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INTRODUCTION

The Preso COIN® flow meter accommodates most flows, even the most abrasive. Accuracy and reliability are achieved by its rugged construction, practical design and simple principle of operation. It stands alone in its ability to maintain the necessary square root relationship between flow rate and differential pressure for almost any type of flow. Even viscosities up to 3,000 centipoise do not affect the accuracy of the meter. The flow coefficient stays highly predictable down to the remarkably low Reynolds number of 300. This makes the meter ideal for traditionally difficult-to-meter applications such as fuel oil, waste water, coal tar, iron ores, black liquor and others.

Scope of Manual

This manual includes installation instructions for the Preso COIN flow meter to help you get the meter up and running quickly.

Safety Information

The installation of the COIN flow meter must comply with all applicable federal, state, and local rules, regulations, and codes. Failure to read and follow these instructions can lead to misapplication or misuse of the COIN flow meter, resulting in personal injury and damage to equipment.

Unpacking and Inspection

Upon opening the shipping container, visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

NOTE: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damage in transit is the sole responsibility of the purchaser.

STRAIGHT PIPE RUN REQUIREMENTS

Proper operation and performance is dependent on the required lengths of unrestricted upstream and downstream piping. The minimum length of the upstream side of the COIN Flow Element depends on the type of fitting at the start of the straight run, and the pipe configuration. See *Figure 1*. The minimum lengths will cause a slight coefficient shift.

DISTANCES (DIMENSIONS A & B) EXPRESSED IN NOMINAL PIPE DIAMETERS		ACCURACY: CALIBRATED $\pm 0.5\%$ UNCALIBRATED $\pm 3\%$				
		DIMENSION	COIN RATIO (H/ID.)			
UPSTREAM DISTURBANCE		.2	.3	.4	.5	
 Single Elbow	A	7	9	10	12	
	B	4	4	4	4	
 Two elbows in the same plane	A	10	12	14	16	
	B	4	4	4	4	
 Two elbows in different planes	A	20	22	24	30	
	B	4	4	4	4	
 Reducer	A	9	11	14	16	
	B	4	4	4	4	
 Expander	A	9	10	12	14	
	B	5	5	5	5	
 Tee connection with different diameters	A	7	9	10	12	
	B	4	4	4	4	
 Globe valve fully opened	A	10	12	14	16	
	B	4	4	4	4	
 Gate valve fully opened	A	7	7	9	10	
	B	4	4	4	4	

Figure 1: Piping requirements

1. For upstream and downstream lengths equal to one half the values shown above, add 1 percent to the accuracy value.
2. Any flow conditioner shall be installed in the straight length between the primary element and the upstream distance, or the fitting closest to the element. The straight lengths between fitting and conditioner shall be at least 10D and the length between conditioner and COIN meter shall be at least 15D.
3. For other fittings or configurations, contact the factory.

SELECTING A MOUNTING LOCATION

Install COIN elements horizontally, rotated 90° along the pipe center line, see *Figure 2*. This method of mounting allows for free passage of solids and eliminates air entrapment at the transmitter connection. Other positions are acceptable provided there is proper venting of the transmitter and differences in lead line elevations are considered. Vertical installations as shown in *Figure 3* may introduce a slight hydrostatic head effect, which must be considered when zeroing the transmitter. Connections between the COIN meter and the transmitter should be 3/8 in. (9.53 mm) tubing minimum. Use a three-valve manifold for zeroing the transmitter.

