1. BASIC PRODUCT INFORMATION

2. STANDARD EQUIPMENT

3. SPECIAL GAS EQUIPMENT

4. ACCESSORY

5. CHARTS

6. GCE

Standard equipment

1. Pressure stage
Brass or stainless steel
Cylinder pressure regulators
Single cylinder gas panels:
- Single-stage
- Double-stage
- With internal or external gas purging

Multi cylinder gas panels:
- Single-stage, with manual change over
- Single-stage, with automatic change over
- With internal or external gas purging

2. Pressure stage
Line pressure regulators
Point-of-use pressure regulators
Accessory for wall mounted supply pressure regulators:
- Tube fittings
- Hose nozzles
- Flame arrestors
- Flow control

Regulating and shut-off valves
Valves, brass:
- Diaphragm valves
- Pneumatic valves

Valves, stainless steel:
- Packed valves
- Diaphragm valves
- Pneumatic valves
- Valve tableaus

Solenoid valves, brass + stainless steel
Ball valves, brass + stainless steel

Laboratory equipment

Valves, brass and stainless steel:
- Shut-off and regulating diaphragm valves

Point-of-use pressure regulators
Point-of-use equipment for laboratory furniture mounting
Point-of-use panels
Accessory for laboratory furniture
- Screwed connections
- Tube fittings
- Hose nozzles
- Connection adapters
- Flame arrestors
- Flow metering

Accessory

Connection material
Assembling material:
- Tube fittings
- C-profile guides
- Cylinder holders
- Valve mounting
- 90°-angle tube fittings
- Straight tube fittings
- Adapter fittings
- Hose nozzles

Others
Pressure gauges:
- Bourdon type
- Contact gauges

Gas supply monitoring
Cylinder connections:
- Convoluted hoses
- Spiral lines
- Extensions for multi cylinder installations
- Screwed connections

Accessory for wall mounted point-of-use tableaus
- Flame arrestors
- Flow control

Cylinder cabinets:
- Safety cabinets
- Sheet steel cabinets

Electric and electronic device:
- Signal boxes
- Control device
- Gas warning systems
- Cylinder scales
- Heating device for cylinder cabinets
- Monitoring device for pressure and flow
- Electric cables and accessory

Ultra High Purity equipment

Pressure regulators, 316L, AOD/VAR
- Line pressure regulators
- Supply pressure regulators

Valves:
Diaphragm valves, manually operated
Pneumatic valves

Process panels (1. pressure stage)

Accessory
- Spirals
- Screwed connections, VCR-type
- Connection adapters
- Rupture disks
- Vacuum generators
- Filters
- Welding fittings
- Security cabinets
- Cylinder cabinets

Electric device
- Monitoring systems

High-purity gases require high-quality regulators, to maintain gas purity, to fulfil user-specific requirements and to protect the operators

Proper handling of expensive high-purity gases requires highest quality of valves and pipelines, not at least of the conception, planning, installation and putting into service of the entire gas distribution system.

The fulfillment of user-specific demands such as pressure stability, flow-capacity and maintaining of the gas composition needs to be guaranteed in the same way as the prevention of contamination from the gas source down to the „point-of-use".

Handling of compressed gases presupposes intensive knowledge of regulations and technical rules which form the basement for a safe layout of any gas-supply system.

The quality of GCE High-Purity Gas distribution system is determined by a large number of features:
- tightness,
- dead-space-minimized design,
- high safety due to Hastelloy diaphragms,
- patented damping system,
- purgeability,
- joining and safety aspects.

They require the same attention as like assembly and preventive maintenance.

Accuracy and safety are the basic rules for the handling of special and high purity gases

Selection of gas resistant and gas neutral materials, combined with precise manufacturing on numeric controlled machining centres guarantee utmost accuracy during the complete production process.

The mechanical manufacturing process is followed by an automatized cleaning bath carefully removing any grease, emulsion, debris and solvents from the gas wetted surface.
Assembly and pressure testing is performed in clean areas using high purity test gases.
Diverse quality inspections such as material examination, surface roughness measurement, dimensional control, functional test with nitrogen, pressure examination and leakage test examination with helium, and quality inspection of TIG-welding, safeguard the function and safety of all components and systems.

We always aspire to an open and beneficial cooperation with our customers

A close dialogue to customers and designers enables us already today developing products suiting the market requirements of tomorrow experience for years, latest test- and measuring equipment and CAD technology build a basement for solutions beyond the usual expectations.
Advanced product quality guarantees continuous process supply and avoids unnecessary system downtime.

Therefore the GCE technology is the safe basis for solutions matching the customers preferences

Fine controllability of pressure and flow

The monitored quality of all components guarantees undisturbed process gas supply, avoids unnecessary follow-up costs and safeguards the lasting efficiency of the GCE Special Gas Supply System.

Minimized leakage rates respectively highest leak integrity guarantee, that process gases are not contaminated and assure the necessary safety during operation and to guarantee gas purity at the point-of-use.

Pressure regulators, valves and accessories of high purity and accuracy

GCE products meet the special requirements of high quality pure-gas distribution systems in terms of purity, pressure stability and operational safety. The supervision and control of the material quality is decisive for quality and safety of the products. By electro-polishing and multi stage cleaning processes all parts receive highest surface quality, are generally ECD-suitable and in combination with 316L, Hastelloy inner parts and proper purge extremely corrosion resistant.

Lowest leakage rates avoid any gas contamination and increase the safety for the operators.

The metal diaphragm design of valves and regulators as well as strictly using of HASTELLOY material for diaphragms guarantees highest safety against diapraghm leak or burst.

Application areas for GCE Special Gas Equipment

- Analysis technology
- Gas chromatography
- Atom-Adsorption-Spectrometry
- Exhaust-gas measurement environmental control
- Chemical process technology
- Laser technology
- Pharmaceutical industry
- Petrochemical industry
- Food / drugs sector
- Semiconductor technology
- Fibre optical industry

Quality Standards

GCE pure gas components are high quality products. They are well known since 1967. Giving great reliability, safety and variety they permit a flexible, economic design of numerous gas supply systems. The use of high quality materials, application adequate surface and system tightness permits precise control of pure gas pressure and flow while maintaining the gas purity and composition.

GCE components are specially designed to ensure that the used gases reach the point of use with the required pressure, flow rate and purity.

Each manufacturing step from design to final test is subject to our quality management system.

The most important steps are:

- Periodical optical measurement control max. 100%,
- microscopic and endoscopic test of all borings,
- multi-stage special cleaning procedure with DI-water cleaning process, clean air flushing and material friendly drying,
- functional tests,
- 12-hour-pressure test at inlet pressure level,
- Helium-leakage-test with mass spectrometer.
- 100% function and tightness control of basic components.

GCE Quality Management

GCE clean-gas systems proof its quality by performance and reliability and by our accreditation according to DIN EN ISO 9001 and DIN EN ISO 46001.
But what does that mean for our customer?
This certification is considered by GCE as only one step of the long way towards gaining the confidence of our customers.
Unannounced re-audits by internal and external supervisors assure a continuous quality level.
Therefore our customers can rely on this certificates not being used a basis to relax but as a stairway into new destinations.
Onto that our efforts are directed towards offering economical solutions to our customers as a reliable partner in all questions of the clean-gas technology on a high quality level.
That is, safeguarded quality in the fulfilment of highest claims on investigation, evolution, production and marketing:

- constant innovation of products, processes and organisational structures
- current updating of the quality assurance system
- regular training, improvement of communication- and information-technologies
- quality control is a central obligation for all our employees.

Helium leak testing

Helium leak rate certification

Helium leak testing is performed by a mass spectrometer. This technique is particularly effective at detecting and quantifying very small leaks. For example a typical regulator will have a helium leak rate of 1 x 10^{-9} mbar l/sec He equivalent. This is equal to a leak of just 1 ccm per 30 years. Some products for the electronics industry or high corrosion service will be helium leak tested and certified as standard to guarantee maximum integrity. Many other components are given a guaranteed but uncertified maximum leak rate. Helium leak testing is standard and certification is an option.

Flow capabilities - performance charts

For regulators the concept of flow coefficient is only partially useful, since a regulator is a variable C_v device. During normal operation, the regulator opens and closes as it controls the outlet pressure. This means that the C_v is constantly changing. For most regulators therefore, flow charts are supplied, which give a simple graphic representation of test results and show the change in outlet pressure with varying flow rate.
GCE always show flow performance charts referring to ISO 2503 for regulator testing conditions with an inlet pressure of double plus 1 bar of the outlet pressure stage (sample: p_1 = 101 bar and p_2 = 50 bar). As a result these flow charts are based on a comparable test method, but they don't show maximum gas flow. See chapter "Regulator Performance and Flow Charts" at the end of this catalogue.

Gas purity values

Gas type	Purity [degrees]	Purity	Max. contamination [ppm]
Pure gas	2.5	99,5%	5000
	3.0	99,9 %	1000
High purity gas	3.5	99,95 %	500
	4.0	99,99 %	100
	4.5	99,995 %	50
	5.0	99,999 %	10
	6.0	99,9999 %	1,0
Ultra pure gas	7.0	99,99999 %	0,1

Single-stage regulators

Pressurized gas enters the regulator from the cylinder connection. When the hand wheel is turned clockwise, it compresses the spring and gives a force on the diaphragm, which pushes the valve stem open. This releases gas into the low-pressure chamber, exerting an opening force on the diaphragm. An equilibrium is reached, when the spring force on the diaphragm is equal to the opposing force of the gas in the low-pressure chamber.

In a single-stage regulator, delivery pressure increases as cylinder pressure falls, because there is less gas pressure exerted on the valve stem. Thus, frequent adjustment of the control knob is required to maintain a constant delivery pressure. This does not cause a problem, however for application requiring constant outlet pressure, a two-stage regulator is recommended.

Pressure regulators denotation

Cylinder regulators (FMD)

Cylinder regulators are used to reduce the cylinder pressure to a lower usable level.

Line regulators (LMD)

Line regulators are designed to reduce line pressure to various low pressure levels..

Point-of-use regulators (EMD)

Point-of-use regulators are used to give maximum accuracy and shut-off capability at the Point-Of-Use - POU.

Gas panels (SMD, BMD)

Gas supply panels are installed in the gas storage area (cylinder stock room or gas cabinet). They reduce cylinder / tank pressure to a certain line pressure for in-house use. Via the subsequent piping system the gas will be guided to the point-of-use.

Ultra high purity regulators

Ultra high purity regulators are designed to provide a maximum diffusion resistance. Metal diaphragms and high-purity seats and seals minimise or eliminate out gassing and inboard diffusion.

Questions to be answered selecting a regulator

Do you need a standard regulator/valve (gas purity < 6.0) for ultra high-purity use (higher 6.0)?
Do you need a single-stage or two-stage regulator?
Do you need a purge system? See information on this page.
Material of construction must not be specified, it depends on gas type. GCE makes a proposal, if gas type is specified.
Which outlet pressure range is required? Specification at “Technical data“.
Which flow rate is required? Specification on product specific flow charts.
Do you have a 200 or a 300 bar gas supply level?
Which type of outlet connection do you need, DIN or other national norms, tube fittings, hose nozzles etc.?

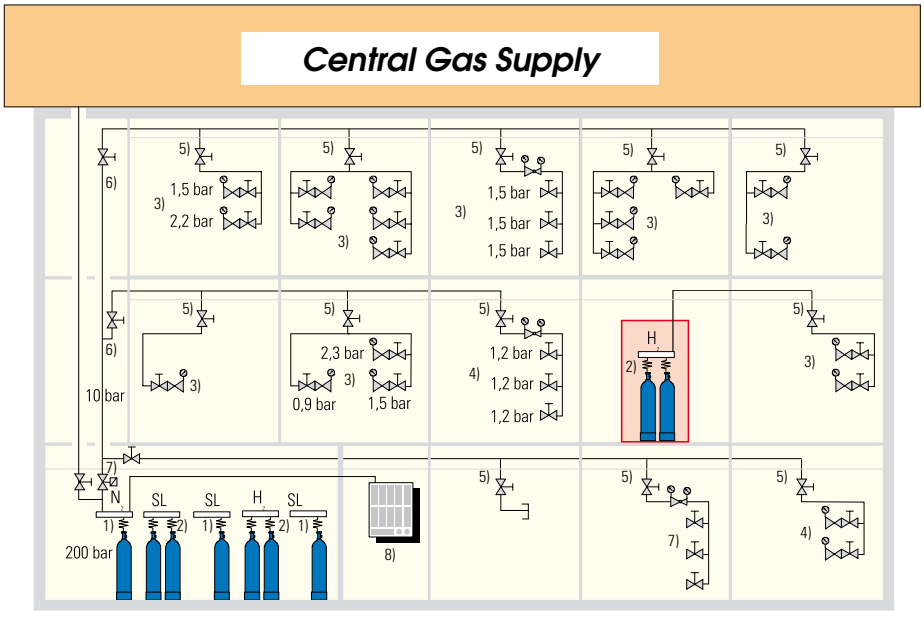
Purge

Purge utilises a sequence of pressurisation followed by de-pressurisation by venting. This simple sequence is recommended to be repeated 10 times and is effective to dilute the process gas or air/moisture ingress and efficiently replacing it.
The so called **Internal gas purging** uses the process gas for purging, **External gas purging** is performed with inert gas into a special inlet connection. The purging method with pressurisation/de-pressurisation is very effective in removing gas also from dead space and save purging time.
To assist in the supply of high purity or hazardous gases and gas mixtures from the cylinder to the point of use, GCE has designed a series of regulators and panels. Purging with an external inert gas is an extremely important factor when changing cylinders for the following reasons:
1. Purging the gas rest remaining in the system before cylinder changing improves the safety level of the operator.
2. Maintaining gas purity by purging the atmospheric air which has penetrated the system after cylinder changing.
3. Purging with dry inert gas reduces humidity and extends the expected live, when corrosive gases are used.
For **high purity gases** purging will remove air/moisture from the system before process gas is introduced in order to preserve the purity of the gas and to promote system reliability.
For **toxic gases** purging will remove process gas out of the system before the system is opened to atmosphere and will therefore minimise the risk of operator's exposure.
For **corrosive gases** purging will remove moisture from the system. Moisture can produce strong acids and potentially solid material which can cause system failure through corrosion and/or particular contamination.
GCE offers cylinder pressure regulators with internal gas purging and gas panels with internal or external gas purging (dry N2 recommended).

1) Gas panel SMD, 2) Gas panel BMD, 3) Point/of/use regulator EMD, 4) Point-of-use shut- off, 5) Room shut-off, 6) Floor shut-off 7) Central shut-off, 8) Gas management,

Double-stage regulators

A double-stage regulator functions like two single-stage regulators connected in line. The first stage reduces the inlet pressure to a preset intermediate pressure. By adjusting the control knob the second stage reduces the intermediate pressure to the wanted delivery pressure.
Like the single-stage regulator, outlet pressure from the first stage of the two-stage regulator rises as cylinder pressure decreases. However, instead of passing out of the regulator, the gas flows into the second stage where the pressure is regulated again. Thus, delivery pressure remains constant even as the cylinder pressure decays, eliminating the need for frequent control knob adjustment.



Order code for your pressure regulators

	Series 500	Series 400	Series 3000	Series 230	Series 100
Purity	< 6.0	≤ 6.0	≤ 6.0	≤ 5.0	≤ 5.0
Application	Standard	Laboratory	Laboratory	Low Purity	Laser

FMD **50** **0** **-16** **B** **F** **200** **DIN** **CL6** **BC** **0** **Gas**

Application area

FMD = cylinder pressure regulator
SMD = gas supply panel for 1 cylinder
BMD = gas supply panel for 2 or more cylinder
LMD = line regulator
EMD = point-of-use regulator

Type of pressure reducing

50 = standard regulators
51/52 = supply into vacuum
54/56 = low outlet pressure
53 = special 300 bar inlet pressure regulators
23 = gas purity ≤ 4.5
10 = Laser
300 = Laboratory module
40 = Laboratory regulator system

Pressure stages

0 = single-stage
2 = double-stage

Outlet and purging

-14 = with outlet tube fitting
-16 = outlet shut-off valve
-18 = outlet metering valve
-21 = external gas purging
-24 = panel with internal purge
-25 = panel with internal gas purge and downstream valve
-27 = panel with external gas purging
-29 = for acetylene (C_2H_2)
-30 = panel with outlet shut-off valve, no purge
-32 = panel with outlet shut-off valve, with internal purge
-34 = panel with semiautomatic change-over, with external gas purge
-35 = panel with semiautomatic change-over, with internal gas purge
-39 = panel with semiautomatic change-over, without purge

Material

B = brass
BC = brass chrome-plated
SS = stainless steel

Inlet pressure (depends on series no.)

	bar	psi	
C =	6	85	
D =	12/14	175/200	
E =	40/50	600/720	
F =	230	3300	
G =	300	4300	
E =	40	600	(Lab 3000, LMD, EMD))

Outlet pressure levels (depends on series type)

bar	psi
0,1 - 1	1,5 - 15
0,1 - 2 abs	1,5 - 30 abs
0,1 - 2,2	1,5 - 33
0,1 - 3	1,5 - 45
0,2 - 3 abs	3 - 45 abs
0,2 - 4	3 - 60
0,5 - 6	7 - 85
1 - 10,5	15 - 150
1 - 14	15 - 200
2,5 - 28	35 - 400
2,5 - 50	35 - 720
10 - 200	145 - 2900

Cylinder connection

DIN = DIN
A = ANSI
F = AFNOR
B = NBN
UK = BS 341
US = CGA
NL = NEN
others
on demand

Assembled outlet fitting

CL0 = without,
CL3, CL6, CL8, CL10, CL12
(e.g.. CL6 = tube fitting for tube outside diam. 6 mm)
NO6, NO8, NO10 =
hose nozzle for tube with inner diameter 6/8/10 mm

Material of assembled outlet fitting

B = brass
BC = brass, chrome-plated
SS = stainless steel

Optional

0 = without
KI = contact gauge

Gas type

Cylinder pressure regulators 500 overview

Outlet: tube fitting
Brass or stainless steel

Single-stage

FMD 500-14
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 6, 14, 28, 50, 200 bar
85, 200, 400, 720, 2900 psi

FMD 510-14
Inlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 3 bar abs
1,5 to 45 psi abs

FMD 540-14
IInlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 2 bar
1,5 to 30 psi

FMD 530-14
Inlet pressure: 300 bar / 4300 psi
Outlet pressure: 6, 14, 28, 50, 200 bar
85, 200, 400, 720, 2900 psi

Double-stage

FMD 502-14
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

FMD 522-14
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 3 bar abs
1,5 to 45 psi abs

FMD 562-14
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 2 bar
1,5 to 30 psi

FMD 532-14
Inlet pressure: 300 bar / 4300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

Outlet: shut-off valve
Brass or stainless steel

Single-stage

FMD 500-16
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 6, 14, 28, 50, 200 bar
85, 200, 400, 720, 2900 psi

FMD 510-16
Inlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 3 bar abs
1,5 to 45 psi abs

FMD 540-16
IInlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 2 bar
1,5 to 30 psi

Double-stage

FMD 502-16
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

FMD 522-16
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 3 bar abs
1.5 to 45 psi abs

FMD 562-16
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 2 bar
1,5 to 30 psi

Outlet: regulating valve
Brass or stainless steel

Single-stage

FMD 500-18
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 6, 14, 28, 50 bar
85, 200, 400, 720 psi

FMD 510-18
Inlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 3 bar abs
1,5 to 45 psi abs

FMD 540-18
IInlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 2 bar
1.5 to 30 psi

Double-stage

FMD 502-18
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

FMD 522-18
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 3 bar abs
1.5 to 45 psi abs

FMD 562-18
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 2 bar
1,5 to 30 psi

With external purging
Stainless steel

Single-stage

FMD 500-21
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 6, 14, 28, 50, 200 bar
85, 200, 400, 720, 2900 psi

FMD 510-21
Inlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 3 bar abs
1.5 to 45 psi abs

FMD 540-21
IInlet pressure: 12 bar / 175 psi
Outlet pressure: 0,1 to 2 bar
1.5 to 30 psi

Double-stage

FMD 502-21
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

FMD 522-21
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 0,1 to 3 bar abs
1.5 to 45 psi abs

Gas supply panels, series 500 and Acetylene

SMD 500-16
Single-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14, 28, 50 bar
/ 200, 400, 720 psi

SMD 502-16
Double-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

SMD 500-24
Single-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 14, 28, 50 bar /
200, 400, 720 psi

SMD 500-25
Single-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 14, 28, 50 bar /
200, 400, 720 psi

SMD 500-27
Single-stage, with external purging
Stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 14, 28, 50 bar /
200, 400, 720 psi

SMD 502-24
Double-stage, with internal purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10.5 bar
45, 85, 150 psi

SMD 502-27
Double-stage, with external purging
Stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure: 3, 6, 10,5 bar
45, 85, 150 psi

BMD 500-30
Single-stage, max. 2 x 4 cylinder
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14, 28, 50 bar
200, 400, 725 psi

BMD 500-32
Single-stage, max. 2 x 4 cylinder
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14, 28, 50 bar
200, 400, 725 psi

BMD 500-34
Single-stage, max. 2 x 5 cylinder
With external gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14 bar
200 psi

BMD 500-35
Single-stage, max 2 x 5 cylinder
With internal gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14 bar
200 psi

BMD 500-35 DS
Single-stage, max. 2 x 5 cylinder
With external gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14 bar / 200 psi

BMD 500-39
Single-stage, max. 2 x 5 cylinder
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press.: 14 bar
200 psi

BMD 502-34
Double-stage, max. 2 x 5 cylinder
With external gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press. : 3, 6 bar / 45, 85 psi

BMD 502-35
Double-stage, max. 2 x 5 cylinder
With internal gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press. : 3, 6 bar / 45, 85 psi

BMD 502-39
Double-stage, max. 2 x 5 cylinder
Without gas purging
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet press. : 3, 6 bar / 45, 85 psi

BMD 200-29
Single-stage,
For Acetylene
Brass
Outlet pressure: 1,5 bar / 22 psi

SMD 200-29
Single-stage,
For Acetylene
Brass
Outlet pressure: 1,5 bar / 22 psi

Line regulators

LMD 500-01/03
Single-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure:
0,2 - 3 / 0,5 - 6 / 1 - 14 bar
3 - 45 / 7,5 - 85 / 36 - 725 psi

LMD 510-01/03
Single-stage
Brass or stainless steel
Inlet pressure: 12 bar / 175 psi
Outlet pressure:
0,1 - 2 / 0,1 - 3 bar abs.
1,5 - 22 / 1,5 - 45 psi abs.

LMD 502-03
Double-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure:
0,1 - 1 / 0,2 - 3 / 0,5 - 6 / 1 - 10,5 bar
1 - 15 / 3 - 45 / 7,5 - 85 / 14 - 150 psi

LMD 522-03
Double-stage
Brass or stainless steel
Inlet pressure: 230 bar / 3300 psi
Outlet pressure:
0,1 - 2 / 0,1 - 3 bar abs.
1,5 - 22 / 1,5 - 45 psi abs.

Point-of-use regulators

Point-of-use regulators EMD 3000, EMD 400
Single-stage
Brass or stainless steel
Inlet pressure: 40 bar / 600 psi
Outlet pressure:
0,1 - 1,5 / 0,2 - 4 / 0,5 - 10,5 bar
1,5 - 22 / 3 - 60 / 7 - 150 psi
Analysis version:
Inlet pressure: 10 bar / 145 psi
Outlet pressure: 2,2 bar / 33 psi

EMD 3000

EMD 400

EMD 500-06
Single-stage
Brass or stainless steel
Inlet pressure: 40 bar / 600 psi
Outlet pressure:
0,1 - 1,5 / 0,2 - 6 / 0,5 - 10,5 bar
1,5 - 22 / 3 - 85 / 7 - 150 psi

EMD 510-06
Single-stage
Brass or stainless steel
Inlet pressure: 12 bar / 175 psi
Outlet pressure:
0,1 - 2 / 0,1 - 3 bar abs.
1,5 - 22 / 1,5 - 45 psi abs.

High performance with outlet pressure range from 0,1 bar abs. to 200 bars (1,5 psi abs. to 2900psi), 0,1 bar abs. to 10,5 bars (1,5 psi abs. to 150 psi) with the double stage version

Pressure gauges in safety version according to DIN EN 562

Inlet pressure 200 bars/2900 psi
Option 300 bars/4300 psi

Cylinder connection, gas specific, according to national standards like DIN, AFNOR, ... available for special gases of gas purity max. 6.0

State-of-the-art fittings and connection technology, body in 6-port technology

Hastelloy diaphragm metering and shut-off valves, protected by mesh filters 100 µm, inlet and outlet 1/4" f, seat sealing PCTFE. Technical details page 45/46.

Easy maintenance and service due to GCE pressure regulating unit with integrated mesh particle filters 10 µm size. Burst and corrosion protected by Hastelloy diaphragm. Long life expectancy from patented damping system. Cleanness and leak tightness according to the demand of high purity applications.

Higher safety level by integrated relief valve

Ergonomic, clean, long life and ATEX conform handling knobs

Basic design aspects*

Body material
Stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated .

Sealing material
PCTFE, FKM, EPDM, etc., depending on gas specification and purity requirements. Material is specified in "Technical data".

Inner parts
Easy maintenance and service due to special GCE pressure regulator unit. Integrated particle filters.

Diaphragm
Good protection against burst and corrosion due to diaphragm material Hastelloy.

Damping system
A built-in damping system establishes a certified protection against vibrations.

Performance data
See flow charts in chapter 5.1, for demanding different pressures please contact GCE.

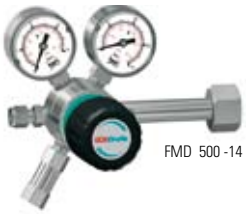
Guaranteed leakage rates
< 1x10 $^{-9}$ mbar l/s Helium (body).
< 1x10 $^{-6}$ mbar l/s Helium (seat).

Working temperature
-20 °C to +70 °C / -4 to 158 °F

Purity
< 6.0.

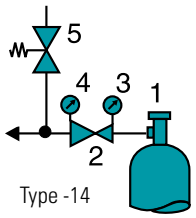
Cylinder / Inlet connection
According to German national standard: DIN 477. Other connections acc. to

US-Norm CGA, British Standard BS etc. available.

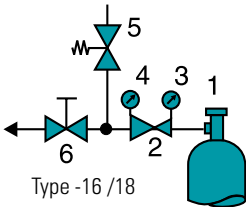

FMD 500-14


FMD 500-16


FMD 500-18



Type -14



Type -16 /18

1 cylinder connection
2 pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (-16)
/ metering valve (-18)

Single-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar / 3300 psi, outlet pressure range 0,2 - 200 bar / 3 - 2900 psi

Highlights

- **Diaphragm valve with quarter turn engaged shut-off function (FMD 500-16) or regulating valve (FMD 500-18)**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

The FMD 500-14/16/18 consists of a cylinder connection, pressure regulator body, inlet and outlet pressure gauge, diaphragm shut-off valve (type -16) regulating valve (type -18), relief valve and outlet tube fittings.

Application

The cylinder pressure regulator line FMD 500 offers a wide range of use and great performance. The FMD 500-14 is the basic model. The FMD 500-16 allows shut-off/opening of the gas flow maintaining the pressure regulator's adjustment. The FMD 500-18 allows pressure level adjustment as well as fine dosing of gas flow.

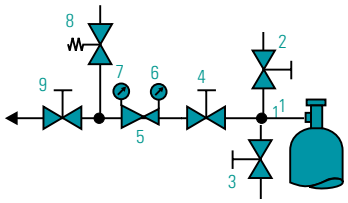
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealings:	PCTFE (SS), PVDF (brass)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Weight:	type -14: 0,4 kg, type -16/18: 0,48 kg
Dimensions (wxhxd):	225 x 140 x 125 mm

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 500-14	**BC**	**F**	**6**	**DIN**	**CL6**	**Gas**
FMD 500-14= without MV FMD 500-16=with MVA FMD 500-18=with MVR	BC = brass SS = stainless steel	F = 230 bar/3300 psi	6 = 0,5 - 6 bar/ 3 - 85 psi 14 = 1 - 14 bar /15 - 200 psi 28 = 2.5 - 28 bar / 35 - 365 psi 50 = 2.5 - 50 bar / 35 - 720 psi 200 = 10 - 200 bar/145 - 2900 psi (200 bar not with FMD 500-18)	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL6 CL8 CL 1/8" CL 1/4" NO6	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)



1 Cylinder connection
2 purge inlet valve
3 purge outlet valve
4 inlet shut-off valve
5 pressure regulator
6 inlet pressure gauge
7 outlet pressure gauge
8 relief valve
9 outlet shut-off valve

Single-stage, with external purging device, for reactive, flammable, oxidizing and corrosive gas and gas mixtures, purity max. 6.0, cylinder pressure 230 bar/ 3300 psi, outlet pressure range 0,2 - 50 bar / 3 - 720 psi

Highlights

- **Ideal external purge conditions by means of purge block**
- **With diaphragm shut-off valve**
- **Diaphragm regulator**
- **Diaphragm valve**
- **ATEX compliance of handwheels**

Features

The FMD 500-27 consists of cylinder connection, purge block device, pressure regulator body, inlet and outlet pressure gauge, diaphragm regulating valve, relief valve and screwed outlet connection.

Application

The cylinder pressure regulator line FMD 500 offers a wide range of use and great performance. The FMD 500-27 model allows fine pressure level adjustment as well as external purging with inert gases. This makes the FMD 500-27 suitable for reactive, flammable, oxidizing and corrosive gases.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Body sealings:	PCTFE
Relief valve seat material	FKM, (EPDM, FFKM) on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	1,5 kg
Dimensions (wxhxd):	285 x 180 x 230 mm
Purge inlet:	tube fitting 6 mm

Order code

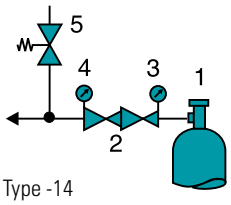
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 500-27	**SS**	**F**	**6**	**DIN**	**CL6**	**Gas**
FMD 500-27	SS = stainless steel	F = 230 bar/3300 psi	6 = 0,5 - 6 bar/ 7 - 85 psi 14 = 1 - 14 bar / 7 - 200 psi 28 = 2,5 - 28 bar / 35 - 400 psi 50 = 2,5 - 50 bar / 35 - 720 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL3 CL6 (standard) CL8 CL 1/8" CL 1/4" NO4 NO6 NO8	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

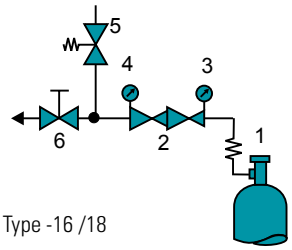

FMD 502-14


FMD 502-16


FMD 502-18



Type -14



Type -16 /18

1 cylinder connection
2 double-stage pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (type -16)
/ metering valve (type -18)

Double-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0
inlet pressure 230 bar / 3300 psi
outlet pressure range 0,2 - 10,5 bar / 3 - 145 psi

Highlights

- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Diaphragm valve with quarter turn engaged shut-off function (FMD 502-16) or regulating valve (FMD 502-18)**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

The FMD 502 -14/16/18 consists of cylinder connection, pressure regulator body, inlet and outlet pressure gauge, diaphragm shut-off/regulating valve, relief valve and screwed outlet connections.

Application

The cylinder pressure regulator line FMD 502 offers a wide range of use and great performance. The FMD 502-16 model allows the shutting off/opening of the gas flow maintaining the pressure regulator adjustment.
The FMD 502-18 model allows pressure level adjustement as well as fine dosing of gas flow.
The double-stage design ensures that the outlet pressure is virtually independent of the inlet pressure.

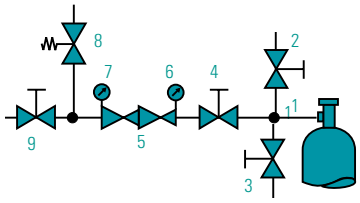
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE (SS), PTFE (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM) on request brass: EPDM, (FKM)* on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	type -14: 0,58 kg, type -16/18: 0,66 kg
Dimensions (wxhxd):	225 x 140x 210 mm

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 502-14	**BC**	**F**	**1**	**DIN**	**CL6**	**Gas**
FMD 502-14	BC = brass	F = 230 bar/3300 psi	1 = 0,1 - 1 bar / 1,5 - 15 psi	DIN	CL6	Specification of used gas
FMD 502-16	SS = stainless		3 = 0,1 - 3 bar / 1,5 - 45 psi	ANSI	CL8	
FMD 502-18	steel		6 = 0,5 - 6 bar / 3 - 85 psi	AFNOR	CL 1/8"	
			10 = 1 - 10,5 bar / 7 - 150 psi	NBN	CL 1/4"	
				BS 341	NO6	
				CGA		
				NEN		
				UNI		

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)



1 Cylinder connection
2 purge inlet valve
3 purge outlet valve
4 inlet shut-off valve
5 pressure regulator
6 inlet pressure gauge
7 outlet pressure gauge
8 relief valve
9 outlet shut-off valve

Double-stage, with external purging device, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar / 3300 psi, outlet pressure range 0,2 - 16 bar / 3 - 85 psi

Highlights

- **Ideal external purge conditions by means of purge block**
- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Diaphragm shut-off valve**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

The FMD 502-27 consists of cylinder connection, purge block device, pressure regulator body, inlet and outlet pressure gauge, diaphragm regulating valve, relief valve and screwed outlet connection.

Application

The cylinder pressure regulator line FMD 500 offers a wide range of use and great performance. The FMD 502-27 model allows fine pressure level adjustment as well as external purging of the whole unit with inert gases. This makes the FMD 502-27 suitable for reactive, flammable, oxidizing and corrosive gases. The double-stage design ensures that the outlet pressure is virtually independent of the inlet pressure.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE
Relief valve seat material:	FKM, (EPDM, FFKM) on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	0,7 kg
Dimensions (wxhxd):	289 x 180 x 230 mm
Purge inlet:	tube fitting 6 mm

Order code

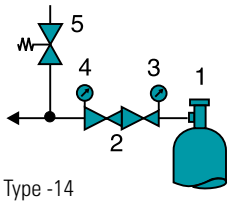
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 502-27	**SS**	**F**	**3**	**DIN**	**CL6**	**Gas**
FMD 502-27	SS = stainless steel	F = 230 bar /3300 psi	3 = 0,1 - 3 bar / 1,5 - 45 psi 6 = 0,5 - 6 bar / 7 - 85 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL3 CL6 (standard) CL8 CL 1/8" NO4 NO6 NO8	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

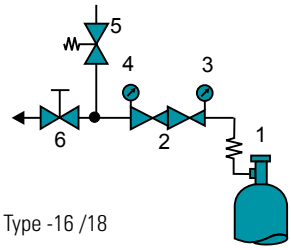

FMD 510/540-14


FMD 510/540-16


FMD 510/540-18



Type -14



Type -16 /18

1 cylinder connection
2 double-stage pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (type -16)
/ metering valve (type -18)

Single-stage,
for inert, reactive, flammable and oxidizing gases and gas mixtures,
purity max. 6.0,
inlet pressure 12 bar / 175 psi,
FMD 510: outlet pressure range 0,1 - 3 bar abs / 1 - 45 psi abs,
FMD 540: outlet pressure range 0,1 - 2 bar / 1 - 30 psi

Highlights

- **For low outlet pressure**
- **Vacuum dosing capability (FMD 510)**
- **Diaphragm valve with quarter turn engaged shut-off function (FMD type -16) or regulating valve (FMD type -18)**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

These regulators consist of a cylinder connection, pressure regulator body, inlet and outlet pressure gauge, diaphragm shut-off valve MVA 500 (type -16) regulating valve MVR 500 (type -18), relief valve and outlet tube fitting.

Application

The pressure regulator line FMD 510 is designed to reduce low inlet pressures to various very low pressure levels: FMD 510 down to 0,1 bar absolute and is suitable for vacuum dosing, FMD 540 down to 0,1 bar.
The use of the FMD 510/540 depends on the gas consumers specific demand respective to shut-off or dosing of gas flow and the need of vacuum dosing.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass 2.0401.26 specially cleaned,chrome-plated
Seat sealing:	stainless steel: FFKM, (EPDM)* brass: EPDM, (FKM)*
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30 in Hg - 40 psi) -1 - 5 bar (-15 - 75 psi) -1 - 18 bar (-15 - 260 psi) optional: 0 - 600 mbar (0 - 8,5 psi) with diam. 63 mm
Weight:	type -14: 0,4 kg, type -16/18: 0,48 kg
Dimensions: (hxdxw):	139 x 126 x 175 (-14), 223 (-16 and -18) mm

Order code

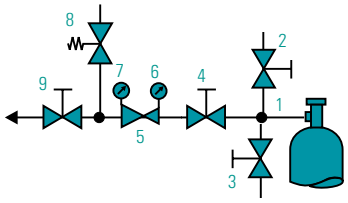
Type		Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 510	**-14**	**BC**	**D**	**2**	**DIN**	**CL6**	**Gas**
FMD 510 FMD 540	-14 = without MV -16 =with MVA -18 =with MVR	BC = brass SS = stainless steel	D = 12 bar /175 psi	**FMD 510:** 2a = 0,1 - 2 bar abs. /1 - 30 psi abs. 3a = 0,1 - 3 bar abs. /1 - 45 psi abs. **FMD 540:** 1 = 0,1 - 1 bar/1 - 15 psi 2 = 0,1 - 2 bar/1 - 30 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL6 CL8 CL 1/8" CL 1/4" NO6	please specify

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

Single-stage,
with external gas purging,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0,
Inlet pressure 12 bar / 175 psi
FMD 510: outlet pressure range 0,1 - 3 bar abs / 1 - 45 psi abs
FMD 540: outlet pressure range 0,1 - 2 bar / 1 - 30 psi

Highlights

- **For low outlet pressure**
- **Vacuum dosing capability (FMD 510)**
- **Ideal external purge conditions by means of purge block**
- **Diaphragm shut-off valve**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**



1 Cylinder connection
2 purge inlet valve
3 purge outlet valve
4 inlet shut-off valve
5 pressure regulator
6 inlet pressure gauge
7 outlet pressure gauge
8 relief valve
9 outlet shut-off valve

Features

These regulators consist of cylinder connection, purge block device, pressure regulator body, inlet and outlet pressure gauge, diaphragm shut-off valve MVA 500 (type -16) regulating valve MVR 500 (type -18), relief valve and outlet tube fitting.

