

Metal Diaphragm Compressor



sera – Metal diaphragm compressors
are oscillating diaphragm compressors – the solution to
the dirt- and oil-free compression of gases.



Field of application

Compression of gases with
inflammable, aggressive, inert, toxic
and radioactive properties.

Advantages

- oil-free compression
- pollution-free compression
- low noise level
- robust with long service life
- high quality materials
- controllable flow
- easy to maintain
- space-saving design
- with type approval acc. to ATEX
- no pressure relief needed for start-up

This leaflet is only a general
information.

Ask us to submit a quotation to
meet your specific requirements!

Metal Diaphragm Compressor



Function

The piston travel is transferred through the hydraulic fluid to the metal diaphragm. The multi-layer diaphragm fully contacts the valve head at the end of the pressure stroke, and against the perforated plate at the end of the suction stroke. A compensation pump and pressure regulating valve ensure optimum hydraulic fluid volume between the piston and diaphragm. The compressor is driven with the help of an electric motor. The compensation pump is driven by the compressor crankshaft. Suction and pressure valves open and close the diaphragm in rhythm with the stroke.

Metal diaphragm

The diaphragm is 3-ply. The oil- and gas-side diaphragms ensure particle- and oil-free compression of the gas. The middle diaphragm (signal diaphragm) together with a pressure switch takes on the task of a diaphragm rupture indication. The diaphragms are made of a corrosion-resistant stainless steel with good spring properties (1.4310). Depending on the composition of the transported gas, the gas-side diaphragm may also be made of high-alloyed materials (e.g. Monel, Hastelloy).

Cooling

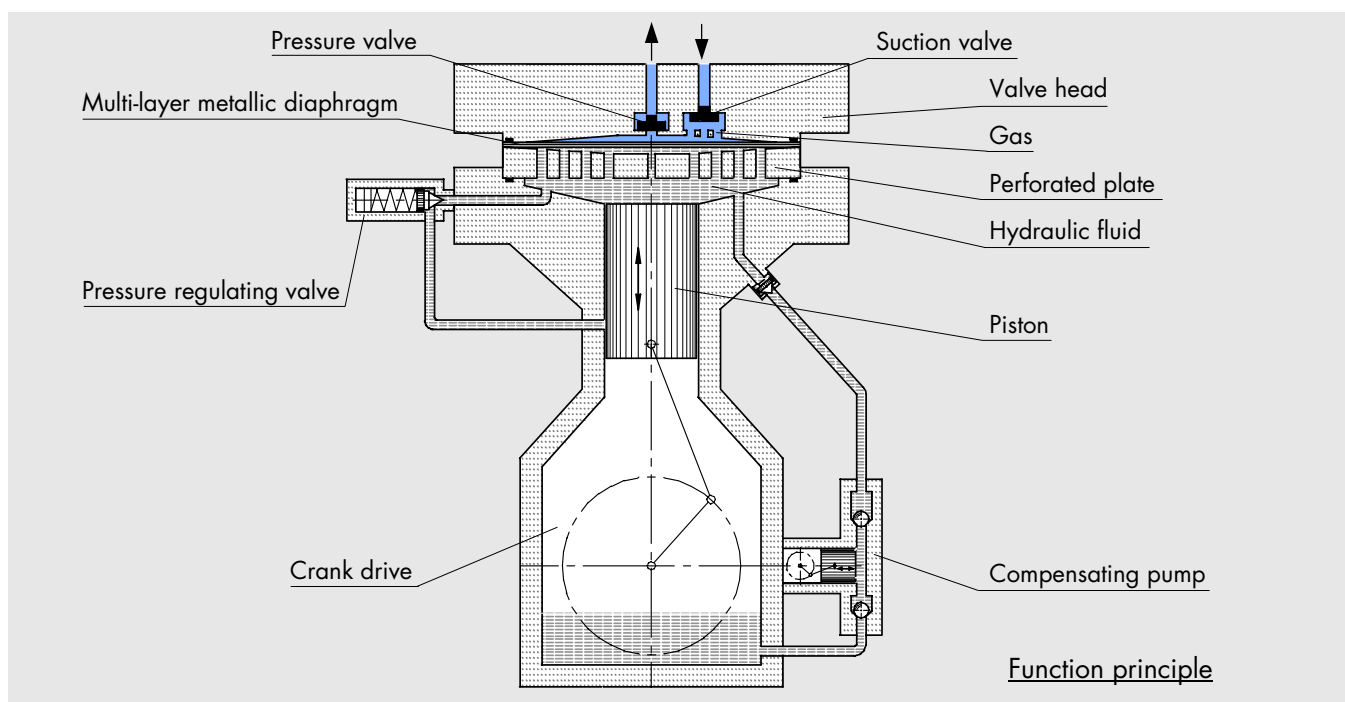
sera compressors are generally water-cooled. Large surface areas with good heat dissipation keep the required coolant quantities low. Water cooling may not be needed for smaller compressors with low compression ratios.

