

CENTRAL GAS SUPPLY SYSTEMS : CYLINDER BATTERIES AND HIGH PRESSURE HOSES



With a Central Gas Supply System, individual work places or gas take-off stations are supplied with gas through pipeline networks. Gases, according to consumption rate, are provided by cylinder batteries or for larger consumption by racks of cylinders. Central Gas Supply Systems offer apart of higher operational safety and economy the following principal advantages :

- With cylinder batteries having two header pipes there is no work interruption at cylinder exchange.
- Insignificant plant-internal cylinder transport.
- Important gas reserve and better utilisation of cylinder content.
- Safety at work place area by elimination of high pressure fittings.
- Better survey of gas consumption and gas reserve.

Our central gas supply systems are available for all non aggressive gases and gas mixtures. The gases most in use (and their abbreviated signs) are:

A	acetylene	C	carbon dioxide
AR	argon	P	propane
CH	butan	O	oxygen
NO	nitrous oxide	N	nitrogen
DL	compressed air	H	hydrogen
M	natural gas	NH	mixed gas
HE	helium		

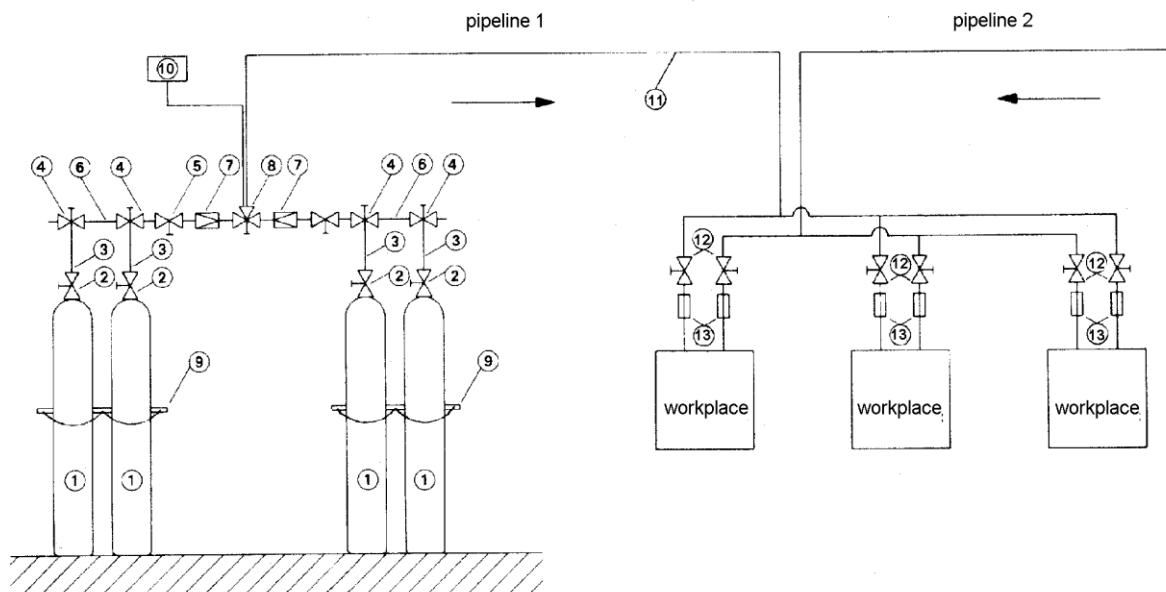
The gas specific connections are as follows:

For 200 bar :

O	=	3/4"
AR, NO, DL, HE, C, N, NH → RG	=	21.8 right
CH, M, P, H → LG	=	21.8 left
A	=	3/4" male

For 300 bar :

O	=	W30 x 2 / 18.7 / 17.3
DL	=	W30 x 2 / 19.4 / 16.6
AR, NO, HE, C, N, NH → RG	=	W30 x 2 / 20.1 / 15.9
CH, M, P, H → LG	=	W30 x 2 LH / 20.8 / 15.2