Application

The pressure regulator line FMD 510 is designed to reduce low inlet pressures to various very low pressure levels: FMD 510 down to 0,1 bar absolute and is suitable for vacuum dosing, FMD 540 down to 0,1 bar.
The use of the FMD 510/540 depends on the gas consumers specific demand respective to shut-off or dosing of gas flow and the need of vacuum dosing.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Seat sealing:	FFKM, (EPDM)*
Body sealing material:	PCTFE
Relief valve seat material:	FKM, (EPDM, FFKM) *
	on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30inHg - 40 psi)
	-1 - 5 bar (-15 - 75 psi)
	-1 - 18 bar (-15 - 260 psi)
	Option: 0 - 600 mbar (8,7 psi) with Ø 63 mm
Weight:	0,7 kg
Dimensions: (wxhxd):	284 x 180 x 23 0 mm
Purge inlet:	tube fitting 6 mm

Order code

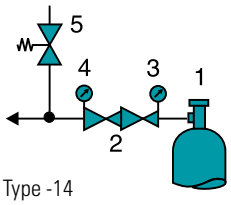
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 510-27	**SS**	**D**	**2**	**DIN**	**CL6**	**Gas**
FMD 510-27 FMD 540-27	SS = stainless steel	D = 12 bar/175 psi	**FMD 510:** 2a = 0,1 - 2 bar abs. /1 - 30 psi abs. 3a = 0,1 - 3 bar abs. /1 - 45 psi abs. **FMD 540:** 1 = 0,1 - 1 bar / 1 - 15 psi 2 = 0,1 - 2 bar /1 - 30 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL3 CL6 (standard) CL8 CL 1/8" NO4 NO6 NO8	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

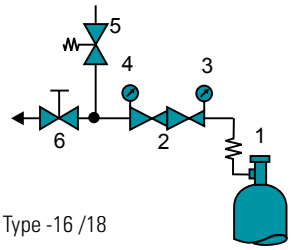

Type -14


Type -16


Type -18



Type -14



Type -16 /18

1 cylinder connection
2 double-stage pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (type -16)
/ metering valve (type -18)

Double-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar / 3300 psi, FMD 522: outlet pressure range 0,1 - 3 bar abs / 1,5 - 45 psi abs, FMD 562: outlet pressure range 0,1 - 2 bar / 1,5 - 30 psi

Highlights

- **For low outlet pressure**
- **Vacuum dosing capability (FMD 522)**
- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Diaphragm valve with quarter turn engaged shut-off function (type -16) or regulating valve (type -18)**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

These cylinder regulators consist of a cylinder connection, pressure regulator body, inlet and outlet pressure gauge, diaphragm shut-off valve MVA 500 (type -16) regulating valve MVR 500 (type -18), relief valve and outlet tube fitting.

Application

The pressure regulator line FMD 522 is designed to reduce low inlet pressures to various very low pressure levels: FMD 522 down to 0,1 bar absolute and is suitable for vacuum dosing, FMD 562 down to 0,1 bar.
The use of these regulators depend on the gas consumers specific demand respective to shut-off or dosing of gas flow and the need of vacuum dosing.

Technical data

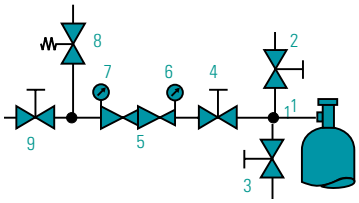
Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	stainless steel: FFKM, (EPDM)*, brass: EPDM, (FKM)*
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30 in Hg - 40 psi) -1 - 5 bar (-15 - 75 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	type -14: 0,58kg, type -16/18: 0,66 kg
Dimensions (hxdxw):	139 x 206 mm, 175 mm (-14), 223 mm (-16 and-18)

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 522	**BC**	**F**	**2**	**DIN**	**CL6**	**Gas**
FMD 522 FMD 562	BC = brass SS = stainless steel	F = 230 bar/3300 psi	**FMD 522** 2 a= 0,1 - 2 bar abs. /1 - 30 psi abs. 3a = 0,1 - 3 bar abs. /1 - 45 psi abs. **FMD 562** 1 = 0,1 - 1 bar / 1 - 15 psi 2 = 0,1 - 2 bar /1 - 30 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL6 CL8 CL 1/8" CL 1/4" NO6	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

Double-stage,
with external purging device,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0
inlet pressure 230 bar / 3300 psi
FMD 522: outlet pressure range 0,1 - 3 bar abs / 1,5 - 45 psi abs,
FMD 562: outlet pressure range 0,1 - 2 bar / 1,5 - 30 psi



1 Cylinder connection
2 purge inlet valve
3 purge outlet valve
4 inlet shut-off valve
5 pressure regulator
6 inlet pressure gauge
7 outlet pressure gauge
8 relief valve
9 outlet shut-off valve

Highlights

- **Ideal external purge conditions by means of purge block**
- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Diaphragm shut-off valve**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

The FMD 522/562-27 consists of cylinder connection, purge block device, pressure regulator body, inlet and outlet pressure gauge, diaphragm regulating valve, relief valve and screwed outlet connection.

Application

These cylinder pressure regulators offer a wide range of use and great performance. The FMD 522/562 -27 model allows fine low pressure level adjustment as well as external purging of the whole unit with inert gases. This makes it suitable for reactive, flammable, oxidizing and corrosive gases. The double-stage design ensures that the outlet pressure is virtually independent of the inlet pressure.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	FFKM, (EPDM)*
Body sealing material:	PCTFE
Relief valve seat material:	FKM, (EPDM, FFKM)*
	*on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30inHg - 40 psi) -1 - 5 bar (-15 - 75 psi) 0 - 315 bar (0 - 4500 psi) Option: 0 - 600 mbar (8,7 psi) with Ø 63 mm
Weight:	0,8 kg
Dimensions: (wxhxd):	202 x 155 x 200 mm
Purge inlet:	CL6

Order code

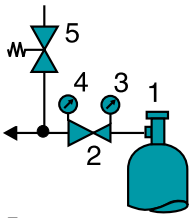
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 522-27	**SS**	**F**	**2**	**DIN**	**CL6**	**Gas**
FMD 522-27	SS = stainless steel	F = 230 bar /3300 psi	**FMD 522** 2 = 0,1 - 2 bar abs. /1 - 30 psi abs. 3 = 0,1 - 3 bar abs. /1 - 45 psi abs. **FMD 562** 1 = 0,1 - 1 bar / 1 - 15 psi 2 = 0,1 - 2 bar /1 - 30 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL3 CL6 (standard) CL8 CL 1/8" NO4 NO6 NO8	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

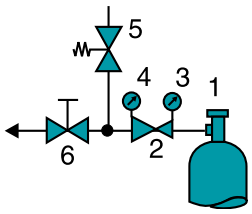

FMD 530-14


FMD 530-16


FMD 530-18



Type -14



Type -16 /18

1 cylinder connection
2 pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (-16)
/ metering valve (-18)

Single-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, cylinder pressure 315 bar/ 4500 psi, outlet pressure range 0,5 - 200 bar / 7 - 2900 psi

Highlights

- **For 300 bar cylinders**
- **Diaphragm regulator**
- **ATEX compliance of handwheels**

Features

The FMD 530-14 consists of cylinder connection, pressure regulator body, inlet and outlet pressure gauge, relief valve and screwed outlet connections.

Application

The cylinder pressure regulator line MD 530 offers a wide range of use and great performance. The FMD 530-14 type is the basic model for local independent gas supply with 300 bar cylinders.The FMD 530-16 model allows the shutting off/opening of the gas flow maintaining the pressure regulator adjustment.The FMD 530-18 model allows pressure level adjustement as well as fine dosing of gas flow.

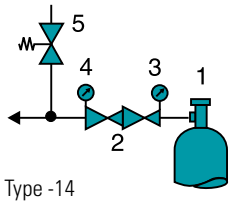
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass 2.0401.26 specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	SS: FKM, (EPDM, FFKM)*, brass: EPDM, (FKM)*, *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi) 0 - 400 bar (0 - 5800 psi)
Weight:	type -14: 0,4 kg, type -16/18: 0,48 kg
Dimensions (WxHxD):	175 x 139 x 126 mm

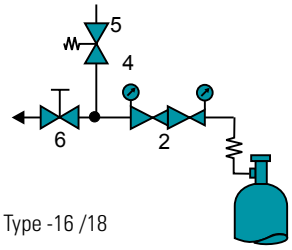
Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 530-14	**BC**	**G**	**14**	**DIN**	**CL6 BC**	**Gas**
FMD 530-14 FMD 503-16 FMD 530-18	BC=brass SS = stainless steel	G = 315 bar /4500 psi	6 = 0,5 - 6 bar / 3 - 85 psi 14 = 1 - 14 bar/15 - 150 psi 28 = 2,5 - 28 bar / 35 - 400 psi 50 = 2,5 - 50 bar/35 - 720 psi 200 = 10 - 200 bar /150 - 2900 psi , not type -18	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL6 (standard) CL 1/8" CL 1/4" NO6 BC=brass SS = stainless steel	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, NO6 = hose adaptor with hose inner diameter 6 mm)



Type -14



Type -16 /18

1 cylinder connection
2 double-stage pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (type -16)
/ metering valve (type -18)

Double-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 315 bar/ 4500 psi, outlet pressure range 0,2 - 10,5 bar/ 3 - 150 psi

Highlights

- **For 300 bar cylinders**
- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Higher reliability due to relief valve**

Features

The FMD 532-14 consists of cylinder connection, pressure regulator body, inlet pressure gauge, outlet diaphragm shut-off valve, relief valve and outlet tube fitting.

Application

The cylinder pressure regulator line MD 532 offers a wide range of use and great performance. The FMD 532-14 type is the basic model for place independent gas supply with 300 bar cylinders. The FMD 532-16 model allows the shutting off/opening of the gas flow maintaining the pressure regulator adjustment.
The FMD 532-18 model allows pressure level adjustement as well as fine dosing of gas flow.
The double-stage design ensures that the outlet pressure is virtually independent of the inlet pressure.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass 2.0401.26 specially cleaned, chrome-plated
Weight:	0,9 kg
Dimensions (WxHxD):	175 x 139 x 206 mm
Seat sealing:	PCTFE
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	SS: FKM, (EPDM, FFKM)*, brass: EPDM, (FKM)*, *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	0 - 400 bar (0 - 5800 psi) -1 - 5 bar (-15 - 73 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi)

Order code

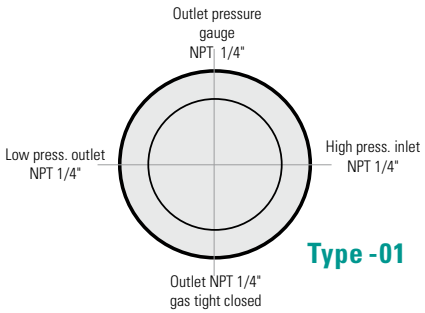
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 532-14	**BC**	**G**	**10**	**DIN**	**CL6 BC**	**Gas**
FMD 532-14	BC=brass	G = 315 bar /4500 psi	3 = 0,1 - 3 bar / 1,5 - 45 psi	DIN	CL6 (standard)	Specification of used gas
FMD 532-16	SS = stainless steel		6 = 0,5 - 6 bar/7 - 85 psi	ANSI	CL 1/8"	
FMD 532-18			10,5 = 1 - 10,5 bar/15 - 150 psi	AFNOR	CL 1/4"	
				NBN	NO6	
				BS 341	BC=brass	
				CGA	SS = stainless steel	
				NEN		
				UNI		

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

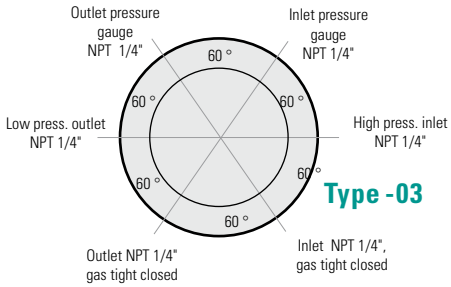
LMD 500-01

LMD 500-03

Connections (front view):



Type -01



Type -03

Single-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0,
inlet pressure 40 bar / 600 psi, optional 230 bar / 3300 psi,
outlet pressure range 0,2 - 50 bar / 3- 725 psi

Highlights

- **Good control characteristics**
- **Compact design**
- **4 or 6 port design**

Features

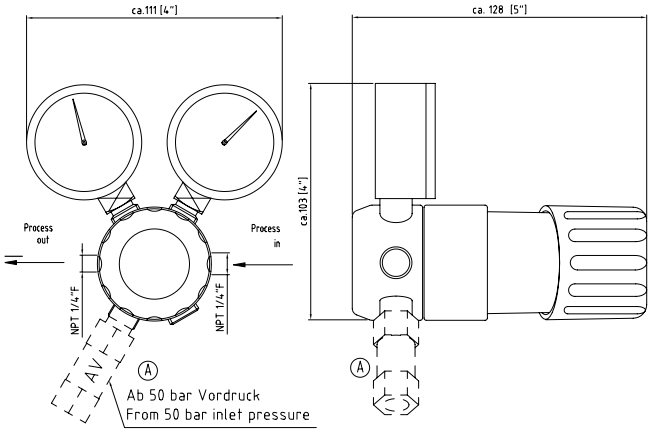
Great variety of use and possibility for connecting due to four or six inlet and outlet connection borings.

Application

The LMD 500 is designed to reduce line pressure to various lower pressure levels. Its compact design allows this pressure regulator to be used with industrial and analytical equipment.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Relief valve:	only for 230 bar version (Inlet pressure >50 bar / 720 psi)
Seat sealing:	PCTFE
Body sealings:	PCTFE (SS), PVDF (brass)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM) - *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	0,3/0,4 kg
Dimensions (wxhxd):	app. 115 x 140 x 120 to 140 mm housing diameter: 50 mm



Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
LMD 500-01	**BC**	**E**	**3**	**CL6 BC**	**CL6 BC**	**Gas**
LMD 500-01 LMD 500-03	BC = brass SS = stainless steel	E = 50 bar/ 720 psi (F = 230 bar/3300 psi)	3 = 0,1 - 3 bar/1,5 - 45 psi 6 = 0,5 - 6 bar/7 - 85 psi 14 = 1 - 14 bar/15 - 200 psi 50 = 2,5 - 50 bar/35 - 720 psi	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

Double-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0,
inlet pressure 230 bar / 3300 psi,
outlet pressure range 0,2 - 10,5 bar / 3 - 150 psi

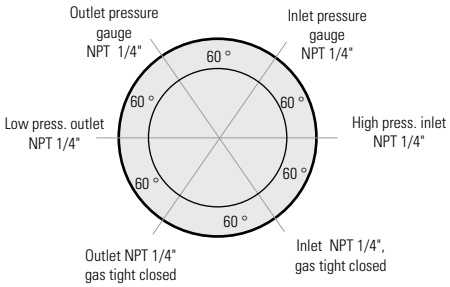
Highlights

- **Outlet pressure virtually independent of inlet pressure level**
- **High control accuracy**
- **Compact port design**

Features

This pressure regulator is designed to reduce line pressure to outlet pressure levels between. The double-stage version is designed to keep outlet pressure virtually independent of the inlet pressure level.
Great variety of use and possibility for connecting due to six inlet and outlet connection borings. For accessory description look at back page.

Connections (front view):



Application

The LMD 502-03 is designed for high purity gas supply, high control accuracy, little space requirement and steady outlet pressure level.
Therefore this line is especially effective for guaranteeing stable gas supply as is needed for analytical equipment or compact gas supply facilities with short connection to the point of use.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE (SS), PTFE (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	0,45 kg
Dimensions (wxhxd):	115 x 140 x 199 to 211 mm housing diameter: 50 mm

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
LMD 502-03	**BC**	**F**	**1**	**CL6 BC**	**CL6 BC**	**Gas**
LMD 502-03	BC = brass SS = stainless steel	F = 230 bar/3300 psi	1 = 0,1 - 1 bar / 1,5 - 15 psi 3 = 0,1 - 3 bar / 1,5 - 45 psi 6 = 0,5 - 6 bar / 7 - 85 psi 10 = 1 - 10,5 bar / 15 - 150 psi	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

LMD 510-01

LMD 510-03

Single-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0,
inlet pressure 12 bar/ 175 psi,
outlet pressure 0,1 - 3 bar abs. / 1,5 - 45 psi abs.

Highlights

- **Vacuum dosing capability**
- **Compact design**
- **4 or 6 port design**

Features

Parts of the LMD 510-03 are pressure regulator and inlet and outlet pressure gauge. Great variety of use for connecting due to four or six inlet and outlet connection borings.

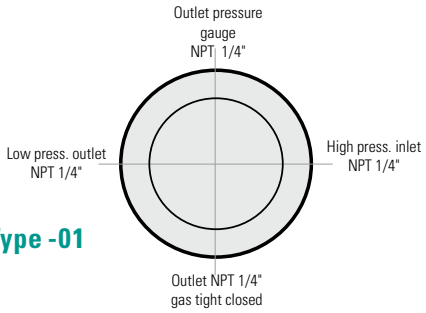
Application

The pressure regulator line MD 510 is designed to reduce low inlet pressures to various very low pressure levels down to 0,1 bar absolute and is also suitable for vacuum dosing.

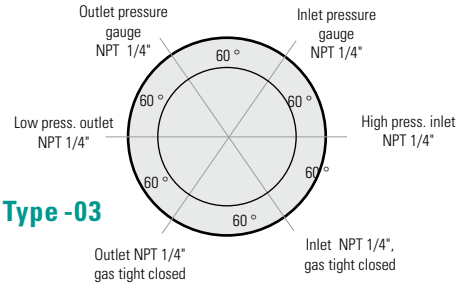
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	stainless steel: FFKM, (EPDM)* brass: EPDM, (FKM)*
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* - * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30 in Hg - 40 psi) -1 - 5 bar (-15 - 75 psi) -1 - 18 bar (-15 - 260 psi) optional: 0 - 600 mbar (0 - 8,5 psi) with diam. 63 mm
Weight:	0,3/0,4 kg
Dimensions: (wxhxd):	115 x 140 x120 to 140 mm housing diameter: 50 mm

Connections (front view):



Type -01



Type -03

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
LMD 510-03	**BC**	**D**	**2**	**CL6 BC**	**CL6 BC**	**Gas**
LMD 510-03 LMD 510-01	BC = brass SS = stainless steel	D = 12 bar/175 psi	2 = 0,1 - 2 bar abs./ 1,5 - 30 psi abs. 3 = 0,1 - 3 bar abs./ 1,5 - 45 psi abs.	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

Double-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0,
inlet pressure 230 bar / 3300 psi,
outlet pressure range 0,1 - 3 bar abs. / 1,5 - 45 psi abs.

Highlights

- **Vacuum dosing capability**
- **Outlet pressure virtually independent of inlet pressure level**

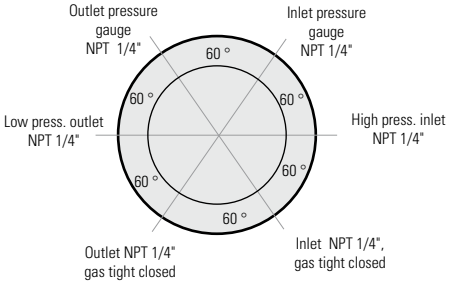
Features

Parts of the LMD 522-03 are pressure regulator and inlet and outlet pressure gauge.
Great variety of use for connecting due to six inlet and outlet connection borings.

Application

The pressure regulator line MD 522 is designed to reduce low inlet pressures to various very low pressure levels down to 0,1 bar. Also suitable for vacuum dosing.
The double-stage design ensures that the outlet pressure is virtually independent of the inlet pressure.
The line pressure regulator LMD 522 is designed to reduce low inlet pressures to various very low pressure levels down to 0,1 bar. Also suitable for vacuum dosing.

Connections (front view):



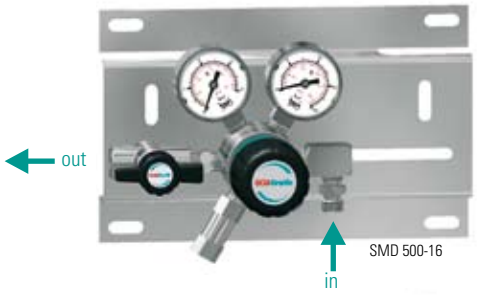
Technical data

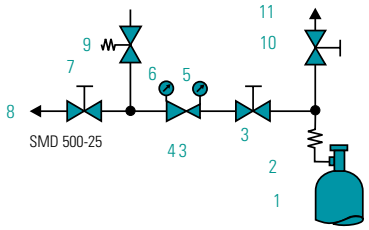
Body material:	stainless steel 316L (1.4404) specially cleanedand electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	stainless steel: FFKM, (EPDM)*, brass: EPDM, (FKM)*
Body sealing material:	PCTFE (SS), PVDF (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30 in Hg - 40 psi) -1 - 5 bar (-15 - 75 psi) 0 - 315 bar (0 - 4500 psi) option: 0 - 600 mbar (8,7 psi) with Ø 63 mm
Weight:	0,45 kg
Dimensions: (wxhxd):	115 x 140 x 120 - 140 mm housing diameter: 50 mm

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
LMD 522-03	**BC**	**F**	**2**	**CL6 BC**	**CL6 BC**	**Gas**
LMD 522-03	BC = brass SS = stainless steel	F = 230 bar/3300 psi	2 = 0,1 - 2 bar abs./ 1,5 - 30 psi abs. 3 = 0,1 - 3 bar abs./ 1,5 - 45 psi abs.	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)





1 Cylinder connection
2 Connection spirals
3 Process gas inlet shut-off valve (type -24 + type 25)

4 Pressure regulator - single-stage
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Process gas outlet shut-off valve (type -16 + type 25)

8 Process gas outlet
9 Relief valve
10 Purge gas outlet valve (type -24 + type 25)
11 Purge gas outlet

Single-stage,
for inert, reactive, flammable and oxidizing gas (type -25) and gas mixtures,
purity max. 6.0,
inlet pressure 230 bar / 3300 psi,
outlet pressure range
SMD 500-16: 1 - 50 bar / 14 - 720 psi
SMD 500-24/25: 1 - 200 bar / 14 - 2900 psi

Highlights

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

Features

These gas panels are mounted on 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 pressure gauges (accessories) facilitates monitoring of the gas reserves.

Application

Gas panels are permanently installed in the cylinder stock room or cabinet and reduce the cylinder pressure to a lower line pressures. The gas is guided to the point of use via the subsequent piping system.
This SMD 500-24 design allows purging to be carried out with internal gas while cylinders are being changed. This flushes the atmospheric air from the system; gas purity is maintained. The SMD 500-25 design allows shuting-off of gas flow during cylinder change with the panel itself. Standard application for these panels: centralized or decentralized gas supply for highly sensitive analysis devices.

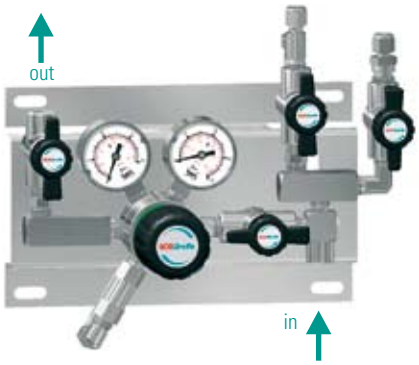
Technical data

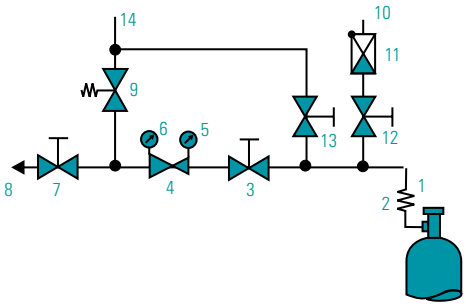
Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealings:	PCTFE (SS), PVDF (brass)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Relief valve:	version 10 - 200 bar without
Weight:	0,73 / 0,74/ 0,75 kg
Dimensions (wxhxd):	250 x 155 x 185 mm
Purge gas inlet:	NPT 1/4" f (optional)
Inlet:	M 14 x 1,5 (standard)

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact press. gauge	Gas type
SMD 500-16	**BC**	**F**	**14**	**N14**	**CL6 BC**	**Ki**	**Gas**
SMD 500-16 SDM 500-24 SMD 500-25	BC = brass SS = stainless steel	F = 230 bar /3300 psi	14 = 1 - 14 bar / 15 - 200 psi 28 = 2,5 - 28 bar /35 - 400 psi 50 = 2,5 - 50 bar / 35 - 720 psi (optional: 200 = 10 - 200 bar / 145 -2900 psi)	N14 = NPT 1/4"	0 CL6, CL8 CL10, CL12 BC = brass SS = stainless steel	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).





1	Cylinder connection
2	Connection spiral
3	Process gas inlet shut-off valve
4	Pressure regulator - single-stage
5	Inlet pressure gauge
6	Outlet pressure gauge
7	Process gas outlet shut-off valve
8	Process gas outlet
9	Relief valve
10	Purge gas inlet
11	Non-return valve
12	Purge gas inlet valve
13	Purge gas outlet valve
14	Purge gas outlet

Single-stage, for reactive, toxic, oxidizing and corrosive (option Hastelloy internals) gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar/ 3300 psi, outlet pressure range 0,5 - 50 bar / 7 - 725 psi

Highlights

- **With external gas purging device**
- **Inlet and outlet shut-off valve**

Features

This gas panel reduces the cylinder pressure of 230 bar to outlet pressure values ranging from 1 to 14 bar or 2.5 to 50 bar (option 10 to 230 bar). The SMD 500-27 is mounted on a stainless steel panel and of a pressure regulator, inlet and outlet pressure gauges, a relief valve and inlet and outlet shut-off valves for the purge and 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 pressure gauges (accessories) facilitates monitoring of the gas reserves.

Application

Gas supply panels are installed in the gas centre (cylinder stock room or gas cabinet). They reduce the cylinder pressure to the line pressure. Via the subsequent piping system the gas will be guided to the point of use.
This design with external gas purging offers the following advantages:
1. Purging the gas rest remaining in the system before cylinder changing improves the personal safety level.
2. Maintaining gas purity by purging the atmospheric air which has penetrated the system after cylinder changing.
3. Purging with dry inert gas reduces humidity and extends the expected live span when corrosive gases are used.

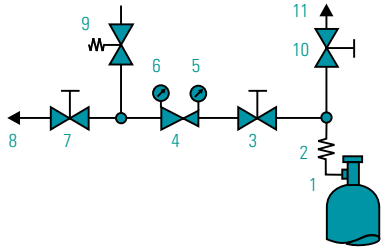
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Relief valve:	10 - 200 bar version without
Body sealings:	PCTFE
Relief valve seat material	FKM, (EPDM, FFKM) on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi) 0 - 25 bar (0 - 365 psi) 0 - 40 bar (0 - 600 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Weight:	1,1 kg
Dimensions (wxhxd):	ca. 305 x 235 x 185 mm
Pressure gauge range:	-1 - 18, 0 - 80, (optional 0 - 315) bar
	-14,5 - 261, 0 - 1161, (optional 0 - 4572) psi
Purge inlet:	tube fitting 6 mm with integrated check valve
Purge outlet:	tube fitting 6 mm
Inlet:	M 14 x 1,5 (standard)
	NPT 1/4" f (optional)

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact pressure gauge	Gas type
SMD 500-27	**SS**	**F**	**6**	**N14**	**CL6 SS**	**Ki**	**Gas**
SMD 500-27	SS = stainless steel	F = 230 bar/3300 psi	6 = 0,5 - 6 bar/ 7 - 85 psi 14 = 1 - 14 bar/ 15 - 200 psi 50 = 2,5 - 50 bar/ 35 - 720 psi	N14 = NPT 1/4"	0 CL6 CL8 CL10 CL12 SS = stainless steel	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).



1 Cylinder connection
2 Connection spirals
3 Process gas inlet shut-off valve (type -24 + type 25)
4 Pressure regulator - double-stage
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Process gas outlet shut-off valve (type -16 + type 25)
8 Process gas outlet
9 Relief valve
10 Purge gas outlet valve (type -24 + type 25)
11 Purge gas outlet

Double-stage, for inert and flammable gases and gas mixtures, purity max. 6.0, inlet pressure 230 bar / 3300 psi, outlet pressure range 0,2 - 10,5 bar / 3 - 150 psi

Highlights

- **Outlet pressure virtually independent of inlet pressure due to double-stage design**
- **Gas supply panel for standard applications (type -16)**
- **Internal gas purging (type -24)**
- **Internal gas purging and process gas outlet shut-off valve (type -25)**

Features

These gas panels are mounted on 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 pressure gauges (accessories) facilitates monitoring of the gas reserves.

Application

Twin-stage station pressure regulators are usually installed peripherally in the cylinder cabinet near the point of use and reduce the cylinder pressure to the operating pressure of the secondary consumers. This SMD 502-24 design allows purging to be carried out with internal gas while cylinders are being changed. This flushes the atmospheric air from the system; gas purity is maintained. The SMD 502-25 design allows shuting-off of gas flow during cylinder change with the panel itself. Standard application for these panels: centralized or decentralized gas supply for highly sensitive analysis devices.

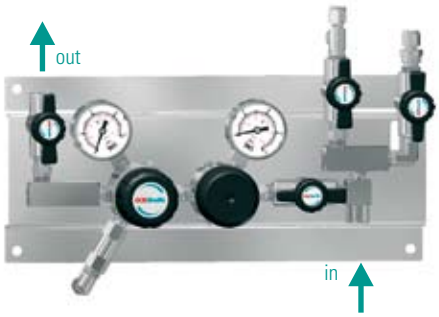
Technical data

Body Material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE (SS), PTFE (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* * on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi) 0 - 315 bar (0 - 4500 psi)
Dimensions (w x h d d):	400 x 155 x 160 mm
Weight:	1,0 kg
Inlet connection:	M 14 x 1,5 (standard) NPT 1/4" f (optional)

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact press. gauge	Gas type
SMD 502-16	**BC**	**F**	**3**	**N14**	**CL6 BC**	**Ki**	**Gas**
SMD 502-16	BC = brass	F = 230 bar	3 = 0,1 - 3 bar/1,5 - 45 psi	N14 =	0	0 = without	Specification
SMD 502-24	SS = stainless	/3300 psi	6 = 0,5 - 6 bar/7 - 85 psi	NPT 1/4"	CL6	Ki = with	of used gas
SMD 502-25	steel		10 = 1 - 10,5 bar/15 - 150 psi		CL8		
					CL10		
					CL12		
					BC = brass		
					SS = stainless steel		

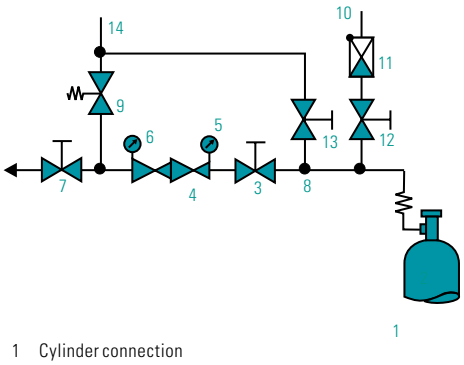
For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).



Double-stage,
for reactive, toxic, slight corrosive, oxidizing and corrosive (option Hastelloy internals) gas and gas mixtures,
purity max. 6.0,
inlet pressure 230 bar / 3300 psi,
outlet pressure range 0,2 - 10,5 bar / 3 - 150 psi

Highlights

- **External gas purging device**
- **Hastelloy-internals for corrosive gases as option**



1 Cylinder connection
2 Connection spiral
3 Process gas inlet shut-off valve
4 Pressure regulator, double-stage
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Process gas outlet shut-off valve
8 Process gas inlet
9 Relief valve
10 Purge gas inlet
11 Non-return valve
12 Purge gas inlet valve
13 Purge gas outlet valve
14 Purge gas outlet

Features

The SMD 502-27 is mounted on a stainless steel panel and consists of a pressure regulator, inlet and outlet pressure gauges, a relief valve and inlet and outlet shut-off valves for the purge and 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 pressure gauges (accessories) facilitates monitoring of the gas reserves.

Application

Double-stage,s are installed in the gas cabinet near to the point of use. They reduce the cylinder supply pressure to the operating pressure of the succeeding consumers.
This design with external gas purging offers the following advantages:
1. Purging the gas rest remaining in the system before cylinder changing improves the personal safety level.
2. Maintaining gas purity by purging the atmospheric air which has penetrated the system after cylinder changing.
3. Purging with dry inert gas reduces humidity and extends the expected live span when corrosive gases are used.

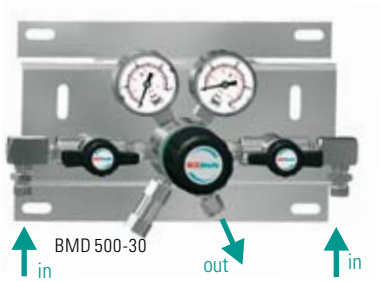
Technical data

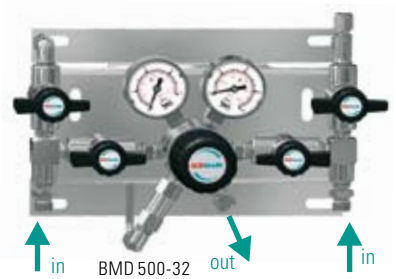
Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE
Relief valve seat material:	FKM, (EPDM, FFKM) on request
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) 0 - 315 bar (0 - 4500 psi)
Dimensions (wxhxd)	400 x 235 x 210 mm / 12" x 9,25" x 8,27"
Weight:	1,2 kg
Purge inlet:	tube fitting 6 mm with integrated check valve
Purge gas outlet:	tube fitting 6 mm
Inlet:	M 14 x 1,5 (standard) NPT 1/4" f (optional)

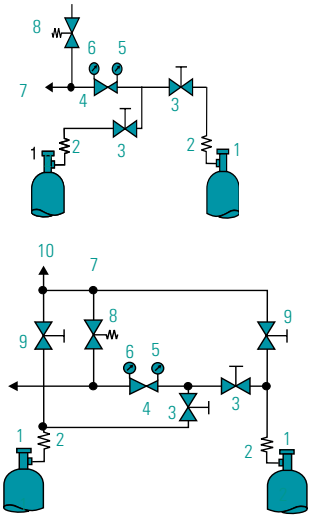
Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact pressure gauge	Gas type
SMD 502-27	**SS**	**F**	**3**	**N14**	**CL6**	**Ki**	**Gas**
SMD 502-27	SS = stainless steel	F = 230 bar/3300 psi	3 = 0,1 - 3 bar/ 1,5 - 45 psi 6 = 0,5 - 6 bar/ 7 - 85 psi 10,5 = 0,5 - 10,5 bar/ 7 - 145 psi	N14 = NPT 1/4"	0 CL6 CL8 CL10 CL12	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).







1 Cylinder connection
2 Connection spiral
3 Process gas inlet shut-off valve
4 Pressure regulator - single-stage
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Process gas outlet
8 Relief valve
9 Purge gas outlet valve
10 Purge gas outlet

Single-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar / 3300 psi, outlet pressure range 1 - 50 (option 200) bar / 14 - 725 (3300) psi

Highlights

- **Continuous gas supply even during cylinder change**
- **Fast manual switch-over to the reserve side**
- **Optional contact pressure gauges for gas supply failure monitoring**
- **Internal gas purging (BMD 500-32)**
- **Connection for 2 x 1 cylinders, extension for 2 x 4 cylinders,**

Features

These gas panels reduce the inlet pressure of maximum 230 bar to pressure levels of 1 to 50 bar (optional 200 bar). The BMD 500 is mounted on a stainless steel panel and consists of a pressure regulator and inlet and outlet pressure gauges. Process gas shut-off valves are located on the inlet side.
Due to switching over from the empty cylinder to the full one manually by opening/closing the shut-off valves the gas supply must not be interrupted during cylinder change. The use of contact pressure gauges (accessories) monitors the minimum reserves for switching over in time. The internal gas purging of BMD 500-32 gives the opportunity of purity level constancy during cylinder change.

Application

The BMD 500-30/32 are gas panels for continuous gas supply and are applied at the first pressure level. The benefit of this gas panel: fast switch-over to the reserve cylinders and the maintaining of gas supply (BMD 500-32: and purity) during cylinder change. Standard application: centralized or decentralized gas supply for highly sensitive analysis device.

