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INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR MINI-BONNET, COMMERICIAL HAND VALVES AND MANIFOLDS

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REVISIONS

SYM	PAGE	DESCRIPTION	DWN	CHK	RC	APPROVAL
A		ECR #88-153-04	L. White 6-13-88	6-13-88		JW Fuller 6-14-88 for Zebb 6/21/88
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FORM NO. 915 A 11-78

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR MINI-BONNET COMMERCIAL HAND VALVES AND MANIFOLDS

1.0 INTRODUCTION

Anderson, Greenwood and Co., mini-bonnet valves are designed for general applications wherever small size valves or manifolds are suitable. These valves and manifolds feature a patented valve seat which can be converted from hard to soft by simply inserting two washers, with no other parts needed. For maximum pressure-temperature ratings see applicable valve assembly drawings.

2.0 INSTALLATION

2.1 Check hand valve body for flow arrow for proper flow orientation. If no flow arrow is stamped on the valve body, flow may be in either direction.

2.2 Check manifold nameplate, if so equipped, for schematic of valve arrangement and note which ports are for process connections and instrument connections.

2.3 Immediately prior to valve installation, check the piping to which the valve is to be connected for cleanliness and freedom from foreign materials.

2.4 THREADED VALVE INSTALLATION

Threaded pipe joints depend on a good intimate fit between the male and female pipe threads, therefore the use of a thread sealant is recommended and the pipe fitting connections must be made up tight.

2.5 PANEL MOUNTING VIA THE BONNET

The following procedure must be followed for panel mounting AGCO minature hand valves (Teflon packed only) via the bonnet. See Figure 5A for part reference.

2.5.1 Turn the bonnet handle to full open position.

2.5.2 Loosen the handle bolt and remove the handle.

2.5.3 Loosen and remove the packing nut from the bonnet.

2.5.4 Unscrew the panel nut that is threaded on the bonnet.

2.5.5 Insert the valve bonnet into the panel hole and attach with panel nut. Tighten down the panel nut on top of the panel 8-10 ft lb of torque.

2.5.6 Thread the packing nut back over the bonnet and hand tighten.

2.5.7 Fit the handle over the stem and tighten the handle bolt to the flattened part of the stem to 25 in lb of torque.

2.5.8 Tighten the packing nut with a wrench till a resistance is felt while turning the bonnet handle. The packing may need to be readusted if leakage occurs when the system is repressurized.

3.0 OPERATION

Valves which have been reasonably matched to a typical valve service application and properly installed in its piping system can expect to have a long service life with a minimum of attention. However, these valves have moving and wearing parts and depend on long term preservation of highly finished surfaces on these parts for satisfactory valve performance.

3.1 The use of a "cheater" to operate the valve handle is not necessary and not recommended. This practice can cause valve damage.

3.2 All valves have rising stems with right hand thread. Rotate the handle counterclockwise to open and clockwise to close.

3.3 Bonnets with rising stems are provided with a backseat. Backseats in rising stem bonnets should be considered basically as stops to prevent overtravel when opening valves. It is recommended not to leave the upper stem in the backseated position. Note MSS SP-92, "MSS Valve User Guide", paragraph 4.3.

3.4 OPERATION OF M9 GAUGE VALVE

The schematic for the M9 gauge valve is shown in Figure 1. These valves are designed to provide a safe way to depressurize a system before removing a gauge.

3.4.1 In normal operation of the system the block valve between the process and instrument ports will be open and the bleed screw will be closed.

3.4.2 Before removing a gauge, depressurize the system by closing the block valve and then opening the bleed screw. When fully vented, the gauge should show zero pressure and can be safely removed.

3.5 OPERATION OF 2-VALVE MANIFOLD

The schematic for the PTM zero-calibration manifold is shown in Figure 2. These 2-valve units are used on static pressure transmitters, switches or gauges.

3.5.1 In normal operation of the system the block between the process and instrument ports will be open and the calibration valve closed.

3.5.2 To readjust the instrument to zero, close the block valve to isolate the instrument from the system. Open the calibration valve to bleed the instrument pressure to atmospheric pressure. When fully vented, the instrument should show zero output. A threaded outlet is provided for field spot-check or reset of instrument.

3.6 OPERATION OF 3-VALVE MANIFOLD

The schematic for the MM1 & MM4 Manifolds is illustrated in Figure 3. These manifolds are three valve units designed for use with differential pressure transmitters or other flow metering instruments. Two valves on the sides of the body are block valves for shutting off the high and low side connections to the d/p transmitter when the instrument is to be adjusted or removed from service. The third valve in the center of the body is an equalizing valve for equalizing pressure on the two sides of the instrument while readjusting.

3.6.1 In normal operation of the system the two block valves will be open and the equalizer valve will be closed.

3.6.2 To readjust the instrument to zero, close the block valve to the low pressure side (downstream side) of the instrument and open the center valve to equalize the pressure on both sides of the instrument.

