

Oil Filter

Series *FH150*

Compact and lightweight

The compact and lightweight design employs an aluminum alloy cover.

Easy maintenance

The element slides into place, making it easy to install and remove.

Clogging sensor

The filter can be fitted with a differential pressure indicator (two-stage 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	Aluminum die-cast
	Case	Cast iron
	O-ring	NBR or FKM ^{Note)}
Element	Material	Paper
	Nominal filtration	5, 10, 20 μm
	Differential pressure resistance	0.6 MPa
Differential pressure indicator operating pressure		0.13 MPa

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

Model/Rated Flow Rate

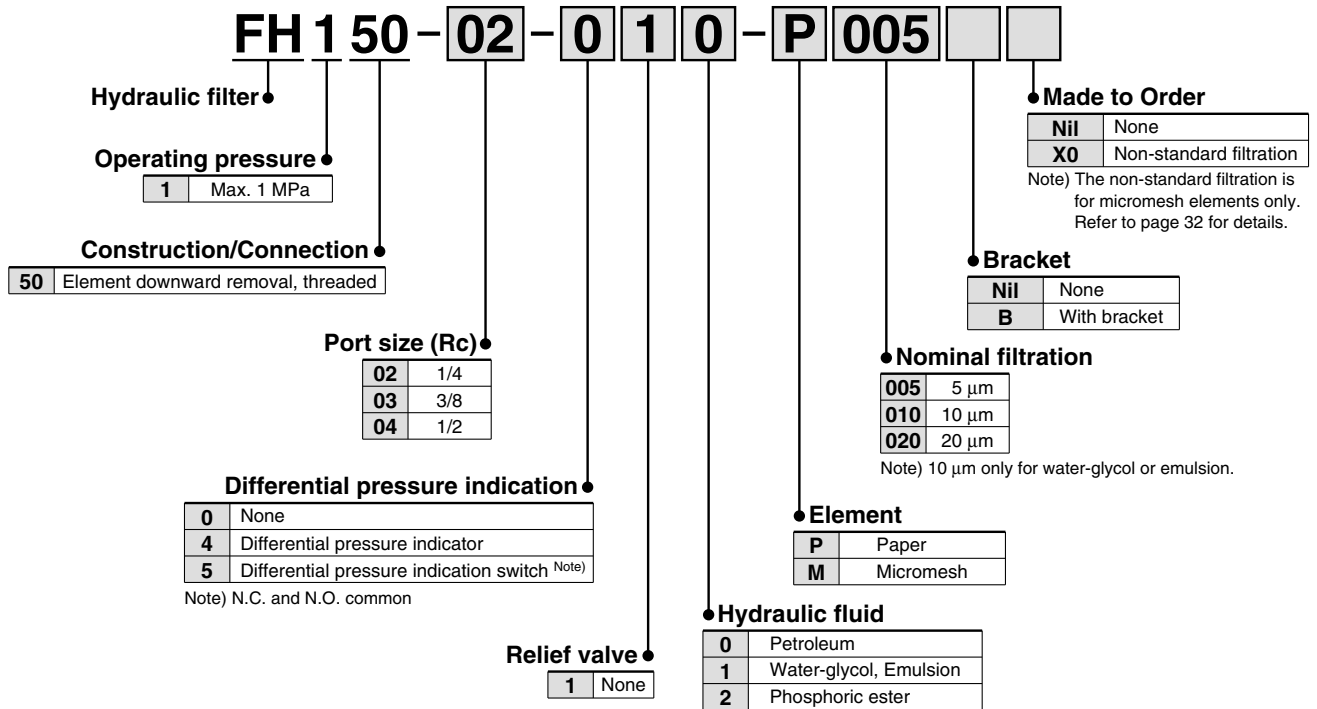
Model	Port size (Rc)	Rated flow rate (ℓ/min)
FH150-02	1/4	5
FH150-03	3/8	10
FH150-04	1/2	20

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
Bracket	B-44P	

Series FH150

How to Order



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

Model	5 μm	10 μm	20 μm	Element size
FH150-02	EP910-005N	EP910-010N	EP910-020N	ø53 x 90
FH150-03				
FH150-04				