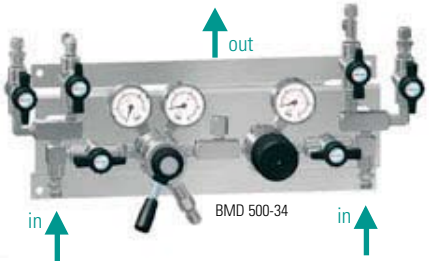
Technical data

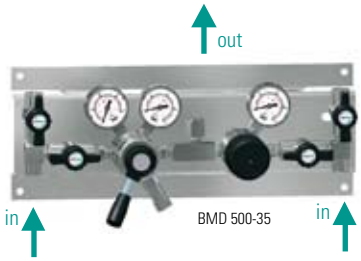
Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealings:	PCTFE (SS), PVDF (brass)*
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 18 bar (-15 - 260 psi) 0 - 80 bar (0 - 1150 psi) 0 - 315 bar (0 - 4500 psi)
Relief valve:	10 - 200 bar version without
Weight:	1,3 / 1,5 kg
Dimensions: (wxhxd):	BMB 500-32: 400 x 200 x 185 mm BMB 500-32: 440 x 200 x 185 mm
Inlet:	M 14 x 1,5 (standard) NPT 1/4" f (optional)

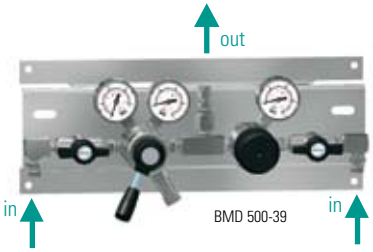
Order code

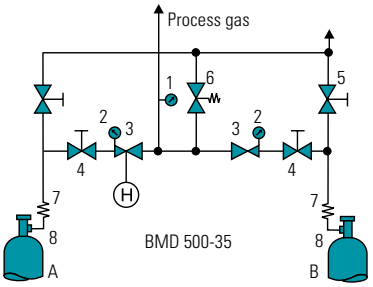
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact pressure gauge	Gas type
BMD 500-30	**BC**	**F**	**14**	**N14**	**CL6 BC**	**Ki**	**Gas**
BMD 500-30 BMD 500-32	BC = brass SS = stainless steel	F = 230 bar/3300 psi	14 = 1 - 14 bar/ 15 - 200 psi 50 = 2,5 - 50 bar/ 36 - 720 psi (Optional: 230 = 10 - 200 bar/ 145 - 2900 psi)	N14 = NPT 1/4"	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).









1 pressure regulator
2 inlet pressure gauge
3 outlet pressure gauge
4 process gas valve
5 purge gas outlet valve
6 safety relief valve
7 spiral connection tube
8 metal- mesh filter
A, B gas cylinders
H lever

Single-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar/ 3300 psi, outlet pressure preset 14 bar/ 200 psi

Highlights

- **Uninterrupted gas supply with semiautomatic change over**
- **Definite indication of active cylinder**
- **Low pressure warning by means of contact pressure gauges (optionally available)**
- **Extendable to max. 2 x 5 cylinders**

Features

Pressure decrease of the active cylinder (or bundle) below a preset level causes semi-automatic switch over to the full cylinder side. This is achieved by 2 integrated regulators (factory-set to slightly different delivery pressure levels), connected at their outlet ports.
Moving the lever towards the full battery side, this allows to disconnect and replace the empty cylinder without interrupting gas supply. The lever position always indicates cylinder priority in being discharged.
Optional contact pressure gauges, connected to an alarm box, indicate optical and audible alarm in case of pressure drop below a preset level. That ensures empty tanks to be replaced in time.

Application

This gas panel supplying is necessary component, wherever uninterrupted process gas supply with semi- automatic change over is needed.

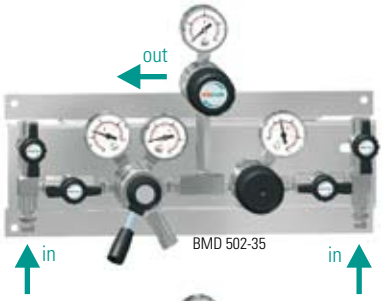
Technical data

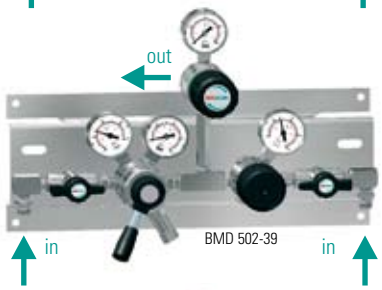
Body:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealings:	PCTFE (SS), PVDF (brass)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 18 bar (-15 - 260 psi) 0 - 315 bar (0 - 4500 psi)
Dimensions: (wxhxd):	300 x 155 x 240 mm
Weight:	5.2 kg (BMD 500-35)
Preset outlet pressure:	14 bar +/-2 bar ; 200 +/- 30 psi
Flow:	25 Nm^3/h N_2 (12 bar - type at 25 bar inlet press.) 14 SCFM N_2 (12 bar - type at 360 psi inlet press.)
Purge inlet and outlet:	tube fitting 6 mm (BMD 500-34)
Connection:	2 x 1 to 2 x 5 cylinders
Inlet:	M 14 x 1,5 (standard) NPT 1/4" f (optional)

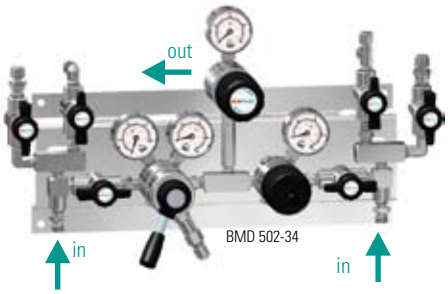
Order code

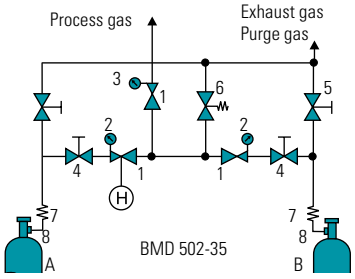
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
BMD 500-35	**BC**	**F**	**14**	**N14**	**CL6 BC**	**Gas**
BMD 500-34 (with external gas purging) BMD 500-35 (with internal gas purging) BMD 500-39 (without purging)	BC = brass SS = stainless steel	F = 230 bar /3300 psi	14 = 14 bar/ 200 psi	N14 = NPT 1/4"	0 CL6, CL8 CL10, CL12 BC = brass SS = stainless steel	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).









1	pressure regulator
2	inlet pressure gauge
3	outlet pressure gauge
4	process gas valve
5	purge gas outlet valve (only 500-35)
6	safety relief valve
7	spiral connection tube
8	metal- mesh filter
A, B	gas cylinders
H	lever

Double-stage, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 230 bar/ 3300 psi, outlet pressure range 0,2 -10,5 bar/ 3 - 150 psi

Highlights

- **Uninterrupted gas supply with semiautomatic chnage over**
- **Outlet pressure virtually independent of the inlet pressure level**
- **Definite indication of active cylinder**
- **Low pressure warning by means of contact pressure gauges (optionally available)**
- **Extendable to max. 2 x 5 cylinders**

Features

Pressure decrease of the active cylinder (or bundle) below a preset level causes semi-automatic switch over to the full cylinder side. This is achieved by 2 integrated regulators (factory-set to slightly different delivery pressure levels), connected at their outlet ports.
Moving the lever towards the full battery side, this allows to disconnect and replace the empty cylinder without interrupting gas supply. The lever position always indicates cylinder priority in being discharged.
Optional contact pressure gauges, connected to an alarm box, indicate optical and audible alarm in case of pressure drop below a preset level. That ensures empty tanks to be replaced in time.

Application

This gas panel is necessary component, wherever a low and constant pressure level independent of the inlet pressure, and uninterrupted gas flow with semi-automatic change-over is needed.

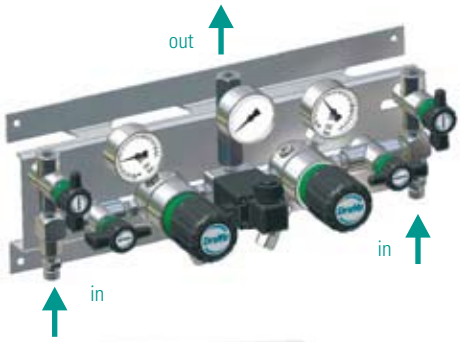
Technical data

Body:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing 1st stage:	PCTFE
Seat sealing 2nd stage:	PTFE
Body sealing material:	PCTFE (SS), PTFE (brass)
Relief valve seat material:	stainless steel: FKM, (EPDM, FFKM)* brass: EPDM, (FKM)* *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi) 0 - 315 bar (0 - 4500 psi)
Dimensions: (wxhxd):	300 x 155 x 240 mm
Weight:	5.4 kg (BMD 500-35)
Flow:	25 Nm^3/h N_2 (12 bar - type at 25 bar inlet press.) 14 SCFM N_2 (12 bar - type at 360 psi inlet press.)
Purge inlet and outlet:	tube fitting 6 mm (BMD 502-34)
Connection:	2 x 1 to 2 x 5 cylinders
Inlet:	M 14 x 1,5 (standard) NPT 1/4" f (optional)

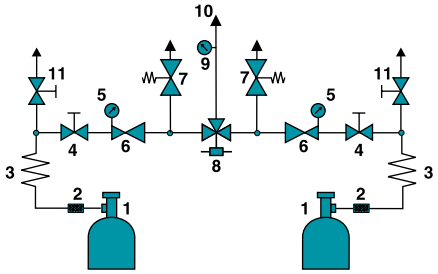
Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact press. gauge	Gas type
BMD 502-35	**BC**	**F**	**3**	**N14**	**CL6 BC**	**Ki**	**Gas**
BMD 502-34 (with external gas purging) BMD 502-35 (with internal gas purging) BMD 502-39 (without purging)	BC = brass SS = stainless steel	F = 230 bar /3300 psi	3 = 0,1 - 3 bar/ 1,5 - 45 psi 6 = 0,5- 6 bar/ 7 - 85 psi 10 = 1 - 10,5 bar /15 - 150 psi	N14 = NPT 1/4"	0 CL6, CL8 CL10, CL12 BC = brass SS = stainless steel	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).



Control unit



1 Cylinder connection
2 Flexible hose filters
3 Flexible hose
4 Process gas valve
5 Inlet gauge
6 Pressure regulator
7 Relief valves
8 3/2 way solenoid valve
9 Outlet gauge
10 Process gas outlet
11 Exhaust gas valve

Ex - Version on request

Single-stage, for inert, reactive and oxidizing gas and gas mixtures, purity max. 5.0, inlet pressure 230 bar/ 3300 psi, outlet pressure setting 3 - 12 bar / 50 - 175 psi

Highlights

- **Uninterrupted gas supply with full automatic change over**
- **No differential pressure needed for change over**
- **Floating ground contact for alarm transmission**
- **Independent adjustable pressure regulator levels**
- **Audible and optical gas lack monitoring with adjustable contact gauges**
- **Extendable max. 2 x 5 cylinders**

Features

Consisting of two single-stage pressure regulators with inlet pressure gauges, the outlet pressure level is left and right individually adjustable and monitored at an outlet pressure gauge. A solenoid valve and a control unit allows individual change over to the remaining full cylinder by adjusting contact gauges to preset pressure levels. An 3/2-way pure gas solenoid valve prevents the gas reflux to the preemptied cylinder.

Application

This gas panel supplying is necessary component, wherever uninterrupted process gas supply with full automatic change over is needed.

Technical data Gas panel

Housing:	brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Seat sealing:	PCTFE
Body sealing:	PVDF (brass), FPM (3-2 way valve)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 18 bar (-15 - 260 psi), 0 - 315 bar (0 - 4500 psi)
Dimensions (WxHxD):	400 x 155 x 160 mm
Weight:	6,0 kg
Purge gas outlet:	NPT 1/4" female
Inlet:	M 14 x 1,5
Gauges and valves	
Switch over voltage gauges:	12 V
Switch over voltage sol. valves:	230 V AC
Electrical connection valves:	Putting flag acc. DIN 43650A for equipment plug socket

Control Unit

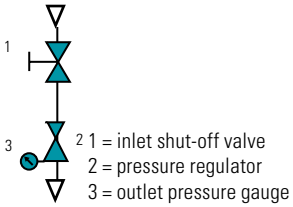
Power supply:	230 V, 50 Hz
Working temperature:	0 to 55 °C
Dimension LxBxH:	200 x 120 x 95 mm
Weight:	1,2 kg
Signal lamps:	yellow: the actual selected cylinder, red: cylinder empty, green: power supply OK
Buttons:	manual selection cylinder A,manual selection cylinder B, alarm acknowledging

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Control Unit	Gas type
BMD 500-35 DS	**BC**	**F**	**12**	**N14**	**CL6 BC**	**SE500**	**Gas**
BMD 500-35 DS	BC = brass	F = 230 bar/3300 psi	12 = 3 - 12 bar/ 45 - 175 psi individual settings between 3 and 12 bar possible	N14 = NPT 1/4"	0 = without CL6, CL8, CL10, CL12, BC = brass, SS = stainless steel	without SE500	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).

Flow scheme



Single-stage,
for inert, reactive, flammable and oxidizing gas and gas mixtures,
purity max. 6.0,
inlet pressure 40 bar/ 600 psi,
outlet pressure range 0,1 bar abs. - 10,5 bar / 1,4 psi abs. - 145 psi

Highlights

- **Inlet valve with 90° shut-off function**
- **Clear open/closed position of shut-off valve**

Features

The EMD 500-06 consists of inlet shut-off valve, pressure regulator, outlet pressure gauge and panel for wall mounting and mounted on aluminium panel,

Application

The EMD 500/510-06 is designed for the second pressure stage inside of a central gas supply system to reduce line pressure to a certain supply pressure level required at the point of use.
The pressure regulator MD 510 reduces to very low pressure levels down to 0,1 bar absolute and is also suitable for vacuum dosing.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated , 4 in-/outlet borings
Seat sealing:	PTFE
Body sealings:	PCTFE (SS), PVDF (brass)
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Pressure gauge range:	-1 - 1,5 bar (-30inHg - 40 psi) -1 - 5 bar (-15 - 75 psi) -1 - 10 bar (-15 - 145 psi) -1 - 18 bar (-15 - 260 psi)
Weight:	0,8 kg
Dimensions (wxhxd):	90 x 260 x 135 mm
Inlet/Outlet:	NPT 1/4" f

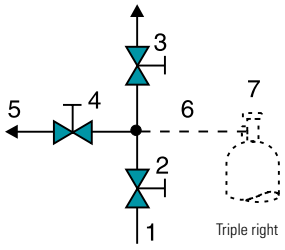
Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
EMD 500-06	**BC**	**E**	**1**	**CL6 BC**	**CL6 BC**	**Gas**
EMD 500-06 EMD 510-06	BC = brass SS = stainless steel	**EMD 500-06:** E = 40 bar/600 psi **EMD 510-06:** 12 bar / 175 psi	**EMD 500-06:** 1 = 0,1 - 1 bar/1,5 - 15 psi 6 = 0,5 - 6 bar/7 - 85 psi 10 = 1 - 10 bar/ 15 - 145 psi **EMD 510-06:** 2 = 0,1 - 1 bar abs. / 1,5 - 15 psi abs. 3 = 0,1 - 2 bar abs. / 1,5 - 30 psi abs.	0 CL6, CL8 CL10, CL12 BC = brass SS = stainless steel	0 CL6, CL8 CL10, CL12 BC = brass SS = stainless steel	Specification of used gas

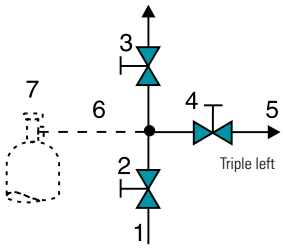
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

Triple left

Triple right



Triple right



Triple left

1 = purge gas inlet
2 = purge gas inlet shut-off valve
3 = purge gas outlet shut-off valve
4 = process gas outlet shut-off valve
5 = process gas outlet
6 = cylinder connection
7 = cylinder

For pure gases and mixtures, no oxygen, purity max. 6.0, for manual operated purging, nominal pressure 230 bar / 3300 psi

Highlights

- **Maintaining gas purity close to the gas stock**
- **No contamination with atmosphere**
- **Fast operating by quarter turn shut-off function**
- **Clearly visible open/closed position**
- **Increase of durability due to fine adjusting of closing pressure**
- **Optimal purge conditions**
- **Wide range of applications**

Features

This valve block purging device consists of process gas shut-off valve, purge gas inlet and outlet valves, cylinder connection, 2 outlet and one inlet connections. Surface cleaning and quality control minimize the potential for adsorbtion of contamination. The left and a mirror/inverted right triple design fit any application demand.

Application

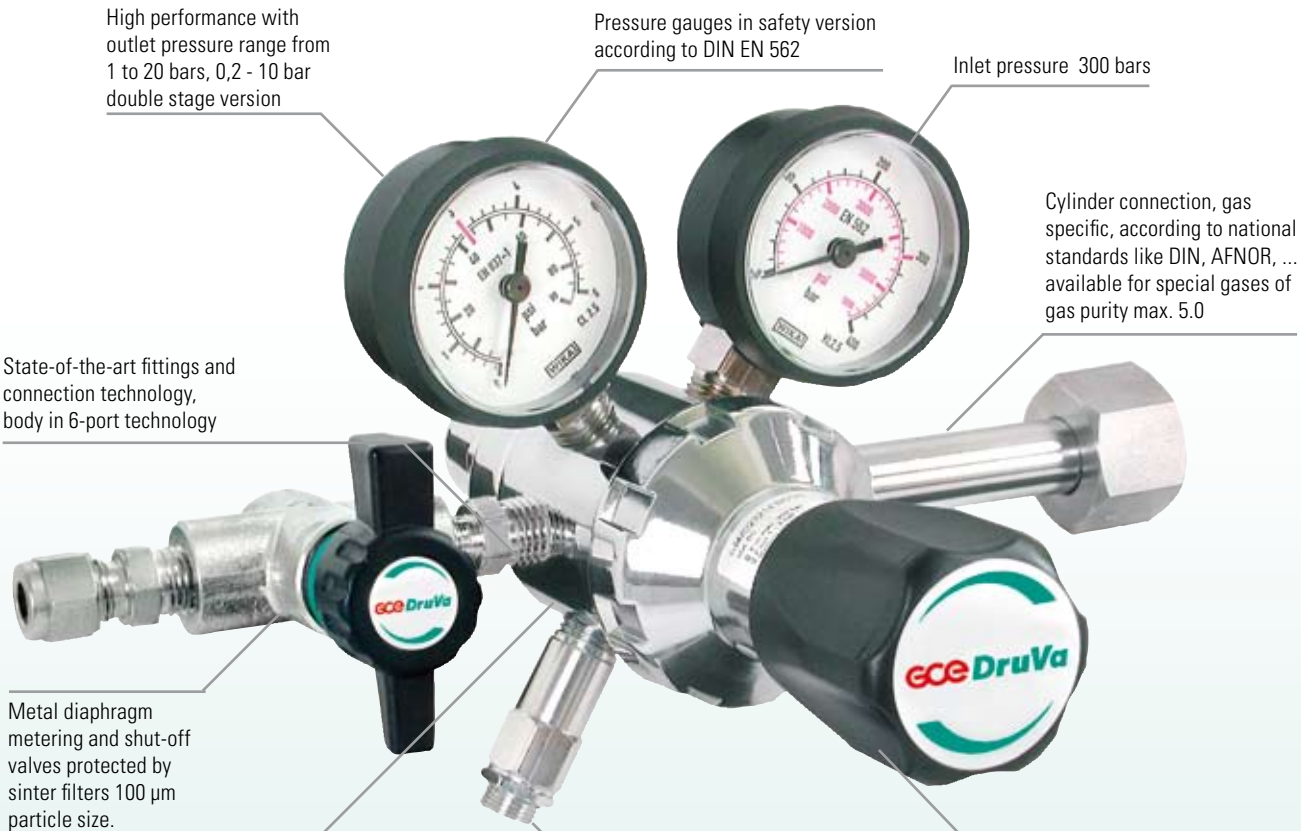
These triple valve blocks, used for purging of ultra pure, toxic or corrosive gases, are fundamental for conservation of gas purity during cylinder change to maintain the purity and even the safety level using toxic gases. Benefit of this design with its high functionality is a optimal security for personnel and installation.

Technical data

Body material:	stainless steel 1.4404 specially cleaned
Diaphragm:	Hastelloy, Elgiloy
Sealing material:	PCTFE
Performance data:	see chapter 5.1
Basic design aspects:	see page 10
Nominal width:	DN 5
KV-value:	0,25 (straight-type)
Inlet filter:	100 µm mesh
Inlets/outlets:	G 1/4" f

Order code

Type	Material	Inlet pressure	Cyl. conn.	Outlet conn.	Gas type
DPS L	**SS**	**F**	**DIN**	**CL6**	**Gas**
DPB-L = triple left **DPB-R** = triple right	SS = stainless steel	F = 230 bar/3300 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 CL6 CL8 CL10 CL12	Specification of used gas



Basic design aspects*

Material
Body: brass CW617 (CuZn40Pb2) chrome-plated .

Sealing material
PCTFE,PTFE,FKM etc., depending on gas specification and purity requirements. Material is specified in “Technical data“.

Inner parts
Low maintenance, service friendly regulator unit, particle filter 100 µm at the inlet.

Diaphragm
Protection against burst and corrosion due to diaphragm material stainless steel.

Performance data
See flow charts, for different pressures please contact GCE.

Guaranteed leakage rates
< 1x10 $^{-7}$ mbar l/s Helium (body).
< 1x10 $^{-6}$ mbar l/s Helium (seat).

Working temperature
-20 °C to +60 °C / -4 to 140 °F

Purity
< 5.0

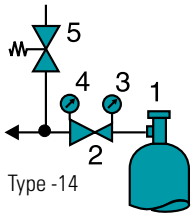
Cylinder / Inlet connection
According to German national standard: DIN 477. Other connections acc. to US-Norm CGA, British Standard BS etc. available.

*Different data to series 230 are specified in product specific "Technical

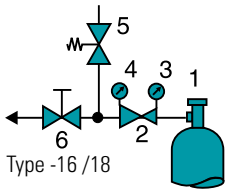

FMD 230-14


FMD 230-16


FMD 230-18



Type -14



Type -16 /18

1 cylinder connection
2 pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (-16)
/ metering valve (-18)

Single-stage,
for inert, flammable gas and gas mixtures and oxygen,
purity max. 5.0
inlet pressure 300 bar/ 4300 psi,
outlet pressure range 1 - 20 bar / 15 - 290 psi

Highlights

- **Stainless steel diaphragm**
- **Good control characteristics**

Features

The FMD 230-14 consists of cylinder connection, pressure regulator, inlet gauge, outlet gauge, relief valve and tube fitting, the FMD 230-18 with metering valve at the outlet, the FMD 230-16 with diaphragm shut-off valve at the outlet.

Application

This cylinder pressure regulator FMD 230 is distinguished by high flow, good control characteristics and direct gas supply from cylinders as well as considering the user's need for mobility of gas supply.

Technical data

Body:	brass CW 617 CuZn40 Pb2, chrome-plated
Seat seal:	Polyamid 6.6, Zytel 103
Sealing material:	NBR 70°- 80°SH
Sealing relief valve seat:	EPDM 70° Sh - Rubber
Performance data:	see chapter 5.1
Basic design aspects:	see page 35
Pressure gauge range:	0 - 400 bar (0 - 5800 psi)
	0 - 16 bar (0 - 230 psi)
	0 - 40 bar (0 - 480 psi)
Weight:	type -14: 0,4 kg, type -16/18: 0,5 kg
Dimensions:	type -14: 195 x 145 x 125
	type -16/-18: 235 x 145 x 125

Order code

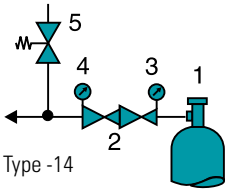
Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 230-14	**BC**	**G**	**10**	**DIN**	**CL6**	**Gas**
FMD 230-14= without MV	BC = brass	G = 300 bar/4300 psi	10 = 1 - 10 bar / 15 - 150 psi	DIN	CL6	specification of used gas
FMD 230-16=with MVA			20 = 2 - 20 bar/ 15 - 290 psi	ANSI	CL8	
FMD 230-18=with MVR				AFNOR	CL10	
				NBN	CL 1/8"	
				BS 341	NO 1/4"	
				CGA	NO 1/8"	
				NEN		
				UNI		

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

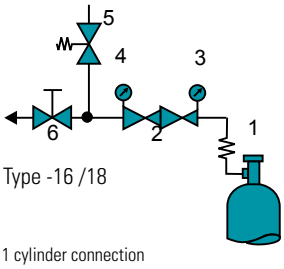

FMD 232-14


FMD 232-16


FMD 232-18



Type -14



Type -16 /18

1 cylinder connection
2 double-stage pressure regulator
3 inlet pressure gauge
4 outlet pressure gauge
5 relief valve
6 outlet shut-off valve (type -16)
/ metering valve (type -18)

Double-stage, for inert, flammable gas and gas mixtures and oxygen, purity max. 5.0 inlet pressure 300 bar/ 4300 psi, outlet pressure range 0,2 - 10 bar / 3 - 145 psi

Highlights

- **Stainless steel diaphragm**
- **Good control characteristics**

Features

The FMD 232-14 consists of cylinder connection, pressure regulator, inlet gauge, outlet gauge, relief valve and tube fitting. The FMD 232-18 is available with metering valve at the outlet, the FMD 232-16 is available with diaphragm shut-off valve at the outlet.

Application

This cylinder pressure regulator FMD 232 is distinguished by high flow and good control characteristics and allow direct extraction from gas cylinders as well as considering the user's need for mobility of gas supply. For basic applications and gas purity max. 5.0.
Double-stage design for constant outlet pressure virtually independent from the inlet pressure level.

Technical data

Body:	brass CW 617 CuZn40 Pb2, chrome-plated
Seat seal:	1st stage: Polyamid 6.6', Zytel 103
	2nd stage: PTFE, Zytel 103
Sealing material:	NBR 70°- 80°SH
Sealing relief valve seat:	EPDM 70° Sh - Rubber
Performance data:	see chapter 5.1
Basic design aspects:	see page 35
Pressure gauge range:	0 - 400 bar (0 - 5800 psi)
	0 - 5 bar (0 - 75 psi)
	0 - 16 bar (0 - 235 psi)
Dimensions:	type -14: 195 x 145 x 200
	type -16/-18: 235 x 145 x 200
Weight:	ca. 0,5 / 0,6 kg

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 232-14	**BC**	**G**	**3**	**DIN**	**CL6**	**Gas**
FMD 232-14= without MV	BC = brass	G = 300 bar/4300 psi	3 = 0,2 - 3 bar / 3 - 45 psi	DIN	CL6	Specification of used gas
FMD 232-16=with MVA			10 = 0,5 -10 bar / 7 -145 psi	ANSI	CL8	
FMD 232-18=with MVR				AFNOR	CL10	
				NBN	CL 1/8"	
				BS 341	NO 1/4"	
				CGA	NO 1/8"	
				NEN		
				UNI		

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)

LMD 230-01

LMD 230-03

Single-stage,
for inert, flammable gas and gas mixtures and oxygen,
purity max. 5.0
inlet pressure 300 bar / 4300 psi,
outlet pressure range 0,2 - 20 bar / 3 - 290 psi

Highlights

- **Good control characteristics**
- **Compact design**

Features

The LMD 230-01/03 consist of the pressure regulator, inlet gauge, outlet gauge (only 230-03). It's stainless steel diaphragm ensures long lifetime and high tightness. With it's low maintenance need and clear operation and serving elements, these regulators appear with a user friendly design.

Application

The line pressure regulators LMD 230-01/03 are distinguished by high flow and good control characteristics and is designed to reduce line pressure to various subsequent lower pressure levels. It's compact enables this regulator to be used within industrial and analytical applications.

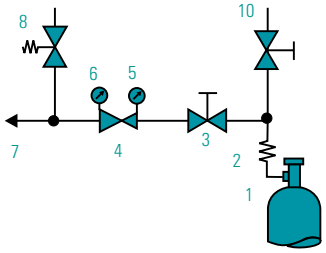
Technical data

Body:	brass CW 617 CuZn40 Pb2, chrome-plated
Seat seal:	Polyamid 6.6, Zytel 103
Sealing material:	NBR 70°- 80°SH
Sealing relief valve seat:	EPDM 70° Sh - Rubber
Performance data:	see chapter 5.1
Basic design aspects:	see page 35
Pressure gauge range:	0 - 400 bar (0 - 5800 psi) 0 - 5 bar (0 - 75 psi) 0 - 16 bar (0 - 230 psi) 0 - 40 bar (0 - 600 psi)
Dimensions (WxH):	130 x 144 mm / 5.1" x 5.7"
Weight:	ca. 1,3 kg / 2,9 lb

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
LMD 230-01	**BC**	**G**	**3**	**N14**	**CL6**	**Gas**
LMD 230-01 LMD 230-03	BC = brass	G = 300 bar/4300 psi	3 = 0,1 - 3 bar / 1,5 - 45 psi 10 = 1 - 10 bar / 15 - 145 psi 20 = 2 - 20 bar / 30 - 290 psi	N14 = NPT 1/4"	0 CL6 CL8 CL10 CL 1/8"	specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm,
NO6 = hose adaptor with hose inner diameter 6 mm)



1 Cylinder connection
2 Connection spirals
3 Inlet shut-off valve
4 Regulator single-stage
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Process gas outlet
8 Relief valve
10 Purge gas outlet

Single-stage, for inert, flammable gases and gas mixtures and oxygen, purity max. 5.0 inlet pressure 300 bar/ 4300 psi, outlet pressure range 1 - 20 bar / 15 - 290 psi

Highlights

- **With internal gas purging,**
- **Process gas and purge gas shut-off valve**
- **Pressure regulato r with SS diaphragm 1.4404**

Features

The SMD 230-24 is mounted on a stainless steel panel and consists of a pressure regulator, inlet and outlet pressure gauges, relief valve and shut off valves for the process gas and for purge gas.

Application

Gas panels are usually installed in the cylinder room or cabinet and reduce the cylinder pressure to a lower line pressure. This design allows purging with internal gas after cylinders are being changed. This flushes the atmospheric air from the system; gas purity is maintained. Standard application: centralized or decentralized gas supply.

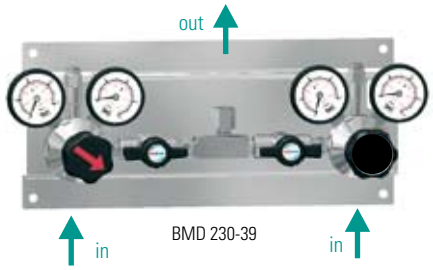
Technical data

Body:	brass CW 617 CuZn40 Pb2, chrome-plated
Seat seal:	Polyamid 6.6, Zytel 103
Sealing material:	NBR 70°- 80°SH
Sealing relief valve seat:	EPDM 70° Sh - Rubber
Weight:	appr.. 2,6 kg
Performance data:	see chapter 5.1
Basic design aspects:	see page 35
Range inlet gauge:	0 – 400 bar / 6000 psi
Range outlet gauge:	0 - 16 bar (0 - 230 psi)
	0 - 40 bar (0 - 480 psi)
Dimensions:	250 x 155 x 185

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact press. gauge	Gas type
SMD 230-24	**BC**	**G**	**10**	**N14**	**N14**	**Ki**	**Gas**
SMD 230-24	BC = brass	G = 300 bar /4300 psi	10 = 1 - 10 bar/15 -145 psi 20 = 2 - 20 bar/30 -290 psi	N14 = NPT 1/4"	N14 = NPT 1/4"	0 = without Ki = with	specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94".
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

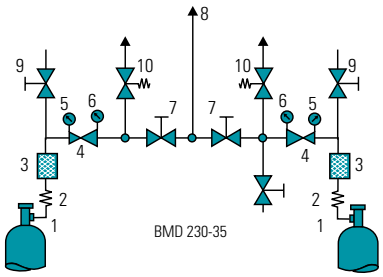


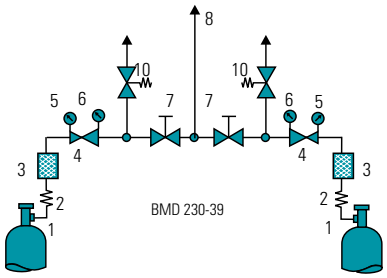
Single-stage,
for inert, flammable gas and gas mixtures and oxygen,
purity max. 5.0
inlet pressure 300 bar / 4300 psi,
outlet pressure 14 bar / 200 psi

Highlights

- **Continuous gas supply by automatic switch over**
- **Definite indication of active cylinder**
- **Process gas purging (version -35)**
- **Extendable max. 2 x 5 cylinders**
- **Low pressure warning by means of contact pressure gauges (optionally available)**

Flow schemes





1	Cylinder connection	6	Outlet pressure gauge
2	Connection spirals	7	Shut-off valve
3	Inlet filter	8	Valve purge
4	Pressure regulator	9	Purge shut-off valve
5	Inlet pressure gauge	10	Relief valve

Features

The BMD 230-39/-35 is a one-stage gas manifold for 2 (max. 2 x 5) gas cylinders. A pressure decrease of the active cylinder (or bundle) below a preset level causes a pressure-activated, automatic switch over to the full cylinder side. This is achieved by 2 integrated regulators, the first factory preset and the second adjustable (+/-2 bar resp. 30 psi).
Before replacing the empty cylinder, the lever has to be moved towards the full battery side, this allows to disconnect and replace the empty cylinder without interrupting gas supply. After emptying the second battery side, this procedure can be repeated, now switching to the prior active side. The lever always indicates, which cylinder has priority in being discharged. Contact pressure gauges (Ki) (optionally available), connected to the low pressure alarm box, indicate optical and audible alarm in case of decreasing manifold pressure. That ensure that empty tanks will be replaced in time.

Technical data

Body:	brass CW 617 CuZn40 Pb2, chrome-plated
Seat seal:	Polyamid 6.6, Zytel 103
Sealing material:	NBR 70°- 80°SH
Sealing relief valve seat:	EPDM 70° Sh - Rubber
Performance data:	see chapter 5.1
Basic design aspects:	see page 35
Preset outlet pressure:	14 bar / 200 psi
Weight (230-35):	ca. 1,4 kg
Inlet gauge ind. range:	0 – 400 bar / 0 - 5800 psi
Outlet gauge ind. range:	0 – 40 bar / 430 psi

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Contact pressure gauge	Gas type
BMD 230-39	**BC**	**G**	**14**	**N14**	**N14**	**Ki**	**Gas**
BMD 230-39 BMD 230-35	BC = brass	G = 300 bar/4300 psi	14 = 14 bar/ 0 - 200 psi	N14 = NPT 1/4"	N14 = NPT 1/4"	0 = without Ki = with	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94".
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

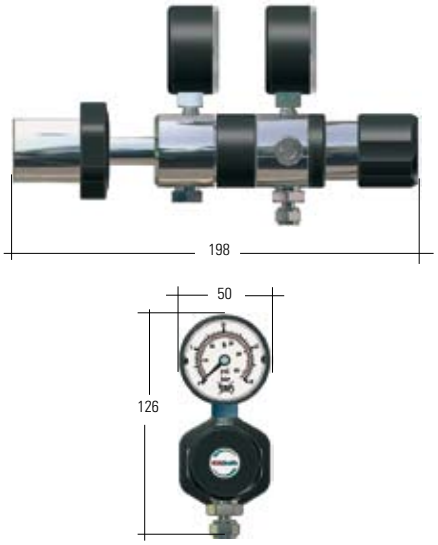
Double-stage,
for inert gas and gas mixtures,
purity max. 5.0
inlet pressure 230 bar / 3300 psi,
outlet pressure range 0,01 -10 bar / 0,15 - 145 psi

Highlights

- **Superior downstream pressure adjustment**
- **Hand tightening nut for cylinder connection**
- **Double-stage version for constant outlet pressure**
- **Precise pressure level due to metallic bellow**
- **100 % helium tested and proved**

Features

The PRIOR is a double-stage cylinder regulator with the first stage preset and a second adjustable one to achieve a very constant pressure level indepent of the inlet pressure level. Equipped with a metallic bellow in second stage this regulator supplies outstanding performance.



Application

The cylinder regulator PRIOR is designed to achieve superior performance combining excellent pressure stability, flow rate span, safety and tightness. It is ergonomically and attractively designed. The kind of manufacturing and his impressive performance qualify that regulator especially for laboratory, laser, analytic and other applications, where precise and reliable pressure levels are needed.

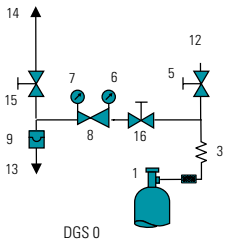
Technical data

Housing:	brass chrome-plated
Seat stage 1:	PCTFE
Seat stage 2:	FKM
Diaphragm stage 1:	stainless steel
Bellow stage 2:	phospor bronze
Filter:	stainless steel
Leakage rate:	10^{-7} (cm³ atm/s He)
Working temperature:	-20° to 50°C / -4 - 122 °F
Weight:	0,8 kg
Outlet:	tube fitting 1/4"

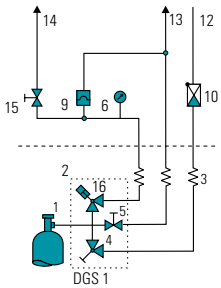
Order code

Type	Material	Inlet pr.	Outl. pressure	Cyl. conn.	Outlet conn.	
FMD PRIOR	**BC**	**F**	**10**	**DIN**	**V6**	**Gas**
FMD PRIOR	BC = brass	F = 230/3300	1,5 = 0,01-1,5 bar/0,15-22 psi 4 = 0,1-4 bar/1,5-60 psi 10 = 0,5-10 bar/7-145 psi	DIN AFNOR	V6 V8 V1/8" V1/4" T8	please specify

B = brass, BC=brass coated, SS= stainless steel, V6 = tube fitting with outer diameter 6 mm, T6 = hose nozzle for hose with inner diameter 6 mm



DGS 0



DGS 1

1 Cylinder valve
2 Purge valve block
3 Connecting hose
4 Purge inlet valve
5 Purge outlet valve
6 Inlet pressure gauge
7 Outlet pressure gauge
8 Pressure regulator
9 Rupture disk
10 Check valve
11 Relief valve
12 Purge inlet
13 Purge outlet
14 Process gas outlet
15 Process gas outlet shut-off valve
16 Process gas inlet shut-off valve

Single-stage, for low flow of non corrosive special gases (hydrogen on request), purity max. 7.0, inlet pressure 230 bar / 3300 psi, outlet pressure adjustable 0,7 - 7 bar / 2 - 100 psi

Highlights DGS 0

- **Internal gas purging**
- **All connections welded or VCR**
- **Regulator with tied diaphragm**
- **Spring less diaphragm valves with 1/4 turn lever**
- **Rupture disk limits pressure level**
- **Safety gauges RM 63**
- **Regulator and valve material 316L/AOD/VAR**

Features

This single stage gas supply panel is assembled onto a stainless steel panel. Consisting of a Single-stage pressure regulator with inlet and outlet pressure gauge, shut-off valves and a rupture disk.

