

Return Filter FH100 Series

RoHS

Selection of elements for different applications

Depending on the application, the user can choose among several standard element types, paper elements (5, 10 and 20 μm) and micro-mesh elements (74 and 105 μm).

Easy maintenance

The element slides into place and is sealed with an O-ring, making it easy to install and remove.

Large drain exhaust outlet

The large M16 drain exhaust outlet assures rapid drainage.

Clogging sensor

The filter can be fitted with a differential pressure indicator (reset type) or differential pressure indication switch (visual combined, non-reset type).



Specifications

Fluid		Hydraulic fluid	
Operating pressure		Max. 1 MPa	
Operating temperature		Max. 80°C	
Main material	Cover ^{Note 1)}	Cast iron	
	Case ^{Note 1)}	Aluminum casting	
	O-ring	NBR or FKM ^{Note 2)}	
	Seal	Stainless steel & NBR or Stainless steel & FKM ^{Note 2)}	
Element	Material	Paper	Stainless steel, Carbon steel, Aluminum, Epoxy resin
	Nominal filtration	5, 10, 20 μm	74, 105 μm (200, 150 mesh)
	Differential pressure resistance	0.6 MPa	
	Differential pressure indicator operating pressure (Element replacement differential pressure)	0.13 MPa	
Relief valve open pressure		0.15 MPa	

Note 1) There may be scratches, discoloration, slight paint peeling, or other defects which do not affect the product's function or performance.

Note 2) The material of the O-rings differs depending on the hydraulic fluid used.
Petroleum, Water-glycol, Emulsion: NBR; Phosphoric ester: FKM

Model/Rated Flow Rate

Model	Port size (Rc)	Rated flow rate (L/min)	
		Paper	Micromesh
FH100-06	3/4	50	60
FH100-08	1	80	100
FH100-10	1 1/4	120	150
FH100-12	1 1/2	160	200
FH100-16	2	260	300
FH100-20	2 1/2	450	550
FH100-24	3	600	700

Accessory/Option

Description	Part no.	Note
Differential pressure indicator	CB-50H	Petroleum, Water-glycol, Emulsion
	CB-50H-V	Phosphoric ester
Differential pressure indication switch (N.C. and N.O. common)	CB-51H	Petroleum, Water-glycol, Emulsion
	CB-51H-V	Phosphoric ester
Blanking cap (for differential pressure indication part)	AG-12H	Petroleum
	AG-12H-W	Water-glycol, Emulsion
	AG-12H-V	Phosphoric ester

FH100 Series

How to Order

FH100-06-000-P005

Hydraulic filter

Port size (Rc)

06	3/4
08	1
10	1 1/4
12	1 1/2
16	2
20	2 1/2
24	3

Differential pressure indication

0	None
4	Differential pressure indicator
5	Differential pressure indication switch ^{Note)}

Note) N.C. and N.O. common

Relief valve

0	With relief valve
1	None

Made to Order

Nil	None (Standard)
XO	Non-standard filtration

Note) The non-standard filtration is for micromesh elements only. [Click here for details](#)

Nominal filtration

005	5 μm
010	10 μm
020	20 μm
074	74 μm
105	105 μm

Note) The paper elements for water-glycol or emulsion is 10 μm only.

Element

P	Paper
M	Micromesh

Hydraulic fluid

0	Petroleum	N
1	Water-glycol, Emulsion	W
2	Phosphoric ester	V

Note) N, W and V refer to the hydraulic fluid symbol indicated at the end of the element part number.

Replacement Element Part No. (Including O-ring for element)

Model	Paper			Micromesh		Element size
	5 μm	10 μm	20 μm	74 μm (200 mesh)	105 μm (150 mesh)	
FH100-06	EP420-005N	EP420-010N	EP420-020N	EM810-074N	EM810-105N	ø64 x 95
FH100-08	EP420-005N	EP420-010N	EP420-020N	EM810-074N	EM810-105N	
FH100-10	EP020-005N	EP020-010N	EP020-020N	EM910-074N	EM910-105N	ø74 x 117
FH100-12	EP020-005N	EP020-010N	EP020-020N	EM910-074N	EM910-105N	
FH100-16	EP520-005N	EP520-010N	EP520-020N	EM020-074N	EM020-105N	ø88 x 157
FH100-20	EP620-005N	EP620-010N	EP620-020N	EM120-074N	EM120-105N	
FH100-24	EP620-005N	EP620-010N	EP620-020N	EM120-074N	EM120-105N	ø119 x 207

