

MEDENUS

Gas Pressure Regulation



Cellular Gas Filters DF 100



Product Information

EN

Table of Contents

| | |
|---|-----------|
| Application, Features , Technical Data | 4 |
| Application | 4 |
| Features | 4 |
| Technical Data | 5 |
| Design and function | 6 |
| DN 25 / 50 / 80 / 100 | 6 |
| DN 150 / 200 | 7 |
| Schematic view of the differential pressure measurement device | 8 |
| DN 25 / 50 / 80 / 100 / 150 / 200 | 8 |
| Dimensions of differential pressure measuring device (mm) | 8 |
| Dimensions, connection and weight | 9 |
| Performance data | 10 |
| Performance diagram | 10 |
| Ordering data | 11 |
| Contact | 12 |
| Remarks | 14 |

Abbreviations - and symbols Directory

| | | | | | |
|----------------|----------------------------|----------------|-------------------------|----------------|-----------------------------------|
| PS | Maximum allowable pressure | $p_{\ddot{u}}$ | Excess pressure in bar | $\ddot{u}.N.N$ | above sea level |
| p_u | inlet pressure | p_{amb} | ambient pressure | | The mean sea level (also sea |
| Δp | loss of pressure | Q_n | Standard - Volume Flow | | level, abbreviated NN or NN) |
| w_u | Gas - entry speed | Q_b | Operation - Volume Flow | | was 1879 to 1992 the fixed |
| $\rho_{n Gas}$ | Gas - normal density | t | temperature | | zero level of the official height |
| | | | | | reference in Germany |

Application, Features , Technical Data

Application

Type DF 100 cellular gas filters are designed for retaining gas impurities, such as dust, rust and other solid particles, in gas-carrying lines at a defined location. They are mainly used in gas pressure regulating and measuring stations and upstream of equipment, the function of which would be impaired by contaminants.

The filters are suitable for gases in accordance with DVGW Code of Practice G 260 / G 262 and neutral non-corrosive gases. (Other gases on request).

Features

- Outdoor version as standard
- Easily replaceable filter cartridge with hydrophobic filter medium
- Optimized flow control ensures high filtration efficiency
- Optionally available with differential pressure measurement (for electric remote transmission , differential pressure gauge with limit switch)



Cellular Gas Filter DF 100 DN 50



Cellular Gas Filter DF 100 DN 50 with Differential pressure measuring device

Technical Data

| | |
|---|---|
| Type | DF 100 |
| Maximum permissible pressure (PS) | 16 bar |
| Nominal size | DN 25 / 50 / 80 / 100 / 150 / 200 |
| Connection type | DIN - flanges PN 16 ASME - ANSI B16.5 - flanges Class 150 RF |
| Werkstoff | body - Aluminum filter - Polyester reinforced cellulose paper gasket - NBR |
| Temperature range (operating / ambient temperature) | - 20°C to + 60°C (- 40°C to + 60°C on request) |
| Filter area | DN 25 - 0,0510m ² DN 100 - 0,9300m ² DN 50 - 0,2430m ² DN 150 - 2,5000m ² DN 80 - 0,4500m ² DN 200 - 3,0000m ² |
| Filtration efficiency | Standard 99.9 % of particle size > 2 µm * |
| Approximate Δp value for new filter cartridge | $\Delta p \leq 50$ mbar if the gas velocity at the filter inlet is $W_u = 20$ m/s ** |
| Approximate Δp value for filter cartridge change | 800 to 1.000 mbar |
| Δpmax limit for soiled filter cartridges | $\Delta p_{\max} = 2.000$ mbar |
| Dust holding capacity | 135 mg/cm ² |
| Function, strength and tightnesst | DIN 3386, DVGW Code of Practice G 498 and DIN 30690-1 |
| CE mark acc. to PED / PIN No. | CE-0085CP0531 |
| Explosion protection | The mechanical components of the device do not contain any potential ignition sources of their own; thus they do not fall under the scope of ATEX 95 (94/9/EC). The electrical components of the device comply with ATEX requirements. |

*) Other designs on request

**) If the gas velocity at the filter inlet is 20 m/s, the gas velocity through the filter element is approx. 0.14 - 0.22 m/s depending on the nominal size. (A much lower flow velocity is recommended when high levels of dust are to be expected.)

