05-9040-137 B

INSTALLATION, OPERATION AND MAINTENANCE

INSTRUCTIONS FOR M22, M24T, M25

INSTRUMENTATION MANIFOLDS

PACKED BELOW THE THREADS

QC

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* EX *
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E20

DWN			
CHK	D.Boyett	2-14-85	
ENGR	J.Spahr	2-15-85	
PROD	G.Fehler	2-15-85	
QA			
ENGR			

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DIMENSIONS IN [ ] ARE MILLIMETERS
IMPLIED 90° ANGLES ± 1/2°; OTHER ANGLES ± 2°
HUNDREDTHS = ±.03
THOUSANDTHS = ± 010

ALL ANDERSON, GREENWOOD & CO PRODUCTION STANDARDS ARE APPLICABLE

√ ALL MACHINED SURFACES REF ANSI B46.1
DO NOT SCALE PRINT

REVIEW CODE (RC)
1. DESIGN REPORT REVIEWED
2 DESIGN REVIEW REQUIRED
3 DESIGN REVIEW NOT REQUIRED

ANDERSON, GREENWOOD & CO.
HOUSTON, TEXAS

INSTALLATION, OPERATION AND MAINTENANCE
INSTRUCTIONS FOR M22, M24T & M25 PBT
INSTRUMENT MANIFOLDS

SIZE	CODE IDENT. NO.		REV
A	01343	05-9040-137	B

SCALE: N/A | PAGE 1 OF 12

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR M22, M24T and M25 PBT INSTRUMENTATION HAND VALVES AND MANIFOLDS

1.0 INTRODUCTION

Anderson, Greenwood and Co., 2-valve and 5-valve manifolds are metal-seated with a globe configuration designed for standard service. The seat is a free-swiveling stainless steel ball sealing on a line contact at the orifice. Teflon packing is available with a variety of end connections.

2.0 INSTALLATION

2.1 Pre-Installation Inspection

The moment of installation of a hand valve or manifold is one of the most critical points in time. Exercise proper care during the process to assure increased probability of trouble-free valve service.

2.1.1 Unpack valve or manifold and check tag, nameplate or body stamping for correct part or identification number.

2.1.2 Check hand valve body for flow arrow and note the direction indicated, appropriate care should be exercised to install valve with proper flow orientation. If no flow arrow is stamped on the valve body, flow may be in either direction. Check manifold nameplate for schematic of valve arrangement if so equipped and note which ports are for process connections and instrument connections.

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

2.2 THREADED VALVE INSTALLATION

Pipe or fitting connections must be made up tight. Threaded pipe joints depend on a good intimate fit between the male and female pipe threads usually with the use of a thread sealant.

2.2.1 Check the threads on both the valve and the mating pipe for both form and cleanliness.

2.2.2 Do not use substantial wrenching force on a tapered pipe joint until it is apparent that threads are properly engaged. Tapered pipe threads are inherently loose fit at entry.

2.2.3 When tightening a tapered thread joint the wrench should be on the valve end into which the pipe is being threaded.

2.3 TUBE FITTING VALVE INSTALLATION

AGCO Tube Fittings come in the valve completely assembled and ready for immediate use. Disassembly of the fittings before use is not recommended because of the possibility of lost parts or introduction of dirt or other foreign matter into the fitting and valve. Only three steps are required for valve installation.

2.3.1 Insert the tubing through the compression nut and ferrule, and into the fitting, making sure the tubing rests firmly against the shoulder in the fitting. The compression fitting should be just finger tight.

2.3.2 Scribe an alignment mark on the valve body and the compression nut of the fitting

2.3.3 Using an appropriate wrench, tighten the copression nut one full turn (until the alignment marks are again aligned). Tighten the compression nut an additional 1/4 turn (until the alignment marks are approximately 90° apart). Installation is now complete.

3.0 OPERATION

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

All manifolds have rising stems with right-hand thread. Rotate the handle counter-clockwise to open and clockwise to close.

Pressure under the ball require stem loading to match the pressure. The higher the pressure the higher the stem loading required to close the valve.

The handle of the valve has been designed to provide an adequate seating force to seal the valve against the maximum pressure of the valve without the use of additional mechanical advantage. The use of a "cheater" to operate the valve is not necessary and not recommended. This practice can cause valve damage.

