Model 500XL

WILKINS®

LEAD-FREE Pressure Reducing Valve with Integral By-pass
(1/2", 3/4", 1", 1-1/4" 1-1/2", 2", 2 1/2" & 3")

❑ Installation ❑ Inspection ❑ Maintenance ❑ Repair Instructions

NOTICE: Periodic inspection and maintenance is required of all plumbing system components, at least once per year or more as service conditions warrant. Corrosive water conditions, and/or unauthorized adjustments or repair could render the product ineffective for the service intended. Regular visual inspection, pressure testing, cleaning and/or repair of the products internal components helps to ensure proper performance and maximum life. If the end user is not qualified to perform periodic inspection and maintenance, a qualified licensed plumber must be contacted for assistance. It is also recommended that a suitable strainer be installed upstream of the valve. **CAUTION: Anytime a pressure reducing valve is adjusted, a pressure gauge must be used downstream to verify correct pressure setting. Do not bottom out adjustment bolt on bell housing.** Where the desired pressure reduction is more than a 3 to 1 ratio (i.e. 225psi to 75psi), or inlet pressure is above 150 PSI multiple regulators in series are recommended to be installed to prolong valve life.

Installation Instructions

Maximum Working Water Pressure: 300 PSI (2070 kPa) Maximum Working Water Temperature: 140°F (60°C)

1. This valve should be installed by a qualified licensed plumber.
2. Flush supply line to remove loose dirt and scale which may damage the seal ring and seat.
3. Install valve in-line with arrow on valve body pointing in the direction of flow. The device shall be installed in an accessible location for maintenance, repair, and replacement; and may be installed in any orientation.
4. All valves are factory set to approximately 50 PSI, adjust regulator to desired outlet set pressure by turning adjustment bolt clockwise (into bell housing) to raise pressure or counterclockwise (out of bell housing) to reduce pressure.

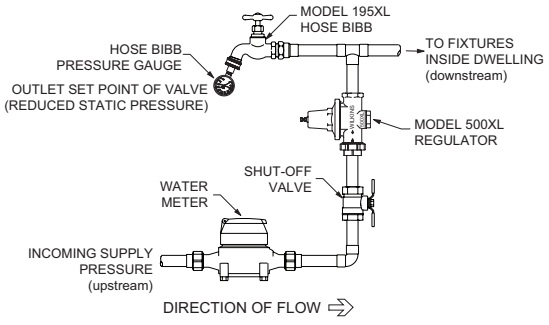
   NOTE: When reducing pressure open a downstream faucet to relieve pressure and use a pressure gauge (Wilkins Model HGI-25) to verify correct downstream pressure setting.
5. Tighten locknut when desired pressure is achieved and test valve to confirm proper operation.

Inspection and Maintenance Instructions

Inspection and Maintenance may be required when the following water behaviors are observed downstream of the product: excessive water pressure, insufficient water pressure or flow, inconsistent water pressure

Tools Required:

- Hose Bibb Pressure gauge (Wilkins Model HGI-25)
- 3/8" and 1/2" wrench or socket for bolt adjustment or removal
- Large and small slotted screwdriver for plunger removal
- Wrench for bell removal
  (Approx. Hex Sizes: 1-5/8", 1-3/4", 1-15/16", 2-3/8", 3-1/8", 3-1/4")
- Wrench or socket for access cap removal.
  (Approx. Hex sizes: 1", 1-1/16", 1-1/4", 1-9/16", 2-1/8", 2-1/4", 2-5/16")
- Silicone based food grade o-ring grease



Testing:

1. If available, determine the incoming supply pressure for reference.
2. Install the pressure gauge
3. Open a downstream fixture inside the dwelling to start flow through the valve.
4. Record the reading on the pressure gauge for reference. This is the reduced flowing pressure.
5. Close the inside faucet or fixture and immediately record the reading on the pressure gauge. This is the reduced static pressure and outlet set point of the valve.
6. Observe the gauge for 10 minutes.

WARRANTY: WILKINS Valves are guaranteed against defects of material or workmanship when used for the services recommended. If in any recommended service, a defect develops due to material or workmanship, and the device is returned, freight prepaid, to WILKINS within 12 months from date of purchase, it will be repaired or replaced free of charge. WILKINS' liability shall be limited to our agreement to repair or replace the valve only.

