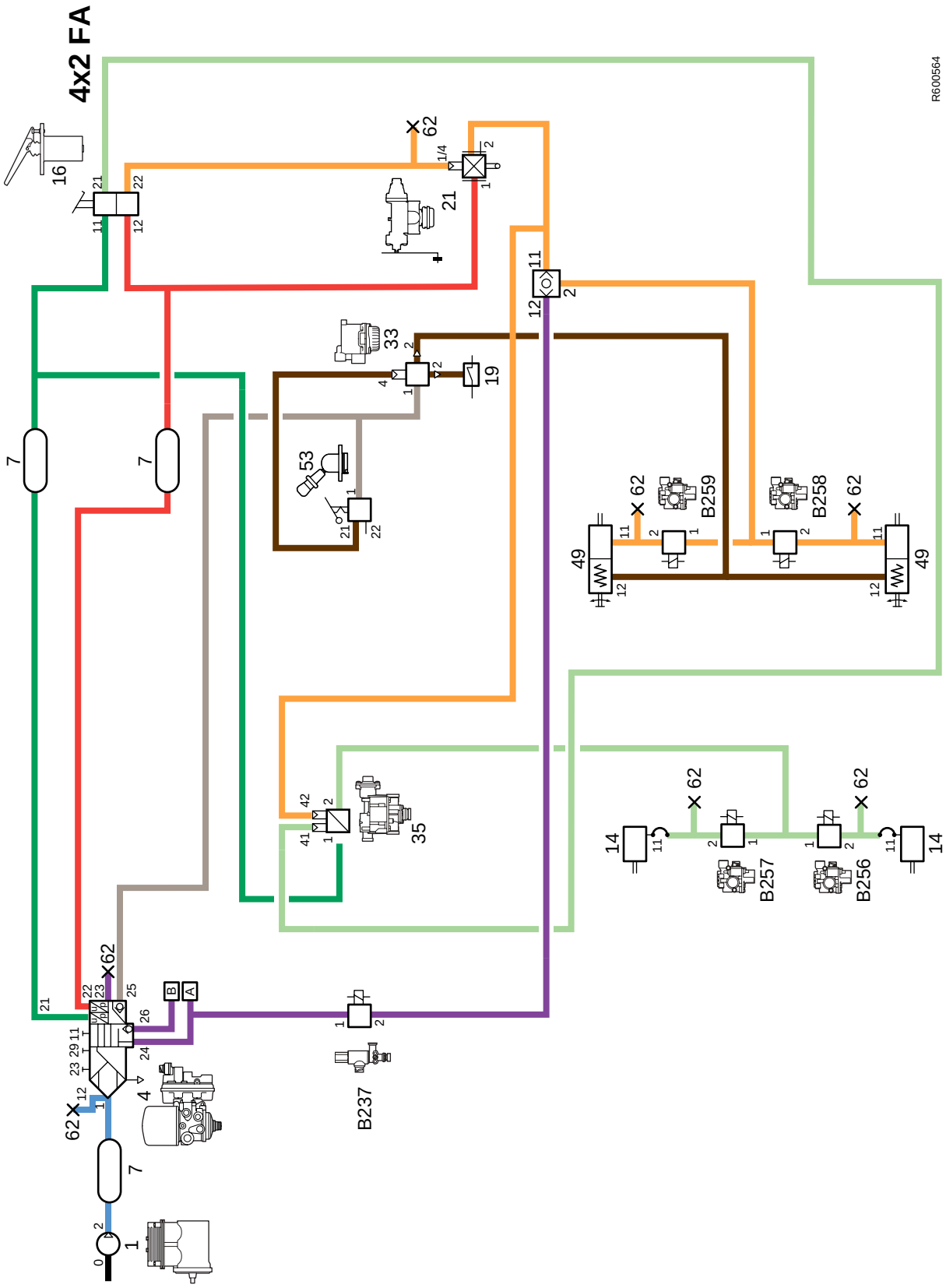
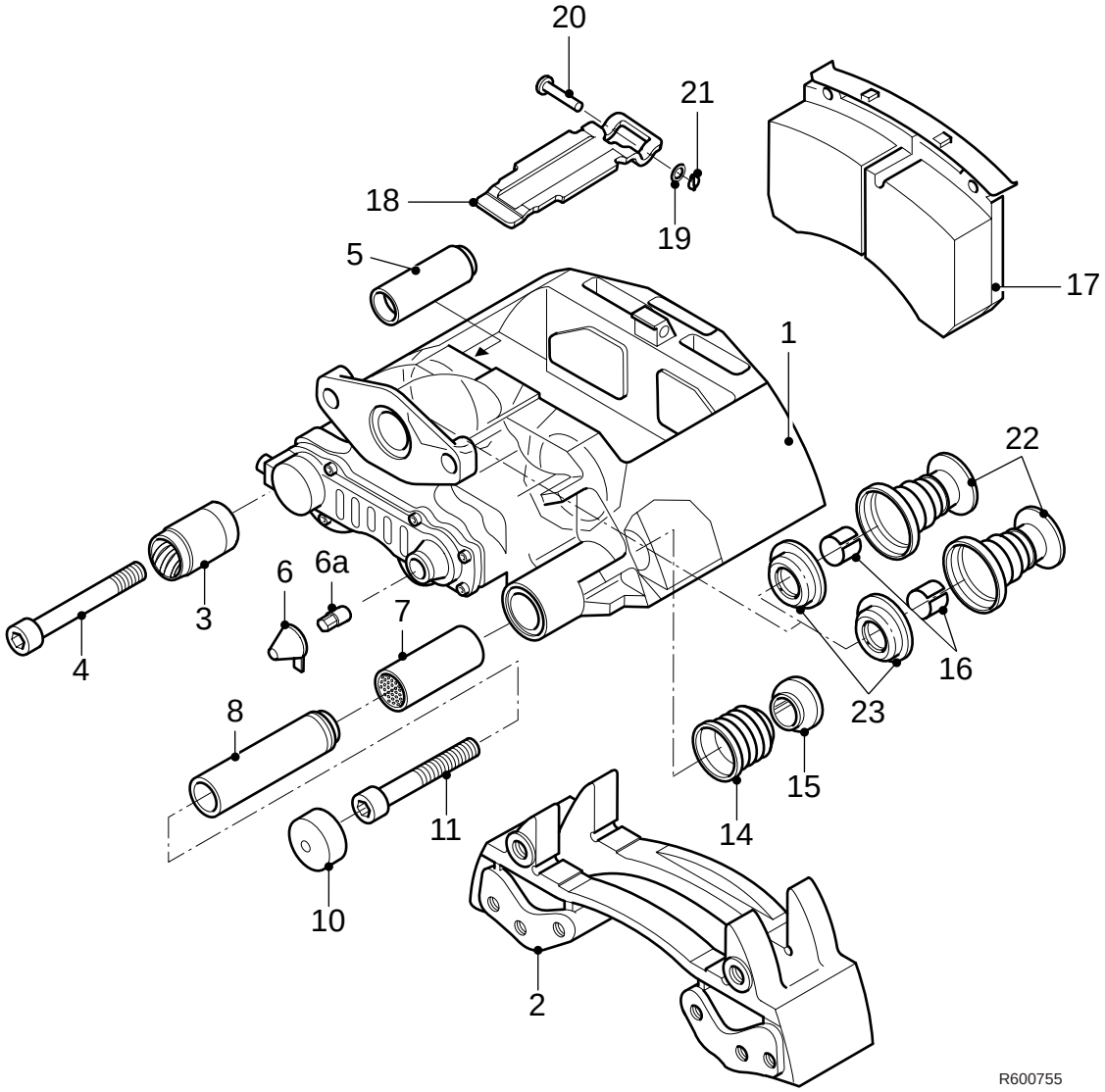
2

