

# **HORNUNG**

**Präzision made in Germany**

Our catalogue for  
**high purity gas control equipment**

# High purity gas control equipment

**1. Cylinder pressure regulators**

**2. Cylinder stations PN 200 / 300 bar**

**3. Line pressure regulators and instrumentation**

**4. Point of use regulators**

**5. Diaphragm dosage and shut-off valves**

**6. Point of use systems for cartridge pressure regulators**

**7. Accessories**

**8. Customers information**



# Cylinder pressure regulators

- brass nickel and matt chrome plated and stainless steel electropolished
- for pure gases up to 6.0 (99.9999 Vol.%) purity

- with purge gas system for corrosive gases and gas mixtures
- for mbar operating pressures and high pressure applications
- cylinder connections according all common standards
- single- and dual stage or with compensated mainvalve

## Content:

Cylinder pressure regulator HP 100	single stage, brass and stainless steel
Cylinder pressure regulator HP 101	dual stage, brass and stainless steel
Cylinder pressure regulator HP 102	single stage, with purge gas system
Cylinder pressure regulator HP 103	dual stage, with purge gas system
Cylinder pressure regulator HP 104	single stage, with balanced poppet
Cylinder pressure regulator HP 105	dual stage, aluminium or stainless
Cylinder pressure regulator HP 106	single stage, with flowmeter
Cylinder pressure regulator HP 107	dual stage, with flowmeter
Cylinder pressure regulator HP 108	single stage balanced regulator, with flowmeter
Cylinder pressure regulator HP 112	single stage, self-venting
Cylinder pressure regulator HP 120	single stage, brass and stainless steel
Cylinder pressure regulator HP 150	single stage, brass and stainless steel

## Special applications:

Cylinder pressure regulator HP-FR 1	dual stage, for mbar operating pressures
Cylinder pressure regulator VDS-FHR 3 / VDS-FHR 4	dual stage, for mbar operating pressures
Cylinder pressure regulator HD 250 FL	for operating pressures up to 250 bar
Cylinder pressure regulator HD 400 FL	for operating pressures up to 300 bar
Cylinder metering valve Rossignol	according to national standards DIN 477-1

# Cylinder pressure regulator HP 100

- single stage in brass, nickel and matt chrome plated or stainless steel electropolished



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The pressure regulator HP 100 is a single stage cylinder pressure regulator and has been developed especially for the gas supply from single cylinders.
Seat:	PCTFE	A special cleaning system for the HP series guarantees the use for ECD applications.	The pressure regulator is fitted as a standard with gas specific connections to DIN 477 or any other common national standard and a relief valve.
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 1-6; 1-12; 1-17 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	180 x 95 x 125 mm		
Weight:	1400 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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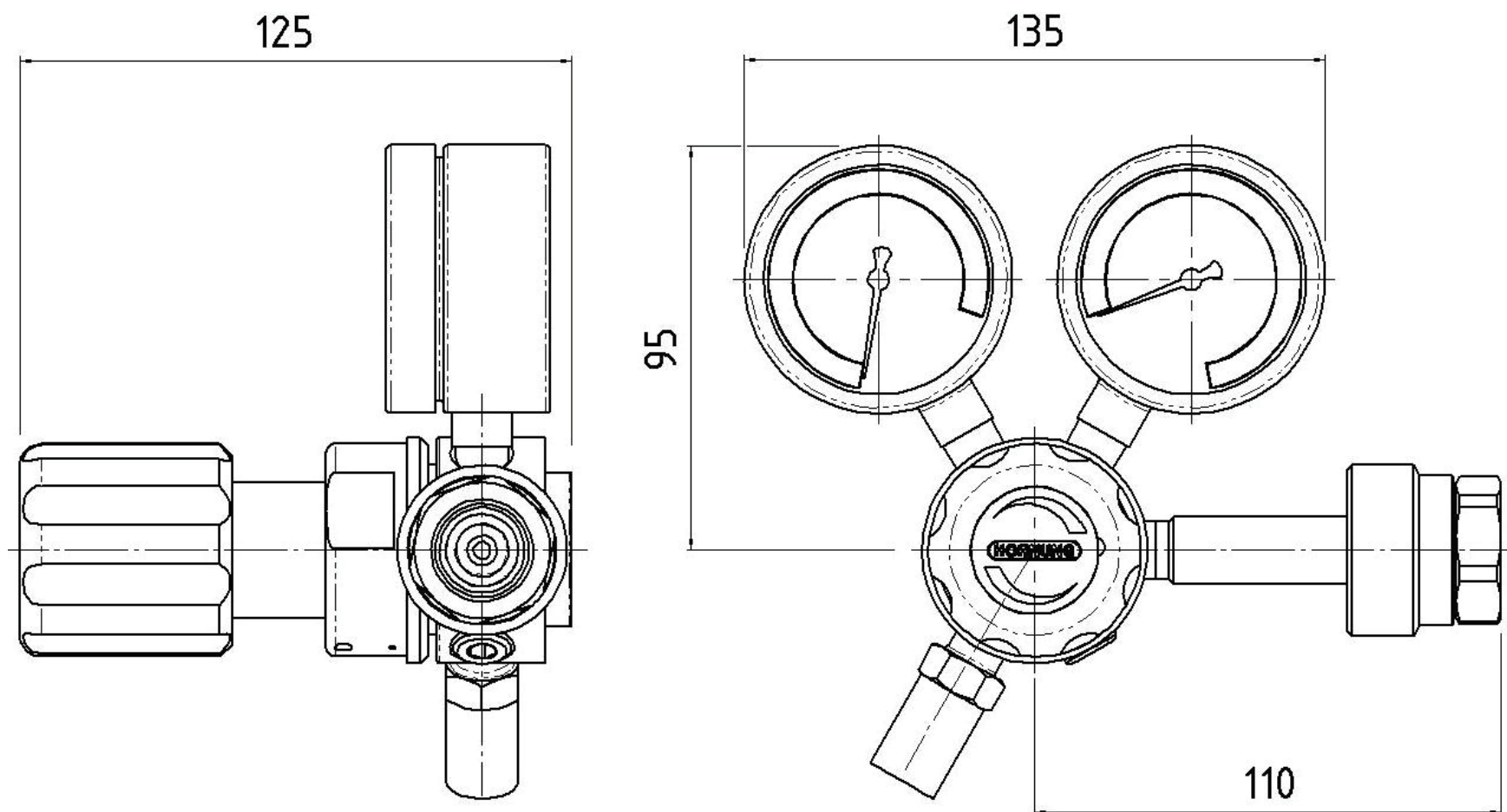
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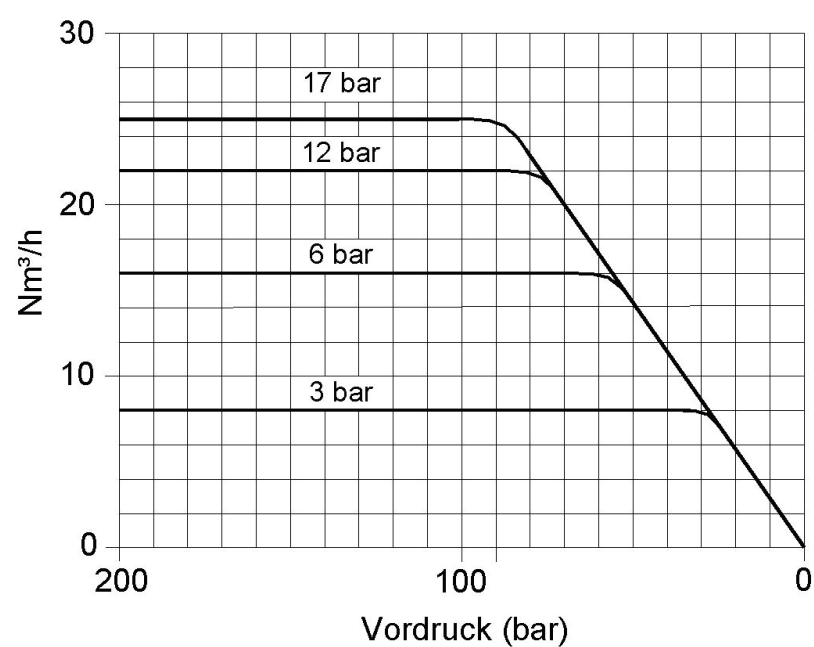
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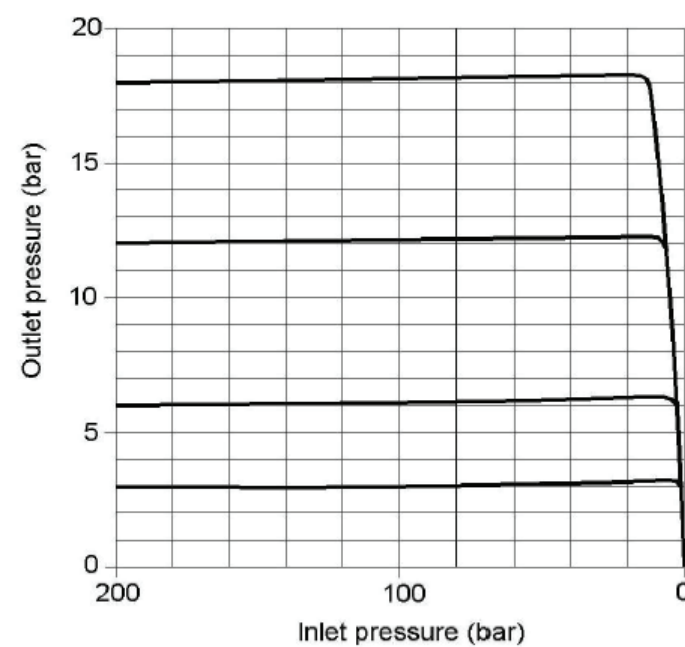
# HP 100



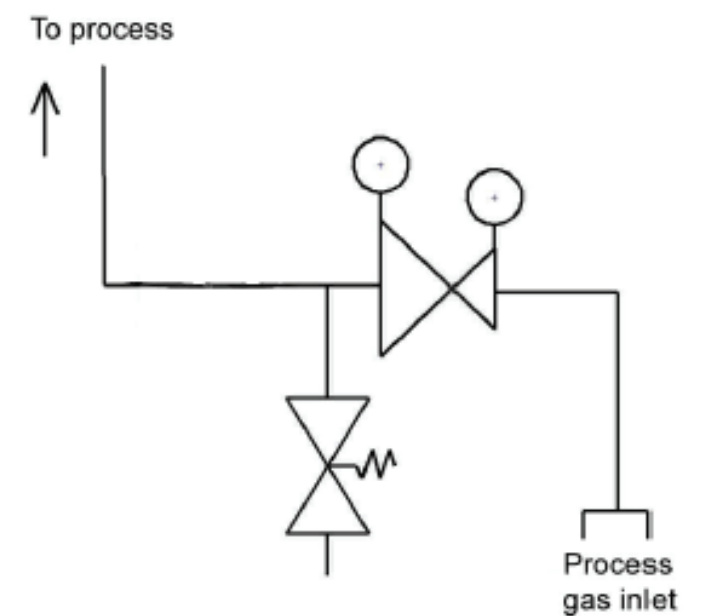
## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## FLOW DIAGRAM



## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure:**  
1 = 200 bar  
2 = 300 bar

**Pressure pressure ranges:**  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar

**Options for the outlet:**  
0 = 1/4" NPT - internal thread  
1 = compression fitting 6 mm  
2 = diaphragm shut-off valve  
3 = diaphragm metering valve  
4 = flowmeter

Regulator type	1-stage	66-	1	1	2	0	Gas type
without purging	66	Type	Material	Inlet	Outlet	Option	Gas type

**Accessories:** See total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Gauges, screws, compression fittings and other accessories



# Cylinder pressure regulator HP 101

- dual stage in brass, nickel and matt chrome plated or stainless steel electropolished



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The pressure regulator HP 101 is a two stage cylinder pressure regulator and has been developed especially for the gas supply of pure and mixed gases from single cylinders.
Seat:	PCTFE	For absolutely stable working pressures. Our special cleaning system for the HP series also guarantees the use for ECD applications.	Two stage regulators will be used when a stable outlet pressure is required (even if the inlet pressure drops, discharging of cylinder).
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		The HP 101 regulator is fitted as a standard with gas specific connections to DIN 477 or any other common national standard as well as a relief valve.
Max. pressure inlet:	300 bar		
Outlet pressure ranges:	0,1-1; 1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C up to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	136 x 150 x 205 mm		
Weight:	2100 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

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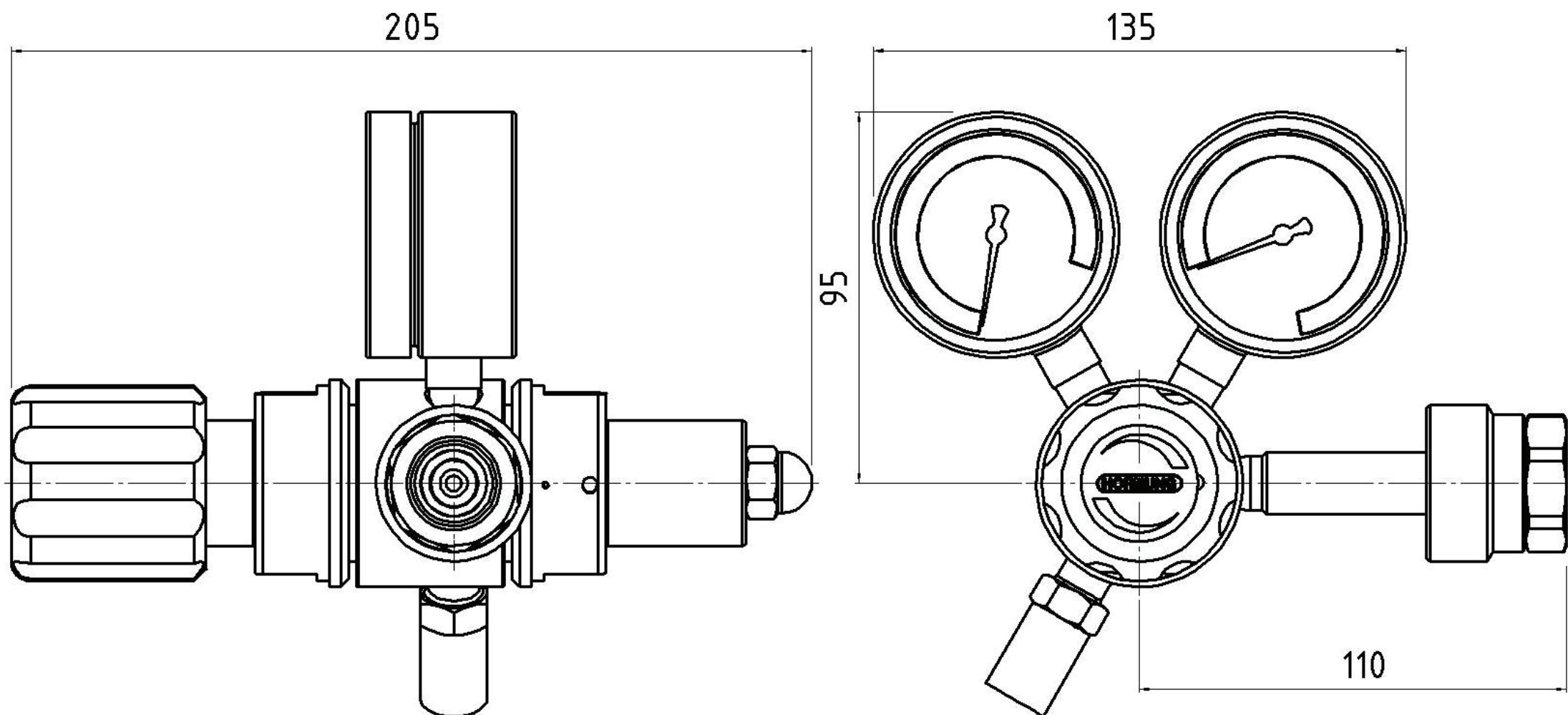
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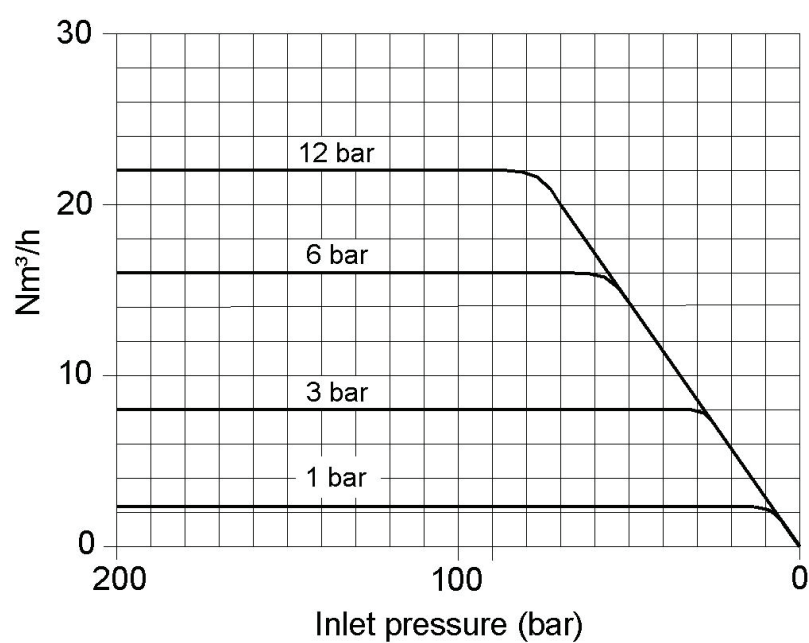
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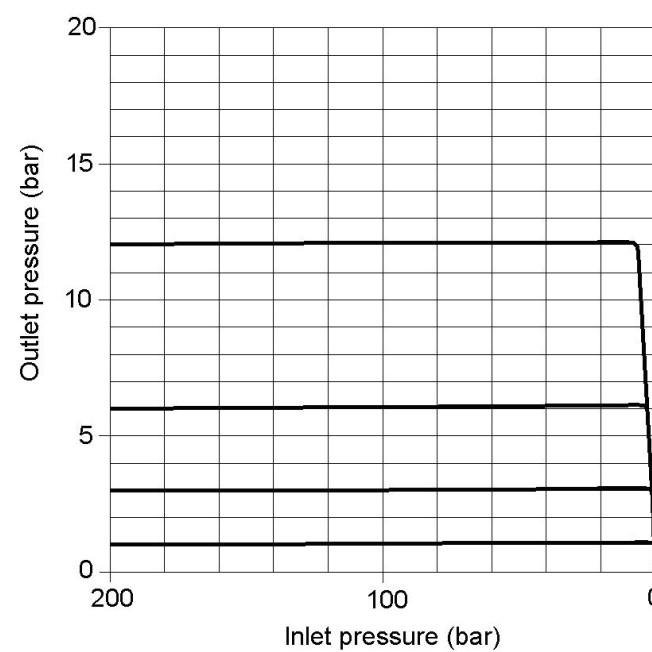
# HP 101



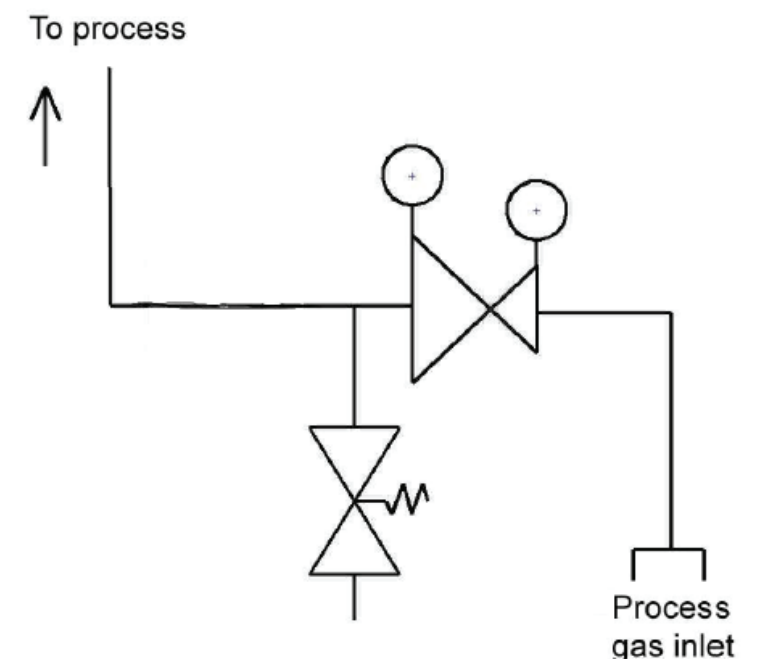
## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## FLOW DIAGRAM



## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure:**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure ranges:**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar

**Options for the outlet:**  
0 = 1/4" NPT - internal thread  
1 = compression fitting 6 mm  
2 = diaphragm shut-off valve  
3 = diaphragm metering valve  
4 = flowmeter

Regulator type  
without purging

2-stage  
67

67-  
Type

1  
Material

1  
Inlet

2  
Outlet

0  
Options

Gas type  
Gas type

**Accessories:** See total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Gauges, screws, compression fittings, cylinder retainers and accessories



# Cylinder pressure regulator HP 102

- single stage in stainless steel electropolished with purge system for corrosive gases



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished	For corrosive gases and gas mixtures with high requirements on safety, tightness and compatibility of material.	HP 102 is a single stage cylinder regulator with integrated inert gas purge system.  The regulator is equipped as a standard with gas specific cylinder connection according DIN 477 or other common national standards, relief valve and inert gas purge system on the high pressure side.
Seat:	PCTFE		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3, 1-6; 1-12; 1-17 bar		
Operating temp.:	-20°C up to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	205 x 95 x 205 mm		
Weight:	2200 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

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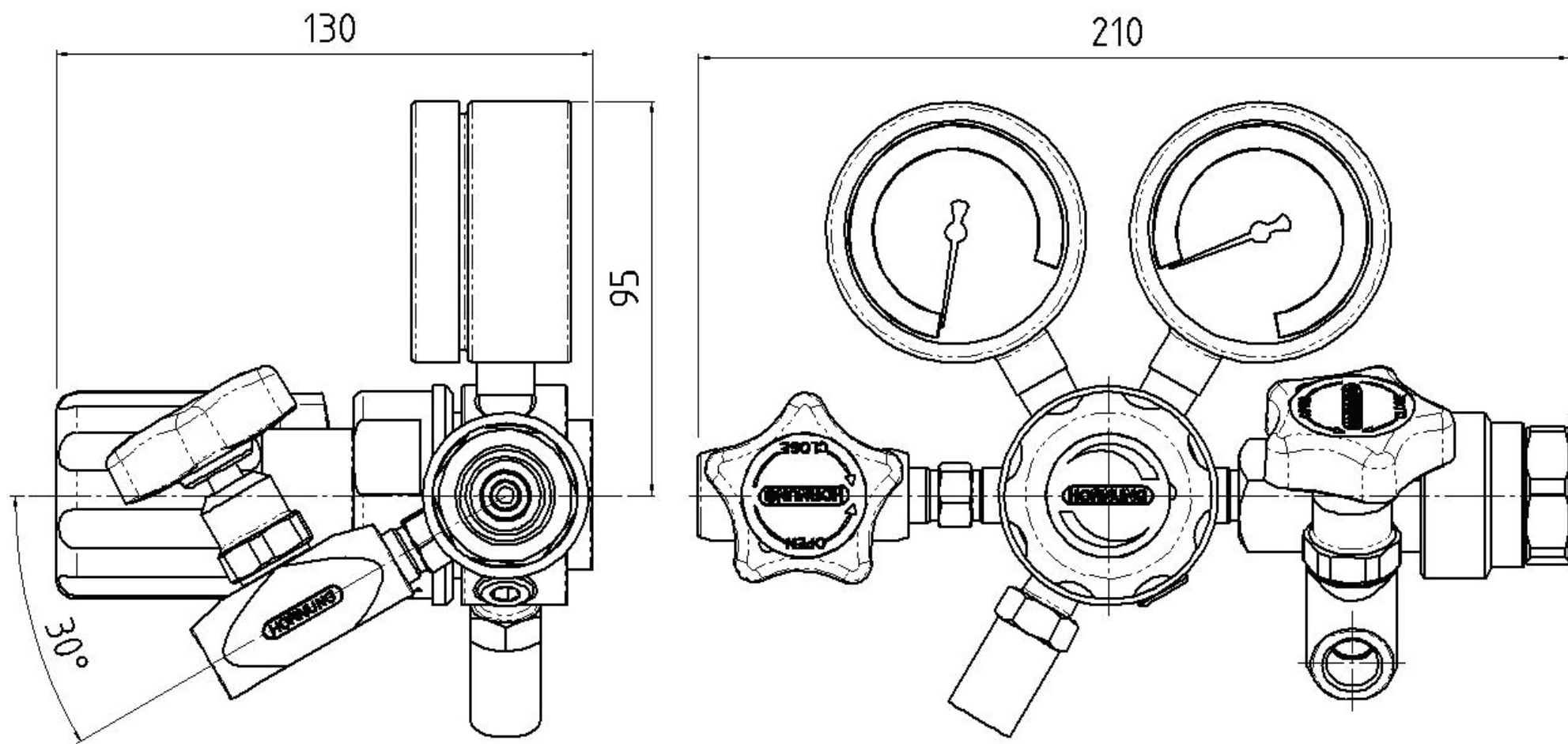
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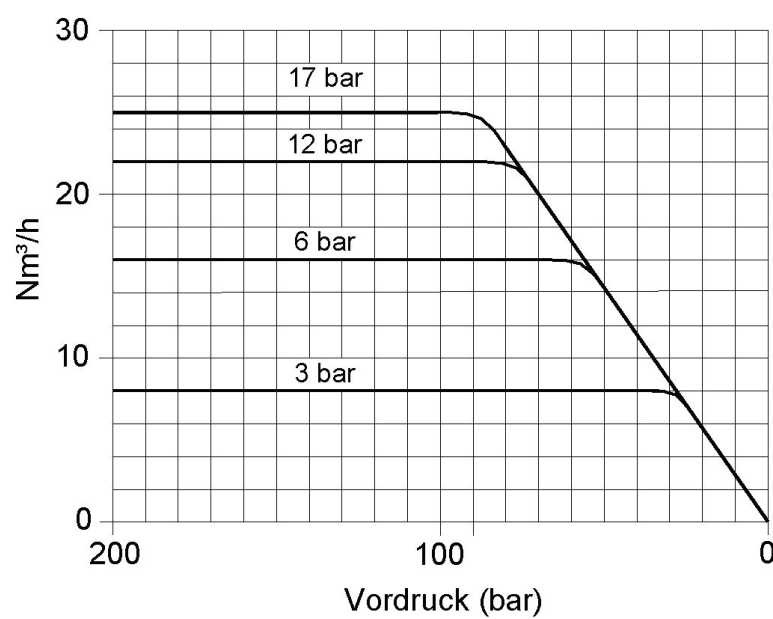
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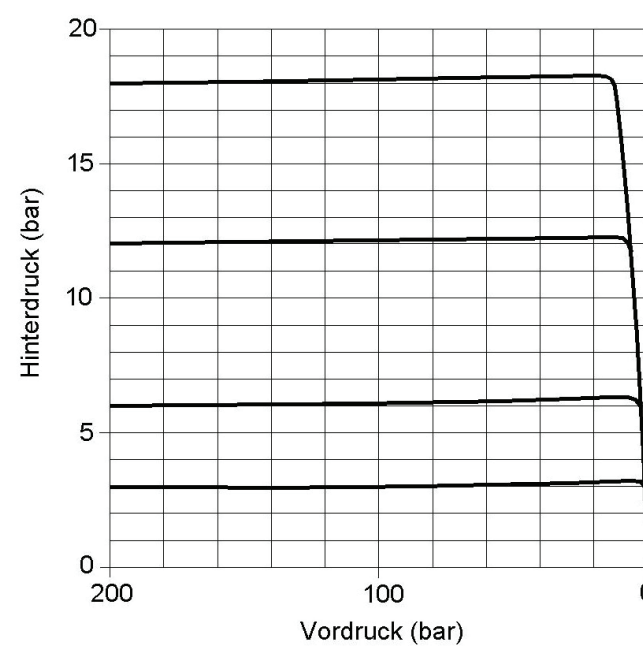
# HP 102



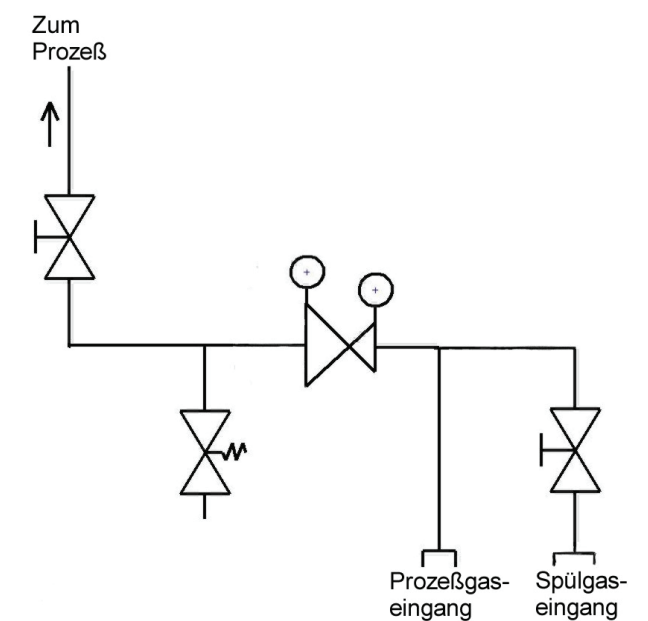
## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## FLOW DIAGRAM



## ORDER DETAILS

### Inlet pressure:

- 1 = 200 bar
- 2 = 300 bar

### Outlet pressure ranges:

- 2 = 0,1 - 3 bar
- 3 = 1 - 6 bar
- 4 = 1 - 12 bar
- 5 = 1 - 17 bar

### Options for the outlet:

- 0 = 1/4" NPT f
- 1 = compression fitting 6 mm
- 2 = diaphragm shut-off valve
- 3 = diaphragm metering valve

Regulator type 1-stage  
with purge system 68

68-	1	2	2	Gas types
Type	Inlet	Outlet	Options	Gas types

**Accessories:** See total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Gauges, screws, compression fittings, cylinder retainers and accessories



# Cylinder pressure regulator HP 103

- dual stage in stainless steel electropolished with purge system for corrosive gases



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished	For corrosive gases and gas mixtures with high requirements on safety, tightness and compatibility of material.	HP 103 is a dual stage cylinder regulator with integrated inert gas purge system.
Seat:	PCTFE		The regulator is equipped as a standard with gas specific cylinder connection according DIN 477 or other common national standards, relief valve and inert gas purge system on the high pressure side.
Membrane:	1.4435		Dual stage regulators will be preferred when the working pressure should be absolutely stable (even if the inlet pressure drops, discharging of cylinder) or when the working pressure is very low.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C up to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	210 x 160 x 215 mm		
Weight:	2900 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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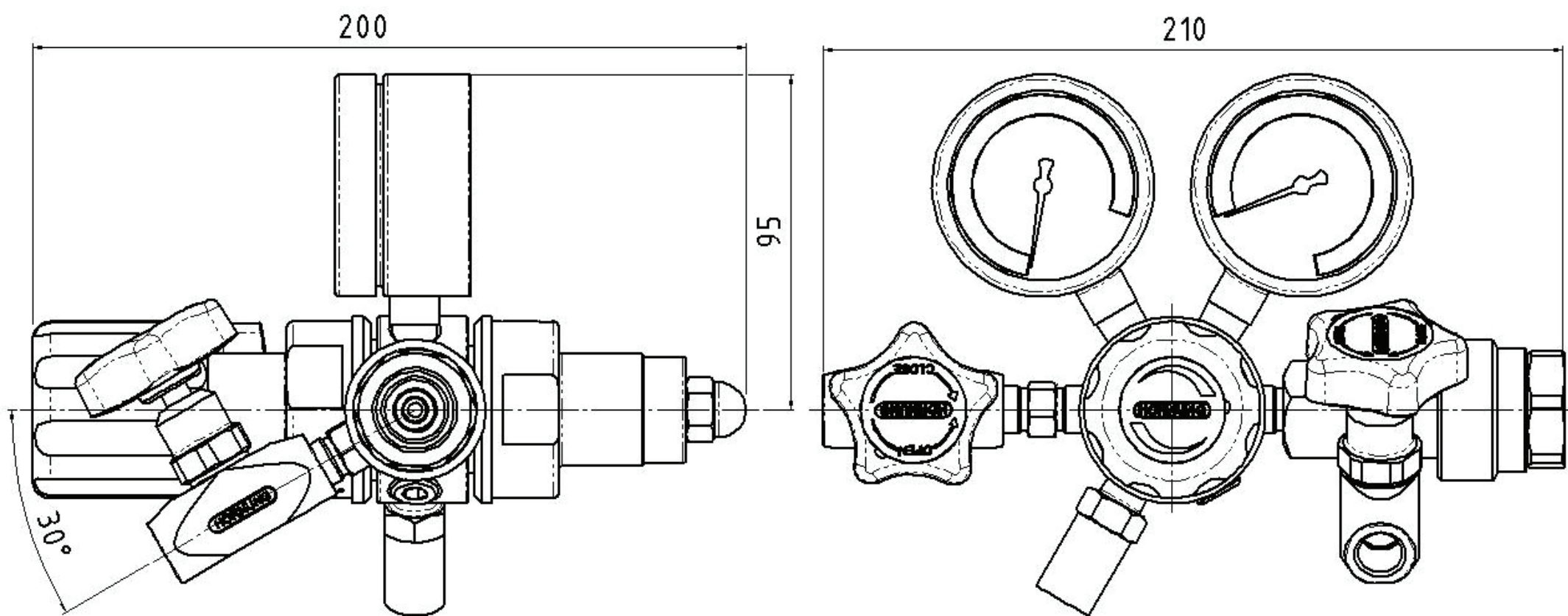
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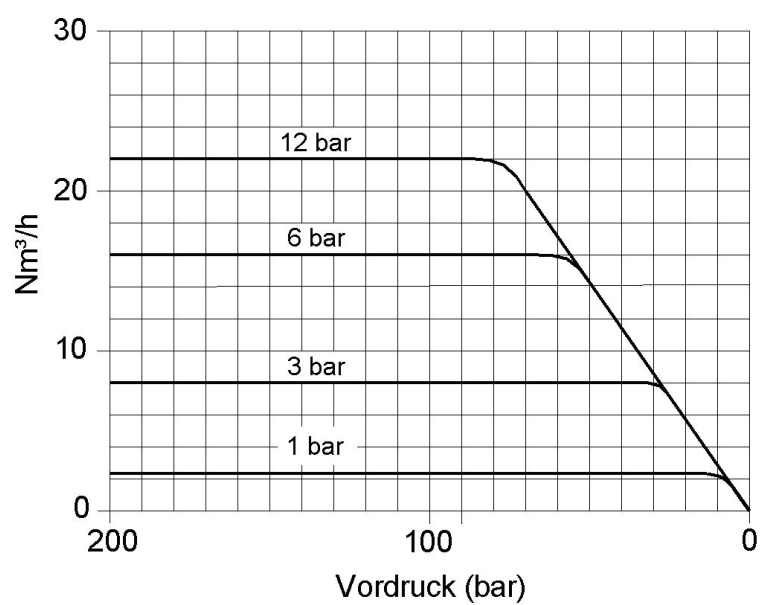
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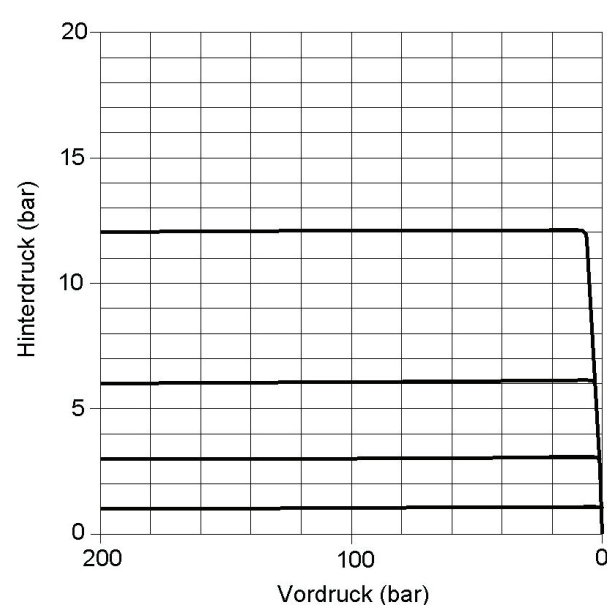
# HP 103



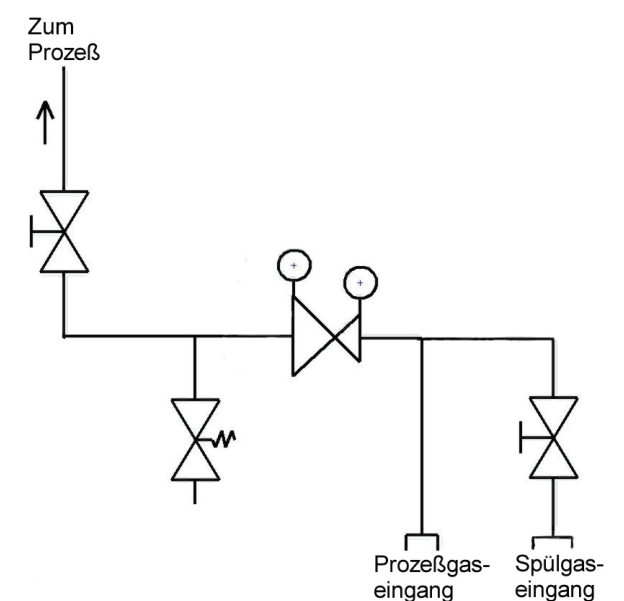
## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## FLOW DIAGRAM



## ORDER DETAILS

### Inlet pressure:

- 1 = 200 bar
- 2 = 300 bar

### Outlet pressure ranges:

- 1 = 0,1 - 1 bar
- 2 = 0,1 - 3 bar
- 3 = 1 - 6 bar
- 4 = 1 - 12 bar

### Options for the outlet:

- 0 = 1/4" NPT f
- 1 = compression fitting 6 mm
- 2 = membrane shut-off valve
- 3 = diaphragm metering valve

Regulator type      2-stage  
with purge system    69

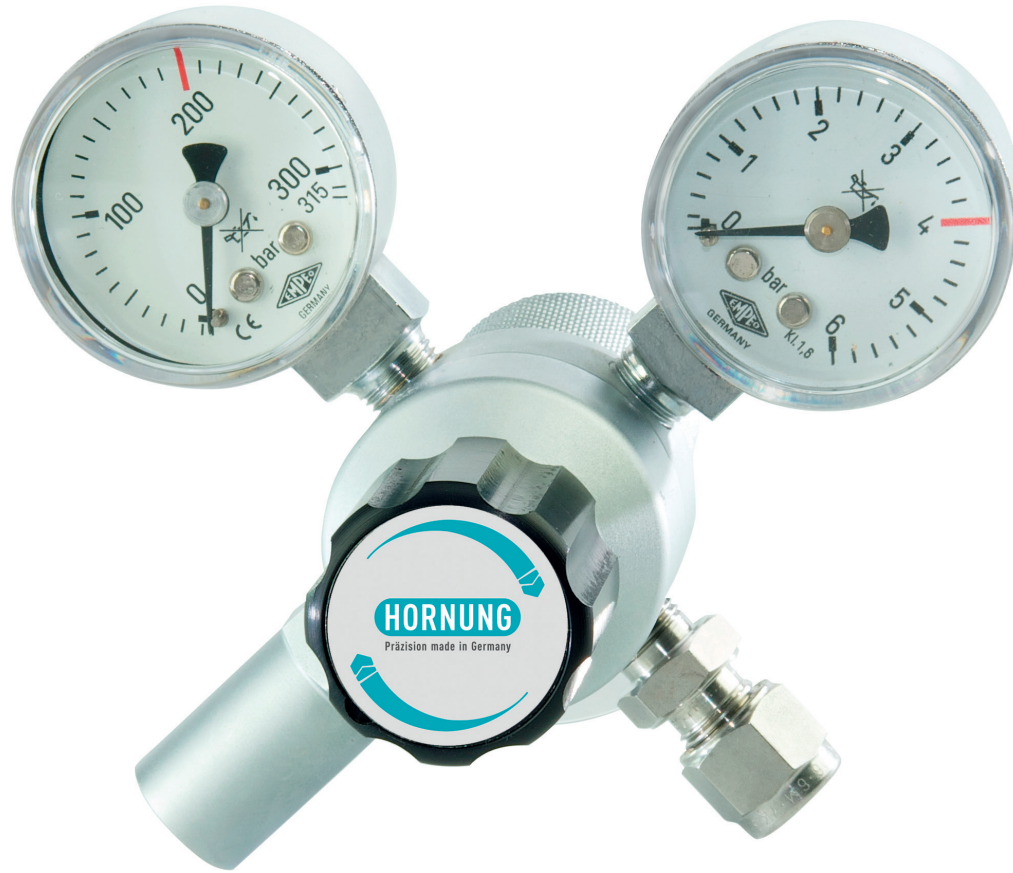
69-	1	2	2	Gas type
Type	Inlet	Outlet	Options	Gas type

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screws, compression fittings, cylinder retainers and accessories

# Cylinder pressure regulator HP 104

- single stage with balanced poppet in brass, nickel and matt chrome plated or stainless steel



Fittings optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and chrome plated	For gases with high requirements such as gas safety, impermeability and purity of up to 6.0. Special and pure gas applications, the HP 104 is ideal for use in the following areas:	The pressure regulator HP 104 is a single stage cylinder pressure regulator with balanced poppet for improved performance (significantly improved outlet pressure accuracy similar to a dual-stage regulator) in stainless steel 1.4404 or brass nickel and chrome plated and has been developed especially for the gas supply from single cylinders.
Seat:	PCTFE	<ul style="list-style-type: none"> <li>· Pharmaceutical</li> <li>· Chemical</li> <li>· Petrochemical</li> <li>· Environment protection</li> <li>· Space and aviation technology</li> <li>· Automotive engineering</li> <li>· Food processing</li> <li>· Science and research</li> </ul>	<ul style="list-style-type: none"> <li>· The HP 104 regulator is fitted as a standard with gas specific connections to DIN 477 or any other common national standard and can be connected without the use of special tools.</li> <li>· The integrated inlet pressure compensation ensures a constant operating pressure during drainage of gas cylinder.</li> <li>· Ergonomic design, compact dimensions low weight, optimised handling and a minimised gas-wetted surface are the main attributes of HP 104 regulator.</li> <li>· An accurate pressure control and a strict gas blockage enables a distinct and measurable withdrawal of gas and an ideal gas suppliance.</li> <li>· A specially designed blow-off valve prevents the incurrence of overpressure.</li> </ul>
Diaphragm:	1.4435 / hastelloy		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	200 bar	Generally in all sectors where high requirements are attached to the withdrawal of gas.	
Outlet pressure ranges / or:	0,5 - 4; 1-10 bar fix adjusted		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	106 x 97 x 112 mm		
Weight:	700 g		
Threads:	NPT 1/8" f		

## QUALITY STANDARD

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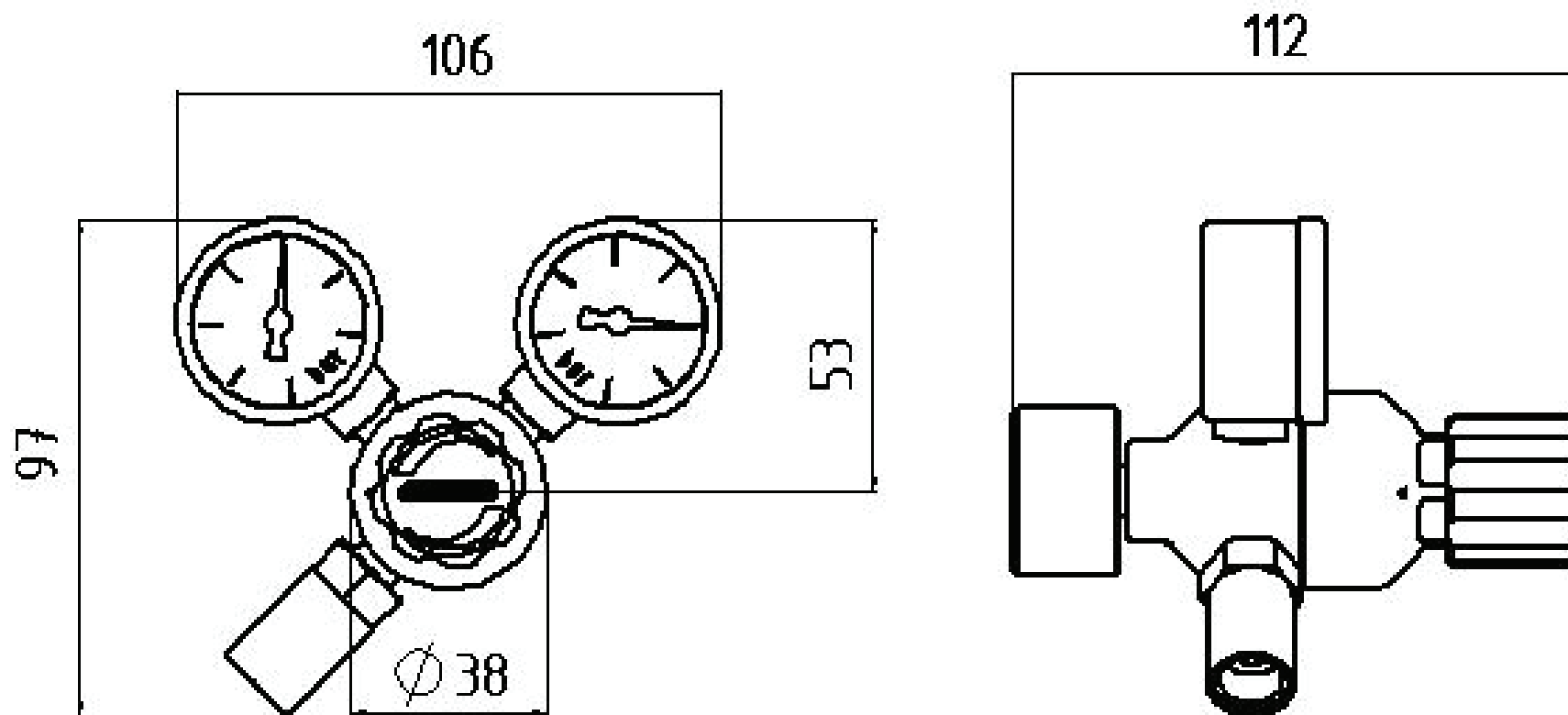
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# HP 104

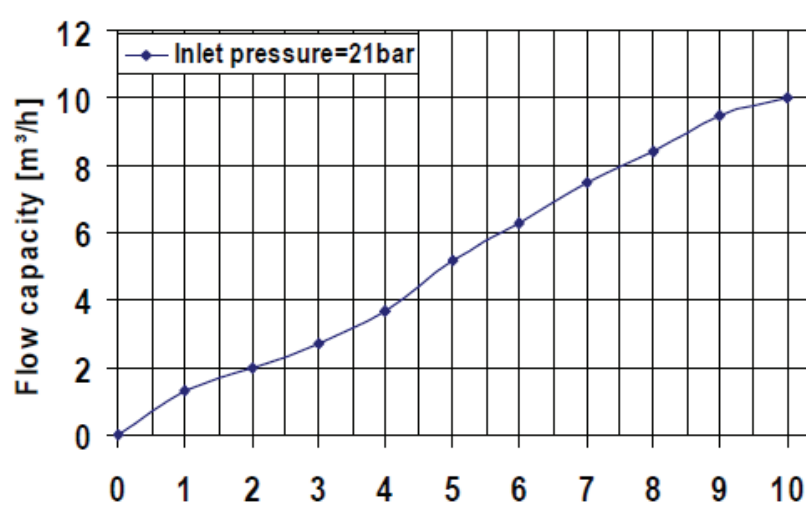


## FLOW CURVE HP 104 to 10 bar

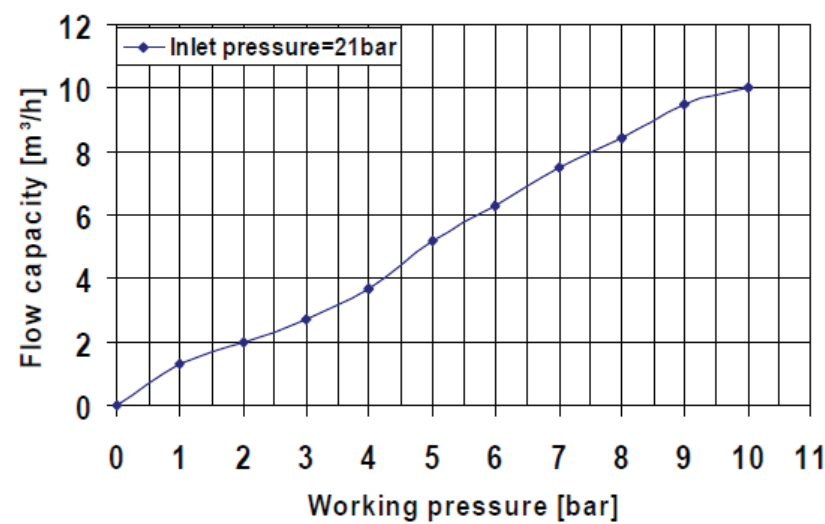
## FLOW CURVE HP 104 to 4 bar

## FLOW DIAGRAM

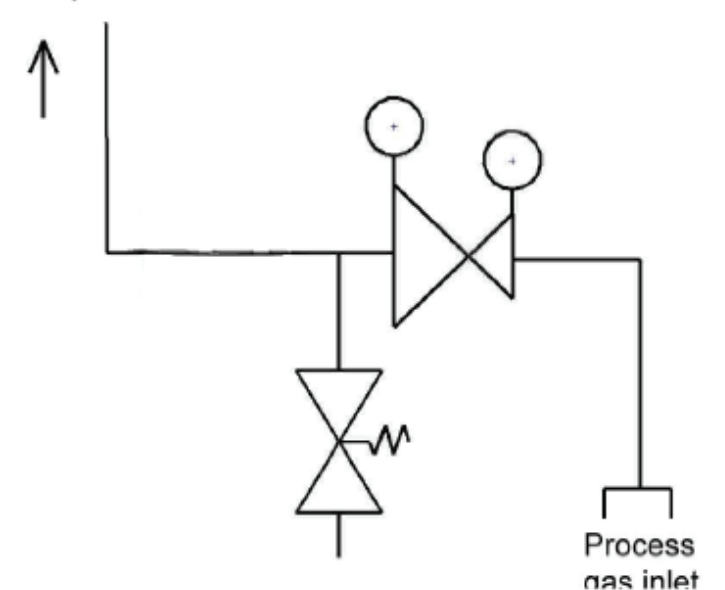
Flow curve HP 104 to 10bar



Flow curve HP 104 to 4 bar



To process



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Pressure outlet ranges:

- 1 = 0,5 - 4 bar
- 2 = 1 - 10 bar
- 4 = 0,5 - 4 bar (fix adjusted)
- 5 = 4 - 10 bar (fix adjusted)

### Options for the outlet:

- 0 = 1/8" NPT - internal thread
- 1 = compression fitting 6 mm
- 2 = diaphragm shut-off valve
- 3 = diaphragm metering valve

Regulator type

70 HP 104

70-  
Type

1  
Material

2  
Outlet

2  
Options

Gas type  
Gas type

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screws, compression fittings, cylinder retainers and accessories



# Precision cylinder regulator HP 105

- two stage in aluminium or stainless steel for mbar applications and low flow rates



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	Stainless steel / aluminium	<p>The precision pressure regulator HP 105 is used particularly in the following areas:</p> <ul style="list-style-type: none"> <li>• Instrumentation</li> <li>• mbar applications</li> <li>• Gas analysis</li> <li>• Gas chromatography</li> <li>• Process engineering</li> <li>• Metallurgy</li> <li>• Laboratory applications</li> <li>• Fluorescent lamp production.</li> </ul>	<p>The precision pressure regulator HP 105 is a compact two-stage cylinder pressure regulator made of stainless steel / aluminium for precise adjustment of the outlet pressure in the millibar range from approx. 50 mbar.</p> <p>The two-stage design with integrated inlet pressure compensation ensures that a constant outlet pressure is guaranteed even when the inlet pressure drops.</p> <p>This precision pressure regulator enables in two stages a high-precision adjustment of the outlet pressure.</p>
Valve seat:	PCTFE		
Gaskets:	FKM / EPDM		
Diaphragm:	Stainless steel 1.4435		
Max. inlet pressure:	200 bar		
Outlet pressure range:	50 mbar bis 7 bar		
Operating temp.:	-20 to +70°C		
Dimensions:	110 x 110 x 170 mm		
Weight:	740 g		
Threads:	Inlet DIN 477 Outlet NPT 1/8		

## QUALITY STANDARD

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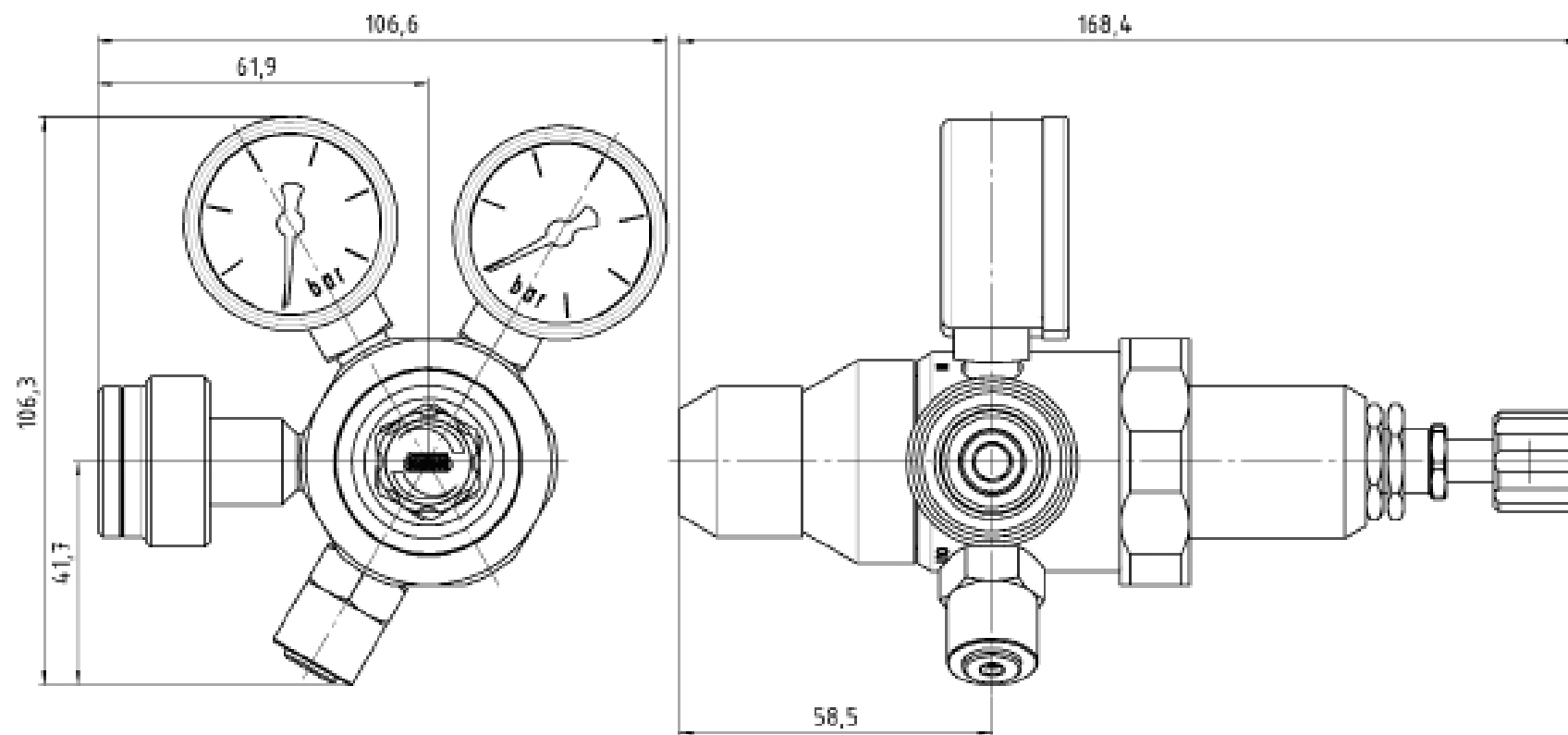
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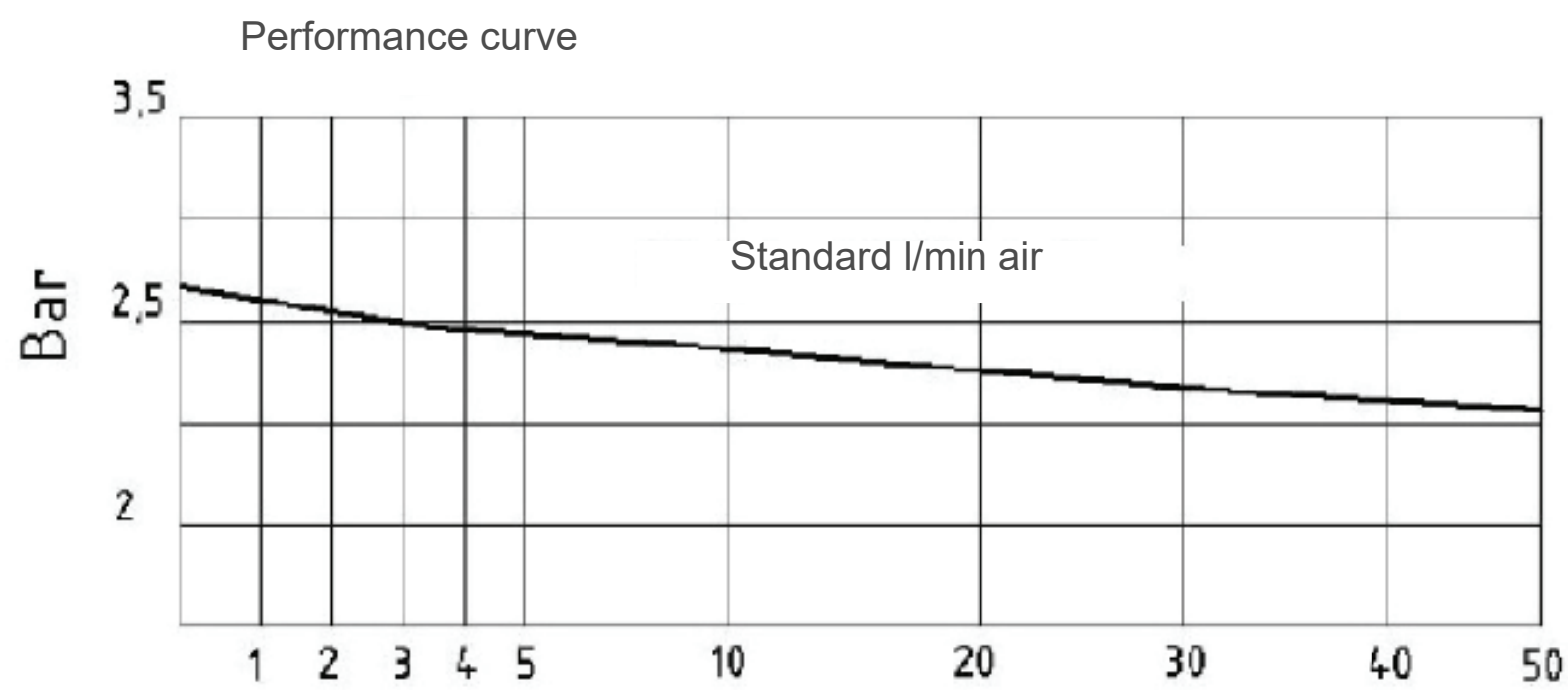
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# HP 105



## PERFORMANCE CURVE



## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = aluminium

**Gaskets:**  
1 = FKM  
2 = EPDM

**Pressure ranges:**  
1 = 170 mbar  
2 = 350 mbar  
3 = 500 mbar  
4 = 700 mbar  
5 = 2,1 bar  
6 = 4,2 bar  
7 = 7,0 bar

**Outlet connection:**  
0 = NPT 1/8  
1 = KLR 6 mm  
2 = nozzle 4 mm

Regulator type	73-	HP 105	73- Type	1 Material	1 Gaskets	4 Pressure range	4 Outlet connection	Gas type Gas type
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Accessories: See total catalogue segment

7. Accessories fittings

# Cylinder pressure regulator HP 106

- with flowmeter, single stage in brass, nickel and matt chrome plated or stainless steel electropolished



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished and brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The pressure regulator HP 106 is a single stage cylinder pressure regulator and has been developed especially for the gas supply from single cylinders.
Seat:	PCTFE	A special cleaning system for the HP Series guarantees the use for ECD applications.	Additionally, it is equipped with a flowmeter at the outlet which gives a chance of reading the current flow rate.
Elastomer:	Viton®		
Diaphragm:	1.4435		
Leakage rate against atmosphere:	10 <sup>-6</sup> mbar l/s HE		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure range:	0,1-3; 1-6; 1-12; 1-17 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	200 x 136 x 113 mm		
Weight:	1755 g		
Outlet:	Hose nozzle outside-Ø 4mm		

## QUALITY STANDARD

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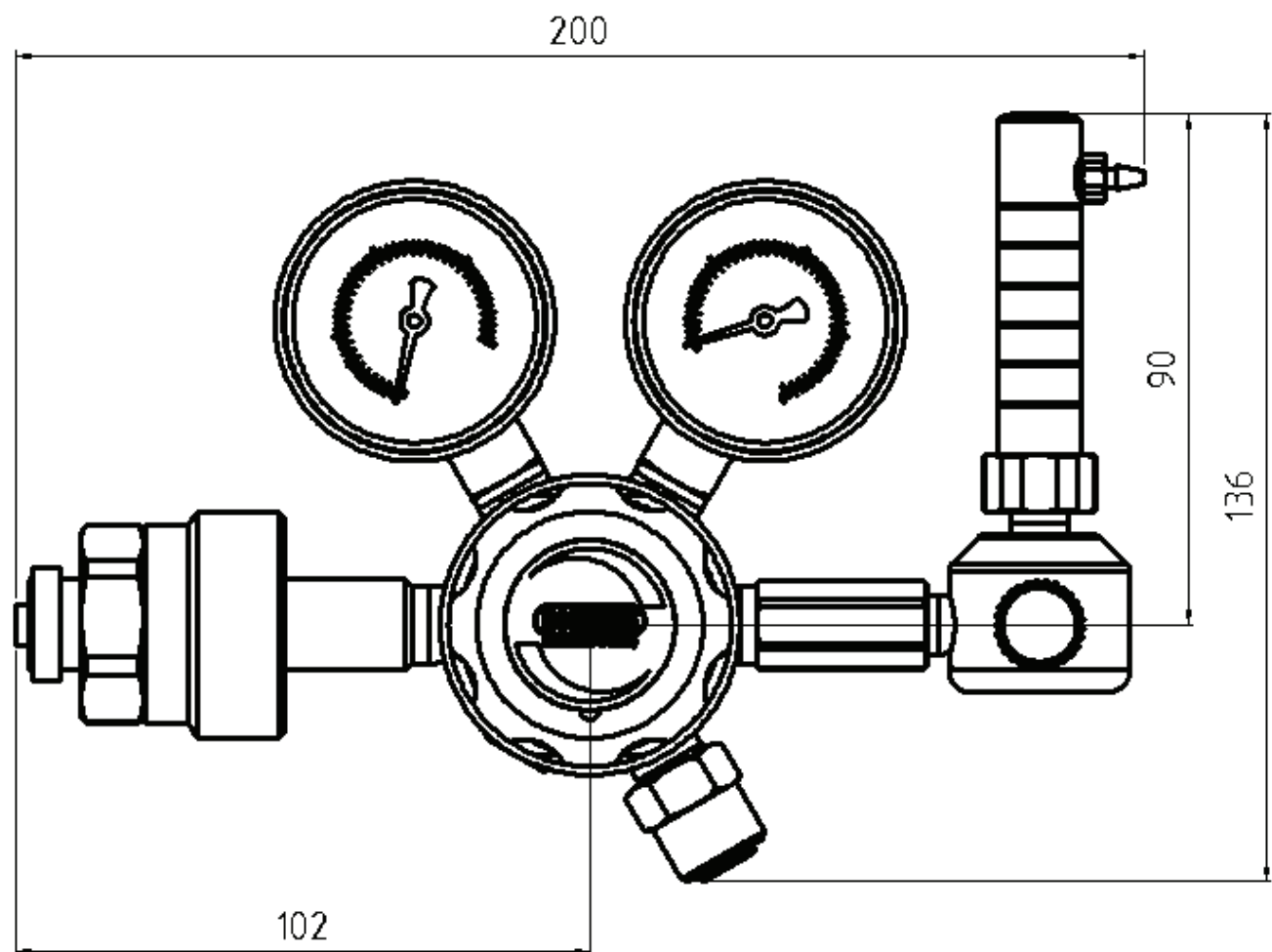
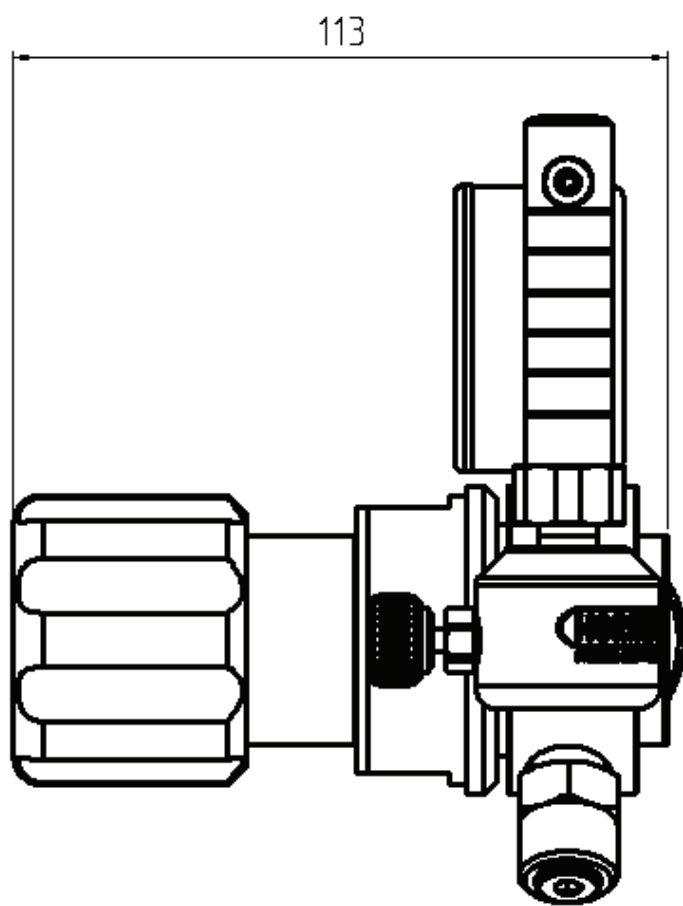
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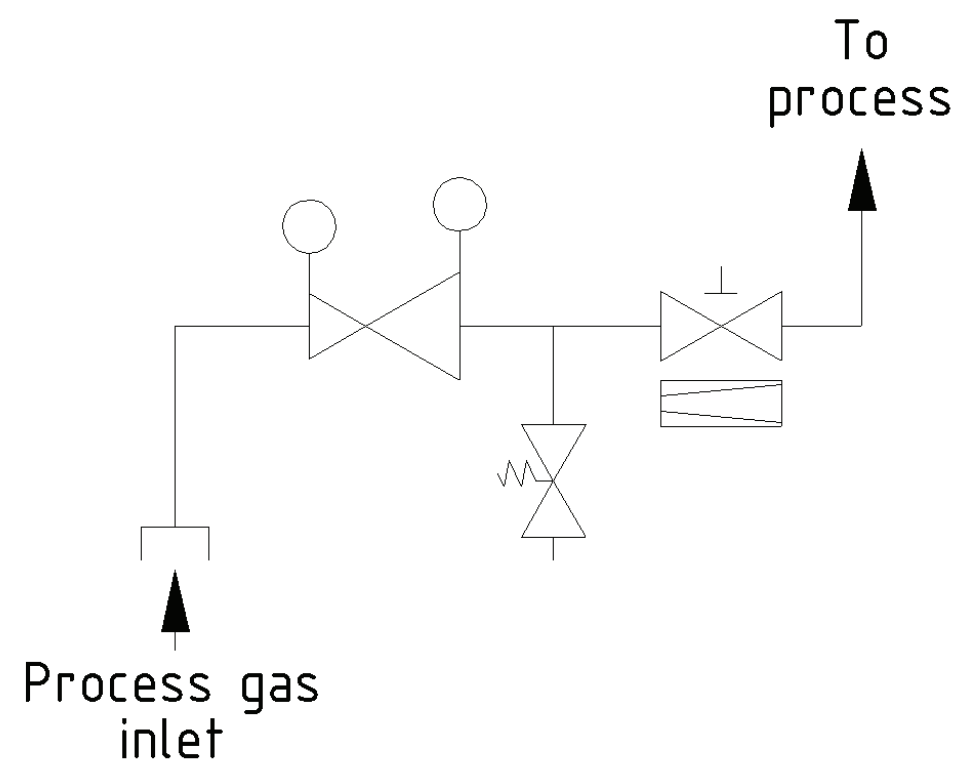
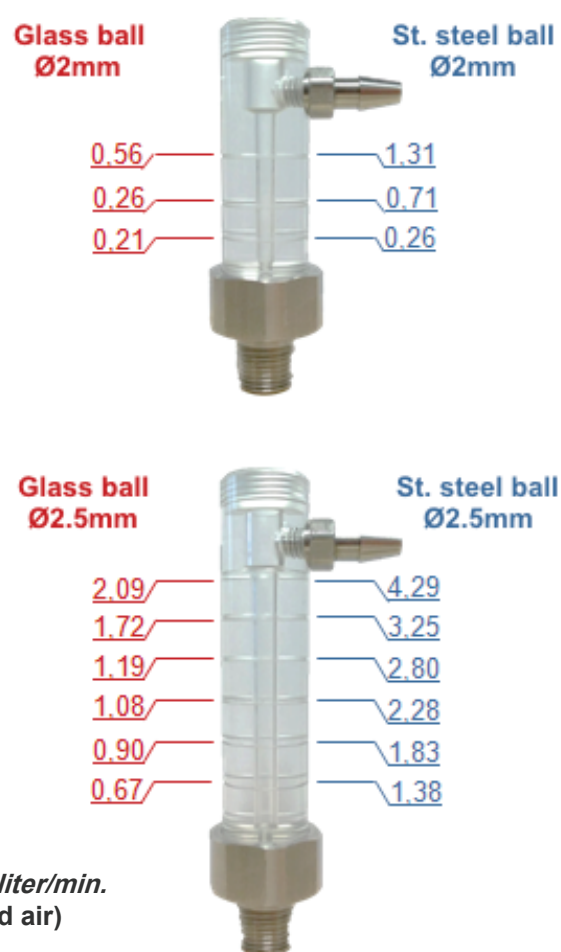


# HP 106



## FLOW RATE HP 106

## FLOW DIAGRAM HP 106



## ORDER DETAILS

Material:	Inlet pressure:	Outlet pressure:	Floating ball:	Outlet options:
1 = Stainless steel	1 = 200 bar	2 = 0,1 - 3 bar	0 = Glass Ø 2,0 mm	1 = Hose nozzle outside-Ø 4mm
2 = Brass	2 = 300 bar	3 = 1 - 6 bar	1 = Glass Ø 2,5 mm	
		4 = 1 -12 bar	2 = Stainless steel Ø 2,0 mm	
		5 = 1 -17 bar	3 = Stainless steel Ø 2,5 mm	

Regulator type	HP 106	66F-	1	1	2	1	1	Gas type
66F		Type	Material	Inlet	Outlet	Ball	Option	Gas type

Accessories: see total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Accessories

# Cylinder pressure regulator HP 107

- with flowmeter, dual stage in brass, nickel and matt chrome plated or stainless steel electropolished



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished and brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The pressure regulator HP 107 is a dual stage cylinder pressure regulator and has been developed especially for the gas supply from single cylinders.
Seat:	PCTFE	A special cleaning system for the HP Series guarantees the use for ECD applications.	Additionally, it is equipped with a flowmeter at the outlet side which gives a chance of reading the current flow rate.
Elastomer:	Viton®		
Diaphragm:	1.4435		
Leakage rate against atmosphere:	10 <sup>-6</sup> mbar l/s HE		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure range:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	200 x 137 x 197 mm		
Weight:	2514 g		
Outlet:	Hose nozzle outside-Ø 4mm		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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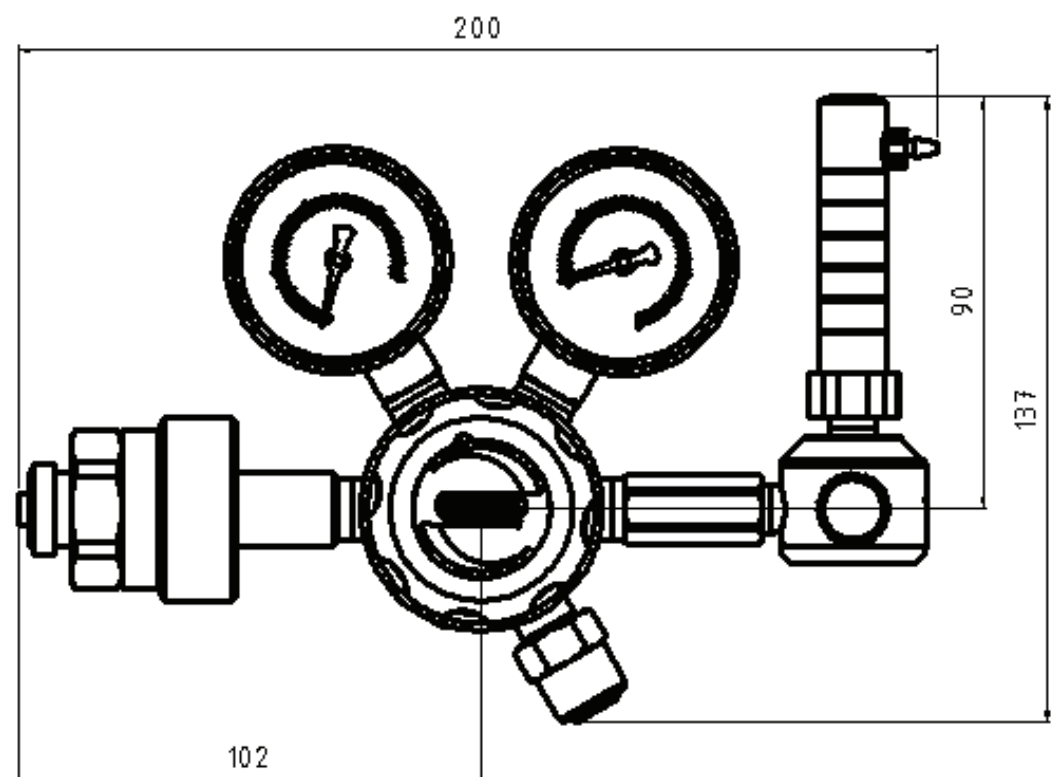
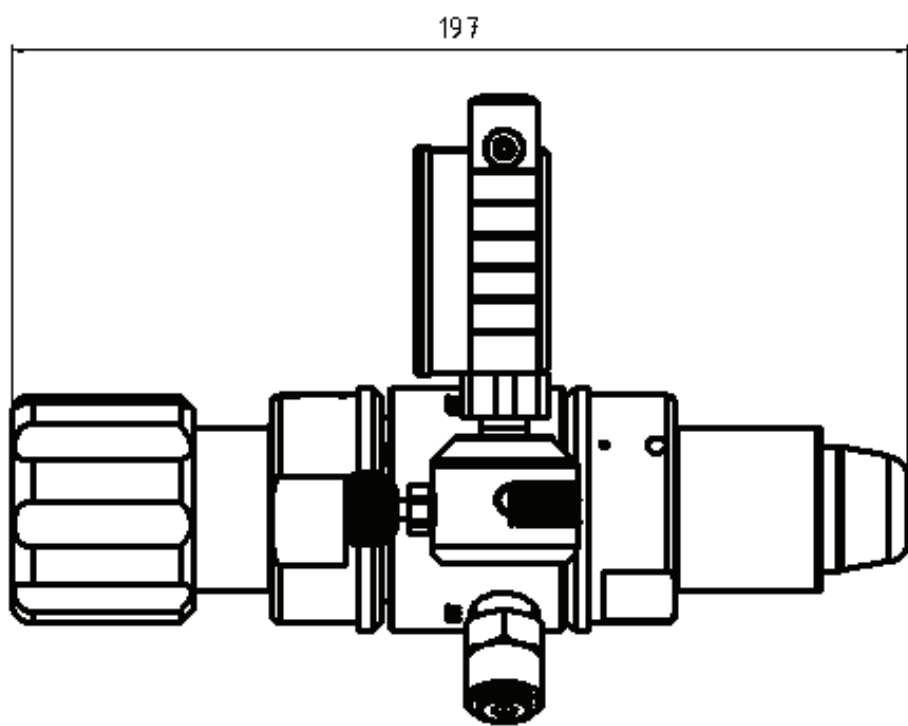
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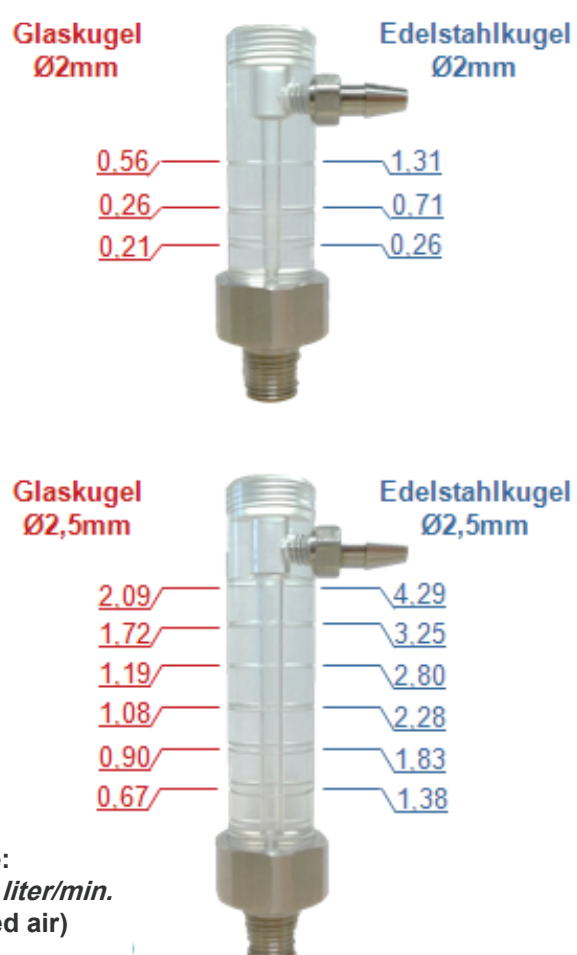
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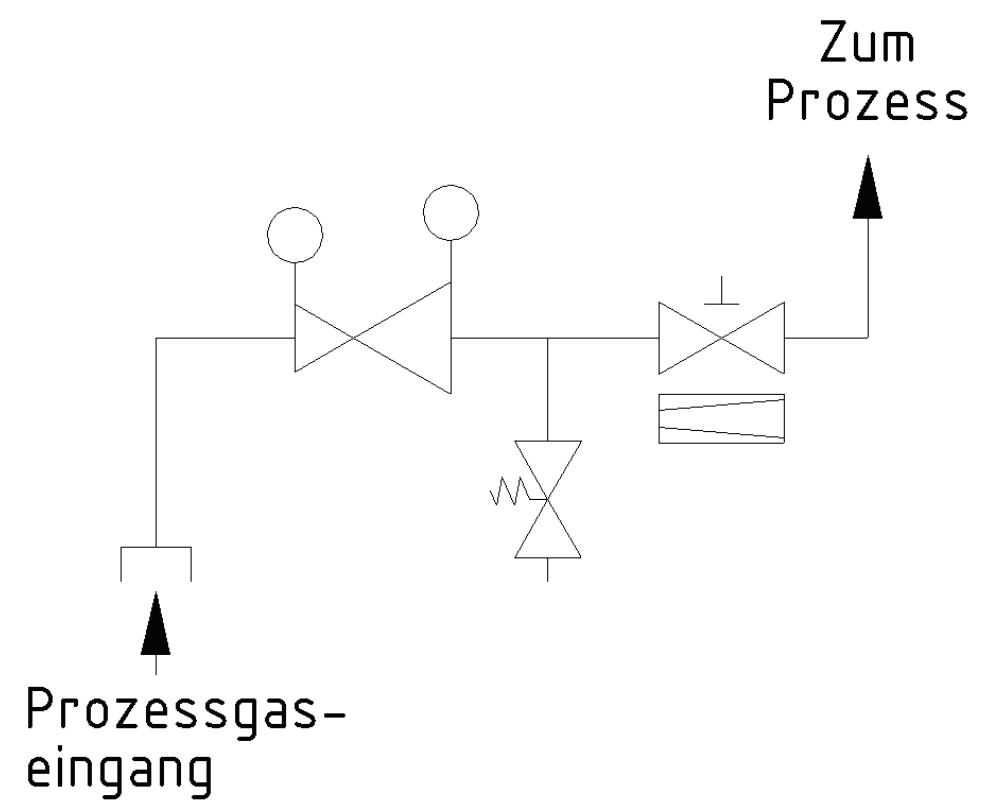
# HP 107



## FLOW RATE HP 107



## FLOW DIAGRAM HP 107



## ORDER DETAILS

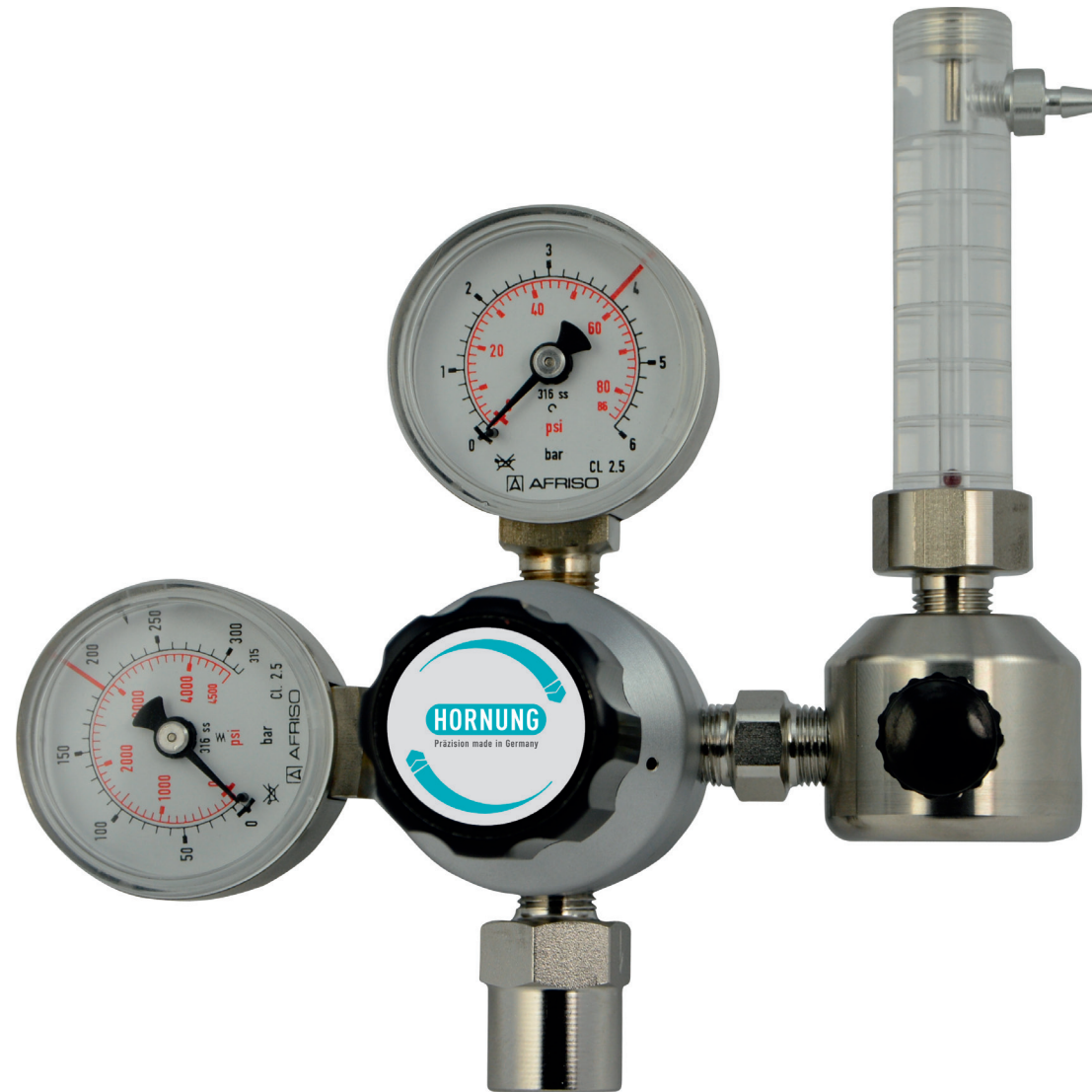
Material:	Inlet pressure:	Outlet pressure:	Floating ball:	Outlet Options:
1 = Stainless steel	1 = 200 bar	2 = 0,1 - 1 bar	0 = Glass Ø 2,0 mm	1 = Hose nozzle outlet-Ø 4 mm
2 = Brass	2 = 300 bar	3 = 0,1 - 3 bar	1 = Glass Ø 2,5 mm	
		4 = 1 - 6 bar	2 = Stainless steel Ø 2,0 mm	
		5 = 1 -12 bar	3 = Stainless steel Ø 2,5 mm	
Regulator type	HP 107	67F-	1	1
67F		Typ	Material	Inlet
			1	2
			Outlet	Ball
			1	1
			Option	Gas type
				Gas type

Accessories: see total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Accessories

# Cylinder pressure regulator HP 108

- with flowmeter, single stage balanced regulator in brass nickel and matt chrome plated or stainless steel electropolished



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	Stainless steel 1.4404 electropolished or brass, nickel and chrome plated	For gases with high requirements such as gas safety, impermeability and purity of up to 6.0.	The pressure regulator HP 104 is a single stage cylinder pressure regulator with balanced main valve for improved performance (significantly improved outlet pressure accuracy similar to a dual-stage regulator) in stainless steel 1.4404 or brass nickel and chrome plated and has been developed especially for the gas supply from single small cylinders (e.g. lecture bottles). Additionally, it is equipped with a flowmeter at the outlet side which gives a chance of reading the current flow rate.
Seat:	PCTFE	Special and pure gas applications, the HP 104 is ideal for use in the following areas:	• The HP 104 regulator is fitted as a standard with gas specific connections to DIN 477 or any other common national standard and can be connected without the use of special tools.
Elastomer:	Viton®	<ul style="list-style-type: none"> <li>• Pharmaceutical</li> <li>• Chemical</li> <li>• Petrochemical</li> <li>• Environment protection</li> <li>• Space and aviation technology</li> <li>• Automotive engineering</li> <li>• Food processing</li> <li>• Science and research.</li> </ul>	• The integrated inlet pressure compensation ensures a constant operating pressure during drainage of gas cylinder.
Diaphragm:	1.4435 / Hastelloy	Generally in all sectors where high requirements are attached to the withdrawal of gas.	• Ergonomic design, compact dimensions low weight, optimised handling and a minimised gas-wetted surface are the main attributes of HP 104 regulator.
Leakage rate against atmosphere:	10 <sup>-6</sup> mbar l/s		• An accurate pressure control and a strict gas blockage enables a distinct and measurable withdrawal of gas and an ideal gas supplience.
Gas purity:	≤ 6.0		
Max. inlet pressure:	200 bar		
Outlet pressure range:	0,5-4; 1-10 bar or: fix adjusted		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	140 x 132 x 110 mm		
Weight:	889 g		
Ausgang:	Hose nozzle outside-Ø 4mm		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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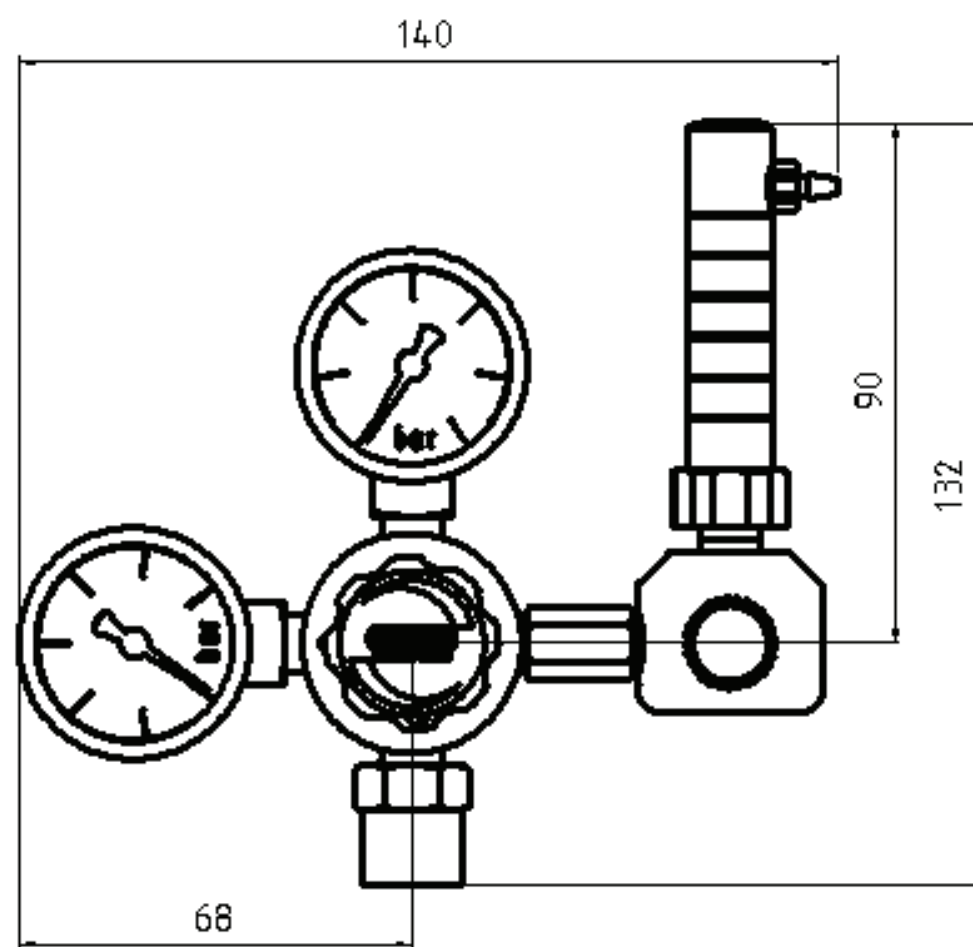
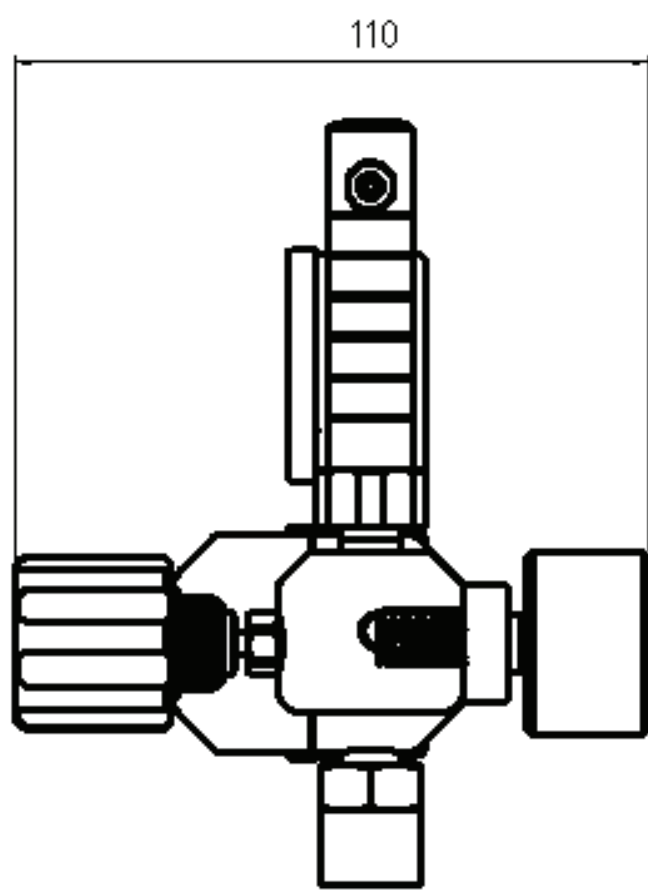
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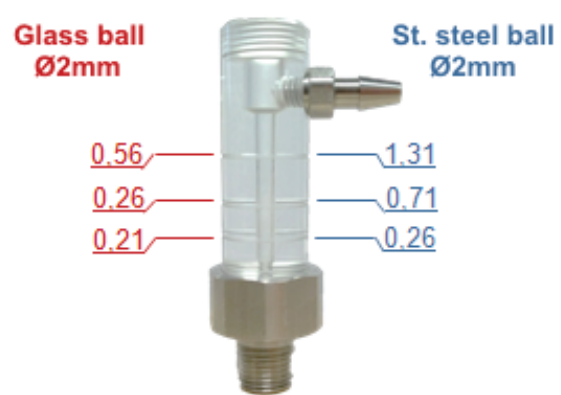
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# HP 108



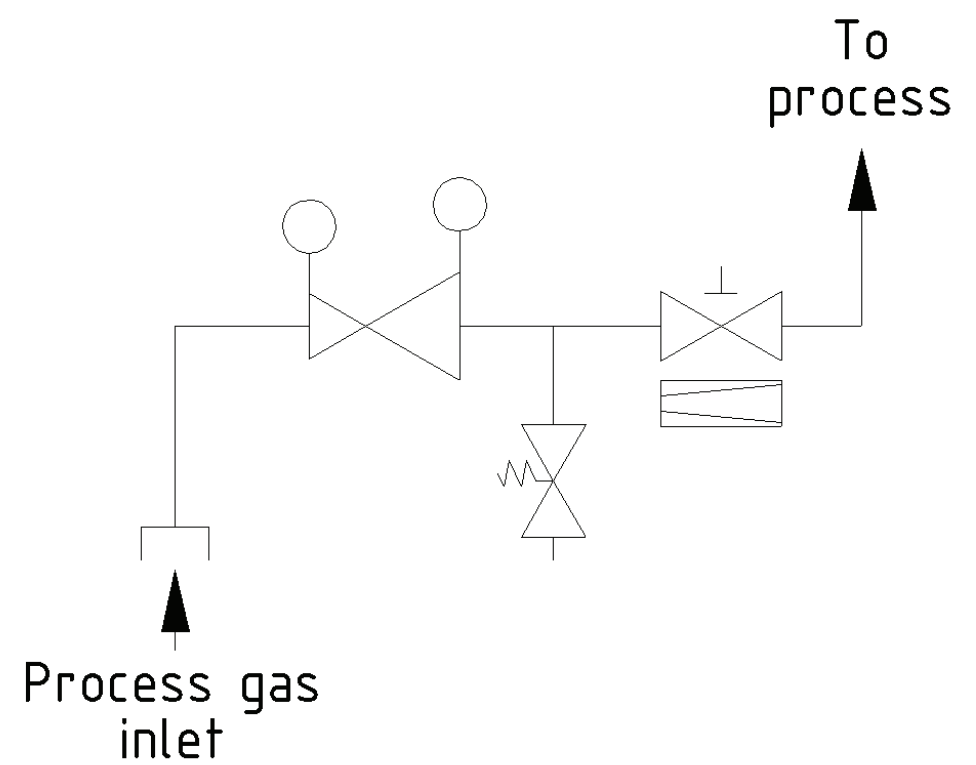
## FLOW RATE HP 108

## FLOW DIAGRAM HP 108



Seen above:  
flow rate in liter/min.  
(compressed air)

ed air)



## ORDER DETAILS

### Material:

- 1 = Stainless steel
- 2 = Brass

### Outlet pressure:

- 1 = 0,5 - 4 bar
- 2 = 1 -10 bar
- 4 = 0,5 - 4 bar (fix adjusted)
- 5 = 4 -10 bar (fix adjusted)

### Floating ball:

- 0 = Glass Ø 2,0 mm
- 1 = Glass Ø 2,5 mm
- 2 = Stainless steel Ø 2,0 mm
- 3 = Stainless steel Ø 2,5 mm

### Outlet options:

- 1 = Hose nozzle outside-Ø 4 mm

Regulator type HP 108  
70F

70F-  
Type

1  
Material

2  
Outlet

1  
Ball

1  
Option

Gas type  
Gas type

Accessories: See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Accessories



# Cylinder pressure regulator HP 112

- single staged, self-venting



fittings optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	Aluminium 3.4365	Especially for gases with high requirements on purity up to 5.0 and for laboratories and analytics.  A special cleaning system for the HP series guarantees the use for ECD applications.	The pressure regulator HP 112 is a single stage self-venting cylinder pressure regulator made of anodized aluminium and has been developed especially for the gas supply of high purity gases and gas mixtures from single cylinders.  The pressure regulator is fitted as a standard with gas specific inlet connector to DIN 477 or any other common international standard and a relief valve.
Seat:	PCTFE		
Leakage rate:	10 <sup>-6</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 5.0		
Max. inlet pressure:	200 bar		
Control range:	1 - 17 bar		
Operating temp.:	-30°C to +60°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	110 x 110 x 126 mm		
Weight:	500 g		
Outlet connections:	NPT 1/4" f or compression fitting		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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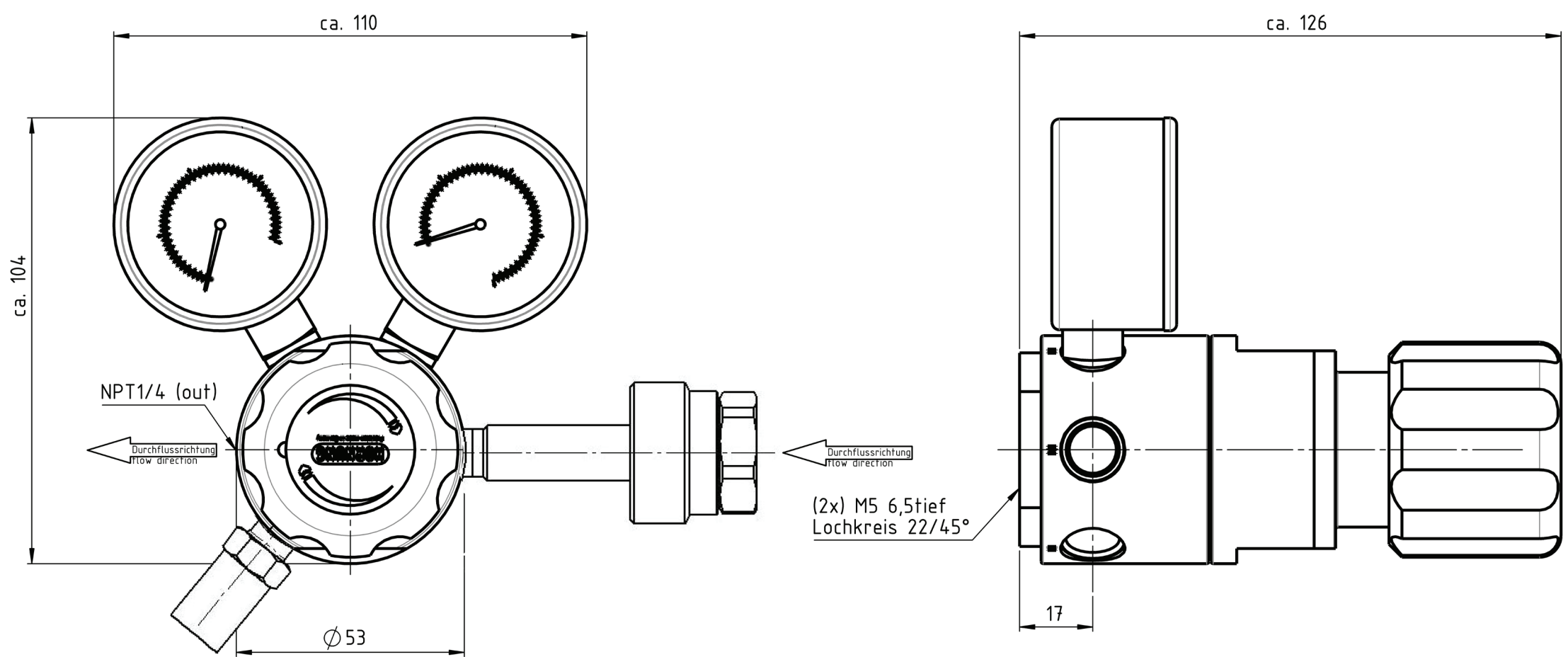
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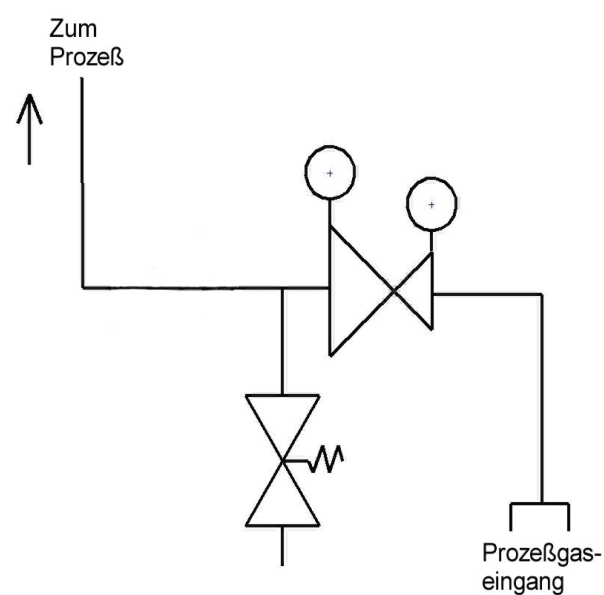
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# HP 112



## FLOW DIAGRAM



## ORDER DETAILS

**Material:**  
2 = Aluminium

**Gauges at inlet:**  
1 = 200/315 bar

**Gauges at outlet:**  
1 = 3/5 bar  
2 = 5/9 bar  
3 = 12/15 bar  
4 = 17/25 bar

**Outlet:**  
0 = 1/4" NPT - female thread  
1 = compression fitting 6 mm

Regulator type  
HP 112

HP112-  
Typ

2  
Material

1  
Gauge-Inlet

1  
Gauge-Outlet

0  
Outlet

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. accessories, fittings

# Cylinder pressure regulator HP 120

- single stage diaphragm regulator for a high outlet pressure up to 200 bar



Fittings optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The cylinder pressure regulator HP 120 is a single stage pressure regulator, brass nickel and matt chrome plated or stainless steel 1.4404 electropolished.  The cylinder pressure regulator is developed as a diaphragm pressure regulator and specially made for high initial pressure.  The pressure regulator is fitted as a standard with gas specific connections to DIN 477 or any other common national standard.
Seat:	PCTFE		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	5 - 50 bar 5 - 100 bar 10 - 200 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	165 x 78 x 118 mm		
Weight:	1580 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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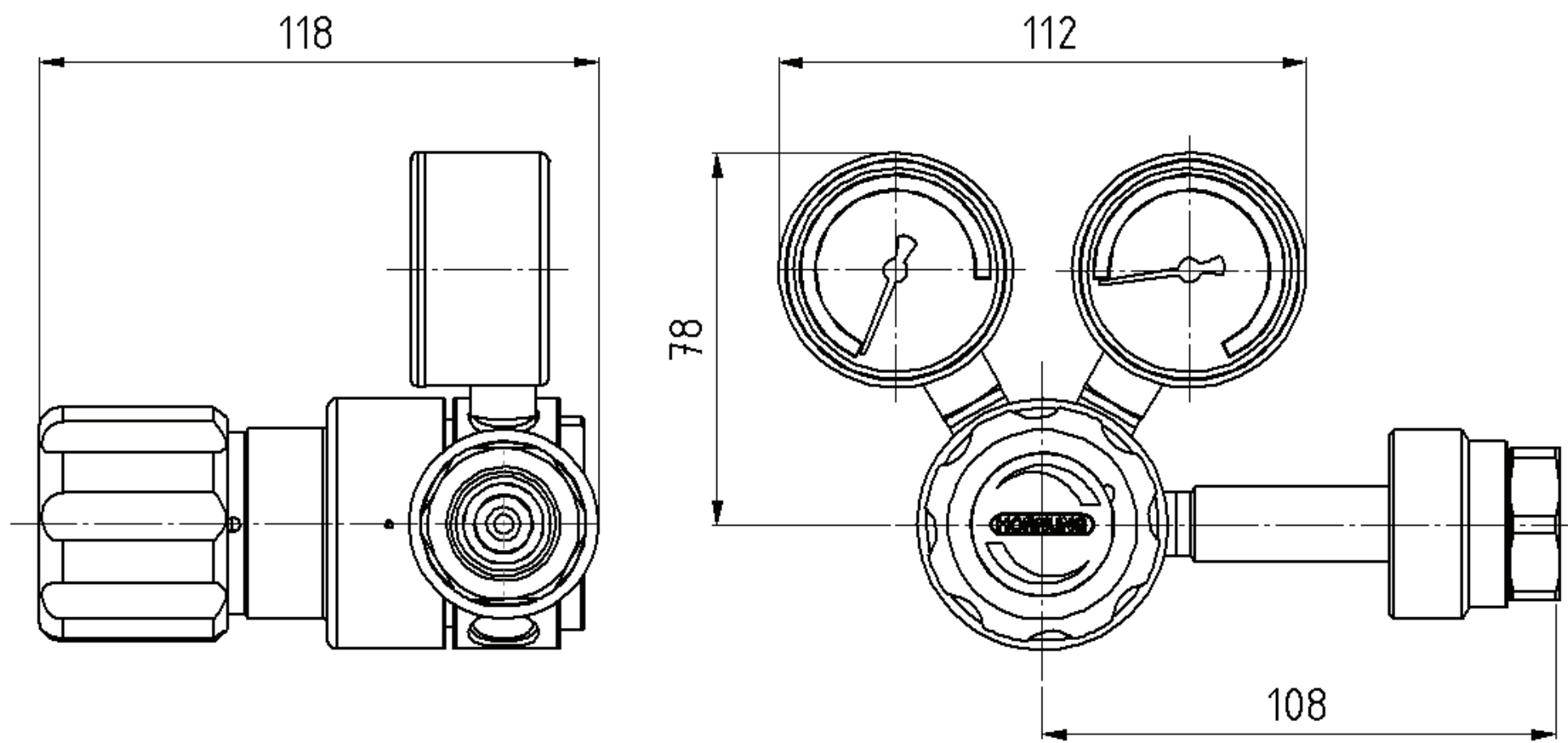
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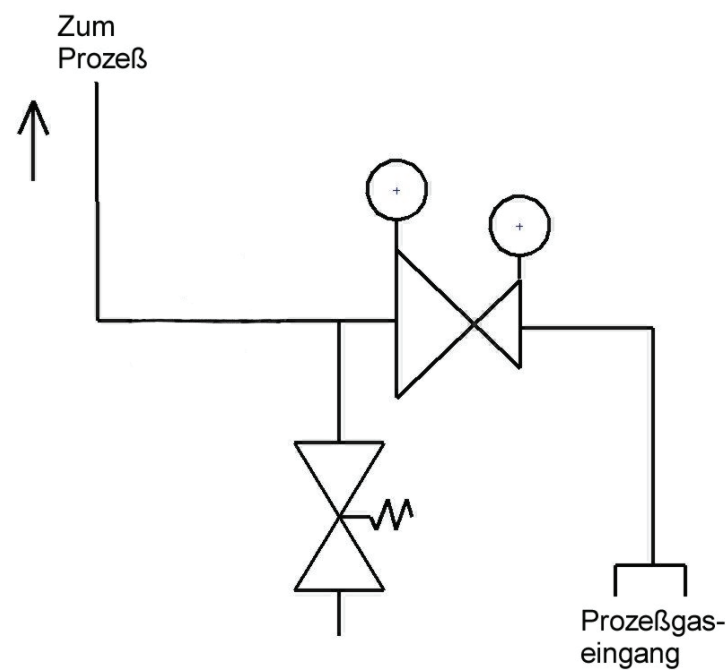
# HP 120



## SPECIFICATION

The diaphragm pressure regulator is specially developed for high inlet- and outlet pressures.

