Vertical Suction Filter
Series FHIA

These vertical suction filters are designed for installation between the pump and reservoir tank. Their main function is to protect the pump.

No air pockets
There are no places for air pockets to form. This prevents damage to the pump and enables normal operation to start immediately.

Elimination of all collected matter
All collected matter can be disposed of reliably when the element is replaced. There is no danger of collected matter dropping back into the tank.

No drain port required
The structure of the filter does not contain areas for drain fluid to collect, so there is no need to manually drain the pump.

Easy element replacement
Simply open the cover to quickly replace the element without touching the pipes. The element is extracted from the top, so no fluid can leak out.

Compact and lightweight
The compact and lightweight design employs an aluminum casted housing.

Clogging sensor
The sensor indicates when the element is becoming dirty, facilitating maintenance and helping to avoid pump damage such as cavitations.
Differential pressure indicator/two-stage indicator, reset type
Differential pressure indication switch/visual combined, non-reset type

Specifications

Fluid		Hydraulic fluid
Operating pressure		Negative pressure
Operating temperature		Max. 80°C
Main material	**Cover/Case**	Aluminum cast
	O-ring	NBR or FKM Note)
	Seal	NBR or EPDM Note)
Element	**Material**	Micromesh
	Nominal filtration	74, 105, 149 μm (200, 150, 100 mesh)
	Differential pressure resistance	0.15 MPa
Differential pressure indicator operating pressure		20.0 kPa
Relief valve open pressure		26.7 kPa

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

Model/Rated Flow Rate

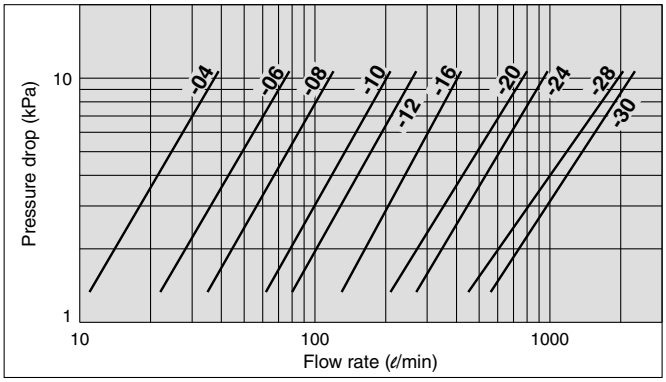
Model	Flange port size Note)	Rated flow rate (ℓ/min)
FHIA□-04	1/2B	30
FHIA□-06	3/4B	50
FHIA□-08	1B	95
FHIA□-10	1 1/4B	150
FHIA□-12	1 1/2B	220
FHIA□-16	2B	350
FHIA□-20	2 1/2B	550
FHIA□-24	3B	770
FHIA□-28	3 1/2B	1000
FHIA□-32	4B	1300

The symbol represented by □ indicates the type of applicable hydraulic fluid. N: Petroleum, W: Water-glycol, Emulsion, V: Phosphoric ester
Note) Fitted with companion flange. (Flange configuration is exclusive to SMC.)

Accessory/Option

Description	Part no.	Note
Differential pressure indicator	CB-56H	Petroleum, Water-glycol, Emulsion
	CB-56H-V	Phosphoric ester
Differential pressure indication switch (N.C. and N.O. common)	CB-57H	Petroleum, Water-glycol, Emulsion
	CB-57H-V	Phosphoric ester
Blanking cap (for differential pressure indication part)	AG-12H	Petroleum
	AG-12H-W	Water-glycol, Emulsion
	AG-12H-V	Phosphoric ester

Flow Characteristics



Conditions Fluid: Turbine oil Class 2 VG56
Viscosity: 45 mm²/s
Filter material: Micromesh
Nominal filtration: 74 μm to 149 μm

SMC

How to Order

FH I A N – 04 – M 074 M R

Hydraulic filter

Model

I	Suction

Type

A	Vertical

Hydraulic fluid

N	Petroleum
W	Water-glycol, Emulsion
V	Phosphoric ester

Port size

04	1/2B
06	3/4B
08	1B
10	1 1/4B
12	1 1/2B
16	2B
20	2 1/2B
24	3B
28	3 1/2B
32	4B

Element

M	Micromesh

Nominal filtration

074	74 µm
105	105 µm
149	149 µm

Differential pressure indication

M	Differential pressure indicator
E	Differential pressure indication switch Note)
D	None (Blanking cap)

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

Relief valve

R	With relief valve
D	None (Blanking plate)

Made to Order

Nil	None
X0	Non-standard filtration

Note) Refer to page 32 for details.

Replacement Element Part No.