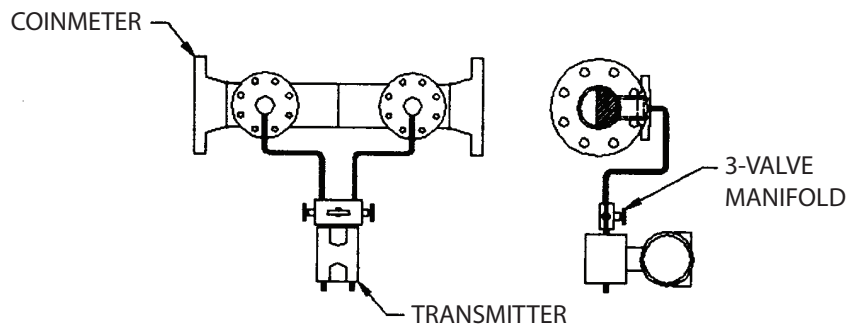


Figure 2: COIN meter with flanged taps

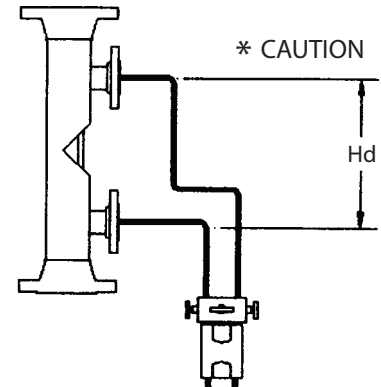


Figure 3: Vertical installation

Each flow element has an arrow indicating the required direction of flow. Failure to properly orient the COIN element may cause improper results when using data supplied for an element that has been calibrated.

