



Installation Procedures for 5X31 Series pH & ORP Sensors & 5XX0 Series ISE Sensors with 316SS Sanitary Sensor Holders

CAUTION:

The 5X31 series pH & ORP sensors and 5XX0 series ISE sensors are ONLY intended for use with ASTI supplied sensor holders. Use with any other fittings is not supported nor is it recommended and doing so will void any and all applicable warranties.

Step 1: Calibrate the sensor

Calibrate your 5X31 series pH/ORP sensor or 5XX0 series ion selective (ISE) sensor per the procedure prescribed by the mating transmitter manual, sensor manual/guide or else any specific special recommendations from ASTI factory for your application. It is always best practice to calibrate the pH, ORP or ISE sensor before it is installed into the sanitary sensor holder, although it can also be calibrated after being installed into this fitting if given sufficient care.

Step 2: Pull through the cable

Pull the sensor cable through the sanitary sensor holder assembly. The 3/4"X1/2" NPT reducer bushing and 1/2" NPT cable gland (cord grip) should already be installed onto the back of the sanitary sensor holder before pulling the cable through. Do NOT lock down the cable gland onto the cable yet. The cable should be able to freely rotate as the sensor is turned.

Step 3: Lubricate the O-rings

It is best practice to always lubricate the two O-rings prior to insertion into the holder. The particular lubricant that will be most suitable will vary based upon the particular application and process media. If you have a process where no lubricant may be used at all (for fear of contamination with the process or any other firm restriction) some suitable solvent that is fast evaporating (such as isopropyl alcohol) may be used to make the O-rings easier to insert but leave no residue.

Step 4: Install the sensor into the holder

Carefully slide the sensor into the holder. Use the supplied rubber grip to gently grip the front diameter of the sensor body. **DO NOT HOLD BY THE SENSOR TIP AS THIS MAY CAUSE BREAKAGE!** Since the rubber grip is used very little pressure should be needed to hold the sensor in place. Some slight force will need to be used to slide the first O-ring (the one most to the back of the sensor or closest to the threads) into the fitting but care should be taken not to damage the sensor during this step. You will feel the sensor stop after you have cleared the first O-ring. You will then need to turn the sensor holder slowly and carefully until you feel that it is locked into place. Four important warning about step 4:

- **Do NOT turn the sensor while performing step # 4.** ONLY the sensor holder should be turned and the sensor should be kept completely stationary during this step. Turning the sensor can twist and damage the cable.
- **Do NOT overtighten the sensor into the holder.** When the 3/4" MNPT threads on the rear of the sanitary sensor are sealed into the internal 3/4" FNPT threads on the sensor holder you will have a secure seated assembly. Overtightening into the holder may damage or break the sensor and this is considered an installation error or mechanical abuse and so would not be covered under warranty!
- **Make sure that both O-rings are fully seated inside the assembly for a proper seal.** If correctly installed then both O-rings on the sensor body will not visible since they will be seated inside of the holder. This ensures that the sensor is centered and sealed into the assembly and there is no uneven pressure or strain.
- **The distance from the flange to the sensor tip shall be 2.5 inches when the sensor is properly installed into the sanitary holder.** If you have a sensor without any protective guard there will be some slight additional length for the protusion of the sensor tip itself, typically making the distane from the flange to the sensor tip about 2.7 to 2.9 inches in total. It is possible that your distance from flange to tip may differ if you purchased a special order sensor holder but these installation dimensions are the normal and typical lengths (see special notes for details).



Step 5: Install the sanitary assembly into process

Install the sanitary gasket for your assembly as usual and install into the sanitary process piping. After this you can lock down on the supplied ½" NPT cable gland seal to provide a watertight seal for the back of the sensor. **Sealing the cable with the provided gland is critical to prevent premature sensor failure from exposure to the back of the sensor.**

Step 6: Removal from process

If the sensor needs to be removed for cleaning, recalibration or replacement simply perform the steps in the reverse order. It is possible to calibrate and/or clean the sensor without removing from the holder if great care is used. If the sensor is not removed from the holder during cleaning or recalibration great care must be taken that the tip is not damaged. Since the assembly is heavy it is recommended to remove the sensor from the holder whenever possible. If this is not possible, then a very heavy metal beaker or receptacle should be used to prevent the sanitary sensor assembly from toppling over during handling, cleaning and conditioning is calibration standards.

SPECIAL NOTES:

1. There is no label on the 5X31 and 5XX0 series sensor body to ensure smooth insertion into the holder. Instead, the sensor part number and item number can be found near the end of the cable sealed with clear heat shrink right next to the ten digit numeric serial number. As always, the cable should never be cut or adulterated in any way or else the warranty will be altogether voided (this includes the removal of any sealed labels).
2. The insertion depth can be modified from the default 2.5 inches past the flange length by using a special order sanitary sensor holder with the flange welded to be a different spot in the fitting. Contact the factory with your special insertion depth requests to get part numbers, pricing and availability for such special order options.
 - a. *The dimensions of the 5X31 series pH/ORP sensors and 5XX0 series ISE sensors are fixed and cannot be supplied in alternate lengths. The insertion depth for such installations, then, is defined based upon the sensor holder alone.*
3. Although it is in principle possible to use 5X31 series pH, ORP and 5XX0 series ISE sensors without any protective guard at all with these sanitary holders (fittings) great care must be taken so that the tip is not damaged during sensor installation, removal and during cleaning/calibration. In the case that it is permissible to use a sensor with a protective guard this is always the preferred configuration. The default configuration for these sensors is a 0.5" protective guard. The ORP sensors or flat style pH sensors are available with a reduced 0.3" protective guard. The ISE sensors can be supplied without any protective guard at all if necessary. If no protective guard is present, be sure that you NEVER touch the sensor tip during the insertion or removal from the holder.
4. The sanitary sensor holders are available with 1.5", 2.0" or 2.5" tri-clover flanges and this is designated at the time of order. The mating sensors used are identical no matter which flange size is selected.
5. The material of construction is 316SS standard for all sanitary sensor holders. Alternate materials of construction are available on a special order basis. Please inquire to the factory for details and options.
6. The material of construction for the O-rings is Viton 75 standard. Optional upgrade available at various surcharge rates include CV75 (alpha prefix "W"), Simriz 485 (alpha prefix "U"), and Kalrez 4079 (alpha prefix "K"). The O-rings for the 5X31 and 5XX0 series sensors are common with the twist lock series sensors and may be used altogether interchangeably.

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