BRAKE DIAGRAM R600564



3

1.4 OVERVIEW DRAWING, KNORR SN700 DISC BRAKE CONSTRUCTION



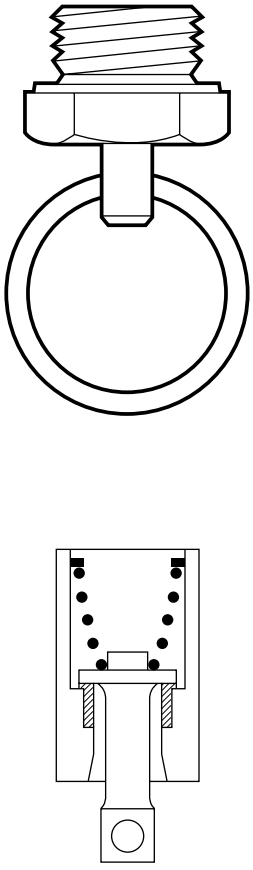
1	Brake calliper	14	Bellows
2	Brake calliper carrier	15	Ring
3	Rubber bearing bush	16	Bearing bushes
4	Allen screw	17	Brake pad
5	Guide sleeve	18	Attachment bracket
6	Cap	19	Sealing ring
6a	Adapter	20	Pin
7	Brass bearing bush	21	Retainer clip
8	Guide sleeve	22	Thrust pieces with bellows
10	Protective cover	23	Sealing rings
11	Allen screw		

2.3 WATER BLOW-OFF VALVE

Purpose
The purpose of the water blow-off valve is to enable any condensation in the air reservoir or air pipes to be drained and, if necessary, to bleed the system.

Operation
The valve is kept closed by the spring and the reservoir pressure. By pushing the pin sideways, the valve is lifted off the seat, allowing condensation and compressed air to escape. When the pin is released, the valve is closed.

Check that no other components are present under the blow-off plug, as these could get fouled during the blow-off process.



