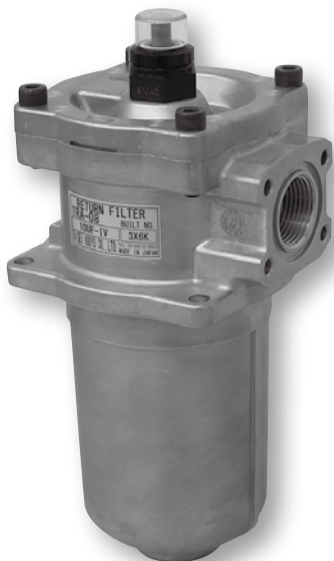
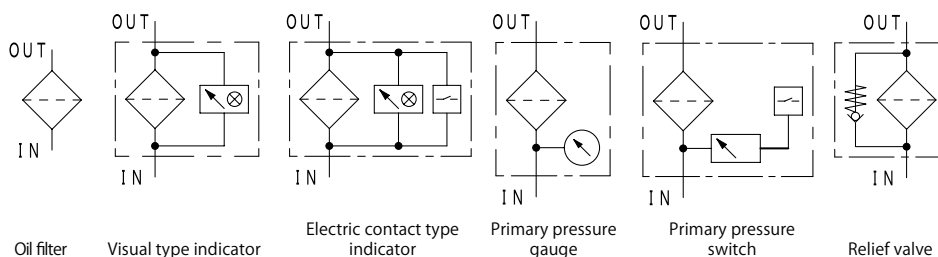


The Newest Return Filter (Model change of TRF)



Characteristics

- Lower pressure drop and higher flow rate model by CFD (computational fluid dynamics)
- The new "High flow" element is available
- Differential pressure type indicator (TRA) and Primary pressure gauge (TRF) are selectable as an option
- Direct installation on tank-top is available (pipe connection is at inlet only)



★ 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 x10 ⁷ times
Working temperature	Standard	°C -10 ~ 90
	High temperature *1	°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

Model code	TRA				TRF				
	06	08	10	12	06A	08A	10A	12A	
Inner diameter									
Standard flow rate ☆	Standard ℓ /min	130	170	320	340	130	170	320	340
	High flow ℓ /min	145	185	360	400	145	185	360	400
Main material	Body	ADC							
	Cover	ADC							
Coating	Body	Non-coating							
	Cover	Non-coating							
Weight *2	kg	2.7	4.1	2.5	3.7				

☆ Standard flow rate is estimated by the condition of density: 0.86, kinematic viscosity: 32mm²/s, filtration rating: 10U/10UF, 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>



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
TRA	06	Rc3/4 (20A)
	08	Rc1 (25A)
	10	Rc1 1/4 (32A)
	12	Rc1 1/2 (40A)
TRF	06A	Rc3/4 (20A)
	08A	Rc1 (25A)
	10A	Rc1 1/4 (32A)
	12A	Rc1 1/2 (40A)

Code	Filtration rating
C-Fiber	
3C	3 μm
8C	8 μm
25C	25 μm
Paper	
10U	10 μm
20U *3	20 μm
40U *3	40 μm
High flow Paper	
10UF *3	10 μm
20UF *3	20 μm

Code	Filtration rating
Wire gauze	
5UW	5 μm
10UW	10 μm
20UW	20 μm
40UW	40 μm
50UW	50 μm
200W	200Mesh
150W	150Mesh
100W	100Mesh
60W	60Mesh

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

TRA		TRF	
Code	① Indicator	Code	① Pressure gauge
Blank	Closing plug	Blank	Closing plug
I	Visual type	I	Pressure gauge
E	Electric contact type	E	Pressure switch
D	Electric contact type (Micro capacity)		

Common to all models	
Code	② Relief valve
K	Non
V	Relief valve
Code	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 is visual type: 130°C, electric contact type/pressure gauge/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: 32mm²/s)

How to calculate of pressure drop

Estimate pressure drop of filter assembly by following equation:

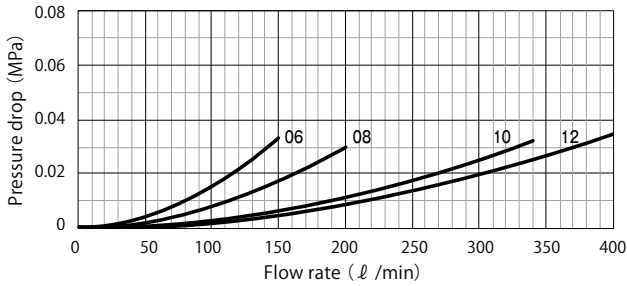
$$\text{Pressure drop of filter assembly} = \text{① Pressure drop of filter housing} + \text{② Pressure drop of filter element}$$

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

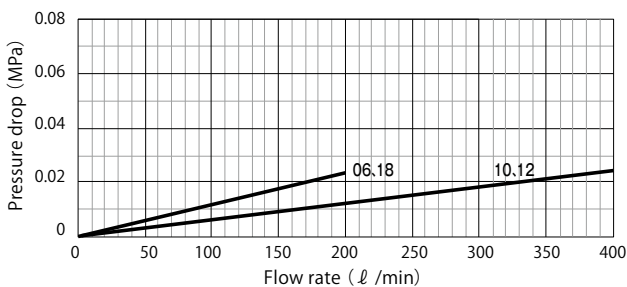
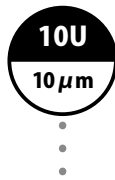
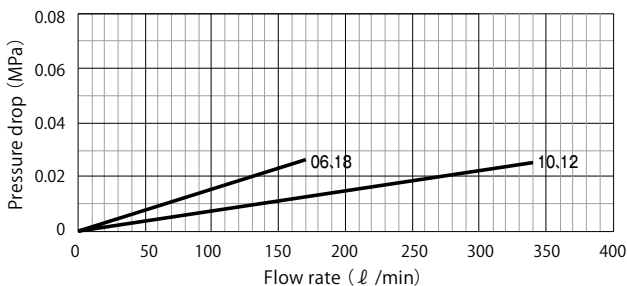
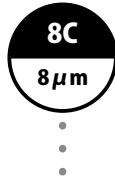
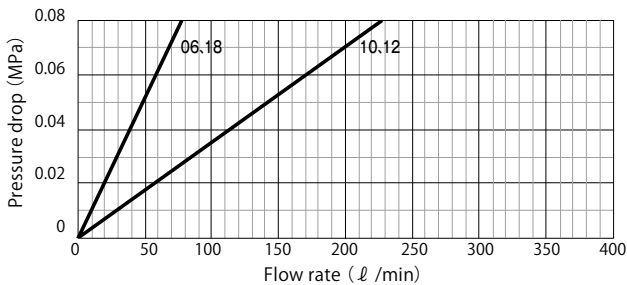
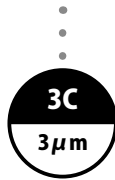
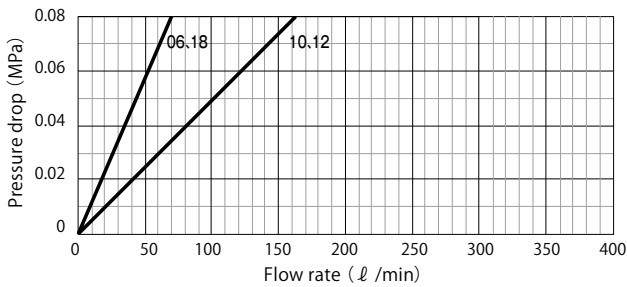
$$\begin{aligned} \text{Pressure drop of filter housing} &= \frac{\text{Fluid density}}{0.86} \times \text{Pressure drop of filter housing at density of 0.86} \\ \text{Pressure drop of filter element} &= \frac{\text{Fluid Density}}{0.86} \times \frac{\text{Kinematic viscosity}}{32} \times \text{Pressure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