- | | |
|------------------------------|---|
| 1 Gas cylinder | 8 Change-over switching station (manual or automatic) |
| 2 Cylinder valve | 9 Cylinder holder |
| 3 High pressure hose | 10 Electronic control unit with empty indicator for automatic change-over switching station |
| 4 Shut-off valve | 11 Distribution pipeline |
| 5 Master manifold valve | 12 Pipeline regulation set |
| 6 Cylinder battery | 13 Flame arrestor (for fuel gas and oxygen) |
| 7 Central pressure regulator | |

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GLOOR

GLOOR LTD
 Kirchbergstrasse 111
 3401 BURG DORF/SWITZERLAND
 Phone +41 34 427 47 47 Fax +41 34 423 15 46
<http://www.gloor.ch> e-mail: gloor@gloor.ch

CYLINDER BATTERIES

An extremely flexible modular system permits individual attention to user requirements. The individual modules of the cylinder batteries can be combined according to the client's wishes and where required, supplemented with manual or automatic change-over switching stations. The modular system enables consideration to be given to the on-site space conditions and also the possibility for a retrospective installation expansion. As the individual modules are assembled on-site, transporting the individual parts presents no problems. The batteries can be supplied in version for cylinders with a filling pressure of 300 bar and as well for 200 bar.

For single cylinders or for cylinder racks

Single cylinder station

For connecting a cylinder or a cylinder rack using a high pressure hose. Outlet optionally left (-L) or right (-R). With integrated sinter filter and device for wall mounting. Optionally also available with backflow valve.

Inlet (at bottom) : for 300 bar : M24x1.5, respectively M24x1.5 left for fuel gases Art.8934-W
for 200 bar : G 3/4", respectively G 3/4" left for fuel gases Art.8924-W
Outlet : gas specific (s.page 2)

Same as above, but for mounting on C-rail (when using with change-over switching station)
for 300 bar Art.8934
for 200 bar Art.8924



Art.8934-W
Art.8924-W



Art.8934
Art.8924

For connecting of several cylinders

Master manifold valve

The master manifold valve is mounted between the change-over switching station and the collector station. Its function is to shut off the entire gas flow of this side. Outlet optionally left (-L) or right (-R). Including device for wall mounting.

Inlet (left or right) : W 21.8x1/14, respectively W21.8x1/14 left for fuel gases
Outlet : gas specific (s.page 2)
for 300 bar Art.8931-W
for 200 bar Art.8921-W

Same as above, but for mounting on C-rail (when using with change-over switching station)
for 300 bar Art.8931
for 200 bar Art.8921

Collector station

For connecting two cylinders using high pressure hoses. Consisting of two shut-off valves, integrated sinter filter and device for wall mounting. Optionally also available with backflow valve. Can be used for both flow directions.

Inlets (at bottom) : for 300 bar : M24x1.5, respectively M24x1.5 left for fuel gases Art.8932
 : for 200 bar : G 3/4", respectively G 3/4" left for fuel gases Art.8922

Outlet : W 21.8x1/14, respectively W21.8x1/14 left for fuel gases

If only two cylinders are connected, the side not in use is blanked with a locking screw.

Additional cylinder station

Same construction as Art.8932 or Art.8922, but only for one cylinder (e.g. for the extension of a collector station to a battery for 3 cylinders)

For 300 bar

Art.8933

For 200 bar

Art.8923



Art.8931-W
Art.8921-W



Art.8932
Art.8922



Art.8933
Art.8923

Connecting tube

For combining the above components (i.e. master manifold valve, collector station and additional cylinder station). Depending on space requirements and desired placement of cylinders, the short (60 mm, Art.89263) or the long version (400 mm, Art.89264) is used. The connecting tube is supplied with connecting nuts W21.8x1/14" resp. for fuel gases W21.8x1/14" L on both sides.



Art.89264-RG
Art.89264-LG



Art.89263-RG
Art.89263-LG



Art.662248-MS-R
Art.662248-MS-L

Accessories

Blanking screw : for blanking off the cylinder battery, consisting of locking cone and connecting nut

Art.79365-K-R
Art.79365-K-L

Instead of the blanking screw, a purging valve can be installed as an option for relieving the pressure or for purging the cylinder battery when changing the cylinders. The purging valve has an outlet with 1/4" female thread (flat sealing) where a vent pipe can be connected or a sinter filter (Art.78608) for the absorbing of the venting noises can be installed.

