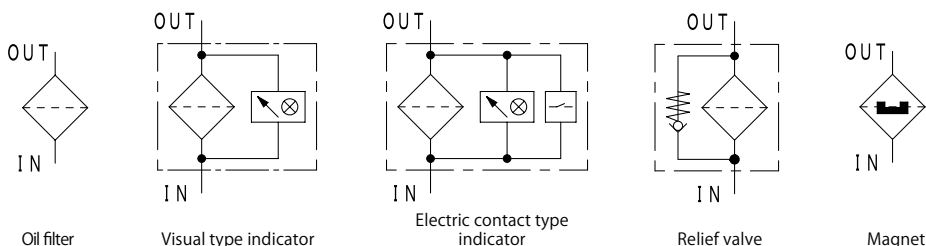


### Downward Extraction Model for construction machines



#### Characteristics

- Simple structure and easy element replacement by screwing a lower case  
Especially best for a system that hardly secures space above
- Light filter housing of aluminum alloy for small models
- Clogging indicator, magnet, and relief valve are selectable as an option
- Pipe connection type is 351: "Rc threaded"



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

#### SPECIFICATION

Max working pressure	MPa	3.5
Repetition durability test		0~3.5MPa x10 <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 / Downward

Inner diameter	A-03	A-04	B-06	B-08	A-10	A-12
Standard flow rate ☆ ℓ /min	30	50	90	135	240	290
Main material	Body	ADC			FC	
	Lower case	Aluminum		STKM, Steel plate		
Coating	Body	Non-coating			Aqua blue	
	Lower case	Non-coating	Protective film treatment		Aqua blue	
Weight	kg		1.0	2.9	6.9	

☆ 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>

**F** — **351** — **A-12** — **10U** — **I V M**  
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
A-03	Rc 3/8 (10A)
A-04	Rc 1/2 (15A)
B-06	Rc 3/4 (20A)
B-08	Rc1 (25A)
A-10	Rc1 1/4 (32A)
A-12	Rc1 1/2 (40A)

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>2</sup>	20 μm	200W	200Mesh
40U* <sup>2</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	Visual type
E	Electric contact type
D	Electric contact type (Micro capacity)
② Relief valve	
K	Non
V	Relief valve
③ Magnet	
Blank	Non
M	Magnet

\* 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: 90°C)

\* 2 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:

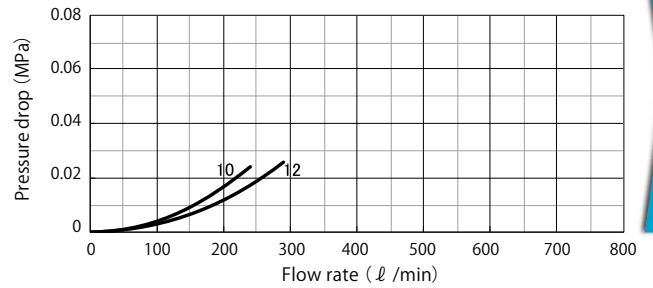
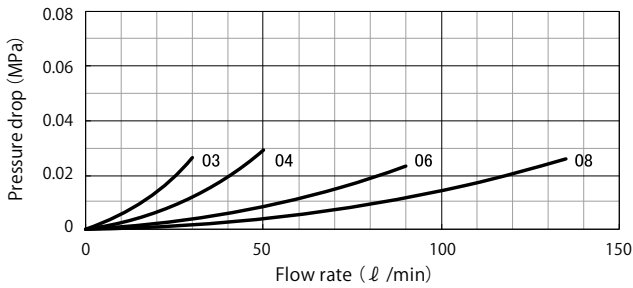
$$\text{Pressure drop of filter assembly} = \text{① Pressure drop of filter housing} + \text{② Pressure drop of filter element}$$

