

Top-Ported Pressure Filter

PF40



Features and Benefits

- Top-ported pressure filter
- All steel housing offers unparalleled fatigue rating
- Available with non-bypass option with high collapse element
- Two bowl lengths provide optimal sizing for the application
- Offered in conventional sub-plate, SAE straight thread, and ISO 228 porting
- Same day shipment model available

Model No. of filter in photograph is PF409HZ10.



**MINING
TECHNOLOGY**



**AUTOMOTIVE
MANUFACTURING**



**MACHINE
TOOL**



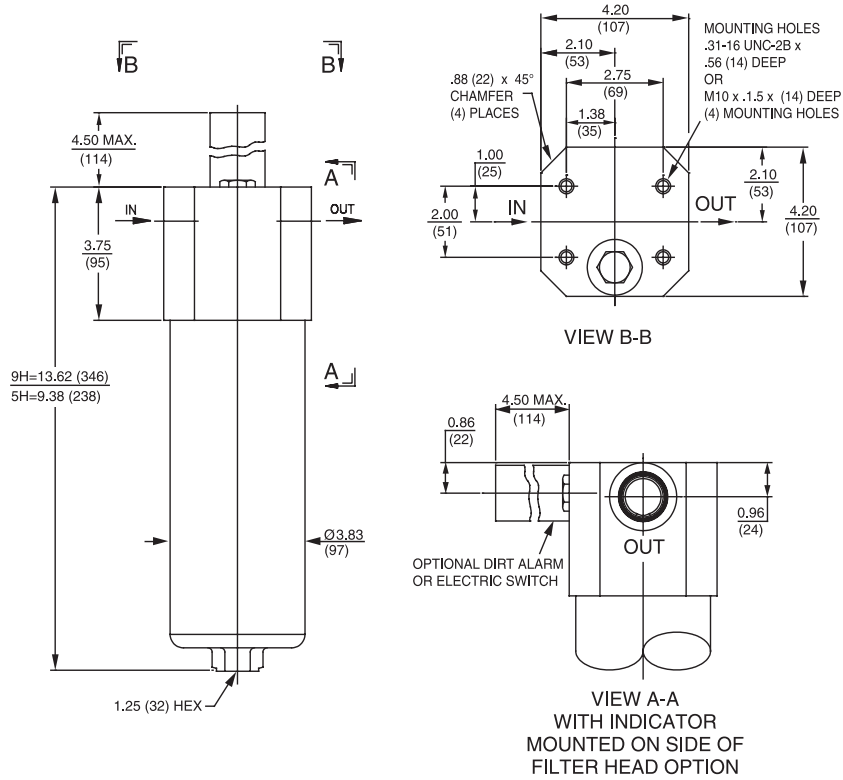
**MOBILE
VEHICLES**

Applications

NF30
NFS30
YF30
CFX30
PLD
DF40
CF40
PF40
RFS50
RF60
CF60
CTF60
VF60
LW60
KF30
TF50
KF50
KC50
MKF50
KC65
NOF30-05
NOF50-760
FOF60-03
NMF30
RMF60
Cartridge Elements
HS60
MHS60
KFH50

Flow Rating:	Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	4000 psi (275 bar)
Min. Yield Pressure:	12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2500 psi (173 bar), per NFPA T2.6.1-R1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 75 psi (5.2 bar)
Porting Head:	Steel
Element Case:	Steel
Weight of PF40-5H:	21.8 lbs. (9.9 kg)
Weight of PF40-9H:	25.5 lbs. (11.6 kg)
Element Change Clearance:	3.25" (83 mm)

Filter Housing Specifications



Metric dimensions in ().

