

TECHNICAL INFORMATION

THE CYLINDER PRESSURE REGULATOR FROM MESSER — A MILLION TIMES TRIED AND TESTED

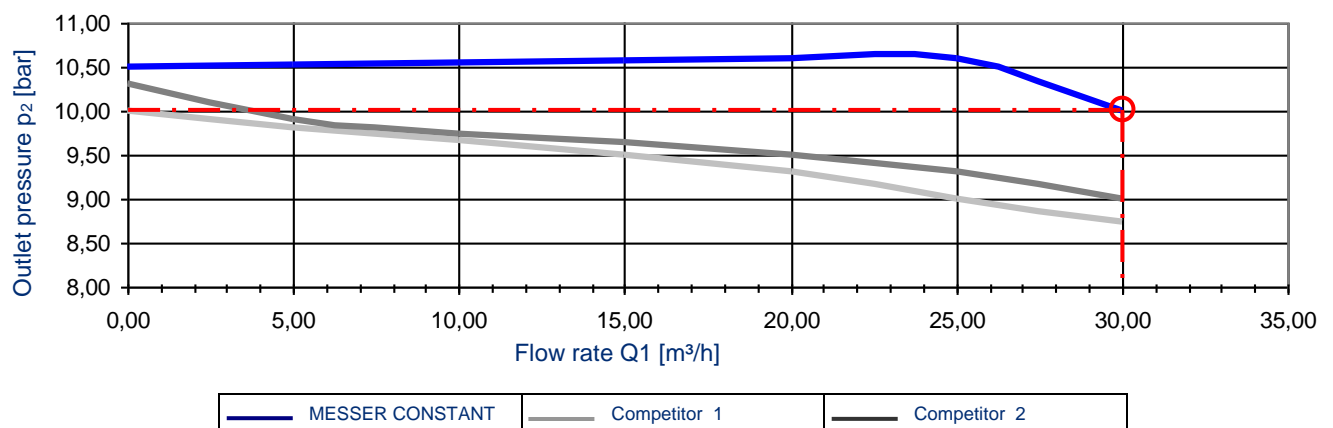
The MESSER CONSTANT 2000 cylinder pressure regulator for 200 and 300 bar, has been established on the international market for over 30 years as an absolute quality product. During this time it has been developed further and has already passed the million production units mark.

The essential advantages of the CONSTANT 2000 over its competition are:

- In contrast to competitive products, the CONSTANT 2000 has a very consistent flow performance.
- The CONSTANT 2000 is characterised by its very high control accuracy even with low operating pressures and low withdrawal rates.
- The CONSTANT 2000 is extremely reliable in operation through its integrated central filter
- By combination of a blow-off valve and ratchet stops, the CONSTANT 2000 has a double protected outlet pressure limitation.
- The simple replacement of wear parts makes the CONSTANT 2000 very easy to maintain.
- The unit weight of the brass housing of the CONSTANT 2000 is, at $7,9\text{g/cm}^3$, significantly higher than that of competitive products and makes the CONSTANT 2000 especially resistant to icing.

NOMINAL FLOW RATE Q_1

Requirements according to DIN EN ISO 2503: equipment class 3 $Q_1 = 30 \text{ m}^3/\text{h}$ at $P_2 = 10 \text{ bar}$



To be able to meet equipment class 3 of DIN EN ISO 2503, the cylinder pressure regulator must achieve a nominal flow rate Q_1 of $30 \text{ m}^3/\text{h}$ with an inlet pressure p_1 of 21 bar and an outlet pressure p_2 of 10 bar.

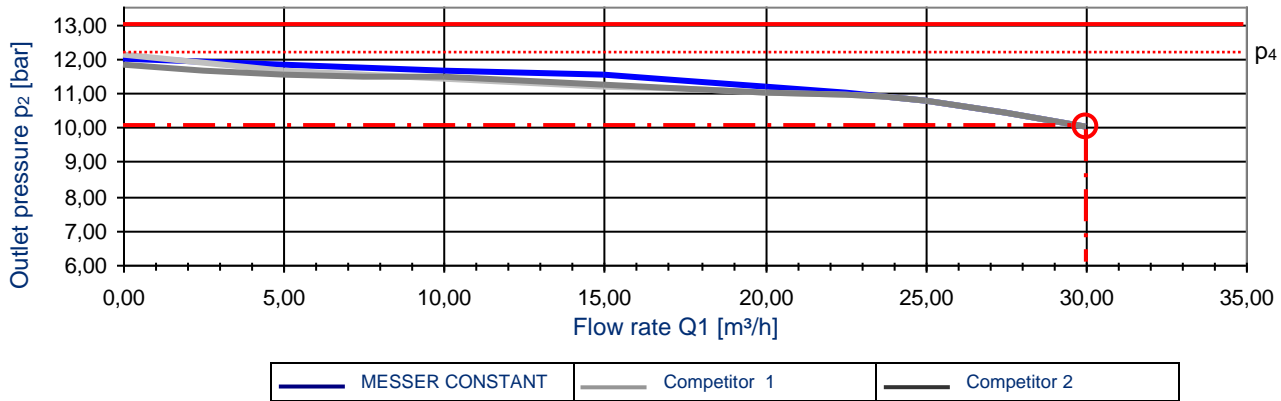
Expressions:

p_1	=	Inlet pressure
p_2	=	Outlet or operating pressure
p_3	=	Inlet pressure for the test
p_4	=	Outlet pressure for evaluation of the flow coefficient R
p_5	=	Outlet pressure for evaluation of the inconsistency coefficient i
R	=	Flow rate coefficient
i	=	Inconsistency coefficient
Q_1	=	Nominal flow rate

