

# Base-Ported Pressure Filter

# KF50



## Features and Benefits

- Base-ported high pressure filter
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements

Model No. of filter in photograph is KF501K10SD.



INDUSTRIAL



AUTOMOTIVE  
MANUFACTURING



MACHINE  
TOOL



MINING  
TECHNOLOGY



STEEL  
MAKING



PULP & PAPER



AGRICULTURE



MOBILE  
VEHICLES



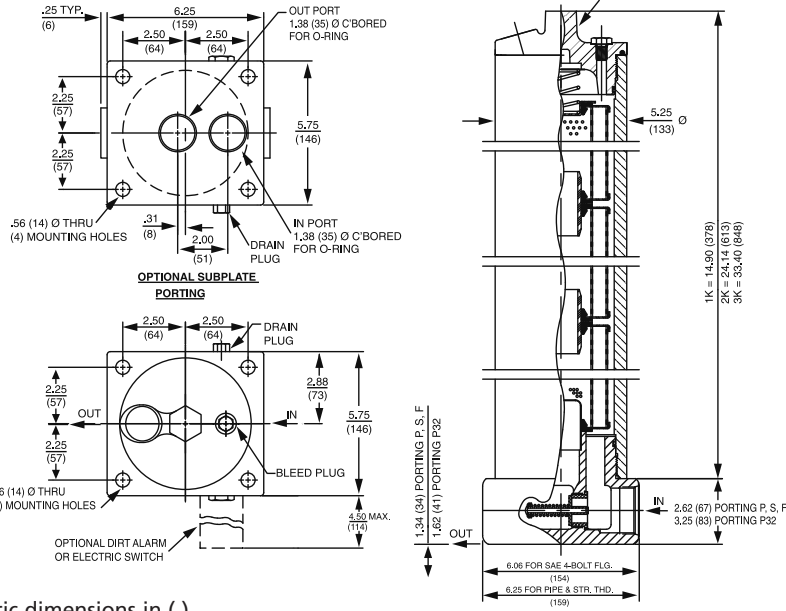
WASTE WATER  
TREATMENT

## 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

## Filter Housing Specifications

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids With 2" porting only, up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	5000 psi (345 bar)
Min. Yield Pressure:	15,000 psi (1035 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	3500 psi (240 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Optional Cracking: 50 psi (3.5 bar) Full Flow: 61 psi (4.2 bar) Non-bypassing model has a blocked bypass.
Porting Base & Cap: Element Case:	Ductile Iron Steel
Weight of KF50-1K:	59.7 lbs. (27.1 kg)
Weight of KF50-2K:	80.7 lbs. (36.6 kg)
Weight of KF50-3K:	102.0 lbs. (46.3 kg)
Element Change Clearance:	8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K



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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
K3/KK3/27K	6.8	7.5	10.0	N/A	N/A
K10/KK10/27K10	15.5	16.2	18.0	N/A	N/A
KZ1/KKZ1/27KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KKZ3/27KZ3/KAS3/KKAS3/27KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KKZ5/27KZ5/KAS5/KKAS5/27KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KKZ10/27KZ10/KAS10/KKAS10/27KAS10	7.4	8.2	10.0	8.0	10.0
KZ25/KKZ25/27KZ25	18.0	20.0	22.5	19.0	24.0
KZW1	N/A	N/A	N/A	<4.0	<4.0
KZW3/KKZW3	N/A	N/A	N/A	4.0	4.8
KZW5/KKZW5	N/A	N/A	N/A	5.1	6.4
KZW10/KKZW10	N/A	N/A	N/A	6.9	8.6
KZW25/KKZW25	N/A	N/A	N/A	15.4	18.5
KZX3/KKZX3/27KZX3	<1.0	<1.0	<2.0	4.7	5.8
KZX10/KKZX10/27KZX10	7.4	8.2	10.0	8.0	9.8

