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.
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.
Back-Flushing AutoFilt®

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-flushing process.

Minimal back-flushing quantities due to cyclic control
The back-flushing valve opens and closes during back-flushing of each filter element.


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.

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.
Back-Flushing AutoFilt® RF4 for Continuous Filtration.


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.

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.

\[
EFQ_x = \frac{A_f}{A_e} \\
x = \text{filtration rating in } \mu\text{m}
\]

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

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

**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:
  - G¼" 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 ...

| 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 | Optimum filtration and back-flushing characteristics |
| Conical filter elements | Long service life |
| Slotted tube filter elements | 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 throughput with compact dimensions |
| Numerous equipment options | Customized adaptation to the particular application |
| Ready-to-operate unit | Simple installation and commissioning, |
| Certified to ISO 9001 | Guaranteed quality due to HYDAC function test |
| | Consistently high quality |

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