

Saab 900

SERVICE MANUAL



SAAB

5:1 Brakes

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5:1 Brakes

M1988-91-

025 Technical data

105 Special tools

500 Technical description

516 Brake discs

517 Brake pads

520 Footbrake system

521 Master cylinder

522 Brake lines

523 Brake calipers

524 Brake pedal assembly

529 Bleeding the brake system

530 Changing the brake fluid

541 Brake servo unit

551 Handbrake system

Brake vibration

Units

The basic and derived units used throughout the Service Manual are in accordance with the SI system. (Système International d'Unités)

For users not familiar with the SI units, some non-Continental units are given in brackets after the respective SI unit.

The following symbols and abbreviations are used:

SI unit	Equivalent unit and symbol
Millimeter (mm)	inch (in)
Kilogramme (kg)	pound (lb)
Newton (N)	pound-force (lbf)
Newtonmeter (Nm)	foot pound (ft lb)
Atmosphere (bar)	pound-force per square inch (lbf/in ²) (Also abbreviated: psi)
Liter (l)	US liquid quart (liq qt) (Also abbreviated: qts)
	US gallon (USgal)
°Celsius (°C)	°Fahrenheit (°F)

Conversion factors

1 in = 25.4 mm	1 mm = 0.039 in
1 lb = 0.45 kg	1 kg = 2.20 lb
1 lbf = 4.45 N	1 N = 0.23 lbf
1 lbf ft = 1.36 Nm	1 Nm = 0.74 lbf ft
1 psi = 0.07 bar	1 bar = 14.5 lbf/in ²
1 US liq qt = 0.83 UKqt	1 l = 1.05 liq qt
	1 USgal = 0.83 UKgal
°F = °C x 9/5 + 32	°C = (°F - 32) x 5/9

Market codes

The codes refer to market specifications

AT	Austria	GB	Great Britain
AU	Australia	GR	Greece
BE	Belgium	IS	Iceland
CA	Canada	IT	Italy
CH	Switzerland	JP	Japan
DE	Germany	ME	Middle East
DK	Denmark	NL	Netherlands
ES	Spain	NO	Norway
EU	Europe	SE	Sweden
FE	Far East	US	USA
FI	Finland	UC	US California
FR	France		

Technical data

Brake system

Type	Dual diagonally split brake circuits
Footbrake system	Acting hydraulically on all wheels
Parking brake system	Acting mechanically on the rear wheels

Brake fluid reservoir

Capacity	litres	0.24
Total capacity of brake system	litres	0.58
Brake fluid specification		DOT 4

Brake servo unit

Make	Girling	
Type	Vacuum assisted	
Diameter	mm (in)	229 (9)
Power assistance		4:1 (at pedal pressure of 300 N (66 lbf))

Master cylinder

Make	Girling	
Type	Tandem cylinder	
Diameter	mm (in)	22.2 (0.87)

Front-wheel brakes

Make	Girling
Type designation	Colette 54
Type	Disc brake with sliding caliper
Piston diameter	mm (in) 54 (2.13)

Front-wheel discs

Type	Ventilated
Outside diameter	mm (in) 278 (10.95)
Thickness (new disc)	mm (in) 23.5 \pm 0.2 (0.93 \pm 0.01)
Minimum permissible thickness	mm (in) 21.5 (0.85)
Minimum permissible thickness after grinding	mm (in) 22.0 (0.87)
Maximum runout with disc fitted	mm (in) 0.08 (0.003)
Maximum variation in disc thickness	mm (in) 0.015 (0.0006)
Both sides of the disc must be turned/ground equally	

Front-wheel pads

Minimum thickness of friction lining	mm (in)	4.0 (0.16)
Area of friction material on each pad	cm ² (in ²)	35 (5.4)

Rear-wheel brakes

Make		ATE
Type		Disc brake with sliding caliper
Piston diameter	mm (in)	33 (1.30)

Rear-wheel discs

Type		Solid (non-ventilated)
Outside diameter	mm (in)	258 (10.16)
Thickness (new disc)	mm (in)	9.0 \pm 0.1 (0.35 \pm 0.004)
Minimum permissible thickness	mm (in)	7.5 (0.30)
Minimum permissible thickness after grinding	mm (in)	8.0 (0.32)
Maximum runout with disc fitted	mm (in)	0.08 (0.003)
Maximum variation in disc thickness	mm (in)	0.015 (0.0006)
Both sides of the disc must be turned/ground equally		

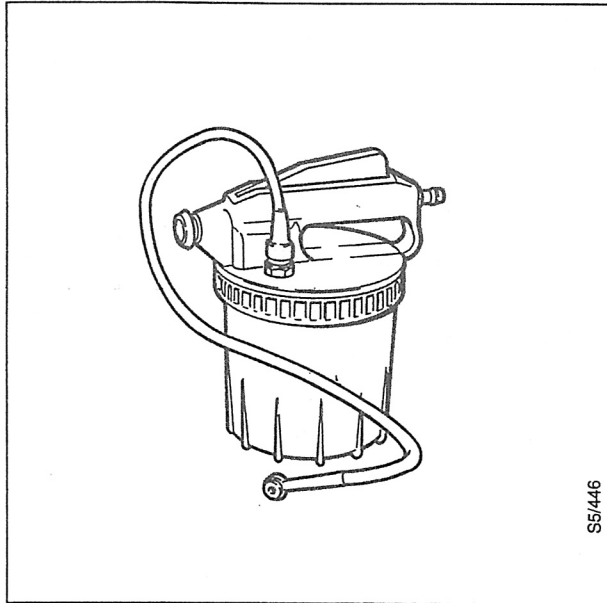
Rear-wheel pads

Minimum thickness of friction lining	mm (in)	4.0 (0.16)
Area of friction material on each pad	cm ² (in ²)	18.4 (2.8)

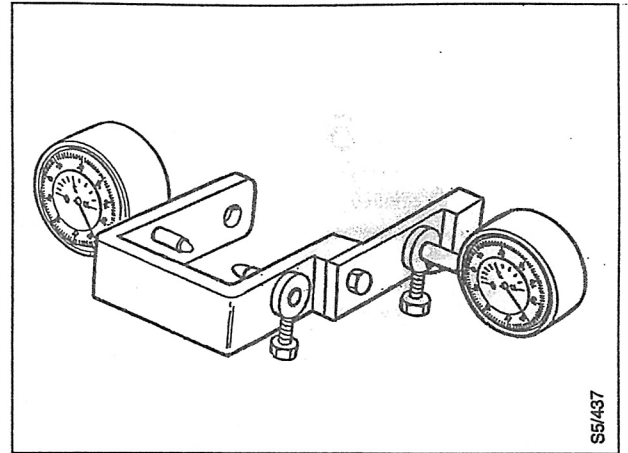
Tightening torques

Front-wheel brake retaining bolts	Nm (lbf ft)	60-100 (45-74)
Rear-wheel brake retaining bolts	Nm (lbf ft)	40-54 (30-40)

Special tools



88 19 096 Bleeding unit



89 96 605 Calipers for measuring variations in thickness and runout on brake discs and hubs.

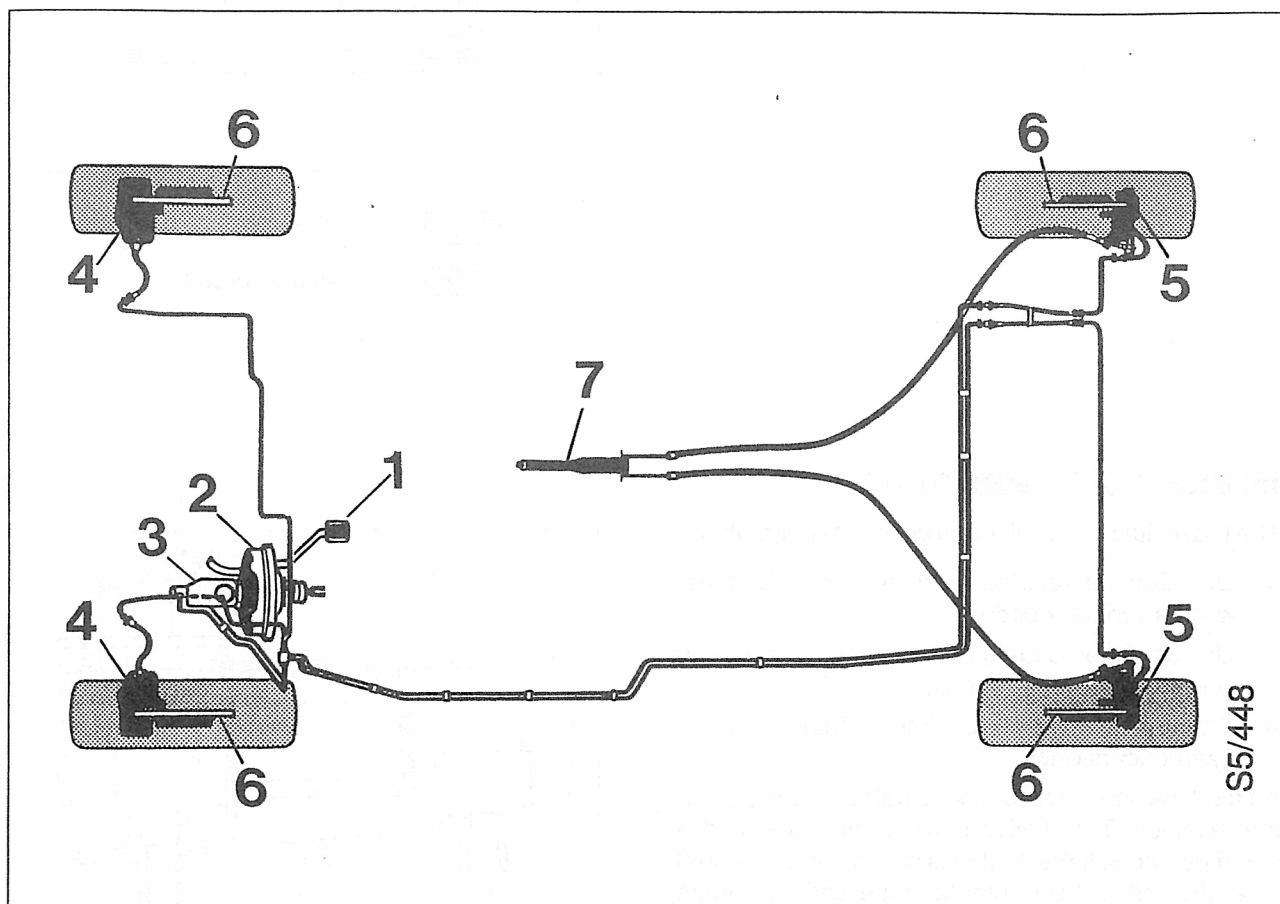
78 40 622 Dial indicators (special tools for the automatic transmission on Saab 9000 models)



Technical description

General	500-1
Brake fluid reservoir	500-2
Footbrake system	500-3
Brake servo unit	500-3

Master cylinder	500-5
Front-wheel calipers	500-7
Rear-wheel calipers	500-7
Handbrake system	500-8



Brake system

- 1 Brake pedal
- 2 Brake servo unit
- 3 Master cylinder
- 4 Front-wheel caliper
- 5 Rear-wheel caliper
- 6 Brake disc
- 7 Handbrake lever

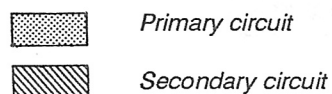
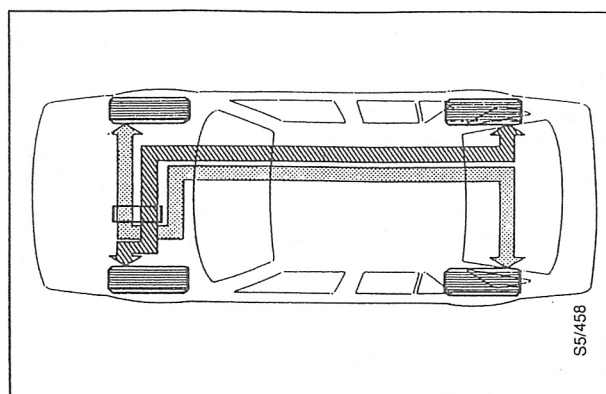
General

The car is equipped with two mutually independent brake systems:

- Footbrake system
- Handbrake system

The footbrake system is actuated by the brake pedal and acts hydraulically on all four wheels. The handbrake system is actuated by the handbrake lever and acts mechanically on the rear wheels.

The footbrake system consists of two diagonally split brake circuits: the primary circuit for the right front and left rear wheels, and the secondary circuit for the left front and right rear wheels. With the circuits split in this way, 50% of the braking effect will always remain if one of the circuits fails.

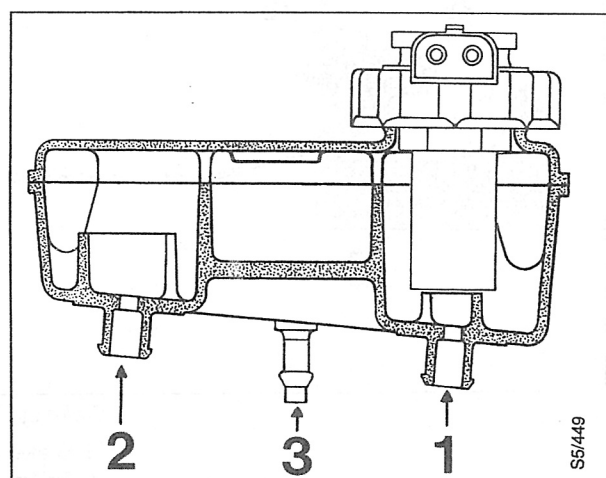


Brake fluid reservoir

The brake fluid reservoir comprises three chambers:

- One chamber feeding the right front and left rear wheels (primary circuit).
- One chamber feeding the left front and right rear wheels (secondary circuit).
- One chamber for the clutch circuit (manual gearbox cars only).

A fluid level indicator is incorporated in the cap on the reservoir. The device consists of a float and a set of contacts. If the float falls as a result of the fluid level dropping, the contacts close and the brake warning light on the instrument panel comes on.



Brake fluid reservoir

- 1 To primary circuit
- 2 To secondary circuit
- 3 To clutch cylinder

Footbrake system

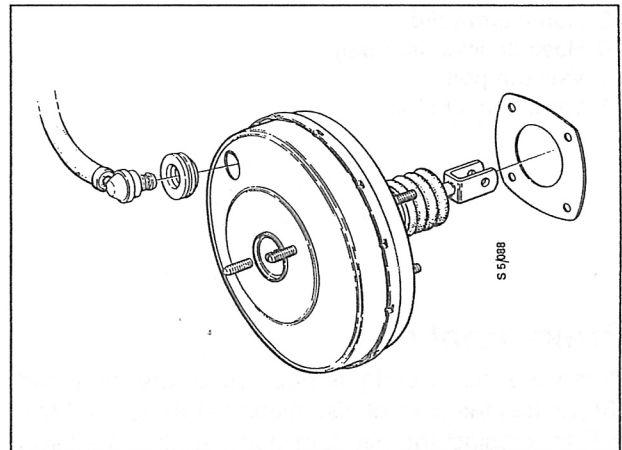
When the brake pedal is depressed, the pedal pressure is assisted by power from the servo unit and pressure is raised in the master cylinder. The plungers in the master cylinder apply the pressure to the fluid in the brake system, advancing the piston in each caliper and thereby pressing the pads against the brake discs.

When the brake pedal is released, the plungers in the master cylinder retract and the cutoff ports are opened. The pressure is thus exhausted and the piston seal in each caliper returns the piston to its retracted position.

Brake servo unit

The servo unit provides power assistance to the effort applied by the driver's foot. The power supplied by the unit is obtained from the vacuum created in the engine inlet manifold and gives assistance in the ratio of about 4:1. A hose connects the servo unit to the inlet manifold.

The servo unit, consisting of two shells, is fitted between the brake pedal and master cylinder and is linked to each of these by means of pushrods. Should a vacuum failure occur, the two pushrods will act as a single rod. The brakes will then work conventionally but without power assistance from the servo unit, so that much greater effort on the brake pedal will be required.

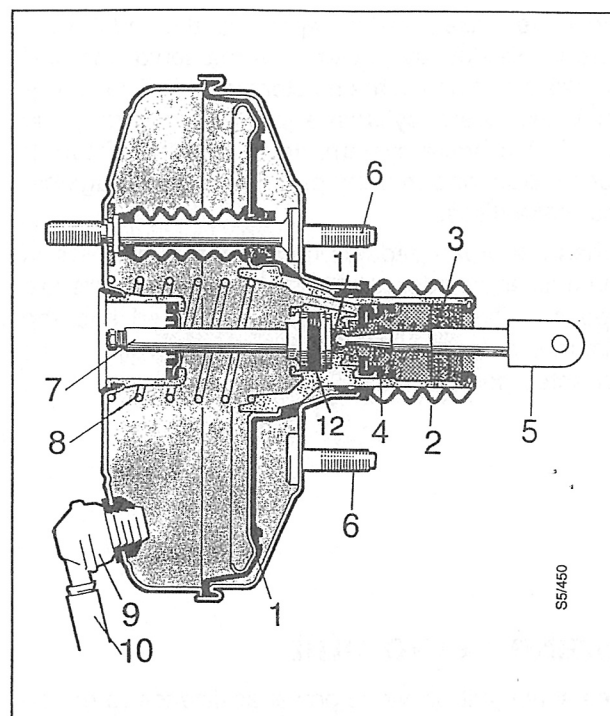


Brake off

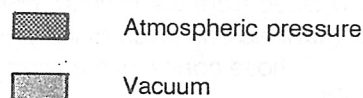
The diaphragm (1) and valve control piston are held in the fully returned position by the diaphragm return spring (8). The vacuum port is open and vacuum acts on both sides of the diaphragm.

Brake servo unit: brake off

- 1 Diaphragm
- 2 Dust cover
- 3 Filter
- 4 Seal
- 5 Input rod (from brake pedal)
- 6 Retaining stud
- 7 Output rod (to master cylinder)
- 8 Diaphragm return spring
- 9 Non-return valve
- 10 Hose (to inlet manifold)
- 11 Vacuum port
- 12 Valve control piston



Brake servo unit: brake off

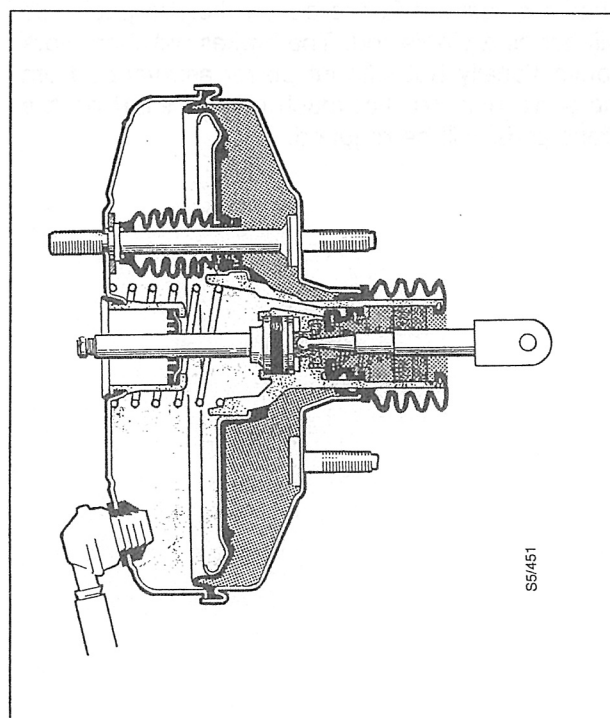


Brake applied

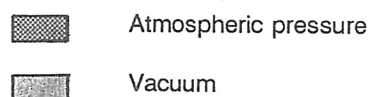
When the brake pedal is depressed, the input rod (5) pushes the control piston and diaphragm (1) forwards, closing the vacuum port. As the input rod continues to move forwards, the control piston opens the atmospheric port, allowing atmospheric pressure to enter through the filter (3) into the rear shell behind the diaphragm.

Since a vacuum is still present at the front of the diaphragm, the pressure assists the input rod in pushing the diaphragm forwards, and the output rod (7) to actuate the master cylinder plunger.

As soon as the pedal is released, the vacuum port is opened, allowing the atmospheric pressure in the rear chamber to flow into the front chamber and from there through the non-return valve (9) into the inlet manifold. The atmospheric port is closed and the return spring presses the diaphragm, control piston and inlet rod back to their original positions. Because the non-return valve opens only when the vacuum in the inlet manifold is greater than that in the servo unit, it prevents air at atmospheric pressure flowing back from the inlet manifold into the servo unit.

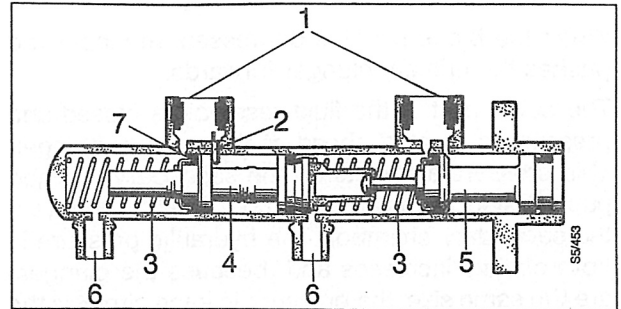


Brake servo unit, brake applied



Master cylinder

The master cylinder is of tandem type and made of steel. It houses a primary plunger (nearer the brake servo unit), a secondary plunger and a return spring for each. The cylinder body incorporates connections for two brake lines.

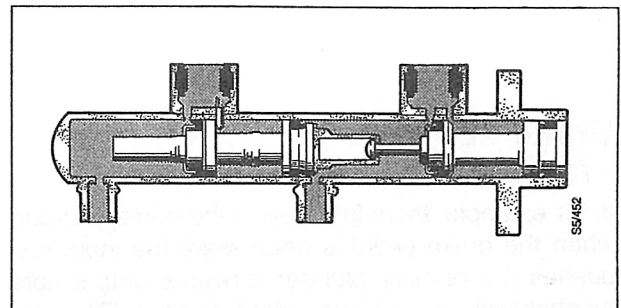


Master cylinder


- 1 Reservoir adapters
- 2 Stop pin
- 3 Return springs
- 4 Secondary plunger
- 5 Primary plunger
- 6 Brake-line connections
- 7 Cutoff port

Brake off

When the brake is off, the return springs hold the plungers in the return position. Both cutoff ports are open and no pressure is therefore applied to the system. The return movement is limited by a stop pin.



Master cylinder: brake off

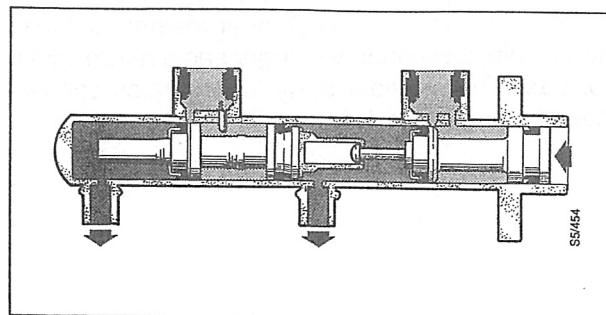
 Vacuum

Brake applied - both circuits operating

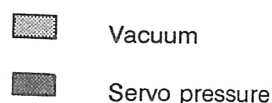
When the brake pedal is depressed, the input rod pushes the primary plunger forwards.

The cutoff port to the fluid reservoir is closed and pressure is created ahead of the primary plunger. This pressure also acts on the secondary plunger, pushing it forwards and closing the cutoff port from the secondary chamber. The hydraulic pressure in both circuits increases and, because the plungers are the same size, the pressure in each circuit is the same. The fluid pressure is then directed to the piston in each caliper, causing the brake pads to be pressed against the discs.

When the brake pedal is released the return springs press the plungers back to their original positions in the master cylinder, thus opening the cutoff ports. This releases the pressure and the seal on the piston in each caliper returns the piston to its original position, thereby retracting the brake pads.



*Master cylinder: brakes applied
(both circuits operating)*

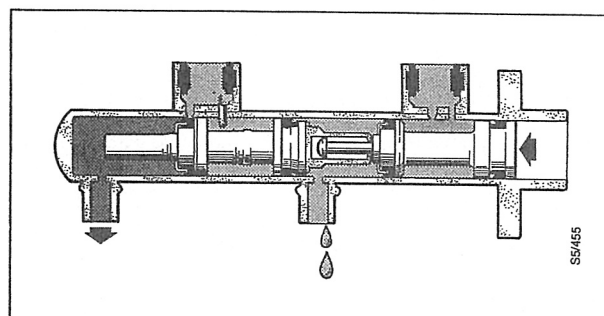


Brake applied - failure in one circuit

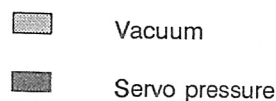
If, for example, there is a leak in the primary circuit when the brake pedal is depressed, the input rod pushes the primary plunger forwards until it acts mechanically on the secondary plunger. The secondary plunger now closes the cutoff port, allowing hydraulic pressure to build up in the secondary circuit.

If a leak should occur in the secondary circuit, the secondary plunger will be pushed forwards until it reaches the end of the cylinder.

In either case, greater pedal movement will be required to achieve the desired braking effect.