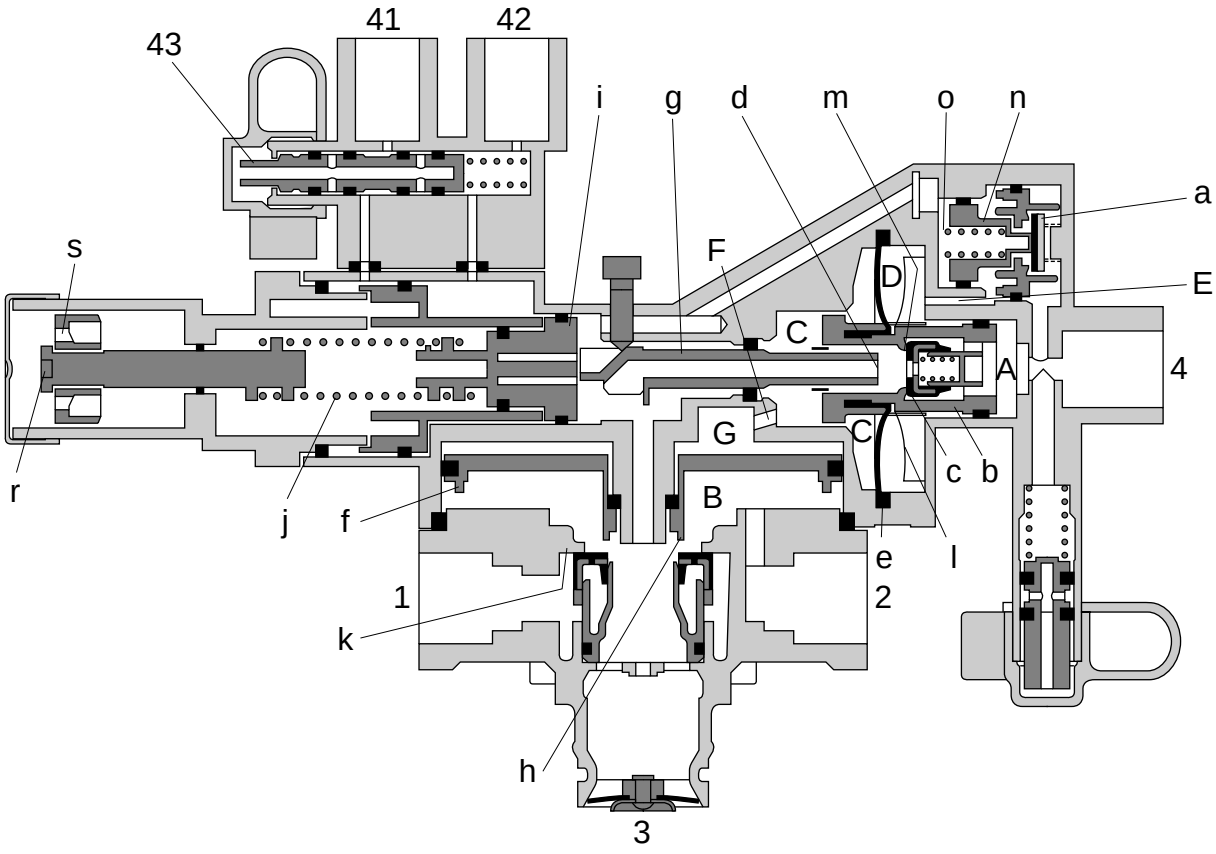
R600046

At the same time, compressed air flows through the open valve (a) and duct E into space D to the right of diaphragm "e". Due to this control, the output pressure at partial load and low control pressures is increased to max. 1.4 bar). If the control pressure increases further, piston "n" is moved to the left against the pressure of spring "o" and valve "a" closes.

As pressure builds up in space G, relay piston "f" is pressed downwards. Outlet "h" closes and inlet "k" opens. The air at connecting point 1 now flows to the brake cylinders via connecting point 2.

Now pressure will start to build up in space B under relay piston "f". As soon as this pressure is somewhat higher than that in space G, the piston is pushed upwards and closes inlet "k".

