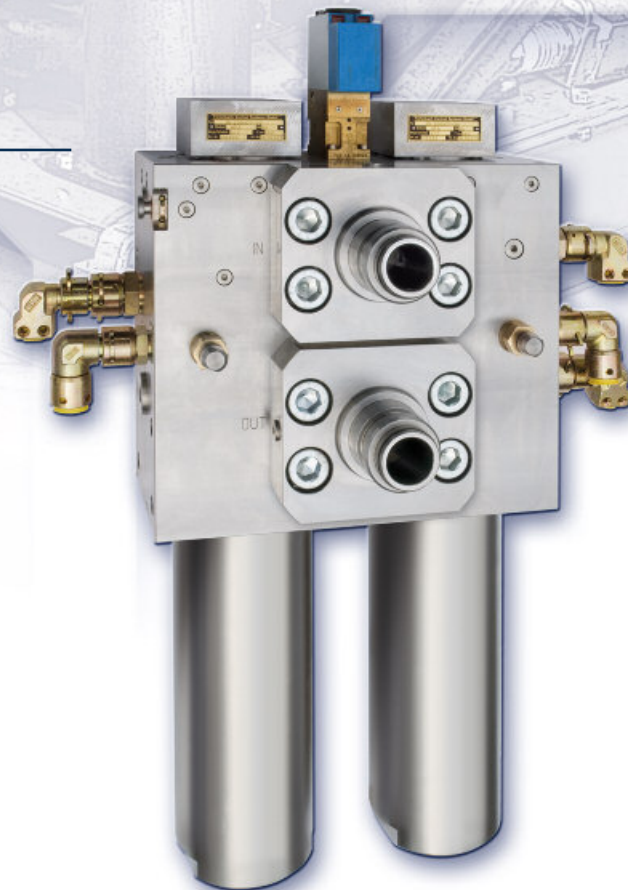


TIEFENBACH
Control Systems GmbH



We give
impulses >>>



FULLY AUTOMATIC BACKFLUSH FILTER

VERSION: HP - HIGH PRESSURE

HP – HIGH PRESSURE

...FULLY AUTOMATIC BACKFLUSH FILTER

>>> TO PREVENT THAT IMPURITIES IN THE HYDRAULIC FLUID CAUSE FUNCTIONS TO FAIL IN A SYSTEM AN EFFECTIVE FILTER HAS BEEN DEVELOPED ...

THE FULLY AUTOMATIC BACKFLUSH FILTER

THE FULLY AUTOMATIC BACKFLUSH FILTER...

- flushes out impurities contained in the fluid
- removes these impurities and cleans the filter elements by backflushing
- is installed in the pressure line (max. 350 bar)
- works fully automatically by electronic control and adjustable parameters
- can be operated manually

➤ Constantly increasing levels of performance and the growing degree of automation in hydraulically operated systems require all components to function perfectly.

➤ It is therefore vital, for example, to ensure that control valves work accurately even with narrow component clearances.

➤ Contamination mainly occurs in the form of metallic abrasions, lacquer, rubbed off seal parts, dust and scales.

➤ When no backflush filters are installed these dirt particles are taken to all points of a hydraulic system and can thus impair the functional reliability of the system.

➤ The fully automatic backflush filter removes the impurities from the system, discharges them and cleans the dirty filter elements.

➤ While one filter element is cleaned by backflushing the other element continues filtration to permit troublefree operation.

➤ The pilot valves are supplied with the flushed fluid internally in order to minimize wear and prevent failures.

➤ The standard connection of the filter is a flange with nominal width DN51SSO which can be adapted to the individual requirements by means of different fittings.

>>> BACKFLUSH FILTER WITH ELECTRONIC CONTROL



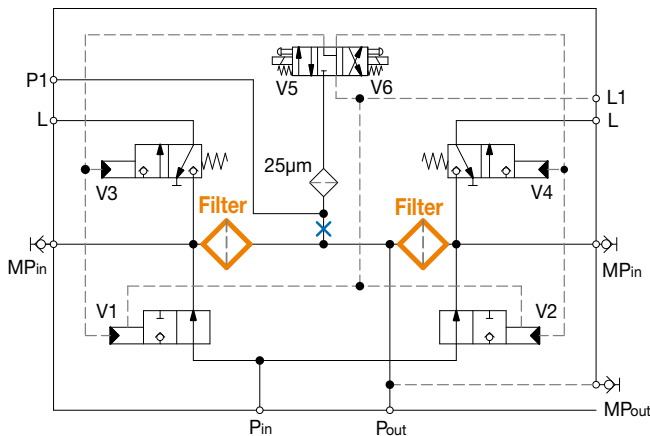
The differential pressure is an indicator of the degree of contamination of the filter elements:

An increase in contamination causes the differential pressure to rise.

