Model 950 & 975

Double Check Valve Assembly
Reduced Pressure Principle Assembly (2 1/2",3", 4", 6", 8" & 10")

ZURN WILKINS

❑ Installation ❑ Testing ❑ Maintenance Instructions

INSTALLATION INSTRUCTIONS

CAUTION: Installation of Backflow Preventers must be performed by qualified, licensed personnel. The installer should be sure the proper device has been selected for the particular installation. Faulty installation could result in an improperly functioning device.

ZURN WILKINS Model 950 Double Check Valve assemblies are for use on water lines where a health hazard does not exist in the event of a backflow situation.

ZURN WILKINS Model 975 Reduced Pressure Principle assemblies are for use on water lines where a health hazard exists in the event of a backflow situation.

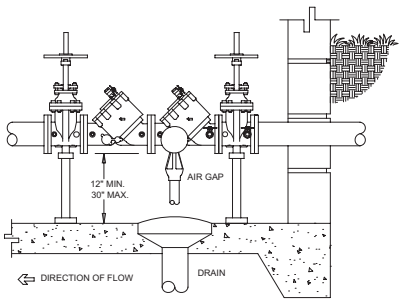
Damage to the device could result wherever water hammer and/or water thermal expansion could create excessive line pressure. Where this could occur, shock arrestors, check valves and/or pressure relief valves should be installed between the source of the water hammer or excess pressure and the device.

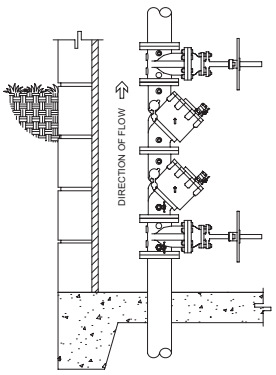
If installation is in a pit or vault, the Backflow Preventer must never be submerged in water because this could cause a cross-connection. Make sure that the pit or vault always remains dry by providing ample drainage. (Consult local codes.)

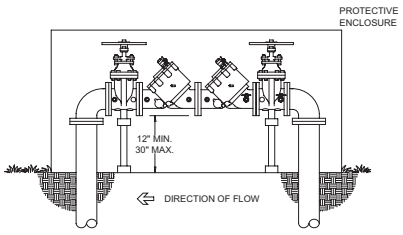
1. Before installing a Backflow Preventer, flush the line thoroughly to remove all debris, chips and other foreign matter. If required, a strainer should be placed upstream of the Backflow Preventer. **CAUTION:** Do not use a strainer in seldom used emergency waterlines such as fire lines.
2. Provide adequate space around the installed unit so that the test cocks will be accessible for testing and servicing.
3. Install valve at least 12 inches above surrounding flood level.
4. Always consult local codes for installation methods, approvals and guidance.

PLACING THE DEVICE IN SERVICE

1. Start with both shut-off valves closed. Slowly open the inlet shut-off valve until the backflow preventer is completely pressurized. With the Model 975, a brief discharge from the relief valve may occur while the device is pressurizing. The discharge should cease by the time the shut-off valve is fully open. Device should function properly. If the discharge does not stop, refer to "MAINTENANCE INSTRUCTIONS" for repair procedures.
2. After the device has been pressurized, vent all trapped air by slightly opening and closing each of the four test cocks.
3. Slowly open the downstream shut-off valve. The backflow preventer is now in service.
4. If spitting or intermittent discharges from the relief valve are noted, it could be a result of pressure fluctuation and/or a water hammer condition in the system. If such conditions exist, install water pressure reducing valves or water hammer shock arresters in compliance with industry standards as needed.
5. After the backflow preventer has been properly installed, test the device according to "TEST PROCEDURES" on page 2. If the device fails the test, remove the first and second check valves and thoroughly flush the device. If the relief valve fails to operate properly, inspect the sensing passage for clogging (see "MAINTENANCE INSTRUCTIONS"). Clean rubber seals of all debris and place unit back in service.