Valves with rising stems are provided with a backseat. This is a shoulder on the stem or other part of the stem assembly which engages a corresponding seat shoulder on the inner side of the bonnet. It has become generally recognized that use of the stem back-seat for stem sealing may mask unsatisfactory condition of the stem packing. For this reason the use of the backseat for normal operational stem sealing is not recommended. Backseats in rising stem valves should be considered basically as stops to prevent overtravel when opening valves. Normal practice should be to unseat the backseat slightly. If it is necessary to use the backseat for stem sealing it should be recognized that backseats are usually smaller than the main seat and care should be exercised to avoid applying excessive stem force in backseating.

3.1 OPERATION OF 2-VALVE MANIFOLD

The schematic for the M25 zero-calibration manifold is shown in figure 1. These 2-valve units are used on static pressure transmitters, switches or gages.

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

3.1.2 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 the instrument.

3.2 OPERATION OF 5-VALVE MANIFOLD

The schematic for the 5-valve manifold is shown in figure 3. These manifolds are utilized with various types of transmitters used to measure differential pressure. The 5-valve manifold is similar to the 3-valve manifold in that it 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.

3.2.1 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.

3.2.2 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.

3.2.3 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.

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

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

4.1 PACKING REPLACEMENT

If stem seal replacement is needed, safe practice requires depressurizing the valve before removal of the bonnet bushing. Teflon packings do not often need replacement. If leakage occurs usually the leak can be stopped by tightening the bonnet bushing.

Reference Figure 3 for parts 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 8) by loosening handle bolt.

4.1.5 Remove dust boot (item 6) from upper portion of bushing (item 3).

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

4.1.7 Remove stem (item 1) from bonnet (item 2) by pushing it downward.

4.1.8 Remove Teflon packing (item 5,) from the bonnet.

4.1.9 Clean all bonnet assembly parts with acetone or alcohol.

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

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

4.1.12 Insert the stem, (item 1) threaded end first, into the end of the bonnet (item 2,) that is threaded externally.

4.1.13 Place the packing (item 4) over the threaded end of the stem and push it down into the body of the bonnet.

4.1.14 Lubricate the bushing (item 3) 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.

4.1.16 Place the boot (item 7) over the upper portion of the valve stem.

4.1.17 Place the handle assembly (item 6) onto the upper portion of the stem and tighten handle bolt to 12 inch/lbs. Be careful not to bend the stem.

4.2 VALVE ASSEMBLY

4.2.1 Lightly lubricate the bonnet threads, and the bonnet sealing surface, with the appropriate lubricant.

4.2.2 Place bonnet assembly into the seat cavity and screw the bonnet into he valve body by hand.

4.2.3 Tighten the bonnet to 80 - 90 ft/lbs. using the preset torque wrench.

4.2.4 Tighten the bonnet bushing using a wrench. The bushing should be //s//

The bushing tightness is a matter of both judgment and experience. The basic considerations are:

Too Loose - the bonnet will leak.

Too Tight - The handle will be hard to turn and the stem seal may be ruined.

4.2.5 Once the bushing is properly adjusted, tighten the jam nut (item 5) to lock the bushing in place.

4.2.6 Tap one bonnet lock pin into one of the two holes that one of the flats on the bonnet hex best centers over.

5.0 POST ASSEMBLY INSPECTION

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

6.0 MANUFACTURER'S RECOMMENDED SPARE PARTS

The recommended spare parts for one years operation are:

One (1) complete bonnet assembly for each five (5) bonnets in service.

One (1) packing for each bonnet in service.

See the applicable valve assembly drawing or bonnet assembly drawing for the correct part numbers.

