

Brake test without aids

1. Check to make sure that the brake fluid reservoirs are full, see Fig. 50-5.
2. Examine the brake lines and parts for damage and leakage.
3. Depress the brake pedal several times to even out any vacuum in the servo units and in this way disengage them.
4. Depress the brake pedal. Start the engine. You should clearly feel the pedal dropping when the servo units are functioning.
5. Open a bleeder nipple. Turn the ignition key and check that the warning lamp goes on when the parking brake is applied. Release the parking brake. Carefully apply the service brakes until the warning lamp goes on. If it does not, change the contact, see Fig. 50-9.

After the test close the bleeder nipple.

NOTE! Disconnect the electric cable and screw out the contact, see Fig. 50-9, so that the warning valve returns to normal position. Screw in the contact carefully (approx. 15 Nm = 1.5 kpm = 11 lbftf).

Connect up the electric cable.

6. Check that the contact for the brake pedal travel is functioning by closing it with the hand. Then re-set the contact by pushing the pin back to the rest position.

7. Raise the vehicle so that the wheels are off the ground. Get someone to rotate the wheels and apply and release the brakes. The wheels should not be braked a half second after the pedal has been released. This test should be carried out with and without vacuum in the servo unit.

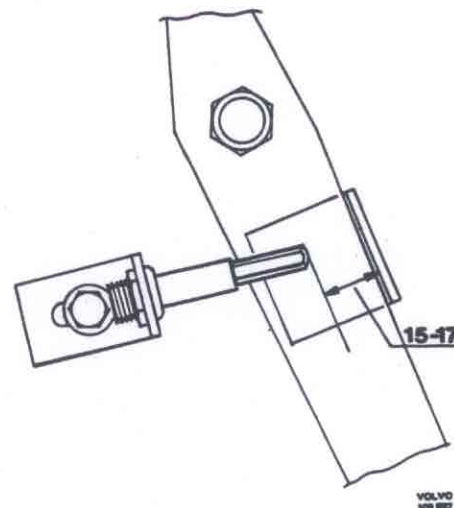


Fig. 50-10. Contact for brake pedal travel

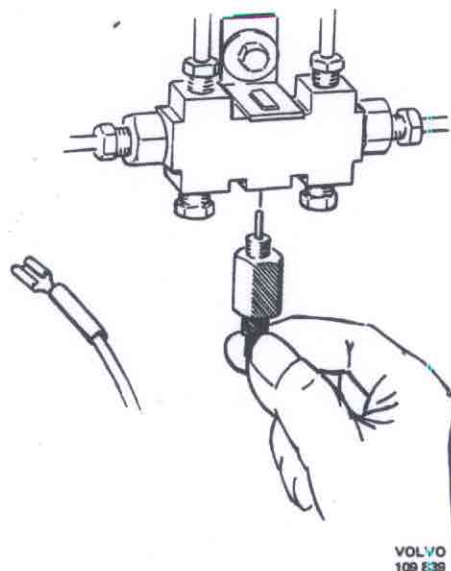


Fig. 50-9. Removing the contact

GROUP 51 BRAKE SHOES, DRUMS AND LININGS

Description

The front wheel brake unit (see Fig. 51-1) has two single-operating wheel cylinders. This means that both shoes function as primary shoes.

The rear wheel brake unit (see Fig. 51-2) has a double-operating wheel cylinder. At the bottom the shoes rest against a support fixed to the brake backing plate.

The shoes can be displaced radially, they are therefore self-centering. The clearance between the brake lining and drum can be adjusted with a rotatable eccentric. The brake linings are bonded.

