

# Ford Figure #12 Pressure Reducing Valve Installation, Operating & Maintenance Manual

## Installation

- Direction of flow is indicated on valve.
- Valve can be installed vertically or horizontally.
- All lines must be thoroughly flushed out prior to installation.
- Position valve to allow easy view of bleed hole on valve bonnet.
- Allow easy access to valves for future servicing.
- Bleed hole must be kept free of obstruction.
- Pipe systems and fittings should be capable of withstanding full head pressure as stipulated by Water Authorities.
- Where two Pressure Reducing Valves per station are installed, rotate use periodically to allow spare valve to function.

## Operation

- Desired inlet and outlet pressure are set at factory.
- To adjust Ford Pressure Reducing Valve (PRV) outlet pressure you will need to establish the following Pressure Reducing Stations conditions:
  1. Establish steady state conditions downstream of the PRV outlet by either keeping the downstream shut off valve closed (this is a viable option if your down stream pressure gage is located before the shut off valve) or maintain steady state conditions downstream of the PRV station by preventing any loads being drawn off the water supply line down stream of the pressure reducing station.
  2. Open the upstream (inlet) shut off valve and allow water to fill the PRV.

- Take the following steps and refer to Figure Number 12 Ford Pressure Reducing Valve cut sheet to adjust the outlet pressure on the PRV:
  1. Remove the acorn (component #1)
  2. To increase outlet pressure: turn the pressure adjusting screw (component #2) into the valve (clockwise).
  3. To decrease outlet pressure: turn the pressure adjusting screw out of the valve (counterclockwise).
  4. Once the desired outlet pressure is attained reinstall and then lock the acorn back into place atop of the valve assembly.
- Once the PRV has been set to the desired pressure open the downstream (outlet) shut off valve (if applicable).
- To test that the PRV is working properly you can then draw a load on the downstream water supply system. Check and see if the downstream pressure gage reading drops below the set pressure and then quickly returns to the desired outlet pressure. If the downstream pressure returns to desired outlet pressure you have confirmed that the PRV is operating properly.

## **Maintenance**

- There are only two wearing parts: O-rings (or cup washer for PRVs with the old style piston assembly) and a disc seat, which can be replaced without removing the valve from the line.
- The balanced construction of this valve assures positive seating and eliminates water or air hammer. In fact, this valve is noiseless in operation.
- By removing the valve cap (component #17) from the body, all the internal parts of the valve are removable in one operation.
- Regular flushing with fresh water should keep the valve clear of any obstructions and operating without any other maintenance actions required.

## O-Ring and Disc Seat Replacement (New Style Piston)

1. Recommended materials and tools:
  - a. 1 1/16" box wrench
  - b. 3/8" ratchet or box wrench
  - c. Loctite Thread Sealant with PTFE
  - d. Evinrude-Johnson Triple-Guard Grease
  
2. Disassembly:
  - a. Remove the valve cap (component #17) from the valve body (component #6) by unbolting the four stud nut bolts (component #19) with a 1 1/16" box wrench.
  - b. Remove the old valve cap O-ring (component #18) from the inside surface of the valve cap.
  - c. The piston assembly (component #11), spring (component #5) and spring top (component #4) can now be removed from the opening created by removing the valve cap - these components should slide out together if you pull on the bottom section of the piston assembly.
  - d. Remove the spring and spring top from the piston assembly. Remove the spring top from the old spring and set it aside for the new spring installation (if needed).
  - e. Once the piston assembly and spring is removed you can check for debris in the valve cavity. If there is any debris in the valve cavity you can remove it by hand or rinse it out with clean water.
  
3. Rebuilding the piston assembly:
  - a. To replace the disc seat (component #12) remove the four 3/8" x 5/8" plate screws (component #14) from the piston assembly with a 3/8" ratchet or box wrench. Then remove the bottom follower (component #15) from the piston assembly. The old disc seat can now be removed from the bottom follower and be replaced with the new disc seat - **to prevent water from getting in between the disc seat and bronze components of the piston assembly it is recommended that before you place the new disc seat on to the bottom follower you apply a thin coat of Loctite Thread Sealant with PTFE to the surface of the bottom follower in contact with the disc seat, as well as to the bottom surface of the piston that will also be in contact with the disc seat.** Once both surfaces have been coated with the Loctite use the four plate screws to bolt the bottom follower and disc seat back onto the piston assembly with the 3/8" ratchet or box wrench.

