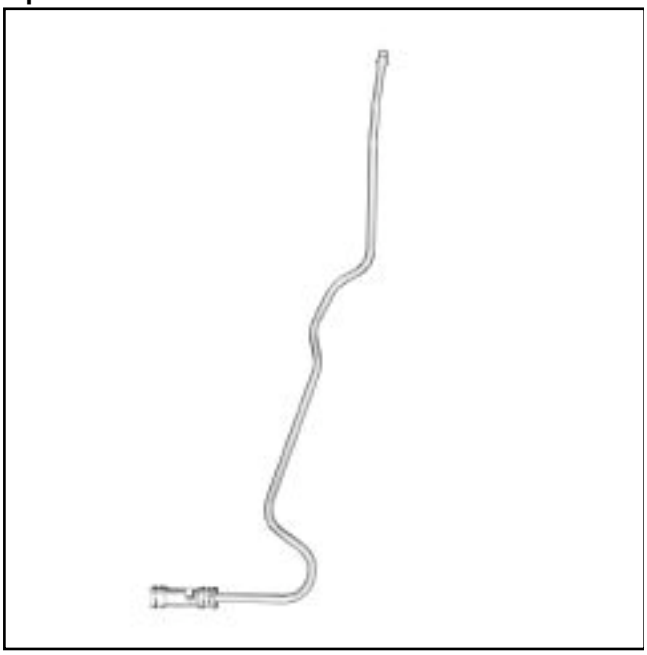
Prefill the hydraulic circuit pipe equipped with a filter.

Position the filter head facing downwards to ensure that it fills.

JH3 or JR5

There are several versions of pipe with and without a filter:

Pipe without filter.



141812

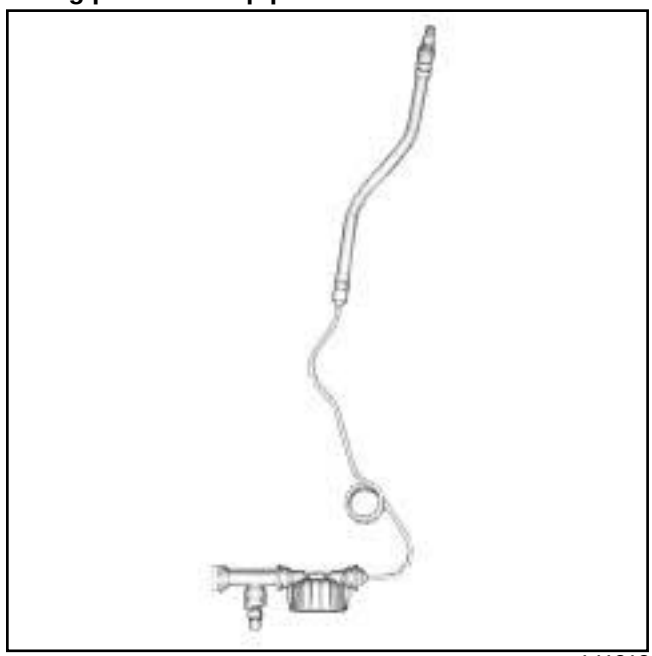
Filling position for pipe with filter.

141811

Filling position for pipe with filter.

141810

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.

JH3 or JR5

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-52**) (37A, mechanical control elements).

JH3 or JR5

VI - FINAL OPERATION

❑ Refit the engine undertray.

❑ Remove the vehicle from the two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

JH3

REMOVAL

I - REMOVAL PREPARATION OPERATION

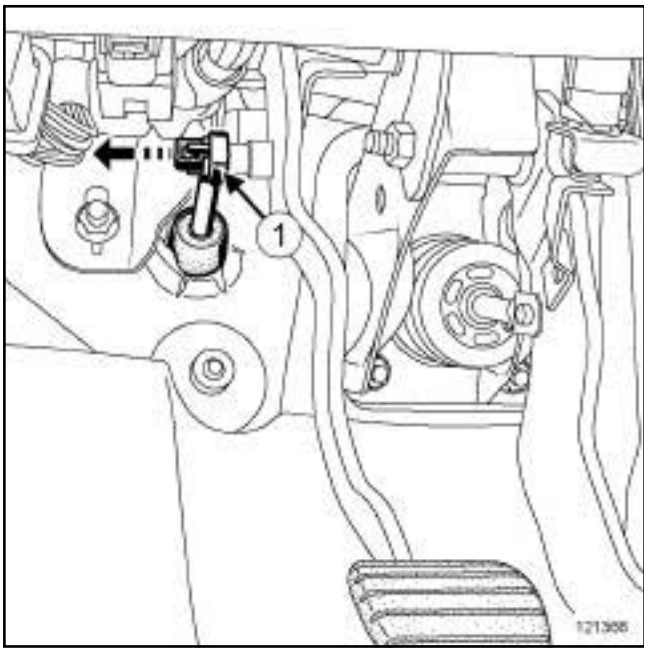
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove:

- the front wheel on the driver's side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).

❑ Use a syringe to empty the brake fluid reservoir.

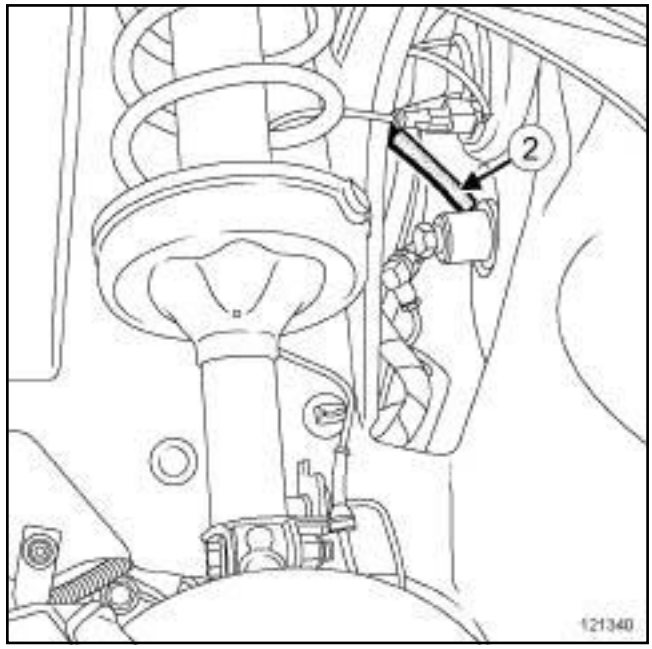
II - OPERATION FOR REMOVAL OF PART CONCERNED



121366

❑ Unclip the hydraulic clutch master cylinder rod (**1**) from the clutch pedal.

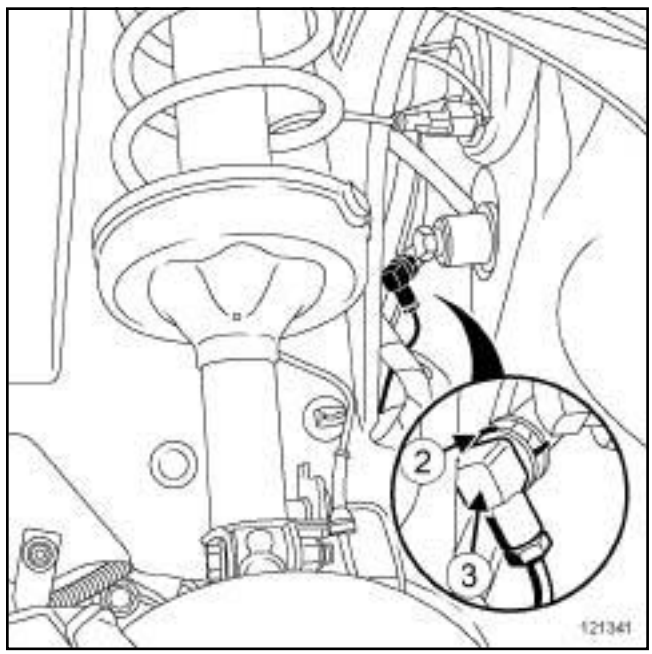
WARNING
Prepare for the flow of fluid, and protect the surrounding components.



121340

❑ Disconnect the brake fluid fuel supply pipe (**2**) from the hydraulic clutch master cylinder.

❑ Insert the blanking plugs.

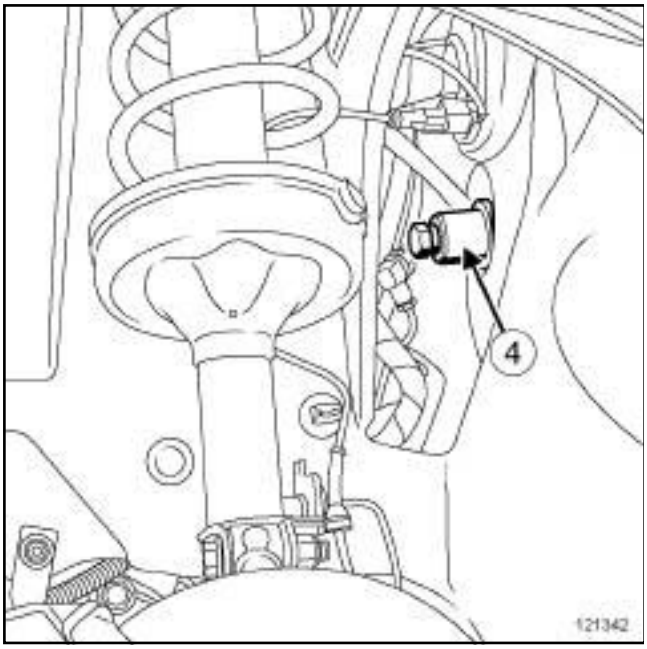


121341

❑ Pull the clip (**2**) .

❑ Detach the end (**3**) of the hydraulic clutch control pipe.

❑ Insert the blanking plugs.



121342

❏ Undo and remove the hydraulic clutch master cylinder (**4**) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Fit the hydraulic clutch master cylinder onto the bulkhead.

❏ Fit the hydraulic clutch master cylinder.

❏ Remove the blanking plugs.

❏ Fit the end of the hydraulic clutch control pipe onto the hydraulic clutch master cylinder.

❏ Push in the metal clip.

❏ Remove the blanking plugs.

❏ Connect the brake fluid supply pipe to the hydraulic clutch master cylinder.

❏ Clip the hydraulic clutch master cylinder rod onto the clutch pedal.

II - FINAL OPERATION.

❏ Top up the brake fluid reservoir.

❏ Bleed the hydraulic clutch control pipe (see **37A**, **Mechanical component controls**, **Clutch circuit: Bleed**, page **37A-54**) .

❏ Refit:

- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the driver's side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

JH3

REMOVAL

I - REMOVAL PREPARATION OPERATION

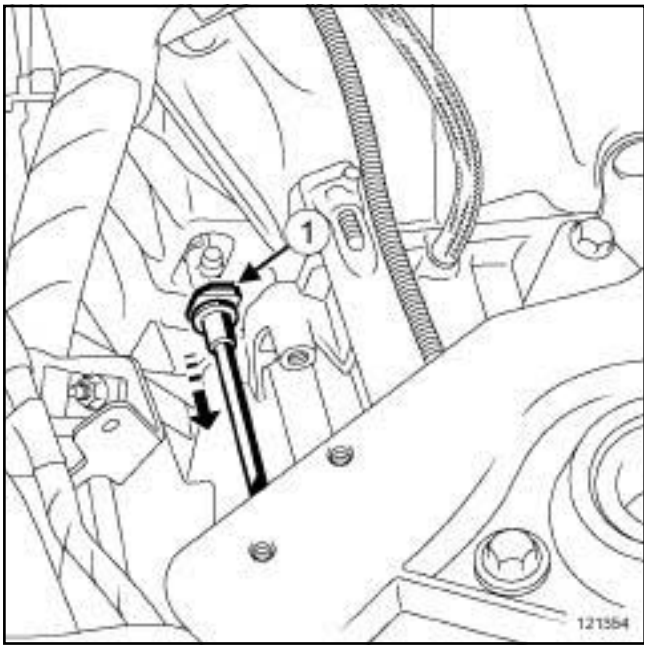
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

- the front wheel on the driver's side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Empty the brake fluid reservoir with a syringe.

II - OPERATION FOR REMOVAL OF PART CONCERNED

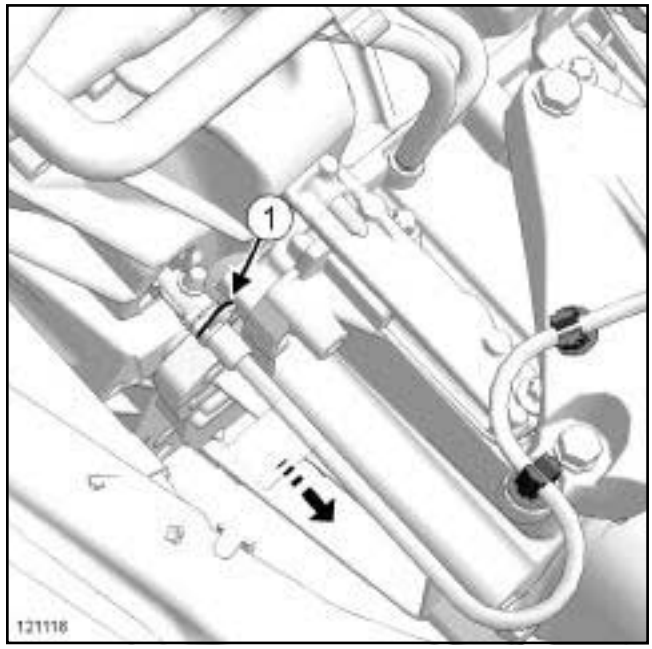


121354

❏ Press and hold the clip (**1**) .

❏ Pull out the hydraulic clutch control pipe by one notch.

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

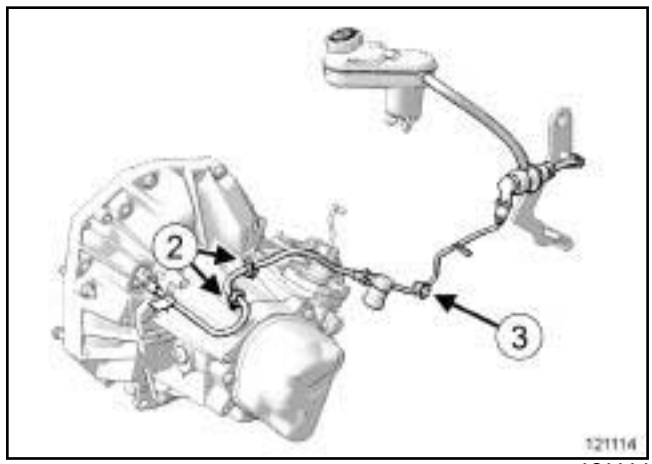


121118

❏ Press and hold the clip (**1**) again.

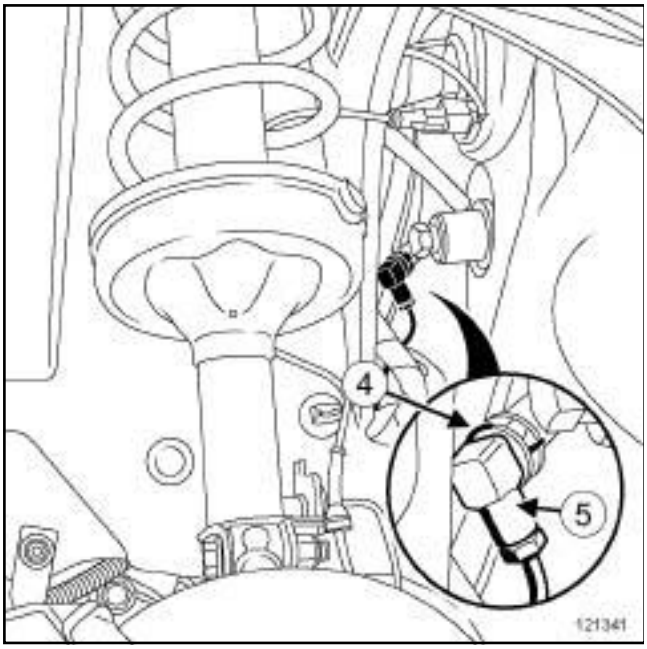
❏ Pull the hydraulic clutch control pipe out another notch and collect the fluid in a container.

❏ Depress the clutch pedal to empty the hydraulic clutch control circuit.



121114

❏ Detach the pipe at (**2**) and (**3**) .



121341

❏ Pull the clip (**4**) .

❏ Unclip the end piece (**5**) .