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PRESSURE INCREASE COEFFICIENT R

Requirements according to DIN EN ISO 2503: $R > 0,3$



To achieve equipment class 3 to DIN EN ISO 2503, the pressure regulator is set to an inlet pressure for the test p_3 ($p_3 = 2 \times p_2 + 1 \text{ bar}$) = 21 bar, with an outlet pressure $p_2 = 10 \text{ bar}$ and a nominal gas flow rate $Q_1 = 30 \text{ m}^3/\text{h}$. With these settings the flow rate of $30 \text{ m}^3/\text{h}$ is evenly and steadily reduced to $0 \text{ m}^3/\text{h}$.

During this procedure the outlet pressure may deviate by max. 30 % from the outlet pressure p_2 .

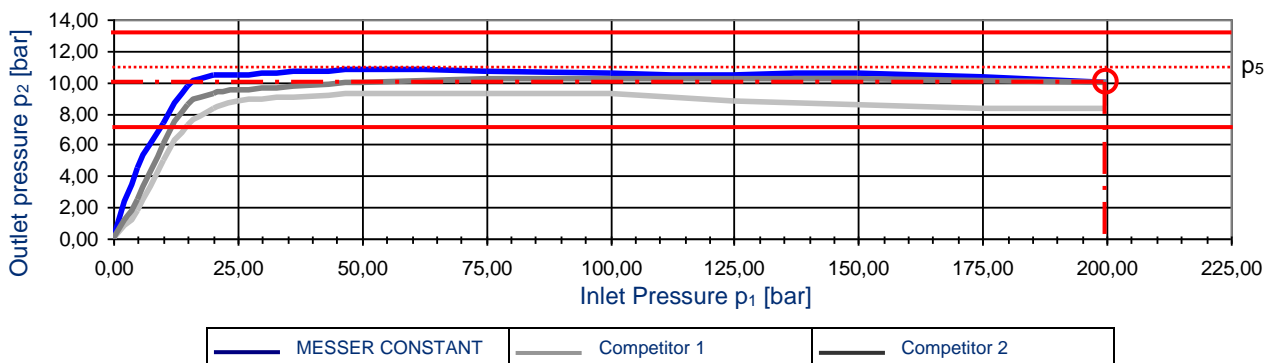
This deviation pressure is defined by DIN EN ISO 2503 as the closing pressure p_4 .

The pressure increase coefficient R is then calculated as follows:

$$R = \frac{p_4 - p_2}{p_2} \quad R = \frac{12 \text{ bar} - 10 \text{ bar}}{10 \text{ bar}} \quad R = 0,2$$

INCONSISTANCY COEFFICIENT I

Requirements of DIN EN ISO 2503: $-0,3 < i < +0,3$



To achieve equipment class 3 to DIN EN ISO 2503, the pressure regulator is set to an inlet pressure $p_1 = 200 \text{ bar}$ with an outlet pressure p_2 of 10 bar and a nominal flow rate Q_1 of $30 \text{ m}^3/\text{h}$.

