

Foxcroft Gas Detector Zero Adjustment

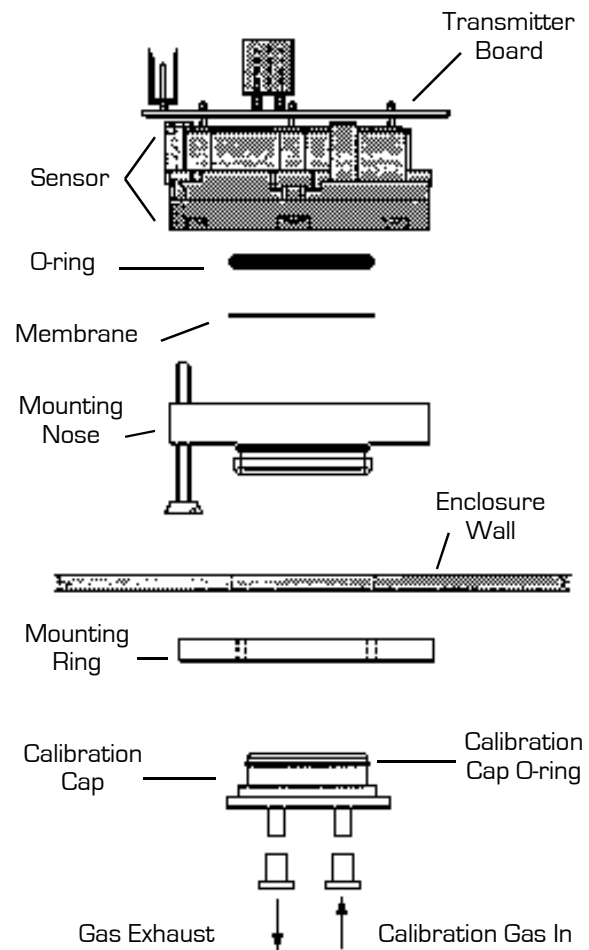
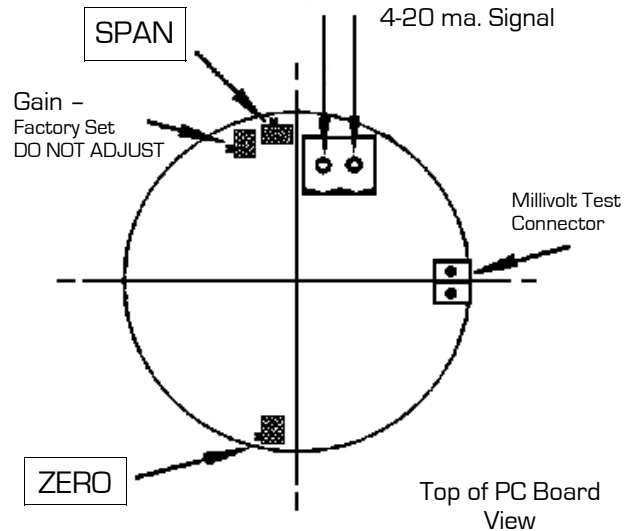
The zero setting on the sensor is usually quite stable, but occasionally the reading may shift up or down slightly, particularly after a substantial gas leak. The shift may only be off slightly (on display models) or possibly enough to trigger the cell failure or caution alarms. If this has happened to your gas detector, and the reading (or alarm) is stable, you can usually correct the problem with a slight zero adjustment. If the reading is erratic, either there is a gas leak that the sensor is picking up, or the detector is in need of service.

The zero adjustment is done on the sensor itself. Zero Calibration is done with ambient air. Be sure that you don't have any minor gas leaks that would affect the zero setting, BEFORE performing this adjustment. Since chlorine gas is heavier than air, it will tend to collect near the floor first, where you may not smell it. The gas detector will. When you check for leaks, make sure you use a high strength fresh ammonia, not the household cleaning type. Keep in mind other potential sources of gas emissions in the room, particularly for chlorine gas sensors. We have seen instances where a barrel of "HTH" chlorine powder or a barrel of Sodium Hypochlorite (either one being used as "backup" chlorination) was stored in the chlorine gas cylinder room. Also, there are many cleaning chemicals AND solvents that contain chlorine. The sensor is very sensitive, and WILL pick up these other sources of chlorine gas, which will offset your zero calibration to an incorrect value.

For calibration of non-display models, such as: the FX-1 or an individual sensor, connect a D.C. millivolt meter to the test connector (observe polarity when connecting the meter). If you have a D.C. milliamp meter, disconnect the negative lead of the 4-20 millamp signal wire and connect the meter in series with the wiring loop (again, observe polarity when connecting the meter). For display models, you may use the detector display for calibration.

In ambient air, the zero reading should be 40 millivolts or 4.00 millamps or 0.0 on the FX-150x series display. If it is not, make the adjustment on the zero potentiometer with the jeweler's screwdriver. The potentiometer is a multi-turn unit, and there is some signal dampening in the circuit, so the signal change may come after you make the adjustment. This may take some patience in adjustment.

Do not adjust the span or gain potentiometers. Span calibration requires a gas standard calibration kit, and gain is factory set. Under normal circumstances span calibration is not required.



Foxcroft Gas Detector Calibration Kit Instructions

Specifications: Regulator; Fixed flow of 1 Liter per minute. CL2 Kit; 10PPM Chlorine Gas in Nitrogen. Bottle capacity 58 liters. SO2 Kit; 10 PPM Sulphur Dioxide Gas in Nitrogen. Bottle capacity 58 liters. Other gasses available: consult factory.