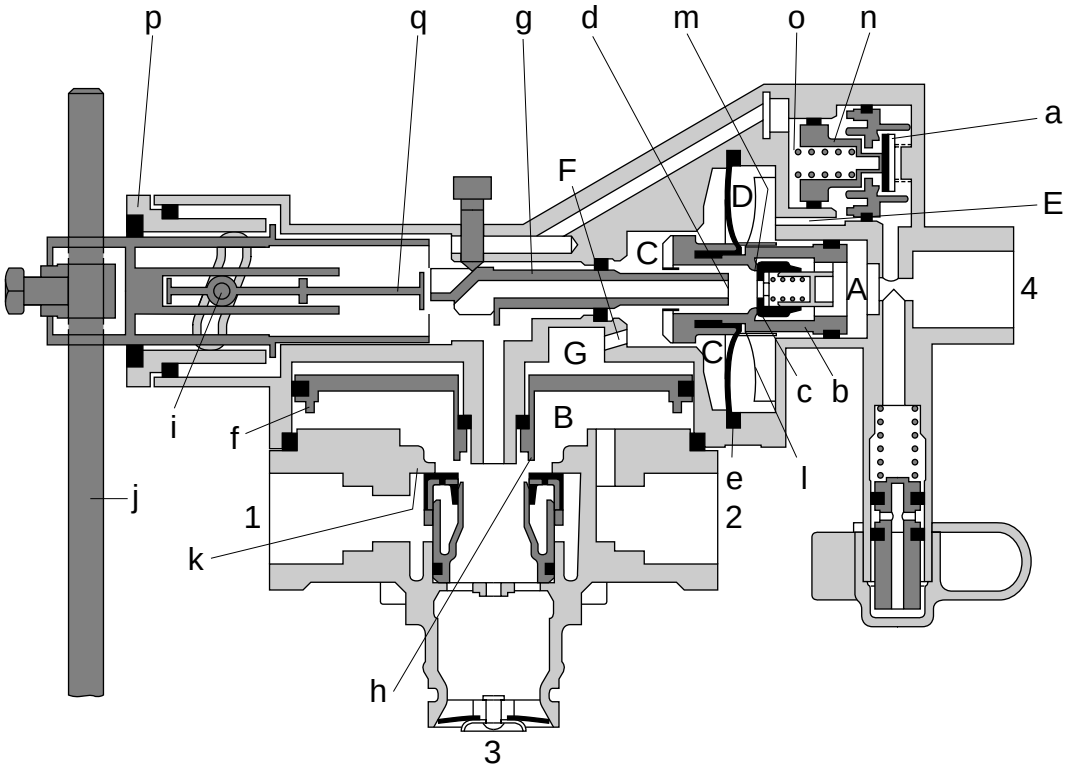
When piston "b" is moved to the left, the vanes (l) attached to it will gradually loosen the diaphragm (e) from the fixed vanes in the valve housing. As a result, the effective diaphragm surface will gradually increase. As soon as the force of the air to the left of the diaphragm exceeds that to the right, piston "b" will move to the right. The inlet (m) will be closed and a set position is reached.



R600455

2.8 LOAD SENSING VALVE, LEAF SUSPENSION

Purpose
Automatic control of the brake force depends on the deflection of the springs and therefore on the loading condition of the vehicle. Thanks to the integrated relay valve, the brake cylinders are aerated and bled quickly.

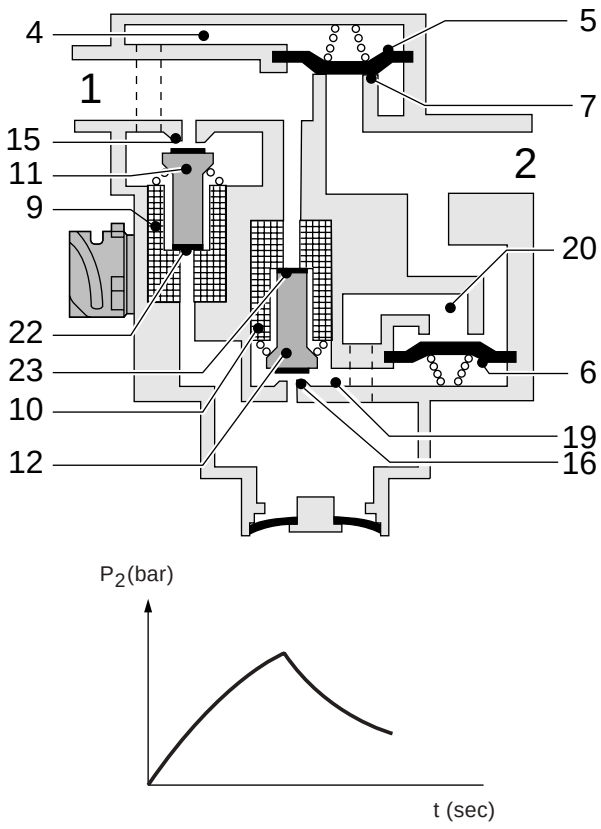


R600456

Operation
The control valve is attached to the chassis and connected to the rear axle by means of a rod. With unladen vehicles, the distance between the regulator and the axle is largest and the lever (j) points fully downwards. When the vehicle is loaded, this distance decreases and the lever moves upwards, towards full load position. Pin i rotates at the same time as the lever and as a result thereof moves to the right via the control groove in bearing cover p. Rod "q" brings the tappet (g) in a position that corresponds with the loading condition.