## Dirt Holding Capacity

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
K3	54	KK3	108	27K3	162				
K10	44	KK10	88	27K10	132				
KZ1	112	KKZ1	224	27KZ1	336	KZW1	61		
KZ3/KAS3	115	KKZ3/KKAS3	230	27KZ3/27KAS3	345	KZW3	64	KKZW3	128
KZ5/KAS5	119	KKZ5/KKAS5	238	27KZ5/27KAS5	357	KZW5	63	KKZW5	126
KZ10/KAS10	108	KKZ10	216	27KZ10/27KAS10	324	KZW10	57	KKZW10	114
KZ25	93	KKZ25	186	27KZ25	279	KZW25	79	KKZW25	158
KZX3	40*	KKZX3	80	27KZX3	120				
KZX10	49*	KKZX10	98	27KZX10	147				

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

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

\*Based on 100 psi terminal pressure

# Base-Ported Pressure Filter

# KF50

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose), Z-Media® and ASP Media (synthetic)
High Water Content	All Z-Media® and ASP Media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® (synthetic), 10 µ ASP Media
Water Glycols	3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP Media (synthetic)
Phosphate Esters	All Z-Media® and ASP Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation
Skydrol®	3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP Media (synthetic) with H.5 seal designation and W media (water removal) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

**Fluid Compatibility**

NF30  
NFS30  
YF30  
CFX30  
PLD

Skydrol® is a registered trademark of Solutia Inc.

Pressure	Element		Flow capacity 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.	1K3		2K3†		3K3			
To 5000 psi (345 bar)	E Media	K3	1K3		2K3†		3K3		See MKF50	
		K10	1K10		2K10†		3K10†		See MKF50	
		K25	1K25				2K25†			
	Z-Media®	KZ1	1KZ1			2KZ1†			3KZ1†	
		KZ3	1KZ3/KAS3/KKAS3/27KAS3			2KZ3†			3KZ3†	
		KZ5	1KZ5/KAS5/KKAS5/27KAS5			2KZ5†			3KZ5†	
		KZ10	1KZ10/KAS10/KKAS10/27KAS10			2KZ10†			3KZ10†	
KZ25	1KZ25				2KZ25†					
Flow	gpm	0	25	50	75	100	125	150		
	(L/min)	0	100	200	300	400	500	570		

**Flow Capacity Selection**  
Based on Pressure Drops

DF40  
CF40  
PF40  
RFS50  
RF60  
CF60  
CTF60

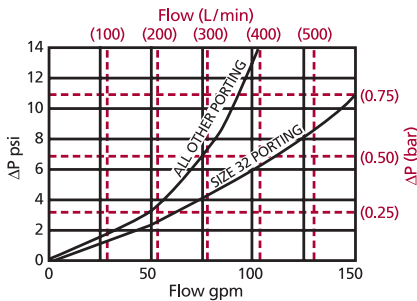
†Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively.      requires 2" porting (P32)

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

Note: Contact factory regarding use of E Media in High Water Content, Invert Emulsion and Water Glycol Applications. For more information, refer to Fluid Compatibility: Fire Resistant Fluids, pages 19 and 20.

## ΔP<sub>housing</sub>

KF50 ΔP<sub>housing</sub> for fluids with sp gr = 0.86:



sp gr = specific gravity

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

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

### Exercise:

Determine ΔP at 50 gpm (190 L/min) for KF501KZ3PD5 using 200 SUS (44 cSt) fluid.

### Solution:

$$\begin{aligned} \Delta P_{\text{housing}} &= 3.0 \text{ psi } [.20 \text{ bar}] \\ \Delta P_{\text{element}} &= 50 \times .10 \times (200 \div 150) = 6.7 \text{ psi} \\ &\text{or} \\ &= [190 \times (.10 \div 54.9) \times (44 \div 32) = .48 \text{ bar}] \\ \Delta P_{\text{total}} &= 3.0 + 6.7 = 9.7 \text{ psi} \\ &\text{or} \\ &= [.20 + .48 = .68 \text{ bar}] \end{aligned}$$

## ΔP<sub>element</sub>

$$\Delta P_{\text{element}} = \text{flow} \times \text{element } \Delta P \text{ factor} \times \text{viscosity factor}$$

El. ΔP factors @ 150 SUS (32 cSt):

