

Model ZW204

Non-Modulating Float

Globe and Angle Pattern Bodies

1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10", 12", 14" & 16"



Installation Troubleshooting Maintenance Instructions

Installation / Start-up

DESCRIPTION

The Zurn Wilkins Model ZW204 Non-Modulating Float Operated Control Valve is an automatic control valve designed to be fully open or fully closed in response to the position of the float. The float ball will be placed in a tank where it will be raised or lowered by the fluid level. The valve will be fully open when the fluid level is at a preset low point and will fully close when the fluid level is at a preset high point. If the float valve is being used to flow water out of instead of into the reservoir, the float pilotry can be configured to have the valve fully open at a preset high point and fully closed at a preset low point. If desired, switch line from port A to B on the float valve and plug port A. The Float Pilot valve is set up for remote liquid level control as standard. With the VM option, the float pilot can be mounted on the valve.

NOTE: Flushing of all pipe lines is to be performed to remove all debris prior to installing valve.

Caution: The recommended installation orientation for ACVs is horizontal, with the valve cover up. 6" and larger valves should only be installed horizontally, with the valve cover up, due to the difficulty of properly bleeding air out of the cover on valves installed in the vertical orientation. In addition, the horizontal positioning of the larger valves avoids premature wear due to the mass of plunger assemblies as well as allows for greater accessibility during annual inspections, and maintenance.

1. Install a control valve, orifice, or other flow restricting device downstream of the ZW204 if discharge pressure is greater than 20 psi. This will prevent the valve from exceeding maximum flow, cavitating, or causing other damage to valve or system from high water velocities.
2. For making adjustments and servicing allow for adequate space around the valve before installing valve.
3. When installing a ZW204, gate valves installed on both inlet and outlet are recommended for maintenance allowing for isolation of valve.
4. Position the main valve in line matching the direction of flow as indicated on the valve model tag with the proper direction of flow in the system. Once attached to line, double check all fasteners/bolts in the pilot system and on main valve are tight and there is no damage prior to pressurizing system.

NOTE: Pressure in some applications can be very high so be thorough in checking and inspecting for proper installation and makeup.

NOTE: Upstream pressure should be at least 10 psi greater than downstream hydrostatic pressure when valve is closed.

5. The float ball and rod assembly must be mounted in the vertical position above the water in a tank or reservoir.

Note: A stilling well is required to surround the float in tanks or reservoirs which are subject to waves of any kind. Verify float has adequate clearance to move freely in all float positions.

6. When installing a ZW204 with remote pilot, route tubing from the main valve to the float valve according to the schematic diagrams on page 3. Port P on the float valve should be connected to the inlet of the main valve. Port A should be connected to the main valve cover (or 3-Way ACL pilot cover if installing an 8 or 10 inch valve.)

Attention: If valve has check option C, then also route tubing from port E on pilot to downstream port of valve. See schematic.
Note: When mounting the float pilot above the main valve, verify pressure at the float pilot is 5 psi or greater to ensure proper operation.

START-UP

CAUTION: To prevent personnel injury and damage to equipment check that downstream venting is adequate prior to start-up and test procedures. If the main valve closes too fast it may cause surging in upstream piping.

1. Open ball valves (2) in the pilot system (see ZW204 schematics).
2. Slowly open the upstream shutoff valve only enough to fill main valve assembly and pilot system. Prior to pressurizing the valve assembly it is also recommended that a ZPI valve position indicator be installed to aid in verifying proper valve movement.
3. As the valve is filling with water, it is necessary to bleed the main valve and pilot system of air. To vent air, partially open or loosen the highest plugs or fittings in the system. The ZPI valve position indicator is a great location, as it has a test cock at the top to vent air pressure. It may be necessary to bleed system more than once. After removal of air in the system tighten all loose fittings. **NOTE: If valve is installed vertically, it will be necessary to loosen some upper cover bolts until you have vented all the air from the cover chamber.**
4. If valve is equipped with speed controls (O or L on ZW204 schematic) it is necessary to back out the set screw a minimum of 3 turns from closed position.
5. At this point with the upstream shutoff valve partially open, slowly open the downstream shut off valve. Flow will begin to occur and pressure should build up in valve and eventually stabilize.
6. Next it is advisable to flow water through the valve to ensure all air has escaped from system. Open upstream and downstream shutoff valves enough to purge pipe system of air. The float must be held in the down position so ZW204 remains open.
7. Float rod, float, stop collars and counterweight must be installed on site for specific application.
8. Assemble the float rod assembly **without the float** for initial setup. Assemble the parts in the order shown on the float rod

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

FLOAT ROD ASSEMBLY DIAGRAM

assembly diagram. (Item #3 Float Rod Bracket will come preassembled on the float pilot). A standard float rod assembly consists of two 1 ft. long rods, two bolts, a lock washer, two stop collars with setscrews, and an extension rod setscrew. Additional rod extensions are available upon request. Install all extensions at this time.

9. Hold the float pilot pivot arms horizontal, adjust the upper stop collar (Item #4) 3 inches above the desired high water level and adjust the lower stop collar 3 inches below the desired low water level then tighten the stop collar setscrews.

Note: The distance between the stop collars should not exceed 40 inches or natural buoyancy of the rod will effect the operation of the ZW204.

