

# Line Filter

# Series FH34/44/54/64

Rated Pressure: 3.5, 7, 14, 21 MPa

## Compact, solid, and safe design

The case and cover have undergone testing in which they were subjected 100,000 times to impacts equivalent 1.5 times the rated pressure (confirming to MIL standard).

## Easy element replacement

The element is extracted from the top, and secured in place by inserting an O-ring seal. The element can be installed and removed easily, simplifying maintenance.

## Reliable outlet side

A firm seal is secured through a special configuration combining a pressure clamp from an O-ring around the inner perimeter of the case with support from the cover, and there is no resistance when the cover is installed and removed.

## Large drain exhaust port

The large M24 drain exhaust port assures rapid drainage.

## Easy fluid flow direction reversal

Simply turn the cover 180° relative to the case mounting base to reverse the fluid flow direction.

## Clogging sensor

The filter can be mounted with a differential pressure indicator (two-stage indicator, reset type) or differential pressure indication switch (common with visual, non-reset type).



## Specifications

Fluid		Hydraulic fluid	
Operating pressure		Max. 3.5 MPa	Max. 7, 14, 21 MPa
Operating temperature		Max. 80°C	
Main material	Cover/Case	Aluminum die-cast (3/8, 1/2, 3/4, 1)	Cast iron
	O-ring	Aluminum casted (1 1/4, 1 1/2, 2)	
Element	Material	Paper	
	Nominal filtration	5, 10, 20 μm	
	Differential pressure resistance	0.6 MPa	
Differential pressure indicator operating pressure		0.275 MPa	
Relief valve open pressure		0.35 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

Operating pressure	Model		Port size		Rated flow rate (ℓ/min)	
	Threaded connection	Flange connection	Threaded Rc	Flange SSA		
Max. 3.5 MPa	FH340-03	—	3/8	—	10	
	FH340-04	—	1/2	—	20	
	FH342-06	FH341-06	3/4	20 (3/4 <sup>B</sup> )	50	
	FH342-08	FH341-08	1	25 (1 <sup>B</sup> )	80	
	FH340-10	FH341-10	1 1/4	32 (1 1/4 <sup>B</sup> )	120	
	FH340-12	FH341-12	1 1/2	40 (1 1/2 <sup>B</sup> )	160	
Max. 7 MPa	—	FH341-16	—	50 (2 <sup>B</sup> )	260	
	FH440-03	—	3/8	—	10	
	FH440-04	FH441-04	1/2	15 (1/2 <sup>B</sup> )	20	
	FH440-06	FH441-06	3/4	20 (3/4 <sup>B</sup> )	50	
	FH440-08	FH441-08	1	25 (1 <sup>B</sup> )	80	
	FH440-10	FH441-10	1 1/4	32 (1 1/4 <sup>B</sup> )	120	
	FH440-12	FH441-12	1 1/2	40 (1 1/2 <sup>B</sup> )	160	
	—	FH441-16	—	50 (2 <sup>B</sup> )	260	
	—	FH441-20	—	65 (2 1/2 <sup>B</sup> )	450	
	—	FH441-24	—	80 (3 <sup>B</sup> )	600	
Max. 14 MPa	FH540-03	—	3/8	—	10	
	FH540-04	FH541-04	1/2	15 (1/2 <sup>B</sup> )	20	
	FH540-06	FH541-06	3/4	20 (3/4 <sup>B</sup> )	50	
	FH540-08	FH541-08	1	25 (1 <sup>B</sup> )	80	
	FH540-10	FH541-10	1 1/4	32 (1 1/4 <sup>B</sup> )	120	
	FH540-12	FH541-12	1 1/2	40 (1 1/2 <sup>B</sup> )	160	
	—	FH541-16	—	50 (2 <sup>B</sup> )	260	
	Max. 21 MPa	FH640-03	—	3/8	—	10
		FH640-04	FH641-04	1/2	15 (1/2 <sup>B</sup> )	20
		FH640-06	FH641-06	3/4	20 (3/4 <sup>B</sup> )	50
FH640-08		FH641-08	1	25 (1 <sup>B</sup> )	80	
FH640-10		FH641-10	1 1/4	32 (1 1/4 <sup>B</sup> )	120	
FH640-12		FH641-12	1 1/2	40 (1 1/2 <sup>B</sup> )	160	
—	FH641-16	—	50 (2 <sup>B</sup> )	260		

Note) Tapered female thread connection conforming to JIS B 0203 is compatible.

