



VOLVO

WORKSHOP BULLETIN

CARS

RE. **BRAKE SYSTEM**

PRODUCT **P**

GROUP **52**

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BRAKE VALVE FOR CARS WITH DISC BRAKES

The P 120 F and L series and the P 1800 F are equipped with a brake valve on the brake line to the rear wheels. When the ingoing brake pressure exceeds 30 kg/cm² (430 lb/sq.in.) a reduction takes place in the valve. The heavier the braking, the greater the reduction and thereby a larger difference between the hydraulic pressure in the front wheel and rear wheel cylinders. This results in a suitable distribution of braking force between both pairs of wheels.

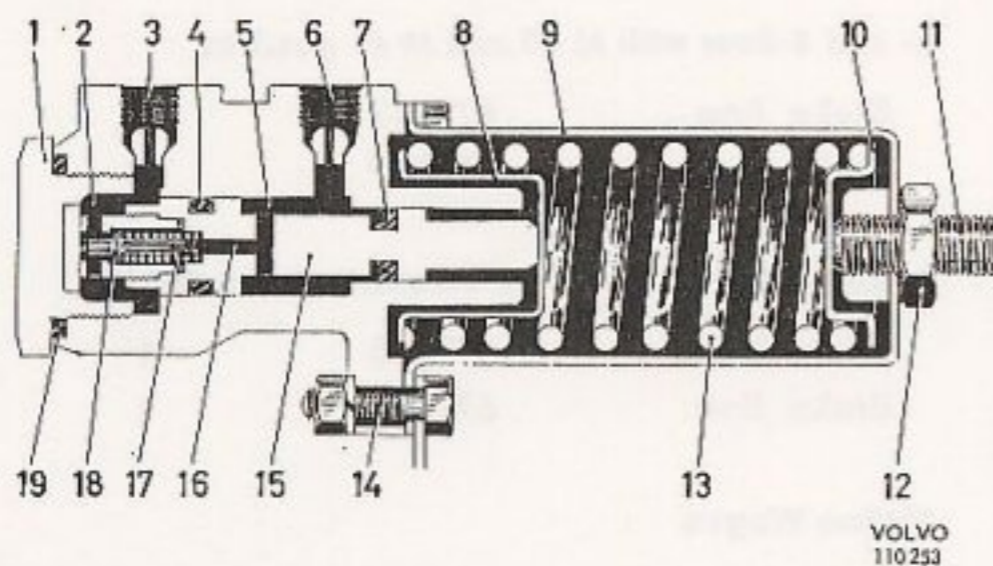


Fig. 1. Construction.

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| 1. Plug | 10. Spring guide |
| 2. Cylinder | 11. Adjusting screw |
| 3. Connection for rear wheel cylinders | 12. Locknut |
| 4. O-ring | 13. Spring |
| 5. Cylinder | 14. Bolt |
| 6. Connection for master cylinder | 15. Piston |
| 7. Sealing ring | 16. Counterbore |
| 8. Spring guide | 17. Spring |
| 9. Spring housing | 18. Valve |
| | 19. Sealing ring |

Function

The brake valve functions as follows.

When the footbrakes are applied, the pressure from the master cylinder is transmitted through connection (6) Fig. 1. The pressure then proceeds through the cylinder (5), the counterbore (16), past the open valve (18) to cylinder (2) and then on through connection (3) to the rear wheel cylinders, see Fig. 2. The hydraulic pressure per unit surface is equal on the different parts of the piston (15), but since its pressure surface is larger in the cylinder (2) than in the cylinder (5), the force developed will move the piston to the right on the