Art.662248-MS-R
Art.662248-MS-L

Backflow valve (optional, installation also possible later on): for 300 bar :
 for 200 bar :

Art.89372
Art.89272

Nipple for mounting of pressure switches or contact gauges :

For mounting on the master manifold valve :

Art.89228-K

For mounting on the single cylinder station :

Art.89229-RG-K

Art.89229-LG-K

For mounting of pressure switches or contact gauges, please order the master manifold valves, resp. the single cylinder stations with the addition -D.

Cylinder holder

Cylinder holder, zinc plated, with device for wall mounting

For one cylinder

For two cylinders

For three cylinders

Art.7951

Art.7952

Art.7953



Art.7952

HIGH PRESSURE METAL HOSES

High pressure all-metal hose, double braided, NW 5, including safety cord. Available in three lengths : 1 m, 1.5 m and 2 m (other lengths upon request) and in three shapes (L-shape, S-shape and U-Shape).

Connection battery side : for 300 bar : non combustible gases M24x1.5, for fuel gases M24x1.5 L
for 200 bar : non combustible gases G 3/4", for fuel gases G 3/4" L

Connection cylinder side : gas and country specific cylinder connection

	L – shape	S – shape	U - shape
High pressure metal hose 300 bar, length 1 m	Art.7970-300	Art.7973-300	Art.7976-300
High pressure metal hose 200 bar, length 1 m	Art.7970	Art.7973	Art.7976
High pressure metal hose 300 bar, length 1.5 m	Art.7971-300	Art.7974-300	Art.7977-300
High pressure metal hose 200 bar, length 1.5 m	Art.7971	Art.7974	Art.7977
High pressure metal hose 300 bar, length 2 m	Art.7972-300	Art.7975-300	Art.7978-300
High pressure metal hose 200 bar, length 2 m	Art.7972	Art.7975	Art.7978