Flanges conforming to JIS B 2291 (21 MPa piping flanges for hydraulic use) SSA are compatible.

## Accessory/Option

Description	Part no.	Model	Note
Differential pressure indicator	CB-48H	FH34 <sup>0</sup> to FH44 <sup>0</sup>	Petroleum, Water-glycol, Emulsion
	CB-48H-V		Phosphoric ester
	CB-52H	FH342	Petroleum, Water-glycol, Emulsion
	CB-52H-V		Phosphoric ester
	CB-64H	FH54 <sup>0</sup> to FH64 <sup>0</sup>	Petroleum, Water-glycol, Emulsion
	CB-64H-V		Phosphoric ester
Differential pressure indication switch (N.C. and N.O. common)	CB-49H	FH34 <sup>0</sup> to FH44 <sup>0</sup>	Petroleum, Water-glycol, Emulsion
	CB-49H-V		Phosphoric ester
	CB-53H	FH342	Petroleum, Water-glycol, Emulsion
	CB-53H-V		Phosphoric ester
	CB-65H	FH54 <sup>0</sup> to FH64 <sup>0</sup>	Petroleum, Water-glycol, Emulsion
	CB-65H-V		Phosphoric ester
Blanking cap (for differential pressure indication part)	AG-9H	FH34 <sup>0</sup> to FH64 <sup>0</sup>	Petroleum
	AG-9H-W		Water-glycol, Emulsion
	AG-9H-V		Phosphoric ester
	AG-12H	FH342	Petroleum
	AG-12H-W		Water-glycol, Emulsion
	AG-12H-V		Phosphoric ester

## How to Order

**FH 3 40 - 03 - 0 0 0 - P 005 L**

**Hydraulic filter**

**Operating pressure (Max.)**

3	3.5 MPa
4	7 MPa
5	14 MPa
6	21 MPa

**Construction/Connection**

40	Element upward removal	Threaded
41	Element upward removal	Flange

**Port size**

Symbol	Threaded Rc	Flange SSA
03	3/8	—
04	1/2	15 (1/2 <sup>B</sup> )
06	3/4	20 (3/4 <sup>B</sup> )
08	1	25 (1 <sup>B</sup> )
10	1 1/4	32 (1 1/4 <sup>B</sup> )
12	1 1/2	40 (1 1/2 <sup>B</sup> )
16	—	50 (2 <sup>B</sup> )
20	—	65 (2 1/2 <sup>B</sup> )
24	—	80 (3 <sup>B</sup> )

**Differential pressure indication**

0	None
1	Differential pressure indicator
2	Differential pressure indication switch <small>Note)</small>
4★	Differential pressure indicator
5★	Differential pressure indication switch <small>Note)</small>

Note) N.C. and N.O. common  
★ Construction 42 only

**Relief valve**

0	With relief valve
1	None

**Nominal filtration**

005	5 μm
010	10 μm
020	20 μm

Note) 10 μm only for water-glycol or emulsion.

**Hydraulic fluid**

0	Petroleum
1	Water-glycol, Emulsion
2	Phosphoric ester

**Made to Order**

Nil	None
X0	Non-standard filtration

Note) The non-standard filtration rating is for micromesh elements only. Refer to page 32 for details.

