

MEDENUS

Gas Pressure Regulation



Cellular Gas Filters DF 100



Product Information

EN

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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.

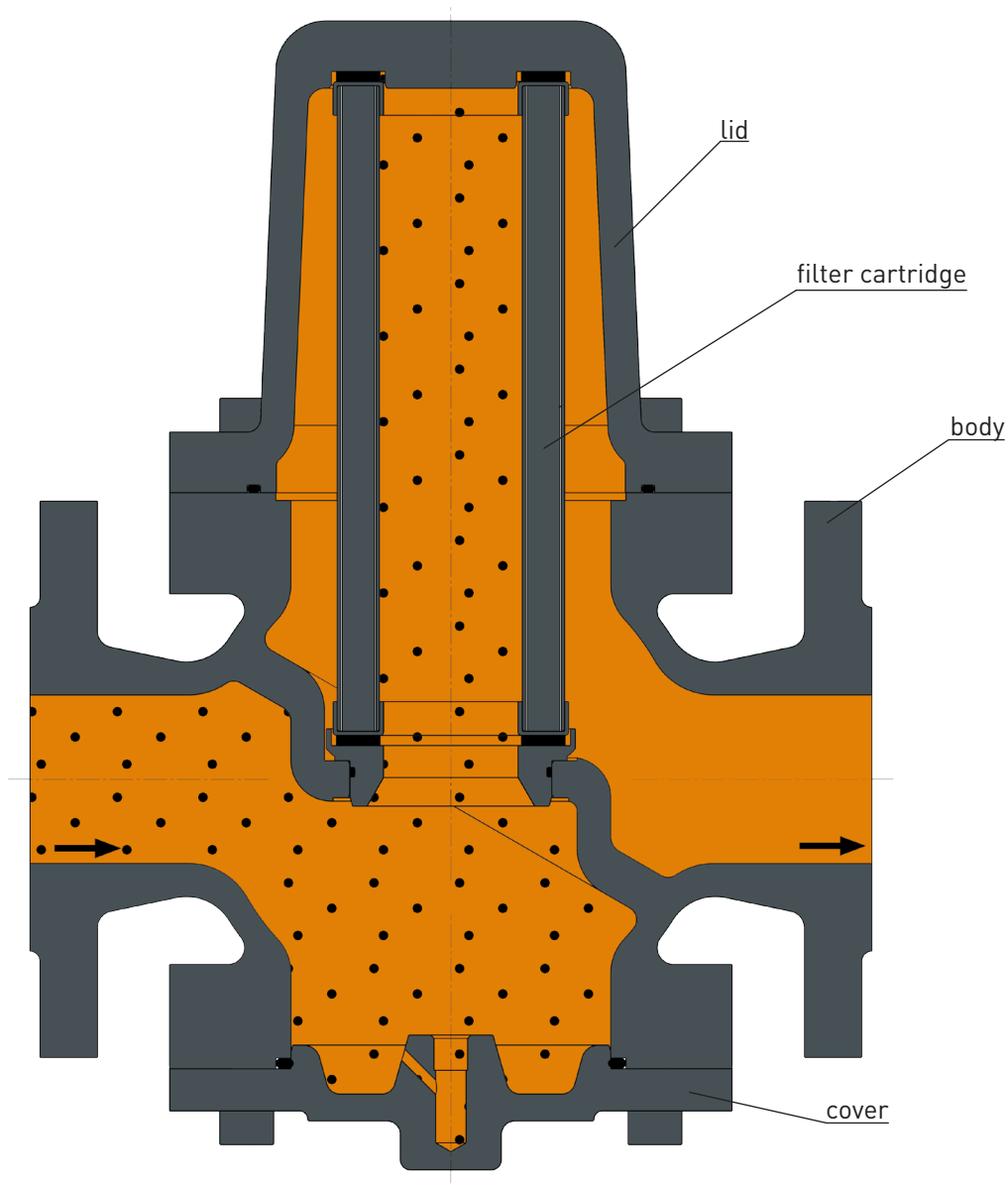
A filter mainly consists of a body, a lid and a filter cartridge. The filter cartridge can be easily accessed for maintenance or replacement by removing the lid. The filter cartridge comprises a filter basket and a filter element.

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.

