

## RF4



The automatic backflushing RF4 filter is a self-cleaning system for removing particles from low viscosity fluids. Its robust construction and automatic backflushing capability make a major contribution to operational reliability and reduce operating and maintenance costs. The slotted tube or SuperMesh™ filter elements with filtration rates from 25 to 1000 µm 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 the backflushing procedure. Two sizes allow flow rates from 10-60 gpm. The RF4 is available as a fully automatic or purely manual version. Numerous combinations of materials and equipment as well as individually adjustable control parameters allow optimum adaptation of the filter to any application.

### OPERATION OF THE RF4

#### Filtration

The fluid to be filtered flows through the slotted tube filter elements of the backflushing filter passing from the inside to the outside. Contamination particles collect on the smooth inside of the filter elements. As the level of the collected contamination increases, the differential pressure between the contaminated and clean sides of the filter increases. When the differential pressure reaches its pre-set value, the backflushing cycle begins.

#### Triggering Automatic Backflushing

Backflushing is triggered automatically when the differential pressure set point is exceeded. As soon as backflushing has been triggered, the filter starts to clean the filter elements.

#### Triggering Backflushing on Manual Version

When the differential pressure set point is reached, the visual clogging alarm indicates to an operator or maintenance personnel that a backflush cycle is needed.

#### Backflushing of the Filter Elements – Backflushing Cycle

The cycle begins with the element plate turning 90°. This brings a clean filter element into filtration, and a contaminated filter element is positioned over the fixed flushing connection.

#### The backflush valve is opened.

The differential pressure between filtrate side and backflush line causes a small amount of the filtrate to reverse flow through the element to be cleaned. The contamination particles collected on the inside of the filter element are loosened and flushed into the backflush line via the flushing arm. As soon as the “backflushing time per element” has elapsed, the backflushing valve is closed. The backflushing cycle is terminated when all the filter elements have been cleaned. On the RF4 with manual backflushing, the element plate including filter elements, is turned and the backflushing valve is opened by hand. Each filter element is cleaned successively in this manner.

### SPECIAL FEATURES OF THE RF4

#### Isokinetic Filtering and Backflushing

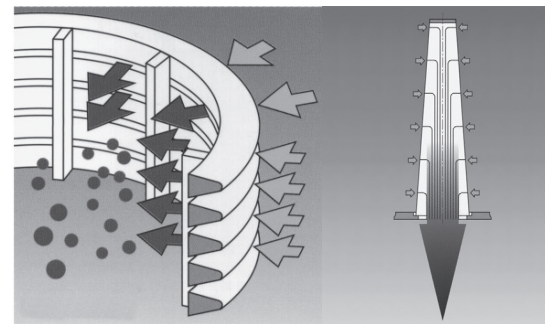
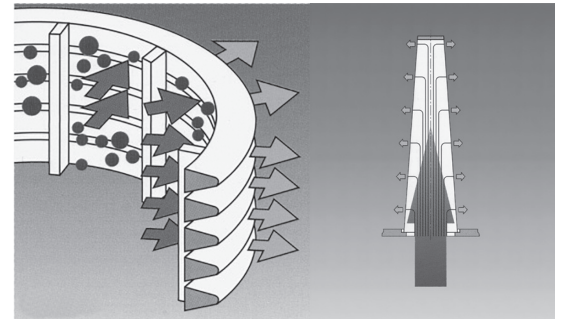
The special conical shape and configuration of the filter elements allows for even flow, resulting in low pressure drop and complete cleaning of the elements. The advantage: fewer backflushing cycles and lower loss of backflushing fluid.

#### Pulse-aided Backflushing

The filter element to be backflushed remains in the flushing position for only a few seconds. Rapid opening of the pneumatic backflushing valve generates a pressure surge in the openings of the filter elements that provides a pulse-aided cleaning effect to the backflushing process.

#### Low Backflushing Quantities Due to Cyclic Control

The backflush valve opens and closes during backflushing of each filter element, further minimizing the amount of filtrate needed to effectively clean the element.

