

U Series Needle Valve

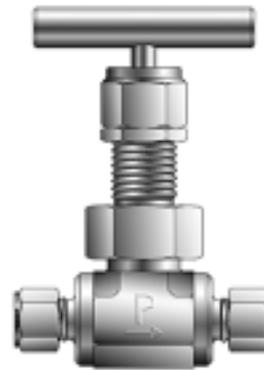


Table I: Maximum Working Pressure and Temperature

| Valve Packing | Maximum Pressure and Temperature | Maximum Temperature and Pressure |
|---------------|---|--|
| Grafoil® | 6000 psig at 70 °F 41.4 MPa at 21 °C | 1545 psig at 1200 °F 10.7 MPa at 649 °C |
| PTFE | 6000 psig at 70 °F 41.4 MPa at 21 °C | 4280 psig at 450 °F 29.5 MPa at 204 °C |

Always consult your authorized Parker representative if questions arise. The arrow on the Valve Body indicates the normal direction of flow.

**Table II: Packing Nut
Hex Wrench Sizes and Tightening Requirements**

| Valve Size | Hex Wrench Size | PTFE Stem Packing | Grafoil® Stem Packing |
|------------|-----------------|--------------------------|---------------------------|
| U6 | 3/4 inch | 125 in-lbs (14.1 N-m) | 10.4 ft-lbs (37.3 N-m) |
| U12 | 15/16 inch | 150 in-lbs (16.8 N-m) | 33.3 ft-lbs (44.8 N-m) |
| U16 | 1-1/8 inch | 50 ft-lbs (67.8 N-m) | 50 ft-lbs (67.8 N-m) |

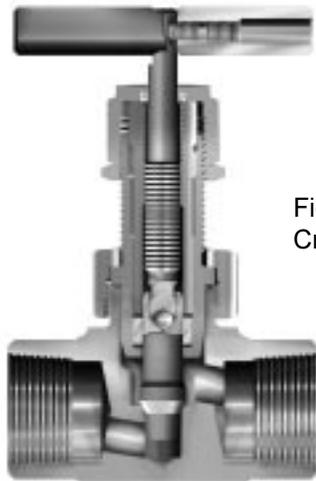


Figure 1: U Series Needle Valve
Cross Sectional View

**Table III: Lock Nut
Hex Wrench Sizes and Tightening Requirements**

| Valve Size | Hex Wrench Size | Torque Requirement |
|------------|-----------------|-----------------------|
| U6 model | 3/4 inch | 125 in-lbs (14.1 N-m) |
| U12 model | 15/16 inch | 150 in-lbs (16.8 N-m) |
| U16 model | 1 1/4 inch | 150 in-lbs (16.8 N-m) |

**Table IV: Bonnet Nut
Hex Wrench Sizes and Tightening Requirements**

| Valve Size | Hex Wrench | Torque Requirements |
|------------|------------|-----------------------|
| U6 model | 15/16 inch | 65 ft-lbs. (88 N-m) |
| U12 model | 1-1/4 inch | 75 ft-lbs. (101 N-m) |
| U16 model | 1-1/2 inch | 100 ft-lbs. (135 N-m) |

PANEL MOUNTED VALVES

The panel must have a through-hole diameter of correct diameter. The maximum panel thickness is 1/4 inch (6.4 mm).

| | |
|-----------|-----------------------|
| U6 model | 41/64 inch (16.2 mm) |
| U12 model | 53/64 inch (21.0 mm) |
| U16 model | 1-1/64 inch (25.8 mm) |

- Remove the Handle by unthreading the Set Screw in the side of the Handle with the following size allen wrench:

| | |
|-----------|-----------|
| U6 model | 3/32 inch |
| U12 model | 3/32 inch |
| U16 model | 1/8 inch |
- Grip the Packing Nut with a wrench as listed in Table II. With another wrench (as listed in Table III), loosen the Lock Nut.
- Remove both the Packing Nut and the Lock Nut by unthreading until completely removed.
- Insert the Valve through the hole in the panel and assemble the Panel Nut onto the Bonnet finger-tight. For assembly, grip the large Bonnet Nut with a hex wrench as listed in Table IV and tighten the Panel Nut securely.

CAUTION: Do not grip the Valve Body or loosen the Bonnet Nut.
- Thread the Lock Nut onto the Bonnet. Thread the Packing Nut onto the Bonnet and tighten in accordance with Table II.
- Tighten the Lock Nut against the Packing Nut in accordance with Table III.
- Re-install the Handle with the Set Screw onto the Stem.

