FOXBORO®

Instruction

MI 022-137
January 1990

3-Valve and 5-Valve Bypass Manifolds

Installation and Maintenance

SIEBE®
A Siebe Group Company

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Introduction

General Description

A bypass manifold adapts a Foxboro d/p Cell® transmitter for direct or close coupling with a primary device. The manifolds can be used with 823DP, 843DP, or 843DX Electronic Transmitters; or with 15A, 13A, or 13H Pneumatic Transmitters.

Three-valve mini-manifolds are also available for use with the 843D Series d/p Cell Transmitters.

Standard Specifications

Pressure and Temperature Limits

Static pressure and process temperature limits for the manifold are stamped on the manifold data plate. The transmitter may have different pressure and temperature limits. Do not exceed the specified values of either the manifold or the transmitter.

Dimensions

Refer to the applicable Dimensional Print (DP) listed below:

3-Valve Manifold With Bolt-On Process Connectors	
Without Integral Flow Orifice U-Bend (IFOU) Manifold	DP 022-140
With IFOU Manifold	DP 022-143
3-Valve Manifold With Integral NPT Process Connections	DP 022-141
3-Valve Mini-Manifold	DP 022-142
5-Valve Manifold	DP 022-139

Installation

The manifold can be connected to either side of the transmitter (except for the 843D Series Transmitters). If the manifold is supplied with an optional manifold mount (with mounting bracket)(3-valve manifolds only), install the bracket on the manifold as shown in this instruction. If a transmitter mounting bracket is used, install the manifold on the opposite side of the transmitter.

3-Valve Manifold With Bolt-On Process Connectors

1. If manifold has an optional manifold mount (with mounting bracket), install mounting bracket on pipe as shown in Figure 1. Then install manifold on mounting bracket as shown. Note that Figure 1 shows an alternate manifold arrangement (valve handle facing down). With E13DM Transmitters, the alternate arrangement must be used to avoid interference between the valve handle and the transmitter topworks. With other Foxboro transmitters, either arrangement can be used.

NOTE: With valve handle facing upwards, pipe can be located on either side of mounting bracket.

2. If transmitter does not have an integral flow orifice U-bend (IFOU) manifold, refer to Figure 2. If transmitter has an IFOU manifold, refer to Figure 3.

   Before installing bypass manifold, check if transmitter topworks interferes with valve handle. If so, invert manifold 180° before installation. With 823DP Transmitter, topworks can be turned to avoid interference.

3. Screw process connectors onto process piping.

4. Install gaskets and fasten process connectors onto manifold using bolts supplied with transmitter. For correct alignment, process connectors can be inverted to give 51, 54, or 57 mm (2, 2 1/8, or 2 1/4 in) center-to-center distance between high and low process connections.

5. Install gaskets and connect manifold to transmitter with bolts provided with manifold.

CAUTION: When connecting transmitter to bypass manifold (Step 5) or installing process connectors (Step 4), use the ASTM A193 Gr B7, 0.437-20 x 1.50 in bolts supplied. Substitute only with bolts of equivalent strength. Apply a process compatible lubricant to threads and then tighten bolts alternately to a maximum torque of 81 N•m (60 lb•ft). Low torque can result in process leakage. High torque can result in bolt fracture.