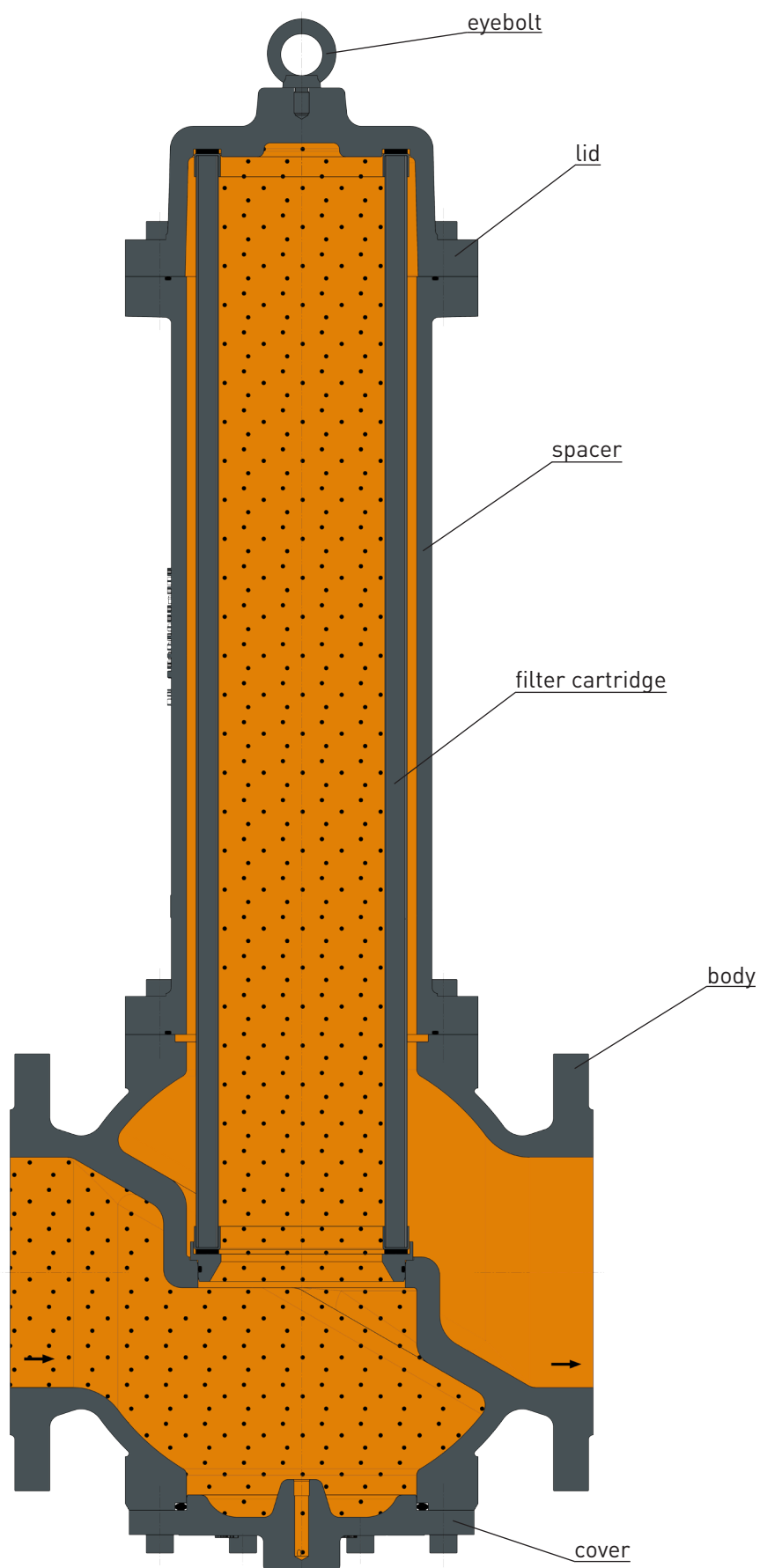
DN 25 / 50 / 80 / 100



shown DN 50

DN 150 / 200

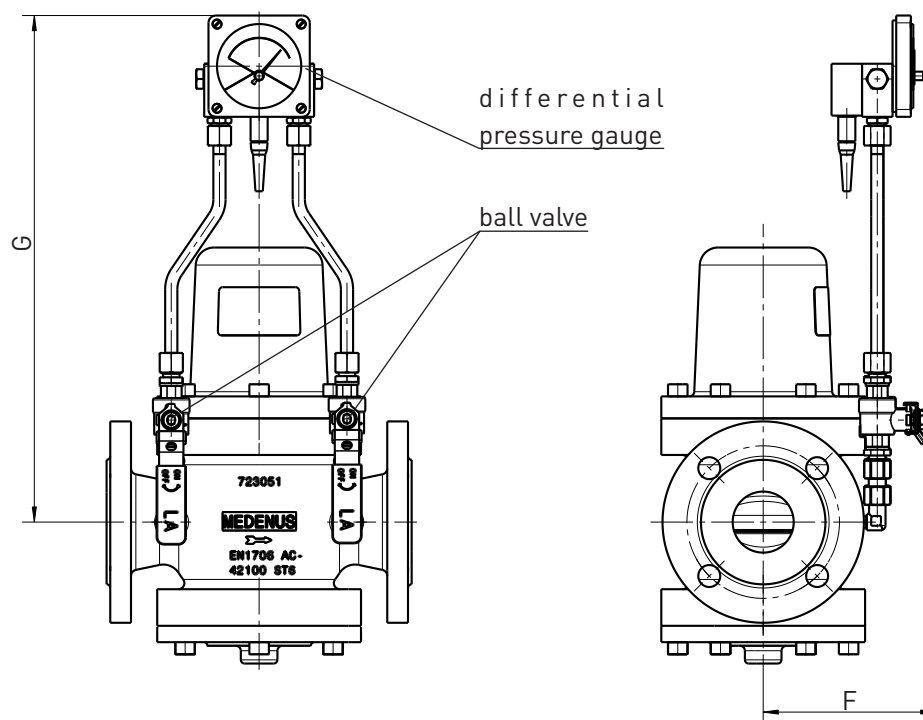
(with spacer and eyebolt)



