

Reduced Pressure Principle Assembly

3 Valve Procedure

A. Initial Setup

1. Flush test cocks by:
 - a. opening test cock #4 to establish flow through the unit. (Leave this test cock open until others are flushed)
 - b. open test cock #1, flush and close
 - c. open test cock #2, flush and close
 - d. open test cock #3, flush and close
 - e. close test cock #4
2. Install test kit adapters into the test cocks.
3. All test kit valves should be in CLOSED position before connecting the test kit
4. Connect high side hose of the test kit to test cock #2
5. Connect low side hose of the test kit to test cock #3
6. Open test cock #3
7. Open the low side valve and the bypass valve to purge air from the test kit.
8. Open test cock #2 **SLOWLY** (If this test cock is opened too quickly, it may cause the relief valve to open. To achieve accurate test measurements, it is important NOT to open the relief valve until the appropriate time)
9. Open the high side valve to purge air from the test kit.
10. Close the high side valve.
11. After the gauge reaches the upper end of the scale, close the low side valve and the bypass valve.
12. Close shutoff valve #2.
 - a. If the relief valve begins to discharge when closing the shutoff valve, end the test at this point, complete the test report indicating a failed assembly and that check valve #1 is leaking.

Response:

Observe the gauge reading.

NOTE: The reading on the test kit reflects the APPARANT static drop across check valve #1 (setup pressure). DO NOT record this number at this time. This number can not be correctly determined until other unit functions have been evaluated. The test kit and unit are now ready to begin the test.

- If the gauge stabilizes at point above the relief valve opening point, proceed to Section B.
- If the pressure drops to relief valve opening point, end the test at this point, complete the test report indicating a failed assembly.

B. Evaluate the Opening Point of the Relief Valve

Purpose: To determine that the relief valve is opening when the pressure in the zone is less than 2 psi of supply pressure and holding tight in other conditions.

1. Open the high side valve one turn.
2. Open the low side valve **SLOWLY!** Stop opening the valve when the gauge begins to drop. (The low side valve should not require opening more than one-quarter turn to exercise the relief valve. If it does require opening more than one-quarter turn, then it is possible that the

- shutoff valve #2 is leaking. Or, if the relief valve does not open, it may be stuck or the pressure passage may be clogged)
3. As the gauge drops, observe the relief valve discharge opening. When water begins to drip from the discharge opening, record the reading on the gauge. This reading is the relief valve opening point.
 4. Close the low side valve.

Response:

- If the relief valve opened before the gauge drops to 2 psi, record the opening point on the test report and proceed to Section C.
- If the relief valve opened at a pressure less than 2 psi or did not open, end the test at this point, complete the test report indicating a failed assembly.

C. Test #2 Check For Leakage Against Backpressure

Purpose:To determine that check valve #2 is holding tight in backpressure conditions.

1. Open the bypass valve to purge air from the bypass line. Then close.
2. Connect the bypass hose to test cock #4, then open test cock #4.
3. Loosen the low side hose connection at test cock #3 allowing leakage to reestablish setup pressure in the zone between the two checks.
4. Tighten the low side hose connection.
5. Open the bypass valve. (This will allow supply pressure to be routed to the zone between check valve #2 and shutoff valve #2).
6. Observe the gauge reading.
 - a. No movement in the gauge indicates that check valve #2 is holding tight against backpressure.
 - b. A slight drop in gauge pressure, then stability above the relief valve opening point, indicates check valve #2 disc compression. But the check valve is holding tight.
 - c. A drop in gauge pressure to relief valve opening point indicates a leaking check valve #2.

Response:

- If the check valve is holding tight, record this on the test report and proceed to Section D.
- If the check valve is NOT holding tight, end the test at this point, complete the test report indicating a failed assembly and a leaking check valve #2.

D. Evaluate the Drop Across #1 Check in Direction of Flow

Purpose: To determine that the static pressure drop across check valve #1 is 3 psi greater than the opening of the relief valve. (A reading less than 3 psi is does not mean that the unit is inadequate protection against backflow but does indicate that “spitting” may occur from the relief valve during line pressure fluctuations.)

1. Loosen the low side hose connection at test cock #3 allowing leakage to reestablish setup pressure in the zone between the two checks.
2. Tighten the low side hose connection.

Response:

- Observe the gauge reading.

- a. A stable gauge pressure reading 3 psi above the relief valve opening point indicates that check valve #1 is holding tight with an adequate pressure differential to minimize spitting. Record this on the test report and proceed to Part E.
- b. If the gauge pressure drops to relief valve opening point, end the test at this point, complete the test report indicating a failed assembly and a leaking check valve #1.

E. Test the #2 Shutoff Valve for Leakage

Purpose: To determine that shutoff valve #2 is holding tight.

1. Close test cock #2.

Response:

- No movement in the gauge indicates that shutoff valve #2 is holding tight. Record this on the test report.
 - A drop in gauge pressure indicates that shutoff valve #2 is leaking. Record this on the test report, make the owner aware that repair **MUST** occur.
2. Close all test cocks. Disconnect all hoses. Close the high side and bypass valve. Proceed to Section F.