Kit contains: 1 – Calibration Gas Cylinder, 1– Fixed Feed Rate Regulator, & a two foot length of 1/4” tubing.

Tools Needed: 1– Jeweler’s Screwdriver, the Grey Calibration Cap (with 2 hose nipples on it) that came with the sensor, and a digital D.C. millivolt or D.C. milliamp meter.

Caution – The full calibration procedure that this kit is designed for, is not a requirement for normal operation of the Foxcroft gas detector. The Foxcroft gas detector sensor is of a 3 electrode, fuel cell technology, design. This type of sensor is far more stable and sensitive than typical gas sensors of the past. Full calibration is only necessary when it has been determined that there is a problem with the sensor, and only after the problem has been repaired, or the sensor has been replaced. However, full gas calibration IS a good safety procedure, and is recommended as such, in the O& M Manual for the gas detector. If your on-site safety procedures require a gas detector test (which they should), we recommend a short gas leak test (details to follow) rather than a full calibration. There are three reasons for this. First, the gas sensor is designed for ambient air conditions, and can eventually be “poisoned” by repeated overexposure to the test and alarm gasses. This is usually noted as a gradual elevation in the zero reading over time and exposure, to the test and alarm gasses. Second, if the calibration is done improperly, or with old test gas (it has a shelf life listed on the bottle), it could seriously impair the sensitivity and function of the gas detector. Third, the calibration gas is expensive, and has a limited shelf life.

Warning – This kit contains toxic gas and should only be used by personnel who are fully trained in gas calibration procedures. All safety procedures and warnings on the gas bottle should be read, understood, and observed.

Short Gas Leak Test for Chlorine Gas Detectors – This test is not a calibration, it is only to test the chlorine gas detector’s response to a chlorine gas leak. Short gas leak tests for other gasses can only be done with the calibration gases.

In a small plastic cup mix 1 teaspoon of fresh Clorox with 1 teaspoon of vinegar, and place it near the gas sensor. This mixture will produce enough gas to set off the gas detector without creating a potentially dangerous situation. In this test, what the gas level goes up to on the display (FX-150x series detectors), is not really important. What is important, is that it sets off the alarms. With other gasses, the calibration gas can be used long enough to set off the alarms. Full calibration requires much longer exposure times to the test gas, and therefore, a potential shortening of the life of the sensor.

Full Sensor Calibration - Full sensor calibration is only as accurate as the digital millivolt or millamp meter being used (or the FX-150x series display), and the freshness of the test gas being used. So it is important to use an accurate digital meter and a fresh test gas bottle. As the FX-150x series detectors already have a factory pre-calibrated 0-1 volt D.C. display, the meter is really only needed for FX-1 units or individual sensors. If you have reason to believe that the display or alarm level calibration of the Gas Detector Electronics is off, we recommend that you contact Foxcroft, to arrange an “RMA”, to return the entire unit with the sensor(s), for a complete calibration. Foxcroft maintains a serial numbered calibration database for all of our gas detectors. Foxcroft does not recommend electronics calibration in the field. Doing so will void your gas detector’s warranty.

Zero: Zero calibration is done with ambient air. Be sure that you don't have any minor gas leaks that would affect the zero setting, BEFORE performing this adjustment. Keep in mind other potential sources of gas emissions in the room, particularly for chlorine gas sensors. We have seen instances where a barrel of "HTH" chlorine powder or a barrel of Sodium Hypochlorite (either one being used as "backup" chlorination) was stored in the chlorine gas cylinder room. Also, there are many cleaning chemicals AND solvents that contain chlorine. The sensor is very sensitive, and WILL pickup these other sources of chlorine gas, which will offset your zero calibration to an incorrect value.

For calibration of the FX-1 or an individual sensor, connect a D.C. millivolt meter to the test connector (observe polarity when connecting the meter). If you have a D.C. milliamp meter, disconnect the negative lead of the 4-20 millamp signal wire and connect the meter in series with the wiring loop (again, observe polarity when connecting the meter).

In ambient air, the zero reading should be 40 millivolts or 4.00 millamps or 0.0 on the FX-150x series display. If it is not, make the adjustment on the zero potentiometer with the jeweler's screwdriver. The potentiometer is a multi-turn unit, and there is some signal dampening in the circuit, so the signal change may come after you make the adjustment. This may take some patience in adjustment.

Span: The calibration cap should be installed in the sensor mounting nose (make sure the calibration cap o-ring is in place). Connect the tubing from one of the calibration cap nipples to the regulator nipple. Screw the test gas bottle onto the regulator to start gas feed. Observe the meter or display reading, which should stabilize at the test gas value. This may take a few minutes to stabilize (the sulphur dioxide units tend to stabilize quicker than the chlorine sensors). For chlorine, the millivolt reading should be 200 millivolts or 20.00 milliamps or 10.0 PPM on the FX-150x display. For sulphur dioxide, the millivolt reading should be 200 millivolts or 20.00 milliamps or 10.0 PPM on the FX-150x display. If the reading is off, the span can be adjusted on the SPAN potentiometer the same way as the Zero adjustment. Again there is some signal dampening, and a little patience will ensure a good calibration. When you have finished the span calibration, be sure to remove the regulator from the test gas bottle to stop the flow of gas. The gas detector can now be placed back in service.

Note: If you are calibrating Chlorine AND Sulphur Dioxide sensors, do not interchange gas cylinders with the same calibration kit, as the sulphur dioxide will be absorbed into some items (such as the tubing) and affect the Chlorine gas standard as it makes it's way to the sensor being tested.

