



GEORG FISCHER
 PIPING SYSTEMS

Signet Tech-Tips

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Title: Installation of Conductivity/Resistivity Electrodes in Pipes

Conductivity electrodes can be installed into standard 3/4 inch NPT or ISO 7/1-R-3/4 threaded fittings. This Tech Tip explains the preferred method for the in-line electrode mounting configuration. The electrode should be mounted horizontally into pipelines or slip streams for best results. (See general installation notes).

The configuration allows fluid to flow through the body of the sensor and reduces the probability of entrapped air bubbles, which cause erratic or false/offset readings. To provide accurate measurement, especially in fluids with low conductivity, it is important to reduce the presence of air bubbles trapped within the sensor housing. In addition, it is important for the sensor vent hole to be fully submersed in the fluid stream and in contact with the process fluid. If the vent hole is not fully covered with process fluid, the electrode will not read properly. Please note: The position of the vent hole varies depending on the electrode selected.

To meet GF Signet pressure specifications, it is important to ensure at least 4 threads (ANSI B1.20.1) must be engaged.

Longer probes for larger pipes sizes are also available. Please contact factory for more information.

Fig 1

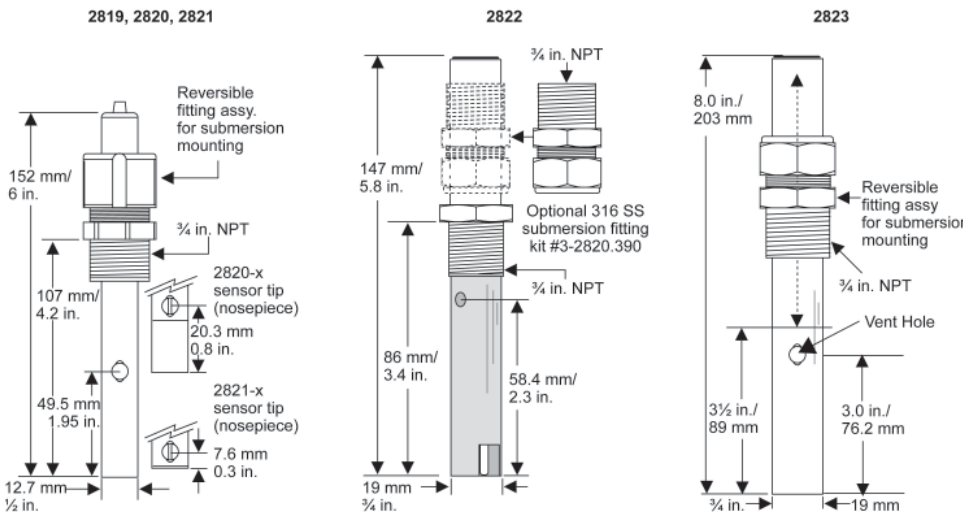
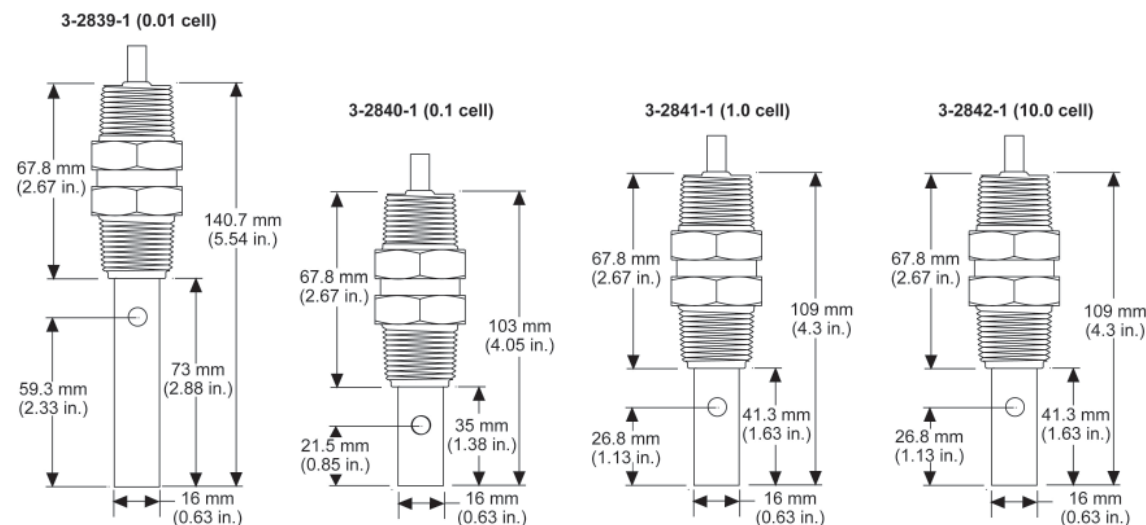


