

## Mechanical Installation Instructions - Max Flow Meters



Piston Series



Gear Series



Helical Series

For optimum performance the following items and conditions should be considered:

### Clean Plumbing

Before installing the flow meter, clean the inside of the pipe line with compressed air or steam (especially when using new pipe). **Don't use water, steam or compressed air through the meter itself!**

### Filters and Bypass Valves

It is recommended that a filter be installed upstream of the flow meter: 5 $\mu$  or smaller element for the P001, 10 $\mu$  for all other piston style meters, 30 $\mu$  for G series and 150 $\mu$  for H240 series. (In bidirectional applications this may require two filters.)

*Optional:* Bypass and shut off valves will allow filter replacement or flow meter removal without completely shutting down the system and draining the lines. They also allow you to bypass system startup conditions that would damage the meter; such as air in the lines, high temperature material, and/or initial flow rate surges.

DO:	DON'T:
<ul style="list-style-type: none"> <li>• Install a bypass line around the meter</li> <li>• Clean the filter on a regular basis</li> <li>• Purge air from the meter before operating your system (Flowing near the meters maximum flow rate for a given viscosity will purge air bubbles. Tilting, tapping or shaking the meter at lower flow rates will also dislodge entrapped air)</li> </ul>	<ul style="list-style-type: none"> <li>• Run water or aqueous solutions through the meter (except the 234 Series of meters)</li> <li>• Put steam or compressed air through the meter.</li> <li>• Disassemble the meter</li> <li>• Apply excessive differential pressure across the meter</li> <li>• Exceed the maximum flow rates or pressure ratings for your meter</li> <li>• Let materials solidify in the meter</li> <li>• Try to pump through the meter if it contains frozen material. Re-melt the material completely before trying to pump through the flow meter.</li> </ul>

## Mechanical Installation

Use the "IN" port as the inlet for the predominant flow direction. Install the meter on the discharge side of the pump whenever possible. Excessive vibration at the meter should be avoided.

The preferred orientation for the meter is dependant on the type of meter and is intended to optimize air purging and/or to minimize heat rising into the electronics. Standard piston meters with in line ports should be mounted with the transmitter either on the side or upside down. Ultra high pressure piston meters with offset inlet and outlet ports should be mounted with the transmitter on top. Gear and Helix meters, especially when used with thick fluid, should be mounted with the transmitter on the side and ideally with the plumbing oriented vertically. Piping diagrams are available within manuals.

**NPT fittings:** Always use either pipe sealant or pipe tape when installing fittings, but take great care to leave the first thread of the pipe exposed. This ensures that the tape or sealant will not accidentally fall inside the meter.

**SAE fittings:** Always lubricate the o-ring when attaching the fitting to the meter.

**Model P001 Compression Fittings:** The P001 compression fittings are based on Swagelok style ferrules (see fig. 1). Do not use other manufacturer's parts because the sealing angle may not be the same. Fitting kits contain detailed instructions and are shipped with every meter (spares are available: P001-2-040 for 6mm and P001-2-042 for 1/4 " tubing). Always select tubing grades that meet or exceed your system pressure requirements. If using flexible tubing, always install a tubing insert to provide the stiffness required for the compression ferrules to seal (such as Swagelok SS-405-2, SS-405-03 or SS-405-170). To reuse a tube fitting first mark the nut and meter and upon re-installing tighten enough to align the marks then tighten a quarter turn farther.

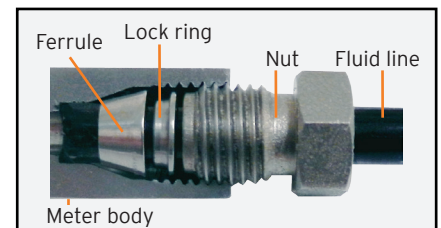


Figure 1. Compression Fitting

**Helical Style Meters:** When installing pipe to the flow meter, always support the nearest end cap or both end caps (such as in a vise). Don't clamp the flow meter body. This avoids possible misalignment of the internal flow meter components when the pipe is screwed tight. ANSI Flanges: Using the H241 or H242 meters at pressures greater than 500 psi will also require flanges. Max has bolt kits available for flange installations. See the specifications and bolt torque table in the helical flow meter manual.