Test instruction

Prior to testing read carefully the safety instructions.

Safety information

WARNING

Only qualified skilled personnel with specific system knowledge are authorized to perform the device testing at the test bench.

Never start testing until you have read and understood all the information required for the test.

Test the device on a calibrated test bench only.

In case of doubt, use test values specified by the vehicle manufacturer.

While testing the device, always adhere to the contents of this test instruction.

CAUTION

Comply with the company and national accident prevention/health & safety regulations

Unlock screws, hoses and equipment parts only when the respective lines of the test bench are vented.

Test instruction for device 461 491 ... 0

017	121	152	254	345
100	137	158	270	
102	145	200	273	
104	149	250	274	

Symbols and Signal Words

WARNING

Possible hazardous situation. To disregard this may lead to serious or fatal personal injuries.

CAUTION

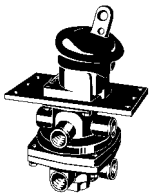
Possible hazardous situation. To disregard this may lead to personal injuries.

– Handling

• List

Instructions, explanations, information, tips

Gauge indication



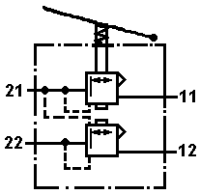


Fig. 1 + 2 Brake valve 461 491 ... 0 / functional symbol

Necessary equipment/tools

- Test bench 435 197 000 0 or adequate testing equipment
- Adequate equipment:
  - for clamping the brake valve,
  - for actuating the lever with mm graduation.
- Soapsuds and brush

Additional documents
(see www.wabco-auto.com => INFORM)

- Test Values 2/2:
  to be found by entry of the product number in INFORM
- Test Bench - Operating Instructions:
  435 197 000 0
- General Repair and Test Hints:
  820 001 074 3 de
  820 001 075 3 en
  820 001 076 3 es
  820 001 077 3 fr
  820 001 078 3 it

Check sequence

Perform test procedure as per specified sequence

Find test values P1 to P8 (pressure in bar) and H1 to H4 (travel in mm) in document "Test values 2/2".

The braking pressure is 8 bar max / 7 bar min.

Before starting each test, ensure that the stopcocks are in their correct normal position (see table 1).

Cock	A	B	C	D	F	L	V		2	3	4	6	7	11	12	21	22
open	x													x		x	
closed		x	x	x	x	x	x		x	x	x	x	x		x		x

Table 1: Normal position of stopcocks on the test bench

1. External inspection

– Inspect the device for external visible damage.

CAUTION

Make sure that the retaining rings are mounted correctly. The brake valve could otherwise explode while testing.

– Visually inspect all the device's ports for blockages.

2. Preparations

2.1 Adjustment arrangement of brake valves

– Assemble the brake valve except for the insertion of fully assembled graduating piston and the flange of the whole actuation.

– Measure dimensions a and b, dimension C = b - a (see fig. 3).

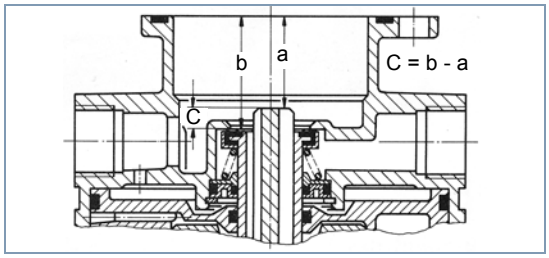


Fig. 3 Dimension C

– Adjust dimension d = C + 0.8 mm in the graduating piston by turning the set screw (see fig. 4).

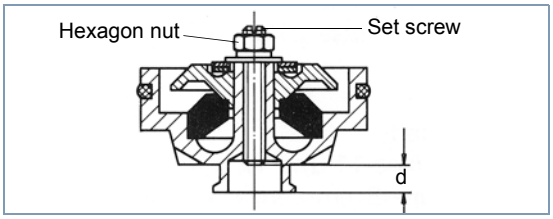


Fig. 4 Dimension d (Device with one rubber spring)

– Counter set screw by turning seizing the hexagon nut (see fig. 5).

The adjustment levels off also at devices with longer graduation travel (two rubber springs), see fig. 5.

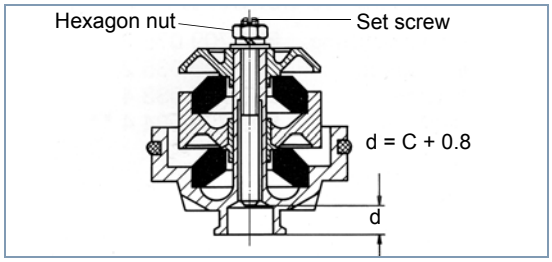


Fig. 5 Dimension d (Device with two rubber springs)

– Assemble the device except for the bellows.
– Fix device in clamping equipment.
– Connect device to test bench ports (see fig. 6).

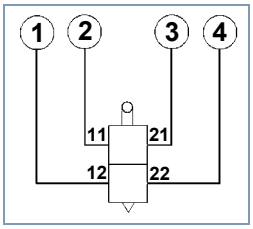


Fig. 6 Test bench ports

CAUTION

Ensure that the plug-in connections on the test bench and the device are securely inserted.