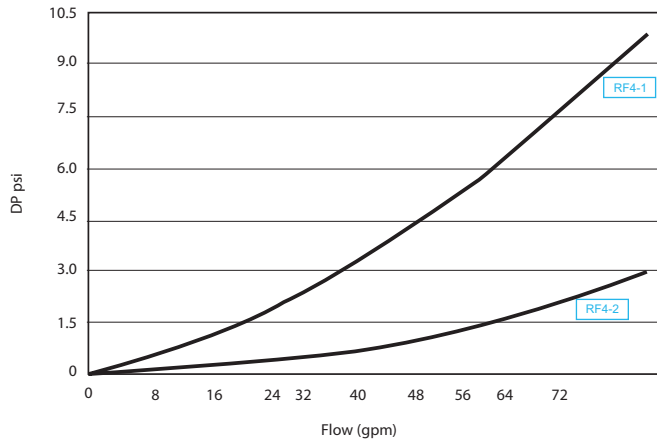


### Water Applications

Fluid	Max. Flow Rate gpm (L/min)	
	RF4-1	RF4-2
Water	32(120)	60(220)

The flow rate ranges indicated apply to filtration ratings  $\geq 100 \mu\text{m}$

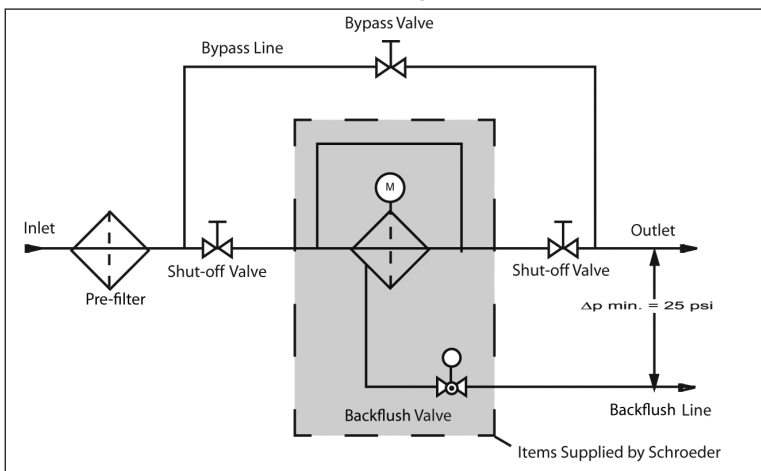
**Important**  
The pressure drop curves apply to water and other fluids up to a viscosity of 11 mm<sup>2</sup>/s.



### Cooling Lubricant Applications

Material Handling	Type of Machining	Max. Flow Rate gpm (L/min)	
		RF4-1	RF4-2
Aluminum	Cutting	26 (100)	53 (200)
Cast Iron	Cutting	18 (70)	42 (160)
Carbon Steel	Cutting	21 (80)	48 (180)
Stainless Steel	Cutting	21 (80)	48 (180)
Aluminum	Grinding	24 (90)	53 (200)
Cast Iron	Grinding	13 (50)	37 (140)
Carbon Steel	Grinding	16 (60)	40 (150)
Stainless Steel	Grinding	16 (60)	40 (150)