**Fluid direction**

Nil	IN left
L	IN right

**Element**

P	Paper
M	Micromesh

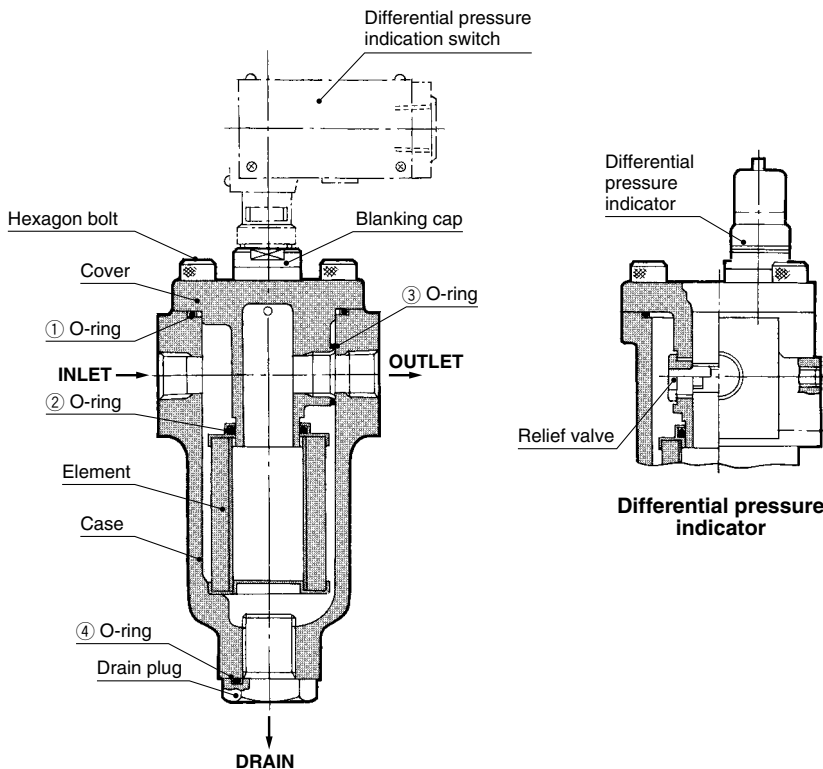
\* Indicates 42 for 3.5 MPa, Port sizes 3/4 and 1.

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

Port size	5 μm	10 μm	20 μm	Element size
03 (3/8), 04 (1/2)	EP910-005N	EP910-010N	EP910-020N	ø53 x 90
06 (3/4), 08 (1)	EP020-005N	EP020-010N	EP020-020N	ø74 x 117
10 (1 1/4), 12 (1 1/2)	EP120-005N	EP120-010N	EP120-020N	ø74 x 195
16 (2)	EP220-005N	EP220-010N	EP220-020N	ø88 x 282
20 (2 1/2), 24 (3)	EP820-005N	EP820-010N	EP820-020N	ø119 x 280

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



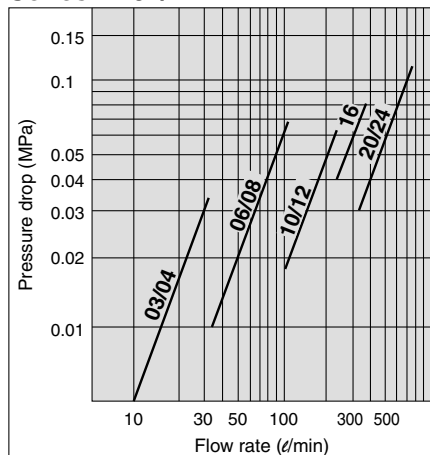
## Replacement Seal List (One each of the O-ring types listed below are required per filter.)

Model	Description	No.	Hydraulic fluid type	①	②	③	④
				O-ring for cover case	O-ring for element	O-ring for OUT side	O-ring for element
				Standard	Standard	Standard	Standard
FH340	-03	-04	Petroleum, Emulsion, Water-glycol	JIS B2401	JIS B2401	JIS B2401	
				-1B-G80	-1A-P30	-1A-P22A	
FH34	-06	-08		JIS B2401	JIS B2401	JIS B2401	
				-1B-G105	-1A-P44	-1A-P32	
FH440 to FH640	-03	-04		JIS B2401	JIS B2401	JIS B2401	
				-1B-G65	-1A-P30	-1A-P20	
FH44 to FH64	-06	-08		JIS B2401	JIS B2401	JIS B2401	JIS B2401
				-1B-G90	-1A-P44	-1A-P32	-1B-P28
FH34 to FH64	-10	-12		JIS B2401	JIS B2401	JIS B2401	
				-1B-G105	-1A-P50	-1A-P50	
FH341 to FH641	-16	-20		JIS B2401	JIS B2401	JIS B2401	
				-1B-G145	-1A-P85	-1A-P85	
FH441	-20	-24		JIS B2401	JIS B2401	JIS B2401	
				-1B-G145	-1A-P85	-1A-P85	
FH340	-03	-04		JIS B2401	JIS B2401	JIS B2401	
				G80	-4D-P30	-4D-P22A	
FH34	-06	-08		JIS B2401	JIS B2401	JIS B2401	
				G105	-4D-P44	-4D-P32	
FH440 to FH640	-03	-04		JIS B2401	JIS B2401	JIS B2401	
				G65	-4D-P30	-4D-P20	
FH44 to FH64	-06	-08		JIS B2401	JIS B2401	JIS B2401	JIS B2401
				G90	-4D-P44	-4D-P32	-4D-P28
FH34 to FH64	-10	-12		JIS B2401	JIS B2401	JIS B2401	
				G105	-4D-P50	-4D-P50	
FH341 to FH641	-16	-20		JIS B2401	JIS B2401	JIS B2401	
				G145	-4D-P85	-4D-P85	
FH441	-20	-24		JIS B2401	JIS B2401	JIS B2401	
				G145	-4D-P85	-4D-P85	

