

## Description

STAUFF Return-Line Filters were designed as filters for tank-top mounting, tank-inside mounting or inline mounting. They filter the hydraulic oil before it flows back into the reservoir. This ensures that contamination arising in the components does not get into the tank. Return-Line filters maintain the targeted purity class like Pressure Filters. However, because of their arrangement, they do not fulfil the additional function of a protection filter. In contrast to a Pressure Filter, it only has to withstand low pressure levels.

The practical design of STAUFF Return-Line Filters enables quick assembly as well as easy exchange of the filter elements.

### Media Compatibility

- Mineral oils, others on request

### Options and Accessories

#### Valves

- Bypass valve integrated in the filter element (except STAUFF Return-Line Filter RTF)

#### Clogging Indicators

- On request with visual clogging indicator or electrical clogging switch
- Others on request



#### Type RF

- Filter bowl with option of thread connection (e.g. STAUFF Diffuser SRV) or leakage oil connection
- Operating pressure: max. 16 bar / 232 PSI
- Nominal flow rate: max. 500 l/min / 130 US GPM
- Materials: Filter head: Aluminium, Filter bowl: PA
- Connections: BSP, NPT, SAE thread or SAE flange (ISO 6162-1)



#### Type RFA

- Filter bowl with option of thread connection (e.g. STAUFF Diffuser SRV) or leakage oil connection
- Operating pressure: max. 25 bar / 365 PSI
- Nominal flow rate: max. 110 l/min / 30 US GPM
- Materials: Filter housing: Aluminium
- Connection: SAE thread



#### Type RFB

- Low weight and compact design
- Filter bowl with option of thread connection
- Filter head with option of integrated air filter
- Operating pressure: max. 10 bar / 145 PSI
- Nominal flow rate: max. 185 l/min / 52 US GPM
- Materials: Filter head: Aluminium, Filter bowl: PA
- Connections: BSP, NPT, SAE thread



#### Type RFS and RFS-D

- Robust design, suitable for high flow rates
- Filter bowl with option of BSP or SAE flange
- Operating pressure: max. 25 bar / 365 PSI
- Nominal flow rate: max. 1135 l/min / 300 US GPM
- Materials: Filter head and bowl: Steel
- Connections: BSP or SAE flange (ISO 6162-1)



#### Type RTF

- Filter bowl is designed to return the oil beneath the surface thus preventing entrainment of air
- Filter head with option of integrated air filter
- Operating pressure: max. 10 bar / 49 PSI
- Nominal flow rate: max. 380 l/min / 100 US GPM
- Materials: Filter head: Aluminium, Filter bowl: PA or Steel
- Connection: BSP or NPT, others on request

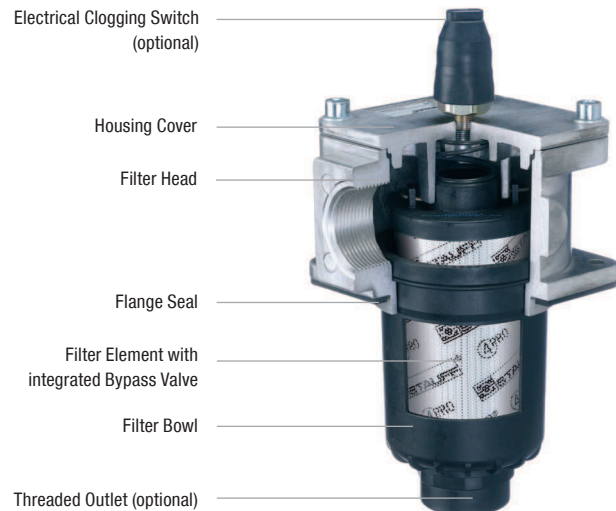


#### Type RTF-N

- Return-Line insert filter
- Custom reservoir design with an in-tank filtering system
- Magnetic pre-filtration
- Operating pressure: max. 10 bar / 145 PSI
- Nominal flow rate: max. 500 l/min / 132 US GPM
- Materials: Flange plate: Aluminium, Magnet rod / Bypass / Diffuser: Steel



## Return-Line Filters ■ Type RF



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**Product Description**

STAUFF RF Return-Line Filters are designed as tank top filters. They are mounted directly on the tank top and when 100% of the system's oil is filtered they provide the optimum removal of contaminant from the system. This provides the pump with clean oil thus reducing contaminant generated wear. The filter bowl is designed to return the oil beneath the surface thus preventing the entrainment of air by the returning oil. A high efficiency of contaminant removal is assured by using STAUFF RE Replacement Filter Elements. The high dirt-hold capacity of STAUFF Elements ensures a long service life and as a result reduced maintenance costs.