Leak tightness

The seal capacity of the gas-contacting area is standard 10^{-3} mbar l/s, or up to 10^{-6} mbar l/s in special versions. This makes **sera** metal diaphragm compressors particularly useful for transporting toxic and explosive gases. They protect persons and the environment.

Flow rate

The achievable flow rate is a function of the suction pressure, the final pressure and the properties of the gas. Multi-stage versions (up to 3 stages) enable economical and low-wear operation of the compressions even at high compression ratios.



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Constructions / Type series



Type series MV 1 ... to MV 4 ...

single-stage diaphragm compressor; upright
suction pressure: greater than or equal to 1 bar (a);
final pressure: up to 500 bar (a)
compression ratios up to 1 : 15 (depending on type of gas)



Type series MV 5

single-stage diaphragm compressor; horizontal
suction pressure: 0,5 ... 1 bar (a); Final pressure: up to 15 bar (a)
compression ratios up to 1 : 15 (depending on type of gas)



Type series MV 2 ... IIK to MV 4 ... IIK

two-stage diaphragm compressor; upright
suction pressure: greater than or equal to 1 bar (a);
final pressure: up to 500 bar (a)
compression ratios up to 1 : 15 per stage (depending on type of gas)



Type series MV 5 ... II

two-stage diaphragm compressor; compact V-construction
suction pressure: greater than or equal to 1 bar (a);
final pressure: up to 200 bar (a)
compression ratios up to 1 : 10 per stage (depending on type of gas)



Type series MV 2 ... IIIK to MV 4 ... IIIK

three-stage diaphragm compressor; upright
suction pressure: greater than or equal to 1 bar (a);
final pressure: up to 500 bar (a)
compression ratios up to 1 : 15 per stage (depending on type of gas)

Special constructions on request

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sera

Seybert & Rahier

Safety

All **sera** metal diaphragm compressors feature a diaphragm break indicator. This ensures among other things that even under fault conditions there will be no contamination of the transport gas or of the environment.

Depending on the application additional monitoring devices, such as temperature, pressure and flow monitors may be used.

Compressors are configured in accordance with the prevailing European Directives:

- Machine Directive (98/37/EC – IIA)
- Directive for Noise Emission 2000/ 14/ EC
- Low Voltage Directive 73/23/EWG incl. 93/68/EWG
- Electromagnetic Compatibility 89/336/EWG incl. 92/31/EWG and 93/68 EWG
- ATEX Directive (94/9/EC)
- Pressure Equipment Directive (97/23/EC)
- DIN EN 292 Parts 1+2
- DIN EN 1012

sera metal diaphragm compressors therefore bear the CE Marking.

Optional accessories

- crankcase heater (outdoor use)
- oil pressure monitor
- gas pressure monitor
- temperature monitor (gas + oil)
- cooling water flow monitor
- cooling unit (closed cooling circuit)
- special oils (e.g. for transporting O₂)
- gas cooler
- pulsation damper
- control components and complete controllers
- valves, filters, pressure gauges
- additional accessories on request



sera

Dosing
Feeding
Compressing

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