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Section G12

Height control valves

Introduction

The height control valves are situated on the outer ends of the rear suspension crossmember and are operated by pivoting links attached to each trailing arm.

Due to the valves containing fine limits and machine matched parts, only certain components are available as individual items. Service replacements for the complete assembly are available if required. Details of the available items are shown in the current parts list.

Height control valves - To remove

1. Place the car on a ramp and depressurise the hydraulic systems as described in Section G2.
2. Remove the flexible and steel pipes from the rear of the height control valve.

Note

All pipe ends, valve ports and junction block ports must have blanks fitted as they are disconnected.

3. **Left-hand height control valve.** Disconnect the two pipes entering the front of the valve at the two three-way junction connectors mounted on the rear face of the rear suspension crossmember (see Fig. G24).

Right-hand height control valve. Disconnect the two pipes entering the front of the valve at the four-way junction connector mounted on the side of the height control valve mounting bracket (see Fig. G25).

4. Slacken the lock-nut and unscrew the adjusting screw from the bottom ball joint of the valve actuation link; disengage the joint.
5. Remove the valve mounting bolts and nuts. Remove the valve, actuation rod and two pipes as a complete assembly.

Height control valves - To dismantle (see Fig. G26)

1. Correlate the position of the operating arm relative to the operating shaft to facilitate assembly. Remove the clamping bolt and operating arm from the shaft.
2. Remove the ram supply adapter complete with washer, sealing ring, nylon valve stop and return spring from the valve; discard the sealing ring.
3. Remove the inlet adapter complete with washer and sealing ring; discard the sealing ring.
4. Remove the return spring and inlet valve from the bore.
5. Remove the nuts and washers securing the halves of the valve together. Carefully separate the halves and discard the sealing rings.
6. Collect the exposed plunger return spring and withdraw the sleeve valve from its bore.

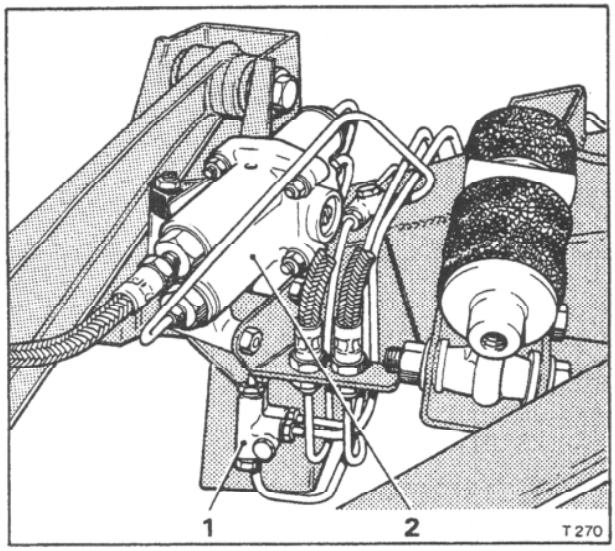

Fig. G24 Left-hand height control valve in position
1 Three-way connectors
2 Height control valve

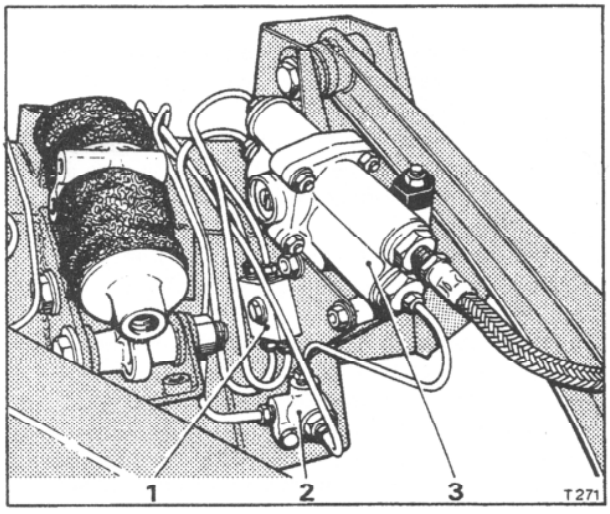

Fig. G25 Right-hand height control valve in position
1 Four-way junction connector
2 High pressure restrictor
3 Height control valve

7. Carefully remove the restrictor valve assembly from the upper bore and collect the spring seating from inside the upper bore of the housing.
8. Remove the solenoid line adapter complete with

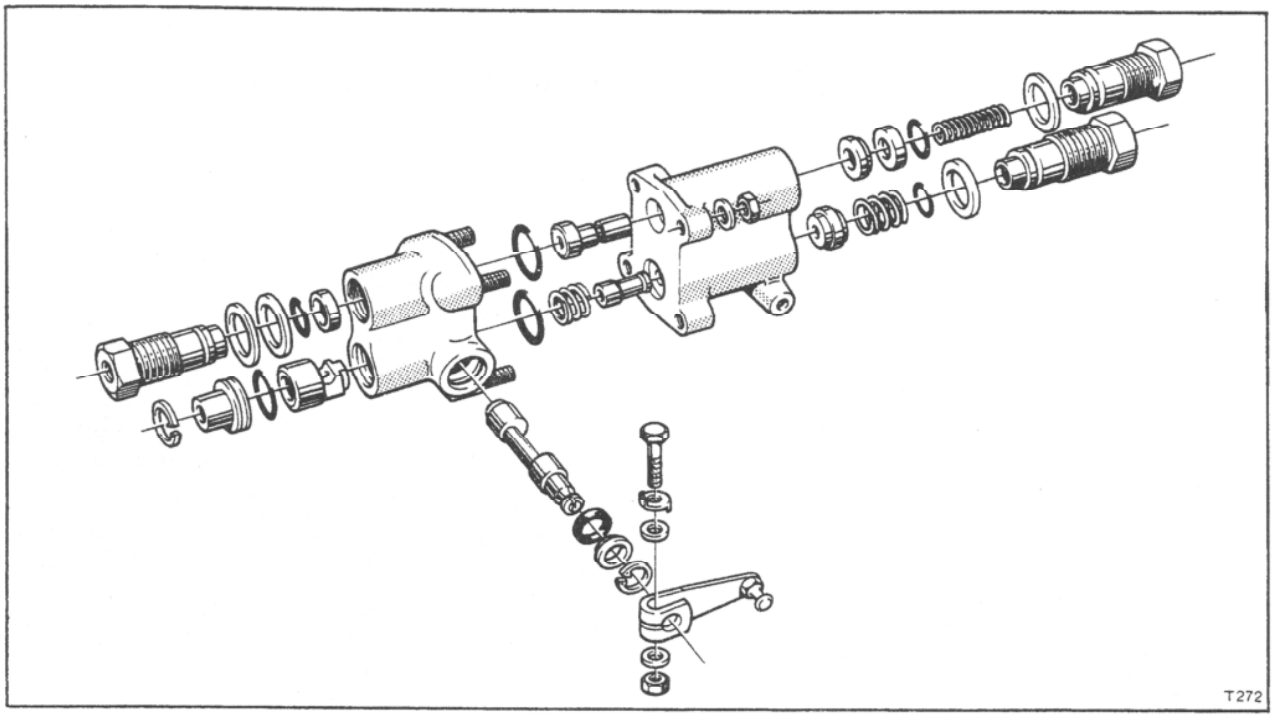

Fig. G26 Height control valve (left-hand shown)

washer, adjusting washers (when fitted) and nylon valve stop; discard the sealing ring.
9. Remove the circlip retaining the fluid return adapter; remove the adapter and discard the sealing ring.
10. Rotate the operating shaft to allow the shaft eccentric to clear the plunger groove; push the plunger out of its bore.
11. Remove the circlips retaining the operating shaft in its bore, remove the stepped washers and press out the shaft. Remove and discard the sealing rings.
12. Thoroughly clean all parts of the valve assembly with methylated spirits and dry with clean compressed air.
13. Inspect all parts for wear and damage. Ensure that the sleeve valve and restrictor valve operate smoothly in their bores without excess radial clearance. Also ensure that the end face of the sleeve valve and the adjacent valve and plunger faces are smooth and free from burrs and damage.

Height control valve - To assemble (see Fig. G27)
Ensure that all parts to be used in the assembly are scrupulously clean.
1. Insert the operating shaft into position in the housing bearing bores; smear the bearings with Molytone 'C' grease. Note that the position of the shaft determines whether the valve assembly is for use on the right-hand or left-hand side of the car.
2. Fit a seal lightly smeared with Molytone 'C' grease to one end of the operating shaft. Ease the seal into its recess using a thin blunt instrument, taking care not to cut the seal.
3. Fit a seal retaining washer over the shaft and locate it in its recess. Pushing gently on the washer, fit the circlip.
4. Fit a seal, retaining washer and circlip to the opposite end of the shaft by repeating Operations 2 and 3.
5. Lightly smear the outside bearing surface and tranverse slot of the plunger with Molytone 'C' grease. Insert the plunger into its bore ensuring that it moves freely. Allow the nose of the plunger to pass the operating shaft then rotate the shaft 180° to locate the plunger into position. Leave the plunger in this position.
6. Fit a sealing ring lubricated with brake fluid onto the fluid return adapter. Insert the adapter into the bore behind the plunger then fit the retaining circlip.
7. Fit a sealing ring lubricated with brake fluid onto the threaded adapter removed from the solenoid connection of the valve body; ensuring that the nylon valve stop is in position. Lubricate the adapter threads with Molytone 'C' grease.
8. Fit the large washer and any adjusting washers that were previously fitted onto the adapter then fit and tighten the adapter into the casing.
9. Lubricate the restrictor valve and sleeve valve with recommended brake fluid (see Chapter D), and insert them into their respective bores ensuring that they move freely.
10. Fit a sealing ring into each groove in the centre joint face of the valve casing and fit the return

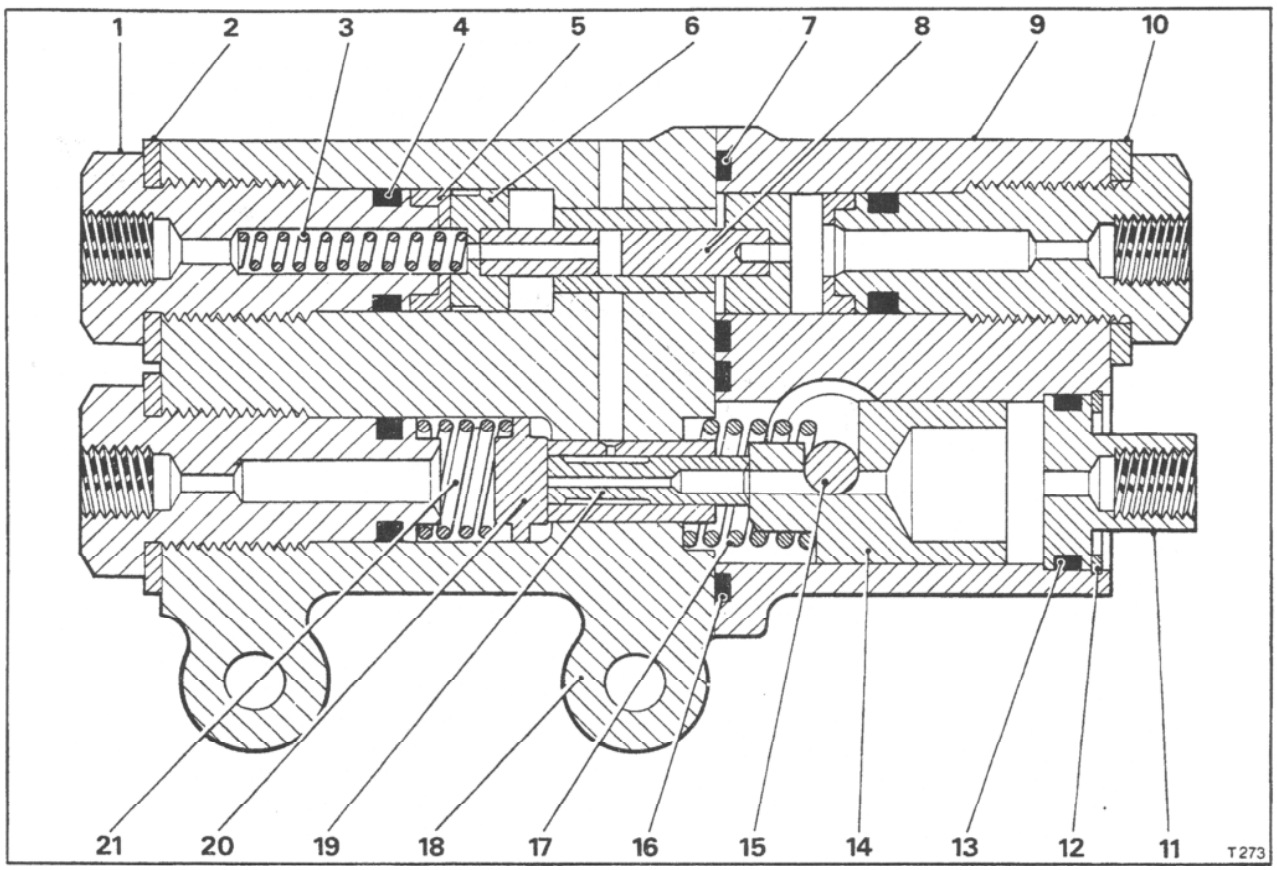

Fig. G27 Height control valve

1 Adapter (3)
2 Washer (3)
3 Return spring
4 Sealing ring (3)
5 Nylon valve stop (2)
6 Return spring seat
7 Sealing ring
8 Sleeve valve
9 Housing
10 Washer (plus adjusting washers if fitted)
11 Fluid return adapter
12 Circlip
13 Sealing ring
14 Plunger
15 Operating shaft
16 Sealing ring
17 Spring
18 Housing
19 Restrictor valve
20 Inlet valve
21 Spring

spring over the nose of the plunger.