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.

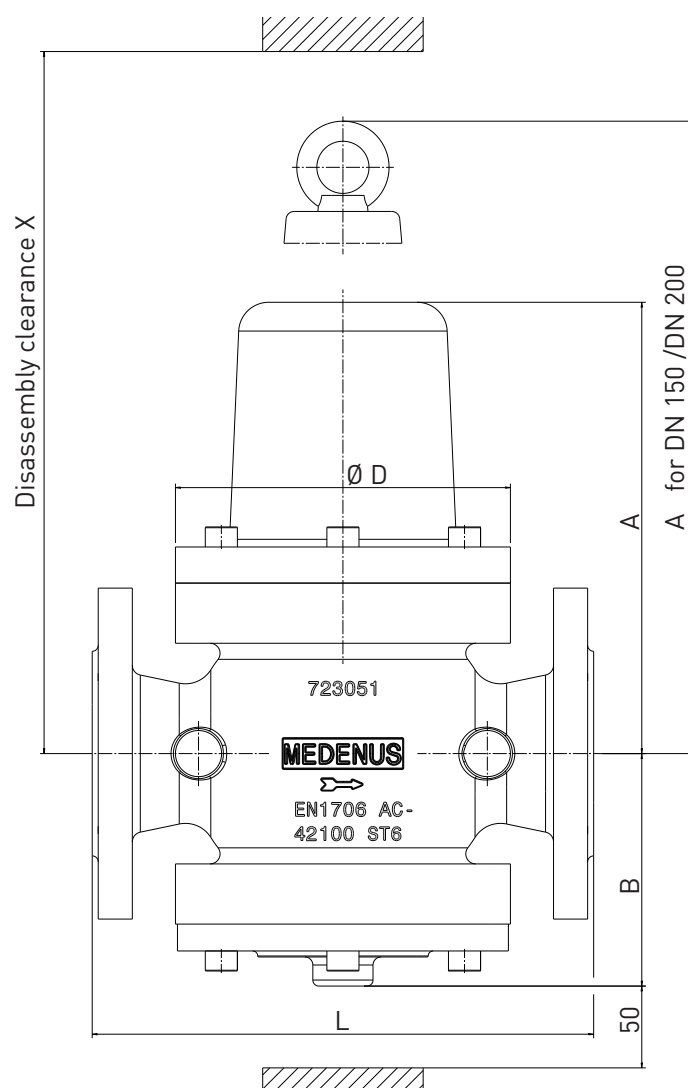
The differential pressure measuring device can be mounted depending on the ordered flow direction of the filter.