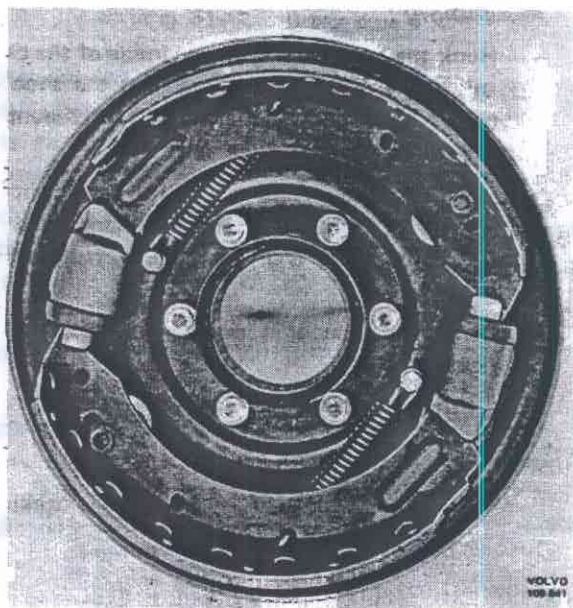


Fig. 51-1. Front wheel brake unit, left

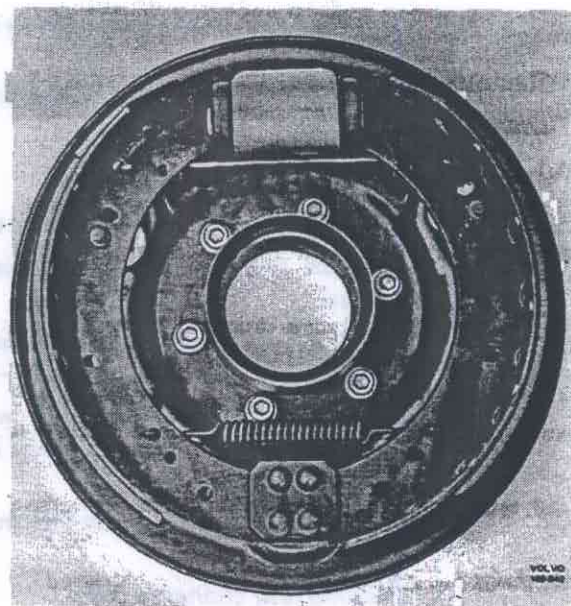


Fig. 51-2. Rear wheel brake unit, left

Service Procedures

Adjusting the wheel brakes

Special tool: 6127 Spanner, rear wheel brakes

1. Jack up the vehicle or at least one axle.
2. Turn the adjuster pin clockwise until the brake drum can just be rotated, see Fig. 51-3. For the rear wheels use spanner 6127 and for the front wheels an 11/16" spanner.
3. Slacken the adjuster pin until the drum can rotate freely.
4. Repeat this with the other adjuster pin and the other wheels.



Fig. 51-3. Adjusting the wheel brake unit

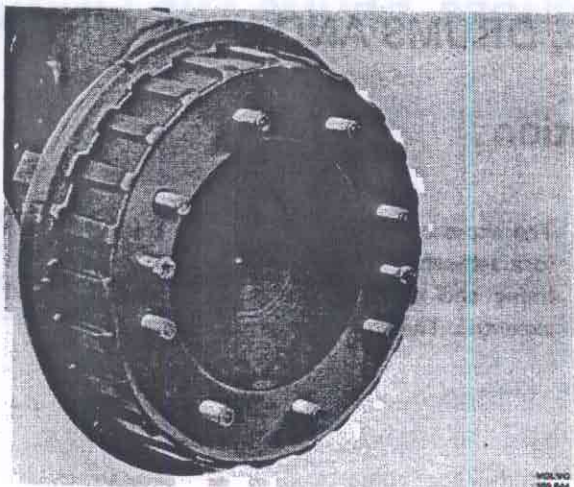


Fig. 51-4. Puller bolts in brake drum

Reconditioning the front wheel brakes

Dismantling

1. Slacken the wheel nuts a bit.
2. Jack up the front end and remove the wheel.
3. Adjust back both the brake shoes (anti-clockwise).
4. Pull off the brake drum. If necessary use two puller bolts 3/8-24 UNF, Fig. 51-4.
5. With a screwdriver or torque wrench lift the brake shoes out of their grooves in the cylinder housing, Fig. 51-5.
6. Unhook the springs and lift forward the shoes.

Checking and changing parts

Clean the brake components and the king pin location for the brake drum.

The wheel cylinder is dealt with under the heading "Wheel cylinder", Group 52.

