BUMP TEST/CALIBRATION OF A Q5/B5/Q6/B5 CO AND NO2

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To test the sensors you would need a calibration gas that has a known concentration value, a .5 LPM regulator, a calibration adapter, and teflon tubing (see list of part numbers and links on next page). We recommend doing a bump test and calibration check with the calibration gas per the service agreement of the building maintenance schedule. If the service agreement doesn't determine how often they should be tested, we suggest at least once a year for CO, and 6 months for NO2. The process we recommend for testing is a bump test and calibration check. You will need to take a cylinder of CO or NO2 with a known percentage value of the content of gas. They would attach the calibration adapter to the sensor and crack the regulator for a few seconds until the detector starts to read the gas. Compare what is indicated on the display to what the calibrated gas is. For example, purchase a 50 PPM of CO cylinder and confirm it is reading very close to 50 PPM on the display. To actually calibrate the Q5/B5/Q6/B6 transmitter you would need all the material listed below with the addition of Zero calibration gas (clean air or 100% Nitrogen).

Note: NO2 has a short shelf life. Less than a year. NO2 is a reactive gas making it very unstable. The lower the ppm concentration, the more likely it is to degrade quickly.

-A **"bump test" (function check)** is defined as a qualitative check in which the sensors are exposed to challenge gas for a time and at a concentration to activate all of the alarms to at least the lower alarm settings. It is important to understand what a qualitative test of this kind does not do. The test confirms that the gas is capable of reaching the sensors, that when they are exposed to gas the sensors respond, the response time (time to alarm) after gas is applied is within normal limits, and that the alarms are activated and function properly. However, a qualitative function test does not verify the accuracy of the readings or output of the sensors when exposed to gas.

-A **"calibration check"** is a quantitative test using a traceable source of known concentration test gas to verify that the response of the sensors is within the manufacturer's acceptable limits. For instance, a manufacturer might specify that readings in a properly calibrated instrument should be within ±10% of the value of the gas applied. If this is the pass / fail criterion, when 20 ppm H2S is applied to the instrument, the readings must stabilize between 18 ppm and 22 ppm in order to pass the test. It should be stressed that these pass / fail criteria are manufacturer guidelines. Different manufacturers are free to publish different requirements.

-A **"full calibration"** is defined as the adjustment of an instrument's response to match a desired value compared to a known traceable concentration of test gas. Once again, the calibration procedure, including the concentration of gas applied, method used to apply gas, and method used to adjust the readings are determined by the manufacturer.

Bump test demonstration: https://www.youtube.com/watch?v=quhqp1QsCBk&t=2s

Calibration demonstration: https://www.youtube.com/watch?v=cpdclBQJlP4

Calibration Equipment for CO and NO2:
-Part: 85930-006-000 (Calibration Adapter for Q5/B5, Q6/B6)

-Part: CAL GAS KIT (Includes – 1ea C10 0.5lpm regulator, 1ea C10 to CGA600 adapter, Carry case, and ten feet of 1/4" tubing.)

-CO gas with Nitrogen balance
Part: H101650PN (50PPM Carbon Monoxide, 34L, Certified)
          Or
Part: H1016100PN (100PPM Carbon Monoxide, 34L, Certified)

-NO2 Gas with air balance
Part: F10675PA (5 ppm Nitrogen Dioxide, A34L, Certified)
          Or
Part: F106710PA (10 ppm Nitrogen Dioxide, A34L, Certified)

- Zero gas for zero calibration only
Part: H1066 (100% Nitrogen, 34L, Certified)
          Or
Part: H107220.9VN (20.9% Oxygen, 34L, Certified)

Note: ACI recommends 50 ppm CO gas for span gas and 10 ppm for NO2.
Zero gas can be 20.9% by Volume Oxygen or 100% Nitrogen.

https://www.workaci.com/sites/default/files/product_cutsheet/Gas%20CAL%20Kit.pdf

Calibration Procedure
To enter Q5/B5 menu.
Press F3 to get to Main menu.
Press F3 again. This will get you to Password.
Default password is 4321.
Press F2 to get to 2. ZERO CAL. Press F3 to enter
The display will ask if you want to continue. Apply zero gas until the output is 0 ppm and press F3 for YES. The sensor will display "Accepted" will return to 2. ZERO CAL
Remove the Zero gas.
Press F2 once to get to 3. SPAN CAL. Press F3 to enter.
Enter the ppm of the calibration gas and press F3.
Display will ask if you want to continue. First, apply the calibration gas and wait until the reading stabilizes.
Press the F3 key to confirm the Span Cal and keep the gas flowing.
When Span Cal is completed, display will show "Accepted" and return to 3. SPAN CAL.
Remove the Span gas.
Press F1 key to get to EXIT MENU.
Once the sensor is in operating mode, apply the Span gas to verify sensor accuracy,
If CAL ERROR comes up, repeat the Zero or Span Cal. If error message continues, replace the smart sensor board.

https://www.workaci.com/sites/default/files/category-files/Replacement%20Smart%20Sensor%20Assembly.pdf