*Master cylinder: brake applied
(failure in one circuit)*



Footbrake system

Workshop technique 520-1

Workshop technique

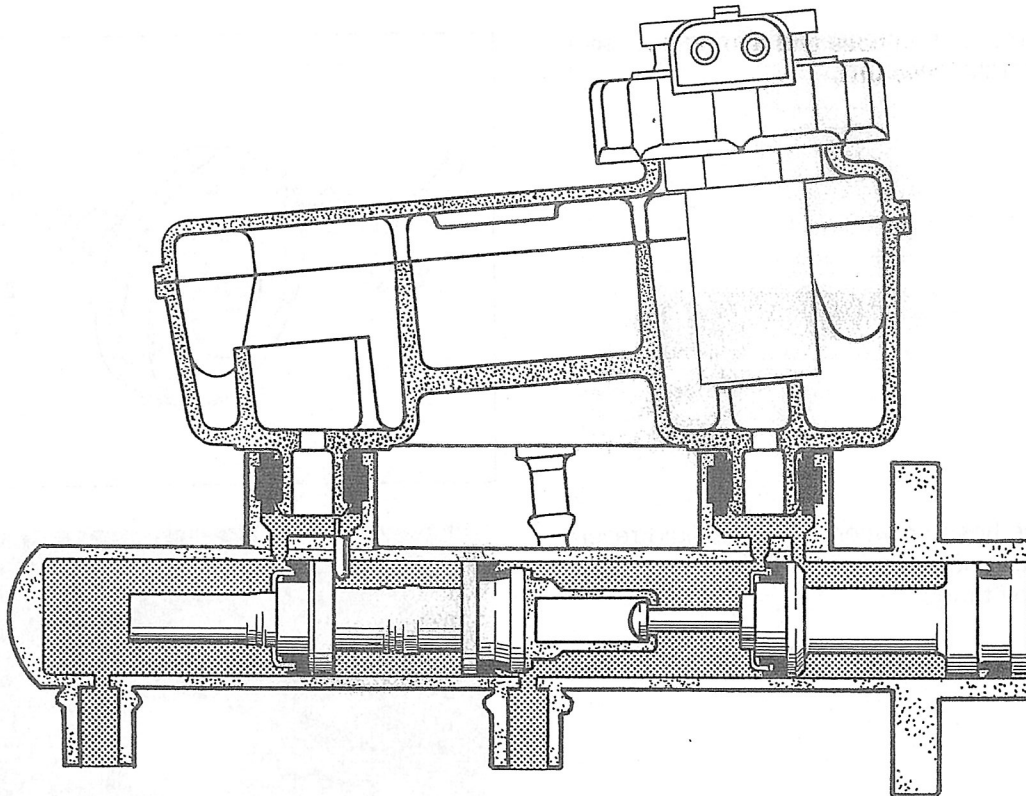
Scrupulous cleanliness is imperative when any work involving the removal, fitting, dismantling or assembly of any hydraulic components is to be carried out. Clean any parts that have been removed or dismantled in unused brake fluid or a cleaning fluid designed specifically for hydraulic brake components. Wipe the parts dry using clean, lint-free paper or cloth. All old gaskets, seals, O-rings and rubber components should be discarded when new ones are provided in the service kit.

Before assembly, all components should be generously lubricated using clean, unused brake fluid of the specified grade.

Master cylinder

Workshop technique 521-1

Master cylinder 521-2



Master cylinder with brake fluid reservoir

Workshop technique

Scrupulous cleanliness is imperative when any work involving the removal, fitting, dismantling or assembly of hydraulic components is to be carried out.

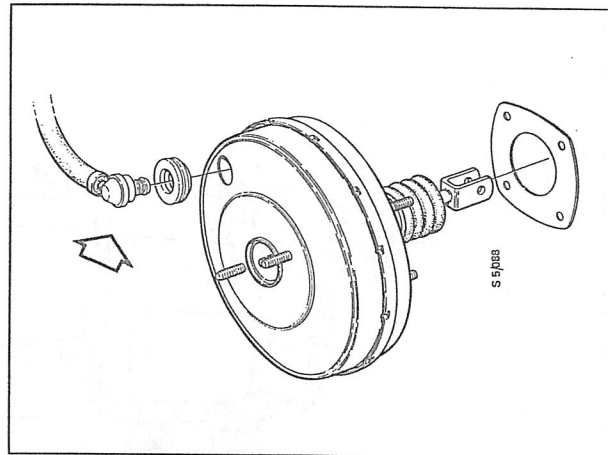
Clean any parts that have been removed or dismantled in unused brake fluid or a cleaning fluid designed specifically for hydraulic brake components. Wipe the parts dry using clean, lint-free paper or cloth. All old gaskets, seals, O-rings and rubber components should be discarded when new ones are provided in the service kit.

Before assembly, all components should be generously lubricated using clean, unused brake fluid of the specified grade.

Master cylinder

To remove

- 1 Disconnect the electric leads from the brake fluid reservoir cap.
- 2 Remove the vacuum hose and non-return valve from the brake servo unit.



- 3 Clamp the hose between the brake fluid reservoir and the clutch master cylinder using a pair of pinch-off tongs.



- 4 Suck the brake fluid out of the reservoir.
Note that not all the fluid can be sucked out.

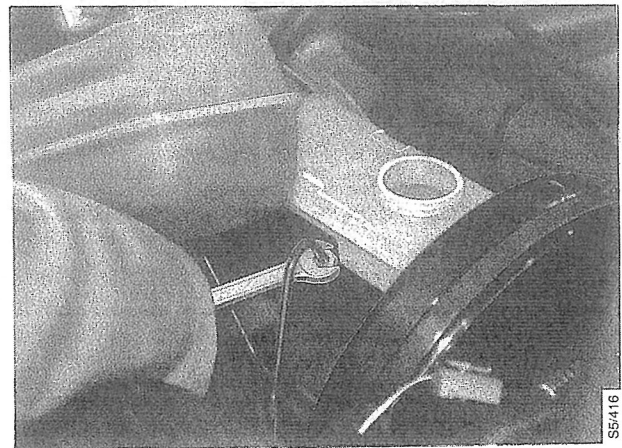
Note:

Make sure that no brake fluid drips onto the paintwork. If it does, rinse the area with water and wipe it thoroughly dry.

- 5 Connect one end of a hose to the bleed nipple on the right-hand front caliper and place the other end in a suitable receptacle. Open the nipple and get an assistant to depress the brake pedal, close the nipple as soon as the brake pedal reaches the floor. Repeat until one of the brake fluid reservoir chambers is empty. Drain the reservoir's other chamber in the same way from the left-hand front bleed nipple.
- 6 Remove the hose from the clutch master cylinder and drain the reservoir. Plug the neck on the brake fluid reservoir.

- 7 Remove the two brake lines from the master cylinder.

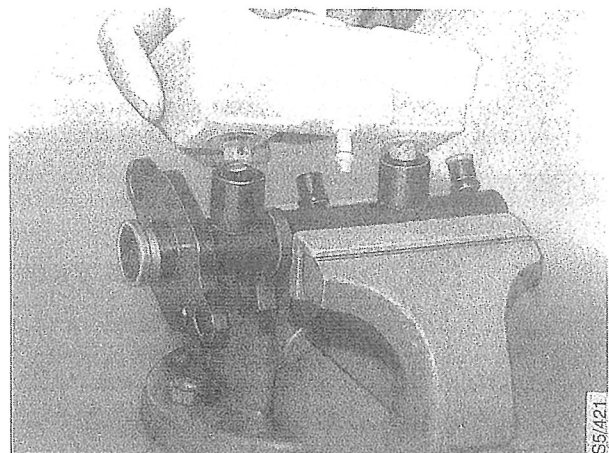
Useful tip: To improve accessibility, the cooling system expansion tank can be loosened and moved aside.



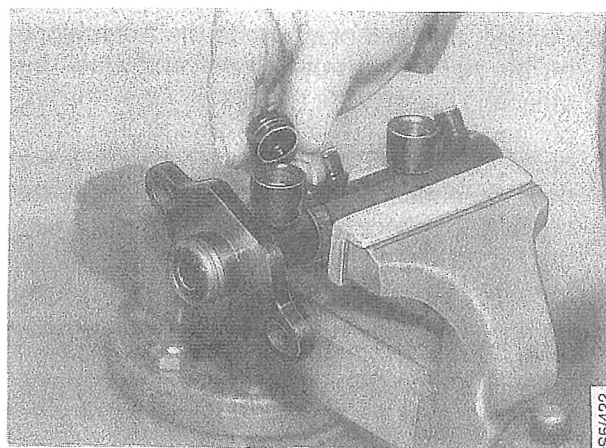
- 8 Undo the two nuts holding the master cylinder to the brake servo unit and remove the master cylinder.

To dismantle

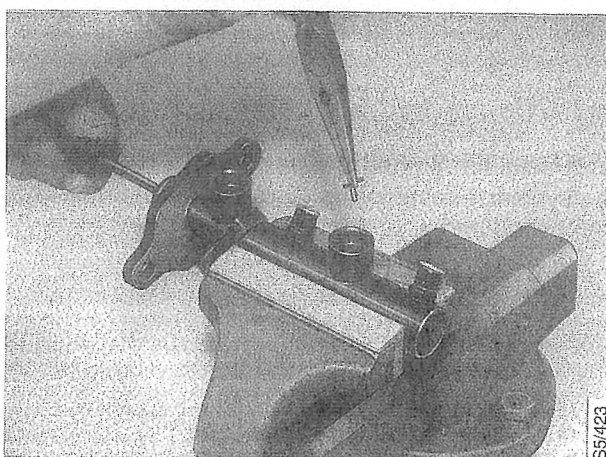
- 1 Clamp the master cylinder in a soft-jaw vice.
- 2 Gently work the reservoir off the master cylinder.



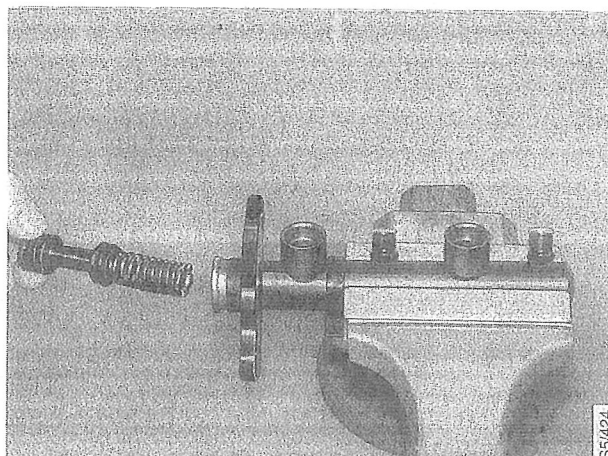
- 3 Remove the rubber seals from the master cylinder's connections to the brake fluid reservoir.



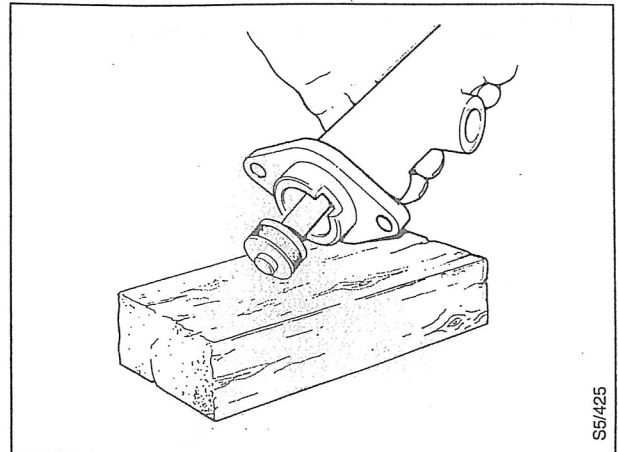
- 4 Press in the primary plunger (at bulkhead end) and remove the stop pin for the secondary plunger.



- 5 Remove plungers and springs from the cylinder bore.



- 6 Carefully tap the cylinder against a wooden block so that the inner (secondary) plunger drops out.

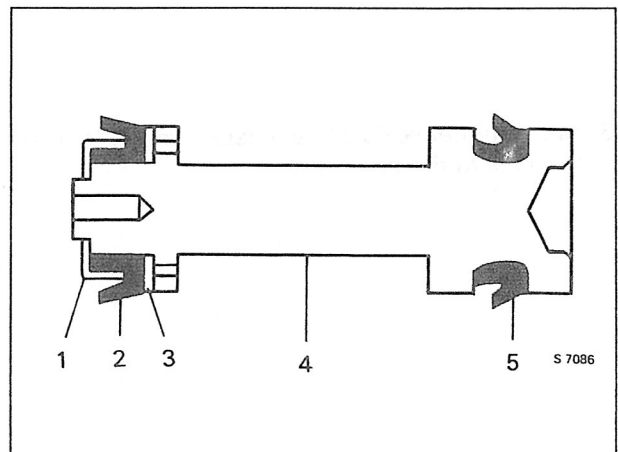


- 7 Inspect the cylinder bore to ensure that it is not scored or pitted.

To assemble

Lubricate seals and cylinder bore with unused brake fluid.
Replace the entire primary plunger assembly.

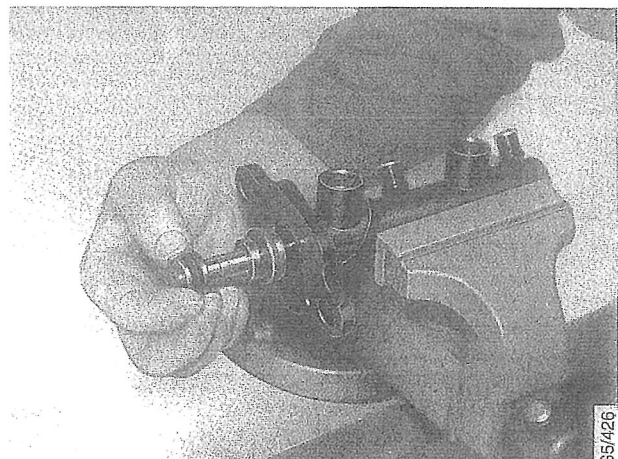
Change both seals on the secondary plunger (note the positions of the seals) and fit a new washer, spring seat and stop pin. The seal between the master cylinder and the servo unit must also be changed.



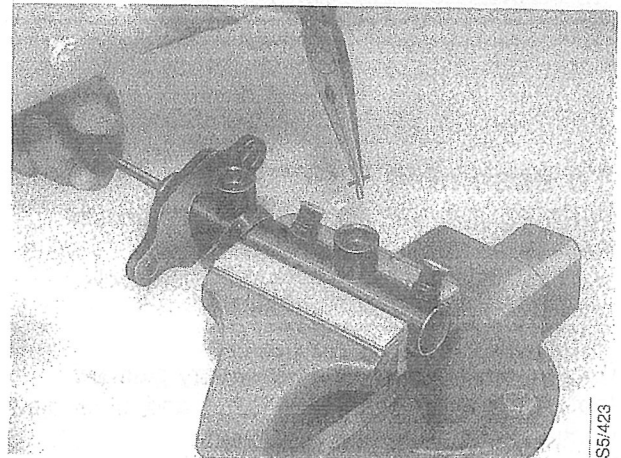
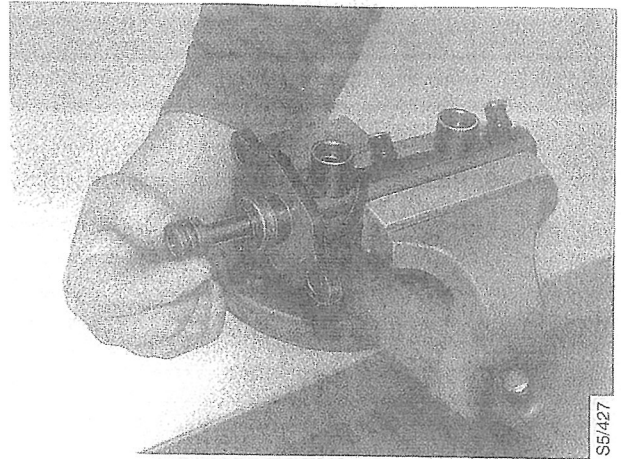
Secondary plunger with seals

- 1 Spring seat
- 2 Plunger seal
- 3 Washer
- 4 Secondary plunger
- 5 Plunger seal

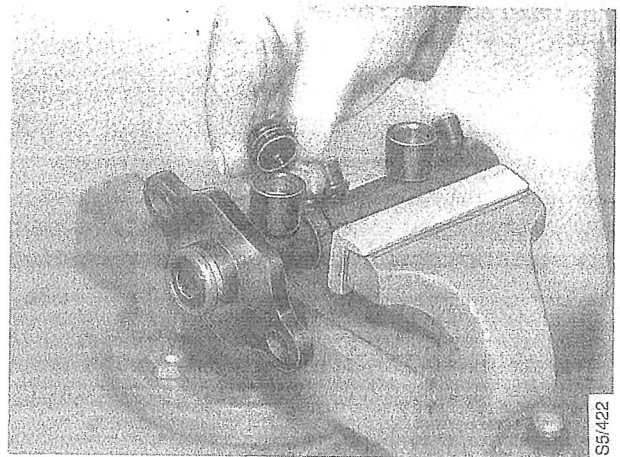
- 1 Fit the inner spring and inner plunger. Be careful not to damage the seals. The primary plunger must not be repaired. If the seals are damaged the entire plunger assembly must be changed.



- 2 Fit the outer plunger with spring. Press it fully home so that the inner plunger's stop pin can be fitted.

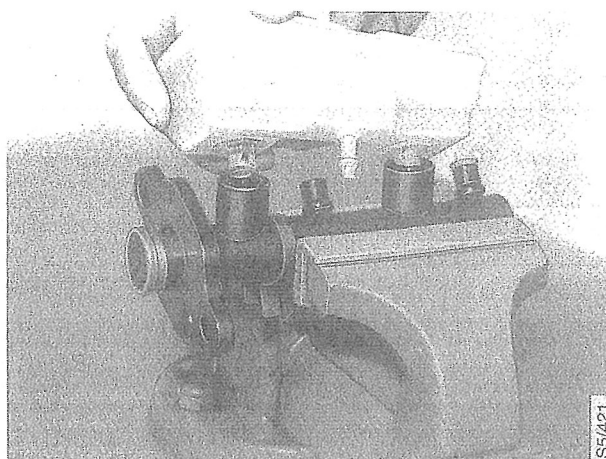


- 3 Fit the rubber seals in the master cylinder's connections to the reservoir.



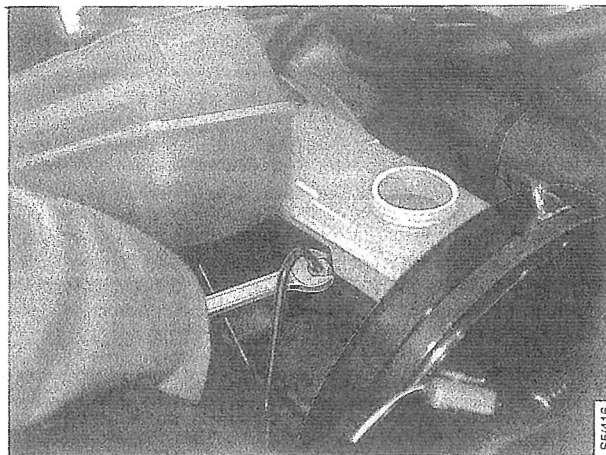
- 4 Lubricate the seals with unused brake fluid.

- 5 Fit the brake fluid reservoir.
Take care not to displace the seals from their seats.



To refit

- 1 Fit the master cylinder back in place.
Tighten the nuts holding the master cylinder to the brake servo unit.
- 2 Reconnect the brake lines and tighten the fittings.

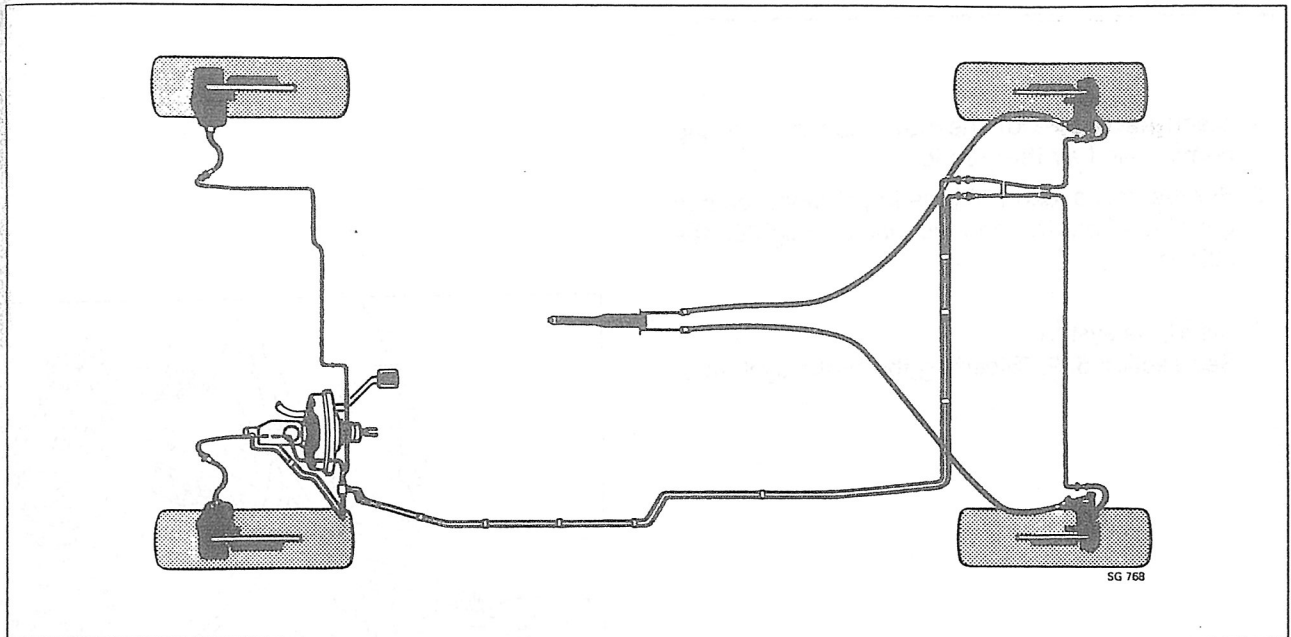


- 3 Refit the cooling system expansion tank if it has been removed.
- 4 Fill the reservoir with brake fluid to DOT 4 specification.
- 5 Reconnect the electric leads to the brake fluid reservoir cap.
- 6 Bleed the brake system.
See section 529 "Bleeding the brake system".

Brake lines

Replacing brake pipes 522-1

Replacing brake hoses. 522-2



Inspection

For safety reasons, all brake pipes, flexible hoses and brake-line fittings must be in good condition. All these components must therefore be carefully inspected at regular intervals as stipulated in the service programme. Brake pipes clamped to the body by means of metal or plastic brackets or clips must be checked for corrosion and pitting. Check the runs to ensure that the pipes are not rubbing against other parts. Check the flexible hoses carefully for signs of visible damage and make sure that all pipe and hose fittings and connections are tight and not leaking. Renew any damaged or corroded parts.

Replacing brake pipes

To remove

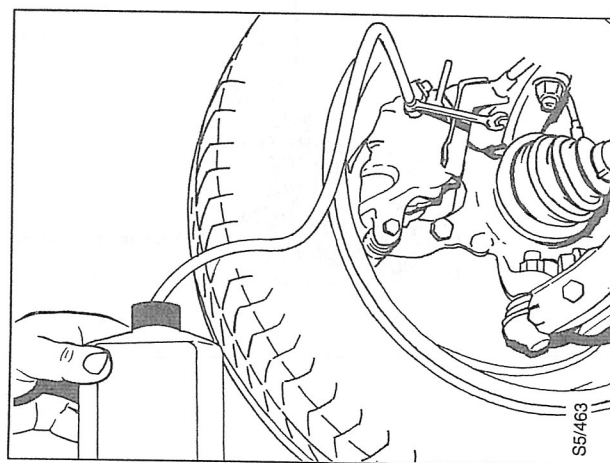
- 1 Carefully clean the connections at either end of the section of pipe to be removed.
- 2 Release the pipe from any clips and unscrew the fittings.
- 3 Plug the open connections and remove the damaged section.

To fit

CAUTION

Never attempt to bend or twist a brake pipe after the pipe fittings have been tightened.

- 1 Clean the inside of the new pipe by blowing compressed air through it.
- 2 Put the new section of pipe in position, remove the plugs from the connections and tighten the fittings.
- 3 Bleed the system.
See section 529, "Bleeding the brake system".



Replacing brake hoses

CAUTION

Position new hoses carefully to ensure that they cannot chafe against other components during movement of the suspension or steering. Also take care not to twist the hose. When front brake hoses are being fitted, the wheels must be freely suspended and in the straight-ahead position. Refit any chafing guards in their correct positions.