11. Carefully secure the valve housing and casing together using the four nuts and washers.

12. Fit a sealing ring lubricated with brake fluid to the two remaining adapters then lightly smear the threads with Molytone 'C' grease. One adapter should be fitted with a nylon valve stop.

13. Carefully insert a straight length of clean 1,59 mm. (0.062 in.) diameter wire approximately 15 cm. (6 in.) long through the adapter fitted with the nylon stop. Thread the return spring onto the wire and into the adapter bore. Locate the spring seat on the wire to abut the spring.

14. Locate the large washer on the adapter then carefully locate the end of the wire in the restrictor valve bore. Slide the parts down the wire into their correct positions then screw and tighten the adapter into position in the housing and withdraw the wire.

15. Fit the nylon inlet/exhaust valve in the following manner. Rest the valve on a short length of clean aluminium bar of approximately 12,7 mm. (0.50 in.) diameter. Invert the height control valve assembly and feed the bar and valve carefully into the housing bore. Upturn the valve assembly and withdraw the bar.

16. Fit the return spring, locate the large washer on the adapter then fit and tighten the adapter into the bore.

17. Fit blanking plugs to the exposed ports of the valve to prevent the ingress of dirt.

18. Fit the operating lever onto the operating shaft; align the correlation marks made prior to removal and fit the clamping bolt. Torque tighten the bolt to the figure quoted in Chapter P.

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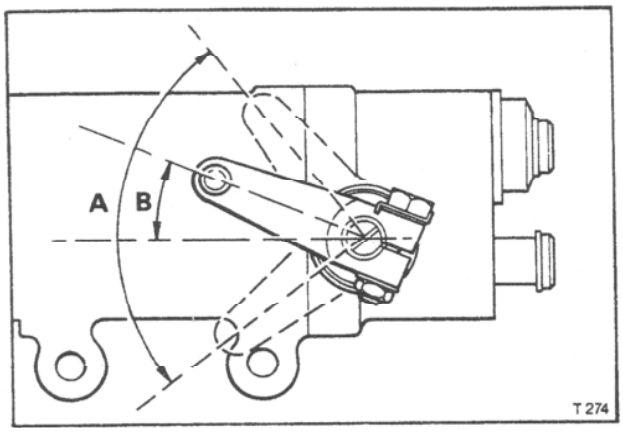

Fig. G28 Height control valve operating arm position and range

- A Approximate operating range without internal disengagement
- B 22° to 20° from horizontal position (see Operation 18 of Height control valve - To assemble.)

If the operating lever and shaft have not been correlated the correct position for the operating lever on the shaft should be determined as follows.

Fit the operating arm onto the shaft but do not tighten the clamping bolt.

Using a length of rod approximately 2,54 mm. (0.10 in.) diameter inserted through the inlet port adapter, push and retain the nylon inlet valve on its seat.

Carefully rotate the operating shaft in a clockwise direction until internal contact between the plunger and sleeve valve is felt.

Position the operating arm as shown in Figure G28 and tighten the clamp bolt.

Note

The operating shaft should only be rotated within the range shown in Figure G28. Further rotation will cause the shaft to disengage from the plunger. If disengagement occurs a thin rod should be inserted through the return port adapter and the plunger carefully pushed down the bore while the operating shaft is slowly rotated to re-engage in the plunger.

Height control valve - To fit

To fit a height control valve, reverse the procedure given for its removal, noting the following points.

1. The operating link joints must be lubricated with Rocol MTS 1000 grease or equivalent and then adjusted to give complete freedom of movement without free play.
2. All setscrews, nuts and pipe connections should be torque tightened in accordance with the figures quoted in Chapter P.
3. After fitting a height control valve, the hydraulic system must be bled as described in Section G4 and the height control valves 'set' to give the correct car levelled height.

Levelled height - To set

If the height control valves are removed from the car, on their replacement the levelled height must be checked and adjusted as necessary.

Note

Before any attempt is made to set the levelled height it is important that the car suspension height is correct. For details of the checking procedure reference should be made to Chapter H.

1. Weight the car with four occupants, or weights to a total of approximately 272 kg. (600 lb.) equally disposed between the front and rear seats. The fuel tank should contain 45 litres (10 Imp. gal. 12 US gal.) of fuel and all accessories, spare wheel and tools must be fitted in their respective locations.
2. Ensure the gearchange selector is in the 'P' Park position then remove the gearchange thermal cut-out from the fuse board.
3. Start the engine and allow the system to fully pressurise.
4. Check the levelled height by measuring the height 'A' (see Fig. G29) from the level surface on which the car stands, to the centre line of the rearmost bottom bolt which secures the forged bracket of the rear suspension crossmember to the body sill. Measure height 'B' from the level surface to the centre line of the rearmost bottom bolt which secures the rear hub assembly to the trailing arm. The difference between these two heights should be between 19,05 mm. and 25,4 mm. (0.750 in. and 1.0 in.). The maximum permissible difference in height between each side of the car being 4,76 mm. (0.187 in.).

On cars destined for USA and Canada with the exception of the Camargue a 12,50 mm. (0.50 in.) thick aluminium ring and second flexible seating washer are fitted to meet the statutory condition of car height.

In this case the difference between dimensions 'A' and 'B' should be between 3,80 mm. and 10,16 mm. (0.150 in. and 0.40 in.).

It is necessary to take two measurements at each point. Before taking the first measurement the

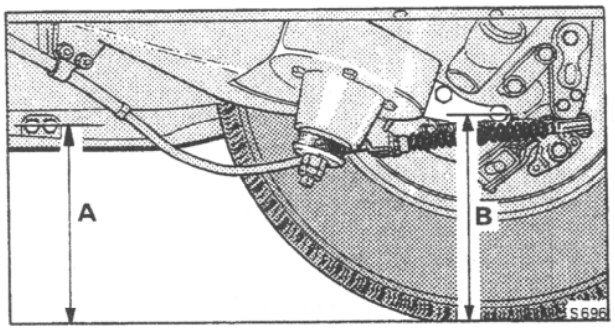

Fig. G29 Levelled height setting measurement positions

- A Ground to centre line of body bracket setscrew
- B Ground to centre line of axle yoke setscrew

car should be lifted approximately 5,08 cm. (2.0 in.) above its static position, then lowered gently and the measurements noted. The car should then be depressed approximately 5,08 mm. (2.0 in.) below its static position and allowed to rise before the second measurements are taken.

The average of the two measurements taken at points 'A' and 'B' should then be used when calculating the levelled height.

5. The levelled height is adjusted by altering the position of the control link bottom ball pivot in the elongated attachment hole on the trailing arm. Raising the ball pivot will increase the car levelled height, lowering the ball pivot will decrease the height.

It should be noted that although only one levelling valve may have been disconnected, both sides of the car must be checked for correct levelled height setting, as alteration to one side will affect the other.

Height control valves - To test (on the car)

The height control valves can be isolated and checked for operation on the car as follows.

1. Depressurise the hydraulic systems as described in Section G2 and isolate the gear-change by removing the thermal cut-out.
2. Remove the feed pipe (orange line) from one of the height control valves at the three-way junction on the rear crossmember and blank off the pipe end. Fit a blank capable of withstanding full hydraulic pressure to the three-way junction.
3. Start and run the engine at approximately 1000 r.p.m. If the height control valve on the opposite side of the car to the isolated valve was not operating before but now operates correctly then the isolated valve or its associated height control ram is faulty.
4. Stop the engine, depressurise the systems and reconnect the height control valve feed.
5. A further check can be made by removing the height control valve return pipe (white line) from the junction on the rear suspension crossmember. Blank off the junction and insert the end of the pipe into a clean container.
6. Disconnect the height control valve operating arm and link from its pivot on the suspension then push the operating arm upwards. Run the engine at approximately 1000 r.p.m.

Fluid should not flow from the pipe, if it does, the height control valve is faulty and should be overhauled or renewed.

7. Pull the control lever down so as to lower the car levelled height.

Fluid contained in the ram(s) should now flow into the container and then stop when the ram(s) are completely exhausted. If the flow does not stop then the height control valve has a faulty valve seat.

8. If the valve is working correctly, depressurise the systems and reconnect the height control valve return pipe.

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Section G13

Height control rams

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Introduction

The height control rams are situated above each rear road spring. With the exception of Corniche Convertible cars access to the rams is through the luggage compartment of the car.

On Corniche Convertible cars the rams are removed down the road spring aperture, necessitating the removal of the rear road spring.

Height control ram - To remove
Silver Shadow II, Bentley T2, Silver Wraith II, Corniche Saloon and Camargue

1. Depressurise the hydraulic systems as described in Section G2.
2. Attach bleed tubes to the height control ram bleed screws; open the bleed screws and allow any remaining fluid to drain into a clean container.
3. **Cars destined for countries other than U.S.A. and Canada**
Remove the trim from the forward panel and corners of the luggage compartment.
Cars destined for U.S.A. and Canada
Remove the screws retaining the sealing panel at the forward end of the luggage compartment. Remove the panel to expose the fuel tank.
Remove the fuel tank as described in Chapter K.
4. Disconnect the hydraulic pipes from the top of the ram body and blank off each pipe and port.
5. Unscrew the three ram retaining setscrews equal amounts to allow the road spring connector tube to lift under road spring pressure until it abuts the underside of the spring pot. When this is achieved, remove the setscrews completely.
6. Ease the ram housing upwards to gain access to the ram piston slots, then using the hook wrench (RH 8051) unscrew the ram piston from the connector tube. Remove the ram from the car.

Height control ram - To remove
Convertible cars

1. Depressurise the hydraulic systems as described in Section G2.
2. Attach bleed tubes to the height control ram bleed screws; open the bleed screws and allow any remaining fluid to drain into a clean container.
3. Remove the rear seat cushions, backrest and trims to expose the ram securing setscrews on the base of the hood stowage compartment (see Chapter S).
4. Using special peg spanner and extension bar (RH 8048) inserted through the centre of the road-spring unlock, but do not unscrew fully the ram piston from the connector tube.

Note
When unlocking the ram piston from the connector tube the spanner must be turned clockwise.

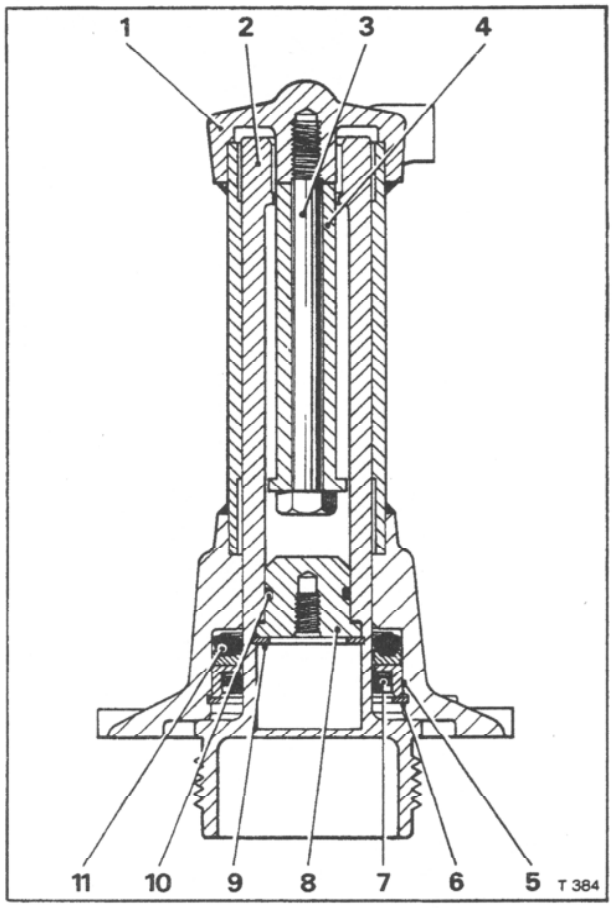

Fig. G30 Height control ram
Silver Shadow II, Bentley T2, Silver Wraith II, Corniche Saloon and Camargue

1 Housing
2 Piston
3 Travel limiting stop setscrew
4 Travel limiting stop
5 Seal housing
6 Circlip
7 Wiper seal
8 Sealing plug
9 Circlip
10 Sealing ring
11 Main seal

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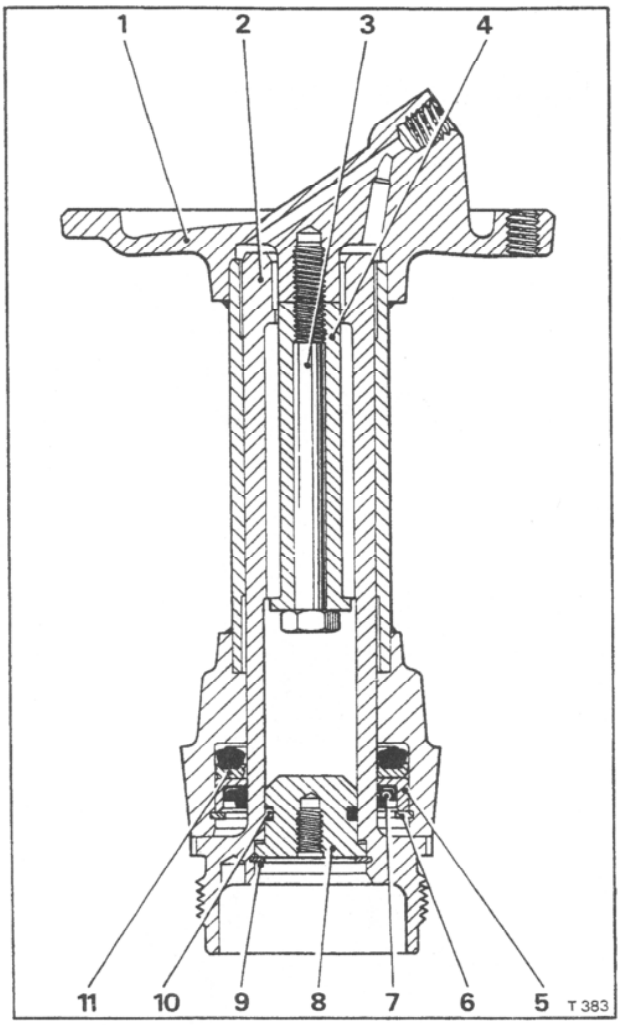

Fig. G31 Height control ram
Convertible cars

1 Housing
2 Piston
3 Travel limiting stop setscrew
4 Travel limiting stop
5 Seal housing
6 Circlip
7 Wiper seal
8 Sealing plug
9 Circlip
10 Sealing ring
11 Main seal

An alternative method is to proceed with Operation 5 onwards and separate the ram piston and connector tube on the workbench.

