Model 450 & 450DA LEAD-FREE*

Double Check Valve Assembly (4” & 6”)
Double Check Detector Assembly (4” & 6”)

(Patent zurn.com/patents)

*This product contains a weighted average lead content less than 0.25% for wetted surfaces.

❑ Installation ❑ Testing ❑ Maintenance Instructions

INSTALLATION INSTRUCTIONS

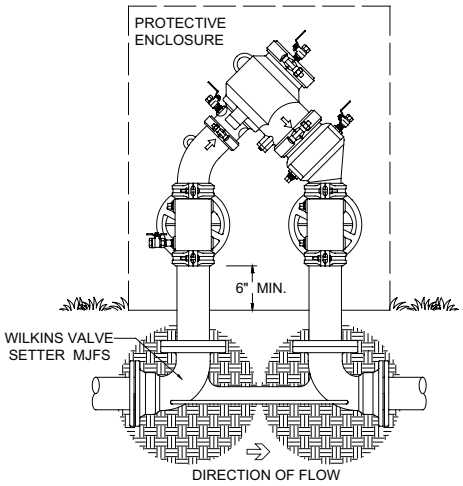
CAUTION: Installation of Backflow Preventers must be performed by qualified, licensed personnel. The installer should be sure the proper device has been selected for the particular installation. Faulty installation could result in an improperly functioning device.

ZURN WILKINS Model 450 Double Check Valve assemblies are for use on potable water lines where a health hazard does not exist 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 downstream of 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.

1. Before installing a Model 450 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 6 inches above surrounding flood level.
4. Always consult local codes for installation methods, approvals and guidance.



TYPICAL HORIZONTAL ORIENTATION

OUTDOOR INSTALLATION

The Model 450 Backflow Preventer 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.

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.
2. When the unit has been pressurized, vent any trapped air by slightly opening each of the four test cocks.
3. Slowly open the downstream shut-off valve. The Model 450 Double Check Valve assembly is now in service.
4. After the Model 450 has been prop-
5. erly installed, test the device (see “TEST PROCEDURES”). If the device fails the test, remove the first and second check valves and thoroughly flush the device. Clean rubber and seats 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.

⚠ **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

Testing Procedures

MODEL 450 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.

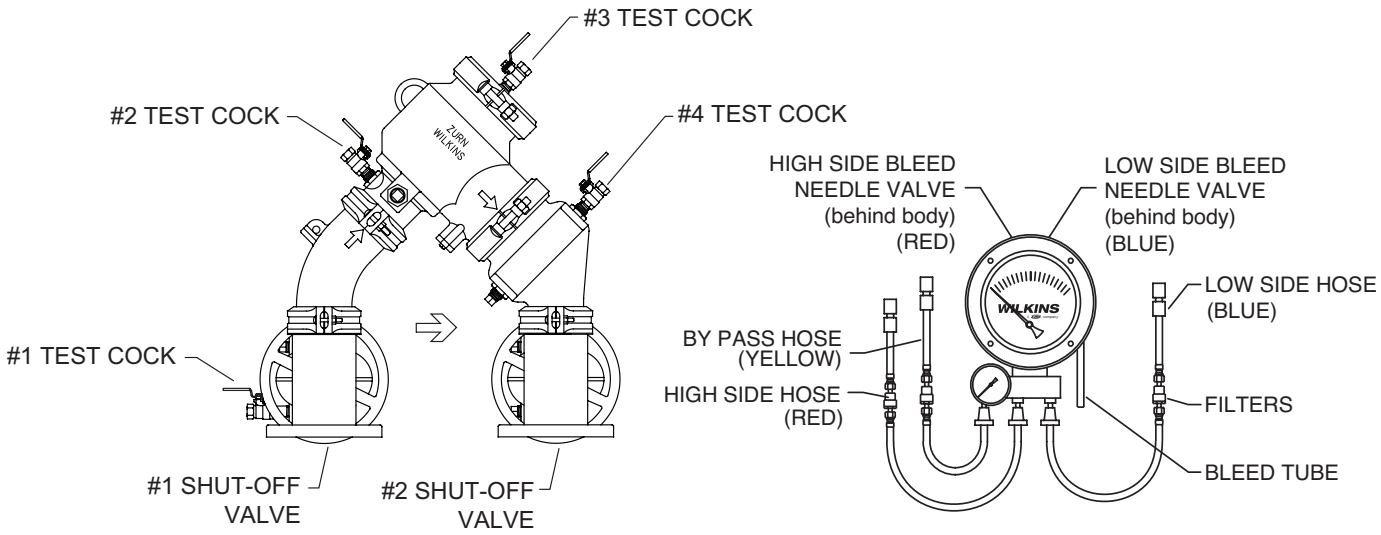
TEST NO. 2 - TIGHTNESS OF #2 CHECK VALVE