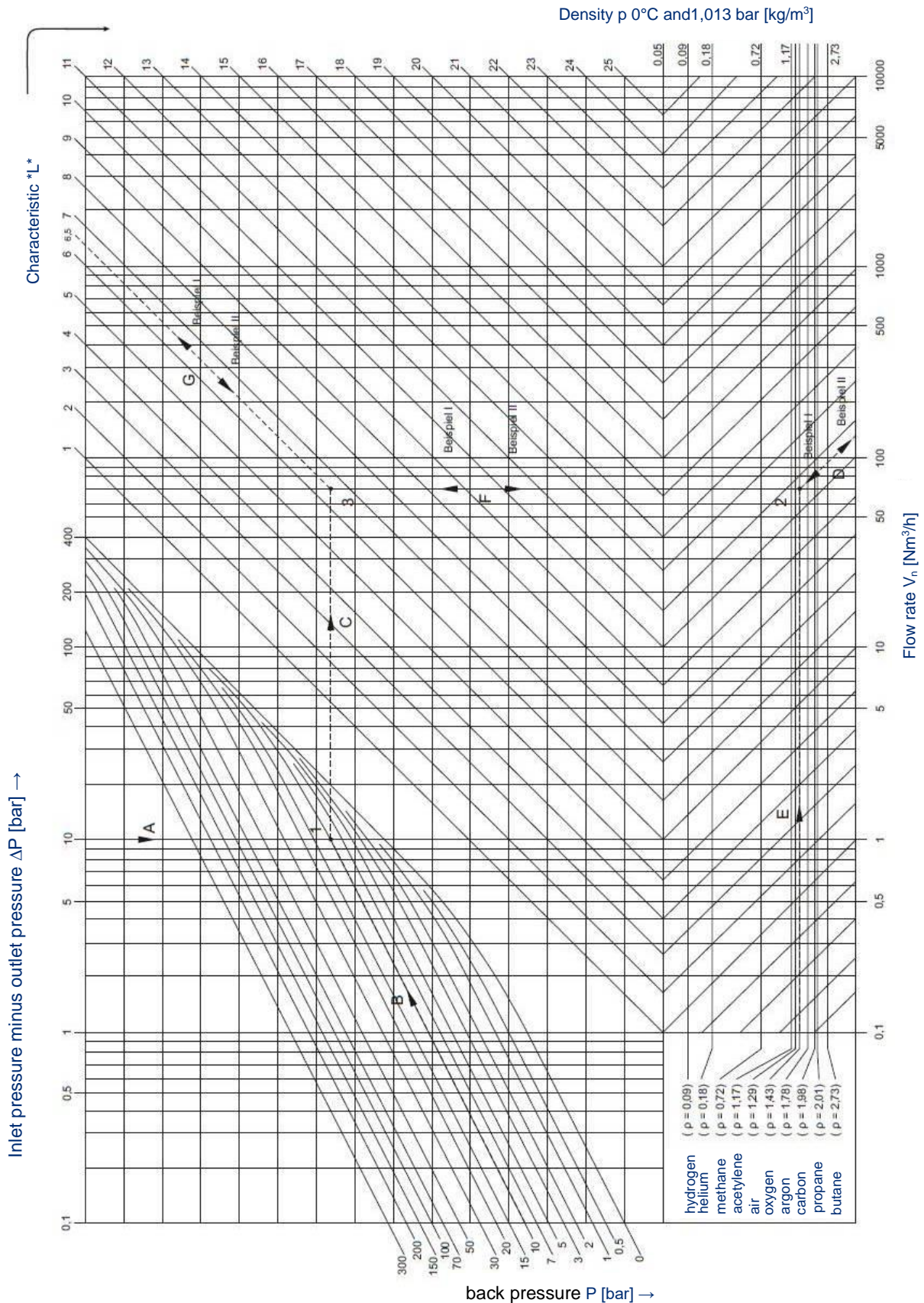
With these settings the inlet pressure of $p_1 = 200 \text{ bar}$ is evenly and steadily reduced to a test pressure $p_3 = 21$.

During this the outlet pressure may deviate by max. 30 % from the outlet pressure p_2 .

This outlet pressure is defined by DIN EN ISO 2503 as the highest or lowest outlet pressure for establishing the inconsistency coefficient p_5 .

$$i = \frac{p_5 - p_2}{p_2} \quad i = \frac{10,5 \text{ bar} - 10 \text{ bar}}{10 \text{ bar}} \quad i = 0,05$$

TECHNICAL INFORMATION



Version: 01/2022

TECHNICAL INFORMATION

EXAMPLE I DETERMINATION OF THE PERFORMANCE CHARACTERISTIC L

Inlet pressure P_V , outlet pressure P_H , flow rate V_n and gas type are known

Operating data:

- Inlet pressure varies between 30 and 20 bar
- Outlet pressure should be able to be set between 8 and 10 bar
- Flow rate required 120 m³/h
- Gas type Oxygen

The pressure regulator must be designed for the worst case, so for the minimum pressure difference.

$\Delta P = \text{Inlet pressure}_{\text{min.}} - \text{outlet pressure}_{\text{max.}}$

$\Delta P = 20 \text{ bar} - 10 \text{ bar}$

$\Delta P = 10 \text{ bar}$

Calculating the performance characteristic L

- Inlet pressure minus outlet pressure = 10 bar → vertically downwards (A)
- Outlet pressure = 10 bar → diagonally upwards (B)
- Intercept (1)
- Flow rate = 120 m³/h → parallel to the guide lines diagonally left upwards (D)
- Gas line OXYGEN → horizontally to the right (E)
- Intercept (2)
- From intercept point (1) → horizontally to the right (C)
- From intercept point (2) → vertically upwards (F) to line (C)
- Intercept point (3)
- From intercept point (3) → parallel to the guide lines diagonally upwards and right (G)
- Characteristic L = 6,5

If the pressure regulator type is to be selected then the gas type, inlet pressure, outlet pressure and flow rate is used to calculate the performance characteristic. It must be observed here, that the pressure regulator has to be selected for the worst case, i.e. for the minimum pressure difference. If there is doubt, it is advisable to determine the performance characteristic for several operating points and to select the pressure regulator for the largest performance characteristic.

EXAMPLE II DETERMINATION OF THE FLOW RATE

Pressure regulator type, characteristic value and gas type are known

Operating data:

- Characteristic value 6,5
- Inlet pressure varies between 30 and 20 bar
- Outlet pressure should be able to be set between 8 and 10 bar
- Gas type Oxygen

Determining the flow rate

- Inlet pressure minus outlet pressure = 10 bar → vertically downwards (A)
- Outlet pressure = 10 bar → diagonally upwards (B)
- Intercept (1)
- From intercept point (1) → horizontally to the right (C)
- Characteristic L = 6,5 → parallel to the guide lines diagonally left downwards (G)
- Intercept point (3)
- From intercept point (3) → vertically downwards (F)
- Gas line OXYGEN → horizontally to the right (E)
- Intercept point (2)
- From intercept point (2) → parallel to the guidelines diagonally right downwards (D)

Flow rate = 120 m³/h

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Flow chart for pressure regulators, single stage, in accordance with DIN EN ISO 2503

