

# FSM-3 Series SuperMag Flow Meter Installation Hardware Instructions



## Dry Tap Installation Kit for Welded Steel Pipe

**For Use with Kit: INSTL0001-FMD, INSTL01DW-FMD,  
INSTL0005-FMD, INSTL0018-FMD**

**Note: Please read entire manual before installing the flow meter.**

This kit must be installed prior to filling the system, or into a section of pipe that is isolated from pressure and flow. Once installed, this kit allows for insertion and removal of the flow meter without a system shutdown.

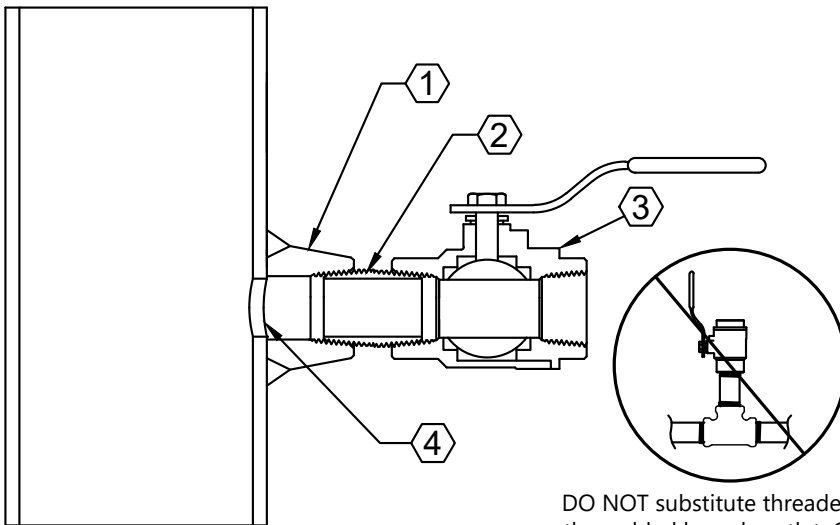
### IMPORTANT NOTE

ONICON insertion flow meters are precision measuring devices that must be installed according to the instructions contained in this document in order to maintain their accuracy and reliability. Failure to follow these instructions will result in erratic operation and reduced accuracy.

### Directions

1. Identify an appropriate location for the flow meter.
2. Weld the branch outlet onto the pipe.
3. Drill a 1" (minimum) access hole in the pipe, centered in the branch outlet.
4. Install the close nipple and ball valve as shown below.
5. Use a paste type thread sealant or use Teflon® tape.
6. Flush and fill the system prior to installing the meter. Refer to the FSM-3 Series SuperMag IOM for more details on the meter installation instructions.

**NOTE: Before installing the flow meter, read the entire installation manual.**



1. 1" NPT welded branch outlet, typical for steel piping system installation
2. 1" threaded close nipple
3. 1" full port ball valve
4. 1" minimum dia access hole

DO NOT substitute threaded tees for the welded branch outlet. Contact ONICON if you need installation hardware for threaded pipe.

# FSM-3 Series SuperMag Flow Meter Installation Hardware Instructions



## Hot Tap Installation Kit for Welded Steel Pipe

**For Use with Kit:** *INSTL0002-FMH, INSTL02DW-FMH, INSTL0006-FMH, INSTL0031-FMH, INSTL5001-FMH, INSTL5002-FMH, INSTL5003-FMH*

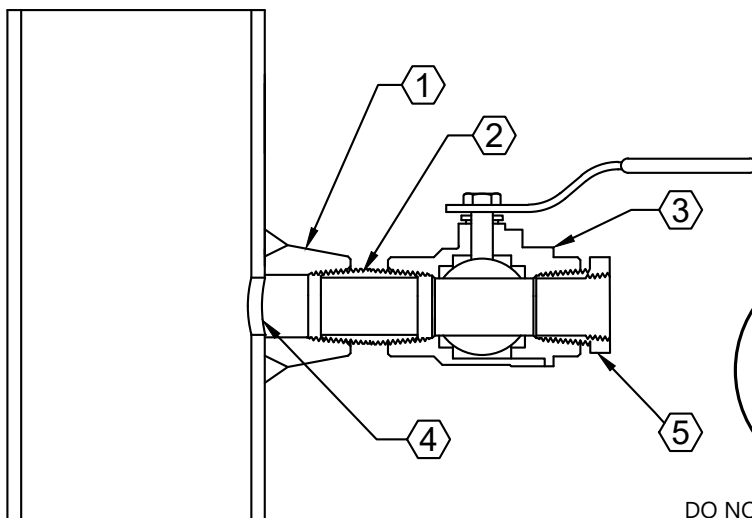
**Note:** *Please read entire manual before installing the flow meter.*

This kit can be installed after filling the system. A hot tap drilling machine is used to create a 1-inch opening in the pipe wall. Once installed, this kit allows for insertion and removal of the flow meter without a system shutdown.