– Close one of the ports 21 and 22.

3. Check for leaks

WARNING

Never install an untightened brake valve on the vehicle.

3.1 Exhaust

i From a non-actuated device no air must exceed from the exhaust.
– Vent ports 11 and 12 with P1.
– Fully operate device several times.
– Wait until excess pressure has decreased.
- Check exhaust of the device for tightness.
  i No leakages admissible.

3.2 Complete device

– Operate lever H1 (stop within the device).
– Cover complete device with soap and check tightness.
  i No leakages admissible.
  With soap bubbling the device is not tight.
– Re-adjust lever to 0 mm.
  ↖ Gauges 3 and 4 must indicate 0 bar.

4. Obtain maximum pressure

– Operate lever H1 (stop within the device).
  i Pressure must increase immediately.
  ↖ Gauges 3 and 4 must indicate P2.
– Re-adjust lever to 0 mm.
  ↖ Gauges 3 and 4 must indicate 0 bar.

5. Adjusting screw

i Carry out test step only on variant 149.
– Adjust lever without clearance by moving the adjusting screw.
– Adjust adjusting screw for the pressure switch to dimension a 12 + 0.5 mm (see fig. 7).

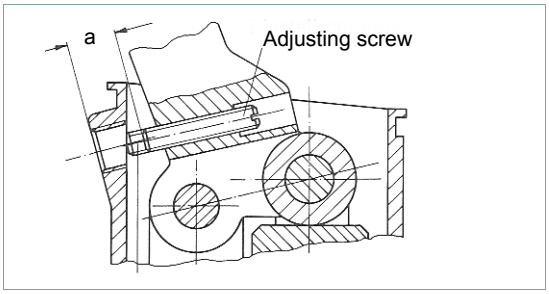


Fig. 7 Dimension a for the adjustment of the adjusting screw

– Secure the adjusting screw with liquid securing means WabcoSeal (830 407 084 4).
i The pressure switch must respond to 3±0.5 mm.

6. Graduability

i In all pressure scopes incremental steps of max. 0.3 bar must be possible.

7. Check pressure increase

– Operate lever several times.
  ↖ Gauges 3 and 4 must indicate immediate pressure increase resp. decrease.
i In accordance with the type of device, one circuit must have predominance.

7.1 Check sudden pressure increase

– Operate lever with H2.
  ↖ Gauge 3 must indicate P3.
  Gauge 4 must indicate P4.

7.2 Adjust predominance

i Adjust predominance only on variant 200

Use washers with the following composition:

material: Steel

Surface protection: gal Zn 6 c yellow

Washer (approx. 0.4 bar pressure change-ment)	Diameter: 25 mm Thickness: 4 mm
Washer (approx. 0.05 bar pressure change-ment)	Diameter: 25 mm Thickness: 0.5 mm

Basic setting of the predominance is 0.4 bar.

– Remove retaining ring from exhaust of the device.

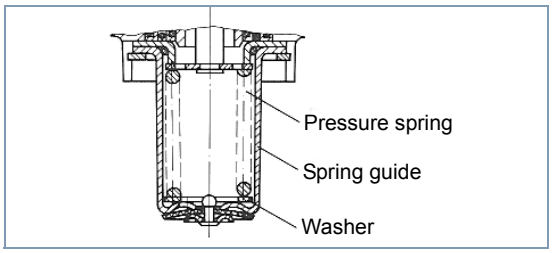


Fig. 8 Position of the washer

– Adjust pressure P6 on a max. predominance of max. 1.1 bar by inserting washers (see fig. 8) .

↖ Gauge 4 must follow gauge 3 immediately.

7.3 Distance until venting of P5/P6

– Operate lever with H3.

i Pressure must increase immediately.

↖ Gauge 3 must indicate P5.
Gauge 4 must indicate P6.

7.4 Distance until venting of P7/P8

– Operate lever with H4.

i Pressure must increase immediately.

↖ Gauge 3 must indicate P7.
Gauge 4 must indicate P8.

7.5 Distance until venting of P2

– Operate lever H1 (stop within the device).

i Pressure must increase immediately.

↖ Gauges 3 and 4 must indicate P2.

– Re-adjust lever to 0 mm.

↖ Gauges 3 and 4 must indicate 0 bar.

8. Failure of circuit 1

– Vent port 11 to 0 bar.

↖ Gauge 1 must indicate 0 bar.

– Operate lever with H1.

↖ Gauge 3 must indicate 0 bar.
Gauge 4 must indicate P2.

– Re-adjust lever to 0 mm.

↖ Gauges 3 and 4 must indicate 0 bar.

9. Completion of test

– Vent port 12 to 0 bar.

↖ Gauges 1 and 2 must indicate 0 bar.

⚠ ***CAUTION***

Do not disconnect the hose connections until you have vented the device to 0 bar.

– Removing device from fixture.

– Clean device.