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Anderson, Greenwood & Co.
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INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS FOR M24 HIGH TEMPERATURE INSTRUMENTATION MANIFOLD

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REVISIONS

SYM	PAGE	DESCRIPTION	DWN	CHK	RC	APPROVAL
A		ECR #88-067-04	S. Wills 3-9-88	4-7-88		4-11-88
B		ECR #89-020-02	S. Wills 2-1-89	2-14-89		2/21/89 2/21/89
C		ECR #89-062-01	S. Wills 3-8-89	R. Wright 3.21.89		3/21/89 3/21/89
D		ECR #93-077-09 Revise entire report	J. Smith 3-25-93	J. Clark 4-29-93		J A Conley 4/30/93 5/10/93

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR M24 HIGH TEMP INSTRUMENTATION MANIFOLD

1.0 INTRODUCTION

Anderson, Greenwood and Co. 5-valve manifolds are metal-seated with a globe configuration designed for high-temperature service. The seat is a free-swiveling stainless steel ball sealing on a line contact at the orifice. Grafoil packing is available with a variety of end connections.

2.0 INSTALLATION

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

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

2.3 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.

3.0 OPERATION

Manifolds 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 manifolds have rising stems with right hand thread. Rotate the handle counter-clockwise to open and clockwise to close. Ball seated valves should be closed at 4-5 ft lb of torque.

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 5-VALVE MANIFOLD

The schematic for the M24 5-valve manifold is shown in Figure 1. This manifold is utilized with various types of transmitters used to measure differential pressure. The M24 has two line block valves and an equalizer valve. The other two valves are isolation valves for the calibration and test ports which are integral with the manifold.

3.4.1 In normal operation of the system the two block valves will be open, the equalizer valve will be closed and the two test-port shut off valves will be closed.

3.4.2 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.

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

3.4.4 To return the instrument to service, close both test-port valves and remove calibration tubing. Open the upstream line block valve, then open the down stream line block valve.

4.0 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 these performance parameters.

Valves which remain in one position for long periods of time may be subject to some loss of operability as a result of 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.

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 BONNET REMOVAL, PACKING REPLACEMENT AND INSTALLATION

If packing replacement is needed, safe practice requires depressurizing the valve before removal of the bonnet assembly. Use of backseat to permit repacking under pressure should be considered unsafe.

Refer to Figure 2 for part identification.

4.1.1 Remove bonnet lock pin from valve body by using heavy duty pliers or wire cutters.

4.1.2 Unscrew bonnet counter-clockwise to remove bonnet assembly from valve body.

4.1.3 Place bonnet assembly in soft-jawed vise to facilitate disassembly.

4.1.4 Remove handle (item 7) by loosening handle bolt.

4.1.5 Loosen jam nut (item 4) and unscrew bushing off stem and out of the bonnet.

4.1.6 Remove stem (item 3) from bonnet (item 1) by pushing it downward.

4.1.7 Remove the packing follower (item 8), Grafoil packing (item 6) and washer (item 5) from the bonnet.

4.1.8 Clean all bonnet assembly parts with acetone or alcohol.

4.1.9 Inspect parts for damage, particularily the stem threads and ball end. Replace both stem and bonnet bushing if threads do not engage smoothly.

4.1.10 Lubricate the stem threads with the appropriate lubricant specified on the assembly drawing.

4.1.11 Insert the stem, (item 3) threaded end first, into the end of the bonnet (item 1).

4.1.12 Place the washer, chamfer side down, (item 5) and then the packing (item 6) and follower (item 8) over the threaded end of the stem and push it down into the body of the bonnet.

4.1.13 Lubricate the stem (item 2) threads with the appropriate lubricant.

4.1.14 Place the bushing with jam nut over the stem and start the threads for both the stem and bonnet by hand. Screw the bushing down into the bonnet until it reaches the stem seal.

4.1.15 Place the handle assembly (item 7) onto the upper portion of the stem and tighten handle bolt to 10-12 ft lb. Be careful not to bend the stem.

4.1.16 Lightly lubricate the bonnet threads, and the bonnet sealing surface, with the appropriate lube and screw the bonnet into the body by hand then tighten the bonnet to 80-90 ft lb using a torque wrench.

