

RVS gasslangen voor hogedruk toepassingen

Voor alle gasen (m.u.v. acetyleen)

Flexibele gasslangen voor het aansluiten van gascilinders met een cilinderdruk van 200 of 300 bar. Voor de veiligheid zijn alle hogedruk gasslangen voorzien van een veiligheidslijn (slangbreukkabel) die voorkomt dat de slang gaat rondzwiepen bij een eventuele slangbreuk.

Deze slangen zijn inwendig voorzien van een RVS balg en zijn gereinigd voor zuurstof toepassingen. De slangen zijn per stuk verpakt in folie. Deze slangen voldoen aan de medische norm ISO-15001.

Standaard lengtes voor deze slangen zijn: 100, 200 en 250 cm. De aansluitingen zijn conform EN560 in G1/4"(i) uitgevoerd. Een overzicht van alle standaard uitvoeringen staat in onderstaande tabel. Naast de standaard uitvoering zijn slangen op klantspecificatie mogelijk.

RVS balgslangen:

Materiaal	:	Inwendige slang (balg) RVS 1.4404. Wartels en aansluitingen: RVS 1.4571. Omvlechting: RVS 1.4301
Afwerking	:	Zwarte mantel van Polyolefin. Veiligheidslijn (RSV 1.4401 met unieke U-beugel, voor 100% zekerheid)
Reiniging	:	Conform ISO-15001, vetvrij, afgedopt en per stuk verpakt. Geschikt voor medische toepassingen.
Aansluitingen	:	G1/4", inwendig met bullnose aansluiting (EN560)
Werkdruk	:	200 bar / 300 bar (testdruk resp. 300 bar / 450 bar)
Lengtes	:	100, 200 en 250 cm
Normen	:	EN ISO 10380 (bij 300 bar 4-voudige veiligheid) EN-21969 (zonder vaste cilinderaansluiting)
Test	:	100% druktest (waterdruk). Optioneel 3.1 certificaat conform NEN-EN-10204 verkrijgbaar.
Uitvoeringen	:	zie tabel

Artikel nr.	Lengte	Werkdruk	Aansluiting
G220-0005	100 cm	300 bar	Beide zijden recht
G220-0006	250 cm	300 bar	Beide zijden recht
G220-0007	100 cm	300 bar	Één zijde recht, één zijde 45° bocht
G220-0008	250 cm	300 bar	Één zijde recht, één zijde 45° bocht
G220-0015	100 cm	200 bar	Beide zijden recht
G220-0016	200 cm	200 bar	Beide zijden recht



Afbeelding: RVS balgslang met aan één zijde een 45° aansluiting

Pressure regulator U33



Pressure regulator U33



Pressure regulator U33 with pressure gauge

Product features

- Precision diaphragm pressure regulator
- For non-corrosive industrial gases (acetylene on request)
- Single-stage with high control accuracy
- Safety pressure gauge acc. to DIN EN 562
- Pressure regulator with integrated relief valve to protect the armature (set approx. 10-20 % above outlet pressure)
- Filter in inlet fitting
- Accessories like wall brackets and in-/outlet fittings are also available

Technical data

Type	single-stage
Flow rate Q	max. 25 m ³ /h
Inlet pressure P₁	max. 10 bar
Outlet pressure P₂	5 mbar - 1500 mbar
Materials	
Body and bonnet:	Alu (powder coated)
Diaphragm:	NBR
Valve seat:	NBR
Ports	
In- / outlet:	G 1/2" - female
Inlet for oxygen:	M24 x 1.5
Pressure gauge ports:	G 1/4" - female
Outlet relief valve:	1/8"-NPT
Temperature range	-30°C to +60°C
Leak rate	<10 ⁻³ mbar l/s He
Weight	approx. 2 kg

Outlet pressures and flow rates for the pressure regulators U33 at 10 bar inlet pressure

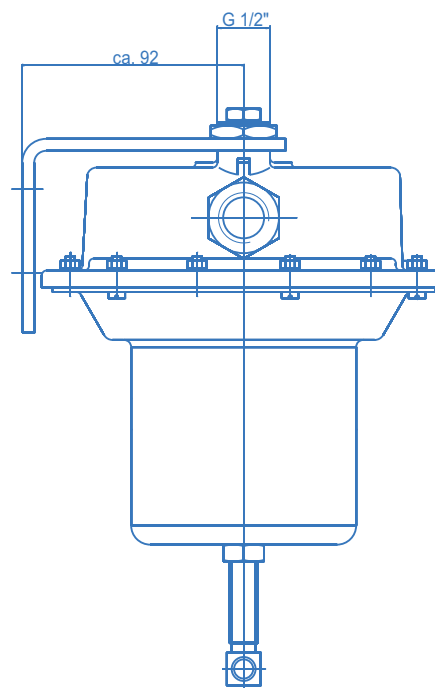
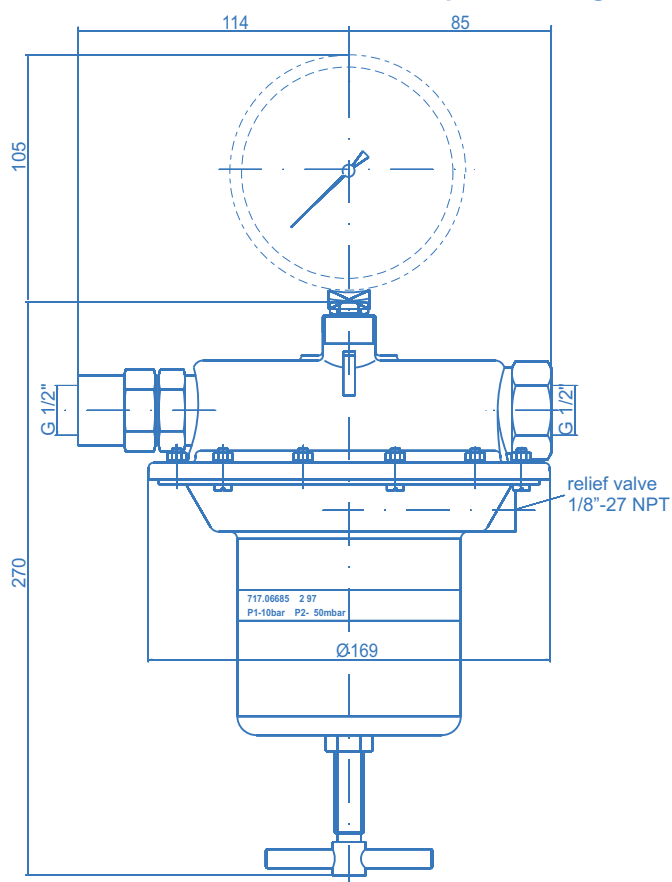
max. outlet pressure P ₂	Flow rate air at outlet pressure
50 mbar	10 m ³ /h
100 mbar	18 m ³ /h
300 mbar	20 m ³ /h
600 mbar	23 m ³ /h
1500 mbar	25 m ³ /h

L₁₀ = 5,5

Pressure regulator U33

spectro **tec**

Dimensions and connections of the pressure regulator U33 with wall bracket 717.06870 (as accessories available)



Ordering information: Pressure regulator

In- and outlet-fittings:
see data sheet "Fittings"

U33 - 0.3 - M - NFG

Outlet pressure P_2

0.05	- 5- 50 mbar
0.3	- 30- 300 mbar
0.6	- 200- 600 mbar
1.5	- 400- 1500 mbar

Type of gas

NFG	- non flammable gases
FG	- flammable gases
O ₂	- oxygen

Pressure gauge Ø 100 mm

M	- with pressure gauge
0	- without pressure gauge

Pressure gauge Part number

0 - 100 mbar	770.50353
0 - 400 mbar	770.50354
0 - 1 bar	770.50355
0 - 2.5 bar	770.50356
Pressure gauge sealing: 452.08020	