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

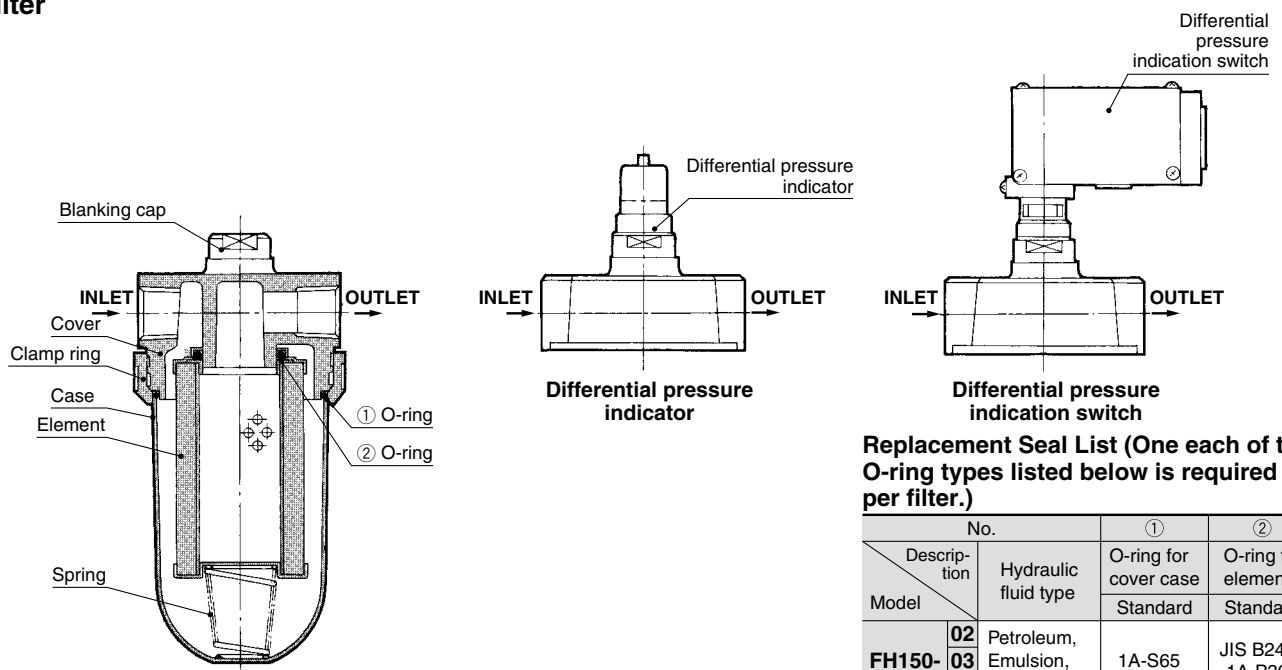
N: Petroleum, V: Phosphoric ester, W: Water-glycol, Emulsion (10 μm only)

Note 2) Refer to page 32 for non-standard filtration.

Note 3) Above elements require one element per filter.

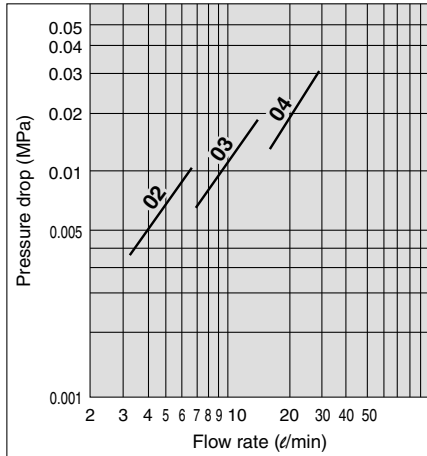
Construction/Seal List

Oil filter



Flow Characteristics

FH150-02 to 04



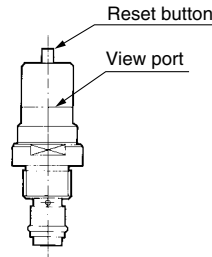
Conditions Fluid: Turbine oil Class 2 VG56
 Measured pressure: 1 MPa
 Viscosity: 45 mm²/s
 Filter material: Paper
 Nominal filtration: 10 μm

Differential Pressure Indication

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

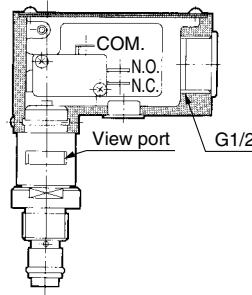
■ Differential pressure indicator

- Operating pressure—0.13 MPa
- Once a value is displayed, it will continue to be displayed until reset, even if the pump is stopped. (2-stage display 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 2-stage display. Perform element replacement when the switch has actuated (when the red ring floats up and covers the entire view port).
- N.C. and N.O. common



Handling Precautions

① Mounting

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

② Operation

- Operation of the differential pressure indicator in cold weather, such as during winter, mostly occurs due to high viscosity, so check whether it is from clogging or not after normal operation starts.
- 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 operation (actuating the differential pressure indicator), stop operation and replace the element.
- When replacing the element, drain the fluid from the case. Also, check the O-rings and replace them if they are damaged.

