

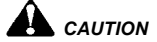
Test instruction

Symbols and Signal Words



WARNING

Potential hazard situations that can cause serious personal injury or death if the safety warning is not observed.



CAUTION

Potential hazard situations that can cause minor or moderate personal injury if the safety warning is not observed.

– Handling

• List

i Note(s), explanation(s) and information which you must take into consideration

i Carefully read through all the safety information before starting the testing.

Safety instructions



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.

Undo the screw plugs, hoses and equipment parts only when the respective lines have been vented.

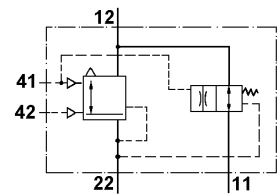
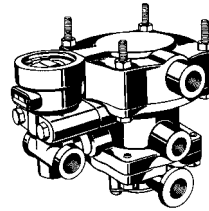



Fig. 1 Trailer Control Valve 973 002 ... 0 / functional symbol

Test instruction for device 973 002 ... 0

	620
	621
	690

Equipment/tools required

- Test bench 435 197 000 0 or adequate testing equipment (see fig. 3)
- Rake angle (with fixing nuts M8 (2x) for devices), see the adjacent diagram 
- T-piece for connecting to A12, A22 and the container
- Cross slot screw driver PH2 with at least 120 mm blade length
- Soapsuds and brush

Additional documents required

- i** The documents are available on the WABCO homepage <http://www.wabco-auto.com> - simply enter the product or document number in INFORM.
- Test Bench 435 197 000 0 - Operating Instructions
- General Repair and Test Information
 - 815 010 109 3 en
 - 815 020 109 3 de
 - 815 030 109 3 fr
 - 815 040 109 3 es
 - 815 050 109 3 it

Testing

! WARNING

Do not install a repaired device in the vehicle unless it has passed the following tests.

1 External inspection

- Inspect the device for external visible damage.
- Visually inspect all the device's ports for blockages.

2 Preparations

i Test bench

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

The output side of pressure regulator D must be unpressurised.

Shut-off cocks	A	B	C	F	L	V	2	3	4	6	7	11	12	21	22
open	x		x	x									x		x
closed		x				x	x	x	x	x	x			x	x

Table 1: Normal position of stopcocks on the test bench

i If you do not have test bench 435 197 000 0 you must test the device according to the following diagram (see fig. 3).

Never directly clamp the device in the vice. This could damage the device.

- Fix the rake angle on the device and clamp into the bench vice.
- Connect the device to the test bench ports (see fig. 2) or according to the test diagram.

i Test bench

Set pressure regulator D to 8 bar.

! CAUTION

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

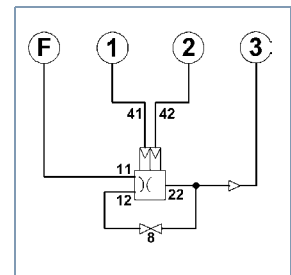


Fig. 2 Test bench connection diagram

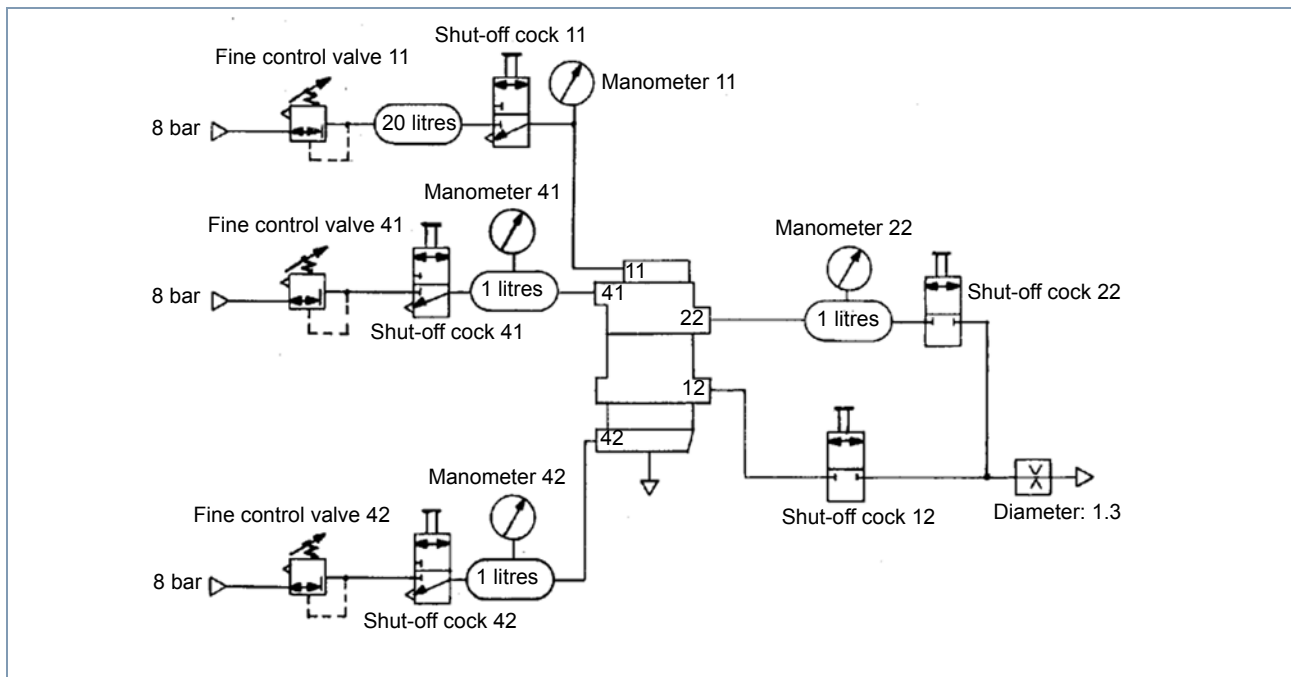




Fig. 3 Test diagram

i Perform the following test sequence in the specified order.
Default value V and test value P see tables 3 and 4.

