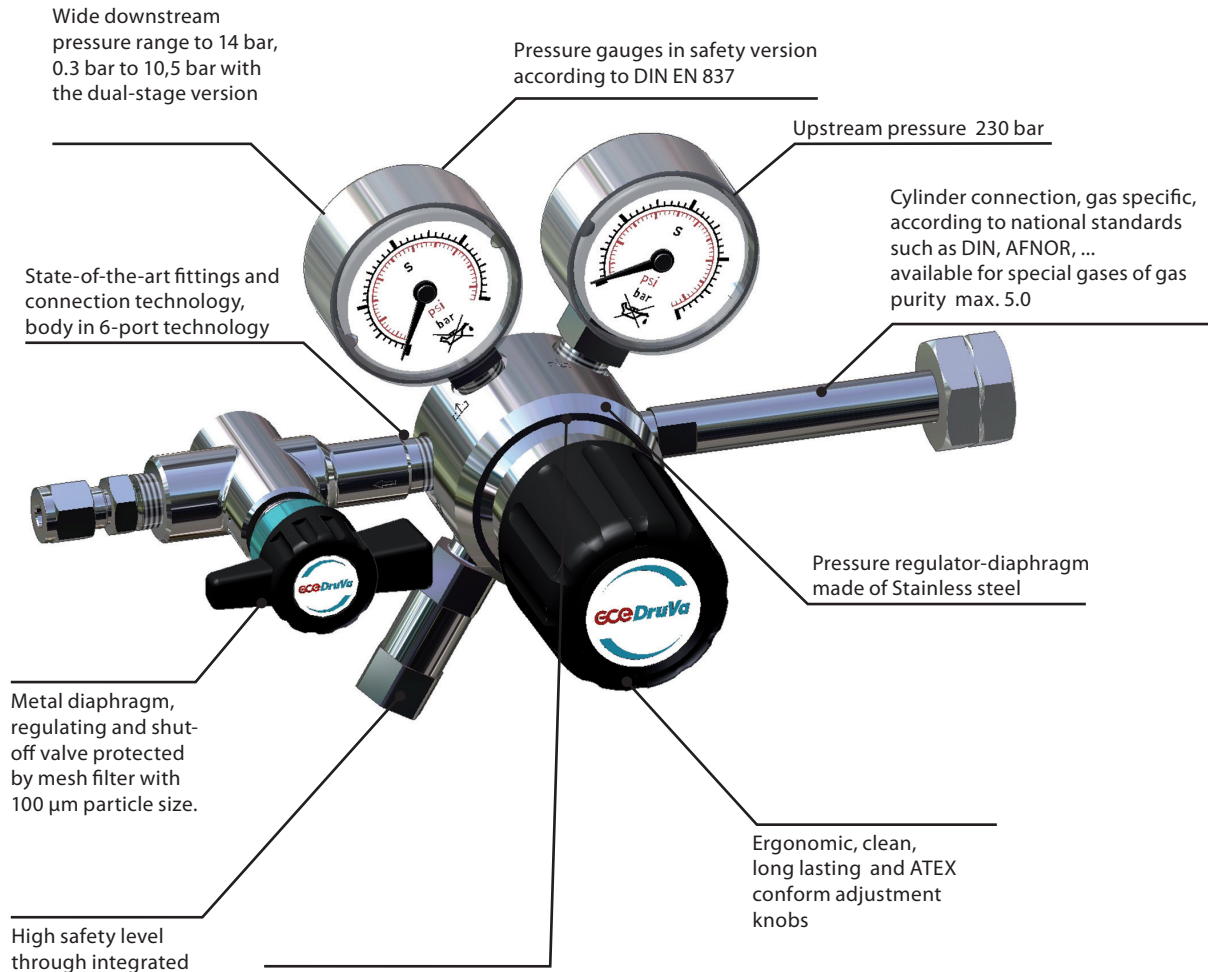




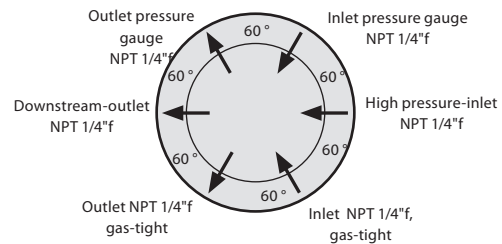
PRESSURE REGULATORS SERIES 320

PRESSURE REGULATORS SERIES 320



The GCEdruVa-pressure regulating unit guarantees easy maintenance and service with integrated particle filters 10 µm particle size. Cleanness and leak tightness fulfilling the demands of high purity applications.