10. Install counterweight on the counterweight pivot rod with the counterweight setscrew installed in the counterweight. (See page 8 for diagram)

11. Now adjust the counterweight position until the counterweight rod is balanced horizontally.

Note: Because of buoyant forces pushing up on the float rod when it is submerged in water, small adjustments must be made to the position of the counterweight to correctly balance the float valve.

12. Once the counterweight balances the float rod, make small adjustments to the position of the counterweight so the valve pivot rods are horizontal when the water level is halfway between the stop collars (the bottom of the float rod will be submerged). Once completed, tighten the counterweight setscrew.

Note: If installing additional float rods (more than 2 feet), 2 counterweights must be installed on the counterweight pivot rod. The maximum total length of the float rod is 5 feet.

13. Disassemble the float rod between the stop collars without moving the stop collars. Place the float between the stop collars on the float rod and tighten the rods.

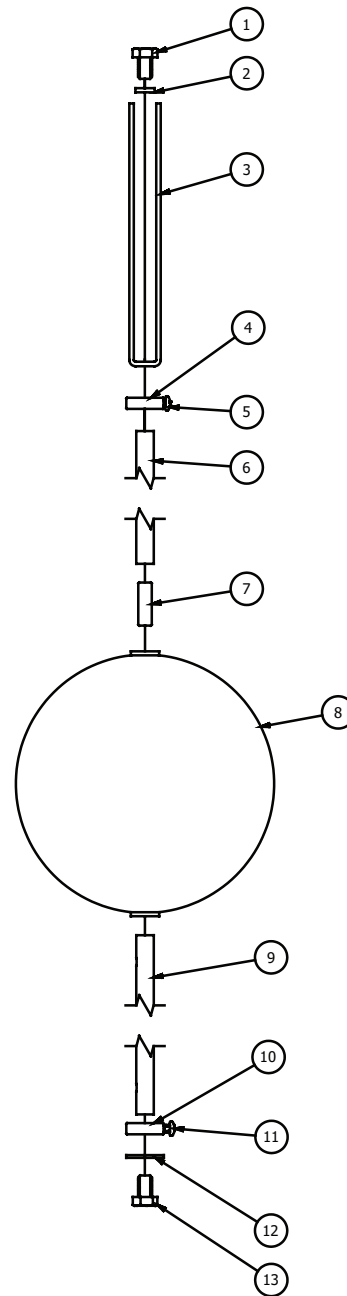
14. After pilot system has been adjusted and the float valve is properly operating the main valve, opening and closing speed controls (O or L) can be adjusted as needed.

15. When setting speed controls, turning the adjustment screw into the speed control will restrict the amount of flow through the needle valve. Depending on whether the control is for opening or closing (refer to ZW204 schematic) the control will either slow the opening or closing of the main valve when the adjustment screw is turned into the speed control. Adjust as needed to prevent large pressure surges when the ZW204 opens and closes. and tighten jam nut. In general a closing speed control on a ZW204 should be at least 3 turns out from the furthest closed position to prevent high tank overflow.

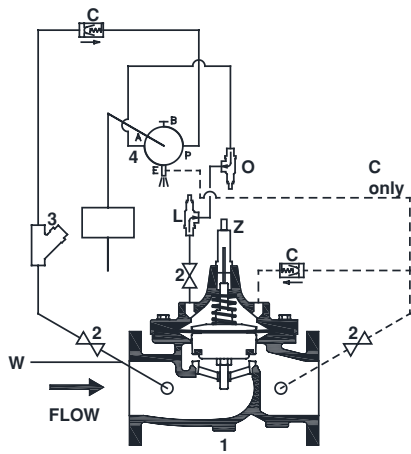
CAUTION: Depending on inlet pressures and flow rates through the main valve, closing times could be longer than anticipated. Verify water level is well below the top of the tank or reservoir when the main valve closes or adjust the upper stop collar on the float rod so the main valve starts to close at a lower water level to prevent overflow.

DIAGNOSIS CHECKS

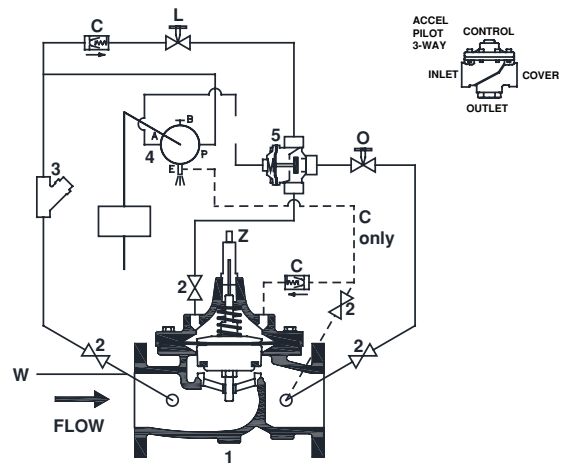
CAUTION: Do not service valve while under pressure. When performing diagnosis checks on the ZW204 and the valve is fully open, high flow rates and high downstream pressures can occur.