Spectrotec



**Pressure control panels BT2000
for industrial gases up to 300 bar**

Pressure control panels BT2000

spectrotec

Pressure control panels BT2000



BT2000-2x2, two-sided (manual change over), completely assembled with extensions



BT2000-2Lx1 (automatic change over)



BT2000-1x1, single-sided

Product features

- Wall-mounting pressure control panels
- For non-corrosive industrial gases
- Ergonomically designed
- Modular design (to be extended to 2, 3 etc. cylinders)
- Filter at the process gas inlet valve
- Central filter in the regulator
- Regulator with high control accuracy
- Shut-off-valves with On/Off position indicators
- Process gas and purge valve on the inlet pressure sides
- Safety pressure gauges acc. to DIN EN ISO 5171
- Stainless steel mounting plates
- Designed for easy installation
- Tested for use with oxygen
- Suitable for inlet pressure values up to 300 bar
- Single-sided, manual or automatic change-over models available
- Piston-type regulators for outlet pressure values of up to 50 or 100 bar available

Technical data

Type	single-stage
Inlet pressure P_1	max. 300 bar
Outlet pressure P_2	max. 10/20/50/100 bar
for 2L-models:	8-12 bar / 17-23 bar / 46-54 bar / 95-105 bar
Materials	
Bodies:	Brass
Diaphragm (P_2 up to 20 bar):	EPDM
Piston ($P_2 > 20$ bar):	Brass
Valve seat regulator:	PA
Mounting plate:	Stainless steel
Filter process gas valve:	Sintered bronze
Filter regulator:	Sintered SS 316L
Flow rates	see table
Connectors	Inlets: G 1/2" male
	Outlet: 1/4"-NPT female
	Relief valve: 1/8"-NPT female
Temperature range	-30°C to +60°C
Leak rate	<10 ⁻⁴ mbar l/s He
Weight	
BT2000-1/-2/-2L:	3.7 / 5.5 / 7.5 kg
Extensions:	1.1 kg (per piece)

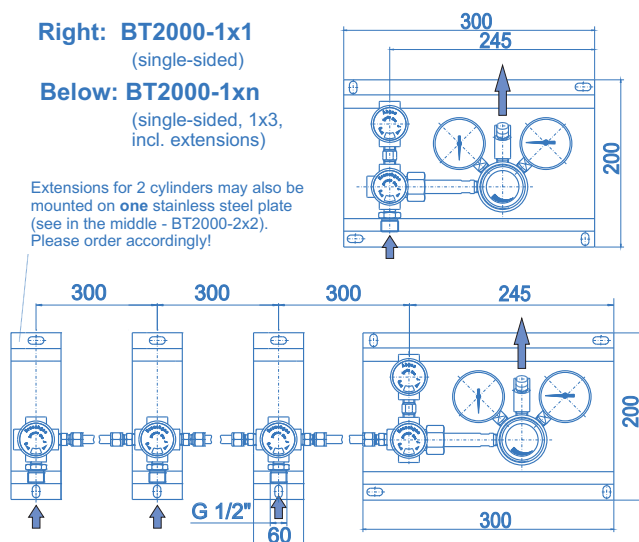
Pressure control panels BT2000

spectrotec

Right: BT2000-1x1
(single-sided)

Below: BT2000-1xn
(single-sided, 1x3,
incl. extensions)

Extensions for 2 cylinders may also be mounted on **one** stainless steel plate (see in the middle - BT2000-2x2). Please order accordingly!



Flow rates pressure regulator BT2000:

Oxygen Inlet pressure (P_1) [bar]	Flow rate (V_n) [m ³ /h] at outlet press. (P_2) [bar]			
	1	2,5	4	10
40	15	30	40	50
20	15	20	25	30
10	15	15	15	--
5	10	10	10	--

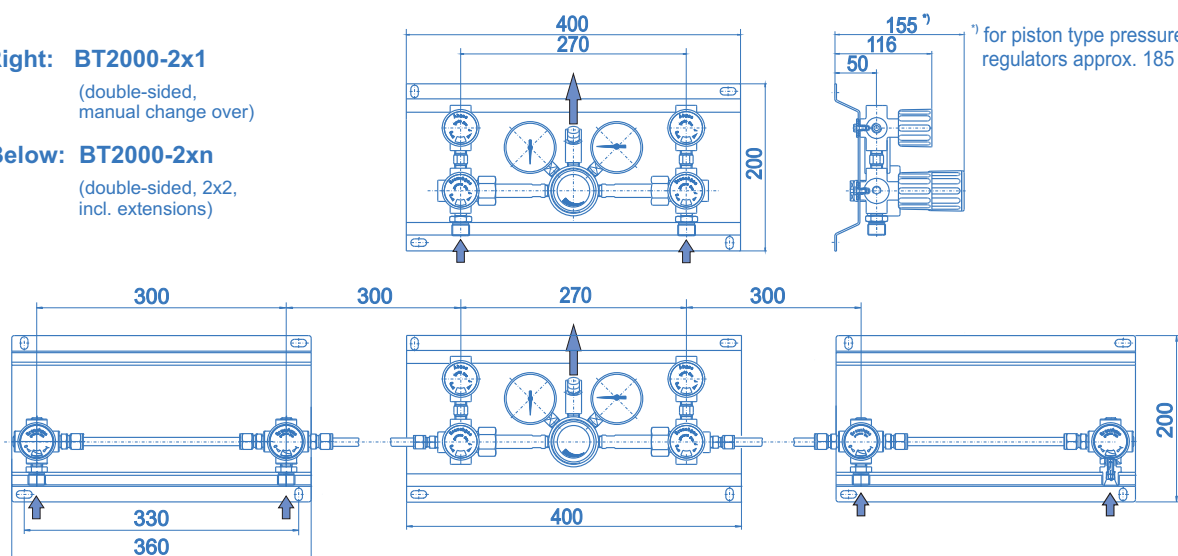
The flow rates for other pressure values can be found in the Performance diagram.
Performance factor
BT2000: $L_{10} = 2.5$

For other gas types the flow rate must be multiplied with these factors:

Nitrogen	1.05
Hydrogen	4.00
Argon	0.90
Carbon dioxide	0.85
Helium	2.83

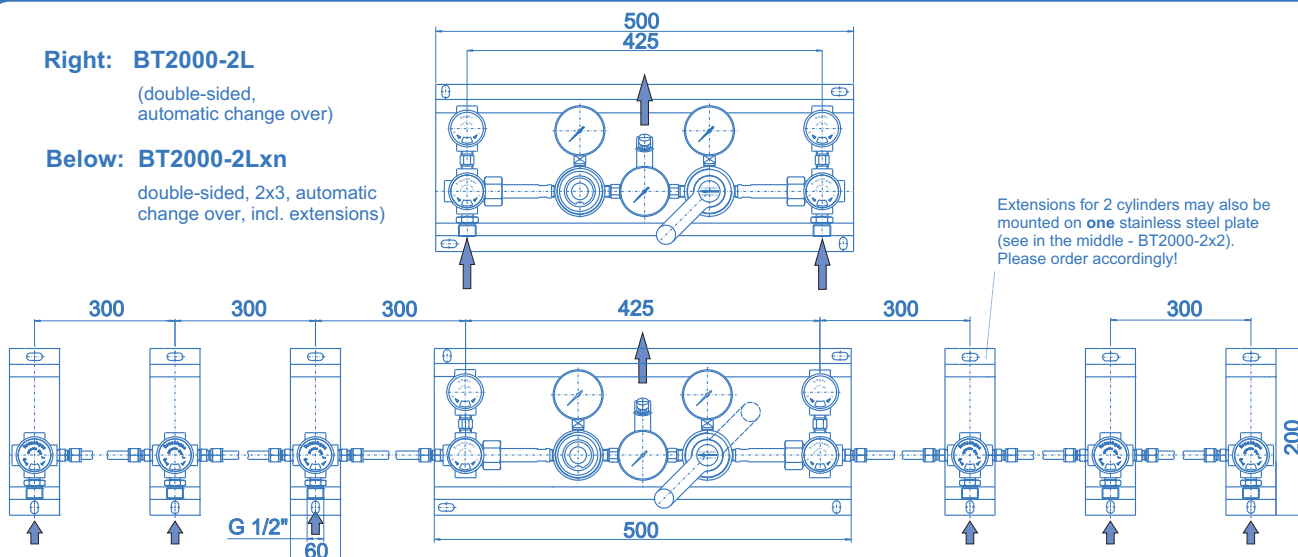
Right: BT2000-2x1
(double-sided,
manual change over)