- The backflush filter with electronic control is equipped with pressure sensors at the inlet and outlet of the filter which measure the difference of pressure and transmit the value to the control unit. If the differential pressure exceeds a parameterized value a signal will be given to the pilot control valve and the backflush process will start.
- The backflushing process can be initiated in the following preset ways:
 - **Depending on differential pressure**
(Differential pressure exceeds parameter)
 - **Depending on preset time**
(Time exceeds parameter)
 - **Depending on differential pressure and time**
(Differential pressure or time exceed parameter)
- The lower the parameter set the more frequently will backflushing be performed. This essentially increases the life of the filter elements.

CIRCUIT DIAGRAM

FOR ELECTRICAL CONTROL (with P1)



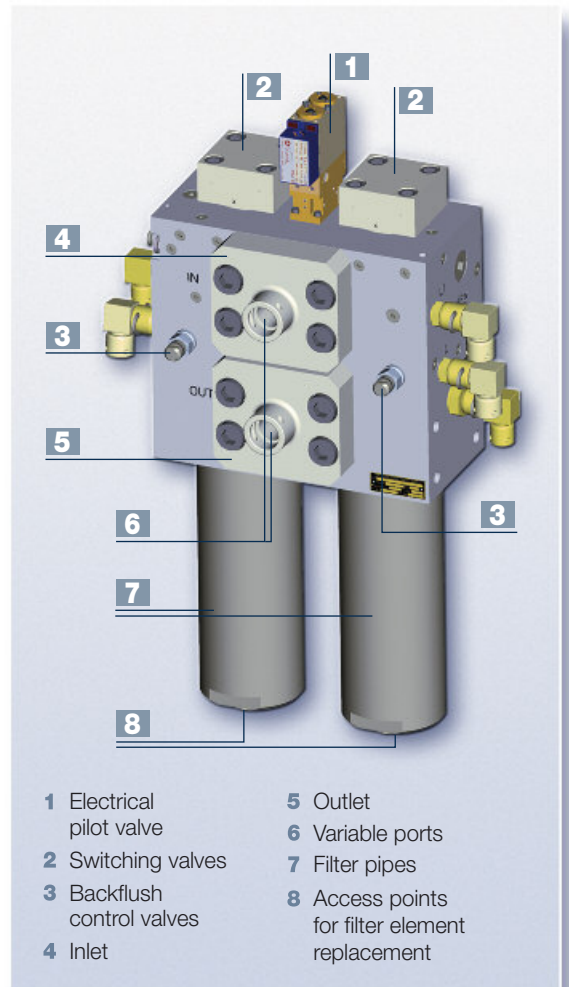
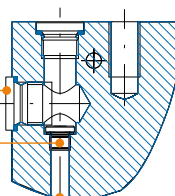
PORT P1 (x)

The backflush control valves need a pressure of 150 bar for an optimum switching behaviour. If the backflush filter is operated at a lower pressure it will be possible to supply the control pressure via the separate pressure port P1. This allows to operate the pilot control valve and thus also the backflush control valves independently of the backflush filter operating pressure.

When supplying external pressure via port P1 the sealing screw is replaced by a screw-in socket DN10.

Additionally, the internal pressure supply is closed with a screw plug M10x1.

Internal pressure supply



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>>> BACKFLUSH FILTER WITH MANUAL CONTROL



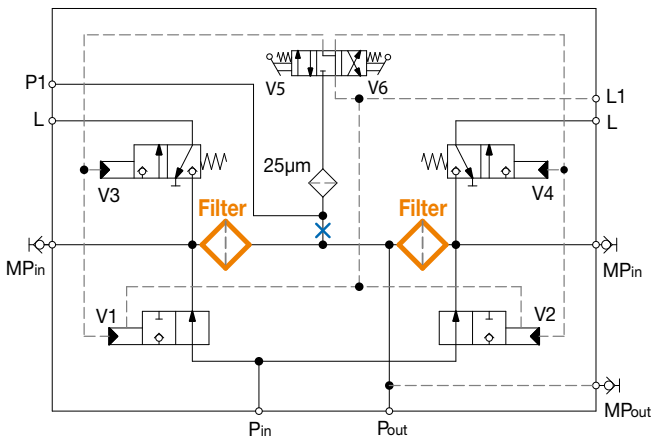
The differential pressure is an indicator of the degree of contamination of the filter elements:

An increase in contamination causes the differential pressure to rise.

