



950 Series

Disassembly Instructions and
Troubleshooting (Also Applies to 950PRS)



Index

Page Solenoid Disassembly Instructions (2,3)

Parts, Sub-Assemblies, and Repair Kits (18)

Troubleshooting:

- Valve will not close (9,10)
- Valve will not open (11-13)
- Water leaks out around flow-control stem (13)
- Water leaks out between bonnet and body (14)
- Water leaks out around manual bleed screw (15)

Additional Troubleshooting for 950PRS:

- Water weeps past valve (16)

Valve will not open electrically or manually (17)

Valve Disassembly Instructions (4-8)

Solenoid Disassembly Instructions

1. Unscrew and remove retaining nut from solenoid post and slide coil and U-frame off of solenoid post.



2. Using a flathead screwdriver, unscrew and remove solenoid post from top of valve.



Solenoid Disassembly Instructions

3. Solenoid plunger will drop out of plunger tube as post is removed from solenoid cavity.



Solenoid cavity: The center port is the exhaust port. The other port connects the solenoid cavity to the diaphragm chamber



Valve Disassembly Instructions

1. Remove solenoid retainer nut and slide solenoid coil and U-frame off of solenoid post

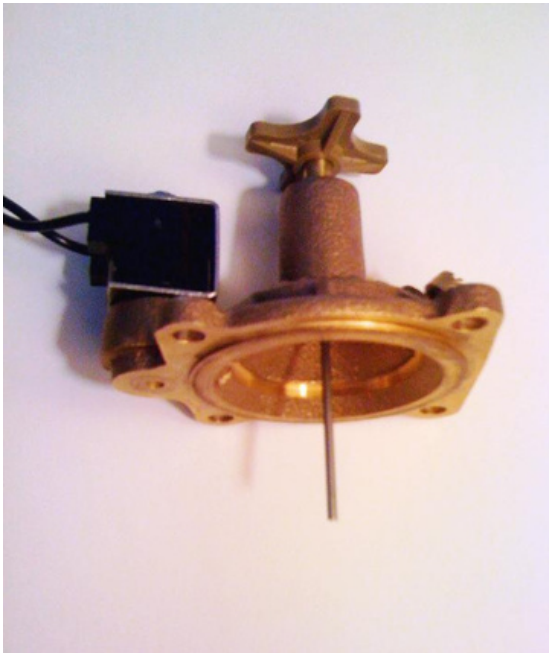