| PARTS LIST | |
|------------|----------------------------|
| ITEM | DESCRIPTION |
| 1, 13 | ROD END BOLT SS |
| 2 | 5/16 LOCK WASHER SS |
| 3 | FLOAT ROD BRACKET |
| 4, 10 | STOP COLLAR |
| 5, 11 | STOP COLLAR SET SCREW SS |
| 6, 9 | FLOAT ROD SS |
| 7 | EXTENSION ROD SET SCREW SS |
| 8 | 6" FLOAT SS |
| 12 | BOTTOM ROD WASHER |



USE FOR SIZES: 1 1/4" - 6"



USE FOR SIZES: 8" - 16"

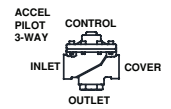
ZW204 SCHEMATIC

STANDARD COMPONENTS

- 1 Main Valve
- 2 Ball Valve
- 3 SXL Wye Type Strainer
- 4 On/Off Float Valve PV-FNM
- 5 3-Way ACL Pilot

OPTIONAL FEATURES

- C 40XL Hydraulic Check w/Ball Valve
- L SC1 or SC2 Closing Speed Control
- O SC1 or SC2 Opening Speed Control
- Z ZPI Valve Position Indicator
- W Independent Operating Pressure



Troubleshooting

1. To verify if the non-modulating float pilot is properly operating, close the cover ball valve on the main valve. Verify there is pressure on the inlet of the main valve. Raise and lower the float several times through the float's entire travel. A small amount of water should come out of port E only when the float is moved from the "up" position to the "down" position.
2. The float pilot is not operating correctly if:

- Water does not come out of port E. Check for inlet pressure to the main valve and pressure at port P (Must be greater than 5 psi) on the float pilot. If there is pressure, then it is recommended that the float valve be disassembled and inspected. (Refer to PV-FNM "Disassembly" section.)
- Water flows out of port E when the float is in an "up" position. Make sure port P is connected to the inlet of the main valve otherwise, it is recommended that the float valve be disassembled and inspected. (Refer to PV-FNM "Disassembly" section.)
- There is a continuous stream of water from port E. It is recommended that the float valve be disassembled and inspected. (Refer to PV-FNM "Disassembly" section.)

If the float pilot is operating correctly proceed to the next step.

3. Open the cover isolation valve on the main valve. Slowly raise the float to the "up" position to allow the cover to fill and the main valve to close. If installed, verify the valve position indicator (model ZPI) is closed. If the main valve does not close and the pilot operating correctly go to the "Diaphragm Check" and "Diaphragm Movement Check" sections.
4. If there is continuous flow (even a trickle) from the outlet of the main valve when the float pilot is an "up" position, the main valve is not sealing properly or the pilot is not setup correctly.
 - Verify the pilot is connected according to the schematic diagram and correct if necessary.

- If the float pilot is connected correctly, go to "Diaphragm Check" and "Diaphragm Movement Check" sections to determine whether those items are operating correctly.
 - If the "Diaphragm Check" and "Diaphragm Movement Check" do not show apparent issues, the main valve is leaking and is allowing pressure to creep by the valve seal. It is recommended that the valve be disassembled and inspected (refer to "Disassembly" section).
5. If the main valve closes and no flow is coming from the outlet of the main valve, slowly close the inlet ball valve on the main valve. With the main valve closed, slowly re-open the cover ball valve. Move the float to the "down" position. This will cause the valve to open and water to flow. If the main valve is not flowing water, check for the following:
 - Water should discharge from the E port on the float pilot. If water does not discharge from E, verify the pilot is connected to the main valve correctly and that there is pressure on the inlet of the main valve.
 - Otherwise, if water does not flow from the outlet, the main valve is not opening. It is recommended that the valve be disassembled and inspected (refer to "Disassembly" section).

When performing troubleshooting and diagnosis checks it is recommended that the following steps be performed in sequential order for best results.



TABLE 1. PILOT SYSTEM TROUBLESHOOTING

| <u>PROBLEM</u> | <u>POSSIBLE CAUSES</u> | <u>CORRECTIVE ACTION</u> |
|----------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 1. Pilot continuously dumps water through discharge port | 1. Main valve diaphragm damaged 2. Loose main valve stem 3. Damaged pilot | 1. Replace diaphragm 2. Tighten main valve stem nut 3. Replace any damaged components of pilot assembly. |
| 2. Float is stuck (stays in up or down position) | 1. Stuck float valve pivots 2. Worn or damaged float valve | 1. Ensure all pivots points are free to move 2. Disassemble and replace damaged components of valve |

TABLE 2. MAIN VALVE TROUBLESHOOTING

| <u>PROBLEM</u> | <u>POSSIBLE CAUSES</u> | <u>CORRECTIVE ACTION</u> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Main Valve fails to open | 1. No pressure at valve Inlet 2. Main valve diaphragm assembly inoperative 3. Float pilot connected to incorrect ports 4. Float is stuck up | 1. Check Inlet pressure 2. Disassemble, clean, and polish stem, replace defective parts 3. Check ports and connect according to schematic 4. See pilot system troubleshooting |
| 2. Main Valve fails to close | 1. Foreign matter between disc and seat or worn disc 2. Scale on stem or diaphragm ruptured 3. No pressure going to main valve cover port 1) Float pilot mounted too high above main valve 2) Clogged wye strainer or tube connecting to pilot and main valve 4. Ball valves closed 5. Float is stuck down | 1. Disassemble the main valve, remove debris, clean parts, and replaced defective parts 2. Clean parts, and replace defective parts 1) Mount float pilot lower or increase pressure at float pilot 2) Remove, clean, and/or replace 4. Open ball valves 5. See pilot system troubleshooting |

