Pressure Measurement in Gas Industry

Application:

Pressure gauges for monitoring of residual pressure in gas bottles

- for manufacturers of monitoring systems for gas bottles,
- for manufacturers of fire-extinguishing systems with gases (e.g. Inergen)

The problem:

There are two types of gas bottles:

- gas bottles with liquefied content (e.g. propane, carbon dioxide)
- gas bottles with highly compressed gaseous content (e.g. nitrogen, oxygen, argon)

Liquefied gases change their state of aggregation upon temperature changes. The steam pressure of the liquefied gas determines the pressure within the bottle. The level is determined by weighing. The residual pressure cannot be indicated by the pressure gauge.

The principle for compressed pressurised gases with pressure regulator* is as follows: half pressure – half full. Depending on the type of bottle, the pressure is 200 or 300 bar.

As the gases can partially be aggressive, the material has to fulfil certain requirements, dependent on the type of gas.

* The pressure regulator has two pressure indications. The first indicates the pressure of the gas bottle when it is opened (inlet pressure). With the second valve and the corresponding second indication, the pressure of the gas is controled that escapes from the pressure regulator (outlet pressure).

Increased caution is required when gas bottles are in use. Misapplication can lead to accidents. Therefore, pressure gauges have to meet high demands.
Application:

Pressure gauges for monitoring of residual pressure in gas bottles

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We offer the following solutions:

When using oxygen, it has to be ensured that all parts are free of grease and oil and have been adjusted residue-free with dry air, since grease and oxygen are inflammable under pressure.

For non-aggressive gas we use inner parts made of non-ferrous metal, alternatively stainless steel or Monel (upon request with helium leak test).

A gas bottle should not be emptied completely to avoid vaccum when cooling.

In order to control the remaining pressure in the bottle, we apply limit switch contact assemblies. This provides the following advantages:

- securing the supply
- avoidance of cleaning costs upon full drain
- control of the min. and max. pressure at the outlet of the regulator

Our advantages at a glance:

- Materials are selected in accordance to the gas
- Limit switch contact assemblies for the control of residual pressure
- Special connection for versions with ultrapure gas
- Safety case

Our instruments in detail:

With limit switch contact assembly
* further details: see data sheets

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Pressure Range</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCha 63</td>
<td>with reed contact pressure, with which the gas escapes from the bottle</td>
<td>-1 / + 3 bar (30&quot; Hg vac. - 60 psi)</td>
<td>G ¼ B (¼&quot;BSP), ⅛&quot; NPT, M10 x 1</td>
</tr>
<tr>
<td>RSCh 63</td>
<td>with inductive or magnetic contact</td>
<td>0 – 250 bar (0 – 3,000 psi)</td>
<td>G ¼ B (¼&quot;BSP), ⅛&quot; NPT, M10 x 1</td>
</tr>
<tr>
<td>RChE 50 – 3</td>
<td>with inductive contact content pressure of the gas bottle</td>
<td>0 – 250 bar (0 – 3,000 psi)</td>
<td>G ¼ B (¼&quot;BSP), ⅛&quot; NPT, M10 x 1</td>
</tr>
</tbody>
</table>

Safety case S3

Examples:

- with reed contact pressure
- with inductive or magnetic contact content pressure of the gas bottle
- with inductive contact content pressure of the gas bottle

* further details: see data sheets