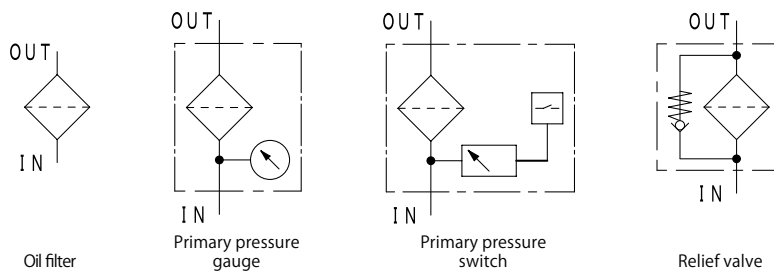


### Signature Model of Tank-top type Return Filter



#### Characteristics

- Directly installable on tank-top (pipe connection at Inlet side only)
- Simple structure and Low pressure drop
- Light filter housing of aluminum alloy (steel lower case for large models)
- Primary pressure gauge/switch is selectable as an option (Installation position is changeable)
- Pipe connection type is "Rc threaded" and "flange" (companion flange is an option)



★ Refer to P.222 for hydraulic graphic symbol of other combination of optional equipment.

### SPECIFICATION

Max working pressure	MPa	1.0
Repetition durability test		0~1.0MPa x 10 <sup>7</sup> times
Working temperature	Standard	°C -10 ~ 90
	High temperature* <sup>1</sup>	°C -10 ~ 150
Indicator working pressure	MPa	0.3
Cracking pressure	MPa	0.35
Allowable differential pressure of filter element	MPa	0.7
Flow direction/Extract direction of filter element		OUT → IN / Upward

Inner diameter		16	20	24
Standard flow rate ☆	ℓ /min	440	770	860
Main material	Body	ADC	AC	
	Lower case	Steel plate		
	Cover	ADC	AC	
Painting Coating	Body, Cover	Non-coating		
	Lower case	Protective film treatment		
Weight * <sup>2</sup>	kg	8.0	20.0	

☆ Standard flow rate is estimated by the condition of density: 0.86, kinematic viscosity: 32mm<sup>2</sup>/s, filtration rating: 10U, pressure drop: lower than 0.05MPa.  
(Since it is adjusted by characteristic of each product, value can be different in some cases.)

### MODEL CODE

(Model code example)

**G** - TRF - **16** - **10U** - **I V N**  
① ② ③

Code	Fluid type
Blank	Mineral oil
F	Phosphate ester fluid
G	Water glycol fluid
C	Fatty ester fluid
W	High water base fluid
S	Fuel (Kerosene, Gas oil, Diesel oil)
B	Brake fluid

Code	Inner diameter	
	IN	OUT
16	Rc2 (20A)	Rc2
20	Rc2 1/2 (25A)	Rc3
24	Rc3 (32A)	

Code	Filtration rating	Code	Filtration rating
C-Fiber		Wire gauze	
3C	3 μm	5UW	5 μm
8C	8 μm	10UW	10 μm
25C	25 μm	20UW	20 μm
Paper		40UW	40 μm
10U	10 μm	50UW	50 μm
20U* <sup>3</sup>	20 μm	200W	200Mesh
40U* <sup>3</sup>	40 μm	150W	150Mesh
		100W	100Mesh
		60W	60Mesh

Refer to P.15 -16 for detail information of filter element.

Code	Option	
① Indicator		
Blank	Closing plug	
I	Pressure gauge (Primary pressure)	Switch position
IR		Right side as seen from Inlet side
IL		Left side as seen from Inlet side
E	Pressure switch (Primary pressure)	Switch position
ER		Right side as seen from Inlet side
EL		Left side as seen from Inlet side

② Relief valve	
K	Non
V	Relief valve

③ Companion flange	
Blank	Non
N	Companion flange

\* 1 Sealing parts: FKM, only for wire gauze element, indicator and relief valve are not available (Max oil temperature are pressure gauge or pressure switch : 90°C)

\* 2 Weight without companion flange \* 3 Not available for water-glycol based oil and high water based fluid

# FLOW RATE GRAPH

## Condition

Fluid type : ISO VG32  
Oil temperature : 40°C

(Density: 0.86,  
Kinematic  
viscosity: 32mm<sup>2</sup>/s)

## How to calculate of pressure drop

Estimate pressure drop of filter assembly by following equation:

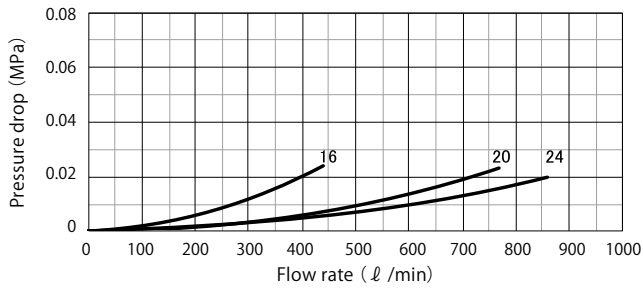
$$\text{Pressure drop of filter assembly} = \text{① Pressure drop of filter housing} + \text{② Pressure drop of filter element}$$

Estimate pressure drop of filter assembly by following equation if required condition is different:

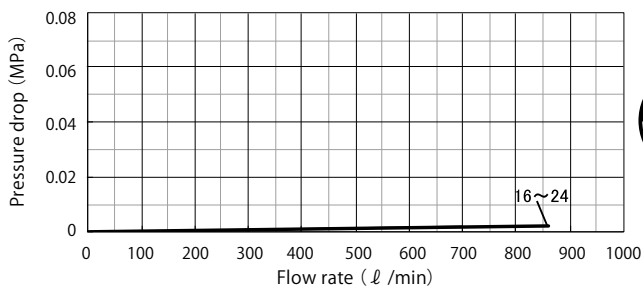
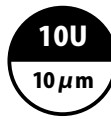
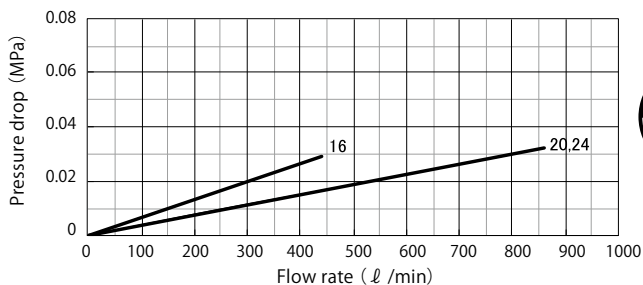
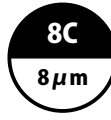
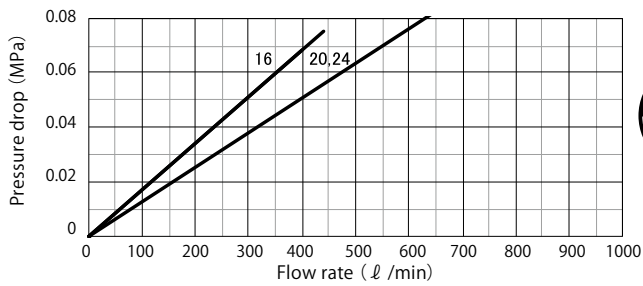
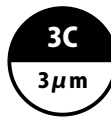
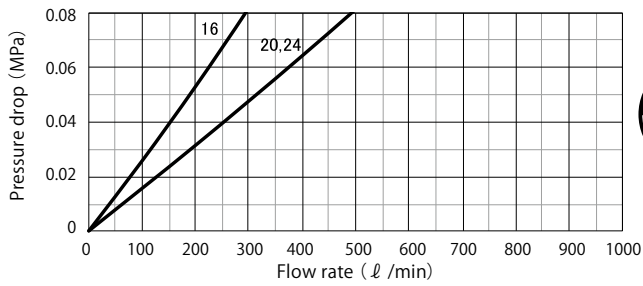
$$\begin{aligned} \text{Pressure drop of filter housing} &= \frac{\text{Fluid density}}{0.86} \times \text{Pressure drop of filter housing at density of 0.86} \\ \text{Pressure drop of filter element} &= \frac{\text{Fluid density}}{0.86} \times \frac{\text{Kinematic viscosity}}{32} \times \text{Pressure drop of filter element at density of 0.86, kinematic viscosity of 32} \end{aligned}$$

★ Pressure drop of filter housing is proportional to fluid density, and pressure drop of filter element is proportional to fluid density and kinematic viscosity.