# Series FH34/44/54/64

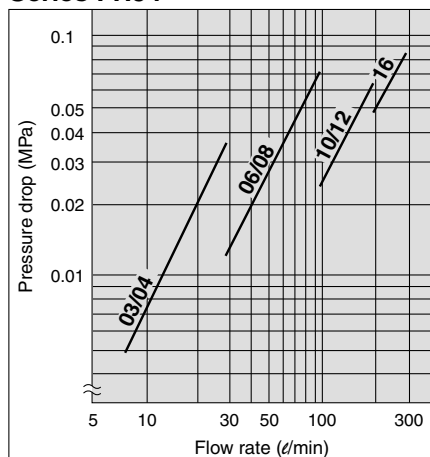
## Flow Characteristics

### Series FH34/44



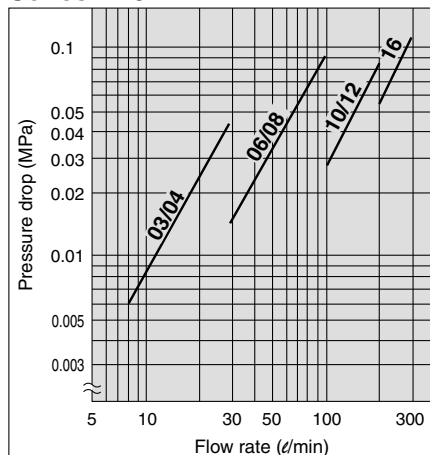
Conditions Fluid: Turbine oil Class 2 VG56  
 Measured pressure: 3.5, 7 MPa  
 Viscosity: 45 mm<sup>2</sup>/s  
 Filter material: Paper  
 Nominal filtration: 10 μm

### Series FH54



Conditions Fluid: Turbine oil Class 2 VG56  
 Measured pressure: 14 MPa  
 Viscosity: 45 mm<sup>2</sup>/s  
 Filter material: Paper  
 Nominal filtration: 10 μm

### Series FH64

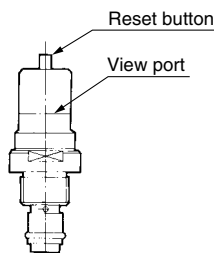


Conditions Fluid: Turbine oil Class 2 VG56  
 Measured pressure: 21 MPa  
 Viscosity: 45 mm<sup>2</sup>/s  
 Filter material: Paper  
 Nominal filtration: 10 μm

## Differential Pressure Indication

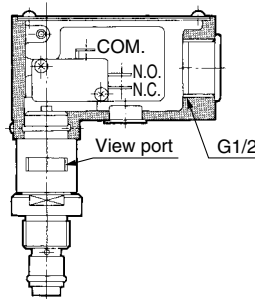
Two indication methods are available: differential pressure indicator and differential pressure indication switch. These can be mounted on all filter models.

- Operating pressure—0.275 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—0.275 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



## 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
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.

## Handling Precautions

### ① Mounting

- Confirm INLET and OUTLET 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

- 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.