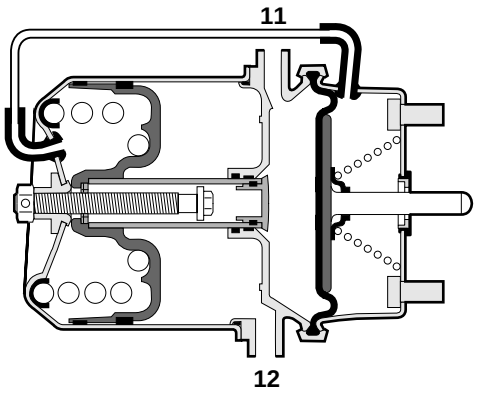
The compressed air provided by the foot brake valve flows via connecting point 4 into space A, pushing piston b to the left. Outlet "d" is closed and inlet "m" is opened, causing compressed air to enter space C to the left of diaphragm "e". Relay piston "f" is operated via duct F and chamber G.

Reducing pressure at connecting point 2
By activating the magnet coil (9), the solenoid valve (11) will open bore 15 and close bore 22. As a result, input pressure enters space 15 above diaphragm 5 via a bore. Diaphragm 5 seals against seat 7, so that no more pressure can build up.
By activating the magnet coil (10) at the same time, bore 16 opens and bore 23 closes.
By opening bore 16, the pressure under diaphragm 6 can be reduced via the bleed vent.
The pressure in the brake chamber can now escape via connecting point 2, space 20 and an internal bore to the bleed vent.



2.15 SPRING BRAKE CYLINDER

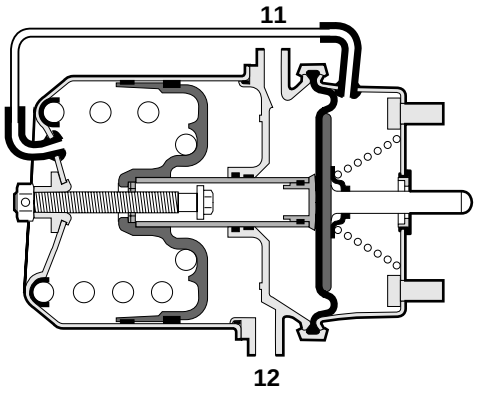
Purpose
The purpose of the spring brake cylinder is to force the brake pads against the brake disc when the service or parking brake is operated.



R600908

Spring brake cylinder operation
The spring brake cylinder consists of two parts: a part for the service brake, which is designed as a normal brake cylinder, and a part for the parking brake, which is a spring brake cylinder.

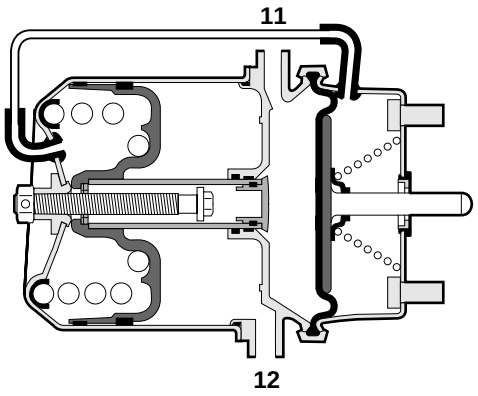
Normal position during driving.
The air reservoirs must be at a safe pressure before you start driving. If this is not the case, a warning signal (e.g. a buzzer) will be given.
If this pressure is admitted to the spring brake cylinder, the piston will compress the powerful spring. The push rod is no longer under load and the vehicle brake will be released due to the operation of the spring, etc.



R600909

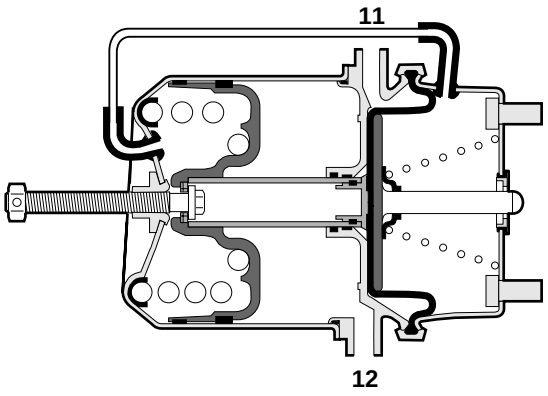
Service brake
Because the brake cylinder and the spring brake cylinder are separate, the spring brake cannot affect the operation of the service brake.
When the service brake is applied, the powerful spring continues to be compressed, while there is air pressure on the diaphragm of the brake cylinder. When the foot brake valve is operated, the compressed air passes through connection point 11 into the chamber behind the diaphragm. The diaphragm with push rod is pushed out against the spring pressure.
The air on the other side of the diaphragm can escape via bleed holes. When the brakes are released, the spring forces the push rod and the diaphragm back into their original position.

Parking brake
Connection point 12 is bled.
The powerful spring then forces the piston with the piston tube against the diaphragm, so that the push rod is forced outwards. Here use is made of the continuously available energy of the compressed, powerful spring.