Art.7970-72
L-shape



Art.7973-75
S-shape

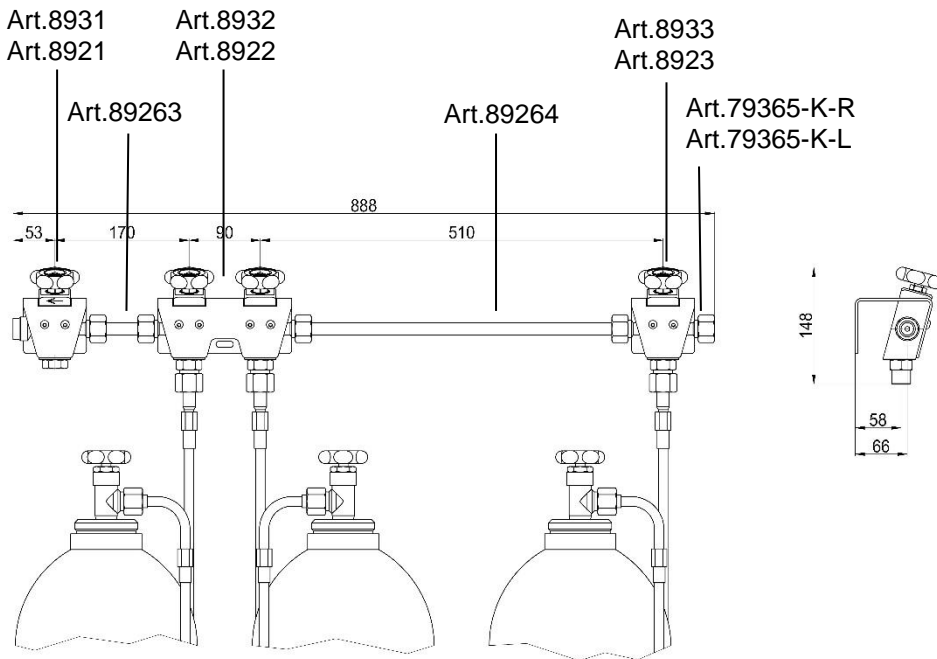


Art.7976-78
U-shape

Possible configurations with dimensions

Battery for 200 or 300 bar inlet pressure

Battery for 3 cylinders with master-manifold valve



CENTRAL GAS SUPPLY SYSTEMS: PRESSURE REGULATORS AND CHANGE-OVER SWITCHING STATIONS

CENTRAL PRESSURE REGULATORS

Both central pressure regulators are outstanding for accuracy of regulation and excellent pressure consistency. A sinter filter made of chrome-nickel steel protects the regulating valve from impurities and is an important factor to the reliability of the regulator. Both regulators are available in version for inlet pressure 300 and 200 bar, and as well with outlet to the right (R) or to the left (L) side. They differ in particularly in the flow rate (s.below).

Central pressure regulator ZD 51

The central pressure regulator ZD 51 is particularly suitable for small central gas supply systems. Standard version with working pressure up to 10 bar.; on request also available with working pressure up to 20, 40 or 60 bar.

Inlet : gas specific screw connector, outlet : for pipeline installation (1/2" or soldered nipple)

Version for inlet pressure 300 bar : - for connection to cylinder or battery Art.5380
- for connection to change-over switching station Art.5390

Version for inlet pressure 200 bar : - for connection to cylinder or battery Art.5180
- for connection to change-over switching station Art.5190



Art.5180-O

ZD 51

Art.No	gas	flow rate Nm ³ /h
5180-O	O	29
5180-DL	DL	30
5180-N	N	30
5180-HE	HE	80
5180-C	C	24
5180-H	H	113
5180-AR	AR	25
5180-A	A	5

Central pressure regulator ZD 79

The central pressure regulator ZD 79 is particularly suitable in central gas supply systems of a certain size. Standard version with working pressure up to 10 bar; on request also available with working pressure up to 20 or 30 bar.

Inlet : gas specific screw connector, outlet : 3/4" or 1/2"

Version for inlet pressure 300 bar: - for connection to cylinder or battery Art.7950
 - for connection to change-over switching station Art.7950-U
 Version for inlet pressure 200 bar: - for connection to cylinder or battery Art.7900
 - for connection to change-over switching station Art.7910
 Bent protection tube for blow off valve (for outdoor installations) Art. 79285



Art.7900-O

ZD 79

Art.No	gas	flow rate Nm ³ /h
7900-O	O	170
7900-DL	DL	180
7900-N	N	180
7900-HE	HE	450
7900-C	C	140
7900-H	H	650
7900-AR	AR	145
7900-A	A	35

CHANGE-OVER SWITCHING STATIONS

Change-over switching stations are used with at least two cylinders (or cylinder racks) to guarantee a continuous gas supply, also during a cylinder change. Depending on the desired level of operating convenience and specific user requirements, change-over switching stations can be either manual or automatic.

Manual change-over switching stations

Manual change-over switching stations permit a continuous operation, the switching from one side to the other being carried out manually via the master manifold valves. The cylinder side in operation is easily identified from the high pressure indication on the pressure regulator.

The manual change-over switching stations are suitable for all non aggressive, technical gases. According to the required flow range, they are available in two versions.

Manual change-over switching station with central pressure regulators ZD 51, outlet pressure 10 bar, inlet (left and right): gas specific (s.page 2)
 outlet : soldered nipple for tube with outer diameter 12 mm.

Version for inlet pressure 300 bar Art.5181-300
 Version for inlet pressure 200 bar Art.5181
 As an alternative also available with working pressure up to 20, 40 or 60 bar.



Art. 5181-300

Manual change-over switching station with central pressure regulators ZD 79, outlet pressure 10 bar,
 inlet (left and right) : gas specific (s.page 2)
 outlet : soldering nipple for tube with outer diameter 12 mm.
 Version for inlet pressure 300 bar
 Version for inlet pressure 200 bar
 As an alternative also available with working pressure up to 20 or 30 bar.

Art.7981-300
 Art.7981



Art.7981-300

Empty indicator

As an option the manual change-over switching station can be equipped with a visual or acoustic alarm which indicates that one battery side is empty.