5. Remove the ram securing setscrews from the base of the hood stowage compartment.

6. Remove the road spring, connector tube and ram assembly from the car as described in Chapter H.

7. Separate the ram assembly from the connector tube by unscrewing the ram piston from the connector tube.

Height control ram - To dismantle (see Figs. G30 and G31)

1. Remove the circlip retaining the sealing plug in the piston bore.

2. Withdraw the sealing plug from the piston bore. Discard the sealing ring.

A 0.250 in. UNF threaded hole is provided in the end of the plug to facilitate removal.

3. Using a suitable spanner unscrew the travel limiting stop setscrew. Withdraw the ram piston from the housing and collect the travel limiting stop and setscrew.

4. Remove the seal retaining circlip from the ram housing then extract the wiper seal, seal housing and main seal.

5. Thoroughly clean and inspect all items for wear and damage. Any score marks should be removed from the piston by use of a fine grade emery cloth prior to final cleaning.

Height control ram - To assemble

1. Lubricate a new main seal with recommended brake fluid (see Chapter D) and insert it into position in the ram housing as shown in Figure G32.

2. Lubricate a new wiper seal with brake fluid and gently push it into place in the seal housing.

3. Insert the wiper seal and housing into position in the ram housing. Ensure that the flat face of the housing abuts the main seal. Fit the seal retaining circlip.

4. Slide the piston into the ram housing taking care not to damage the seal lips.

5. Fit the setscrew and travel limiting stop and torque tighten the setscrew to the figure quoted in Chapter P.

6. Smear the new piston blanking plug seal with Molytone 'C' grease or equivalent and fit it onto the plug.

7. Press the blanking plug into position in the ram piston and fit the retaining circlip.

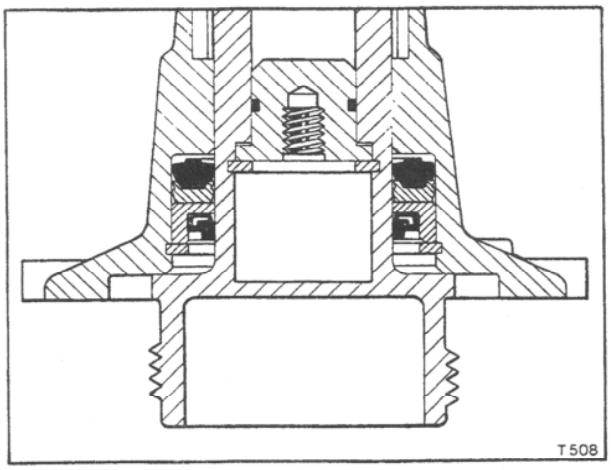

Fig. G32 Height control ram seals

Height control ram - To fit

Fit the height control ram by reversing the procedure for removal noting the following points.

1. All nuts and setscrews should be torque tightened in accordance with the figures quoted in Chapter P.
2. After fitting the height control ram, bleed the height control system as described in Section G4.
3. Check the ram and all the disturbed pipe connections for leaks prior to fitting the body trims.

Height control ram - To test (on the car)

The only likely failures on a height control ram are seal failures. If a ram piston blanking plug seal or main piston seal fail this will be visually evident as hydraulic fluid will be seen running down the damper casing or road spring.

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Section G14

Pressure switches

Introduction

The accumulator pressure switches are situated in the engine compartment on the right-hand longeron (No. 1 system accumulator) and the left-hand longeron (No. 2 system accumulator).

The pressure switches are operated by the pressurised fluid in the hydraulic systems and will illuminate the warning panel(s) situated on the interior facia if the pressure in the hydraulic system(s) falls below a safe working pressure. It is important therefore that the warning panel lamps are not operated due to a faulty switch.

In the event of a pressure switch failure the pressure switch should be renewed.

Pressure switch - To test

1. The hydraulic pressure switches are designed to 'fail safe' i.e. if a pressure switch fails it will operate the facia panel warning lamps.
2. The warning lamp bulbs can be checked for correct operation by moving the gear range selector lever to the 'D' drive position and turning the ignition key against the spring pressure to the 'start' position. This operation should result in all of the panels in the warning cluster situated on the facia being illuminated.

Important

Ensure that both the parking brake and foot brake are firmly applied when carrying out this operation.

3. The easiest method of testing a hydraulic pressure switch is by substitution. If this is not possible the following procedure should be carried out.
4. Depressurise the hydraulic systems as described in Section G2.
5. Remove the bleed screw from the three-way adapter on the left-hand pressure switch and connect a zero kg/sq.cm. to 210 kg/sq.cm. (zero lb/sq.in. to 3 000 lb/sq.in.) pressure gauge fitted with a connecting pipe and bleed screw into the adapter.
6. Connect a battery and test lamp in series to the pressure switch as shown in Figure G34. The test lamp should illuminate, confirming that the switch contacts are made, denoting no brake fluid pressure.
7. Start and run the engine at approximately 800 r.p.m. and observe the pressure gauge. The test lamp should extinguish at a pressure not exceeding 45,70 kg/sq.cm. (650 lb/sq.in.). Switch off the ignition and using a bleed tube attached to the gauge feed pipe bleed screw slowly bleed off the fluid into a clean container thus allowing the

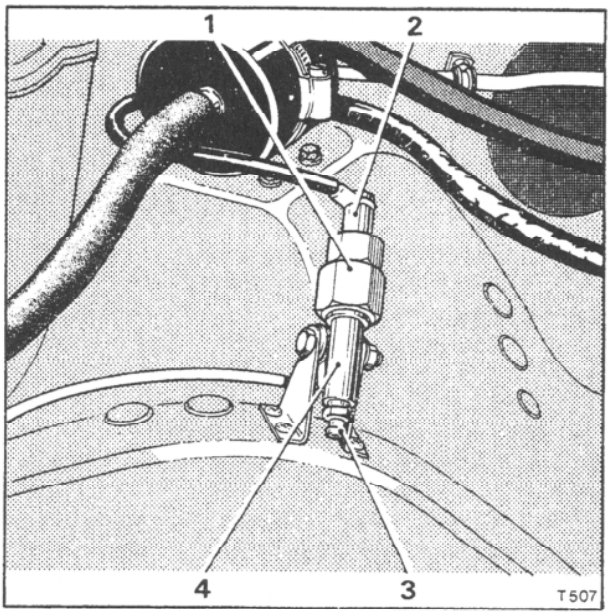

Fig. G33 Pressure switch (left-hand longeron)
1 Pressure switch
2 Electrical connection
3 Bleed screw
4 Three-way adapter

hydraulic pressure to fall. Observe the pressure at which the test lamp illuminates, this pressure should not be less than 17,58 kg/sq.cm. (250 lb/sq.in.).

Note

On cars destined for use in Australia, Canada and the U.S.A. higher rated pressure switches are fitted. The operating pressures for these switches are as follows:

84,39 kg/sq.cm. (1 200 lb/sq.in.) test lamp extinguished.

63,28 kg/sq.cm. (900 lb/sq.in.) test lamp illuminated.

8. In order to test the pressure switch fitted to the right-hand longeron (No. 1 system) the pressure switch should be exchanged with the left-hand (No. 2 system) pressure switch and Operations 5 to 7 inclusive repeated.
9. When tests and rectifications have been completed the systems must be bled as described in Section G4.

Pressure switch - To renew

1. Depressurise the hydraulic systems as described in Section G2.

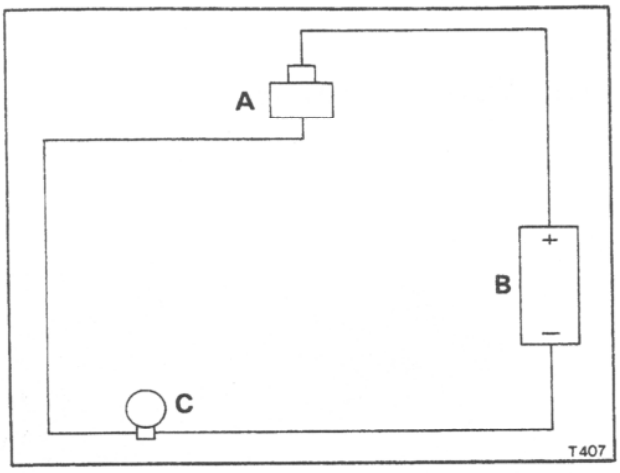

Fig. G34 Pressure switch test circuit
- **A** Pressure switch
- **B** Battery
- **C** Test lamp

2. Disconnect the electrical connection from the top of the pressure switch. Unscrew the pressure switch from the three-way adapter; discard the two aluminium sealing washers.
3. Screw a new pressure switch into the three-way adapter, fitting a new sealing washer to each side of the distance washer on the switch connection. Torque tighten the switch to the figure quoted in Chapter P.
4. Fit the electrical connection to the pressure switch contact pin.
5. When fitting is completed bleed the hydraulic system as described in Section G4.

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Section G15

Front and rear disc brakes

Introduction

Disc brakes are fitted to all four wheels; each front wheel being fitted with two twin cylinder calipers and each rear wheel with a large four cylinder caliper.

The calipers are divided between the two hydraulic systems, providing an integrated braking system in which each system can operate independently in the event of system failure.

Bleed screws are fitted to the inner faces of each caliper to facilitate bleeding of the two systems.

The rear brake calipers have the mechanically operated parking brake pads situated beneath them. On application of the parking brake the wedge shaped brake pads act on each side of the rear brake disc (refer to Section G16 for details).

Inspection of all brake pads must be carried out at the specified service intervals; for details reference should be made to the Service Schedule Manual publication number T.S.D. 4117.

In order to obtain maximum efficiency and safety from the braking systems it is important that only replacement disc pads of approved design and material specification are fitted.

It is important when changing brake pads that the friction material of the new pads is of the same type and grade as that fitted to the other brake calipers; otherwise it will be necessary to renew all the brake pads.

Brake pads of different specification or different manufacturers vary in their friction, wear and operating characteristics and if mixed could have an adverse effect on braking performance.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm. (0.125 in.) of the back plate.

After fitting new brake pads an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed.

During this initial running-in period, the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. The force with which the brakes are applied may be progressively increased towards the end of the running-in period.

Note

If the brakes are to be relined with pads which have different recommended linings from those previously fitted the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad material should be removed by hand rotating the disc whilst applying fine emery cloth to the disc faces. Do not emery the disc radially. **It is again stressed that the same type and grade of pad linings must be fitted to all six brake calipers.**

Front wheel brake pads - To renew

1. Depressurise the hydraulic system as described in Section G2.

Note

This operation is not essential for brake pad renewal but is recommended as a safety precaution in the event of the brake pedal being accidentally depressed whilst the brake pads are removed.

2. Slacken but do not remove the front road wheel retaining nuts.
3. Securely chock the rear road wheels, then jack up the front of the car. Support the car with stands and sill blocks.
4. Remove the front road wheels.
5. Remove the spring clips from the two brake pad retaining pins (see Fig. G35) and withdraw the pins.
6. Using extractor tool (RH 8928) withdraw the brake pads from the caliper.
7. Prior to fitting the new brake pads, inspect the caliper piston dust seals for signs of damage or heat hardening and renew as necessary.
8. Carefully press the caliper pistons back into their bores, taking care not to damage or trap the piston seals. Ensure that the seal retaining clips are correctly located.
9. Fit the new pads by reversing the removal procedure, ensuring that the spring clips are correctly located in the pad retaining pins.

On later cars a 'M' shaped anti-rattle spring is fitted onto the brake pad retaining pin, on the leading side of the caliper pad i.e. upper pin on the front wheel, front brake caliper and lower pin on the front wheel, rear brake caliper (see Fig. G36). One spring only is fitted to each brake caliper.

The brake pads differ from those fitted to the earlier type of brake caliper in that an additional hole is incorporated to accommodate the 'M' spring.

Always ensure that the 'M' spring is fitted correctly as follows.

1. Fit the brake pads into the caliper and insert the trailing, pad retaining pin. Secure the pin with the retaining clip.
2. Locate the ends of the 'M' spring into the central holes of the brake pad back plate.