2. Unscrew bolts that fasten valve bonnet to valve body.

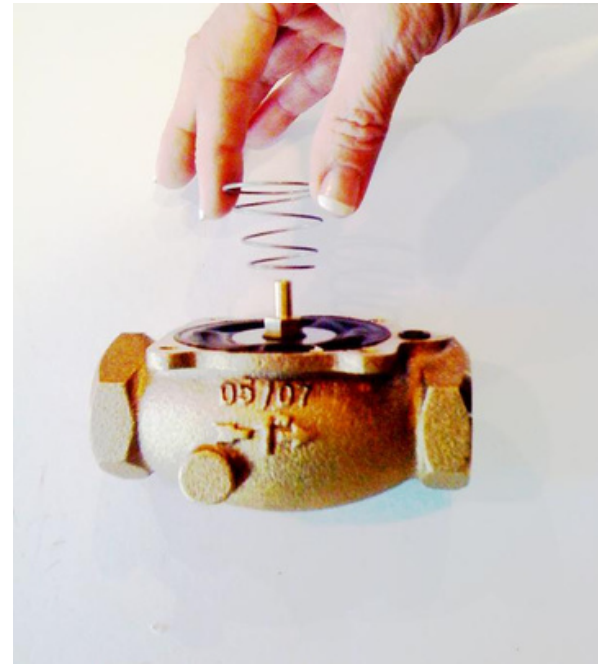


Valve Disassembly Instructions

3. Lift bonnet straight up off of valve body taking care that the metering in bonnet exits top of diaphragm shaft.



4. Remove diaphragm spring from top of diaphragm assembly

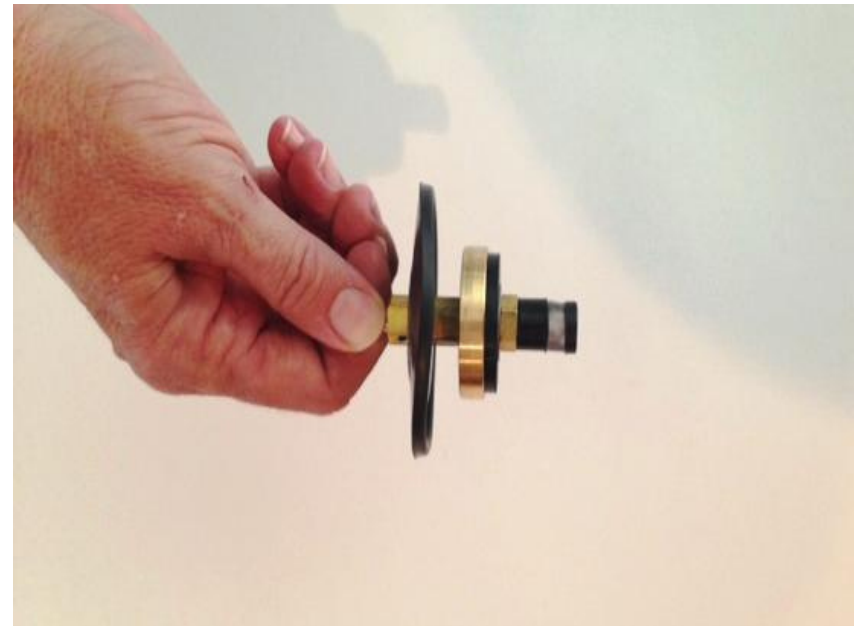


Valve Disassembly Instructions

5. Remove diaphragm assembly from valve body.

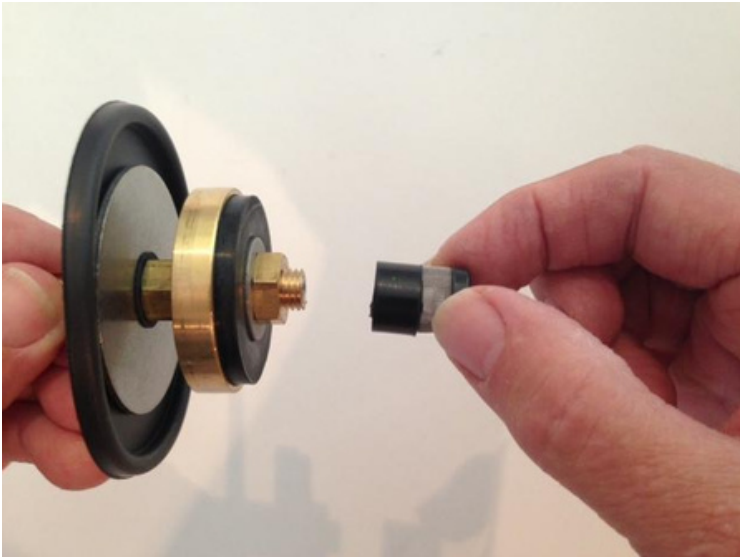


6. This photo shows the diaphragm assembly of the 950DW, 950DWIB, and 950PRS. The only difference is the filter that is screwed onto the bottom of the shaft.



Valve Disassembly Instructions

8. For 950DW, 950DWIB, and 950PRS models, unscrew filter from bottom of shaft.



9. To access rubber seat disc, unscrew retainer nut from bottom of shaft and remove retaining washer, brass disc holder, and rubber seat disc.



Valve Disassembly Instructions

7. Completely disassembled diaphragm assembly.



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



Troubleshooting

PROBLEM: Valve will not close

CAUSE #1: Malfunctioning solenoid.

Solenoid plunger is unable to seal exhaust port due to debris in solenoid cavity or plunger being stuck in plunger tube and unable to drop.