Table 1 (see Fig 1)

| Sensor Model | Length from tip of electrode to center of vent hole (Inch) |
|--------------|--|
| 2819 | 1.95 |
| 2820 | 0.8 |
| 2821 | 0.3 |
| 2822 | 2.3 |
| 2823 | 3.0 |
| 2839 | 2.33 |
| 2840 | 0.85 |
| 2841 / 2842 | 1.13 |



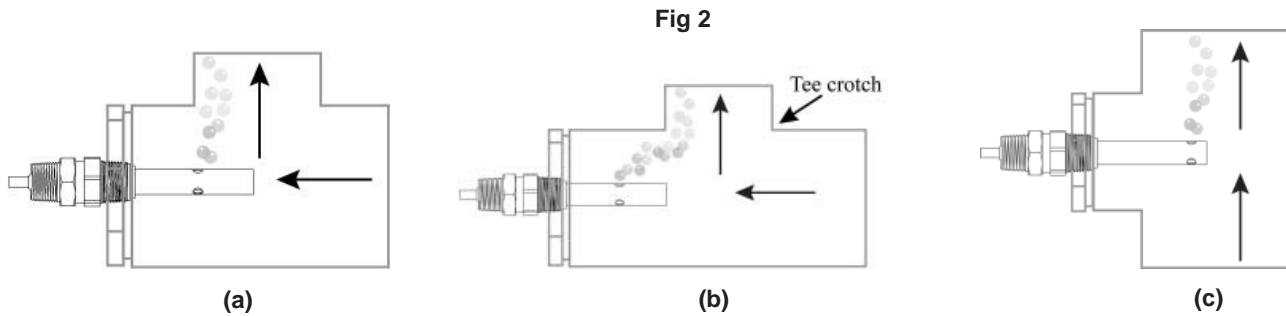
General Installation Notes:

1. See Figure 2(a) below for preferred mounting configuration. Figure 2(b) shows the minimum insertion depth. The tip of the electrode must reach the tee crotch. Electrode tip and vent hole must be fully submerged in the process flow stream. Do not recess the sensor too far back, such that the electrode tip and vent hole are no longer in the flow stream.

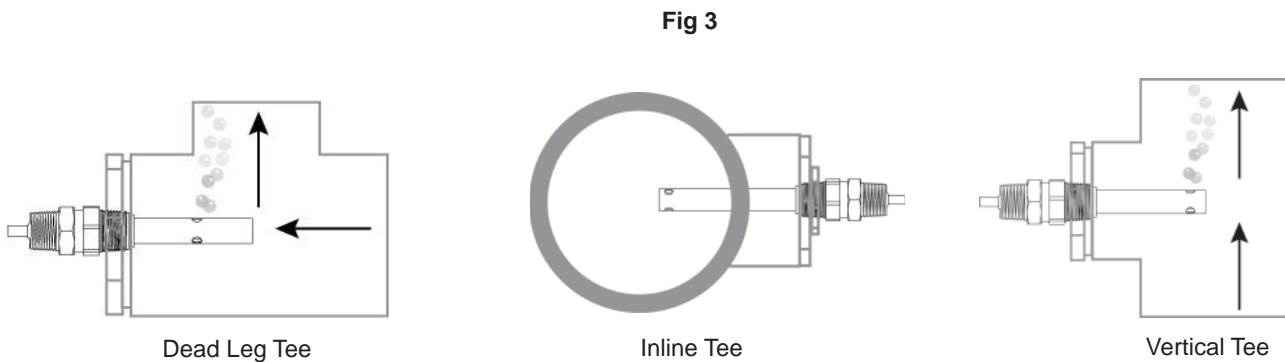
Make sure the vent hole is not recessed inside any bushings. There should be at least 1/4" clearance around the vent hole.

Flow should be directed into the sensor housing and the vent hole must be fully submerged and facing up to allow air bubbles to be purged by the flow through the sensor housing. Mark the top of the sensor before installation to help identify the location of the hole. For electrode dimensions from tip of the electrode to the center of the vent hole, see Table

2. When installing in a straight through pipe, ensure that the electrode tip and the vent hole are fully submerged and exposed to the process fluid, as shown in Fig 2(c) below.



For information on dead leg or inline tee mounting configuration, see Fig 3. See Table 2 on the following page for some suggested GF part numbers for tees and bushings, which can be used for installation accessories for pipe mounting.



Dead Leg Tee: This is the preferred mounting position. This installation method is required for the 2819 and 2820 electrodes when used in very low conductivity water.

Inline Tee: This mounting configuration can be used, but may be prone to air bubbles. Also, sediment may become trapped if mounted at an angle below the horizontal.