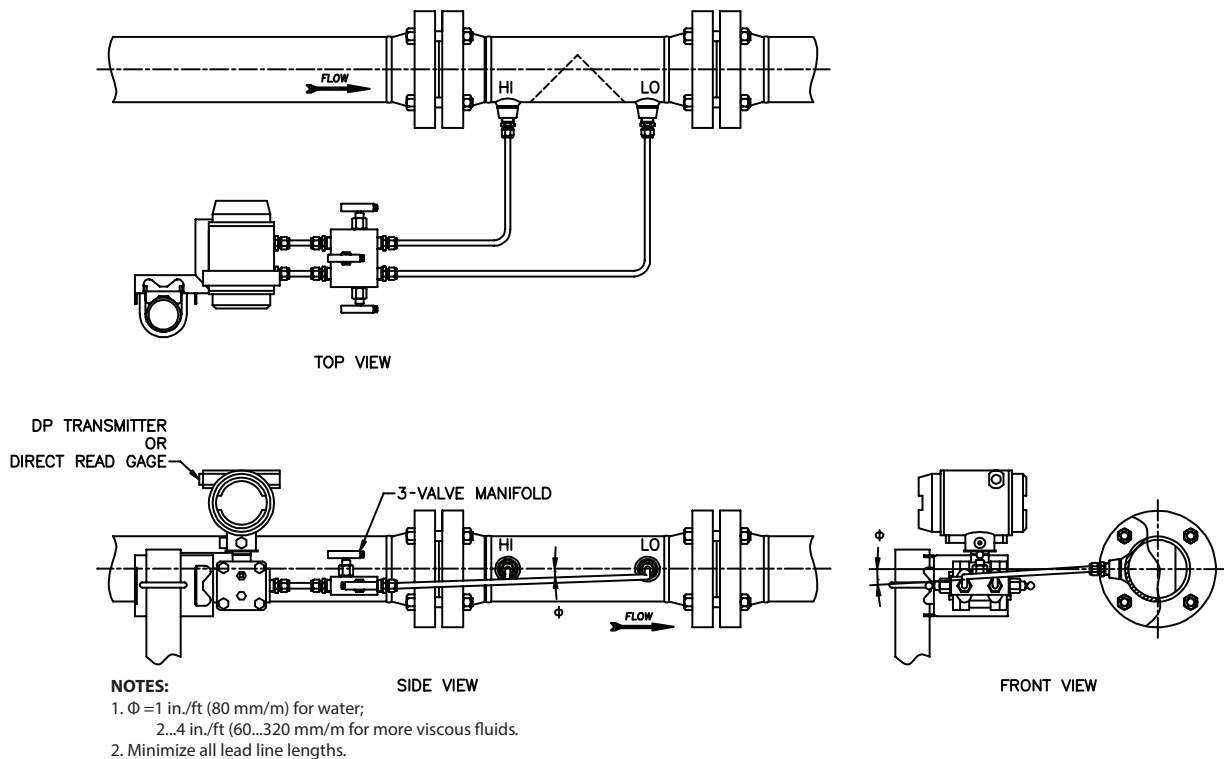


Figure 4: Typical horizontal installation for liquid

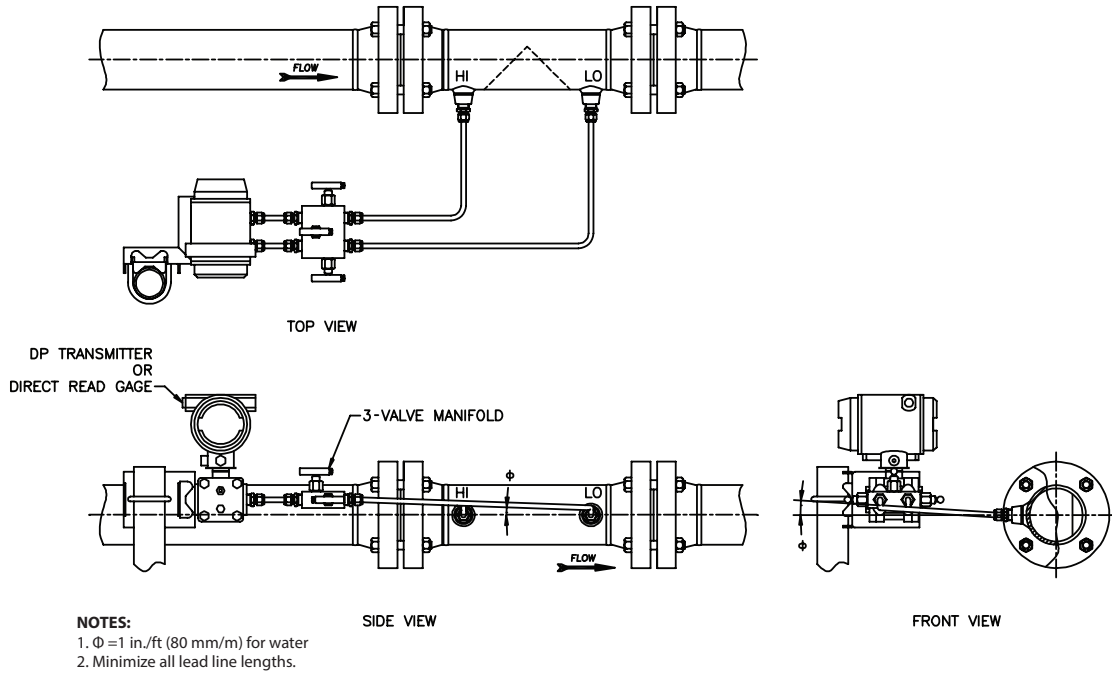


Figure 5: Typical horizontal installation for gas

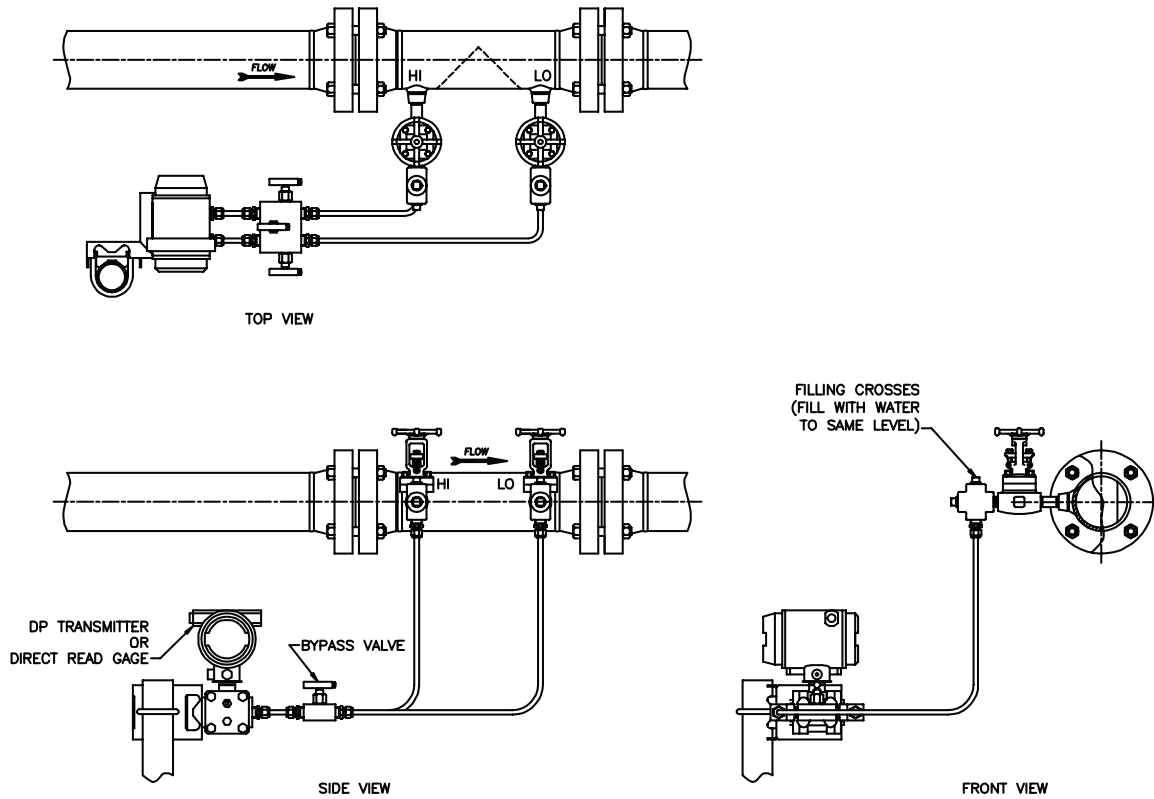


Figure 6: Typical horizontal installation for steam

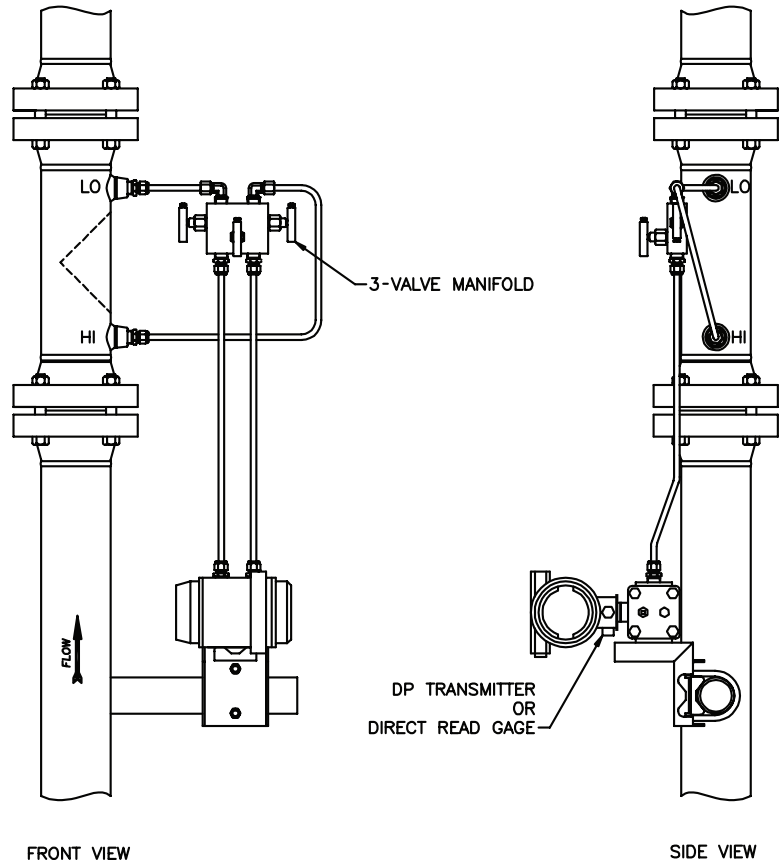


Figure 7: Typical vertical installation for liquid

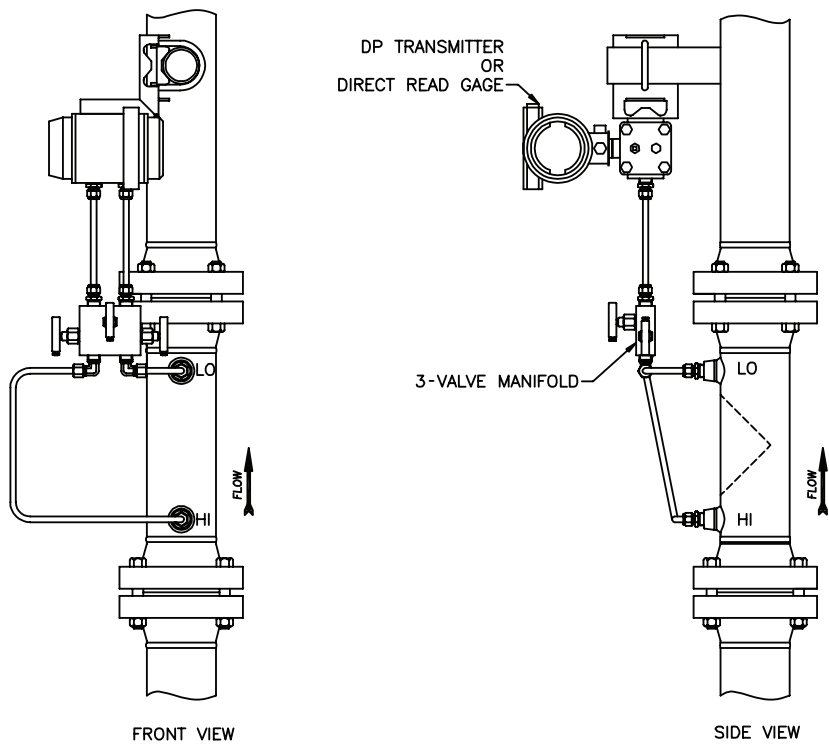


Figure 8: Typical vertical installation for gas

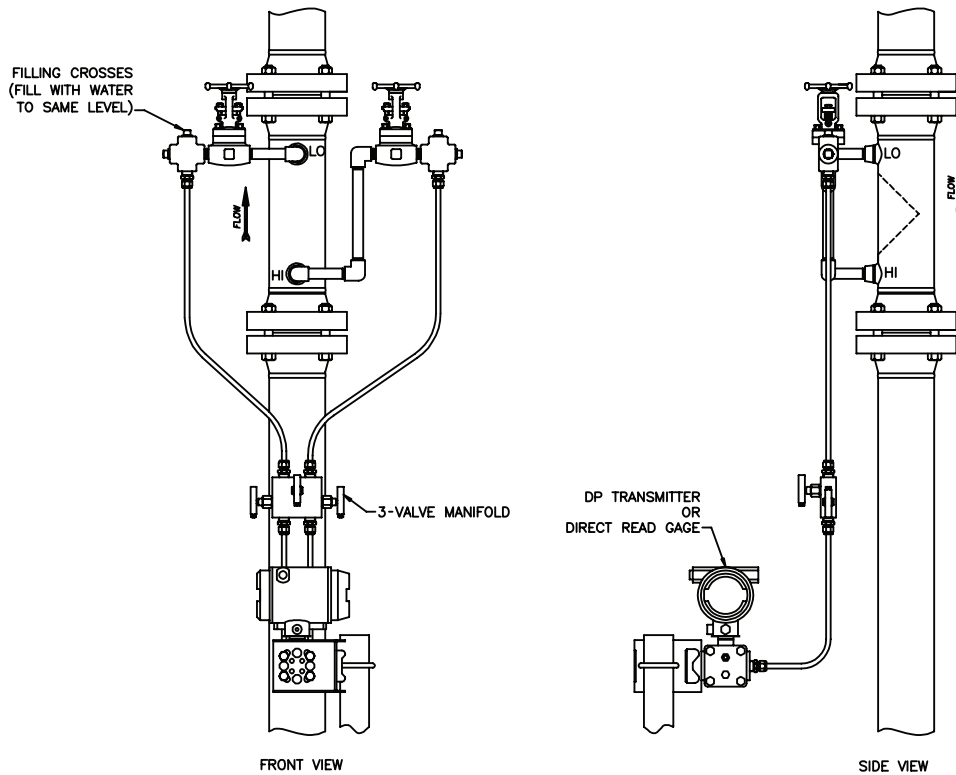


Figure 9: Typical vertical installation for steam

⚠ WARNING

NEVER EXCEED THE MAXIMUM PRESSURE OR TEMPERATURE RECOMMENDED FOR THE MEASURED PROCESS. EXCEEDING PROPER PRESSURE OR TEMPERATURE RATINGS CAN LEAD TO PERSONAL INJURY OR EQUIPMENT DAMAGE. THE