3.6.3 To return the instrument to service, close the equalizer valve and open the block valve to the low pressure side of the instrument.

3.7 OPERATION OF 5 VALVE MANIFOLD

The schematic for MM24 five valve manifold is shown in Figure 4. These manifolds are designed for use with various types of transmitters for measuring differential pressure. The five valve manifold is similar to the three valve manifold in that it has two line block valves and an eqalizer valve. The other two valves are isolation valves for the calibration and test ports which are integral with the manifold.

3.7.1 In normal operation of the system, the two block valves will be open with the equalizer and two test valves closed.

3.7.2 To readjust the instrument to zero, close the block valve to the low pressure (downstream) side of the instrument and open the center valve to equalize pressure on both sides of the instrument.

3.7.3 To perform a span calibration check on the instrument, both line block valves are closed. Open the equalizer valve and crack the downstream test valve to release pressure. After the pressure is released, close the equalizer valve. Install calibration input signal tubing to the upstream test port and open the corresponding test valve. The instrument may now be checked for calibration.

3.7.4 To return the instrument to service, close both test valves. Open the upstream line block valve and the downstream block valve.

4.0 HAND VALVE AND MANIFOLD MAINTENANCE

The important performance parameters are pressure boundary integrity, actuating force required and internal leak tightness. Maintenance should logically address the importance of preserving the performance parameters.

Valves which remain in one position for long periods of time may be subject to some degree of operability due to the loss of effective lubricants in threads, aging of packing surface, corrosion of moving parts or accumulation of harmful solids. In some applications it may be desirable to schedule periodic partial or full cycle exercising of these valves.

4.1 PACKED-ABOVE-THE-THREAD BONNET/TEFLON PACKING

4.1.1 Stem seal leakage usually results from packing wear, and can usually be corrected by tightening the packing nut. Overtightening can cause high stem friction, accelerated wear and shortened packing life.

4.1.2 If packing replacement is needed, safe practice requires depressurizing the valve before removal of the packing nut. Use of backseat to permit repacking under pressure should be considered unsafe though emergency packing replacement may be accomplished by backseating stem in full open position.

4.1.2.1 Refer to Figure 5A, for part identifications.

4.1.2.2 Remove handle (item 1) by loosening handle screw.

4.1.2.3. Remove packing nut (item 2), packing (item 3) and packing washer (item 4).

4.1.2.4 Insert a small amount of lubricant into packing cavity followed by packing washer, packing and nut. Tighten nut until a slight resistance is felt in the stem movement. See assembly drawing for approved lubricant.

4.1.2.5 Install handle and tighten screw against flat spot on stem to 25 in.-lb.

4.1.2.6 Pressurize system and check for leakage. Tighten packing nut additionally if required to stop leak.

4.1.3 If conditions allow removal of bonnet assembly for repair, it is preferable to do so.

4.1.3.1 Remove the bonnet lock pin from valve body using heavy duty pliers or wire cutters. Unscrew bonnet from body.

4.1.3.2 Dismantle bonnet assembly and clean thoroughly with Acetone or Alcohol.

4.1.3.3 Inspect parts for damage; particularly stem threads and end. Replace both stem and bonnet if threads do not engage smoothly.

4.1.3.4 Lubricate threads thoroughly with the lubricant specified on the respective assembly drawing.

4.1.3.5 Reassemble per Figure 5A, replacing old packing with new packing.

4.3.1.6 Install new secondary seal (item 7) onto bonnet.

4.3.1.7 Screw the bonnet into the body by hand, then tighten the bonnet to values shown below:

Stainless Steel .....16-18 ft lb.
Carbon Steel....13-15 ft lb.
Brass.....12-14 ft lb.

4.2 PACKED-ABOVE-THE-THREAD BONNET/O-RING PACKING

4.2.1 If packing replacement is needed, safe practice requires depressurizing the valve before removal of the packing nut. Use of backseat to permit repacking under pressure should be considered unsafe though emergency packing replacement may be accomplished by backseating stem in full open position.

4.2.1.1 Refer to Figure 5B, for part identifications.

4.2.1.2 Remove handle (item 1) by loosening handle screw.

4.2.1.3 Remove packing nut (item 2), back-up washer (item 3), O-ring (item 8) and packing washer (item 4).

4.2.1.4 Insert a small amount of lubricant into packing cavity followed by packing washer, O-ring, back-up washer and nut. Tighten packing nut snugly. See assembly drawing for approved lubricant.

4.2.1.5 Install handle and tighten screw against flattened spot on stem to 25 in lb.

4.2.1.6 Pressurize system and check for leakage. Tighten packing nut additionally if required to stop leak.

4.2.2 If conditions allow removal of bonnet assembly for repair, it is preferable to do so.

4.2.2.1 Unscrew bonnet from body. For MMA manifold, the bonnet lock pin will need to be removed from body using heavy duty pliers or wire cutters.