★ 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



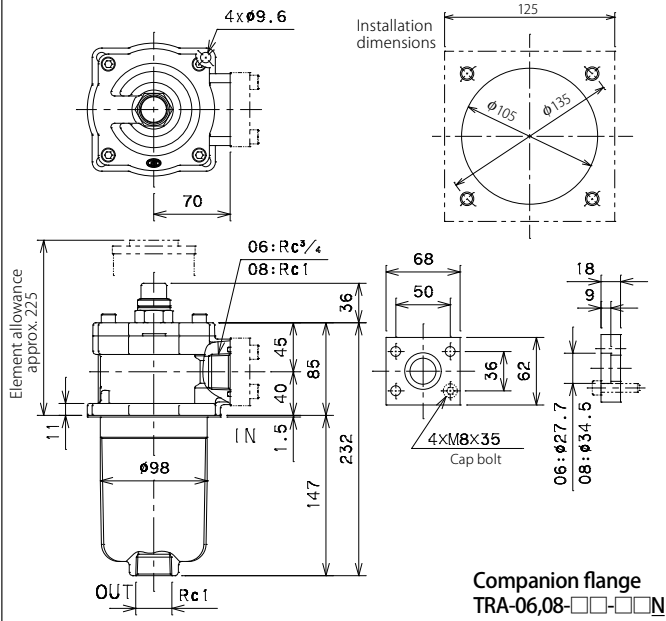
② Pressure drop of filter element



* 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.