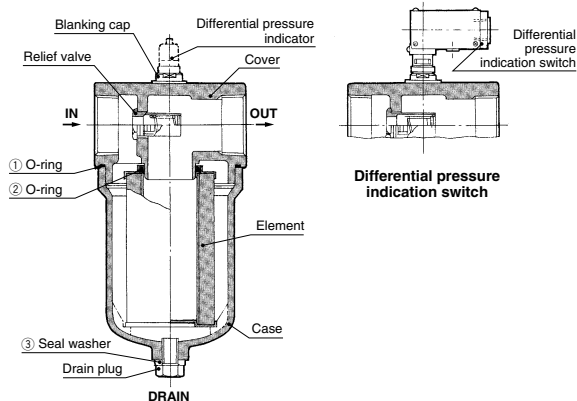
Note 1) The symbol at the end of the element part no. indicates the hydraulic fluid type.

N: Petroleum, V: Phosphoric ester, W: Water-glycol, Emulsion (10 μm only for paper)

Note 2) Refer to page 528 for non-standard filtration.

Note 3) Above elements require one element per filter.

Construction/Seal List



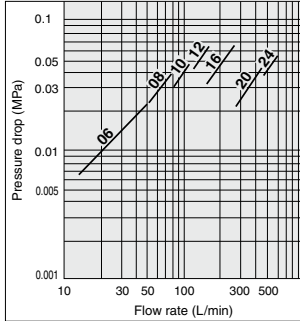
Replacement O-ring/Seal List (One each of the seal and O-ring types listed below are required per filter.)

Port size	Applicable hydraulic fluid	Material	① O-ring order no. (Nominal size)	② O-ring order no. (Nominal size)	③ Seal washer order no.
06 to 08	Petroleum, Water-glycol, Emulsion	NBR	KA00466	KA00800 (P35)	NB00006
			(G90)	KA00082 (P44)	
10 to 12	Water-glycol, Emulsion	-70	KA00788 (G130)	KA00806 (P50)	
			-1	KA00756 (AS588-255 H670)	
16	Phosphoric ester	FKM	KA00704 (G90)	KA00721 (P35)	NB00074
			(G130)	KA00107 (P44)	
20 to 24	Phosphoric ester	-70	KA00690 (G130)	KA00636 (P50)	
			KA00676 (AS588-255 H670)	KA00725 (P85)	

Note) The material and nominal size notations are based on JISB2401.

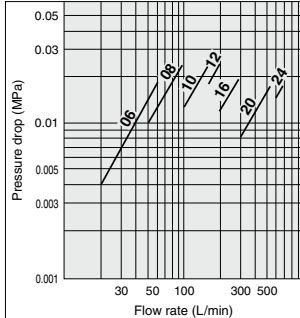
Flow Rate Characteristics

FH100-06 to 24: Nominal filtration 10 μm



Conditions Fluid: Turbine oil Class 2 VG56
 Measured pressure: 1 MPa
 Viscosity: 45 mm²/s
 Filter material: Paper
 Nominal filtration: 10 μm

FH100-06 to 24: Nominal filtration 74 μm



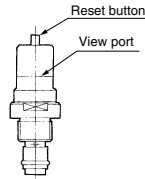
Conditions Fluid: Turbine oil Class 2 VG56
 Measured pressure: 1 MPa
 Viscosity: 45 mm²/s
 Filter material: Micromesh
 Nominal filtration: 74 μm

Differential Pressure Indication

Two indication methods are available: differential pressure indicator and differential pressure indication switch. These can be mounted on all filter models.

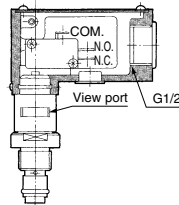
■ Differential pressure indicator

- Operating pressure—0.13 MPa
- Once a value is displayed, it will continue to be displayed until reset, even if the pump is stopped. (Reset type)
- Perform element replacement when the red ring floats up and covers the entire view port.



■ Differential pressure indication switch

- Operating pressure—0.13 MPa
- When a value has been displayed, it will be automatically reset when the pump is stopped. (Non-reset type)
- This is a visual dual-purpose. Perform element replacement when the switch has actuated (when the red ring floats up and covers the entire view point).
- N.C. and N.O. common



* Refer to page 529 for "Microswitch for differential pressure indication switch".