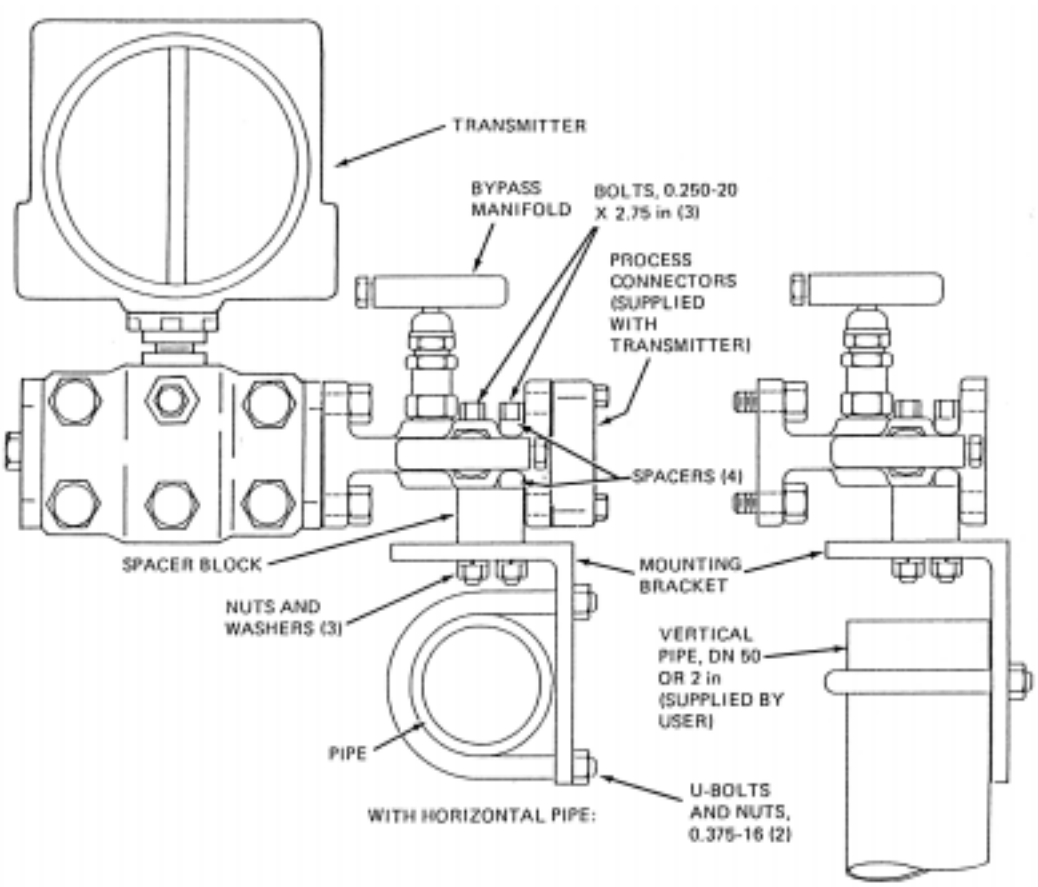

Figure 1. Installation of Optional Mounting Bracket on 3-Valve Bypass Manifold With Bolt-On Process Connectors