Circuit Diagram



### Industries Served



STEEL MAKING



PULP & PAPER



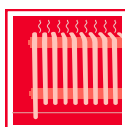
WASTE WATER TREATMENT



AUTOMOTIVE MANUFACTURING



INDUSTRIAL



THERMAL TRANSFER



MARINE



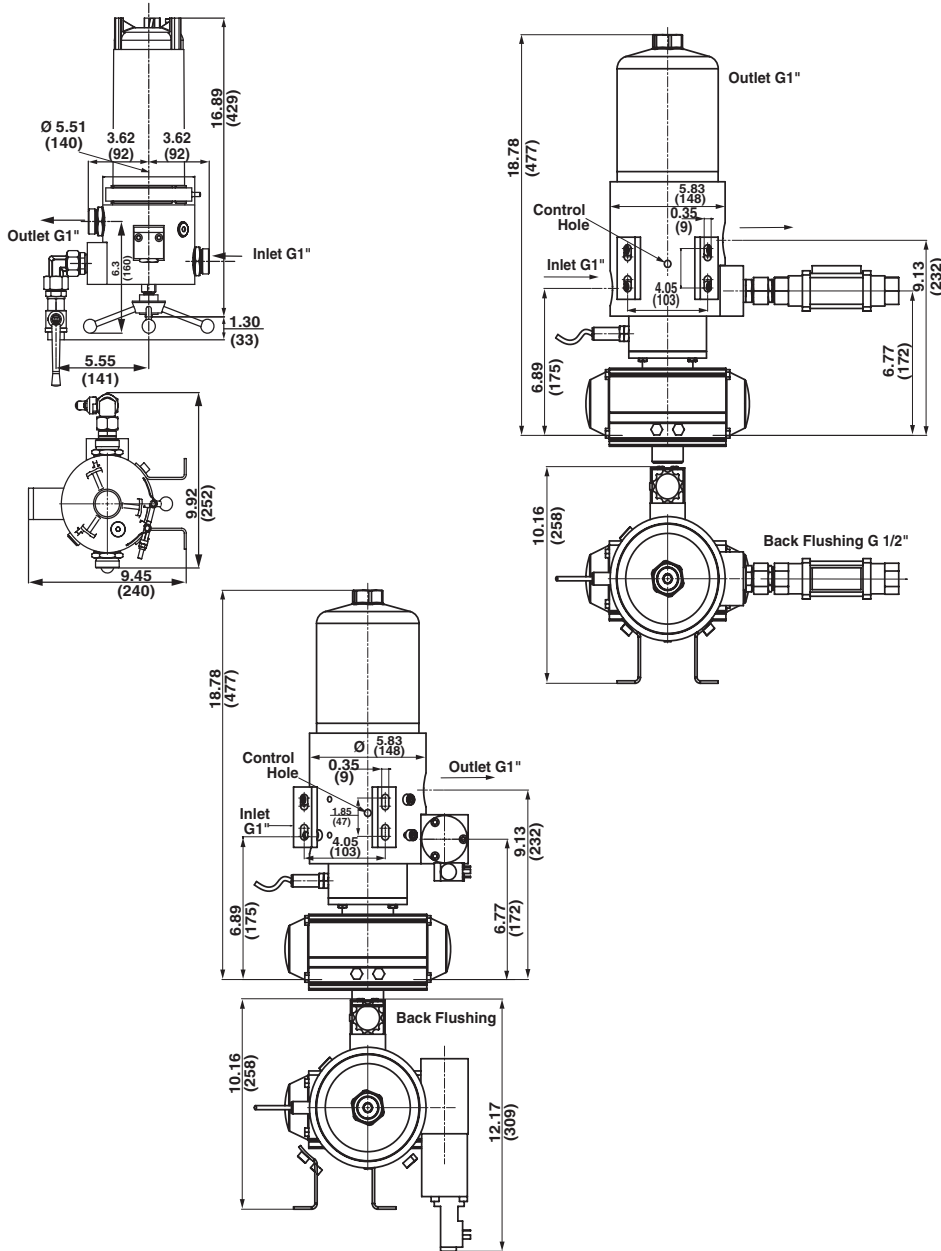
MACHINE TOOL

# Backflushing Filter AutoFilt® RF4

**RF4-1**

**87 psi - 6 bar or 230 psi - 16 bar**

**32 gpm - 120 L/min**



**NOTES:**

1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact factory for certified drawings.

## Specifications

Process Connection:	G 1" Female
Max Flow:	32 gpm (120 L/min)
Max. Working Pressure:	87 psi (6 bar) or 230 psi (16 bar)
Max. Working Temperature:	194°F (90°C)
Weight:	29 lbs. (13 kg) or 33 lbs. (15kg)
Housing Volume:	0.66 gallons (2.5 L)
Filter Area:	85in.2 (548 cm2)
No. of Filter Elements	4
Backflush Connection:	G1/2 Female
Backflush Volume:	1.1 gallons (4 L/cycle)

### How to Build a Valid Model Number for a RF4:

Filter Series	Size	Control Type	Voltage Type	Materials	Material of Internal Parts	Backflushing Valve	Differential Pressure Control	Pressure Range	Modification Number	Element Type & Size

#### Filter Series

RF4

#### Size

1 = G1"

#### Control Type

- EPT** = Electro-pneumatic cyclic control, (including pneumatic drive)
- ET** = Electric Control
- EU** = Electrical Circulation Control
- M** = Manual

#### Voltage Type

- 0** = Without control, without solenoid valve
- 1** = With control\* and solenoid valve 230 V AC
- 2** = With control\* and solenoid valve 24 V AC
- 2M** = With control, and solenoid valve 24 V DC/M12x1 plug
- 3** = Without control, with solenoid valve 24 V AC
- 4** = Without control, with solenoid valve 24 V AC
- 4M** = Without control, with solenoid valve 24 V DC/M12x1 plug
- 5A** = With AutoFilt® Control Unit ACU, 1 x 230 V / N / PE, 50 Hz
- 5C** = With AutoFilt® Control Unit ACU, 3 x 380-420 V / N / PE, 50/60 Hz
- 5D** = With AutoFilt® Control Unit ACU, 3 x 380-420 V / x / PE, 50/60 Hz

#### Only for ET control:

- 0A** = Without control, drive 1 x 230 V / N / PE, 50 Hz back-flushing valve 1 x 230 V / N / PE, 40-60 Hz sensors 24 V DC
- 0C** = Without control, drive 3 x 380-420 V / x / PE, 50/60 Hz back-flushing valve 1 x 230 V / N / PE, 40-60 Hz sensors 24 V DC
- 1A** = With control S7, 1 x 230 V / N / PE, 50 Hz
- 1C** = With control S7, 3 x 380-420 V / N / PE, 50/60 Hz
- 1D** = With control S7, 3 x 380-420 V / x / PE, 50/60 Hz
- 2A** = With AutoFilt® Control Unit ACU, 1 x 230 V / N / PE, 50 Hz
- 2C** = With AutoFilt® Control Unit ACU, 3 x 380-420 V / N / PE, 50/60 Hz
- 2D** = With AutoFilt® Control Unit ACU, 3 x 380-420 V / x / PE, 50/60 Hz

\*Other voltages available on request!