CONNECTIONS (FRONT VIEW)



BASIC DESIGN ASPECTS*

MATERIAL

Body: stainless steel 316L (1.4404) specially cleaned or brass CW614 (CuZn39Pb3) nickel-plated and chrome-plated.

SEALING MATERIAL

PCTFE, PTFE, FKM etc., dependent upon gas specification and purity requirements. Material is specified in "Technical data".

INNER PARTS

Low maintenance, service friendly regulator unit, with a 10 µm particle filter on inlet and 100 µm on the outlet.

DIAPHRAGM

The stainless steel material offers ample protection against damage and corrosion.

PERFORMANCE DATA

See performance charts on pages 3 and 4, for differing pressure ranges please contact GCE GmbH.

GUARANTEED LEAKAGE RATES

< 1×10⁻⁹ mbar l/s Helium (outboard).
< 1×10⁻⁶ mbar l/s Helium (across the seat).

WORKING TEMPERATURE

-25 °C to +70 °C / -13 °F to 158 °F

PURITY

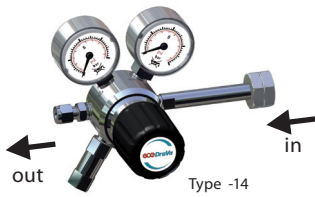
≤ 5.0

CYLINDER CONNECTIONS

In accordance with German national standards DIN 477. Other connections such as US-Norm CGA, British Standard BS etc. are available.

*Data other than that given for the Series 320 can be found listed in the "Technical Data" of the individual pressure regulator.

CYLINDER PRESSURE REGULATORS FMD 320-14/-16/-18



Single-stage, for inert, reactive and oxidizing gases and mixtures, no acetylene, purity max. 5.0, cylinder pressure 230 bar / 3300 psi, downstream pressure range 0.5 - 14 bar / 7 - 200 psi

SPECIAL FEATURES

- Diaphragm valve (FMD 320-16 with 90°-shut-off function)
- Pressure regulator with stainless steel diaphragm
- ATEX conform adjustment knob
- Gauge in safety version accordance with DIN EN 837



DESCRIPTION

These pressure regulators consist of cylinder connections, pressure regulator, inlet- and outlet gauges, diaphragm shut-off valve (Type -16) regulating valve (Type -18), relief valve, tube fitting on outlet.

APPLICATION

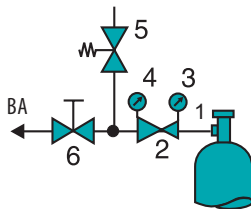
The FMD 320-14 is the base model. The FMD 320-16 permits shutting-off of the gas flow while maintaining the pressure regulator settings, the regulating valve on the FMD 320-18 enables a fine apportioning of the gas flow.



TECHNICAL DATA

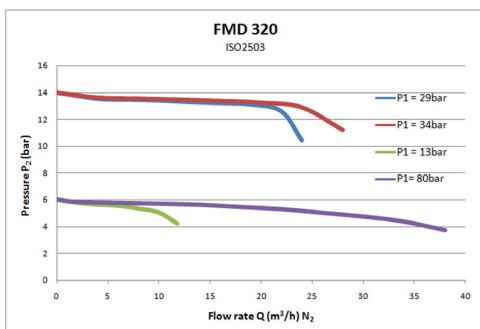
Body:	Stainless steel 316L (1.4404) specially cleaned or Brass CW614 (CuZn39Pb3) specially cleaned
Seat seals:	PCTFE
Body seals:	PCTFE (Stainless steel), PVDF (Brass)
Diaphragm:	Stainless steel
Leakage rate:	< 1×10 ⁻⁹ mbar l/s Helium (outboard) < 1×10 ⁻⁶ mbar l/s Helium (across the seat)
Relief valve seat seals:	SS: FKM, (EPDM*, FFKM*), Brass: EPDM, (FKM*)
Pressure gauge range:	0 to 25 bar (0 - 365 psi), 0 - 80 bar (0 - 1150 psi), 0 - 315 bar (0 - 4500 psi)
Working temperature:	-25 °C to +70 °C / -13 °F to 158 °F
Weight:	approx. 1.5 kg (Type -14), 1.8 kg (Type -16/18)
Performance data:	see below
Basic design aspects:	see page 2
Cylinder connection:	according to gas type
Outlet:	NPT 1/4" f, optional tube fitting
*on request	