## FLOW DIAGRAM



## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure:**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure ranges:**  
1 = 5 - 50 bar  
2 = 5 - 100 bar  
3 = 10 - 200 bar

**Options for the outlet:**  
1 = 1/4" NPT - internal thread  
2 = compression fitting 6 mm

Regulator type	single	71-	1	1	2	1	Gas type
without purging	71	Type	Material	Inlet	Outlet	Options	Gas type

**Accessories:** See total catalogue segment

7. Accessories, screw connections

# Cylinder pressure regulator HP 150

- single stage for high flow and high outlet pressure (up to 50 bar) – with balanced poppet



Fittings optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The cylinder pressure regulator HP 150 is a single stage pressure regulator with a high flow rate and is designed for pressure reduction of high purity gases.
Seat:	PCTFE	In case of our special cleaning method the cylinder pressure regulator is ECD capable.	The HP 150 reduces the pressure of compressed gases or fluids to a maximum outlet pressure of 50 bar.
Diaphragm:	1.4435		It works according to the principle guiding the equilibrium of forces between the set spring force and the outlet pressure.
Leakage rate:	$10^{-8}$ (mbar l/s) He		The cylinder pressure regulator HP 150 is equipped with a balanced poppet and by so doing ensures constancy in operating pressure during the entire gas withdrawal process, and occurring decrease in inlet pressure.
Gas purity:	$\leq 6.0$		
Max.inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1,7; 1-3,5; 1-7; 1-12; 1-17; 1-50 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	189 x 123 x 126 mm		
Weight:	1980 g		
Threads:	NPT 3/8" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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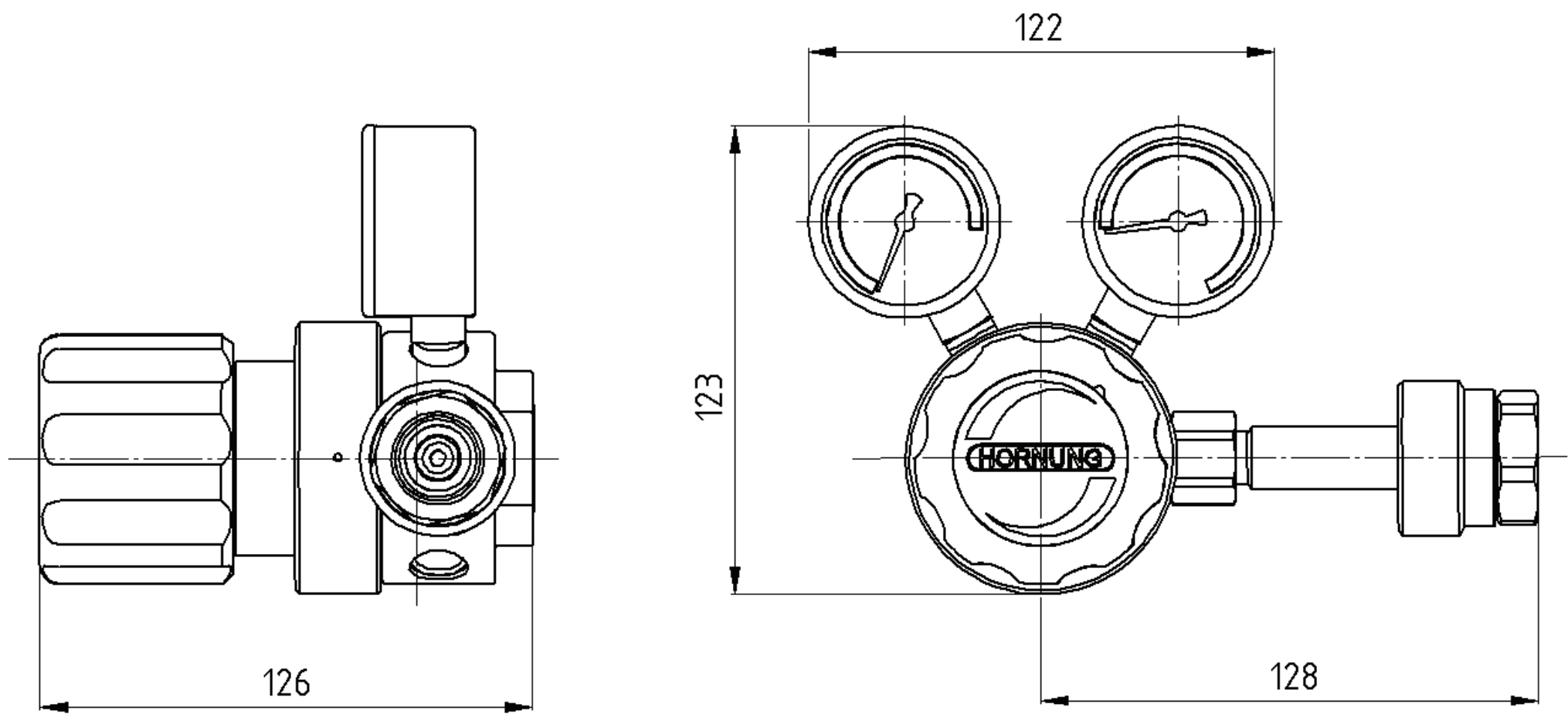
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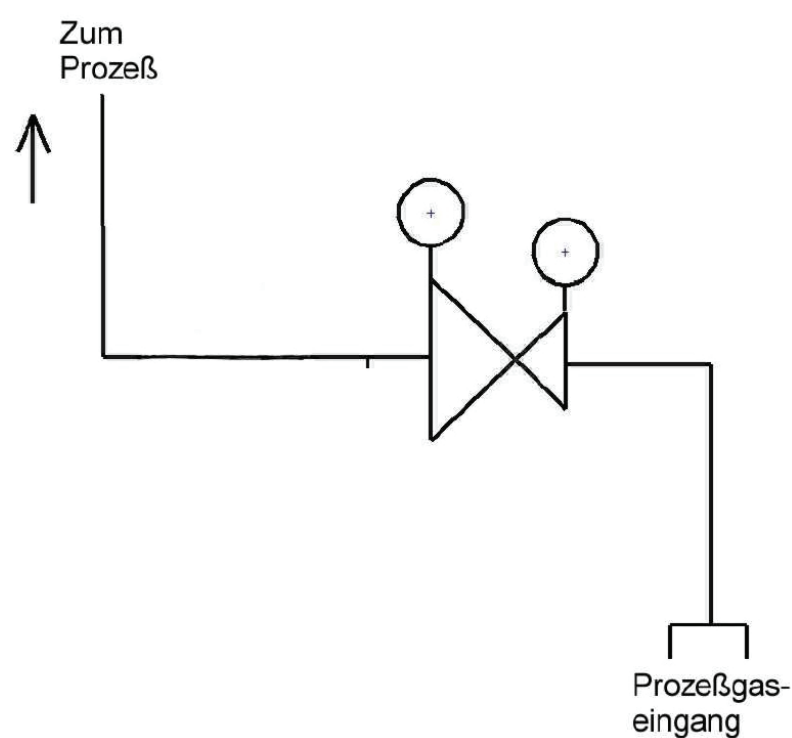
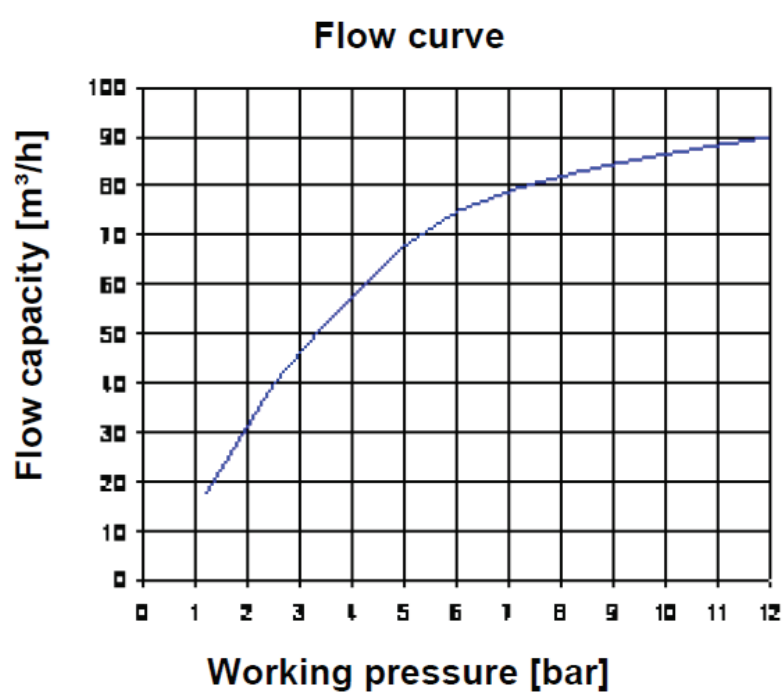


# HP 150



## FLOW CURVE

## FLOW DIAGRAM



## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure:**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure ranges:**  
1 = 0,1 - 1,7 bar  
2 = 1 - 3,5 bar  
3 = 1 - 7 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar  
6 = 1 - 50 bar

**Options for the outlet:**  
0 = NPT 3/8" f  
6 = compression fitting 6 mm  
8 = compression fitting 8 mm  
10 = compression fitting 10 mm  
12 = compression fitting 12 mm  
15 = compression fitting 15 mm

72-  
Type

1  
Material

1  
Inlet

2  
Outlet

6  
Options

Gas types  
Gas types

**Accessories:** See total catalogue segment

7. Accessories, screw connections

# Precision cylinder pressure regulator HP-FR1

- dual stage, in stainless steel or brass/ aluminium for mbar applications and low flow



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Bodies:	stainless steel or brass / aluminium	<ul style="list-style-type: none"> <li>· Instrumentation</li> <li>· mbar applications</li> <li>· Gasanalysis</li> <li>· Gaschromatography</li> <li>· Process engineering</li> <li>· Metallurgy</li> <li>· Science and research</li> <li>· Lamp production</li> </ul>	<p>The precision HP-FR 1 is a compact dual stage cylinder pressure regulator made of stainless steel or brass/aluminium for operating pressures from 50 mbar up to 7 bar.</p> <p>The dual stage construction with integrated balanced poppet guarantees absolutely stable working pressures even if inlet pressure fluctuate significantly.</p>
Seat:	PCTFE / Viton/NBR		
Gaskets:	viton / NBR		
Diaphragm:	stainless steel / viton / NBR		
Max pressure inlet:	200 bar		
Outlet pressure range:	50 mbar - 7 bar		
Operating temp.:	-20 up to +70°C		
Dimensions (wxhxd):	124 x 94 x 145 mm		
Weight:	850 g		
Connections:	thread inlet: DIN 477-1 (others on request)		
	thread outlet: NPT 1/8" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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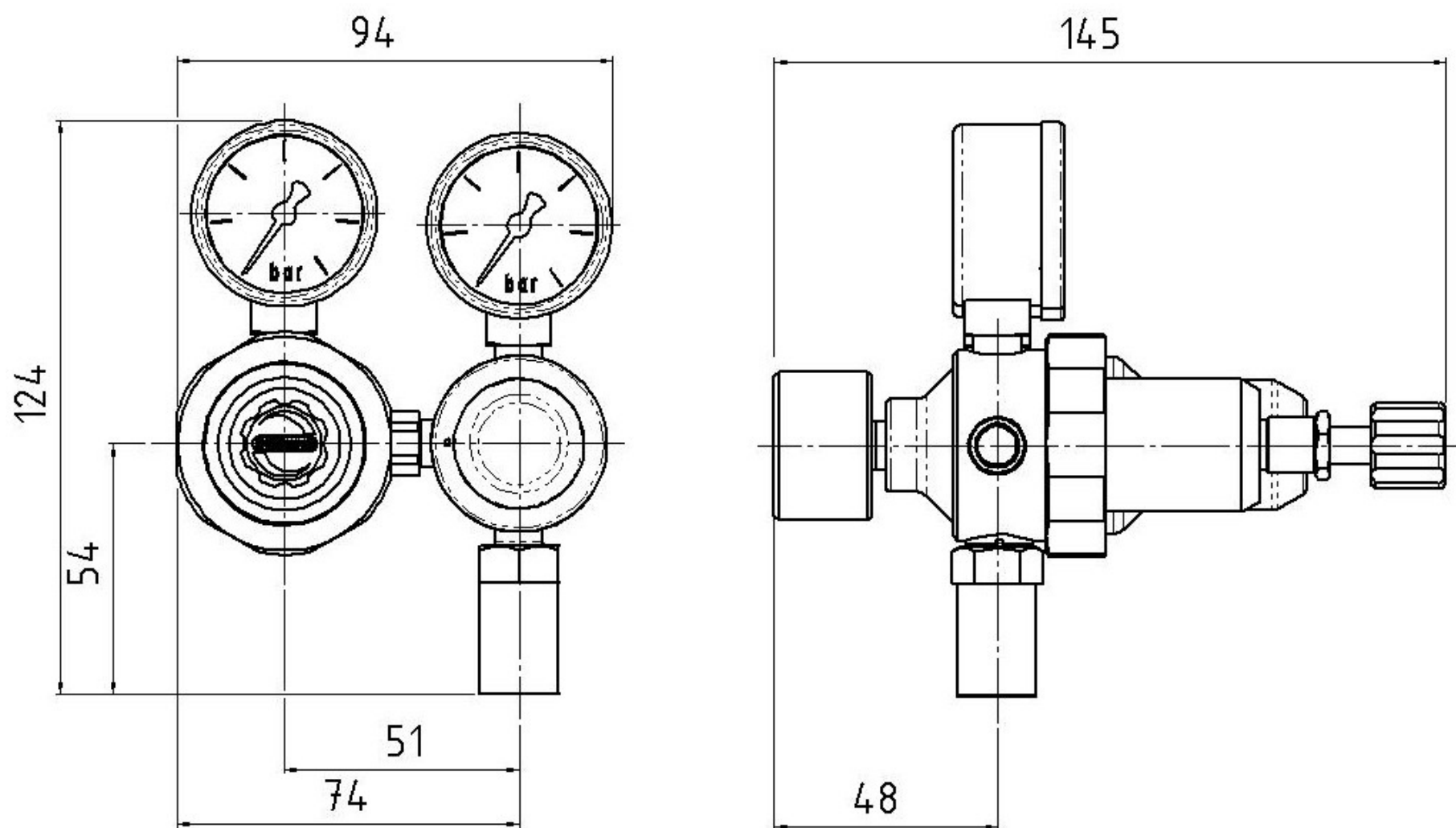
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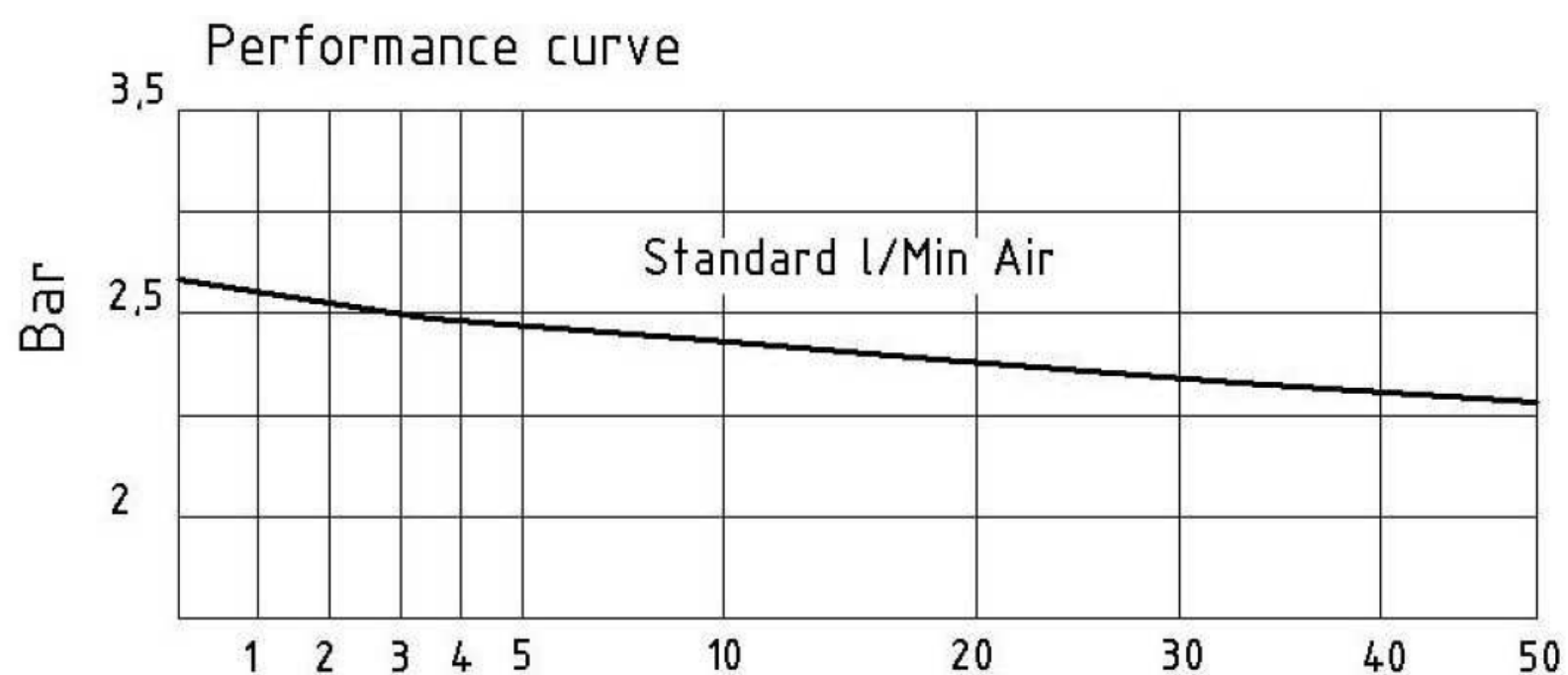
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# HP-FR 1



## PERFORMANCE CURVE



## ORDER DETAILS

**Material:**  
1 = brass / aluminium  
2 = stainless steel

**Diaphragm:**  
1 = NBR  
2 = viton  
3 = stainless steel (1.4435)  
4 = hastelloy (2.4610)

**Gaskets:**  
1 = NBR  
2 = viton

**Outlet pressure ranges:**  
1 = up to 170 mbar  
2 = up to 350 mbar  
3 = up to 500 mbar  
4 = up to 700 mbar  
5 = up to 2,1 bar  
6 = up to 4,2 bar  
7 = up to 7,0 bar

Regulator type  
27

HP-FR 1

27-  
Type

2  
Material

3  
Diaphragm

2  
Gaskets

4  
Outlet

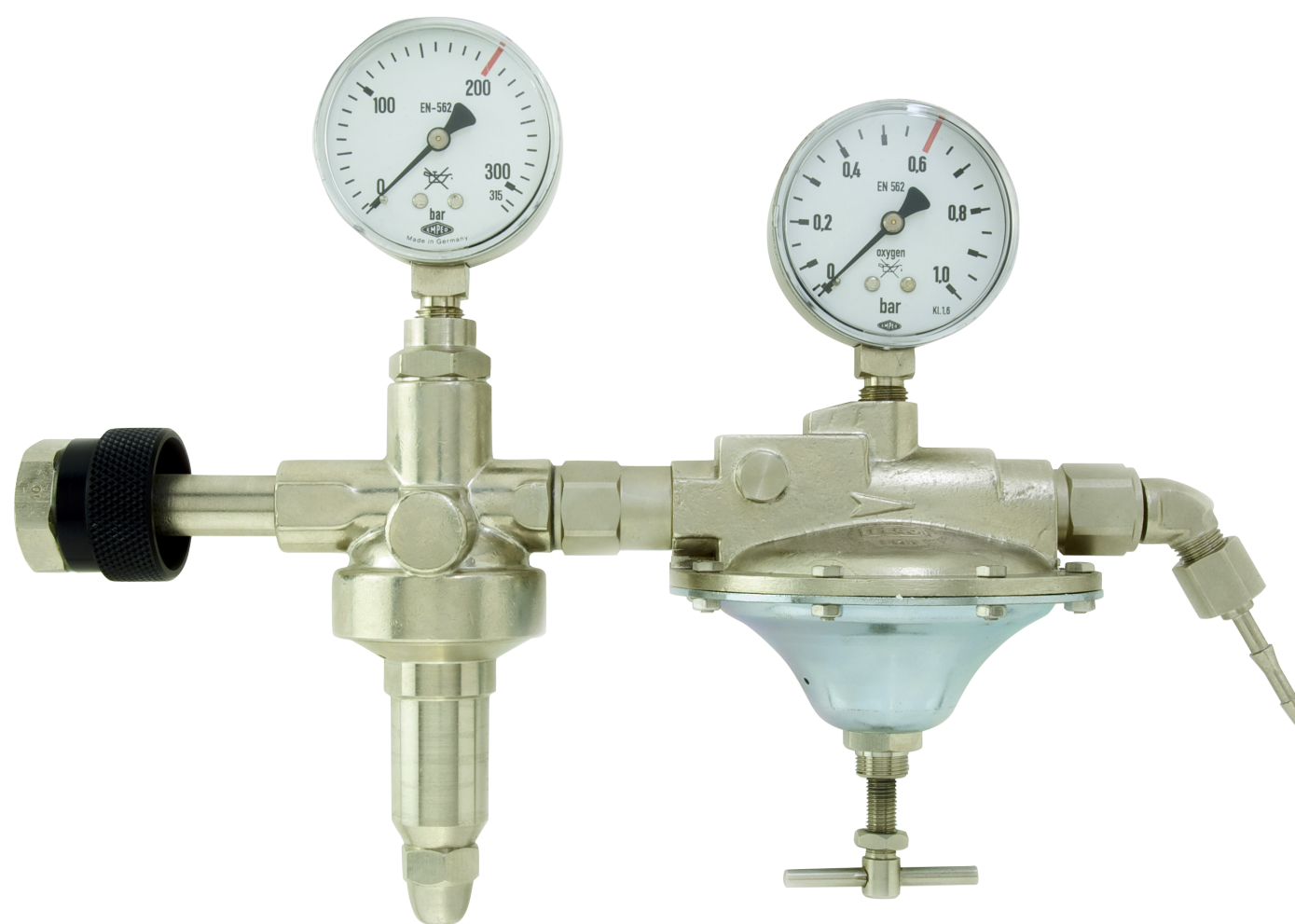
Gas types  
Gas types

### Accessories:

5. Diaphragm shut-off and metering valves  
7. Gauges, screws, compression fittings, cylinder retainers and accessories

# Precision cylinder pressure regulator VDS-FHR 3 / VDS-FHR 4

- dual stage for mbar operating pressures in brass, or nickel plated



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	brass or brass, nickel plated	Especially for mbar applications:	Dual stage precision regulator with a large diaphragm for mbar applications integrated into the second stage (FHR).
Seat:	3 mm or 4 mm	· Laboratories and industries	For non corrosive gases up to 5.0 purity.
Gaskets:	NBR	· Science and research	
Diaphragm:	NBR	· Instrumentation	
Max. inlet pressure:	300 bar	· Glass- and lamp industries	
Outlet pressure ranges:	5 mbar - 1 bar	· Process engineering.	
Operating temp.:	-20 up to +70°C		
Dimensions (wxhxd):	292 x 124 x 110 mm		
Connections:	inlet thread: DIN 477-1 and -5 (others on request)		
	outlet thread: G 1/4" -DIN 3852		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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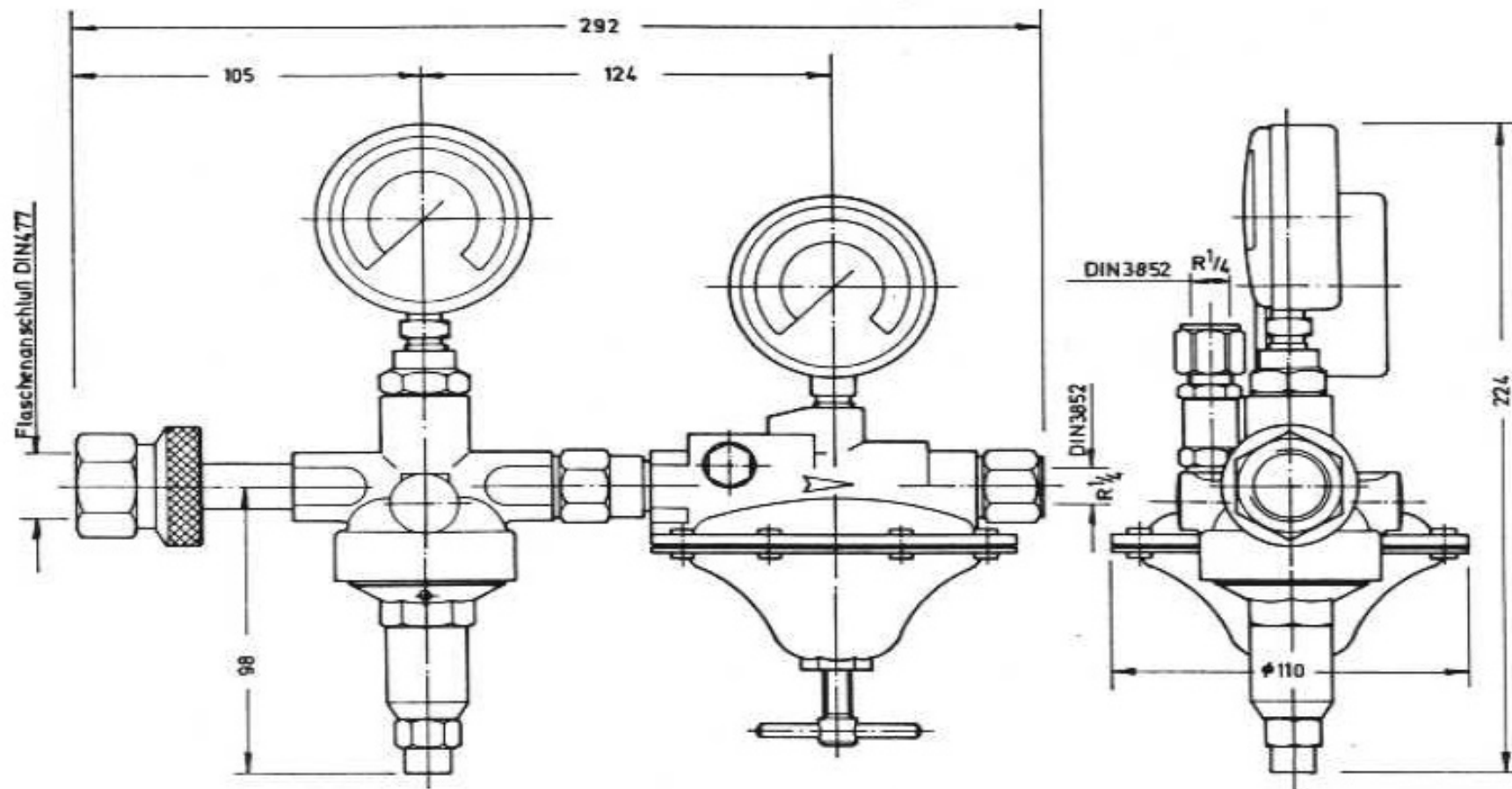
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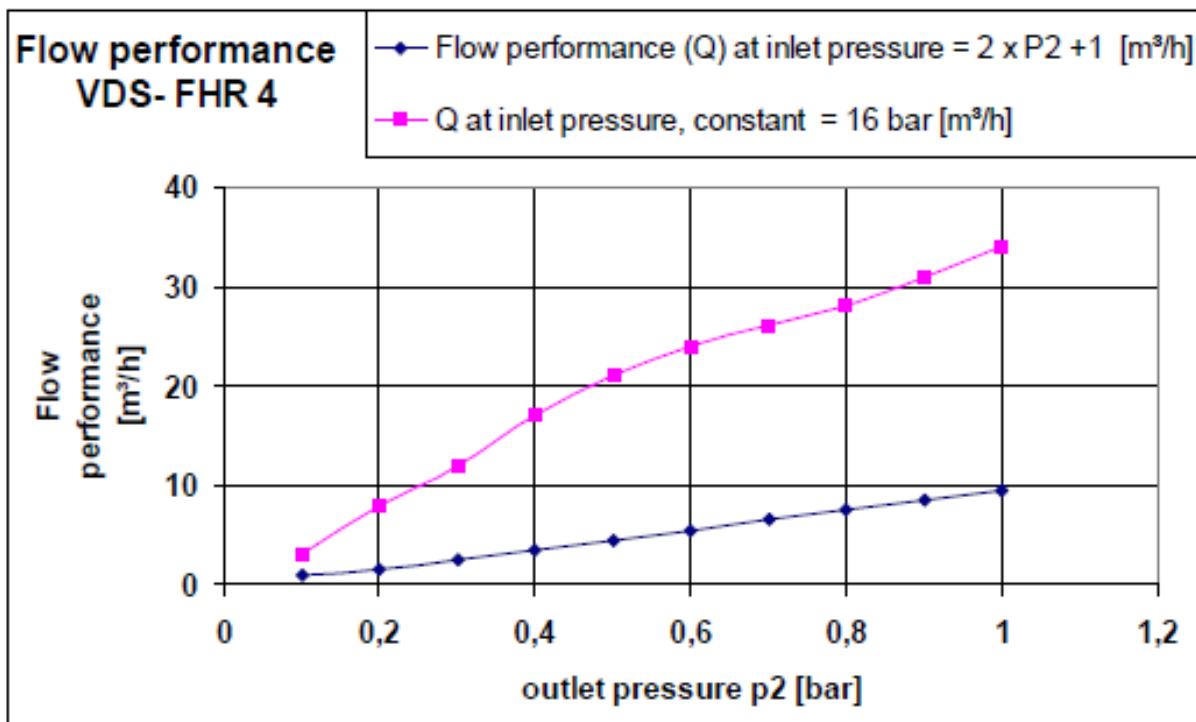
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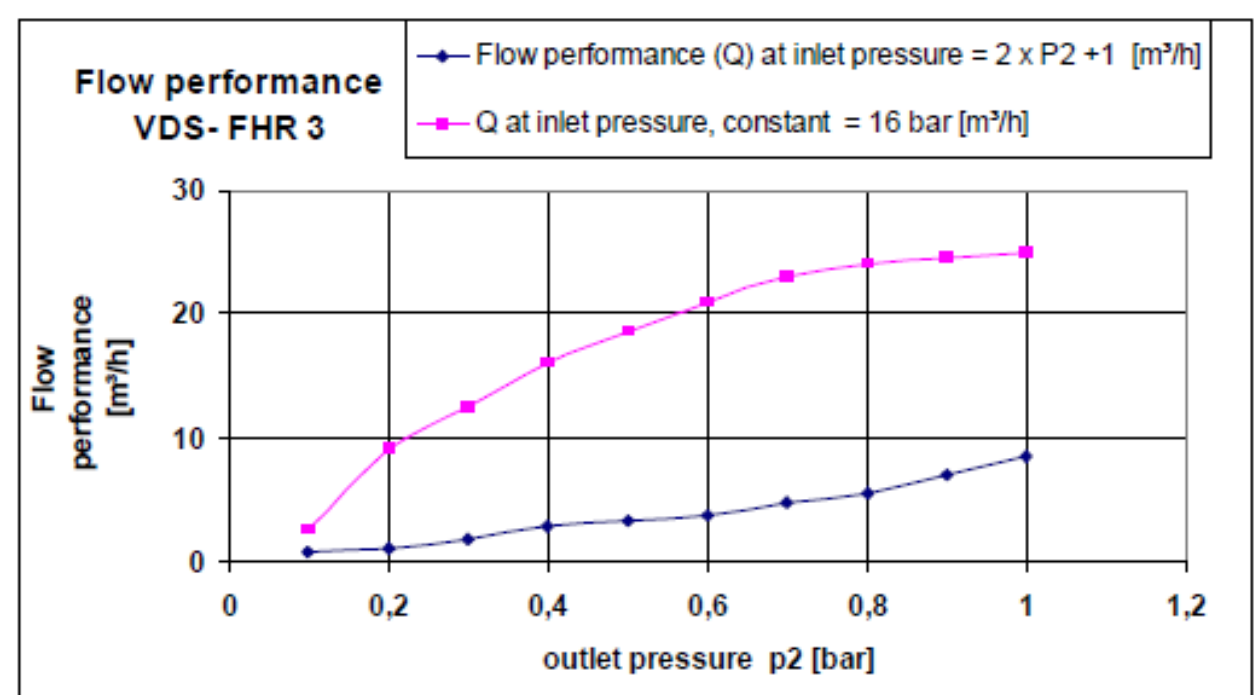
# VDS-FHR 3/ VDS-FHR 4



Flow performance VDS-FHR 4



Flow performance VDS-FHR 3



## ORDER DETAILS

<b>Material:</b> 1 = brass 2 = brass, nickel plated, hand connected	<b>Inlet pressure:</b> 1 = 200 bar 2 = 300 bar	<b>Seat:</b> 1 = 3 mm 2 = 4 mm	<b>Outlet pressure ranges:</b> 1 = up to 30 mbar 2 = up to 50 mbar 3 = up to 70 mbar 4 = up to 100 mbar 5 = up to 200 mbar 6 = up to 300 mbar 7 = up to 500 mbar 8 = up to 700 mbar 9 = up to 1000 mbar
--	--	--------------------------------------	--

Regulator type	2-stage	17-	2	2	2	1	Gas type
VDS-FHR 3 / FHR 4	precision regulator	Type	Material	Inlet	Seat	Outlet	Gas type

**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings, cylinder retainers and accessories

# Cylinder pressure regulator HD250 FL



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass matt chrome plated or stainless steel	This pressure regulator is designed for use with high inlet and high outlet pressures. High pressure applications.	The Cylinder pressure regulator HD250 FL is a single-stage pressure-regulator made of matt Chrome plated brass or high-grade steel 1.4404.  The HD250 FL is designed as a piston pressure-regulator and reduces the pressure of compressed gases to a maximum outlet pressure of 250 bar.  It works according to the principle of the force equilibrium between the adjusted spring action and the outlet pressure.  The pressure regulator is fitted as standard with gas specific connections.
Seat:	PCTFE		
Elastomere:	viton / NBR		
Max. inlet pressure:	300 bar		
Operating area:	5 - 250 bar 1 - 100 bar 1 - 50 bar		
Operating temp.:	-20°C bis +70°C		
Size:	180 x 95 x 125		
Weight:	1350g		
Connections:	NPT ¼" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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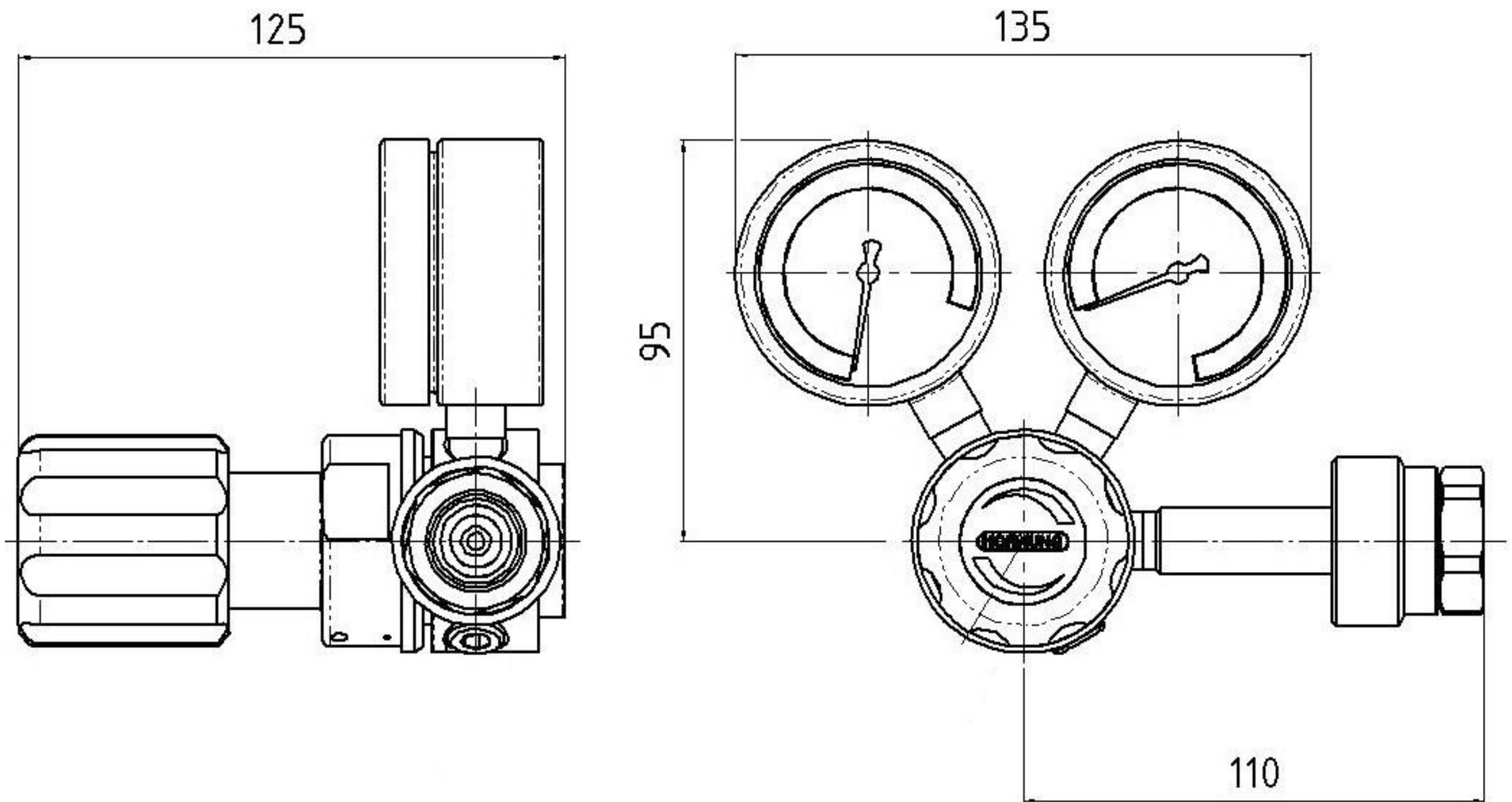
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# HD250 FL



## ORDERING INFORMATION

### Material:

1 = brass, nickel and matt chrome plated  
2 = stainless steel

### Gaskets:

1 = NBR  
2 = viton

### Inlett pressure:

1 = 200 bar  
2 = 300 bar

### Operating area:

1 = 5 - 250 bar  
2 = 1 - 100 bar  
3 = 1 - 50 bar

Regulator type  
34

HD250 FL

34-  
Type

1  
Material

1  
Gaskets

2  
Inlet pressure

1  
Pressure

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Gauges, screws, Cylinder holders and accessories  
8. Compression fittings



# Cylinder pressure regulator HD 400 FL

- for high pressure applications



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	This pressure regulator is designed for use with high inlet and high outlet pressures.  High pressure applications.	HD 400 FL is a single-stage pressure regulator made of brass, nickel and matt chrome plated or stainless steel 1.4404.
Seat:	PCTFE	The high-grade stainless steel construction with elastomer made of viton compound permits the use of aggressive media with this pressure regulator.	HD 400 FL is designed as a piston pressure regulator and reduces the pressure of compressed gases to a maximum outlet pressure of 300 bar.
Gaskets:	viton / NBR		The pressure regulator will be fitted with gas specific cylinder connector to all common national standards.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	10 - 300 bar		
Operating temp.:	-20°C up to +70°C		
Dimensions (wxhxd):	180 x 95 x 125 mm		
Weight:	1350 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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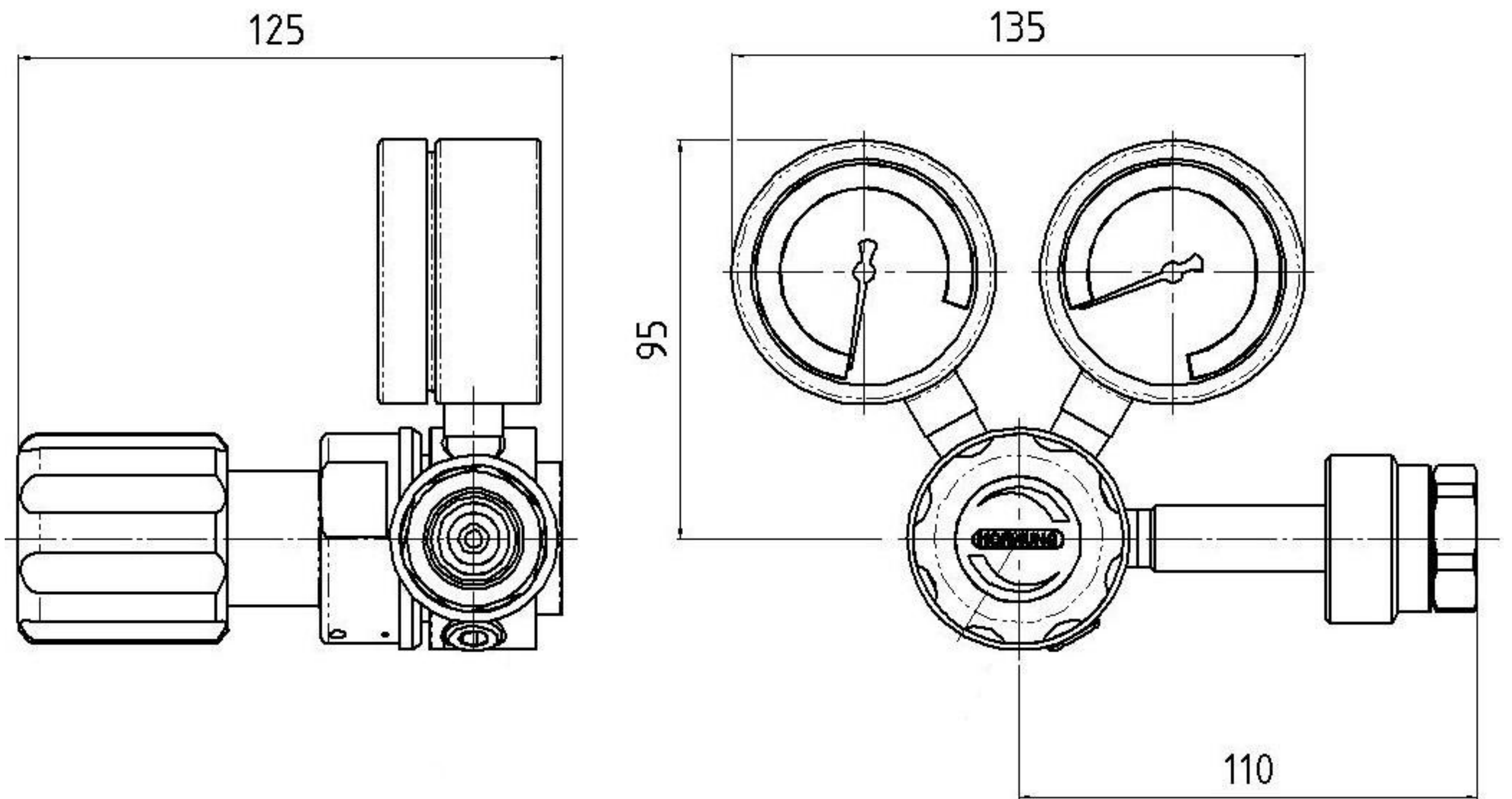
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# HD 400 FL



## ORDER DETAILS

### Material:

- 1 = brass, nickel and matt chrome plated
- 2 = stainless steel

### Gaskets:

- 1 = NBR
- 2 = viton

Regulator type

50 HD 400 FL

50-  
Typ

1  
Material

1  
Gaskets

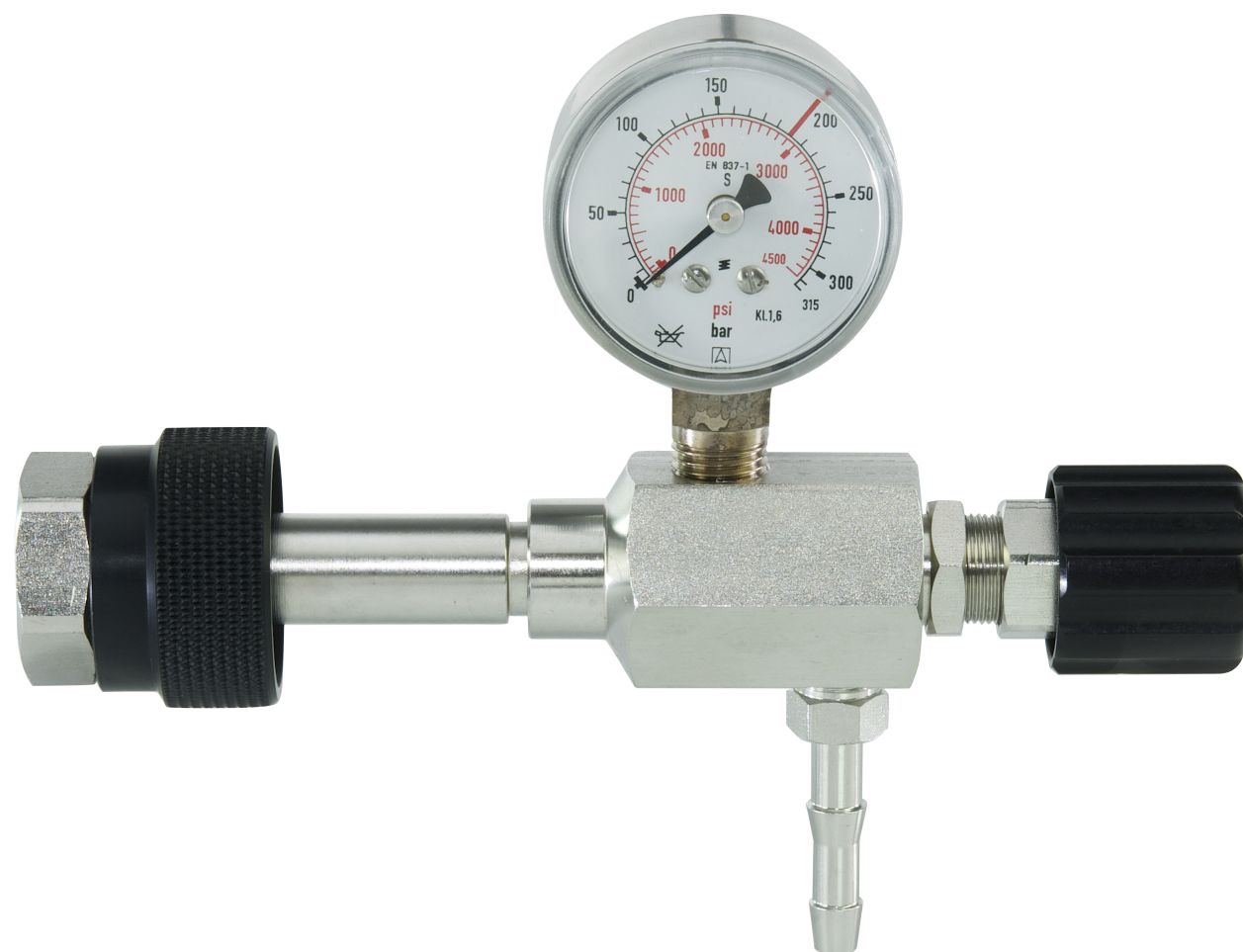
Gas type  
Gas type

**Accessories:** See total catalogue segment

- 7. Gauges, screws, cylinder retainers and accessories
- 8. Compression fittings

# Fine dosage valve Rossignol

- with cylinder valve connection according national standards



TECHNICAL DETAILS		APPLICATION	DESCRIPTION
Body:	brass, nickel plated or stainless steel	The metering valve Rossignol will be used for industrial applications as well as for such in laboratories, e.g. for gases (like hydrocabons), where the vapour pressure is low or pressure control is not needed in applications.	The rossignol metering valve will be fitted directly to the cylinder valve.
Seat:	metering valve		Due to the slim conus of the metering spindle the rossignol valve guarantees precise metering.
Gaskets:	viton		As an option the valve can be delivered with gauge for indicating cylinder pressure.
Max inlet pressure:	200 bar		The rossignol valve can not be used for pressure control.
Flow max.:	50 l/min air		
Operating temp.:	-20 up to +70°C		
Dimensions (wxhxd):	146 x 150* x 75 mm		
Connections:	inlet: DIN 477-1 (or on request)  outlet: nozzle 6mm		
* modification with gauge and nozzle			

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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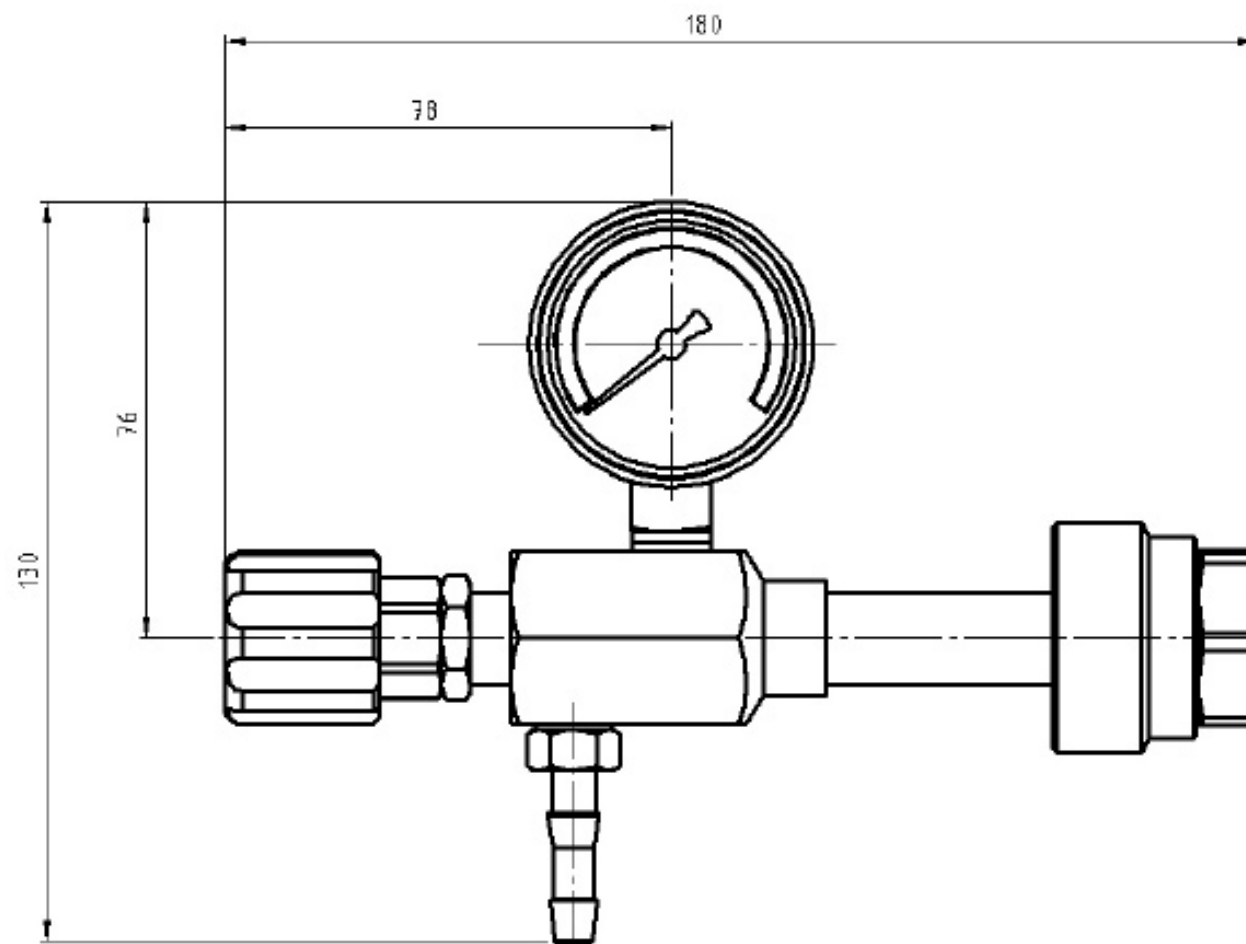
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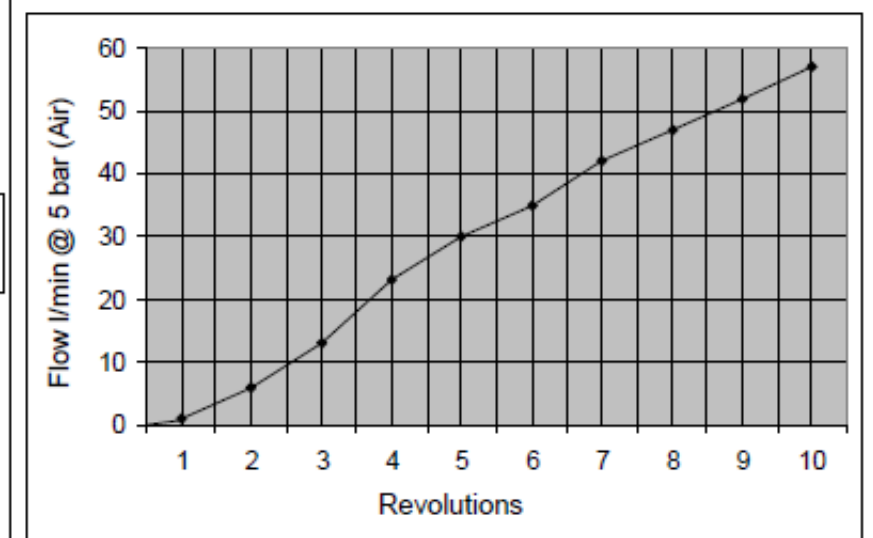
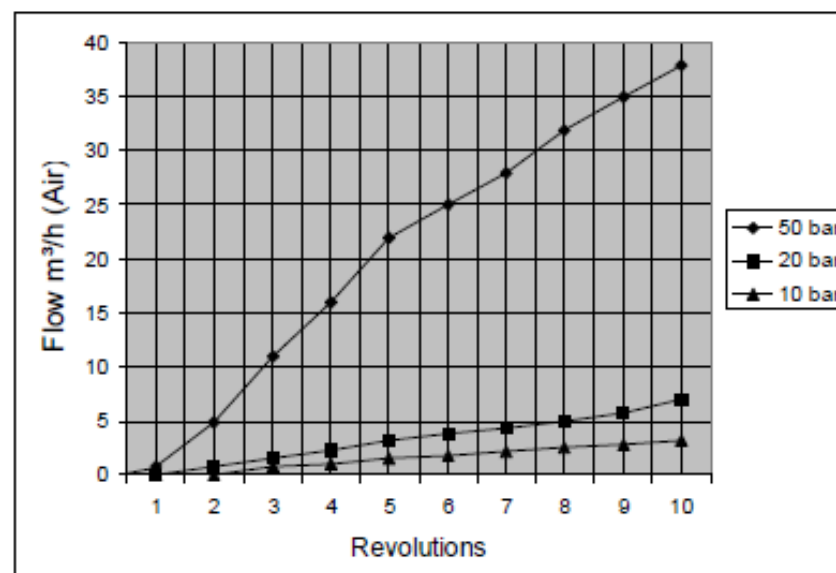
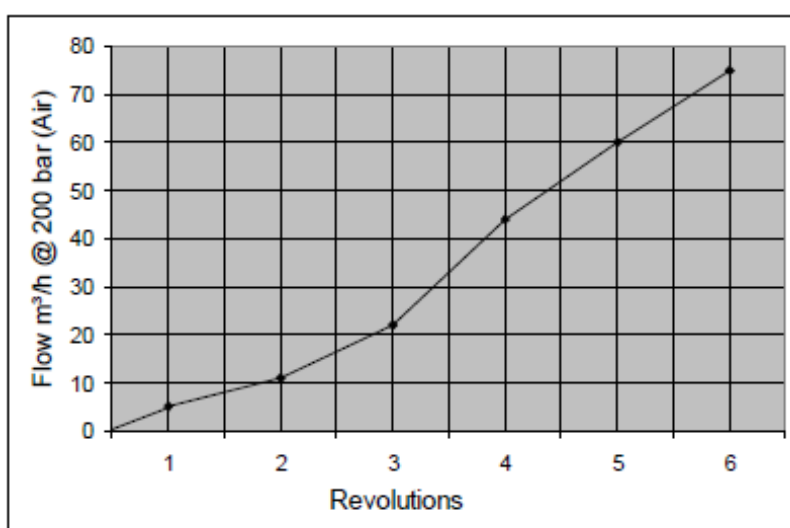
# ROSSIGNOL



Flow m<sup>3</sup>/h @ 200 bar (Air)

Flow m<sup>3</sup>/h (Air)

Flow l/min @ 5 bar (Air)



## ORDER DETAILS

**Material:**

- 1 = brass, nickel plated
- 2 = stainless steel

**Gaskets:**

- 1 = NBR
- 2 = viton

**Outlet connection:**

- 0 = 1/4" NPT - internal thread
- 1 = nozzle 6 mm
- 2 = others

Valve type    metering valve  
 Rossignol    62

62-                    2                    2                    2                    Gas type  
 Type                Material            Gaskets            Outlet                Gas type

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screws, compression fittings and other accessories



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# Cylinder stations PN 200 / 300 bar

- in brass, nickel and matt chrome plated and in stainless steel electropolished
- for pure gases up to 6.0 (99.9999 Vol.%) purity
- for corrosive gases and – gas mixtures with external (inert-) purge system
- single and dual stage and with automatic changeover

## Contents:

Cylinder station HP 200	1x1 1-stage with an inlet shut-off valve
Cylinder station HP 230	1x1 1-stage with internal purge system
Cylinder station HP 231	1x1 2-stage with internal purge system
Cylinder station HP 236	1x1 1-stage with external purge system
Cylinder station HP 237	1x1 2-stage with external purge system
Cylinder station HP 240	2x1 1-stage with manual changeover
Cylinder station HP 241	2x1 2-stage with manual changeover
Cylinder station HP 250	2x1 1-stage with automatic changeover
Cylinder station HP 251	2x1 2-stage with automatic changeover
Cylinder station HP 252	2x1 1-stage with automatic changeover (sequential)
Cylinder station HP 253	2x1 2-stage with automatic changeover (sequential)
Cylinder station HP 254	2x1 1-stage with automatic changeover (side by side)
Cylinder station HP 255	2x1 2-stage with automatic changeover (side by side)
Cylinder station HP 256	2x1 1-stage with automatic changeover (high flow)
Cylinder station HP 257	2x1 2-stage with automatic changeover (high flow)
Cylinder station HP 258	2x2 1-stage with manual changeover
Cylinder station HP 259	2x2 2-stage with manual changeover
Cylinder station HP 260	2x2 1-stage with manual changeover
Cylinder station HP 261	2x2 2-stage with manual changeover
Cylinder station HP 262	2x2 1-stage with automatic changeover
Cylinder station HP 263	2x2 2-stage with automatic changeover
Cylinder station HP 275	1x1 for Acetylene 2.6
Cylinder station HP 276	2x1 with automatic changeover for Acetylene 2.6
Cylinder station HP 277	2x1 – 2x2 – 2x3 with ACV
Cylinder station HP 278	1x1 for 1 cylinder Propane
Cylinder station HP 280	2x1 with automatic or manual changeover for Propane
Cylinder station HP 290	2x2 – 2x3 with ACV
Cylinder station HP 291	with ACV
Three-way purge block HP 560	

# Cylinder station HP 200

- 1x1 cylinder (bundle) single stage with an inlet pressure shut-off valve



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The cylinder station HP 200 is a single stage cylinder station. It serves the safe supply of high purity gases and gas mixtures from single or bundled cylinders.
Seat:	PCTFE	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel wall bracket and consists of one pressure regulator with in- and outlet pressure gauges and an inlet pressure shut-off valve for the process gas.
Diaphragm:	1.4435		
Leakage rate:	10 - 8 mbar l/s He		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 1-6; 1-12; 1-17 bar		
Cv:	0,06		
Operating temp.:	-20°C bis +70°C		
Gauges:	inlet pressure gauge outlet pressure gauge		
Dimensions (wxhxd):	174 x 142 x 130 mm		
Weight:	2010 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2008** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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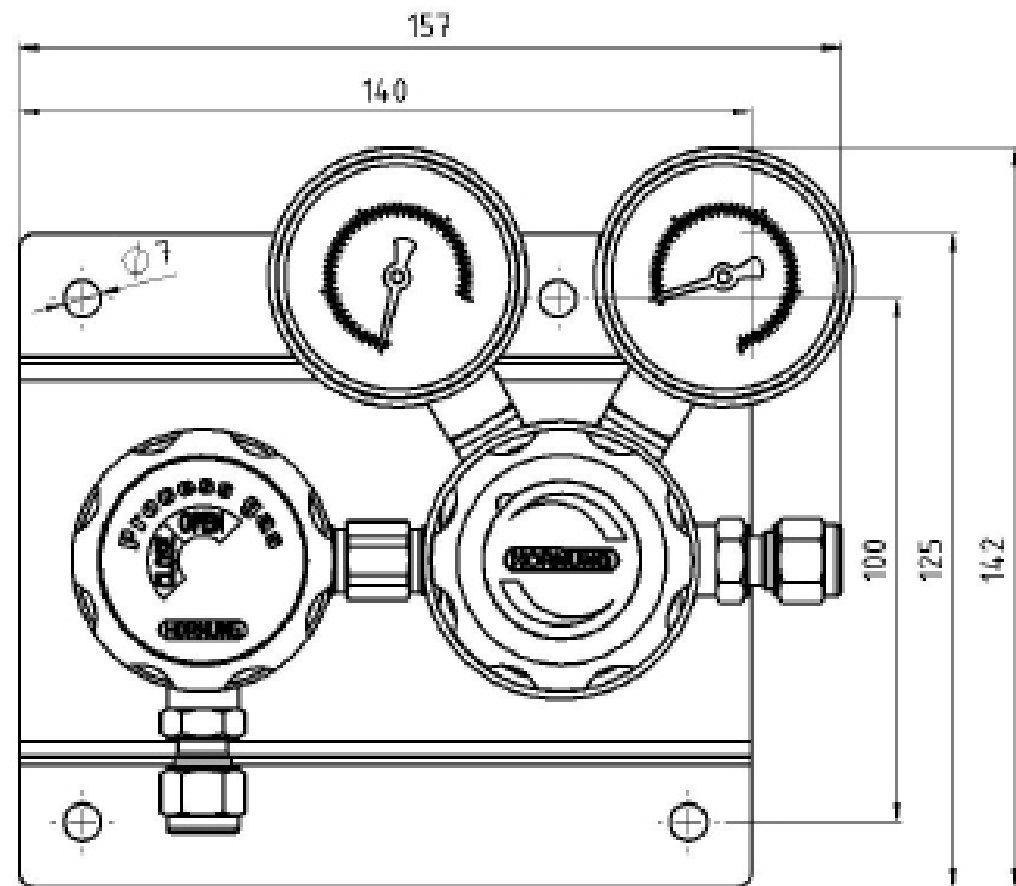
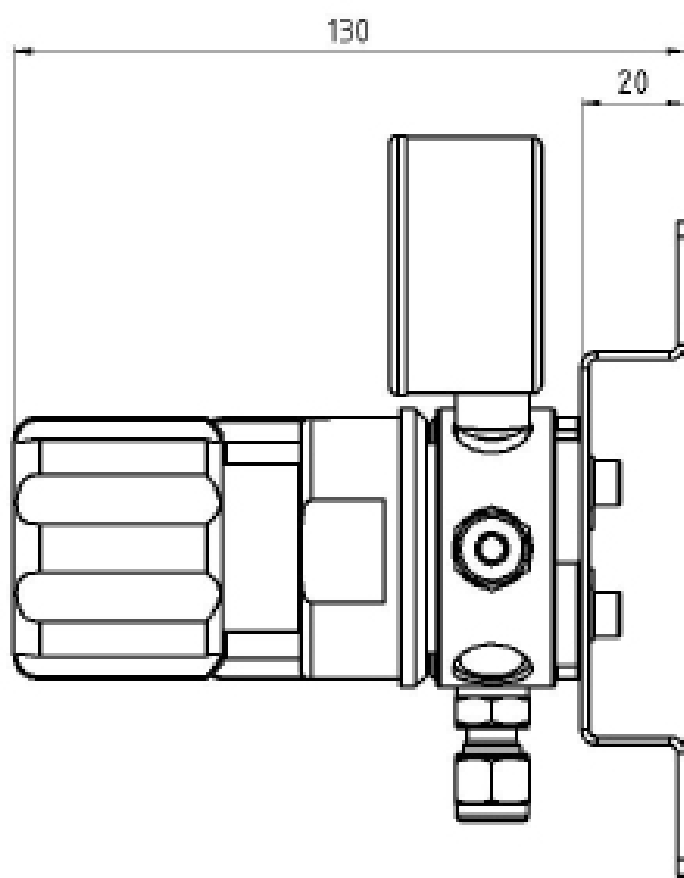
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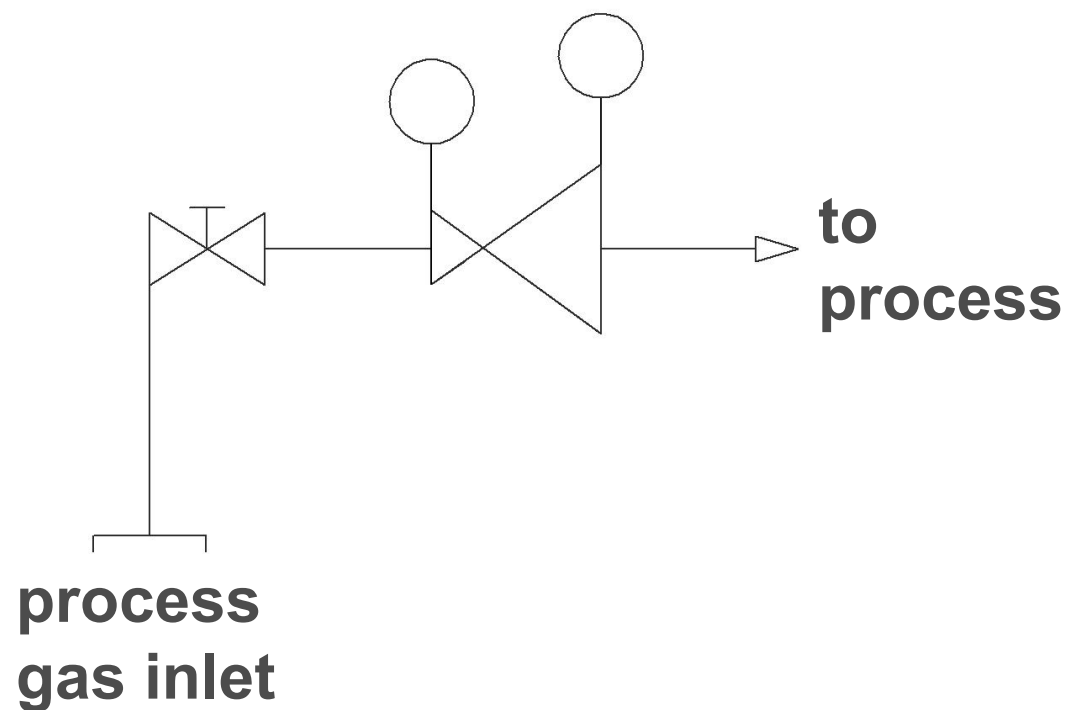
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# HP 200



## FLOW DIAGRAM



## SCOPE OF DELIEVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

For this station we recommend to connect a pigtail/ connecting hose. (see HP 600 - HP 603 in segment 7 of the catalog).

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
2 = 0,1- 3 bar  
3 = 1 - 6 bar  
4 = 1 -12 bar  
5 = 1 - 17 bar

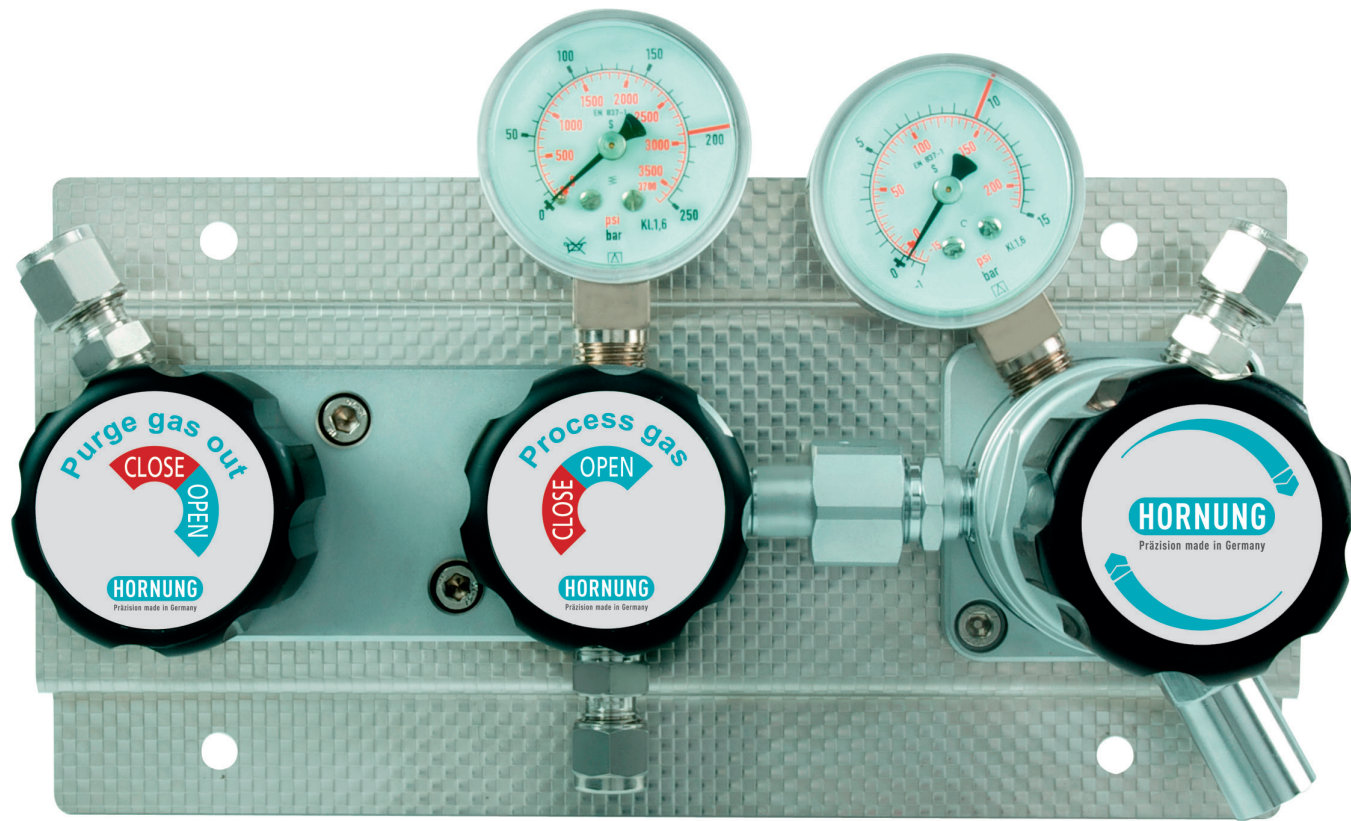
**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP200- Type	2 Material	1 p1	2 p2	1 Gauge	Gas type Gas type
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**Accessories: See total catalogue segment 7.** Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), connecting hose 200 bar (optional RV), connecting hose 300 bar (optional RV), gauges, compression fittings, cylinder holders and accessories, gas cylinder cabinets and safety equipment, (RV = check valve)

# Cylinder station HP 230 Frontline

- 1x1 cylinder (bundle) single stage with internal purge system



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 230 is a single stage panel for central gas supply with internal purging. It serves the safe supply of pure and mixed gases from single or bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Expandability for 1x2 cylinder/ bundle is already integrated.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 0,1-6; 1-12; 1-17; 5-50 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	240 x 125 x 135 mm		
Weight:	4,1 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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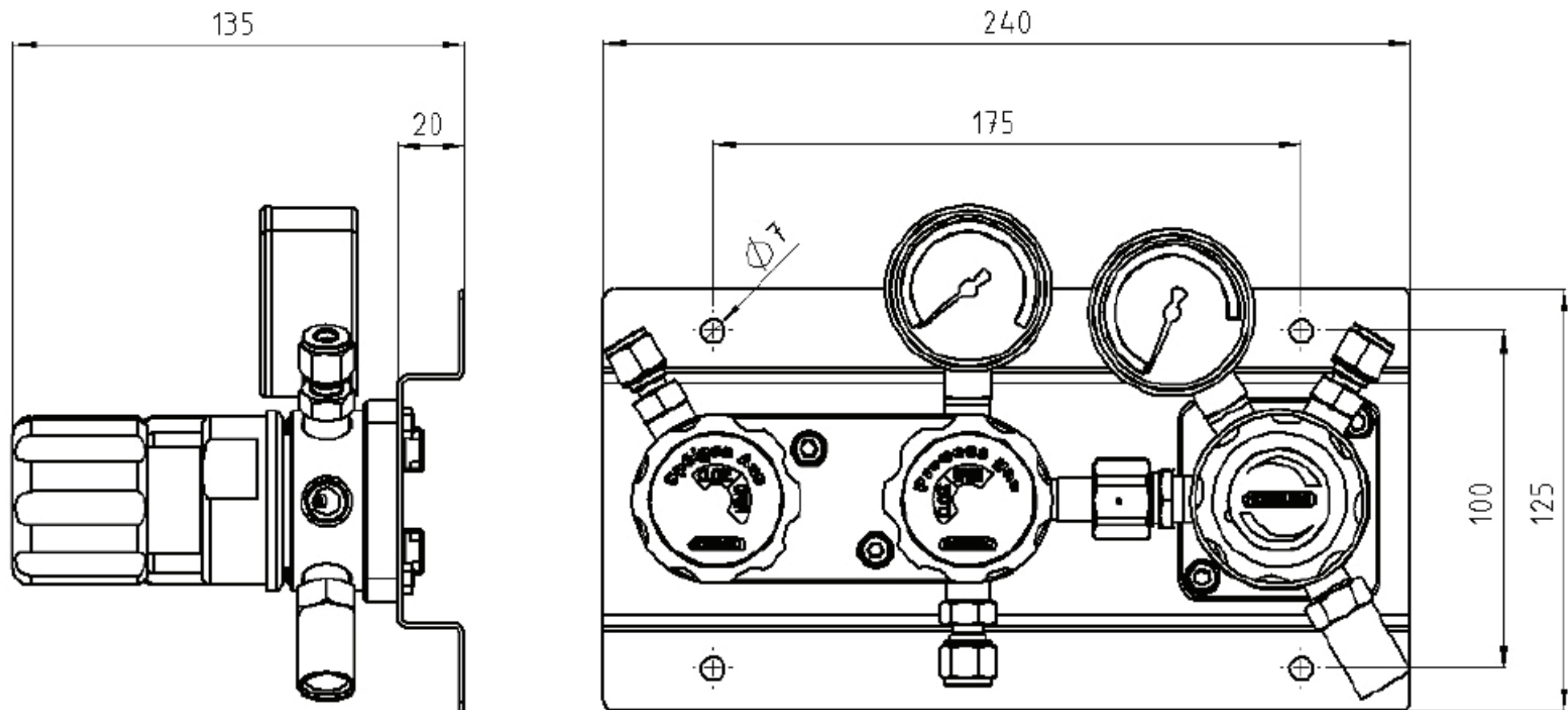
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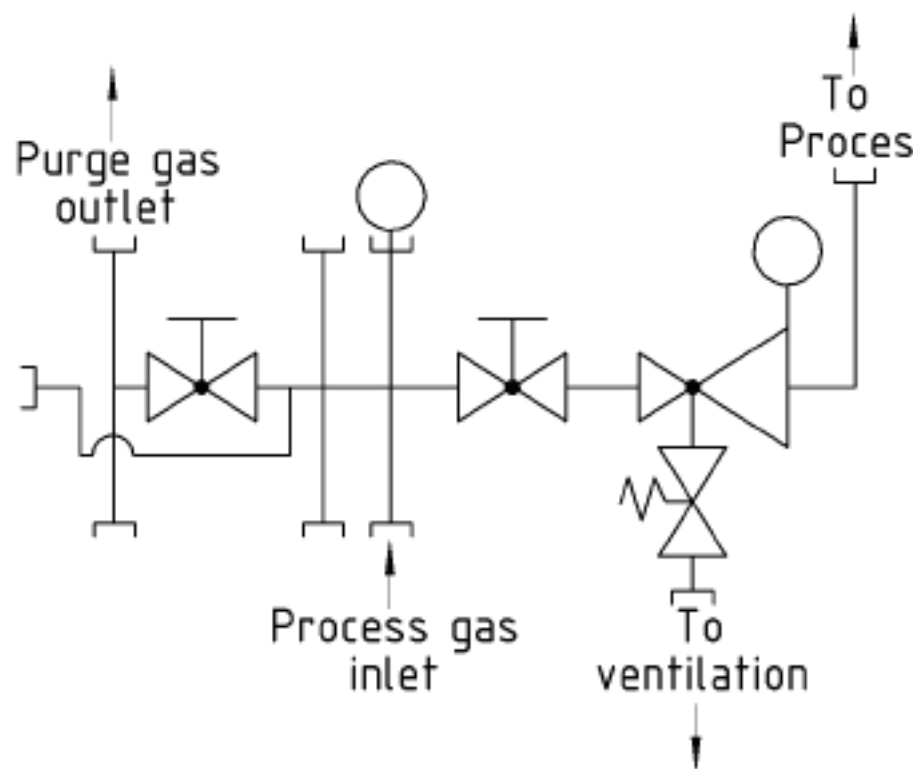
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# HP 230 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar  
6 = 5 - 50 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP230- Type	2 Material	1 p1	4 p2	2 Gauge	Gas types Gas types
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**Accessories:** See total catalogue segment

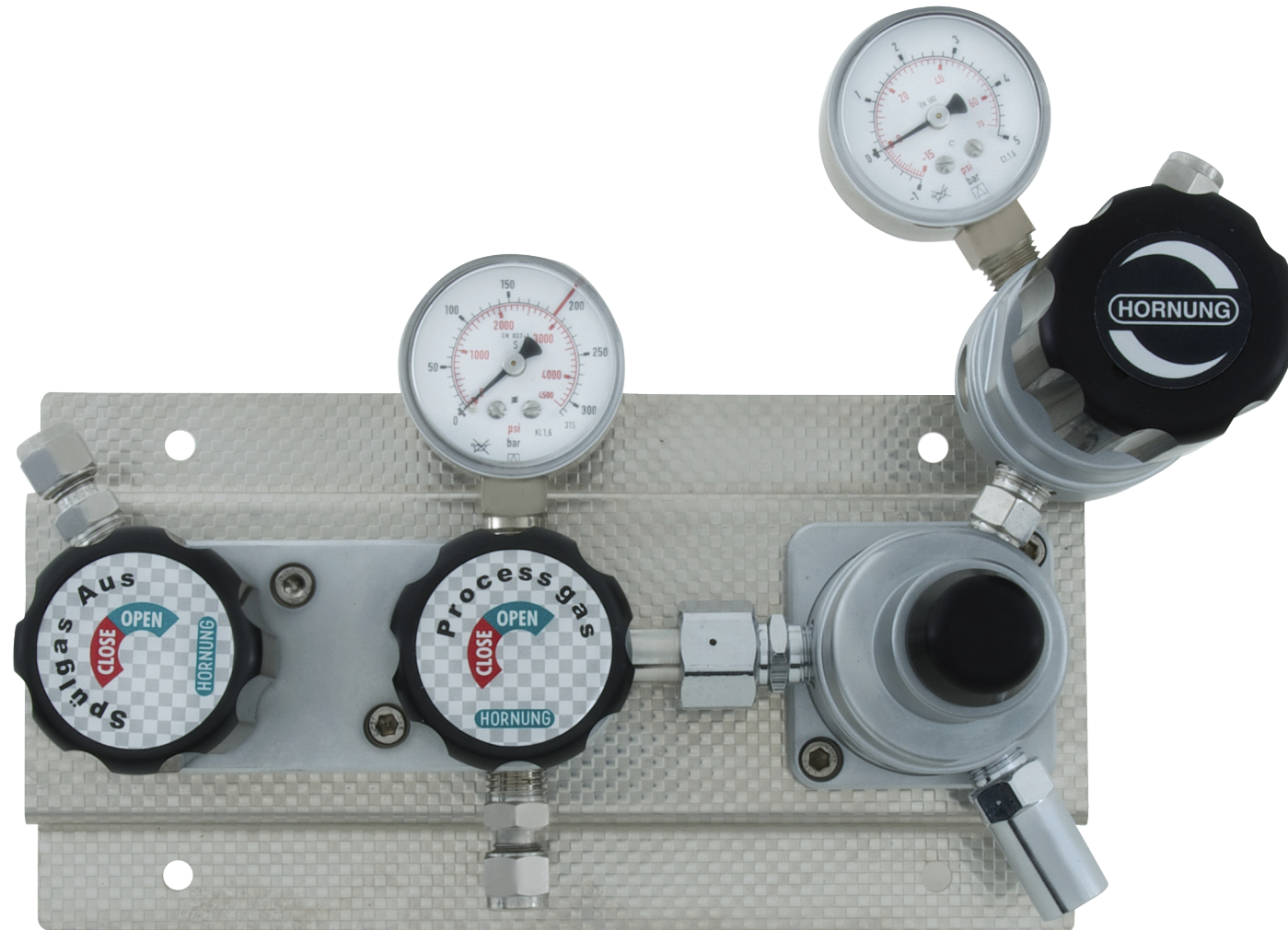
7. Pigtail 200 bar, pigtail 300 bar, connecting hose 200 bar, connecting hose 300 bar, gauges, compression fittings, cylinder retainers and accessories,

gas cylinder cabinets and safety equipment.



# Cylinder station HP 231 Frontline

- 1x1 cylinder (bundle) dual stage with internal purge system



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 231 is a dual stage panel for central gas supply with internal purging. It serves the safe supply of pure and mixed gases from single or bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		Assembly and disassembly of all fixtures from the front. Diaphragm shut-off valve in block design for process and purge gas with open and close display. Expandability for 1x2 cylinder / bundle is already integrated.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	265 x 205 x 135 mm		
Weight:	4,9 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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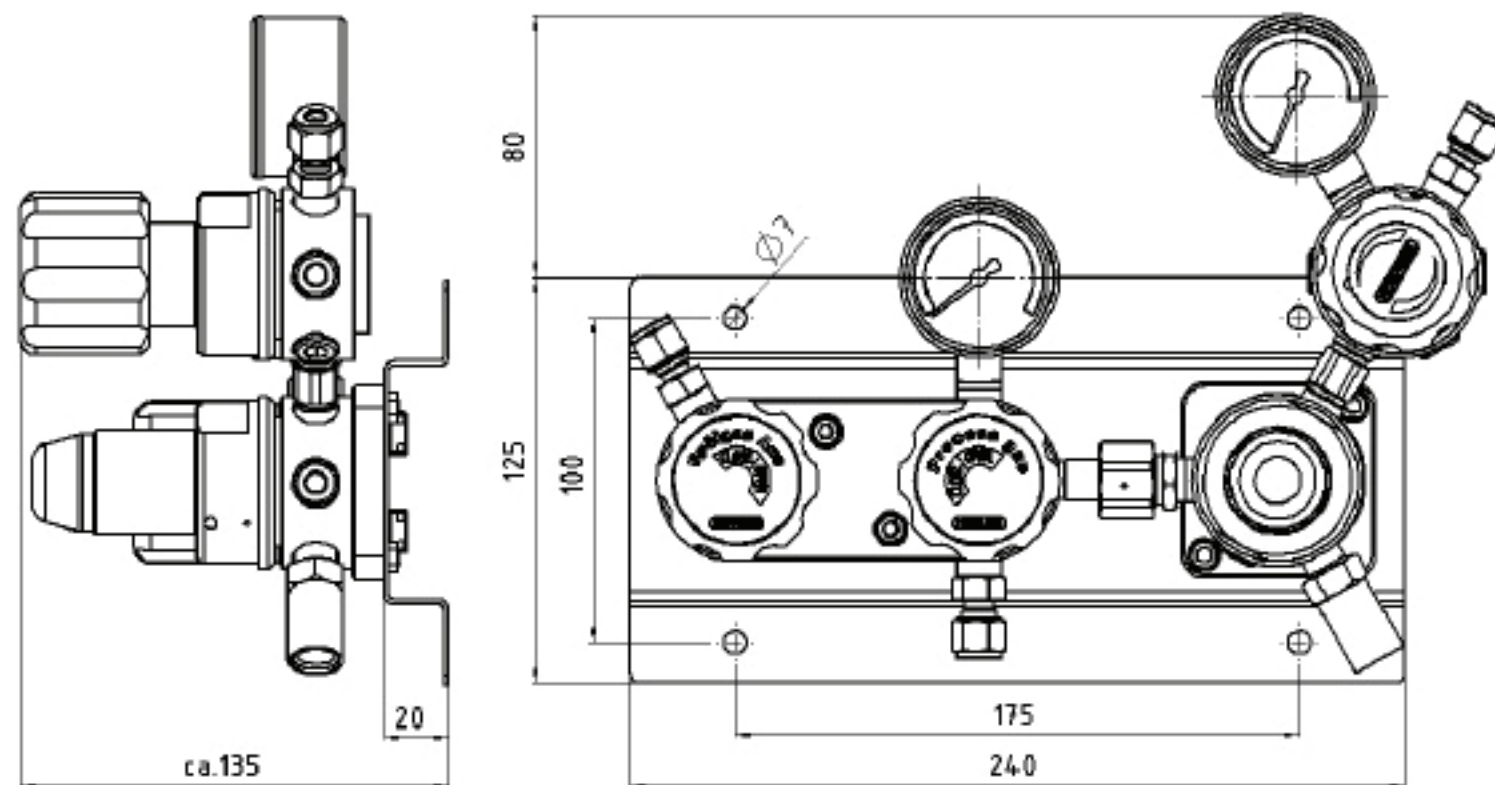
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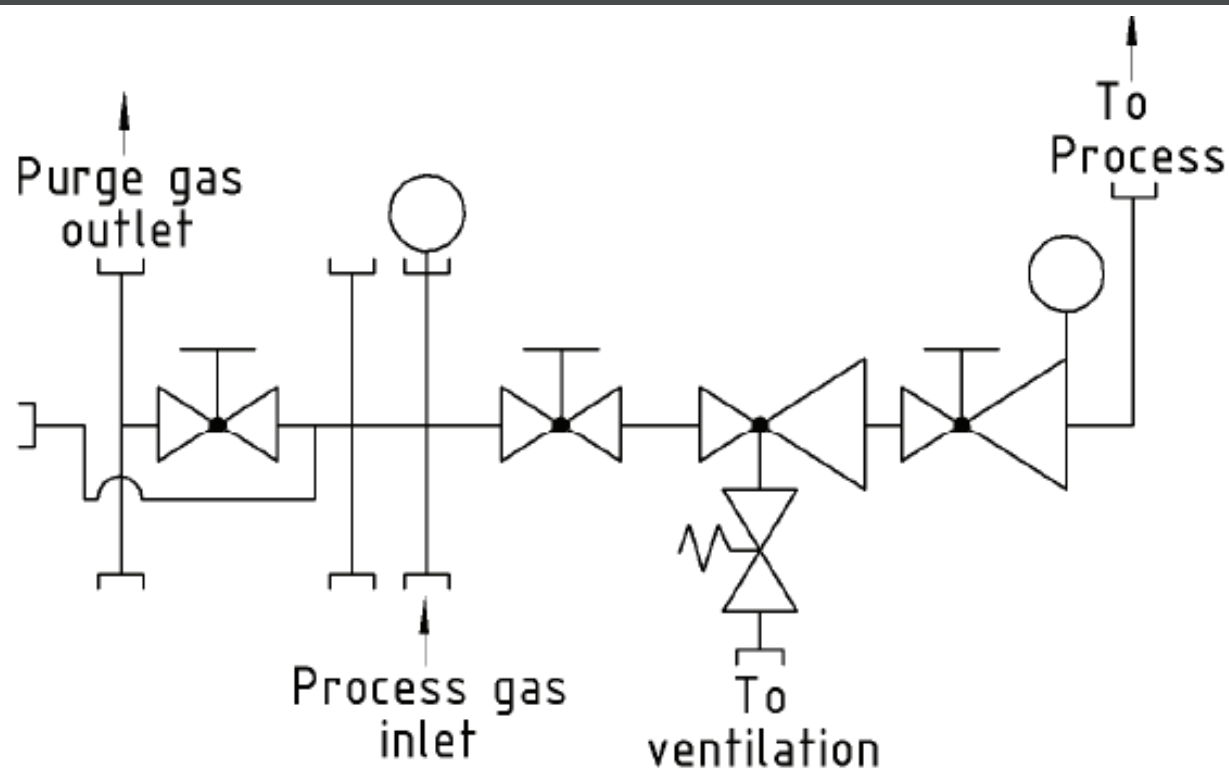
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# HP 231 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP231-  
Type

2  
Material

1  
p1

4  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets and  
safety equipment.



# Cylinder station HP 236 Frontline

- 1x1 cylinder (bundle) single stage with external purge system



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 236 is a single stage panel for central gas supply with external purging. It serves the safe supply of pure and mixed gases from single or bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		Diaphragm shut-off valve in block design for process and purge gas with open and close display. Expandability for 1x2 cylinder / bundle is already integrated.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 0,1-6; 1-12; 1-17 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	320 x 125 x 135 mm		
Weight:	5,2 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001 and ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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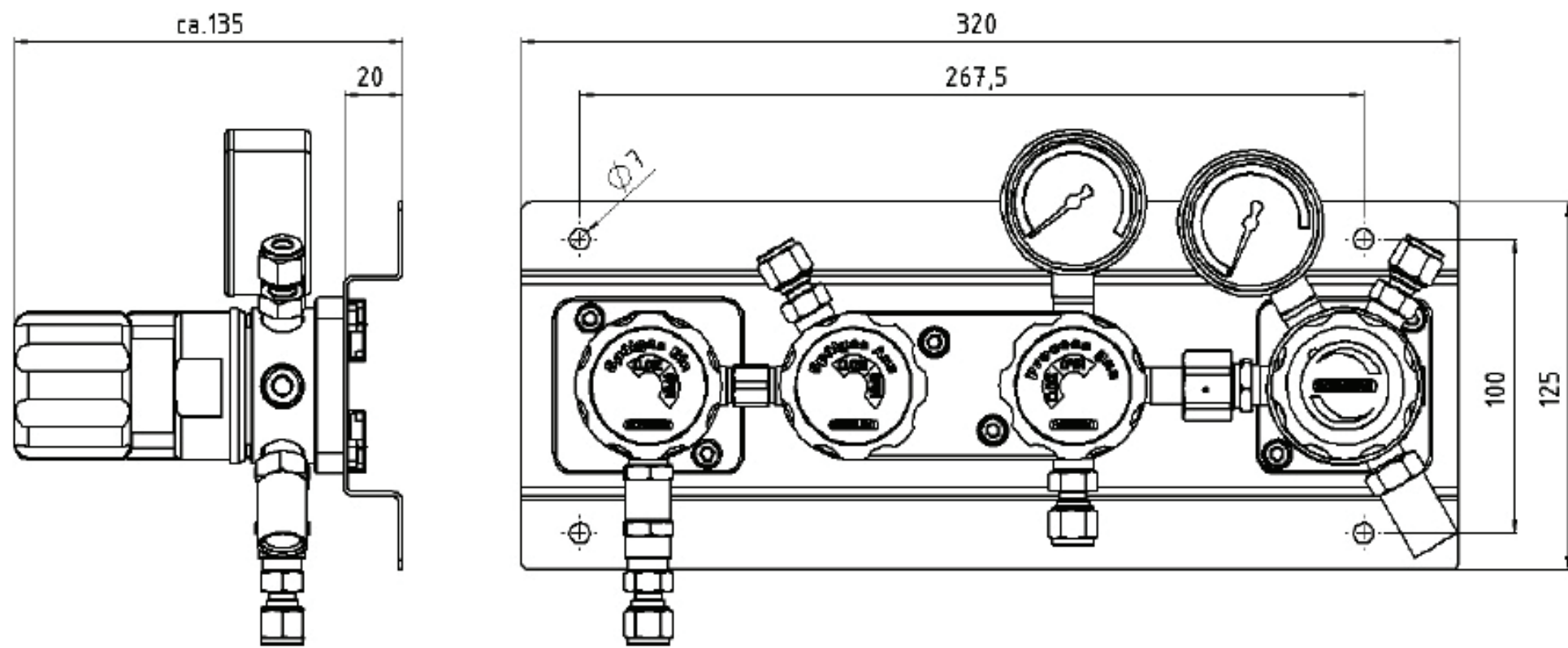
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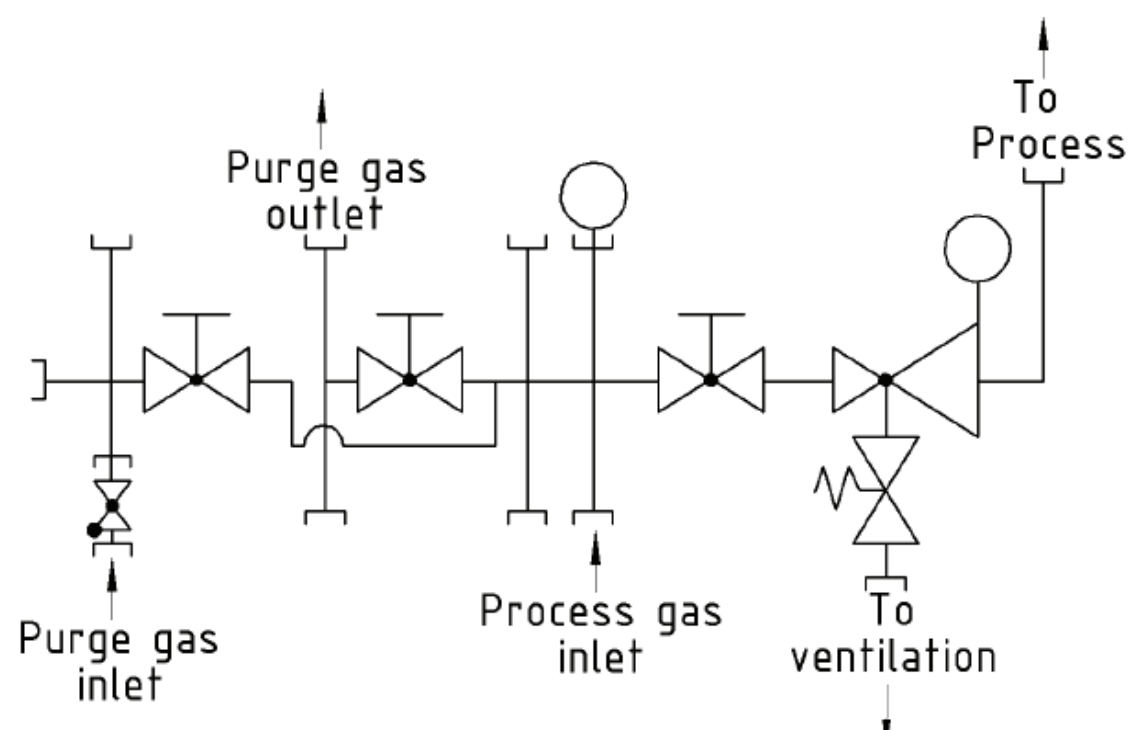
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# HP 236 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP236- Type	2 Material	1 p1	4 p2	2 Gauge	Gas types Gas types
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**Accessories:** See total catalogue segment

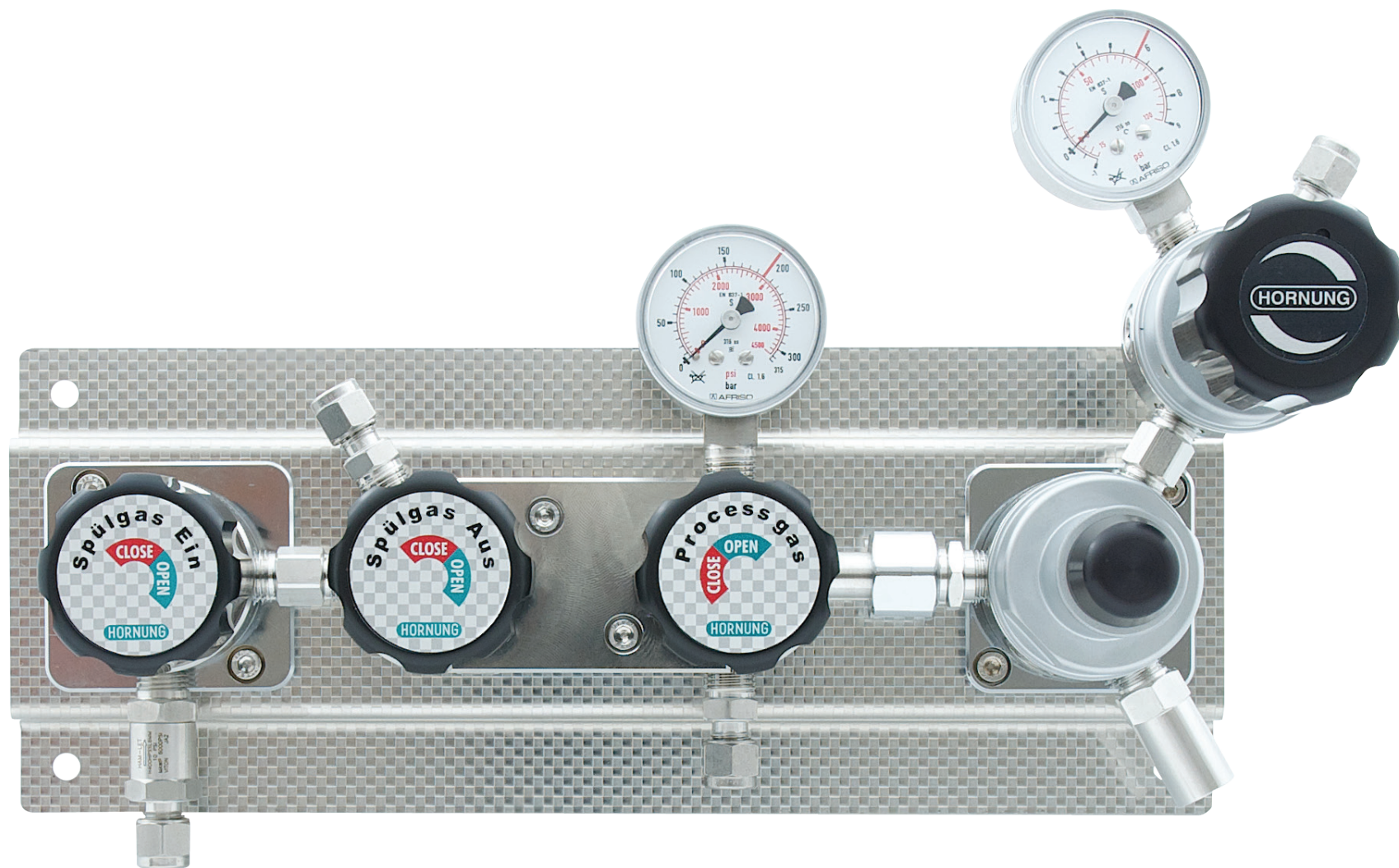
7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets  
and safety equipment.