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

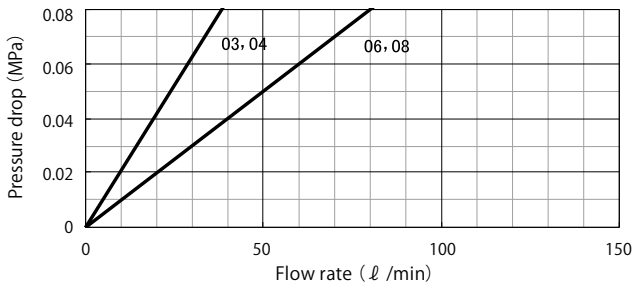
$$\begin{aligned} \text{Pressure drop of filter housing} &= \frac{\text{Fluid density}}{0.86} \times \text{Pressure drop of filter housing at density of 0.86} \\ \text{Pressure drop of filter element} &= \frac{\text{Fluid density}}{0.86} \times \frac{\text{Kinematic viscosity}}{32} \times \text{Pressure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

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

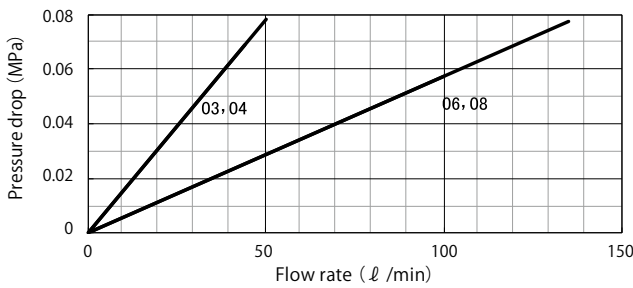
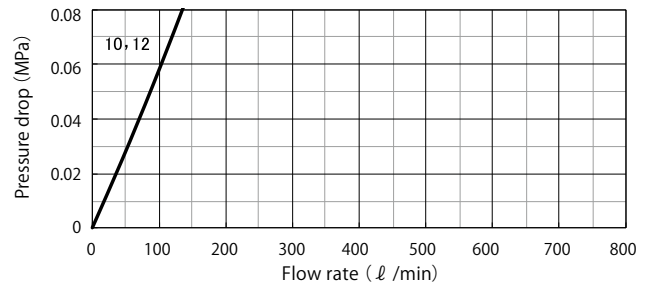
### ① Pressure drop of filter housing



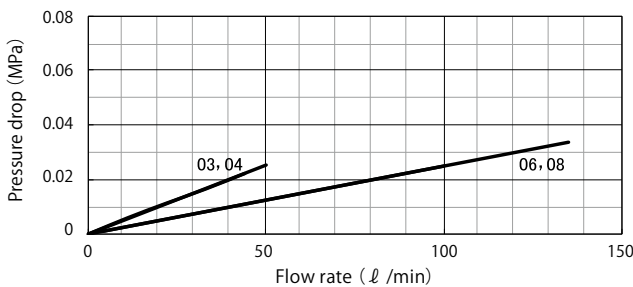
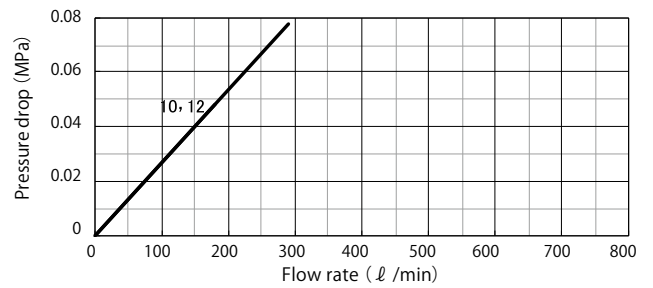
### ② Pressure drop of filter element