Below: BT2000-2xn
(double-sided, 2x2,
incl. extensions)



Right: BT2000-2L
(double-sided,
automatic change over)

Below: BT2000-2Lxn
double-sided, 2x3, automatic
change over, incl. extensions)



Pressure control panels BT2000



Ordering information: Pressure control panels BT2000

BT2000 - 1 x 3 - 10 - M - N₂

Pressure control panels
BT2000 for acetylene
see data sheet
BT2000AC

Series

BT2000 series pressure control panels

Type

- 1x1 - single-sided one-cylinder panel
- 1xn - single-sided n-cylinder panel
(1x1-panel c/w n extensions *)
- 2x1 - two-cylinder panel with manual switch-over
- 2xn - n-cylinder panel with manual switch-over
(2x1-panel c/w 2xn extensions *)
- 2Lx1 - two-cylinder panel with automatic switch-over
- 2Lxn - n-cylinder panel with automatic switch-over
(2Lx1-panel c/w 2xn extensions *)

*) For n-cylinder panels the block valves on the regulator panels are used as central shut-off- and purge-valves. Therefore one extension per cylinder is required (see example 1x3: regulator panel + 3 extensions).

Gas type

Please specify gas type
with your order (for
marking the equipment)

Inlet press. indication

- M - pressure gauge
- K - contact pressure gauge

Outlet pressure P₂

- 10 - up to 10 bar *
- 20 - up to 20 bar *
- 50 - up to 50 bar **
- 100 - up to 100 bar **
- 200 bar on request
- * diaphragm type regulator
- ** piston type regulator

Specifications

- SPECTROTEC - components guarantee maximum quality by using high grade materials and a quality assurance program acc. to DIN ISO 9001.
- All components which come into contact with the medium are cleaned free of oil and grease before the assembly.
- SPECTROTEC - components undergo a 100% leak- and function test.

Applications

- Central gas supply systems for one or more tapping points for a maximum cylinder pressure of 300 bar
- For all gases compatible with the materials used in the products, e.g. compressed air, oxygen, nitrogen, carbon dioxide, forming gas, hydrogen, methane and rare gases

Pressure indication

- All pressure control panels may be equipped with contact pressure gauges for indication and monitoring of the inlet pressure.

Important note regarding component selection

- In order to assure safe operation it is essential to take the configuration of the whole system into account when selecting a control panel.
- The function of the components, the compatibility of the materials, correlating temperature ranges, correct installation, operation and maintenance in accordance with the relevant regulations are the responsibility of the system designer and the user.

For further information we recommend the following brochures:

- Pressure control panels BT2000AC for acetylene
- Pressure control panels BU13 for high flow rates
- Pressure control panels BU13AC for acetylene
- Performance diagram - How to find the right pressure regulator
- Central gas supply for technical gases

Messingkugelhahn D32509

brass ball valve D32509

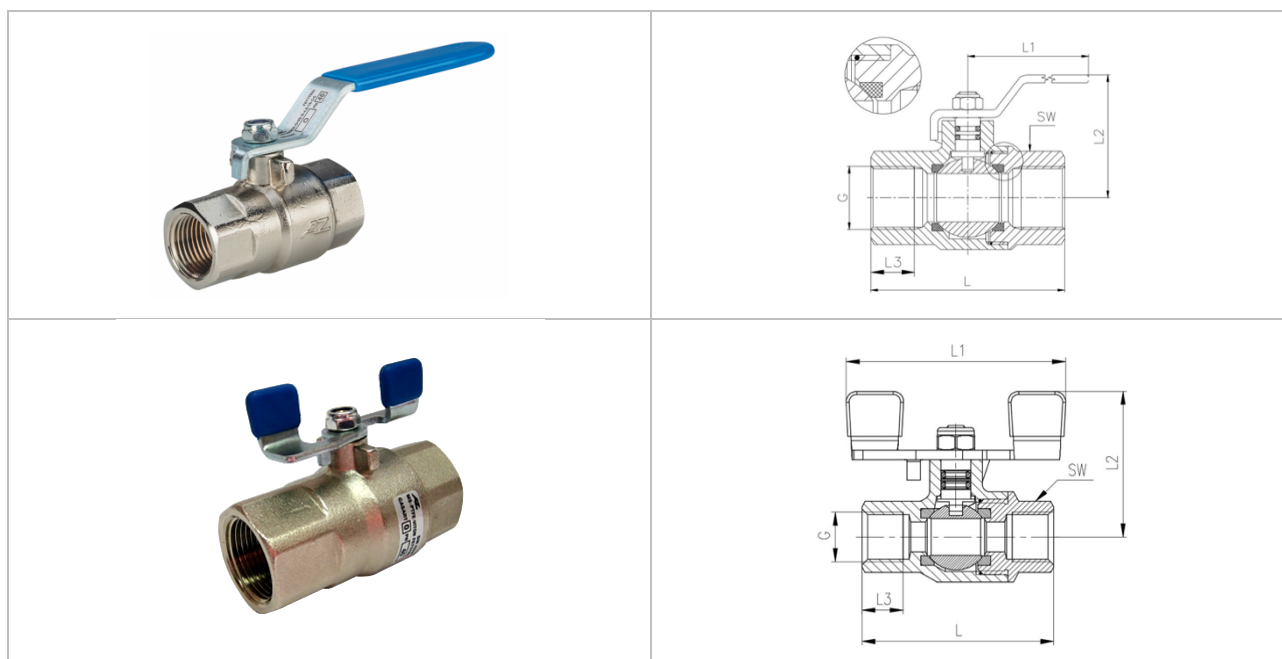


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Material		material	
Gehäuse	Messing vernickelt	body	brass nickel plated
Kugel	Messing hartverchromt	ball	brass hard chrome plated
Schaltwelle	Messing	stem	brass
Kugeldichtung	PTFE	ball sealing	PTFE
Schaltwellendichtung	Standard: O-Ring FKM für Acetylen: O-Ring EPDM	stem sealing	standard: o-ring FKM for acetylene: o-ring EPDM
Griff	Stahl verzinkt mit farbiger PVC-Hülle nach Einsatzgebiet	handle	steel zinc coated with colored cover acc. to application

Merkmale	details
▶ Messingkugelhahn zum Absperren des Leitungssystems u.a. beim Schweißen, Schneiden und verwandten Prozessen für gasförmige und flüssige Medien im Rahmen der verwendeten Werkstoffe ▶ Ausführung als Durchgangsabsperrrarmatur nach DIN 32509 ▶ ausblassichere Schaltwelle mit doppelter O-Ring Abdichtung	▶ brass ball valve to shut off the line system e.g. welding, cutting and related processes for gaseous and liquid media in line of the materials ▶ design as gateway shut off valve acc. to DIN 32509 ▶ blow-off-proofed stem with double o-ring sealing