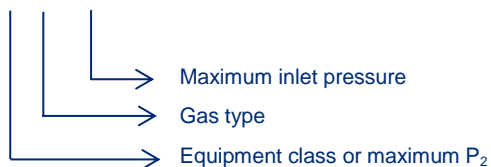
Oxygen ¹⁾ Inlet pressure P _v [bar]	Flow Rate Q [m ³ /h] ²⁾ with back pressure P ₂ [bar]					Acetylene Inlet pressure P _v [bar]	Flow rate Q [m ³ /h] ²⁾ with back pressure P ₂ [bar]		
	1	2,5	4	10	16		0,5	1	1,2
300	8	14	20	47	67				
200	8	14	20	45	69				
100	8	14	20	43	65				
40	8	14	20	38	54	18	5	6	8
20	8	14	19	30	31	10	4,5	5,5	6,5
10	8	14	14	17	--	4	3	4	5
5	3	8	9	--	--	2	1,5	2	3
¹⁾ Flow rate is multiplied by the following factors for other gas types:						²⁾ in normal status (with free outlet)			
Argon	0,90	Nitrogen		1,05					
Compressed Air	1,05	Methane		1,40					
Carbon Dioxide	0,85	Hydrogen		4,00					

Equipment classification for pressure regulators in accordance with DIN EN ISO 2503 (table 3)

Gas type	Equipment	Maximum inlet pressure P ₁ [bar]	Maximum outlet pressure P ₂ [bar]	Nominal gas flow Q ₁ [m ³ /h]
Oxygen and other compressed gases up to 300 bar	0	0 to 300	2	1,5
	1		4	5
	2		6	15
	3		10	30
	4		12,5	40
Dissolved acetylene	1	25	0,8	1
	2		< 1,5	5
MPS (Mapp)	0	25	1,5	1
	1		4	5
LPG	1	25	1,5	1
	2		4	5
CO ₂	0	200	2	4
	1		4	2

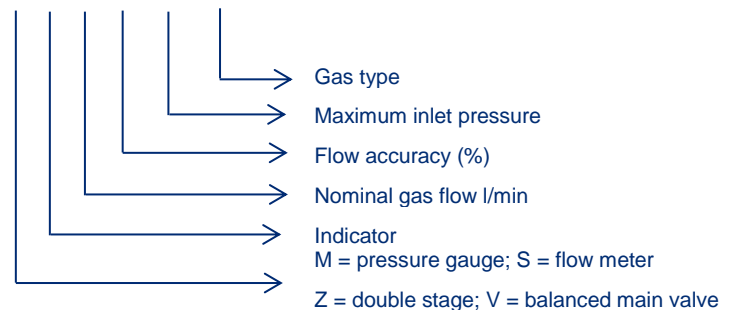
Identification in accordance with DIN EN ISO 2503

3 - 0 - 200



Identification in accordance with DIN EN 13918

Z - M - 1 - 10 - 200 - Ar



200 BAR- TECHNOLOGY

OXYGEN

single stage



<i>Max. working pressure/min.flow</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar / 40m³/h	G 3/4"	G 1/4", DN 6	716.20100	025
20 bar	G 3/4"	G 1/4", DN 6	716.20101	025
50 bar	G 3/4"	Brazing nipple G 1/4", DN 6 **	716.20333	026
With polymer spring bonnet for outlet pressures up to 20 bar				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

** Brazing nipple included in delivery

OXYGEN

double stage



<i>Maximum working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
1,5 bar	G 3/4"	G 1/4", DN 6	716.20104	026
2,5 bar	G 3/4"	G 1/4", DN 6	716.20105	026
10 bar	G 3/4"	G 1/4", DN 6	716.20106	026
With polymer spring bonnet for outlet pressures up to 20 bar				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

OXYGEN

single stage



<i>Max. working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
100 bar	G 3/4"	G 1/2", DN 15 **	716.20345	004

** Brazing nipple included in delivery

OXYGEN U13-F

HIGH FLOW, single stage



<i>Max. working pressure/min.flow</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar/ 150m³/h	G 3/4"	G 1/2", DN 9	509.99850	004
20 bar	G 3/4"	G 1/2", DN 9	509.99900	004
High efficiency pressure regulator for high flow rates				
Union nut G 1/2"			286.256	008
Hose nipple DN 9			749.111	039

Further options available !

Art.No.s = with German DIN 477 connections)
Performance characteristics available for your individual application.

200 BAR- TECHNOLOGY

single stage ACETYLENE

Max. Inlet pressure	Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
25 bar	1,5 bar/ 8m ³ /h	Clamp	G 3/8" LH, DN 8	716.20107	025
With polymer spring bonnet for outlet pressures up to 20 bar					
Union Nut G 3/8"LH				700.50040	008
Hose nipple DN 9				471.40090	008



single stage PROPANE

Max. Inlet pressure	Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar	2,5 bar/ 8m ³ /h	W 21,80 x 1/14" LH	G 3/8" LH, DN 8	716.20108	026
With polymer spring bonnet for outlet pressures up to 20 bar					
Union Nut G 3/8"LH				700.50040	008
Hose nipple DN 9				471.40090	008



single stage PROPAN

Max. Inlet pressure	Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
40 bar	6 bar	W 21,80 x 1/14" LH	G 1/2" LH, DN 11	716.55598	004

single stage MAPP

Max. Inlet pressure	Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
20 bar	2,5 bar/ 10m ³ /h	W 21,80 x 1/14" LH	G 3/8" LH, DN 8	716.20109	026
With polymer spring bonnet for outlet pressures up to 20 bar					
Union Nut G 3/8"LH				700.50040	008
Hose nipple DN 9				471.40090	008



single stage FUEL GASES

Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 160m ³ /h	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20110	026
20 bar	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20111	026
50 bar	W 21,80 x 1/14" LH	Brazing nipple G 3/8"LH, DN 8 **	716.20344	026