Design and function

Gas flows through the inlet flange into the filter body.

The filter area which is up to or more than 100 times larger than the cross-section of the inlet flange reduces the velocity of the gas flow accordingly. The dust particles carried along with the gas are retained by the filter element. The cleaned gas is discharged through the outlet flange.

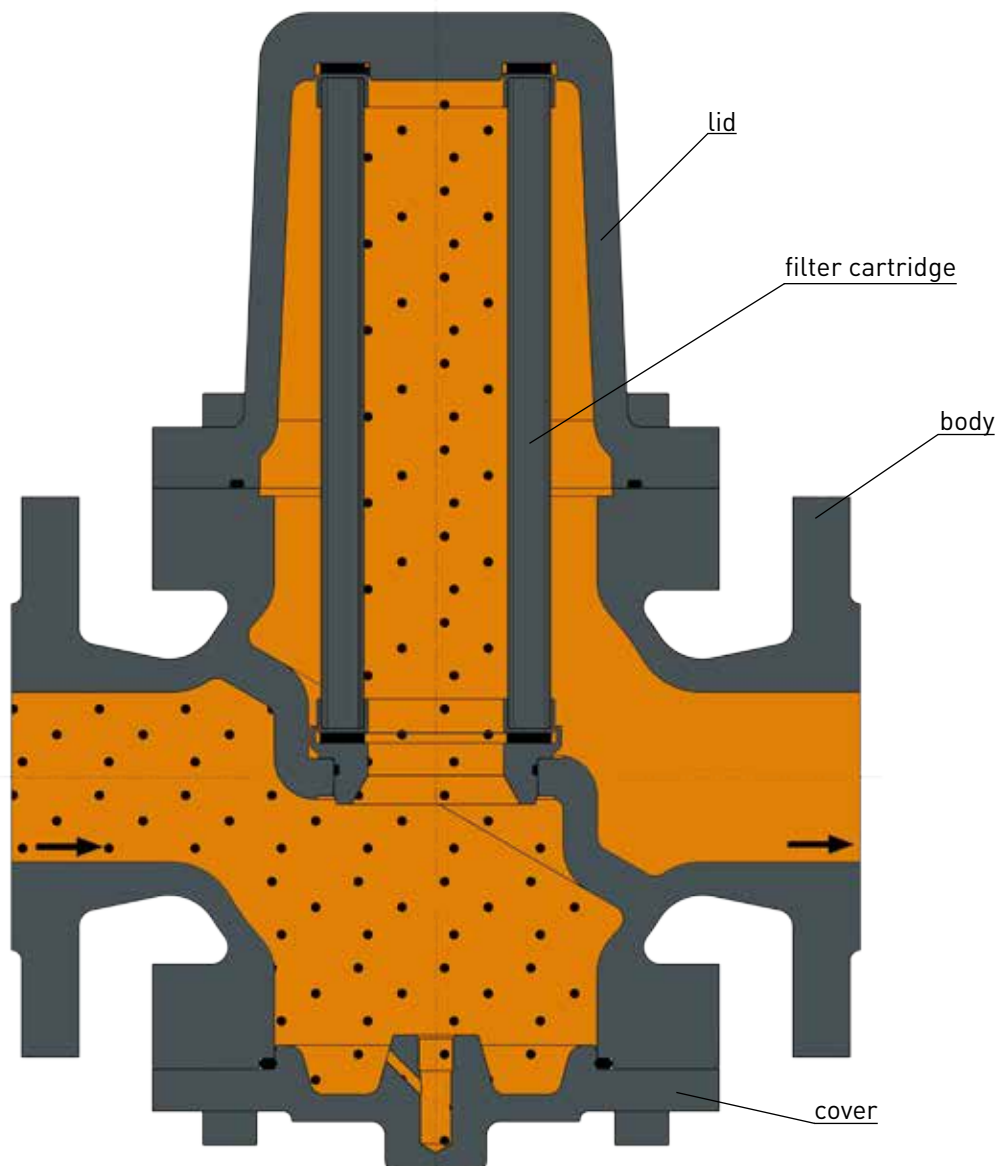
A filter mainly consists of a body, a lid and a filter cartridge. The filter cartridge can be easily accessed for maintenance or replacement by removing the lid. The filter cartridge comprises a filter basket and a filter element.

