

RENAULT

3 Chassis

30A GENERAL VEHICLE INFORMATION

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33A REAR AXLE ASSEMBLIES

35A WHEELS AND TYRES

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X84, and J84

77 11 322 062

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Edition Anglaise

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

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

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Scénic II - Section 3

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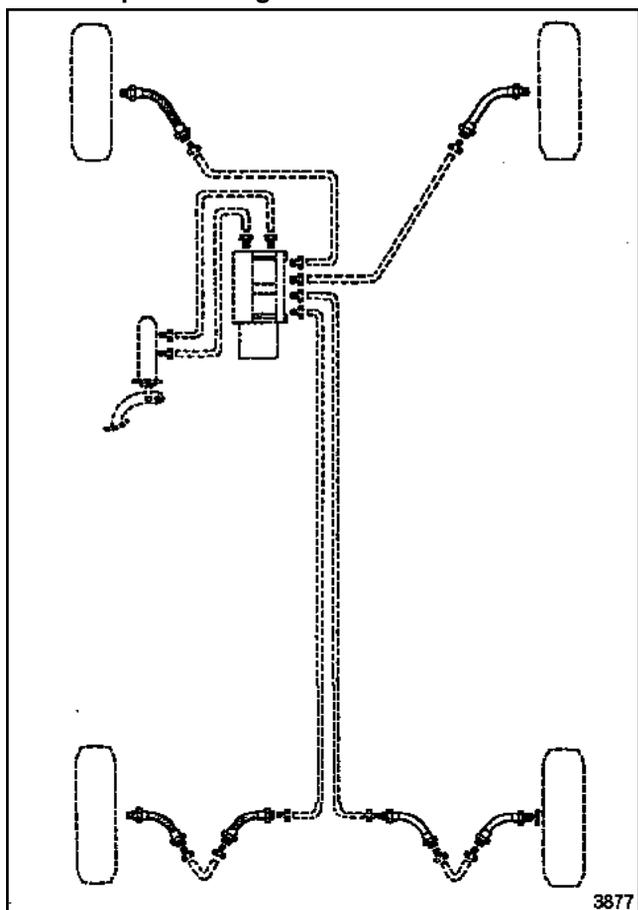
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GENERAL VEHICLE INFORMATION

Schematic diagram of the brake circuit

30A

« X »-shaped braking circuit



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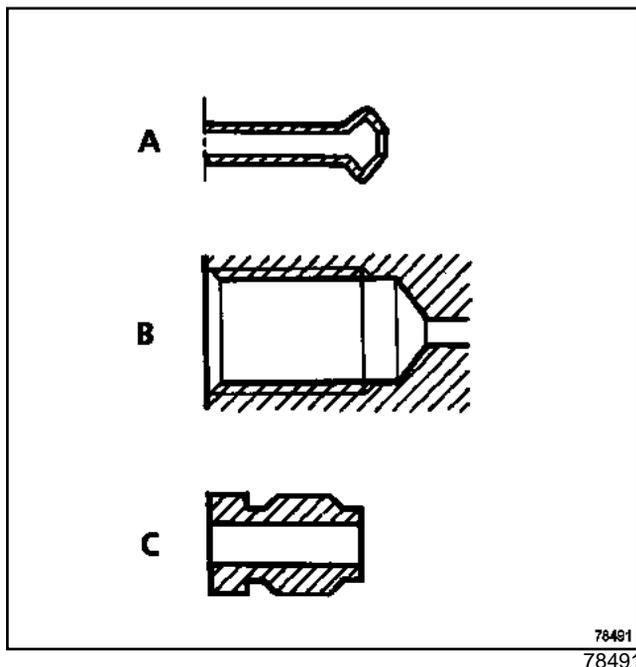
IMPORTANT

This is a general system diagram, do not use it as a reference for take-off points or circuit allocation. When replacing a vehicle's braking circuit components, always mark the pipes before removing them as they must be reconnected in their original positions.

Brake circuit pipes and unions

WARNING

- 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.



Parts identification:

- shape of the steel or copper pipe end piece (A),
- shape of the threaded housings on components (B),
- shape of unions (C): **11 mm** Allen key.

Brake fluid

BRAKE FLUID REPLACEMENT INTERVALS

Our brake technology, in particular our disc brakes (hollow pistons which conduct little heat with a small amount of fluid in the cylinder and sliding callipers avoiding the need for a fluid reservoir in the least cooled area of the wheel), has allowed us to reduce the risks of « vapour-lock » as far as possible, even if the brakes are used intensively (in mountainous areas). However, current brake fluids are subject to a slight deterioration during the first months of use as a result of a small amount of humidity intake. Reasons for it being recommended that you change the brake fluid: see **the warranty and servicing book for the vehicle**.

1 - Topping up the level

Brake pad wear will result in a gradual drop in the fluid level in the reservoir.

The fluid should not be topped up as the level will rise again when the pads are changed. However, the brake fluid level should not drop below the minimum mark.

2 - Approved brake fluid

Mixing two incompatible brake fluids in the circuit could lead to major leaks, mainly due to damage to the cups.

To avoid these risks, it is essential to only use brake fluids which have been checked and approved by our laboratories and which comply with the SAE J 1703-DOT4 standard.

For optimized braking, RENAULT recommends a brake fluid with low viscosity in cold conditions (**750 mm² / s** at **40°C** maximum).

GENERAL VEHICLE INFORMATION

Brake: Specifications

30A

	Engine	
	K4J, K4M, K9K	F9Q, F4R
Front brakes (mm)		
Piston diameter	54	54
Disc diameter	280 (1) 300 (2)	300
Disc thickness	24	24
Minimum disc thickness (3)	21.8	21.8
Maximum disc run-out	0.07	0.07
Brake lining thickness (including support)	18	18
Minimum brake lining thickness (including support)	6	6
Rear brakes (mm)		
Piston diameter	34	
Disc diameter	270 (1) 274 (2)	
Disc thickness	10	
Minimum disc thickness (3)	6.5	
Maximum disc run-out	0.07	
Brake lining thickness (including support)	16	
Minimum brake lining thickness (including support)	6	
Master cylinder (mm)		
Diameter	23.8	
Stroke	36	

(1) Scenic.

(2) Long Scenic.

(3) Brake discs cannot be reground. In case of excessive scoring or wear they must be replaced.

Braking circuit bleed

Equipment required

brake circuit bleeding device (approved by Renault)

Diagnostic tool

Precautions to be taken during the braking circuit bleeding operation:

- Check the brake fluid levels of the brake circuit and the bleeding device.
- The braking regulation circuit must not have any hydraulic or electrical faults.

I - BLEEDING THE BRAKE CIRCUIT OUTSIDE THE CONTROL CIRCUIT

WARNING

Special precautions to be taken during the brake circuit bleeding operation: the vehicle ignition must be switched off to ensure that the hydraulic unit solenoid valves do not operate.

This procedure should be used after one of the following components has been removed or replaced:

- the master cylinder,
- the brake fluid,
- the hydraulic unit (new and pre-filled),
- a rigid pipe,
- a hose,
- the reservoir,
- a calliper.

Put the vehicle on a two-post lift.

Connect the bleeding device to the vehicle brake fluid reservoir (refer to the driver's handbook).

Fit the bleed reservoirs to the bleed screws.

Bleed the circuit by opening the bleed screws in the following order (remember to close them after the operation):

- the rear right-hand circuit,
- the front left-hand circuit,
- the rear left-hand circuit,
- the front right-hand circuit.

With the engine switched off, check the pedal travel; if it is not correct, start the bleeding procedure again.

Top up the brake fluid level in the reservoir once the bleeding device has been disconnected. Check the tightness of the bleed screws and ensure that the sealing caps are all present.

During a road test, trigger braking regulation to confirm that the brake pedal travel is correct. If the pedal travel becomes incorrect during the road test, follow the procedure for bleeding the braking regulation circuit.

II - BLEEDING THE BRAKE CONTROL CIRCUIT

This procedure can be applied after a road test with brake regulation during which the pedal travel becomes incorrect.

Put the vehicle on a two-post lift.

Referring to the equipment instructions, connect:

- tool **brake circuit bleeding device (approved by Renault)** to the vehicle brake circuit,
- the **Diagnostic tool**.

Fit the bleed reservoirs to the bleed screws.

Bleed the regulation circuit using the **Diagnostic tool**.

Run command **SC006 « hydraulic assembly and brake circuits bleed »**.

Follow the instructions on the **Diagnostic tool**.

Note:

Depress and release the brake pedal alternately (pumping action) throughout the bleed procedure.

Disconnect the bleeding device.

Top up the brake fluid level in the reservoir.

Check the tightness of the bleed screws and ensure that the sealing caps are all present.

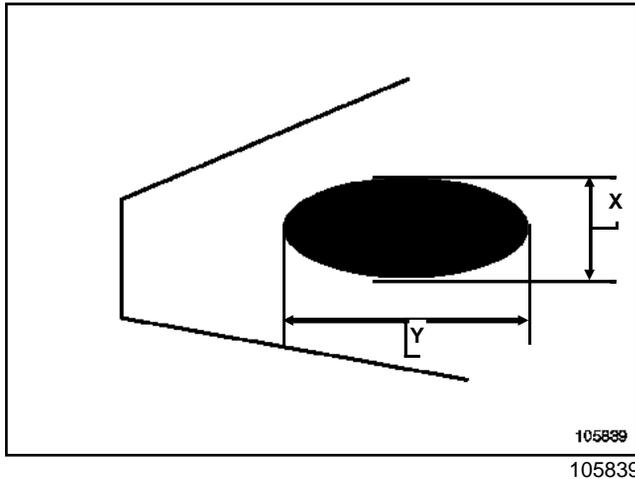
During a road test, trigger braking regulation to confirm that the brake pedal travel is correct. If the pedal travel becomes incorrect during the road test, follow the procedure for bleeding the braking regulation circuit.

It is therefore possible to use a larger quantity of brake fluid than the capacity of the circuit.

I - FRONT AXLE

Bar diameter (mm)	Marking
22	Green

II - REAR AXLE



F4R or F9Q – K9K, and DP0

Bar size (mm)
X 16.6
Y 43.9

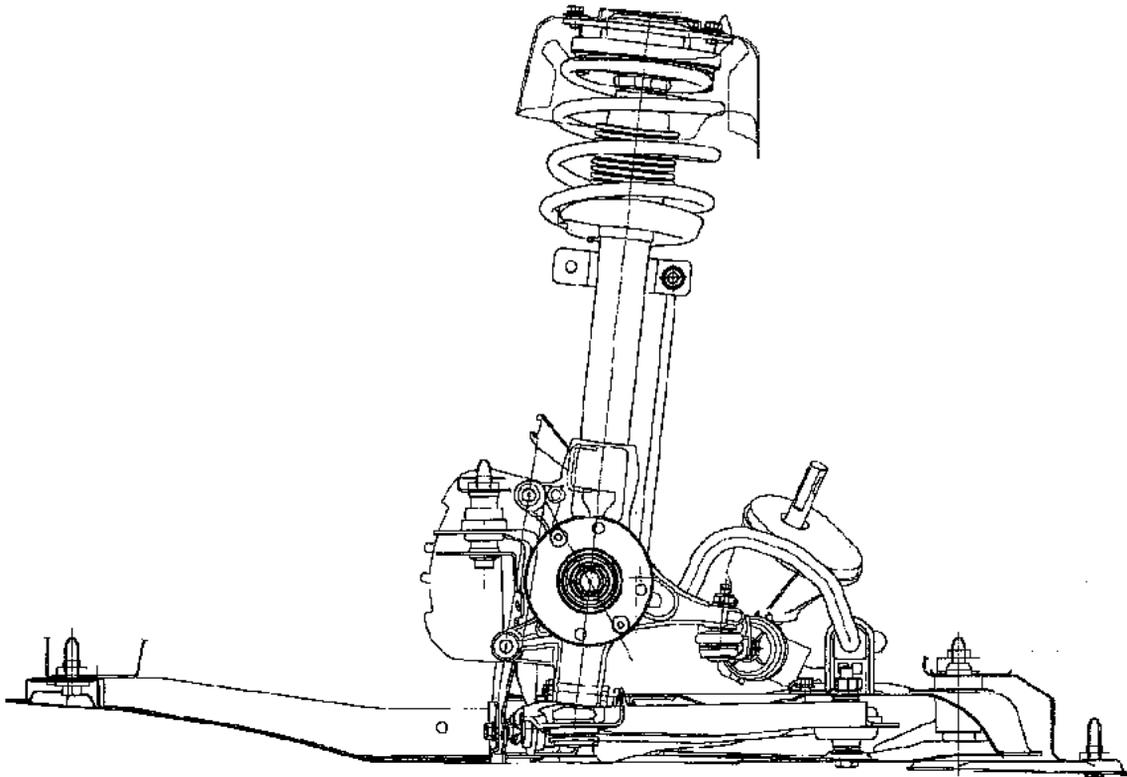
K4J or K4M – K9K, and JR5

Bar size (mm)
X 15.7
Y 41.3

GENERAL VEHICLE INFORMATION

Tightening torques (in daNm) for the front axle

30A



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101232

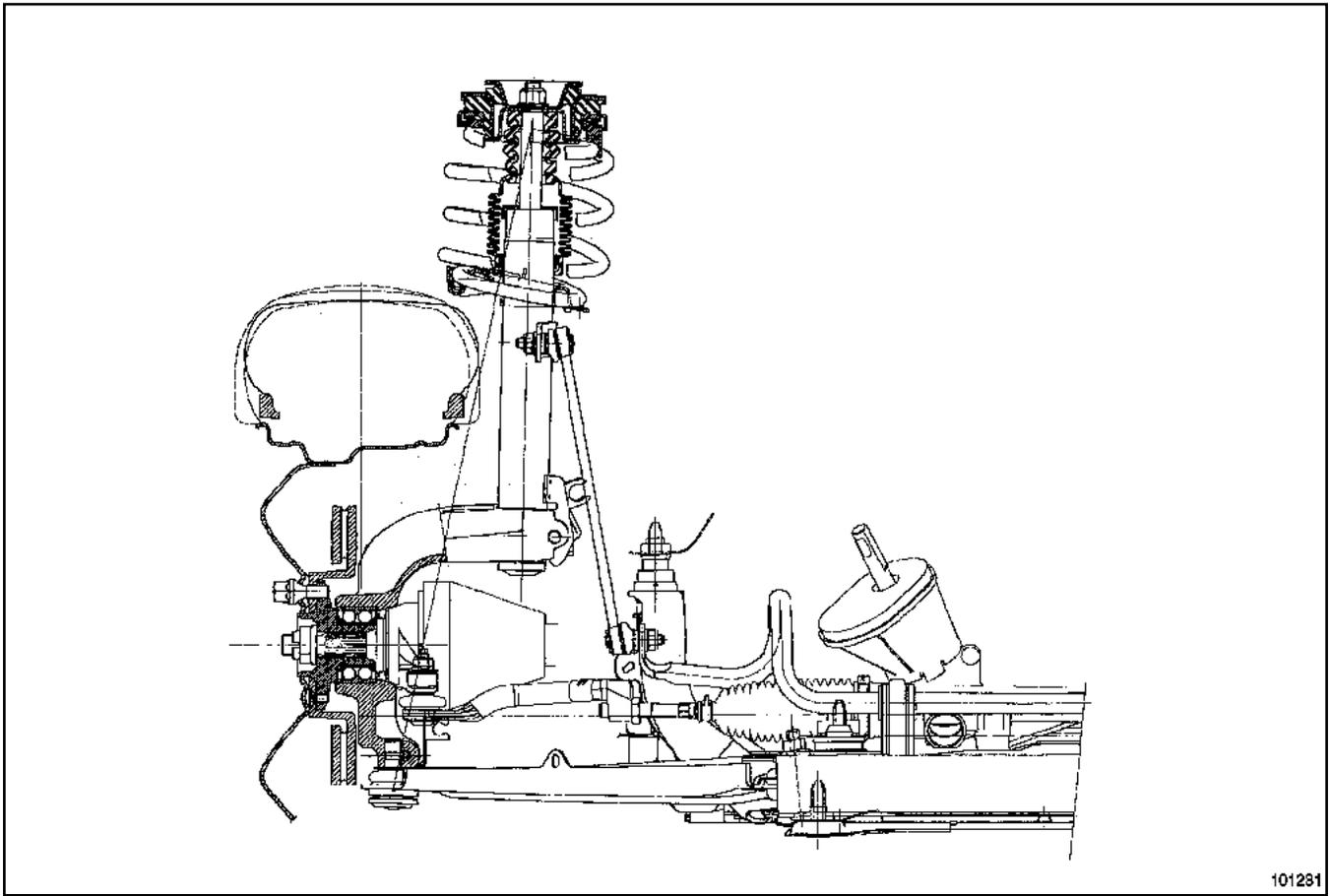
|

Reference	Description	Tightening torque (daNm)
(1)	« Spring and shock absorber » assembly - body mounting bolt	2.1
(2)	Lower arm bolt	7
(3)	Sub-frame block bolt	10.5
(4)	Rear cross member bolt	6.2
(5)	Anti-roll bar - sub-frame mounting bolt	2.1
(6)	Radiator cross member front mounting bolt	10.5
(7)	Calliper support bolt	10.5
	Steering rack - sub-frame mounting bolt	10.5

GENERAL VEHICLE INFORMATION

Tightening torques (in daNm) for the front axle

30A



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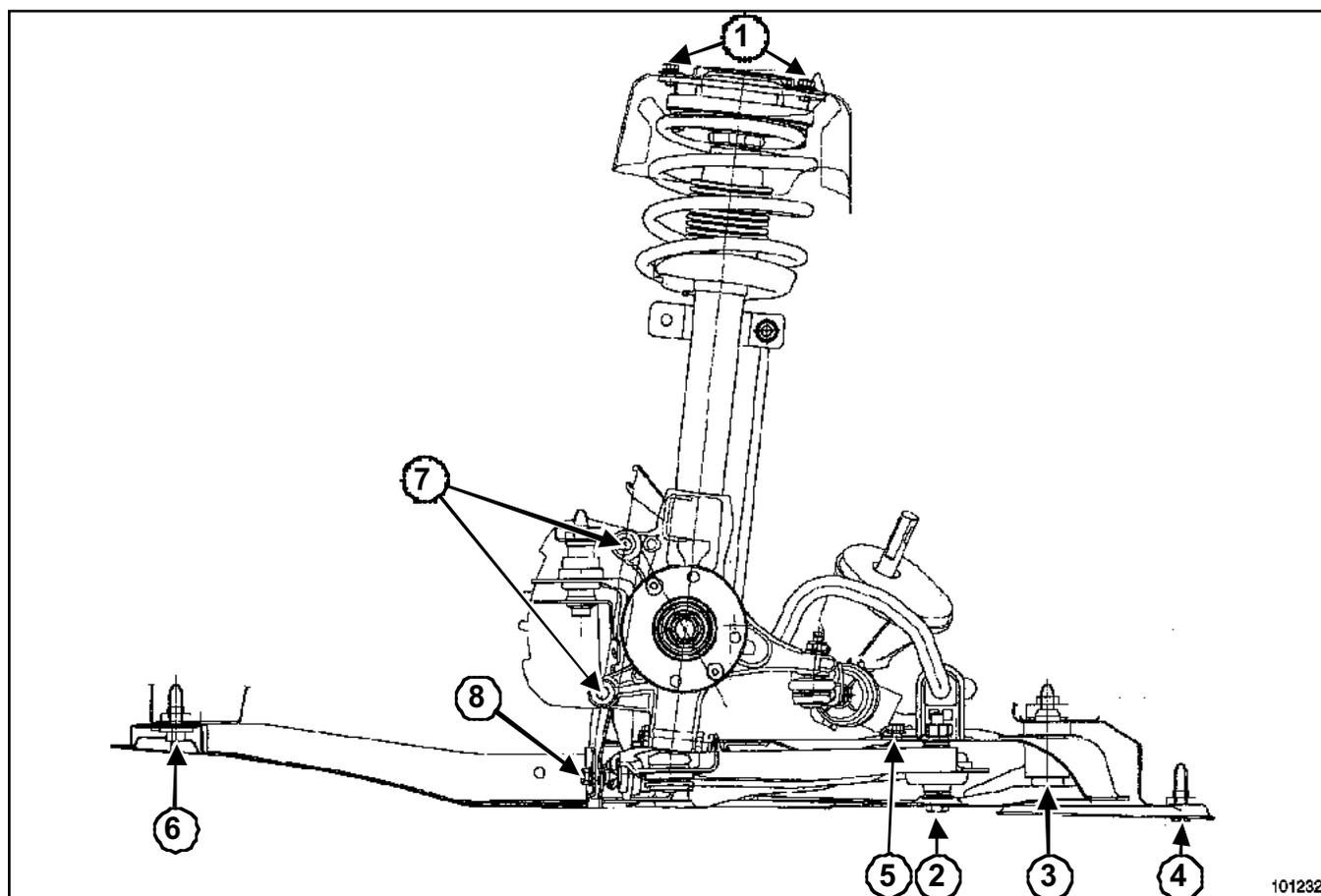
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Reference	Description	Tightening torque (daNm)
(8)	Shock absorber nut	6.2
(9)	Anti-roll bar tie rod ball joint nut	4.4
(10)	Shock absorber base bolt	10.5
(11)	Sub-frame tie-rod bolt	10.5
(12)	Lower arm ball joint bolt	6
(13)	Driveshaft nut	28
(14)	Wheel bolts	11
(15)	Track rod end nut	3.7
	Side stiffener - radiator cross member mounting bolt	2.1

GENERAL VEHICLE INFORMATION

Tightening torques (in daNm) for the front axle

30A



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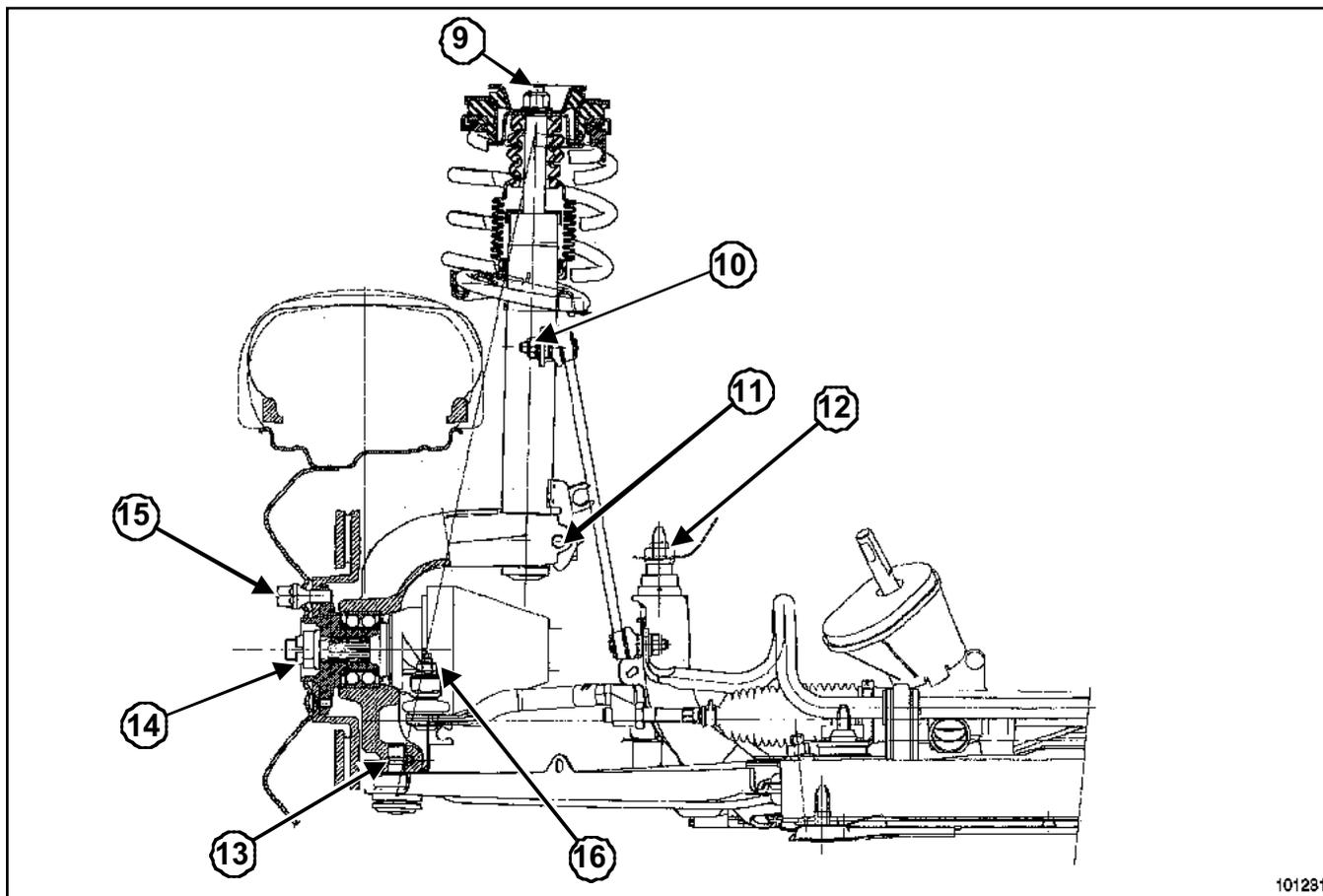
I

Key	Description	Tightening torques (daNm)
(1)	Bolt for mounting the «spring / shock absorber» assembly onto the body	2.1
(2)	Lower arm bolt	7
(3)	Sub-frame block bolt	10.5
(4)	Rear cross member bolt	6.2
(5)	Anti-roll bar mounting bolt on the sub-frame	2.1
(6)	Radiator cross member front mounting bolt	10.5
(7)	Calliper mounting bolt	10.5
(8)	Radiator cross member rear mounting nut	2.1
	Steering rack mounting bolt on the sub-frame	10.5

GENERAL VEHICLE INFORMATION

Tightening torques (in daNm) for the front axle

30A



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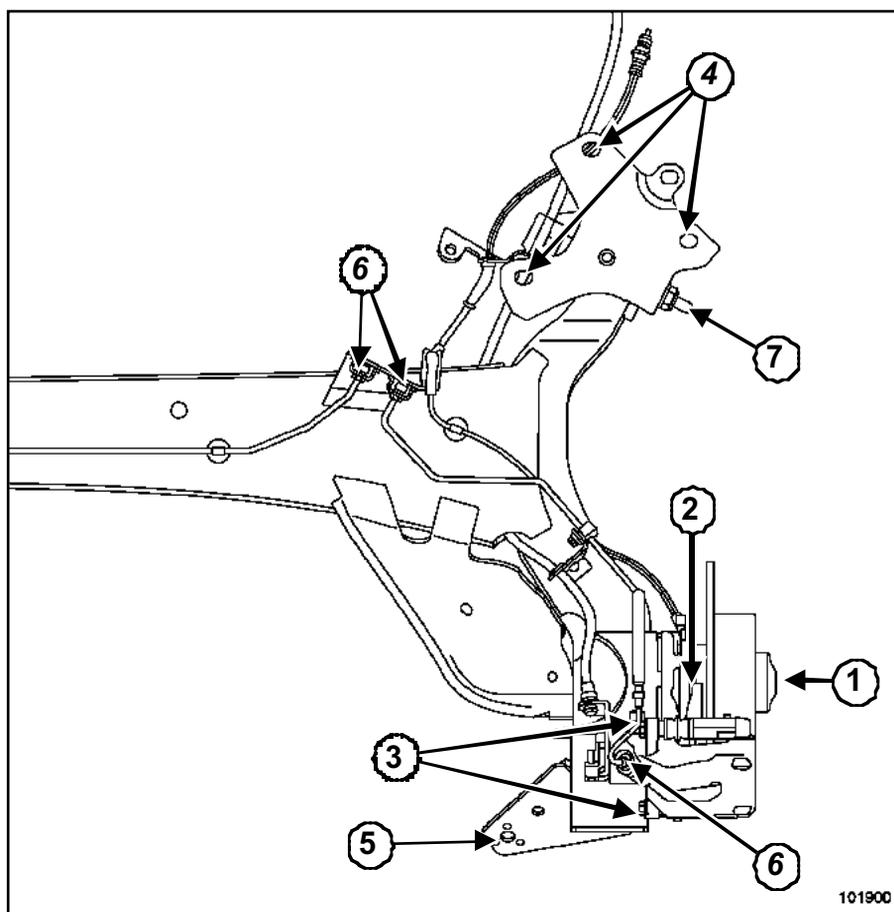
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Key	Description	Tightening torques (daNm)
(9)	Shock absorber nut	6.2
(10)	Anti-roll bar tie-rod ball joint nut	4.4
(11)	Shock absorber base bolt	10.5
(12)	Sub-frame tie-rod bolt	10.5
(13)	Lower arm ball joint bolt	6
(14)	Driveshaft nut	28
(15)	Wheel bolt	13
(16)	Track rod end nut	3.7
	Side reinforcement mounting bolt on the radiator cross member	2.1

GENERAL VEHICLE INFORMATION

Tightening torques (in daNm) for the rear axle

30A



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I

Key	Description	Tightening torques (daNm)
(1)	Stub-axle nut	22
(2)	Calliper mounting bolt	10.5
(3)	Pillar bolt	3.6
(4)	Bearing mounting bolt	6.2
(5)	Shock absorber lower mounting bolt	10.5
	Shock absorber upper mounting bolt	6.2
(6)	Brake pipe nut	1.4
(7)	Bearing and rear axle mounting bolt nut	12.5
	Mounting bolt on guard beneath rear axle	0.8

Tightening torques (in daNm) of the braking system

I - FRONT AND REAR BRAKES

Description	Tightening torque (daNm)
Front calliper bleed screw	0.65
Rear calliper bleed screw	1
Front calliper inlet brake hose	1.7
Rear calliper inlet brake hose	1.4
Brake hose on brake pipe	1.4
Front brake guide pin bolt	3.2
Calliper support bolt	10.5
Rear brake guide pin bolt	3.6
Brake disc mounting bolt	1.5

II - BRAKE CONTROL

Description	Tightening torque (daNm)
Brake servo mounting bolts	2.1
Master cylinder mounting nuts	5
Master cylinder outlet pipe	1.4
Hydraulic unit mounting bolt	0.8
Hydraulic unit pipe unions	1.4
Parking brake control mounting nuts	0.8
Hydraulic unit support - vehicle body mounting bolts	6.5

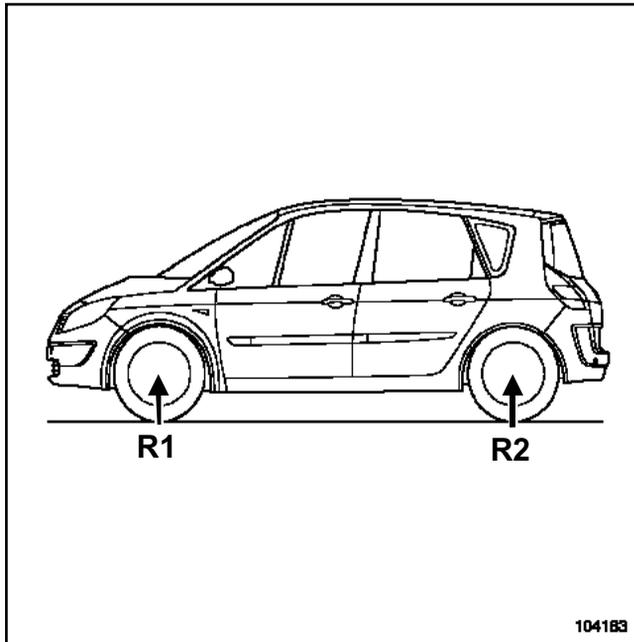
GENERAL VEHICLE INFORMATION
Tightening torques (in daNm) of steering

30A

Description	Tightening torques (daNm)
Steering wheel bolt	4.4
Steering column mounting bolts	2.1
Universal joint bolt	2.4

Underbody height

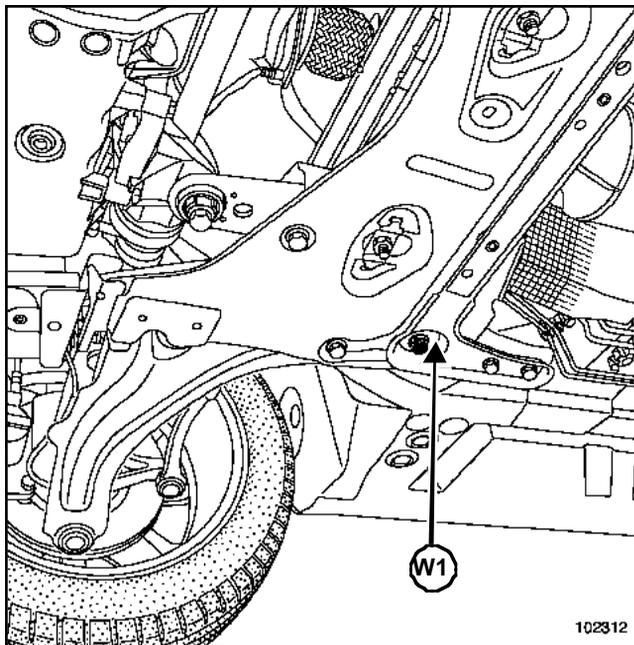
MEASURING POINTS



104183

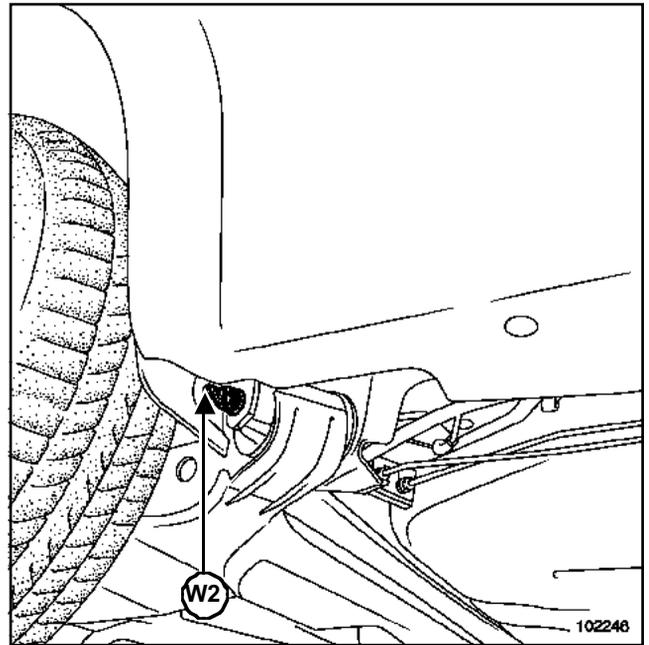
(R1) is taken between the ground and the axis of the front wheel.

(R2) is taken between the ground and the axis of the rear wheel.



102312

(W1) is taken between the ground and the sub-frame rear cross member mounting bolt head.



102246

(W2) is taken between the ground and the rubber bush - bearing mounting pin.

Values and adjustments for the front axle assemblies

I - PREREQUISITES

Before putting the axle assemblies on the test bench, be sure to observe the following advice:

- check the tyre inflation pressure (see **35A, Wheels and tyres, Characteristics**),
- Compress the suspension.

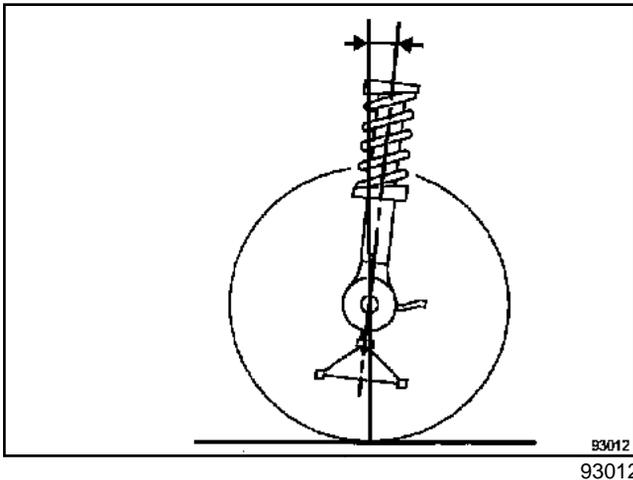
WARNING

When checking the axle assembly values, the vehicle should be empty (no luggage or passengers on board).

Make sure the steering wheel is positioned straight during wheel alignment adjustment, to avoid offsetting the angular position of the steering wheel with the straight-ahead position front wheels. The steering wheel being offset in relation to the position of the wheels may cause the vehicle to be returned by the customer.

II - CASTOR ANGLE

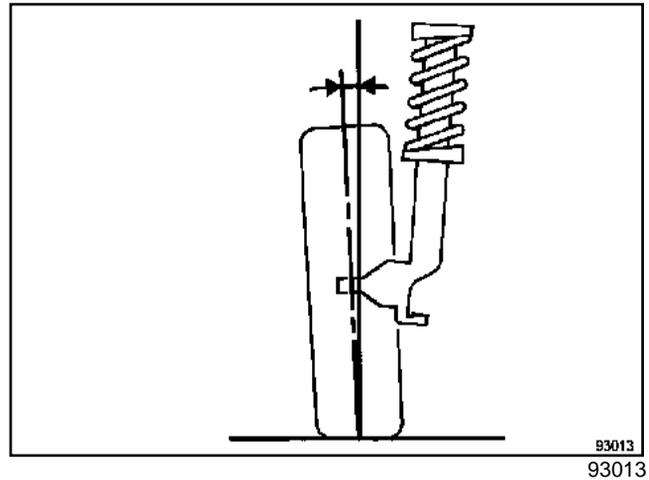
Not adjustable.



Value	Position of front axle (mm)
$4^{\circ} 54' \pm 30'$	$W2 - W1 = 84$
$5^{\circ} 12' \pm 30'$	$W2 - W1 = 74$
$6^{\circ} 00' \pm 30'$	$W2 - W1 = 50$
$6^{\circ} 12' \pm 30'$	$W2 - W1 = 47$
Maximum left - right difference = $30'$	

III - CAMBER

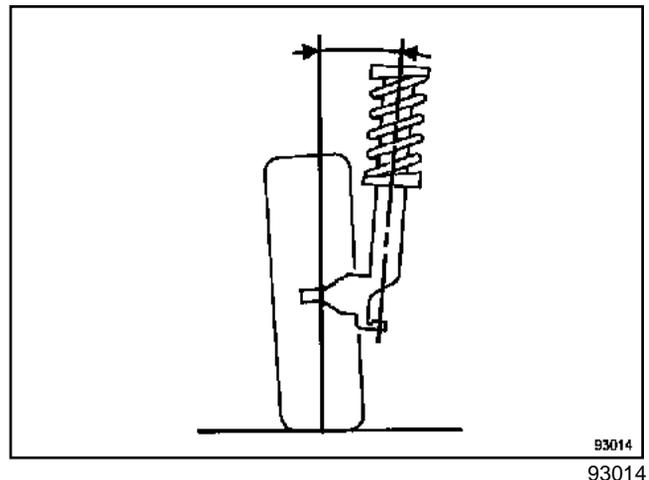
Not adjustable.



Value	Position of front axle (mm)
$0^{\circ} 00' \pm 30'$	$R1 - W1 = 124$
$0^{\circ} 00' \pm 30'$	$R1 - W1 = 130$
$-0^{\circ} 10' \pm 30'$	$R1 - W1 = 149$
$-0^{\circ} 13' \pm 30'$	$R1 - W1 = 155$
Maximum left - right difference = $30'$	

IV - PIVOT

Not adjustable.

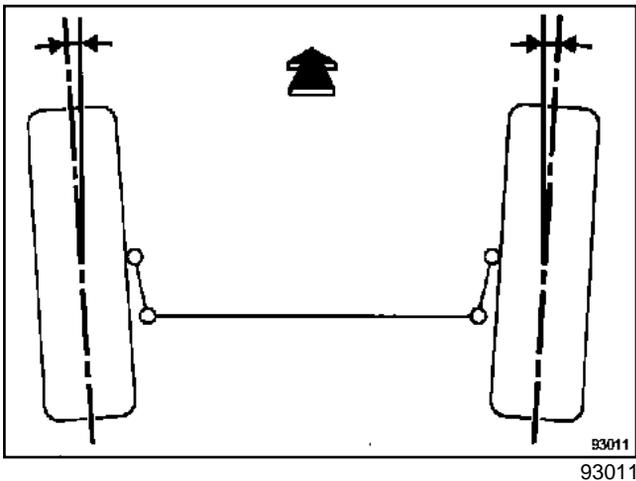


Values and adjustments for the front axle assemblies

Value	Position of front axle (mm)
10° 52' ± 30'	R1 - W1 = 124
11° 00' ± 30'	R1 - W1 = 130
11° 18' ± 30'	R1 - W1 = 149
11° 28' ± 30'	R1 - W1 = 155
Maximum left - right difference = 30'	

V - WHEEL ALIGNMENT MEANING OF SIGNS

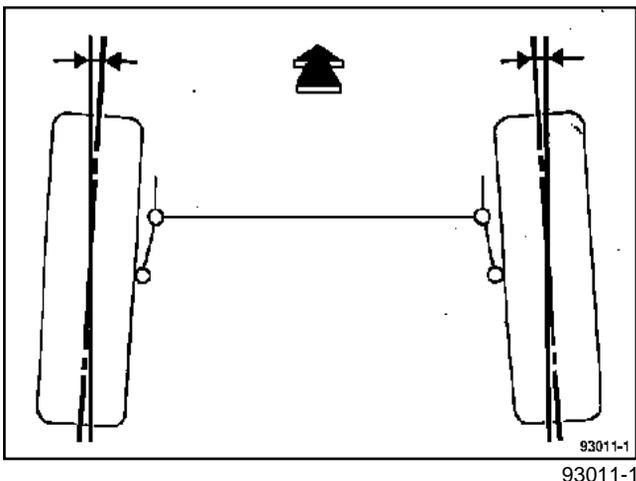
1 - Toe-out: minus sign



WARNING

Meaning of signs used in this document,
- = Toe-out.

2 - Toe-in: plus sign



WARNING

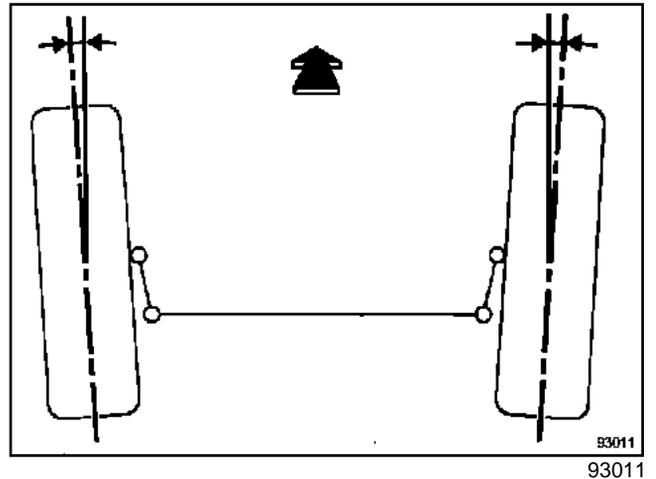
Meaning of signs used in this document,
+= Toe-in:

WARNING

When adjusting the axle assemblies, program the steering wheel angle and torque sensor using the fault finding tool (see **MR 372 Fault finding, 36B, Electric Power-assisted Steering, Configuration and programming**).

VI - WHEEL ALIGNMENT

Adjustable by rotating the track rod sleeves.



Value	Position of front axle (mm)
(For two wheels)	Unladen
Toe-out: - 0° 10' ± 10'	
15-inch wheel rim: 1.1 mm ± 1.1 mm	
16-inch wheel rim: 1.2 mm ± 1.2 mm	
17-inch wheel rim: 1.3 mm ± 1.3 mm	

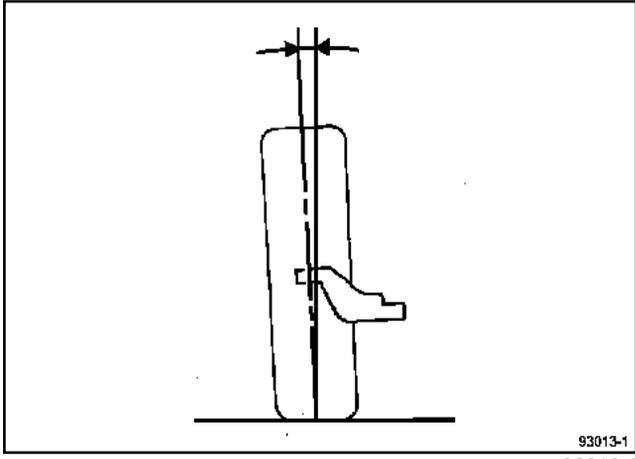
VII - POSITION FOR TIGHTENING RUBBER BUSHES

To tighten rubber bushes, (see **31A, Front Lifting Components, Lower Arm**).

Values and adjustments for the rear axle assemblies

I - CAMBER

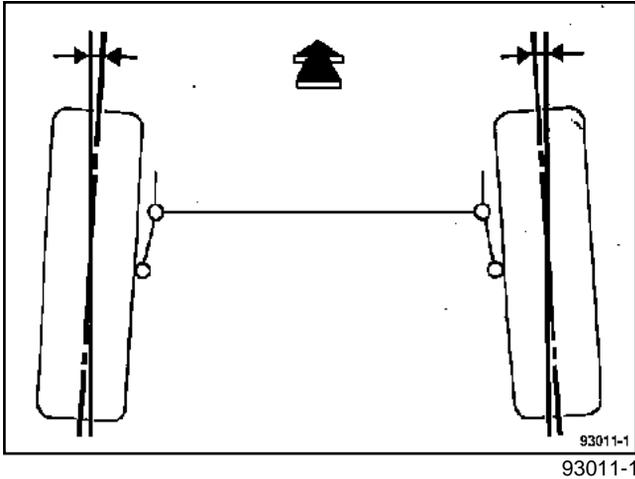
Not adjustable.



Values	Position of rear axle
- 1° 30' ± 20'	Unladen

II - WHEEL ALIGNMENT

Not adjustable.



Values	Position of axle REAR
(For two wheels) Toe-in: + 0° 35' ± 20' 15-inch wheel rim: -3.9 mm ± 2.3 mm 16-inch wheel rim: -4.2 mm ± 2.4 mm 17-inch wheel rim: -4.4 mm ± 2.6 mm	Unladen

III - POSITION FOR TIGHTENING RUBBER BUSHES

To tighten rubber bushes, (see 33A, Rear Lifting components, Tighten in axle position).

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
---------------------	--

Tightening torques

guide pin bolts	3.2 daNm
wheel bolts	13 daNm

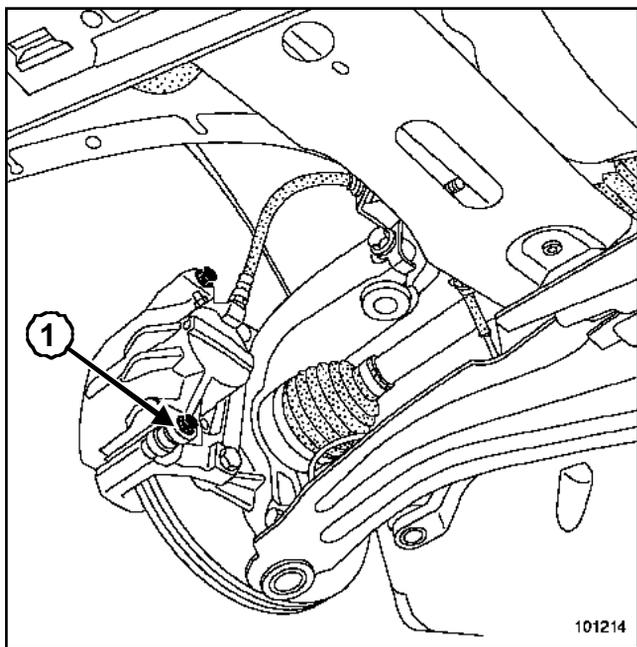
When replacing brake pads, be sure to replace the pads on the opposite side.

REMOVAL

Mount the vehicle on a two post lift.

Unlock the steering wheel.

Remove the front wheels.



Remove the lower guide pin bolt (1).

Turn the calliper upwards.

Remove the pads.

Check the condition of the braking components.

Replace any faulty parts.

REFITTING

Clean the calliper supports and callipers.

Push back the piston using tool (**Fre. 1190-01**).

Fit the new pads, starting with the inside.

WARNING

- Mount the brake hose and wheel speed sensor wiring if they have been unclipped.
- Do not twist the brake hose.

Proceed in the reverse order to removal.

Torque tighten:

- the **guide pin bolts (3.2 daNm)**,
- the **wheel bolts (13 daNm)**.

IMPORTANT

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

Equipment required

pedal press

Tightening torques

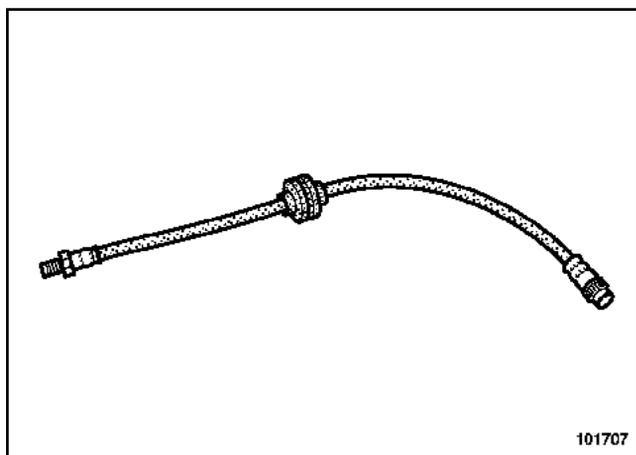
brake hose onto the caliper **1.7 daNm**

brake hose onto the union **1.4 daNm**

bleed screw **0.65 daNm**

IMPORTANT

Be sure to follow the order of operations for the procedure described below.



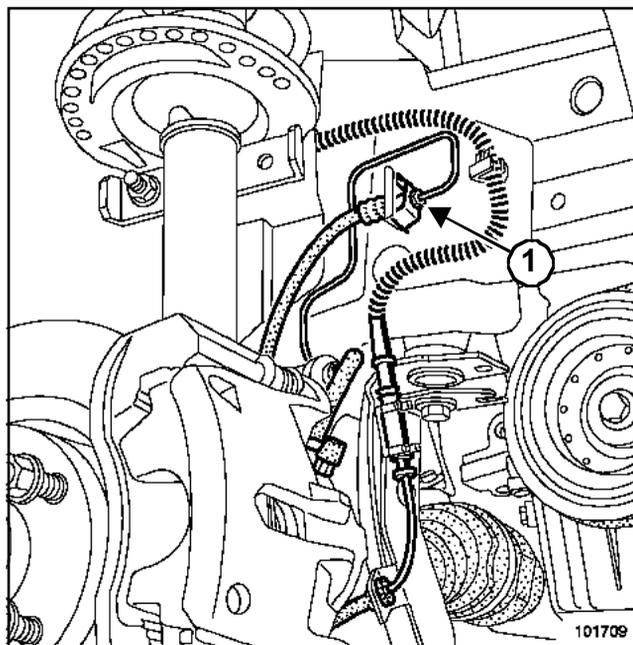
101707

REMOVAL

WARNING

Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

Fit the **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.



101709

Unscrew:

- the pipe union (1),
- the calliper hose.

REFITTING

WARNING

Do not twist the brake hose, and straighten the wheels as steering lock makes it easier for the unit to become twisted.

Make sure that there is no contact between the brake hose and the surrounding components.

Note:

The hoses supplied as spare parts are encased in a spring to prevent them from being twisted during fitting.

Refit the brake hose at the calliper end.

Torque tighten:

- the **brake hose onto the calliper (1.7 daNm)**,
- the **brake hose onto the union (1.4 daNm)**.

Place the female end of the brake hose on the retaining bracket without straining it by twisting.

Make sure that the end piece engages freely into the bracket splines.

The brake pipe

Mount:

- the spring,
- the rigid pipe on the brake hose, making sure that the hose is not twisted when the rigid pipe is screwed on.

Bleed the braking circuit (**General Vehicle Information**Section).

Torque tighten the **bleed screw (0.65 daNm)**.

Special tooling required

Fre. 1190-01 Tool for pushing calliper pistons back

Equipment required

pedal press

Tightening torques

guide pin bolts	3.2 daNm
brake hose	1.7 daNm
bleed screw	0.65 daNm
wheel bolts	13 daNm

Note:

The callipers supplied as replacement parts are pre-filled.

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

REMOVAL

Mount the vehicle on a two post lift.

WARNING

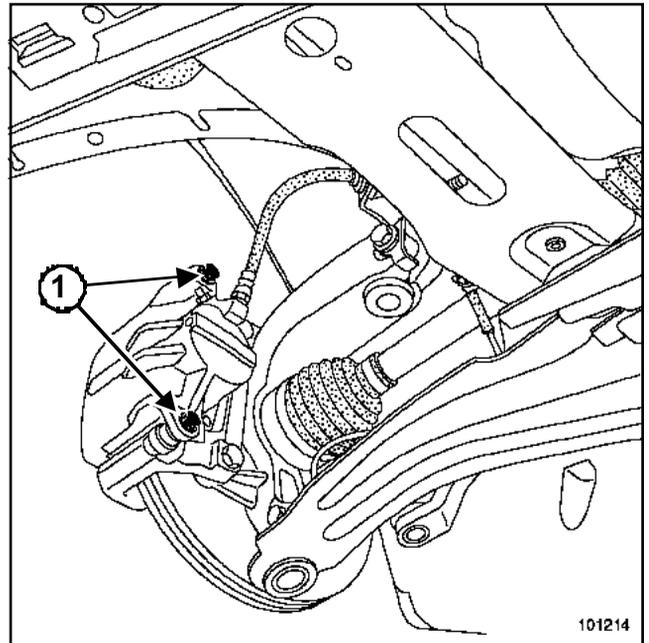
Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

Fit the **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

Unlock the steering wheel.

Remove the front wheels.

Undo the brake hose from the brake calliper.



101214
101214

Remove:

- the two guide pin bolts (1),
- the brake calliper,
- the brake pads,

Check the condition of the braking components (replace faulty parts).

Clean the calliper supports and callipers.

REFITTING

Push the piston back using tool (**Fre. 1190-01**) until it is at the end of its bore.

Fit the pads, starting with the inside.

Refit:

- the calliper,
- the guide pin bolt.

Torque tighten:

- the **guide pin bolts (3.2 daNm)**,
- the **brake hose (1.7 daNm)**.

WARNING

- Mount the brake hose and wheel speed sensor wiring, if they have been unclipped.
- Do not twist the brake hose.

Refit the wheels.

Torque tighten:

- the **bleed screw (0.65 daNm)**,

- the **wheel bolts (13 daNm)**.

Bleed the brake circuit partially if the compensation reservoir is not completely emptied during the procedure. Otherwise, carry out a full bleed (**General Vehicle Information**Section).

Check the brake fluid level.

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
---------------------	--

Tightening torques

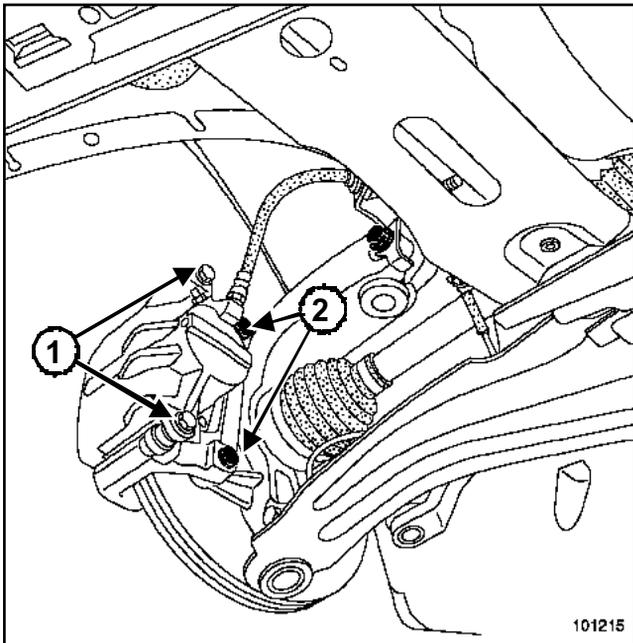
calliper support bolts	10.5 daNm
guide pin bolts	3.2 daNm
wheel bolts	13 daNm

When replacing brake pads or a disc, it is essential to change the pads or disc on the opposite side.

REMOVAL

Mount the vehicle on a two post lift.

Remove the front wheels.



101215

101215

Remove the guide pin bolts (1).

Suspend the brake calliper from the suspension spring.

Remove:

- the brake pads,
- the two calliper support mounting bolts (2),
- the calliper support.

Check the condition of the braking components (replace faulty parts).

Clean the calliper supports and callipers.

REFITTING

Push back the piston using tool (Fre. 1190-01) until it is at the end of its housing.

The calliper support bolts and the guide pin bolts must be coated with **FRENBLOC** or similar product before being fitted.

Refit:

- the calliper support,
- the calliper support mounting bolts.

Torque tighten the **calliper support bolts (10.5 daNm)**.

Fit the pads, starting with the inside.

Refit:

- the calliper,
- the guide pin bolts.

WARNING

- Mount the brake hose and wheel speed sensor wiring if they have been unclipped.
- Do not twist the brake hose.

Check the brake fluid level.

Torque tighten the **guide pin bolts (3.2 daNm)**.

Refit the wheels.

Torque tighten the **wheel bolts (13 daNm)**.

IMPORTANT

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

Check the brake fluid level.

Tightening torques 

disc mounting bolts	1.5 daNm
calliper support bolts	10.5 daNm
wheel bolts	13 daNm

REMOVAL

Brake discs are not regrindable. If there is excessive scoring or wear, they will need to be replaced.

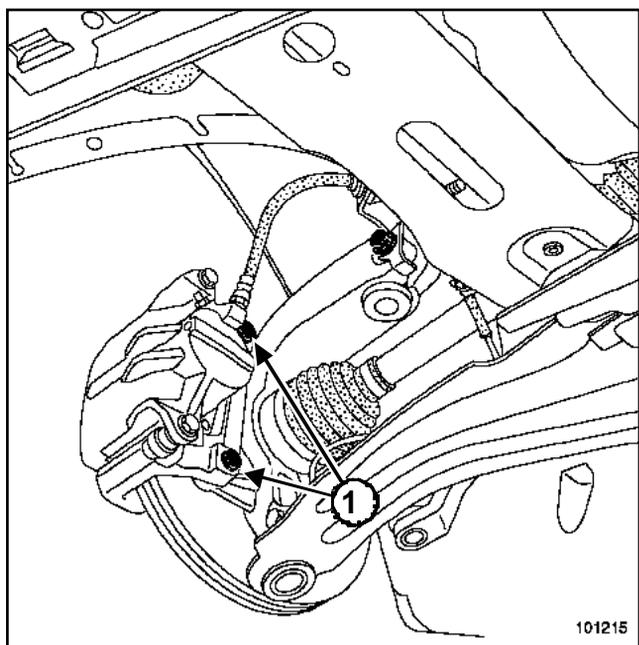
When replacing a brake disc, be sure to replace the disc on the opposite side.

Be sure to replace the brake pads if the brake discs are being replaced.

Mount the vehicle on a two post lift.

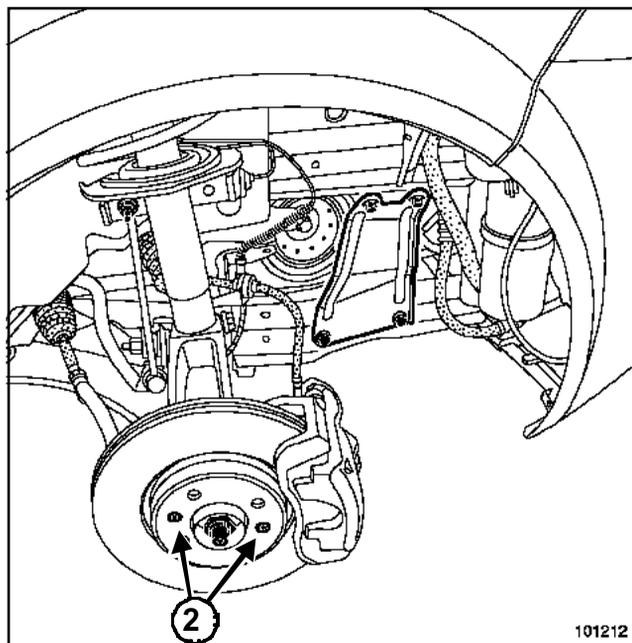
Unlock the steering wheel.

Remove the front wheels.



Remove both calliper support bolts (1).

Suspend the calliper / calliper support assembly.



101212

Remove

- the calliper support,
- the two disc mounting bolts (2),
- the disc.

REFITTING**WARNING**

- Mount the hose and wheel speed sensor wiring, if they were unclipped.
- Do not twist the brake hose.

Clean the calliper supports and callipers.

Proceed in the reverse order to removal.

Torque tighten:

- the **disc mounting bolts (1.5 daNm)**,
- the **calliper support bolts (10.5 daNm)**.

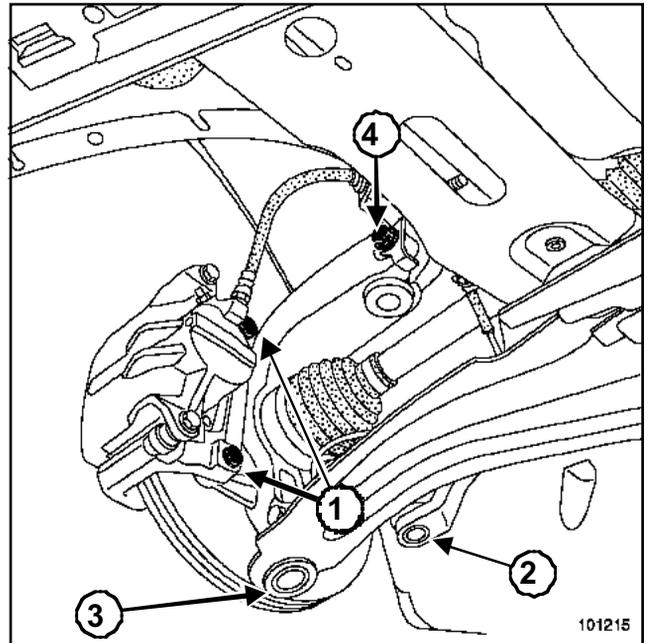
The calliper support bolts must be coated with **FRENBLOC** or similar product before they are fitted.

Refit the wheels.

Torque tighten the **wheel bolts (13 daNm)**.

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

Tightening torques 	
shock absorber lower mounting bolt	10.5 daNm
lower ball joint nut	6.2 daNm
track rod end nut	3.7 daNm
brake disc mounting bolts	1.5 daNm
hub nut	28 daNm
brake calliper support mounting bolts	10.5 daNm
wheel bolts	13 daNm



101215
101215

Remove the front brake calliper support bolts (1).

REMOVAL

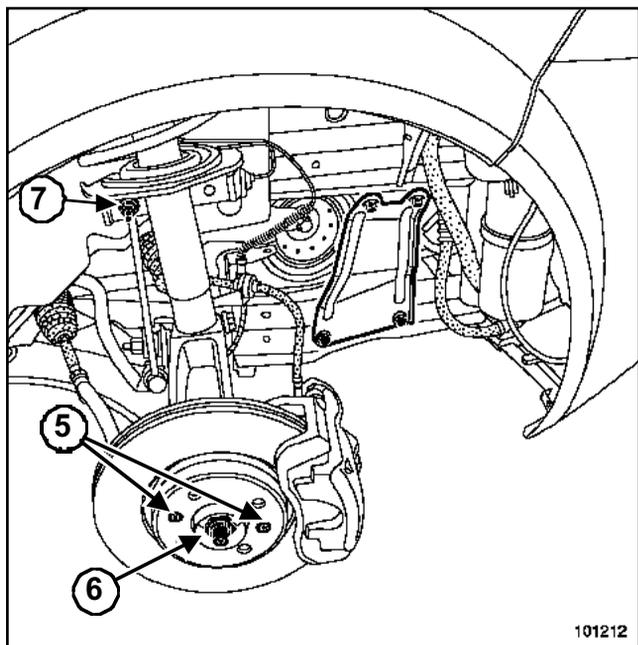
Mount the vehicle on a two post lift.

Disconnect the battery, starting with the negative terminal.

Remove the front wheel.

Unclip:

- the wheel speed sensor from the hub carrier,
- the discharge bulb sensor (if fitted on vehicle).



101212
101212

Hang the « calliper - front brake calliper support » assembly on the suspension spring.

Remove:

- the hub nut (6) using tool (Rou. 604-01),
- the two disc mounting bolts (5),
- the disc,
- the track rod end nut (2),
- the lower ball joint nut (3),
- the anti-roll bar tie rod upper mounting nut (7),
- the anti-roll bar tie rod,
- the shock absorber lower mounting bolt (4).

Extract the ball joints using tool (Tav. 476).

Remove the front driveshaft stub axle carrier by turning it towards the vehicle interior.

IMPORTANT

Take care to avoid injury from the base of the shock absorber when it comes out of the stub axle carrier.

REFITTING

Proceed in the reverse order to removal.

Note:

The calliper support bolts must be coated with a product such as **FRENBLOC** before being refitted.

Torque tighten:

- the **shock absorber lower mounting bolt (10.5 daNm)**,
- the **lower ball joint nut (6.2 daNm)**,
- the **track rod end nut (3.7 daNm)**,
- the **brake disc mounting bolts (1.5 daNm)**,
- the **hub nut (28 daNm)**,
- the **brake calliper support mounting bolts (10.5 daNm)**,
- the **wheel bolts (13 daNm)**.

IMPORTANT

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

WARNING

Connect the battery, starting with the positive terminal; carry out the necessary programming (Section **Electrical equipment**).

WARNING

Adjust the axle assemblies (**General Vehicle Information**Section).

Program the torque and angle sensor using the **Diagnostic tool** (see **fault finding manual**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle;Section **Electrical equipment**).

Special tooling required

Rou. 15-01	16 mm interior diameter shaft protector
Rou. 604-01	Hub locking tool
Tav. 476	Ball joint extractor
Tav. 1050-02	Tool for pushing calliper pistons back

Tightening torques

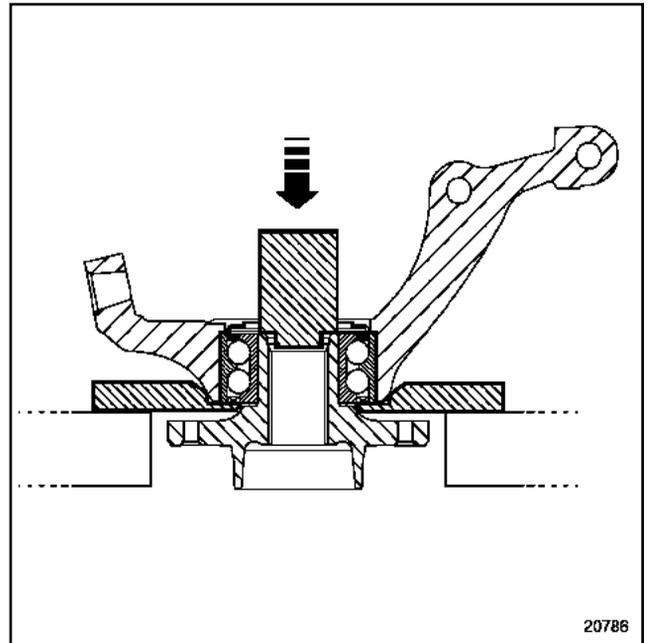
lower ball joint bolt	6.2 daNm
track rod end nut	3.7 daNm
driveshaft nut	28 daNm
shock absorber base bolt	10.5 daNm
disc mounting bolt	1.5 daNm
calliper support bolt	10.5 daNm
wheel bolt	13 daNm

The following tools are required for this procedure:

- tool **(Rou. 15-01)**,
- tool **(Rou. 604-01)**,
- tool **(Tav. 476)**,
- tool **(Tav. 1050-02)**.

REMOVAL

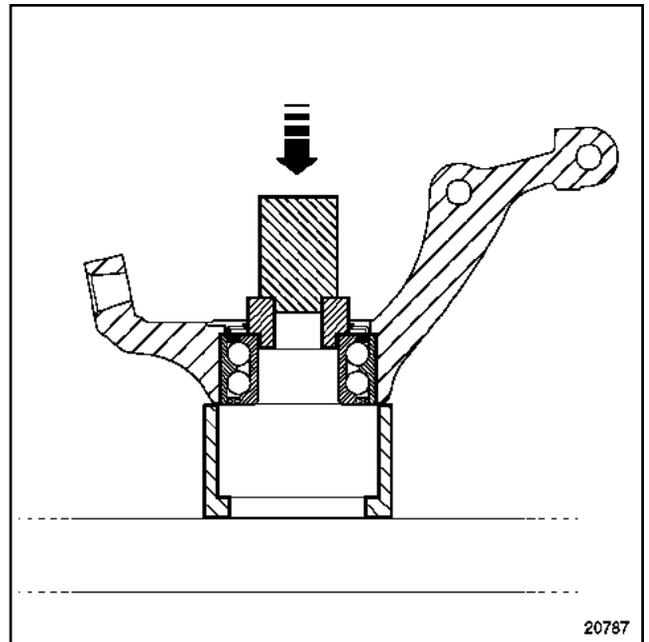
Remove the stub axle carrier (Section Front axle assemblies, Hub carrier, page **31A-8**).



20786
20786

Remove:

- the hub using a press, gripping with a **41 mm** diameter tube,
- the circlip.



20787
20787

Remove the bearing, gripping the internal bush with a tube of diameter **46 mm**.

REFITTING

WARNING

Do not move the vehicle without its driveshafts torque tightened on the hub, as to do so could destroy the wheel bearings and damage the ABS target.

WARNING

Take care not to mark the wheel speed sensor target on the active sensor bearing when refitting.

WARNING

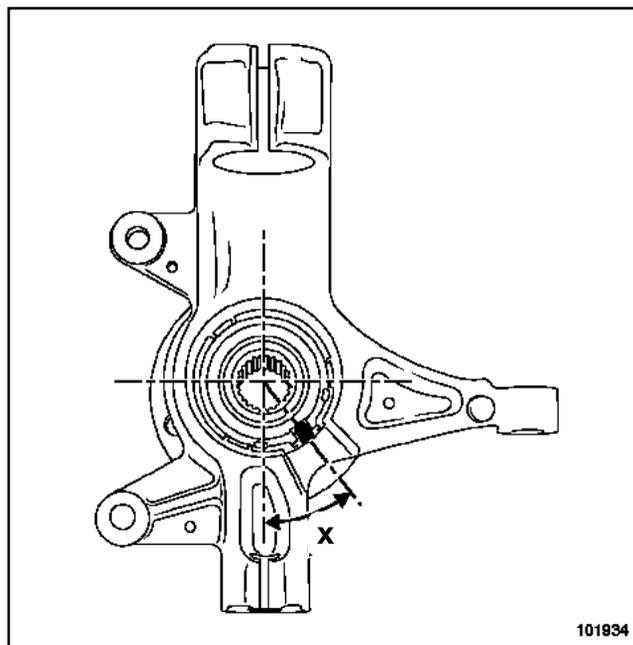
- Be sure to check the condition of the hub surface and the hub carrier bore before refitting the bearing. Replace the hub carrier if it is defective.

Clean:

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

WARNING

Do not grip the inner bearing bush, to avoid damaging the bearing (significant force is required for fitting).

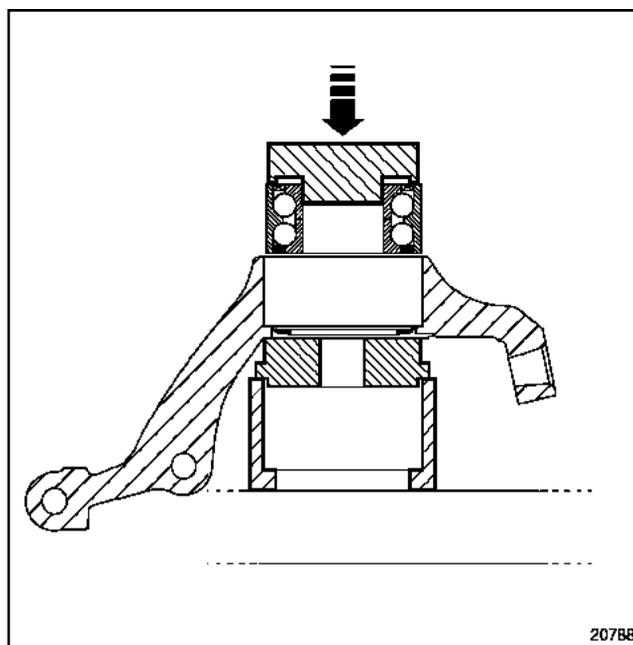


101934

101934

Refit the sensor holder.

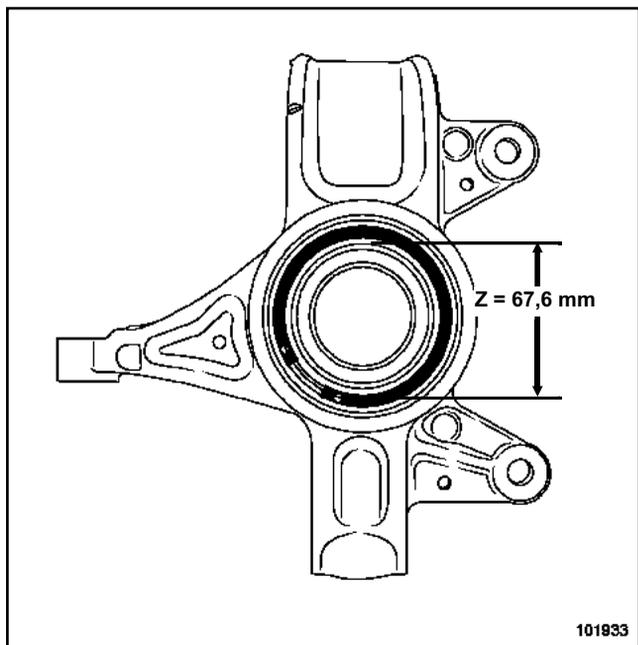
Position the sensor holder at $(x) = 35^\circ \pm 5^\circ$ from vertical. This position corresponds to the centre of the housing.



20788

20788

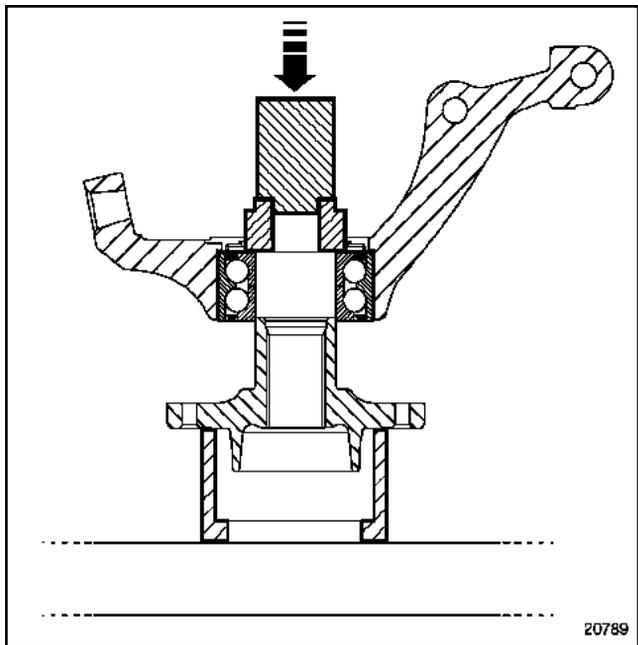
Grip the external bush with a tube of external diameter **77 mm** and bore diameter **70 mm**.



101933

Refit the circlip.

Check that the circlip is positioned correctly by measuring the internal diameter ($Z = 67.6 \text{ mm}$) for a bearing with an external diameter of 77 mm .



20789

Refit:

- the hub,
- the « stub axle carrier - bearing - hub » assembly (Section Front axle assemblies, Hub carrier, page 31A-8).

Torque tighten:

- the lower ball joint bolt (6.2 daNm),

- the track rod end nut (3.7 daNm),
- the driveshaft nut (28 daNm),
- the shock absorber base bolt (10.5 daNm),
- the disc mounting bolt (1.5 daNm),
- the calliper support bolt (10.5 daNm),
- the wheel bolt (13 daNm).

FRONT AXLE ASSEMBLIES

Spring and shock absorber assembly

31A

Equipment required

spring compressor

shock absorber rod nut removal tool

Tightening torques

shock absorber rod nut **6.2 daNm**

shock absorber cup bolts **2.1 daNm**

shock absorber base bolt **10.5 daNm**

anti-roll bar tie rod ball joint nut **4.4 daNm**

wheel bolts **13 daNm**

REMOVAL

Mount the vehicle on a two post lift.