# Cylinder station HP 237 Frontline

- 1x1 cylinder (bundle) dual stage with external purge system



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 237 is a dual stage panel for central gas supply with external purging. It serves the safe supply of pure and mixed gases from single or bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		Diaphragm shut-off valve in block design for process and purge gas with open and close display. Expandability for 1x2 cylinder/ bundle is already integrated.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	345 x 205 x 135 mm		
Weight:	6,2 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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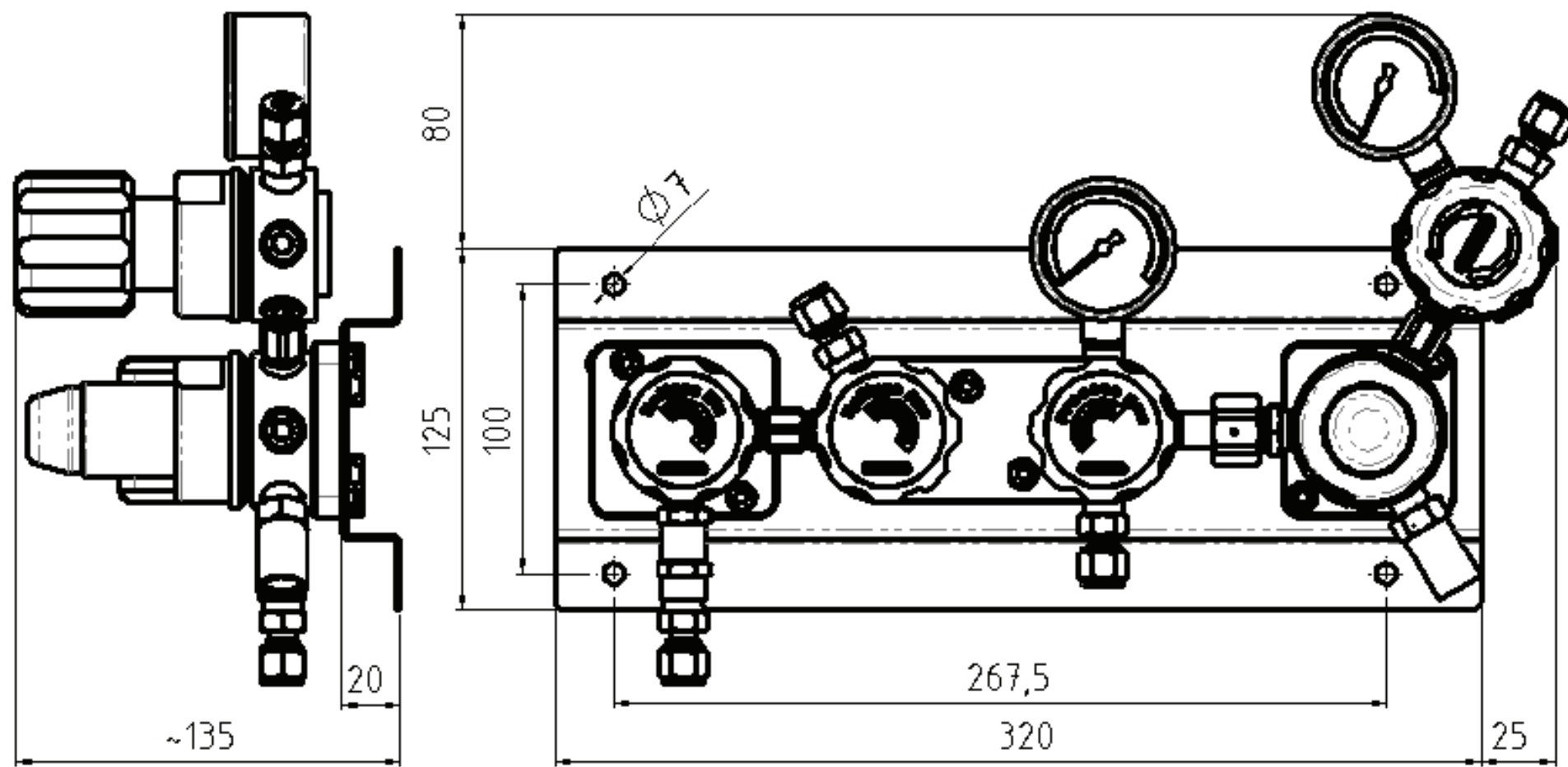
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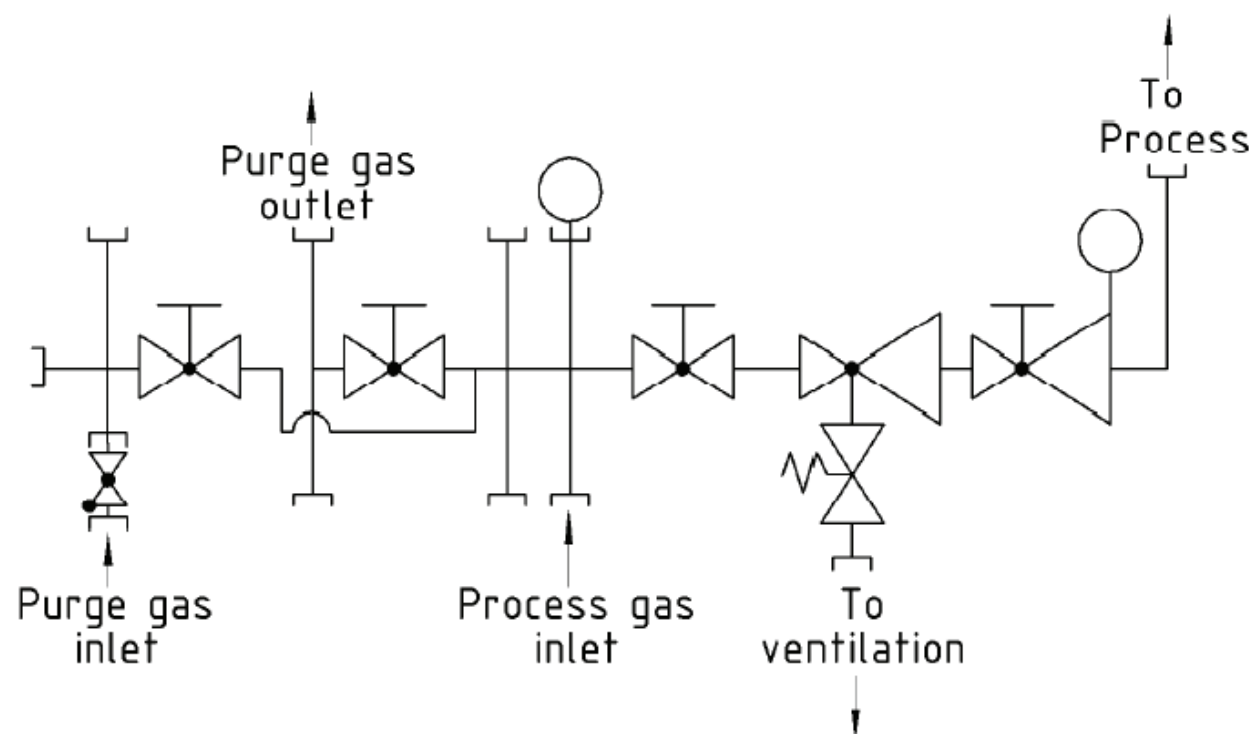
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# HP 237 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 -12 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP237- Type	2 Material	1 p1	4 p2	2 Gauge	Gas type Gas type
----------------	---------------	---------	---------	------------	----------------------

**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

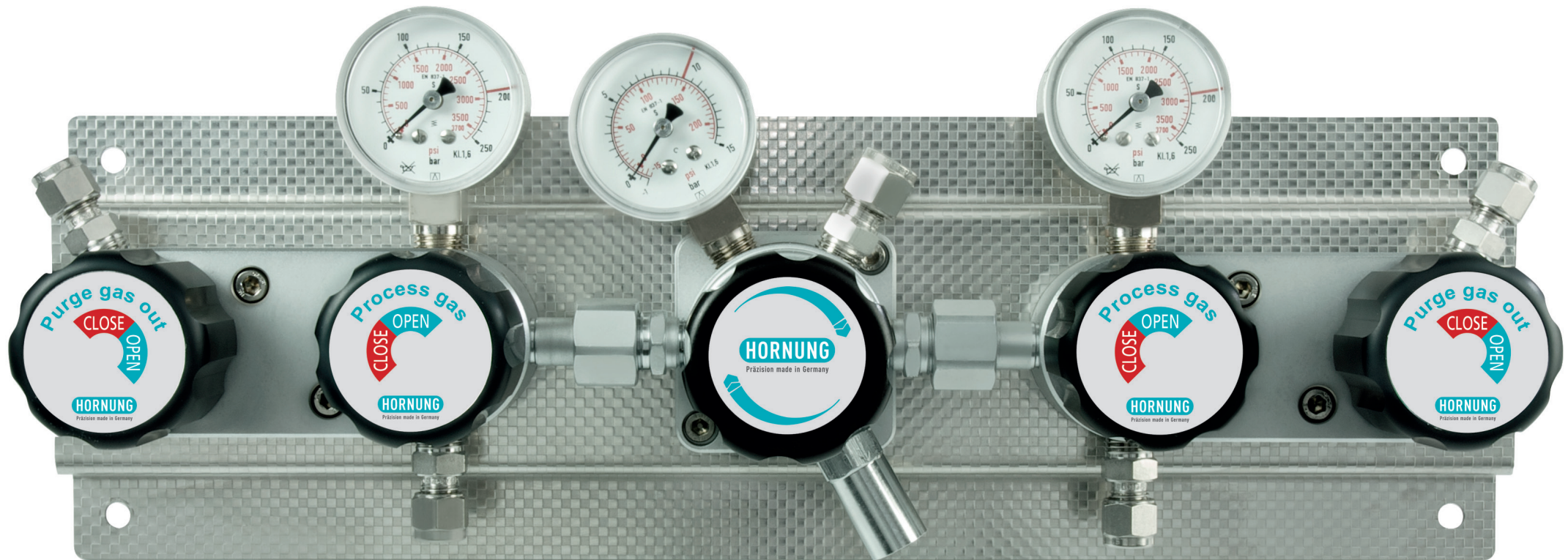
connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets and  
safety equipment.



# Cylinder station HP 240 Frontline

- 2x1 cylinder (bundle) single stage with manual changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 240 is a single stage panel for central gas supply with manual changeover and internal purging. It serves the safe supply of pure and mixed gases from 2 single or 2 bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	When changing cylinders, the gas supply must not be interrupted.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Gas purity:	≤ 6.0		Diaphragm shut-off valve in block design for process and purge gas with open and close display. Expandability for 2x2 cylinder/ bundle is already integrated.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 0,1-6; 1-12; 1-17; 5-50 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	400 x 125 x 135 mm		
Weight:	6,4 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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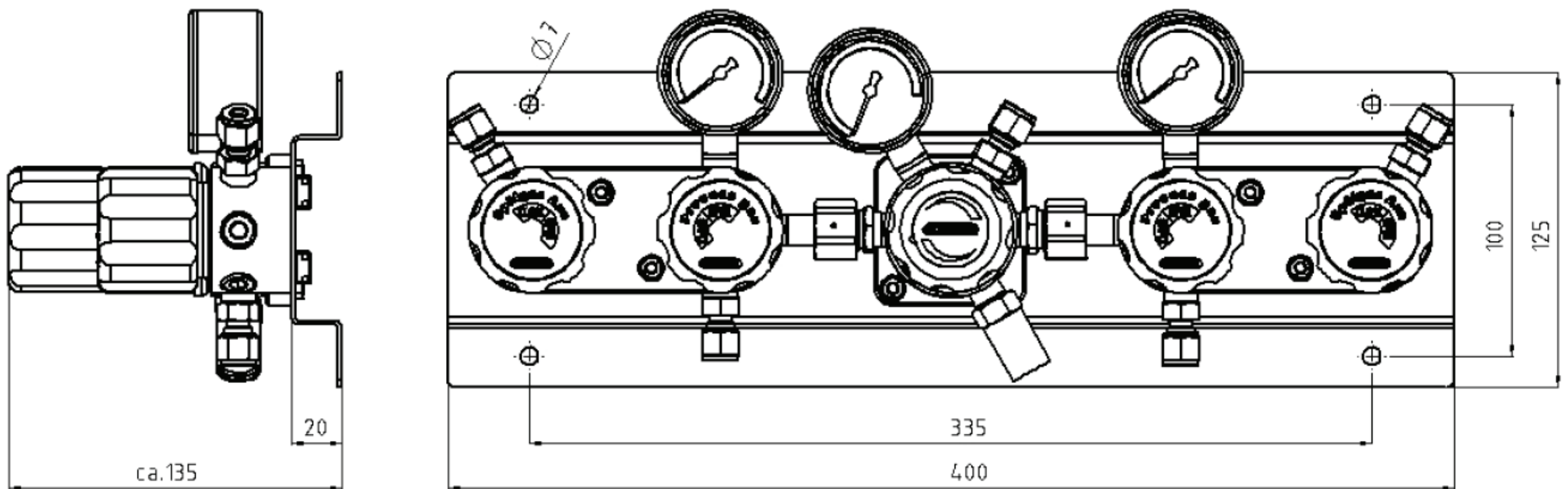
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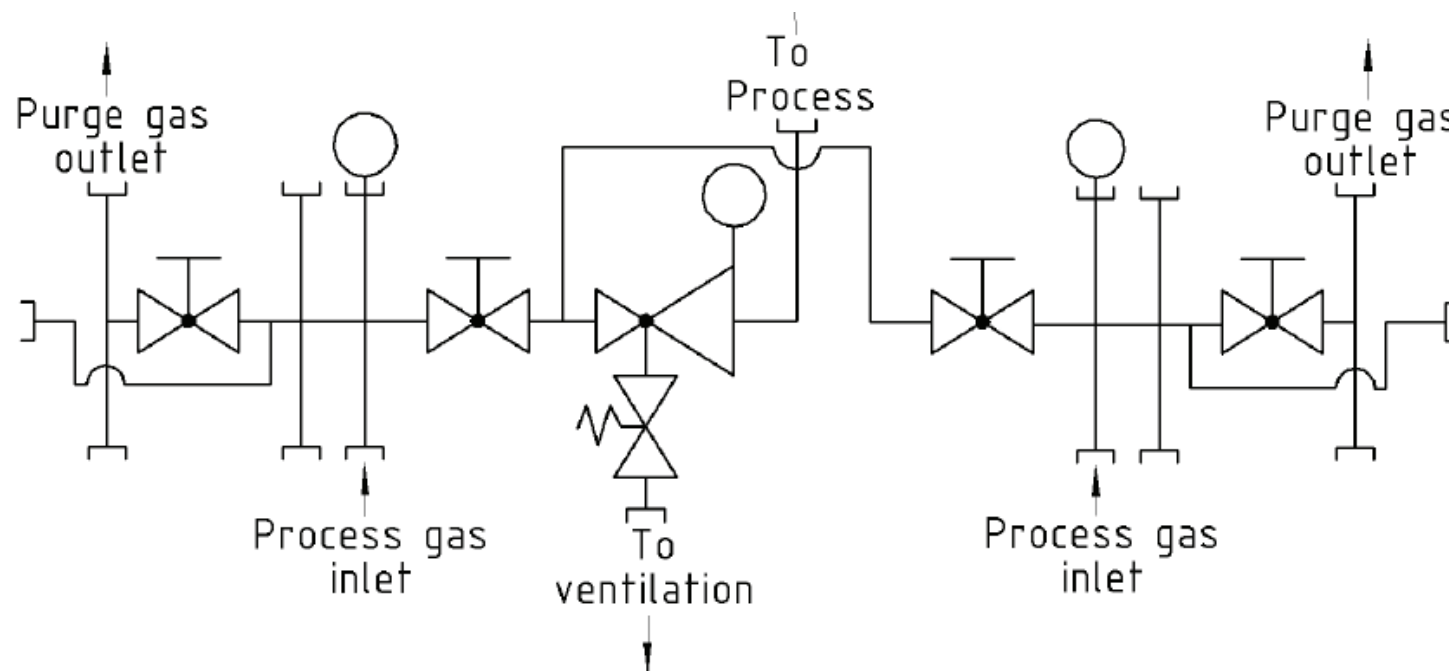
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# HP 240 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar  
6 = 5 - 50 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP240-  
Type

2  
Material

1  
p1

4  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets and  
safety equipment.



# Cylinder station HP 241 Frontline

- 2x1 cylinder (bundle) dual stage with manual changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 241 is a dual stage panel for central gas supply with manual changeover and internal purging. It serves the safe supply of pure and mixed gases from 2 single or 2 bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	When changing cylinders, the gas supply must not be interrupted.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Gas purity:	≤ 6.0		Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Expandability for 2x2 cylinder/ bundle is already integrated.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	400 x 205 x 135 mm		
Weight:	7,6 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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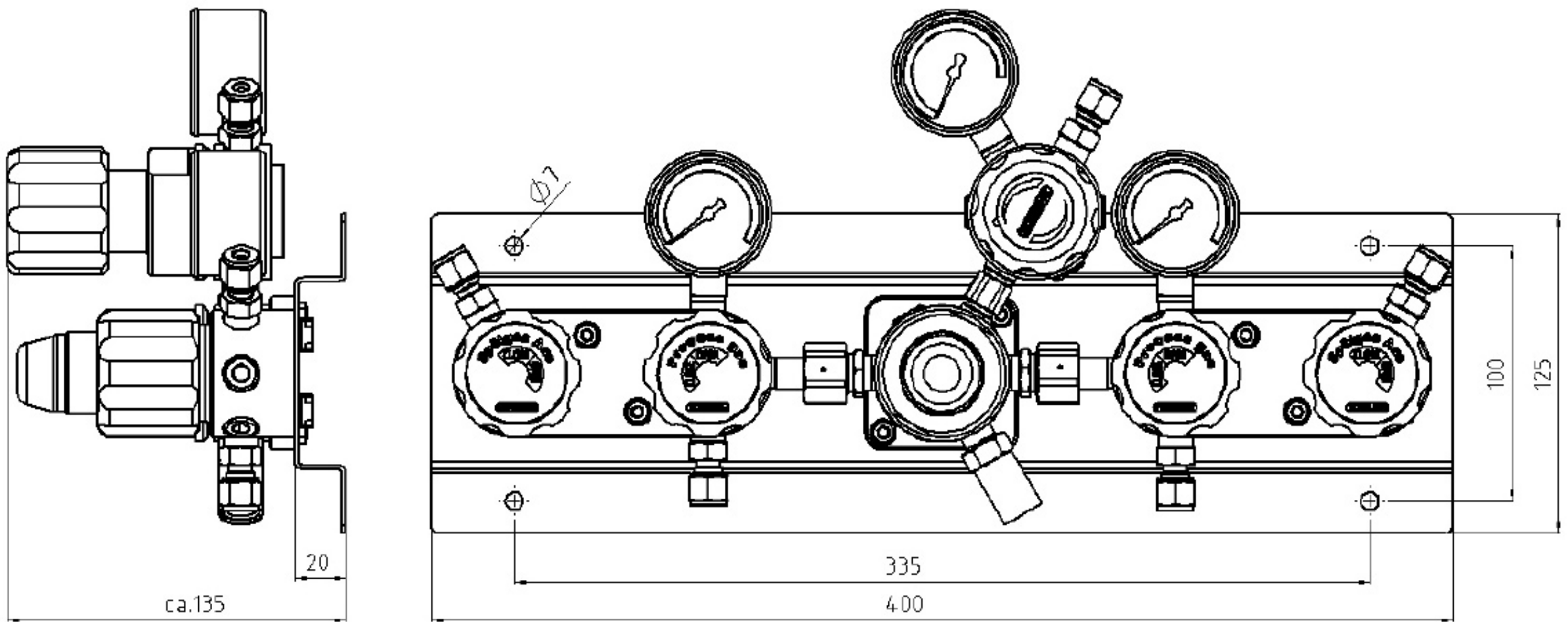
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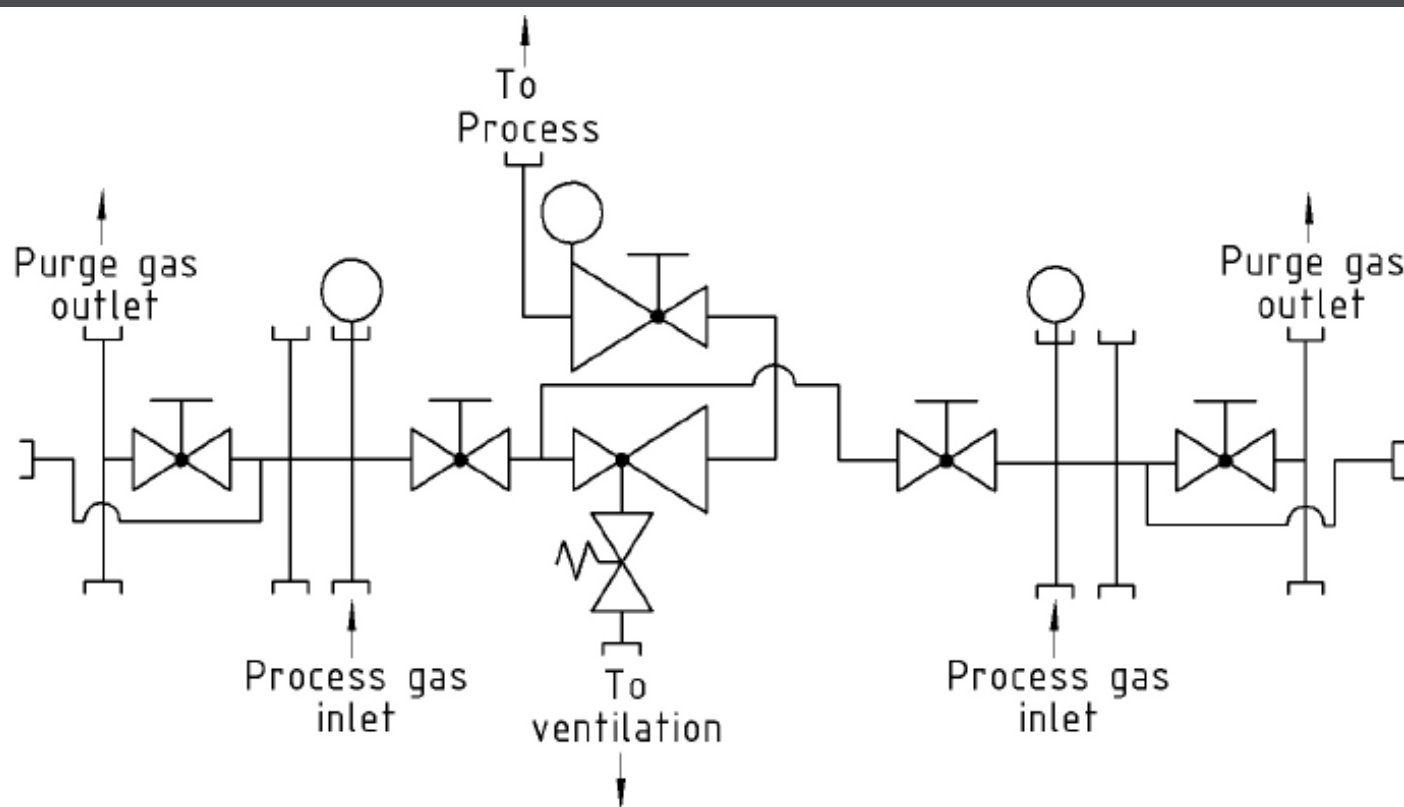
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# HP 241 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shutoff valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 -12 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP241- Type	2 Material	1 p1	3 p2	2 Gauge	Gas type Gas type
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**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets and  
safety equipment.

# Cylinder station HP 250 Frontline

- extraction from cylinders (bundle) single stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak-proof where an uninterrupted supply over night and at weekends must be guaranteed.	The HP 250 is a single stage panel for central gas supply with automatic changeover and internal purging. It serves the safe supply of pure and mixed gases from single or bundled cylinders.
Seat:	PCTFE	Through options such as contact gauges and gas alarm boxes (see segment 7) is the supply concept optimised.	The changeover takes place as soon as the pressure in the first side sinks below a predetermined level. This is controlled by two installed regulators with connected outlets.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Gas purity:	≤ 6.0		Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Connection possibility for 1x2 or 2x2 cylinder/ bundle is already integrated. Options for external gas purging can be retrofitted without any problem.
Max. inlet pressure:	300 bar		
Outlet pressure range:	10 - 12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version according to EN 837-1 KL1,6		
Dimensions (wxhxd):	480 x 125 x 140 mm		
Weight:	7,7 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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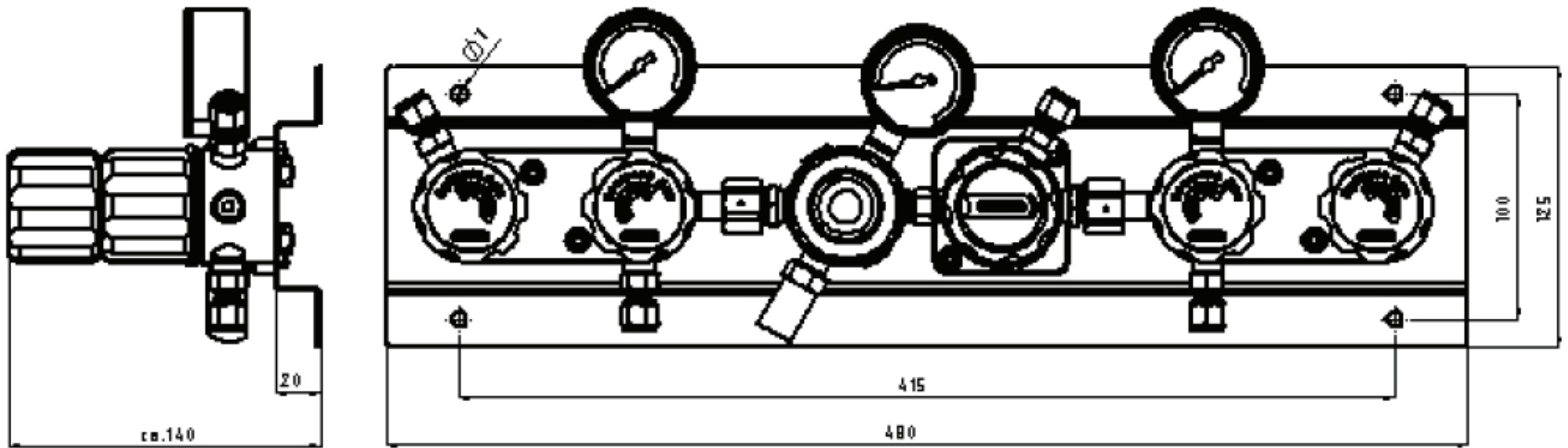
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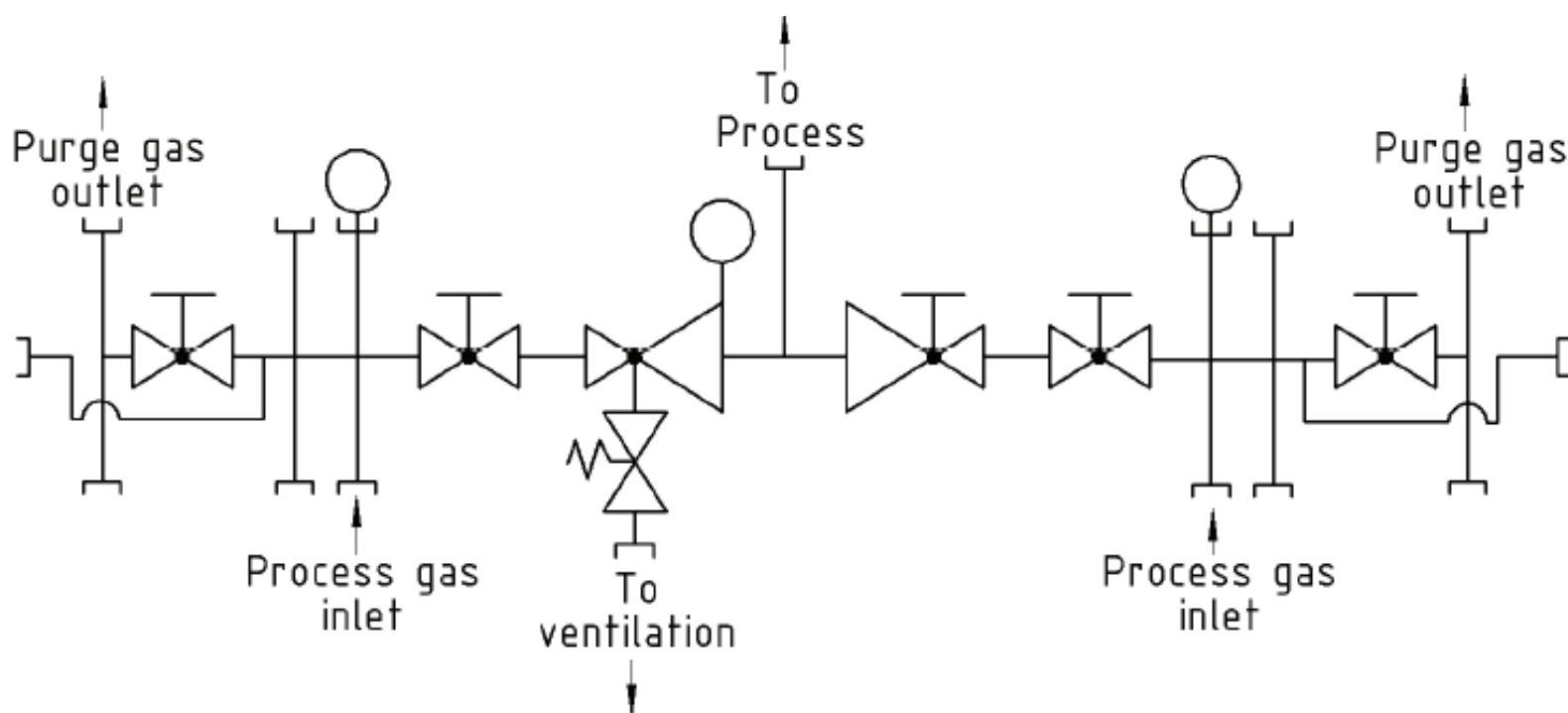
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# HP 250 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 10 - 12 bar  
2 = 45 - 55 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP250- Type	2 Material	1 p1	1 p2	2 Gauge	Gas type Gas type
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**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

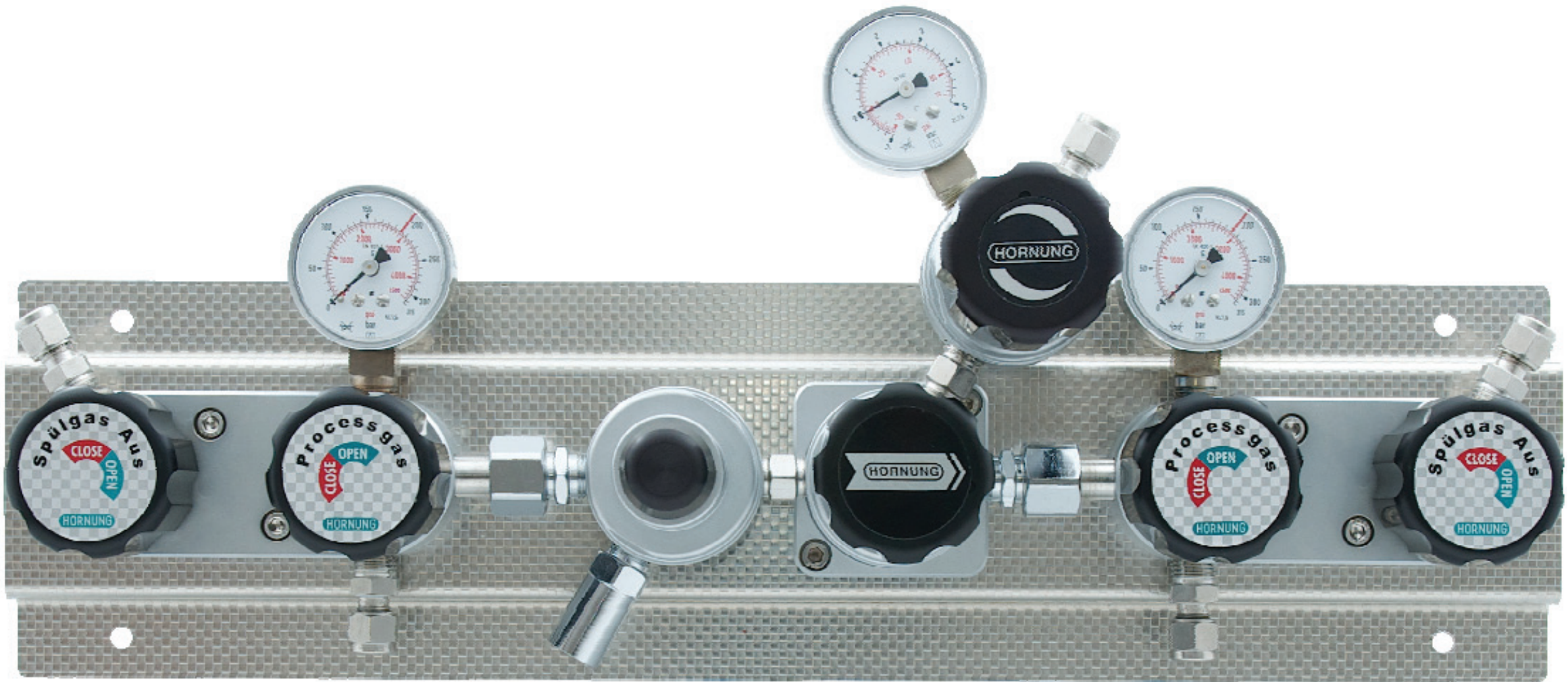
connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets and  
safety equipment.



# Cylinder station HP 251 Frontline

- 2x1 cylinder (bundle) dual stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak-proof were an uninterrupted supply over night and at weekends must be guaranteed.	The HP 251 is a dual stage panel for central gas supply with automatic changeover and internal purging.
Seat:	PCTFE	Through options such as contact gauges and gas alarm boxes (see segment 7) is the supply concept optimised.	It serves the safe supply of pure and mixed gases from 2 single or 2 bundled cylinders. The changeover takes place as soon as the pressure in the first side sinks below a predetermined level. This is controlled by two installed regulators with connected outlets.
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Dimensions (wxhxd):	480 x 205 x 140 mm		Diaphragm shut-off valve in block design for process and purge gas with open and close display. Expandability for 1x2 or 2x2 cylinder/bundle is already integrated. Options for external gas purging can be retrofitted without any problem.
Weight:	7,7 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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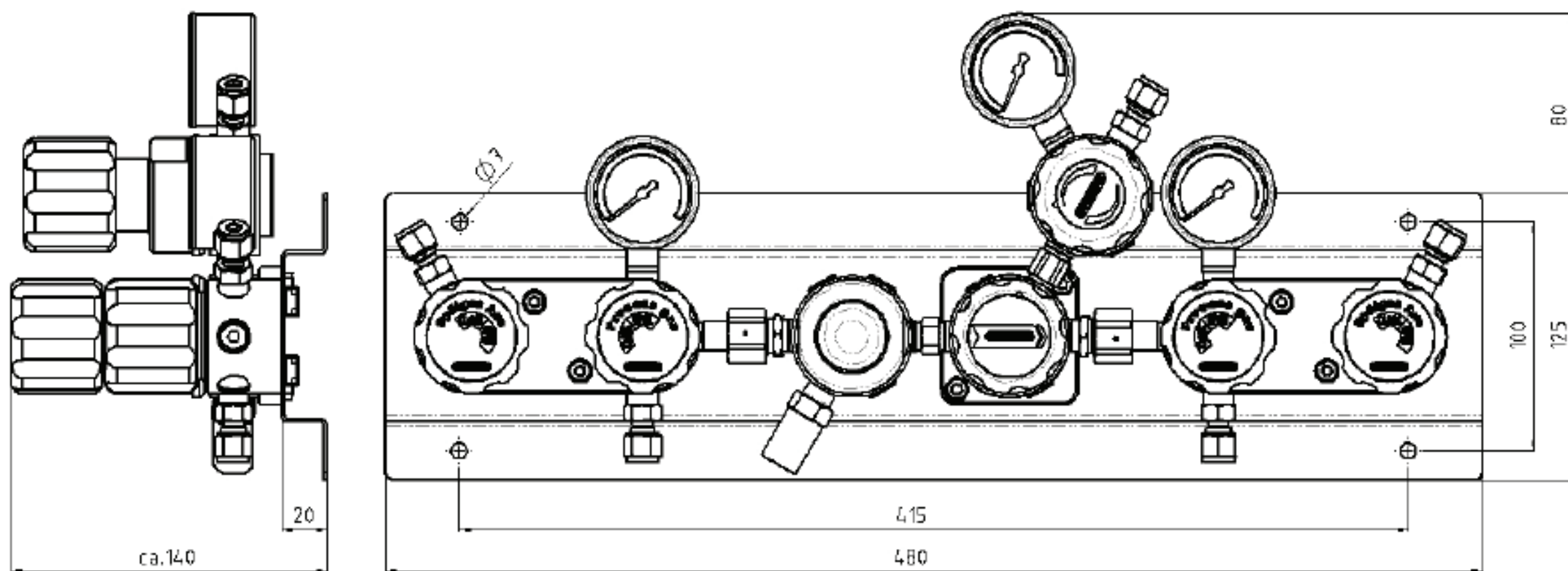
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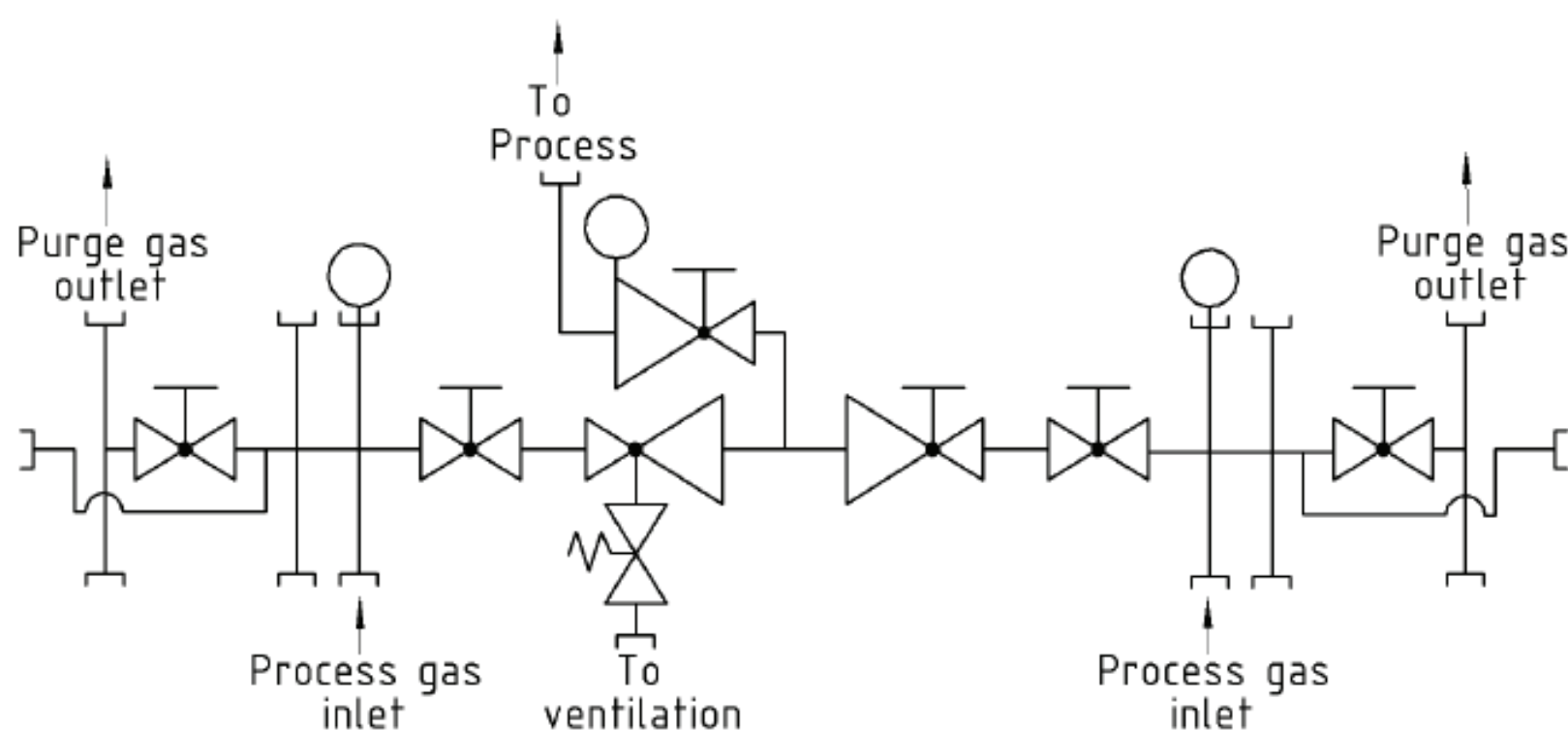
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# HP 251 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF SUPPLY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP251-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,

gas cylinder cabinets and  
safety equipment.



# Cylinder station HP 252

- 2x1 cylinder (bundle) single stage with automatic changeover - sequential version



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 252 is a single stage panel for central gas supply with automatic changeover.
Seat:	PCTFE	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The changeover sets in as soon as the pressure in the first side sinks below a predetermined level. This process is controlled by two installed regulators which are connected through one mutual housing.
Leakage rate:	$10^{-8}$ mbar l/s He		The station is mounted on a stainless steel console and in standard version it consists of two pressure regulators and the in- and outlet gauges.
Gas purity:	$\leq 6.0$		<b>Special characteristics:</b> The HP 252 is a special version of a typical cylinder station with automatic changeover.
Max. inlet pressure:	300 bar		It combines two pressure regulators which are placed in sequential position in one housing to save space.
Outlet pressure range:	10 - 12 bar		
Cv value:	0.06		
Operating temp.:	-20°C to +70°C		
Gauges:	inlet gauge outlet gauge		
Dimensions (wxhxd):	90 x 125 x 205 mm		
Weight:	2200 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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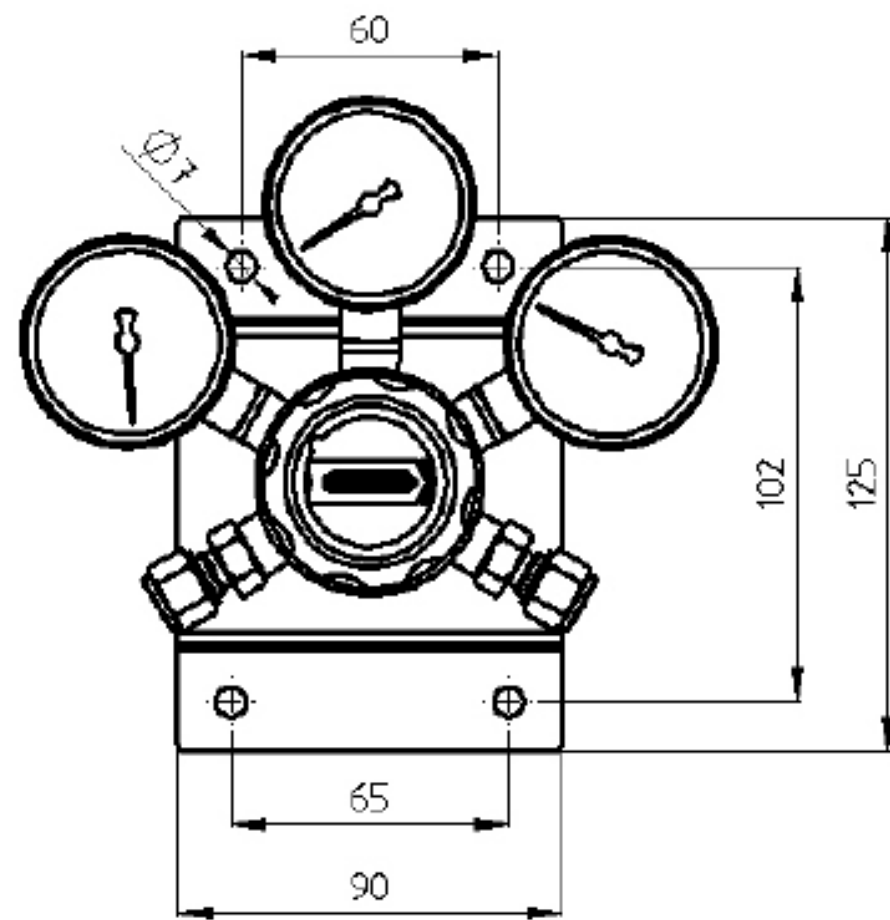
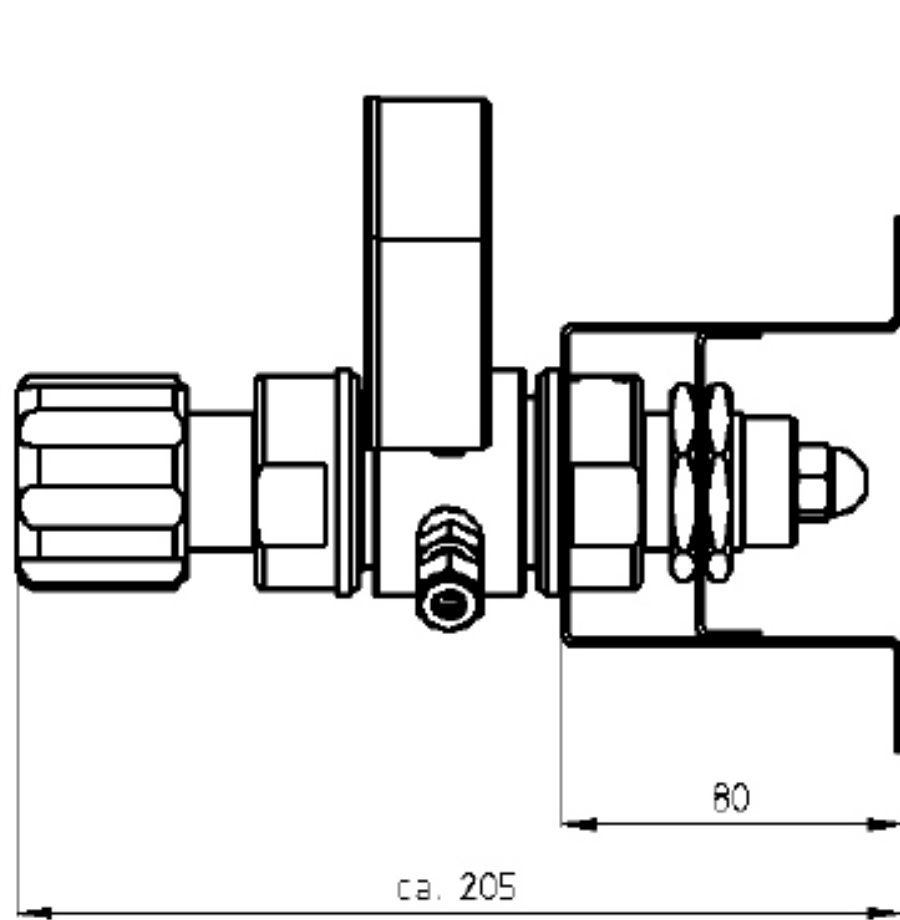
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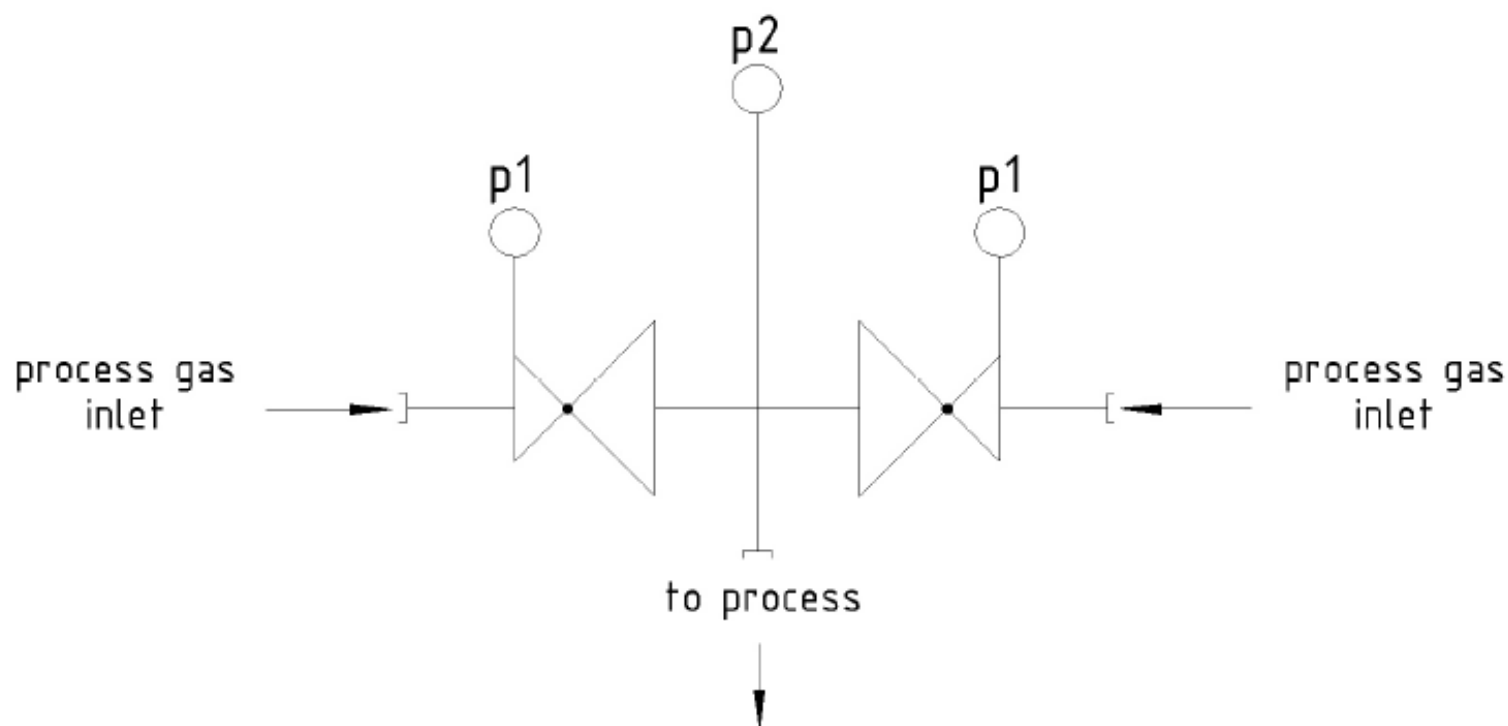
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# HP 252



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 10 - 12 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP252-  
Type

2  
Material

1  
p1

1  
p2

1  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar (optional RV),  
pigtail 300 bar (optional RV),  
connecting hose 200 bar (optional RV),

connecting hose 300 bar (optional RV), gas cylinder cabinets  
gauges, compression fittings, and safety equipment.  
cylinder retainers and accessories, (RV = check valve)

# Cylinder station HP 253

- 2x1 cylinder (bundle) dual stage with automatic changeover – sequential version



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 253 is a dual stage panel for central gas supply with automatic changeover.
Seat:	PCTFE	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles.
Diaphragm:	1.4435		The changeover sets in as soon as the pressure in the first side sinks below a predetermined level. This process is controlled by two installed regulators which are connected through one mutual housing.
Leakage rate:	$10^{-8}$ mbar l/s He	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	Two stage regulators will be used when a stable outlet pressure is required. The station is mounted on a stainless steel console and in standard version it consists of three pressure regulators and the in- and outlet gauges.
Gas purity:	$\leq 6.0$		<b>Special characteristics:</b> The HP 253 is a special version of a typical cylinder station with automatic changeover.
Max. inlet pressure:	300 bar		It combines two pressure regulators which are placed in sequential position in one housing to save space.
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6 bar		
Cv value:	0.06		
Operating temp.:	-20°C to +70°C		
Gauges:	inlet gauge outlet gauge		
Dimensions (wxhxd):	125 x 135 x 205 mm		
Weight:	4000 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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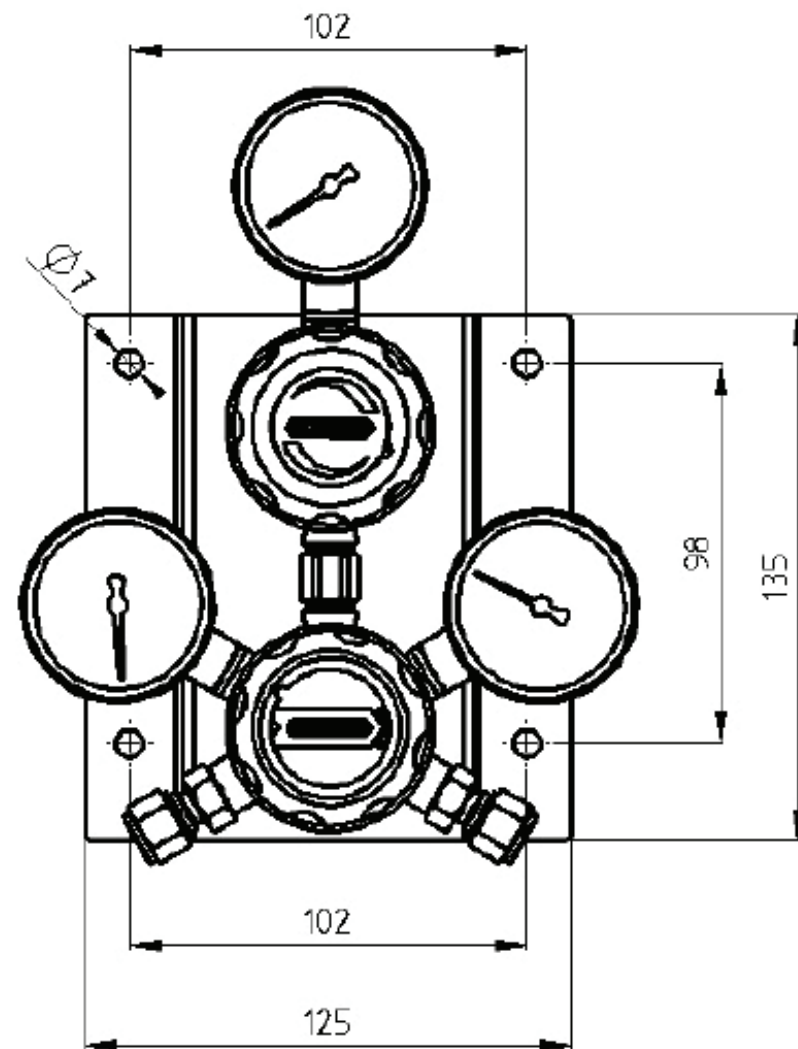
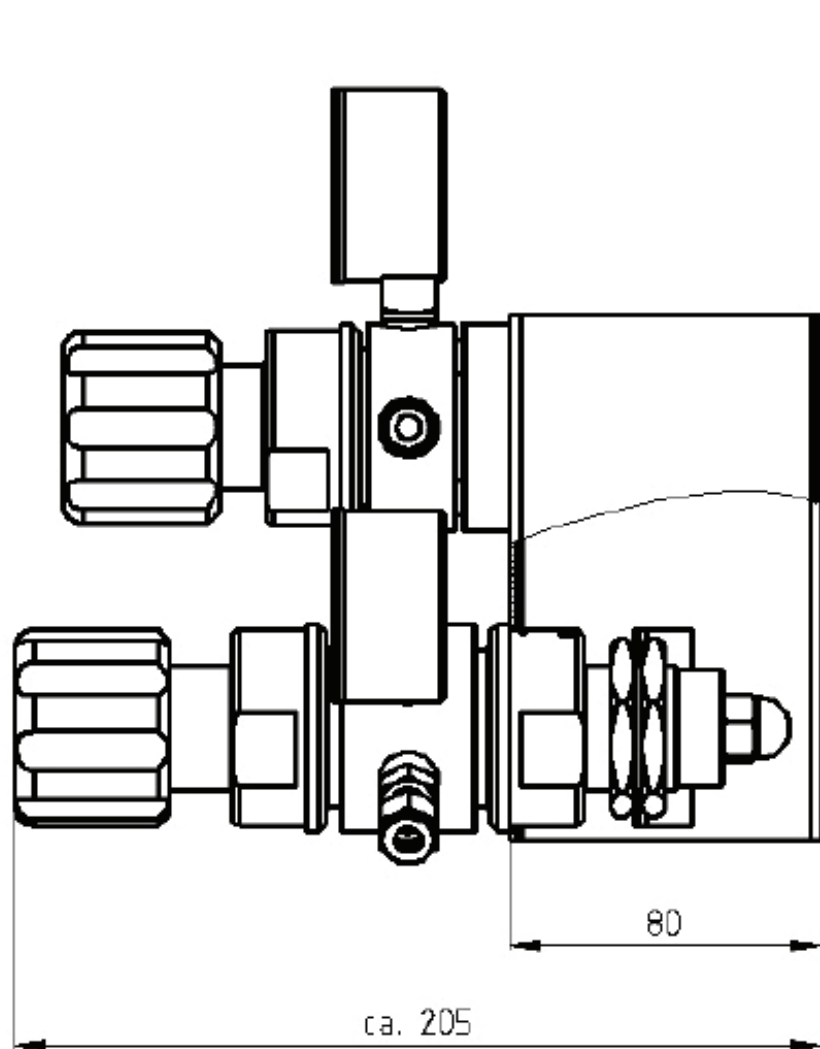
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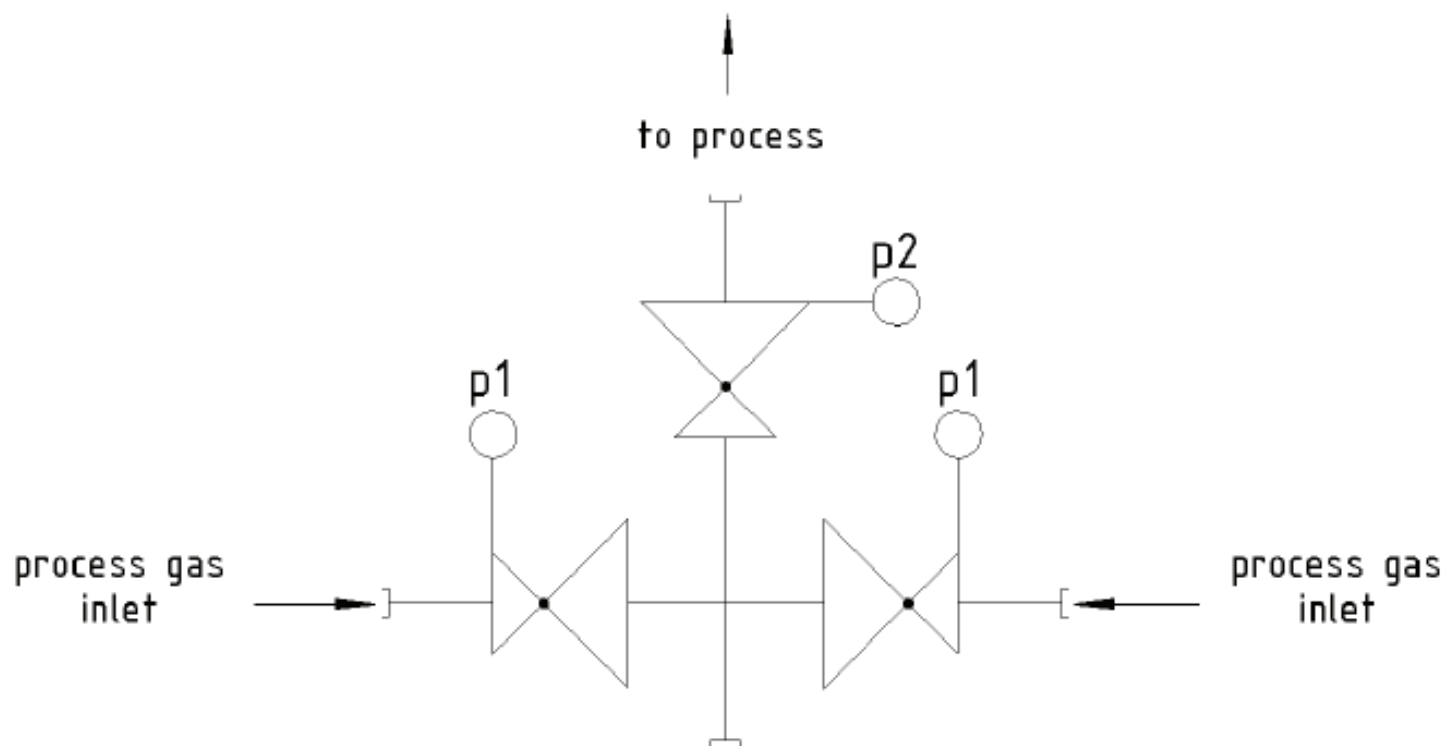
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# HP 253



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP253-  
Type

2  
Material

1  
p1

2  
p2

1  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

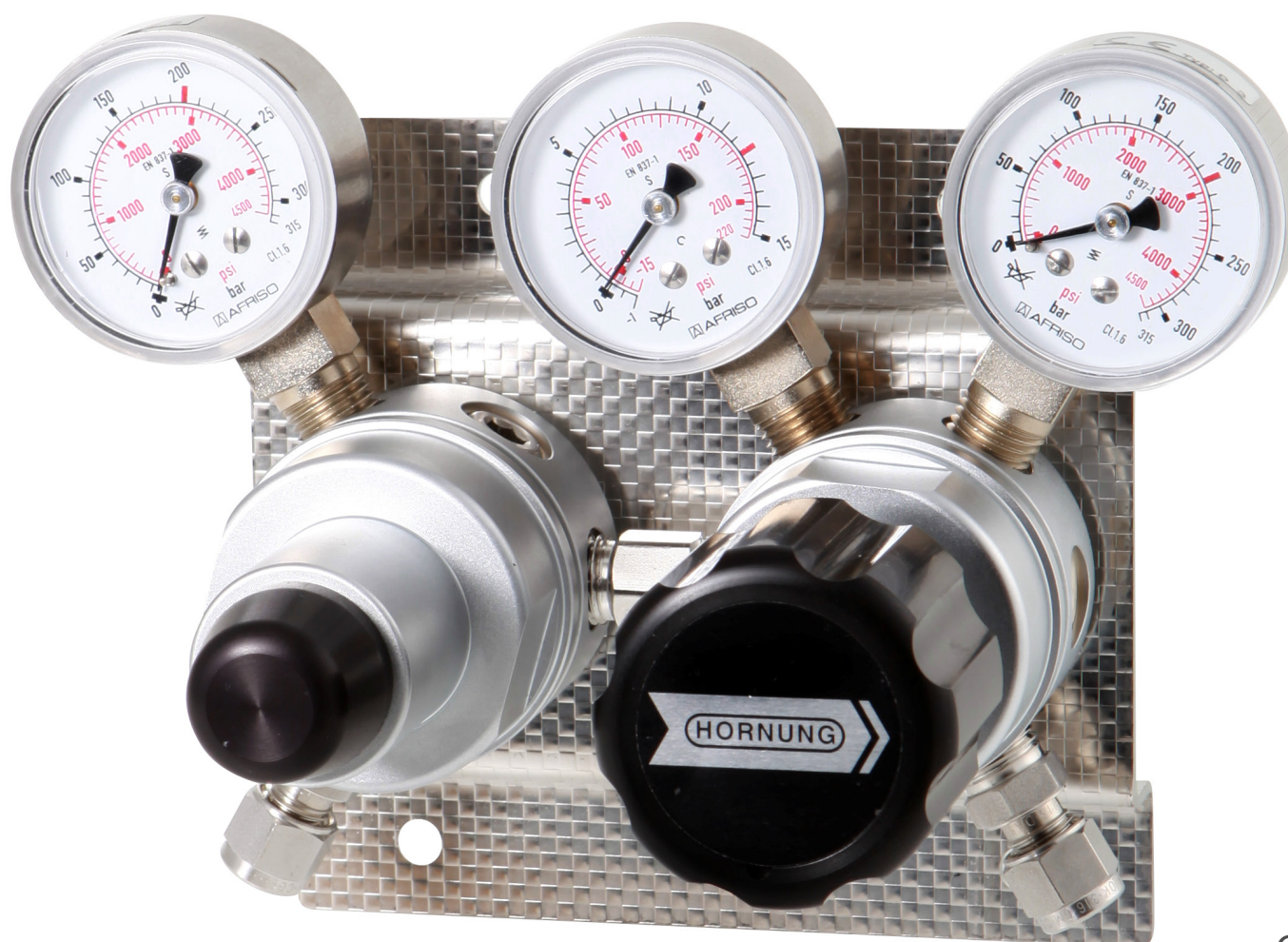
7. Pigtail 200 bar (optional RV),  
pigtail 300 bar (optional RV),  
connecting hose 200 bar (optional RV),

connecting hose 300 bar (optional RV),  
gauges, compression fittings,  
cylinder retainers and accessories,  
gas cylinder cabinets  
and safety equipment  
(RV = check valve)



# Cylinder station HP 254

- 2x1 cylinder (bundle) single stage with automatic changeover – side by side version



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 254 is a single stage panel for central gas supply with automatic changeover.
Seat:	PCTFE	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles. The changeover sets in as soon as the pressure in the first side sinks below a predetermined level.
Diaphragm:	1.4435		
Leakage rate:	$10^{-8}$ mbar l/s He	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	This process is controlled by two installed regulators which are connected by their outlets.
Gas purity:	$\leq 6.0$		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	10 - 12 bar 45 - 55 bar		The station is mounted on a stainless steel console and in standard version it consists of two pressure regulators and the in- and outlet gauges.
Cv value:	0,06		
Operating temp.:	-20°C bis +70°C		
Gauges:	inlet gauge outlet gauge		
Dimensions (wxhxd):	135 x 125 x 130 mm		
Weight:	2500 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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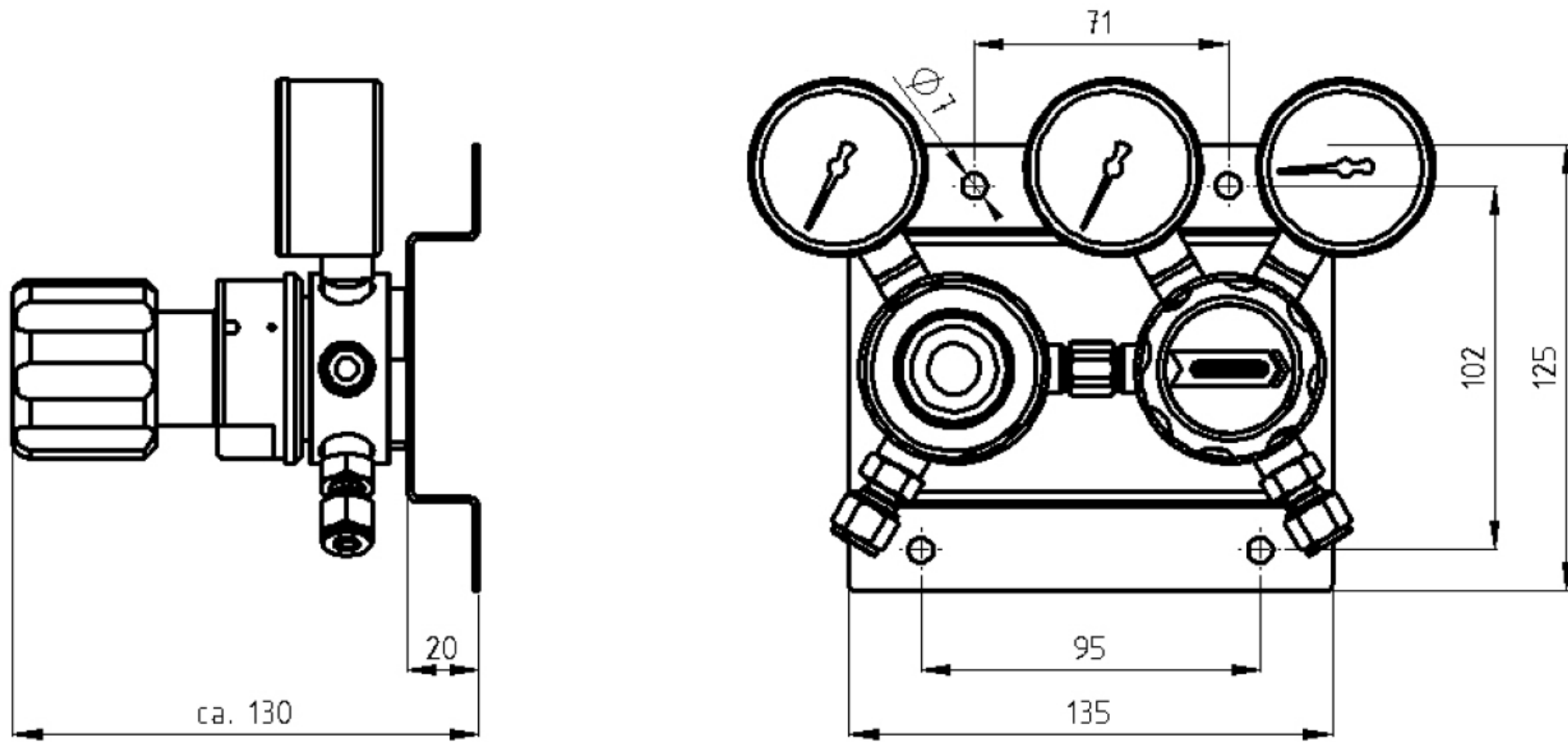
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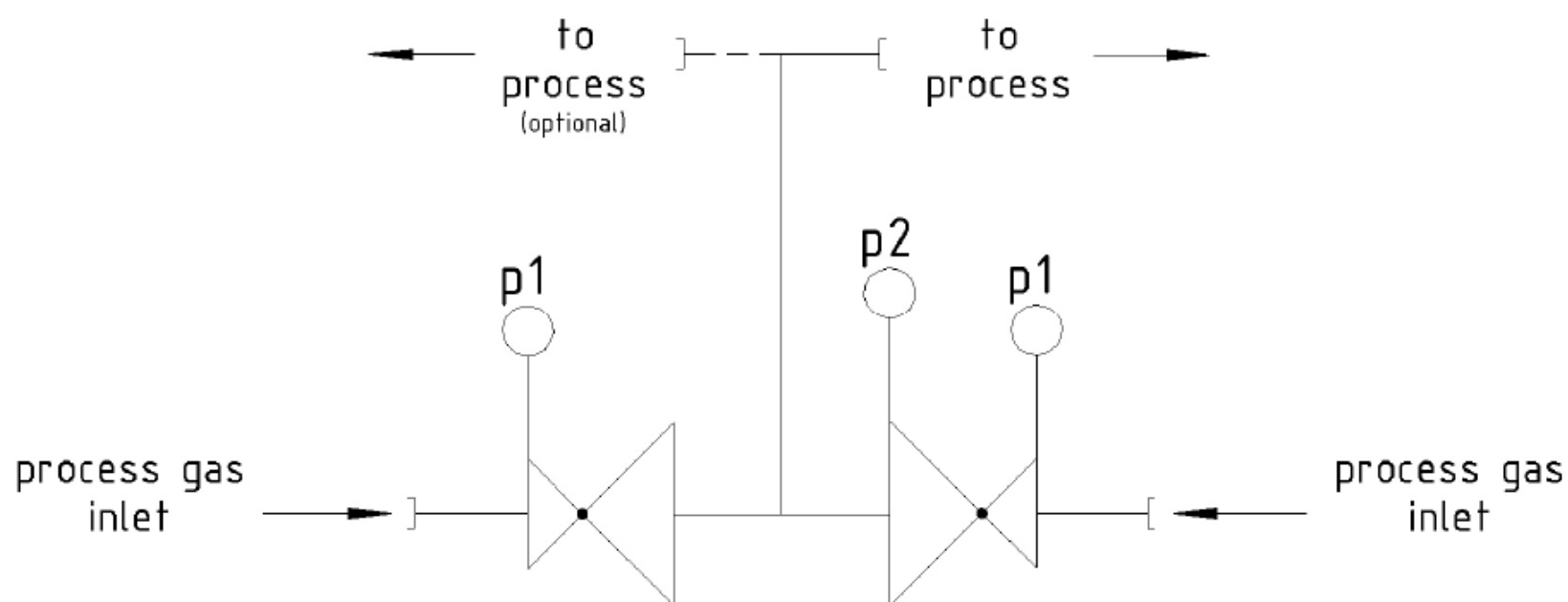
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# HP 254



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 10 - 12 bar  
2 = 45 - 55 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP254-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment 7. Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), connecting hose 200 bar (optional RV), connecting hose 300 bar (optional RV), gas cylinder cabinets and safety equipment (RV = check valve) and accessories,



# Cylinder station HP 255

- 2x1 cylinder (bundle) dual stage with automatic changeover – side by side version



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 255 is a dual stage panel for central gas supply with automatic changeover.
Seat:	PCTFE	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles. The changeover sets in as soon as the pressure in the first side sinks below a predetermined level.
Diaphragm:	1.4435		
Leakage rate:	$10^{-8}$ mbar l/s He	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	This process is controlled by two installed regulators which are connected by their outlets. Two stage regulators will be used when a stable outlet pressure is required.
Gas purity:	$\leq 6.0$		
Max. inlet pressure:	300 bar	The station is mounted on a stainless steel console and in standard version it consists of three pressure regulators and the in- and outlet gauges.	<b>Special characteristics:</b> It is a very compact design of an automatic changeover cylinder station.
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-17 bar		
Cv value:	0.06		
Operating temp.:	-20°C to +70°C		
Gauges:	inlet gauge outlet gauge		
Dimensions (wxhxd):	135 x 125 x 130 mm		
Weight:	3400 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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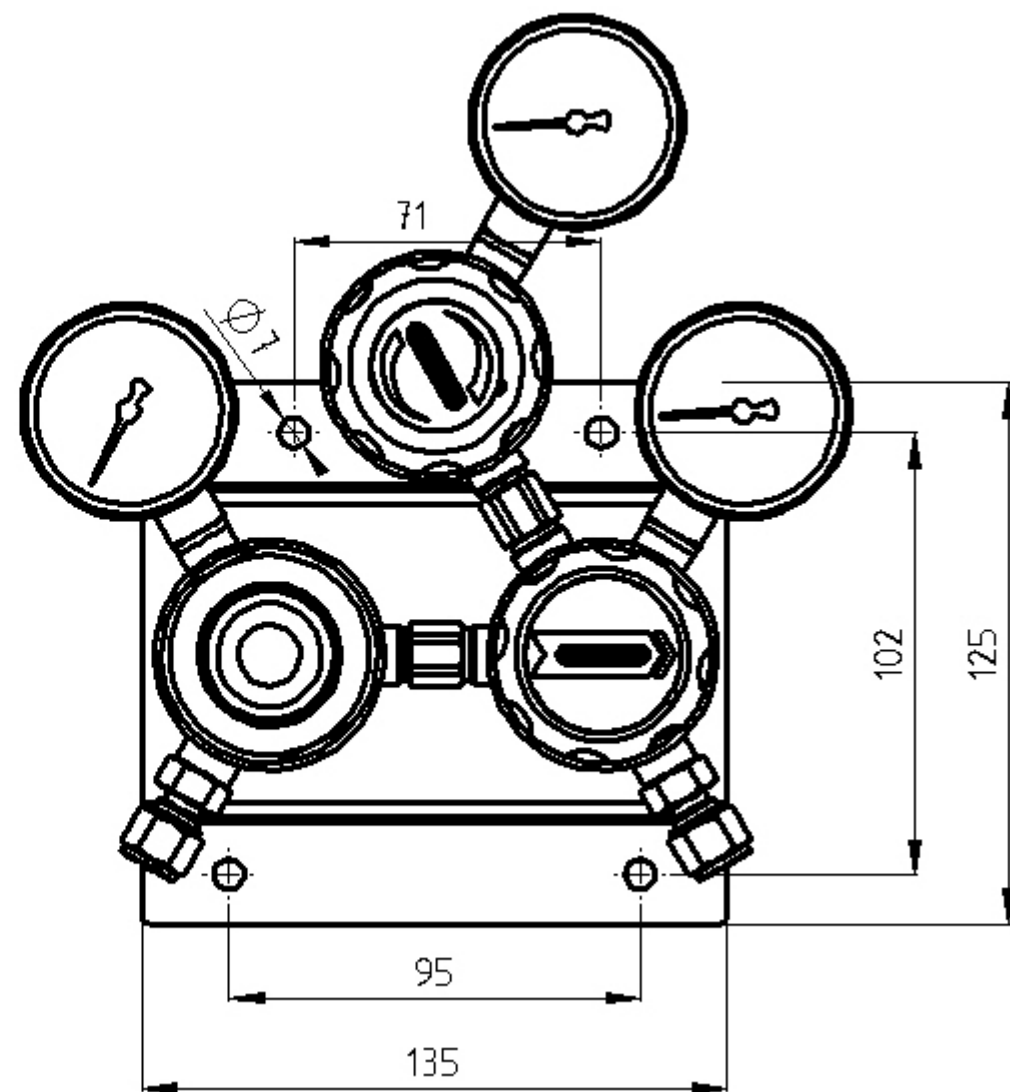
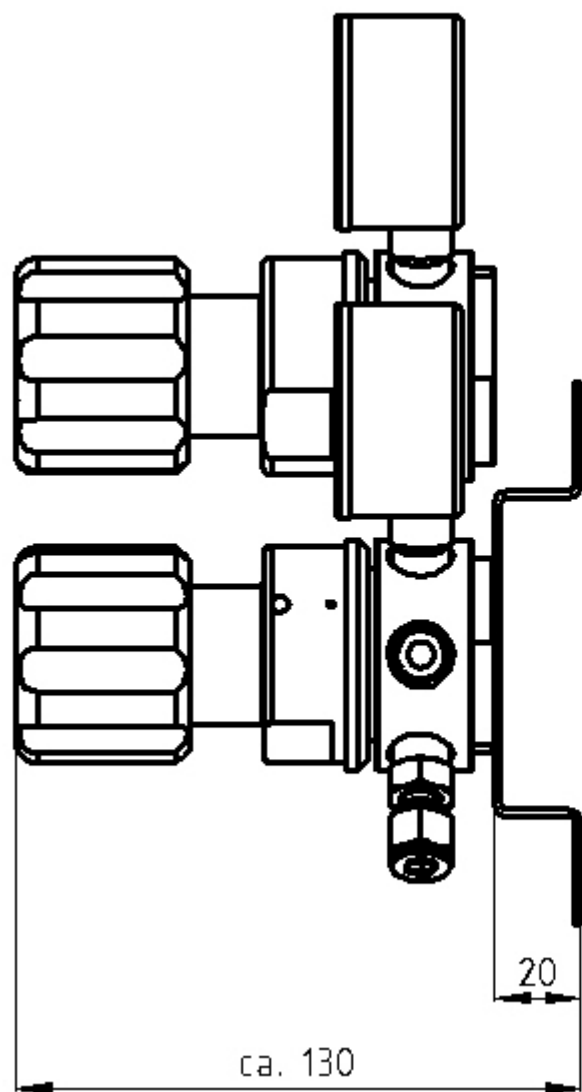
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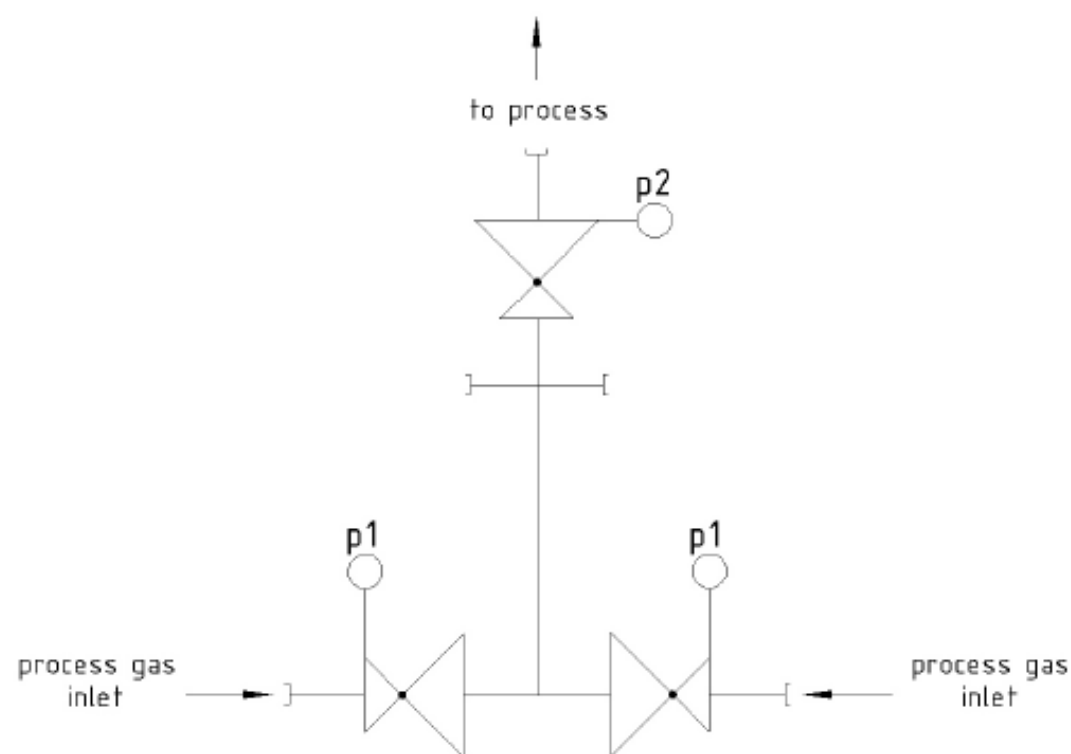
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# HP 255



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 17 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP255-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment 7. Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), connecting hose 200 bar (optional RV),

connecting hose 300 bar (optional RV), gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets and safety equipment. (RV = check valve)

# Cylinder station HP 256

- 2x1 cylinder (bundle) single stage with automatic changeover – for high flow



Compression fittings  
optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 256 is a single stage panel for central gas supply with automatic changeover.
Seat:	PCTFE	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The changeover sets in as soon as the pressure in the first side sinks below a predetermined level. This process is controlled by two installed regulators which are connected by their outlets.
Leakage rate:	$10^{-8}$ mbar l/s He		The station is mounted on a stainless steel console and in standard version it consists of two pressure regulators and the in- and outlet gauges.
Gas purity:	$\leq 6.0$		<b>Special characteristics:</b> The HP 256 is a high flow changeover station for cylinders or bundles.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	10 - 12 bar 45 - 55 bar		
Cv value:	1.05		
Operating temp.:	-20°C to +70°C		
Gauges:	inlet gauge outlet gauge		
Dimensions (wxhxd):	174 x 125 x 158 mm		
Weight:	3800 g		
Connections:	NPT 3/8" f - NPT 1/2" f		

## QUALITY STANDARD

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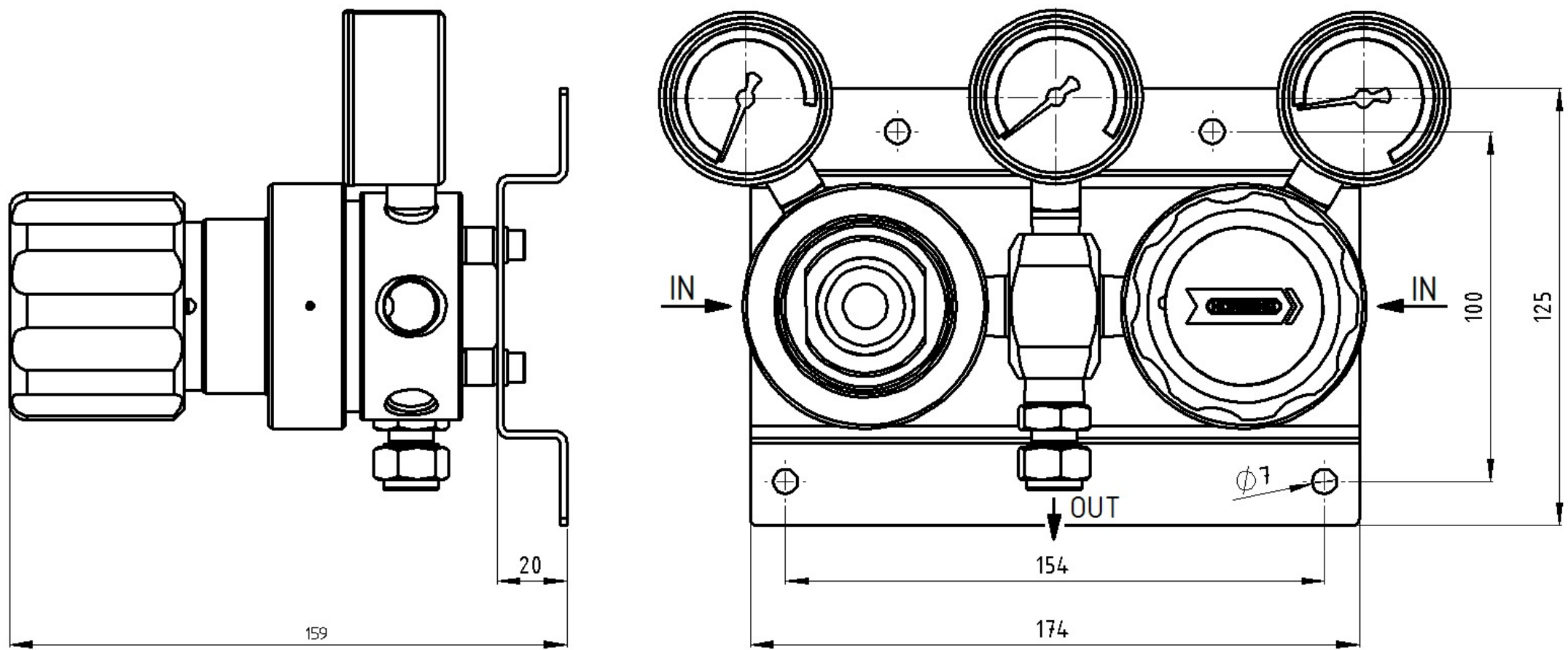
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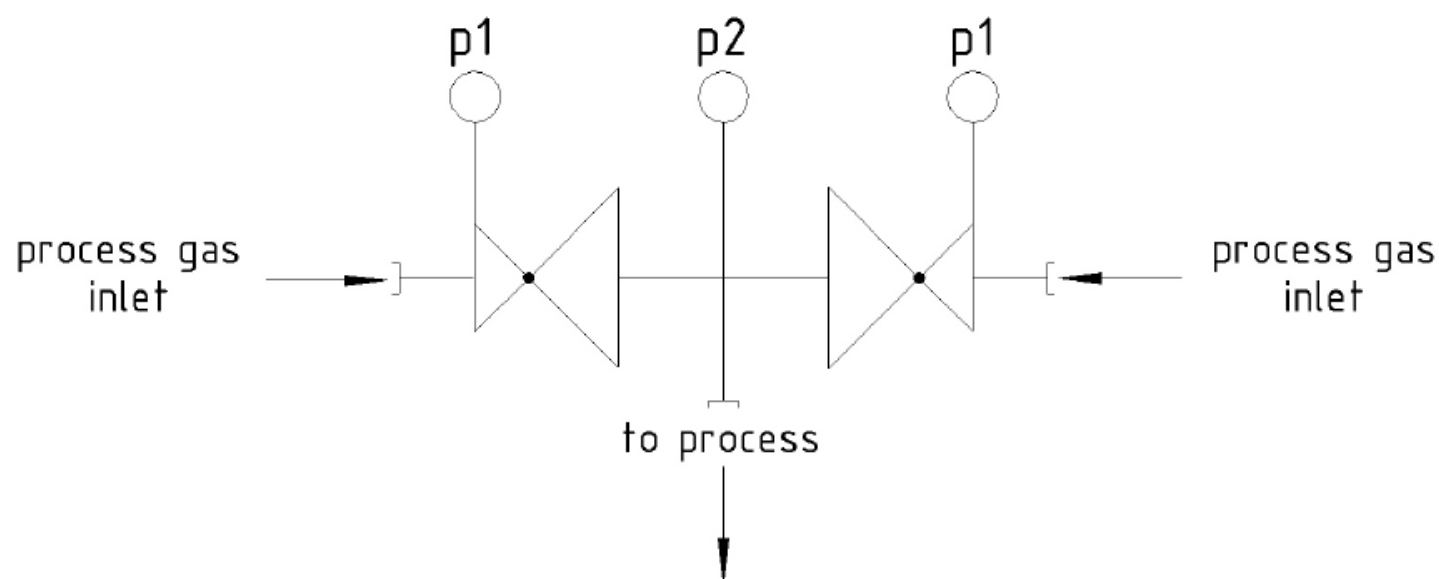
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# HP 256



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 10 - 12 bar  
2 = 45 - 55 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP256-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar (optional RV),  
pigtail 300 bar (optional RV),  
connecting hose 200 bar (optional RV),

connecting hose 300 bar (optional RV),  
gauges, compression fittings,  
cylinder retainers and accessories,  
gas cylinder cabinets  
and safety equipment.  
(RV = check valve)



# Cylinder station HP 257

- 2x1 cylinder (bundle) dual stage with automatic changeover – for high flow



Compression fittings optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0, safety and density for which an uninterrupted supply overnight and weekends must be guaranteed.	The HP 257 is a dual stage panel for central gas supply with automatic changeover.
Seat:	PCTFE		It serves the safe supply of high purity and mixed gases from 2 single cylinders or cylinder bundles. The changeover sets in as soon as the pressure in the first side sinks below a predetermined level.
Diaphragm:	1.4435	The supply concept can be optimised by options such as contact gauges and gas alarm boxes (see segment 7).	
Leakage rate:	$10^{-8}$ mbar l/s He		This process is controlled by two installed regulators which are connected by their outlets. Two stage regulators will be used when a stable outlet pressure is required.
Gas purity:	$\leq 6.0$	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1,7; 0,1-3,5; 1-7; 1-12; 1-17 bar		
Cv value:	1.05		The station is mounted on a stainless steel console and in standard version it consists of three pressure regulators and the in- and outlet gauges.
Operating temp.:	-20°C to +70°C		
Gauges:	inlet gauge outlet gauge		<b>Special characteristics:</b> The HP 257 is a high flow changeover station for cylinders or bundles.
Dimensions (wxhxd):	135 x 125 x 130 mm		
Weight:	4300 g		
Connections:	NPT 3/8" f - NPT 1/2" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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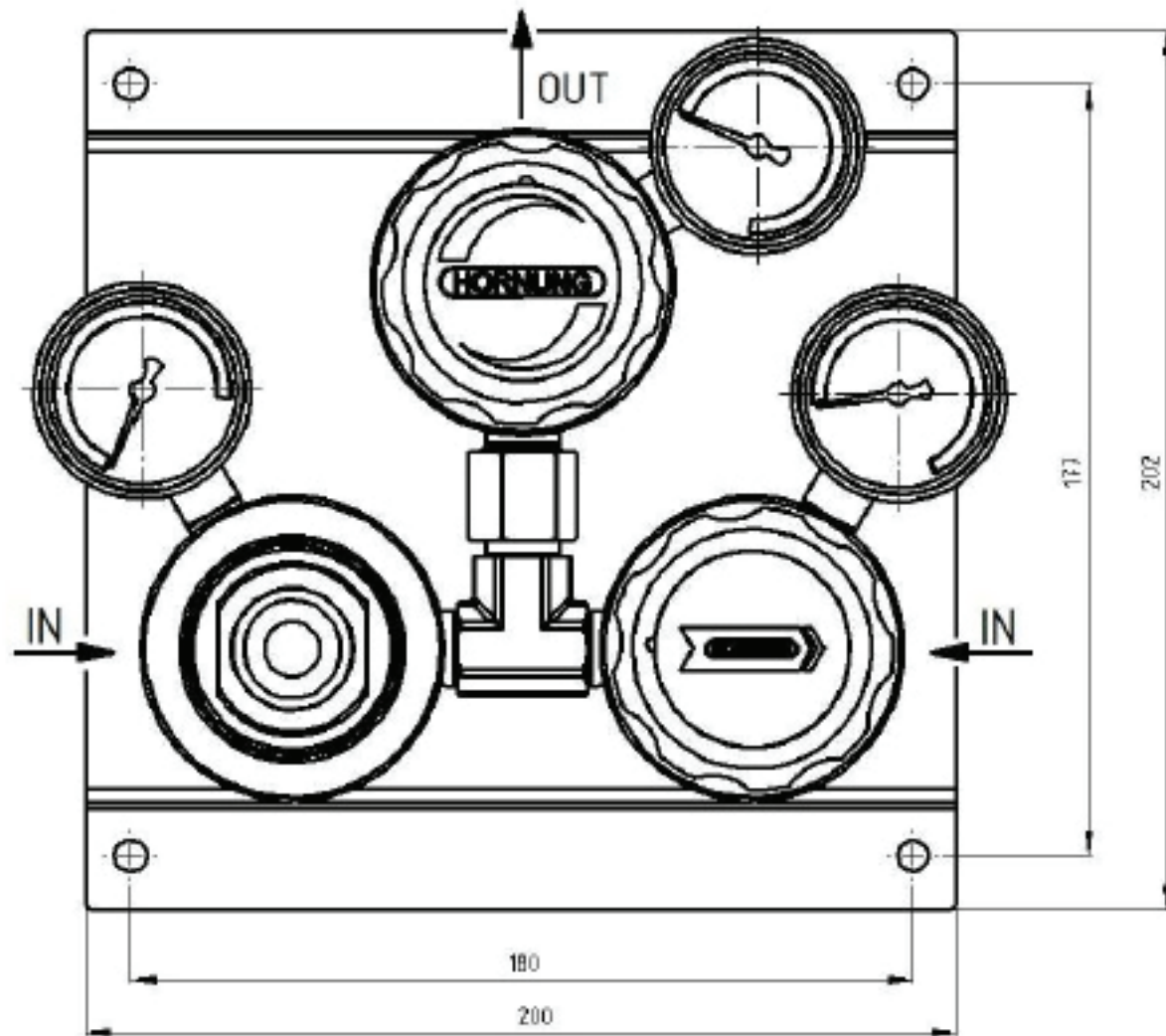
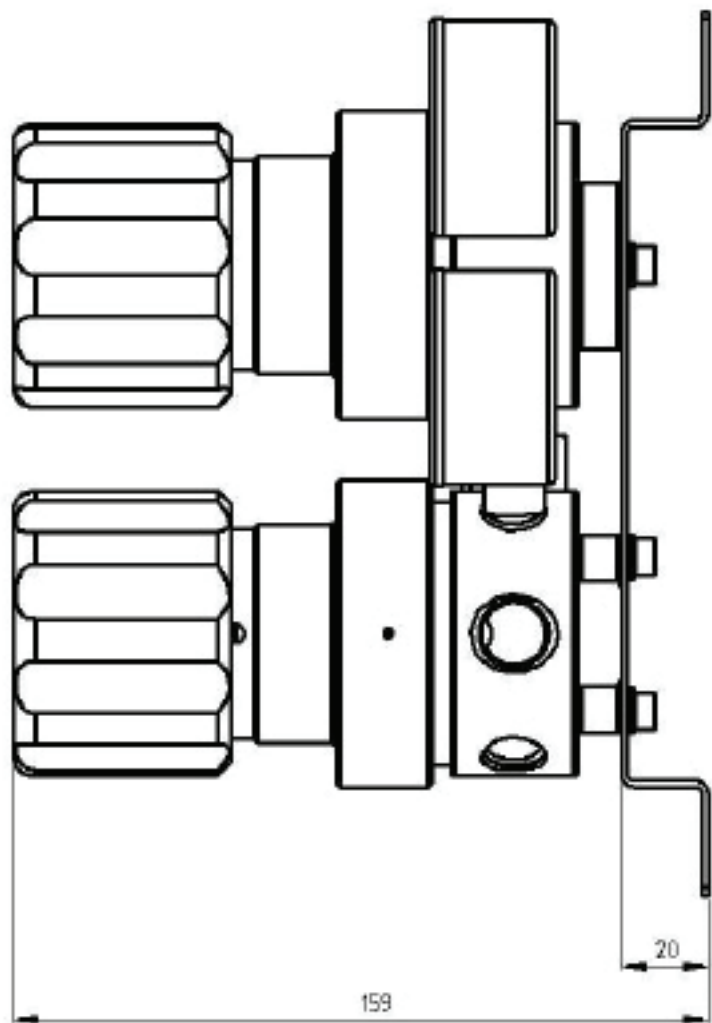
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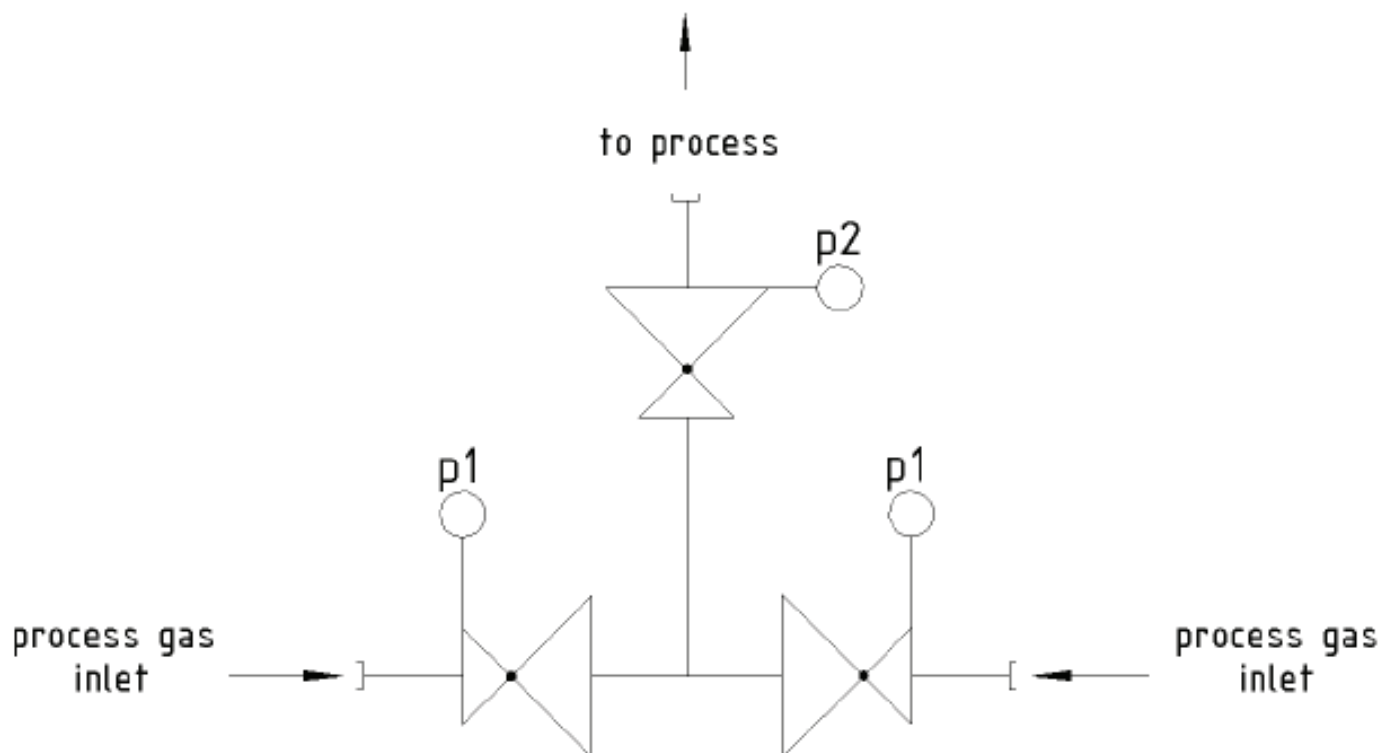
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# HP 257



## FLOW DIAGRAM

## SCOPE OF DELIVERY



Cylinder station with inlet and outlet gauges, mounted on a stainless steel wall bracket.

Compression fittings are not included.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1,7 bar  
2 = 0,1 - 3,5 bar  
3 = 1 - 7 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP257-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment 7. Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), connecting hose 200 bar (optional RV), connecting hose 300 bar (optional RV), gas cylinder cabinets and safety equipment. (RV = check valve) gauges, compression fittings, cylinder retainers and accessories,



# Cylinder station HP 258

- 2x1 cylinder (bundle) single stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Brass, chrome plated	Especially for gases with high requirements on purity up to 5.0. Secure and leak-proof where an uninterrupted supply over night and at weekends must be guaranteed.	The HP 258 is a single stage cylinder station with automatic changeover and internal purging.
Seat:	PCTFE		
Elastomer:	Viton®, EPDM	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	It serves the safe supply of high purity and mixed gases from single or bundled cylinders.
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-6</sup> mbar l/s He		
Gas purity:	≤ 5.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	10 - 12 bar/ 45 - 55 bar		
Cv-value:	0,06		
Operating temp.:	-20°C to +70° C		
Gauges:	safety version to EN 837-1 KL1.6		
Dimensions (wxhxd):	440 x 146 x 135 mm		
Weight:	6,1 kg	The changeover takes place as soon as the pressure in the first side sinks below a predetermined level.	
Connections:	NPT 1/4" f		This is controlled by two installed regulators with connected outlets.
			The station is mounted on a stainless steel panel and has at the standard version a inlet and outlet gauge, as well as a relief valve and a shut off valve for the process and pure gas
			<b>Special characteristics:</b> Modular design of the cylinder station. Shut-off valves for process and purge gas. Expandability for 2x2 cylinders / cylinder bundles is already integrated. Options for external gas purging can be retrofitted without any problem.

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001:2008** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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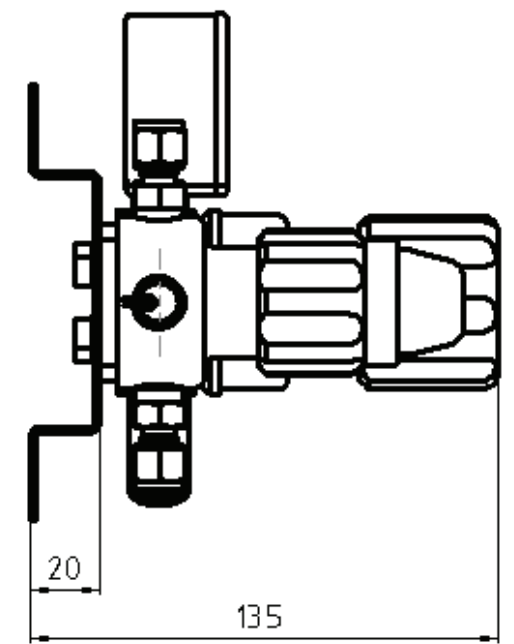
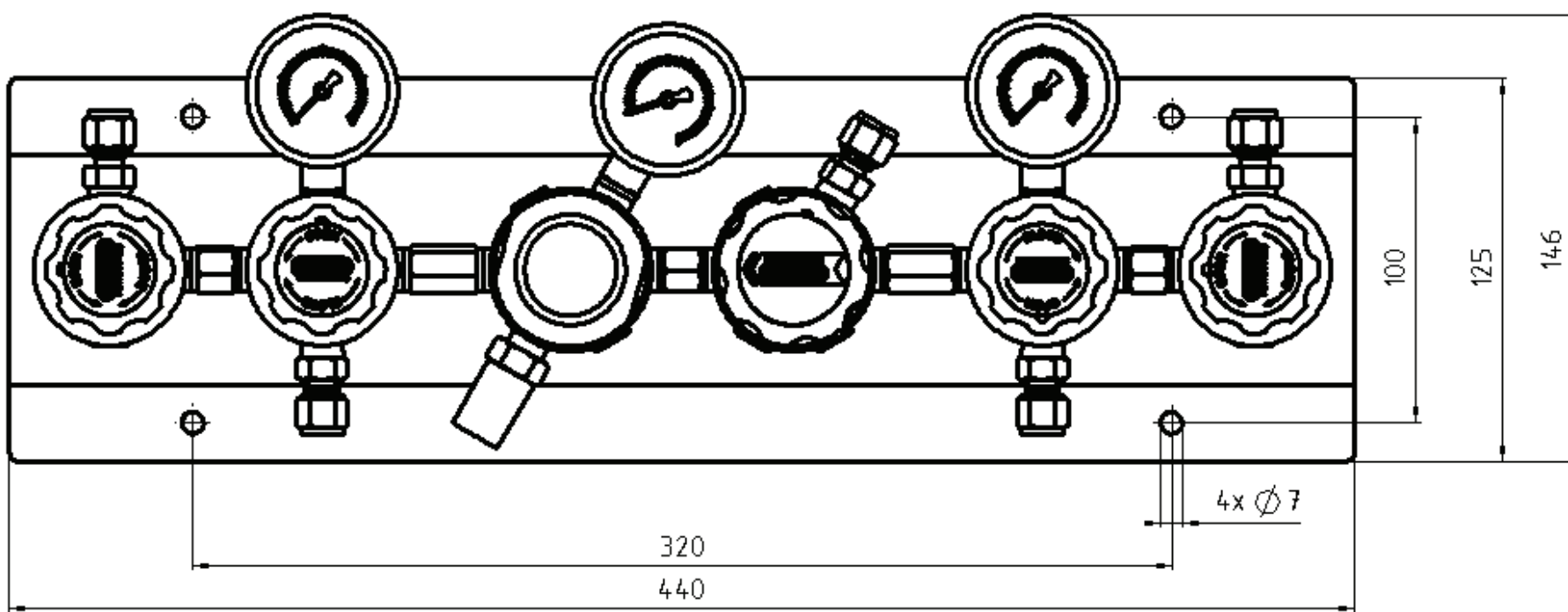
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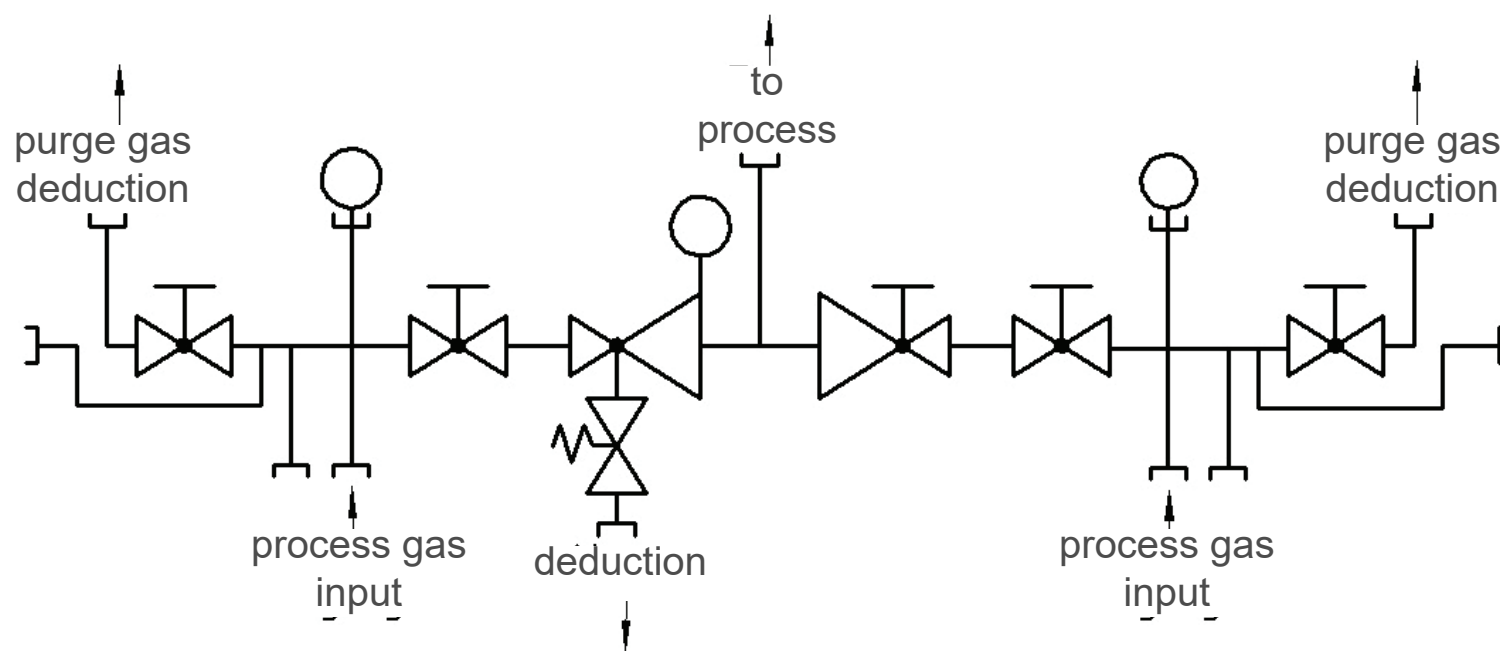
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# HP 258



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, relief valve shut-off valve for process and purge gas. Completely mounted on a stainless steel wall bracket.

Without compression fittings.

### Our recommendation:

We recommend the use of a metal hose with an integrated check valve, which brings the profit of a shorter purging time.

Additionally it avoids an unwanted gas transfer between cylinders when more than one cylinder is connected to the station.

