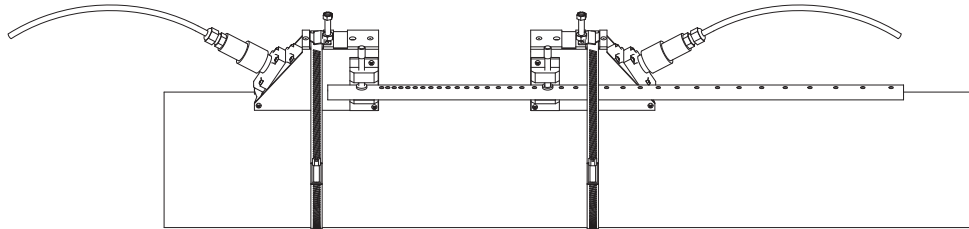


F-4000 Series Installation Hardware Instructions for Reflect Mount Bracket and Spacer Bar Configuration



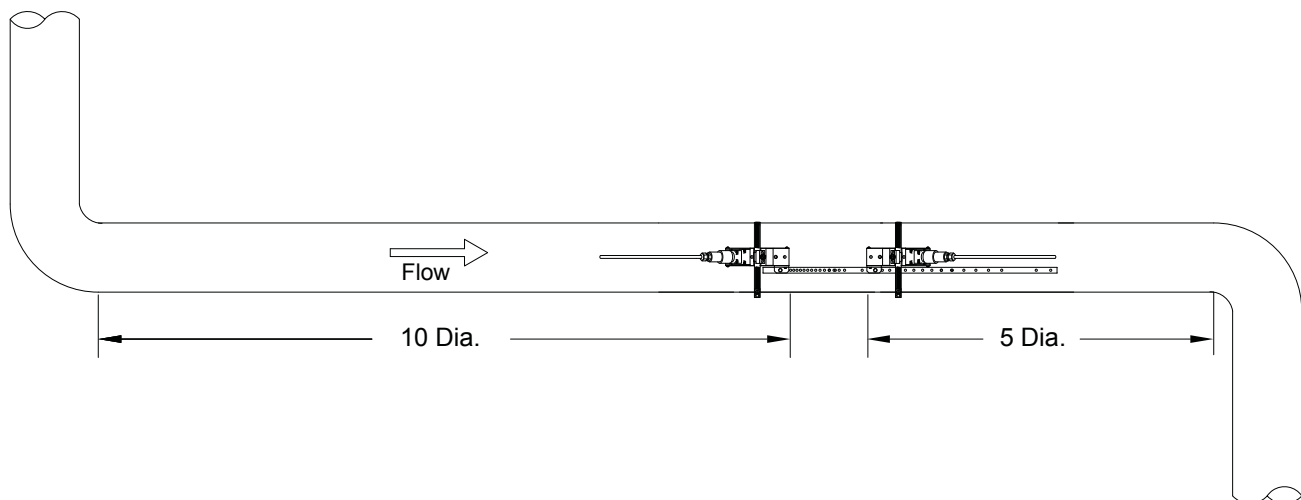
The Transducers

For best results, the transducers must be installed on a straight run of pipe, free of bends, tees, valves, transitions, insertion probes and obstructions of any kind. For most installations, ten straight unobstructed pipe diameters upstream and five diameters downstream of the transducers is the minimum recommended distance for proper operation. Additional considerations are outlined on the next page.



IMPORTANT NOTE

In some cases, longer straight runs may be necessary when the transducers are placed downstream from devices which cause unusual flow profile disruptions or swirl; for example, modulating valves or two elbows in close proximity and out of plane, etc.



Determining Diameters of Straight Pipe

For each application, locate the longest straight, unobstructed section of pipe (no bends, tees, valves, other insertion probes, size transitions). 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.

Other Considerations When Determining Mounting Location

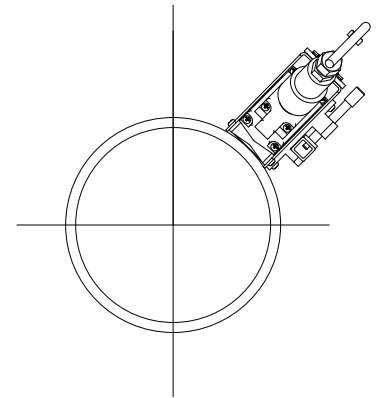
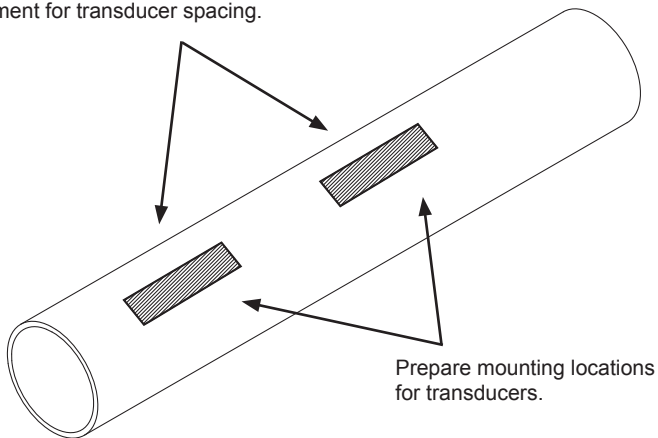
1. Do not, if possible, install the transducers downstream from a throttling valve, a mixing tank, the discharge of a positive displacement pump or any other equipment that could possibly aerate the liquid. The best location will be as free as possible from flow disturbances, vibration, sources of heat, noise, or radiated energy.
2. Do not mount transducers on the bottom of a horizontal pipe.
3. Avoid mounting transducers on the top of a horizontal pipe. The best placement on a horizontal pipe is either the 10:00 or 2:00 position for reflect mode, or one sensor at 9:00 and one sensor at 3:00 for direct mode.
4. Mounting on a vertical pipe is recommended only if flow is in the upward direction. When mounting on a vertical pipe flowing in a downward direction, make sure there is sufficient back pressure in the system to maintain a full pipe.
5. Do not mount the transducers on a surface aberration (pipe seam, etc.)
6. Avoid mounting the transducers on a section of pipe with any external scale. Remove all scale, rust, loose paint, etc. from the location prior to mounting the transducers.
7. Do not mount transducers from different ultrasonic flow meters on the same pipe.
8. Never mount transducers under water, unless you have specifically purchased submersible transducers and you install them in accordance with factory instructions.