Port size (Nominal size)	74 µm (200 mesh)	105 µm (150 mesh)	149 µm (100 mesh)	Element size
04 (1/2B)	EM001H-074N	EM001H-105N	EM001H-149N	ø65 x 90
06 (3/4B), **08** (1B)	EM101H-074N	EM101H-105N	EM101H-149N	ø85 x 110
10 (1 1/4B), **12** (1 1/2B)	EM201H-074N	EM201H-105N	EM201H-149N	ø100 x 160
16 (2B)	EM301H-074N	EM301H-105N	EM301H-149N	ø120 x 180
20 (2 1/2B), **24** (3B)	EM401H-074N	EM401H-105N	EM401H-149N	ø140 x 200
28 (3 1/2B), **32** (4B)	EM501H-074N	EM501H-105N	EM501H-149N	ø180 x 260

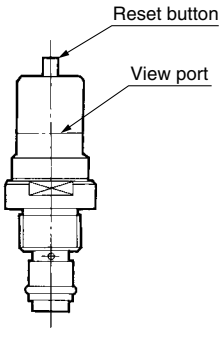
Note 1) The symbol at the end of the element part no. indicates the hydraulic fluid type.
N: Petroleum, Phosphoric ester, W: Water-glycol, Emulsion.
Note 2) Refer to page 32 for non-standard filtration.
Note 3) Above elements require one element per filter.

Differential Pressure Indication

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

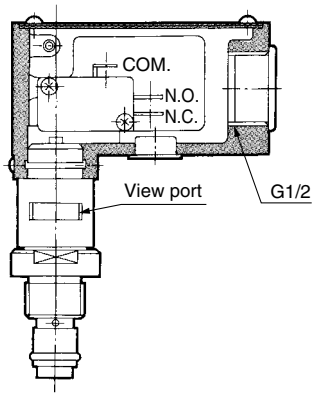
■ Differential pressure indicator

- Operating pressure—20 kPa
- 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—20 kPa
- 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



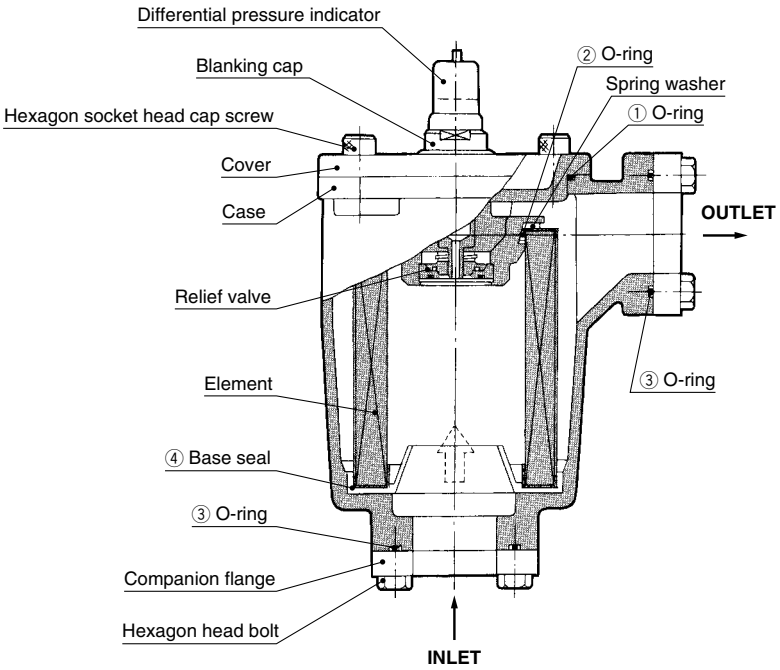
Microswitch Rating

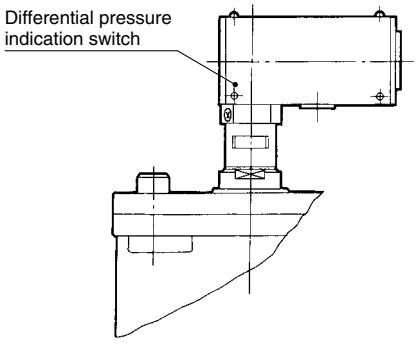
Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistance load		Light load		Inductive load		Motor load	
	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open
AC125	5		1.5	0.7	4		2.5	1.3
AC250	5		1	0.5	4		1.5	0.8
DC8	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.

Construction/Seal List





Differential pressure indication switch

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

No.			①	②	③	④
Description / Model		Hydraulic fluid type	O-ring for cover case	O-ring for element	O-ring for companion flange	Element base seal
			Standard	Standard	Standard	Part no.
FHIA N/W-	04	Petroleum, Emulsion, Water-glycol	JIS B2401-1A-G70	JIS B2401-1A-G35	JIS B2401-1A-G30	AL-196H
	06		JIS B2401-1A-G90	JIS B2401-1A-G50	JIS B2401-1A-G45	AL-197H
	08					
	10		JIS B2401-1A-G105	JIS B2401-1A-G65	JIS B2401-1A-G55	AL-198H
	12					
	16		JIS B2401-1A-G125	JIS B2401-1A-G80	JIS B2401-1A-G70	AL-199H
	20		JIS B2401-1A-G145	JIS B2401-1A-G100	JIS B2401-1A-G95	AL-200H
	24					
	28		JIS B2401-1A-G185	JIS B2401-1A-G140	JIS B2401-1A-G125	AL-201H
	32					
FHIA V-	04	Phosphoric ester	JIS B2401-4D-G70	JIS B2401-4D-G35	JIS B2401-4D-G30	AL-196H-V
	06		JIS B2401-4D-G90	JIS B2401-4D-G50	JIS B2401-4D-G45	AL-197H-V
	08					
	10		JIS B2401-4D-G105	JIS B2401-4D-G65	JIS B2401-4D-G55	AL-198H-V
	12					
	16		JIS B2401-4D-G125	JIS B2401-4D-G80	JIS B2401-4D-G70	AL-199H-V
	20		JIS B2401-4D-G145	JIS B2401-4D-G100	JIS B2401-4D-G95	AL-200H-V
	24					
	28		JIS B2401-4D-G185	JIS B2401-4D-G140	JIS B2401-4D-G125	AL-201H-V
	32					