Application

This gas panel, completely assembled, is used for low flow non corrosive pure gases special or high purity non corrosive gases.

Technical data

Flow coefficients:	regulator 0,09, valve 0,29
Reg. diaphragm:	316L
Seat:	PCTFE
Process gas outlet:	VCR 1/4"m
Purge outlet:	VCR 1/4" f
Operating temperature:	-40 °C to +70 °C / 40 °F - 158 °F
Surface finish:	0,4 µm / 15 µin. Ra max. standard
Outboard leakage:	2 x 10-9 cm³/sec He at 100 bar/1500 psig
Seat leakage:	4 x 10 -8 cm³/sec He at 70 bar/1000 psig

For low flow, low pressure special gases (hydrogen on request), purity max. 7.0, inlet pressure vacuum to 17 bar / 250 psi, outlet pressure vacuum to inlet pressure

Highlights DGS 1

- **For low pressure low flow applications**
- **External gas purging with FAV 903**
- **Spring less diaphragm valve with 1/4 turn lever**
- **Rupture disk limits improper pressure level increase**
- **Valve material 316L/AOD/VAR**

Features

This gas supply panel is assembled onto a stainless steel panel. Consisting of a pressure gauge, shut-off valve and a rupture disk and connected to the gas stock via purgeable cylinder valve

Application

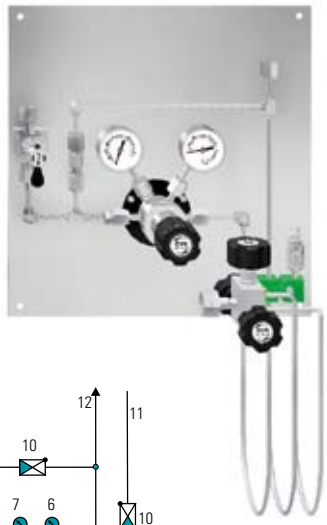
This gas panel, completely assembled, is used for low flow low pressure special or high purity gases.

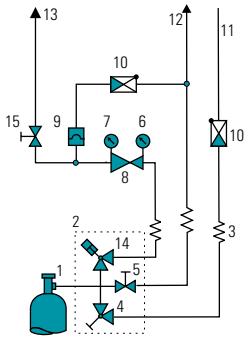
Technical data

Flow coefficient, valve:	0,5
Seat :	PCTFE
Diapraghm:	Elgiloy
Inlet/outlets:	VCR 1/4"m
Operating temperature:	-40 °C to +70 °C / 40 °F - 158 °F
Surface finish:	0,4 µm / 15 µin. Ra max. standard

Order code

Type	Gas type
DGS 0	**Gas**
DGS 0	Specification
DGS 1	of used gas





Single-stage, with external purging, for low flow reactive and corrosive special gases (hydrogen on request), purity max. 7.0, inlet pressure 230 bar / 3300 psi, outlet pressure adjustable 0,15 - 10 bar / 2 - 145 psi

Highlights DGS 2

- **Regulator with tied diaphragm**
- **Spring less valves with 1/4 turn lever**
- **Rupture disk limits improper pressure level increase**
- **Safety gauges RM 63**
- **Regulator and valve material 316L/AOD/VAR**

Features

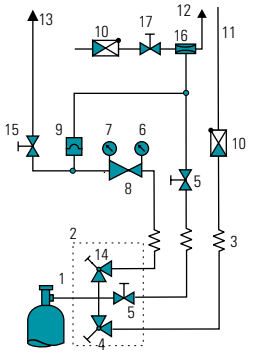
This gas supply panel is assembled onto a stainless steel panel. Consisting of pressure regulator with inlet and outlet pressure gauge, outlet shut-off valve, rupture disk and connected to the gas stock via purgeable cylinder valve, the panel may be purged with external gas.

Application

This gas panel is used for low flow low pressure reactive or corrosive gases.

Technical data

Flow coefficients:	regulator 0,09, valves 0,29
Seat:	PCTFE
Reg. diaphragm:	Hastelloy C22
Process gas outlet:	VCR 1/4" f
Purge inlet + outlet:	VCR 1/4" m
Operating temperature:	-40 °C to +70 °C / 40 °F - 158 °F
Surface finish:	0,4 µm / 15 µin. Ra max. standard
Outboard leakage:	2 x 10 -9 cm³ /sec He at 100 bar/1500 psig inlet pressure
Seat leakage:	4 x 10 -8 cm³ /sec He at 70 bar/1000 psig inlet pressure



1 Process gas inlet
2 Purge valve block
3 Connecting hose
4 Purge inlet valve
5 Purge outlet valve
6 Inlet pressure gauge
7 Outlet pressure gauge
8 Pressure regulator
9 Rupture disk
10 Check valve
11 Purge inlet
12 Purge outlet
13 Process gas outlet
14 Process gas inlet shut-off valve
15 Process gas outlet shut-off valve
16 Vacuum generator
17 Vacuum generator valve

Single-stage, with external purging, for low flow low pressure special gases (hydrogen on request), purity max. 7.0, inlet pressure 230 bar / 3300 psi, outlet pressure adjustable 0,15 - 10 bar / 2 - 145 psi

Highlights DGS 3

- **Vacuum generation with VG 80 at the purge outlet**
- **Regulator with tied diaphragm**
- **Spring less valves with 1/4 turn lever**
- **Rupture disk limits improper pressure level increase**
- **Safety gauges RM 63**
- **Regulator and valve material 316L/AOD/VAR**

Features

This gas supply panel is assembled onto a stainless steel panel. Consisting of pressure regulator with inlet and outlet pressure gauge, outlet shut-off valve, rupture disk and connected to the gas stock via purgeable cylinder valve, the panel may be evacuated by a vacuum generator for maximum purging effectivity.

Application

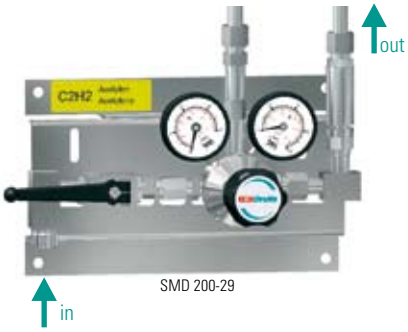
This gas panel is used for low flow low pressure reactive or corrosive gases.

Technical data

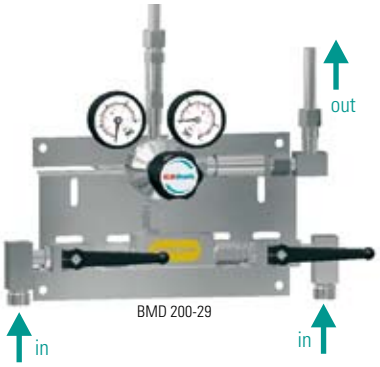
Flow coefficients:	regulator 0,09, valves 0,29
Seat:	PCTFE
Reg. diaphragm:	Hastelloy C22
Process gas outlet/ purge inlet:	VCR 1/4"m
Vacuum generator	outlet: VCR 1/4"m, inlet: VCR or tube weld
Operating temperature:	-40 °C to +70 °C / 40 °F - 158 °F
Surface finish:	0,4 µm / 15 µin. Ra max. standard
Outboard leakage:	2 x 10 -9 cm³ /sec He at 100 bar/1500 psig inlet pressure
Seat leakage:	4 x 10 -8 cm³ /sec He at 70 bar/1000 psig inlet pressuree

Order code

Type	Gas type
DGS 2	**Gas**
DGS 2	Specification
DGS 3	of used gas



SMD 200-29



BMD 200-29

For Acetylene of medium purity, connection for 1 or 2 x 1 cylinders.

Highlights

- **Single-stage version for common max. medium gas consumption**
- **Gas failure monitoring via contact pressure gauges and signal boxes**
- **Single components with type approval**

Features

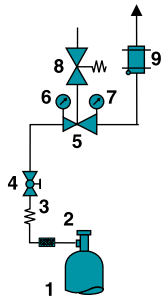
Panels to connect to 1 cylinder (SMD) or 2 cylinders (BMD). With emergency shut-off valve and flame arrestor.

Application

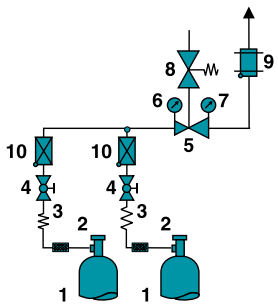
Serving as a first pressure stage of a central gas supply these gas panels together with contact gauges and signalling device allow an interruption free gas supply. The change over from the emptied cylinder to the full one has to be done manually indicated by the alarm box acoustic/optic signal.

Technical data

Housing:	brass 2.0401.26
Diaphragm:	rubber
Flow:	up to 11 m³/h (pa = 1,26 bar)
Working temperature:	-20 to +60 °C / -4 to 140 °F
Dimensions (wxhxd):	app. 300 x 155 x app. 160 mm
Weight:	4,6 kg
Inlet pressure gauge:	RM or KI
Press. gauge range:	0 - 40 bar, 0 - 580 psi (inlet),
	0 - 2,5 bar, 0 - 36 psi (outlet)
Outlet safety valve:	G 3/8" I



SMD 200-29



BMD 200-29

1 Cylinder
2 Cylinder valve
3 Hose connection
4 Ball valve
5 Pressure regulator
6 Inlet pressure gauge
7 Outlet pressure gauge
8 Relief valve
9 Safety valve acc. to german TRAC
10 Non return valve

Order code

Type	Material	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
SMD 200-29	**BC**	**1,5**	**DIN**	**12**	**Gas**
SMD 200-29 BMD 200-29	BC = brass	1,5 = 1,5 bar/22 psi	DIN, ANSI AFNOR, NBN BS 341, CGA NEN, UNI	**12** = tube with 12 mm outer diameter	Specification of used gas

For proper installation and service of this panel a gas specific spiral connection tube is necessary. See in chapter Accessory page 94.
Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without).

**For inert, reactive, flammable and oxidizing gas and gas mixtures.
purity max. 6.0,
inlet pressure: MVA 500: 230 bar/ 3300 psi, MVA 530: 315 bar/ 4500 psi**

Highlights

- **Simple operating by quarter turn shut-off function**
- **Clearly visible open/closed position**
- **Increase of durability due to fine adjusting of closing pressure**

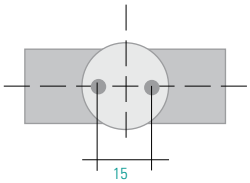
Features

With the valve line MVA 500 a generation of diaphragm valves has emerged, particularly representing reliability and system tightness. This type, the shut-off valve MVA 500 is very easy to operate by quarter turn, engaged shut-off function and its unmistakable, clearly visible open/closed position. Durability has been increased by precise adjustment of the closing forces to shut off the valve.

Application

As line shut-off component in central pure gas supply systems. As system component for the high and low pressure area.

Fixing



The MVA 500 has 2 borings M6 at the bottom side.

Technical data

Body material:	stainless steel 1.4404 specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Diaphragm:	Hastelloy, Elgiloy
Sealing material:	PCTFE
Leakage rate:	< 1x10-6 mbar l/s Helium (seat)
	< 1x10-9 mbar l/s Helium (outside)
Nominal width:	DN 5
KV-value:	0,25 (straight-type)
Inlet filter:	100 µm mesh
Vacuum suitable:	yes
Weight:	260 g
Inlet/Outlet:	NPT 1/4" f

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
MVA 500	**BC**	**F**	**CL6 BC**	**CL6 BC**	**Gas**
MVA 500 (230 bar/3300 psi) MVA 530 (315 bar/4500 psi)	BC = brass SS = stainless steel	F = 230 bar/3300 psi G = 315 bar/4500 psi	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Inlet/Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

Diaphragm regulating valve MVR 500 G

For inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0,
inlet pressure 50 bar / 725 psi

Highlights

- **Very fine gas flow dosing**
- **Wide flow range in high and low pressure applications**
- **Hardened stainless steel sealing cone for long life endurance**
- **Very tight due to special diaphragm design**

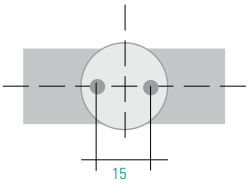
Features

With the valve line MV 500 a new generation of diaphragm valves has emerged, particularly representing reliability and system tightness. This type, the regulating valve MVR 500, is distinguished by very good control characteristics and fine dosing properties at high and low flow levels.

Application

As a gas supply system component in the low pressure level area. As accessory part for cylinder and supply pressure regulators for precision dosing of gas flow. As gas supply system component in the industrial and analytical equipment construction.

Fixing



The MVR 500 has 2 borings M6 on the bottom side.

Technical data

Body material:	stainless steel 1.44404 specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Sealing material:	hardened stainless steel cone
Diaphragm:	Hastelloy, Elgiloy
Leakage rate:	< 1x10 -4 mbar l/s Helium (seat)
	< 1x10 -7 mbar l/s Helium (outside)
Nominal width:	DN 2
K_V-value:	<0,02
Inlet filter:	100 µm mesh
Vacuum suitable:	yes
Operating:	hand wheel with 10 turns
Weight:	260 g
Inlet/Outlet:	NPT 1/4" f

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
MVR 500 G	**BC**	**E**	**CL6 BC**	**CL6 BC**	**Gas**
MVR 500 G	BC = brass SS = stainless steel	E = 50 bar/725 psi	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Inlet/Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

Diaphragm shut-off valve MVA 501 G

For inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 40 bar / 600 psi

Highlights

- **High flow**
- **Leakage rate lower than 1 x 10^{-8} mbar l/sec**
- **Surface with medium contact specially cleaned and diffusion tight**

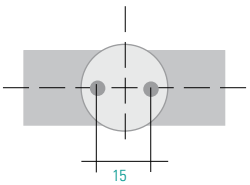
Features

The Diaphragm valve MVA 501 G with shut-off function allows the shut-off of gas flow by turning the hand wheel.

Application

As system component this valve is especially designed for low pressure and high flow.

Fixing



The MVA 501 has 2 borings M6 on the bottom side.

Technical data

Body material:	stainless steel 1.4404 specially cleaned and electro-polished or brass CW614 (CuZn39Pb3), specially cleaned
Body sealing:	diaphragm Hastelloy C
Sealing material:	PCTFE
Leakage rate:	< 1x10-6 mbar l/s He (seat),
	< 1x10-9 mbar l/s He (outside)
Nominal width:	DN 8
Kv-value:	0,7
Operation turns:	1,5
Inlet filter:	100 µm mesh
Working termperature.:	max. 80 °C / 176 °F
Vacuum suitability:	yes
Inlet/Outlet:	NPT 1/4" f

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
MVA 501 G	**BC**	**E**	**CL6 BC**	**CL6 BC**	**Gas**
MVA 501 G	BC = brass SS = stainless steel	E = 40 bar / 600 psi	0 CL6 (standard) CL8 CL10 CL12 BC = brass SS = stainless steel	0 CL6 (standard) CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Inlet/Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

FAV 115 V - with tube fitting 6 mm

FAV 115 T - with hose nozzle

Valve with cylinder connection, for corrosive gases and gas mixtures. inlet pressure 200 bar / 2900 psi

Highlights

- **Housing and cylinder connection nut material stainless steel, electro-polished**
- **Regulating cone material hard metal**
- **Stuffing box material woven PTFE**
- **Angle shape, nominal width DN 2**

Application

These valves are directly assembled to the cylinder valves and allow precise gas flow regulation, for example pressureless polymerization processes.

Information

The secure handling of very toxic gases requires unconditionally the use of valves with bellows or metal diaphragm .
For achievement of constant outlet pressure and precise flow control please use one of the GCE pressure regulators.

Assembly

It is very recommended to use clips for the hoses.
To avoid diffusion of Nitrogen or Helium through the hose material please consider the installation of metal tubes or at least keep care to corresponding security steps.

Technical data

Body material:	stainless steel 1.4404 specially cleaned and electro-polished
Working temperature	max. 50 °C / 122 °F
Leakage rate:	1 x 10-3 mbar l/s Helium, seat and outside
Inlet filter:	100 µm mesh
Sealing:	PTFE

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
FAV 115	**SS**	**F**	**DIN**	**CL6**	**Gas**
FAV 115	SS = stainless steel	F = 230 bar/3300 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	CL6 = with tube diameter 6 mm NO8 = with hose nozzle 8 mm others on demand	Specification of used gas

FAV 500-36

FAV 500-37

Valve with cylinder connection, for inert, reactive, flammable and oxidizing gas and gas mixtures, purity max. 6.0, inlet pressure 50 bar / 725 psi

Highlights

- **Cylinder connection valve in diaphragm design**
- **Precise regulation of flow**
- **Hardened stainless steel cone for long live performance**
- **Easy to purge due to minimized dead space**

Application

As regulating and shut-off valve for low pressure gas cylinders (max. 50 bar).

Features

With the valve line MV 500 a new generation of diaphragm valves has emerged, particularly representing reliability and system tightness. This valve FAV 500 is immediately assembled to the cylinder and delivered with or without inlet pressure gauge.

Technical data

Body material:	stainless steel 1.4404 specially cleaned and electro-polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome-plated
Sealing material:	hard metal (stainless steel), SS-cone hardened (brass)
Diaphragm	Hastelloy, Elgiloy
Leakage rate:	< 1x10-4 mbar l/s He (seat)
	< 1x10-70 mbar l/s He (outside)
Nominal width:	DN2
Kv-value:	< 0,02
Vacuum suitability:	yes
Filter:	at the inlet, 100 µm
Operation turns:	10

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
FAV 500-36	**SS**	**E**	**DIN**	**CL6 BC**	**Gas**
FAV 500-36 = without pressure gauge FAV 500-37 = with pressure gauge	BC = brass SS = stainless steel	E = 50 bar/720 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 CL6 (standard) CL8 CL10 CL12 BC = brass SS = stainless steel	Specification of used gas

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, 0 = without)

Cylinder pressure regulator FMD 100-14

For laser process gas supply wi
gas cylinders.

Gas panel SMD/BMD 100-30

For laser process gas supply with
1 or 2 cylinders / bundles.

Point-of-use regulator EMD 100-06

For the decompression of laser process gases
at the point of use.

Gas panel BMD 100-39/-35 S

With semiautomatic change-over, for cylinder or bundle laser
process gas supply

Point-of-use regulator EMD 100-06

For the decompression of laser process gases
at the point of use.

Gas panel BMD 100-39

With automatic switch-over, for cylinder and bundle
battery gas supply.

Point-of-use EMD 50-06

To open or close the tanksupply near laser installation.

Cylinder pressure regulator

Cylinder pressure regulator
FMD 502-27 - Excimer
Double-stage, inlet pressure: 230 bar (3300 psi), gas purity 6.0
stainless steel, diaphragm Hastelloy C
outlet pressure: 0,2 - 6 bar (3 - 85 psi)
inlet: cylinder connection according to national standards
outlet: tube fitting 6 mm
Order code: FMD-502-27-EC

Gas supply with 1 cylinder

Gas supply panel for 1 cylinder
SMD 500-27
Single-stage, inlet pressure: 230 bar (3300 psi), gas purity 6.0,
stainless steel, diaphragm Hastelloy C
outlet pressure: 2,5 - 50 bar (35 - 720 psi)
inlet: stainless steel spiral tube or convoluted hoses
outlet: NPT 1/4" female
Order code: SMD-500-27-ED

Point-of-use pressure regulator
EMD 500-06
Single-stage, inlet pressure 40 bar, 600 psi
brass chrome-plated , diaphragm Hastelloy C
outlet pressure: 1 - 10 bar, 15 - 145 psi
inlet: NPT 1/4" f, outlet: NPT 1/4" f
Order code: EMD-500-06-MD

Gas supply with 1 cylinder

These laser gas supply systems are standardized. The GCE Pure Gas Program additionally offers much more solutions precisely designed for your personal demand.
Cylinder connections can be delivered according to national norms AFNOR, BS, CGA, and others.
Please contact our pure gas experts to get further information.

Gas supply panel for 1 cylinder
SMD 500-25

Single-stage, inlet pressure: 230 bar (3300 psi), process gas purging,
brass chrome-plated , diaphragm Hastelloy C,
outlet pressure: 1 - 14 bar, 15 - 200 psi,
inlet: stainless steel spiral tube or convoluted hoses,
outlet: NPT 1/4" f

Order code:		
	Carbon dioxide	SMD-500-25-MD-CO2
	Nitrogen	SMD-500-25-MD-N2
	Helium	SMD-500-25-MD-He

Point-of-use pressure regulator
EMD 500-06

Single-stage, inlet pressure 40 bar, 580 psi
brass chrome-plated , diaphragm Hastelloy C
outlet pressure: 1 - 10 bar / 15 - 145 psi
inlet: NPT 1/4" f, outlet: NPT 1/4" f

Order code: EMD-500-06-MD

Continous gas supply with gas panels and semiautomatic changer over

Please keep care:
For gas panels with semiautomatic change-over the use of contact gauges and an alarm box for gas failure signalization is recommended, to insure an interruption free gas supply.

Gas supply panel for 2 cylinders
BMD 500-35

Single-stage, inlet pressure: 230 bar (3300 psi) brass chrome-plated ,
diaphragm Hastelloy C, semiautomatic change over
change over pressure: 14 bar, 200 psi
inlet: stainless steel spiral tube or convoluted hoses
outlet: NPT 1/4" female

Order code:		
	Carbon dioxide	BMD-500-35-MD-CO2
	Nitrogen	BMD-500-35-MD-N2
	Helium	BMD-500-35-MD-He
	Argon	BMD-500-35-MD-Ar

Point-of-use pressure regulator
EMD 500-06

Single-stage, inlet pressure 40 bar, 580 psi
brass chrome-plated , diaphragm Hastelloy C
outlet pressure: 1 - 10 bar, 15 - 145 psi
inlet: NPT 1/4" f, outlet: NPT 1/4" f

Order code:		
	Carbon dioxide	EMD-500-06-MD-CO2
	Nitrogen	EMD-500-06-MD-N2
	Helium	EMD-500-06-MD-He

Single-stage, purity max. 5.0, inlet pressure 230 bar / 3300 psi (FMD 100-14) or 300 bar / 4300 psi (FMD 130-14), outlet pressure range 0 - 40 bar / 0 - 600 psi

Highlights

- **For laser process gases**
- **For high flow**
- **Security pressure gauge acc. to EN 562**
- **Relief valve at the outlet protects users and applications**

Features

This regulator includes inlet and outlet pressure gauge, manual cylinder connection and relief valve to prevent unacceptable pressure rising.

Application

If gas supply for laser processes may be interrupted , single cylinder gas supply configuration is the simplest and cheapest way to accomplish. Among others this configuration is used for start-up of laser gas machining.

Technical data

Body:	brass 2.0402 CuZn40Pb2
Housing:	zinc alloy Zn Al3
Housing sealing:	NBR 70° IRH
Seat sealing:	PA 6.6 Zytel 103 Dupont
Piston sealing (for N2):	silicon rubber 80° IRH
Diaphragm (for O2):	EPDM
Working temperature:	-40 °C to 50 °C, -40 °F to 148 °F
Dimensions ((wxhxd)):	190 x 110 x app. 130 mm
Weight:	1,4 kg
Performance:	charts see page 97 - 100
Pressure gauge range:	0 - 400 bar / 5800 psi, 0 - 515 bar / 7450 psi 0 - 65 bar / 950 psi
Outlet pressure:	0 - 40 bar/580 psi (N2), 0 - 13 bar/19 psi (O2)
Inlet:	manual cylinder connection DIN 477-5 for 300 bar/4500 psi or acc. to DIN 477-1 for 200 bar /2900 psi

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 100-14	**B**	**F**	**40**	**DIN**	**CL12**	**N2**
FMD 100-14 (230 bar) FMD 130-14 (300 bar)	B = brass	F = 230 bar/3300 psi G = 300 bar/4300 psi only FMD 130	40 = 0 - 40 bar/ 600 psi (N_2) 13 = 0 - 13 bar/ 190 psi (O_2)	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 CL12	Nitrogen Oxygen Argon Helium

Outlet: (expl.: 0 = without, CL12 = tube fitting 12 mm, others on demand)

Single-stage, purity max. 4.0, inlet pressure 300 bar /4300 psi, outlet pressure range 0 - 20 bar / 0 - 290 psi

Highlights

- **High flow**
- **Good regulating performance**
- **Safety valve**

Features

The constant pressure regulator MR 60 has a considerable capacity compared to standard cylinder regulators. A large diaphragm diameter provides excellent regulating performance. The valve seat material fits to the gas type specific requirements. The regulator is equipped with safety valve and each regulator has been individually tested before delivery. The MR 60 regulator's safety valve outlet is fitted with a tube end for discharge into air.

Application

As first pressure reduction stage for large gas flow applications. Tank supply for high flow applications.

Technical data

Inlet pressure:	Oxygen, Argon, Hydrogen 200 bar /2900 psi
Outlet pressure:	Oxygen, Argon, Hydrogen 14 bar /200 psi
Indication range:	Oxygen, Argon, Hydrogen 0 - 315 bar / 0-4570 psi
Outlet pressure:	0 - 20 bar / 0 - 290 psi
Flow:	max. 600 Nm^3/h / 350 SCFM
Indication range:	Oxygen, Argon, Hydrogen 0 - 25 bar / 0-360 psi
Weight:	4,2 kg / 9,7 lbs
Sealing material:	PTFE
Diaphragm material:	Butyl rubber
Piston sealing:	Silicon rubber 80° IRH
Inlet:	manual cylinder connection DIN 477-5
	for 300 bar/4500 psi
	Oxygen + Argon: W 21,8 x 1/14"
	Hydrogen: W 21,8 x 1/14" LH
Outlet:	tube end 23,7 x 2,85 stainless steel

Order code

Type	Inlet pressure	Inlet conn.	Outlet pressure	Gas type
MR 60	**G**	**DIN**	**20**	**N2**
MR 60	G = 300 bar / 4300 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 - 20 bar / 0 - 290 psi	Nitrogen Argon Oxygen

Single-stage, purity max. 5.0, inlet pressure 40 bar / 600 psi (N_2), 30 bar / 430 psi, outlet pressure range 0 - 30 bar / 435 psi (N_2), 0 - 16 bar / 235 psi

Highlights

- **For laser process gases**
- **For high flow**
- **For constant supply pressure at the point of use**
- **Pressure gauge in safety version acc. to EN 562**
- **Relief valve at the outlet protects user and applications**

Features

This Single-stage regulator includes an outlet pressure gauge, inlet ball shut-off valve and it can be mounted onto walls.

Application

To guarantee constant inlet pressure for laser process gas supply even when supply pressure during gas stock diminishing increases, this second pressure stage regulator is necessary. Mounting takes place immediately at the inlet of the laser machining device. The EMD 100-01 nitrogen version is used for high pressure cutting (inert gas fusion cutting) as well as oxygen cutting of metals with the hydrogen version, and for inert gases (Ar/He).

Technical data

Body:	CW 617 CuZn40Pb2
Housing:	zinc alloy Zn Al3
Housing sealing:	NBR 70° IRH
Seat sealing:	Chloroprene rubber 80° IRH
Piston sealing (for N2):	silicon rubber 80° IRH
Diaphragm (for O2):	EPDM
Ball valve sealing:	PTFE, chambered
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Performance:	see chartst page 97 -100
Dimensions (WxHxD):	120 x 300 x 150 mm
Inlet:	G1/2" f
Outlet:	G3/8" f

Order code

Type	Material	Inlet pressure	Outlet pressure	Outlet conn.	Gas type
EMD 100-06	**B**	**E**	**30**	**CL22**	**N2**
EMD 100-06	B = brass	E = 40 bar/600 psi E30 = 30 bar/435 psi	30 = 0 - 30 bar/ 0 - 430 psi 16 = 0 - 16 bar/ 0 - 235 psi	0 CL22	Nitrogen Argon Helium

Outlet: (expl.: 0 = without, CL22 = tube fitting 22 mm, others on demand)

Point-of-use shut-off valve, purity max. 5.0, inlet pressure 40 bar / 600 psi

Highlights

- **For laser process gas control material processing**
- **For high flow**
- **Safety gauges acc. to EN 562**

Features

This device, built of a ball valve and a subsequent pressure gauge, may be wall mounted close to the laser.

Application

The EMD 50-06 is used as a shut-off valve for constant flow tank supply.

Technical data

Housing:	brass 2.0402 CuZn40Pb2
Bonnet:	zinc alloy Zn Al3
Bonnet sealing:	NBR 70° IRH
Ball valve sealing:	PTFE, bonnet-gasket
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Gauge indication range:	0 - 40 bar/0 - 580 psi
Inlet:	G1/2" f
Outlet:	G3/8" m

Order code

Type	Material	Inlet pressure	Inlet conn.	Outlet conn.	Gas type
EMD 50-06	**B**	**E**	**DIN**	**CL22**	**N2**
EMD 50-06	B = brass	E = 40 bar/600 psi	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 CL22	Nitrogen Oxygen Carbon dioxide

Outlet: (expl.: 0 = without, others on demand)

Single-stage, for high pressure tank supply, purity max. 5.0, inlet pressure 33 bar / 480 psi, outlet pressure O2: 18 bar / 260 psi, N2: 29 bar / 420 psi

Highlights

- **For laser material processing**
- **High flow**
- **Low pressure drop between upper and lower pressure level**

Features

This gas panel with control regulator and main pressure regulator is protected by a zinc coated steel housing. This gas panel is designed for tank gas supply with high flow max. 150 Nm3/h and pressure levels max. 18 bars for oxygen and 29 bars for Nitrogen indicated by an outlet pressure gauge. Improper pressure level is controlled by a relief valve actuating at 19/32 bars. Flow is controlled by ball valves at the outlet and inlet.

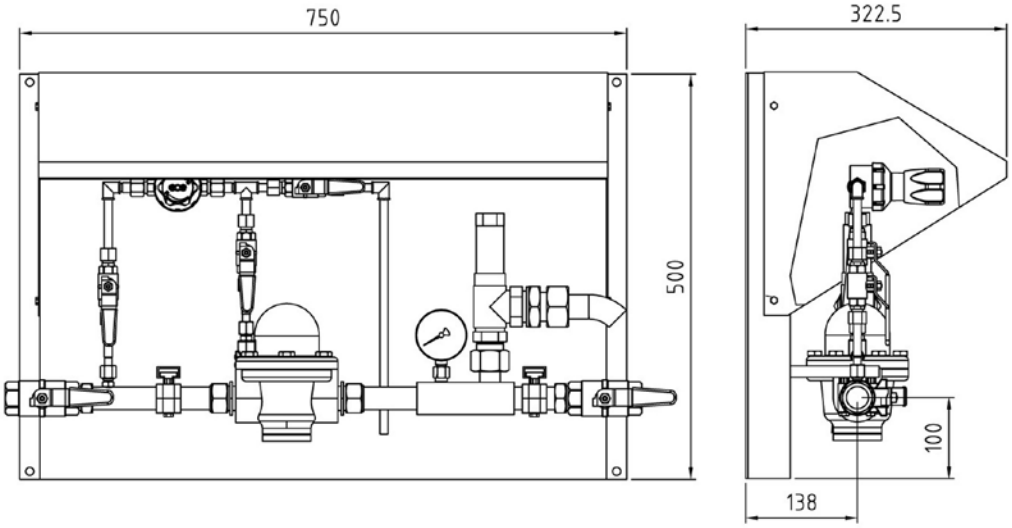
Application

This panel supplies extreme high gas flow at a constant pressure level for oxygen and nitrogen process gas and tank gas supply.

Technical data

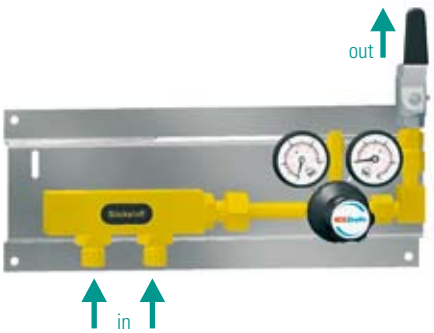
Housing:	brass 2.0402 CuZn40Pb2
Seat sealing:	EPDM
Ball valve sealing:	PTFE
Working temperature:	-20 °C to 100 °C / -4 to 210 °F
Dimensions (WxHXD):	750 x 500 x 322,5 mm
Pressure gauge:	RM 63-40
Flow:	>150 Nm3/h N2 / 88 SCFM
	performance see charts page 99 -102
Pressure level:	19 bar for O2 / 275 psi
	32 bar for N2 / 465 psi
Outlet pressure:	18 bar O2 / 260 psi
	29 bar N2 / 420 psi
Inlet/Outlet:	ball valve 1" female

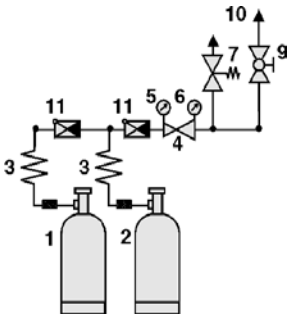
Dimensions



Order code

Type	
TDS 18	**Gas**
TDS 18	Oxygen
TDS 29	Nitrogen





1 first gas stock
2 additional gas stock
3 cylinder connection
4 pressure regulator
5 Inlet contact pressure gauge
6 Outlet pressure gauge
7 relief valve
9 Outlet ball shut-off valve
10 process gas outlet
11 non return valve

Single-stage, for cylinder or bundle laser process gas supply, purity max 5.0, inlet pressure 300 bar/ 4300 psi, outlet pressure 0 - 40 bar / 600 psi (N_2) or 0 - 16 bar / 235 psi (O_2)

Highlights

- **For process laser gas supply**
- **For high flow**
- **For alternative supply with of one or more gas cylinders or bundles**
- **Pressure gauge in safety version acc. to EN 562**
- **Relief valve at the outlet protects user and applications against unacceptable pressure rise**

Features

This gas panel with single-stage pressure regulator and inlet and outlet pressure gauge is mounted onto a stainless steel panel. The shut-off is done by an outlet ball valve. Optionally one or more pressure gas cylinders or bundle can be connected. The BMD version allows a manual change over from the emptied side onto the reserve side. Upon request this gas panel can be also equipped with a contact pressure gauge. The check valves integrated into the input connections prevent a refilling of the reserve side into the emptied side.

Application

This gas panel is used for the stationary expansion of process gases (operation gases) for the nitrogen high pressure cutting (laser fusion cutting) as well as for optical laser flame cutting (hydrogen version), and also for decompression of rare gases (Argon/Helium) from gas containers. The expansion occurs according to gas requirement optionally from one or two gas cylinders and/or bundles.

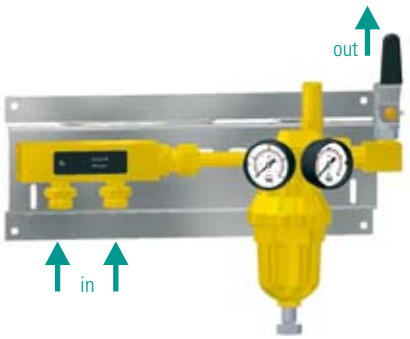
Technical data

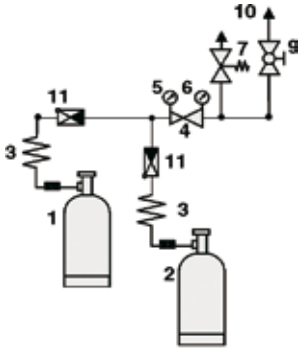
Body:	CuZn40Pb2
Housing:	zinc alloy Zn Al3
Housing sealing:	NBR 70° IRH
Seat sealing (for N2):	PA 6.6 Zytel 103 Dupont
Seat sealing (for O2):	PA 6.6 Zytel 103 Dupont
Piston sealing (for N2):	silicon rubber 80° IRH
Diaphragm (for O2):	EPDM
Ball valve sealing:	PTFE, chambered
Weight:	1,4 kg
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Performance:	see charts page 99 -102
Dimensions ((wxhxd)):	400 x 155 x 150 mm
Pressure gauge range:	0 - 400 bar, 0 - 65 bar
	0 - 5800 psi, 0 - 920 psi
Inlet:	W 21,8 x 1/14"
Outlet:	G 1/2" f EN 560

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
BSMD 100-30	**B**	**G**	**16**	**DIN**	**CL22**	**N2**
B SMD 100-30	B = brass	G = 300 bar/4300 psi	16 = 0 - 16 bar/235 psi (O_2) 40 = 0 - 40 bar/600 psi (N_2)	DIN ANSI AFNOR NBN BS 341 CGA NEN UNI	0 CL22	Nitrogen Argon Helium

Outlet: (expl.: 0 = without, CL22 = tube fitting 22 mm, others on demand





1 First gas stock
2 Additional gas stock
3 High pressure hose
4 Pressure regulator
5 Inlet pressure gauge
6 Outlet pressure gauge
7 Relief valve
9 Outlet ball valve
10 Process gas outlet
11 Check valve

Single-stage, for cylinder or bundle laser process gas supply, purity max. 5.0. inlet pressure 300 bar / 4300 psi, outlet pressure 0 - 50 bar / 600 psi (N_2) or 0 - 16 bar/235 psi (O_2)

Highlights

- **For material processing with laser process gas**
- **For high flow > 225 Nm³/h (132 SFCM) at 40 bar (580 psi) working pressure**
- **Alternatively connected to 1 or 2 cylinders or bundles**
- **Optional connectable to gas tank**
- **Inlet pressure 300 bar (4500 psi) N_2 / 230 bar (3300 psi) O_2**
- **Outlet pressure 0 - 50 bar (0 - 550 psi)**

Features

This single-stage gas panel, mounted on a stainless steel panel, consists of an inlet and an outlet pressure gauge, an outlet shut-off ball valve and two inlet connections (one could be closed by plug). The BMD version (both inlets connected) allows manual change over from the empty side to the still full one. The inlet connection integrated check valves prevent back flow. Optional contact gauges serve a gas lack monitoring function.

