HON 219 Pressure Reducer (D119a)

PRODUCT INFORMATION

Serving the Gas Industry Worldwide

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Applications

- For industrial and process application
- Suitable for gases in accordance with DVGW Worksheet G 260 and neutral, non-aggressive gases; other gases on request

Characteristics

- Single-stage pressure reducer
- Bubble-tight sealing at zero flow
- Integrated overpressure protection with built-in SRV for leak gas quantities for device-internal safeguarding
- Easy operation and monitoring

Technical data

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Max. admissible pressure	PS = 50 bar PSD = 8 bar (measuring unit 'G') PSD = 16 bar (measuring unit 'V')	
Max. inlet pressure	p_{umax} = 50 bar	
Outlet pressure range **Optional, depending on measuring unit**	W_d = 8 mbar to 8 bar	
Valve seat diameter and valve flow rate coefficient K_G)*	Valve seat ø (mm)	K_G value in (m³/h)/bar
	2 3.7 5.5 8	4.5 15 35 65
Type of connection	Input: • G3/4 (bis p_{umax} 50 bar) • Pipe connections accor. to DIN EN ISO 8434-1 (DIN 2353) for pipe outside diameters 10 mm, 12 mm and 16 mm Outlet: • G3/4	
Material	Body parts: AL alloy Internal parts: St, Ms, Al, Niro Diaphragm: Perbunan	
SEP design in accordance with PED	Honeywell SEP nach PED Art. 3, Abs. 3	
Ambient and operating temperatures	–15 °C to +60 °C	
Explosion protection	All mechanical components of this device are without potential ignition sources and/or hot faces. They are not subject to ATEX 95 (94/9/EC). All electronic accessories, on the other hand, meet ATEX requirements.	

)* valve flow rate coefficient for natural gas: d = 0.64 (ρ_n = 0.83 kg/m³), t_u = 15 °C

Suitable measuring units and pressure valves for HON 219 (D119a)

Measuring unit designation and measuring unit Ø in mm	Measuring unit spring No.	Measuring unit spring Wire Ø in mm	Specific set range W_{ds}	Valve seat Ø in mm
G 187	F1 F2 F3 F4 F5 F6 F7 F8	2.5 3 4 4.5 6 6.5 8 9	8 to 12 mbar 10 to 40 mbar 30 to 100 mbar 30 to 250 mbar 50 to 500 mbar 0.1 to 1 bar 0.2 to 1.8 bar 0.3 to 2 bar	2 3.7 5.5 8
V 112	F4 F5 F6 F7 F8	4.5 6 6.5 8 9	0.1 to 1 bar 0.2 to 2 bar 0.4 to 4 bar 0.7 to 7 bar 0.8 to 8 bar	

Load dependences in bar for 100 % valve stroke

Load dependence Δp table in bar / stroke max					
Measuring unit	**Spring**	**with valve seat Ø**			
		2 mm	3.7 mm	5.5 mm	8 mm
G 187	F1	0.0006	0.0011	0.0015	0.0021
	F2	0.0014	0.0024	0.0034	0.0048
	F3	0.0048	0.0081	0.0115	0.0163
	F4	0.0092	0.0156	0.022	0.031
	F5	0.021	0.035	0.05	0.0705
	F6	0.035	0.06	0.084	0.119
	F7	0.068	0.115	0.163	0.231
	F8	0.112	0.19	0.267	0.38
V 112	**F4**	0.036	0.062	0.087	0.12
	F5	0.088	0.11	0.16	0.23
	F6	0.13	0.22	0.31	0.44
	F7	0.23	0.4	0.56	0.79
	F8	0.38	0.64	0.9	1.27

The values apply for the fully open valve seat in bar.

The required maximum flow rate under operating conditions ($Q_{n\ max}$) the arises in relation to the maximum flow rate with a fully open valve set ($Q_{n\ Vs}$) the actual load dependence Δp_{ds} under the specified operating conditions.

$$Q_{n\ Vs} = K_G \cdot \frac{p_u}{2} \quad \text{if} \quad \frac{p_d}{p_u} \leq 0{,}5 \quad \text{or} \quad K_G \cdot \sqrt{p_d \cdot (p_u - p_d)} \quad \text{if} \quad \frac{p_d}{p_u} > 0{,}5$$

$$\Delta p_{ds} = \frac{Q_{n\ max}}{Q_{n\ Vs}} \cdot \Delta p_{Table}$$

If, for instance, $Q_{n\ max}$ = 50 % of $Q_{n\ Vs}$, the load dependence Δp_{ds} is also only 50 % the respective table value with maximum valve stroke ($\triangleq Q_{n\ Vs}$).

