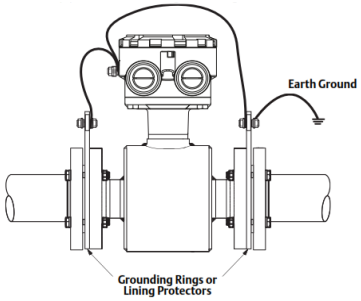
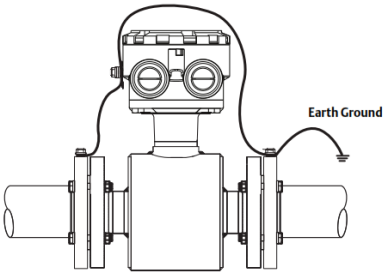
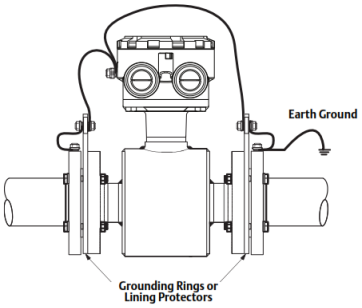
GROUNDING ARRANGEMENTS FOR GENERAL PURPOSE MAGNETIC FLOW METER INSTALLATIONS



SUITABLE FOR NON CONDUCTIVE PIPE, SUCH AS PVC, USING GROUND RINGS



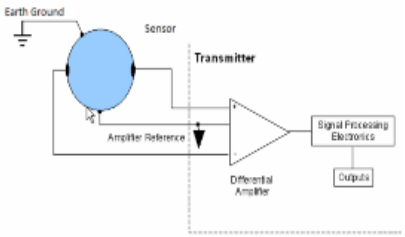
SUITABLE FOR CONDUCTIVE PIPE WITH GROUND ELECTRODE



SUITABLE FOR CONDUCTIVE PIPE USING GROUND RINGS

Basic Process Grounding

This applies to the instrumentation aspect of the installation & addresses different issues to the safety grounding described below. Establishing a process ground is one of the most important installation details. Proper process grounding ensures that the sensor and fluid are at the same potential so that only the induced flow signal is measured. The flow signal is connected to a differential amplifier that is electrically isolated from the case of the transmitter. The process of grounding provides a stable reference for this differential amplifier. In the majority of applications, the best and most stable reference is earth ground itself. By connecting the mag meter sensor, the fluid, and the reference for the amplifier to a stable, noise free reference point, the user is ensured of getting the best performance.



Ground Rings vs. Ground Electrode

Ground rings are required when the piping adjacent to the mag meter does not provide a good electrical connection to the fluid. Ground electrodes are an integral part of the sensor, so installation is easier and less expensive, particularly when “exotic” materials are required. Ground rings provide a larger surface area of connection to the process fluid, and limit the effects of the conductivity of the adjacent piping, which is important for wafer style sensors. Therefore ground rings should be installed in the following situations:

- The fluid conductivity is less than 100uS/cm.
- Wafer style sensors installed in non-conductive piping or lined piping. Such as PVC & CPVC.
- Applications that may cause a coating or build-up on the bottom of the pipe.
- Electrolytic process or cathodic protection, these applications have special requirements contact sales@merrimancontrols.com for assistance.

Earth/Safety Grounding

To prevent hazards to operating personnel, electrical equipment must always be installed and wired as per local electrical code. For AC powered equipment, this usually takes the form of connection of the case of the equipment to Earth ground. If the transmitter is integrally mounted to the sensor, this automatically connects the sensor to earth ground as well. It is common that the adjacent piping to the mag meter will provide a connection to Earth ground. It is important that if both Earth ground connections are established, the impedance between them must be very low. If the impedance between these earth ground connections is high, it can result in a high current through the coil shield wire.