

Reduced Pressure Principal Assembly Test Procedures
(For use with five-valve equipment) Rev. January 2,2020

Preparation	Notify customer Inspect area Flush testcocks (open #4, #3, #2, #1, then close #1, #2, #3, and #4) Install fittings Inspect test kit - close all needle valves
Observe CV #1	Attach high hose to testcock #2 Attach low hose to testcock #3 Open testcock #3 slowly then open low-pressure bleed valve Open testcock #2 slowly then open high-pressure bleed valve Close high-pressure bleed valve Close low-pressure bleed valve (1) Close #2 shut-off valve, record line pressure Observe check valve #1 (5.0 psid. or greater to continue)
Record Relief Value	Open high control valve two full turns Open low control valve slowly (no more than ¼ turn) (2) Record relief valve opening (2.0 psid. or greater to pass) Close low control valve only
Record CV #2 Leaks Or Closed Tight	Bleed bypass hose by opening bypass valve Loosely attach bypass hose to testcock #4 Close bypass valve Tighten bypass hose to testcock #4 open testcock #4 Reset gauge (open and close low-pressure bleed valve) Open bypass valve two full turns Observe whether relief valve drips (3) Record status of check valve #2 as (closed tight or leaking)
Record #2 Shut-Off Valve	Close testcock #2 observe gauge (4) Record #2 shut-off valve as (closed tight or leaking) Close bypass valve.
Record CV #1	Open testcock #2, Reset gauge (open and close low-pressure bleed valve) (5) Record status of check valve #1 (closed tight or leaked) (6) Record value of check valve #1 (5.0 psid. or greater to pass) (7) Record buffer value (cv#1 – rv = 3.0 psid. or greater to pass) Close testcocks #2, #3 and #4 and remove hoses
Record CV #2	Move low hose to testcock #4 Move high hose to testcock #3 Open testcock #4 slowly then open low-pressure bleed valve Open testcock #3 slowly then open high-pressure bleed valve Close high-pressure bleed valve Close low-pressure bleed valve (8) Record value of check valve #2 (1.0 psid. or greater to pass)
Final	Close testcocks #3 and #4, remove all equipment Open #2 shut-off valve slowly

Reduced Pressure Principal Assembly

Trouble Shooting

NOTE: Flushing and/or cleaning the internal components can correct many problems. Carefully observe condition of components.

PROBLEM	MAY BE CAUSED BY
Relief valve discharges continuously	1. Faulty check valve #1 2. Faulty check valve #2 with back-pressure condition 3. Faulty relief valve
Relief valve discharges intermittently	1. Properly working assembly with back-siphonage condition 2. 1st check valve "buffer" is too small (less than 3.0 psi), with line pressure fluctuation 3. Water hammer
Relief valve discharges after no. 2 shut-off valve is shut. (observe CV #1 test)	1. Normally indicates faulty check valve #1 a. dirty or damaged disk b. dirty or damaged seat
Relief valve would not open, differential on the gage would not drop (relief valve test)	1. Leaky #2 shut-off valve with flow through the assembly
Relief valve would not open, differential drops to zero (relief valve test)	1. Relief valve stuck closed due to corrosion or scale 2. Relief valve sensing line (s) plugged
Relief valve opens too high (with sufficiently high 1st check reading)	1. Faulty relief valve a. dirty or damaged RV disk b. dirty or damaged RV seat
1st check reading too low (less than 3.0 psi "buffer") (observe CV #1 test, & Relief valve test)	1. Dirty or damaged CV #1 disk 2. Dirty or damaged CV #1 seat 3. Guide members hanging up 4. Weak or broken CV #1 spring
Leaky 2nd check valve (CV #2 back-pressure test) 2nd check valve reading too low (CV #2 differential test)	1. Dirty or damaged CV #2 disk 2. Dirty or damaged CV #2 seat 3. Guide members hanging up 4. Weak or broken CV #2 spring

Repair note: Lubricants shall only be used to assist with the re-assembly of components, and shall be USDA approved and non-toxic.

Double Check Valve Assembly Test Procedures
(For use with five-valve equipment) Rev. February 26, 2010

Preparation

- Notify customer
- Inspect area
- Flush testcocks
- Install fittings
- Inspect test kit - close all needle valves

Note: Test gauge and hoses must be at same level

CV #1 Test

- Install vertical tube on testcock #3
- Install compensating tee on testcock #2
- Attach high hose to compensating tee installed on testcock #2
- Open testcock #2 **slowly**
- Open high-pressure bleed valve then close high-pressure bleed valve
- Open testcock #3 to fill vertical tube
- Close testcock #3
- Close #2 shut-off valve
- (1) Record line pressure
- Close #1 shut-off valve
- Open testcock #3
- (2) Record status of check valve #1 (closed tight or leaking)
- (3) Record value of check valve #1 (1.0 psid. or greater to pass)
- Close testcock #2 and testcock #3
- Open #1 shut-off valve to re-pressurize the assembly

CV #2 Test

- Move vertical tube from testcock #3 to testcock #4
- Move high hose and compensating tee from testcock #2 to testcock #3
- Open testcock #3 **slowly**
- Open high-pressure bleed valve then close high-pressure bleed valve
- Open testcock #4 to fill vertical tube
- Close testcock #4
- Close #1 shut-off valve
- Open testcock #4
- (4) Record status of check valve #2 as (closed tight or leaking)
- (5) Record value of check valve #2 (1.0 psid. or greater to pass)

Record Shut-Off Valves

- (6)(7) Record #1 & #2 shut-off valve as (closed tight or leaking)

Final

- Close testcocks #3 and #4, remove all test equipment
- Open #1 shut-off valve
- Open #2 shut-off valve slowly**

Double Check Valve Assembly

Trouble Shooting

With compensating tee arrangement attached to high hose any time water continues to run out of the vertical sight tube you must observe and note gauge reading and prepare to operate the compensating tee in efforts to reduce the flow out of the sight tube to a sight drip.