R600908

Release tool, spring brake cylinder with unscrewable release bolt
If, due to a failure, no compressed air is available in the spring brake cylinder, the vehicle brakes are automatically applied.
But it must still be possible to tow the vehicle.
The spring brake cylinder is therefore fitted with a release bolt at the rear. By turning this bolt anti-clockwise using a spanner, the powerful spring will be compressed.
As the bolt is provided with a thrust bearing, the torque required is not more than 20 - 40 Nm.
A pneumatic spanner must not be used for this purpose.



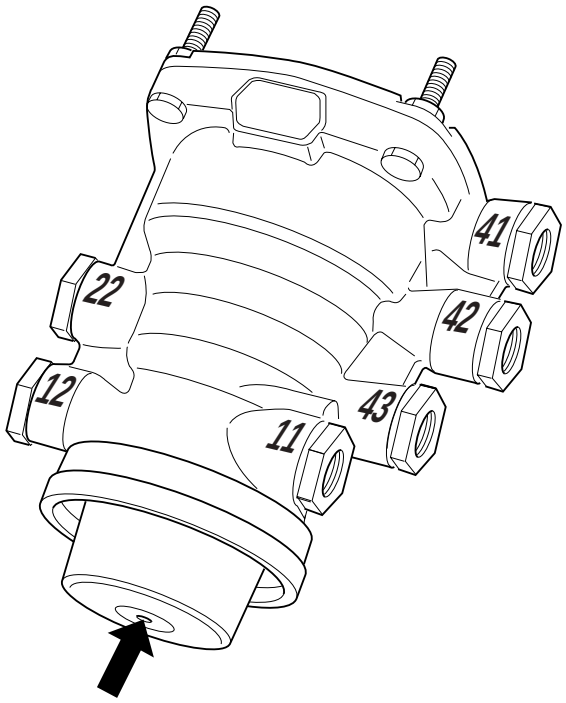
R600910

Because the spring brakes have been released mechanically, the parking brake can no longer be applied.

Once the failure has been remedied and sufficient compressed air is available, the control valve can be used to again admit air into the spring brake cylinder.
The release bolt should then be screwed back in with the spanner and tightened to the specified torque. See "Technical data". The pressure in the spring brake cylinder circuit should be at least 5.1 bar.

2.16 TRAILER CONTROL VALVE

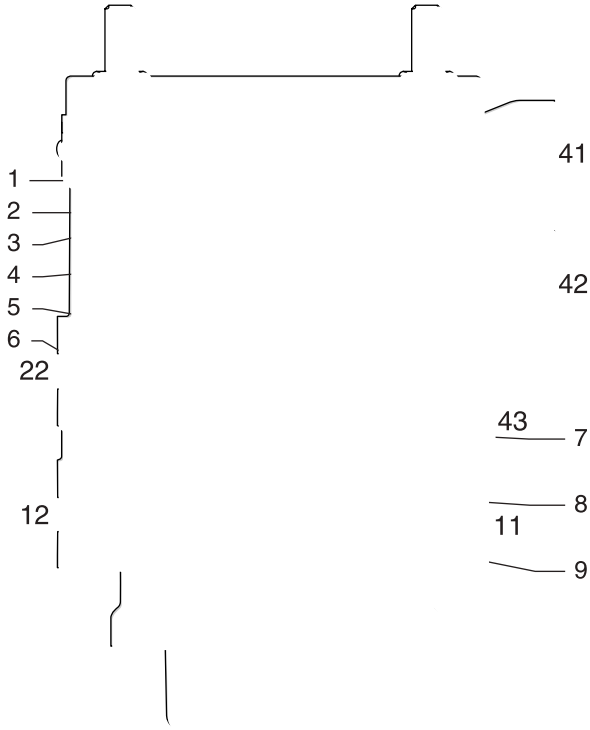
Purpose
The purpose of the trailer vehicle control valve is to pass on the brake commands from the prime mover to the trailer vehicle.



R600335

Operation

Driving
Connecting point 11 is connected to a reservoir and connecting point 43 to the parking brake valve. Both are pressurised and in a state of equilibrium. The service coupling head communicates with the ambient air via connecting point 22, valve 8 and the bleed vent with damper.

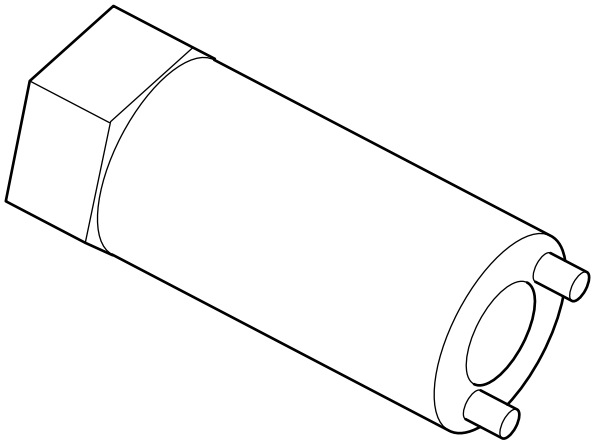


R600340

8. Read the brake pressure of the rear axle on pressure gauge 2 and check that this brake pressure matches the one listed on the instruction plate in the table under "output pressure p2" to the rear axle.