4.2.2.2 Dismantle bonnet assembly and clean thoroughly with Acetone or Alcohol.

4.2.2.3 Inspect parts for damage; particularly stem threads and end. Replace both stem and bonnet if threads do not engage smoothly.

4.2.2.4 Lubricate threads thoroughly with the lubricant specificed on the respective assembly drawing.

4.2.2.5 Reassemble per Figure 5B, replacing old packing with new packing.

4.2.2.6 Install new secondary seal (item 7) onto bonnet.

4.2.2.7 Screw the bonnet into the body by hand then tighten the bonnet to values shown below:

Stainless Steel .....16-18 ft lb.
Carbon Steel ....13-15 ft lb.
Brass .....12-14 ft lb.

4.3 PACKED-BELOW-THE-THREAD/O-RING PACKING

4.3.1 If packing replacement is needed, safe practice requires depressurizing the valve before removal of the bonnet assembly.

4.3.1.1 Refer to Figure 6 for part identifications.

4.3.1.2 Unscrew bonnet from body.

4.3.1.3 Remove handle (item 1) by loosening handle screw.

4.3.1.4 Remove stem (item 2) from bonnet.

4.3.1.5 Remove O-ring (item 3) from stem.

4.3.1.6 Clean stem and bonnet thoroughly with acetone or alcohol.

4.3.1.7 Inspect parts for damage; particularly stem threads and end. Replace both stem and bonnet if threads do not engage smoothly.

4.3.1.8 Install new O-ring on to stem.

4.3.1.9 Lubricate threads thorougly with lubricant specified on the respective assembly drawing.

4.3.1.10 Install stem into bonnet.

4.3.1.11 Install handle and tighten screw against flattened spot on stem to 25 in lb.

4.3.1.12 Install new secondary seal (item 5) onto bonnet.

4.3.1.13 Tighten to values shown below:

Stainless Steel .....16-18 ft lb.
Carbon Steel ....13-15 ft lb.
Brass .....12-14 ft lb.

4.4 SOFT SEAT REPLACEMENT

4.4.1 If seat replacement is needed, safe practice requires depressurizing valve before removal of bonnet assembly.

4.1.1.1 Refer to Figure 7, soft seat assembly for part identifications.

4.1.1.2 Unscrew bonnet assembly from body.

4.1.1.3 Remove wave spring flow washer (item 1).

4.1.1.4 Remove plastic washer type seat (item 2).

4.1.1.5 Clean seat cavity with acetone or alcohol.

4.1.1.6 Install new seat.

4.1.1.7 Install wave spring flow washer.

4.1.1.8 Install new secondary seal (item 7, Figure 5A & 5B, item 5, Figure 6) onto bonnet.

4.1.1.9 Screw bonnet assembly back into body and tighten to values shown below:

Stainless Steel .....16-18 ft lb.
Carbon Steel .....13-15 ft lb.
Brass .....12-14 ft lb.

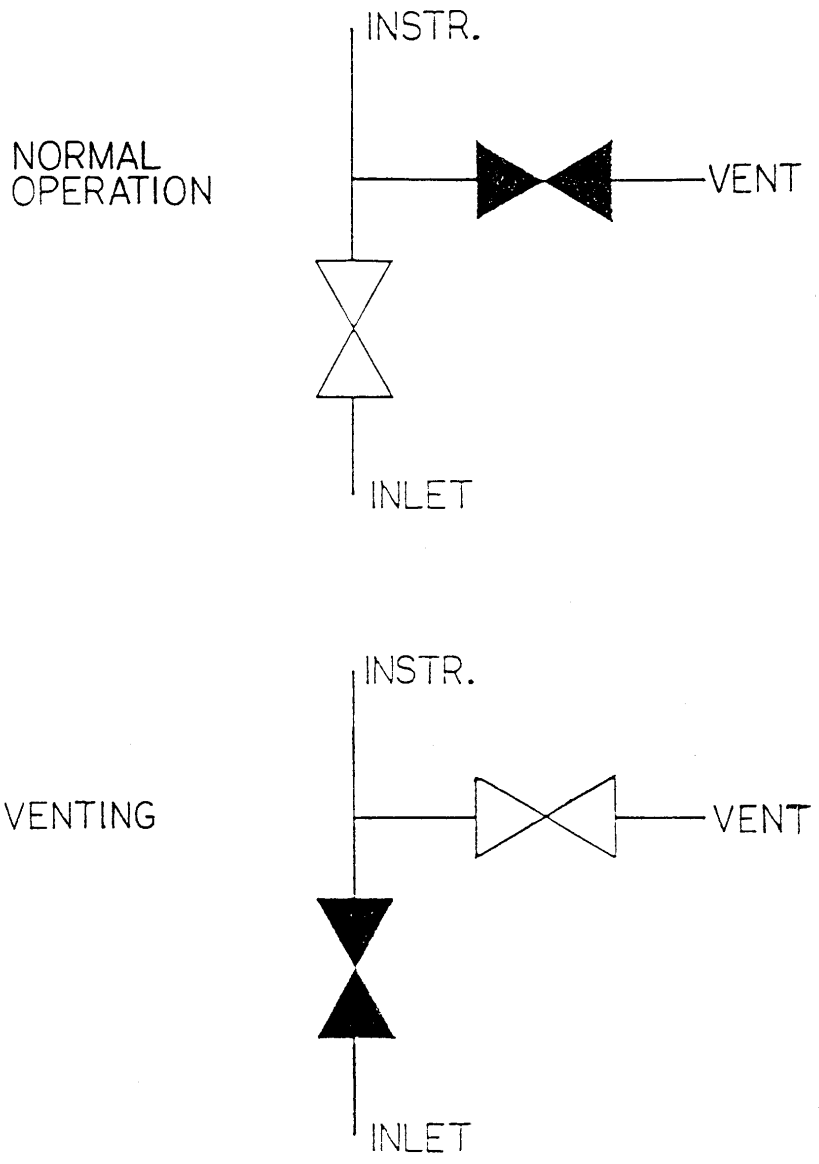
5.0 CONVERSION OF SEAT TYPE:

A. Hard To Soft

Perform those steps outlined in 4.4 omitting steps 4.1.1.3 and 4.1.1.4.

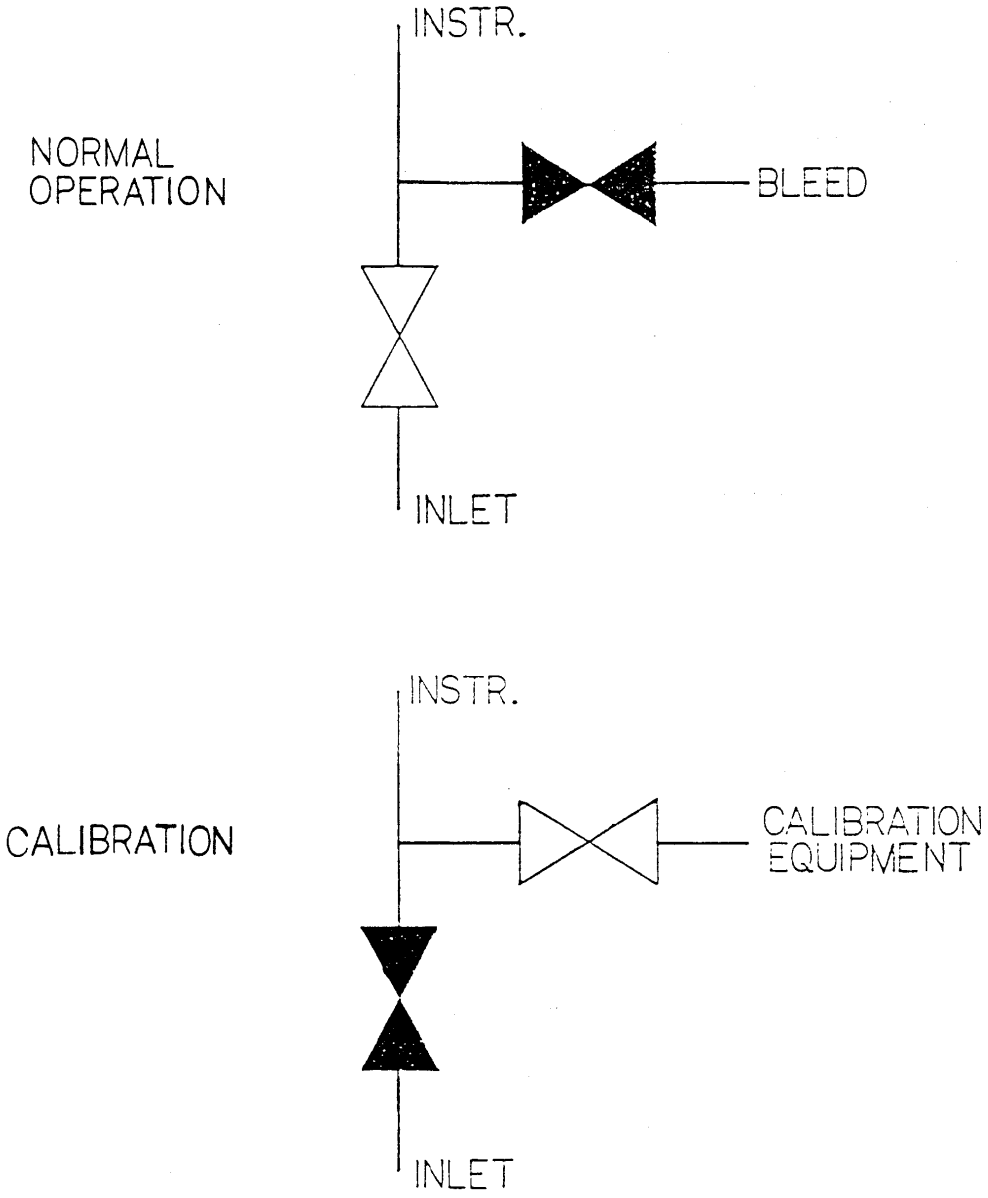
B. Soft To Hard

Perform those steps outlined in 4.4 omitting steps 4.1.1.6 and 4.1.1.7.



