HYDAC INTERNATIONAL

Automatic Back-Flushing Filter AutoFilt® RF4.

HYDAC

Back-Flushing Filter AutoFilt® RF4 for Process Technology.

Back-Flushing Filter AutoFilt® RF4.

The automatic back-flushing filter AutoFilt® RF4 is a self-cleaning system for removing particles from low-viscosity fluids. Its robust construction and automatic back-flushing capability make a major contribution to operational reliability, and reduce operating and service costs.

In the filter the slotted tube elements with filtration rates of 25 to 3000 µm (finer on request) ensure highly effective separation of contaminating particles from the process medium.

Automatic cleaning starts as soon as the elements become contaminated. The flow of filtrate is not interrupted during back-flushing.

AutoFilt® RF4 Versions.

Basically two models are available:

AutoFilt® RF4 with automatic back-flushing

AutoFilt® RF4 with manual back-flushing

Numerous equipment options as well as individually adjustable control parameters allow optimum adaptation to any application.

Different sizes permit flow rates of 40 to 220 l/min.

Cost-Effectiveness of the AutoFilt® RF4.

Particle contamination in operating fluids accelerates the rate of wear of system components, pipelines and valves and often leads to their premature failure.

In many cases, the use of automatic back-flushing filters results in a significant increase in service life and maintenance intervals.

Costs for new purchases, maintenance and waste disposal can thus be minimized.

AutoFilt® RF4, Maintenance-Free Filtration for All Industries.

Examples of applications for the AutoFilt® RF4:

Automotive industry
Machine tools

Cooling lubricants and washing emulsions
can be kept in circulation significantly longer.
This eases the pressure on the environment
and reduces waste-disposal and re-purchase costs.
Cooling channels, pipelines, rotary joints,
pumps, valves etc are protected from clogging and wear.

Power plants

Conditioning of industrial water used to cool
generators and filtration of sealing water to increase
the service life of turbine shaft floating ring seals
in hydroelectric power stations.

Chemical industry

Improving product quality by filtering process media.

Sewage treatment plants

During the production of service water,
filtration of a take-off of the clear run
can be used to save valuable drinking water
or well water.

Environmental technology

Back-flushing filters are used as pre-filters
before waste-water treatment plants
(UV treatment, reverse osmosis, membrane filtration).

Paper industry

Protection of all types of nozzles
(trim spray nozzles, spray showers, roller spraying)
to prevent failures.

Special Features of the AutoFilt® RF4.

Isokinetic filtration and back-flushing

The conical shape of the filter elements allows consistent flow, resulting in low pressure drop and complete cleaning of the elements.
The advantage: fewer back-flushing cycles and minimal loss of back-flushing fluid.

Pulse-aided back-flushing

With control types EPT and ET, rapid opening of the back-flushing valve generates a pressure surge in the filter elements, supplementing the cleaning effect of the back-flushinging process.

### Minimal back-flushing quantities due to cyclic control

The back-flushing valve opens and closes during back-flushing of each filter element.

The information in this brochure relates to the operating conditions and applications described.
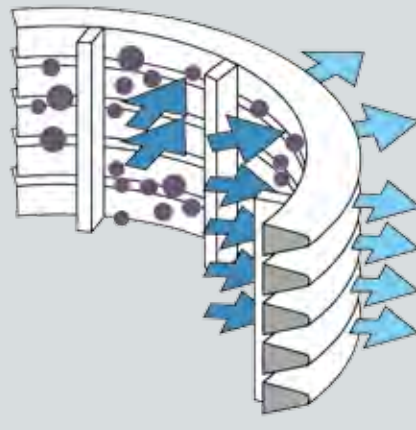
Subject to technical modifications.

For applications and operating conditions not described, please contact the relevant technical department.

Efficiency Achieved by the Special of the Back-Flushing Filter AutoFi
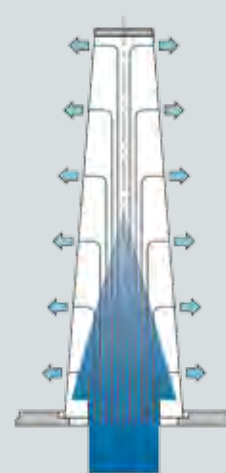
Filtration

Filtration.

The fluid to be filtered flows through the slotted tube filter elements of the back-flushing filter, passing from the inside to the outside. Contamination particles collect on the smooth inside of the filter elements. As the level of contamination increases, the differential pressure between the contaminated and clean sides of the filter increases.

