Chlorine, Chlorine dioxide, Sulfur dioxide

Leak Detector type DC 01

with dry type sensor

- no chemical reagent
- color bar graph indicator of chlorine
- two adjustable thresholds by keyboard (one is memorized)
- monitor of the sensor (to 300 m)
- working temperature (-20° à +50°C)
- electrical supply 110/235 V or 24 V by stand-by battery
- eventual connection of a stand-by sensor
- integrated buzzer
- dry default contact sensor or electronical circuit

Rules

The DC01 leak detector is designed to monitor on line the gas content in a room. In case of leak, the technical staff is informed and the safety devices start automatically. The 28th july 1977 circular letter dealing with protected installations notes that: “any chlorine tank storage without any continuous supervision must be equipped with an automatic chlorine leak detector”. This safety is strongly advised in case of chlorine line under pressure.

<table>
<thead>
<tr>
<th>Physiological Reactions of men to chlorine gas in the air</th>
<th>ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ppm - admissible content without any danger during 8 working hours.</td>
<td></td>
</tr>
<tr>
<td>3.5 ppm - start of the odour detection.</td>
<td></td>
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<tr>
<td>15 ppm - irritation of the throat.</td>
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<tr>
<td>30 ppm - cough</td>
<td></td>
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<tr>
<td>40 à 60 ppm - dangerous for a 30 mn inhalation.</td>
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<tr>
<td>1000 ppm - Lethal reaction (very quickly.)</td>
<td></td>
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</tbody>
</table>

(Extract of “Water & Sewage Works” de mars 1951. Prof. Edward W. Moore)

Principle of the unit

The chlorine leak detector is monitoring the gas content in the air and giving an alarm to the maintenance staff in case of oxidizing gas (chlorine, chlorine dioxide, sulfur dioxide).

When the oxidizing gas concentration is higher than one of the two settled threshold, the unit emits an optical and an audible alarm. At the same time, it let start a relay, which enables the automatic bringing to use of the necessary measures: fans starting, valves shutting, releasing of an absorption device, etc...

Working

When chlorine, chlorine dioxide or sulfur dioxide is found, the detector sensor, dry type, without reagent, with 3 electrodes, delivers a proportional current to the diffused gas quantity. Beyond one of the two adjustable thresholds, the alarm is automatically released.

A key “stop audible alarm” allows to stop the audible alarm although the leak is persisting. The keys enable the simulation of an alarm to control the good working of the electronic circuit. One of the thresholds is memorized after vanishing of the leak and must be deleted by the key “Stop audible alarm”.

Note: The chlorine sensor is suitable for the chlorine dioxide too (in case of chlorine dioxide, the sensor is three times more sensitive). The sensor for the sulfur dioxide is different from this of chlorine.
Installation
The detection sensor is separated of the electronical box, allowing a 300 m distance from the air likely to be contaminated.
It is located in the room to be controlled, 500 mm high from the floor. The electronical box is wall mounted, in the monitoring room.

OPTIONAL
1. One second sensor can be connected in stand-by with the same alarm contacts. In this case, the sensor giving the highest value will start the thresholds.
2. External audible alarm, gyrolight, flashing lights and phone transmitter.
3. Cifec GP 400 gas generator for control and calibration of the detectors (see picture) with an adjustable concentration (0-10 ppm), graphic display, battery, lifetime of the chlorine cell: 200 h at 5 ppm, may be changed in workshop.

OTHER SOLUTION: Mini 200 generator, fixed concentration, working on battery, lifetime of the cell: 10 h, may be changed on site.

Technical Characteristics

<table>
<thead>
<tr>
<th>ELECTRONICAL BOX CE</th>
<th>Consumption</th>
<th>Chlorine Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interferences:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hydrogen...................................</td>
<td>100 ppm</td>
<td>0 ppm</td>
</tr>
<tr>
<td>carbon monoxide...........................</td>
<td>300 ppm</td>
<td>0 ppm</td>
</tr>
<tr>
<td>hydrogen sulfur...........................</td>
<td>15 ppm</td>
<td>-1.5 ppm</td>
</tr>
<tr>
<td>ethylene...................................</td>
<td>100 ppm</td>
<td>0 ppm</td>
</tr>
<tr>
<td>sulfur dioxide...........................</td>
<td>5 ppm</td>
<td>0 ppm</td>
</tr>
<tr>
<td>nitrogen dioxide...........................</td>
<td>10 ppm</td>
<td>+10 ppm</td>
</tr>
</tbody>
</table>

Sizes:
- large ..................................... 122 mm
- depth ..................................... 125 mm
- height .................................... 100 mm
- proof ..................................... IP65
- average life time of the sensor ........ 18 to 24 months
- maximum sensibility ..................... 10 ppm
- Variante ................................ (20-30-50-100-200 ppm)
- minimum sensibility ..................... < 1 ppm

CHLORINE CELL CE

- working temperature ..................... -20°C + 50°C
- humidity due to working ............ 15 to 90%
- non condense
- Note: out of these limits, the cell becomes rapidly **insensible** and doesn’t work anymore.