**Technical Data**
**Construction**

- Tank Top flange mounting

**Materials**

- Filter head: Aluminium
- Filter bowl: Glass Fibre reinforced Polyamide
- Sealings: NBR (Buna-N®)  
FKM/FPM (Viton®)  
EPDM (Ethylene-Propylene-Diene-Monomer-Rubber)  
Other sealing materials on request

**Port Connections**

- BSP
- NPT
- SAE O-ring thread
- SAE flange 3000 PSI

**Operating Pressure**

- Max. 16 bar / 232 PSI

**Temperature Range**

- -10 °C ... +100 °C / +14 °F ... +212 °F

**Filter Elements**

- Specifications see page 72

**Media Compatibility**

- Mineral oils, other fluids on request

**Options and Accessories**
**Valve**

- Bypass valve (integrated in the filter element): Opening pressure 3 bar ± 0,3 bar / 43.5 PSI ± 4.35 PSI  
Other settings available on request

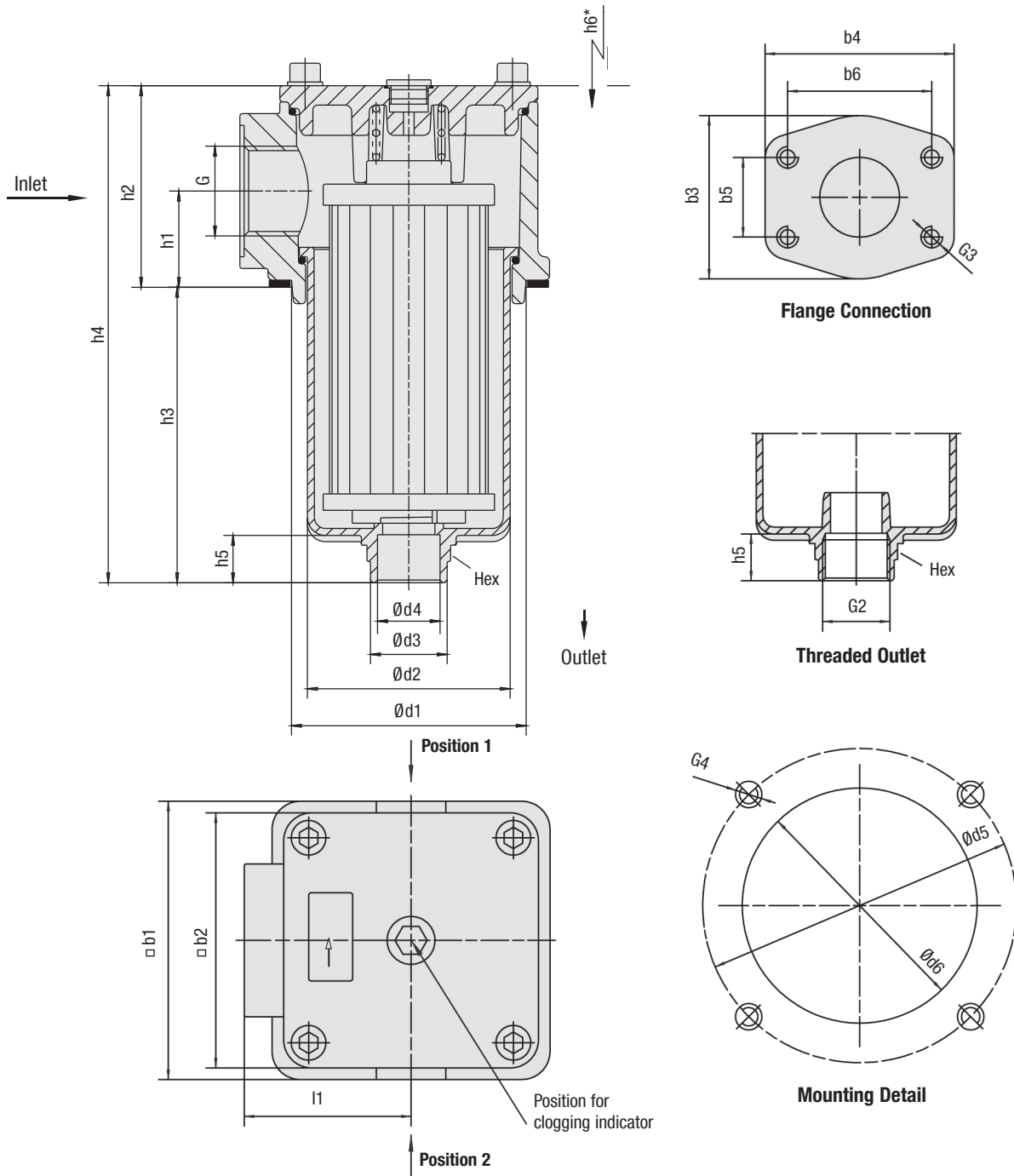
**Clogging Indicators**

- For clogging indicator types please see page 73



Return-Line Filters ▪ Type RF

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\* recommended space for element change



## Return-Line Filters ■ Type RF

Thread Connection G	Filter Size RF					
	014	030	045	070	090	130
BSP	3/4	1	1-1/4	1-1/2	2	2
NPT	3/4	1	1-1/4	1-1/2	2	2
SAE O-ring Thread	1-1/16-12	1-5/16-12	1-5/8-12	1-7/8-12	1-7/8-12	1-7/8-12
SAE Flange 3000 PSI	-	-	-	-	2	2

Dimensions (mm/in)	Filter Size RF					
	014	030	045	070	090	130