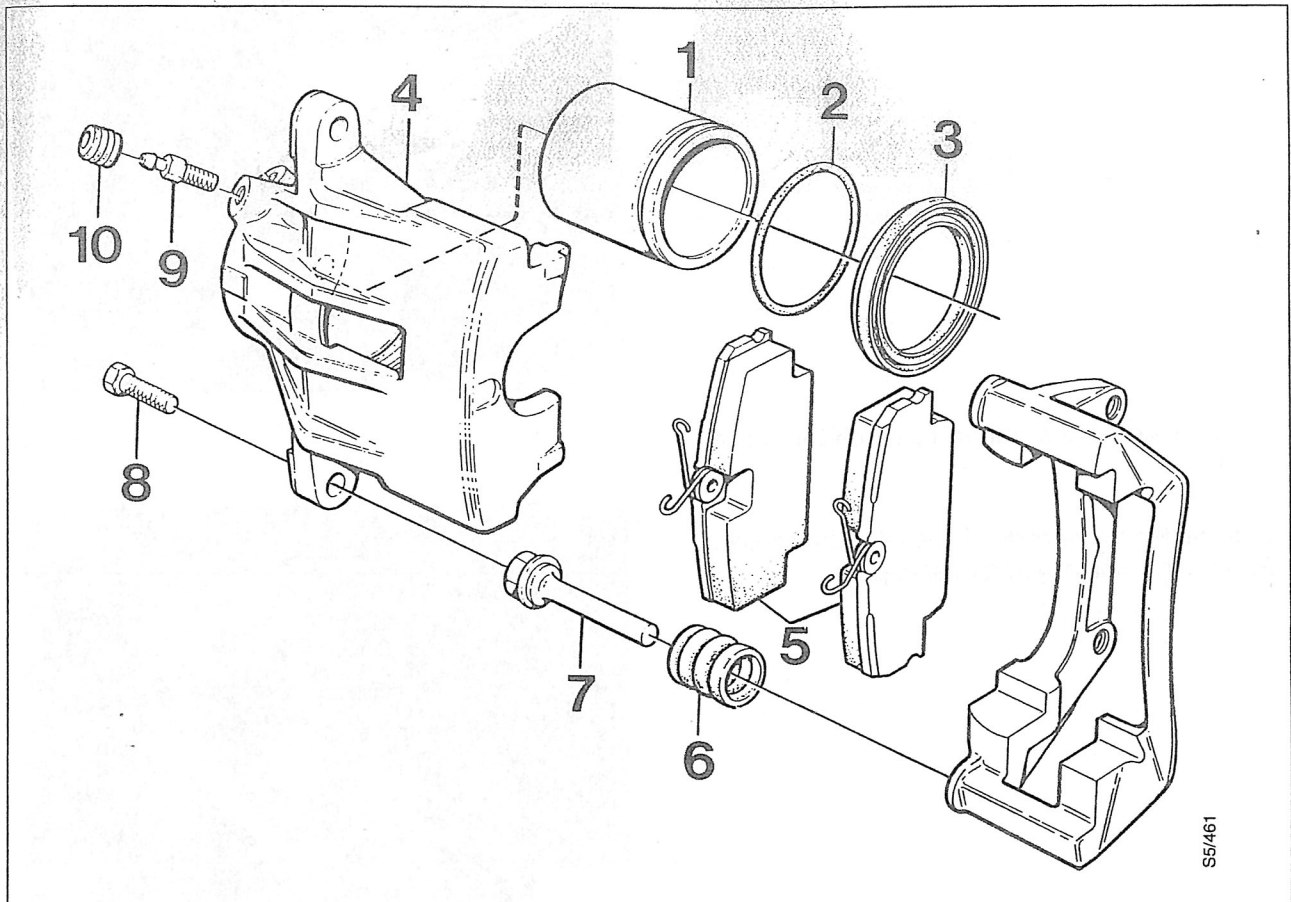
The procedure for replacing brake hoses is otherwise the same as for brake pipes.

Brake calipers

Front calipers. 523-1

Rear calipers 523-9

Front calipers



Front calipers

- | | |
|--------------------------|------------------|
| 1 Piston | 6 Dust cover |
| 2 Seal | 7 Guide pin |
| 3 Dust cover (on piston) | 8 Guide pin bolt |
| 4 Hydraulic body | 9 Bleed nipple |
| 5 Pads | 10 Dust cap |

Workshop technique

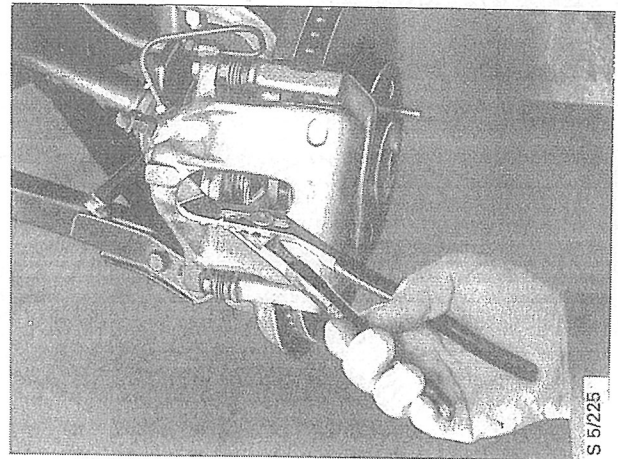
Scrupulous cleanliness is essential when the brake system or any part of it is dismantled.

Clean any dismantled parts in clean brake fluid or in a special cleaning solution for hydraulic brake components. Wipe the parts dry with clean, lint-free paper or a cloth. Gaskets, seals, retaining rings and rubber parts are available in repair kits and should be replaced.

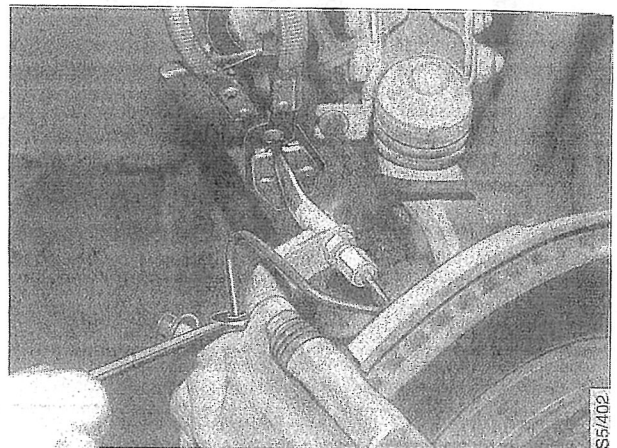
Before assembly, the components should be well oiled with clean, unused brake fluid to the recommended specification.

To remove

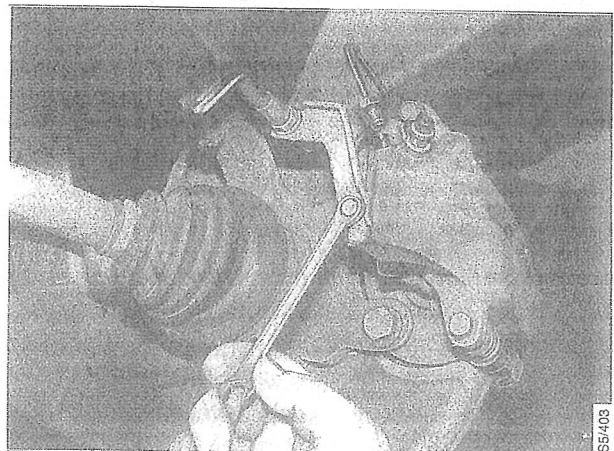
- 1 Raise the car and remove the front wheel.
- 2 Thoroughly clean the caliper and hose fittings.
- 3 Retract the pads, using a pair of slip joint pliers.



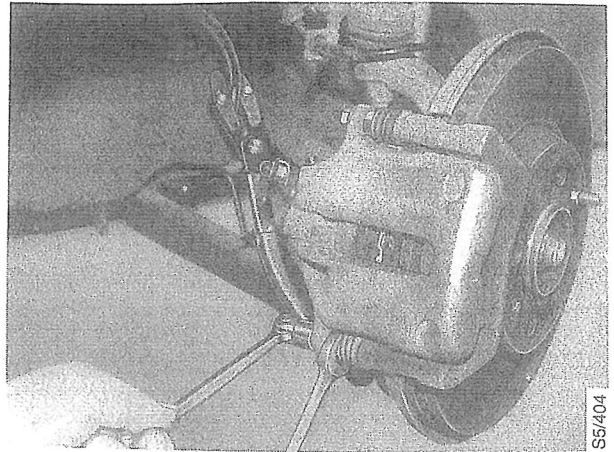
- 4 Use a brake hose clamp to pinch off the brake hose.
- 5 Remove the brake hose nipple from the caliper. Protect the nipple with a dust cap.



- 6 Plug the hole in the caliper.
- 7 Remove the bracket for the brake hose from the caliper.



8 Remove both guide pin bolts.



9 Lift away the caliper.

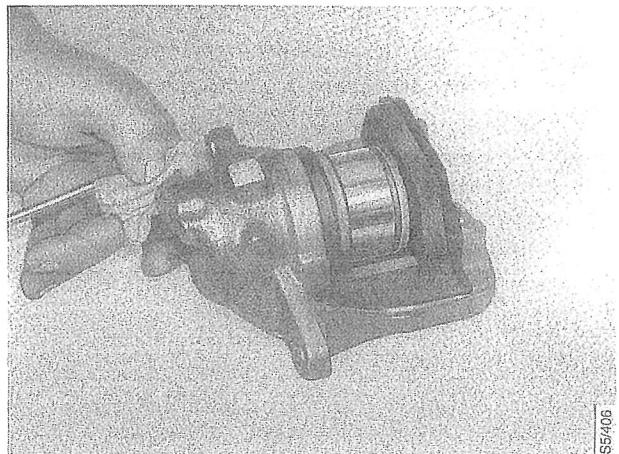
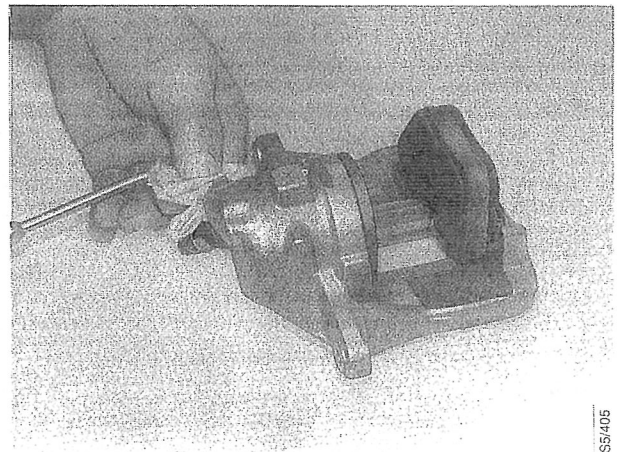
To dismantle

Thoroughly clean the caliper before dismantling it.

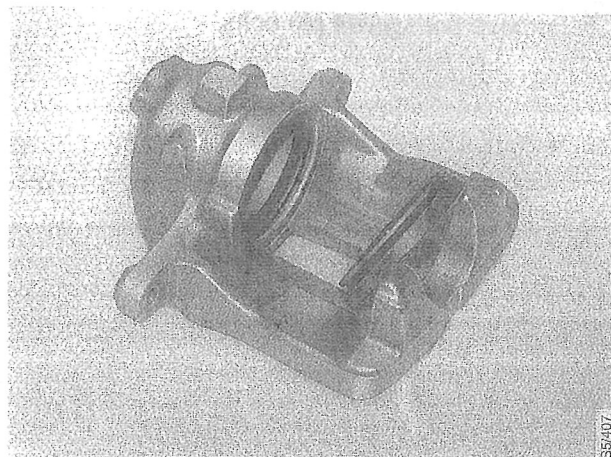
- 1 Use a brake pad or block of wood as protection when the piston is forced out. Mind your fingers. Use compressed air to force out the piston.

CAUTION

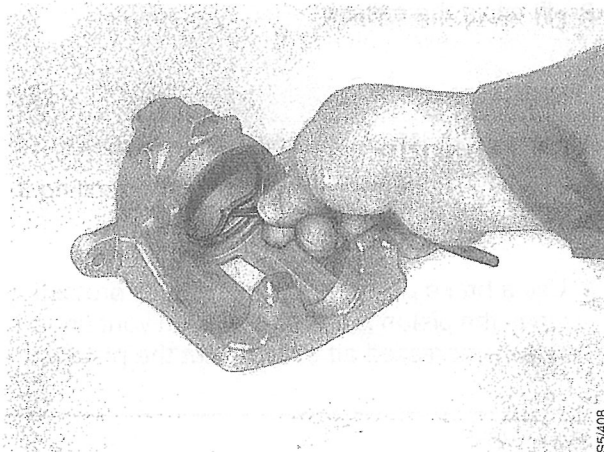
Use a piece of paper or cloth to avoid damaging the bore and threads in the hydraulic body. Oil leakage may otherwise occur.



2 Remove the dust cover.



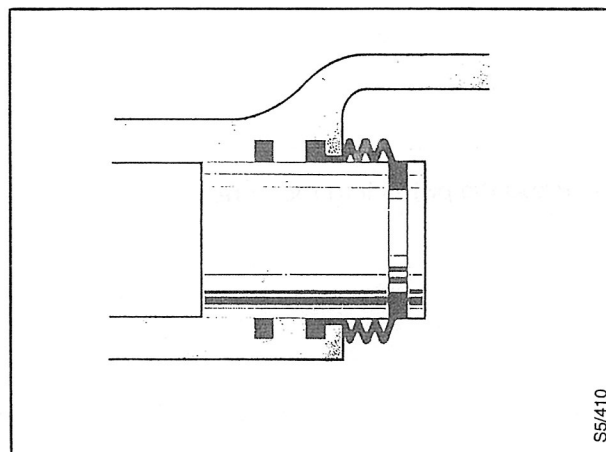
3 Remove the piston seal.
Use a cable tie or the like.



To assemble

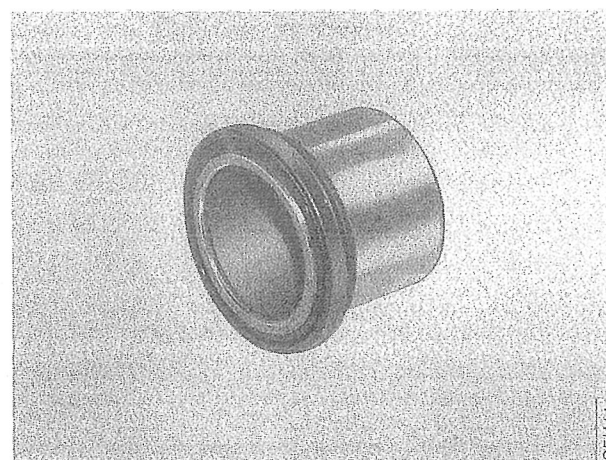
Fit replacements for any damaged parts.
Lubricate the piston seal, dust cover and piston with the grease supplied in the kit.
Inspect the cylinder bore for scoring and other damage.

- 1 Fit the new piston seal in the groove in the cylinder bore.

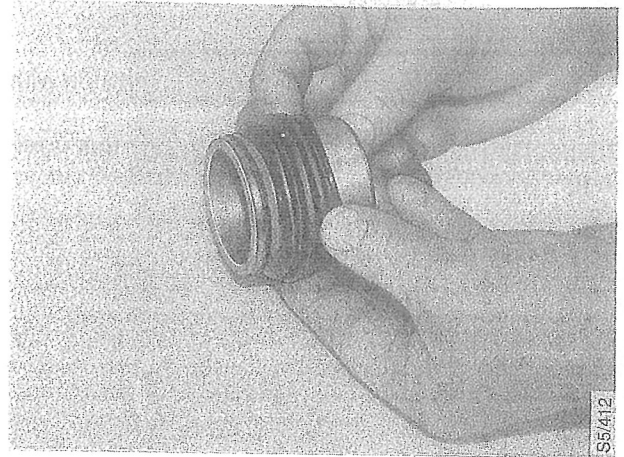


- 2 Fit the new dust cover on the piston as follows:

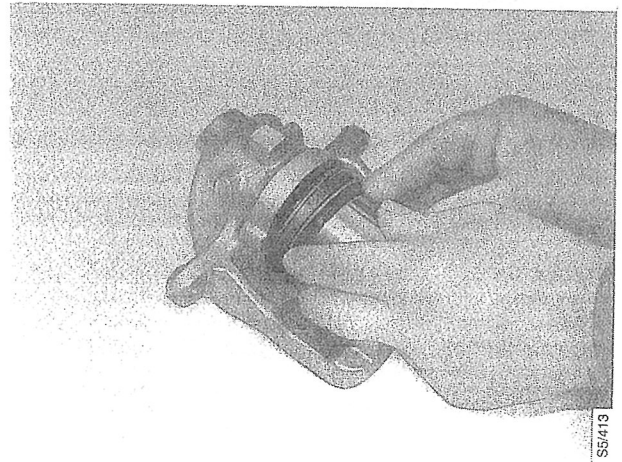
- Slide the dust cover onto the piston from the brake pad end.



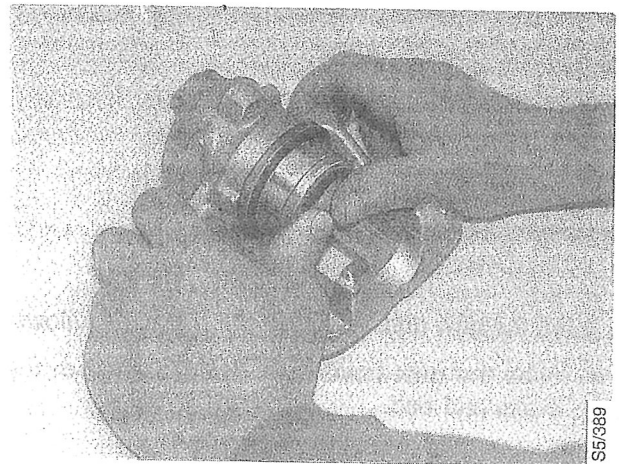
- Slide the dust cover along to the other end of the piston.



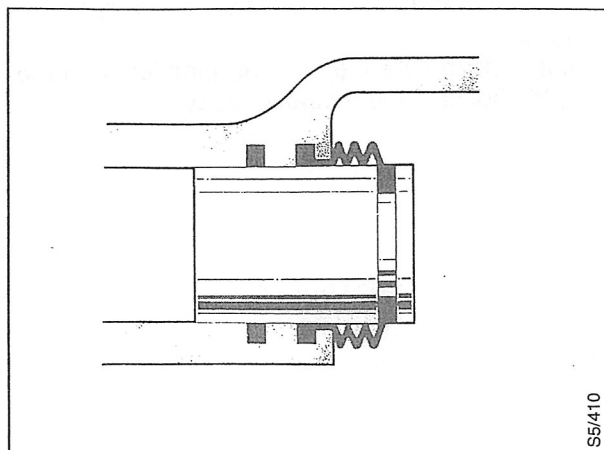
- 3 Press the collar on the dust cover into the groove in the cylinder bore, beginning at the lower edge.



- 4 Press the piston into the bore.



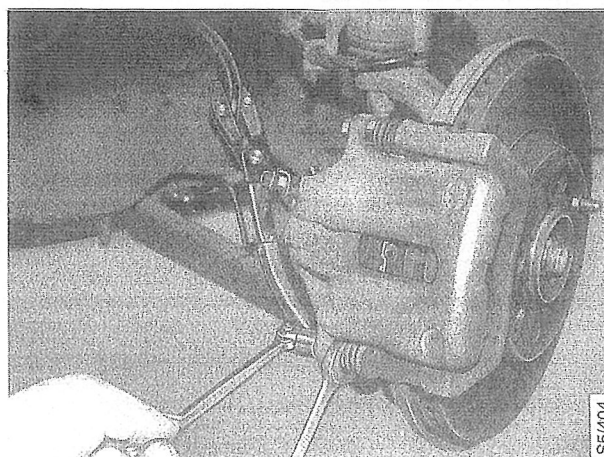
- 5 Make sure that the collar fits into the groove in the cylinder bore all the way round.



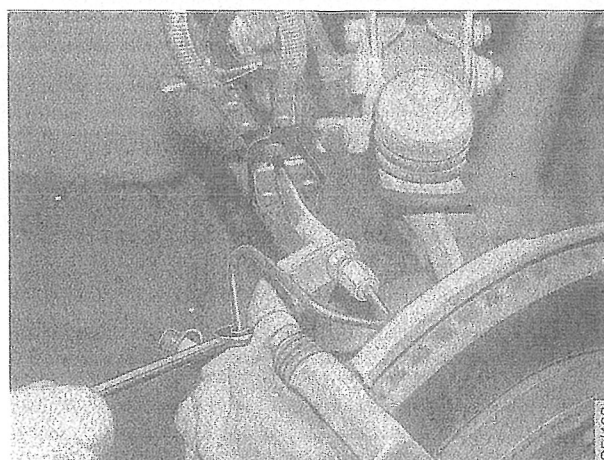
To assemble

Before starting assembly, thoroughly clean the surfaces of the caliper in contact with the brake pads, using a wire brush. Brush the guide pins clean and lubricate them sparingly with special grease. Also make sure that the dust covers for the guide pins and piston are intact and undamaged.

- 1 Fit the hydraulic body in place.
- 2 Tighten the guide pin bolts.

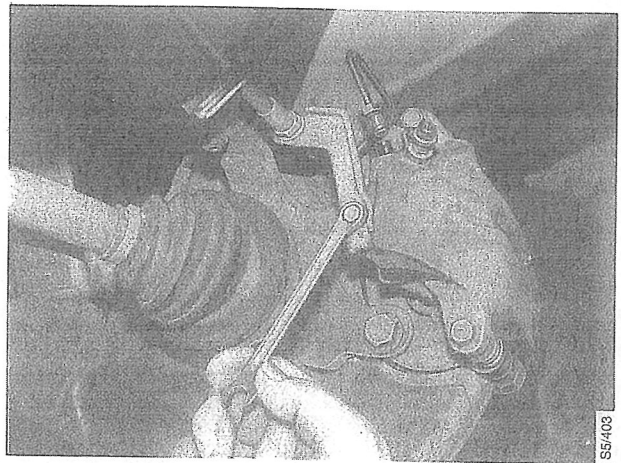


- 3 Screw the nipple into the hydraulic body.



- 4 Screw the brake hose bracket to the hydraulic body.

Note: Make sure the locating pimples fit in the guide holes in the hydraulic body.

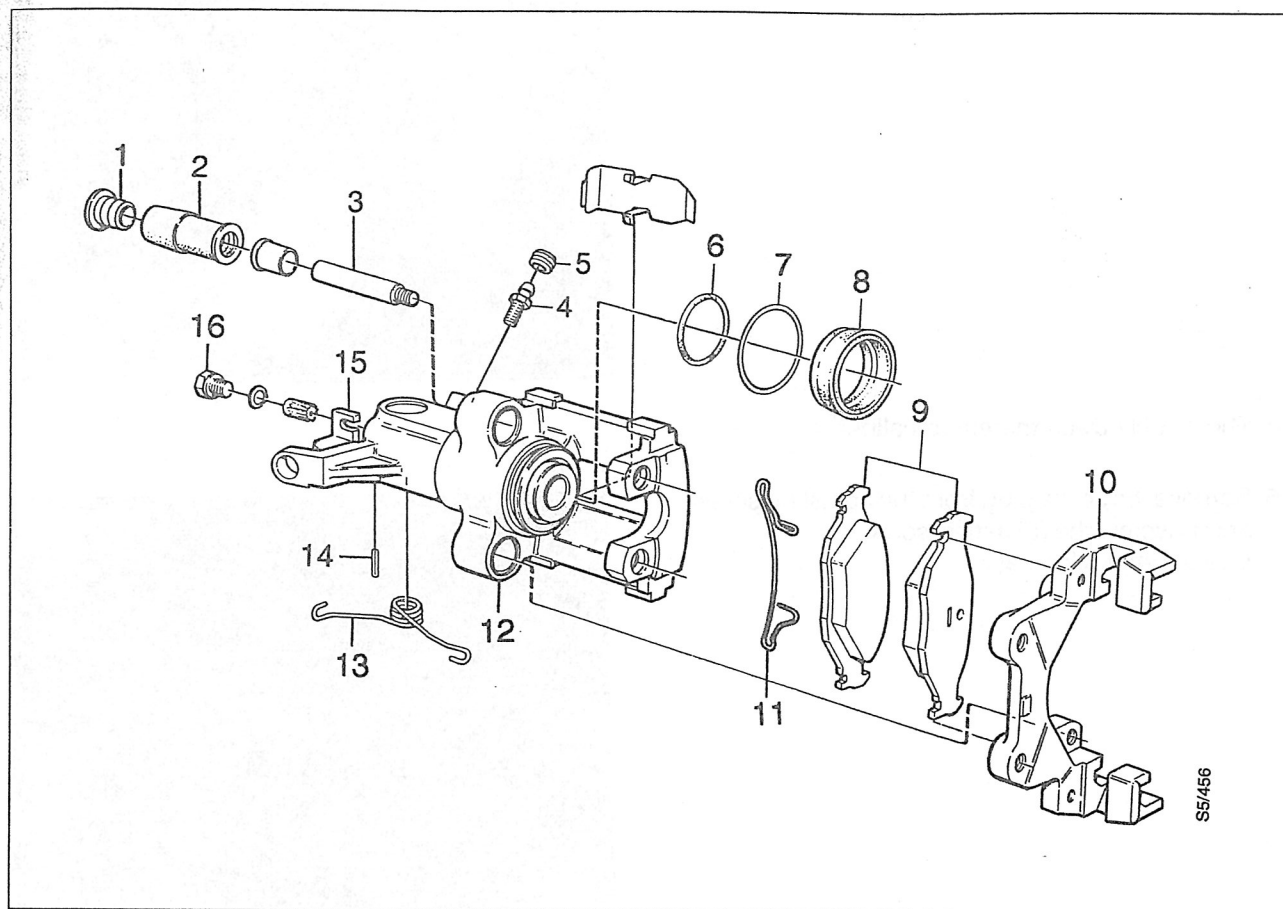


- 5 Remove the brake hose clamp.
- 6 Bleed the brake system. See section 529 "Bleeding the brake system".
- 7 Fit the wheel back in place and lower the car to the ground.
- 8 Tighten the wheel bolts.
Tightening torque for wheel bolts:
105-125 Nm (80-90 lbf ft).

Note:

Before driving off, pump the brake pedal to advance the brake pads to the disc.