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



Nominal sizes	DN 25	DN 50	DN 80	DN 100	DN 150	DN 200
Dimensions						
A [mm]	117	225	317	404	817	954
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

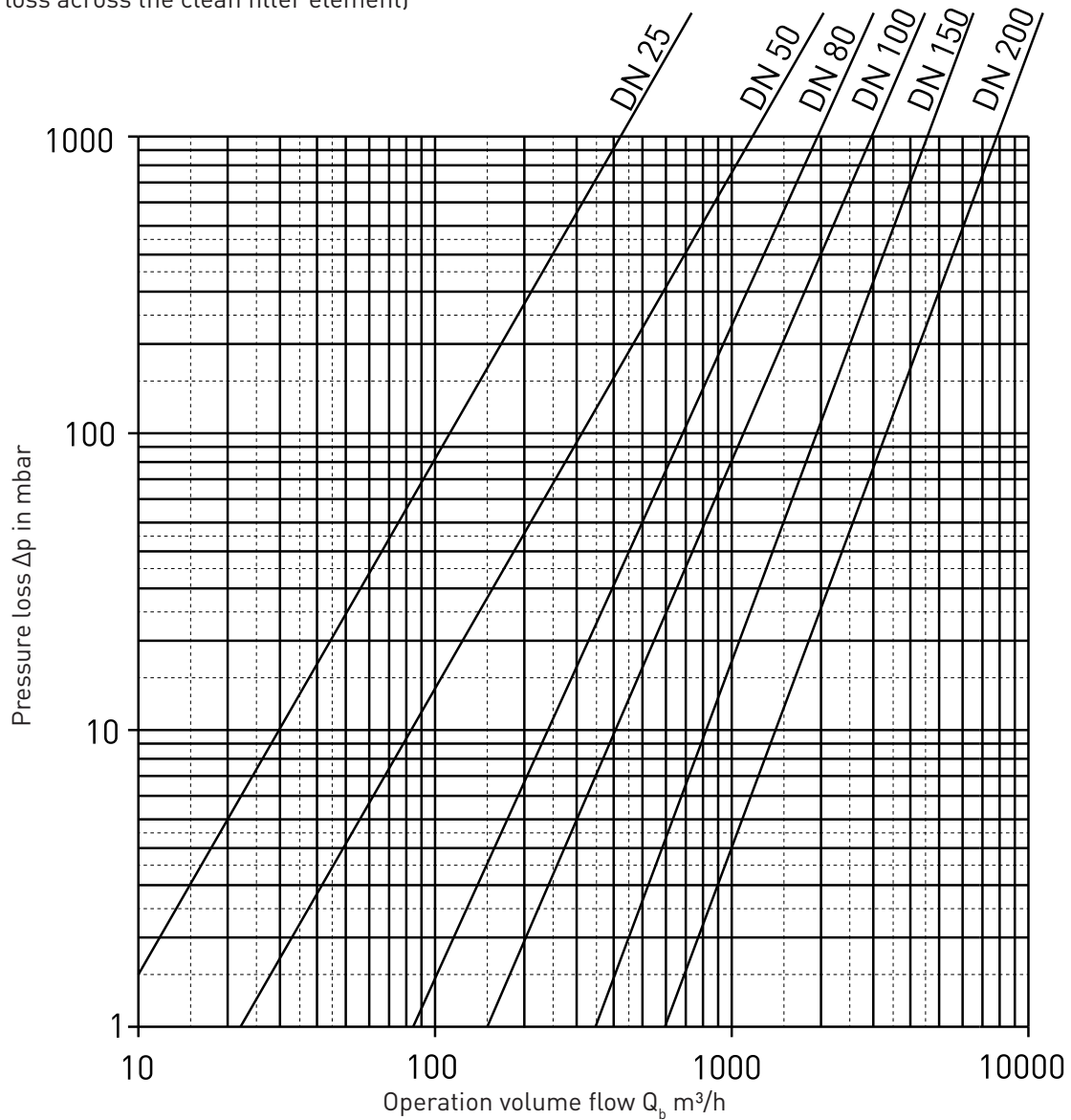
- Connection for differential pressure measuring device G 1/4"
- Eyebolt for DN 150 /DN 200 M10
- Connection type (standart): each side DIN - flanges PN 16

*) 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 $\rho_{\text{n Gas}} = 0,83 \text{ kg/m}^3$ and $t = 15 \text{ }^\circ\text{C}$.