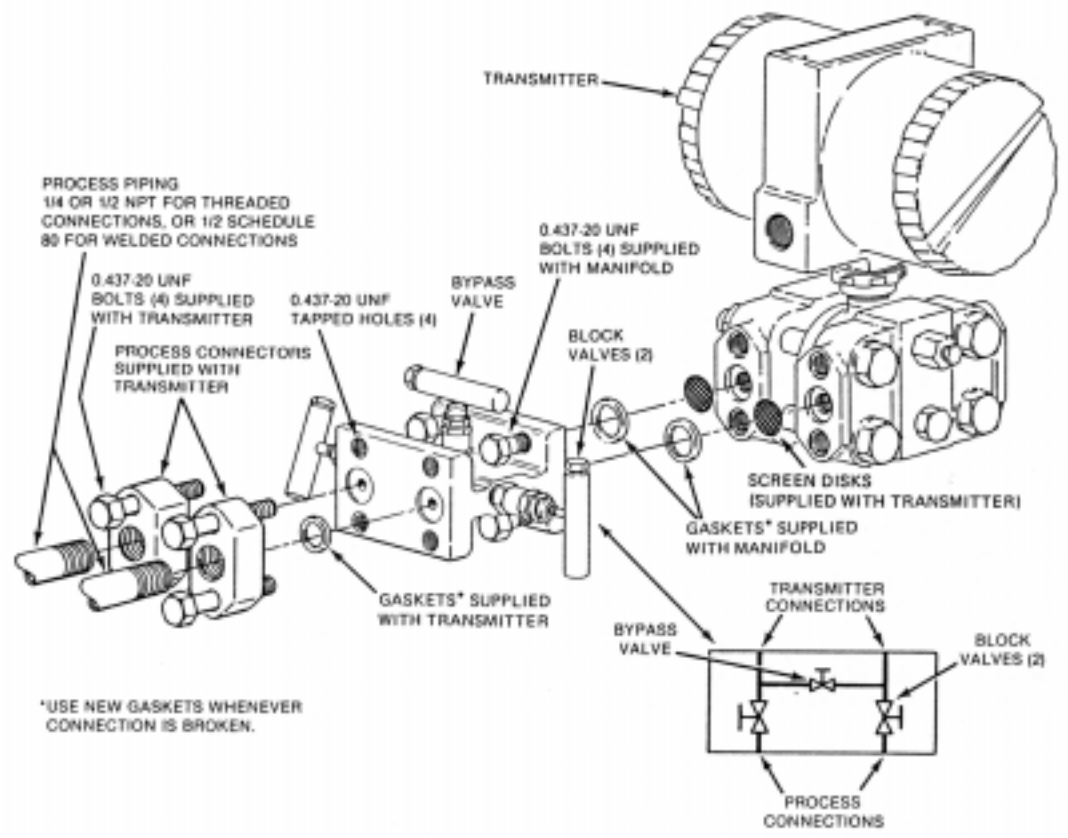

Figure 2. Installation of 3-Valve Bypass Manifold With Bolt-On Process Connectors (Without IFOU Manifold)