## ORDER DETAILS

**Material:**  
2 = Brass

**Inlet pressure p1:**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure p2:**  
1 = 10 - 12 bar  
2 = 45 - 55 bar

**Gauges:**  
1 = standard gauges  
2 = contact gauges ex

HP258-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauges

Gas type  
Gas type

**Accessories:** see total catalogue segment

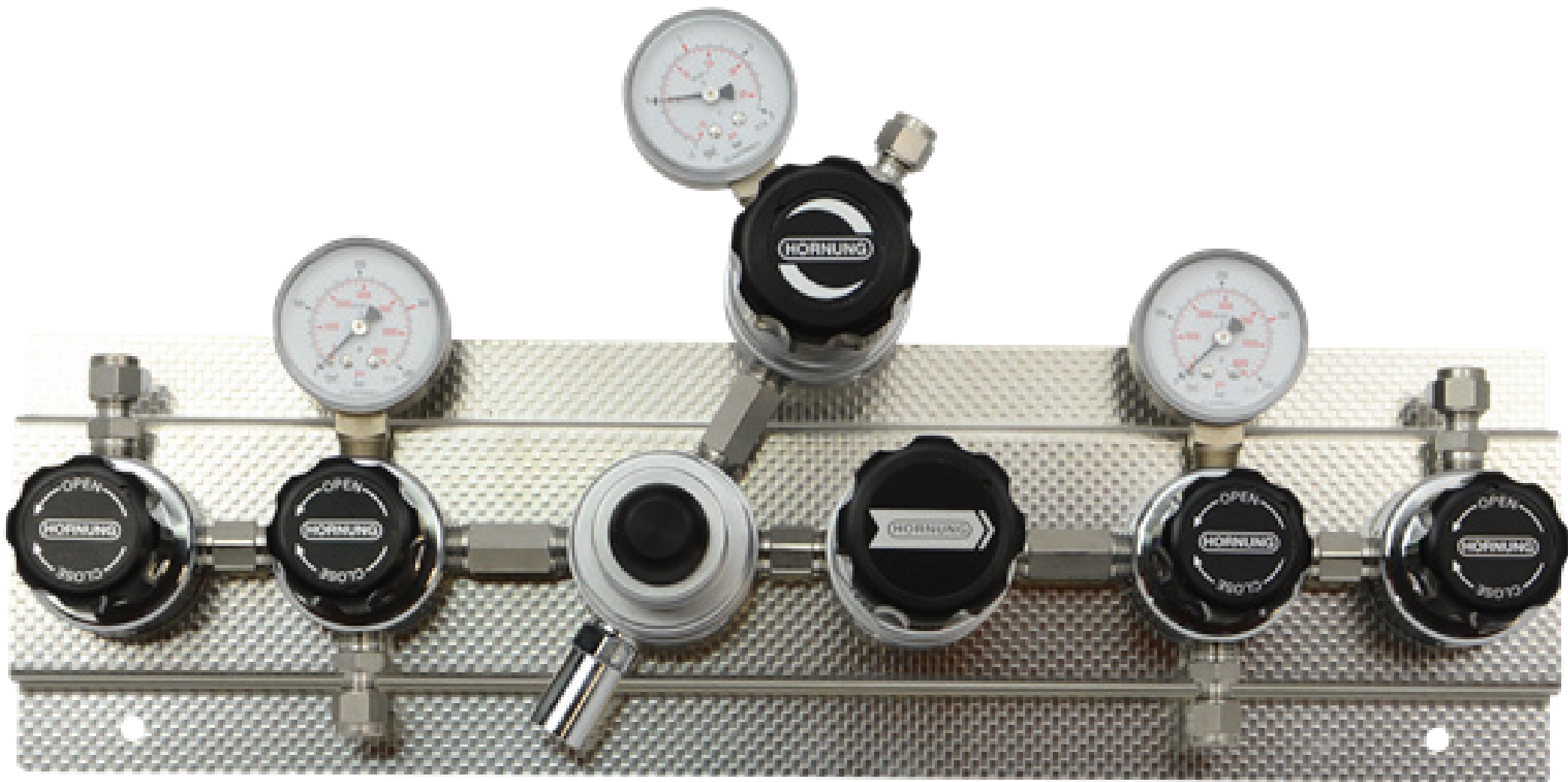
7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets  
and safety equipment,  
connecting spirals HP 660

# Cylinder station HP 259

- 2x1 cylinder (bundle) dual stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Brass, chrome plated	Especially for gases with high requirements on purity up to 5.0. Secure and leak-proof where an uninterrupted supply over night and at weekends must be guaranteed.	The HP 259 is a two stage station with automatic changeover.  It serves the save supply of high purity and mixed gases from 2 single cylinders or cylinder bundles.  The cangeover sets in as soon as the pressure in the first side sinks below a predetermined level.  This process is controlled by two installed pressure regulators which are connected by there outlets.  The station is mounted on a stainless steel panel and has at the standard version a inlet and outlet gauge, as well as a relif valve and a shut off valve for the process and pure gas.
Seat:	PCTFE		
Elastomer:	Viton®, EPDM	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	<p><b>Special characteristics:</b> Modular design of the cylinder station. Shut-off valves for process and purge gas. Expandability for 2x2 cylinders / cylinder bundles is already integrated. Options for external gas purging can be retrofitted without any problem.</p>
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-6</sup> mbar l/s He		
Gas purity:	≤ 5.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3;1-6; 1-12; 1-17; 5-30 bar		
Cv-value:	0,06		
Operating temp.:	-20°C to +70° C		
Gauges:	safety version to EN 837-1 KL1.6		
Dimensions (wxhxd):	440 x 213 x 135 mm		
Weight:	6,6 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001:2008** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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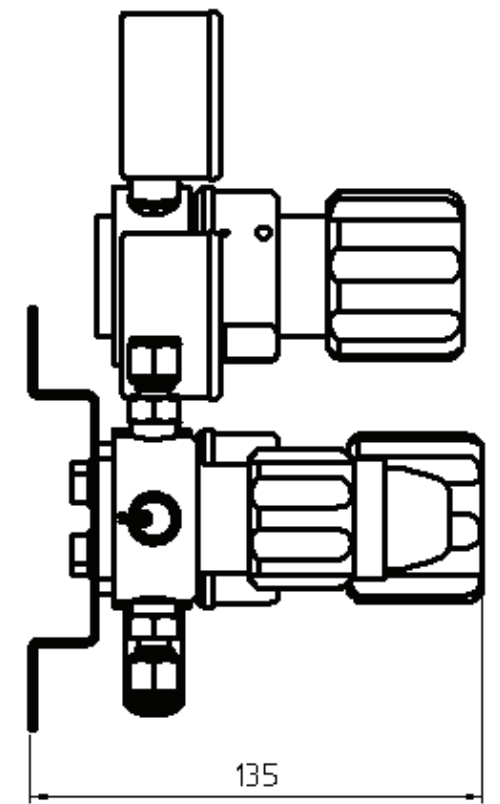
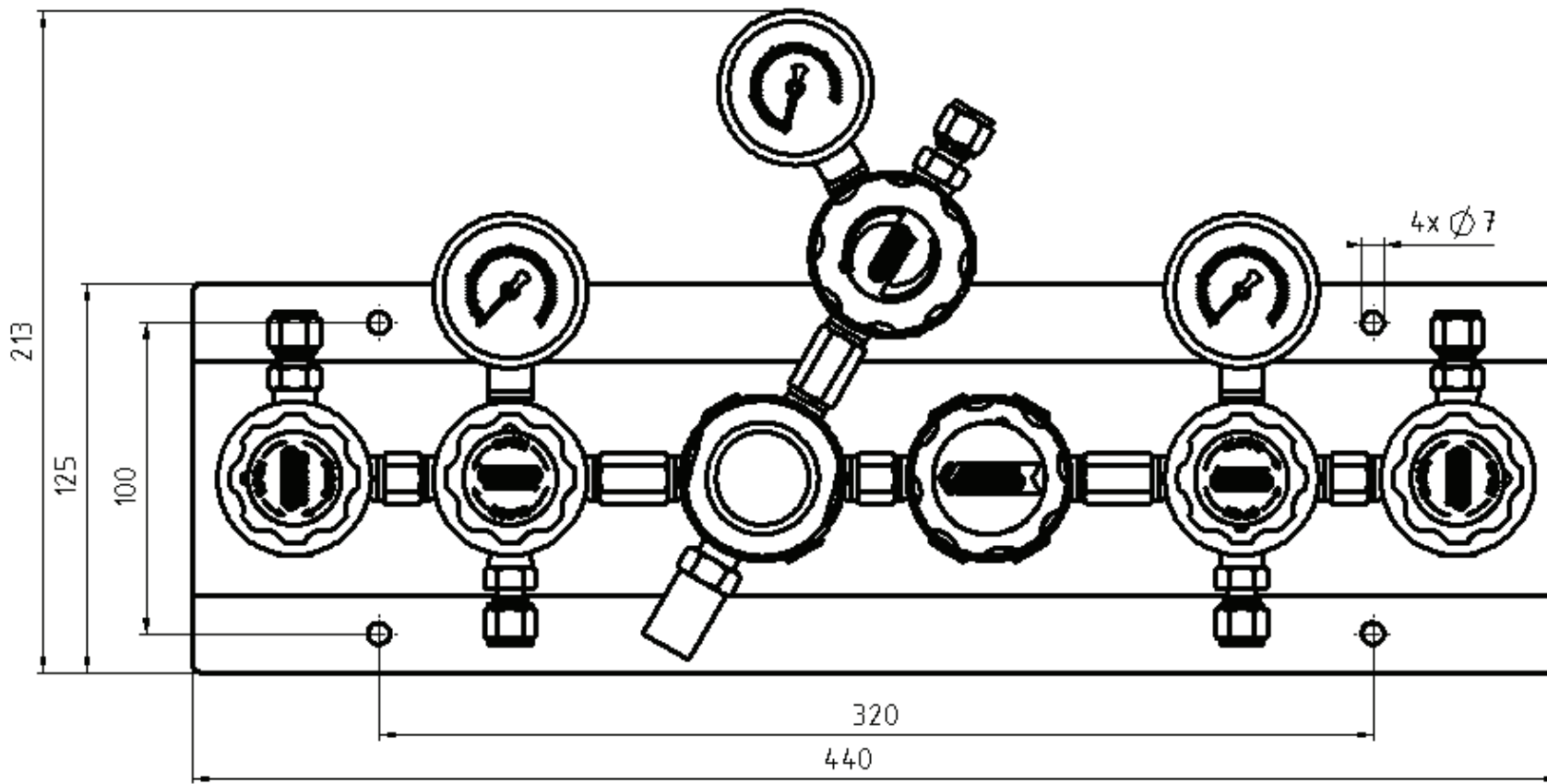
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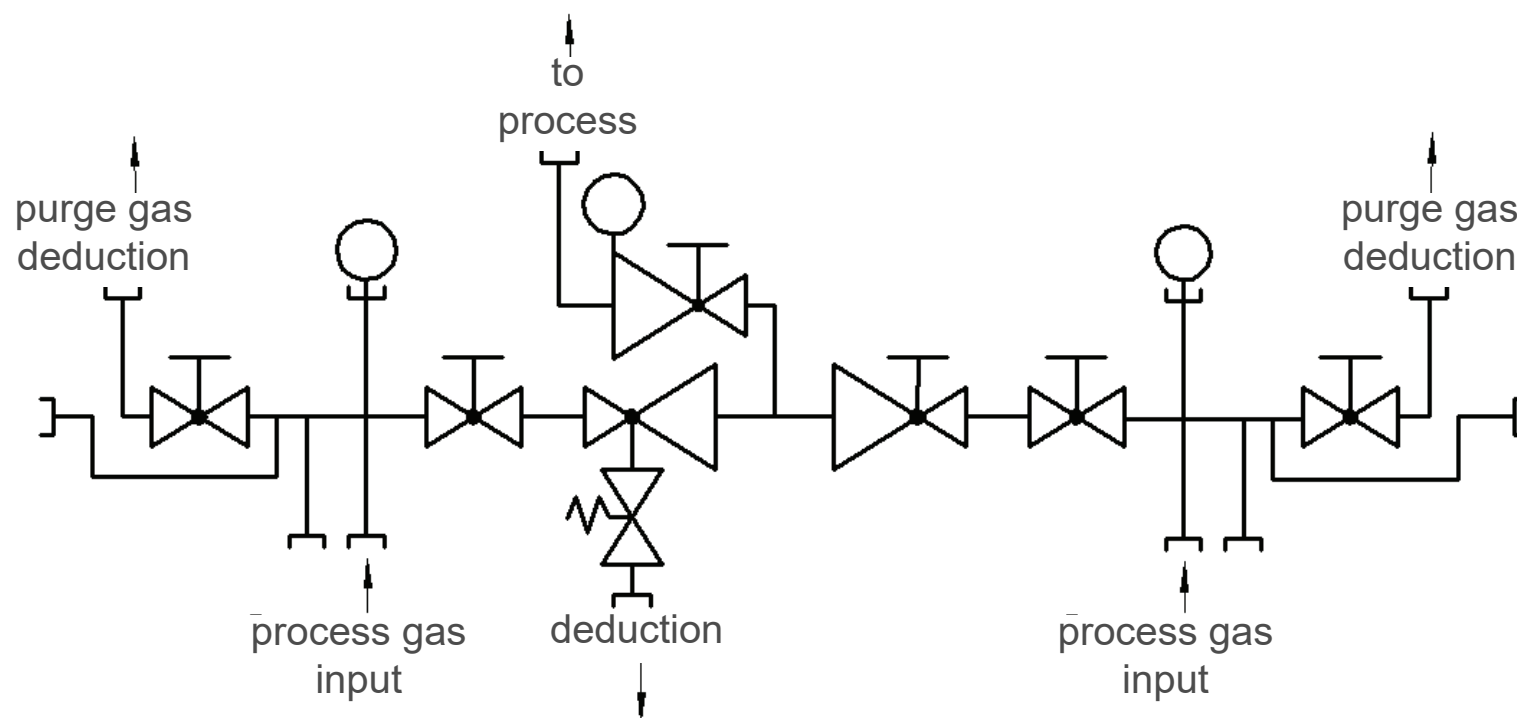
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# HP 259



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, relief valve, shut-off valve for process and purge gas. Completely mounted on a stainless steel wall bracket. Without compression fittings.

### Our recommendation:

We recommend the use of a metal hose with an integrated check valve, which brings the profit of a shorter purging time.

Additionally it avoids an unwanted gas transfer between cylinders when more than one cylinder is connected to the station.

## ORDER DETAILS

**Material:**  
2 = Brass

**Inlet pressure p1:**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure p2:**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1-12 bar  
5 = 1-17 bar  
6 = 5-30 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP259-  
Type

2  
Material

1  
p1

1  
p2

2  
Gauges

Gas type  
Gas type

**Accessories:** see total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings  
cylinder retainers and accessories,

cylinder gas cabinets  
and safety equipment,  
connecting spirals HP 660



# Cylinder station HP 260 Frontline

- 2x2 cylinder (bundle) single stage with manual changeover



TECHNICAL DETAILS		APPLICATION AREA	SPECIAL CHARACTERISTICS
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Options for external gas purging can be retrofitted without any problem.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The HP 260 is a single stage panel for central gas supply with manual changeover and internal purging. It serves the safe supply of pure and mixed gases from 2x2 single or 2x2 bundled cylinders.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		When changing cylinders, the gas supply must not be interrupted.
Gas purity:	≤ 6.0		The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-3; 0,1-6; 1-12; 1-17; 5-50 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	760 x 125 x 135 mm		
Weight:	7,6 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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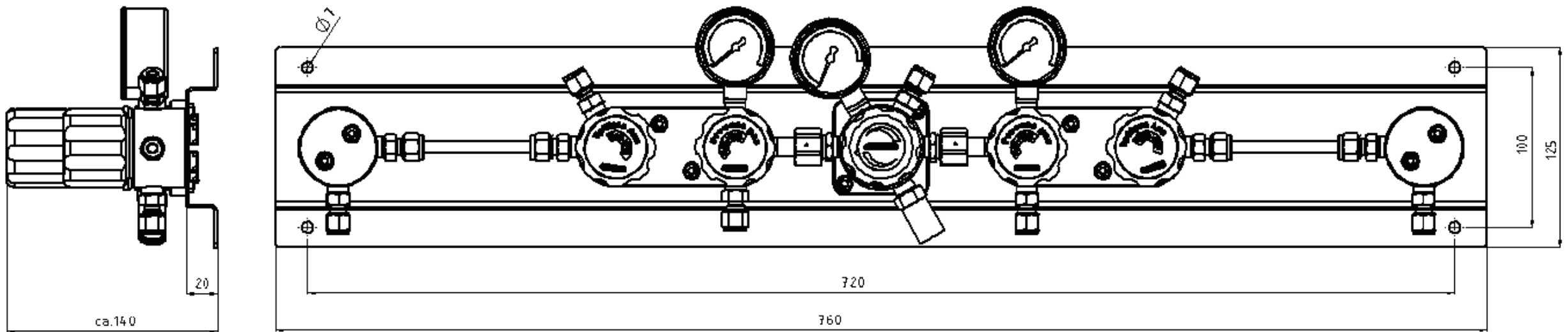
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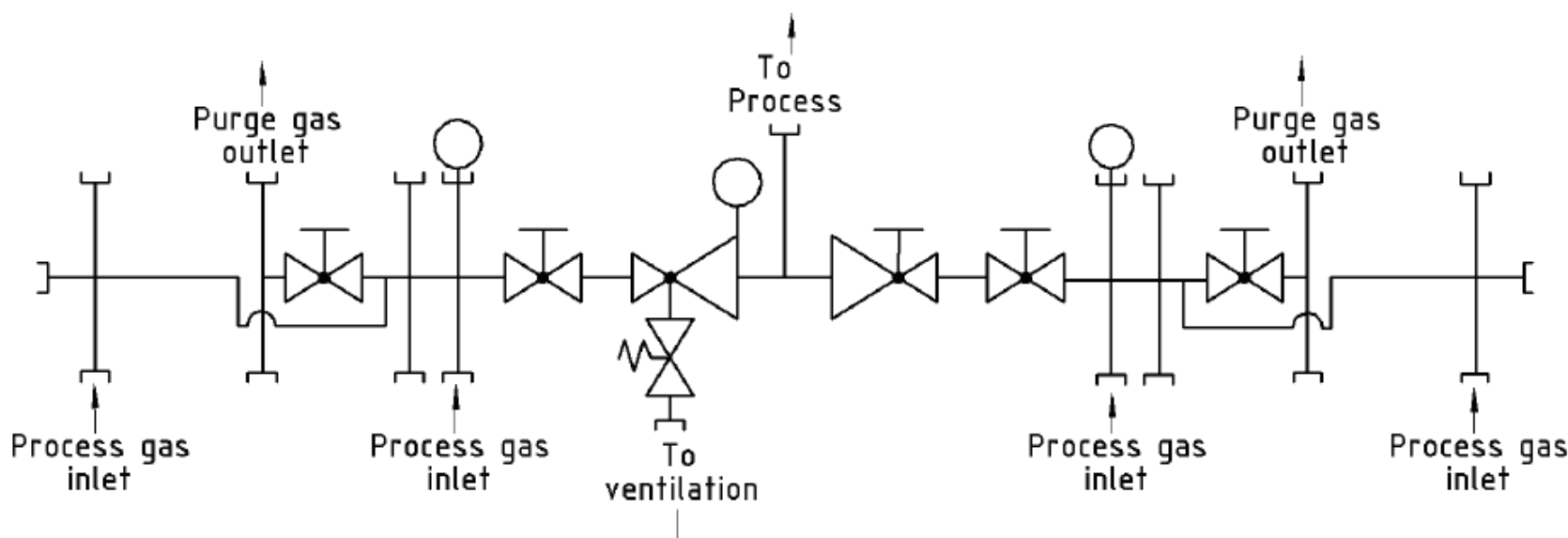
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# HP 260 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar  
5 = 1 - 17 bar  
6 = 5 - 50 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

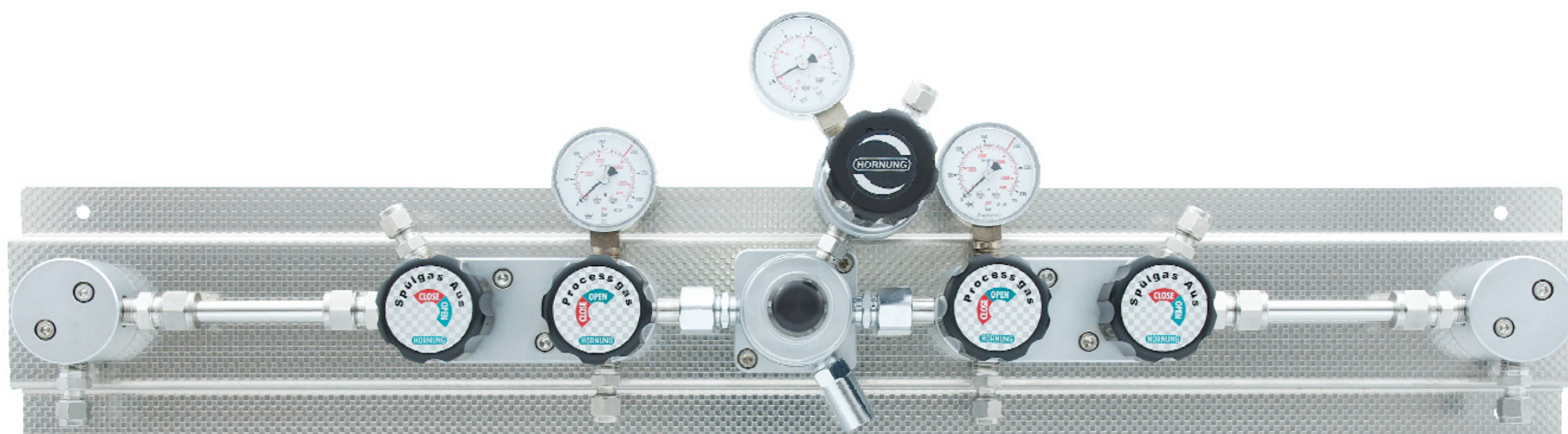
HP260- Type	2 Material	1 p1	4 p2	2 Gauge	Gas type Gas type
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**Accessories:** See total catalogue segment 7. Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), connecting hose 200 bar (optional RV), connecting hose 300 bar (optional RV), gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets and safety equipment. (RV = check valve)



# Cylinder station HP 261 Frontline

- 2x2 cylinder (bundle) dual stage with manual changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The HP 261 is a dual stage panel for central gas supply with manual changeover and internal purging. It serves the safe supply of pure and mixed gases from 2x2 single or 2x2 bundled cylinders.
Seat:	PCTFE	With options like contact gauges and gas alarm boxes (see segment 7) the supply concept can be optimised further.	When changing cylinders, the gas supply must not be interrupted.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Gas purity:	≤ 6.0		Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Expandability for 2x2 cylinder / bundle is already integrated. Options for external gas purging can be retrofitted without any problem.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	760 x 205 x 135 mm		
Weight:	8,2 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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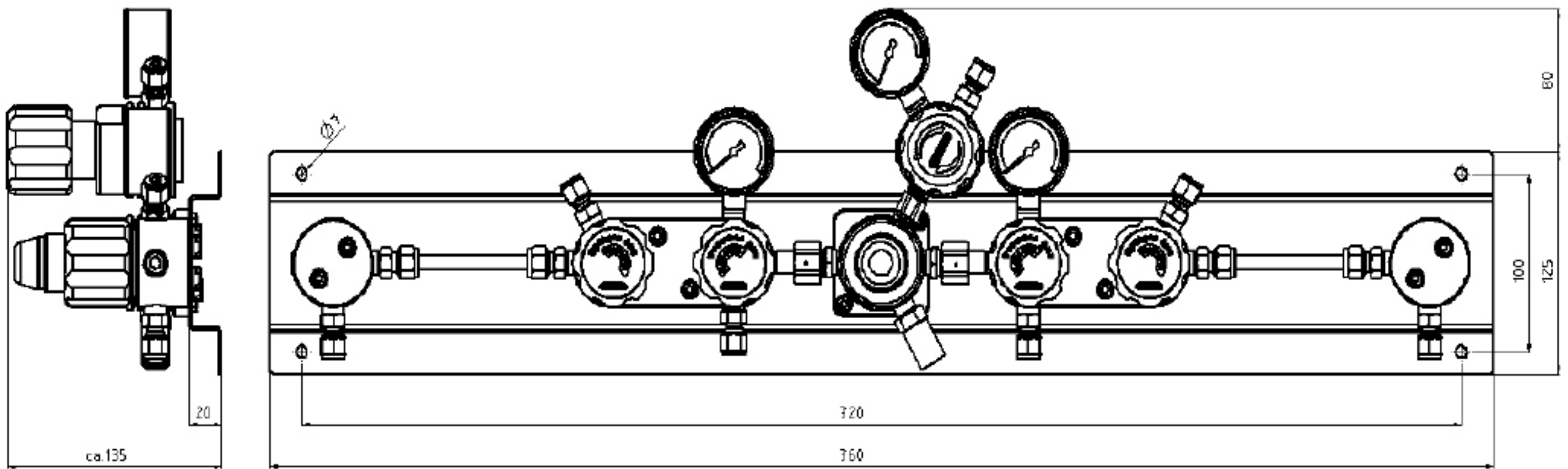
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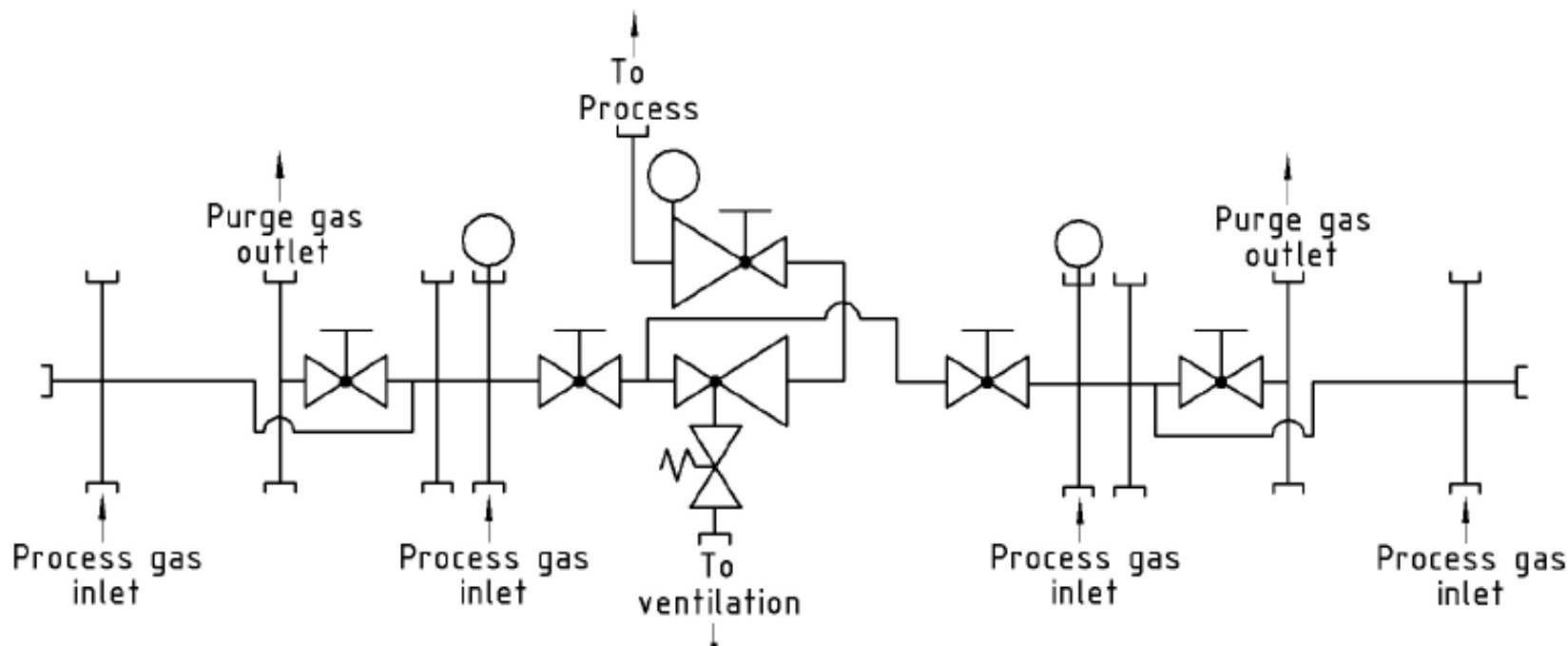
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# HP 261 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP261- Type	2 Material	1 p1	3 p2	1 Gauge	Gas type Gas type
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**Accessories:** See total catalogue segment 7. Pigtail 200 bar (optional RV), pigtail 300 bar (optional RV), Connecting hose 200 bar (optional RV), connecting hose 300 bar (optional RV), gas cylinder cabinets and safety equipment. (RV = check valve)

# Cylinder station HP 262 Frontline

- 2x1 cylinder (bundle) dual stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof were an uninterrupted supply over night and at week-ends must be guaranteed.	The HP 262 is a single stage panel for central gas supply with automatic changeover and internal purging. It serves the safe supply of pure and mixed gases from 2x2 single or 2x2 bundled cylinders. The changeover takes place as soon as the pressure in the first side sinks below a predetermined level.
Seat:	PCTFE	Through options such as contact gauges and gas alarm boxes (see segment 7) is the supply concept optimised.	This is controlled by two installed regulators with connected outlets.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block.
Gas purity:	≤ 6.0		Assembly and disassembly of all fixtures from the front.
Max. inlet pressure:	300 bar		Diaphragm shut-off valve in block design for process and purge gas with open and close display. Options for external gas purging can be retrofitted without any problem.
Outlet pressure range:	10 - 12 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	830 x 125 x 140 mm		
Weight:	8,7 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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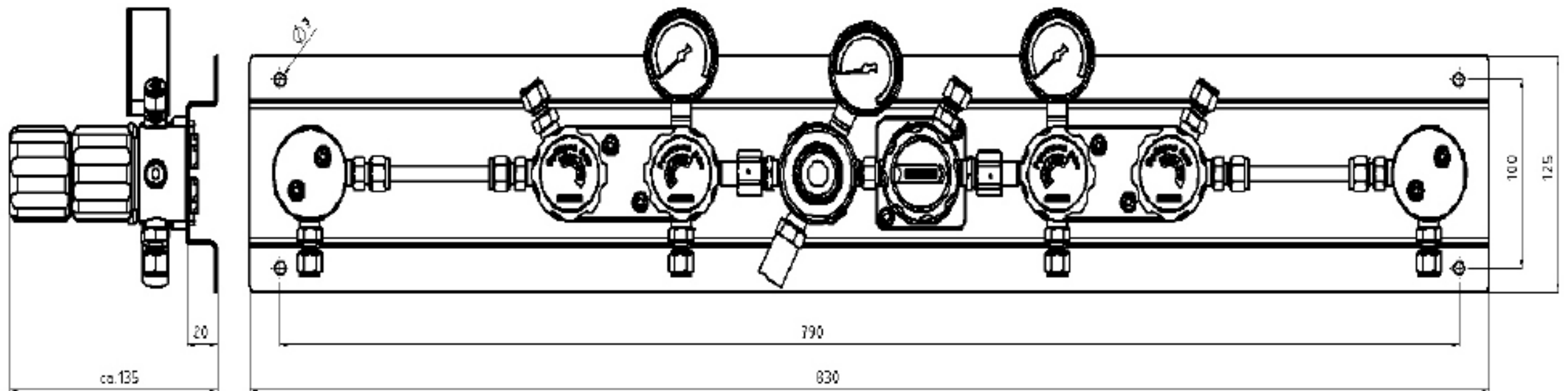
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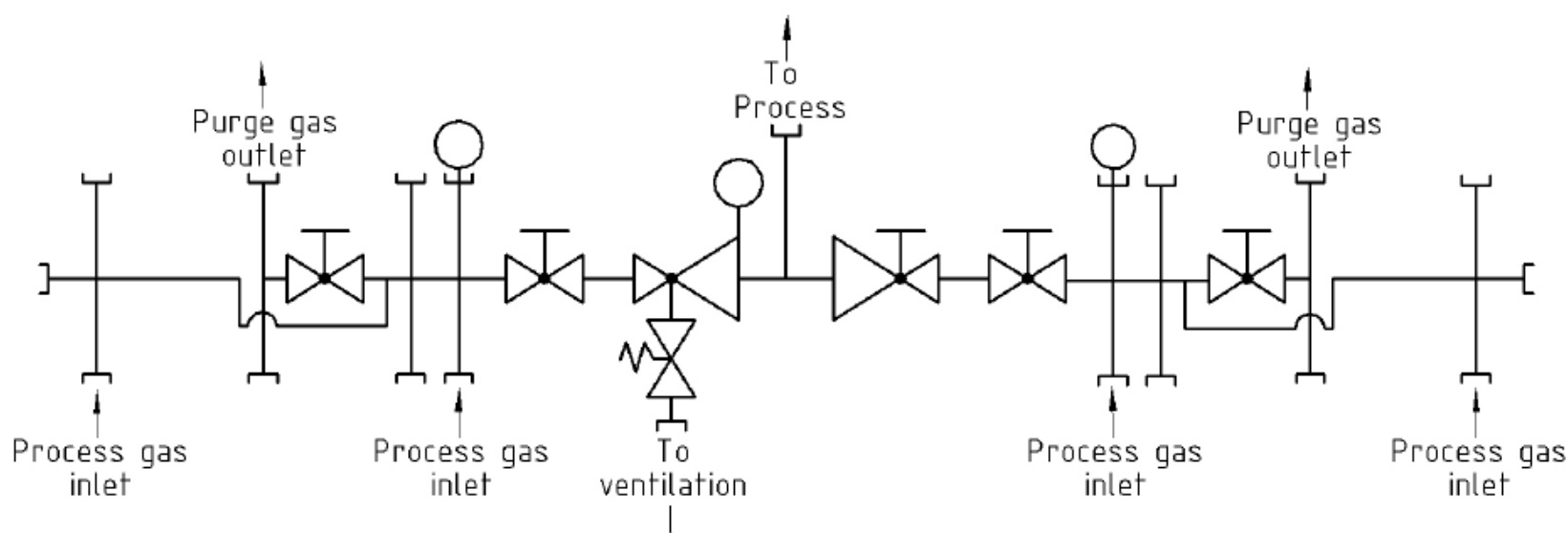
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# HP 262 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 10 - 12 bar  
2 = 45 - 55 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP262-  
Type

2  
Material

1  
p1

1  
p2

1  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets  
and safety equipment.



# Cylinder station HP 263 Frontline

- 2x1 cylinder (bundle) dual stage with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak-proof were an uninterrupted supply over night and at weekends must be guaranteed.	The HP 263 is a dual stage panel for central gas supply with automatic changeover and internal purging. It serves the safe supply of pure and mixed gases from 2x2 single or 2x2 bundled cylinders. The changeover takes place as soon as the pressure in the first side sinks below a pre-etermined level. This is controlled by two installed regulators with connected outlets.
Seat:	PCTFE	Through options such as contact gauges and gas alarm boxes (see segment 7) is the supply concept optimised.	The station is mounted on a stainless steel console consisting of a pressure regulator with in and outlet pressure gauges as well as a relief valve and shut-off valve for the process gas and purge gas.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		<b>Special characteristics:</b> Modular design of the pressure regulator and multifunction block. Assembly and disassembly of all fixtures from the front.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		Diaphragm shut-off valve in block design for Process and purge gas with open and close display. Options for external gas purging can be retrofitted without any problem.
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6 bar		
Cv:	0,06		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	830 x 205 x 140 mm		
Weight:	12,9 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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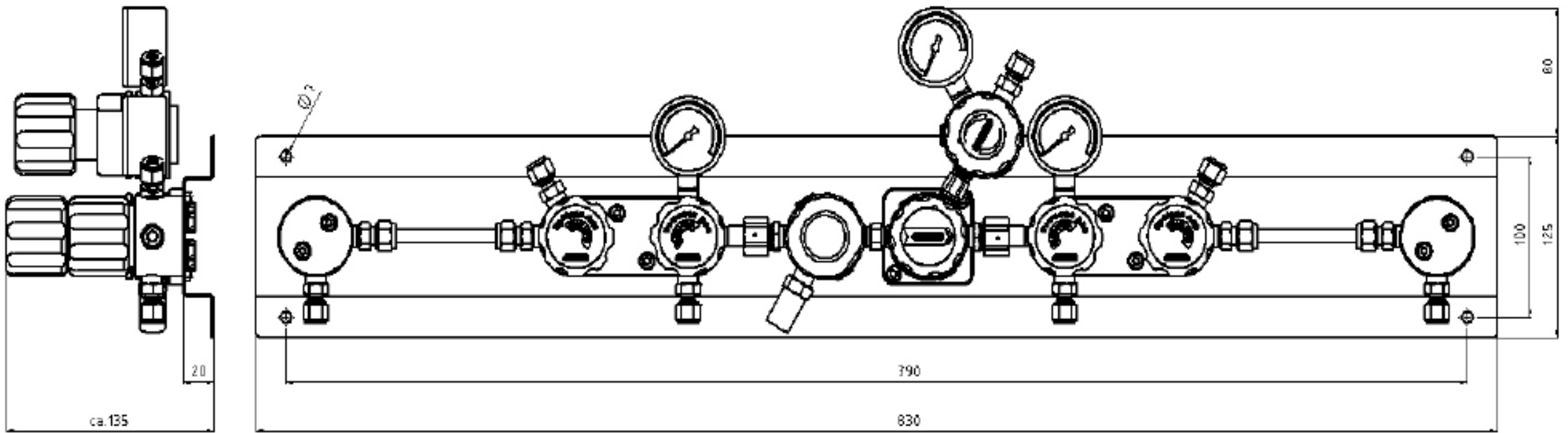
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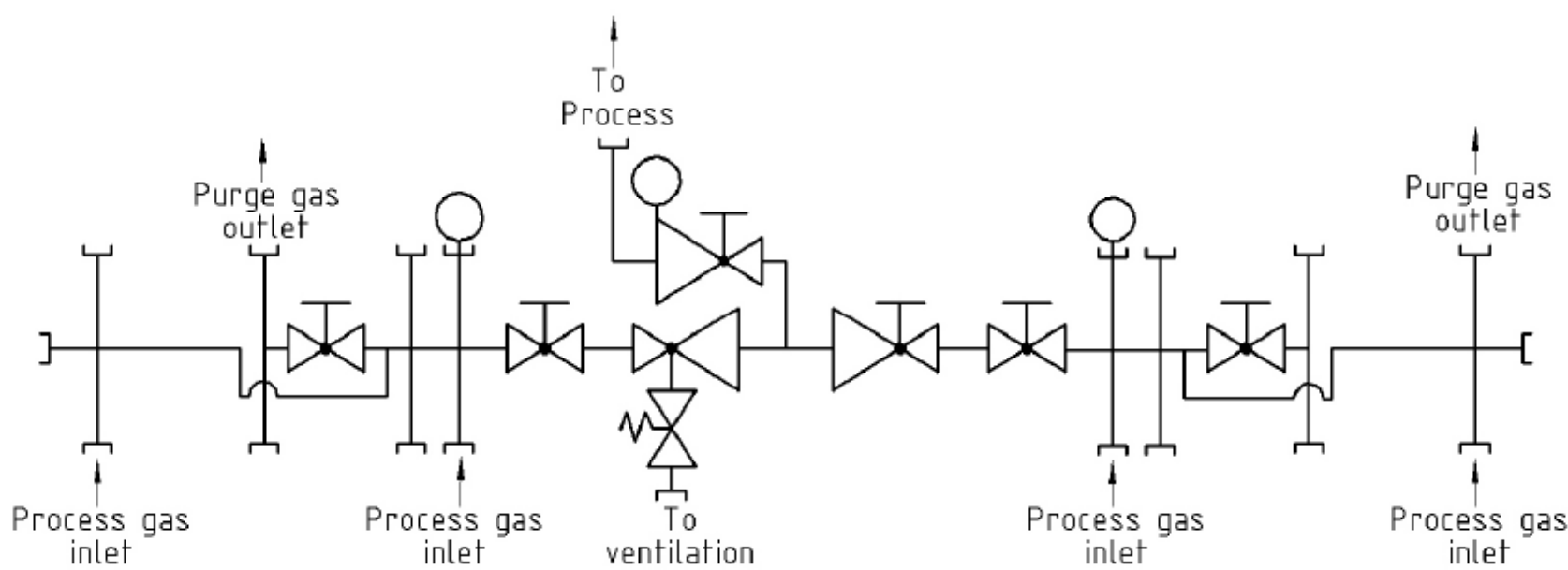
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# HP 263 FRONTLINE



## FLOW DIAGRAM



## SCOPE OF DELIVERY

Cylinder station with inlet and outlet gauge, shut-off valve, shut-off valve for process and purge gas. Completely mounted on a wall bracket out of stainless steel.

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Inlet pressure (p1):**  
1 = 200 bar  
2 = 300 bar

**Outlet pressure (p2):**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

HP263-  
Type

2  
Material

1  
p1

1  
p2

1  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Pigtail 200 bar,  
pigtail 300 bar,  
connecting hose 200 bar,

connecting hose 300 bar,  
gauges, compression fittings,  
cylinder retainers and accessories,

gas cylinder cabinets  
and safety equipment.

# Cylinder station HP 275 Acetylene 2.6

- 1x1 cylinder



TECHNICAL DETAILS	APPLICATION AREA	DESCRIPTION
Material: brass	Especially for gases with high requirements on security and leak-tightness.	The HP 275 is a single stage cylinder station for Acetylene 2.6. The supply panel serves the secure supply of Acetylene from 1 cylinders and is available for 1x1 cylinder as standard.
Gas purity: $\leq 2.6$	Utilisation in Labs and AAS-supply.	The station is mounted on a console and has a pressure regulator with in and outlet gauges as standard. Also a safety valve, flashback arrestor, check valve and quick-connectors.
Max. Inlet pressure: 25 bar		Can be retrofitted with contact gauges.
Outlet pressure range: 0,1 - 1,5 bar		In addition, as accessories, a gas failure detector and an emergency shut-off system for upgrading the safety of the system are also available (see. segment 7).
Operating temp.: -20°C to +70°C		
Dimensions: (1x1) 342x143x318		
Weight: approx. 3 kg (1x1)		
Flow: approx. 0,5 m <sup>3</sup> /h (momentary 1m <sup>3</sup> /h)		
QN-regulator: 4 m <sup>3</sup> /h		
Connections: Inlet: to DIN 477-3 (others on request)		
Outlet: G 3/8 LH m / G 3/8 RH f		
Type approval: flash back arrestor BAM 007/03		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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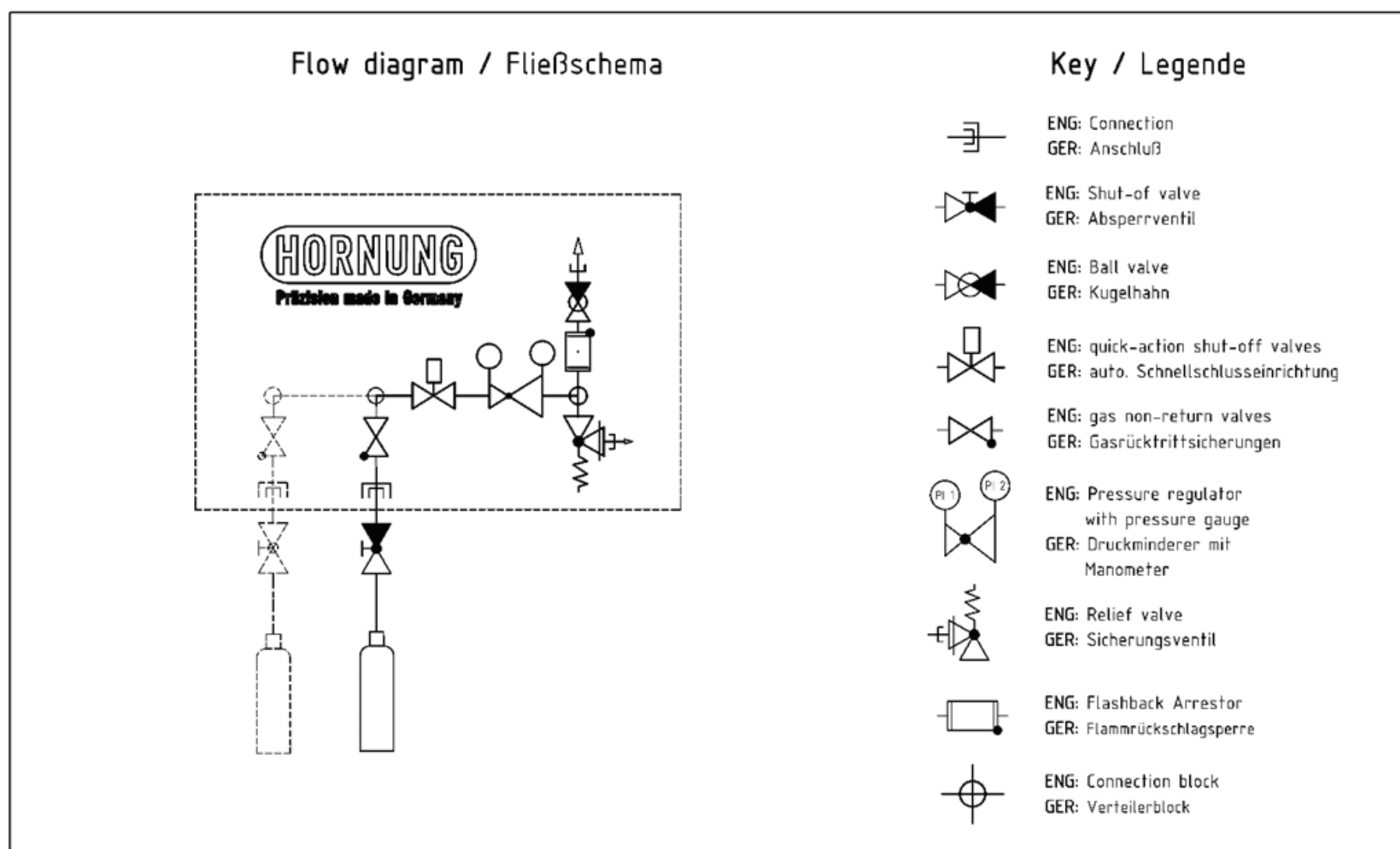
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# HP 275

## FLOW DIAGRAM



## SCOPE OF DELIVERY

- pressure regulator with in and outlet gauges
- shut off ball valve
- flash back arrestor
- safety valve

## ORDER DETAILS

**Number of cylinders:**  
1 = 1x1 cylinder

**Gauges:**  
1 = standard gauge  
2 = contact gauge ex

**Outlet pressure range p2:**  
1 = 0,1 - 1,5 bar

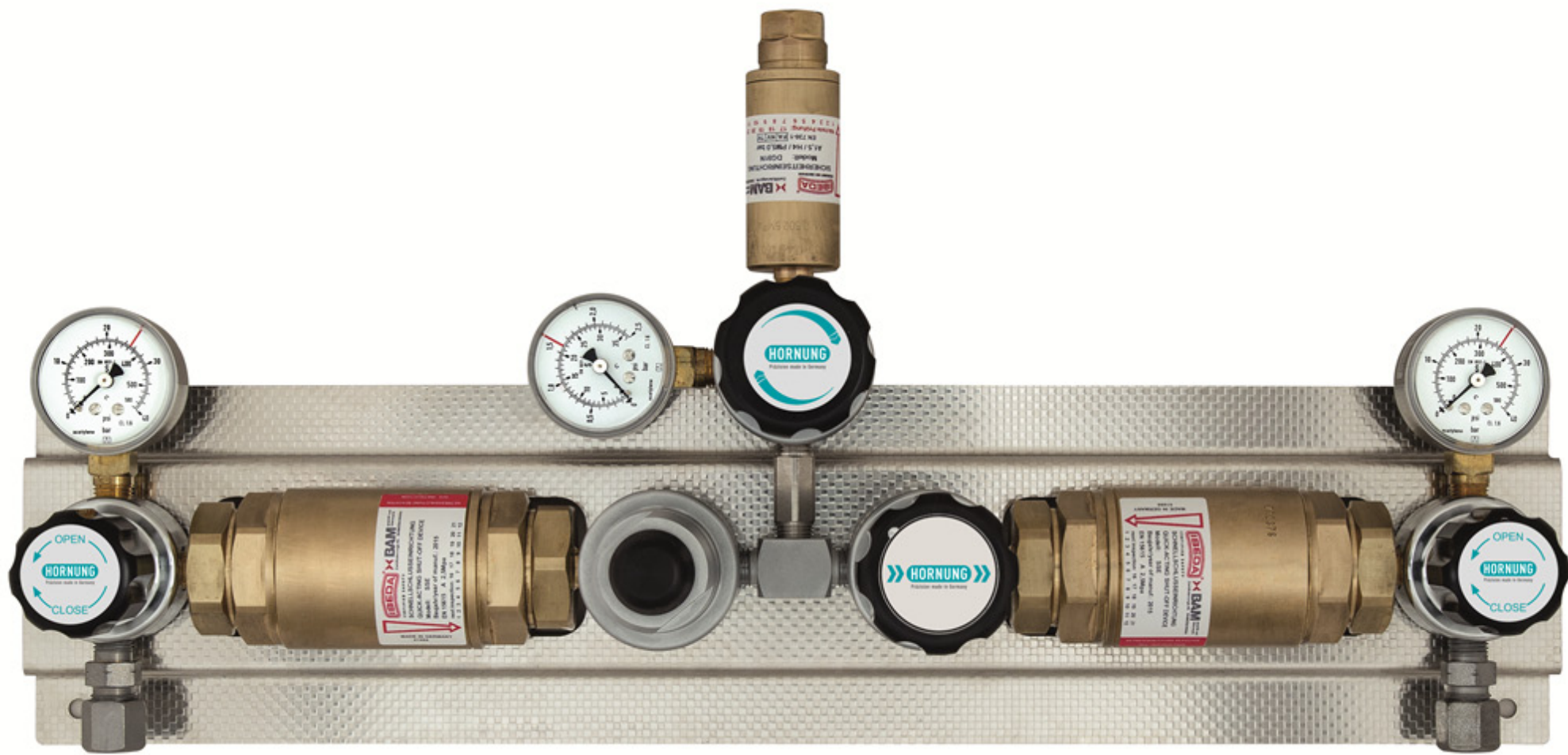
HP275-	1	2	1	Acetylene
Type	No. cylinders	Gauge	p2	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets und safety equipment.

# Cylinder station HP 276 Acetylene 2.6

- 2x1 cylinder with automatic changeover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass	Especially for gases with high requirements on purity to 6.0. secure and leak-proof were an uninterrupted supply over night and at weekends must be guaranteed.	The HP 274 is a single stage supply panel for Acetylene 2.6 for 2x1 cylinder with automatic changeover.
Gas purity:	≤ 2.6		
Max. inlet pressure:	25 bar	Utilisation in labs and AAS-supply.	The cylinder station serves the secure supply of Acetylene from 1 or 2 cylinders and is available for 2x1 cylinder as standard.
Outlet pressure range:	0,1 - 1,5 bar		
Operating temp.:	-20°C to +70°C		
Dimensions:	530 x 140 x 170 mm		
Weight:	approx. 20 kg		
Flow:	approx. 0,5 m <sup>3</sup> /h (momentary 1 m <sup>3</sup> /h)		
Connections:			
Inlet:	to DIN 477-3 (others on request)	The station is mounted on a console and has a pressure regulator with in and outlet gauges as standard. Also a safety valve, flashback arrestor und quick-connectors.	
Outlet:	NPT 1/4 i		
Type approval:		Can be retrofitted with contact gauges.	In addition, as accessories, a gas failure detector and an emergency shut-off system for upgrading the safety of the system are also available (see. segment 7).
for hoses	BAM 0283		
for ball valve DN 6	BAM 0394		
for quick shut-off device. HDS17	BAM 1481		
for pressure regulator	BAM cert.		
for flash back arrestor	BAM 0485		

## QUALITY STANDARD

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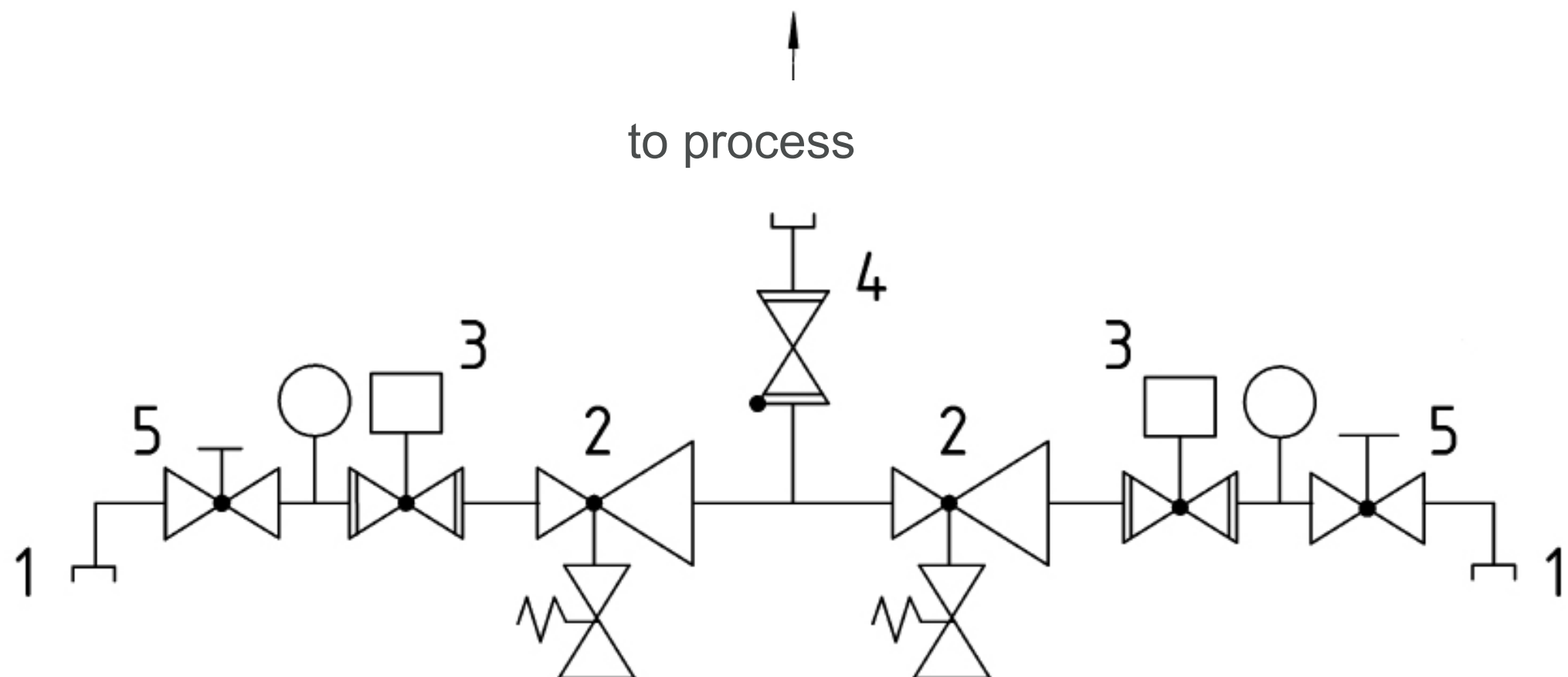
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# HP 276 Acetylene 2.6

## FLOW DIAGRAM



## SCOPE OF DELIVERY

- high pressure hose 90°, approx. 800 mm long (1)
- pressure regulator with in and outlet gauges (2)
- quick shut-off device (3)
- flash back arrestor (4)
- safety valve (5)
- changeover (6)
- shut-off ball valve (7)

Without compression fittings at outlet.

## ORDER DETAILS

### Number of cylinders:

- 1 = 2x1 cylinder
- 2 = 2x2 cylinders

### Gauges:

- 1 = standard gauge
- 2 = contact gauge ex

HP276-	1	2	Acetylene
Type	Number of cylinders	Gauge	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets und safety equipment.



# Cylinder station HP277-ACV Acetylen

- 2x1 – 2x2 – 2x3 with Automatic Changeover Valve (ACV)



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass	Especially for acetylene with high safety and tightness requirements, where an uninterrupted supply must be ensured overnight and at weekends.	The HP 277 is a single stage cylinder station for acetylene 2.6 for 2x1, 2x2 or 2x3 cylinders with automatic changeover.
Gas purity:	≤ 2.6		
Max. inlet pressure:	25 bar	Application in laboratory and AAS supplies.	The cylinder station is used for the safe withdrawal of acetylene from 1, 2 or 3 cylinders and is available as standard for 2x1, 2x2 or 2x3 cylinders.
Control range:	up to 1,5 bar		
Operating temp.:	-20°C to +70°C		
Dimensions:	530 x 420 x 170mm		
Weight:	approx. 14 kg		
flow rate:	approx. 0,5 m³/h (briefly 1 m³/h)		
Connection at inlet:	compression fitting M16x1,5m x NPT1/4m steel for 8mm pipe		
Outlet:	G3/8 LH m / G 3/8 IG-RH	It can optionally be equipped with contact gauges.	A gas shortage warning device and an emergency stop system for upgrading the safety circuit are also available as accessories (see also Chapter 7).
<b>design approval certificate:</b>			
for hose	BAM 0283		
for ball valves DN 6	BAM 0394		
for quick shut-off device .HDS17	BAM 1481		
for pressure regulator	BAM gepr.		
for flash back arrestor	BAM 0485		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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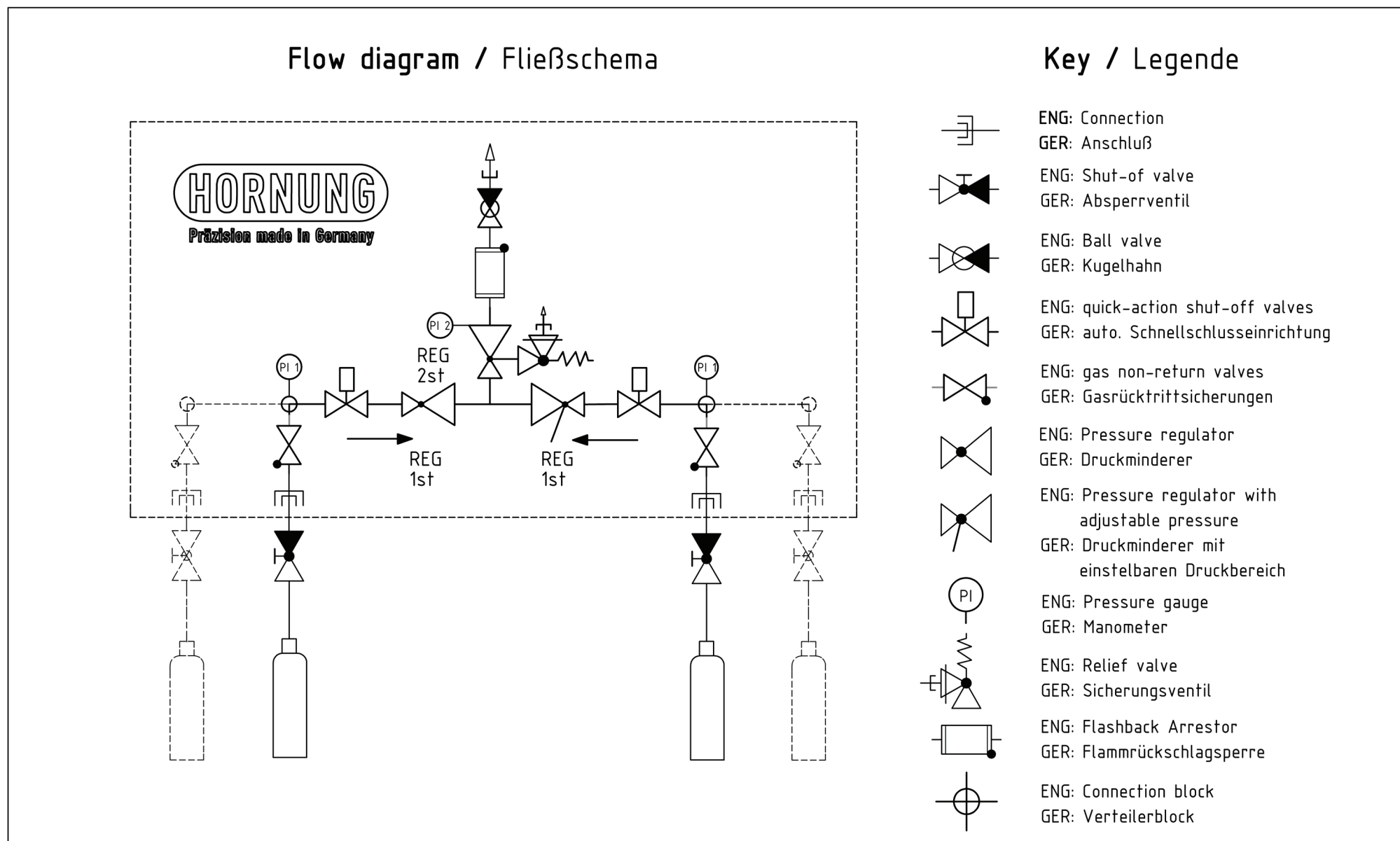
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# HP 277 -ACV Acetylen

## FLOW DIAGRAM



## SCOPE OF SUPPLY

high-pressure hoses, approx. 800 mm long  
 pressure regulator with inlet- and outlet-gauges  
 quick shut-off device  
 flash back arrestor  
 safety valve  
 automatic changeover valve (ACV)  
 shut-off ball valve

without connecting coupling at outlet

## ORDER DETAILS

### Quantity of cylinders:

1 = 2x1 cylinder automatic  
 2 = 2x2 cylinder automatic  
 3 = 2x3 cylinder automatic

### Gauges:

1 = standard gauge  
 2 = contact gauge ex

### Connection at outlet:

0 = 3/8" IG/RH  
 1 = 3/8" AG/LH

HP277-  
Type

1  
quantity

2  
Gauges

2  
Connection

Acetylen  
Gas type

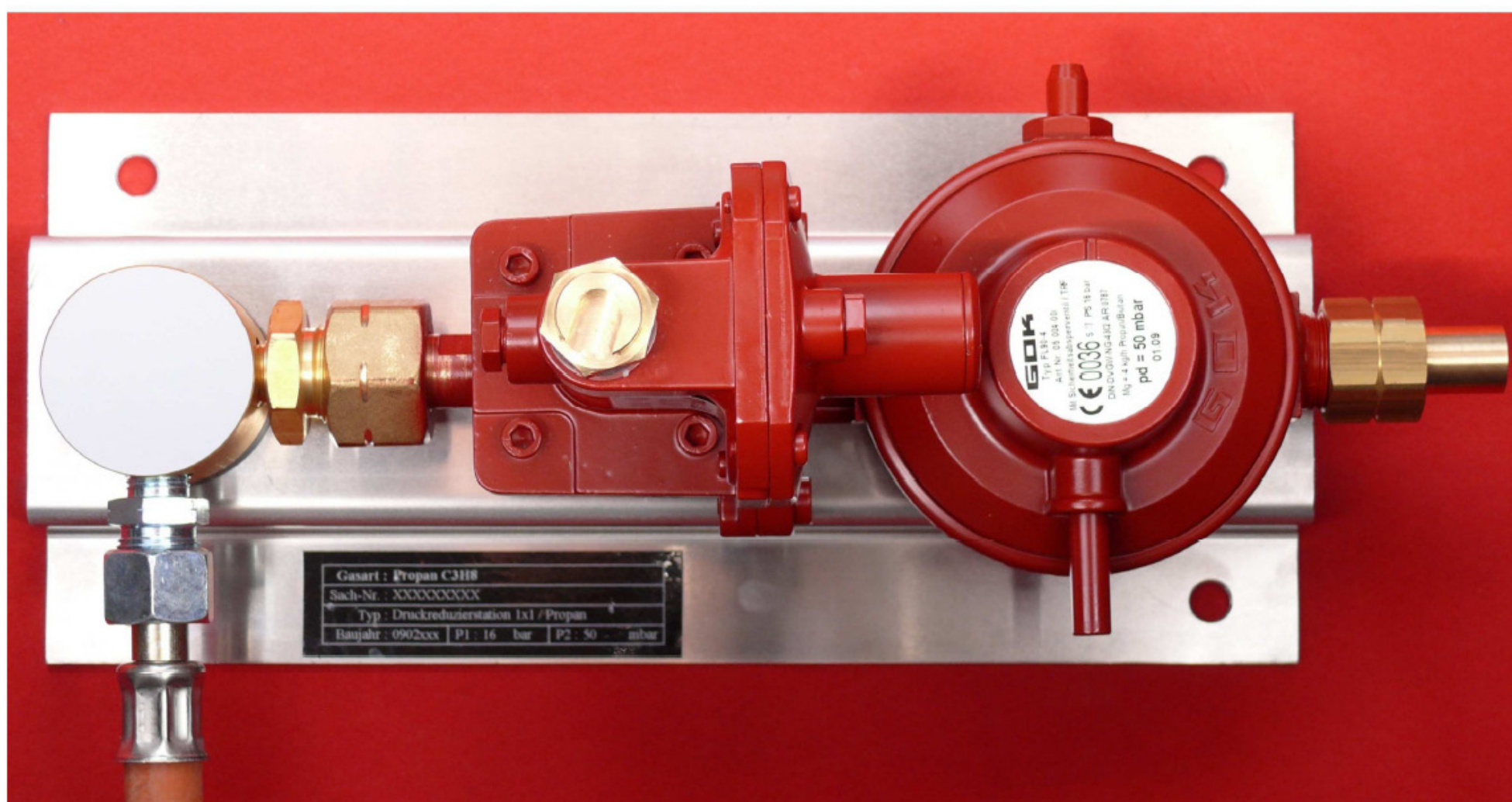
**Accessories:** See total catalogue segment

7. Gauges, fittings,  
 cylinder retainers and accessories,  
 gas cylinder cabinets and safety equipment.



# Cylinder station HP 278 for Propane

- 1x1 cylinder



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass	<p>Especially for gases with high requirements on material, tightness and safety.</p> <ul style="list-style-type: none"> <li>· For applications in laboratories</li> <li>· For Bunsen burners in laboratories</li> </ul>	<p>The HP 278 is a single stage cylinder station for propane. The cylinder station serves the secure supply of Propane from 1 cylinder and is available for 1 cylinder as standard.</p> <p>The single cylinder station HP 278 consists of one low pressure regulator, 400 mm middle-pressure hose with safety shut-off valve and a safety blow-off valve.</p> <p>Can be retrofitted with contact gauges.</p> <p>In addition, as accessories, a gas failure detector and an emergency shut-off system for upgrading the safety of the system are also available (see. segment 7).</p> <p>HP 242 is in full accordance with German TRF 1996 resp. BGV D34 §11 subparagraph 4.</p>
Max. inlet pressure:	20 bar		
Outlet pressure ranges:	50 mbar, 1,5 bar fixed 0,5 - 4 bar adjustable		
Max. flow:	4 kg/h		
Operating temp.:	-20°C to +70°C		
Dimensions: 1 cylinder	330 x 25 x 2 mm		
Connections:			
Inlet:	hose DIN 477-1		
Outlet:	soldering connection for 12 mm tube		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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# HP 278 FOR PROPANE

## SCOPE OF DELIVERY

- high pressure hose
- regulators for low pressure
- safety shut-off valve
- safety blow-off valve

with connection fittings at the outlet.

## ORDER DETAILS

### Outlet pressure:

- 1 = 50 mbar fixed
- 2 = 1,5 bar fixed
- 3 = 0,5 - 4 bar adjustable

### Gauges:

- 1 = no gauge
- 2 = standard gauge
- 3 = contact gauge ex

HP278-	1	2	Propane
Type	No. cylinders	Gauge	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets und safety equipment

# Cylinder station HP 280 for Propane

- 2x1 cylinder with manual or automatic crossover



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass	<p>Especially for gases with high requirements on material, tightness and safety.</p> <ul style="list-style-type: none"> <li>· For applications in laboratories</li> <li>· For Bunsen burners in laboratories</li> </ul>	<p>The HP 280 is a single stage cylinder station for propane.</p> <p>The cylinder station serves the secure supply of Propane gas from 2 cylinders and is available for 2 cylinders as standard.</p> <p>The two cylinder station HP 280, consists of one low pressure regulator, safety shut-off valve (connected upstream) and a safety blow-off valve as well as 2 high pressure hoses with cylinder connections, a cylinder holding rail.</p> <p>With the two cylinder station the gas supply alternates between the two cylinders.</p> <p>HP 242 is in full accordance with German TRF 1996 resp. BGV D34 §11 subparagraph 4.</p>
Max inlet pressure:	20 bar		
Outlet pressure ranges:	50 mbar 1,5 bar fixed 0,5 - 4 bar adjustable		
Flow max:	4 kg/h		
Operating temp.:	-20°C to +70°C		
Dimensions: 1 cylinder	330 x 350 x 2 mm		
Connections: Inlet:	hose DIN 477-1		
Outlet:	soldering connection for 12 mm tube		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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# HP 280 FOR PROPANE

## SCOPE OF DELIVERY

- high pressure hose
- regulators for low pressure
- safety shut-off valve
- safety blow-off valve

with connection fittings at the outlet.

## ORDER DETAILS

Station:	Outlet pressure:	Gauges:
1 = 2x1 cylinder manual (1,5 or 4 bar)	1 = 50 mbar fixed	1 = no gauge
2 = 2x1 cylinder autom. (50 mbar)	2 = 1,5 bar fixed	2 = standard gauge
	3 = 0,5 - 4 bar adjustable	3 = contact gauge ex

HP280-	1	1	2	Propane
Type	Station	Outlet	Gauge	Gas type

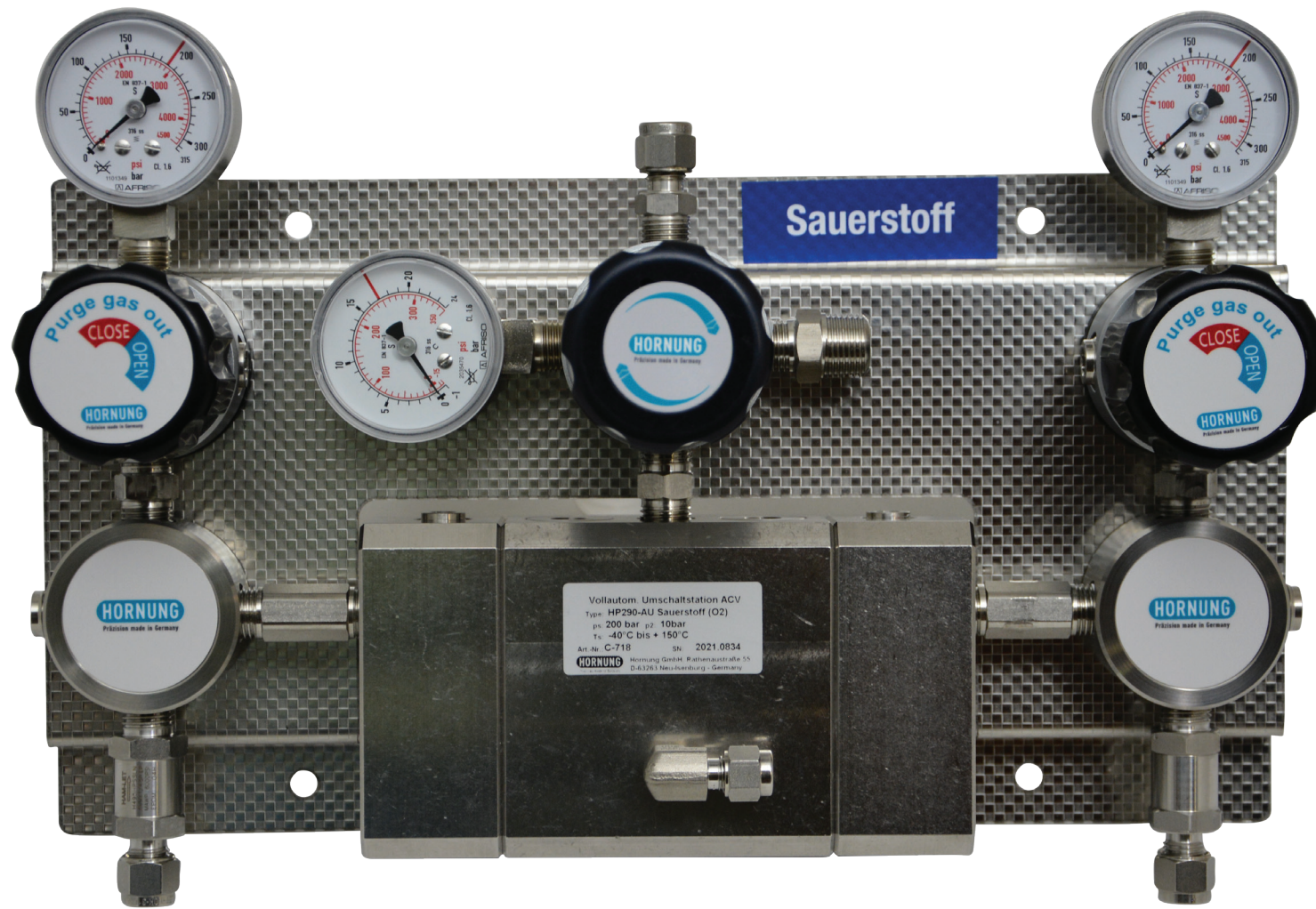
**Accessories:** See total catalogue segment

7. Gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets und safety equipment



# Cylinder station HP290-ACV

- with Automatic Changeover Valve (ACV)



compression fittings at outlet are optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 or brass chrome plated	The cylinder station HP290-AU is designed for oxygen (BAM tested) and non-corrosive gases and is intended for gas purity 5.0.	The modular design enables an expansion to 2x2 or 2x3 gas cylinders.
Seat:	PCTFE	Especially for gases with high safety and tightness requirements, where an uninterrupted supply must be ensured overnight and at weekends.	The single-stage pressure reducer with integrated blow-off valve for all pressure levels enables precise pressure adjustment.
Diaphragm:	1.4435		Equipped with filters in the inlet and flushing valves, the ergonomically designed expansion station can be used for compact installation situations in gas bottle cabinets.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		It can optionally be equipped with contact gauges.
Gas purity:	≤ 5.0		A gas shortage warning device and an emergency stop system for upgrading the safety circuit are also available as accessories (see also Chapter 7).
Max. inlet pressure:	max. 100 / 200 / 300bar		
Outlet pressure ranges:	1 - 12 bar 1 - 17 bar 1 - 30 bar 5 - 50 bar 5 - 100 bar 5 - 200 bar		
Operating temp.:	-40°C to +150°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	325 x 212 x 155 mm		
Weight:	10 kg		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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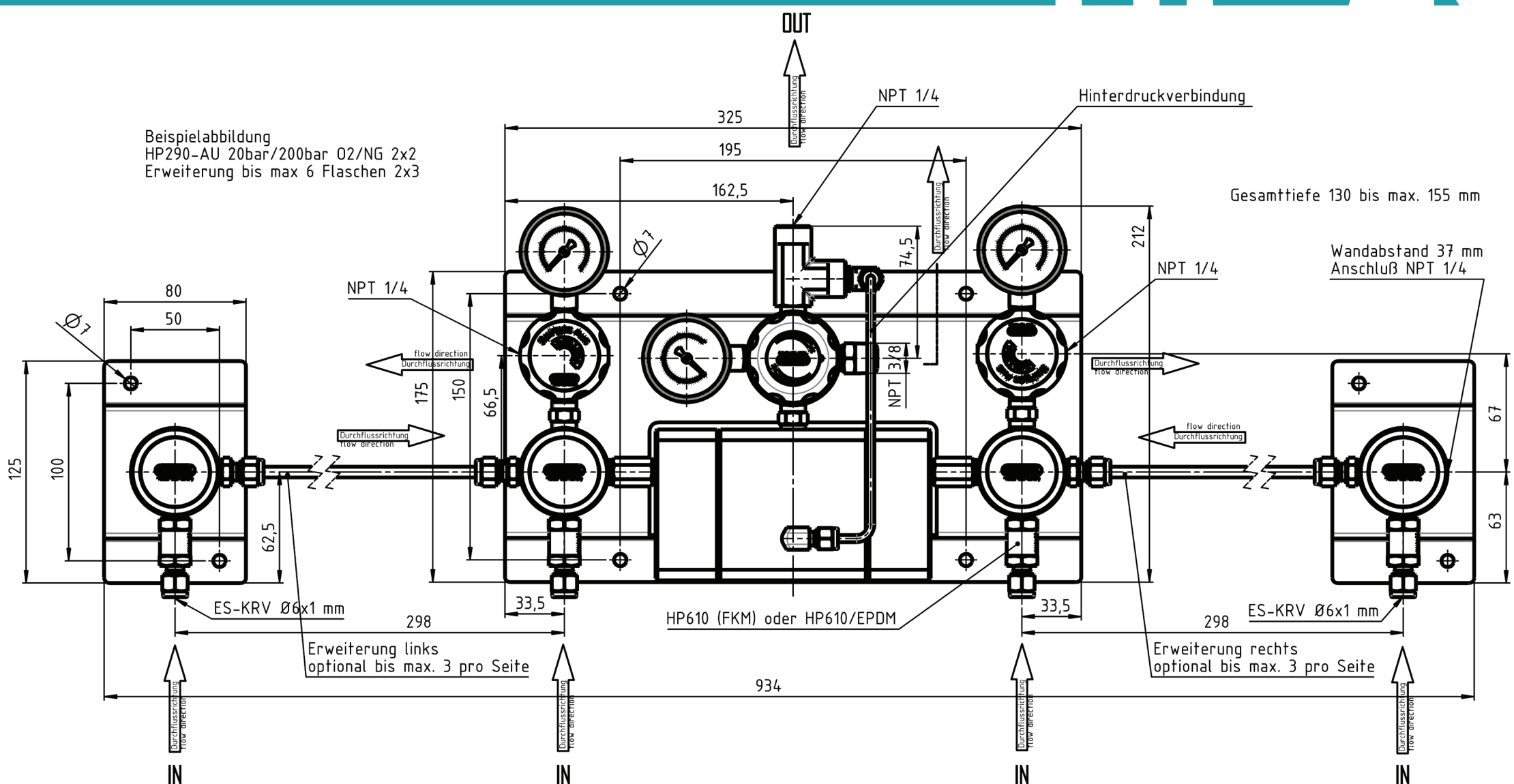
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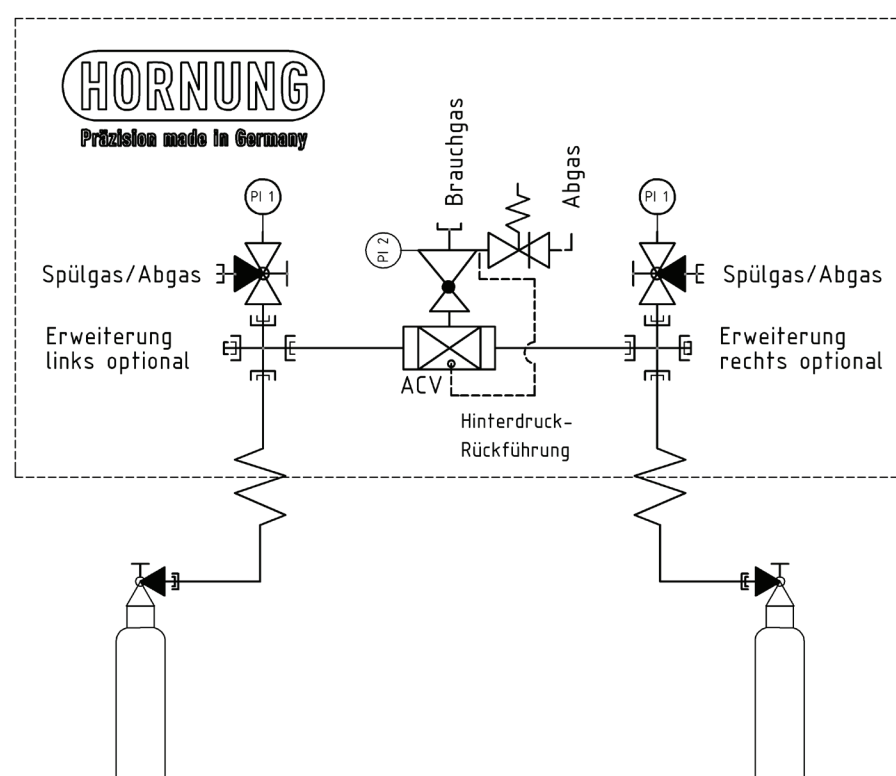
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# HP 290



## FLOW DIAGRAM



- ENG: Automatically Change Valve  
GER: vollauto. Umschaltventil ACV
- ENG: Waste gas valve or purge valve  
GER: Absperrventil Spülgas/Abgas
- ENG: Pressure regulator with balanced poppet  
GER: Druckminderer mit Vordruckausgleich
- ENG: Pre-pressure gauge  
GER: Vordruckmanometer
- ENG: Back pressure gauge  
GER: Hinterdruckmanometer
- ENG: Relief valve  
GER: Abblaseventil
- ENG: Connection block  
GER: Verteilerblock
- ENG: Back pressure return pipeline  
GER: Hinterdruck-Rückführung
- ENG: Connection  
GER: Anschluß

## ORDER DETAILS

Material:	Inlet pressure p1:	Outlet pressure p2:	Gauges:	Connections at outlet:
1 = stainless steel 2 = brass	1 = 100 bar 2 = 200 bar 3 = 300 bar	1 = 1 - 12 bar 2 = 1 - 17 bar 3 = 1 - 30 bar 4 = 5 - 50 bar 5 = 5 - 100 bar 6 = 5 - 200 bar	1 = standard gauge 2 = contact gauge ex	0 = NPT 1/4" f 1 = compression fitting 2 = shut-off valve

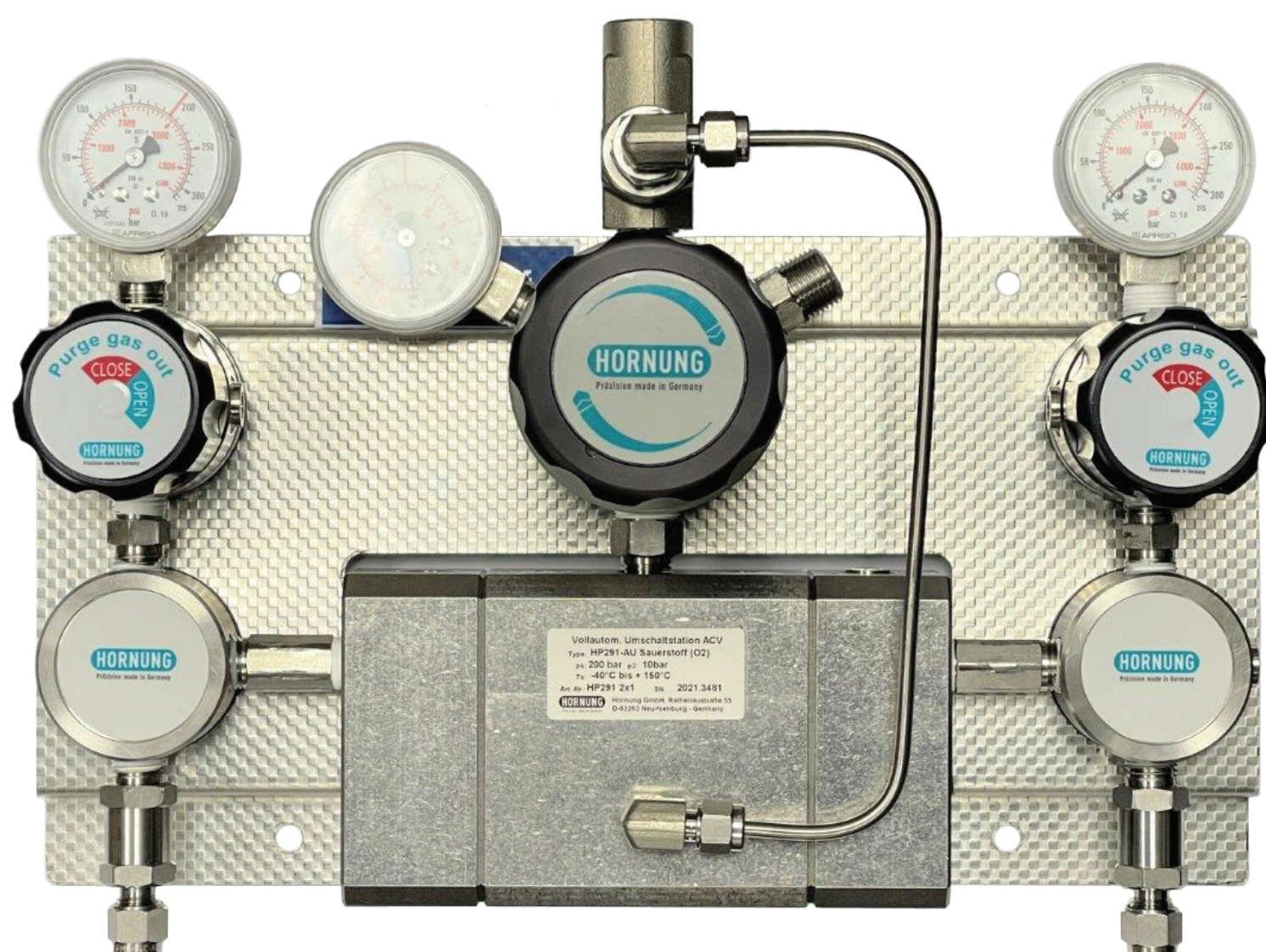
HP290- Type	2 Material	1 p1	1 p2	2 Gauges	2 Connections	Gas type Gas type
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**Accessories:** See total catalogue segment  
Pigtail 200 bar, pigtail 300 bar, connecting hose 200 bar, connecting hose 300 bar, gauges, compression fittings, cylinder retainers and accessories, gas cylinder cabinets and safety equipment.



# Cylinder station HP291-ACV

- with Automatic Changeover Valve (ACV) and balanced poppet



compression fittings at outlet are optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 or brass chrome plated	The cylinder station HP291-AU is designed for non-corrosive gases and is intended for gas purity 6.0.	The modular design enables an expansion to 2x2 or 2x3 gas cylinders.
Seat:	PCTFE	Especially for gases with high safety and tightness requirements, where an uninterrupted supply must be ensured overnight and at weekends.	The single-stage pressure reducer with integrated blow-off valve and balance poppet for all pressure levels enables precise pressure adjustment.
Diaphragm:	1.4435		Equipped with filters in the inlet and flushing valves, the ergonomically designed expansion station can be used for compact installation situations in gas bottle cabinets.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		It can optionally be equipped with contact gauges.
Gas purity:	≤ 6.0		A gas shortage warning device and an emergency stop system for upgrading the safety circuit are also available as accessories (see also Chapter 7).
Max. inlet pressure:	max. 100 / 200 / 300bar		
Outlet pressure ranges:	0 - 7 bar 1 - 12 bar 1 - 17 bar 1 - 30 bar 5 - 50 bar		
Operating temp.:	-40°C to +150°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Dimensions (wxhxd):	325 x 212 x 155 mm		
Weight:	11 kg		
Connection inlet:	NPT 1/4" f		
Connection outlet:	NPT 3/8" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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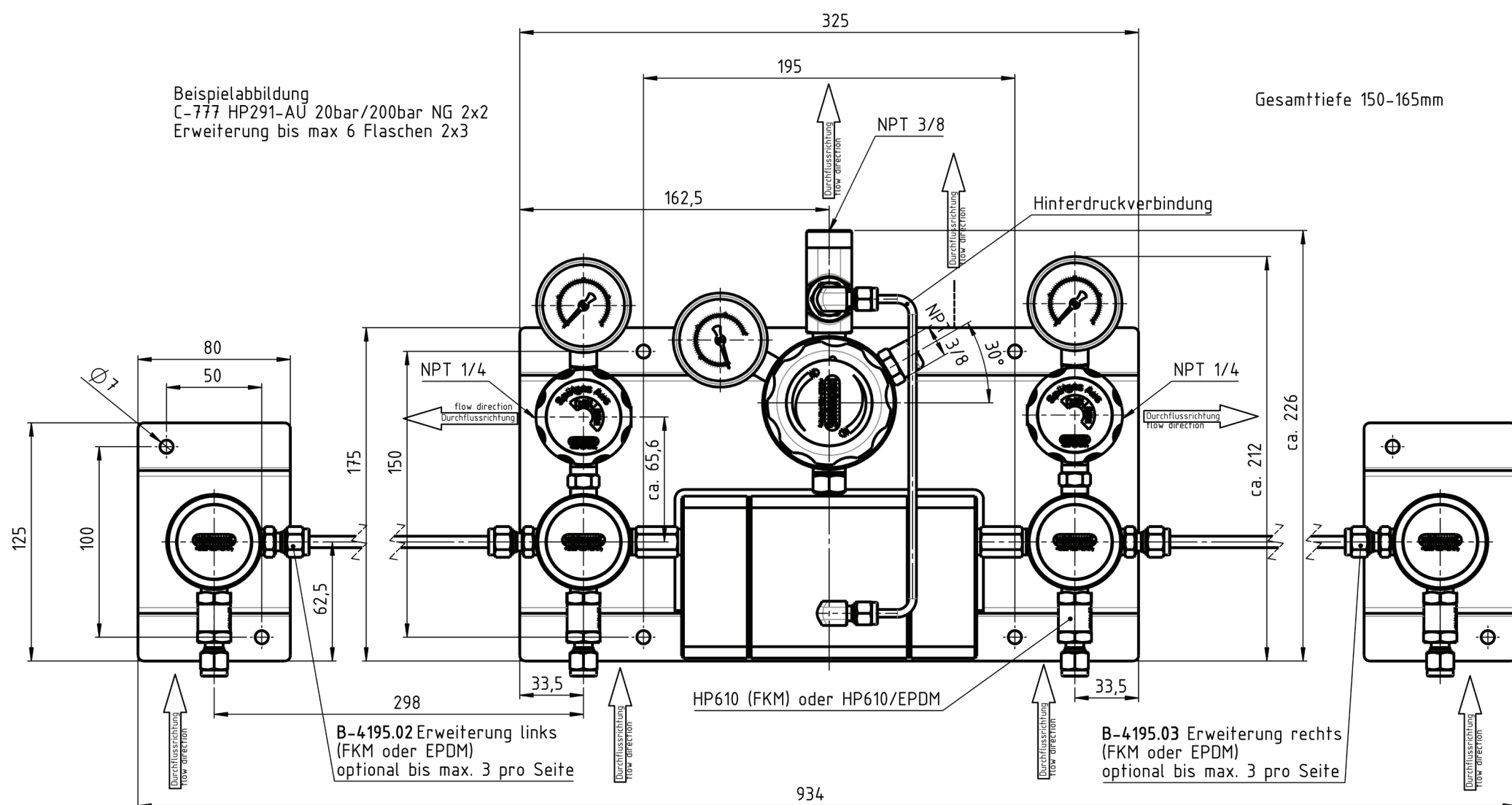
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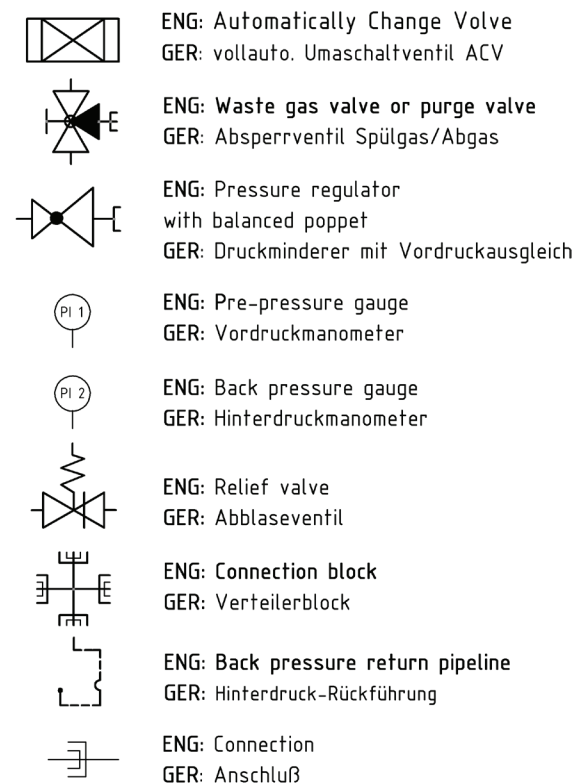
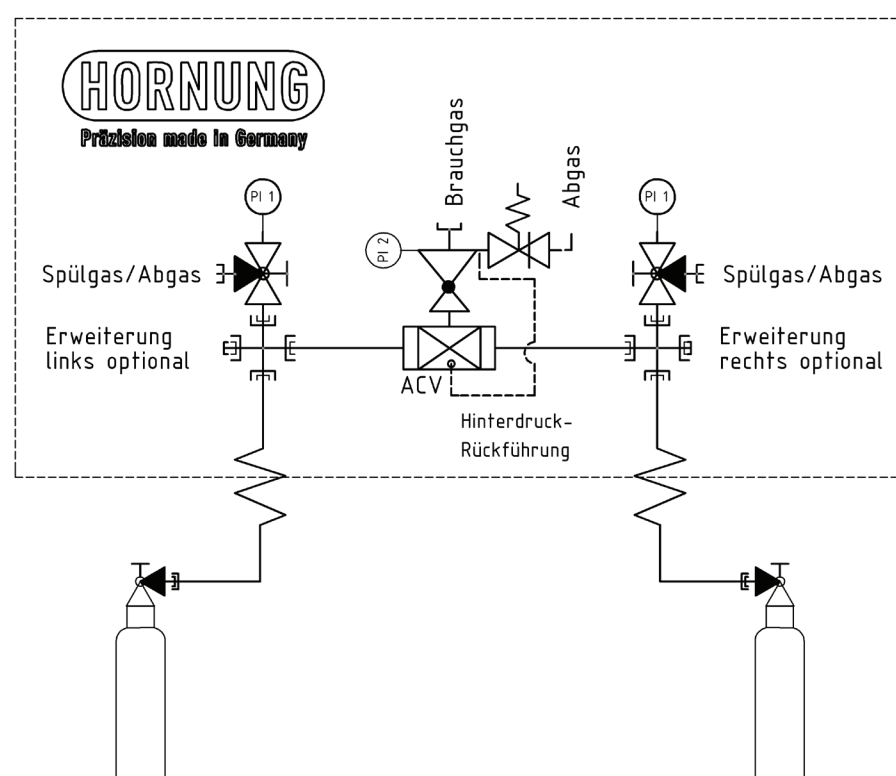
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# HP 291



## FLOW DIAGRAM



## ORDER DETAILS

Material:	Inlet pressure p1:	Outlet pressure p2:	Gauges:	Connections at outlet:
1 = stainless steel 2 = brass	1 = 100 bar 2 = 200 bar 3 = 300 bar	0 = 1 - 7 bar 1 = 1 - 12 bar 2 = 1 - 17 bar 3 = 1 - 30 bar 4 = 5 - 50 bar	1 = standard gauge 2 = contact gauge ex	0 = NPT 3/8" f 1 = compression fitting 2 = shut-off valve

HP291- Type	2 Material	1 p1	1 p2	2 Gauges	2 Connections	Gas type Gas type
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**Accessories:** See total catalogue segment 7. Pigtail 200 bar, pigtail 300 bar, connecting hose 200 bar,

connecting hose 300 bar, gauges, compression fittings, cylinder retainers and accessories,

gas cylinder cabinets and safety equipment.