b1	89	89	120	120	150	150
	3.50	3.50	4.72	4.72	5.91	5.91
b2	80	80	110	110	135	135
	3.15	3.15	4.33	4.33	5.31	5.31
b3	-	-	-	-	88	88
	-	-	-	-	3.47	3.47
b4	-	-	-	-	102	102
	-	-	-	-	4.02	4.02
b5	-	-	-	-	42,9	42,9
	-	-	-	-	1.69	1.69
b6	-	-	-	-	77,8	77,8
	-	-	-	-	3.06	3.06
d1	73	73	100	100	126	126
	2.87	2.87	3.94	3.94	4.96	4.96
d2	57,5	57,5	84	84	112,5	112,5
	2.26	2.26	3.31	3.31	4.43	4.43
d3	36	36	48	48	54,5	54,5
	1.42	1.42	1.89	1.89	2.15	2.15
d4	17	17	28	28	37,5	37,5
	.67	.67	1.1	1.1	1.48	1.48
d5	100	100	135	135	170	170
	3.94	3.94	5.31	5.31	6.69	6.69
d6	78	78	105	105	131	131
	3.07	3.07	4.13	4.13	5.16	5.16
h1	33	33	41	41	47	47
	1.30	1.30	1.61	1.61	1.85	1.85
h2	66	66	86	86	98	98
	2.60	2.60	3.39	3.39	3.86	3.86
h3	91,5	159,5	119	180	172,5	252,5
	3.60	6.28	4.69	7.09	6.79	9.94
h4	157,5	225,5	206	267	273,5	353,5
	6.20	8.88	8.11	10.51	10.77	13.91
h5	23,5	23,5	24	24	27	27
	.93	.93	.95	.95	1.06	1.06
h6	140	210	180	240	235	315
	5.51	8.27	7.09	9.45	9.25	12.40
I1	48	48	66	66	85	85
	1.89	1.89	2.60	2.60	3.35	3.35
G2	G1 or 1 NPT	G1 or 1 NPT	G1-1/4 or 1-1/4 NPT	G1-1/4 or 1-1/4 NPT	G1-1/2 or 1-1/2 NPT	G1-1/2 or 1-1/2 NPT
G3	-	-	-	-	1/2 UNC x 15	1/2 UNC x 15
	-	-	-	-	1/2 UNC x .59	1/2 UNC x .59
G4	M6 or 1/4-20 UNC	M6 or 1/4-20 UNC	M8 or 5/16-18 UNC	M8 or 5/16-18 UNC	M10 or 3/8-16 UNC	M10 or 3/8-16 UNC
	36	36	50	50	55	55
Hex	1.42	1.42	1.97	1.97	2.16	2.16