❏ Remove the hydraulic clutch control pipe.

❏ Fit anti-contamination caps.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Remove the blanking plugs.

❏ Refit the clutch control pipe.

❏ Fit the clutch control clip.

❏ Connect the pipe to the master cylinder and slave cylinder.

II - FINAL OPERATION.

❏ Bleed the clutch circuit (see **37A**, **Mechanical component controls**, **Clutch circuit: Bleed**, page **37A-54**) .

❏ Top up the brake fluid reservoir.

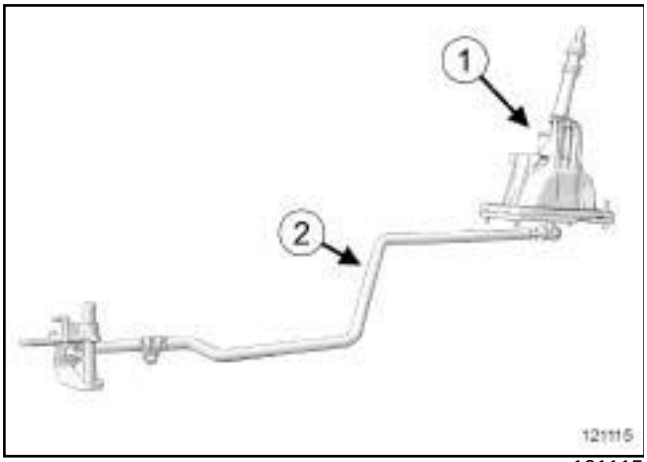
❏ Check that the clutch system is operating correctly.

❏ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the front wheel arch liner on the driver's side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the driver's side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

JB1

Gear control

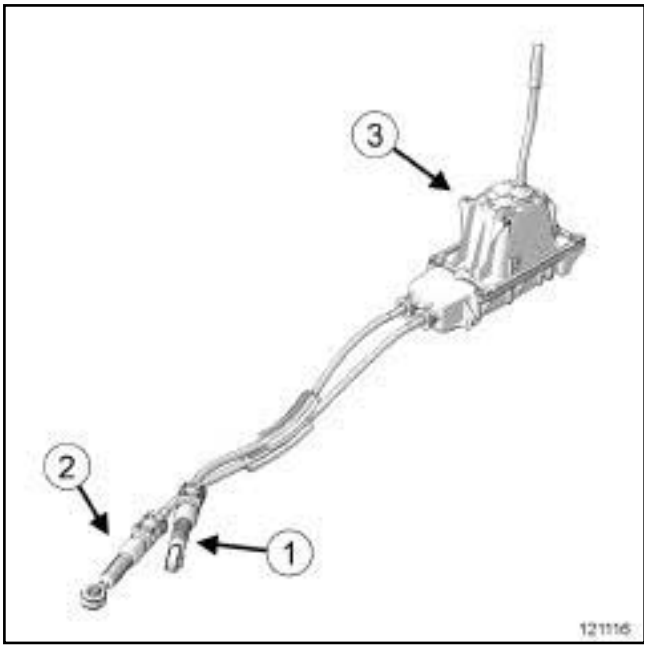


121115

(**1**) « lever - mounting » assembly
(**2**) control bar

JH3

Gear control



121116

(**1**) gear selection cable

(**2**) control cable

(**3**) « lever - mounting » assembly

The control is only supplied as a « cable - lever - mounting » assembly.

JH3 or JR5

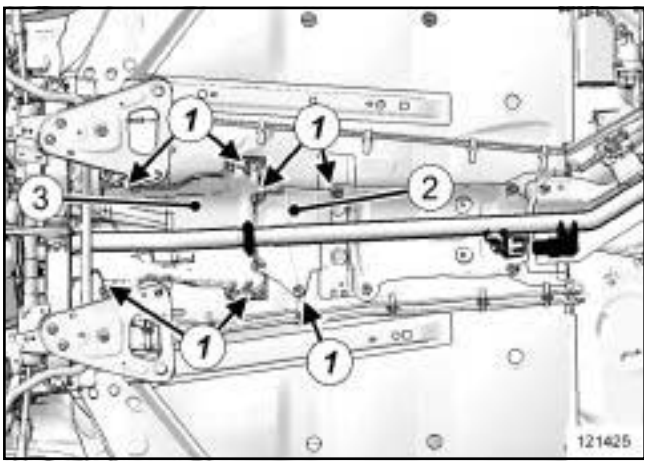
Tightening torques ▽	
gear control unit nuts	**12 Nm**
exhaust clip	**21 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❏ Remove the centre console (see **Centre console: Removal - Refitting**) (57A, Interior equipment).



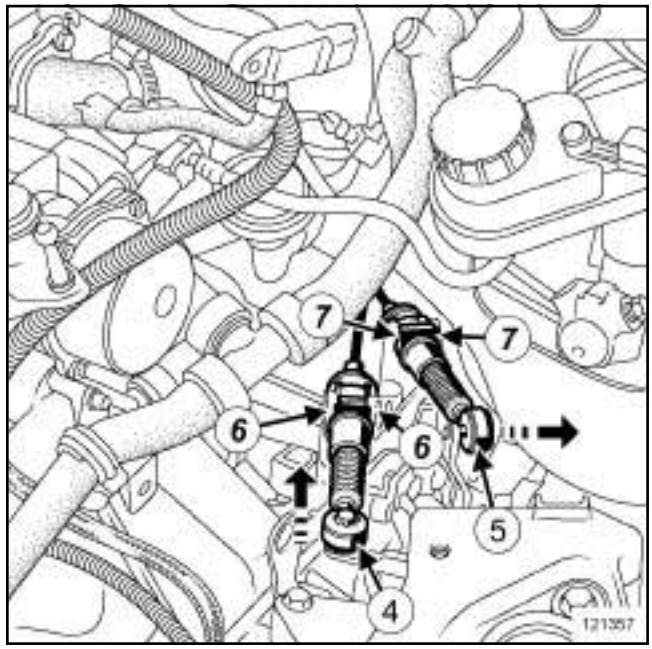
121425

❏ Remove:

- the clips (**1**) ,
- the heat shields (**2**) and (**3**) .

❏ Release the exhaust pipe clamp.

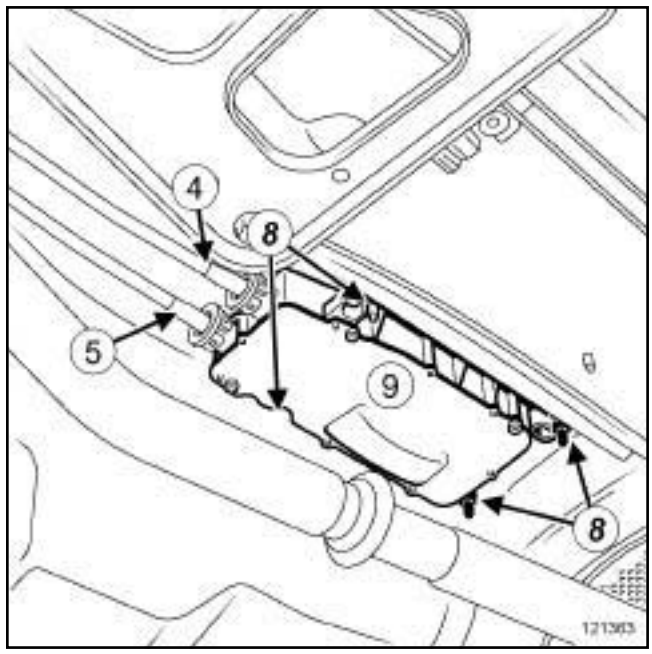
II - OPERATION FOR REMOVAL OF PART CONCERNED



121357

❏ Unclip the control cable (**4**) and selection cable (**5**) from the ball joints in the direction of the arrows, using the open-jawed spanner as a lever.

❏ Detach the cable sleeve stops by pressing on the tabs (**6**) and (**7**) .



121363

(**4**) control cable

(**5**) gear selection cable

JH3 or JR5

❑ Remove:

- the nuts (**8**) ,
- the gear control unit (**9**) by passing it between the exhaust system and the tunnel.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the gear control unit by passing it between the exhaust pipe and the tunnel

❑ Torque tighten the **gear control unit nuts (12 Nm)**.

❑ Attach the sleeve stops of the control cable and gear selection cable by clipping them to the gearbox.

❑ Attach the cables to the ball joints.

II - FINAL OPERATION.

❑ Torque tighten the **exhaust clip (21 Nm)**.

❑ Refit:

- the heat shields,
- the central console (see **Centre console: Removal - Refitting**) (57A, Interior equipment).

Note:

It is not necessary to adjust the control cable and gear selection cable.

Tightening torques ▽	
gear control unit nuts	**12 Nm**
gear control linkage bolt	**28 Nm**

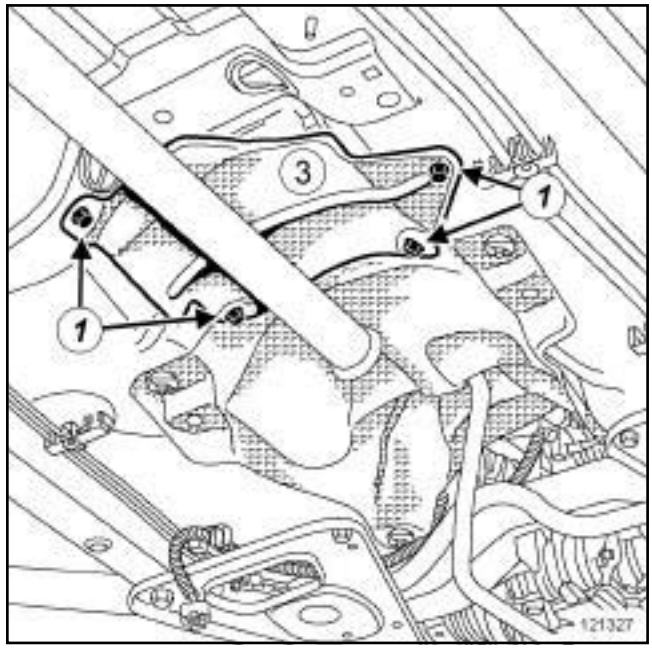
REMOVAL

I - REMOVAL PREPARATION OPERATION

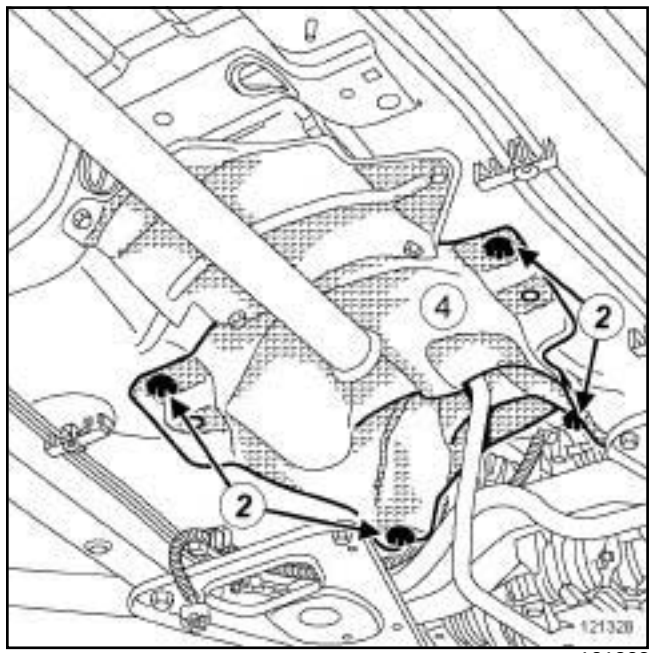
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove:

- the centre console (see **Centre console: Removal - Refitting**) (MR 412, 57A, Interior equipment),
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) (MR 411, 19B, Exhaust).



121327



121328

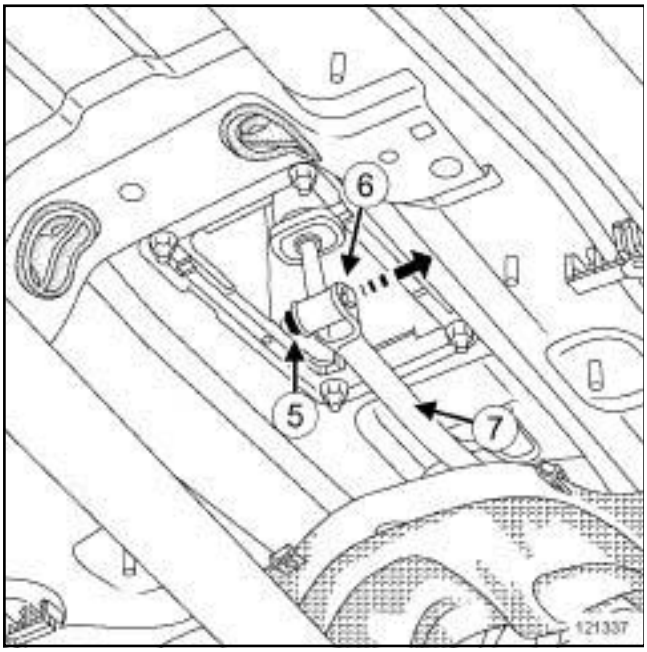
❑ Remove:

- the clips (**1**) and (**2**) ,
- the rear heat shield (**3**) .

❑ Slide the heat shield towards the front of the vehicle (**4**) .

JB1

II - OPERATION FOR REMOVAL OF PART CONCERNED

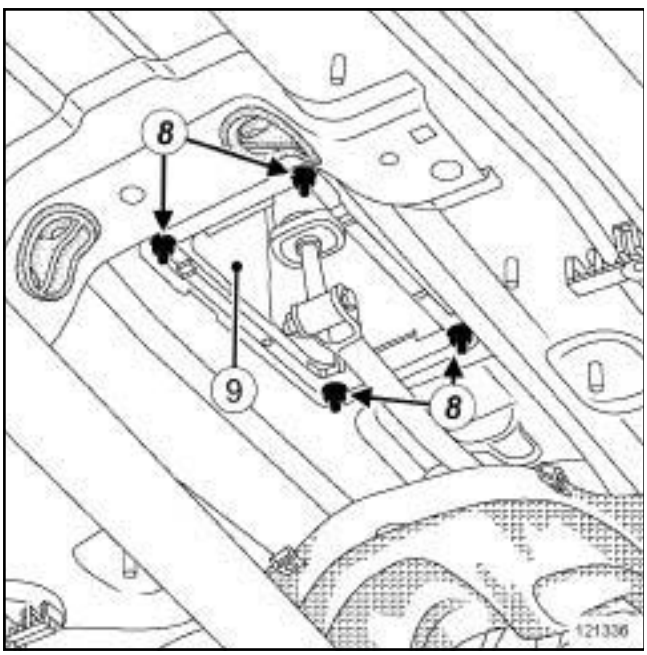


121337

❑ Remove:

- the nut (**5**) ,
- the bolt (**6**) .

❑ Remove the linkage (**7**) .



121336

❑ Remove:

- the nuts (**8**) ,
- the gear control unit (**9**) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the gear control unit,
- the gear control unit nuts.

❑ Torque tighten the **gear control unit nuts (12 Nm)**.

❑ Fit the gear control linkage.

❑ Refit the bolt between the gear control linkage and the gear control unit.

❑ Torque tighten the **gear control linkage bolt (28 Nm)**.

II - FINAL OPERATION.

❑ Fit the front heat shield.

❑ Refit:

- the rear heat shield,
- the front and rear heat shield clips,
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) (MR 411, 19B, Exhaust),
- the centre console (see **Centre console: Removal - Refitting**) (MR 412, 57A, Interior equipment).

JB1

Special tooling required	
Bvi. 1133-01	1st gear locking shim for gearbox input lever.

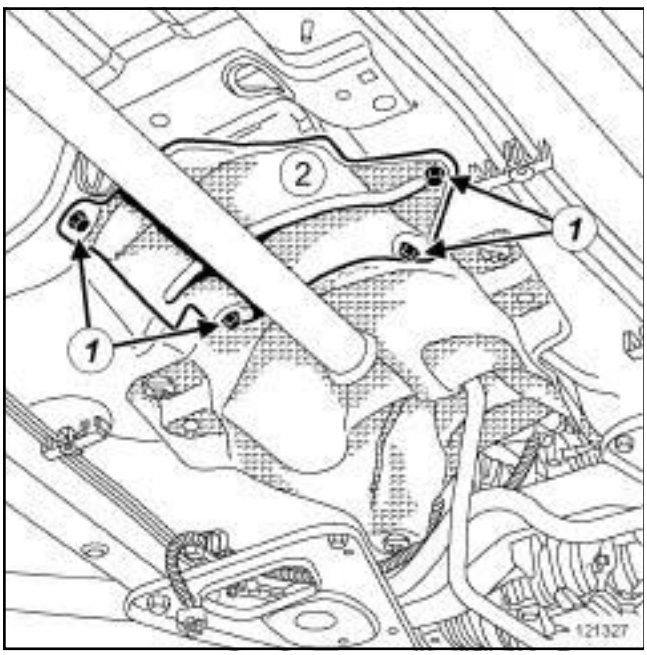
Tightening torques ▽	
linkage adjusting nut	**30 Nm**

ADJUSTMENT

I - ADJUSTMENT PREPARATION STAGE

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Engage first gear.