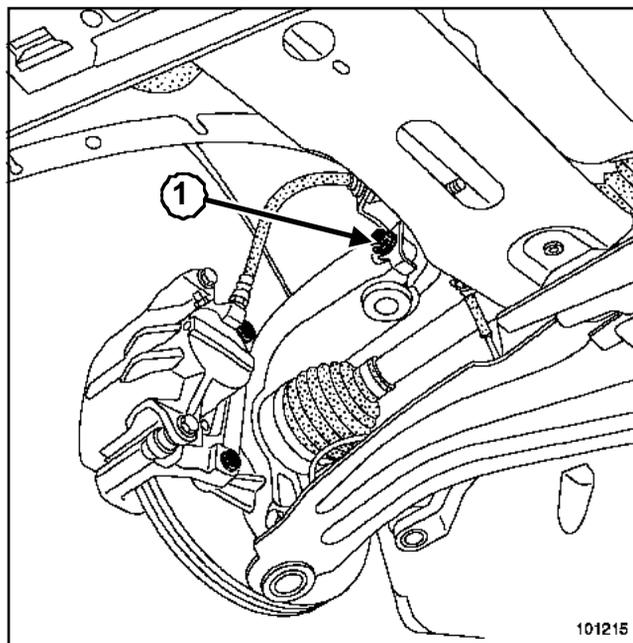
Disconnect the battery, starting with the negative terminal.

Remove the front wheels.

Unclip the brake hose from the shock absorber and the wheel speed sensor cable.

Remove the front wiper mechanism (Section **Electrical equipment**).

Disconnect the anti-roll bar tie rod ball joint.



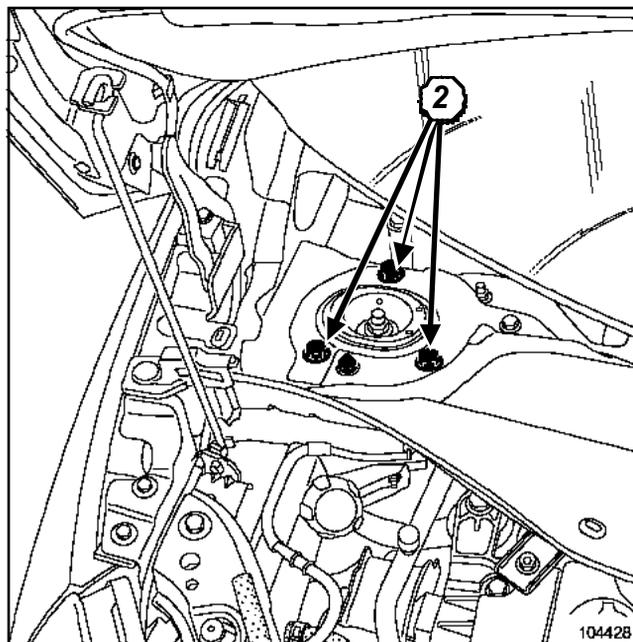
101215

101215

Remove the shock absorber base bolt (1).

Remove the shock absorber base from the stub axle carrier, pushing on the stub axle carrier.

Hang up the stub axle carrier.



104428

104428

Remove:

- the three shock absorber cup bolts (2),
- the « spring and shock absorber » assembly.

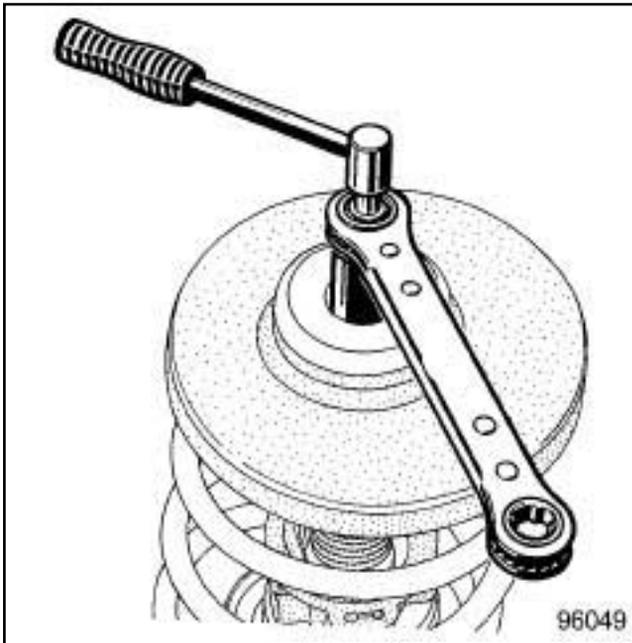
Mount the appropriate cups on the **spring compressor** and position the assembly on the spring.

Detach the spring from the cups by compressing the spring.

FRONT AXLE ASSEMBLIES

Spring and shock absorber assembly

31A



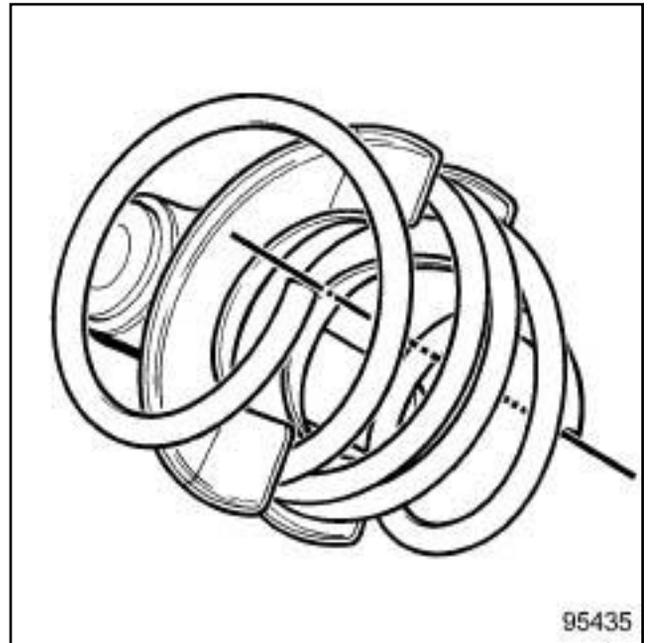
96049

Remove the shock absorber rod nut using the **shock absorber rod nut removal tool**.

Separate the various components of the "spring and shock absorber" assembly.

REFITTING

Put the **spring compressor** tool in a vice.



95435

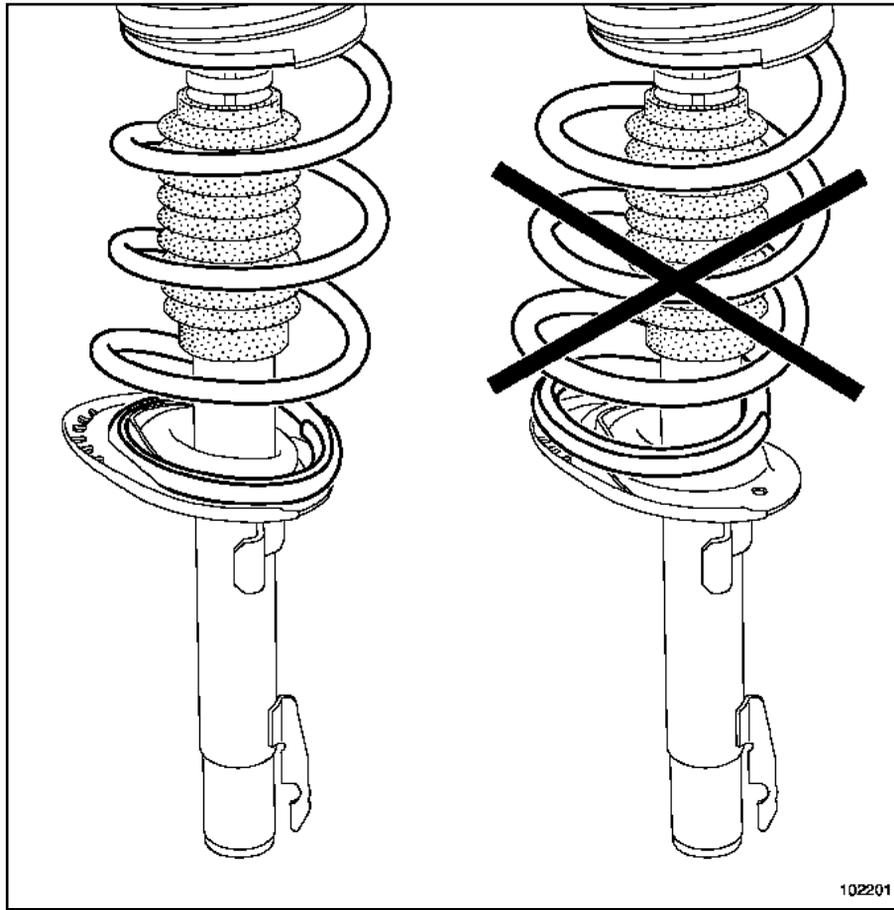
Note:

When replacing the spring, ensure the positioning and orientation of the spring and the tool cups are correct to facilitate refitting.

FRONT AXLE ASSEMBLIES

Spring and shock absorber assembly

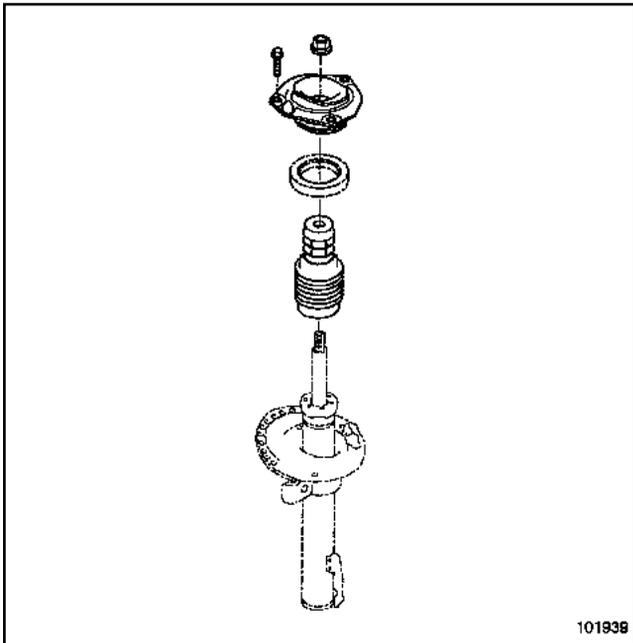
31A



102201

102201

Position the spring in the cup groove, smooth sheath in the upper position, and grooved sheath the lower.



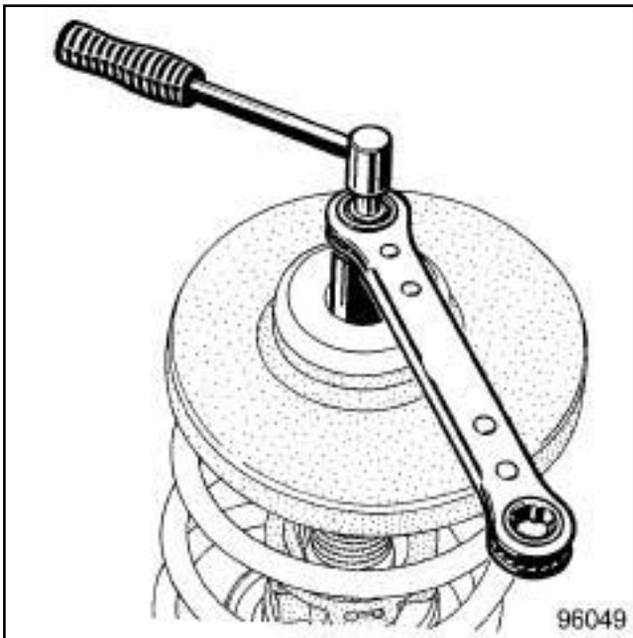
101938

101939

Be sure to fit the constituent parts in the correct order and direction.

Note:

Make sure that the rotary stop is correctly oriented to facilitate refitting above and below.



96049

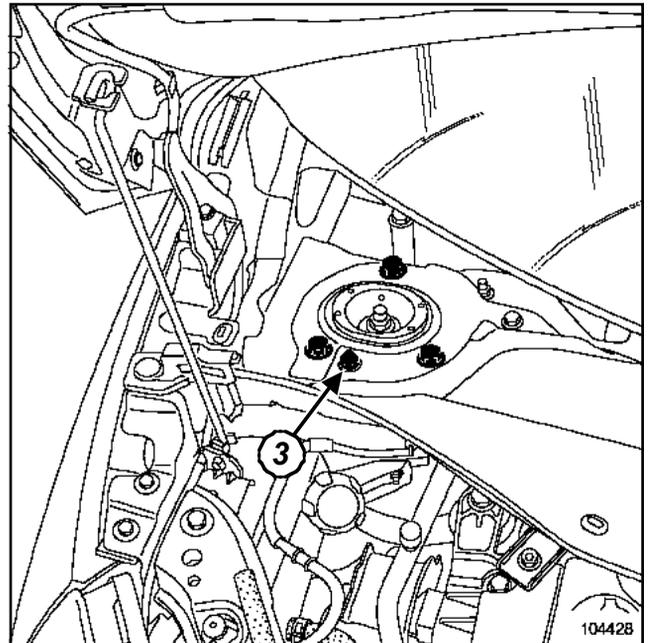
96049

Be sure to replace the shock absorber rod nut.

Torque tighten the **shock absorber rod nut (6.2 daNm)**.

Decompress the spring.

Remove the spring compressor.



104428

104428

Position the index pin (3) in its housing.

Proceed in the reverse order to removal.

WARNING

- Attach the brake hose and wheel speed sensor wiring, if they have been detached.
- Do not twist the brake hose.

Torque tighten:

- the **shock absorber cup bolts (2.1 daNm)**,
- the **shock absorber base bolt (10.5 daNm)**,
- the **anti-roll bar tie rod ball joint nut (4.4 daNm)**,
- the **wheel bolts (13 daNm)**.

WARNING

Connect the battery, starting with the positive terminal; carry out the necessary programming (Section **Electrical equipment**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle; (Section **Electrical equipment**).

Equipment required	
jack	
Diagnostic tool	

Tightening torques 	
lower arm - sub-frame mounting bolts	7 daNm
track rod end nut	3.7 daNm
anti-roll bar tie rod ball joint nuts	4.4 daNm
lower ball joint nut	6.2 daNm
radiator cross member front mounting bolts	10.5 daNm
radiator cross member rear mounting bolts	2.1 daNm
side stiffener lower bolts	2.1 daNm
front wheel bolts	13 daNm

WARNING

Do not grip lower arm for support with a lifting system.

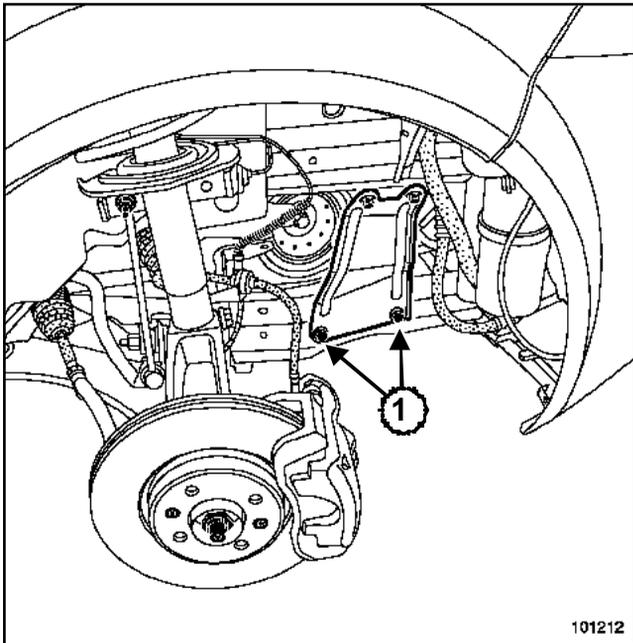
REMOVAL

Mount the vehicle on a two post lift.

Disconnect the battery, starting with the negative terminal.

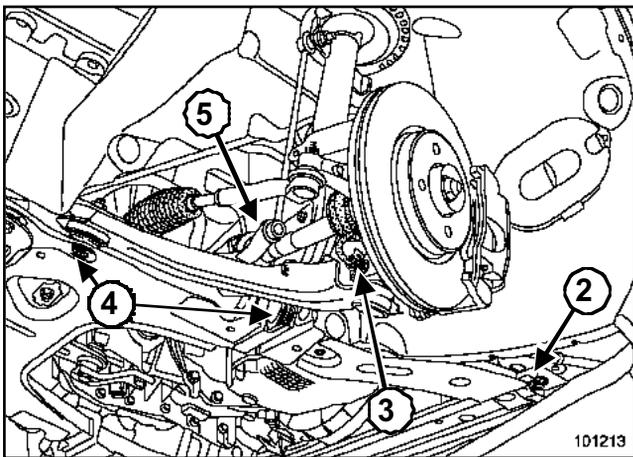
Unlock the steering wheel.

Strap the radiator to the radiator grille.



101212

101212



101213

101213

Extract the height sensor ball joint (if fitted on vehicle).

Remove:

- the lower arm front and rear mounting bolts (4),
- the lower arm.

REFITTING

Proceed in the reverse order to removal.

Remove:

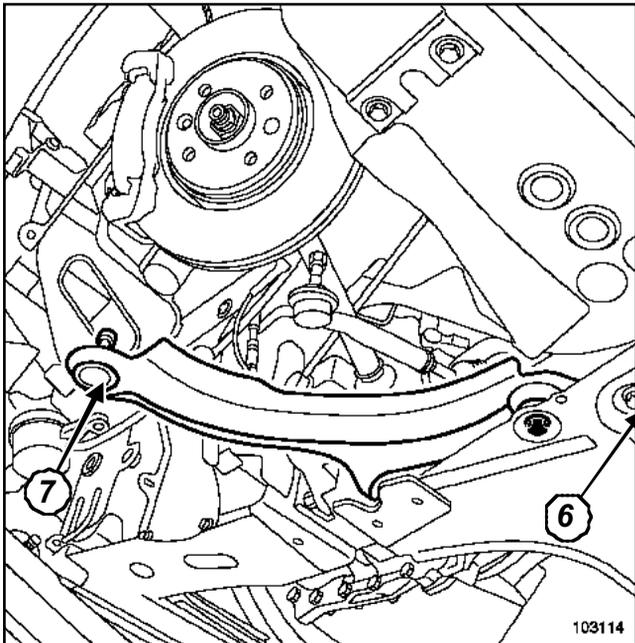
- the front wheel,
- the wheel arch protectors,
- the engine undertray,
- the side stiffener lower bolts (1),
- the radiator cross member front mounting bolts (2),
- the radiator cross member rear mounting nuts,
- the radiator cross member.

Unclip the wheel sensor wiring.

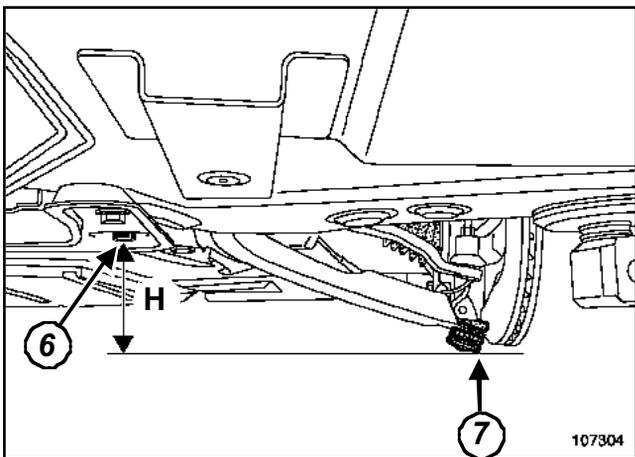
Disconnect the wheel speed sensor connector from the wheel arch.

Remove:

- the lower ball joint bolt (3),
- the anti-roll bar tie bar lower ball joint nuts (5).



103114



107304

WARNING

When refitting, position the lower arm below the sub-frame rear mounting bolt head (**H**) = **10 mm** to tighten the rubber bushes without putting a strain on them.

Fit the **jack** to the sub-frame rear mounting bolt head (**6**).

Lower the **jack** by (**H**) = **10 mm**.

Fit the lower arm ball joint (**7**) to the **jack** without changing the setting.

Torque tighten the **lower arm - sub-frame mounting bolts (7 daNm)** in this position.

Remove the **jack**.

Refit the lower ball joint into the stub axle carrier.

WARNING

- Be sure to replace the sub-frame and arm mountings.
- Be sure to place a **10 mm** thick shim between the radiator cross member and the sub-frame to torque tighten the radiator cross member mountings.

Refit and torque tighten:

- the **track rod end nut (3.7 daNm)**,
- the **anti-roll bar tie rod ball joint nuts (4.4 daNm)**,
- the **lower ball joint nut (6.2 daNm)**,
- the radiator cross member and the **radiator cross member front mounting bolts (10.5 daNm)**,
- the **radiator cross member rear mounting bolts (2.1 daNm)**,
- the **side stiffener lower bolts (2.1 daNm)**,
- the front wheels and the **front wheel bolts (13 daNm)**.

WARNING

Connect the battery, starting with the positive terminal; carry out the necessary programming (Section **Electrical equipment**).

WARNING

Adjust the axle assemblies (**General Vehicle Information**Section).

Program the torque and angle sensor using the **Diagnostic tool** (see **fault finding manual**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle; Section **Electrical equipment**).

Tightening torques 	
anti-roll bar - sub-frame mounting bolts	2.1 daNm
steering rack - sub-frame mounting bolts	10.5 daNm

REMOVAL

Mount the vehicle on a two post lift.

Remove:

- the front axle sub-frame (Section Front axle assemblies, Axle sub-frame, page **31A-21**),
- the steering rack - sub-frame mounting bolts,
- the steering rack,
- the anti-roll bar - sub-frame mounting bolts,
- the anti-roll bar.

REFITTING

Proceed in the reverse order to removal.

WARNING

Make sure the anti-roll bar mounting bracket lugs are correctly positioned in the sub-frame apertures.

Torque tighten:

- the **anti-roll bar - sub-frame mounting bolts (2.1 daNm)**,
- the **steering rack - sub-frame mounting bolts (10.5 daNm)**.

Equipment required	
steering wheel lock	
jack	
Diagnostic tool	

Tightening torques 	
sub-frame block bolts	10.5 daNm
rear cross member bolt on the sub-frame	6.2 daNm
sub-frame damper bolts	10.5 daNm
radiator cross member rear mounting bolts	10.5 daNm
lower arm bolts	7 daNm
radiator cross member front mountings	10.5 daNm
lower ball joint bolts	6.2 daNm
engine tie-bar bolts on the sub-frame	10.5 daNm
anti-roll bar tie rod ball joint nuts	4.4 daNm
track rod end nuts	3.7 daNm
side stiffener bolts	2.1 daNm
steering column universal joint bolts	2.4 daNm
wheel bolts	13 daNm
engine tie-bar bolts on the F engine	18 daNm
engine tie-bar bolts on the K engine	10.5 daNm

WARNING

Do not grip the lower arm for support with a lifting system.

REMOVAL

Centre the vehicle in relation to the two lift posts (without moving it forward between the posts to open the doors).

Disconnect the battery, starting with the negative terminal.

Straighten the wheels.

In the passenger compartment, remove the steering column universal joint bolt and nut.

Fit the **steering wheel lock** tool.

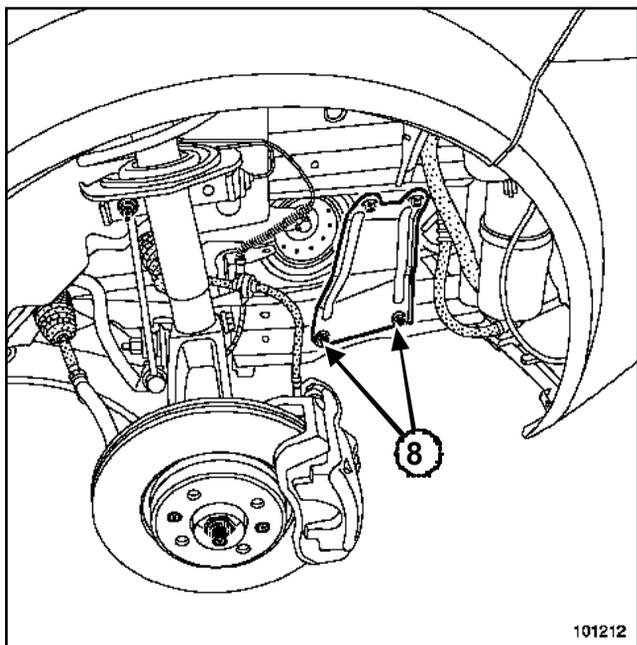
Mount the vehicle on a two post lift.

Note:

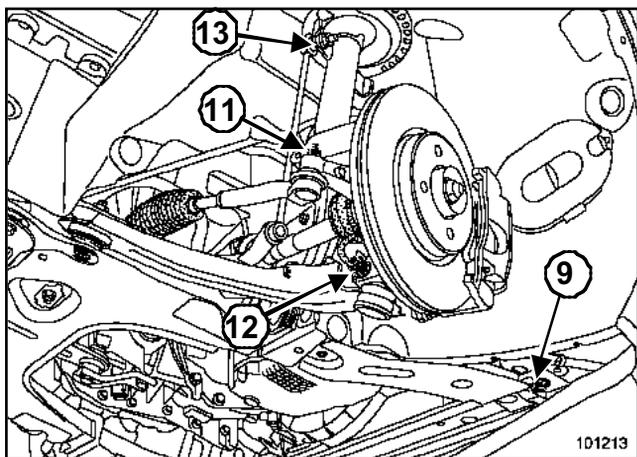
During this operation, secure the vehicle on the lift to prevent it from unbalancing.

For the strap fitting procedure, (**Lifting**Section).

Strap the radiator to the radiator grille.



101212
101212



101213
101213

Remove:

- the front wheels,
- the wheel arch liners,
- the engine undertray,
- the side reinforcement lower bolts (8),
- the radiator cross member front mounting bolts (9),
- the radiator cross member rear mounting nuts,
- the radiator cross member.

Unclip the wheel speed sensors wiring.

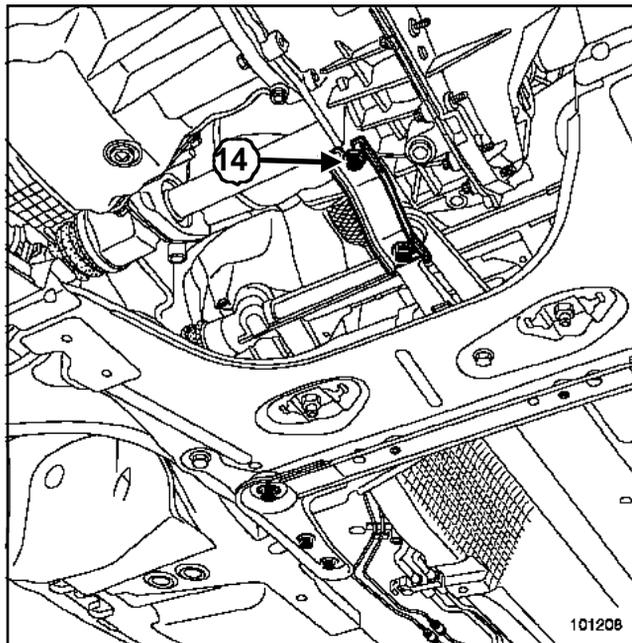
Disconnect the wheel speed sensors connector from the wheel arch.

Remove:

- the track rod end nuts (11),
- the lower ball joint bolts (12),

- the anti-roll bar tie rod upper ball joint nuts (13).
- Extract the ball joints.

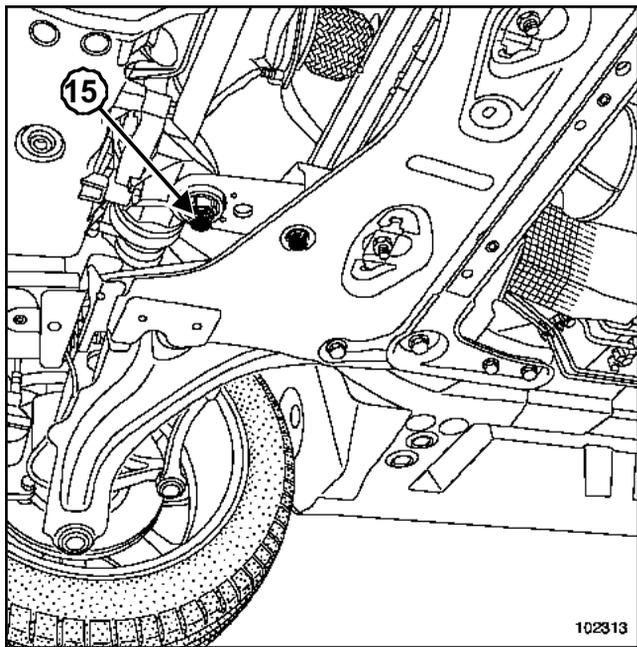
K4J or K4M or K9K



101208
101208

Remove the engine tie-bar mounting bolt (14) from the engine.

F4R or F9Q



102313

Remove the engine tie-bar mounting bolt (15) from the engine.

Set up the **jack** tool under the sub-frame.

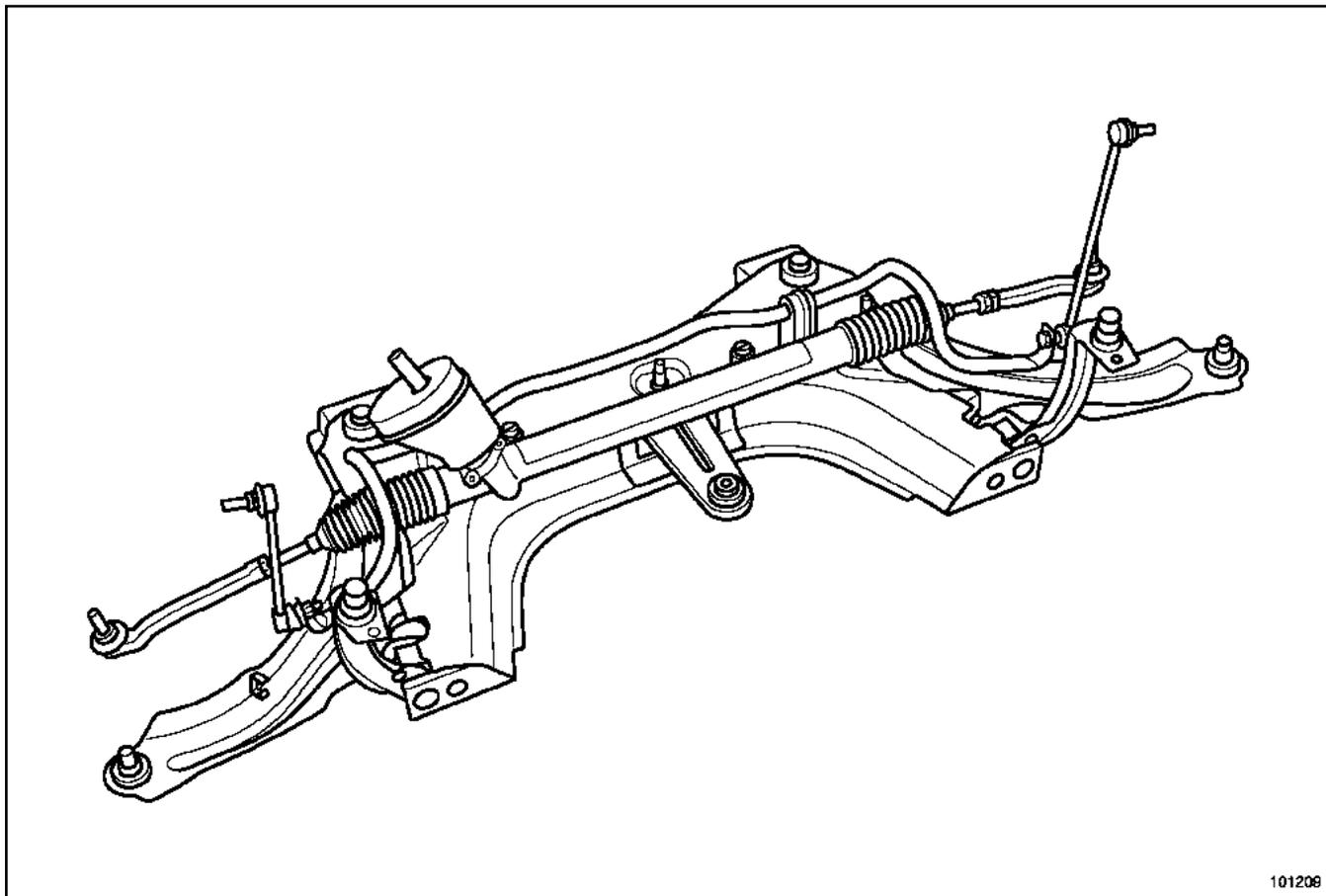
Strap the sub-frame to tool **jack**.

Remove the lower arm ball joints.

Remove the wheel speed sensor wiring support.

Remove:

- the rear cross member mounting bolts,
- the sub-frame - body mounting bolts,
- the rear cross member,
- the sub-frame.



101208

101209

Remove the equipment from the sub-frame.

REFITTING

WARNING

- Be sure to replace the sub-frame and arm mountings.
- A shim **10 mm** thick must be placed between the radiator cross member and the sub-frame.
- Straighten the wheels; centre the steering wheel.

Proceed in the reverse order to removal.

Torque tighten in order:

- the **sub-frame block bolts (10.5 daNm)**,
- the **rear cross member bolt on the sub-frame (6.2 daNm)**,
- the **sub-frame damper bolts (10.5 daNm)**,
- the **radiator cross member rear mounting bolts (10.5 daNm)**,
- the **lower arm bolts (7 daNm)**,

- the **radiator cross member front mountings (10.5 daNm)**.

WARNING

Be sure to follow the sub-frame tightening order.

Torque tighten:

- the **lower ball joint bolts (6.2 daNm)**,
- the **engine tie-bar bolts on the sub-frame (10.5 daNm)**,
- the **anti-roll bar tie rod ball joint nuts (4.4 daNm)**,
- the **track rod end nuts (3.7 daNm)**,
- the **side stiffener bolts (2.1 daNm)**,
- the **steering column universal joint bolts (2.4 daNm)**,
- the **wheel bolts (13 daNm)**.

F4R or F9Q

Torque tighten the **engine tie-bar bolts on the F engine (18 daNm)**.

K4J or K4M or K9K

Torque tighten the **engine tie-bar bolts on the K engine (10.5 daNm)**.

WARNING

Connect the battery, starting with the positive terminal; carry out the necessary programming (Section **Electrical equipment**).

WARNING

Adjust the axle assemblies (**General Vehicle Information**Section).

Program the torque and angle sensor using the **Diagnostic tool** (see **fault finding manual**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle; Section **Electrical equipment**).

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
---------------------	--

Tightening torques

calliper guide pin lower bolts	3.6 daNm
wheel bolts	13 daNm

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

REMOVAL

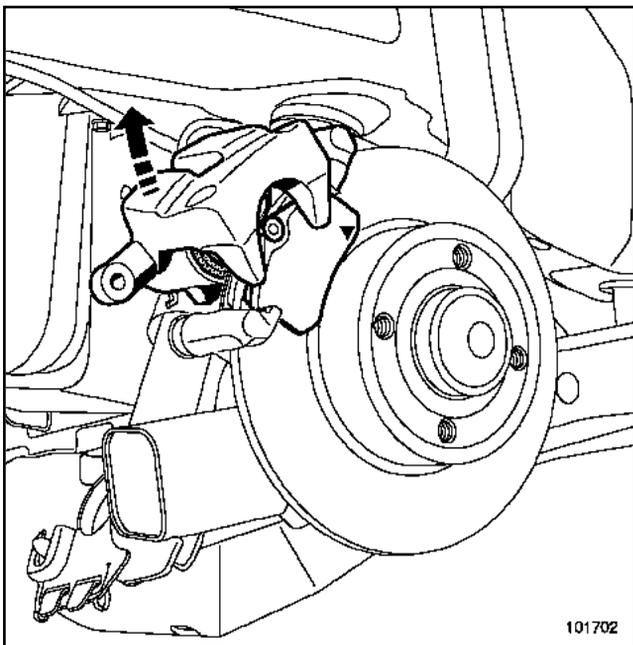
Mount the vehicle on a two post lift.

Unlock the automatic parking brake (see **37B automatic parking brake**).

Remove the rear wheels.

Unclip the parking brake cables.

Remove the calliper lower mounting bolts.



101702
101702

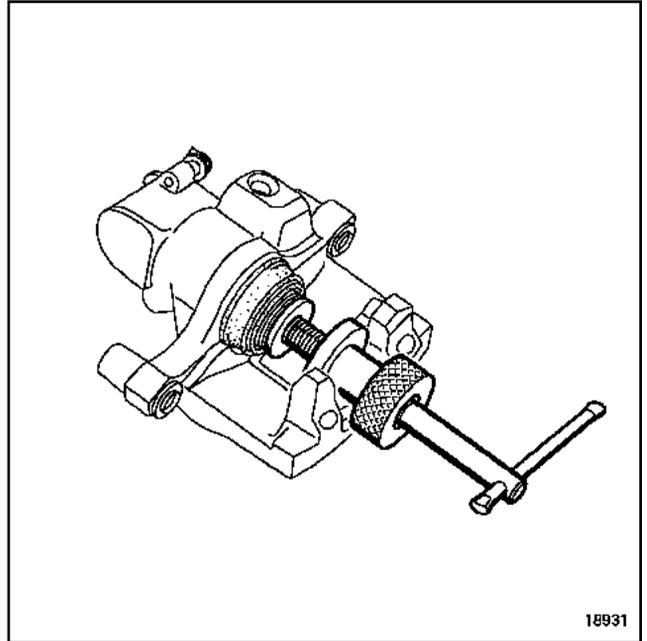
Turn the callipers upwards.

Remove the brake pads.

Check the condition of the braking components (replace faulty parts).

Clean the calliper supports and callipers.

REFITTING



18931
18931

Push the calliper piston back using tool (**Fre. 1190-01**) until it is at the end of its bore.

Refit:

- the new brake pads,
- the guide pin bolts.

Note:

Coat the guide pin bolts with **FRENBLOC** or similar product before fitting.

Torque tighten the **calliper guide pin lower bolts (3.6 daNm)**.

Refit the parking brake cables.

IMPORTANT

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

Apply the parking brake control several times to activate the locking and unlocking function and to activate the calliper automatic play compensation.

Refit the wheels.

Torque tighten the **wheel bolts (13 daNm)**.

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
---------------------	--

Equipment required

pedal press

Tightening torques

guide pin bolts	3.6 daNm
brake hose	1.7 daNm
wheel bolts	13 daNm

Note:

The callipers supplied as spare parts are supplied pre-filled.

WARNING

Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

REMOVAL

Mount the vehicle on a two post lift.

Unlock the automatic parking brake (see **37B Automatic parking brake**).

Fit the **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

Remove the rear wheel.

Unclip the parking brake cable.

Note the parking brake cable routing for refitting.

Undo the brake hose.

Remove:

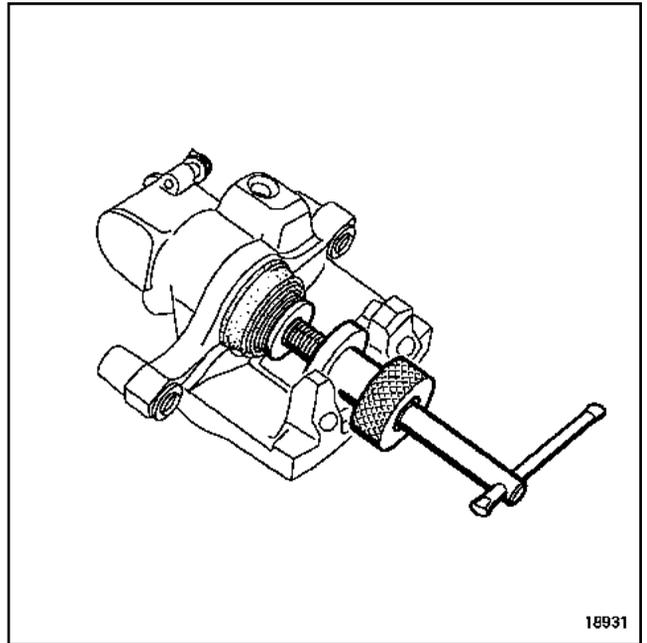
- the guide pin mounting bolts,
- the calliper,
- the brake pads,

Cap the hose.

Check the condition of the braking components (replace faulty parts).

Clean the calliper support and the calliper.

REFITTING



18931

18931

Push the calliper piston back using tool (**Fre. 1190-01**) until it is at the end of its bore.

Refit:

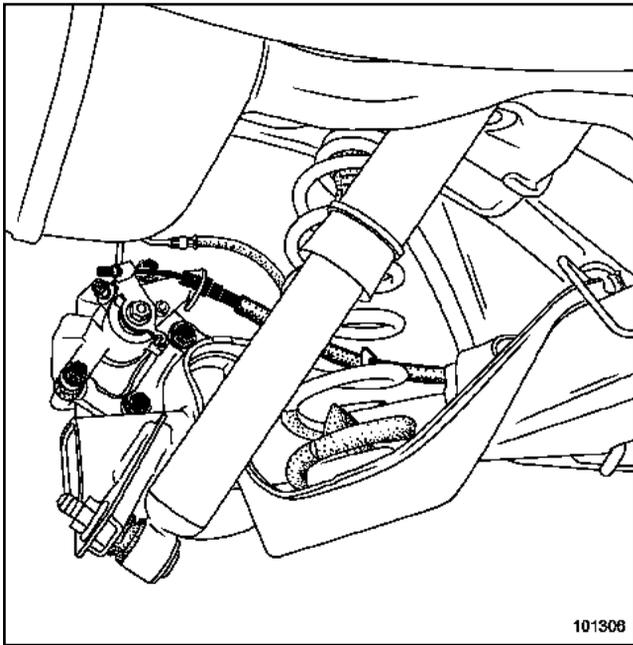
- the brake pads,
- the calliper,
- the guide pin bolts.

Note:

Coat the guide pin bolts with **FRENBLOC** or a similar product before fitting.

Torque tighten:

- the **guide pin bolts (3.6 daNm)**,
- the **brake hose (1.7 daNm)**.



101308

101306

Refit the parking brake cable.

Check that the parking brake cable stop is properly engaged in its housing.

Bleed the braking circuit (see **30A Bleeding the braking circuit**).

Check the brake fluid level.

Apply the parking brake control several times to activate the locking - unlocking function and to activate the calliper automatic play compensation.

Refit the wheel.

Torque tighten the **wheel bolts (13 daNm)**.

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
---------------------	--

Tightening torques

calliper support mounting bolts	10.5 daNm
guide pin bolts	3.6 daNm
wheel bolts	13 daNm

REMOVAL

Mount the vehicle on a two post lift.

Unlock the parking brake (see **37B Automatic parking brake**).

Remove the rear wheel.

Unclip the parking brake cable.

Memorise the parking brake cable routing for refitting.

Remove:

- the guide pin bolts,
- the calliper.

Hang up the calliper.

Remove:

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

Check the condition of the braking components (replace faulty parts).

Clean the calliper support and the calliper.

REFITTING

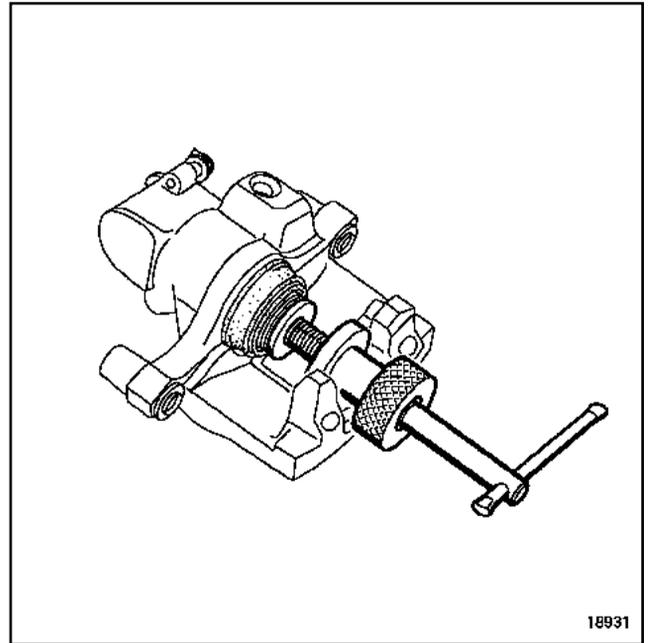
Refit:

- the calliper support,
- the calliper support mounting bolts.

Note:

Coat the calliper support and guide pin bolts with **FRENBLOC** or a similar product before fitting them.

Torque tighten the **calliper support mounting bolts (10.5 daNm)**.



18931

18931

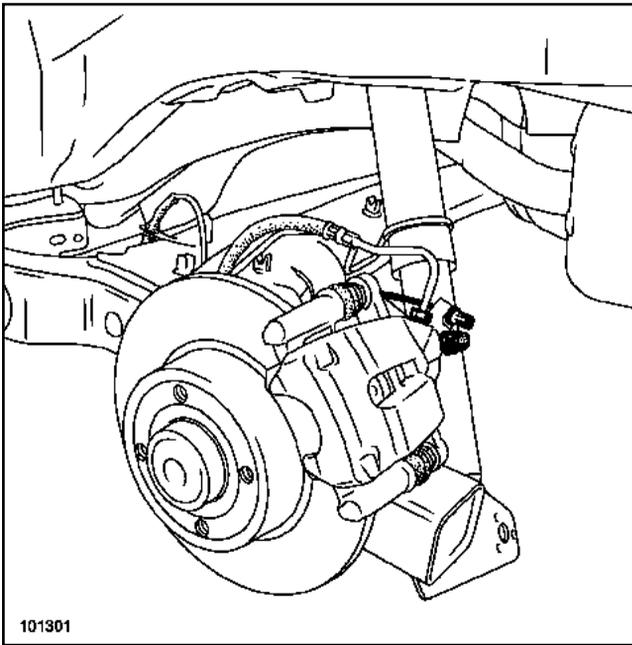
Push the calliper piston back using tool (**Fre. 1190-01**) until it is at the end of its bore.

Refit:

- the brake pads,
- the calliper,
- the guide pin bolts.

Torque tighten the **guide pin bolts (3.6 daNm)**.

Refit the parking brake cables.



101301

Check that the parking brake cable stop is properly engaged in its housing.

Apply the parking brake control several times to activate the locking and unlocking function and to activate the calliper automatic play compensation.

Refit the wheel.

Torque tighten the **wheel bolts (13 daNm)**.

Equipment required

pedal press

Tightening torques

rigid brake pipe onto the rear axle **1.4 daNm**

rigid brake pipe onto the calliper **1.4 daNm**

The pipes have a rigid and a flexible section.

WARNING

Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

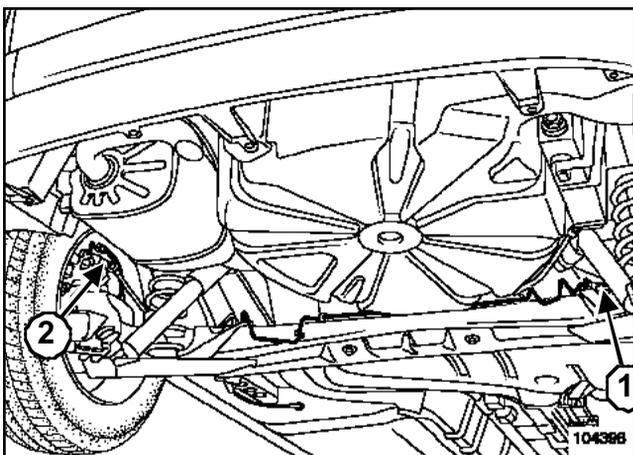
REMOVAL

Mount the vehicle on a two post lift.

Fit the **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

Raise the vehicle.

I - LEFT HAND REAR RIGID BRAKE PIPE



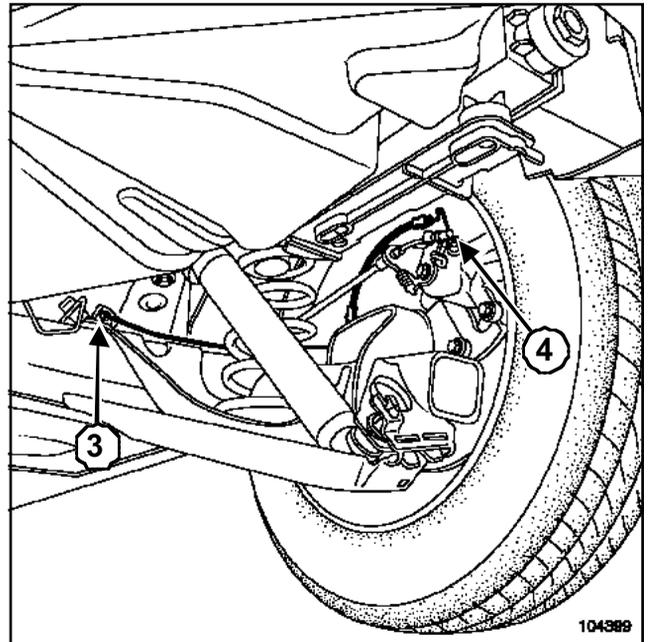
Unscrew:

- the rigid brake pipe from the rear axle (1),
- the rigid brake pipe from the calliper (2).

Unclip the rear axle rigid brake pipe.

Remove the rigid brake pipe.

II - RIGHT HAND REAR RIGID BRAKE PIPE



Unscrew:

- the rigid brake pipe from the rear axle (3),
- the rigid brake pipe from the calliper (4).

Unclip the rear axle rigid brake pipe.

Remove the rigid brake pipe.

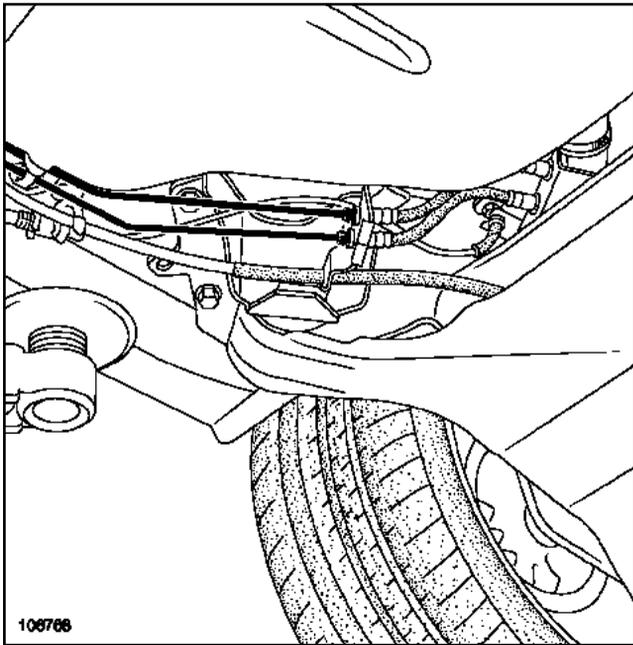
REFITTING

WARNING

Do not twist the brake hose.

Make sure that there is no contact between the brake hose and the surrounding components.

Brake pipe



106768

Proceed in the reverse order to removal.

IMPORTANT

Make sure that the underbody brake pipes are not under any strain at all the clips, and that they are not crossed. If the brake pipes are crossed, the ABS and ESP systems will not work properly.

Torque tighten:

- the rigid brake pipe onto the rear axle (1.4 daNm),
- the rigid brake pipe onto the calliper (1.4 daNm).

Bleed the braking circuit (see **30A Bleeding the braking circuit**).

Special tooling required

Fre. 1190-01	Tool for pushing calliper pistons back
--------------	--

Tightening torques

stub-axle nuts	22 daNm
calliper support bolts	10.5 daNm
guide pin bolts	3.6 daNm
wheel bolts	13 daNm

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

The discs are supplied with fitted bearings.

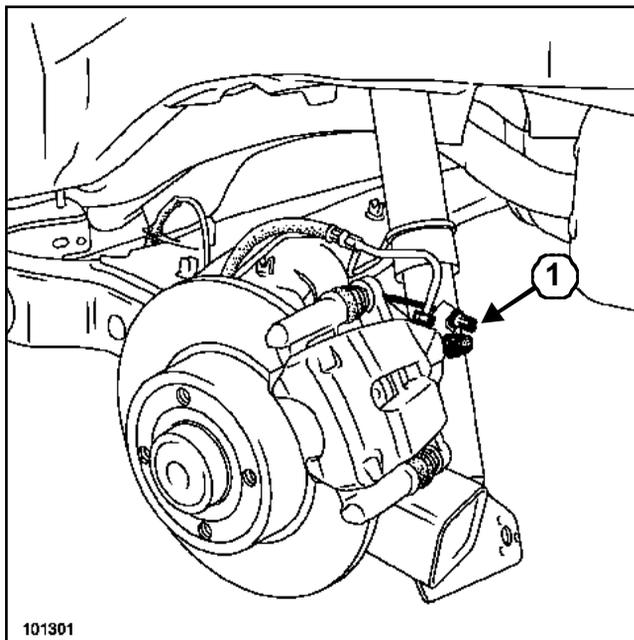
Brake discs are not regrindable. If there is excessive wear or scoring, the brake discs must be replaced.

Be sure to replace the brake pads if the brake discs are being replaced.

REMOVAL

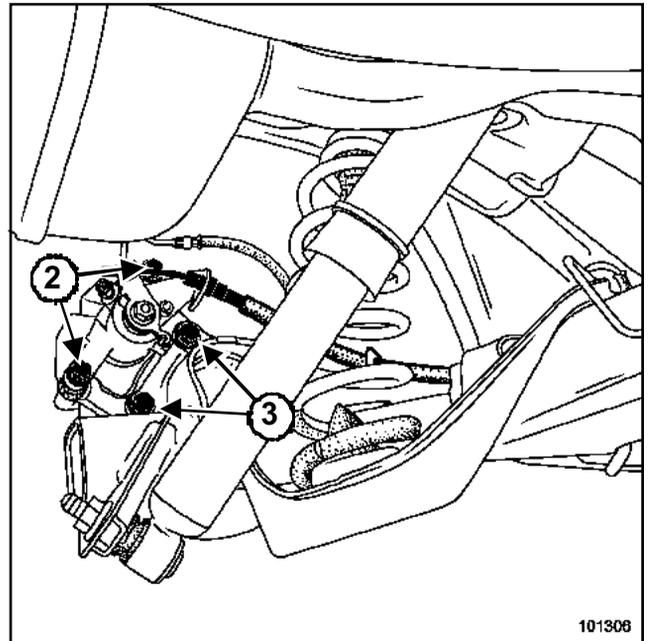
Mount the vehicle on a two post lift.

Remove the wheels.



Unclip the parking brake cables (1).

Note the routing for refitting.



101306
101306

Remove:

- the guide pin bolts (2),
- the calliper.

Hang up the calliper.

Remove:

- the brake pads,
- the calliper support bolts (3),
- the calliper supports,
- the hub caps,
- the stub-axle nuts,
- the « disc - bearing » assemblies.

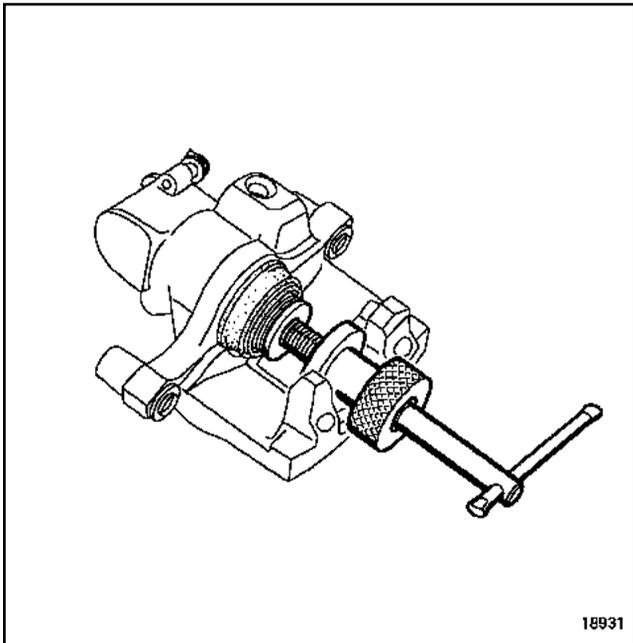
Check the condition of the braking components (replace faulty parts).

Clean the callipers and calliper supports.

REFITTING

Note:

Coat the calliper support and guide pin bolts with **FRENBLOC** or similar product before fitting them.



18931

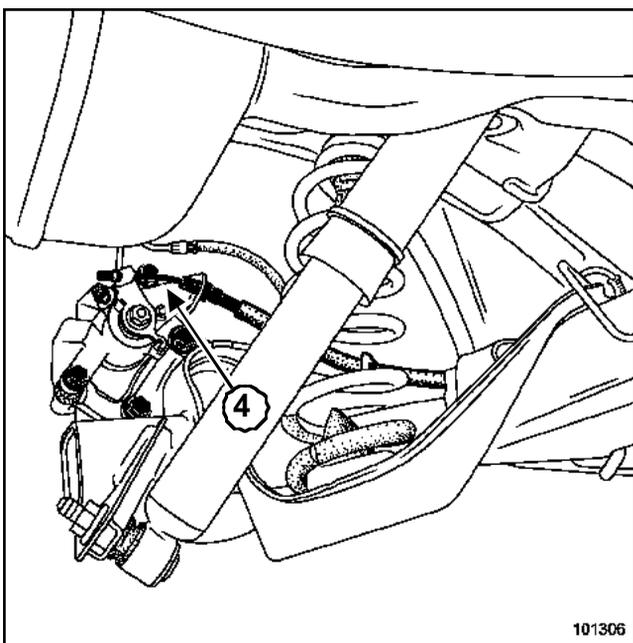
18931

Push the calliper piston back using tool (**Fre. 1190-01**) until it is at the end of its bore.

Proceed in the reverse order to removal

Torque tighten:

- the **stub-axle nuts (22 daNm)**,
- the **calliper support bolts (10.5 daNm)**,
- the **guide pin bolts (3.6 daNm)**.



101306

101306

Refit the parking brake cables (4).

Check that the parking brake cable stops are properly engaged in their housing.

Note:

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

Check the brake fluid level.

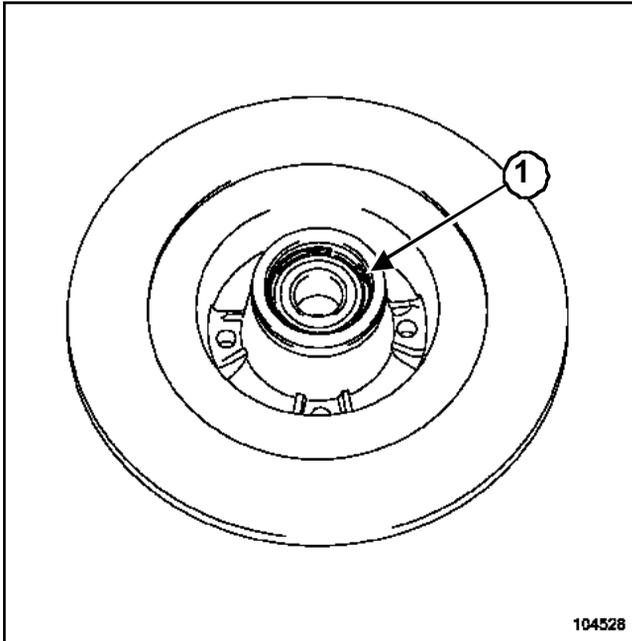
Apply the parking brake control several times to activate the locking and unlocking function and to activate the calliper automatic play compensation.

Refit the wheels.

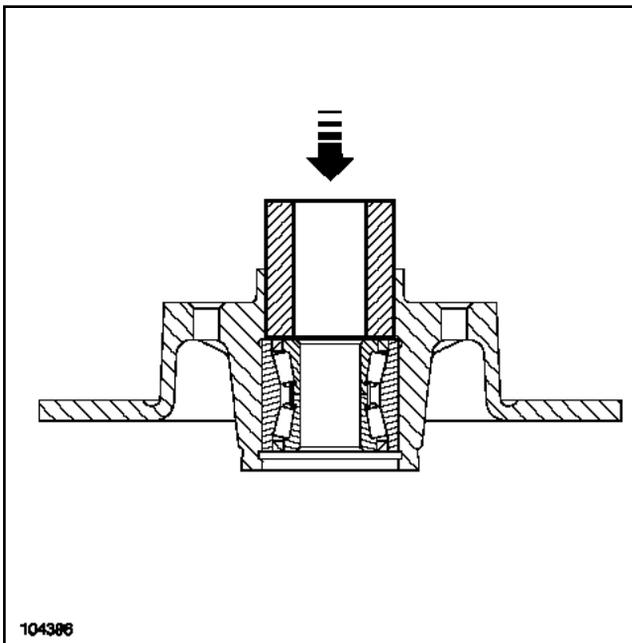
Torque tighten the **wheel bolts (13 daNm)**.

REMOVAL

Remove the brake disc (Section Rear axle assemblies, Brake discs, page 33A-8).



Remove the circlip (1)



Remove the bearing by applying pressure with a **49 mm** diameter pipe.

REFITTING

WARNING

Take care not to mark the wheel speed sensor target on the bearing fitted with it when refitting.

WARNING

Clean:

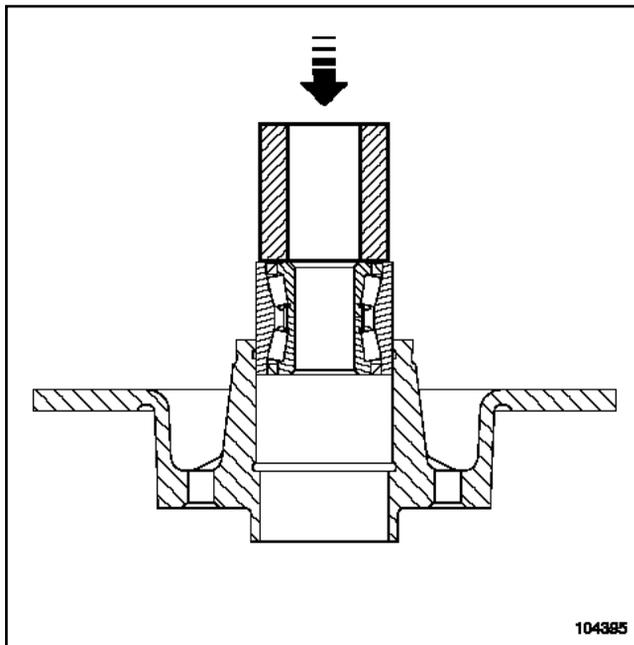
- The internal and external surfaces of the new bearing in contact with the hub carrier and the stub-axle,
- the hub carrier surfaces, in contact with the new bearing,
- the stub-axle surfaces, in contact with the new bearing,

WARNING

It is essential to check the condition of the stub-axle surface and the bore of the hub carrier. Replace the hub carrier if it is faulty.

WARNING

Do not use the inner bearing race for support in order to avoid damaging the bearing (significant force is required for fitting).



104395

Refit the bearing by applying pressure with a **49 mm** diameter pipe.

Refit the circlip.

To refit, proceed in the reverse order of removal.

Equipment required

jack

Tightening torques

wheel bolts	13 daNm
shock absorber lower mounting bolts	10.5 daNm

During removal, note the colours of the shock absorbers and springs, to ensure the parts match when refitting.

WARNING

Never grip the rear axle with a lifting system.

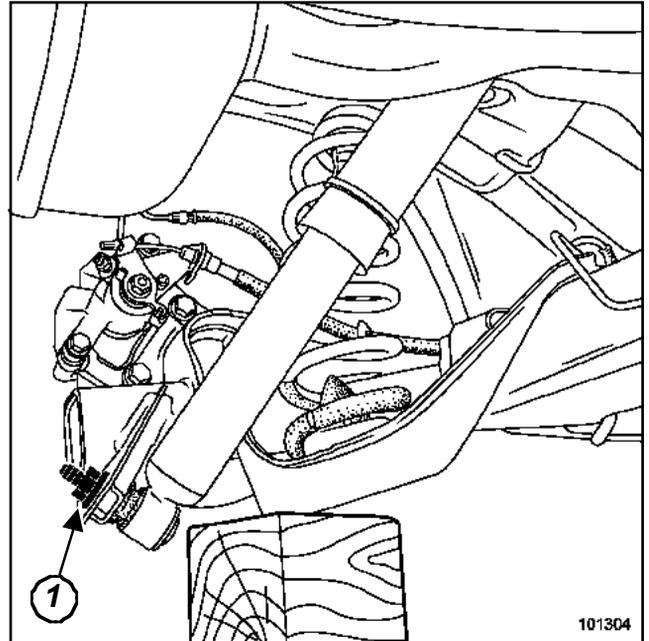
REMOVAL

Mount the vehicle on a two post lift.

Remove:

- the rear wheels,
- the rear axle protective fairing clips using unclipping pliers,
- the rear axle protective fairing.

1 - Left side



101304

101304

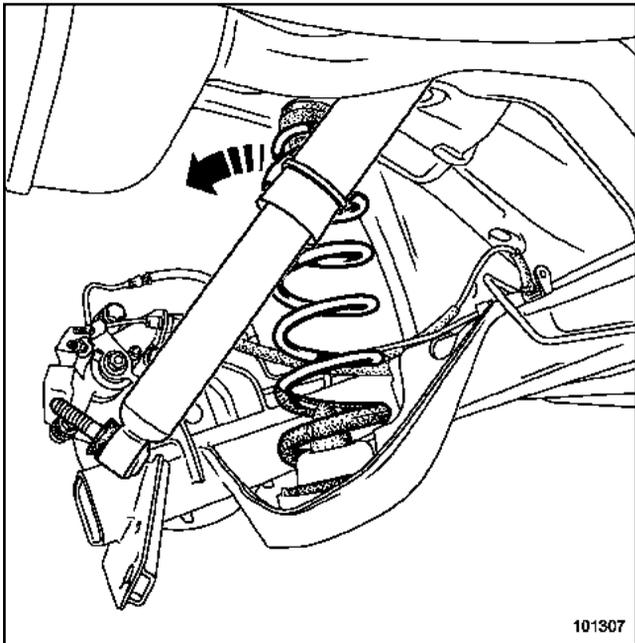
Set up the **jack** tool, with a shim, under the left spring cup.

Mark the position where the left spring is fitted.

Remove the left shock absorber lower mounting (1) using a long socket.

Release the left shock absorber lower mounting.

Remove the **jack** tool.



101307
101307

Remove the left spring with its lower support.

WARNING

If the upper support is unclipped, replace it.

2 - Right side

Repeat these operations on the right-hand side of the vehicle.

Hang up the rear axle.

REFITTING

Refit:

- the two lower supports on the springs,
- the springs in their housing.

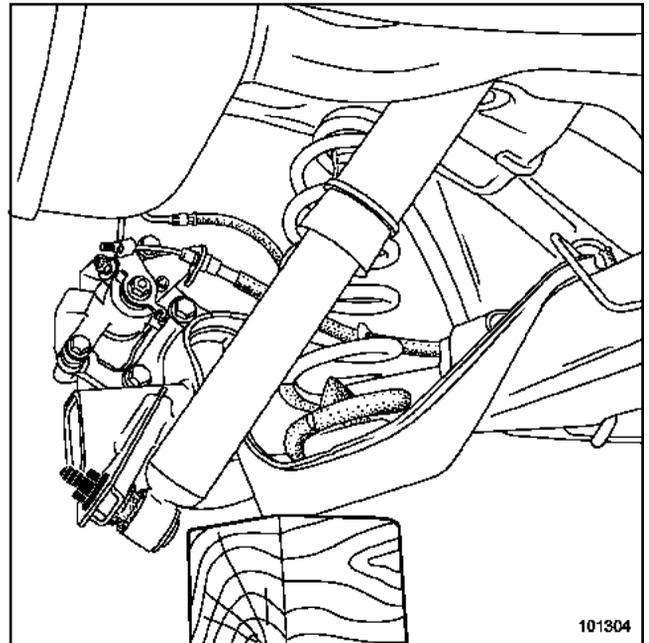
Mount the bump stops on the axle assembly, with the marking towards the rear and in the longitudinal axis of the vehicle.

1 - Left side

Set up the **jack** tool, with a shim, under the spring cup.

Insert the spring into its bump stops, starting at the top.

Compress the rear axle.



101304
101304

WARNING

Make sure that the shock absorber lower mounting is fitted the right way round.

Refit the shock absorber lower mounting.

Pretighten the shock absorber lower mounting.

WARNING

The shock absorber mountings are only to be tightened with the vehicle wheels on the ground.

Remove the **jack** tool.

2 - Right side

Repeat these operations on the right-hand side of the vehicle.

Refit the rear wheels.

Torque tighten the **wheel bolts (13 daNm)**.

Lower the lift until the wheels touch the ground.

Torque tighten the **shock absorber lower mounting bolts (10.5 daNm)**.

Raise the lift again.

Refit the rear axle aerodynamic fairing, replacing any damaged plastic clips.

Tightening torques

shock absorber upper mounting bolts	6.2 daNm
shock absorber lower mounting bolts	10.5 daNm

During removal, note the colours of the shock absorbers and springs, to ensure the parts match when refitting.

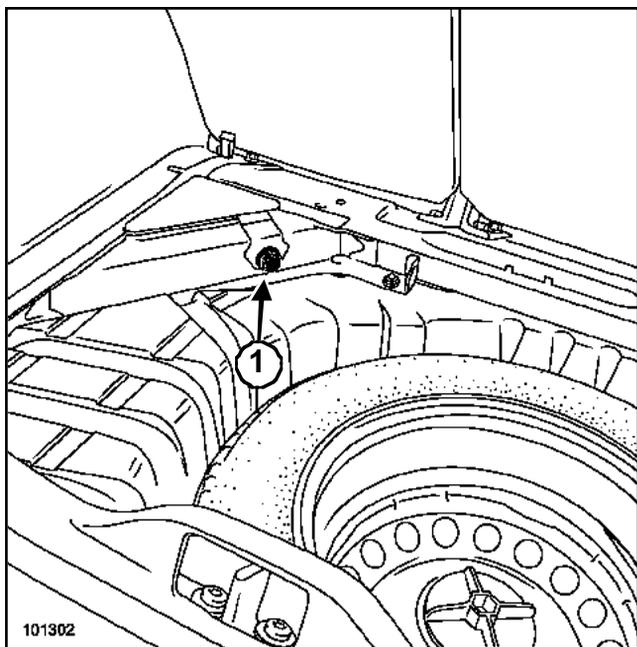
WARNING

- Never grip the rear axle with a lifting system.
- When replacing a shock absorber, the shock absorber on the opposite side must be replaced.

REMOVAL

Mount the vehicle on a two post lift.

Lift up the carpet in the boot.



Remove the shock absorber head upper mounting bolt (1).

Raise the lift.

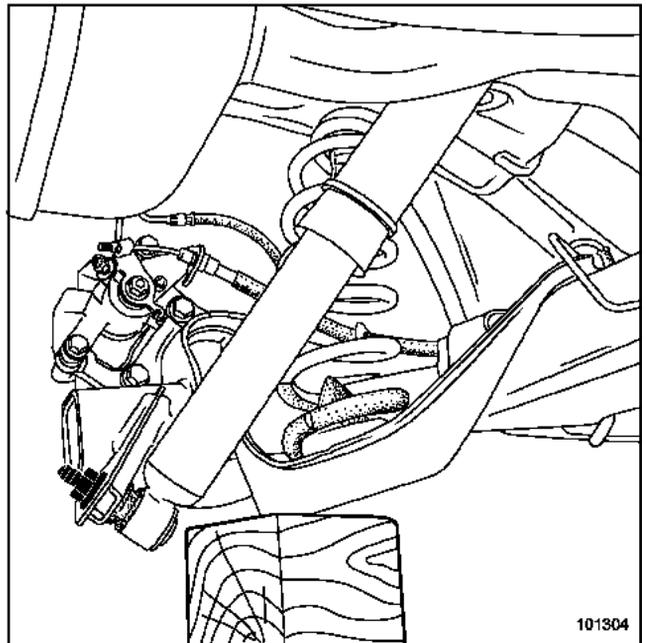
Remove:

- the protective fairing cover clip,
- the shock absorber lower mounting nut,
- the shock absorber.

REFITTING

Refit:

- the shock absorber,
- the shock absorber lower mounting.



101304
101304

WARNING

Make sure that the shock absorber lower mounting is fitted the right way round.

Pretighten the shock absorber lower mounting.

WARNING

The shock absorber mountings are only to be tightened with the vehicle wheels on the ground.

Cut the retaining wire.

Position the shock absorber head in its housing.

Lower the lift until the wheels touch the ground.

Align the shock absorber head with the drill hole in the boot.

Refit the shock absorber upper mounting bolt.

Pretighten the shock absorber upper mounting bolt.

Repeat the operation on the opposite side.

Torque tighten:

- the **shock absorber upper mounting bolts (6.2 daNm)**,
- the **shock absorber lower mounting bolts (10.5 daNm)**, holding the bolt head.

Refit the shock absorber lower mounting protective
fairing covers, replacing any damaged plastic clips.

Special tooling required

Mot. 1390	Support for removing and refitting the engine and gearbox assembly
------------------	--

Equipment required

pedal press

jack

Tightening torques

bearing mounting bolts	6.2 daNm
brake hose bolts	1.4 daNm
shock absorber lower mountings	10.5 daNm
wheel bolts	13 daNm

WARNING

Never grip the rear axle with a lifting system.

REMOVAL

Unlock the automatic parking brake (see **37B Automatic parking brake**).

Mount the vehicle on a two post lift.

Note:

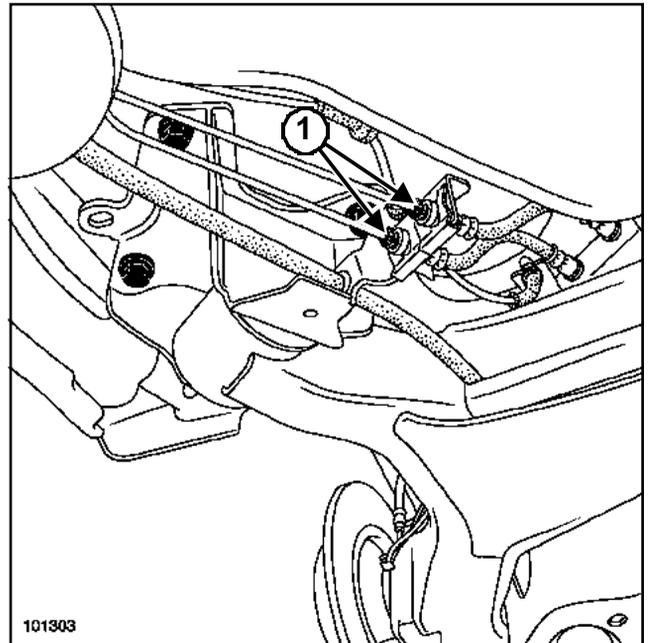
- During this operation, secure the vehicle on the lift with a strap to prevent it from unbalancing.
- For the strap fitting procedure (see **02A Underbody lift**).

Fit the **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

Remove the rear wheels.

Unclip the parking brake cables.

Note the parking brake cable routing for refitting.



101303

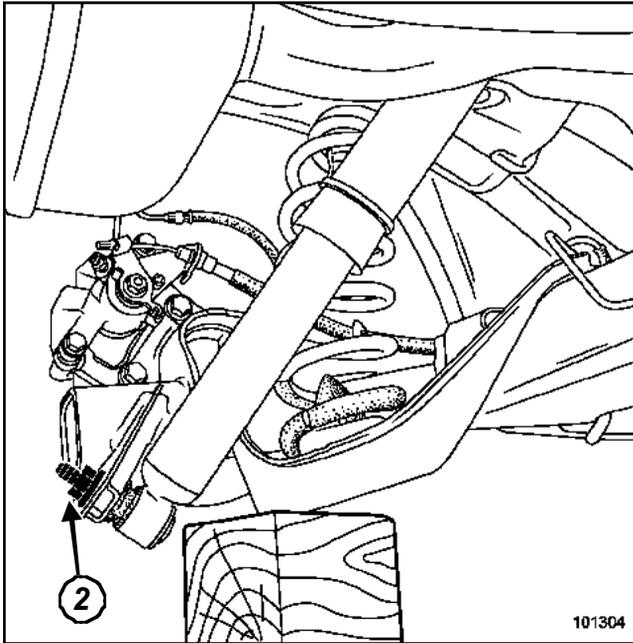
Undo the brake hose nuts (1).

Disconnect the wheel speed sensor connectors from each side member.

Remove:

- the clips from the rear axle protective fairing using unclipping pliers,
- the rear axle protective fairing.

1 - Left side



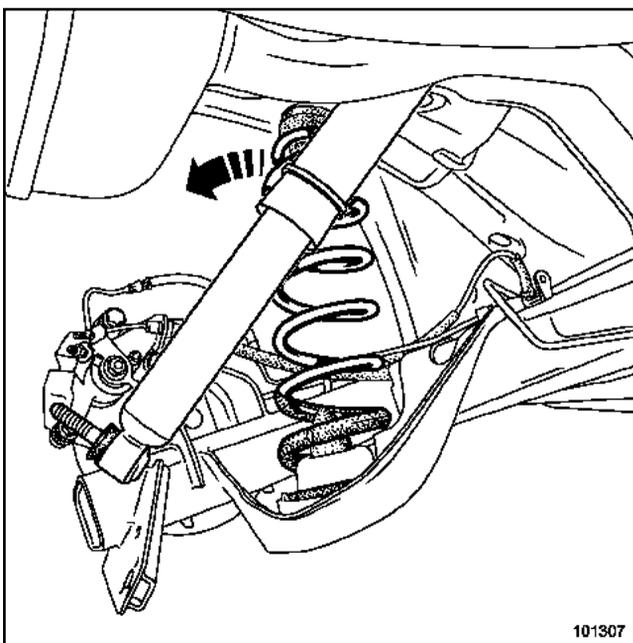
Mount the **jack** tool, with a shim, under the left spring cup.