FLOW SCHEMATIC

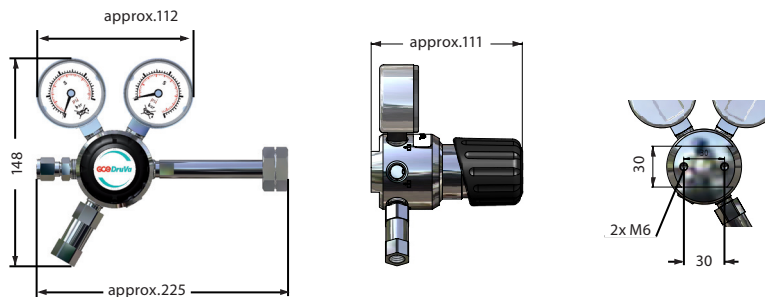


- 1 Cylinder connection
 - 2 Pressure regulator
 - 3 Upstream pressure gauge
 - 4 Downstream pressure gauge
 - 5 Relief valve
 - 6 Downstream shut-off valve (only type -16) / regulating valve (only type -18)
- BA Process gas outlet

PERFORMANCE DATA



DIMENSIONS



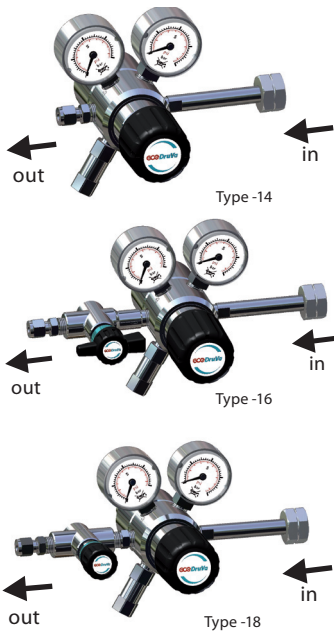
ORDER CODE

Type	Material	Upstream pressure	Downstream pressure	Inlet	Outlet	Gas type
FMD 320-14	BC	F	6	DIN	CL6	GAS
FMD 320-14	BC = brass Cr plated	F = 230 bar / 3300 psi	6 = 0.5 - 6 bar / 15 - 200 psi	DIN	0=NPT 1/4" f	Please specify
FMD 320-16	SS = stainless steel		14 = 1 - 14 bar / 15 - 200 psi	ANSI/ AFNOR/ NBN/BS 341/ CGA/NEN/UNI	CL6/ CL8**	
FMD 320-18					CL 1/8" / CL 1/4" NO6	

Subject to change without notice

** = Outlet: (CL6 = tube fitting for 6 mm outside diameter, NO6 = hose connector for 6 mm hose inside diameter). Please note the "burst rate chart" when choosing the tube fittings in chapter 5.

CYLINDER PRESSURE REGULATORS FMD 322-14/-16/-18



Dual-stage, for inert, reactive, flammable and oxidizing gases and mixtures, not suitable for acetylene, purity max. 5.0 cylinder pressure 230 bar / 3300 psi, downstream pressure range 0.5 - 10.5 bar / 7 - 150 psi

SPECIAL FEATURES

- Downstream pressure is independent of the upstream pressure due to the dual-stage design
- Diaphragm valve (FMD 322-16 with 90° shut-off function)
- Pressure regulator with stainless steel diaphragm
- ATEX conform adjustment knob
- Gauge in safety version accordance with DIN EN 837

DESCRIPTION

These pressure regulators consist of cylinder connections, pressure regulator, inlet- and outlet gauges, diaphragm shut-off valve (Type -16) regulating valve (Type -18), relief valve, tube fitting on outlet.

APPLICATION

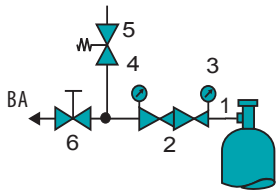
The FMD 322-14 is the base model. The FMD 322-16 permits shutting-off of the gas flow while maintaining the pressure regulator settings, the regulating valve on the FMD 322-18 enables a fine controlling of the gas flow. The dual-stage pressure regulator ensures the uniformity of the downstream pressure independent of the level of the cylinder pressure.