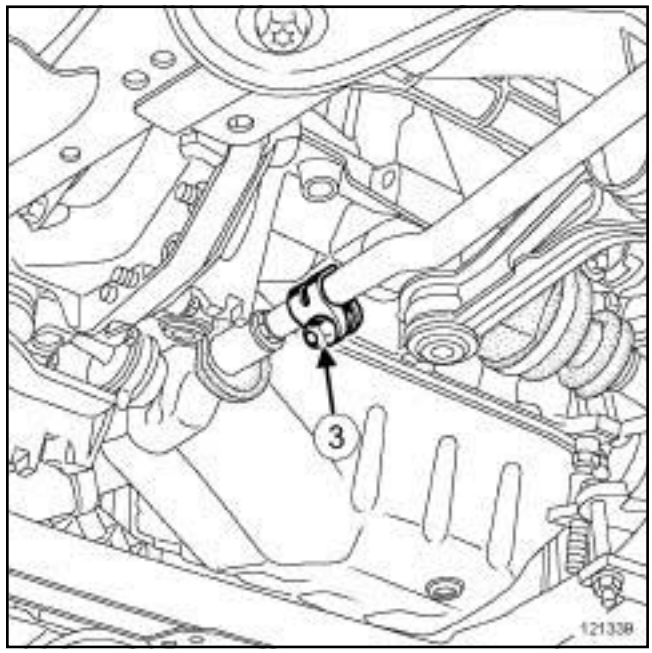


121327

❑ Remove:

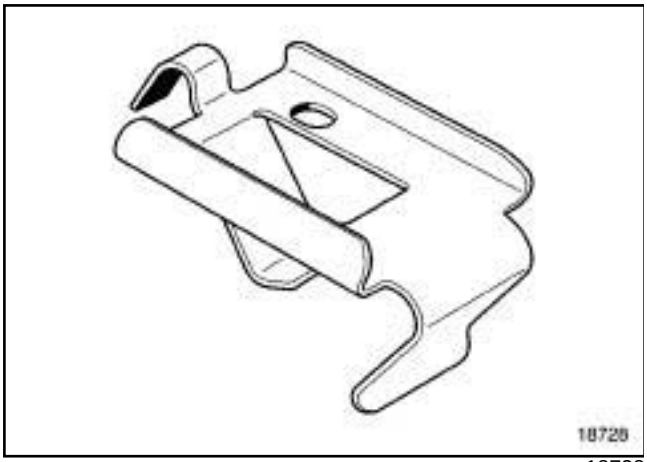
- the clips (**1**) ,
- the heat shield (**2**) .

II - OPERATION FOR ADJUSTMENT OF PART CONCERNED

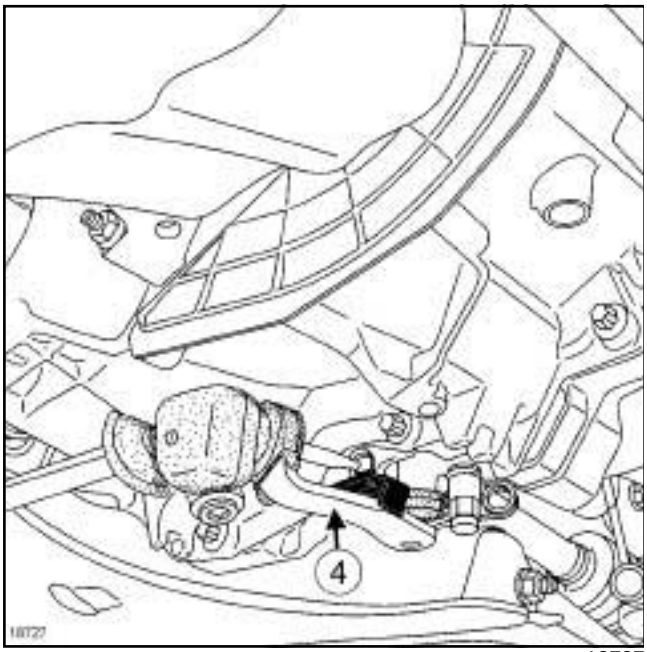


121339

❑ Unlock the nut (**3**) .

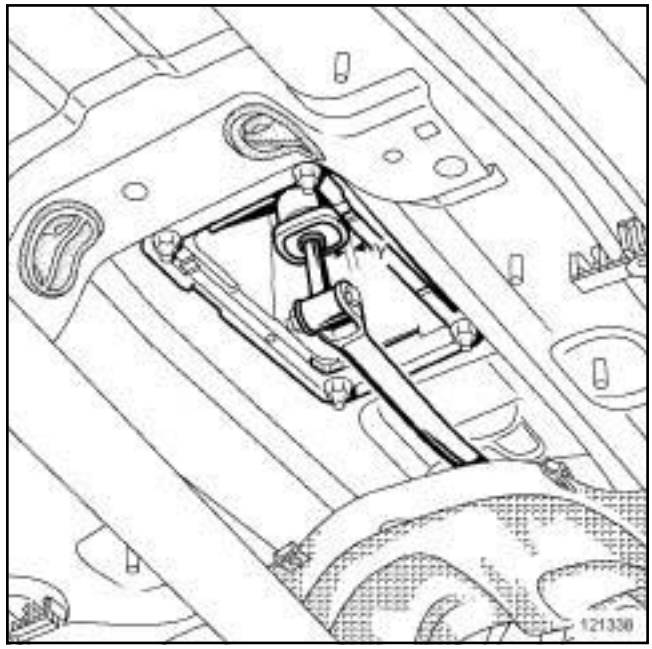


18728



18727

❏ Position the **(Bvi. 1133-01)** between the control lever (**4**) and the gearbox casing.



121338

❏ Position a **5 mm** thick adjustment shim between the gear lever lower thrust bearing and the lower rail on the unit.

❏ Hold the gear control lever against the shim.

❏ Torque tighten the **linkage adjusting nut (30 Nm)**.

❏ Check the adjustment value.

❏ Clearance noted at the bottom of the lever ***(Y)*** (in mm):

- first gear engaged = Y1 ,

- second gear engaged = **Y2**,

$\mathbf{Y_{average}}$ = **(Y1+Y2)/2**

$\mathbf{5 \leq Y_{average} \leq 8}$

- adjustment shim = **5 mm**.

Note:

It is preferable to be closer to the maximum value of the adjustment interval.

❏ Remove the shim.

CHECK

I - CHECKING OPERATION FOR PART CONCERNED

❏ Check gear changes.

JB1

II - FINAL OPERATION.

❑ Refit:

- the heat shield,
- the heat shield clips.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4

REMOVAL

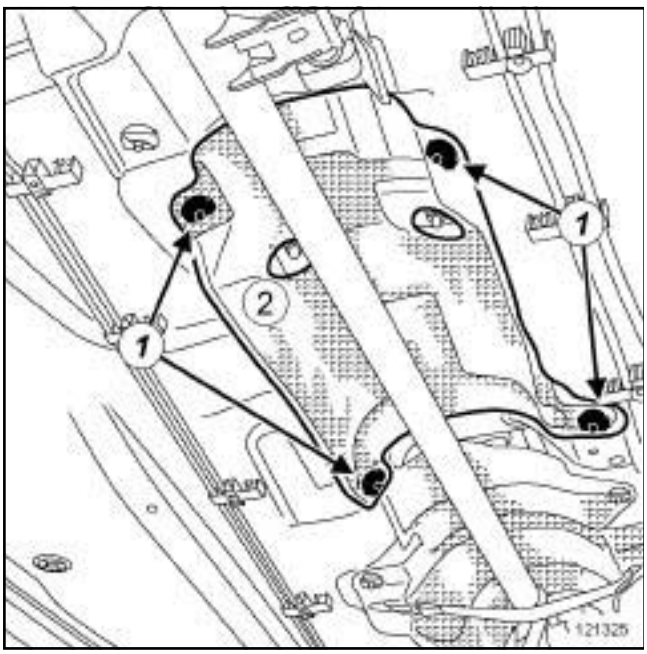
I - REMOVAL PREPARATION OPERATION

❏ Fit:

- the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment),
- the parking brake lever in the released position.

❏ Remove:

- the rear wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) .

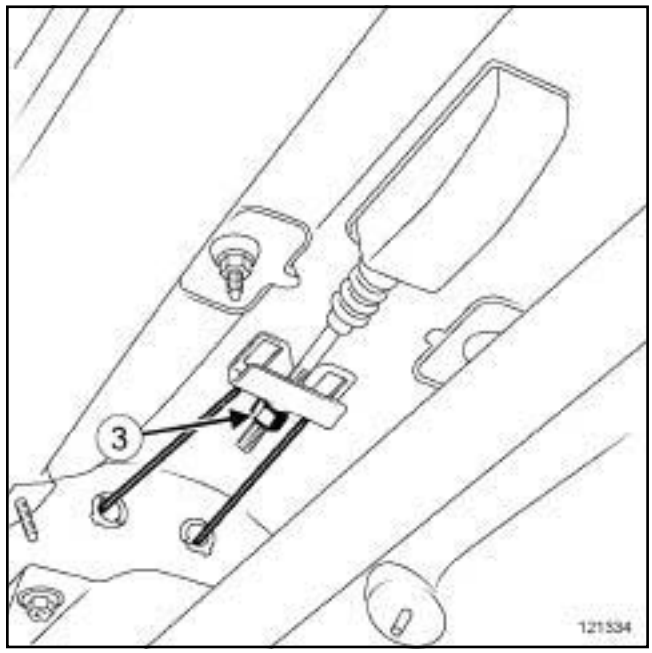


121325

❏ Removal:

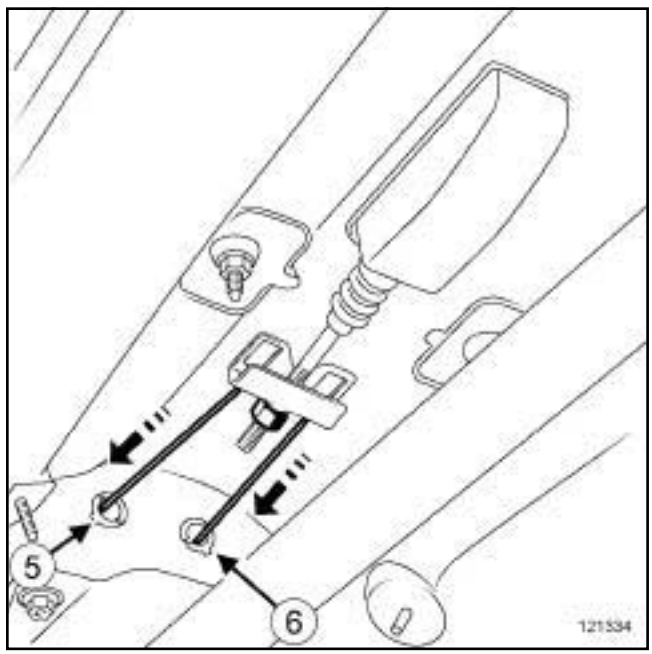
- the clips (**1**) ,
- the heat shield (**2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



121334

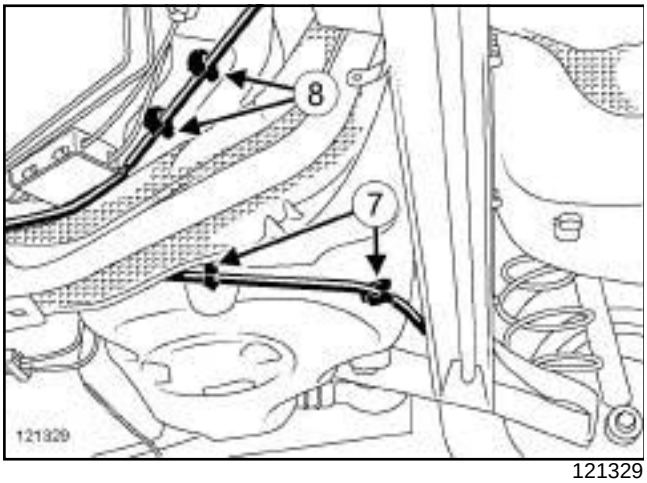
❏ Loosen nut (**3**) .



121334

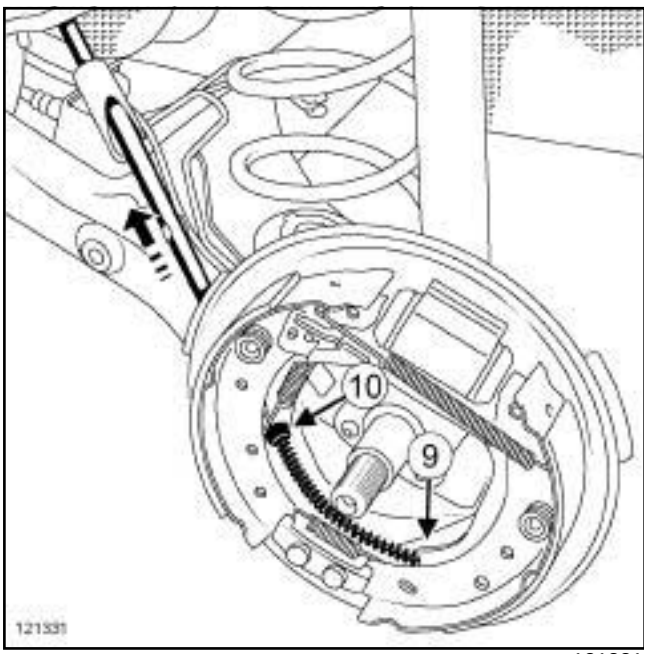
❏ Unclip the left-hand (**5**) and right-hand (**6**) parking brake cable sleeve stops.

EQUIPMENT LEVEL EA0 or EQUIPMENT LEVEL EA1 or EQUIPMENT LEVEL EA3 or EQUIPMENT LEVEL EA5 or EQUIPMENT LEVEL EAG or EQUIPMENT LEVEL EZ2 or EQUIPMENT LEVEL EZ4



121329

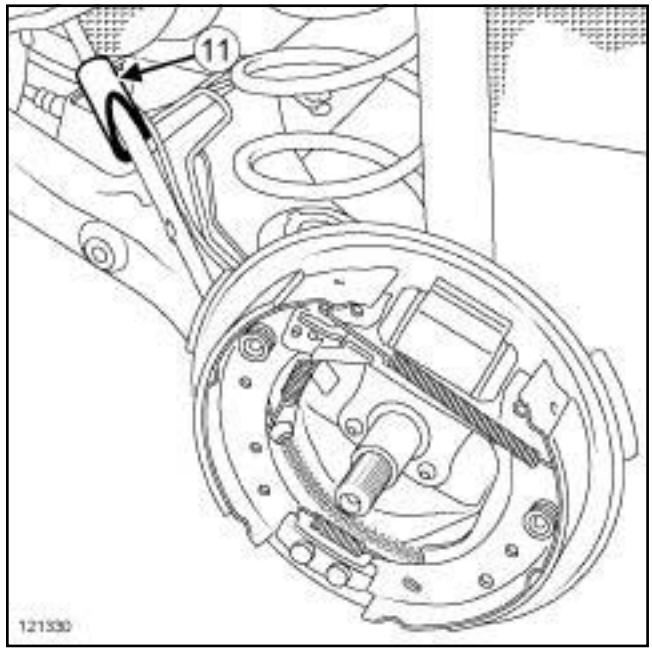
❏ Detach the parking brake cables at (**7**) and (**8**) .



121331

❏ Unclip the end of the parking brake cables at (**9**) .

❏ Unclip the cable sleeve stops at (**10**) and remove the parking brake cables from the rear drum flanges.



121330

❏ Pass the parking brake cables into the guides (**11**) and remove the parking brake cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Fit the parking brake cables by passing them into the guides ***(11)*** and rear brake drum flanges.

