

NP Series Needle Valve



Allowable Working Pressures and Temperatures “R” Stem

Stem Packing	Maximum Pressure and Temperature	Maximum Temperature and Pressure
PTFE	6000 psig at 70 °F 41.4 MPa at 21 °C	0 psig at 400 °F 0 MPa at 204 °C
O-Ring	6000 psig at 70 °F 41.4 MPa at 21 °C	0 psig at 400 °F 0 MPa at 204 °C
Grafoil®	6000 psig at 70 °F 41.4 MPa at 21 °C	3930 psig at 700 °F 27.1 MPa at 371 °C

Allowable Working Pressures and Temperatures “K” Stem

Stem Packing	Maximum Pressure and Temperature	Maximum Temperature and Pressure
PTFE	6000 psig at 70 °F 41.4 MPa at 21 °C	0 psig at 350 °F 0 MPa at 176 °C
O-Ring	6000 psig at 70 °F 41.4 MPa at 21 °C	0 psig at 350 °F 0 MPa at 176 °C
Grafoil®	6000 psig at 70 °F 41.4 MPa at 21 °C	0 psig at 350 °F 0 MPa at 176 °C

The arrow on the Valve Body indicates the normal direction of flow.

PANEL MOUNTED VALVES

The panel must have a through-hole of 49/64 inch (19.4 mm) diameter. The maximum panel thickness is 1/4 inch (6.4 mm). When the Valve is mounted to a thin panel, a spacer (or washer) may be necessary to permit full Panel Nut engagement on the Valve.

1. Remove the Handle by unthreading the Handle Set Screw in the side of the Handle with a 3/32 inch allen wrench.
2. Remove the Body Set Screw with a 1/16 inch allen wrench.
3. Insert the Valve through the hole in the panel and assemble the Panel Nut, using a 3/4 inch hex wrench.
4. Re-install the Body Set Screw into the Body using a 1/16 inch allen wrench and torque to 6 in-lbs.
5. Re-install the Handle with the Set Screw into the grooved flat on the Stem, using a 3/32 inch allen wrench.

PACKING ADJUSTMENT (Valves With PTFE Packing)

Packing adjustment may be necessary depending on the many and varied uses for the Valve. It is recommended an adjustment be made shortly after the initial installation and just prior to flow start-up.

NOTE: There is no packing adjustment necessary for Valves with an optional O-Ring Stem Packing.

1. Turn the stem to the closed position, finger tight.
2. Tighten the Packing Nut using a 9/16 inch wrench from 1/8 to 1/4 turn, or torque to 75 In-lbs. (8.4 N-m).

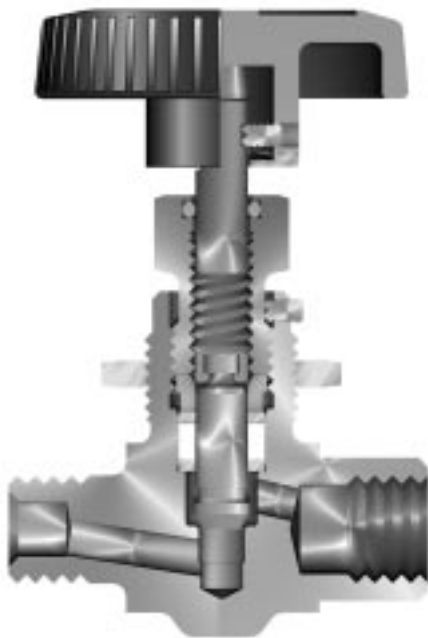


Figure 1: NP Series Needle Valve Cross Sectional View

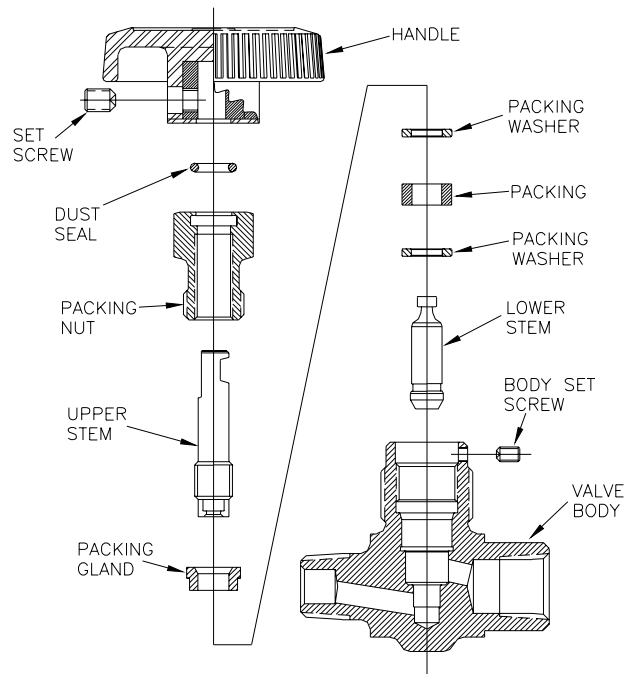


Figure 2: NP Series Needle Valve w/PTFE Packing Exploded View

DISASSEMBLY

WARNING: MAKE CERTAIN THE SYSTEM IN WHICH THE VALVE IS INSTALLED IS DRAINED AND/OR EXHAUSTED OF ALL PRESSURE BEFORE STARTING VALVE REMOVAL OR DISASSEMBLY. FAILURE TO DO SO CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