- On the backflush filter with manual control the backflush process is initiated manually by operating the hand lever valve.
- Further details on the backflush process are given on page 5.
- Frequent backflushing considerably increases the life of the filter elements.
Irrespective of this, the filters should be backflushed at least once every shift.
- The differential pressure can be determined via the measuring points of the filter.
- The manual control can be upgraded to an electronic control at any time.

CIRCUIT DIAGRAM

FOR MANUAL CONTROL (with P1)



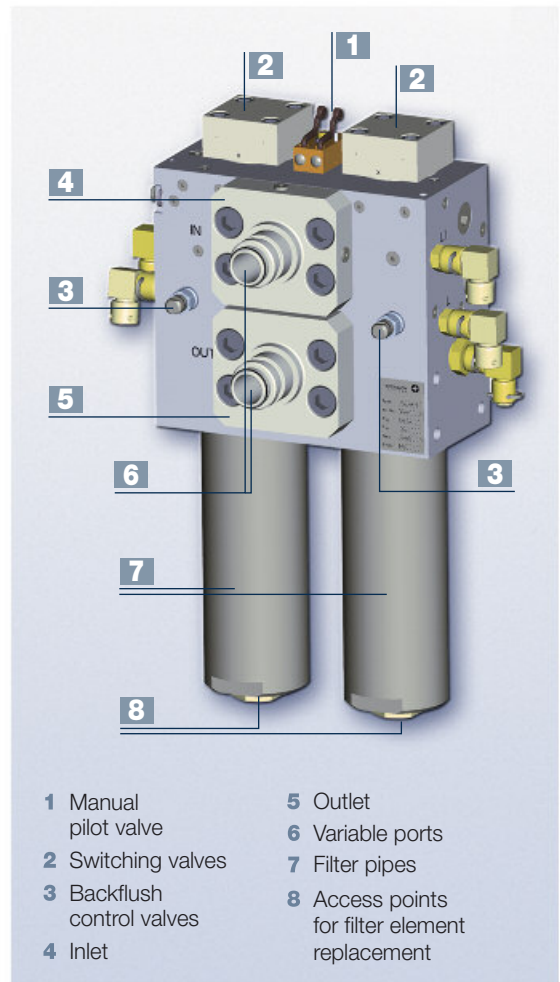
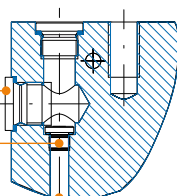
PORT P1 (x)

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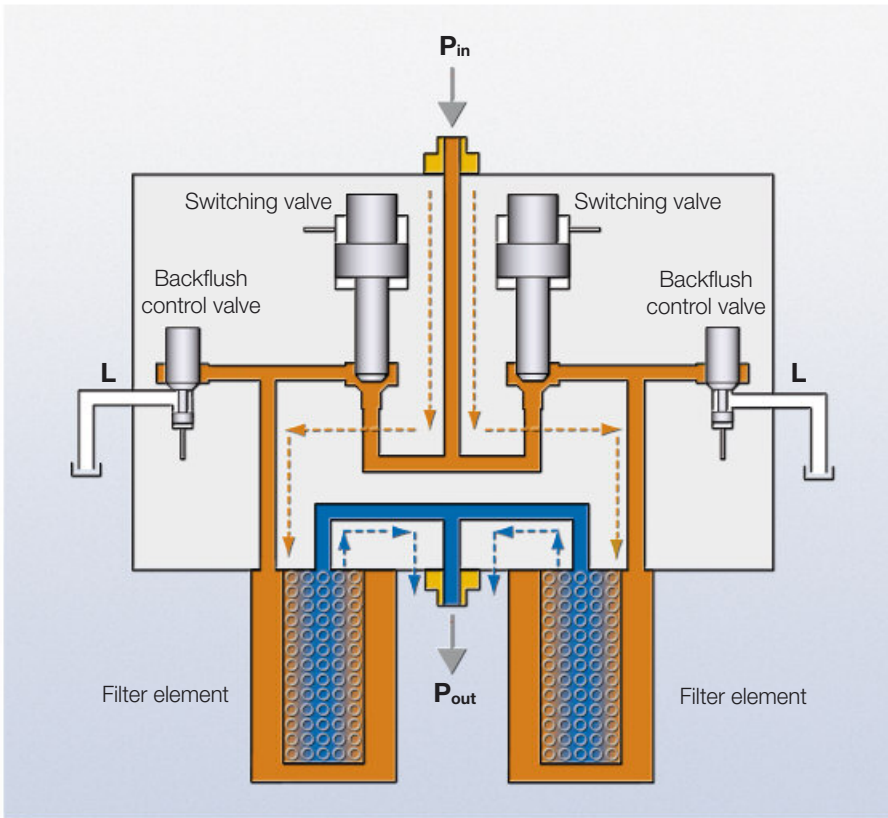
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Internal pressure supply



