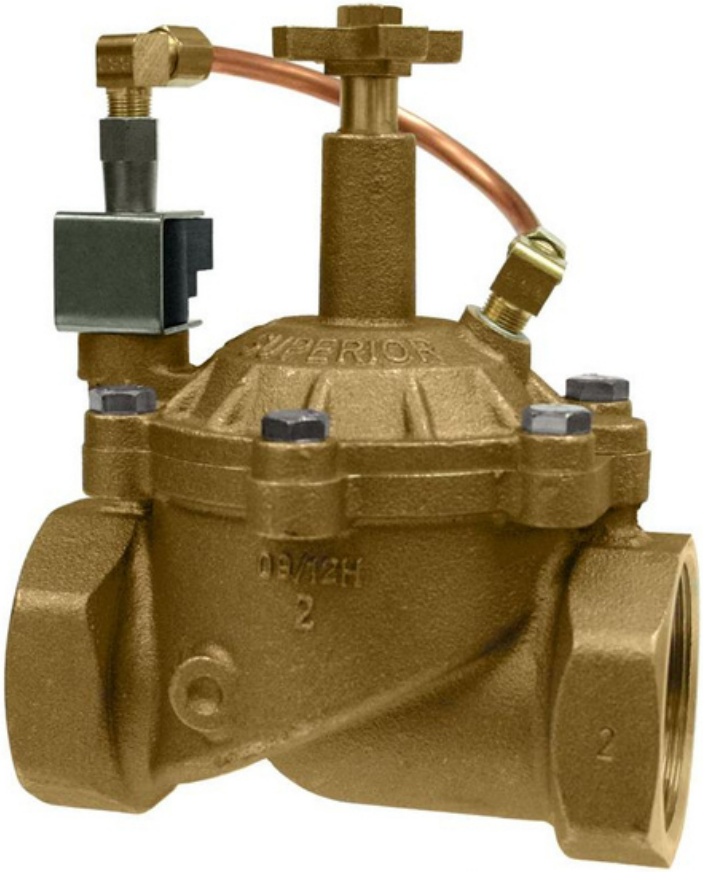
SUPERIOR

Model 3100

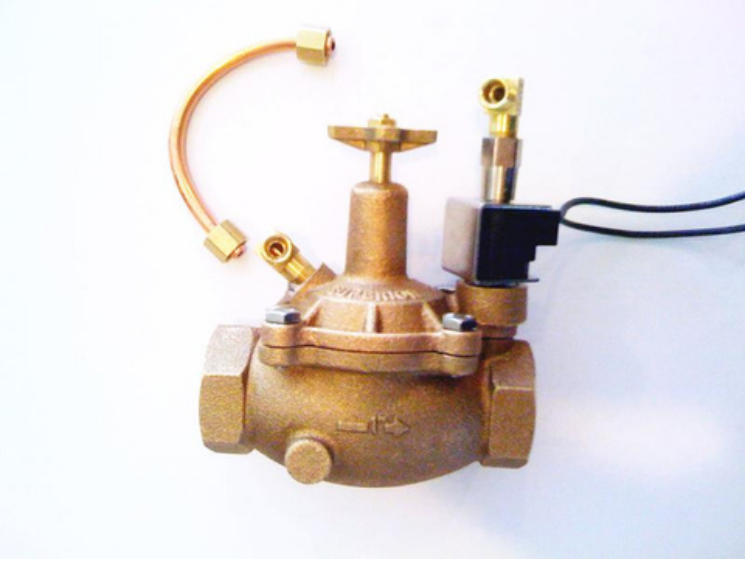
Disassembly Instructions and Troubleshooting (Applies to Model 3100PRS)



Index

Solenoid Disassembly Instructions

1. Using a ½" wrench, remove copper by-pass tube from top of valve.



2. Remove coupling and L-fitting from top of solenoid by applying a ½" wrench to the coupling. It is not necessary to separate the L-fitting from the coupling.