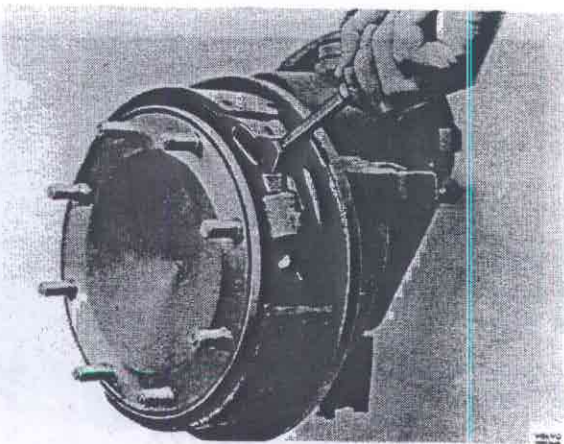


Fig. 51-5. Removing the brake shoes

If the brake backing plate or the adjuster mechanisms are damaged, replace the plate. The king pin must be removed to do this, see under the heading "Wheel hub", Group 78.

If the brake linings are oily, damaged or worn so that there is not more than about 1.5 mm (1/16") of the lining thickness remaining, replace the shoes complete.

Check the friction surface and out-of-roundness of the brake drums. The out-of-roundness may not exceed 0.1 mm (0.004").

The friction surface can be machine-smoothed or ground but the diameter may not exceed 282.4 mm (11").

Assembling

1. Hook the return spring on the inside of the brake shoes, see Fig. 51-7. Check that the shoe pin comes inwards since the shoes are different on the left-hand and right-hand sides.
2. Place the shoe on the inside of the king pin and hook the return spring on the backing plate pin. Carefully fit the end of the shoe on the piston groove.
3. Tension the shoe in position in the cylinder housing groove.
4. Fit the other brake shoe in the same way.

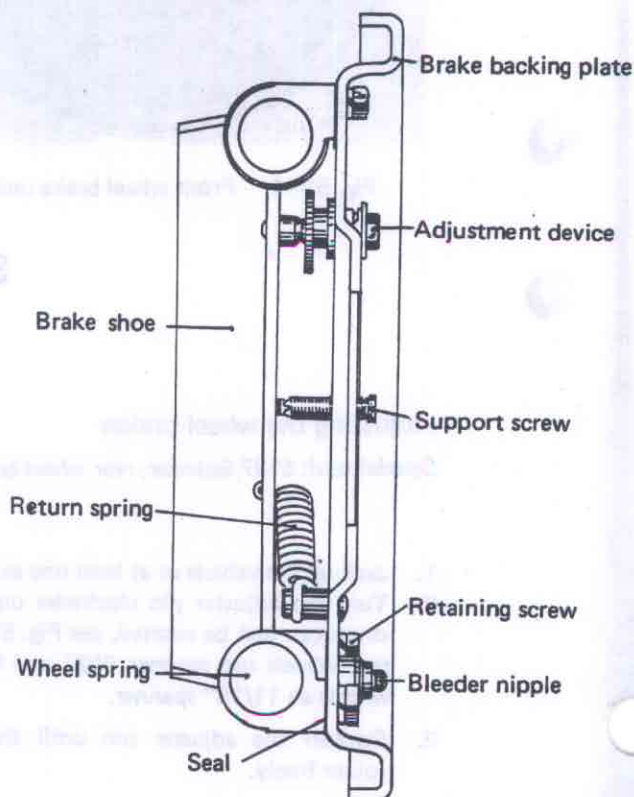


Fig. 51-6. Front wheel brake parts

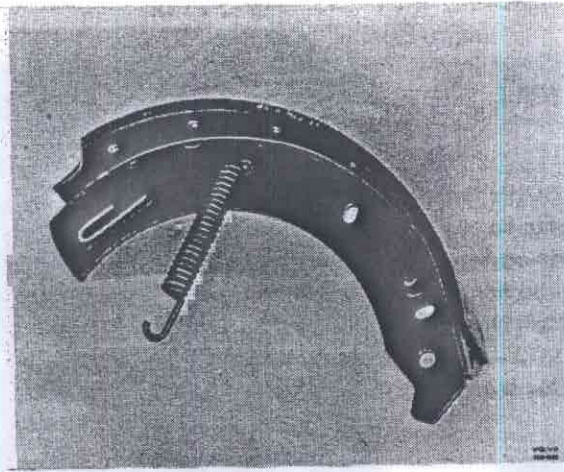


Fig. 51-7. Brake shoe

5. Check that the linings are at right angles to the king pin, see Fig. 51-8. To adjust use the support screw in the backing plate. Tighten up after adjusting.
6. Fit the brake drum. Make sure that it is fitted properly in position with the help of the two nuts.
7. Adjust the wheel brake unit.
8. Fit the wheel, lower the front end and tighten the wheel nuts to a torque of 160–210 Nm (16–21 kpm = 115–152 lbftf).