Mark the position where the left spring is fitted.

Remove the left shock absorber lower mounting (2) using a long socket.

Put aside the left shock absorber lower mounting.

Remove the **jack** tool.

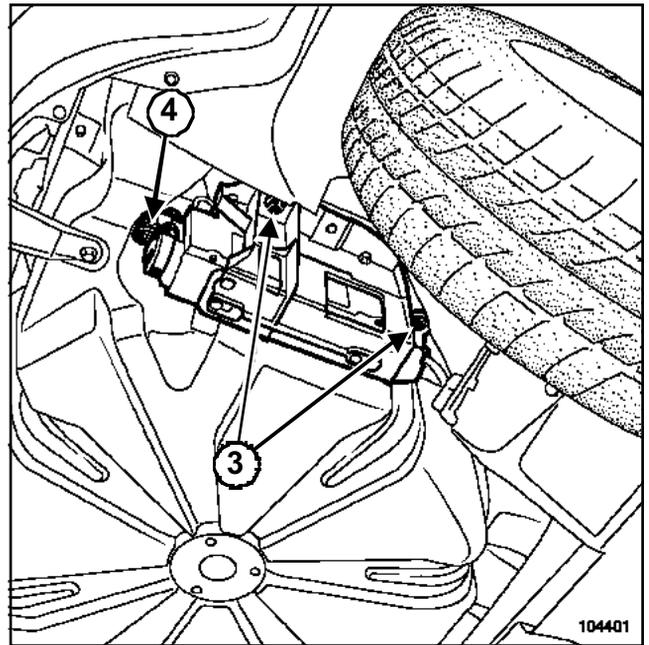


Remove the left spring and its supports.

2 - Right side

Repeat these operations on the right side of the vehicle.

J84, and AUTOMATIC PARKING BRAKE

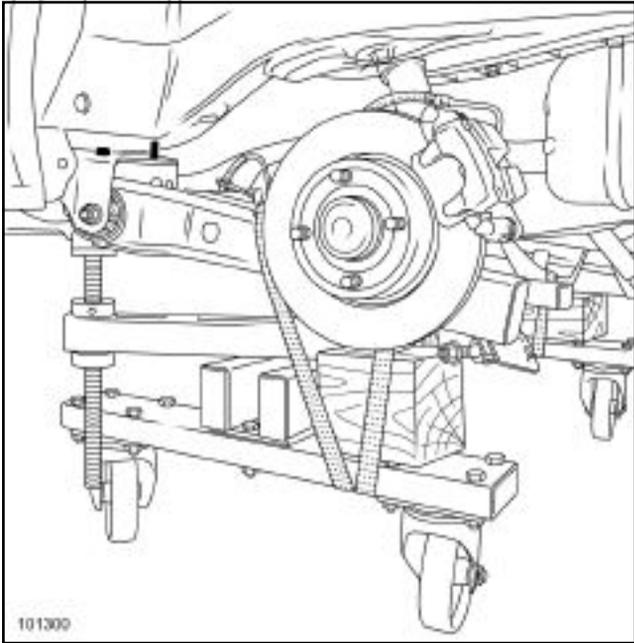


Remove the two automatic parking brake control unit support mounting bolts (3).

Remove the automatic parking brake control unit downwards.

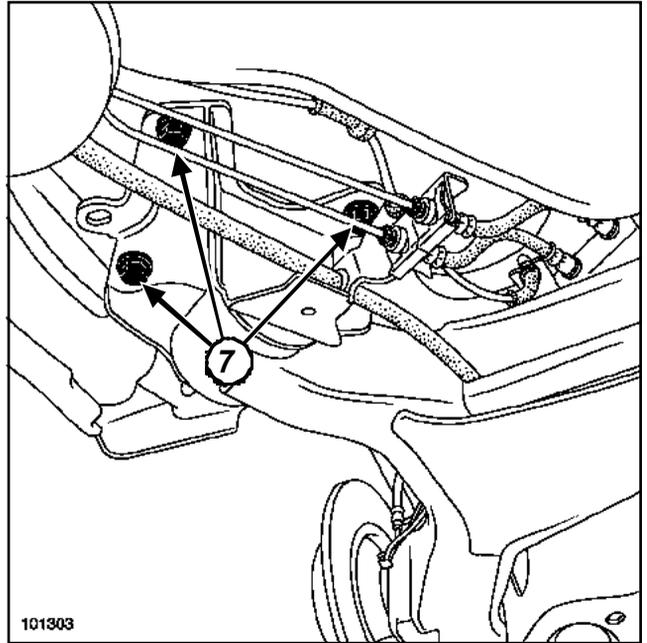
Disconnect the automatic parking brake control unit wiring (4).

Hang the automatic parking brake control unit on the rear axle.



101300

Set up tool (**Mot. 1390**) on the rear axle jacking points.



101303

101303

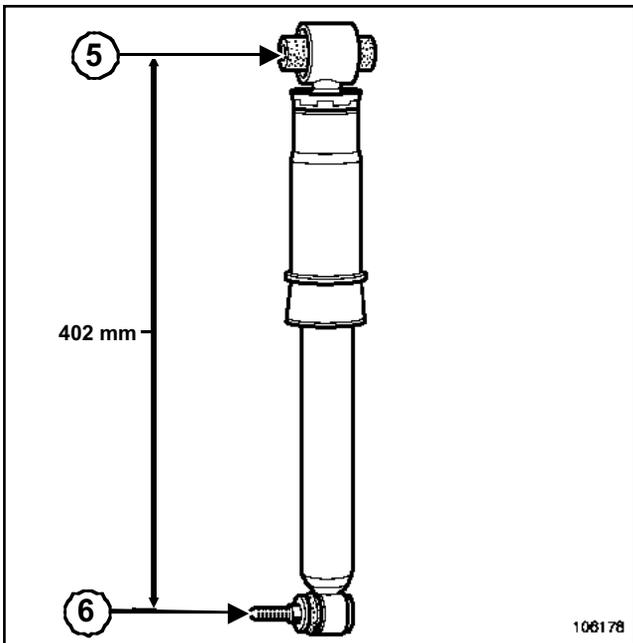
Loosen the bearing bolts.

Press the pads of tool (**Mot. 1390**) onto the rear axle.

Strap the rear axle.

Remove the bearing bolts.

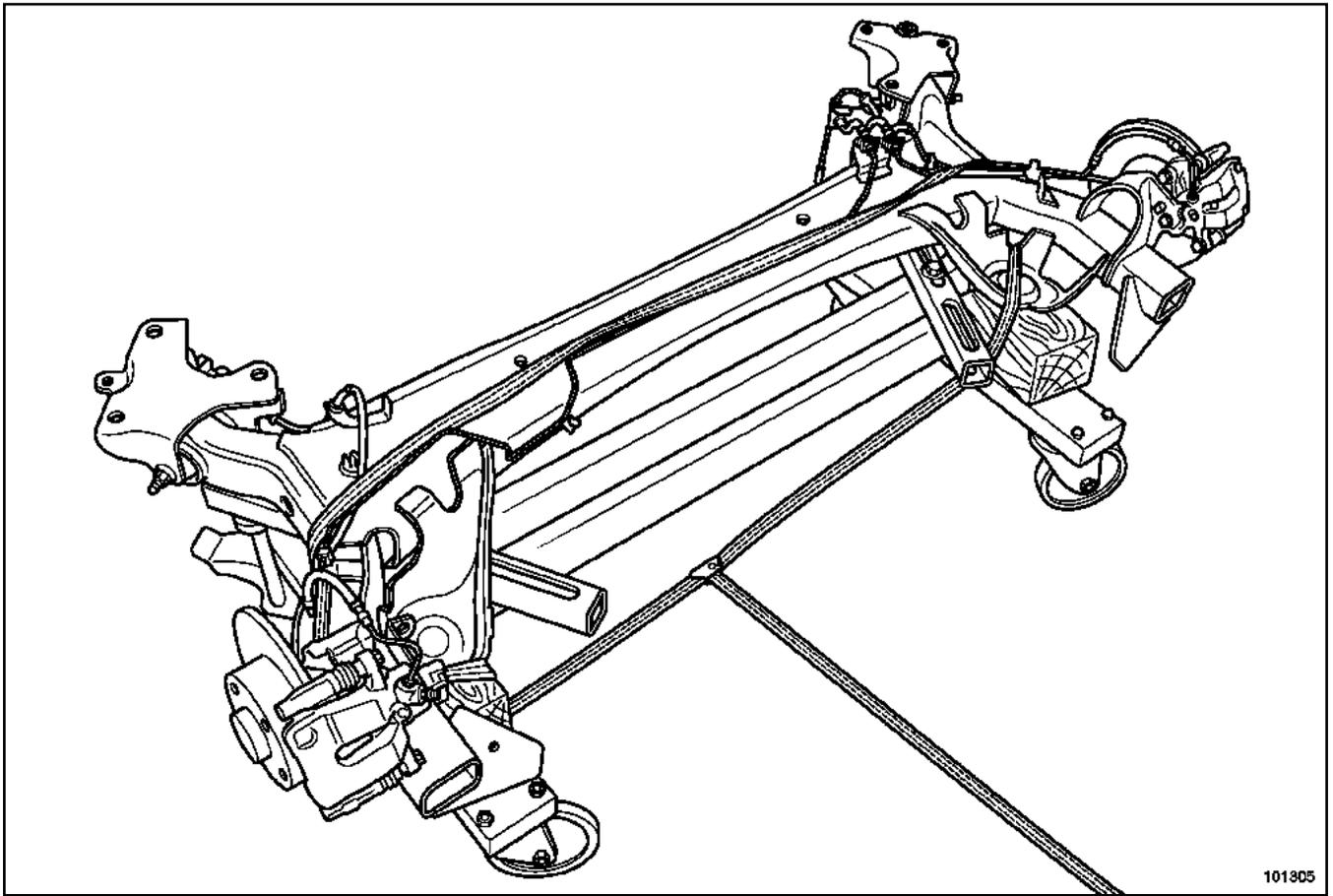
Raise the vehicle.



106178

106178

Adjust the height of the pads to obtain a centre-to-centre distance between the shock absorber mounting points (mounting on body (5), mounting on axle (6)) **402 mm** in length.



101305

101305

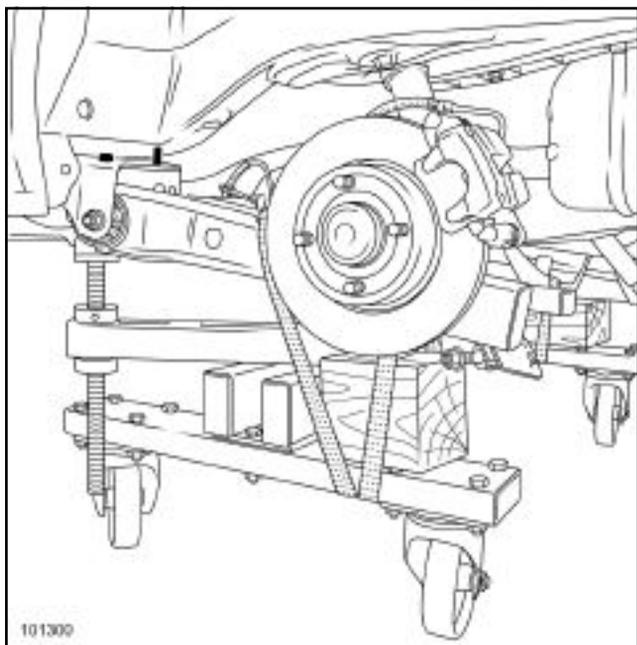
Remove the rear axle equipment.

REFITTING

Refit the rear axle equipment.

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

Position the axle underneath the vehicle.



101300

Lower the lift.

Position the bearing locators opposite the centring holes.

Refit the mountings, starting with the left bearing.

Insert the brake pipes into their housing.

Remove the strap.

Raise the lift.

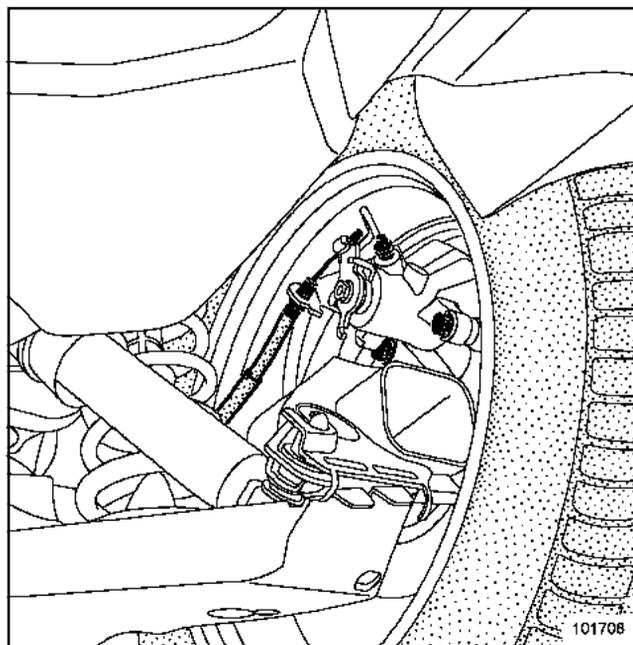
Remove tool (**Mot. 1390**).

Torque tighten:

- the **bearing mounting bolts (6.2 daNm)**,
- the **brake hose bolts (1.4 daNm)**.

Reconnect the ABS connectors.

Refit the parking brake cables.



101706

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

Refit:

- the supports on the springs,
- the springs in their housing.

Mount the bump stops on the axle assembly, with the marking towards the rear and in the longitudinal axis of the vehicle.

J84, and AUTOMATIC PARKING BRAKE

Reconnect the parking brake control unit wiring.

Refit the parking brake control unit support mounting bolts.

1 - Left side

Mount the **jack** tool, with a shim, under the left spring cup.

Compress the rear axle.

Refit the shock absorber lower mounting.

WARNING

The shock absorber mountings are only to be tightened with the vehicle wheels on the ground.

Remove the **jack** tool.

2 - Right side

Mount the **jack** tool, with a shim, under the left spring cup.

Check the position of the bump stop on the axle assembly.

Compress the rear axle.

Refit the shock absorber lower mounting.

Remove the **jack** tool.

Lower the lift.

Torque tighten the **shock absorber lower mountings (10.5 daNm)**.

Raise the lift again.

Refit the rear axle protective fairing, replacing damaged plastic clips.

Refit the rear wheels.

Torque tighten the **wheel bolts (13 daNm)**.

REAR AXLE ASSEMBLIES

Locking the axle in position

33A

Equipment required

safety belt

Tightening torques

bush mounting bolts **12.5 daNm**

WARNING

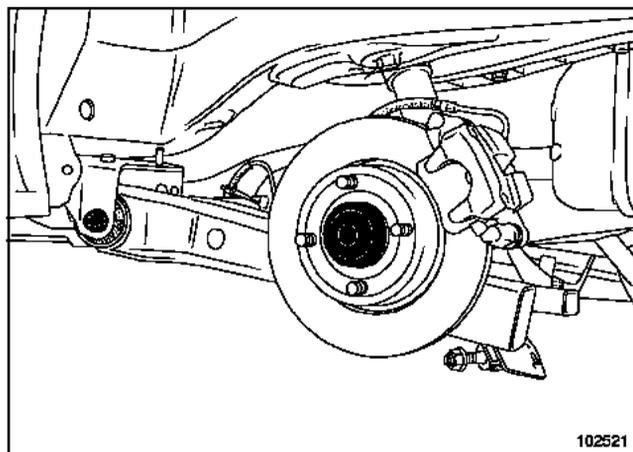
Never grip the rear axle with a lifting system.

Mount the vehicle on a two post lift.

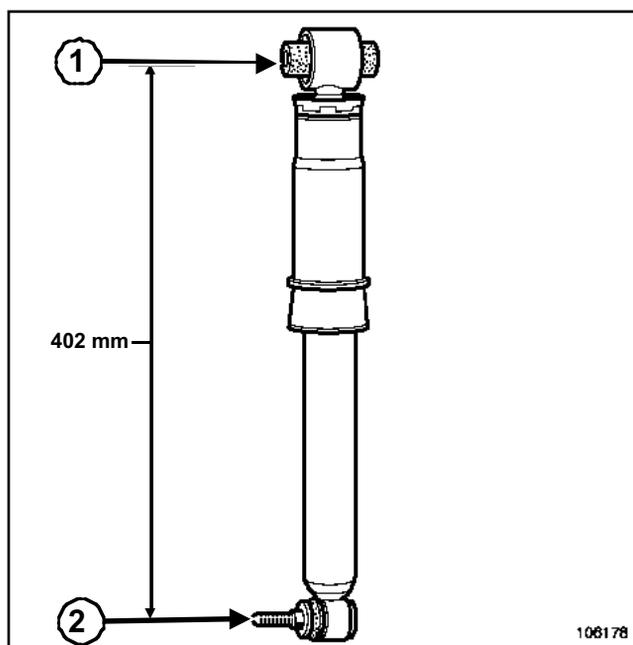
Note:

- During this operation, strap the vehicle to the lift using a **safety belt**, to prevent it from unbalancing.
- For the **safety belt** fitting procedure, (see **02A Underbody lift**).

The operation is carried out with the shock absorber lower mounting removed.



102521

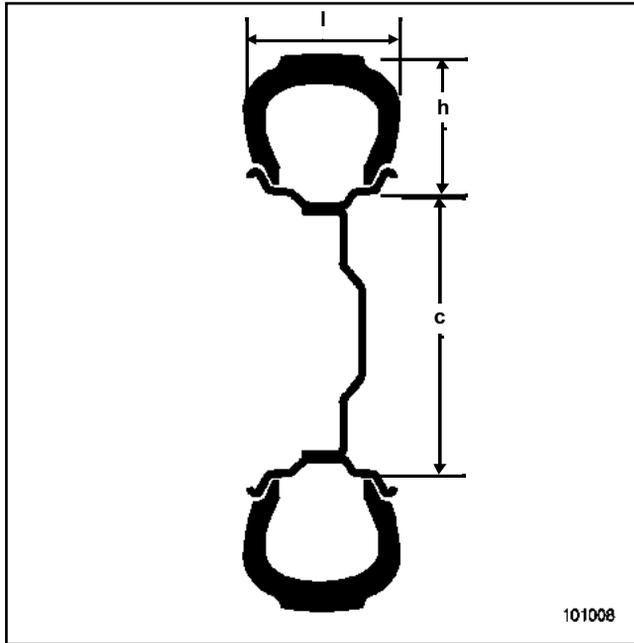


106178

Adjust the height of the pads to obtain a centre-to-centre distance between the shock absorber mounting points (body mounting - (1) axle mounting (2)) of **402 mm**.

Torque tighten the **bush mounting bolts (12.5 daNm)**.

Example of a tyre identification marking: **205/55 R 16 91 V**.



205	Tyre width in mm (l)
55	Height/width ratio (h/l)
R	Radial structure
16	Internal diameter in inches
91	Load index
V	Speed code

Speed index table:

Code	Maximum speed in mph (km/h)
R	106 (170)
S	112 (180)
T	118 (190)
U	124 (200)
H	130 (210)
V	149 (240)
ZR	above 149 (240)

WHEELS AND TYRES

Wheel rim: Identification

35A

The wheel rims are marked in one of two ways:

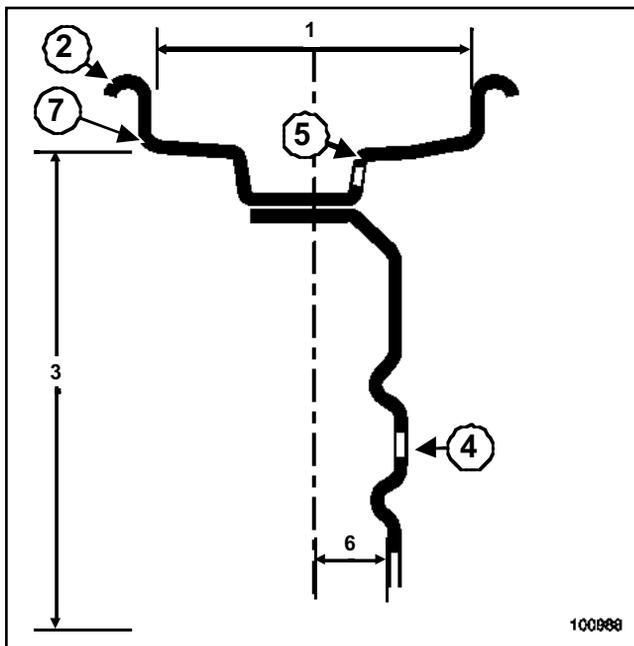
- engraved marking for steel wheel rims,
- cast marking for alloy wheel rims.

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

The marking may be:

- complete, for example **5 1/2 J 144 CH 36**;
- simplified, for example **5 1/2 J14**.

	Type of wheel	5.5 J 14
1	Width (in inches)	5.5
2	Rim edge profile	J
3	Nominal diameter (in inches)	14
4	Number of holes	4
5	Tyre bead profile	CH
6	Offset (in mm)	36



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The wheel bolts are positioned in a circle with a diameter of **100 mm** (four mounting bolts).

The maximum run-out is measured at the rim edge .

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.

Never 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.

1 - Wheel

Clean the bearing and centring faces.

Remove any gravel trapped in the tyre treads.

Clean the wheels.

2 - Wheel balancer

Make sure the wheel balancer bearing surface and all the centring equipment (ring, thrust plate, etc.) are kept clean.

II - WHEEL REMOVAL AND WHEEL BALANCING

1 - Driver's observation

If the wheels are not correctly balanced this causes the steering wheel and/or the vehicle floor to vibrate.

The vibrations occur at between **56 mph (90 km/h)** and **93 mph (150 km/h)**.

WARNING

Perform a road test of at least **1.25 miles (2 km)** before the wheel balancing operation to prevent a flat spot forming on the tread when the vehicle is stationary.

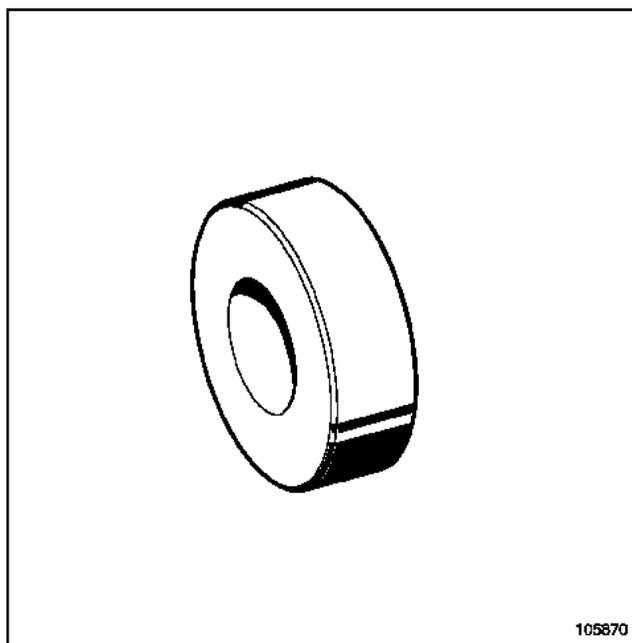
After the road test:

- lift the vehicle immediately,
- leave the four wheels suspended,
- release the automatic parking brake.

Remove the wheels, positioning the valves upwards.

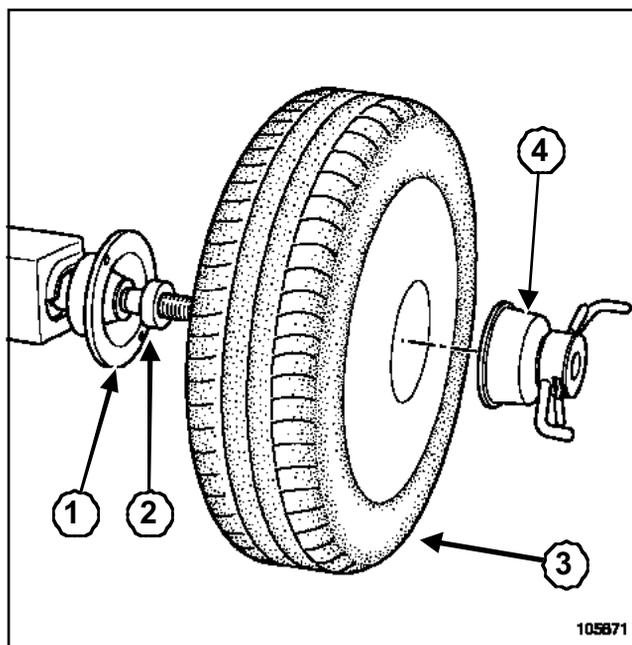
Be sure to clean the wheel, disc, and hub bearing surfaces.

To reproduce the exact vehicle wheel assembly, it is essential to fit a **60 mm** diameter cylindrical centre on the wheel balancer.



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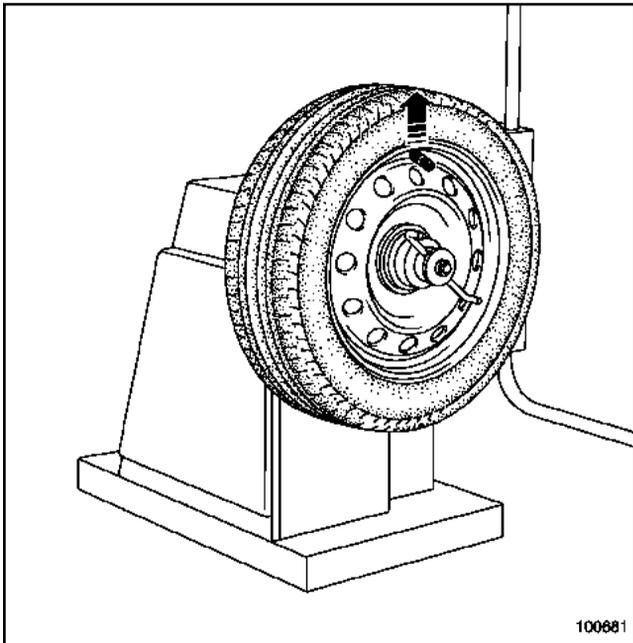
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The wheel is fitted on the wheel balancer as follows:

- (1) wheel balancer back-plate,
- (2) ring, diameter **60 mm**,
- (3) wheel,
- (4) wheel locking tool.

After switching on the wheel balancer and entering the specific wheel parameters, select the « end » balancing mode.



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Place the wheel on the wheel balancer, with the valve at the top, then lock the wheel in place.

Check that the wheel is not deformed because of accidental impact. If it is, replace the deformed components.

Remove any grit which may be jammed in the tyre treads.

Start the wheel balancer and check that the wheel balance is below **5 g** (dynamic) and **10 g** (static).

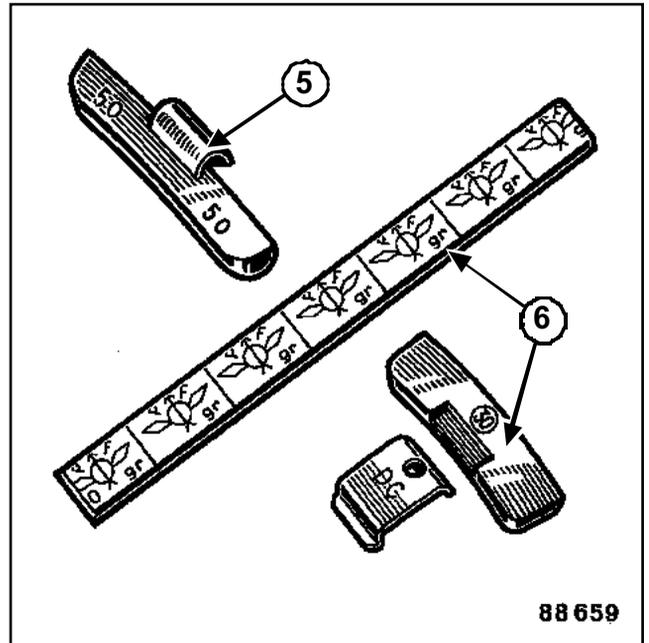
Otherwise, remove the old balancing weights and repeat the wheel balancing procedure to obtain a value below **5 g** on each wheel surface and a value below **10 g** when static.

Repeat this operation on the other vehicle wheels.

2 - Balance weights

Only use spare parts weights:

- secured by hooks to steel wheel rims (hooks incorporated in the weight),
- secured using (flat) hooks, or self-adhesive weights, for alloy wheel rims.



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- (5) Steel wheel rim
- (6) Alloy wheel rim

WHEELS AND TYRES

Specifications

35A

Equipment required
Diagnostic tool

I - INFLATION

Tyre inflation pressure when cold (bar), for the tyre pressure monitoring system (SSPP)

WARNING

If checking the pressure when hot, increase the tyre inflation pressure by **0.2 to 0.3 bar** above the recommended pressure.

STANDARD CHASSIS

Engine	Wheel rim	Tyre	Tyre inflation pressure when cold (bar)			
			Front		Rear	
			Normal	Motorway	Normal	Motorway
K4J	6.5 J 15	195/65 R15T	2.4	2.4	2.2	2.2
	6.5 J 16*	205/55 R16V	2.2	2.4	2	2.1
	195/440 (49)	205-650 R440 (1)	2.3	2.3	2.1	2.1
K4M	6.5 J 15	195/65 R15T	2.4	2.4	2.2	2.2
	6.5 J 16*	205/55 R16V	2.2	2.4	2	2.1
	195/440 (49)	205/650 R440 (1)	2.3	2.3	2.1	2.1
K9K**	6.5 J 15	195/65 R15T	2.4	2.4	2.2	2.2
	6.5 J 16*	205/55 R16V	2.3	2.4	2.1	2.1
K9K***	6.5 J 16*	205/55 R16H	2.3	2.4	2	2.1
	6.5 J 16	205/60 R16H	2.3	2.5	2.1	2.3
	195/440 (49)	205/650 R440 (1)	2.3	2.3	2.1	2.1

WHEELS AND TYRES Specifications

35A

Engine	Wheel rim	Tyre	Tyre inflation pressure when cold (bar)			
			Front		Rear	
			Normal	Motorway	Normal	Motorway
F4R	6.5 J 17*	205/50 R17V	2.4	2.5	2	2.1
	6.5 J 16*	205/55 R16H	2.3	2.4	2	2.1
	6.5 J 17	205/55 R17V	2.4	2.6	2.2	2.4
	6.5 J 17	205/55 R17V	2.4	2.5	2.2	2.3
	6.5 J 16	205/60 R16H	2.3	2.5	2.1	2.3
	6.5 J 16	205/60 R16V	2.3	2.5	2.1	2.3
	195/440 (49)	205-650 R440 (1)	2.3	2.3	2.1	2.1
	195/440 (49)	205-650 R440 (1) (2)	2.4	2.4	2.2	2.2
F9Q	6.5 J 17*	205/50 R17V	2.3	2.5	2	2.1
	6.5 J 16*	205/55 R16H	2.3	2.5	2	2.1
	6.5 J 17	205/55 R17V	2.4	2.5	2.2	2.3
	6.5 J 16	205/60 R16H	2.3	2.5	2.1	2.3
	195/440 (49)	205-650 R440 (1)	2.3	2.3	2.1	2.1

LONG CHASSIS

Engine	Wheel rims	Tyre	Load condition 5 people max.		Load condition 5 to 7 people max.	
			Road and motorway		Road and motorway	
			Front	Rear	Front	Rear
K4M	6.5 J 17	205/55 R17V	2.4	2.2	2.6	2.5
	6.5 J 16	205/60 R16H	2.2	2.2	2.4	2.5
F4R	6.5 J 17	205/55 R17V	2.4	2.2	2.6	2.6
	6.5 J 16	205/60 R16H	2.3	2.2	2.5	2.6
K9K	6.5 J 17	205/55 R17V	2.4	2.2	2.6	2.5
	6.5 J 16	205/60 R16H	2.2	2.2	2.4	2.5

WHEELS AND TYRES

Specifications

35A

Engine	Wheel rims	Tyre	Load condition 5 people max.		Load condition 5 to 7 people	
			Road and motorway		Road and motorway	
			Front	Rear	Front	Rear
F9Q	6.5 J 17	205/55 R17V	2.4	2.2	2.6	2.5
	6.5 J 16	205/60 R16H	2.4	2.2	2.6	2.5
All types	6.5 J 16	175/70 R16M	2.5	2.5	2.5	2.5

* Alloy wheel rim

** Manual gearbox

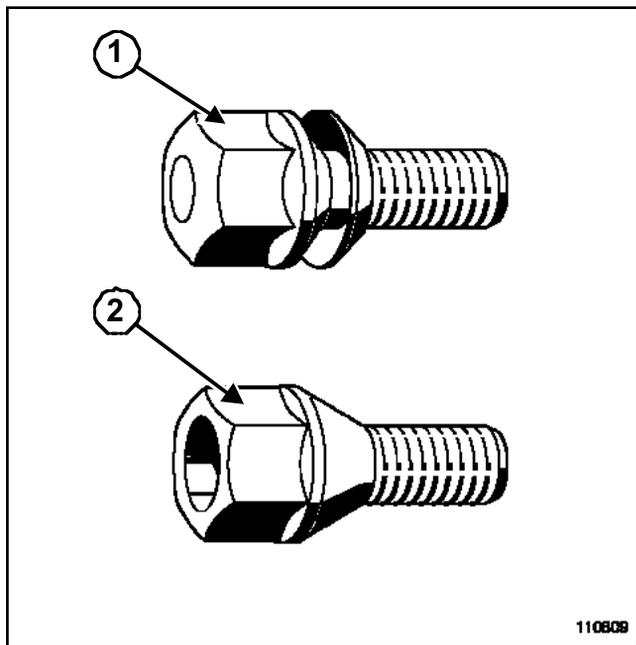
*** Automatic transmission

The pressure values provided are the recommended values when cold.

(1) Run flat tyre

(2) Turbocharger engine

II - SPECIAL NOTES FOR WHEEL BOLTS



Alloy wheel rim bolts (1).

Steel wheel rim bolts (2).

WARNING

The wheel bolts for the steel wheel rim and the alloy wheel rim are different. Check that the bolts match the wheel rims.

III - CONFORMITY CHECK AND ADJUSTMENT

WARNING

When the tyre size changes calibrate the computer for the electric power-assisted steering and for the tyre pressure monitoring system (see **MR 372 Fault finding, 36B, Electric Power-assisted Steering, Configuration and programming**).

Torque tightening of the **wheel bolts (130 N.m)**

Maximum wheel rim runout checked on the external diameter of the rim:

- steel wheel rim: **0.8 mm**,
- alloy wheel rim: **0.3 mm**.

Maximum run-out checked on the surface of the wheel rim: **0.7 mm**.

Wheel rim offset:

- steel wheel rim: **45 mm**,
- alloy wheel rim: **49 mm**.

For fitting chains, see « driver's handbook ».

IV - SPECIAL NOTES ON VEHICLES FITTED WITH TYRE PRESSURE MONITORING SYSTEM

Each set of four tyres is programmed into the computer.

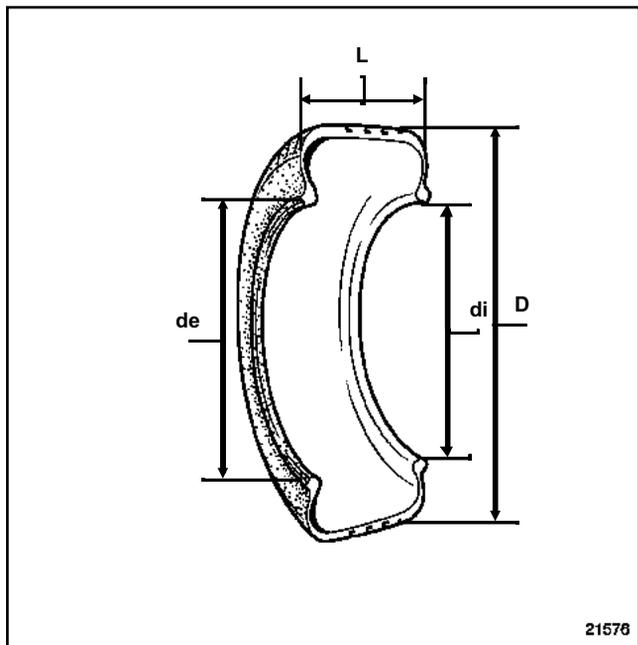
When fitting a « winter » set of tyres, if the programming has already been carried out, the set of tyres fitted on the vehicle is automatically recognised: you do not need to do anything with the **Diagnostic tool**.

WHEELS AND TYRES

Run flat tyres: Identification

35A

I - TYRE IDENTIFICATIONS



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The marking on these tyres differs from that on conventional product ranges.

Example of marking read on sidewall: **195-620 R 420 A 90 H**

Illustration reference	Example	Meaning
(L)	195	Width in mm
(D)	620	External diameter in mm
	R	Type of structure (R = radial)
	420	Nominal diameter on seat in mm
	A	Asymmetric
	90	Load index (90 = 600 kg)
	H	Speed code (H = 130 mph [210 km/h] maximum)

Note:

The internal diameter (**di**) is always greater than the external diameter (**de**).

WHEELS AND TYRES

Run flat tyres: Identification

35A

II - SUPPORT IDENTIFICATIONS

Example of markings read: 195-440 (49)

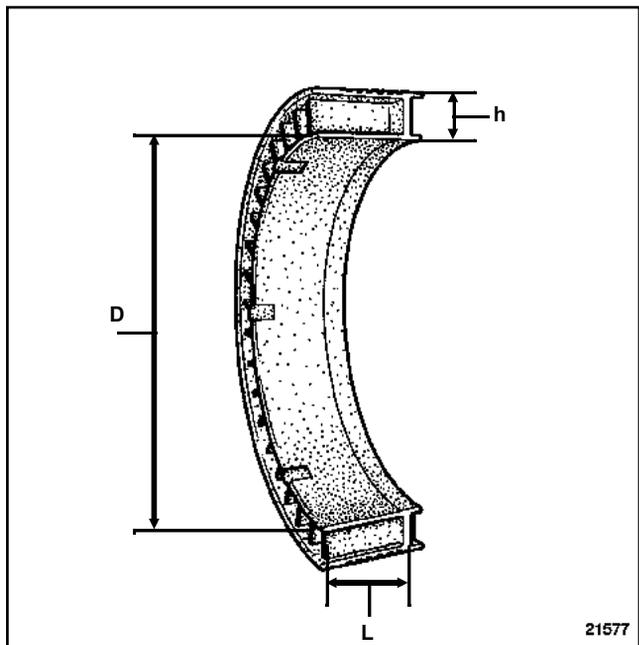


Illustration reference	Example	Meaning
(L)	195	Nominal width in mm
(D)	440	Nominal diameter on seat in mm
(h)	49	Support height in mm

WHEELS AND TYRES

Run flat wheel rim: Identification

35A

WHEEL RIM IDENTIFICATIONS

Example of markings read: **185-420 A-4-43**

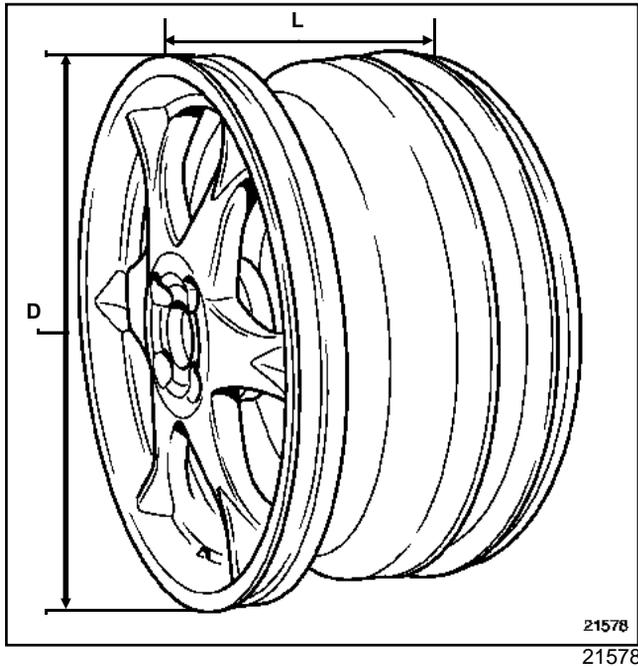


Illustration reference	Example	Meaning
(L)	185	Nominal width in mm
(D)	420	Nominal diameter on seat in mm
	A	Asymmetric
	4	Number of mounting holes
	43	Offset in mm

REPAIR AFTER PUNCTURE OR FLAT RUNNING

WARNING

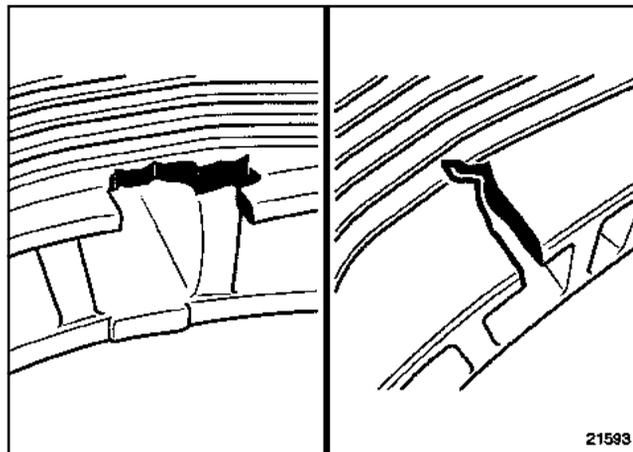
No repair can be carried out without removing the tyre and support.

Remove the tyre and the support (consulting the corresponding method).

With a rag, remove most of the gel present in the tyre and the support.

Inspect the inside of the tyre to detect any sign of the following possible types of damage:

- chafing or overheating marks on the inner rubber characteristic of prolonged running at an inadequate pressure,
- detachment of rubber or plies,
- visible or deformed bead wires,
- damage to the bead laying bare the plies.



Inspect the support to detect any sign of the following possible types of damage:

- missing pieces;
- cracks in the partitions or the crown,
- visible blistering.

WARNING

Be sure to replace any components damaged in any of the specified ways.

If the tyre is not damaged in any of the specified ways, it may be repaired by a PRP (tyre repair patch) on condition that the perforations or holes meet the following conditions:

- on the sidewalls, the perforation must be less than **3 mm**, up to speed code T inclusive (codes H, V, W, Y and Z with perforated sidewall must be replaced),
- in the crown region for perforations less than **6 mm** for all speed codes.

WARNING

Hot repair is strictly prohibited.

Refit the tyre and support (consult the corresponding method).

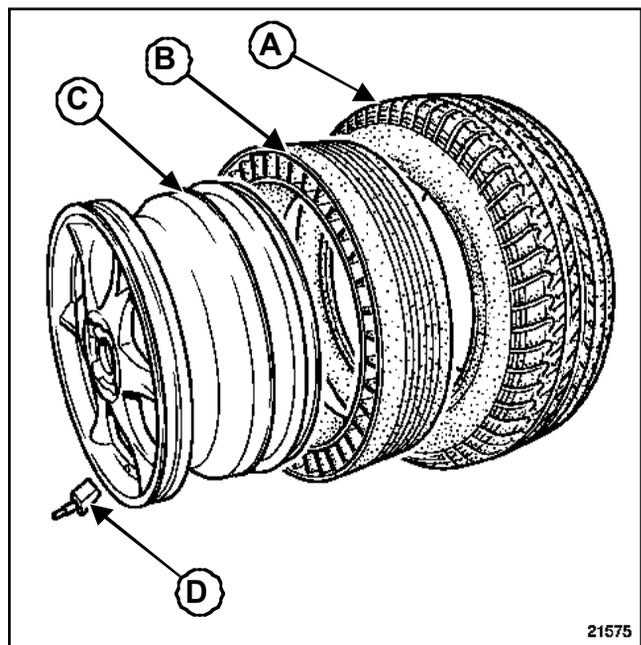
Inflate the tyre. The pressure values given in the manuals and Technical Notes are values for a fully laden vehicle or for motorway travel.

The tyre inflation pressure must be checked when cold.

Note:

Always use a source of dry compressed air.

WHEEL COMPOSITION



A wheel comprises four components:

- a tyre (A) (also known as the cover),
- a support (B),
- a wheel rim (C),
- a pressure detector (D) with built-in valve.

The tyre, the support and the wheel rim are asymmetric.

The pressure detector has a coloured marking determining the wheel's position on the vehicle.

Marking colour	Wheel position
Green	Front left
Yellow	Front right
Red	Rear left
Black	Rear right

The spare wheel (depending on equipment level) does not have an active pressure detector.

It should be used only in case of emergency.

The wheels should be refitted in their respective positions on the vehicle after a servicing operation. Accordingly, operations such as swapping wheels over are strictly prohibited.

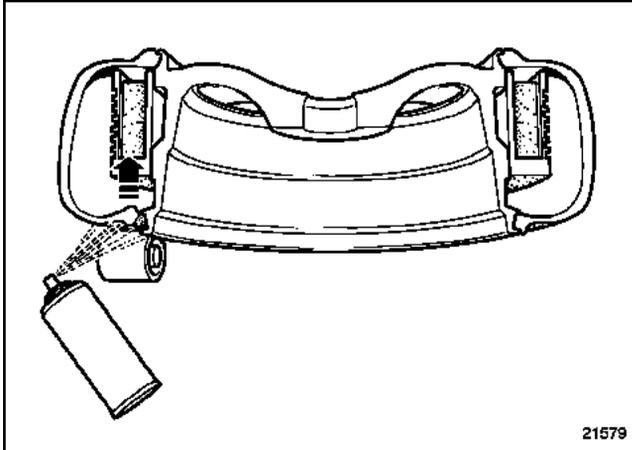
Run flat tyres

REMOVAL

Remove:

- the valve cap;
- the valve insert.

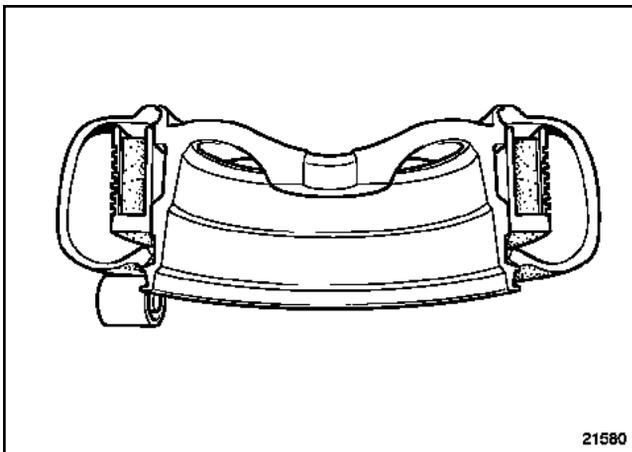
Empty the air from the tyre.



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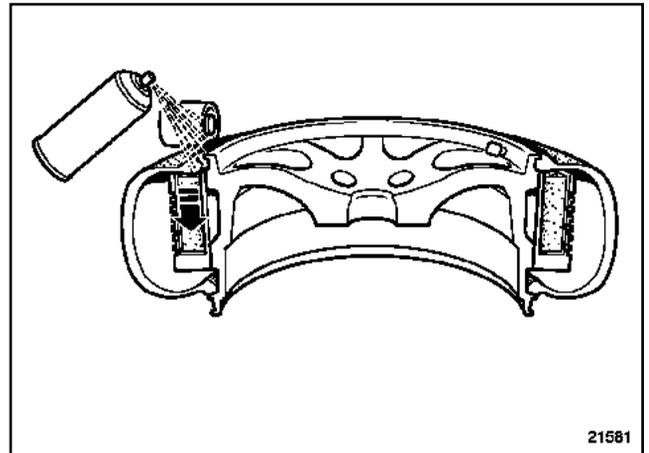
Push the bead slightly inside the wheel rim with the roller to lubricate the inner edge of the wheel rim and bead.



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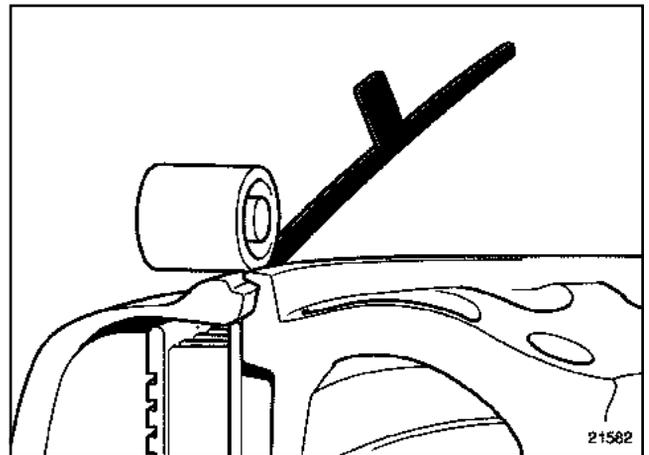
Gradually push the tyre bead towards the inside of the tyre, the wheel rim groove using the roller and turning the assembly.



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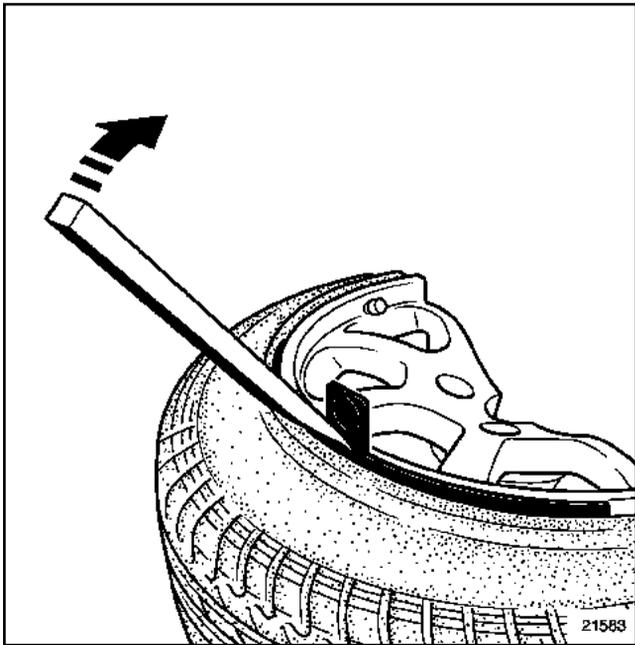
Push the bead slightly towards the outside of the wheel rim with the roller to lubricate the outer edge of the wheel rim and bead.



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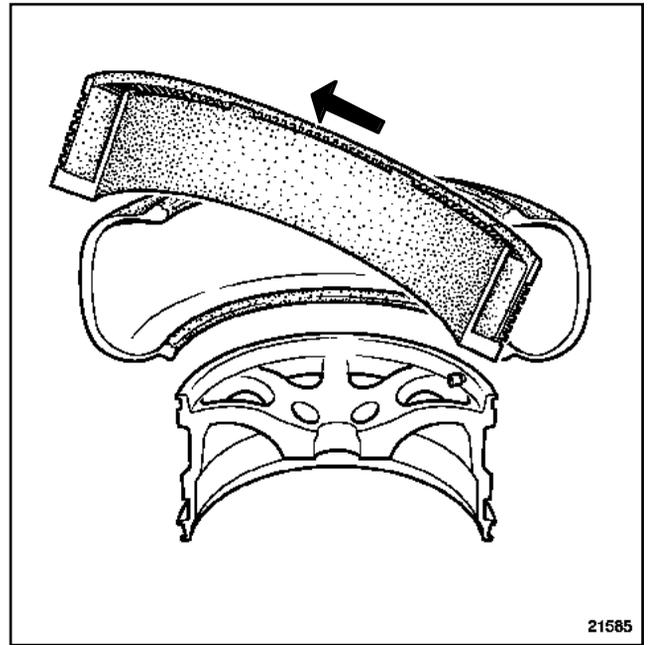
21582

Rotate the assembly to insert the rule into the space created by the roller between the tyre and the wheel rim. Make sure the rule is fitted the right way round, with the badge facing the tyre sidewall.



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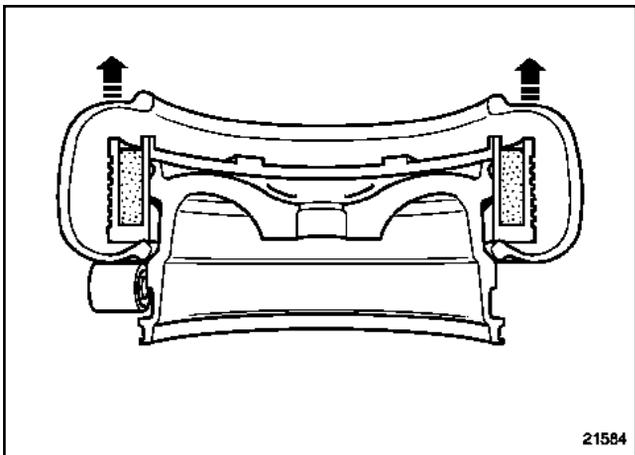
Insert the lever in the rule slot and remove the outer bead. Do not forget the rule in the tyre.



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Extract the support by hand or with a lever.

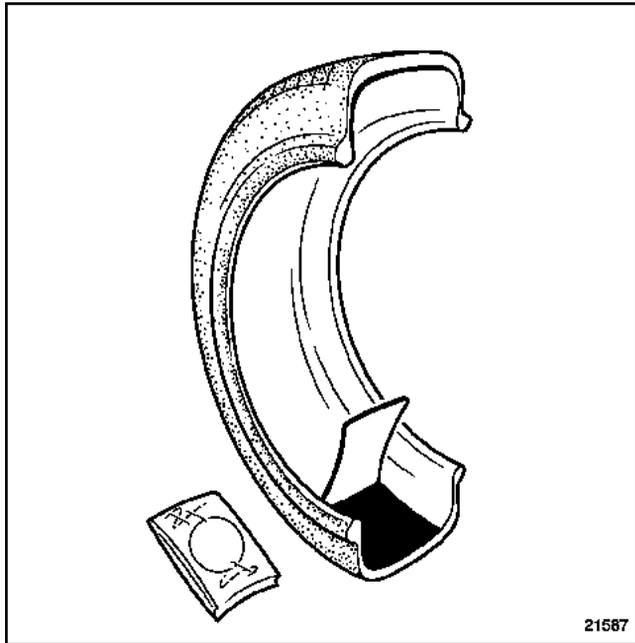


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Pull off the tyre and support by pushing the roller and rotating the assembly, without damaging the pressure detector.

REFITTING

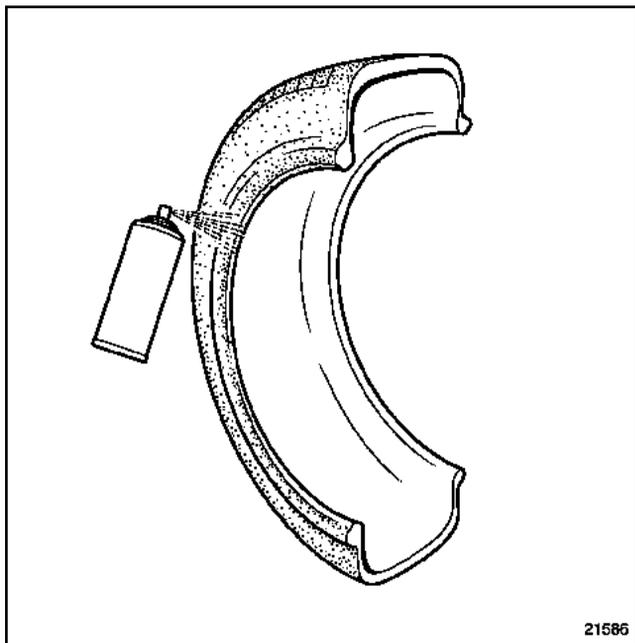


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For a new tyre, empty out the dose of gel inside the tyre and spread with the scraper. Never apply the dose of gel on the tyre beads.

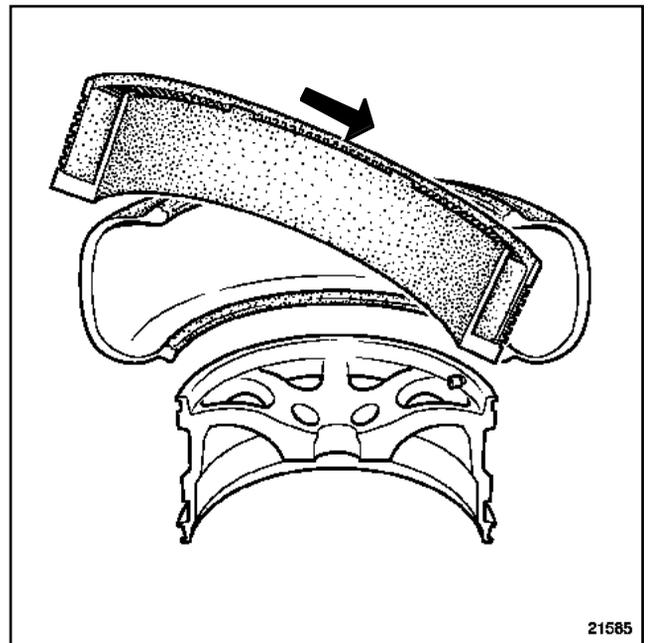
For a tyre previously removed for repair or checking, remove the gel from the tyre.

Empty out the corresponding quantity of recommended gel (**consult the manuals or Technical Notes in section 35 for details**) inside the tyre and spread with the scraper. Never apply the dose of gel to the tyre beads.



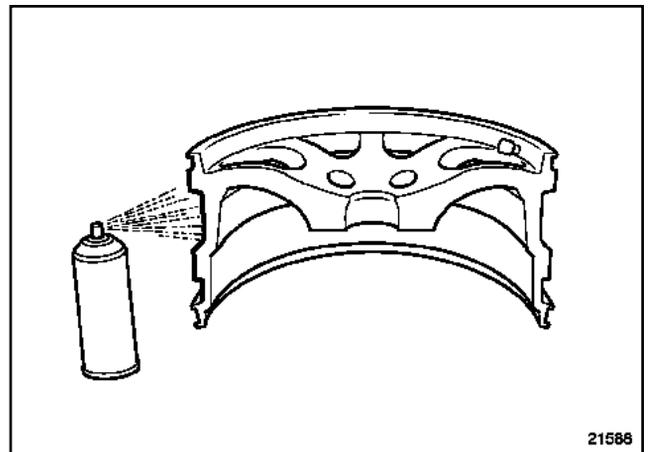
21586
21586

Lubricate the tyre beads with a lubricant solution for passenger car tyres.



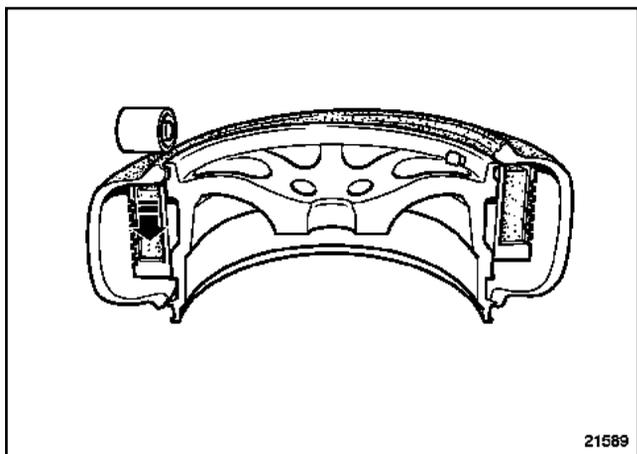
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Remove the size label from the support, if present. Insert the support, clean and free of gel, into the tyre making sure to fit it the right way round.



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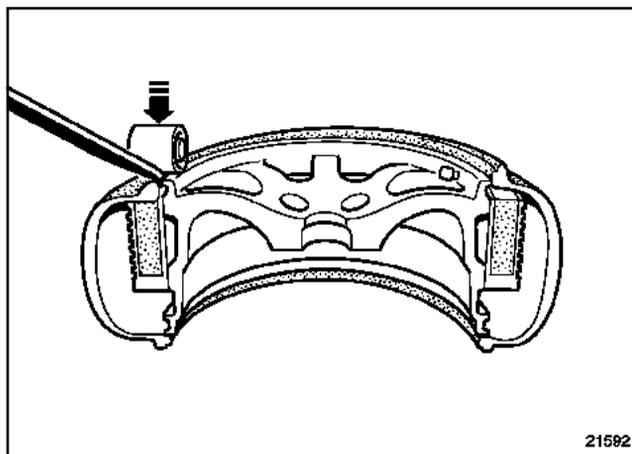
Lubricate the wheel rim over its entire width.



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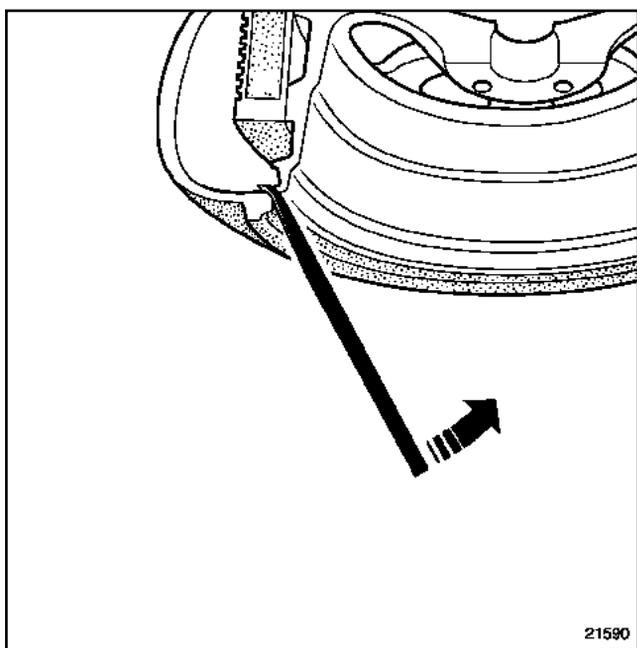
Mount the support up to the wheel stop by pushing the roller and rotating the assembly. Make sure the support is properly positioned against the wheel stop, without damaging the pressure detector.



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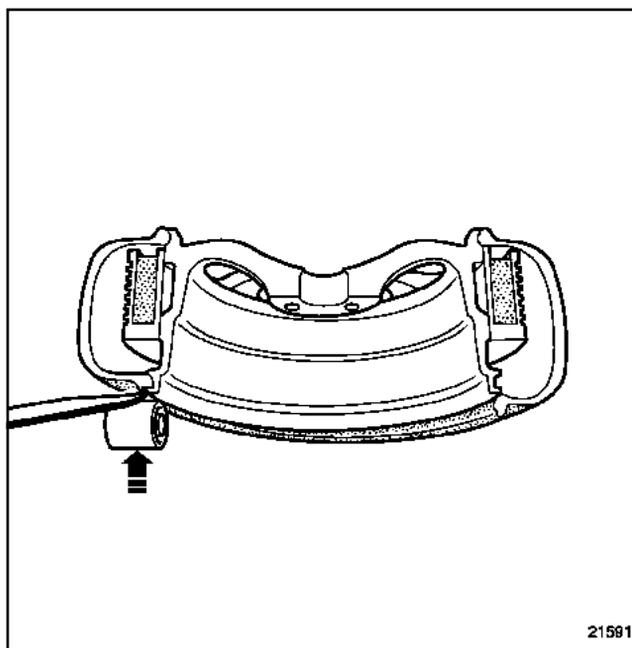
Position the roller to bear against the wheel rim.
Mount the tyre's outer bead on the wheel rim seat.



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Remove the tyre's inner bead from the wheel rim groove using the lever.



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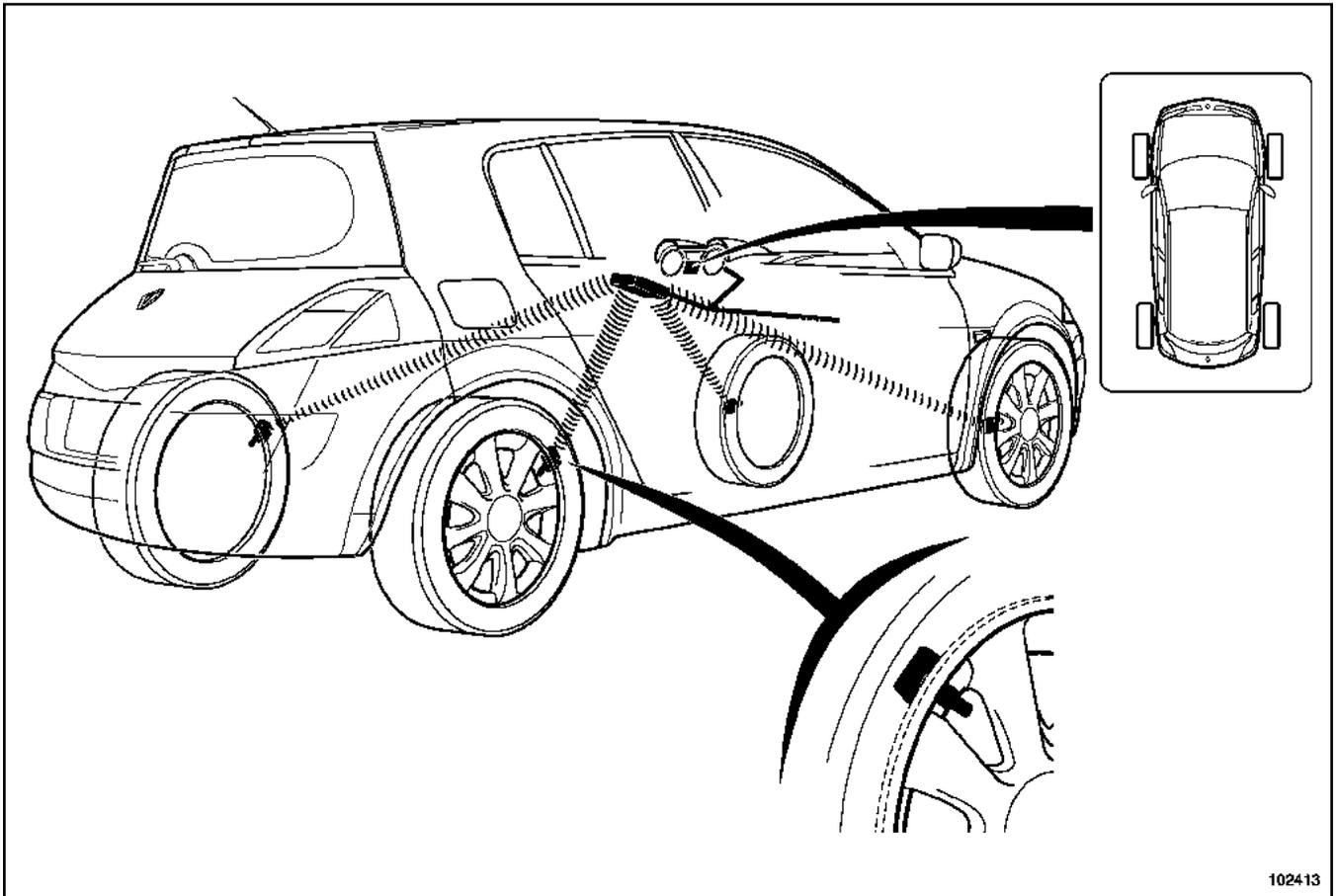
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Fit the tyre's inner bead in the same way as before.
Make sure that the tyre is correctly fitted when inflating, and then screw on the valve cap.

Note:

Always use a source of dry compressed air.

Description



102413

102413

This system continuously monitors the pressure status of the vehicle's four tyres and any system malfunctions.

The spare wheel is not monitored.

The system warns the driver in the event of:

- overinflation,
- under-inflation,
- puncture,
- tyre inflation pressure inappropriate for the vehicle speed,
- slow puncture between left-hand and right-hand tyres,
- left - right imbalance when starting,
- sensor failure.

The system corrects the pressures measured against the coldest tyre. The corrected pressure is used to detect leaks and left - right imbalance.

The system comprises:

- four pressure sensors built into the valves (one per wheel); they transmit a radio frequency signal,
- the UCH, which collects, decodes and processes signals from the sensors, then determines which message to display,

- a display built into the instrument panel.

Note:

Each sensor is identified by a coloured marking round the valve:

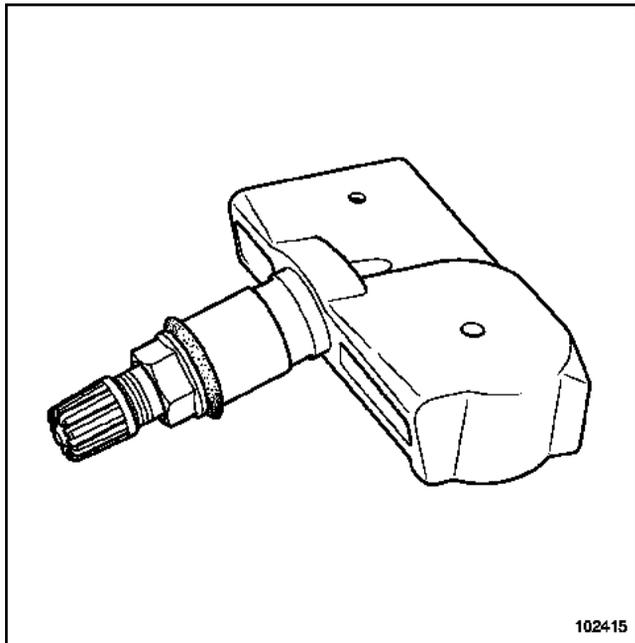
- green = front left,
- yellow = front right,
- red = rear left,
- black = rear right.

WARNING

Be sure to follow the colour coding, so that the system displays the signals correctly. A unique code enables the UCH to recognise each sensor.

Equipment required

Diagnostic tool



102415
102415

The pressure sensor comprises:

- a conventional valve,
- a pressure sensor,
- a temperature sensor,
- an acceleration sensor,
- a specific radiofrequency transmitter,
- a non-removable battery.

Note:

Each sensor is identified by a coloured marking round the valve:

- green = front left,
- yellow = front right,
- red = rear left,
- black = rear right.

WARNING

It is essential to follow the colour coding in order to enable the system to display the signals correctly. Each sensor has its own unique computer code.

OPERATION

The sensors (supplied by a built-in battery) regularly measure the internal pressure, temperature and acceleration of the tyres. They transmit this information and their code to the receiver (built into the UCH) via radio.

Programming of sensors in the UCH

Note:

A second set of two or four wheel sensors can be identified by the UCH. It is important to keep the colours in their correct positions.

If replacing valves, program the four sensors using the **Diagnostic tool**.

Do not swap the wheels if they have been removed.

Note:

In order that the UCH can recognise two or four additional wheels fitted with sensors, it must be programmed when the wheels are first fitted. The system subsequently automatically recognises the wheel set which is fitted to the vehicle.

When replacing the UCH, program the valves and the recommended tyre pressures using the **Diagnostic tool**.

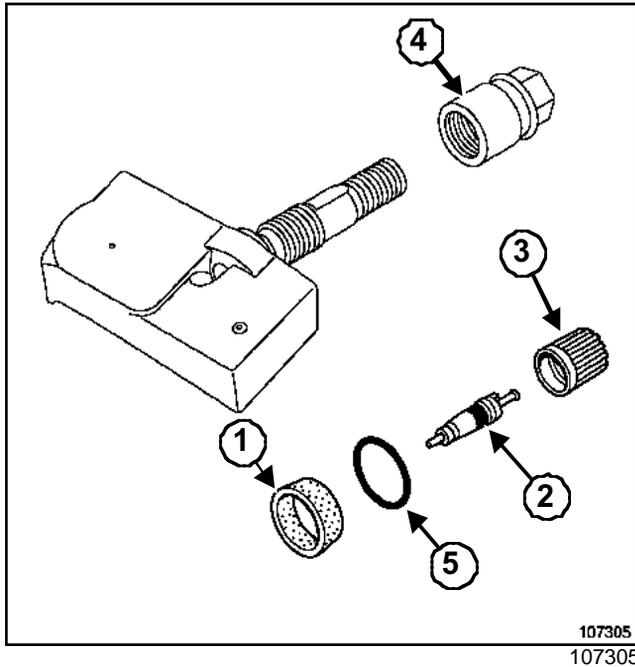
If you are disabling the tyre monitoring system function, use the **Diagnostic tool** to select configuration **CF002** « **without SSPP** ».

If you are adding the tyre monitoring system function to a vehicle not originally fitted with the function, carry out all of the programming referred to above. Using the **Diagnostic tool**, select configuration **CF001** « **with SSPP** » on the UCH and the instrument panel.

Tightening torques

tyre monitoring system sensor retaining nut	0.8 daNm
--	-----------------

REPLACEMENT

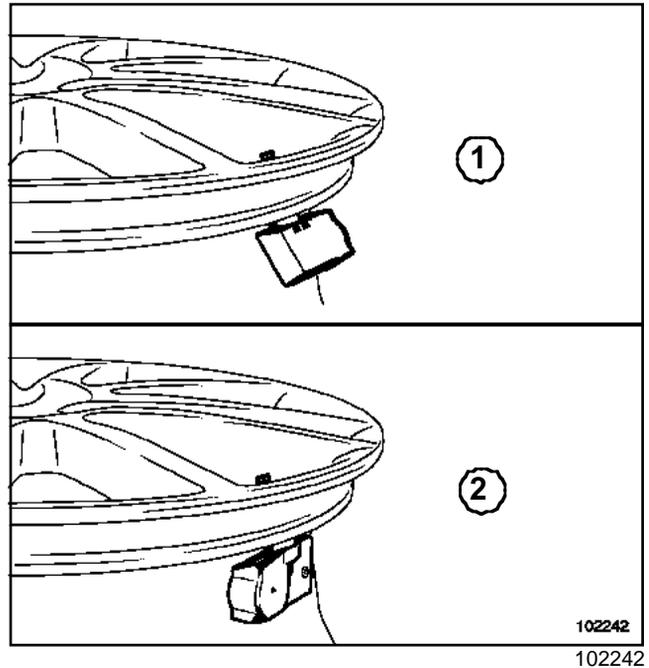


The following parts must be replaced:

- the seal (1),
- the mechanism (2),
- the cap (3).

If necessary replace:

- the retaining nut (4),
- the coloured marker (5).



WARNING

Make sure that the sensor is correct positioned on the wheel rim:

- figure 1 = incorrect refit,
- figure 2 = correct refit.

Position the sensor in the valve opening, checking that the seal is attached all around the edge of the opening.

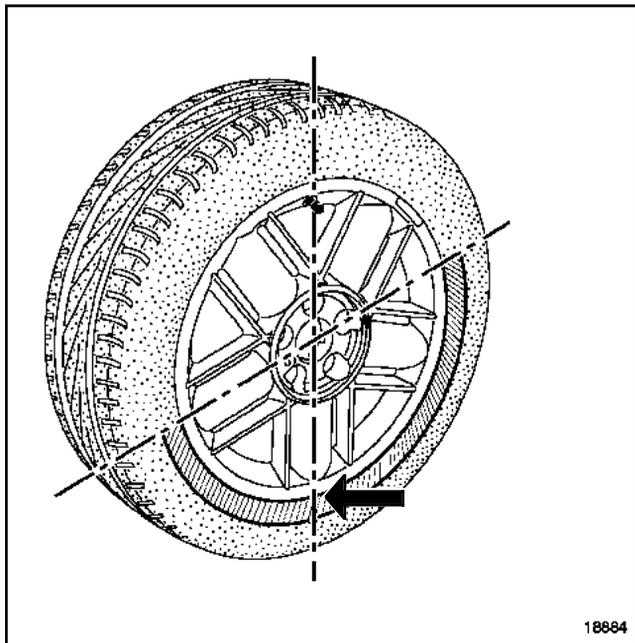
Tighten to torque the **tyre monitoring system sensor retaining nut (0.8 daNm)**.

Note:

After using a tyre repair aerosol, remove the product residue from the valve with a dry cloth or air gun before refitting it on the wheel rim.

REMOVAL

I - DETACHING THE TYRE BEAD FROM THE OUTSIDE OF THE TYRE



Begin on the opposite side to the valve when detaching the tyre bead from the wheel rim.

WARNING

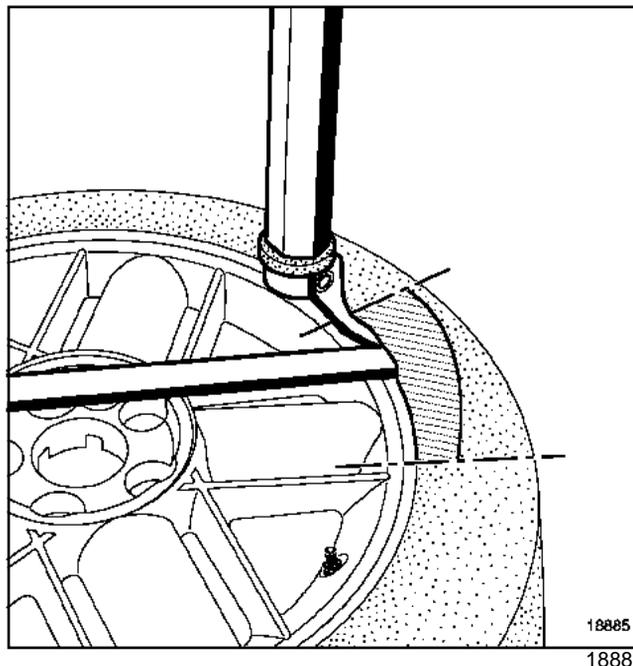
Make sure that the tyre bead does not pull on the sensor at any point.