TRA-06,08-□□-□□

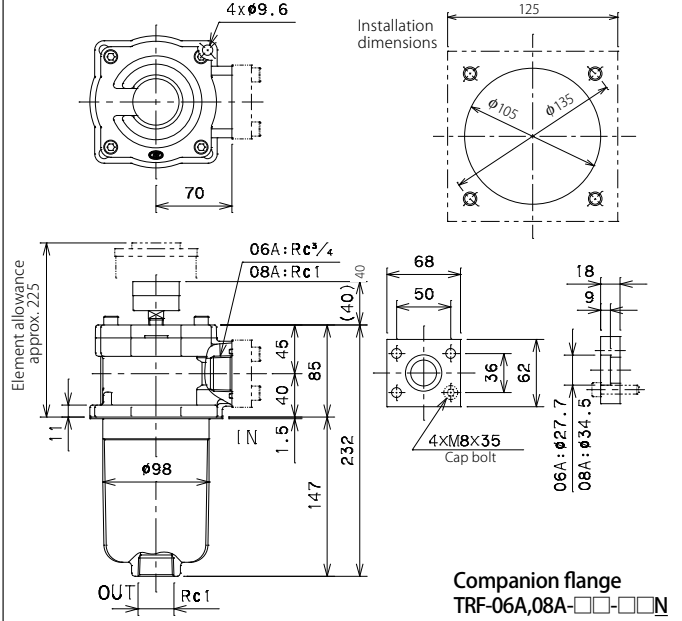
I: Visual type indicator



Companion flange
TRA-06,08-□□-□□IN

TRF-06A,08A-□□-□□

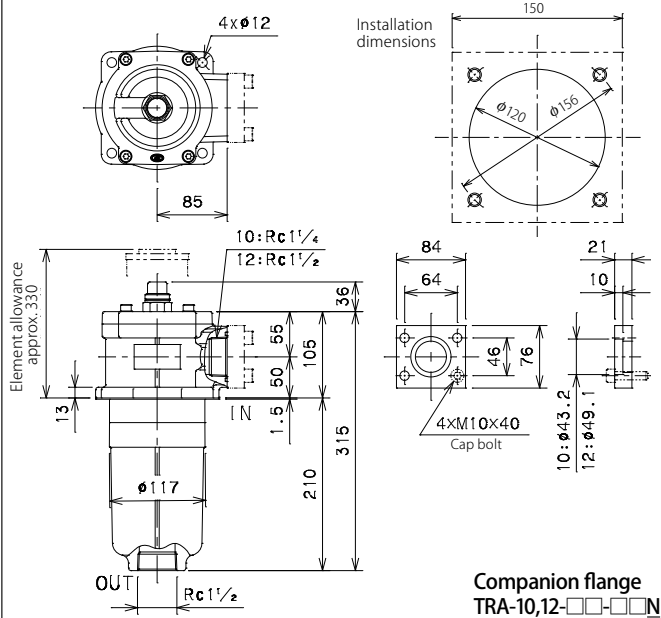
I: Pressure gauge



Companion flange
TRF-06A,08A-□□-□□IN

TRA-10,12-□□-□□

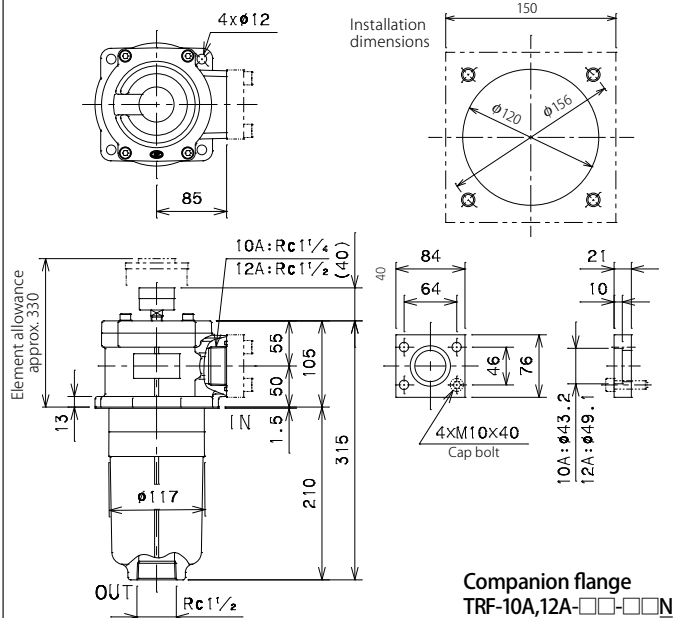
I: Visual type indicator



Companion flange
TRA-10,12-□□-□□IN

TRF-10A,12A-□□-□□

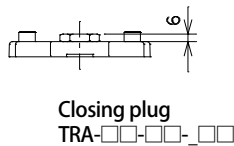
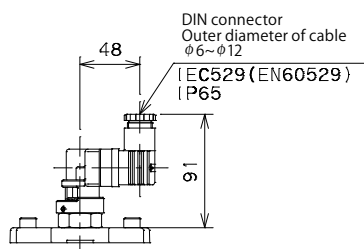
I: Pressure gauge



Companion flange
TRF-10A,12A-□□-□□IN

Differential pressure type indicator part * Common at all size

Primary pressure type indicator part * Common at all size

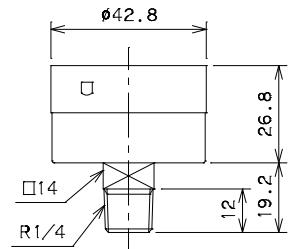


Model code	Working pressure(MPa)		
	Visual observation signal	Caution	Clogging
IA-3	0.2	0.3	
EA-3			0.3
EA-3D	0.2	0.3	0.3

**E,D: Electric contact type indicator
TRA-□□-□□-ED□□**

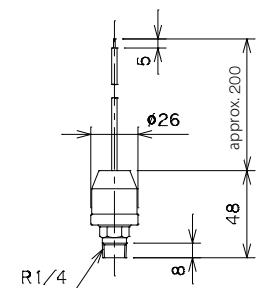
(Micro switch specification)

Model code	Rated capacity		Contact diagram : 1C
	Resistance load	Inductive load	
EA-3	3A,250V AC	2A,250V AC	
	3A,30V DC	2A,30V DC	
EA-3D	100mA,125V AC	100mA,30V DC	
	100mA,30V DC		



U: Pressure gauge
TRF-□□-□□-□□

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



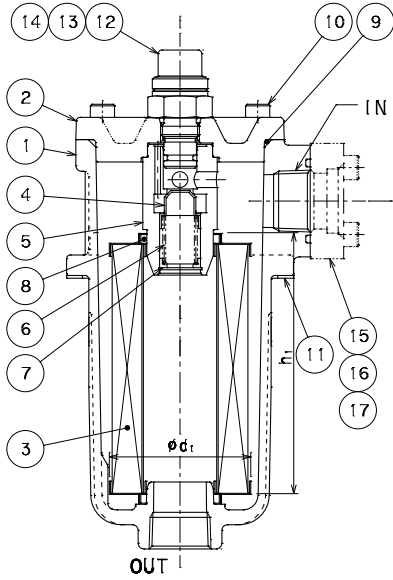
E: Pressure switch
TRF-□□-□□-□□

(Pressure switch specification)