DIAPHRAGM CHECK

1. Slowly close upstream shut off valve and relieve all pressure downstream.
2. With all pressure relieved in the main valve, close inlet pilot ball valve and remove side plug on cover and leave off.
3. Then open upstream shut off valve partially, allowing water to flow through the valve. While flowing water, monitor the opening on the cover. Water will come out of the cover as the ACV opens. Once the valve opens fully subsequent water should not come out of the cover. If water flows continuously through the open hole in the cover, then there is likely damage to the diaphragm or fluid is leaking past the diaphragm assembly due to loose assembly. It is recommended that the valve cover be removed to investigate the leakage (to remove cover see "Maintenance" section for procedures). If water stops flowing out of the cover then the diaphragm is good and you may proceed to the diaphragm movement check.

DIAPHRAGM MOVEMENT CHECK

1. The diaphragm movement check can be determined during the diaphragm check by removing the top center plug or it can also be performed with the use of a valve position indicator model ZPI.
2. Replace cover plugs and open pilot ball valves on inlet and cover.
3. Moving the float position to the "up" position will direct the flow to the cover causing it to close. NOTE: Slow or delayed closing of main valve is normal and is due to the time required to fill, pressurize cover and stretch the diaphragm into the closed position. This normal delay is not mechanical binding of the valve assembly.
4. Using the valve position indicator, make note of the closed position on the indicator. Compare distance of the open mark to the close mark and compare to Table 3.
5. Verify that the main valve is closed, by opening a downstream source (not the outlet isolation ball valve on the main body). If water continuously flows, then the main valve is not sealing properly. Double check the valve movement matches the valves in Table. 3 and refer to the disassembly procedures section if it does not. This is an indication that the main valve is not sealing due to an obstruction between the seat and the seal, seat, or a damaged seal. If water does stop flowing and the measured valve movement does not match Table. 3, then there is possible damage under the cover. Remove cover to identify obstruction and replace parts as necessary.

TABLE 3. VALVE STEM TRAVEL

| VALVE SIZE (in) | VALVE SIZE (mm) | STEM TRAVEL (in) | STEM TRAVEL (mm) |
|-----------------|-----------------|------------------|------------------|
| 1-1/4" - 1-1/2" | 38 | 0.4 | 10.2 |
| 2" | 50 | 0.7 | 18.0 |
| 2-1/2" | 65 | 0.8 | 21.3 |
| 3" | 80 | 0.9 | 23.4 |
| 4" | 100 | 1.1 | 28.8 |
| 6" | 150 | 1.7 | 43.4 |
| 8" | 200 | 2.4 | 59.7 |
| 10" | 250 | 2.8 | 71.1 |
| 12" | 300 | 3.4 | 86.4 |
| 14" | 350 | 3.8 | 96.5 |
| 16" | 400 | 4.3 | 109.2 |

6. For smaller valves (6" and below) diaphragm checks can be performed by hand with the use of a valve stem tool. The valve stem tool can be made using Table 4 to create a "T" bar handle with the appropriate threads on the opposite end of the "T" handle.

TABLE 4. VALVE STEM THREAD SIZE

| VALVE SIZE (in) | THREAD SIZE UNF INTERNAL |
|-----------------|--------------------------|
| 1-1/4" - 1-1/2" | 10-32 |
| 2" | 10 - 32 |
| 2-1/2" | 10 - 32 |
| 3" | 1/4 - 20 |
| 4" | 1/4 - 20 |
| 6" | 1/4 - 20 |
| 8" | 3/8 -16 |
| 10" | 3/8-16 |
| 12" | 3/8-16 |
| 14" | 3/8-16 |
| 16" | 3/8-16 |

7. To perform the diaphragm check using the valve stem tool, first remove all pressure in the system and vent the cover. Then remove the center plug on the cover and insert tool into the top of the stem threads. Once the tool is inserted, the valve can be lifted up and the valve movement can be measured by creating marks on the tool in the opened and closed positions. The distance between marks is the valve stem travel. Replace or repair any parts as necessary. Caution: water will squirt from center hole or can be vented from extra plug on cover when lifting.



Maintenance Instructions

PREVENTATIVE MAINTENANCE

The Zurn Wilkins ZW200 models require minimal maintenance. However, it is highly recommended to schedule annual inspections and to have a repair kit on hand before work begins. Valves used often may be inspected on annual basis, but at least every five years. Valves that rarely open, should be inspected every six months to one year for water deposits, debris, or corrosion.

DISASSEMBLY

Warning: Because of the ability to perform inspections and maintenance without removal from the system, it is very important that all shut off valves be closed and all pressure relieved in the valve before beginning disassembly. Failure to do so can result in personnel injury or equipment damage.