Tee and Bushing Selection for Conductivity Sensors - Table 2

| Pipe Size | | 2819 | | 2820 | | 2821 | | 2823 | | 2839 | | 2840 | | 2841/2842 | | 2822 |
|-----------|------------------------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------------|
| | | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | Inline Tee | Dead Leg Tee | |
| 0.75 | Tee (S x S x S) | - | 801-007 | - | 801-007 | 801-007 | 801-007 | - | - | - | - | - | 801-007 | - | 801-007 | Submersible only |
| | Pipe Extension | - | 2" long | - | 2" long | 2" long | 2" long | - | - | - | - | - | 1" long | - | 1" long | |
| | Female Adapter (S x FPT) | - | 835-007 | - | 835-007 | 835-007 | 835-007 | - | - | - | - | - | - | - | 835-007 | |
| 1 | Tee (S x S x S) | - | 801-010 | - | 801-010 | 801-010 | 801-010 | - | - | - | - | - | 801-010 | - | 801-010 | Submersible only |
| | Pipe Extension | - | - | - | - | 2" long | - | - | - | - | - | - | - | - | - | |
| | Female Adapter (S x FPT) | - | - | - | - | 835-010 | - | - | - | - | - | - | - | - | - | |
| 1.25 | Reducer Bushing (Spig x FPT) | - | 838-131 | - | 838-131 | - | 838-131 | - | - | - | - | - | - | - | 838-131 | Submersible only |
| | Tee (S x S x S) | - | 801-012 | - | 801-012 | 801-012 | 801-012 | - | 801-012 | - | 801-012 | - | 801-012 | - | 801-012 | |
| | Pipe Extension | - | - | - | - | 2" long | - | - | - | - | - | - | - | - | - | |
| 1.5 | Female Adapter (S x FPT) | - | - | - | - | 835-012 | - | - | - | - | - | - | - | - | - | Submersible only |
| | Reducer Bushing (Spig x FPT) | - | 838-167 | - | 838-167 | - | 838-167 | - | 838-167 | - | 838-167 | - | 838-167 | - | 838-167 | |
| | Tee (S x S x S) | - | 801-015 | - | 801-015 | 801-015 | 801-015 | - | 801-015 | - | 801-015 | - | 801-015 | - | 801-015 | |
| 1.5 | Pipe Extension | - | - | - | - | 1" long | - | - | - | - | - | - | - | - | - | Submersible only |
| | Female Adapter (S x FPT) | - | - | - | - | 835-015 | - | - | - | - | - | - | - | - | - | |
| | Reducer Bushing (Spig x FPT) | - | 838-210 | - | 838-210 | - | 838-210 | - | 838-210 | - | 838-210 | - | 838-210 | - | 838-210 | |
| 2 | Tee (S x S x S) | - | 801-020 | - | 801-020 | 801-020 | 801-020 | - | 801-020 | - | 801-020 | - | 801-020 | - | 801-020 | Submersible only |
| | Reducer Bushing (Spig x S) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | Reducer Bushing (Spig x FPT) | - | 838-248 | - | 838-248 | 838-248 | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | |
| 2.5 | Tee (S x S x S) | - | 801-025 | - | 801-025 | 801-025 | 801-025 | - | 801-025 | - | 801-025 | - | 801-025 | - | 801-025 | Submersible only |
| | Reducer Bushing (Spig x S) | - | 837-292 | - | 837-292 | 837-292 | 837-292 | - | 837-292 | - | 837-292 | - | 837-292 | - | 837-292 | |
| | Reducer Bushing (Spig x FPT) | - | 838-248 | - | 838-248 | 838-248 | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | |
| 3 | Tee (S x S x S) | - | 801-030 | - | 801-030 | 801-030 | 801-030 | - | 801-030 | - | 801-030 | - | 801-030 | - | 801-030 | Submersible only |
| | Reducer Bushing (Spig x S) | - | 837-338 | - | 837-338 | 837-338 | 837-338 | - | 837-338 | - | 837-338 | - | 837-338 | - | 837-338 | |
| | Reducer Bushing (Spig x FPT) | - | 838-248 | - | 838-248 | 838-248 | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | |
| 4 | Tee (S x S x S) | - | 801-040 | - | 801-040 | 801-040 | 801-040 | - | 801-040 | - | 801-040 | - | 801-040 | - | 801-040 | Submersible only |
| | Reducer Bushing (Spig x S) | - | 837-420 | - | 837-420 | 837-420 | 837-420 | - | 837-420 | - | 837-420 | - | 837-420 | - | 837-420 | |
| | Reducer Bushing (Spig x FPT) | - | 838-248 | - | 838-248 | 838-248 | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | - | 838-248 | |