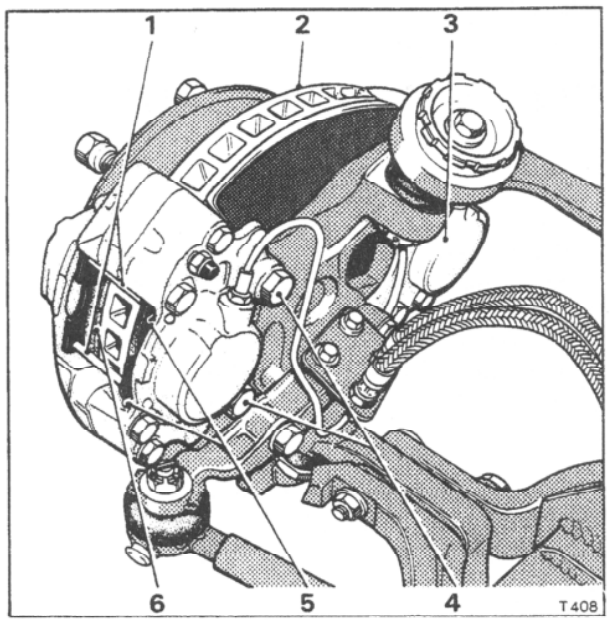

Fig. G35 Front wheel brake calipers
1 Brake pad retaining pins
2 Brake disc
3 Rear caliper
4 Caliper retaining bolts
5 Spring clips
6 Brake pad

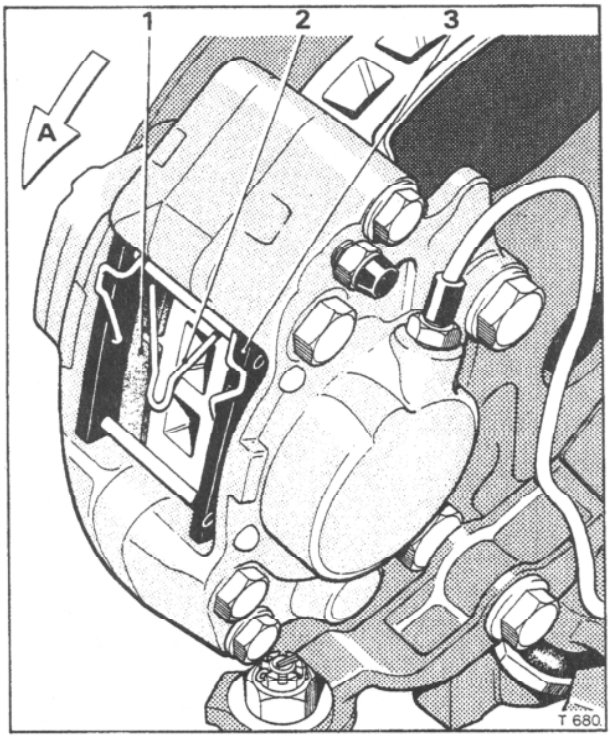

Fig. G36 Front wheel brake caliper 'M' spring type
1 Brake pad
2 'M' spring
3 Brake pad backing plate
A Direction of forward rotation of brake disc

3. Ease the spring into position and secure with the leading pad retaining pin. Fit the pin retaining clip.
4. Ensure that the centre of the 'M' spring points in the same direction as the forward rotation of the brake disc.

Note
When fitting the 'M' spring the 'ears' of the spring must rest on the edge of the brake pad backing plate, with the bends at the top of the 'M' figuration butting against the caliper body.

Do not compress the two bends of the spring more than the normal gap between the two brake pads otherwise the spring may become permanently set.

Due to inherent distortion during pad wear new 'M' springs must be fitted whenever replacement brake pads are fitted.

Rear wheel brake pads - To renew
1. Depressurise the hydraulic system as described in Section G2.

Note
This operation is not essential for brake pad renewal but is recommended as a safety precaution in the event of the brake pedal being accidentally depressed whilst the brake pads are removed.

2. Securely chock the front road wheels, then jack up the rear of the car as necessary. Support the car with stands and sill blocks.
3. Remove the rear road wheels.
4. Remove the spring clips from the two brake pad retaining pins (see Fig. G38) and withdraw the pins. Collect the anti-rattle spring clip from the rear of each brake pad.
5. Withdraw the brake pads from the caliper using the extractor tool (RH 8929).
6. Prior to fitting the new pads, inspect the caliper piston dust seals for signs of damage or heat hardening and renew as necessary.
7. Carefully press the caliper pistons back into their bores, taking care not to damage or trap the seal. Ensure that the seal retaining clips are correctly located.
8. Fit the new pads by reversing the removal procedure, ensuring that the anti-rattle spring clips and pad retaining pin clips are correctly located (see Fig. G38).

Front brake caliper - To remove (refer to Fig. G35)
1. Depressurise the hydraulic systems as described in Section G2.
2. Securely chock the rear road wheels.
3. Remove the wheel disc, (see Section R1) then slacken but do not remove the wheel retaining nuts.
4. Raise the front of the car on a hydraulic jack. Securely support the car on stands and sill blocks.
5. Remove the road wheel.
6. Disconnect the caliper feed pipe and blank off the pipe end and caliper port against the ingress of dirt.

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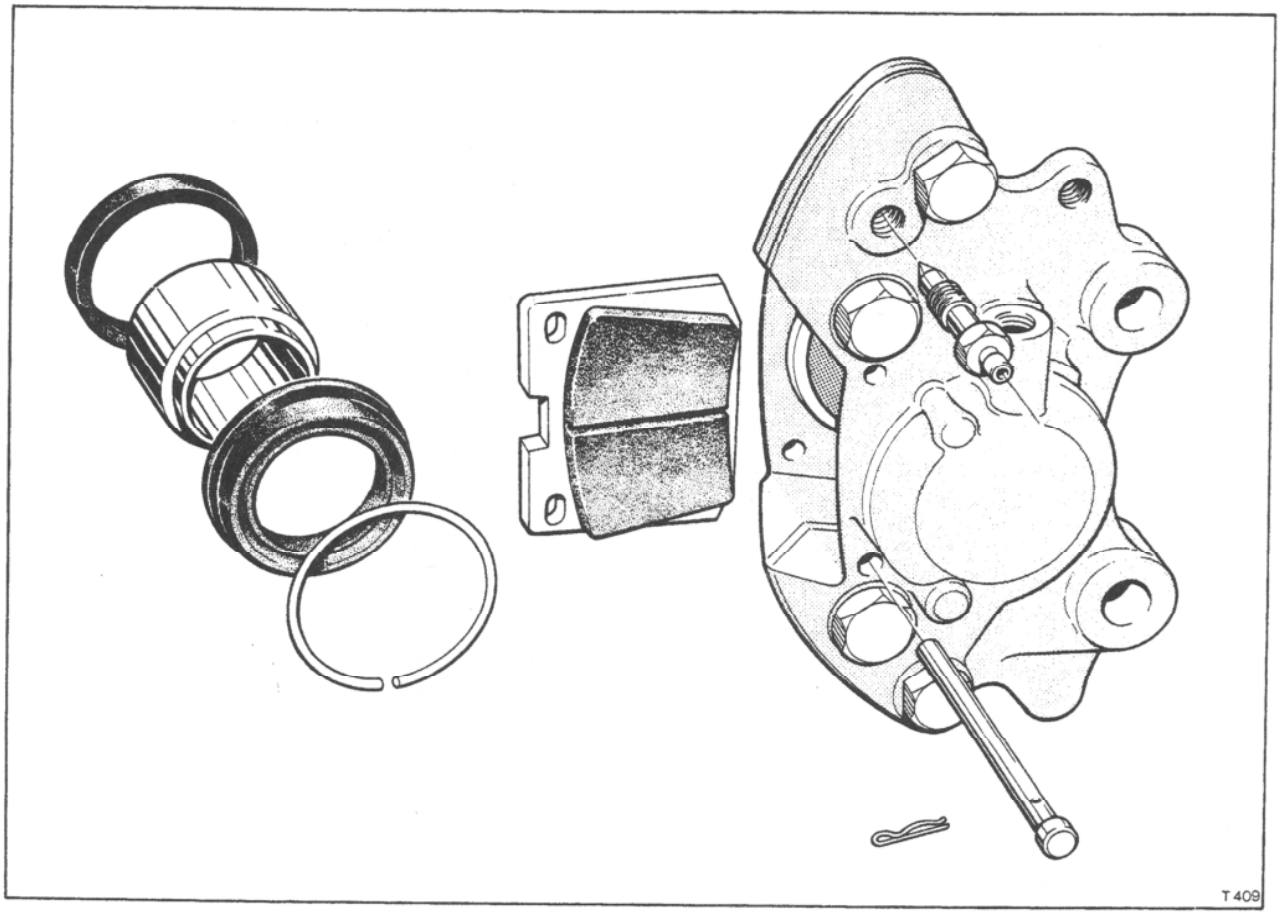

Fig. G37 Front wheel brake caliper

7. Remove the fitted bolts which secure the caliper to the axle yoke. Remove the caliper from the car.

8. It is recommended that a distance piece is fitted between the caliper pads after removal to prevent the pistons from easing out of their bores.

Rear brake caliper - To remove (refer to Fig. G38)

1. Depressurise the hydraulic systems as described in Section G2.

2. Securely chock the front wheels of the car.

3. Remove the wheel disc (see Section R1) then slacken but do not remove the wheel retaining nuts.

4. Raise the rear of the car on a hydraulic jack. Securely support the car on stands and sill blocks. Do not allow the full load of the suspension to hang on the rebound straps.

5. Remove the road wheel.

6. Disconnect the two caliper feed pipes from the caliper and blank off the pipe ends and caliper ports against the ingress of dirt.

7. Remove the split pin and clevis pin from the twin links on the parking brake caliper linkage. Collect the waved anti-rattle washer.

8. Remove the fitted bolts securing the caliper to the hub yoke. Remove the caliper from the car.

9. Fit a distance piece between the caliper pads to prevent the pistons easing out of their bores.

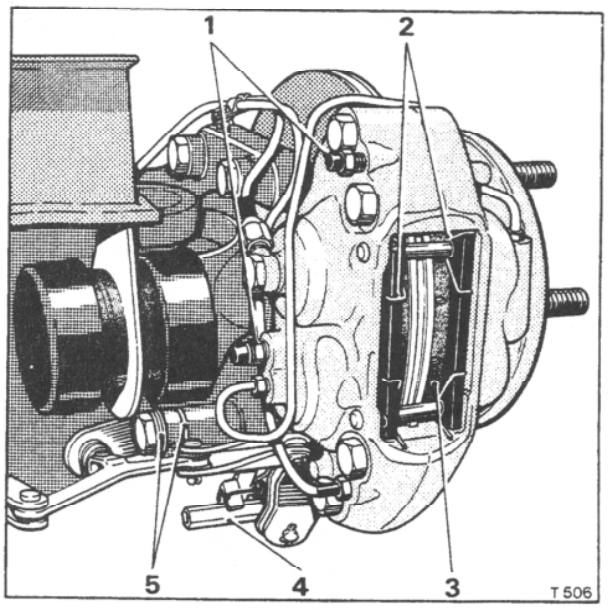

Fig. G38 Rear wheel brake caliper

1 Bleed screws
2 Anti-rattle spring clips
3 Brake pad
4 Parking brake adjuster
5 Parking brake lever adjustment washers

Brake caliper piston seals - To renew

The brake caliper seals should be renewed at the intervals specified in the Service Schedule Manual publication number T.S.D. 4117.

1. Depressurise the hydraulic systems as described in Section G2.
2. Remove the brake caliper from the car and remove the brake pads as described previously.
3. Remove the spring clip retaining the caliper piston dust seal; remove the dust seal.
4. Ease the piston from its bore taking care not to damage the piston.
5. Remove the piston seal from the caliper bore.
6. Clean the caliper bore and piston with methylated spirits and dry thoroughly using dry compressed air.
7. Immerse the new piston seal in approved brake fluid (refer to Chapter D), then carefully insert it into the groove in the caliper bore, ensuring it is correctly seated.
8. Lubricate the piston outside diameter with a small quantity of approved brake fluid, then carefully fit the piston.
9. Fit a new dust seal around the piston top and over the caliper bore flange. Fit the spring ring taking care not to 'pinch' the seal with the ends of the ring.

Brake calipers - To fit

Fit the brake calipers by reversing the respective removal procedure noting the following points.

1. All setscrews and pipe connections must be torque tightened in accordance with the figures quoted in Chapter P.
2. Ensure that a minimum clearance of 8,00 mm. (0.312 in.) is maintained between the caliper bridge pipe and the brake disc when fitting rear brake calipers.
3. When fitting is completed bleed the hydraulic systems as described in Section G4.

Note

The supply pipe connection ports on the front wheel brake calipers are a metric threaded fitting and only pipes fitted with the correct metric pipe nuts should be used.

