

## Accuracy Check And Calibration Procedure For the Alco-Sensor FST

Alco-Sensor FST instruments should be checked for accuracy at least once a month. Programs that use the Alco-Sensor FST very frequently, or that must meet rigorous quality control regulations, may require a more frequent accuracy check interval.

### Accuracy Check Procedure

1. Insert a clean mouthpiece. Access the Menu by holding the **OFF** button down and pressing the **ON** button at the same time.
2. The FST should display the message *rcL*. Press the **ON** button to cycle through the menu options until the FST displays the message *ACC*.
3. Press the **OFF** button to select the *ACC* (Accuracy Check) option.
4. When the display flashes *ACC*, connect the mouthpiece of the FST to the Mini Alcohol Can, Alcohol Gas Tank, or Simulator.
3. Make a note of the Target value of the Mini Alcohol Can, Alcohol Gas Tank, or simulator, and deliver a sample of the alcohol to the Alco-Sensor FST.

#### *If using the Mini Alcohol Can:*

Prepare the can by removing the clear plastic tubing from the top of the Mini Alcohol can. With a light back and forth twisting motion, attach the valve to the stem on the top of the Mini Alcohol can. Attach a clean mouthpiece to the Alco-Sensor FST. Insert the small plastic tubing on the valve of the Mini Alcohol Can into the end of the mouthpiece that is in the Alco-Sensor FST.

When the Alco-Sensor FST flashes *ACC*, depress the valve on Mini Alcohol can for 4 seconds. On the 3rd second of the 4 second count, press the **ON** button. The Alco-Sensor FST will sample the gas at this time. It is important to press the **ON** button while the gas is still flowing.

4. Note the reading on the Alco-Sensor FST.
5. If the reading is +/- .010 of the target value on Mini Alcohol can, the unit is considered within calibration limits and no further action is necessary. **If not within limits, the Calibration Procedure should be performed.**

*Example: Target value of Mini Alcohol can is .113. Acceptable limit is .113 +/- .010, or any reading between .103 and .123. Accuracy Check shows an Alco-Sensor FST reading of .111. This is within acceptable limits, so Calibration Procedure is not necessary.*

#### *If using Alcohol Gas Tank:*

First, purge the regulator by depressing the valve on Alcohol Gas Tank for at least 10 seconds to allow stale gas to be expelled from regulator. Insert a clean mouthpiece into the Alco-Sensor

FST. Make a firm connection between the plastic tubing from the regulator and the end of the mouthpiece. When the instrument flashes *ACC*, allow seven seconds of gas to flow through the mouthpiece. On the sixth second, while the gas is flowing, press the **ON** button. Continue to hold the gas button down for the full seven seconds. *Note: If using a regulator with a 6 lpm flow rate, the flow of gas will trigger the sample automatically without the need to press the ON button.*

4. Note the reading on the Alco-Sensor FST.

5. If the reading is +/- .005 of the target value of Alcohol Gas Tank, the unit is considered within calibration limits and no further action is necessary. **If not within limits, the Calibration Procedure should be performed.**

*Example #2: Target value of Alcohol Gas Tank is .037. Acceptable limit is .037 +/- .005, or any reading between .032 and .042. Accuracy Check shows an Alco-Sensor IV reading of .031. This is not within acceptable limits, so Calibration Procedure is performed.*

***If using Simulator:***

Prepare the simulator according to manufacturers instructions. Be sure the temperature is at 34° C. Blow steadily through the Simulator for about 6 seconds. Press the **ON** button on the 4th second, while continuing to blow through the Simulator.

4. Note the reading on the Alco-Sensor FST.

5. If the reading is +/- .005 of the target value Simulator, the unit is considered within calibration limits and no further action is necessary. **If not within limits, the Calibration Adjustment Procedure should be performed.**

*Example: Target value of Simulator is .040. Acceptable limit is .040 +/- .005, or any reading between .035 and .045. Accuracy check shows an Alco-Sensor FST reading of .039. This is within acceptable limits, so the Calibration Adjustment Procedure is not necessary.*

## **Calibration Adjustment Procedure**

The purpose of Calibration Adjustment Procedure is to change the sensitivity of the Alco-Sensor FST to make it read accurately. It is not necessary to adjust the calibration of the FST on a regular basis. The Calibration Adjustment Procedure is necessary only when an Accuracy Check determines that the instrument is not reading with acceptable limits.

*Note: The Alco-Sensor FST must be within 15 C and 35 C in order to perform a Calibration Adjustment. If the instrument is outside this range, it will display **E09** or **E10** and not allow the operator to perform the procedure.*

1. Attach a clean mouthpiece. Access the Menu by holding the **OFF** button down and pressing the **ON** button at the same time.

