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PARKER
Air Actuated
P Series Bellows Valve
Maintenance Instructions
MI-123



WARNING

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ALL PARKER VALVES MUST PASS A RIGID OPERATIONAL AND LEAKAGE TEST BEFORE LEAVING THE FACTORY. IT IS RECOMMENDED AFTER ANY REASSEMBLY, THE VALVE SHOULD BE TESTED BY THE USER FOR OPERATION AND LEAKAGE. IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH, THE REPAIRED PRODUCT MAY FAIL AND CAUSE DAMAGE TO PROPERTY OR INJURY TO PERSONS. PARKER HANNIFIN CANNOT ASSUME RESPONSIBILITY FOR PERFORMANCE OF A CUSTOMER SERVICED VALVE.

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P/N 17000854 Rev. A

**NORMALLY CLOSED VALVE (11AC)
 GASKET & STEM TIP REPLACEMENT**

Disassembly

Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly removal occurs.

1. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
2. Remove the Stem Tip assembly by unthreading with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® No. 9RY4306 or equivalent) inserted between the Bellows Ring and Bonnet. Do not hold the Bellows or the Bellows Ring to prevent damage to the Bellows
3. Remove the Gasket from the Valve Body.

Reassembly

Make certain all parts are free of dirt or other contaminants before reassembly.

4. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly to 1/8 turn past finger-tight or preferably torque to 15 in.-lbs. Rotate the Stem Tip with a 3/8" wrench for the P4 Series (a 7/16" wrench for the P6 and P8 series) while securing the Lower Stem flats with a thin 1/4" wrench (Craftsman® 9RY4306) inserted between the Bellows Ring and Bonnet.
5. Place the new Gasket in the Valve Body.
6. Lightly lubricate the Body or Union Nut threads with an appropriate lubricant.
7. Preferably, pressurize the Bonnet Assembly at the 1/8 NPT port in the Body to open the valve for the following step.
8. Engage the Bonnet Assembly onto the Valve Body and torque the Union Nut to 50 FT-LBS (67 N-M).

**NORMALLY CLOSED VALVE (11AC)
 BELLOWS SUB-ASSEMBLY REPLACEMENT**

Disassembly

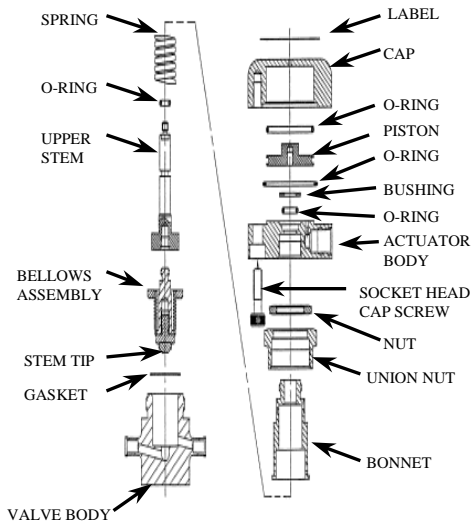
Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly or removal occurs.

1. Remove the three Socket Head Screws on the Actuator using a 5/32" Allen Key wrench.
2. Remove the Air Operator Cap from the Actuator.
3. Disengage the Piston using a 1/4" wrench on the Piston flats while holding the Upper Stem flats, directly under the Piston, with the thin 3/16" wrench provided with the kit.
4. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
5. Remove the Gasket from the Valve Body.
6. Remove the Stem Tip assembly by unthreading with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent). Do not hold the Bellows or the Bellows Ring to prevent damage to the Bellows.
7. With a thin 1/4" wrench on the Lower Stem flats of the Bellows Assembly, unthread the Bellows Assembly from the Upper Stem using the 3/16" wrench on the Upper Stem flats.

