

# Return Line Filter with Threaded Bowl

# KL3



## Features and Benefits

- Threaded bowl allows for easier removal and facilitates element changes
- Available with 18LC and K-size elements
- Available with 1½" and 2" porting
- Offered in pipe, SAE straight thread, ISO 228, and flange porting
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with housing drain plug

**120 gpm**  
**455 L/min**  
**300 psi**  
**20 bar**

IRF  
 TF1  
 KF3  
**KL3**  
 LF1-2"  
 MLF1  
 RLD  
 GRTB  
 MTA  
 MTB  
 ZT

Model No. of filter in photograph is KL31KZ10F24.



**AUTOMOTIVE  
 MANUFACTURING**



**MACHINE  
 TOOL**



**MOBILE  
 VEHICLES**



**MINING  
 TECHNOLOGY**

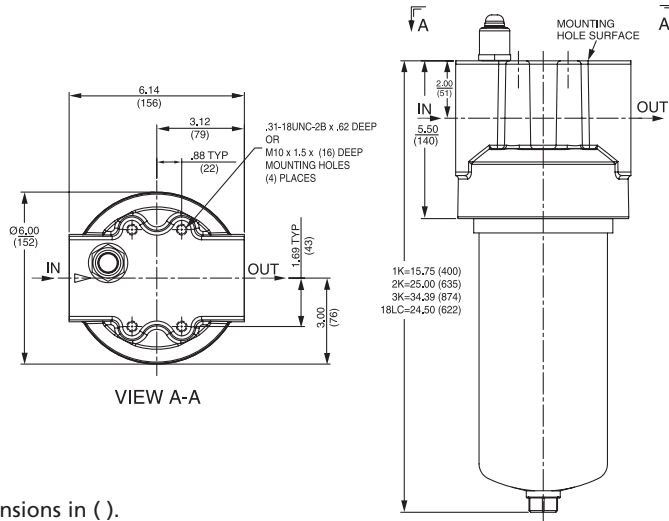
## Applications

KFT  
 RT  
 RTI  
 LRT  
 ART  
 BFT  
 QT

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids for P24, S24, F24 and B24 porting Up to 120 gpm (455 L/min) for 150 SUS (32 cSt) fluids for P32, S32 and B32 porting
Max. Operating Pressure:	300 psi (20 bar)
Min. Yield Pressure:	1000 psi (70 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	300 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: 68 psi (4.7 bar)
Porting Head:	Cast Aluminum
Element Case:	Steel
Weight of KL3-18LC:	20.00 lbs. (9.1 kg)
Weight of KL3-1K:	14.75 lbs. (6.7 kg)
Weight of KL3-2K:	18.50 lbs. (8.4 kg)
Weight of KL3-3K:	22.75 lbs. (10.3 kg)
Element Change Clearance:	2.50" (64 mm)

## Filter Housing Specifications

MRT  
 Accessories for Tank-Mounted Filters  
 PAF1  
 MAF1  
 MF2



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/KK3/27K3	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
18L3	6.8	7.5	10.0	N/A	N/A
18L10	15.5	16.2	18.0	N/A	N/A
18LZ1	<1.0	<1.0	<1.0	<4.0	4.2
18LZ3	<1.0	<1.0	<2.0	<4.0	4.8
18LZ5	2.5	3.0	4.0	4.8	6.3
18LZ10	7.4	8.2	10.0	8.0	10.0
18LZ25	18.0	20.0	22.5	19.0	24.0

## Dirt Holding Capacity

Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)
K3	54	KK3	108	27K3	162					18LC1	110
K10	44	KK10	88	27K10	132					18LC10	88
KZ1	112	KKZ1	224	27KZ1	336	KZW1	61			18LCZ1	200
KZ3/KAS3	115	KKZ3/KKAS3	230	27KZ3/27KAS3	345	KZW3	64	KKZW3	128	18LCZ3	205
KZ5/KAS5	119	KKZ5/KKAS5	238	27KZ5/27KAS5	357	KZW5	63	KKZW5	126	18LCZ5	228
KZ10/KAS10	108	KKZ10/KKAS10	216	27KZ10/27KAS10	324	KZW10	57	KKZW10	114	18LCZ10	203
KZ25	93	KKZ25	186	27KZ25	279	KZW25	79	KKZW25	158	18LCZ25	184

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
- 18LC: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

# Return Line Filter with Threaded Bowl

# KL3

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® with H (EPR) seal designation and all ASP media (synthetic)