#### Only for EU control:

- 0A** = Without control, drive 1 x 230 V / N / PE, 50 Hz sensors and back-flush ball valve 24 V DC
- 04** = Without control, drive 24 V DC/10 V DC control voltage sensors and back-flush ball valve 24 V DC

#### Materials

- AA** = Aluminum head & bowl (only RF4-1, 230 psi)
- EE** = Stainless Steel head and bowl (only RF4-1, 230 psi)

#### Material of Internal Parts

- E** = Stainless Steel

#### Backflushing Valve

- 0** = Without backflushing valve
- CO** = Coaxial valve, brass
- CON** = Coaxial valve, steel galvanized (only on request!)
- COE** = Coaxial valve, stainless steel (only on request!)
- KN** = Ball valve, nickel plated brass (only on M or EPT control models)
- KE** = Ball valve, nickel plated brass (only on M or EPT control models)

#### Differential Pressure Control

- 0** = Without differential pressure monitoring
- 1** = Fixed value: 7.3 psi (0.5 bar), Type DS 32 N/O contact
- 2** = Adjustable: 1.5 psi (0.1 bar) - 14.5 psi (1 bar), Type DS 31, N/O contact
- 3** = Fixed value: 7.3 psi (0.5 bar), type DS 32, N/C
- 4** = Adjustable: 1.5 - 14.5 psi (0.1 - 1 bar), type DS 31, N/C
- 5** = Visual clogging indicator (only for manual version)
- 7** = Fixed value 7.3 psi (0.5 bar), type VL 1 GW (Alu), N/C
- 8** = Fixed value 7.3 psi (0.5 bar), type PVL 1 GW (1.4301), N/C
- 9** = 2 x HDA 4700 stainless steel (4-20 mA), standard in combination with AutoFilt® Control Uni ACU
- A** = Fixed value 7.3 psi (0.5 bar), type VL 1 GW (Alu), N/O
- B** = Fixed value 7.3 psi (0.5 bar), type PVL 1 GW (1.4301), N/O

#### Pressure Range

- 06** = 87 psi (6 bar) (housing fastened with clamp), only for housings in stainless steel design
- 16** = 230 psi (16 bar) (filter upper section threaded)
- 25** = 360 psi (25 bar), only for RF4-1 (only on request!)

#### Modification No.

- X** = Latest version is always supplied

#### Element Type & Size

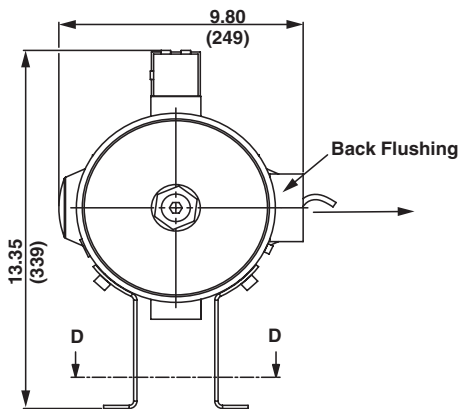
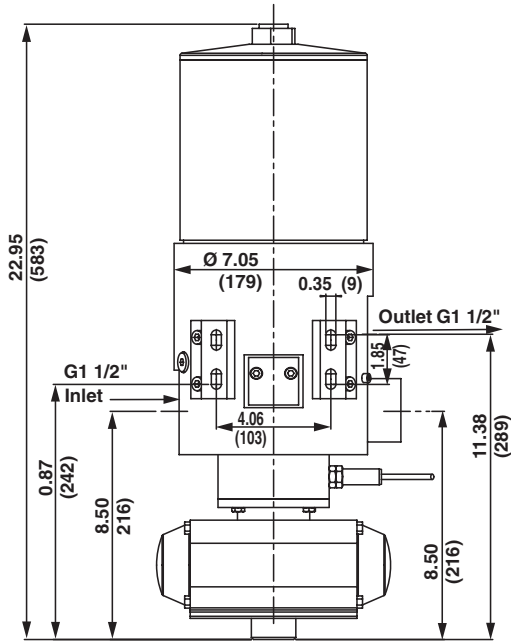
- KMS** = Slotted Tubes, 30 to 1000µm
- KMD** = SuperMesh™ 25µm, 40µm, 60µm
- SKMS** = Slotted Tube Superflush 30 µm to 1000 µm
- SKMD** = SuperMesh™ Superflush 25µm, 40 µm, 60