Devices with measuring unit V are used whenever the inlet pressure range b_{pu} and flow rate Q_n are relatively small. Devices with larger measuring units G must be used for larger input pressure ranges b_{pu}, larger flow rates Q_n and relative small setpoint values$w$. The purpose of the table on page 4 is to determine load dependences.

Correction values for adjusting the setpoint value

Correction factors for adjusting the setpoint value		
Setpoint change (mbar/1 bar input pressure p_u)		
Nozzle Ø in mm	Measuring units	
	V	G
2	0.5	0.1
3.7	1.5	0.4
5.5	3.5	0.8
8	7	1.8

Example:

- Lowest input pressure p_{umin} = 15 bar
- Highest input pressure p_{umax} = 30 bar
- Measuring unit G
- Regulating nozzle Ø 5.5 mm
- Setpoint for the output pressure p_{ds} = 30 mbar

Setpoint deviation due to inlet pressure changing from 15 to 30 bar.

Calculation of setpoint deviation:

Pressure difference Δp = 15 bar
Correction factor = 0.8
Setpoint deviation of 12 mbar (15 x 0.8 mbar) accor. to the table.
The setpoint must be adjusted to the medium inlet pressure!

That means the device works as follows:

at 15 bar inlet pressure: 30 – 6 = 24 mbar
at 22.5 bar inlet pressure = 30 mbar
at 30 bar inlet pressure: 30 + 6 = 36 mbar

Construction and mode of operation

The measuring unit consists of the measuring diaphragm of the setpoint spring and the screw for adjusting the setpoint value *w*.
Multiplying the outlet pressure p_d by the working surface of the diaphragm reveals the force acting against the force of the setpoint spring. Usually, the two forces will be in balance, thus keeping the working piston and preceding jet in the open position. However, if the outlet pressure should decrease under the setpoint value ab, the force of the setpoint spring will prevail, actuating the lever and thus the final control element. When the final control element opens, the gas finds a greater orifice to flow through. With the flow rate increased, the actual value will approach the setpoint value again until both the forces generated by the outlet pressure p_d and the setpoint spring are in balance again. (The regulating accuracy is thus determined by the surface of the measuring diaphragm, the diameter of the jet and the lever transmission.)

Multiplying the actual inlet pressure p_u by the working surface of the piston will reveal the force pushing the jet in the “open” direction.
The purpose of the lever system is to reduce the force acting on the piston in order to diminish the influence of the inlet pressure. An alternative would be to use bigger measuring units that would have the same effect.
A larger measuring unit would generate a bigger force acting on the lever system at the same outlet pressure p_d, thanks to the larger diaphragm surface. The effect would be that the influence of the inlet pressure is reduced.
It is therefore necessary to correct the setpoint value ***w*** for a given range of the inlet pressure increase.
The table “Correction values for adjusting setpoint values” contains the correction values (inlet pressure influences) for the various measuring units and regulating jets.