5.0 POST ASSEMBLY INSPECTION

Turn the handle to open and close the valve. Check for binding, rubbing or any resistance to smooth operation.

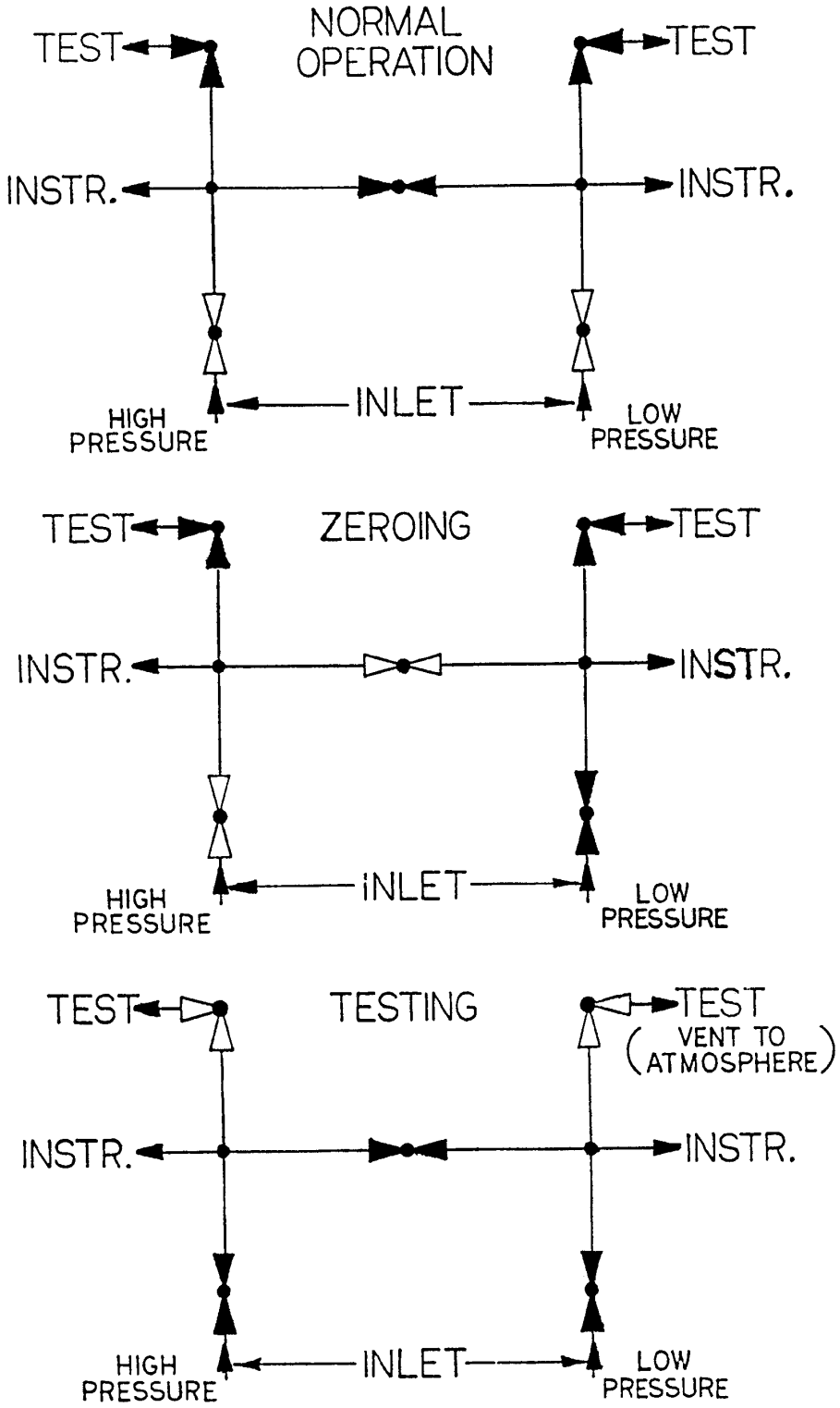
NORMAL OPERATION
TEST
TEST
INSTR.
INSTR.
INLET
HIGH PRESSURE
LOW PRESSURE
ZEROING
TEST
TEST
INSTR.
INSTR.
INLET
HIGH PRESSURE
LOW PRESSURE
TESTING
TEST
TEST
(VENT TO ATMOSPHERE)
INSTR.
INSTR.
INLET
HIGH PRESSURE
LOW PRESSURE