A filter cartridge with an appropriate pore size according to the application and the particle size to be filtered should be used. The filter cartridge is sealed by two sealing rings which are mostly integrated within the filter cartridge.

The cover on the underside of the filter allows a comfortable distance incurred residues (dismounting 40mm).

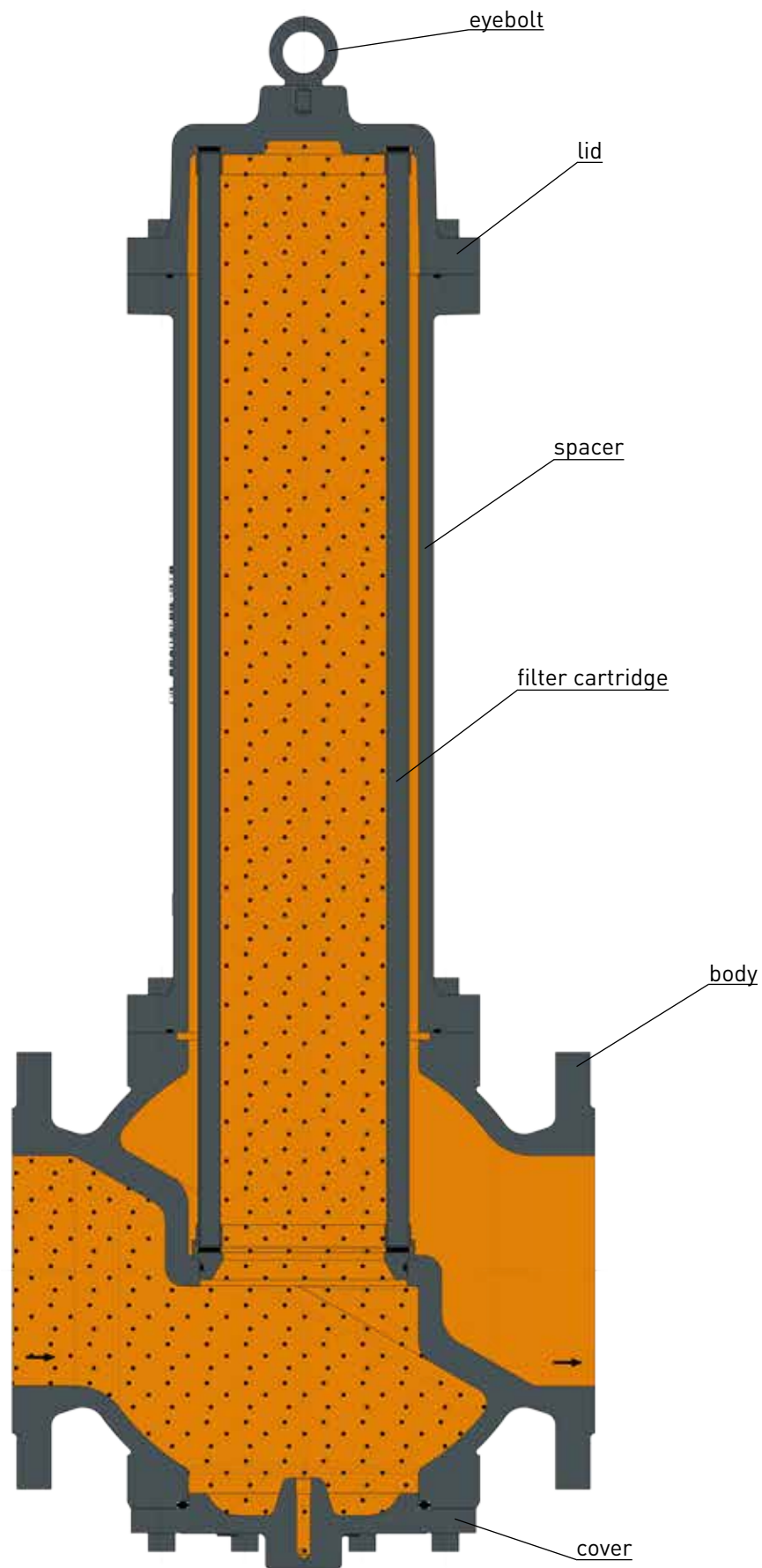
The nominal widths DN 150 and DN 200 are equipped with an eyebolt M10 for installation.