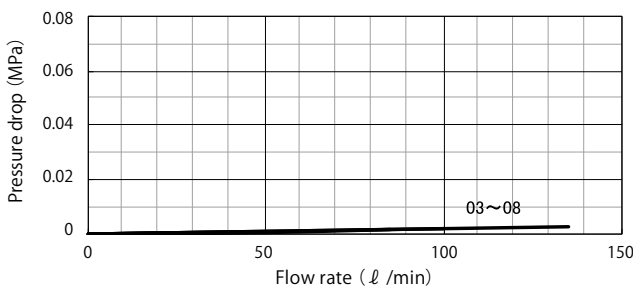
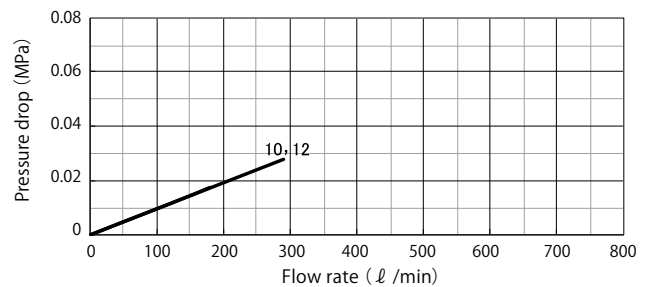
**3C**  
3μm