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.
4. Close all test cocks, slowly open shut-off valve #1 & #2 and remove test equipment.



All Model 450 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.

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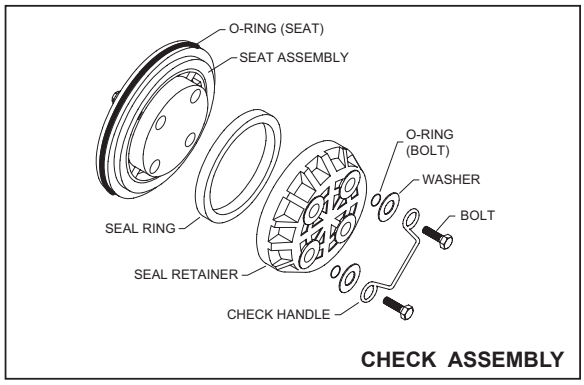
Maintenance Instructions



CHECK ASSEMBLY

GENERAL MAINTENANCE

1. Clean all parts thoroughly with water after disassembly.
2. Carefully inspect rubber seal rings and o-rings for damage.
3. Test unit after reassembly for proper operation (refer to "TESTING PROCEDURES").

SERVICING CHECK VALVES

1. Close the outlet and then the inlet shut-off valves.
2. Open No. 2, 3 and 4 test cocks to release internal pressure. Leave them open during check removal and reinstallation.
3. Loosen and remove the two nuts, bolts, gasket and grooved coupling from around the access cover.
4. If the valve has a wire retainer on the #1 check assembly, pinch together the exposed ends, pull toward the #2 check and remove from valve.
5. If the valve has a plastic retainer on the #1 check, grasp one of the exposed ends, push down and then pull toward the #2 check. The retainer should "spiral" out of the groove around the check.
6. Remove the #2 check by locating one of the two spring-loaded plate retainers around the face of the check. Pinch the sides of the spring together and rotate the plates out of the body groove one at a time. Remove the 2nd retainer the same way.
7. Always service the checks one at a time to avoid mixing parts. Start by removing the hardware and o-rings from the back of the check assembly (See "Check Assembly" illustration). Separate the seal retainer from the assembly to expose the seal ring.
8. Inspect the seal ring for cuts or embedded debris. If the reverse side of the seal is unused, the seal ring can be inverted and used temporarily until a new seal is obtained. Inspect seat o-ring and replace if cut or damaged in any way.
9. Inspect valve cavity and seating areas. Flush with water to remove any debris.
10. Reassembly: Lubricate the #2 check o-ring, install in the body and close the #4 test cock. Install the #2 check retainers into the body groove one plate at a time, squeezing the spring ends together to clear the stops on the face of the seat. Lubricate and install the #1 check, close the #2 test cock and install:

    (A) wire retainer by pinching the ends together, placing the lower edge of the ring into the body groove below the check and rotating the top of the ring into the notch above the check.