Brake disc - To remove

1. Depressurise the hydraulic systems as

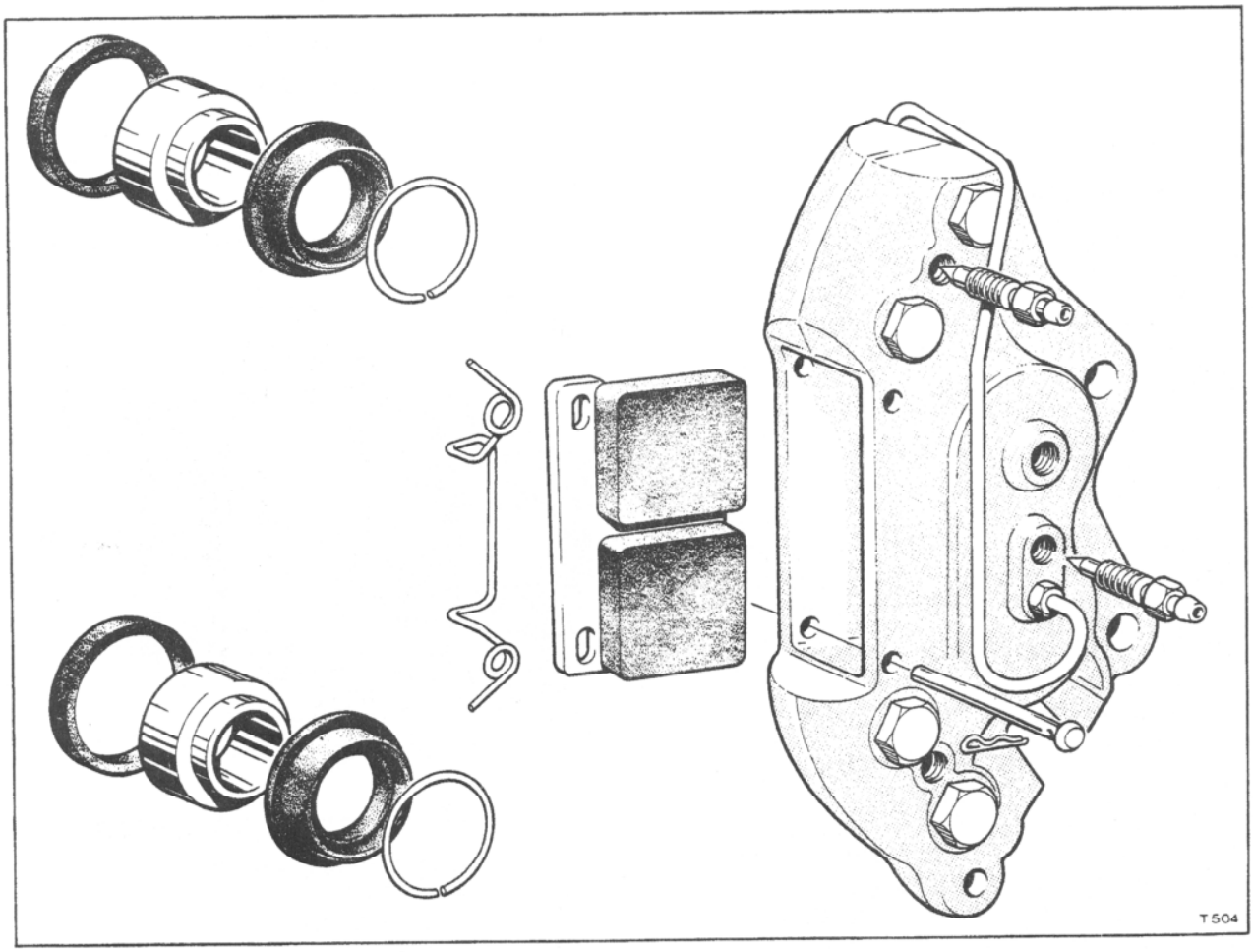

Fig. G39 Rear wheel brake caliper

described in Section G2.
2. Remove the front or rear hub as necessary, following the procedure described in Chapter J Rear hubs or Chapter H Front hubs.
3. To remove a front brake disc remove the set-screws securing the disc to the hub.
4. To remove a rear brake disc dismantle the rear hub as described in Chapter J then unscrew the disc retaining setscrews.

Brake disc - To fit
Fit the brake disc by reversing the procedure for removal noting the following points.
1. All setscrews must be torque tightened in accordance with the figures quoted in Chapter P.
2. The hubs must be assembled and fitted as described in their respective Chapter H or J.
3. On completion the hydraulic systems must be bled as described in Section G4.

Note
New brake discs are treated with a protective film. When a new disc has been fitted the brakes should be gently applied until the protective film has been removed from the working surface of the disc by the first few brake applications.

If only one front brake disc has been replaced the car will gently pull to the side opposite the new disc until the protective film has been removed.

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Section G16

Parking brake linkage

Introduction

The parking brake is operated by a hand pulled mechanism on right-hand drive cars and by a foot pedal application with a hand pull release on left-hand drive cars. Both types of mechanism operate a caliper lever arrangement fitted beneath the two rear hydraulic brake calipers. These levers apply a wedge shaped friction pad to each side of the brake disc.

The parking brake pads should be manually adjusted at the intervals specified in the Service Schedule Manual publication T.S.D. 4117.

Hand operated ratchet assembly - To remove
Right-hand drive cars

1. Place the car on a ramp and securely chock the road wheels. Release the parking brake to the 'off' position.
2. At the intermediate linkage on the underside of the body, unhook the parking brake return spring from the operating lever. Remove the clevis pin attaching the front parking brake cable to the end of the lever (see Fig. G40).
3. Remove the trim retaining screw from the centre panel of the parking brake handle aperture.
4. Remove the Lucar connectors from the micro-switch mounted on the lower end of the ratchet assembly cover tube.
5. Remove the setscrews securing the upper support bracket to the facia structure.
6. Remove the setscrew securing the lower support bracket.
7. Ease the complete ratchet assembly downwards, from beneath the facia.
8. Draw the ratchet assembly away from the toeboard and disconnect the cable from the retaining piece bolted to the bottom of the operating rod; remove the assembly.

Hand operated ratchet assembly - To dismantle

1. Remove the ratchet assembly from the car as described previously.
2. Remove the cable retainer from the lower end of the operating rod. Refit the screw into the operating rod to retain the coil spring and end fittings.
3. Remove the cheese headed screw and washer from behind the cover tube locking nut.
4. Unscrew the locking nut from behind the upper support bracket.
5. Withdraw the operating rod and roller assembly from the cover tube.

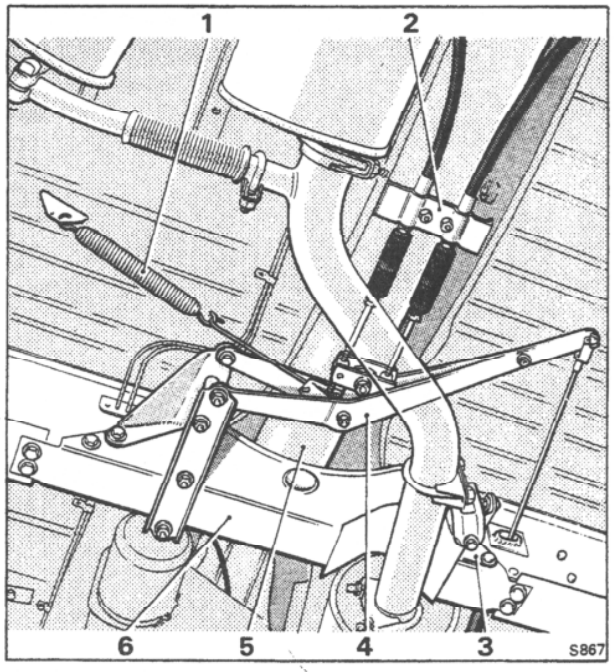

Fig. G40 Parking brake intermediate linkage (Right-hand drive cars)

1 Return spring
2 Abutment bracket-rear brake cables
3 Exhaust mount
4 Operating lever
5 Propeller shaft
6 Centre body member

Note
The roller assembly can be extracted from the cover tube by pulling the assembly to the top of the tube then tilting the tube and carefully manipulating first one roller then the other roller out of the slots.

6. Remove the retaining screw from the lower end of the operating rod. Slide the coil spring, stop plate, roller assembly and distance piece off the operating rod.
7. Remove the operating rod from the upper housing and separate the housing and ratchet components.
8. All the components should be inspected for signs of wear and damage, paying particular attention to the bushes, ratchet assembly and springs. New parts should be fitted as necessary.

Hand operated ratchet assembly - To assemble
Assemble the ratchet assembly by reversing the

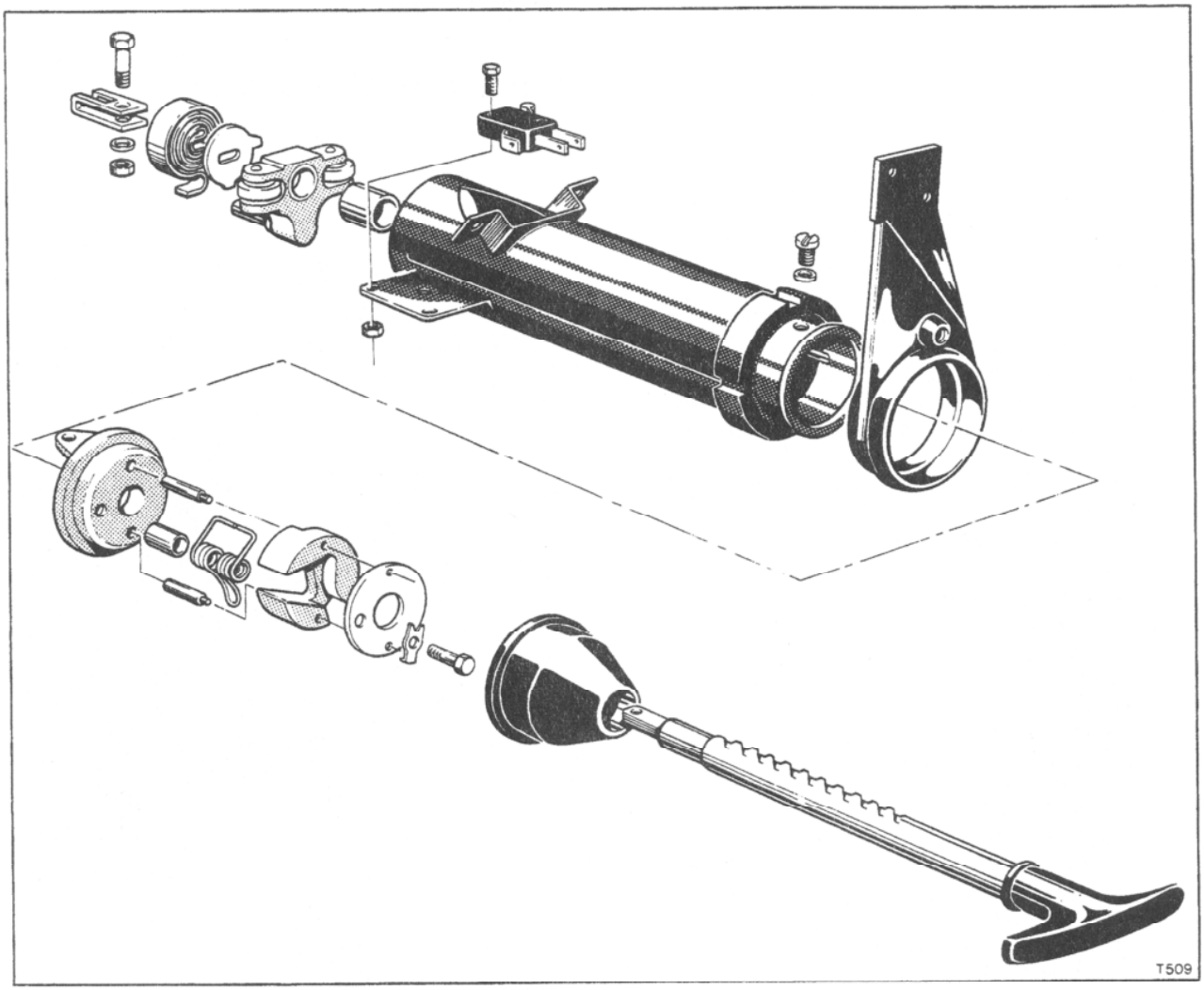

Fig. G41 Parking brake ratchet assembly (Right-hand drive cars)

procedure given for dismantling noting the following points.

1. The hand operating rod is spring loaded and must turn in a clockwise direction from the horizontal position to release the ratchet mechanism. For correct operation ensure that the coil spring and stop plate fitted below the roller assembly are as shown in Figure G41.
2. Lightly lubricate the ratchet pawls and roller mechanism using Retinax "A" grease or equivalent.
3. Care must be taken when entering the rollers and operating rod into the cover tube slots. The tube should be held at an angle to the control rod. Enter one roller into the tube, then carefully manipulate the other roller into position.
4. The cable retainer should be fitted after the control rod and roller assembly has been fitted into the cover tube.
5. Adjust the micro-switch so that on the initial movement of the parking brake the facia warning panel marked PARKING BRAKE illuminates.

Hand operated ratchet assembly - To fit

Fit the ratchet assembly by reversing the procedure given for removal noting the following points.

1. All setscrews should be torque tightened in accordance with the figures quoted in Chapter P.
2. Care should be taken to ensure the brake cable end is located correctly in the connector link.
3. Ensure that the brake cable is correctly positioned in the guide pulleys.
4. Check the operation of the mechanism to ensure free movement of the ratchet assembly and brake cable.

Foot operated parking brake mechanism - To remove
Left-hand drive cars

1. Place the car on a ramp and securely chock the road wheels. Release the parking brake to the 'off' position.
2. At the intermediate linkage on the underside of the body, unhook the parking brake return spring

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from the operating lever. Remove the clevis pin attaching the front brake cable to the lever (see Fig. G42)

3. Remove the knee roll trim from the parking brake area as described in Chapter S in order to gain access to the four setscrews which retain the foot pedal mechanism.

4. Disconnect the Lucar connections from the micro-switch.

5. Disconnect the brake cable from the retaining piece on the actuation lever.

6. Remove the four pedal mechanism retaining setscrews and lower the mechanism from beneath the facia.

Foot operated parking brake mechanism - To dismantle

1. Remove the foot operated parking brake mechanism as described previously.

2. Remove the spring plate and release lever return springs.

3. Dismantle the parking brake foot mechanism by removing the pivot bolts from the foot pedal lever, sprag plate, release actuator and hand release lever. Remove these items from the mounting bracket frame; collect the distance tube from each pivot.

4. Separate the release actuator from the intermediate lever by removing the clamping setscrew, collect the distance piece.

5. Inspect all items for wear and damage; renew parts as necessary.

Foot operated parking brake mechanism - To assemble (see Fig. G43)

Assembly the parking brake mechanism by reversing the procedure given for dismantling noting the following points.

1. The inside of the sprag plate hole should be sparingly smeared with Retinax 'A' grease or equivalent.

Note

The sprag rod must be clean, dry and free of lubricant.

2. The sprag plate pivot bolt should be fitted with the bolt head on the left-hand side of the frame. All other bolts should be fitted from the right-hand side of the frame.