### ① Pressure drop of filter housing



### ② Pressure drop of filter element

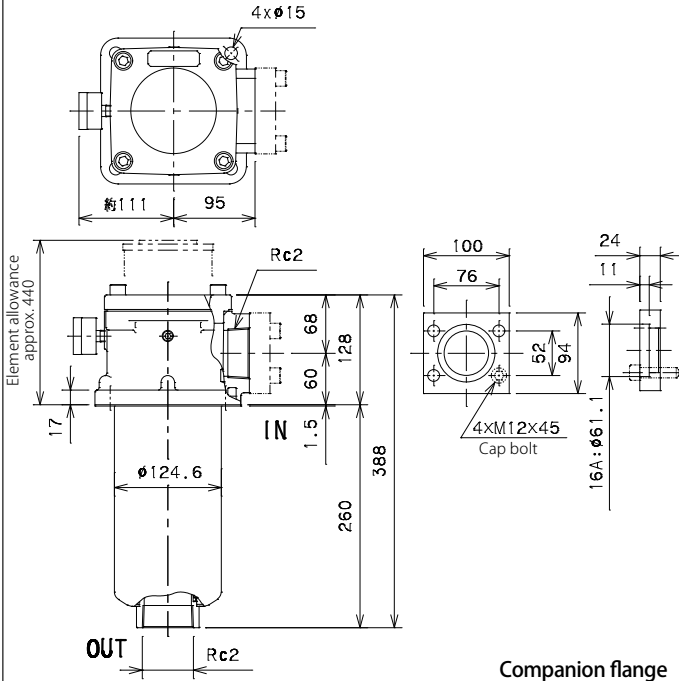


\* 1 Pressure drop of wire gauze element is described with one line since the value is low and there is no difference at each filter size.