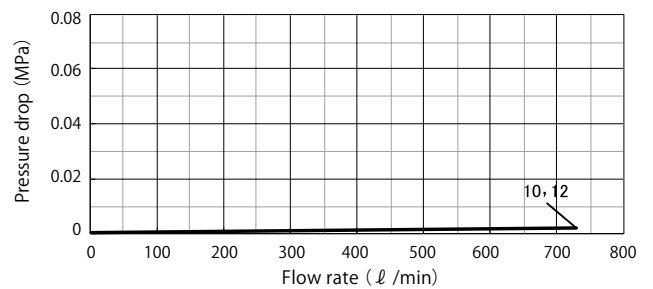
**8C**  
8μm



**10U**  
10μm



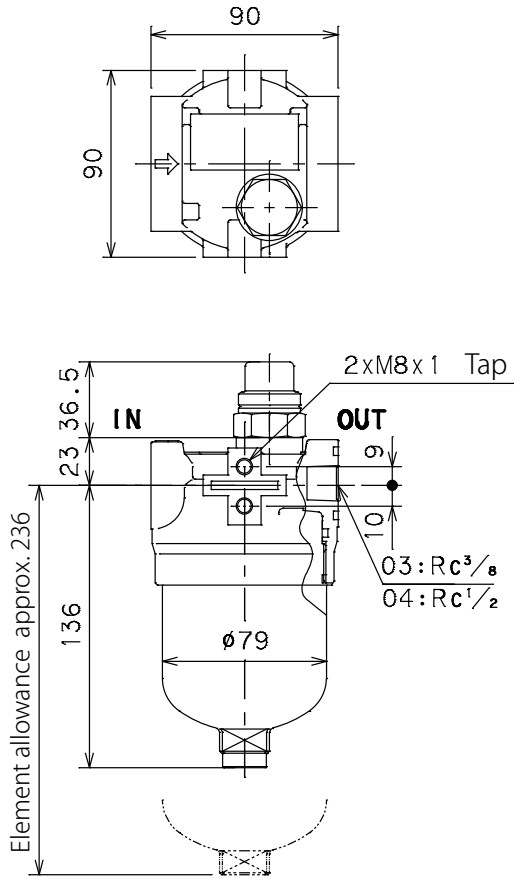
**150W**  
150Mesh\*1



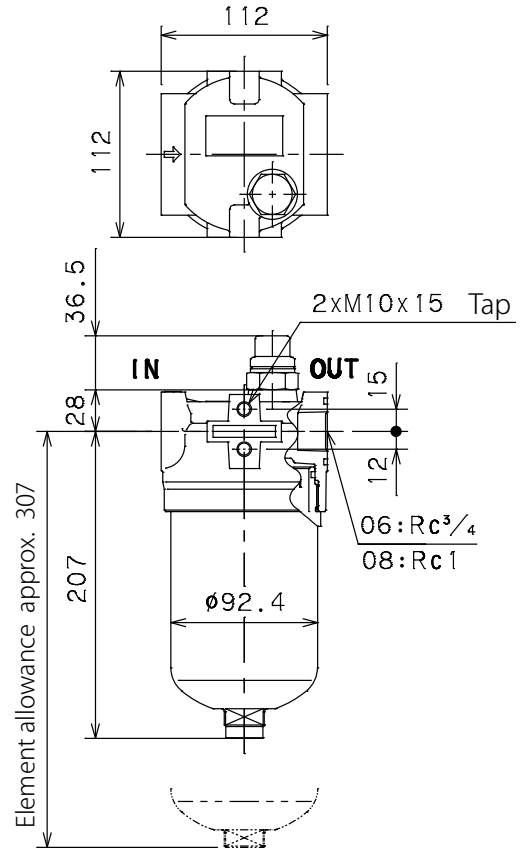
\* 1 Pressure drop of wire gauze element is described with one line since the value is low and there is no difference at each filter size.

351-A-03,04-I□□

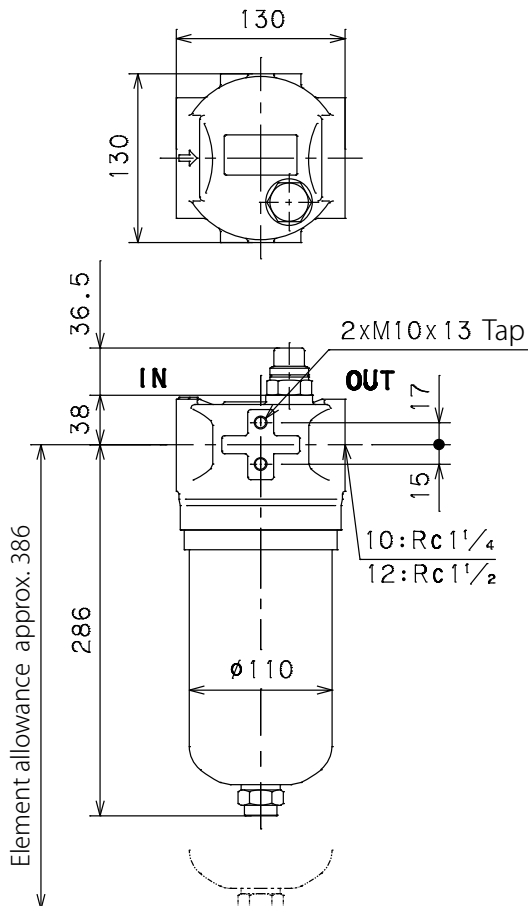
I : Visual type indicator



351-B-06,08-I□□

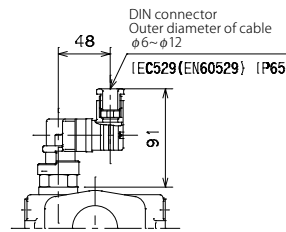


351-A-10,12-I□□



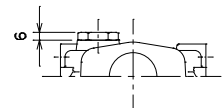
Differential pressure type indicator part