1. Verify that all pressure sources are closed up and downstream of valve.
2. Remove pressure in pilot system by loosening the tube fittings to the valve body and cover. When all pressure has been vented, continue to disassemble the pilot control valve and cover tubing. NOTE: Taking a picture before tear down can help with re-assembly of pilot system.
3. Next remove the cover by loosening and removing the cover bolts. If the cover does not come off easily it may be necessary to loosen the cover using a brass chisel and rubber mallet. Apply the chisel under the cover pointing upward away from valve body and tap bottom of cover with the chisel and mallet to loosen the cover. Once the cover is loose, pull cover straight up to avoid damaging the stem and stem bearing in the cover. On larger valves 8" and up, eye bolts and a hoist are recommended due to the weight of these larger covers.
4. With the cover removed, the diaphragm assembly can be removed. To avoid damaging the seat bushing, grab the stem and lift straight up. For larger valves 8" and up it is recommended that an eye bolt with the proper stem threads be used with a hoist to lift the assembly out of the valve (see Table 4 for appropriate stem threads).
5. Next it is recommended that the diaphragm assembly be placed in a vise with the bottom hex nut secured. Once secured remove the spring and stem nut.
6. After inspecting the stem and removing the nut the diaphragm assembly can be dismantled. If the valve has not been serviced in awhile it is possible that the assembly will require the use of a rubber mallet or pry bars to dismantle the assembly. If this is the case gently tap or pry the components until the components are free to move. When disassembling be sure to clean, inspect, and save all components. Replace any damaged components as necessary.
7. The last component to inspect is the seat which is in the body of the main valve. During inspection of the seat, clean and polish as necessary with fine grit wet/dry sandpaper (400 grit or

higher). Typically, if after cleaning there is no visual damage or excessive wear the seat should not require removal. If damage is present or the seat is excessively worn the seat should be replaced.

8. To remove the seat, on valves 6" and smaller the seat is threaded into the body and will require a seat removal tool. Care should be taken when removing the seat to avoid damaging. On 8" and larger valves, the seat is held in place with flat head hex screws. For larger valves a seat puller may be required to remove the seat from the body. A seat tool may be made by grinding three notches for the spokes in the end of a pipe. Turn with a pipe wrench.

INSPECTION OF COMPONENTS

Cleaning of components is required for proper inspection. Lime deposits are common in systems that use water. To remove deposits, fine grit wet/dry sandpaper (400 grit or higher) can be used. If deposits cannot be removed, off the shelf lime deposit remover can be used. Prepare a solution following the lime deposit remover instructions and soak components (excluding rubber components) until lime deposits are removed.

CAUTION: When handling chemicals (acids) be sure to use proper safety equipment (gloves and eye protection) and practices. After soaking components, be sure to thoroughly rinse all components before handling and re-assembling valve.

Once all valve components have been cleaned, inspect each component looking for damage, abnormal wear & corrosion, and replace all components that look questionable. Replace all rubber components including the diaphragm, o-rings and disc each time the valve is serviced or inspected (rubber components are standard in ZW200 repair kits).