2. The FST should display the message *rcL*. Press the **ON** button to cycle through the menu options until the FST displays the message *CAL*.

3. Press the **OFF** button to select the **CAL** (Calibration) option.
4. The FST will display the temperature. If the temperature is within 15 C to 35 C, the instrument will flash **CAL**.

When the display flashes **CAL**, connect the mouthpiece of the FST to the Mini Alcohol Can, Alcohol Gas Tank, or Simulator.

5. Make a note of the Target value of the Calibration Supply (Mini Alcohol Can, Alcohol Gas Tank, or simulator), and deliver a sample of the alcohol to the Alco-Sensor FST.

***If using the Mini Alcohol Can:***

If the valve is not already attached to the Mini Alcohol Can, remove the clear plastic tubing from the top of the Mini Alcohol can. With a light back and forth twisting motion, attach valve to the stem on the top of the Mini Alcohol can. Insert a clean mouthpiece into the Alco-Sensor FST. Insert the small plastic tubing on the valve into the end of the mouthpiece that is already in the Alco-Sensor FST.

When the Alco-Sensor FST flashes **CAL**, depress the valve on Mini Alcohol can for 4 seconds. On the 3rd second of the 4 second count, press the **ON** button. The Alco-Sensor FST will sample the gas at this time. It is important to press the **ON** button while the gas is still flowing.

***If using the Alcohol Gas Tank:***

First, purge the regulator by depressing the valve on Alcohol Gas Tank for at least 10 seconds to allow stale gas to be expelled from regulator. Insert a clean mouthpiece into the Alco-Sensor FST. Make a firm connection between the plastic tubing from the regulator and the end of the mouthpiece. When the instrument flashes **CAL**, allow seven seconds of gas to flow through the mouthpiece. On the sixth second, while the gas is flowing, press the manual button. Continue to hold the gas button down for the full seven seconds. *Note: If using a regulator with a 6 lpm flow rate, the flow of gas will trigger the sample automatically without the need to press the **ON** button.*

***If using the Simulator:***

Prepare the simulator according to manufacturers instructions. Be sure the temperature is at 34° C. When the FST flashes **CAL**, blow steadily through the Simulator for about 6 seconds. Press the **ON** button on the 4th second, while continuing to blow through the Simulator.

6. Remove the mouthpiece from the Mini Alcohol Can, Alcohol Gas Tank, or Simulator.

7. Observe the number on the Alco-Sensor FST display.

***If the number is the same as the target value*** of the Calibration Supply (Mini Alcohol Can, Alcohol Gas Tank, or Simulator), press the **OFF** button three times. The flashing digit will move from the digit on the left to the digit on the right. The display will flash three times and the instrument will turn off.

***If the number is different than the target value***, adjust the number on the FST to match the target value.

The display flashes the digit on the left. If this digit is not correct, change it by repeatedly pressing the **ON** button until the FST displays the correct digit. When the correct digit is correct, press the **OFF** button, and the middle digit will flash.

If the middle digit is not correct, press the **ON** button repeatedly to change it to the correct number. When the correct digit is displayed, press the **OFF** button and the digit on the right will flash.

Adjust the digit on the right as before by pressing the **ON** button repeatedly. When the digit is correct, press the **OFF** button. The entire display flashes three times and turns off.

Pressing the **OFF** button before the display flashes the third time allows the operator to repeat the adjustment.

8. Perform another Accuracy Check to ensure the instrument is reading within +/- .003 of the target value.

## Glossary

**Accuracy Check:** Also called Calibration Check. The procedure compares a reading of a known alcohol standard (a Mini Alcohol Can, an Alcohol Gas Tank, or a Simulator) to the target value.

**Calibration Check:** Also called and Accuracy Check.

**Calibration Adjustment:** A procedure that adjusts the sensitivity of the Alco-Sensor FST.

**Target Value:** The expected reading that a calibration supply (Mini Alcohol Can, Alcohol Gas Tank, or Simulator) will produce. This number is found on the label of the calibration supply.

**Alcohol Standard:** Also called Calibration Supply. A means to produce and alcohol vapor of a know quantity.

- Each Mini Alcohol Can has a different value, which is printed on the label. The value of Mini Alcohol Cans will change with elevation.
- Each Alcohol Gas tank has the same amount of alcohol, which is printed on the label. The alcohol value will change depending on atmospheric pressure and elevation. An elevation chart on the tank predicts the target value for a given elevation. An optional True Cal Device predicts the valued of an Alcohol Gas Tank for varying elevations and atmospheric pressure conditions.
- Simulators produce an alcohol value based upon the value of the solution used, and do not vary with elevation or atmospheric pressure.