1.0 SCOPE

These instructions provide a description of procedures for installing the Accelabar model flow sensor and meter body. Procedures are given for all industrial flow measurement applications including liquid, steam and gas service for both horizontal and vertical piping configurations.

2.0 RECEIVING INSPECTION

The following tasks should be performed as part of the receiving inspection procedure:

- Check items received against the packing list.
- Check sensor nameplate for proper model number, serial number and customer number.
- Verify that the meter body ID stated on the sensor nameplate matches the packing list.
- Check for signs of damage to assembly such as (1) bent cover tube; and (2) scratched sealing surface of flanges deeper than allowed by ASME B16.5 (consult Veris for ASME B16.5 guidelines, if needed).

3.0 SAFETY PRECAUTIONS

The following should be conducted prior to installing the Accelabar:

- Check maximum operation conditions on the flow sensor nameplate and verify that they exceed the maximum operating conditions of the application. If any pressure, temperature or flow limits will be exceeded, consult the factory before proceeding.
- Check that the pipe is depressurized and drained prior to installation.
- The Accelabar is available in ANSI 150#, 300# and 600# configurations. Verify that the Accelabar flanges match the ANSI rating required by the application.
- Check that all pressure containing components are properly installed and tightened prior to pressurizing the system.

4.0 INSTALLATION PREPARATIONS

4.1 Location

There is no minimum straight run requirement.

4.2 Orientation

Verify the proper sensor orientation by checking for an "-H" (horizontal piping) or a "-V" (vertical piping) in the model number on the Verabar sensor nameplate.

4.2.1 Horizontal Piping

For air or gas applications, mount the Accelabar directly to the top of the pipe in the 12 o'clock position. For liquid applications, mount the Accelabar directly to the bottom of the pipe in the 6 o'clock position (see Figure 1). Deviation from these locations may cause inaccuracy in the flow measurement.

4.2.2 Vertical Piping

For vertical air or gas applications, orientation of the Accelabar is not critical. For vertical liquid applications, consult the Factory.

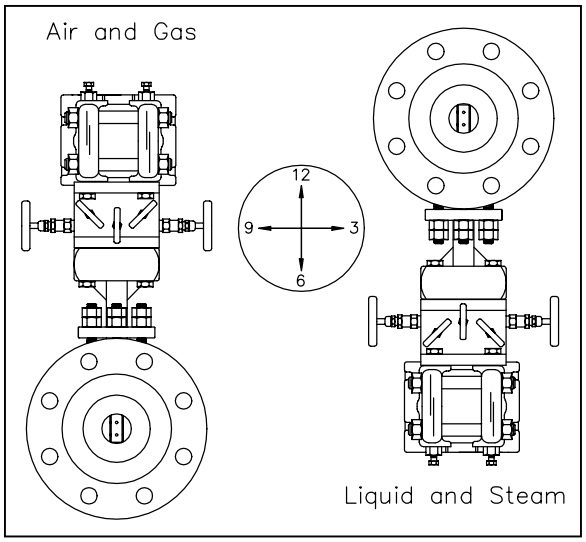

Figure 1. Accelabar Orientation in Horizontal Pipe

5.0 INSTALLATION PROCEDURES

5.1 Preparing the Pipe

- Completely depressurize and drain the pipe prior to installation of the Accelabar.
- Remove a section of the pipe large enough to accommodate the Face-to-Face flange dimension of the size Accelabar listed in Table 1.
- **Important**: Locate the Accelabar to allow adequate clearance for a direct mounted manifold and transmitter, a minimum of 24" from the centerline of the pipe. Bolt the manifold and transmitter to the Accelabar to obtain the exact clearance requirements for your application.

Accelabar: NPS, ANSI# and Verabar Size	Face-to-Face [in]
3in, 150#, -05	Consult Veris
3in, 300#, -05	Consult Veris
3in, 600#, -05	Consult Veris
4in, 150#, -05	Consult Veris
4in, 300#, -05	Consult Veris
4in, 600#, -05	Consult Veris
6in, 150#, -10	Consult Veris
6in, 300#, -10	Consult Veris
6in, 600#, -10	Consult Veris
8in, 150#, -10	Consult Veris
8in, 300#, -10	Consult Veris
8in, 600#, -10	Consult Veris
10in, 150#, -10	Consult Veris
10in, 300#, -10	Consult Veris
10in, 600#, -10	Consult Veris
12in, 150#, -10	Consult Veris
12in, 300#, -10	Consult Veris
12in, 600#, -10	Consult Veris

Table 1: Required Face-to-Face

Note: The Face-to-Face dimension does not include gaskets (see Figure 2). Veris recommends adding

0.375” to the above dimensions to obtain the required void between the piping flanges.