9. If the measured value is not correct, depressurise connection 43 and, using a special slotted-nut spanner, special tool (DAF no. 1329464), turn the adjusting nut(s):
   - brake pressure too high: unscrew the adjusting nut
   - brake pressure too low: screw in the adjusting nut

   Note:
   When depressurising the simulation connection (pressure gauge 43), the air hose must remain connected to prevent the (actual) bellows pressure from accidentally activating the valve.
   The small socket head screw in the centre of the valve must not be adjusted.



R600478

10. Repeat the procedure described in point 6 until the measured brake pressure value is within the tolerance limits.

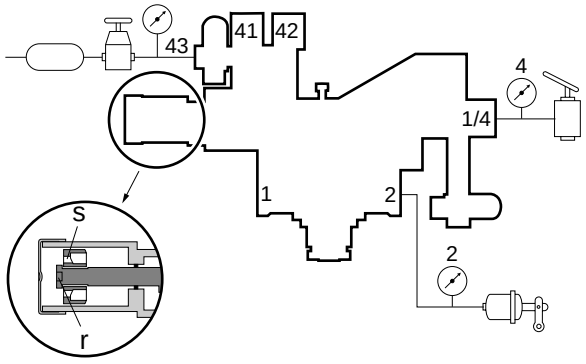
11. Set the simulated bellows pressure to its **second highest** value, as indicated on the instruction plate.

12. Depress the brake pedal until pressure gauge (4) indicates a pressure of 6 bar.

13. Read the pressure gauge (2) and check that this braking pressure matches the pressure indicated in the table on the instruction plate.

14. If the measured reading is not correct, depressurise connection 43 and turn the adjusting bolt (r) using a Torx screwdriver:
   - brake pressure too high: screw in the adjusting bolt
   - brake pressure too low: unscrew the adjusting bolt

   Note:
   When depressurising the simulation connection (pressure gauge 43), the air hose must remain connected to prevent the (actual) bellows pressure from accidentally activating the valve.
   The small socket head screw in the centre of the valve must not be adjusted.



R600473

15. If the adjusting bolt (r) has been turned, repeat the procedure from point 6.

2.4 INSPECTION AND ADJUSTMENT, LOAD SENSING VALVE, LEAF SUSPENSION

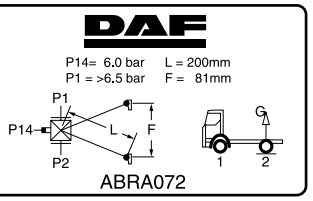
Explanatory notes on instruction plate
The data relating to axle loads and output pressures are listed on the instruction plate following the sequence of the axles beneath the vehicle.

"1" refers to the (first) front axle, "2" to the following axle, etc.

In the entire column, a reading of 6 bar has been filled in under "1". If the vehicle is equipped with an empty/load valve, a pressure ratio is entered in the box under the valve illustration, e.g. "i = 1 : 1.5". The "output pressure P2" of axle 1 will give variable readings.

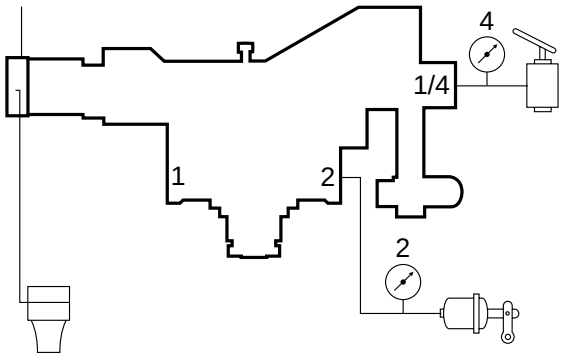
These values can be used to check the brake pressure values of the front axle and to carry out the inspection/adjustment below at the same time. To do this, connect a pressure gauge to the test connection of one of the front axle brake cylinders.

G (kg)	1	2
	±0.4 (bar)	±0.2 (bar)
1000	6.0	2.8
1500	6.0	3.4
2000	6.0	4.0
3000	6.0	5.1
3750	6.0	6.0
4700	6.0	6.0