\* Common at all size



E,D : Electric contact type indicator

351-□-□□-E,D□□



Closing plug

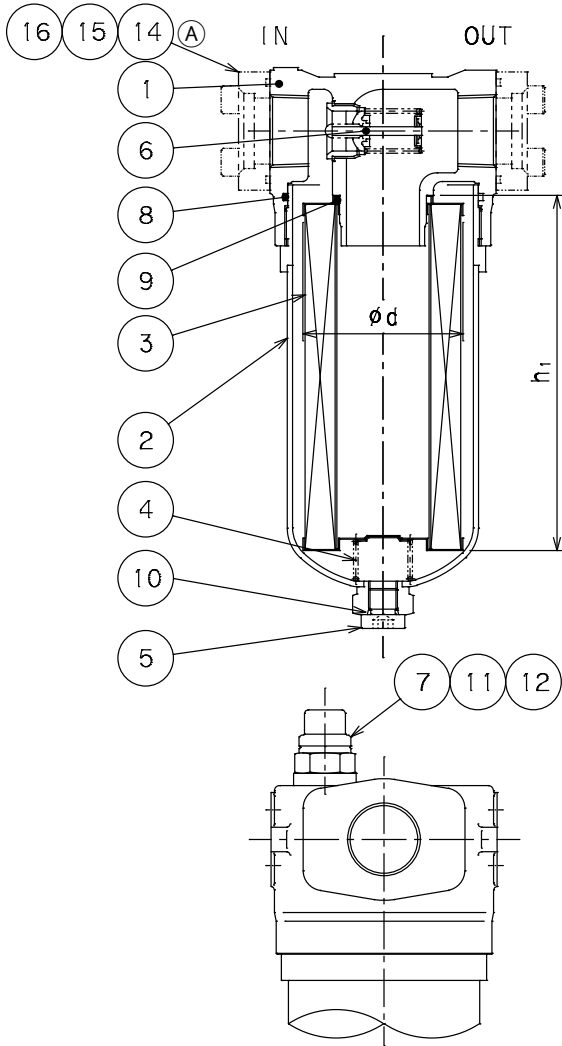
351-□-□□-□□

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

(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		

## CROSS SECTION



Ⓐ O-ring groove on Body for 03 ~ 08.

## PARTS LIST

No.	Item	Qty
1	Body	1
2	Lower case	1
3	Element	1
4	Spring	1
5	Drain plug	1
6	Relief valve	1
7	Indicator	1
8	O-ring	1
9	O-ring	1
10	O-ring	1
11	O-ring	1
12	O-ring	1
—	—	—
14	Companion flange (Only for 352)	2
15	Cap bolt (Only for 352)	8
16	O-ring (Only for 352)	2

★ 352 filter assembly is discontinued model.

## ELEMENT SIZE

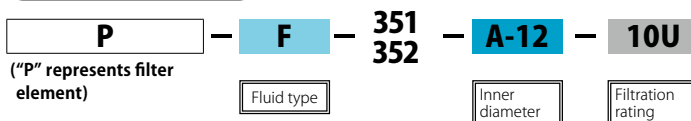
Element Model code	Size(mm)		Weight*1 (kg)
	φ d <sub>1</sub>	h <sub>1</sub>	
P-351-A-03,04	64	84.2	0.16
P-352-A-03,04			
P-351-B-06,08	76	140.0	0.33
P-352-B-06,08			
P-351-A-10,12	92	204.2	0.72
P-352-A-10,12			
P-351-A-16	105	254.2	0.93
P-352-A-16			
P-351-A-20,24	133	304.5	1.64
P-352-A-20,24			

## SEALING PARTS LIST

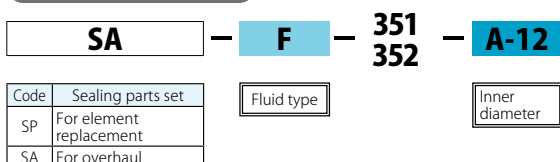
No.	8	9	10	11	12	16	Item code of sealing parts set*3			
							Material	SP No.: 8 ~ 10	SA (351MODEL) No.: 8 ~ 12	SA (352MODEL) No.: 8 ~ 12, 16
351 352	A5568	JIS B2401 1A	P11	P18	P14	G30	NBR	SSF000055	SSF000045	SSF000050
351 352	G90*4	P36	P14				G40	NBR	SSF000056	SSF000046
351 352	245	G50		P18	P14	G55		FKM	SSF000422	SSF000412
351 352	250	G60	P18				P14	G70	NBR	SSF000057
351 352	259	G90		P18	P14	G100			FKM	SSF000423
351 352			P18				P14	G100	NBR	SSF000058
351 352				P18	P14	G100			FKM	SSF000425
351 352			P18				P14	G100	NBR	SSF000059
351 352				P18	P14	G100			FKM	SSF000426

## 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 "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.

\* 4 O-ring standard is JIS B2401 1A.