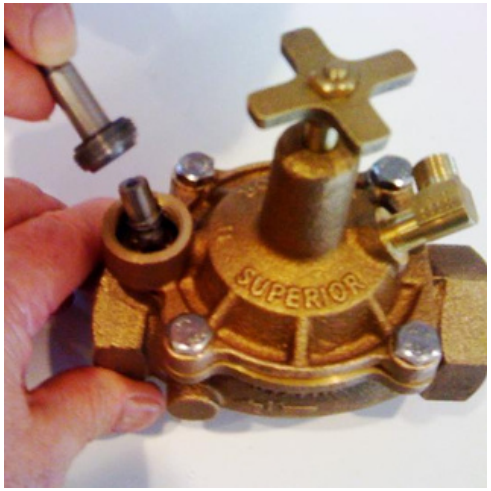
Solenoid Disassembly Instructions

3. Slide coil and U-frame off of solenoid post.

4. Using a flathead screwdriver, remove post from top of valve.

Solenoid Disassembly Instructions

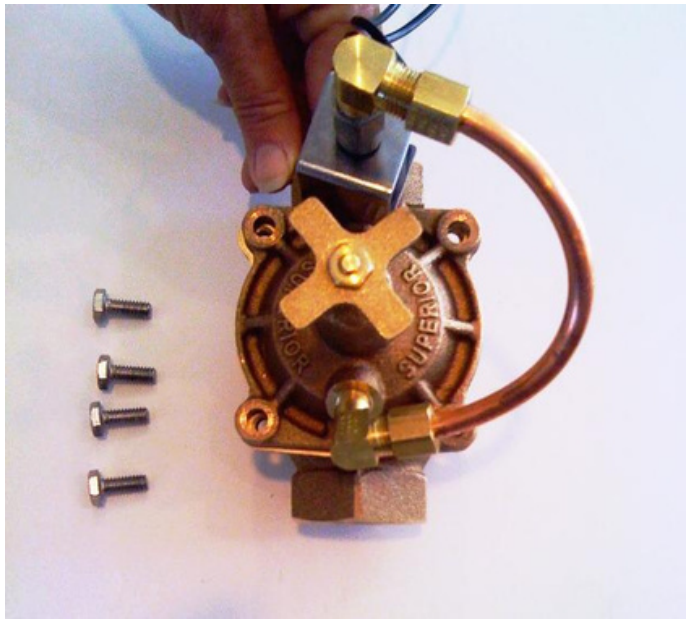
5. As you remove solenoid post, solenoid plunger will drop out of plunger tube.



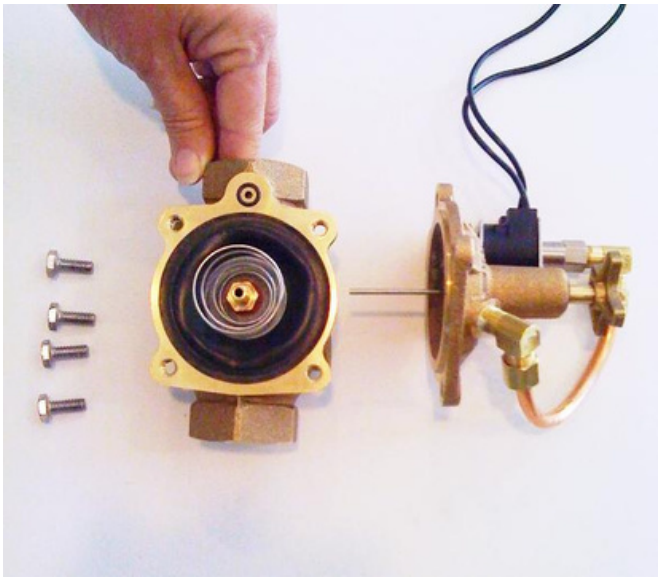
6. After removing the solenoid plunger, all that has a cross machined in it so water will be able to escape downstream when the solenoid is not energized and valve will remain open. remains is the o-ring at the bottom. Note that seat