Rear calipers

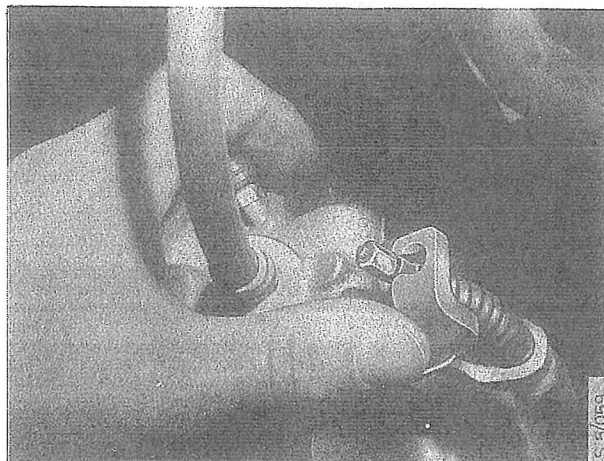


Rear calipers

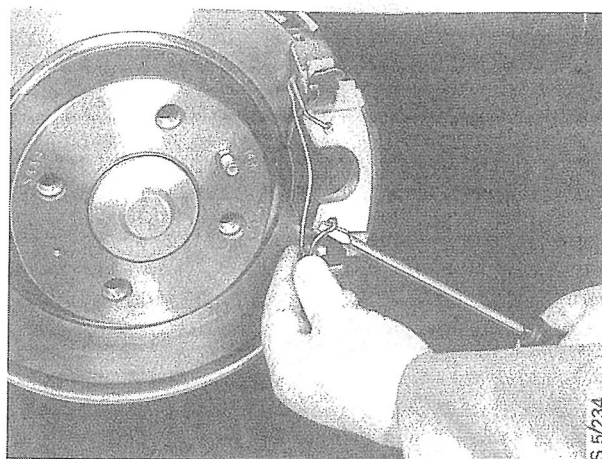
- | | |
|------------------|--------------------------------------|
| 1 Dust cap | 9 Brake pads |
| 2 Spacer sleeve | 10 Carrier |
| 3 Guide pin | 11 Pad retaining clip |
| 4 Bleed nipple | 12 Hydraulic body |
| 5 Dust cap | 13 Return spring |
| 6 Piston seal | 14 Stop pin |
| 7 Retaining ring | 15 Lever |
| 8 Dust cover | 16 Screw plug (over adjusting screw) |

To remove

- 1 Raise the car and remove the rear wheel.
- 2 Unhook the handbrake cable from the lever on the hydraulic body and withdraw the wire from the caliper.

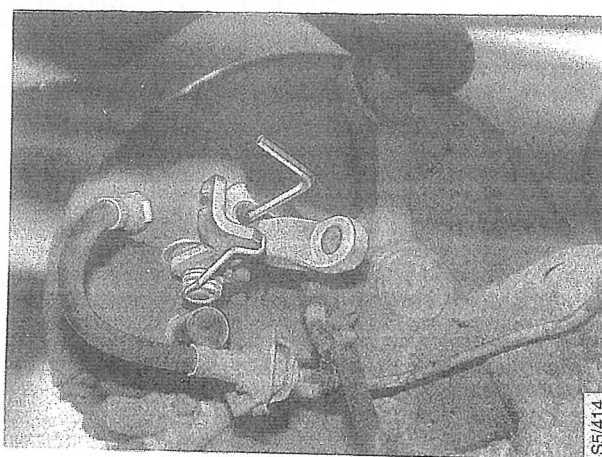


- 3 Remove the pad retaining clip.



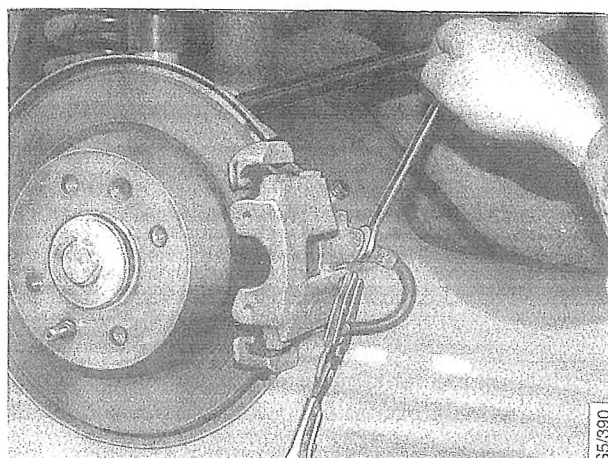
- 4 Thoroughly clean the entire caliper.

- 5 Remove the screw plug from the adjusting screw and unscrew the adjusting screw. Use a 4 mm Allen key.

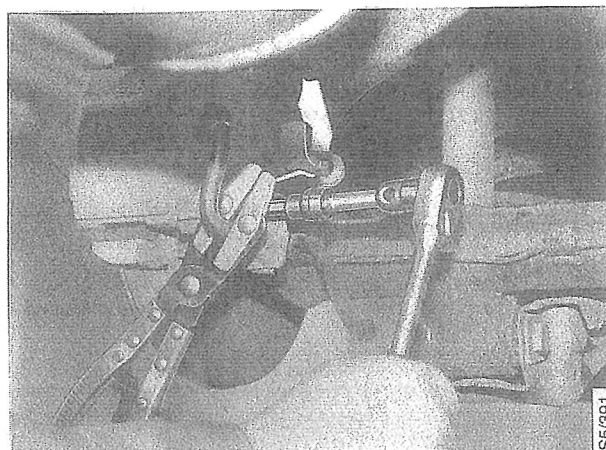


- 6 Fit a hose clamp on the brake hose.

- 7 Loosens the brake hose slightly.

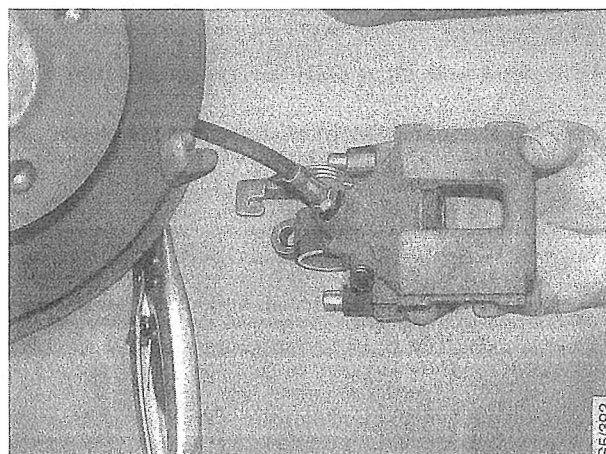


- 8 Remove the dust caps from the guide pins and unscrew the guide pins.
Use a 7 mm Allen key.



- 9 Lift out the caliper body and remove the brake pads.

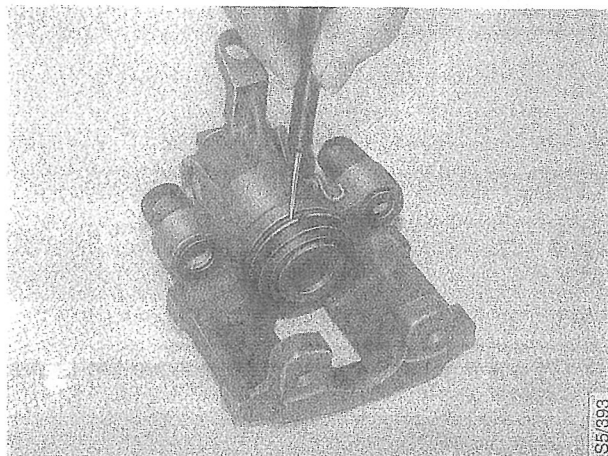
- 10 Disconnect the brake hose from the caliper by rotating the caliper.
Fit a dust cap over the brake hose connection on the caliper body and another on the end of the brake hose.



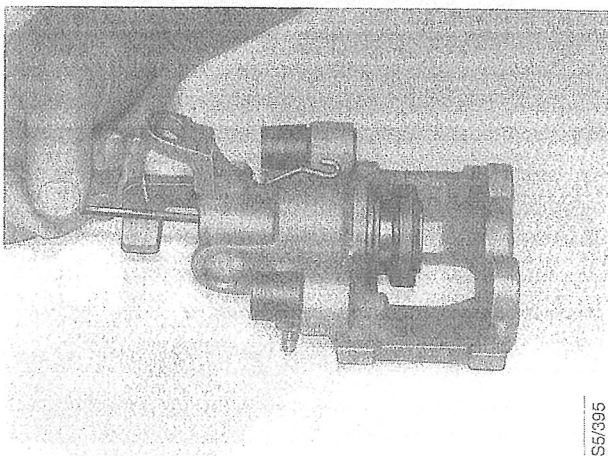
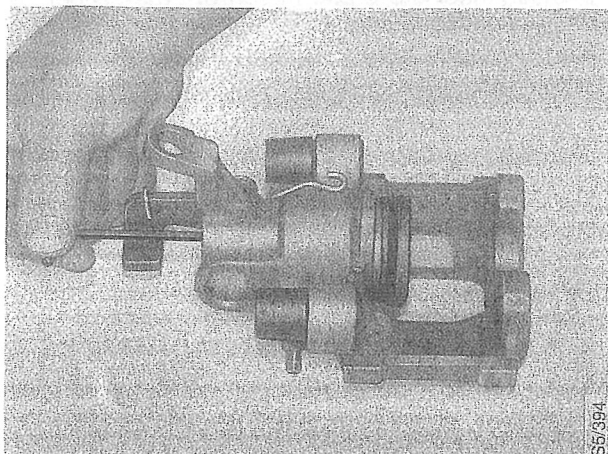
To dismantle

Clean the caliper thoroughly before dismantling it.

- 1 Remove the dust cover retainer and dust cover.



- 2 Press out the piston using the adjusting screw.
Use a 4 mm Allen key.



- 3 Remove the seal.
Use a cable tie.



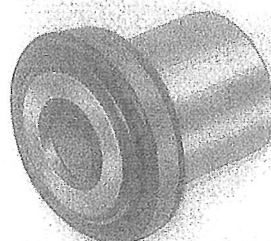
To assemble

Fit new components in place of any damaged ones.
Lubricate the piston seal, piston and dust cover with unused brake fluid.
Inspect the cylinder bore for scoring and other damage.

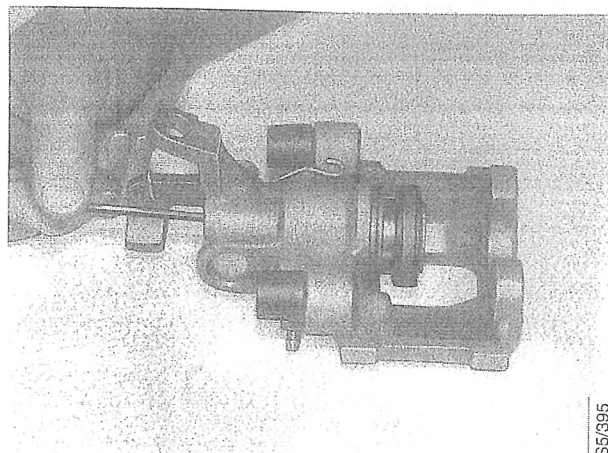
- 1 Fit the new piston seal in the groove in the cylinder bore.



- 2 Fit the new dust cover on the piston from the brake pad end.



- 3 Use the adjusting screw to retract the piston into the bore.



S5/395

- 4 Make sure the dust cover is correctly fitted on the piston and cylinder body and fit the retainer.

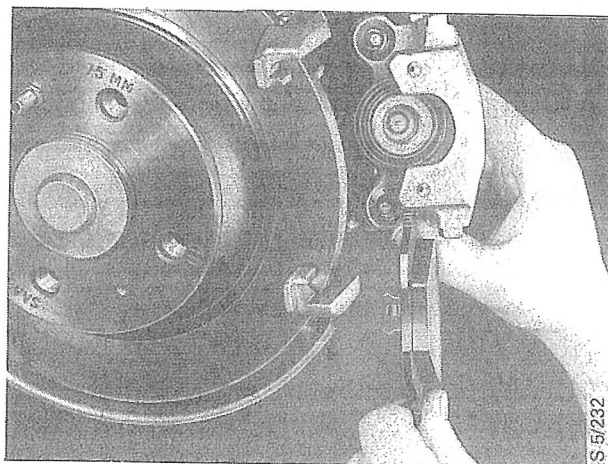
To fit

Before refitting the caliper, check that the guide pins slide freely in the hydraulic body. If necessary, use a wire brush to clean the guide pins. Do not lubricate them as grease picks up dust and dirt particles.

Use a wire brush to clean the caliper surfaces coming into contact with the brake pads

- 1 Reconnect the brake hose to the caliper by rotating the caliper while holding the hose. Make sure the hose is not twisted.

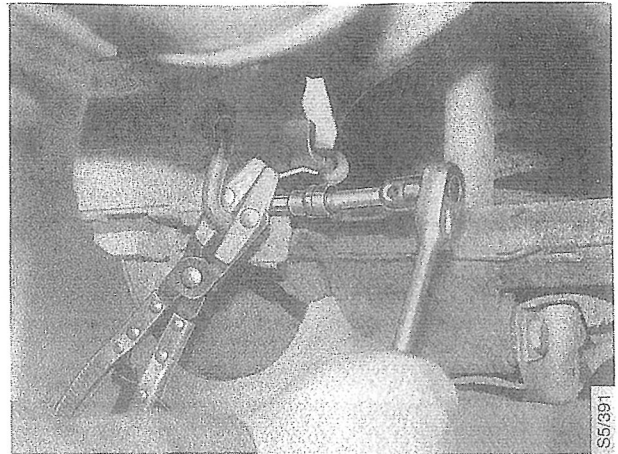
- 2 Fit the brake pads, the pad with spring against the piston.



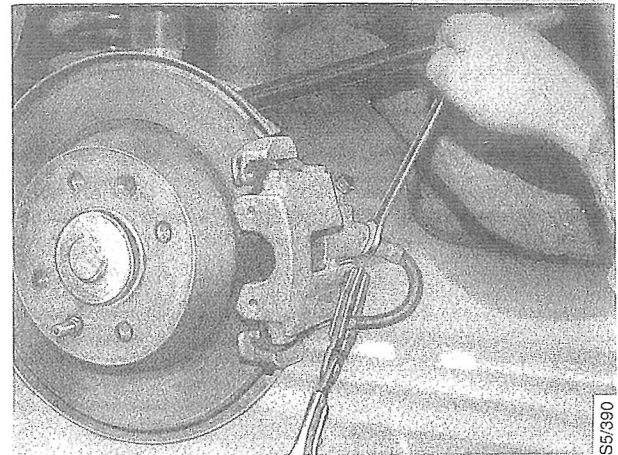
S5/232

- 3 Fit the hydraulic body into position.

- 4 Fit the guide pins in place and tighten them. Fit the dust caps over them.



- 5 Tighten the hose fitting on the caliper.



- 6 Remove the hose clamp.
- 7 Fit the pad retaining clip in place.
- 8 Reconnect the handbrake cable to the lever.
- 9 Adjust the handbrake.
See section 551 "Adjusting the handbrake".
- 10 Bleed the brake system.
See section 529 "Bleeding the brake system".
- 11 Fit the wheel and lower the car to the ground.
- 12 Tighten the wheel bolts to the correct torque.
Tightening torque for wheel bolts:
105-125 Nm (80-90 lbf ft)



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Brake pedal assembly

Brake pedal. 524-1

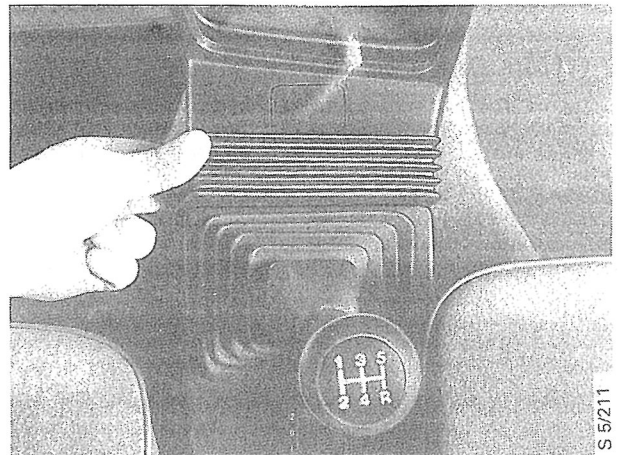
Brake pedal

To remove

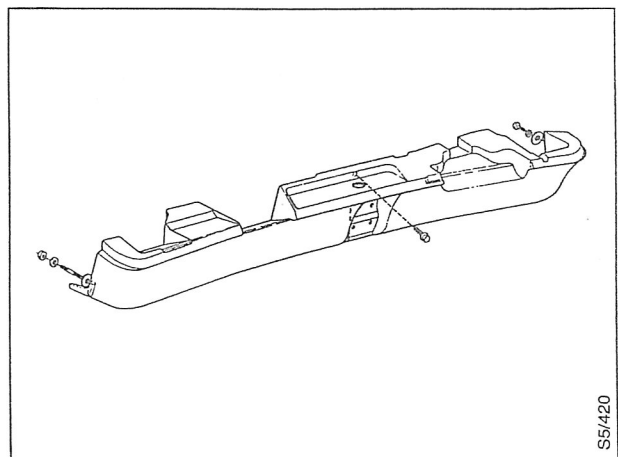
- 1 Remove the steering column bearing cover and the ashtray.
- 2 Remove the console's upper screws (behind the ashtray).



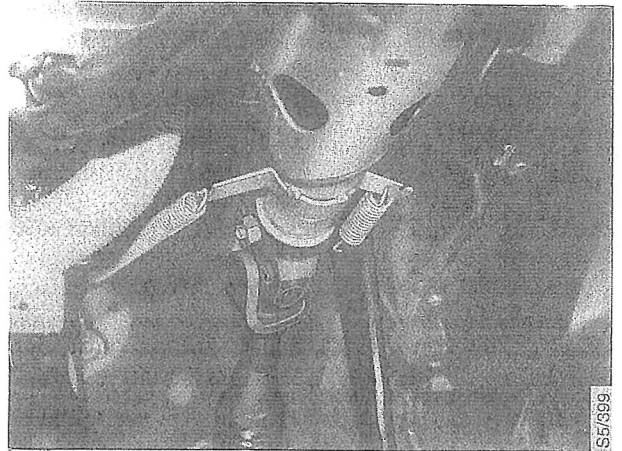
- 3 Remove the rubber dust excluder between the central console and gear-lever cover.



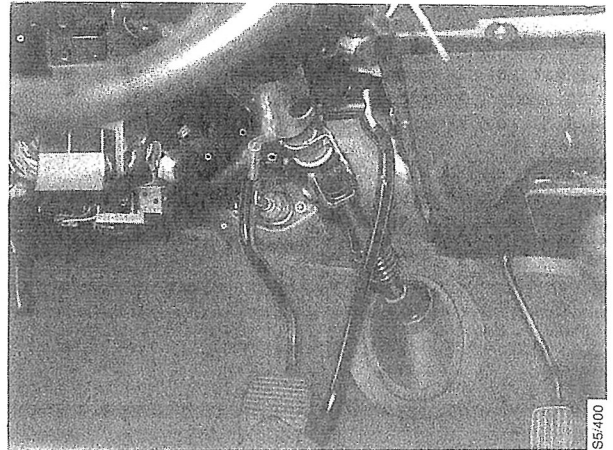
- 4 Remove the central console. See page 551-2 for 1988-1990 models or page 551-8 for 1991 and later models.
- 5 Remove the three screws retaining the safety padding (one behind the ashtray and one on each side of the engine compartment).



- 6 Remove the safety padding.
- 7 Remove the lower air duct.
- 8 Unhook the brake pedal return spring.

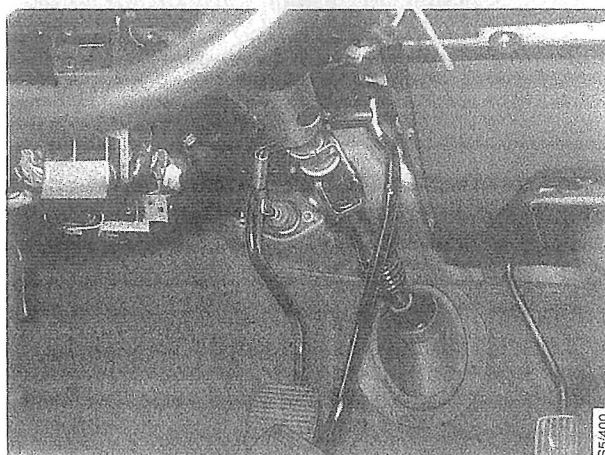
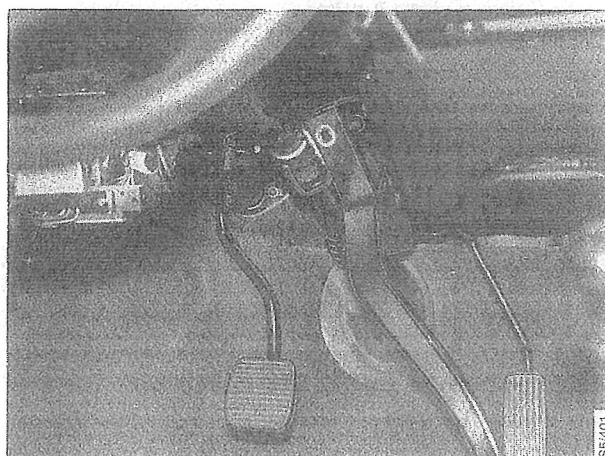


- 9 Remove the clip and split pin from the master cylinder push rod.
- 10 Remove the brake light switch mounting plate.
- 11 Remove the locknut from the pedal spindle bolt and press out the bolt.
- 12 Twist the pedal and ease it out between the steering column and heater casing.



To fit

- 1 Twist the pedal and ease it up between the steering column and heater casing.



- 2 Locate the pedal on the mounting bracket. Fit the pedal spindle bolt and tighten it.
- 3 Fit the split pin and clip for the master cylinder push rod.
- 4 Hook the brake pedal return spring in place.



- 5 Fit the lower air duct in place.
- 6 Fit the safety padding in place.

- 7 Fit the central console in place.
- 8 Fit the console's upper screws in place.



- 9 Fit the ashtray in place.
- 10 Fit the steering column bearing cover in place.

Bleeding the brake system

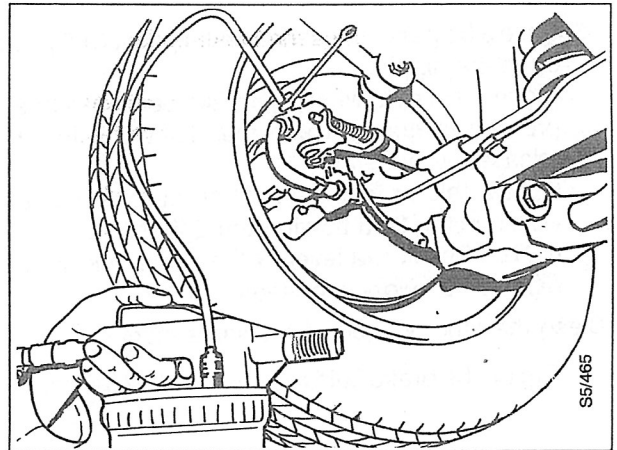
Bleeding by means of a bleeder unit . . . 529-1

Bleeding in the conventional manner . . . 529-2

We recommend the use of a special bleeder unit for bleeding the brake system. However, if a special unit is not available, the brakes can still be bled in the conventional way at each caliper. Regardless of the method used, the order in which the brakes are bled must always be as follows: rear left-hand wheel; front right-hand wheel; rear right-hand wheel; front left-hand wheel.

Bleeding by means of a bleeder unit

- 1 If necessary, top up the brake fluid reservoir with DOT 4 fluid.
- 2 Connect the bleeder unit to the bleed nipple on the caliper of the rear left- hand wheel.



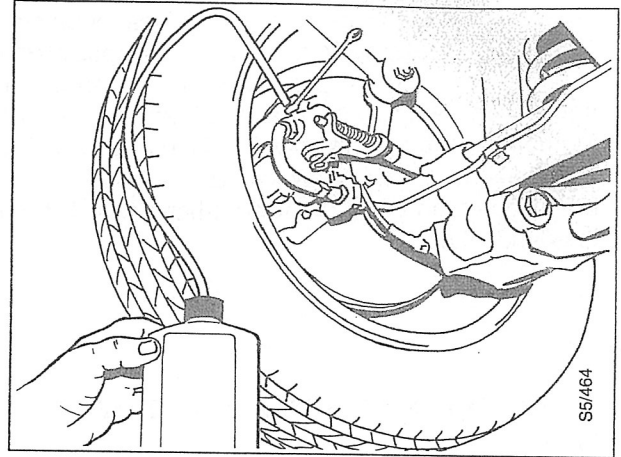
- 3 Open the nipple and activate the bleeder unit. Close it when air bubbles are no longer visible in the hose.
NOTE: Check the level of the brake fluid in the reservoir as work proceeds.
- 4 Repeat this procedure on the caliper of the front right-hand wheel. Then continue with the rear right-hand wheel and finally the front left-hand wheel.
- 5 Top up the brake fluid reservoir to the MAX mark.

Bleeding in the conventional manner

1 If necessary, top up the brake fluid reservoir with DOT 4 fluid.

2 Connect a length of transparent hose to the bleed nipple on the caliper of the rear left-hand wheel.

Place the other end of the hose in a bottle containing brake fluid. The end of the hose must be below the surface of the fluid at all times.



3 Have a helper depress the brake pedal while you open the nipple.

Close the nipple when the brake pedal has been pressed to the floor and then tell the helper to release the pedal.

Repeat this procedure until no air bubbles are visible in the fluid flowing through the hose.