II - DETACHING THE TYRE BEAD FROM THE INSIDE OF THE TYRE

WARNING

- Detaching the tyre bead from the inside does not present any particular difficulties.
- Make sure that the tyre bead does not pull on the sensor at any point.

III - REMOVING THE OUTER TYRE BEAD



Position the tyre lever approximately **15 cm** from the valve.

Remove the tyre bead, finishing at the valve.

WARNING

Make sure that the tyre bead does not pull on the sensor at any point.

IV - REMOVING THE INNER TYRE BEAD

The method is the same as for removing the outer tyre bead (previous paragraph).

REFITTING

Soap the tyre bead properly.

WARNING

Make sure that the tyre bead does not pull on the sensor at any point.

Insert the lower tyre bead at approximately **15 cm** after the valve.

Finish fitting the tyre at the valve.

Fit the outer bead following the same method as for the lower tyre bead.

Inflate the tyre to the recommended pressure.

TYRE PRESSURE MONITOR

Configuration

35B

Special tooling required

Ms. 1607	Tyre Pressure Monitor wheel valve activation tool
-----------------	---

Equipment required

Diagnostic tool

I - VALVE IDENTIFICATION CODE

Programming the four valve codes

Inflate the four wheels to **3.8 bar**.

Establish dialogue with the UCH using the **Diagnostic tool**.

WARNING

It is essential to follow the instructions displayed on the **Diagnostic tool** screen.

Select the « **repair mode** » menu.

Select the « **programming** » menu.

Select line « **SC002: programming the four valve codes** » from the « **tyres** » function.

A table of stored codes and the recognised valve set is displayed.

By default, the **Diagnostic tool** displays the « **summer** » set when the UCH is replaced.

Select « **next** ».

Select the «**valve set select**» menu, then « **summer** » or « **winter** ».

Confirm to go to the «**valve programming conditions** » table.

Select « **next** » to go to the « **find valve code** » menu.

Excite each valve by holding tool (**Ms. 1607**) on the tyre, just under the valve concerned.

Start with the front left wheel.

Wait for the new code to appear on the screen before moving on to the next valve.

Program the codes in the following order:

- front left,
- front right,
- rear right,
- rear left.

WARNING

It is essential to follow the order of validation given in the table.

WARNING

The time limit between programming two valves is **two minutes**, otherwise the procedure will be interrupted.

Confirm by selecting « **finish** ».

Set the tyres to the recommended pressure.

Carry out a road test in order to fulfil the validation conditions: **12 mph (20 km/h)** minimum for **ten minutes** without interruption.

Check that there are no faults on the instrument panel.

II - READING THE CODES FOR THE TYRES (SUMMER / WINTER)

Select the « **repair mode** » menu.

Select the « **programming** » menu.

From the « **tyres** » sub-function, select line « **SC001: read valve set and stored valve codes** ».

III - RECOMMENDED PRESSURES FOR THE VEHICLE

Check these pressures on the driver's door frame label (see **General Vehicle Information**Section) or in the driver's handbook (see **Specifications**).

WARNING

These pressures must only be altered to configure the new UCH.

1 - Procedure for writing or modifying recommended pressures

Select the « **repair mode** » menu.

Select the « **other parameters** » menu.

Select line **WP005: enter recommended pressures »**.

2 - Reading recommended pressures

The recommended road and motorway pressures for the vehicle can be displayed by selecting:

- the « **tyres** » function.
- the « **tyre management** » sub-function.
- select lines:
 - « **PR009: front wheel low speed rec. pressure** »,
 - « **PR010: rear wheel low speed rec. pressure** »,
 - « **PR011: front wheel high speed rec. pressure** »,
 - « **PR012: rear wheel high speed rec. pressure** ».

IV - CHECKING THE TYRE INFLATION PRESSURE

The pressures can be displayed by selecting:

- the « **tyres** » function
- the « **fault finding mode** » menu
- the « **read statuses and parameters** » function
- the « **tyre acceptance** » sub-function
- select lines:
 - « **PR003: Front left wheel pressure** »,
 - « **PR004: Front right wheel pressure** »,
 - « **PR005: Rear right wheel pressure** »,
 - « **PR006: Rear left wheel pressure** ».

Note:

If the battery has been disconnected, the four reading parameters are **3.5 bar** as long as the vehicle speed has not exceeded **12 mph (20 km/h)**.

STEERING ASSEMBLY

Axial ball joint linkage

36A

Special tooling required	
Tav. 476	Ball joint extractor
Dir. 1306-04	Bar immobilising tool
Dir. 1305-01	Axial ball joint removal and refitting tool

Equipment required
Diagnostic tool

Tightening torques 	
axial ball joint	8 daNm
bolt clip	0.3 daNm
wheel alignment adjustment lock nut	5.3 daNm
track rod end nut	3.7 daNm
wheel bolts	13 daNm

REMOVAL

Mount the vehicle on a two post lift.

Unlock the steering column lock using the **Diagnostic tool**.

Disconnect the battery, starting with the negative terminal.

Note:

During this operation, the steering rack must be in place on the vehicle.

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

Loosen the wheel alignment lock nut.

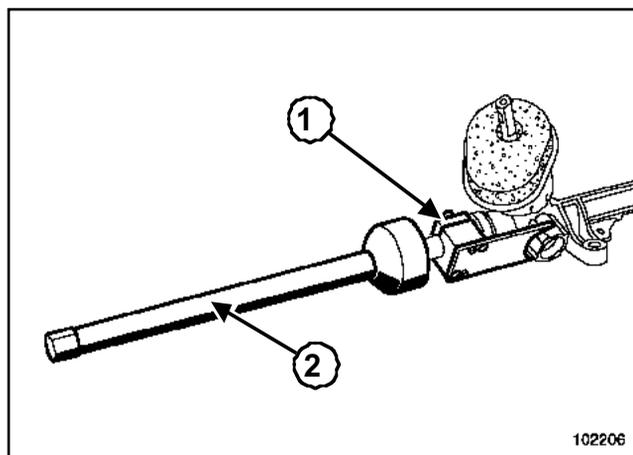
Note the number of thread turns captured in order to pre-adjust the wheel alignment during refitting.

Remove:

- the ball joint housing,
- the lock nut,
- the gaiter retaining clips,
- the gaiter.

WARNING

Take care not to deform the gaiters: risk of irreparable damage.



102206

102206

Set up tool (**Dir. 1306-04**)(1) on the steering rack, at the pinion end.

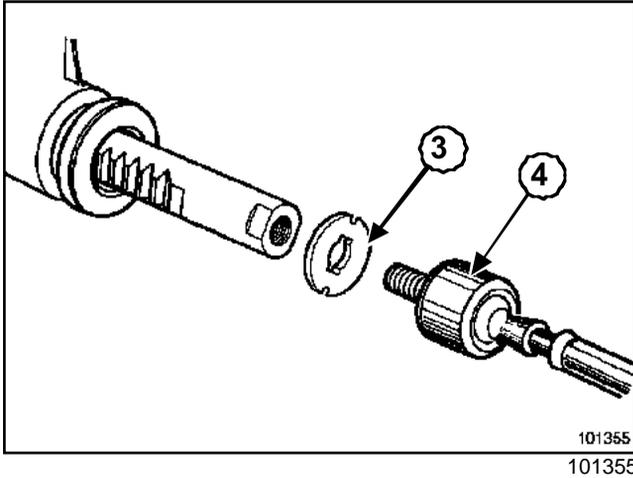
Unlock the axial ball joint using tool (**Dir. 1305-01**)(2).

STEERING ASSEMBLY

Axial ball joint linkage

36A

REFITTING



Be sure to replace the washer (3).

Refit:

- the washer (3),
- the axial ball joint (4).

Torque tighten the **axial ball joint (8 daNm)** using tool (**Dir. 1305-01**).

Coat the following parts with lithium grease:

- the steering rack,
- the axial ball joint.

Refit:

- the gaiter,
- the metal clip,
- the bolt clip, part no. **77 03 083 432**,
- the lock nut,
- the ball joint housing.

Retighten the ball joint housing by the number of rotations noted during removal.

Refit the track rod end.

Torque tighten:

- the **bolt clip (0.3 daNm)**,
- the **wheel alignment adjustment lock nut (5.3 daNm)**,
- the **track rod end nut (3.7 daNm)**,
- the **wheel bolts (13 daNm)**.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Adjust the axle assemblies (**General Vehicle Infor-**

mationSection).

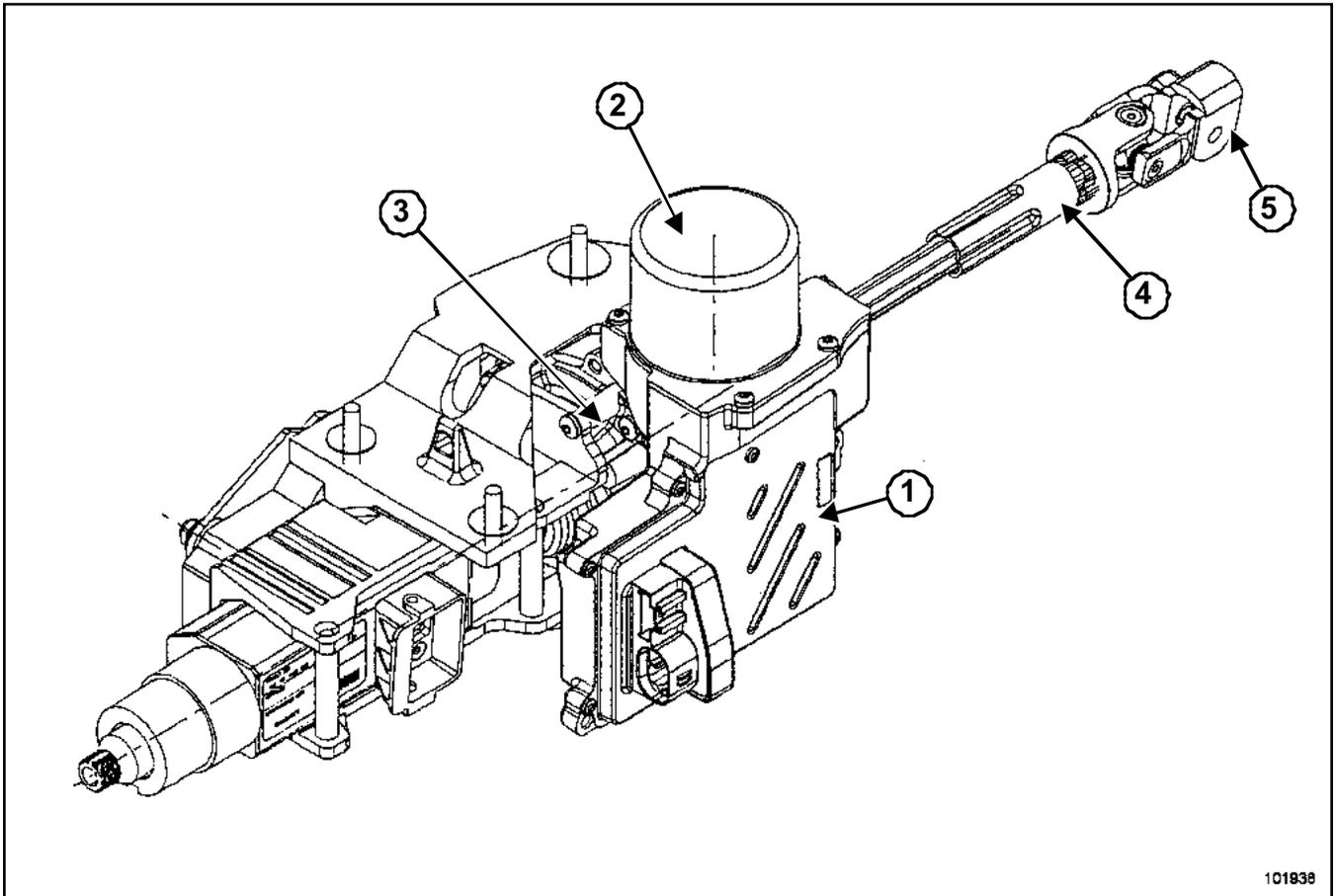
WARNING

Program the torque and angle sensor using the **Diagnostic tool** (see **fault finding**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle;Section **Electrical equipment**).

Description



101938

101938

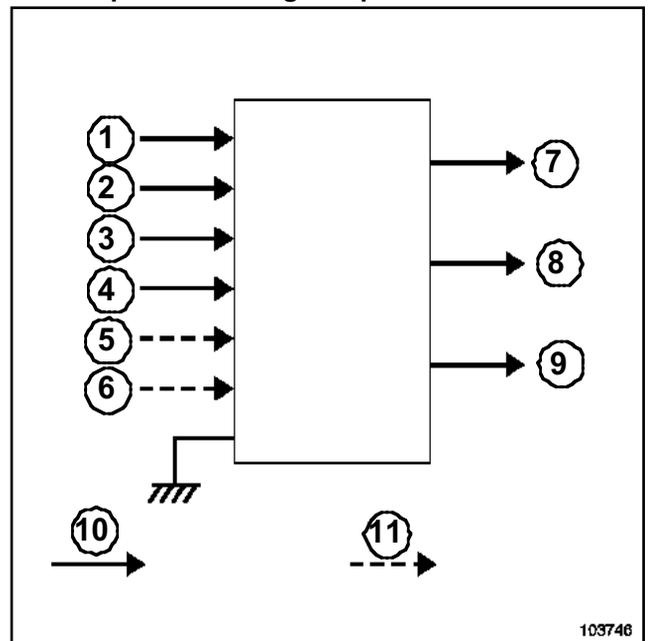
- (1) Electric power assisted steering computer fitted with torque and angle sensor
- (2) Electric stepper motor with worm screw
- (3) Reducer sprocket
- (4) Intermediate shaft
- (5) Steering column universal joint in passenger compartment

Assistance varies according to vehicle speed.

IMPORTANT

- Never carry out work on the constituent components of the electric power assisted steering column assembly.
- If a mechanical fault finding procedure on the function requires two people, the battery must be disconnected.

Electric power steering computer



103746

103746

Description

Reference	Description	
Inputs	1	Vehicle speed signal (sent by the ABS system computer)
	2	Heat engine status signal (running, stationary, under starter or stalled)
	3	CAN bus status signal
	4	Diagnostic socket
	5	+ after ignition feed
	6	Power supply (permanent +)
Outputs	7	Angle sensor signal (electronic stability program signal)
	8	Instrument panel signals
	9	Diagnostic socket

Reference	Description
10	CAN connection
11	Wire connection

WARNING

In the event of a malfunction, the onboard computer displays the warning messages:

- « Check steering » message, with the « Service » warning light lit continuously,
- « Faulty steering » message, with the « Stop » warning light lit continuously,
- flashing (at a frequency of **8 Hz**) of the « Service » warning light indicates that the steering wheel angle is not calibrated (blank computer).

Note:

During fault finding, the « Service » warning light flashes at a frequency of **2 Hz**.

POWER ASSISTED STEERING

Steering rack

36B

Equipment required

Diagnostic tool

Tightening torques

steering rack - sub-frame mounting bolts	10.5 daNm
--	------------------

IMPORTANT

Do not grip lower arm with a lifting system.

REMOVAL

Remove the front axle sub-frame (see **Front axle assemblies**Section).

Remove the steering rack.

REFITTING

WARNING

- The sub-frame, arm and steering rack mountings must be replaced.
- Position a **10 mm** thick shim between the radiator cross member and the sub-frame to tighten the radiator cross member mountings to the recommended torque.

Torque tighten the **steering rack - sub-frame mounting bolts (10.5 daNm)**.

Proceed in the reverse order to removal.

WARNING

Connect the battery; carry out the necessary programming (**Battery**Section).

Adjust the axle assemblies (**General Vehicle Information**Section).

Program the torque and angle sensor using the **Diagnostic tool** (see **fault finding manual**).

Note:

Be sure to initialise the discharge bulb system (if fitted on vehicle; Section **Electrical equipment**).

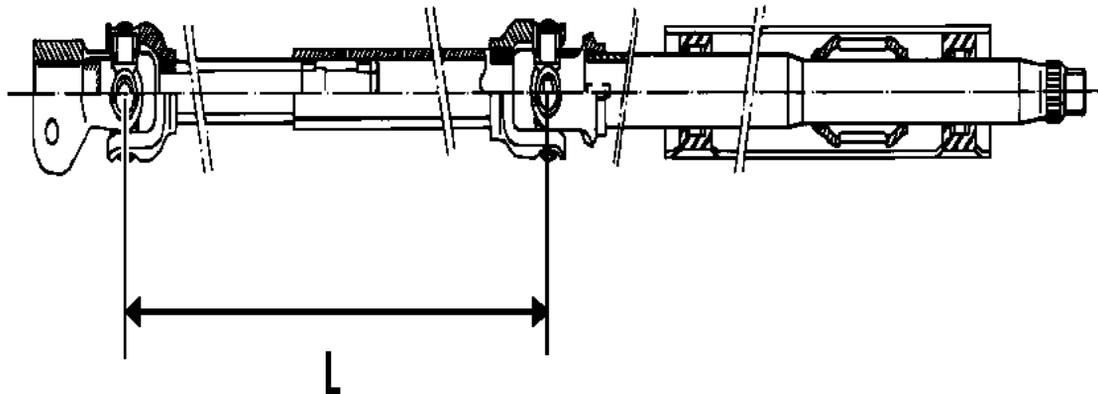
CHECKING

These vehicles are fitted with a non-removable « intermediate shaft - steering wheel shaft - steering column » assembly. If it is not possible to fit the universal joint eccentric bolt, or after an impact, check that the length of the shaft is correct.

If the length of the intermediate shaft is incorrect, replace the steering column assembly, (Section Power assisted steering, Steering column, page **36B-5**).

WARNING

Never pull the intermediate shaft (after an impact).



92218

92218

Check that: $L = 313.90 \pm 1 \text{ mm}$

Special tooling required

Ms. 1373	Philips radio removal tool
Ms. 1639	Tool for removing radio - CD player

Equipment required

Diagnostic tool

Tightening torques

steering column mounting nuts	2.1 daNm
steering column universal joint bolt	2.4 daNm
casing bolts	0.2 daNm
steering wheel bolt	4.4 daNm

IMPORTANT

Before carrying out any work on a safety system component, lock the air bag computer using the **Diagnostic tool** (Section **Electrical equipment**). When the function is activated all the trigger lines are inhibited, and the air bag warning light on the instrument panel will be lit continuously (when ignition on).

NOTE

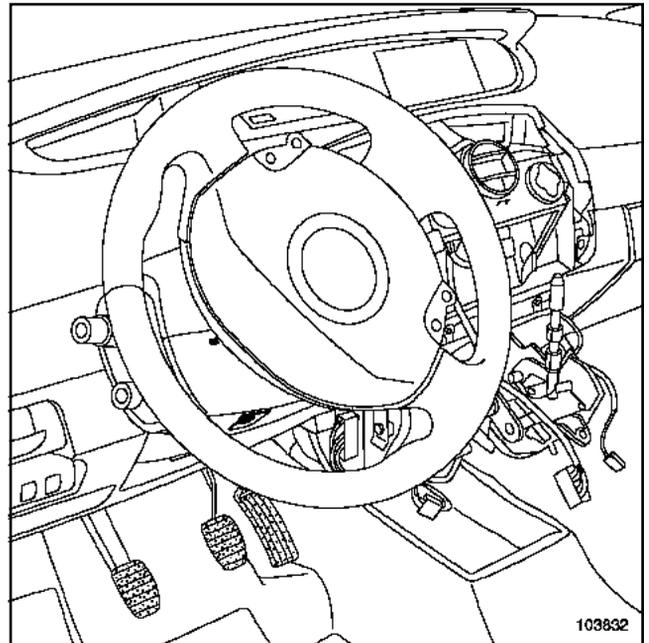
- In the event of problems likely to be caused by a faulty computer, (see **Technical Note 3700A**).

These operations do not require a lift.

REMOVAL

Disconnect the battery, starting with the negative terminal.

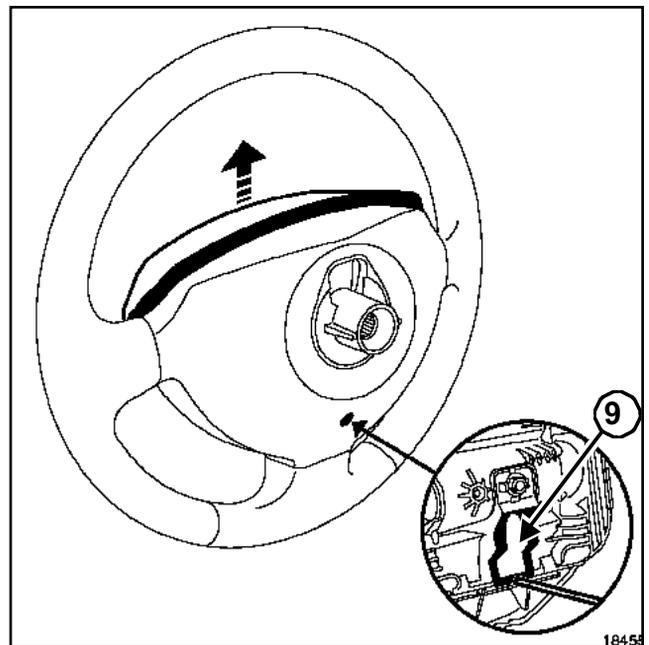
Move the steering column to the low position and pull it out as far as possible.



103832

103832

Remove the lower casing bolts.



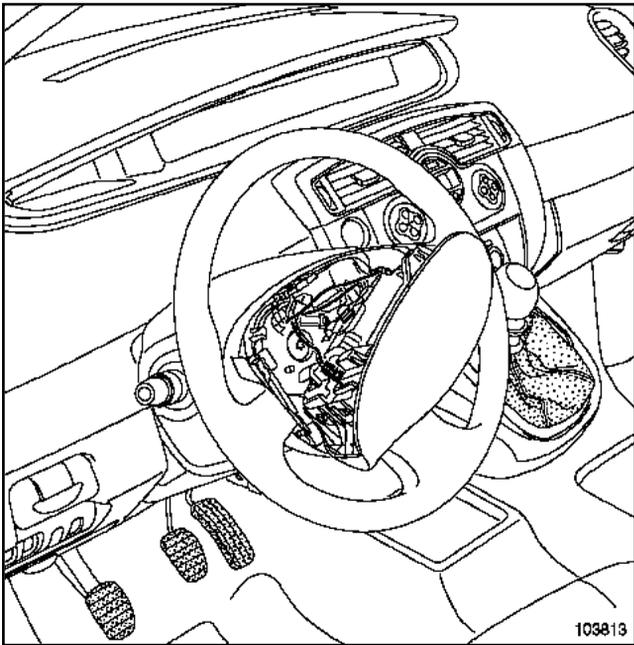
18455

18455

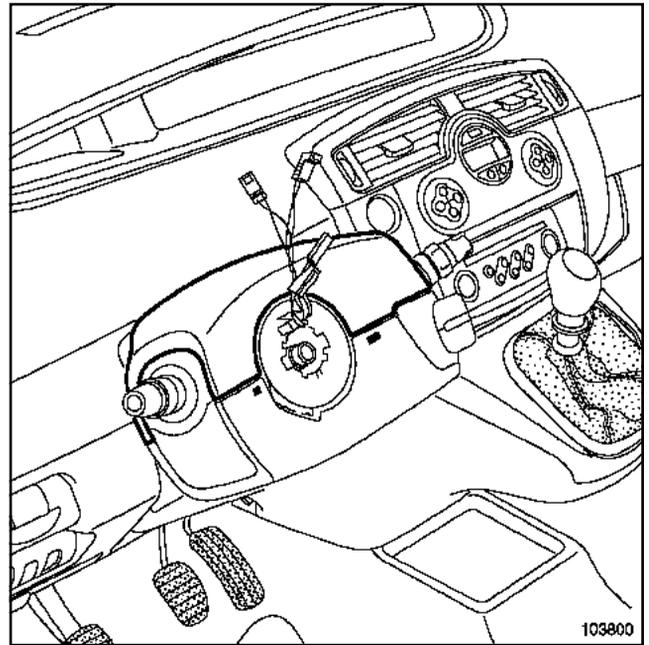
Insert a screwdriver in the aperture behind the steering wheel.

Unlock the system (9).

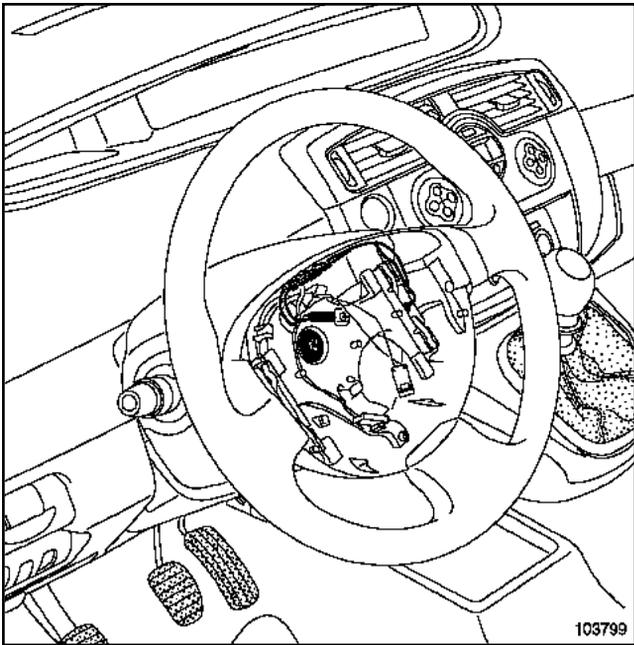
Remove the driver's frontal air bag.



Remove the air bag connectors.
Straighten the wheels.



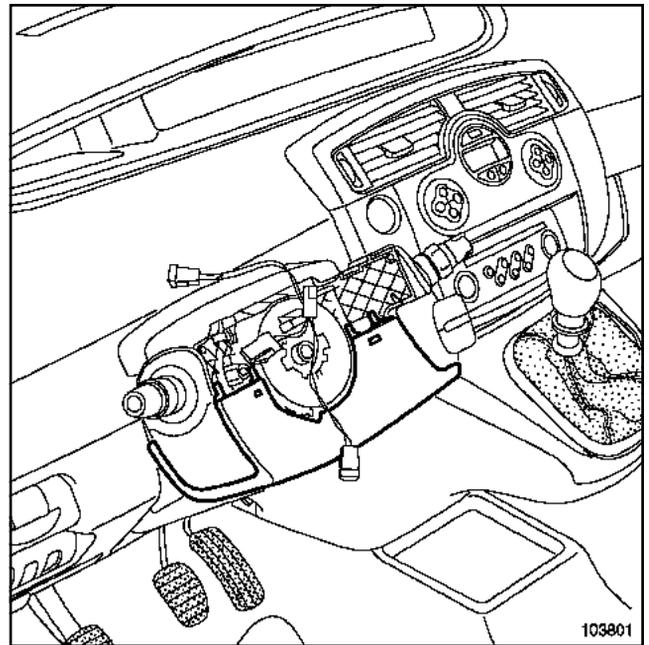
Unclip the upper casing.



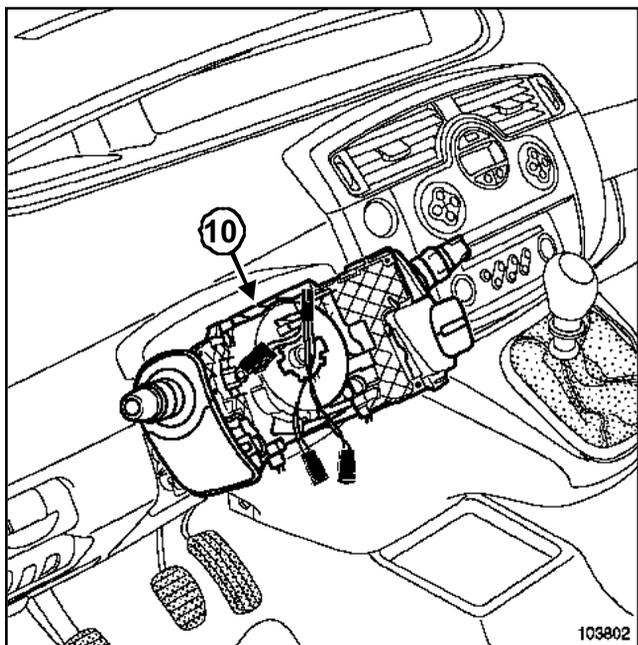
Disconnect the connectors in the steering wheel.

Remove:

- the steering wheel bolt,
- the steering wheel.



Unclip the lower casing.



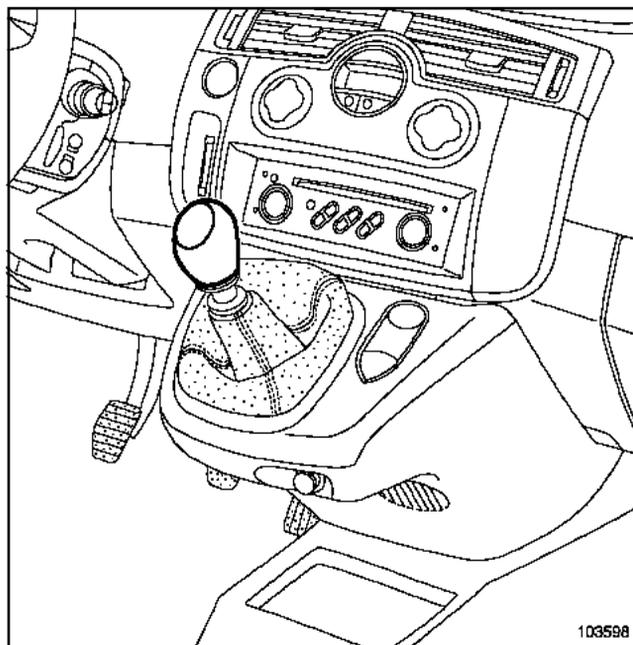
103802

Disconnect the rotary switch connectors.

Undo the rotary switch bolt (10).

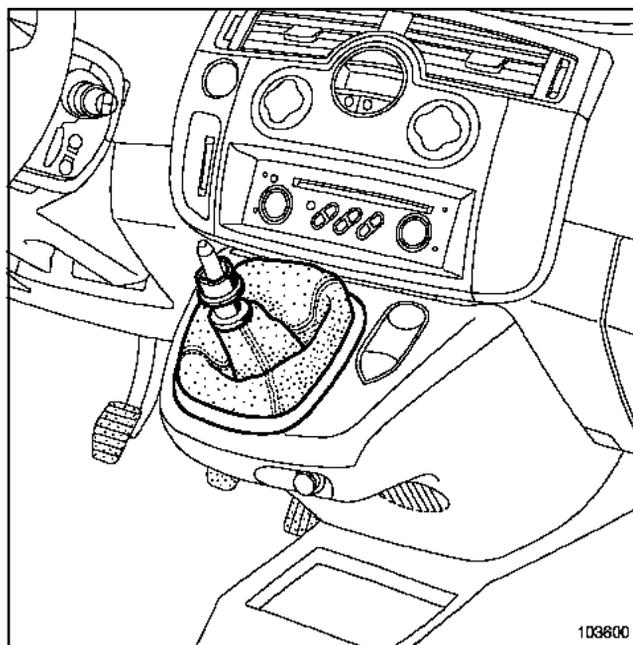
Unclip the rotary switch.

Remove the rotary switch.



103598

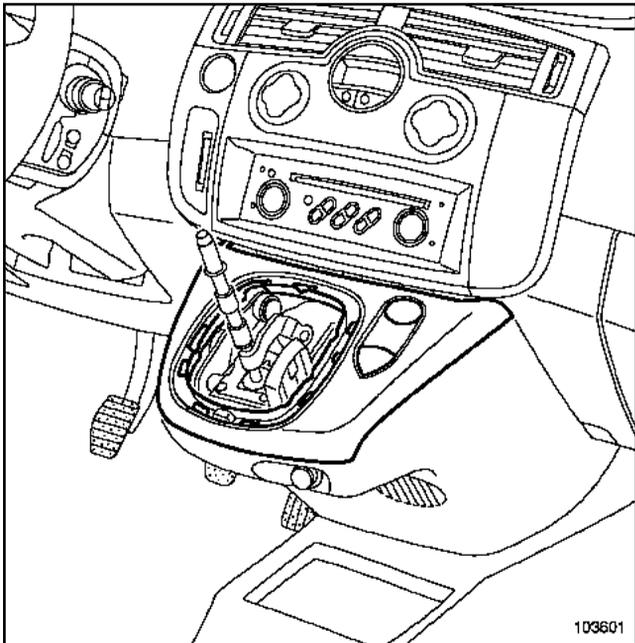
103598



103600

103600

Unclip the « gear lever gaiter - knob » assembly.

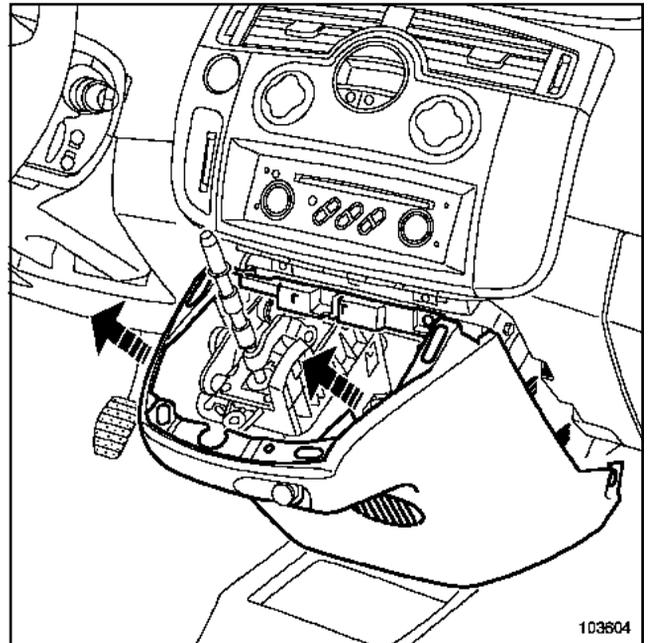


103601
103601

Unclip the gear lever upper trim.

Disconnect:

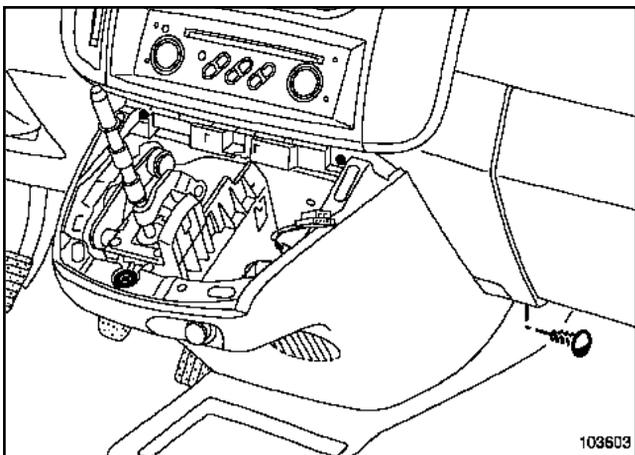
- the hazard warning lights switch connector,
- the cigarette lighter connector,
- the voice synthesiser speaker connector.



103604
103604

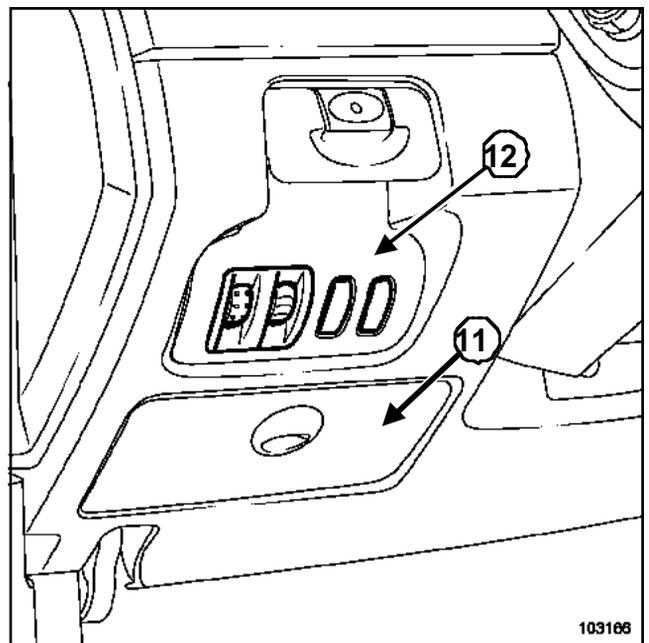
Remove:

- the gear lever lower trim,
- the radio using tool (Ms. 1373) and tool (Ms. 1639),
- the air conditioning control panel fascia.



103603
103603

Remove the gear lever lower trim mountings.



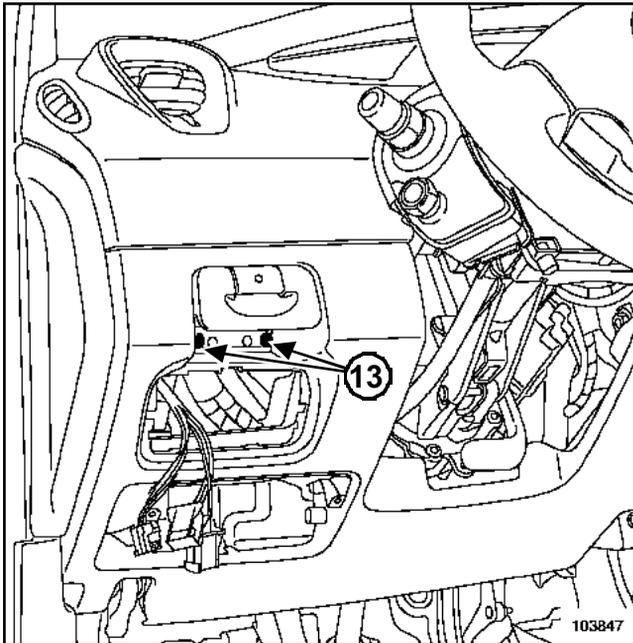
103166
103166

Unclip:

- the glovebox (11),
- the beam adjustment control (12) from the rear (Section **Electrical equipment**).

Disconnect the beam adjustment control connectors.

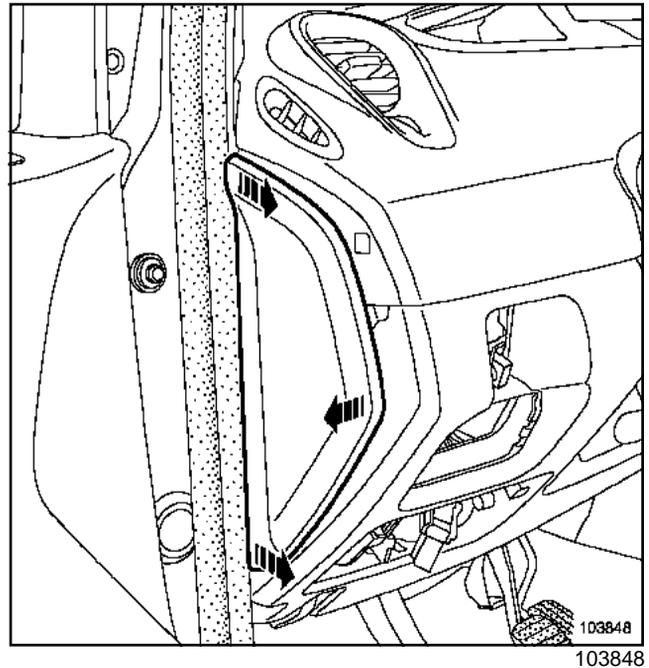
AUTOMATIC PARKING BRAKE



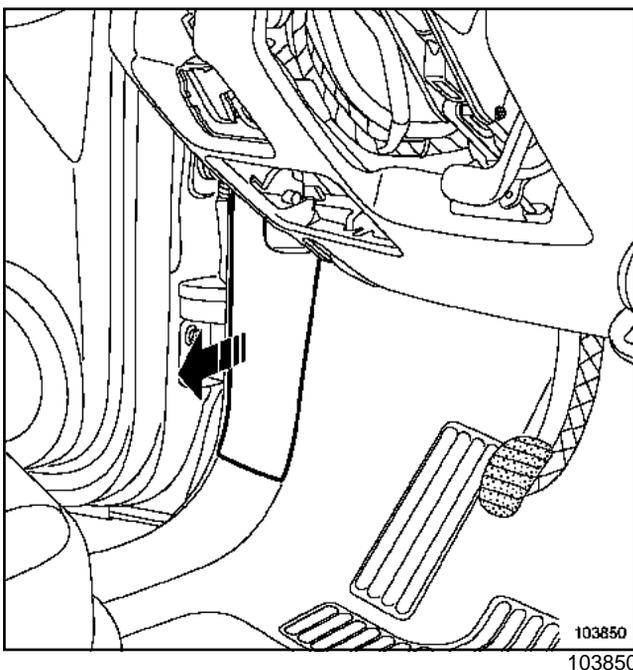
Remove the automatic parking brake catch mounting bolts (13).

Disconnect the automatic parking brake control connector.

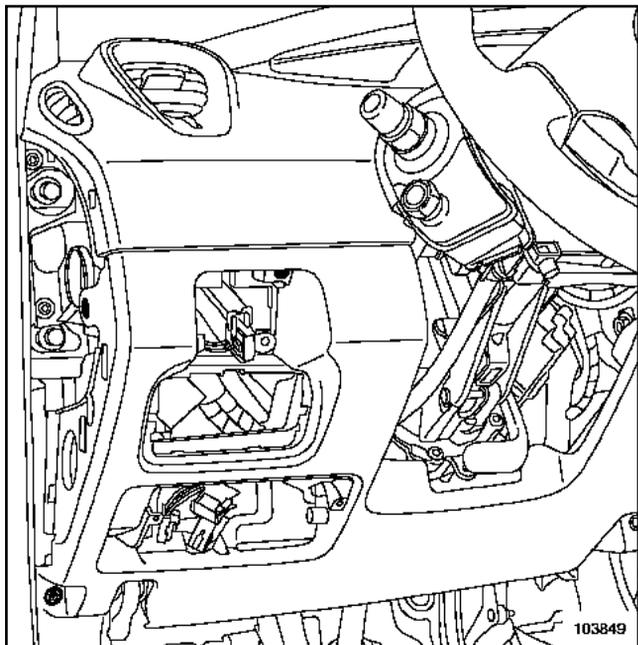
Remove the catch.



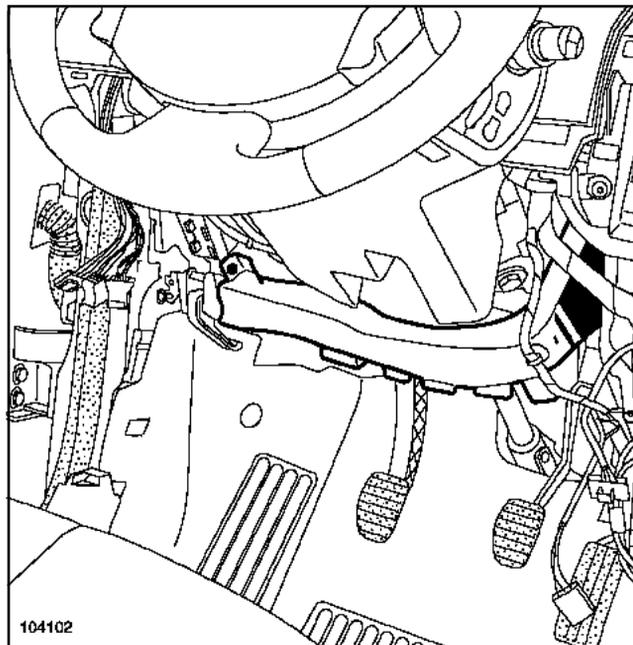
Unclip the front left-hand side panel.



Unclip the left footwell trim.

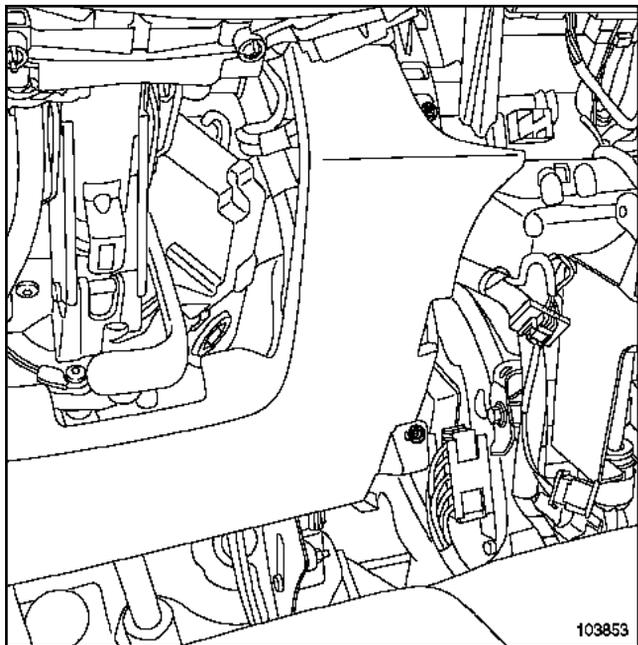


103849
103849



104102

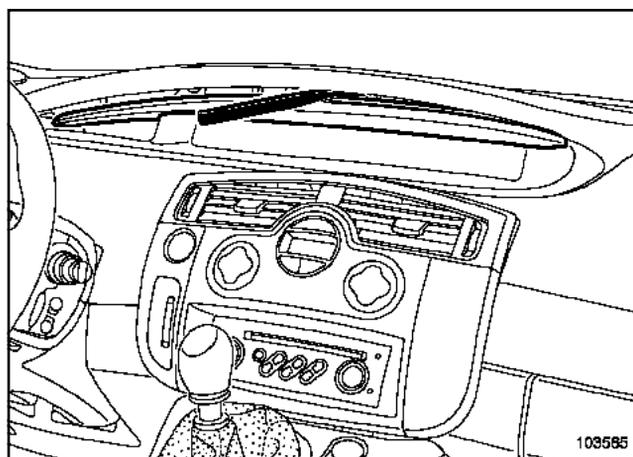
104102



103853
103853

Remove:

- the bolts,
- the lower section of the dashboard,

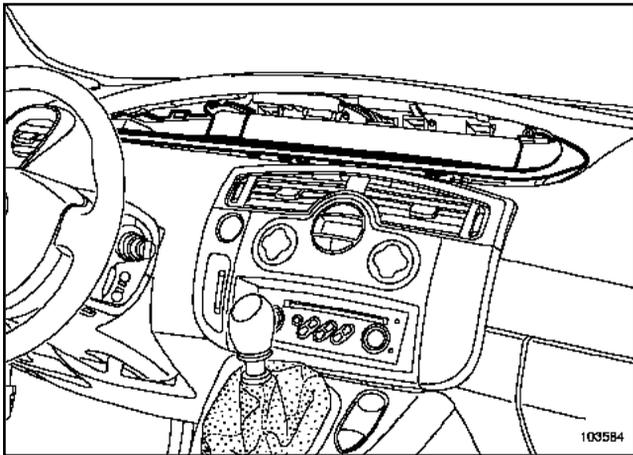


103585

103585

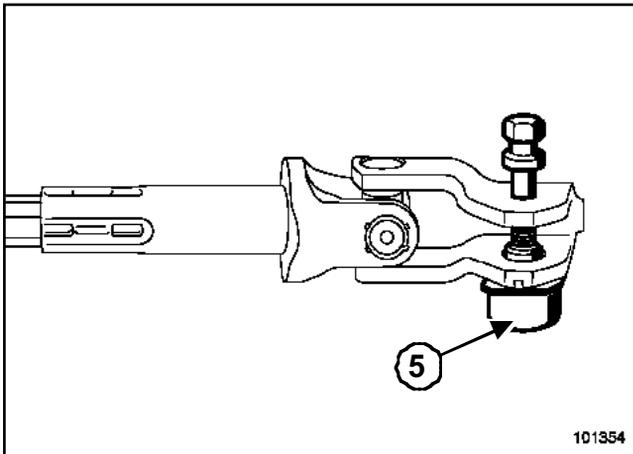
Remove the air duct.

Unclip the instrument panel upper trim.



103584

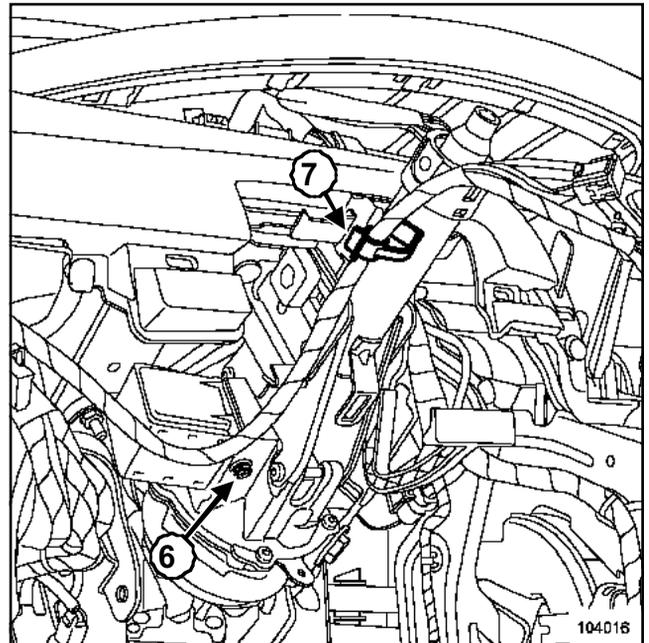
Unclip the instrument panel lower trim.
Pull back the carpet on the driver's side.



101354

Remove the cover (5) using a hammer. Do not keep it.

Remove the steering column universal joint bolt.



104016

Note:

- The column lock is mounted by a left-hand thread bolt.

Remove the column lock bolt (6).

Disconnect the column lock connector.

Remove the column lock.

Disconnect:

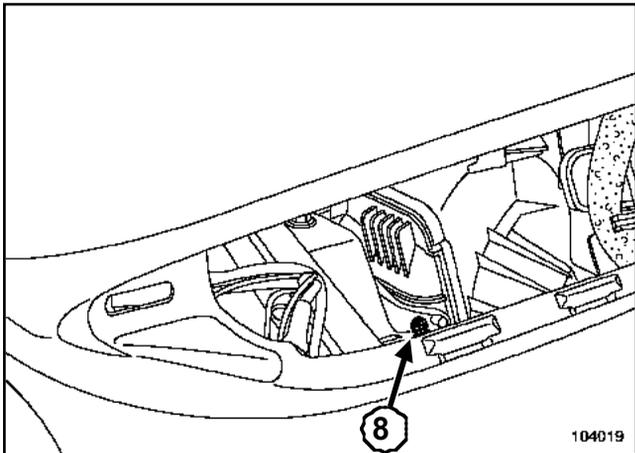
- the electric power assisted steering computer power connector using a screwdriver 4 mm wide and 0.5 mm thick,

- the electric power assisted steering computer signal connector using a screwdriver 4 mm wide and 0.5 mm thick.

Unclip the steering column rotary switch wiring harness (7).

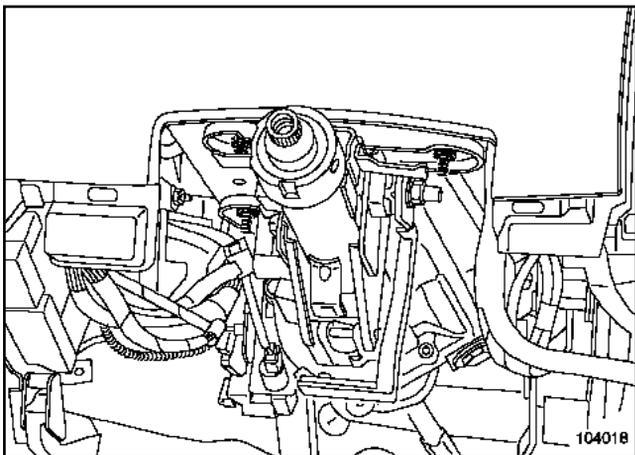
WARNING

Do not unclip the clip from the column, this could break it.



104019

Remove the steering column upper mounting nut (8).



104018

Remove:

- the three steering column mounting lower nuts,
- the steering column.

REFITTING

Proceed in the reverse order to removal.

Refit the steering column, starting with the furthest lower threaded stud, and finishing with the upper threaded stud.

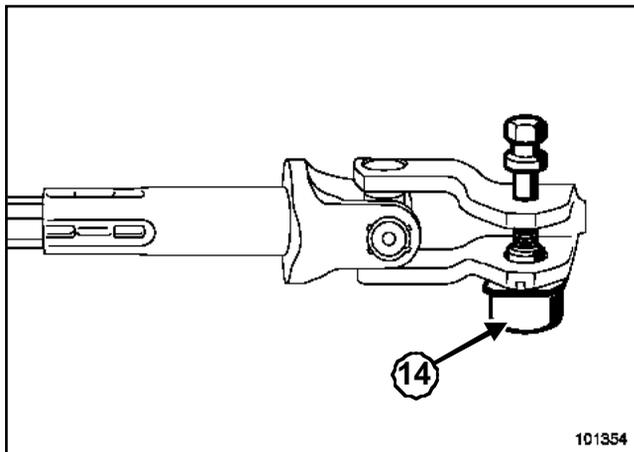
WARNING

Push and pull on the electric power assisted steering computer power and signal connectors to check that they are properly secured (risk of loss of assistance).

- The steering wheel should enter the splines freely (the splines are foolproofed).
- Do not damage the foolproofing splines.
- Be sure to replace the steering wheel bolt each time it is removed.

Note:

- Be sure to replace the steering column universal joint bolt and eccentric nut each time they are removed.
- Do not refit the cover (14).
- On a new steering column, the universal joint eccentric nut is pre-fitted.



101354

Ensure that the steering column universal joint eccentric nut and bolt are fitted the right way round.

Finger tighten the universal joint eccentric nut and bolt.

Lock the eccentric nut in its housing (aperture on the steering column universal joint).

Torque tighten:

- the **steering column mounting nuts (2.1 daNm)**,
- the **steering column universal joint bolt (2.4 daNm)**,
- the **caseing bolts (0.2 daNm)**,
- the **steering wheel bolt (4.4 daNm)**.

WARNING

Connect the battery, starting with the positive terminal.

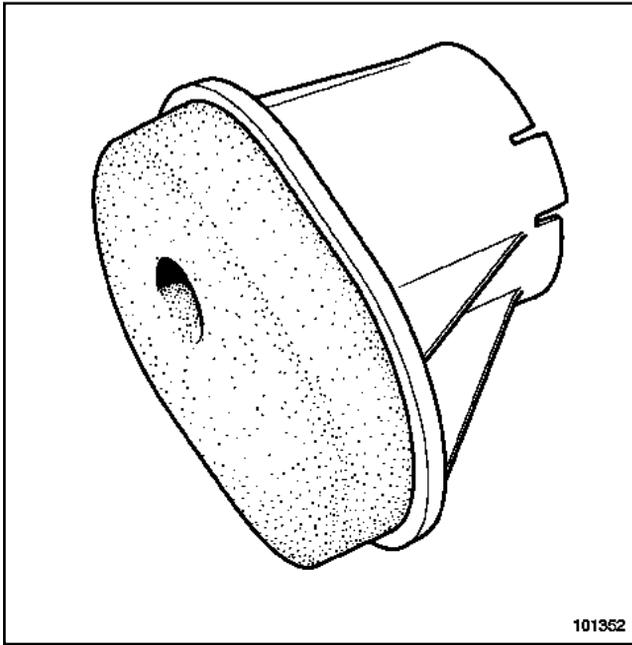
- Carry out the necessary programming (Section **Electrical equipment**).
- Program the torque and angle sensor and make the necessary configurations using the **Diagnostic tool** (see **Workshop Repair Manual 372**).
- Carry out a complete check using the **Diagnostic tool**.
- Clear the fault generated using the **Diagnostic tool**.

Equipment required

Diagnostic tool

REMOVAL

Remove the front axle sub-frame (**Front axle assemblies**Section).



Unclip the bulkhead seal using a screwdriver.

REFITTING

To refit, proceed in the reverse order of removal.

Note:

- The universal joint cam bolt and nut must be replaced.

WARNING

Connect the battery.

- carry out the necessary programming (**Battery**Section).
- Program the angle and torque sensor and make the necessary configurations using the **Diagnostic tool** (see **fault finding manual**).

F4R or F9Q or K4J or K4M or K9K

Tightening torques 

master cylinder reservoir mounting bolts	0.85 daNm
master cylinder - brake servo mounting nuts	5 daNm
brake pipe - master cylinder nuts	1.7 daNm

WARNING

Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

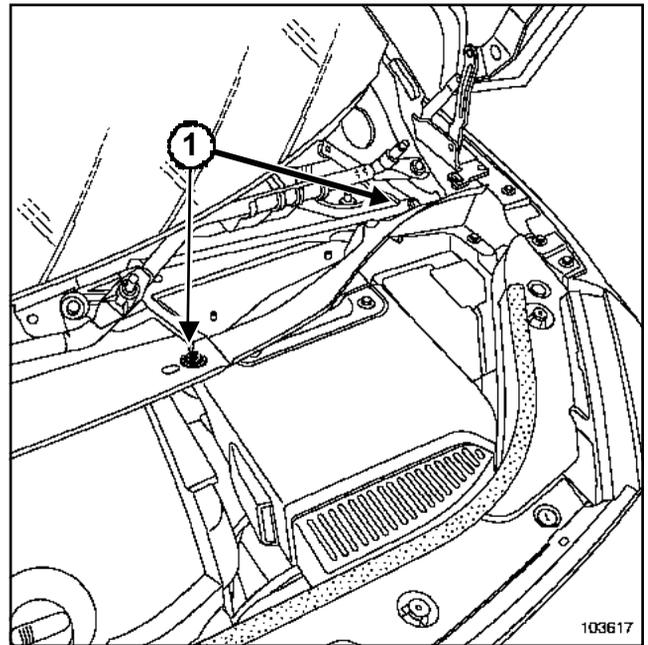
REMOVAL

Mount the vehicle on a two post lift.

Disconnect the battery, starting with the negative terminal.

Remove:

- the wiper arms,
- the cowl grille.



103617

103617

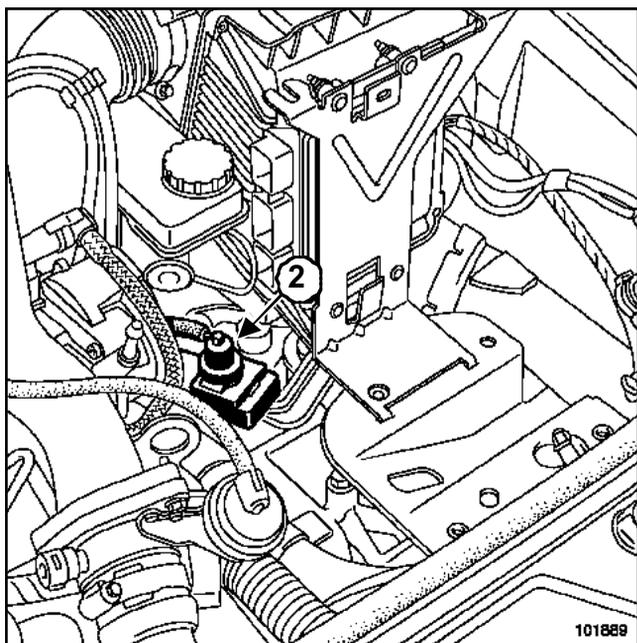
Remove:

- the air filter access panel mounting bolts (1),
- the engine covers,
- the battery,
- the battery tray,

Master cylinder

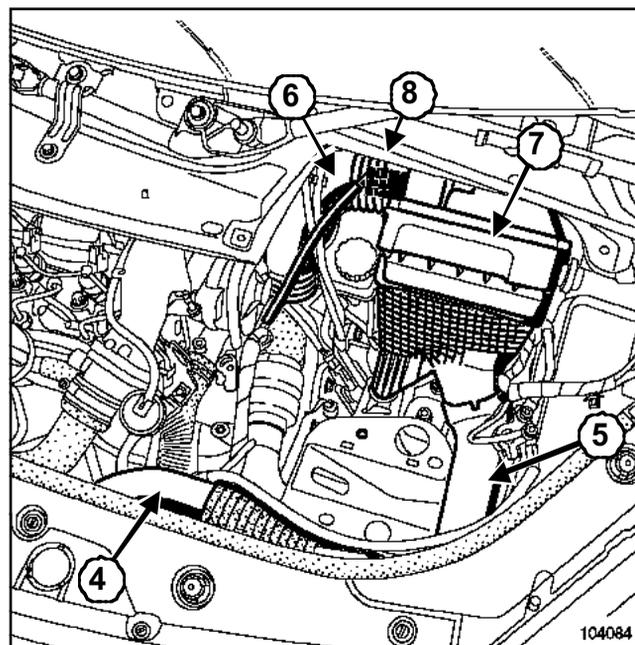
F4R or F9Q or K4J or K4M or K9K

F9Q



101889

Remove the turbocharger regulation solenoid valve (2).

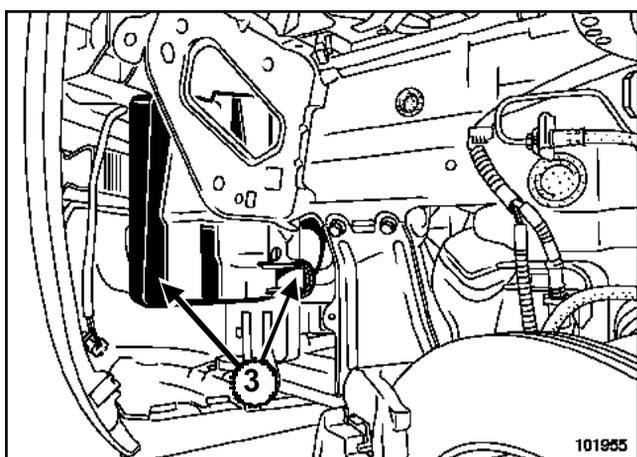


104084

Remove:

- the air intake sleeve (4),
- the air sleeve (5),
- the air sleeve downstream of air box,(6),
- the air box (7).

F4R or K4M



101955

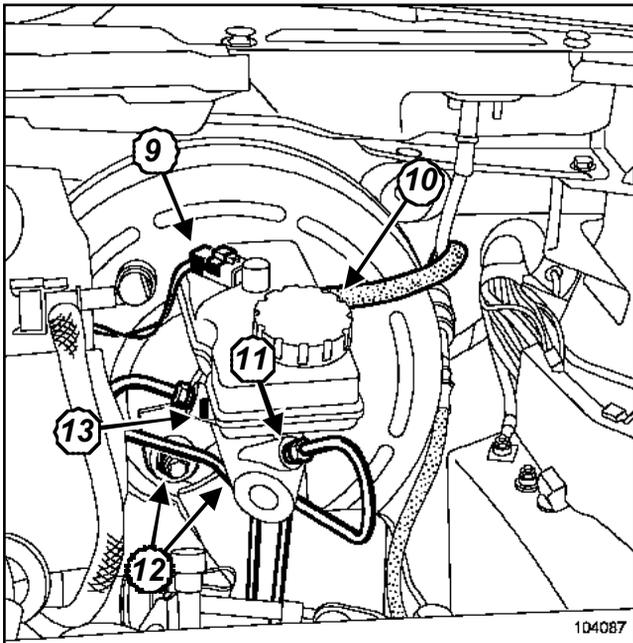
Remove:

- the front left wheel,
- the wheel arch liner,
- both air resonators (3).

F9Q

Disconnect the air flowmeter connector (8).

F4R or F9Q or K4J or K4M or K9K



104087

104087

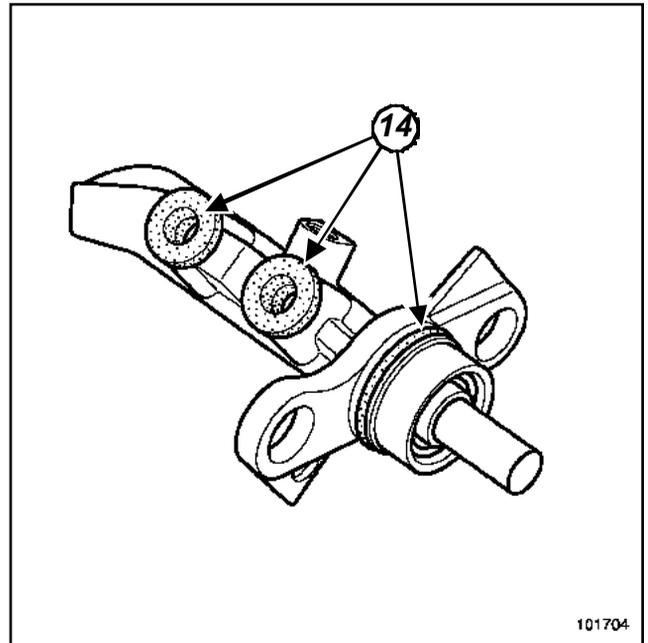
Disconnect the electrical connector (9) from the master cylinder reservoir.

Drain the master cylinder reservoir with a syringe.

Remove:

- the clutch master cylinder pipe (10),
- the brake pipes (11) from the master cylinder,
- the master cylinder - brake servo mounting nuts (12),
- the « master cylinder - master cylinder reservoir » assembly,
- the master cylinder reservoir mounting bolts (13),
- the master cylinder reservoir.

REFITTING



101704

101704

WARNING

Be sure to replace the master cylinder seals (14).

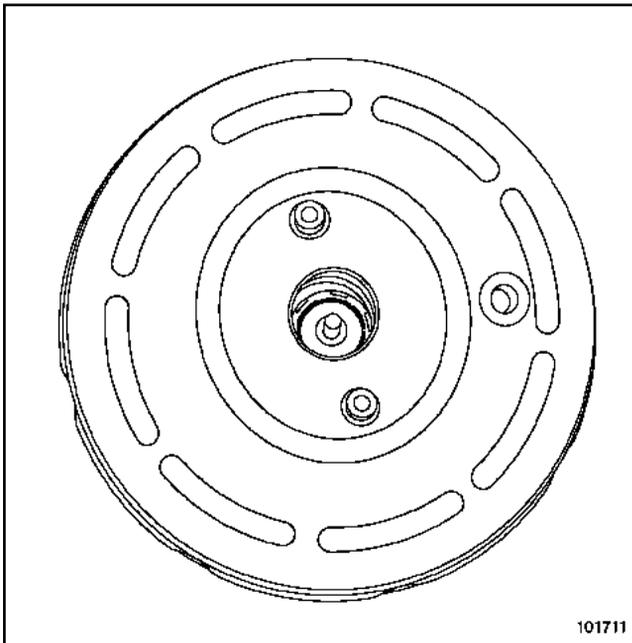
Clip the master cylinder reservoir onto the master cylinder properly.

Refit the master cylinder reservoir - master cylinder mounting bolts.

Torque tighten the **master cylinder reservoir mounting bolts (0.85 daNm)**.

Master cylinder

F4R or F9Q or K4J or K4M or K9K



101711

101711

Line up the master cylinder with the brake servo so that the pushrod goes into the master cylinder housing.

WARNING

When refitting the master cylinder, be sure that the cup is centred in the brake servo.

Refit the master cylinder - brake servo mounting nuts.

Torque tighten the **master cylinder - brake servo mounting nuts (5 daNm)**.

Proceed in the reverse order to removal.

Torque tighten the **brake pipe - master cylinder nuts (1.7 daNm)**.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Bleed the braking circuit (Section General Vehicle Information, Braking circuit bleed, page **30A-5**).

Adjust the brake pedal position switch (Section Mechanical component controls, Brake light switch, page **37A-24**).

F4R or F9Q or K4J or K4M or K9K

Tightening torques

brake servo mounting bolts	2.1 daNm
gearbox control sheath support mounting bolts	2.1 daNm

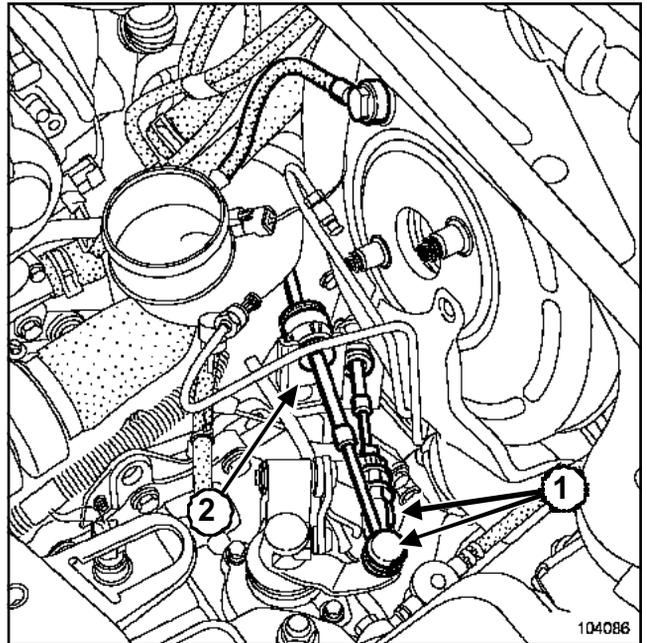
WARNING

Prepare for brake fluid outflow, to prevent damage to the mechanical parts and bodywork around the braking system.

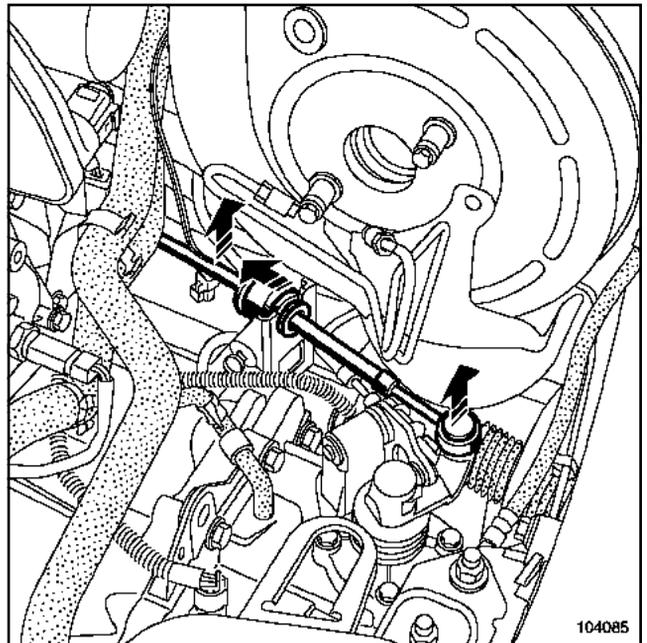
REMOVAL

Remove the master cylinder (Section Mechanical component controls, Master cylinder, page 37A-1).

F4R or F9Q



104086



104085

WARNING

Do not touch the gearbox control rack.

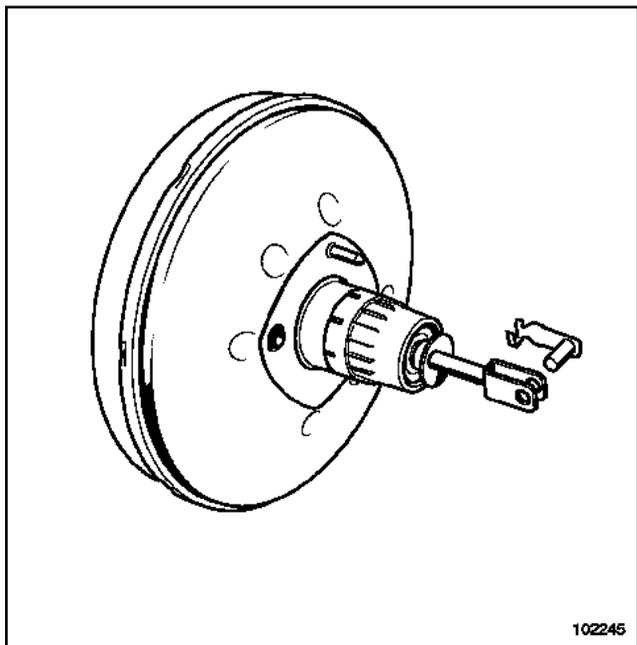
Remove:

- the gearbox control ball joints (1),
- the control cables from the sheath stops
- the sheath stop support mounting bolts,

Brake servo

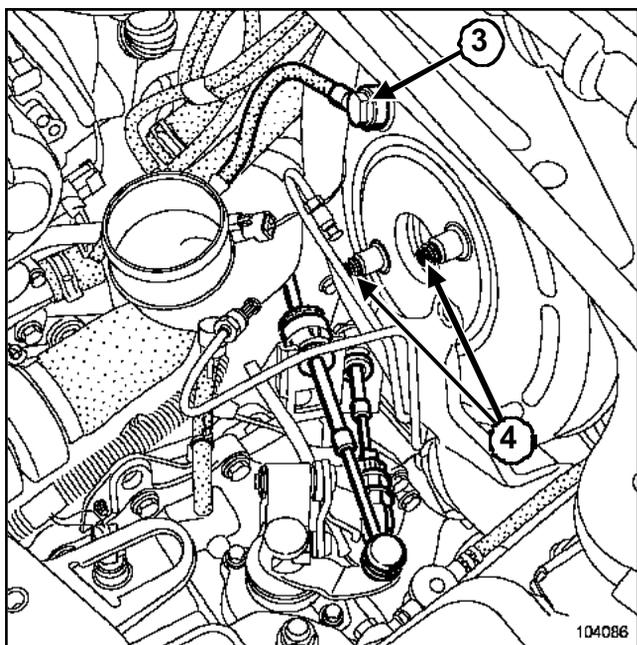
F4R or F9Q or K4J or K4M or K9K

- the sheath stop support (2).



102245

Remove the brake servo pushrod - brake pedal connecting shaft from the passenger compartment side.

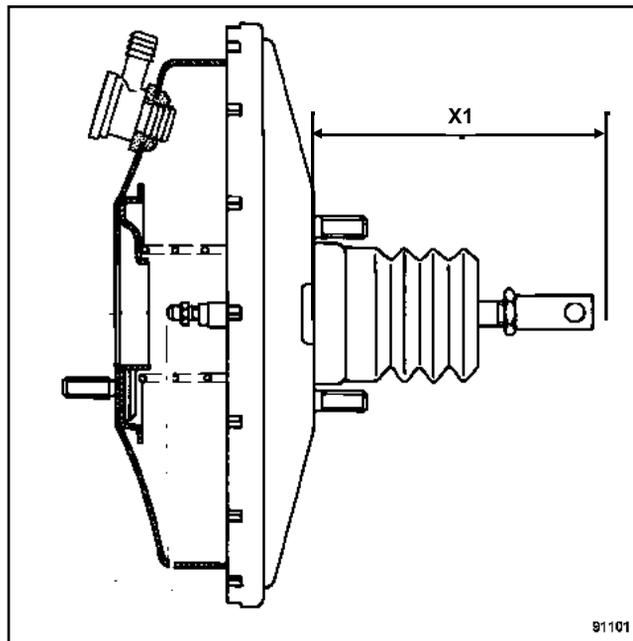


104086

Remove:

- the brake servo valve (3),
- the brake servo mounting bolts (4) from the engine compartment side,
- the brake servo.

REFITTING



91101

Check the following dimension before refitting:

- for left-hand drive vehicles: (X1) = 163.7 mm,
- for right-hand drive vehicles: (X1) = 133.2 mm.

Proceed in the reverse order to removal.

IMPORTANT

Check that the brake servo pushrod - brake pedal connecting shaft is locked in place.

Torque tighten:

- the **brake servo mounting bolts (2.1 daNm)**,
- the **gearbox control sheath support mounting bolts (2.1 daNm)**.

Refit the master cylinder (Section Mechanical component controls, Master cylinder, page 37A-1).

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

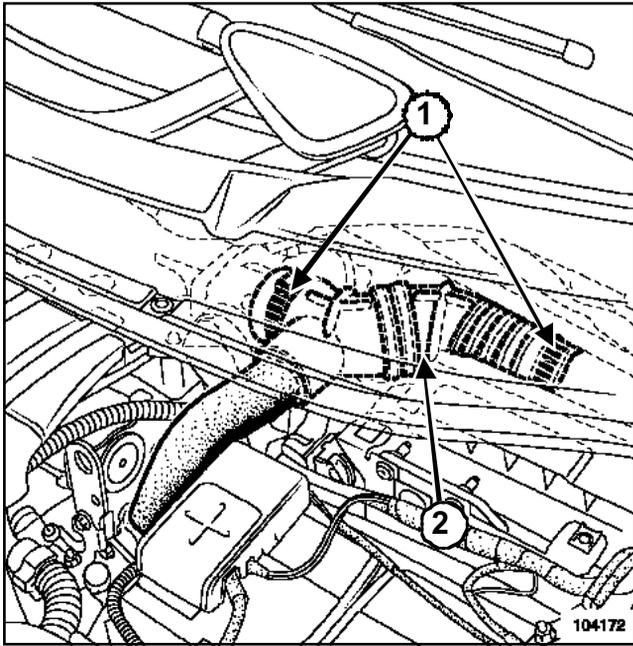
Bleed the braking circuit (Section General Vehicle Information, Braking circuit bleed, page 30A-5).