Valve Disassembly Instructions

1. Remove bolts that fasten top of valve to valve body.

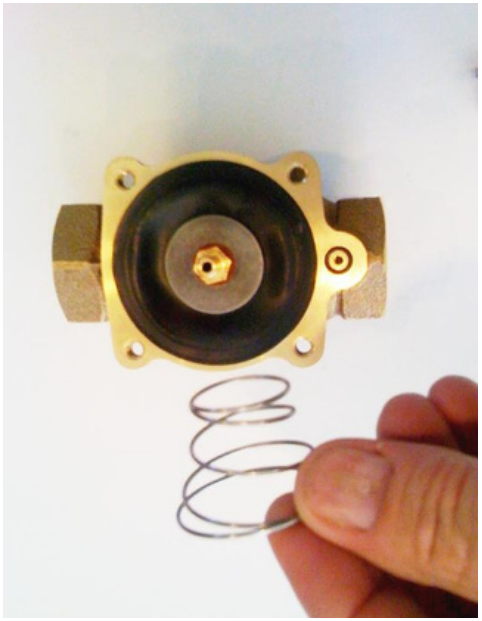


2. Lift top assembly straight up until metering rod clears the top of the diaphragm shaft.



Valve Disassembly Instructions

3. Remove spring from top of diaphragm assembly.



4. Remove diaphragm assembly from valve body.

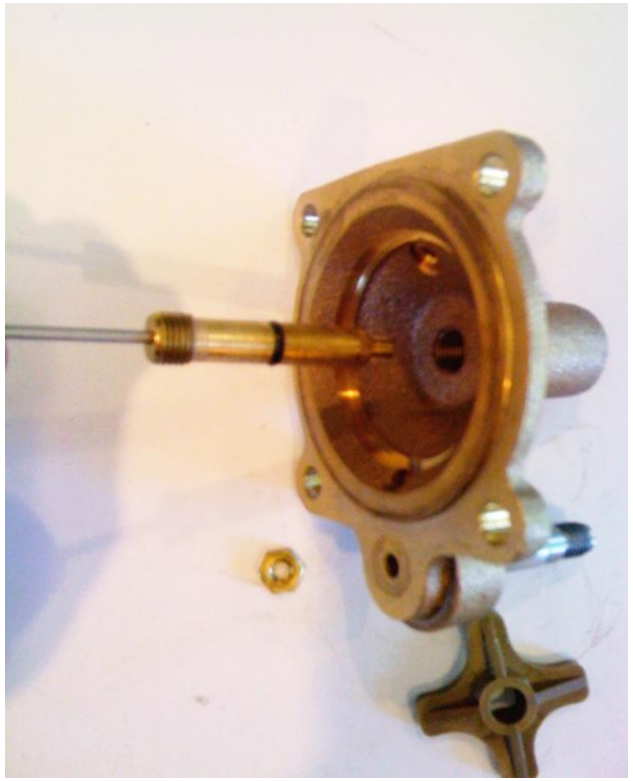
Valve Disassembly Instructions

5. To remove rubber seat disc from diaphragm assembly, unscrew nut at bottom of diaphragm assembly.

6. Completely disassembled diaphragm assembly. From top to bottom: Diaphragm shaft, fiber washer, upper diaphragm plate, diaphragm, lower diaphragm plate, fiber washer, spacer nut, fiber washer, seat disc holder, seat disc, retaining washer, and seat disc nut.

Valve Disassembly Instructions

7. To remove flow control stem from bonnet, remove nut and cross-handle from top of stem, then unscrew flow control stem from underside of bonnet.



Troubleshooting

PROBLEM: Valve will not close when energized.

CAUSE #1:
Debris in plunger tube is preventing plunger from sealing port at top of plunger tube.
SOLUTION:
Clean plunger tube or replace if necessary.

CAUSE #2:
Plunger seat on top side of solenoid plunger is retracted below surface of plunger top. The rubber seat has a spring under it in an opening in the top of the plunger that allows the seat to move up and down. It is possible for the plunger to get stuck below the surface of the plunger top.
SOLUTION:
Attempt to dislodge plunger seat or replace if necessary.

Troubleshooting

PROBLEM: Valve will not close when energized.

CAUSE #3:

Debris under rubber seat disc is preventing it from seating onto brass seat in valve body.

SOLUTION:

Remove diaphragm assembly, check and remove debris in body or in rubber seat disc. If rubber seat is pitted, flip it over or replace it.

CAUSE #4:

Torn diaphragm.

SOLUTION:

Disassemble diaphragm assembly and replace diaphragm or replace diaphragm assembly.

Troubleshooting

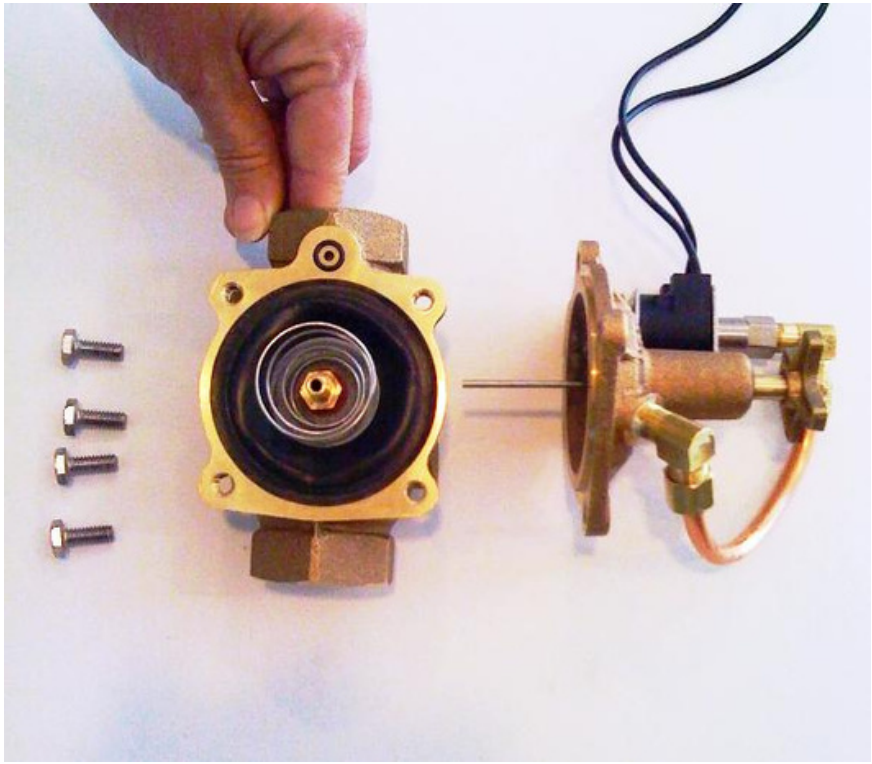
PROBLEM: Valve will not close when energized.