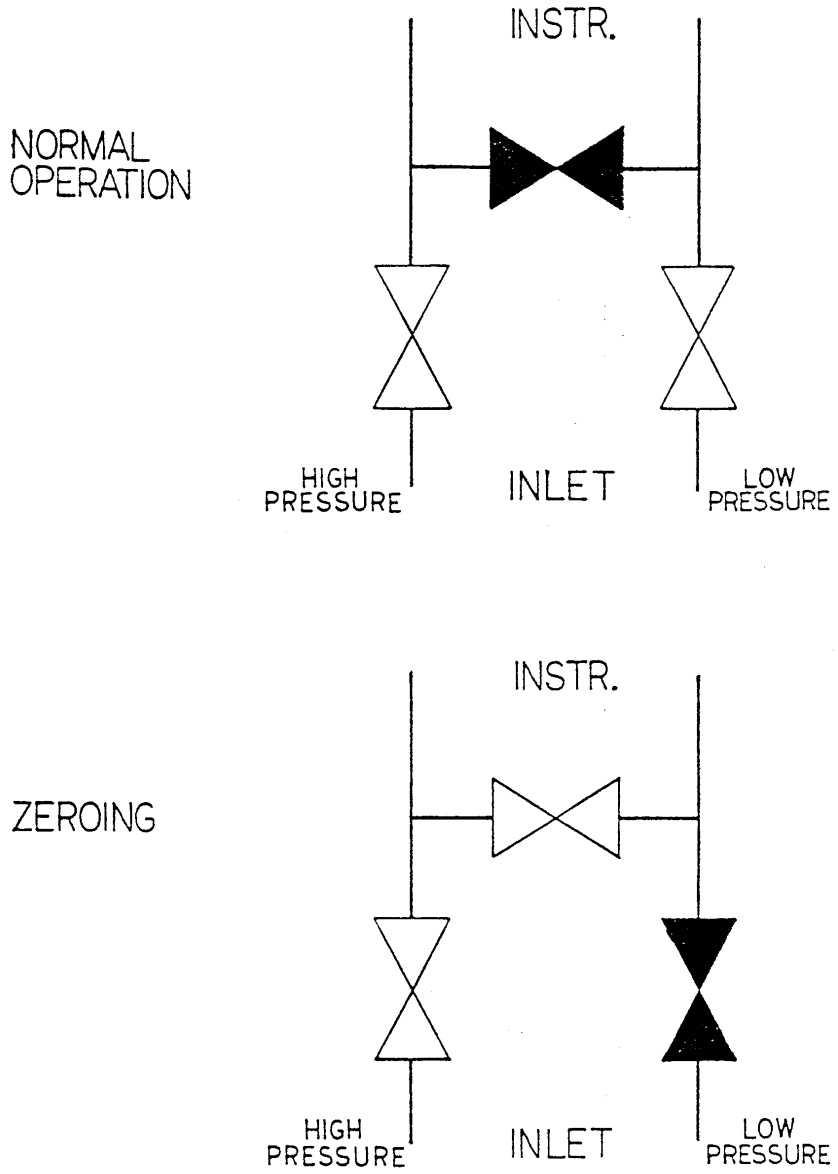
SCHEMATIC – M 9

FIGURE 1



SCHEMATIC – PTM

FIGURE 2