With polymer spring bonnet for outlet pressures up to 20 bar
For Back-Shielding gas, test gas, methane, city gas, natural gas and hydrogen

Union Nut G 3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

** Brazing nipple included in delivery



200 BAR- TECHNOLOGY

FUEL GASES

double stage



Maximum Working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20116	026
2,5 bar	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20117	026
10 bar	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20118	026
For Back-Shielding gas, test gas, methane, city gas, natural gas and hydrogen				
Union Nut G 3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

FUEL GASES

single stage



Maximum Working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W 21,80 x 1/14" LH	G 1/2", DN 15 **	717.05540	004

For Back-Shielding gas, test gas, methane, city gas, natural gas and hydrogen

** Brazing nipple included in delivery

HYDROGEN

single stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20115	023
With polymer spring bonnet				
Union Nut G 3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

BACK-SHIELDING GAS

single stage, outlet flow gauge



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
50 l/min	W 21,80 x 1/14" LH	G 3/8" LH, DN 9	716.20114	023
With polymer spring bonnet				
Union Nut G 3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

BACK-SHIELDING GAS

single stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 21,80 x 1/14"LH	G 3/8"LH, DN 6	716.20127	023
With polymer spring bonnet				
For argon / hydrogen mix (97% / 3%)				
Union nut G 3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

Further options available !

(Art.No.s = with German DIN 477 connections) Performance characteristics available for your individual application.

200 BAR- TECHNOLOGY

single stage

SHIELDING GASES

Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 35m³/h	W 21,80 x 1/14"	G 1/4", DN 6	716.20119	026
20 bar	W 21,80 x 1/14"	G 1/4", DN 6	716.20120	026
50 bar	W 21,80 x 1/14"	Brazing nipple G 1/4", DN 6 **	716.20337	026
With polymer spring bonnet for outlet pressures up to 20 bar				
For Argon and other inert gases, carbon dioxide (CO ₂), mixed gases				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



single stage

SHIELDING GASES

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W 21,80 x 1/14"	Brazing nipple G 1/2", DN 15 **	716.20338	004
200 bar	W 21,80 x 1/14"	Brazing nipple G 1/2", DN 15 **	716.20339	004
For Argon and other inert gases, carbon dioxide (CO ₂), mixed gases				



double stage

SHIELDING GASES

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W 21,80 x 1/14"	G 1/4", DN 6	716.20128	026
2,5 bar	W 21,80 x 1/14"	G 1/4", DN 6	716.20129	026
10 bar	W 21,80 x 1/14"	G 1/4", DN 6	716.20130	026
With polymer spring bonnet for outlet pressures up to 20 bar				
For Argon and other inert gases, carbon dioxide (CO ₂), mixed gases				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



single stage, outlet flow gauge

ARGON / CO₂

Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20123	025
32 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20124	023
With polymer spring bonnet				
Flow rate indication with flow gauge				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



**** Brazing nipple included in delivery
Further options available !**

Performance characteristics available for your individual application.
(Art.No.s = with German DIN 477 connections)

200 BAR- TECHNOLOGY

ARGON / CO₂

single stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20125	023
30 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20126	023
With polymer spring bonnet				
Flow rate indication with flow meter				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / CO₂

single stage, outlet double flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20352	023
30 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20353	023
Flow rate indication with 2 flow meters				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / CO₂

double stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
1 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20131	023
5 l/min	W 21,80 x 1/14"	G 1/4", DN 6	716.20132	023
With polymer spring bonnet				
Flow rate indication with flow meter				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

Further options available !
(Art.No.s with German DIN 477 connections)

Performance characteristics available for your individual application.

200 BAR- TECHNOLOGY

single stage

NITROGEN

Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 40m³/h	W 24,32 x 1/14"	G 1/4", DN 6	716.20133	026
20 bar	W 24,32 x 1/14"	G 1/4", DN 6	716.20134	026
50 bar	W 24,32 x 1/14"	Brazing nipple G 1/4", DN 6 **	716.20340	026
With polymer spring bonnet for outlet pressures up to 20 bar				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



single stage

NITROGEN

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W 24,32 x 1/14"	Brazing nipple G 1/2", DN 15 **	716.20341	026
150 bar	W 24,32 x 1/14"	Brazing nipple G 1/2", DN 15 **	716.20342	026
200 bar	W 24,32 x 1/14"	Brazing nipple G 1/2", DN 15 **	716.20343	026



single stage, outlet flow meter

NITROGEN

Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W 24,32 x 1/14"	G 1/4", DN 6	716.20137	023
With polymer spring bonnet				
Flow rate indication with flow meter				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



double stage

NITROGEN

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W 24,32 x 1/14"	G 1/4", DN 6	716.20138	026
2,5 bar	W 24,32 x 1/14"	G 1/4", DN 6	716.20139	026
10 bar	W 24,32 x 1/14"	G 1/4", DN 6	716.20140	026
With polymer spring bonnet for outlet pressures up to 20 bar				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



** Brazing nipple included in delivery
Further options available !

(Art.No.s = with German DIN 477 connections)

Performance characteristics available for your individual application.