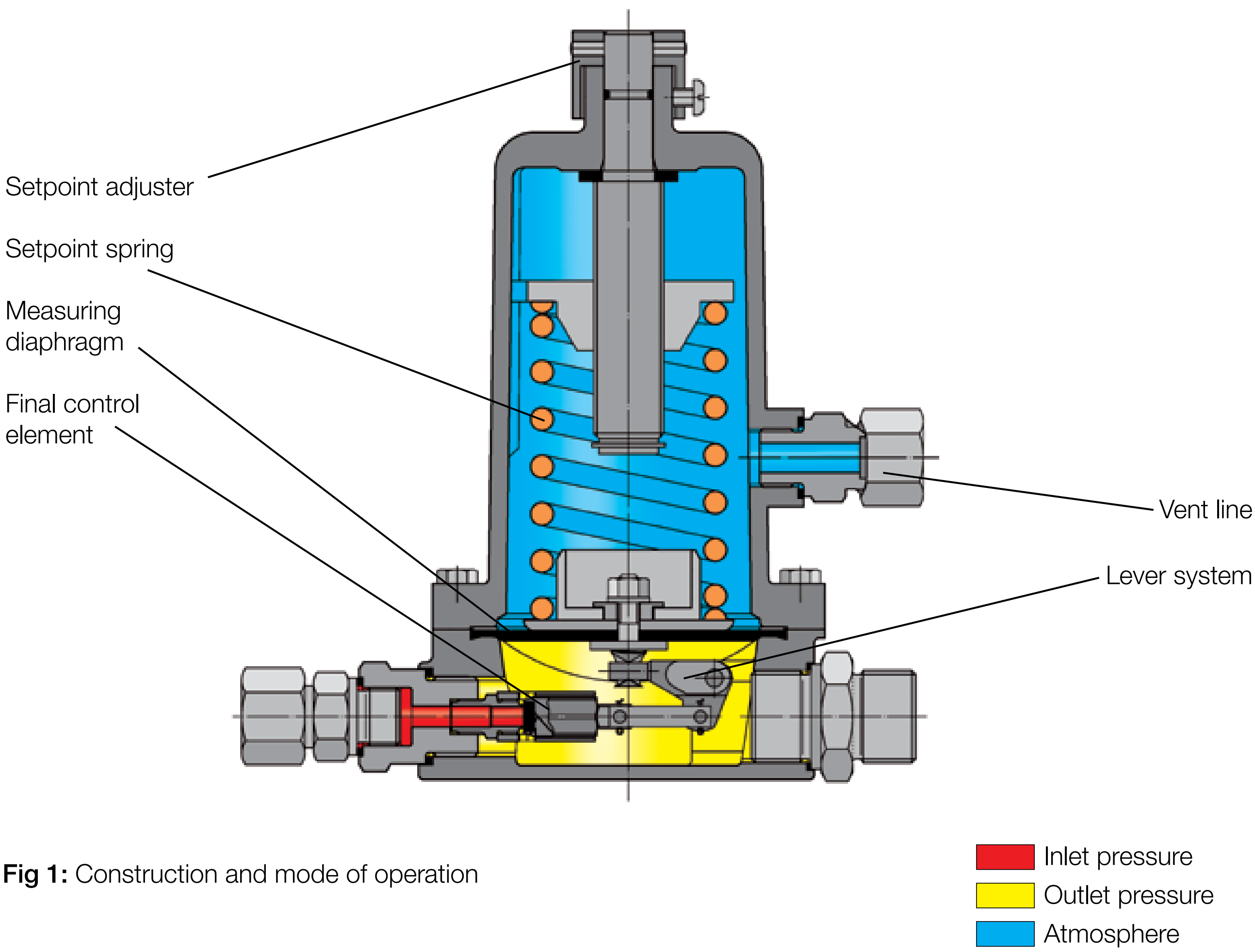

Fig 1: Construction and mode of operation

Dimensions

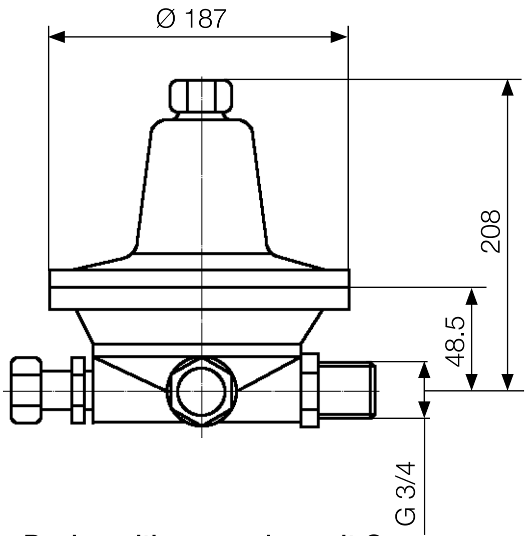

Fig 2: Mounting dimensions + situation

Note

Recommended installation position with horizontal centre axis of the pressure reducer.

Device designation (example)

HON 219 – G3/4 / G3/4 – 3.7 – G – F3

Device designation	
Type	HON 219
Inlet	G3/4
Outlet	G3/4
Valve seat Ø	3.7
Measuring unit	G
Spring	F3

For pressure reducer RMG 219 with inlet and outlet connections G3/4a; diameter of valve: 3.7 mm.
Measuring unit G with spring F3 for outlet pressure range W_d from 30 to 100 mbar.

For More Information

To learn more about Honeywell's Advanced Gas Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager

GERMANY

Honeywell Process Solutions

Honeywell Gas Technologies GmbH
Osterholzstrasse 45
34123 Kassel, Germany
Phone: +49 (0) 561 5007-0
Fax: +49 (0) 561 5007-107

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