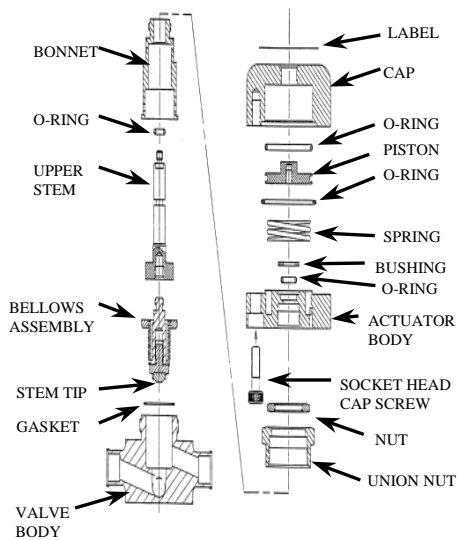
Reassembly

Make certain that all parts are free of dirt or other contaminants before reassembly.

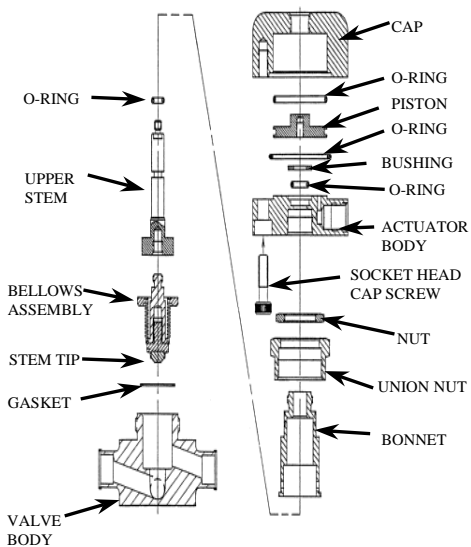
8. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly, hand-tight.
9. Thread the Lower Stem of the Bellows Assembly into the Upper Stem. Tighten to 15 IN-LBS. (1.7 N-M) using the 3/16" wrench provided with the kit to secure the flats on the Upper Stem and a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) at the Stem Tip.
10. Slide the Spring over the Upper Stem of the previous assembly.
11. Install the Spring/Stem assembly into the Bonnet assembly. Exercise caution to prevent damage to the O-rings.
12. Apply a small drop of thread adhesive on the Upper Stem threads.
13. Engage the Piston hand-tight onto the Upper Stem. Torque to 7 IN-LBS (0.8 N-M), using a 1/4" wrench on the flats of the Piston and a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) at the Stem Tip.
14. Ensure the Piston O-ring and the Body seal O-ring are properly installed and lubricated.
15. Carefully install the Cap to ensure the O-rings are not damaged. Re-install and torque the three screws to 25 IN-LBS (2.8 N-M)
16. Place the new Gasket in the Valve Body.
17. Lightly lubricate the Valve Body or Union Nut threads with an appropriate lubricant.
18. Preferably, pressurize the Bonnet Assembly at the 1/8 NPT port in the Body to open the valve prior to the following step.
19. Install the Bonnet Assembly and torque the Union Nut to 50 FT-LBS Maximum (67 N-M).



NORMALLY CLOSED
VALVE



NORMALLY OPEN VALVE



DOUBLE ACTING VALVE

NORMALLY OPEN VALVE (11AO) GASKET & STEM TIP REPLACEMENT

Disassembly

Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly or removal occurs.

1. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
2. Pressurize the Actuator at the 1/8 NPT port to permit access to the Lower Stem flats.
3. Remove the Stem Tip assembly by unthreading it with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) while securing the lower stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® No. 9RY4306 or equivalent) inserted between the Bellows Ring. Do not hold the Bellows or the Bellows Ring to prevent damage to the Bellows.

4. Remove the Gasket from the Valve Body.

Reassembly

Make certain all parts are free of dirt or other contaminants before reassembly. Pressurize the Actuator at the 1/8 NPT port to permit access to the Lower Stem flats for the following step.

6. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly to 1/8 turn past finger tight or preferably torque to 15 IN-LBS (1.7 N-M). Rotate the Stem Tip with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® No. 9RY4306 or equivalent) inserted between the Bellows Ring and Bonnet.
7. Place the new Gasket in the Valve Body.
8. Lightly lubricate the Valve Body or Union Nut threads with an appropriate lubricant.
9. Engage the Bonnet Assembly onto the Valve Body and torque the Union Nut to 50 FT-LBS (67 N-M).