NOTE: Check the level of the brake fluid in the reservoir as work proceeds.

Bleed the other wheels in the same manner.

4 Top up the brake fluid reservoir to the MAX mark.

Changing the brake fluid

Changing the brake fluid by means of a bleeder unit. 530-1

Changing the brake fluid in the conventional manner. 530-2

All brake fluid deteriorates after a time through oxidation and absorption of water.

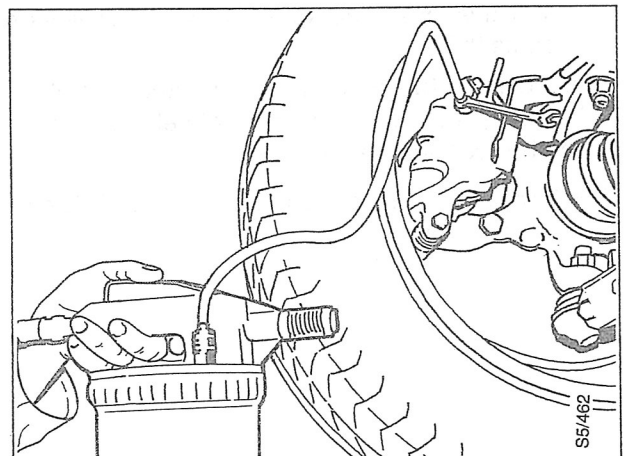
This process lowers the boiling point of the fluid, which may therefore vaporize during prolonged hard braking. It is therefore essential to change the brake fluid at regular intervals. See Group 1 "Service".

Caution

To avoid possible brake failure, all old brake fluid must be drained from the system. The fluid capacity of the system is about 0.6 litres. We recommend the use of a bleeder unit to drain the brake circuits.

Changing the brake fluid by means of a bleeder unit.

- 1 Siphon off the brake fluid from the reservoir.
Note that it will not be possible to empty the reservoir completely.
- 2 Connect the topping-up unit to the brake fluid reservoir. Place the end of the hose in a receptacle containing unused brake fluid.
Note that brake fluid must be kept in a tightly closed container.
- 3 Connect the bleed unit to the bleed nipple on the caliper of the front right-hand wheel. Open the nipple and activate the bleed unit until new, unused brake fluid can be seen in the hose.

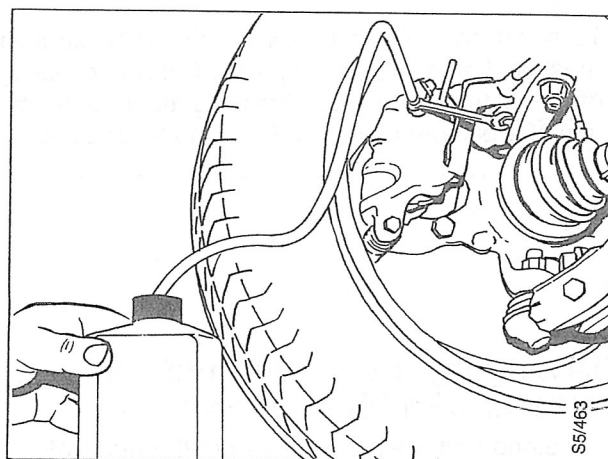


- 4 Continue in the same manner on the rear left-hand wheel.
- 5 Bleed the other circuit in the following order: front left-hand wheel and then the rear right-hand wheel.
- 6 Disconnect the topping-up unit from the brake fluid reservoir. Top up as necessary with fresh brake fluid to the MAX mark.

Changing the brake fluid in the conventional manner.

- 1 Siphon off the brake fluid from the reservoir.
Note that it will not be possible to empty the reservoir completely.
- 2 Top up with DOT 4 brake fluid.

- 3 Connect a length of transparent hose to the bleed nipple on the brake caliper of the front right-hand wheel. Place the end of the hose in a receptacle containing new and unused brake fluid. The end of the hose must be below the surface of the brake fluid.



- 4 Have a helper depress the brake pedal as you undo the nipple.
Tighten the nipple when the brake pedal is pressed to the floor and tell your helper to release the pedal.
Repeat this procedure until about 0.5 litres of brake fluid has been drained off.
NOTE: Check the level of the brake fluid in the reservoir as work proceeds.
- 5 Repeat points 3 and 4 on the rear left-hand wheel (but this time drain off only about 0.1 litres of brake fluid).

Then change the brake fluid in the other circuit, beginning with the front left-hand wheel and finishing with the rear right-hand wheel.

- 6 Top up with fresh brake fluid to the MAX mark on the reservoir.

Brake servo unit

Workshop technique 541-1

Brake servo unit 541-1

Workshop technique

Scrupulous cleanliness is imperative when carrying out any work involving the removal, fitting, dismantling or assembly of any hydraulic components.

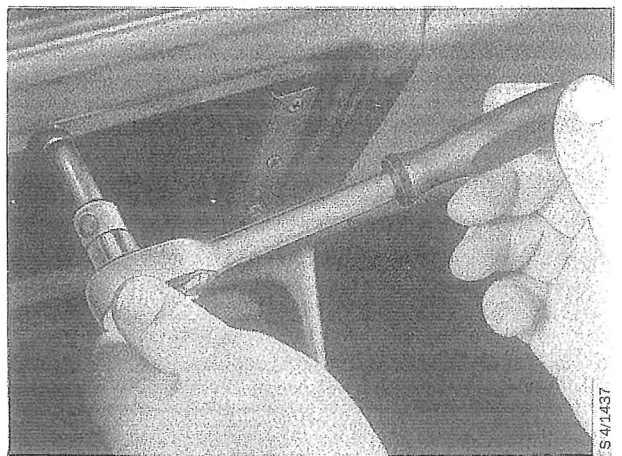
Clean any parts that have been removed or dismantled in unused brake fluid or a cleaning fluid designed specifically for hydraulic brake components. Wipe the parts dry using clean, lint-free paper or cloth. All old gaskets, seals, O-rings and rubber components should be discarded when new ones are provided in the service kit.

Before assembly, all components should be generously lubricated using clean, unused brake fluid of the specified grade.

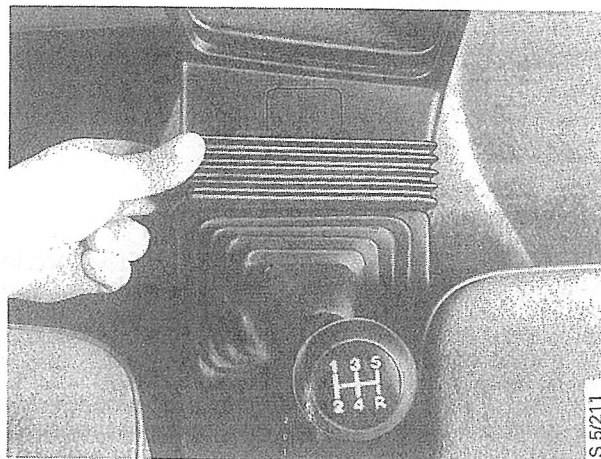
Brake servo unit

To remove

- 1 Remove the steering column bearing cover and ashtray.
- 2 Remove the central console's upper screws (behind the ashtray).

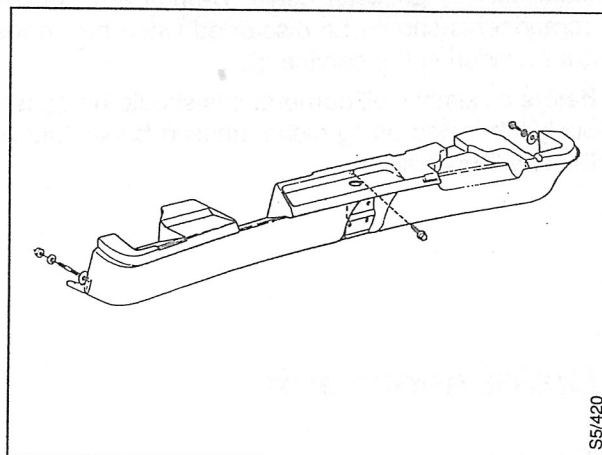


- 3 Remove the rubber bellows between the central console and the gear lever cover.
- 4 Remove the central console. See page 551-2 for model years 1988-1990 or page 551-8 for model year 1991 and later.



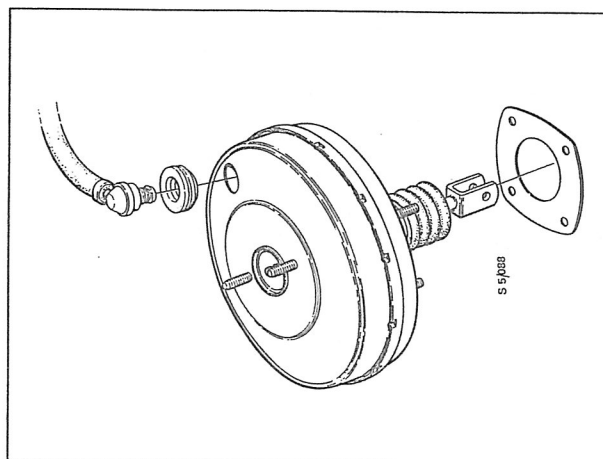
S 5/211

- 5 Remove the three safety padding retaining screws.
- 6 Remove the safety padding.



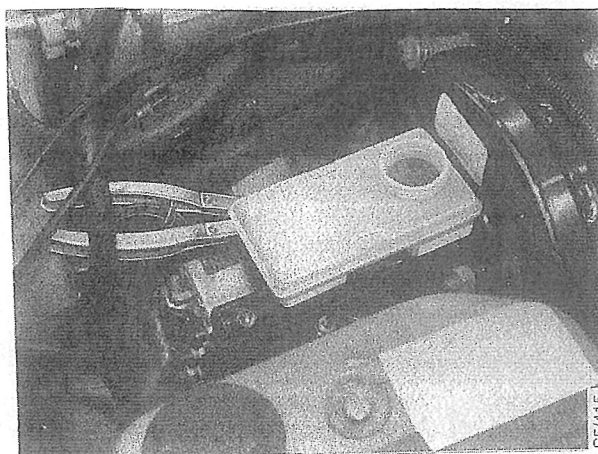
S5/420

- 7 Remove the lower air duct.
- 8 Remove the clip and split pin from the servo unit push rod.
- 9 Disconnect the cable from the brake fluid reservoir filler cap.
- 10 Disconnect the vacuum hose from the servo unit by withdrawing the non-return valve.



S 5/200

- 11 Fit a hose clamp on the hose between the brake fluid reservoir and the clutch master cylinder.

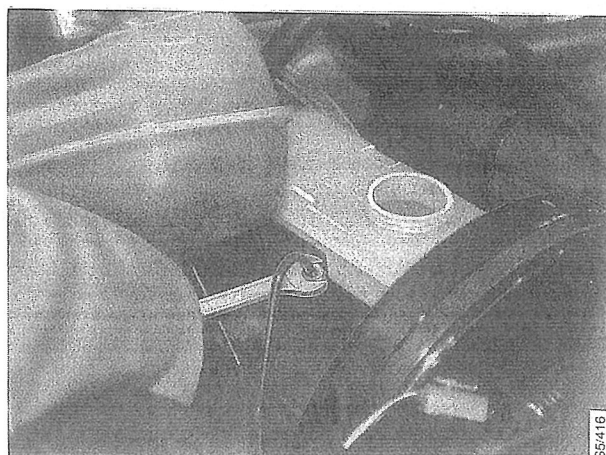


- 12 Siphon off the brake fluid from the reservoir. Note that it will not be possible to empty the reservoir completely.

Note:

Make sure that no brake fluid comes into contact with the paintwork. If it does, rinse the area thoroughly with water and dry carefully.

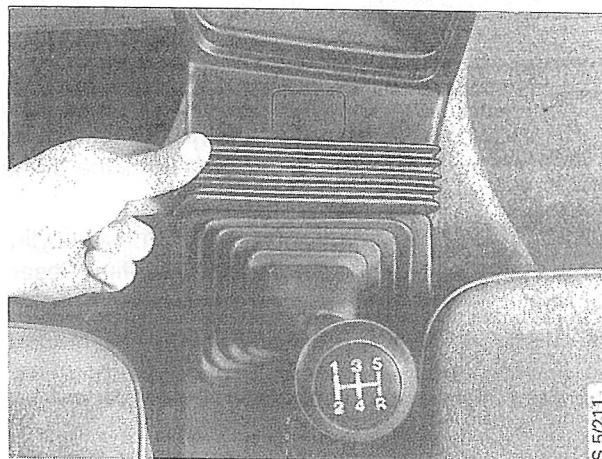
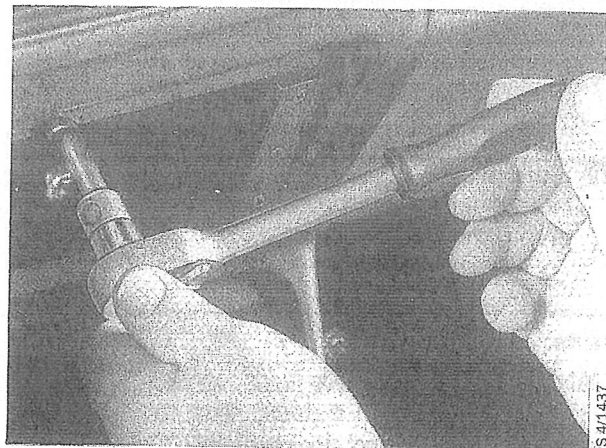
- 13 Connect a length of hose to the bleed nipple on the front right-hand brake caliper and place the other end of the hose in a receptacle. Undo the nipple and pump the brake pedal until the brake fluid reservoir is empty.
- 14 Remove the hose from the clutch master cylinder and plug the fitting on the brake fluid reservoir.
- 15 Disconnect the two brake lines from the master cylinder. Accessibility will be improved by unfastening the cooling system's expansion tank and bending it aside.



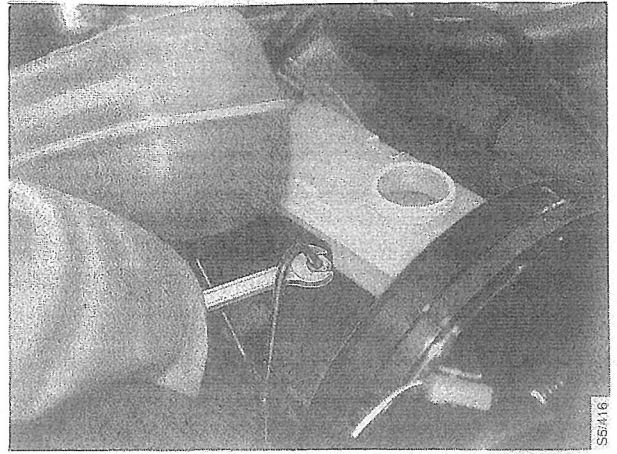
- 16 Undo the two nuts on the master cylinder retaining the brake servo unit and remove the master cylinder.
- 17 Undo the four retaining nuts for the brake servo unit and lift out the servo unit.

To fit

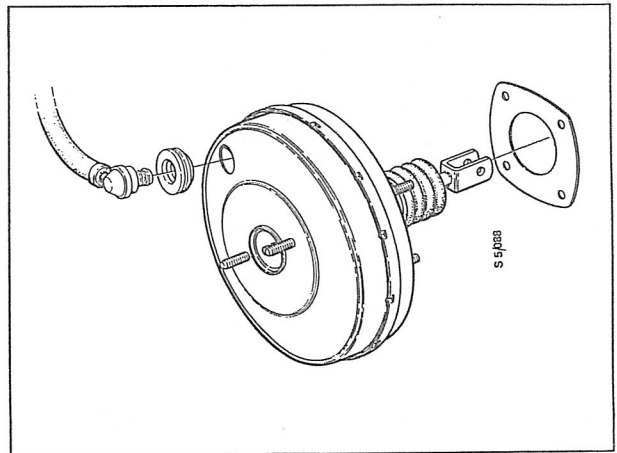
- 1 Position the servo unit in the car, screw on the four retaining nuts and tighten them.
- 2 Fit the split pin and clip on the servo unit push rod.
- 3 Fit the lower air duct in place.
- 4 Fit the safety padding in place.
- 5 Fit the central console in place.
- 6 Secure the central console by means of the upper screws.
- 7 Fit the ashtray and steering column bearing covers back in place.
- 8 Fit the rubber bellows between the central console and gear lever console back in place.
- 9 Fit the steering column bearing cover back in place.
- 10 Fit the master cylinder with reservoir in position. Tightens the nuts securing the servo unit to the master cylinder.



- 11 Fit the brake lines to the master cylinder, taking care not to damage the threads.



- 12 Fit the vacuum hose with non-return valve to the servo unit.



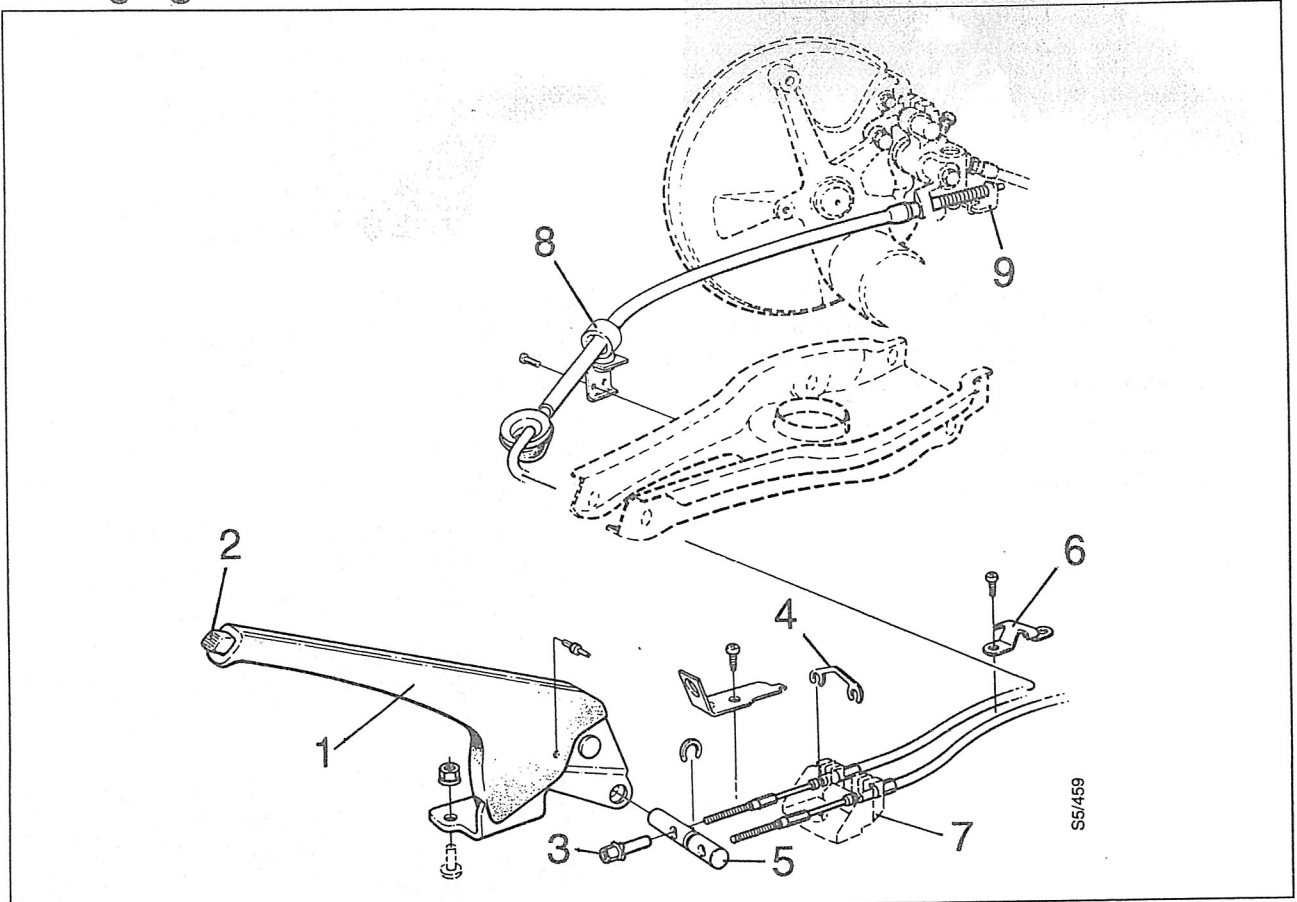
- 13 Fill up with DOT 4 brake fluid.
- 14 Bleed the brake system. See section 529 "Bleeding the brake system"
- 15 Fit the electric cable to the reservoir filler cap.
- 16 Check the operation of the brake system and inspect it for any leakage.

Handbrake system

Changing the handbrake cable 1988-90 . . . 551-1
 Adjusting the handbrake 1988-90 551-7

Changing the handbrake cable 1991-. . . 551-8
 Adjusting the handbrake 1991-. 551-17

Changing the handbrake cable 1988-1990

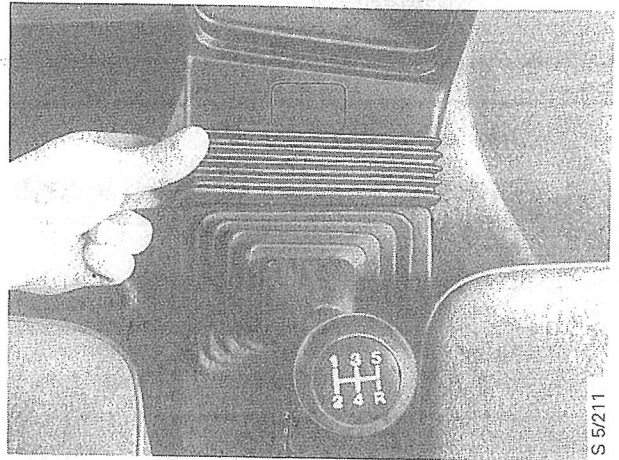


Handbrake 1988-1990

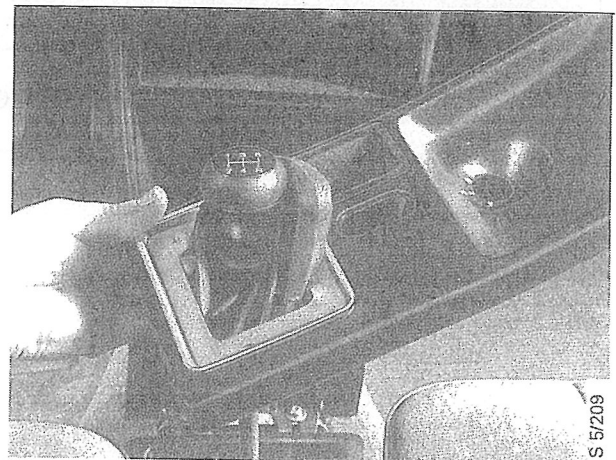
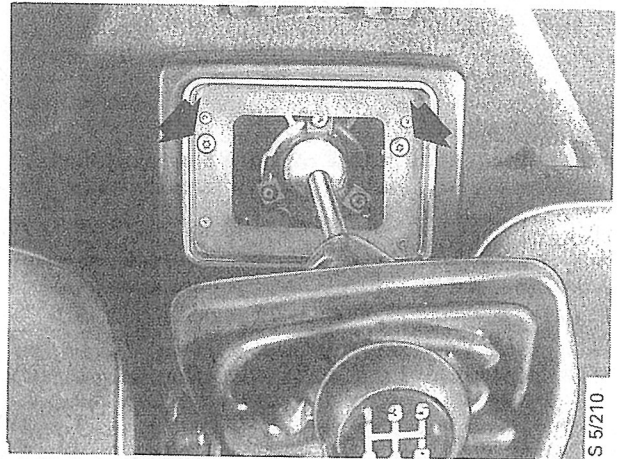
- 1 Handbrake lever
- 2 Release button
- 3 Adjusting nut
- 4 Locking plate
- 5 Pivot pin
- 6 Clamp
- 7 Cable bracket
- 8 Cable guide on spring link
- 9 Lever

To remove

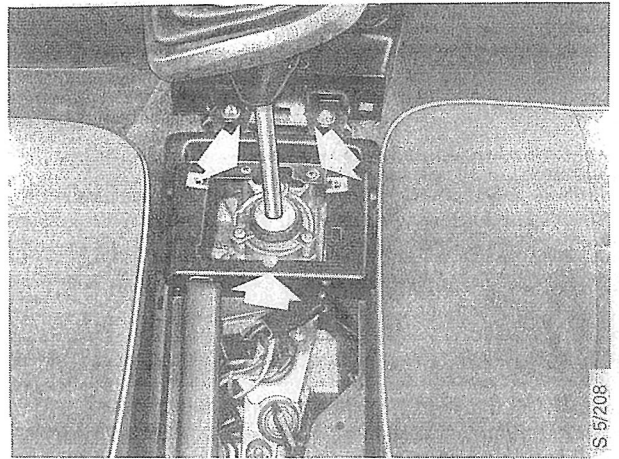
- 1 Remove the rubber bellows between the central console and the gear lever console.
- 2 Loosen and pull up the rubber gaiter on the gear lever.