Element Performance Information

Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio wrt ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
5HZ1/9HZ1	<1.0	<1.0	<1.0	<4.0	4.2
5HZ3/9HZ3	<1.0	<1.0	<2.0	<1.0	4.8
5HZ5/9HZ5	2.5	3.0	4.0	4.8	6.3
5HZ10/9HZ10	7.4	8.2	10.0	8.0	10.0
5HZ25/9HZ25	18.0	20.0	22.5	19.0	24.0
5HZX1/9HZX1	<1.0	<1.0	<1.0	<4.0	4.2
5HZX3/9HZX3	<1.0	<1.0	<2.0	<1.0	4.8
5HZX5/9HZX5	2.5	3.0	4.0	4.8	6.3
5HZX10/9HZX10	7.4	8.2	10.0	8.0	10.0
5HZX25/9HZX25	18.0	20.0	22.5	19.0	24.0

Dirt Holding Capacity

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
5HZ1	26	9HZ1	51	5HZX1	14	9HZX1	29
5HZ3	28	9HZ3	42	5HZX3	14	9HZX3	29
5HZ5	39	9HZ5	59	5HZX5	15	9HZX5	31
5HZ10	31	9HZ10	47	5HZX10	15	9HZX10	31
5HZ25	32	9HZ25	48	5HZX25	16	9HZX25	33

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse elements

Flow Direction: Outside In

Element Nominal Dimensions: 5H: 2.5" (100 mm) O.D. x 5.36" (136 mm) long
9H: 2.5" (100 mm) O.D. x 9.63" (244 mm) long

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Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose) and Z-Media® (synthetic)
High Water Content	All Z-Media® (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® (synthetic)
Phosphate Esters	All Z-Media® (synthetic) with H (EPR) seal designation

Fluid Compatibility

NF30
NFS30
YF30
CFX30
PLD

Pressure	Element		Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 40 psi (2.8 bar) bypass valve.				
	Series	Part No.	5HZ1	9HZ1			
To 4000 psi (275 bar)	Z-Media®	Z1	5HZ1	9HZ1			
		Z3	5HZ3		9HZ3		
		Z5	5HZ5		9HZ5		
		Z10	5HZ10			9HZ10	
		Z25	5HZ25			9HZ25	
Flow	gpm	0	10	20	30	40	50
	(L/min)	0	50	100	150	190	

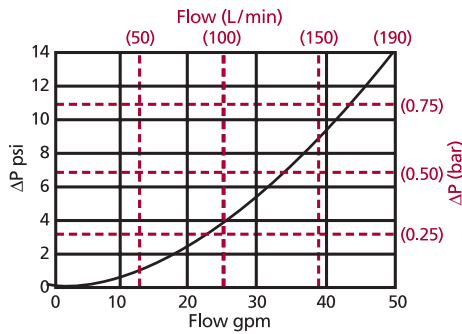
Element Selection Based on Flow Rate

DF40
CF40
PF40
RFS50
RF60
CF60

Shown above are the elements most commonly used in this housing.

ΔP_{housing}

PF40 ΔP_{housing} for fluids with sp gr = 0.86:



ΔP_{element}

ΔP_{element} = flow x element ΔP factor x viscosity factor

El. ΔP factors @ 150 SUS (32 cSt):

	5H	9H
Z1	2.01	1.07
Z3	0.77	0.41
Z5	0.65	0.35
Z10	0.44	0.23
Z25	0.29	0.15
ZX3	1.17	0.62
ZX10	0.50	0.26
ZX25	0.27	0.14

If working in units of bars & L/min, divide above factor by 54.9.

Viscosity factor: Divide viscosity by 150 SUS (32 cSt).

Pressure Drop Information Based on Flow Rate and Viscosity

CTF60
VF60
LW60
KF30
TF50
KF50
KC50
MKF50
KC65

sp gr = specific gravity

Sizing of elements should be based on element flow information provided in the Element Selection chart above.

Notes

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + \Delta P_{\text{element}}$$

Exercise:

Determine ΔP at 20 gpm (76 L/min) for PF405HZ10D5 using 200 SUS (44 cSt) fluid.