PROCESS PIPING FLANGES SHOULD BE IDENTICAL TO THOSE ON THE COIN METER. THE PROCESS TEMPERATURE AND PRESSURE SHOULD NEVER EXCEED THAT FOR WHICH THE ELEMENT WAS DESIGNED.

LINE INSTALLATION

All flanged COIN flow elements require a gasket between the process line connection and the mating flange. Make sure the gaskets selected match the size and rating of the COIN meter and the line flanges. Gasket material must be selected to resist corrosive attack of the process.

Be sure that the gaskets are properly centered so that protrusion into the pipe opening is minimized before completing the bolting process. Misalignment may cause added flow turbulence, however performance affects are typically minimal depending upon the application. Bolt the element in line with suitable hardware using recommended bolt torques for the type and class rating of the flanges.

Torque all models per ANSI flange ratings.

Tighten the flange bolts in a progressive "star" pattern to avoid localized stresses on the gaskets.

IMPORTANT

Do not exceed the specified torque.

DIFFERENTIAL PRESSURE CONNECTIONS

The high pressure connection is always on the upstream side of the flow direction arrow and the low pressure connection on the downstream side. Fittings used must be able to withstand the process temperature and pressure conditions as well as provide proper corrosion resistance. Badger Meter offers three types of fittings, see *"Typical Pressure Port Configurations"* on page 12. See to the appropriate transmitter manual for connections to the transmitter high and low ports.