Messingkugelhahn D32509 brass ball valve D32509

Merkmale	details
▶ Kugeldichtungen gekammert (Ausbrennschutz) ▶ Armatureninnenraum öl- und fettfrei ▶ Betätigung mit Handhebel oder Flügelgriff (bis DN25) mit farbiger PVC-Hülle entsprechend Medium Handhebel wahlweise abschließbar ▶ Nennweite: DN8 ... DN50 ▶ Betriebstemperatur: -20 °C ... +100 °C Wasser (kein Dampf): 0 °C ... +120 °C ▶ Betriebsdruck: PN40, PN1,5 Acetylen, PN30 Sauerstoff (DN8/DN10 PN63 bei unkritischen Medien) ▶ Anschlüsse: G-Innengewinde nach ISO 228-1 ▶ BAM-Beurteilung zur Ausbrennsicherheit bei Sauerstoffdruckstößen (PN30) ▶ CE-Registrierung (CE-0085) für DN32 ... DN50 ▶ Kennzeichnung: DIN 32509, AZ, PN, Gasart, Ident.-Nr.	▶ chambered ball sealing (burnout protection) ▶ internal space of the fitting free of oil and grease ▶ operation with handle or butterfly handle (up to DN25) with colored PVC-cover according to media optional lockable handle ▶ nominal size: DN8 ... DN50 ▶ operating temperature: -20 °C ... +100 °C water (not steam): 0 °C ... +120 °C ▶ operating pressure: PN40, PN1,5 acetylene, PN30 oxygen (DN8/DN10 PN63 with non-critical media) ▶ connectors: female G-thread acc. to ISO 228-1 ▶ BAM-rating for burnout protection at oxygen pressure shocks (PN30) ▶ CE-registration (CE-0085) for DN32 ... DN50 ▶ marking: DIN 32509, AZ, PN, kind of gas, ident.-no.
auf Anfrage: ▶ Prüfbescheinigung nach DIN EN 10204 ▶ Kugel mit Entlastungsbohrung Ø 3 mm ▶ andere Anschlüsse	on request: ▶ test certificate acc. to DIN EN 10204 ▶ ball with relief hole Ø 3 mm ▶ other connectors

Einsatzbedingungen · operating conditions			
Gasart kind of gas	Kennung label	Grifffarbe handle color	Druck-Temperatur-Diagramm pressure-temperature-chart
Brennbare Gase burnable gases	F (CMY)	rot red	
Wasserstoff Hydrogen	H		
Acetylen Acetylene	F (A)	gelb yellow	
Flüssiggas Liquid gas	F (P)	orange orange	
Sauerstoff Oxygen	O	blau blue	
nicht-brennbare Gase non-burnable gases	N (D)	schwarz black	

Messingkugelhahn D32509

brass ball valve D32509

Abmessungen mit Handhebel / mit Flügelgriff · dimensions with handle / butterfly handle								
DN	G [ISO228-1]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	SW [mm]	kg	freier Durchgang free gateway
8	1/4"	51	70 / 60	41	11,4	17	0,20	8,0 mm
10	3/8"	51	70 / 60	41	11,4	17	0,20	8,0 mm
15	1/2"	61	90 / 60	43	14,0	26	0,25	13,0 mm
20	3/4"	74	90 / 60	47	16,0	32	0,40	18,0 mm
25	1"	91	135 / 85	72	18,0	41	0,70	23,0 mm
32	1 1/4"	104	135 / —	75	20,0	50	1,10	29,5 mm
40	1 1/2"	117	180 / —	82	22,0	55	1,80	36,5 mm
50	2"	135	180 / —	89	25,0	70	2,90	47,0 mm

Bestellinformation · order information					
Standardausführung mit Handhebel Standard design with handle			Standardausführung mit Flügelgriff Standard design with butterfly handle		
Acetylen · acetylene					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509A/F-08-G1/4	1,5	11-008-006-001	D32509A/F-08-G1/4-FG	1,5	11-009-006-001
D32509A/F-10-G3/8	1,5	11-008-010-001	D32509A/F-10-G3/8-FG	1,5	11-009-010-001
D32509A/F-15-G1/2	1,5	11-008-015-001	D32509A/F-15-G1/2-FG	1,5	11-009-015-001
D32509A/F-20-G3/4	1,5	11-008-020-001	D32509A/F-20-G3/4-FG	1,5	11-009-020-001
D32509A/F-25-G1	1,5	11-008-025-001	D32509A/F-25-G1-FG	1,5	11-009-025-001
D32509A/F-32-G11/4	1,5	11-008-032-001			
D32509A/F-40-G11/2	1,5	11-008-040-001			
D32509A/F-50-G2	1,5	11-008-050-001			
Flüssiggas · liquid gas					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509P/F-08-G1/4	40	11-008-006-002	D32509P/F-08-G1/4-FG	40	11-009-006-002
D32509P/F-10-G3/8	40	11-008-010-002	D32509P/F-10-G3/8-FG	40	11-009-010-002
D32509P/F-15-G1/2	40	11-008-015-002	D32509 P/F-15-G1/2-FG	40	11-009-015-002
D32509P/F-20-G3/4	40	11-008-020-002	D32509P/F-20-G3/4-FG	40	11-009-020-002
D32509P/F-25-G1	40	11-008-025-002	D32509P/F-25-G1-FG	40	11-009-025-002
D32509P/F-32-G11/4	40	11-008-032-002			
D32509P/F-40-G11/2	40	11-008-040-002			
D32509P/F-50-G2	40	11-008-050-002			

Messingkugelhahn D32509

brass ball valve D32509

Bestellinformation · order information					
Standardausführung mit Handhebel Standard design with handle			Standardausführung mit Flügelgriff Standard design with butterfly handle		
Brennbare Gase · burnable gases					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509CMY/F-08-G1/4	40	11-008-006-003	D32509CMY/F-08-G1/4-FG	40	11-009-006-003
D32509CMY/F-10-G3/8	40	11-008-010-003	D32509CMY/F-10-G3/8-FG	40	11-009-010-003
D32509CMY/F-15-G1/2	40	11-008-015-003	D32509CMY/F-15-G1/2-FG	40	11-009-015-003
D32509CMY/F-20-G3/4	40	11-008-020-003	D32509CMY/F-20-G3/4-FG	40	11-009-020-003
D32509CMY/F-25-G1	40	11-008-025-003	D32509CMY/F-25-G1-FG	40	11-009-025-003
D32509CMY/F-32-G11/4	40	11-008-032-003			
D32509CMY/F-40-G11/2	40	11-008-040-003			
D32509CMY/F-50-G2	40	11-008-050-003			
Sauerstoff · oxygen					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509O-08-G1/4	30	11-008-006-007	D32509O-08-G1/4-FG	30	11-009-006-007
D32509O-10-G3/8	30	11-008-010-007	D32509O-10-G3/8-FG	30	11-009-010-007
D32509O-15-G1/2	30	11-008-015-007	D32509O-15-G1/2-FG	30	11-009-015-007
D32509O-20-G3/4	30	11-008-020-007	D32509O-20-G3/4-FG	30	11-009-020-007
D32509O-25-G1	30	11-008-025-007	D32509O-25-G1-FG	30	11-009-025-007
D32509O-32-G11/4	30	11-008-032-007			
D32509O-40-G11/2	30	11-008-040-007			
D32509F/CMY-50-G2	30	11-008-050-003			
Wasserstoff · hydrogen					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509H-08-G1/4	40	11-008-006-004	D32509H-08-G1/4-FG	40	11-009-006-004
D32509H-10-G3/8	40	11-008-010-004	D32509H-10-G3/8-FG	40	11-009-010-004
D32509H-15-G1/2	40	11-008-015-004	D32509H-15-G1/2-FG	40	11-009-015-004
D32509H-20-G3/4	40	11-008-020-004	D32509H-20-G3/4-FG	40	11-009-020-004
D32509H-25-G1	40	11-008-025-004	D32509H-25-G1-FG	40	11-009-025-004
D32509H-32-G11/4	40	11-008-032-004			
D32509H-40-G11/2	40	11-008-040-004			
D32509H-50-G2	40	11-008-050-004			