Application

This gas panel supplies high flow process high pressure cutting gas (laser melt-cuttings) inside a central gas supply system. Alternatively 1 or 2 gas cylinders or bundles and even a gas tank for high flow supply may be connected.

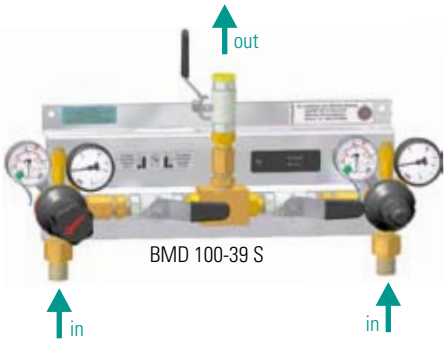
Technical data

Housing:	brass 2.0402 CuZn40Pb2
Seat seal (N2):	PA 6.6 Zytel 103 Dupont
Seat seal (O2, Ar, CO2):	PTFE
Piston seal (N2)::	Silicon rubber 80° IRH
Diaphragm (O2, Ar, CO2):	Butyl
Ball valve seal:	PTFE
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Performance:	see charts page 99 -102
Dimension (WxHxD):	420 x 360 x 155 mm
Pressure gauge indication:	0 - 400 bar (0 - 5800 psi) 0 - 65 bar (0 - 943 psi)
Inlet connection:	W 21,8 x 1/14"
Outlet:	ball valve G 3/4" female

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Version	Gas type
SMD 100-HF	**BC**	**F**	**50**	**DIN**	**T**	**N2**
SMD 100-HF	BC = brass	F = 230 bar/3300 psi G = 300 bar/4300 psi	50 = 0 - 50 bar / 0 - 720 psi	DIN	T = gas tank F = cylinder bundles	Nitrogen Oxygen Carbon dioxide

Outlet: (example.: V0 = without, others on demand)
You need one or two high pressure hoses to connect the panel to the gas stock. Please look to "Accessory".



Single-stage, for cylinder or bundle laser process gas supply, purity max. 5.0, inlet pressure 300 bar / 4300 psi, outlet pressure 40 bar / 600 psi (N_2) or 16 bar/235 psi (O_2)

Highlights

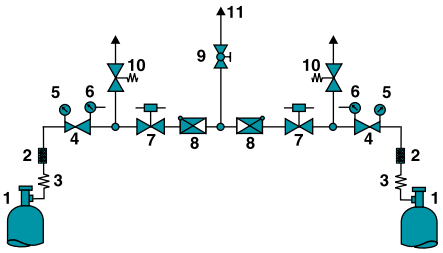
- **For high flow process laser gas supply**
- **Continuous gas supply with semiautomatic change over**
- **Optional exhaust gas piping (BMD 100-35S)**
- **Acoustic and optical gas leakage monitoring via contact pressure gauges and signal device**

Features

This gas panel with semiautomatic change over is mounted onto a stainless steel panel and consists of two one-stage pressure regulators with inlet and outlet pressure gauge. Check valves on both sides prevent the reflux of gas into the empty side. The user is protected from making operating errors by clear display and operator control functions.

Application

This gas panel is used to process such gas as nitrogen, hydrogen as well as rare gases (Argon/Helium) from cylinders or bundle batteries for the optical laser material processing. It is to be used, when the central gas supply may not be interrupted.



1 Cylinder connection
2 Filter
3 Convoluted hoses
4 Pressure regulator
5 Inlet pressure gauge
6 Outlet contact pressure gauge
7 Solenoid valve
8 Check valve
9 Outlet ball shut-off valve
10 Relief valve
11 Process gas outlet

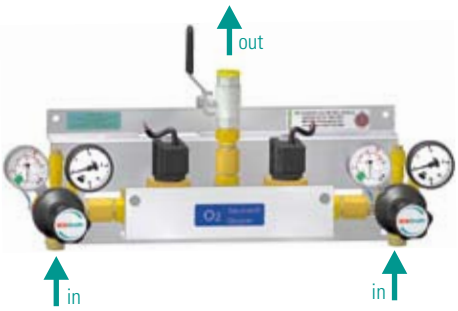
Technical data

Body:	brass 2.0402 CuZn40Pb2
Housing:	zinc alloy Zn Al3
Housing sealing:	NBR 70° IRH
Seat sealing (for N_2):	PA 6.6 Zytel 103 Dupont
Seat sealing (for O_2):	PA 6.6 Zytel 103 Dupont
Piston sealing (for N2):	Silicon rubber 80° IRH
Diaphragm (for O_2):	EPDM
Ball valve sealing:	PTFE, chambered
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Performance:	see charts page 99 -102
Dimensions (WxHxD):	400 x 180 x 170 mm
Pressure gauge range:	0 - 400 bar, 0 - 60 bar
	0 - 6000 psi, 0 - 850 psi
Inlet:	21,8 x 1/14"
Outlet:	ball valve G 1/2" female

Order code

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
BMD 100-39S	**B**	**G**	**16**	**DIN**	**CL22**	**N2**
BMD 100-39 S (without exhaust gas piping)	B = brass	G = to 300 bar/4300 psi	16 = 16 bar / 235 psi (O_2)	DIN	0	Nitrogen
			40 = 40 bar / 600 psi (N_2)	ANSI	CL22	Argon
BMD 100-35 S (with exhaust gas piping)				AFNOR		Helium
				NBN		
				BS 341		
				CGA		
				NEN		
				UNI		

Outlet: (expl.: 0 = without, CL22 = tube fitting 22 mm, others on demand)
To connect gas panels to the gas supply a spiral tube or flexible hoses are necessary. Please pay attention to "Accessories".



Single-stage, for cylinder or bundle laser process gas supply, purity max. 5.0, inlet pressure 300 bar / 4300 psi, outlet pressure 0 - 40 bar/ 600 psi (N_2) or 0 - 16 bar/ 235 psi (O_2)

Highlights

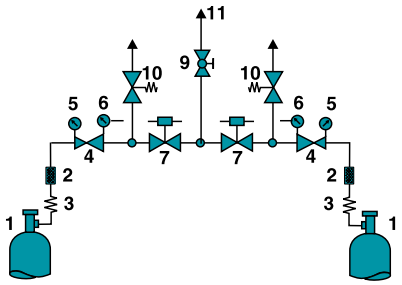
- **For high flow process laser gas supply**
- **Continuous gas supply with automatic change over**
- **Solenoid valve guarantee a maximum of exhaustion of the gas containers**
- **Acoustic and optical gas leakage monitoring via contact pressure gauges and signal device**

Features

This gas panel with automatic change over is mounted onto a stainless steel panel and consists of two one-stage pressure regulators with inlet and outlet pressure gauge, a switch unit with two magnetic valves including control unit and signal monitoring. In each case, after falling below boundary values (at the pressure gauges preset delay period) gas supply will be changed over to the full cylinder. Check valves on both sides prevent the reflux of gas back into the empty side. The user will be protected against operating errors by clear display and operator control functions.

Application

This gas panel is used to process gas as nitrogen, hydrogen as well as rare gases (Argon/Helium) from cylinders or bundle batteries for the optical laser material processing. It will be used always, when the central gas supply may not be interrupted.



1 Cylinder connection
2 Filter
3 Convoluted hoses
4 Pressure regulator
5 Inlet pressure gauge
6 Outlet contact pressure gauge
7 Solenoid valve
9 Outlet ball shut-off valve
10 Relief valve
11 Process gas outlet

Technical data Pressure Regulator

Body:	brass 2.0402 CuZn40Pb2
Housing:	zinc alloy Zn Al3
Housing sealing:	NBR 70° IRH
Seat sealing (for N2):	PA 6.6 Zytel 103 Dupont
Seat sealing (for O2):	PA 6.6 Zytel 103 Dupont
Piston sealing (for N2):	silicon rubber 80° IRH
Diaphragm (for O2):	Neoprene
Ball valve sealing:	PTFE, chambered
Working temperature:	-20 °C to 50 °C, -4 °F - 148 °F
Performance:	see charts page 99 -102
Dimensions (WxHxD):	400 x 180 x 170 mm
Pressure gauge range:	0 - 400 bar, 0 - 60 bar, 0 - 6000 psi, 0 - 850 psi
Flow:	see performance data
Inlet:	21,8 x 1/14"
Outlet:	ball valve G 1/2" female

Technical data Control Unit

Power supply:	220 V, 50 Hz
Max. gas pressure:	50 bar / 725 psi
Working temperature:	0 to 55 °C / 157 °F
Dimensions (wxhxd):	200 x 120 x 95 mm
Signal lamps:	yellow: the actual connected gas container red: gas supply run out green: power supply OK
Entry keys:	manual selection gas container A manual selection gas container B acceptance of trouble/alarm

Order code

Type	Material	Outlet pressure	Outlet	Gas type
BMD 100-39	**B**	**G**	**V22**	**N2**
	B = brass	**E** = 0 - 40 bar / 60 0 psi (N_2)	**0** = without	Nitrogen
		D = 0 - 16 bar / 235 psi (O_2)	**CL22**	Oxygen

Outlet: (expl.: 0 = without, CL22 = tube fitting 22 mm, others on demand)
To connect gas panels to the gas supply a spiral tube or flexible hoses are necessary. Please pay attention to "Accessories".

Major references and countries for GCE equipment

AUDI
BOSCH
DAIMLER CHRYSLER
FORD
German Automobile Club
HONDA
HORIBA
IAV
MAGNETI MARELLI
NISSAN
OPEL
SUZUKI
VDO
VOLKSWAGEN

Belgium
Germany
Hungary
South Afrika
Turkey

Point-of-use cupboards

Delivery range

- **Planning**
- **Point-of-use cupboards**
- **Central gas supply**
- **Tubing**

GCE's customer service

In the planning stage GCE supports
planning engineers,
operators and users,
manufacturer of analysis plants,
general enterprises,
building offices.

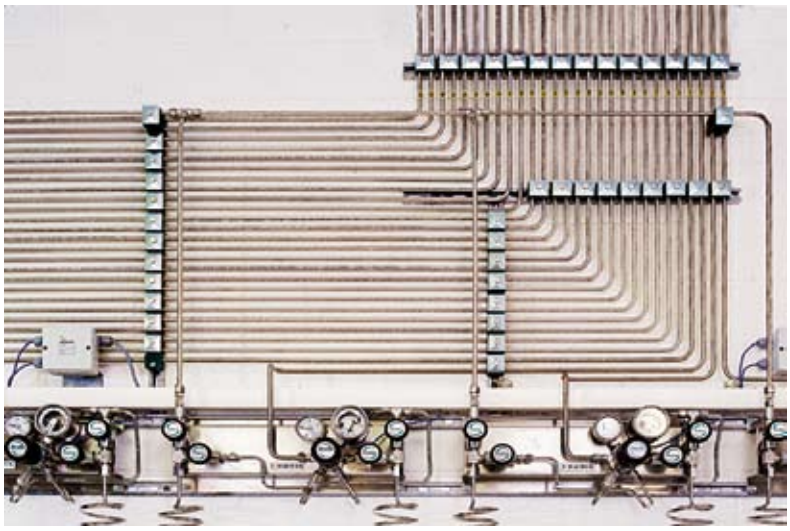
On the basis of long-standing experience GCE gives support for determination and organization of first and second pressure stage gas supply device, tube and tube housing, cylinder stock rooms and monitoring device.

Application areas

- **Combustion engine research and development**
- **Catalyst development and production**
- **Development of injection systems**
- **Control element research**
- **Combustion research**
- **Ignition system development**
- **Exhaust gas measuring**

Cupboards with integrated gas lack signalling

Central gas supply device



Pressure reduction unit with 18 lines, for calibration gas supply, purity max. 6.0, in 19" rack technology.

Highlights

- **18 adjustable pressure lines**
- **Fine tuneable pressure levels**
- **Very small closing pressures**
- **High resistance against burst and corrosion due to diaphragm material Hastelloy**
- **Brass and stainless steel version, electro-polished stainless steel version for low-emission applications**
- **Seat seal PCTFE/PVDF**
- **High surface quality and purity**
- **Easy cleaning due to minimized dead space**

Features

Single-stage pressure regulator unit with 18 lines, built with analysis version regulators series 3000, guarantee low closing pressures. Precise and fine tuneable pressure adjustment is combined with outlet control by pressure transducers. The controlling of the gas supply with single solenoid valves enables full automation with sensors and solenoid valve control. All parts are integrated into a 19" 3HE rack and temperature controlled by integrated ventilator. Internally the rack is assembled with stainless steel tubes. The electric circuits are combined with grounding connection. The connection to the measuring device is done by tube fittings or quick couplings.

Application

As second pressure reduction stage in calibration gas supply, for example for exhaust measuring systems in the automotive industry.

Technical data

Housing:	19" rack, three altitude units (3 HE)
Ventilation:	11 ventilators
Solenoid valves:	NC; DN3
	power supply: 24V DC
	housing material : stainless steel
	seat sealing: FKM/ FFKM/ EPDM
Pressure regulators:	housing material: stainless steel or brass
	diaphragm: Hastelloy C
	sealing to atmosphere: PCTFE
	seat sealing: FKM/ FFKM/ EPDM
Inlet pressure:	max. 12 bar (175 psi)
Outlet pressure:	0,1 – 2,2 bar (1,5 - 32 psi)
Leakage rate:	$< 10^{-8}$ mbar l/sec He (to atmosphere)
	$< 10^{-6}$ mbar l/sec He (seat)
Sensors:	pressure range: 0 – 16 bar (0 - 235 psi)
	indicating accuracy: ± 0,25%
	power supply 12V – 35V DC
	material: stainless steel
Outlet connection:	tube fitting, or QC (Quick coupling for inlet and outlet, body and connector material stainless steel, color indication)
Internal tubing:	1/8" tube stainless steel
External tubing:	2 × crimping plug connection, permission acc. to BQF to DBL 9666-e, internal and external grounding
Quality level:	function test and leakage test 12 hours factory made, pressure test with Helium and leakage test on site

Order information

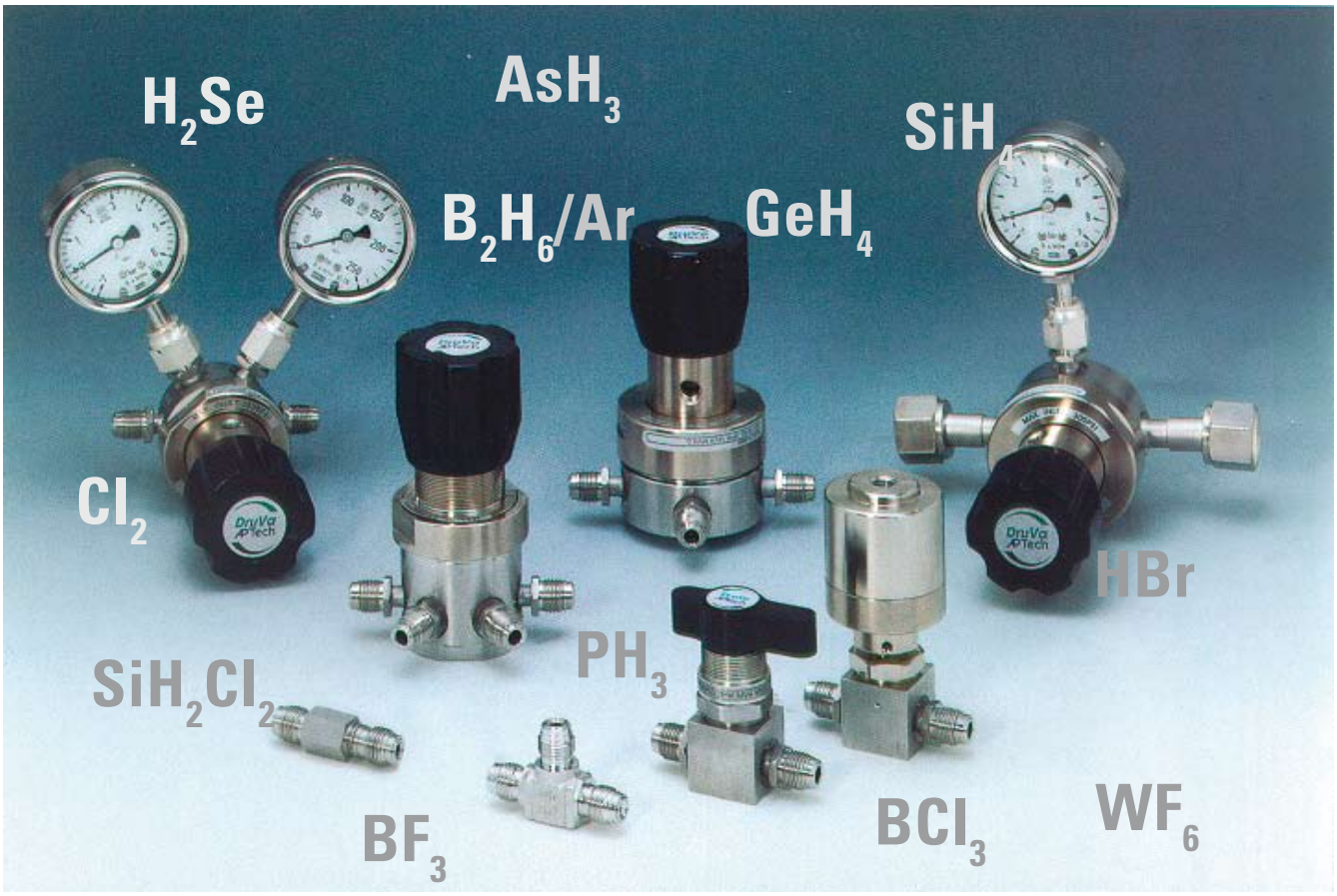
Please contact our sales department:
GCE GmbH
Tel: +49 (0)6221/ 79 21- 0
Fax: +49 (0)6221/ 79 21- 32
info@druva.de

Pressure regulators, valves and gas panels for micro- and optoelectronic applications

Commencing its own product range for Ultra high purity gases today GCE exclusively represents AP Tech products throughout Europe. Central warehousing in Eppelheim allows quick availability of key products for various semiconductor projects. GCE offers complete service including final assembly, maintenance, repair and testing in its class 10 - clean rooms.

Sales, service and support

for Ultra-high purity gas equipment purity above 6.0



Since its foundation in 1987 the success of APTech is based on a consistent product line and marketing strategy: innovative products of highest quality are complemented by exceptional technical background and customer-oriented service. APTech is the global market leader for gas handling products in the semiconductor field and has furthermore an outstanding market position in Southeast Asia and Europe.

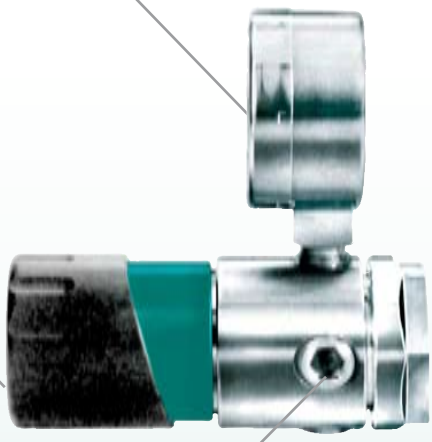
AP Tech's Quality Policy

It is the policy of APTech to efficiently design, manufacture and market quality products that are safe, reliable and that meet or exceed customers' requirements. APTech is oriented to providing quality, service and customer satisfaction and recognizes that quality products have a direct effect on customers' satisfaction.

EMD 3000

Pressure gauges in safety version according to DIN EN 562

EMD 400



Ergonomic, clean handling knobs with optional color coded gas specific hand-wheel labels.

Inlet from rear, bottom or from top. Outlet to top or front

Its mono block design eliminates dead space and reduces the number of potential leak points to a minimum

Metal diaphragm metering and shut-off valves protected by sinter filters 100 µm particle size.

State-of-the-art fittings and connection technology with G 3/8" or tube fitting inlet connection and outlet tube fittings.

Single stage regulators at high performance.
Inlet pressure 40 bars.
Outlet pressure range 0,1 - 10,5 bars / 7 - 150 psi, analytical version 0,1 - 2,2 bar / 1,5 - 33 psi.

Available in different versions and combined with angle and straight version regulating and shut-off valves, this results in a unique adaption and makes these modules suitable for the most common laboratory applications and for lab furnitures of all manufacturers: suspended versions, bench mounting, surface and inset wall assembly or mounted on plates.

Basic design aspects*

Material
stainless steel 316L (1.4404) specially cleaned and electro-polished or brass 2.0401.26.

Sealing material
Seats: FKM and FFKM with stainless steel, FKM and EPDM with brass.
Seals: PCTFE with stainless steel and PVDF with brass. This depenps on gas specification and purity requirements. Material is specified in “Technical data“.

Inner parts
Low maintenance, service friendly regulator unit, particle filter 10 µm SS-filament at the inlet.

Diaphragm
Good protection against burst and corrosion due to diaphragm material Hastelloy.

Performance data
See flow charts, for different pressures please contact GCE.

Guaranteed leakage rate
< 1x10 $^{-9}$ mbar l/s Helium.

Purity
Cleanness and leak tightness according to the demand of high purity < 6.0 applications.

Working temperature
-20 °C to +70 °C / -4 to 160 °F.

Inlet / outlet connections
Inlet G 3/8", others with adapters. Outlet tube fitting for 6 mm tube, others on demand.

*Different data to series specification are listed in the product specific "Technical Data".

built in version

wall mounted

suspended version

bench mounted

For inert, flammable and corrosive gases and gas mixtures, purity max. 6.0, inlet pressure 40 bar / 600 psi, analysis version 10 bar / 145 psi, outlet pressure range 0,1 - 10,5 bar / 1 - 150 psi

Highlights

- **Laboratory demand conform system design achieved by optimizing the component relating properties**
- **ECD-suitable**
- **Analysis version available (EMD 3004)**

Features

Due to it's modular design with/without shut-off or regulating valve and manifold inlet/outlet configurations, the EMD 3000 can be delivered in various configurations. Even surface colour may be adapted to customer's demand.
Metal diaphragm design, click valves and a gas consistent sealing system make it an ideal choice for all HP laboratory gases including ECD applications. The mono block design eliminates any dead space and reduces the number of connections/fittings to just the inlet and outlet port. Inlet might be configured from top or rear, outlet from to bottom, top or front (via metering valve with outlet nozzle).

Application

Designed as a Point-of-use pressure regulator the single-stage EMD 3000 series eliminates the frequent supply pressure changes in central gas supply sy stems caused by pressure drop. It provides a constant delivery pressure for instruments and analyzers.
With its unique adaption system the EMD 3000 make it suitable for the most common laboratory applications and for lab furnitures of all manufactures. The bench mounting design allows easy installation on benches and worktables. Wall mounting allows easy assembly to walls and front panels. Combined with adapters it may also be mounted suspended on supply channels or ceilings. All operative elements are in each case ergonomically located at its front.

Technical data

Body:	stainless steel 316L (1.4404) specially cleaned and electro polished or brass 2.0401.26
Diaphragm:	Hastelloy C 276
Gauges:	safety gauge acc. to EN 562, 40 mm, dual scale
Weight:	1,9 kg / 3.5 lbs (w/o turret)
Counter top hole:	13/16“ diameter
Panel installation size:	10x5,6x4 cm / 4x2.2x1.6" (h x w x d)
Wall installation size:	14x6,4x4 cm / 5.5x2.5x1.6" (h x w x d)
Panel thickness:	max. 5 mm - 3/16"
Performance:	see charts page 99 -102

Other inlet/outlet options on request

Order code

Type	Version	Valves	Material	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
EMD 3000	**W**	**10**	**BC**	**4**	**0 BC**	**CL6 BC**	**gas**
EMD 3000 = standard EMD 3004 = analysis version	B = built-in version W = wall mounted S = suspended version T = bench mounted	10 = complete 08 = without shut-off valve 06 = without regulating valve 04 = only valve block	BC = brass coated SS = stainless steel	EMD 3000: **1** = 0,1 to 1 / 1 - 15 psi **4** = 0,2 to 4 / 3 - 60 psi **10** = 0,5 to 10,5 bar / 7 - 150 psi EMD 3004: **2,2** = 0,1 - 2,2 bar / 1,5 - 32 psi **4** = 0,5 - 4 bar / 7 - 60 psi	0 = without CL6, CL8 CL1/8, CL3/8 BC = brass SS = stain-less steel	0 = without CL4, CL6, CL8 CL 1/4, CL 1/8" NO 1/4" NO 1/8" BC = brass SS = stainless steel	please specify

Outlet expl.: CL6 = tube fitting 6 mm, others on demand

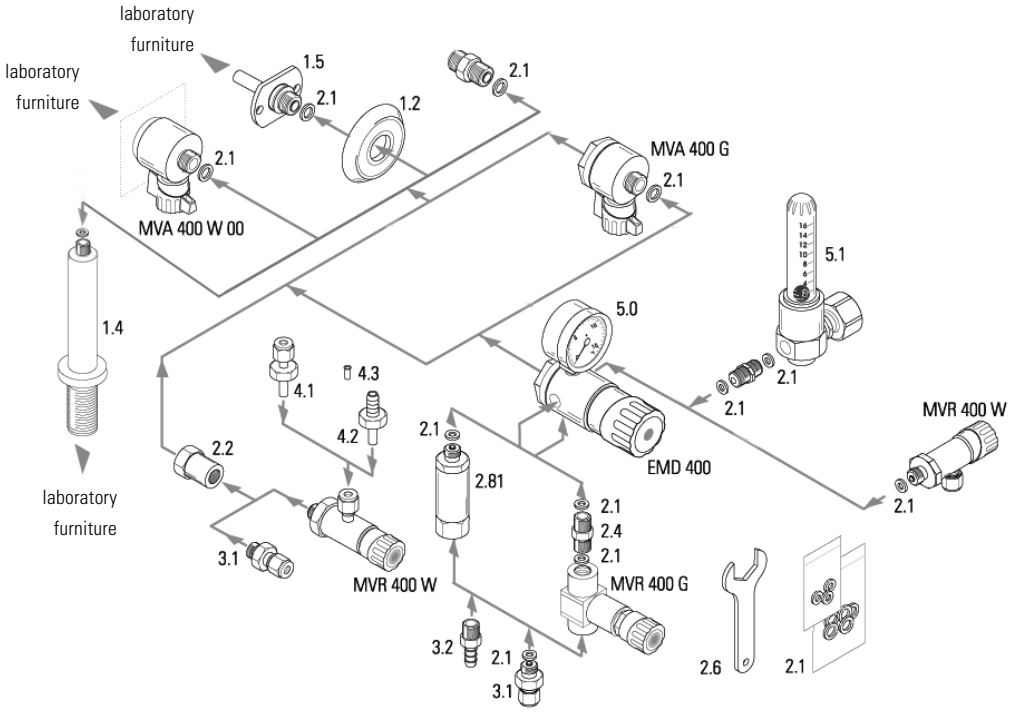

EMD 400-01


MVA 400 W


MVA 400 G


MVR 400 W


MVR 400 G



No.	Type	Function	Material	Art.-No.
1.2	Closing cap	Cap to cover the wall connector (1.5).		H 19 006 625
1.3	Adapter fitting G 3/8" m > G 3/8"m	Threaded adapter fitting to connect shut-off valve resp. pressure regulator and other female threaded outlets G 3/8"	stainless steel	H 23 303 701
1.4	Upright pipe conn. G 1/4" f > G 1/4"m	Connector for table mounting		H 28 590 603
1.5	Wall connector 8 mm > G 3/8"m	Mounting LabSystem components at laboratory furniture walls	brass	H 23 303 403
1.51	Wall connector NPT1/4" f > G 3/8"m	Mounting LabSystem components to laboratory furniture walls	brass stainless steel	H 23 303 203 H 23 303 201
2.1	Sealing			
	14,0 x 9,0 x 2,0 mm (G 3/8")	for brass version	PVDF	H 09 010 316
	11,2 x 5,5 x 1,5 mm (G 1/4")		PVDF	H 09 008 919
	14,0 x 9,0 x 2,0 mm (G 3/8")	for stainless steel version	PCTFE	H 09 010 309
	11,2 x 5,5 x 1,2 mm (G 1/4")		PCTFE	H 09 011 809
	11,2 x 5,5 x 1,5 mm (G 1/4")		PCTFE	H 09 008 909
	11,2 x 5,5 x 2,1 mm (G 1/4")		PCTFE	H 09 009 009
2.2	Adapter fitting G 3/8"f > G 1/4" f	Reducing adapter to connect the control valve with the wall connector (1.1)	brass	H 23 302 253

No.	Type	Function	Material	Art.-No.
2.4	Male connector G 1/4"m > G 1/4"m	To connect the control valve MVR 400 G or the flow meter SVM 400 with the pressure regulator EMD 400	brass stainless steel	A 000 105 A 000 104
2.6	Spanner, wrench size 36	Special LabSystem Spanner for EMD 400, ZB 400, MVE 400E and MVE 400G.	steel plated	H 11 006 405
2.81	Flame arrestor FS 400 G 1/4"m > G 1/4" f	For the use of acetylene	stainless steel	L 000 110
3.1	Tube fitting for EMD 400 G 1/4" > tube	Outlet screwed connection for EMD 400.	brass 1/8" brass 6 mm brass 10 mm stainless steel 1/8" stainless steel 6 mm stainless steel 10 mm	A 000 121 A 000 123 A 000 125 A 000 120 A 000 122 A 000 124
3.2	Hose nozzle fitting for EMD 400 G 1/4" > hose nozzle	Outlet screwed connection for EMD 400, outer diameters of hoze nozzles = inner diameters of hose.	brass 4 mm brass 6 mm brass 8 mm	H 03 825 573 H 03 825 673 H 03 825 773
4.2	Hose nozzle fitting for SVR 400 W G 1/4" > hoze nozzle	Outer diameters of hoze nozzles = inner diameters of hose.	brass 4 mm brass 6 mm brass 8 mm stainless steel 4 mm stainless steel 6 mm	H 03 825 203 H 03 825 303 H 03 825 403 H 03 825 201 H 03 825 301
4.3	Supporting tube 6 x 4 mm	Enables the use of PE- resp. PTFE-hoses in tube fittings	stainless steel	H 03 804 401
5.0	Pressure gauge RM 50 inlet: G 1/4"m	Spring-tube gauge, rating diameter 50 mm, metallic housing, precision class 2.5.	stainless steel brass	see accessory
5.1	Flow meter SVM 400, without adapter G 1/4" f > G 1/4" f	Flow indication with fine adjustment valve 0 - 60 l /h air 0 - 120 l /h air 0 - 960 l /h air 0 - 1500 l /h air		on demand

Legend:
f = female thread, **m** = male thread
G 1/4" f **>** G 1/4" m means: **inlet** G 1/4" female thread and **outlet** G 1/4" male thread.

Available accessory

Large range of mounting and assembling accessory (see Accessory), especially tube fittings and hose adaptors.

EMD 400-01

EMD 400-06
Plate mounted,
inlet from top

EMD 400-42
Wall assembly,
inlet from rear

EMD 400-41
Bench version

Single-stage,
for inert, reactive, flammable and oxidizing gases and gas mixtures,
purity max. 6.0,
inlet pressure 40 bar / 600 psi,
outlet pressure range 0,1 - 10,5 bar / 1 - 150 psi

Highlights

- **ECD-suitable**
- **Great variety of assembly possibilities in laboratory furniture due to the modular design of the LabSystem**
- **Gas type specific colour indication labels according to DIN 13792**
- **Analysis version available**

Features

Standard version regulator with gauge, inlet at rear, outlet downwards. May be combined with inlet shut-off valve MVA 400, wall connector, metering valve MVR 400G and MVR 400W, different gauges and diverse accessory (see previous pages).

Application

For wall, plate, suspended and bench mounting, with great variety of combinations, covering any laboratory gas supply demand.

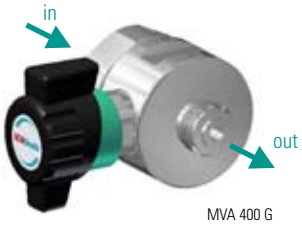
Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro
	polished or brass CW614 (CuZn39Pb3) specially cleaned,
	chrome-plated
Performance:	see charts page 99 -102
Pressure gauge range:	0 - 2,5/6/16 bar (0 - 35/85/ 235 psi)
	type 404: 0 - 3 / 6 bar (0 - 45/85 psi)
Weight:	0,8 kg
Inlet - outlet:	G 3/8" f - G 1/4" f

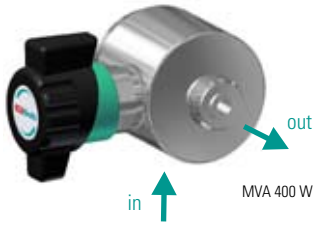
Order code

Type	Variation	Material	Outlet pressure	Outlet conn.	Gas type
EMD 400	**-01**	**BC**	**1**	**CL6 BC**	**gas**
EMD 400 = standard **EMD 404** = analysis version	**-01** = standard **-06** = plate mounted **-41** = bench version **-42** = wall assembly	**BC** = brass **SS** = stainless steel	EMD 400: **1** = 0,1 to 1 / 1 - 15 psi **4** = 0,2 to 4 / 3 - 60 psi **10** = 0,5 to 10,5 bar / 7 - 150 psi EMD 404: **2,2** = 0,1 - 2,2 bar / 1,5 - 32 psi **4** = 0,5 - 4 bar / 7 - 60 psi	0 = without CL4, CL6, CL8 CL 1/4, CL 1/8" NO 1/4" NO 1/8" BC = brass SS = stainless steel	please specify

Outlet expl.: CL6 = tube fitting 6 mm, others on demand



MVA 400 G



MVA 400 W

Straight or angle shape, for inert, reactive, flammable and oxidizing gases and gas mixtures, purity max. 6.0., inlet pressure 40 bar / 600 psi.

Highlights

- **Simple opening by quarter turn, engaged shut-off function**
- **Clearly visible open / closed position**
- **Great variety of assembly possibilities in laboratory furniture due to the modular design**
- **Gas type specific colour indication labels according to DIN 13792**

Features

These shut-off valves are operated by a quarter turn, engaged 90° shut-off function. This results in a clearly visible open/closed position.
The MVA 400 G is a straight version with inlet and outlet G3/8". The integrated release union-nut coupling of the 400 G enables the mounting of the valve in each position desired by using only one sealing. The result is a fast and tight connection. The inlet connection is simply made from above, below, from left or right by turning the valve alternatively to the four directions.
The MVA 400 W is a angle shaped version with inlet at side (G3/8" male) and outlet in line (G1/4" female). The MVA 400 W has two screw borings M6 with a distance of 25 mm at the back side to facilitate the mounting of the valve on a panel which can be fixed (deliverable accessory) directly at the laboratory wall.

Application

These shut-off valves are components of the LabSystem and works together with the pressure regulator EMD 400 as a supply pressure regulator at the point of use. Great variety of assembly possibilities supplied with the other LabSystem components.

Technical data

Body material:	stainless steel 316L (1.4404) specially cleaned and electro polished or brass 2.0401.26 specially cleaned, chrome-plated
Nominal width:	DN 5
Leakage rate:	< 1x10 $^{-8}$ mbar l/s Helium
	MVA 400 G
Kv-value:	0,2
Seat sealing:	PCTFE
Weight:	ca. 0,6 kg
Inlet/outlet:	G 3/8" f x G 3/8" m
MVA 400 W	
Kv-value:	0,25
Seat sealing:	PCTFE
Weight:	ca. 260 g
Inlet/outlet:	G 3/8" f x G 1/4" m

Order code

Type	Material	Gas type
MVA 400 G	**BC**	**gas**
MVA 400 G = straight shape	**BC** = brass	please specify
MVA 400 W = 90° angle shape	**SS** = stainless steel	

MVR 400 W

MVR 400 G

For inert, reactive, flammable and oxidizing gases and gas mixtures, purity max. 6.0, inlet pressure 40 bar / 600 psi

Features

Diaphragm metering valves as a component of the LabSystem.

Highlights

- **Fine tuning capability**
- **Gas type specific colour indication labels according to DIN 13792**

Application

This metering valves are components of the LabSystem and serve together with the pressure regulator EMD 400 as point-of-use unit. Great variety of assembly possibilities is supplied together with the other LabSystem components.

Technical data

Body material:	stainless steel 1.4301 specially cleaned and electro-polished or
	brass 2.0401.26 specialty cleaned, chrome-plated
Diaphragm:	Hastelloy C
Nominal width:	DN 2
Inlet/outlet:	MVR 400 G: G 1/4" f / G 1/4" f
	MVR 400 W: G 1/4" m / G 1/4" f
Seat sealing:	PCTFE
Kv-value:	< 0,02
Weight:	ca. 0,25 kg

Order code

Type	Material	Gas type
MVA 400 W	**BC**	**gas**
MVA 400 W = angle shape valve	**BC** = brass	please specify
MVA 400 G = straight shape valve	**SS** = stainless steel	

Signal Box DGM-SK 2/4/6/10

Signal box

Intrinsical safe barrier

For optical and acoustic alarm monitoring, 2, 4, 6 and 10 channel version

Highlights

- **Optional Fax /SMS alarm**
- **Indication of gas lack via contact gauge**
- **Collective alarm for control room**
- **Optional EX protection (installation outside Ex-area)**
- **Fast system supervision**

Description

The GCE Gasmanagment Signal Box DGM - SK is used for optical and acoustic monitoring of alarm signals. Standard operating conditions are indicated by an enlightened green lamp. Lamp and horn check allow self testing. If one or more alarm signals are triggered (e.g. gas failure), an acoustic (buzzing noise) and an optical signal (red lamp) are emitted. The acoustic signal is acknowledged by pressing a button, the optical signal does not switch off until all malfunctions have been remedied (e.g. the gas supply has been replenished). The instrument is equipped with a collective alarm to notify a main central office, a control unit or an external signalling device.
The signal box is made inherently safe for use in the EX range by using an isolating switch device, VDE 0165. In combination with the relay box DGM- IT, individual alarms are reported by SMS and/ or Fax.

