



## Pressure Measurement in Food Engineering



### Application:

## Chemical seals in the application field of the coffee industry

for plant operators in the coffee industry  
for engineering and planning offices in food processing  
for process plant construction companies in the food industry

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Process plants in the food industry are subject to frequently changing operating conditions. Coffee is considered as a medium which is difficult to process, as it is subjected to frequent cleaning processes. Therefore, pressure gauges have to meet high technical prerequisites.

### The problem:

During industrial processing of coffee (e.g. production of instant coffee), a viscous extract is formed after the brewing process, which is transported through pipelines for further processing. During transportation, coffee particles of the extract are deposited on all wetted parts. In addition to the inner walls of the pipes, this also includes all wetted parts of the measuring instruments. After only approx. 12 – 15 weeks, the coffee particles form a very hard crust, which usually can only be removed by high-pressure cleaning (1000 bar). The measuring instruments have to be cleaned from residues separately in caustic baths for several days, since high-pressure cleaning was impossible until now.

### Basic cleaning problems:

- ◆ Cleaning can only be carried out during downtime of the plant
- ◆ During the cleaning process, all pressure gauge units have to be removed and cleaned separately in a caustic bath
- ◆ Medium residues impair the performance of the pressure measuring units after only a few production cycles – in a later process it can even be destroyed

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## Our solution:

We offer various **special versions of chemical seals** which meet the requirements of high-pressure cleaning and no longer have to be dismantled, which means they are suitable for **high-pressure in-line cleaning**. This allows for **shorter cleaning times**, **reduces the need for a second batch of measuring instruments** and **eliminates the additional costs of cleaning the measuring instruments** with deposit build-up separately. **These factors lower the costs of the plant operator considerably.**

The use of our in-line seal RDM 7635.9 has proven to be particularly economic. In the nominal widths DN 40 and DN 50, it can be easily cleaned in-line. Beyond that, our chemical seal models MDM 7515 with flange and extension tube as well as our MDM 7340.17 are also recommendable.

**The efforts that were required with conventional instruments can be significantly reduced with our instruments.**

## Our instruments in detail:

## Our advantages: RDM 7635.9

- ◆ **Longer service life** (several years as opposed to weeks)
- ◆ **Cleaning times are significantly reduced**
  - ◆ the RDM can remain in-line also during the cleaning phase
  - ◆ further cleaning efforts, such as installation and deinstallation of the instrument as well as a subsequent caustic bath, are no longer necessary
- ◆ Cleaning and inspection cycles are significantly reduced
- ◆ Due to reduced inspection cycles, the plant can quickly be taken back into operation
- ◆ Even with persistent product adhesions and after cleaning procedures (e.g. with water jetting processes at approx. 1000 bar), our diaphragms allow for
  - ◆ a flawless performance
  - ◆ a stable zero point
  - ◆ a long-lasting, non-destructive operating time
- ◆ It can be combined with all common pressure measuring instruments (pressure gauges, pressure gauges with limit switch, pressure gauges with integrated pressure transmitter DMU, pressure transmitters, etc.)
- ◆ Operating temperature  $t_A$ : up to +220 °C (+428 °F)
- ◆ Deviating specifications upon request

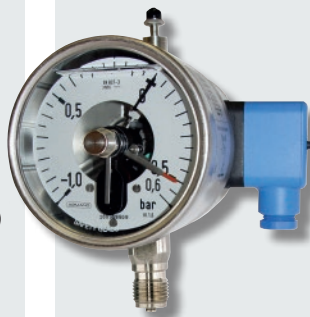
## Our alternative: MDM 7515 or 7340.17

**In many cases, existing plants do not allow for extensive modifications – we have taken this circumstance into account!**

The ARMANO Messtechnik GmbH is able to supply high-quality technology for existing plants, which distinctly outshines other instruments available on the market. Among others, this includes our **diaphragm seals** (MDM 7515 or 7340.17). These are particularly characterized by a **modified diaphragm structure**.

## Advantages of diaphragm seals:

- ◆ **Guaranteed operative readiness even at a high degree of media adhesions**
- ◆ Verifiably a significantly **longer service life**



## Example:

Bourdon tube pressure gauge, RChOe 100 – 3, –1/+0.6 bar, inductive limit switch I2, overrange protected up to 40 bar, switching point: 0.5 bar

RDM 7635.9  
preferably DN 50



MDM 7515  
DN 50



MDM 7340.17  
DN 50