NORMALLY OPEN VALVE (11AO) BELLOWS SUB-ASSEMBLY REPLACEMENT

Disassembly

Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly or removal occurs.

1. Remove the three Socket Head Screws on the Actuator using a 5/32" Allen Key wrench.
2. Remove the Cap from the Actuator.
3. Remove the Piston by first securing the Upper Stem through the Spring coils, with the 3/16" wrench provided with the kit. Unthread the Piston with a 1/4" wrench, being careful to avoid injury and damage from the compressed Spring.
4. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
5. Remove the Gasket from the Valve Body.
6. Remove the Stem Tip assembly by unthreading with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent). Do not hold by the Bellows or the Bellows Ring to prevent damage to the Bellows.
7. With a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent) on the Lower Stem flats of the Bellows Assembly, unthread the Bellows Assembly from the Upper Stem using the 3/16" wrench, provided with the kit, on the Upper Stem Flats.

Reassembly

Make certain all parts are free of dirt or other contaminants before reassembly.

8. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly, hand-tight.

DOUBLE ACTING VALVE (11AD) GASKET & STEM TIP REPLACEMENT

Disassembly

Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly or removal occurs.

1. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
2. Remove the Stem Tip assembly by unthreading with a 3/8" wrench for the P4 Series (a 7/16" wrench for the P6 and P8 Series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® No. 9RY4306 or equivalent) inserted between the Bellows Ring and Bonnet. Do not hold the Bellows or the Bellows Ring to prevent damage to the Bellows.

3. Remove the Gasket from the Valve Body.

Reassembly

Make certain all parts are free of dirt or other contaminants before reassembly.

4. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly to 1/8 turn past finger-tight or preferably, torque to 15 IN-LBS. (1.7 N-M). Rotate the Stem Tip with a 3/8" wrench for the P4 Series (a 7/16" wrench for the P6 and P8 Series) while securing the Lower Stem flats with a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent) inserted between the Bellows Ring and Bonnet.
5. Place the new Gasket in the Valve Body.
6. Lightly lubricate the Valve Body or Union Nut threads with an appropriate lubricant.
7. Preferably, pressurize the Bonnet Assembly at the 1/8 NPT port in the Body to open the valve for the following step.
8. Engage the Bonnet Assembly onto the Valve Body and torque the Union Nut to 50 FT-LBS. Maximum (67 N-M).

DOUBLE ACTING (11AD) BELLOWS SUB-ASSEMBLY REPLACEMENT

Disassembly

Make certain the system in which the valve is installed is drained and/or exhausted of all pressures before valve disassembly or removal occurs.

1. Remove the three Socket Head Screws on the Actuator using a 5/32" Allen Key wrench.
2. Remove the Cap from the Actuator.
3. Disengage the Piston using a 1/4" wrench on the Piston flats while holding the upper stem flats, directly under the Piston, with the thin 3/16" wrench provided with the kit.
4. Remove the Bonnet Assembly by unthreading the Union Nut with a 1" wrench.
5. Remove the Gasket from the Valve Body.
6. Remove the Stem Tip assembly by unthreading with a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 Series) while securing the Lower Stem flats of the Bellows Assembly with a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent). Do not hold the Bellows or the Bellows Ring to prevent damage to the Bellows.
7. With a thin 1/4" wrench (Craftsman® 9RY4306 or equivalent) on the Lower Stem flats of the Bellows Assembly, unthread the Bellows Assembly from the Upper Stem using the 3/16" wrench on the Upper Stem flats.

Reassembly

Make certain all parts are free of dirt or other contaminants before reassembly.

8. Engage the Stem Tip assembly into the Lower Stem of the Bellows Assembly, hand-tight.
9. Thread the Lower Stem of the Bellows Assembly into the Upper Stem. Tighten to 15 IN-LBS. (1.7 N-M) using the 3/16" wrench provided with the kit to secure the flats on the Upper Stem and a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) at the Stem Tip.
10. Install the Upper and Lower Stem assembly into the Bonnet Assembly. Exercise caution to prevent damage to the O-rings.
11. Apply a small drop of thread adhesive on the Upper Stem threads.
12. Engage the Piston hand-tight onto the Upper Stem. Torque to 7 IN-LBS. (0.8 N-M) using a 1/4" wrench on the flats of the Piston and a 3/8" wrench for the P4 series (a 7/16" wrench for P6 and P8 series) at the Stem Tip.
13. Ensure the Piston O-ring and the Body seal O-ring are properly installed and lubricated.