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## Return-Line Filter Housings / Complete Filters ■ Type RF

RF - 070 - G - 10 - B - G24 - G42NO - D - O - L1 / X

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

## ① Type

Return-Line Filter **RF**

## ② Group

Flow	Size
60 l/min / 14 US GPM	<b>014</b>
110 l/min / 30 US GPM	<b>030</b>
160 l/min / 45 US GPM	<b>045</b>
240 l/min / 70 US GPM	<b>070</b>
330 l/min / 90 US GPM	<b>090</b>
500 l/min / 130 US GPM	<b>130</b>

Note: Exact flow will depend on the selected filter element.  
For technical data please see pages 75 / 76.

## ③ Filter Material

Material	max. Δp*collapse	Micron ratings available	Code
Without filter element	-	-	<b>O</b>
Inorg. glass fibre	25 bar / 363 PSI	3, 5, 10, 20	<b>G</b>
Stainless fibre	30 bar / 435 PSI		<b>A</b>
Filter paper	10 bar / 145 PSI	10, 20	<b>N</b>
Stainless mesh	30 bar / 435 PSI	25, 50, 100, 200	<b>S</b>

Note: \*Collapse/burst resistance as per ISO 2941. Other materials on request.

## ④ Micron Rating

3 µm	<b>03</b>
5 µm	<b>05</b>
10 µm	<b>10</b>
20 µm	<b>20</b>
25 µm	<b>25</b>
50 µm	<b>50</b>
100 µm	<b>100</b>
200 µm	<b>200</b>

Note: Other micron ratings on request.

## ⑤ Sealing Materials

NBR (Buna®)	<b>B</b>
FKM/FPM (Viton®)	<b>V</b>
EPDM	<b>E</b>

Note: Other sealing materials on request

## ⑥ Connection Style

Connection Style	Thread Style	Group 014	Code	Group 030	Code	Group 045	Code	Group 070	Code	Group 090	Code	Group 130	Code
BSP	-	3/4	<b>G12</b>	1	<b>G16</b>	1-1/4	<b>G20</b>	1-1/2	<b>G24</b>	2	<b>G32</b>	2	<b>G32</b>
BSP	-	1/2	G08	1/2	G08	1-1/2	G24	1-1/4	G20	1-1/4	G20	1-1/4	G20
BSP	-	1	G16	3/4	G12	-	-	-	1-1/2	G24	1-1/2	G24	1-1/2
NPT	-	3/4	<b>N12</b>	1	<b>N16</b>	1-1/4	<b>N20</b>	1-1/2	<b>N24</b>	2	<b>N32</b>	2	<b>N32</b>
NPT	-	1	N16	3/4	N12	1-1/2	N24	1-1/4	N20	1-1/2	N24	1-1/2	N24
SAE O-ring Thread	-	1-1/16	<b>U12</b>	1-5/16	<b>U16</b>	1-5/8	<b>U20</b>	1-7/8	<b>U24</b>	1-7/8	<b>U24</b>	1-7/8	<b>U24</b>
SAE O-ring Thread	-	1-5/16	U16	1-1/16	U12	1-7/8	U24	1-5/8	U20	1-5/8	U20	1-5/8	U20
SAE Flange 3000 PSI	metric	-	-	-	-	-	-	-	2	<b>C332M</b>	2	<b>C332M</b>	
SAE Flange 3000 PSI	UNC	-	-	-	-	-	-	-	2	<b>C332U</b>	2	<b>C332U</b>	

Note: Bold types identify preferred connection styles.