R6 00 549

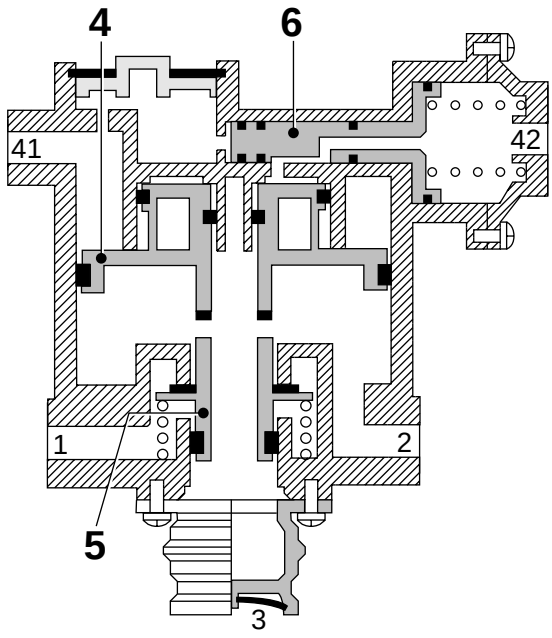
Inspection/adjustment
1. Measure the weight plus load of the rear axle.
2. Check the attachment of the control lever and its ease of operation.
3. Check that the right type of valve has been fitted.
4. Check the length of the control lever (see "L" on the instruction plate).
5. Connect a pressure gauge (4) to the test connection near connection 1/4 on the load-sensing valve (input pressure).
6. Connect a pressure gauge (2) to the test connection on one of the brake cylinders (service brake connection) of the rear axle.
7. Make sure that the reservoir pressure is higher than 6.5 bar throughout the testing process.
8. Depress the brake pedal until pressure gauge 4 indicates a value of 6 bar.
9. Read the brake pressure of the rear axle from pressure gauge 2 and check that this value matches the one listed on the instruction plate in the table under "output pressure p2" to the rear axle.



R600562

2.5 INSPECTION EMPTY/LOAD RELAY VALVE

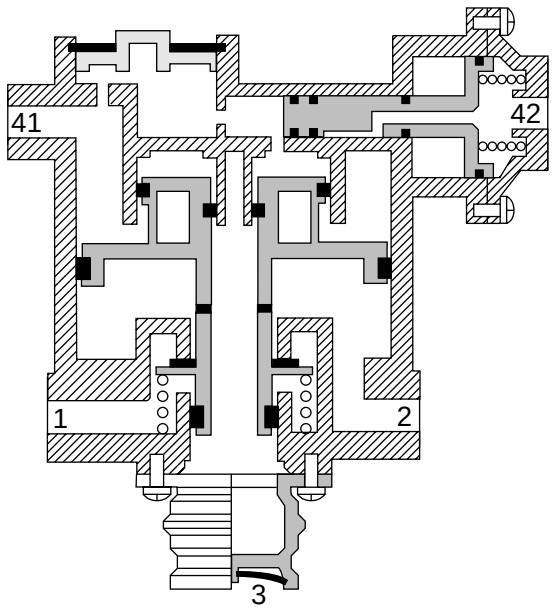
1. Using a T-piece, connect a pressure gauge to connecting point 41.
2. Connect a pressure gauge to the test connection on one of the brake chambers of the front axle.
3. Connect a pressure gauge to the test connection on one of the brake chambers of the rear axle.
4. Pressurise the system.



R600904

Testing when empty

1. Set the load sensing valve to the empty position.
2. Slowly depress the brake pedal.
   The pressure on the front axle should rise gradually, not in jumps.
   The pressure on the front axle will rise less quickly than that on connecting point 41.
   (With an empty vehicle, the difference will be greater than with a partially loaded vehicle).



R600905

6. If the mechanical condition of the wheel brakes, the results of the test drive and the data obtained from the brake equalisation test using the brake dynamometer give cause for doing so, the brake pressure advance of the trailer vehicle control valve can be adjusted.

Adjusting brake equalisation of non-EBS truck with non-EBS trailer vehicle

1. When the brake pressure advance in the trailer vehicle control valve on the truck is increased or decreased, the position of the curve for the trailer vehicle (B) in the graph will not be affected. This is because the reference pressures are measured at the yellow coupling head (= service line). For the same reason, however, the curve for the truck (A) will shift to the right or the left (will appear to be lower or higher respectively). So the horizontal axis indicates how much the brake pressure advance has to be changed. Reducing the brake pressure advance results in increased deceleration of the truck. Increasing the brake pressure advance results in decreased deceleration of the truck.

   Note:
   Increasing the brake pressure advance on the trailer vehicle reaction valve on the trailer vehicle results in increased deceleration of the trailer vehicle.

   Bear in mind that an increase in the brake pressure advance does not necessarily improve the braking performance of the trailer vehicle. It only means that the brake pressure balance between prime mover and trailer vehicle is changed. Moreover, in the event of an emergency stop the poorer braking performance of the trailer vehicle will again be noticeable, as the brake pressure advance is eliminated when the maximum brake pressure is used.

2. So the horizontal axis indicates how much the brake pressure advance has to be changed.

3. Take a test run, perform a brake equalisation test using a brake dynamometer and fill in the "Brake equalisation form for brake dynamometer". See "General". If desired or required, the setting of the trailer vehicle control valve can be adjusted again.