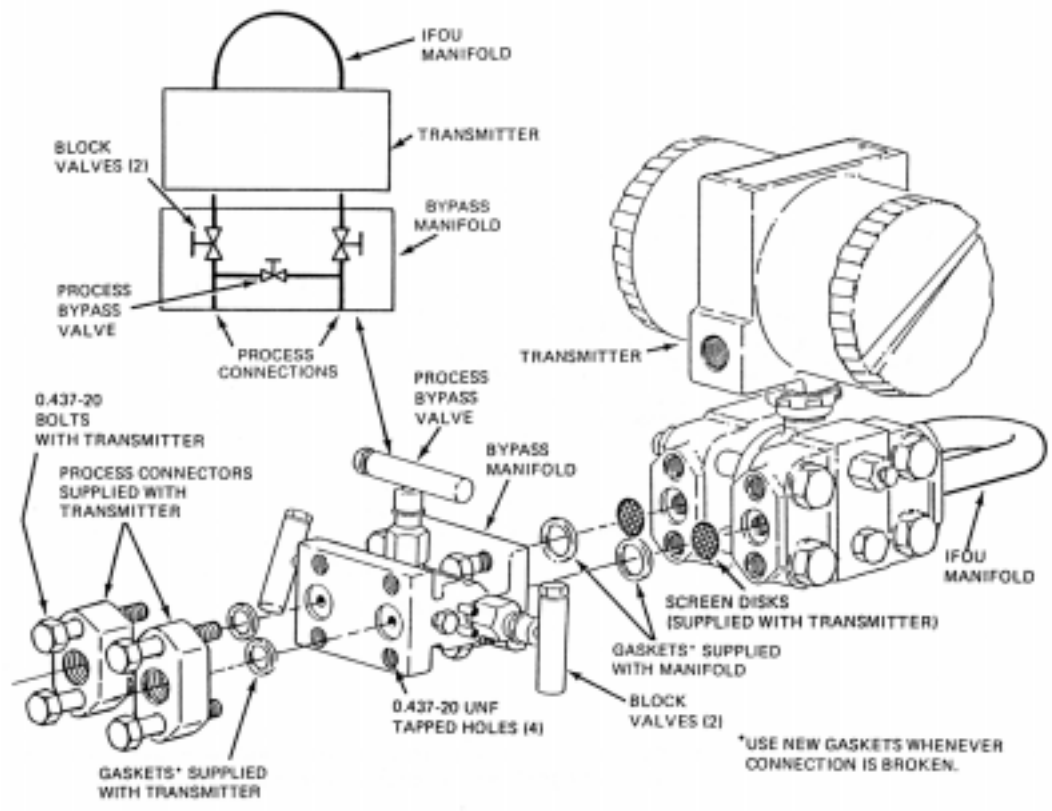

Figure 3. Installation of 3-Valve Bypass Manifold With Bolt-On Process Connectors (With IFOU Manifold)

3-Valve Manifold With Integral NPT Process Connections

1. If manifold has an optional manifold mount (with mounting bracket), install mounting bracket on pipe as shown in Figure 4. Then install manifold on mounting bracket as shown. Note that Figure 4 shows an alternate manifold arrangement (valve handle facing down). With E13DM Transmitters, the alternate arrangement must be used to avoid interference between the valve handle and the transmitter topworks. With other Foxboro transmitters, either arrangement can be used.

NOTE: With valve handle facing upwards, pipe can be located on either side of mounting bracket.

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2. Refer to Figure 5. Before installing bypass manifold, check if transmitter topworks interferes with valve handle. If so, invert manifold 180° before installation. With 823DP Transmitter, topworks can be turned to avoid interference.
3. Screw process piping into manifold.
4. Install gaskets and fasten manifold to transmitter with bolts supplied with manifold.

CAUTION: When connecting manifold to transmitter, use the ASTM A193 Gr B7, 0.437-20 x 1.50 in bolts supplied. Substitute only with bolts of equivalent strength. Apply a process compatible lubricant to threads and then tighten bolts alternately to a maximum torque of 81 N•m (60 lb•ft). Low torque can result in process leakage. High torque can result in bolt fracture.