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

CROSS SECTION

TRA

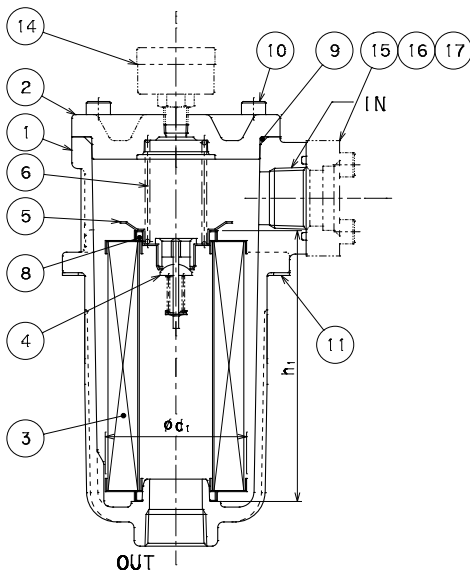


PARTS LIST

No.	Item	Qty
1	Body	1
2	Cover	1
3	Element	1
4	Relief valve	1
5	Valve seat	1
6	Spring	1
7	Spring holder	1
8	O-ring	2
9	O-ring	1
10	Cap bolt	4
11	Packing	1
12	O-ring	1
13	O-ring	1
14	Indicator	1

No.	Item	Qty
15	Companion flange	1
16	Cap bolt	4
17	O-ring	1

TRF



No.	Item	Qty
1	Body	1
2	Cover	1
3	Element	1
4	Relief valve	1
5	Cap	1
6	Spring	1
7	—	—
8	O-ring	2
9	O-ring	1
10	Cap bolt	4
11	Packing	1
12	—	—
13	—	—
14	Pressure gauge	1

No.	Item	Qty
15	Companion flange	1
16	Cap bolt	4
17	O-ring	1

ELEMENT SIZE

Element Model code	Size(mm)		Weight*1 (kg)
	ϕd_i	h_1	
P-TRA-06,08	76	145.6	0.39
P-TRF-06A,08A			
P-TRA-10,12	92	209	0.7
P-TRF-10A,12A			

* Common to TRF,TRA,TLA

SEALING PARTS LIST

No.	8	9	11	12	13	17	Item code of sealing parts set *3						
							Material	SP No.: 8, 9	SA No.: 8, 9, 11, (12,13)	SA-N No.: 8, 9, 11, (12,13), 17			
Model code	JIS B2401 1A		Special packing non asbestos	JIS B2401 1A									
TRA-06,08	P36	G90	t1.5x□113/φ105	P18	P14	G40	NBR	SSF001922	SSF001916	SSF001917			
										FKM	SSF001931	SSF001925	SSF001926
TRA-10,12	G50	G115	t1.5x□136/φ120			G55	NBR	SSF002025	SSF002013	SSF002014			
								FKM	SSF002026	SSF002015	SSF002016		
TRF-06A,08A	P36	G90	t1.5x□113/φ105			G40	NBR	SSF001922	SFL001920	SFL001921			
										FKM	SSF001931	SFL001929	SFL001930
TRF-10A,12A	G50	G115	t1.5x□136/φ120			G55	NBR	SSF002025	SFL002019	SFL002020			
								FKM	SSF002026	SFL002021	SFL002022		

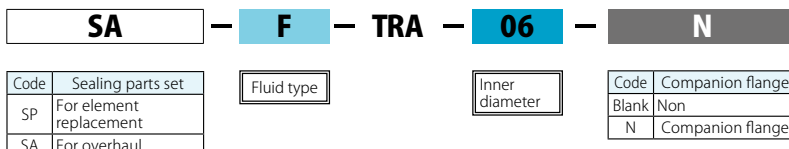
() : For TRA

MODEL CODE OF SPARE PARTS

Replacement element (Model code example)



Sealing parts set (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".

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

* 1 Weight of "C-Fiber" 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.