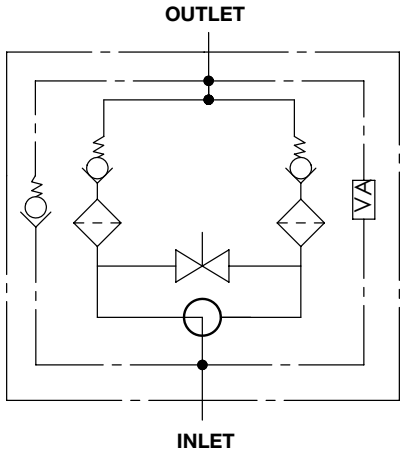
FMND Series

Inline Duplex Filters

3000 psi • up to 100 gpm

Hydraulic Symbol



Features

- The FMND filter consists of a ductile iron filter head with built-in changeover valve and three different lengths of screw-in filter bowls.
- The FMND filter can be supplied with or without bypass valve, (located in head assembly) but includes vent and drain screws, and also a connection for a differential pressure clogging indicator.
- Pressure equalization requirement is achieved by raising the changeover lever prior to switching it to the relevant filter side.
- Fatigue pressure rating = maximum allowable working pressure rating.
- Germanischer Lloyd (GL) approved
- This filter meets the requirements of DIN 24550 as follows:
  - Filter size 0160 with G 1-1/4" port selection
  - Filter size 0250 with G 1-1/2" port selection
  - Filter size 0400 with SAE-DN 38 1-1/2" Flange Port Selection

Applications

Technical Specifications

Mounting Method	4 Mounting holes
Port Connections	Inlet / Outlet 1-1/4" Threaded – SAE 20, 1-1/4" BSPP 1-1/2" Threaded – SAE 24, 1-1/2" BSPP 1-1/2" Flange-SAE-DN 38 Code 61
Flow Direction	Inlet: Side Outlet: Opposite Side
Construction Materials	
Head	Ductile iron
Bowl	Steel
Flow Capacity	
160	42 gpm (160 lpm)
250	66 gpm (250 lpm)
400	100 gpm (400 lpm)
Housing Pressure Rating	
Max. Allowable Working Pressure	3000 psi (207 bar)
Fatigue Pressure	3000 psi (210 bar) @ 1 million cycles
Burst Pressure	10,650 psi (735 bar)
Element Collapse Pressure Rating	
BH4HC	3045 psid (210 bar)
BN4HC, W/HC	290 psid (20 bar)
Fluid Temperature Range	14°F to 212°F (-10°C to 100°C)
Consult HYDAC for applications operating below 14°F (-10°C)	
Fluid Compatibility	
Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.	
Indicator Trip Pressure	
ΔP = 36.25 psid (2.5 bar) -10% *(optional)*	
ΔP = 50.75 psid (3.5 bar) +10% *(optional)*	
ΔP = 72 psid (5 bar) -10% *(standard)*	
ΔP = 116 psid (8 bar) -10% *(optional)* [Used with non-bypass]	
Bypass Valve Cracking Pressure	
ΔP = 102 psid (7 bar) +10%	

PN#02081318 / 07.19 / FIL1907-2109

Model Code

FMND BN/HC 250 L D F 10 C 1 . X / 12 - V -

Filter Type
FMND = Inline Duplex Filter

Element Media
BH/HC = Betamicron® *(High Collapse)* BN/HC = Betamicron® *(Low Collapse)*
W/HC = Wire Mesh

Size
160, 250, 400

Operating Pressure
L = 3000 psi (210 bar)

Type of Changeover
D = segment valve

Type and Size of Port
E = 1-1/4" Threaded – SAE 20, 1-1/4" BSPP
F = 1-1/2" Threaded – SAE 24, 1-1/2" BSPP
K = 1-1/2" Flange-SAE-DN 38 Code 61

Filtration Rating *(micron)*
3, 6, 10, 25 = BH/HC 3, 6, 10, 25 = BN/HC 25, 50, 100, 200 = W/HC

Type of ΔP Clogging Indicator
A, B, BM, C, D *(Others available upon request)*

Type Code
1

Modification Number *(the latest version is always supplied)*

Port Configuration
(omit) = SAE DN Flange
0 = BSPP Threaded
12 = SAE Straight Threaded

Seals
(omit) = Nitrile rubber (NBR)
V = Fluorocarbon elastomer (FKM) *(standard)*

Bypass Valve
(omit) = no bypass *(optional)*
B3.5 = 50.75 psid (3.5 bar) *(optional)*
B7 = 101.5 psid (7 bar) *(standard)*

Supplementary Details
L24, L48, L110, L220 = Lamp for D-type clogging indicator *(LXX, XX = voltage)*
RL = Flow Path reversed - Right inlet/Left outlet
SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids
cRUus = Electrical Indicator with underwriter's recognition
SFREE = Element specially designed to minimize electrostatic charge generation