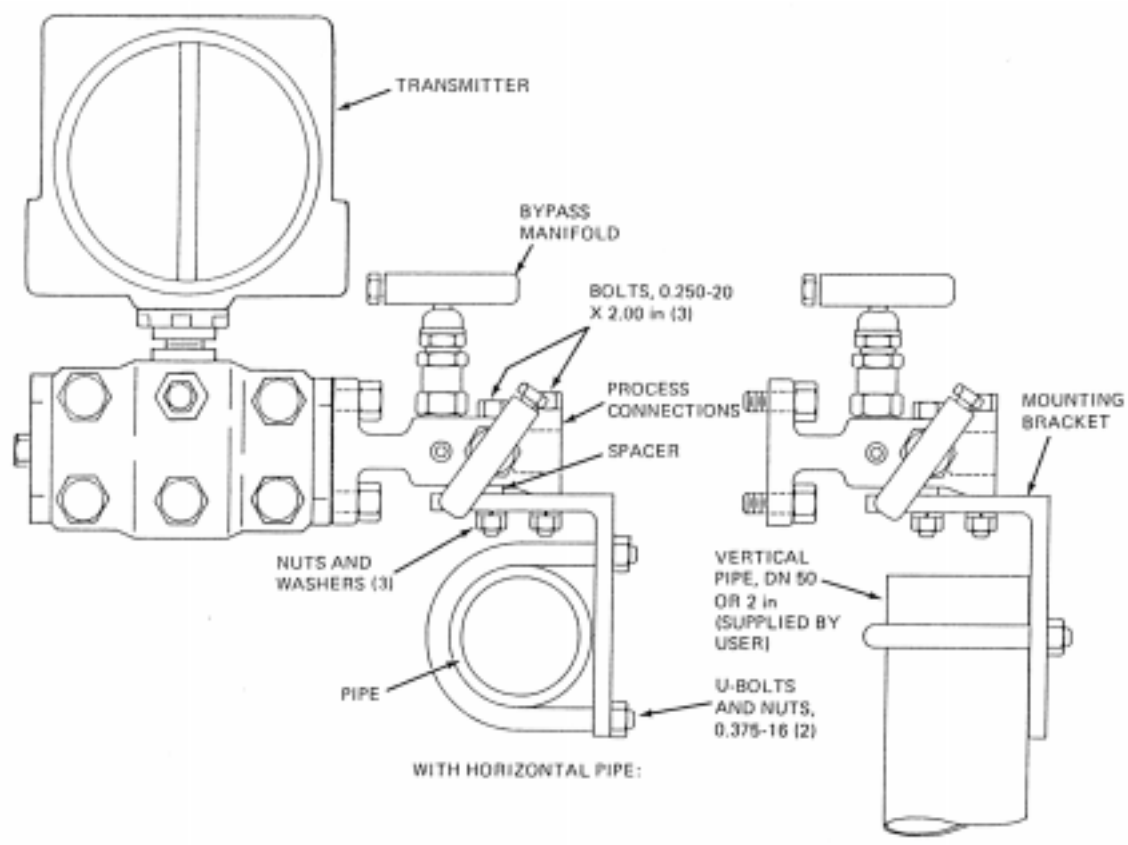

Figure 4. Installation of Optional Mounting Bracket on 3-Valve Bypass Manifold With Integral NPT Process Connections

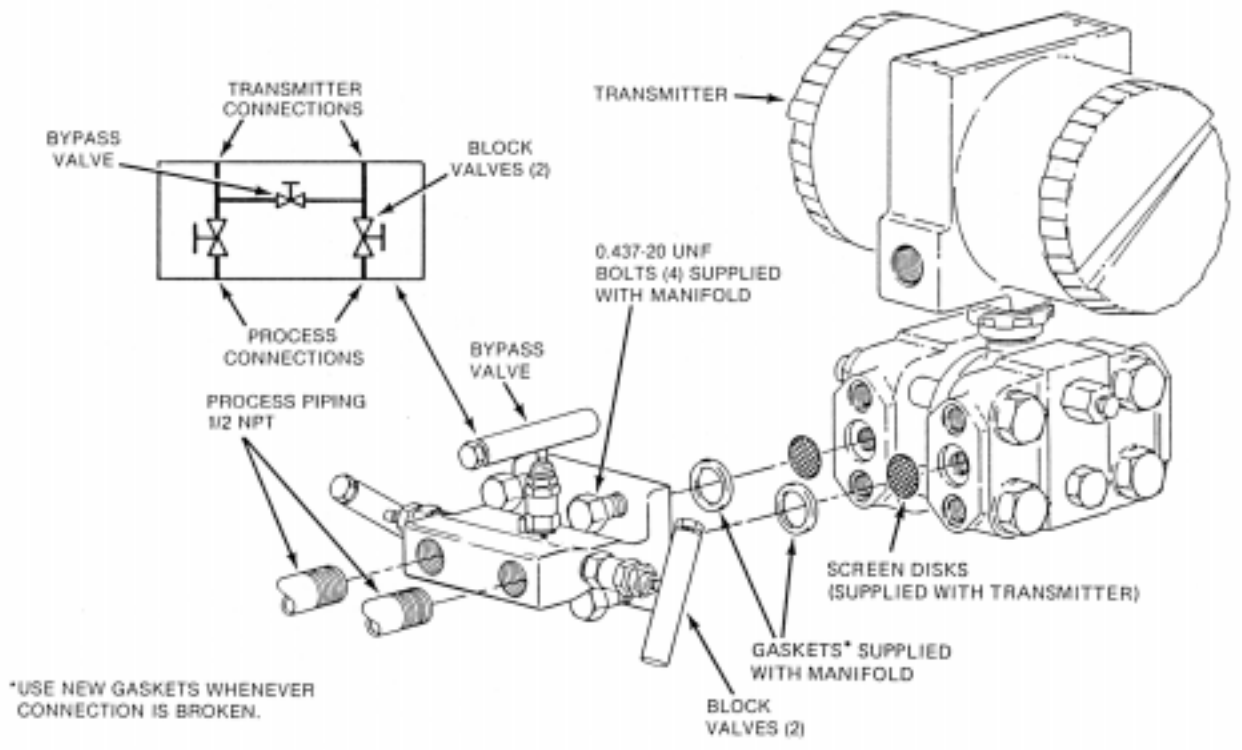

Figure 5. Installation of 3-Valve Bypass Manifold With Integral NPT Process Connections

