Return Line Filter KF3

Features and Benefits

- Meets HF4 automotive standard
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Various Dirt Alarm® options
- Available with No-Element indicator
- Available with NPTF inlet and outlet female test ports
- Available with magnet inserts
- Available with housing drain plug
- Takes the standard "K" element in K, KK or 27K lengths
- Allows consolidation of inventoried replacement elements by using K-size elements
- WKF3 model for water service available – refer to Section 7 of this catalog
- Also available with DirtCatcher® elements (KD & KKD)

100 gpm
380 L/min
300 psi
20 bar

Model No. of filter in photograph is KF31K10S.

Applications


INDUSTRIAL


AUTOMOTIVE MANUFACTURING

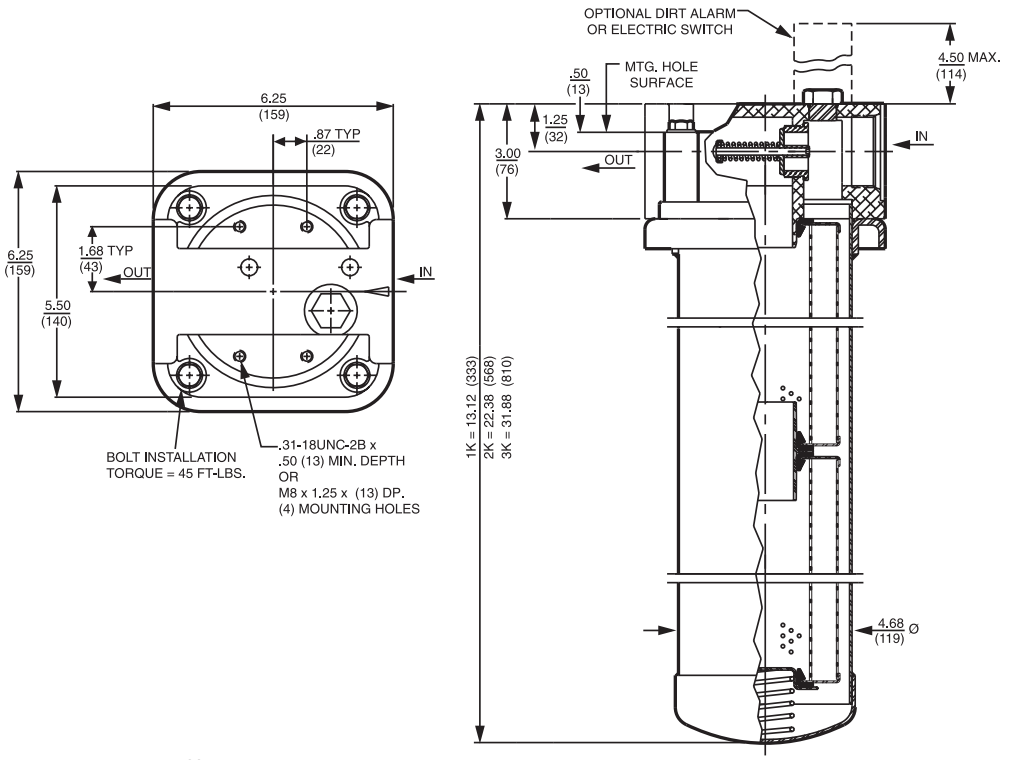

STEEL MAKING


MOBILE VEHICLES

Filter Housing Specifications

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	300 psi (20 bar)
Min. Yield Pressure:	1000 psi (70 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	290 psi (20 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 30 psi (2 bar) Full Flow: 51 psi (4 bar)
Porting Head: Element Case:	Die Cast Aluminum Steel
Weight of KF3-1K: Weight of KF3-2K: Weight of KF3-3K:	10.5 lbs. (4.8 kg) 14.2 lbs. (6.4 kg) 18.5 lbs. (8.4 kg)
Element Change Clearance:	1.50" (40 mm) for all lengths

KF3 Return Line Filter



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/KAS3/KKZ3/KKAS3/27KZ3/27KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KAS5/KKZ5/KKAS5/27KZ5/27KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KAS10/KKZ10/KKAS10/27KZ10/27KAS10	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

Dirt Holding Capacity

Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)
K3	54	KK3	108	27K3	162								
K10	44	KK10	88	27K10	132								
KZ1	112	KKZ1	224	27KZ1	336	KDZ1	89	KKDZ1	188	KZW1	61		
KZ3/KAS3	115	KKZ3/KKAS3	230	27KZ3/27KAS3	345	KDZ3	71	KKDZ3	150	KZW3	64	KKZW3	128
KZ5/KAS5	119	KKZ5/KKAS5	238	27KZ5/27KAS5	357	KDZ5	100	KKDZ5	210	KZW5	63	KKZW5	126
KZ10/KAS10	108	KKZ10/KKAS10	216	27KZ10/27KAS10	324	KDZ10	80	KKDZ10	168	KZW10	57	KKZW10	114
KZ25	93	KKZ25	186	27KZ25	279	KDZ25	81	KKDZ25	171	KZW25	79	KKZW25	158

Element Collapse Rating: 150 psid (10 bar) for standard elements

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

Fluid Compatibility

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 (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5, and 10 µ ASP Media (synthetic)
Phosphate Esters	All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and all ASP media (synthetic)
Skydrol®	3, 5, 10 and 25 µ Z-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) and all ASP media (synthetic)

Skydrol® is a registered trademark of Solutia Inc.