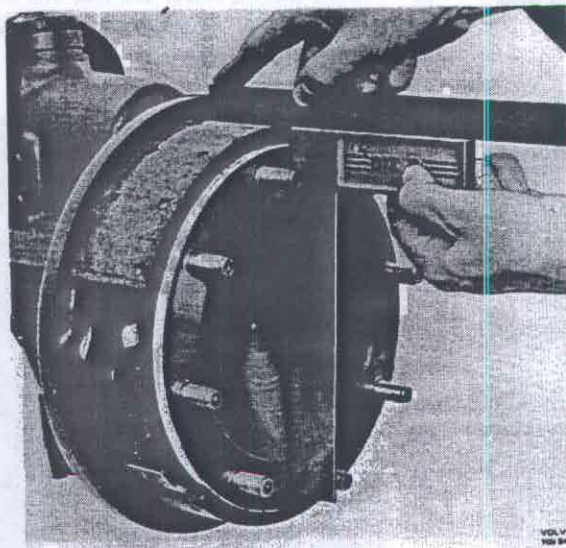


Fig. 51-8. Checking the right angle

Servicing the rear wheel brakes

Special tool: 6118 Protective bracket for wheel cylinder.

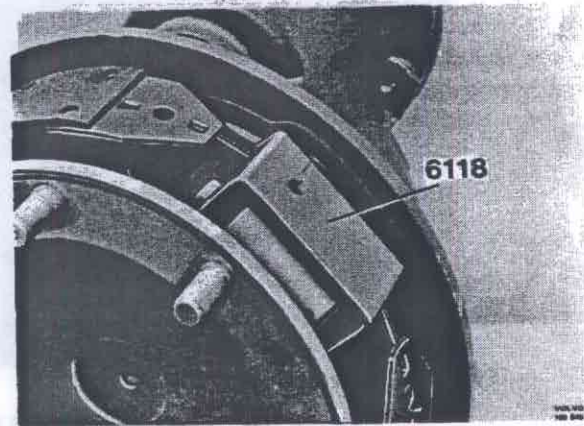


Fig. 51-9. Safety bracket

Dismantling

1. Slacken the wheel nuts a bit.
2. Jack up the rear end and remove a wheel.
3. Adjust back both the brake shoes (anti-clockwise).
4. Pull off the brake drum. If necessary use two puller bolts 3/8–24 UNF, see Fig. 51-4.
5. Lever out the shoes a bit at the top and place the protective bracket 6118 on the wheel cylinder, see Fig. 51-9.
6. Lever out the shoes from the guide at the bottom with two screwdrivers, see Fig. 41-10, or torque wrench.
7. Move the upper ends of the shoes to the side of the pistons and remove the protective bracket.
8. Unhook the upper spring with flat pliers. Pull forward the shoes.

Checking and replacing parts

Clean the brake parts and the king pin location for the brake drum.

The wheel cylinder is dealt with under the heading "Wheel cylinder", Group 52.

If the brake backing plate or the adjusting mechanisms are damaged, replace the backing plate. The king pin must be removed in order to do this, so see under the heading "Wheel hub", Group 78.

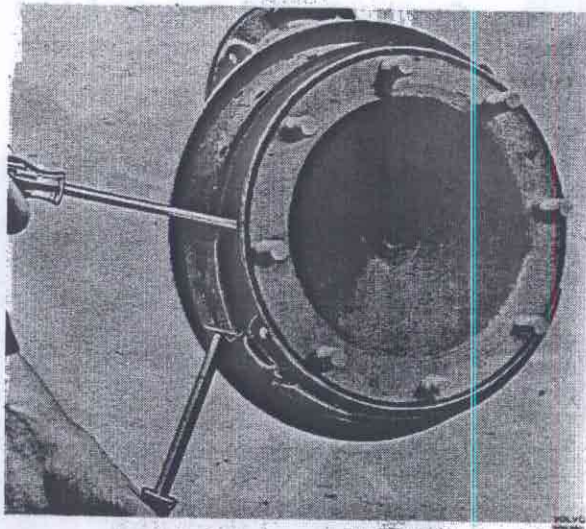


Fig. 51-10. Removing the brake shoes

If the brake linings are oily, damaged or worn so that there is not more than about 1.5 mm (1/16") of lining thickness remaining, replace the shoes complete.

