ARMANO

Pressure Measurement in the Gas Industry

Application:

Pressure gauges for monitoring residual pressures in gas bottles

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

Increased caution is required when using gas bottles. Incorrect use may result in accidents. Therefore, increased demands are placed on the pressure measuring instruments.

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 vapour pressure of the liquefied gas determines the pressure within the bottle. The filling level is determined by weighing. The residual pressure content of such a gas bottle cannot be indicated by the pressure gauge.

For compressed pressurised gases with pressure regulator* the following applies: 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 controlled, which escapes from the pressure regulator (outlet pressure).

ARMANO Messtechnik GmbH
Location Beierfeld • Am Gewerbepark 9 • 08344 Grünhain-Beierfeld
Tel.: +49 3774 58 – 0 • Fax: +49 3774 58 – 545 • mail@armano-beierfeld.com
Location Wesel • Manometerstraße 5 • 46487 Wesel-Ginderich
Tel.: +49 2803 9130 – 0 • Fax: +49 2803 1035 • mail@armano-wesel.com

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Our solution:

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 gases, 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 vacuum when cooling.

In order to control the remaining pressure in the bottle, we apply limit switches. 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 switches for the control of residual pressure**
- **Special connection for versions with ultrapure gas**
- **Safety case**

Our instruments in detail:

With limit switch:

further details: see data sheets

RSCh 63
1610.94

- Connection thread G ¼ B, ¼" NPT, M 10x1
- Special connection for versions with ultrapure gas (VCR male thread or union nut)

- Examples:
  - with reed contact
  - pressure, with which the gas escapes from the bottle
  - pressure range: –1 / +3 bar
  - outlet pressure
  - safety case S3

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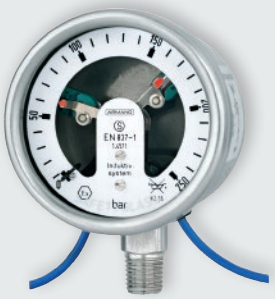

- with inductive or magnetic contact
- content pressure of the gas bottle
- pressure range: 0 – 250 bar
- inlet pressure
- safety case S3

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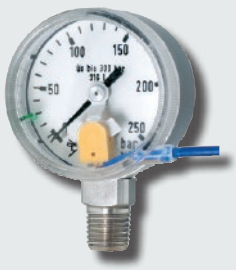

- with inductive contact
- content pressure of the gas bottle
- pressure range: 0 – 250 bar
- inlet pressure
- safety case S2

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