Messingkugelhahn D32509

brass ball valve D32509

Bestellinformation · order information					
Standardausführung mit Handhebel Standard design with handle			Standardausführung mit Flügelgriff Standard design with butterfly handle		
Druckluft · compressed air					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509D/N-08-G1/4	40	11-008-006-008	D32509D/N-08-G1/4-FG	40	11-009-006-008
D32509D/N-10-G3/8	40	11-008-010-008	D32509D/N-10-G3/8-FG	40	11-009-010-008
D32509D/N-15-G1/2	40	11-008-015-008	D32509D/N-15-G1/2-FG	40	11-009-015-008
D32509D/N-20-G3/4	40	11-008-020-008	D32509D/N-20-G3/4-FG	40	11-009-020-008
D32509D/N-25-G1	40	11-008-025-008	D32509D/N-25-G1-FG	40	11-009-025-008
D32509D/N-32-G11/4	40	11-008-032-008			
D32509D/N-40-G11/2	40	11-008-040-008			
D32509D/N-50-G2	40	11-008-050-008			

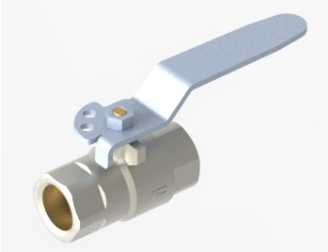
Bestellinformation · order information	
Standardausführung mit Handhebel abschließbar Standard design with handle lockable	Standardausführung mit Flügelgriff abschließbar Standard design with butterfly handle lockable
	

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Acetylen · acetylene					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509A/F-08-G1/4-AS	1,5	11-005-006-001	D32509A/F-08-G1/4-FG	1,5	11-006-006-001
D32509A/F-10-G3/8-AS	1,5	11-005-010-001	D32509A/F-10-G3/8-FG	1,5	11-006-010-001
D32509A/F-15-G1/2-AS	1,5	11-005-015-001	D32509A/F-15-G1/2-FG	1,5	11-006-015-001
D32509A/F-20-G3/4-AS	1,5	11-005-020-001	D32509A/F-20-G3/4-FG	1,5	11-006-020-001
D32509A/F-25-G1-AS	1,5	11-005-025-001			
D32509A/F-32-G11/4-AS	1,5	11-005-032-001			
D32509A/F-40-G11/2-AS	1,5	11-005-040-001			
D32509A/F-50-G2-AS	1,5	11-005-050-001			

Messingkugelhahn D32509

brass ball valve D32509

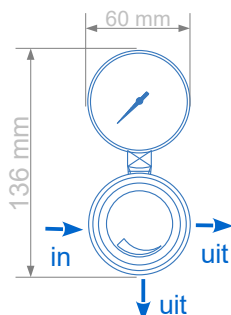
Bestellinformation · order information					
Standardausführung mit Handhebel abschließbar Standard design with handle lockable			Standardausführung mit Flügelgriff abschließbar Standard design with butterfly handle lockable		
Flüssiggas · liquid gas					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509P/F-08-G1/4-AS	40	11-005-006-002	D32509P/F-08-G1/4-FG	40	11-006-006-002
D32509P/F-10-G3/8-AS	40	11-005-010-002	D32509P/F-10-G3/8-FG	40	11-006-010-002
D32509P/F-15-G1/2-AS	40	11-005-015-002	D32509P/F-15-G1/2-FG	40	11-006-015-002
D32509P/F-20-G3/4-AS	40	11-005-020-002	D32509P/F-20-G3/4-FG	40	11-006-020-002
D32509P/F-25-G1-AS	40	11-005-025-002			
D32509P/F-32-G11/4-AS	40	11-005-032-002			
D32509P/F-40-G11/2-AS	40	11-005-040-002			
D32509P/F-50-G2-AS	40	11-005-050-002			
Brennbare Gase · burnable gases					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509CMY/F-08-G1/4	40	11-005-006-003	D32509CMY/F-08-G1/4-FG	40	11-006-006-003
D32509CMY/F-10-G3/8	40	11-005-010-003	D32509CMY/F-10-G3/8-FG	40	11-006-010-003
D32509CMY/F-15-G1/2	40	11-005-015-003	D32509CMY/F-15-G1/2-FG	40	11-006-015-003
D32509CMY/F-20-G3/4	40	11-005-020-003	D32509CMY/F-20-G3/4-FG	40	11-006-020-003
D32509CMY/F-25-G1	40	11-005-025-003			
D32509CMY/F-32-G11/4	40	11-005-032-003			
D32509CMY/F-40-G11/2	40	11-005-040-003			
D32509CMY/F-50-G2	40	11-005-050-003			
Sauerstoff · oxygen					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509O-08-G1/4-AS	30	11-005-006-007	D32509O/F-08-G1/4-FG	30	11-006-006-007
D32509O-10-G3/8-AS	30	11-005-010-007	D32509O/F-10-G3/8-FG	30	11-006-010-007
D32509O-15-G1/2-AS	30	11-005-015-007	D32509O/F-15-G1/2-FG	30	11-006-015-007
D32509O-20-G3/4-AS	30	11-005-020-007	D32509O/F-20-G3/4-FG	30	11-006-020-007
D32509O-25-G1-AS	30	11-005-025-007			
D32509O-32-G11/4-AS	30	11-005-032-007			
D32509O-40-G11/2-AS	30	11-005-040-007			
D32509O-50-G2-AS	30	11-005-050-007			

Messingkugelhahn D32509

brass ball valve D32509

Bestellinformation · order information					
Standardausführung mit Handhebel abschließbar Standard design with handle lockable			Standardausführung mit Flügelgriff abschließbar Standard design with butterfly handle lockable		
Wasserstoff · hydrogen					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509H-08-G1/4	40	11-005-006-004	D32509H/F-08-G1/4-FG	40	11-006-006-004
D32509H-10-G3/8	40	11-005-010-004	D32509H/F-10-G3/8-FG	40	11-006-010-004
D32509H-15-G1/2	40	11-005-015-004	D32509H/F-15-G1/2-FG	40	11-006-015-004
D32509H-20-G3/4	40	11-005-020-004	D32509H/F-20-G3/4-FG	40	11-006-020-004
D32509H-25-G1	40	11-005-025-004			
D32509H-32-G11/4	40	11-005-032-004			
D32509H-40-G11/2	40	11-005-040-004			
D32509H-50-G2	40	11-005-050-004			
Druckluft · compressed air					
Bezeichnung type	PN	Bestell-Nr. order-no.	Bezeichnung type	PN	Bestell-Nr. order-no.
D32509D/N-08-G1/4-AS	40	11-005-006-008	D32509D/N-08-G1/4-FG	40	11-006-006-008
D32509D/N-10-G3/8-AS	40	11-005-010-008	D32509D/N-10-G3/8-FG	40	11-006-010-008
D32509D/N-15-G1/2-AS	40	11-005-015-008	D32509D/N-15-G1/2-FG	40	11-006-015-008
D32509D/N-20-G3/4-AS	40	11-005-020-008	D32509D/N-20-G3/4-FG	40	11-006-020-008
D32509D/N-25-G1-AS	40	11-005-025-008			
D32509D/N-32-G11/4-AS	40	11-005-032-008			
D32509D/N-40-G11/2-AS	40	11-005-040-008			
D32509D/N-50-G2-AS	40	11-005-050-008			