i If test values do not fit, the device must be re-adjusted.
Reservoir pressure is 8 bar max.

Test step	Manometer (M)				Comment
	Default value			Test value	
	M11 bar	M41 bar	M42 bar	M22 bar	
3 Leak test					
Fine control valve 11: Increase pressure slowly.	8	0	0	0	
Loosen and twist off the hose connection at device connection 42. Wet the device connection 42 and device venting with soapsuds and test for leaks. Reconnect the hose connection.	8	0	0	-	Permissible leakage: 8 cm ³ /min  WARNING Never install a leaking trailer control valve on the vehicle.
4 Functional test					
Shut-off cock 41: Open the pass.	8	0	0	0	
Fine control valve 41: Increase and lower the pressure rapidly twice.	8	0...8	0	0...8	M22 (Test bench: M3) must display an immediate rise or drop in pressure.
	8	8...0	0	8...0	
Fine control valve 41: Increase pressure slowly.	8	>0...≤0.3	0	> 0	Pressure display on M22 (Test bench: M3).
	8	V1	0	P1	Set the value on M22 (Test bench: M3) using an adjusting screw 891 200 700 2, a venting piece must be mounted for this purpose.
Pressure progression test (upwards)	8	V2	0	P2	
Fine control valve 41: Increase the pressure slowly until a change is recognised on M22 (Test bench: M3). Stop the pressure increase at this point and test M22 (Test bench: M3).	8	-	0	pressure stage max. 0.3 bar in comparison to the value in the line before.	

Test step	Manometer (M)				Comment
	Default value			Test value	
	M11 bar	M41 bar	M42 bar	M22 bar	
Fine control valve 41: Increase pressure slowly.	8	V3	0	P3	
Pressure progression test (upwards) Fine control valve 41: Increase pressure slowly.	8	V4	0	-	Start with the pressure fall on M22 (Test bench: M3).
	8	V5	0	P5	
Increase the pressure slowly until a change is recognised on M22 (Test bench: M3). Stop the pressure increase at this point and test M22 (Test bench: M3).	8	-	0	pressure stage max. 0.3 bar in comparison to the value in the line before.	
Fine control valve 41: Carry on decreasing the pressure slowly.	8	0	0	0...0,1	Residual pressure
Shut-off cock 42: Open the pass.	8	0	0	-	
Fine control valve 42: Increase pressure slowly.	8	0	0...1.4	> 0	Pressure display on M22 (Test bench: M3).
	8	0	8	P6	
Fine control valve 41: Increase pressure slowly.	8	8	8	-	
Check for leaks Wet flanges and device vent with soap suds.	8	8	8	-	Permissible leakage: 8 cm ³ /min  WARNING Never install a leaking trailer control valve on the vehicle.
Fine control valve 11, 41 and 42. Reduce the pressure.	0	0	0	-	
Fine control valve 41: Increase pressure.	0	5,5	0	0	For this purpose, loosen the pressure line from the connection 11 on the device. Pressure line from connection 42 to connection 11.


Test step	Manometer (M)				Comment
	Default value			Test value	
	M11 bar	M41 bar	M42 bar	M22 bar	
Fine control valve 11: Increase pressure	5.5	5.5	0	5.5	
Open stopcocks 12 and 22	-	5.5	0	-	
Fine control valve 41: Slowly increase the pressure on connection 41, until a drop in pressure of ≥ 0.2 bar takes place on M22 (Test bench: M3). Wait for this value on M22 (Test bench: M3), then check M41 (Test bench: M1).	-	6.9...7.5	0	-0.2	Pressure reduction M22 at least 0.2 bar in comparison to the value in the line before.
Fine control valves 11 and 41: Reduce the pressure. Shut-off cocks 12 and 22: Shut the pass. Shut-off cocks 11, 41 and 42: Open the vent.	0	0	0	0	 CAUTION <i>Do not disconnect the hose connections until you have vented the device to 0 bar.</i> Clean device and unclamp.

Table 2: Test steps

Default and test values

973 002 ... 0 Variant	V1	P1	V2	P2	V3	P3	V4	V5	P5	P6
620	2...3	M41+0.5±0.1	2...3	M41+0.5±0.1	7.3...7.7	8	≥6.8	3...2	M41+0.8±0.2	≥7.4
621	2...3	M41+1±0.1	2...3	M41+0.2	8	≥7.7	≥7.2	3...2	M41+0.8±0.2	≥7.4
690	2	2.3±0.1	2	2.3±0.1	8	6.8...7.4	≥7.2	3	3.2...3.9	6.7...7.3

Table 3 + 4: Default and test values