❏ Attach the end of the parking brake cables to the rear brake pads.

❏ Clip on the cable sleeve stops.

❏ Attach the cables to the fuel tank.

❏ Fit the cables to the compensator.

❏ Refit the compensator nut.

II - FINAL OPERATION.

❏ Adjust the parking brake lever (see **37A**, **Mechanical component controls**, **Parking brake lever: Adjustment**, page **37A-48**) .

❏ Refit:

- the heat shield,
- the rear brake drums (see **33A**, **Rear axle components**, **Rear brake drum: Removal - Refitting**, page **33A-19**) ,
- the rear wheels (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

EQUIPMENT LEVEL SPORT

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

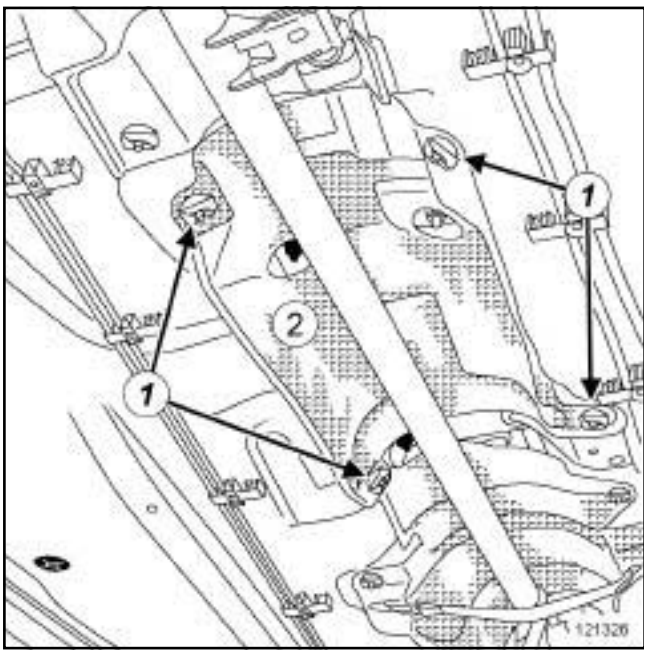
REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Fit:

- the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment),
- the parking brake lever in the released position.

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

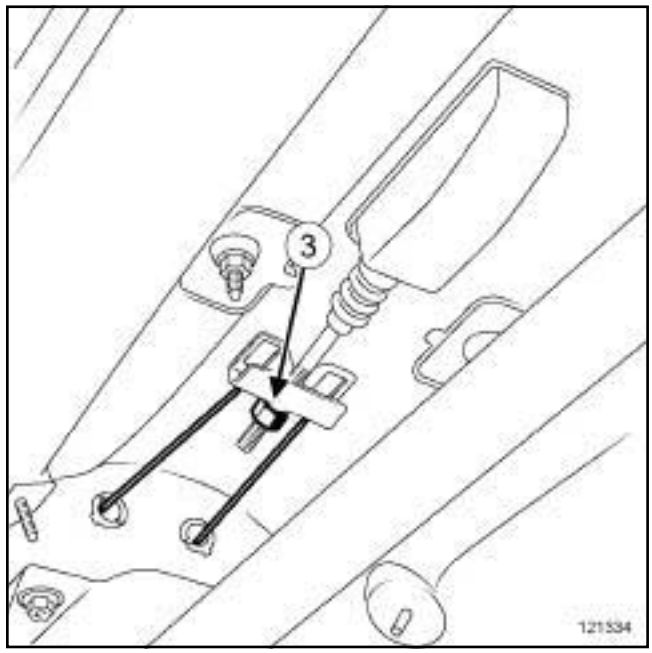


121326

❑ Remove:

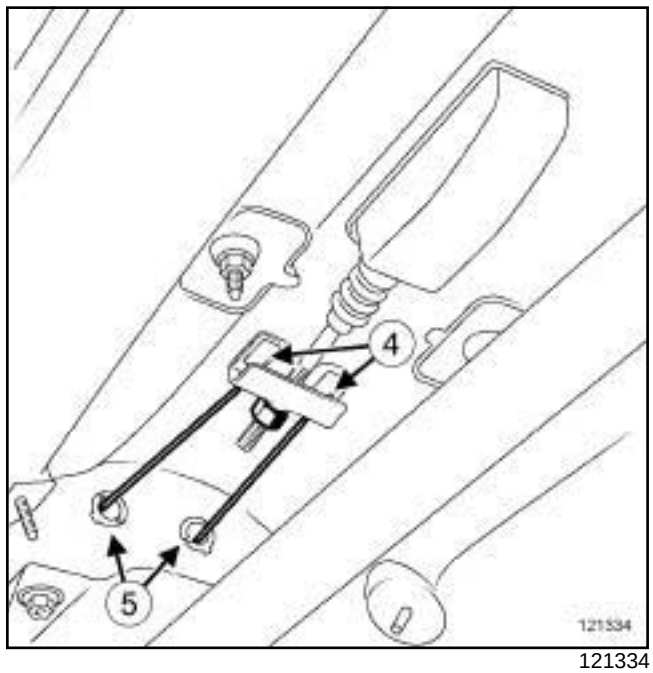
- the clips (**1**) ,
- the heat shield (**2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



121334

❑ Loosen nut (**3**) .

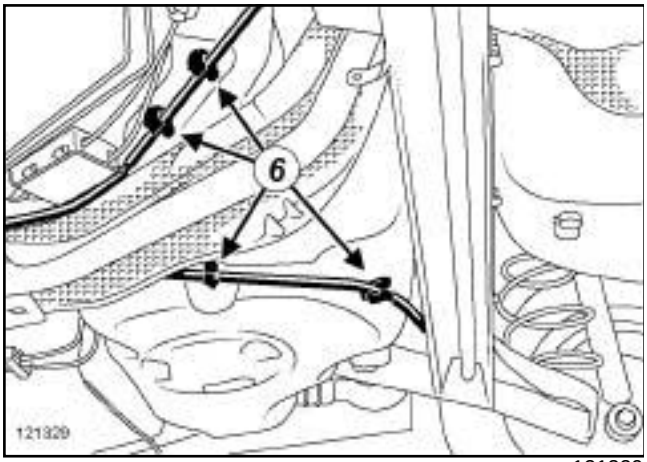


121334

❑ Remove the handbrake cables from the compensator at (**4**) .

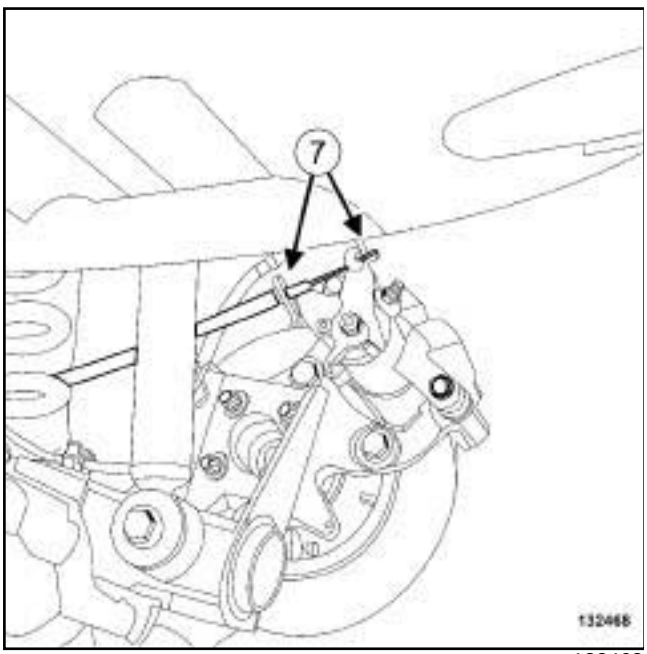
❑ Unclip the sleeve stops (**5**) from the parking brake cables.

EQUIPMENT LEVEL SPORT



121329

❏ Unclip the parking brake cables at (**6**) .



132468

❏ Unhook the parking brake cables from the callipers at (**7**) .

❏ Mark the tracks of the parking brake cables.

❏ Remove the parking brake cables.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the parking brake cables by following their routing.

❏ Clip the parking brake cables onto the brake callipers.

❏ Clip on the handbrake cables.

❏ Clip on the sleeve stops of the parking brake cables.

❏ Refit the parking brake cables on the compensator.

❏ Adjust the parking brake cables (see **37A**, **Mechanical component controls**, **Parking brake lever: Adjustment**, page **37A-48**) .

WARNING

To check the positioning of the parking brake cables in the compensator, engage and release the parking brake a number of times. If this fails to apply the parking brake, position the cables correctly in the brake compensator.

II - FINAL OPERATION.

❏ Refit:

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

RIGHT-HAND DRIVE

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**.

CHECK

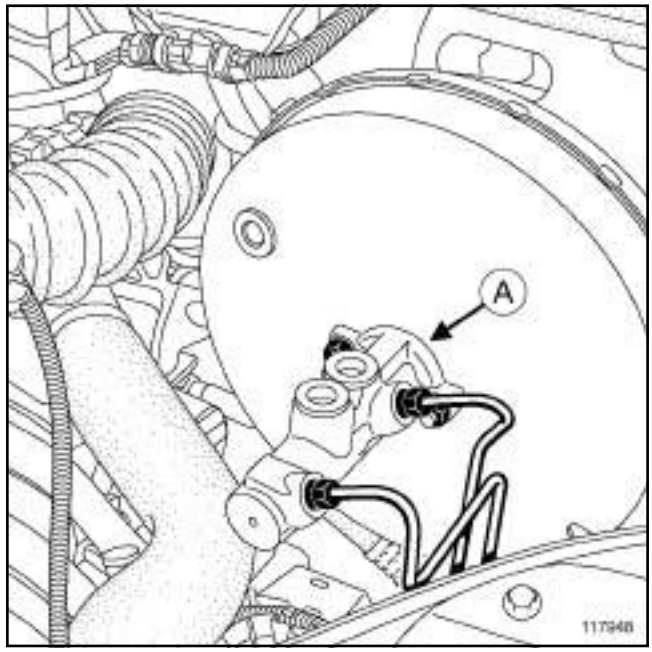
I - PREPARATION OPERATION FOR CHECK

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove:

- 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**) (MR 412, 55A, Exterior protection).

II - CHECKING THE SEALS



117948

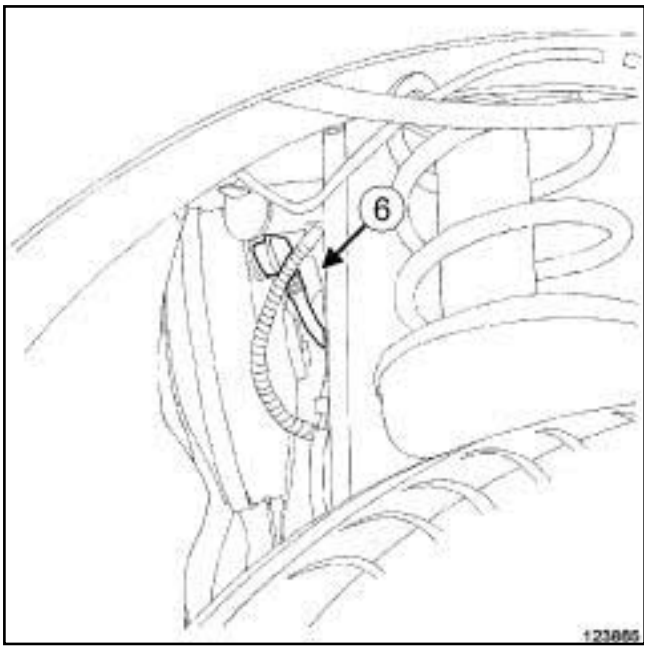
❑ When checking the brake servo seal, ensure that there is a perfect seal between this and the master cylinder at (**A**) .

If there is a leak in this area, replace the seal between the brake servo and the master cylinder (see **37A**, **Mechanical component controls**, **Master cylinder: Removal - Refitting**, page **37A-1**) .

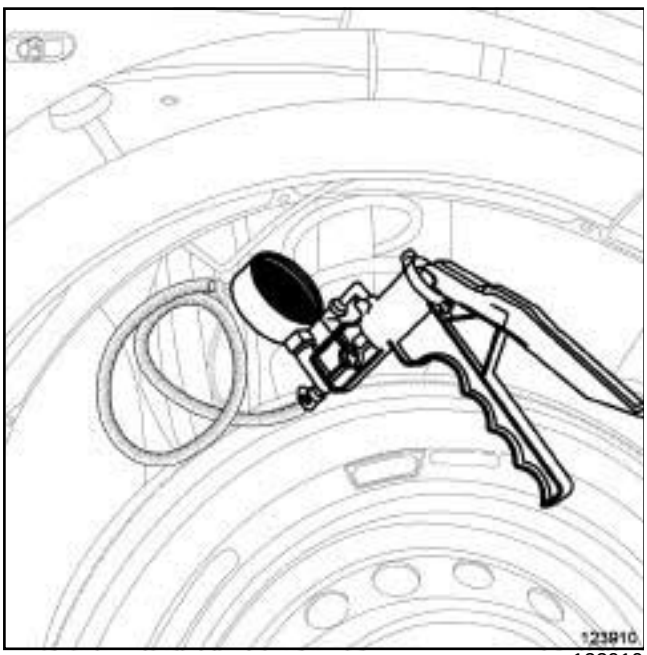
The brake servo seals must be checked when fitted on the vehicle and when the braking circuit is operational.

RIGHT-HAND DRIVE

III - CHECKING THE BRAKE SERVO



123865



123910

❏ Remove the non-return valve (**6**) from the brake servo (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

❏ Connect a vacuum pump directly to the brake servo.

❏ Activate the vacuum pump to obtain a vacuum of **500 mbar**.

❏ Check that the vacuum does not fall by more than **33 mbar** in **15 seconds**.

If the vacuum falls by more than **33 mbar** in **15 seconds**, there is a leak which may be:

- on the non-return valve seal; in this case replace the seal (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) ,
- on the pushrod diaphragm; in this case, replace the brake servo (see **37A**, **Mechanical component controls**, **Brake servo: Removal - Refitting**, page **37A-14**) .

❏ Refit the non-return valve on the brake servo (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

IV - CHECKING THE NON-RETURN VALVE

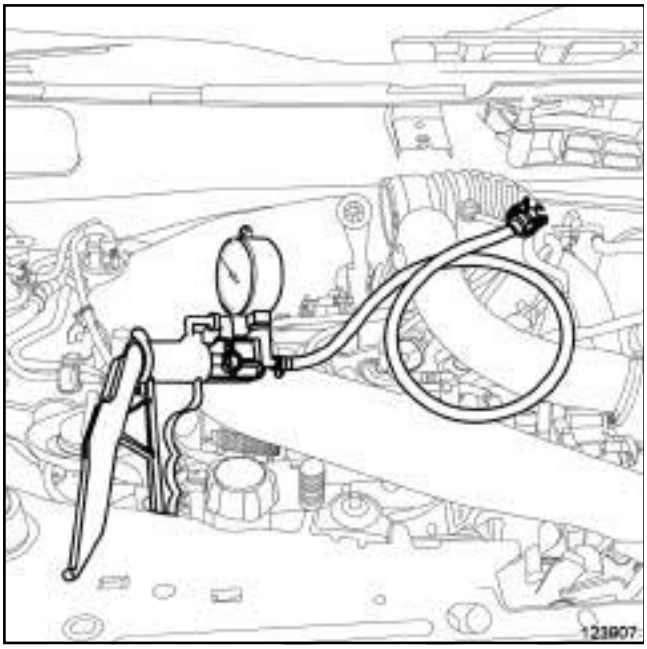
D4F or D7F

❏ Disconnect the non-return valve pipe on the intake distributor.

K9K

❏ Disconnect the non-return valve pipe on the vacuum pump.

RIGHT-HAND DRIVE


123907

❑ Connect a vacuum pump to the end of the non-return valve.

❑ Activate the vacuum pump to obtain a vacuum of **500 mbar**.