DN 25 / 50 / 80 / 100



shown DN 50

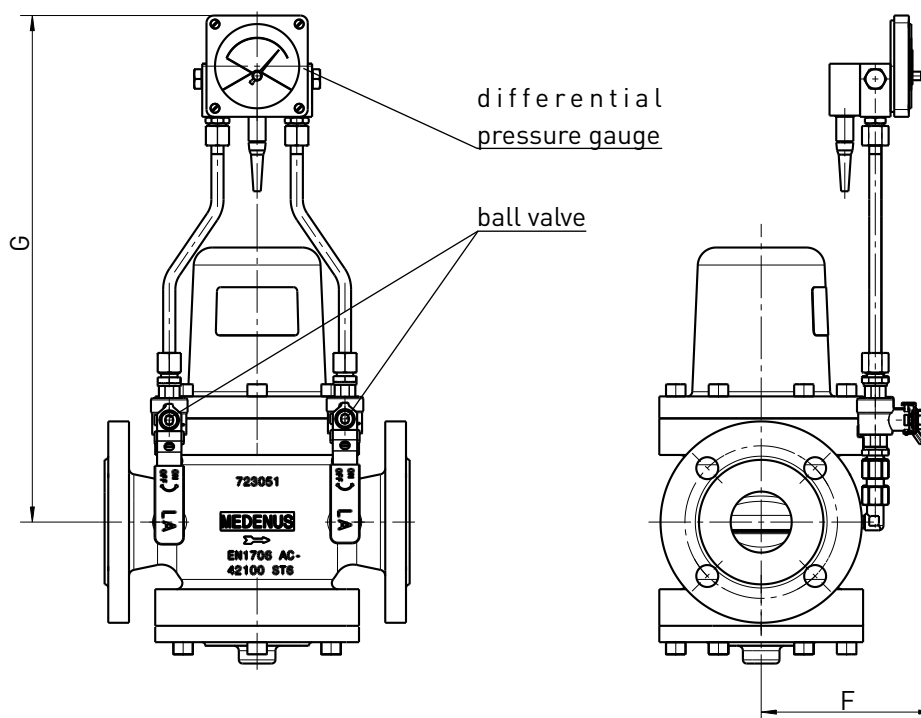
DN 150 / 200
(with spacer and eyebolt)



shown DN 50

Schematic view of the differential pressure measurement device

DN 25 / 50 / 80 / 100 / 150 / 200



shown DN 50 PN 16 with differential pressure measuring device and reed contact
(Ball valve in operating position)

Filters of all nominal sizes can be equipped with a differential pressure measuring device to check the degree of contamination of the filter element.

The version for electric remote transmission is supplied with a differential pressure gauge with reed contact.