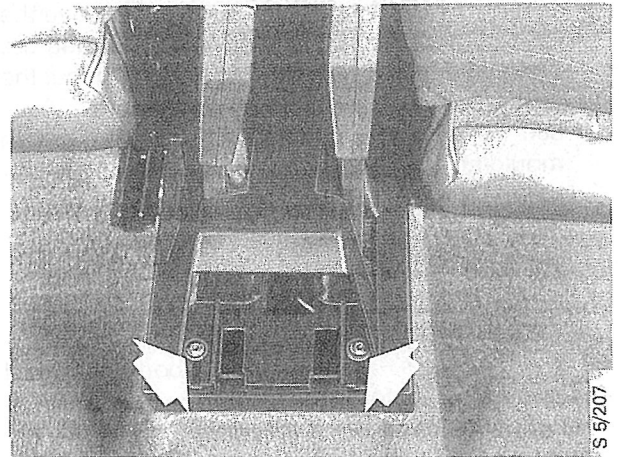
- 3 Remove the console cover panel (two screws). Engage reverse gear, remove the ignition key and lift the rear edge of the cover panel. Insert the ignition key and engage 3rd gear. Unplug the connector for the interior lighting and remove the bulb for the ignition switch illumination. Lift the cover panel straight up over the gear lever.



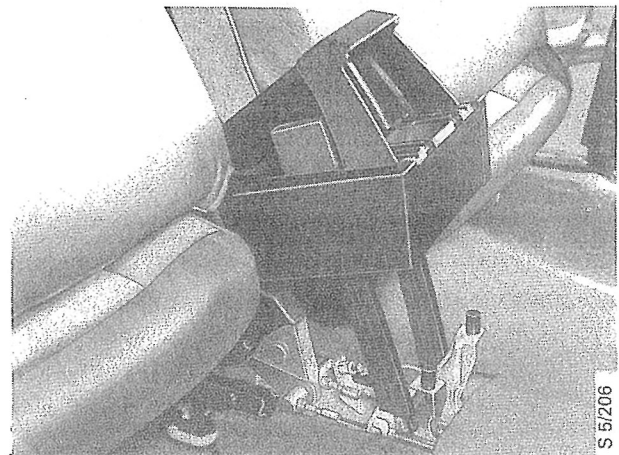
- 4 Remove the gear lever console's three front retaining screws.



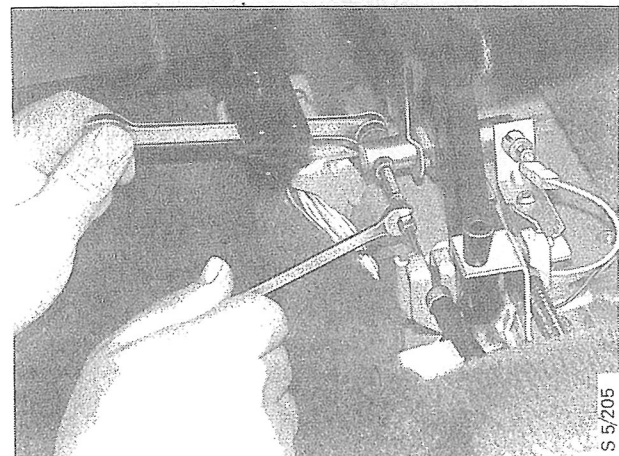
- 5 Remove the rear ashtray and undo the two retaining screws at the rear of the console.



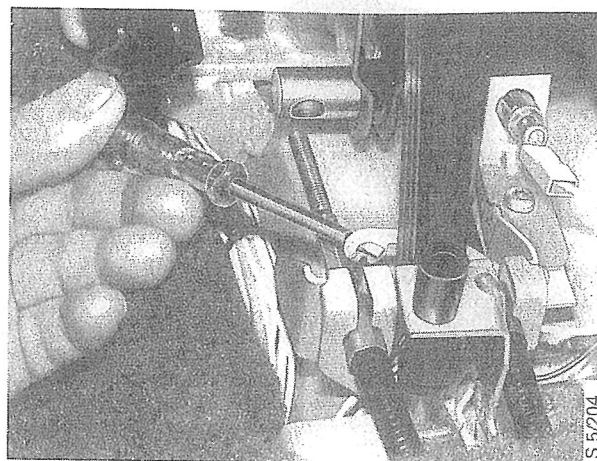
- 6 Slide the seats forwards and raise the rear edge of the console.



- 7 Screw the adjusting nut off the end of the cable by the handbrake lever.



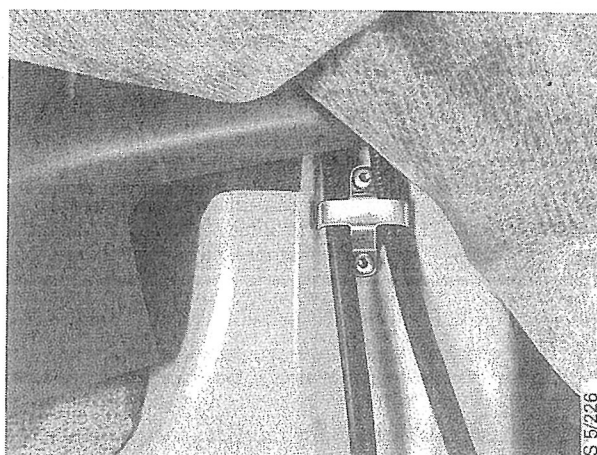
- 8 Raise the locking plate and withdraw the cable from the console.



- 9 Tip the rear seat cushion forwards. Remove the locking pins from the two dowels securing the seat cushion. Remove the dowels and lift out the seat cushion.

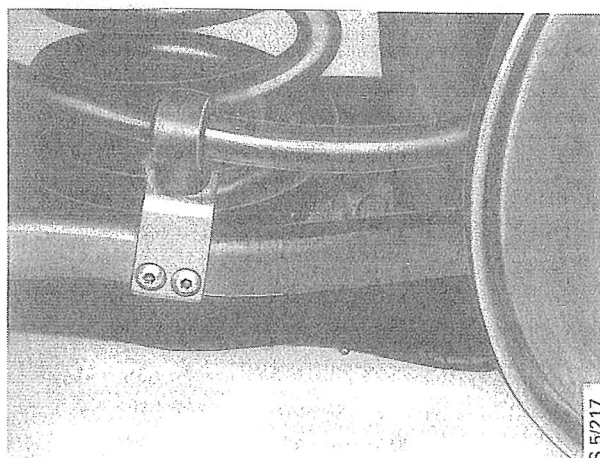
900 Convertible: Undo the screws retaining the moulding under the front of the seat cushion, remove the moulding and lift out the cushion.

- 10 Remove the sill scuff plates on both sides and fold the carpet forwards to expose the clamp securing the cables to the floor.

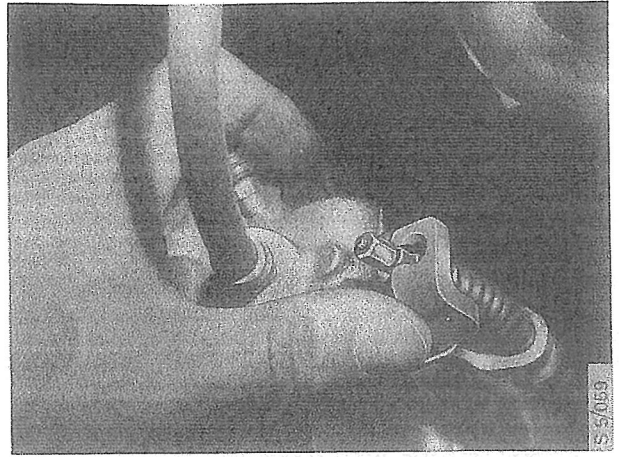


- 11 Remove the clamp's retaining screws and withdraw the cables.

- 12 Unscrew the cable guide from the spring link.



13 Disconnect the cable from the brake caliper.

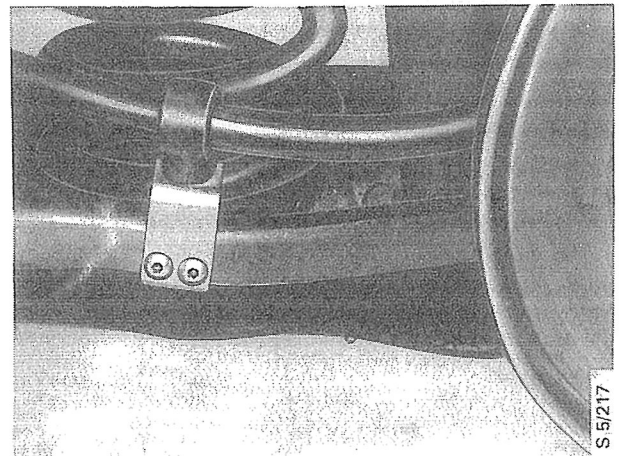


14 Withdraw the cable.

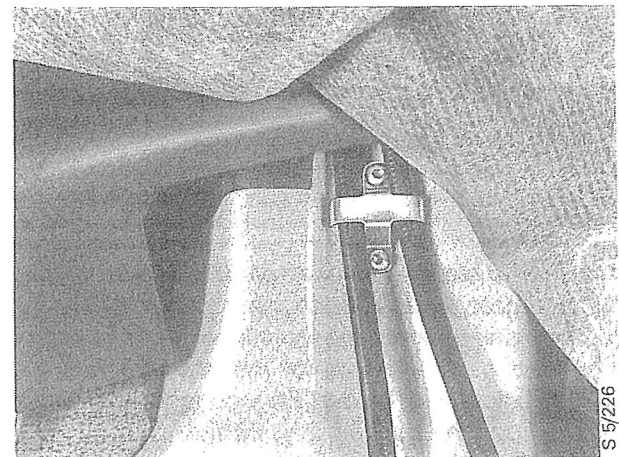
To fit

1 Insert the new cable through the body lead-through.

2 Connect the cable to the brake caliper and screw the cable guide to the spring link.



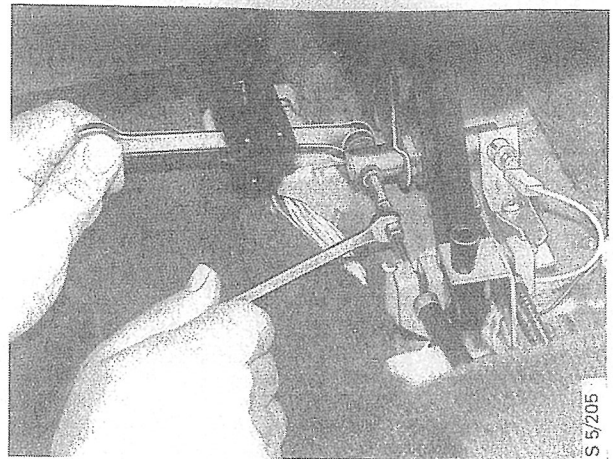
3 Fit the clamp holding the cables to the floor.



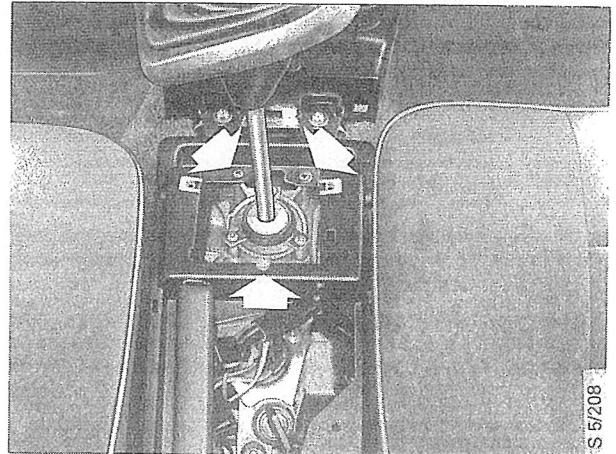
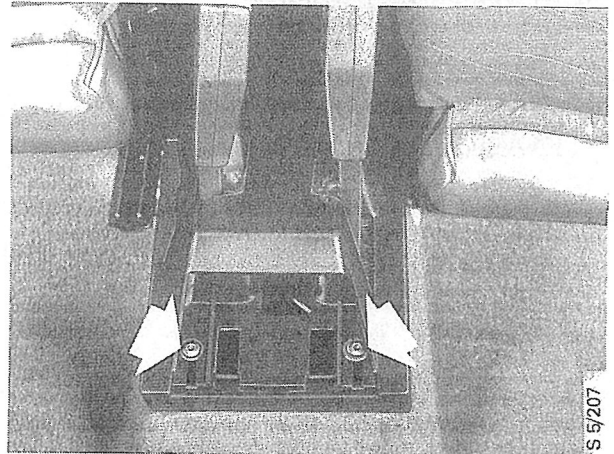
4 Insert the threaded end of the cable through the console between the seats.

5 Fit the locking plate over the cables.

- 6 Screw the adjusting nut onto the end of the cable by the handbrake lever.
- 7 Before fitting the central console in position, adjust the handbrake as follows:
Insert a 1.0 mm feeler gauge between the lever and the stop on the rear brake caliper and then tighten the adjusting nut under the handbrake lever until the feeler gauge drops out.

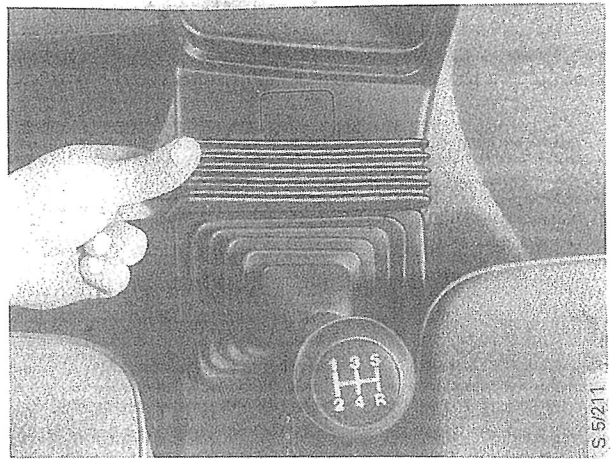


- 8 Lower the console into place and secure it with the two rear screws and three front ones.



- 9 Fit the console's cover panel in place: engage 3rd gear, lower the cover panel over the gear lever and plug in the connector for the interior lighting. Fit the bulb for the ignition switch illumination in its holder. Engage reverse gear and remove the ignition key. Fit the cover panel in place and secure it with the retaining screws.

- 10 Fit the gear lever gaiter and rubber bellows between the consoles back in place.



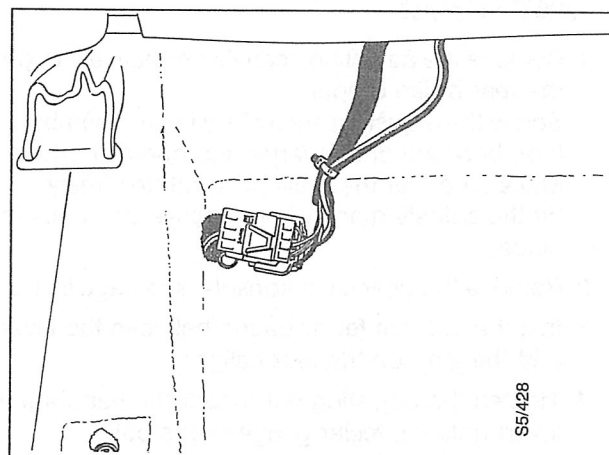
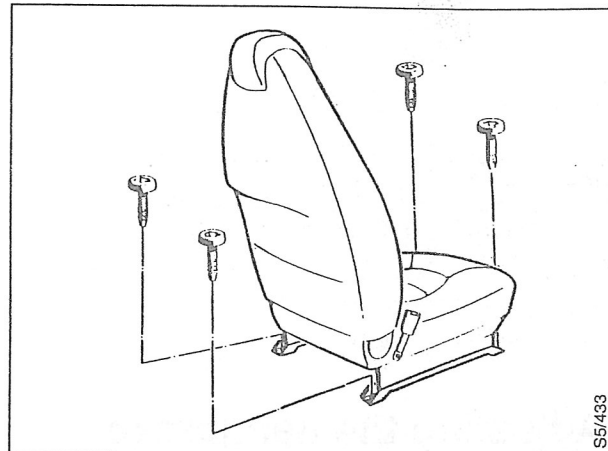
Adjusting the handbrake 1988-1990

- 1 Remove the adjusting screw's protective cap on the rear brake caliper.
Screw the adjusting screw fully in and then back it off between one-quarter and one-half a turn. Make sure that the brake disc rotates freely. Fit the adjusting screw's protective cap back in place.
- 2 Remove the gear lever console, see page 551-2.
- 3 Insert a 1.0 mm feeler gauge between the lever and the stop on the rear caliper.
- 4 Tighten the adjusting nut (under the handbrake lever) until the feeler gauge drops out.
Correct clearance: 1.0 mm \pm 0.5 mm (0.04 \pm 0.02 in).
- 5 Fit the gear lever console back in place, see page 551-6.
- 6 Fit the gear lever gaiter and rubber bellows between the consoles back in their positions.

Changing the handbrake cable 1991-

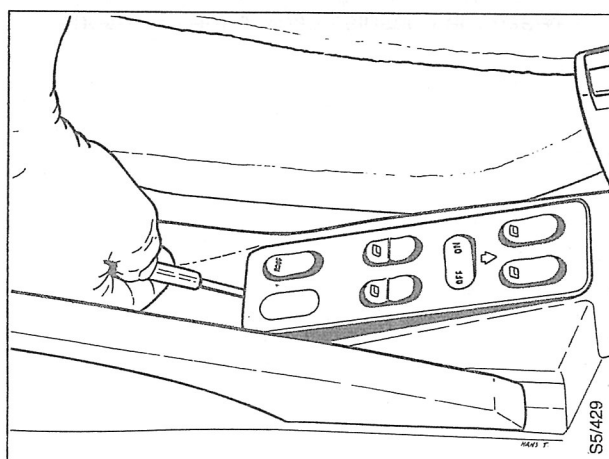
To remove

- 1 Remove the front left-hand seat.
Unplug the connector under the seat.

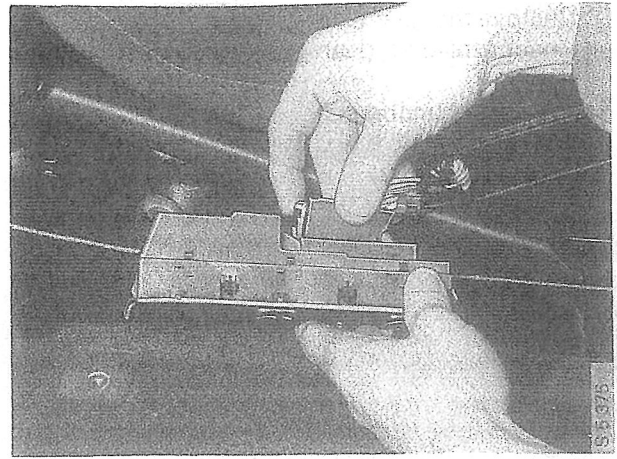


- 2 Remove the rubber bellows between the central console and gear lever console.

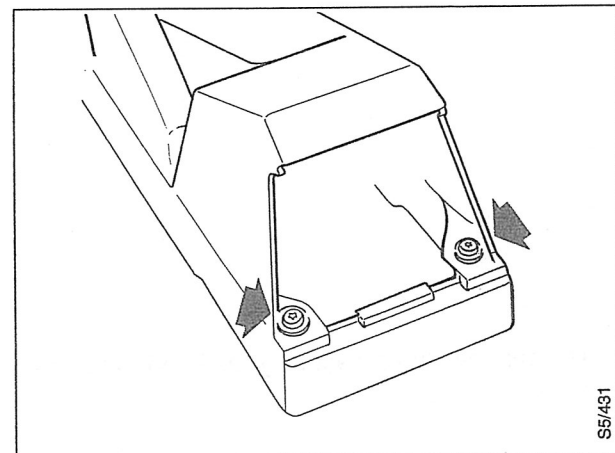
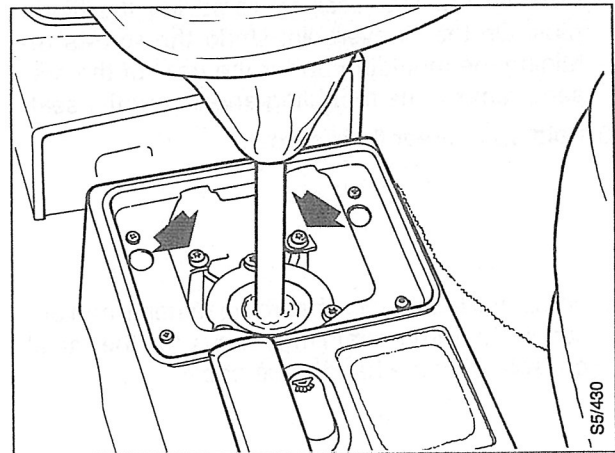
- 3 Remove the switch unit from the gear lever console.



- 4 Remove the connector by pressing in the tongue.

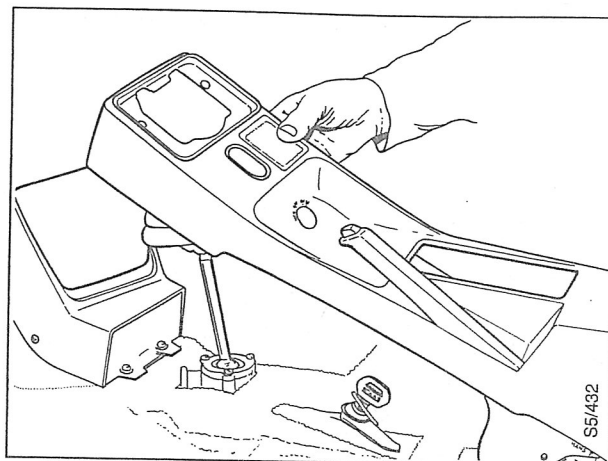


- 5 Undo the four screws (two at front and two at rear) retaining the gear lever console.



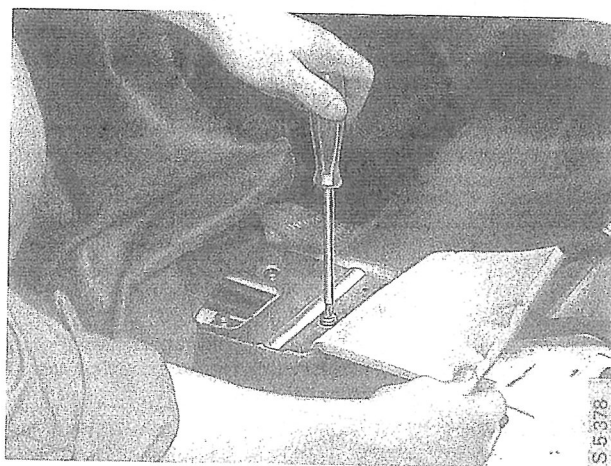
- 6 Unplug the connector for the interior lighting and remove the bulb for the ignition switch illumination.

- 7 Remove the gear lever console:
Engage reverse gear and remove the ignition key.
Apply the handbrake.
Raise the console and insert the ignition key.
Engage 3rd gear.
Press the gear lever gaiter down through the console and raise the console.

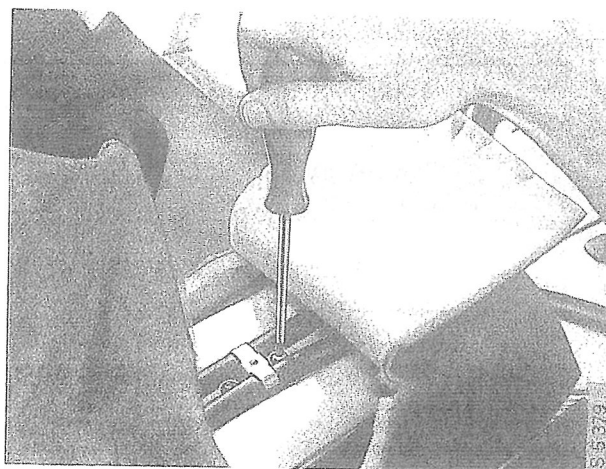


- 8 Remove the rear sill scuff plates on both sides.
9 Remove the rear seat by removing the hinge pins. On the Convertible: Undo the screws retaining the moulding under the front of the rear seat, remove the moulding and lift out the seat.
10 Fold up the rear floor carpet.

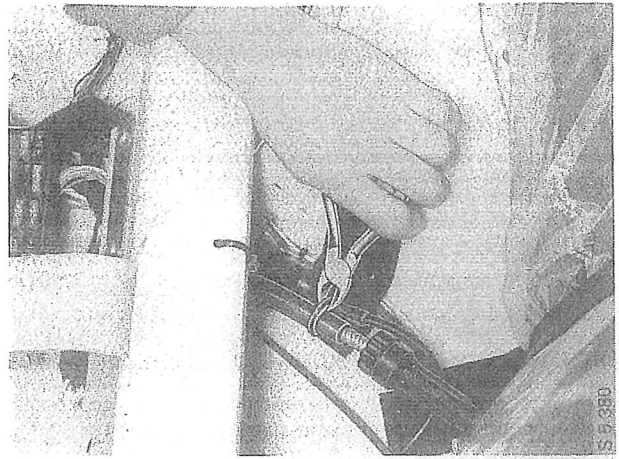
- 11 Fold back the sound-absorbing material and unscrew the three retaining screws for the metal console over the handbrake cable.



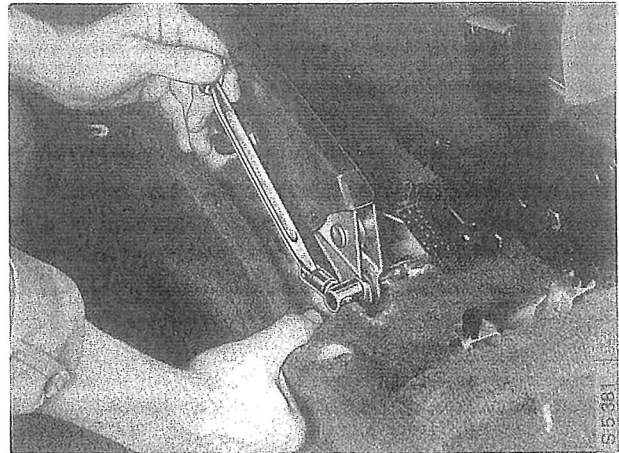
- 12 Remove the clamp securing the handbrake cables.



