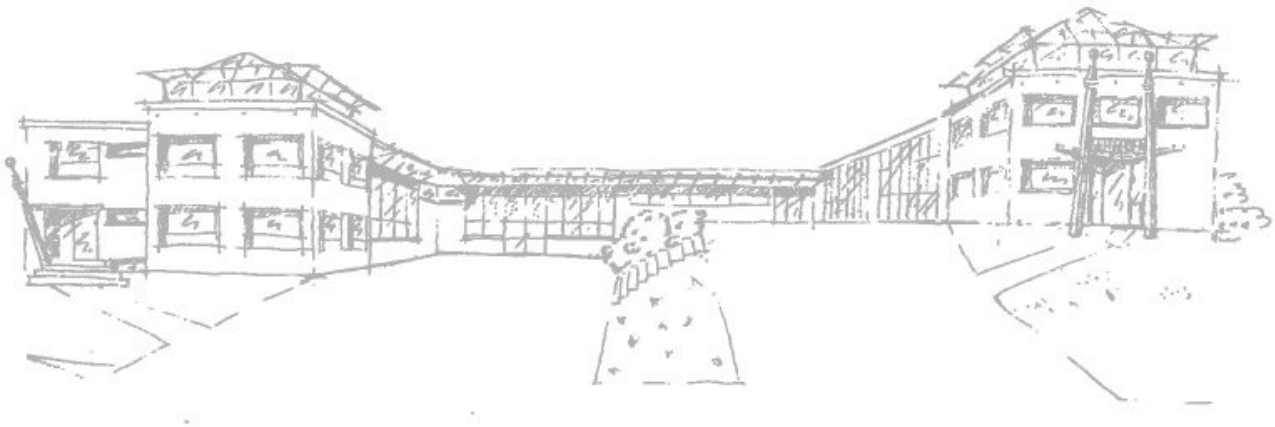
Medi*Control* MC2025P

Central Gas Distribution System

- Description of functions
- Instructions for use
- Installation instructions
- Maintenance and service



GREGGERSEN Gasetechnik GmbH
Bodestr. 27-29

D-21031 Hamburg
Germany
Tel.: +49/40/73 93 57-0
Fax: +49/40/73 93 57-27

E-Mail: Info@greggersen.de
Internet: www.Greggersen.de

Contents

Definitions

Main supply / reserve supply

- In a distribution system with tank, the tank is the main supply source and the cylinder batteries (bundles of cylinders) form the reserve supply (emergency supply).
- In a distribution system with cylinder batteries, the two cylinder batteries form the main supply source and another cylinder battery acts as reserve supply.

Use

The central gas distribution system **Medi*Control*** guarantees a continuous supply with medical or technical gases (oxygen, nitrous oxide, carbon dioxide and other gases). In line with DIN EN 737-3, the system is rated for 3 supply sources. It consists basically of 3 components: the pneumatic switch-over system with integrated electronic contact-switch component, a reducer panel and the manifolds.

The pneumatic switch-over system controls and monitors the supply of the gas distribution system. At the same time it reduces the pressure of the cylinder batteries.

The reducer panel reduces the pressure of the tank or the reserve supply (for 2 cylinder batteries + 1 reserve supply) on the network pressure.

The system can be configured in two different versions:

⇒ 2 cylinder batteries + 1 reserve supply

⇒ 2 cylinder batteries as reserve supply

Standards / classification

The following standards or specifications have been taken into consideration, among others:
DIN EN 737-3, DIN EN 738-2, E DIN EN 13221, DIN VDE 0107, DIN 477

Description of functions

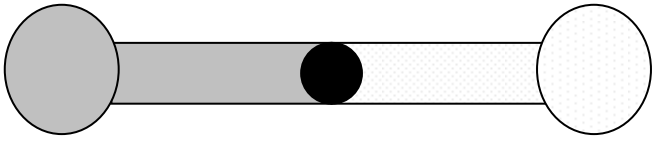
The central gas distribution system **Medi*Control*** is intended to safeguard the continuous supply with medical or technical gases.