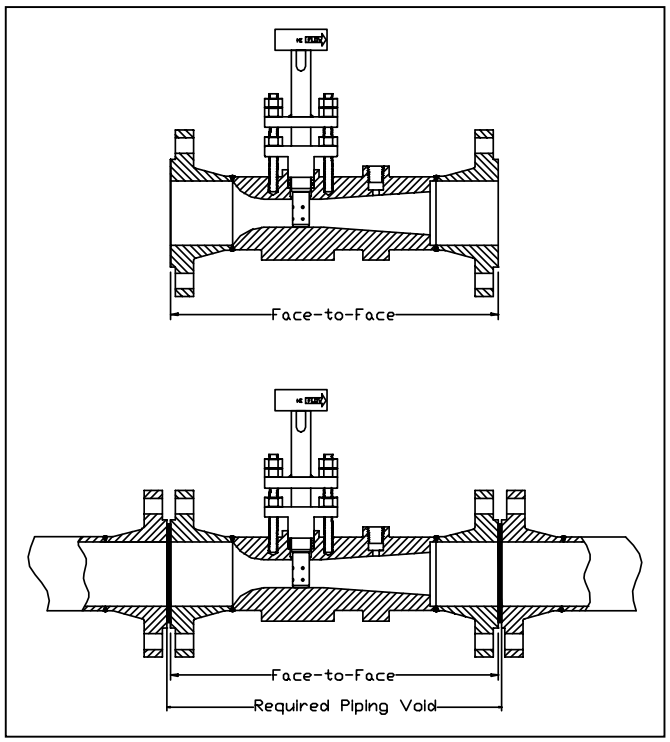

Figure 2. Face-to Face Dimension

- Weld Flanges to existing pipe per ANSI B31.1. Make certain that the pipe flanges and Accelabar flanges are the same NPS size and ANSI rating. Bolt hole location must be as shown in Figure 3 (does not show twelve and twenty bolt patterns; orientation is typical).

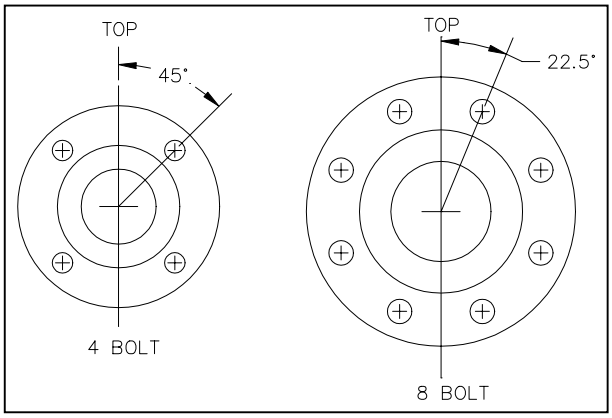

Figure 3. Bolt Hole Location

- **IMPORTANT:** Piping must flex slightly to allow the gaskets to crush and seal completely.

5.2 Installing the Accelabar

- Refer to Figure 1 for proper Accelabar orientation for horizontal applications (orientation is not critical for vertical applications).
- Position Accelabar in piping void that has been prepared per Figure 2. Be certain that the flow arrow on the Verabar Sensor is oriented in the same direction as the flow in the pipe. Failure to orient the Accelabar correctly will result in poor flow measurement.
- Place the appropriate spiral-wound stainless steel gasket between the pipe flanges and the Accelabar flanges (see Figure 4).
- Insert the flange bolts through the flanges and tighten the nuts hand-tight on each end of the bolt. Once all the bolts are hand-tight, tighten opposing sets of bolts until the gasket is crushed. The final gasket height should be approximately 1/8”.

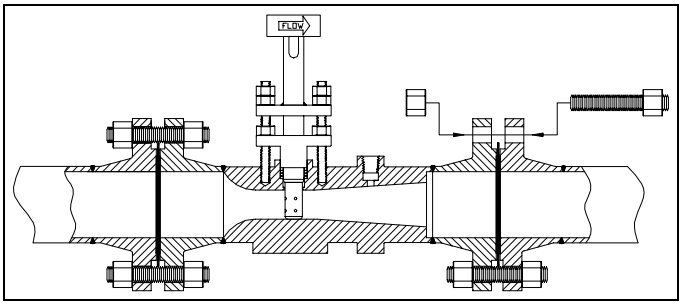

Figure 4. In-Line Accelabar

6.0 REPLACING PACKING

The following instructions describe removing the Accelabar sensor from the meter body and replacing the packing rings:

- **IMPORTANT**: Depressurize and drain pipe.
- Unbolt and remove transmitter from the Accelabar.
- Loosen and remove retaining nuts and washers from retaining studs (see Figure 8).
- Loosen the follower bolts and gently remove the sensor from the meter body.
- Remove the follower bolts and the follower.
- Remove the old packing. Do not damage packing box.
- Install the new packing and reinstall the sensor per the procedure described in Sections 7.1, 7.3 and 7.4.
- Reassemble the transmitter to the sensor.

