

Manual test kit TK 99D



The TK 99D test kit consists of a digital differential pressure gauge with connecting hoses and adapters. It enables measuring both the pre-pressure and the differential pressures. The TK 99D allows you to test

the backflow prevention devices BA 009, BA 909, BA BS and BA BM quickly and easily. This manual describes how to connect the digital test kit and how to perform the various tests.



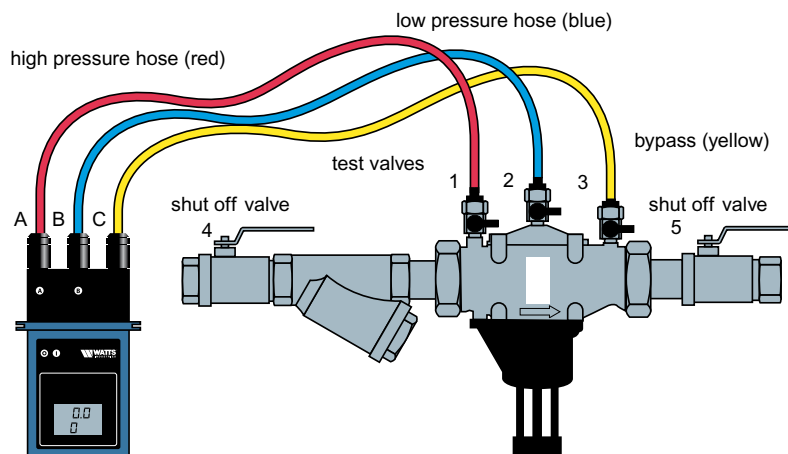
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Testing the BA backflow preventer with test kit TK99D

Description of the test kit

Before starting the test:

- Check if the BA device is not damaged, or if anything has been changed on the device so that it no longer complies with the EN1717.
- Check the safety class of the “dangerous” device behind the BA.
- Check if the device has been placed as a unit; this means with a strainer and 2 valves. If any valves are missing, the device cannot be tested.



Names on the testkit TK 99D

A-Gage = upstream pressure
A-B DIFF = pressure difference

Figure 1: BA BM DN15 up to DN50

Verify:

- if the supply of drinking-water may be interrupted.
 - when the device was last tested.
- Otherwise, check for contamination in the pipe or the test valves. This is to prevent having to repair the kit.

De-aerate the BA device if you have not already done so

1. Start by carefully opening test valve no. 3, so that the water starts to run slowly. This will cause the flow in the device.
 2. Carefully open test valve no 1 until a steady flow of water is released and then carefully close the valve.
 3. Next, do the same with test valve no. 2.
 4. Then, close test valve no. 3
- (With the BA 909 flanged: also de-aerate the relief valve through the shut off valve on top of the relief part).

Connecting the test kit

1. Connect the hoses to the test kit with the colours according to the drawing.
2. Attach the adapters to the test valves of the BA device.
3. Attach the red hose to test valve no. 1 of the BA device and ensure a leak-tight connection.
4. Next, attach the blue hose to test valve no. 2 of the BA device.

Do not yet connect the yellow hose to the BA device.

The BA device is now de-aerated.

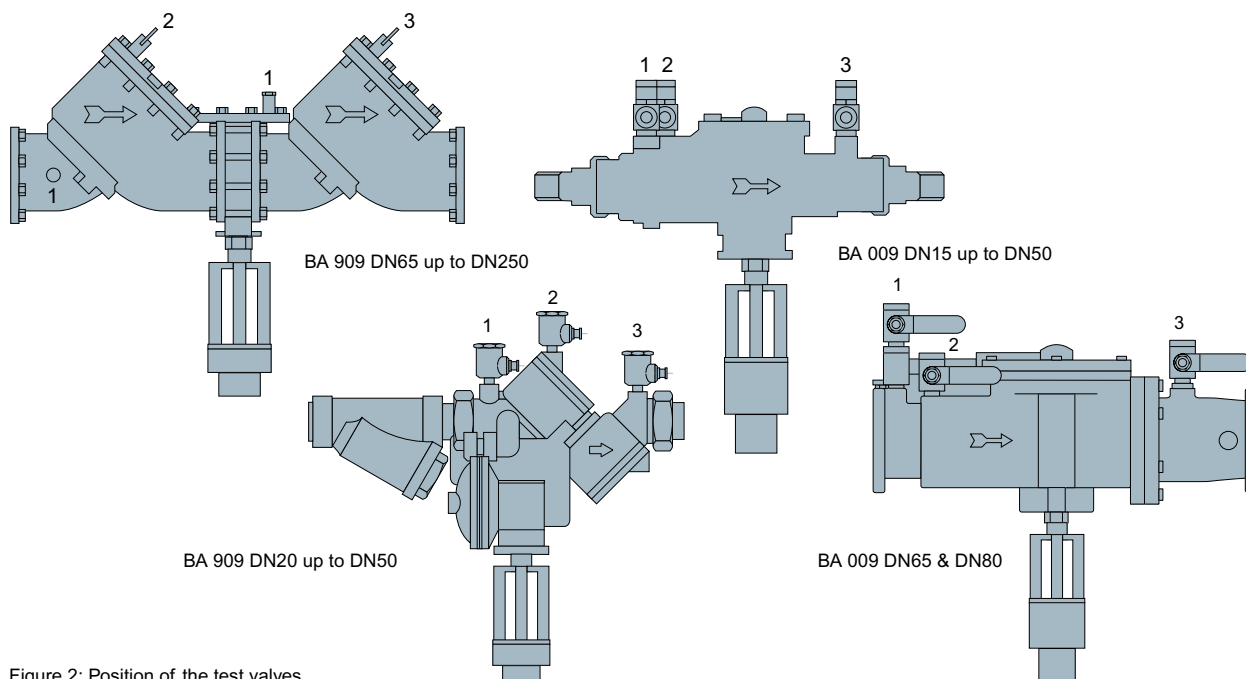


Figure 2: Position of the test valves

De-aeration of the Test kit

Initial situation: the needle valves are closed.