INDOOR INSTALLATION

Indoor installation is preferred in areas that are subject to freezing conditions. All the basic installation instructions apply to such installations. **CAUTION: An adequately sized drain is required to prevent possible water damage due to relief valve discharge.**

VERTICAL INSTALLATION

Vertical installation of double check valves is acceptable in applications where inlet and outlet piping are flowing vertically upwards. All the basic installation instructions apply to such installations. Consult factory for approval status.

OUTDOOR INSTALLATION

Backflow Preventers may be installed outdoors only if the device is protected against freezing conditions. Exposure to freezing conditions will result in improper function or damage to the device. The installation location must be kept above 32°F. All the basic installation instructions apply.

⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
⚠ **ADVERTENCIA:** Cáncer y daño reproductivo - www.P65Warnings.ca.gov
⚠ **AVERTISSEMENT:** Cancer et néfastes sur la reproduction - www.P65Warnings.ca.gov

WARNING: This product is NOT Lead Free in accordance with U.S. Federal Law and is illegal in the U.S. for use in potable services or to install in water systems anticipated for human consumption.

Testing Procedures

Model 950 Double Check Valve Assembly

Equipment Required: Differential pressure gauge test kit.

TEST NO. 1 - TIGHTNESS OF #1 CHECK VALVE

REQUIREMENT:

The static pressure drop across check valve #1 shall be at least 1.0 psid. If test cock #3 is not at the highest point of the check valve body, then a vertical tube must be installed on test cock #3 so that it rises to the top of the check valve body.

PROCEDURE:

1. Slowly open all 4 test cocks to remove any foreign material and attach fittings.
2. Attach hose from the high side of the test kit to the #2 test cock.
3. Open test cock #2 and bleed all air from the hose and gauge by opening the high side bleed needle valve. Close high side bleed needle valve. If a tube is attached to test cock #3, open test cock #3 to fill the tube. Close test cock #3. Close #2 shut-off valve then close the #1 shut-off valve.
4. Hold gauge at same level as test cock #3 or water level in tube. Slowly open test cock #3. Record the static pressure drop across check valve #1 after gauge reading stabilizes and water stops running out of test cock #3.
5. Close all test cocks, open shut-off valve #1 and remove test equipment.

Model 975 Reduced Pressure Principle Assembly

Equipment Required: Differential pressure gauge test kit.

TEST NO. 1 - RELIEF VALVE OPENING POINT

REQUIREMENT:

The differential pressure relief valve must operate to maintain the zone between the two check valves at least 2 psi less than the supply pressure.

PROCEDURE:

1. Flush water through test cocks #1, #2 (open #2 slowly), #3 and #4 by opening and closing each test cock one at a time, to eliminate foreign material.
2. Install appropriate fittings to test cocks. Attach hose from the high side of the differential pressure gauge to the #2 test cock then attach hose from the low side of the gauge to the #3 test cock. Open test cock #3 slowly and then bleed all air from the hose and gauge by opening the low side bleed needle valve.
3. Maintain the low side bleed needle valve in the open position while test cock #2 is opened slowly. Open the high side bleed needle valve to bleed all air from the hose and gauge. Close the high side bleed needle valve, then close the low side bleed needle valve after the gauge reading has reached the upper end of the scale.
4. Close the #2 shut-off valve. If the gauge reading drops to the low end of the gauge scale and the differential pressure relief valve discharges continuously, then the #1 check valve is leaking. If this occurs, Tests #1, #2 and #3 cannot be completed (See USC Maintenance Guide). However, should the gauge reading remain above the differential pressure relief valve opening point, then observe the gauge reading. This is the apparent pressure drop across the #1 check valve.
5. Open the high side control needle valve approximately one turn, and then open the low side control needle valve no more than 1/4 turn to by-pass water from the #2 test cock to the #3 test cock. Observe the differential pressure reading as it slowly drops to the relief valve opening point. Record this opening point value when the first discharge of water is detected. Close the low side needle valve.

TEST NO. 2 - TIGHTNESS OF #2 CHECK VALVE

REQUIREMENT:

The #2 check valve shall be tight against backpressure.