Adjust the brake pedal position switch (Section Mechanical component controls, Brake light switch, page 37A-24).

F4R or K4J or K4M

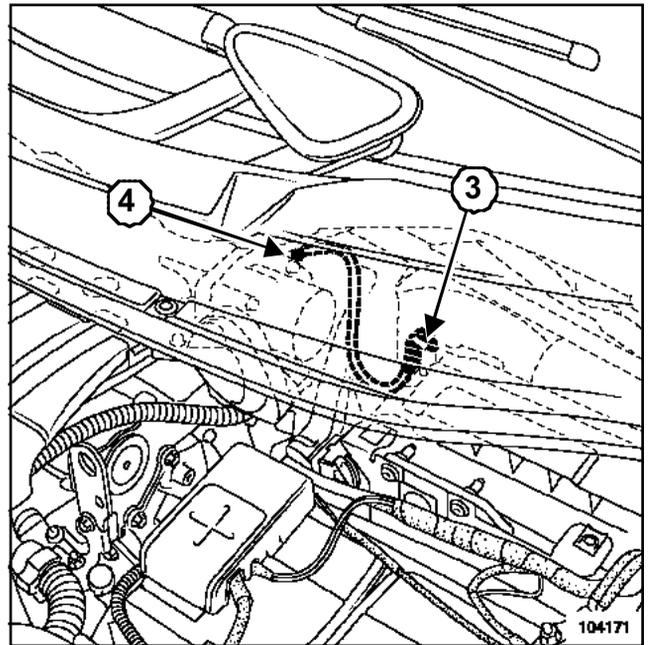
REMOVAL

Remove the engine covers.



Loosen the air duct clips (1).

Remove the air duct (2).



Disconnect the vacuum tube at the brake servo end (3).

Pull and turn the non-return valve to release it from the rubber sealing washer.

Note:

Do not damage the vacuum tube on the air distributor. If it is damaged, the air distributor will have to be replaced.

Disconnect the vacuum tube at the inlet manifold end (4).

REFITTING

Check the condition of the sealing washer and the non-return valve.

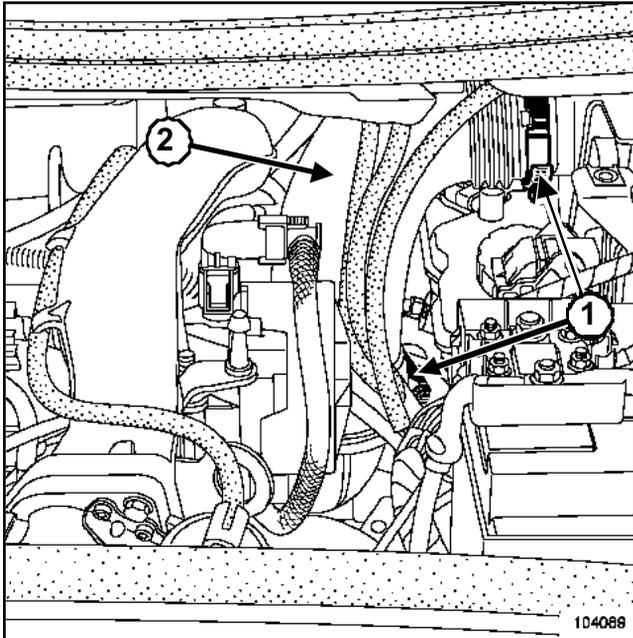
Replace any faulty parts.

Proceed in the reverse order to removal.

F9Q

REMOVAL

Remove the engine covers.

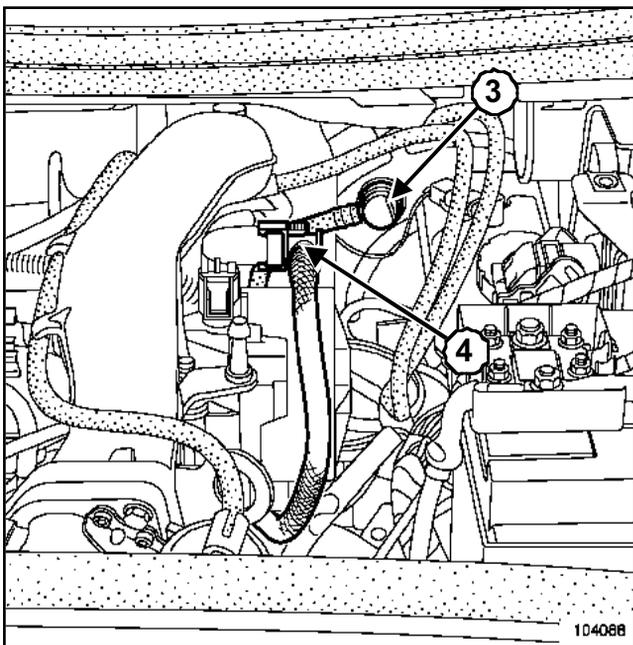


104088

104089

Loosen the air duct clips (1).

Remove the air duct (2).



104088

104088

Disconnect the vacuum pipe at the brake servo end (3).

Pull and turn the non-return valve to extract it from the rubber sealing washer.

Disconnect the vacuum pipe at the vacuum pump end (4).

REFITTING

Check the condition of the rubber sealing washer and the non-return valve.

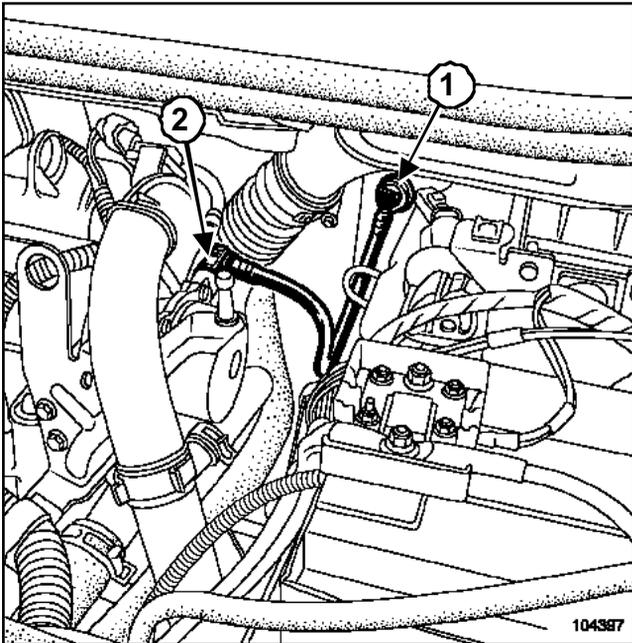
Replace any faulty parts.

Proceed in the reverse order to removal.

K9K

REMOVAL

Remove the engine covers.



104397

Disconnect the vacuum pipe at the brake servo end (1).

Pull and turn the non-return valve to extract it from the rubber sealing washer.

Disconnect the vacuum pipe at the vacuum pump end (2).

REFITTING

Check the condition of the rubber sealing washer and the non-return valve.

Replace any faulty parts.

Proceed in the reverse order to removal.

Vacuum pump

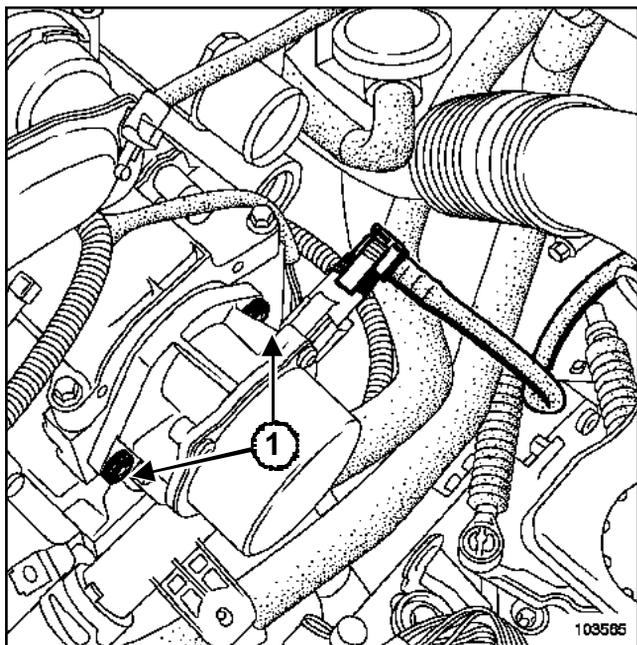
K9K

Tightening torques 

vacuum pump mounting bolts	2.1 daNm
----------------------------	----------

REMOVAL

Remove the engine covers.



Remove:

- the hose connected to the brake servo,
- the vacuum pump mounting bolts (1),
- the vacuum pump.

REFITTING

Proceed in the reverse order to removal.

Torque tighten the **vacuum pump mounting bolts (2.1 daNm)**.

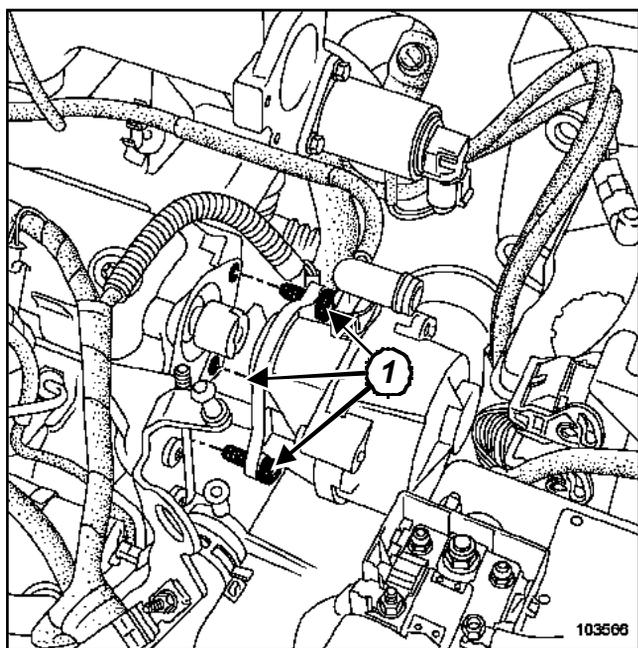
F9Q

Tightening torques 

vacuum pump mounting bolts	2.1 daNm
inlet tract mounting bolts	0.8 daNm

REMOVAL

Remove the engine covers.



103566

Remove:

- the inlet tract mounting bolts,
- the inlet tract,
- the hose connected to the brake servo,
- the vacuum pump mounting bolts (1),
- the vacuum pump.

REFITTING

Proceed in the reverse order to removal.

Torque tighten:

- the **vacuum pump mounting bolts (2.1 daNm)**,
- the **inlet tract mounting bolts (0.8 daNm)**.

LEFT-HAND DRIVE

Special tooling required

Fre. 1752	Safety pin
Ms. 1373	Philips radio removal tool
Ms. 1639	Tool for removing radio - CD player

Tightening torques 

mounting nuts on the brake pedal fork	21 N.m
---------------------------------------	---------------

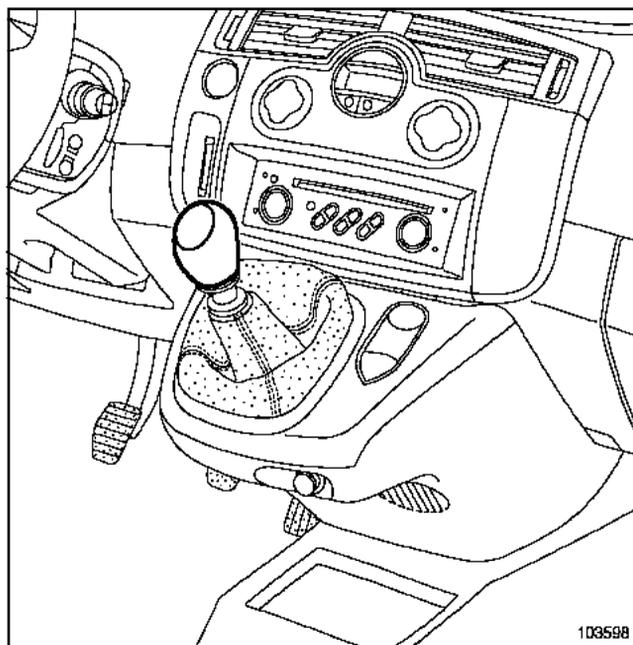
WARNING

When the brake pedal is replaced, the pedal is supplied fitted with a pin. **(Fre. 1752)**.

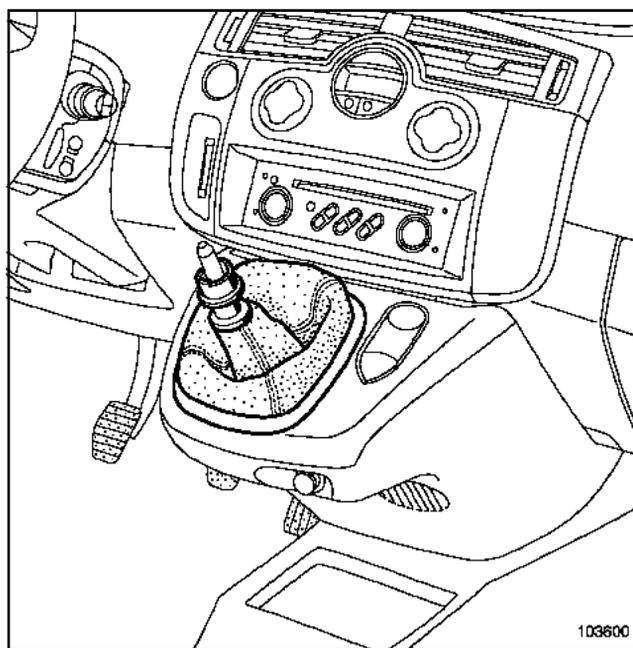
To remove/refit (without replacing the brake pedal), always fit the pin **(Fre. 1752)** during the remove/refit.

REMOVAL

Disconnect the battery, starting with the negative terminal.



103598



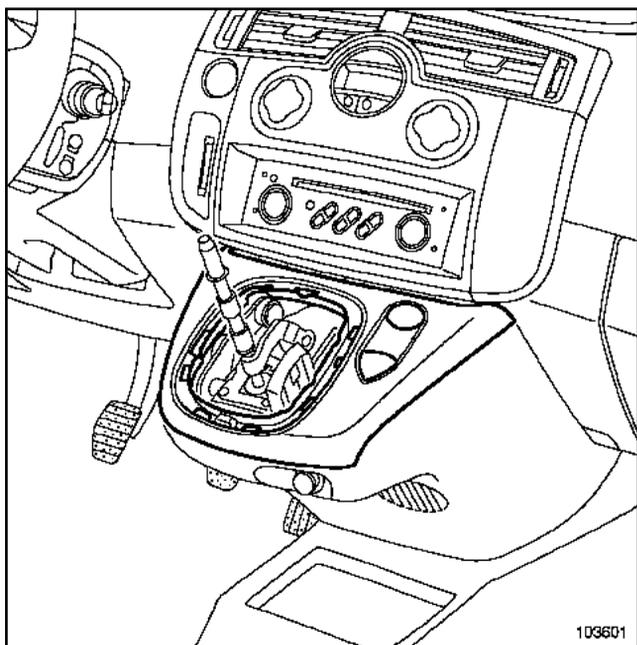
103600

103600

Unclip the « knob - gear lever gaiter » assembly.

Brake pedal

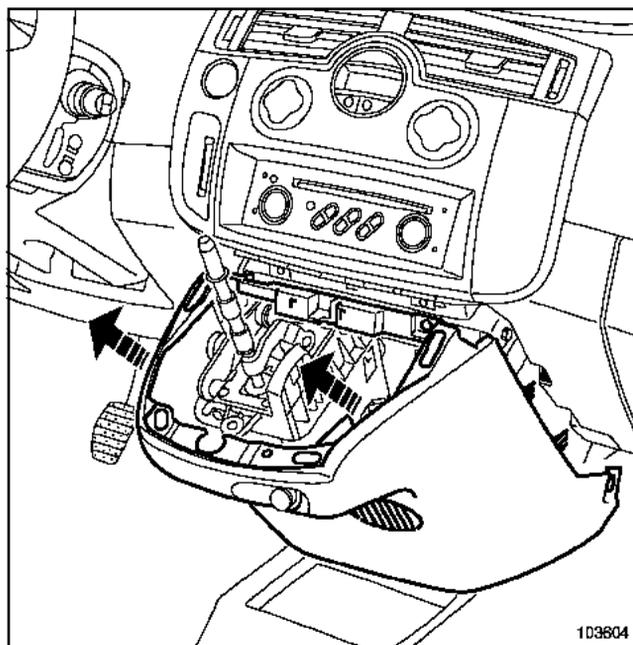
LEFT-HAND DRIVE

103601
103601

Unclip the gear lever upper trim.

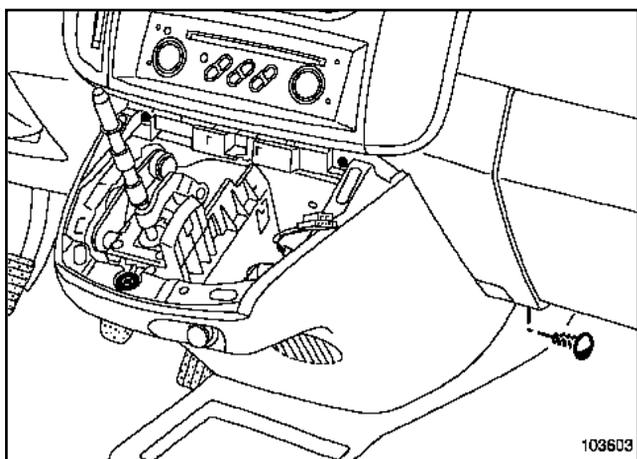
Disconnect:

- the hazard warning lights switch connector,
- the cigarette lighter connector,
- the voice synthesiser speaker connector.

103604
103604

Remove:

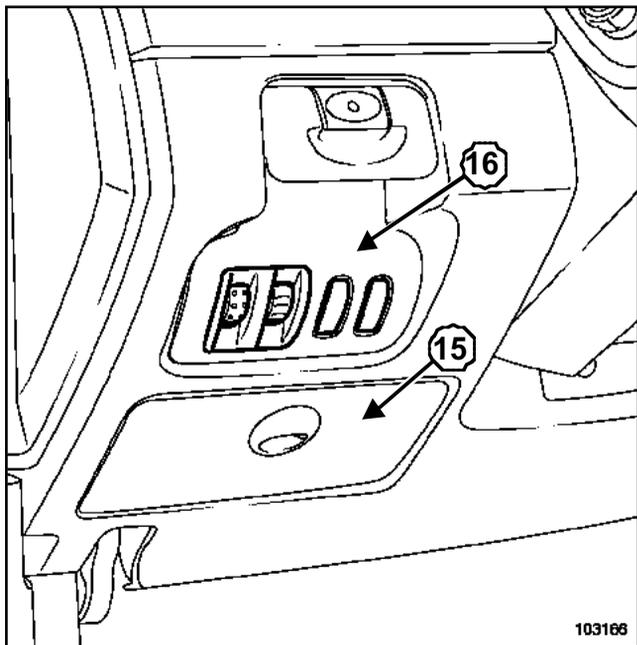
- the gear lever lower trim,
- the radio using tool **(Ms. 1373)** and tool **(Ms. 1639)**,
- the air conditioning control panel face.

103603
103603

Remove the gear lever lower trim strips.

Brake pedal

LEFT-HAND DRIVE

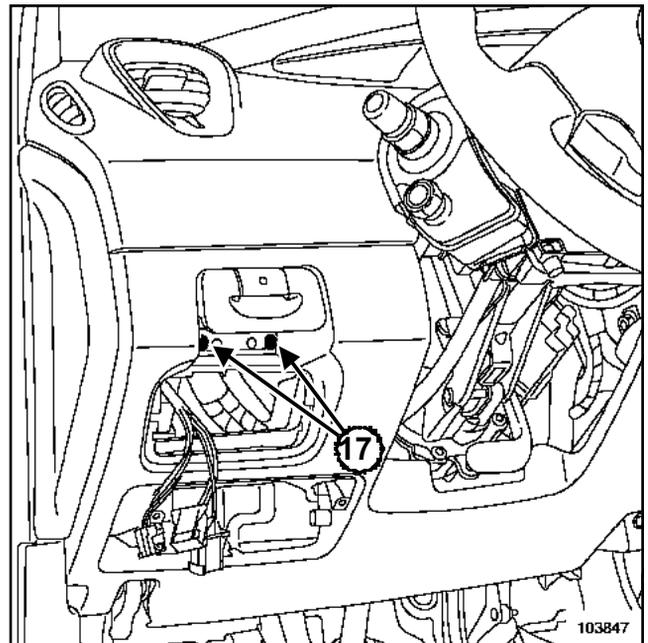
103166
103166

Unclip:

- the glovebox (15),
- the remote adjustment control (16) via the rear (see **80B, Headlight, Beam Adjustment Control and Lighting Dimmer Control**).

Disconnect the remote adjustment control connectors.

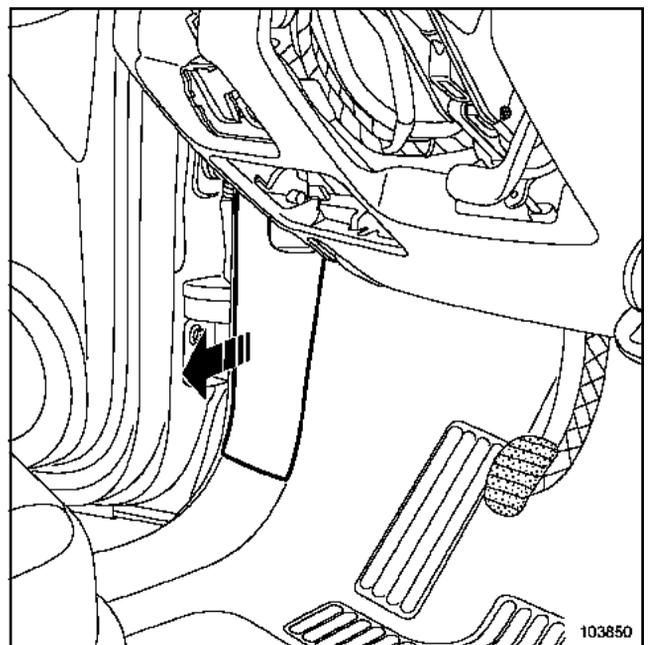
AUTOMATIC PARKING BRAKE

103847
103847

Remove the automatic parking brake catch mounting bolts (17).

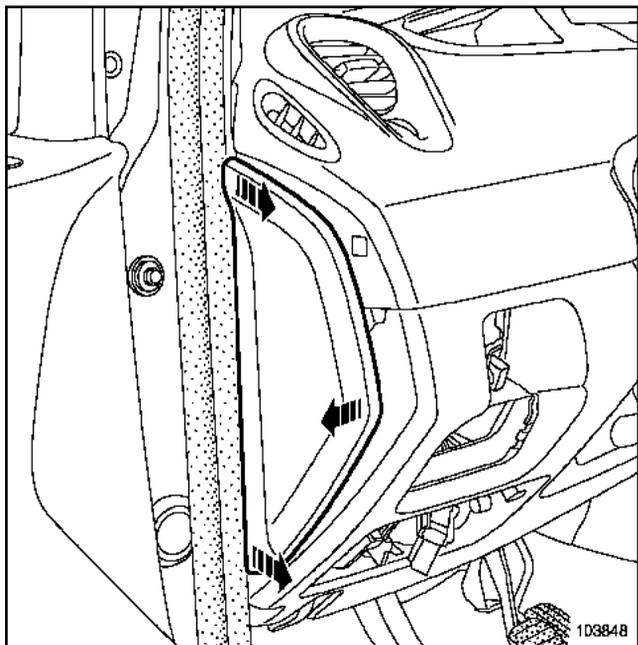
Disconnect the automatic parking brake control connector.

Remove the catch.

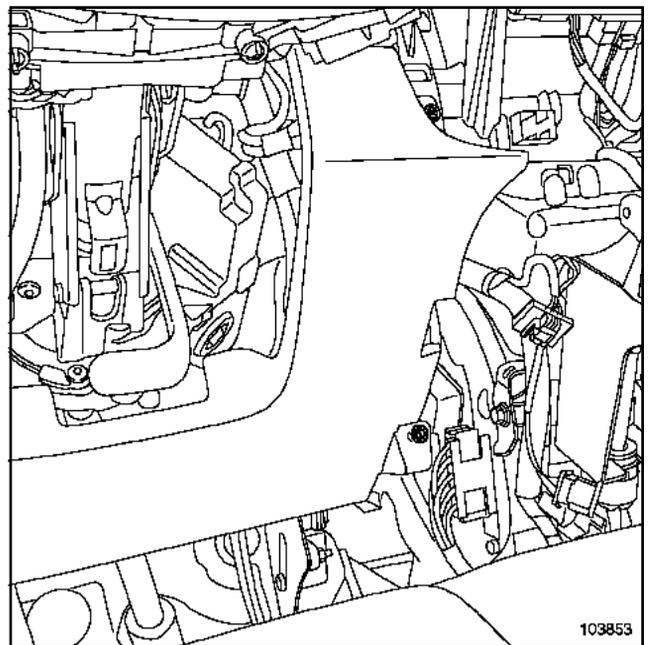
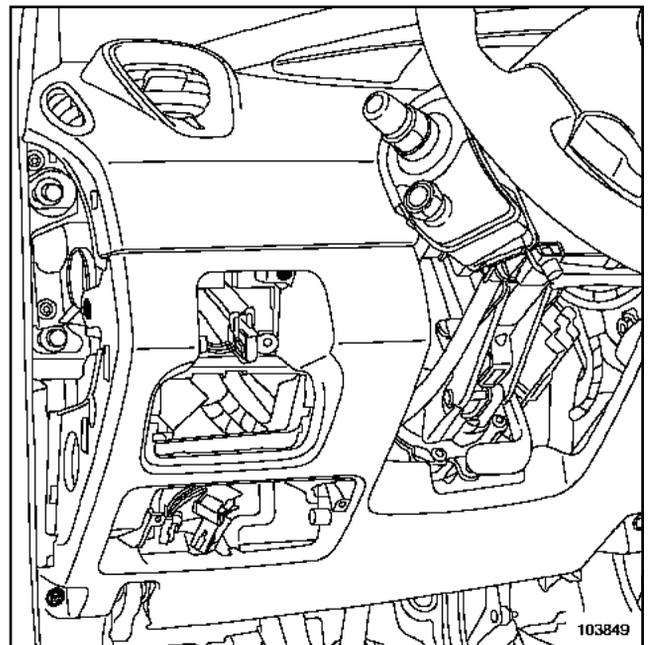
103850
103850

Unclip the left A-pillar trim.

LEFT-HAND DRIVE



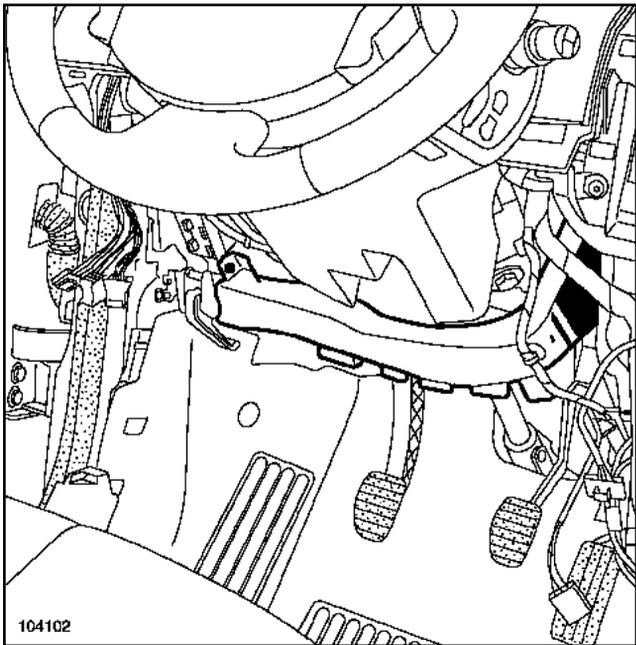
Unclip the front left-hand side panel.



Remove:

- the dashboard lower section mounting bolts,
- the lower section of the dashboard,

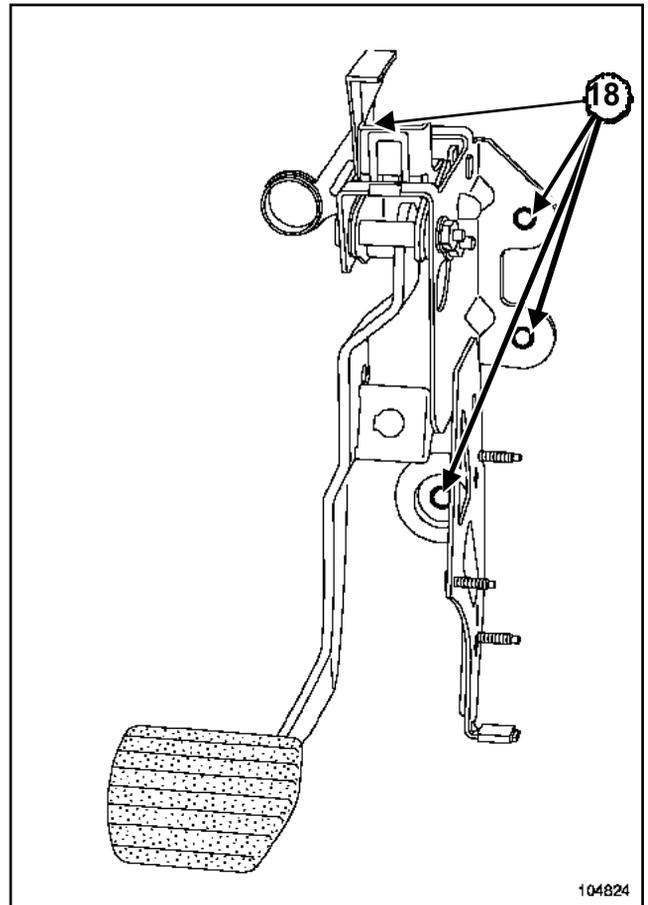
LEFT-HAND DRIVE



Remove:

- the air duct ,
- the linkage connecting the « brake pedal - bellcrank rod ».

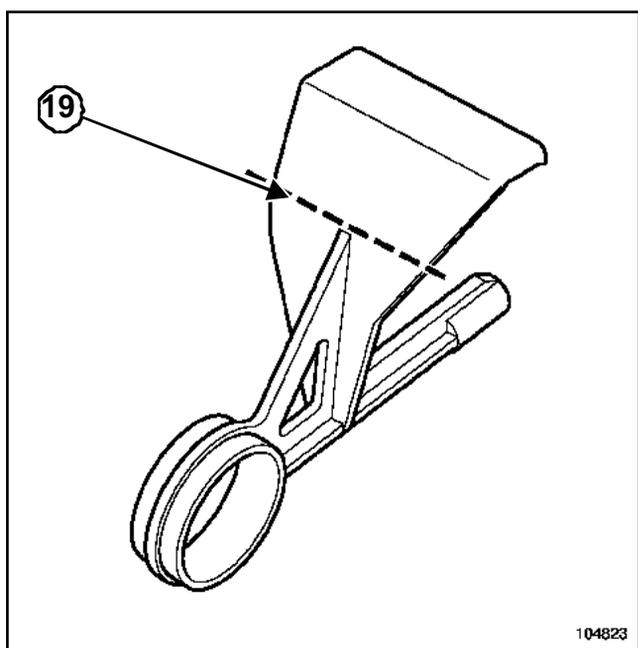
Disconnect the potentiometer from the accelerator pedal.



Disconnect the brake light switch.

Turn the brake pedal brake light switch anticlockwise a quarter of a turn.

LEFT-HAND DRIVE

104823
104823

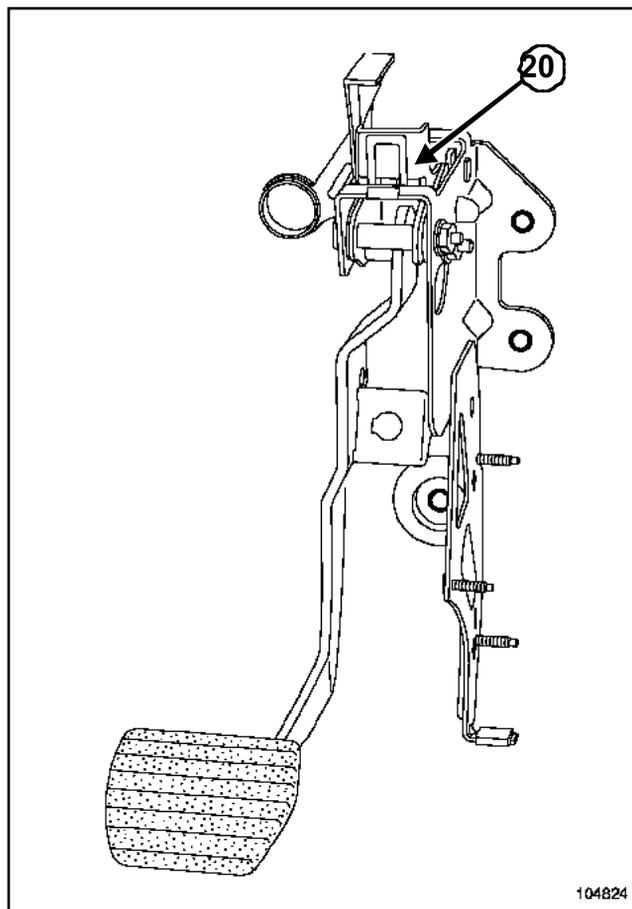
Cut the pin (19).

Insert the pin (**Fre. 1752**) moving from left to right (when not replacing the pedal).

Remove:

- the brake pedal yoke mounting nuts (18),
- the « brake pedal - accelerator pedal » assembly,
- the accelerator pedal mounting nuts,
- the accelerator pedal.

REFITTING

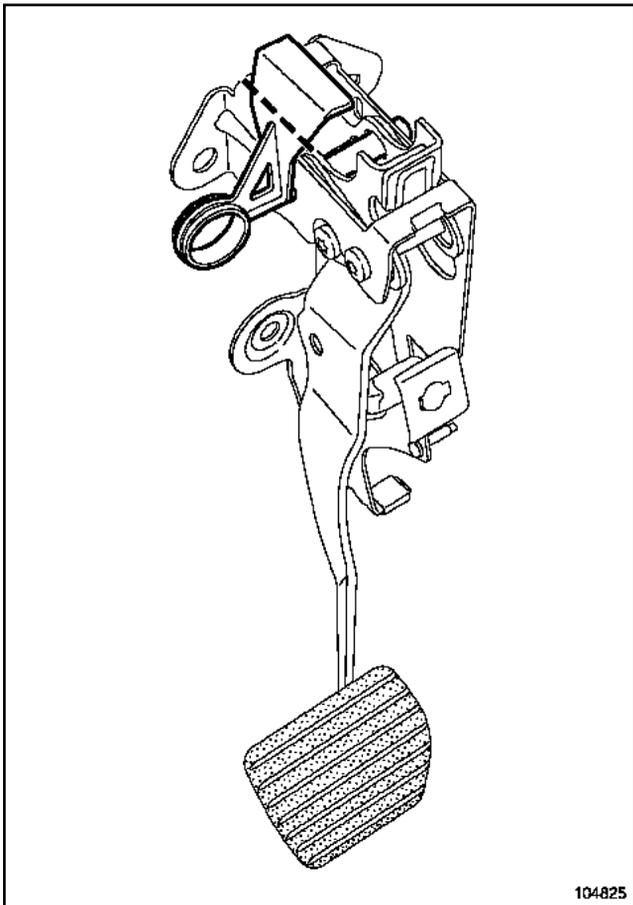
104824
104824**IMPORTANT**

The pedal is fitted with an unlocking system in the event an impact. Do not strike the pedal system (20) (this could inadvertently fully depress the pedal).

Note

- Do not remove the pin before refitting and tightening the pedal assembly.

LEFT-HAND DRIVE



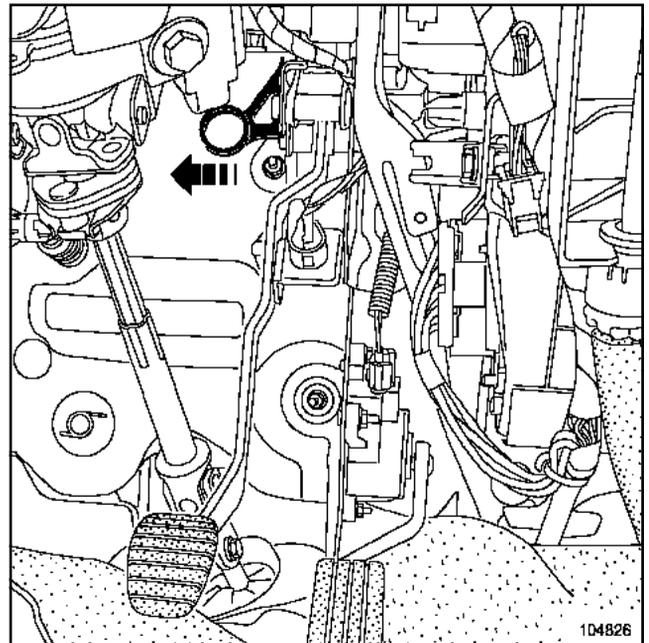
104825

104825

Cut the pin along the dotted line.

Proceed in the reverse order to removal.

Torque tighten the **mounting nuts on the brake pedal fork (21 N.m)**.



104826

104826

Remove the pin from the pedal.

IMPORTANT

Check that the connecting piece between the brake servo pushrod and the brake pedal is locked in place.

Adjust the brake pedal position switch (see **37A, Mechanical Component Controls, Brake Light Switch**).

Connect the battery, starting with the positive terminal.

WARNING

Carry out the necessary programming (see **80A, Battery: Remove and Refit**).

RIGHT-HAND DRIVE

Special tooling required

Fre. 1752

Safety pin

Equipment required

Diagnostic tool

Tightening torques mounting nuts on the
brake pedal fork**21 N.m****IMPORTANT**

- Before carrying out any work on a safety system component, lock the airbag computer using the **Diagnostic tool** (see **88C, Airbags and Pretensioners, Airbag Computer Locking Procedure**).
- When this function is activated, all the trigger lines are inhibited and the air bag warning light on the instrument panel lights up continuously (ignition on).
- Handling the pyrotechnic systems (air bags or pretensioners) near to a heat source or flame is prohibited; there is a risk of triggering the airbags or pretensioners.

WARNING

When the brake pedal is replaced, the pedal is supplied fitted with a pin. **(Fre. 1752)**

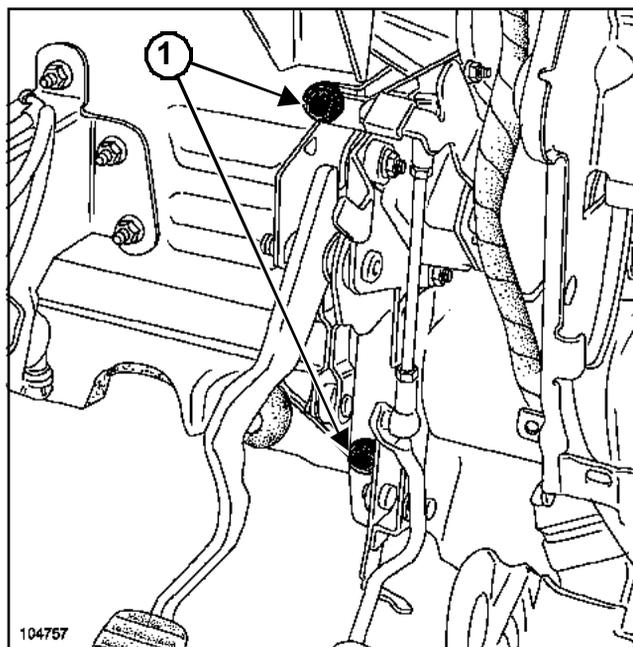
To remove/refit (without replacing the brake pedal), always fit the pin **(Fre. 1752)** during the remove/refit.

REMOVAL

Disconnect the battery, starting with the negative terminal.

Remove:

- the dashboard (see **83A, Instrument Panel, Dashboard**),
- the steering column (see **36B, Power-assisted Steering, Steering Column**),
- the dashboard cross member (see **MR 371 Bodywork, 42A, Upper Front Structure, Dashboard Cross member**).



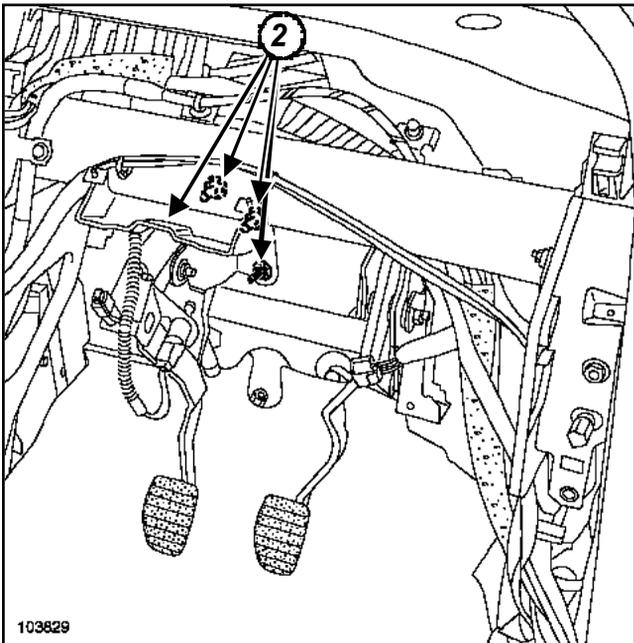
Disconnect the accelerator pedal potentiometer connector.

Remove:

- (1) mounting bolts from the accelerator pedal,
- the accelerator pedal.

Brake pedal

RIGHT-HAND DRIVE



103829

103829

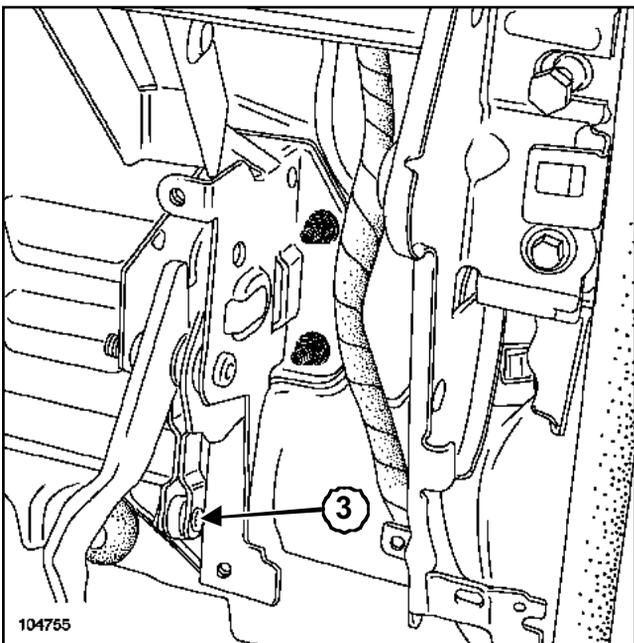
Disconnect the brake light switch.

Remove the bolts(2) from the clutch pedal.

Remove the clutch pedal assembly from its housing without removing the master cylinder pipes.

WARNING

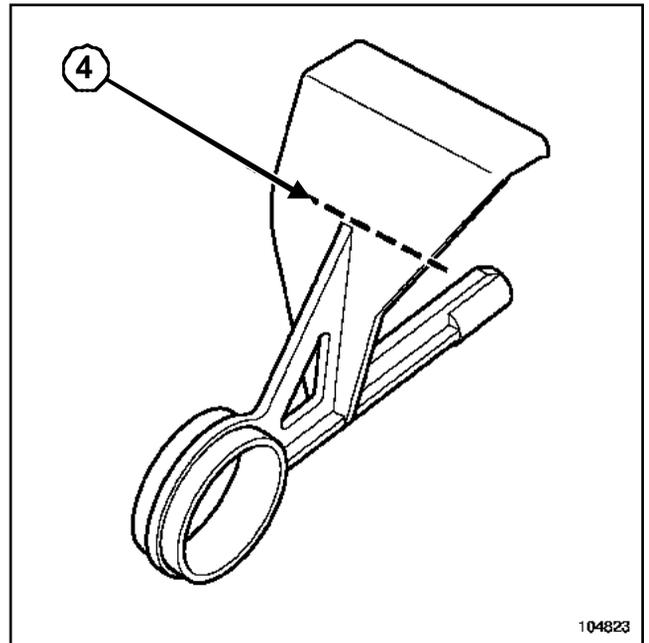
Do not damage the clutch master cylinder pipes.



104755

104755

Remove the shaft (3) connecting the « brake pedal - equaliser bar » assembly.



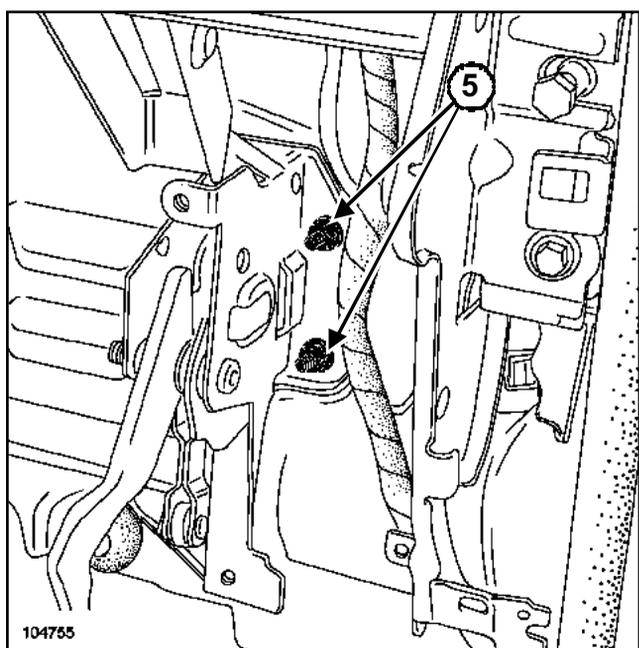
104823

104823

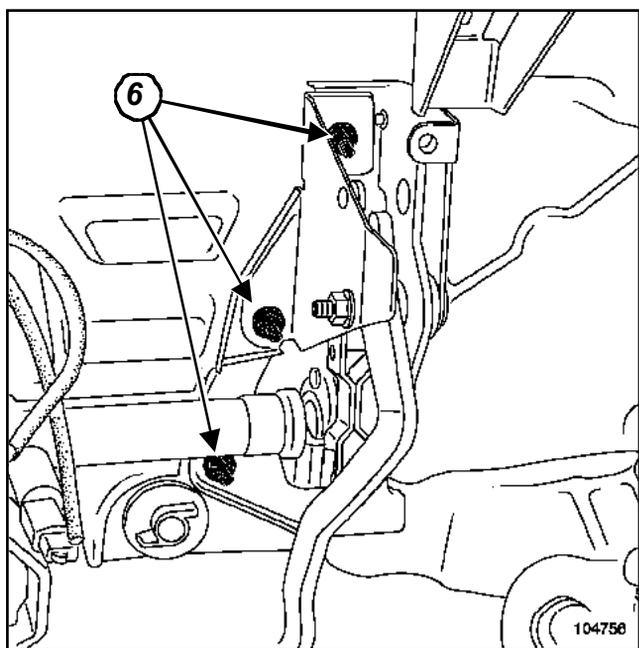
Cut the pin (4).

Insert the pin (**Fre. 1752**) moving from left to right (when not replacing the pedal).

RIGHT-HAND DRIVE



104755

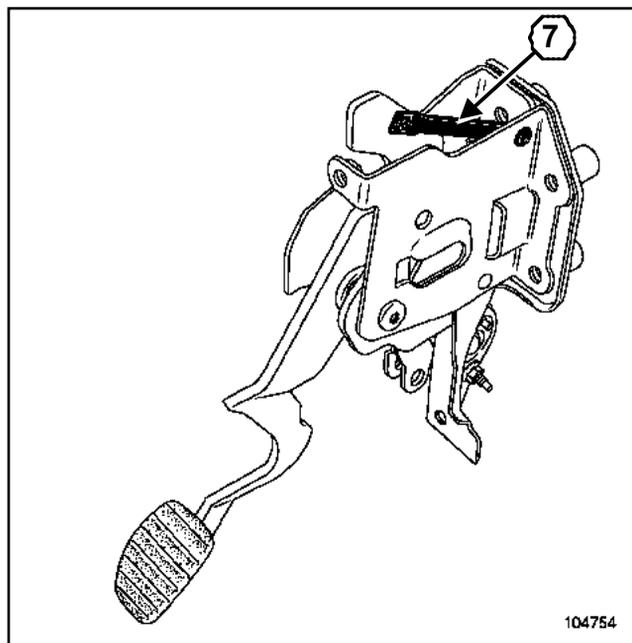


104756

Remove:

- the mounting bolts (5) and (6) from the brake pedals,
- the brake pedal assembly by twisting it round to release it from the equaliser bar.

REFITTING



104754

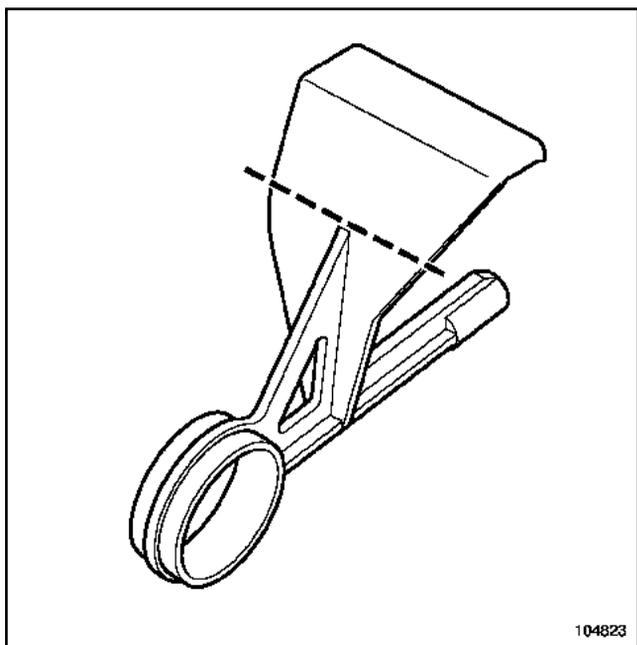
WARNING

Before refitting, check that the fuse board (7) is not deformed. If there is any deformation on the fuse board, the brake pedal assembly must be replaced.

Note

- Do not remove the pin before refitting and tightening the pedal assembly.

RIGHT-HAND DRIVE



104823

104823

Cut the pin along the dotted line. (do not remove the pin from the pedal).

Proceed in the reverse order to removal.

Torque tighten the **mounting nuts on the brake pedal fork (21 N.m)**.

Remove the pin from the pedal.

Adjust the brake pedal position switch (see **37A, Mechanical Component Controls, Brake Light Switch**).

IMPORTANT

Unlock the computer using the **Diagnostic tool** (see **88C, Airbags and Pretensioners, Airbag Computer Locking Procedure**).

Connect the battery, starting with the positive terminal.

WARNING

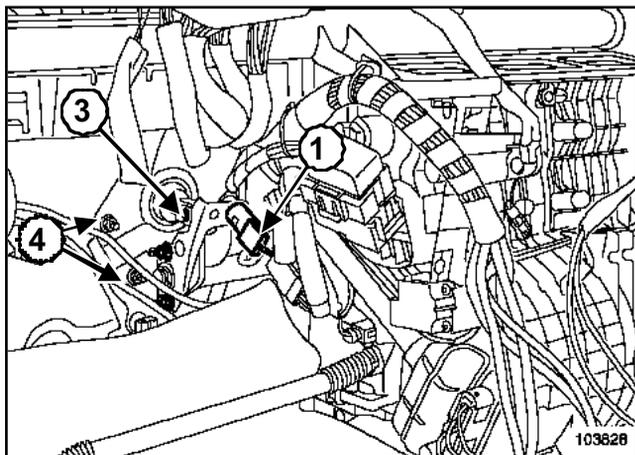
carry out the necessary programming (see **80A, Battery: Remove and Refit**).

RIGHT-HAND DRIVE

When the brake pedal is replaced, the pedal is supplied fitted with a pin.

REMOVAL

Remove the brake pedal (Section Mechanical component controls, Brake pedal, page 37A-12).



103828

Turn the brake pedal sensor (1) through a quarter turn anticlockwise.

Remove:

- the brake pedal sensor (1),
- the two equaliser bar retaining ring nuts (4),
- equaliser bar retaining ring,
- the shaft (3) connecting the « equaliser bar - brake servo pushrod » assembly.
- the circlips at the ends of the equaliser bar.

WARNING

Do not damage the clutch master cylinder pipes.

Remove the equaliser bar through the passenger side of the vehicle.

REFITTING

Proceed in the reverse order to removal.

If replacing the pedal, (Section Mechanical component controls, Brake pedal, page 37A-12).

Adjust the brake pedal position switch (Section Mechanical component controls, Brake light switch, page 37A-24).

REMOVAL

Disconnect the brake pedal position switch connector.

Turn the brake pedal switch a quarter turn anticlockwise.

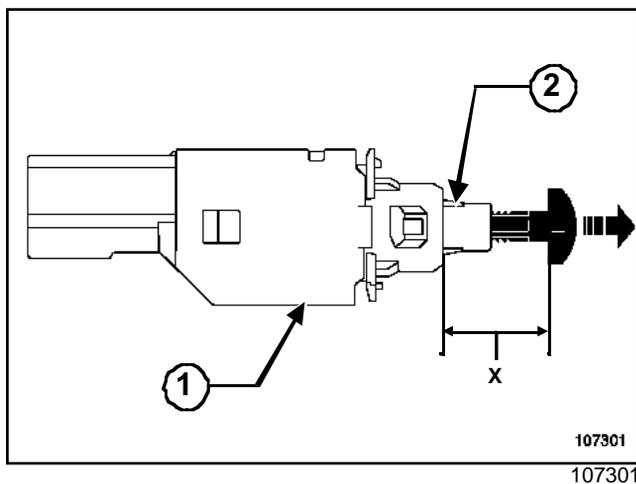
Remove the brake pedal switch.

REFITTING

Note:

The brake pedal switch has an automatic adjustment feature, adapting to the pedal position.

I - WHEN REMOVING AND REFITTING THE SENSOR



Carefully pull on the end of the switch so that (X) is **17 mm** minimum and **18 mm** maximum.

WARNING

- The switch must be replaced if the piston (2) for the brake pedal position switch (1) is extracted completely.
- The switch must be replaced if the work on the piston involves three adjustments.

Depress the brake pedal.

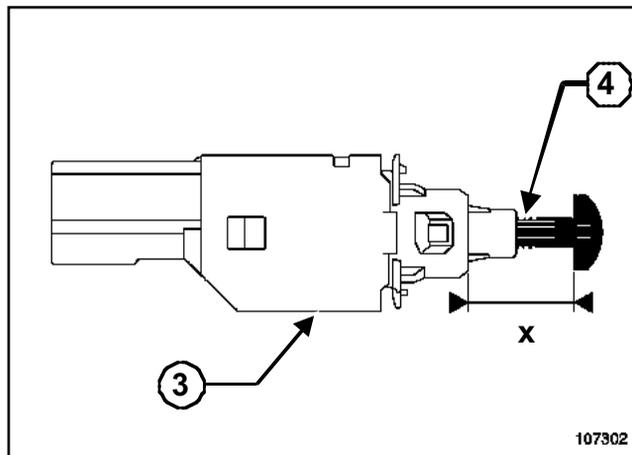
Position the switch on the pedal assembly.

Turn the brake pedal switch a quarter turn clockwise.

Support the brake pedal as it returns.

Connect the connector.

II - WHEN FITTING A NEW SENSOR



Make sure that (x) is at least **17 mm**.

If (x) is of another value, apply the procedure for the switch removed.

WARNING

- The switch must be replaced if the piston (4) for the brake pedal position switch (3) is extracted completely.
- The switch must be replaced if the work on the piston involves three adjustments.

Depress the brake pedal.

Position the switch on the pedal assembly.

Turn the brake pedal switch a quarter turn clockwise.

Support the brake pedal as it returns.

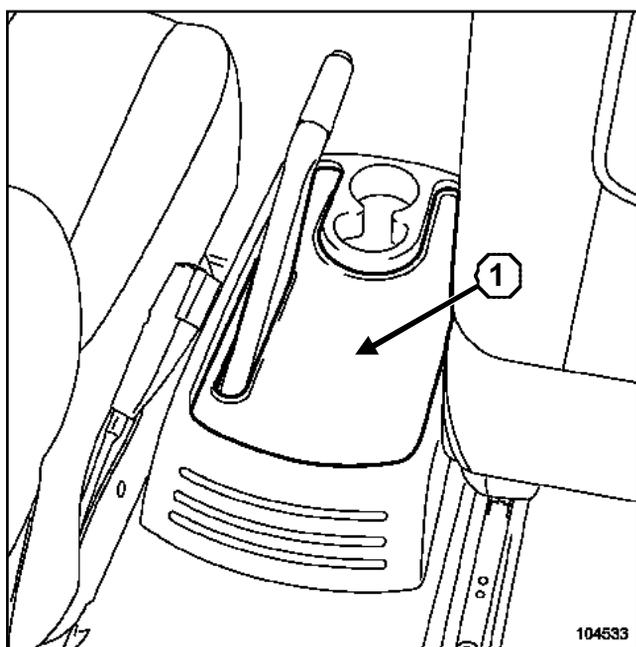
Connect the connector.

WITHOUT AUTOMATIC PARKING BRAKE

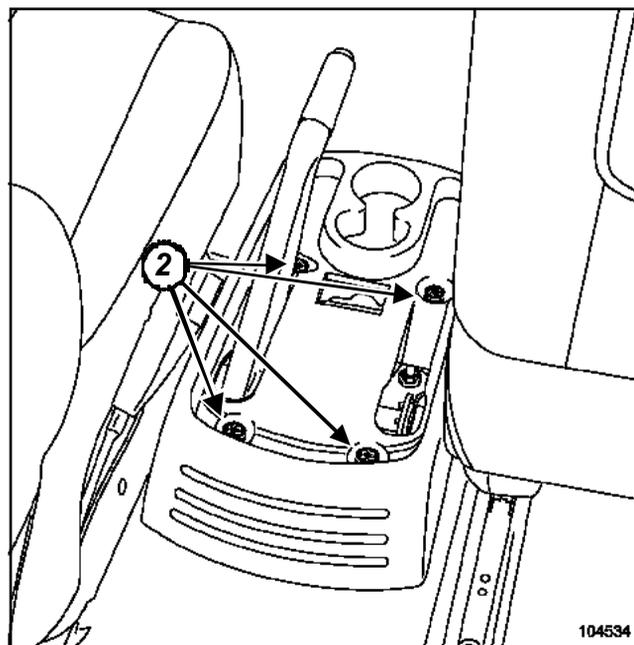
Tightening torques 	
parking brake lever mountings	0.8 daNm
centre console mountings	0.2 daNm

REMOVAL

Mount the vehicle on a two post lift.

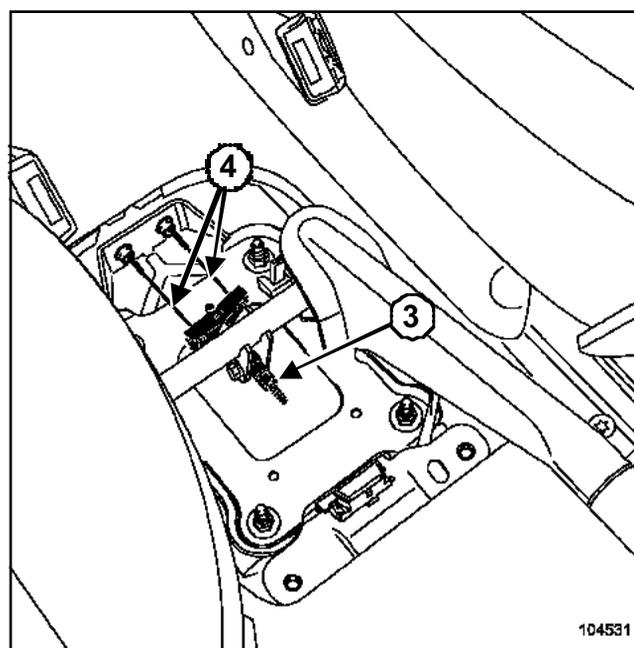


Remove the centre console carpet (1).



Remove:

- the centre console mountings (2),
- the centre console.



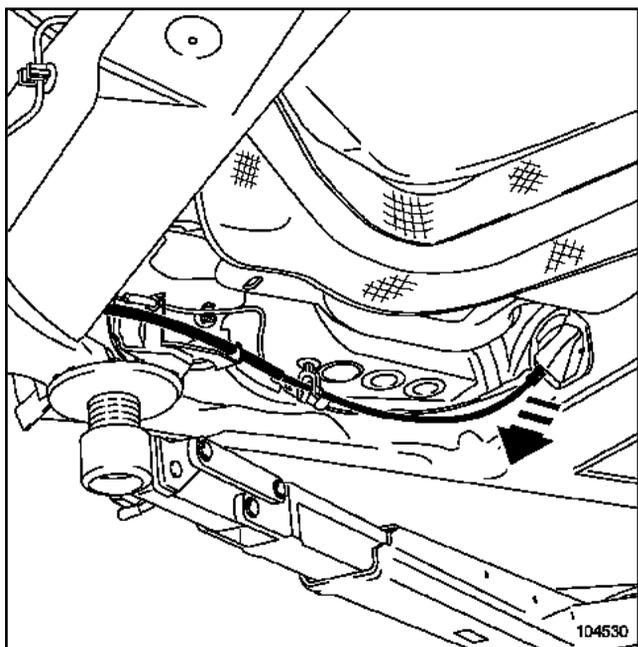
Unscrew the adjusting nut (3).

Pull out the parking brake control cables (4) from the control lever.

Thread the parking brake control cables into their sheaths.

Raise the vehicle.

WITHOUT AUTOMATIC PARKING BRAKE

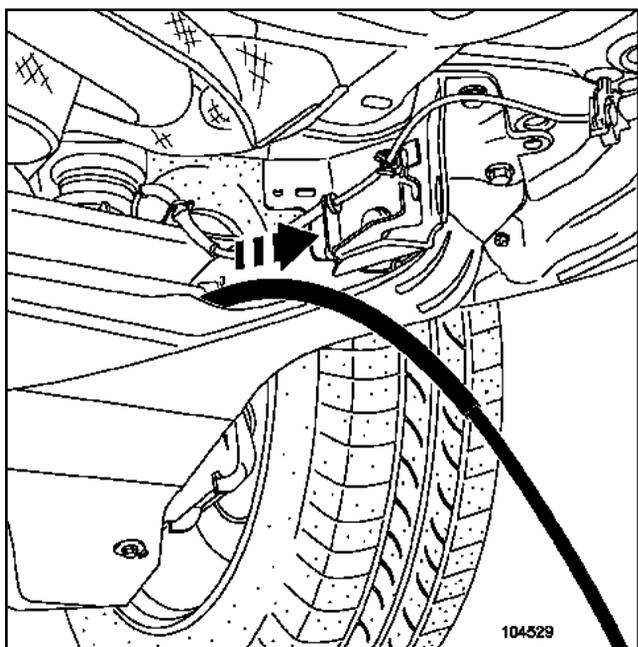
104530
104530

Pull the parking brake control cables out via the vehicle underbody.

Note the routing for refitting.

Unhook the parking brake control cables:

- from the callipers,
- from their guides.

104529
104529

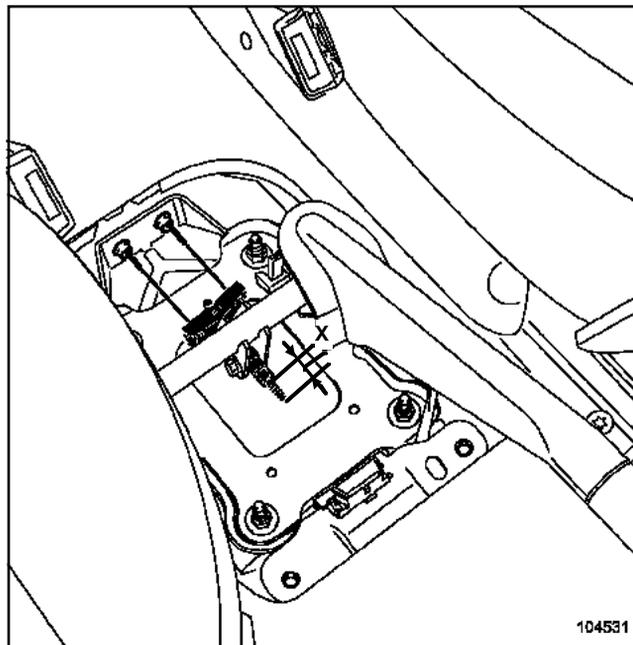
Remove the parking brake control cables from the rear axle.

Remove the parking brake control cables.

REFITTING

Follow the routing noted during removal.

Proceed in the reverse order to removal.

104531
104531

Tighten the adjusting nut so that dimension (X) equals **17 mm**.

Tighten the adjusting nut so that the brake pads are rubbing lightly against the brake discs.

Check the parking brake lever stroke.

Refit:

- the centre console,
- the centre console mountings,
- the centre console carpet.

Tighten to torque:

- the **parking brake lever mountings (0.8 daNm)**,
- the **centre console mountings (0.2 daNm)**.

AUTOMATIC PARKING BRAKE

Equipment required

Diagnostic tool

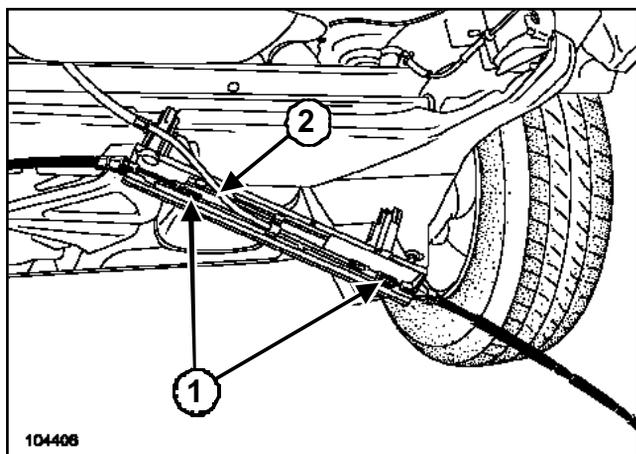
Tightening torques

primary cable nut	0.6 daNm
left-hand plastic nut	0.5 daNm
right-hand plastic nut	0.5 daNm

REMOVING THE PRIMARY CABLE

STANDARD CHASSIS

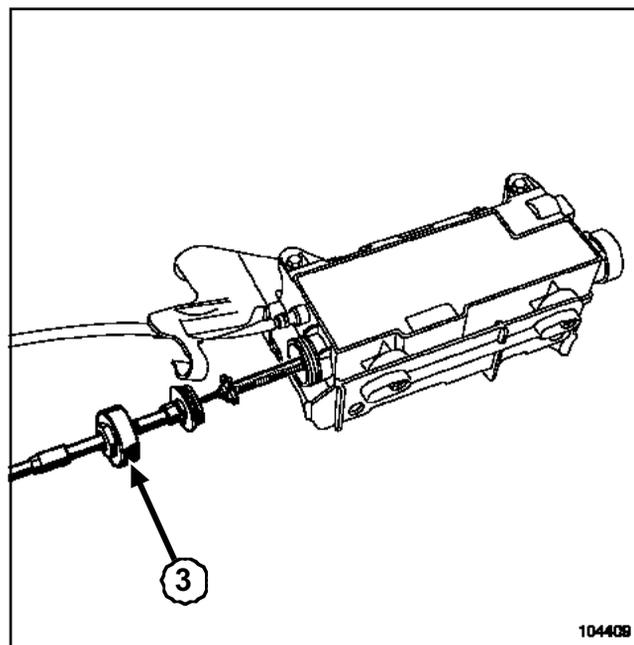
Remove the automatic parking brake control unit (Section Automatic parking brake, Control unit, page 37B-6).



104406

Remove:

- the secondary cables (1) from the reduction gearing,
- the reduction gearing from its support (2).



104409

104409

Remove the primary cable nut (3) from the control unit.

Unscrew the primary cable from the control unit in a clockwise direction.

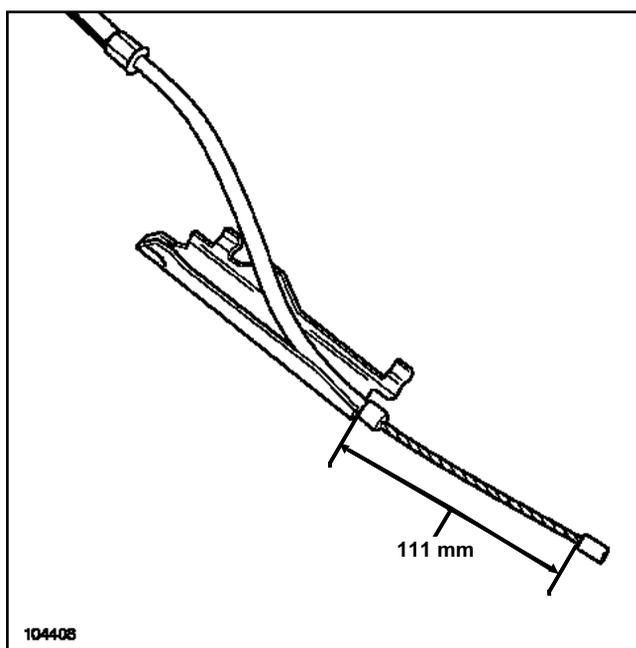
REFITTING THE PRIMARY CABLE

STANDARD CHASSIS

Screw the primary cable back into the control unit by twelve turns in an anticlockwise direction.

Torque tighten the **primary cable nut (0.6 daNm)**.

AUTOMATIC PARKING BRAKE



104408

Pull the primary cable through at the reduction gearing.

Check that the dimension shown is **111 mm**.

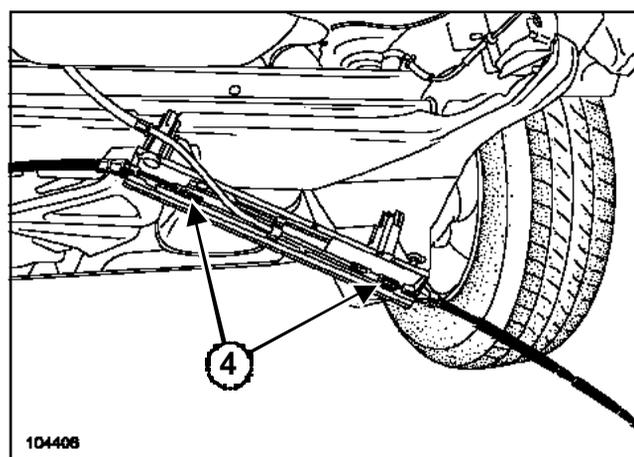
Tighten or loosen the cable if necessary to obtain **111 mm**.

Proceed in the reverse order to removal.

REMOVING THE SECONDARY CABLES

STANDARD CHASSIS

Remove the automatic parking brake control unit (Section Automatic parking brake, Control unit, page **37B-6**).



104406

Remove the secondary cables (4) from the reduction gearing.

Unclip the secondary cables from the reduction gearing support.

REFITTING THE SECONDARY CABLES

STANDARD CHASSIS

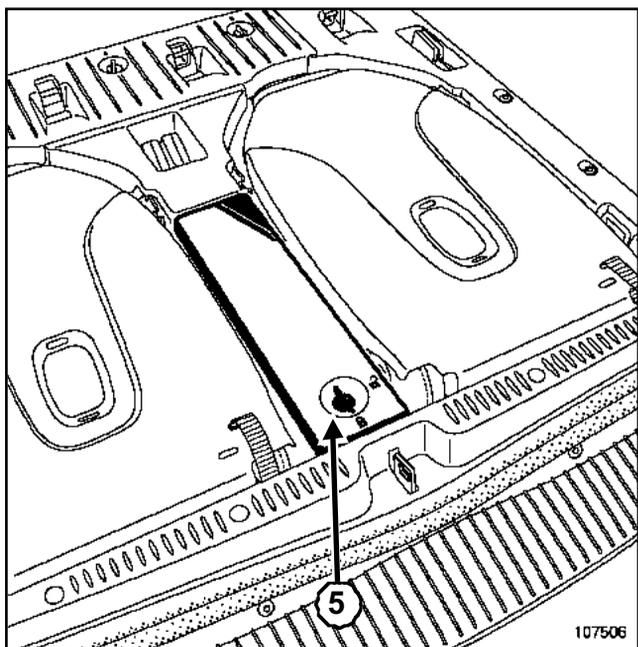
Proceed in the reverse order to removal.

REMOVING - REFITTING

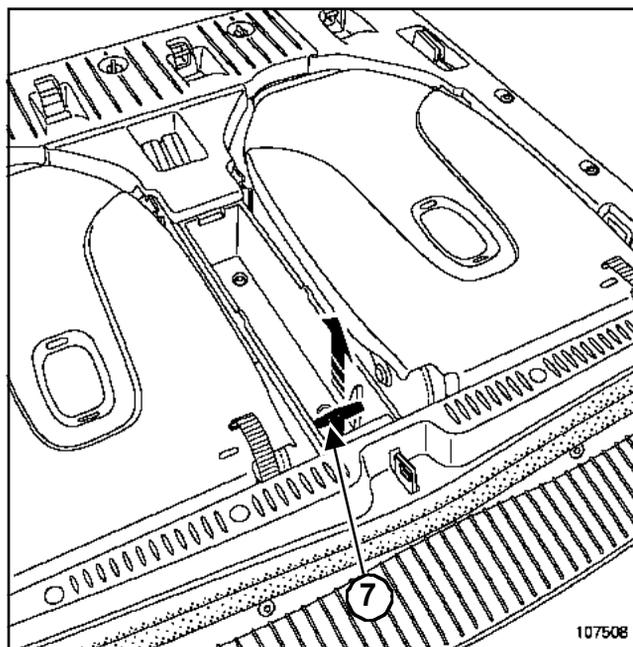
LONG CHASSIS

Disconnect the battery, starting with the negative terminal.

AUTOMATIC PARKING BRAKE

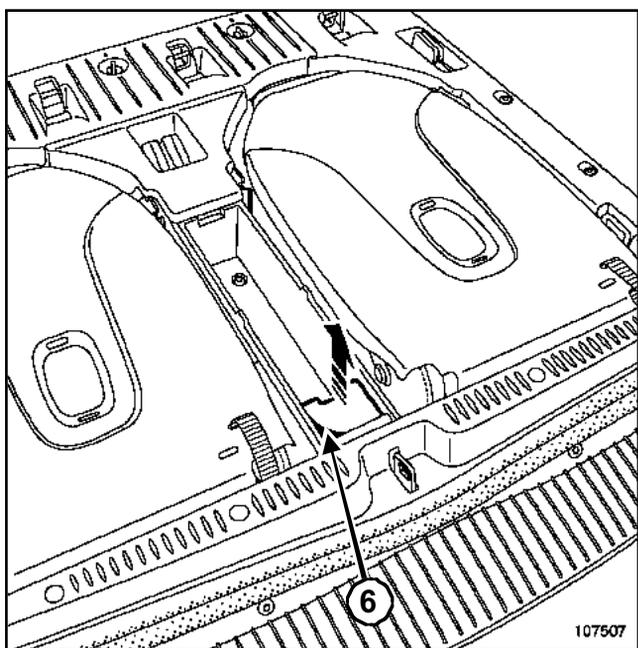


107506



107508

107508



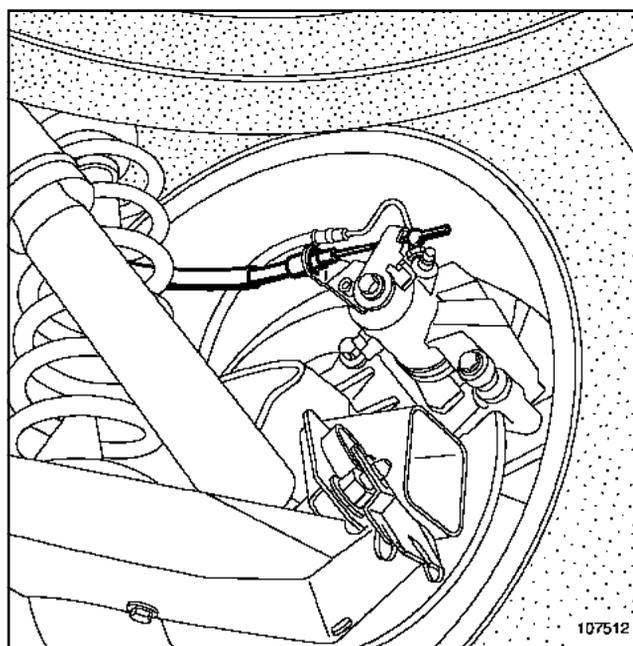
107507

107507

Remove:

- the boot centre trim (5),
- the emergency control handle cover (6).