Handling Precautions

① Mounting

- Confirm INLET and OUTLET before connecting.
- For maintenance, make sure to provide sufficient space above the filter for removing the element.

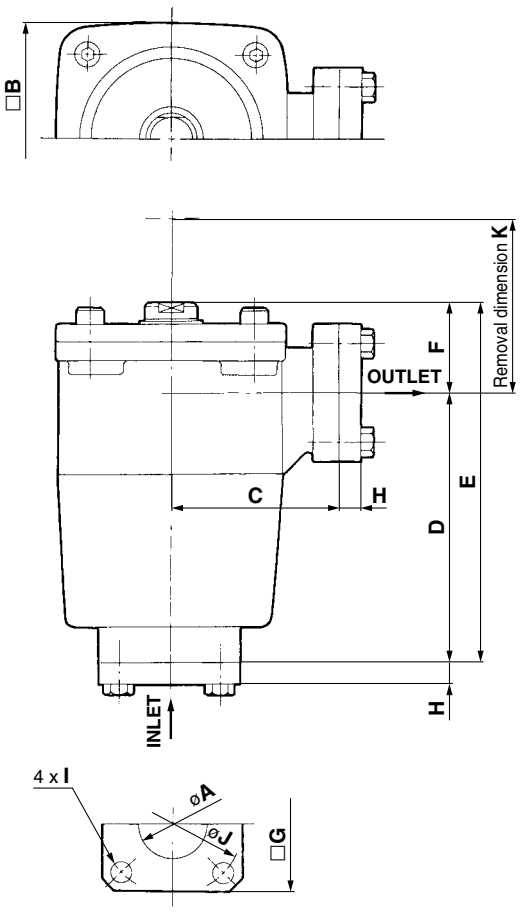
② Operation

- 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.
- If the differential pressure indicator is the reset type, make sure to reset it after normal operation starts in cold weather such as during winter.
- When using a differential pressure indication switch, 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.

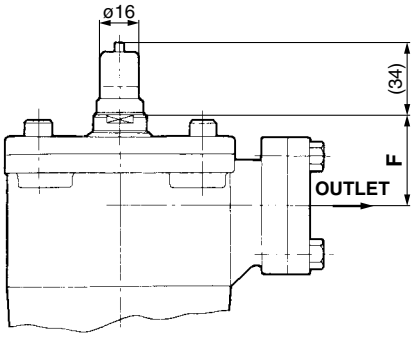
③ Element replacement

- When the pressure difference reaches 20 kPa during filter operation (actuating the differential pressure indicator), stop operation and either wash or replace the element.
- During disassembly and assembly, check that there is no cracking of or damage to the O-rings.
- When washing the element, do not wipe it using a stiff brush or rag.
- After washing the element, make sure the base seal is properly mounted.

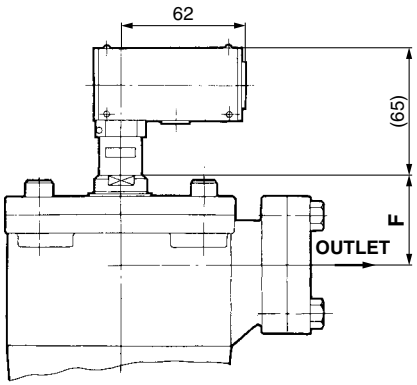
Dimensions



Differential pressure indicator



Differential pressure indication switch



(mm)

Model	A	B	C	D	E	F	G	H	I	J	K	Weight (kg)
FHIA□-04	22.2	90	72	116	154	38	60	11	M8 x 25	56	260	1.8
FHIA□-06	27.7	110	80	133	177	44	70	11	M8 x 25	70	290	2.7
FHIA□-08	34.5											
FHIA□-10	43.2	128	95	185	234	49	86	15	M10 x 30	86	340	4.6
FHIA□-12	49.1											
FHIA□-16	61.1	152	110	214	268.5	54.5	100	15	M12 x 35	102	370	6.1
FHIA□-20	77.1	176	125	220	290.5	70.5	120	15	M12 x 35	130	410	9.5
FHIA□-24	90.0											8.0
FHIA□-28	102.6	224	155	280	364.5	84.5	150	15	M16 x 40	166	490	14.0
FHIA□-32	115.4											13.5