## ⑦ Clogging Indicator

Without Clogging Indicator	<b>O</b>
Visual Clogging Indicator	<b>V</b>
Electrical Clogging Switch 42 V, NO	<b>G42NO</b>
Electrical Clogging Switch 42 V, NC	<b>G42NC</b>
Electrical Clogging Switch 110 V ... 230 V, two-way contact (only for Code W)	<b>G230</b>

## ⑧ Option Clogging Indicator G42NO, G42NC and G230

Plug connector	<b>O</b>
M12 x 1,5	<b>M12</b>
AMP plug	<b>A</b>
Deutsch plug	<b>D</b>
Rubber boot	<b>S</b>
90 degree Polyamide cap (only for Code G230)	<b>W</b>

## ⑨ Outlet Style

Without thread (Standard outlet)	<b>O</b>
Filter bowl with threaded outlet	<b>G</b>

## ⑩ Additional Features

	Position*	
Without leakage oil connection	-	<b>none</b>
Leakage oil connection	1 2	<b>L</b>

Note: \*Position of the leakage oil connection see page 70.

Without any code: assembly in the middle of the filter cover.

## ⑪ Design Code

Only for information **X**

## Filter Elements ■ Type RE

RE - 014 - G - 10 - B / X

① ② ③ ④ ⑤ ⑥

## ① Type

Filter Element Series **RE**

## ② Group

According to filter housing

## ③ Filter Material

Material	Max. Δp*collapse	Micron ratings available	Code
Inorg. glass fibre	25 bar / 363 PSI	3, 5, 10, 20	<b>G</b>
Stainless fibre	30 bar / 435 PSI		<b>A</b>
Filter paper	10 bar / 145 PSI	10, 20	<b>N</b>
Stainless mesh	30 bar / 435 PSI	25, 50, 100, 200	<b>S</b>

Note: \*Collapse/burst resistance as per ISO 2941. Other materials on request.

## ④ Micron Rating

3 µm	<b>03</b>
5 µm	<b>05</b>
10 µm	<b>10</b>
20 µm	<b>20</b>
25 µm	<b>25</b>
50 µm	<b>50</b>
100 µm	<b>100</b>
200 µm	<b>200</b>

Note: Other micron ratings on request.

## ⑤ Sealing Materials

NBR (Buna®)	<b>B</b>
FKM/FPM (Viton®)	<b>V</b>
EPDM	<b>E</b>

Note: Other sealing materials on request.

## ⑥ Design Code

Only for information **X**

## Return-Line Filters ■ Type RF

**Visual Clogging Indicator**

The gauge visually displays the degree of contamination of the element.  
The colored segments allow quick visual checking.

green	0 ... 2,5 bar / 0 ... 36.25 PSI	Element has service life left
yellow	2,5 ... 3,0 bar / 36.25 ... 43.5 PSI	Element is contaminated and should be changed
red	>3,0 bar / >43.5 PSI	Bypass valve open, unfiltered oil passing to tank

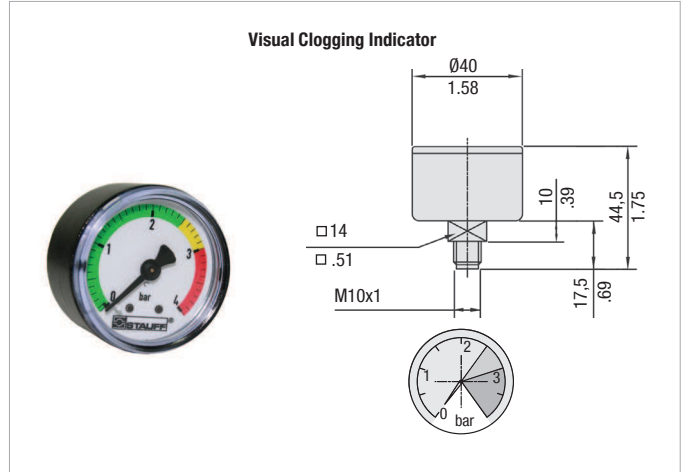
**Order Codes**

**SPG-C-040-00004-02-P-M10-402922**

①

**① Type**

Visual Clogging Indicator **SPG-C-040-00004-02-P-M10-402922**


**Electrical Clogging Switch**

The switch is used where an electrical signal is needed to indicate when the element needs to be changed. The switch can turn on a light, or shut the machine down, or any further function controlled by an electric signal. The switching pressure is 2,5 bar / 36.25 PSI and this allows the element to be changed before the bypass setting of 3 bar / 43.5 PSI is reached.