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. Verify that the Union Bonnet Valve Maintenance Kit being used is appropriate for the Valve's size, handle, stem packing configuration and service requirements. Always contact your authorized Parker representative if any questions arise.
 2. Remove the Handle by unthreading the Set Screw in the side of the Handle with the following size allen wrench.

| | |
|-----------|-----------|
| U6 model | 3/32 inch |
| U12 model | 3/32 inch |
| U16 model | 1/8 inch |
 3. Loosen the Locknut, located directly under the Packing Nut, by turning clockwise with the following size hex wrench:

| | |
|-----------|------------|
| U6 model | 3/4 inch |
| U12 model | 15/16 inch |
| U16 model | 1-1/4 inch |
 4. Remove and save the Packing Nut, located directly under the Handle, by turning counter-clockwise with the following size hex wrench:

| | |
|-----------|------------|
| U6 model | 3/4 inch |
| U12 model | 15/16 inch |
| U16 model | 1-1/8 inch |
 5. Remove and save the Locknut from the Bonnet
 6. Remove and discard the Lube Seal from within the Packing Nut.
 7. If applicable, remove the Valve Body from its panel mounting hole by turning the Panel Nut counter-clockwise and removing it from the Bonnet.
 8. Remove and save the Bonnet Nut, located directly above the Body, by turning counter-clockwise with the following size hex wrench:

| | |
|-----------|------------|
| U6 model | 15/16 inch |
| U12 model | 1-1/4 inch |
| U16 model | 1-1/2 inch |
 9. Remove the Bonnet/Stem Assembly from the Valve Body.
 10. Press the Stem UP to disengage the Stem Guide hex from the Bonnet.
 11. While carefully securing the Valve Stem, remove the Stem Guide from the Bonnet using the following size hex wrench:

| | |
|-----------|------------|
| U6 model | 3/8 inch |
| U12 model | 9/16 inch |
| U16 model | 11/16 inch |
 12. Slide the Valve Stem from the Bonnet by applying a minimal amount of force (i.e. hand pressure) on the "Handle end" of the Valve Stem and pushing towards the "seat end".
 13. Remove the Packing Washers and the Packing from within the Bonnet. The Upper Packing Washer should fall out easily. The Packing must be pushed out with a thin probe or wire. After this is removed the lower Packing Washer should also fall out.
- NOTE:** If the valve is Grafoil® packed make certain the entire packing is removed since it may break-up during removal.
14. Discard the appropriate components from the valve consistent with the new components within the Valve Kit.

Additional Step (U16 only)

15. Using a pick or thin flat headed screwdriver remove the metal o-ring from within the Valve Body. Insure care not to damage the o-ring groove.

REASSEMBLY

Make certain all parts are free of dirt or other contamination before starting reassembly of the Valve.

1. Clamp the Body in a vise.
2. **U16 only:** Install the Metal O-Ring into the o-ring groove in the Valve Body
3. Insert the three packing components into the Bonnet in the following order with the first item being placed at the bottom of the Bonnet:
 - Packing Washer
 - Stem Packing
 - Packing Washer
4. Insert the Stem Guide into the Bonnet, use it to push the packing components to the bottom of the Bonnet. Insert the Stem Guide hex into the hex-shaped slot at the top of the Bonnet.
5. Apply a liberal amount of lubricant, as consistent with the Valve's service requirements, to the Stem Sub-Assembly threads. Always contact your authorized Parker representative if questions arise.
NOTE: Every thread must be covered with lubricant.
6. Refer to Figures 2 and 3. Carefully install the Stem Sub-Assembly into the Bonnet from the lower end until hand-tight.
7. Apply a liberal amount of lubricant, as consistent with the Valve's service requirements, to the Body threads, as well as to the surface area where the Bonnet fits up against the interior of the Bonnet Nut. Always contact your authorized Parker representative if questions arise.
8. Place the hand-tight Bonnet and Stem Sub-Assembly from Step 6 into the Body. Torque the Bonnet Nut onto the Body using the hex wrench size and torque specified in Table IV.
9. This Step only applies to Valves with an optional Panel Nut, else proceed to Step 10.
Insert the Body into its panel mounting hole. Thread the Panel Nut clockwise onto the Bonnet until the Valve is secure in the mounting panel.
10. Place the Lube Seal over the Stem to the top of the Stem Guide.
11. Apply a small amount of lubricant, as consistent with the Valve's service requirements, to the Bonnet upper threads and the top of the Stem Guide.
NOTE: A minimum of the upper four (4) Bonnet threads must be covered with lubricant !
12. Place the Locknut on the Bonnet and thread it down near the Panel Nut. Place the Packing Nut over the Bonnet. Tighten in accordance with Table II.
13. Tighten the Locknut against the Packing Nut. Tighten in accordance with Table III.
14. Re-install the Handle with the Set Screw onto the Stem.
15. Install the Handle on the Stem Sub-Assembly. Secure the Handle with the Set Screw, and tighten the Set Screw to 15 In-lbs torque, using a 3/32 inch allen wrench. Verify the Handle is tightly fastened.
16. Turn the Bar Handle through at least one (1) "Open and Close" cycle to verify proper operation of the Stem's threads.
17. Reject and rebuild any Union Bonnet Valve exhibiting rough or irregular Stem operation. Always contact your authorized Parker representative if questions arise.