FIGURE 1

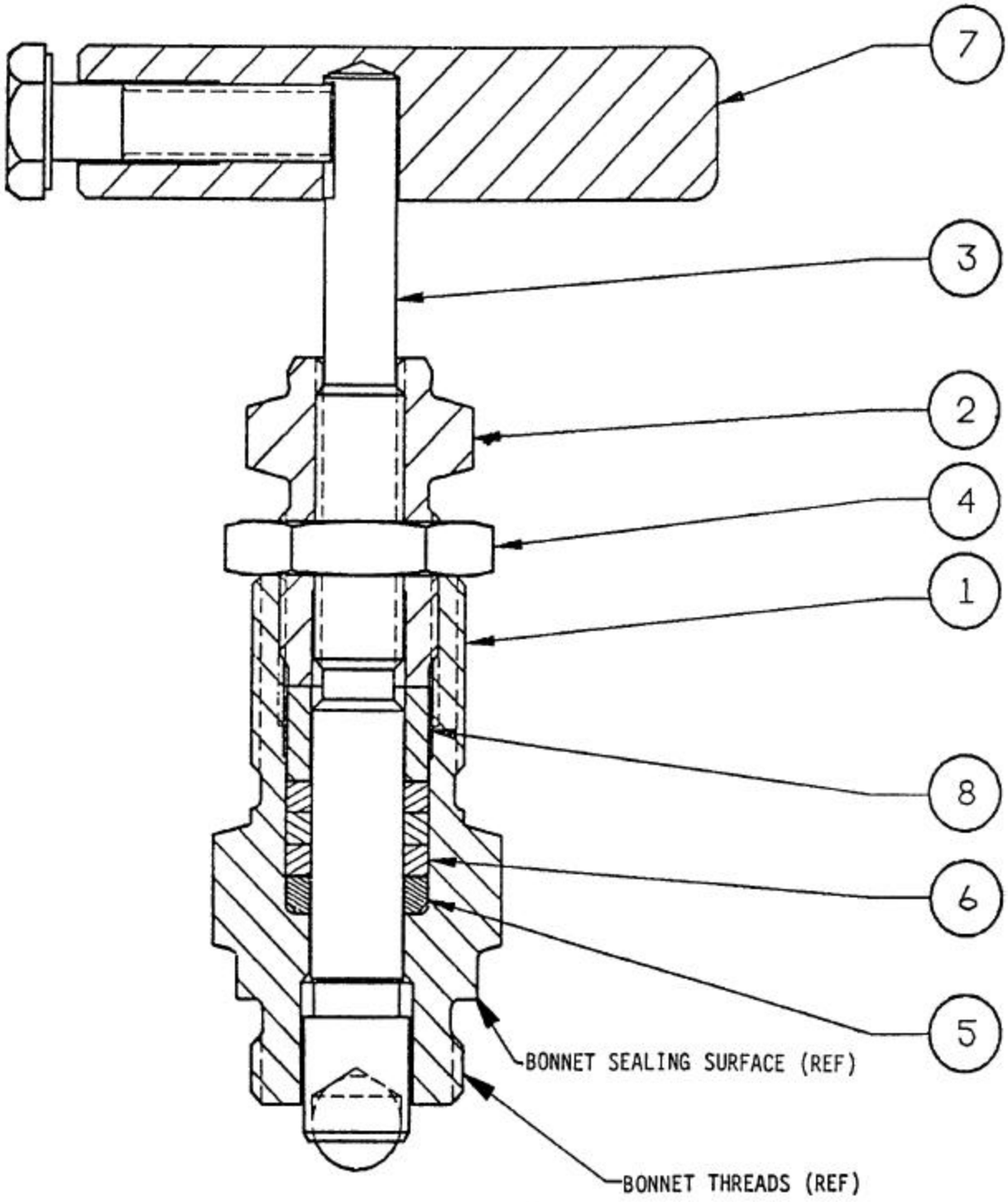

FIGURE 2
PBT BONNET ASSY