PROCEDURE:

1. Maintain the #2 shut-off valve in the closed position (from Test #1). Vent all air through the vent hose by opening the vent needle valve. Close the vent needle valve only (The high side control needle valve is to remain open.).
2. Attach the vent hose from the gauge to the #4 test cock, then open the #4 test cock. Bleed water from the zone by opening the low side bleed needle valve on the gauge in order to reestablish the normal reduced pressure within the zone. Once the gauge reading reaches a value above the #1 check valve pressure drop, close the low side bleed needle valve.

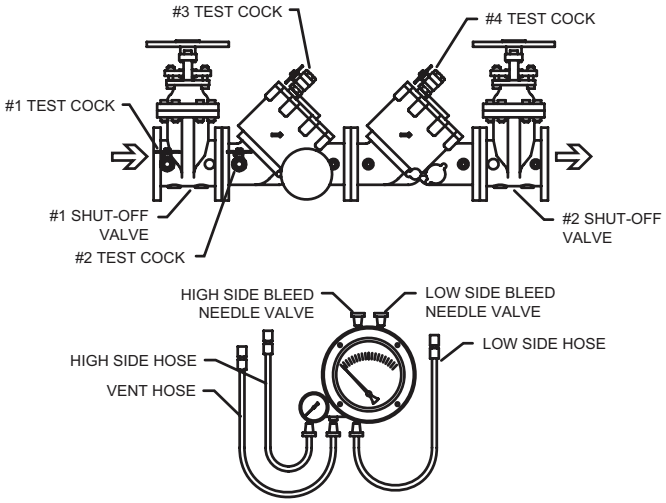
TEST NO. 2 - TIGHTNESS OF #2 CHECK VALVE

REQUIREMENT:

The static pressure drop across check valve #2 shall be at least 1.0 psid. If test cock #4 is not at the highest point of the check valve body, then a vertical tube must be installed on test cock #4 so that it rises to the top of the check valve body.

PROCEDURE:

1. Attach hose from the high side of the test kit to the #3 test cock.
2. Open test cock #3 and bleed all air from the hose and gauge by opening the high side bleed needle valve. Close high side bleed needle valve. If a tube is attached to test cock #4, open test cock #4 to fill the tube. Close test cock #4. Close #1 shut-off valve.
3. Hold gauge at same level as test cock #4 or water level in tube. Slowly open test cock #4. Record the static pressure drop across check valve #2 after gauge reading stabilizes and water stops running out of test cock #4. Close all test cocks, slowly open shut-off valve #1 & #2 and remove test equipment.



4. Open the vent needle valve. If the indicated differential pressure reading remains steady then the #2 check valve is reported as "closed tight." Go to Test #3. If the differential pressure reading falls to the relief valve opening point, bleed water through the low side bleed needle valve until the gauge reading reaches a value above the #1 check valve pressure drop. If the gauge reading settles above the relief valve opening point, record the #2 check valve as "closed tight," and proceed to Test #3. If the differential pressure reading falls to the relief valve opening point again, then the #2 check valve is noted as "leaking," and Test #3 cannot be completed. If the differential pressure reading drops, but stabilizes above the relief valve opening point, the #2 check valve can still be reported as "closed tight."

TEST NO.3 - TIGHTNESS OF #1 CHECK VALVE

REQUIREMENT:

The static pressure drop across check valve #1 should be at least 3.0 psi greater than the relief valve opening point (Test #1). A buffer of less than 3.0 psi does not imply a leaking #1 check valve, but rather is an indication of how well check valve #1 is sealing.

PROCEDURE:

1. With the vent hose connected to test cock #4 as in step 3 of Test #2, bleed water from the zone through the low side bleed needle valve on the gauge until the reading exceeds the #1 check valve pressure drop. Close the low side bleed needle valve. After the gauge reading settles, the steady state differential pressure reading indicated (reading is not falling on the gauge) is the actual static (i.e., no flow) pressure drop across check valve #1 and is to be recorded as such.
2. Close all test cocks, slowly open shutoff valve #2 and remove equipment.

