Positioning the Meter

CAUTION: These flow sensors are not recommended where installation may expose the flow sensor to boiler pressure and temperature. Maximum recommended operating temperature is 140˚F (60˚C).

ATTENTION: Ces capteurs de débit ne sont pas recommandés là où l'installation peut exposer le capteur de débit à la pression et à la température de la chaudière. La température de fonctionnement maximale recommandée est de 140 °F (60 °C).

These meters can be installed horizontally, vertically (with upward flow), or in any radial position.

The meter must not be installed where it will be exposed to extreme levels of vibration.

Using a check valve on the upstream side of the meter, and/or an air vent (vacuum relief valve) in the same, unobstructed run of pipe as the meter, is required in any installation where the meter may be exposed to suction when the system is not in normal operation. Suction can cause damage to the liner. Liner damage caused by suction, without the use of a check valve and/or air vent, may void the warranty.

Straight Pipe Recommendations. The AG3000 requires straight pipe before and after the meter for best accuracy. However, the ability of electromagnetic meters to average the flow across the entire pipe allows for shorter straight pipe recommendations than most mechanical meters (see page 7).

Full Pipe Recommendations. To prevent false readings, this meter is designed to indicate 'EMPTY PIPE' if one or more electrodes is exposed. For highest accuracy, install the meter so that the pipe will be full when there is flow. If air bubbles may be present in the pipe or sludge accumulation is an issue, rotate the meter by one flange hole to position the control housing at a 45˚ angle (see diagrams on page 8).

Fittings. The AG3000 has ANSI 150 lb. drilled flanges and will mate with any other ANSI 150 lb. flanges. *See table on page 10 for flange bolt tightening torque specifications.*

Calibration. The AG3000 is factory-calibrated before shipping. The frequency of recalibration will depend on the needs of each application and local regulatory policies.

Chemical Injection. When the AG3000 is used in a chemical injection application, **the chemical injection point must be placed downstream of the magmeter OR far enough upstream for complete mixing to occur before the fluid reaches the meter.** When unmixed chemical alternates with water passing through the meter, the rapid changes in conductivity may cause sudden spikes and drops in the meter's reading, resulting in inaccurate measurement. The magmeter will re-stabilize, however, with a steady flow of fluid of uniform conductivity.

CAUTION: In chemical injection applications, install chemical injection point downstream of magmeter, or far enough upstream to allow complete mixing of fluids.

ATTENTION: dans les applications d'injection de produits chimiques, installez le point d'injection de produits chimiques en aval du débitmètre électromagnétique ou suffisamment en amont pour permettre un mélange complet des fluides.

NOTICE: Do not install a magmeter downstream of a pressure or proportional control valve.

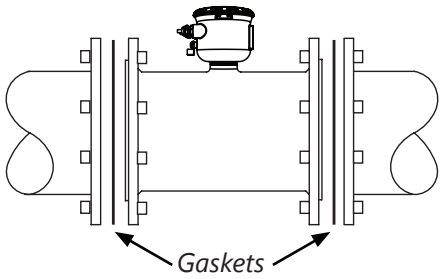
AVIS: N'installez pas de débitmètre magnétique en aval d'une vanne de régulation de pression ou proportionnelle.

Installing Gaskets

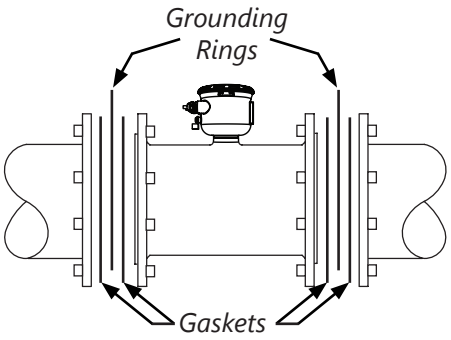
NOTICE: Gaskets are required at all junctions.

AVIS: Des joints sont requis à toutes les jonctions.

1. Be sure all mating surfaces are smooth and free of debris.
2. Install Seametrics provided gaskets, or equivalent, on each end of meter as shown in diagrams below. If using grounding rings, install one gasket on each side of the grounding ring.
3. **Failure to install gaskets will void warranty.**



Installation <u>without</u> grounding rings

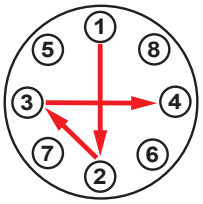


Installation <u>with</u> grounding rings

Tightening Flange Bolts

NOTE: Mating pipe flanges must be ANSI 150# full face (FF) and/or raised face (RT).

1. Tighten flange bolts in an alternating pattern.
   - Tighten left flange bolt-1 to 20% recommended torque.
   - Tighten right flange bolt-1 to 20% of recommended torque.
   - Repeat steps a and b for each bolt in an alternating order, such as shown at right, tightening to 40%, then 60%, then 80%, and then 100%.
2. Test for leaks.
3. If needed, tighten further in 10% increments until leaking stops. **DO NOT over-tighten. Over-tightening can cause serious damage to the flow meter.**
4. Recheck after 24 hours, adjusting if needed.