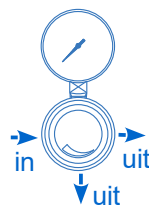
CRL series Pressure Regulators



Line regulator CRL 61-40-10

(in-/outlet fittings not part of standard scope of supplies)

Ordering information: CRL61-40 line regulators



Ordering example:
CRL 61-40-10

CRL 61-40-10

Outlet pressure P_2

1,5 – to 1,5 bar

4 – to 4 bar

10 – to 10 bar

Product features

- Brass line pressure regulator
- For non-corrosive high-purity gases up to quality 5.0
- 4 ports for flexible and individual configuration
- Very stable outlet pressure
- Inlet filters
- Regulator with high control accuracy
- Designed for easy installation
- Tested for use with oxygen
- Panels suitable for inlet pressure up to 40 bar
- Safety pressure gauges with dual bar/psi scale

Technical data

Type: single-stage

Inlet pressure P_1 : max. 40 bar

Outlet pressure P_2 : max. 10 bar

Materials:

Body regulator and valves: brass

Bonnet: brass, powder-coated

Valve seat regulator: PA 11

Diaphragm regulator: SS 301 (SS 1.4310)

Filter process gas valve: Sintered bronze

Filter pressure regulator: Sintered SS 316L

In-/Outlet connectors: 1/4"-18 NPT female

Temperature range: -30°C to +60°C

Leak rates (int. and ext.): 1x10⁻⁷ mbar l/s He

Weight: 1,5 kg

Pressure gauge: Safety pressure gauge
EN562 / CI2.5 / NG60
with dual bar /psi scale

Specifications line regulators

- SPECTROCOM – components guarantee maximum quality by using high grade materials and a quality assurance program acc. to ISO-9001
- All components which come into contact with the medium are cleaned in an ultrasonic cleaning system (CFC-free) with the special cleaning process SPECTRO-CLEAN® and are then baked out.
- SPECTROCOM - components undergo a function test and a 100%Helium-leak-test.

Important note regarding component selection

- In order to assure safe operation it is essential to take the configuration of the hole system in to account when selecting a line regulator
- The function of the components, the compatibility of the materials, correlating temperature ranges, correct installation, operation and maintenance in accordance with the relevant regulations are the responsibility of the system designer and the user.

→ Series 2480



■ MATERIAL



■ SPECIFICATION



1/4" – 1"



– 200°C to + 200°C



0,2 – 70 bar

■ SUITABLE FOR

Liquids	neutral and non-neutral	
Air, gases and vapours	neutral and non-neutral	

■ EXAMPLES OF USE

Full-lift safety valve for the protection of:

- Containers and pipelines for the storage and transport of cryogenic liquified gases such as LIN, LOX, LAr, CO₂, LNG.

- Tunnel freezer plants
- Dry ice blasting plants
- Cryogenic plant construction
- Liquid nitrogen dosing
- Cryogenic milling process
- Cryogenic machining
- Ground freezing plants
- Gases used in medical equipment
- Plants for cryogenic gases which come into contact with foodstuffs

Safety valves are set and sealed at the factory and are oil- and grease-free as standard.

■ APPROVALS

TÜV-Type test approval 2091	D/G, F
EU type examination	S/G, L
ASME	G, L
CRN	G, L
TSG ZF001-2006	D/G (S/G), F (L)
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L)
Requirements	
AD 2000 Data sheet A2	TPED 2010/35/EU, ADR/RID 2015
DIN EN ISO 4126-1	FDA 21 CFR 177.1550
DGR 2014/68/EU	FDA 21 CFR 178.3570
DIN EN 13648-1	NSF-H1
ASME-Code Sec. VIII Div. 1	KGS AA 319
Classification society	
Bureau Veritas	BV
American Bureau of Shipping	ABS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Gunmetal / Brass	CC499K/CW617N	CC499K/CW617N
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Seal	PTFE	PTFE	PTFE

t	gastight version of spring housing	for neutral and non-neutral media. The environment is protected from being affected by the medium.
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■ MEDIUM

GF	gaseous and liquid	Cryogenic liquified gases, vapours and liquids, for oxygen max. 40bar/ max. 60°C
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■ TYPE OF LIFTING MECHANISM

L	with lifting lever
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		8			10			15		
Inlet		1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)
Outlet	3/8" (10)	■	■	■						
	1/2" (15)	■	■	■	■	■				
	1" (25)					■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / f	Standard	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
f / f		Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
NPT-m / f		Male thread NPT / Female thread BSP-P	ANSI B1.20.1 / DIN EN ISO 228-1
NPT-m / NPT-f		Male thread NPT / Female thread NPT	ANSI B1.20.1 / ANSI B1.20.1
NPT-f / NPT-f		Female thread NPT / Female thread NPT	ANSI B1.20.1 / ANSI B1.20.1

With insect protection:

m/z		Male thread BSP-P / Insect protection screen	DIN EN ISO 228-1 / –
f/z		Female thread BSP-P / Insect protection screen	DIN EN ISO 228-1 / –
NPT-m/z		Male thread NPT / Insect protection screen	ANSI B1.20.1 / –

■ SEALS

PTFE	Polytetrafluoroethylene	O-ring with FDA Approval	–200°C to +200°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	O-ring	–200°C to +200°C

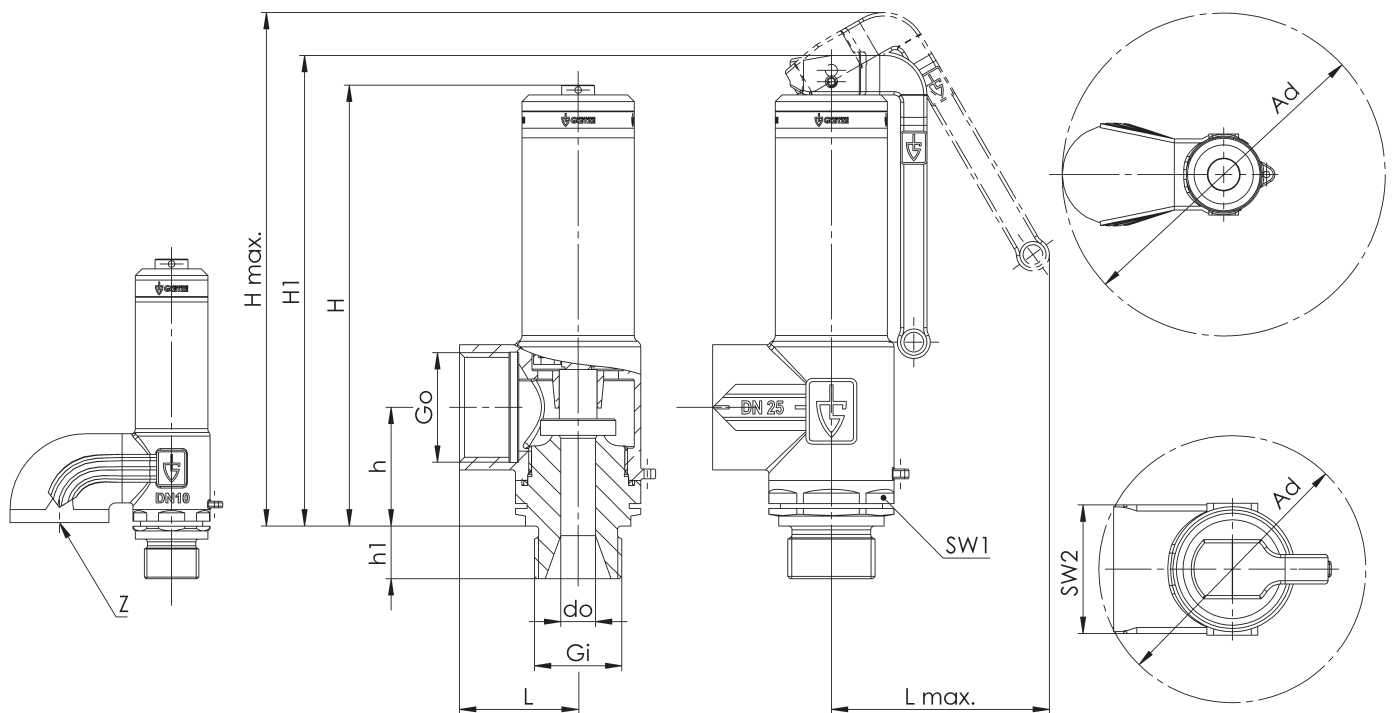
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2480: Connection, installation dimensions, ranges of adjustment														
Nominal diameter	DN	8						10				15		
Connection DIN EN ISO 228	Gi	1/4" (8)	3/8" (10)	1/2" (15)	1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)
Outlet DIN EN ISO 228	Go	3/8" (10)	3/8" (10)	3/8" (10)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)
Installation dimensions in mm	h1	12	14	12	14	12	14	12	14	14	16	14	16	18
	h	22		26		26		26		36		36		
	L	21		26		26		26		36		36		
	Lmax	43		47		47		47		66		66		
	H	85		99		99		99		134		134		
	H1	91		107		107		107		144		144		
	Hmax	99		116		116		116		156		156		
	SW1	22		27		27		27		34		34		
	SW2	22		26		26		26		39		39		
	Ad	47 / 98 ²		58		58		58		81		81		
	$\alpha_w / K_{dr} (F)$	0,52		0,52		0,52		0,52		0,49		0,52		
	$\alpha_w / K_{dr} (D/G)^1$	0,73		0,73		0,73		0,73		0,73		0,73		
	d ₀	6,0		6,0		7,5		7,5		10,5				
Weight	kg	0,2		0,3		0,3		0,7		0,7				
Range of adjustment	bar	0,2 - 70		0,2 - 70		0,2 - 70		0,2 - 70		0,2 - 50		0,2 - 50		
Range of adjustment ASME	psi	40 - 1015		40 - 1015		40 - 1015		40 - 1015		40 - 725		40 - 725		
Outlet with insect protection screen	Z	- / Yes		-		-		-		-		-		