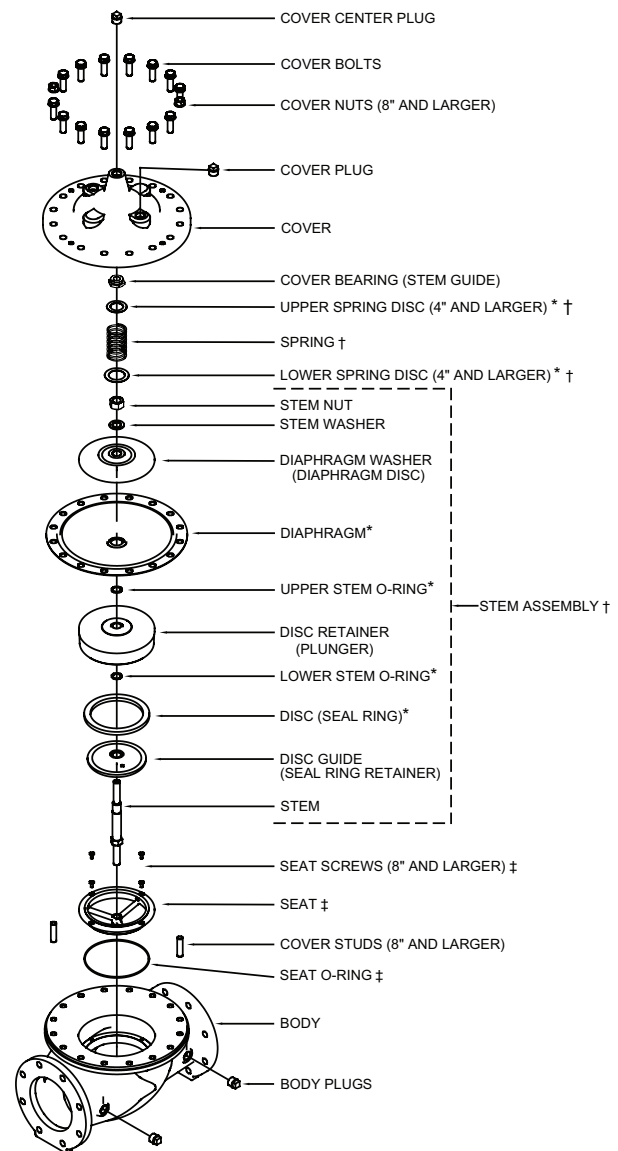


REASSEMBLY

1. First reinstall seat into body. Be sure to use lube around seat o-ring before tightening. Tighten seat according to torque values in Table 5 using seat tool.
2. Next place valve stem in a vise clamping on the hex portion of the stem. Then assemble the diaphragm assembly as shown in Figure. When assembling be sure that the diaphragm is centered on the raised step of the disc retainer. It is also recommended to apply lube to stem threads and o-rings before tightening. Then tighten the stem nut according to Table 5 for torque values.
3. Lower diaphragm assembly carefully into the seat bushing. Be careful not to damage the seat or stem while installing assembly. Rotate the assembly as needed until the bolt holes on the diaphragm line up with the body bolt holes.
4. Place lower spring disc on the diaphragm disc and place spring on top of the assembly. Then install cover, aligning the bolt holes and insuring that the cover is not pinching the diaphragm between the bolt holes. Position cover so plug holes and pilot connection are in original position.
5. Install cover bolts and tighten in a star pattern to the torque values in Table 5.
6. Before installing center cover plug manually check that assembly has full operating travel before installing the pilot assembly (refer to "Diaphragm Movement" in the diagnosis checks section).
7. Once full operation range of the main valve is verified, begin reinstalling pilot system.
8. After installing pilot system double check that all plugs, bolts, and fittings are sealed and tight before applying pressure.
9. Slowly open upstream shutoff valve to pressurize the system and check for any leaks.
10. Stop leaks as needed and proceed to "Start-Up" and "Diagnosis Check" sections for returning valve to proper system operations.

TABLE 5. VALVE TORQUE SETTINGS

| VALVE SIZE (in) | COVER (ft-lbs) | DIAPHRAGM ASSEMBLY (ft-lbs) | THREADED SEAT (ft-lbs) | SEAT BOLTS (ft-lbs) |
|-----------------|----------------|-----------------------------|------------------------|---------------------|
| 1-1/4" | 3.5 | 7.5 | 11 | N/A |
| 1-1/2" | 3.5 | 7.5 | 11 | N/A |
| 2" | 15 | 20-25 | 30 | N/A |
| 2-1/2" | 25 | 25-35 | 60 | N/A |
| 3" | 25 | 35-45 | 70 | N/A |
| 4" | 55 | 40-50 | 85 | N/A |
| 6" | 110 | 50-60 | 95 | N/A |
| 8" | 120 | 60-70 | N/A | 7.4 |
| 10" | 184 | 70-75 | N/A | 7.4 |
| 12" | 200 | 110-115 | N/A | 7.4 |
| 14" | 275 | 170-175 | N/A | 7.4 |
| 16" | 360 | 230-240 | N/A | 7.4 |



- * RUBBER REPAIR KIT ITEMS
- † COMPLETE REPAIR KIT ITEMS
- ‡ SEAT REPAIR KIT

Maintenance (PV-FNM Valve)

MAINTENANCE (PV-FNM VALVE)

The Non-Modulating Float Pilot must be installed in a vertical position with a stilling well surrounding the float if the tank or reservoir is subject to waves of any kind. Port P on the float valve should be connected to the inlet of the main valve. Port A should be connected to either the main valve cover or accelerator pilot cover if installing an 8 inch or larger valve.

DISASSEMBLY

Prior to disassembly, relieve all pressure in pilot system and then remove the PV-FNM. Note the pilot connections and reinstall the pilot with the same connection placement when finished with maintenance.

1. Remove the float rod assembly by taking out the two cotter pins from the float rod bracket and parallel pivot rods.
2. Remove the counterweight and counterweight assembly if desired. This is not necessary for performing maintenance to the float valve.

NOTE: If removing counterweight, note the position so it can be reinstalled easily.

3. Remove the four screws and four nuts from the valve body with a screwdriver and small adjustable wrench.
4. Lift the cover assembly straight up off of the valve body.

NOTE: Do not drop the cover o-ring, valve seat and spring, which are not attached to the end of the stem. Be careful not to scratch or damage the polished surfaces of the valve body or valve seat.

5. Carefully remove the valve seat and spring. Carefully wipe the lapped surface of the valve seat and valve body.
6. Remove the o-ring on the bottom of the cover.
7. Next use a small screwdriver to remove the screw from the valve stem and pivot rod.
8. Once the stem screw is removed slide the valve stem out of the cover along with a washer and small o-ring.
9. After complete disassembly, thoroughly clean and inspect all components before reassembly. Replace any parts as necessary after inspection.

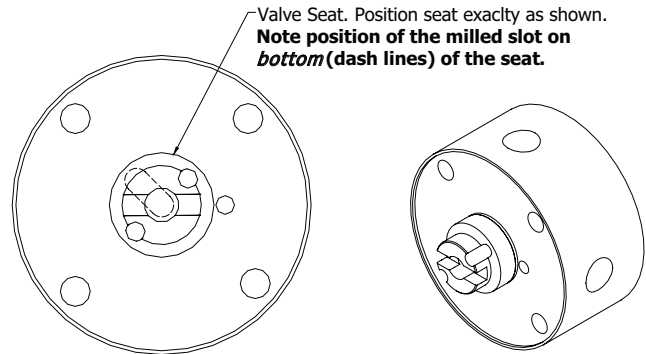
PV-FNM VALVE REASSEMBLY

Reassembly of the PV-FNM is the reverse of disassembly.