# Backflushing Filter AutoFilt® RF4

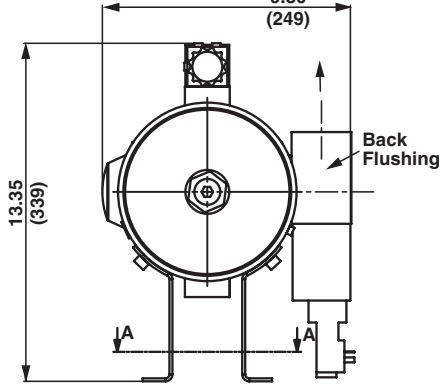
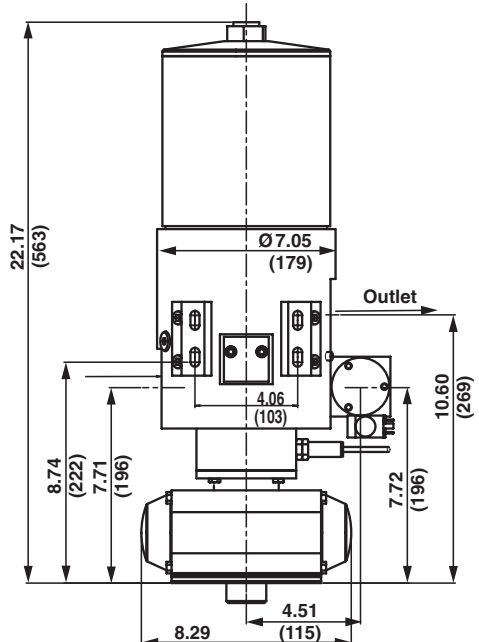
**RF4-2**

87 psi - 6 bar or 230 psi - 16 bar

60 gpm - 220 L/min



RF4-2  
w/ Co-Ax Cable,  
230 psi



RF4-2  
w/ Lateral Valve,  
230 psi

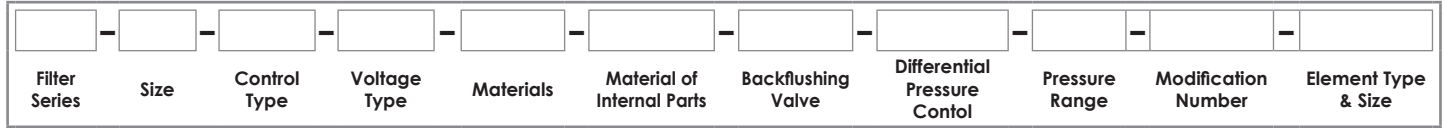
**NOTES:**

1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact factory for certified drawings.

## Specifications

Process Connection:	G1 1/2" Female
Max Flow:	60 gpm (220 L/min)
Max. Working Pressure:	87 psi (6 bar) or 230 psi (16 bar)
Max. Working Temperature:	194°F (90°C)
Weight:	71 lbs. (32 kg) or 140 lbs. (63kg)
Housing Volume:	1.0 gallons (3.7 L)
Filter Area:	220in.2 (1420 cm2)
No. of Filter Elements	4
Backflush Connection:	G3/4 Female
Backflush Volume:	3.4 gallons (13 L/cycle)