ZURN WILKINS
1747 Commerce Way, Paso Robles, CA 93446 Phone:855-663-9876 Fax:805-238-5766
www.zurn.com

Maintenance Instructions

All Model 975 Reduced Pressure Principle and Model 950 Double Check Valve Backflow Preventers must be inspected and maintained by licensed personnel at least once a year or more frequently as specified by local codes. Replacement of worn or damaged parts must only be made with genuine "ZURN WILKINS" parts.

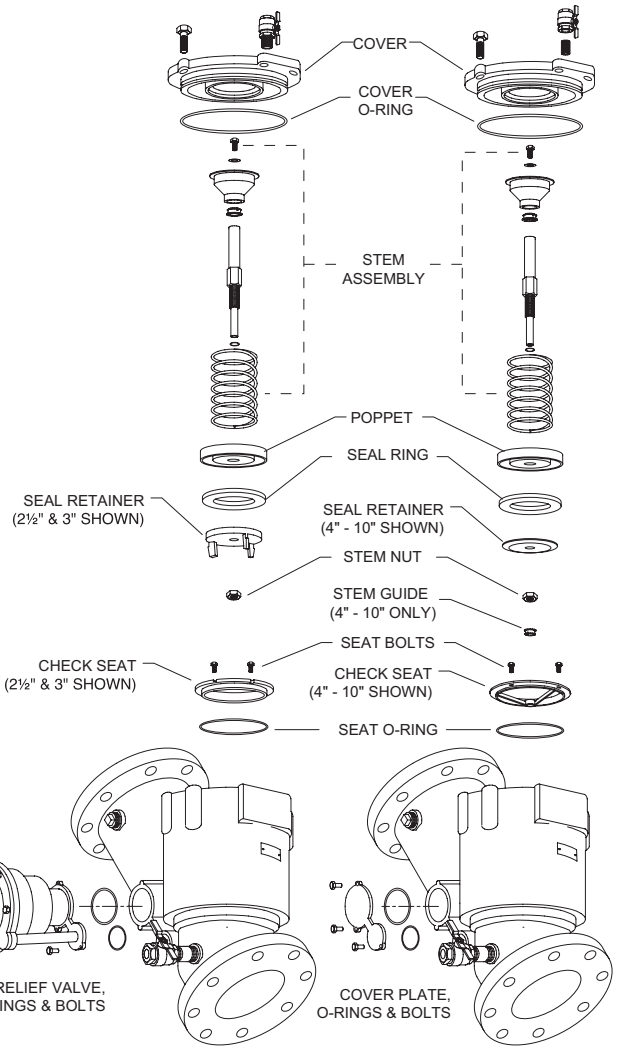
Backflow prevention assemblies should be thoroughly flushed after backflow conditions occur to prevent any type of corrosive deterioration to its components. Failure to do so could result in malfunction of the device.

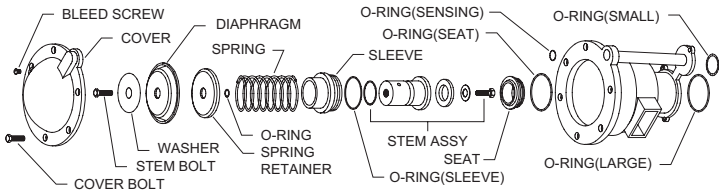
GENERAL MAINTENANCE

1. Clean all parts thoroughly with water after disassembly.
2. Carefully inspect rubber seal rings, diaphragms and o-rings for damage.
3. Test unit after reassembly for proper operation according to "TESTING PROCEDURES" on page 2.