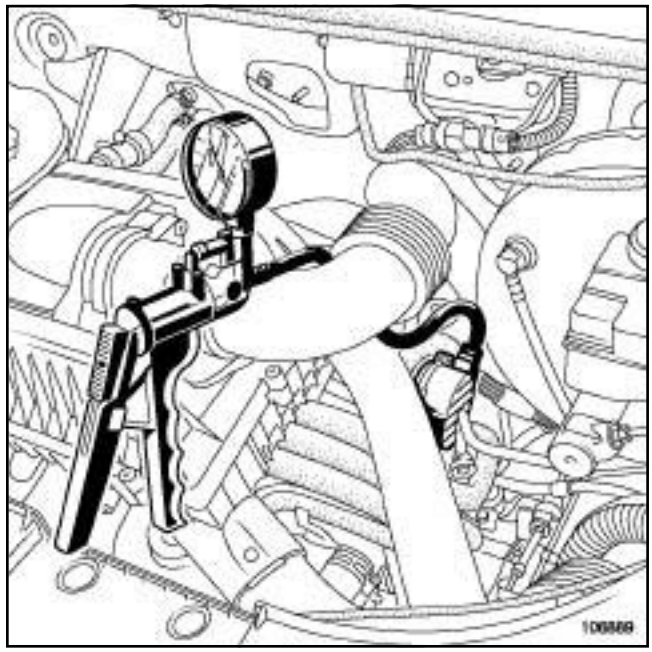
❑ Check that the vacuum pressure does not drop. If it does, the non-return valve is pierced; replace the valve (see **37A**, **Mechanical component controls**, **Brake servo non-return valve: Removal - Refitting**, page **37A-11**) .

D4F or D7F

❑ Refit the non-return valve pipe on the intake distributor.

V - CHECKING THE VACUUM PUMP

K9K


106889

❑ Connect the external vacuum pump to the engine vacuum pump.

❑ Start the engine.

❑ Check the following values:

- **550 mbar** in **5 seconds** for an engine speed of **700 rpm**,
- **700 mbar** in **3 seconds** and **900 mbar** in **5 seconds** for an engine speed of **4050 rpm**.

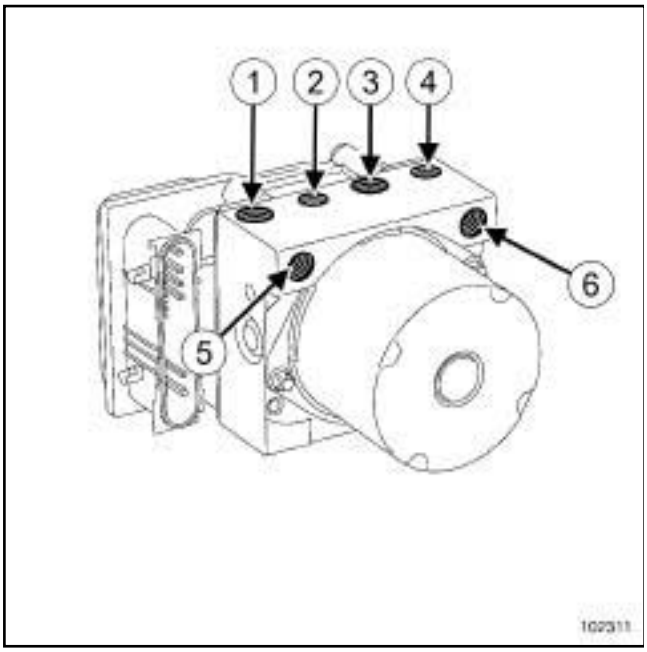
❑ Replace the vacuum pump if the values are different (see **37A**, **Mechanical component controls**, **Vacuum pump: Removal - Refitting**, page **37A-25**) .

❑ Refit the non-return valve pipe onto the vacuum pump.

VI - FINAL OPERATION.

❑ Refit:

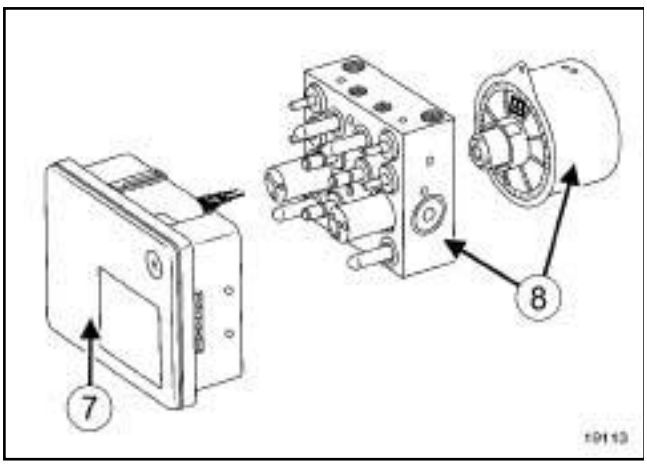
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front right-hand wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .



102311

(**1**) Master cylinder primary circuit
(**2**) Circuit for front left-hand wheel
(**3**) Circuit for front right-hand wheel
(**4**) Master cylinder secondary circuit
(**5**) Circuit for rear right-hand wheel
(**6**) Circuit for rear left-hand wheel

The anti-lock braking system pump assembly is equipped with a **26-track** computer.



19113

(**7**) Braking computer
(**8**) Hydraulic assembly

K9K, and LEFT-HAND DRIVE

Equipment required
pedal press

Tightening torques ▽	
hydraulic unit bolts on its intermediate bracket	**8 Nm**
hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting	**6.5 Nm**
hydraulic unit main mounting bolts on the body	**8 Nm**
rigid brake pipe unions on the hydraulic unit	**13 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

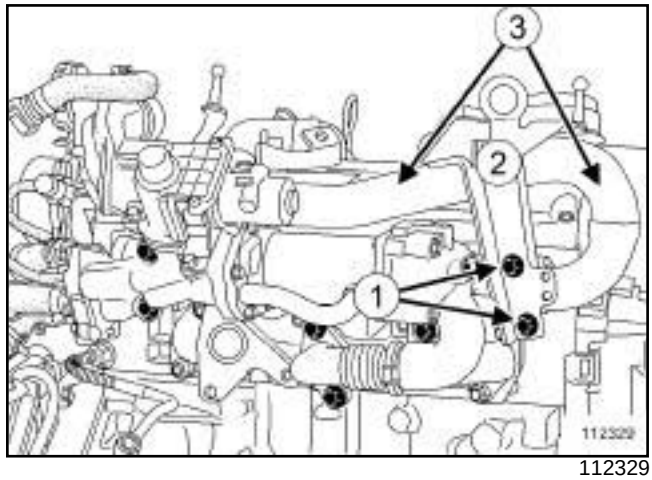
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

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

❏ Remove:

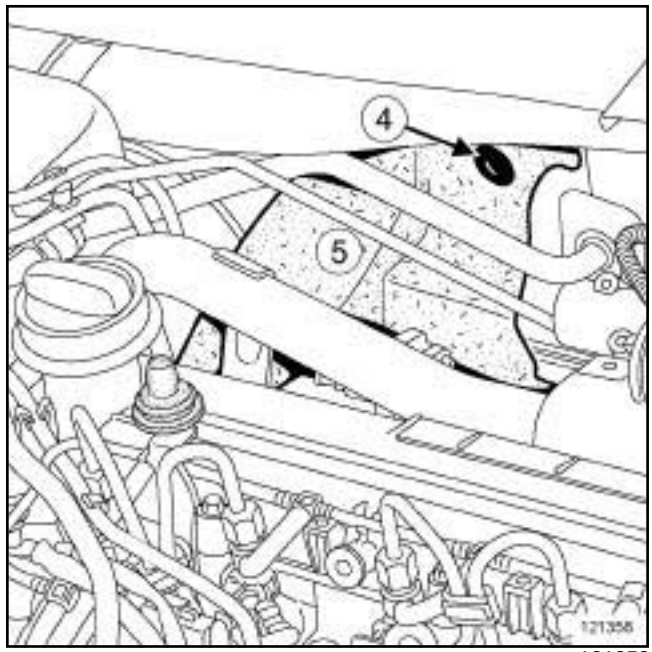
- the front wheel on the passenger side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).



112329

❏ Remove:

- the bolts (**1**) from the lifting eye on the right-hand side,
- the lifting eye on the right-hand side (**2**) ,
- the rigid pipe (**3**) from the EGR circuit.

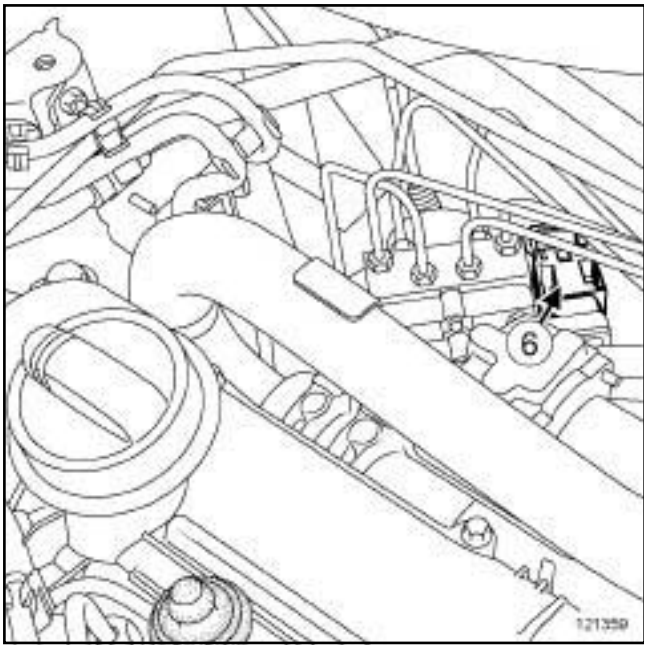


121358

❏ Remove the clip (**4**) from the soundproofing.

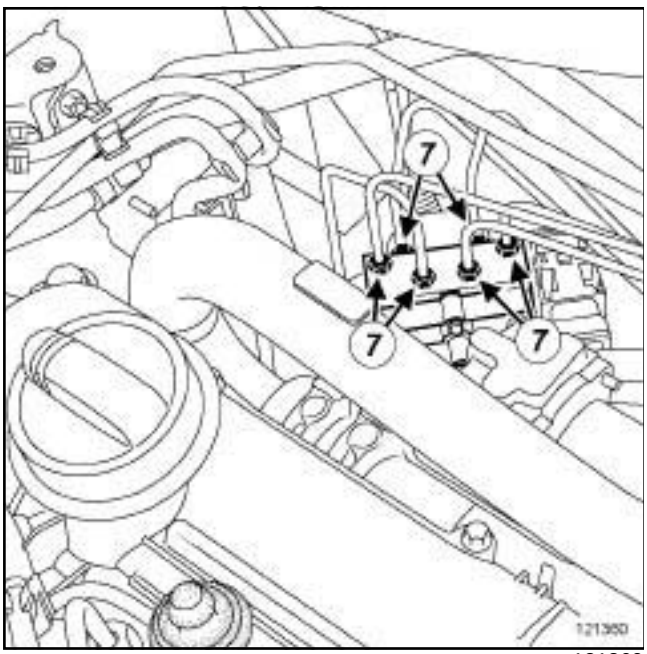
❏ Move the soundproofing aside (**5**) to access the hydraulic unit.

K9K, and LEFT-HAND DRIVE



121359

❏ Disconnect the hydraulic unit computer connector (**6**) .



121360

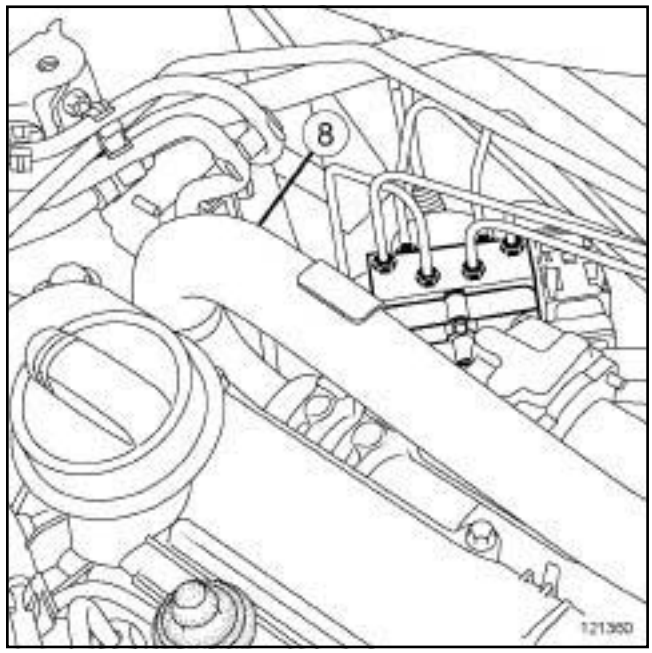
❏ Undo the rigid brake pipe unions (**7**) on the hydraulic unit.

WARNING

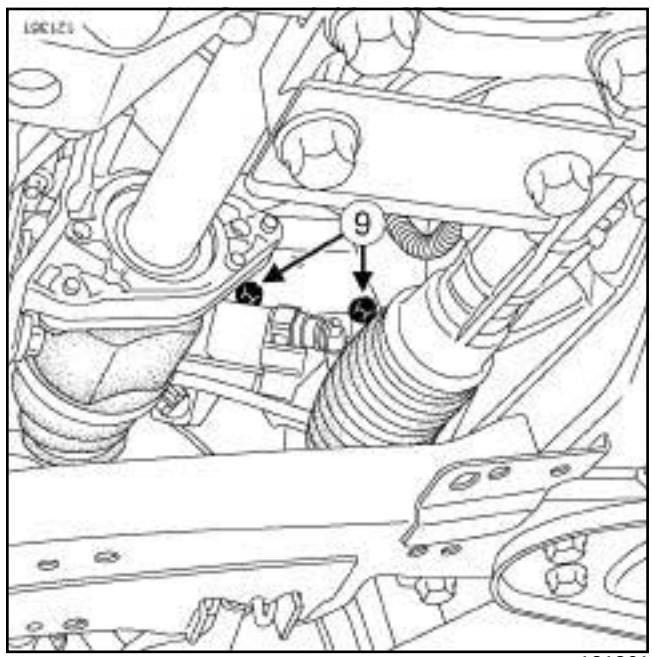
Prepare for the flow of fluid, and protect the surrounding components.

❏ Insert the blanking plugs.

II - OPERATION FOR REMOVAL OF PART CONCERNED



121360

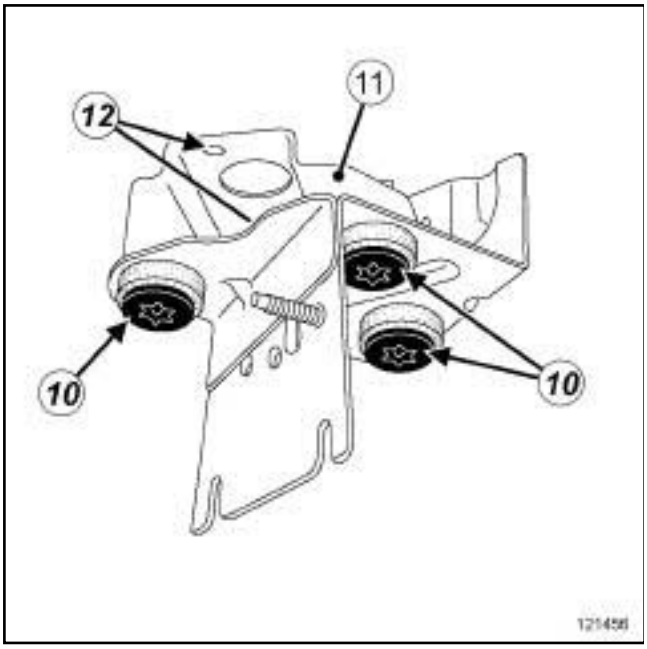


121361

❏ Remove:

- the hydraulic unit main mounting bolts (**8**) and (**9**) on the body,
- the « hydraulic unit mounting - hydraulic unit » assembly from the body.

K9K, and LEFT-HAND DRIVE



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (**10**) ,
- the « hydraulic unit intermediate bracket - hydraulic unit » assembly (**11**) from the main mounting,
- the hydraulic unit bolts (**12**) from its intermediate bracket,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the hydraulic unit onto its intermediate bracket,
- the hydraulic unit bolts onto its intermediate bracket.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.

❑ Refit:

- the « hydraulic unit intermediate bracket - hydraulic unit » assembly onto the main mounting,
- the hydraulic unit intermediate bracket bolts onto the main hydraulic unit mounting.

❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting (6.5 Nm)**.

❑ Refit:

- the « hydraulic unit mounting - hydraulic unit » assembly on the body,
- the hydraulic unit main mounting bolts on the body.

❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

II - FINAL OPERATION.

❑ Remove the blanking plugs.

❑ Fit and tighten the rigid brake pipe unions on the hydraulic unit.

❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.

❑ Connect the computer connector on the hydraulic unit.