⚠ **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

Inspection and Maintenance Instructions (Continued)

7. **Criteria:**

   a. If the outlet pressure is maintained for 10 minutes without increasing, the valve is working properly and no further action is required.

   b. If outlet pressure increases immediately and is equal to supply pressure from step 1, the valve may be severely fouled, damaged, or defective and should be repaired or replaced. Proceed to the Repair Instruction steps below.

   c. If pressure slowly creeps up within 10 minutes the valve may be fouled and should be cleaned and retested. Proceed to the Maintenance and Cleaning steps below. If you are retesting with cleaned parts and it still has pressure creep, proceed to repair the valve.

   d. If there is any external leakage from the body the valve should be replaced. If there is any leakage observed from the bell, the valve should be repaired.

Maintenance and Cleaning

1. Close shutoff valve upstream of the pressure reducing valve.
2. Open faucet in dwelling to remove line pressure.
3. Note and record height that adjustment bolt protrudes from bell housing. Loosen locknut on adjustment bolt, then turn adjustment bolt out of bell housing to remove spring tension.
4. Loosen main cap/gasket and remove counterclockwise.
5. Loosen plunger with seal ring and washer, and remove counterclockwise.
6. Remove bell housing by turning counterclockwise and remove spring, spring disc and friction ring.
7. Remove stem sub-assembly from regulator. Inspect area in body where o-ring guides for pitting or scratches. Smooth bore with emery cloth if needed. This area must be smooth for the valve to function correctly.
8. While disassembled, open the upstream shutoff valve to flush out valve body and service line of debris.
9. Visually inspect both sides of the diaphragm for cuts or tears, or material degradation and clean as needed.
10. Visually inspect the seal ring for cuts, tears, or debris on seating face and clean as needed.
11. Visually inspect the seat for nicks, cuts, or other damage and clean as needed.
12. **Criteria:**

    a. If there is no visible damage observed, reinstall the cleaned parts following steps 2-9 of the Repair Instruction below and retest the valve.

    b. If there is any visible damage to the diaphragm, seal ring, stem or stem o-ring, the valve should be repaired.

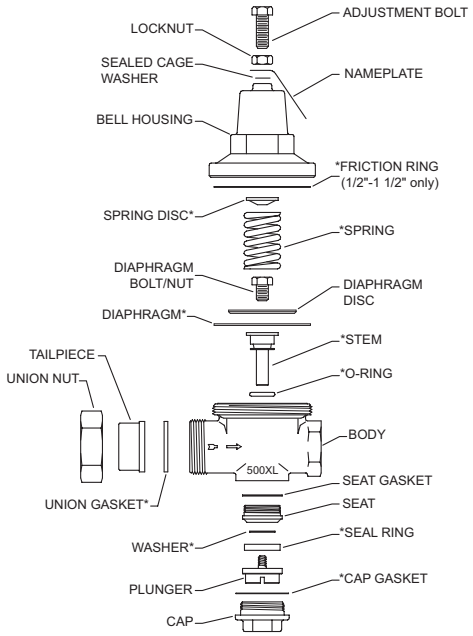
    c. If there is any visible damage or corrosion to the bronze body or seat, the valve should be replaced.

Repair Instructions

Repair kits and instruction videos are available at zurn.com

Call 1-855-663-9876 to order

VALVE SIZE	STANDARD REPAIR KIT	HIGH RANGE REPAIR KIT
1/2"	RK12-500XL	RK12-500XLHR
3/4"	RK34-500XL	RK34-500XLHR
1"	RK1-500XL	RK1-500XLHR
1-1/4"	RK114-500XL	RK114-500XLHR
1-1/2"	RK112-500XL	RK112-500XLHR
2"	RK2-500XL	RK2-500XLHR
2 1/2"	RK212-500XL	RK212-500XLHR
3"	RK3-500XL	RK3-500XLHR



* INDICATES PARTS SUPPLIED IN REPAIR KITS
(spring disc not included in sizes 1 1/2" - 3")

SEALED CAGE WARNING: Loosen lock washer at adjustment bolt slowly. Look for any trapped water pressure under the sealed cage washer. Relieve pressure before removing bell.