Pull the emergency control handle (7) to unlock the automatic parking brake.



107512

107512

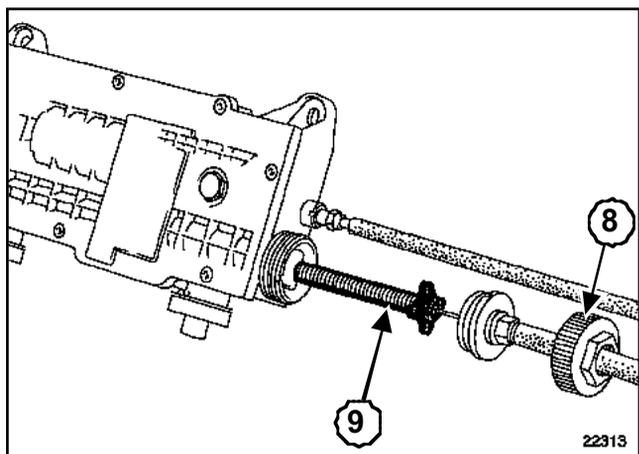
Remove the automatic parking brake cables:

- from the brake callipers,
- from their guides.

Let the parking brake cables hang freely.

Set the control unit shaft fully to the left.

AUTOMATIC PARKING BRAKE

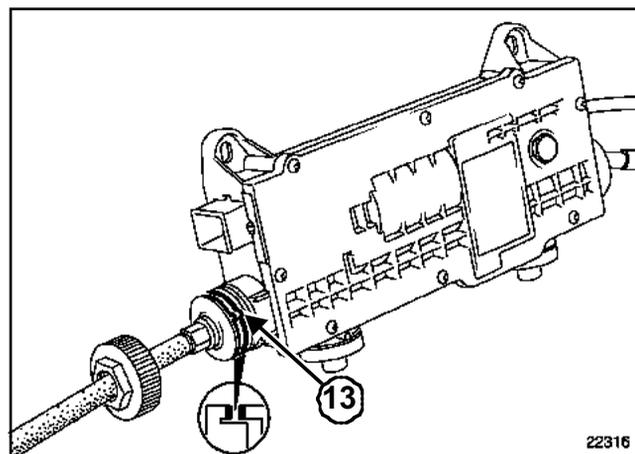


22313

Loosen the control unit plastic nut (8).

Loosen the left-hand cable by turning the threaded rod (9) clockwise.

Set the control unit shaft fully to the right.



22316

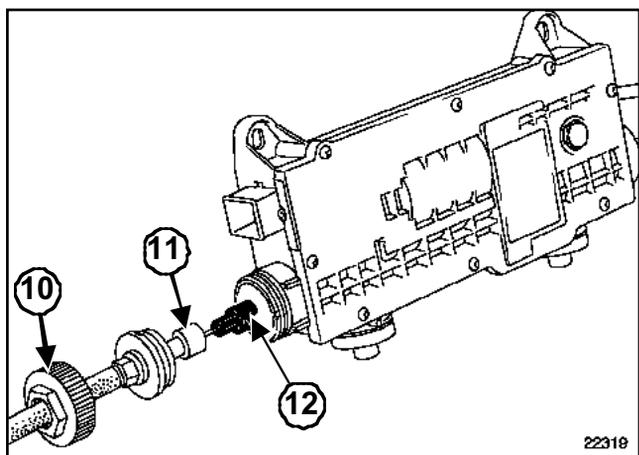
22316

Check the condition of the O-ring.

Insert the lug (13) in the notch.

Torque tighten the **left-hand plastic nut (0.5 daNm)**.

Move control unit shaft fully to the right.



22319

22319

Loosen the control unit plastic nut (10).

Unclip the locking ring (11).

Detach the force sensor cable (12).

REFITTING

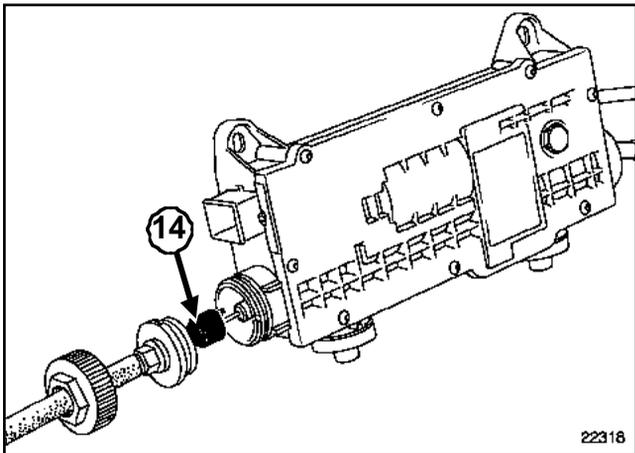
LONG CHASSIS

Set the control unit shaft fully to the left.

Screw in the left-hand cable by turning the threaded rod anticlockwise over five turns.

Insert the crosspiece in its housing.

AUTOMATIC PARKING BRAKE



22318

Attach the right-hand brake cable to the force sensor cable.

Clip on the locking ring (14).

Check the condition of the O-ring.

Insert the lug (13) in the notch.

Torque tighten the **right-hand plastic nut (0.5 daNm)**.

Proceed in the reverse order to removal.

IMPORTANT

Check that the brake cables are correctly fitted in their housing. If they are not, remove the left-hand parking brake cable. Refit it, tightening by the correct number of turns: five turns.

WARNING

Connect the battery, starting with the positive terminal; carry out the necessary programming (Section **Electrical equipment**).

IMPORTANT

Carry out a complete check with the **Diagnostic tool**, and clear any faults generated.

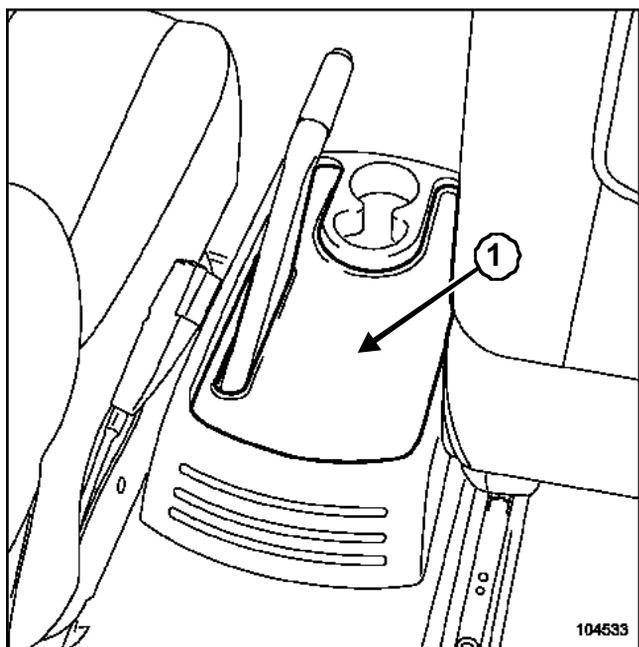
Note:

With the ignition on, release the automatic parking brake (pull the catch, push the button). The automatic parking brake system locking function emits a warning sound. The play compensation is set automatically.

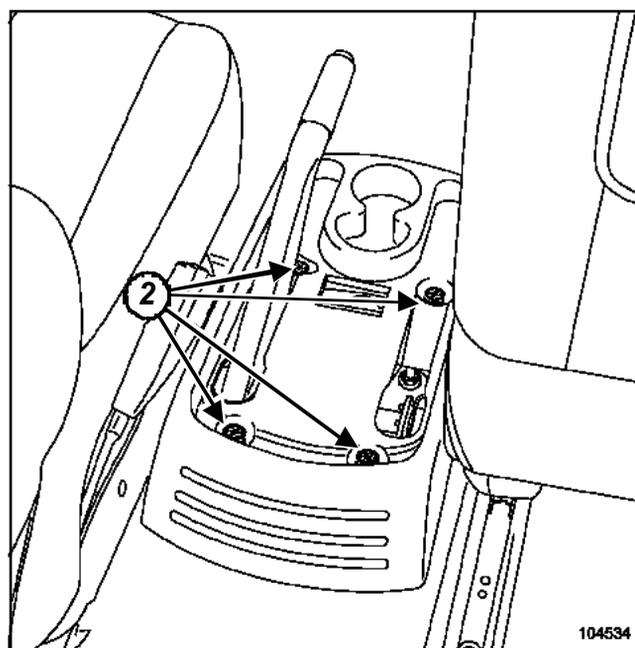
Parking brake lever

Tightening torques 	
parking brake lever mountings	0.8 daNm
centre console mountings	0.2 daNm

REMOVAL

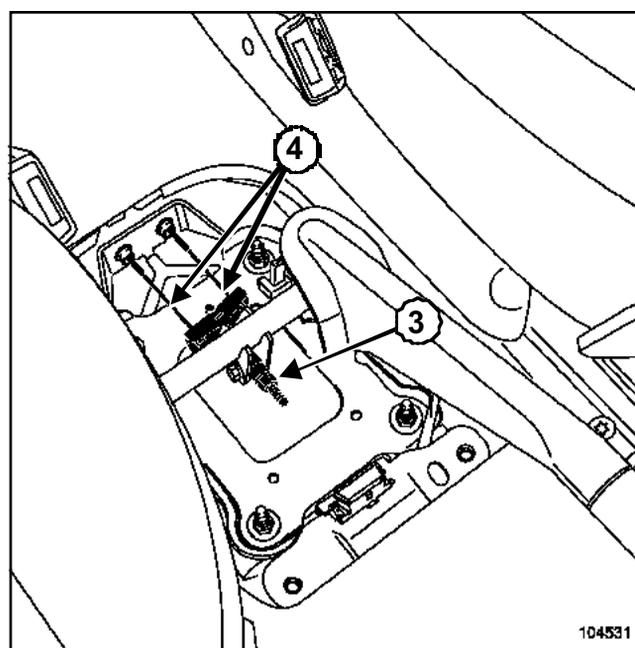


Remove the centre console carpet (1).



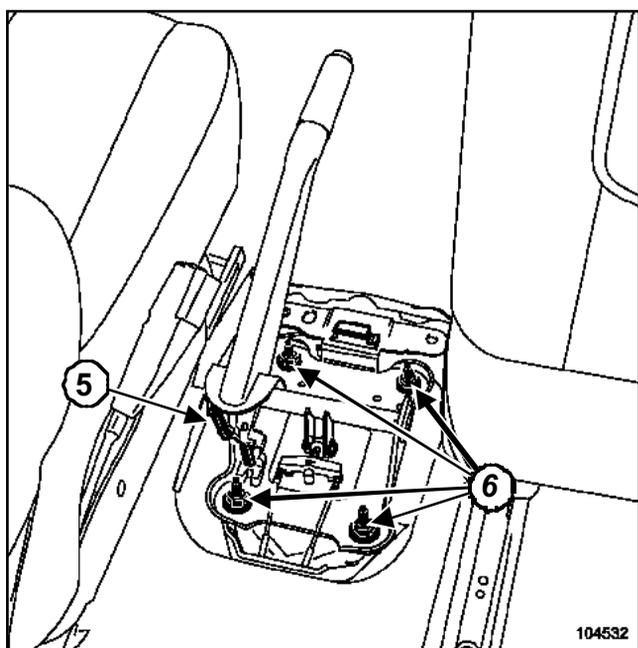
Remove:

- the centre console mountings (2),
- the centre console.



Unscrew the adjusting nut (3).

Remove the parking brake control cables (4).



104532

Disconnect the parking brake lever switch connector (5).

Remove:

- the parking brake lever mountings (6),
- the parking brake lever.

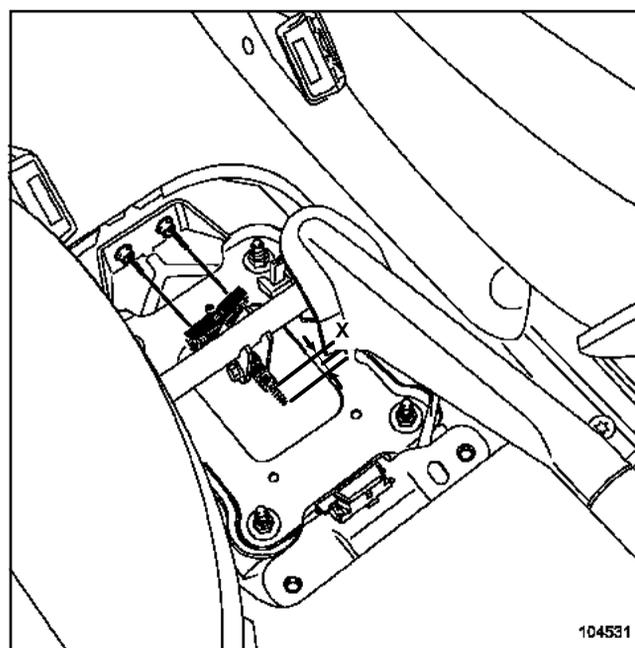
REFITTING

Refit:

- the parking brake lever,
- the parking brake lever mountings.

Tighten to torque the **parking brake lever mountings (0.8 daNm)**.

Reconnect the parking brake lever switch connector.



104531

104531

Tighten the adjusting nut so that dimension (X) equals **17 mm**.

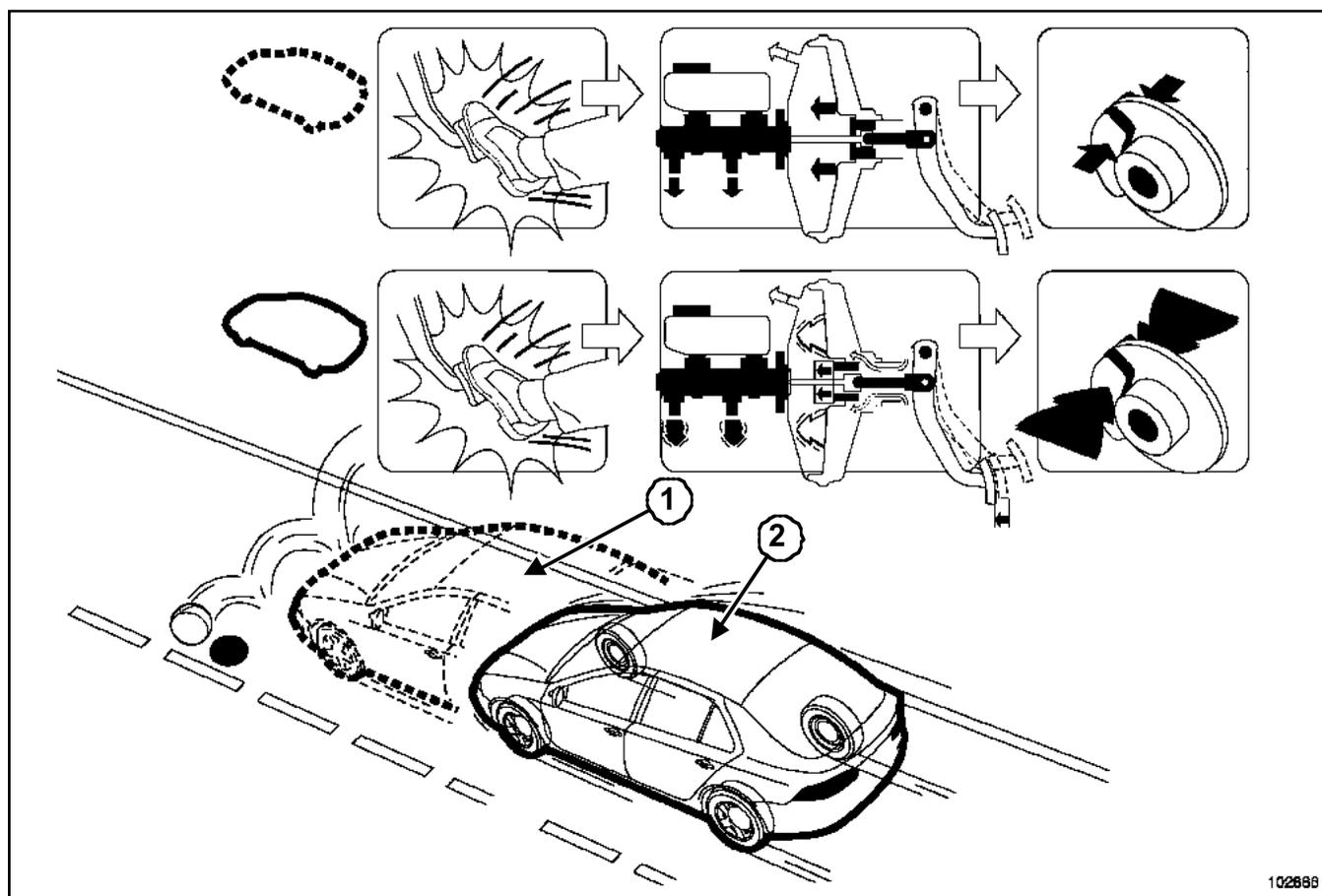
Tighten the adjusting nut so that the brake pads are rubbing lightly against the brake discs.

Check the parking brake lever stroke.

Refit:

- the centre console,
- the centre console mountings,
- the centre console carpet.

Tighten to torque the **centre console mountings (0.2 daNm)**.



102886

102886

- (1) Without emergency brake assist
- (2) With emergency brake assist

Emergency brake assist is a system which supplements ABS.

OPERATING PRINCIPLE

Emergency brake assist enables the system to recognise the situation and act immediately to provide the best possible stopping distance.

Emergency braking is calculated according to how quickly the brake pedal is fully depressed; in this situation, braking assistance instantaneously reaches maximum power.

The system works conditionally for current braking systems.

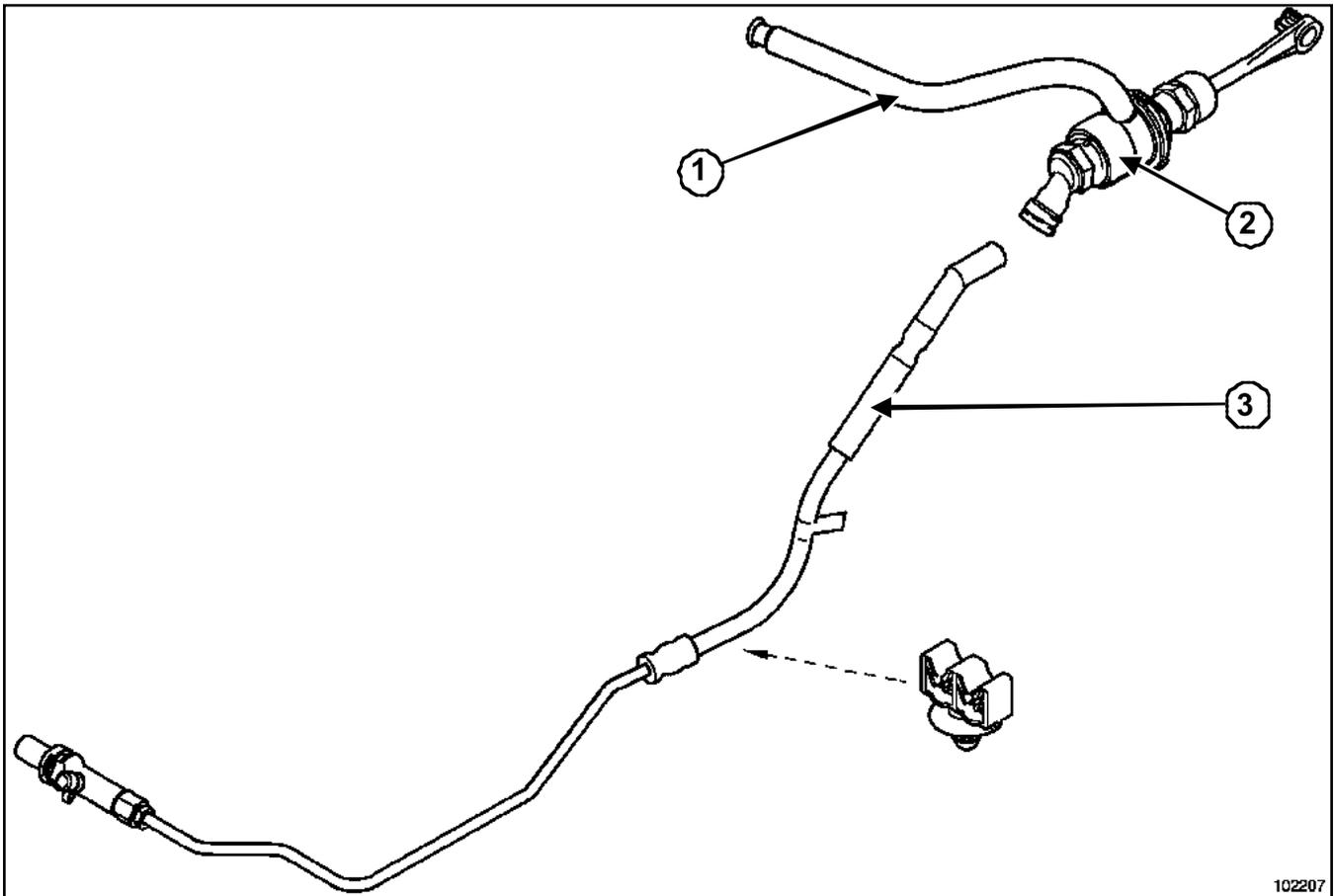
The emergency brake assist is a mechanical system built into the brake servo and completely independent of any electronic component.

The brake servo is fitted with a magnet which reacts by locking the control unit when the pedal is depressed sharply.

Clutch control: Description

RIGHT-HAND DRIVE or LEFTHAND DRIVE

LEFT-HAND DRIVE



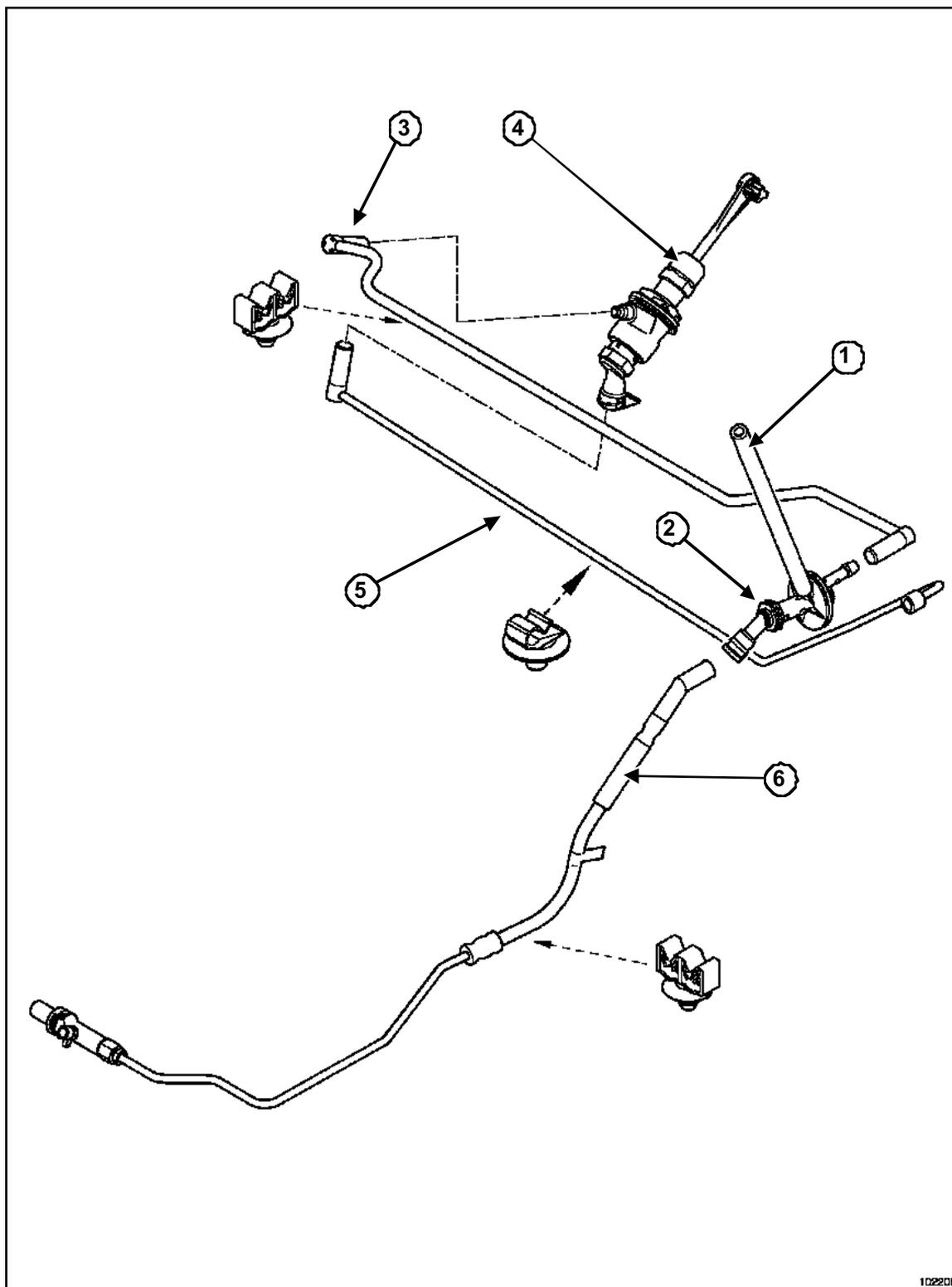
102207

102207

- (1) Master cylinder supply pipe (engine compartment)
- (2) Master cylinder (engine compartment / passenger compartment connection)
- (3) Slave cylinder supply pipe (engine compartment)

RIGHT-HAND DRIVE or LEFTHAND DRIVE

RIGHT-HAND DRIVE



102208
102208

Clutch control: Description

RIGHT-HAND DRIVE or LEFTHAND DRIVE

- | | |
|-----|--|
| (1) | Master cylinder supply pipe (engine compartment) |
| (2) | Master cylinder return (engine compartment connection / passenger compartment) |
| (3) | Master cylinder supply pipe (passenger compartment) |
| (4) | Master cylinder (passenger compartment) |
| (5) | Slave cylinder supply pipe (passenger compartment) |
| (6) | Slave cylinder supply pipe (engine compartment) |

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE

Special tooling required

Emb. 1596	24 mm socket for removing/fitting clutch master cylinder
------------------	--

Tightening torques

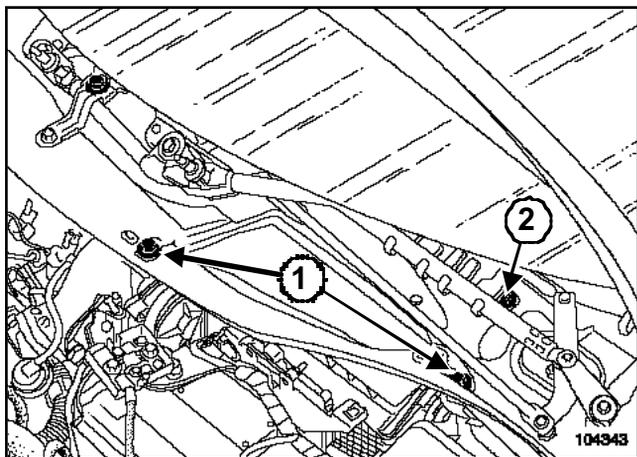
clutch pedal assembly plate nuts	2.1 daNm
----------------------------------	-----------------

REMOVAL

Disconnect the battery, starting with the negative terminal.

Remove:

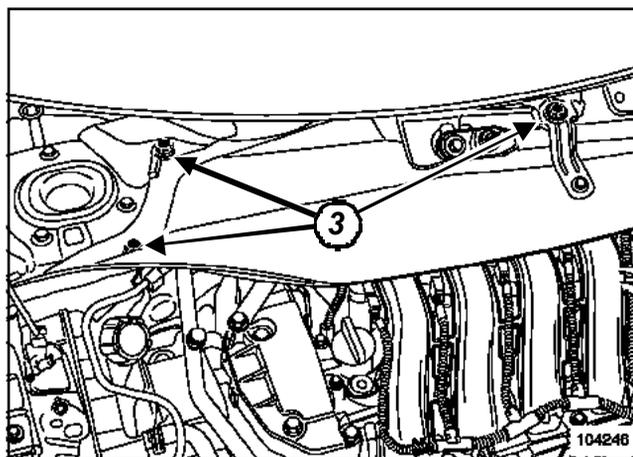
- the engine covers,
- the cowl grille (**Wiping - Washing**Section).



104343

Remove:

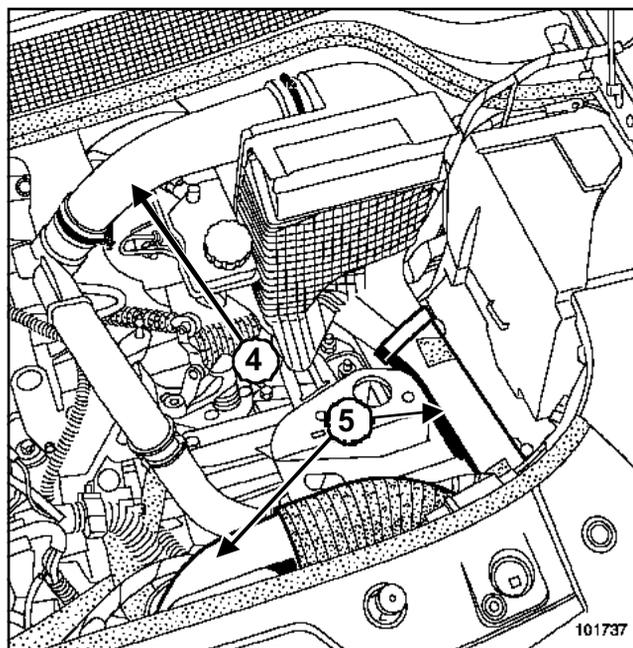
- the two air filter access panel mounting bolts (1),
- the air filter access panel,
- the plenum chamber partition mounting bolt (2).



104246

Remove:

- the plenum chamber partition mounting bolts (3),
- the plenum chamber partition,
- the battery,
- the battery tray,
- the computer and its support.



101737

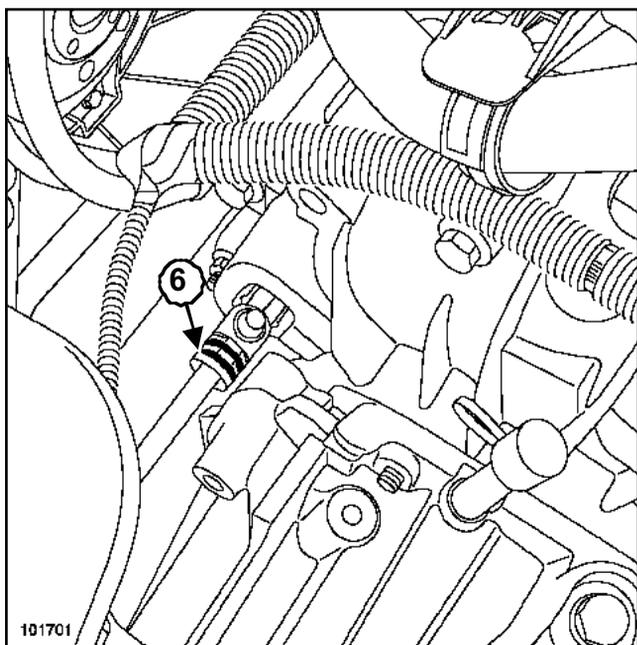
Remove:

- the air filter outlet duct (4),
- the air inlet sleeves (5),
- the air filter box.

Drain the brake fluid reservoir until the level is below the master cylinder supply aperture.

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE

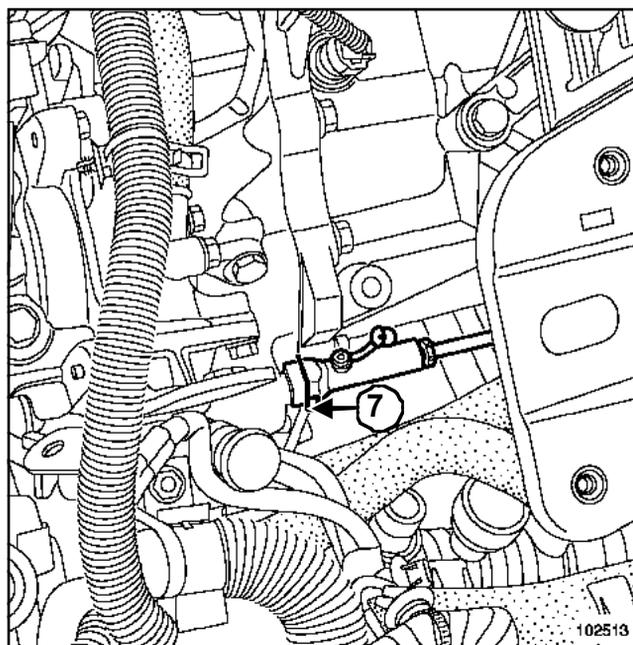
JH3 or JR5



Lift up the clip (6).

Pull out the clutch control pipe one notch.

ND0



Press the clip (7) with your hand while pulling out the pipe.

WARNING

Do not pull the clip. If it is incorrectly handled in any way, the pipe will need to be replaced.

Pull out the clutch control pipe one notch.

Place a cloth under the bleed aperture.

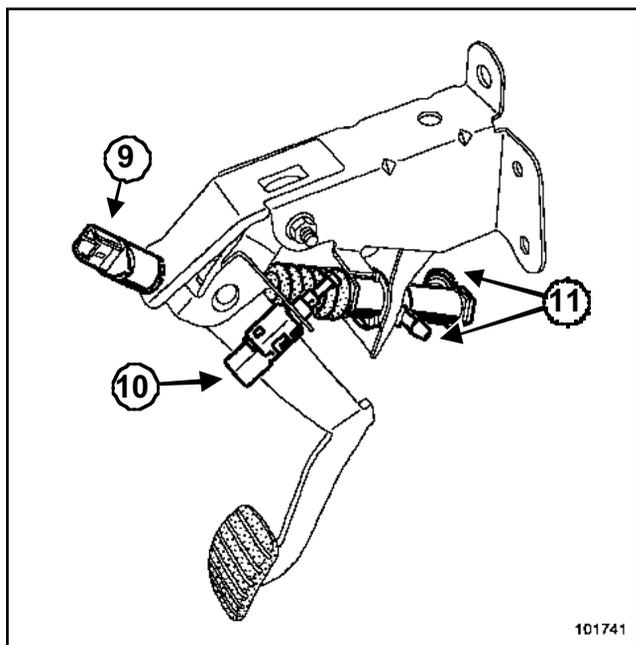
Depress the pedal using your hand (to drain the master cylinder and the pipe).

Note:

The clutch master cylinder is mounted on the clutch pedal assembly. Remove the «pedal assembly - master cylinder» assembly to extract the pedal assembly and master cylinder.

Drain the brake fluid reservoir until the level is below the master cylinder supply aperture using a syringe.

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE



101741

101741

Remove the grey start of travel switch (9) by turning it a quarter a turn.

Disconnect the switch connector (9).

Remove the green end of travel switch (10) by turning it a quarter turn.

Disconnect the switch connector (10).

Place a cloth under the master cylinder.

Remove the union clips on the master cylinder (11).

Disconnect the pipes.

Cap the apertures.

Remove the clutch master cylinder ball joint from the pedal.

Remove the four nuts from the « pedal assembly ».

Extract the « pedal assembly - master cylinder » assembly.

Remove the master cylinder from the bulkhead by turning it a quarter turn clockwise (bayonet type mounting) using tool (Emb. 1596).

REFITTING

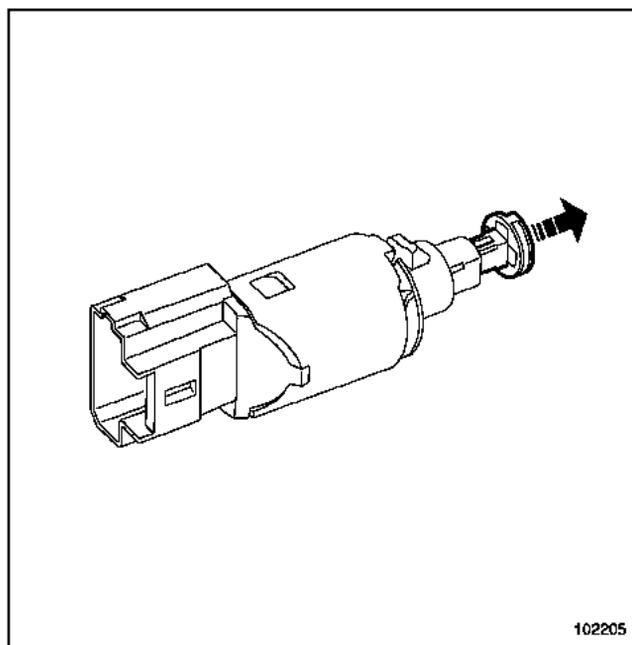
Visually check the condition of the seals.

Proceed in the reverse order to removal.

Torque tighten the **clutch pedal assembly plate nuts (2.1 daNm)**.

Be sure to pull the end of the sensor to bring it to the maximum position.

The pedal position sensor has an automatic adjustment function which adapts to the position of the pedal.



102205

102205

Position the switches in their housing and turn one quarter turn clockwise.

Reconnect the two clutch pedal switches.

Bleed the clutch control (Section Mechanical component controls, Clutch circuit: Bleeding, page 37A-57).

Check that the clutch system is operating correctly.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

JH3 or JR5 or ND0, and LEFT-HAND DRIVE

Special tooling required

Emb. 1596

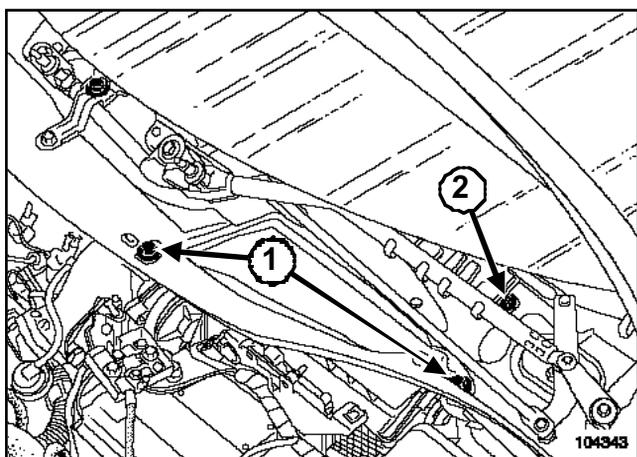
24 mm socket for removing/fitting clutch master cylinder

REMOVAL

Disconnect the battery, starting with the negative terminal.

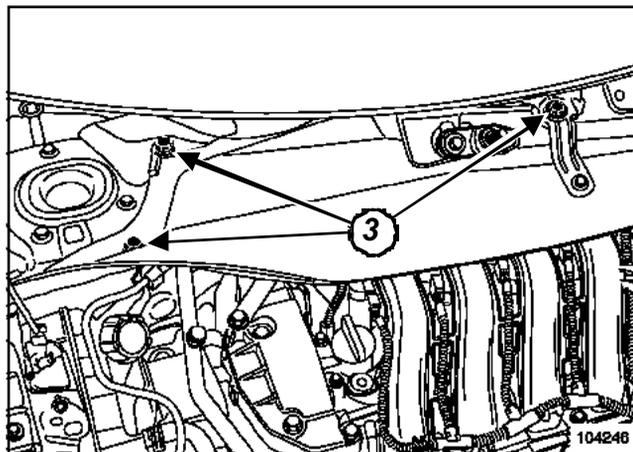
Remove:

- the engine covers,
- the cowl grille (**Wiping - Washing**Section).



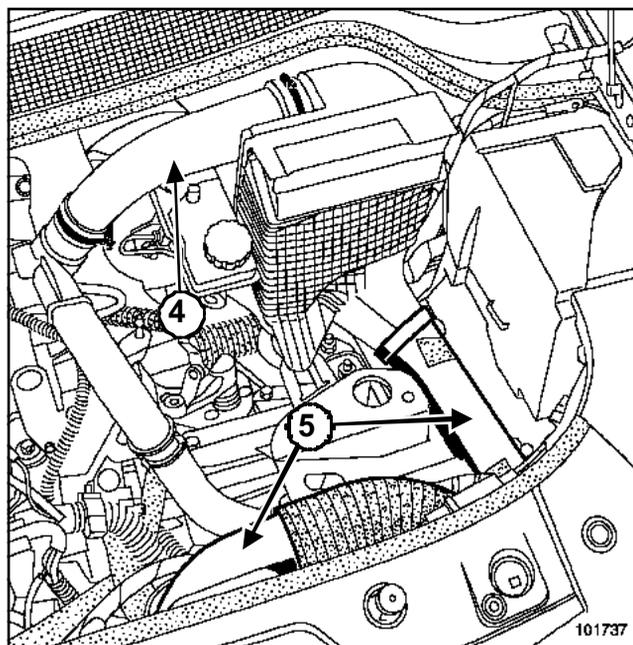
Remove:

- the two air filter access panel mounting bolts (1),
- the air filter access panel,
- the plenum chamber partition mounting bolt (2).



Remove:

- the plenum chamber partition mounting bolts (3),
- the plenum chamber partition,
- the battery,
- the battery tray,
- the computer and its support.



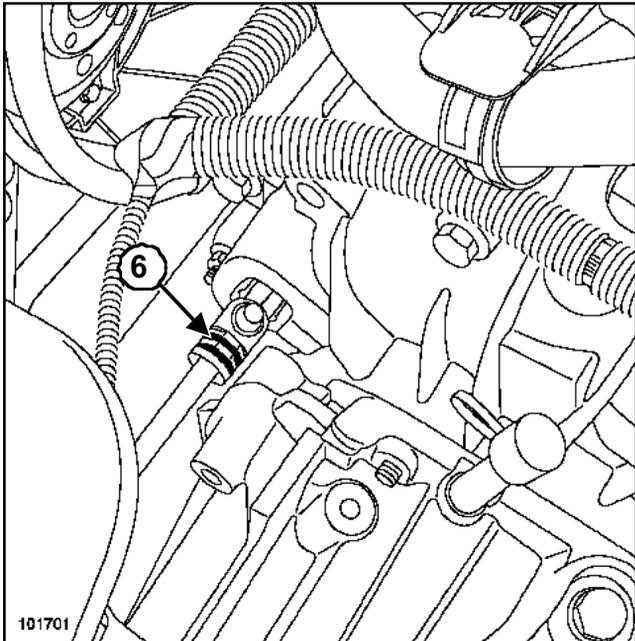
Remove:

- the air filter outlet duct (4),
- the air inlet sleeves (5),
- the air filter box.

Drain the brake fluid reservoir until the level is below the master cylinder supply aperture.

JH3 or JR5 or ND0, and LEFT-HAND DRIVE

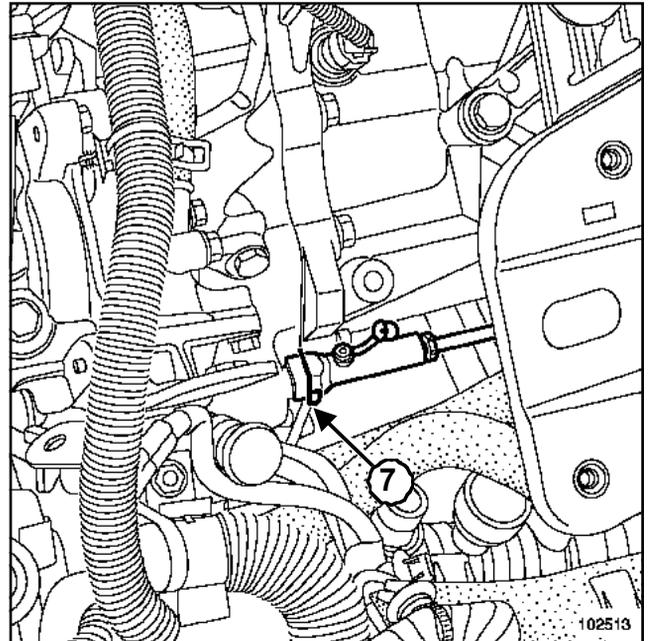
JH3 or JR5



Lift up the clip (6).

Pull out the clutch control pipe one notch.

ND0



Press the clip (7) with your hand while pulling out the pipe.

WARNING

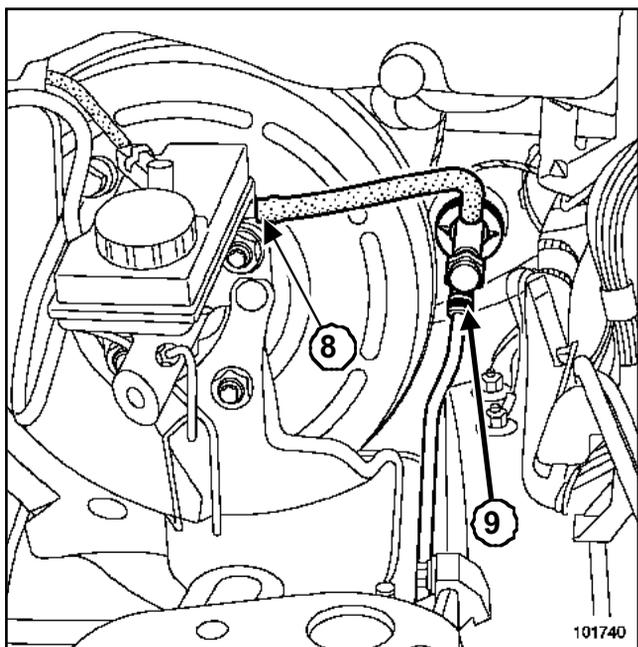
Do not pull the clip. If it is incorrectly handled in any way, the pipe will need to be replaced.

Pull out the clutch control pipe one notch.

Place a cloth under the bleed aperture.

Depress the pedal using your hand (to drain the master cylinder and the pipe).

JH3 or JR5 or ND0, and LEFT-HAND DRIVE



101740
101740

Place a cloth under the aperture (8)

Disconnect the brake fluid reservoir pipe.

Cap the apertures.

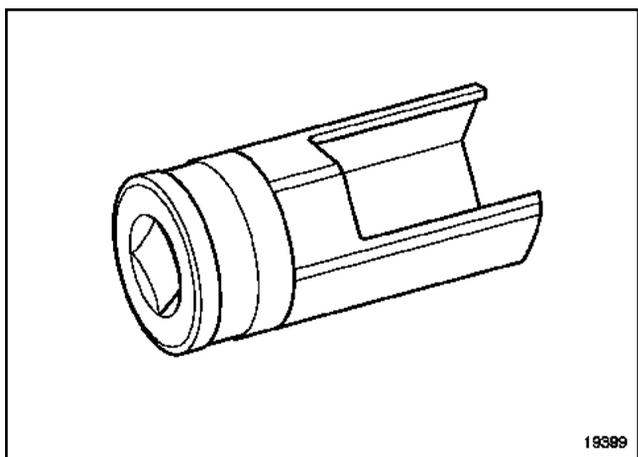
Place a cloth under the master cylinder.

Remove the union clip on the master cylinder (9).

Disconnect the pipe.

Cap the apertures.

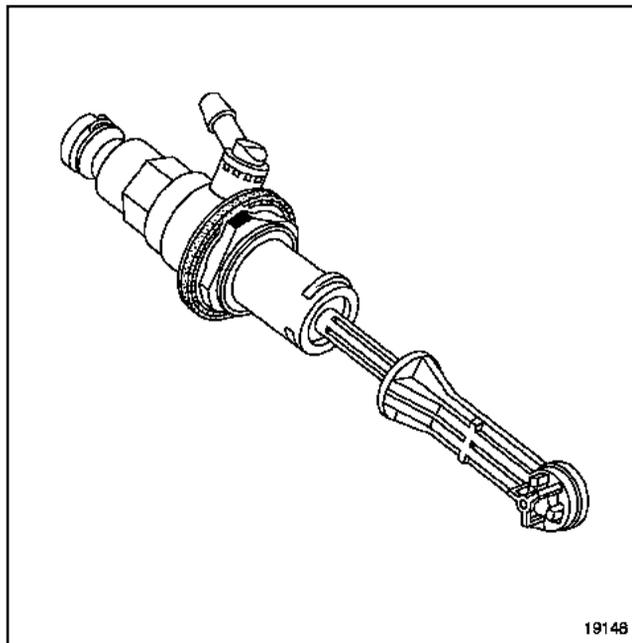
Disconnect the master cylinder ball joint from the clutch pedal in the passenger compartment.



13399
19399

Remove the master cylinder from the bulkhead in the engine compartment by turning it a quarter turn clockwise (bayonet type mounting) using tool (**Emb. 1596**).

REFITTING



19148
19148

Check the condition of the seals.

Proceed in the reverse order to removal.

Note:

- Lubricate both ends of the supply pipe with brake fluid to facilitate fitting on the brake fluid reservoir take-off point.
- The master cylinder is foolproofed, there is only one possible position.

WARNING

Do not use the take-off points as a support when fitting.

JH3 or JR5 or ND0, and LEFT-HAND DRIVE

Connect the master cylinder ball joint to the clutch pedal.

Be sure to pull the end of the sensor to bring it to the minimum position.

The pedal position sensor has an automatic adjustment function which adapts to the position of the pedal.

Proceed in the reverse order to removal.

Bleed the clutch control (Section Mechanical component controls, Clutch circuit: Bleeding, page **37A-57**).

Check that the clutch system is operating correctly.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

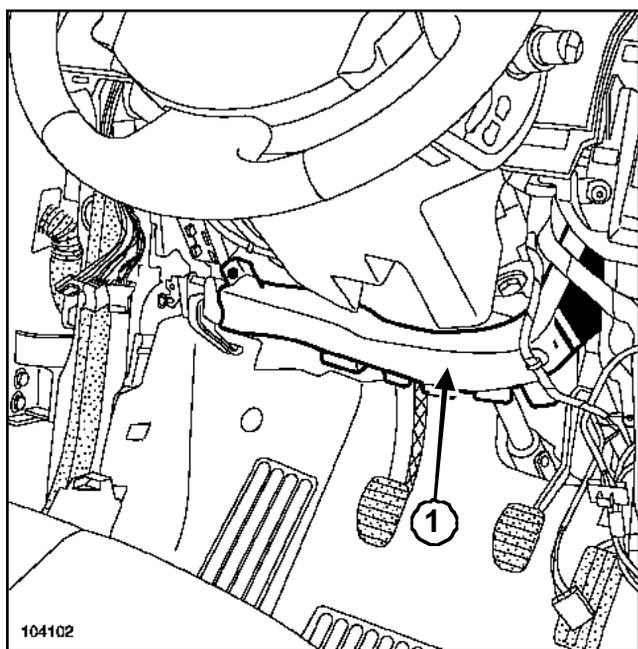
LEFT-HAND DRIVE

Tightening torques

clutch pedal plate to torque	2.1 daNm
------------------------------	----------

REMOVAL

Disconnect the battery starting with the negative terminal.

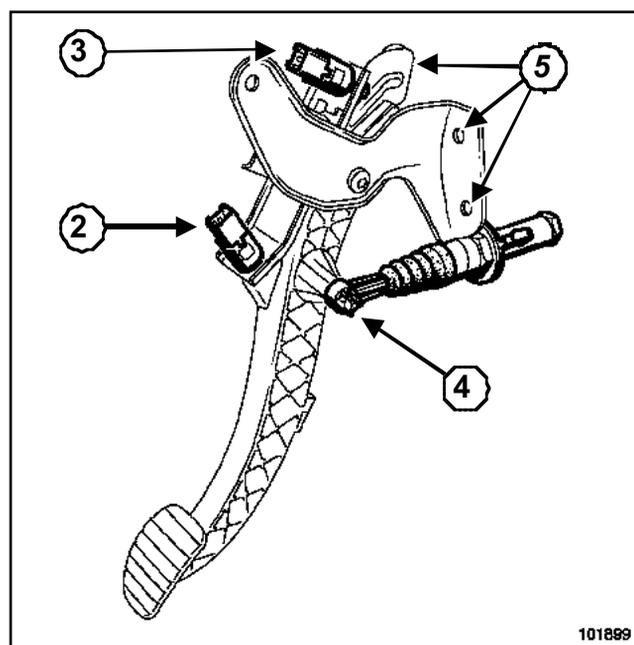


104102

104102

Remove:

- the lower left-hand cover (see Section **Mechanisms and accessories**),
- the air duct (1).



101899

101899

Remove the grey start of travel connector (2) by turning it a quarter of a turn.

Disconnect the connector from the switch (2).

Remove the green end of travel switch (3) by turning it a quarter of a turn.

Disconnect the connector from the switch (3).

Remove the clutch master cylinder ball joint from the pedal (4).

Disconnect the clutch pedal position sensor connector.

Remove the clutch pedal position sensor.

Remove the three clutch pedal nuts (5).

Remove the clutch pedal assembly.

REFITTING

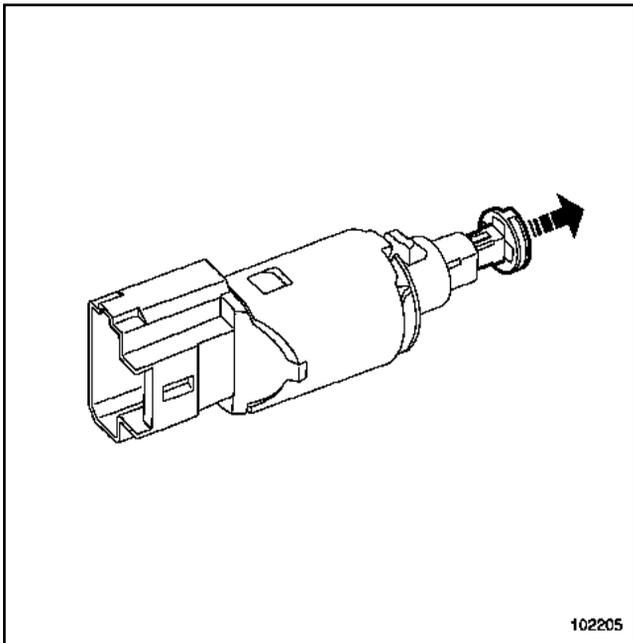
To refit, proceed in the reverse order of removal.

Tighten the **clutch pedal plate to torque (2.1 daNm)**.

It is essential that the sensors are pulled to the end stop to position them at the minimum.

The clutch pedal position sensors have an automatic adjustment function which adjusts in accordance with the position of the pedal.

LEFT-HAND DRIVE



102205

Position the switches in their housing.

Turn them one quarter of a turn clockwise.

Reconnect the two clutch pedal switches.

WARNING

Connect the battery; carry out the necessary programming (see Section **Electrical equipment**).

RIGHT-HAND DRIVE

Tightening torques 

clutch pedal plate to torque	2.1 daNm
------------------------------	----------

REMOVAL

Disconnect the battery starting with the negative terminal.

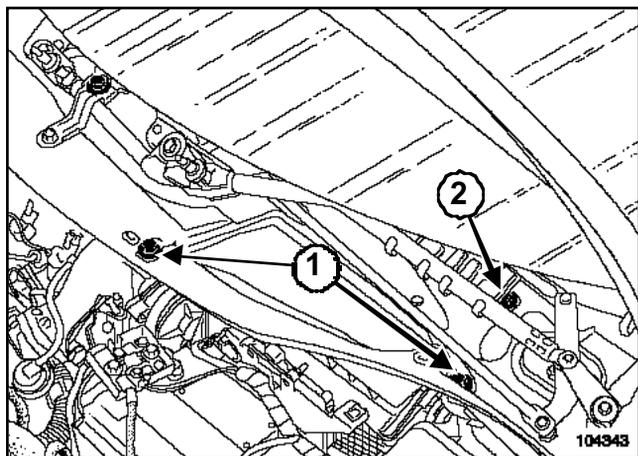
Note:

The clutch master cylinder is secured to the clutch pedal assembly. Remove the «pedal assembly /master cylinder» unit to remove the pedals or the master cylinder.

Drain the brake fluid reservoir until the level is below the master supply port.

Remove:

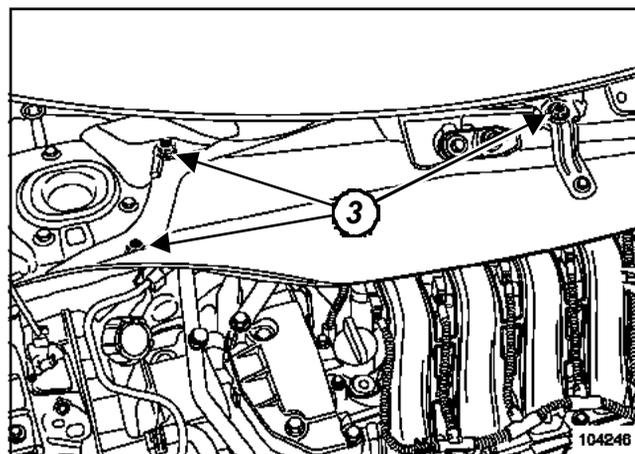
- the engine covers,
- the scuttle panel grille (**Wiping - Washing**Section),



104343

Remove:

- both air filter access flap mounting bolts (1),
- the air filter access flap,
- the radiator tank partition mounting bolt (2).



104246

Remove:

- the radiator tank partition mounting bolts (3),
- the radiator tank partition panel.

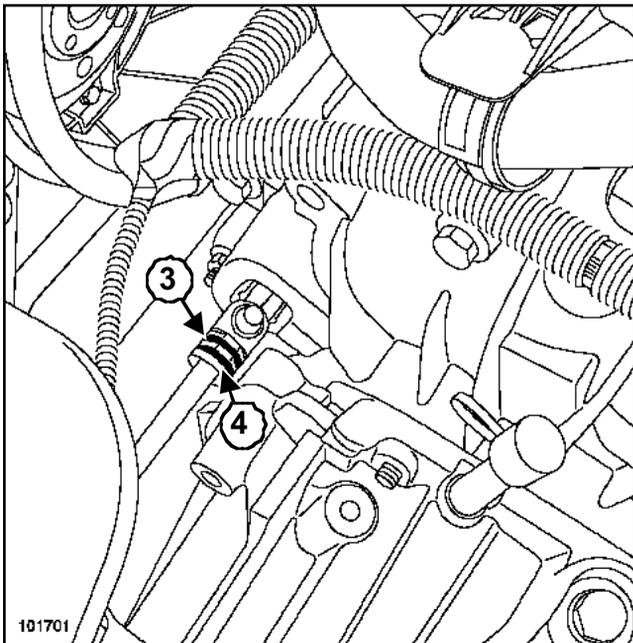
Remove:

- the battery,
- the battery tray,
- the computer with its mounting,
- the air filter outlet duct.

Drain the brake fluid reservoir until the level is below the master supply port.

RIGHT-HAND DRIVE

JH3 or JR5



Remove clip (3).

Pull out the master cylinder control pipe by one position.

Place a cloth under the bleed port.

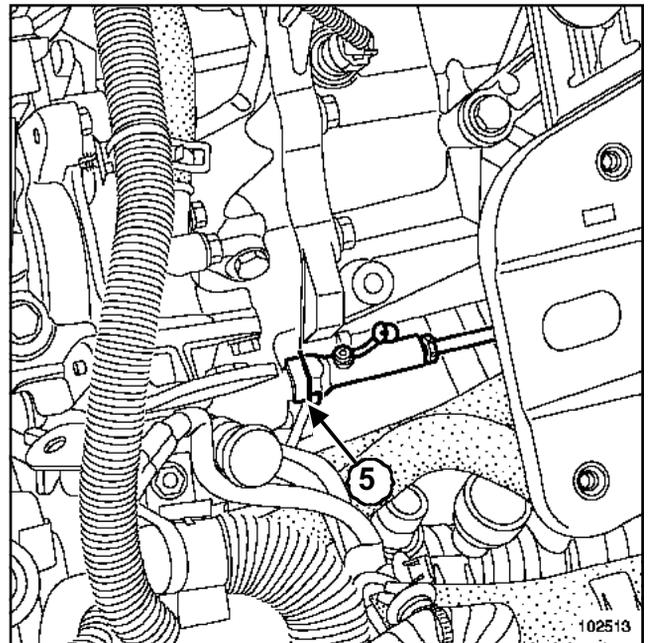
Depress the pedal using your hand (to drain the master cylinder and the pipe).

Remove clip (4).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the ports.

ND0



Press clip (5) with your hand while pulling the pipe.

WARNING

DO NOT PULL THE CLIP. Any error in handling will require the pipe to be replaced.

Pull out the pipes on the clutch control by one position.

Place a cloth under the bleed port.

Operate the pedal by hand to empty the master cylinder and the pipes.

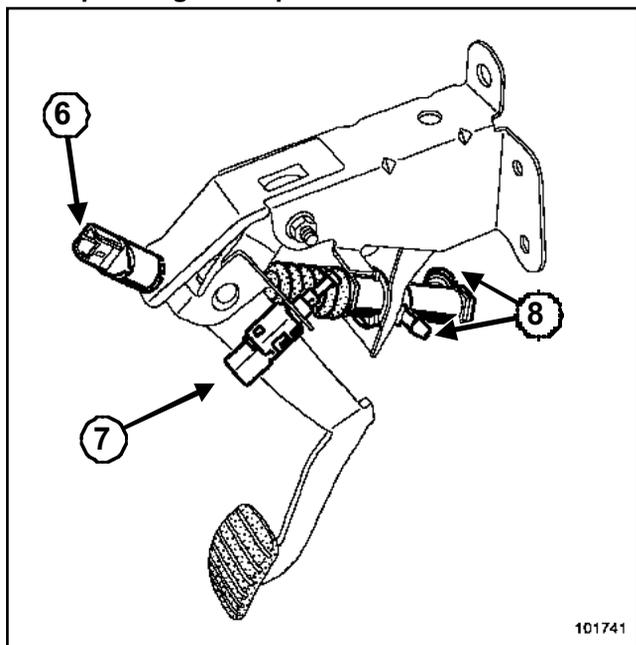
Remove clip (5).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the ports.

RIGHT-HAND DRIVE

In the passenger compartment



101741

101741

Remove the grey start of travel connector (6) by turning it a quarter of a turn.

Disconnect the connector from the switch (6).

Remove the green end of travel switch (7) by turning it a quarter of a turn.

Disconnect the connector from the switch (7).

Place a cloth under the master cylinder.

Remove the union clips on the master cylinder (8).

Disconnect the pipes.

Fit the plugs into the ports.

Remove the clutch master cylinder ball joint from the pedal.

Disconnect the clutch pedal position sensor connector.

Remove the clutch pedal position sensor.

Remove the four clutch plate nuts.

Remove the « pedal assembly/master cylinder » unit.

Remove the master cylinder from the pedal assembly by turning it clockwise a quarter of a turn (bayonet type mounting).

REFITTING

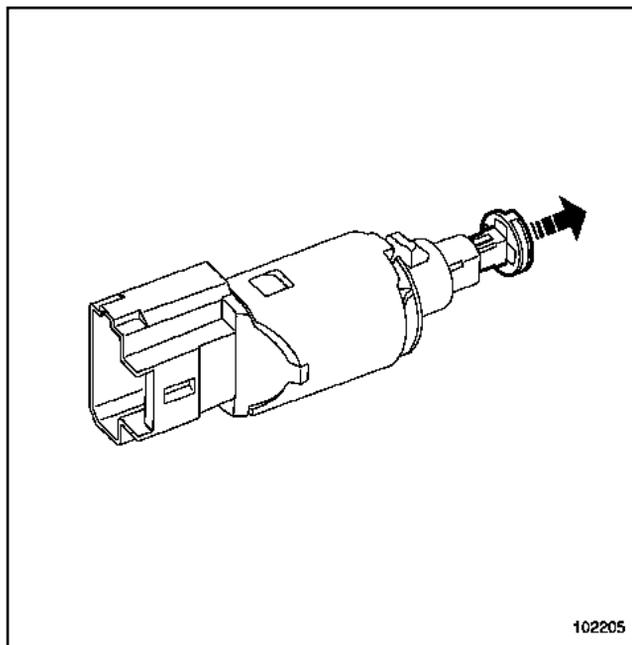
Check the condition of the seals.

To refit, proceed in the reverse order of removal.

tighten the **clutch pedal plate to torque (2.1 daNm)**.

It is essential that the sensors are pulled to the end stop to position them at the minimum.

The clutch pedal position sensors have an automatic adjustment function which adjusts in accordance with the position of the pedal.



102205

102205

Position the switches in their housing.

Turn them one quarter turn clockwise.

Reconnect the two clutch pedal switches.

Drain the clutch control (Section Mechanical component controls, Clutch circuit: Bleeding, page 37A-57).

WARNING

Connect the battery; carry out the necessary programming (see Section **Electrical equipment**).

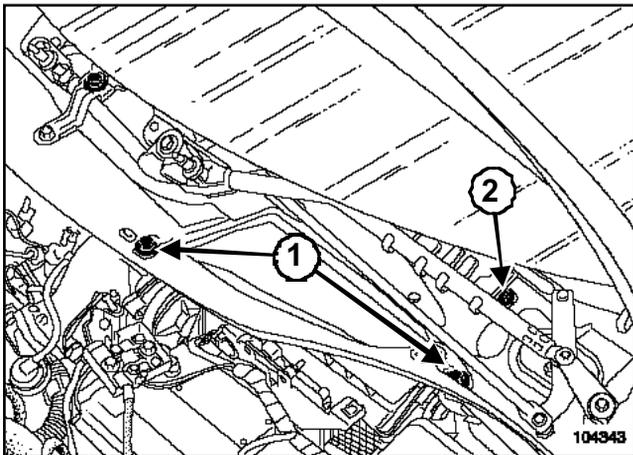
JH3 or JR5 or ND0, and LEFT-HAND DRIVE

REMOVAL

Put the vehicle on a two-post lift.

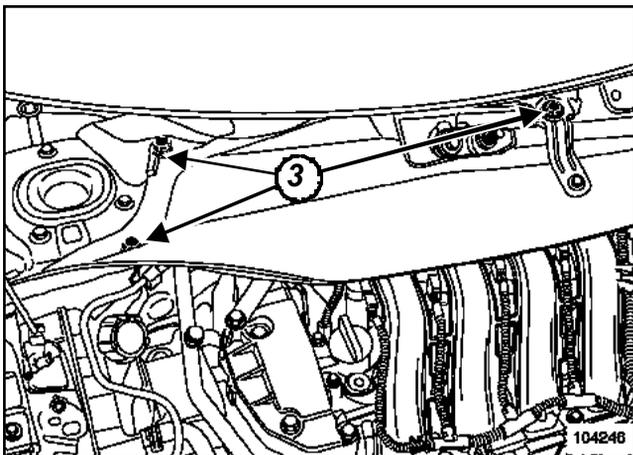
Disconnect the battery starting with the negative terminal.

Remove the engine covers and the scuttle grille (**Wiping - Washing**Section).



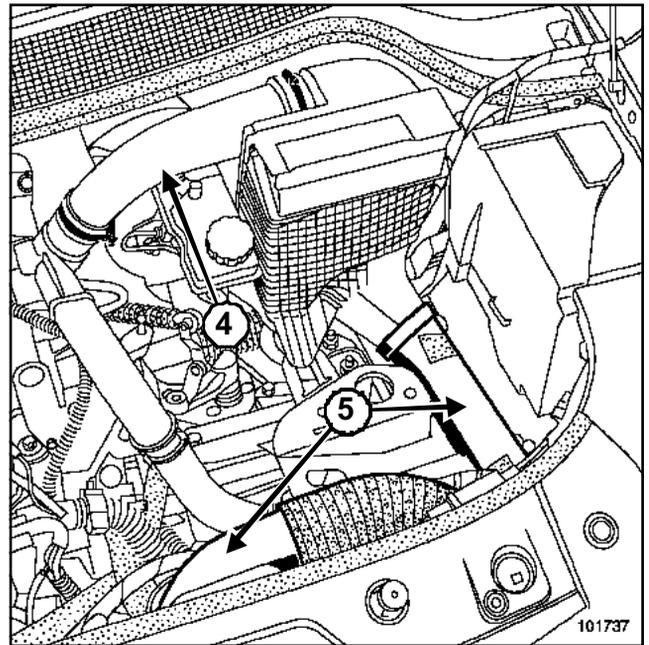
Remove:

- both air filter access flap mounting bolts (1),
- the air filter access panel,
- the radiator tank partition mounting bolt (2).



Remove:

- the radiator tank partition mounting bolts (3),
- the radiator tank partition panel.
- the battery,
- the battery tray,
- the computer and its mounting.



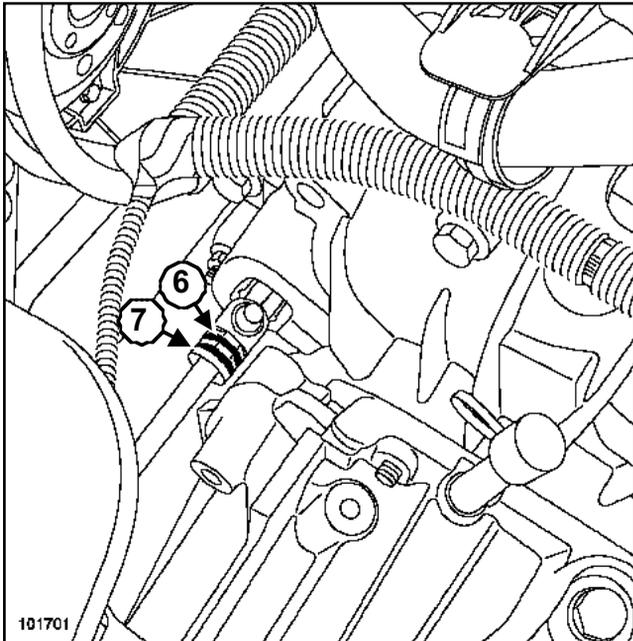
Remove:

- the air filter outlet filter (4),
- the inlet ducts (5),
- the air filter unit.

Drain the brake fluid reservoir until the level is below the master supply port.

JH3 or JR5 or ND0, and LEFT-HAND DRIVE

JH3 or JR5



Remove the clip (6).

Pull out the master cylinder control pipe by one position.

Place a cloth under the bleed port.

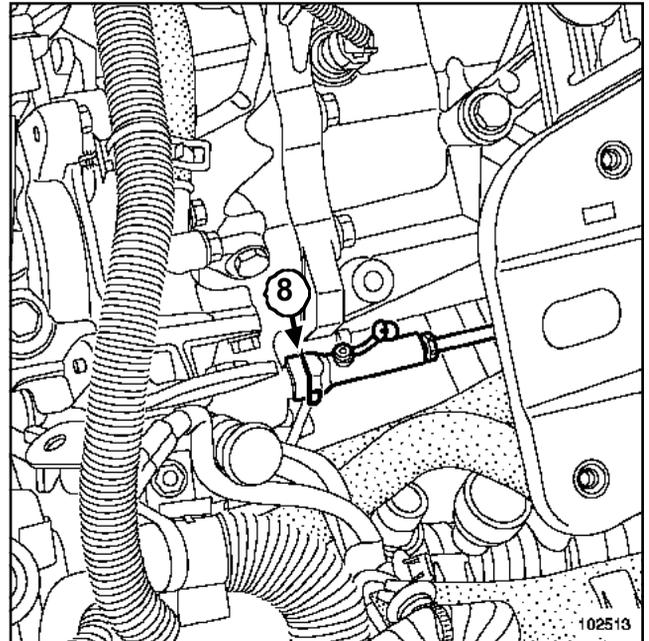
Depress the pedal using your hand (to drain the master cylinder and the pipe).

Remove the clip (7).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

ND0



Press clip (8) with your hand while pulling the pipe.

WARNING

Do not pull the clip. If there are any handling errors the pipe it will need to be replaced.

Pull out the master cylinder control pipe by one position.

Place a cloth under the bleed port.

Depress the pedal using your hand (to drain the master cylinder and the pipe).

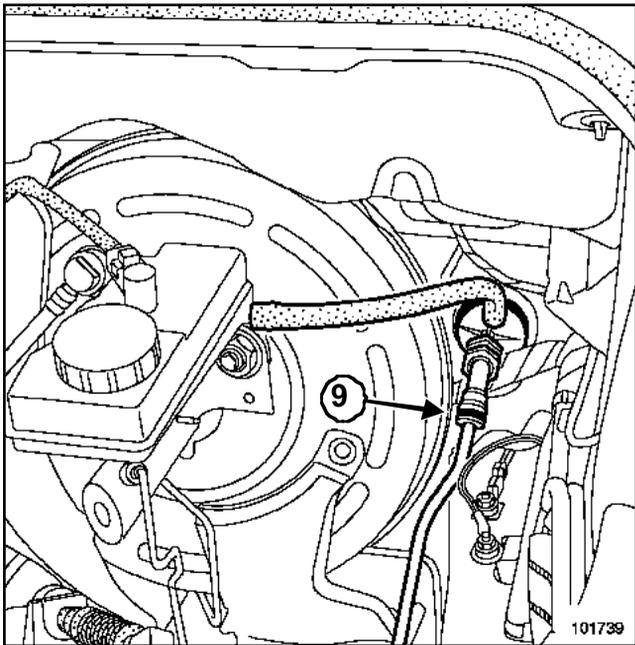
Remove the clip (8).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

Clutch control pipes

JH3 or JR5 or ND0, and LEFT-HAND DRIVE



101739

Place a cloth under the master cylinder.

Remove the clip (9) from the union on the master cylinder return.

Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

Remove the slave cylinder supply pipe.

REFITTING

Check the condition of the seals.

To refit, proceed in the reverse order of removal.

Bleed the clutch control (Section Mechanical component controls, Clutch circuit: Bleeding, page 37A-57).

Check that the clutch system is operating correctly.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Clutch control pipes

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE

Special tooling required

Emb. 1596

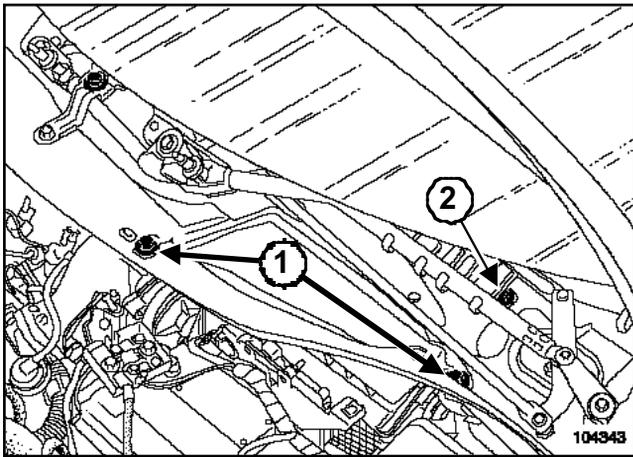
24 mm socket for removing/fitting clutch master cylinder

REMOVAL

Put the vehicle on a two-post lift.

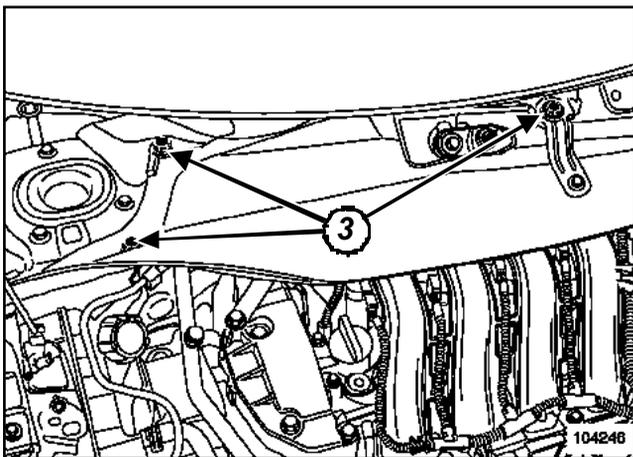
Disconnect the battery starting with the negative terminal.

Remove the engine covers and the scuttle grille (**Wiping - Washing**Section).



Remove:

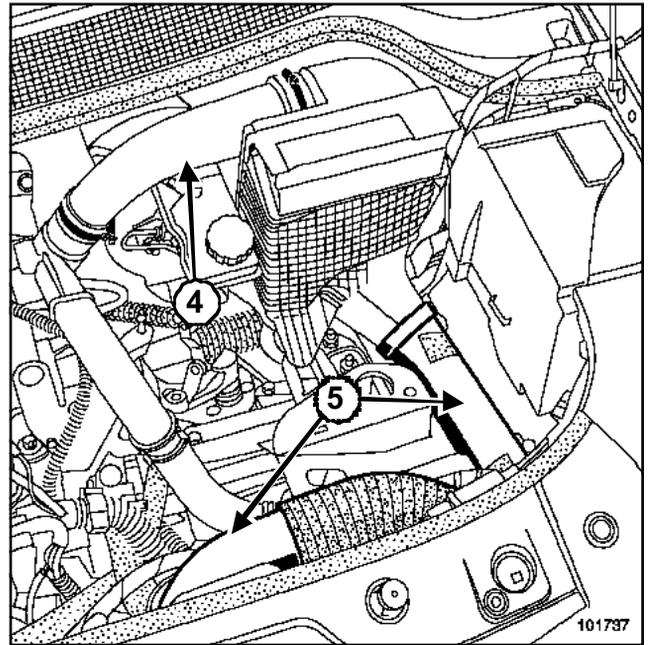
- both air filter access flap mounting bolts (1),
- the air filter access panel,
- the radiator tank partition mounting bolt (2).