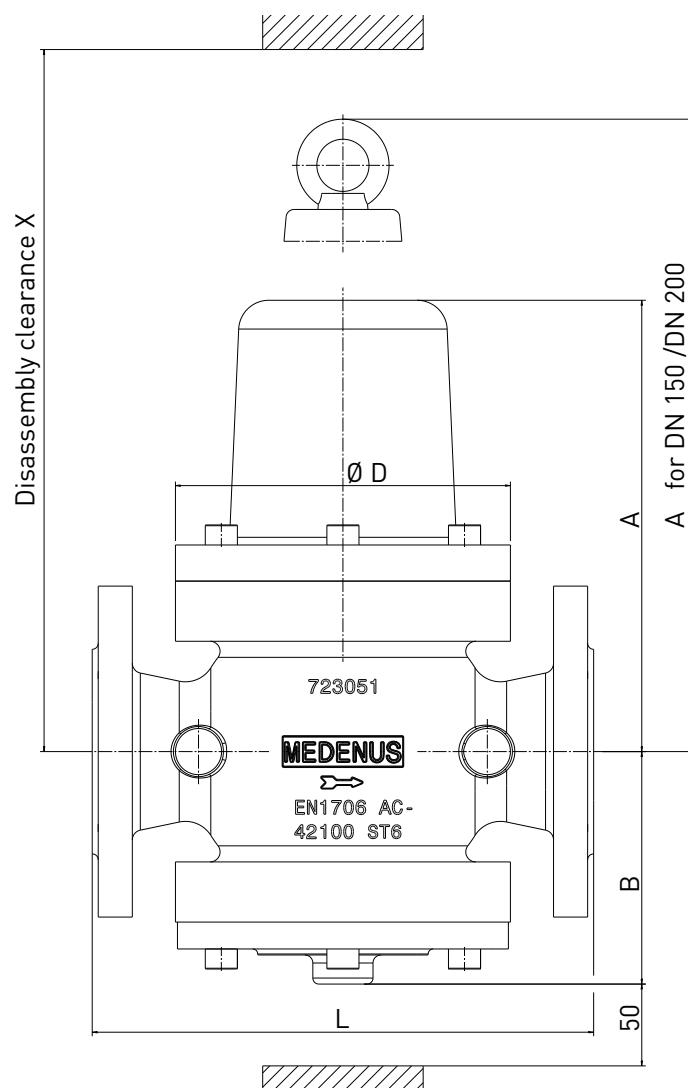
The differential pressure measuring device can be mounted depending on the ordered flow direction of the filter.

If desired, the connecting lines are each equipped with a ball valve.

Dimensions of differential pressure measuring device (mm)

| Nominal sizes | G | F |
|---------------|-----|-----|
| DN 025 | 355 | 146 |
| DN 050 | 415 | 141 |
| DN 080 | 432 | 153 |
| DN 100 | 452 | 171 |
| DN 150 | | 193 |
| DN 200 | | 234 |

Dimensions, connection and weight



| Dimensions | Nominal sizes | DN 25 | DN 50 | DN 80 | DN 100 | DN 150 | DN 200 |
|--------------------------------------|---------------|-------|-------|-------|--------|--------|--------|
| | A [mm] | | 117 | 225 | 317 | 404 | 817 |
| B [mm] | | 101 | 116 | 138 | 188 | 195 | 225 |
| D [mm] | | 85 | 167 | 167 | 200 | 230 | 280 |
| L [mm] | | 160 | 250 | 280 | 350 | 380 | 420 |
| X [mm] | | 192 | 350 | 512 | 546 | 905* | 1040* |
| Weights [kg] | | 3,0 | 9,0 | 12,0 | 23,0 | 41,0 | 62,0 |
| Capacity of the pressure chamber (l) | | 0,6 | 2,7 | 4,8 | 12,6 | 25,4 | 46,6 |

