INSTALLATION INSTRUCTIONS

Magnetic Flowmeter
Models 10D1475J/S/W
This installation instruction literature serves as a guide for proper installation of the associated magnetic flowmeter. A more detailed description of installation procedures will be found in the Instruction Bulletin provided for the particular magnetic flowmeter primary.
Mounting hardware (supplied by ABB) consists of: studs, nuts, gaskets and adapter(s). Check itemized packing list to be certain that all items listed have been received.

**FIGURE 2. Recommended Piping Diagram**
NOTE
Although a vertical installation of your meter is best, a horizontal or sloping installation can be very successful if the meter electrodes are oriented in a horizontal plane. If either electrode is positioned at the top, entrapped air may act as an insulator, resulting in an unreliable measurement.

This tag highlights the installation techniques necessary for dependable service from your ABB Magnetic Flowmeter. By observing and performing these operations, your meter warranty remains valid and satisfactory performance is assured. Coverage of all recommendations given in this instruction is provided in detail within the Instruction Manual which accompanies your meter.

METER GASKETS

Two gaskets are provided in the Installation Kit, as selected for the particular application.

CONDUIT CONNECTIONS

Conduit seal fittings must be properly installed at the meter primary to prevent condensate, that may be present in the conduit system, from entering the customer connection box and degrading meter performance.

Conduit seals are also required to prevent the process fluid from entering the electrical conduit system. This safety feature considers the remote possibility of a primary seal failure within the flowmeter, in which case, this secondary seal will prevent the process from entering the electrical conduit system in accordance with the National Electrical Code (NEC) ANSI/NFPA 70, Article 501-5 (f) (3). A cable seal and mating fittings are supplied with the meter for cables that interconnect with a remotely mounted signal converter. When an integrally mounted signal converter is supplied, cable seals and fittings are provided only when the accidental submergence option has been specified.

Proper assembly of the cable seal and fittings is illustrated in the adjacent diagram. If the seal provided contains plugs in the thru-holes, remove only those plugs required to accommodate necessary wiring. The proper use of conduit and seals provides physical protection for all external wiring, makes the meter weatherproof and provides added assurance against undesirable stray pick up on signal transmission leads.

FIGURE 3. Typical Conduit Seal
MOUNTING PROCEDURE

INSTALLATION OF 1/10 - 3/8 INCH METERS

- Align flange adapter on meter body, as shown below.
- Install a gasket at meter inlet and outlet, as applicable for meter type. Observe flow direction arrow.
- Insert meter with (with gaskets) between pipe flanges.
- Insert mounting studs through bolt holes.
- Thread nuts on mounting studs (finger tight).
- Press down on flange adapter to force-spread studs, thereby centering meter in pipeline.
- Use proper torque and tightening sequence (i.e. 1-3-2-4) to maintain even pressure distribution as shown in the figure to the right.

FIGURE 4. Meter Mounting Diagram, 1/10 - 3/8 in. Sizes
INSTALLATION OF 1/2 - 4 INCH METERS

- Install a gasket at meter inlet and outlet, as applicable for meter type.
- Insert meter (with gaskets) between pipe flanges.
- Insert two lower mounting studs with adaptor sleeves between pipe flanges.
- Insert top two mounting studs and sleeves (this will center the meter in pipeline); install other mounting studs, if required.
- Thread nuts on studs. Use proper torque and tightening sequence (i.e. 1-5-3-7, 2-6-4-8) to maintain even pressure distribution as shown in the figure to the right.

FIGURE 5. Meter Mounting Diagram, 1/2 - 4 in. Sizes
GROUNDING PROCEDURE

ELECTRICALLY CONDUCTIVE PIPELINE
(Liquid in Electrical Contact With Pipeline)

FOR OPTIMUM SYSTEM PERFORMANCE
the flowmeter body and electrically conductive pip- ing must be connected to a good earth ground.

GROUNDING STRAPS

- Although grounding straps are not actually packed within the Installation Kit, they are attached to the Magnetic Flowmeter. Proper use of these straps is mandatory for satisfactory operation. Perform the applicable grounding procedure.

- Two bonding straps are supplied with the meter for connection to the upstream and downstream pipe flanges. Flanges must be drilled and tapped.

  (Refer to FIGURE 6)

- Customer must supply and install bonding strap (e.g., 1/2" copper braid) from meter body to an external earth ground.

FIGURE 6. Grounding Procedure, Conductive Pipeline

NOTE
Refer to appropriate Instruction Bulletin supplied by ABB for electrical interconnection diagram(s).
ELECTRICALLY NON-CONDUCTIVE PIPELINE
(Liquid NOT in Electrical Contact With Pipeline)

SYSTEMS USING INSULATED PIPE INCLUDE:
- Ceramic lined cast iron pipe
- Plastic pipe*
- Concrete pipe*
- Teflon lined pipe

* Model 10D1477 may not be installed in these types of pipelines. Consult instruction manual for details.

FOR OPTIMUM SYSTEM PERFORMANCE
the flowmeter body and electrically conductive piping must be connected to a good earth ground.

- Install grounding ring between pipe flange and meter (one upstream and one downstream).
  (Refer to FIGURE 7)

- Two ground straps are supplied with the meter for connection to the upstream and downstream grounding rings.

- Customer must supply and install ground strap (e.g., 1/2" copper braid) from meter grounding stud to an external earth ground.

- Refer to Figure 8 for optional grounding ring dimensions.

NOTE
Refer to applicable Instruction Bulletin supplied by ABB for electrical interconnection diagram(s).
OPTIONAL GROUNDING RINGS

- The grounding ring material must be conductive and not subject to chemical reaction with the metered fluid.
- Grounding rings are available from ABB (2 required).

(Refer to Figure 8)

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**Figure 8. Outline Dimensions of Accessory Grounding Rings**

<table>
<thead>
<tr>
<th>NOMINAL SIZE</th>
<th>ANSI CLASS ISO</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm (inch)</td>
<td>&quot;A&quot;</td>
</tr>
<tr>
<td>3-15 (1/2)</td>
<td>1 - 7/8</td>
</tr>
<tr>
<td>25</td>
<td>2 - 5/8</td>
</tr>
<tr>
<td>40 (1-1/2)</td>
<td>3 - 3/8</td>
</tr>
<tr>
<td>50 (2)</td>
<td>4 - 1/8</td>
</tr>
<tr>
<td>80 (3)</td>
<td>5 - 3/8</td>
</tr>
<tr>
<td>100 (4)</td>
<td>6 - 7/8</td>
</tr>
</tbody>
</table>

Notes:
1. All dimensions in inches, except as noted.
3. Grounding ring centered by flange bolts.