SCHEMATIC – MMI & MM4

FIGURE 3

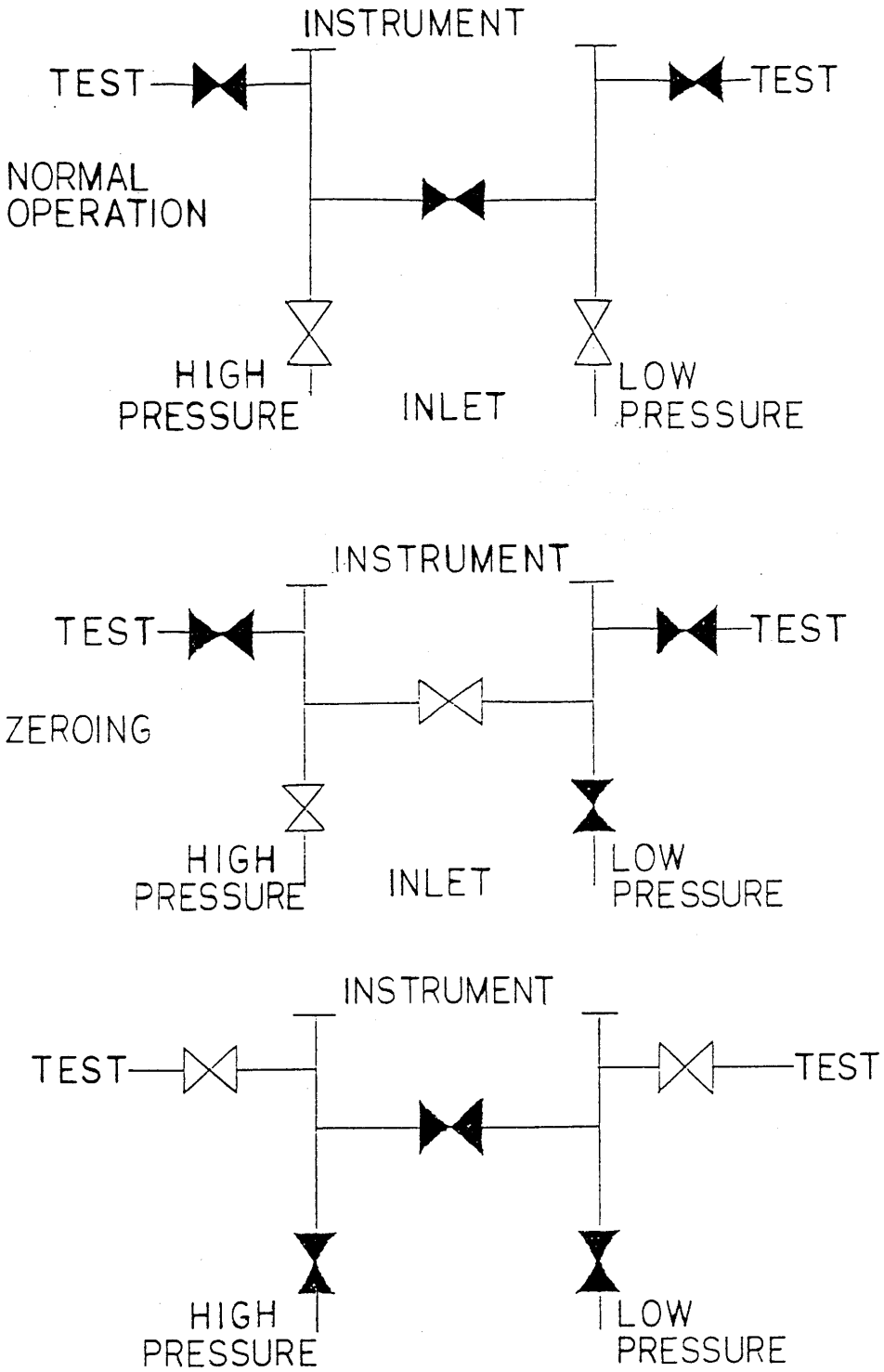
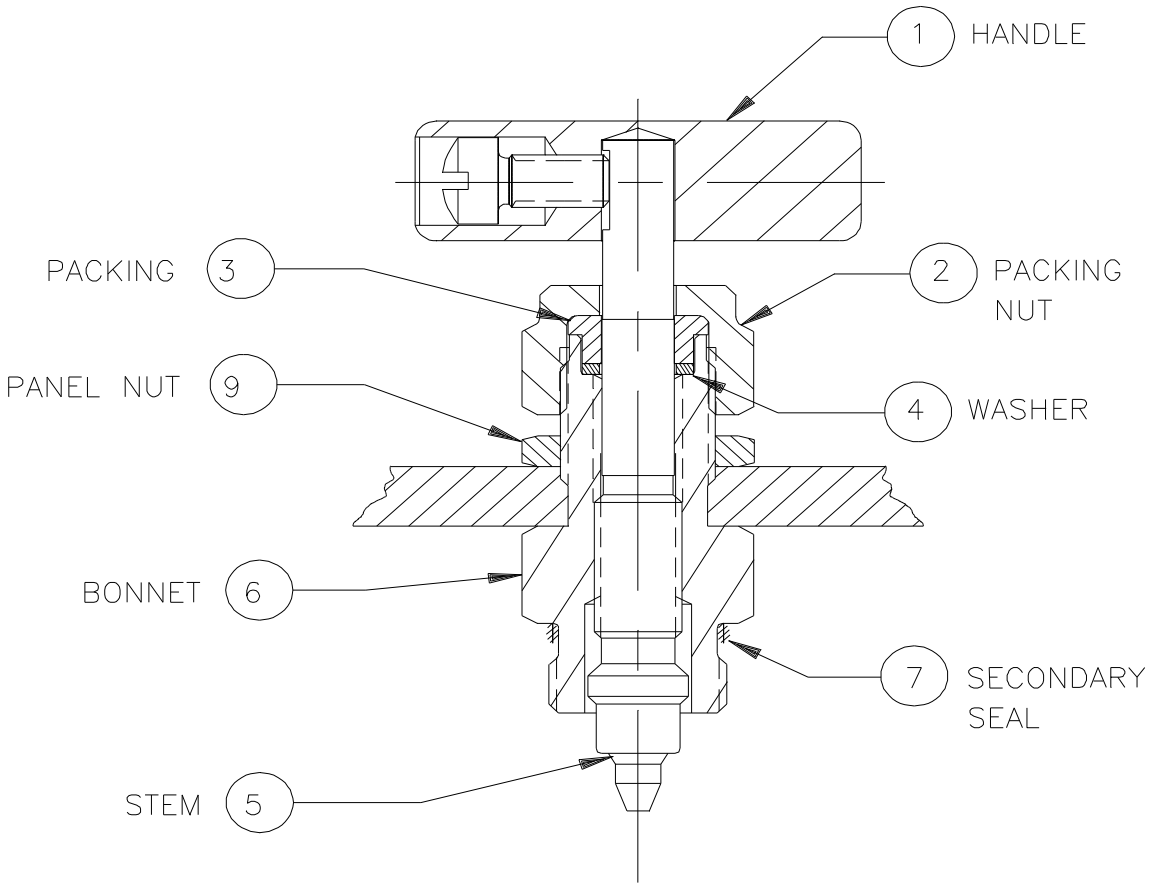