### How to Build a Valid Model Number for a RF4:



<b>Filter Series</b>	
	RF4
<b>Size</b>	
	2 = G 1½"
<b>Control Type</b>	
	<b>EPT</b> = Electro-pneumatic cyclic control, (including pneumatic drive) <b>ET</b> = Electric Control <b>EU</b> = Electrical Circulation Control <b>M</b> = Manual
<b>Voltage Type</b>	
	<b>0</b> = Without control, without solenoid valve <b>1</b> = With control* and solenoid valve 230 V AC <b>2</b> = With control* and solenoid valve 24 V AC <b>2M</b> = With control, and solenoid valve 24 V DC/M12x1 plug <b>3</b> = Without control, with solenoid valve 24 V AC <b>4</b> = Without control, with solenoid valve 24 V AC <b>4M</b> = Without control, with solenoid valve 24 V DC/M12x1 plug <b>5A</b> = With AutoFilt® Control Unit ACU, 1 x 230 V / N / PE, 50 Hz <b>5C</b> = With AutoFilt® Control Unit ACU, 3 x 380-420 V / N / PE, 50/60 Hz <b>5D</b> = With AutoFilt® Control Unit ACU, 3 x 380-420 V / x / PE, 50/60 Hz
<b>Only for ET control:</b>	
	<b>0A</b> = Without control, drive 1 x 230 V / N / PE, 50 Hz back-flushing valve 1 x 230 V / N / PE, 40-60 Hz sensors 24 V DC <b>0C</b> = Without control, drive 3 x 380-420 V / x / PE, 50/60 Hz back-flushing valve 1 x 230 V / N / PE, 40-60 Hz sensors 24 V DC <b>1A</b> = With control S7, 1 x 230 V / N / PE, 50 Hz <b>1C</b> = With control S7, 3 x 380-420 V / N / PE, 50/60 Hz <b>1D</b> = With control S7, 3 x 380-420 V / x / PE, 50/60 Hz <b>2A</b> = With AutoFilt® Control Unit ACU, 1 x 230 V / N / PE, 50 Hz <b>2C</b> = With AutoFilt® Control Unit ACU, 3 x 380-420 V / N / PE, 50/60 Hz <b>2D</b> = With AutoFilt® Control Unit ACU, 3 x 380-420 V / x / PE, 50/60 Hz <i>*Other voltages available on request!</i>
<b>Only for EU control:</b>	
	<b>0A</b> = Without control, drive 1 x 230 V / N / PE, 50 Hz sensors and back-flush ball valve 24 V DC <b>04</b> = Without control, drive 24 V DC/10 V DC control voltage sensors and back-flush ball valve 24 V DC
<b>Materials</b>	
	<b>NN</b> = Carbon Steel, nickel plated (only RF4-2 230 psi) <b>EE</b> = Stainless Steel head and bowl (only RF4-2, 230 psi) <b>AA</b> = Aluminum
<b>Material of Internal Parts</b>	
	<b>E</b> = Stainless Steel