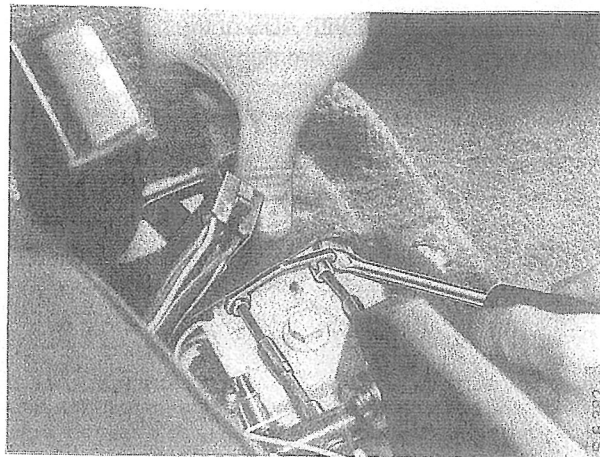
On cars equipped with ABS brakes: Cut through the cable tie holding the handbrake cable to the cable for the ABS sensor.



- 13 Release the handbrake lever. Unscrew the handbrake cable's nut by the handbrake lever.

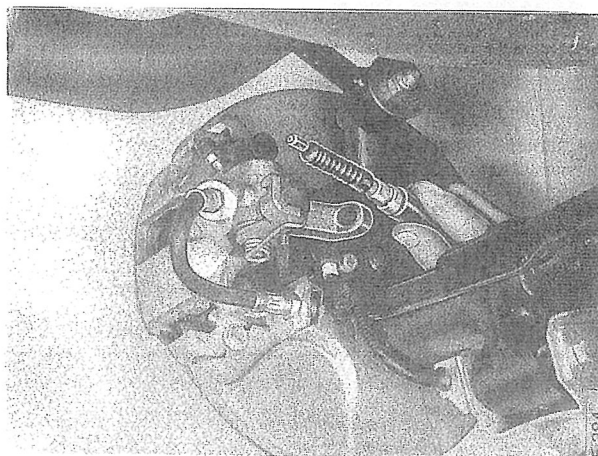
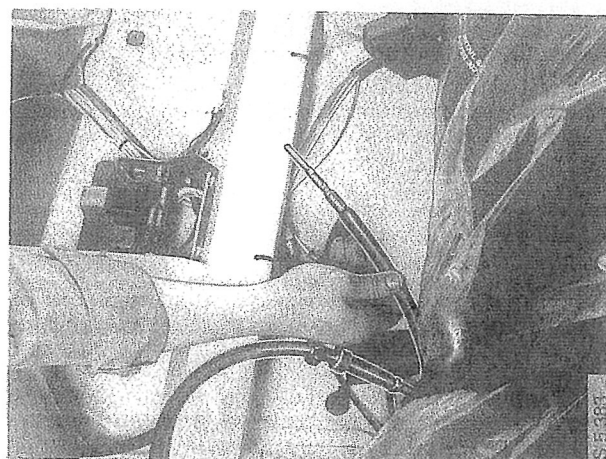


- 14 Lift the locking plate holding the cables to the cable bracket and then withdraw the cable.

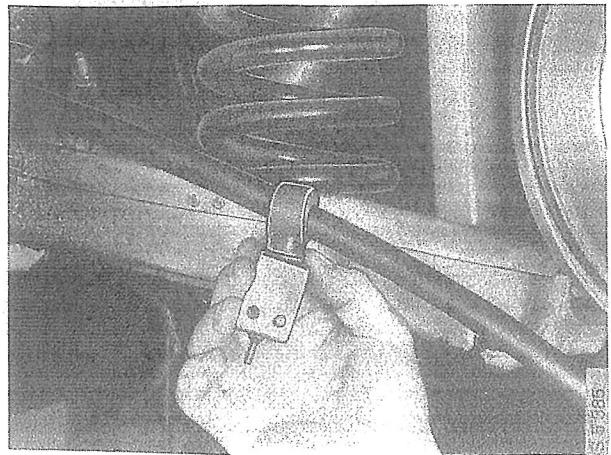


- 15 Raise the car and remove the rear wheel.

- 16 Disconnect the handbrake cable from the brake caliper.

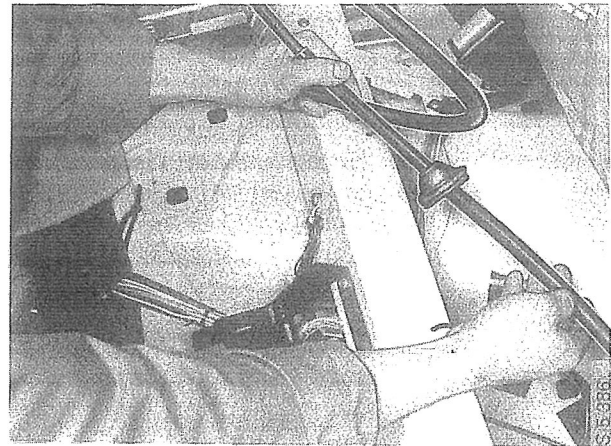


- 17 Unscrew the cable guide from the spring link and remove the guide.



- 18 Lower the car to the floor.

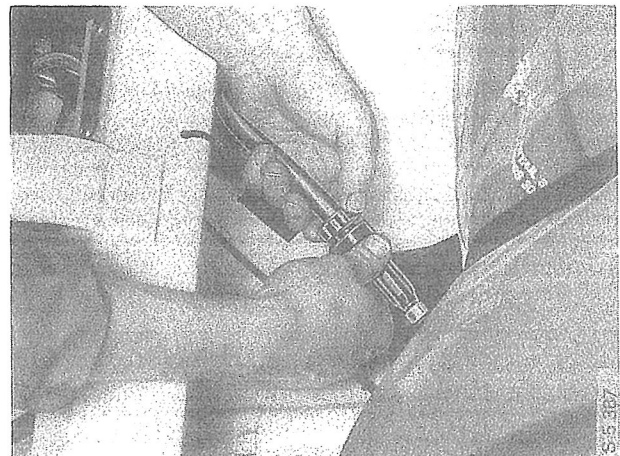
- 19 Withdraw the cable from the inside.



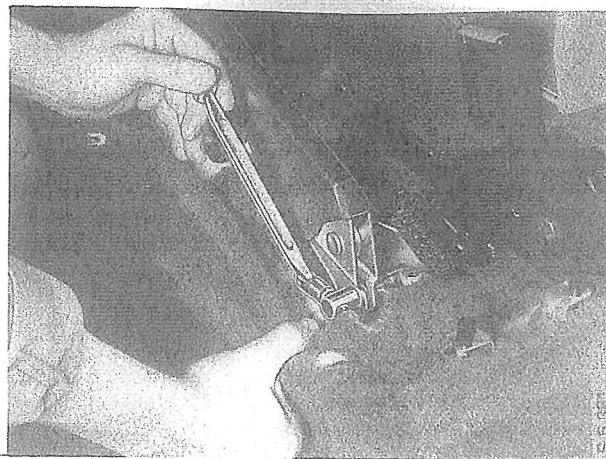
To fit

Note that the right-hand cable is 20 mm longer than the left-hand one.

- 1 Unscrew the locknut from the adjusting sleeve on the new handbrake cable until the handbrake sheathing can be pressed to the bottom of the adjusting sleeve. Then tighten the locknut three turns against the adjusting sleeve.

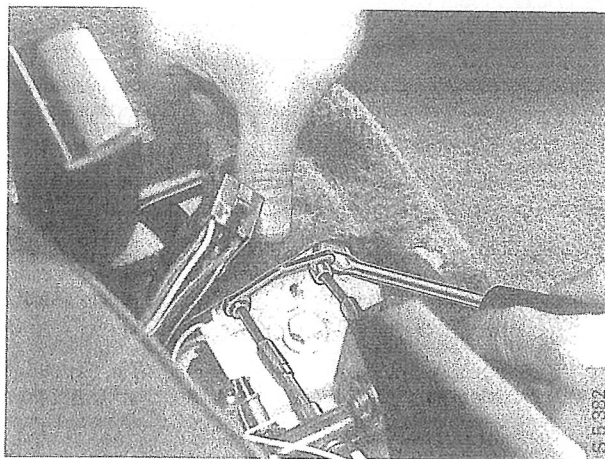


- 2 Insert the new cable through the hole under the rear seat and secure it in the front retaining bracket.

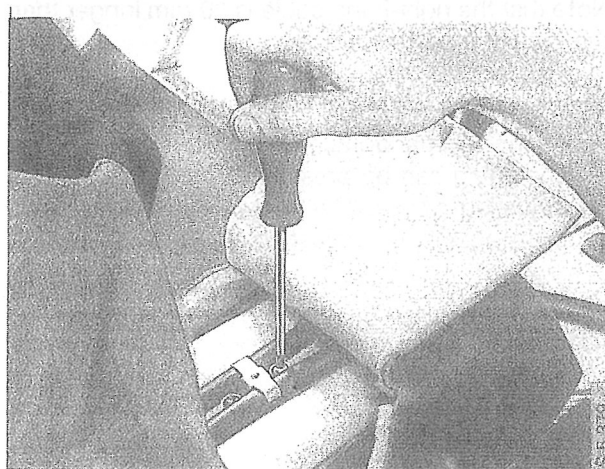


- 3 Screw the nut on the wire as far as possible by hand.

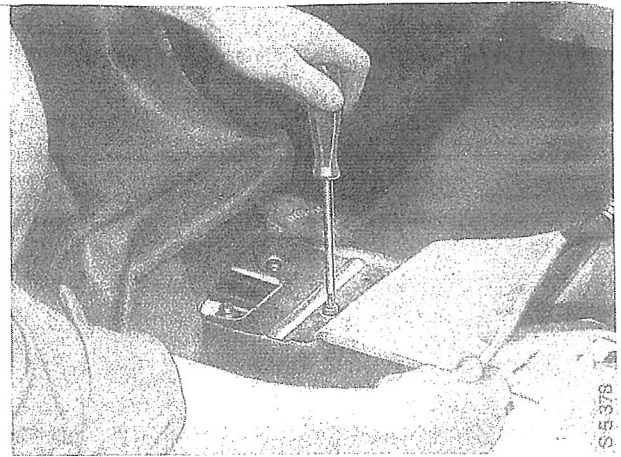
- 4 Fit the locking plate for the cables.



- 5 Screw on the clamp securing the handbrake cables.

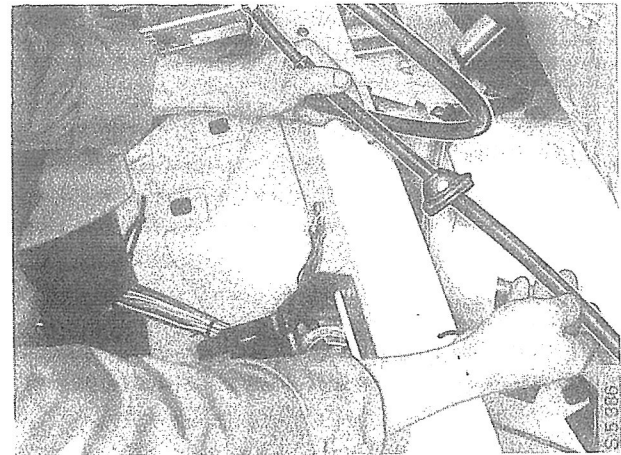


6 Fit the metal console in place.



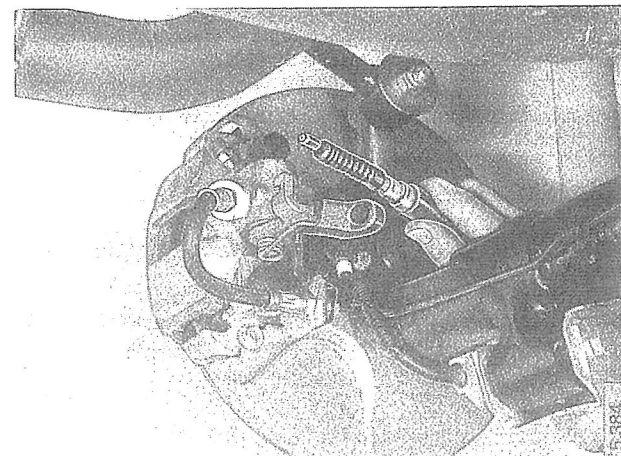
7 Fit a new cable tie in place.

8 Fit the rubber lead-through in the hole.

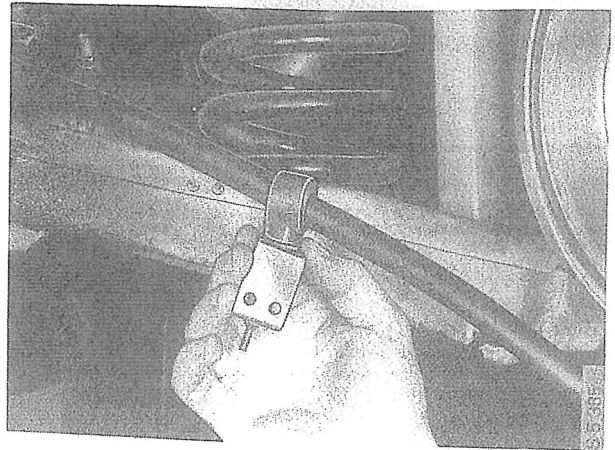


9 Raise the car.

10 Connect the cable to the lever on the caliper.

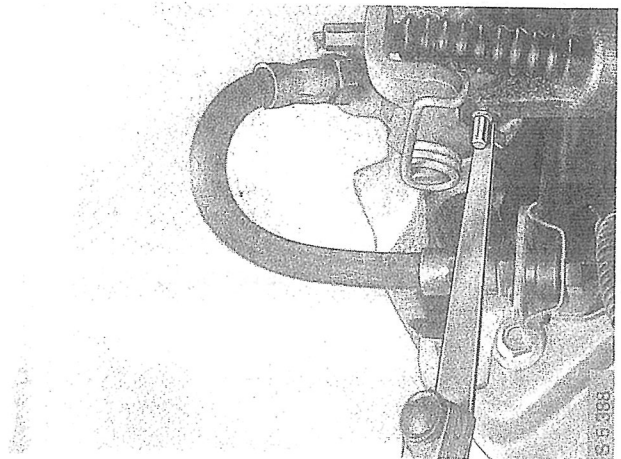


- 11 Screw the cable guide to the spring link.



- 12 Fit the wheel and lower the car to the floor.
Tightening torque for the wheel bolts:
105-125 Nm (80-90 lbf ft).
- 13 Apply and release the handbrake lever a few times to settle the adjusting device under the rear seat.

- 14 To adjust the handbrake cable, insert a 2.0 feeler gauge between the handbrake lever and the stop on the brake caliper and adjust the nut on the cable until the feeler gauge drops out. See "Adjusting the handbrake", page 551-17.



- 15 Fit the gear lever console in place and plug in all the electrical connectors.
- 16 Fit the rubber bellows in place between the central console and the gearlever console.
- 17 Fit the front left-hand seat back in place.
- 18 Plug in the connector under the seat.
- 19 Fold the rear floor carpet back in place and refit the rear seat.

- 20 Screw the rear sill scuff plates back in place.
- 21 Refit the front seat.

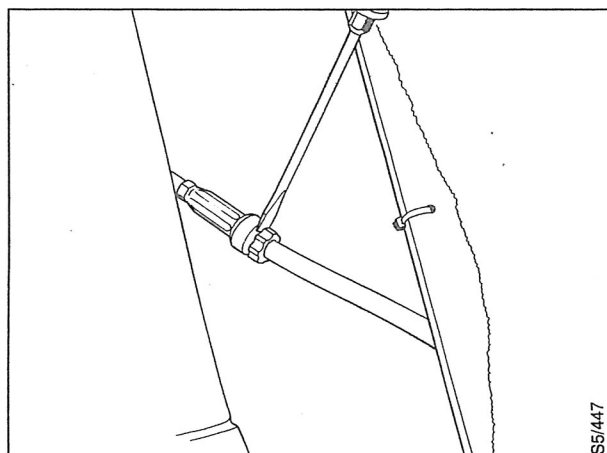
Adjusting the handbrake 1991-

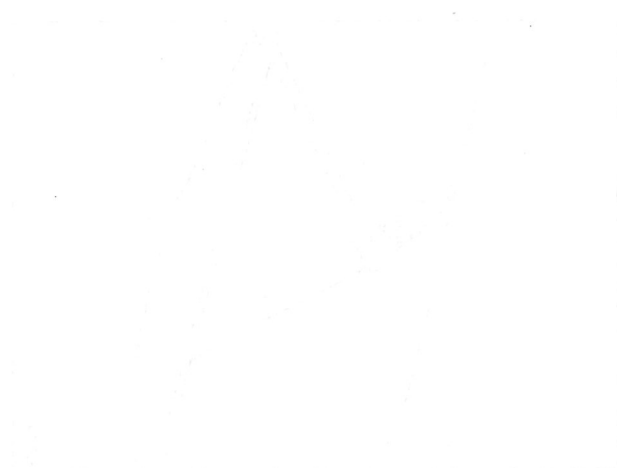
All adjustment of the handbrake cable should be carried out by means of the adjusting device under the rear seat.

The maximum range of adjustment is about 30 mm.

To adjust

- 1 Raise the rear seat.
900 Convertible: Remove the seat cushion by grasping its front edge and lifting it straight up.
- 2 Prise the adjusting device apart.
- 3 Insert a 2.0 mm (0.08 in) feeler gauge between the handbrake lever and the stop on the brake caliper.
- 4 Screw the locknut against the adjusting sleeve until the feeler gauge drops out.
- 5 Apply and release the handbrake lever a few times to settle the adjusting device.
- 6 Check that the clearance between the lever and the stop is 0.5-2.0 mm (0.02-0.08 in).
- 7 Lower the rear seat into place.
900 Convertible: Refit the seat cushion, pressing on its front edge to secure it in position.





Brake vibration

Cause of brake vibration	1	Template for marking the brake disc	10
Fault tracing	2	Measurement record sheet	11
Corrective measures	3		

General

These instructions apply to all 1988 and later Saab 900 models.

When dealing with complaints about vibration, knowing how to tell where the vibration originates is important. Possible sources over and above the brakes could be the engine, gearbox or certain combinations of tyre and wheel.

If the brakes are the cause of the vibration, try to find out about the way the owner drives and check the type of brake pads that are fitted to the car.

Cause of brake vibration

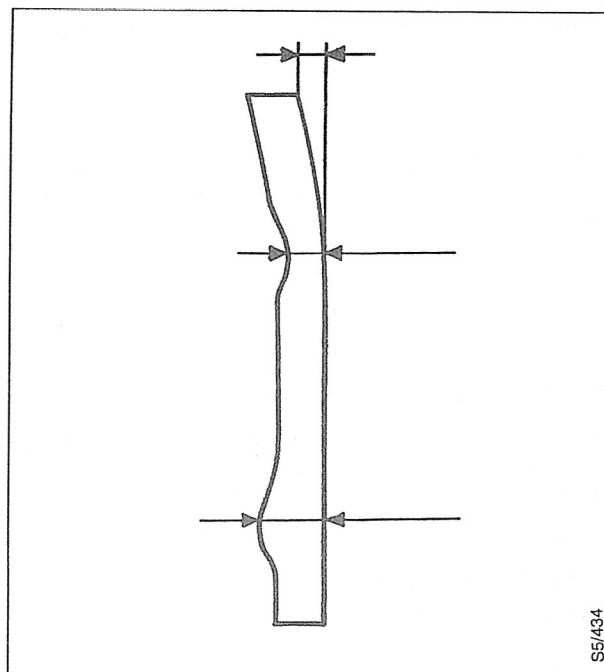
Brake vibration can be caused by:

- thickness variations/lateral throw
- changes in the material of the braking surface of the disc

Thickness variations/lateral throw

Several factors, individually or in combination, may be the cause of unacceptable thickness variations and/or lateral throw:

- aggressive friction material
- adhesive friction material
- pads, holders or brake pistons which bind
- excessive lateral throw (wrong brake disc, dirt on contact surface between disc and hub, bearing play)

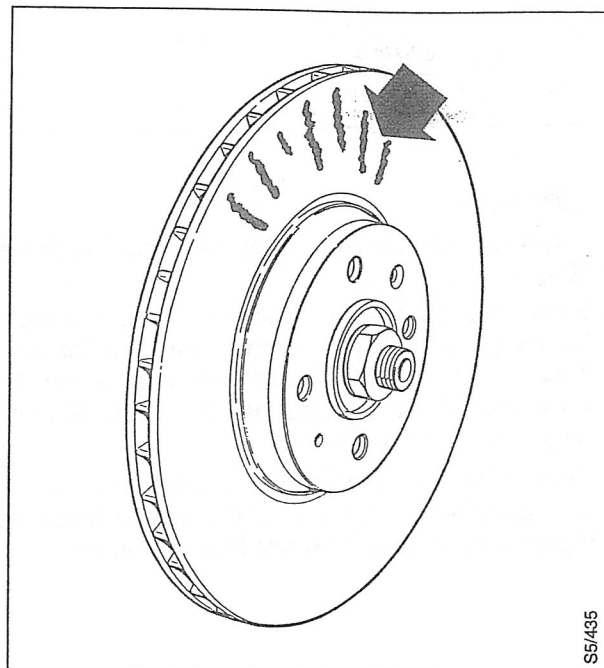


Lateral throw and thickness variation

2 Brake vibration

Changes in disc material

When the brakes are used hard during a journey, changes in the disc material can take place on account of the high temperatures which occur in the braking surface of the disc. These changes are visible as bluish streaks along the ventilation ribbing of the disc.



S5/435

Fault tracing

Note:

The brakes should be tested on a straight stretch of road with little traffic or in a brake dynamometer.

Allow the brakes to reach working temperature through normal town driving or by braking a couple of times from about 60 km/h.

REAR BRAKES

Drive the car, put the gear lever into neutral and lightly apply the handbrake with the release button depressed.

Do this at different speeds up to 90 km/h.

If vibration occurs, check the rear brakes. See Corrective measures, page 3.

FRONT BRAKES

If no vibration can be detected in the rear brakes, drive the car and apply the foot brake with the gear lever in neutral.

Do this at different speeds up to 90 km/h.

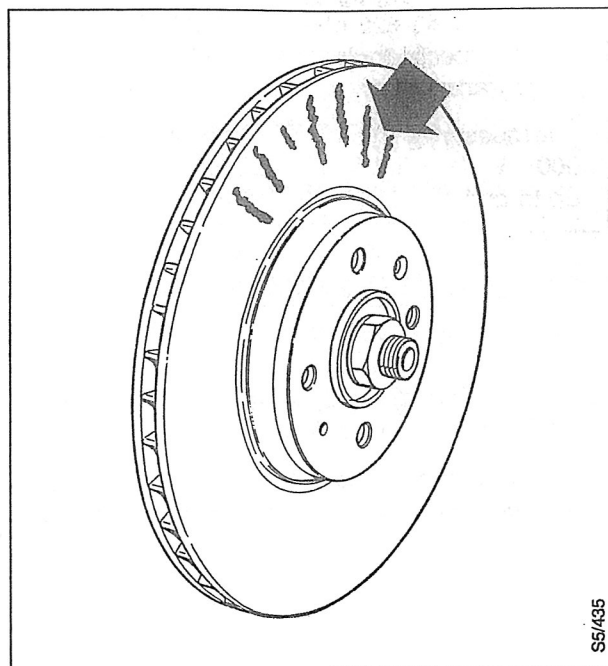
If vibration is now detected, check the front brakes. See Corrective measures, page 3.

Corrective measures

- 1 Remove the wheel and brake caliper from the wheels causing vibration.

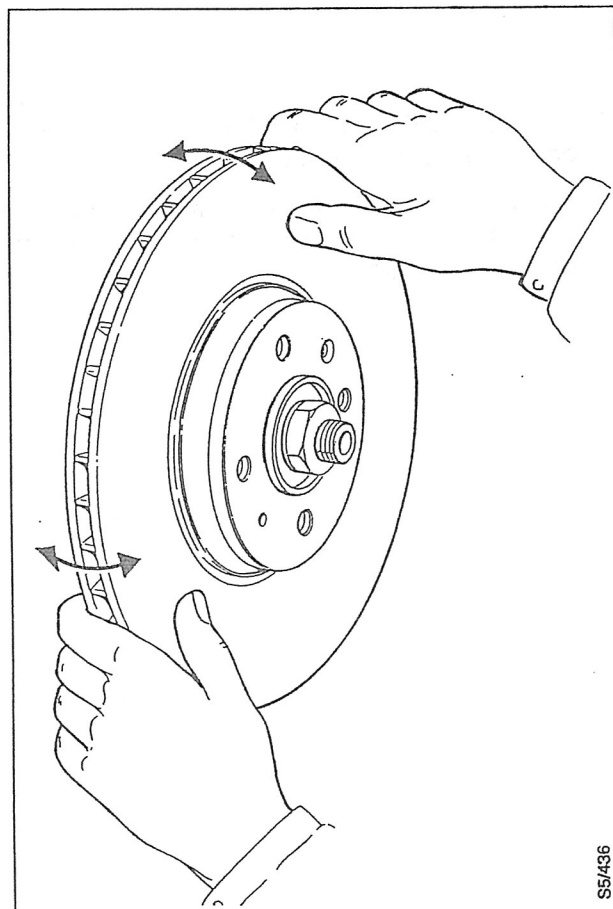
Checking for changes in material

- 2 Inspect the discs to see whether any changes have taken place in the material of the braking surface. Such changes appear as bluish streaks along the ventilation ribbing of the disc.
- 3 If changes have occurred, fit a new brake disc. Carry out repeated brake tests to check for vibration.