>>> BACKFLUSHING PROCESS



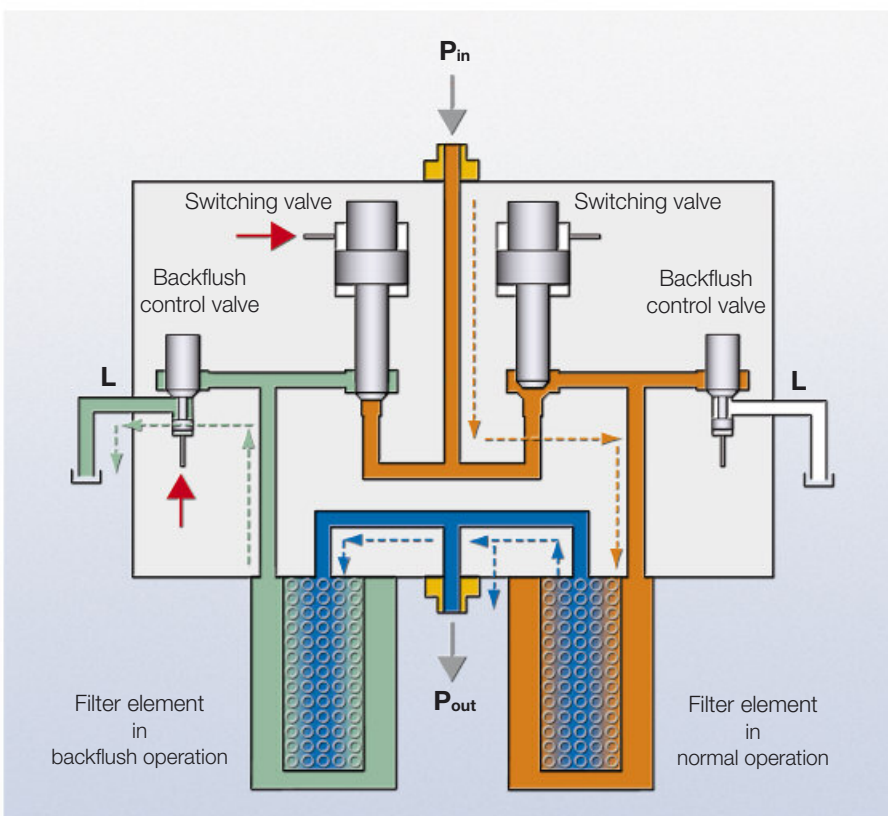
NORMAL OPERATION...

The contaminated fluid enters the filter housing via filter inlet P_{in} .

The backflush control valves open to allow flow through the filter elements from the outside in.

Dirt particles that are larger than the pore size of the filter are trapped.

The fluid is cleaned.



BACKFLUSHING...

If the pressure difference measurement reveals that the filter elements need cleaning the control unit will transmit a signal in order to initiate the backflushing operation.

A backflush control valve opens and the respective switching valve is closed.

The fluid flows through the filter element in the opposite direction for about 2 to 3 seconds flushing out the impurities via a leakage line.

While this happens, the second filter element continues operation. It will afterwards be cleaned the same way.

The cleaned fluid is drained via outlet P_{out} and will be supplied to the hydraulic system again.