200 BAR- TECHNOLOGY

COMPRESSED AIR

single stage



<i>Max. working pressure / min. flow</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar/ 40m³/h	G 5/8"ext.	G 1/4", DN 6	716.20141	026
20 bar	G 5/8"ext.	G 1/4", DN 6	716.20142	026
50 bar	G 5/8"ext.	Brazing nipple G 1/4", DN 6 **	716.20334	026

With polymer spring bonnet for outlet pressures up to 20 bar

Union nut G 1/4" 700.50030 008

Hose nipple DN 6 700.50050 008



<i>Maximum working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
100 bar	G 5/8"ext.	Brazing nipple G 1/2", DN 15 **	716.20335	004
200 bar	G 5/8"ext.	Brazing nipple G 1/2", DN 15 **	716.20336	004

COMPRESSED AIR

double stage



<i>Maximum working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
1,5 bar	G 5/8"ext.	G 1/4", DN 6	716.20145	026
2,5 bar	G 5/8"ext.	G 1/4", DN 6	716.20146	026
10 bar	G 5/8"ext.	G 1/4", DN 6	716.20147	026

With polymer spring bonnet for outlet pressures up to 20 bar

Union nut G 1/4" 700.50030 008

Hose nipple DN 6 700.50050 008

TEST GAS

single stage



<i>Maximum working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar	M 19 x 1,5 LH	G 3/8", DN 9	716.20148	026

With polymer spring bonnet for outlet pressures up to 20 bar

For test gas without corrosive components

Union nut G3/8"LH 700.50040 008

Hose nipple DN 9 471.40090 008

NITROUS OXIDE

single stage



<i>Maximum working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar	G 3/8"	G 1/4", DN 6	716.20150	004

Inlet pressure up to 50 bar

With polymer spring bonnet for outlet pressures up to 20 bar

Union nut G 1/4" 700.50030 008

Hose nipple DN 6 700.50050 008

** Brazing nipple included in delivery
Further options available !

(Art.No.s = with German DIN 477 connections)
Performance characteristics available for your individual application.

300 BAR- TECHNOLOGY

HIGH FLOW, single stage

OXYGEN U13-F

Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 150m³/h	W30x2 - Ø 17.3/18.3	G 1/2", DN 9	717.06901	004
20 bar	W30x2 - Ø 17.3/18.3	G 1/2", DN 9	717.06902	004
High efficiency pressure regulator for high flow rates				
Union nut G 1/2"			286.256	008
Hose nipple DN 9			749.111	039



single stage

OXYGEN

Max. working pressure / min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 40m³/h	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30100	026
20 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30101	026
50 bar	W30x2 - Ø 17.3/18.3	Brazing nipple G 1/4", DN 6 **	716.30102	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



single stage

OXYGEN

Max. working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W30x2 - Ø 17.3/18.3	G 1/2", DN 15 **	716.30103	026

** Brazing nipple included in delivery



single stage, balanced main valve

OXYGEN

Max. working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
2.5 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30120	026
10 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30121	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



double stage

OXYGEN

Max. working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30138	026
2,5 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30139	026
10 bar	W30x2 - Ø 17.3/18.3	G 1/4", DN 6	716.30140	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



Fuel gases

single stage



<i>Max. working pressure / min. flow</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
10 bar/ 160m³/h	W30x2LH-Ø 15.2/20.8	G 3/8"LH, DN 9	716.30115	026
20 bar	W30x2LH-Ø 15.2/20.8	G 3/8"LH, DN 9	716.30116	026
50 bar	W30x2LH-Ø 15.2/20.8	G 3/8" LH, DN 8 **	716.30117	026
For methane, hydrogen, back-shielding gas ** Brazing nipple included in delivery				
Union nut G3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

Fuel gases

single stage



<i>Max. working pressure</i>	<i>Cylinder connection</i>	<i>Hose connection</i>	<i>Art. No.</i>	<i>Cat. No.</i>
100 bar	W30x2LH - Ø 15.2/20.2	G 1/2" LH, DN 15 **	716.30118	026
200 bar	W30x2LH - Ø 15.2/20.2	G 1/2" LH, DN 15 **	716.30119	026
For methane, hydrogen, back-shielding gas ** Brazing nipple included in delivery				

single stage, balanced main valve, outlet flow meter

HYDROGEN

Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W30x2LH - Ø 15.2/20.2	G 3/8"LH, DN 9	716.30129	026
With pressure balanced main valve (V) Flow rate indication with flow meter				
Union nut G3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008



single stage, balanced main valve

HYDROGEN

Max. working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
2,5 bar	W30x2LH - Ø 16.6/19.4	G 3/8"LH, DN 6	716.30122	026
10 bar	W30x2LH - Ø 16.6/19.4	G 3/8"LH, DN 6	716.30123	026
Union nut G3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008



double stage

HYDROGEN

Max. working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W30x2LH - Ø 16.6/19.4	G 3/8"LH, DN 6	716.30147	026
2,5 bar	W30x2LH - Ø 16.6/19.4	G 3/8"LH, DN 6	716.30148	026
10 bar	W30x2LH - Ø 16.6/19.4	G 3/8"LH, DN 6	716.30149	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