Standard type with plug connector and rubber cap. Available with DEUTSCH DT04-2P plug (industrial standard), AMP Junior Timer plug (industrial standard) and five-pin circular connector M12, A-coded, according to IEC 61076-2-101.

**Order Code**

**Limit-Switch - G42NO - S - M10 - B2.5**

①

②

③

④

⑤

**① Type**

Limit-Switch

**② Connector Type**

Electrical Clogging Switch 42 V, NO	<b>G42NO</b>
Electrical Clogging Switch 42 V, NC	<b>G42NC</b>
Electrical Clogging Switch 110 V ... 230 V, two-way contact (only for Plug Type W)	<b>G230</b>

**③ Plug Type**

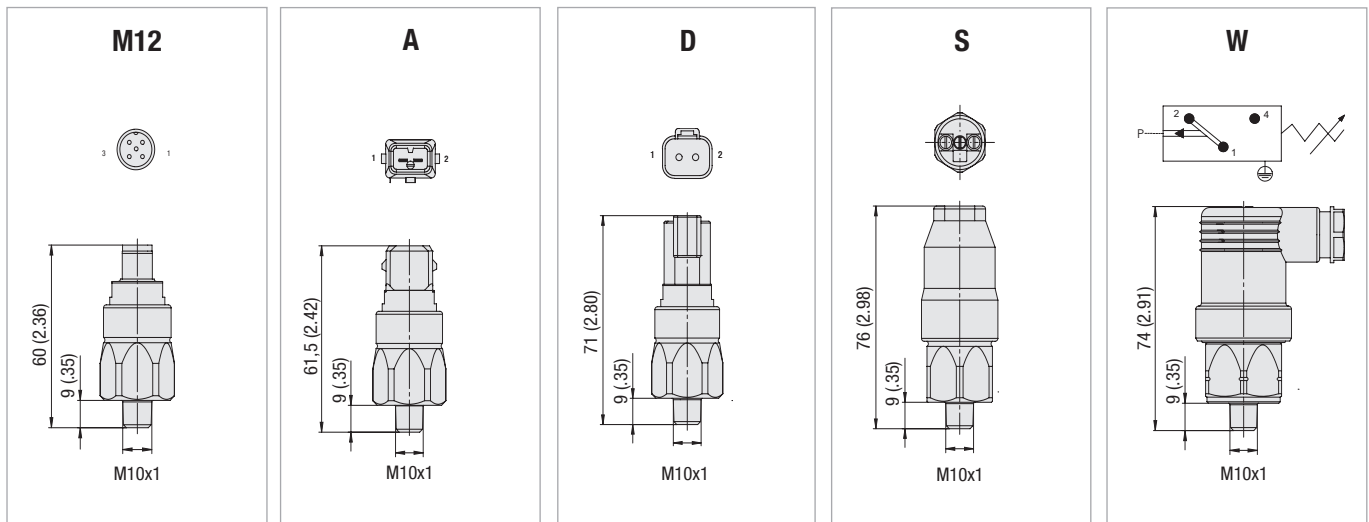
M12 Five-Pin Connector according to IEC 61076-2-101	<b>M12</b>
AMP-Junior-Timer Plug	<b>A</b>
DEUTSCH Plug DT04-2P	<b>D</b>
Rubber boot	<b>S</b>
90 degree Polyamide cap (only for Connector Type G230)	<b>W</b>

**④ Thread Type**

M10 x 1 **M10**

**⑤ Pressure Setting**

2,5 bar / 36.3 PSI **B2.5**

**Dimensions Plug Type**


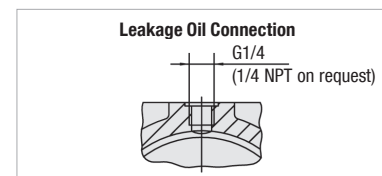
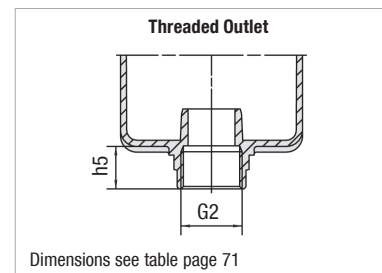
## Return-Line Filters - Type RF

### Filter Bowl with Threaded Connection

Under some circumstances such as a tall reservoir or one with oil levels which vary greatly during operation, it is necessary to extend the filter bowl so that the returning oil returns beneath the surface and does not entrain air in the process. The optional bowl with a female thread allows an extension to be fitted quite simply.