④ Other

- Refer to the operating manual regarding the tightening torque for clamping ring.

Microswitch Rating

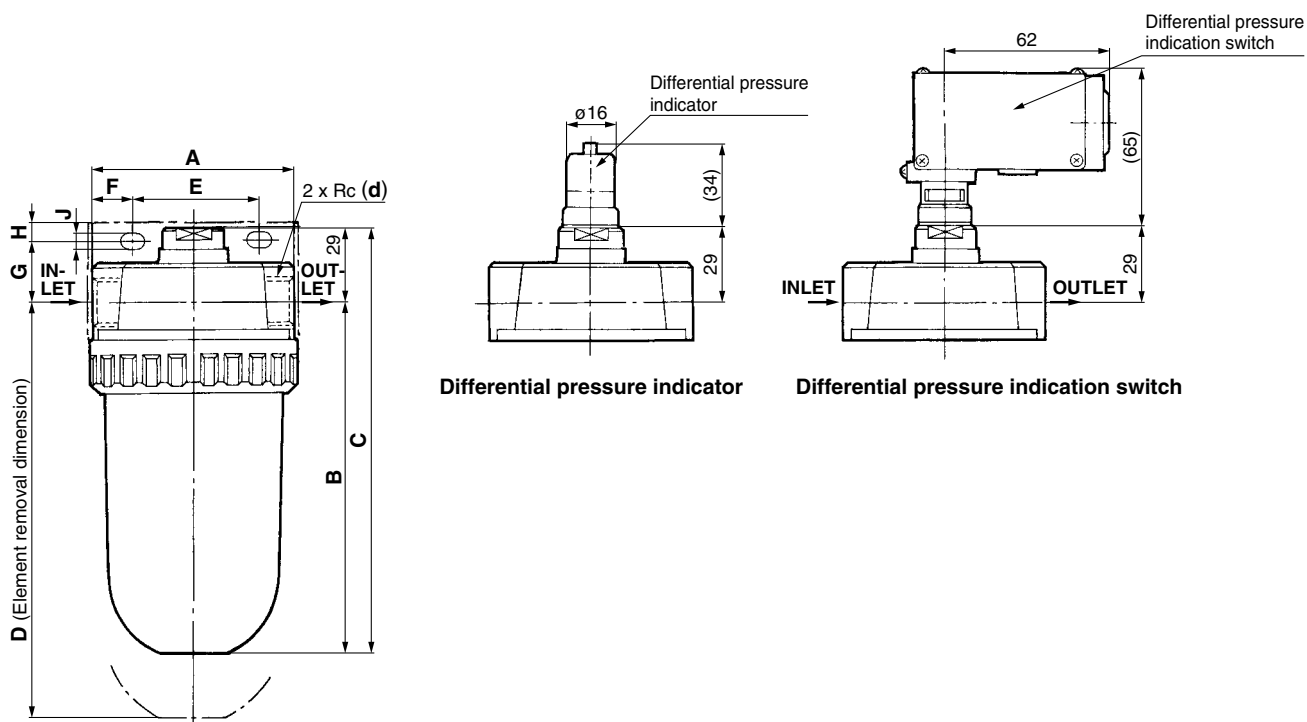
Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistance load		Light load		Inductive load		Motor load	
	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open
AC125	5	1.5	0.7	4	2.5	1.3		
AC250	5	1	0.5	4	1.5	0.8		
DC8	5	3		5	4	3		
DC14	5	3		4		3		
DC30	5	3		4		3		
DC125	0.4	0.1		0.4		0.1		
DC250	0.3	0.05		0.3		0.05		

Precautions

1. The figures in the above table indicate stationary current.
2. An inductive load has a power factor (AC) of 0.75 or more, and a time constant (DC) of 7 msec or less.
3. A light load has an inrush current 10 times greater.
4. Lead wires are connected using a screw tightening terminal.
5. The electrical entry is equipped with a conduit (G1/2) and grommet.
6. Please wire freely to the microswitch indication symbol 1(COM.), 2(N.C.) and 3(N.O.).
7. If a holding mechanism is necessary for the non-reset type, provide it using electric circuits.