INSTRUMENT
TEST
TEST
NORMAL
OPERATION
HIGH
PRESSURE
INLET
LOW
PRESSURE
INSTRUMENT
TEST
TEST
ZEROING
HIGH
PRESSURE
INLET
LOW
PRESSURE
INSTRUMENT
TEST
TEST
HIGH
PRESSURE
LOW
PRESSURE

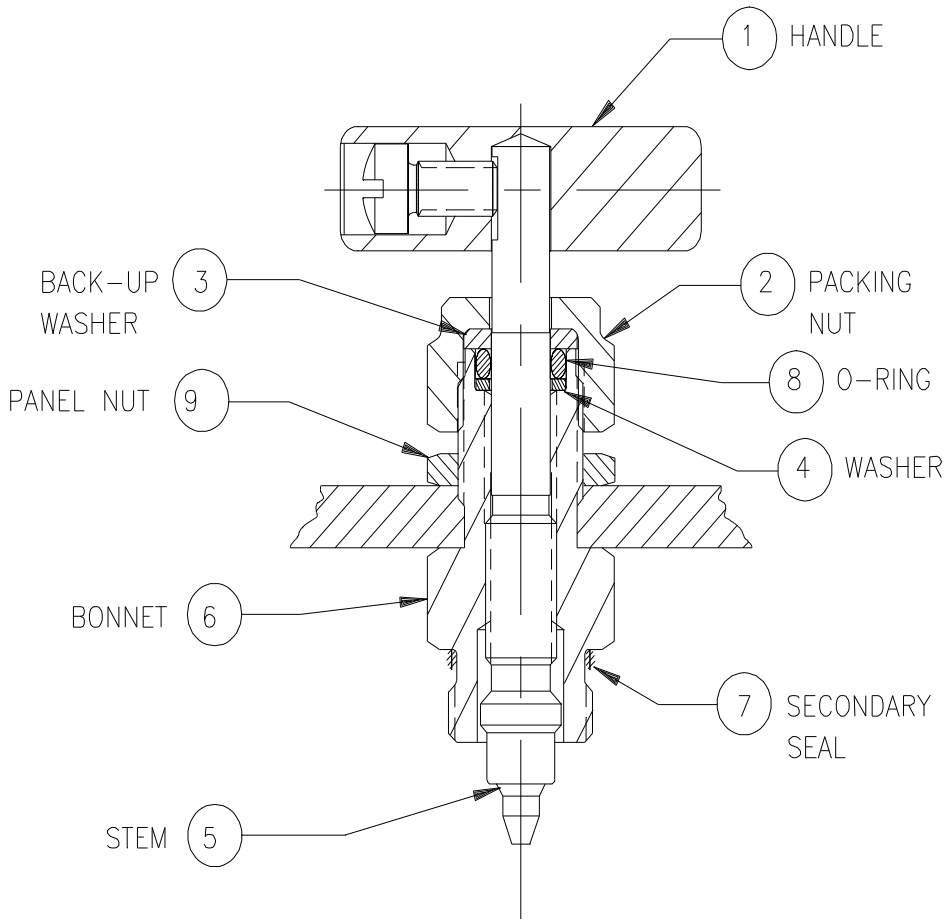
FIGURE 4



PACKED–ABOVE–THE–THREAD
TEFLON PACKING

FIGURE 5A

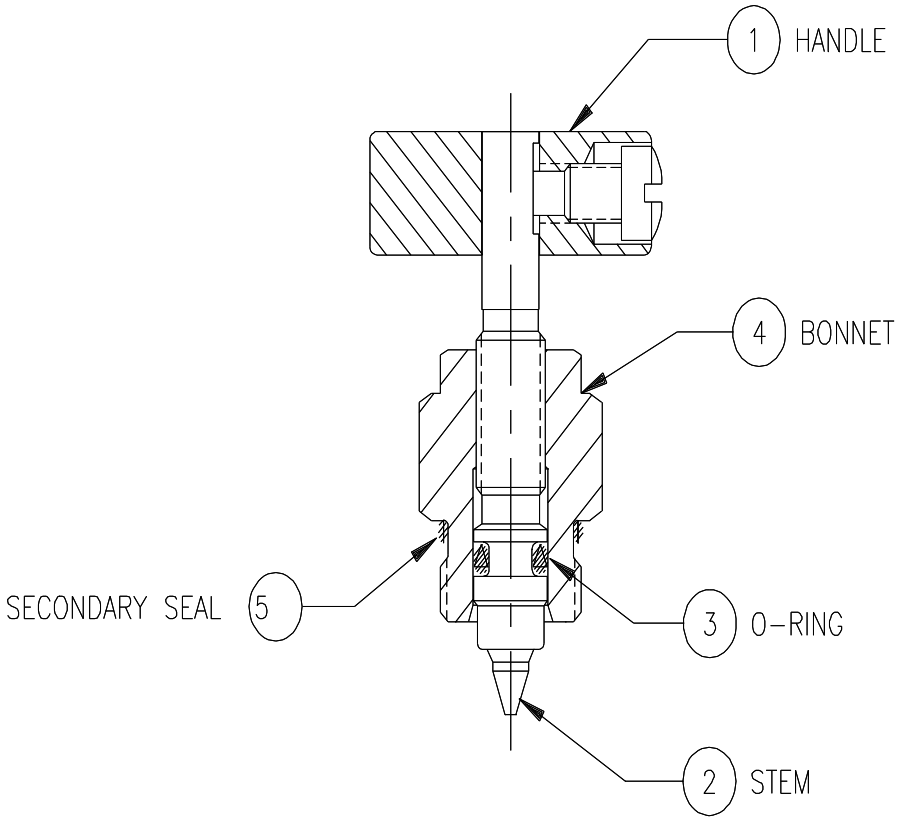