❑ Fit the bulkhead soundproofing.

❑ Refit:

- the soundproofing clip,
- the rigid exhaust gas recirculation circuit pipe,
- the lifting eye on the right-hand side,
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the passenger side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

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

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

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

D4F or D7F, and LEFT-HAND DRIVE

Equipment required
pedal press

Tightening torques ▽	
hydraulic unit bolts on its intermediate bracket	**8 Nm**
hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting	**6.5 Nm**
hydraulic unit main mounting bolts on the body	**8 Nm**
rigid brake pipe unions on the hydraulic unit	**13 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

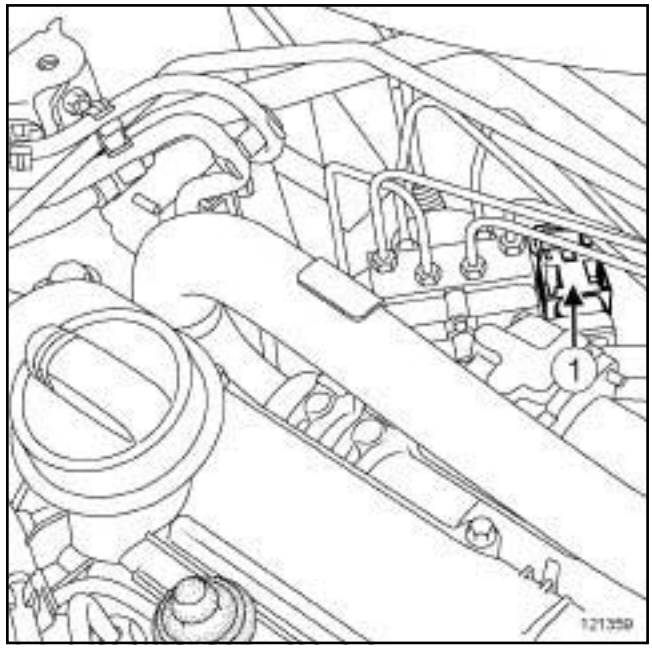
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

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

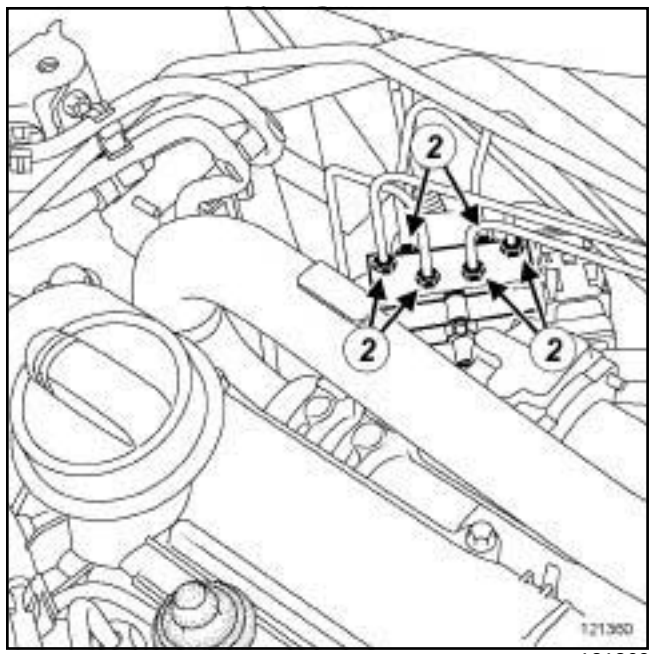
❏ Remove:

- the front wheel on the passenger side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the ignition coil (see **Coils: Removal - Refitting**) (MR 411, 17A, Ignition),
- the fuel vapour recirculation circuit solenoid valve (see **Fuel vapour absorber: Removal - Refitting**) (MR 411, 14A, Emission control),
- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).



121359

❏ Disconnect the hydraulic unit computer connector (**1**) .



121360

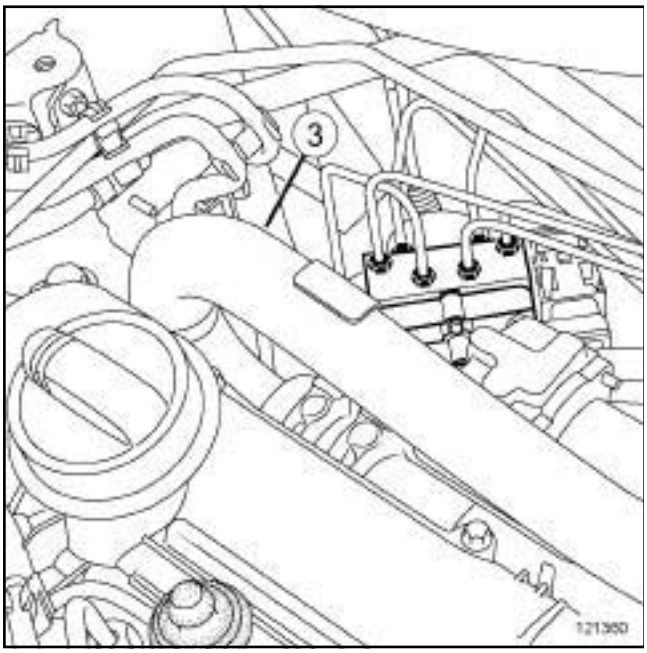
❏ Undo the rigid brake pipe unions (**2**) on the hydraulic unit.

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

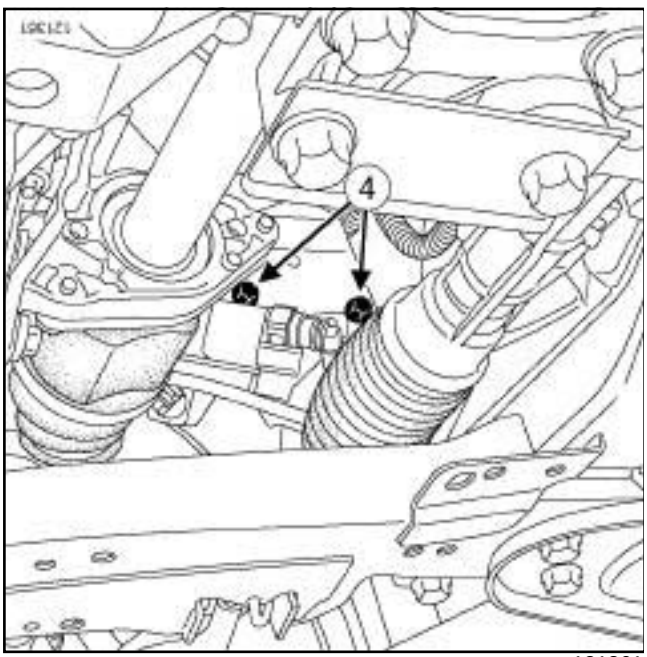
❏ Insert the blanking plugs.

D4F or D7F, and LEFT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



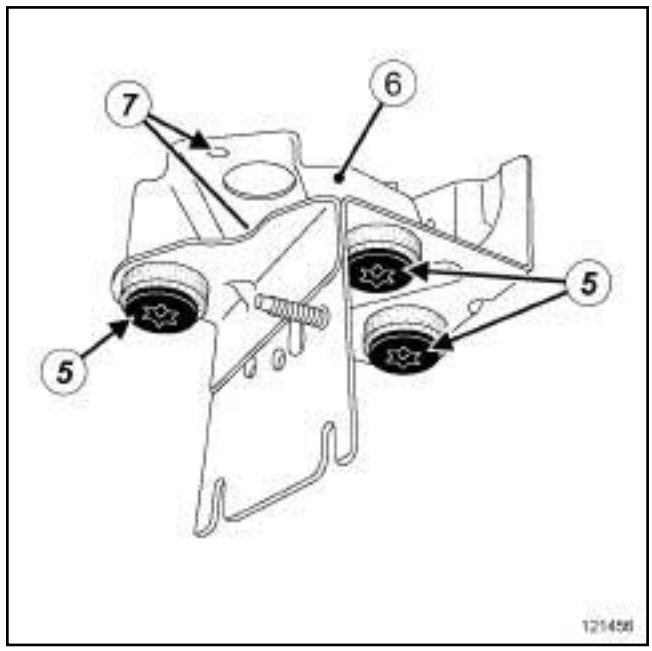
121360



121361

❑ Remove:

- the hydraulic unit main mounting bolts (**3**) and (**4**) on the body,
- the « hydraulic unit mounting - hydraulic unit » assembly from the body.



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (**5**) ,
- the « hydraulic unit intermediate bracket - hydraulic unit » assembly (**6**) from the main mounting,
- the hydraulic unit bolts (**7**) ,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the hydraulic unit onto its intermediate bracket,
- the hydraulic unit bolts.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.

❑ Refit:

- the « hydraulic unit intermediate bracket - hydraulic unit » assembly onto the main mounting,
- the hydraulic unit intermediate bracket bolts.

❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit mounting (6.5 Nm)**.

❑ Refit:

- the « hydraulic unit mounting - hydraulic unit » assembly on the body,

D4F or D7F, and LEFT-HAND DRIVE

- the hydraulic unit main mounting bolts on the body.

❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

II - FINAL OPERATION.

❑ Remove the blanking plugs.

❑ Fit and tighten the rigid brake pipe unions on the hydraulic unit.

❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.

❑ Connect the computer connector on the hydraulic unit.

❑ Refit:

- the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the fuel vapour recirculation circuit solenoid valve (see **Fuel vapour absorber: Removal - Refitting**) (MR 411, 14A, Emission control),
- the ignition coil (see **Coils: Removal - Refitting**) (MR 411, 17A, Ignition),
- the front wheel arch liner, on the passenger side (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel on the passenger side (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

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

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

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

D4F, and 780, and LEFT-HAND DRIVE – K4M, and LEFT-HAND DRIVE

Equipment required
pedal press
refrigerant charging station

Tightening torques ▽	
hydraulic unit bolts on its intermediate bracket	**8 Nm**
intermediate bracket bolts on the hydraulic unit main bracket	**8 N.m**
hydraulic unit main mounting bolts on the body	**8 Nm**
rigid brake pipe unions on the hydraulic unit	**13 Nm**

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).

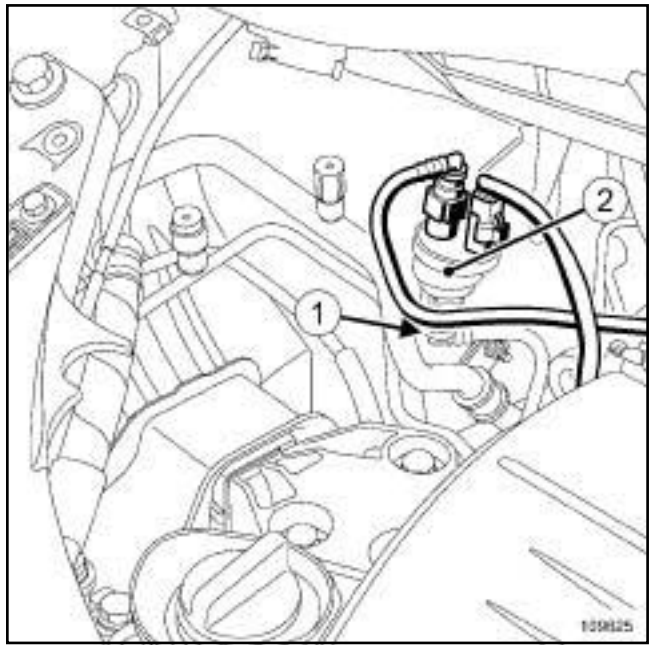
❏ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.

❏ Remove:

- the passenger side front wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) ,
- the front wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

D4F, and 780

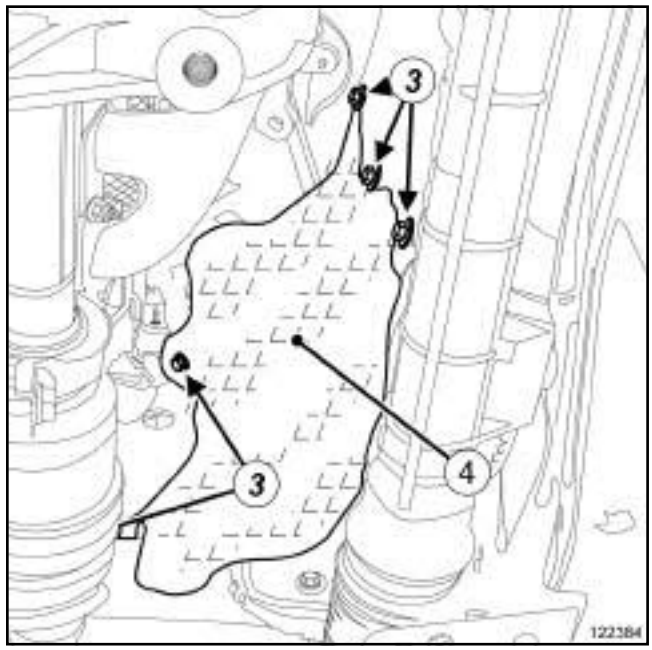
❏ Remove the air filter housing (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).



109625

❏ Disconnect the fuel vapour rebreathing solenoid valve union (**1**) .

❏ Remove the fuel vapour rebreathing solenoid valve (**2**) .



122384

❏ Remove the bolts (**3**) from the bulkhead heat shield.

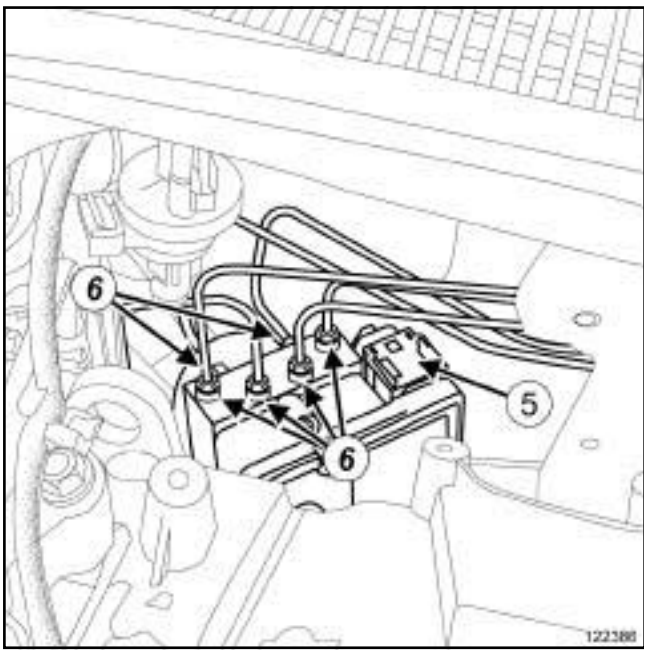
❏ Move the bulkhead heat shield (**4**) to one side.

K4M, and AIR CONDITIONING or CLIMATE CONTROL

❏ Drain the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❏ Remove the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

II - OPERATION FOR REMOVAL OF PART CONCERNED



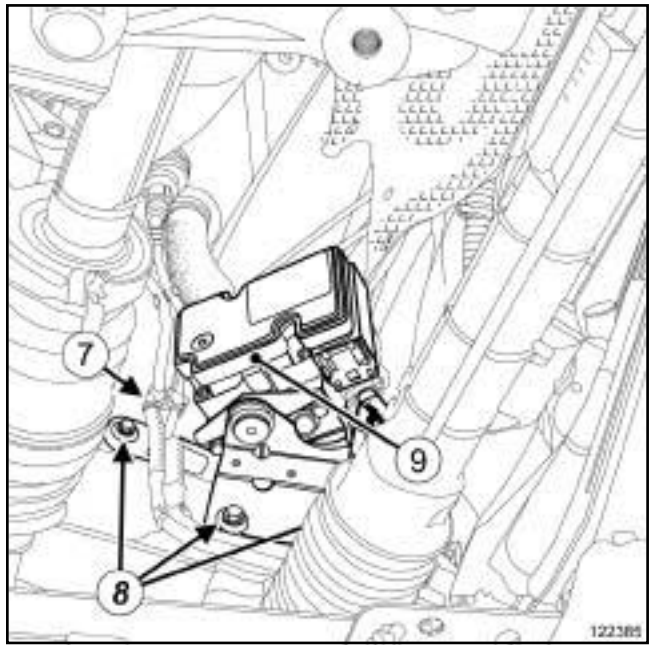
122386

❏ Disconnect the hydraulic unit computer connector (**5**) .

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

❏ Undo the rigid brake pipe unions (**6**) on the hydraulic unit.