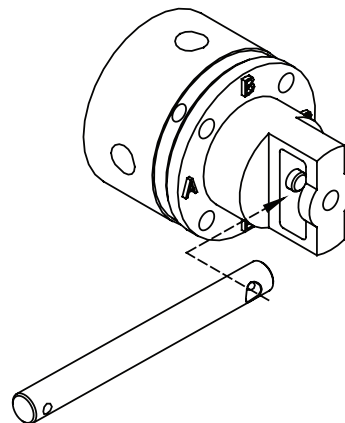
1. Place the valve body on top of the valve base bracket with the polished surface up. Line up all four screw holes in the valve body and base plate. There is only one orientation in which all four holes line up together.
2. Place a dab of grease on the inner polished surface of the valve body. Carefully place the valve seat, with polished surface down, onto the center of the valve base. Make sure the valve

seat is oriented as shown below with the slot in the top of the valve seat parallel to the bottom of the base plate.

3. Next place the spring on top of the valve seat followed by the valve stem. The roll pin in the valve stem will slide into the top slot of the valve seat.



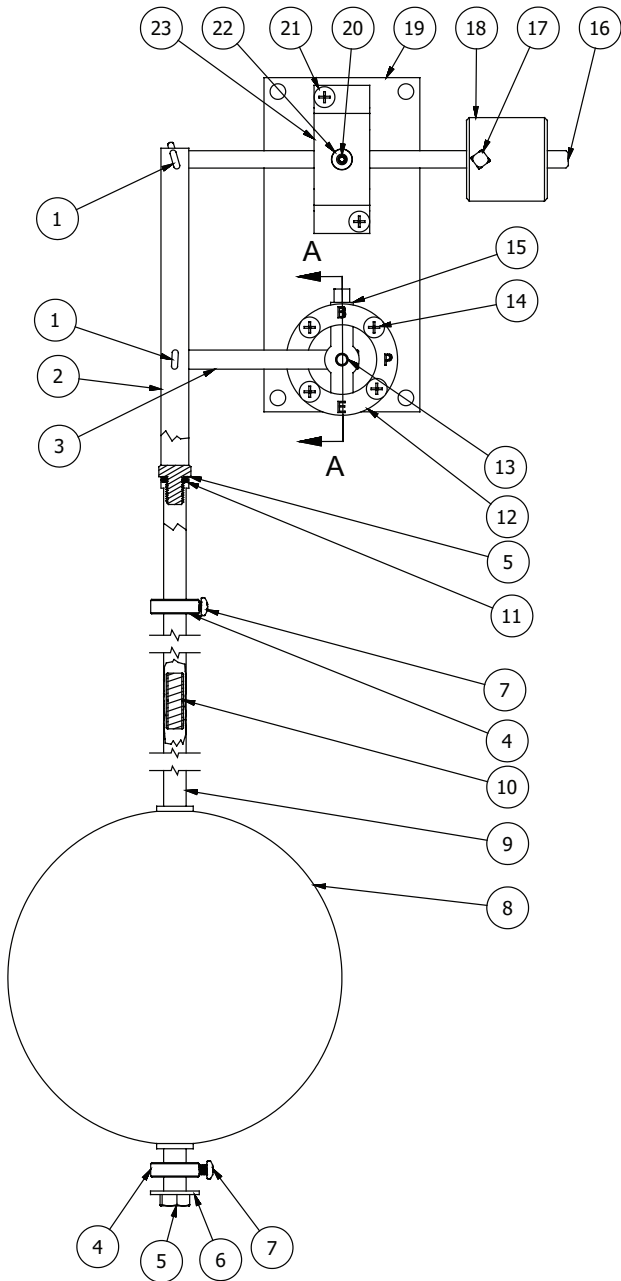
4. Place the washer then the small o-ring on the valve stem.
5. Insert an o-ring into the slot on the bottom of the cover. Take the valve cover and position the "P" on the cover to the right side. Line up the screw holes and the stem hole then slide the cover partially on to the stem.
6. Take the valve pivot rod and place into the top slot in the cover with the rod out to the left. Line up the through hole in the valve pivot rod with the center holes in the cover.
7. Slide the valve pivot rod down on to the stem as the cover is pressed onto the valve body. Hold the cover down and do not release.
8. Insert the four valve screws and thread into valve nuts. Tighten all of the screws. Now the cover can be released.



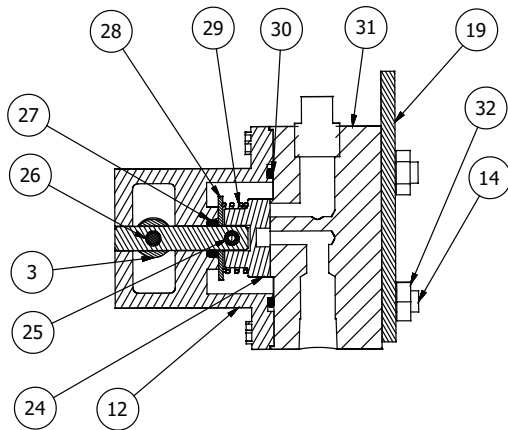
9. Next line up the stem screw hole with the hole on the end of the valve pivot rod. Insert the set screw and tighten.
10. Reinstall the counterweight and counterweight assembly if disassembled.
11. Reinstall the float assembly by inserting the two cotter pins into the float rod bracket and parallel pivot rods.