SOLUTION:

Remove debris from solenoid and/or clean plunger and plunger tube. Replace stem and plunger assembly if necessary.



CAUSE #2:

Debris in valve body prevents rubber seat from fully closing onto brass seat.

SOLUTION:

Remove debris from valve body.



Troubleshooting

PROBLEM:

Valve will not close (or closes but weeps).

CAUSE #3:

Debris embedded in rubber seat of diaphragm assembly or rubber seat is pitted.

SOLUTION:

Disassemble lower portion of diaphragm assembly, flip rubber seat disc or replace with a new one.



PROBLEM: Valve will not close.

CAUSE #4:

Torn diaphragm.

SOLUTION:

Replace diaphragm assembly or disassemble diaphragm assembly and replace diaphragm.



Troubleshooting

PROBLEM: Valve will not open.

CAUSE #1:

Solenoid is not receiving power. Check as follows:
1) Energize solenoid at controller. The solenoid should vibrate enough that it can be felt when coil is touched. 2) As an additional check, remove coil and solenoid stem and plunger from bonnet. Have another person energize solenoid at controller while you are holding solenoid with thumb pressing up on plunger so that plunger is most of the way up plunger tube. Plunger should be sucked up all the way in tube when coil is energized.

If solenoid is not receiving power, disengage solenoid lead wires from valve wires and go to controller with solenoid assembly. Attach one solenoid lead to common terminal and other to a station terminal. Energize the station while holding solenoid in manner described above. If solenoid plunger is sucked into cylinder, then solenoid is OK. Problem is damaged wire between controller and valve.

SOLUTION:

Replace solenoid coil if bad.



Troubleshooting

PROBLEM: Valve will not open

CAUSE #2:

Clogged inlet orifice as indicated by water not exiting manual bleeder when opened. The likely cause is a mineral buildup on metering rod.

SOLUTION:

Remove bonnet assembly and clean metering rod with emery cloth.



CAUSE #3:

Clogged solenoid exhaust port.

SOLUTION:

Run a wire down exhaust port. If necessary, remove bonnet and run a drill down exhaust port into opening of valve.



Troubleshooting

PROBLEM:

Valve will not open.

CAUSE #4:

Dislodged stainless steel inlet orifice enabling water to enter upper diaphragm chamber faster than it can exit through the solenoid exhaust port. This condition is revealed by an excessive amount of water exhausting out of manual bleeder when opened.

SOLUTION:

Replace diaphragm shaft



PROBLEM:

Water leaks out around flow-control stem.

CAUSE:

Torn or damaged flow-control o-ring.

SOLUTION:

Remove flow-control stem from bonnet and replace o-ring. Apply silicone grease to o-ring before reassembling stem into bonnet.



Troubleshooting

PROBLEM:

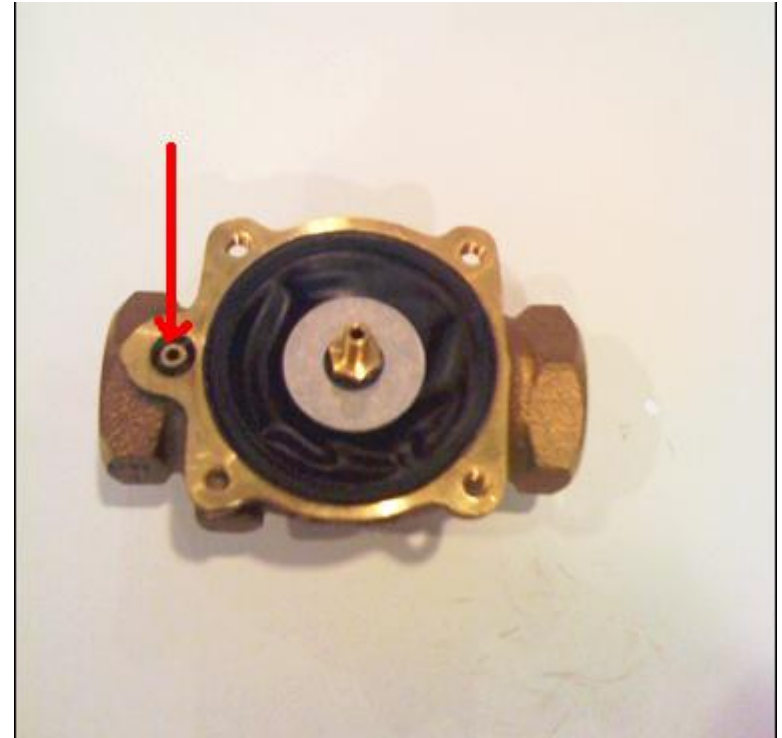
Water leaks out of valve between bonnet and body in area below solenoid.