Element Selection
Based on Flow Rate

Pressure	Element Series	Element Part No.	Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 30 psi (2.1 bar) bypass valve.
To 300 psi (20 bar)	E Media	K3	1K3 — 2K3† — 3K3
		K10	1K10 — 2K10† — 3K10†
		K25	1K25 — 2K25†
	Z-Media®	KZ1	1KZ1 — 2KZ1† — 3KZ1†
		KZ3	1KZ3 — 2KZ3†
		KZ5	1KZ5 — 2KZ5†
		KZ10	1KZ10
		KZ25	1KZ25
	Flow	gpm	0 — 20 — 40 — 60 — 80 — 100
		(L/min)	0 — 50 — 150 — 250 — 380

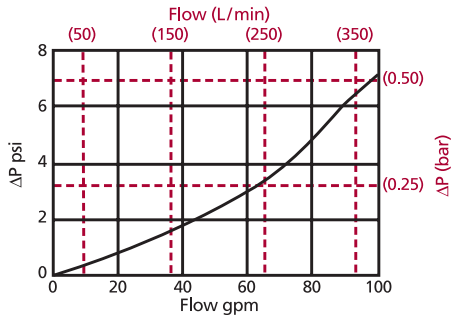
†Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively. Shown above are the elements most commonly used in this housing.

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.*

Pressure Drop Information
Based on Flow Rate and Viscosity

$\Delta P_{housing}$

KF3 $\Delta P_{housing}$ 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.

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

Exercise:

Determine ΔP at 60 gpm (225 L/min) for KF32KZ5SD5 using 200 SUS (44 cSt) fluid.

Solution:

$\Delta P_{housing}$ = 3.5 psi [.24 bar]

$\Delta P_{element}$ = 60 x .04 x (200÷150) = 3.2 psi
or
= [225 x (.04÷54.9) x (44÷32) = .23 bar]

ΔP_{total} = 3.5 + 3.2 = 6.7 psi
or
= [.24 + .23 = .47 bar]

$\Delta P_{element}$

$\Delta P_{element}$ = flow x element ΔP factor x viscosity factor

El. ΔP factors @ 150 SUS (32 cSt):

	1K	2K	3K		1K	2K
K3	.25	.12	.08			
K10	.09	.05	.03			
K25	.02	.01	.01			
KZ1	.20	.10	.05	**KDZ1**	.24	.12
KZ3/KAS3	.10	.05	.03	**KDZ3**	.12	.06
KZ5/KAS5	.08	.04	.02	**KDZ5**	.10	.05
KZ10/KAS10	.05	.03	.02	**KDZ10**	.06	.03
KZ25	.04	.02	.01	**KDZ25**	.04	.02

	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).

KF3 Return Line Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder KF3:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10
KF3									

Example: *NOTE: Only box 10 may contain more than one option*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	
KF3	1K	Z	10			S		D5		= KF31KZ10SD5

BOX 1 — Filter Series

KF3 (See Section 7 for Water Service version)

BOX 2 — Number & Size of Elements

1K, KK,27K
2K
3K

BOX 3 — Media Type

Omit = E media (cellulose)
ASP = Anti-Stat Pleat media
Z = Excellement® Z-Media® (synthetic)
ZW = Aqua-Excellement® ZW media
W = Water Removal media
M = M Media (reusable metal)
DZ = DirtCatcher® Excellement® Z-Media®

BOX 4 — Micron Rating

1 = 1 µ (Z, ZW and DZ media)
3 = 3 µ (E, AS, Z, ZW and DZ media)
5 = 5 µ (AS, Z, ZW and DZ media)
10 = 10 µ (E, AS, Z, ZW, M and DZ media)
25 = 25 µ (E, Z, ZW, M and DZ media)
60 = 60 µ (M media)

BOX 5 — Seal Material

Omit = Buna N
H = EPR
V = Viton®
H.5 = Skydrol® Compatibility
W = Buna N

BOX 6 — Magnet Option

Omit = None
M = Magnet

BOX 7 — Porting

P = 1½" NPTF
S = SAE-24
F = 1½" SAE4-bolt flange Code 61
B24 = ISO 228 G-1½"

BOX 8 — Bypass Setting

Omit = 30 psi cracking
50 = 50 psi cracking (req. for HF4)

BOX 9 — Dirt Alarm® Options

	Omit = None
Visual	D = Pointer 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
Electrical with Thermal Lockout	MS17LC = Electrical w/ 4 pin Brad Harrison male connector 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

BOX 10 — Additional Options

Omit = None
L = Two 1/4" NPTF inlet and outlet test ports
N = No-Element indicator
G426 = 3/4" drain on bottom of housing
G440 = 1/2" drain on bottom of housing

NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. ZW media not available in 27K.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5.

Box 5. For options H, W, 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 7. For option F, bolt thread depth .63" (16 mm). B porting option supplied with metric mounting holes.

Box 10. Option L not available with MS & MS2 dirt alarm options.