NOTE: Flushing and/or cleaning the internal components can correct many problems. Carefully observe condition of components.

PROBLEM	MAY BE CAUSED BY
During CV #1 test, water stops running out of vertical tube and gauge drops to 0.0 psid. <i>(Leaking CV #1 fix and retest)</i>	1. Dirty or damaged CV #1 disk 2. Dirty or damaged CV #1 seat 3. Guide members hanging up 4. Weak or broken CV #1 spring
During CV #1 test, water continues running out of vertical tube after compensating tee runs out of water. <i>(Take observed reading and record CV #1)</i>	1. Leaking CV #2 and leaking #2 shut-off valve with backpressure
During CV #1 test, water continues running out of vertical tube and it <u>can</u> be controlled to a slight drip <i>(Record Check Valve #1)</i>	1. Slightly damaged #1 shut-off valve
During CV #1 test, water continues running out of vertical tube and it <u>cannot</u> be controlled to a slight drip <i>(stop test, resolve problem w/valve and retest)</i>	1. Severely damaged #1 shut-off valve
During CV #1 test, water stops running out of vertical tube and starts to recede into the tube <i>(Lower equipment to centerline of assembly and record CV #1)</i>	1. Leaking CV #2 and slightly damaged #2 shut-off valve with flow to customer
During CV #2 test, water stops running out of vertical tube and gauge drops to 0.0 psid. <i>(Leaking CV #2 fix and retest)</i>	1. Dirty or damaged CV #2 disk 2. Dirty or damaged CV #2 seat 3. Guide members hanging up 4. Weak or broken CV #2 spring
During CV #2 test, water continues running out of vertical tube and it <u>can</u> be controlled to a slight drip <i>(Record Check Valve #2)</i>	1. Slightly damaged #1 shut-off valve
During CV #2 test, water continues running out of vertical tube after compensating tee runs out of water. <i>(Take observed reading and record CV #2)</i>	1. Leaking #2 shut-off valve with backpressure
During CV #2 test, water stops running out of vertical tube and starts to recede into the tube <i>(Lower equipment to centerline of assembly and record CV #2)</i>	1. Leaking #2 shut-off valve with flow to customer

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Pressure Vacuum Breaker Assembly Test Procedures
(For use with five-valve equipment) Rev. February 26, 2010

Preparation

Notify customer
Inspect area
Flush testcocks
Install fittings
Remove air inlet valve canopy
Inspect test kit - close all needle valves

Note: **Make sure** that all hoses and gauge are at the same level as the Pressure Vacuum Breaker
Do not have test kit attached to backflow prevention assembly when opening #1 shut-off valve

Air Inlet Test

Attach high hose to testcock #2
Open testcock #2 **slowly**
Open high-pressure bleed valve then close high-pressure bleed valve
Close #2 shut-off valve, then close #1 shut-off valve
Slowly open high-pressure bleed valve (no more than ¼ turn) until air inlet valve opens
(1) Record value of air inlet valve (1.0 psid. or greater to pass)
Close testcock #2 then remove high hose from testcock #2
Close high-pressure bleed valve
Open #1 shut-off valve to re-pressurize the assembly

Check Valve Test

Attach high hose to testcock #1
Open testcock #1 **slowly**
Open high-pressure bleed valve then close high-pressure bleed valve
(2) Record line pressure
Close #1 shut-off valve
Open testcock #2 until water drains out of the body
(3) Record value of check valve (1.0 psid. or greater to pass)

Record #1 Shut-Off Valve

(4) Record #1 shut-off valve as (closed tight or leaking)

Final

Close testcocks #1 and #2, remove all test equipment
Open #1 shut-off valve
Open #2 shut-off valve slowly
Replace air inlet valve canopy

Pressure Vacuum Breaker

Trouble Shooting

NOTE: Flushing and/or cleaning the internal components can correct many problems. Carefully observe condition of components.

PROBLEM	MAY BE CAUSED BY
Air inlet valve does not open, as gauge drops to 0.0 psid.	1. Air inlet disk stuck to seat 2. Broken or missing air inlet spring 3. "Old Style" pressure vacuum breaker (non-loaded air inlet valve)
Air inlet valve does not open, and differential on gauge will not drop	1. Leaky #1 shut-off valve 2. Parallel installation with leaky #2 shut-off valve
Air inlet opens below 1.0 psid.	1. Dirty or damage air inlet disk 2. Scale build up on seat
Check valve below 1.0 psid.	1. Dirty or damaged check disk 2. Damaged seat 3. Weak or broken spring
Water runs continuously from test cock #2 (CV test)	1. Leaky #1 shut-off valve

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