¹Flow coefficients for blow-off pressures < 3,0 bar: Please refer to the Flow Coefficients Chart.

²Diameter for body with insect protection screen

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet			
2480	t	GF	0	15	m	f	20	25	PTFE	6,0	2
2480	t	GF									
2480	t	GF									
2480	t	GF									

■ TECHNICAL FINISHES, VARIANTS, ACCESSORIES

S77	Screw-in seat made of brass	☐	☐
		☐	☐
		☐	☐

■ CERTIFICATES / APPROVALS

C01	Factory certificate acc. DIN EN 10204 2.2 (WKZ 2.2)	☐	C06	ATEX evaluation acc. to 2014/34/EU	☐
C02	Test certificate acc. DIN EN 10204 3.1 (WPZ 3.1)	☐	C07	SIL evaluation relating to IEC 61508-2	☐
C03	Material test certificate acc. DIN EN 10204 3.1 (MPZ 3.1) (pressure retaining part)	☐	C09	Seat tightness test with helium, leak detection method under vacuum incl. Factory Inspection Certificate 3.1 acc. to DIN EN 10204	☐
C04	TÜV/DEKRA individual inspection acc. EN 10204 3.2 (TÜV/DEKRA-APZ)	☐	C10	Certificate of oil- and grease free production	☐
C05	Sealing material Manufacturer certification (FDA, USP 3, 3-A,...), Please indicate description of certificate:	☐			☐

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK4	Bureau Veritas (BV) type approval	☐
AA3	Certification acc. to ASME Boiler and Pressure Vessel Code, Section VIII.Div 1 (ASME) ¹	☐	AK6	Registro Italiano Navale (RINA) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AL	Individual inspection by notified body inspector – (body to be indicated):	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐			☐
AA6	Certification acc. to. Korean Gas Safety Corporation (KGS) ³	☐			☐
AA7	Registration according to Canadian Registration Number (CRN) ⁴	☐			☐

¹ASME not for gases in combination with liquids | ²KGS only for gases | ³KGS only in combination with ASME | ⁴CRN only in combination with ASME

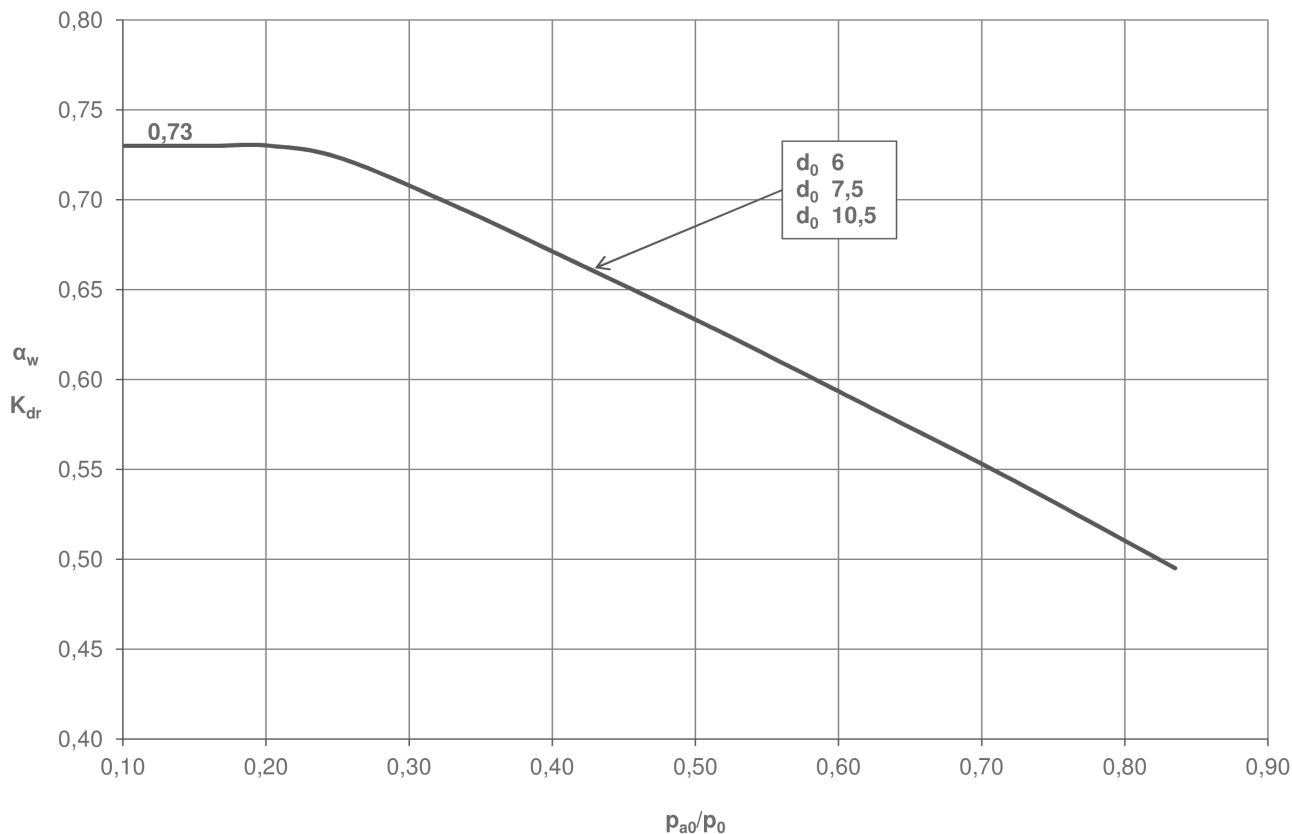
■ ENQUIRY

Copy and send to: order@goetze-armaturen.de.