The gas is brought from the cylinder batteries through the manifolds to the switch-over system. The high pressure on the cylinder batteries is reduced in two stages in the switch-over system. The two high reducers (DM1, DM2) reduce the high pressure from the cylinder batteries to a medium pressure. The left-hand high reducer (DM1) is adjusted to a pressure of approx. 850 kPa, the right-hand one to approx. 750 kPa. This guarantees priority for the reducer on the left side, even in the event of a power failure. Each high reducer is equipped with a safety valve (SV1, SV2) which opens at a pressure of approx. 1100 kPa.

The medium pressure is reduced by two low reducers (DM3, DM4) to the network pressure. Each reducer has an output which corresponds to the rated output, i.e. even when one of the reducers is removed or being serviced, the switch-over system still performs to the rated output level. When the network pressure exceeds 600 kPa, a safety valve opens (SV3).

An emergency supply point (NE1) allows for the supply network to be supplied via a NIST-connector coupling in an emergency. Gas supply can then be provided for example by means of a gas cylinder. Please note that the corresponding shut-off valves of the system are closed during an emergency supply, and that after an emergency supply, the system has to be started up again according to the chapter "initial commissioning".

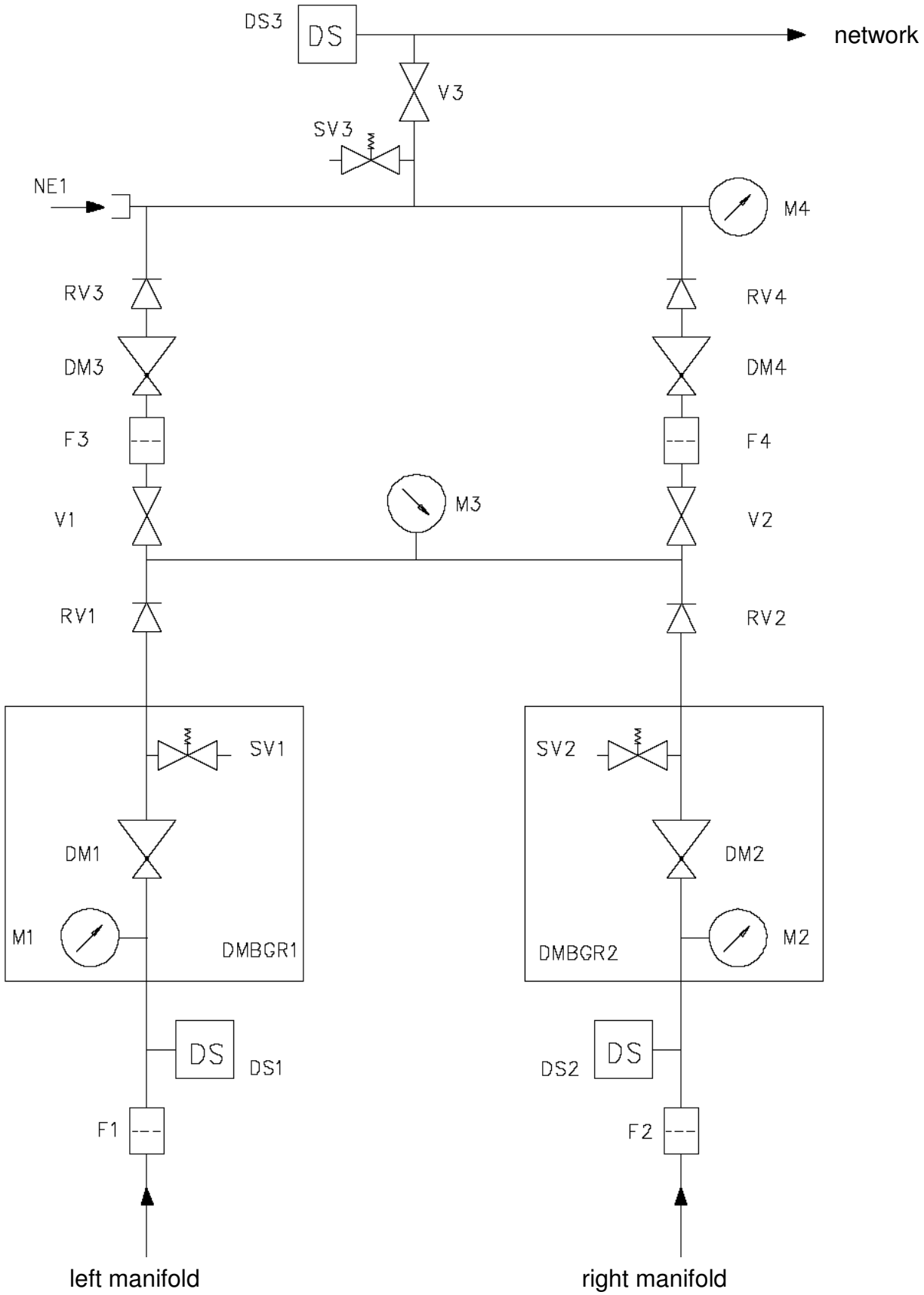
In normal operation, the switching system is supplied by one cylinder bank while the other side is available as a reserve. The control lever is used to select that side which is to start up (the lever must point in the direction of the pressure reducer to be triggered). This causes the outlet pressure of the corresponding pressure reducer to increase by about 2 bar, the pressure difference closes the one-way valve on the other side. The lever (which is mount on one high-pressure-reducer) is used to select that side which is to start up (the lever must point in the direction of the pressure reducer to be triggered. This causes the outlet pressure of the corresponding pressure reducer to increase by 2 bar, the pressure difference closes the one-way valve on the other side.