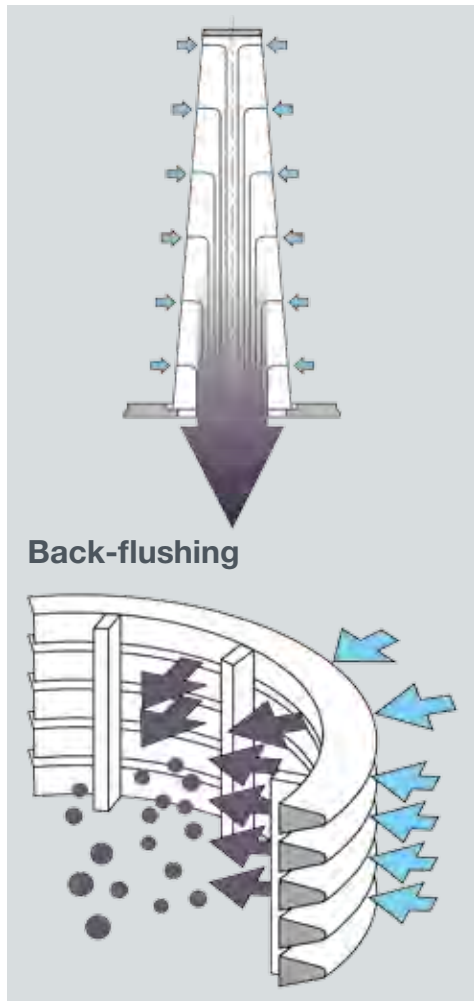### Automatic trigger for back-flushing on the AutoFilt® RF4

Back-flushing is triggered automatically when the triggering differential pressure is exceeded. The filter elements are cleaned.

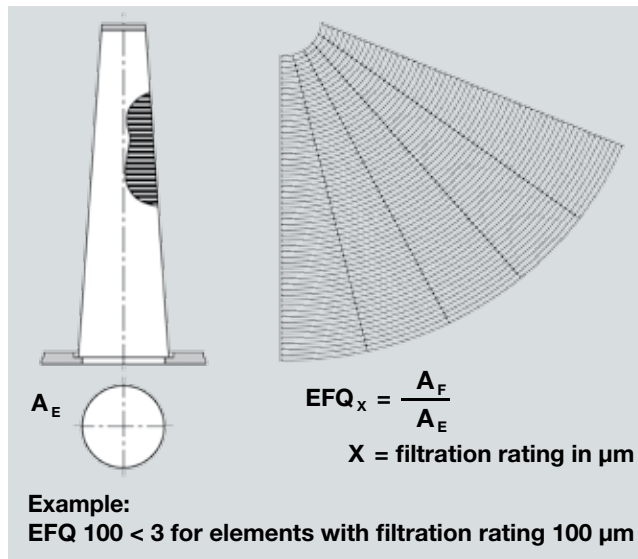### Manual trigger for back-flushing on the AutoFilt® RF4

As soon as the visual clogging indicator responds, back-flushing is started manually.

Flow-Enhancing Design ...ilt® RF4.

Back-flushing

Back-Flushing of the Filter Elements – Back-Flushing Cycle of the AutoFilt® RF4.

During automatic back-flushing, the pneumatic drive rotates the element mounting plate, including the filter elements, into the correct position, so that a contaminated filter element sits over the flushing opening.
The back-flushing valve is opened.

The pressure drop between filtrate side and back-flushing line flushes a small amount of the filtrate back through the contaminated filter elements. The contamination particles deposited on the inside of the filter elements are detached and carried away via the flushing opening into the back-flushing line. After the "back-flushing time per element" has expired, the back-flushing valve is closed. In this way, all the filter elements are back-flushed, one after the other.
A back-flushing cycle is terminated once all filter elements have been cleaned.

On the AutoFilt® RF4 with manual back-flushing, the element plate including filter elements is turned, and the back-flushing valve is opened, by hand.

Isokinetic Filtration and Back-Flushing due to Conical Filter Elements

A_E

$$EFQ_X = \frac{A_F}{A_E}$$

X = filtration rating in µm

Example:
EFQ 100 < 3 for elements with filtration rating 100 µm

Element Opening Quotient EFQx.

The element opening quotient EFQx is crucial for consistent flow without back-pressure through the filter element during filtration and back-flushing.

The EFQx value is the ratio of the open filter area of an element to the cross section of the opening of the element inlet.