Order form easily to be found online under the section for each series.

Series 2480: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		8		10		15	
flow diameter		d0 = 6 mm		d0 = 7,5 mm		d0 = 10,5 mm	
Set pressure bar		I	II	I	II	I	II
Air I Nm³/h	0,2	11,1	0,4	17,3	0,6	33,9	1,2
	0,5	17,4	0,6	27,2	0,9	53,3	1,8
	1	25,8	0,8	40,3	1,2	79,0	2,4
	1,5	34,5	1,0	54,0	1,5	105,8	2,9
	2	43,2	1,1	67,5	1,7	132,2	3,4
	2,5	51,7	1,2	80,8	1,9	158,4	3,8
	3	60,1	1,4	93,9	2,1	184,1	4,2
	3,5	68,1	1,5	106,5	2,3	208,7	4,5
	4	76,0	1,6	118,8	2,5	232,8	4,8
	4,5	83,8	1,7	130,9	2,6	256,5	5,1
Water II m³/h	5	91,5	1,8	143,0	2,7	280,2	5,4
	5,5	99,2	1,8	155,1	2,9	303,9	5,6
	6	107,0	1,9	167,1	3,0	327,6	5,9
	6,5	114,7	2,0	179,2	3,1	351,3	6,1
	7	122,5	2,1	191,3	3,2	375,0	6,4
	7,5	130,2	2,2	203,4	3,4	398,7	6,6
	8	137,9	2,2	215,5	3,5	422,4	6,8
	8,5	145,7	2,3	227,6	3,6	446,2	7,0
	9	153,4	2,4	239,7	3,7	469,9	7,2
	9,5	161,2	2,4	251,8	3,8	493,6	7,4
	10	168,9	2,5	263,9	3,9	517,3	7,6
	11	184,4	2,6	288,1	4,1	564,7	8,0
	12	199,9	2,7	312,3	4,3	612,1	8,3
	13	215,4	2,8	336,5	4,4	659,5	8,7
	14	230,8	2,9	360,7	4,6	707,0	9,0
	15	246,3	3,0	384,9	4,8	754,4	9,3
	16	261,8	3,1	409,1	4,9	801,8	9,6
	17	277,3	3,2	433,3	5,1	849,2	9,9
	18	292,8	3,3	457,5	5,2	896,6	10,2
	19	308,3	3,4	481,7	5,4	944,0	10,5
	20	323,7	3,5	505,8	5,5	991,5	10,8
	21	339,2	3,6	530,0	5,6	1038,9	11,0
	22	354,7	3,7	554,2	5,8	1086,3	11,3
	23	370,2	3,8	578,4	5,9	1133,7	11,5
	24	385,7	3,8	602,6	6,0	1181,1	11,8
	25	401,2	3,9	626,8	6,1	1228,5	12,0
	26	416,6	4,0	651,0	6,3	1276,0	12,3
	27	432,1	4,1	675,2	6,4	1323,4	12,5
	28	447,6	4,2	699,4	6,5	1370,8	12,7
	29	463,1	4,2	723,6	6,6	1418,2	13,0
	30	478,6	4,3	747,8	6,7	1465,6	13,2
	32	509,5	4,4	796,2	6,9	1560,5	13,6
	34	540,5	4,6	844,5	7,2	1655,3	14,0
	36	571,5	4,7	892,9	7,4	1750,1	14,4
	38	602,4	4,8	941,3	7,6	1845,0	14,8
	40	633,4	5,0	989,7	7,8	1939,8	15,2
	42	664,4	5,1	1038,1	8,0	2034,6	15,6
	44	695,3	5,2	1086,5	8,1	2129,5	16,0
	46	726,3	5,3	1134,9	8,3	2224,3	16,3
	48	757,3	5,4	1183,2	8,5	2319,1	16,7
	50	788,2	5,6	1231,6	8,7	2414,0	17,0
	52	819,2	5,7	1280,0	8,9		
	54	850,2	5,8	1328,4	9,0		
	56	881,1	5,9	1376,8	9,2		
	58	912,1	6,0	1425,2	9,3		
	60	943,1	6,1	1473,6	9,5		
	62	974,0	6,2	1521,9	9,7		
	64	1005,0	6,3	1570,3	9,8		
	66	1036,0	6,4	1618,7	10,0		
	68	1066,9	6,5	1667,1	10,1		
	70	1097,9	6,6	1715,5	10,3		

Coefficient of discharge α_w i.e. K_{dr} as a function of the relation between the pressures p_{a0}/p_0 of vapours and gases



$$\frac{p_{a0}}{p_0} = \frac{\text{counter pressure bar(a)}}{\text{blow-off pressure bar(a)}} \quad p_{atm} = \text{ambient i.e. atmospheric pressure} = 1,01325 \text{ bar(a)}$$

Example to determine the coefficient of discharge α_w i.e. K_{dr} in relation to the set-pressure p_{set}

Set-pressure	Blow-off pressure
p_{set} bar(g)	p_0 bar(a)
≤ 1	$p_{set} + p_{atm} + 0,1 \text{ bar}$
> 1	$p_{set} \times 1,1 + p_{atm}$

For a safety valve set at $= 0,3 \text{ bar(g)}$ and blowing-off into the environment the blow-off pressure is determined as follows:

Set-pressure	0,3	bar(g)
+ Atmospheric pressure	1,01325	bar(a)
+ permissible overpressure	0,1	bar(g)
~ Blow-off pressure	1,41	bar(a)

Consequently:

$$\frac{p_{a0}}{p_0} = \frac{1,01325 \text{ bar(a)}}{1,41 \text{ bar(a)}} = 0,72 \quad \text{and extracted from the chart} \quad \alpha_w \text{ i.e. } K_{dr} = 0,55$$

Units:

bar(a) $\triangleq$ absolute pressure - pressure in relation to absolute vacuum (zero), e.g. $p_{atm} = 1,01325 \text{ bar(a)}$

bar(g) $\triangleq$ overpressure - pressure above i.e. in relation to $p_{atm} = 1,01325 \text{ bar(a)}$

Series 2480: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		8		10		15	
flow diameter		d0 = 0,2362 inch (6,0 mm)		d0 = 0,2953 inch (7,5 mm)		d0 = 0,4134 inch (10,5 mm)	
Set pressure bar psi(g)		I	II	I	II	I	II
Air I	40	38	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	59	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	115	19
	50	45		70		137	22
SCFM	60	52		81		159	24
	70	59		92		180	26
Water II	87	71		111		217	28
	90	73		114		223	29
GPM	100	80		125		245	31
	110	87		136		267	32
	120	94		147		288	33
	130	101		158		310	35
	140	108		169		331	36
	150	115		180		353	37
	160	122		191		375	39
	170	129		202		396	40
	180	136		213		418	41
	190	143		224		439	42
	200	151		235		461	43
	210	158		246		483	44
	220	165		257		504	45
	230	172		268		526	46
	240	179		279		548	47
	250	186		290		569	48
	260	193		301		591	49
	270	200		312		612	50
	280	207		323		634	51
	290	214		334		656	52
	300	221		345		677	53
	320	235		368		720	55
	340	249		390		764	56
	360	263		412		807	58
	380	278		434		850	59
	400	292		456		893	61
	420	306		478		936	63
	440	320		500		980	64
	460	334		522		1023	65
	480	348		544		1066	67
	500	362		566		1109	68
	550	398		621		1217	72
	600	433		676		1325	75
	650	468		731		1434	78
	700	503		787		1542	81
	725	521		814		1596	82
	750	539		842		1650	84
	800	574		897		1758	86
	850	609		952		1866	89
	900	644		1007		1974	92
	950	680		1062		2082	94
	1015	726		1134		2222	97