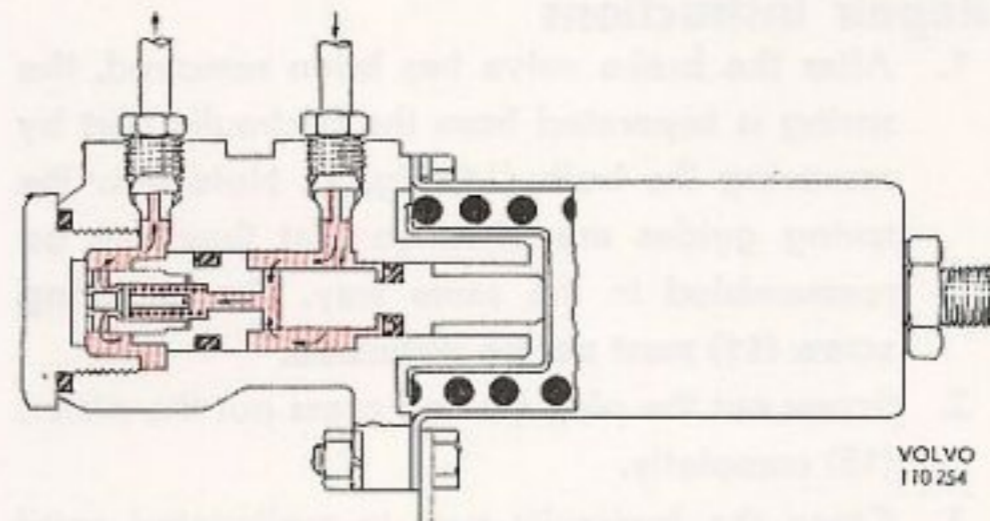


Fig. 2. Brake application (pressure below 30 kg/cm² = 430 lb/sq.in.)

figure. However, this is counteracted by the pressure from the spring (13).

When the hydraulic pressure approaches 30 kg/cm² (430 lb/sq.in.), the spring pressure is overcome and the piston (15) is moved to the right. By means of pressure from the smaller spring (17), the valve (18) closes off the connection between the two cylinders and forms two separate systems, one for the front wheels and one for the rear wheels. With a continued increase in pressure in the master cylinder and front wheel cylinders, the hydraulic force in cylinder (5) will move the piston to the left so that the valve rod comes up against its stop and opens the valve, whereby the pressure in cylinder (2) increases. Due to the larger pressure surface in this cylinder, the piston is moved to the right again and the valve closes. In this way the piston assumes a position of balance and the outgoing pressure from the brake valve will be lower than the ingoing pressure, see Fig. 3. The difference in these pressures is determined by the different areas and spring force.

When the brake pedal is released, the pressure in cylinder (5) falls. The piston (15) is moved to the

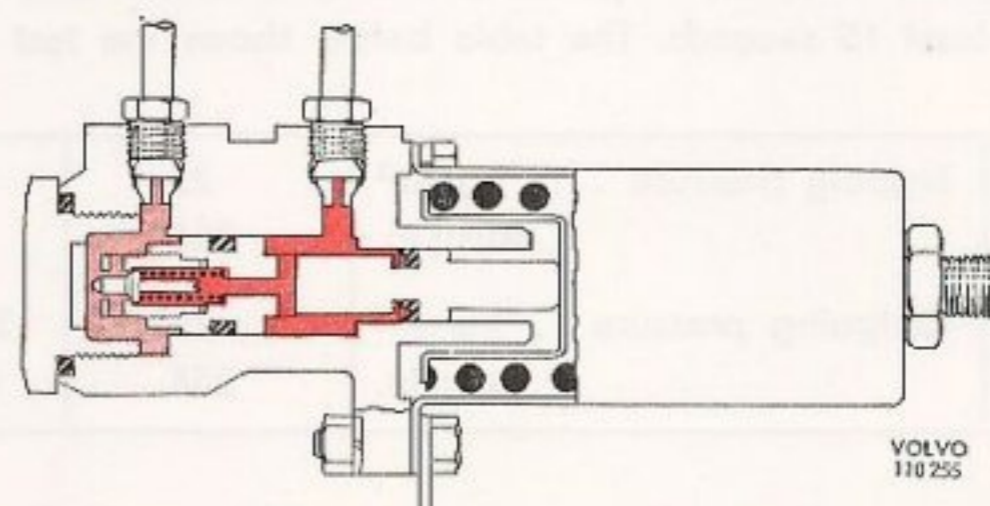


Fig. 3. Reducing action.