**Fluid Compatibility**

IRF  
TF1  
KF3

**KL3**

**Element Selection Based on Flow Rate**

LF1-2"  
MLF1  
RLD  
GRTB  
MTA  
MTB  
ZT  
KFT  
RT  
RTI  
LRT  
ART  
BFT  
QT  
KTK  
LTK  
MRT

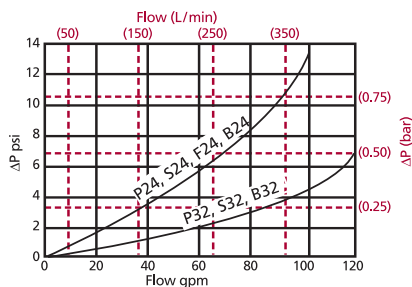
Pressure	Element		Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid, SAE-24 porting for K-size elements, SAE-32 porting for 18LC elements, and a 30 psi (2.1 bar) bypass valve.								
	Series	Part No.									
To 300 psi (20 bar)	E Media	K3	1K3	2K3	3K3						
		K10	1K10	2K10	3K10						
		K25	1K25	2K25							
		18LC3									
		18LC10									
	Z-Media®	KZ1	1KZ1	2KZ1	3KZ1						
		KZ3	1KZ3	2KZ3	3KZ3						
		KZ5	1KZ5	2KZ5	3KZ5						
		KZ10	1KZ10	2KZ10	3KZ10						
		KZ25	1KZ25	2KZ25							
		18LCZ1		18LCZ1							
		18LCZ3		18LCZ3							
		18LCZ5		18LCZ5							
		18LCZ10		18LCZ10							
		18LCZ25		18LCZ25							
		Flow		gpm	0	20	40	60	80	100	120
				(L/min)	0	100	200	300	400	455	

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>**

KL3 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.

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

**Exercise:**

Determine ΔP at 60 gpm (225 L/min) for KL32KZ10P24 using 200 SUS (44 cSt) fluid.

**Solution:**

$\Delta P_{housing} = 6 \text{ psi } [.4 \text{ bar}]$   
 $\Delta P_{element} = 60 \times .03 \times (200 \div 150) = 2.4 \text{ psi}$   
 or  
 $= [225 \times (.03 \div 54.9) \times (44 \div 32)] = .17 \text{ bar}$   
 $\Delta P_{total} = 6 + 2.4 = 8.4 \text{ psi}$   
 or  
 $= [.4 + .17 = .57 \text{ bar}]$

**ΔP<sub>element</sub>**

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

El. ΔP factors @ 150 SUS (32 cSt):

	1K	2K	3K		
K3	.25	.12	.08		
K10	.09	.05	.03	18LC3	.12
K25	.02	.01	.01	18LC10	.05
KZ1	.20	.10	.05	18LCZ1	.10
KZ3/KAS3	.10	.05	.03	18LCZ3	.05
KZ5/KAS5	.08	.04	.02	18LCZ5	.04
KZ10/KAS10	.05	.03	.02	18LCZ10	.03
KZ25	.04	.02	.01	18LCZ25	.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).

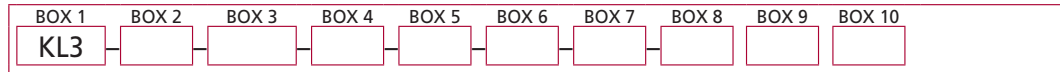
**Pressure Drop Information Based on Flow Rate and Viscosity**

Accessories for Tank-Mounted Filters

PAF1  
MAF1  
MF2

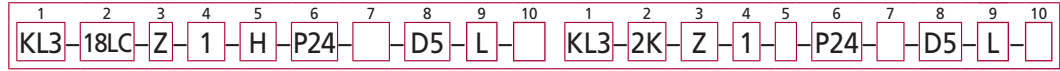
## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder KL3:



**Example: Option 1** NOTE: One option per box

**Option 2** NOTE: One option per box



BOX 1	BOX 2 Option 1	BOX 3 Option 1	BOX 4 Option 1
Filter Series	Size	Media Type	Micron Rating
KL3	18LC	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic)	1 = 1 µ (Z-Media®) 3 = 3 µ (E and Z-Media®) 5 = 5 µ (Z-Media®) 10 = 10 µ (E and Z-Media®) 25 = 25 µ (E and Z-Media®)

BOX 2 Option 2	BOX 3 Option 2	BOX 4 Option 2	BOX 5
Number & Size of Elements	Media Type	Micron Rating	Seal Material
1K, KK, 27K 2K 3K	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic) AS = Anti-Stat Pleat media (synthetic) ZW = Aqua-Excellement® ZW media W = Water Removal media M = M media (reusable metal) DZ = DirtCatcher® Excellement® Z-Media®	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)	Omit = Buna N H = EPR V = Viton® H.5 = Skydrol® Compatibility W = Buna N

BOX 6	BOX 7
Porting	Bypass Setting
P24 = 1½" NPTF S24 = SAE-24 F24 = 1½" SAE 4-bolt flange Code 61 B24 = ISO 228 G-1½" P32 = 2" NPTF S32 = SAE-32 B32 = SO 228 G-2"	Omit = 30 psi cracking 50 = 50 psi cracking (req. for HF4)

BOX 8		BOX 9	BOX 10
Dirt Alarm® Options		Test Port Options	Bowl Drain Option
	Omit = None	Omit = None	Omit = None
Visual	D5 = Visual pop-up	L = Two ¼" NPTF inlet and outlet female test ports	DR = ⅝"-20 drain on bottom of housing
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		
Electrical with Thermal Lockout	MS16 = Electrical w/ weather-packed sealed connector		
	MS16LC = Low current MS16		
	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		
Electrical Visual	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		
	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. 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. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. ZW media not available in 27K length. Example: 18LCZ3V

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 6. B24 and B32 porting options supplied with metric mounting holes. 18LC elements require 2" ports for up to 120 gpm. K size elements require 1½" ports for up to 100 gpm.