**** Brazing nipple included in delivery
Further options available !**

Performance characteristics available for your individual application

300 BAR- TECHNOLOGY

BACK-SHIELDING GAS

single stage, balanced main valve, outlet flow gauge



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
50 l/min	W30x2LH - Ø 15.2/20.2	G 3/8"LH, DN 9	716.30134	026
With pressure balanced main valve (V) Flow rate indication with flow gauge				
Union nut G3/8"LH			700.50040	008
Hose nipple DN 9			471.40090	008

NITROGEN / SHIELDING GASES

single stage



Max. working pressure/min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 40m³/h	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30110	026
20 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30111	026
10 bar	W30x2 - Ø 15.9/20.1	G 3/8", DN 9	716.30137	026
50 bar	W30x2 - Ø 15.9/20.1	Brazing nipple G 1/4", DN 6 **	716.30112	026
For nitrogen and other inert gases, CO ₂ (carbon dioxide), mixed gases				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

NITROGEN / SHIELDING GASES

single stage



Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W30x2 - Ø 15.9/20.1	Brazing nipple G 1/2", DN 15 **	716.30113	026
200 bar	W30x2 - Ø 15.9/20.1	Brazing nipple G 1/2", DN 15 **	716.30114	026
For nitrogen and other inert gases, CO ₂ (carbon dioxide), mixed gases				

NITROGEN / SHIELDING GASES

single stage, balanced main valve



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30128	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

300 BAR- TECHNOLOGY

single stage, balanced main valve

NITROGEN / SHIELDING GASES

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
2,5 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30150	026
10 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30151	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



double stage

NITROGEN / SHIELDING GASES

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30144	026
2,5 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30145	026
10 bar	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30146	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



**** Brazing nipple included in delivery
Further options available !**

Performance characteristics available for your individual application

300 BAR- TECHNOLOGY

ARGON / CO₂

single stage, balanced main valve



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30152	026
32 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30153	026
With pressure balanced main valve (V) Flow rate indication with flow gauge				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / CO₂

single stage, balanced main valve; outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30126	026
30 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30130	026
With pressure balanced main valve (V); Flow rate indication with flow meter				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / CO₂

single stage, balanced main valve; double outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
2x16 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30131	026
2x30 l/min	W30x2 - Ø 15.9/20.1	G 1/4", DN 6	716.30132	026
With pressure balanced main valve (V); Flow rate indication with 2 flow meters				
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / CO₂

double stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
1 l/min	W30x2 - Ø 15.2/20.2	G 1/4", DN 6	716.30124	026
5 l/min	W30x2 - Ø 15.2/20.2	G 1/4", DN 6	716.30125	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

ARGON / HYDROGEN

double stage, outlet flow meter



Max. flow rate	Cylinder connection	Hose connection	Art. No.	Cat. No.
16 l/min	W30x2LH - Ø 15.2/20.8	G 3/8"LH, DN 9	716.30127	026
Union nut G 3/8"			700.50040	008
Hose nipple DN 9			700.40090	008

300 BAR- TECHNOLOGY

single stage

COMPRESSED AIR

Max. working pressure/min. flow	Cylinder connection	Hose connection	Art. No.	Cat. No.
10 bar/ 40m³/h	W30x2 - Ø 16.6/19.4	G 1/4", DN 6	716.30105	026
20 bar	W30x2 - Ø 16.6/19.4	G 1/4", DN 6	716.30106	026
50 bar	W30x2 - Ø 16.6/19.4	Brazing nipple G 1/4", DN 6 **	716.30107	026



With polymer spring bonnet for outlet pressures up to 20 bar

Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008

single stage

COMPRESSED AIR

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
100 bar	W30x2 - Ø 16.6/19.4	G 1/2", DN 15 **	716.30108	026
200 bar	W30x2 - Ø 16.6/19.4	G 1/2", DN 15 **	71630109	026



** Brazing nipple included in delivery

double stage

COMPRESSED AIR

Maximum working pressure	Cylinder connection	Hose connection	Art. No.	Cat. No.
1,5 bar	W30x2 - Ø 16.6/19.4	G 1/4", DN 6	716.30141	026
2,5 bar	W30x2 - Ø 16.6/19.4	G 1/4", DN 6	716.30142	026
10 bar	W30x2 - Ø 16.6/19.4	G 1/4", DN 6	716.30143	026
Union nut G 1/4"			700.50030	008
Hose nipple DN 6			700.50050	008