# Three-way purge HP 560



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404. electropolished	Designed especially for gases with high requirements for purity up to 6.0, safety and density.	The three-way purge block HP 560 was designed in order to guard against the lack of space in modern gas cylinder cabinets.
Seat:	PCTFE	The stations are ECD – suitable through our special-cleansing-procedure.	For this purpose a short cylinder connections and the close fitting purge valves are installed, which also simplifies the cylinder change and increase the operating safety of the entire armature. The purge block is characterized by a compact design and the purge valves installed lateral over the cylinders shoulders.
Membrane:	1.4435		
Leckage rate:	10 <sup>-8</sup> mbar l/s He		It has a small dead volume and by the abandonment of purge capillary a quick evacuation is possible.
Gas purity:	≤ 6.0		
Max. pre-pressure:	300 bar		<b>Specific features:</b> A modular construction of the three-way purge block. Assembly and disassembly of all mountings attached from the front.
Operating temp.:	-20°C bis +70°C		
Manometer:	safety design EN 837-1 KL1,6		
Dimensions (wxhxd):	149 x 141,3 x 174 mm		
Weight:	2,15 kg		
Connections:	DIN477 cylinder connection  NPT 1/4 i		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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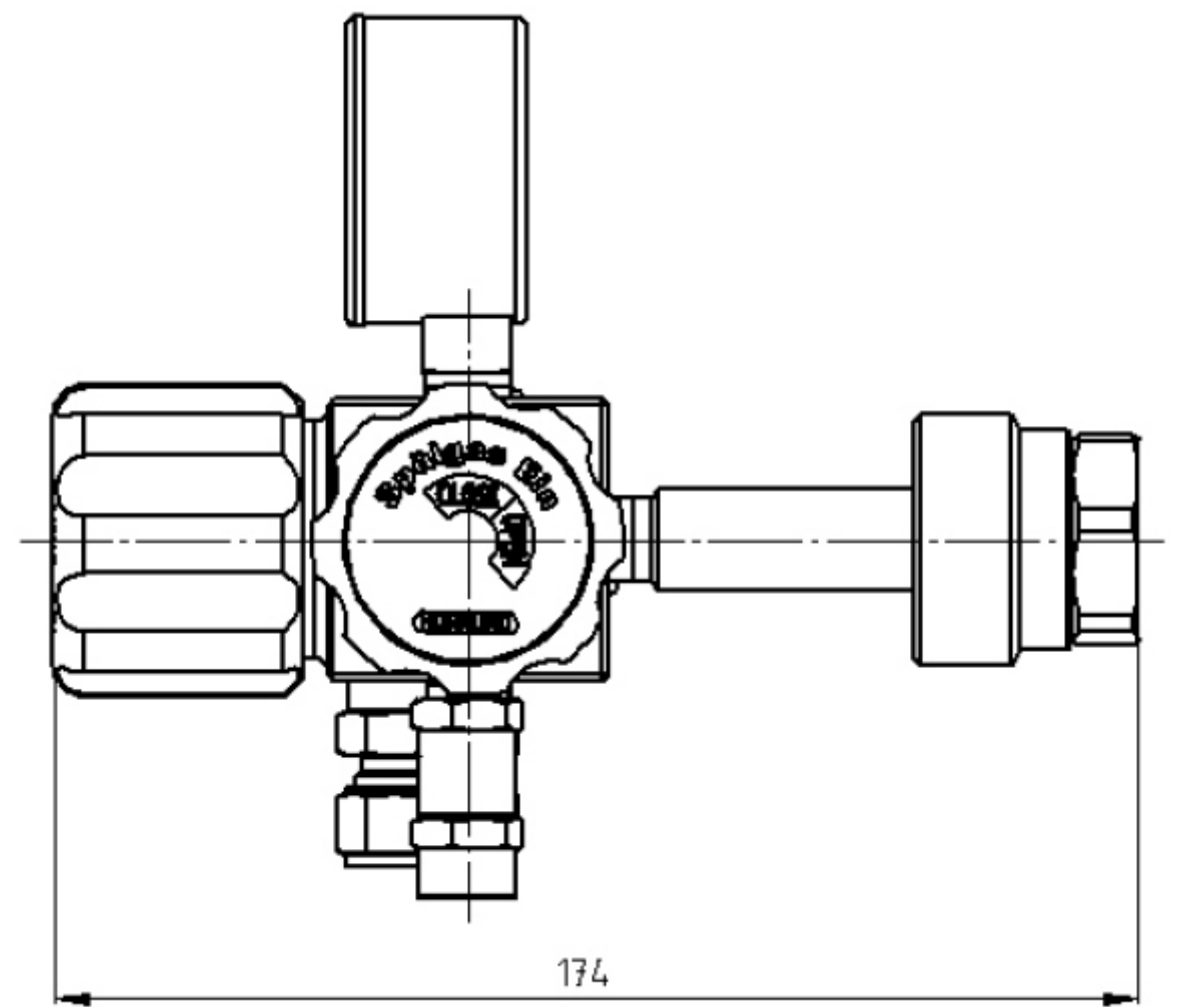
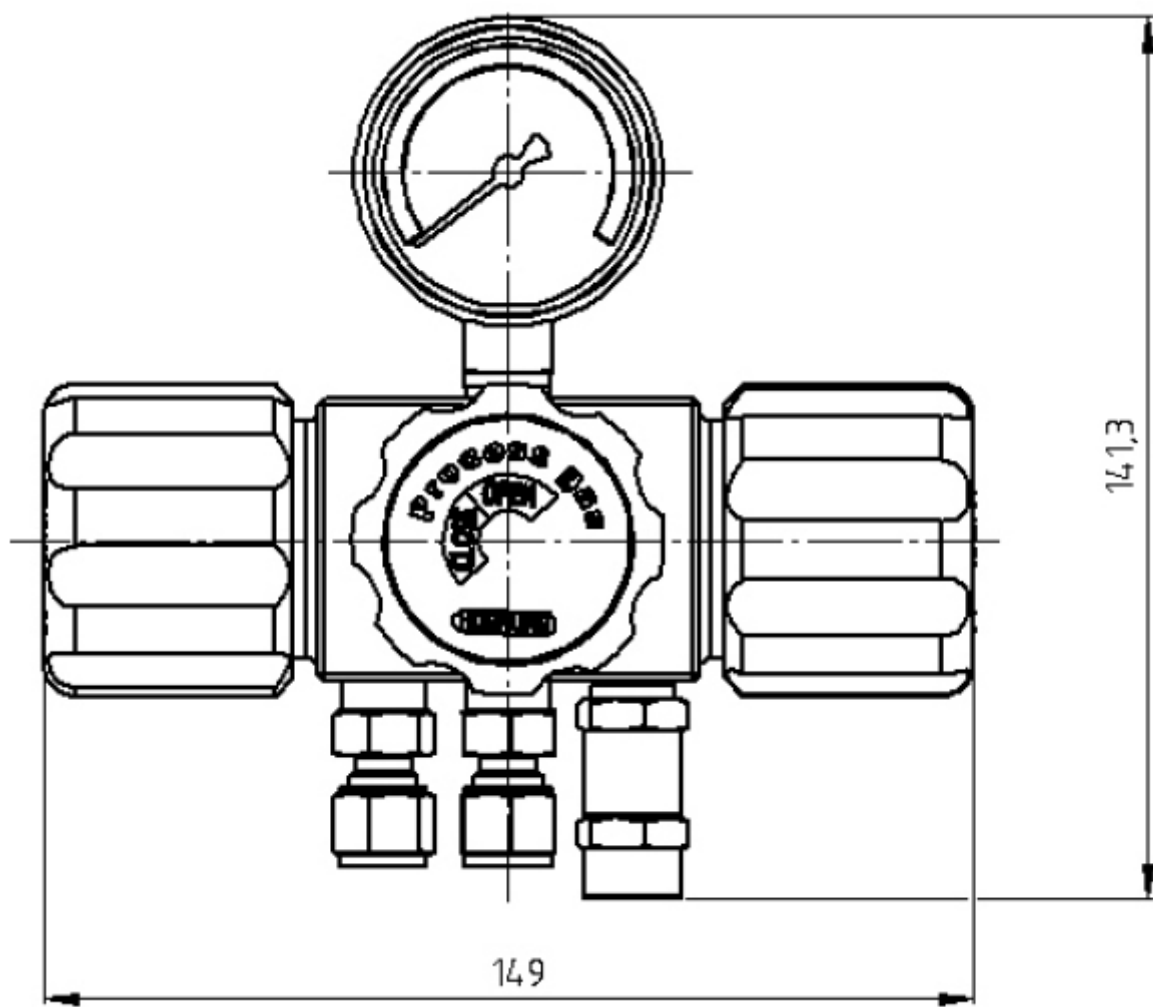
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# HP 560



## SCOPE OF DELIVERY

Friction ring fittings 6 mm

## ORDER DETAILS

**Material:**  
1 = stainless steel

**Inlet pressure :**  
1 = 200 bar  
2 = 300 bar

**Gauges:**  
1 = standard gauge

HP560-  
Type

1  
Material

1  
Inlet pressure

1  
Gauge

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Accessories



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# Line pressure regulators / instrumentation

- in brass, nickel and matt chrome plated and stainless steel electropolished  
- for pure gases up to 6.0 purity  
- for mbar operating pressures and high pressure applications

- to be integrated in copper or stainless steel tubes or instruments  
- single and dual stage

## Contents:

Line pressure regulator HP 300	single stage, 6-port, max 300 / 17 bar
Line pressure regulator HP 301	dual stage, max 300 / 12 bar
Line pressure regulator HP 302	single stage, 4-port, max. 300 / 17 bar
Line pressure regulator HP 304	single stage, 4-port, for low outlet pressure
Line pressure regulator HP 306	single stage, 6-port, for low outlet pressure
Line pressure regulator HP 310	single stage, small sized, 40 / 10 bar, adjustable
Line pressure regulator HP 312	single stage, 4-port, self-venting, max. 200 bar
Line pressure regulator HP 320	single stage, 6-port, max. 300 / 200 bar
Line pressure regulator HP 350	with / without, select option to change, max. 300 / 50 bar

## Special applications:

Precision regulator FR 1	max.12 bar / 20 mbar - 7 bar
Precision regulator FHR 3 / FHR 4	max.16 bar / 10 mbar - 1 bar
Precision regulator PHR	single stage, max. 20 bar / 10 mbar - 2 bar
regulator VDS / PHR	dual stage, max. 300 bar / 10 mbar - 2 bar
Line pressure regulator HD 250	outlet pressure max. 250 bar
Line pressure regulator HD 400	outlet pressure max. 400 bar
Line pressure regulator HD 550	outlet pressure max. 550 bar

# Line pressure regulator HP 300

- single stage (6-port) max. 300 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements of purity up to 6.0 for laboratories and analytics. In case of our cleaning method the cylinder pressure regulator is ECD capable.	The line pressure regulator HP 300 is a single stage pressure regulator, brass nickel and matt chrome plated or stainless steel 1,4404 electropolished.
Seat:	PCTFE	Stainless steel version allows the usage of aggressive gases.	It is designed as a diaphragm pressure regulator.
Diaphragm:	1.4435	We recommend the installation of suitable safety valves to secure following equipment from improper high pressure.	The HP 300 reduces the pressure of compressed gases or fluids to a maximum outlet pressure of 17 bar.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		It can be equipped optionally with in and outlet gauges.
Gas purity:	≤ 6.0		<b>Special characteristics:</b> The line pressure regulator HP 300 is characterized through his high control accuracy at the pressure area from up to 17 bar.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12; 1-17 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	112 x 124 x 117 mm		
Weight:	1350 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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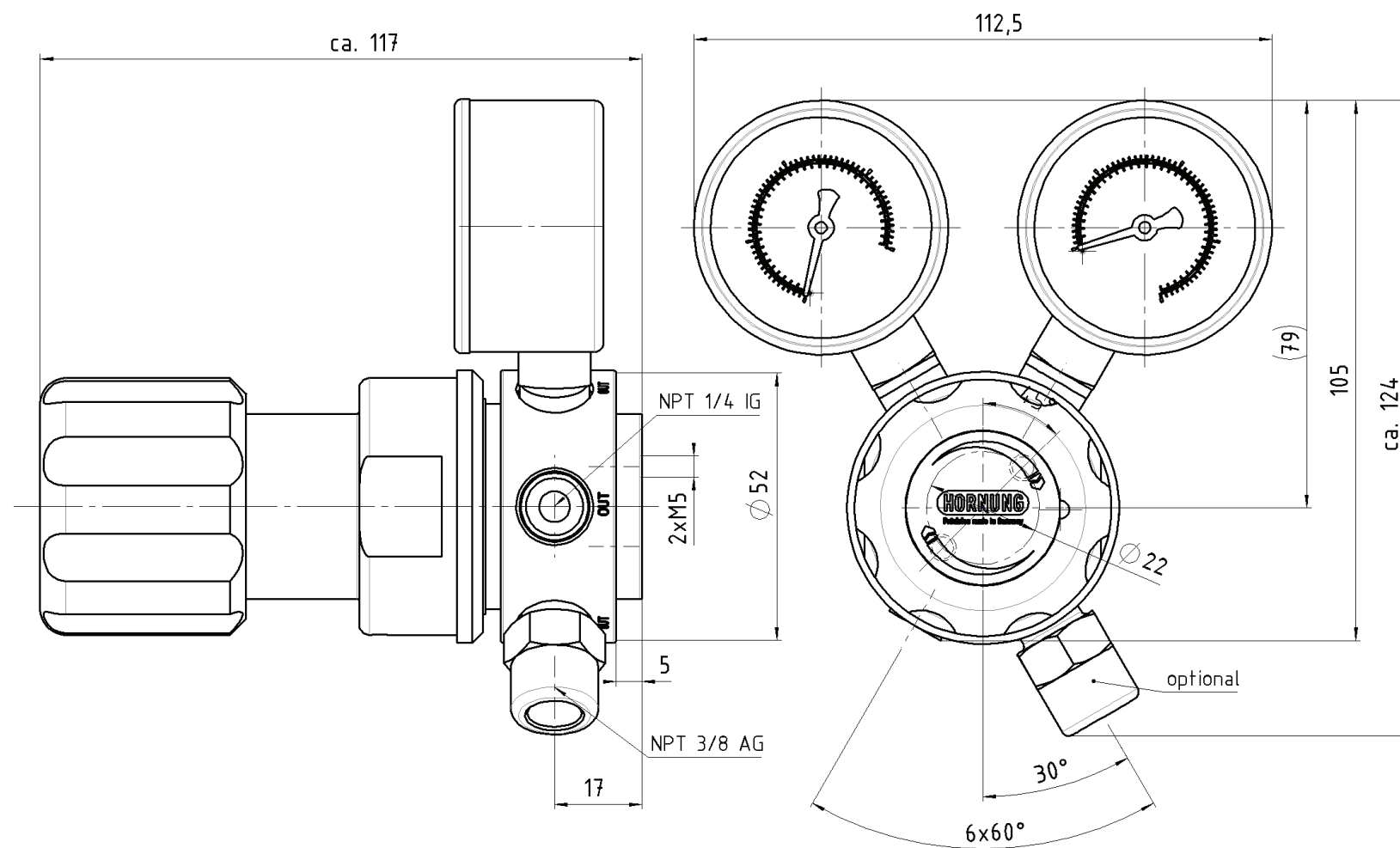
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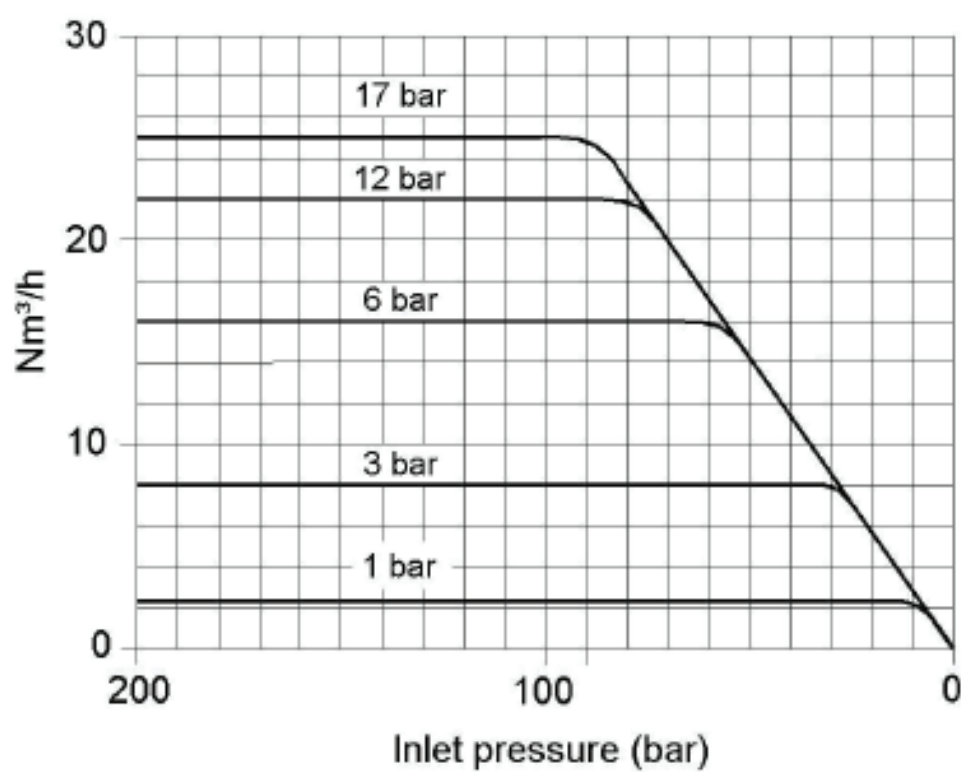
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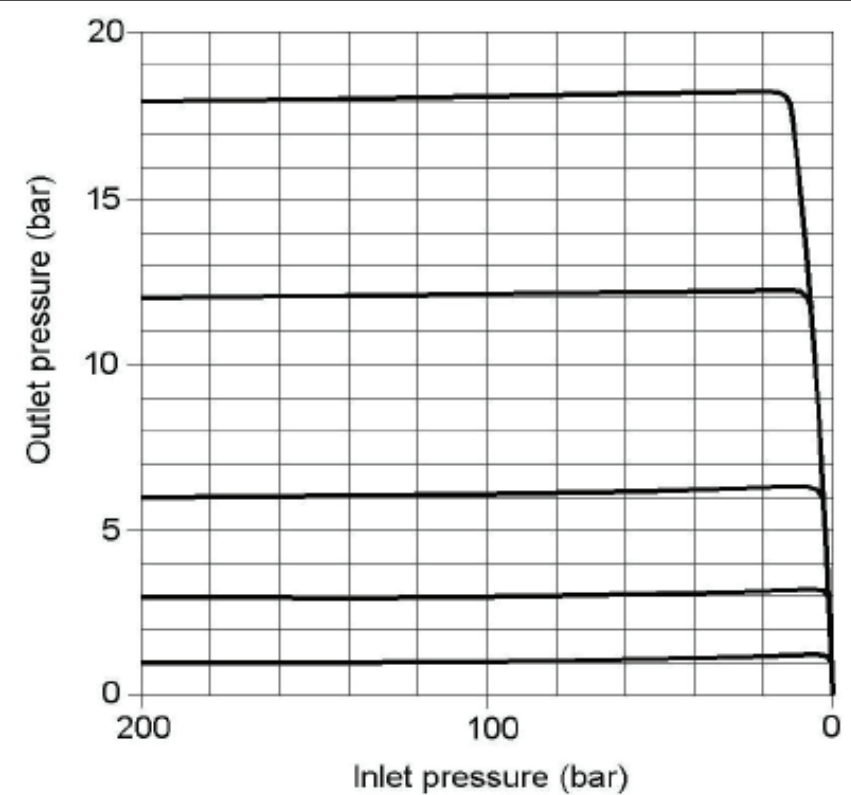
# HP 300



## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## ORDER DETAILS

<b>Material:</b> 1 = stainless steel electropolished 2 = brass, nickel and matt chrome plated	<b>Inlet:</b> 1 = from the left to the right 2 = from the right to the left	<b>Outlet pressure ranges:</b> 1 = 0,1 - 1 bar 2 = 0,1 - 3 bar 3 = 1 - 6 bar 4 = 1 - 12 bar 5 = 1 - 17 bar	<b>Gauges:</b> 1 = without gauges 2 = outlet gauge (working pressure) 3 = in- and outlet gauges	<b>Inlet and outlet option:</b> 0 = NPT 1/4" f 3 = compression fitting 3 mm 6 = compression fitting 6 mm 8 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm
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Regulator type HP300	1-stage 6-port	HP300- Type	1 Material	2 Inlet	3 Pressure	2 Gauge	6 Option	Gas type Gas type
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**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories

# Line pressure regulator HP 301

- dual stage max. 300 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	For integrating in pipe systems or (analytical) instruments. High purity gas quality in science and research.	HP 301 is a dual stage line pressure regulator and recommended for high purity gas applications.
Seat :	PCTFE	Low and stable working pressures.	Due to the dual stage construction the working pressure of HP 301 is absolutely stable even if inlet pressure drops down.
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	135 x 95 x 205 mm		
Weight:	1950 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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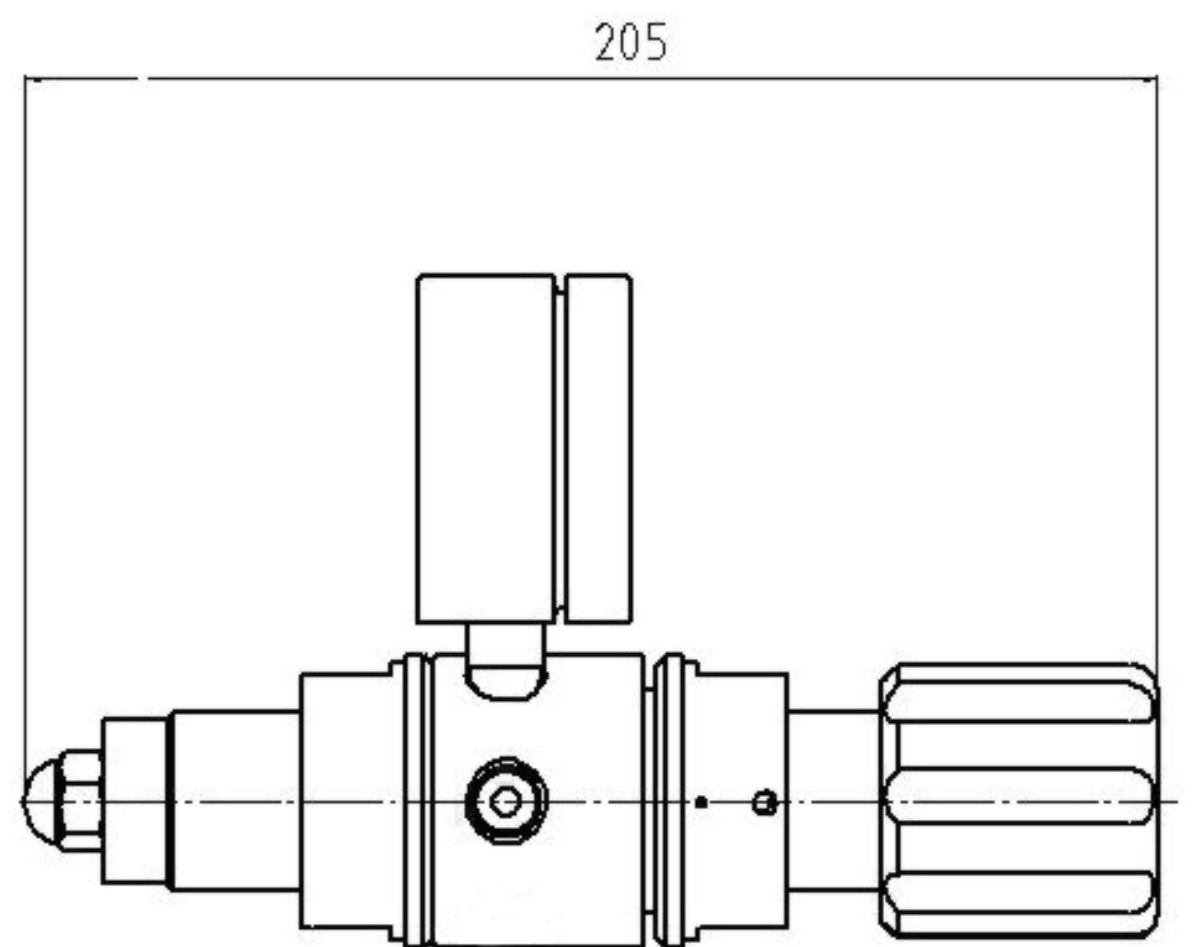
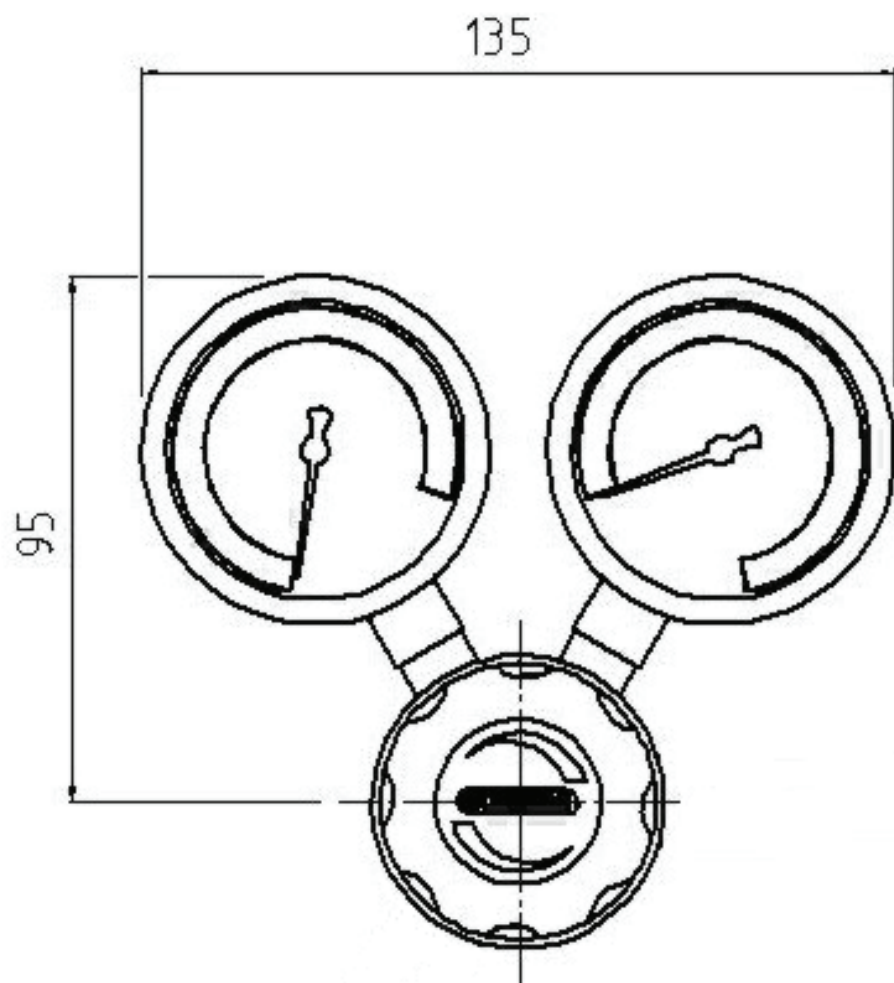
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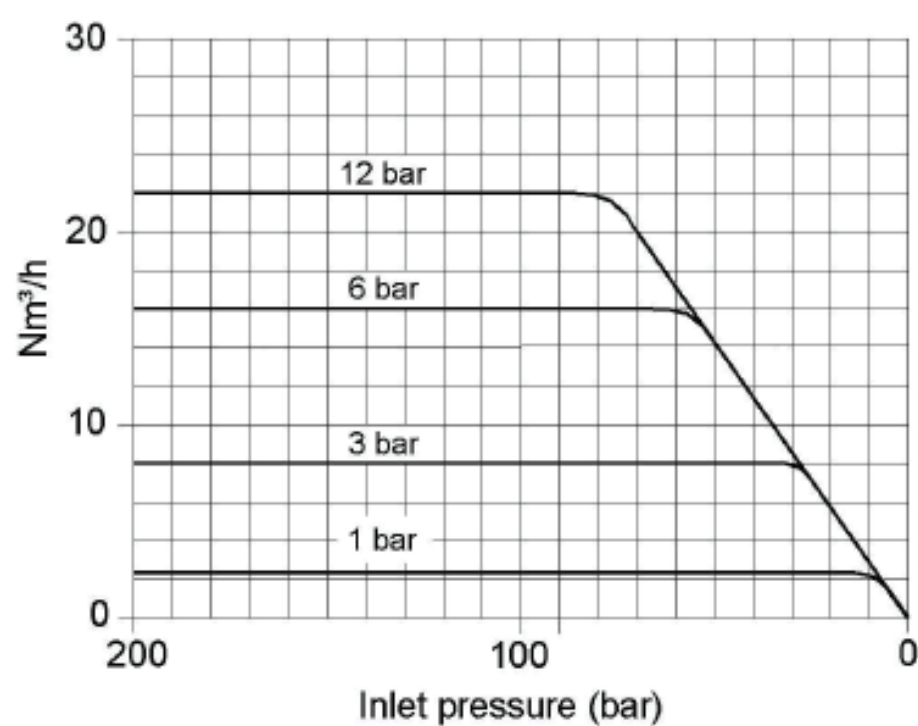
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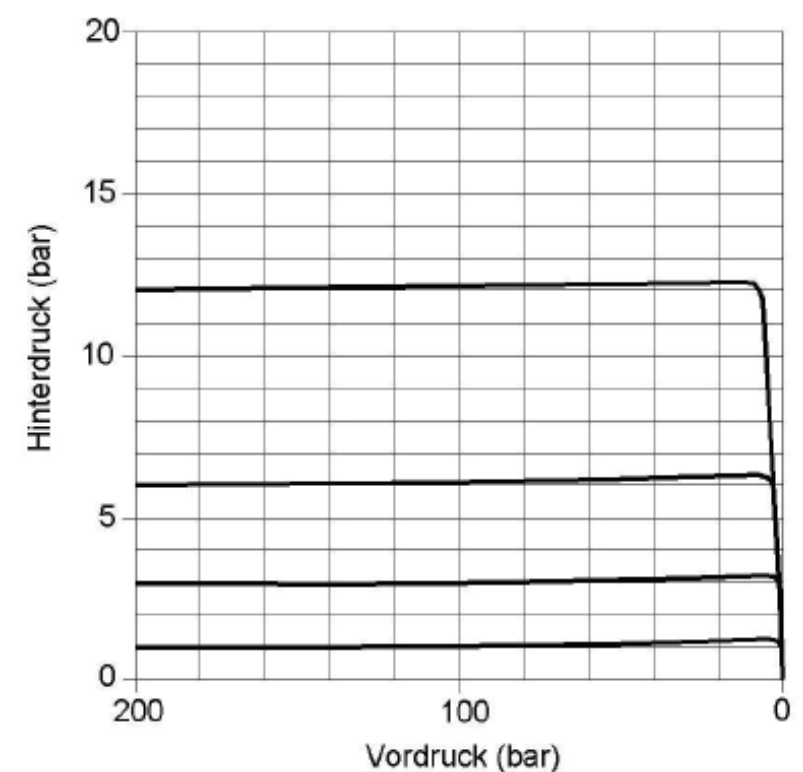
# HP 301



## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## ORDER DETAILS

### Material:

- 1 = stainless steel electropolished
- 2 = brass, nickel and matt chrome plated

### Outlet pressure ranges:

- 1 = 0,1 - 1 bar
- 2 = 0,1 - 3 bar
- 3 = 1 - 6 bar
- 4 = 1 - 12 bar

### Gauges:

- 1 = without gauges
- 2 = outlet gauge (working pressure)
- 3 = in- and outlet gauges

### Inlet- and outlet option:

- 0 = NPT 1/4" f
- 3 = compression fitting 3 mm
- 6 = compression fitting 6 mm
- 8 = compression fitting 8 mm
- 10 = compression fitting 10 mm
- 12 = compression fitting 12 mm

Regulator type    2-stage  
HP301

HP301-  
Type

1  
Material

3  
Pressure

2  
Gauge

6  
Option

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories



# Line pressure regulator HP 302

- single stage (4-port) max 300 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	For integrating in pipe systems or (analytical) instruments. High purity gas quality in science and research.	The HP 302 pressure regulator is a single-stage line pressure reducer that is particularly suitable for the pressure reduction of high-purity gases, gas mixtures and liquids.
Seat:	PCTFE	Due to special cleaning system also suitable for ECD application.	It can optionally be equipped with a outlet pressure gauge.
Diaphragm:	1.4435		
Leakage rate:	$10^{-8}$ mbar l/s He against atmosphere		The pressure reducer is designed as a diaphragm pressure reducer and specially designed for the high-pressure range.
Gas purity:	$\leq 6.0$		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12; 1-17 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	63 x 130 x 125 mm		
Weight:	1200 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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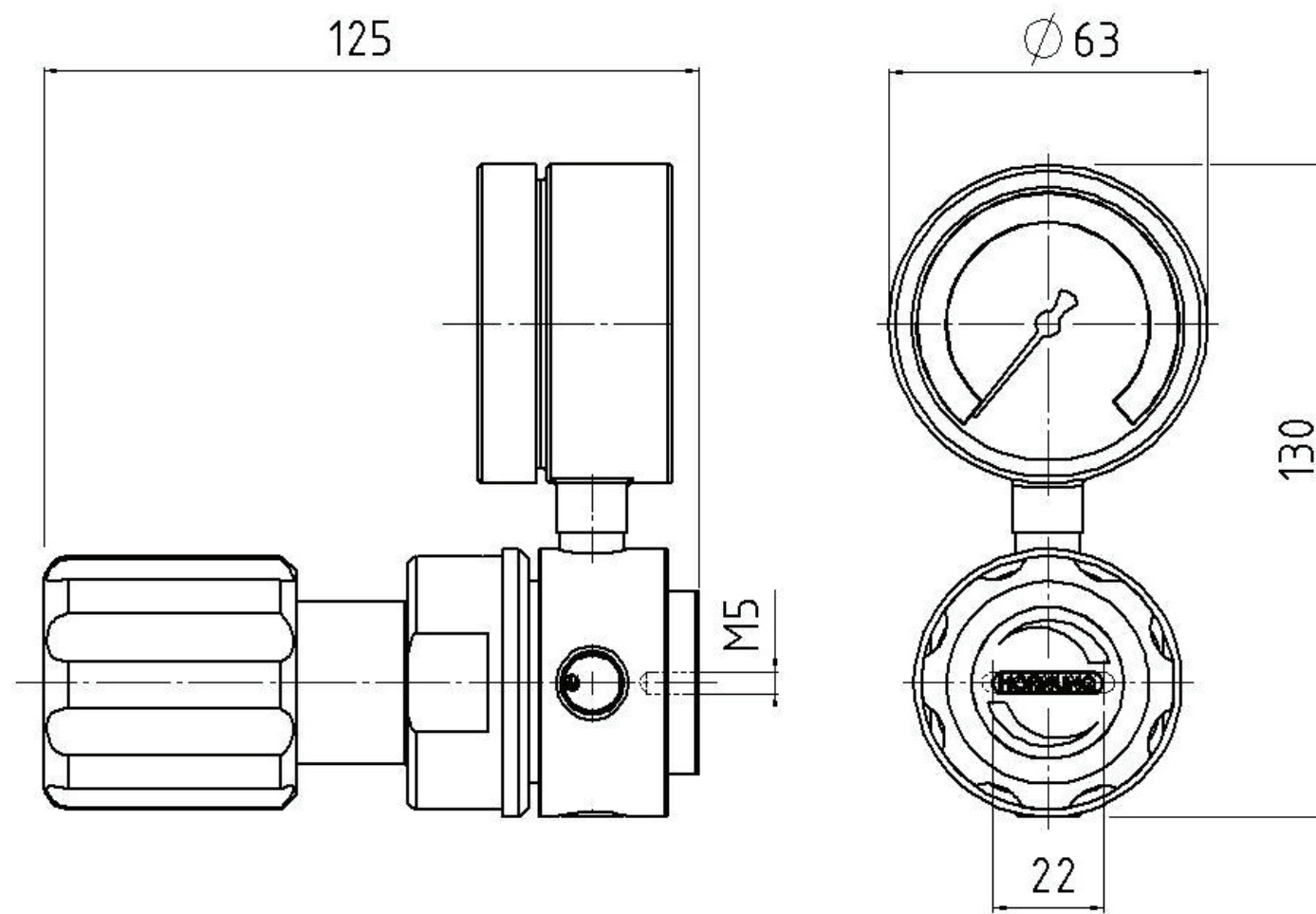
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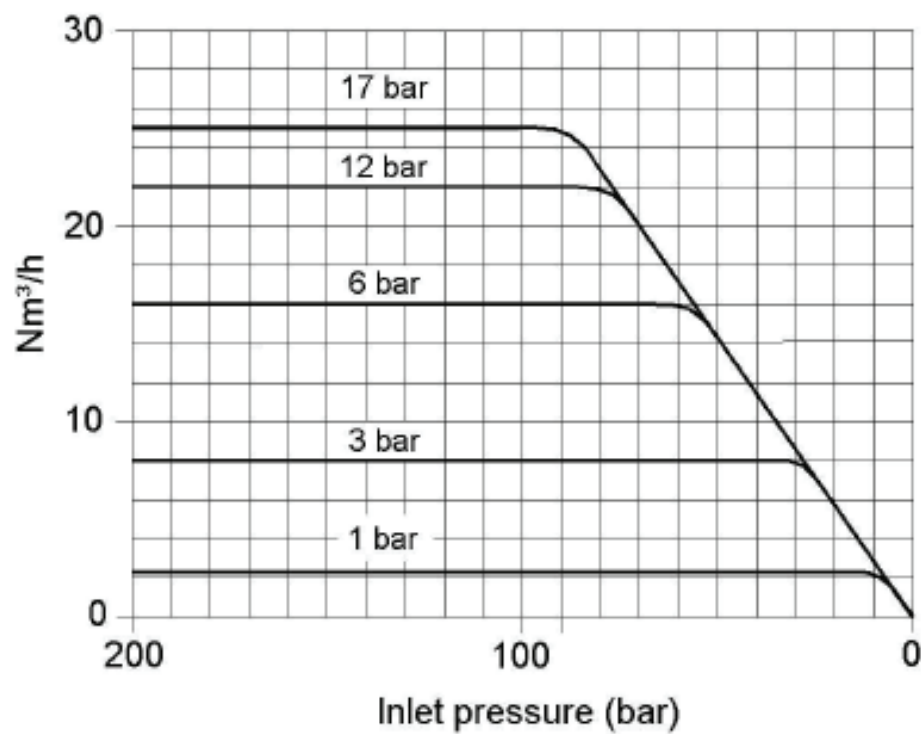
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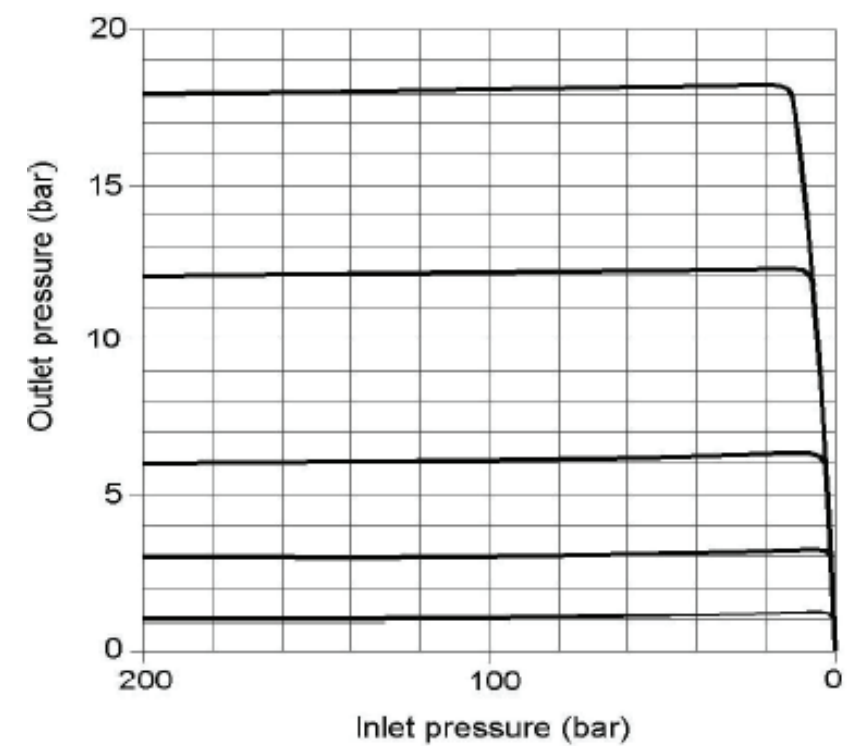
# HP 302



## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## ORDER DETAILS

<b>Material:</b> 1 = stainless steel electropolished 2 = brass, nickel and matt chrome plated	<b>Inlet:</b> 1 = from the left to the right 2 = from the right to the left	<b>Outlet pressure ranges:</b> 1 = 0,1 - 1 bar 2 = 0,1 - 3 bar 3 = 1 - 6 bar 4 = 1 - 12 bar 5 = 1 - 17 bar	<b>Gauges:</b> 1 = without gauges 2 = outlet gauge (working pressure)	<b>Inlet- and outlet option:</b> 0 = NPT 1/4" f 3 = compression fitting 3 mm 6 = compression fitting 6 mm 8 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm
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Regulator type	1-stage	HP302-	1	2	3	2	6	Gas type
HP302	4-port	Type	Material	Inlet	Pressure	Gauge	Option	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories

# Line pressure regulator HP 304

- single stage (4-port) for low outlet pressure and max. 40 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Brass, nickel and matt chrome plated or stainless steel 1.4404 electropolished	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The line pressure regulator HP 304 is a single stage line pressure regulator, especially designer for high purity gases and fluids.
Seat:	PCTFE	Due to our special cleaning method the cylinder pressure regulator is ECD capable.	It can be equipped with an outlet pressure gauge optionally.
Diaphragm:	Hastelloy® (2.4819)		<b>Special characteristics:</b> The line pressure regulator HP 304 is characterized by its high regulating accuracy within an outlet pressure range of 0.1 up to 3 bar.
Leakage rate:	10 <sup>-8</sup> mbar l/s Helium leak test		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,1-1, 0,1-1,7; 0,2-3 bar		
Cv-value:	0,15		
Operating temp.:	-20°C to +70°C		
Dimensions (wxhxd):	53 x 113 x 120 mm		
Weight:	1253 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001 and ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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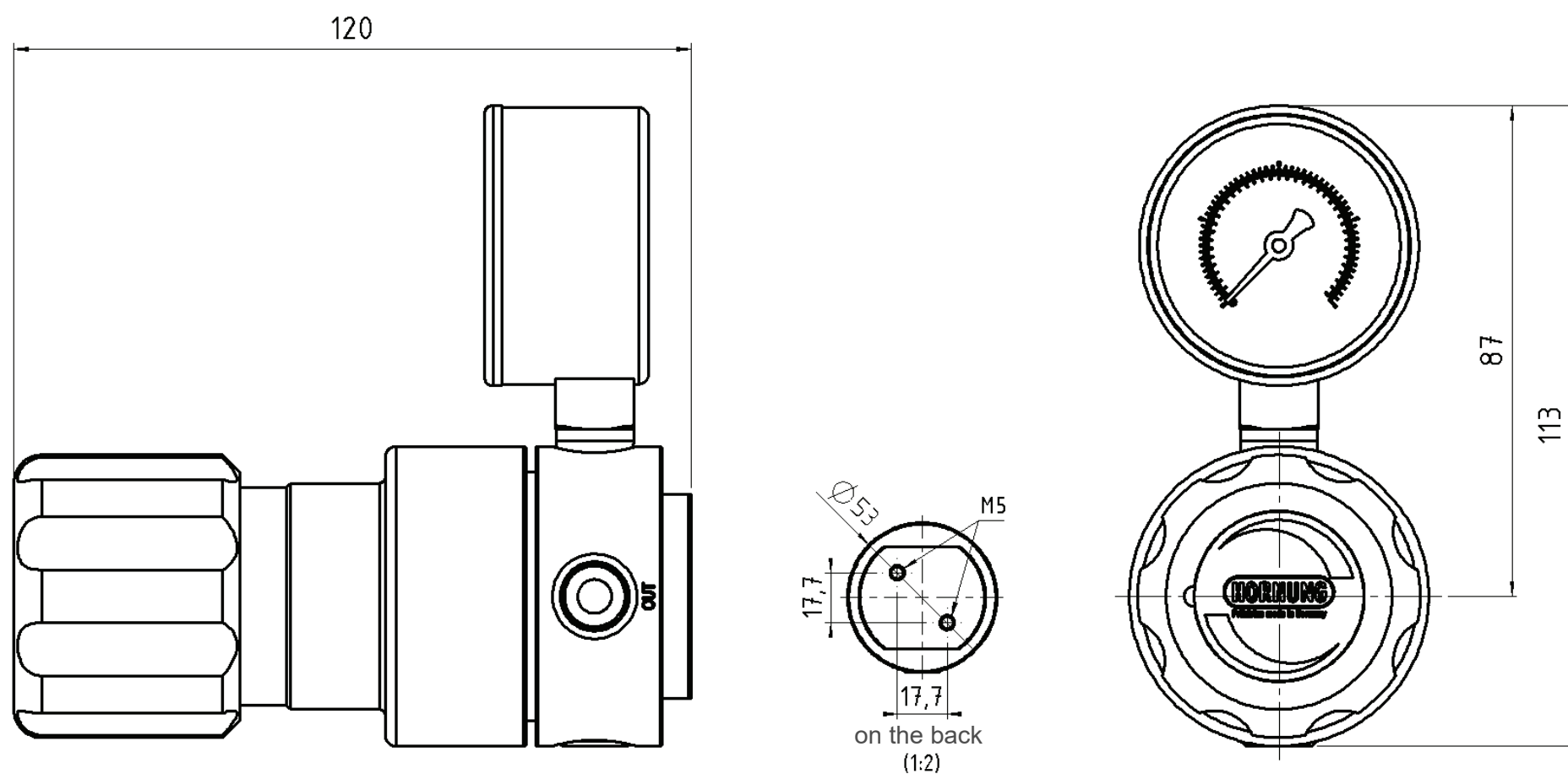
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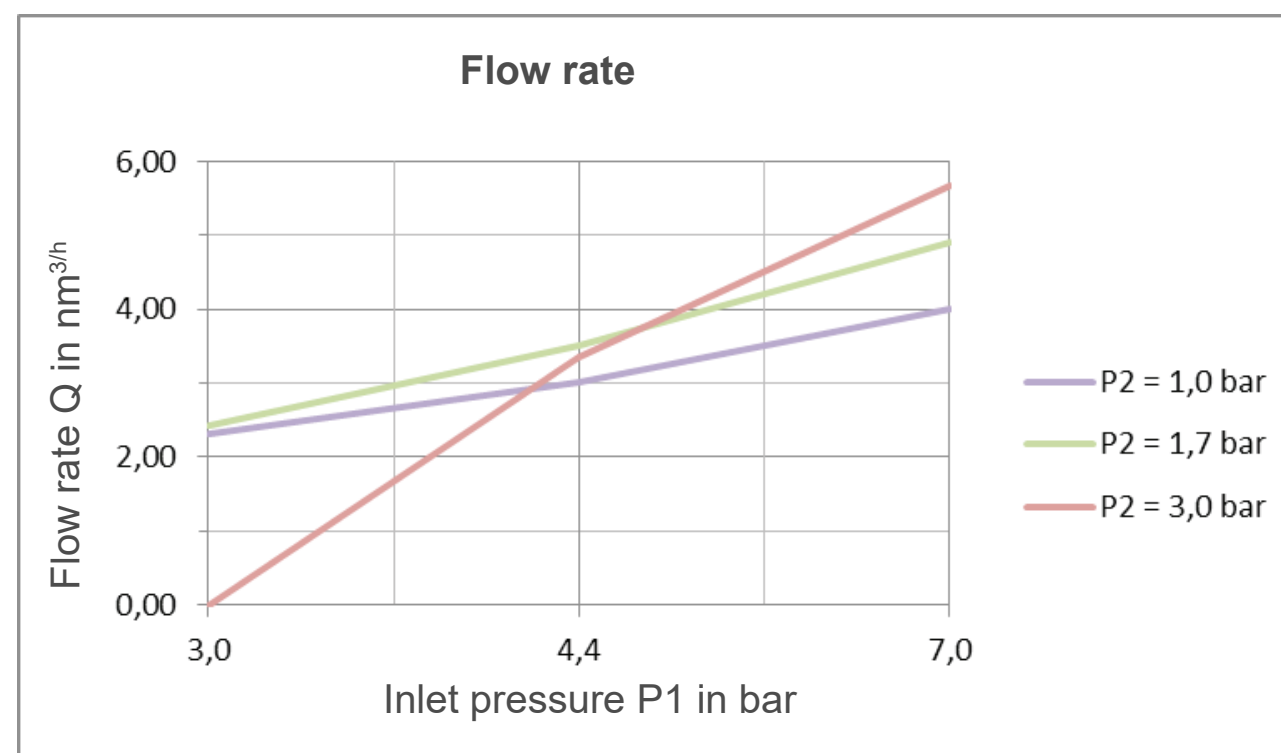
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# HP 304



## FLOW CURVE HP 304



## ORDER DETAILS

Material:	Inlet:	Pressure range p2:	Gauge:	Option on the back:
1 = Stainless steel 2 = Brass	1 = left to right 2 = right to left	1 = 0,1 - 1,0 bar 2 = 0,1 - 1,7 bar 3 = 0,2 - 3,0 bar	1 = none 2 = with outlet gauge	0 = 1/4" NPT 3 = compression fitting 3 mm 6 = compression fitting 6 mm 8 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm

Regulator type	1-stage	HP304-	1	1	2	0	6	Gas type
HP 304	4-port	Type	Material	Inlet	p2	Gauge	Option	Gas type

Accessories: see total catalogue segment

7. Gauges, fittings and accessories

# Line pressure regulator HP 306

- single stage (6-port) for low outlet pressure and max. 40 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Brass, nickel and matt chrome plated or stainless steel 1.4404 electropolished	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The line pressure regulator HP 306 is a single stage line pressure regulator, especially designer for high purity gases and fluids.
Seat:	PCTFE	Due to our special cleaning method the cylinder pressure regulator is ECD capable.	It can be equipped with an outlet pressure gauge optionally.
Diaphragm:	Hastelloy® (2.4819)		<b>Special characteristics:</b> The line pressure regulator HP 306 is characterized by its high regulating accuracy within an outlet pressure range of 0.1 up to 3 bar.
Leakage rate:	10 <sup>-8</sup> mbar l/s Helium leak test		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,1-1, 0,1-1,7; 0,2-3 bar		
Cv-value:	0,15		
Operating temp.:	-20°C to +70°C		
Dimensions (wxhxd):	53 x 105 x 120 mm		
Weight:	1187 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001 and ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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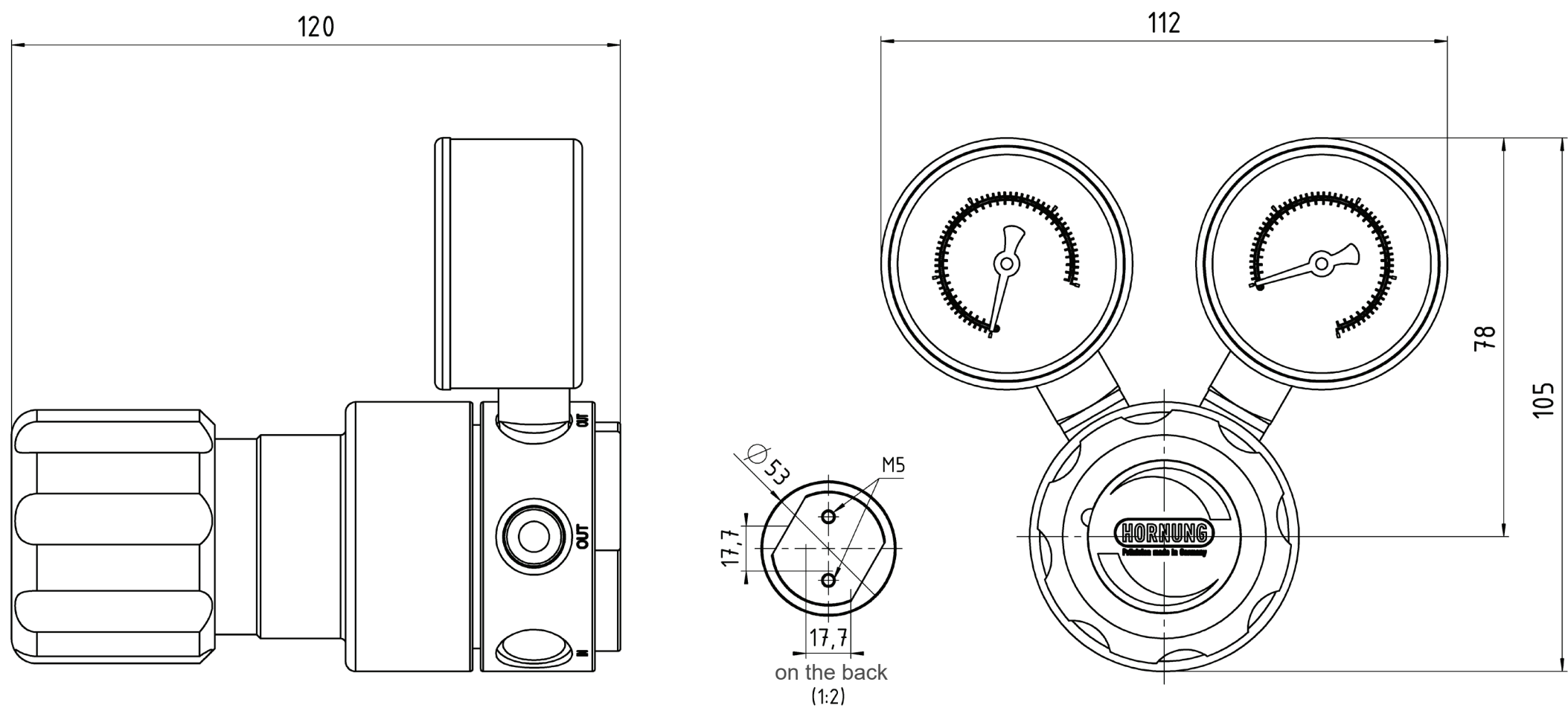
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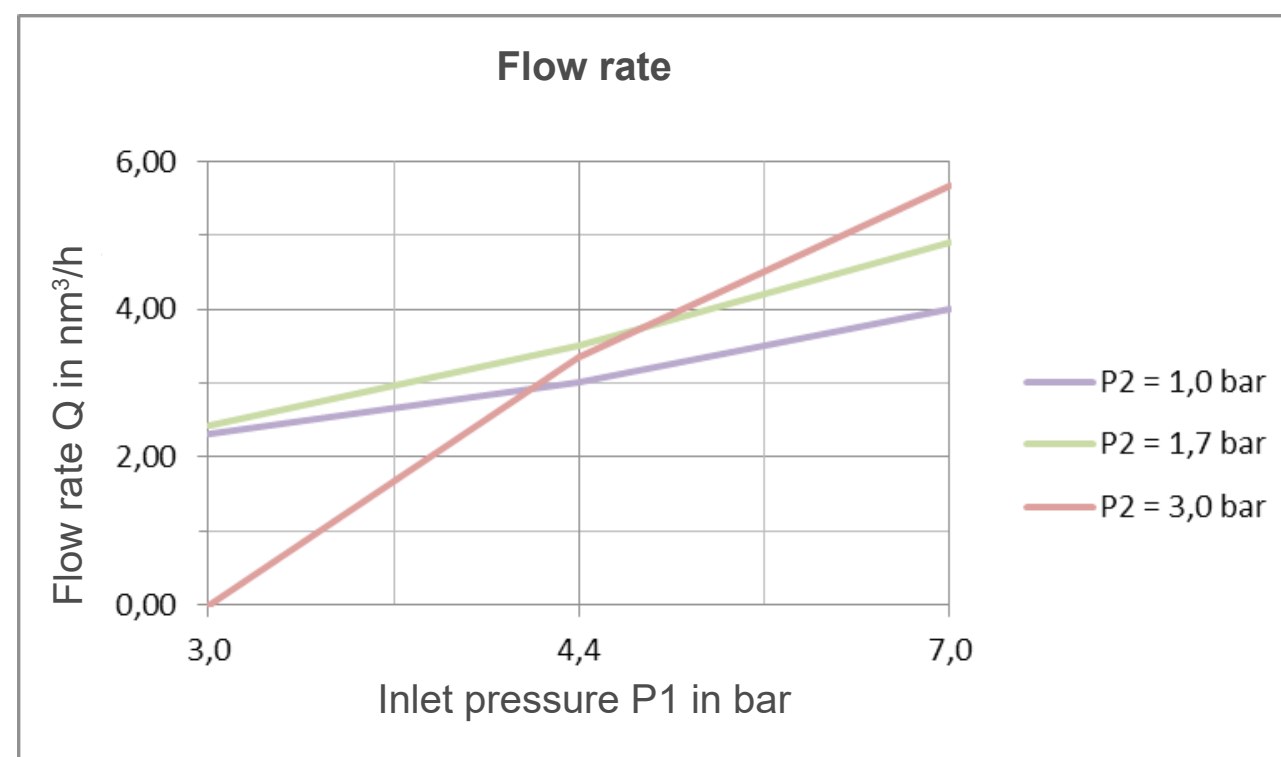
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# HP 306



## FLOW CURVE HP 306



## Order Details

Material:	Inlet:	Pressure ranges p2:	Gauge:	Option on the back:
1 = Stainless steel 2 = Brass	1 = left to right	1 = 0,1 - 1,0 bar 2 = 0,1 - 1,7 bar 3 = 0,2 - 3,0 bar	1 = none 2 = with outlet gauge	0 = 1/4" NPT 3 = compression fitting 3 mm 6 = compression fitting 6 mm 8 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm

Regulator type	1-stage	HP306-	1	1	3	2	6	Gas type
HP 306	6-port	Type	Material	Inlet	p2	Gauge	Option	Gas type

Accessories: see total catalogue segment

7. Gauges, fittings and accessories



# Line pressure regulator HP 310

- single stage (4-port) max. 40 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements of purity up to 6.0 for laboratories and analytics.	The line pressure regulator HP 310 is a very small single stage pressure regulator, brass nickel and matt chrome plated or stainless steel 1.4404 electropolished.
Seat:	PCTFE	In case of our cleaning method the cylinder pressure regulator is ECD capable.	It is designed as a diaphragm pressure regulator and especially made for high outlet pressure.
Diaphragm:	1.4435	Stainless steel version allows the usage of aggressive gases.	The HP 310 reduces the pressure of compressed gases or fluids to a maximum outlet pressure of 10 bar.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere	We recommend the installation of suitable safety valves to secure following equipment from improper high pressure.	It can be equipped optionally with in and outlet gauges.
Gas purity:	≤ 6.0	Due to its small size, it can be integrated very well into equipment and line networks.	
Max. inlet pressure:	40 bar	Also in combination with the diaphragm shut-off valves as withdrawal regulator.	
Outlet pressure ranges:	0,5-3; 1-6; 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	Safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	50 x 103 x 86 mm		
Weight:	605 g		
Connections:	In- and outlet G 1/4 f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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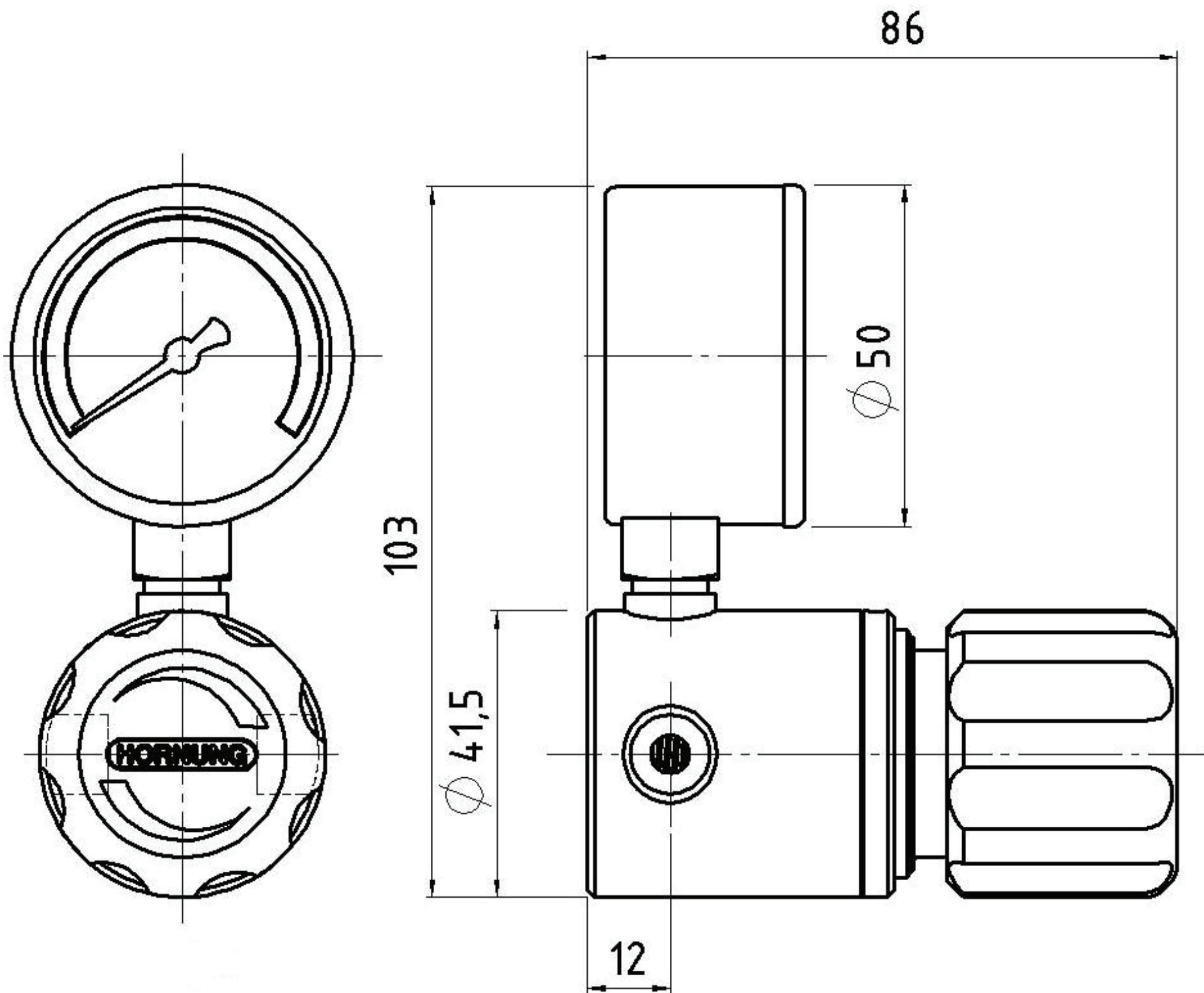
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# HP 310



## ORDER DETAILS

Material:	Inlet:	Outlet pressure ranges:	Gauges:	Inlet- and outlet option:
1 = Stainless steel electropolished	1 = from the left to the right	1 = 0,5 - 3 bar	1 = without gauges	0 = G 1/4" f
2 = Brass, nickel and matt chrome plated	2 = from the right to the left	2 = 1 - 6 bar	2 = outlet gauge (working pressure)	3 = compression fitting 3 mm
		3 = 1 - 10 bar		6 = compression fitting 6 mm
				8 = compression fitting 8 mm
				10 = compression fitting 10 mm
				12 = compression fitting 12 mm

HP310- Type	1 Material	2 Inlet	2 Pressure	2 Gauge	6 Option	Gas type Gas type
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**Accessories:** See total catalogue segment

5. Diaphragm shut-off and metering valve  
7. Gauges, compression fittings and accessories

# Line pressure regulator HP 312

- single stage (4-port), self-venting, max. 200 bar inlet pressure



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	Aluminium 3.4365	Especially for gases with high demands on purity up to 5.0, safety and tightness.	The pressure regulator HP 312 is a single stage self-venting line pressure regulator made of anodized aluminium, which has been developed for the extraction of high purity gases and gas mixtures.
Seat:	PCTFE	Due to our special cleaning process, the pressure regulators are ECD-compatible.	The pressure reducer is designed as a diaphragm pressure reducer and specially designed for the high-pressure range.
Leakage rate:	$10^{-8}$ mbar l/s He against atmosphere	The HP 312 reduces the pressure of compressed gases to a maximum outlet pressure of 17 bar.	It can optionally be equipped with an outlet gauge.
Gas purity:	$\leq 5.0$		
Max. inlet pressure:	200 bar		
Outlet pressure:	1-17 bar		
Operating temp.:	-30°C to +60°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	53 x 110 x 126 mm		
Weight:	500 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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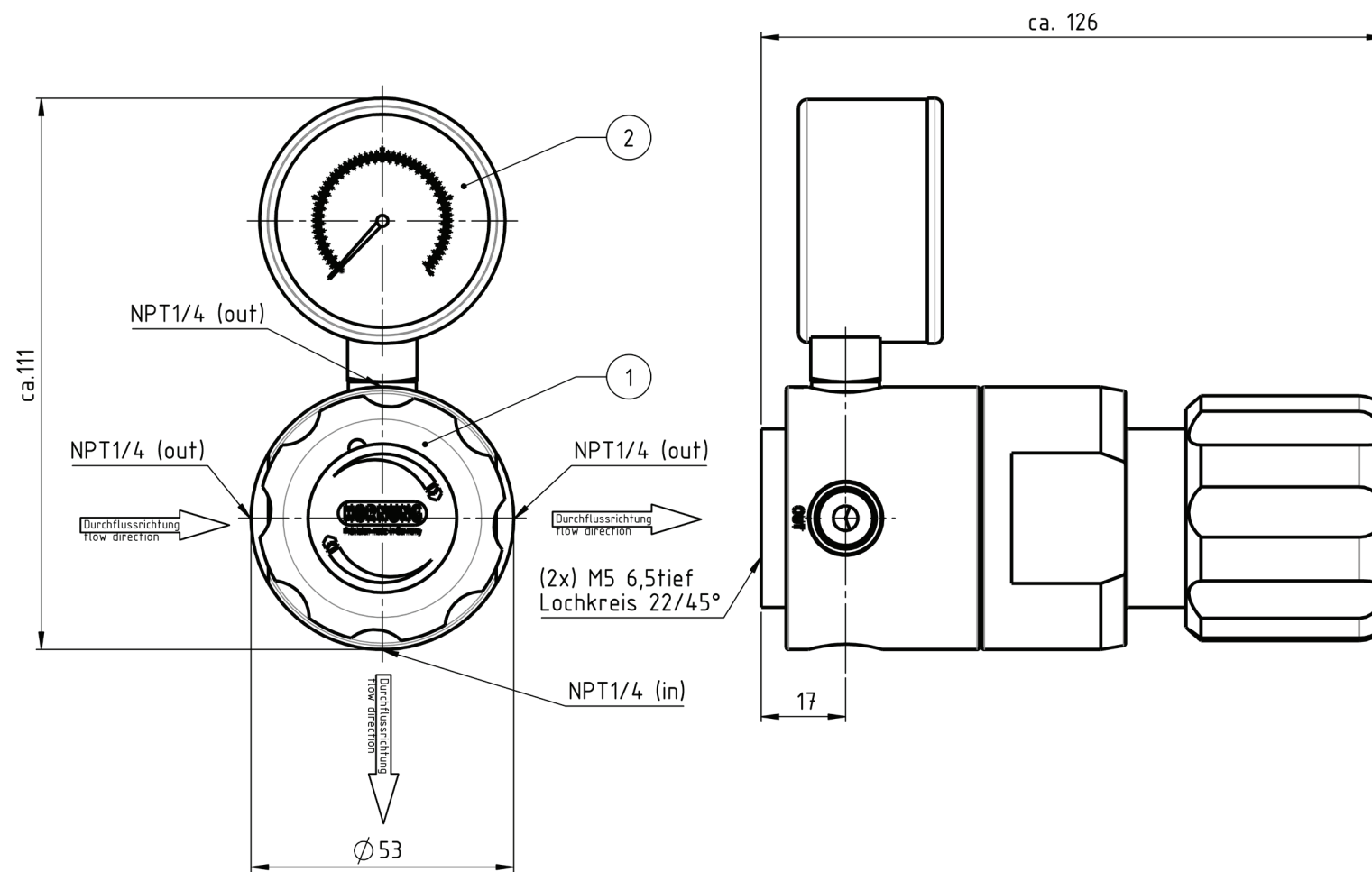
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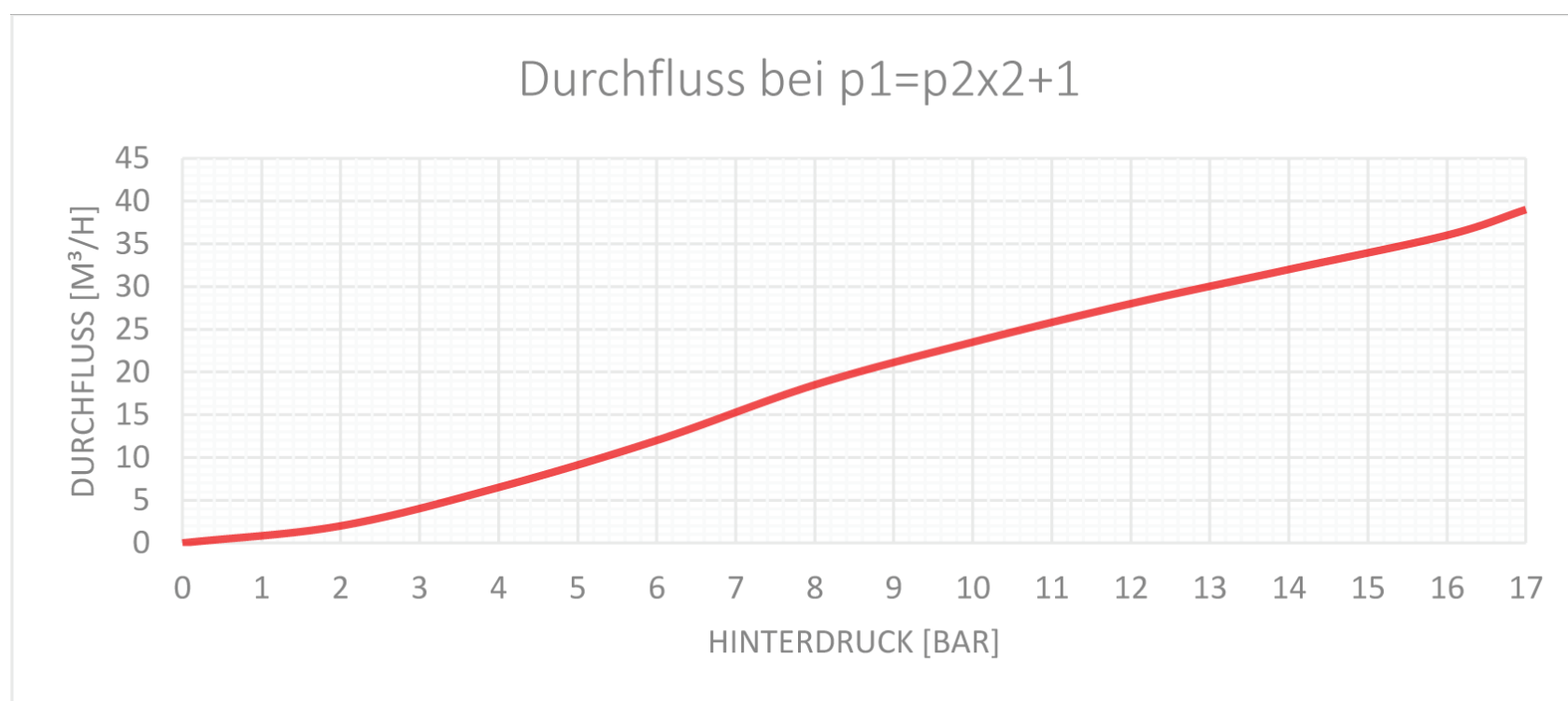
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# HP 312



## PERFORMANCE CURVE



## ORDER DETAILS

**Material:**  
2 = Aluminium

**Flow direction:**  
1 = from left to right  
2 = from right to left

**Gauges:**  
1 = without gauges  
2 = outlet gauge  
(working pressure)

**Inlet- and outlet option:**  
0 = NPT 1/4" f  
1 = compression fitting 6 mm

Regulator type	1-stage	HP312-	2	1	1	0	Gasart
HP312	4-port	Type	Material	Flow direction	Gauges	Option	Gasart

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories

# Line pressure regulator HP 320

- single stage diaphragm regulator for a high outlet pressure up to 200 bar



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electro polished brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics. In case of our special cleaning method the cylinder pressure regulator is ECD capable.	The line pressure regulator HP 320 is a single stage pressure regulator, brass nickel and matt chrome plated or stainless steel 1.4404 electro polished.
Seat:	PCTFE		It is designed as a diaphragm pressure regulator and especially made for high outlet pressure.
Diaphragm:	1.4435	The stainless steel version with viton elastomers allows the usage of aggressive gases.	
Leakage rate:	$10^{-8}$ mbar l/s HE		The HP 320 reduces the pressure of compressed gases or fluids to a maximum outlet pressure of 200 bar.
Gas purity:	$\leq 6.0$	We recommend to prefix a fine filter with max. 40 $\mu$ at the inlet and an installation of suitable safety valves to secure following equipment from improper high pressures.	It functions according to the principle guiding the equilibrium of forces between the set spring force and the outlet pressure.
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	5-50; 5-100; 10-200 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	112 x 78 x 118 mm		
Weight:	1380 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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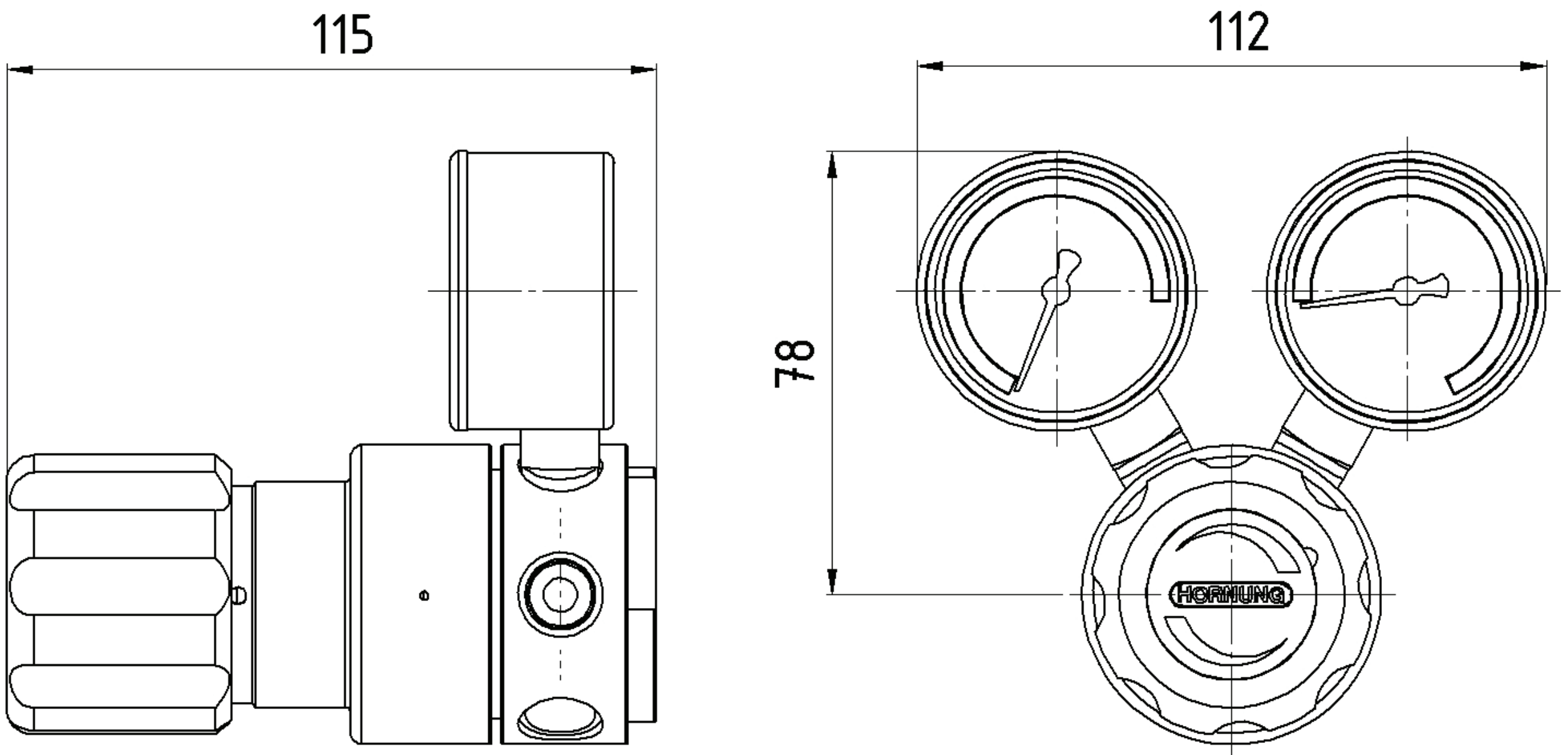
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# HP 320



## DESIGN

In- and outlet of the HP 320 are equipped with a NPT 1/4" female thread.

The line pressure regulator can be equipped with compression fitting and gauges optionally.

## ORDER DETAILS

Material:	Inlet:	Outlet pressure ranges:	Gauges:	Option for inlet and outlet:
1 = stainless steel 2 = brass	1 = left to right 2 = right to left	1 = 5 - 50 bar 2 = 5 - 100 bar 3 = 10 - 200 bar	1 = with gauges 2 = without gauges	1 = 1/4" NPT – international thread 2 = compression fitting 6 mm 3 = compression fitting 8 mm

Regulator type	single	HP320-	1	1	1	1	Gas type
HP320	6-port	Type	Material	Inlet	Pressure	Gauge	Gas type

**Accessories:** See total catalogue segment

7. Accessories, gauges, screw connections



# Line pressure regulator HP 350

- single stage for high flow and high outlet pressure (up to 50 bar) – with a balanced poppet



Fittings and gauges optional

TECHNICAL DETAILS		DESCRIPTION	APPLICATION AREA
Body:	Edelstahl 1.4404 elektropoliert bzw. Messing, vernickelt und mattverchromt	Especially for gases with high requirements on purity up to 6.0 and for laboratories and analytics.	The line pressure regulator HP 350 is a single stage pressure regulator with a high flow rate and is designed for pressure reduction of high purity gases.
Seat:	PCTFE	Due to our special cleaning method the cylinder pressure regulator is ECD capable.	The HP 350 reduces the pressure of compressed gases or fluids to a maximum outlet pressure of 50 bar.
Membran:	1.4435		It functions according to the principle guiding the equilibrium of forces between the set spring force and the outlet pressure.
Leakage rate:	10 <sup>-8</sup> (mbar l/s) Heliumlecktest		The line pressure regulator HP 350 is equipped with a balanced poppet and by so doing ensures constancy in operating pressure during the entire gas withdrawal process, and occurring decrease in inlet pressure.
Gas purity:	≤ 6.0		
Max. inlet pressure:	300 bar		
Outlet pressure ranges:	0,1-1,7; 1-3,5; 1-7; 1-12; 1-17; 1-30; 1-50 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to EN 837-1 KL1.6		
Dimensions (wxhxd):	122 x 123 x 126 mm		
Weight:	1750 g		
Connections:	NPT 3/8" f / NPT 1/2" f		

## QUALITY STANDARD

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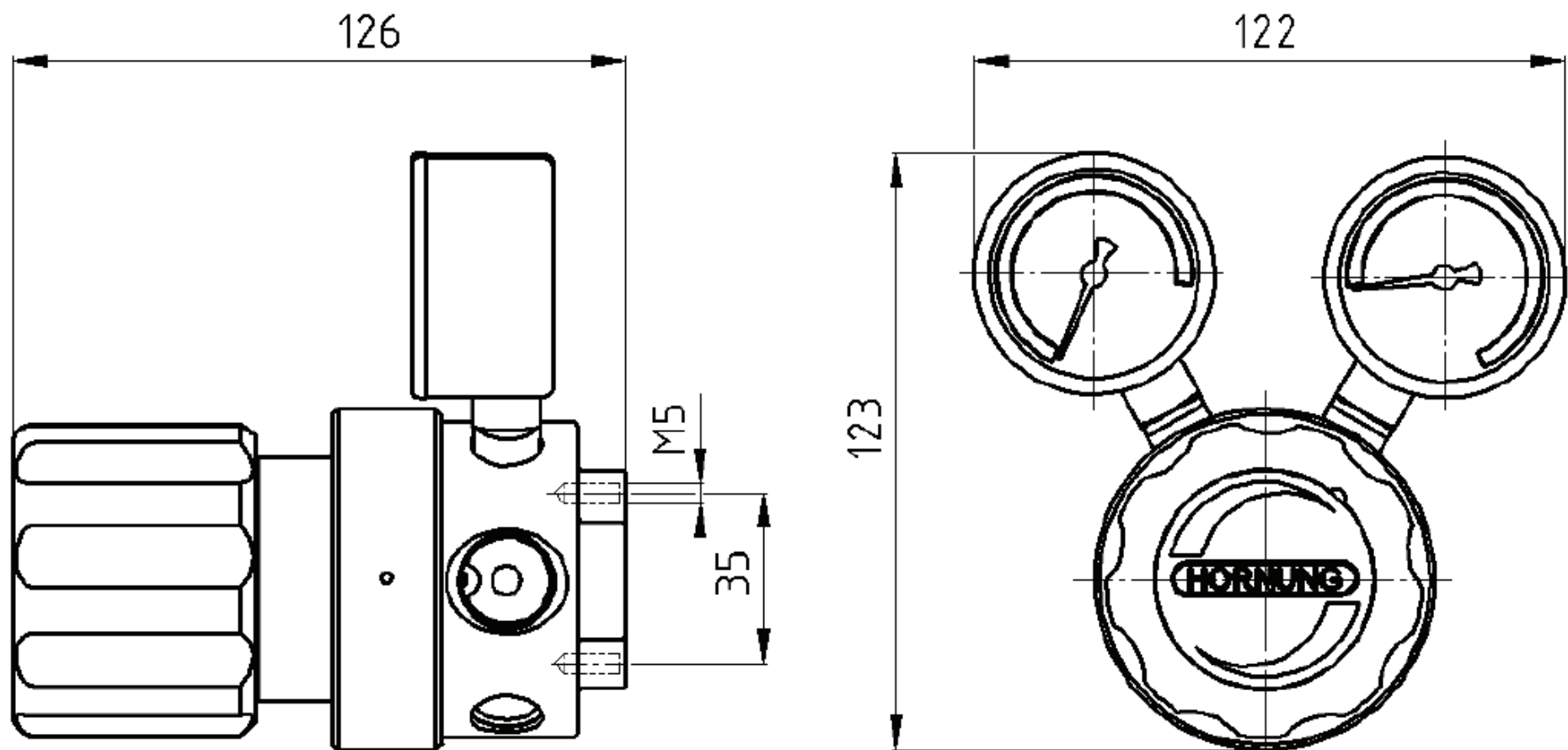
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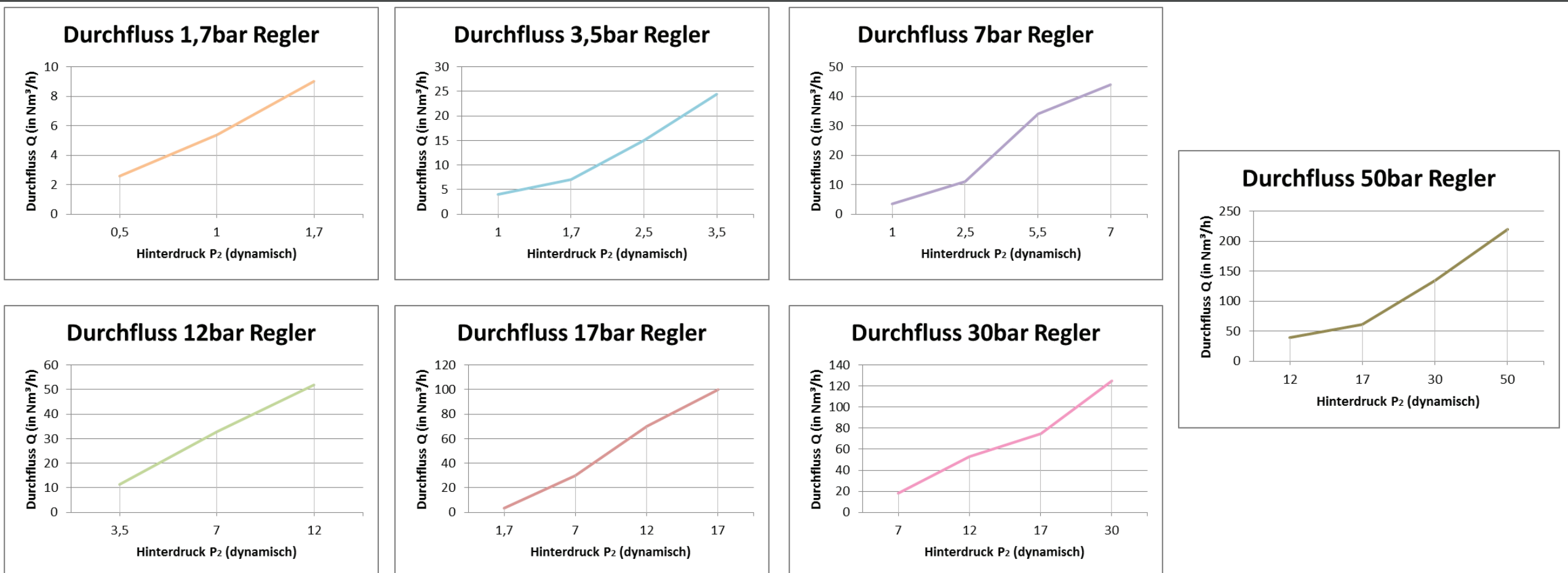
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# HP 350



## FLOW CURVE



## ORDER DETAILS

<b>Material:</b> 1 = Stainless steel 2 = Brass	<b>Inlet:</b> 1 = left to right 2 = right to left	<b>Outlet pressure ranges:</b> 1 = 0,1 - 1,7 bar 2 = 1 - 3,5 bar 3 = 1 - 7 bar 4 = 1 - 12 bar 5 = 1 - 17 bar 6 = 1 - 30 bar 7 = 1 - 50 bar	<b>Gauges:</b> 1 = none 2 = with inlet and outlet gauges	<b>Option on the front and back:</b> 0 = NPT 3/8" f 1 = NPT 1/2" f 6 = compression fitting 6 mm 8 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm 15 = compression fitting 15 mm
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HP350- Type	2 Material	3 Inlet	2 Outlet	1 Gauge	6 Option	Gas type Gas type
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Accessories: see total catalogue segment

7. Gauges, fittings and accessories

# Precision pressure regulator FR 1

- single stage with balanced main valve for mbar applications and instrumentation



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	aluminium anodised or stainless steel	<p>The precision pressure regulator FR1 is used particularly in the following areas:</p> <ul style="list-style-type: none"> <li>• Gas analysis</li> <li>• Gas chromatography</li> <li>• Instrumentation</li> <li>• Process engineering</li> <li>• Metallurgy</li> <li>• Laboratory applications</li> <li>• mbar applications</li> </ul>	<p>The FR 1 is a single-stage precision pressure regulator with balanced main valve.</p> <p>The FR 1 is for installation in piping systems, for installation in control panels or for integrating in instruments (instrumentation).</p> <p>The Integrated balanced poppet ensures that even when inlet pressure drops down a constant operating pressure is guaranteed (dual stage effect).</p> <p>An easily replaceable sinter metal filter element is integrated into the pressure regulator as standard.</p>
Valve seat:	stainless steel		
Gaskets:	viton / NBR		
Diaphragm:	viton / NBR / stainless steel		
Max. inlet pressure:	12 bar		
Outlet pressure range:	50 mbar - 7,0 bar		
Operating temp.:	-20 to +70°C		
Dimensions:	106 x 48 mm		
Weight:	240 g		
Threads:	in- / outlet NPT 1/8" f		

## QUALITY STANDARD

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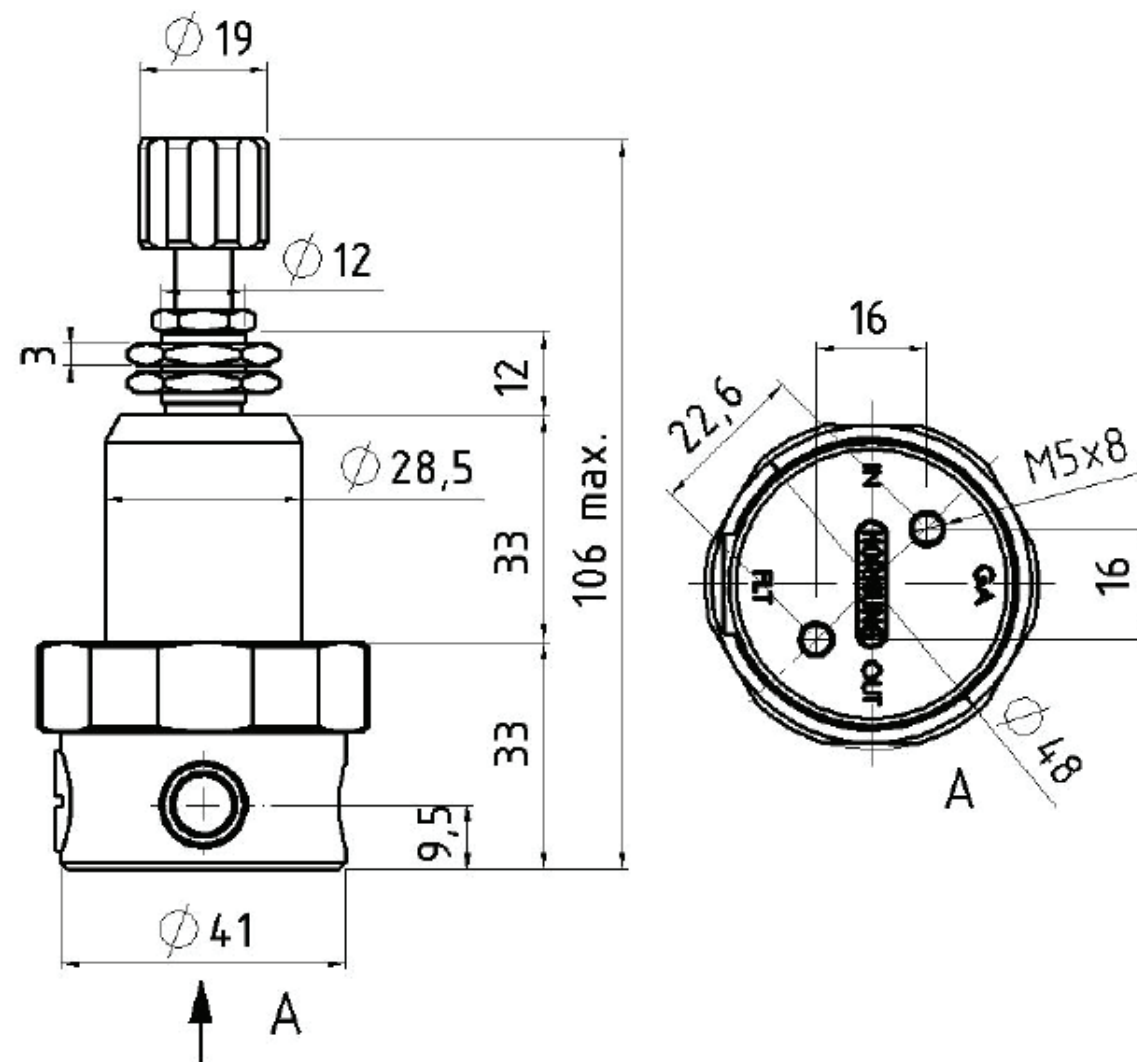
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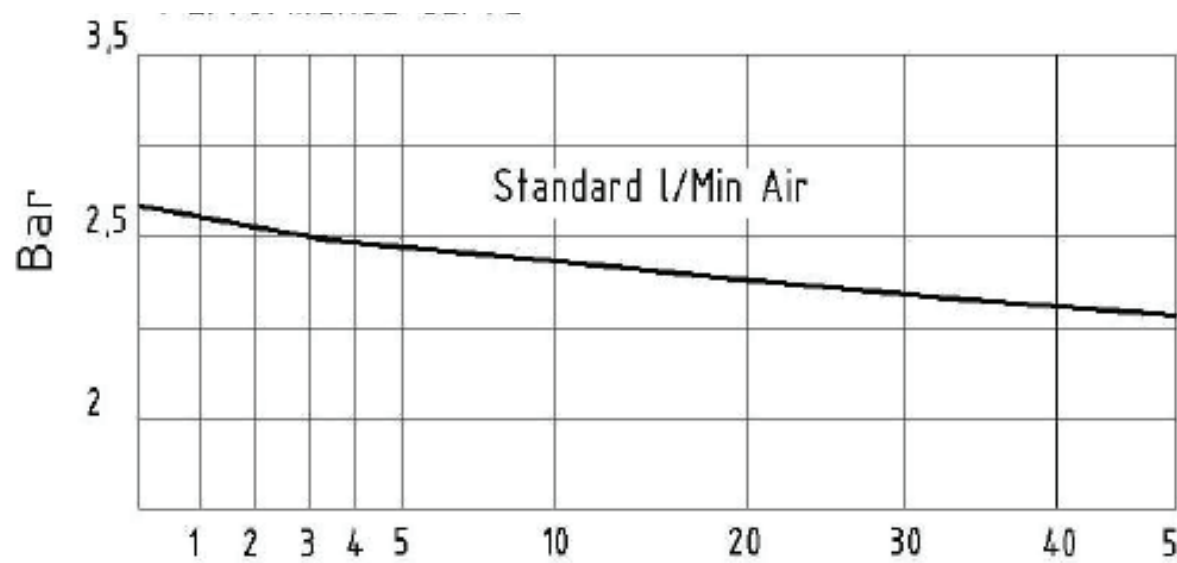
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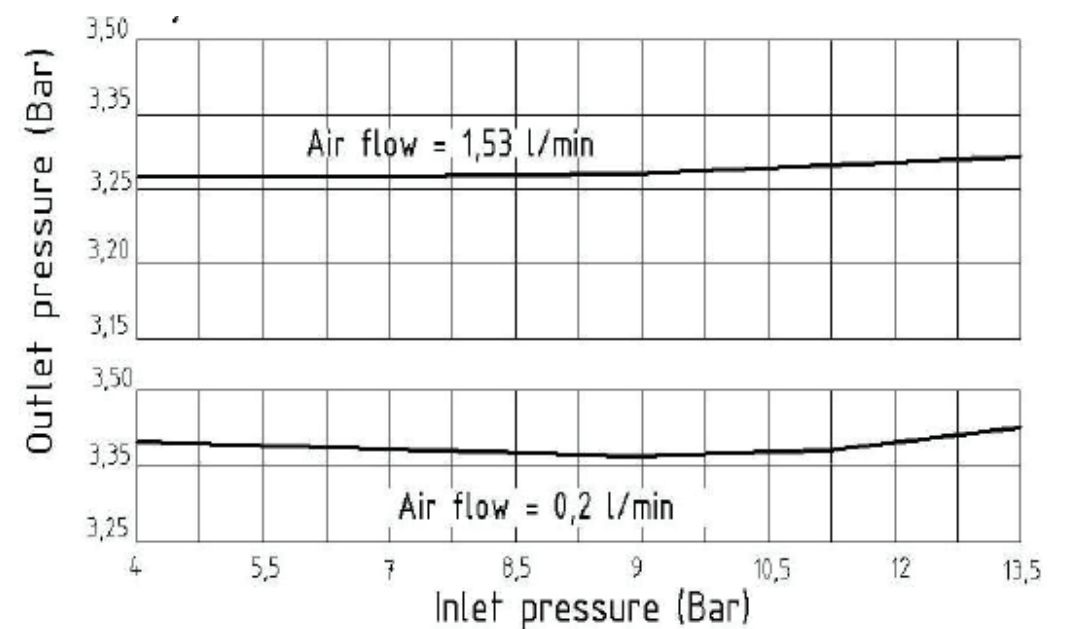
# FR 1



## PERFORMANCE CURVE



## FLOW DIAGRAM



## ORDER DETAILS

Material:	Diaphragm:	Gaskets:	Gauge:	Pressure ranges:
1 = aluminium	1 = NBR	1 = NBR	0 = none	1 = up to 170 mbar
2 = stainless steel (1.4404)	2 = viton	2 = viton	1 = outlet gauge	2 = up to 350 mbar
	3 = stainless steel (1.4435)			3 = up to 500 mbar
	4 = hastelloy (2.4610)			4 = up to 700 mbar
				5 = up to 2,1 bar
				6 = up to 4,2 bar
				7 = up to 7,0 bar

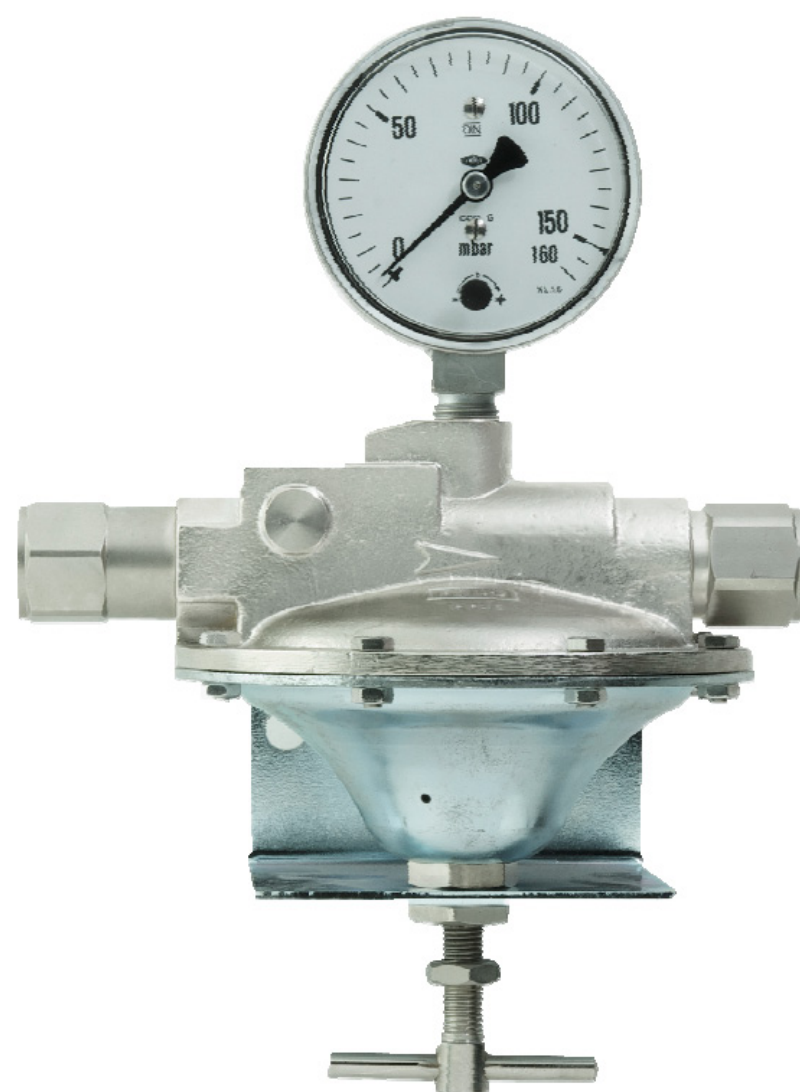
Regulator type	27-	2	3	2	1	4	Gas type
27	FR 1	Type	Material	Diaphragm	Gaskets	Gauge	Pressure

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories  
9. Console

# Precision pressure regulator FHR 3 / FHR 4

- single stage for mbar applications



TECHNISCHE DATEN		ANWENDUNG	BESCHREIBUNG
Body:	brass, or brass nickel plated	<ul style="list-style-type: none"> <li>· For mbar applications</li> <li>· For laboratories</li> <li>· For instrumentation and process engineering</li> <li>· For gases up to 5.0 (99.9999 Vol.%) purity</li> <li>· For lamp production and glass shops</li> </ul>	<p>FHR 3 und FHR 4 are single stage regulators for mbar gas control applications and inlet pressures not higher than 16 bar.</p> <p>The excellent gas control characteristics of FHR 3 and FHR 4 are based on the wide and flexible diaphragm construction.</p> <p>As an option this regulator type can also be delivered with a wall mounting bracket.</p>
Seat:	3 mm or 4 mm		
Diaphragm:	NBR		
Gas purity:	≤ 5.0		
Max. inlet pressure:	16 bar		
Outlet pressure range:	5 mbar - 1 bar		
Operating temp.:	-20°C to +70°C		
Gauge: (optional)	safety specification according EN 837-1 KL 1,6		
Threads:	in- and outlet: G 1/4 f		

## QUALITY STANDARD

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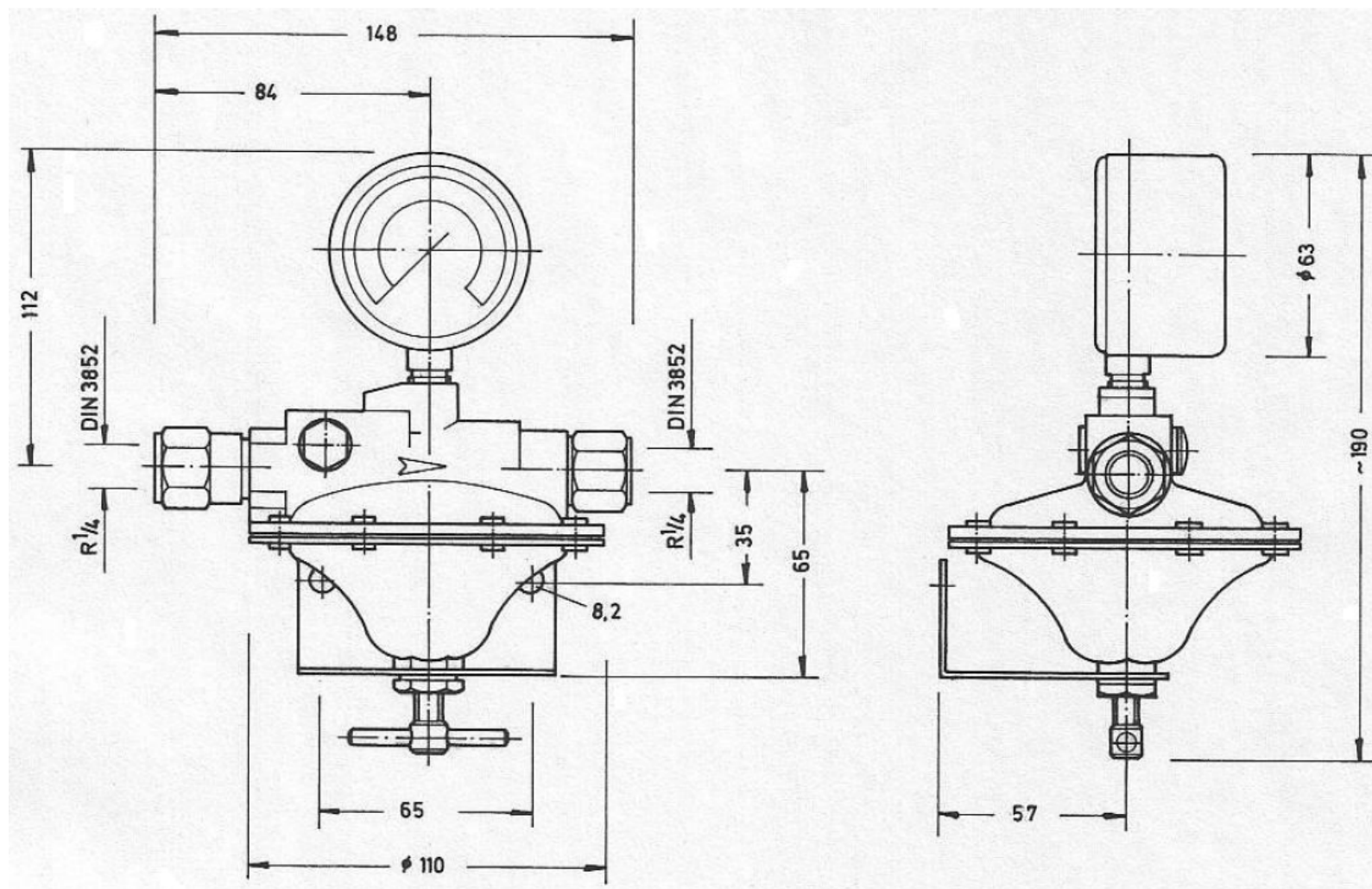
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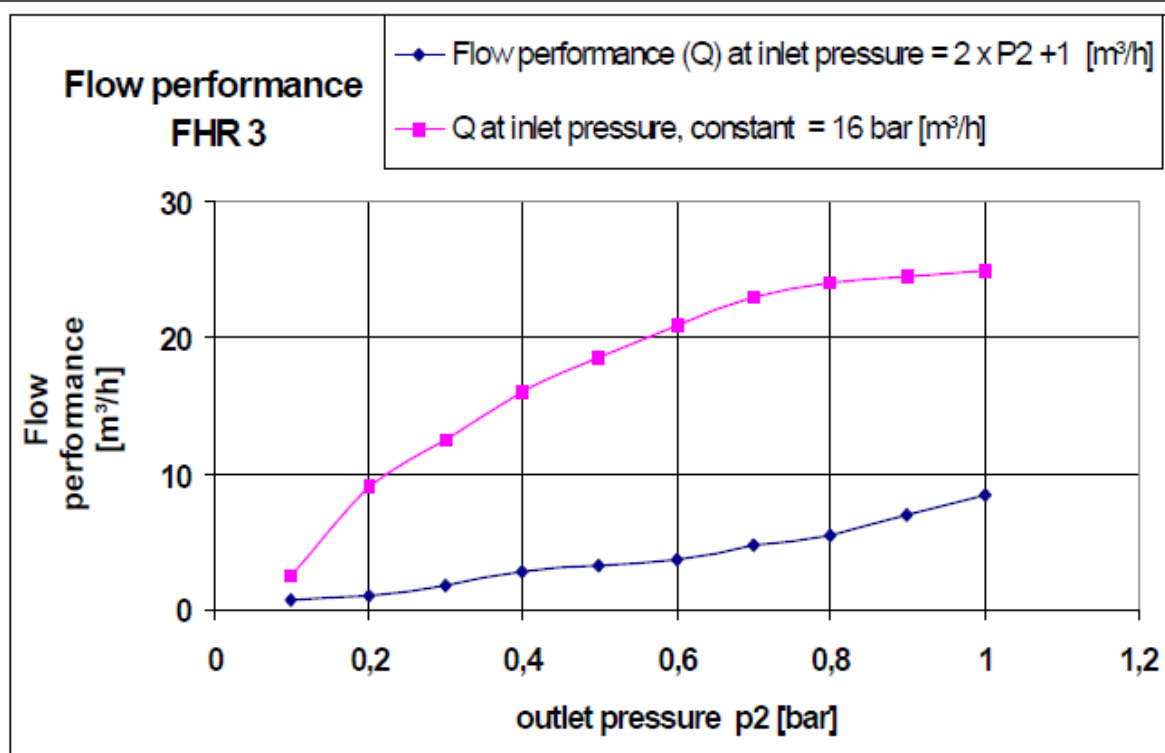
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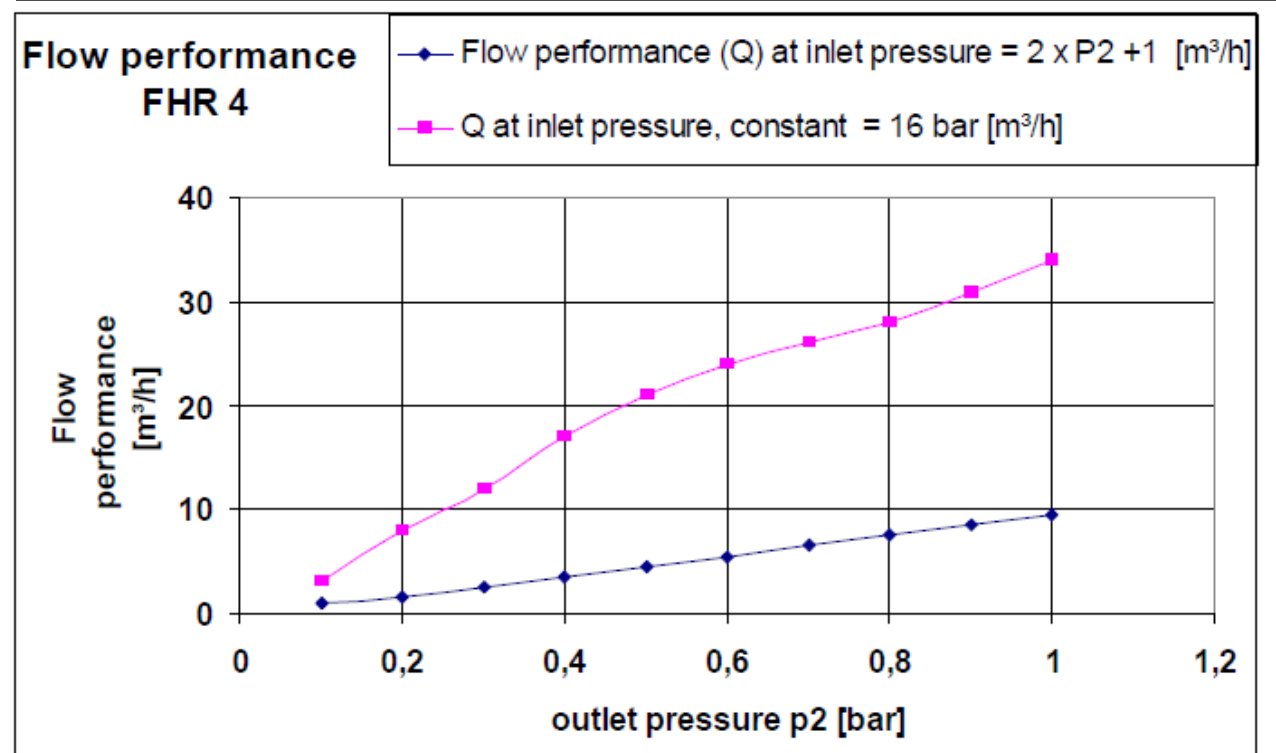
# FHR 3 / FHR 4



Flow performance FHR 3



Flow performance FHR 4



## ORDER DETAILS

**Material:**

- 1 = brass
- 2 = brass, nickel plated

**Seat:**

- 1 = 3 mm
- 2 = 4 mm

**Outlet pressure ranges:**

- 1 = 30 mbar
- 2 = 50 mbar
- 3 = 70 mbar
- 4 = 100 mbar
- 5 = 200 mbar
- 6 = 300 mbar
- 7 = 500 mbar
- 8 = 700 mbar
- 9 = 1000 mbar

17-  
Type

1  
Material

1  
Seat

7  
Pressure

Gas type  
Gas type

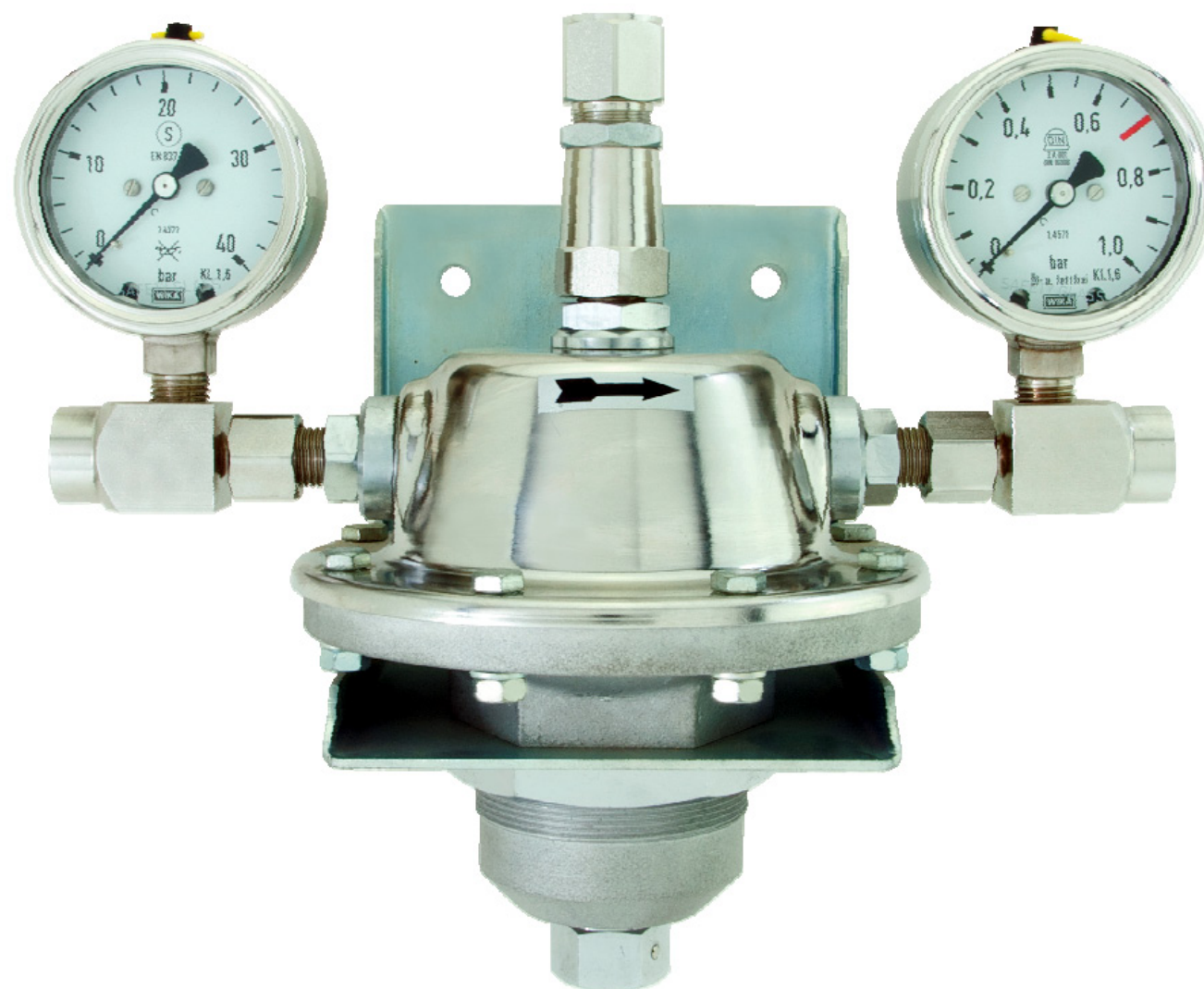
**Accessories:** See total catalogue segment

7. Gauges, screw connections and accessories



# Precision pressure regulator PHR

- single stage for mbar applications



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	brass or stainless steel electropolished	<p>The precision pressure regulator PHR is used particularly in the following areas:</p> <ul style="list-style-type: none"> <li>· Laboratories and industries</li> <li>· Science and research</li> <li>· Gas analysis</li> <li>· Gaschromatography</li> <li>· Process engineering</li> </ul>	<p>The excellent gas control characteristics of PHR - even in the mbar area starting with 10 mbar is based on the wide and flexible diaphragm construction.</p> <p>As an option the PHR regulator can be delivered with in- and outlet pressure indicators or with a wall mounting bracket.</p>
Seat:	viton		
Diaphragm:	viton		
Gas purity:	≤ 5.0		
Max. inlet pressure:	16 bar		
Outlet pressure range:	10 mbar - 2 bar		
Flow rate:	10 m <sup>3</sup> /h air		
Operating temp.:	-20°C to +70°C		
Gauge: (optional)	safety classification according EN 837-1 KL 1,6		
Threads:	inlet NPT 1/4 f outlet NPT 1/4 f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