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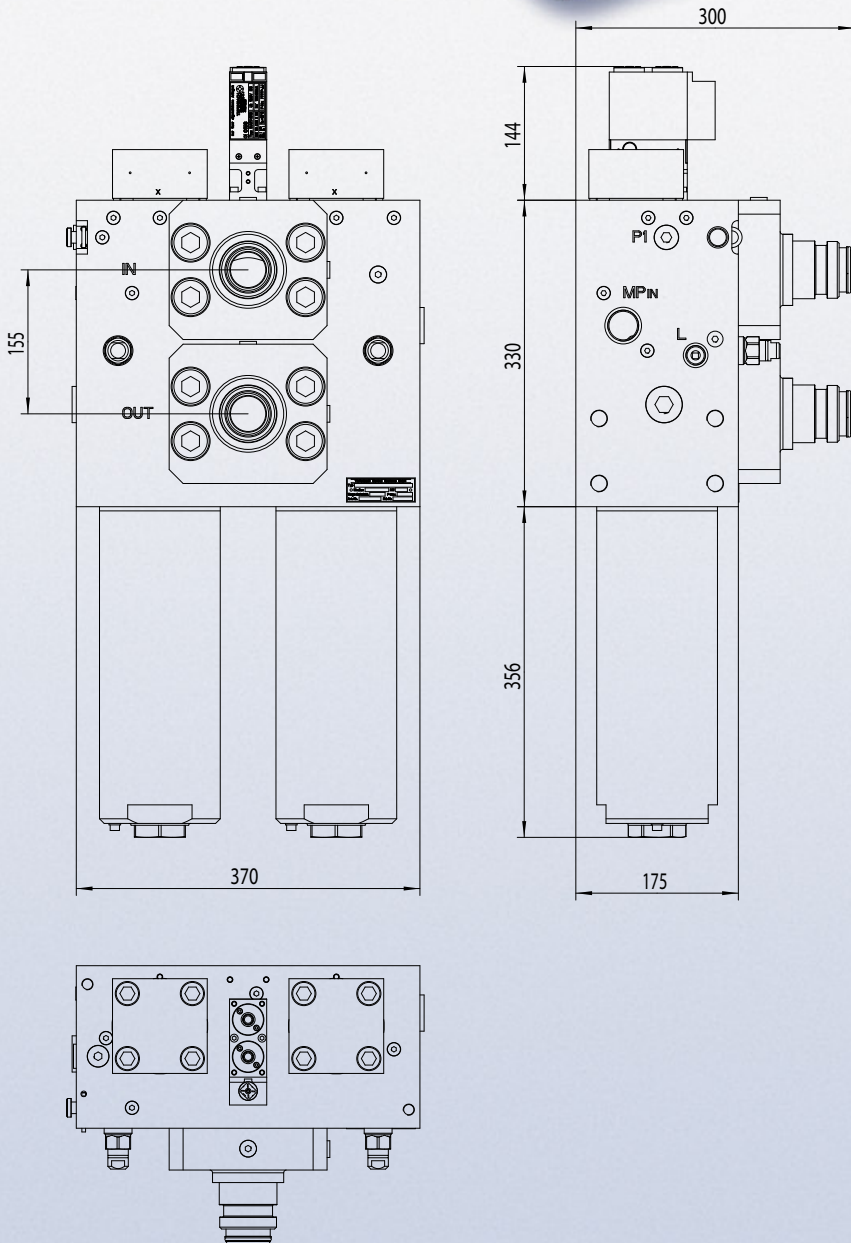


➤ The actual filtration of the fluid takes place via the filter elements. These have a large filtration surface which increases maintenance intervals and minimizes follow-up costs.

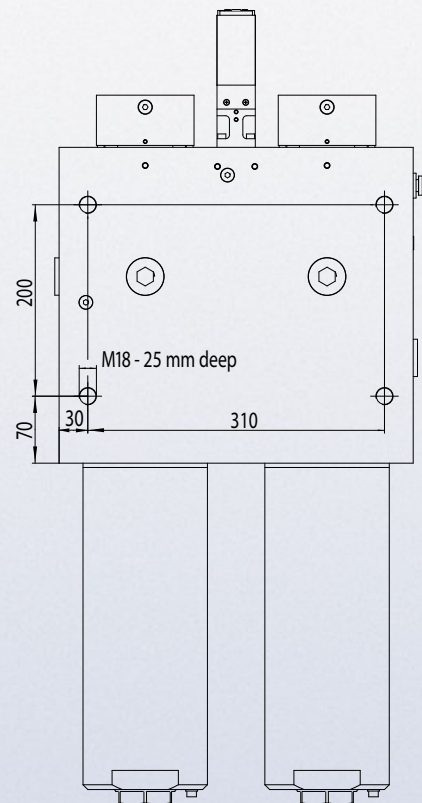
➤ Depending on the respective application, fabric or slotted filter elements of different mesh sizes are used.