3. Adjust the mechanism as described under Foot operated parking brake - To adjust.

4. All setscrews should be torque tightened to the figures quoted in Chapter P.

Foot operated parking brake - To adjust (see Fig. G44)

1. Slacken the setscrew securing the intermediate lever to the actuator.

2. Slowly depress the pedal from the 'off' position. The sprag plate will rise from its 'off' position for approximately one third of the sprag rod's length,

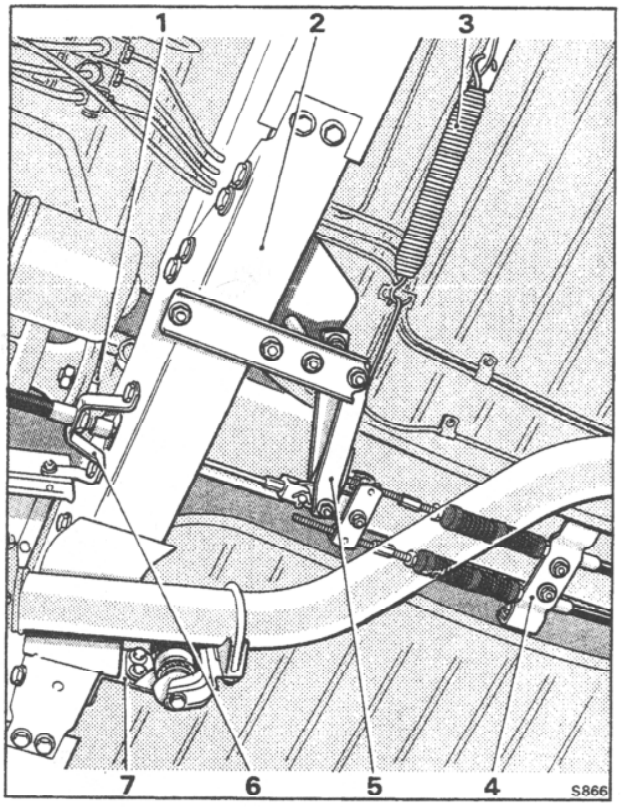

Fig. G42 Parking brake intermediate linkage (Left-hand drive cars)

1 Propeller shaft
2 Centre body member
3 Return spring
4 Abutment bracket-rear brake cables
5 Operating lever
6 Mounting bracket-front brake cable
7 Exhaust mount

then lower for the remainder of pedal travel. With the sprag plate in its highest position adjust the actuator to obtain a clearance of 0,127 mm. to 0,254 mm. (0.005 in. to 0.010 in.) between the actuator pawl and the sprag plate. Tighten the setscrew securing the intermediate lever to the actuator.

3. With the sprag rod approximately 3,17 mm. (0.125 in.) away from its rubber off stop, set the warning lamp micro-switch so that it operates i.e. the point where the switch gives an audible click. Check that the switch roller assembly is not trapped between the switch body and roller ramp when the sprag rod is against the 'off' stop.

Note

Operations 1 to 3 inclusive can be carried out with the parking brake mechanism removed from the car.

4. Release the parking brake caliper adjusters at the rear wheels to enable the parking brake pedal to be fully depressed to the floor. Check the release handle travel; there should be a minimum of 12,70 mm. (0.50 in.) extra travel (measured at the

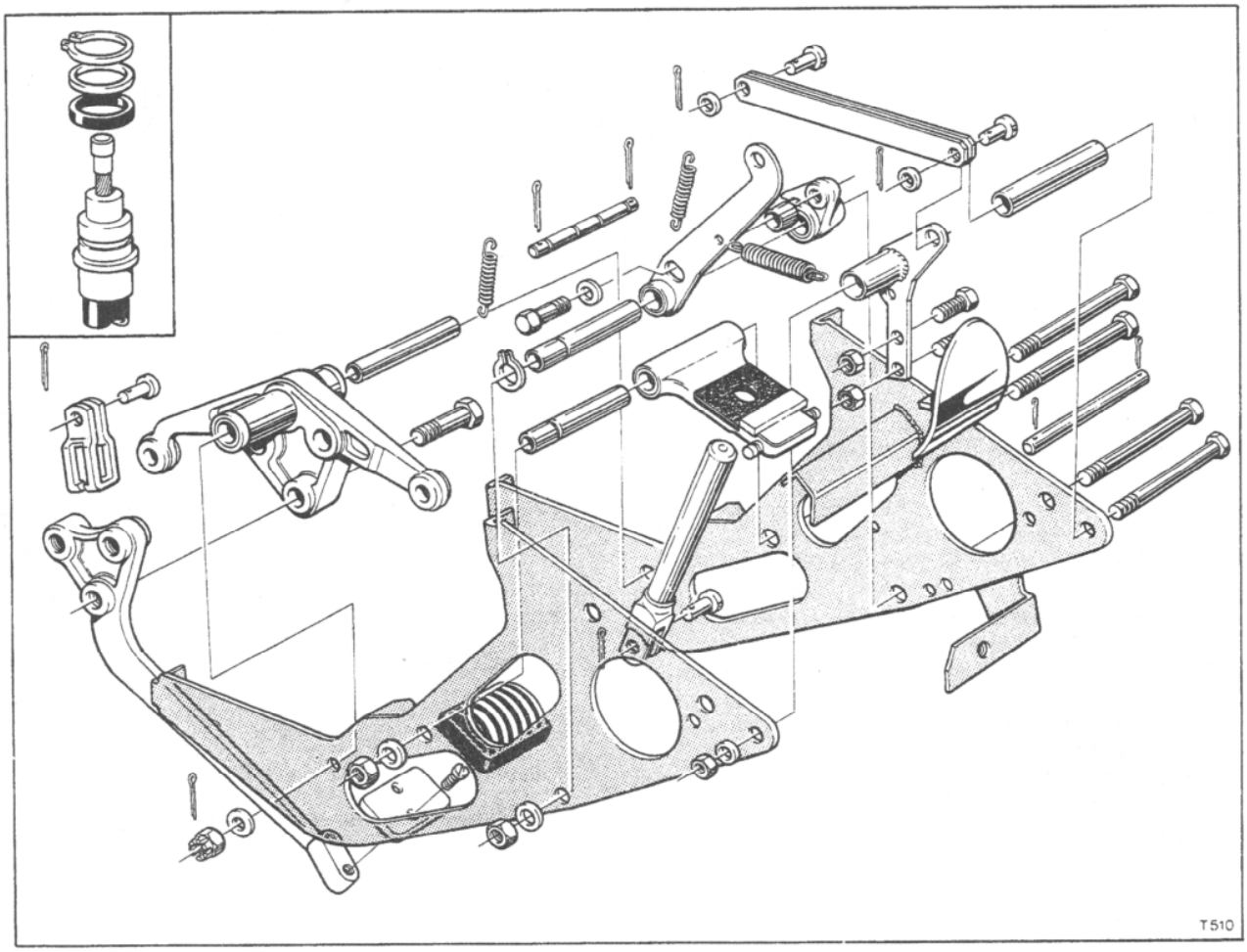

Fig. G43 Foot operated parking brake and cable connection

end of the release handle) after the point of release of the mechanism. If the handle travel is incorrect the clearance between the actuator pawl and the sprag plate should be checked as described previously in Operation 2.

5. Adjust the parking brake cables and pads as described in their relevant sections.
6. Apply the parking brake. The foot pedal should remain in the 'on' position without slipping until the mechanism is released. If slipping occurs inspect the sprag rod and sprag plate for signs of wear and replace as necessary.
7. Check that the facia warning lamp marked PARKING BRAKE is extinguished when the brake is released to the 'off' position.

Foot operated parking brake - To fit

Fit the foot operated parking brake by reversing the procedure for removal noting the following points.

1. All setscrews should be torque tightened in accordance with the figures quoted in Chapter P.
2. Care should be taken to ensure the brake cable end is located correctly in the connector link.
3. Check the operation of the parking brake as described in Foot operated parking brake - To adjust.

Parking brake front cable - To remove
Right-hand drive cars

1. Remove the hand operated ratchet assembly as described under Hand operated ratchet assembly - To remove.
2. Remove the circlip retaining the rubber seal to the brake cable on the interior side of the toeboard. Remove the seal from the cable.
3. Remove the two setscrews retaining the felt seal housing to the engine side of the toeboard. Withdraw the cable from the housing and felt seal.
4. Remove the two brake cable guide pulleys; collect the distance tube from the centre of each pulley (see Fig. G45).
5. Remove the nuts and bolts retaining the brake cable outer cover to their mountings on the underside of the body. Also remove the clips retaining the cable in position along the body.
6. Carefully withdraw the brake cable from

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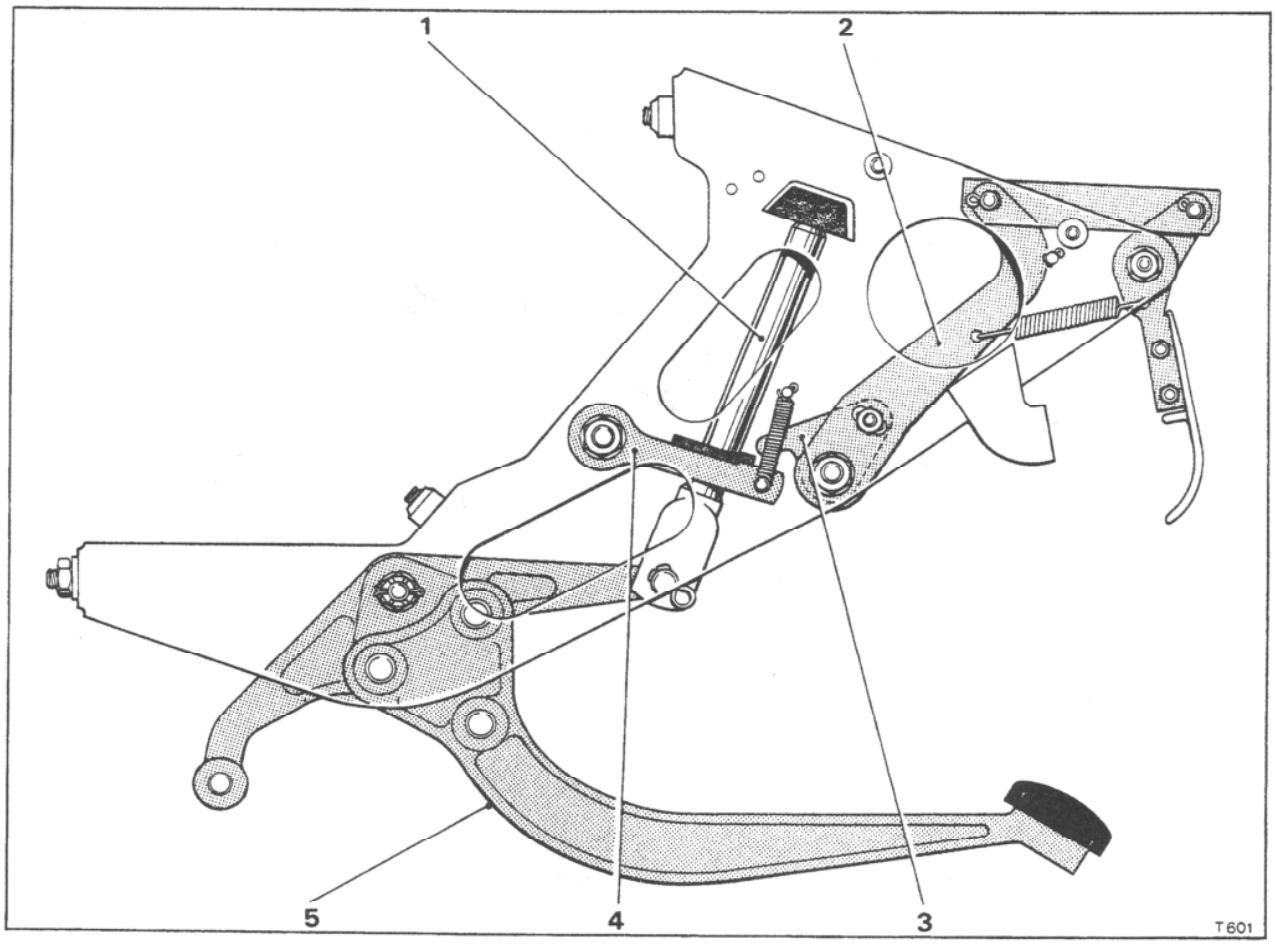

Fig. G44 Foot operated parking brake components

1 Sprag rod
2 Intermediate lever
3 Actuator
4 Sprag plate
5 Foot pedal

behind the exhaust pipe heatshield and remove it from the car.

Parking brake front cable - To fit
Right-hand drive cars

Fit the parking brake front cable by reversing the procedure given for removal noting the following points.

1. All setscrews and nuts should be torque tightened in accordance with the figures quoted in Chapter P.

2. Lubricate the guide pulley pivots with Molytone 265 grease and the pulley grooves with Midland Silicones MS44 grease.

Note

Use of any other grease on the pulley grooves could have a harmful effect on the inner cable low friction coating.

3. Ensure that the guide pulley cable retainers are correctly located in the pulley mounting brackets.

4. Check for freedom of movement during the application and release of the parking brake. The parking brake should operate freely without roughness or binding throughout its operation.

5. Adjust the parking brake cables and calipers as described under Parking brake cables and calipers - To adjust.

Parking brake front cable - To remove
Left-hand drive cars

1. Carry out Operations 1 and 2 of Foot operated parking brake mechanism - To remove.

2. Disconnect the front end of the brake cable from the retaining piece on the actuation lever of the foot pedal mechanism.

3. Remove the circlip retaining the outer cable to the car floor below the foot pedal mechanism. Withdraw the front end of the brake cable from the car floor; collect the washer and rubber seal.