5-Valve Manifold

1. Refer to Figure 6. Screw process piping into manifold.
2. Connect 1/2 NPT hex nipples to manifold.
3. Screw process connectors onto hex nipples. When installing connectors, check that mounting holes are aligned with holes on transmitter. For correct alignment, process connectors can be inverted to give 51, 54, or 57 mm (2, 2 1/8, or 2 1/4 in) center-to-center distance between high and low process connections.
4. Install gaskets and fasten process connectors onto transmitter with bolts provided with transmitter.

CAUTION: When installing process connectors on transmitter, use the ASTM A193 Gr B7, 0.437-20 x 1.50 in bolts supplied. Substitute only with bolts of equivalent strength. Apply a process compatible lubricant to threads and then tighten bolts alternately to a maximum torque of 81 N• m (60 lb• ft). Low torque can result in process leakage. High torque can result in bolt fracture.

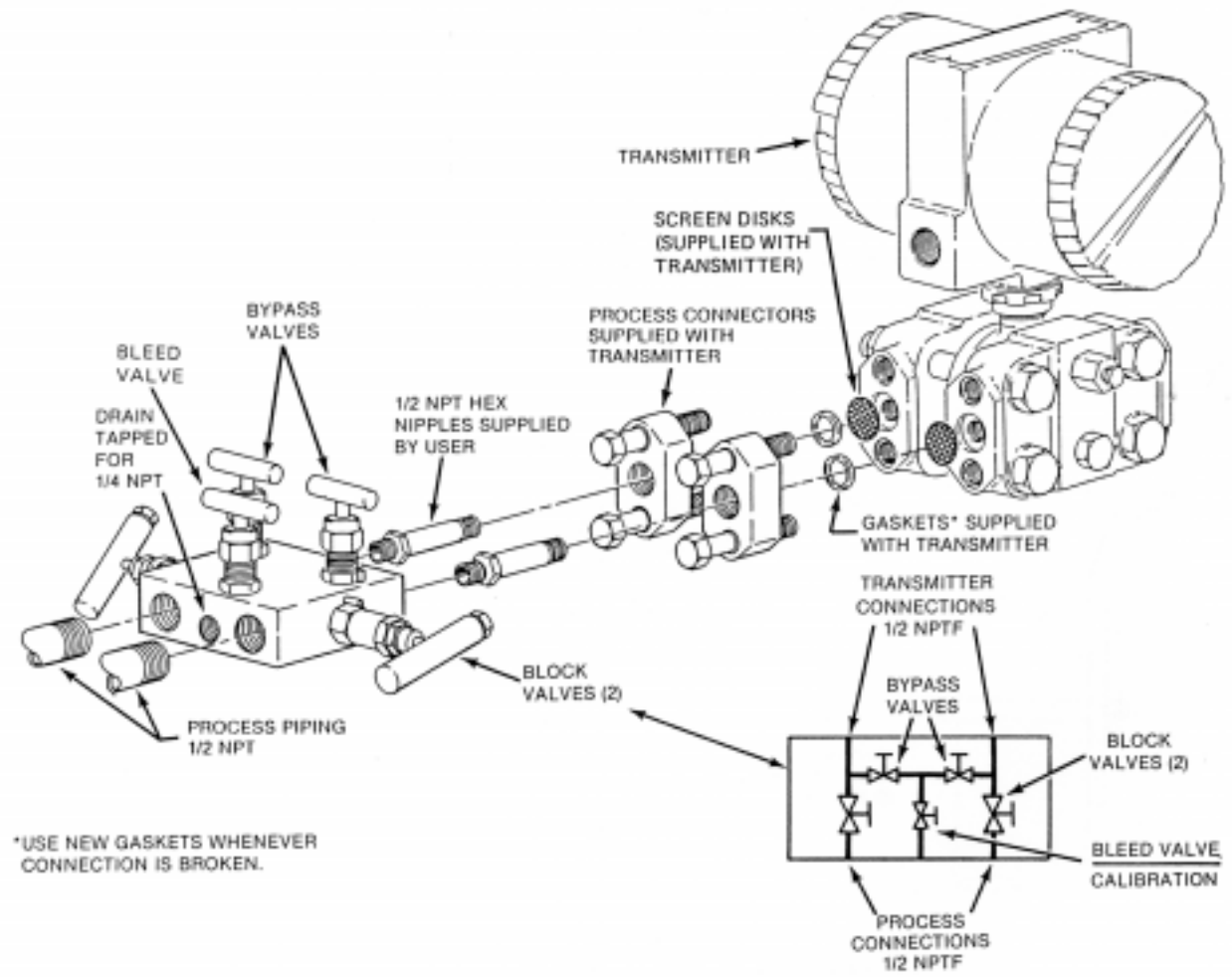

Figure 6. Installation of 5-Valve Bypass Manifold

3-Valve Mini-Manifold

NOTE: The 3-Valve Mini-Manifold is for use with the Foxboro 843D Series d/p Cell Transmitter.