TRF

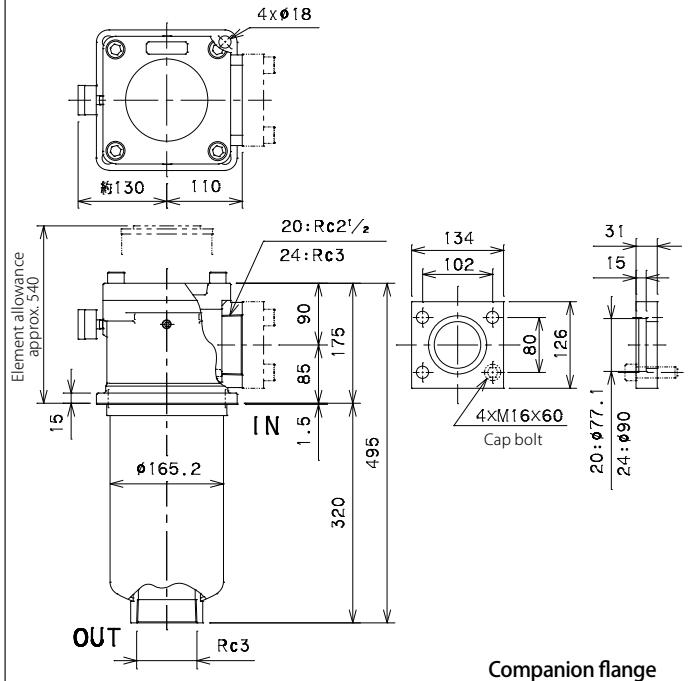
TRF-16-□□-I□□

I : Pressure gauge



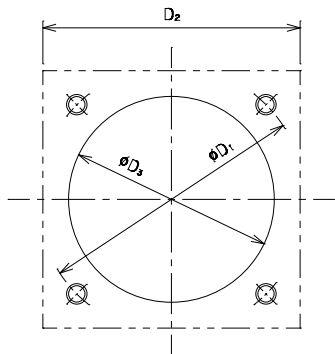
Companion flange  
TRF-16-□□-□□N

TRF-20,24-□□-I□□



Companion flange  
TRF-20,24-□□-□□N

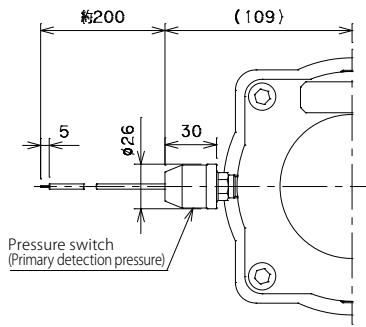
Recommended installation dimensions



Model code	D1	D2	D3
TRF-16	190	170	134
TRF-20,24	240	205	176

Primary pressure type indicator part

\* Common at all size



E : Pressure switch  
TRF-□□-□□-E□□

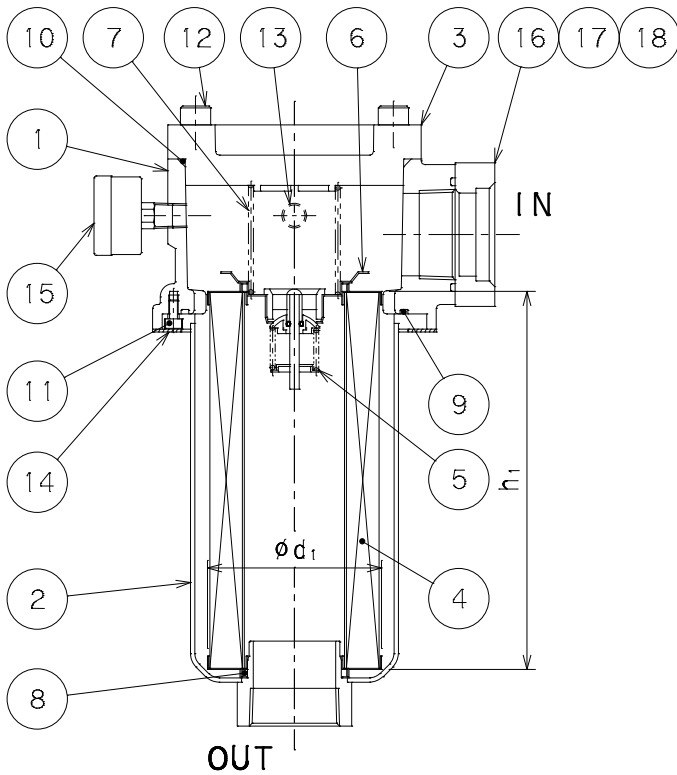
Model code	Working pressure(MPa)	
	Visual observation signal	Electric signal
UT-4	Pressure range	Clogging
PS-20	0 ~ 1.0	0.3 ~
		0.3

<Pressure switch specification>

Model code	Electric standard	Contact diagram
PS-20	DC5 ~ 30V 5mA ~ 2A AC120/240V 135VA	1A (NO)

## CROSS SECTION

## PARTS LIST



No.	Item	Qty
1	Body	1
2	Case	1
3	Cover	1
4	Element	1
5	Relief valve	1
6	Cap	1
7	Spring	1
8	O-ring	2
9	O-ring	1
10	O-ring	1
11	Cap bolt	TRF-16 4
12	Cap bolt	4
13	Closing plug	2
14	Packing	1
15	Indicator	1
16	Companion flange	1
17	Cap bolt	4
18	O-ring	1

## ELEMENT SIZE

Element Model code	Size(mm)		Weight*1 (kg)
	φ d <sub>1</sub>	h <sub>1</sub>	
P-TRF-16	105	258	0.94
P-TRF-20,24	133	309	1.60

## SEALING PARTS LIST

No.	8	9	10	14	18	Item code of sealing parts set*3			
Standard*2		JIS B2401 1A		Special packing non asbestos	JIS B2401 1A	Material	SP No.: 8, 10	SA No.: 8~10, 14	SA-N No.: 8~10, 14, 18
TRF-16	G60	G130	G130	t1.5x□170/φ134	G70	NBR	SSF000039	SSF000031	SSF000035
						FKM	SSF000406	SSF000398	SSF000402
TRF-20,24	G90	AS568 259	G160	t1.5x□205/φ176	G100	NBR	SSF000040	SSF000032	SSF000036
						FKM	SSF000407	SSF000399	SSF000403

## MODEL CODE OF SPARE PARTS

### Replacement element (Model code example)



★ Model code of replacement element exists two types: "Individual code" and "Common code", however it represents same product.

"Individual code": Used in drawings and nameplate as shown in <Model code example>.

"Common code": Used in vouchers and tag

Refer to [Spare Element List] on P.152 for "Common code".

### Sealing parts set (Model code example)



★ Refer to the [MODEL CODE] table on the previous page for code selection.

\* 1 Weight of "Paper" element \* 2 Standard for NBR. For other material, conform to the standard.  
\* 3 Sealing parts are available as "Sealing parts set" only. We do not provide single part individually.