TECHNICAL DATA

Body:	Stainless steel 316L (1.4404) specially cleaned or Brass CW614 (CuZn39Pb3) specially cleaned
Seat seals:	1st stage: PCTFE, 2nd stage: PTFE
Body seals:	PCTFE (Stainless steel), PVDF (Brass)
Diaphragm:	Stainless steel
Leakage rate:	< 1×10 ⁻⁹ mbar l/s Helium (outboard) < 1×10 ⁻⁶ mbar l/s Helium (across the seat)
Relief valve seat seals:	Stainless steel: FKM, (EPDM, FFKM) * Brass: EPDM, (FKM)
Pressure gauge range:	-1 to 10 bar (-15 to 145 psi), -1 to 18 bar (-15 to 260 psi), 0 - 315 bar (0 - 4500 psi)
Weight:	approx. 2.1 kg (Type -14), 2.4 kg (Type -16/18)
Working temperature:	-25 °C to +70 °C / -13 °F to 158 °F
Performance data:	see below
Basic design aspects:	see page 2
Cylinder connection:	according to gas type

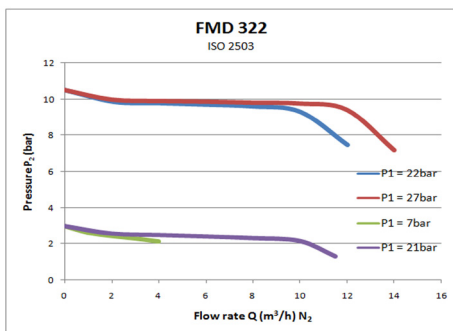
*on request

FLOW SCHEMATIC

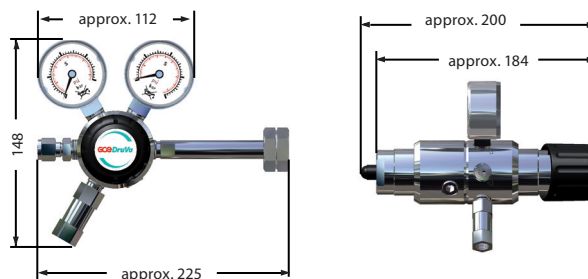


- 1 Cylinder connection
 - 2 Dual-stage pressure regulator
 - 3 Upstream pressure gauge
 - 4 Downstream pressure gauge
 - 5 Relief valve
 - 6 Downstream shut-off valve (only type -16) / downstream regulating valve (only type -18)
- BA Process gas outlet

PERFORMANCE DATA



DIMENSIONS

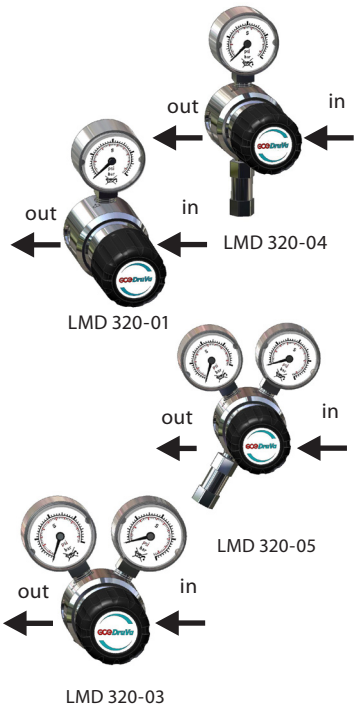


ORDER CODE

Type	Material	Upstream pressure	Downstream pressure	Inlet	Outlet	Gas type
FMD 322-14	BC	F	6	DIN	CL6	GAS
FMD 322-14	BC = brass Cr plated	F = 230 bar / 3300 psi	6 = 0.5 - 6 bar / 7- 85 psi	DIN	0=NPT 1/4"f	Please specify
FMD 322-16	SS = stainless steel		10 = 1 - 10.5 bar / 15 - 150 psi	ANSI/ AFNOR/ NBN/BS 341/ CGA/NEN/UNI	CL6/ CL8** CL 1/8" /CL 1/4"	
FMD 322-18					NO6	

** = Outlet: (CL6 = tube fitting for 6 mm outside diameter, NO6 = hose connector for 6 mm hose inside diameter). Please note the "burst rate chart" when choosing the tube fittings in chapter 5.

