



## **BU-3160**

### **OPERATION AND MAINTENANCE INSTRUCTIONS FOR 30MMV\*6V MICRO-METERING VALVES**

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## 1.0 REFERENCE

- 1.1 Applicable Assembly Drawing B-3346, latest revision

## 2.0 PURPOSE

- 2.1 To establish maintenance instructions for 30MMV\*6V Micro-metering Valve.

## 3.0 SCOPE

- 3.1 This maintenance instruction (BU-3160) is to be used for all 30MMV\*6V Micro-metering Valves.

## 4.0 INSTRUCTIONS

### 4.1 Setup:

- 4.1.1 The valve is not set for minimum flow conditions at the factory. The user must determine the minimum flow for his/her application and position the collar (item 15) and index the sleeve (item 14) accordingly.
  - 4.1.1.1 The collar can be rotated after loosening the set screw (item 11).
  - 4.1.1.2 The sleeve can be re-positioned and indexed after loosening the set screw (item 10).
  - 4.1.1.3 Position the handle (item 19) to rest on the sleeve.
  - 4.1.1.4 Verify full stroke capability. Valve is designed for approximately a stroke of approximately 10 turns.

### 4.2 Operation:

- 4.2.1 The micro-metering valve is designed to provide precise control of fluids and gases at very low flow rates. Metering is achieved with a 40 pitch thread on the stem retracting a 4 degree tapered stem tip through a .062" diameter seat.
- 4.2.2 Each rotation of the valve handle equals .025" of linear stroke. The graduated sleeve provides incremental and repeatable settings of .001" of linear stroke.
- 4.2.3 The micro-metering valve is not to be used as a "shutoff" valve.



#### 4.0 INSTRUCTIONS (continued):

**CAUTION: Vent all pressure from system before removing valve for maintenance.**

##### 4.3 Disassembly

- 4.3.1 Remove valve from system.
- 4.3.2 Secure the valve assembly in a vise equipped with "soft jaws".
- 4.3.3 Turn the valve handle counterclockwise until the valve stem is in the full open position.
- 4.3.4 Loosen the set screws securing the handle, collar and sleeve to the metering stem (item 2). Lift and remove each component.
- 4.3.5 Remove the slotted machine screw (item 8) and locking device (item 7) from the body (item 1).
- 4.3.6 Loosen and remove the packing gland (item 3) and stem from the valve body.
- 4.3.7 Remove the packing gland from the stem by turning counterclockwise until the threads are disengaged.
- 4.3.8 Using a packing puller, carefully remove the top packing washer (item 4), packing (item 5) and bottom washer (item 6) from the body.

**Caution: Do not scratch the walls of the stuffing box.**

#### 4.4 Assembly:

- 4.4.1 Examine the repair kit components for damage and cleanliness.

**CAUTION: All damaged components are to be replaced.**

- 4.4.2 Apply an approved lubricant (anti-galling) to the components of the stem and packing components as follows:

4.4.2.1 The outside edge of the bottom washer (item 6).

4.4.2.2 The external threads of the stem (item 2).

4.4.2.3 The first three external threads of the packing gland (item 3).

- 4.4.3 Grasp the lubricated stem with your fingers and insert it into the packing gland. Rotate the packing gland clockwise until the internal threads are completely engaged.

4.4.3.1 Important - Rotate the packing gland clockwise until the stem threads top out in the packing gland.

- 4.4.4 Install the packing gland and stem/packing components into the body. Tighten packing gland finger tight.

- 4.4.5 Apply lubricant to the external threads of the seat retainer (item 13) and to the conical seating surfaces of the seat (item 12).

**Caution: The following steps are important to prevent damage to the metering seat.**

- 4.4.6 Seat Assembly Instructions

4.4.6.1 Temporarily reattach the handle (item 9) and secure with the set screw (item 10). Turn the handle clockwise to fully expose the stem tip. Drop the seat (item 12) onto the tapered part of the stem. The seat will be elevated on the stem in the body seat retainer cavity.

4.4.6.2 Engage the seat retainer (item 13) into the body to just lightly touch the elevated seat. Turn the stem to retract the elevated seat approximately one turn further into the body. Further tighten the seat retainer until it contacts the elevated seat again.

- 4.4.6.3 Repeat the steps 4.4.6.1 and 4.4.6.2 until seat no longer retracts into the body seat retainer cavity and the stem disengages from the stem. The stem and seat will be in perfect alignment.
- 4.4.6.4 Continue to turn the stem counterclockwise until the tops out in the packing gland.
- 4.4.7 Using a torque wrench tighten the seat retainer to 25 lb-ft.
- 4.4.8 Tighten the packing gland to 45 in-lbs.
- 4.4.9 Reattach and tighten the locking device (items 7 and 8).
- 4.4.10 Reattach the collar, sleeve and handle to the stem. Refer to the set-up instructions outlined in para. 4.1.1 to establish the "0" mark for your specific minimum flow condition.

***CAUTION: Align the handle with the machined flats on the stem before tightening.***

- 4.4.11 Loosen vise and remove refurbished valve assembly.

**General Note:**

Butech Pressure Systems recommends that the user pressure test refurbished valves before returning the valves to service.



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Revision 0  
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**RECORD OF REVISIONS**

<b>REV NO</b>	<b>DESCRIPTION OF CHANGES</b>	<b>DATE</b>	<b>BY</b>	<b>APPR</b>
0	Original document	11-Apr-03	DTG	DTG