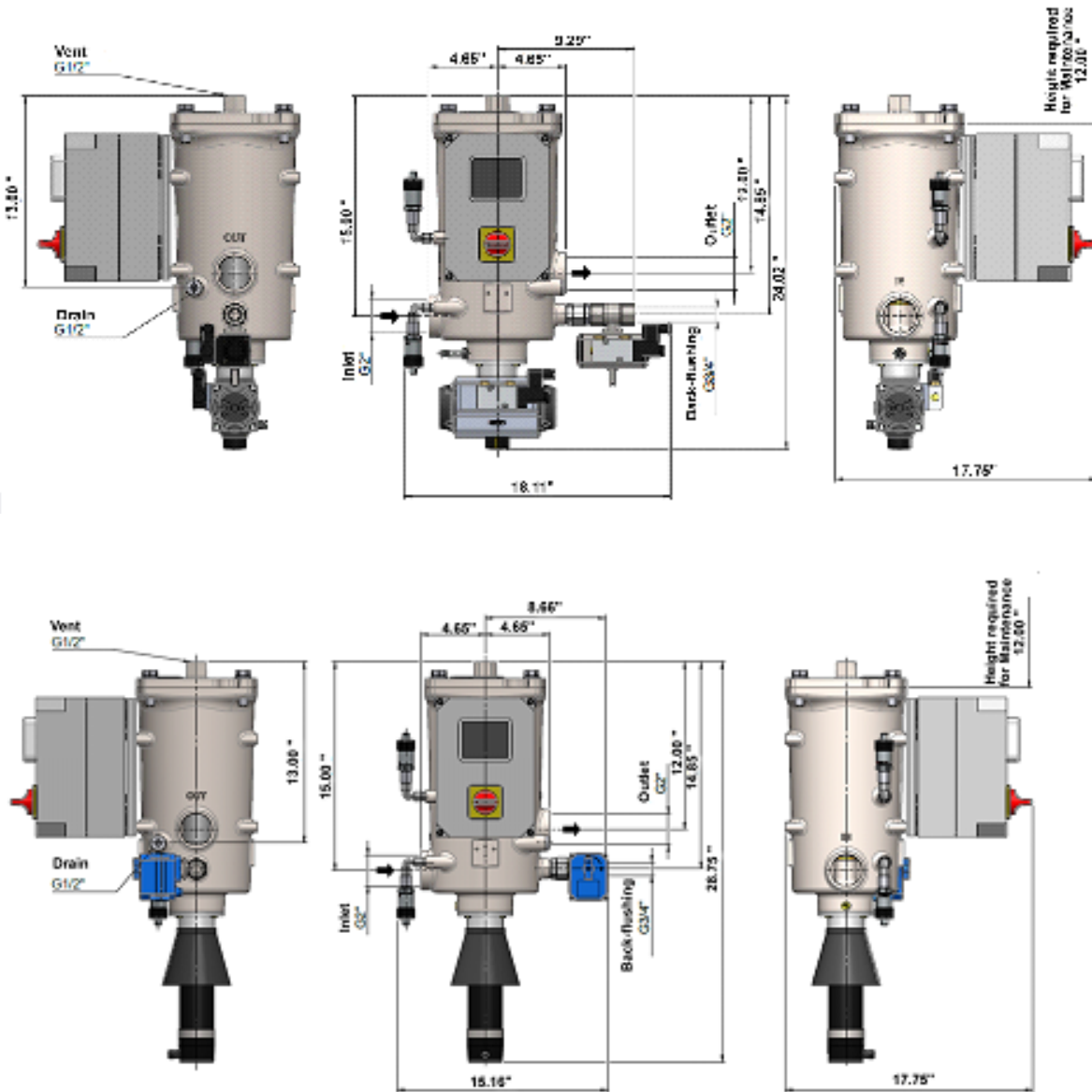
<b>Backflushing Valve</b>	
	<b>0</b> = Without backflushing valve <b>CO</b> = Coaxial valve, brass <b>CON</b> = Coaxial valve, steel galvanized (only on request!) <b>COE</b> = Coaxial valve, stainless steel (only on request!) <b>KN</b> = Ball valve, nickel plated brass (only on M or EPT control models) <b>KE</b> = Ball valve, nickel plated brass (only on M or EPT control models)
<b>Differential Pressure Control</b>	
	<b>0</b> = Without differential pressure monitoring <b>1</b> = Fixed value: 7.3 psi (0.5 bar), Type DS 32 N/O contact <b>2</b> = Adjustable: 1.5 psi (0.1 bar) - 14.5 psi (1 bar), Type DS 31, N/O contact <b>3</b> = Fixed value: 7.3 psi (0.5 bar), type DS 32, N/C <b>4</b> = Adjustable: 1.5 - 14.5 psi (0.1 - 1 bar), type DS 31, N/C <b>5</b> = Visual clogging indicator (only for manual version) <b>7</b> = Fixed value 7.3 psi (0.5 bar), type VL 1 GW (Alu), N/C <b>8</b> = Fixed value 7.3 psi (0.5 bar), type PVL 1 GW (1.4301), N/C <b>9</b> = 2 x HDA 4700 stainless steel (4-20 mA), standard in combination with AutoFilt® Control Uni ACU <b>A</b> = Fixed value 7.3 psi (0.5 bar), type VL 1 GW (Alu), N/O <b>B</b> = Fixed value 7.3 psi (0.5 bar), type PVL 1 GW (1.4301), N/O
<b>Pressure Range</b>	
	<b>06</b> = 87 psi (6 bar) (housing fastened with clamp), only for housings in stainless steel design <b>16</b> = 230 psi (16 bar) (filter upper section threaded) <b>25</b> = 360 psi (25 bar), only for RF4-1 (only on request!)
<b>Modification No.</b>	
	<b>X</b> = Latest version is always supplied
<b>Element Type &amp; Size</b>	
	<b>KMS</b> = Slotted Tubes, 30 to 1000µm <b>KMD</b> = SuperMesh™ 25µm, 40µm, 60µm <b>SKMS</b> = Slotted Tube Superflush 30 µm to 1000 µm <b>SKMD</b> = SuperMesh™ Superflush 25µm, 40 µm, 60

# Backflushing Filter AutoFilt® RF4-3

**RF4W-3**

232 psi - 16 bar

120 gpm - 450 L/min



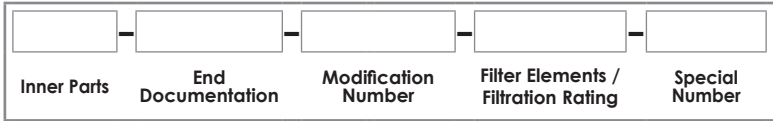
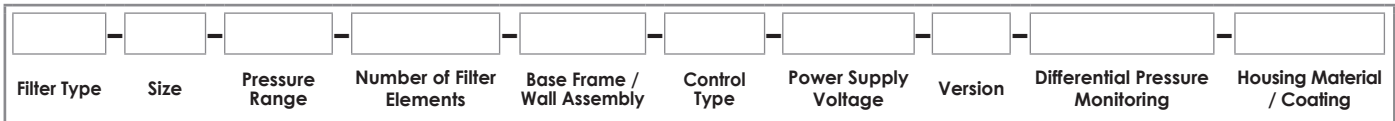
**NOTES:**

1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact factory for certified drawings.