left Side
priority

right Side
priority

Schematic structure of the switch-over system



Key for the schematic structure

DM1/DM2	High-pressure reducer
DM3/DM4	Low-pressure reducer
DMBGR1/DMBGR2	Reducer assembly
DS1/DS2	Pressure switch cylinder battery
DS3	Pressure switch network-pressure
F1/F2/F3/F4	Filter
M1/M2	Pressure gauge 0-31500 kPa
M3/M4	Pressure gauge 0-1600 kPa
NE1	Emergency supply point (NIST)
RV1/RV2	one-way valve medium-pressure
RV3/RV4	one-way valve low-pressure
SV1-SV2	Safety valve medium-pressure, 1100 kPa
SV3	Safety valve network-pressure, 600 kPa
V1-V2	Shut-off valves, low-pressure
V3	Main shut-off valve cylinder supply

Technical data

pneumatic switch-over system

Design:	twin-designed, two-stage network pressure reduction with pneumatic priority switching, removable painted steel plate housing with easily opened hood, safety valves for medium pressure and network pressure, emergency supply point (NIST)
Dimensions:	approx. 360x780x300 (WxHxD), approx. 35 kg
Capacity:	25 Nm^3/h Input pressure: max. 20000 kPa Output pressure: 500 kPa
Incoming:	G3/4”a flat (cylinder batteries)
Outgoing:	to the distribution panel: copper pipe Ø 22 mm Safety valves: copper pipe Ø 8 mm

Manifolds

Design:	rated for up to 5 cylinders, venting valve, main shut-off valve, non-return valve for every cylinder, cylinder support
Dimensions:	approx. 1200x600x460 (WxHxD), weight approx. 15 kg
Capacity:	incoming pressure: max. 20000 kPa
Incoming:	connection according to the specification of DIN 477
Outgoing:	G¾”a flat

Installation instructions

Space required

A distribution system with gas cylinders should be installed in a specially designed room, or a room which has been suitable modified, which is well ventilated and fire-proof.

Recommended installation procedure

- Attachment of the manifolds to the wall
- Attachment of the switch-over system to the wall
- Connection of the manifolds to the switch-over system
- Route the vent pipes of the safety valves and the manifolds outside
  - ➢ The vent pipes for the medium pressure stage and those for the network pressure must be routed separately
- After installation, rinse the whole system
- Route and connect up the electrical connections