Operating mode:

On emptying the cylinders, an alarm is activated on the signal box when the pressure which was pre-set on the contact gauges (which are mounted on the high pressure side of the central pressure regulators) falls below this level. The alarm is visual (with a LED per cylinder side) and acoustic. With the reset button the reception of the empty indication is confirmed. The LED of the empty side continues to glow and extinguishes only after the cylinders have been replaced.

Furthermore there are contacts for a remote acknowledgement and an external signal.

For versions for fuel gases and installations in ex zones all components must be protected against explosion in accordance with Swiss safety prescription SEV and SUVA. Thereby a limitation of current and tension in the form of a Zener barrier has to be installed between the empty indicator and each individual contact gauge. The installation of the Zener barrier has always to be made outside the ex zone.

empty indicator standard	for 2 contact gauges	Art.79842-N-2
	for 4 contact gauges	Art.79842-N-4
	for 6 contact gauges	Art.79842-N-6
empty indicator explosion protected	for 2 contact gauges	Art. 79842-N-2-F
	for 4 contact gauges	Art. 79842-N-4-F
	for 6 contact gauges	Art. 79842-N-6-F
contact gauges	200 bar	Art.25681
	300 bar	Art.25682

(per change-over station, two contact gauges are required)



79842-N



5681

Automatic change-over switching stations

Automatic change-over switching stations with empty indication permit continuous and uninterrupted operation and greatly increase operational convenience and safety to a huge extent.

The change-over switching station consists of two central pressure regulators, a change-over unit with solenoid valves, flashback valves and a pressure control. All components are fixed on a wall bracket. Also included is the electronic control box which is yet supplied separately. The control may also be installed outside the gas room; this is obligatory for fuel gases.

The electronic control permits different checks and settings, i.e.

- manual choice of the desired cylinder battery side / cylinder rack side
- closing and opening contacts for external alarm (visual and/or acoustic)
- setting the original state after a power failure or a turning off of the plant

The automatic change-over switching stations are suitable for all non aggressive, technical gases. For fuel gases all components must be protected against explosion. As an alternative the solenoid valves are also available in version „de-energised open“, permitting uninterrupted operation in case of power failure.

Automatic change-over switching station with central pressure regulators ZD 51, inlet pressure 10 bar,

inlet (left and right) : gas specific (s.page 2)

outlet : soldering nipple for tube with outer diameter 12 mm.

Version for inlet pressure 300 bar

Version for inlet pressure 200 bar

As an alternative also available with working pressure up to 20, or 40 bar

Art.5182-300-KM

Art.5182-KM



Automatic change-over switching station with central pressure regulators ZD 79, outlet pressure 10 bar,
 inlet (left and right) : gas specific (s.page 2)
 outlet : soldering nipple for tube with outer diameter 12 mm.
 Version for inlet pressure 300 bar
 Version for inlet pressure 200 bar
 As an alternative also available with working pressure up to 20 or 30 bar.

Art.7982-300-KM
 Art.7982-KM



Art. 7982-300-KM

In addition to the standard version, i.e. solenoid valves 'de-energised closed' and change-over pressure max. 10 bar, the following versions are available as options :

- 1 standard
- 2 protected against explosion, max.change-over pressure up to 1.5 or 4 bar, special version acetylene s.page 13
- 3 protected against explosion
- 4 solenoid valves 'de-energised open'
- 5 solenoid valves 'de-energised open', protected against explosion
- 6 solenoid valves 'de-energised open', protected against explosion, max.change-over pressure up to 1.5 or 4 bar, special version acetylene s.page 13
- 7 max. change-over pressure 20 bar
- 8 max. change-over pressure 20 bar, protected against explosion
- 9 solenoid valves 'de-energised open', max. change-over pressure 20 bar
- 10 solenoid valves 'de-energised open', max. change-over pressure 20 bar, protected against explosion
- 11 max. change-over pressure 40 bar(ZD 51) or 30 bar (ZD 79)
- 12 max. change-over pressure 40 bar (ZD 51) or 30 bar (ZD 79), protected against explosion

Mode of operation of the basic version with one contact gauge

The desired pipeline pressure is preset in the low pressure part on the contact gauge which is mounted on the change-over unit. On falling below this pressure, the contact gauge gives a signal to the electronic control which activates the solenoid valves and thus switches over to the stand-by side. The alarm is given visually on the electronic control. After the replacement of the empty cylinders, the reception of the empty indication is confirmed with the reset button and the light goes off.