Checking for bearing play

- 4 Check whether play is present in the wheel bearing by grasping the outer edges of the brake disc and rocking it back and forth. Rotate the disc through 90 degrees and repeat the procedure. If play can be detected, change the wheel bearing.
- 5 After changing the wheel bearing, carry out repeated brake tests to check for vibration.

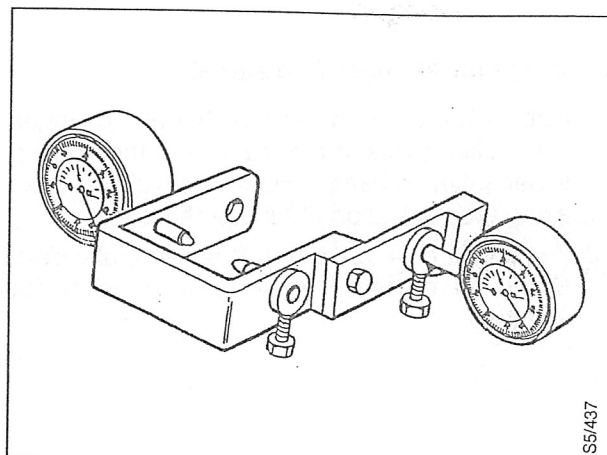


Checking the brake discs

TOOLS

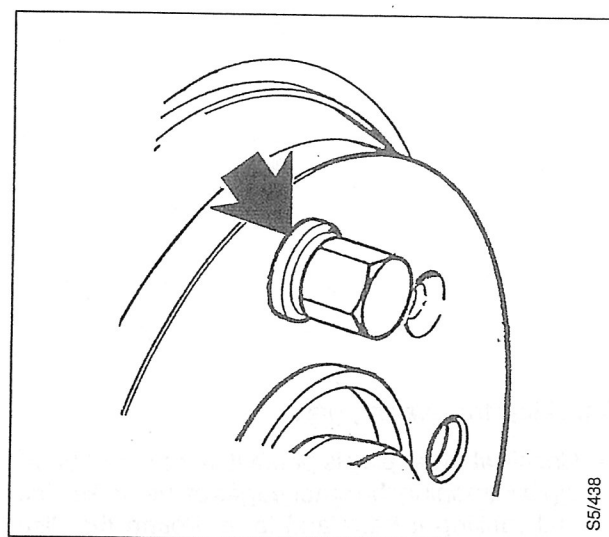
To measure thickness variations/lateral throw, use a measuring jig 89 96 605 and two dial gauges 78 40 622 (the dial gauges are available as special tools for the Saab 9000 automatic transmission).

The measuring jig cannot be used on the Saab 900 up to and including 1987 models.



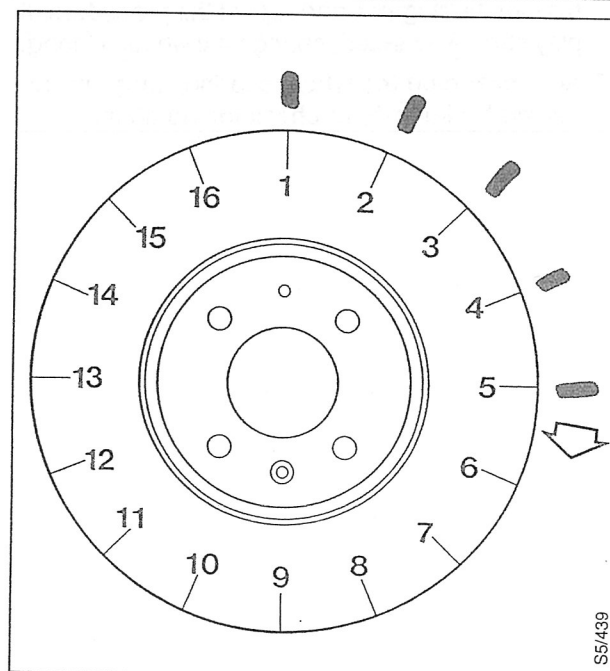
- 6 Fit the brake disc with a washer 80 73 124 under each wheel bolt.

These washers protect the wheel bolt taper and prevent the bolt from touching the bearing housing.



- 7 Using a marking pen, mark the 16 measuring points on the disc as shown in the Fig.

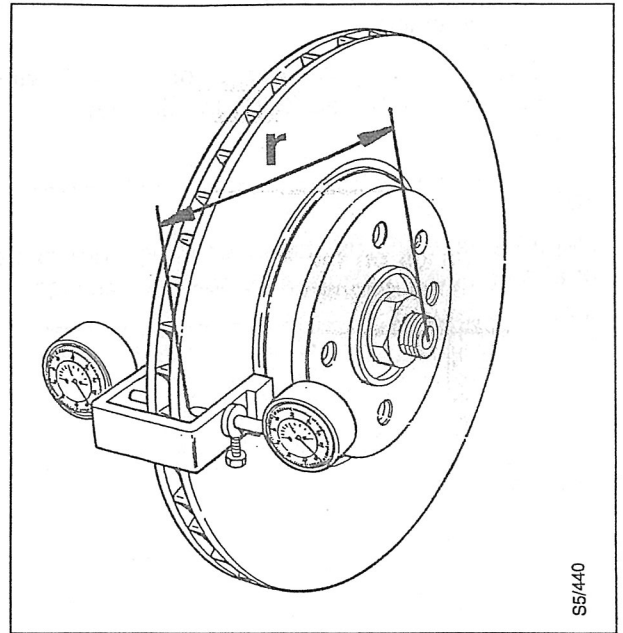
A template and measurement record sheet, a copy or tracing of which must be made for each series of measurements.



Mark the 16 measuring points on the brake disc, using a marking pen

- 8 Mount the measuring jig on the lower retaining lug for the brake caliper and fit the dial gauges in the jig.

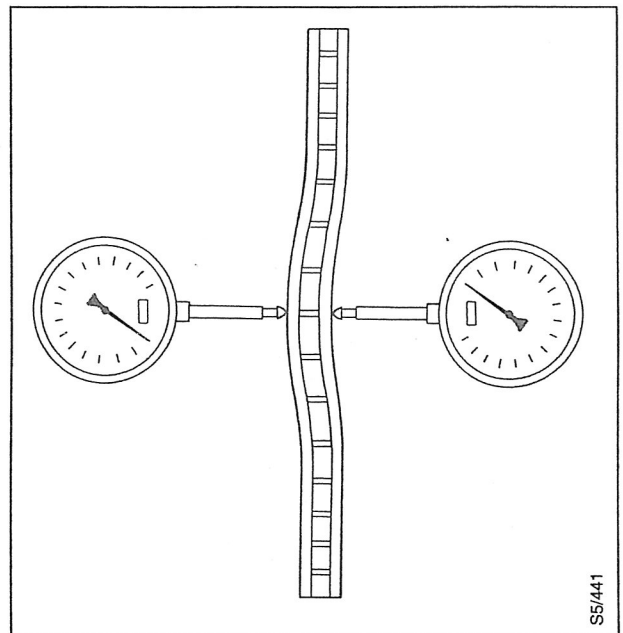
Adjust the jig so that the tips of the dial gauges are $r = 130$ mm from the wheel centre at front and $r = 120$ mm from the wheel centre at rear.



- 9 Rotate the brake disc while observing the outer dial gauge.

Set both dial gauges to zero when the outer gauge shows the maximum negative reading.

Prepare a copy of the measurement record sheet on page 10.



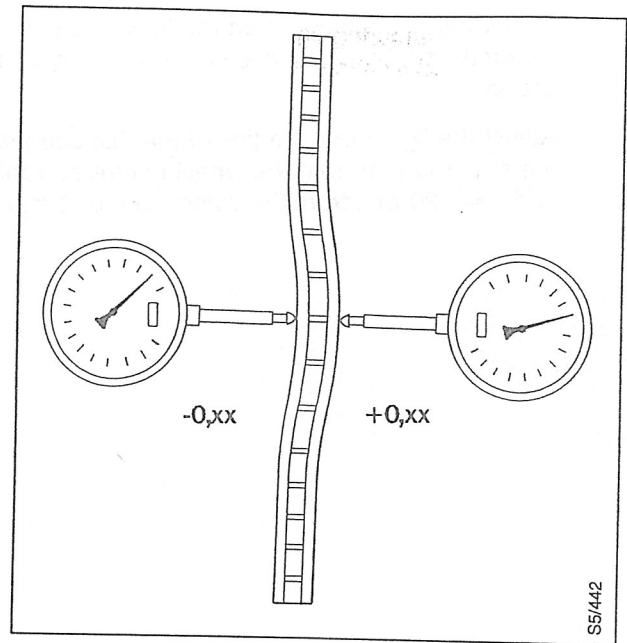
6 Brake vibration

- 10 Now rotate the disc stepwise to each of the 16 marking points.

Note the readings of both gauges at each point and mark off the results on the diagram.

Note:

Negative readings on the inner gauge are to be marked off on the diagram as positive readings.



What the curves mean

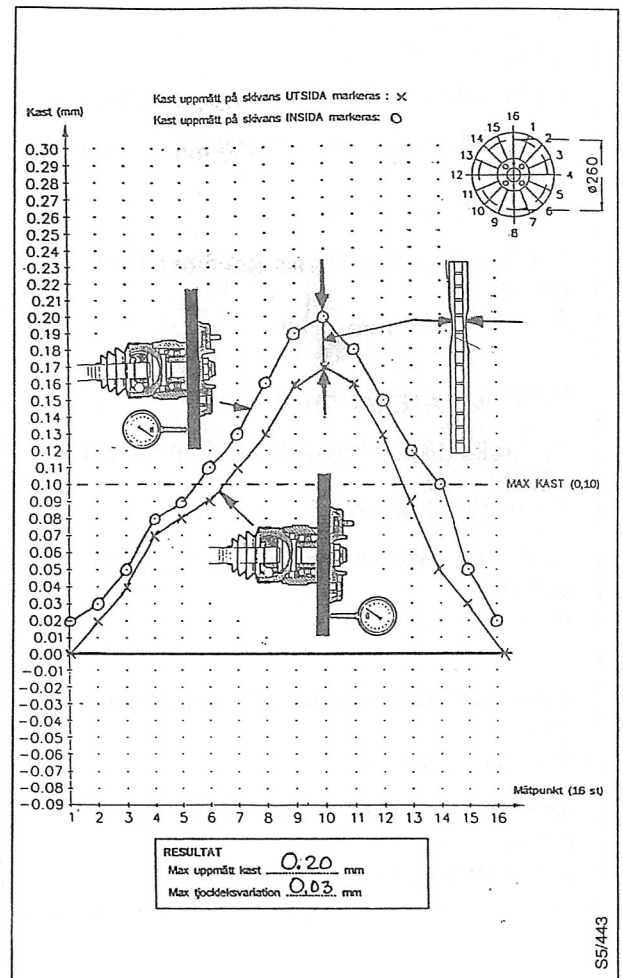
When you have marked off the readings of both gauges for the 16 measuring points you will have two curves on the diagram. Both curves show the lateral throw of the brake disc, one for the inside and one for the outside.

The distance between the two curves shows the difference in lateral throw between the inside and outside of the disc, or how the disc varies in thickness (thickness variation).

If the lateral throw is outside the tolerance range, the wheel hub must be checked, see below.

If the hub is faultless, then the brake disc is defective and must be changed or reground. For dimensions, see Technical Data.

If the variation in thickness is outside the maximum permissible tolerances, a new disc must be fitted.



TOLERANCES

MAXIMUM VARIATION IN THICKNESS:

front brake disc, measured 130 mm from centre

($r = 130$): **0.015mm**

rear brake disc, measured 120 mm from centre

($r = 120$): **0.015mm**

MAXIMUM LATERAL THROW

front brake disc, measured 130 mm from centre

($r = 130$): **0.08mm**

rear brake disc, measured 120 mm from centre

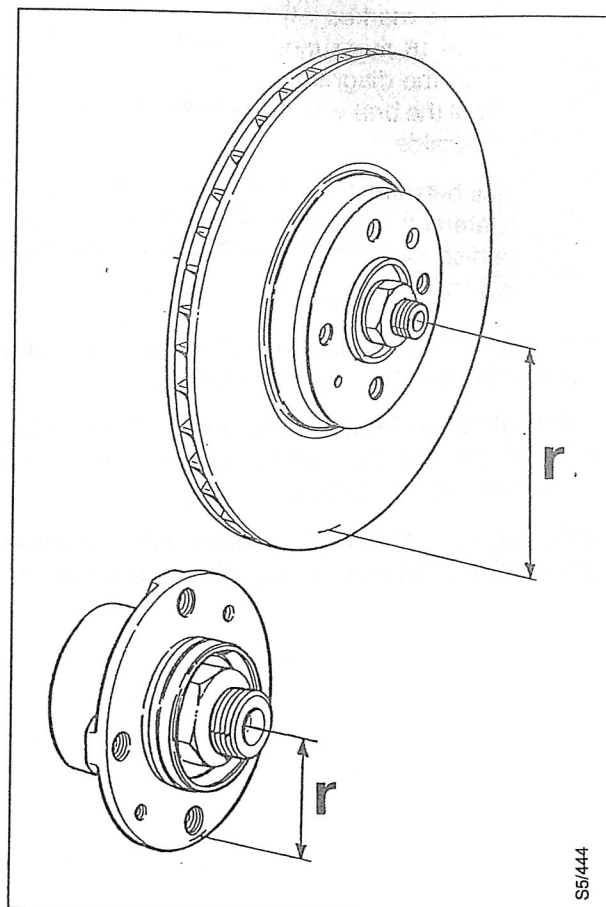
($r = 120$): **0.08mm**

front wheel hub, measured 63 mm from centre

($r = 63$): **0.05mm**

rear wheel hub, measured 63 mm from centre

($r = 63$): **0.05mm**



S5/444

Checking the wheel hubs

- 11 Before fitting the brake disc in place, check the lateral throw of the wheel hub.

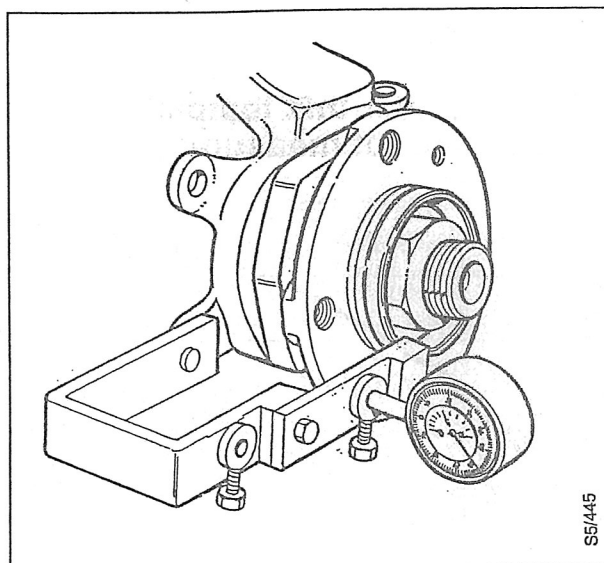
Make sure the hub is clean and free from foreign matter. Use the extension arm on the measuring jig and adjust its position so that measurement will be made outside the bolt holes. Only one dial gauge is used here.

- 12 Rotate the hub and check its lateral throw (the difference between the maximum and minimum readings).

If the lateral throw exceeds 0.05 mm a new hub must be fitted.

Note:

At each bolt hole the dial gauge will fluctuate about 0.03-0.05 mm, which is perfectly normal.



S5/445

After changing the brake disc and/or hub

- 13 Fit the brake disc in place.

Check the lateral throw of the new brake disc and/or new hub. If the throw is excessive, remove the disc and rotate it through 180 degrees. Check the lateral throw once again.

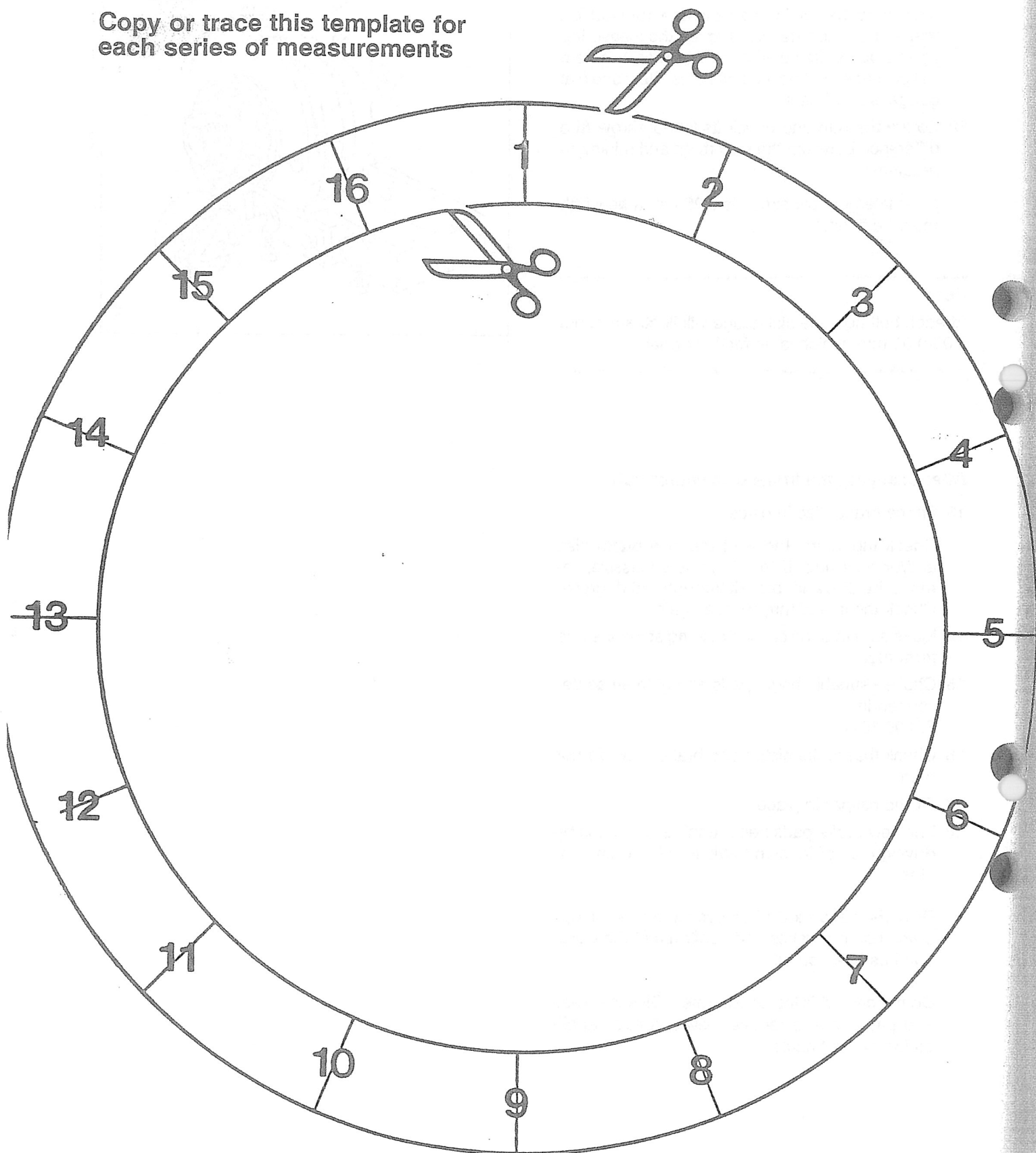
- 14 Make sure that the caliper locating studs are free from rust.
- 15 Choose suitable brake pads and fit them as described in SI 500-1017.
- 16 Check that brake piston and brake pads do not bind.
- 17 Fit the caliper in place.
- 18 The new brake pads need running in. Do this by driving the car in town traffic for about ten minutes.

Drive the car on test afterwards to check the operation of the brakes and confirm that the vibration has been cured.

Do not carry this test to extremes. Give the discs and pads time to recover between each application of the brakes.

Template for marking the brake disc.

Copy or trace this template for each series of measurements



Measure record sheet

Complaint made by:

Copy the measurement record sheet for each series of measurements.

Model:

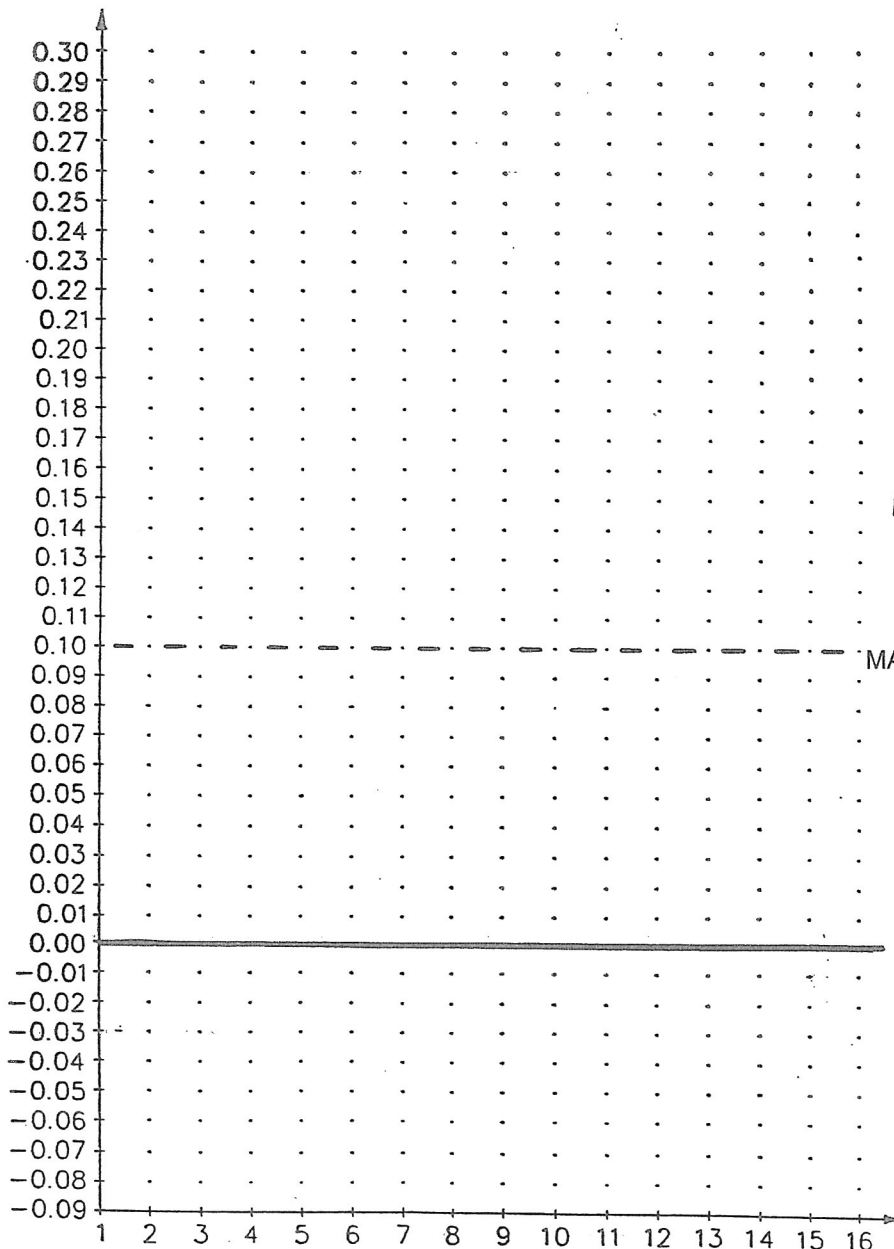
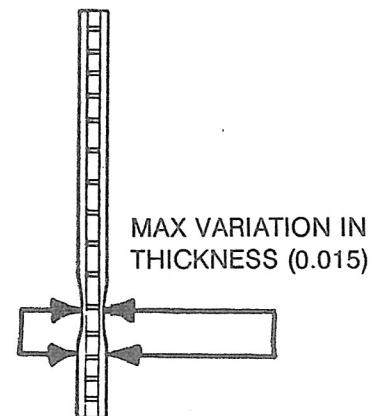
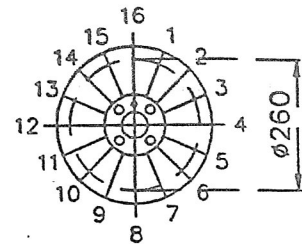
Chassis No.:

Odometer reading:.....

Lateral throw (mm)

Lateral throw measured on OUTSIDE of disc is marked: X

Lateral throw measured on INSIDE of disc is marked: O



MAX LATERAL THROW (0.08)

Measurement point (16)

RESULTS

Max. lateral throw.....mm

Max. variation in thickness.....mm

Workshop information

User feedback

To

From

Saab Automobile AB
Workshop Information, MSVI
S-461 80 TROLLHÄTTAN
SWEDEN

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Telefax phone no.: +46 520 84370

Comments/suggestions

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Manual concerned:

It is important that Saab technicians in the field regard the Workshop Service Manual as their bible, and we therefore strive to make the manual easy to use and to provide accurate information.

By letting us have your views on this manual you will be helping us to maintain a high standard in our literature.

Note down any comments or suggestions you may have on a sheet of paper or take a copy of this page and send us your views at the above address. For greater convenience, you are also welcome to send your comments by fax, using the telephone number shown.



SAAB

Saab Automobile AB
Trollhättan, Sweden



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