    (B) plastic retainer by inserting the end with short tab into the notch above the check, sliding your hand around the face of the retainer pushing it into the groo the groove as you go. Retainer should "snap" into place.
11. Lubricate the outside surface of the grooved coupling gasket. Reassemble access cover and grooved coupling, making sure the ends of the coupling touch each other. Close any remaining open test cocks and place valve back in service.

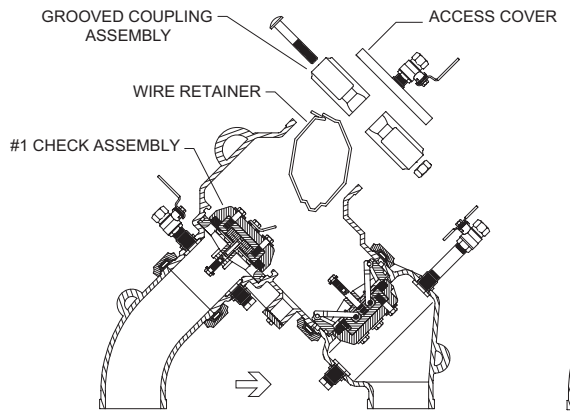


FIGURE 1

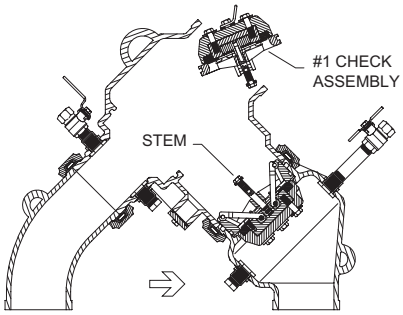


FIGURE 2

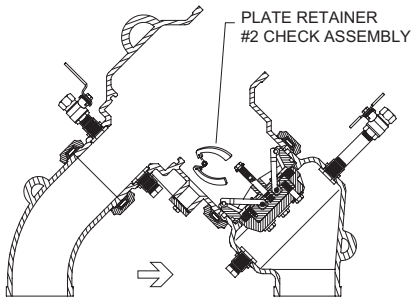


FIGURE 3

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
2 1/2"	75	112	149	224
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687

SPECIFICATIONS

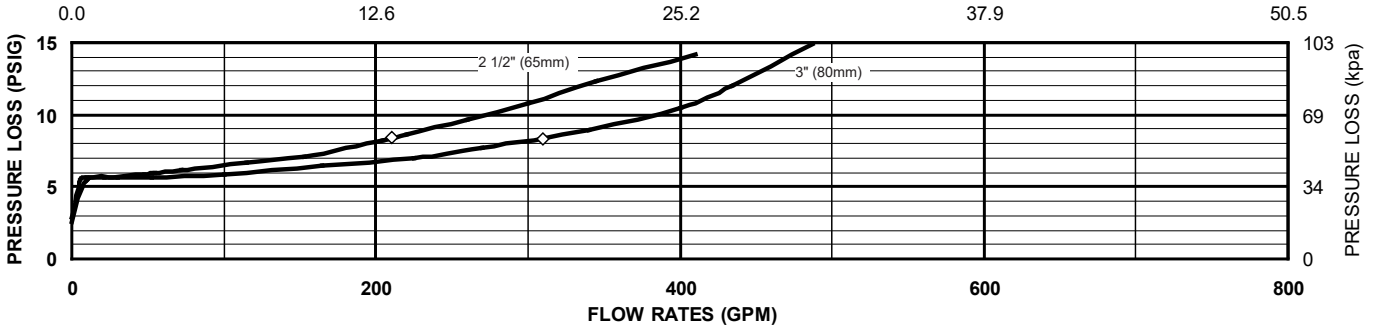
Maximum working water pressure:	175 PSI
Maximum working water temperature:	140°F
Hydrostatic test pressure:	350 PSI
End connections:	Grooved AWWA C606