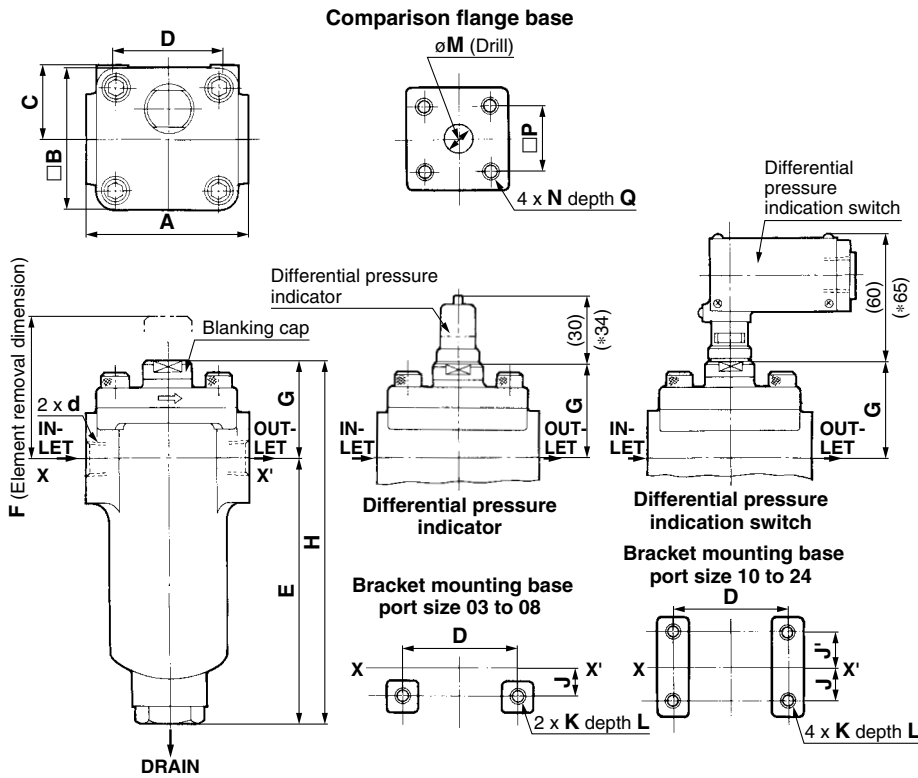
### ③ Element replacement

- When the pressure difference reaches 0.275 MPa during operation (actuating the differential pressure indicator), stop operation, drain the oil from the case, and replace the element.
- When replacing the element, check the O-rings and replace them if they are damaged.
- When installing and removing an element, do not scratch or damage it by touching the corners of the case, etc.

### ④ Others

- For the top cover O-ring, use a product of hardness 90 to prevent leaks or damage.
- If there is back pressure, install a check valve on the outlet side to prevent damage to the element.
- Turn the top cover 180° to reverse the oil flow direction.
- Use an auxiliary pipe or the like and apply force evenly when tightening the cap screws on the cover and case.

## Dimensions



(\*): Internal dimensions for FH342 type

## Companion Flange Bolt Dimensions

Port size	Model	Bolt dimension	Flange (JIS B2291)	O-ring (JIS B240-1-A)
04	FH441	M10 x 1.5 x 30	SSA15	G25
	FH541	M10 x 1.5 x 30		
	FH641	M10 x 1.5 x 40		
06	FH341	M10 x 1.5 x 30	SSA20	G30
	FH441			
	FH541			
08	FH341	M12 x 1.75 x 40	SSA25	G35
	FH441			
	FH541			
10	FH341	M12 x 1.75 x 40	SSA32	G40
	FH441			
	FH541			
12	FH341	M16 x 2 x 50	SSA40	G50
	FH441			
	FH541			
16	FH341	M16 x 2 x 50	SSA50	G60
	FH441			
	FH541			
20	FH441	M20 x 2.5 x 65	SSA65	G75
24	FH441	M22 x 2.5 x 65	SSA80	G85

Note) The companion flange mounting base conforms to JIS B 2291 (21 MPa pipe flanges for hydraulic use) SSA.