## Directions

1. Identify an appropriate location for the flow meter.
2. Weld or fuse the branch outlet onto the pipe.
3. Install the close nipple and ball valve as shown below. Use a paste type thread sealant or use Teflon® tape.
4. Use a hot tap drilling machine with a 1" hole saw to drill the access hole.
5. Remove the drill, then flush all debris out of the valve.
6. Use the 1" reducer provided in this kit when installing the flow meter. Refer to the FSM-3 Series SuperMag IOM for more details on the meter installation instructions.

**NOTE:** *Before installing the flow meter, read the entire installation manual.*



1. 1¼" NPT welded branch outlet, typical for steel piping system installation  
Note: customer supplied fusion outlet for HDPE/PPR pipes
2. 1¼" threaded close nipple
3. 1¼" full port ball valve
4. 1" minimum dia access hole
5. 1" reducer

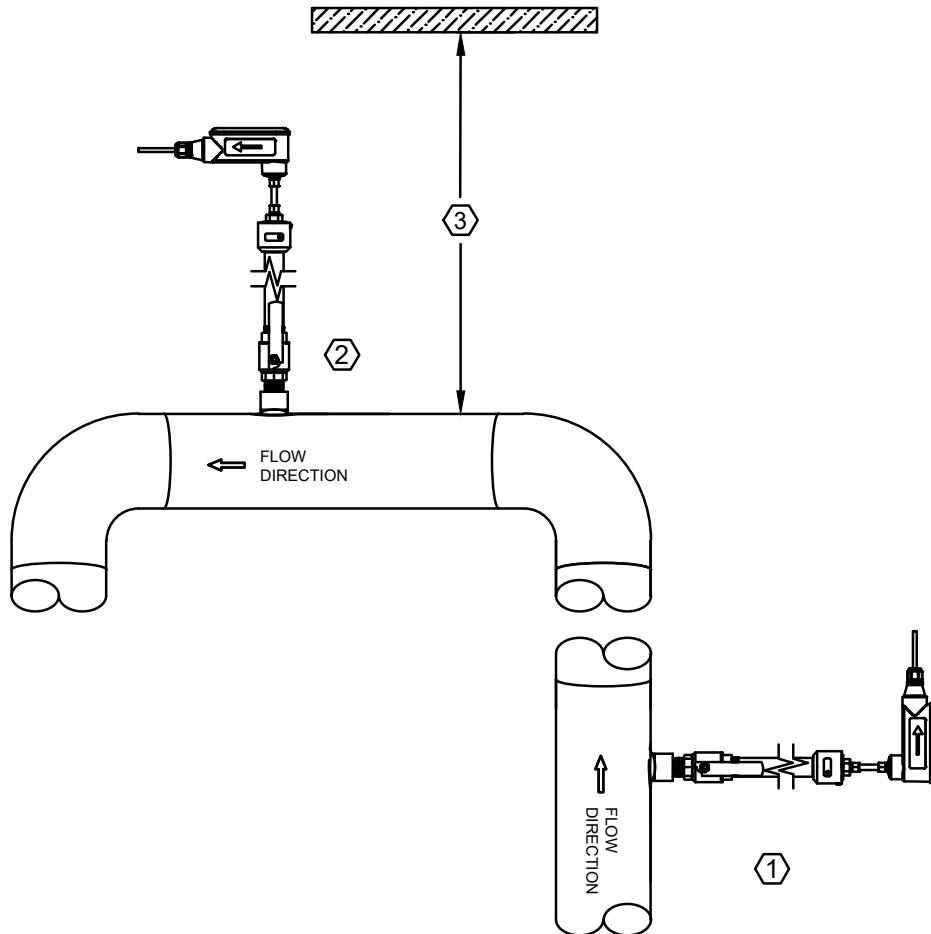
DO NOT substitute threaded tees for the welded branch outlet. Contact ONICON if you need installation hardware for threaded pipe.

# FSM-3 Series SuperMag Flow Meter Installation Hardware Instructions



## Flow Meter Site Selection General Guidelines

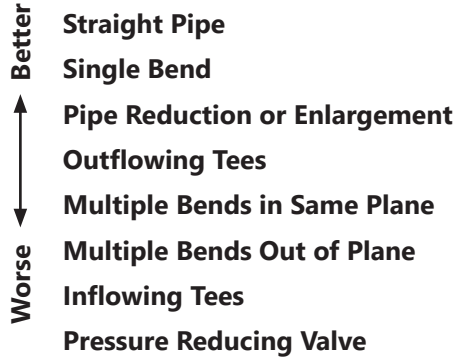
For 6", 8" 10" and 12" diameter pipes



1. Installation of the FSM-3 flow meter in vertical pipes is acceptable. Flow in the upward direction is recommended in non-pressurized (open loop) systems.
2. For horizontal pipes, position meter anywhere in the upper 240 degree range on the pipe. Avoid locating the flow meter at the highest point where air can be trapped in a horizontal piping system.
3. Confirm there is sufficient overhead clearance for installation and removal of the flow meter. The clearance required from the top of the pipe to the nearest obstruction is listed below.