### Leakage Oil Connection

Seal or case drain lines can be connected to the filter through either of the clogging indicator ports providing that the leakage oil can accept a pressure of 3 bar / 43.5 PSI. It ensures that no unfiltered oil can return to the reservoir.

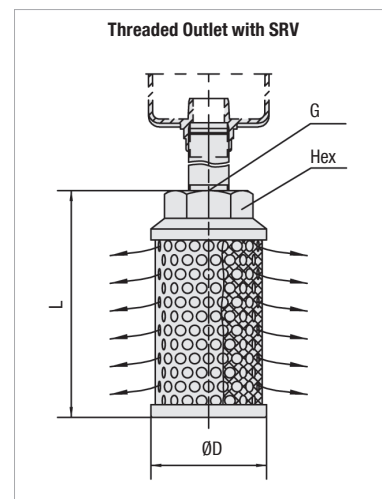


### Filter Bowl with Threaded Connection and Diffuser

Diffusers mounted to the filter bowl minimise foaming and reduce noise of high Return-Line flows. For further details on STAUFF Diffusers please refer to the Catalogue No. 10 - Hydraulic Accessories.

Attention: Connection pipe not included in scope of delivery!

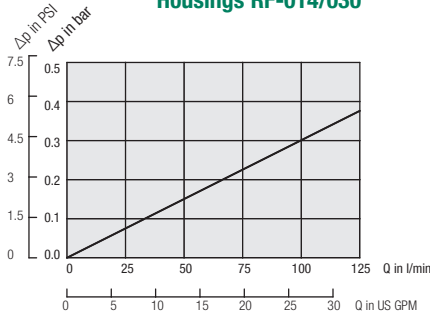
Size SRV	for Return-Line Filter Size	Dimensions (mm/in)			
		øD	L	Thread G	Hex
SRV-114-G16	RF-014/030	60	139	G1	46
SRV-114-N16		2.36	5.47	1 NPT	1.81
SRV-200-G20	RF-045/070	82	139	G1-1/4	60
SRV-200-N20		3.23	5.47	1-1/4 NPT	2.36
SRV-227-G24	RF-090/130	82	200	G1-1/2	60
SRV-227-N24		3.23	7.87	1-1/2 NPT	2.36



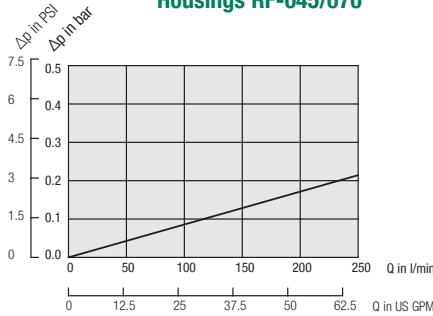
Return-Line Filters • Type RF Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm<sup>3</sup> and the kinematic viscosity of 30 mm<sup>2</sup>/s (30cSt). The characteristics have been determined in accordance to ISO 3968. Multipass filter ratings have been obtained in accordance to ISO 16889. The housing pressure drop is directly proportional to the oil density. Contact STAUFF for details.