Version with 2 contact gauges in the high pressure part

This version is in particular sensible for higher pipeline pressure (30 bar), and is also recommended when a large-scale pipeline net has to be supplied with a corresponding volume of gas. The system gets less dependant on any rear pressure increase respectively pressure drop. When ordering this version, please indicate the addition 2KM.

Moreover with this version there is a two step alarm when the cylinders are empty. On falling below the preset pressure, also here the contact gauge gives a signal to the electronic control which activates the solenoid valves and thus switches over to the other side.

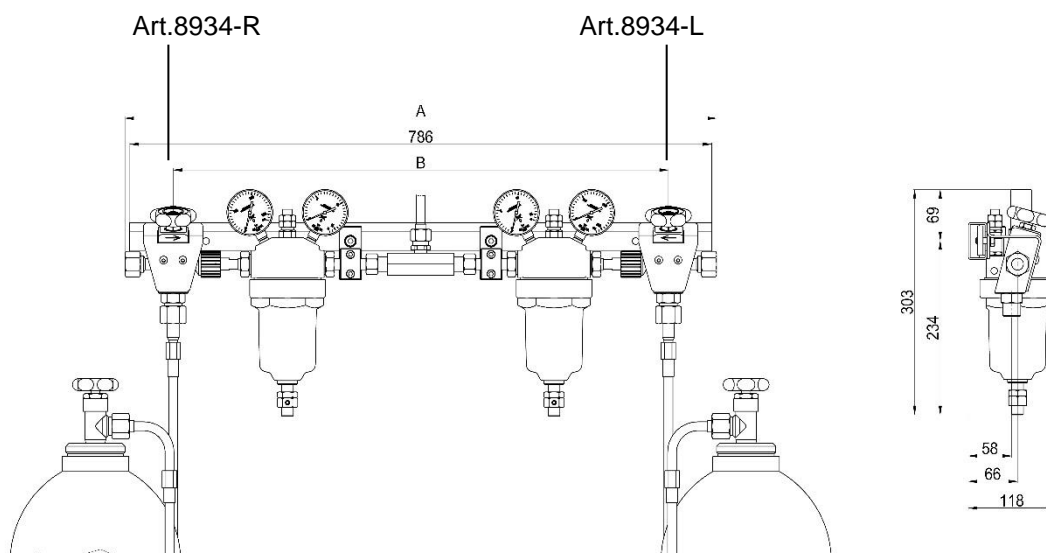
The alarm is also given here visually on the electronic control. After the confirmation of the empty indication, the red light stops flashing but continues to be on until the contact gauge is again under pressure, i.e. the empty cylinders have been replaced.



Art. 7982-2KM

Dimensions

Art.7981-300



Dimensions of the manual and automatic change-over switching station with ZD79: A = 800mm
B = 670mm