1. Verify that the PBT Needle Valve Maintenance Kit being used is appropriate for the Valve's Stem Seat, packing configuration, and service requirements
2. Open the PBT Valve until the Stem is lightly back-stopped.
3. Remove the Handle by turning the Handle Set Screw counter-clockwise with a 3/32 inch allen wrench.
4. Remove the Body Set Screw (located under the Packing Nut) by turning counter-clockwise with a 1/16 allen wrench.
5. Clamp the Body securely in a vise, with the Stem in a vertical position.
6. Remove the Packing Nut (located directly under the Handle) by turning counter-clockwise with an 9/16 inch size hex wrench. Gently pull the Packing Nut (and attached Stem Sub-Assembly) out of the Body.
7. Remove the Stem assembly from the Packing Nut by holding the (upper) Stem in one hand, and rotating the Packing Nut (counter-clockwise) until the Stem Sub-Assembly is disengaged from the Packing Nut.
8. Discard the appropriate (replaceable) components from the Valve Stem Sub-Assembly, as consistent with the new components in the Maintenance Kit.
9. Remove the Valve Body from its mounting panel hole (if applicable) by turning the Panel Nut counter-clockwise.
10. Remove and discard the Dust Seal O-Ring from the Packing Nut.

REASSEMBLY

1. Make certain all parts are free of dirt or other contamination before starting reassembly of the Valve.
2. Secure the Body in an assembly fixture.
3. Apply a small amount of lubricant, as consistent with the valve's service requirements, to the Dust Seal O-Ring.
4. Refer to Figure 2. Carefully install the Dust Seal O-Ring in the Packing Nut interior groove.
5. This step only applies to Valves with the "K" (soft-seat) option. Proceed to step 6 for Valves with other stem options. Verify the Soft Seat is firmly attached onto the Lower "K" Stem.
6. This step assembles the variety of stem packing options for the PBT Needle Valve. Refer to the instructions which apply to the specific Valve model being assembled with these instructions.
 - A) **PTFE Stem Packing** (standard): Refer to Figure 2. Stack the four packing components on the Lower Stem (either "K" or "R") in the following order, with the first item being placed on the landing at the end of the stem. Then proceed to Step 8.
 - 1) Packing Washer
 - 2) PTFE Packing
 - 3) Packing Washer
 - 4) Packing Gland.
 - B) **O-Ring Stem Packing** (optional): Apply a small amount of lubricant, as consistent with the valve's service requirements, to the Stem O-Rings. Refer to Figure 3. Place the Large O-ring in the external groove of the Packing Gland. Place the Small O-ring into the recess of the O-ring Gland. Position the assembled O-ring Gland over the Lower Stem. Place the Washer on the Lower Stem, assuring the internal tapered end is facing up. Then proceed to step 7.
 - C) **Grafoil Stem Packing** (optional): Refer to Figure 4. Stack the four packing components on the Lower Stem (either "K" or "R") in the following order, with the first item being placed on the landing at the end of the stem. Then proceed to Step 7.
 - 1) Packing Washer
 - 2) Grafoil Packing
 - 3) Packing Washer
 - 4) Packing Gland.

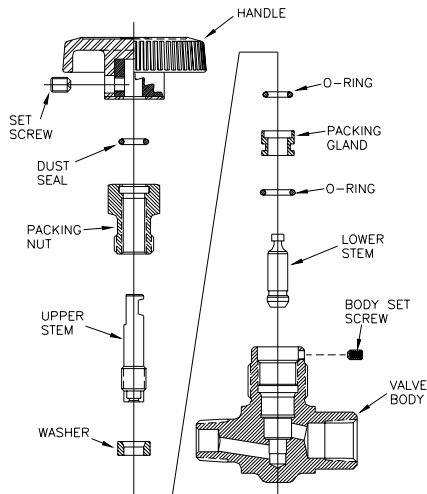


Figure 3: NP6 Needle Valve
w/O-Ring Stem Packing Exploded View

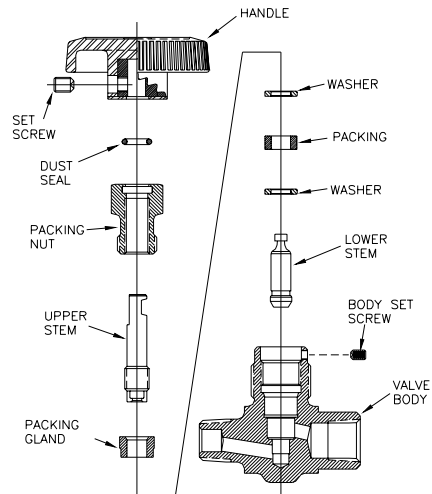


Figure 4: NP6 Needle Valve
w/Grafoil Packing Exploded View

7. Apply a liberal amount of lubricant, as consistent with the valve's service requirements, to the Upper Stem threads and the circular stem attachment slot at the lower end of the Upper Stem.