Model	d		A	B	C	D	E	F	G	H	J	J'	K	L	M	N	P	Q	Weight (kg)	
	Threaded Rc	Flange SSA																		
FH340-03	3/8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FH340-04	1/2	—	105	96	50	80	160.5	275	57	217.5	5	—	2 x M8 x 1.25	19	—	—	—	—	—	1.8
FH342-06	3/4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FH342-08	1	—	136	120	65	60	180	340	61	241	0	—	2 x M10 x 1.5	15	—	—	—	—	—	2.5
FH341-06	—	20 (3/4 <sup>B</sup> )	141	120	63	100	199.5	330	69	268.5	0	—	2 x M10 x 1.5	23	20	4 x M10 x 1.5	40	12	3.5	
FH341-08	—	25 (1 <sup>B</sup> )													25	4 x M12 x 1.75	48	17		
FH341-10	1 1/4	32 (1 1/4 <sup>B</sup> )	150	106	56	100	260	435	87	347	50	0	4 x M10 x 1.5	23	32	4 x M12 x 1.75	56	17	4.6	
FH341-12	1 1/2	40 (1 1/2 <sup>B</sup> )	—	—	—	—	—	—	—	—	—	—	—	—	36	4 x M16 x 2	65	20	—	
FH341-16	—	50 (2 <sup>B</sup> )	155	120	70	120	361	545	94	455	60	0	4 x M12 x 1.75	28	46	4 x M16 x 2	73	20	6.4	
FH440-03	3/8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FH441-04	1/2	15 (1/2 <sup>B</sup> )	100	80	45	60	152	285	62	214	0	—	2 x M8 x 1.25	14	—	—	—	—	—	4.5
FH441-06	3/4	20 (3/4 <sup>B</sup> )	135	105	57	80	182	330	73	255	0	—	2 x M10 x 1.5	18	16	4 x M10 x 1.5	36	12	8.7	
FH441-08	1	25 (1 <sup>B</sup> )													25	4 x M12 x 1.75	48	17		
FH441-10	1 1/4	32 (1 1/4 <sup>B</sup> )	150	105	57	80	260	435	87	347	50	0	4 x M10 x 1.5	18	32	4 x M12 x 1.75	56	17	12.2	
FH441-12	1 1/2	40 (1 1/2 <sup>B</sup> )	—	—	—	—	—	—	—	—	—	—	—	—	36	4 x M16 x 2	65	20	—	
FH441-16	—	50 (2 <sup>B</sup> )	160	120	65	92	359	540	94	453	60	0	4 x M12 x 1.75	22	46	4 x M16 x 2	73	20	18.1	
FH441-20	—	65 (2 1/2 <sup>B</sup> )	220	170	100	130	390	615	119	509	40	25	4 x M12 x 1.75	22	60	4 x M20 x 2.5	92	27	35.9	
FH441-24	—	80 (3 <sup>B</sup> )													70	4 x M22 x 2.5	103	27		
FH540-03	3/8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FH541-04	1/2	15 (1/2 <sup>B</sup> )	105	86	45	70	152	285	62	214	0	—	2 x M8 x 1.25	14	16	4 x M10 x 1.5	36	12	5.2	
FH541-06	3/4	20 (3/4 <sup>B</sup> )	145	108	56	100	182	330	73	255	0	—	2 x M10 x 1.5	18	20	4 x M10 x 1.5	40	12	9.7	
FH541-08	1	25 (1 <sup>B</sup> )													25	4 x M12 x 1.75	48	17		
FH541-10	1 1/4	32 (1 1/4 <sup>B</sup> )	150	108	56	100	260	435	87	347	50	0	4 x M12 x 1.75	22	32	4 x M12 x 1.75	56	17	12.8	
FH541-12	1 1/2	40 (1 1/2 <sup>B</sup> )	—	—	—	—	—	—	—	—	—	—	—	—	36	4 x M16 x 2	65	20	—	
FH541-16	—	50 (2 <sup>B</sup> )	180	126	70	120	361	545	94	455	60	0	4 x M12 x 1.75	22	46	4 x M16 x 2	73	20	20.4	
FH640-03	3/8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FH641-04	1/2	15 (1/2 <sup>B</sup> )	120	98	51	90	152	285	62	214	0	—	2 x M10 x 1.5	18	16	4 x M10 x 1.5	36	22	6.9	
FH641-06	3/4	20 (3/4 <sup>B</sup> )	155	124	65	120	182	330	73	255	0	—	2 x M10 x 1.5	18	20	4 x M10 x 1.5	40	22	12.9	
FH641-08	1	25 (1 <sup>B</sup> )													25	4 x M12 x 1.75	48	22		
FH641-10	1 1/4	32 (1 1/4 <sup>B</sup> )	180	124	65	125	260	435	87	347	50	0	4 x M12 x 1.75	22	32	4 x M12 x 1.75	56	22	19.8	
FH641-12	1 1/2	40 (1 1/2 <sup>B</sup> )	—	—	—	—	—	—	—	—	—	—	—	—	36	4 x M16 x 2	65	30	—	
FH641-16	—	50 (2 <sup>B</sup> )	200	144	75	145	361	545	94	455	60	0	4 x M12 x 1.75	22	46	4 x M16 x 2	73	30	29	