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

Ordering data

Ordering example: DF100/ 050/ 016/ RL/ D/ R/ T/ Z/ S0

Ordering Key:		/		/		/		/		/		/		/	
Type															
DF 100	DF 100														
Nominal size															
DN 25		025													
DN 50		050													
DN 80		080													
DN 100		100													
DN 150		150													
DN 200		200													
Flange design															
PN 16			016												
Class 150RF			150												
Flow direction															
direction left - right				LR											
direction right - left				RL											
Differential pressure measurement device															
without differential pressure measurement device					-										
with differential pressure measurement device*					D										
Differential pressure gauge															
differential pressure gauge without reed contact						O									
differential pressure gauge with reed contact						R									
Temperature range															
-20°C to +60°C							S								
-40°C to +70°C							T								
Inspection certificate according to EN 10204/3.1															
without inspection certificate												O			
with inspection certificate												Z			
Special version**															
special version															S0

*) differential pressure measuring device will be supplied loose

**) Example:

- lacquered
- individual approval
- differential pressure gauge mounted

Contact

If you want to learn more about solutions from MEDENUS for the gas industry,
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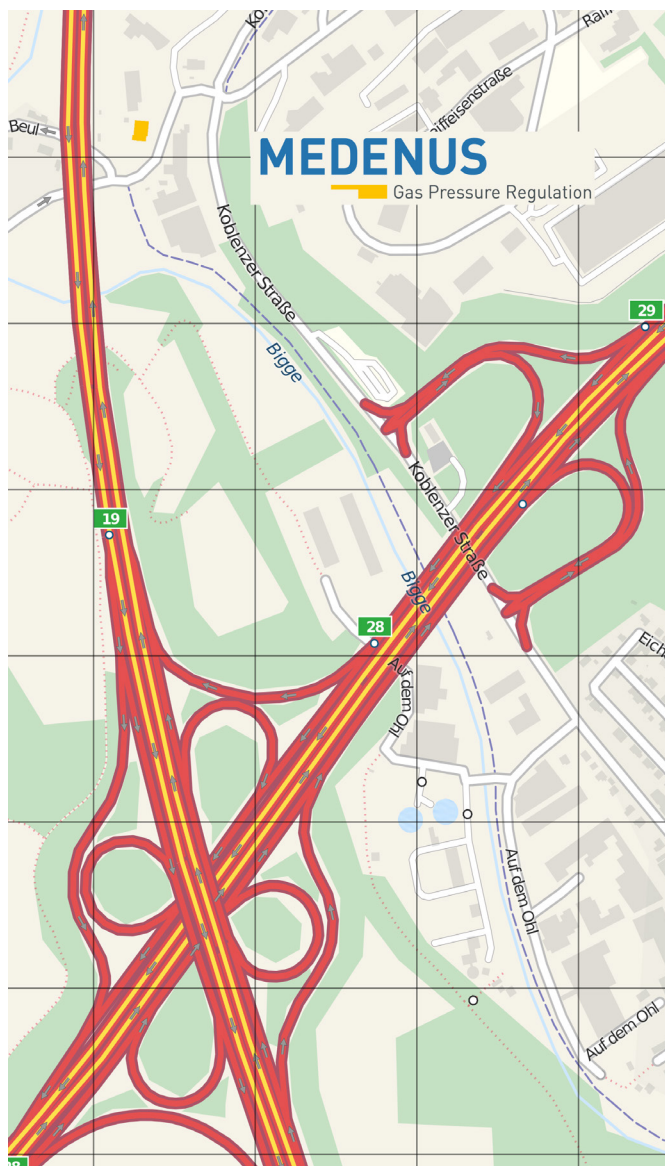
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Directions



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