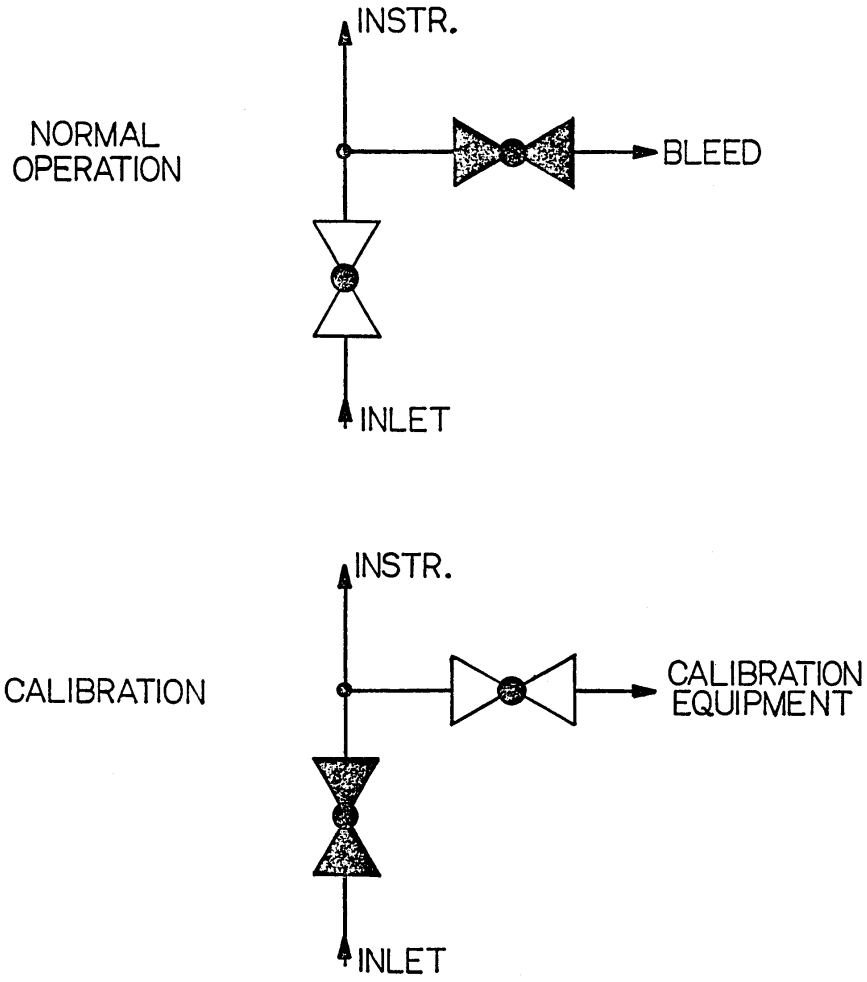

INSTR.
NORMAL OPERATION
BLEED
INLET
INSTR.
CALIBRATION
CALIBRATION EQUIPMENT
INLET

FIGURE 1

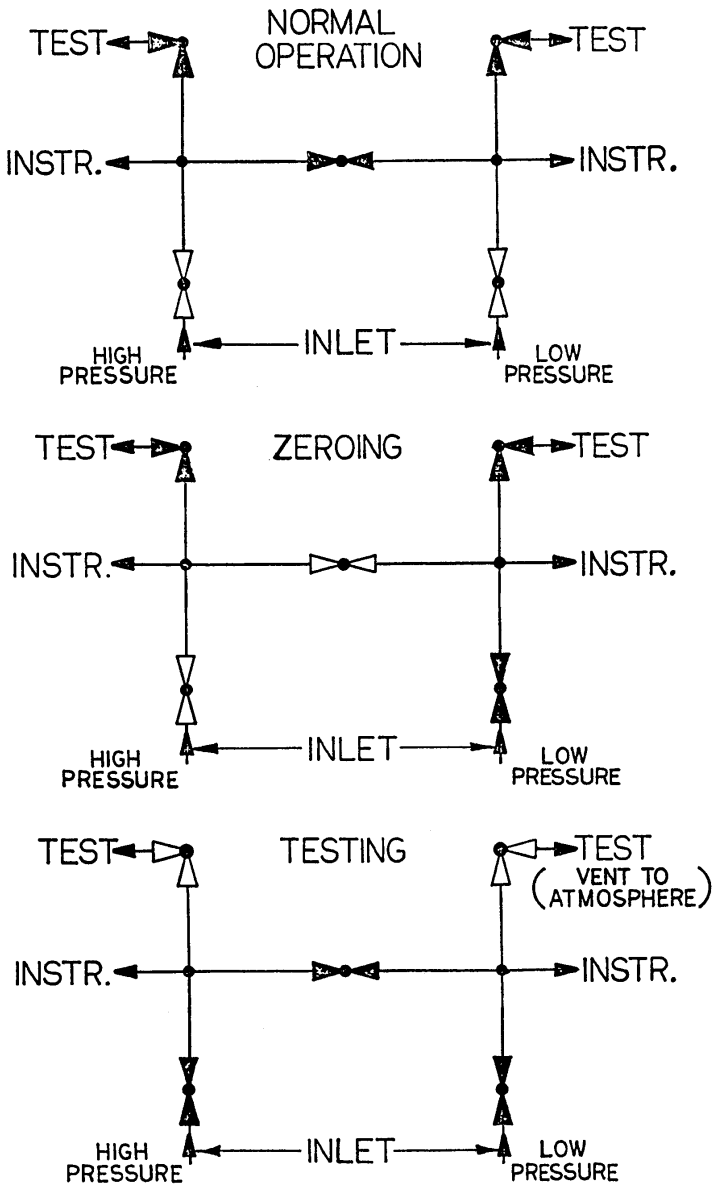
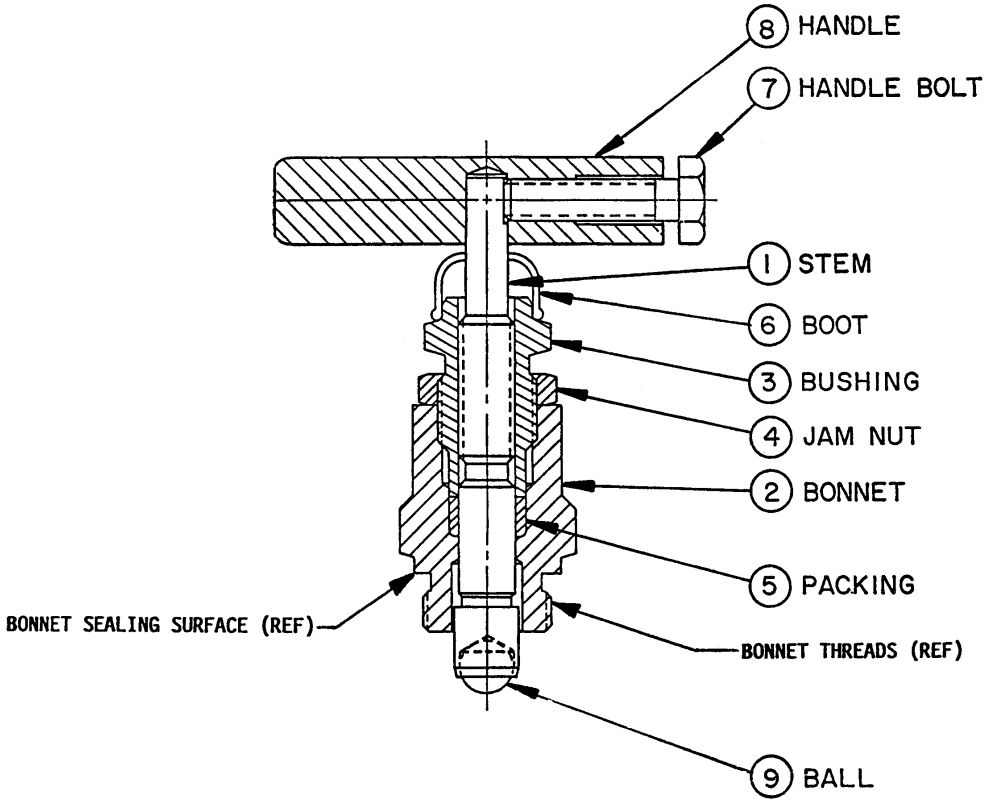

NORMAL
OPERATION
TEST
TEST
INSTR.
INSTR.
INLET
HIGH
PRESSURE
LOW
PRESSURE
ZEROING
TEST
TEST
INSTR.
INSTR.
INLET
HIGH
PRESSURE
LOW
PRESSURE
TESTING
TEST
TEST
(VENT TO
ATMOSPHERE)
INSTR.
INSTR.
INLET
HIGH
PRESSURE
LOW
PRESSURE

FIGURE 2



TEFLON PACKED HARD SEAT
BONNET

FIGURE 3