7.0 COMPLETE SENSOR INSTALLATION

The following instructions describe complete assembly of the Accelabar sensor in the Accelabar meter body (Figures 5 through 8 do not show flanges on the body).

- **IMPORTANT**: Depressurize and drain pipe if Accelabar is already installed in line.
- Parts necessary for Accelabar assembly are itemized in Table 2. Consult factory for specifications if these parts are not factory supplied.

Quantity	Item
3	3/8”-16 UNC Bolts
3	3/8”-16 UNC Retaining Studs
3	3/8” Flat Washers
6	3/8”-16 UNC Nuts
3	3/8” Split Washers
4	Packing Rings (grey)
2	Teflon Rings (white or black)
4	7/16”-20 UNF Transmitter Bolts
1	Packing Follower
1	Verabar Sensor

Table 2. Assembly Parts

7.1 Packing Installation

Insert a tube into the bottom bore of the Accelabar meter body per Figure 5. Use a 0.75" tube for –05 sensors and a 1.00" tube for –10 sensors.

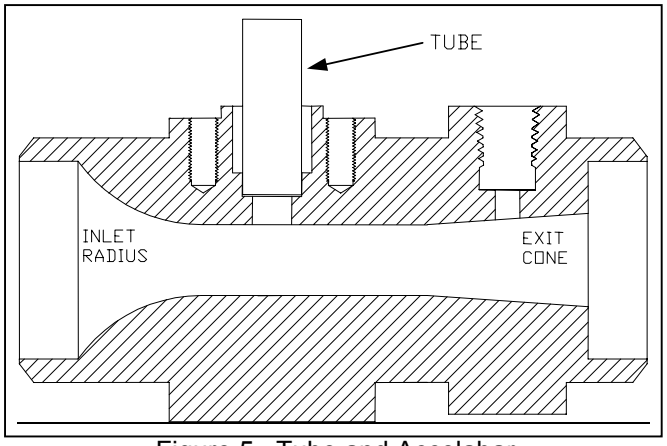

Figure 5. Tube and Accelabar

Install four packing rings one at a time using the following method (see Figure 6):

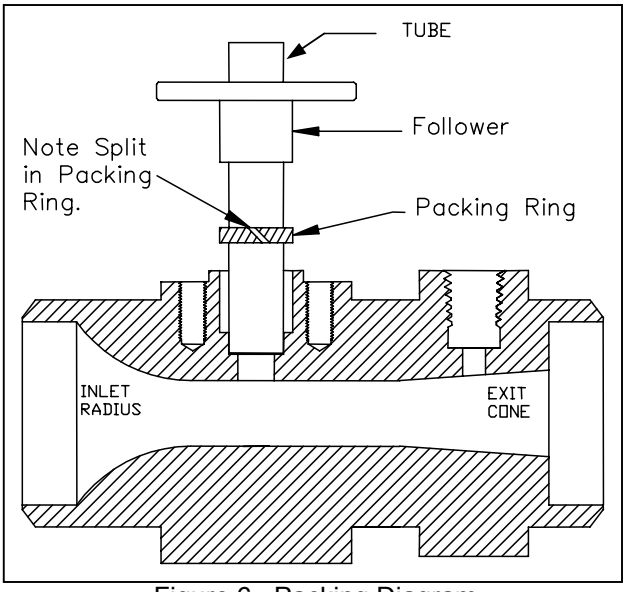

Figure 6. Packing Diagram

- Using a blunt screwdriver, swage the packing material between the outer diameter of the packing box and the outside diameter of the tube. Care must be taken not to twist the packing material during installation.
- After each individual packing ring is swaged around the tube, the follower should be pushed down firmly on the packing ring to seat the ring in the packing box.
- These steps should be repeated for the other three packing rings, being sure that the splits in the packing rings are 90° apart as shown in Figure 7.
- Remove follower.

7.2 Retaining Stud Installation

- Apply a thread-locking product (e.g. Loctite 262) to the first 0.75-inch of stud. Next, install the stud in the threaded hole closest to the exit of the meter, hole #1 in Figure 8. (The inlet is radiused; the exit is conical). Thread the stud into the hole until hand tight.