General Information Installation Requirements		
Model Number	Nominal Pipe Size (in)	Overhead Clearance (in)
FSM-3BF-06	6	41
FSM-3BF-08	8	45
FSM-3BF-10	10	49
FSM-3BF-12	12	53

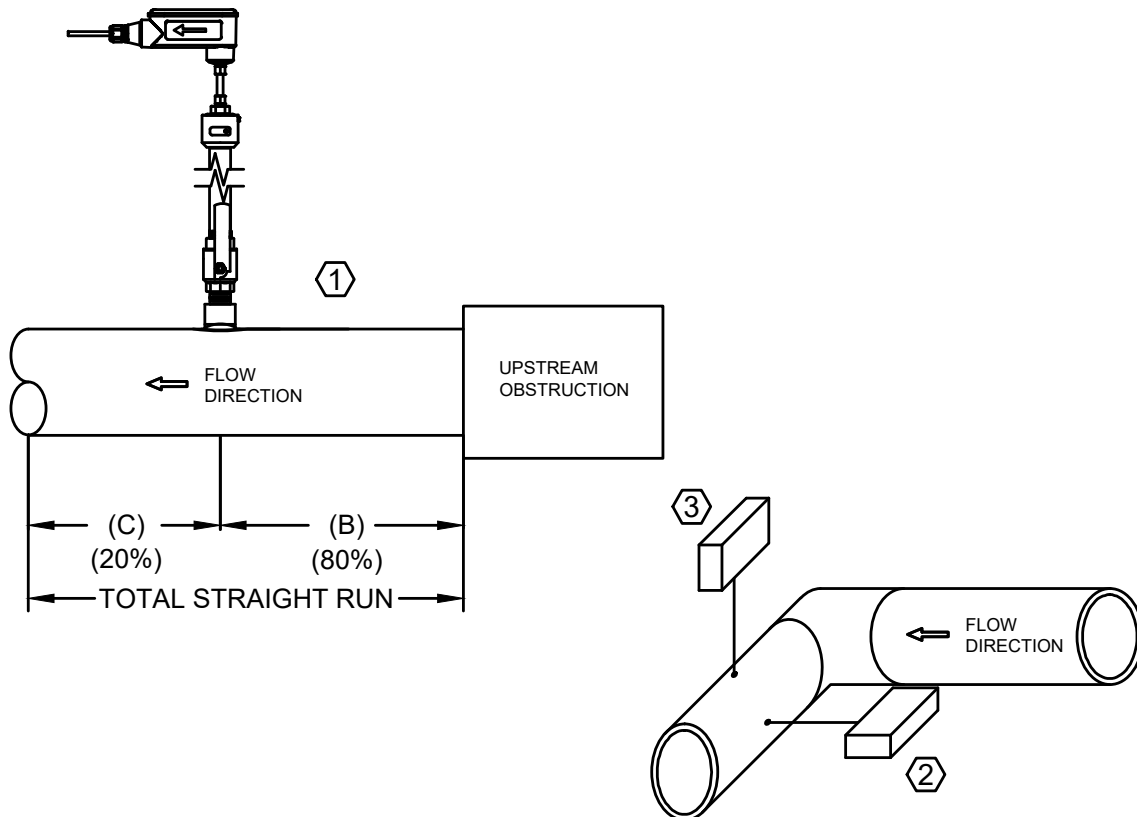
### Evaluating Upstream Piping Conditions



### How to determine the available straight pipe diameters:

For each application, locate the longest straight, unobstructed section of pipe (no bends, tees, valves, other insertion probes, size transitions, etc.). The longest straight pipe run in inches divided by nominal pipe size in inches equals "diameters of straight pipe." For closed loop applications, consider both the supply and return lines as possible locations.

### Straight Run Requirements for Insertion Flow Meters



1. Install the flow meter in a section of pipe with the longest unobstructed straight run available. If the published straight run recommendations cannot be met, locate the flow meter with 80% of the available straight run upstream.
2. Flow meter installed In Plane with upstream elbow
3. Flow meter installed Out Of Plane with upstream elbow

# FSM-3 Series SuperMag Flow Meter Installation Hardware Instructions



## Straight Run Requirements for Insertion Flow Meters (continued)

- For best results, install the flow meter in a straight run of pipe, free of bends, tees, valves, transitions, and obstructions.
- Straight run requirements vary based on the nature of the upstream obstruction. Longer straight runs may be required in applications where the meter is placed downstream from devices which cause unusual flow profile disruption or swirl, for example, modulating valves or two elbows in close proximity and out of plane, etc.
- Please note that depending upon specific location details, more or less straight run may be required to produce a satisfactory flow profile.

### IMPORTANT NOTE

Always use the maximum available straight run. When more than the minimum required straight run is available place the meter such that the excess straight run is upstream of the meter location.

**Straight Run Requirements**

Upstream Obstruction	Orientation	Upstream Diameters (B)	Downstream Diameters (C)
Single Elbow	In Plane	8	2
Single Elbow	Out of Plane	6	2
Butterfly Valve (Fully Open)	In Plane	5	2
Butterfly Valve (Fully Open)	Out of Plane	4	2
Single Pipe Size Reduction	Any	3	2