4. Disconnect the rear end of the outer cable from the support bracket on the centre crossmember of the body.

5. Disconnect the clip securing the cable to the bracket on the transmission sump. Remove the brake cable from the car.

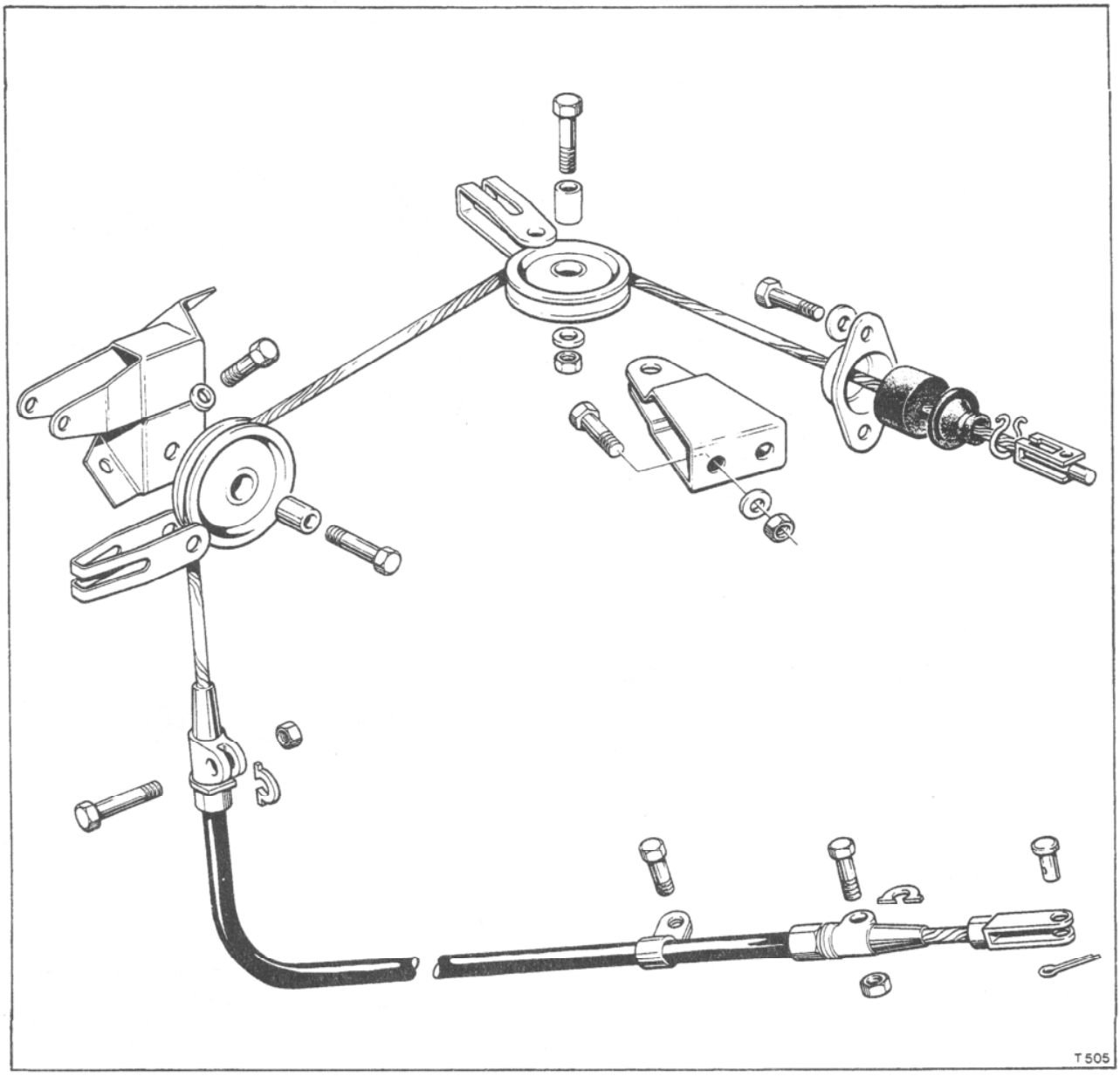

Fig. G45 Parking brake front cable and pulleys (Right-hand drive cars)

Parking brake front cable - To fit

Left-hand drive cars

Fit the front cable by reversing the procedure given for removal noting the following points.

1. All setscrews and nuts should be torque tightened in accordance with the figures quoted in Chapter P.
2. Lubricate the clevis pin with Molytone 265 grease prior to fitting.
3. Check for freedom of operation during the application and release of the parking brake. The parking brake should operate freely without roughness or binding throughout its operation.
4. Adjust the parking brake cables and calipers (see Parking brake cables and calipers - To adjust).

Parking brake rear cables - To remove

Although the parking brake intermediate linkages, situated on the centre body crossmember are different for right-hand and left-hand drive cars, the rear brake cable arrangements are identical.

1. Disconnect the rear cables at the equaliser fitted to the intermediate linkage on the centre body crossmember.
2. Disconnect the rear end of each cable from the parking brake caliper mechanism.
3. Remove the two centre bolts from the abutment bracket at the front end of the cables; collect the top clamping plate.
4. Disconnect the cable support clips from each cable; remove the cables from the car.

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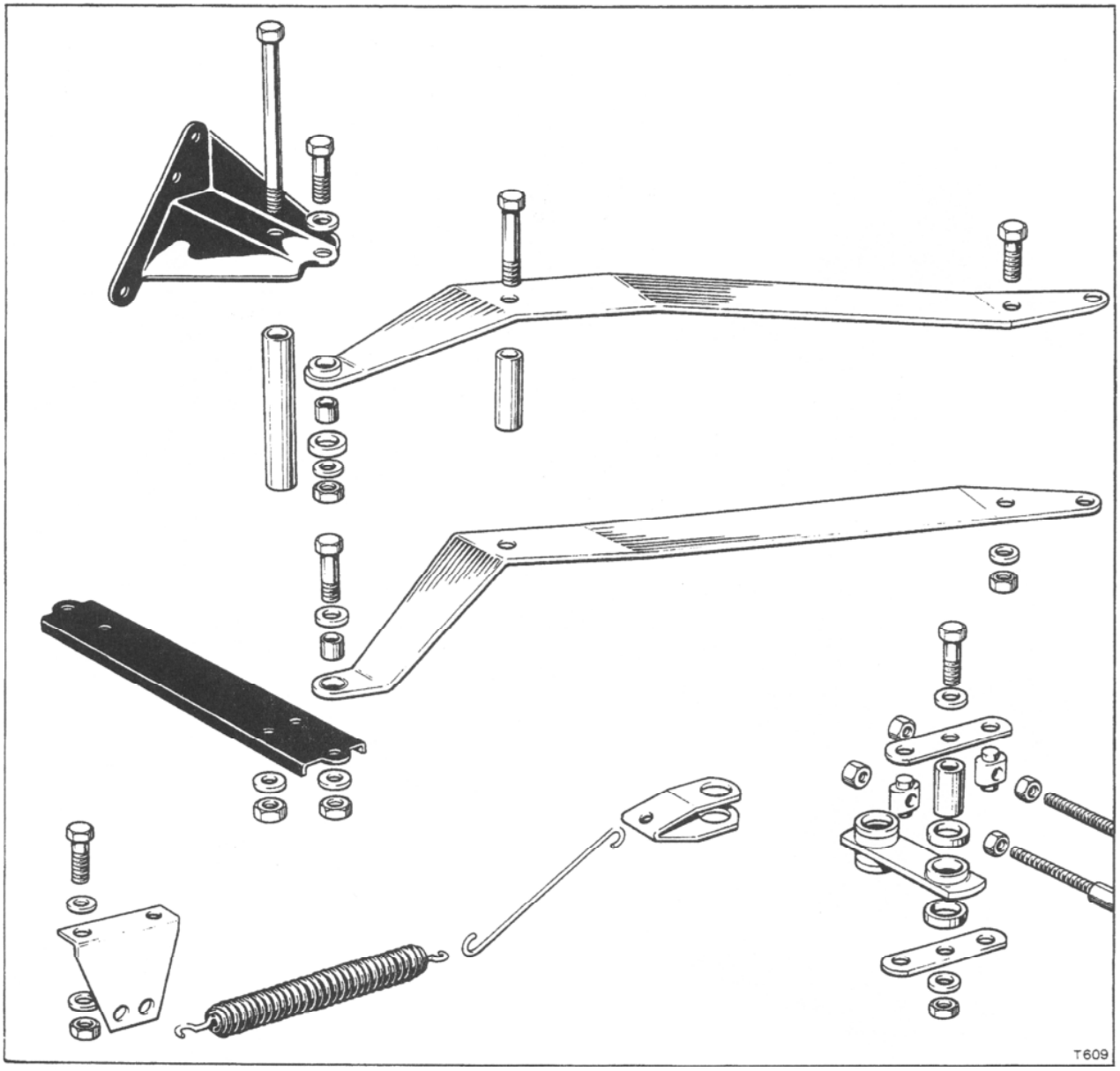

Fig. G46 Parking brake intermediate linkage (Right-hand drive cars)

Parking brake rear cables - To fit

Fit the parking brake rear cables by reversing the procedure given for removal noting the following points.

1. All setscrews and nuts should be torque tightened in accordance with the figures quoted in Chapter P.
2. Lubricate the clevis pins and cable adjustment threads with Molytone 265 grease prior to fitting.
3. Check for freedom of operation during the application and release of the parking brake. The parking brake should operate freely without roughness or binding throughout its operation.
4. Ensure that the cables are held correctly by the cable support clips. The front clip on each cable can be adjusted on elongated holes and should hold the cable firmly in position, whilst the clips on the trailing arms should allow the nylon covered section of the cable to slide freely through them.
5. Adjust the cables as described under Parking brake cables and calipers - To adjust.

Parking brake cables and calipers - To adjust

Before any adjustments are made to the parking brake rear cables the calipers on each rear wheel should be set as follows

1. Remove the clevis pin connecting the brake cable to the caliper lever. The position of the clevis

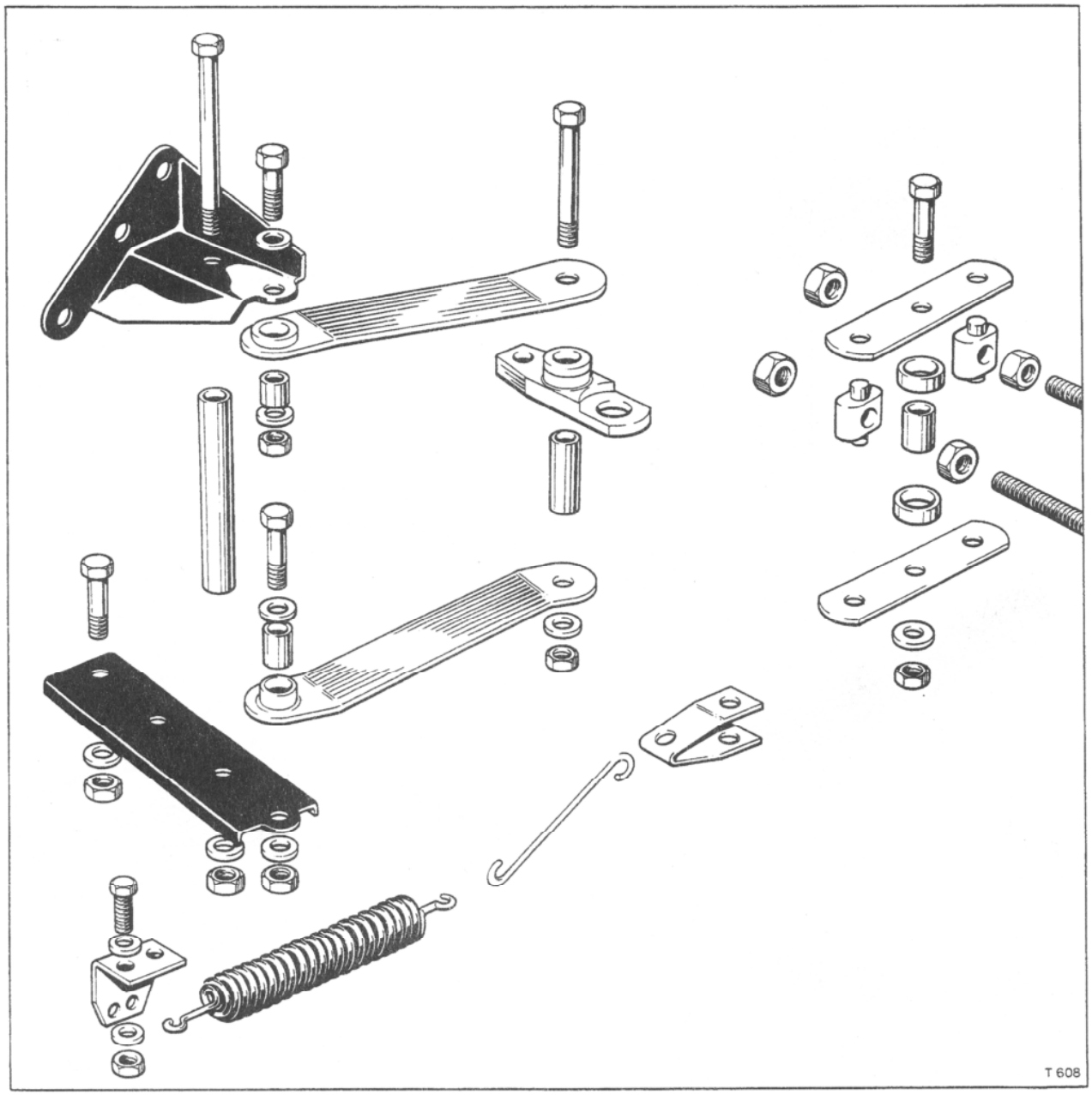

Fig. G47 Parking brake intermediate linkage (Left-hand drive cars)

pin hole in the lever must be set by correctly positioning the washers situated on the lower rear hub mounting bolts (see Fig. G38). Five washers must always be fitted to each bolt. One washer must always be fitted beneath the bolt head; the remaining four should be fitted either between the pivot bracket and trailing arm or directly below the bolt head, depending on the adjustment required. The adjustment is correct when there is a clearance of approximately 4,80 mm. (0.187 in.) between the washer on the spring guide rod and the spring abutment bracket with the caliper in the fully 'off' position.