Remove:

- the radiator tank partition mounting bolts (3),

- the radiator tank partition panel.
- the battery,
- the battery tray,
- the computer and its mounting.



101737

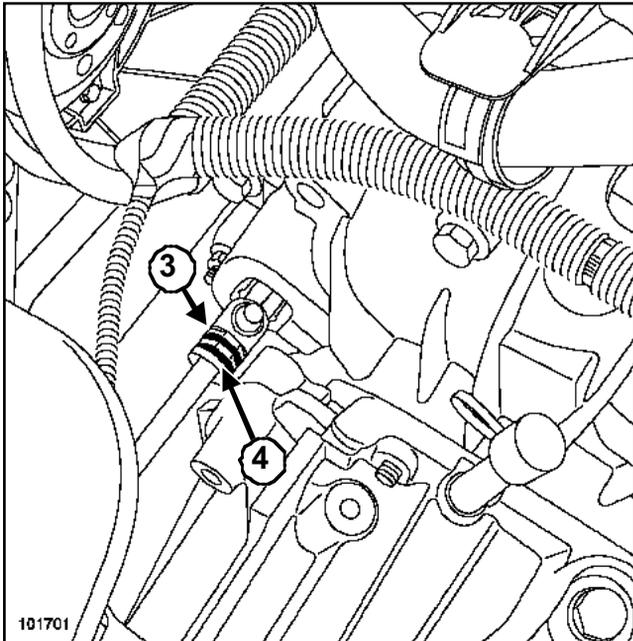
Remove:

- the air filter outlet filter (4),
- the inlet ducts (5),
- the air filter unit.

Drain the brake fluid reservoir until the level is below the master supply port.

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE

JH3 or JR5



Remove the clip (3).

Pull out the master cylinder control pipe by one position.

Place a cloth under the bleed port.

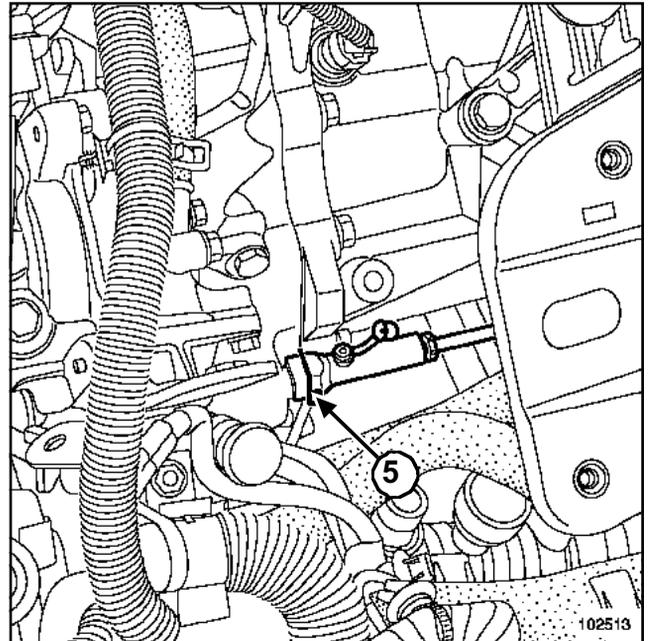
Depress the pedal using your hand (to drain the master cylinder and the pipe).

Remove the clip (4).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

ND0



Press clip (5) with your hand while pulling the pipe.

WARNING

Do not pull the clip. Any error in handling will require the pipe to be replaced.

Pull out the master cylinder control pipe by one position.

Place a cloth under the bleed port.

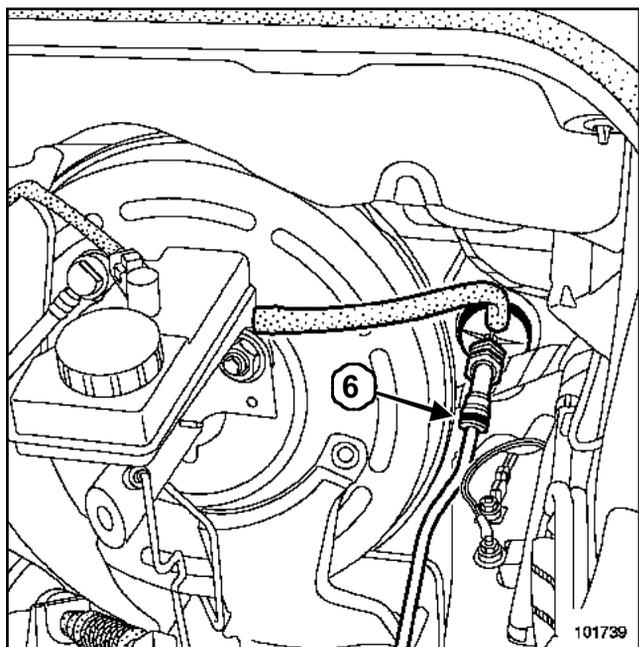
Depress the pedal using your hand (to drain the master cylinder and the pipe).

Remove the clip (5).

Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE



101739

Place a cloth under the master cylinder.

Remove the clip (6) from the union on the master cylinder return.

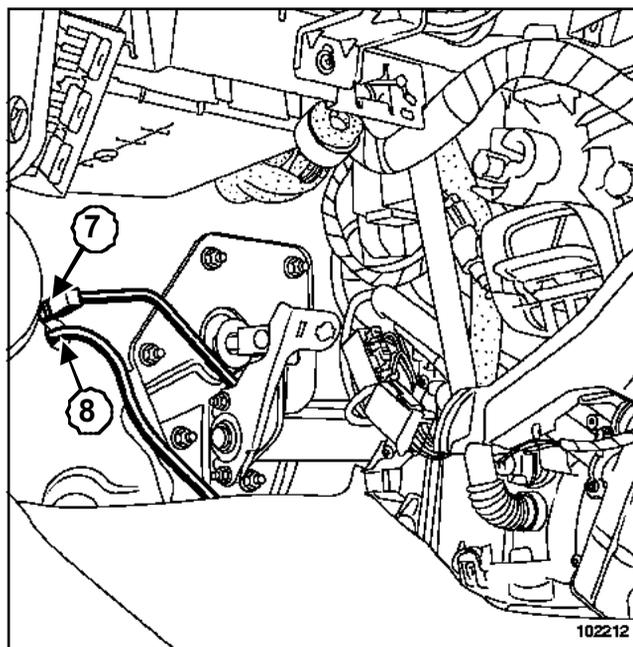
Disconnect the pipes from the slave cylinder.

Fit the plugs into the openings.

Withdraw the slave cylinder supply pipe.

Remove:

- the left-hand glove box (see **Interior accessories-**Section),
- the left-hand air duct.



102212

Place a cloth under the pipe unions.

Remove the clip (7) from the master cylinder union on the master cylinder return.

Disconnect the pipe.

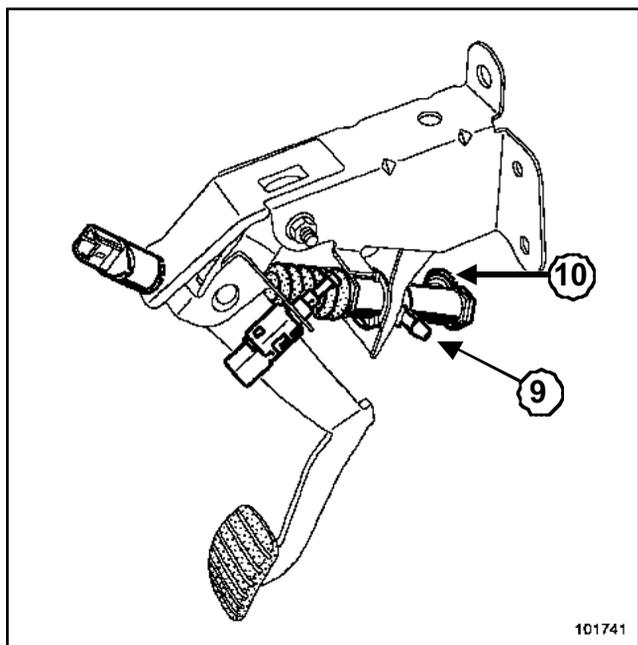
Fit the plugs into the openings.

Remove the clip (8) from the slave cylinder union on the master cylinder return.

Disconnect the pipe.

Fit the plugs into the openings.

JH3 or JR5 or ND0, and RIGHT-HAND DRIVE



Place a cloth under the master cylinder.

Remove the clip (9) from the master cylinder union on the master cylinder return

Disconnect the pipe.

Fit the plugs into the openings.

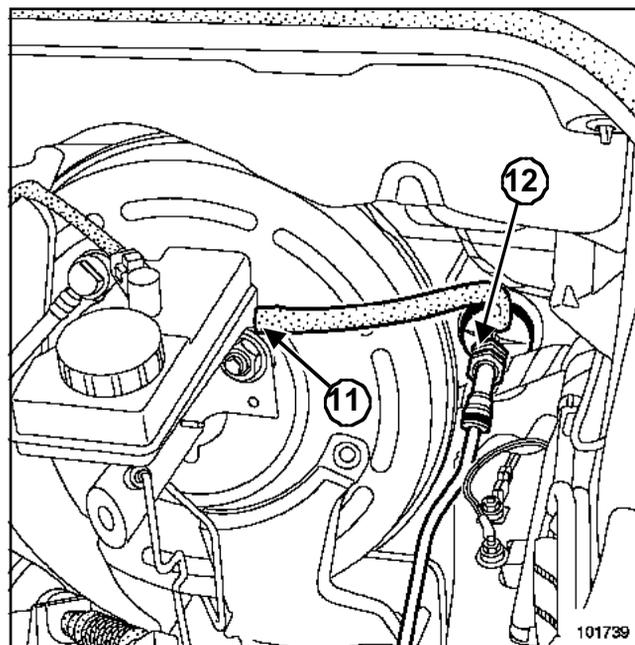
Withdraw the master cylinder supply pipe from the left-hand side.

Remove the clip (10) from the slave cylinder union on the master cylinder return.

Disconnect the pipe.

Fit the plugs into the openings.

Remove the slave cylinder supply pipe from the left-hand side.



Place a cloth under the hole (11)

Remove the brake fluid reservoir pipe.

Fit the plugs into the openings.

Remove the master cylinder return (12) from the bulkhead by turning it clockwise a quarter of a turn (bayonet type mounting) using tool (Emb. 1596).

REFITTING

Check the condition of the seals.

To refit, proceed in the reverse order of removal.

Bleed the clutch control (Section Mechanical component controls, Clutch circuit: Bleeding, page 37A-57).

Check that the clutch system is operating correctly.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Clutch circuit: Bleeding

Special tooling required

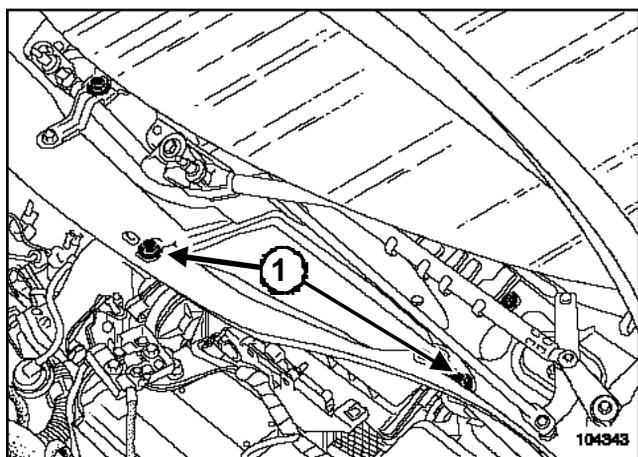
Ms. 554-07	Cooling circuit and expansion bottle valve tester
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PROCEDURE

Disconnect the battery, starting with the negative terminal.

Remove:

- the engine covers,
- the scuttle panel grille (see **MR 371 Bodywork, 55A, Exterior protection, Scuttle panel grille**).



Remove:

- air filter access panel mounting bolts (1),
- the air filter access flap.

Note:

Even the tiniest air bubble in the circuit can cause faulty operation (pedal failing to return properly, crunching sound when changing gear, etc.).

Improper bleeding can result in faulty diagnostics and unnecessary part replacements.

During every operation on the hydraulic clutch system, it is essential to bleed:

- between the reservoir and the bleed hole,
- between the bleed hole and the hydraulic stop.

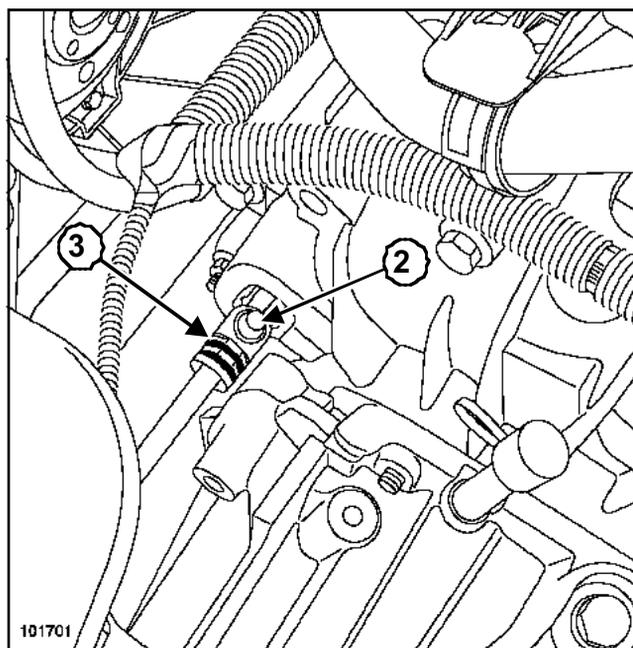
I - BLEEDING FROM THE RESERVOIR TO THE BLEED HOLE

Keep the clutch pedal in the upper position.

Fill the hydraulic circuit reservoir with the approved fluid.

Connect tool (**Ms. 554-07**) to the hydraulic circuit reservoir.

JH3 or JR5



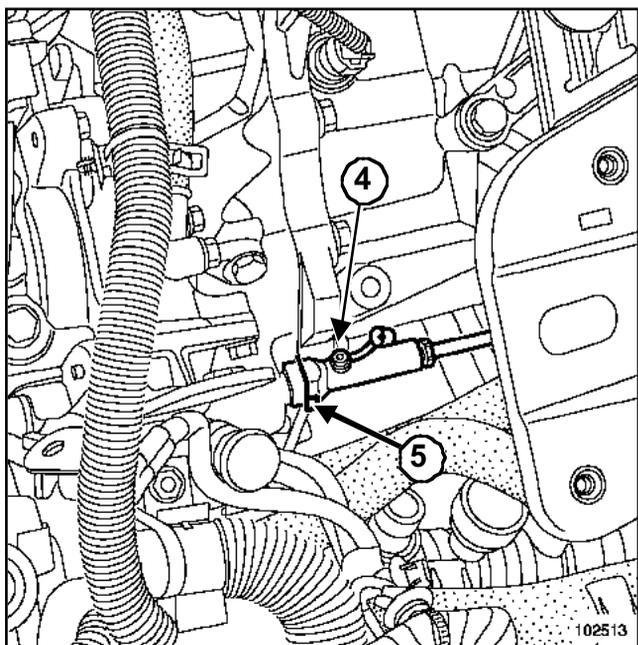
Remove the bleed plug.

Connect a transparent hose to the bleed hole (2) running to an empty container placed above the bleed hole

Remove the clip (3).

Pull out the master cylinder control pipe by one position.

NDO



102513

Remove the bleed plug.

Connect a transparent hose to the bleed hole (4) running to an empty container placed above the bleed hole.

Press the clip (5).

WARNING

DO NOT PULL THE CLIP. If it is incorrectly handled in any way, the pipe will need to be replaced.

Pull out the master cylinder control pipe by one position.

Switch on the pump of tool (Ms. 554-07) and let the liquid flow into the container.

WARNING

Check that the level is still above the hydraulic control union.

Stop when the liquid does not contain any bubbles.

Close the bleed hole.

Disengage and engage the clutch about ten times.

II - BLEEDING FROM THE HYDRAULIC STOP TO THE BLEED HOLE.

Connect an empty 60 cc syringe to the end of the transparent pipe.

Open the bleed hole.

Switch on the pump of (Ms. 554-07) and let the liquid fill the syringe.

Slowly inject the entire contents of the syringe into the circuit.

Repeat this operations three times.

Disengage and engage the clutch about ten times.

Check that the clutch system is working properly.

Top up the fluid level until it reaches the maximum mark on the reservoir.

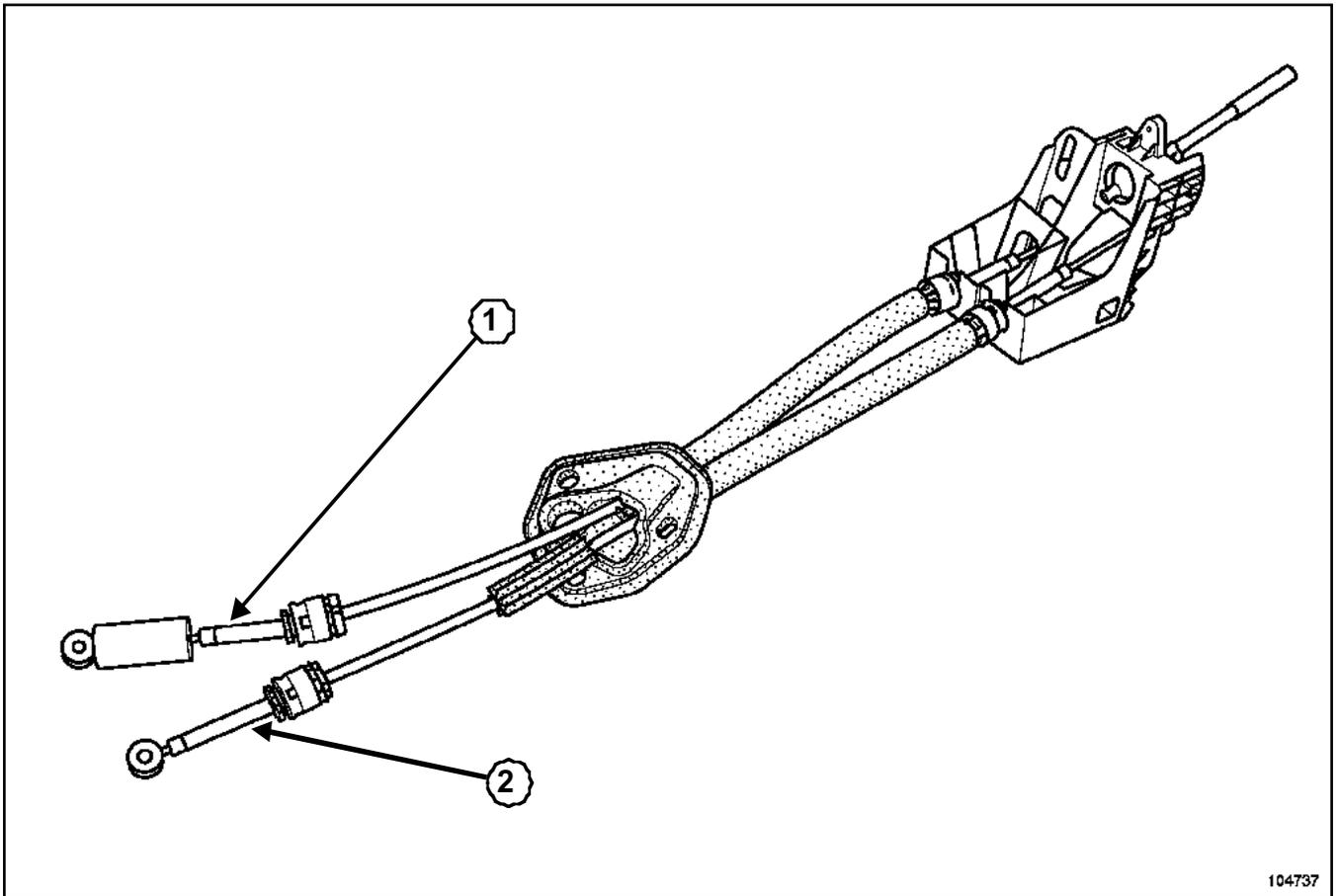
Connect the battery, starting with the positive terminal.

WARNING

Carry out the necessary programming (see 80A, Battery: Remove and Refit).

External gear control: Description

JH3 or JR5 or ND0

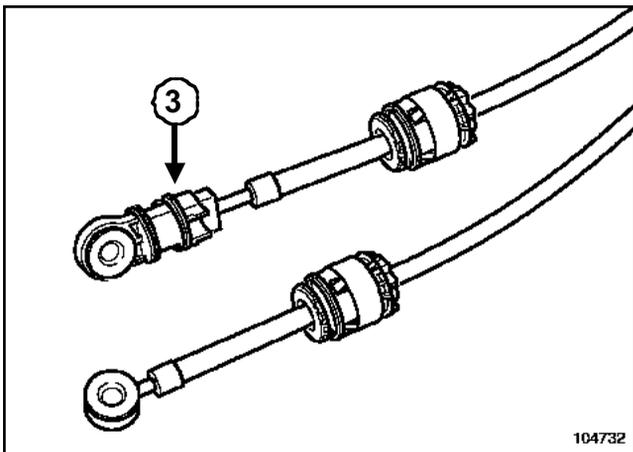


104737

104737

- (1) Selector cable.
- (2) Gear change cable.

ND0



104732

104732

Note:

The external control of the ND0 gearbox has the same features as those of JH / JR gearboxes except for the adjustment system (3) on the selector cable.

JH3 or JR5 or NDO

Tightening torques 

control unit mounting bolts	2.1 daNm
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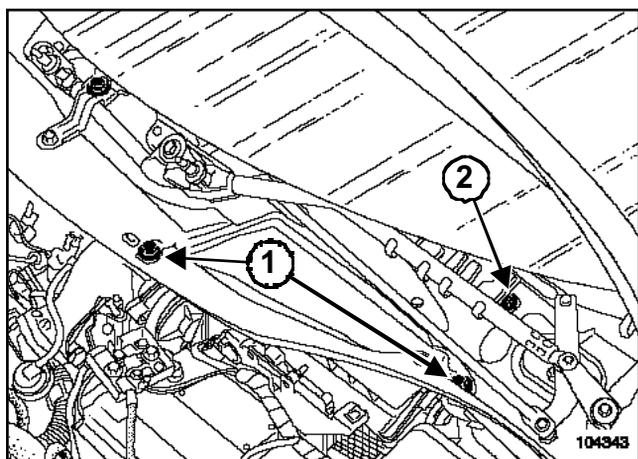
REMOVAL

Put the vehicle on a two-post lift.

Disconnect the battery starting with the negative terminal.

Remove the engine covers.

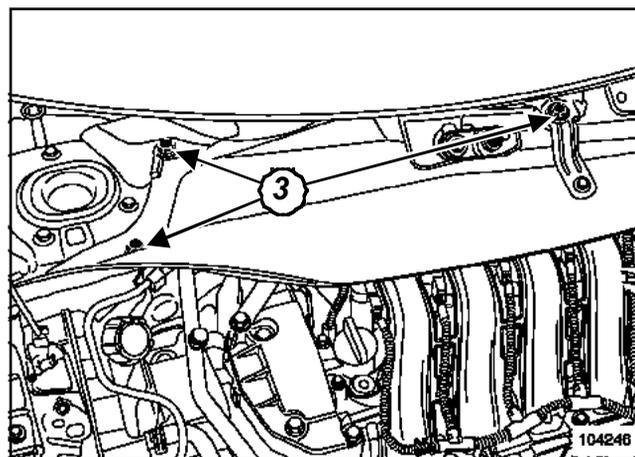
Remove the scuttle grille (**Wiping - Washing** Section).



104343

Remove:

- both air filter access flap mounting bolts, (1)
- the air filter access panel,
- the plenum chamber partition mounting bolt (2).



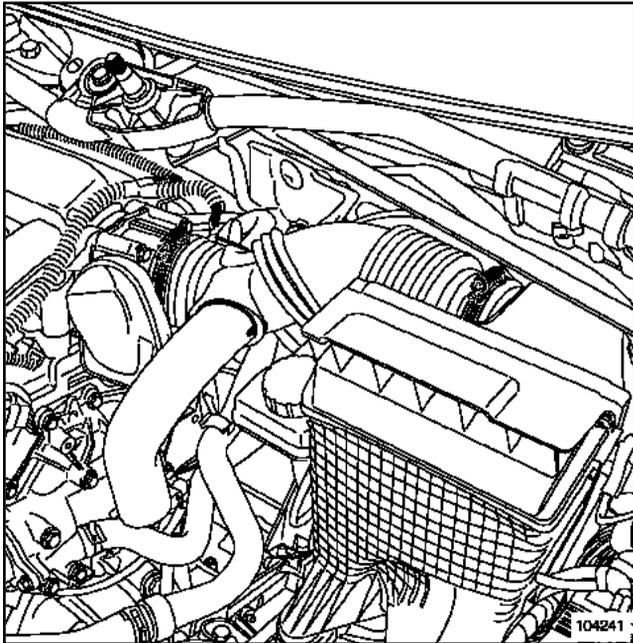
104246

Remove:

- the plenum chamber partition mounting bolts (3),
- the plenum chamber partition panel.

External gear control

JH3 or JR5 or ND0



104241

Remove:

- the battery,
- the battery tray,
- the computer and its mounting.
- the air filter outlet duct.

Remove the two lever cables on the gearbox:

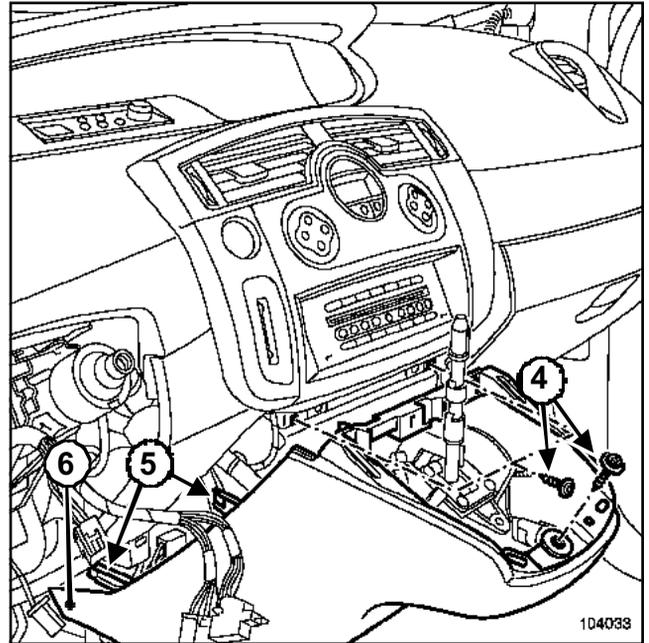
- at the two anchoring ball joints ,
- at the sleeve stops.

WARNING

- If the anchoring clip is damaged it must be replaced (see **Mechanical component controls**Section).
- Do not touch the adjustment system on the ND gearbox selector cables, as this would alter the length of the cable and consequently the movement of the gear lever.

Remove:

- the gear lever knob by lifting it,
- the gear lever gaiter.



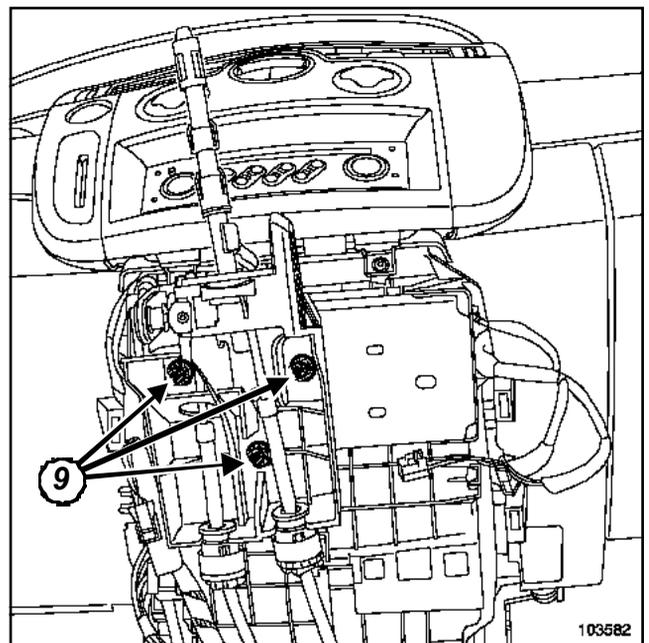
104033

104033

Remove the mounting screws for the central console.(4)

Unclip:

- the central console mounting brackets(5),
- the clip (6).

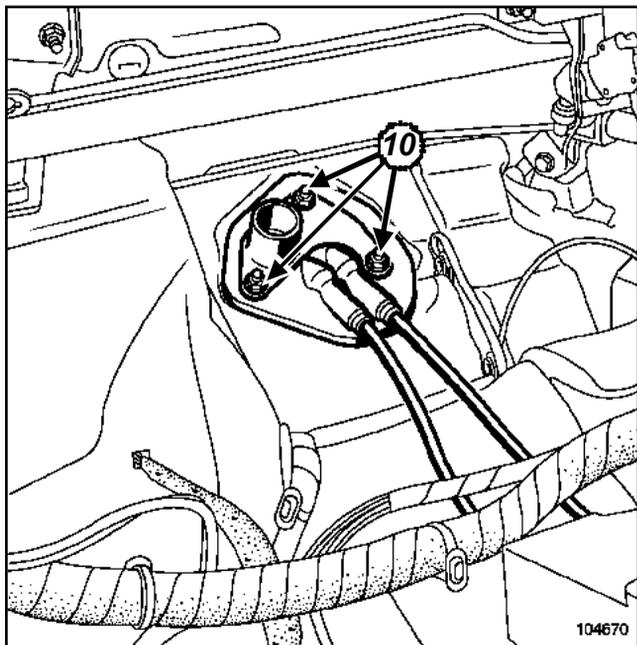


103582

103582

Remove the three control unit mounting nuts(9).

JH3 or JR5 or ND0



104670

Remove the three bulkhead seal mounting bolts (10).

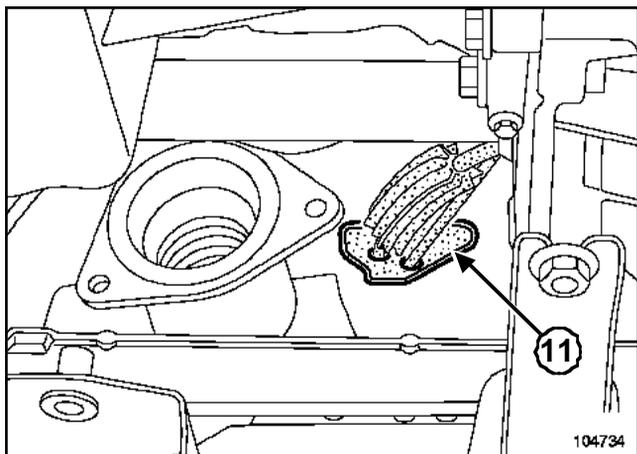
Remove the engine undertray.

Disconnect:

- the exhaust pipe from the manifold,
- the centre bracket.

Move the exhaust pipe to the side (see **Turbocharging** Section).

Remove the heat shield mountings.



104734

Move the heat shield towards the rear of the vehicle to gain access to the gearbox selector cable routing (11).

Remove the gear lever unit.

REFITTING

To refit, proceed in the reverse order to removal.

Refit the heat shield correctly.

Tighten to torque the **control unit mounting bolts (2.1 daNm)**.

JH3 or JR5

ADJUSTING THE GEARBOX CABLES

Refit the cables in their respective sleeve stops.

Fit the cables into their respective ball joints.

Check that all the gears engage correctly before starting the engine.

Note:

- the selector cable can be identified by a « B » mark stamped on the sleeve stop,
- There is no cable adjustment system.
- The external control unit and the selector levers on the gearbox must be in the neutral position when the cables are attached to the levers.

ND0

I - WITHOUT REPLACING A COMPONENT OR WITH A GEAR CHANGE CABLE:

Note:

- There is no cable adjustment system.
- The external control unit and the control levers on the gearbox must be in « neutral » when the cables are attached to the levers.

II - WITH REPLACEMENT OF THE COMPLETE EXTERNAL CONTROL OR THE GEAR SELECTOR CABLE:

Refit the control unit.

JH3 or JR5 or ND0

Engine compartment

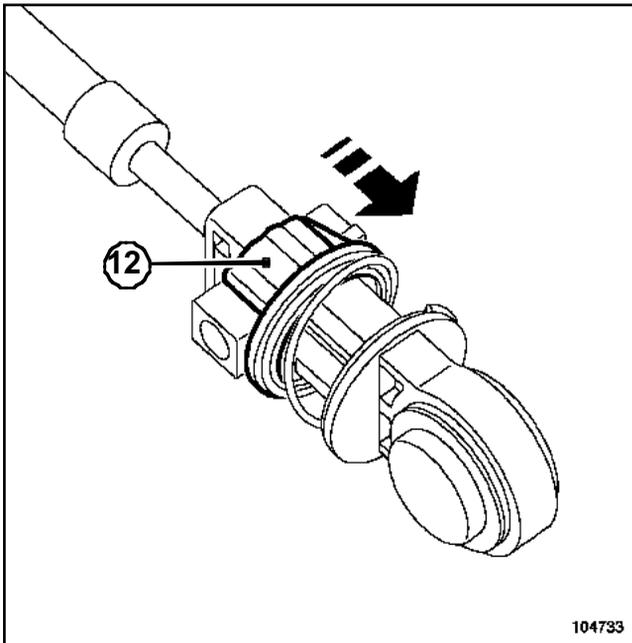
Position the gear change lever on the gearbox in 4th gear engaged position.

Refit the cables in their respective sleeve stops.

Note:

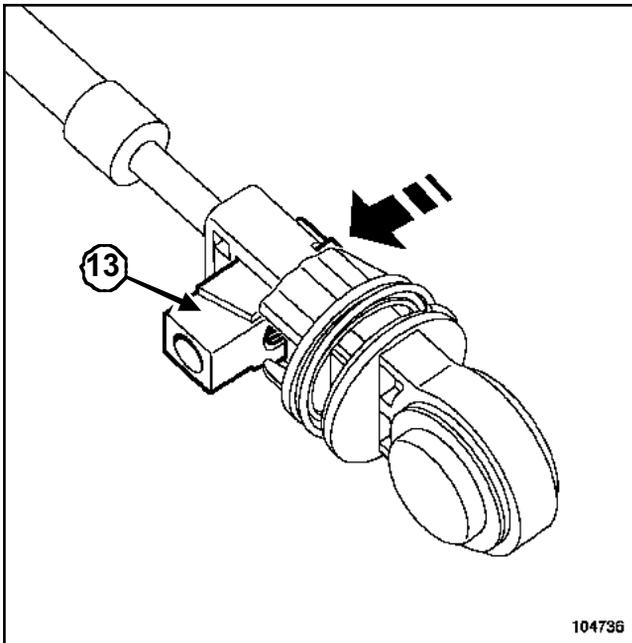
the gear change cable can be identified by an « N » mark stamped on the cable sleeve stop,

JH3 or JR5 or NDO



104733

104733



104736

104736

Slide the part (12) into place, compressing the spring on the selector cable.

Unlock the adjustment mechanism by sliding the catch (13) sideways.

Adjust the length of the cable.

Fit the selector cable on the gear lever ball joint.

Lock the adjustment mechanism by pushing the catch (13) back to its original position.

Fit the selector cable on the lever ball joint.

WARNING

When the complete external control unit is replaced, it is imperative to remove the adjustment shim from the gear lever after the cables have been adjusted and fitted.

Check that all the gears engage correctly before starting the engine.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

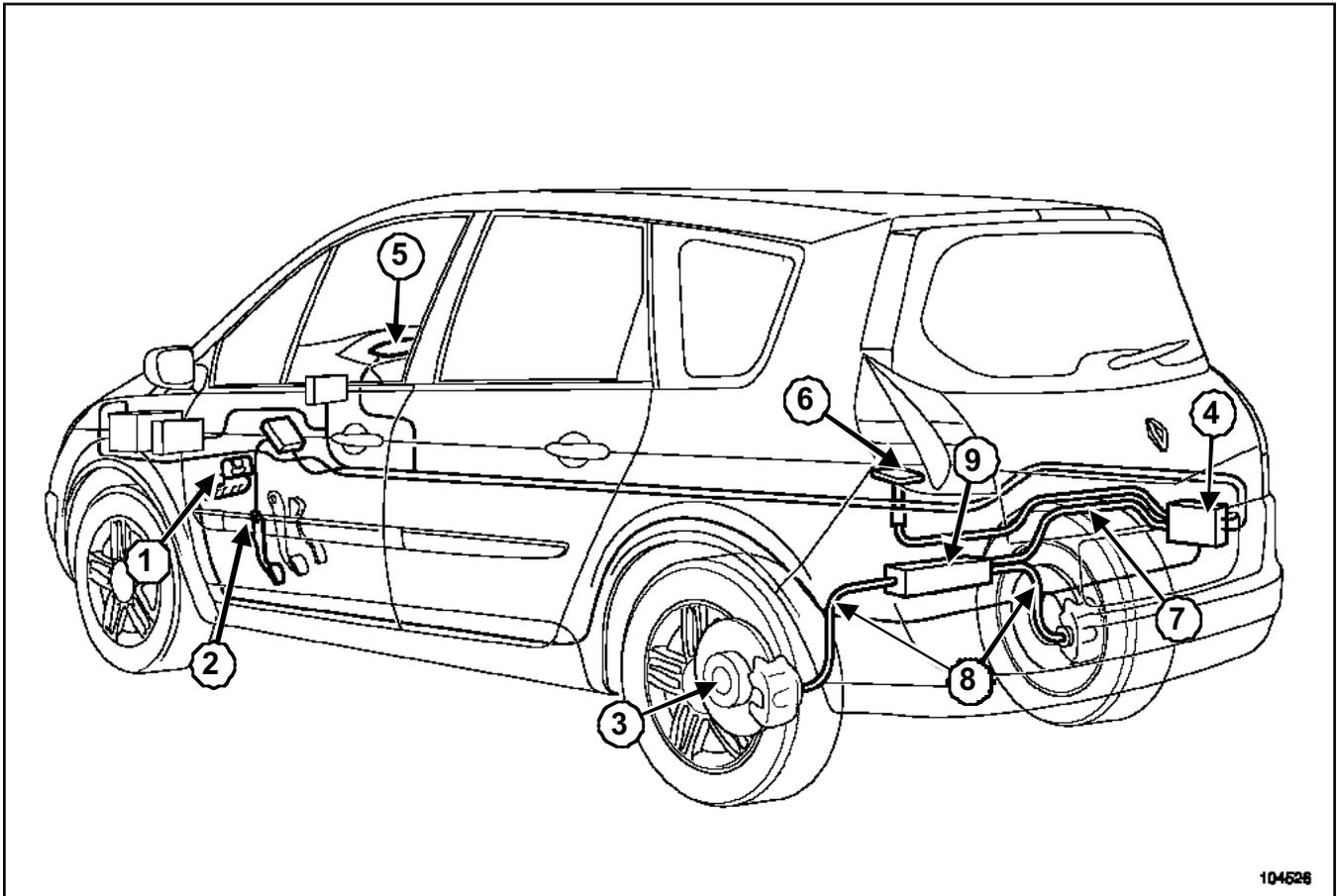
AUTOMATIC PARKING BRAKE

Introduction

37B

Equipment required

Diagnostic tool

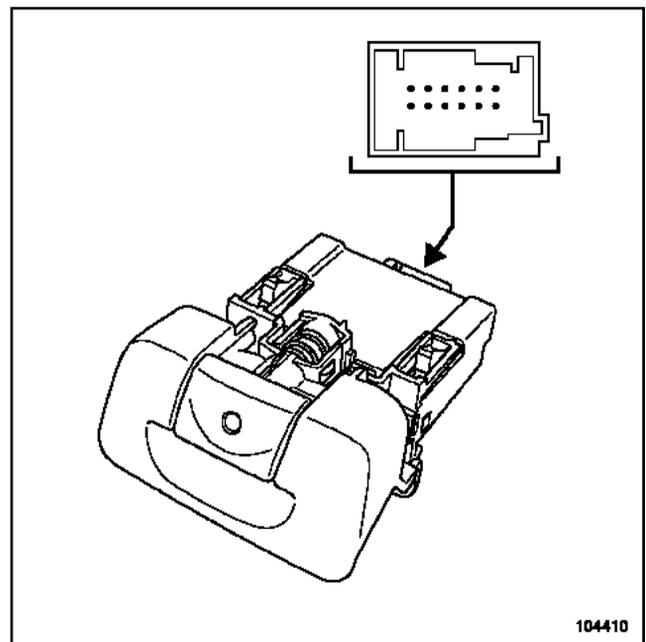


104526

104526

The automatic parking brake consists of the following components:

- the catch (1), this replaces the handbrake lever. It is located on the dashboard, next to the steering wheel,
- the clutch pedal position sensor (2),
- the wheel speed sensors (3),
- the control unit (4) for the short Scenic, (9) for the long Scenic,
- the instrument panel warning lights (5),
- an emergency parking brake cable control (6) (manual), located in the spare wheel compartment in the boot, underneath the carpet,
- the primary cable (7),
- the secondary cables (8).



104410

104410

Introduction

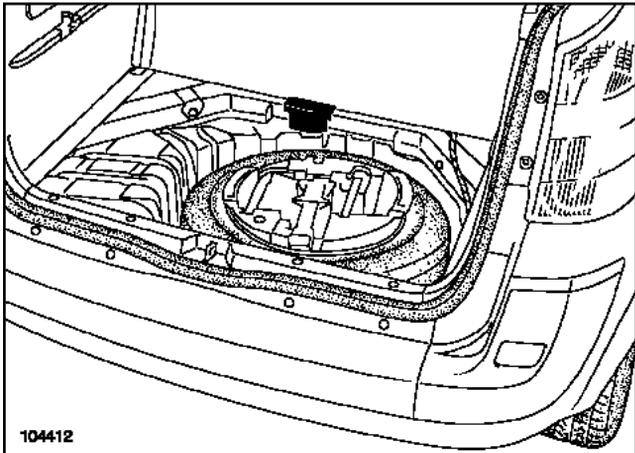
The unit consists of two main components:

- a locking control component, called a catch,
- a release control button, with a red warning light indicating the status of the parking brake.

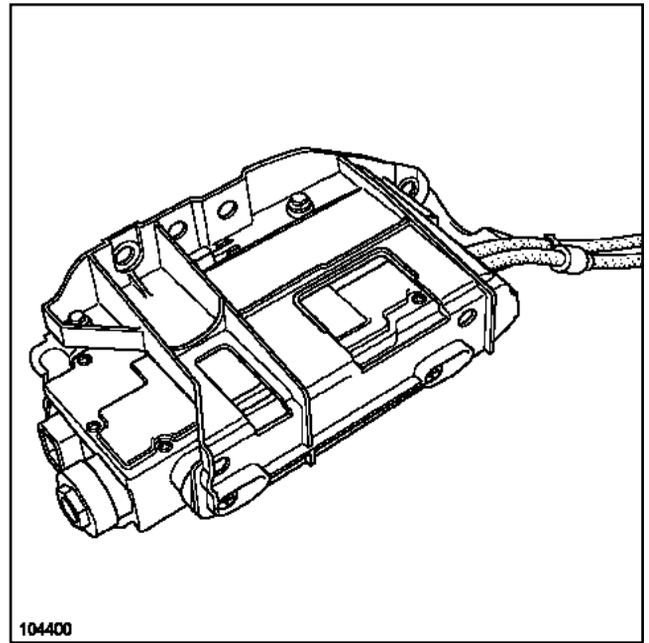
To apply the automatic parking brake, pull the catch.

To release the automatic parking brake, pull the catch and press the button.

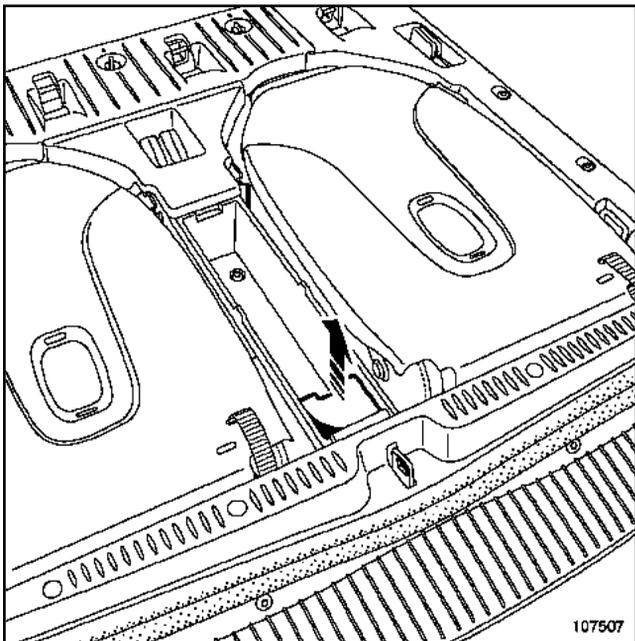
STANDARD CHASSIS



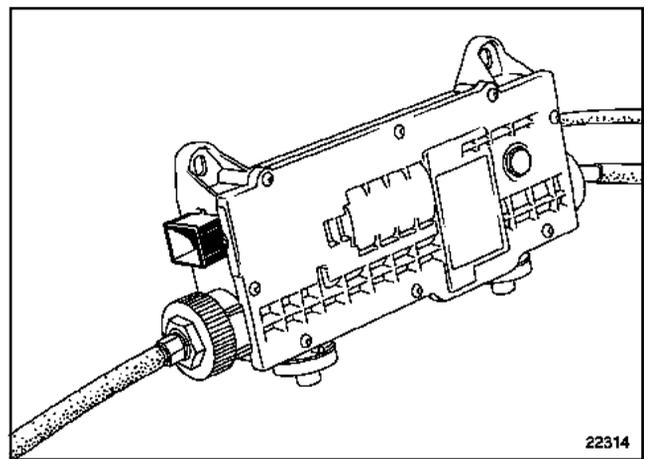
STANDARD CHASSIS



LONG CHASSIS



LONG CHASSIS



Each time the emergency cable handle is used, the fault generated must be cleared using the **Diagnostic tool**.

Introduction

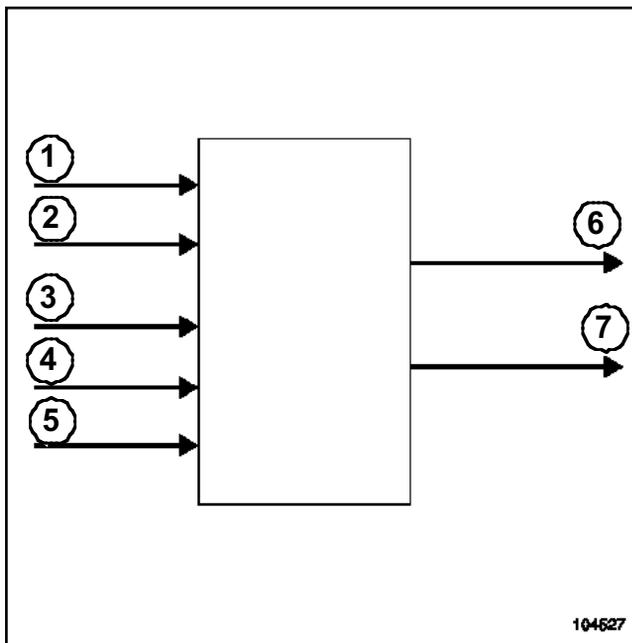
The parking brake locks automatically when the engine is switched off. It is automatically released when the vehicle starts moving.

When performing a hill start, pressing the catch will immobilise the vehicle on the gradient. The brake is released automatically when the torque required to move the vehicle reaches the drive wheels. Nevertheless, this function does not prevent engine stalling.

In the event of a fault in the main braking circuit when driving, the automatic parking brake system offers a dynamic emergency braking system. It is also equipped with a safety system preventing unwanted rear wheel lock.

The emergency (manual) parking brake cable control allows the parking brake to be released in the event of a battery fault.

The parking brake cable play compensation is set automatically by the control unit.



104527

The catch is a manual control (1).

The gradient sensor (2) controls the brake lock according to the angle of the gradient.

The force sensor (3) monitors and corrects the pressure applied to the brakes.

The clutch pedal position sensor (4) informs the computer of the slip point to create a reference curve.

The rear wheel speed sensors (5) are part of the anti-lock braking system. They signal abnormal movement of the vehicle when parking.

The control unit (6) contains the electric motor, the rear brake cable attachments and the force and gradient sensors.

The warning lights and symbol on the instrument panel (7) indicate whether the automatic parking brake is applied, released or faulty.

AUTOMATIC PARKING BRAKE

Recommendations and safety issues

37B

On vehicles fitted with the automatic parking brake, the RENAULT Card must be removed to prevent rapid discharge of the battery and to prevent the system unlocking erratically.

The automatic parking brake can only be unlocked when the steering column is unlocked.

When the vehicle exceeds the Maximum permissible all-up weight, it is possible to obtain a tighter application by holding the lever in the applied position for three seconds.

When parking in very cold conditions, it is advisable to release the brake after switching off the engine and before removing the Renault card to prevent the rear wheels from becoming locked by ice. The computer can be configured in extreme cold mode. Extreme cold mode inhibits the automatic application of the brake.

In vehicles fitted with an automatic gearbox, release is no longer possible after five seconds:

- if the engine is working,
- if the automatic parking brake is applied,
- if a gear is engaged,
- and if the driver's door is open,

The system:

- triggers a buzzer,
- displays a message on the instrument panel, inhibits the automatic parking brake release and requires the gear lever to be shifted into the P or N position.

AUTOMATIC PARKING BRAKE

Emergency handle

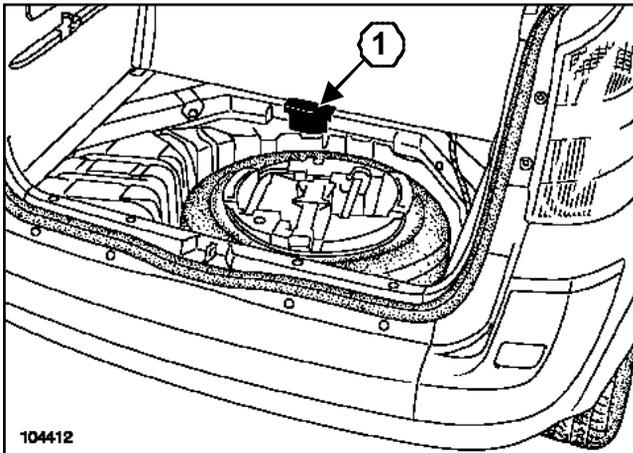
37B

Equipment required

Diagnostic tool

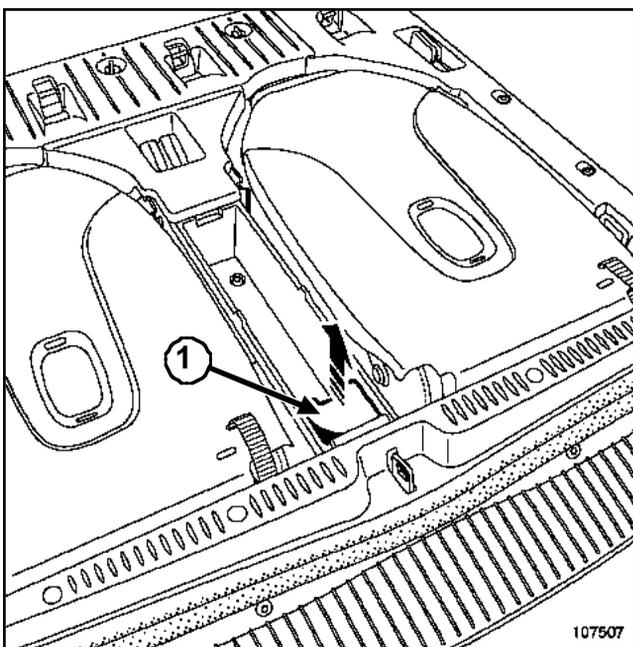
REMOVAL

STANDARD CHASSIS

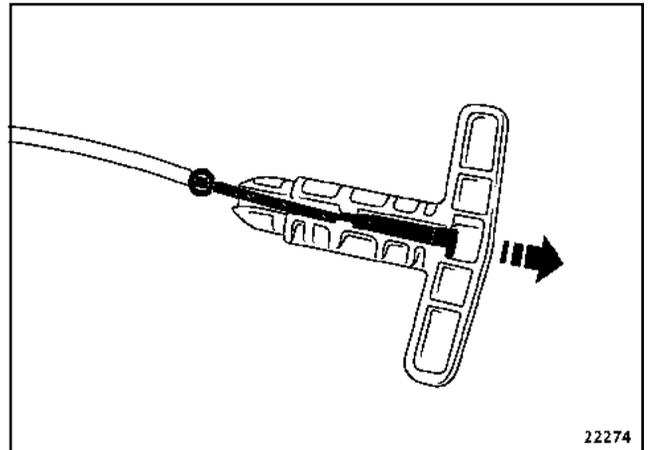


Remove the guard (1).

LONG CHASSIS



Remove the guard (1).



Pull out the handle and cable slightly, by a length less than **2 cm**.

Remove the handle.

REFITTING

Proceed in the reverse order to removal.

Note:

If you make a mistake with the lever (pull the cable too far), carry out the following operations:

- with the ignition on, release the parking brake (pull the catch and push the button).
- the automatic parking brake locking function is indicated by a sound.

The play compensation is set automatically.

IMPORTANT

- Check that the brake cables are correctly fitted in their housing.
- Carry out a complete check and clear the fault generated using the **Diagnostic tool**.

Equipment required

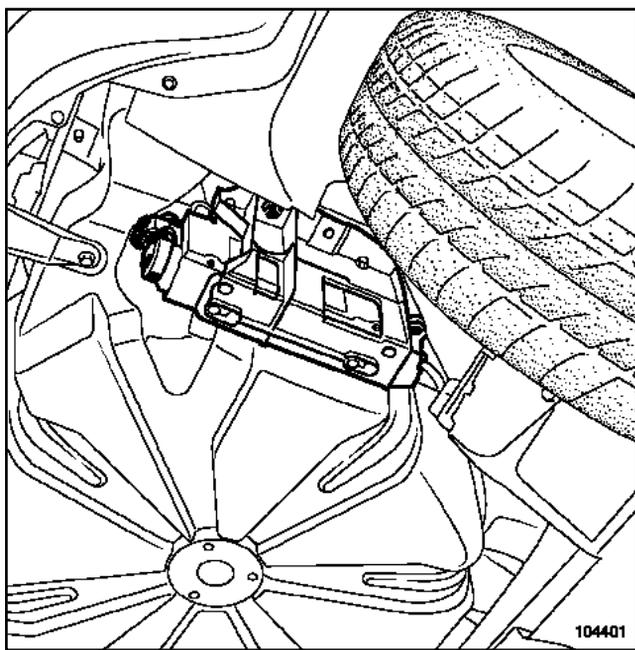
Diagnostic tool

Tightening torques

support - body mounting bolts	2.1 daNm
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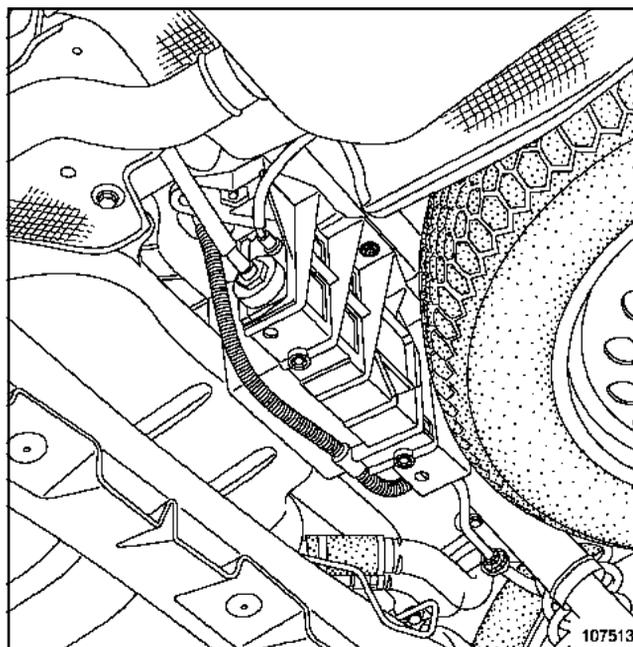
anchorage support mounting bolts	0.8 daNm
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STANDARD CHASSIS



The control unit is located at the right of the rear axle.

LONG CHASSIS



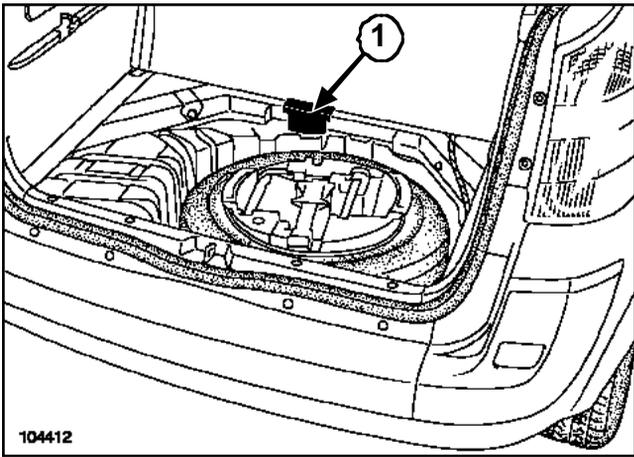
The control unit is located in the middle of the rear axle.

REMOVAL

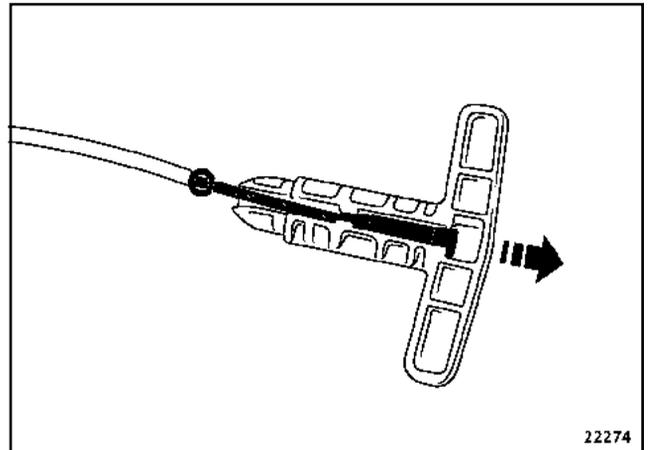
Mount the vehicle on a two post lift.

Disconnect the battery, starting with the negative terminal.

STANDARD CHASSIS



Remove the handle guard (1) in the boot.

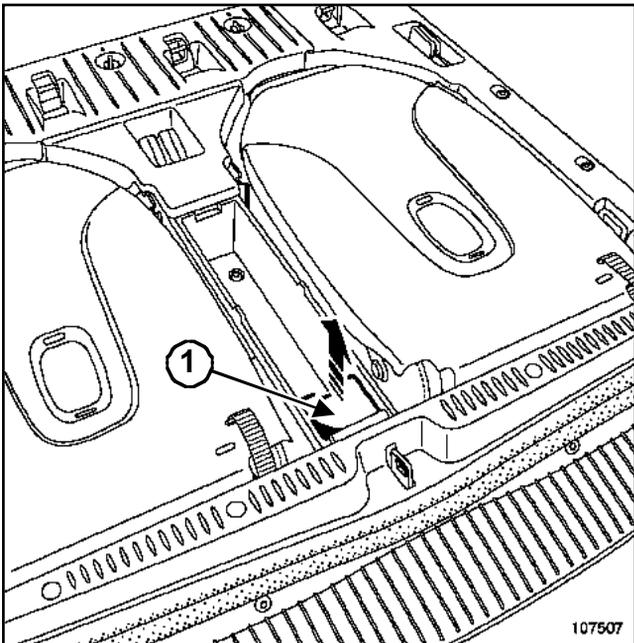


Pull the emergency handle, the brake cables will make a noise when released.

Remove the handle.

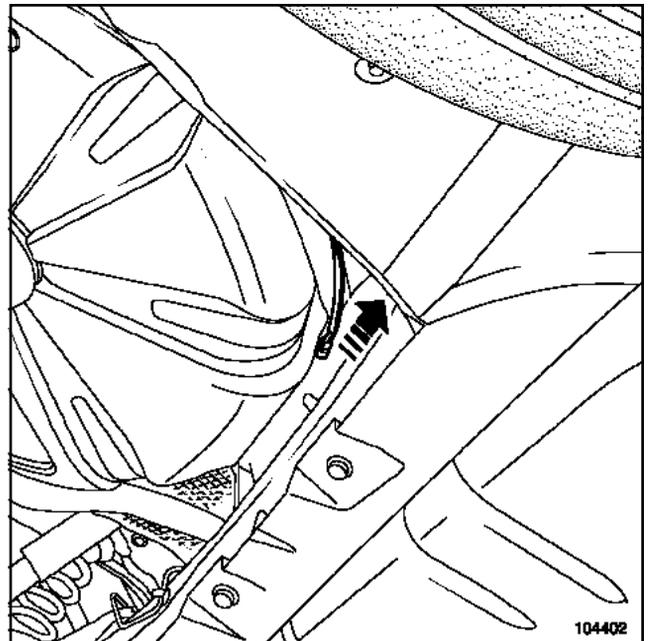
Raise the vehicle.

LONG CHASSIS

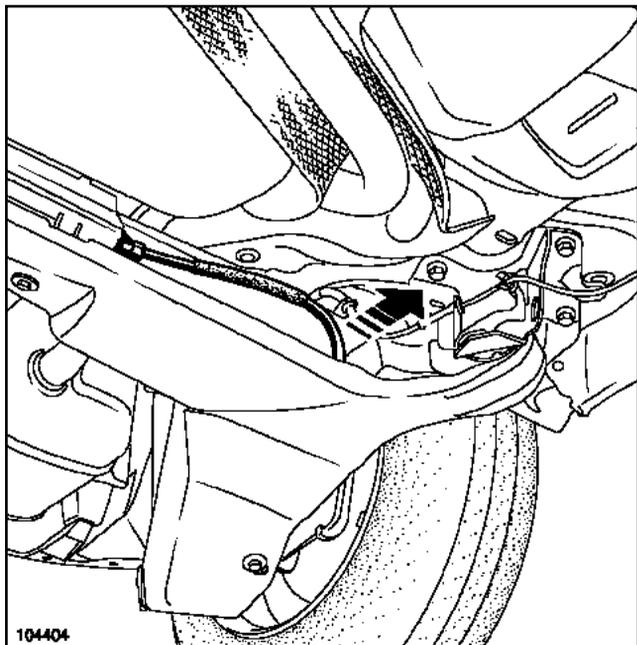


Remove the handle guard (1) in the boot.

STANDARD CHASSIS



Pull out the emergency control cable via the vehicle underbody.



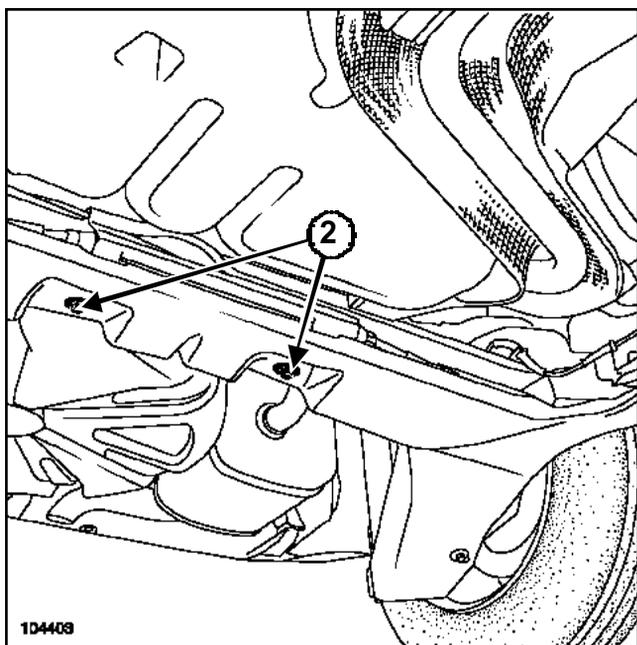
104404

104404

Note the brake cable routing for refitting.

Remove:

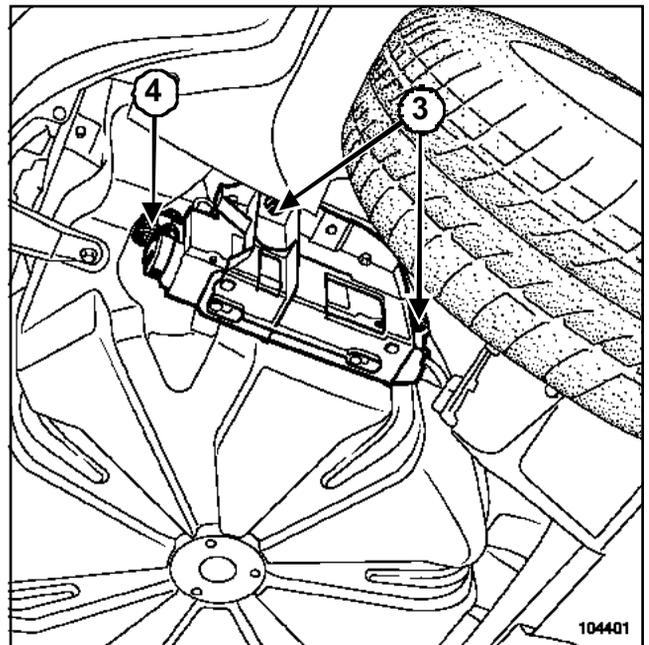
- the brake cables from the callipers,
- the cables from their guides,
- the right and left cables from the rear axle.



104403

104403

Remove both brake cable anchorage support mounting bolts (2).



104401

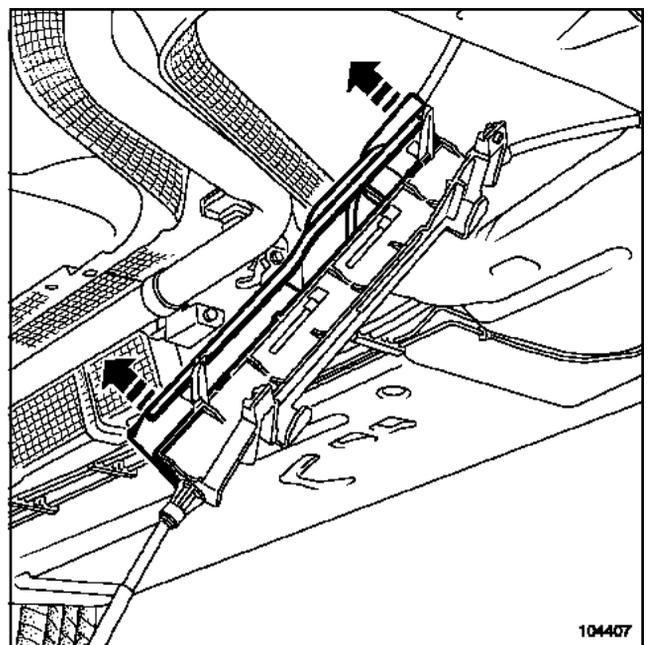
104401

Remove both control unit support mounting bolts (3).

Partially take out the control unit downwards.

Disconnect the control unit electrical wiring (4).

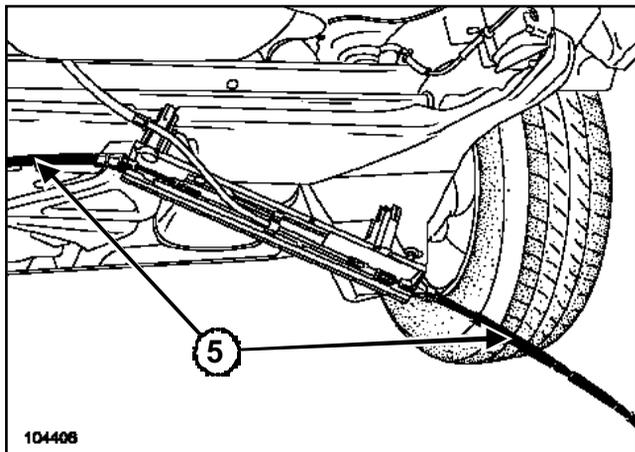
Slide the « control unit - rear axle anchorage support » assembly towards the left side of the vehicle (this operation requires two people).



104407

104407

Unclip the anchorage guard.



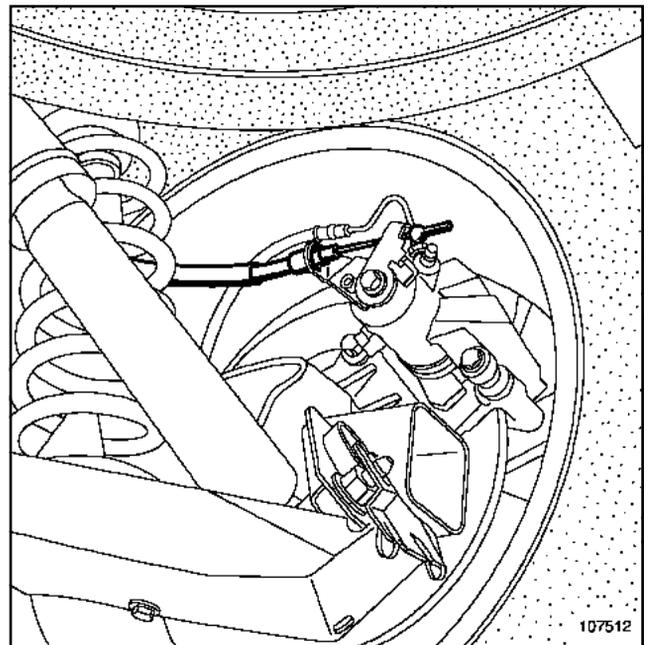
104406

Remove both cables (5) from the rear axle anchorage.

Remove:

- The anchorage from its support,
- The assembly.

Remove the assembly.



107512

107512

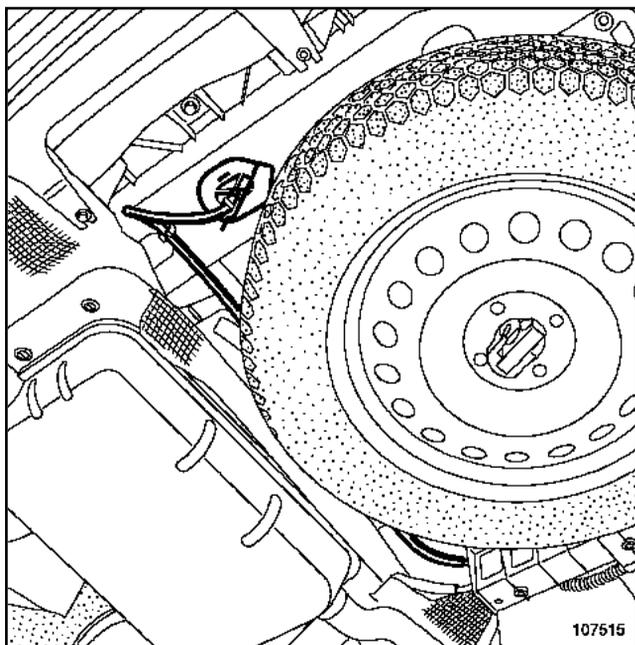
Note the brake cable routing for refitting.

Remove:

- the brake cables from the callipers,
- the cables from their guides.

Let the parking brake cables hang freely.

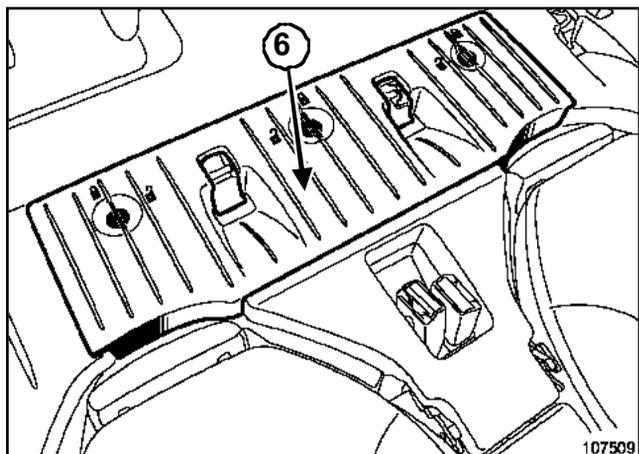
LONG CHASSIS



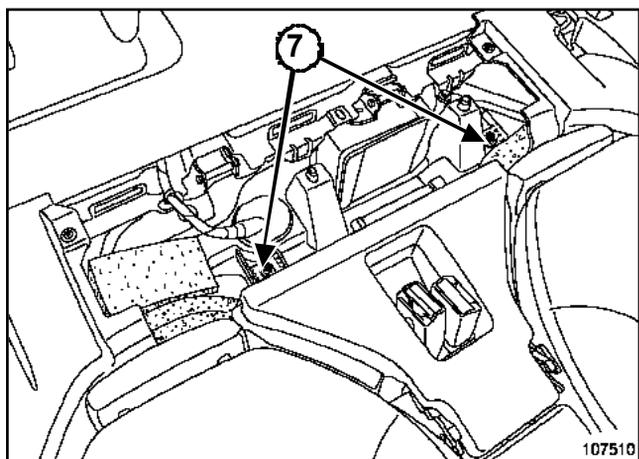
107515

107515

Pull out the emergency control cable via the vehicle underbody.



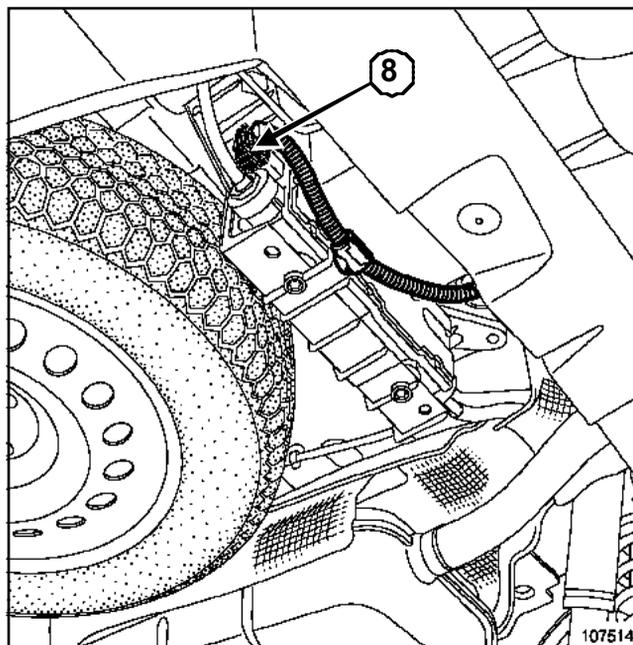
107509



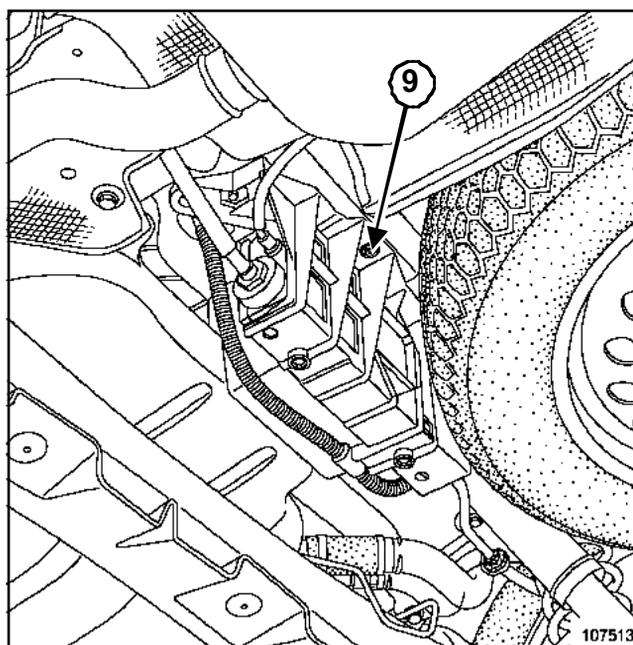
107510

Remove:

- The boot trim (6),
- The control unit mounting bolts (7).



107514



107513

Disconnect the control unit electrical wiring (8).

Remove:

- the control unit retaining bolt (9),
- the control unit.

REFITTING

Proceed in the reverse order to removal.

AUTOMATIC PARKING BRAKE

Control unit

37B

Torque tighten:

- the **support - body mounting bolts (2.1 daNm)**,
- the **anchorage support mounting bolts (0.8 daNm)**.

Follow the brake cable routing noted during removal.

STANDARD CHASSIS

WARNING

When feeding the secondary cables through the rear axle, keep the cables taut inside their sheath using a piece of string so that the cable does not slip off the anchorage on the rear axle. Check that the brake cables are correctly fitted in their housing.

Note:

With the ignition on, release the automatic parking brake (pull the catch; push the button). The automatic parking brake locking function emits a warning sound. The play compensation is set automatically.

IMPORTANT

Carry out a complete check and clear the fault generated using the **Diagnostic tool**. Configure the new brake control unit. See **fault finding workshop repair manual, (automatic parking brake)**.