Series FH150

Dimensions



(mm)

Model	d	A	B	C	D	E	F	G	H	J	Weight (kg)
FH150-02	1/4										
FH150-03	3/8	80	139	168	230	50	15	25	7	6.5	0.7
FH150-04	1/2										

Series FH

Made to Order (Non-Standard Filtration)

Please contact SMC for detailed specifications, lead times and prices.

How to Order

Filter symbol (Refer to “How to Order” for each series)

X0

Note) Made-to-order specifications (non-standard filtration rating) are available only for micromesh elements (element symbol: M).

↓
**Made to Order
(Non-standard filtration)**

Hydraulic Filter Non-Standard Filtration Replacement Element Part No.

Description	Model	Port size	Replacement element part no.		Element size
			Micromesh element	Micromesh element (With relief valve)	
Vertical suction filter	FHIA (Refer to P. 3.)	1/2	EM001H-*1*2	—	ø65 x ℓ90
		3/4, 1	EM101H-*1*2	—	ø85 x ℓ110
		1 1/4, 1 1/2	EM201H-*1*2	—	ø100 x ℓ160
		2	EM301H-*1*2	—	ø120 x ℓ180
		2 1/2, 3	EM401H-*1*2	—	ø140 x ℓ200
		3 1/2, 4	EM501H-*1*2	—	ø180 x ℓ260
Suction filter with case	FH99 (Refer to P. 7.)	1/2, 3/4	EM230-*1*2	EM520-*1*2	ø65 x ℓ90
		1, 1 1/4	EM330-*1*2	EM620-*1*2	ø82 x ℓ133
		1 1/2	EM430-*1*2	EM720-*1*2	ø104 x ℓ177
		2	EM530-*1*2	EM820-*1*2	ø104 x ℓ177
		2 1/2	EM630-*1*2	EM920-*1*2	ø132 x ℓ212
		3	EM730-*1*2	EM030-*1*2	ø132 x ℓ212
Suction guard	FHG (Refer to P. 11.)	1/2, 3/4, 1	EM220-*1*2	—	ø69 x ℓ88
		1 1/4, 1 1/2, 2	EM320-*1*2	—	ø89 x ℓ123
		2 1/2, 3	EM420-*1*2	—	ø109 x ℓ188
Line filter	FH34 FH44 FH54 FH64 (Refer to P. 15.)	3/8, 1/2	EM040-*1*2	—	ø53.1 x ℓ90
		3/4, 1	EM910-*1*2	—	ø73.5 x ℓ117
		1 1/4, 1 1/2	EM140-*1*2	—	ø73.5 x ℓ195
		2	EM930-*1*2	—	ø87.6 x ℓ282
		2 1/2, 3	EM240-*1*2	—	ø118.7 x ℓ280
Vertical return filter	FHBA (Refer to P. 19.)	3/4	EM601H-*1*2	—	ø56 x ℓ180
		1 1/4	EM701H-*1*2	—	ø76 x ℓ190
		1 1/2	EM801H-*1*2	—	ø76 x ℓ290
Return filter	FH100 (Refer to P. 22.)	3/4, 1	EM810-*1*2	—	ø65 x ℓ95
		1 1/4, 1 1/2	EM910-*1*2	—	ø73.5 x ℓ117
		2	EM020-*1*2	—	ø87.6 x ℓ157
		2 1/2, 3	EM120-*1*2	—	ø118.7 x ℓ207
Oil filter	FH150 (Refer to P. 26.)	1/4, 3/8, 1/2	EM040-*1*2	—	ø53 x ℓ90

Note) In the table above *1 indicates nominal filtration and *2 indicates hydraulic fluid type.

Nominal Filtration

Symbol (*1)	µm
003	3
005	5
010	10
020	20
040	40
074	74
105	105
149	149
270	270

Hydraulic Fluid

Symbol (*2)	Type
N	Petroleum
W	Water-glycol, Emulsion
V	Phosphoric ester