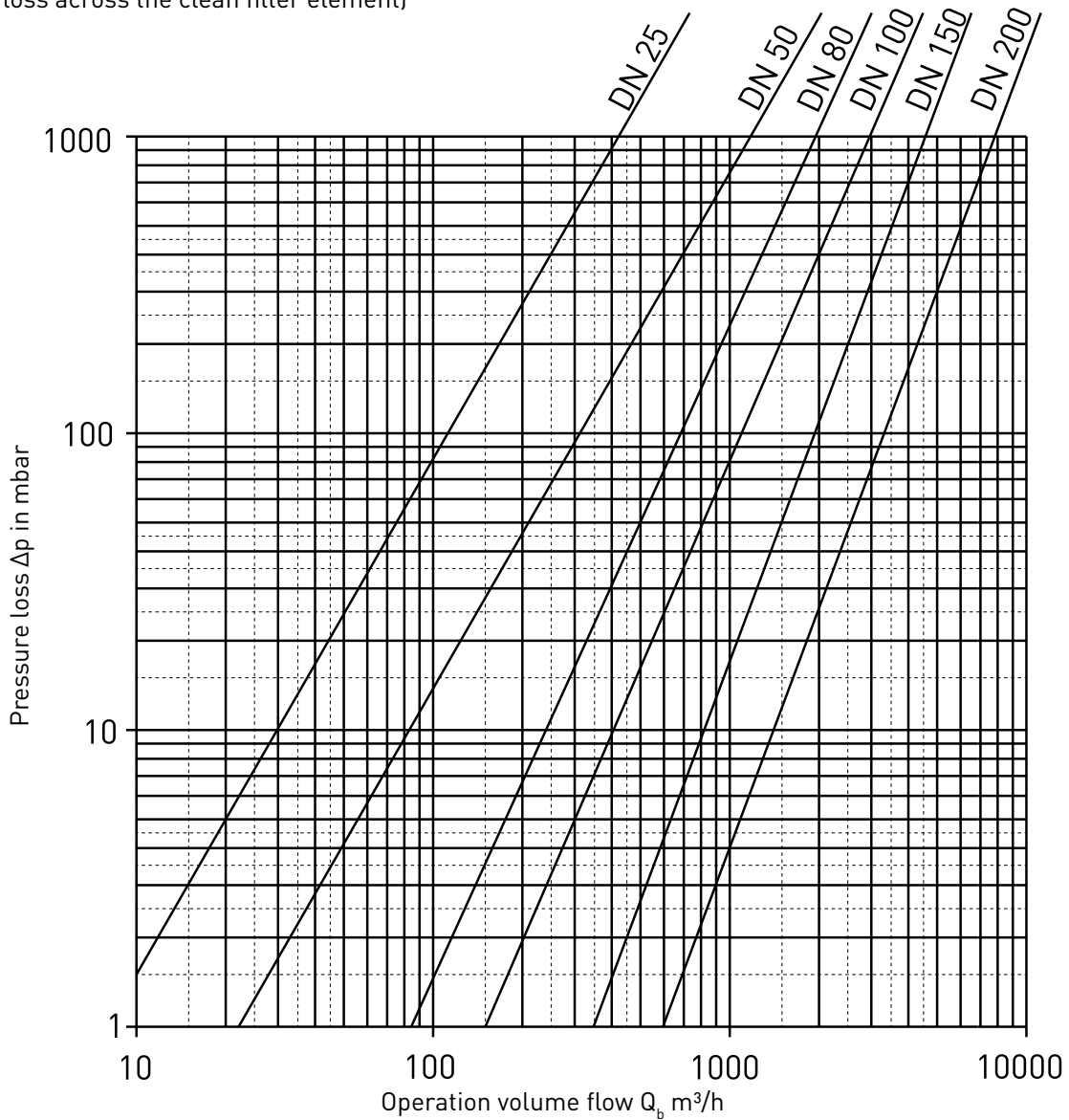
- Connection for differential pressure measuring device G 1/4"
- Eyebolt for DN 150 /DN 200 M10
- Connection type (standart): each side DIN - flanges PN 16