➤ For ease of replacement the elements can be pulled out of the filter pipe easily by means of the retractable dismantling ring.

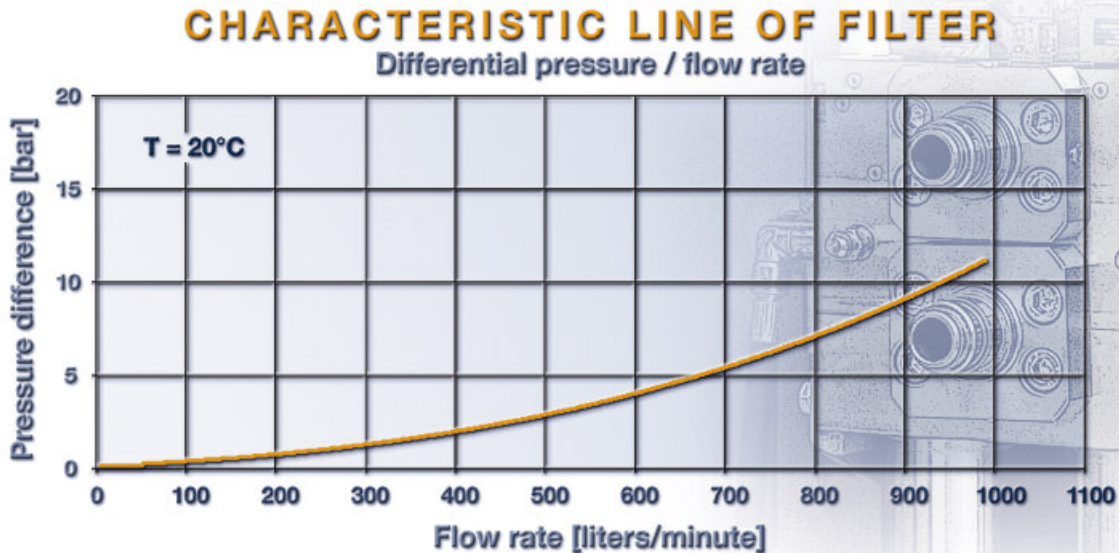
DIMENSIONS



ATTACHMENT



>>> CHARACTERISTIC LINE OF FILTER IN NORMAL OPERATION



TECHNICAL DATA


- | | |
|--|-----------------------------------|
| ➤ Max. perm. operating pressure | 350 bar |
| ➤ Min. perm. operating pressure | 40 - 60 bar |
| ➤ Min. control pressure for backflushing | 100 bar |
| ➤ Differential pressure for backflushing | adjustable from 1 bar to 40 bar |
| ➤ Time intervals for backflushing | adjustable from 1 min to 600 mins |
| ➤ Type of filter | Pressure filter |
| ➤ Mesh size | As requested by customer |
| ➤ Filter element | Slotted pipes or fabric cylinders |
| ➤ Pilot control mesh size | 25 µm |
| ➤ Flow rate | 1000 l/min |

Ports:

- | | |
|---|--|
| ➤ Inlet P _{in} / Outlet P _{out} | Flange DN51 SSO (standard) or as requested by customer |
| ➤ Leakage L / L1 | Thread G1/2 |
| ➤ Pressure indicator MP _{in} | Thread G1 |
| ➤ Pressure indicator MP _{out} | Thread G1 |
| ➤ Pilot valve P1 pressure port | Thread G1/2 |

- | | |
|----------------------|--|
| ➤ Housing material | Special steel |
| ➤ Fitting position | Any, cartridge length to be considered |
| ➤ Weight | approx. 220 kg |
| ➤ Rated voltage | 12.0 V DC |
| ➤ Rated current | 160 mA (= I _{max}), lowered to 65 mA |
| ➤ Type of protection | I M2 EEx ia I |

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