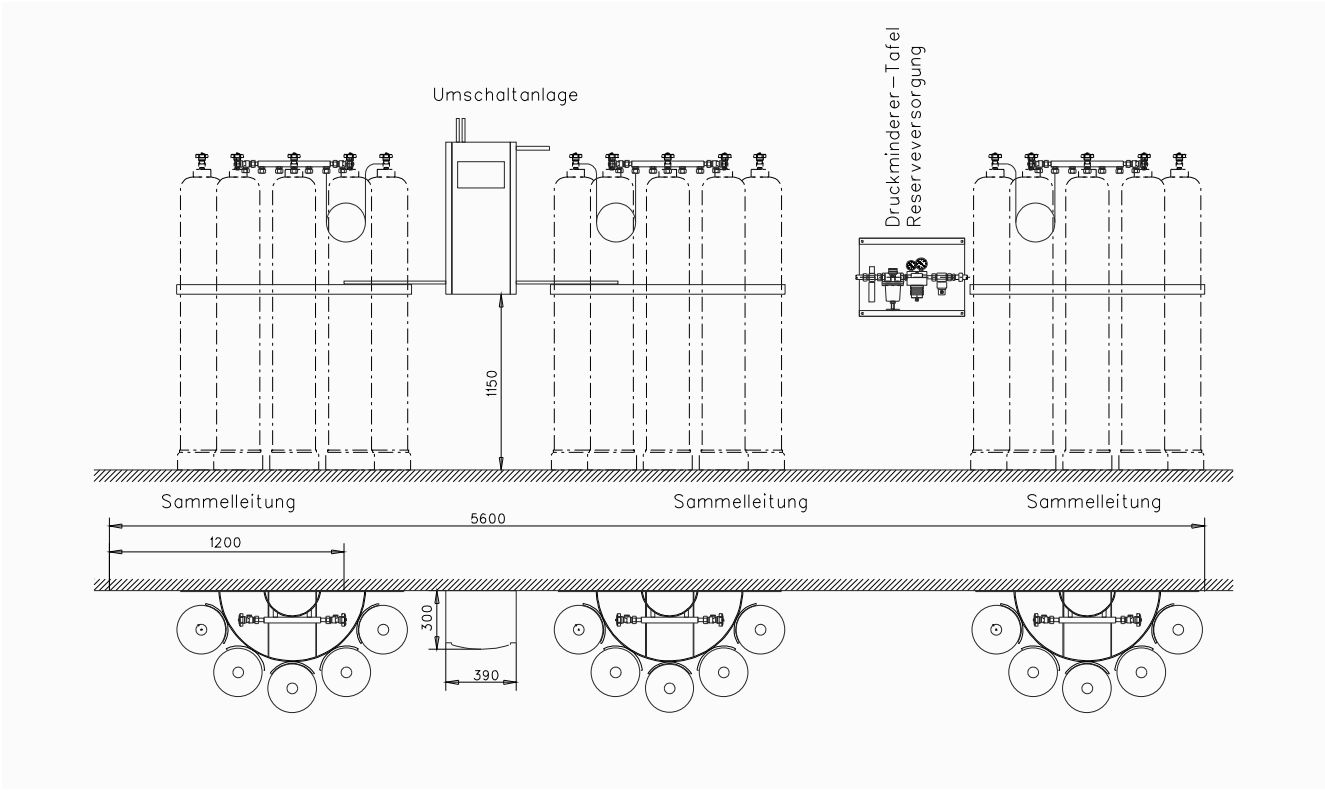
!!! Caution !!!

During soldering work, the pipes **must** be rinsed with inert gas!