Preparing the Pipe

Once a suitable section of straight pipe has been located, the pipe surface must be prepared. Refer to the Site Installation Details document provided with the installation hardware to determine the transducer spacing dimensions. Prepare the pipe surface as shown below. Clean and de-grease two rectangles where the transducers will be located. Use the small sanding block provided with the installation hardware as necessary to remove any grit, corrosion, rust, loose paint or other contaminants. The cleaned surface should extend at least 1/2" beyond the length and width of the transducers.

For horizontal pipes, the preferred installation is slightly off center from the top of the pipe. This prevents trapped air from affecting the flow measurement.

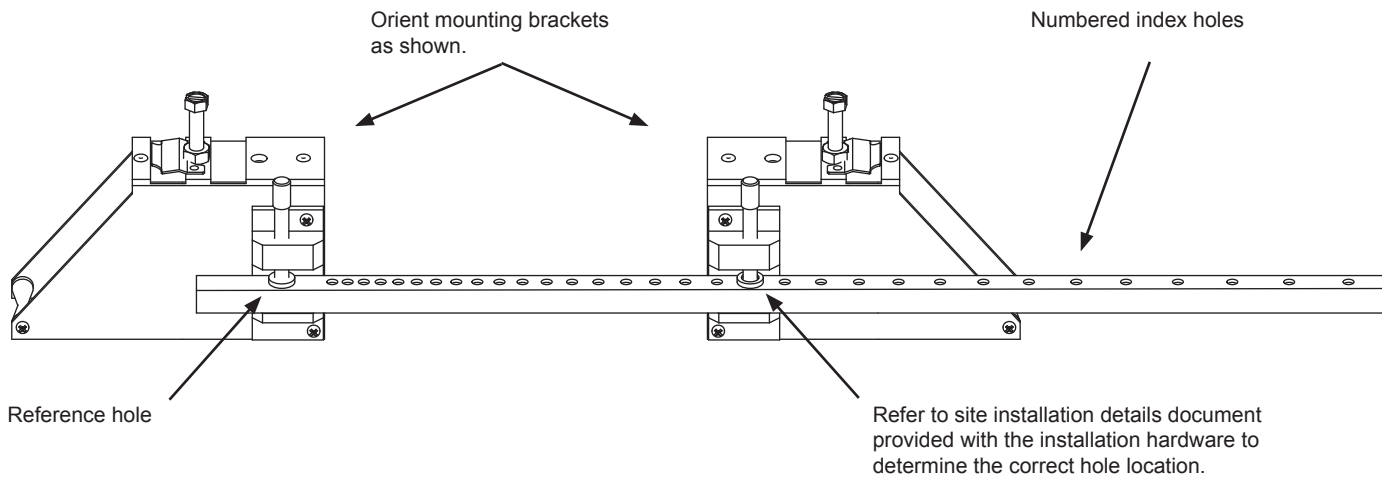
Refer to site installation details document for transducer spacing.



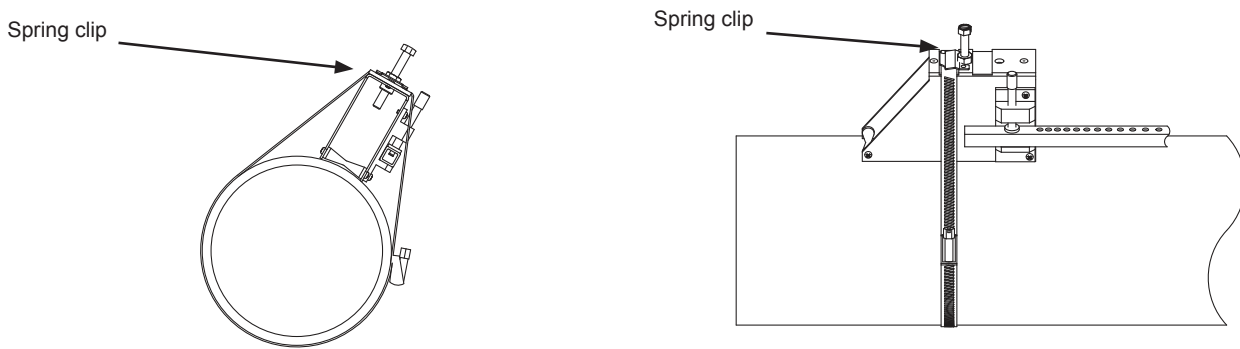
For horizontal pipes, locate transducers slightly off center from the top of the pipe.

Assemble the Brackets and Spacer Bar

1. Prepare the pipe surface as described on the previous page.
2. On a flat surface, assemble the hardware as shown in the drawing below.



3. Install the mounting straps as shown below. For larger pipes, use multiple straps connected end-to-end to increase the length of each strap. Leave enough slack in the straps to allow the assembly to be correctly positioned on the pipe.



4. Move the hardware assembly to its final position on the pipe. Align the brackets with the prepared surface for each transducer as shown below, ensuring that the entire assembly is properly oriented along the axis of the pipe. Tighten the assembly firmly on the pipe. Do not over tighten the straps.