CAUSE #5:

Clogged inlet port at bottom of diaphragm shaft is preventing water from entering upper diaphragm chamber. This can be diagnosed by loosening the compression fitting where copper tubing connects to L-fitting above solenoid. If water does not exhaust out of tubing, this indicates water is not entering upper diaphragm chamber. This needs to be done while valve is pressurized.

SOLUTION:

Problem is most likely due to buildup of minerals on metering. Remove top of valve and
clean metering rod with emery cloth.



Troubleshooting

PROBLEM:
Valve closes or partially closes when solenoid is not energized.

CAUSE #1:
Inlet orifice at top of solenoid plunger tube is clogged, or corrosion in solenoid plunger tube is preventing water from escaping at the rate required to keep the valve fully open.

SOLUTION:
If port is clogged, clean it with small sharp object such as a paper clip. If corrosion is evident, replace stem and plunger assembly.

PROBLEM:
Valve remains closed when solenoid is not energized.

CAUSE #2:
Water is entering upper diaphragm chamber at too great of a rate due to: 1) Stainless steel inlet orifice in bottom of diaphragm shaft has fallen out, or 2) metering rod in flow control stem has fallen out.

SOLUTION:
If the stainless steel inlet orifice is missing, replace diaphragm shaft or diaphragm assembly. If metering rod is missing, replace flow
control stem.

Additional Troubleshooting Applying to 3100PRS

PROBLEM:
Valve remains closed when solenoid is not energized.

CAUSE:
Adjustment knob on regulator is in “off” position preventing water from passing thru regulator.

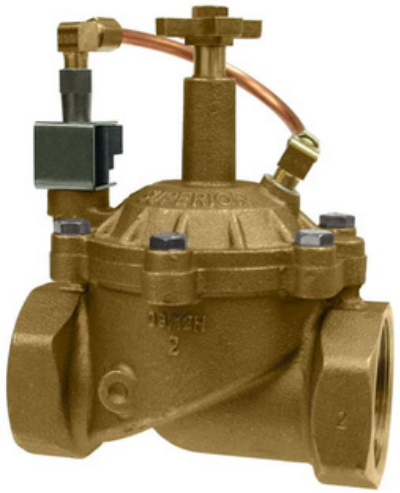
SOLUTION:
Raise knob on regulator to unlock it, then rotate knob clockwise, a half turn at a time, until water begins to pass thru valve. Wait until system is fully pressurized then continue to rotate knob clockwise until desired setting is reached. Next, push down on regulator knob to lock it in place.

Troubleshooting

PROBLEM:
Valve closes whenever controller energizes a station.

CAUSE:
Master valve circuit is also energized causing normally open master valve to close.

SOLUTION:
Follow wiring and/or programming instructions included with controller for connecting to and operating a normally open master valve.



PROBLEM:
Water is leaking out around flow control stem.

CAUSE:
O-ring on flow control stem is damaged.

SOLUTION:
Disassemble flow control stem from bonnet and replace o-ring. Before reassembling stem to bonnet, apply silicone grease to o-ring.

Parts, Sub-Assemblies, and Repair Kits

Solenoid Coil (24 VAC): 16008
Solenoid Stem and Plunger Assembly: 16300
24 VAC 3-Way Solenoid Assembly: 16075
L-Fitting: 16500-1
Copper Tubing (includes compression fittings): ¾" & 1"-16516, 1 ¼"-16517, 1 ½" & 2"-16518, 2 ½" & 3"-16519
Flow-Control Stem (includes o-ring): ¾"-20006-A, 1"-16081, 1 ¼"-16004-1, 1 ½" & 2"-16004, 2 ½" & 3"-19000
Diaphragm: ¾"-16055, 1"-16056-A, 1 ¼"-16057RW, 1 ½" & 2"-16058, 2 ½" & 3"-400028
Regulator (3100PRS): 16525
Repair Kits (includes all rubber and fiber parts): ¾"-17308, 1"-17309, 1 ¼"-17310, 1 ½"-17311, 2"-17312, 2 ½" & 3"-17313
Diaphragm Assemblies: ¾"-16211, 1"-16212, 1 ¼"-16213, 1 ½"-16214, 2"-16215, 2 ½" & 3"-16216
Top Assemblies: ¾"-16280, 1"-16281, 1 ¼"-16282, 1 ½" & 2"-16283, 2 ½" & 3"-16284