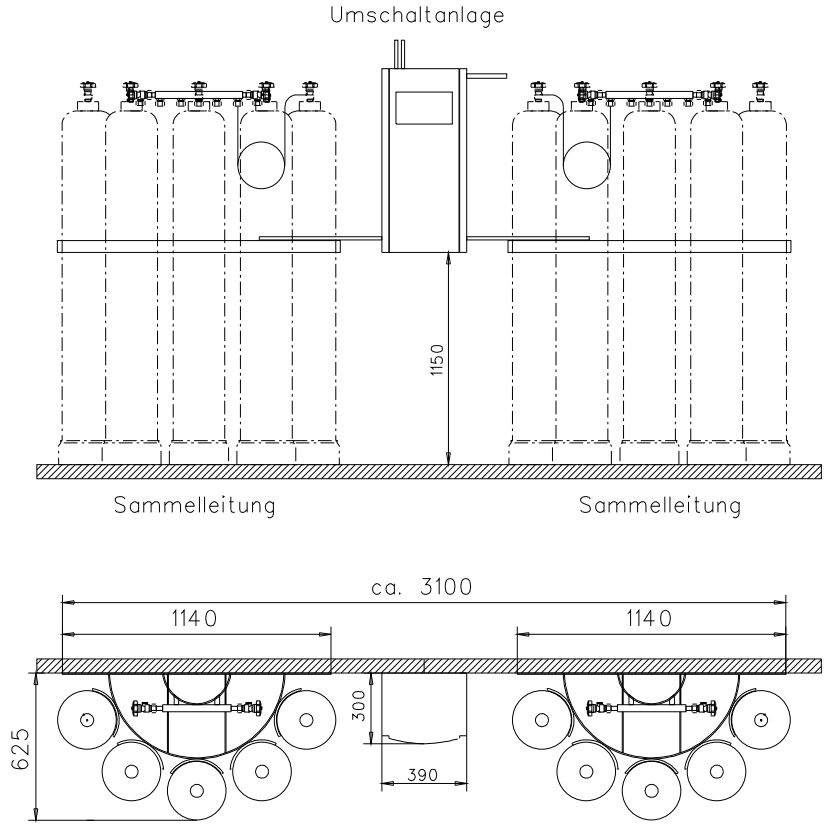
Installation instructions

- Installation may only be carried out by authorised qualified staff.
- Only copper pipes as per DIN 1786 may be used for installation.
- Reports must be kept of the acceptance and handing over procedures for the gas distribution system.
- All pipes and connections must always be kept free of oil and grease!
  - ➢ Risk of explosion !!!
- To connect the cylinders with the high pressure header use a tool to hold the high pressure check-valve! New check-valves shall be installed with a torsion force of appr. 40 Nm.

Structure of the central gas distribution system



2 cylinder batteries + 1 reserve supply



2 cylinder batteries as reserve supply

Initial commissioning

- Before initial commissioning, the system must be vented and all shut-off valves must be **closed.**
- Installation must be finished completely

1. **Slowly open the main shut-off valves of the manifolds.**
   - Observe the pressure at pressure gauges M3, it must remain constant and adjust to a pressure of approx. 850 kPa
   - The pressure on the left-hand side should be approx. 200 kPa higher than on the right-hand side. In the event of inadequate pressure difference, it is possible to feed both cylinder batteries into the supply network at the same
   - If the pressure increases slowly, the reducer must be checked.
2. **Open shut-off valve V1 to V2**
   - Observe the pressure at pressure gauge M4, it must adjust to the network pressure and remain constant.
   - If the pressure increases slowly, the reducer must be checked.
3. **Slowly open shut-off valve V3**
   - Observe pressure at pressure gauge M4, it must adjust to the network pressure

Maintenance / Inspection

Inspection

The whole gas distribution system should be subject to visual inspection at regular intervals by an authorised qualified technician, checking the functions and pressure conditions in the system.

Maintenance

Inspection of the system is recommended once every twelve months and may only be carried out by an authorised qualified technician. This includes among others, checking the correct pressure conditions and tightness of the pipe connections together with the valves. All service parts should be replaced every 5 years.

If individual components have to be removed for maintenance or repair, the corresponding shut-off valves before and after the component have to be closed. The redundant design with double components in the switch-over system means that the network continues to be supplied with gas, so that it is not necessary to adjust the reducers.