1. Follow maintenance and cleaning steps 1-8 above and discard the old parts.
2. Assemble new stem sub-assembly using stem, stem o-ring, diaphragm, diaphragm disc and diaphragm bolt/nut. Tighten bolt/nut securely (CAUTION: Be sure the rounded edge of the diaphragm disc is next to the diaphragm).
3. Apply silicone grease to stem o-ring and install stem sub-assembly into body of valve.
4. Center seal ring and washer onto plunger. Screw plunger into stem assembly through the bottom access port. Use a large slotted screwdriver to tighten plunger. (CAUTION: Do not over tighten plunger; it is possible to break threaded end of plunger.) Hold diaphragm bolt secure with socket or wrench while tightening plunger to recommended torque with screwdriver.
   Recommended Torque (lb-ft) (1/2"-1": 5, 1-1/4": 12, 1-1/2"-2": 20, 2-1/2"-3": 22)
5. Replace friction ring, spring, spring disc and bell housing. (Make sure friction ring is installed with raised edge facing up).
6. Tighten bell housing onto body by threading clockwise.
7. Install new cap gasket and replace cap by tightening clockwise.
   Minimum Torque Required (lb-ft) (1/2"-3/4": 50, 1"-1-1/2": 75, 2": 90, 2-1/2": 100, 3": 200)
8. Turn adjustment bolt into bell housing and adjust to height recorded from Maintenance and Cleaning step 3 above.
9. Enter dwelling and turn on several fixtures.
10. Open upstream shutoff valve slowly to turn on water service. Let water run for several seconds or as long as needed until air is purged from the system, then turn off fixtures in dwelling.
11. Adjust regulator to desired outlet set pressure by turning adjustment bolt clockwise (into bell housing) to raise pressure or counterclockwise (out of bell housing) to lower pressure.
    NOTE: When reducing pressure open a downstream faucet to relieve pressure and use a pressure gauge (Wilkins Model HGI-25) to verify correct pressure setting and **ensure downstream pressure is reduced below 75 psi.**
12. Tighten locknut when desired pressure is achieved and retest valve to confirm proper operation.

Troubleshooting

Pipelines in a water supply system must be of sufficient carrying capacity to maintain adequate pressure at the most remote or highest fixture. Under the maximum probable fixture use, minimum adequate pressure is generally 8 to 15 PSI but may be more, depending on the equipment being supplied. Relatively high service pressures which can create high water velocities in pipelines would allow use of smaller pipes to satisfy fixture use. However, high velocity tends to cause whistling and humming. Reduction of pressure by the use of a pressure reducing valve, in an attempt to eliminate such a condition, may reduce pipeline capacities below that which is adequate for maximum probable use. When high service pressures are in effect, either continuously or periodically, the application of a pressure reducing valve will be successful only when the installed pipeline is of adequate size to satisfy the system demand at the lower pressure. When actual water demands are unknown, the valve size should be no less than the existing pipe size.

1. Pressure periodically builds up in system above the outlet set pressure of the pressure reducing valve.

a. Cause: Thermal expansion of water as it is being heated.

i. Solution: This is a natural consequence. It may happen each time that the heater runs. Pressure will be relieved the next time a fixture is opened until the next time the heater turns on. An expansion control relief valve (Wilkins model BVECXL) properly piped to a suitable drain or expansion tank (Wilkins model XT) set at the pressure reducing valve outlet set pressure must be installed. This will not prevent pressure rise but should limit it to a safe level.

2. Pressure builds up in system above the outlet set pressure of the pressure reducing valve.

a. Cause: Debris on seating face of seal ring.

i. Solution: Flush the reducing valve by opening multiple fixture outlets wide open. If this does not correct the problem, remove the cartridge for inspection and cleaning.

b. Cause: Cut or worn seal ring or stem o-ring.

i. Solution: Repair the valve with a Wilkins repair kit.

3. Fixture Pressure and flow is unsteady or inadequate.

a. Cause: Low water supply pressure in mains.

i. Solution: This is a water department problem. It is due to the mains being inadequate for the demands made on them during certain periods of the day.

b. Cause: Heavy periodic demands by appliances in the house or inadequate line size.

i. Solution: House service lines may at times be inadequate for certain fixtures. Size of some pipelines may need to be increased. Increasing the house service mains might be necessary if inadequate flow is general at all fixtures. Contact a qualified licensed plumber for assistance to determine if pipeline sizes need to be increased.

ii. Solution: Pressure setting of reducing valve may be too low. Try increasing the setting of the reducing valve gradually to increase flow at the fixtures.
Caution: Do not bottom out adjustment bolt on bell housing.

c. Cause: Screen clogged with debris.

i. Solution: Follow maintenance and cleaning steps above.

4. Valve appears to be noisy; chatters, hums, whistles.

a. Cause: High velocity of flow in pipelines causing vibration.

i. Solution: The valve or the pipelines could be undersized. Pipes and valves being undersized would accentuate this condition. Contact a qualified licensed plumber for assistance to determine if the valve size or pipe size should be increased.

b. Cause: Worn seat washer or loosely installed seal ring.

i. Solution: Follow maintenance and cleaning steps above. If a deep channel appears on seal ring face, repair the valve with a Wilkins repair kit.

c. Cause: Pressure reduction is greater than 3 to 1

i. Solution: increase set pressure temporarily to see if noise goes away, adding a second valve in series may be required to achieve desired pressure setting without noise.