9. Thread the Lower Stem of the Bellows Assembly into the Upper Stem. Tighten to 15 IN-LBS. (1.7 N-M) using the 3/16" wrench provided with the kit to secure the flats on the Upper Stem and a 3/8" wrench for the P4 series (a 7/16" wrench for the P6 and P8 series) at the Stem Tip.
10. Install the Stem/Bellows Assembly into the Bonnet Assembly. Exercise caution to prevent damage to the O-rings. Position the Bellows Ring properly against the Bonnet.
11. Lightly lubricate the Body or Union Nut threads with an appropriate lubricant.
12. Place the Gasket in the Valve Body.
13. Install the Bonnet Assembly onto the Valve Body and torque the Union Nut to 50 FT-LBS. Maximum (67 N-M).
14. Apply a small drop of thread adhesive on the Upper Stem threads.
15. Place the Spring into the Body.
16. Thread the Piston onto the Upper Stem by simultaneously compressing the spring and rotating the Piston. Exercise care to prevent thread damage during this step. Torque the Piston to the Upper Stem to 7 IN-LBS. (0.8 N-M) using a 1/4" wrench on the flats of the Piston while securing the Upper Stem with the thin 3/16" wrench inserted through the Spring coils.
17. Ensure the Piston O-ring and the Body seal O-ring are properly installed and lubricated.
18. Carefully install the Cap to ensure the O-rings are not damaged. Re-install and torque the three screws to 25 IN-LBS. (2.8 N-M).

14. Carefully install the Cap to ensure the O-rings are not damaged. Re-install and torque the three screws to 25 IN-LBS. (2.8 N-M).
15. Place the new Gasket in the Valve Body.
16. Lightly lubricate the Valve Body or Union Nut threads with an appropriate lubricant.
17. Preferably, pressurize the Bonnet Assembly at the 1/8 NPT port in the Body to open the valve prior to the following step.
18. Install the Bonnet Assembly onto the Valve Body and torque the Union Nut to 50 FT-LBS. Maximum (67 N-M)

VALVE CONNECTOR MAKE-UP INSTRUCTIONS

TUBE FITTING CONNECTIONS

1. Insert the tube into the Valve port until the tube bottoms out in the Valve Body. Care should be exercised to insure the tube is properly aligned with the Valve Body and port.
2. Normal make-up for port sizes 1 thru 3 (1/16 inch thru 3/16 inch) is 3/4 turn from finger tight. Normal make-up for port sizes 4 thru 16 (1/4 inch thru 1 inch) is 1 1/4 turns from finger tight.

PLEASE FOLLOW THE ABOVE DIRECTIONS FOR COUNTING THE NUMBER OF TURNS FOR PROPER FITTING MAKE-UP. DO NOT MAKE-UP TUBE FITTINGS BY TORQUE OR "FEEL". VARIABLES SUCH AS TUBING AND FITTING TOLERANCES, TUBE WALL THICKNESS, AND THE LUBRICITY OF NUT LUBRICANTS CAN RESULT IN AN IMPROPERLY ASSEMBLED TUBE FITTING CONNECTION.

ULTRASEAL CONNECTIONS

1. Insert the proper O-ring into the UltraSeal fitting's O-ring groove. Position the UltraSeal gland sealing face against the O-ring, and then advance the nut to a finger-tight position.
2. A positive seal is obtained by advancing the nut no less than 1/4 turn from the finger-tight position. Proper UltraSeal make-up is achieved when a sharp rise in required application torque occurs, which indicates proper seal face contact and O-ring seal compression into the UltraSeal groove.

VACUSEAL CONNECTIONS

1. A positive seal is obtained by advancing the nut 1/8 turn from the finger-tight position.
2. A new gasket should be installed upon each fitting re-make to insure system pressure integrity.