General recommendations for inspections and calibrations of GC, GI and GR series explosive gas detectors and carbon monoxide detectors GIC

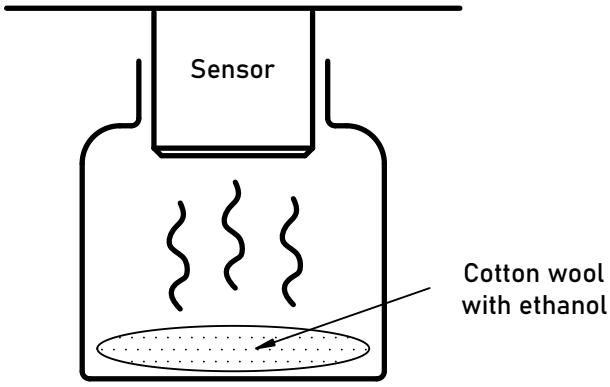
Detectors manufactured by our company are always calibrated with the appropriate calibration mixture at a temperature of approx. 20°C and 50% relative humidity (average). The type of gas, which has been used for detector calibration, is always indicated on the detector label. The detectors have to be checked regularly to perform their protective function correctly.

Recommended terms and methods of inspections and calibrations of stable detectors

1. **Post-installation inspection:** Detectors are always calibrated by the manufacturer. It is sufficient to perform a functional check after installation when installation under normal climatic conditions is done (see below). A calibration check have to be performed if the detector is placed in an environment with an exceptional climatic conditions (eg high altitude) or a longer period of time has elapsed since its dispatch from the manufacturer (eg longer than 6 months) (see below).

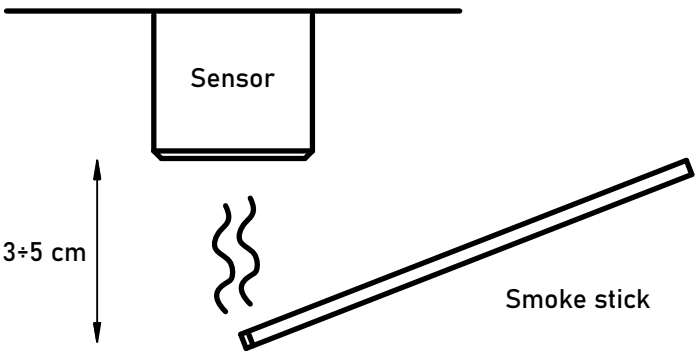
2. **Functional check:** The system's readiness for gas leaks and its proper function in the event of a gas leak into the air are tested by this check. It is not possible to check the accuracy of the settings of individual detected levels in this way. Gas detection system response of some non-specified gas concentration is evaluated by this test.

   The non-selectivity of the detector sensor can be used for the functional test. Flammable gas detector sensors generally respond to a wide range of explosive gases. For functional control, it is therefore possible to use, for example, an ampoule with a cotton wool filling saturated with pure or technical ethanol at the bottom. During the test itself, the ampoule approaches the detector sensor so that the ethanol vapour rises to the sensor. If the detector is OK, it will usually activate within 5 seconds. **The liquid must not get on the sensor during the inspection!**



   A smoke stick is used during the functional test of detectors for CO. The smoke rises on the detector sensor after the stick is ignited and blown out. Due to the generally slower response of the sensors to CO, the detector should be activated within about 20 seconds.

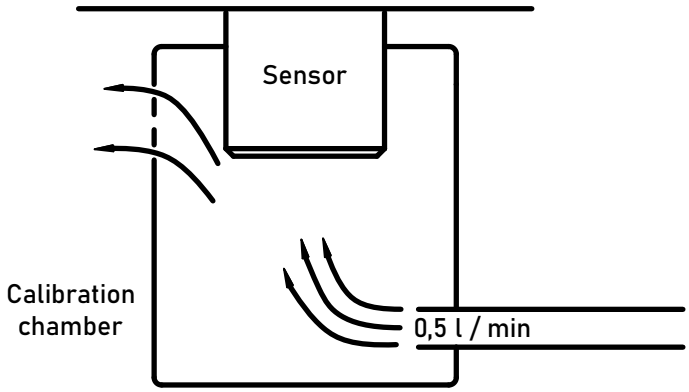
   Do not leave the detector sensors in the test gas for a long time after activating them. As soon as the detector reacts, move the test substance away from the sensor and leave the sensor in fresh air.



The detectors must not be checked with a high gas concentration (eg with a lighter)! High concentrations in the immediate proximity can damage the sensitive sensor. Similarly, strong smoke acting on the CO sensor for a long time can block its carbon filter. Checking with high gas concentrations should not be performed, especially because even a bad detector can react to high gas concentrations.

The frequency of functional inspections is usually determined by the operating rules for the object and ranges from 1 to 3 months.

3. **Calibration check:** The function of the whole system is tested in the same way as in the previous check during this check. In addition it is verified whether the detector has correctly set limits for signalling the given gas concentrations. Appropriate calibration gas must be provided for this purpose. It is necessary to supply the corresponding gas with the required concentration to the detector sensor for the calibration check. The incoming gas must not have a high flow to prevent the sensor from cooling down. The flow should be about 0.5 l / min, which corresponds to a gentle breeze.



The actual setting (sensor calibration) is then performed according to the specific procedure given in the detector manual. Detectors for refrigerants or substances that are normally liquid (such as thinners, etc.) must be sent to the manufacturer for calibration.

Calibration checks have to be performed at least once a year. It is recommended to perform calibrations twice a year in demanding environments, where, for example, there is higher humidity, dust or other gases may appear,

Inspection tools

The new detectors are supplied with small ampoules with a control substance (alcohol) for checking flammable gas detectors or with ampoules with a piece of smoke stick for CO detectors for post-installation functional control. It is expected that they will be used only once after installation.

It is advisable to prepare the above-mentioned preparations for regular inspections. If necessary, ask the manufacturer about the procedure for ensuring these inspections.

If you perform a functional check with alcohol vapour and the detector does not respond, check that:

- the alcohol filling is sufficiently fresh, refill it if necessary
- the contents of the ampoule are not subcooled, then warm it to a body temperature
- there is need to bring the ampoule closer to the detector sensor
- there is need to recalibrate the detector

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