Troubleshooting

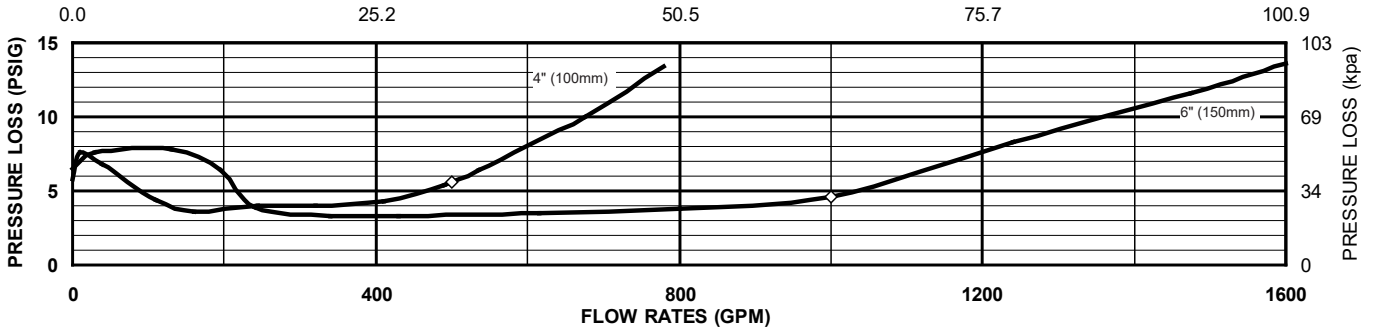
PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
1. LEAKING CHECK VALVES	1. Debris on seat or seal ring.	1. Clean seat area
	2. Damaged seat area	2. Replace check assembly
	3. Damaged seat o-ring	3. Replace seat o-ring
	4. Damaged bolt o-ring(s) on check retainer	4. Replace o-ring(s)
2. LOW OR NO FLOW	1. Device installed backwards	1. Verify flow direction arrow
	2. Gate valves not fully open	2. Turn handles counterclockwise
	3. Low supply pressure	3. Attach pressure gauge to test cock #1 and verify pressure

Performance Characteristics

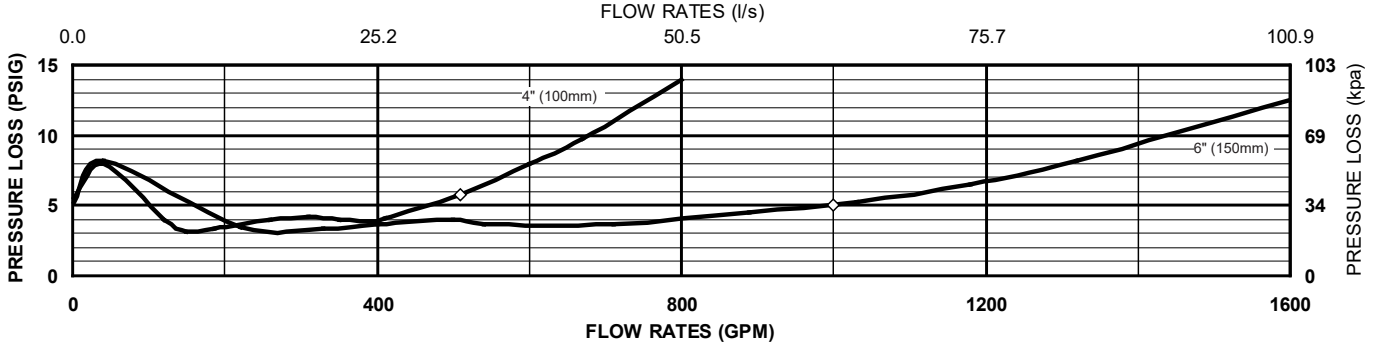
MODEL 450 2 1/2" & 3" (STANDARD & METRIC)



MODEL 450 4" & 6" (STANDARD & METRIC)



MODEL 450DA 4" & 6" (STANDARD & METRIC)



◇ Rated Flow (Established by approval agencies)

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.