CAUSE:

Damaged or missing exhaust o-ring.

SOLUTION:

Remove bonnet and replace o-ring. It may be necessary to scrape remnants of the o-ring from the o-ring groove using a sharp object. This is because the o-ring was set in groove with epoxy.



Troubleshooting

PROBLEM:

Water leaks out around manual bleed screw.

CAUSE #1:

Damaged o-ring on manual bleed screw.

SOLUTION:

Replace manual bleed screw.



PROBLEM:

Water leaks out around manual bleed screw.

CAUSE #2:

Bleed screw unable to screw all the way down due to disappearing threads in opening. This is caused by a transfer of metal between threads of bleed screw and female threads in opening.

SOLUTION:

Using a 5/16"-24 tap, rethread opening and replace bleed screw with a new one.



Additional Troubleshooting Applying to 950PRS

PROBLEM:

Water weeps past valve and seeps out of lowest head in system.

CAUSE:

If the solenoid has been checked and is OK and the interior of the valve has been checked for debris but none is found, then the likely cause is a defective manual bleed valve. To verify, remove the plastic tubing from the barbed fitting on the manual bleed valve. The best way is to slit the end of the tubing about $\frac{1}{4}$ " with a knife or razor blade and pull the tubing off of the barb. If water, even a very small amount, exhausts from the manual bleed valve when it is in the "off" position, then the manual bleed valve is defective.

SOLUTION:

Replace the manual bleed valve and reconnect the tubing after slicing the end of the tubing just below the slit that was made in order to remove the tubing.



Additional Troubleshooting Applying to 950PRS

PROBLEM:

Valve will not open electrically or by opening the manual bleed valve.

CAUSE:

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

SOLUTION:

Open manual bleed valve by turning handle in counter-clockwise direction. Next, 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, then close manual bleed valve.



Parts, Sub-Assemblies, and Repair Kits

Solenoid Coil (24 VAC): 16008

Solenoid Stem and Plunger Assembly: 16010-2A

Solenoid Assembly (24VAC): 16200

Manual Bleed Screw (includes o-ring): 15013 (all sizes)

Manual Bleed Ball Valve-950PRS, 950DWIB: 16551 (all sizes) Note:

Replaces Manual Bleed Needle Valve Flow-Control Stem (includes o-ring): ¾"-2006-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

Diaphragm Assembly-950: ¾"-16211, 1"-16212, 1 ¼"-16213, 1 ½"-16214, 2"-16215, 2 ½" & 3"-16216 Diaphragm Assembly-950DW, 950PRS, 950DWIB: Add -L to above numbers (i.e. 1"-16212-L)

Repair Kits (includes all rubber and fiber parts): ¾"-17308, 1"-17309, 1 ¼"-17310, 1 ½"-17311, 2"-17312, 2 ½" & 3"-17313

Top Assembly-950, 950DW : ¾"-16201, 1"-16202, 1 ¼"-16203, 1 ½"-16204, 2"-16205, 2 ½" & 3"-16220

Top Assembly-950PRS: Add -M to above numbers (i.e. 1 ½"-16204-M (i.e. 1 ½"-16204-M)

Pressure Regulator-950PRS: 16525

T-Tubing Assembly-950PRS: 1"-16513, 1 ¼" thru 2"-16514, 2 ½" & 3"-165150