DWG: D_059040099_PG17
DB: MH5ASSY
LIB: HVLIB



PACKED–ABOVE–THE–THREAD
O–RING PACKING

FIGURE 5B

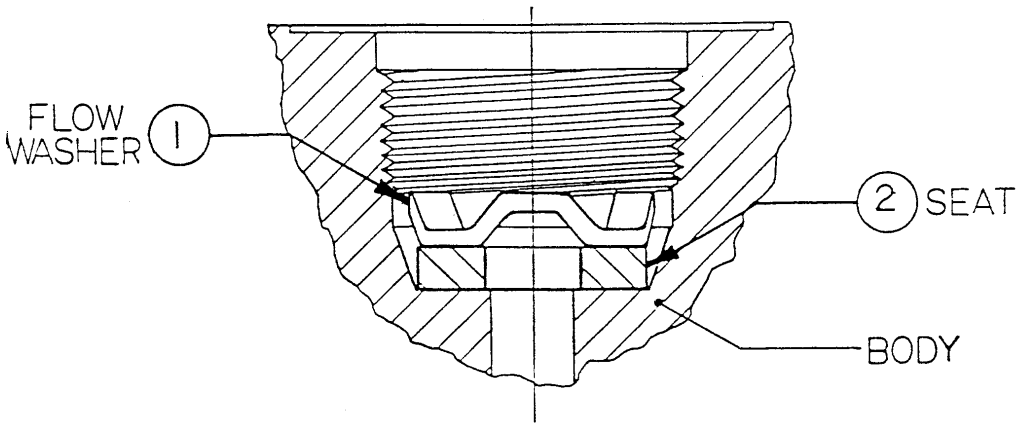
DWG: D_059040099_PG18
DB: MH5ASSY
LIB: HVLIB



PACKED-BELOW-THE-THREAD
O-RING PACKING

FIGURE 6

DWG: D_059040099_PG19
DB: MH5ASSY
LIB: HVLIB



SEAT CAVITY — SOFT SEATED

FIGURE 7