❏ Insert the blanking plugs.



122385

❏ Unclip the fuel pipes (**7**) .

❏ Remove the bolts (**8**) from the hydraulic unit main bracket.

K4M

❏ Remove the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

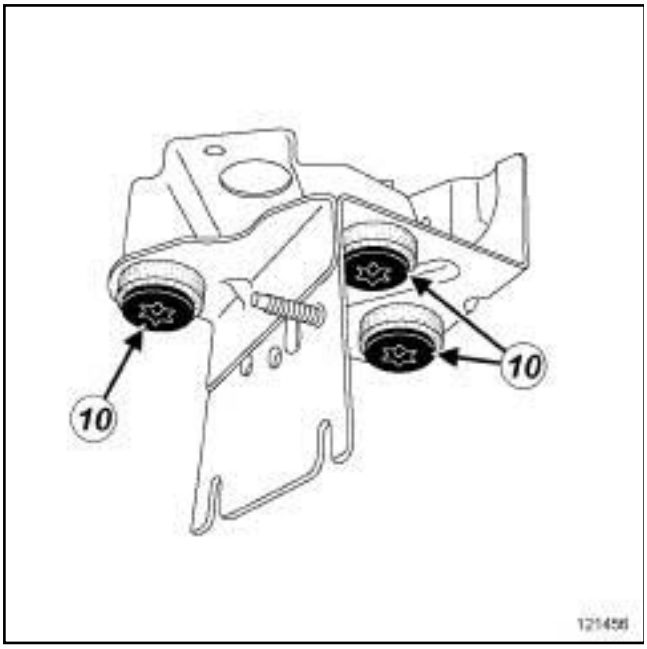
❏ Fit theunder the engine.

❏ Remove the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

❏ Tilt the engine towards the front of the vehicle.

❏ Remove the "hydraulic unit bracket - hydraulic unit" assembly from the body.

D4F, and 780, and LEFT-HAND DRIVE – K4M, and LEFT-HAND DRIVE



121456

❑ Remove:

- the hydraulic unit intermediate bracket bolts (**10**) ,
- the “intermediate bracket - hydraulic unit” assembly from the main bracket,
- the hydraulic unit bolts,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the hydraulic unit on its intermediate bracket.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.

❑ Refit the "hydraulic unit intermediate bracket - hydraulic unit" assembly on the main bracket.

❑ Torque tighten the **intermediate bracket bolts on the hydraulic unit main bracket (8 N.m)**.

❑ Refit the "main bracket - hydraulic unit" assembly on the body.

K4M

❑ Refit:

- the right-hand suspended engine mounting (see **Right-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

❑ Clip on the fuel pipes.

❑ Remove the blanking plugs.

❑ Fit and tighten the rigid brake pipe unions on the hydraulic unit.

❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 Nm)**.

❑ Connect the hydraulic unit connector.

II - FINAL OPERATION.

K4M, and AIR CONDITIONING or CLIMATE CONTROL

❑ Refit the "dehydrator reservoir - expansion valve" connecting pipe (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**) (62A, Air conditioning).

❑ Fill the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Refit the bulkhead heat shield.

❑ Fit the fuel vapour rebreathing solenoid valve.

❑ Refit the union on the fuel vapour rebreathing solenoid valve.

D4F, and 780

❑ Refit the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture)

❑ Refit:

- the front wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front passenger side wheel (see **35A**, **Wheels and tyres**, **Wheel: Removal - Refitting**, page **35A-1**) .

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

D4F, and 780, and LEFT-HAND DRIVE – K4M, and LEFT-HAND DRIVE

- ❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ❑ Bleed the brake circuit (see **30A**, **General information**, **Braking circuit: Bleed**, page **30A-4**) .

RIGHT-HAND DRIVE

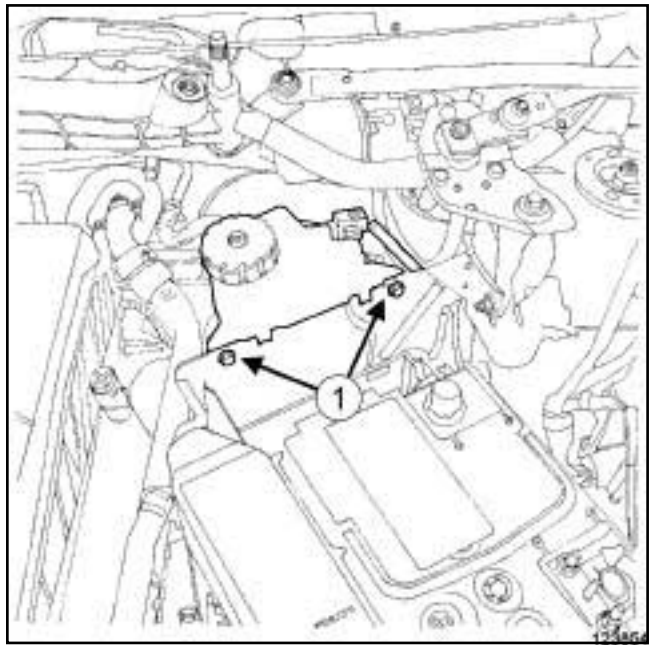
Tightening torques ▽	
hydraulic unit bolts on its intermediate bracket	**8 Nm**
hydraulic unit intermediate bracket bolts on the main hydraulic unit bracket	**8 Nm**
hydraulic unit main mounting bolts on the body	**8 Nm**
rigid brake pipe unions on the hydraulic unit	**14 Nm**
secondary brake fluid reservoir bolts	**8 Nm**

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).



123854

❑ Remove:

- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the bolts (**1**) from the secondary brake fluid reservoir.

❑ Move aside the secondary brake fluid reservoir.

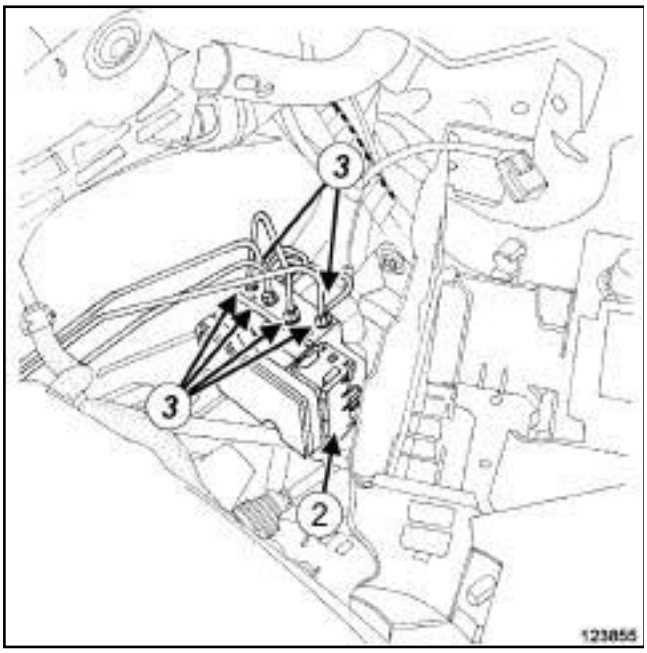
K4M

❑ Remove:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the computer mounting bolts,
- the computer bracket.

RIGHT-HAND DRIVE

II - OPERATION FOR REMOVAL OF PART CONCERNED



123855

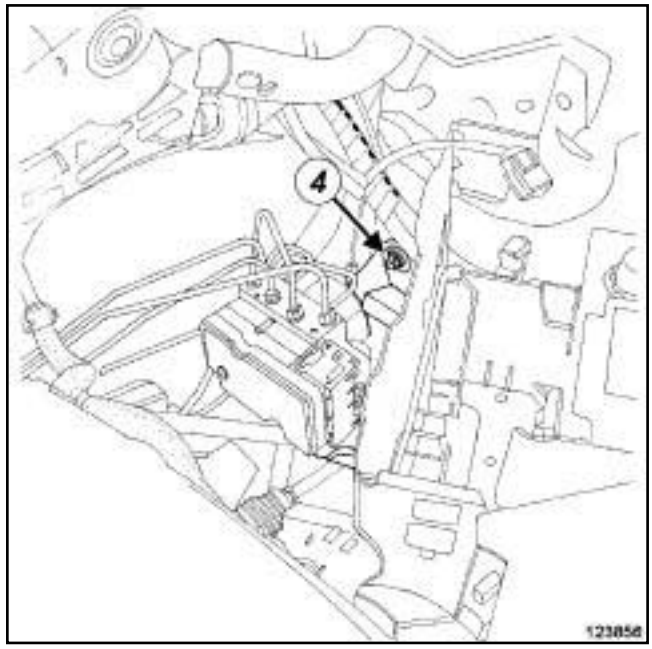
❏ Disconnect the braking hydraulic unit connector (**2**) .

WARNING

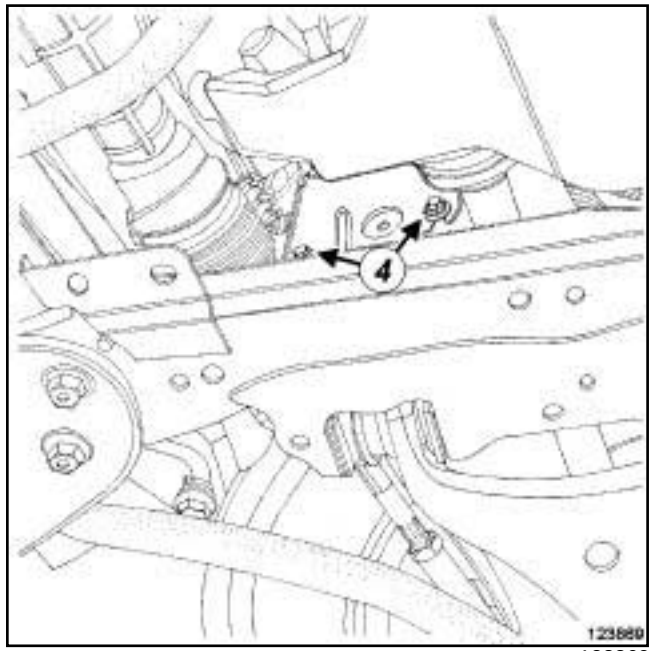
Prepare for the flow of fluid, and protect the surrounding components.

❏ Remove the unions (**3**) of the rigid brake pipes on the hydraulic unit.

❏ Fit blanking plugs to the hydraulic unit.



123856

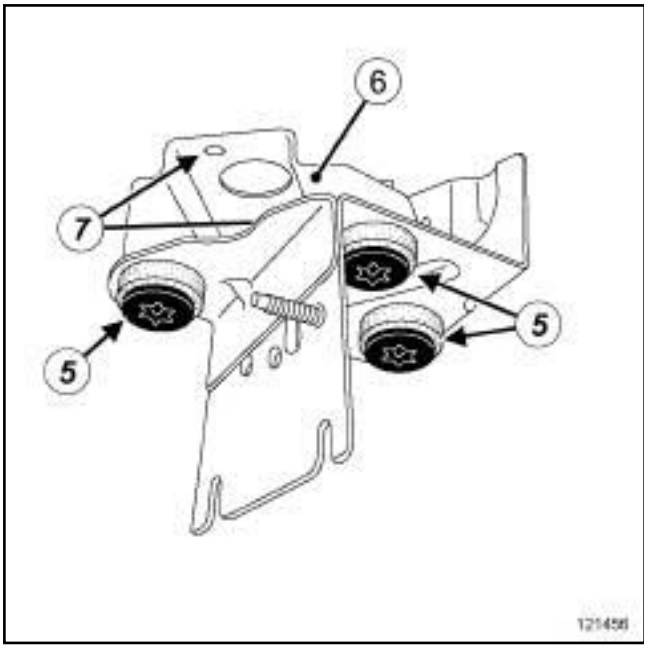


123869

❏ Remove:

- the bolts (**4**) from the hydraulic unit main bracket on the body,
- the “hydraulic unit bracket - hydraulic unit” assembly.

RIGHT-HAND DRIVE



121456

❑ Remove:

- the hydraulic assembly intermediate bracket bolts (**5**) ,
- the “hydraulic unit intermediate bracket - hydraulic unit” assembly (**6**) from the main bracket,
- the hydraulic unit bolts (**7**) ,
- the hydraulic unit from its intermediate bracket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the hydraulic unit on its support.

❑ Torque tighten the **hydraulic unit bolts on its intermediate bracket (8 Nm)**.

❑ Refit the "hydraulic unit intermediate bracket - hydraulic unit" assembly on the main bracket.

❑ Torque tighten the **hydraulic unit intermediate bracket bolts on the main hydraulic unit bracket (8 Nm)**.

❑ Refit the "hydraulic unit main bracket - hydraulic brake unit" assembly on the body.

❑ Torque tighten the **hydraulic unit main mounting bolts on the body (8 Nm)**.

❑ Refit the rigid brake pipe unions on the hydraulic unit.

❑ Torque tighten the **rigid brake pipe unions on the hydraulic unit (14 Nm)**.

❑ Connect the braking hydraulic unit connector.

II - FINAL OPERATION.

K4M

❑ Refit:

- the computer bracket.
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection).

❑ Fit the secondary brake fluid reservoir.

❑ Torque tighten the **secondary brake fluid reservoir bolts (8 Nm)**.

❑ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

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

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

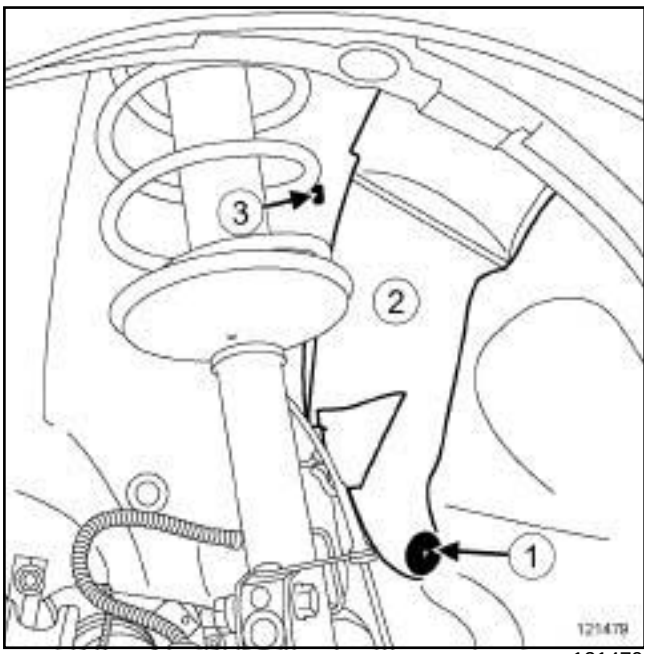
Tightening torques ▽	
front wheel speed sensor bolt	8 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

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



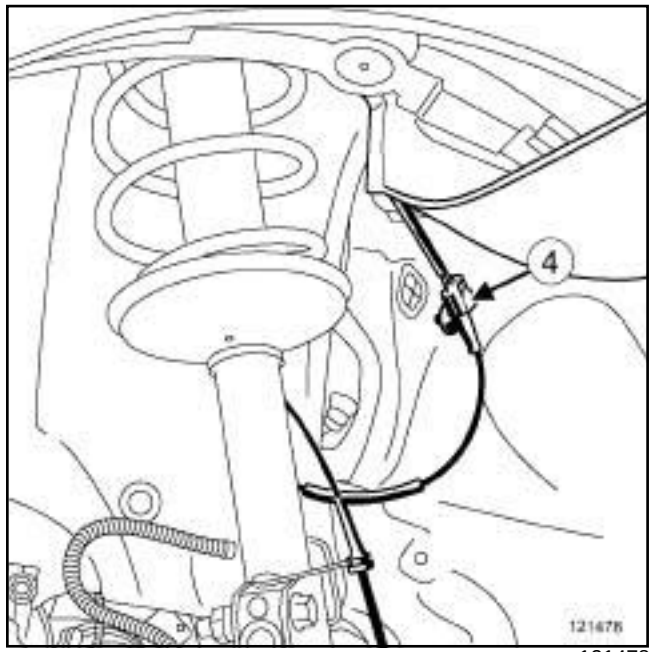
121479

❏ Remove the clip (**1**) .

❏ Lift part of the front wheel arch liner (**2**) .