Application

The DGM- SK is used for all kinds of alarm signal, among other things for reporting alarms or hazardous conditions, for indicating levels or for monitoring drives. Monitoring of gas supply can be done by controlling the preliminary pressure or the outlet pressure (using a contact-manometer), the weight of the bottle or through monitoring rupture disks. Suitable signal transmitters for monitoring the flow are the flow switch, a plummet or a mass flow controller.
In connection with these new IT relay stations, individual faults can be selectively passed on by SMS or Fax. For every individual alarm, you can program an individual text or an SMS and also a separate target number.

Available accessories

Solenoid valve control and regulation DGM-MV, mass flow controller, cylinder scales, rupture disk, variable area flow meters, flow switch, cable monitoring.

Installation

The housing is designed to be mounted on a wall. For this purpose four mounting holes are provided in the back of the housing. These can be accessed by unscrewing the cover.

Ex protection	
Types of protection:	EEx ia IIB, EEx ia IIC, EEx ib IIB, EEx ib IIC

Output (collective alarm)	
Alarm output:	2* relay output (1 changeover contact)
Contact load:	max. 230 V~, 50 Hz, 100 VA max. 48 V, 1A

Internal alarm equipment	
Signal lamp:	LED green 5 mm
Acoustic signal:	Piezo buzzer, f = 3.3 kHz
Collective alarm:	via zero potential break contact

Ambient conditions	
Ambient temperature	max. 40 °C / 104 °F
Humidity:	0 - 95 % rel. humidity, not condensing
Housing design:	Polystyrene, colour similar to RAL 7035 (light grey)
Protection category:	IP 54
Dimensions (wxhxd):	200 x 160 x 60 mm
Installation position:	upright, outside of the Ex area!
Cable glands:	blue: 1 each of PG 9 and PG11 grey: 1 each of PG 11 and PG 13.5
EX protection:	applicable operating material in compliance with EN 50014 and EN 50020 (1977 +A1-A5)

Technical data

Connection load	
Power supply:	230 V AC, 50 Hz, 5 VA / 110 V, 50 Hz
Note:	defective fuses may only be replaced by the manufacturer

Inlets	
Signal transmitter:	zero potential, mechanical contacts, initiators which comply with DIN 19234 NAMUR
Effective direction:	NC normally closed
Connection system:	2 wires
Signal transmitter supply:	10 V max. through the instrument 10 mA max. short circuit proof
Max. load:	330 µH / 4.0 mF (EEx ib IIC), 1000 µH / 30,0 mF (EEx ib IIC)
Cable monitoring (option):	Short circuit
Connection cable cross sections:	2.5 mm² max.

Order code

Type	Power supply	Ex protection
DGM - SK 02	**220**	**0**
DGM - SK 04	220 = 220V 50 Hz	0 = without
DGM - SK 06	110 = 110V 50 Hz	Ex = with
DGM - SK 10		

Solenoid valve control and regulation, also for the Gas Management System

Highlights

- **Operates 5/10 solenoid valves**
- **On-Off via a key switch**
- **Emergency shutdown function and compound circuit**
- **Collective alarm for the control room**
- **Increased installation security**
- **Improved user-friendliness**
- **Quick system information**
- **Simple installation and operation**
- **No Ex - Version**

Available accessories

Signal box DGM - SK, relay box DGM- IT and operating terminal DGM-AX for the gas management system, contact manometer, mass controller, bottle scales, rupture disks, plummet, flow switch, cable monitoring.

Installation

The housing of the solenoid valve control is designed to be mounted on a wall. For this purpose four mounting holes are provided in the back of the housing. These can be accessed by unscrewing the cover.

Features

The DGM-MV is equipped with five/ten output channels which make it possible to control and monitor solenoid valves. Furthermore there is an input channel for emergency shutdown and two zero potential signals for a higher signal such as DDC, PLC.
As soon as voltage is applied to the solenoid valve control, the green operating LED lights up and signals that it is operational.
The MV (solenoid valves) are activated using the key switch “On” or deactivated using the key switch “Off”.
If the emergency shutdown is activated, all solenoid valves are switched off and the red emergency shutdown LED flashes. In addition, an acoustic signal is emitted which can be reset using the Reset button.

Application

The MV-05/MV-10 controls and regulates solenoid valves on individual pressure cylinders and multiple cylinder bundles. It has been constructed to be fail-safe with state-of-the-art technology and takes into account the pertinent provisions and EC guidelines. Malfunction of any solenoid valve connected is monitored to the user both optically and acoustically.

Technical data

Power supply:	230 V ~, 50 Hz, 5 VA
Fuse:	3.15 A slow-blow
Solenoid valve output:	5 * relay output with one fine fuse protection
Signal output:	2 * Relay output (1 change over contact)
Maximum contact load AC:	230 V ~, 50 Hz, 100 VA
Maximum contact load DC:	48 V , 1A
Signal lamp:	LED red, green 5 mm
Acoustic signal:	Piezo buzzer, f = 3.3 kHz
Ambient temperature:	40°C max. / 104 °F
Humidity:	0 - 95 % relative humidity, not condensing
Housing:	Polystyrene, colour similar to RAL 7035 (light grey)
Protection category:	IP 54
Dimensions:	240 x 160 x 90 mm (wxhxd)
Connection cross sections:	2,5 mm² max.
Cable glands:	13 pieces PG11

Order code

Type

DGM MV 05

DGM MV 05 = 5 channel version
DGM MV 10 = 10 channel version

Gas Safety Protection system, for controlling of special gas supply systems in laboratories, scientific education rooms and industrial facilities.

Highlights

- **Control of the shut/off position of all downstream device**
- **Control for tube burst and damage of the following gas tubing during work**
- **Control of the system for unintended pressure increase (pressure regulator or valve defect) during work.**
- **Control of the pressure reduction after setting the system out of operation.**
- **System data storage supplies fault analysis and arrangement statistics (option).**
- **Emergency stop**
- **Self monitoring of the GSPS**
- **Optional Ex-protection (installation outside Ex-area)**

Features

The control of the initial levels of all downstream device by starting ensures, that uncontrollable gas leakage is prevented. The gas tubing network is checked for tube burst and damage during work. Thus a personal hazard by operational faults is eliminated by automatic emergency stop and system control. In the same way the device checks the system for unintended pressure increase (by ex.: pressure regulator or valve is defect) or outlet pressure fluctuations. The control unit with its integrable data memory acquires a history of the system pressures, respective a statistic for security intentions and fault analysis. After setting the arrangement out of action, the device is checking the system consistently for pressure constancy and locks it if necessary automatically. With its emergency stop it is possible to integrate the GSPS in a central security network of a building management. The GSPS valves can be arranged room oriented, floor oriented or central. It is to be arranged by the security concept of the owner as well as the size of the arrangement.

Application

According to the latest Pressure Equipment Directive, the owner of a gas installation is responsible for the faultless function and tightness of the system, as well as the safety of the employees.
The GSPS not only fullfills all controlling and covering functions, complies with the given norms and security instructions, but also advances the security of the whole system with various functions. These are the reasons, why the GSPS is of particular importance especially if using toxic and flammable gases (by ex.: C_2H_2; H_2; O_2) in central gas supply systems. By continuous control, gas leakage can practically be eliminated. The expense for maintenance and inspections will be reduced by early detection of system defects, given by the continuous control.

Technical data Control unit SK

Caparison- box:	ABS – plastic (UL 94 HB) white
Dimensions:	240 x 160 x 90mm (B/H/T)
Voltage:	230 V / 50 Hz
Operation:	by foil keypad
	key switch
Display:	text display 2 x 40 signs,
	background illuminated
Outlet:	electric potential free contact
	for notice of malfunction
Cable feed:	from bottom by PG- fittings

Technical data Pressure detector

Materials:	stainless steel 1.4305 (body)
	ceramics Al_2O_3 (cut diaphragms)
	Dural (grip screw), EPDM (seal)
Inlet:	0 – 16 bar / 230 psi
Outlet:	4 – 20 mA / 2– conductor
Voltage:	12 – 36 V DC
	12 – 28 V DC (EX– version)
Protection class:	IP 67
Ex-Version:	Ex – protection
	II 1 G EEX ia lic
	T 4/4
Electrical connection:	connector M 12 x 1 (4– pole)
Mech. connection:	G1/4" EN 837-1/-3

Technical data Valve

Gases:	for all non corrosive high purity
	gases + Acetylene
Nominal width:	DN 0,5 / DN 10
Working temp.:	-30 °C to +60 °C / -22 °F to 140 °F
Materials:	brass, MS 58 (valve body), chrome-plated
	brass, MS 58 (valve body), stainless
	steel, 1.4305 (valve body)
Diaphragm:	EPDM (brass, chrome-plated)
	NBR (brass),
	Viton (stainless steel)
Connection:	G3/8" female thread
Pressure range:	0,2 – 12 bar, 0,2 – 1,5 bar
Inside cleaning:	free of oil and grease
	(US- cleaning GCE- Spez. 16.05.02
Power supply:	230V / 50 – 60Hz
Protection class:	IP 65
optional Ex-Version:	EEX m II T4
Mounting position:	any
Electrical connection:	power socket DN 43650 with
	rectifier (IP 65) connection cable,
	L=3,0m (EX- version)

Order code

Type	Connection	Material	Work. pressure	Aux Info	Type	Circuits CU
GSPS	**10**	**MV**	**120**	**0**	**GSPS-SK**	**1**
	10 = DN 10, 3/8" f **15** = DN 15, 1/2" f **20** = DN 20, 3/4" f **25** = DN 25, 1" f	**MV** = brass ni/cr plated **M** = brass **E** = stain-less steel	**120** = max 12 bar / 175 psi **15** = max. 1,5 bar /22 psi (Acetylene) **2** = max. 0,2 bar / 3 psi (natural gas)	**0** = without **EX** = adaption in EX-guarded area	**GSPS-SK =** with Control Unit **0 =** without	**1** = control unit 1 circuit **2** = control unit 2 circuit **EX** = EX – circuit, for adoption in EX- guarded area

Gas Monitoring System, main screen

Gasmonitoring system for complete function control and gas cylinder stock management of high purity gas supply systems

Highlights

- **Cost reduction by automated stock control**
- **Minimization of downtimes, caused by empty cylinders**
- **Avoidance of double entrx mistakes (e.g. gas certificate data) due to intelligent interfaces**
- **Flexibility software adaptation to the customer's processes and demand**
- **Option for integration of gas detection magnetic valve control**

Application

The Gasmonitoring System is a part of a conclusive and customer oriented gas supply concept. It satisfies both the increasing demand of cost control and higher effectiveness of work planning. Based on an automation concept GasCom is suitable for all high purity gas supply systems. With an integrated gas management module the system controls all important technical functions of a gas supply system. A cylinder storage management with tight cost control is included. That means all customer requirements regarding management and control of gas supply like parameter monitoring, control and recording, stock and cost control and order processing accessible via internet may be integrated.

Gas Monitoring System, cylinder management

Gas Monitoring System, flow, stock and pressure control

Functions

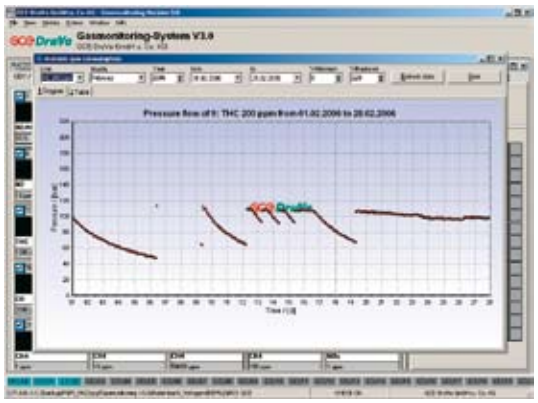
- Sensor control of cylinder, tube and point-of-use pressures
- Recording of gas cylinder data for single cylinders
- Continuous recording of incidents and measurement readings,
- Gas supply shortage detection
- Gas failure monitoring with line specific choice of pressure alarm thresholds
- System control via intranet and internet

- Gas cylinder management
- Multiple stock management

- Order processing via email connected to gas failure signal
- Automatic generation of order proposals

- Gas consumption measurement and statistical evaluation
- Single cylinder and even complete gas stock cost calculation according to the costs-by-cause principle
- Budgeting
- Backup of gas cylinder ordering contracts
- Archive function: Where was which cylinder connected at which time?

- Flexible system extensibility with automated control processes appropriate to application demand
- User interface language switching german/english



Gas Monitoring System, statistic example gas - consumption

Order information

Please contact GCE for further details.

Security cabinets, acc. to DIN EW 14 470-2, for 1 - 4 50 litre cylinders

Highlights

- **Cylinder storing in workrooms**
- **Fire and leakage protected**
- **Flexible cylinder fixing for 10l and 50l cylinders**
- **Integrated extraction air outlet on top**
- **Flexible positioning of gas panels**
- **Additional lead-throughs for sensors, cables etc.**

Features

These cabinets allow a safe and fire protection approved storing of gas cylinders in workrooms. They provide users with an optimal and increased fire protection: All cabinets are fire chamber tested in accordance with EN 14470-2 and 90 minutes fire-resistant.
You will find extraction air inlets on the top and adjusting aids to compensate for uneven floor. Further advantages: 180° max. opening angle of the wing doors, door locks in place at 0° and 90° and can be held open at 160°, cylinder retainer across the whole width of the cabinet, the distance between the cylinders and the rear panel gives plenty of space for the flexible spiral piping, a rolling ramp with low rolling edge provides high safety when maneuvering cylinders into the cabinet, cylinders are rigidly fixed in the cabinet. The cabinets are available in four sizes .

Application

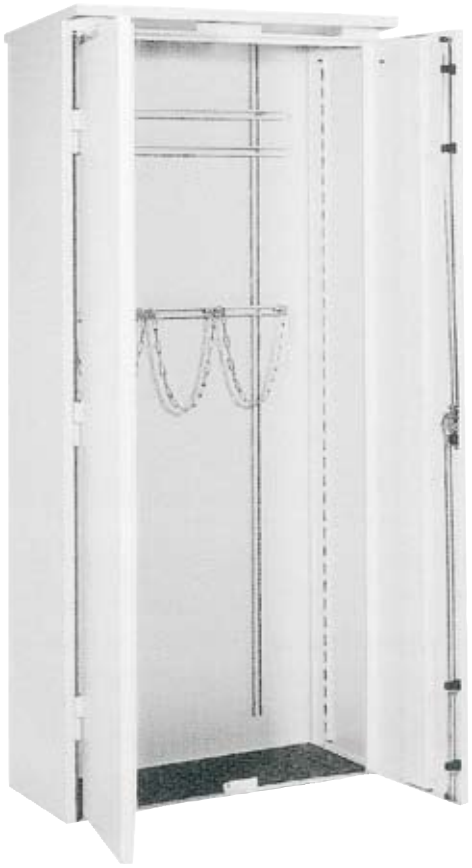
For secure storing of cylinders, in case of:
- cylinders remaining after end of business day inside workrooms,
- a protection area for cabinets because of limited space may not be arranged,
- continuous gas supply is necessary
- short tubing is needed.

Dimension example, others on demand

Type	outside dimensions (WxDxH)	cylinders max.
SC 600	600 x 617 x 2050 mm	1-2 (50l)
SC 900	900 x 617 x 2050 mm	1-4 (50l)
SC 1200	1200 x 617 x 2050 mm	1-4 (50l)
SC 1400	1400 x 617 x 2050 mm	1-4 (50l), 1-8 (10l)

Order information

Please contact GCE for further details.



Cabinets for outdoor gas cylinde storage, sheet steel, for 1 - 4 50 litre cylinders.

Highlights

- **For safe outdoor installation**
- **High quality steel construction**
- **High mechanical damage protection**
- **High corrosion protection**

Features

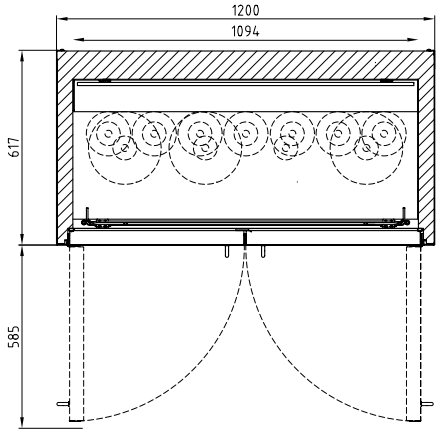
Gas cylinders may be installed safely in outside areas. The cabinets, built of high quality sheet-steel construction with double-skin base are completely galvanized and have a plastic laminated surface to provide high protection against corrosion and mechanical damages.

Application

Secure storage of gas cylinders outside buildings.

Dimension example, others on demand

Type	outside dimensions (WxDxH)	cylinder max.
OD 700	700 x 400 x 2150 mm	1 - 2 (50l)
OD 1350	1350 x 400 x 2150 mm	1 - 4 (50l)



Order information

Please contact GCE for further details.

Inline Gas Purifier with indicator

High Purity Filtration for Gas Chromatography, Laser Resonator Gases and High Purity Applications.

Highlights

- **Installation without tools**
- **Many adsorbents /combinations of adsorbents possible**
- **Very cost-effective since only one filter needed**
- **Avoid pollution of gas lines by incoming air during exchange of purifier**
- **Avoids damaged gas line connectors due to frequent change or over tightening**
- **Super Clean purifiers guarantee 99.9999 purity of gas output (6.0 grade of gas or better)**
- **Purifiers are available in Metal (without indicator) or Glass with indicator with both brass and SS connectors of ¼" and 1/8"**
- **Global TÜV-approved design under accepted laboratory conditions**
- **Inlet pressure 11 bar / 160 psi**

Features

Unique Super Clean "Click-On ™ INLINE" by SGT glass/metal, diffusion proof Super-Clean ™ Gas Filters, purify the delicate carrier- and burner gases for your GC, carrier for GC/MS and LC/MS system for Hydrocarbons, Oxygen and Moisture (all with indicators) to better-as 6.0 gas (99,9999% at Flow of 2 L/min) quality, independent of input quality of gas ; available with/without visual indicators.

Application

State-of-the-Art Super-Clean Gas Filters® for RESONATOR Gases with CO2 Lasers:
Unique POINT-OF-USE glass/metal, diffusion proof Super-Clean Gas Filters to purify delicate Lasing Gases (Helium, Nitrogen, Carbon Dioxide) to protect the resonator and overall the performance of your valuable Laser equipment.

Technical data

Gas purity at outlet:	better 6.0
Max. Pressure:	11 bar (160 psi)
In/Outlet:	tube fittings 1/8", on demand 1/4"

Order information

CO 1001	Moisture Trap
CO 1002	Oxygen Trap
CO 1003	Hydrocarbon Trap
CO 1004	Combi : Oxygen - Moisture Trap
CO 1005	Triple : Oxygen - Moisture - Hydrocarbon Trap
CO 1006	Gas-spec. (He) Triple : Oxygen / Moisture / Hydrocarbon Trap
Inline Filter - Glass indicators	
CO 1041	Indicating Combi Oxygen/Moisture Trap for ICP
CO 1061	Indicating Gas Specific (He) Triple Oxygen/Moisture/ Hydrocarbon Trap
Inline Filter Parts	
CO 2002	Click-On Inline Super Clean™ Connector 1/8" Brass (2x)
CO 2011	Click-On Inline Super Clean™ Connector 1/8" SS (2x)
CO 2001	Click-On Inline Super Clean™ Connector 1/4" Brass (2x)
CO 2010	Click-On Inline Super Clean™ Connector 1/4" SS (2x)
CO 3002	Wall mounting clamp (4/pk)
CO 3001	Replacement special O-ring set for "Click-On" connector ; 10-pack

Inline Filtration Super Clean Filters

Type	**Filtration**	**Max. flow** (l/min)	**H2O** (gr)	**Capacity O2** (ml)	**Hydroc.** (gr)	**est. life time**
GC-Moisture	Moisture	25	15	N.A.	N.A.	> 3 y
GC-Oxygen	Oxygen	25	2000	N.A.		> 3 y
GC-Hydroc.	Hydrocarb.	25	N.A.	N.A.	24 n-butane	> 3 y
GC-Combi	Moisture + Oxygen	25	7	N.A.	12 (as n-butane)	> 2 y
GC-Triple	Moisture + Oxygen + Hydrocarb.	25	4	1000	8 (as n-butane)	> 2 y

Single-stage, to raise gas purity above 6.0, inlet pressure 230 bar / 3300 psi, outlet pressure range 0,2 - 6 bar / 3 - 85 psi

Highlights

- **With integrated purifier element**
- **Diaphragm regulator**

Features

The FMD 500-14 IP consists of a cylinder connection, pressure regulator, inlet and outlet pressure gauge, relief valve, outlet tube fitting and a integrated, exchangeable filter element.

Application

The FMD 500-14 IP is designed to raise gas purity higher than 6.0 by using a filter element.

Technical data regulator

Body material:	stainless steel 316L (1.4404) specially cleaned and electro polished or brass CW614 (CuZn39Pb3) specially cleaned, chrome plated
Seat sealing:	PCTFE
Sealings:	PCTFE, PVDF (brass)
Relief valve seat material	FKM, (EPDM, FFKM)*, EPDM, (FKM)* *on request
Pressure gauge range:	-1 - 10 bar (-15 - 145 psi), 0 - 315 bar (0 - 4500 psi)
Basic design aspects:	see page 10
Weight:	0,8 kg
Dimensions (wxhxd):	225 x 240 x 125 mm

Filtration Super Clean Filters

Type	Filtration	Max. Flow	H2O (gr)	Capacity O2 (ml)	Hydroc. (gr)	Est. life time
GC-Moisture	Moisture	25 l/min	15	N.A.	N.A.	> 3 y
GC-Oxygen	Oxygen	25 l/min	2000	N.A.	N.A.	> 3 y
GC-Hydroc.	Hydrocarbons	25 l/min	N.A.	N.A.	24 (as n-butane)	> 3 y
GC-Combi.	Moist. + Oxygen	25 l/min	7	N.A.	12 (as n-butane)	> 2 y
GC-Triple	Moisture + Oxygen + Hydrocarb.	25 l/min	4	1000	8 (as n-butane)	> 2 y

Order information Filter

SIR 1001 Oxygen Trap
SIR 1002 Moisture Trap
SIR 1003 Hydrocarbon Trap
SIR 1004 Triple : Oxygen - Moisture Trap
SIR 1005 Triple : Oxygen - Moisture - Hydrocarbon Trap
SIR 1006 Gas-spec. (He) Triple : Oxygen / Moisture / Hydrocarbon Trap

Inline Filter - Glass indicators

SIR 1051 Indicator Triple : Oxygen / Moisture / Hydrocarbons
SIR 1061 Indicating Gas Specific (He) Triple Oxygen/Moisture/Hydrocarbon Trap
SIR 1041 Indicating Combi Oxygen/Moisture Trap for ICP

Inline Filter Parts

CO 2001 Click-On Inline Super Clean™ Connector 1/4" Brass (2x)
CO 2010 Click-On Inline Super Clean™ Connector 1/4" SS (2x)
CO 3001 Replacement special O-ring set for "Click-On" connector ; 10-pack
CO 3003 Special Connector for 1/4" Click-On Connector

Order code regulator

Type	Material	Inlet pressure	Outlet pressure	Inlet conn.	Outlet conn.	Gas type
FMD 500-14 IP	**BC**	**F**	**6**	**DIN**	**CL6**	**Gas**
FMD 500-14 IP	BC = brass SS = stainless steel	F = 230 bar /3300 psi	6 = 0,5 - 6 bar / 7 - 85 psi	DIN, ANSI, NEN, AFNOR, NBN BS 341, CGA, UNI	CL6, CL8 CL 1/8", CL 1/4", NO6	please specifiy

Outlet: (expl.: CL6=tube fitting with outer diameter 6 mm, NO6 = hose adaptor with hose inner diameter 6 mm)

Laser resonator guard and purifier cartridges

Highlights

- **Just 1 Guard needed to purify Lasing Gases for Hydrocarbons, Oxygen and Moisture.**
- **Easy and fast exchange of Cartridges**
- **Change possible during Laser operation within seconds**
- **Fast-Connect, diffusion-proof design**
- **Visual saturation indication avoids non-functioning filter-protection**
- **Early replacement warning**
- **Out-coming gas guaranteed 6.0 grade or higher**
- **Increases Laser productivity and avoids troubleshooting and maintenance costs**
- **Completely inert and diffusion-proof**
- **Eliminates Laser disturbance**

Features

Unique POINT OF USE glass/metal, diffusion proof Super-Clean Gas Filters®,
Purify delicate Nitrogen generator gases for your LC/MS system for Hydrocarbons to better-as 6.0 gas (99,9999%) quality, independent of the original gas quality.

Application

Fast-Connect design avoids source damage and eliminates LC/MS downtime.
The filters can be installed and replaced within seconds without disturbing the technical- and analytical performance of the Gas chromatographic system in any way. The cartridges are not directly connected into the gas line (as an In-Line filter is) but are connected onto a specially designed In-Line metal Fast Connect Base plate, allowing a fast & diffusion-proof installation.

Technical data

Gas purity at outlet:	> 6.0
Max. Pressure:	11 bar (160 psi)

Type	Filtration	Application	Max. Flow	H2O (gr)	O2 (ml)	Hydroc. (gr)	Est. life time
GC-Moisture	Moisture	Resonator Lasing Gas	7 l/min	7.2	N.A.	N.A.	> 1 y
GC-Oxygen	Oxygen	Resonator Lasing Gas	7 l/min	N.A.	1000	N.A.	> 1 y
GC-Hydroc.	Hydrocarbons	Resonator Lasing Gas	20 l/min	N.A.	N.A.	24	> 1 y
GC-Triple	Moisture + Oxygen + Hydrocarb.		7 l/min	1.8	500	4 (as n-butane)	> 0,5 y

Order information

Art. No.	Description
RESONATOR : hardware for Super Clean Gas filters with 1/4" brass connectors	
RES 0010	Resonator Gas Base plate for 1 Super Clean Gas filter (for pre-mix gas)
RES 0030	Resonator Gas Base plate for 3 filters (for Nitrogen - Helium - Carbon dioxide)
on request	Special : Surcharge for SS base plate connectors : 20% of base plate value
RESONATOR : Super Clean Gas Filters Cartridges with Combination of Adsorbents & Indicators	
RES 0301	Resonator Gas Purifier, Triple Guard & Purification (Oxygen - Moisture - Hydrocarbons)
RES 0303	Resonator Gas Purifier, Triple Guard & Purification (Oxygen - Moisture - Hydrocarbons) Bundle of 3
RESONATOR : PARTS for Base Plate	
B0050	Wall mounting-bracket set for Resonator Lasing Gas Guard & Purification System (1- and 3-position)
B0110	Replacement O-ring set for Base Plate (10+10) for Resonator Lasing Gas Guard & Purification System
B0120	Replacement rear-end fitting set for Base Plate (3 x 2 for in- and outlet) ; brass - 1/4"
B0122	Replacement rear-end fitting set for Base Plate (3 x 2 for in- and outlet) ; stainless steel - 1/4"
B0130	Replacement Flush Caps for Base Plate ; complete set of 2, incl. O-rings

Super Clean Filters
High Flow

Highlights

- **Just 2 Filters (in parallel) needed to purify the LC/MS for Hydrocarbons.**
- **Easy and fast exchange of filters, possible during instrument operation, within seconds**
- **No tools needed, diffusion-proof design**
- **Visual saturation indication by handy timing wheel or indicator**
- **Outcoming gas guaranteed 6.0 grade or higher with maximum flow max. 20 l/min**
- **Inlet pressure 11 bar / 160 psi**

Features

Unique POINT OF USE glass/metal, diffusion proof Super-Clean Gas Filters®, purify delicate Nitrogen generator gases for your LC/MS system for Hydrocarbons to better-as 6.0 gas (99,9999%) quality, independent of the original gas quality.

Application

Fast-Connect design avoids source damage and eliminates LC/MS downtime.
The filters can be installed and replaced within seconds without disturbing the technical- and analytical performance of the Gas chromatographic system in any way. The cartridges are not directly connected into the gas line (as an In-Line filter is) but are connected onto a specially designed In-Line metal Fast Connect Base plate, allowing a fast & diffusion-proof installation.

Technical data

Gas purity at outlet:	> 6.0
Max Pressure:	11 bar /160 psi
Inlet connections:	standard brass tube fittings 1/4"
Dimensions:	filter: 290 x 40 mm, plate: 80 x 100 mm
Working temperature:	-40° to 65 °C

Type	Filtration	Application	Max. Flow	H2O (gr)	O2 (ml)	Hydroc. (gr)	est. life time
GC-Moisture	Moisture	Resonator Lasing Gas	7 l/min	7.2	N.A.	N.A.	> 2 y
GC-Oxygen	Oxygen	Resonator Lasing Gas	7 l/min	N.A.	1000	N.A.	> 2 y
GC-Hydroc.	Hydrocarbons	Resonator Lasing Gas	7 l/min	N.A.	N.A.	12	> 2 y
LC-Hydroc.	Hydrocarbons	Resonator Lasing Gas	20 l/min	N.A.	N.A.	24	> 0,4 y
GC-Combi	Moisture + Oxygen	Resonator Lasing Gas	7 l/min	3,5	N.A.	6 n-butane	> 1,5 y
GC-Triple	Moisture + Oxygen +Hydroc.		7 l/min	1.8	500	4 n-butane	> 1 y

Order information

Base plates		
B0010	Base plate 1 position	GC= Gas Chromatography
B0020	Base plate 2 positions	GC
B0021	Base plate 2 positions - high flow	LC = Liquid Chromatography
B0030	Base plate 3 positions	GC
B0040	Base plate 4 positions	GC
Filter Cartridges		
F0101	Moisture filter, standard, ultra capacity: with indicator	GC
F0102	Oxygen filter, standard, ultra capacity: with indicator	GC
F0103	Hydrocarbon filter, standard, ultra capacity: without indicator	GC
F0730	Filter bundle of 3 (Triple + 2x charcoal/moisture Combi)	GC
F0740	Filter bundle of 4 (standard: oxygen, moisture + 2x charcoal)	GC
F0720	Filter bundle of 2 (charcoal 2x for LC-MS: N2 purification) - high flow: without indicator	LC
F0722	Filter bundle of 2 (charcoal 2x for LC-MS : N2 purification) - high flow: with indicator	LC
F0721	HIGH-FLOW Special Moisture Filter; bundle of 2 cartridges	LC
Filters Cartridges with Combination of Adsorbents		
F0301	Triple filter (O2/Moisture/Charcoal); carrier gas purifier for FID - ECD - NPD	GC
F0302	Triple filter: gas specific for He (O2/Moisture/Charcoal) in GC-MS usage	GC
F0201	Combi filter, high capacity, (Charcoal/moisture); fuel gas usage	GC
Base Plates + Cartridges with combined Filter Adsorbents		
B1040	GC-FID KIT for 4 standard cartridge filters, ultra capac. O2, Moisture, 2x Charcoal	GC
B1030	GC-FID KIT for 3 filters/base plate: Triple + 2x Combi cartridge (Charcoal/Moisture)	GC
B1011	GC-MS KIT for He (gas specific) ;1 filter/base plate, Triple cartridge (O2/Moisture/Charcoal)	GC
B1010	GC-MS, ECD-, FID-, NPD-carrier gas KIT for 1 filter/base plate, Triple cartridge (O2/Moisture/Charcoal)	GC
B1020	GC-Burner gas KIT for FID, 2 pos. for Air & H2 (Combi: 2x charcoal/moisture)	GC
B1021	LC-MS KIT for 2 filters/base plate (2x charcoal: N2 purification) - HIGH FLOW capacity !!: without indicator	LC

Actuator ring with gas type indication


Surface mounting version

Outlet point terminal unit, for inset or surface installation

Highlights

- **Upmarket design by pearl gloss nickel-plated all-metal actuator**
- **Two-part construction with a basic block and a socket unit**
- **Easy installation and servicing with one structural component (cartridge) including sealing elements**
- **Maintenance without blocking the station**
- **Unique laser marking with gas-type and gas symbol in German and English**

Features

Easy unlocking by single-hand operation pressing the actuator ring. Pearl gloss nickel-plated all-metal construction. The terminal unit consists of a gas-specific basic block and a socket unit screwed together. A non-return valve opens when the plug is fitted and closes automatically when the plug is removed. A service valve, screwed to the connecting thread in the rear part of the basic block, interrupts the gas supply to the terminal unit entirely. Thus, a separate and gas-tight shut-off of the terminal unit is ensured for maintenance. The O-ring seals may be easily replaced by removing the socket unit.

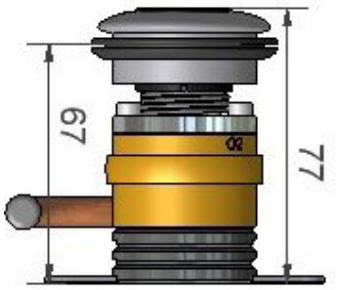
Application

The unit is used to withdraw compressed gases and vacuum from a central gas supply system. Possible configurations are: Concealed or flush mounting installation, surface installation and installation in ceiling-mounted supply units.

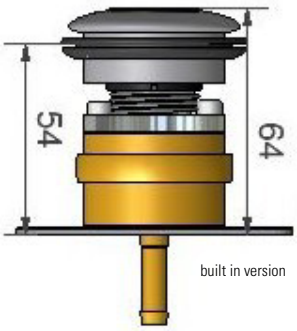

Flush mounting version
with connectors

Technical data

Inlet:	8x1 mm copper tube
Operating pressure:	compressed gases: 4 - 5 bar / 60 - 70 psi (excess pressure)
Vacuum:	0 - 0,4 bar / 0 - 6 psi (absolute pressure)
Outlet:	quick connectors with hose nozzles, gas type indicated



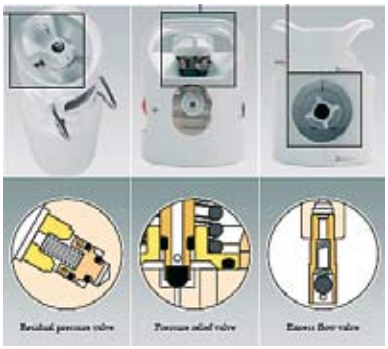
wall mounted version



built in version

Order information

Please contact GCE GmbH.



Integrated combination of cylinder valve and regulator, for inert gases and oxygen and gas mixtures.

Highlights

- **Protection guard provides high security**
- **All-in-one package system**
- **Eliminates the need to make high pressure connections**
- **Fits to all type of cylinders max. 24 kg**
- **"Low torque" valve actuator**
- **Drop tested according to EN ISO 11117**
- **115 mm outside diameter**
- **Ergonomic handle on both sides**
- **Easy grip handwheel and ON/OFF valve**
- **Easy to operate flow control hand-wheel**
- **Integrated pressure relief valve**
- **ON/OFF high pressure isolation valve**
- **Long-life seat mechanism in the ON/OFF valve**

Features

The standard features are: cylinder valve and pressure regulator in one brass construction, flow control unit, nickel plated body surface, good grip, easy operated hand-wheel, flow outlet ports (firtree, 360 degree swivel function), active cylinder pressure gauge with colored safety- and refill zones, filling port with non-return valve, integrated pressure relief valve, particle tube filter in front of the pressure regulator, residual pressure valve (keeps 3 - 5 bar residual pressure in cylinder). The Combilite protective guard fits all type of cylinders max. a max. package weight of 24 kg.

Application

GCE Gas Control Equipment has been the pioneer in the field of integrated combination valves. Today more than one million medical combivalves from GCE are worldwide in use. This is an integrated solution for mobile high purity gas applications. Compact and lightweighted, it includes pressure regulator and flow selector. The guard allows easy transportation and protects the unit in case of accident.

Technical data

Cylinder pressure:	300 bar / 4500 psi
Material:	flow control: brass body: brass Nickel plated
Outlet pressure:	3,6 to 5,5 bar, acc. to EN ISO 10524-3 (or per customer specification)
Seat material:	Zytel
Flow capacity:	60 l/min nominal (at full cylinder pressure)
Flow control discs	(0 - 1 l/min, 0 - 5 l/min, 0 - 15 l/min, 0 - 25 l/min etc.
Flow settings:	3/10/12 steps (including ZERO position)
Safety gauge:	40 mm, indication range 180°
Weight:	0,95 kg
Outside diameter:	115 mm
Height:	123 mm (measured from the cylinder neck)
Inlet Stem:	tapered or parallel threads (E17, E25, M18, per customer specification)
Traceable serial number:	individual, stamped into body
Particle tube filter:	in front of pressure regulator
Residual pressure valve:	keeps 3 - 5 bar residual pressure in cylinder
Optional features:	excess flow valve, limits the flow in case of accident and valve shearing
Safety burst disc:	integrated
Filling port:	ISO 5145, NEVOC or per customer specification,
Non return valve:	integrated into the filling port
Quick couplers:	Wide range, according to customer's national standard

Approvals

Production in accordance to EN ISO 9001:2000, ISO 13485: 1996. Pi-mark approval - Compliance with 99/36/EEC TPED. US listed FDA.

Accessories

Filling adapter, Safety Guard white, or per customer specification.

Maintenance and Repair

GCE provides repair and service for the system. Please contact your local GCE company for more details.

Order information

Please contact GCE for further details.

LRX 500
for preheating of inert and non corrosive gases, exept flammable gases.
Inlet pressure max. 230 bar/ 3300 psi

Highlights
- **High performance preheating device for liquids and gases**
- **IP66 protected (according to EN 60947)**
- **Good protection against circumstantial intrusion**

Features
The LRX is a high performance preheater for the central gas supply. It is delivered with readily assembled 1m cable (3 x 1,5 mm2) and an power supply plug. The resistance unit is exchangeable (only by the manufacturer), armored and coated with stainless steel. The LRX 500 has a IP66 protection (acc. to EN 60947), and is thus protected against: The intrusion of dust and strong water jet (a limited intrusion is permissible).

Application
The electrical device LRX is used for gas pre-heating before entering the pressure regulators in order to avoid freezing of valves and subsequent device.
It also allows the vaporization of liquefied gases possible and is in particular suitable for the use with Carbon Dioxide, Argon and Nitrogen Oxide as well as mixtures of non-inflammable gases which contain CO_2 or Argon.