Handling Precautions

① Mounting

- Confirm IN and OUT before mounting. Then connect so that the drain is oriented downward. For maintenance, make sure to provide sufficient space above the filter for removing the element.

② Operation

- The hydraulic fluid used becomes high viscosity when the temperature is low during the winter, etc., and the differential pressure indicator or the switch may activate. If this occurs, wait until the oil temperature rises by a warm-up operation, then check if this is caused by clogging.
- Once the differential pressure indicator is actuated, the indication continues to be displayed until the indicator is reset (by depressing the reset button), even if the pump stops operating.

Reset after replacing the element and restarting operation, or after normal operation starts in cold weather such as during winter.

- When using a differential pressure indication switch and if a filter clogged signal is incorporated into the sequence circuit of the machine, make sure to design the system so the filter clogged signal does not operate until normal operation starts.

③ Element replacement

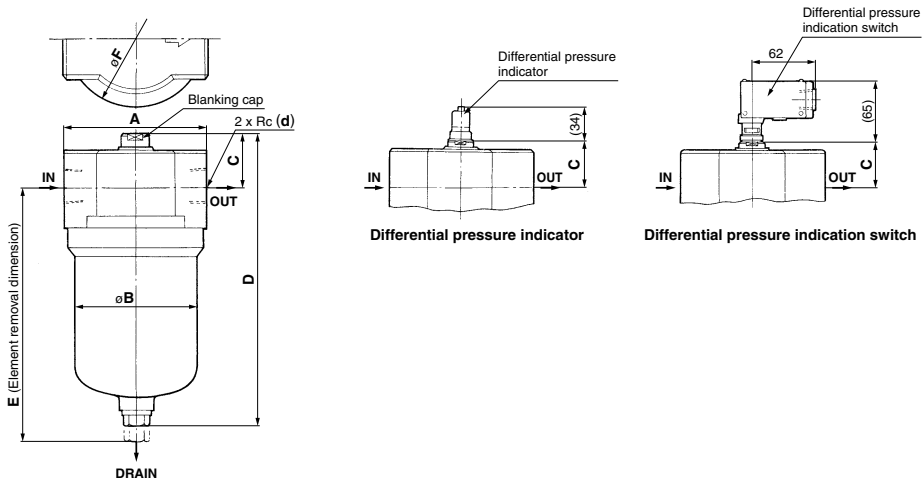
- When the pressure difference reaches 0.13 MPa during filter operation (actuating the differential pressure indicator), stop operation, drain the oil from the case, and replace the paper element or wash the micromesh element. If the micromesh element has reached the end of its service life, replace it.
- When replacing the element, check the O-rings and replace them if they are damaged.
- When washing the micromesh element, do not wipe it using a stiff brush or rag.

FH □

HOW □

FH100 Series

Dimensions



								(mm)
Model	d	A	B	C	D	E	F	Weight (kg)
FH100-06	3/4							2.5
FH100-08	1	102	90	35	200	290	104	
FH100-10	1 1/4							4.3
FH100-12	1 1/2	110	100	45	265	380		
FH100-16	2	150	128	52	299	430	144	6.8
FH100-20	2 1/2							17.5
FH100-24	3	200	157	70	387	540	175	

(1) Contact specifications

Table 1 Contact specifications

Item	Specifications
Inrush current	Max. 15 A
Minimum applicable load	5 VDC 160 mA

(2) Rating

Table 2 Rating

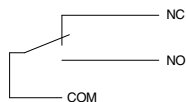
Rated voltage	Resistance load
250 VAC	5 A

(3) Other performance

Table 3 Other specifications

Item	Specifications	
Insulation resistance	100 MΩ or more (Measured by 500 VDC, insulation resistance tester.)	
Contact resistance	30 mΩ or less	
Withstand voltage	Between terminals with the same pole.	1,000 VAC 50/60 Hz 1 min
	Between charged metal part and ground	1,500 VAC 50/60 Hz 1 min
	Between each terminal and non-charged metal part	1,500 VAC 50/60 Hz 1 min

(4) Electric circuit



(N.C. and N.O. common)

Precautions

1. Connect desired wiring to the micro switch indication symbols 1 (COM.), 2 (N.C.), and 3 (N.O.).
2. When a protection mechanism is required, take appropriate considerations on the electric circuit since the micro switch is a type of non-reset.

(5) Terminal type

Soldering terminal