Check the brake drum friction surface and out-of-roundness. The out-of-roundness may not exceed 0.1 mm (0.004").

The friction surface can be machine-smoothed or ground but the diameter may not exceed 282.4 mm (11").

Assembling

1. Hook the lower return spring on both the shoes and the upper on one of the shoes, see Fig. 51-11. Note that the lining on the primary shoe (the leading) is displaced downwards.

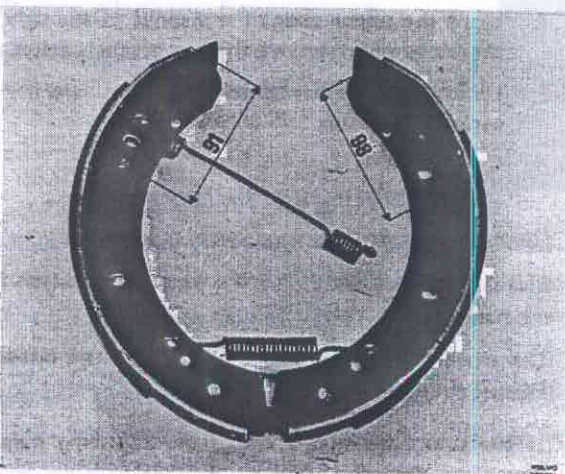


Fig. 51-11. Brake shoes

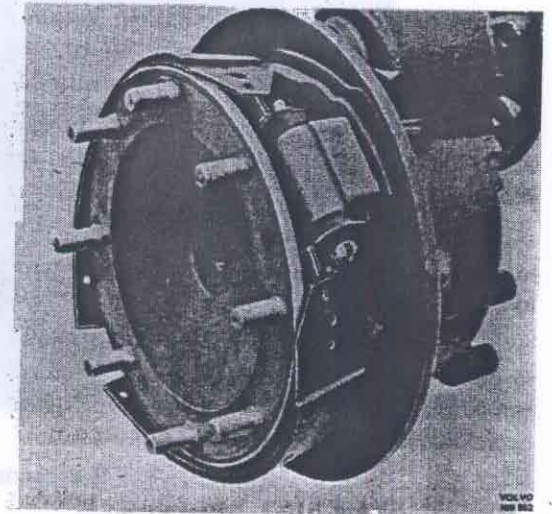


Fig. 51-12. Fitting the brake shoes

2. Fit the shoes on the inside of the king pin, see Fig. 51-12. Hook on the upper return spring with flat pliers.
3. Place the protective bracket 6118 on the wheel cylinder, see Fig. 51-13.
4. Carefully fit the shoes on the grooves on the pistons.
5. Tension out the shoes at the bottom so that they can be fitted in the guide.
6. Lever out the shoes a bit and remove the protective bracket.
7. Fit the brake drum. Make sure that it is fitted properly and align it with the help of two nuts.
8. Adjust the wheel brake unit.
9. Fit the wheel, lower the rear end and tighten the wheel nuts to a torque of 160-210 Nm (16-21 kpm = 115-152 lbftf).

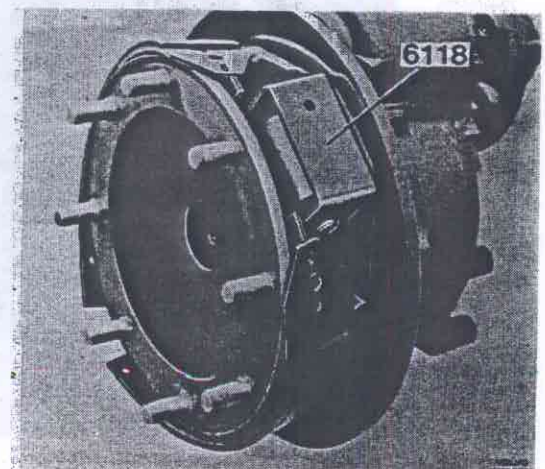


Fig. 51-13. Protective bracket

GROUP 52 HYDRAULIC SERVICE BRAKES

Description

The service brakes (Fig. 52-1) are vacuum-hydraulic. Layout is according to Fig. 52-1. It has two circuits, one of which (the primary circuit) operates on the front wheels and the left, rear wheel, and the other (the secondary circuit) on the front wheels and right, rear wheel. The service brakes have also an auxiliary brake with servo units which boost the hydraulic pressure.