Back-Flushing Valve

KHM ball valve with pneumatic actuator
- Safety
- Long service life

HYDAC CX valve, 2/2 way
- Externally controlled

Differential Pressure Measurement

Electronic differential pressure switch EVA-Wind-HPT
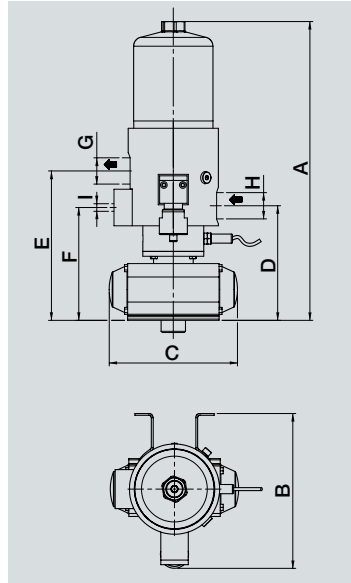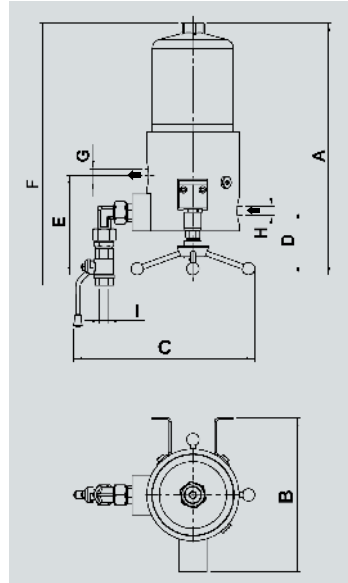- Monitoring of the back-flushing filter

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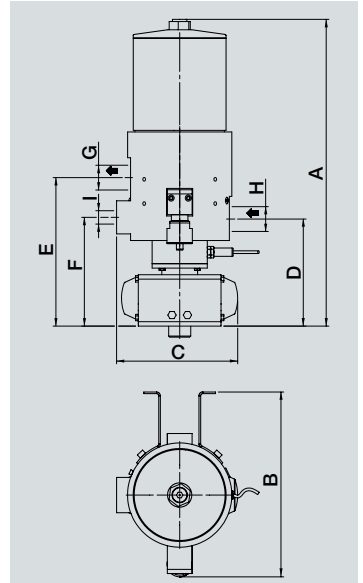
Dimensions of Back-Flushing Filter AutoFilt® RF4.

RF4-1-16 bar

A	490 mm
B	255 mm
C	210 mm
D	190 mm
E	245 mm
F	185 mm
G	1"
H	1"
I	1/2"

RF4-1-M-16 bar (manual)

A	405 mm
B	248 mm
C	290 mm
D	103 mm
E	161 mm
F	422 mm
G	1"
H	1"
I	1/2"

RF4-2-16 bar

A	562 mm
B	342 mm
C	220 mm
D	196 mm
E	269 mm
F	197 mm
G	1 1/2"
H	1 1/2"
I	3/4"

AutoFilt® RF4-1 –*
Specifications.

Maximum operating pressure
16 bar

Maximum flow rate
100 l/min for cooling lubricants
120 l/min for water

Maximum contamination load
120 mg/l

Maximum operating temperature
80 °C

Inlet and outlet
G1"

Back-flushing line
G½" female

Filtration rating
25 to 3,000 µm

Number of filter elements
4 pieces

Volume
2.5 litres

Operating weight
15.5 kg (without controller)

Materials
Filter head: Aluminium (anodized),
                 stainless steel
Filter bowl: Aluminium (anodized),
                 stainless steel
Internal parts: Stainless steel 1.4301
Elements: Stainless steel 1.4435

AutoFilt® RF4-2 –*
Specifications.

Maximum operating pressure
16 bar

Maximum flow rate
200 l/min for cooling lubricants
220 l/min for water

Maximum contamination load
150 mg/l

Maximum operating temperature
80 °C

Inlet and outlet
G1½"

Back-flushing line
G¾" female

Filtration rating
25 to 3,000 µm

Number of filter elements
4 pieces

Volume
3.7 litres

Operating weight
63 kg (without controller)

Materials
Filter head: Carbon steel (nickel pl.),
                 stainless steel
Filter bowl: Carbon steel (nickel pl.),
                 stainless steel
Internal parts: Stainless steel 1.4301
Elements: Stainless steel 1.4435

*Other models on request.

AutoFilt® RF4:
The advantages ...

... and the benefits to you:

Feature	Benefit
Extensive standard equipment for real-world applications	Very good price/performance ratio
Fully automatic operation	First-class reliability
	No intervention by staff required
	Low operating costs
Continuous flow of filtrate even during back-flushing	No interruption to operation
Easy to service	Low maintenance costs
Isokinetic filtration and back-flushing	Maximum utilization of the filter area
	Full filtration performance after back-flushing
Conical filter elements	Optimum filtration and back-flushing characteristics
Slotted tube filter elements	Long service life
	Optimum filtration and back-flushing characteristics
Pulse-aided back-flushing	Additional dynamic element cleaning with minimal loss of flushing fluid
Individually adjustable control parameters on the programmable logic controller	Customized adaptation to the particular application
Flow-optimized filter	High through-put with compact dimensions
Numerous equipment options	Customized adaptation to the particular application
Ready-to-operate unit	Simple installation and commissioning,
	Guaranteed quality due to HYDAC function test
Certified to ISO 9001	Consistently high quality

Note:

For information on sizing the HYDAC AutoFilt® RF4
please contact our Head Office.