12. Reinstall into the pilot system once maintenance is completed. For further assistance or ordering replacement parts go to www.zurn.com or call product support 877-222-5356





| PARTS LIST | |
|------------|--------------------------------|
| ITEM | DESCRIPTION |
| 1 | SS COTTER PIN |
| 2 | FLOAT ROD BRACKET |
| 3 | VALVE PIVOT ROD |
| 4 | STOP COLLAR |
| 5 | ROD END BOLT SS |
| 6 | BOTTOM ROD WASHER |
| 7 | STOP COLLAR SET SCREW SS |
| 8 | 6" FLOAT SS |
| 9 | FLOAT ROD SS |
| 10 | EXTENSION ROD SET SCREW SS |
| 11 | 5/16 LOCK WASHER SS |
| 12 | VALVE COVER |
| 13 | VALVE STEM |
| 14 | VALVE SCREW SS |
| 15 | 1/8" BRASS PLUG |
| 16 | COUNTERWEIGHT PIVOT ROD |
| 17 | COUNTERWEIGHT SET SCREW SS |
| 18 | COUNTERWEIGHT |
| 19 | BASE BRACKET |
| 20 | CONE POINT SET SCREW SS |
| 21 | COUNTERWEIGHT BRACKET SCREW SS |
| 22 | COUNTERWEIGHT STEM |
| 23 | COUNTERWEIGHT BRACKET |
| 24 | VALVE SEAT |
| 25 | ROLL PIN SS |
| 26 | VALVE STEM SCREW |
| 27 | VALVE STEM O-RING |
| 28 | VALVE STEM WASHER SS |
| 29 | VALVE SPRING |
| 30 | VALVE COVER O-RING |
| 31 | VALVE BODY |
| 32 | VALVE NUT SS |

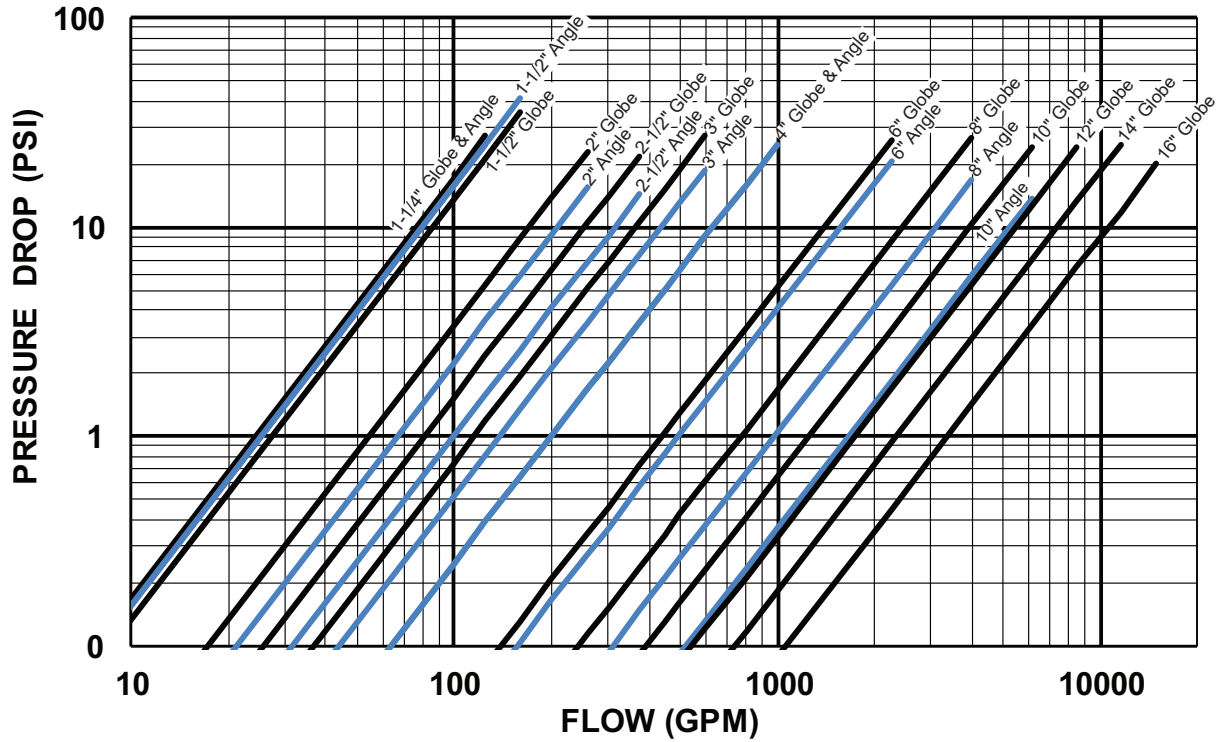


SECTION A-A



Flow Characteristics

BODY MINIMUM FRICTION LOSS



Note: If the valve discharges to atmosphere regularly adequate back pressure is very important to prevent damage to valve, throttle discharge from valve with a gate or butterfly valve.