Note) Tapered female thread conforming to JIS B 0203 is compatible.

Flanges conforming to JIS B 2291 (21 MPa pipe flanges for hydraulic use) SSA are compatible.

# 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	<b>FHIA</b> (Refer to P. 3.)	1/2	EM001H- <sup>*1*2</sup>	—	ø65 x ℓ90
		3/4, 1	EM101H- <sup>*1*2</sup>	—	ø85 x ℓ110
		1 1/4, 1 1/2	EM201H- <sup>*1*2</sup>	—	ø100 x ℓ160
		2	EM301H- <sup>*1*2</sup>	—	ø120 x ℓ180
		2 1/2, 3	EM401H- <sup>*1*2</sup>	—	ø140 x ℓ200
		3 1/2, 4	EM501H- <sup>*1*2</sup>	—	ø180 x ℓ260
Suction filter with case	<b>FH99</b> (Refer to P. 7.)	1/2, 3/4	EM230- <sup>*1*2</sup>	EM520- <sup>*1*2</sup>	ø65 x ℓ90
		1, 1 1/4	EM330- <sup>*1*2</sup>	EM620- <sup>*1*2</sup>	ø82 x ℓ133
		1 1/2	EM430- <sup>*1*2</sup>	EM720- <sup>*1*2</sup>	ø104 x ℓ177
		2	EM530- <sup>*1*2</sup>	EM820- <sup>*1*2</sup>	ø104 x ℓ177
		2 1/2	EM630- <sup>*1*2</sup>	EM920- <sup>*1*2</sup>	ø132 x ℓ212
		3	EM730- <sup>*1*2</sup>	EM030- <sup>*1*2</sup>	ø132 x ℓ212
Suction guard	<b>FHG</b> (Refer to P. 11.)	1/2, 3/4, 1	EM220- <sup>*1*2</sup>	—	ø69 x ℓ88
		1 1/4, 1 1/2, 2	EM320- <sup>*1*2</sup>	—	ø89 x ℓ123
		2 1/2, 3	EM420- <sup>*1*2</sup>	—	ø109 x ℓ188
Line filter	<b>FH34 FH44 FH54 FH64</b> (Refer to P. 15.)	3/8, 1/2	EM040- <sup>*1*2</sup>	—	ø53.1 x ℓ90
		3/4, 1	EM910- <sup>*1*2</sup>	—	ø73.5 x ℓ117
		1 1/4, 1 1/2	EM140- <sup>*1*2</sup>	—	ø73.5 x ℓ195
		2	EM930- <sup>*1*2</sup>	—	ø87.6 x ℓ282
		2 1/2, 3	EM240- <sup>*1*2</sup>	—	ø118.7 x ℓ280
Vertical return filter	<b>FHBA</b> (Refer to P. 19.)	3/4	EM601H- <sup>*1*2</sup>	—	ø56 x ℓ180
		1 1/4	EM701H- <sup>*1*2</sup>	—	ø76 x ℓ190
		1 1/2	EM801H- <sup>*1*2</sup>	—	ø76 x ℓ290
Return filter	<b>FH100</b> (Refer to P. 22.)	3/4, 1	EM810- <sup>*1*2</sup>	—	ø65 x ℓ95
		1 1/4, 1 1/2	EM910- <sup>*1*2</sup>	—	ø73.5 x ℓ117
		2	EM020- <sup>*1*2</sup>	—	ø87.6 x ℓ157
		2 1/2, 3	EM120- <sup>*1*2</sup>	—	ø118.7 x ℓ207
Oil filter	<b>FH150</b> (Refer to P. 26.)	1/4, 3/8, 1/2	EM040- <sup>*1*2</sup>	—	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