1. If manifold has an optional manifold mount (with mounting bracket), install mounting bracket on pipe as shown in Figure 7. Then install mini-manifold on mounting bracket as shown.
2. Refer to Figure 8 before performing the steps that follow.
3. Screw process connectors onto process piping.
4. Install gaskets and fasten process connectors onto manifold using bolts (and gaskets) supplied with transmitter. For correct alignment, process connectors can be inverted to give 51, 54, or 57 mm (2, 2-1/8, or 2-1/4 in) center-to-center distance between high and low process connections.

5. Install gaskets and connect mini-manifold to transmitter with bolts provided with manifold.

CAUTION: When connecting mini-manifold to transmitter (Step 5) or installing process connectors (Step 4), use the ASTM A193, Gr B7, 0.437-20 x 1.50 in bolts supplied. Substitute only with bolts of equivalent strength. Apply a process-compatible lubricant to threads and then tighten bolts alternately to a maximum torque of 81 N•m (60 lb•ft). Low torque can result in bolt fracture.

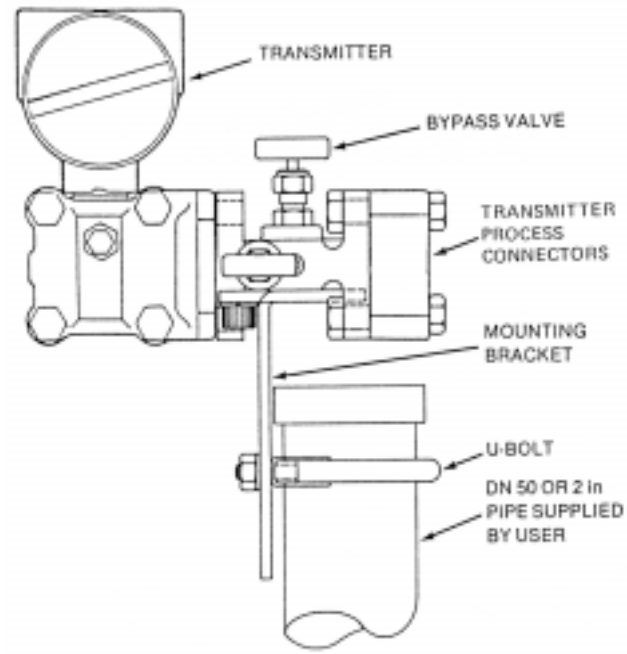

Figure 7. Installation of Optional Manifold Mount on 3-Valve Mini-Manifold with Bolt-On Process Connectors