When installing chemical tee seals, tighten cap screws uniformly in a "star" pattern to avoid localized stresses on the gaskets.

The ANSI flanged taps seals require a backup flange rated for the same type and class as the COIN element. Backup flanges with bolts and nuts are generally offered as an option to the transmitter, and are not supplied with the COIN element. Again, observe recommended torque specifications for the type and class being used.

Typical Pressure Port Configurations

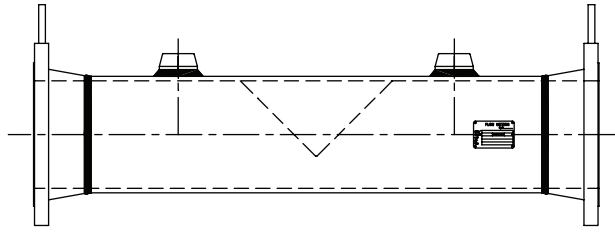


Figure 10: NPT taps

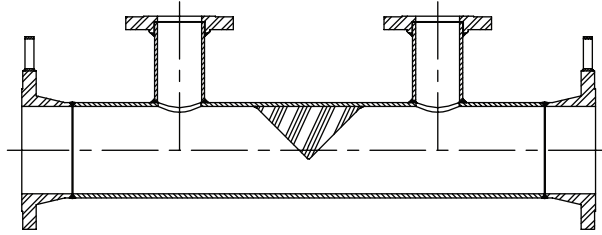


Figure 11: Flange taps

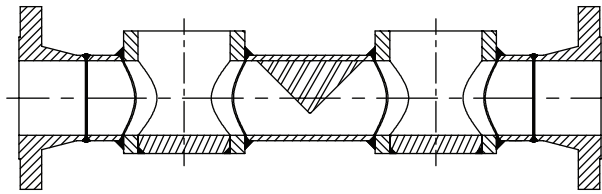


Figure 12: Chem Tee taps

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