SERVICING CHECK VALVES

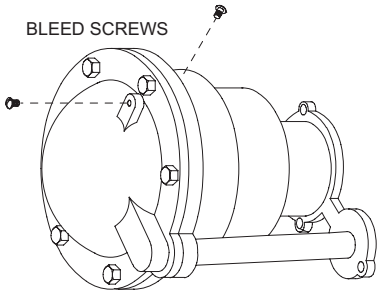
1. Close inlet and outlet shut-off valves.
2. Open No. 2, No. 3 and No. 4 test cocks to release pressure from valve.
3. Unbolt the check valve covers using appropriate size wrench. NOTE: Poppets are self contained. The covers should lift no more than 1/2" before tension is relieved.
4. Remove check cover and poppet assembly.
5. Inspect the rubber seal ring for cuts or embedded debris. To remove seal ring, remove nut and seal ring retainer. If the reverse side of the seal ring is unused, it is possible to invert the seal ring. This would be considered a temporary solution to fixing a fouled check and should be replaced with a new seal ring as soon as possible.
6. Inspect valve cavity and seating area. Remove any debris.
7. Reverse the above procedures to reinstall check valve assembly. NOTE: Care should be taken to make sure the heavy spring is installed in the No. 1 check valve (Model 950DA, 975 & 975DA only).





SERVICING RELIEF VALVE

1. Remove relief valve cover bolts and cover. Gently pull on diaphragm to remove the cartridge assembly.
2. Inspect seal ring for cuts and embedded debris. Turn over or replace if required.
3. Disassemble stem cartridge by unscrewing diaphragm bolt. **CAUTION: This assembly is spring loaded.**
4. Inspect diaphragm and o-rings for damage. Replace required parts and apply a light coat of grease to o-rings.
5. Carefully reassemble cartridge assembly.
6. Inspect stainless steel seat for wear on seating surface. If damaged, replace seat and seat o-ring.
7. Insert cartridge assembly into relief valve body. Make sure that stem guide is fully seated into body and that diaphragm is assembled as shown below.
8. Replace cover o-ring, cover and cover bolts.
9. Place relief valve back in service and test according to "TESTING PROCEDURES" on page 2.



AIR BLEED FROM RELIEF VALVE

To bleed air from relief valve, first locate the two stainless steel bleed screws located on the top of cover and side of body. Using a slotted head screwdriver, turn the screws counterclockwise about 1/4 to 1/2 turn. When a steady stream of water is noted, turn the screws clockwise to their original position.

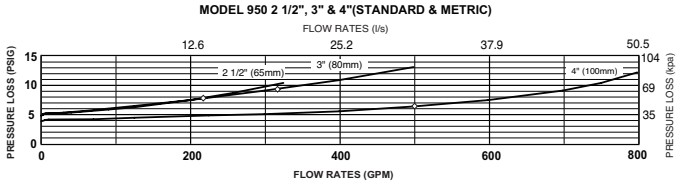
SPECIFICATIONS

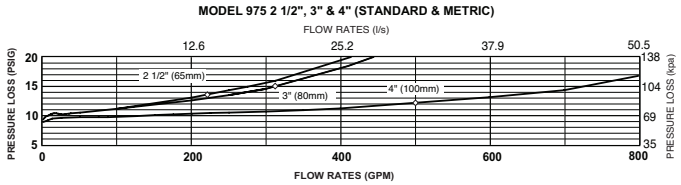
Maximum working water pressure:	175 PSI
Maximum working water temperature:	140°F
Hydrostatic test pressure:	350 PSI
End connections:	Flanged ANSI B16.1 Class 125