Technical data

Power supply:	230 V AC / 50 Hz, 500 W
Outlet temperature:	60 °C / 140 °F
Max. flow of gas:	more than 10 °C / 50 °F:
	CO2 gas 10 m3/h / 5,9 SCFM
Argon gas	15 m3/h / 8,8 SCFM
Housing:	brass + copper plated tube Ø 5 x 8 (500 W)
Dimensions:	140 x 105 x 220 mm (wxhxl)
Weight:	2,0 kg
Inlet:	W21,8 x 1/14

Order code
LRX 500

GVW 250
for oxygen and inert gases.
Inlet pressure 300 bar / 4500 psi

Highlights
- **High performance and efficiency**
- **With security marking acc. to "device as technical work equipment" according to german safety law GPSG**

Features
The GVW 50 is delivered with cable and power supply plug.

Application
To preheat high pressure level oxygen and inert gases.

Technical data

Power supply:	230 V - 50 Hz, 250 W
Inlet / outlet:	acc. to DIN 477 and CEN

Order code
GVW 250

Scale

Display

Electronic scale, for level measuring of liquid gases, with signal outlets for gas leakage alarm indication

Highlights

- **Low overall height**
- **Metering range up to 135 kg**
- **Accuracy 0,1 % and high temperature stability**
- **Fits to the highest electromagnetic compatibility demand**
- **High protection class IP 65 for outdoor installation and high humidity conditions**
- **3 signal outlets**

Features

This electronic scale is supplied with display unit and connecting cable and provide three signal outlets for gas leakage indication.

Application

For indoor and outdoor installation into gas cabinets. The low overall height offers installation even within small space conditions. The protection class level ensure safety even where extensive condensate is generated. The scale fulfills the highest electromagnetic compatibility demand to provide for secure, faultless and precise operation.

Technical data scale

Measuring range :	45 / 136 kg (100 / 300 lbs)
Overrange limit:	130 / 340 kg (300 / 750 lbs)
Material case / base plates:	stainless steel
Working temperature:	-15 bis 50 °C (compensated temperature range)
Accuracy:	< 0,1 % of range
Nonlinearity:	< 0,05 % of range
Explosion protection:	ATEX, category 3G, II 3G Ex nL IIC T4 X
Ingress protection:	IP 65 (NEMA 4) acc. to IEC 60 529
Dielectric strength:	500 DC V
Auxiliary power:	15 - 30 DC V
Max. current consumption:	< 30 mA
Signal output:	4 ... 20 mA, two-wire system
Weight:	app. 6 kg, 13 lbs
Dimensions:	235 x 235 x 35 mm (9.25" x 9.25" x 1.35")

Technical data display

Housing:	Polycarbonat, black
Dimensions:	48 x 96 x 98,5 mm
Front size:	45 x 92 mm
Protection class:	IP 66
Weight:	300 g
Signal outlets:	switching output
Switching behavior:	break cutter and shutter, adjustable with keyboard
Power supply:	230 V AC, 3 A
Power consumption:	10 VA
Working temperature:	0 - 50 °C
Auxiliary power:	AC 240 V 50/60 Hz

Order code

Type	Measuring range (kg)	display
ESC	**45**	**0**
	45 = 45 kg version	0 = without
	136 = 136 kg version	Y = included

Contact gauge (KI) with inductance contact, for monitoring gas supply pressure and shortage, for inert, combustible, oxidizing, and corrosive gases and gas mixtures, Nominal pressure 230 bar

Highlights

- **Safety gauge acc. to EN 562**
- **Shift point can be reset as needed within the indicated angle of 45°**
- **Pressure readings in situ and signal transmission for data logging**
- **Explosion protection is available in conjunction with designated signal boxes**

Description

These pressure measuring instruments have a robust CrNi-steel/copper-zinc-alloy housing in accordance with DIN 16063. An inductive contact switches as soon the gas supply pressure drops below a preset value. The shift point, i.e. the pressure level triggering the signal, can be reset as needed. The shift point is reset by setting the glass indicator to the desired value.

Application

Gas panels may be optionally equipped with contact pressure gauges. Contact pressure gauges combine the advantages of in situ readings with the demands of electrical signal transmissions. In combination with signal boxes, this creates visual and acoustic warning signals in the case of pressure drop and the monitoring of line pressure according to adjustable thresholds.

Information regarding connection with electrical power

Polarity has to be taken into consideration connecting the instrument to electrical power, as the inductance contact is an active electronic component. The KI 50 may be operated only with a special amplifier.
The following are suitable for operation:
Signal box DGM SK 60-02/4/6/8/10 Ex *,
Section switch amplifier WE 77/Ex *.
* the use of the contact making pressure gauge is possible in Explosion Zone 1 with these instruments.
Connecting the contact making pressure gauges to a pre-existing malfunction warning installation, the technical documentation is to be consulted to determine whether the operation of NAMUR initiators is possible.
In case of doubt, please contact the manufacturer.

Technical data

Measuring Component:	bourdon tube
Diameter:	50 mm / 1,97"
Design:	safety version DIN 16003
Housing:	CrNi-steel/copper-zinc-alloy
Measuring component:	CrNi-Steel 1.4571, circular form, copper-zinc-alloy
Inspection glass:	Polycarbonate
Accuracy:	class 2.5 (DIN 16005)
Wrench size:	no. 14 (opening of the spanner)
Threshold:	freely adjustable within an angle of 45°
Gas suitability:	All gases
Contact:	inductive slit sensor (following NAMUR)
Working temperature:	environment: -20 °C to +60 °C / -4 to 140 °F
	measuring sample maximally +100 °C /212 °F
Type of shielding:	II 2 G EEx ia IIc T6, PTB 99 ATEX 2219 X
Switching hysteresis:	+/- 5 % (SEW)
Control behavior:	contact type 1 (I1), contact of low impedance with increasing pressure
Dimensions (Ø x D x H):	50 x 35 x 70 mm
Inlet:	NPT 1/4" male

Order code

Type	Pressure range [bar]	[psi]	Article No.	Connection	Material
KI 50-315 I1	-1 - 315	0 - 4500	**H 281 91 101**	NPT 1/4" m	stainl. steel
KI 50-315 I1	-1 - 315	0 - 4570	**H 281 91 103**	NPT 1/4" m	brass
KI 50-400 I1	-1 - 400	0 - 5800	**H 281 91 201**	NPT 1/4" m	stainl. steel
KI 50-400 I1	-1 - 400	0 - 5800	**H 281 91 203**	NPT 1/4" m	brass

Contact gaugewith inductance (KI) or mechanical Reed-contact (KR), for monitoring gas supply pressure and shortage, for inert, combustible, oxidizing, and corrosive gases and gas mixtures, Nominal pressure 230 bar

Highlights

- **Safety gauge acc. to EN 562**
- **Shift point may be set as wanted**
- **With one or two switch-points**
- **Explosion protection available in conjunction with designated signal boxes**

Description

These pressure measuring instruments have a robust CrNi-steel/copper-zinc-alloy housing in accordance with DIN 16063. An inductance contact a mechanical Reed contact switches on as the gas tanks empty and in the event of sinking tank pressure. The shift point, i.e. the pressure level which triggers the signal, may be set as needed. After taking away the cover glass, the switch-point is set by turning the red marker to the desired value.

Application

Gas panels may be optimally equipped with contact pressure gauges. Contact pressure gauges combine the advantages of in situ readings with the demands of electrical signal transmissions. In combination with signal boxes, this creates visual and acoustic warning signals in the event of gas shortage and the monitoring of line pressure according to adjustable thresholds.

Information regarding connection with electrical power

Polarity has to be taken into consideration connecting the instrument to electrical power, as the inductance contact is an active electronic component.
The KI 50 may be operated only with a special amplifier.
The following are suitable for operation:
Signal box DGM SK 60-02/4/6/8/10 Ex *,
Section switch amplifier WE 77/Ex *.
* the use of the contact making pressure gauge is possible in Explosion Zone 1 with these instruments.
Connecting the contact making pressure gauges to a pre-existing malfunction warning installation, the technical documentation is to be consulted to determine whether the operation of NAMUR initiators is possible.
In case of doubt, please contact the manufacturer.

Technical data

Measuring Component:	bourdon tube
Diameter:	63 mm / 2,5"
Safety level:	according to DIN EN 562
Housing:	CrNi-steel 1.4301/copper-zinc-alloy 1.4571
Accuracy:	Class 1.6
Working temperature:	Environment: -20 °C to +70 °C / -4 to 140 °F
Switch-point:	adjustable to all values of the indication range
Gas suitability:	All gases
Inlet:	NPT 1/4" male
KI 63	
Contact:	Induction acc. to NAMUR
Type of protection:	II 2 G EEx ia IIc T6, PTB 99 ATEX 2219 X
Switching hysteresis:	+/- 2,5 %
Control behavior:	Contact type 1 (I1), contact of low impedance with incr. pressure
	Contact type 2 (I2), contact of high impedance with incr. pressure
Dimensions (Ø x D x H):	63 x 58 x 70 mm
KR 63	
Contact:	REED contact, magnetically operated protective gas contact
Max. load:	10 W/ 100 V / 0,5 A
Switching hysteresis:	max 2,5 %
Control behavior:	Contact type 1 (R1), contact disconnection with decr. pressure
	Contact type 2 (R2), contact disconnection with incr. pressure
Min. switching difference K1/K2 :	35 % of indication range
Dimensions (Ø x D x H):	63 x 50 x 90 mm

Order code

			Pressure range	
Article No.	Type / contact type	Material	bar	psi
H28945601	KI 63- 15 / i2	SS	-1 – +15	-14,5 – 220
H28940901	KI 63- 100 / i1	SS	0 – 100	0 – 145
H28941101	KI 63- 250 / i1	SS	0 – 250	0 – 3600
H28900801	KR 63-15 / r2	SS	-1 – +15	-14,5– 220
H28974801	KR 63-100 / r1	SS	0 – 100	0 – 1450
H28974101	KR 63- 250 / r1	SS	0 – 250	0 – 3600

Safety Gauges RM 50, G ¼“

With G1/4”m connection, accuracy class 2,5

Part.- no.	Type	Material	Range bar	psi
H28150103	RM 50- 1,5 G	Brass / NI-CR	-1 – 1,5	-15 - 21
H28150101	RM 50- 1,5 G	SS	-1 – 1,5	-15 - 21
H28170103	RM 50- 2,5 G	Brass / NI-CR	-1 – 2,5	- 15 – 35
H28170101	RM 50- 2,5 G	SS	-1 – 2,5	- 15 – 35
H28170303	RM 50- 6 G	Brass / NI-CR	-1 – 10	-15 – 145
H28170301	RM 50- 6 G	SS	-1 – 10	-15 – 145
H28170503	RM 50- 16 G	Brass / NI-CR	-1 – 25	-15 – 360
H28170501	RM 50- 16 G	SS	-1 – 25	-15 – 360

H28256003	RM 50- 1,5 G	Brass / NI-CR	-1 – 1,5	-15 – 21
H28176001	RM 50- 1,5 G	SS	-1 – 1,5	-15 – 21
H28176103	RM 50- 2,5 G	Brass / NI-CR	-1 – 2,5	- 15 – 35
H28176101	RM 50- 2,5 G	SS	-1 – 2,5	- 15 – 35
H28176303	RM 50- 6 G	Brass / NI-CR	-1 – 6	-15 – 85
H28176301	RM 50- 6 G	SS	-1 – 6	-15 – 85
H28176403	RM 50- 10 G	Brass / NI-CR	-1 – 10	-15 – 145
H28176401	RM 50- 10 G	SS	-1 – 10	-15 – 145
H28176503	RM 50- 16 G	Brass / NI-CR	-1 – 16	-15 – 235
H28176501	RM 50- 16 G	SS	-1 – 16	-15 – 235

Gauge with inlet at bottom „equal standard” Others on request!

Safety gauges RM 50, NPT ¼“

With inlet bottom connection, accuracy class 2,5

Part.- no.	Type	Material	Range bar	psi
H28160103	RM 50- 1,5 NPT	Brass / NI-CR	-1 – 1,5	-15 - 21
H28160101	RM 50- 1,5 NPT	SS	-1 – 1,5	-15 - 21
H28160303	RM 50- 6 NPT	Brass / NI-CR	-1 – 6	-15 - 90
H28160301	RM 50- 6 NPT	SS	-1 – 6	-15 - 90
H28160403	RM 50- 10 NPT	Brass / NI-CR	-1 – 10	-15 – 145
H28160401	RM 50- 10 NPT	SS	-1 – 10	-15 – 145
H28160603	RM 50- 18 NPT	Brass / NI-CR	-1 – 18	-15 – 260
H28160601	RM 50- 18 NPT	SS	-1 – 18	-15 – 260
H28160703	RM 50- 25 NPT	Brass / NI-CR	-1 – 25	-15 – 360
H28160701	RM 50- 25 NPT	SS	-1 – 25	-15 – 360
H28160903	RM 50- 80 NPT	Brass / NI-CR	0 – 80	0 – 1150
H28160901	RM 50- 80 NPT	SS	0 – 80	0 – 1150
H28161103	RM 50- 315 NPT	Brass / NI-CR	0 – 315	0 – 4500
H28161001	RM 50- 315 NPT	SS	0 – 315	0 – 4500
H28161203	RM 50- 400 NPT	Brass / NI-CR	0 – 400	0 – 5800
H28161201	RM 50- 400 NPT	SS	0 – 400	0 – 5800

Specification Safety gauges

Accuracy classes:	2,5 / 1,6
Safety level:	according to DIN EN 562
Diameters:	50 mm (2") / 63 mm (2,48")
Material:	brass chrome-plated CW614N (CuZn39Pb3) (base)
	CW508L (CuZn37); CW453K (CuSn8) (bourdon spring)*
	* depends on pressure range
	stainless steel 316L (1.4404)

Tube Fittings, straight

Part. No.	Type	Material
H03005103	NPT ¼"m × 1/8"	Brass
H03006103	NPT ¼"m × ¼"	Brass
H03001103	NPT ¼"m × 6 mm	Brass
H03002103	NPT ¼"m × 8 mm	Brass
H03003003	NPT ¼"m × 10 mm	Brass
H03004003	NPT ¼"m × 12 mm	Brass
H03005101	NPT ¼"m × 1/8"	SS
H03006101	NPT ¼"m × ¼"	SS
H03001101	NPT ¼"m × 6 mm	SS
H03002101	NPT ¼"m × 8 mm	SS
H03003001	NPT ¼"m × 10 mm	SS
H03004001	NPT ¼"m × 12 mm	SS
A000121	G ¼"m × 1/8"	Brass / NI-CR
A000113	G ¼"m × ¼"	Brass / NI-CR
A000123	G ¼"m × 6 mm	Brass / NI-CR
A000162	G ¼"m × 8 mm	Brass / NI-CR
A000125	G ¼"m × 10 mm	Brass / NI-CR
A000127	G ¼"m × 12 mm	Brass / NI-CR
A000120	G ¼"m × 1/8"	SS
A000112	G ¼"m × ¼"	SS
A000122	G ¼"m × 6 mm	SS
A000161	G ¼"m × 8 mm	SS
A000124	G ¼"m × 10 mm	SS
A000126	G ¼"m × 12 mm	SS
H03206103	G 3/8"m × 1/8"	Brass
H03888703	G 3/8"m × ¼"	Brass
H03019303	G 3/8"m × 6 mm	Brass
H03823803	G 3/8"m × 8 mm	Brass
H03818603	G 3/8"m × 10 mm	Brass
H03831103	G 3/8"m × 12 mm	Brass
H03866301	G 3/8"m × 1/8"	SS
H03889701	G 3/8"m × ¼"	SS
H03019301	G 3/8"m × 6 mm	SS
H03823801	G 3/8"m × 8 mm	SS
H03818601	G 3/8"m × 10 mm	SS
H03831101	G 3/8"m × 12 mm	SS

Tube Fittings, elbow 90°

Part.- No.	Type	Material
H03001203	NPT ¼"m × 6 mm	Brass
H03002303	NPT ¼"m × 8 mm	Brass
H03085203	NPT ¼"m × 10 mm	Brass
H03096403	NPT ¼"m × 12 mm	Brass
H03001201	NPT ¼"m × 6 mm	SS
H03002301	NPT ¼"m × 8 mm	SS
H03085201	NPT ¼"m × 10 mm	SS
H03096401	NPT ¼"m × 12 mm	SS

G ¼"m × 6, 8, 10, or 12 mm in brass and stainless steel on request !

Tube Fittings, T-shape

Part.- No.	Type	Material
H03814703	3 × 1/8" tube	Brass
H03900703	3 × ¼" tube	Brass
H03001303	3 × 6 mm tube	Brass
H03002803	3 × 8 mm tube	Brass
H03003303	3 × 10 mm tube	Brass
H03004103	3 × 12 mm tube	Brass
H03814701	3 × 1/8" tube	SS
H03900701	3 × ¼" tube	SS
H03001301	3 × 6 mm tube	SS
H03002801	3 × 8 mm tube	SS
H03003301	3 × 10 mm tube	SS
H03004101	3 × 12 mm tube	SS

Tube Fittings, tube end 6 mm

Part.- no.	Type	Material
H03849603	6 mm × 1/8"	Brass
H03826103	6 mm × 3 mm	Brass
H03826203	6 mm × 4 mm	Brass
H03849601	6 mm × 1/8"	SS
H03826101	6 mm × 3 mm	SS
H03826201	6 mm × 4 mm	SS

Other tube stub connections on request !

Hose Nozzles, G-thread

Part.- no.	Type	Material
H03825573	G ¼" m × 4 mm	Brass / NI-CR
H03825673	G ¼" m × 6 mm	Brass / NI-CR
H03825773	G ¼" m × 8 mm	Brass / NI-CR
H03825501	G ¼" m × 4 mm	SS
H03825601	G ¼" m × 6 mm	SS

Hose Nozzles, tube end 6 mm

Part.- no.	Type	Material
H03825203	6 mm × 4 mm	Brass
H03825303	6 mm × 6 mm	Brass
H03825403	6 mm × 8 mm	Brass
H03825201	6 mm × 4 mm	SS
H03825301	6 mm × 6 mm	SS

Adaptors

Part.- no.	Type	Material
H03017803	NPT ¼" m × G ¼" m	Brass
H03014853	NPT ¼" m × G ¼" f	Brass / NI-CR
H03017801	NPT ¼" m × G ¼" m	SS
H03014801	NPT ¼" m × G ¼" f	SS
H03012801	NPT ¼" m × VCR ¼" m	SS
H03013801	NPT ¼" m × VCR ¼" f	SS

Hexagon blind plugs

Part.- no.	Type	Material
H220032151	NPT 1/4" m	SS
H220121151	G 1/4" m	SS
H220197151	G 3/8" m	SS

Protection Caps

Part.- no.	Type	Material	covers
W602100	Ø 6,6 – 7,8 mm conical	PE/ LD	univ. protection cap red
W602600	Ø 9,9 – 11,3 mm con.	PE/ LD	univ. protection cap red
W602900	Ø 12,7 – 14,7 mm con.	PE/ LD	univ. protection cap red
W642900	Ø 15,5 – 17,5 mm con.	PE/ LD	univ. protection cap red
W601600	Ø 19,8 – 21,9 mm con.	PE/ LD	univ. protection cap red
W642800	Ø 22,5 – 24,2 mm con.	PE/ LD	univ. protection cap red
W613800	G ¼"	PE/ HD	screwed cab yellow
W600400	G 3/8"	PE/ HD	screwed cab yellow
W618600	M 14 × 1,5 mm	PE/ HD	screwed cab yellow
W600700	M 45 × 1,5 mm	PE	screwed cab yellow
W600500	NPT ¼" × 18 mm	PE	screwed cab yellow
W600300	G ¼"	PE	screwed cab yellow
H22013119	G 3/8"	PE	screwed cab yellow
W600600	M 14 × 1,5 mm	PE	screwed cab yellow
W601900	Cylinder conn. 1, 6, 14	PE	univ. protection cap yellow
W611200	Cylinder conn. 5, 8, 9, 10	PE	univ. protection cap yellow
W642800	Cylinder conn. 11, 12, 13	PE/ LD	univ. protection cap yellow

Gaskets for G- threading

Minimum purchasing amount 25 pcs. PVDF, 10 pcs. PCTFE

Part.- no.	Type	Size	Material
H09011816	11,2 × 5,5 × 1,2 mm	G ¼"	PVDF
H09008916	11,2 × 5,5 × 1,5 mm	G ¼"	PVDF
H09011716	11,2 × 5,5 × 1,8 mm	G ¼"	PVDF
H09015716	11,2 × 5,5 × 2,1 mm	G ¼"	PVDF
H09011809	11,2 × 5,5 × 1,2 mm	G ¼"	PCTFE
H09008909	11,2 × 5,5 × 1,5 mm	G ¼"	PCTFE
H09011709	11,2 × 5,5 × 1,8 mm	G ¼"	PCTFE
H09009009	11,2 × 5,5 × 2,1 mm	G ¼"	PCTFE
H09008915	11,2 × 5,5 × 1,5 mm	G ¼"	PTFE
H09015916	14 × 9 × 2 mm	G 3/8"	PVDF
H09010309	14 × 9 × 2 mm	G 3/8"	PCTFE
H09001015	14 × 9 × 3 mm	G 3/8"	PTFE

Gaskets

Minimum purchasing amount 25 pcs.

Part.- no.	Type	Material	Dimentions
H17000112	O- Ring	EPDM	6 × 2 mm
H17000111	O- Ring	FKM	6 × 2 mm
H09001116	Gasket	PVDF	10 × 6 × 2 mm

Cylinder Connections DIN 477

Complete, for FMD series 500 + 230, outlet NPT ¼" m

Part.- no.	Type	Material	Threads
H03028855	FA 1	Brass / NI-CR	W 21,8 × 1/14" LH
H03028864	FA 1	SS	W 21,8 × 1/14" LH
H03028955	FA 5	Brass / NI-CR	W 1" × 1/8" LH
H03028964	FA 5	SS	W 1" × 1/8" LH
H03029055	FA 6	Brass / NI-CR	W 21,8 × 1/14"
H03029064	FA 6	SS	W 21,8 × 1/14"
H03029164	FA 7	SS	R 5/8"
H03029264	FA 8	SS	W 1" × 1/8"
H03029355	FA 9	Brass / NI-CR	R ¾"
H03029364	FA 9	SS	R ¾"
H03029455	FA 10	Brass / NI-CR	W 24,32 × 1/14"
H03029464	FA 10	SS	W 24,32 × 1/14"
H03029564	FA 11	SS	R 3/8"
H03029855	FA 13	SS	R 5/8"
H03029864	FA 13	SS	R 5/8"
H03029664	FA 14	SS	M 19 × 1,5

Cylinder Connections AFNOR

Complete, for FMD 500-Series, outlet NPT ¼" m

Part.- no.	Type	Material	Threads
H03303473	FA C	Brass / NI-CR	Ø 21,7 × 1,814
H033034151	FA C	SS	Ø 21,7 × 1,814
H03608873	FA E	Brass / NI-CR	Ø 21,7 × 1,814 LH
H036088151	FA E	SS	Ø 21,7 × 1,814 LH
H03608973	FA F	Brass / NI-CR	Ø 22,91 × 1,814
H036089151	FA F	SS	Ø 22,91 × 1,814

Cylinder Connections UNI

Complete,for FMD series 500 + 230, outlet NPT ¼" m

Part.- no.	Type	Material	Threads
H03608355	FA UNI 4405	Brass / NI-CR	W 20 × 1/14" Sin.
H03608364	FA UNI 4405	SS	W 20 × 1/14" Sin.
H03608155	FA UNI 4406	Brass / NI-CR	W 21,7 × 1/14"
H03608164	FA UNI 4406	SS	W 21,7 × 1/14"
H03608055	FA UNI 4409	Brass / NI-CR	W 21,7 × 1/14"
H03608064	FA UNI 4409	SS	W 21,7 × 1/14"
H03610450	FA UNI 4412	Brass / NI-CR	W 24,5 × 1/14"
H03610401	FA UNI 4412	SS	W 24,5 × 1/14"

Cylinder Connections BS 341

Complete,for FMD series 500 + 230, outlet NPT ¼" m

Part.-no.	Type	Material	Threads
H03603173	FA BS 341 Nr. 3	Brass/ NI	G 5/8"
H03603101	FA BS 341 Nr. 3	SS	G 5/8"
H03612773	FA BS 341 Nr. 4	Brass/ NI	G 5/8" LH
H03612701	FA BS 341 Nr. 4	SS	G 5/8" LH
H03606003	FA BS 341 Nr. 8	Brass	0,860" × 14 TPI
H03606001	FA BS 341 Nr. 8	SS	0,860" × 14 TPI

Cylinder Connections NEN 3268

Complete, for FMD series 500 + 230, inlet see below, outlet NPT ¼" m

Part.-no.	Type	Material	Threads
H03609655	FA LU 1	Brass/ NI- CR	W 21,8 × 1/14" LH
H036096117	FA LU 1	SS	W 21,8 × 1/14" LH
H03609856	FA LU 4	Brass/ NI- CR	W 1" × 1/8" LH
H036098113	FA LU 4	SS	W 1" × 1/8" LH
H03608673	FA RI 2	Brass/ NI- CR	G 5/8"
H036086151	FA RI 2	SS	G 5/8"
H03609555	FA RU 1	Brass/ NI- CR	W 21,8 × 1/14"
H036095117	FA RU 1	SS	W 21,8 × 1/14"
H03610055	FA RU 3	Brass/ NI- CR	W 24,32 × 1/14"
H036100117	FA RU 3	SS	W 24,32 × 1/14"

Cylinder Connections CGA

Complete, for FMD series 500 + 230, outlet NPT ¼" m

Part.-no.	Type	Material	Inlet
H03614573	FA CGA 320	Brass/ CR	0.825" – 14 NGO RH EXT
H03614501	FA CGA 320	SS	0.825" – 14 NGO RH EXT
H03607673	FA CGA 350	Brass/ NI- CR	0.825" – 14 NGO LH EXT
H03607601	FA CGA 350	SS	0.825" – 14 NGO LH EXT
H03619273	FA CGA 540	Brass/ NI- CR	0.825" – 14 NGO RH EXT
H03619201	FA CGA 540	SS	0.825" – 14 NGO RH EXT
H03750073	FA CGA 580	Brass/ NI- CR	0.825" – 14 NGO RH EXT
H03750001	FA CGA 580	SS	0.825" – 14 NGO RH EXT
H03607473	FA CGA 590	Brass/ NI- CR	0.825" – 14 NGO LH EXT
H03607401	FA CGA 590	SS	0.825" – 14 NGO LH EXT

Cylinder valve FAV

Inlet pressure max. 50 bar, outlet NPT ¼"f × NPT ¼" f

Part.-no.	Type	Material
FAV50036GE	FAV 50036GM, without Gauge	Brass
FAV50036GE	FAV 50036GE, without Gauge	SS
FAV50037GM	FAV 50037GM, with Gauge	Brass/ NI- CR
FAV50037GE	FAV 50037GE, with Gauge	SS

Gaskets

For cylinder connection in accordance to German standards DIN 477 (minimum purchasing amount 25 pcs. PVDF, 10 pcs. PCTFE)

Part.- no.	Cylinder connection no.	Material
H09015816	1, 6, 7, 9, 10, 12, 13	PVDF
H09010109	1, 6, 7, 9, 10, 12, 13	PCTFE
H09010216	5, 8	PVDF
H09010209	5, 8	PCTFE
H09015916	FA 11, 14	PVDF
H09010309	FA 11, 14	PCTFE

Pigtails, outlet NPT 1/4" m

Acc. to DIN 477/ 230 bar, with hex nut, spiral tube, tube Ø 6 mm, Material, SS/ PCTFE. Outlet NPT 1/4"m – swivel nut, optional size M14x1,5. Spiral lines allow, in a certain range of height and distance, to connect gas cylinders to gas panels. Built-in hold-up grips ensure stress free screwing-up and gas tight connections.
Cylinder connections acc. to other national standards like, AFNOR, NEN, ... on demand.

Part.-no.	DIN connection
H27 448 064	FA 1
H27 427 364	FA 6
H27 446 364	FA 8
H27 433 464	FA 9
H27 433 564	FA 10
H27 433 664	FA 11
H27 447 664	FA 13
H27 433 864	FA 14

Pigtails, outlet NPT ¼“ male

Acc. DIN 477/ 230 bar, capillar pigtail, tube Ø 1/8“, with hex nut NPT 1/4", optional size M14x1,5. Material SS/PCTFE. Cylinder connections acc. to other national standards like, AFNOR, NEN, ... on demand.

Part.-no.	DIN connection
H27 430 564	FA 1
H27 430 664	FA 5
H27 430 764	FA 6
H27 430 864	FA 7
H27 430 964	FA 8
H27 431 064	FA 9
H27 431 164	FA 10
H27 431 264	FA 11
H27 432 264	FA 13
H27 431 364	FA 14

Material acc. to NEVOC (300 bar) SS, acc. to CEN (300 bar) SS

Flexibles hoses, outlet NPT 1/4" m

Acc. to DIN 477/ 230 bar, with hex nut. Material SS/PCTFE. Inlet see below, outlet NPT 1/4"m – swivel nut, optional size M14x1,5. Convoluted hoses are for security reasons equipped with a loop to avoid uncontrolled beating of the hose end in the case of hose rupture. The advantage of convoluted hoses is a maximum of moving flexibility of gas supply. Cylinder connections acc. to other national standards like, AFNOR, NEN, ... on demand.

Part.-no.	DIN conn.	Length
H27 429 564	FA 1	1m
H27 449 064	FA 5	1m
H27 429 064	FA 6	1m
H27 444 846	FA 7	1m
H27 431 464	FA 8	1m
H27 432 164	FA 9	1m
H27 428 164	FA 10	1m
H27 436 664	FA 13	1m
H27 506 264	FA 14	1m
H27 435 424	FA 1	1,5 m
H27 458 164	FA 5	1,5 m
H27 428 364	FA 6	1,5 m
H27 212 264	FA 7	1,5 m
H27 435 564	FA 8	1,5 m
H27 429 364	FA 9	1,5 m
H27 429 664	FA 10	1,5 m
H27 451 664	FA 11	1,5 m
HOSESSDIN1N14L3	FA1	3m
HOSESSDIN6N14L3	FA 6	3m
HOSESSDIN10N14L3	FA 10	3m
HOSESSDIN13N14L3	FA 13	3m
HOSESSDIN14N14L3	FA 14	3m

Check valves

Part.-no.	Material	Inlet	Outlet
H45002060	SS/ FKM	M 14 × 1,5 mm	NPT ¼" m
H45002061	SS/ EPDM	M 14 × 1,5 mm	NPT ¼" m
H03882603	Brass/ Buna	NPT ¼" f	NPT ¼" m
H03882601	SS/ Viton	NPT ¼" f	NPT ¼" m
B000638	SS/ FKM	SW 6	NPT ¼" m
B000727	SS/ EPDM	SW 6	NPT ¼" m

Relief valves „Old"

Inlet NPT ¼" m, Outlet M 14x1

Part.-no.	Type	Material	Relief pressure
B000098	SB/ 8 N	Brass/ NI/ EPDM	8 bar
B000099	SS/ 8 N	SS/ FKM	8 bar
A000024	SB/ 15 N	Brass/ NI/ EPDM	15 bar
A000022	SS/ 15 N	SS/ FKM	15 bar
A000025	SB/ 80 N	Brass/ NI/ EPDM	60 bar
A000026	SS/ 80 N	SS/ FKM	60 bar

Relief valves „New"

Inlet NPT ¼" m, Outlet NPT ¼" female. Component certified, spring loaded, direct acting safety valve for venting of gases.

Part.-no.	Type	Material	Relief pressure
B000645	SB/ 8 N	Brass/ NI/ EPDM	8 bar
B000646	SS/ 8 N	SS/ FKM	8 bar
B000631	SB/ 15 N	Brass/ NI/ EPDM	15 bar
B000632	SS/ 15 N	SS/ FKM	15 bar
B000636	SB/ 80 N	Brass/ NI/ EPDM	60 bar
B000635	SS/ 80 N	SS/ FKM	60 bar

Flame arrestors FS

Part.-no.	Type	Inlet × Outlet	Material	Gas	Service pressure
K000016	FS 300	tube Ø 6 mm × G ¼" f	Brass	C2H2/ H2/ O2	1,5 bar (300-14)
K000019	FS 300	tube Ø 6 mm × G ¼" f	Brass	C2H2/ H2/ O2	1,5 bar (300-18)
L000454	FS 400	G ¼" m × G ¼" f	Brass- CR	C2H2/ H2/ O2	1,5 bar
L000337	FS 400	G ¼" m × G ¼"f	Brass	H2/ gas mixt.	max. 10 bar
L000110	FS 400	NPT ¼" f × NPT ¼" m	SS	C2H2	1,5 bar
B000096	FS 500	NPT ¼" m × NPT ¼" f	Brass	C2H2/ H2/ O2	1,5 bar
B000614	FS 500	NPT ¼" m × NPT ¼" f	Brass	H2/ O2	max. 10 bar
B000492	FS 500	NPT ¼" f × NPT ¼" f	SS	H2/ O2/CH4	max. 10 bar
B000643	FS 500	NPT ¼" f × NPT ¼" f	SS	H2/ CH4/ C3H8	max. 5 bar

Flow meter, with regulating valve

Conversion table attached delivery, inlet/outlet NPT ¼" f

Air

Part.-no.	Type	Material	Flow [l/h] at 1 bar (20°C)
H28030070	DK 800	Brass/ FKM	6 – 60
H28030060	DK 800	SS/ VITON	6 – 60
H28028370	DK 800	Brass/ FKM	50 – 500
H28028360	DK 800	SS/ VITON	50 – 500
H28028270	DK 800	Brass/ FKM	25 – 250
H28028260	DK 800	SS/ VITON	25 – 250
H28033170	DK 800	Brass/ FKM	240 – 2400
H28033160	DK 800	SS/ VITON	240 – 2400

N2 / H2

Part.-no.	Type	Material	Flow [l/h] (20°C)
H28032970	DK 800 for N2	Brass/ VITON	10 – 100 at 1 bar
H28032360	DK 800 for H2	SS/ VITON	16 – 160 at 2 bar

Other flow meter for spezial type of gases on request

Plastic hose

Otainable in length at 10 m

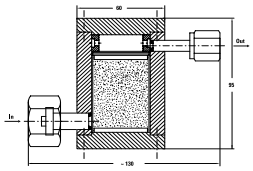
Part.-no.	Inner × outer diameter	Material
H28800019	6 mm × 4 mm	Polyethylen
H27505015	6 mm × 4 mm	Teflon
H27505115	8 mm × 6 mm	Teflon
H27505215	10 mm × 8 mm	Teflon

Valve mounting

For valves MVA 500, MVK 41, MVR 500, MVA 501

Part.-no.	Type	Specification
H05018204	for wall mounting	Aluminium
H05023905	Retaining bracket for outlet	Steel

Moisture filter TF 750



Recommended for hydrophilic corrosive gases like HCL, BF_3, etc.

Part.-no.	Type	Specification
H51000164	TF 750	Filter housing filled with moleculary sief
H03108364	TF 750	Filter exchange

Heating sleeve ZB 500

For FMD series 230 and 500. Illustration with FMD 500-14.

Part.-no.	Type	Specification
H28650119	ZB 500- Heat	230 V
H28650019	ZB 500- Heat	110 V

Cylinder holder FH

Part.-no.	Type	Specification
H03110301	FH	SS steel plate, nylon belt with D-rings
H03050220	Belt	Spare belt with D-rings

Part.-no.	Type
H111004201	Spare handwheel regulator, black, series 500
H110073201	Spare handwheel shut off valve, 90° black, series 500
H110080201	Spare handwheel regulating valve, black, series 500
H040520204	Guide jacket for Spare handwheel, series 500
H110060204	Guide jacket for valve, series 500
H22005219	Screw for series 500
321813960150	Spare handwheel regulator, black, series 230
311112220612	Screw for series 230
H110090210	Spare handwheel regulator, series LAB 3000
H110091210	Spare handwheel shut off valvel, series LAB 3000
H110092210	Spare handwheel regulating valve, series LAB 3000

Label, series 300, 400 und 500

For valve- and regulator handwheel, color coded acc. to DIN 12920

Type	Material	Diameter	Notice
Spare label for valve	PVC	Ø 17 mm	specify gas!
Spare label for handwheel	PVC	Ø 30 mm	specify gas!

Label, series 500

For valve and regulator handwheel, GCE design

Part.-no.	Type	Material	Diameter
H21003604	for handwheel	Aluminium	Ø 30 mm
H21027304	for valve	Aluminium	Ø 17 mm

Label, series 3000

Regulator handwheel gas specific labeled, please specifiy gas!

Part.-no	Type	Material	Diameter
Label LAB3000	for handwheel	PVC	Ø 21 mm
H21047004	for shut off valve	Alu anodized	Ø 12 mm
H21047104	for regulating valve	Alu anodized	Ø 14 mm

Label, series 500 for SMD/ BMD/ EMD

Gas specific labeled, threads: 80 mm × 25 mm. Please specifiy used gas!