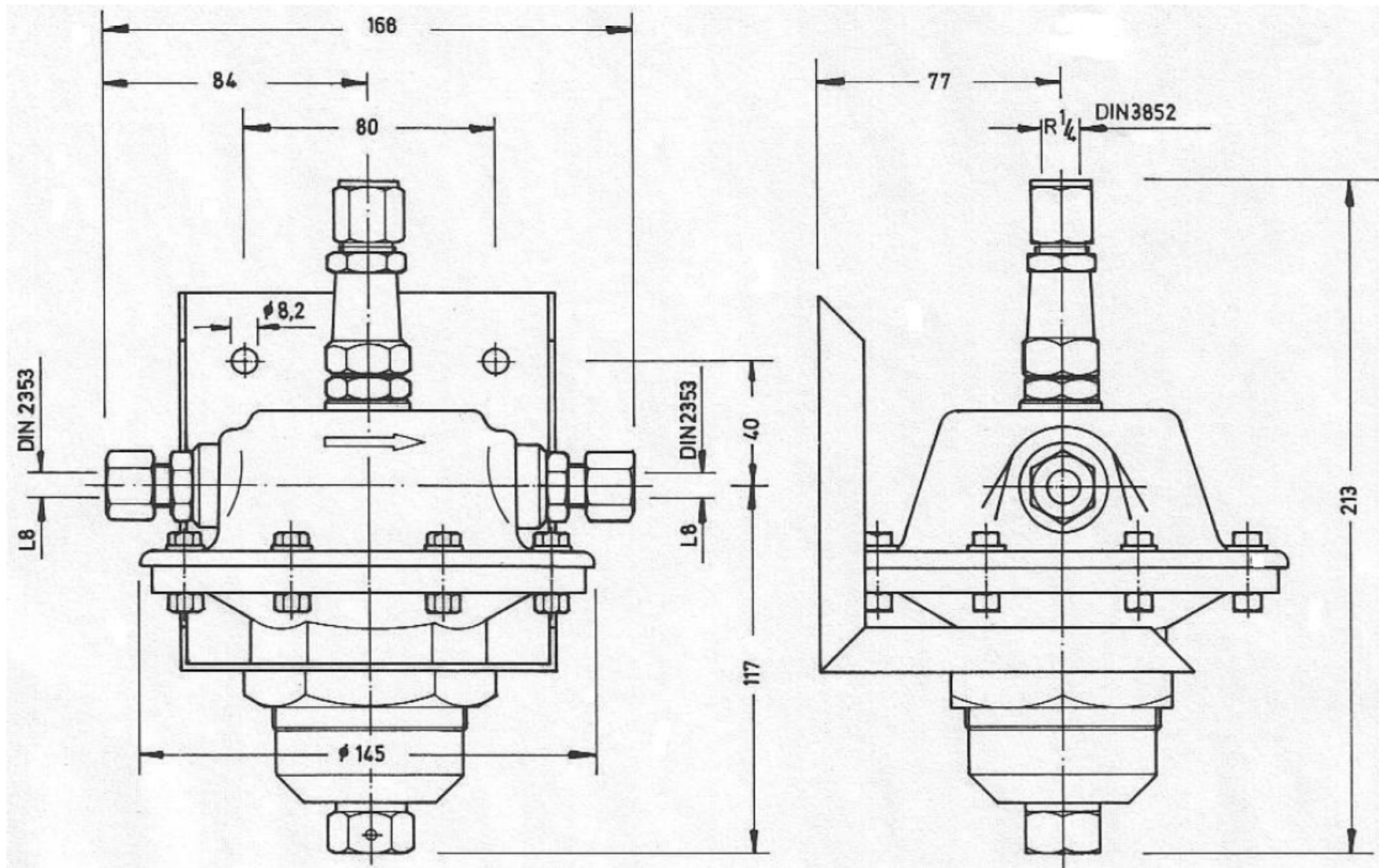
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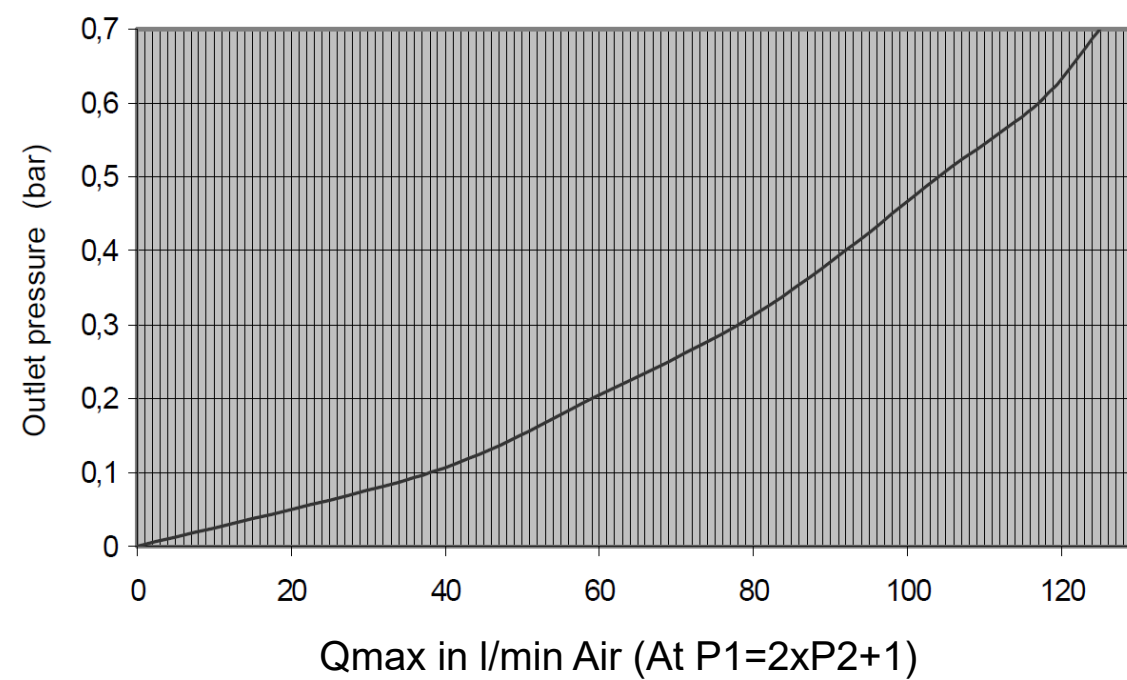
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## FLOW PERFORMANCE PHR



## ORDER DETAILS

### Material:

- 1 = brass
- 2 = stainless steel electropolished

### Outlet pressure ranges:

- 1 = 30 mbar
- 2 = 50 mbar
- 3 = 70 mbar
- 4 = 100 mbar
- 5 = 200 mbar
- 6 = 300 mbar
- 7 = 500 mbar
- 8 = 700 mbar
- 9 = 1000 mbar
- 10 = 1500 mbar
- 11 = 2000 mbar

### Gauge:

- 1 = without
- 2 = with working pressure indicator
- 3 = in- and outlet pressure gauges

### Options for in- and outlet:

- 00 = NPT 1/4" f
- 03 = compression fitting 3 mm
- 06 = compression fitting 6 mm
- 08 = compression fitting 8 mm
- 10 = compression fitting 10 mm
- 12 = compression fitting 12 mm

28-  
Type

2  
Material

2  
Pressure

2  
Gauge

08  
Inlet

12  
Outlet

Gas type  
Gas type

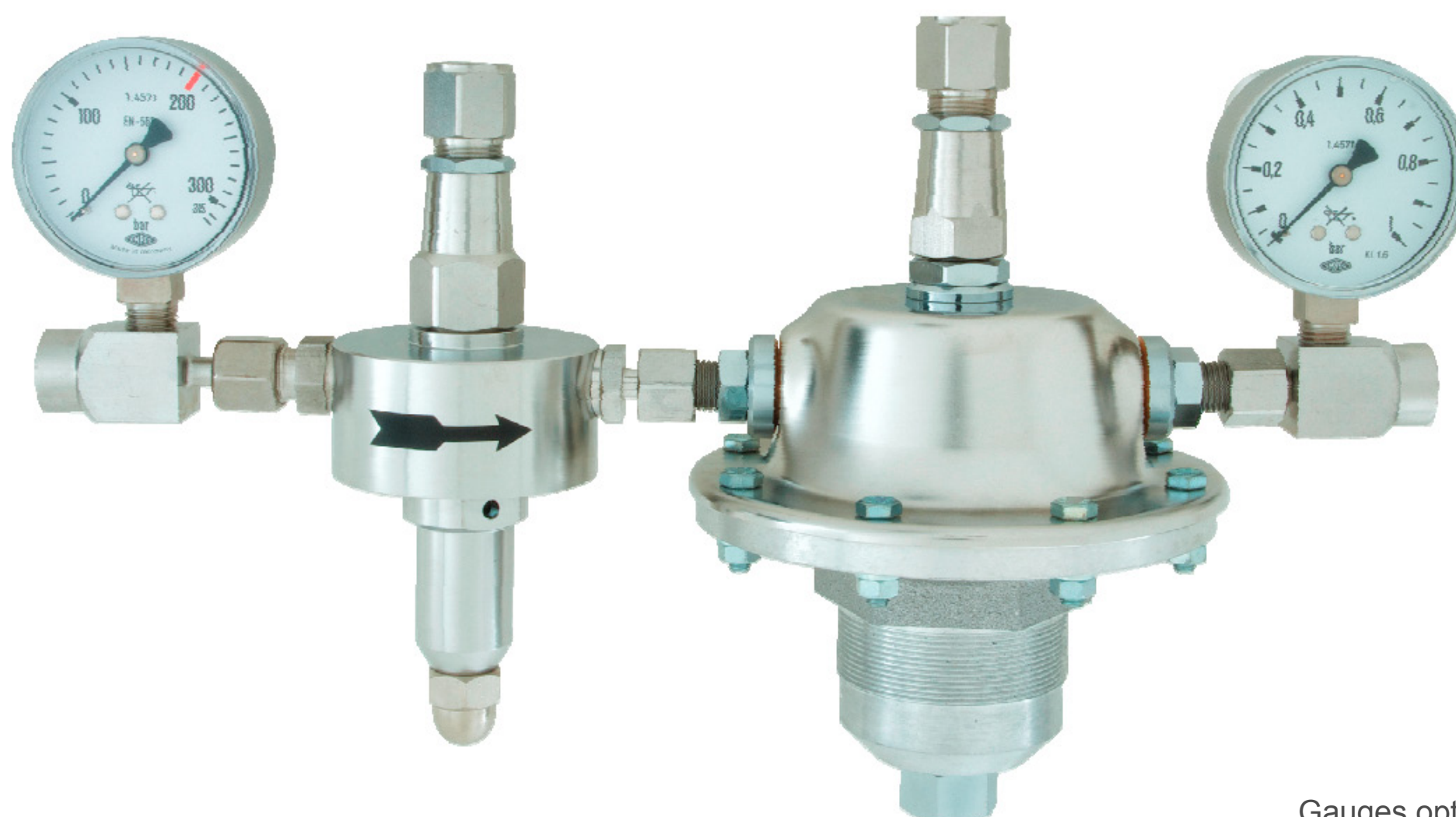
**Accessories:** See total catalogue segment

- Gauges, screw connections and accessories



# Precision pressure regulator VDS-PHR

- dual stage for mbar applications inlet pressures up to 300 bar



Gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	brass, nickel and matt chrome plated or stainless steel	<ul style="list-style-type: none"> <li>· mbar applications with high inlet pressures up to 300 bar</li> <li>· Instrumentation and process engineering</li> <li>· Laboratories</li> <li>· Gas purities up to 5.0 (99.999 Vol.%) purity</li> </ul>	<p>VDS PHR is a dual stage precision pressure regulator with a wide and flexible diaphragm surface for mbar operating pressures and is often used at science and research institutes or process engineering.</p> <p>Due to dual stage construction it is possible to work with absolutely stable outlet pressure even if there are high inlet pressures and even if the inlet pressure drops down significantly.</p> <p>For wall mounting of VDS PHR is as an option a bracket available.</p>
Seat:	viton		
Diaphragm:	viton		
Gas purity:	≤ 5.0		
Max. inlet pressure	300 bar		
Outlet pressure range:	10 mbar - 2 bar		
Flow:	10 m <sup>3</sup> /h air		
Operating temp.:	-20°C to +70°C		
Gauge: (optional)	safety version according EN 837-1 KL 1,6		
Threads:	in- and outlet G 1/4 f		

## QUALITY STANDARD

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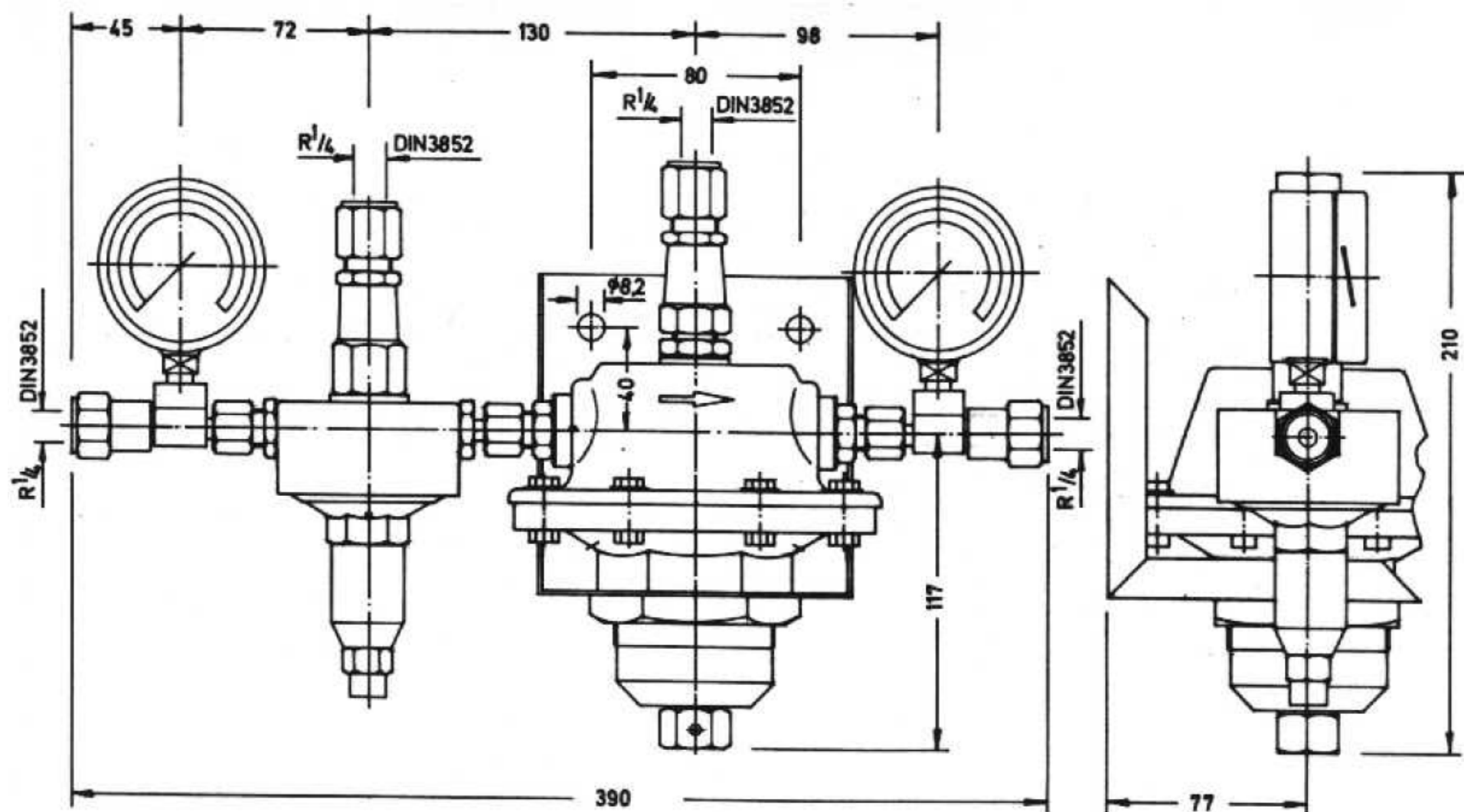
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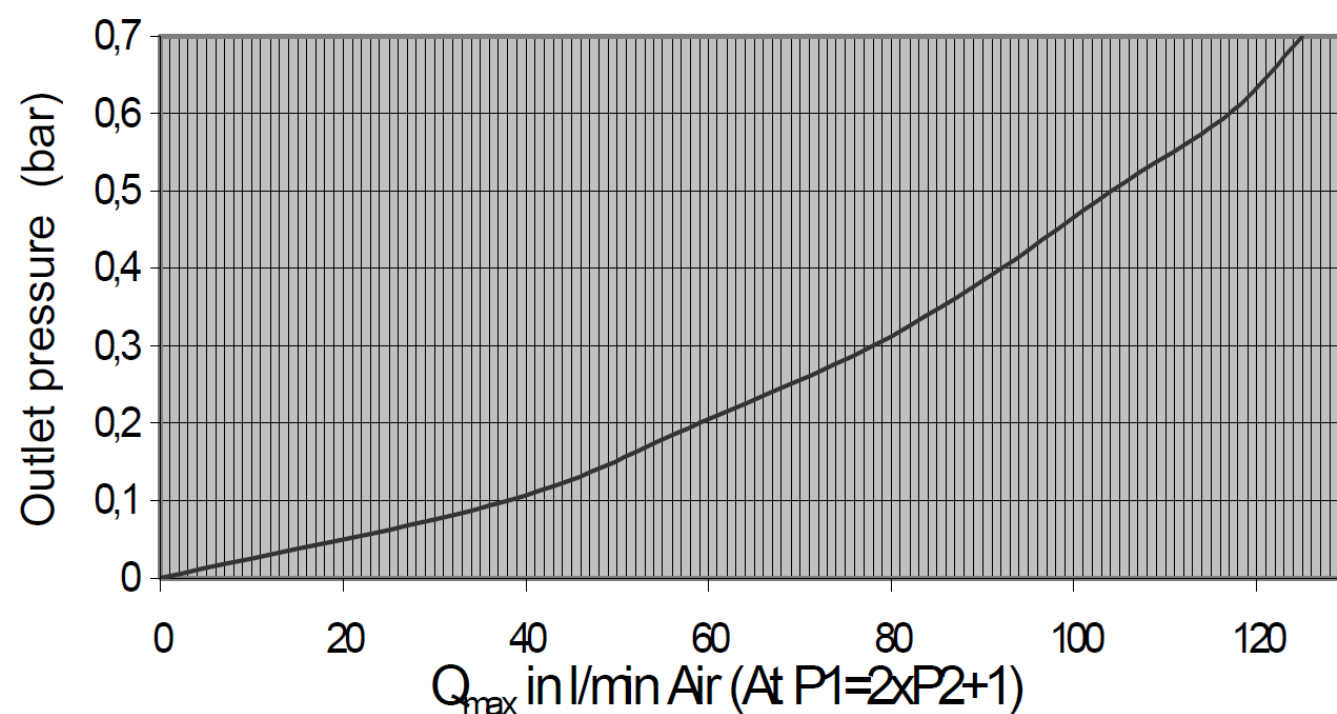
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# VDS-PHR



## FLOW PERFORMANCE VDS-PHR



## ORDER DETAILS

### Material:

- 1 = brass
- 2 = stainless steel electropolished

### Outlet pressure ranges:

- 1 = 30 mbar
- 2 = 50 mbar
- 3 = 70 mbar
- 4 = 100 mbar
- 5 = 200 mbar
- 6 = 300 mbar
- 7 = 500 mbar
- 8 = 700 mbar
- 9 = 1000 mbar
- 10 = 1500 mbar
- 11 = 2000 mbar

### Gauges :

- 1 = without
- 2 = with working pressure indicator
- 3 = with in- and outlet pressure indicator

### Options for in- and outlet:

- 00 = G 1/4" f
- 03 = compression fitting 3 mm
- 06 = compression fitting 6 mm
- 08 = compression fitting 8 mm
- 10 = compression fitting 10 mm
- 12 = compression fitting 12 mm

29-  
Type

2  
Material

2  
Pressure

2  
Gauge

08  
Inlet

12  
Outlet

Gas type  
Gas type

Accessories: See total catalogue segment

7. Gauges, screw connections and accessories

# Line pressure regulator HD 250

- Inlet pressure max. 440 bar and operating pressures up to 250 bar



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	brass, nickel and matt chrome plated or stainless steel	<ul style="list-style-type: none"> <li>· This pressure regulator is designed for use with high inlet and outlet pressures.</li> <li>· High pressure technology</li> <li>· Pilot pressure regulator e.g. in controlled systems in connection with dome pressure regulators.</li> <li>· The high-grade steel construction with elastomer made of viton compound permits the use of aggressive media with HD 250.</li> </ul>	<p>The line pressure regulator HD 250 is a single-stage pressure regulator for high pressure applications (in- and outlet).</p> <p>The HD 250 is designed as a piston pressure regulator and reduces the pressure of compressed gases or liquids to a maximum outlet pressure of 250 bar.</p>
Seat:	PCTFE		
Elastomer:	viton / NBR		
Max. inlet pressure:	440 bar		
Outlet pressure ranges:	5-250; 1-100; 1-50 bar		
Operating temp.:	-20°C to +70°C		
Size:	131 x Ø 53 mm		
Weight:	865 g		
Threads:	in- and outlet NPT 1/4" f		

## QUALITY STANDARD

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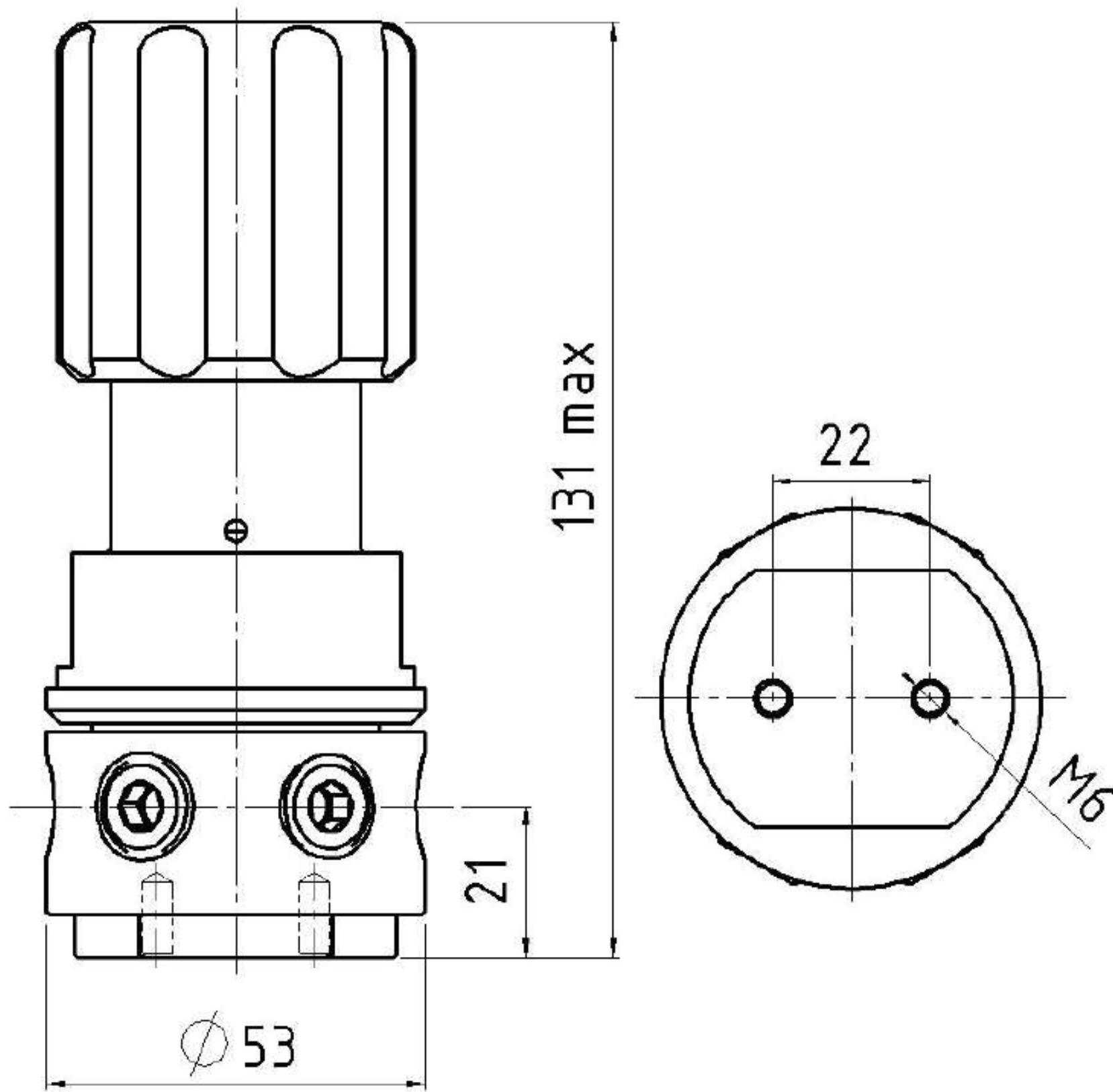
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# HD 250



## ORDER DETAILS

Material:	Elastomer:	Outlet pressure ranges:	Gauge:	Outlet option:
1 = brass, nickel and matt chrome plated 2 = stainless steel electropolished	1 = NBR 2 = viton	1 = 5 - 250 bar 2 = 1 - 100 bar 3 = 1 - 50 bar	1 = without gauges 2 = outlet pressure gauge 3 = in- and outlet pressure gauges	00 = NPT 1/4" f 03 = compression fitting 3 mm 06 = compression fitting 6 mm 08 = compression fitting 8 mm 10 = compression fitting 10 mm 12 = compression fitting 12 mm

Regulator type	42	HD 250	42- Type	1 Material	1 Elastomer	3 Pressure	2 Gauge	06 Option	Gas type Gas type
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**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings and other accessories



# Line pressure regulator HD 400

- Inlet pressure max. 440 bar / operating pressures up to 400 bar



Fittings and gauges optional

TECHNICAL DETAILS		DESIGN	DESCRIPTION
Body:	brass, nickel and matt chrome plated or stainless steel	<ul style="list-style-type: none"> <li>This pressure regulator is designed for use with high inlet and outlet pressures.</li> <li>High pressure technology</li> </ul>	The line pressure regulator HD 400 is a single-stage pressure regulator for high pressure applications (in- and outlet).
Seat:	PCTFE	<ul style="list-style-type: none"> <li>Pilot pressure regulator e.g. in controlled systems in connection with dome pressure regulators.</li> </ul>	The HD 400 is designed as a piston pressure regulator and reduces the pressure of compressed gases or liquids to a maximum outlet pressure of 400 bar.
Elastomer:	viton / NBR	<ul style="list-style-type: none"> <li>The high-grade steel construction with elastomer made of viton compound permits the use of aggressive media with HD 400.</li> </ul>	
Max. inlet pressure:	440 bar		
Outlet pressure:	10 - 400 bar		
Operating temp.:	-20°C to +70°C		
Size:	131 x Ø 53 mm		
Weight:	865 g		
Threads:	in- and outlet NPT ¼" f		

## QUALITY STANDARD

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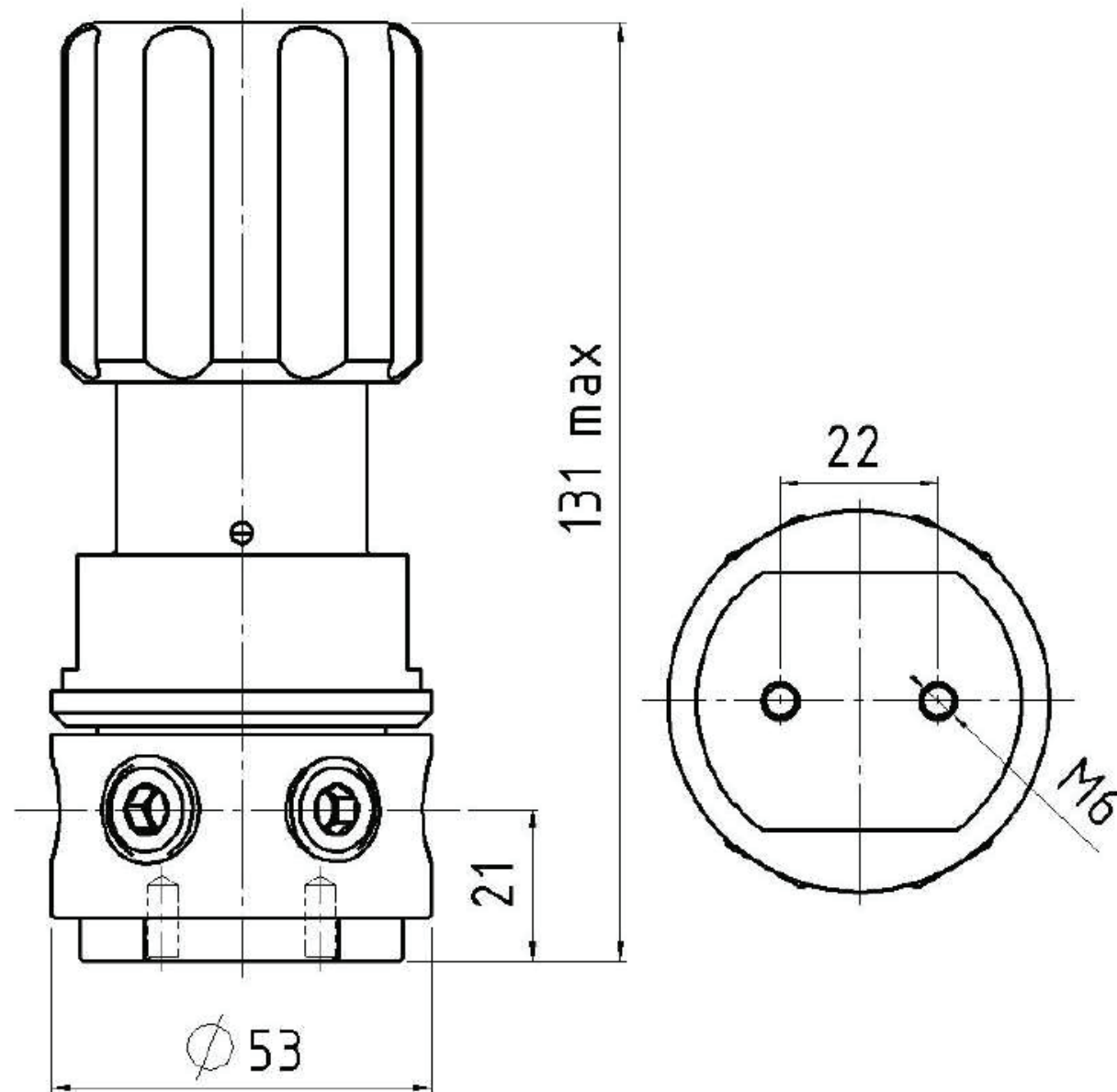
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# HD 400



## APPLICATION AREA

This pressure regulator is used especially for the withdrawal of a less amount of gas at high inlet and outlet pressures. Due to its small size is this pressure regulator particularly suitable for use as a pilot pressure regulator e.g. in controlled systems in connection with dome pressure regulators.

The stainless steel construction with elastomere made of viton compound permits the use of aggressive media with this pressure regulator.

We urgently recommend the pre-connection of a fine filter, with at least a level of purity of up to 40  $\mu$ , as well as the subsequent integration of suitable safety valves against unduly high pressure.

## ORDER DETAILS

Material:	Elastomer:	Gauge:	Outlet option:
1 = brass, nickel and matt chrome plated	1 = NBR	1 = without gauges	00 = NPT 1/4" f
2 = stainless steel electropolished	2 = viton	2 = outlet pressure gauge	03 = compression fitting 3 mm
		3 = in- and outlet pressure gauges	06 = compression fitting 6 mm
			08 = compression fitting 8 mm
			10 = compression fitting 10 mm
			12 = compression fitting 12 mm

Regulator type	45- Type	1	1	3	06	Gas type
45 HD 400		Material	Elastomer	Gauge	Option	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories

# High pressure regulator HD 550

- Inlet pressure up to 750 bar and operating pressures up to 550 bar



Fittings and gauges optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	brass or stainless steel 1.4404	To guarantee a good control characteristic of HD 550 even for low pressures piston diameters are different (depending on flow and pressure).	HD 550 is a single stage high pressure regulator and is designed as a piston pressure regulator and reduces the pressure of compressed gases or liquids to a maximum outlet pressure of 550 bar.
Seat size:	Ø 1,70 Ø 6,35 (balanced)	The outlet pressure of HD 550 is adjustable without strength even at high working pressures by capture vented construction and a control spindle with axial bearing.	
Flow capacity:	Cv 0,03 (Ø 1,70 ) Cv 0,7 (Ø 6,35)	HD 550 can be equipped optionally with inlet and outlet gauge.	
Seat:	PCTFE		
Elastomer:	EPDM / viton		
Max. inlet pressure:	750 bar		
Outlet pressure ranges:	0,5 - 100 bar 10 - 550 bar		
Operating temp.:	-20°C to +60°C		
Size:	Ø 80 x 186 mm		
Weight:	2,5 kg		
Threads:	in- / outlet NPT 3/8 f gauges NPT 1/4 f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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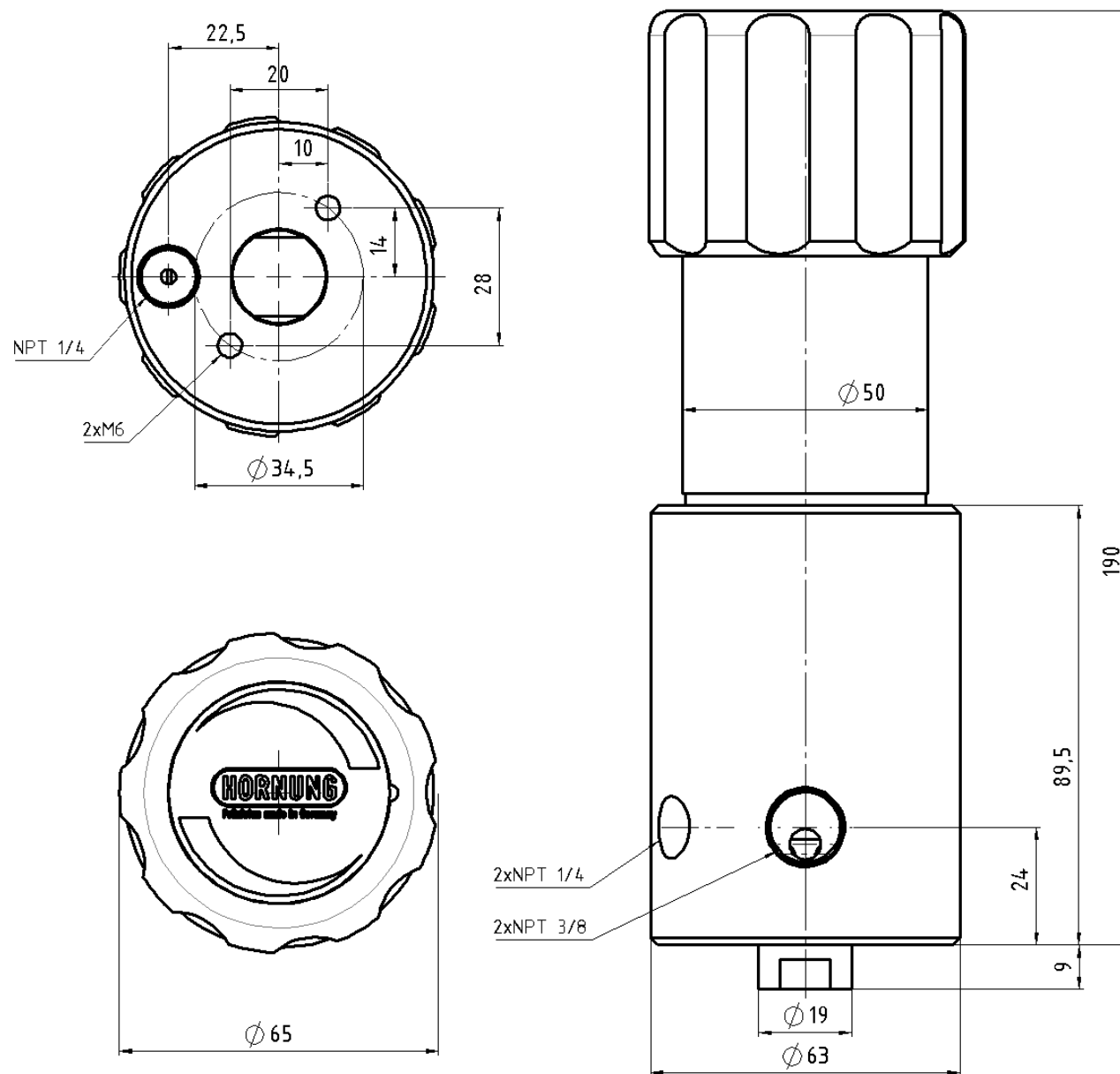
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# HD 550



## APPLICATION AREA

This pressure regulator is constructed for high in and outlet pressures. With its captured vent this pressure regulator is particularly suitable for use as a pilot pressure regulator, e.g. in control systems in connection with dome pressure regulators.

The stainless steel version with elastomers made of viton permits the use for corrosive media with this pressure regulator. Using the captured vent version, customer has to assure, that venting is connected to customer's exhausting system.

It is recommended to integrate a fine filter of at least 40  $\mu$  in front of HD 550 and to install relief valve behind HD 550 for protecting customer's equipment/ system.

## ORDER DETAILS

Material:	Seat sizes:	Elastomer:	Outlet pressure:	Capture venting:	Gauges:
1 = brass	1 = $\varnothing$ 1,70	1 = EPDM	1 = 100 bar	1 = none	1 = none
2 = stainless steel 1.4404	2 = $\varnothing$ 6,35 (balanced)	2 = viton	2 = 550 bar	2 = with capture venting	2 = with inlet and outlet gauge

Regulator type	46-	1	1	1	1	1	2	Gas type	
46	HD 550	Type	Material	Seat	Elastomer	Pressure	Venting	Gauge	Gas type

**Accessories:** See total catalogue segment

7. Gauges, compression fittings and accessories
8. Flanges, fine filter F1 (see separate data sheet), safety valves available on request

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# Point of use regulators

- in brass, nickel and matt chrome plated or stainless steel electropolished
- for gases up to 6.0 purity
- for corrosive gases and mixtures

## Contents:

Point of use regulator HP 450	wall mounting version
Point of use regulator HP 454	wall mounting version
Point of use regulator HP 456	wall mounting version
Point of use regulator HP 400	bench version
Point of use regulator HP 401	wall mounting version
Point of use regulator HP 402	furniture version
Point of use regulator HP 403	built in version
Point of use regulator HP 404	wall mounting version
Point of use HP 410	small sized regulator
Point of use HP 411	small sized regulator



# Point of use regulator HP 450 Frontline

- wall mounting V-Version (system version)

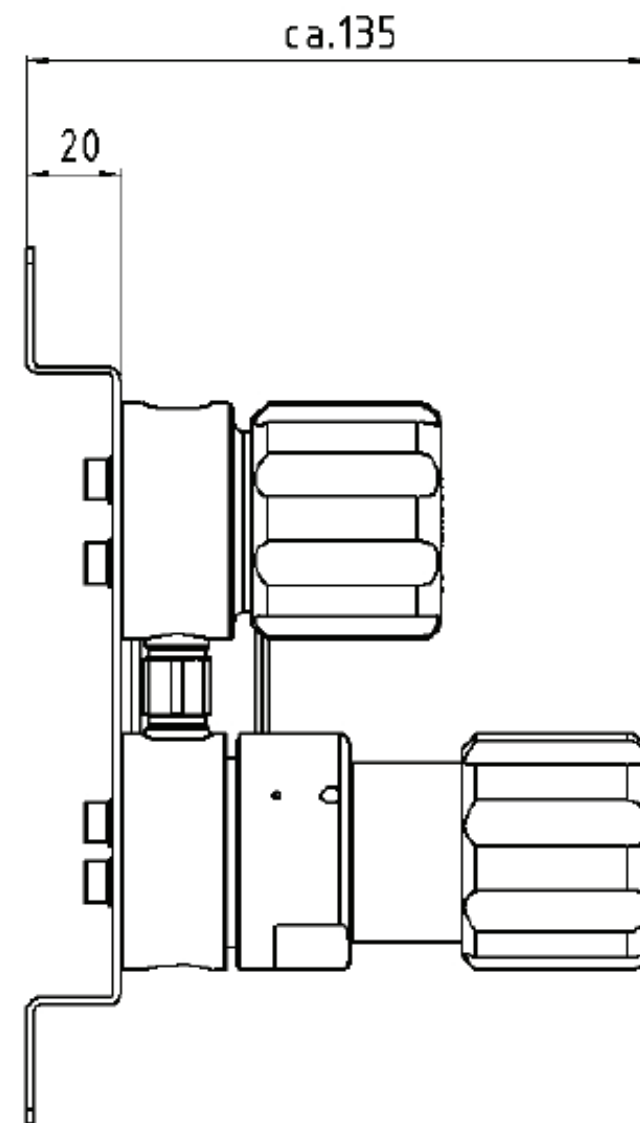
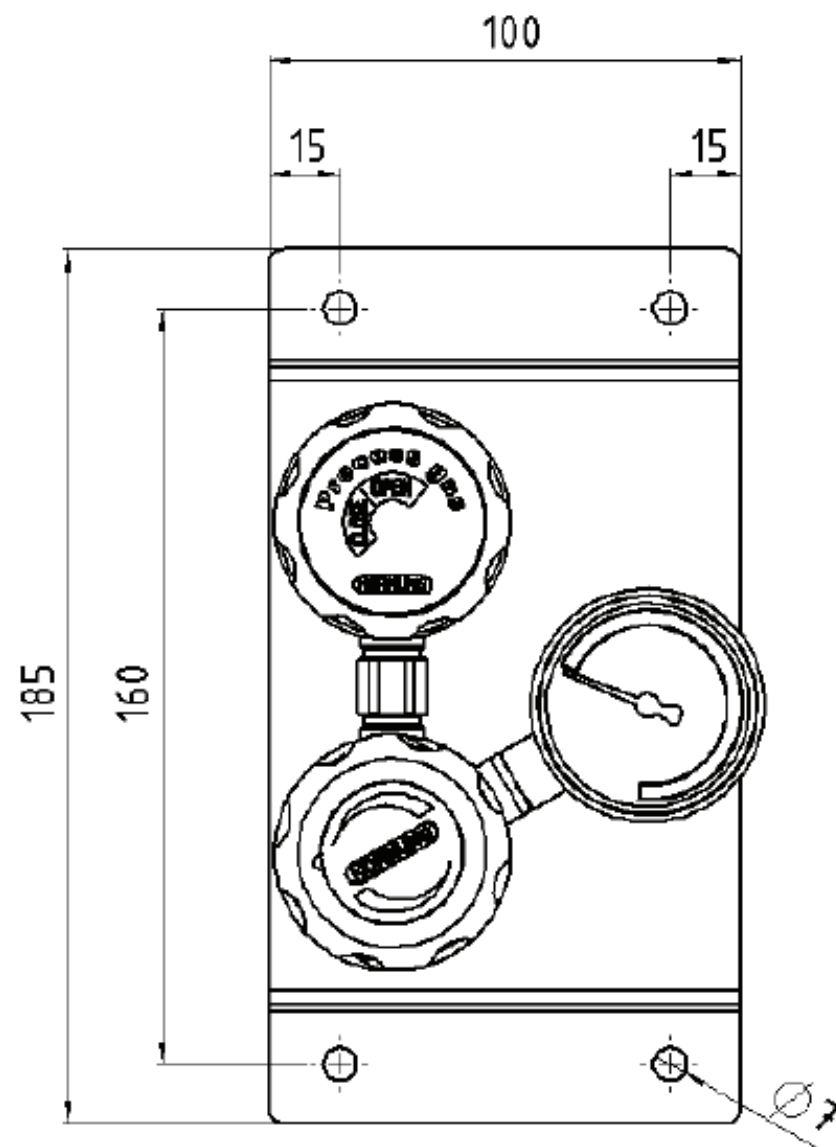


TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The point of use regulator HP 450 is a system wall version. The point of use regulator is ready mounted on a console and is connected to a permanently laid piping system. It serves as a second-stage and reduces the line pressure to an adjustable working pressure.
Seat:	PCTFE	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	
Diaphragm:	1.4435	The point of use regulator HP 450 is also suitable for acetylene with the use of a corresponding flash-back arrestor to EN730.	1 to 5 regulators with a modular dimension of 100 mm can be collectively mounted on one bracket.
Leakage rate:	10 <sup>-8</sup> mbar l/s helium against atmosphere		
Gas purity:	≤ 6.0		The HP 450 point of use regulator is fitted with a diaphragm shut-off valve, pressure regulator with pressure gauge as standard.
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Weight:	3050 g		
Connections:	inlet NPT 1/4" f outlet NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HP 450 FRONTLINE

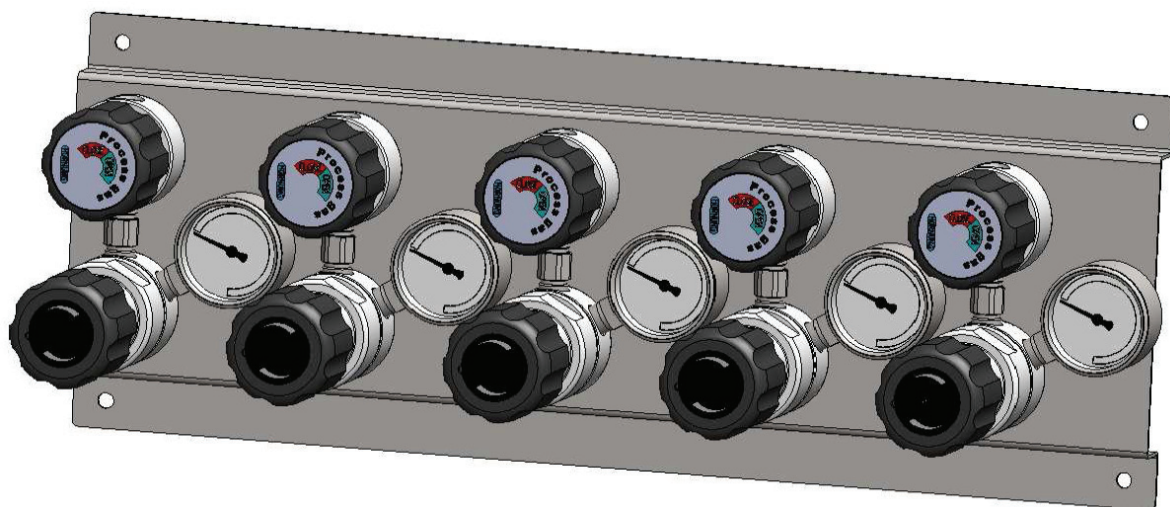


## ACCESSORIES

See total catalogue segment

- 5. Diaphragm shut-off und dosage valves
- 7. Accessories

Also available in a fivefold version as seen below:



## SCOPE OF SUPPLY

Cylinder station with outlet gauge and inlet shutoff valve.  
Completely mounted on a wall console out of stainless steel.

Without compression fittings.

## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Point of use regulator:

- 1 = 1-fold
- 2 = 2-fold
- 3 = 3-fold
- 4 = 4-fold
- 5 = 5-fold

### Outlet pressure ranges:

- 1 = 0,1 - 1 bar
- 2 = 0,1 - 3 bar
- 3 = 1 - 6 bar
- 4 = 1 - 12 bar

### Options on the outlet side:

- 1 = NPT 1/4" f
- 2 = compression fitting 6 mm

HP450-  
Type

2  
Material

1  
Regulator

3  
Pressure

1  
Option

Gas type  
Gas type



# Point of use regulator HP 454 Frontline

- wall mounting H-Version (system version)



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The point of use regulator HP 454 is a system wall version. The point of use regulator is ready mounted on a console and is connected to a permanently laid piping system. It serves as a second-stage and reduces the line pressure to an adjustable working pressure.
Seat:	PCTFE	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	
Diaphragm:	1.4435	The point of use regulator HP 450 is also suitable for acetylene with the use of a corresponding flash-back arrestor to EN730.	1 to 5 regulators with a modular dimension of 140mm can be collectively mounted on one bracket.
Leakage rate:	10 <sup>-8</sup> mbar l/s helium against atmosphere		
Gas purity:	≤ 6.0		The HP 454 point of use regulator is fitted with a diaphragm shut-off valve, pressure regulator with pressure gauge as standard.
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,1-1; 0,1-3; 1-6; 1-12 bar		
Operating temp.:	-20°C to +70°C		
Gauges:	safety version to: EN 837-1 KL1,6		
Weight:	3050 g		
Connections:	inlet NPT 1/4" f outlet NPT 1/4" f		

## QUALITY STANDARD

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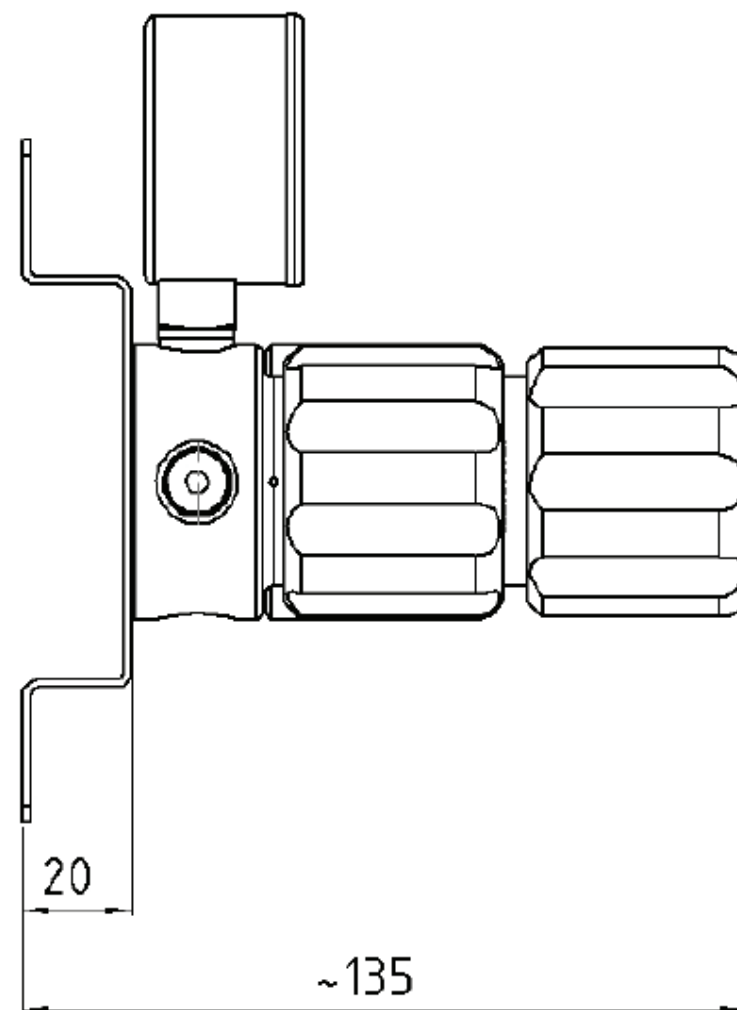
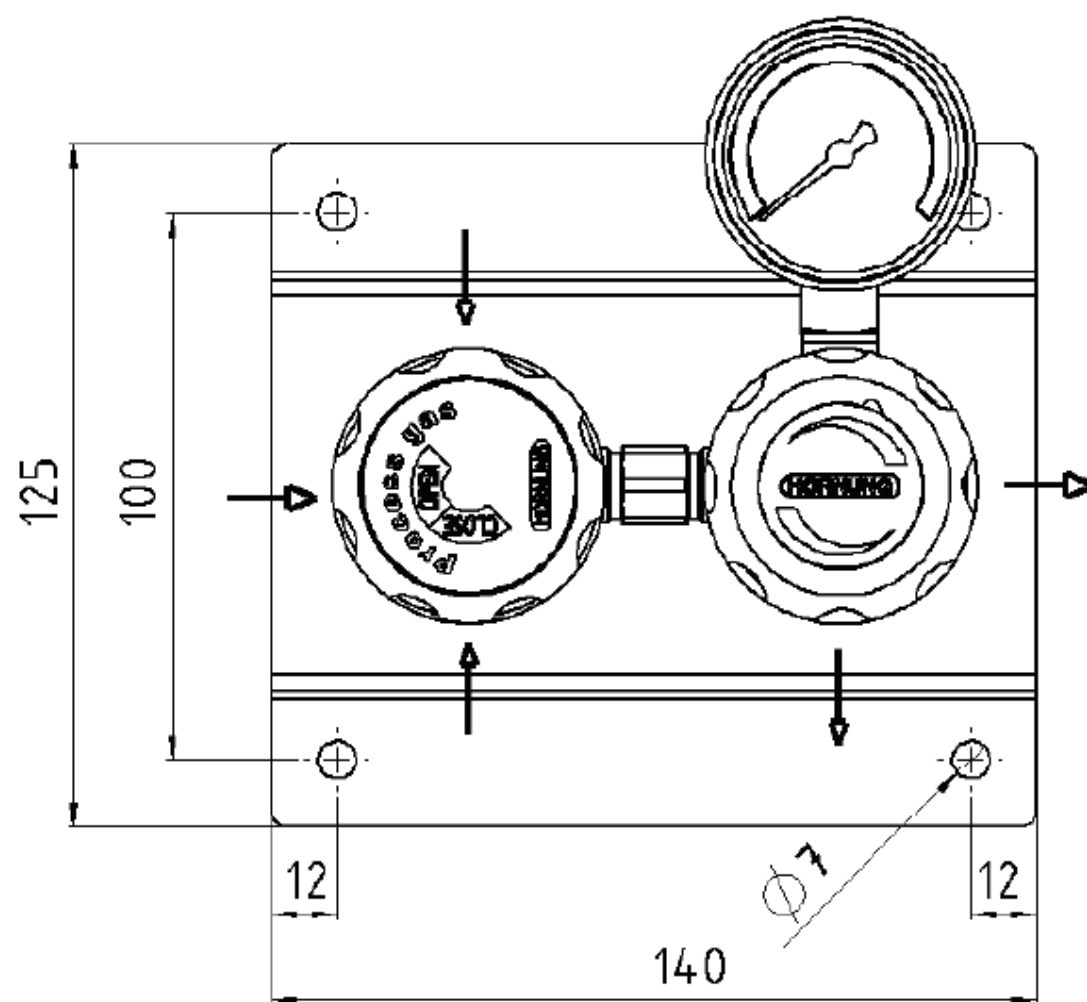
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# HP 454 FRONTLINE

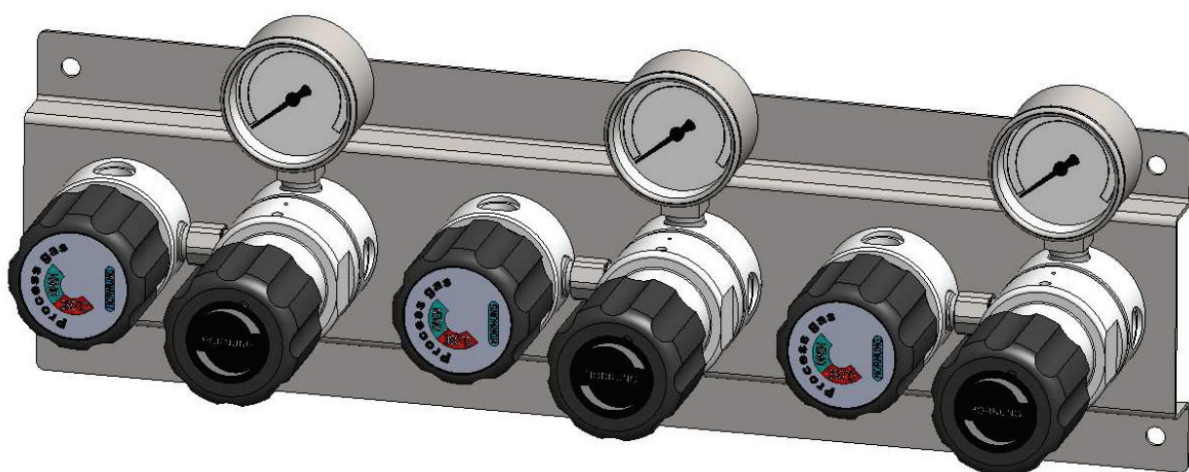


## ACCESSORIES

See total catalogue segment

- 5. Diaphragm shut-off und dosage valves
- 7. Accessories

Also available in a fivefold version as seen below:



## SCOPE OF SUPPLY

Cylinder station with outlet gauge and inlet shut-off valve.  
Completely mounted on a wall console out of stainless steel.  
(For Acetylene with flash-back arrestor to DIN)

Without compression fittings.

## ORDER DETAILS

**Material:**  
1 = stainless steel  
2 = brass

**Point of use regulator:**  
1 = 1-fold  
2 = 2-fold  
3 = 3-fold  
4 = 4-fold  
5 = 5-fold

**Outlet pressure ranges:**  
1 = 0,1 - 1 bar  
2 = 0,1 - 3 bar  
3 = 1 - 6 bar  
4 = 1 - 12 bar

**Options on the outlet side:**  
1 = NPT 1/4" f  
2 = compression fitting 6 mm

HP454-  
Type

2  
Material

1  
Regulator

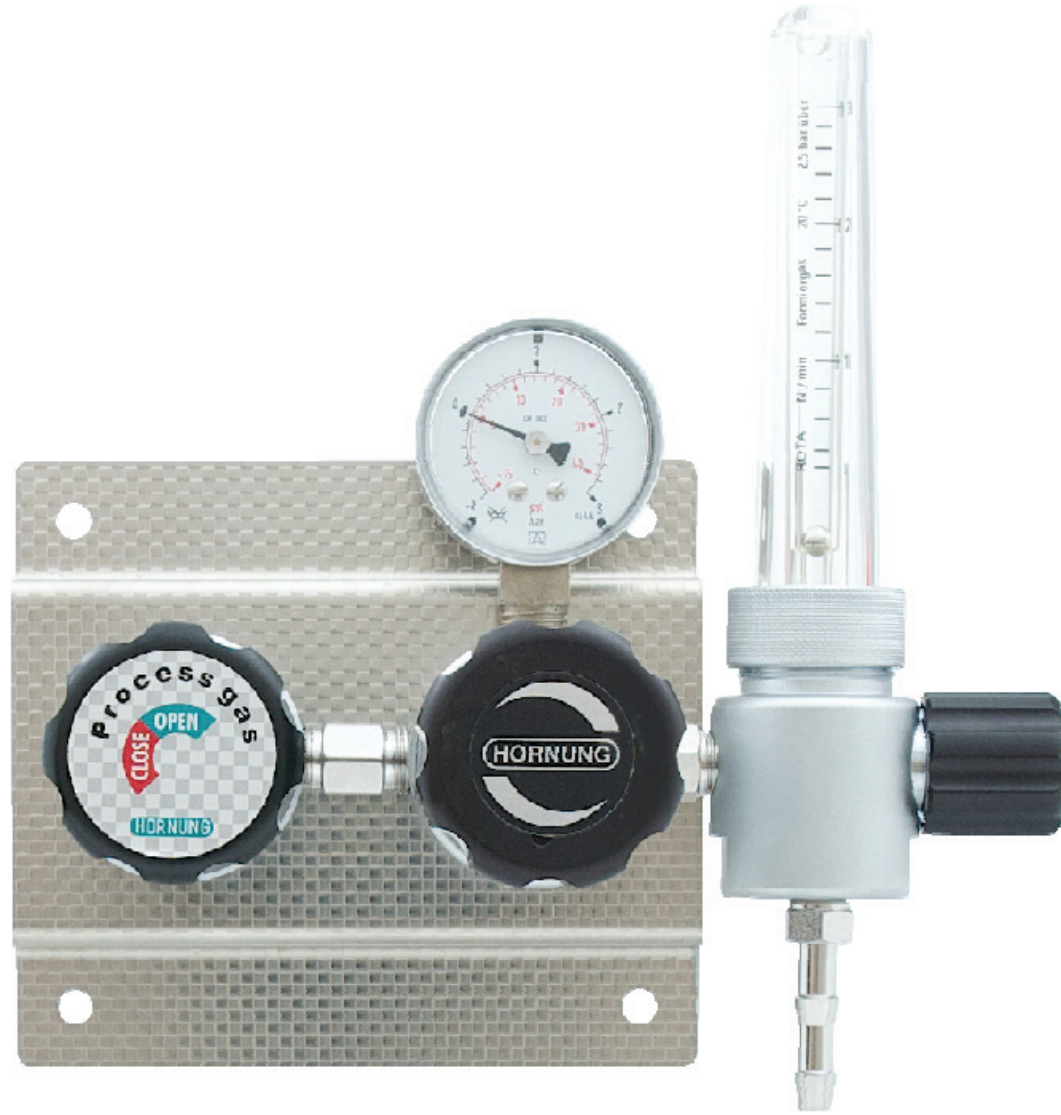
3  
Pressure

1  
Option

Gas type  
Gas type

# Point of use regulator HP 456 Frontline

- wall mounted regulator with flowmeter (system version)



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	The HP 456 is designed for low pressure use. It is used where an exact dosage and reading of this dosage on a scale is required.	The HP 456 point of use regulator is fitted with a diaphragm shut-off valve, single-stage pressure regulator and a flow measurer and a dosage valve.
Seat:	PCTFE	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The point of use regulator HP 456 is an system wall version.
Diaphragm:	1.4435	Through our special cleaning system our pressure regulators are suitable for ECD – applications.	The point of use regulator is ready mounted on a console and is connected to a permanently laid piping system.
Leakage rate:	10 <sup>-6</sup> (mbar l/s) helium leakage test		
Gas purity:	≤ 6.0		It serves as a second stage and reduces the line pressure to an adjustable working pressure. A floating body in the measuring tube shows the flow rate on a scale.
Max. inlet pressure:	40 bar		
Flow:	dependant on gas type and measurement tube		
Gauges:	safety version to: EN 837-1 KL1,6		
Operating temp.:	-20°C to +70°C		
Weight:	2600 g		
Connections:	inlet NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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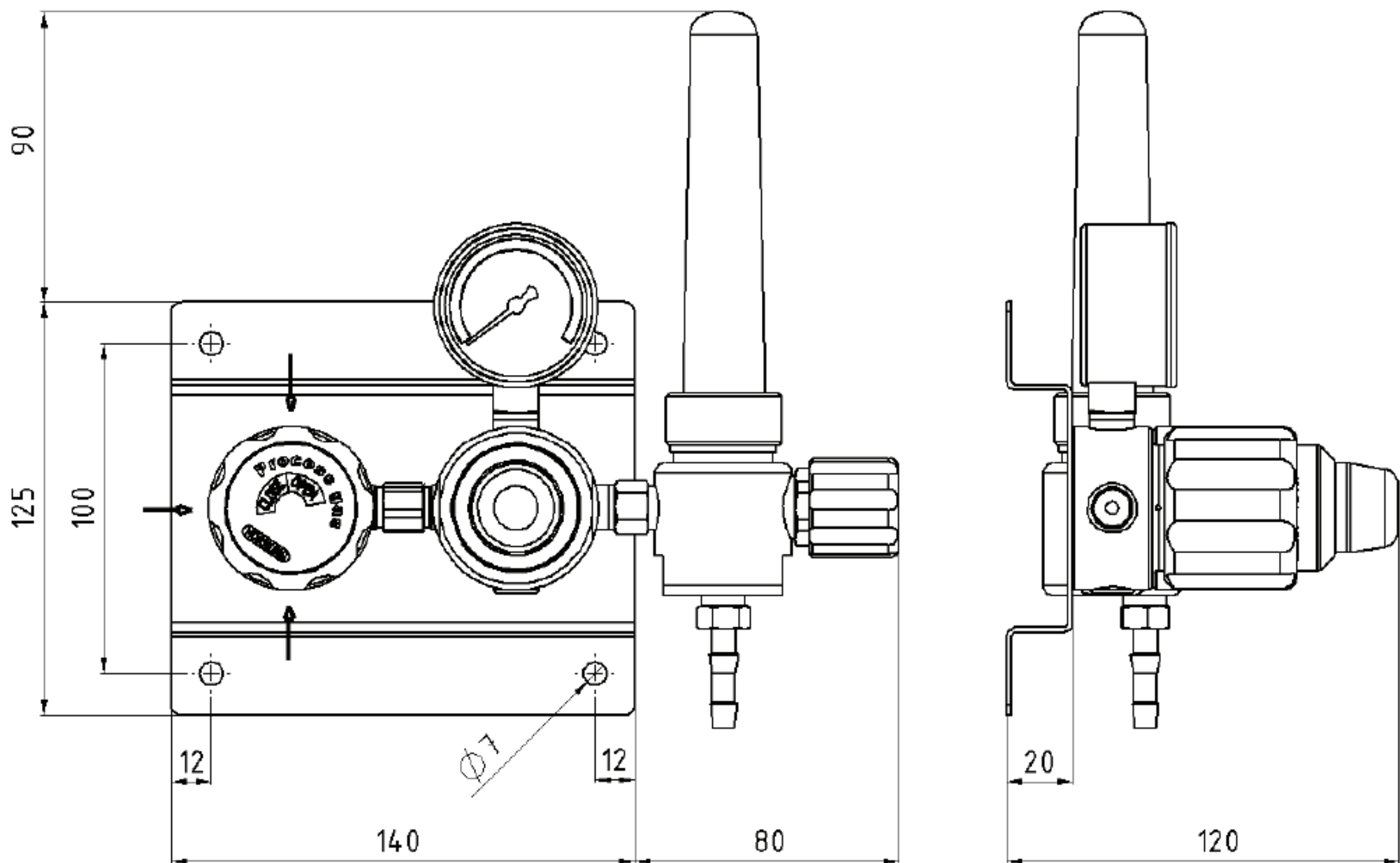
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# HP 456 FRONTLINE



## ACCESSORIES

See total catalogue segment

7. Accessories

## SCOPE OF SUPPLY

Cylinder station with outlet gauge and inlet shutoff valve.  
Flowmeter with dosage valve, completely mounted on a wall console out of stainless steel.

Without compression fittings.

## ORDER DETAILS

### Material:

1 = stainless steel  
2 = brass

### Outlet pressure (p2):

1 = 1,0 bar fixed  
2 = 2,5 bar fixed  
3 = 1 - 6 bar adjustable

### Options on the outlet side:

1 = G 1/4" f  
2 = compression fitting 6 mm

HP456- Type	2 Material	3 p2	1 Option	Gas type Gas type
----------------	---------------	---------	-------------	----------------------



# Point of use regulator HP 400

- bench version



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity up to 6.0.	The HP 400 is a point of use regulator for bench (laboratory furniture) mounting.
Seat:	PCTFE	Our special cleaning system for the HP series also guarantees the use for ECD applications.	The regulator is mounted on a table column for reducing line pressure to working pressure as a second-stage.
Diaphragm:	1.4435		As a standard configuration the point of use regulator will be supplied with shut-off valve and gauge for indicating working pressure.
Leakage rate:	$10^{-8}$ mbar l/s He against atmosphere		Options are specific inlet- and outlet connections or a metering valve fitted to the outlet of HP 400.
Gas purity:	$\leq 6.0$		
Max. Inlet pressure:	40 bar		
Outlet pressure ranges:	0,5-3; 1-6 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	85 x 250 x 145 mm		
Weight:	1700 g		
Connections:			
Inlet:	compressing fitting 6 mm		
Outlet:	G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HORNUNG

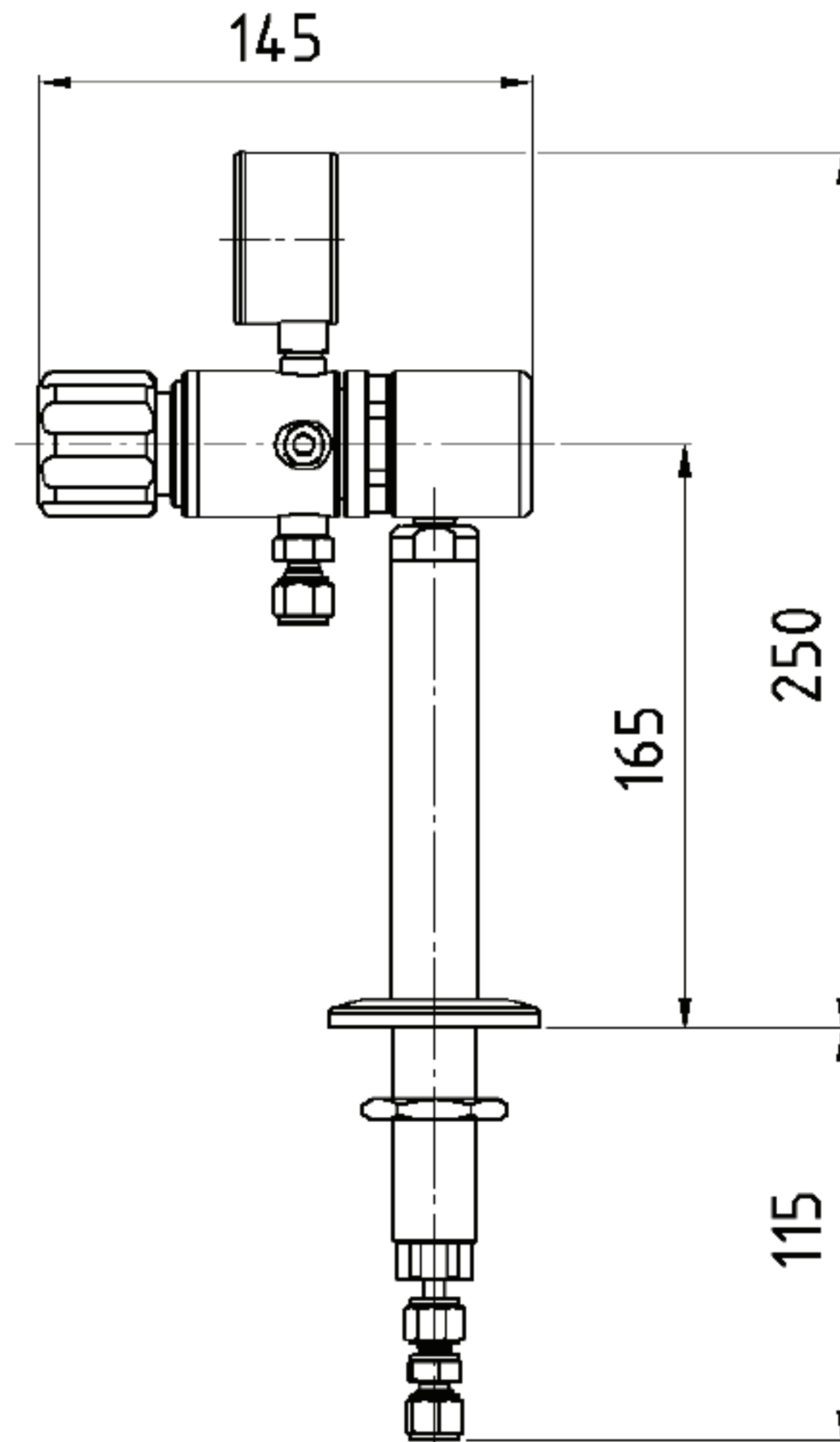
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# HP 400



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass, nickel and matt chrome plated

### Outlet pressure ranges:

- 1 = 0,5 - 3 bar
- 2 = 1 - 6 bar
- 3 = 1 - 10 bar

### Options for the outlet:

- 0 = G 1/4" - Internal thread
- 1 = compression fitting 6 mm
- 2 = compression fitting 8 mm

HP400- Type	1 Material	2 Pressure	1 Option	Gas type Gas type
----------------	---------------	---------------	-------------	----------------------

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screws, compression fittings, cylinder retainers and accessories

# Point of use regulator HP 401

- wall mounting version



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0.	The HP 401 is a point of use regulator for wall mounting. The regulator is mounted on a wall console for reducing line pressure to working pressure as a second-stage.
Seat:	PCTFE	Our special cleaning system for the HP series also guarantees the use for ECD applications.	As a standard configuration the point of use regulator will be supplied with shut-off valve and gauge for working pressure. Options are specific inlet- and outlet connections or a metering valve fitted to the outlet of HP 401.
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,5-3; 1-6; 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	125 x 105 x 175 mm		
Weight:	1600 g		
Connections:	inlet G 1/4" f outlet G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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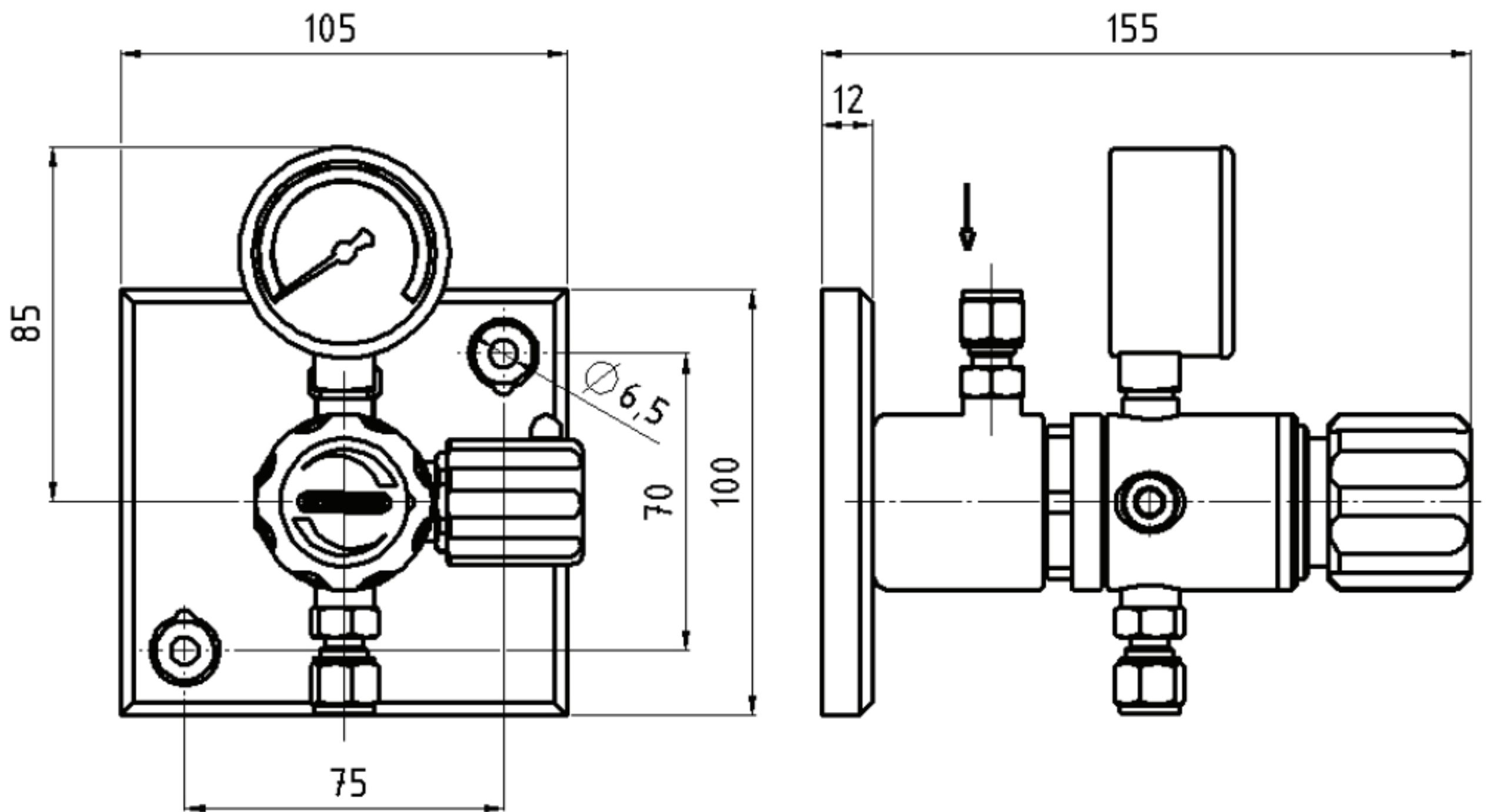
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# HP 401



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass, nickel and matt chrome plated

### Outlet pressure ranges:

- 1 = 0,5 - 3 bar
- 2 = 1 - 6 bar
- 3 = 1 - 10 bar

### Options for the outlet:

- 0 = G 1/4" – internal thread
- 1 = compression fitting 6 mm
- 2 = metering valve

HP401- Type	1 Material	2 Pressure	1 Option	Gas type Gas type
----------------	---------------	---------------	-------------	----------------------

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screw connections, cylinder retainers and accessories

# Point of use regulator HP 402

- furniture wall version



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0.	The HP 402 is a point of use regulator for laboratory furnitures. The regulator is fitted with a small wall console in front of and a screw behind the wall.
Seat:	PCTFE	Our special cleaning system for the HP series also guarantees the use for ECD applications.	The HP 402 is for reducing line pressure to working pressure as a second-stage.
Diaphragm:	1.4435		As a standard configuration the point of use regulator will be supplied with shut-off valve and gauge for working pressure, the console and the screwing for fixing. Options are specific inlet and outlet connections or a metering valve fitted to the outlet of HP 402.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,5-3; 1-6; 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	85 x 135 x 155 mm		
Weight:	1700 g		
Threads:	inlet G 1/4" f outlet G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HORNUNG

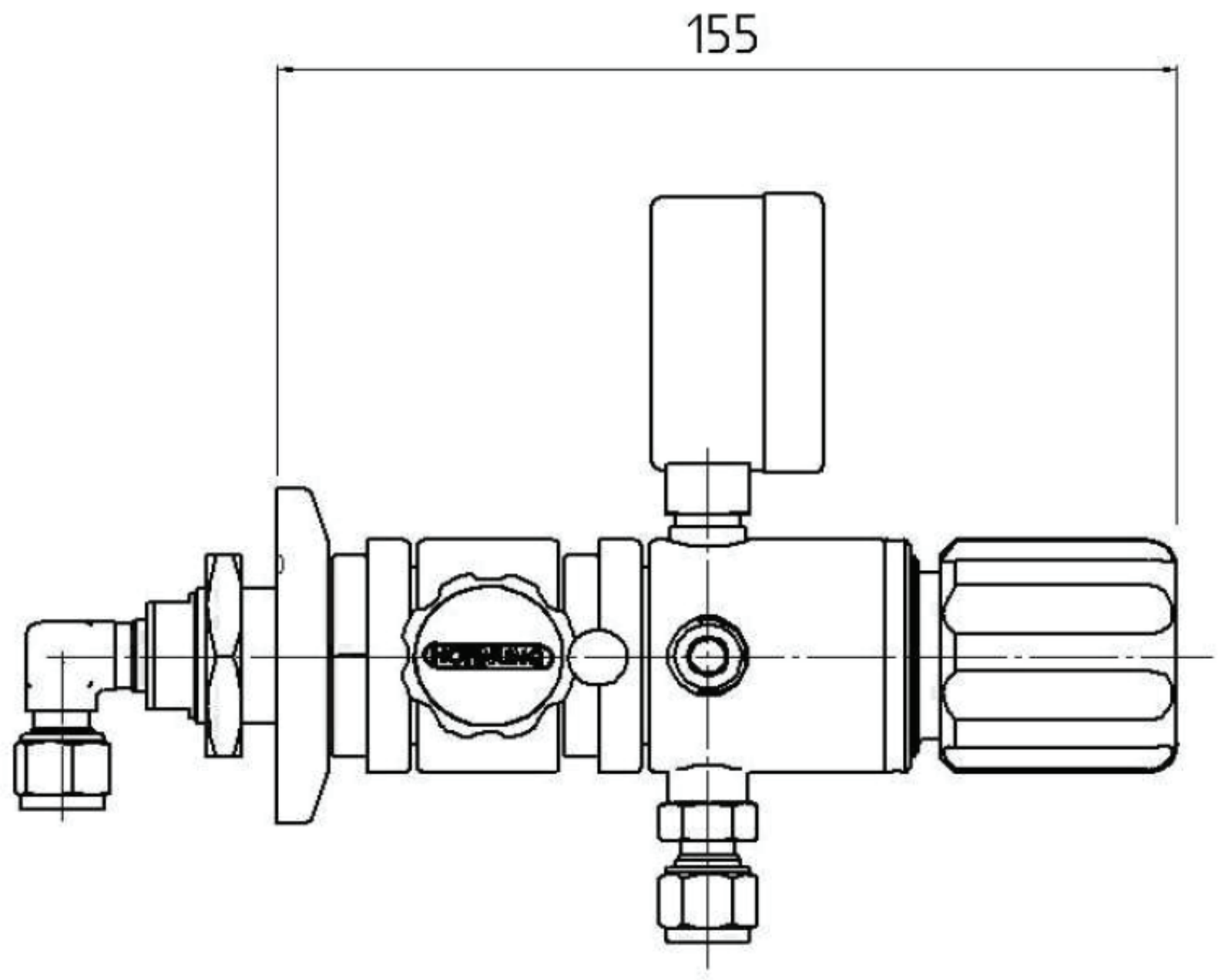
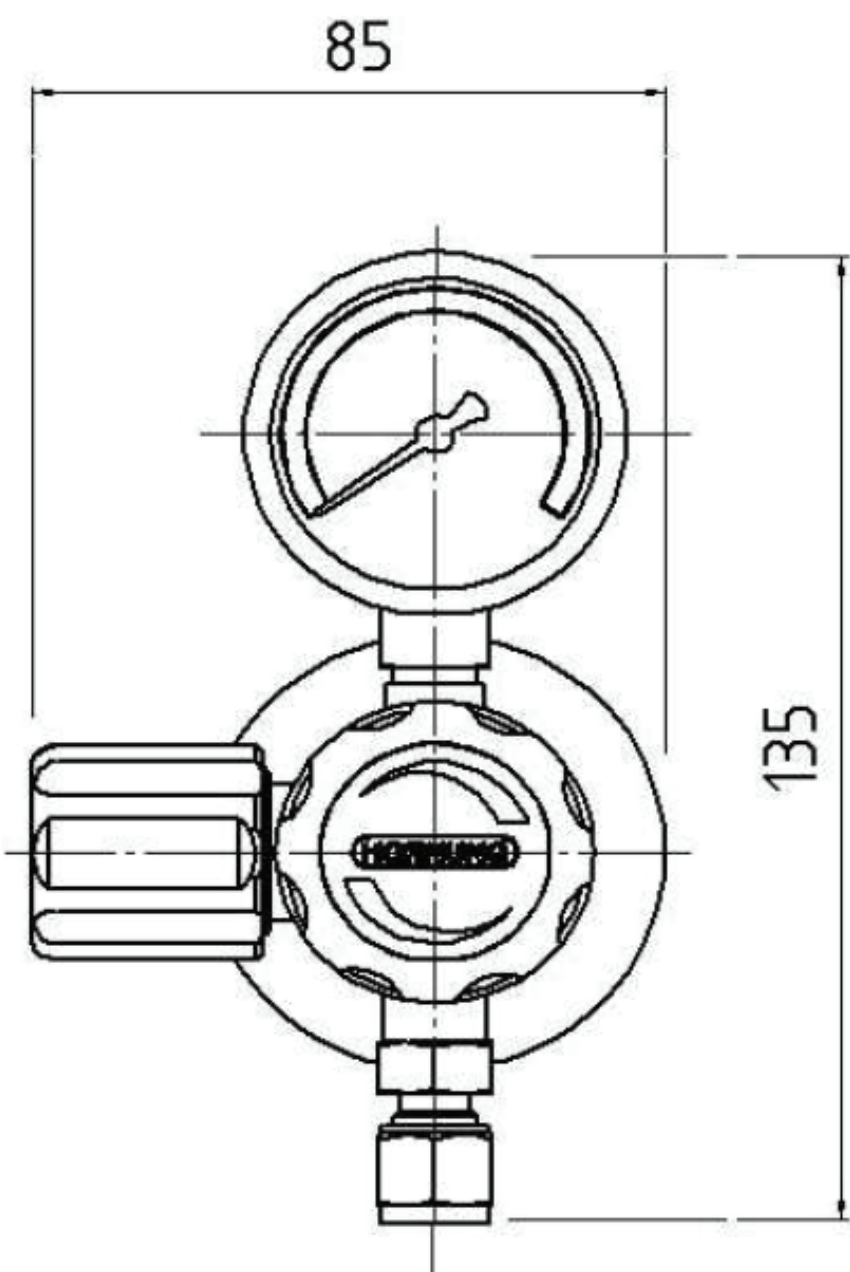
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# HP 402



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass, nickel and chrome plated

### Outlet pressure ranges:

- 1 = 0,5 - 3 bar
- 2 = 1 - 6 bar
- 3 = 1 - 10 bar

### Options for the outlet:

- 0 = G 1/4" – Internal thread
- 1 = compression fitting 6 mm
- 2 = compression fitting 8 mm

HP402- Type	1 Material	2 Pressure	0 Option	Gas type Gas type
----------------	---------------	---------------	-------------	----------------------

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screws, compression fittings, cylinder retainers and accessories



# Supply station HP 403

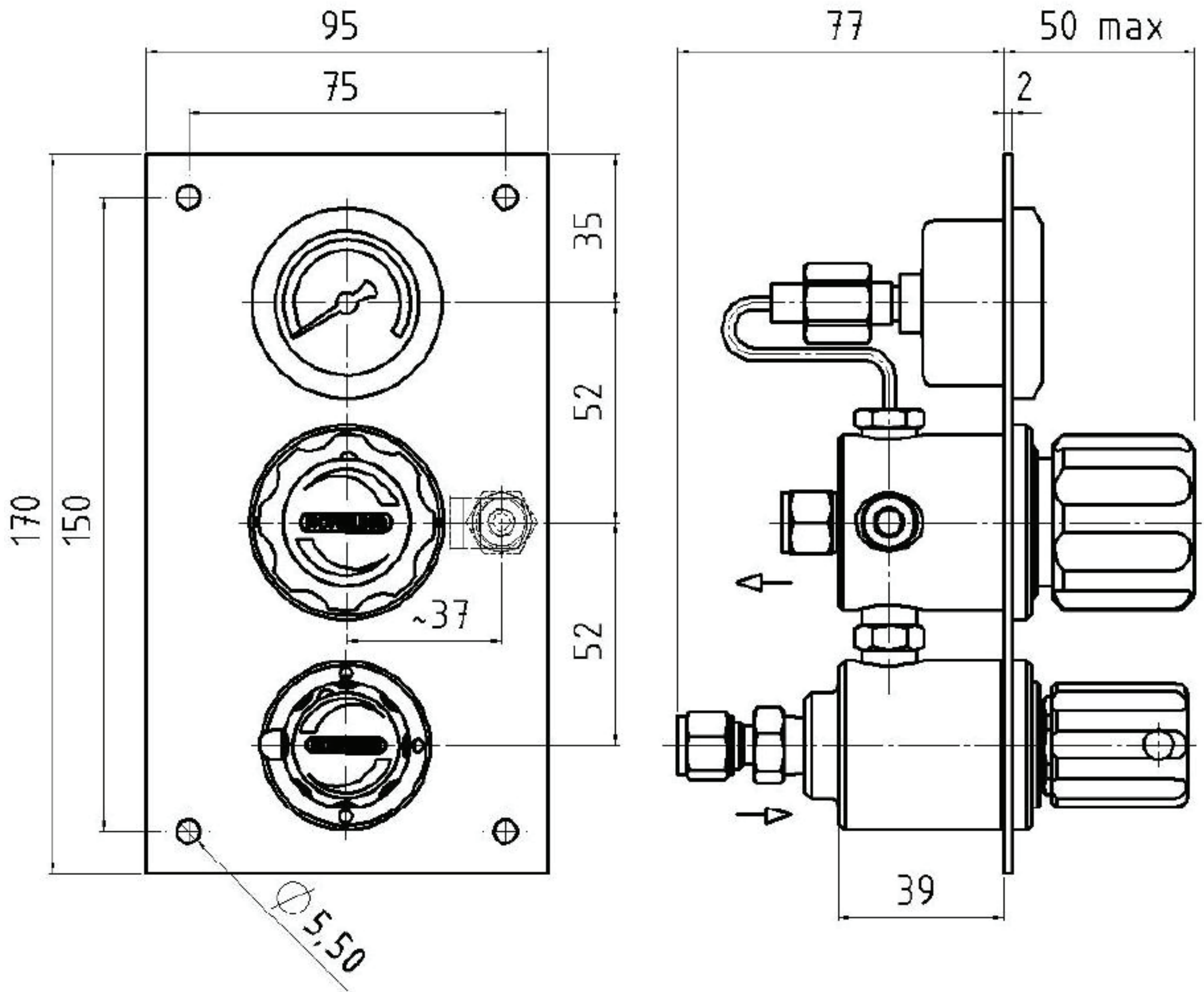


TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Especially for gases with high requirements on purity to 6.0. secure and leak proof.	The supply station is HP 403 is a supply station and is mounted on a panel.
Gasket:	PCTFE	Through our special cleaning system our pressure regulators are ECD – able.	It serves the safe supply of pure and mixed gases. The station is connected to gas supply line.
Diaphragm:	1.4435		A diaphragm shut-off valve and a single stage pressure regulator with gauge are supplied as standard.
Leakage rate:	10 <sup>-8</sup> (mbar l/s) helium leakage test		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,5-3; 1-6; 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	95 x 170 x 127 mm		
Weight:	1400 g		
Connections:	inlet G 1/4 f outlet G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HP 403



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Pressure ranges:

- 1 = 0,5 - 3 bar
- 2 = 1 - 6 bar
- 3 = 1 - 10 bar

### Option on the outlet pressure side:

- 0 = G 1/4" - Internal thread
- 1 = compression fitting 6 mm
- 2 = compression fitting 8 mm

HP403- Type	1 Material	2 Pressure	0 Option	Gas type Gas type
----------------	---------------	---------------	-------------	----------------------

**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and dosage valve
- 7. Gauges, screw connections, cylinder retainers and accessories

# Point of use regulator HP 404

- wall mounting version



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	aluminium-brass stainless steel	<p>The point of use regulator HP 404 with the precision pressure regulator FR 1 is used particularly in the following areas:</p> <ul style="list-style-type: none"> <li>• Gas analysis</li> <li>• Gas chromatography</li> <li>• Process engineering</li> <li>• Metallurgy</li> <li>• Laboratory applications</li> </ul>	<p>The HP 404 is a point of use regulator for wall mounting. The regulator is mounted on a wall console for reducing line pressure to working pressure as a second-stage.</p> <p>In case of maintenance, the regulator can be separated from the shut-off valve to avoid a complete shutdown of the pipeline.</p> <p>As a standard configuration the point of use regulator will be supplied with shut-off valve, a gauge for working pressure and a precision pressure regulator FR 1.</p>
Valve seat:	stainless steel		
Gaskets:	viton / NBR		
Diaphragm:	viton / NBR stainless steel		
Max. inlet pressure:	12 bar		
Outlet pressure range:	50 mbar to 7 bar		
Operating temp.:	-20 to +70°C		
Dimensions:	105 x 130 x 175 mm		
Weight:	1300 g		
Connections:	inlet G 1/4" f outlet NPT 1/8" f		

## QUALITY STANDARD

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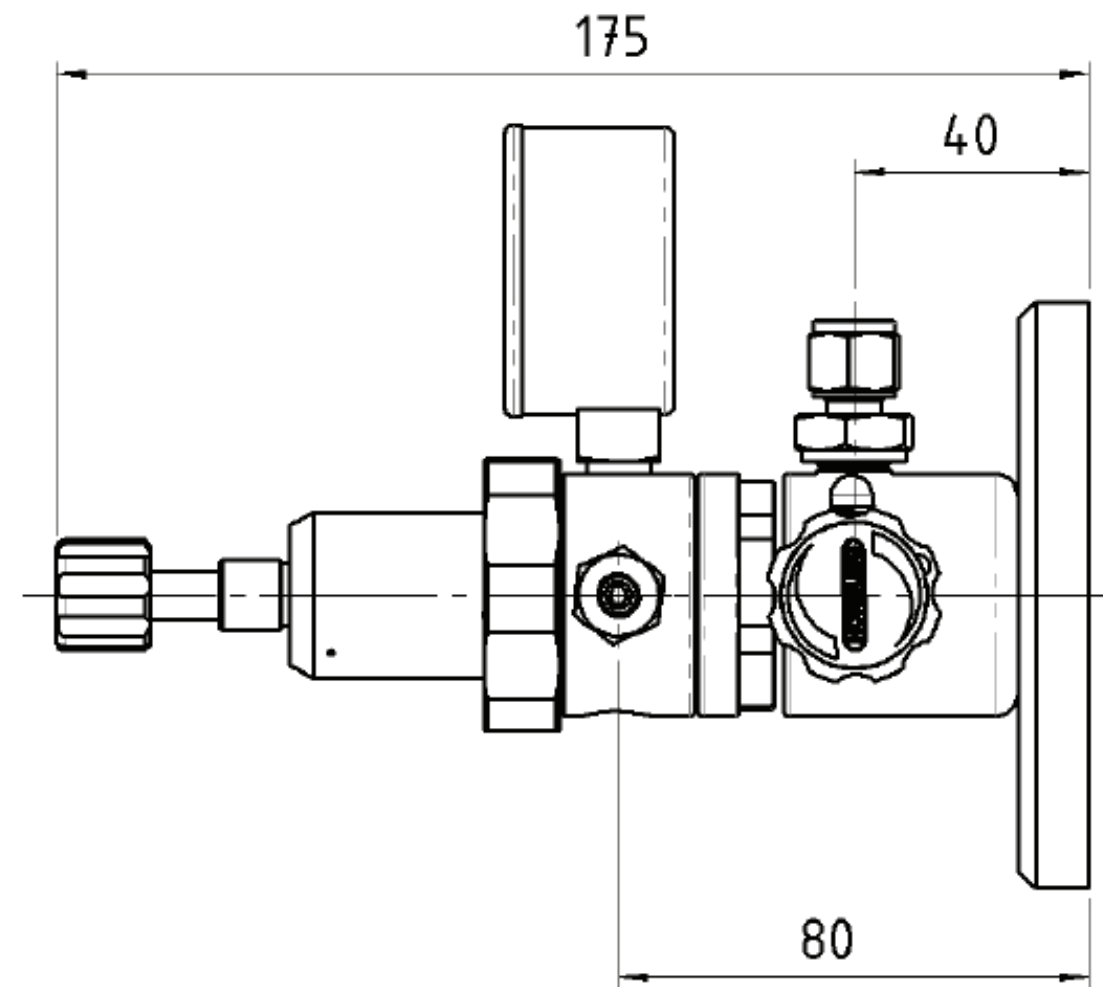
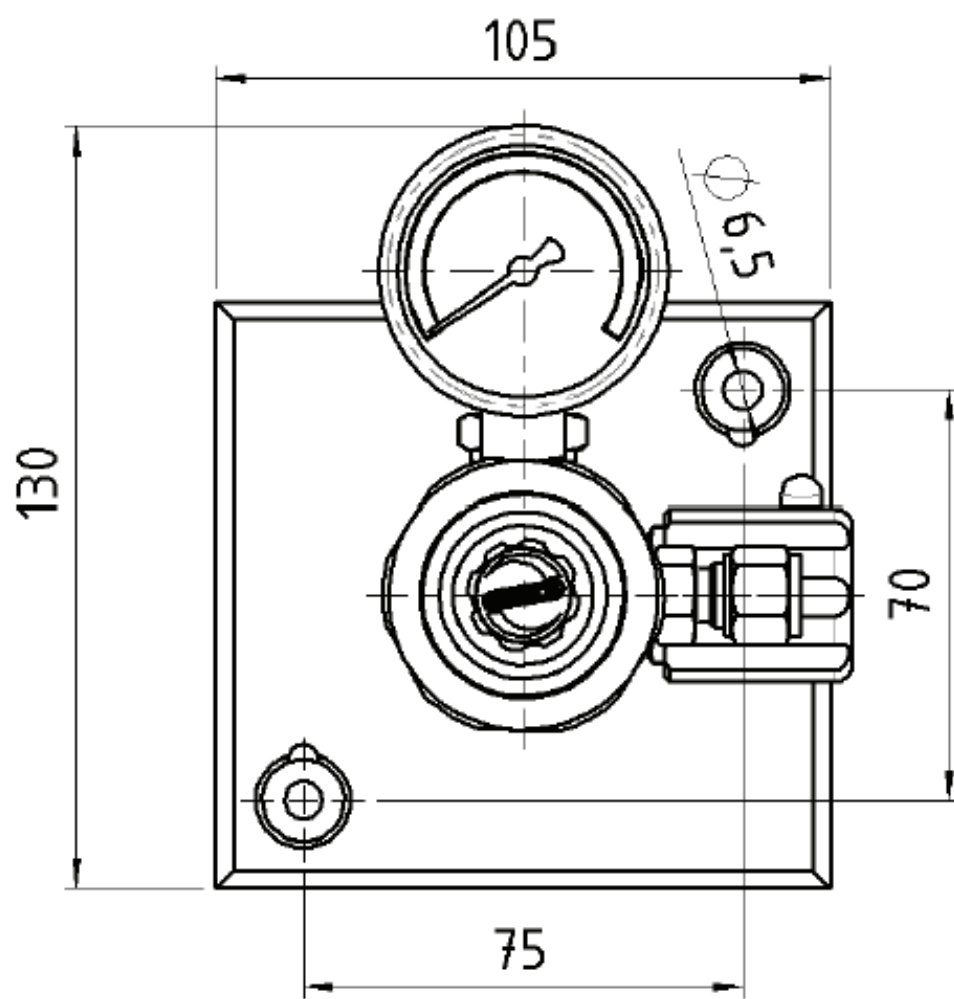
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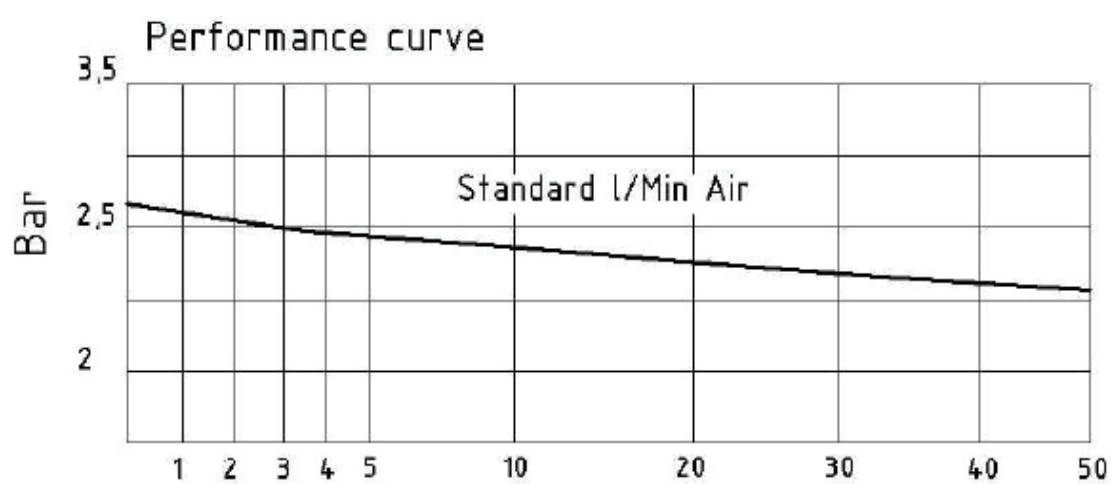
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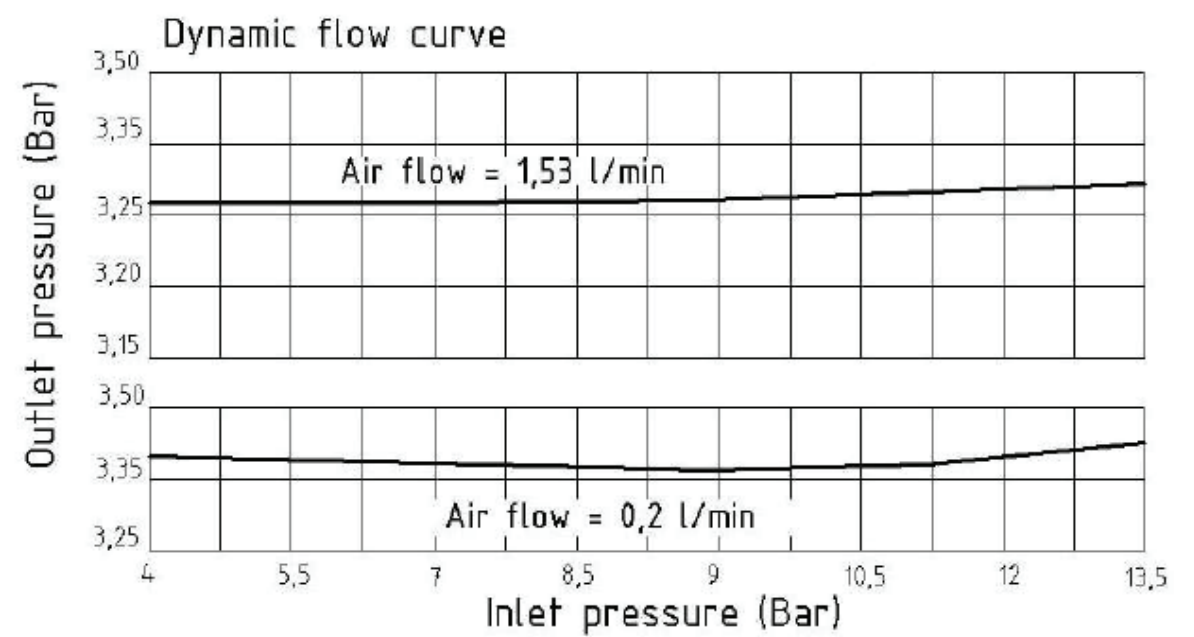
# HP 404



## PERFORMANCE CURVE



## DYNAMIC FLOW CURVE



## ORDER DETAILS

### Material:

- 1 = aluminium-brass
- 2 = stainless steel

### Outlet pressure ranges:

- 1 = 170 mbar
- 2 = 350 mbar
- 3 = 500 mbar
- 4 = 700 mbar
- 5 = 2,1 bar
- 6 = 4,2 bar
- 7 = 7,0 bar

### Options for outlet:

- 0 = NPT 1/8" - Internal thread
- 1 = compression fitting 6 mm
- 2 = metering valve

HP404-	1	2	1	Gas type
Type	Material	Pressure	Option	Gas type

**Accessories:** See total catalogue segment

- 7. Screw connections and accessories
- 9. Wall mounting

# Point of use regulator HP 410

- used for individual solutions with inlet from the back side



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	The pressure regulator can be combined with our shut-off valve HP 502 and our metering valve HP 503. This pressure regulator is used in gas supply stations HP 400, HP 401, HP 402 and HP 403.	The HP 410 is a single stage pressure regulator with metal diaphragm construction.  It is used as a second stage in a central gas supply system for high purity gases.
Seat:	PCTFE		
Diaphragm:	1.4435	Especially for gases with high requirements on purity to 6.0.	The pressure regulator will be supplied with a gauge for indicating working pressure as standard.
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere	Our special cleaning system for the HP series also guarantees the use for ECD applications.	
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 bar		
Outlet pressure ranges:	0,5-3; 1-6; 1-10 bar		
Operating temp.:	-20°C to +70°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	50 x 105 x 105 mm		
Weight:	710 g		
Connections:	inlet G 3/8" f outlet G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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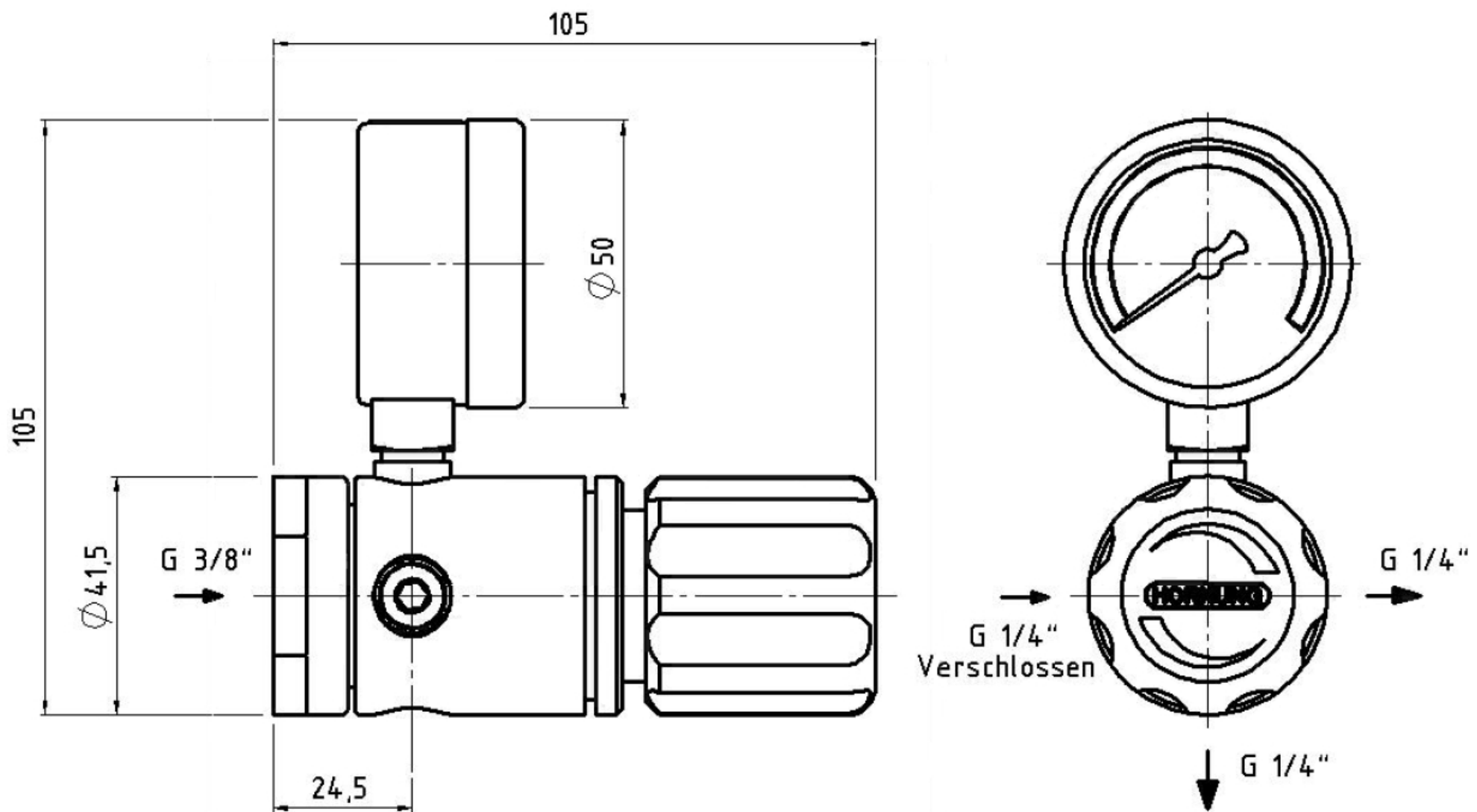
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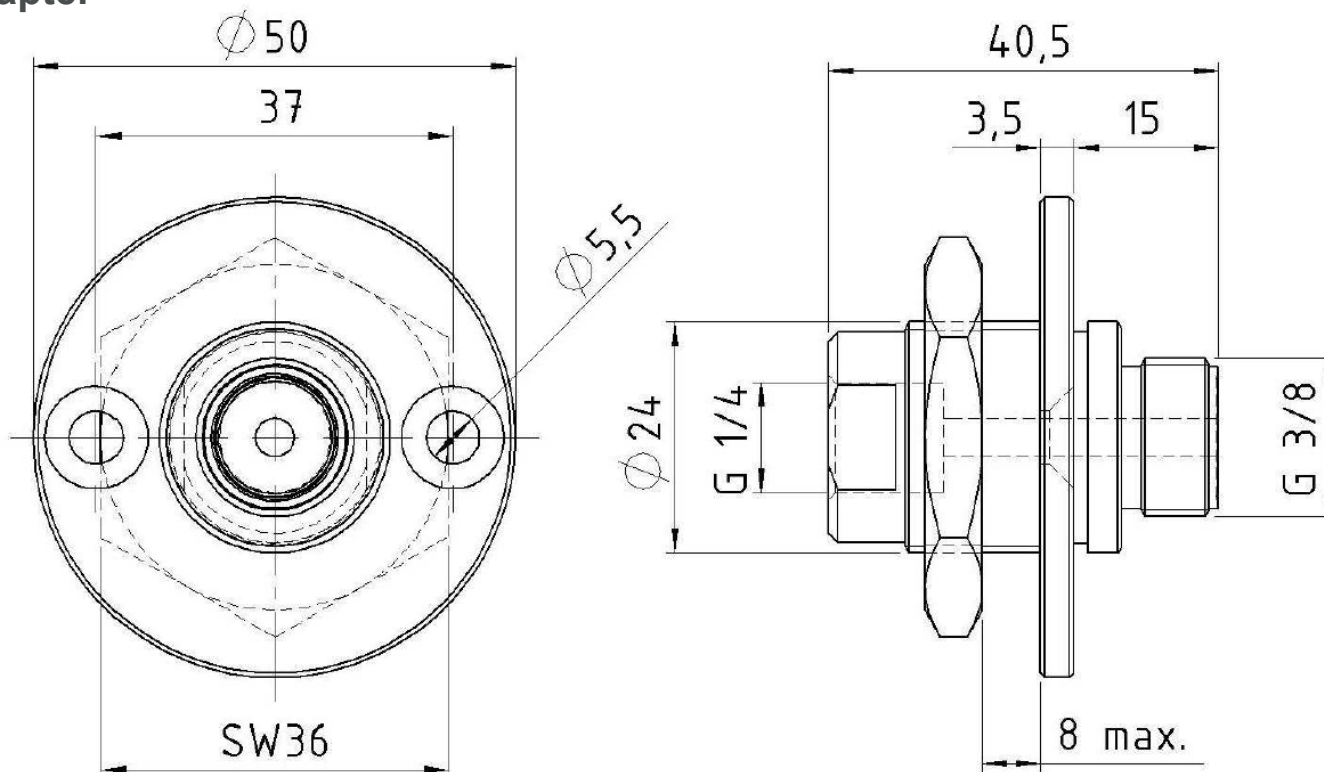
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# HP 410



wall adapter



## ORDER DETAILS

### Material:

- 1 = stainless steel electropolished
- 2 = brass, nickel and matt chrome plated

### Outlet pressure ranges:

- 1 = 0,5 - 3 bar
- 2 = 1 - 6 bar
- 3 = 1 - 10 bar

### Option on the outlet pressure side:

- 3 = compression fitting 3 mm
- 6 = compression fitting 6 mm
- 8 = compression fitting 8 mm
- 10 = compression fitting 10 mm