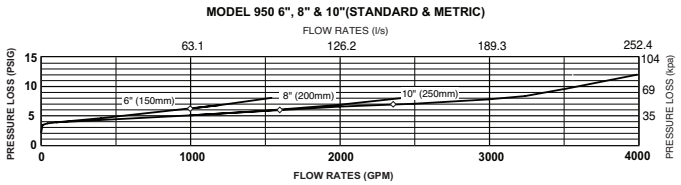
Troubleshooting

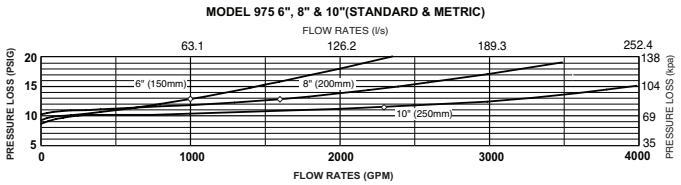
PROBLEM (Model 950/950DA)	POSSIBLE CAUSES	CORRECTIVE ACTION
1. LEAKING CHECK VALVES	1. Debris on seat or seal ring 2. Damaged seat area 3. Damaged seat o-ring	1. Clean seat area 2. Replace check assembly 3. Replace seat o-ring
2. LOW OR NO FLOW	1. Device installed backwards 2. Gate valves not fully open 3. Low supply pressure	1. Verify flow direction arrow 2. Turn handles counterclockwise 3. Attach pressure gauge to test cock #1 and verify pressure
PROBLEM (Model 975/975DA)	**POSSIBLE CAUSES**	**CORRECTIVE ACTION**
1. SUDDEN OR RAPID SPITTING	1. Drop in inlet pressure. 2. Sudden increase in downstream pressure due to waterhammer from quick closing shut-off valve installed downstream.	1. Install an in-line spring loaded check valve or pressure reducing valve upstream of backflow preventer. 2. Install an in-line spring loaded check valve or pressure reducing valve downstream of backflow preventer.
2. LIGHT INTERMITTENT DRIP	1. Slightly fouled #1 check. 2. Slightly fouled relief valve seat. 3. Air trapped in relief valve.	1. Clean #1 check and/or turn check valve seal ring over or replace. 2. Clean relief valve seat and/or turn relief valve seal ring over or replace. 3. Bleed air from relief valve.
3. CONTINUOUS DISCHARGE	1. Fouled #1 check and/or #2 check. 2. Fouled relief valve seat.	1. Clean check valves and/or turn check valve seal rings over or replace. 2. Clean relief valve seat and/or turn relief valve seal ring over or replace.

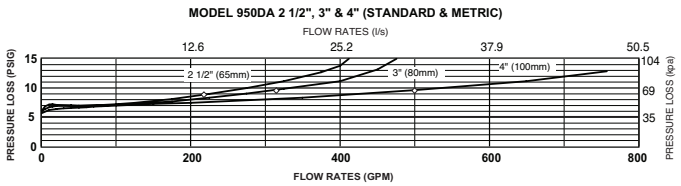
Performance Characteristics

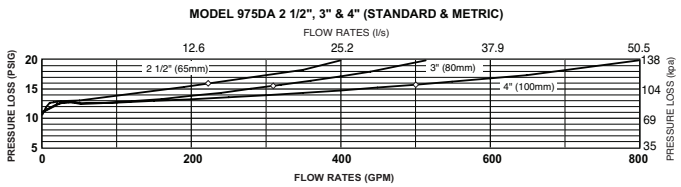


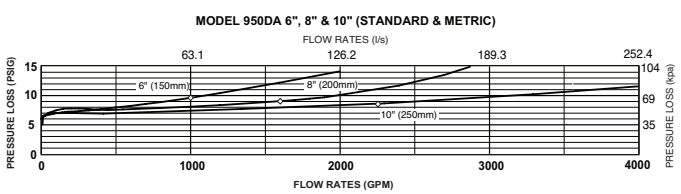


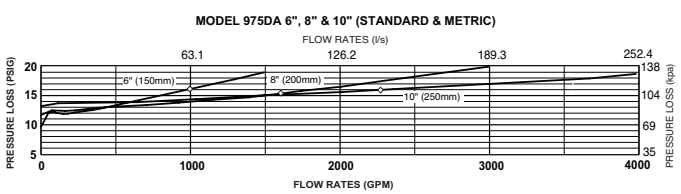












Proper performance is dependent upon licensed, qualified personnel performing regular, periodic testing according to ZURN WILKINS' specifications and prevailing governmental & industry standards and codes and upon following these installation instructions. Failure to do so releases ZURN WILKINS of any liability that it might otherwise have with respect to that device. Such failure could also result in an improperly functioning device.