LINE PRESSURE REGULATORS LMD 320-01/-03/-04/-05



Single-stage, for inert, reactive, flammable and oxidizing gases and gas mixtures, purity max. 5.0, inlet pressure LMD 320: 40 bar / 600 psi, optional 230 bar / 3300 psi, downstream pressure range LMD 320: 0 - 14 bar / 200 psi,

SPECIAL FEATURES

- Excellent pressure adjustment
- Compact design
- 4 or 6 port configuration

DESCRIPTION

A broad application spectrum through the 4-port configuration (type -01/-04) or 6-Port-configuration (type -03/-05), which can be delivered respectively, with (type -04/-05) or without (type -01/-03) a relief valve. With type-03 and type-05 the use of contact gauge (accessories) in conjunction with alarm box (accessories) facilitates the monitoring of gas reserves.

APPLICATION

The LMD 320 reduces line pressure to give a lower supply pressure. Through its compact design this regulator is especially well suited for use in analytical or chemical apparatuses or processes.

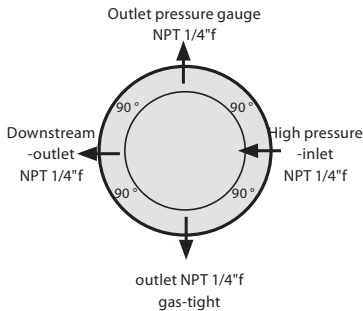
TECHNICAL DATA

Body:	stainless steel 316L (1.4404) specially cleaned or brass CW614 (CuZn39Pb3) specially cleaned, nickel-plated and chrome-plated
Seat seals:	PCTFE
Body seals:	PCTFE, PVDF (Brass)
Relief valve seat seals:	SS: FKM, (EPDM, FFKM)*, Brass: EPDM, (FKM)*
Performance data:	see the single stage regulator
Pressure gauge range:	-1 - 5 bar (-15 - 73 psi) / -1 - 10 bar (-15 - 145 psi), 0 - 25 bar (0 - 365 psi), 0 - 80 bar (0 - 1150 psi) / 0 - 315 bar (0 - 4500 psi)
Weight:	approx. 1.1kg (type -01), 1.2kg (type -03)
Dimensions (w×h×d):	approx. 115×140×120 to 140 mm
Inlet/Outlet:	NPT 1/4" f, optional tube fitting

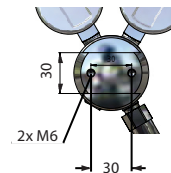
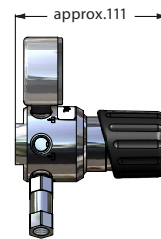
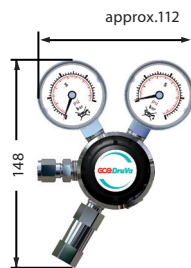
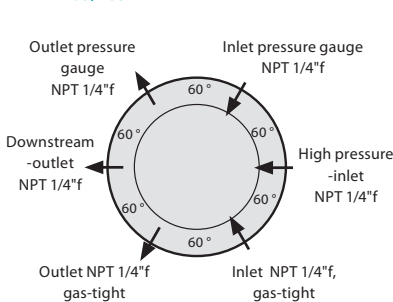
*on request

CONNECTIONS (FRONT VIEW)

TYPE -01/-04



TYPE -03/-05



ORDER CODE

Type	Material	Upstream pressure	Downstream pressure	Inlet	Outlet	Contact gauge	Gas type
LMD 320-01	BC	E	3	CL6 BC	CL6 BC	Ki	GAS
LMD 320-01	BC = brass	E = 50 bar	3 = 0.2-3 bar/3-45 psi	0=NPT 1/4" f	same as inlet	0 = without	Please specify
LMD 320-03	chrome-plated	/ 720 psi	6 = 0.5 - 6 bar/7-85 psi	CL6**		Ki = with	
LMD 320-04	SS = stainless steel	F = 230 bar	14 = 1 - 14 bar/15-200 psi	CL8		(only for Type -03 and -05)	
LMD 320-05	steel	/3300 psi		CL10 CL12 BC = brass chrome-plated SS = stainless steel			

Subject to change without notice

** Outlet: CL6 = tube fitting for 6 mm outside diameter, NO6 = hose connector for 6 mm hose inside diameter. Please note the "burst rate chart" when choosing the tube fittings in chapter 5.