- b. To replace the piston O-ring and back-up ring (component #10) simply pull off the old O-ring and back-up ring and replace with the new O-ring and back-up ring. Please note that the O-ring should sit on top of the back-up ring and the concave surface of the back-up ring should face up so that the O-ring sits in the concave groove of the back-up ring.
- c. Coat the inside of the cylinder (component #7) and the outside of the O-ring and back-up ring, as well as the piston surface above the O-ring with a light coat of Evinrude-Johnson Triple-Guard Grease.

4. Reinstalling the spring and piston assembly:

- a. Attach the spring top (component #4) to the new spring (component #5).
- b. Attach the spring and spring top to the rebuilt piston assembly (component #11).
- c. Slide the spring top, spring and piston assembly back up into the valve cavity.

5. Closing up the valve:

- a. Install the new valve cap O-ring (component #18) into the groove of the inner face of the valve cap (component #17).
- b. Reinstall the valve cap to the valve body (component #6) and lock it in place by evenly tightening the four stud nut bolts with the 1 1/16" box wrench.

After these repairs have been completed and the valve is placed back on line it will be necessary to adjust the valves outlet pressure. This can be accomplished by doing the following:

- 1. Remove the acorn (component #1) and acorn washer (component #1A).
- 2. Change the outlet pressure by turning the adjusting screwing (component #2):
  - a. Either screwing it in (turning clockwise) - which will increase outlet pressure/flow
  - b. Or, screwing it out (turning counter clockwise) - which will decrease outlet pressure/flow
- 3. Once the desired outlet pressure is attained reinstall the acorn washer and lock the acorn back into place atop of the valve assembly.

## O-Ring and Disc Seat Replacement (Old Style Piston)

1. Recommended materials and tools:
  - a. 1 1/16" box wrench
  - b. 7/8" box wrench or adjustable wrench
  - c. 3/8" ratchet or box wrench
  - e. Loctite Thread Sealant with PTFE
  - f. Graphite
  
2. Disassembly:
  - a. Remove the valve cap (component #17) from the valve body (component #6) by unbolting the four stud nut bolts (component #19) with a 1 1/16" box wrench.
  - b. Remove the old valve cap gasket (component #18) from the inside surface of the valve cap.
  - c. The piston assembly (component #11), spring (component #5) and spring top (component #4) can now be removed from the opening created by removing the valve cap - these components should slide out together if you pull on the bottom section of the piston assembly.
  - d. Remove the spring and spring top from the piston assembly. Remove the spring top from the old spring and set it aside for the new spring installation (if needed).
  - e. Once the piston assembly and spring is removed you can check for debris in the valve cavity. If there is any debris in the valve cavity you can remove it by hand or rinse it out with clean water.
  
3. Rebuilding the piston assembly:
  - a. To replace the disc seat (component #12) remove the four 3/8" x 5/8" plate screws (component #14) from the piston assembly with a 3/8" ratchet or box wrench. Then remove the bottom follower (component #15) from the piston assembly. The old disc seat can now be removed from the bottom follower and be replaced with the new disc seat - **to prevent water from getting in between the disc seat and bronze components of the piston assembly it is recommended that before you place the new disc seat on to the bottom follower you apply a thin coat of Loctite Thread Sealant with PTFE to the surface of the bottom follower in contact with the disc seat, as well as to the bottom surface of the piston that will also be in contact with the disc seat.** Once both surfaces have been coated with the Loctite use the four plate screws to bolt the bottom

- follower and disc seat back onto the piston assembly with the 3/8" ratchet or box wrench.
- b. To replace the piston cup washer (component #10) remove the guide nut (component #8) with a 7/8" box wrench or adjustable wrench and set it aside. Then remove the four 3/8" x 1" plate screws from the piston assembly with a 3/8" ratchet or box wrench. Then remove the top follower (component #9) from the piston assembly. The old cup washer can now be removed from the piston assembly and be replaced with the new cup washer. Use the four 3/8" x 1" plate screws to bolt the top follower and cup washer back onto the piston assembly with the 3/8" ratchet or box wrench.
  - c. Coat the inside of the cylinder (component #7) and the exposed surface of the cup washer with a light layer of graphite.
4. Reinstalling the spring and piston assembly:
- a. Attach the spring top (component #4) to the new spring (component #5).
  - b. Attach the spring and spring top to the rebuilt piston assembly (component #11).
  - c. Slide the spring top, spring and piston assembly back up into the valve cavity.
5. Closing up the valve:
- a. Install the new valve cap gasket (component #18) onto the inner face of the valve cap (component #17).
  - b. Reinstall the valve cap to the valve body (component #6) and lock it in place by evenly tightening the four stud nut bolts with the 1 1/16" box wrench.

After these repairs have been completed and the valve is placed back on line it will be necessary to adjust the valves outlet pressure. This can be accomplished by following the steps listed in the operation section of this manual.