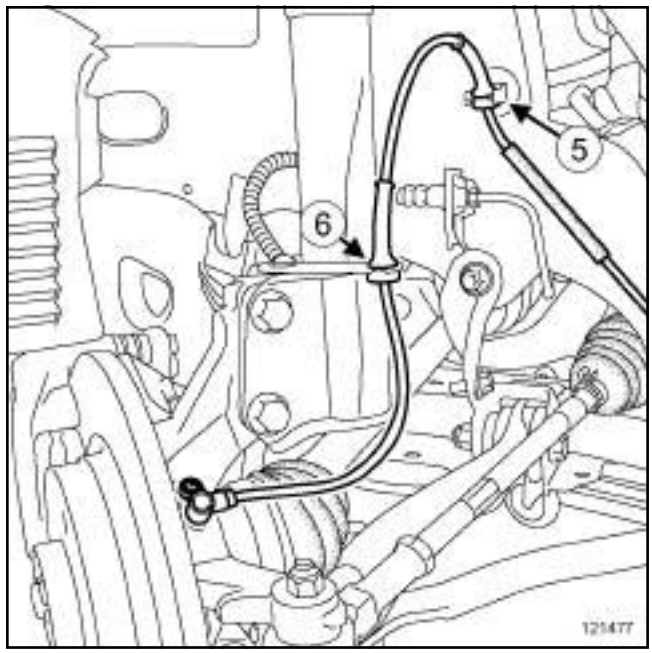
❏ Unclip the pin (**3**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



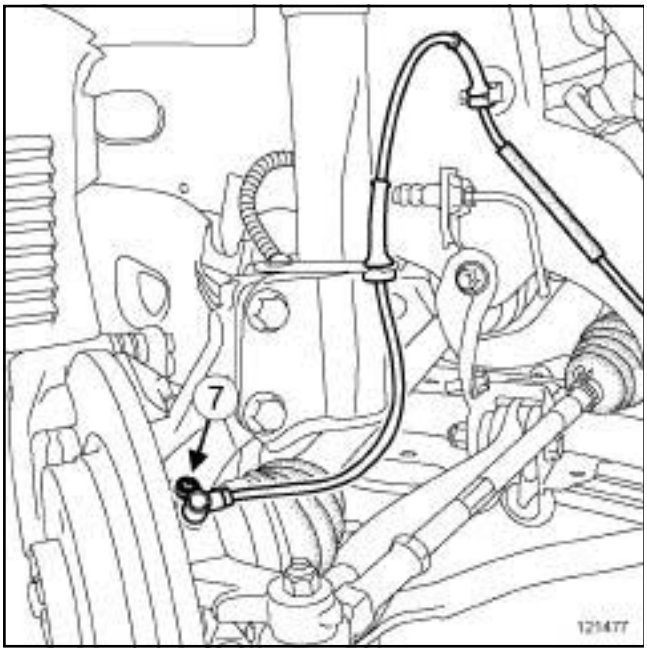
121478

❏ Disconnect the front wheel speed sensor cable connector (**4**) .



121477

❏ Unclip the front wheel speed sensor cable at (**5**) and (**6**) .



121477

❑ Remove:

- the front wheel speed sensor bolt (**7**) ,
- the front wheel speed sensor.

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

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

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

❑ Torque tighten the **front wheel speed sensor bolt (8 Nm)**.

❑ Connect the front wheel speed sensor cable connector.

❑ Clip on the front wheel speed sensor cable.

II - FINAL OPERATION.

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

Tightening torques ▽	
rear wheel speed sensor bolt	**8 Nm**

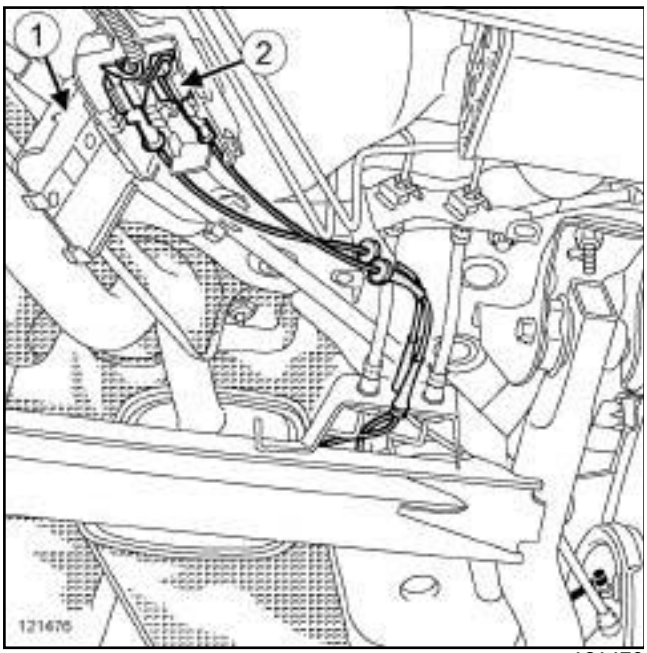
REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

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

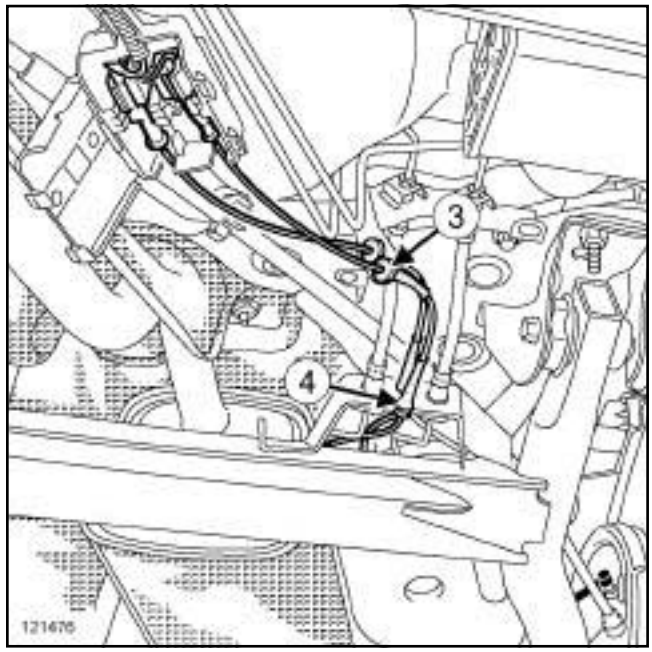
II - OPERATION FOR REMOVAL OF PART CONCERNED



121476

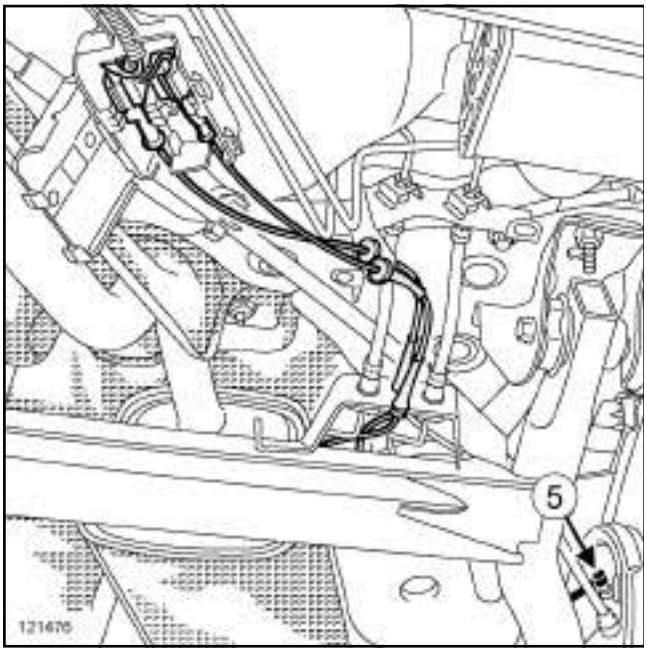
❑ Open the rear wheel speed sensor connector protection unit flap (**1**) .

❑ Disconnect the rear wheel speed sensor cable connector (**2**) .



121476

❑ Unclip the rear wheel speed sensor cable at (**3**) and (**4**) .



121476

❑ Remove:

- the rear wheel speed sensor bolt (**5**) ,
- the rear wheel speed sensor.

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

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

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

❑ Torque tighten the **rear wheel speed sensor bolt (8 Nm)**.

❑ Clip on the rear wheel speed sensor cable.

❑ Connect the rear wheel speed sensor cable connector.

II - FINAL OPERATION.

❑ Close the rear wheel speed sensor connector protection unit flap.

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

Tightening torques ▽	
lateral acceleration and yaw sensor nuts	**8 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

LEFT-HAND DRIVE

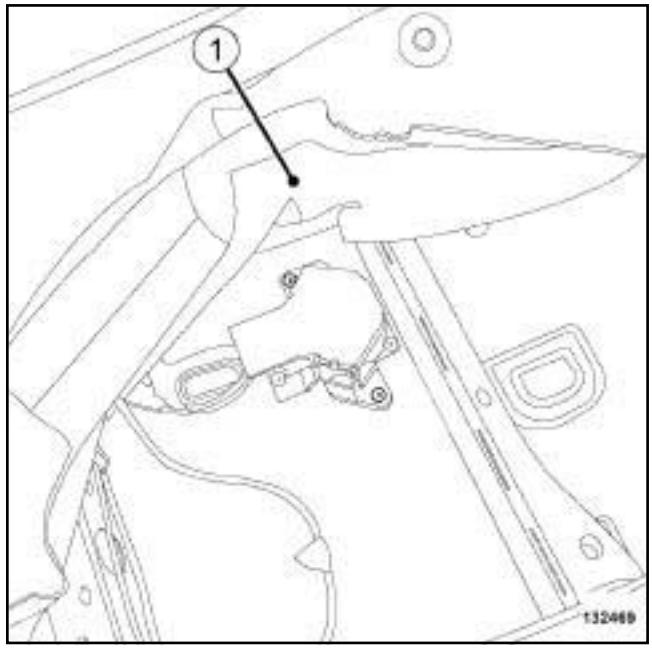
❏ Remove:

- the front passenger seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners),
- the passenger side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim).

RIGHT-HAND DRIVE

❏ Remove:

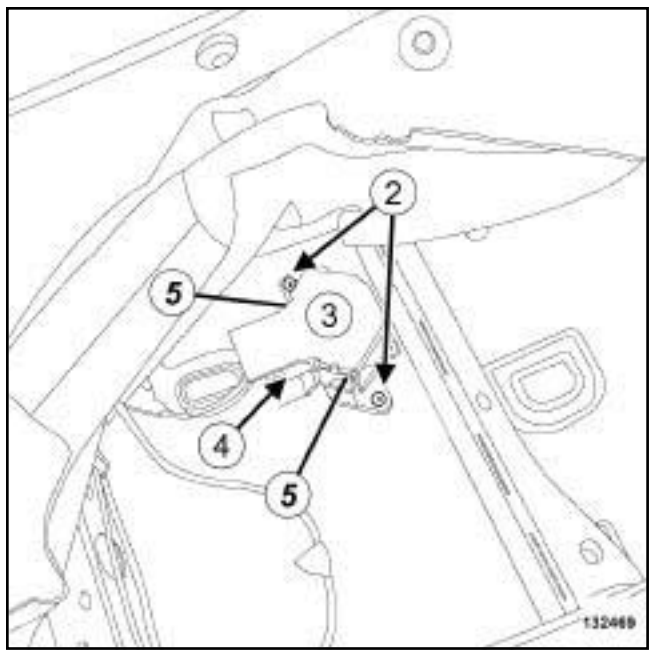
- the driver's seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners),
- the driver's side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim).



132469

❏ Remove the floor carpet (**1**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132469

❏ Drill the rivets (**2**) of the protection plate (**3**) ,

❏ Remove the protection plate (**3**) .

❏ Disconnect the lateral acceleration and yaw sensor connector (**4**) .

❏ Remove:

- the (**5**) lateral acceleration and yaw sensor nuts,

ELECTRONIC STABILITY PROGRAM

- the lateral acceleration and yaw sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the lateral acceleration yaw sensor.

❏ Torque tighten the **lateral acceleration and yaw sensor nuts (8 Nm)**.

❏ Connect the lateral acceleration and yaw sensor connector.

❏ Refit:

- the sensor protection plate,
- the rivets of the sensor protection plate.

II - FINAL OPERATION.

❏ Refit the floor carpet.

RIGHT-HAND DRIVE

❏ Refit:

- the driver's side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim),
- the driver's seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners).

LEFT-HAND DRIVE

❏ Refit:

- the passenger side front sill lining (see **Front door sill lining: Removal - Refitting**) (71A, Body internal trim),
- the front passenger seat (see **Complete front seat: Removal - Refitting**) (75A, Front seat frames and runners).

Special tooling required	
Mot. 1608	Torque screwdriver 1 to 6.6 N.m.

Equipment required
Diagnostic tool

Tightening torques ▽	
braking computer bolts	**3 Nm**

This repair method only relates to vehicles without **ESP**, equipped with **TEVES** brand hydraulic unit.

REMOVAL

I - REMOVAL PREPARATION OPERATION

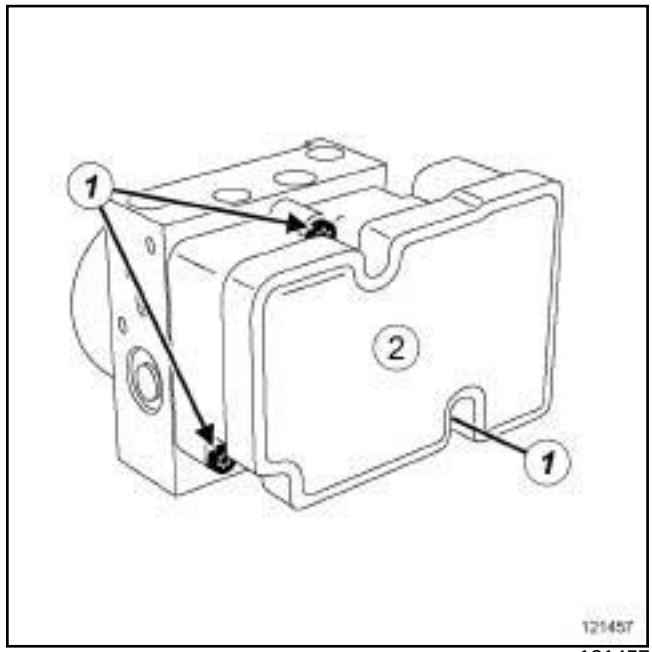
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

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

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Remove the entire hydraulic unit (see **38C**, **Anti-lock braking system**, **Hydraulic brake unit: Removal - Refitting**, page **38C-2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



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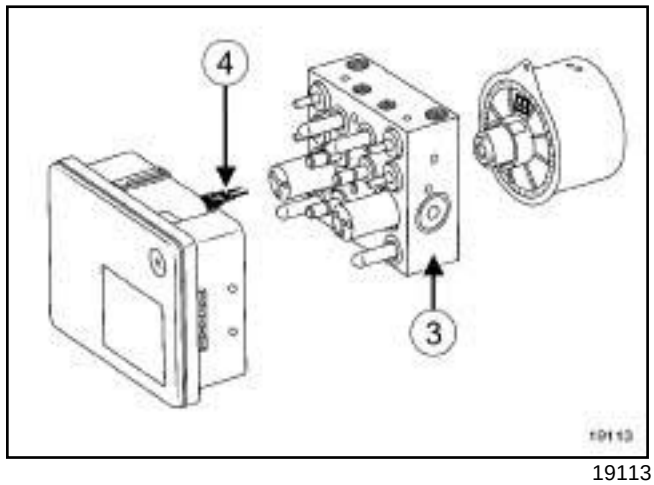
❏ Remove:

- the braking computer bolts (**1**) on the hydraulic unit,
- the braking computer (**2**) .

REFITTING

I - REFITTING PREPARATION OPERATION



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❏ Do not clean the pressure modulation unit (**3**) .

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the braking computer ***(2)*** , holding it by its edge.

> Note:
>
> Do not try to force the braking computer into place when refitting; it should fit in without any resistance.

> Note:
>
> When a new braking computer is being fitted, remember to attach the interconnection fork ***(4)*** between the pressure modulation unit and the braking computer.

❑ Refit the braking computer bolts on the pressure modulation unit.

❑ Torque tighten the **braking computer bolts (3 Nm)** using the **(Mot. 1608)**.

III - FINAL OPERATION.

❑ Refit the entire hydraulic unit (see **38C**, **Anti-lock braking system**, **Hydraulic brake unit: Removal - Refitting**, page **38C-2**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

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

❑ Configure the tachometric index using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413 Fault finding, 38C, Anti-lock braking system).

❑ Clear any faults stored by the braking computer.

❑ Carry out a road test to confirm the repair.