Described on the following pages are the master cylinder, wheel cylinders, brake pedal and the warning devices for the brake system. Described under Group 51 are the brake shoes and brake drums, and under group 54 the servo units.

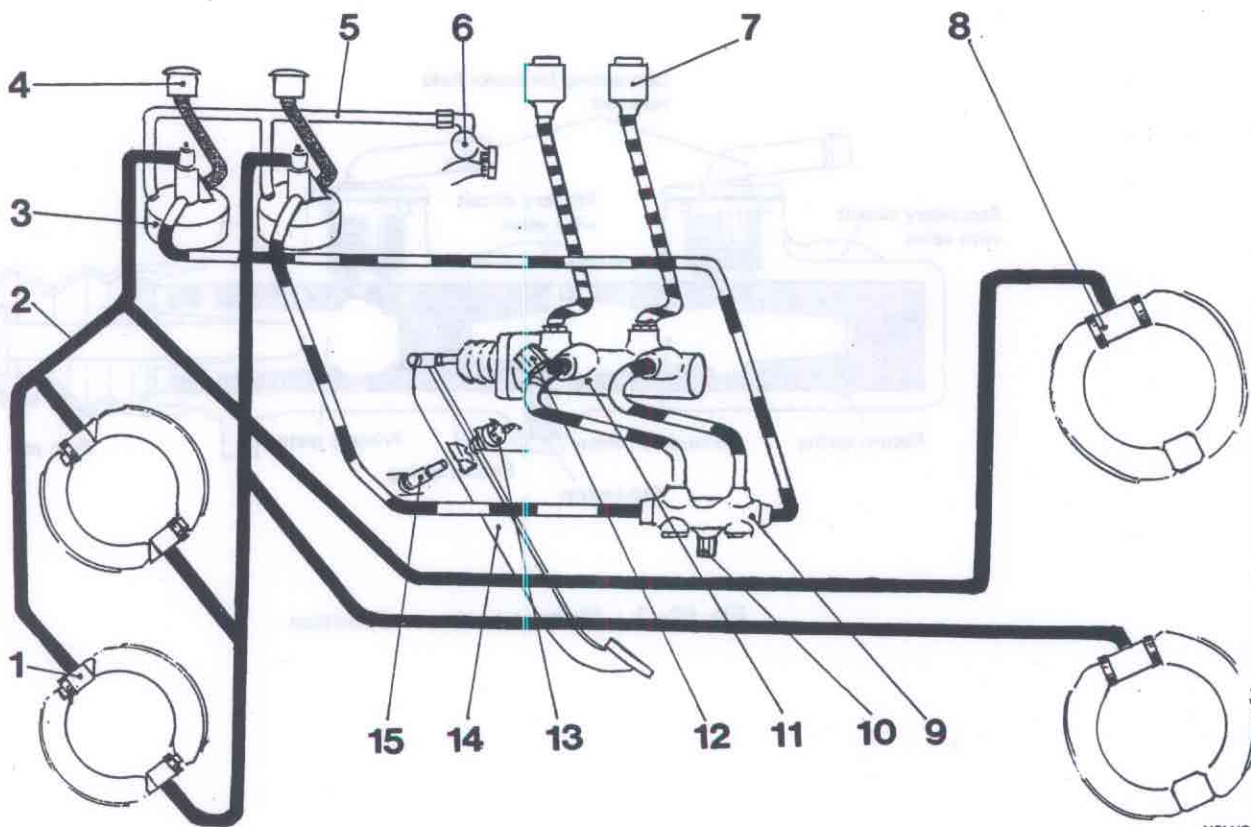


Fig. 52-1. Service brakes, layout diagram

- | | |
|---------------------------------|-----------------------------------|
| 1. Wheel cylinder, front wheels | 9. Warning valve |
| 2. Brake line | 10. Contact, press. diff. |
| 3. Servo unit | 11. Master cylinder |
| 4. Air cleaner | 12. Contact (only Swedish market) |
| 5. Vacuum line | 13. Contact for stop lights |
| 6. Suction pipe | 14. Brake pedal |
| 7. Brake fluid reservoir | 15. Contact, brake pedal travel |
| 8. Wheel cylinder, rear wheels | |