NOTE: Every Power Thread must be covered with lubricant !

8. Attach the Lower Stem Sub-Assembly to the Upper Stem by "hooking" the two stem elements together inside the circular stem attachment slot.
9. Gently push the top of the Upper Stem through the Dust Seal O-Ring mounted in the Packing Nut, until the Upper Stem threads begin to engage.
10. Complete the assembly of the general Stem Sub-Assembly by turning the Upper Stem counter-clockwise until hand-tight.
11. This step only applies to Valves with the "R" (blunt stem) option. Proceed to step 12 for Valves with other stem options. Apply a small drop of lubricant, as consistent with the valve's service requirements, to the Lower Stem cone seat area.
12. Apply a liberal amount of lubricant, as consistent with the valve's service requirements, to the Packing Nut threads.
13. Install the Packing Nut and Stem Sub-Assembly in the Body until the Packing Nut is hand-tight.
14. This step only applies to Valves with the "Soft-Seat" stem option. Proceed to step 16 for Valves with other stem options.
 - A) Turn the Stem to the OPEN position.
 - B) Torque the Packing Nut in the Body to 75 In-lbs., using a 9/16 inch hex torque wrench.
 - C) Turn the "Soft-Seat" Stem Sub-Assembly to the Closed position and torque to 5 In-Lbs.

15. Install the Body Set Screw in the Body until hand-tight, using a 1/16 inch allen wrench. Torque to 5 In-lbs. Proceed to step 22.
16. Turn the "R" Stem Sub-Assembly to the Closed position and torque to 8 In-Lbs.
17. Torque the Packing Nut in the Body to 75 In-lbs, using a 9/16 inch hex torque wrench.
18. Turn the "R" Stem Sub-Assembly to the Open position.
19. Verify the Packing Nut is still torqued to the Body at 75 In-lbs. If necessary, re-torque the Packing Nut in the Body to 75 In-lbs., using a 9/16 inch hex torque wrench.
20. Re-torque the "R" Stem Sub-Assembly to 8 In-Lbs.
21. Install the Body Set Screw into the Body using a 1/16 hex-socket wrench and torque to 6 in-lbs.
22. Install the Valve in its panel mounting hole, if applicable, by turning the Panel Nut with a 3/4 inch hex wrench.
23. Install the proper Handle onto the Stem. Secure the Handle with the Handle Set Screw, and tighten to 15 In-lbs. torque, using a 3/32 inch allen wrench. Verify the Handle is tightly fastened.

NOTE: The Bar Handle option must not be used on "K" Stem models !

24. Turn the Valve Handle through at least one (1) "Open and Close" cycle to verify proper operation of the Stem's threads.
25. Reject and rebuild any Valve exhibiting rough or irregular Stem operation.

VALVE CONNECTOR MAKE-UP INSTRUCTIONS

MALE AND FEMALE PIPE PORTS

Wrench flats are provided on the Valve Body. It is recommended a smooth-jawed wrench or vise be used to grip the Valve Body.

1. On the male threaded part of the connection, apply a high quality pipe joint compound or PTFE tape made for this purpose. When PTFE tape is used, it is recommended two full turns of tape be applied. PTFE tape should not be overhanging or covering the first thread
2. Engage the Valve and the other component part together, until hand-tight.
3. With a proper wrench, holding both the Valve and the component part, continue to tighten to achieve a leak-tight joint.

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.

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 US Customary port sizes 1 thru 3 (1/16 thru 3/16 inch) and SI port sizes 2 thru 4 (2 thru 4 mm) is 3/4 turn from finger tight. Normal make-up for US Customary port sizes 4 thru 16 (1/4 thru 1 inch) and SI port sizes 5 thru 25 (5 thru 25 mm) is 1 1/4 turn from finger tight. For larger port sizes consult Parker Ferrule Presetting Tool Instructions.

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.

A -Two ferrule A-LOK[®] compression port



Z -Single ferrule CPI[™] compression port



F -ANSI/ASME B1.20.1 Internal pipe threads



V -VacuSeal face seal port



Q -UltraSeal face seal port



M -ANSI/ASME B1.20.1 External pipe threads



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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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.