Test valves 1, 2 and 3 are closed. Shut off valve 4 is open and shut off valve 5 is closed.

1. Slowly open test valves 1 and 2.
2. Open needle valve C.
3. Open needle valve A to allow the water with air to flow away via the red hose through the test kit and the yellow by-pass hose. Close needle valve A on the test kit.
4. Open needle valve B, ensuring that the water with air can flow away via the blue hose through the test kit and the yellow hose.
5. Close needle valve C slowly until only a trickle of water runs from the yellow hose.
6. Open test valve 3 until it slightly flows over and connect the yellow hose to test valve 3, while water flows from both, and open the test valve completely (so-called wet connection preventing air being trapped in the test kit).
7. Slightly open the connection to test valve 2 and then close it again. This is to compensate for unwanted impression of the seat.
8. Close needle valves B and C.
9. Switch on the test kit.

The test kit is now ready to perform the test.

1. Testing shut off valve 5

Aim: to test the leak-tightness of valve 5. It must be fully closed in order to perform tests no. 2, 3, 4 and 5 accurately.

Initial situation: The needle valves are closed. Test valves 1, 2 and 3 are open. Shut off valve 4 is open and shut off valve 5 is closed.

1. Close test valve 1.
2. Open needle valves A and C (Value A-Gage and A-B DIFF will slightly drop).
3. Open a tap behind shut off valve 5, allowing the water to flow downstream.

If the measured difference in pressure A-B DIFF remains constant, this means that shut off valve 5 closes tightly. If the difference in pressure A-B DIFF drops, this means that the water (pressure A) in the red hose can flow away via the yellow hose through a leaking shut off valve 5.

2. Testing the leak-tightness of the 1st non-return valve

Aim: to check whether the 1st check valve is closed under all differential pressures.

Initial situation: The needle valves are closed. Test valves 1 and 2 are open and 3 is closed. Shut off valve 4 is open and shut off valve 5 is closed.

If the indicated pressure A-Gage and differential pressure A-B DIFF remain constant, we may assume that the 1st check valve is leak-tight.

If the differential pressure on the 1st non-return valve is constant but low (< 4 kPa), the 1st check valve or the relief valve may be slightly contaminated. In the event of fluctuation in the upstream pressure, this may result in a regular discharge of the device.

3. Testing the relief valve

Aim: To check if the relief valve opens when the

pressure in the intermediate chamber is still at least 14 kPa lower than the upstream pressure.

Initial situation: The needles valves are closed. Test valves 1 and 2 are open and 3 is closed. Shut off valve 4 is open and shut off valve 5 is closed.

1. Slowly open needle valve A.
2. Open needle valve B no more than ¼ turn. Allow the differential pressure A-B DIFF to slowly drop until the water starts to leak from the relief opening.
3. As soon as the water starts to leak, check the gauge and note down the value. This is the differential pressure at which the relief valve opens. This should be at least 14 kPa.
4. Close the needle valves on the test kit.

4. Checking the leak-tightness of the 2nd check valve

Aim: To check whether this non-return valve fully closes under all differential pressures.

Initial situation: The needle valves are closed. Test valves 1, 2 and 3 are open. Shut off valve 4 is open and shut off valve 5 is closed.

1. Close test valve 1.
2. Open needle valves A and C.
If the values with A-Gage and A-B DIFF remain constant, the 2nd check valve is leak-tight. If A-Gage and A-B DIFF drop, this means that the water from the red hose will flow back to the intermediate chamber via the yellow hose and the leaking 2nd check valve.
3. Close the needle valves on the test kit.

5. Measuring the differential pressure on the 2nd non-return valve (=optional)

Initial situation: The needle valves are closed. Shut off valve 4 is open and shut off valve 5 is closed.

1. Close all the test valves on the BA device and disconnect all hoses.
2. Connect the red hose to test valve 2 of the BA device.
3. Connect the blue hose to test valve 3.
4. Slowly open test valves 2 and 3.
5. Open needle valve C.
6. Open needle valve A to allow the water with air to flow away via the red hose through the test kit and the yellow by-pass hose. Connect needle valve A to the kit.
7. Open needle valve B to allow the water with air to flow away via the blue hose through the test kit and the yellow hose.
8. Close needle valve B.
9. Check the differential pressure value A-B DIFF and note down the differential pressure over the 2nd check valve. The difference in pressure over the 2nd check valve with a BA 009/909 is +/- 2 – 2.5 kPa. The difference in pressure with a BA BM is +/- 0.05 – 0.1 kPa.

Finishing the testing of the BA device

The BA device has now been tested.

- Close all test valves on the BA device.
- Open all needle valves on the test kit.
- Disconnect the hoses of the BA device and discharge the water from the test kit to prevent possible freezing in the winter.
- Do not forget to remove the adapters.
- Open shut off valve 5 to return the flow in the system.

Product range Watts Industries

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