Part.-no.	Type	Material
H21049519	Type of label	PVC foil adhesive

Leakage detection spray

Part.-no.	Type	Specification	
W619600	Leakage search spray	400 ml bottle	DVGW registrated

Teflon tape

Part.-no.	Type	Material	Specification
W635600	Teflon band, wide 1,5	PTFE	reel 12 m × 12 mm × 0,1 mm
W635500	Teflon band, wide 1,6	PTFE	reel 13,7 m × 12,3 mm × 0,1 mm

Part.-no.	Type	Material	Specification
H11006401	SW 36 mm	SS	Open- end wrench, extra flat 6mm
H11008901	SW 38 mm	SS	Open- end wrench, extra flat 6 mm

Gloves, transparent

Quantity buying 25 pieces

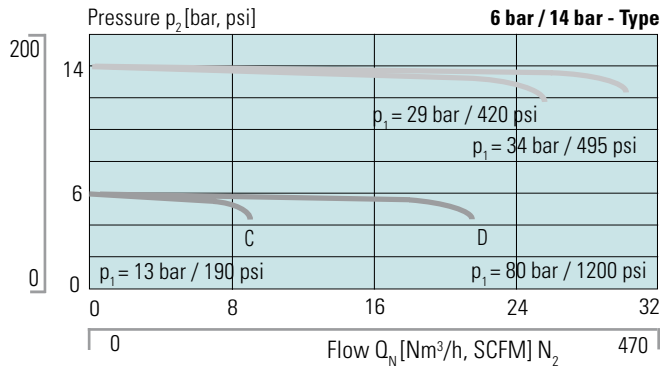
Part.-no.	Type	Material	Size
W619000	non-returnable gloves	Latex	S, or 6 – 7
W619100	non-returnable gloves	Latex	M, or 7 – 8
W619200	non-returnable gloves	Latex	L, or 8 – 9
W656100	non-returnable gloves	Latex reinforced	9 – 9 ½
W649400	non-returnable gloves;	white plastic	XL

Services

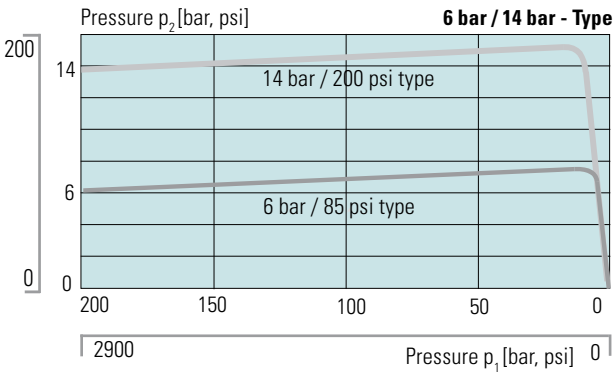
Type
Electrochemical polishing of metal parts
Ultrasonic cleaning
Orbital welding of stainless steel
Flow measurements
Repair training for regulators und valves
Maintenance contracts for special gas supply plants

FMD + LMD 500

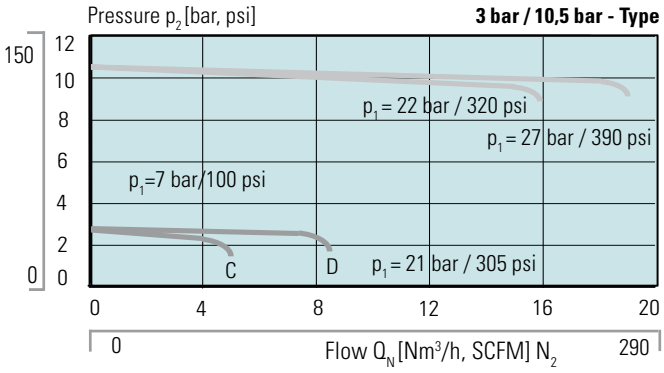
Flow chart



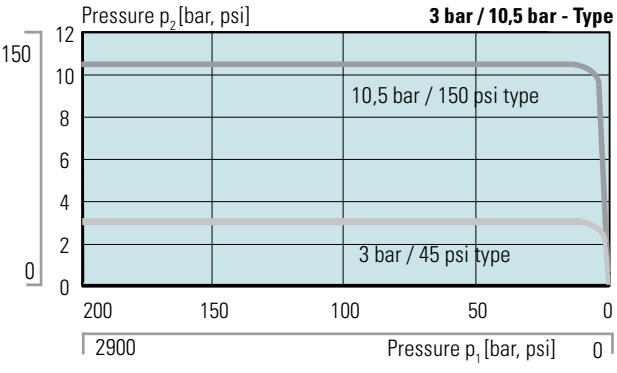
Dynamic pressure relief curve



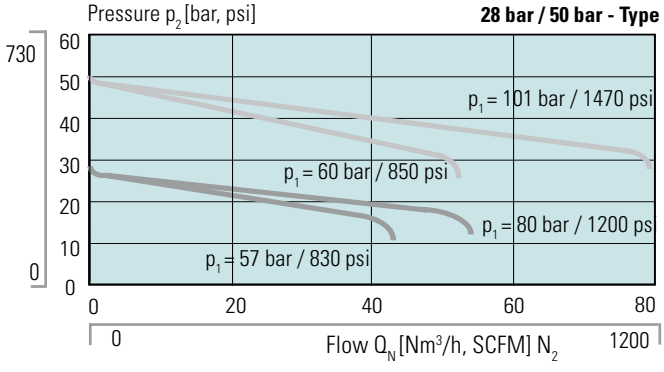
FMD + LMD 502



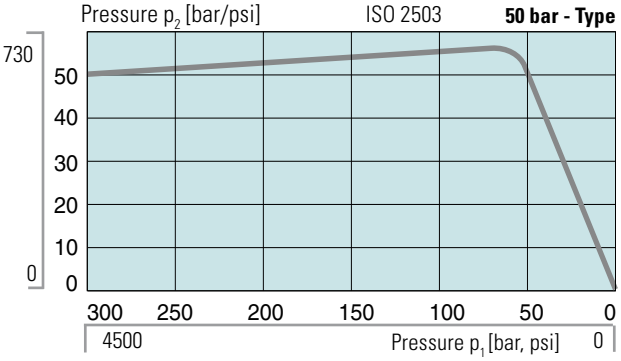
Dynamic pressure relief curve



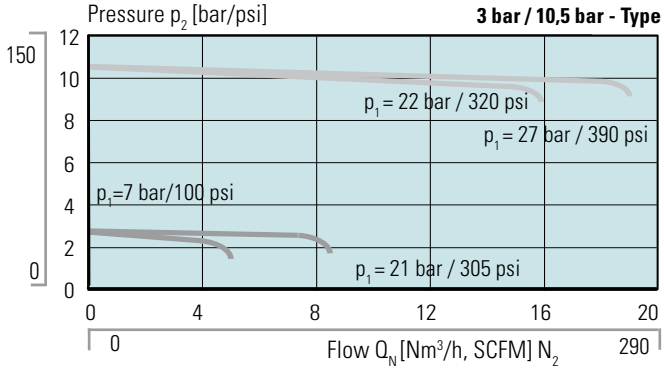
FMD 530



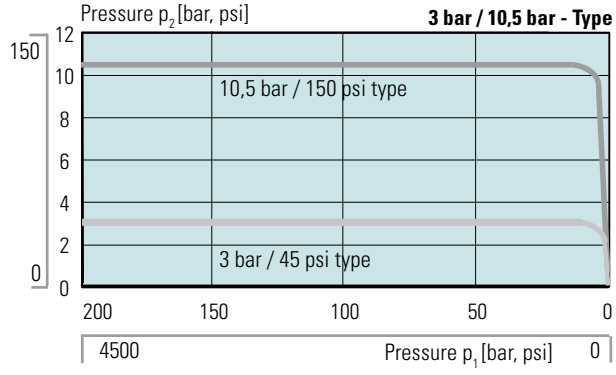
Dynamic pressure relief curve



FMD 532

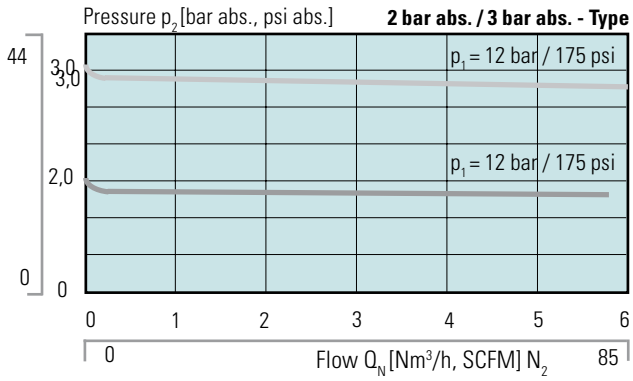


Dynamic pressure relief curve



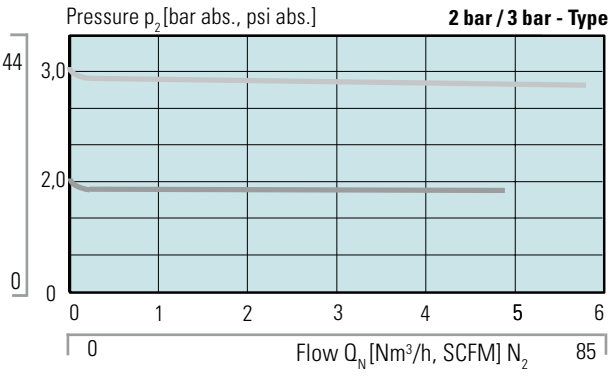
FMD + LMD 510

Flow chart

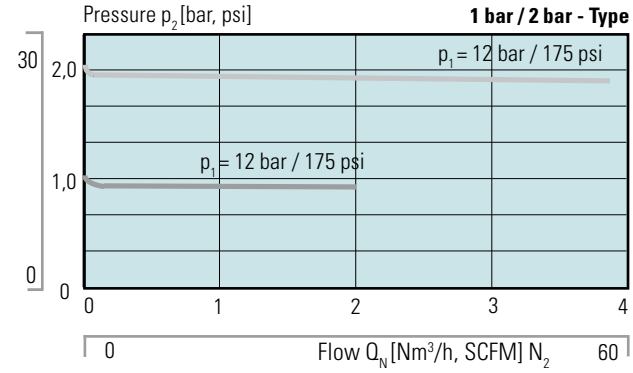


FMD + LMD 522

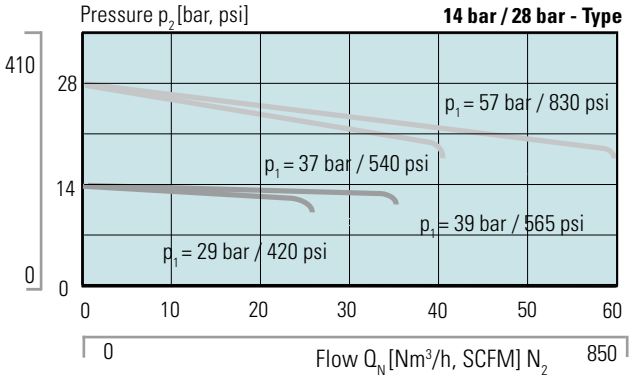
Flow chart



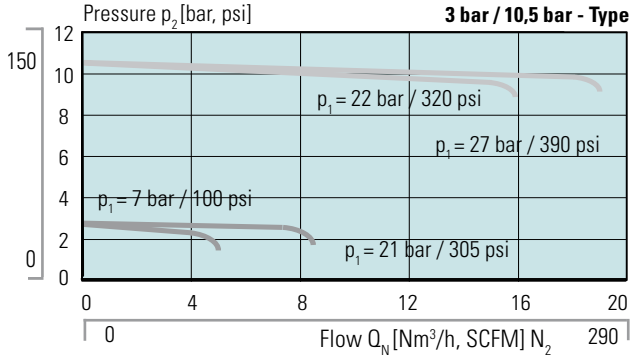
FMD 540



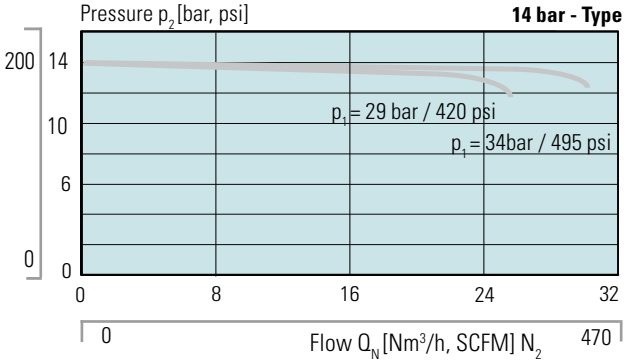
SMD 500-16



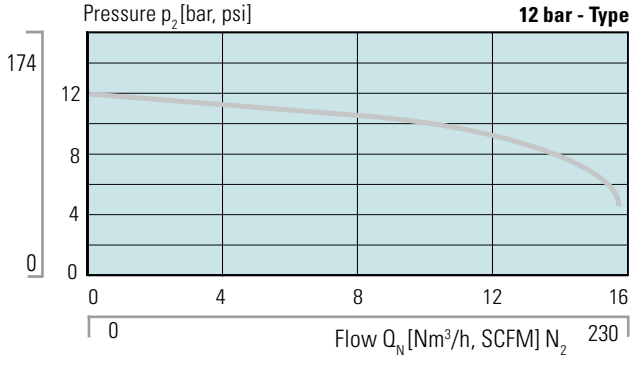
SMD 502-16



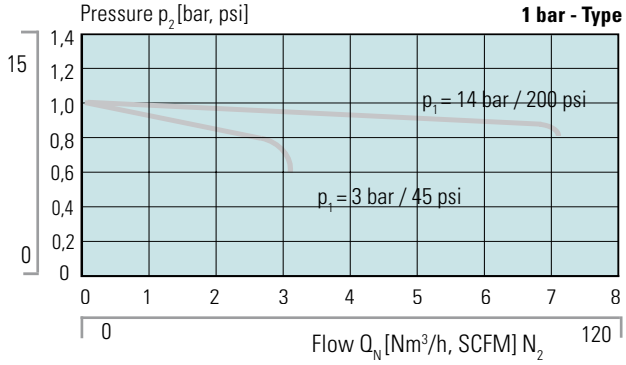
BMD 500-30



BMD 500-35 DS

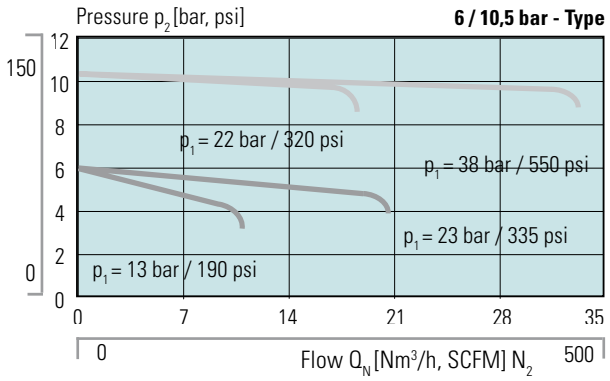


EMD 500



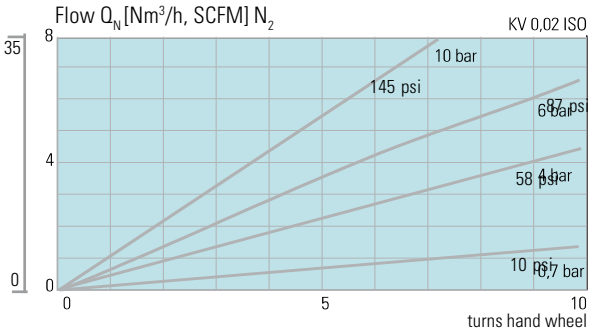
EMD 500

Flow chart

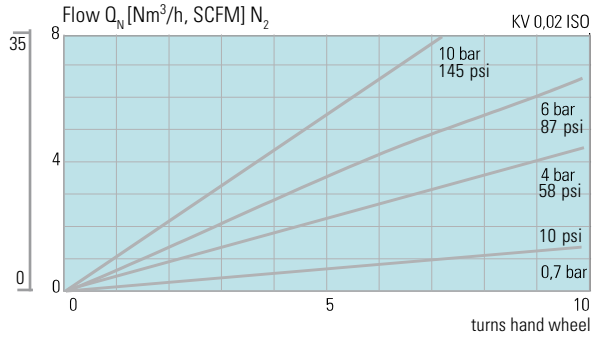


MVR 500 G

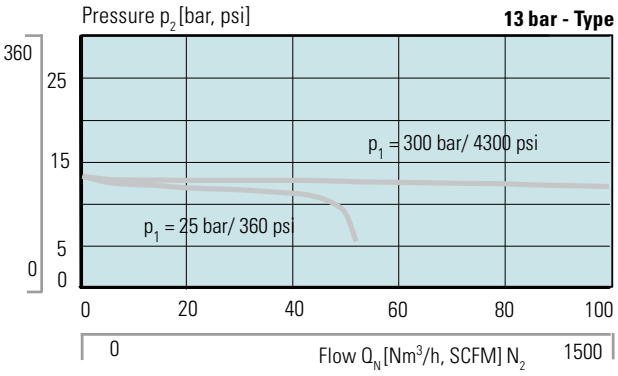
Flow chart



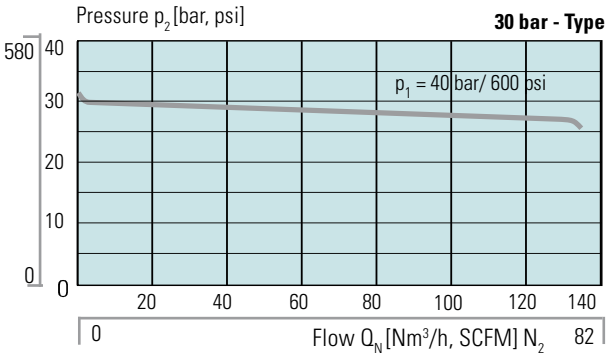
FAV 500



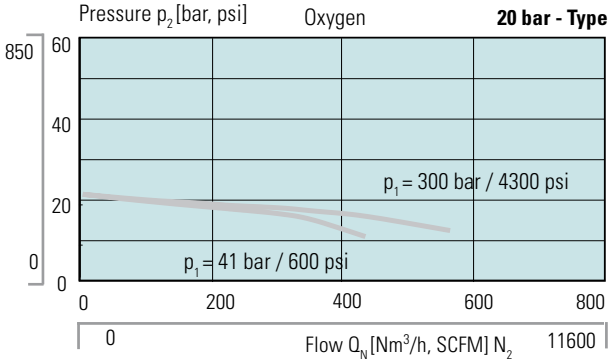
FMD 100-14



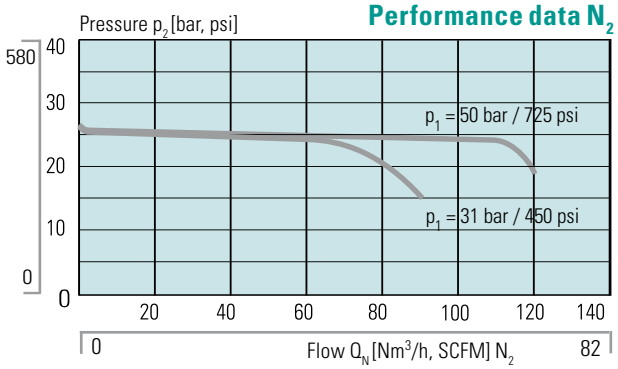
EMD 100-06



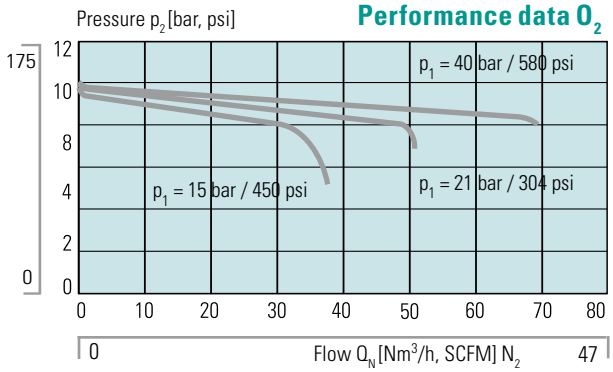
MR 60



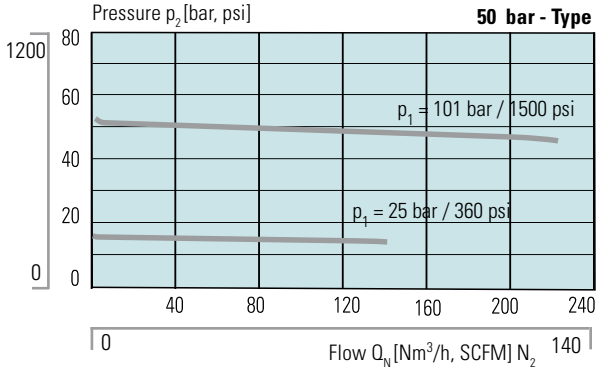
BMD/SMD 100-30



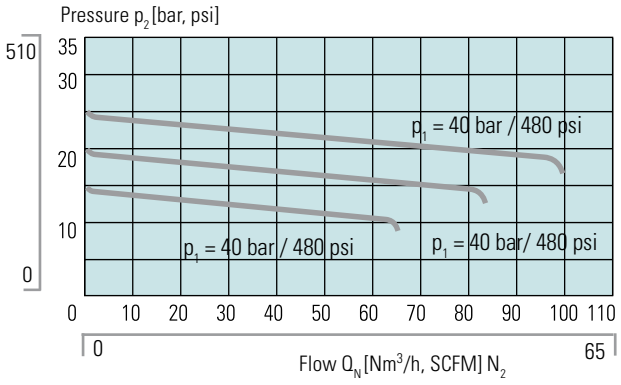
BMD/SMD 100-30



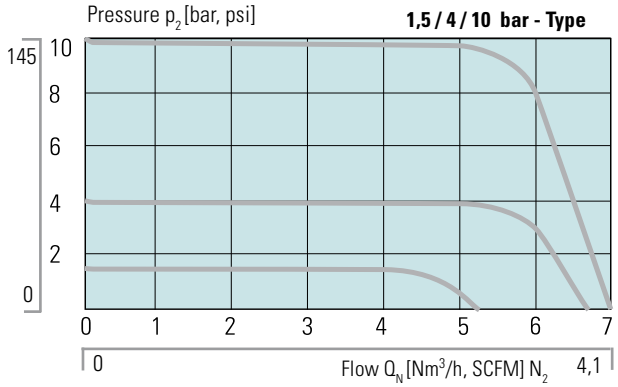
BMD/SMD 100-HF



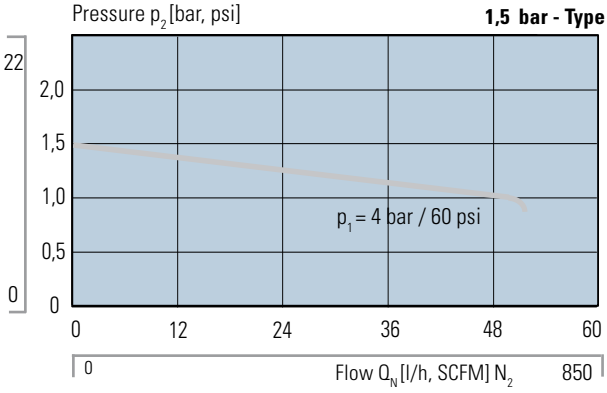
BMD 100-35S/39 + BMD 100-39



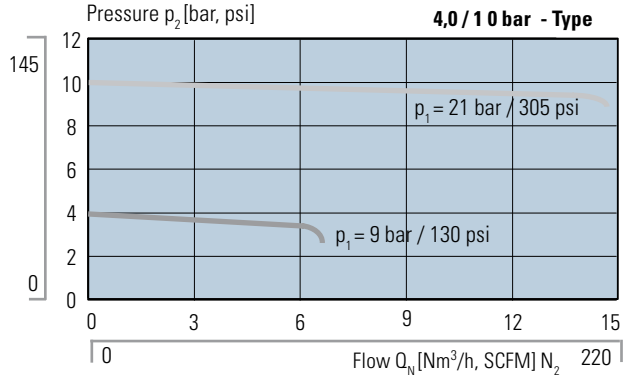
FMD Prior



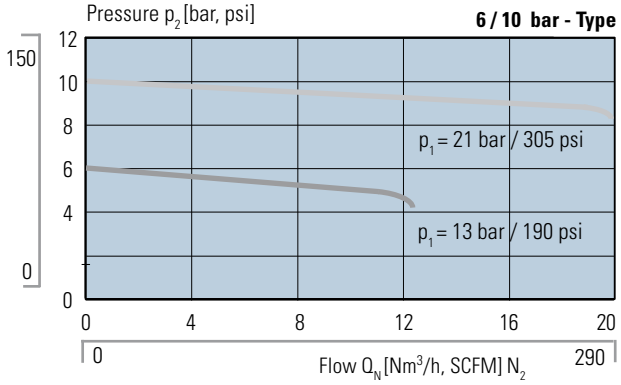
LAB 3000



LAB 3000



EMD 400



LAB 3004, EMD 404

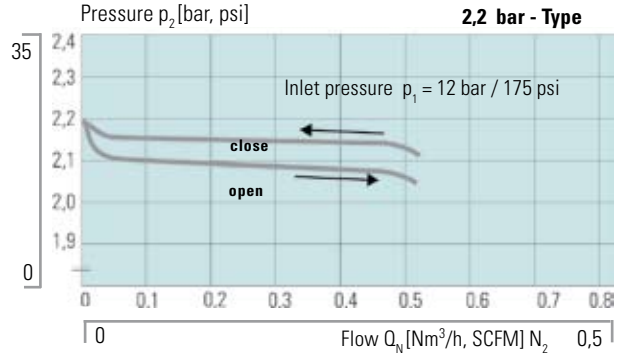


Chart of pressure unit conversion factors

	SI-Einheiten						Technical units						
	bar	mbar	µbar	Pa	kPA	MPa	kp/mm^2	kp/cm^2	atm [1]	mm Hg [2]	m Ws	mm Ws	psi
bar	1	10^{3}	10^{6}	10^{5}	100	0,1	1,019 10^{-2}	1,019	0,986	7,500 10^{2}	10,197	1,020 10^{4}	14,514
mbar	10^{-3}	1	10^{3}	100	0,1	10^{-4}	1,020 10^{-5}	1,020 10^{-3}	9,869 10^{-4}	0,750	1,020 10^{-2}	10,200	1,4514 10^{-2}
µbar	10^{6}	10^{3}	1	0,1	10^{-4}	10^{-7}	1,020 10^{-8}	1,020 10^{-6}	9,869 10^{-7}	7,500 10^{-4}	1,200 10^{-5}	1,200 10^{-2}	1,4514 10^{-5}
Pa	10^{5}	10^{2}	10	1	10^{-3}	10^{-6}	1,020 10^{-7}	1,020 10^{-5}	9,669 10^{-6}	7,501 10^{-3}	1,020 10^{-4}	0,102	1,4514 10^{-4}
kPA	10^{2}	10	10^{4}	10^{3}	1	10^{-3}	1,020 10^{-4}	1,020 10^{-2}	9,869 10^{-3}	7,501	0,102	1,020 10^{2}	0,1451
MPa	10	10^{4}	10^{7}	10^{6}	10^{3}	1	0,102	10,197	9,669	7,501 10^{3}	1,020 10^{2}	1,020 10^{5}	1,451 10^{2}
kp/ mm^2	9,807 10^{2}	9,807 10^{4}	9,807 10^{7}	9,807 10^{6}	9,807 10^{3}	9,807	1	10^{2}	96,784	7,356 10^{4}	10^{3}	10^{6}	1,423 10^{3}
kp/cm^2	9,807 10^{-1}	9,807 10^{2}	9,807 10^{5}	9,807 10^{4}	9,807 10^{1}	9,807 10^{-2}	10^{1}	1	0,968	7,356 10^{2}	10	10^{4}	14,23
atm [1]	1,013	1,013 10^{3}	1,013 10^{6}	1,013 10^{5}	1,013 10^{2}	0,101	1,033 10^{-2}	1,033	1	7,60 10^{2}	10,332	1,033 10^{4}	14,7
mm Hg [2]	1,333 10^{-3}	1,333	1,333 10^{3}	1,333 10^{2}	0,133	1,333 10^{-4}	1,3 60 10^{-5}	1,360 10^{-3}	1,316 10^{-3}	1	1,360 10^{-2}	13,600	1,934 10^{-2}
m Ws	9,807 10^{-2}	9,807 10^{1}	9,807 10^{4}	9,807 10^{3}	9,807	9,807 10^{-3}	10^{-1}	0,1	9,678 10^{-2}	7,356 10^{1}	1	10^{3}	1,423
mm Ws	9,807 10^{-5}	9,807 10^{-2}	9,807 10^{1}	9,807	9,807 10^{-3}	9,807 10^{-6}	10^{-4}	10^{-4}	9,678 10^{-5}	7,356 10^{-2}	10^{-3}	1	1,423 10^{-3}
psi	0,0689	68,9	6,89 10^{4}	6,89 10^{3}	6,89	6,89 10^{-3}	7,028 10^{-4}	7,028 10^{-2}	6,803 10^{-2}	51,703	0,703	7,032 10^{2}	1

[1] 1atm = 1 physical atmosphere (Standard atmosphere acc. to B. S.)
= 760 mm Hg at 0°C and standard earth acceleration of 9,80655 m/s^2

[2] 1 mm Hg = Pressure of a mercury columnn of 1 mm at 0°C and a standard density of 13,5951 g/cm^3 at standard earth acceleration of 9,80655 m/s^2

1 Pa = 1 N/m^2, 1 kp/cm^2 = 1 at (atü), 1mm Hg = 1 Torr.
1 psi = 0,069 bar, 1 bar = 14,51 psi.

Chart of volume unit conversion factors

	cm^3	liter	m^3	(Zoll)^3	(Fuß)^3	gal
cm^3	1		10^{-6}	0,0610	3,53x10^{-5}	2,64x10^{-4}
liter	1000	1	0,001	61,02	0,0353	0,2642
m^3	10^{6}	1000	1	6,1x10^{4}	35,31	264,2
in^3 (Zoll)^3	16,39	0,0164	1,64x10^{-5}	1	5,79x10^{-4}	0,00433
ft^3 (Fuß)^3	2,83x10^{4}	28,32	0,0283	1728	1	7,481
gal	3785	3,785	0,0038	231,0	0,1337	1

Chart of mass flow unit conversion factors

	kg/h	g/h	mg/h
kg/h	1	103	106
g/h	10-3	1	103
mg/h	10-6	10-3	1

To calculate the mass through flow (m) the volume through flow (V) is multiplied with the density (ρ) of the substance: $m = \rho \times V$.

With gases the density (ρ) is strongly dependent upon the pressure (p) and the temperature (T):
$\rho_2 = \rho_1 \times T_1 \times p_2 \ / \ T_2 \times p_1$.

Chart of volume flow unit conversion factors

	m^3/h [SCMH]	l/h	ml/h	ft^3/min [SCFM]	gal/min	ft^3/s [SCFS]	l/s	cm^3/s [SCCMS]
m^3/h	1	10^3	10^6	0,589	4,403	$9,808 \times 10^{-3}$	0,2778	277,78
l/h	10^{-3}	1	10^3	$5,887 \times 10^{-4}$	$4,403 \times 10^{-3}$	$9,808 \times 10^{-6}$	$2,778 \times 10^{-4}$	0,2778
ml/h	10^{-6}	10^{-3}	1	$5,887 \times 10^{-7}$	$4,403 \times 10^{-6}$	$9,808 \times 10^{-9}$	$2,778 \times 10^{-7}$	$2,778 \times 10^{-4}$
ft^3/min	1,699	$1,699 \times 10^3$	$1,699 \times 10^6$	1	7,481	$1,667 \times 10^{-2}$	0,4719	$4,720 \times 10^2$
gal/min	0,227	$2,271 \times 10^2$	$2,271 \times 10^5$	0,133 67	1	$2,228 \times 10^{-3}$	$6,309 \times 10^{-2}$	63,09
ft^3/s	$1,019 \times 10^2$	$1,019 \times 10^5$	$1,019 \times 10^8$	60	$4,4877 \times 10^2$	1	28,32	$2,832 \times 10^4$
l/s	3,6	$3,6 \times 10^3$	$3,6 \times 10^6$	2,119	15,85	0,0353	1	10^3
cm^3/s	$3,6 \times 10^{-3}$	3,6	$3,6 \times 10^3$	$2,119 \times 10^{-3}$	$1,585 \times 10^{-2}$	$3,531 \times 10^{-5}$	10^{-3}	1

GAS	FORMULA	Flow rel. to N2	Cylinder pressure (20° C) bar	Cylinder pressure (68° F) psi	Cylinder connection acc. to DIN 477	Gas charact.
Acetylene	C2H2	1,09	18	261	3	f
Ammonia	NH3	1,3	8,6	125	6	p/c
Argon	Ar	0,85	200	2900	6	i
Arsine	AsH3	0,62	15	218	1	f/p
Bortrifluoride	BF3	0,67	200	2900	8	p/c
Butadien	C4H6	0,75	2,5	36	1	f/p
Butane	C4H10	0,72	2,1	30	1	f
Butylene	C4H8	0,73	2,6	38	1	f
Chlorine	Cl2	0,65	6,4	93	8	p/c
Hydrogen chloride	HCl	0,91	43	624	8	p/c
Deutérium	D2	2,6	100	1450	1	f
Nitrous oxide	N2O	0,83	54,2	786	11	o
Pressure air	DL	1	200	2900	13	o
Ethylene	C2H4	1,02	-68	-986	1	f/o
Ethane	C2H6	0,98	38	551	1	f/o
Helium	He	2,6	200	2900	6	i
Carbon dioxide	CO2	0,83	53,7	780	6	o
Carbon monoxide	CO	1	151	2190	5	f/p
Krypton	Kr	0,59	200	2900	6	i
Methane	CH4	1,35	200	2900	1	f
Neon	Ne	1,12	200	2900	6	i
Propane	C3H8	0,83	8,3	120	1	f
Propylene	C3H6	0,87	10,3	149	1	f
Test gas					14	o
Oxygen	O2	0,96	200	2900	9	o
Sulfur dioxide	SO2	0,7	3,3	48	7	p/c
Sulfur hexafluoride	SF6	0,45	22,2	322	6	o
Hydrogen sulfide	H2S	0,91	18	261	5	f/p/c
Nitrogen	N2	1	200	2900	10	o
Nitric oxide	NO	0,96	50	725	8	p/c
Synthetic air	SL	1	200	2900	9	o
Tetrafluoromethane	CF4	0,57	100	1450	6	p/o
Hydrogen	H2	3,7	200	2900	1	f/o
Xenon	Xe	0,47	50	725	6	i

Declaration: f = flammable, i = Inert gas, p = poisonous, c = corrosive, o = others, b = brass, ss = stainless steel

Cylinder Connections

DIN 477 -1 230 bar gases

No.	Connection	Gases
1	W 21,80 x 1/14 LH	Ethylene, Methane, Propane , Hydrogen, forming gas
3	Clamp clip	Acetylene
6	W 21,80 x 1/14	Argon, Helium, Carbon dioxide
9	G ¾	Oxygen, Test gas (with Oxygen > 21 %)
10	W 24,32x 1/14"	Nitrogen
13	G 5/8"	Compressed air
14	M 19 x 1,5 LH	Test gas (with Oxygen < 21 %)

DIN 477-5 300 bar gases

No.	Connection		Gases
54	15,9 / 20,1	W 30 x 2	Not flammable, non poisonous and not oxidizing gases and gas mixtures
55	15,2 / 20,8	W 30 x 2	Not flammable, poisonous and oxidizing gases and gas mixtures
56	16,6 / 19,4	W 30 x 2	Pressure air
57	15,2 / 20,8	W 30 x 2 LH	Flammable, not poisonous gases and gas mixtures
58	15,9 / 20,1	W 30 x 2 LH	Flammable, poisonous and oxidizing or not oxidizing gases and gas mixtures
59	17,3 / 18,7	W 30 x 2	Oxygen and oxidizing, non poisonous, not oxidizing gases and gas mixtures
60	18 / 18	W 30 x 2	Oxidizing, poisonous and/or oxidizing gases and gas mixtures

GCE DruVa

DruVa - since 1967 this brand is recognized for „high purity gas equipment" of highest quality.
Providing a product range from the single valve to complete systems for high purity gases the quality of our products and the expected aftersales service is our obligation.
Still aiming to increase this quality in the future our enterprise strategy is based on three basic goals:
- focussing solely on high-purity gas-handling equipment.
- maintaining an intensive dialogue with our customers to allow continuous adaption of our product range to the forthgoing requirements of application technology.
Improvement of all procedures according to DIN/EN 9001 and DIN/EN 46001. All employees of our enterprise bear responsibility for that goal. Since 1998 the former DruVa GmbH appertains to the GCE Group (Gas Control Equipment, Malmoe/Sweden).
http://www.druva.de

GCE
Gas Control Equipment

- GCE is an european group specialized in Flow and Pressure Control of Gases:
  - GCE is present on all major european markets
  - GCE equipment is adapted to local standards
  - GCE has application know how since 100 years
- GCE's supply facilities demonstrate state of the art:
  - organised for quick response, short lead-times
  - all units with ISO 9000 approval
  - selected units with ISO 14000 approval.
  - all medical units with EN approvals for CE marking

Seventeen own manufacturing-, sales- and service enterprises, also one in US, representing the trademarks Autogen, BIG, Charledave, Mediline, Mujelli, MUREX, Rhoena and also GCEDruVa established market-leadership in their particular market segments.
Embedded and encouraged by this worldwide operation GCE will go ahead offering products characterized by the words Safety, Reliability, Purity and Way-Pointing-Technology.
GCEDruVa stands for competence in all questions concerning High Purity Gas Equipment, efficient service and particularly a reliable partnership in order to safeguard the success together with its customers.
http://www.gceab.se

GCE worldwidely provides various type of gas handling equipment from its business sectors:

- **Cutting and Welding Gas Control Equipment**
  - Cutting and welding systems
  - Machine cutting torch systems
  - Gas supply systems for industries

GCE CUTTING & WELDING

- **Process Applications Gas Control Equipment**
  - High pressure valves for all gases
  - Residual pressure and low torque valves
  - Industrial Process Application equipment

GCE PROCESS APPLICATIONS

- **Medical Gas Control Equipment**
  - Oxygen therapy systems
  - Gas supply systems for hospitals
  - Emergency gas systems

GCE MEDICAL

- **High Purity Gas Control Equipment**
  - Regulators and valves
  - Gas supply systems and panels
  - Accessory

GCE HIGH PURITY

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GCE GmbH/Subject to alteration/Art. No. V000305/ Edition 8-2007