GAS SUPPLY PANELS SMD 320-16/-24/-25

**Single-stage,
for inert, reactive, flammable and oxidizing gases and gas mixtures,
purity max. 5.0
inlet pressure 230 bar / 3300 psi
downstream pressure range 1 - 14 bar / 14 - 200 psi**

SPECIAL FEATURES

- Gas supply panel for standard applications (Type -16)
- Process gas purging (Type -24)
- Process gas purging and process gas outlet shut-off valve (Type -25)

DESCRIPTION

These gas supply panels are mounted onto a stainless steel panel and consist of a pressure regulator, inlet and outlet pressure gauges, a relief valve and shut-off valves (type -16 at the outlet, type -24 at the inlet, type -25 at inlet and outlet) for the process gas. A choice of stainless steel coils or flexible high pressure hoses is available for the connection to the gas cylinder. The use of contact gauge (accessories) in conjunction with alarm box (accessories) facilitates the monitoring of gas reserves. Vent piping connected to the relief valve can be ordered optionally.

APPLICATION

Gas panels are permanently installed in the cylinder stock room or cabinet near the point of use and reduce the cylinder pressure to a lower line pressure. Through the subsequent piping system the gas is taken to the point of use. The type -24 allows for process gas purging to be carried out while cylinders are being changed. The type-25 design allows shutting-off of gas flow during cylinder change from the panel itself. Standard application for these panels: centralized or decentralized gas supply.

TECHNICAL DATA

Body:	stainless steel 316L (1.4404) specially cleaned or brass CW614 (CuZn39Pb3) specially cleaned, nickel-plated and chrome-plated
Relief valve:	Outlet NPT 1/4" f, downstream pressure > 50 bar RV on request
Seat seals:	PCTFE
Body seals:	PCTFE (SS), PVDF (Brass)
Relief valve seat seals:	SS: FKM, (EPDM, FFKM)*, Brass: EPDM, (FKM)*
Performance data:	see the single stage regulator
Basic design aspects:	see page 2
Pressure gauge range:	0 - 25 bar (0 - 365 psi), 0 - 315 bar (0 - 4500 psi)
Weight:	approx. 2.5 kg (type -16) / 2.74 kg (type -24) / 3 kg (type -25)
Dimensions (w×h×d):	approx. 250×155×185 mm
Purge outlet:	NPT 1/4" f or tube fitting
Inlet:	NPT 1/4" f, M 14×1.5 (optional)

*on request



out
←
Type -16
↑
in

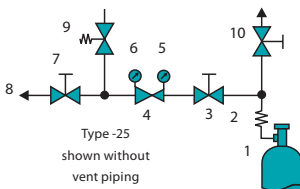


out
←
Type -24
↑
in



out
←
Type -25
↑
in

FLOW SCHEMATIC



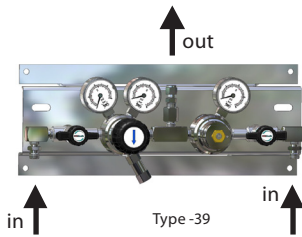
- 1 Cylinder connection
- 2 Coil
- 3 Shut off valve (not Type -16)
- 4 Pressure regulator - Single-stage
- 5 Upstream pressure gauge
- 6 Downstream pressure gauge
- 7 Process gas outlet shut-off valve (Type -25 and -16)
- 8 Process gas outlet
- 9 Relief valve
- 10 Purge outlet valve (not Type -16)

ORDER CODE

Type	Material	Upstream pressure	Downstream pressure	Inlet	Outlet	Contact gauge	Vent piping	Gas type
SMD 320-16	BC	F	14	N14	CL6 BC	Ki	A	Gas
SMD 320-16	BC = brass	F = 230 bar	14 = 1 - 14 bar	N14 =	0=NPT 1/4" f	0 = without	0 = without	Please
SMD 320-24	chrome-plated	/3300 psi	/15 - 200 psi	NPT 1/4" f	CL6, CL8**	Ki = with	A = with	specify
SMD 320-25	SS = stainless steel			M14×1.5 (optional)	CL10, CL12 BC = brass chrome-plated		(Only in conjunction with RV not available for Type-16)	

It is necessary to have a gas specific connection to the gas supply for an efficient installation and use of this station, see accessories chapter "cylinder connection FA 500". **Outlet: CL6 = tube fitting for tube 6 mm, (0 = without). Please note the "burst rate chart" when choosing the tube fittings in chapter 5.

