

# Test Equipment

For field testing of reduced pressure principle backflow preventers and double check valve assemblies, a differential pressure test gauge is utilized having a 0 to 15 psi range and a working pressure of 500 psi. Appropriate length of hoses with necessary fittings accompany the test gauge. Several manufactured test kits are commercially available that incorporate the differential gauge, hoses, and fittings and are packaged for ease of portability and come with protective enclosures or straps for hanging. Calibrated water columns are commercially available that are portable and come with carrying cases.

It is important that all test equipment be periodically checked for calibration.

## Pressure Vacuum Breaker (Figure 38)

Field testing of a pressure vacuum breaker involves testing both the internal spring loaded soft seated check valve as well as testing the spring loaded air inlet valve. The testing must be performed with the device pressurized and the air inlet closed. The number 2 shut-off valve must also be closed and the air inlet valve canopy removed.

### Method 1

Using a differential pressure gauge

**Test 1** Test the internal check valve for tightness of 1 psid in the direction of flow.

1. With the valve body under pressure, (number 2 shut-off valve closed and number 1 shut-off valve open) bleed test cocks number 1 and number 2.
2. Hook up the high pressure hose to number 1 test cock and the low pressure hose to number 2 test cock.

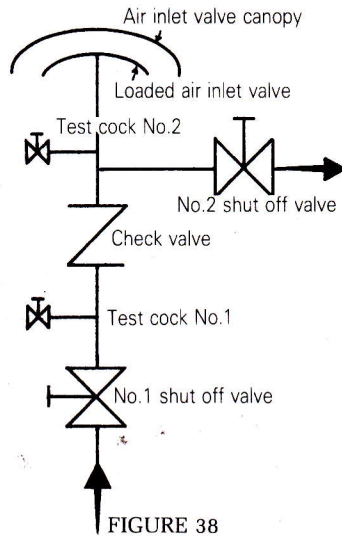


FIGURE 38

3. Bleed the high pressure hose, and low pressure hose, in that order, and close the test kit needle valves slowly.
4. Record the differential pressure on the gauge. A reading of 1 psid is acceptable to insure a tight check valve.

**Test 2** Test the air inlet valve for a breakaway of 1 psi.

1. Connect the high pressure hose to test cock number 2, and bleed the high pressure hose.
2. Shut off number 1 shut-off valve.
3. Slowly open the bleed valve of the test kit, and observe and record the psi when the air inlet poppet opens. This should be a minimum of 1 psi. Restore the valve to normal service.

### Method 2

Using a water column sight tube and 90 degree elbow fitting with bleed needle

**Test 1** Test the internal check valve for tightness of 1 psid in the direction of flow.

1. Assemble sight tube to test cock number 1. Open test cock and fill the tube to a minimum of 36 inches of water height.
2. Close number 1 shut-off valve.
3. Open test cock number 2. The air inlet valve should open and discharge water through number 2 test cock.
4. Open number 1 test cock. The sight tube level of water should drop slowly until it stabilizes. This point should be a minimum of 28 inches of water column which equals 1 psi.

**Test 2** Test the air inlet valve for a breakaway of 1 psi.

1. Assemble sight tube to test cock number 2. Open test cock number 2 and fill the tube to a minimum of 36 inches of water height.
2. Close number 1 shut-off valve.
3. Bleed water slowly from the number 2 test cock bleed needle and observe the water column height as it drops.
4. At the point when the air inlet valve pops open, record the height of the water column. This point should be a minimum of 28 inches of water column which equals 1 psi.

Restore the valve to normal service.

## Reduced Pressure Principle Backflow Preventer (Figure 39)

(Figure 39)

Field testing of a reduced pressure principle backflow preventer is accomplished utilizing a differential pressure gauge. The device is tested for three optional characteristics: i.e., (1) the first check valve is tight and maintains a minimum of 5 psi differential pressure, (2) the second check valve tight against backpressure and (3) the relief valve opens at a minimum of 2 psi below inlet supply pressure. Testing is performed as follows:

**Step 1** Test to insure that the first check valve is tight and maintains a minimum pressure of 5 psi differential pressure.

1. Verify that number 1 shut-off valve is open. Close number 2 shut-off valve. If there is no drainage from the relief valve it is assumed that the first check is tight.
2. Close all test kit valves.
3. Connect the high pressure hose to test cock number 2.
4. Connect the low pressure hose to test cock number 3.
5. Open test cocks number 2 and number 3.
6. Open high side bleed needle valve on test kit bleeding the air from the high hose. Close the high side bleed needle valve.
7. Open the low side bleed needle valve on test kit bleeding air from the low hose. Close the low side bleed needle valve. Record the differential gauge pressure. It should be a minimum of 5 psi.