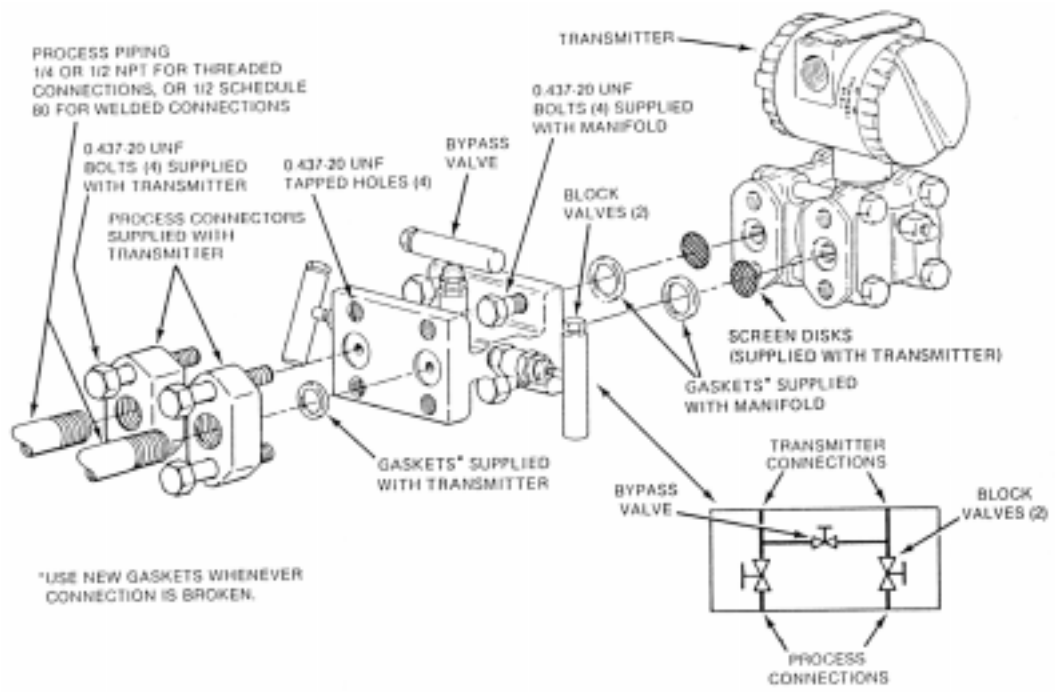

Figure 8. Installation of 3-Valve Mini-Manifold with Bolt-On Process Connectors.

Maintenance

General

Install a new gasket whenever a connection is broken. See applicable Manifold Parts List (PL) for part numbers.

Installing New Bonnet Assembly

1. Shut off process and bleed process liquid from manifold.

CAUTION: When draining process liquid, wear clothing suitable to protect against the liquid.

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2. Refer to Figure 9. Pull the roll pin out of manifold body.
3. Unscrew and remove old bonnet assembly.

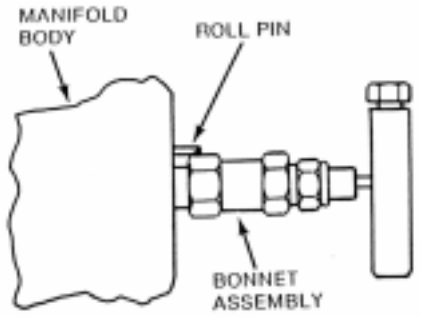

Figure 9. Bonnet Assembly and Roll Pin Identification

4. Coat threads of new bonnet assembly with a suitable grease or thread sealant such as Foxboro Part Number X0114AA.
5. Install new bonnet assembly and tighten to a torque between 27 and 34 N•m (20 and 25 lb• ft).
6. Reinsert roll pin into valve body.

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