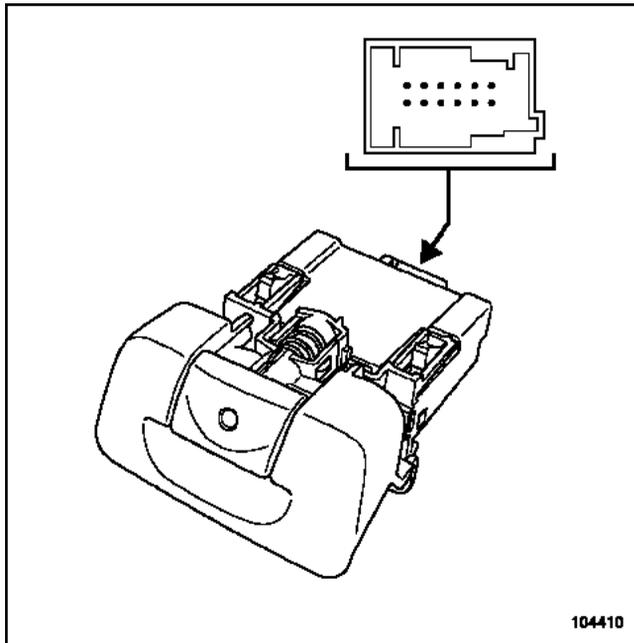
WARNING

Connect the battery; carry out the necessary programming Section **Electrical equipment**.

AUTOMATIC PARKING BRAKE Unit

37B

REMOVAL

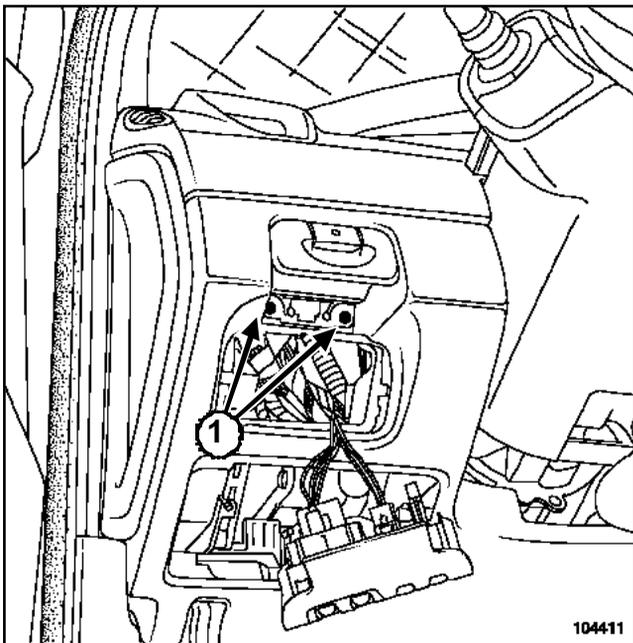


104410

Disconnect the battery starting with the negative terminal.

Remove:

- the glovebox on the driver's side,
- the remote adjustment control mounting.



104411

Remove the mounting bolts (1) from the lever.

Disconnect the connector from the lever.

Remove the lever.

REFITTING

To refit, proceed in the reverse order of removal.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

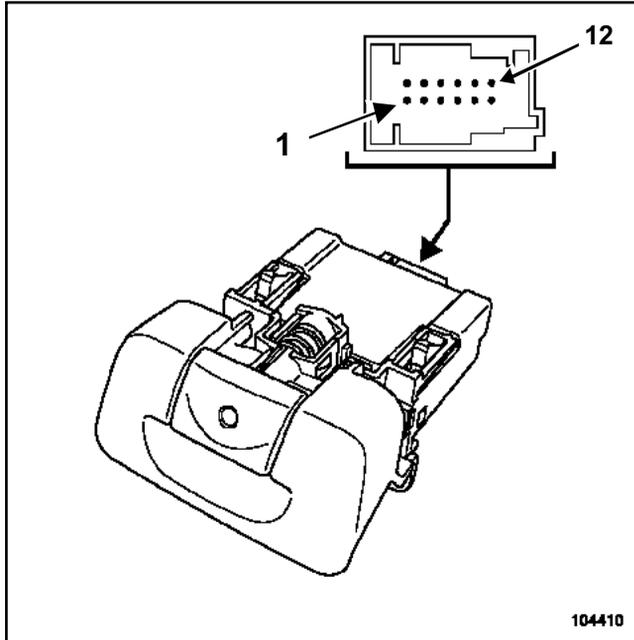
AUTOMATIC PARKING BRAKE

Allocation of lever tracks

37B

The catch is located on the dashboard, next to the steering wheel.

I - CONNECTION



104410

104410

Track	Description
1	Not used
2	Earth
3	Not used
4	Static release control
5	Locking warning light control
6	+ Battery feed
7	Connection with computer (track C2)
8	Not used
9	Connection with computer (track D2)
10	Static locking control
11	Not used
12	Catch lighting supply

II - CHECKING

Track	Catch position	Resistance value
9 and 7	idle	2700 Ω
	locking	172 Ω
	releasing	172 Ω
10 and 2	idle	∞
	locking	0 Ω
	releasing	0 Ω
4 and 2	idle	∞
	locking	∞
	releasing	0 Ω

AUTOMATIC PARKING BRAKE

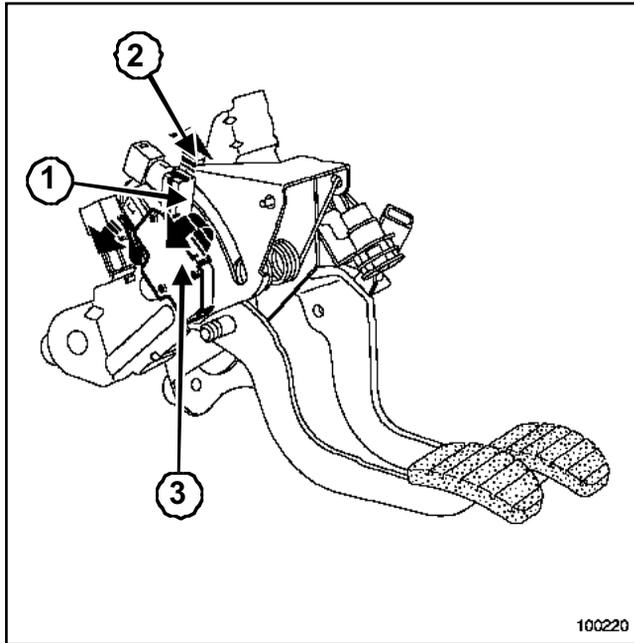
Clutch pedal position sensor

37B

AUTOMATIC PARKING BRAKE

REMOVAL

Remove the lower trim under the steering wheel (Section **Mechanisms and accessories**).



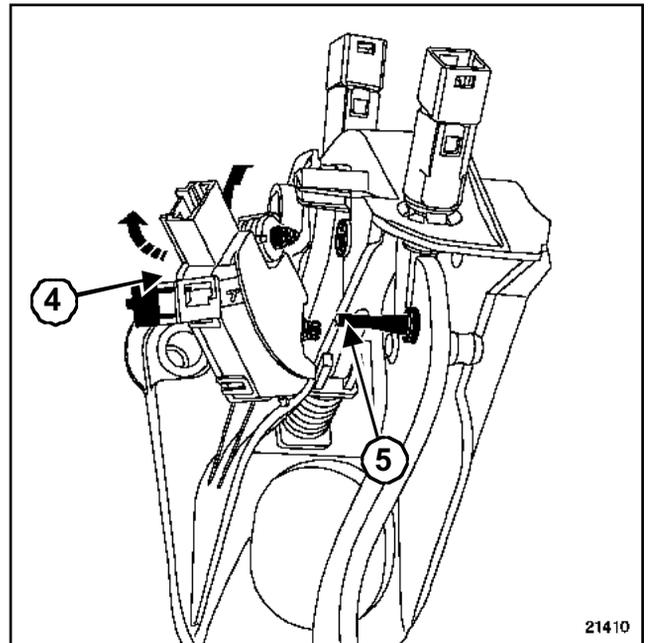
100220

Disconnect:

- the battery starting with the negative terminal.
- the connector.

Unlock:

- the section connected to the pedal by undoing lock (1), slide it (2),
- the sensor body by undoing lock (3).



21410

21410

Tilt the sensor (4). Take care not to break the lower mounting bracket (5).

REFITTING

To refit, proceed in the reverse order of removal.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Introduction

Equipment required

Diagnostic tool

The vehicle is fitted with a BOSCH 8.0. ABS system.

Depending on the vehicle equipment, the BOSCH 8.0 system consists of the ABS system only or the Anti-lock Braking System in conjunction with the Electronic Stability Program (ESP).

IMPORTANT

After any operation on the ESP system, it is essential to confirm the repair with a road test and a check with the **Diagnostic tool** (CLIP).

I - DESCRIPTION OF THE ABS SYSTEM WITH ELECTRONIC STABILITY PROGRAM

The ABS system / Electronic Stability Program comprises:

- a brake servo assembly,
- a pump assembly comprising:
 - a hydraulic pump,
 - a pressure modulation unit (twelve solenoid valves),
 - a computer,
 - a pressure sensor,
- a steering wheel angle sensor built into the electric power assisted steering,
- a combined yaw speed and transverse acceleration sensor,
- four wheel speed sensors,
- an Electronic stability program deactivation pressure button.

II - PRINCIPLE OF OPERATION OF THE ABS SYSTEM WITH ELECTRONIC STABILITY PROGRAM

The reference status is calculated continuously from wheel speed and steering wheel angle measurements. The reference status represents the desired correct behaviour.

This reference status is compared to the actual status of the vehicle from the yaw speed and transverse acceleration measurements.

Where there is a difference between the desired trajectory and the actual trajectory, the appropriate wheel is braked. In certain cases, the understeer monitoring brakes two wheels at the same time. The torque generated sets the vehicle on the desired trajectory.

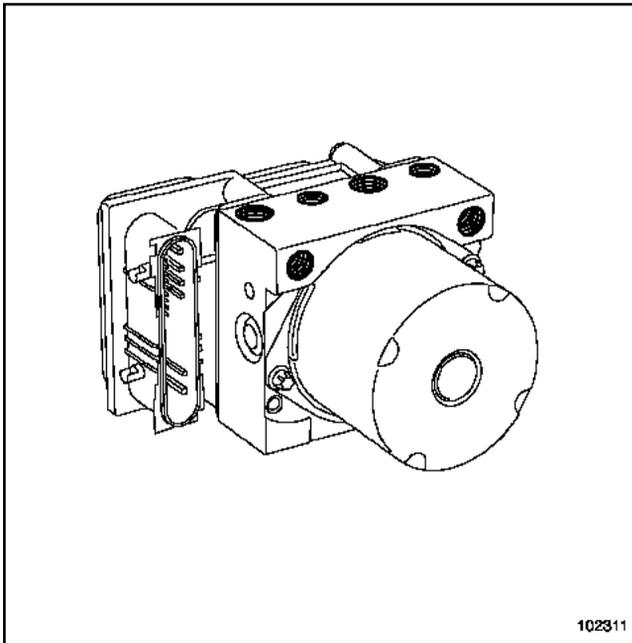
In some cases, the anti-skid control modifies the engine torque.

III - ELECTRONIC STABILITY PROGRAM OPERATION SPECIAL FEATURES

The ESP function can be disconnected via the switch located on the dashboard.

This function can not be deactivated above a threshold of approximately **50 km per hour**.

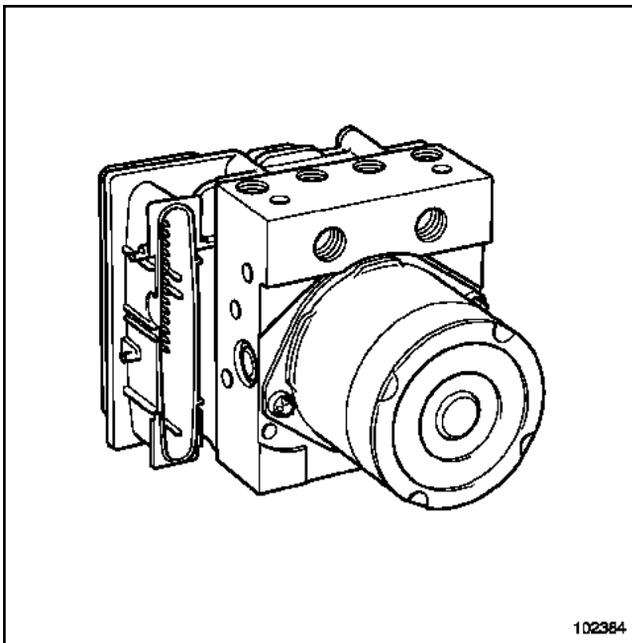
This function is automatically reactivated when the vehicle is switched on, or at speeds above approximately **50 km/h**.



102311

102311

The ABS system pump assembly is equipped with a **26-track** computer.



102384

102384

The ABS System and Electronic Stability Program pump assembly is equipped with a **46-track** computer.

Note:

The computer cannot be separated from the pump assembly.

K4J

Equipment required

pedal press

filling station

Diagnostic tool

Tightening torques

0.65 daNm

bolts securing the pipes
on the hydraulic unit

1.4 daNm

air distributor mounting
bolts

0.9 daNm

hydraulic unit - support
mounting bolts

0.8 daNm

REMOVAL

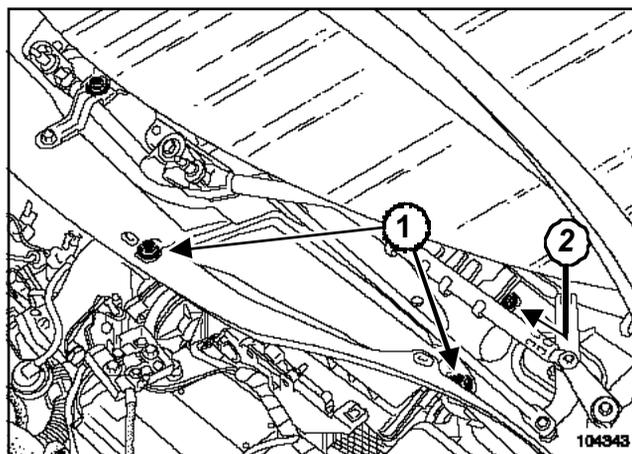
Disconnect the battery, starting with the negative terminal.

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

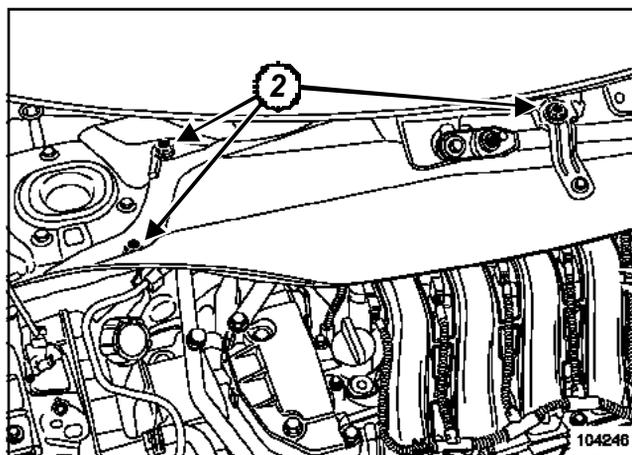
AIR CONDITIONING or CLIMATE CONTROL

Drain the refrigerant circuit using the **filling station** tool.

Remove the cowl grille (**Wiping - Washing**Section).



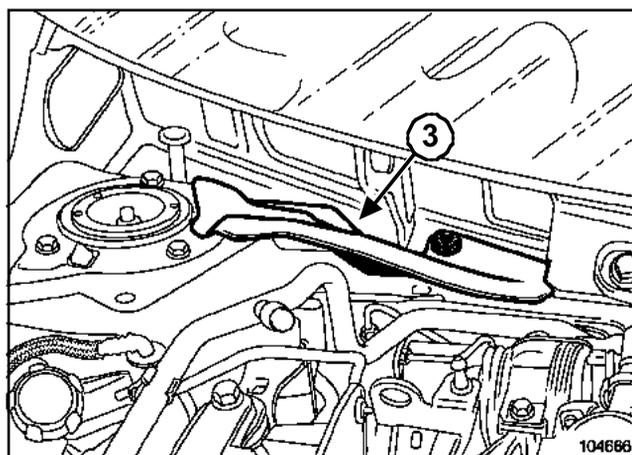
104343



104246

Remove:

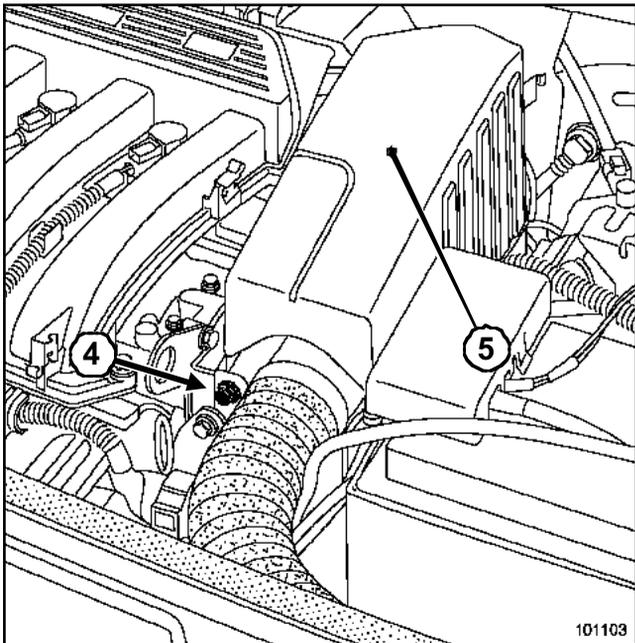
- the engine covers,
- the two air filter access panel mounting bolts (1),
- the plenum chamber partition mounting bolts (2),
- the plenum chamber partition.



104666

Remove the plenum chamber bracket (3)

K4J



Remove:

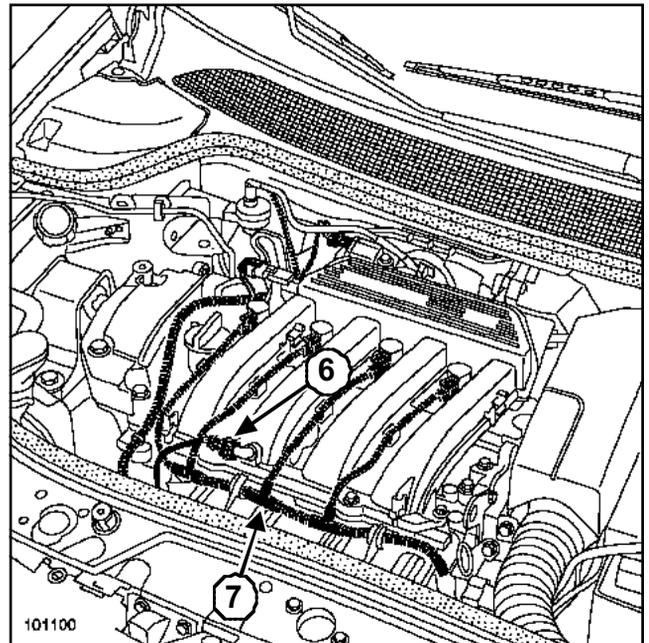
- the air resonator unit mounting bolt (4),
- the air resonator unit (5).

WARNING

Do not damage the vacuum outlet on the air distributor. If it is damaged, the air distributor will have to be replaced.

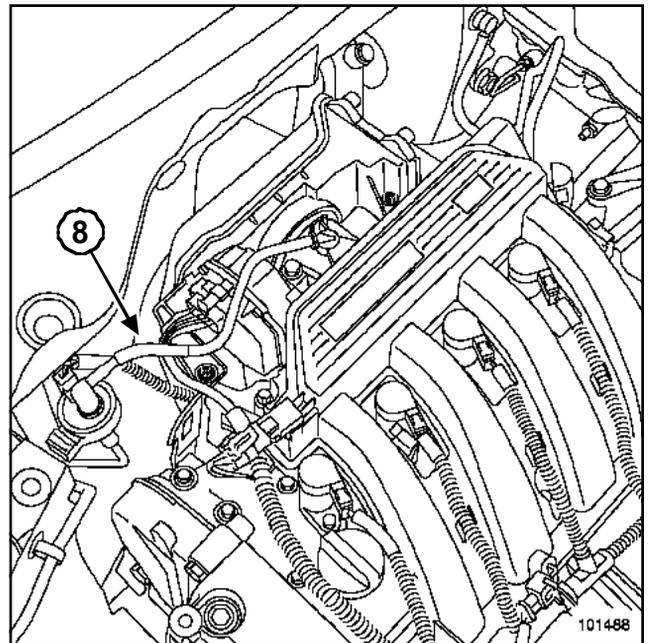
Disconnect:

- the brake servo vacuum pipe at the air distributor end,
- the ignition coil connectors,
- the throttle valve connector.



Disconnect the air temperature sensor (6).

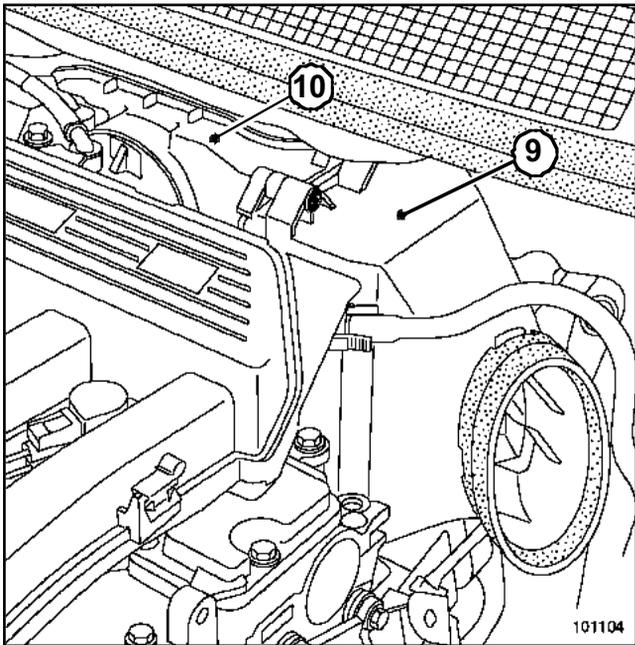
Unclip the engine wiring harness (7).



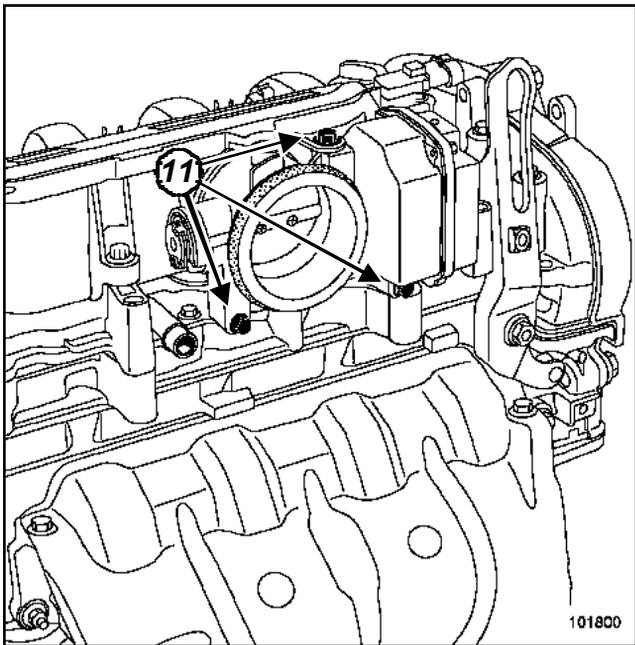
Unclip the petrol vapour recirculation pipe (8).

Loosen the air filter box mountings, without removing it from the engine compartment.

K4J



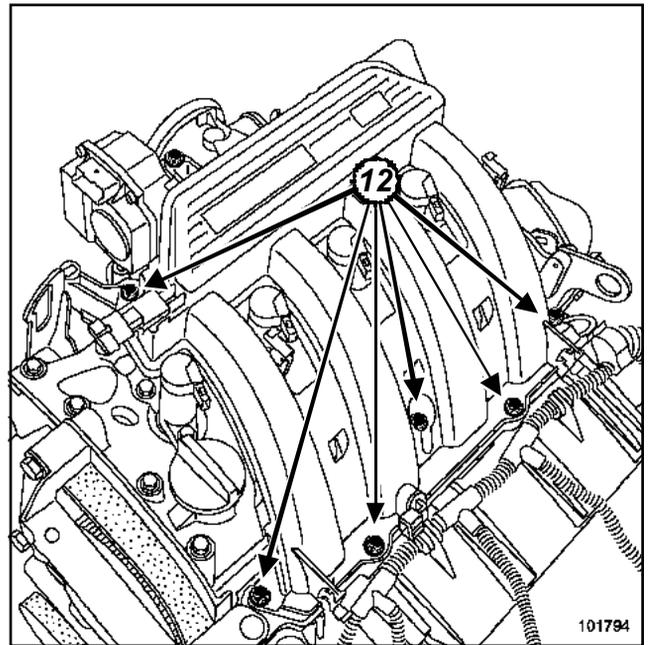
101104



101800

Remove:

- the filter element (9),
- the throttle valve mounting bolts (11),
- the throttle valve,
- the air filter box (10).

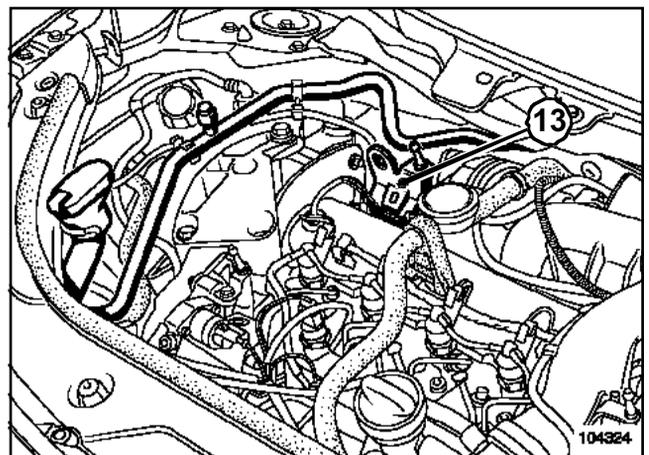


101794

Remove:

- the air distribution unit mounting bolts (12),
- the air distribution unit,
- the soundproofing screen mountings.

Remove the soundproofing screen.



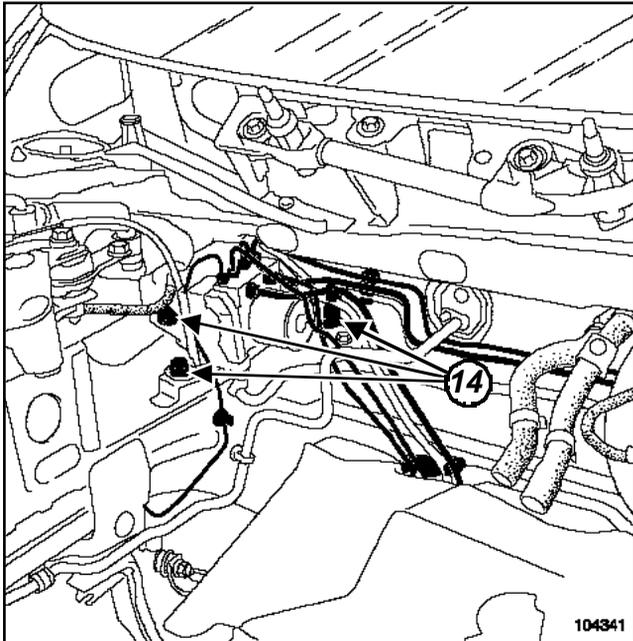
104324

Remove the lifting eye (13).

AIR CONDITIONING or CLIMATE CONTROL

Remove the air conditioning pipe (see **Evaporator - dehydration canister**).

K4J



104341

Remove the ABS computer earth terminal mounting bolt.

Disconnect the computer connector.

Unscrew the six hydraulic unit pipes.

Unclip the six pipes from the hydraulic unit.

Remove:

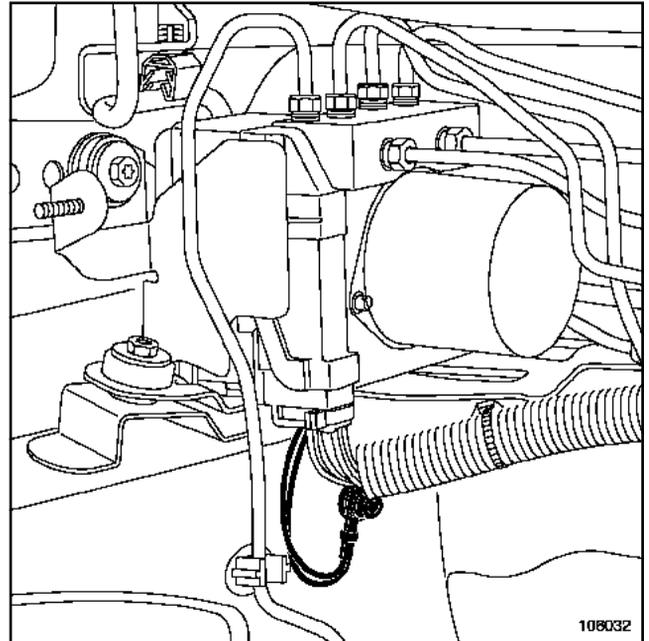
- the hydraulic unit support mounting bolts (**14**),
- the « hydraulic unit - support » assembly,
- the hydraulic unit - support mounting bolts,
- the hydraulic unit.

REFITTING

WARNING

- Replace the throttle valve seal each time it is removed.
- Position the hydraulic unit earth terminal wire facing downwards to optimise the computer connector sealing.

Proceed in the reverse order to removal.



106032

WARNING

Set up the earth terminal wires facing downwards, to optimise the hydraulic unit computer connector sealing.

AIR CONDITIONING or CLIMATE CONTROL

Refit the air conditioning pipe (see **Evaporator - de-hydration canister**).

Hydraulic unit

K4J

Torque tighten:

- the hydraulic unit support mounting bolts (**0.65 daNm**),
- the **bolts securing the pipes on the hydraulic unit (1.4 daNm)**,
- the **air distributor mounting bolts (0.9 daNm)**,
- the **hydraulic unit - support mounting bolts (0.8 daNm)**.

WARNING

- When the ignition is switched on, the throttle valve should run a minimum and maximum stop programming cycle. Using the **Diagnostic tool**, check that this programming has been executed correctly.
- Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Bleed the braking circuit using the **Diagnostic tool**

(Section General Vehicle Information, Braking circuit bleed, page **30A-5**).

AIR CONDITIONING or CLIMATE CONTROL

Fill up the refrigerant circuit using the **filling station** tool.

Note:

- Make sure the air conditioning is working properly with the fan assembly at top speed.
- If there is no cooling, look for leaks (see **Leak detection**).

K4M

Equipment required

pedal press

filling station

Diagnostic tool

Tightening torques

0.65 daNm

hydraulic unit - support
mounting bolts

0.8 daNm

bolts securing the pipes
on the hydraulic unit

1.4 daNm

air distributor mounting
bolts

0.9 daNm

REMOVAL

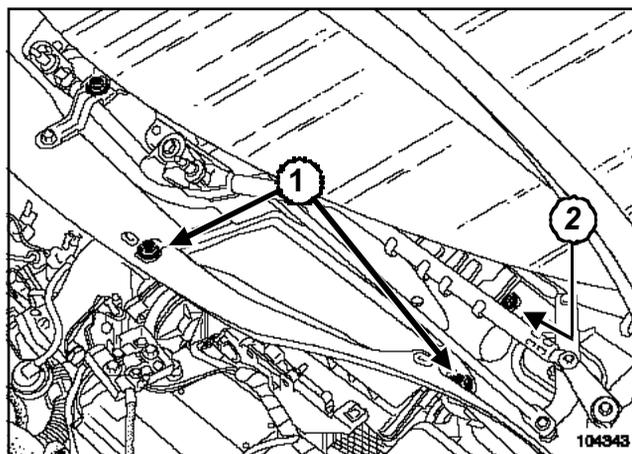
Disconnect the battery, starting with the negative terminal.

Fit a **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

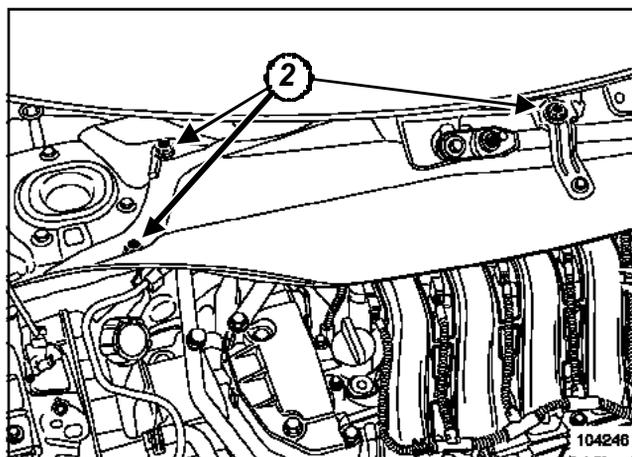
AIR CONDITIONING or CLIMATE CONTROL

Drain the refrigerant circuit using the **filling station** tool.

Remove the cowl grille (**Wiping - Washing**Section).



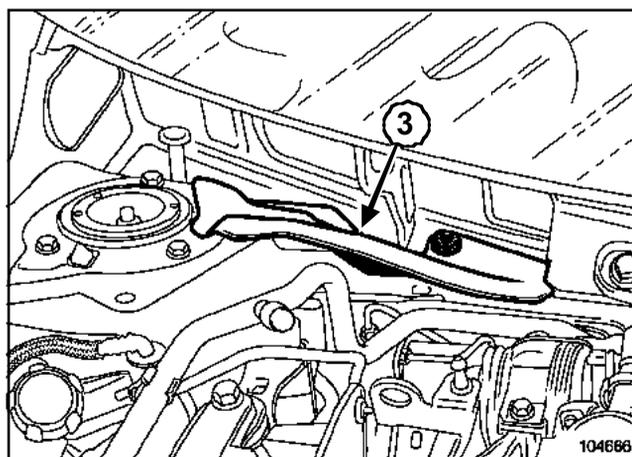
104343



104246

Remove:

- the engine covers,
- the two air filter access panel mounting bolts (1),
- the plenum chamber partition mounting bolts (2),
- the plenum chamber partition.



104666

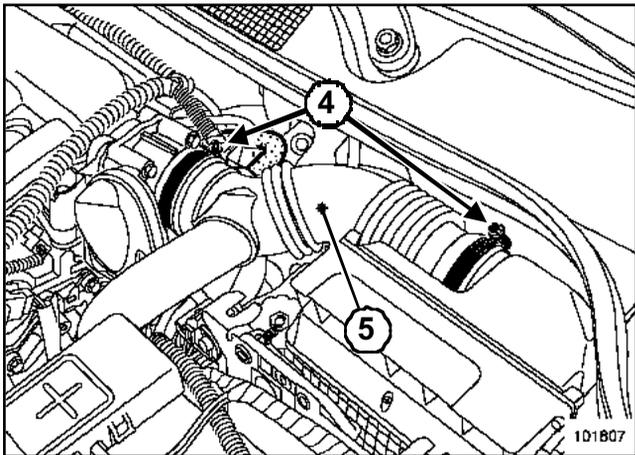
Remove the plenum chamber bracket (3)

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

K4M



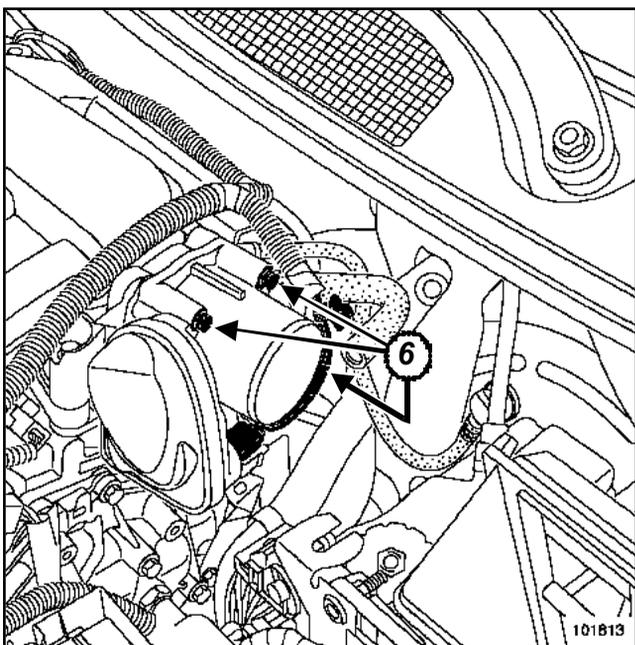
Loosen the air duct clips (4).
Remove the air duct (5).

Note:

Do not damage the vacuum outlet on the air distributor. If it is damaged, the air distributor will have to be replaced.

Disconnect:

- the brake servo vacuum pipe at the air distributor end,
- the ignition coil connectors.

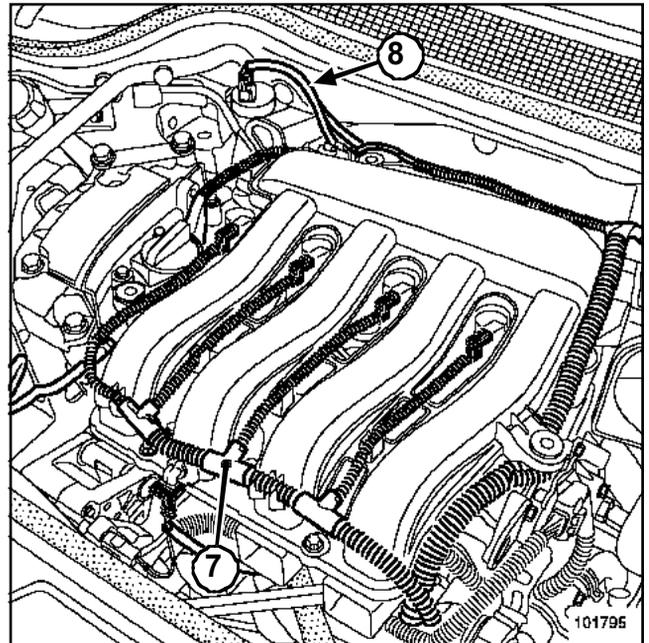


Disconnect the throttle valve connector.

Remove:

- the throttle valve mounting bolts (6),

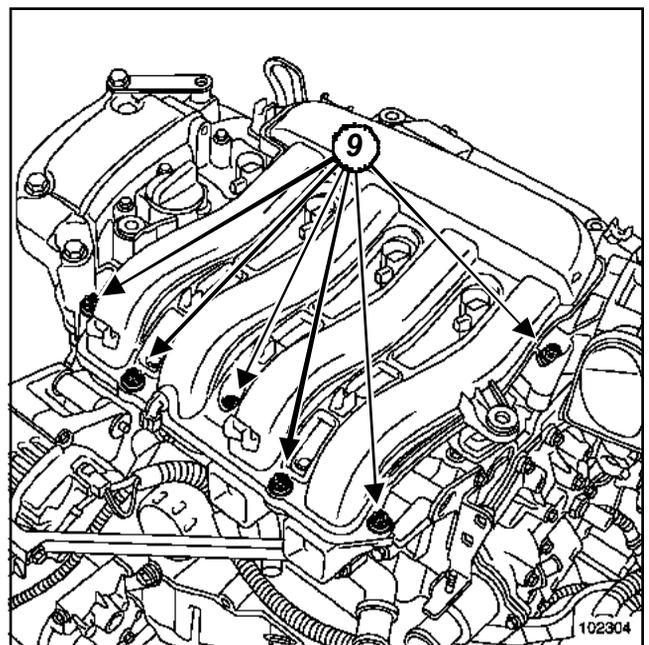
- the throttle valve.



Unclip the petrol vapour recirculation pipe (8).

Disconnect the air temperature sensor.

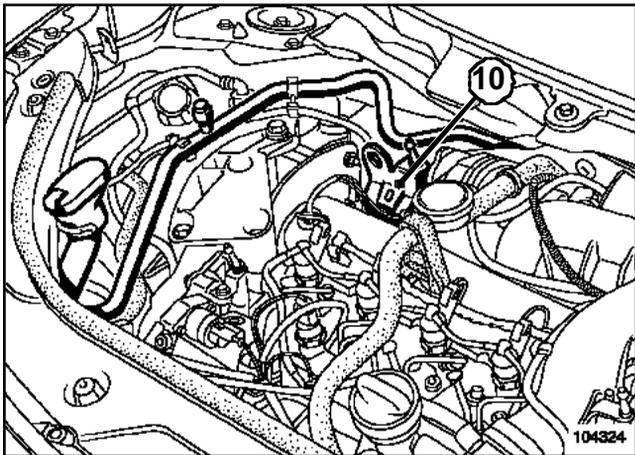
Remove the engine wiring harness (7).



Remove:

- the air distribution unit mounting bolts (9),
 - the air distribution unit,
 - the soundproofing screen mountings.
- Remove the soundproofing screen.

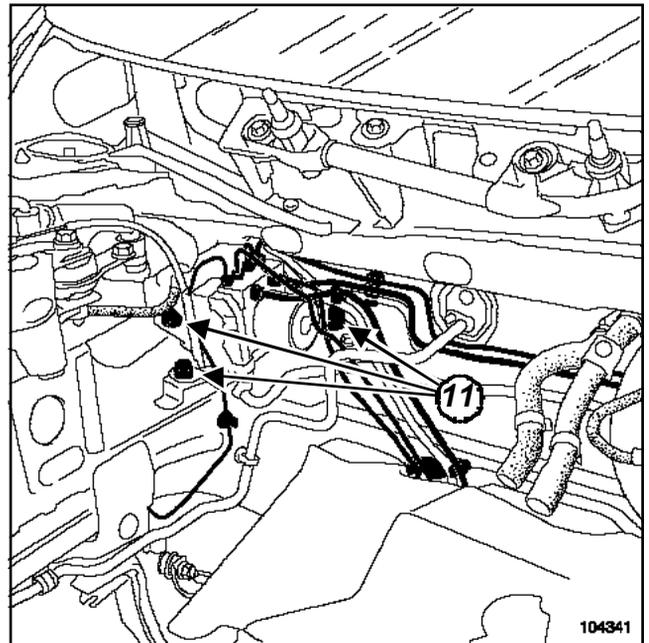
K4M



Remove the lifting eye (10).

AIR CONDITIONING or CLIMATE CONTROL

Remove the air conditioning pipe (see **Evaporator - dehydration canister**).



Remove the ABS computer earth terminal mounting bolt.

Disconnect the computer connector.

Unscrew the six hydraulic unit pipes.

Unclip the six pipes from the hydraulic unit.

Remove:

- the hydraulic unit support mounting bolts (11),
- the « hydraulic unit - support » assembly,
- the hydraulic unit.

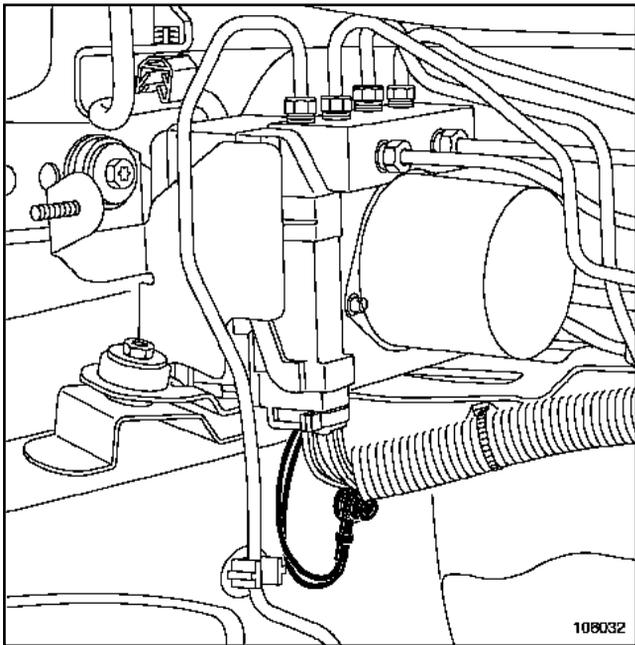
REFITTING

WARNING

- Replace the throttle valve seal each time it is removed.
- Position the hydraulic unit earth terminal wire facing downwards to optimise the computer connector sealing.

Proceed in the reverse order to removal.

K4M



106032
106032

WARNING

Set up the earth terminal wires facing downwards, to optimise the hydraulic unit computer connector sealing.

AIR CONDITIONING or CLIMATE CONTROL

Refit the air conditioning pipe (see **Evaporator - dehydration canister**).

Torque tighten:

- the hydraulic unit support mounting bolts (**0.65 daNm**),
- the hydraulic unit - support mounting bolts (**0.8 daNm**),
- the bolts securing the pipes on the hydraulic unit (**1.4 daNm**),
- the air distributor mounting bolts (**0.9 daNm**).

WARNING

- When the ignition is switched on, the throttle valve should run a minimum and maximum stop programming cycle. Using the **Diagnostic tool**, check that this programming has been executed correctly.
- Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Bleed the braking circuit using the **Diagnostic tool** (Section General Vehicle Information, Braking circuit bleed, page **30A-5**).

AIR CONDITIONING or CLIMATE CONTROL

Fill up the refrigerant circuit using the **filling station** tool.

Note:

- Make sure that the air conditioning is working properly with the fan assembly at maximum speed.
- If there is no cold air flow, look for leaks (see **Leak detection**).

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

F9Q or K9K

Equipment required

pedal press

filling station

Diagnostic tool

Tightening torques

hydraulic unit support mounting bolts **0.65 daNm**

hydraulic unit - support mounting bolts **0.8 daNm**

bolts securing the pipes on the hydraulic unit **1.4 daNm**

REMOVAL

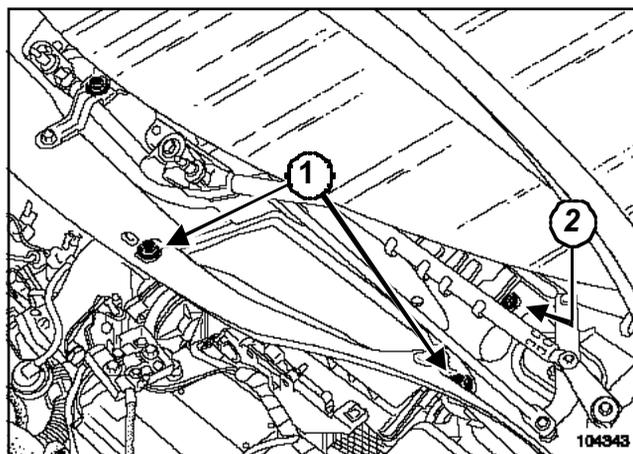
Disconnect the battery, starting with the negative terminal.

Fit a **pedal press** tool to the brake pedal to restrict the outflow of brake fluid.

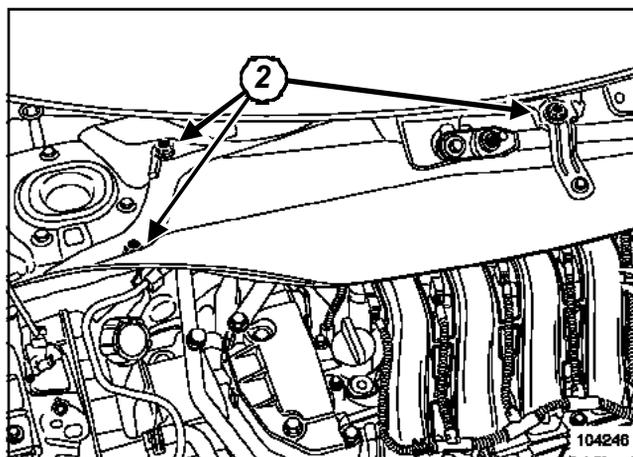
AIR CONDITIONING or CLIMATE CONTROL

Drain the refrigerant circuit using the **filling station** tool.

Remove the cowl grille (see **Wiping - Washing** Section).



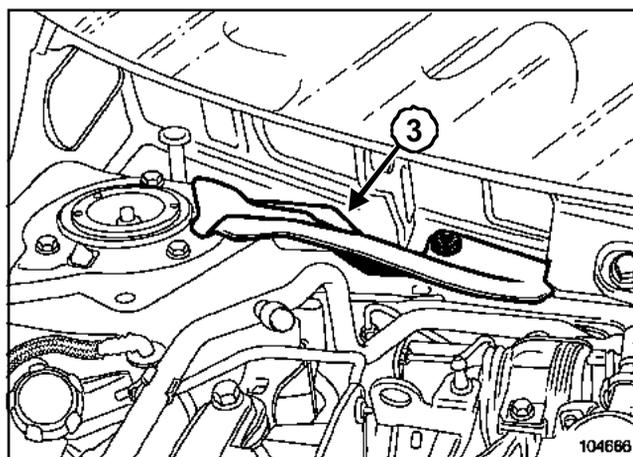
104343



104246

Remove:

- the engine covers,
- the two air filter access panel mounting bolts (1)
- the plenum chamber partition mounting bolts (2),
- the plenum chamber partition.

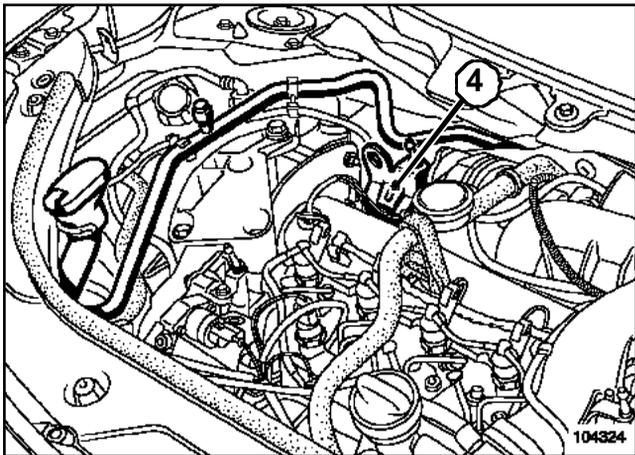


104666

104666

Remove the plenum chamber bracket (3).

F9Q or K9K



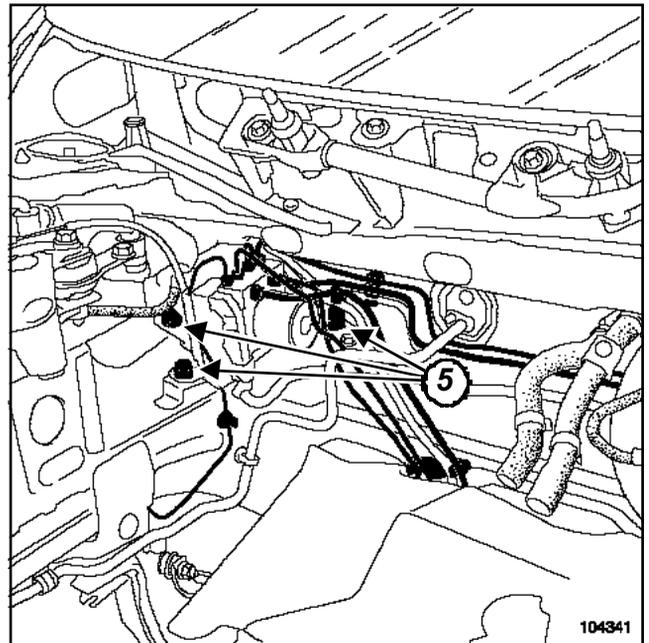
Remove:

- the lifting eye (4),
- the soundproofing screen mountings.

Remove the soundproofing.

AIR CONDITIONING or CLIMATE CONTROL

Remove the air conditioning pipe (see **Evaporator - dehydration canister**).



Remove the ABS computer earth terminal mounting bolt.

Disconnect the computer connector.

Unscrew the six hydraulic unit pipes.

Unclip the six pipes from the hydraulic unit.

Remove:

- the hydraulic unit support mounting bolts (5),
- the « hydraulic unit - support » assembly,
- the hydraulic unit - support mounting bolts,
- the hydraulic unit.

REFITTING

WARNING

Position the hydraulic unit earth terminal wire facing downwards to optimise the computer connector sealing.

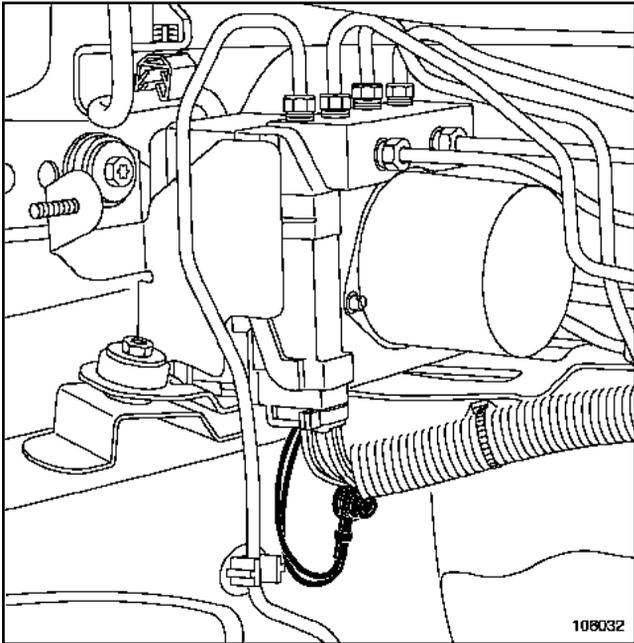
Proceed in the reverse order to removal.

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

F9Q or K9K



106032

WARNING

Set up the earth terminal wires facing downwards, to optimise the hydraulic unit computer connector sealing.

AIR CONDITIONING or CLIMATE CONTROL

Refit the air conditioning pipe (see **Evaporator - de-hydration canister**).

Torque tighten:

- the hydraulic unit support mounting bolts (0.65 daNm),
- the hydraulic unit - support mounting bolts (0.8 daNm),
- the bolts securing the pipes on the hydraulic unit (1.4 daNm).

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Bleed the braking circuit using the **Diagnostic tool**

(Section General Vehicle Information, Braking circuit bleed, page **30A-5**).

AIR CONDITIONING or CLIMATE CONTROL

Fill up the refrigerant circuit using the **filling station** tool.

Note:

- Make sure the air conditioning is working properly with the fan assembly at top speed.
- If there is no cooling, look for leaks (see **Leak detection**).

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

F4R

Equipment required

pedal press

filling station

Diagnostic tool

Tightening torques

0.65 daNm

hydraulic unit - support
mounting bolts

0.8 daNm

bolts securing the pipes
on the hydraulic unit

1.4 daNm

air distributor mounting
bolts

0.9 daNm

REMOVAL

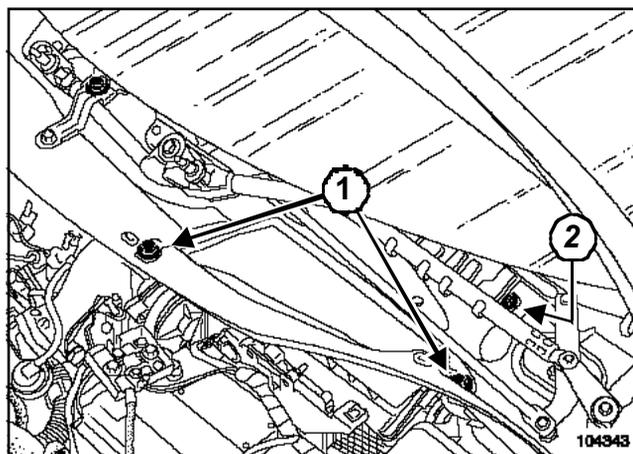
Disconnect the battery, starting with the negative terminal.

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

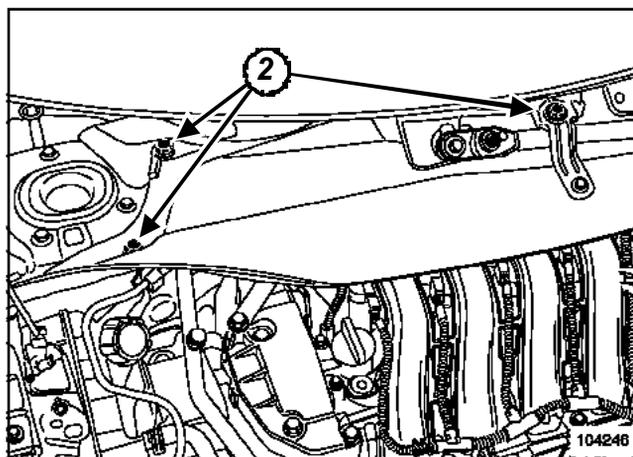
AIR CONDITIONING or CLIMATE CONTROL

Drain the refrigerant circuit using the **filling station** tool.

Remove the cowl grille (see **Wiping - Washing** Section).



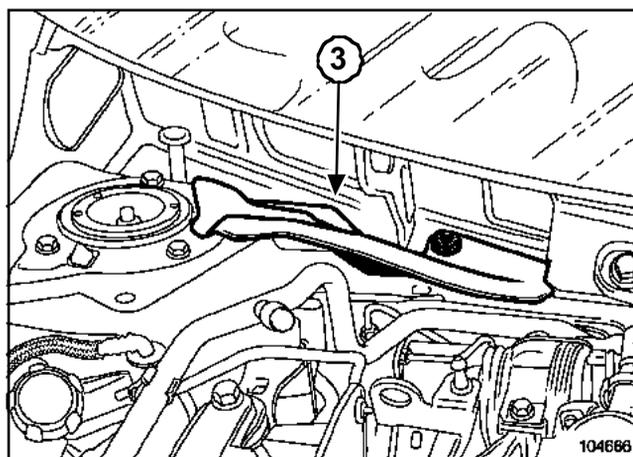
104343



104246

Remove:

- the engine covers,
- the two air filter access panel mounting bolts (1)
- the plenum chamber partition mounting bolts (2),
- the plenum chamber partition.



104666

104666

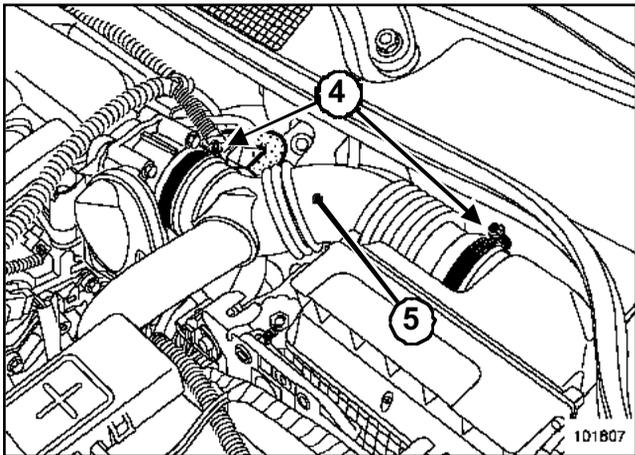
Remove the plenum chamber bracket (3).

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

F4R

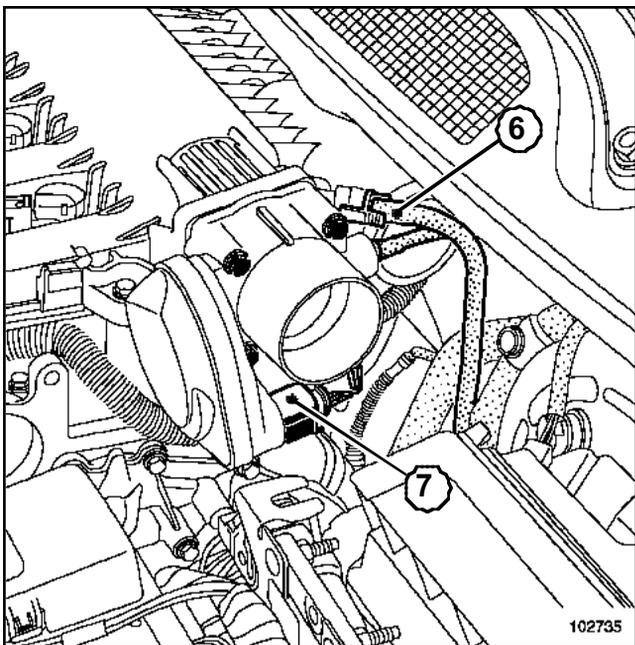


Loosen the air duct clips (4).

Remove the air duct (5).

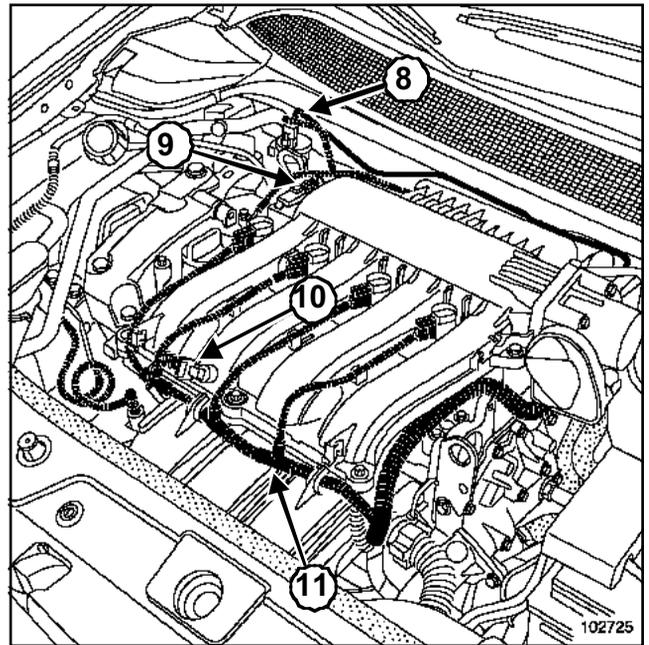
Note:

Do not damage the vacuum outlet on the air distributor. If it is damaged, the air distributor will have to be replaced.



Disconnect:

- the brake servo vacuum pipe (6) at the air distributor end,
- the ignition coil connectors,
- the throttle valve connector (7).



Unclip the petrol vapour recirculation pipe at the solenoid valve end (8).

Disconnect:

- the air pressure sensor (9),
- the air temperature sensor (10).

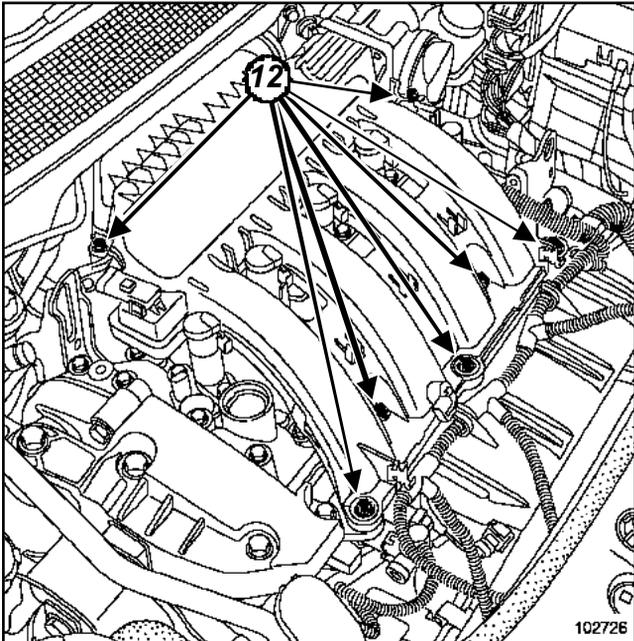
Remove the engine wiring harness (11).

ANTI-LOCK BRAKING SYSTEM

Hydraulic unit

38C

F4R

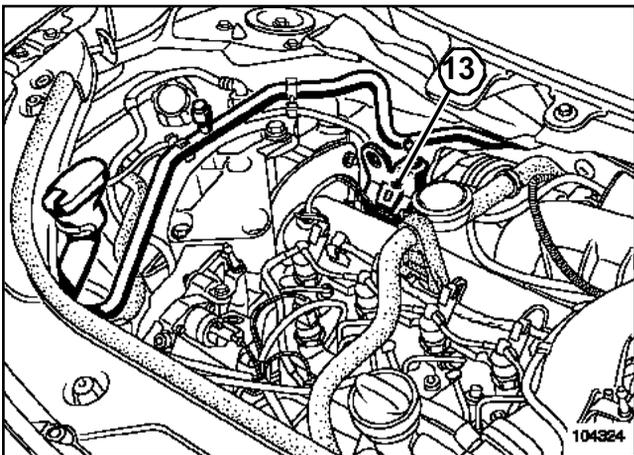


102726

Remove:

- the distribution unit mounting bolts (12),
- the air distribution unit,
- the soundproofing screen mountings.

Remove the soundproofing screen.

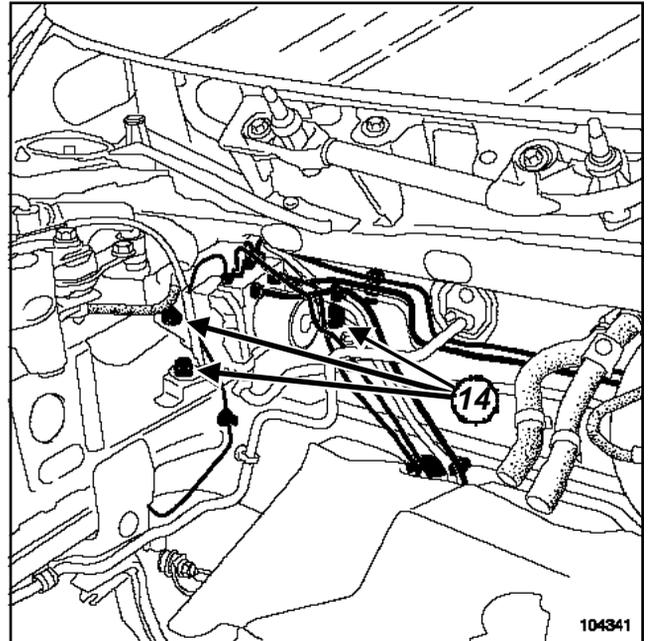


104324

Remove the lifting eye (13).

AIR CONDITIONING or CLIMATE CONTROL

Remove the air conditioning pipe (see **Evaporator - dehydration canister**).



104341

Remove the ABS computer earth terminal mounting bolt.

Disconnect the computer connector.

Unscrew the six hydraulic unit pipes.

Unclip the six pipes from the hydraulic unit.

Remove:

- the hydraulic unit support mounting bolts (14),
- the « hydraulic unit - support » assembly,
- the hydraulic unit - support mounting bolts,
- the hydraulic unit.

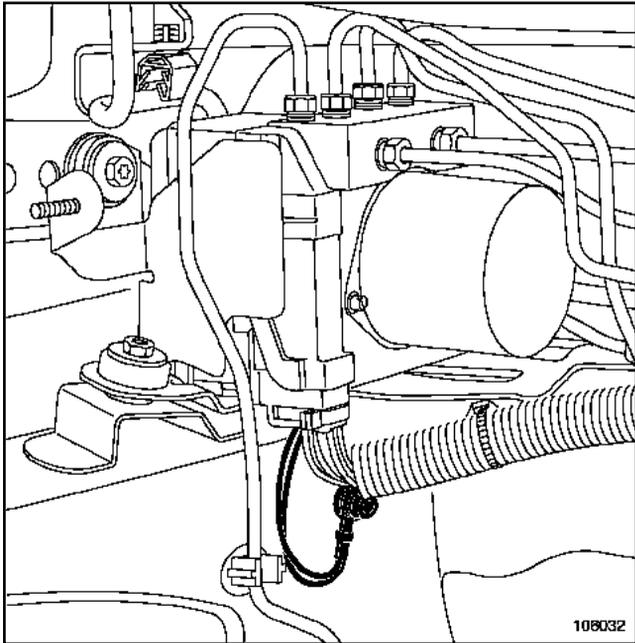
REFITTING

WARNING

- Position the hydraulic unit earth terminal wire facing downwards to optimise the computer connector sealing.

Proceed in the reverse order to removal.

F4R



106032

WARNING

Set up the earth terminal wires facing downwards, to optimise the hydraulic unit computer connector sealing.

AIR CONDITIONING or CLIMATE CONTROL

Refit the air conditioning pipe (see **Evaporator - de-hydration canister**).

Torque tighten:

- the hydraulic unit support mounting bolts (**0.65 daNm**),
- the hydraulic unit - support mounting bolts (**0.8 daNm**),
- the bolts securing the pipes on the hydraulic unit (**1.4 daNm**),
- the air distributor mounting bolts (**0.9 daNm**).

WARNING

- When the ignition is switched on, the throttle valve should run a minimum and maximum stop programming cycle. Using the **Diagnostic tool**, check that this programming has been executed correctly.
- Connect the battery; carry out the necessary programming (Section **Electrical equipment**).

Bleed the braking circuit using the **Diagnostic tool** (Section General Vehicle Information, Braking circuit bleed, page **30A-5**).

AIR CONDITIONING or CLIMATE CONTROL

Fill up the refrigerant circuit using the **filling station** tool.

Note:

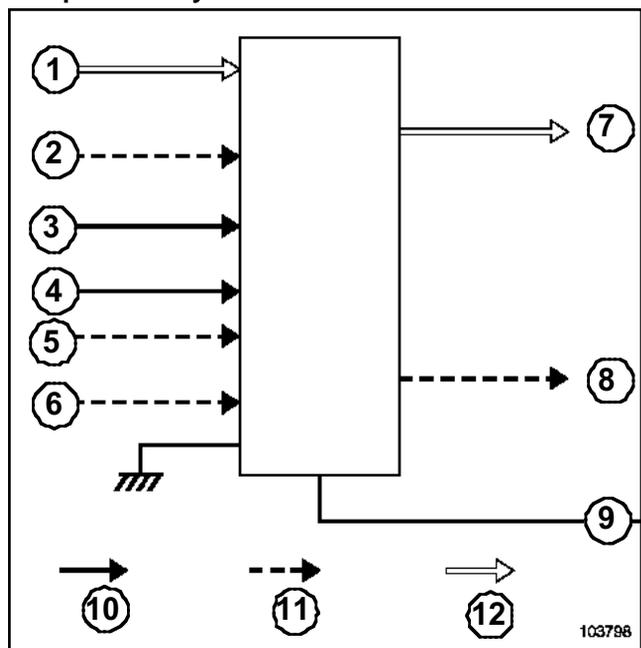
- Make sure the air conditioning is working properly with the fan assembly at top speed.
- If there is no cold air flow, look for leaks (see **Leak detection**).

ANTI-LOCK BRAKING SYSTEM

ABS with ESP: Description

38C

Pump assembly



Reference	Type of connection
10	Multiplex network
11	Wire connection
12	Hydraulic connection

Reference	Description	
Inputs	1	Braking pressure from master cylinder
	2	Combined lateral acceleration and yaw sensor signal
	3	Wheel speed sensor signal
	4	Steering wheel angle sensor signal
	5	Diagnostic socket
	6	Supply (+ after ignition feed)
Outputs	7	Regulated braking pressure on wheel(s) concerned
	8	Diagnostic socket
	9	Anti-skid and electronic stability program deactivation push button

The steering wheel angle sensor is built into the electric power steering. This sensor cannot be removed.

Note:

Two types of pump assemblies are fitted, either ABS or ABS - ESP. The ABS computer has **26 tracks**. The ABS - ESP computer has **46 tracks**.

Equipment required

Diagnostic tool

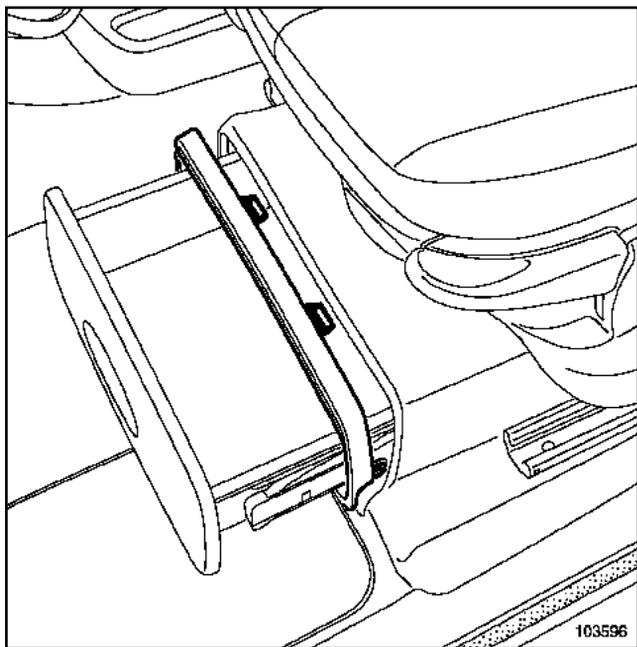
Tightening torques

lateral acceleration and yaw sensor mounting nuts

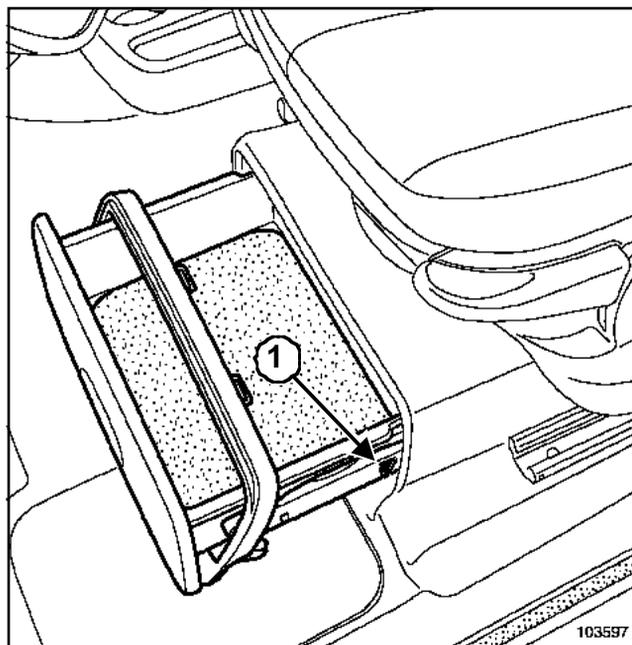
0.8 daN

REMOVAL

Disconnect the battery, starting with the negative terminal.



Unclip the rack frame.



103597

Remove the rack by pressing on the clip (1) with a flathead screwdriver.

Disconnect the lateral acceleration and yaw sensor connector.

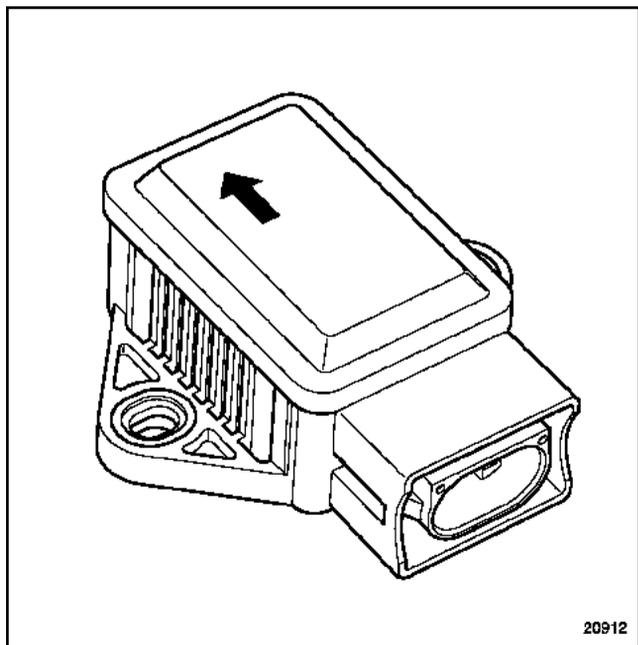
WARNING

- Handle this sensor with care.

Remove:

- the sensor mounting nuts,
- the sensor.

REFITTING



20912
20912

WARNING

- The sensor must be fitted facing the vehicle's direction of travel (as shown by the arrow).
- Be sure to replace any sensor which has undergone impact.

Proceed in the reverse order to removal.

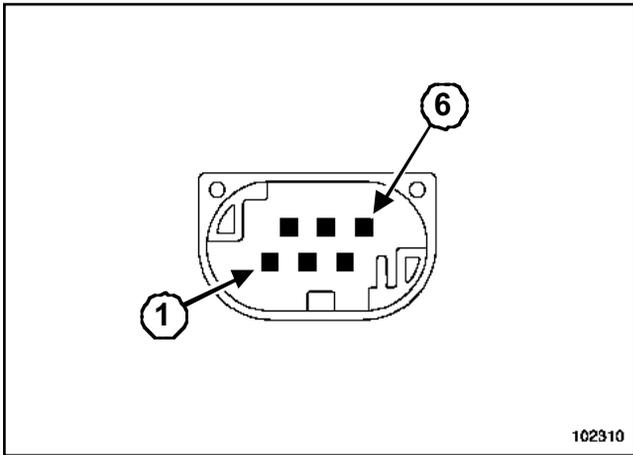
Torque tighten the **lateral acceleration and yaw sensor mounting nuts (0.8 daN)**.

IMPORTANT

Be sure to confirm the repair with a road test and a check using the **Diagnostic tool**.

WARNING

Connect the battery; carry out the necessary programming (Section **Electrical equipment**).



102310

Track	Description
1	Yaw sensor reference signal
2	Yaw sensor test signal
3	Accessories + feed
4	Yaw speed sensor signal
5	Transverse acceleration signal
6	Earth