Replacement Element Model Code

0250 DN 010 BN4HC / V

Size
0160, 0250, 0400

Type
DN

Filtration Rating *(micron)*
3, 6, 10, 25 = BN4HC
25, 50, 100, 200 = W/HC

Element Media
BN4HC, W/HC

Seals
(omit) = Nitrile rubber (NBR)
V = Fluorocarbon elastomer (FKM) *(standard)*

Supplementary Details
SFREE = *(same as above)*
SO263 = *(same as above)*

Clogging Indicator Model Code

VM 8 C . X / V

Indicator Prefix
VM = G 1/2 3000 psi

Trip Pressure
2 = 29 psid (2 bar) *(optional)*
5 = 72 psid (5 bar) *(optional)*
8 = 116 psid (8 bar)

Type of Indicator
A = No indicator, plugged port
B = Pop-up indicator *(auto reset)*
BM = Pop-up indicator *(manual reset)*
C = Electric switch - SPDT
D = Electric switch and LED light - SPDT

Modification Number

Supplementary Details

Seals
(omit)= Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

Light Voltage *(D type indicators only)*
L24 = 24V L110 = 110V

Thermal Lockout *(VM types C, D, J, and J4 only)*
T100 = Lockout below 100°F

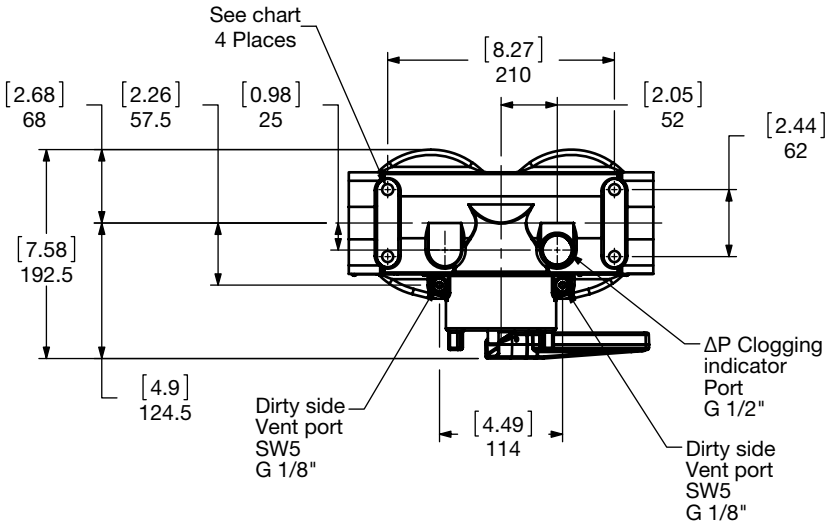
Underwriters Recognition *(VM types C, D, J, and J4 only)*
cRUus = Electrical Indicator with underwriter's recognition

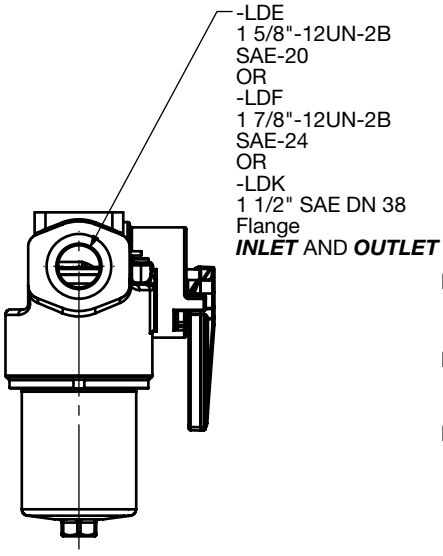
(For additional details and options, see Section H - Clogging Indicators.)

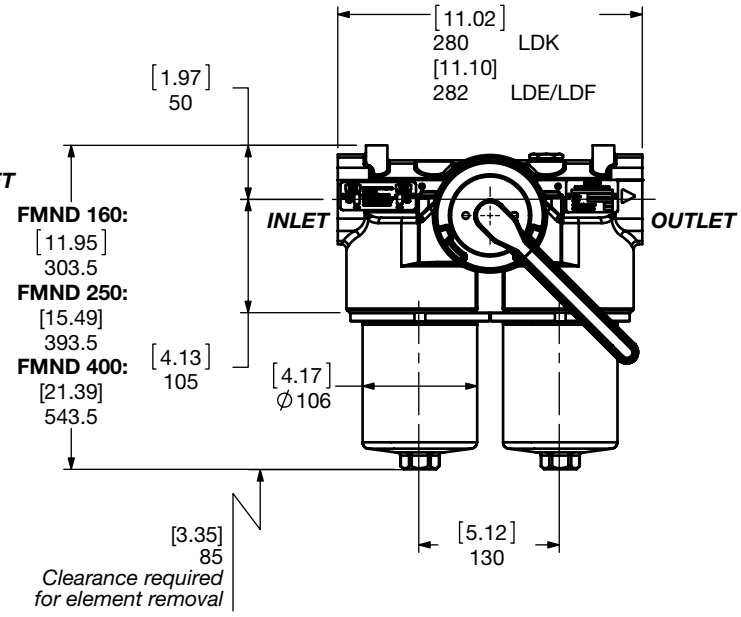
Model Codes Containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability

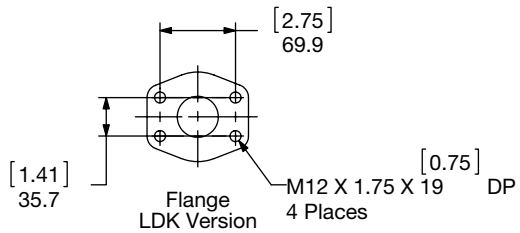
Dimensions
FMND 160/250/400

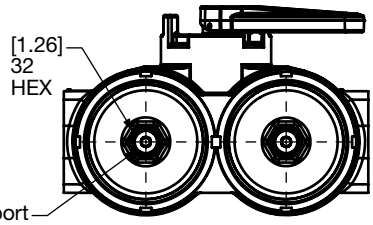
Model	Mounting Hole
FMND160-400LDE	M12X1.75 x 19mm Deep
FMND160-400LDE/12	3/8-24UNF x 14mm Deep
FMND160-400LDF	M12X1.75 x 19mm Deep
FMND160-400LDF/12	3/8-24UNF x 14mm Deep
FMND160-400LDK	M12X1.75 x 19mm Deep

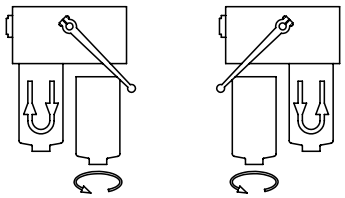












Before changing the element, relieve pressure in the filter housing.

Size	160	250	400
Weight (lbs.)	52.7	59.8	71.0

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Sizing Information

Total pressure loss through the filter is as follows:

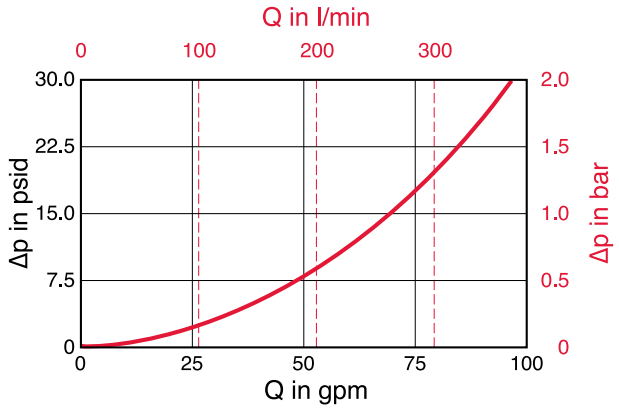
Assembly ΔP = Housing ΔP + Element ΔP

Housing Curve:

Pressure loss through housing is as follows:

$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! *(see "Sizing HYDAC Filter Assemblies" in Section B - Overview)*



Element K Factors

$$\Delta P \text{ Elements} = \underset{\text{(From Tables Below)}}{\text{Elements (K) Flow Factor}} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Betamicron	**...DN...BN/HC Elements** (Low Collapse)			
Size	**3µm**	**6 µm**	**10 µm**	**25 µm**
0160 DN XXX BN4HC	0.434	0.280	0.187	0.143
0250 DN XXX BN4HC	0.280	0.176	0.115	0.099
0400 DN XXX BN4HC	0.176	0.110	0.071	0.055

Wire Mesh	**...DN...W/HC Elements**			
Size	**25 µm**	**50 µm**	**100 µm**	**200 µm**
0160 DN XXX W/HC	0.009	0.009	0.009	0.009
0250 DN XXX W/HC	0.006	0.006	0.006	0.006
0400 DN XXX W/HC	0.004	0.004	0.004	0.004

Betamicron	**...DN...BH/HC Elements** (High Collapse)			
Size	**3 µm**	**6 µm**	**10 µm**	**25 µm**
0160 DN XXX BH4HC	0.439	0.280	0.209	0.137
0250 DN XXX BH4HC	0.296	0.187	0.154	0.104
0400 DN XXX BH4HC	0.187	0.115	0.093	0.060

All Element K Factors in psi / gpm.

FMND 160/250/400 LDK