HP410- Type	1 Material	2 Pressure	6 Option	Gas type Gas type
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**Accessories:** See total catalogue segment

- 5. Diaphragm shut-off and metering valves
- 7. Gauges, screw connections, cylinder retainers and accessories



# Precision point of use regulator HP 411

- used for individual solutions with inlet from the back



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	aluminium / stainless steel	The precision point of use regulator HP 411 is characterized by its very good control performance with pressures lower than 1 bar.	The HP 411 is a single-stage precision pressure regulator with metal diaphragm construction. It is used as a second-stage in a central gas supply system for high purity gases.
Valve seat:	stainless steel		
Gaskets:	viton / NBR	The pressure regulator can be combined with our shut-off valve HP 502 and our metering valve HP 503. This pressure regulator is used in gas supply stations HP 400, HP 401 and HP 402.	The pressure regulator will be supplied with a gauge for indicating working pressure as standard.
Diaphragm:	stainless steel		
Max. inlet pressure:	12 bar		
Outlet pressure range:	50 mbar to 7 bar	Especially for gases with high requirements on purity to 6.0.	
Operating temp.:	-20 to +70°C	Our special cleaning system for the HP Series also guarantees the use for ECD applications.	
Dimensions (wxhxd):	50 x 103 x 122 mm	The precision point of use regulator HP 411 is used particularly in the following areas:	
Weight:	approx. 350 g	<ul style="list-style-type: none"> <li>• Gas analysis</li> <li>• Gas chromatography</li> <li>• Process engineering</li> <li>• Metallurgy</li> <li>• Laboratory applications</li> </ul>	
Connections:	inlet G 3/8" f outlet NPT 1/8" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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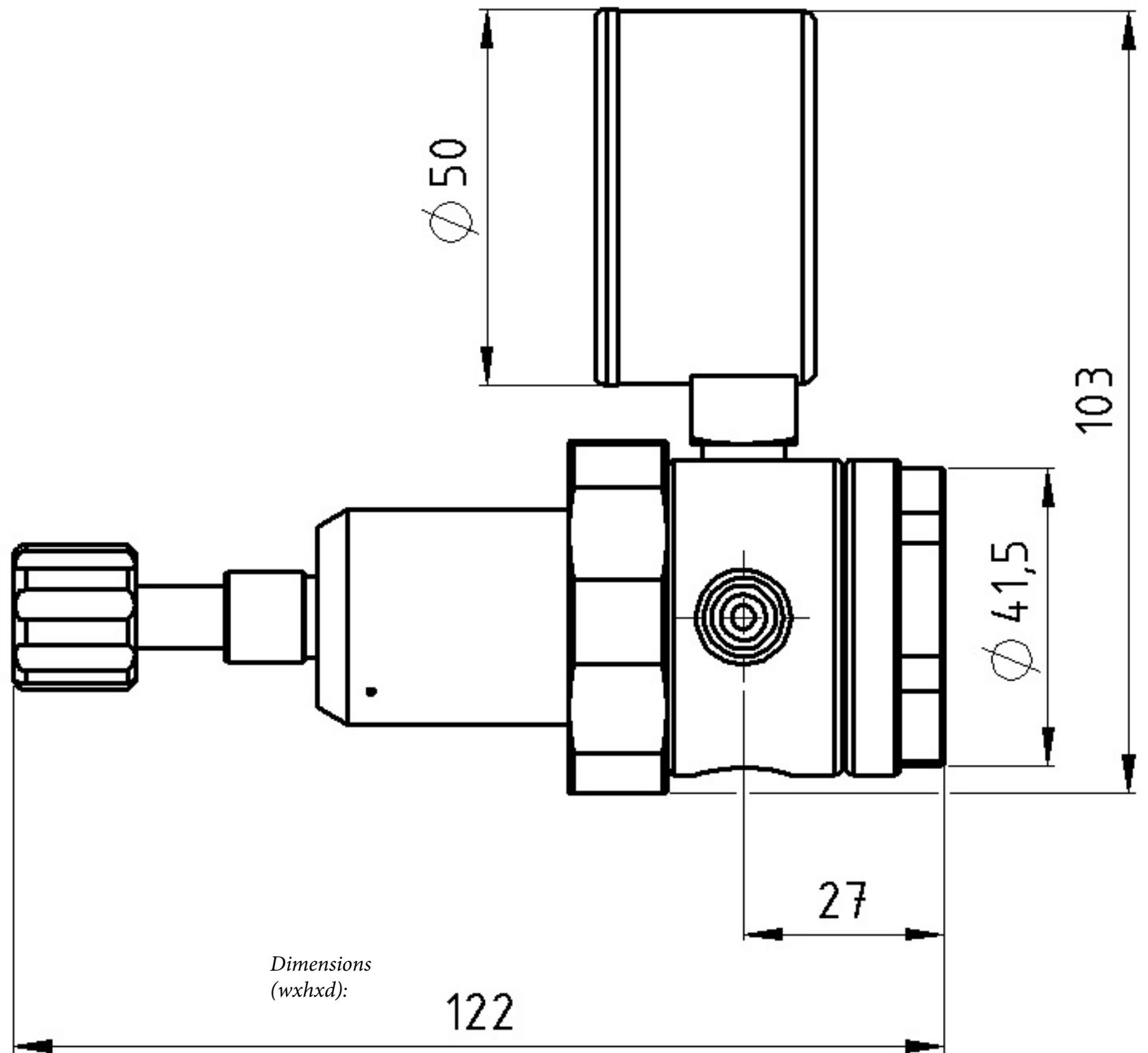
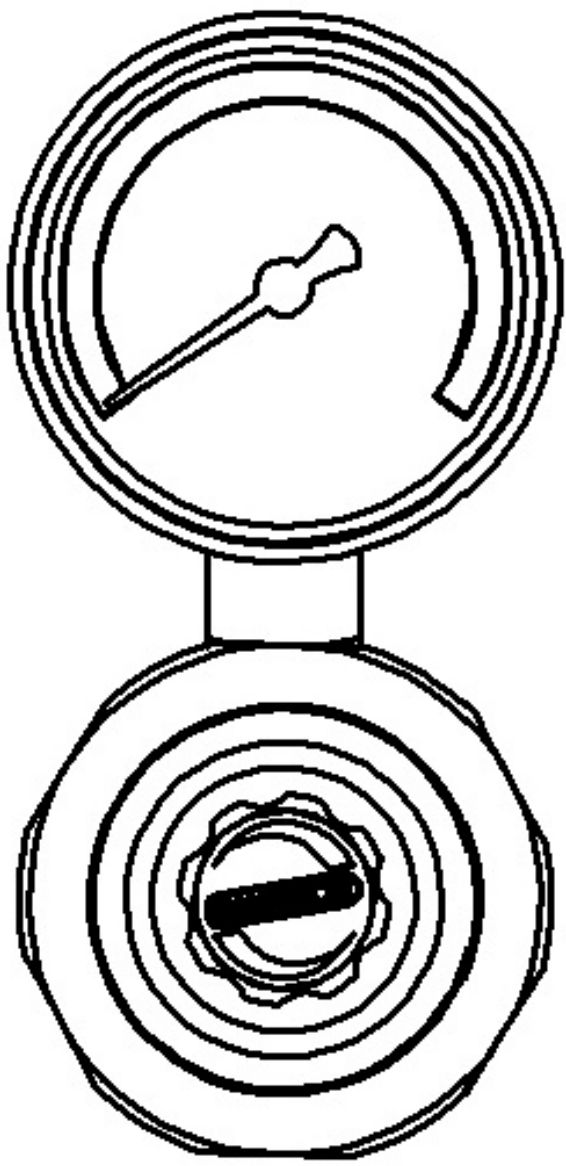
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# HP 411



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass, nickel and matt chrome plated

### Outlet pressure ranges:

- 1 = 170 mbar
- 2 = 350 mbar
- 3 = 500 mbar
- 4 = 700 mbar
- 5 = 2,1 bar
- 6 = 4,1 bar
- 7 = 7,0 bar

### Options for the outlet:

- 0 = G 1/4" – Internal thread
- 1 = compression fitting 6 mm

HP411-	1	2	1	Gas type
Type	Material	Pressure	Option	Gas type

**Accessories:** See total catalogue segment

5. Diaphragm shut-off and metering valves  
7. Accessories

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# Diaphragm dosage and shut-off valves

- in 90° or straight through for max. 300 or max. 40 / 50 bar
- brass nickel plated and matt chrome plated or electropolished stainless steel

## Contents:

Diaphragm shut-off valve HP 550	D-valve (4-port) DN 4 / PN 300 NPT 1/4 f
Diaphragm shut-off valve HP 551	D-valve (2-port) DN 4 / PN 300 NPT 1/4 f
Diaphragm shut-off valve HP 552	D-valve DN 8 / PN 40 NPT 1/4 f / 3/8 f
Diaphragm shut-off valve HP 556	D-valve DN 6 / PN 300 NPT 3/8 f
Diaphragm shut-off valve HP 500	D-valve max. 300 / 40 bar NPT 1/4 f
Diaphragm shut-off valve HP 501	90° valve max. 40 bar G 1/4 f to G 3/8 m
Diaphragm shut-off valve HP 502	D-Venti max. 40 bar G 3/8 f to G 3/8 m
Diaphragm dosage valve HP 503	G 1/4 m to G 1/4 f max. 50 bar
Flowmeter HP 504	with dosage valve max. 4 bar G1/4 f
Miniflow HP 505	flowmeter with dosage function
Dosage valve DV 25	PN max. 60 bar; DN Ø 2.5 mmmm

# Diaphragm shut-off valve HP 550

- straight through valve 4-port with metal diaphragm DN 4 / PN 300

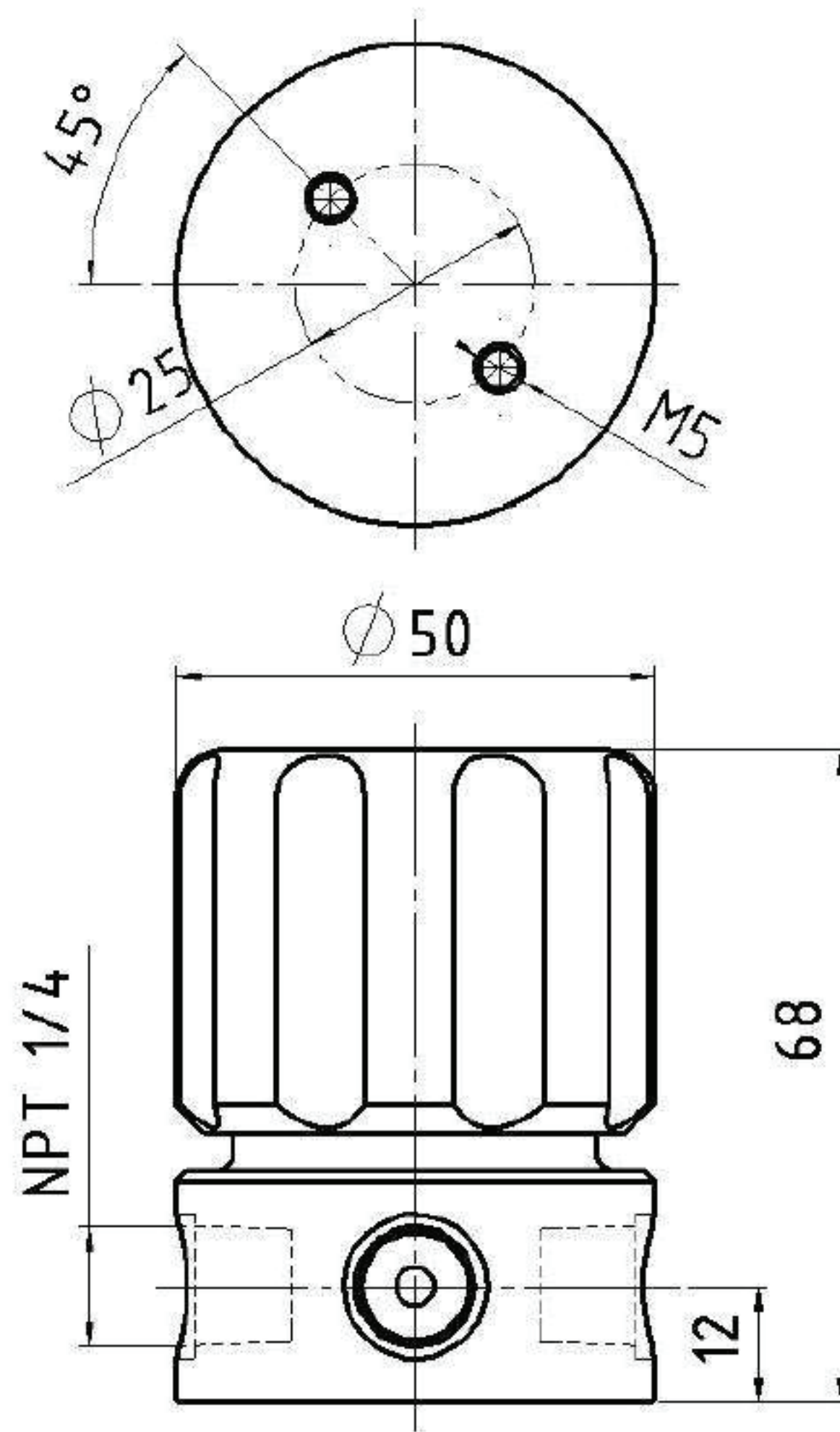


TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Diaphragm shut-off valves are system components used in low and high pressure pure gas supply.	The diaphragm shut-off valve HP 550 is laid out for the use in pure gas supply systems.  The diaphragm shut-off valve has 3 inlets and one outlet.  Threaded holes on the reverse side connect to a bracket that can be directly mounted on a laboratory wall.
Seat:	PCTFE		
Nominal bore:	4 mm		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He helium leak test		
Gas purity:	≤ 6.0		
Cv:	0,15		
Max. pressure:	300 bar		
Operating temp.:	-20°C to +70°C		
Weight:	580 g		
Connections:	NPT 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HP 550



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

HP550-  
Type

2  
Material

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Accessories



# Diaphragm shut-off valve HP 551

- straight through valve 2-port with metal diaphragm DN 4 / PN 300



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Diaphragm shut-off valves are system components used in low and high pressure pure gas supply.	The diaphragm shut-off valve HP 551 is laid out for the use in pure gas supply systems.  The diaphragm shut-off valve has an inlet and an outlet.  Threaded holes on the reverse side connect to a bracket that can be directly mounted on a laboratory wall.
Seat:	PCTFE		
Nominal bore:	4 mm		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He helium leak test		
Gas purity:	≤ 6.0		
Cv:	0,15		
Max. pressure:	300 bar		
Operating temp.:	-20°C to +70°C		
Weight:	610 g		
Connections:	G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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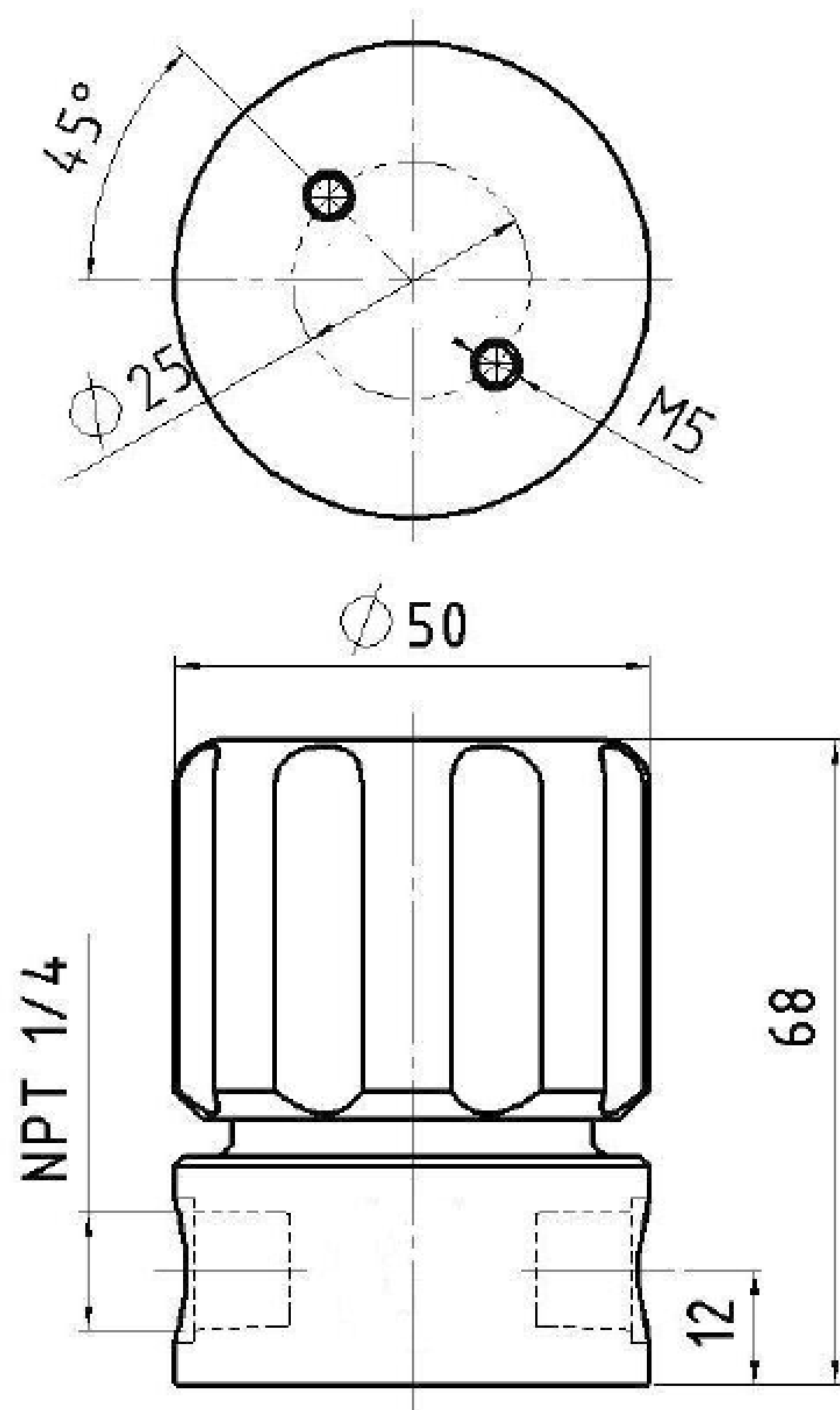
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# HP 551



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

HP551-  
Type

2  
Material

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Accessories

# Diaphragm shut-off valve HP 552

- straight through valve with metal diaphragm DN 8 / PN 40



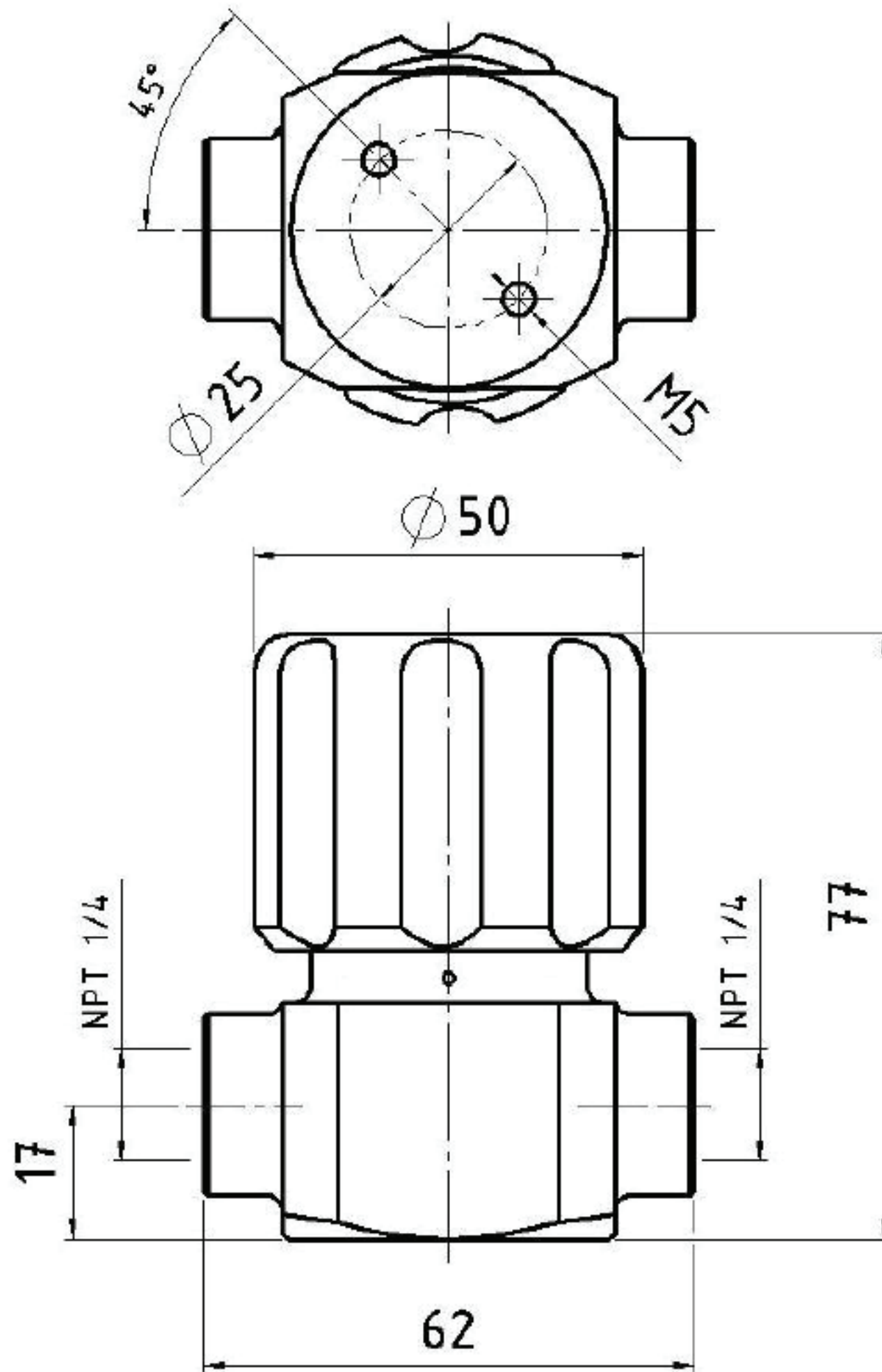
TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Diaphragm shut-off valves are system components used in low pressure pure gas supply.	<p>The diaphragm shut-off valve HP 552 is laid out for the use in pure gas supply systems.</p> <p>The diaphragm shut-off valve has an inlet and an outlet.</p> <p>Threaded holes on the reverse side connect to a bracket that can be directly mounted on a laboratory wall.</p>
Seat:	PCTFE		
Nominal bore:	8 mm		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He helium leak test		
Gas purity:	≤ 6.0		
Cv:	0,5		
Max. pressure:	40 bar		
Operating temp.:	-20°C to +70°C		
Weight:	600 g		
Connections:	NPT 1/4" f oder NPT 3/8" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.



# HP 552



## ORDER DETAILS

### Material:

1 = stainless steel  
2 = brass

### Inlet / outlet:

1 = 1/4" NPT  
2 = 3/8" NPT

HP552-  
Type

2  
Material

2  
inlet/outlet

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Accessories

# Diaphragm shut-off valve HP 556

- straight through valve 2-port with metal diaphragm DN 6 / PN 300

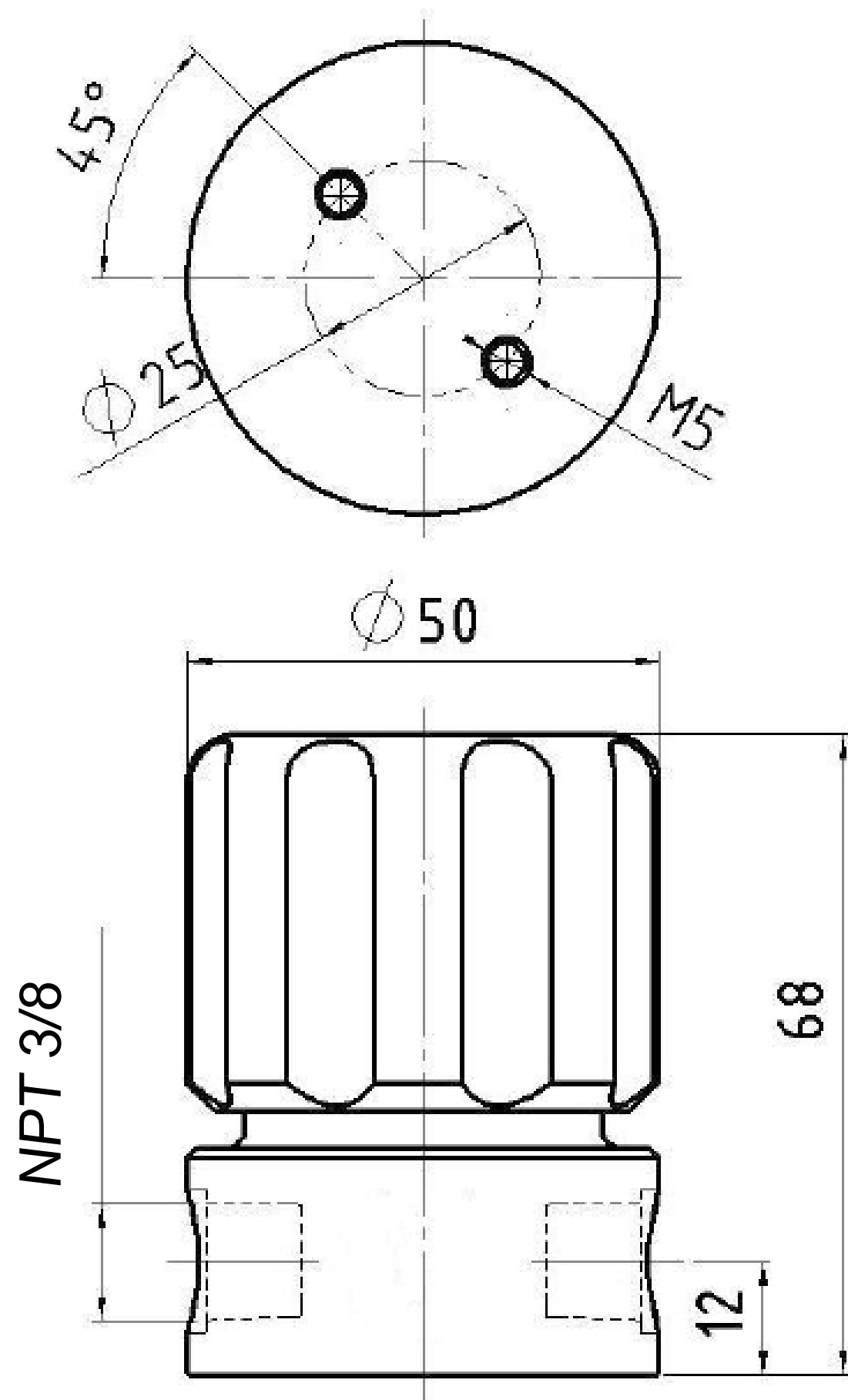


TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	Diaphragm shut-off valves are system components used in low and high pressure pure gas supply.	<p>The 2-port diaphragm shut-off valve HP 556 is laid out for the use in pure gas supply systems.</p> <p>The diaphragm shut-off valve has an inlet and an outlet.</p> <p>Threaded holes on the reverse side connect to a bracket that can be directly mounted on a laboratory wall.</p>
Seat:	PCTFE		
Nominal bore:	6 mm		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He helium leak test		
Gas purity:	≤ 6.0		
Cv:	0,35		
Max. pressure:	300 bar		
Operating temp.:	-20°C to +70°C		
Weight:	610 g		
Connections:	NPT 3/8" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HP 556



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

HP556-  
Type

2  
Material

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Accessories



# Diaphragm shut-off valve HP 500

- straight way valve with metal diaphragm PN 40 and PN 300



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel electropolished or brass, nickel and matt chrome plated	Diaphragm shut-off valves are system components for central gas supply units and can be used for low pressure as well as for high pressure.	HP 500 is a metal diaphragm shut-off valve.
Gasket:	PCTFE		
Nominal diameter:	3 mm		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. inlet pressure:	40 / 300 bar		
Operating temp.:	-20°C to +70°C		
Weight:	240 g		
Threads:	NPT 1/4" f		

## QUALITY STANDARD

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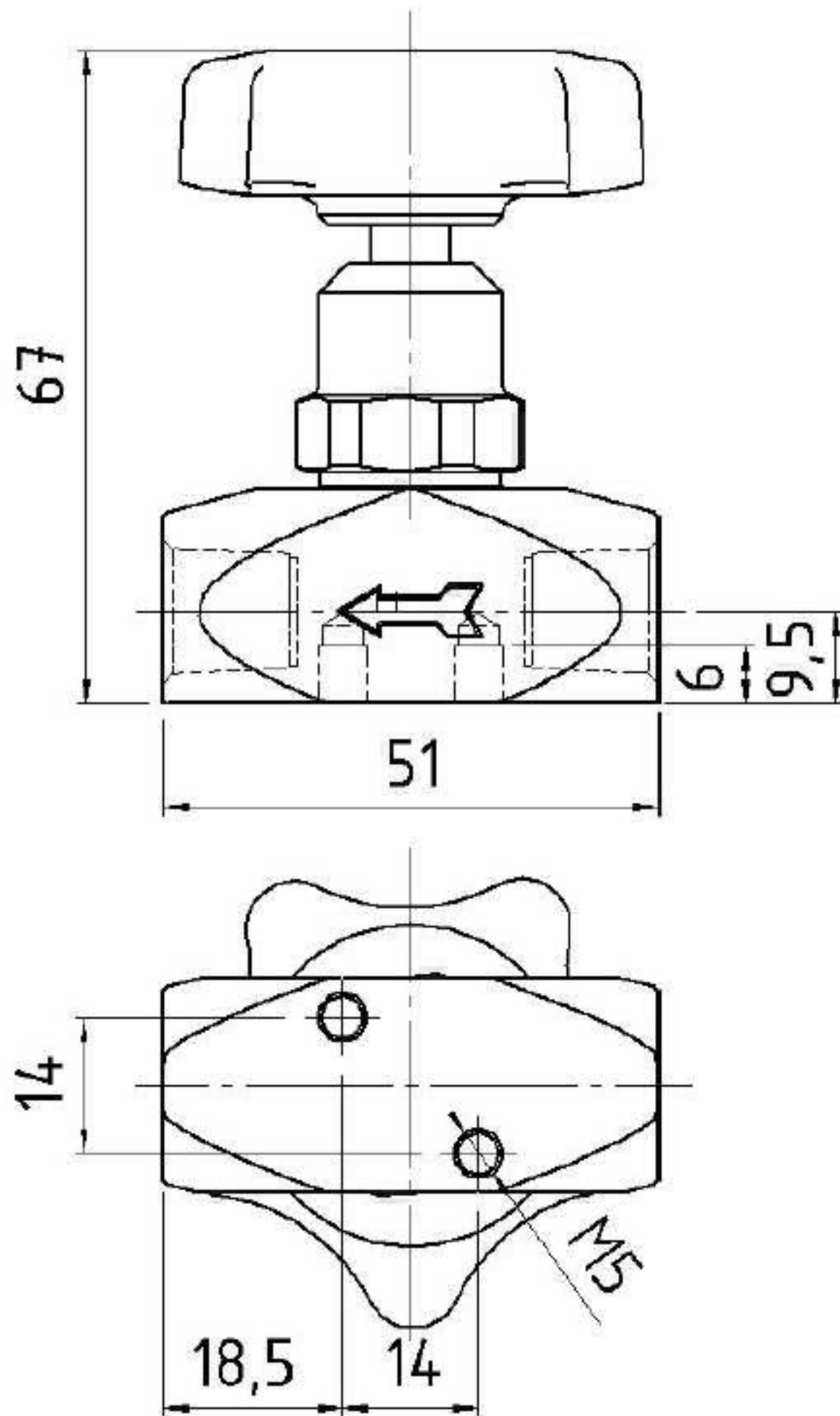
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# HP 500



## ORDER DETAILS

### Material:

1 = stainless steel  
2 = brass

### Max. pressure:

1 = 300 bar  
2 = 40 bar

### Option:

6 = compression fitting 6 mm  
8 = compression fitting 8 mm  
10 = compression fitting 8 mm

HP500- Type	1 Material	2 Pressure	6 Option	Gas type Gas type
----------------	---------------	---------------	-------------	----------------------

**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings and accessories

# Diaphragm shut-off valve HP 501

- 90° metal diaphragm valve PN 40



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	The HP 501 is a shut-off valve will be used with pressure regulator HP 410 as a point of use regulator for laboratory benches and as wall mounting version.	The 90° shut-off valve HP 501 is a shut-off for point of use regulators.
Gasket:	PCTFE	HP 501 can be connected with the pipe system from the left, the right and from above.	
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. pressure:	40 bar		
Operating temp.:	-20°C to +70°C		
Weight:	500 g		
Threads:	inlet G 1/4" f outlet G 3/8" m		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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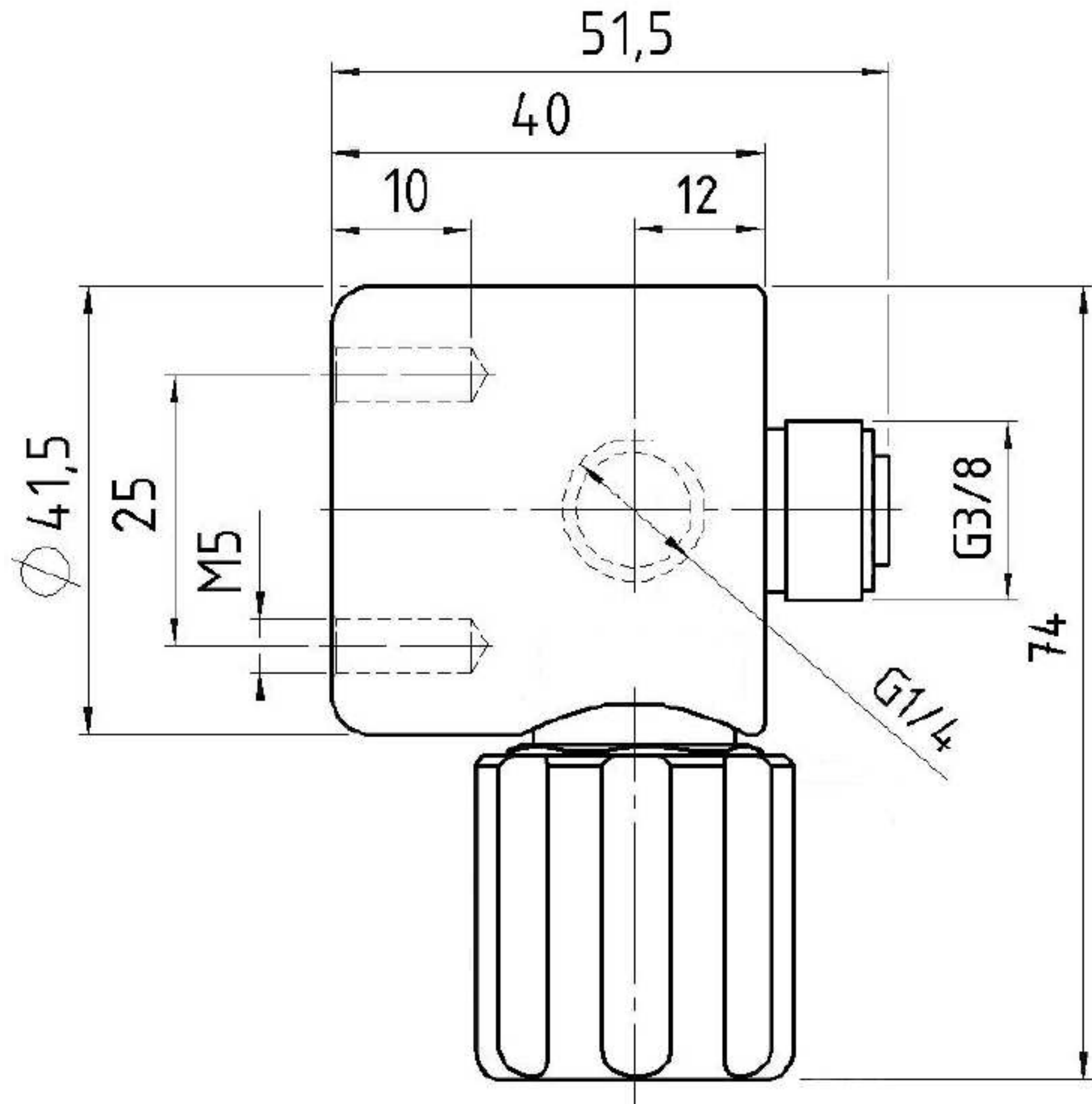
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# HP 501



## ORDER DETAILS

### Material:

1 = stainless steel  
1 = brass

### Option:

06 = compression fitting 6 mm  
08 = compression fitting 8 mm  
10 = compression fitting 10 mm

HP501- Type	1 Material	08 Option	Gas type Gas type
----------------	---------------	--------------	----------------------

**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings and accessories

# Diaphragm shut-off valve HP 502

- straight way valve max. 40 bar



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	The HP 502 is a shut-off valve to be used with pressure regulator HP 410 as a point of use for laboratory benches and wall mounting versions.	The diaphragm shut-off valve HP 502 is a shut-off for point of use regulators.
Gasket:	PCTFE		
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. pressure:	40 bar		
Operating temp.:	-20°C to +70°C		
Weight:	450 g		
Threads:	inlet G 3/8 f outlet G 3/8 m		

## QUALITY STANDARD

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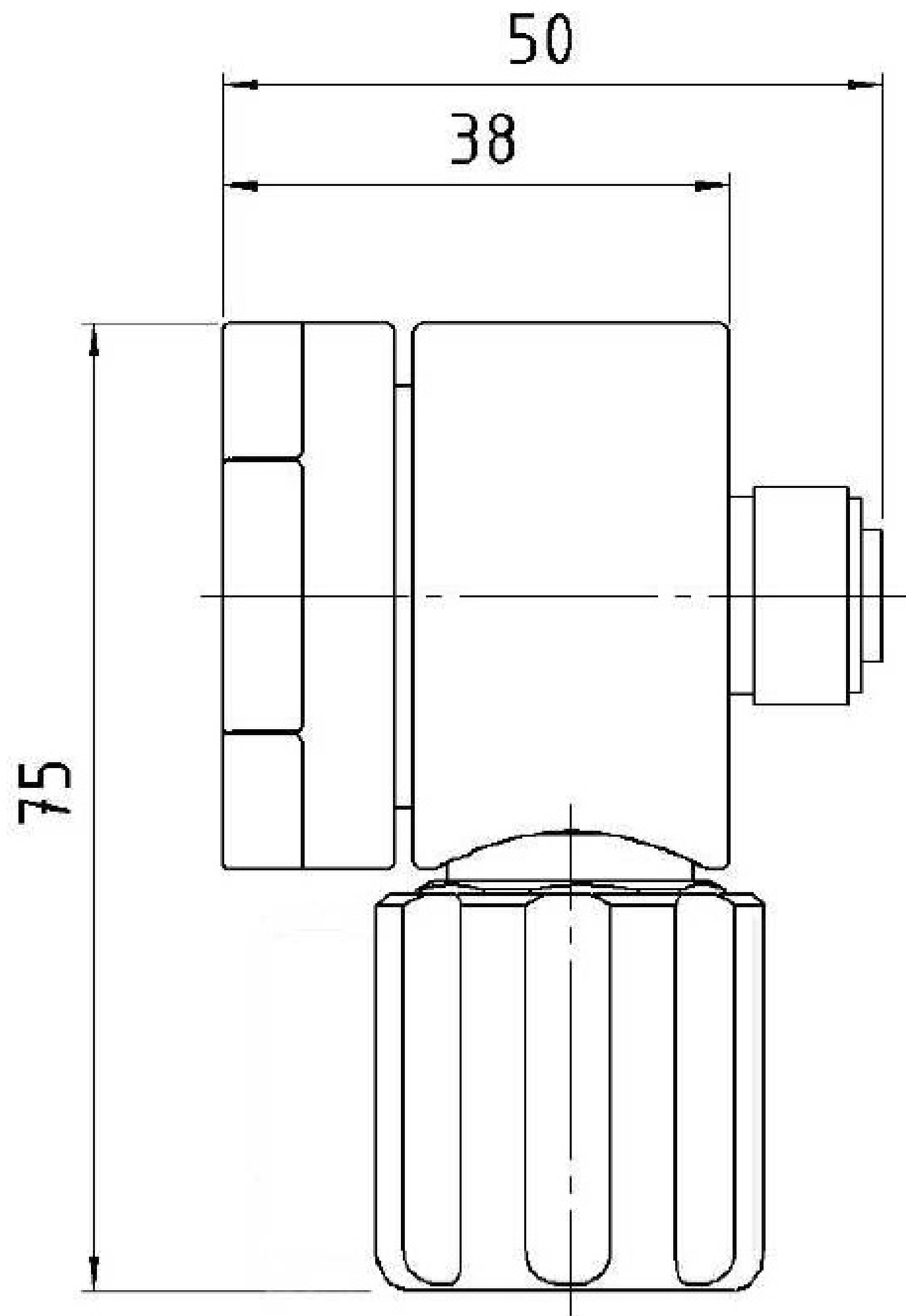
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# HP 502



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Option:

- 06 = compression fitting 6 mm
- 08 = compression fitting 8 mm
- 10 = compression fitting 10 mm

HP502-  
Type

1  
Material

06  
Option

Gas type  
Gas type



# Diaphragm metering valve HP 503

- angle valve max 50 bar operating pressure



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	The HP 503 is a system component for low pressure.	Diaphragm metering valve HP 503 is constructed for precise metering of low flow.
Seat:	stainless steel hardened	It is used where the exact metering of the flow is required. It can be combined with our cylinder pressure regulators and point of use regulators.	
Diaphragm:	1.4435		
Leakage rate:	10 <sup>-8</sup> mbar l/s He against atmosphere		
Gas purity:	≤ 6.0		
Max. pressure:	50 bar		
Max. flow:	22 m <sup>3</sup> /h		
Operating temp.:	-20°C to +70°C		
Weight:	240 g		
Connections:	inlet G 1/4 "m outlet G 1/4 "f		

## QUALITY STANDARD

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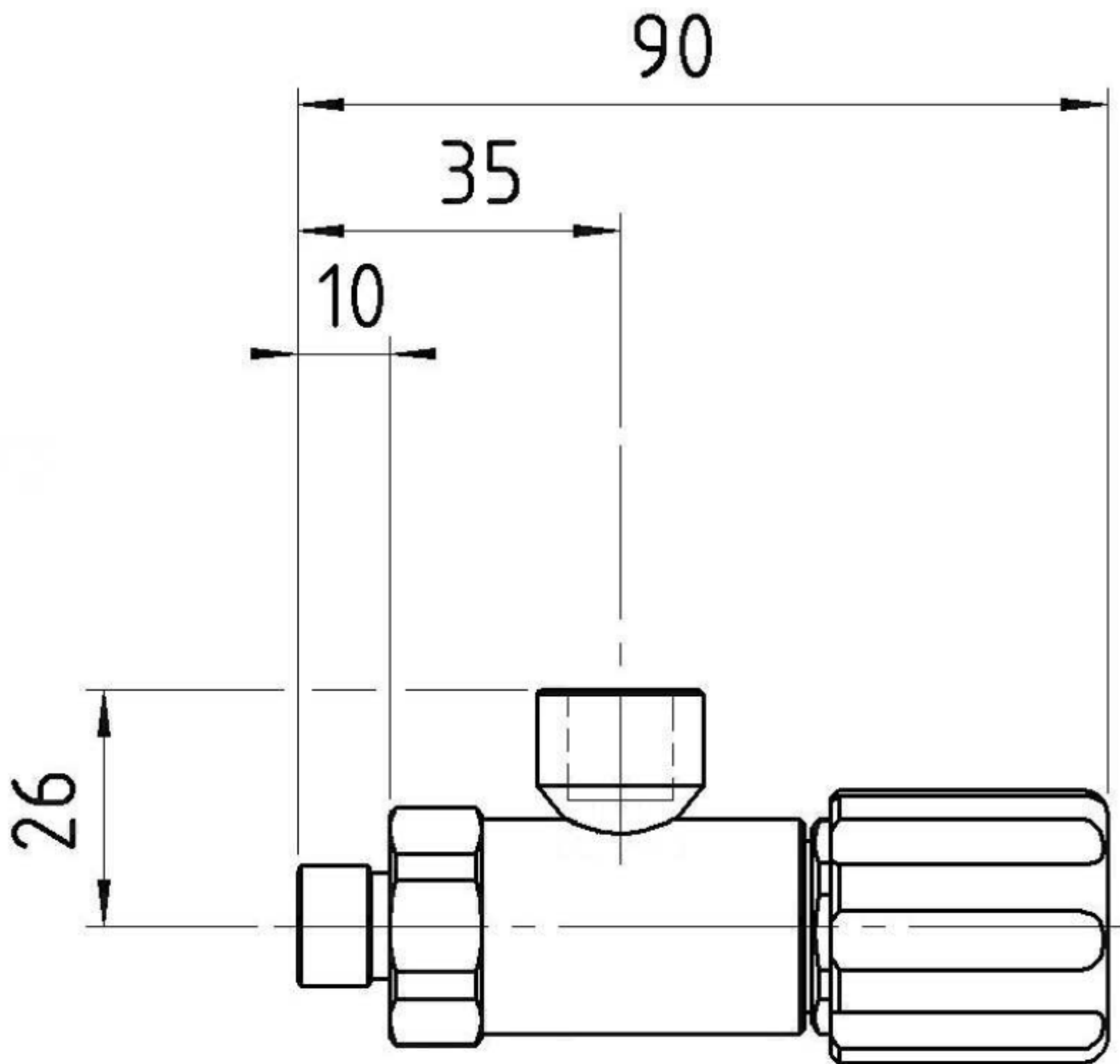
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# HP 503



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Option:

- 03 = compression fitting 3 mm
- 06 = compression fitting 6 mm
- 08 = compression fitting 8 mm
- 10 = compression fitting 10 mm

HP503-  
Type

1  
Material

03  
Option

Gas type  
Gas type

**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings and accessories

# Flowmeter HP 504

- with integrated metering valve



TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	stainless steel 1.4404 electropolished or brass, nickel and matt chrome plated	HP 504 is designed for low pressure use of max. 4 bar and will be combined with the outlet of cylinder- or point of use regulators.	HP 504 in stainless steel 1.4404 or brass consists of a rotameter and a metering valve.
Gasket:	viton		
Leakage rate:	$10^{-6}$ mbar l/s He against atmosphere		
Gas purity:	$\leq 6.0$		
Max. inlet pressure:	4 bar		
Flow:	depending on gas and selected rotameter		
Operating temp.:	-20°C to +70°C		
Weight:	570 g		
Connections:	inlet G 1/4" f outlet G 1/4" f		

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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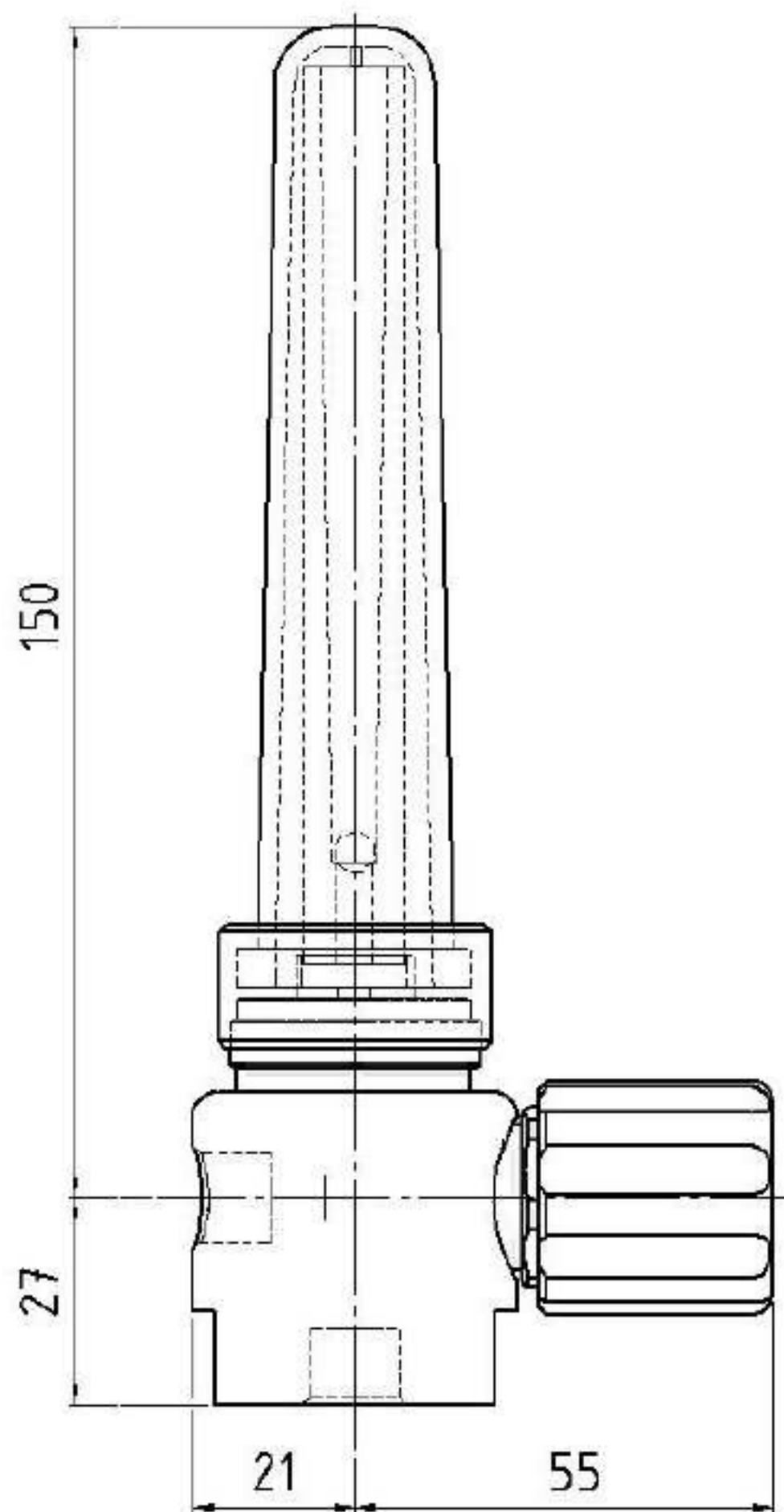
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# HP 504



## ORDER DETAILS

### Material:

- 1 = stainless steel
- 2 = brass

### Option:

- 03 = compression fitting 3 mm
- 06 = compression fitting 6 mm
- 08 = compression fitting 8 mm
- 10 = compression fitting 10 mm

HP504- Type	1 Material	03 Option	Gas type Gas type
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**Accessories:** See total catalogue segment

7. Gauges, screws, compression fittings and accessories

# HP 505 Miniflow

- with integrated dosage function

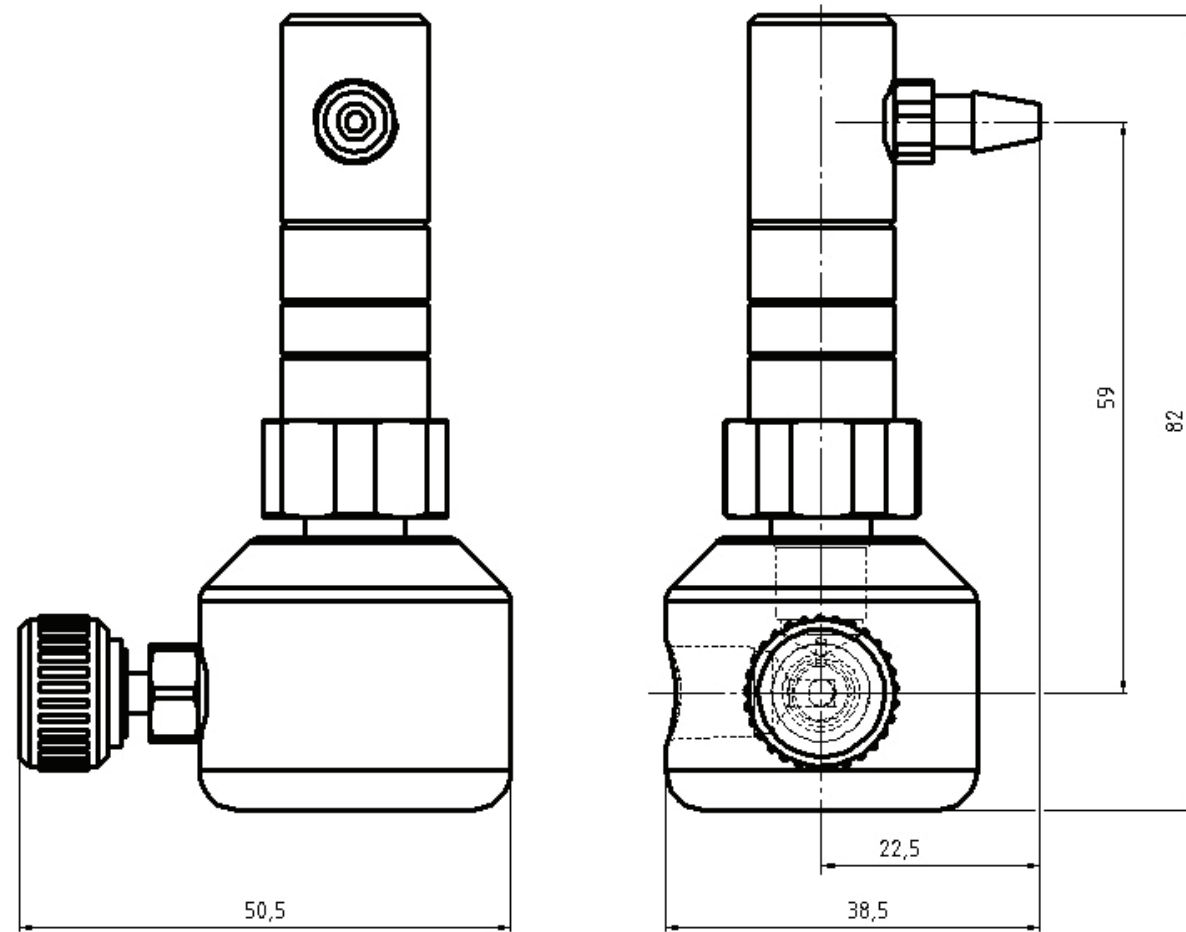


TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	Stainless steel 1.4404 elektropoliert or eloxed aluminum	The HP 505 is designed as a system component for low pressure. It is used when a very precise adjustability and reading of the flow rate are desired.	The Miniflow HP 505 consists of a flowmeter and a dosage valve. A floating ball in the flowmeter indicates the adjusted flow rate.
Gasket:	Viton®, EPDM	It is compatible with most of our products but especially for our cylinder pressure regulators and our point of use regulators.	An ergonomic and compact design sum up to low weight, ideal handling and a minimum of gas affected surfaces.
Flowmeter:	PMMA		
Max. pressure:	40 bar		
Flow rate:	Depending on gas type and flowmeter		
Operating temp.:	-20°C to +60°C		
Dimensions (BxHxT):	38,5 x 82 x 32 mm		
Weight:	243 g		
Connections:	Inlet NPT 1/8" f Outlet: hose nozzle outside - Ø 4 mm		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

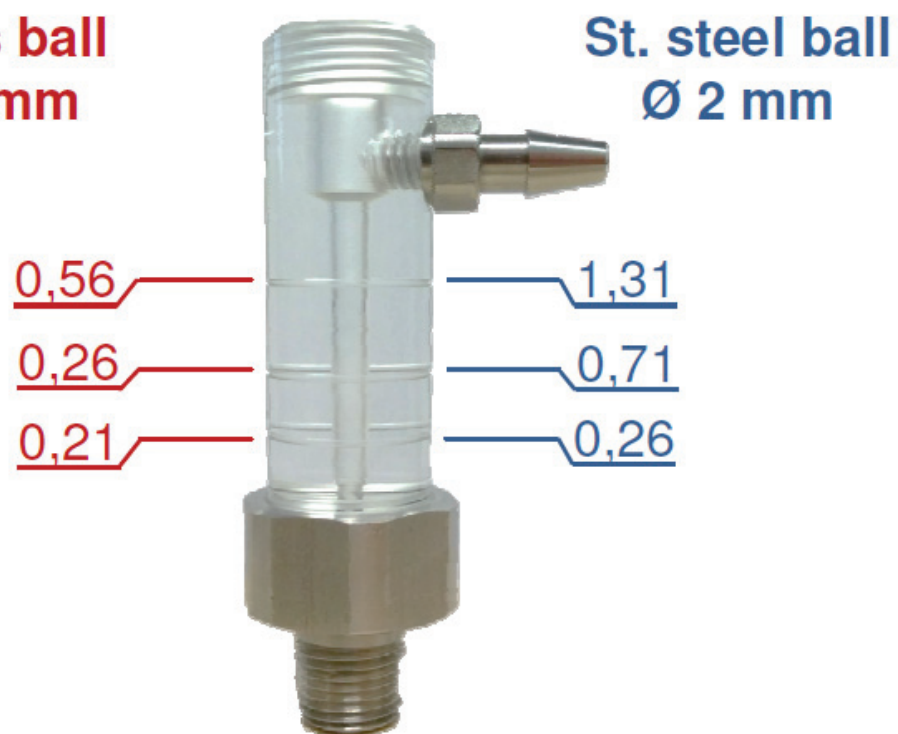
# HP 505



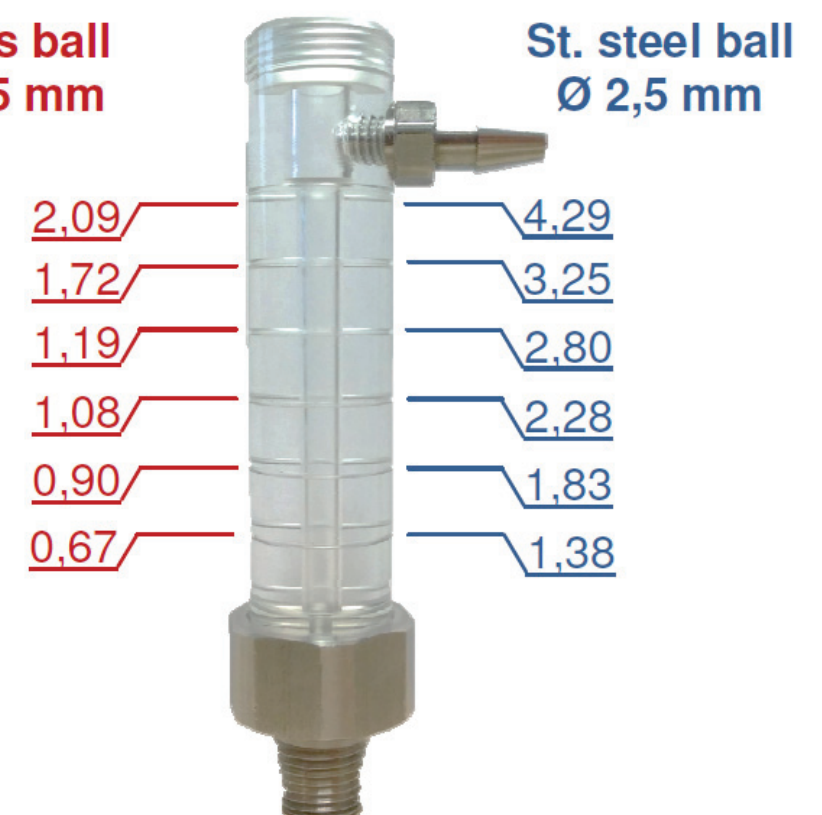
Version with a short flowmeter

Shown above: Flow Q in liters/min

**Glass ball**  
Ø 2 mm



**Glass ball**  
Ø 2,5 mm



## ORDER DETAILS

Material	Elastomer:	Floating ball:	Outlet:
0 = aluminium	1 = Viton	0 = glass Ø 2,0 mm	1 = Hose nozzle outside- Ø 4 mm
1 = stainless steel	2 = EPDM	1 = glass Ø 2,5 mm	
		2 = stainless steel Ø 2,0 mm	
		3 = stainless steel Ø 2,5 mm	

HP505- Type	1 Material	1 Elastomer	0 Ball	1 Outlet	Gas types Gas types

**Accessories:** Cylinder pressure regulators and point of use regulators



# Dosage valve DV 25

- Dosage valve PN max. 60 bar; DN Ø 2.5 mm



## DESCRIPTION

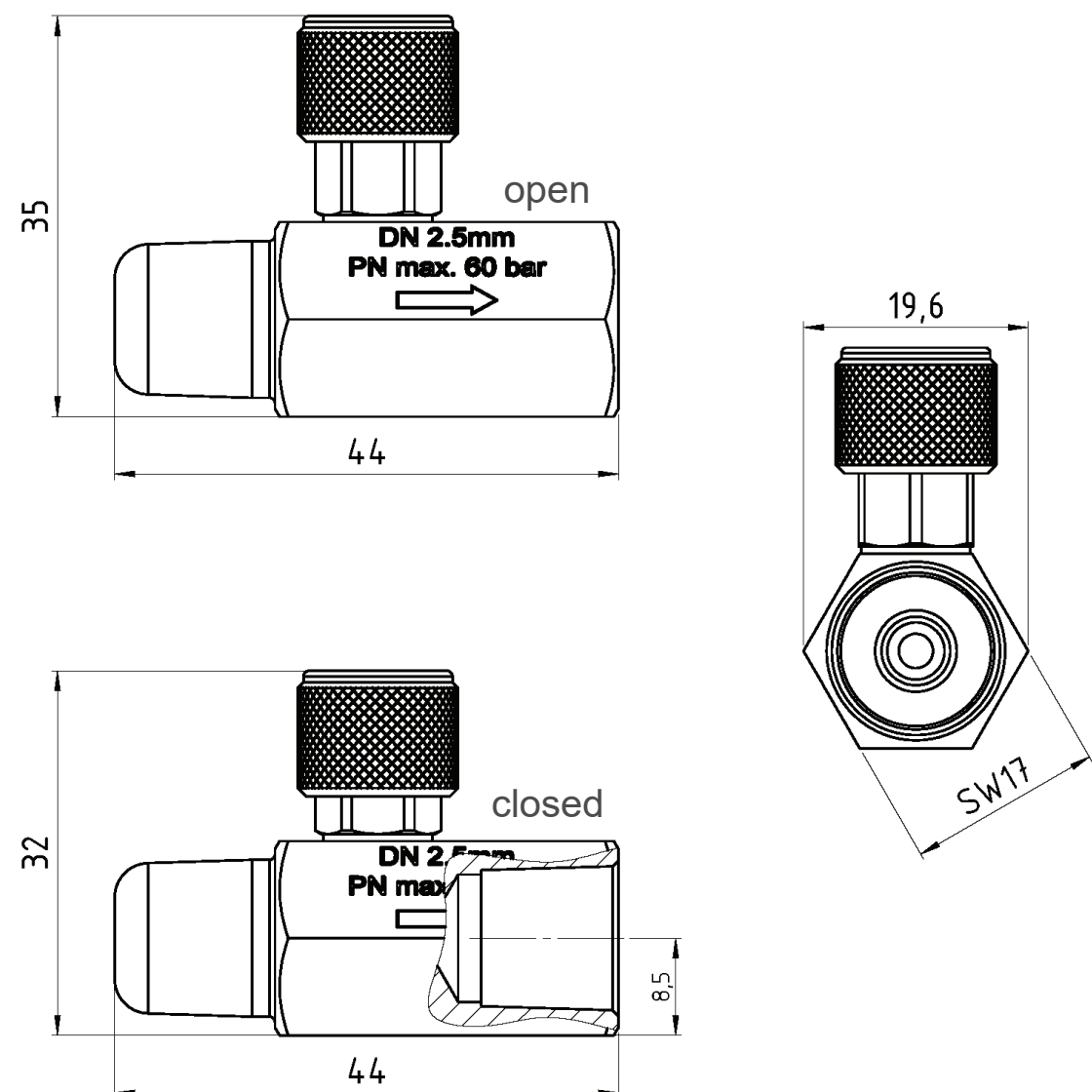
The dosage valve is designed for use at the outlet of cylinder pressure regulators or point of use regulators. It is characterized by its compact design and easy installation and handling.

### Application area:

Dosage valves are applicable as system components in a central high purity gas supply at low pressure.

### Technical details:

Material:	Stainless steel 1.4404
Elastomer:	Viton®, EPDM
Nominal diameter:	Ø 2,5 mm
Leakage rate:	10 <sup>-6</sup> mbar l/s Helium leak test
Gas purity:	≤ 6.0
Max. inlet pressure:	60 bar
Operating temp.:	-20°C to +70°C
Dimensions (wxhxd):	SW 17x35x44 mm
Weight:	approx. 100 g
Connections:	Inlet NPT 1/4" m Outlet NPT 1/4" f



### ORDER DETAILS:

<b>Material:</b>	<b>Elastomere:</b>
0 = Stainless steel	1 = Viton®
	2 = EPDM

### ORDER EXAMPLE:

64-	0	1	Gas type
Type	Material	Elastomer	Gas type

Accessories: see total catalogue segment

7. Accessories; compression fittings and hose nozzles

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HORNUNG

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# Point of use systems for cartridge pressure regulators

- Aluminium version to 12 bar system pressure

## Contents:

ED 06 Cartridge pressure regulator

EV 12 Top valve

EF 12 Flow meter

ODR 1 On demand flow regulator

ODR 2 On demand flow regulator

ODR 3 On demand flow regulator

# ED 06 Cartridge pressure regulator

- aluminium version till 12 bar system pressure



Gauges optional  
(without bottle and top-valve)

TECHNISCHE DATEN		ANWENDUNGSBEREICHE	BESCHREIBUNG
Material:	aluminium	<ul style="list-style-type: none"> <li>· Extraction system for cartridges</li> <li>· Charging with reduced work pressure</li> </ul>	<p>The cartridge pressure regulator was especially developed for gas extraction from cartridges / bottles.</p> <p>The initial pressure is fixed at 0,6 bar and the through flow can be exactly positioned with the integrated flow meter.</p> <p>Low weight is a result of ergonomic design and compact dimensions, optimum handling and a minimum on gas-affected surfaces.</p> <p>The manometer shows the filling pressure in the cartridge pressure regulator.</p>
Body:	aluminium anodised		
Seat:	FPM (FKM / viton®)		
Diaphragm:	FPM (FKM / viton®)		
Max. pressure:	12 bar		
Outlet:	0,6 bar (fixed)		
Operating temp.:	-20°C bis +60°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	85 x 80 x 65 mm		
Weight:	215 g		
Connections:			
inlet:	UNEF 7/16"		
outlet:	NPT 1/8" f		

## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2015** and **ISO 14001:2015**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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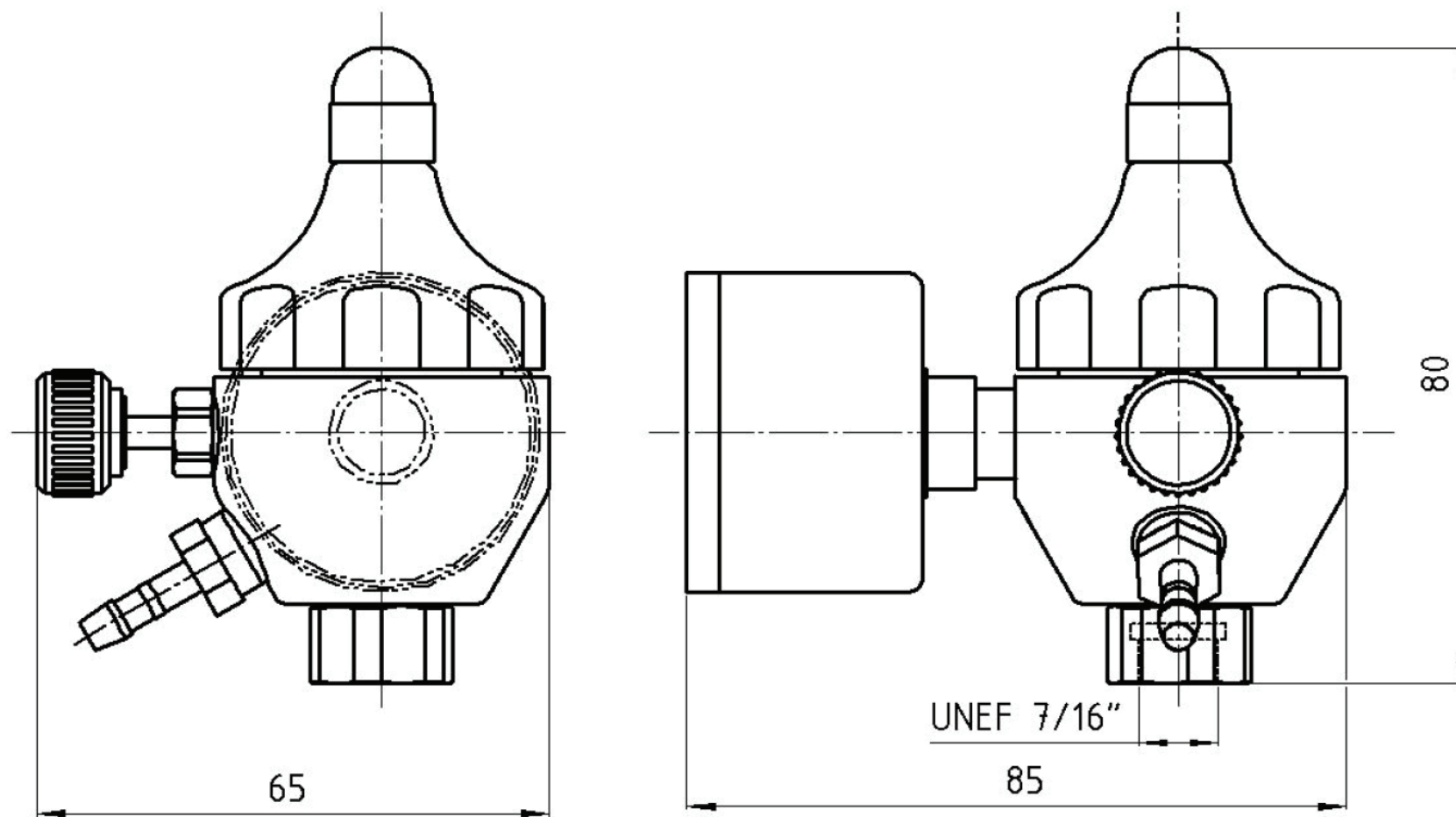
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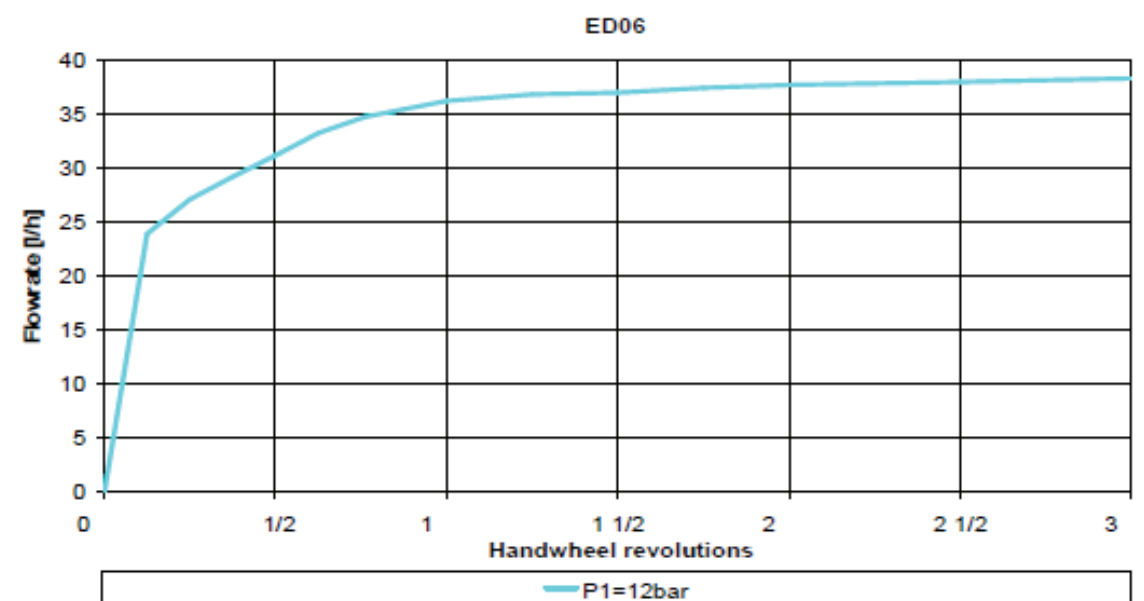
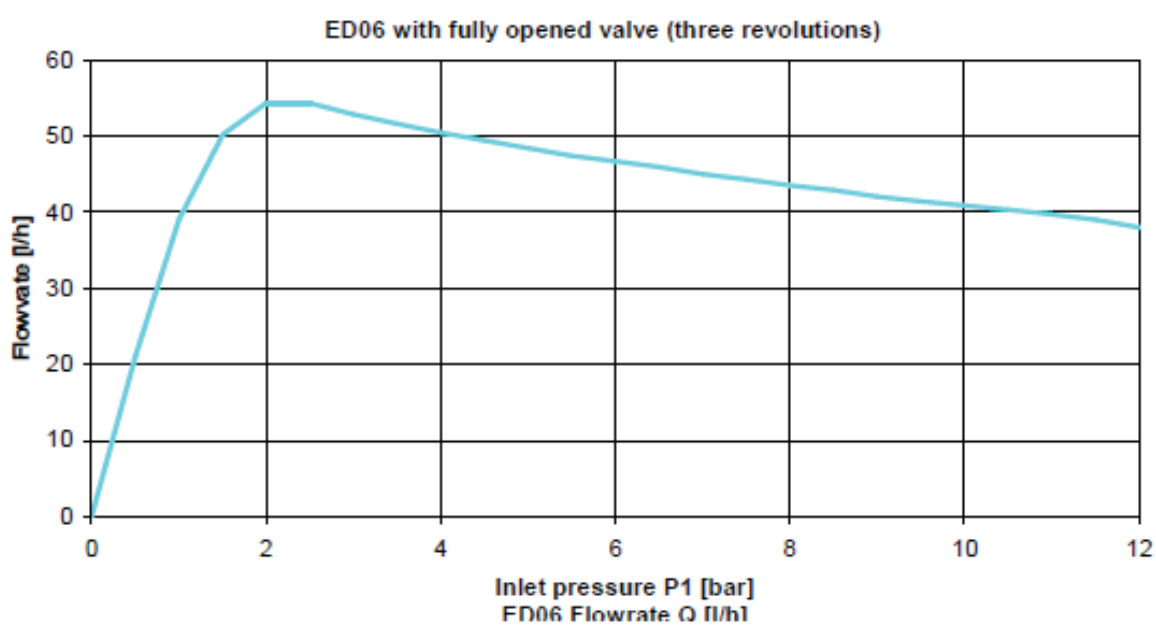


# ED 06



ED 06 with fully opened valve (three revolutions)

ED 06



## ORDER DETAILS

### Gauge:

- 0 = with gauge
- 1 = without gauge

### Outlet:

- 0 = NPT 1/8" f
- 1 = hose nozzle 3 mm bore
- 2 = compression fitting 3 mm
- 3 = compression fitting 6 mm

ED06- Type	1 Gauge	1 Outlet
---------------	------------	-------------

**Accessories:** See total catalogue segment

7. Accessories, hose nozzles,  
friction ring fittings made from plastic,

friction ring fittings made of stainless steel,  
double nipples NPT 1/8 / UNEF 7/16"

# EV12 Top-valve

- aluminium version till 12 bar system pressure



Gauge optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	aluminium anodised	Shut off armature for cartridge pressure regulator.	The cartridge Top-valve was especially developed for gas extraction from cartridges / bottles.
Seal:	FPM (FKM / viton®)	Withdrawal of gas from cartridge pressure regulator.	The cartridge top valve can be combined with the cartridge pressure regulator ED 06 or with the flow meter E12.
Max. pressure:	12 bar		Low weight is a result of ergonomic design and compact dimensions, optimum handling and a minimum on gas-affected surfaces.
Operating temp.:	-20°C bis +60°C		The manometer shows the filling pressure of the cartridge.
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	72 x 64 x 32 mm		
Weight:	115 g		
Connections:			
inlet:	UNEF 7/16"		
outlet:	NPT 1/8" f		

## QUALITY STANDARD

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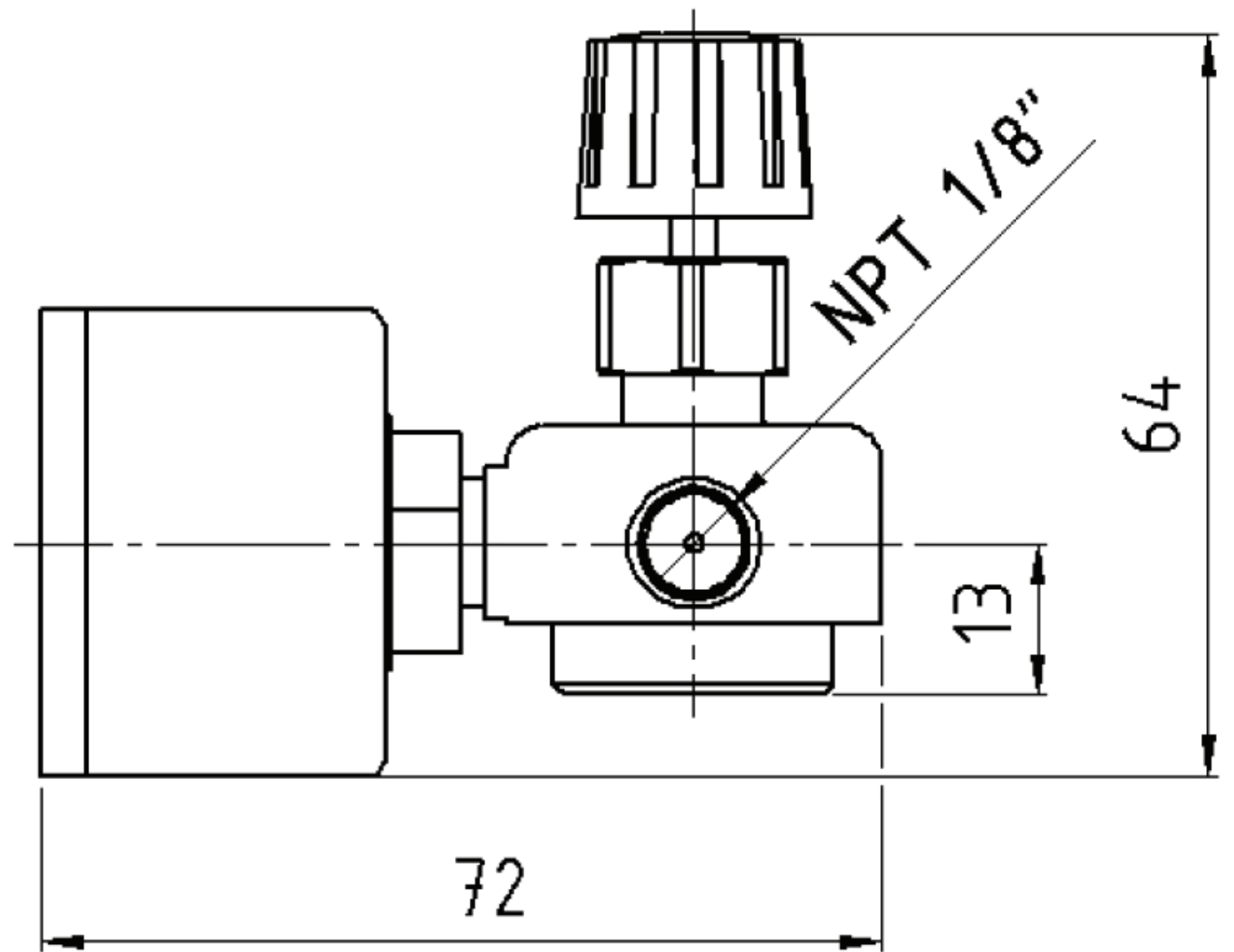
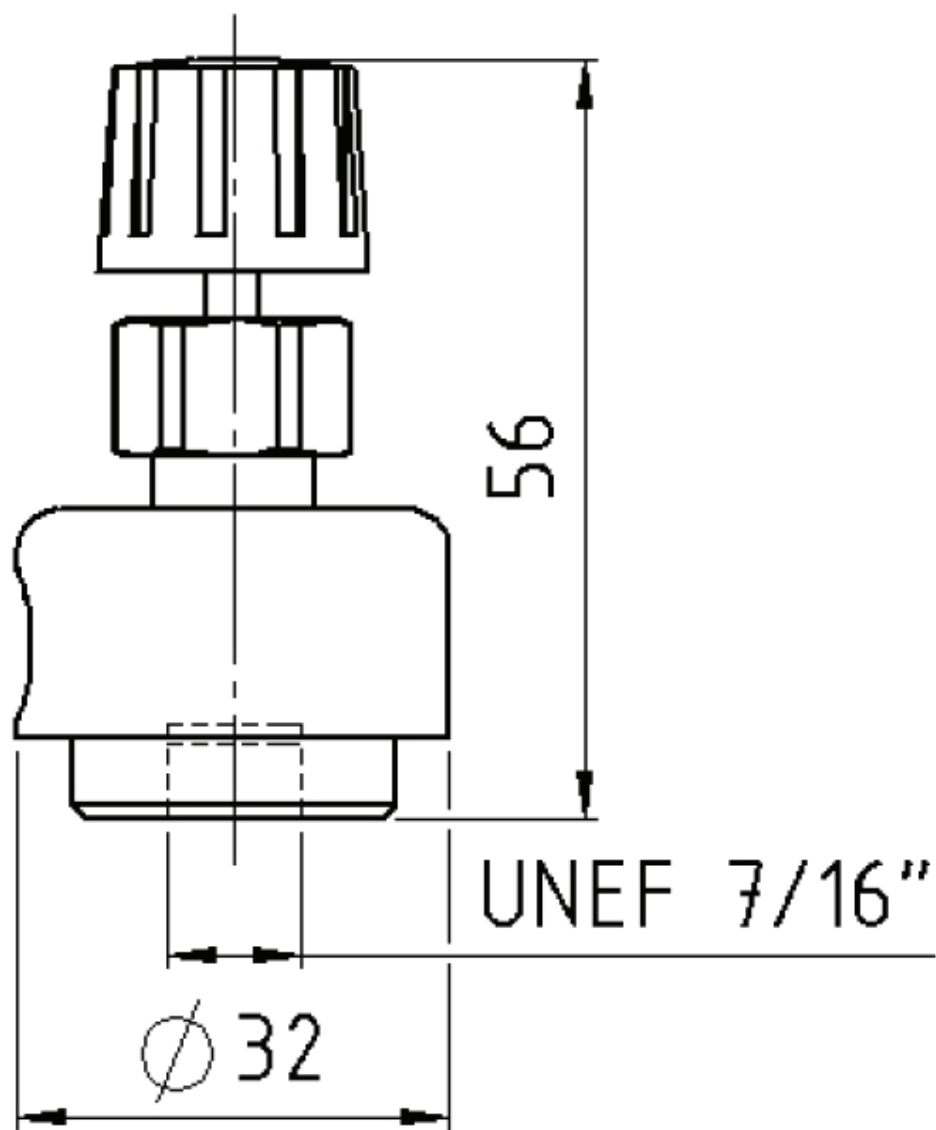
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# EV 12



## ORDER DETAILS

### Gauge

- 0 = with gauge
- 1 = without gauge

### Outlet:

- 0 = NPT 1/8" f
- 1 = hose nozzle 3 mm bore
- 2 = compression fitting 3 mm
- 3 = compression fitting 6 mm

EV12-  
Type

1  
Gauge

1  
Outlet

**Accessories:** See total catalogue segment

7. Accessories, hose nozzles,  
friction ring fittings made from plastic,

friction ring fittings made of stainless steel,  
double nipples NPT 1/8 / UNEF 7/16"



# EF 12 Flow meter

- aluminium version till 12 bar system pressure



Flow and  
gauge optional

TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Body:	aluminium anodised	<ul style="list-style-type: none"> <li>· Extraction system for cartridges</li> <li>· Charging without pressure reducing</li> </ul>	<p>The flow meter consists of a flow measurer and a dosage valve. A floating body in the measuring tube shows the flow rate on a scale.</p> <p>Low weight is a result of ergonomic design and compact dimensions, optimum handling and a minimum on gas-affected surfaces.</p> <p>The manometer shows the filling pressure in the cartridge pressure regulator.</p>
Seat:	FPM (FKM / viton®)		
Max. pressure:	12 bar		
Operating temp.:	-20°C to +60°C		
Gauge:	safety version to EN 837-1 KL1,6		
Dimensions (wxhxd):	93 x 92 x 32 mm		
Weight:	145 g		
Connections:			
inlet:	UNEF 7/16"		
outlet:	NPT 1/8" f		

## QUALITY STANDARD

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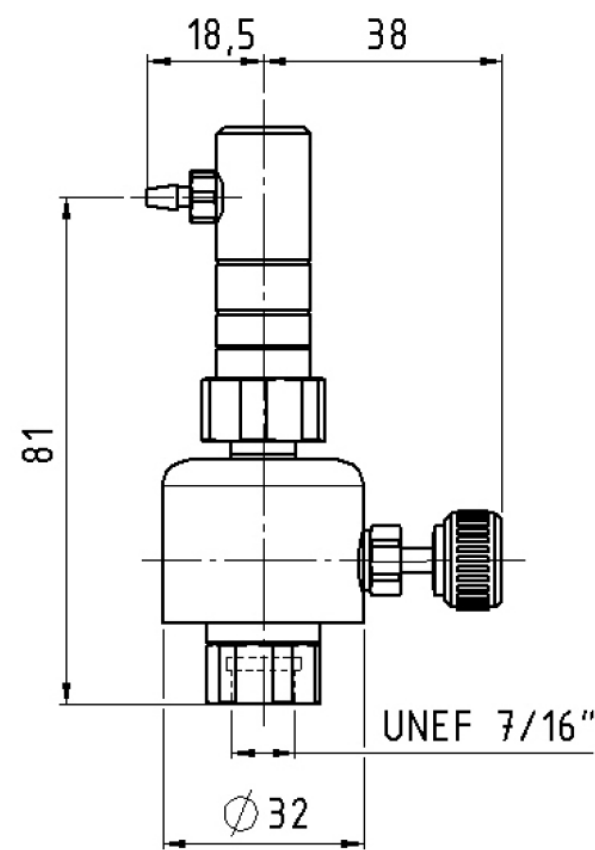
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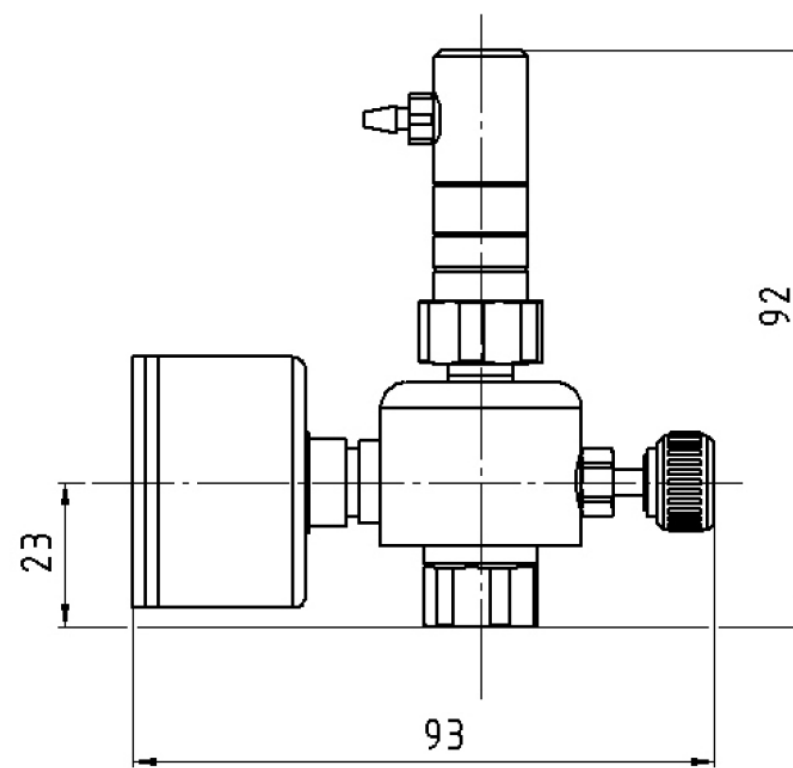
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# EF 12

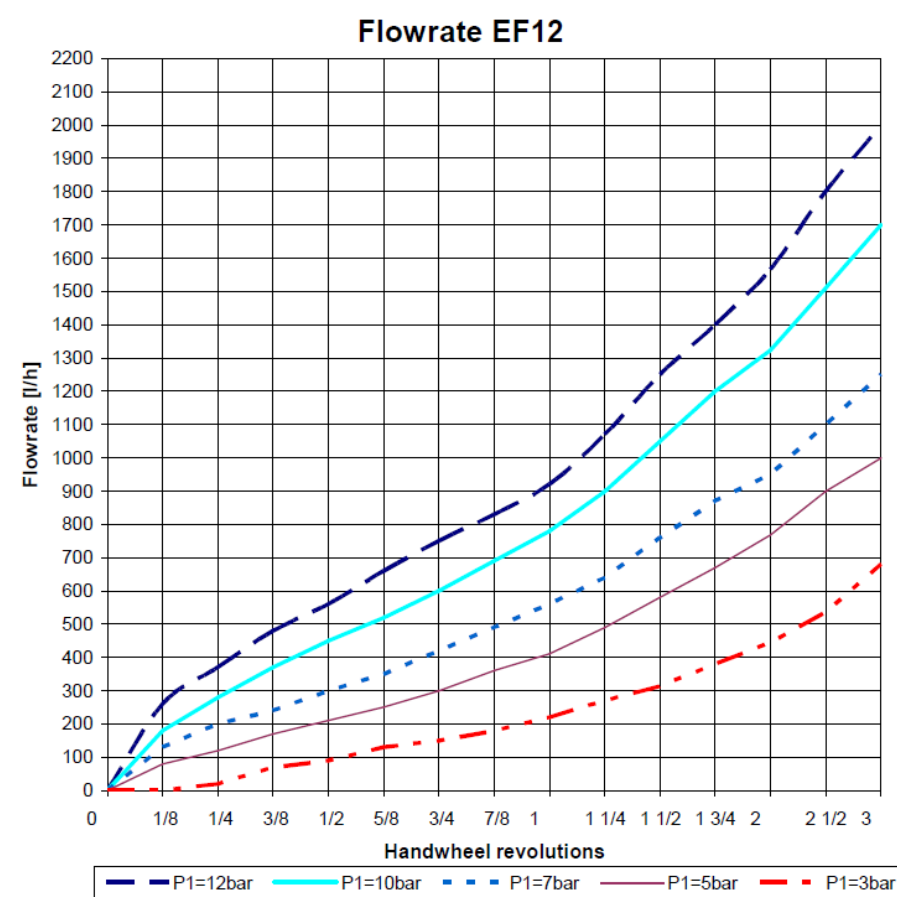


Without flow indicator



with flow indicator

## FLOWRATE EF 12



## ORDER DETAILS

### Gauge:

- 0 = without gauge
- 1 = with gauge
- 2 = without flow indicator
- 3 = with flow indicator

### Outlet:

- 0 = NPT 1/8" f
- 1 = hose nozzle 3 mm bore
- 2 = compression fitting 3 mm
- 3 = compression fitting 6 mm

EF12-	1	1	2
Type	Gauge	Outlet	Flow indicator

Accessories: See total catalogue segment

7. Accessories

# On Demand Flow Regulator ODR 1

- two stage, for low flow rates



TECHNICAL DETAILS		APPLICATION	DESCRIPTION
Body:	Aluminium	The two-stage pressure regulator ODR 1 is especially designed for the quick and easy execution of calibration and analysis tasks. For example the use with gas measuring instruments for the automatic adjustment of the gas withdrawal to the flow rate of a sample gas pump.	<p>The ODR 1 automatically opens due to the suction of a pump and delivers the exact amount of gas required by the process instruments.</p> <p>Optionally, the pressure regulator can also be configured in a stainless steel version for the use of corrosive gases, with appropriate sealing materials.</p> <p>This process has the following advantages:</p> <ul style="list-style-type: none"> <li>- Withdrawal of the exact quantity of gas required for process, without gas waste.</li> <li>- The costs for calibration tasks decrease.</li> <li>- An additional shut-off valve or a sampling bag is not required</li> <li>- Calibration and analysis tasks are carried out quickly and simple, so there is no need for a special training for the user.</li> </ul>
Seat:	FKM		
Seals:	FKM/ PCTFE		
Diaphragm:	FKM		
Max. inlet pressure:	12 bar		
Opening negative pressure:	-15 to -35 mbar		
Delivery performance:	bis 3 l/min.		
Operating temp.:	-20 to +60°C		
Dimensions (wxdxd):	68 x 120 x 72 mm		
Weight:	580 g		
Connections:	Inlet: 7/16-28 UNEF female thread (others on request) Outlet: NPT 1/8 female thread		
Outlets optional, according to type and model possible			

## QUALITY STANDARD

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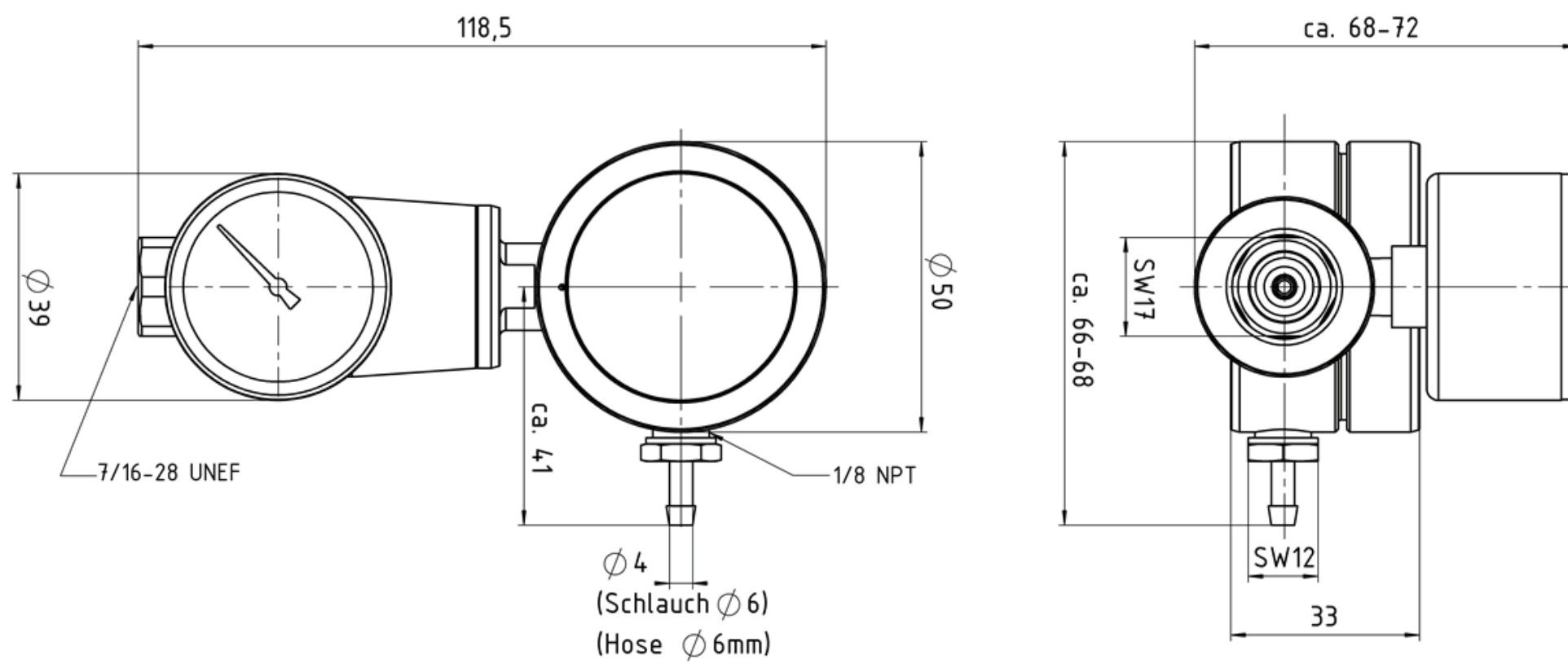
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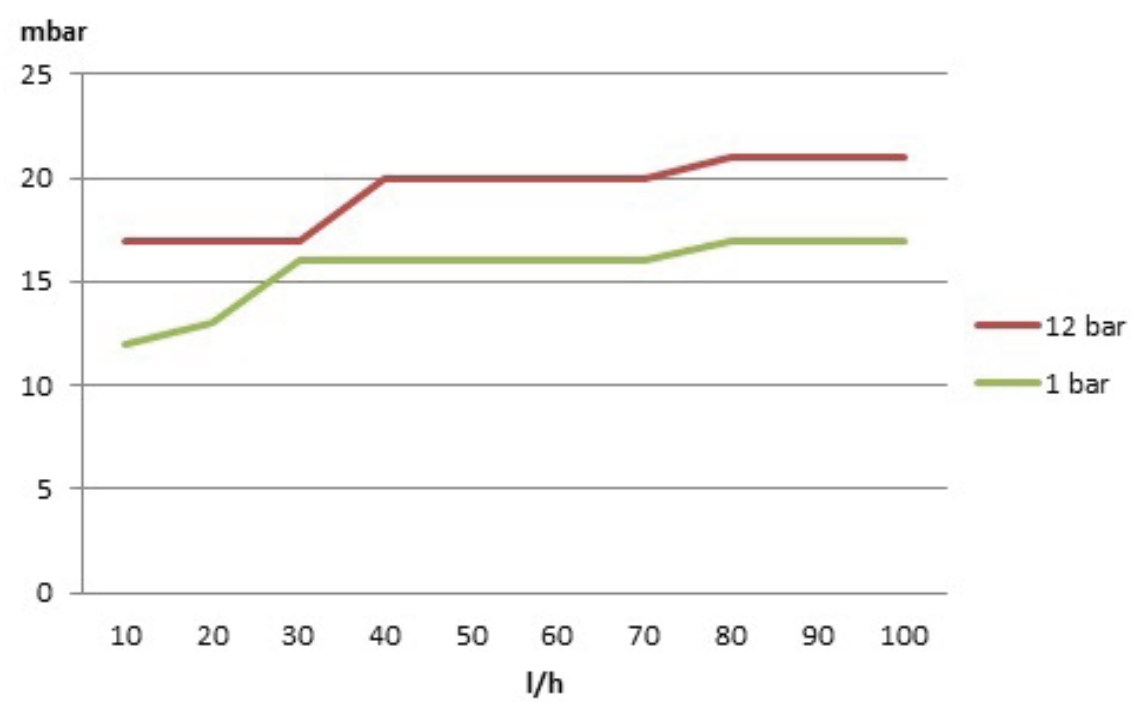
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# ODR1



## FLOW RATE DIAGRAM



ODR1  
Type

Accessories:

Gauge, hose nozzle, fittings optional

# On Demand Flow Regulator ODR 2

- two stage, with balanced poppet for low flow rates



TECHNICAL DETAILS		APPLICATION	DESCRIPTION
Body:	brass	The two-stage pressure regulator ODR 2 is especially designed for the quick and easy execution of calibration and analysis tasks. For example the use with gas measuring instruments for the automatic adjustment of the gas withdrawal to the flow rate of a sample gas pump.	<p>The ODR 2 automatically opens due to the suction of a pump and delivers the exact amount of gas required by the process instruments.</p> <p>This process has the following advantages:</p> <ul style="list-style-type: none"> <li>- Withdrawal of the exact quantity of gas required for process, without gas waste.</li> <li>- The costs for calibration tasks decrease.</li> <li>- An additional shut-off valve or a sampling bag is not required</li> <li>- Calibration and analysis tasks are carried out quickly and simple, so there is no need for a special training for the user.</li> </ul>
Seat:	FKM		
Seals:	FKM/PCTFE		
Diaphragm:	FKM		
Max. inlet pressure:	200 bar		
Opening negative pressure:	-15 to -35 mbar		
Delivery performance:	bis 3 l/min.		
Operating temp.:	-20 to +60°C		
Dimensions (wxdxd):	102 x 130 x 72 mm		
Weight:	900 g		
Connections:	Inlet: cylinder connection depends on gas type  Outlet: NPT 1/8 female thread		
Outlets optional, according to type and model possible			

## QUALITY STANDARD

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# On Demand Flow Regulator ODR 3

- two stage, for low flow rates



TECHNICAL DETAILS		APPLICATION	DESCRIPTION
Body:	Aluminium	<p>The two-stage pressure regulator ODR 3 is especially designed for the quick and easy execution of calibration and analysis tasks. For example the use with gas measuring instruments for the automatic adjustment of the gas withdrawal to the flow rate of a sample gas pump.</p>	<p>The ODR 3 automatically opens due to the suction of a pump and delivers the exact amount of gas required by the process instruments.</p> <p>This process has the following advantages:</p> <ul style="list-style-type: none"> <li>- Withdrawal of the exact quantity of gas required for process, without gas waste.</li> <li>- The costs for calibration tasks decrease.</li> <li>- An additional shut-off valve or a sampling bag is not required</li> <li>- Calibration and analysis tasks are carried out quickly and simple, so there is no need for a special training for the user.</li> </ul>
Seat:	FKM		
Seals:	FKM / PCTF		
Diaphragm:	FKM		
Max. inlet pressure:	100 bar		
Opening negative pressure:	-15 bis -35 mbar		
Delivery performance:	bis 3 l/min.		
Operating temp.:	-20 bis +60°C		
Dimensions (wxdxd):	50 x 142 x 91 mm		
Weight:	405 g		
Connections:	Inlet: 5/8-18 UNF male thread  Outlet: NPT 1/8 female thread		

## QUALITY STANDARD

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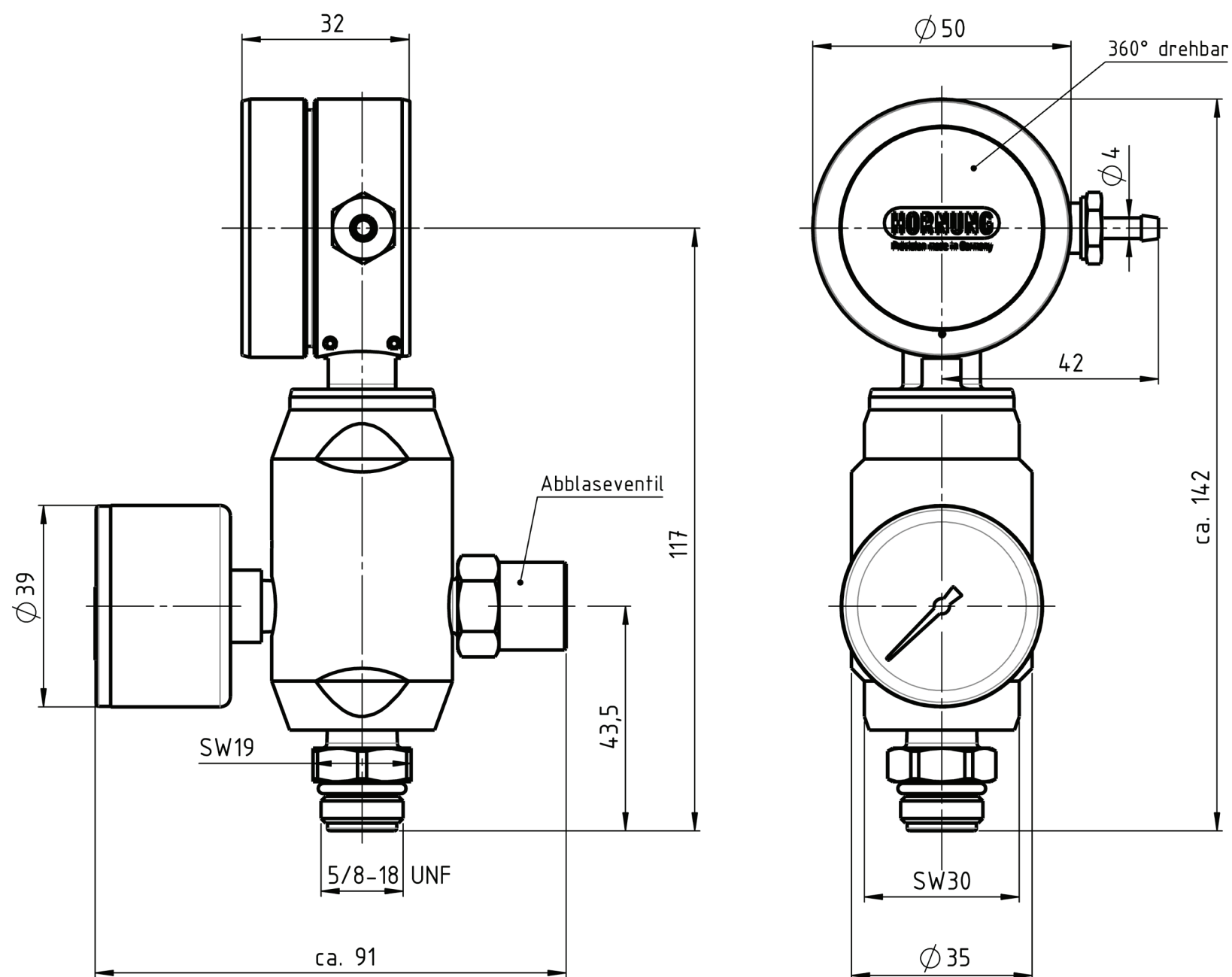
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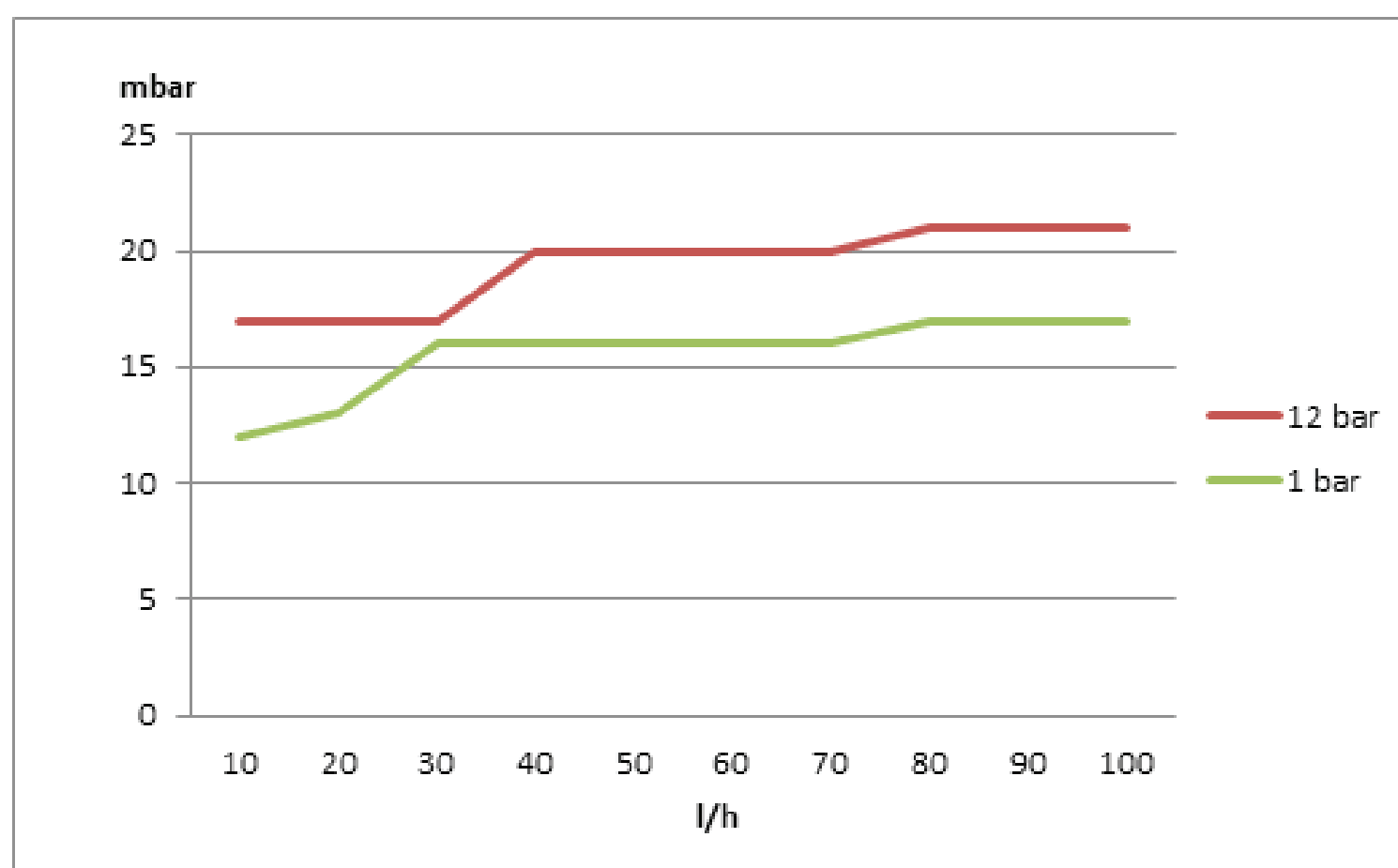
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# ODR3



## FLOW RATE DIAGRAM



### Accessories:

Gauge, hose nozzle, fittings optional,  
adhesive label logo (Private label possible)

# Accessories for high purity equipment

- Pigtail gas tubes

- Gauges

- Compression fittings, hose nozzles and connecting nipples

- Gas failure detector and solenoid valve control

- Gas cylinder cabinets to TRG 280 and DIN EN 14470-2

- Solenoid valves in brass or stainless steel

## Contents

Gauges and contact gauges

Compression fittings

Hose nozzles

Adapter nipples, connecting nipples

Solenoid valves in brass or stainless steel

Solenoid valve control (Emergency shut-off for 5 or 10 solenoid valves)

Gas failure detector for 2, 4 and 10 signal registers

Gas cylinder cabinets to TRG 280 (outdoor) and DIN EN 14470-2 (indoor) on request

Pigtail gas tubes with hand connection HP 600 (6 mm)

Corrugated metal hose with hand connection HP 602 (6 mm)

Pigtail gas tubes with hand connection HP 603 (6 mm)

Cylinder retainer

High pressure manifold with check valve

Filter F 2

Filter F 4



# Gauges HP 700-701-702



Gauges are utilised everywhere when special worth is laid on the exactness of measurement, repeatability and stability.