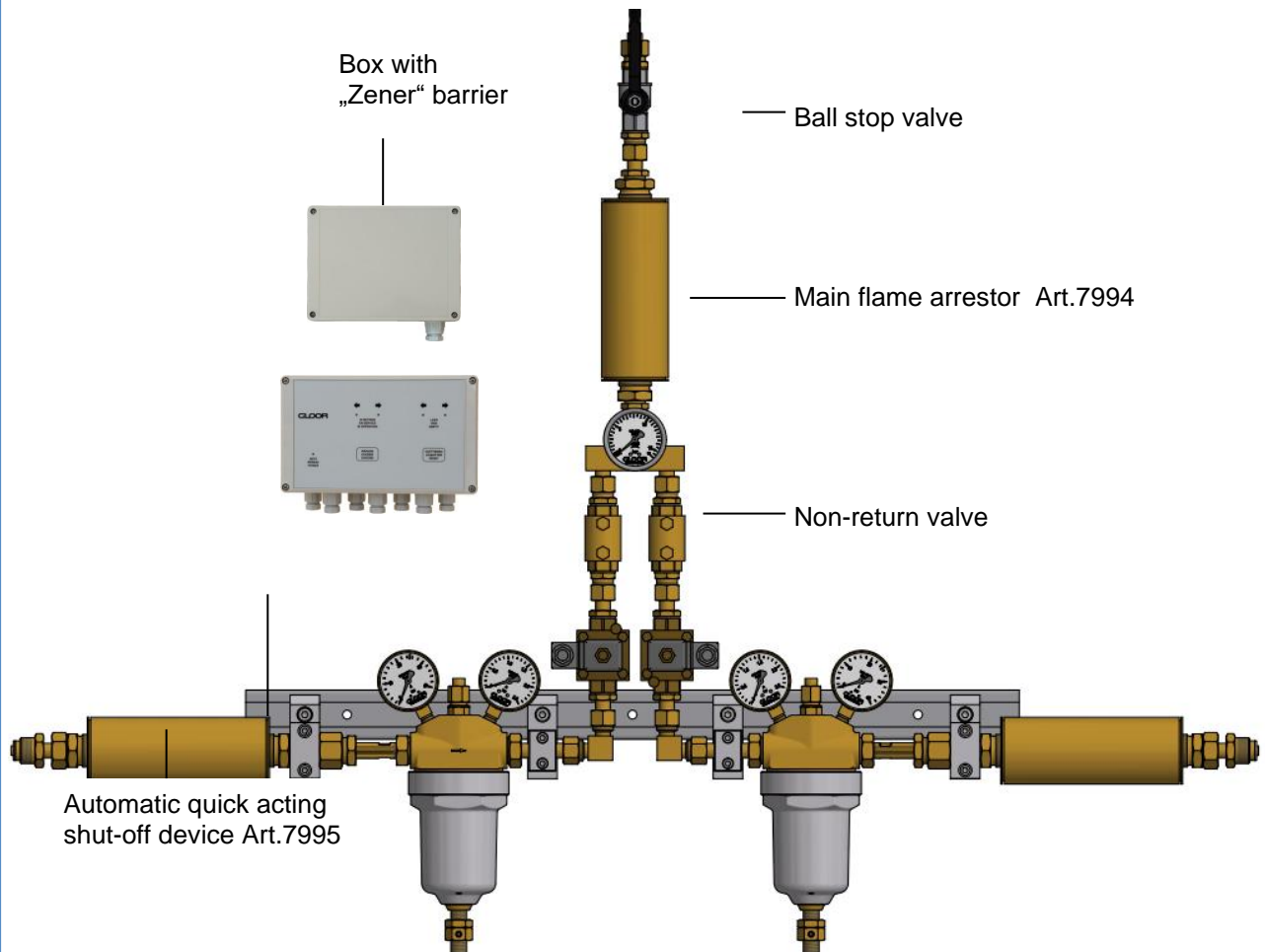
Dimensions of the manual and automatic change-over switching station with ZD51: A = 840mm
B = 710mm

Change-over switching stations for acetylene (according to EN ISO 14114)

According to the norm EN ISO 14114 change-over switching stations for acetylene must dispose of the following safety elements :

- A non-return valve per cylinder or per rack of cylinders
- An automatic quick acting shut-off device each in the high pressure section which closes the acetylene supply of each battery side in the event of an acetylene decomposition
- A non-return valve in the low pressure section
- A main flame arrestor in the low pressure section

This impacts the change-over switching stations as well as the cylinder batteries for acetylene :



The manual (Art.5181-A-EN, Art.7981-A-EN) and the automatic change-over switching stations (Art.5182-A/2-EN-KM, Art.5182-A/6-EN-KM, Art.7982-A/2-EN-2KM, Art.7982-A/2-EN-KM, Art.7982-A/6-EN-KM) for acetylene include an automatic quick acting shut-off device on each high pressure side, a non-return valve in the low pressure section and as well a main flame arrestor (Art.7993 for the version with ZD 51, Art.7994 for the version with ZD 79). Also included is a ball stop valve on the outlet of the change-over switching station.

With the batteries for single cylinders or for cylinder racks, the single cylinder station must be equipped with a non-return valve (Art.8924-A-W-V-L/R). With several cylinders the collector stations (Art.8922-A-W-V) and/or the additional cylinder stations (Art.8923-A-W-V) must be equipped with individual non-return valves.