GAS SUPPLY MANIFOLDS BMD 320-39



**Single-stage,
for inert, reactive, flammable and oxidizing gases and gas mixtures,
purity max. 5.0,
inlet pressure 230 bar / 3300 psi,
preset downstream pressure 14 bar - 200 psi**

SPECIAL FEATURES

- Uninterrupted gas supply with semiautomatic switch over
- Indicator for active cylinder
- Low gas alarm signal with contact gauges (optional)
- Upgradable to max. 2x4 cylinders

DESCRIPTION

Pressure decreases in the active cylinder (or bundle) below a preset level which causes a semi-automatic switch to switch over to the full cylinder. This is achieved by two integrated pressure regulators (preset to slightly different delivery pressure levels), connected at their outlet ports. Moving the lever towards the full bank allows for the disconnection and replacement of empty cylinders without interruption to the gas flow. The use of contact gauge (accessories) in conjunction with alarm box (accessories) facilitates the monitoring of gas reserves.

APPLICATION

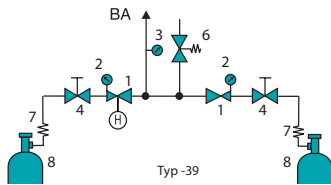
These gas supply panels, with semi-automatic switch over, are optimally used when it is when uninterrupted gas supply is required.

TECHNICAL DATA

Body:	stainless steel 316L (1.4404) specially cleaned or brass CW614 (CuZn39Pb3) specially cleaned, nickel-plated and chrome-plated
Relief valve:	Outlet NPT 1/4" f
Body seals:	PCTFE (SS), PVDF (Brass)
Seat seals:	PCTFE
Relief valve seat seals:	FKM, (EPDM, FFKM)*, EPDM, (FKM)*
Pressure gauge range:	-1 - 18 bar (-15 - 260 psi) / 0 - 315 bar (0 - 4500 psi)
Dimensions (w×h×d):	approx. 400×155×200 mm
Weight:	approx. 5.0 kg (BMD 320-39)
Preset downstream pressure:	14 bar +/- 2 bar ; 200 +/- 30 psi
Flow rate:	20 Nm ³ /h N ₂ (14 bar - type at 29 bar inlet pressure.)
Inlet:	NPT 1/4" f , M 14×1.5 (optional)
Outlet:	NPT 1/4" f, optional tube fitting

*on request

FLOW SCHEMATIC



- 1 Pressure regulator
- 2 Upstream pressure gauge
- 3 Downstream pressure gauge
- 4 Process gas valve
- 6 Relief valve
- 7 Connection spirals
- 8 Gas cylinder
- H Change over hand wheel
- BA Process gas outlet

ORDER CODE

Type	Material	Upstream pressure	Downstream pressure	Inlet	Outlet	Contact gauge	Extension bar	Gas type
BMD 320-39	BC	F	14	N14	CL6 BC	Ki	M	GAS
BMD 320-39	BC = brass chrome-plated SS = stainless steel	F = 230 bar /3300 psi	14 = 14 bar/ 200 psi	N14 = NPT 1/4" f M14×1.5 (optional)	0=NPT 1/4" f CL6, CL8** CL10, CL12 BC = brass chrome-plated	0 = without Ki = with	0 = without M2 = 2×2 Cylinder M3 = 2×3 Cylinder M4 = 2×4 Cylinder	Please specify

Subject to change without notice

It is necessary to have a gas specific connection to the gas supply for an efficient installation and use of this station, see accessories chapter "cylinder connection FA 500". **Outlet: CL6 = tube fitting for tube 6 mm, (0 = without). Please note the "burst rate chart" when choosing the tube fittings in chapter 5.

GCE Group is one of the world's leading companies in the field of gas control equipment. The headquarters are in Malmö, Sweden, and the two major supply units are located in the Czech Republic and in China. The company operates 15 subsidiaries around the world and employs more than 850 people. GCE Group includes four business areas –Cutting & Welding, Process Applications, Medical and High Purity. Today's product portfolio corresponds to a large variety of applications, from single pressure regulators and blowpipes for cutting and welding to sophisticated gas supply systems for medical and electronics industry applications.



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