Suggested Tightening Sequence

SUGGESTED FLANGE BOLT TORQUE

Pipe Size	Liner	
	ft-lb	Nm
2"	18	25
3"	25	34
4"	20	27
6"	42	57
8"	65	88
10"	73	99
12"	97	132

CAUTION: Improper tightening sequence can cause serious damage to the flow meter.
- Do not tighten one side at a time.
- Do not tighten each bolt completely at one time.

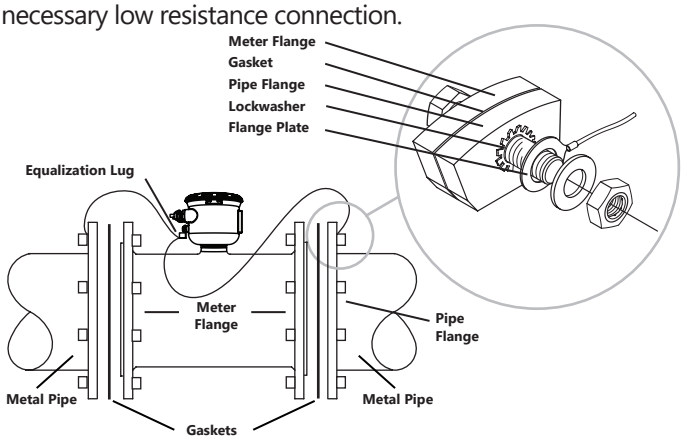
ATTENTION: Une séquence de serrage incorrecte peut endommager gravement le débitmètre.
- Ne serrez pas un côté à la fois.
- Ne serrez pas complètement chaque boulon en une seule fois.

Equalization and Grounding

WARNING: ELECTRICAL SHOCK HAZARD
When the iMAG is installed in a plastic piping system, or when externally powered, the piping system must be grounded to meet national and local electrical safety codes. Failure to do so can result in electrocution.

AVERTISSEMENT: RISQUE D'ÉLECTROCUTION
Lorsque l'iMAG est installé dans un système de tuyauterie en plastique, ou lorsqu'il est alimenté de manière externe, le système de tuyauterie doit être mis à la terre pour respecter les codes de sécurité électriques nationaux et locaux. Ne pas le faire peut entraîner une électrocution.

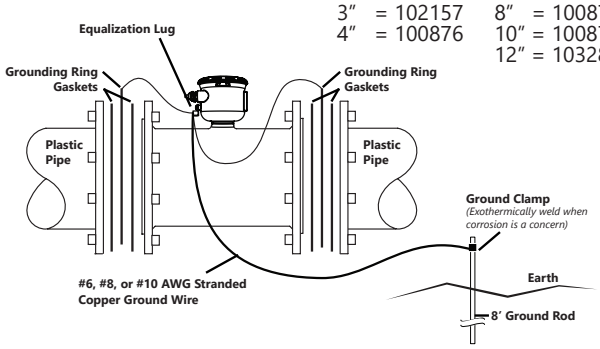
Metal Pipe Installations. To equalize the electrical potential of the fluid, the AG3000 meter, and the surrounding pipe, secure the flange plates (factory-installed on the equalization wire) to both pipe flanges at one of the bolt holes, as shown below. Be sure the lock washer fits between the pipe flange and the flange plate. For the best electrical bonding, remove rust and paint to expose clean, bare metal where the equalization flange plate lock washer contacts the pipe flange. Connection must be inspected periodically for corrosion to maintain the necessary low resistance connection.



Plastic Pipe and Electronically Noisy Installations. When the meter is installed in plastic pipe or in an electrically noisy system (near a VFD etc.), grounding rings are recommended. As shown in the diagram below, the equalization wires should be solidly connected to the grounding ring tabs instead of the flange bolts as in metal piping installations. Where lightning is a threat, or in severe electrical environments, an optional connection to a nearby equipment ground or ground rod may be advisable.

Grounding Ring Part Numbers:

2" = 104124	6" = 100877
3" = 102157	8" = 100878
4" = 100876	10" = 100879
	12" = 103288



Although grounding rings will not be necessary on all installations, adding grounding rings to any meter at the time of installation will make the diagnosis and elimination of excessive noise or transient voltages much easier if found during normal operation of the meter site.

Adding a 5/8" x 8' independent ground rod dedicated to the meter, a ground rod clamp, and connecting them with at least 10 GA ground wire may be necessary when electrical noise is present, but unlike grounding rings, ground rods are easy to add after the fact although installing these during meter installation adds insurance that a meter will encounter less noise and will help protect against large electrical spikes.

Lack of grounding will always cause more problems than grounding loops.