	1K	2K/KK	3K/27K
K3	.25	.12	.08
K10	.09	.05	.03
K25	.02	.01	.01
KZ1	.20	.10	.05
KZ3/KAS3/KKAS3/27KAS3	.10	.05	.03
KZ5/KAS5/KKAS5/27KAS5	.08	.04	.02
KZ10/KAS10/ KKAS10/27KAS10	.05	.03	.02
KZ25	.04	.02	.01
KZX10	.08	.04	.03
	1K	2K	
KZW1	.43		
KZW3	.32	.16	
KZW5	.28	.14	
KZW10	.23	.12	
KZW25	.14	.07	

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

**KF50**

KC50

MKF50

KC65

NOF30-05

NOF50-760

FOF60-03

NMF30

RMF60

Cartridge Elements

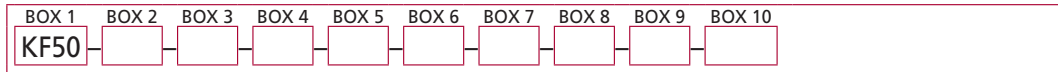
HS60

MHS60

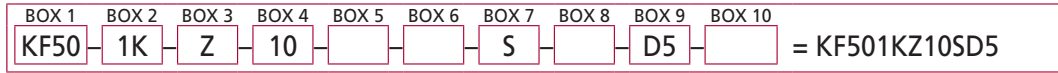
KFH50

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder KF50:



**Example:** NOTE: Only boxes 8 and 10 may contain more than one option



Filter Series	Number & Size of Elements	Media Type	Micron Rating
<b>KF50</b>	1 K, KK, 27K	Omit E Media (Cellulose)	1 = 1 Micron (Z, ZW, ZX media)
<b>KFN50</b> (Non-bypassing: requires ZX high collapse elements)	2 K	Z Excellement® Z-Media® (synthetic)	3 = 3 Micron (AS, E, Z, ZW, ZX media)
	3 K	AS Anti-Stat Media (synthetic)	5 = 5 Micron (AS, Z, ZW, ZX media)
		ZW Aqua-Excellement™ ZW Media	10 = 10 Micron (AS, E, M, Z, ZW, ZX media)
		ZX Excellement® Z-Media® (High Collapse centertube)	25 = 25 Micron (E, M, Z, ZW, ZX media)
		W W Media (water removal)	60 = 60 Micron (M media)
	M Media (reusable metal mesh)	150 = 150 Micron (M media)	
			260 = 260 Micron (M media)

Seal Material	Magnet Options	Porting	Options
Omit = Buna N V = Viton® H = EPR H.5 = Skydrol® compatibility	Omit = None  M = Magnet inserts (not available w/ indicator in cap)	P = 1½" NPTF P32 = 2" NPTF S = SAE-24 F = 1½" SAE 4-bolt flange Code 62 O = Subplate B24 = ISO 228 G-1½"	Omit = None  X = Blocked bypass  50 = 50 psi bypass setting  L = Two ¼" NPTF inlet and outlet female test ports  U = Series 1215 ¼" UNF Schroeder Check Test Point installed in cap (upstream)  UU = Series 1215 ¼" UNF Schroeder Check Test Point installed in block (upstream and downstream)

Dirt Alarm® Options		Additional Options
	Omit = None	Omit = None
Visual	D = Pointer D5 = Visual pop-up D5C = D5 in cap D9 = All stainless D5	N = No-Element Indicator (not available w/ KFN50 or housings w/ indicator in cap)
Visual with Thermal Lockout	D8 = Visual w/ thermal lockout D8C = D8 in cap	G509 = Dirt alarm and drain opposite standard
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	G588 = Electrical switch and drain opposite standard
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	
Electrical Visual	MS = Cam operated switch w/ ½" conduit female connection MS13 = Supplied w/ threaded connector & light MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)	
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. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length.
- Box 5. 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 7. For option F, bolt depth .75" (19 mm). For option O, O-rings included; hardware not included.
- Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.
- Box 10. Options N, G509 and G588 are not available with KFN50. N option should be used in conjunction with dirt alarm.