Through the use of high quality materials such as stainless steel can the strength and resistance against aggressive mediums be optimised.

Contact Gauges with electric limit contacts are suited to the control and regulation of the process gas pressure.

ORDER NUMBER	PRESSURE RANGES	TYPE	CONNECTION	SIZE
HP700-01	-1 - 1/ 1,5 bar	ND-gauge	1/4" NPT bottom	Ø 50
HP700-02	-1 - 3/ 5 bar	ND-gauge	1/4" NPT bottom	Ø 50
HP700-03	-1 - 6/ 9 bar	ND-gauge	1/4" NPT bottom	Ø 50
HP700-04	-1 - 12/ 15 bar	ND-gauge	1/4" NPT bottom	Ø 50
HP700-20	0 - 200/ 315 bar	ND-gauge	1/4" NPT bottom	Ø 50
HP701-01	0 - 1/ 1,6 bar	ND-gauge	G 1/4" bottom	Ø 50
HP701-02	0 - 3/6 bar	ND-gauge	G 1/4" bottom	Ø 50
HP701-03	0 - 6/ 10 bar	ND-gauge	G 1/4" bottom	Ø 50
HP702-36	0 - 200/ 315 bar	Inductive-contact gauge Open / Close	1/4" NPT bottom	Ø 50

Other sizes and combinations on request!

## TECHNICAL DETAILS

Material:	stainless steel 1.4571
Range:	-1 to 400 bar
Accuracy class:	1,6 to DIN 16005
Temperature:	medium -20°C bis 80°C environment -25°C bis 60°C

## QUALITY STANDARD

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# Olive joint connections HP 710-711-712



## HP 710



## HP 711



## HP 712

Olive joint connections guarantee that all joint connections are tight and torque free. That way dangerous leaks in the pipe system can be eliminated. Olive and screw joint connections can be combined with all products in the HP series.

ORDER NO	TYPE	THREAD	CONNECTION
HP710-03	Straight connection	1/4" NPT	3 mm tube
HP710-06	Straight connection	1/4" NPT	6 mm tube
HP710-08	Straight connection	1/4" NPT	8 mm tube
HP710-10	Straight connection	1/4" NPT	10 mm tube
HP710-12	Straight connection	1/4" NPT	12 mm tube
HP711-03	Straight connection	G 1/4"	3 mm tube
HP711-06	Straight connection	G 1/4"	6 mm tube
HP711-08	Straight connection	G 1/4"	8 mm tube
HP711-10	Straight connection	G 1/4"	10 mm tube
HP711-12	Straight connection	G 1/4"	12 mm tube
HP711-12	90° connection	1/4" NPT	3 mm tube
HP712-06	90° connection	1/4" NPT	6 mm tube
HP712-08	90° connection	1/4" NPT	8 mm tube
HP712-10	90° connection	1/4" NPT	10 mm tube
HP712-12	90° connection	1/4" NPT	12 mm tube

Other sizes and combinations on request!

### TECHNICAL DETAILS

Material: stainless steel 316  
 Operating temp.: -195°C to +200°C

### QUALITY STANDARD

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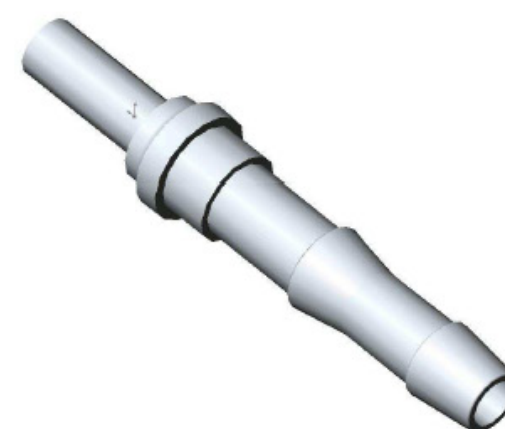
# Hose nozzles HP 715-716-717



## HP 715



## HP 716



## HP 717

Should a flexible tube be connected to a pressure regulator or other component in the HP series, then tube sockets in stainless steel 1.4404 are available in various diameters.

ORDER NUMBER	TYPE	THREAD	CONNECTION
HP715-03	Hose nozzle	1/4" NPT	4 mm tube
HP715-06	Hose nozzle	1/4" NPT	6 mm tube
HP715-08	Hose nozzle	1/4" NPT	8 mm tube
HP716-03	Hose nozzle	G 1/4	4 mm tube
HP716-06	Hose nozzle	G 1/4	6 mm tube
HP716-08	Hose nozzle	G 1/4	8 mm tube
HP717-04	Plug sockets for olive joints	6 mm pipe	4 mm tube
HP717-06	Plug sockets for olive joints	6 mm pipe	6 mm tube
HP717-08	Plug sockets for olive joints	6 mm pipe	8 mm tube

Andere Abmessungen und Ausführungen auf Anfrage !

### TECHNICAL DETAILS

Material: stainless steel 1.4404  
electropolished

### QUALITY STANDARD

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# Adapter - Nipple HP 720



**HP 720-06**



**HP 720-03**

Adapter nipples allow the connection of our products in the HP series with your equipment or fittings.

In our selection assortment you'll find the connecting adapter with the most popular connecting threads.

ORDER NO.	TYPE	CONNECTION 1	CONNECTION 2
HP720-01	Adapter - Nipple	NPT 1/8" m	NPT 1/8" m
HP720-02	Adapter - Nipple	NPT 1/4" m	NPT 1/4" m
HP720-03	Adapter - Nipple	G 1/4" m	G 1/4" m
HP720-04	Adapter - Nipple	NPT 1/8" m	NPT 1/4" m
HP720-05	Adapter - Nipple	NPT 1/4" m	G 1/4" m
HP720-06	Adapter - Nipple	NPT 1/8" m	NPT 1/4" f

Other sizes and combinations on request!

## TECHNICAL DETAILS

Material: stainless steel 1.4404  
 Operating temp.: -195°C to +200°C

## QUALITY STANDARD

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# HG-2/2 2-Way solenoid valves

- in brass or stainless steel, Ex-valves with ATEX-approval



Typ 43



Typ 43Ex



Typ 52

## Description:

Solenoid valves are used in systems where the gas supply is shut off electrically. With gas failure detectors or interconnected systems the solenoid valve stops the supply of gas in emergency situations. By loss of voltage, the gas supply is shut off. (NC-function closed without electricity).

## Approvals:

Ex-Valves with ATEX-approval

## Solenoid valves in brass

ORDER NO.	GAS TYPE	DN	CONNECTION	SWITCHING RANGE	SEAT	ATEX
HG-MVZ-4301	Oxygen	13	NPT 1/4	0 - 16bar	FKM	no
HG-MVZ-4302	neutral gases	13	NPT 1/4	0 - 16bar	FKM	no
HG-MVZ-4303	Oxygen	13	NPT 1/4	0 - 16bar	EPDM	no
HG-MVZ-4304	neutral gases	13	NPT 1/4	0 - 16bar	EPDM	no
HG-MVZ-4305	Oxygen	13	NPT 3/8	0 - 16bar	FKM	no
HG-MVZ-4306	neutral gases	13	NPT 3/8	0 - 16bar	FKM	no
HG-MVZ-4307	Oxygen	13	NPT 3/8	0 - 16bar	EPDM	no
HG-MVZ-4308	neutral gases	13	NPT 3/8	0 - 16bar	EPDM	no
HG-MVZ-4309	flammable gases	13	NPT 1/4	0 - 16bar	FKM	yes
HG-MVZ-4310	flammable gases	13	NPT 3/8	0 - 16bar	FKM	yes
HG-SVD-5201	Acetylene	4	G 3/8	0 - 10bar	EPDM	yes

## Solenoid valves in stainless steel 1.4104

ORDER NO.	GAS TYPE	DN	CONNECTION	SWITCHING RANGE	SEAT	ATEX
HG-SVD-5202	flammable gases	3	NPT 1/4	0-20 bar	FKM	yes

Other connections and special designs on request. When ordering please specify supply voltage.

## ACCESSORIES

See total catalogue segment

7. Accessories, solenoid valve controller GVS for controlling up to 10 solenoid valves

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

# HORNUNG

Präzision made in Germany

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# HG-GVS Solenoid valve controller

- for controlling up to 10 solenoid valves



## Description:

The solenoid valve controller HG-GVS (05, 10) controls and monitors pipe ruptures with up to 10 solenoid valves.

Connected solenoid valves can be turned on and off using a key-operated switch. The solenoid valves are individually monitored by measuring the solenoid current.

Should the voltage supply to the solenoid be disrupted e.g. through cable rupture, coil defect or blown fuse, the valve controller registers this with an acoustic and optical signal.

**Solenoid valve controller**  
for max. 5 solenoid valves

**Order no.: HG-GVS-05**

**Solenoid valve controller**  
for max. 10 solenoid valves

**Order no.: HG-GVS-10**

## TECHNICAL DETAILS

Body (wxhxd):	200 x 120 x 75 mm
Protection:	IP 65
Material:	ABS
Operating temp.:	0 - 55 °C
Supply voltage:	230 VAC, 50 Hz

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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# HG-GMM Gas failure detector

- gas failure monitoring for up to 10 contact gauges



## Description:

The gas failure detector HG-GMM (02, 06, 10) controls up to 10 contact gauges (switch ex), whose switches are closed under normal conditions.

If a contact opens or more than one contact opens because of a gas deficit, the gas failure detector registers this with an acoustic and optical signal. Simultaneously, the switch logic also registers if there is a break in the cable or an interruption of the electricity supply.

The signal or signals can be reset with the "Quit" button – or can be forwarded to other devices via potential-free relays.

For the use of the gas failure detector with inductive switches, a separate switch amplifier must be installed downstream. (see EX - model)

### Gas failure detector

Controls up to 2 contact gauges  
for Ex - model with switch amplifier

**Order No.:** HG-GMM-02  
**Order No.:** HG-GMM-02-EX

### Gas failure detector

Controls up to 6 contact gauges  
for Ex - model with switch amplifier

**Order No.:** HG-GMM-06  
**Order No.:** HG-GMM-06-EX

### Gas failure detector

Controls up to 10 contact gauges  
for Ex - model with switch amplifier

**Order No.:** HG-GMM-10  
**Order No.:** HG-GMM-10-EX

## TECHNICAL DETAILS

Body (wxhxd):	200 x 120 x 75 mm
Protection:	IP 65
Material:	ABS
Operating temp.:	0 - 55 °C
Contact voltage:	6V / DC / 10mA
Supply voltage:	230V / 50Hz
Switching capacity max:	250VA / 65W

## QUALITY STANDARD

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# HG-GFS Gas cylinder cabinets

- to DIN EN 14470-2 (indoor installation) and TRG 280 (outdoor installation)



**G90**



**G30**



**TRG280**

## Description:

The gas cylinder cabinets to DIN EN 14470-2 TRG 280 are fire chamber tested and type- tested and serve the safe and prescribed housing of 50 l gas cylinders in buildings and outside areas. The large inside height of the cylinder cabinets facilitates the easy mounting of gas supply stations. Standard contents consist of cylinder restraints, mounting rails for supply stations.

Also permanently mounted at the bottom of the cabinet is a roll-in flap to facilitate the easy rolling in of cylinders in the G90 and G30 cabinets.

Mounted in the cabinet ceiling are diverse possibilities for the implementation of piping. The gas cylinder cabinets are painted light grey RAL7035 as standard. On request, the cabinets can also be delivered in bright yellow RAL1004.

### Gas cylinder cabinets G90 to DIN EN 14470-2 for indoor installation

ORDER NO.	CYLINDER	DOORS	H X W X D / OUTER	H X W X D / INNER	WEIGHT
HG-GFS-901	1 x 50l	1	2050 x 600 x 615	1875 x 440 x 400	305 kg
HG-GFS-902	3 x 50l	2	2050 x 900 x 615	1875 x 740 x 400	355 kg
HG-GFS-903	3x50l + 1x10l	2	2050 x 1200 x 615	1875 x 1040 x 400	485 kg
HG-GFS-904	4 x 50l	2	2050 x 1400 x 615	1875 x 1240 x 400	525 kg

### Gas cylinder cabinets G30 to DIN EN 14470-2 for indoor installation

ORDER NO.	CYLINDER	DOORS	H X W X D / OUTER	H X W X D / INNER	WEIGHT
HG-GFS-301	1 x 50l	1	2050 x 600 x 615	1900 x 490 x 450	290 kg
HG-GFS-302	2 x 50l	2	2050 x 900 x 615	1900 x 790 x 450	340 kg
HG-GFS-303	3x50l + 1x10l	2	2050 x 1200 x 615	1900 x 1090 x 450	470 kg
HG-GFS-304	4 x 50l	2	2050 x 1400 x 615	1900 x 1290 x 450	510 kg

### Gas cylinder cabinets to TRG 280 for outdoor installation

ORDER NO.	CYLINDER	DOORS	H X W X D / OUTER	H X W X D / INNER	WEIGHT
HG-GFS-281	2 x 50l	1	2150 x 740 x 470	2070 x 695 x 370	85 kg
HG-GFS-282	3 x 50l	2	2150 x 1040 x 470	2070 x 995 x 370	113 kg
HG-GFS-283	4 x 50l	2	2150 x 1390 x 470	2070 x 1345 x 370	138 kg

## ACCESSORIES

Height adjustable lower shelf for max. 75 kg weight over the complete cabinet width.

Side mounted height, adjustable cylinder holders for 10 l cylinders. Adjustable feet for easy alignment on uneven ground.

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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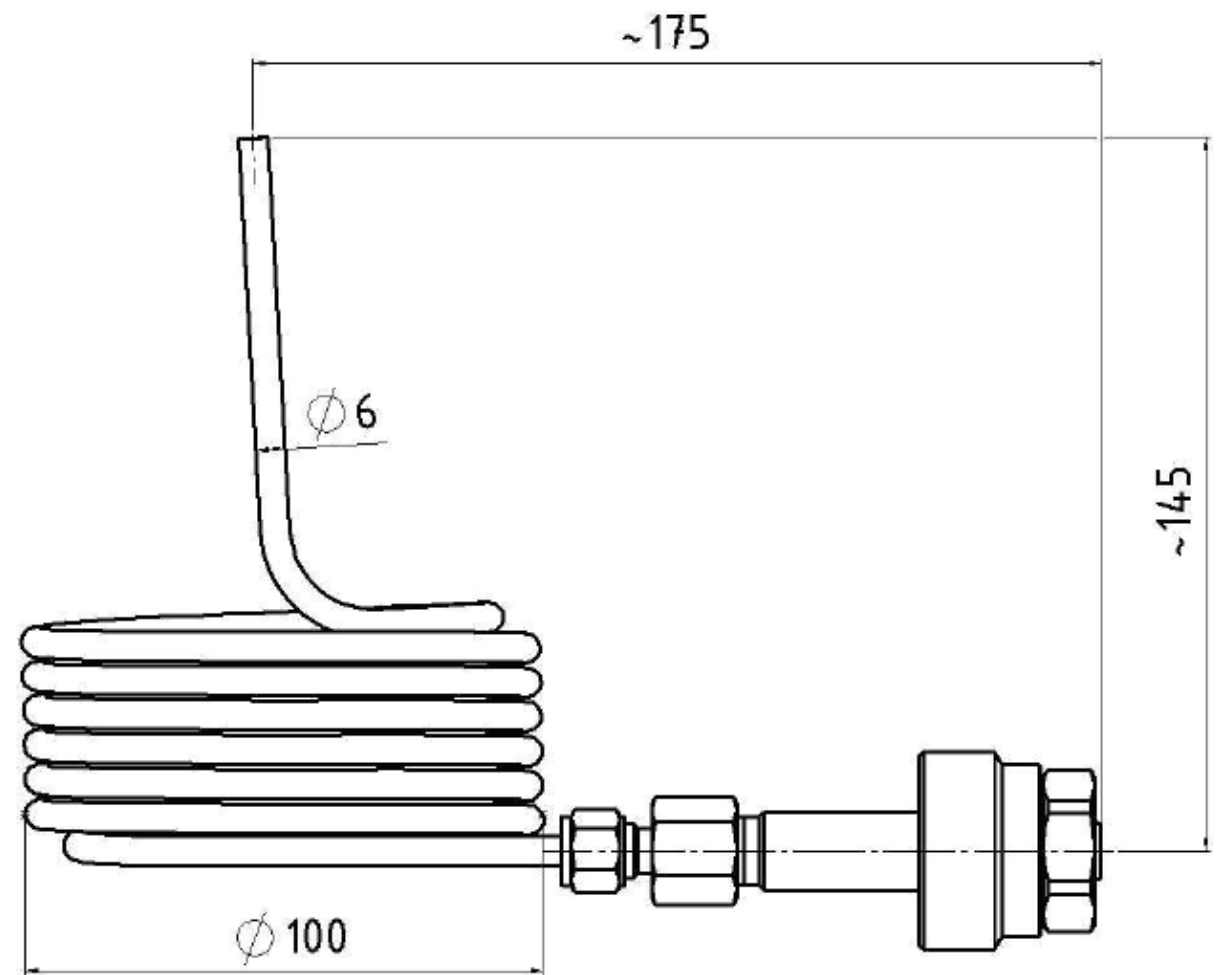
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# Connecting spirals HP 600

- 6 mm tube



Connecting spirals in stainless steel 1.4404 are the connecting tubes between gas cylinders and gas supply stations. The connecting spirals are fitted with a hand nut and gas specific connections to DIN477 and CEN-Hevos.

The optionally offered check valve is required to avoid a gas transfer between cylinders when more than one cylinder is connected to a cylinder station or one side of a changeover station.

ORDER NUMBER	CHECK VALVE (OPTINAL)	PRESSURE AREA	CYLINDER CONNECTION	OUTLET
HP 60001	RV	to 200 bar	W21,8x1/14" left	Tube 6 mm
HP 60005	RV	to 200 bar	W1" left	Tube 6 mm
HP 60006	RV	to 200 bar	W21,8x1/14" right	Tube 6 mm
HP 60008	RV	to 200 bar	W 1" right	Tube 6 mm
HP 60009	RV	to 200 bar	G 3/4" right	Tube 6 mm
HP 60010	RV	to 200 bar	W24,32x1/4" right	Tube 6 mm
HP 60011	RV	to 200 bar	G3/8" right	Tube 6 mm
HP 60013	RV	to 200 bar	G5/8" right	Tube 6 mm
HP 60014	RV	to 200 bar	M19x1,5 left	Tube 6 mm
HP 6000170	RV	to 300 bar	W30x2 right	Tube 6 mm
HP 6001170	RV	to 300 bar	W30x2 right	Tube 6 mm
HP 6002170	RV	to 300 bar	W30x2 left	Tube 6 mm
HP 6004170	RV	to 300 bar	W30x2 right	Tube 6 mm

Other connections and combinations on request!

Always give the gas type with the order number!

TECHNICAL DETAILS		QUALITÄTSSTANDARD
Material:	Stainless steel 1.4404 electropolished	The company Hornung is certified to <b>DIN EN ISO 9001</b> and <b>ISO 14001:2009</b> . All single parts are manufactured, assembled and tested in house. The finished parts are therefore under the criteria of our exact quality control with 100% final control.
Connection:	connecting thread DIN 477 or CEN-HEVOS	
Gas purity:	≤ 6.0	

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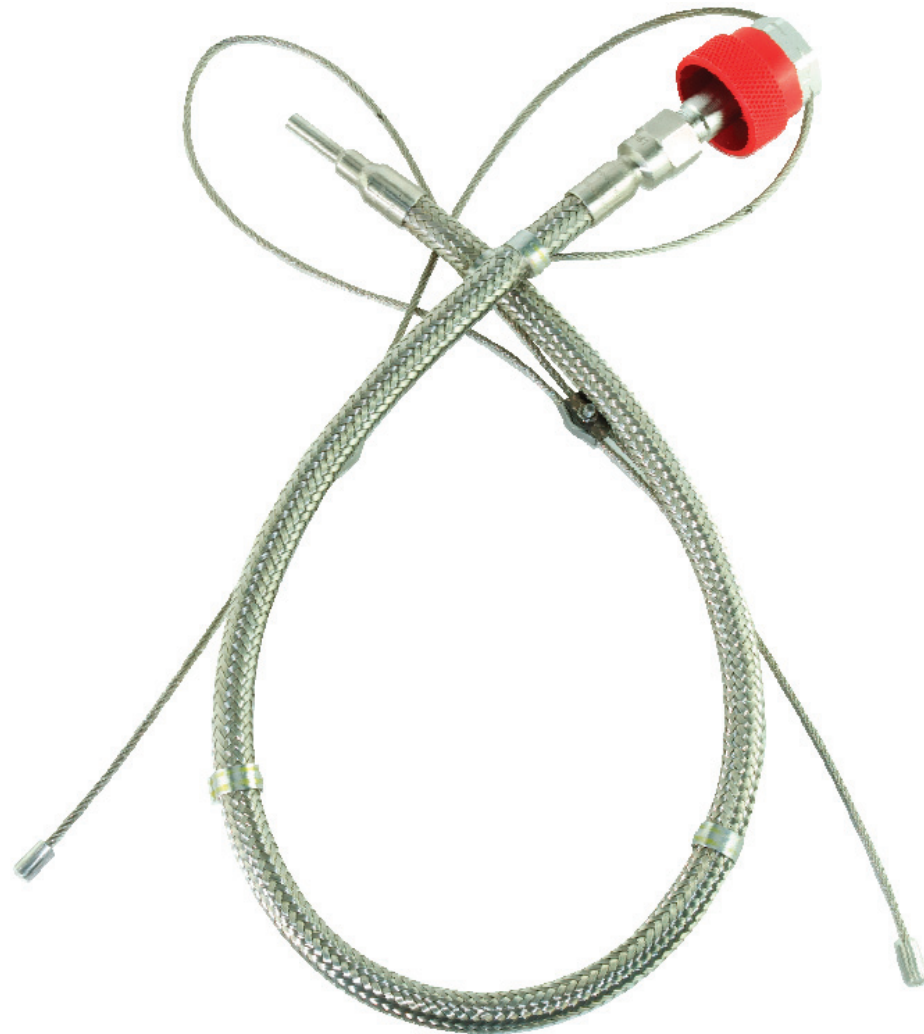
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# Metal hose HP 602

- 6 mm stainless steel
- check valve optional



Pigtails in stainless steel 1.4404 are for connecting gas cylinders with gas supply panels.  
The pigtails are fitted with a hand nut and gas specific connections to DIN 477 -1 or -5 (300 bar).

ORDER NUMBER	OPTIONAL CHECK VALVE	PRESSURE RANGE	CYLINDER CONNECTION	OUTLET
HP60201	RV	to 200 bar	W21,8 x 1/14" left	6 mm tube
HP60205	RV	to 200 bar	W 1" left	6 mm tube
HP60206	RV	to 200 bar	W21,8 x 1/14" right	6 mm tube
HP60208	RV	to 200 bar	W 1" right	6 mm tube
HP60209	RV	to 200 bar	G 3/4" right	6 mm tube
HP60210	RV	to 200 bar	W24,32 x 1/4" right	6 mm tube
HP60211	RV	to 200 bar	G 3/8" right	6 mm tube
HP60213	RV	to 200 bar	G 5/8" right	6 mm tube
HP60214	RV	to 200 bar	M19 x 1,5 left	6 mm tube
HP6020170	RV	to 300 bar	W30 x 2 right	6 mm tube
HP6021170	RV	to 300 bar	W30 x 2 right	6 mm tube
HP6022170	RV	to 300 bar	W30 x 2 left	6 mm tube
HP6024170	RV	to 300 bar	W30 x 2 right	6 mm tube

Other connections, lengths and combinations on request! (Standard length 1000mm)

Always give the gas type with the order number!

## TECHNICAL DETAILS

Material:	stainless steel 1.4404 electropolished
Connection:	connecting thread DIN 477-1 or DIN 477-5
Gas purity:	≤ 6.0

## QUALITY STANDARD

The company Hornung is certified to **DIN EN ISO 9001** and **ISO 14001**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

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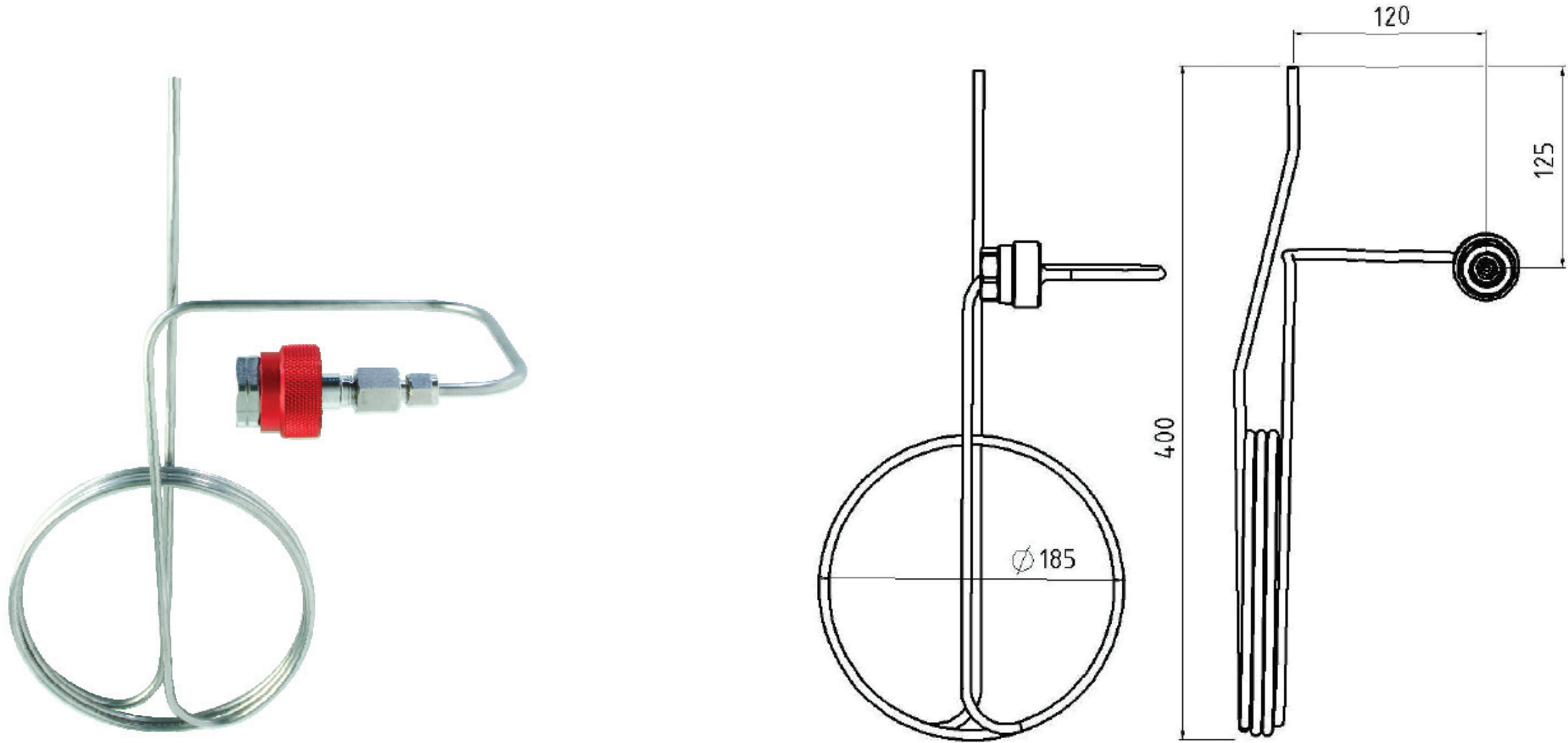
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# Pigtails HP 603

- 6 mm stainless steel tube, ideal for space saving cabinet applications
- check valve optional



Pigtails in stainless steel 1.4404 are for connecting gas cylinders with gas supply panels.  
The pigtails are fitted with a hand nut and gas specific connections to DIN477 -1 or -5 (300 bar).

ORDER NUMBER	OPTIONAL CHECK VALVE	PRESSURE RANGE	CYLINDER CONNECTION	OUTLET
HP60301	RV	to 200 bar	W21,8 x 1/14" left	6 mm tube
HP60305	RV	to 200 bar	W 1" left	6 mm tube
HP60306	RV	to 200 bar	W21,8 x 1/14" right	6 mm tube
HP60308	RV	to 200 bar	W 1" right	6 mm tube
HP60309	RV	to 200 bar	G 3/4" right	6 mm tube
HP60310	RV	to 200 bar	W24,32 x 1/4" right	6 mm tube
HP60311	RV	to 200 bar	G 3/8" right	6 mm tube
HP60313	RV	to 200 bar	G 5/8" right	6 mm tube
HP60314	RV	to 200 bar	M19 x 1,5 left	6 mm tube
HP6030170	RV	to 300 bar	W30 x 2 right	6 mm tube
HP6031170	RV	to 300 bar	W30 x 2 right	6 mm tube
HP6032170	RV	to 300 bar	W30 x 2 left	6 mm tube
HP6034170	RV	to 300 bar	W30 x 2 right	6 mm tube

Pigtails with connections to other national standards on request.

When ordering, please specify type of gas.

TECHNICAL DETAILS		QUALITY STANDARD
Material:	stainless steel 1.4404 electropolished	The company Hornung is certified to <b>DIN EN ISO 9001</b> and <b>ISO 14001</b> . All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.
Connection:	connecting thread DIN 477-1 or -5 (300 bar)	
Gas purity:	≤ 6.0	

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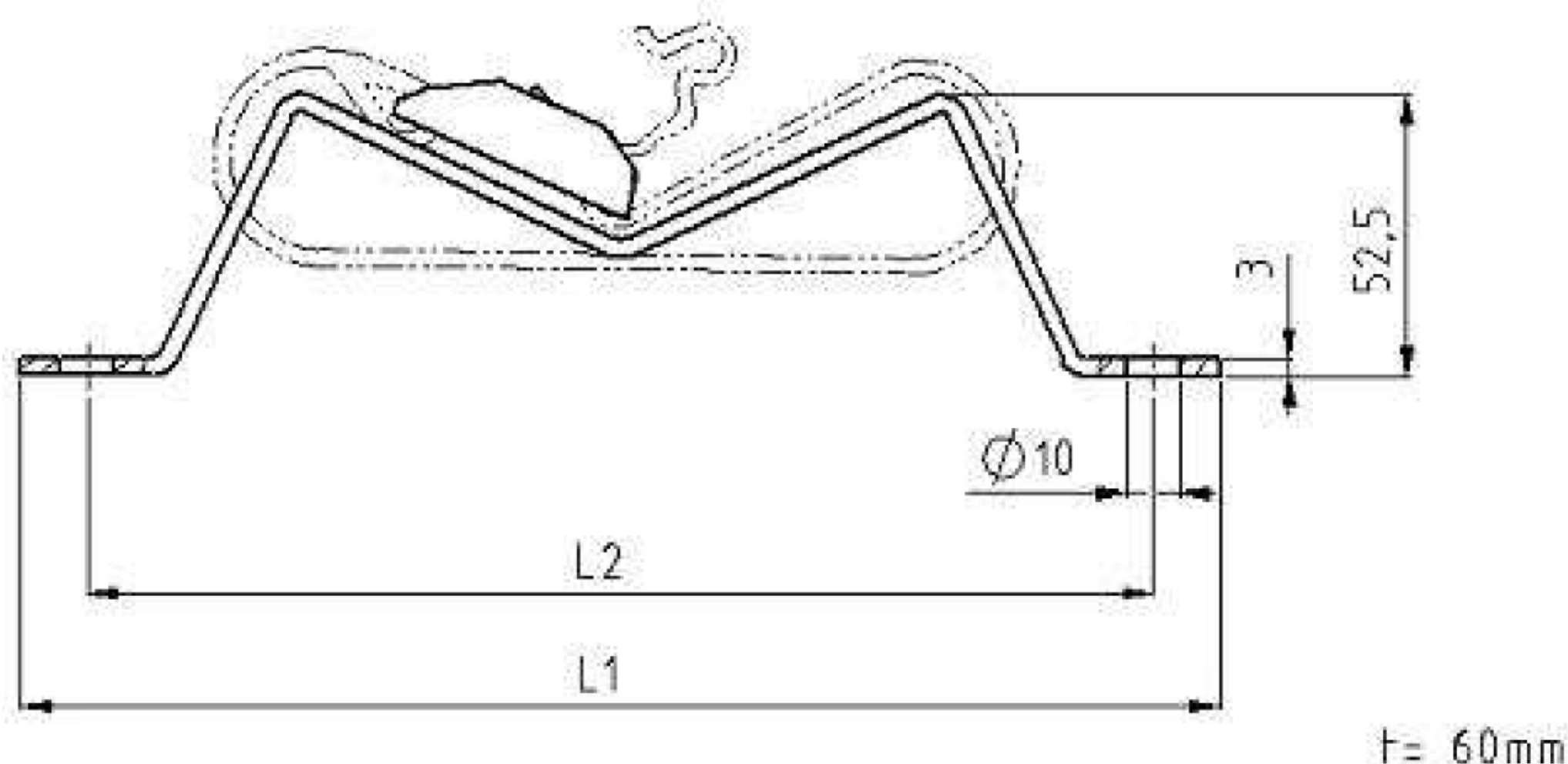
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# Cylinder retainer

- for interior application and gas cylinder board



The usual cylinder battery consists of several 40 - litre or 50 - litre single cylinders, which are attached to stationary installed high-pressure distributing main. The cylinder retainers have belts that prevent the falling over of the gas cylinders. The cylinder retainer with an adjustable belt is designed with the main purpose of securing different cylinder sizes.

Cylinders Ø (mm)	Quantity	L1 (mm)	L2 (mm)	Order no.
229	1	225	200	HP60900

## TECHNICAL DETAILS

Retainer:	coated steel plate
Fastener:	zinc die-cast synthetic fabric

## QUALITY STANDARD

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# High pressure manifold with check valve

- for high purity gases up to 6.0
- stainless steel

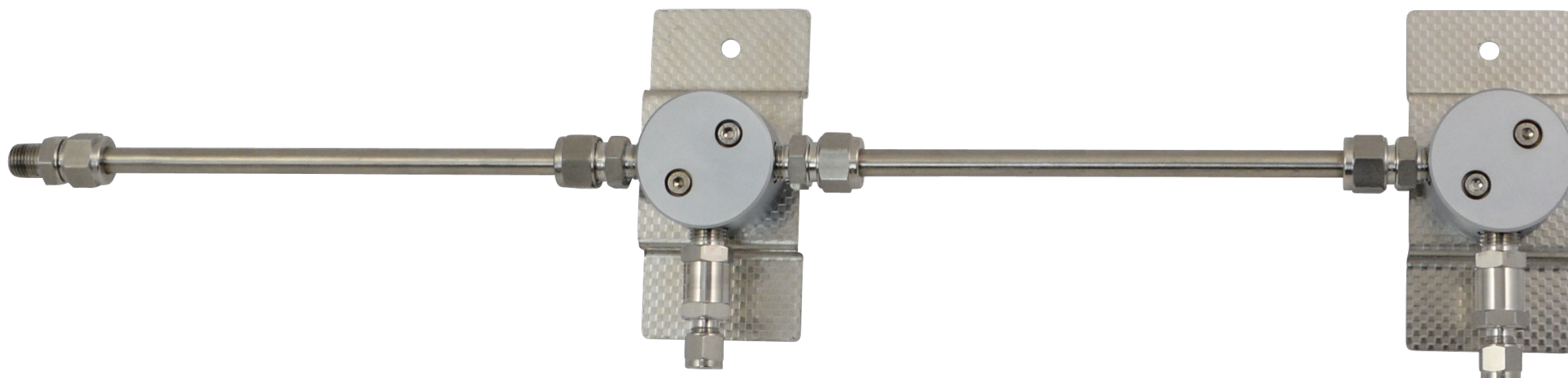


illustration: HP 660R-2

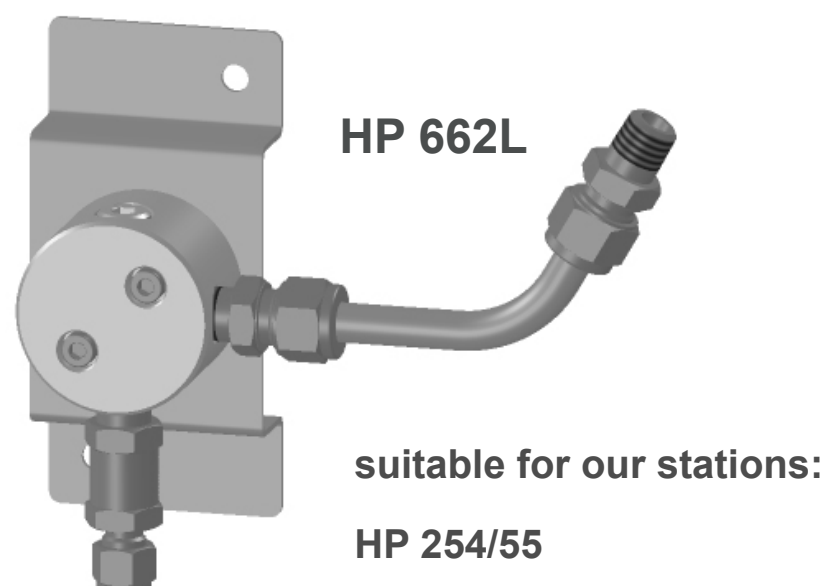
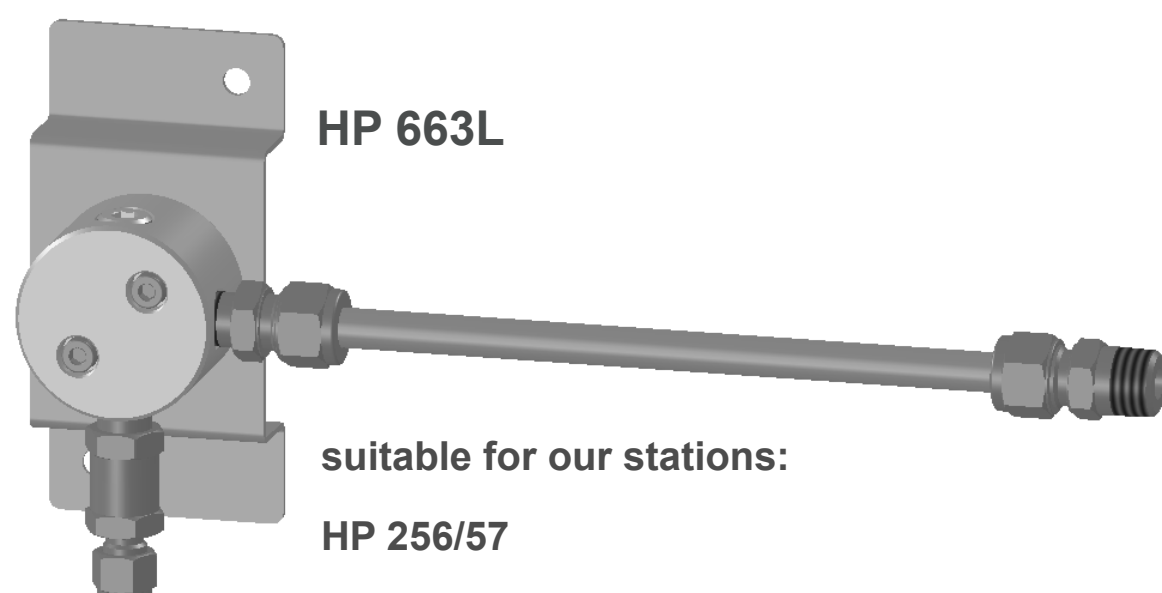
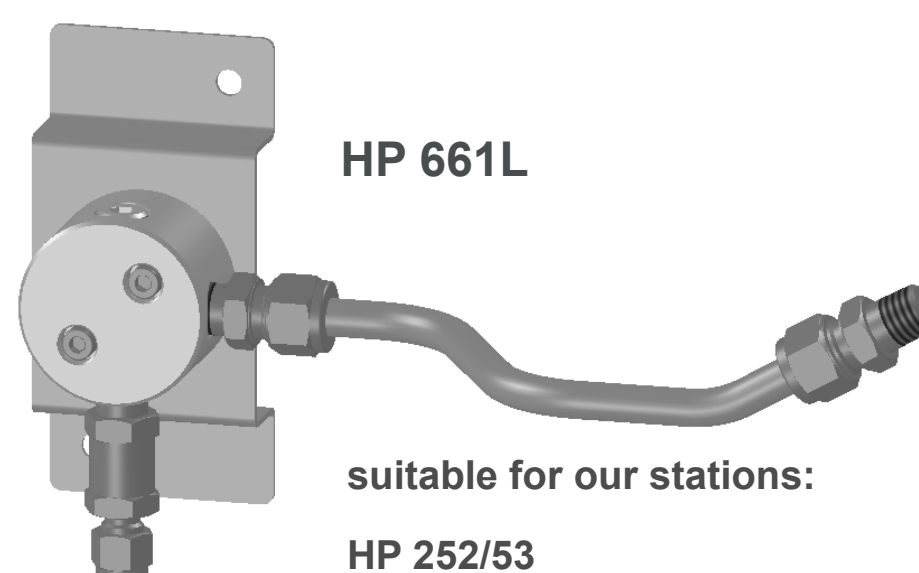
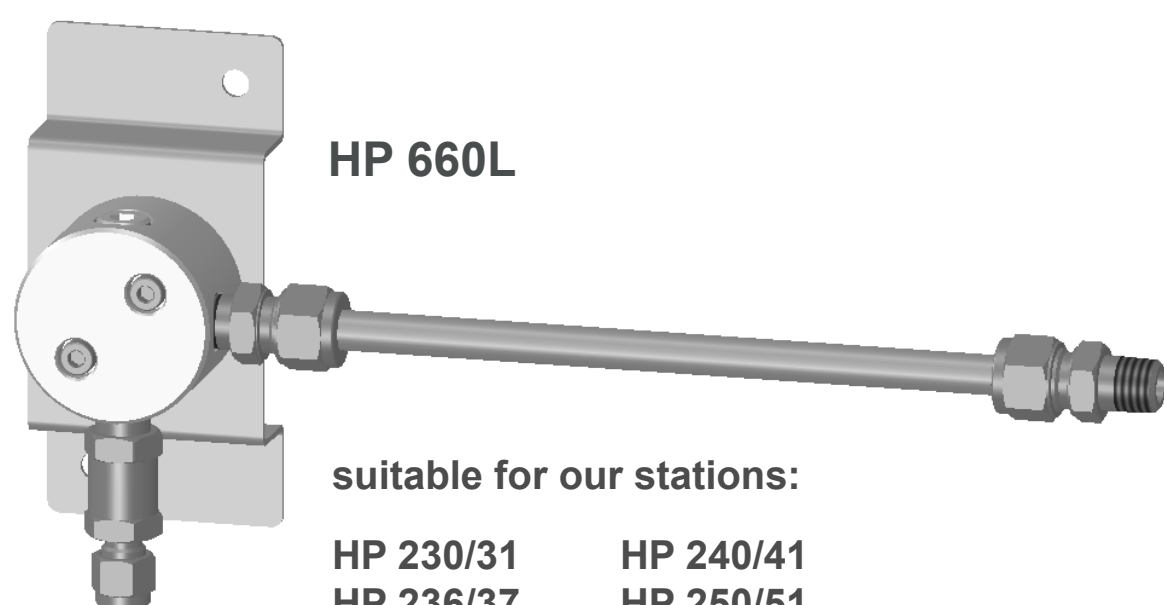
## DESCRIPTION

The high pressure manifold with check valve offers the opportunity to extend the amount of cylinders connected to cylinder stations. It is stackable up to 6 times. The integrated check valve provides safety and avoids an unwanted and not permitted transfer of the gas.

The manifold is available for the left and the right side of our cylinder stations. Every following expansion element is fastened to a separate wall mounting to guarantee maximum safety.

By using compression fittings, there is no need of additional sealing components.

## Choice of version:



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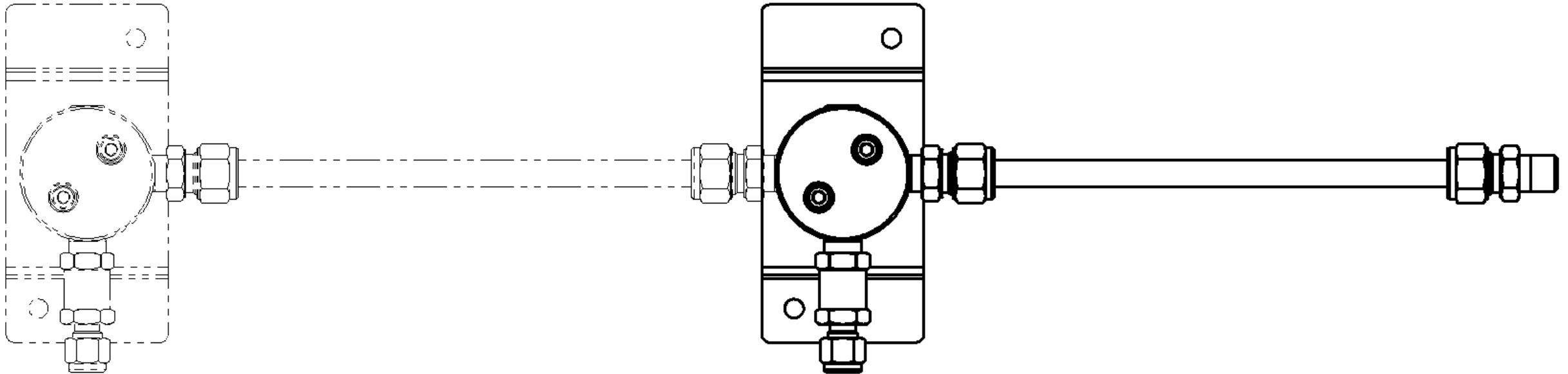
# HP 660L

Choice of quantity (using the example of HP 660L):

← up to 6-fold

2-fold  
HP 660L-2

1-fold  
HP 660L-1



## ONE ELEMENT CONSISTS OF:

2x	Compression fittings
1x	Seamlessly drawn stainless steel tube 1.4571 - DIN 2462
1x	Gas distributor block
1x	Check valve
1x	Wall mounting

## TECHNICAL DETAILS

Material:	stainless steel	Nominal diameter:	
Wall mounting:	1.4301	Distributor block & check valves:	Ø 5 mm
Compression fittings & check valves:	1.4401	Compression fittings & tube:	Ø 8 mm
Distributor block:	1.4404		
Tube:	1.4571		

## ORDER DETAILS

Version: HP 660 HP 661 HP 662 HP 663	Side: L = left R = right	Quantity of elements: 1 = 1-fold 2 = 2-fold 3 = 3-fold 4 = 4-fold 5 = 5-fold 6 = 6-fold
<b>Order example:</b>	HP 660L- version / side	4 quantity

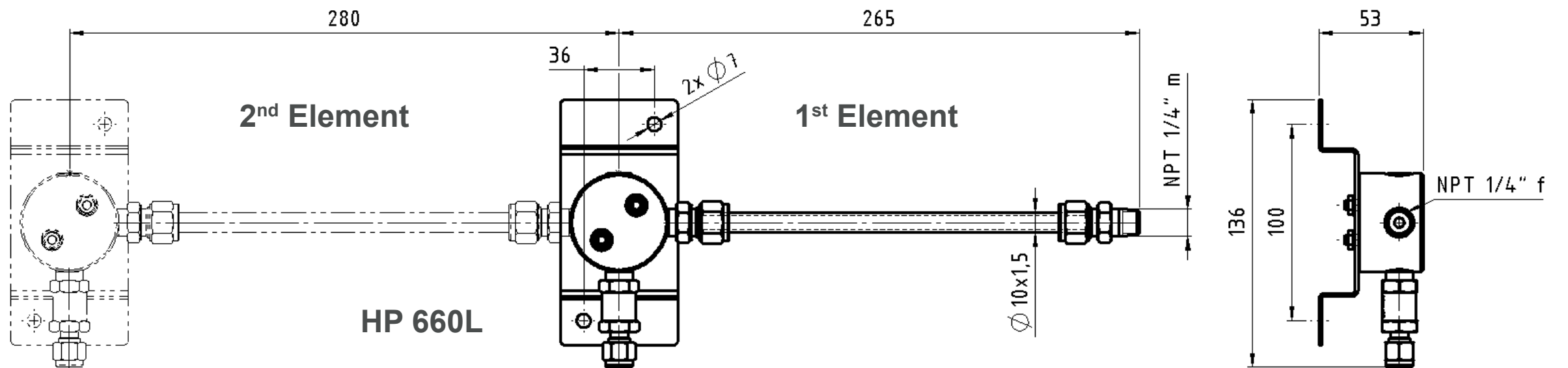
## QUALITY STANDARD

The company Hornung is certified to **ISO 9001:2008** and **ISO 14001:2009**. All single parts are manufactured, assembled and tested by in-house production. The finished parts are therefore under all criteria of German quality control with 100% final inspection.

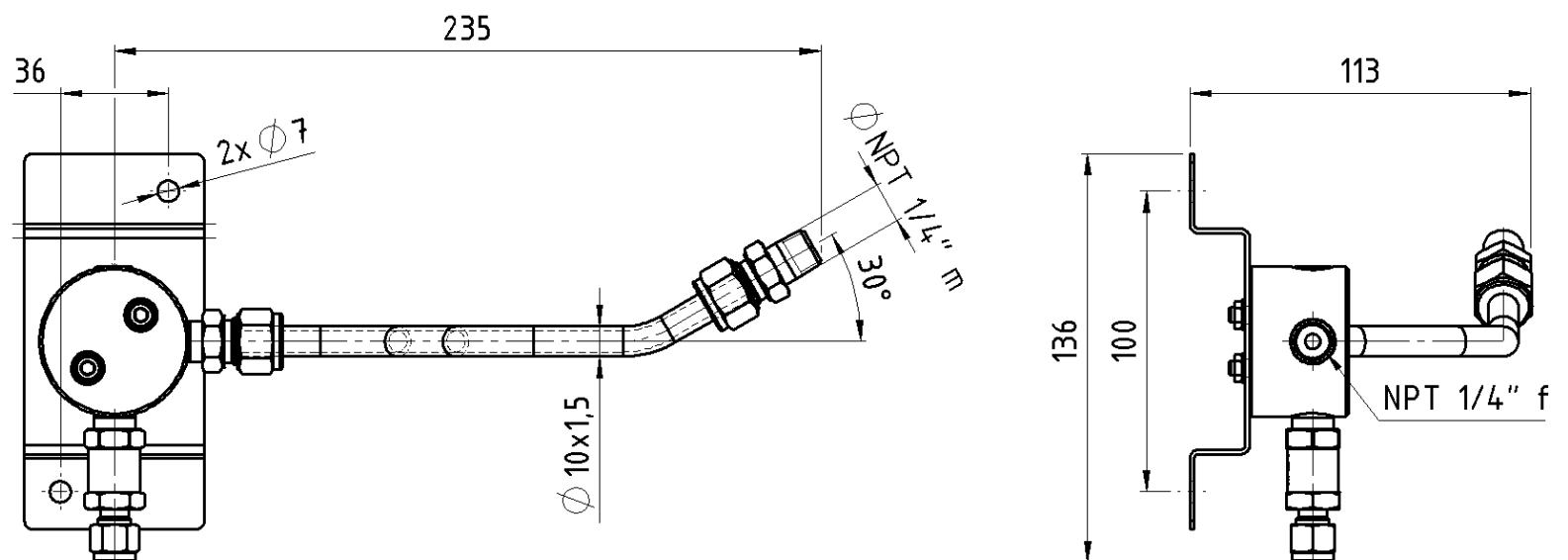
# HP 660L

## Dimensions:

← following elements: 280 mm

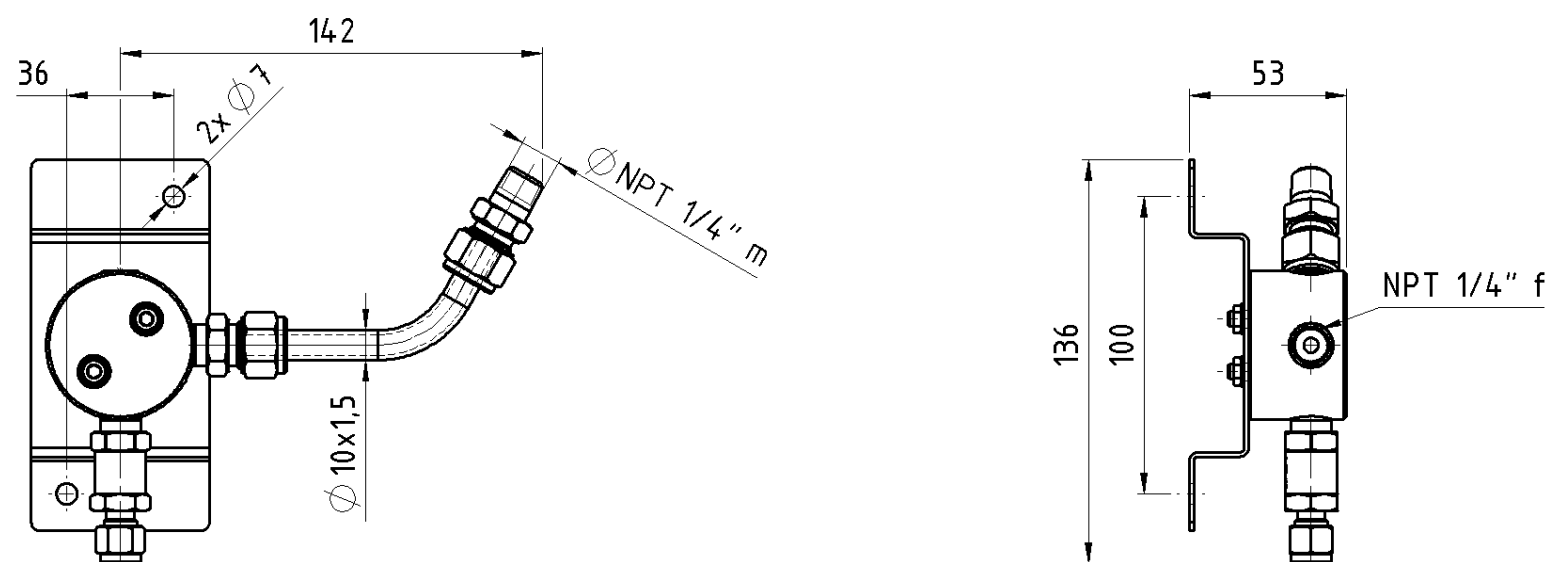


HP 660L

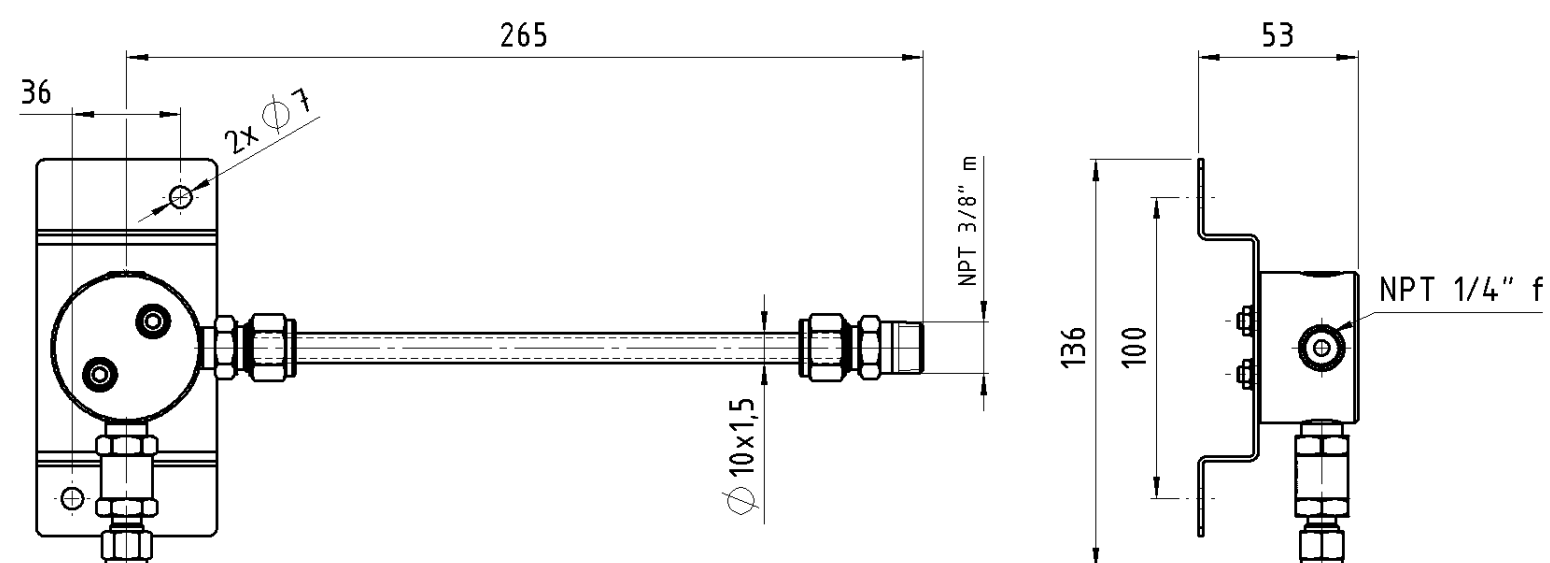


HP 661L

Following elements of different versions are always identical to the 2<sup>nd</sup> element of **HP 660L** (see above)



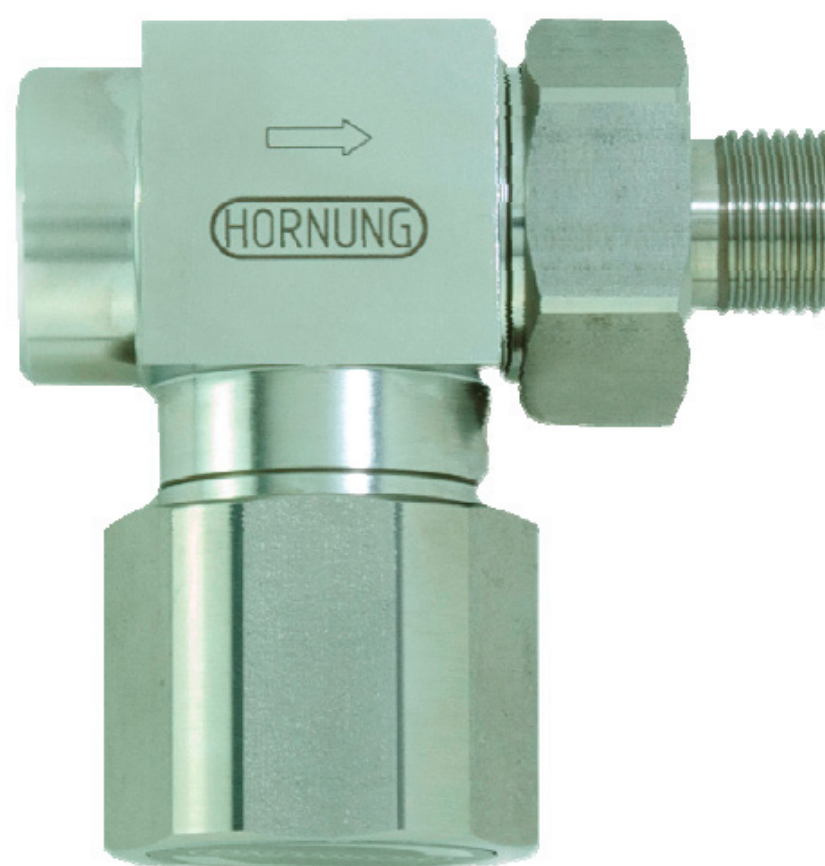
HP 662L



HP 663L



# Fine filter F 2

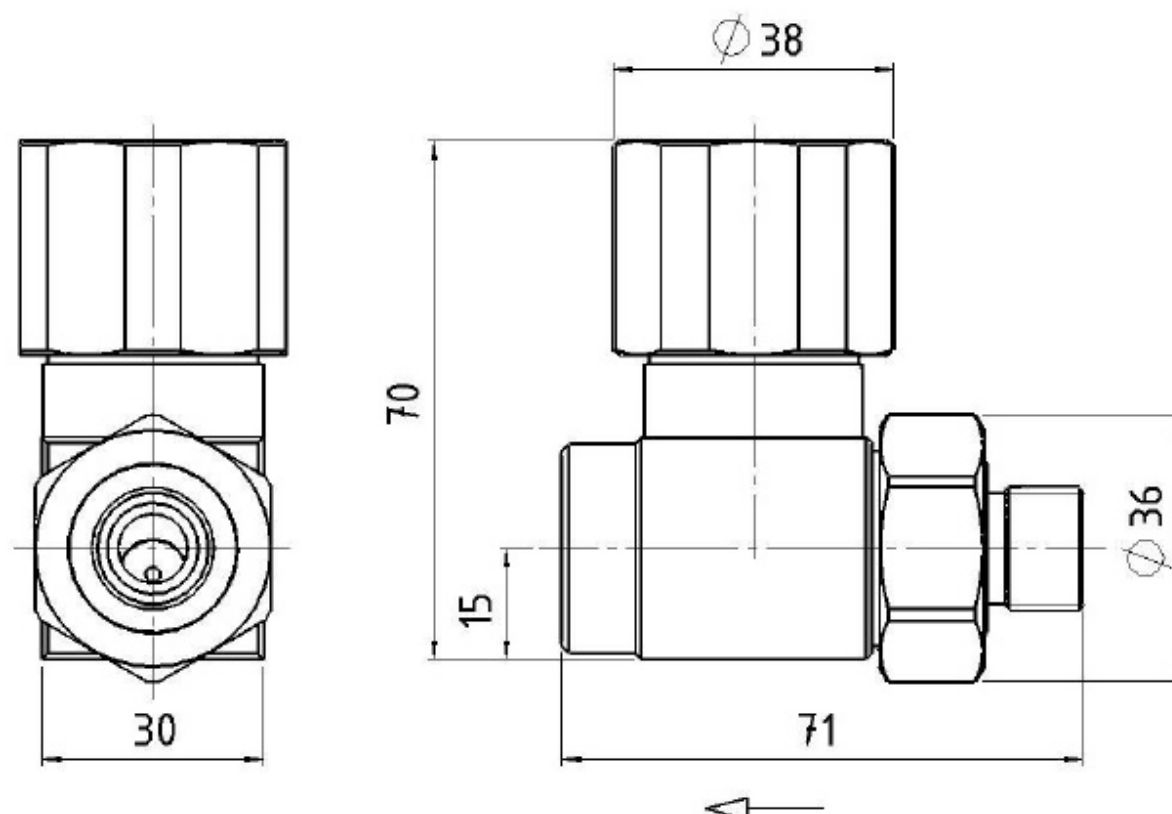


TECHNICAL DETAILS		DESIGN	DESCRIPTION
Material:	brass / stainless steel	<p>This fine filter is equipped with a standard internal thread G 3/8" m at the inlet and G 3/8" f at the outlet.</p> <p>In order to constantly have the maximum flow capacity available, it is advisable to periodically examine the filter element and replace when necessary.</p> <p><b>Application area</b> We urgently recommend the use of this filter element in connection with our pressure regulators, where the accuracy and life span of pressure-regulators can be substantially increased with a clean medium.</p> <p>Further application areas exist in high pressure pneumatics for the protection of sensitive measuring equipment and controllers.</p>	<p>The high pressure filter F 2 is a stainless steel 1.4404 or brass manufactured fine filter with a replaceable filter element made of sintered bronze or stainless steel.</p> <p>The built-in filter element holds back solid particles to 20 or 40 micron and permits only cleansed gases or liquids to flow to the following equipment.</p>
Gaskets:	viton		
Max. pressure:	420 bar		
Pore size:	20 or 40 μ (bronze) 20 or 35 μ (st. steel)		
Operating temp.:	-20°C to +70°C		
Dimensions:	38 x 70 x 71 mm		
Weight:	640 g		
Connections:	inlet G 3/8" m outlet G 3/8" f		

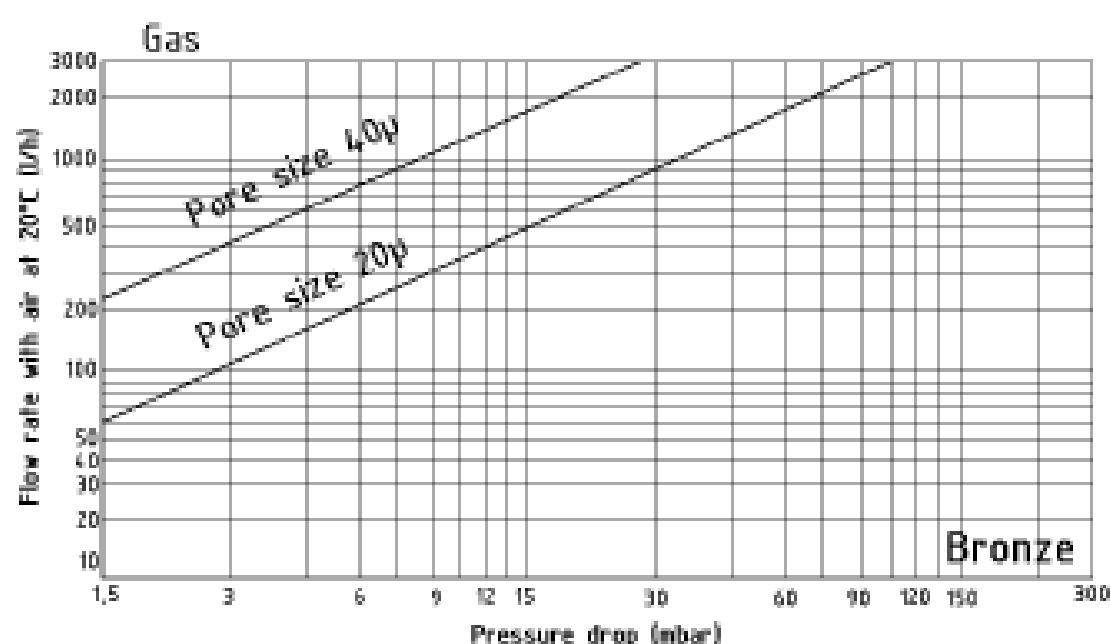
## QUALITY STANDARD

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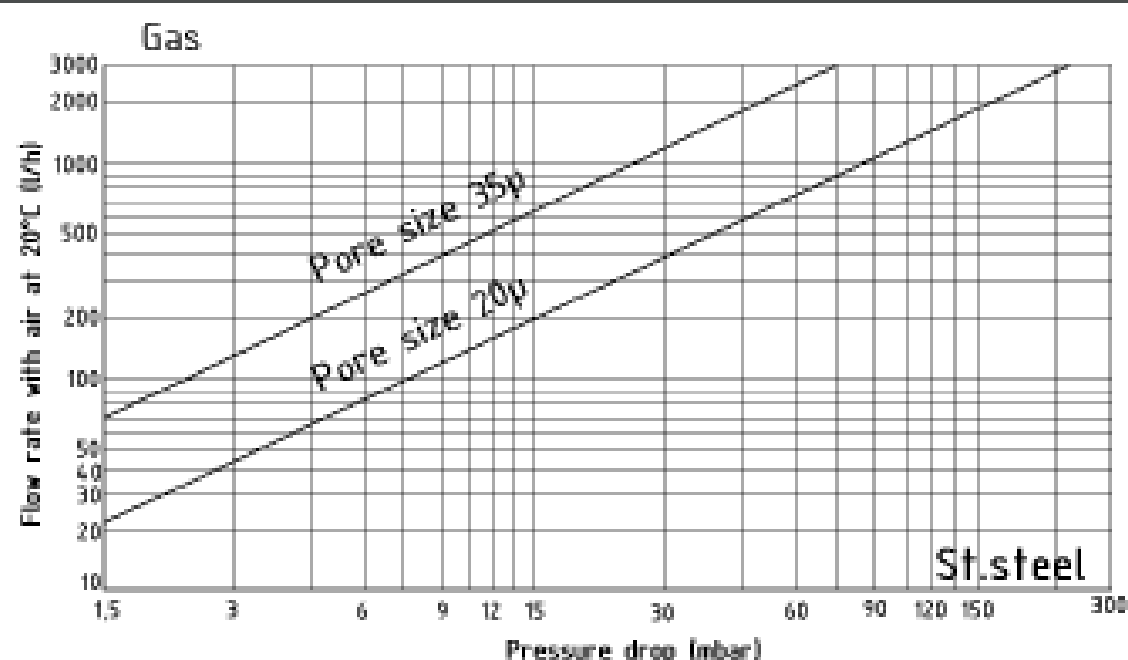
# F 2



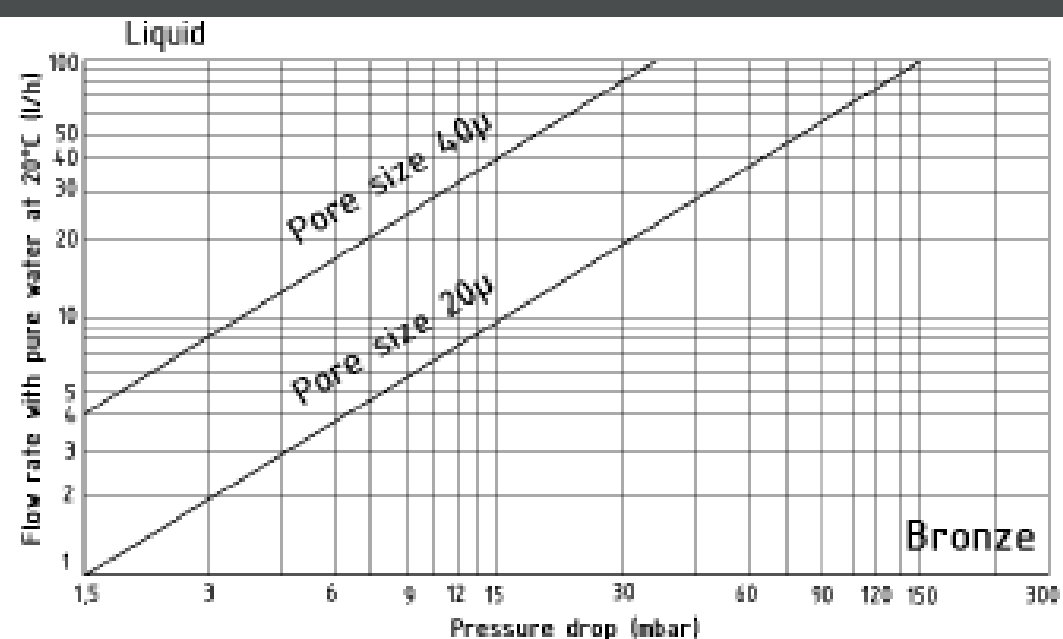
## GAS (BRONZE)



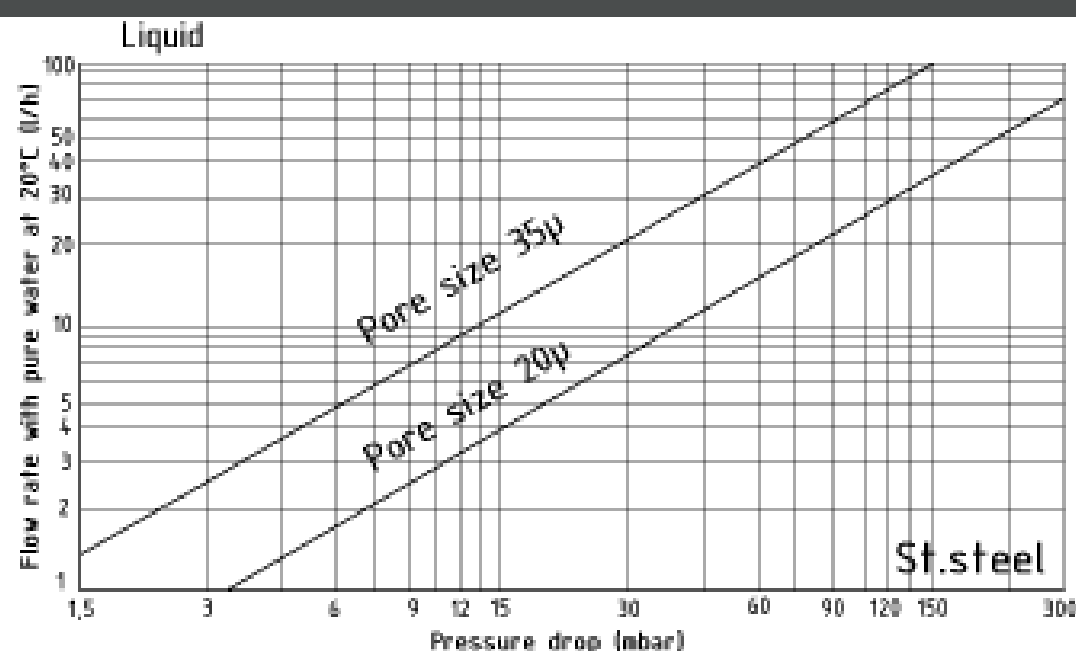
## GAS (STAINLESS STEEL)



## LIQUID (BRONZE)



## LIQUID (STAINLESS STEEL)



## ORDER DETAILS

### Material:

- 1 = brass
- 2 = stainless steel

### Filter element:

- 1 = bronze 20 µ
- 2 = bronze 40 µ
- 3 = stainless steel 20 µ
- 4 = stainless steel 35 µ

Filter type

32

F 2

32

Type

-1

Material

1

Filter element

Gas type

Gas type

### Accessories:

- Filter elements, O-rings

# Fine filter F 4

- with a replaceable filter element



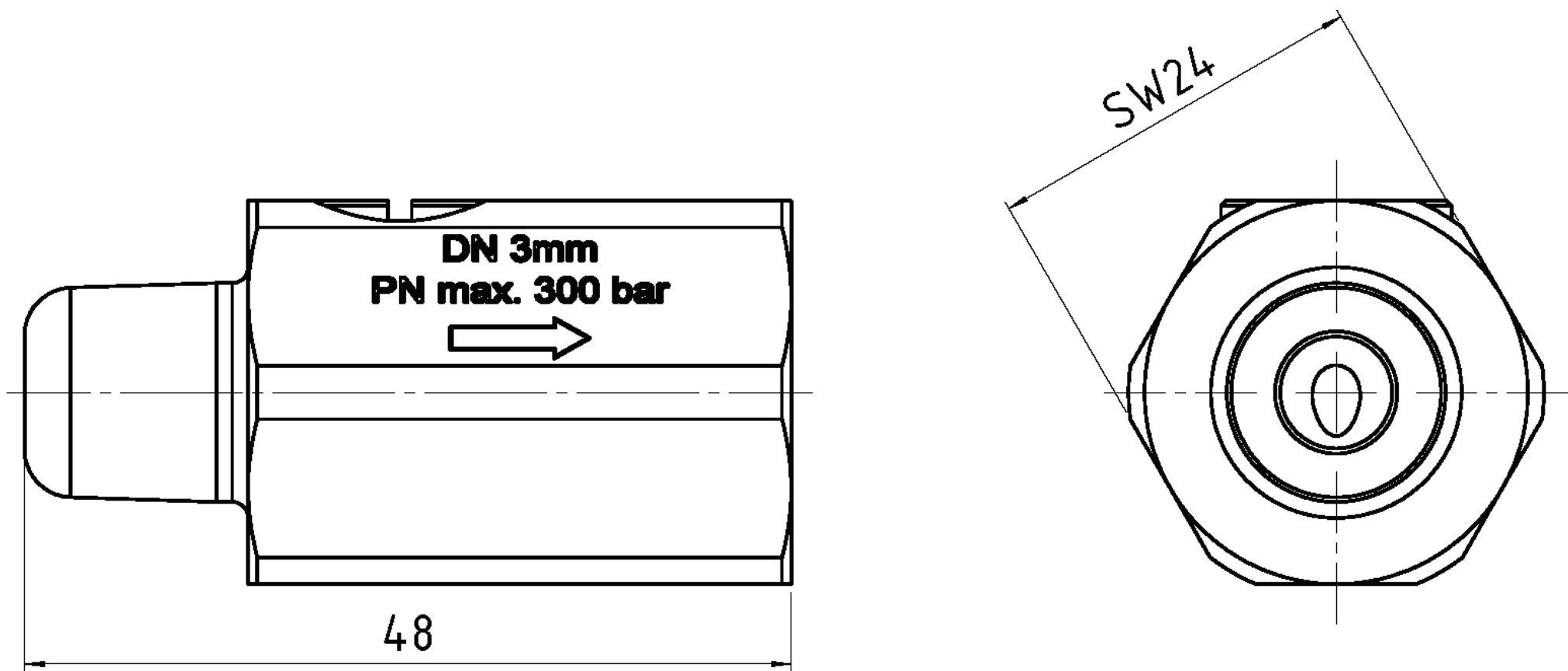
TECHNICAL DETAILS		APPLICATION AREA	DESCRIPTION
Material:	Stainless steel 1.4404	<p>We urgently recommend the use of this filter element in connection with our pressure regulators.</p> <p>The accuracy and life span of the equipment can be substantially increased with a clean medium.</p> <p>Further application areas are high pressure pneumatics for the protection of sensitive measuring equipment and controllers.</p>	<p>The fine filter F 4 is a stainless steel manufactured filter with a stainless steel replaceable filter element.</p> <p>The built-in filter element holds back solid particles up to 32 micron and permits only cleansed gases or liquids to flow to the following equipment.</p> <p><b>Design:</b> The fine filter is designed with a standard external thread NPT 1/4" at the inlet and an internal thread NPT 1/4" at the outlet.</p> <p>In order to constantly have the maximum flow capacity available, it is advisable to periodically examine the filter element and replace it when necessary.</p>
Elastomer:	Viton®		
Max. inlet pressure:	300 bar		
Nominal diameter:	Ø 3 mm		
Pore size:	32 µm (1.4404)		
Operating temp.:	-20°C to +70°C		
Dimensions (wxhxd):	SW 24x48 mm		
Weight:	approx. 125 g		
Connections:	Inlet NPT 1/4" m Outlet NPT 1/4" f		

## QUALITY STANDARD

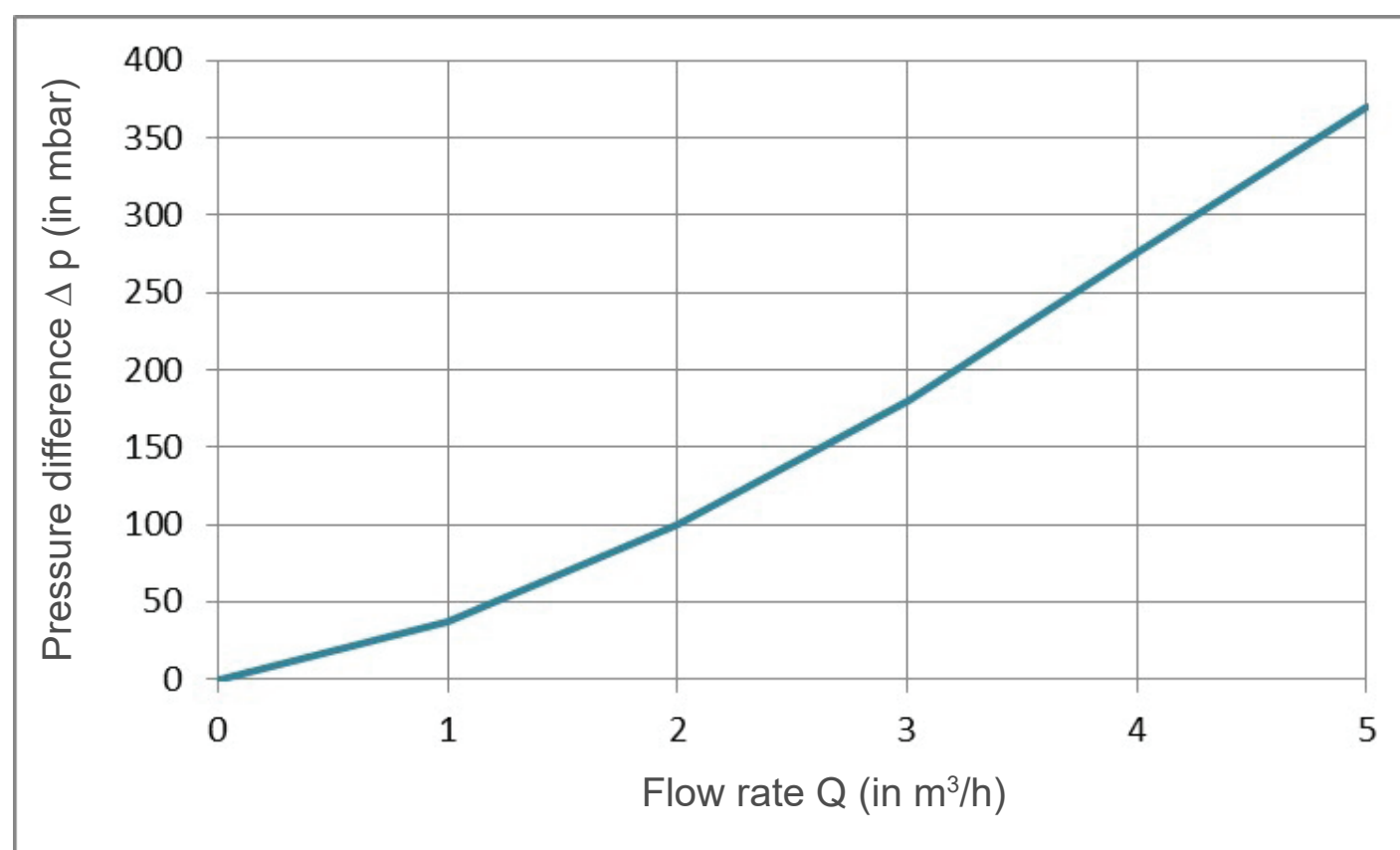
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# F 4



## PRESSURE DROP F 4



## ORDER DETAILS

### Material:

1 = Stainless steel

### Filter element:

1 = Stainless steel 32 μ

Filter element  
F 4

F 4-  
Type

1  
Material

1  
Filter element

Gas type  
Gas type

**Accessories:** Filter inlet, O-rings

# **HORNUNG**

**Präzision made in Germany**

**Customers information**

# Selection matrix for cylinder pressure regulators

	CHEMICAL FORMULA	VAPOUR-FILLING PRESSURE MAX. AT 20°C IN BAR	PROPERTIES	SINGLE-STAGE HP-SERIES / TYPE	DUAL-STAGE	WITH PURGE SYSTEM MATERIAL	CYLINDER CONNECTION* DIN 477-1	CYLINDER CONNECTION* DIN 477-5
Acetylene	C2H2	18		f		B	3	
Ammonia	NH3	8.6	f,t,c	HP102		SS	6	
Argon	Ar	200/300	i	HP100	HP101	B	6	54
Arsine	AsH3	14.1	f,t	HP102	0.05	SS	1	
Boron Trichloride	BCL3	0.37	t,c	HP102		X SS	8	
Boron Trifluoride	BF3	68.9	t,c	HP102	1	X SS	8	
Bromotrifluoromethane	CBrF3	14.4	o	HP102		X SS	6	
Calibration gas (non corrosive)		150/200	o	HP100	HP101	B	14	
Calibration gas (corrosive)		150/200	c	HP102	HP103	X SS		
Carbondioxide	CO2	57.3	o	HP100		B	6	
Carbonmonoxide	CO	150/200	f,t	HP100	HP101	SS	5	
Chlorine	CL2 6.8	6.8	t,c	HP102		X SS	8	
Chlorodifluoromethane R22	CHCIF2	31	o	HP100		B	6	
Chloropentafluoroethan R115	C2CIF5	8	o	HP100		B	5	
Compressed air	DL	200/300	o	HP100	HP101	B	13	56
Cyclopropane	C3H6	6.3	f	HP100	0.5	B	1	
Deuterium	D2	100	f	HP100	HP101	b	1	
Diborane (-mixtures)	B2H6	150	f,t	HP102	HP103	X SS	1	
Ethane	C2H6	37.7	f	HP100		B	1	
Ethylene (Ethene)	C2H4	68.6	f	HP100		B	1	
Fluorine	F2	-	t,c				8	
Helium	He	200/300	i	HP100	HP101	B	6	54
Hexafluoro Ethane	C2F6	-	i			B	8	
Hydrogen	H2	200/300	f	HP100	HP101	B	1	57
Hydrogen Bromide	HBR	20	t,c	HP102		X SS	8	
Hydrogen Chlorid	HCL	42.6	t,c	HP102		X SS	8	
Hydrogen Fluoride	HF	1.03	t,c				8	
Hydrogen Sulfide	H2S	18-2	f,t,c				8	
Isobutane	iC4H10	3.02	f	HP100*)		B	1	
Isobutene	C4H8	2.59	f	HP100*)		B	1	
Krypton	Kr	200	i	HP100	HP101	B	6	



# Selection matrix for cylinder pressure regulators

	CHEMICAL FORMULA	VAPOUR-FILLING PRESSURE MAX. AT 20°C IN BAR	PROPERTIES	SINGLE-STAGE HP-SERIES / TYPE	DUAL-STAGE	WITH PURGE SYSTEM MATERIAL	CYLINDER CONNECTION* DIN 477-1	CYLINDER CONNECTION* DIN 477-5
Methane	CH4	200	f	HP100	HP101	B	1	
Methylamine	CH5N	3	f,t	HP100**)		B	1	
Methyl Chloride	CH3CL	4.1	f,t	HP100**)		B	1	
Methyl Mercaptan	CH4S	1.7	f,t	HP100**)		B	1	
Neon	Ne	200	i	HP100	HP101	B	6	
Nitrogen	N2	200/300	i	HP100	HP101	B	10	54
Nitrogen Dioxide	NO2	0.962	oxct	HP102		X SS	8	
Nitrogen Monoxide	NO	50	t,c	HP102		X SS	8	
N2O	50.6	ox	HP100	HP101		B	11	
Nitrogen Trifluoride	NF3	100	t	HP102	HP103	X SS	8	
Oxygen	O2	200/300	ox	HP100	HP101	B	9	59
Phosphine	PH3	34.6	f,t	HP102		X SS	1	
Propane	C3H8	8.4	f	HP100		B	1	
Propylene (Propene)	C3H6	10.3	f	HP100		B	1	
Protective gas	H2/N2	200/300	(f)	HP100	HP101	B	1	57
Silane	SiH4	86	f,t	HP102		X SS	1	
Silicon Dichloride	SiH2CL2	0.65	f,t,c			X SS	5	
Sulphur Dioxide	SO2	3.3	t,c	HP102**		X SS	7	
Sulphur Hexafluoride	SF6	22.1	i	HP100		B	6	
Synthetic Air	SL	200/300	ox	HP100	HP101	B	9	59
Tetrafluoro Methane	CF4	bis ca 137	i	HP100	HP101	B	6	
Trifluoro Methane R 23	CHF3	41.8	o	HP100	HP101	B	6	4
Xenon	Xe	bis ca. 33	i	HP100		B	6	

f = flammable

t = toxic

c = corrosive

i = inert

o = others

ox = oxidising

f = brennforndernd

B = brass (nickel and chrome plated) \* other common national standards deliverable on request

SS = Stainless steel \*\* alternative: metering valve „Rossignol“with cylinder valve.connection

# Safety notes for high purity gas equipment

## CONTAMINATION AND PREVENTION

Contamination by air (humidity) when initially using the equipment or after changing a cylinder will be removed by multiple purging with changing pressures (up to 10 bar increase/ relief) using dry Nitrogen or other inert gases. Contamination caused by inappropriate piping material or inappropriate valves and regulators can be avoided by the consequent use of control equipment with metal diaphragms, gases with high purity, the appropriate use of pipe work (electropolished), minimising of dead space, usage of orbital welding techniques with Argon inert gas, regular purging and conservation of the pipe work, avoiding leaks by Helium leakage tests and the use of VCR fittings.

## USE OF AUTOMATIC OR MANUAL CHANGE OVER

Automatic change over is recommended, when a higher gas flow with frequently cylinder changes will be required, an interruption of gas supply should be avoided or when over weekends the gas supply has to be guaranteed without any staff activities.

## SELECTION OF SINGLE OR DUAL STAGE

Dual stage regulators should be used if the operating pressure has to be absolutely stable even if the inlet pressure drops (during discharging of cylinder) or if the pressure has to be reduced from a high pressure level (e.g. 200/ 300 bar) to a very low pressure (e.g. < 1 bar)

When using liquefied gases it is sufficient in nearly all applications (e.g. SF<sub>6</sub>, NH<sub>3</sub>, HCL, CO<sub>2</sub> and others) to use the single stage pressure regulator because the vapour pressure of liquefied gases remains constant until the cylinder is nearly empty.

## CONTROL IN MBAR RANGES

High purity pressure regulator will reach their limits because of the metallic elements (flexibility of the metal diaphragm) inside. For operating pressure below 100 mbar in most of the cases a compromise has to be made between the quality of the gas and the control capabilities of the pressure regulator. For analytical processes metal diaphragm or metal bellows components have to be used.

## GAS PURGING EQUIPMENT

For toxic and corrosive gases or for calibration gases with contents of corrosive ingredients (even in ppm- or ppb areas) a purging device is recommended.

## CENTRALISED OR DECENTRALISED GAS SUPPLY

A decentralized gas supply from single gas cylinders is useful if gas is needed temporarily or for a few hours. If gases are needed continuously it is recommended to use a centralized gas supply system. A centralized gas supply system offers economical advantages if the same gas will be used at different points of use (less cylinders, less handling, less renting costs, less indoor transport, more safety).

# Safety notes for high purity gas equipment

## MATERIAL CHOICE

Stainless Steel is used in processes with toxic or corrosive gases. Furthermore it is recommended to use stainless steel materials for process operating with high purity gases and for calibration gases with corrosive ingredients in the range of ppm or ppb or more. For non corrosive gas qualities up to 5.0 it is sufficient to use copper pipelines or brass materials. For the gas supply for ECD (electron capture detector) applications stainless steel or a special cleaning process is recommended.

## IMPLEMENTING OF CORROSIVE GASES

When applying corrosive gases, the entrance of moisture and atmospheric oxygen should be avoided. The prevention of moisture to the extent of less than 5 ppm demands that the choice of material, purge gas, as well as the purging method should be thoroughly examined.

The pressure gas cylinders are placed in a safety gate with defined air load change.

## RELIEF VALVE FOR PRESSURE REGULATOR

Pressure regulators, used as cylinder or panel regulators, usually have an integrated relief valve with a relief pressure adjusted to the max. outlet pressure. The primary purpose of the relief valve is to protect the pressure regulator. For the protection of especially sensitive processes behind the regulator, a relief valve is necessary.



# Conversion tables

PRESSURE UNITS	HPA (mbar)	INCH HG	INCH H2O	FT H2O	bar	lb/in.2 (psi)
1 hPa (mbar)	1	0.02983	0.4055	0.03379	0.001	0.01450
1 inch Hg	33.86	1	13.60	1.133	0.03386	0.4912
1 inch H2O	2.49	0.07355	1	0.08333	0.00249	0.03613
1 ft H2O	29.89	0.8826	12	1	0.02989	0.4335
1 bar	1000	29.51	401.3	33.44	1	14.50
1 lb/in.2 (psi)	68.95	2.036	27.67	2.307	0.06895	1

VOLUME UNITS	cm <sup>3</sup>	Liter	m <sup>3</sup>	Zoll	Fuß <sup>3</sup>	gal
1 cm <sup>3</sup>	1	0.001	1x10 <sup>-6</sup>	0.06102	3,53x10 <sup>-5</sup>	2.64x10 <sup>-4</sup>
1 liter	1000	1	0.001	61.02	0.03532	0.2646
1 m <sup>3</sup>	1x10 <sup>6</sup>	1000	1	6.10x10 <sup>4</sup>	35.31	264.2
1 (Zoll) <sup>3</sup>	16.39	0.01639	1.64x10 <sup>-5</sup>	1	5.79x10 <sup>-4</sup>	0.00433
1 (Fuß) <sup>3</sup>	2.83x10 <sup>4</sup>	28.32	0.02832	1728	1	7.481
1 gal	3785	3.785	0.00379	231.0	0.1337	1

LENGTH UNITS	cm	m	km	Zoll	Fuß	Mile
1 cm	1	0.01	1x10 <sup>-5</sup>	0.3937	0.03281	6.21x10 <sup>-6</sup>
1m	100	1	0.001	39.37	3.281	6.21x10 <sup>-4</sup>
1 km	1x10 <sup>5</sup>	1000	1	3.94x10 <sup>4</sup>	3281	0.6214
1 in. (Zoll)	2.540	0.02540	2.54x10 <sup>-5</sup>	1	0.08333	1.58x10 <sup>-5</sup>
1 ft. (Fuß)	30.48	0.3048	3.05x10 <sup>-4</sup>	12	1	1.89x10 <sup>-4</sup>
1 mile	1.61x10 <sup>5</sup>	1609	1.609	6.34x10 <sup>4</sup>	5280	1

FLOW UNITS	1 l/min	1 gal/min	1 ft/s	1 ft <sup>3</sup> /min
1 l/min	1	0.264	0.00058	0.0353
1 gal/min	3.7854	1	0.00223	0.1337
1ft/s	1699.2	448.8	1	60
1 ft <sup>3</sup> /min	28.314	7.481	0.01667	1

# Technical rules, guidance and common installation references

97/23/EG	Pressure equipment directive
TRG 280	Technical rules compressed gas
TRG 801	Technical rules for pressure tank regulation
TRR	Technical rules pipework
TRGS 520	Technical rules for dangerous substances, safety instructions
TRF	DVGW

BGI 617	Introduction with oxygen
BGI 644	Hazard with oxygen
BGI 612	Hydrogen

BGR 104	Explosion safety instructions (EX-RL)
BGR 120	Laboratories (past ZH 1 / 119)

BGV A3	Electrical plant and operating material
BGV B6	For the exposure with gas (UVV Gas)
BGV B7	Oxygen (UVV Sauerstoff)
BGV D1	Welding, cutting, cognate procedures

DIN EN 270-2	Safety closet (DIN 12925)
DIN 2470	Gases from steel pipes

EG	Safety data sheet for gases (TRGS 220)
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VDE 0171	Electrical operating material for explosion hazard areas
VDE 0789	Guidance for laboratories
VDS 2008	Welding, cutting, brazing and cutoff grinding

VDMA	Commendation
VOB/VOL	Places of contracts by tender

# Converting regulation

Quality analyses before installation, among other things the storage of materials at the building yard in an dust controller cave room. Visual part check if scratched, bended, busted, not covered with casing, without lamination sheet, not enough labelled, bating and polishing defects, color change, viewable dampness or particles.

WIG-method welding with orbital welding automat without welding appendage with binding piece. In effect method check according to AD-sheet HP 2/1 and DIN EN 288-3. In effect adequacy check for the welding personal necessary. Welding samples must be conducted before assembling, changing the pipe diameter, machine changeover and after changing machine personal.

Copper/copper solder bonding for pure gas facilities must be exclusively accomplished flux material free. Before or during brazing the inlet of air must be eliminated by reforming.

Detachable connection get jointed with clamp collar fitting. In case of increased demands VCRbolting must be inserted for stainless steel pipe connections (such as high corrosive or high pure gases).

Flushing and preserving of the supply system is necessary during deadlock or open circuit and after completion to adhere the requested quality standards.

After the assembling the user must effect an pressure test with azotic UVV-VBG 61/62, an helium leakage test and an functional test and record the chronicles.

## ACHIEVEMENT RECOMMENDATION FOR COMPONENTS AT SUPPLY SYSTEMS

### **For technical gases with basic quality 4.0 (99,99 Vol%)**

Copper pipework, hard brazed and screwed, brass armatures without spezial purity demands.

### **For pure gases with a quality of 5.0 (99,999 Vol%)**

Copper pipe work, special cleaned, oil- and grease free, flux material free hard brazed or stainless steel pipes, orbital welded, brass armatures (stainless steel) with metal diaphragm- or convoluted rubber gaiter blinding.

### **For ECD quality and gases with purity 6.0 (99,9999 Vol%), and also corrosive gases**

Stainless steel pipe work, special cleaned (TCC-quality), orbital welded, stainless steel armatures with metal diaphragm- or convoluted rubber gaiter blinding. Application of metallic obdurate VCRscrewing. Cleaning with FCKW free cleaning agent, if applicable cure in the trying oven and packaging air tight, every opening metallic closed.

### **For purity class 6.0, highly corrosive gases respectively semi conductor gases**

Pipe work (such as quality Ultron), orbital welded, ultra high purity armatures from specific stainless steel, electro polished, with defined surface quality, material adverted (stainless steel, Hastelloy, Elgiloy), metal diaphragm and VCR- screwing assembled in clean room, particle checked, dust- and air tight packed, every opening metallic closed.



# Cylinder valve connection types

THREAD		THREAD	
FRANCE	AFNOR	GERMANY	DIN 477-1
		No. 1	W 21.80 x 1/14" a left
AFNOR C	IS 21.7 x 1.814 a	No. 3	Connection for brace stirrup
AFNOR E	IS 21.7 x 1,814 a	No. 5	W 1" a left
AFNOR F	IS 22.91 x 1.814 i	No. 6	W 21.80 x 1/14" a right
AFNOR G	IS 26 x 1.5 i	No. 7	G 5/8" a right
AFNOR H	W 22.91 x 1.814 i	No. 8	W 1" a right
AFNOR J	W 25.4 x 3.175 a	No. 9	G 3/4" a right
AFNOR K	W 27.0x2.0 (not flammable)	No. 10	W 24.32 x 1/14" a right
AFNOR P	W 27.0 x 2.0 (oxidizing)	No. 11	G 3/8" a right
		No. 13	G 5/8" i right
		No. 14	M19 x 1,5 left
GB	BS341	GERMANY	DIN 477-5
BS341 No 3	G 5/8" BSPF	No. 54	W30x2 RH 300 bar inert gas / nitrogen
BS341 No 4	G 5/8" BSPF	No. 59	W30x2 RH 300 bar oxygen
BS341 No 6	G 5/8" BSPM	No. 56	W30x2 RH 300 bar compressed air
BS341 No 7	G 5/8" BSPM	No. 57	W30x2 LH 300 bar burnable gas
BS341 No 8	W 0.860" a		
BS341 No 10	G 1/2" BSPM		
BS341 No 12	G 1/2" BSPM		
BS341 No 15	G 3/8" BSPM		
USA	CGA		
CGA 320	0.825" 14 NGO a (flat connection fitting)		
CGA 330	0.825" 14 NGO a (flat connection fitting)		
CGA 350	0.825" 14 NGO a (rounded connection fitting)		
CGA 580	0.965" NGO i		
CGA 660	1.030" 14 NGO a (incumbent blinding)		
CGA 670	1.030" 14 NGO a (incumbent binding)		
CGA 678	1.030" 14 NGO a		

## Legend:

**AFNOR** = Association Française de Normalisation  
**BSPF** = British Standard Innengewinde  
**BSPM** = British Standard Aussengewinde  
**CGA** = Compressed Gas Association – US Standard  
**G** = Gas thread

**JIS** = Japanese Industrial Standard  
**M** = Metric threads  
**NGO** = National Gas Outlet  
**W** = Whitworth Gewinde

# Assortment for special gas pipes

VDMA 4390	Spezifikation	Description	Gas quality				
			4.0	5.0	5.0 ECD	6.0	7.0
Cu 1	Smoothly copper pipe, SF-Cu-R290, EN 13 348/ Med < 0,2 mg/dm <sup>2</sup> rest fat content	Medicin pipe	■	■			
Cu 2	Smoothly copper pipe, SF-Cu-R290 < 0,1 mg/dm <sup>2</sup> rest fat content	Pure gas pipe (ECD)	.....	■	■	.....	
ES 1	Smoothly ES-pipe, standard, blank annealed/m tolerance D4/T3	VSR 80	■	.....			
ES 2	Smoothly ES-pipe, FCKW-free, cleaned, C4/T3/Ra-inner 1µm aspired	TCC, CQ	.....	■	■	.....	
ES 3	Smoothly ES-pipe, contamination N 30, D+/-0,07mm/T +/-5%/Ra-inner 0,4µm	Finetron, CQE		.....	■	■	
-	Smoothly ES-pipe, electro polished/spezcal cleaned Ra-inner 0,4-0,8 µm, tolerance as ES 3	EC			.....	■	■
ES 4	Smoothly ES-pipe, contamination N 10, electro-chemical polished D+/-0,007mm/T +/-5%/Ra-inner 0,2µm	Ultron				■	■
-	Smoothly Es-pipe, electro chemical polished, Spec. HE 150, 4VN/D4/T3/Ra-inner <0,25µm	Safetron				■	■

■ acceptable

..... not acceptable

# **HORNUNG**

**Präzision made in Germany**

Our team is happy to assist you.  
Please don't hesitate to contact us at any time.  
Please don't forget to mention the gas type.

Custom made production is possible, please contact us for  
further information.

Technical modifications and errors excepted.