Colour marking

- | | |
|--------|----------------------------------|
| Red | = brake fluid, primary circuit |
| Blue | = brake fluid, secondary circuit |
| Purple | = air |

Pressure marking on lines

- | | |
|-----------------|----------------------------|
| Uncoloured | = vacuum |
| Short dashes | = atmospheric pressure |
| Long dashes | = master cylinder pressure |
| Continuous line | = servo pressure |

MASTER CYLINDER

The master cylinder design can be seen from Fig. 52-2. It functions as follows:

In the rest position, the pistons are held back by spring pressure. The connection is then open in both circuits between the brake fluid reservoir and the space in front of the piston. During braking the primary piston (right on Figure) is pushed in by the push rod. This closes the connection with the reservoir and the pressure in front of the piston rises.

This pressure actuates the secondary piston and pushes it to the left. The same overpressure arises in front of both the pistons, the brake fluid is pressed out into the brake lines and all the wheel brakes are applied, providing the system is without fault.

When the brake pedal is released, the pistons return to the rest position. Both the valves at the outlets result in a low, hydraulic overpressure remaining in the circuits outside the master cylinder.

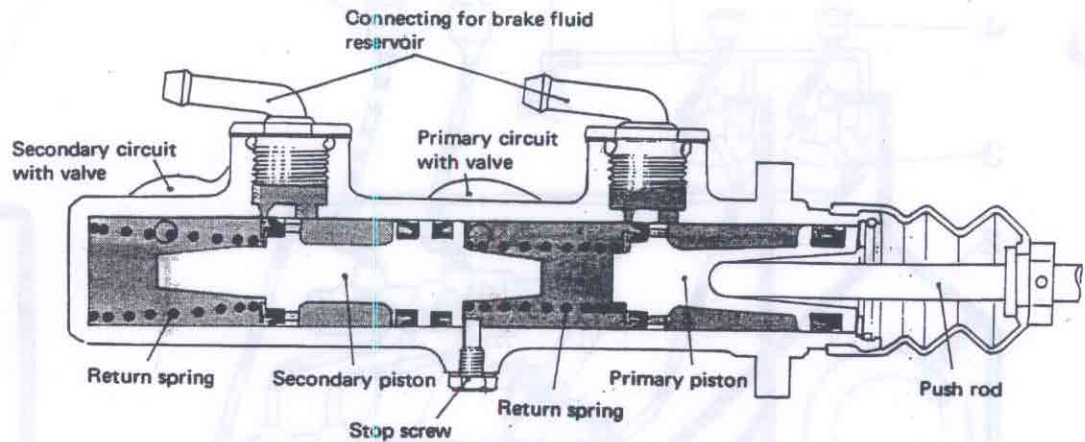


Fig. 52-2. Master cylinder, rest position

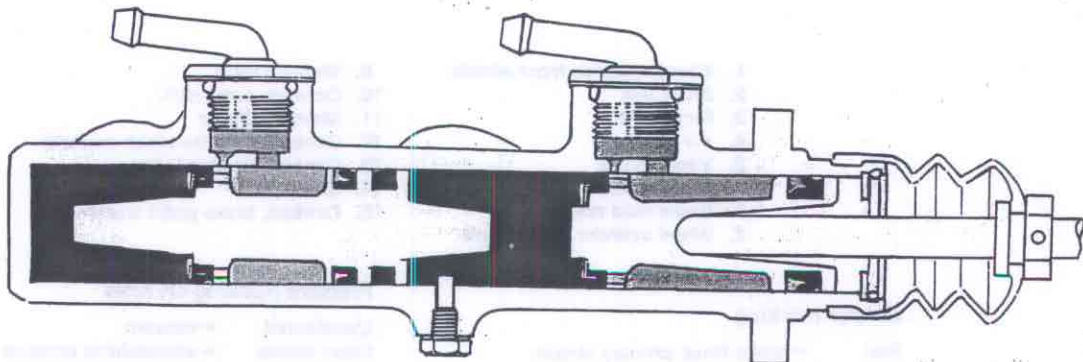


Fig. 52-3. Normal brake application