*) we recommend: DN 150 - 1260 mm / DN 200 - 1475 mm

Performance data

Performance diagram

(Pressure loss across the clean filter element)



Recommended maximum Operation volume flow rate Q_b

| | | | | | |
|----------|----------|-----------|-----------|-----------|-----------|
| DN 025 | DN 050 | DN 080 | DN 100 | DN 150 | DN 200 |
| 100 m³/h | 400 m³/h | 1000 m³/h | 1700 m³/h | 3800 m³/h | 6800 m³/h |

Example: at $Q_b = 100 \text{ m}^3/\text{h}$ and DN 25: $\Delta p_{\text{Diagramm}} = 80 \text{ mbar}$

Operation volume flow m^3/h und Standard volume flow m^3/h :

$$Q_b = \frac{1,01325 \cdot Q_n \cdot (t + 273,15)}{273,15 \cdot (p_{\bar{u}} + p_{\text{amb}})}$$

$$Q_n = \frac{273,15 \cdot Q_b \cdot (p_{\bar{u}} + p_{\text{amb}})}{1,01325 \cdot (t + 273,15)}$$

| | | | | | | | | | |
|------------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| above sea level (m) | 0 | 200 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 | 11000 |
| P_{amb} (bar) | 1,01315 | 0,989 | 0,955 | 0,899 | 0,795 | 0,616 | 0,472 | 0,356 | 0,226 |

Notice

These values are valid for natural gas $\rho_{n \text{ Gas}} = 0,83 \text{ kg/m}^3$ and $t = 15 \text{ }^\circ\text{C}$.

If other types of gas are used, the pressure loss is to be calculated as follows $\Delta p = \rho_{n \text{ Gas}} / 0,83 \cdot \Delta p_{\text{Diagramm}}$

Ordering data

Example:

Cellular Gas Filters: DF100/050/links/D/R/T/WAZ/So

| Order selection | Designation | DF100 | 050 | - | links | D/R | T | WAZ | So |
|--|-------------|-------|-----|---|-------|-----|---|-----|----|
| Type | | | | | | | | | |
| DF100 | DF100 | DF100 | | | | | | | |
| DN - Nominal size | Table S.11 | | 050 | | | | | | |
| Flange design | | | | | | | | | |
| PN 16 | - | | | - | | | | | |
| Class 150 | C | | | | | | | | |
| Flow direction | | | | | | | | | |
| right (from left to right) | - | | | | | | | | |
| left (from right to left) | links | | | | links | | | | |
| Differential pressure measuring device* | | | | | | | | | |
| without differential pressure measurement device | - | | | | | | | | |
| with differential pressure measurement device without reed contact | D/- | | | | | | | | |
| with differential pressure measurement device with reed contact | D/R | | | | | D/R | | | |
| Temperature range | | | | | | | | | |
| -20°C bis +60°C | S | | | | | | | | |
| -40°C bis +70°C | T | | | | | | T | | |
| Acceptance test certificate to EN 10204/3.1 | | | | | | | | | |
| without acceptance test certificate | - | | | | | | | | |
| with acceptance test certificate | WAZ | | | | | | | WAZ | |
| Special Version | So** | | | | | | | | So |

In each selection group, only one option can be selected in each case.

DN - Nominal size

| Type | 025 | 050 | 080 | 100 | 150 | 200 |
|-------|-----|-----|-----|-----|-----|-----|
| DF100 | X | X | X | X | X | X |

*) differential pressure measuring device will be supplied loose

**) Example:

- lacquered
- individual approval
- differential pressure gauge mounted

Contact

If you want to know more about solutions from MEDENUS for the gas industry, please contact your local contact person or go to our internet site at www.medenus.de

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