CENTRAL GAS SUPPLY SYSTEMS : PIPELINE REGULATION SETS AND SAFETY EQUIPMENT

PIPELINE REGULATION SETS

Low pressure pipeline regulation sets

Low pressure pipeline regulations sets serve as individual pressure control at the work place. They are available as versions with pressure indication (0-10 bar), with flow gauge or with flowmeter. The maximum inlet pressure is 40 bar.

Pipeline regulation set for 1 gas

Art.5651

Pipeline regulation set for 2 gases

Art.5652

Pipeline regulation set for 3 gases

Art.5653

Pipeline regulation sets include:

- bracket (1 gas)
- bracket (2 or 3 gases)
- ball stop valve G 1/2" outside thread
- valve block (right hand / left hand)
- low pressure regulator

Art.5661

Art.5662

Art.5671

Art.5673

Low pressure regulator with pressure indication (bar)

Art.5600

Low pressure regulator with gauge 4-24 l/min.

Art.5640

Low pressure regulator with flowmeter 0-3/16/32 l/min.

Art.5650

(please indicate gas)



Art.5651



Art.5652



Art.5653



Art.5650

Ball stop valves

for installation in pipelines (for working pressure up to 20 bar), in brass (nickel-plated)

ball stop valve
ball stop valve
ball stop valve
ball stop valve

G 3/8" inside thread Art.5811
G 1/2" inside thread Art.5812
G 3/4" inside thread Art.5813
G 1" inside thread Art.5814



Art.5811

Low pressure pipeline regulation sets in metal casing

The low pressure take-off stations are available in versions for oxygen, acetylene and mixed gases (CO₂/AR) and as single and double stations. The take-off stations consist of a shut-off valve, a low pressure regulator with integrated sinter filter and a flame arresting device (with exception of the mixed gases). Robust casing made of sheet steel which can be easily fixed on the wall.

Take-off station for oxygen, working pressure up to 10 bar

Art.5821-O

Take-off station for acetylene, working pressure up to 1.5 bar

Art.5821-A

Double take-off station for oxygen / acetylene

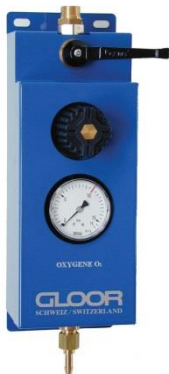
Art.5822-A/O

Take-off station for argon/CO₂ with flow gauge 4-24 l/min

Art.5840

Take off station for argon/CO₂ with flowmeter 0-32 l/min

Art.5850-AC



Art.5821



Art.5822



Art.5850-AC

SAFETY EQUIPMENT

Flame arrestor Gloorotherm

To protect pipeline regulation sets and pipeline-circuits.

Maximum performance of flame arrestor depends on primary pressure, admissible pressure drop and the gas. Please ask for the specific flow charts/performance diagrams.

Inlet and outlet threads 3/8" right hand or left hand

For standard requirements: Gloorotherm Type 1500

Art.1500

For higher requirements: Gloorotherm Type 1800
(indicate gas)

Art.1800

Back burning arrestor

To protect central gas supply systems.

To protect the oxygen supply after the central pressure regulator

260 Nm³/h at 15 bar at $\Delta p = P_v$

800 Nm³/h at 15 bar at $\Delta p = P_v$

Art.7991

Art.7992

Main flame arrestor

To protect the acetylene supply after the central pressure regulator.

15 Nm³/h at 1,5 bar; $\Delta p = P_v$

55 Nm³/h at 1,5 bar; $\Delta p = P_v$

Art.7993

Art.7994

Quick stop device

Automatically cuts gas flow at acetylene decomposition within high pressure section.

Pmax 25 bar

70 Nm³/h at 1,5 bar; $\Delta p = P_v$

Art.7995

Inlet and outlet threads

Art.7992,7994,7995 G 1"

Art.7991,7993 G 1/2"



Art.1500
Art.1800



Art.7992
Art.7994
Art.7995



Art.7991
Art.7993

Dimensions