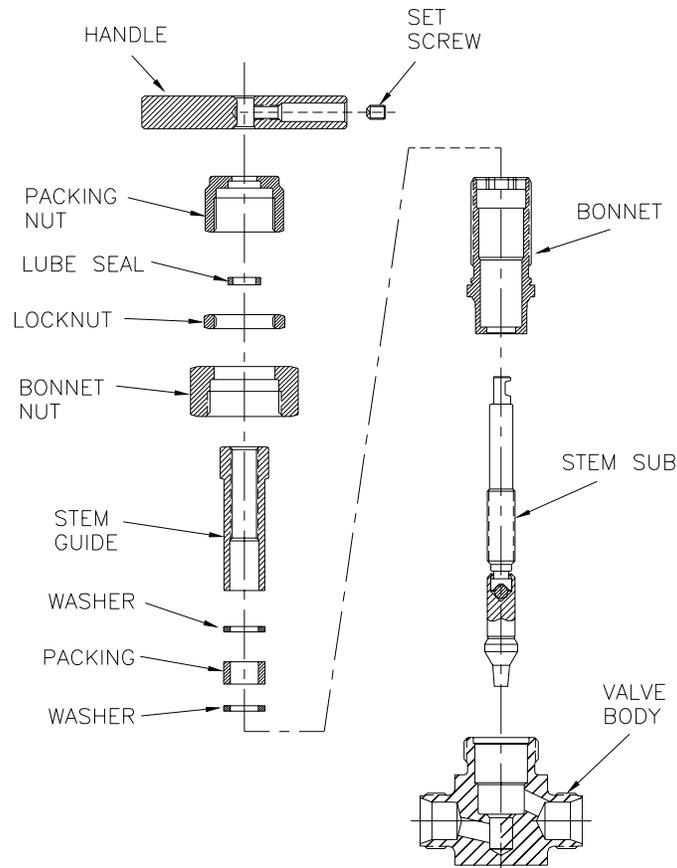


Figure 2: Size 6 & Size 12 Union Bonnet Valve Exploded View

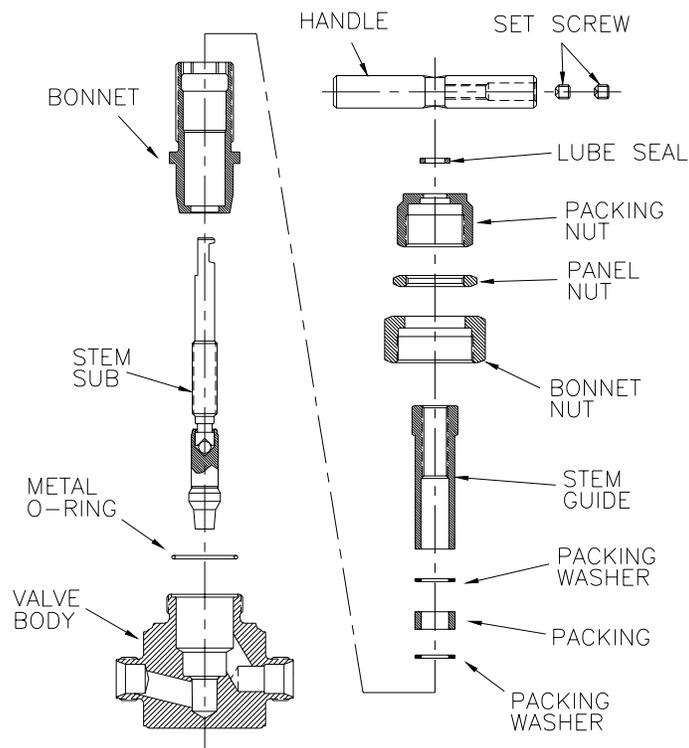


Figure 3: Size 16 Union Bonnet Valve Exploded View

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.



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