2. Connect the rear brake cable to the caliper lever.
3. Ensure that the parking brake is in the fully 'off' position. Adjust the rear cables at the equaliser on the intermediate linkage until the caliper 'off stops' are just clear of the caliper. Measure the gap beneath each 'off stop' and lengthen the cables at the adjusters by this amount.

Note
The cables must be adjusted so that the equaliser transverse link, lies at right angles to the centre line of the car with the parking brake in the 'off' position.

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4. Raise each rear wheel in turn so that it is free to rotate. Turn the caliper adjuster clockwise until the parking brake pads grip the brake disc. At this point it should only just be possible to rotate the wheel by hand. Turn the adjuster anti-clockwise a quarter turn (three clicks on the nut) to obtain minimum clearance between the pads and disc.
5. Ensure that the centralising straps are forcing the pads away from the disc when the handbrake is in the 'off' position. If not, remove the retaining bolt securing the straps; bend the straps outwards then re-assemble.
6. When new brake pads have been fitted carry out the pad bedding operation as described under Parking brake pads - To 'bed-in'.

Parking brake pads - To renew (see Fig. G49)

The parking brake pads should be inspected at the recommended intervals (see Service Schedule Manual publication T.S.D. 4117). The pads must be renewed when the friction material has worn to within 3,18 mm. (0.125 in.) of the pad back plates.
1. Securely chock the front wheels.
2. Raise the rear of the car and place sill blocks under the rear end of the body sills. Support the trailing arms; do not allow the suspension rebound straps to support the full suspension load.
3. Remove the rear wheel trims and the rear wheels.
4. Release the parking brake to the 'off' position.
5. Disconnect the twin links from the caliper lever. Collect the waved washer.
6. Unscrew and remove the caliper adjuster. Collect the adjuster clicker plate.
7. Unhook the pad retention springs from each brake pad; noting that the larger spring is fitted to the inner parking brake pad.
8. Lift out the parking brake pads from the caliper and remove the retention springs.
9. Fit the springs to the new pads, then locate the pads in position. Hook the springs onto the caliper levers.
10. Complete the assembly by reversing the removal procedure and adjusting the calipers and cables as described under Parking brake cables and calipers - To adjust.

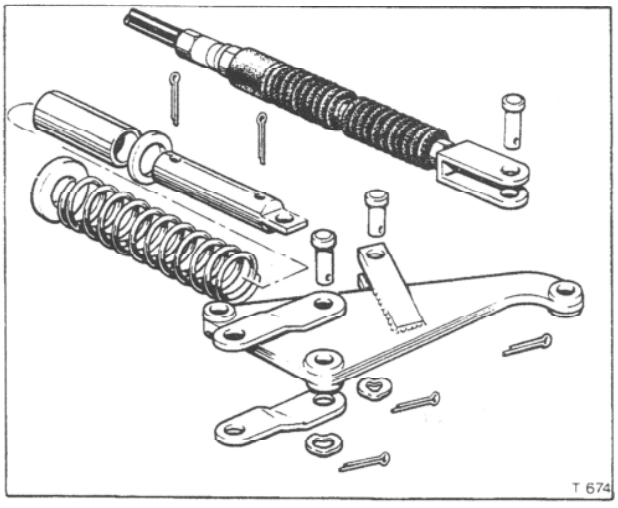


Fig. G48 Operating lever and guide rod - Parking brake caliper

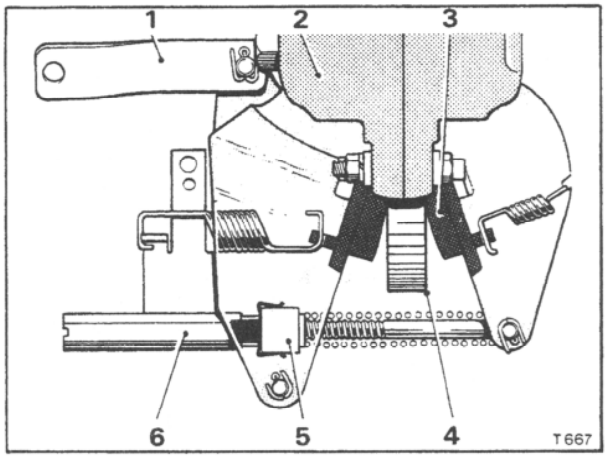


Fig. G49 Parking brake caliper
1 Twin connecting links
2 Rear brake caliper
3 Parking brake pads
4 Brake disc
5 Adjuster clicker block
6 Adjuster

Parking brake pads - To 'bed-in'

When new parking brake pads are fitted to the car the following 'bedding-in' procedure should be carried out.
1. Drive the car at 48 k.p.h. (30 m.p.h.) and apply the parking brake to bring the car to rest. The parking brake should be applied in such a way that the retardation of the car is constant without locking the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between applications to prevent overheating.
2. Re-adjust the parking brake calipers as described under Parking brake cables and calipers - To adjust.

Section G17

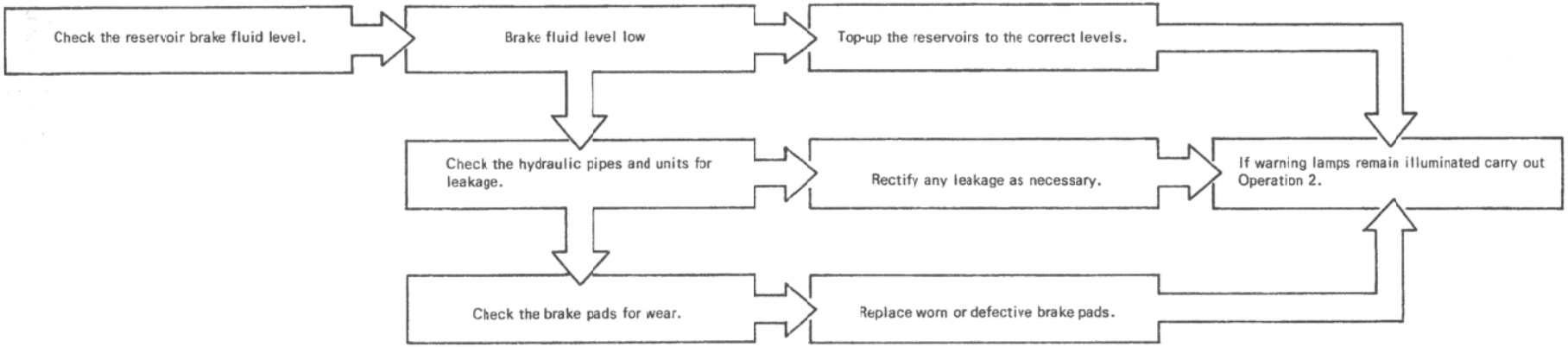
Brake and height control hydraulic systems

Systematic check sequence chart

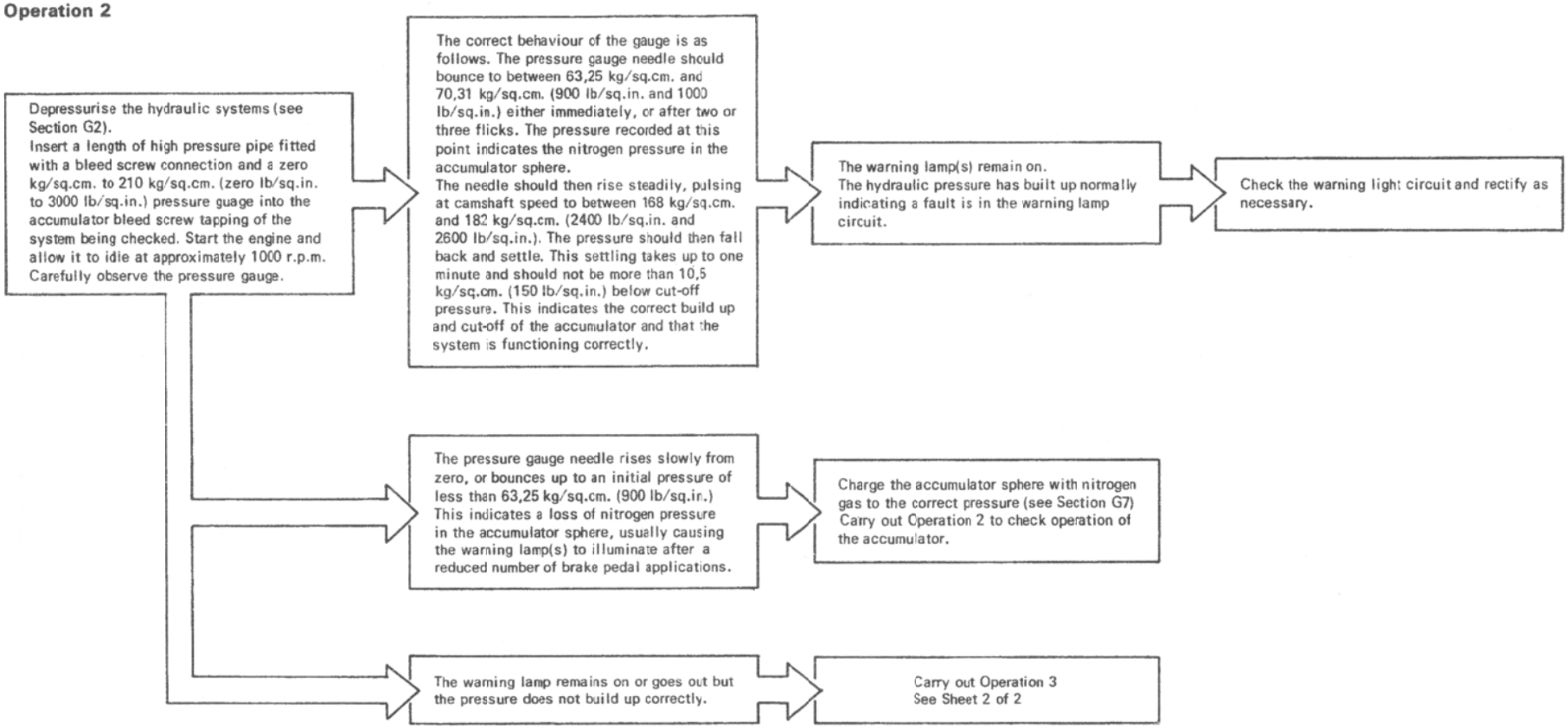
Facia warning lamps 1 BRAKE PRESSURE and/or 2 BRAKE PRESSURE illuminated (Intermittently or continuously)

Sheet 1 of 2

Operation 1



Operation 2



Section G17

Brake and height control hydraulic systems

Systematic check sequence chart

Facia warning lamps 1 BRAKE PRESSURE and/or 2 BRAKE PRESSURE illuminated (Intermittently or continuously)

Sheet 2 of 2

Operation 3

Depressurise the systems. Remove the pressure gauge and pipe from the bleed screw tapping and insert it into the accumulator pressure outlet after first removing the flexible pipe. Refit the bleed screw.
Start the engine and observe the pressure gauge.
This action separates the accumulator from the rest of the system and allows the accumulator and hydraulic pump to be checked thoroughly.

- Pressure does not build up at all.
  This indicates that the hydraulic pump is not functioning correctly because either the pump is air locked or there is dirt under the pump main delivery valve seat.
  - Stop the engine.
    Connect a bleed tube to the bleed screw on the accumulator. Open the bleed screw. Run the engine to see if brake fluid flows from the bleed tube.
    - Brake fluid does not flow.
      Check that the hydraulic pump is not air locked.
      Brake fluid flows.
      Close the bleed screw and check again. If pressure still does not build up the pump is faulty.
      Overhaul the hydraulic pump (see Section G6).
      Bleed and re-test the system.
- Pressure builds up to between 21,1 kg/sq.cm. and 84,4 kg/sq.cm. (300 lb/sq.in. and 1200 lb/sq.in.) but will not increase further.
  - Stop the engine.
    Remove the accumulator to reservoir return hose from the accumulator stub pipe; blank off the hose to prevent the reservoir from draining. Connect a bleed pipe to the accumulator stub pipe. Run the engine and check for brake fluid flow from the bleed pipe.
    - Brake fluid flows before the pressure has built up to between 168 kg/sq.cm. and 182 kg/sq.cm. (2400 lb/sq.in. and 2600 lb/sq.in.
      The main charging valve is faulty or an internal leak is occuring.
      Overhaul the accumulator valve assembly as described in Section G7.
      Bleed and re-test the system.
    - Brake fluid does not flow and pressure does not build up.
      Overhaul the accumulator valve and check cut-off valve setting as described in Section G7.
      Bleed and re-test the system.
- Pressure builds up and cuts off correctly.
  - Carry out Operation 4.

Operation 4

De-pressurise the system and refit the pressure gauge into the bleed valve tapping. Reconnect the pressure outlet flexible pipe and confirm fault exists as at Operation 3.

- Blank off the feed to the relevant distribution valve.
  Carry out Operation 2.
  - If pressure now builds up normally overhaul the distribution valve as described in Section G9.
    Bleed and re-test the system.

Operation 5

Only applicable when warning lamp marked 2 BRAKE PRESSURE is illuminated.
Blank off in turn the feed (orange pipe) to each of the following units in turn. 1. Right-hand height control valve. 2. Left-hand height control valve. 3. Solenoid valve.
After blanking off each valve, run the engine and observe the gauge. If the pressure is normal after blanking off one of the valves that valve is faulty.
The main valve in the height control valves can leak and allow fluid to flow back to the reservoir thus preventing pressure build up.
By blanking off individual valves the faulty valve can be isolated from the system.

- Pressure not available by blanking off the height control valves.
  - Blank off the lower brake distribution valve feed.
    If pressure is corrected. Overhaul the distribution valve.
    Bleed and re-test the system.
- Pressure available after blanking off the height control valves.
  - Flush clean the height control valve by holding the valve wide open and fast running the engine.
    If the fault still exists overhaul the faulty valve as described in Section G12.
    Bleed and re-test the system.

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