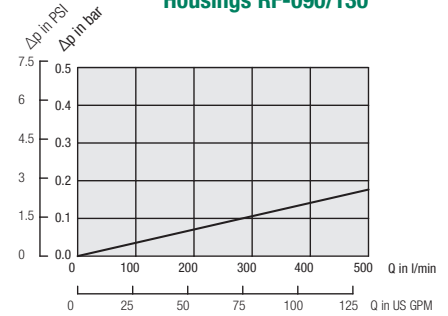
Housings RF-014/030



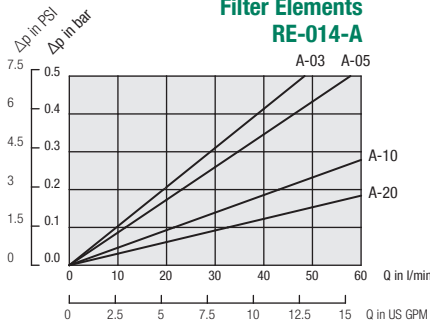
Housings RF-045/070



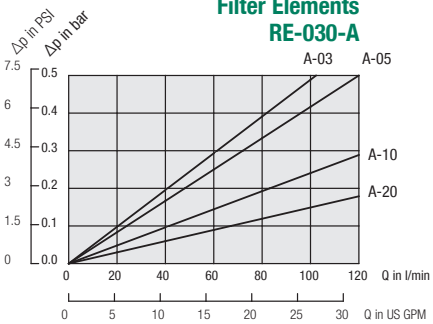
Housings RF-090/130



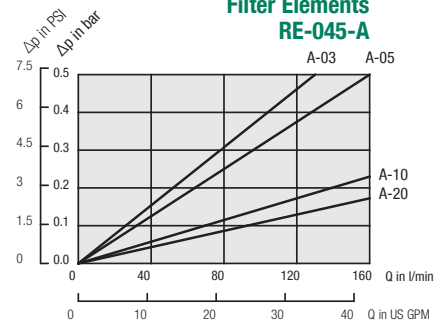
Filter Elements RE-014-A



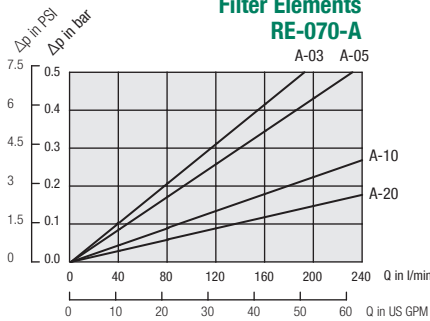
Filter Elements RE-030-A



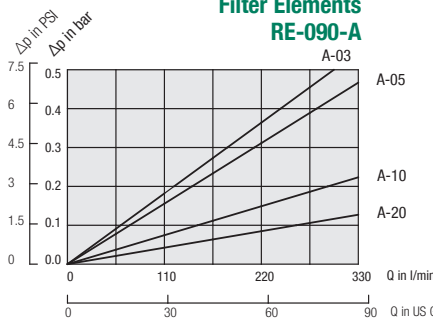
Filter Elements RE-045-A



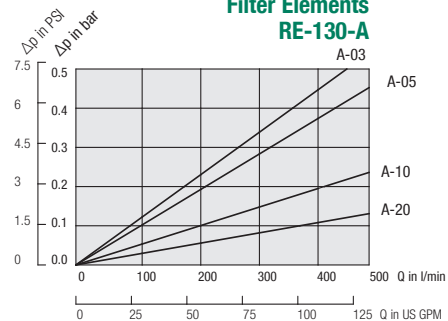
Filter Elements RE-070-A



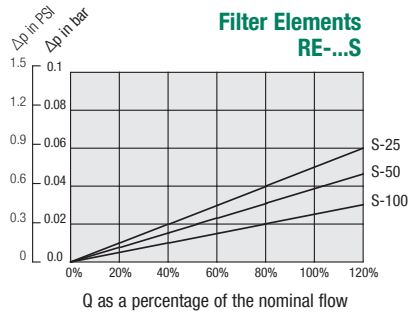
Filter Elements RE-090-A



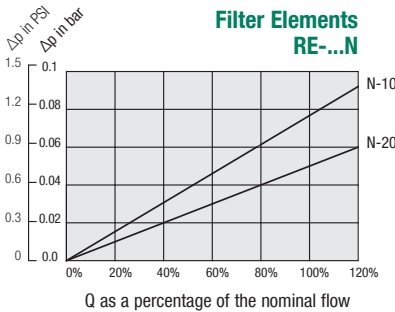
Filter Elements RE-130-A



Filter Elements RE-...S



Filter Elements RE-...N





### Return-Line Filters - Type RF Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm<sup>3</sup> and the kinematic viscosity of 30 mm<sup>2</sup>/s (30cSt). The characteristics have been determined in accordance to ISO 3968. Multipass filter ratings have been obtained in accordance to ISO 16889. The housing pressure drop is directly proportional to the oil density. Contact STAUFF for details.

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