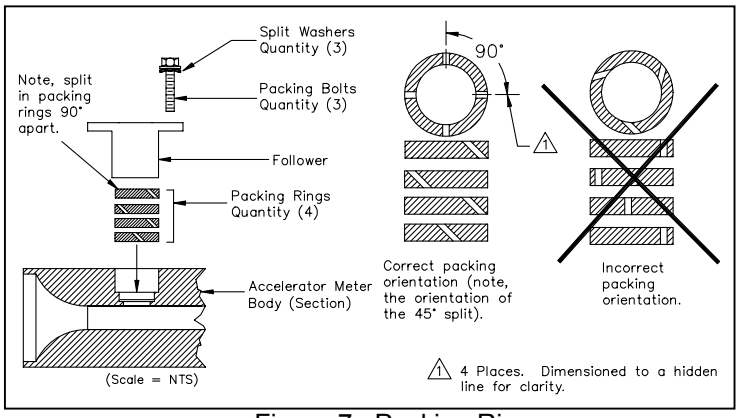

Figure 7. Packing Rings

- Thread a nut about one inch onto the stud. Then thread a second nut onto the stud.
- Place a backup wrench on first nut and tighten the second nut 1/8 turn beyond hand tight onto the first nut. Do not allow the backup wrench to turn.
- Using the second nut, tighten the stud one half to one full turn beyond hand tight.
- Remove nuts from stud.
- Repeat this process in holes #3 and #5 in Figure 8.

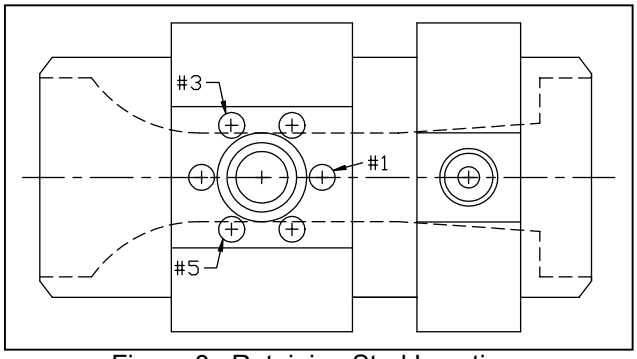

Figure 8. Retaining Stud Locations

7.3 Packing Bolt Installation

- Install the follower in the packing box, taking care not to damage the stud threads.
- Put one split washer on each packing bolt.
- Apply a small amount of anti-gall paste (e.g. Loctite Moly Paste) on first three to five threads of packing bolts.
- Install packing bolts in remaining bolt holes hand tight.

7.4 Accelabar Sensor Installation

- Carefully insert the Accelabar sensor into the Accelabar meter body. The sensor can only inserted one direction due to the orientation of the mount disk and the retaining studs.
- Bottom the sensor firmly in the meter body.

- Place one flat washer and one nut on each stud and thread until it is hand tight against the mount disk of the sensor. Tighten the nut 1/4 turn beyond hand tight. Thread a second nut on the stud until hand tight against the first nut. Place a backup wrench on the first nut and tighten the second nut 1/8 turn beyond hand tight.
- Tighten the packing bolts to 70 in*lbs torque on –05 models and to 100 in*lbs on –10 models.
- Installation is complete (see Figure 9 for Final Assembly.)

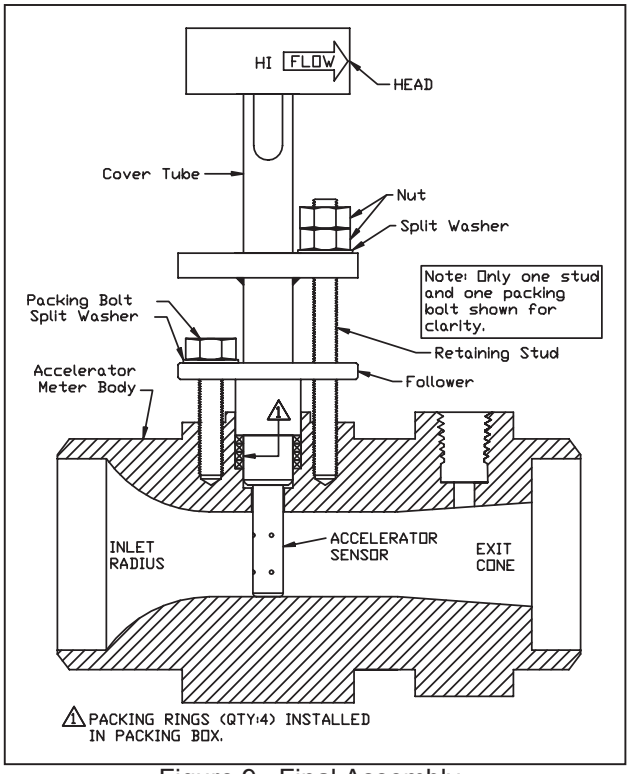

Figure 9. Final Assembly

7.5 Help

Contact the factory for installation assistance.

8.0 PERIODIC MAINTENANCE

The assembly should be periodically checked. Verify that no leaks are present. Retaining nuts and packing bolts should be tight.

Warning: Large and heavy Accelabars require support at the unit and piping.