SPARE PARTS / ACCESSORIES

GAUGES

Ø 63 mm, G 1/4", pressure indication



Medium	Pressure limitation/ Red Mark	Scale end value	Housing Color	Art. No.	Cat .No.
Oxygen	1,5 bar	2,5 bar	Brass	0.640.114	008
	2,5 bar	4 bar	Brass	0.640.113	008
	10 bar	16 bar	Brass	0.640.477	008
	10 bar	16 bar	Black	0.640.586	008
	16 bar	25 bar	Brass	0.640.109	008
	20 bar	40 bar	Brass	0.640.108	008
	50 bar	100 bar	Brass	0.640.105	008
	200 bar	315 bar	Brass	0.640.476	008
Acetylene	200 bar	315 bar	Black	0.640.588	008
	300 bar	400 bar	Brass	0.640.576	008
	1,5 bar	2,5 bar	Brass	0.640.479	008
	1,5 bar	2,5 bar	Black	0.640.585	008
Fuel gases / neutral gases	25 bar	40 bar	Brass	0.640.478	008
	25 bar	40 bar	Black	0.640.587	008
	1,5 bar	2,5 bar	Brass	0.640.070	008
	2,5 bar	4 bar	Brass	0.640.069	008
	10 bar	16 bar	Brass	0.640.066	008
	16 bar	25 bar	Brass	0.640.065	008
	20 bar	40 bar	Brass	0.640.064	008
	50 bar	100 bar	Brass	0.640.061	008
Fuel gases / neutral gases	100 bar	160 bar	Brass	0.640.060	008
	150 bar	220 bar	Brass	0.640.315	004
	200 bar	315 bar	Brass	0.640.059	008
	300 bar	400 bar	Brass	0.640.321	008

GAUGES

Ø 63 mm, G 1/4", with flow rate indication



Medium	Max. Flow rate/ Red Mark	Scale end value	Art. No.	Cat .No.
Argon / CO ₂	16 l/min	25 l/min	0.640.141	004
	32 l/min	50 l/min	0.640.139	004
Back-Shielding gas	50 l/min	70 l/min	0.640.142	004

GASKET

(without picture)

Description	Art. No.	Cat. No.
Sealing gasket for gauges	452.08020	008
Sealing 11,7 x 18 x 2 for regulator connection 200 Bar	716.20047	008
O-Ring 5,7 x 1,9 for regulator connection 300 Bar	162.36560	008
Set: 2 pcs 162.36560	717.06941	008

SPARE PARTS / ACCESSORIES

for gauges with flow rate indication

ORIFICES

Gas type	Indication range	Bore diameter	Art. No.	Cat. No.
Argon / CO ₂	0 - 16 l/min	0,55 mm	717.00753	004
Argon / CO ₂	0 - 32 l/min	0,75 mm	717.00787	004
Forming gas	0 - 50 l/min	0,85 mm	717.00788	004



gauge protection against damage

PROTECTING CAP

Description	Art. No.	Cat. No.
for fuel gas, yellow design	0.462.571	043
for oxygen, blue design	0.462.572	043
Description	Art. No.	Cat. No.
Rubber protection cap for gauges, dark-grey/black	0.647.614	008



for flow meters

MEASURING GLASSES

Gas type	Indication range	Art. No.	Cat. No.
Argon / CO ₂	1 l/min	717.00725	004
Argon / CO ₂	16 l/min	717.00724	004
Hydrogen	16 l/min	717.00726	004
Protection cover for measuring glass (without picture)		152.02250	004



flow meter cpl.

FLOW METER

Gas type	Indication range	Art. No.	Cat. No.
Argon / CO ₂	16 l/min	717.05877	000
Argon / CO ₂	30 l/min	717.05878	000



oxygen and compressed gases

DOUBLE OUTLET VALVE

Gas type	Connection	Art. No.	Cat. No.
for oxygen and compressed gases	G 1/4"	512.11653	038
Acetylene	G 3/8" LH	512.11602	038
Fuel gas	G 3/8" LH	716.55018	038

Connection: G 3/8" LH union nut



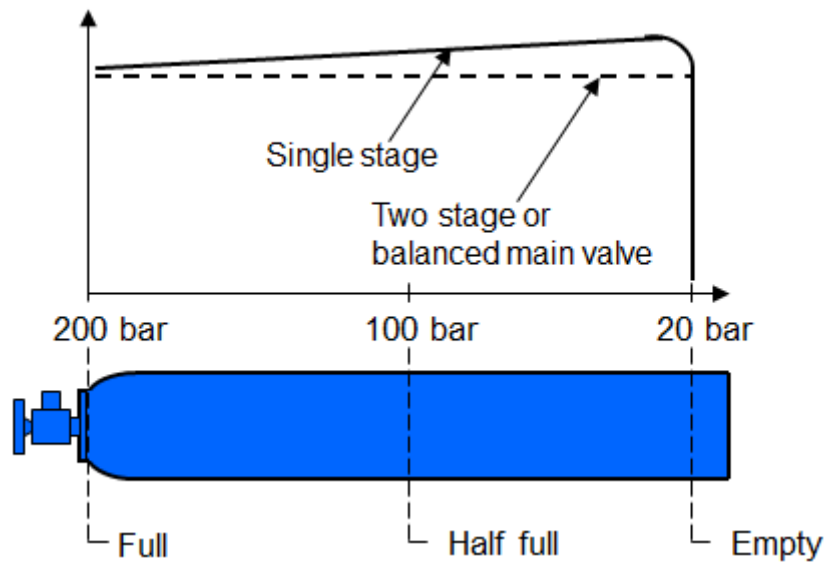
up to 25 l

GAS FLOW TESTER

Description	Art. No.	Cat. No.
Gas flow tester	0.445.464	038



Characteristically function of a pressure regulator



There is an interdependency between inlet pressure and outlet pressure. With a single-stage regulator, working pressure may rise in relation to the decreasing filling level of the gas cylinder. Outlet pressure must be re-adjusted in this situation.