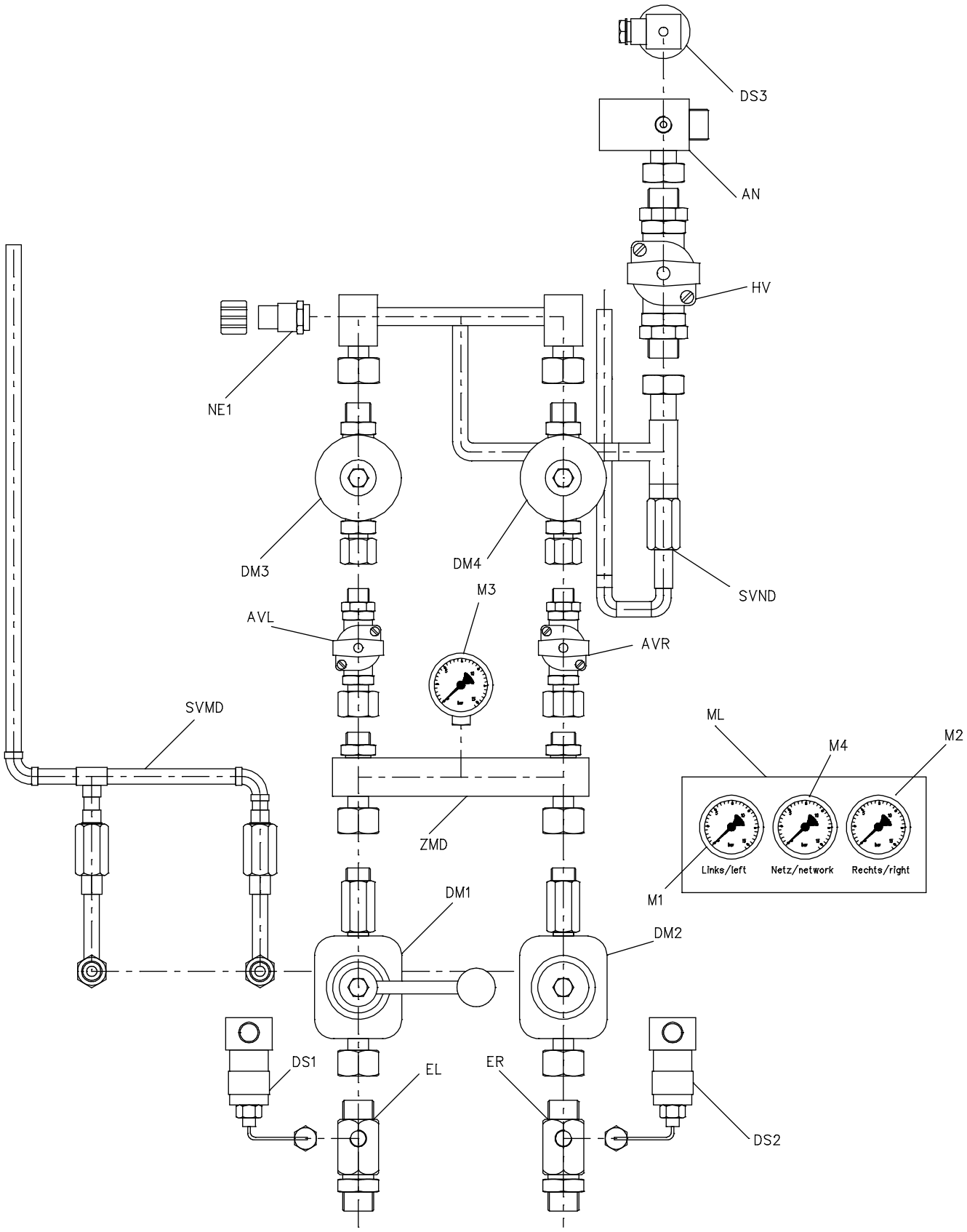
If the system has to be decommissioned for a brief time (major repairs, replacement of whole components), it is possible for gas to be supplied by the emergency supply. Please note that the main shut-off valve of the system is closed during emergency gas supply. To start up the system again for normal operation, please proceed according to the chapter "initial commissioning".

Changing the cylinders

If one of the cylinder batteries is empty turn the vent valve to the other cylinder battery

In order to change a cylinder battery, the corresponding main shut-off valve of the manifold have to be closed, and the manifold vented at the venting valve. During this procedure, the gas supply is provided by the other cylinder battery. After changing the cylinders, the main shut-off valve of the cylinder battery has to be opened again **slowly** (vent valve must be closed). Avoid sudden increases in pressure, danger of explosion!

Explosion drawing



Legend explosion drawing

Abbreviation	Assembly
AN	Outgoing to the network
AVL	shut-off valve left
AVR	shut-off valve right
DM1	Left high pressure reducer with one-way valve
DM2	Right high pressure reducer with one-way valve
DM3	Left low reducer
DM4	Right low reducer
DS1	Pressure switch left cylinder battery
DS2	Pressure switch right cylinder battery
DS3	Pressure switch network pressure
ML	pressure gauge row
EL	Incoming, left cylinder battery
ER	Incoming, right cylinder battery
HV	Main shut-off valve
M1	Left high pressure gauge
M2	Right high pressure gauge
M3	medium pressure gauge
M4	Network pressure gauge
NE1	Emergency supply point (NIST)
SVMD	Safety valve medium pressure, 1100 kPa
SVND	Safety valve network pressure, 600 kPa
ZMD	Junction medium pressure