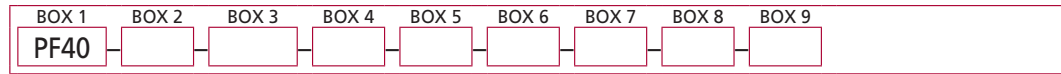
Solution:

$$\begin{aligned} \Delta P_{\text{housing}} &= 2.5 \text{ psi } [.17 \text{ bar}] \\ \Delta P_{\text{element}} &= 20 \times .44 \times (200 \div 150) = 11.7 \text{ psi} \\ &\text{or} \\ &= [76 \times (.44 \div 54.9) \times (44 \div 32) = .84 \text{ bar}] \\ \Delta P_{\text{total}} &= 2.5 + 11.7 = 14.2 \text{ psi} \\ &\text{or} \\ &= [.17 + .84 = 1.01 \text{ bar}] \end{aligned}$$

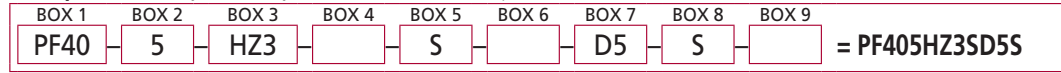
NOF30-05
NOF50-760
FOF60-03
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RMF60
Cartridge Elements
HS60
MHS60
KFH50

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder PF40:



Example: NOTE: Only box 6 may contain more than one option



BOX 1	BOX 2	BOX 3
Filter Series	Element Length (in)	Element Part Number
PF40	5	HZ1 = H size 1 μ Excellement® Z-Media® (synthetic) HZ3 = H size 3 μ Excellement® Z-Media® (synthetic) HZ5 = H size 5 μ Excellement® Z-Media® (synthetic) HZ10 = H size 10 μ Excellement® Z-Media® (synthetic) HZ25 = H size 25 μ Excellement® Z-Media® (synthetic) HZX3 = H size 3 μ Excellement® Z-Media® (high collapse center tube) HZX10 = H size 10 μ Excellement® Z-Media® (high collapse center tube) HZX25 = H size 25 μ Excellement® Z-Media® (high collapse center tube)
PFN40 <small>(Non-bypassing; requires ZX high collapse elements)</small>	9	

BOX 4	BOX 5	BOX 6
Seal Material	Porting	Options
Omit = Buna N H = EPR V = Viton® H.5 = Skydrol® compatibility	O = Manifold Mounting (Contact factory) S = SAE-16 B = ISO 228 G-1"	Omit = None L = Two ¼" NPTF inlet & outlet female test ports U = Schroeder Check 7/16"-20 UNF test point installation in head (upstream)

BOX 7		BOX 8
Dirt Alarm® Options		Dirt Alarm® Location
	Omit = None	Omit = Top mounted S = Side mounted
Visual	D5 = Visual pop-up	
Visual with Thermal Lockout	D8 = Visual w/ thermal lockout	
Electrical	MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable MS5LC = Low current MS5 MS10 = Electrical w/ DIN connector (male end only) MS10LC = Low current MS10 MS11 = Electrical w/ 12 ft. 4-conductor wire MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only) MS12LC = Low current MS12 MS16 = Electrical w/ weather-packed sealed connector MS16LC = Low current MS16 MS17LC = Electrical w/ 4 pin Brad Harrison male connector	BOX 9
Electrical with Thermal Lockout	MS5T = MS5 (see above) w/ thermal lockout MS5LCT = Low current MS5T MS10T = MS10 (see above) w/ thermal lockout MS10LCT = Low current MS10T MS12T = MS12 (see above) w/ thermal lockout MS12LCT = Low current MS12T MS16T = MS16 (see above) w/ thermal lockout MS16LCT = Low current MS16T MS17LCT = Low current MS17T	Bowl Drain Options
Electrical Visual	MS13 = Supplied w/ threaded connector & light MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)	Omit = None DR = Drain 7/16"-20
Electrical Visual with Thermal Lockout	MS13DCT = MS13 (see above), direct current, w/ thermal lockout MS13DCLCT = Low current MS13DCT MS14DCT = MS14 (see above), direct current, w/ thermal lockout MS14DCLCT = Low current MS14DCT	

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 5HZ10V

Box 4. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 5. B porting option supplied with metric mounting holes.