## Specifications

Connection Size:	• Inlet/Outlet: G2" • Back-flush line: G¾
Flow Rate Qmax:	450 l/min (120 gpm)
Design Pressure pmax:	16 bar (232 psi)
Design Temperature Tmax:	80° C (176°F)
Filtration Rating:	25 — 1000 µm
Filter Elements / Filter Area:	4 pieces: 1430 cm <sup>2</sup> (222 in <sup>2</sup> ) 6 pieces: 2140 cm <sup>2</sup> (332 in <sup>2</sup> ) 7 pieces: 2500 cm <sup>2</sup> (388 in <sup>2</sup> )
Housing Material:	Stainless steel cast 1.4581
Weight:	45 kg (99.2 lbs)

### How to Build a Valid Model Number for a Schroeder ATF 2, 2.5 and 3:



<b>Filter Type</b>	<b>RF4WL</b> = Left Filter Inlet - Standard <b>RF4WR</b> = Right Filter Inlet
<b>Size</b>	<b>3</b> = G2"
<b>Pressure Range</b>	<b>2</b> = 10 bar (only for EU) <b>3</b> = 16 bar (EPT & EU)
<b>Number of Filter Elements</b>	<b>4</b> = 4 pieces <b>6</b> = 6 pieces - Standard <b>7</b> = 7 pieces - only in case of high dirt load
<b>Base Frame / Wall Assembly</b>	<b>0</b> = Without - standard <b>1</b> = For wall mounting <b>2</b> = With base frame <b>3</b> = Air-bleed valve & piping <b>4</b> = Automatic vent valve (plastic) and piping
<b>Control Type</b>	<b>A</b> = EPT: Electro-pneumatic cyclic control <b>B</b> = EU: Electrical circulation control - Standard
<b>Power Supply Voltage</b>	<b>D</b> = Supply voltage 230VAC 50Hz/60Hz (EPT & EU) - Standard (= Gear motor, control valve or backflush valve unit 24VDC) <b>F</b> = Supply voltage 115VAC 60Hz (EU gear motor) (= Gear motor, control valve or backflush valve unit 24VDC) <b>L</b> = Supply voltage 24VDC (only for EPT)
<b>Version</b>	<b>0</b> = Without control, loose cable, cable length 5 meters <b>1</b> = Basic terminal box on filter, actuators & sensors on the terminal strip <b>2</b> = ACU Basic on Filter - Standard <b>3</b> = ACU Basic with 5 meters cable for wall mounting <b>4</b> = ACU (metal control cabinet, with 5 meter cable for wall mounting)
<b>Differential Pressure Monitoring</b>	<b>5</b> = HDA 4700 Stainless steel V2A (4-20 mA), 2 pieces

<b>Housing Material / Coating</b>	<b>E2</b> = Stainless steel casting 1.4581(Group 316) - Standard
<b>Inner Parts</b>	<b>E1</b> = Stainless steel 1.4301, 1.4541 or similar (Group 304/321) - Standard <b>E2</b> = Stainless steel 1.4401, 1.4404, 1.4571 or similar (Group 316)
<b>End Documentation</b>	<b>0</b> = Standard (Assembly & Operating manual, E plan, Declaration of Incorporation) <b>A</b> = Certificate of Conformance CoC + standard <b>B</b> = Acceptance test certificate 3.1 according to DIN EN 10204 for design, pressure and function test + standard <b>C</b> = Acceptance test certificate 3.1 according to DIN EN 10204 for design, pressure and function test <b>D</b> = Material inspection certificates according to EN 10204, 3.1 for pressure-bearing media-contacting housing parts + standard <b>E</b> = Russian device pass incl. explanation letter for TRCU 031/2013; additional Declaration of Conformity for TRCU 010/2011 + standard
<b>Modification Number</b>	The latest version is always supplied (currently 2)
<b>Filter Elements / Filtration Rating</b>	<b>S</b> = "S" additionally prefixed for SuperFlush <b>KNS</b> = Wedge wire 50 µm up to 1000 µm <b>KND</b> = SuperMesh 25 µm, 40 µm, 60 µm (3-layer)
	Filtration Ratings: KNS 50 µm, 100 µm, 150 µm, 200 µm, 250 µm, 300 µm, 500 µm, 1000 µm
	Filtration Ratings: KND 25 µm, 40 µm, 60 µm
	<i>Other filtration ratings available on request</i>
<b>Special Number</b>	For special design (number will be issued after technical clarification in the Head Office)