F. Evaluate the Drop Across #2 Check in Direction of Flow

Purpose: To determine that the pressure drop across check valve #2 is greater than 1 psi.

1. Connect high side hose of the test kit to test cock #3
2. Connect low side hose of the test kit to test cock #4
3. Open test cock #4
4. Open test cock #3
5. Open the low side valve and the bypass valve to purge air from the test kit.
6. Open the high side valve to purge air from the test kit.
7. Close the high side valve.
8. Close the low side valve and the bypass valve.

Response:

- Observe the gauge reading.
 - a. A stable gauge pressure reading 1 psi or above indicates that check valve #2 is holding tight.
 - b. If the pressure drops below 1 psi, complete the test report indicating that repairs **MUST** be made to check valve #2.
9. Close all test cocks, disconnect all hoses, open shutoff valve #2, remove fittings and drain test kit.

Double Check Valve Assembly Test Procedure

3 Valve

A. Initial Setup

1. Flush test cocks by:
 - a. opening test cock #4 to establish flow through the unit. (Leave this test cock open until others are flushed)
 - b. open test cock #1, flush and close
 - c. open test cock #2, flush and close
 - d. open test cock #3, flush and close
 - e. close test cock #4
2. If not already in place, install test kit adapters into the test cocks
3. All test kit valves should be in CLOSED position before connecting the test kit
4. Connect high side hose of the test kit to test cock #2
5. Connect low side hose of the test kit to test cock #3
6. Open test cock #3
7. Open the low side valve and the bypass valve to purge air from the test kit
8. Open test cock #2
9. Open the high side valve to purge air from the test kit
10. Close the high side valve
11. After the gauge reaches the upper end of the scale, close the low side valve. The reading on the gauge is the "setup pressure".
12. Close shutoff valve #2. The test kit and unit are now ready to begin the test

B. Test #2 Check For Leakage Against Backpressure

Purpose: To determine that check valve #2 is holding tight in backpressure conditions.

1. Open the high side valve to purge air from the bypass line. Then close.
2. Connect the bypass hose to test cock #4, then open test cock #4.
3. Loosen the low side hose connection at test cock #3 allowing leakage to reestablish setup pressure in the zone between the two checks.
4. Tighten the low side hose connection.
5. Open the high side valve. (This will allow supply pressure to be routed to the zone between check valve #2 and shutoff valve #2).
6. Observe the gauge reading.
 - a. No movement in the gauge indicates that check valve #2 is holding tight against backpressure.
 - b. A slight drop in gauge pressure, then stability, indicates check valve #2 disc compression. But the check valve is holding tight.
 - c. A constant drop in gauge pressure to 0 psi indicates a leaking check valve #2.

Response:

- If the check valve is holding tight, record this on the test report and proceed to Section D.
- If the check valve is NOT holding tight, end the test at this point, complete the test report indicating a failed assembly and a leaking check valve #2.

C. Evaluate the Drop Across #1 Check in Direction of Flow

Purpose: To determine that the static pressure drop across check valve #1 is 1 psi or greater.

1. Loosen the low side hose connection to reestablish pressure in the zone between the checks and then tighten.

Response:

- Observe the gauge reading.
 - a. A stable gauge pressure reading 1 psi or greater indicates that check valve #1 is holding tight with an adequate pressure differential. Record this on the test report.
 - b. If the gauge pressure drops below 1 psi, end the test at this point, complete the test report indicating a failed assembly.

D. Test the #2 Shutoff Valve for Leakage

Purpose: To determine that shutoff valve #2 is holding tight.

1. Close test cock #2.
 - a. No movement in the gauge indicates that shutoff valve #2 is holding tight.
 - b. A drop in gauge pressure indicates that shutoff valve #2 is leaking.

Response:

- If the shutoff valve holds tight, record this on the test report.
 - If the shutoff valve leaks, record this on the test report, make the owner aware that repair **MUST** occur.
2. Close all test cocks, disconnect all hoses, close all test kit valves.

E. Evaluate the Drop Across #2 Check in Direction of Flow

Purpose: To determine that the pressure drop across check valve #2 is greater than 1 psi.

1. Connect high side hose of the test kit to test cock #3
2. Connect low side hose of the test kit to test cock #4
3. Open test cock #4
4. Open test cock #3
5. Open the low side valve and the bypass valve to purge air from the test kit.
6. Open the high side valve to purge air from the test kit.
7. Close the high side valve.
8. Close the low side valve.

Response:

- Observe the gauge reading.
 - a. A stable gauge pressure reading 1 psi or above indicates that check valve #2 is holding tight with an adequate pressure differential. Record this on the test report form.
 - b. If the pressure drops below 1 psi, complete the test report indicating that repairs **MUST** be made to check valve #2.

9. Open shutoff valve #2, close all test cocks, disconnect all hoses, remove fittings and drain test kit.