

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
- G** Available with quality-protected GeoSeal® Elements (GKL3)

120 gpm
455 L/min
300 psi
20 bar

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

KFT

RT

RTI

LRT

ART

BFT

QT

KTK

LTK

MRT

Model No. of filter in photograph is KL31KZ10F24.

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

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)

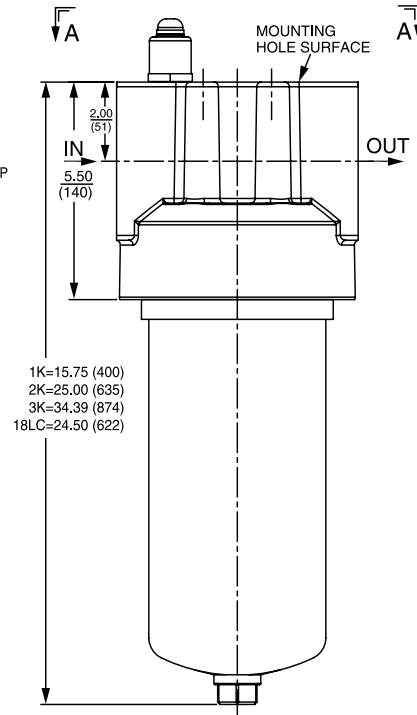
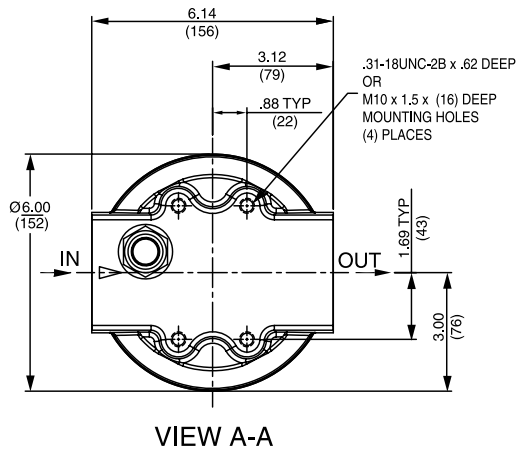
Fluid Compatibility

Accessories For Tank-Mounted Filters

PAF1

MAF1

MF2



Metric dimensions in ().

Element Performance Information & Dirt Holding Capacity

Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
KZ1/KKZ1/27KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KKZ3/27KZ3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KKZ5/27KZ5	2.5	3.0	4.0	4.8	6.3
KZ10/KKZ10/27KZ10	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
18LCZ1	<1.0	<1.0	<1.0	<4.0	4.2
18LCZ3	<1.0	<1.0	<2.0	<4.0	4.8
18LCZ5	2.5	3.0	4.0	4.8	6.3
18LCZ10	7.4	8.2	10.0	8.0	10.0
18LCZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)	Element	DHC (g)
KZ1	112	KKZ1	224	27KZ1	336	KZW1	61	18LCZ1	224		
KZ3	115	KKZ3	230	27KZ3	345	KZW3	64	KKZW3	128	18LCZ3	230
KZ5	119	KKZ5	238	27KZ5	357	KZW5	63	KKZW5	126	18LCZ5	238
KZ10	108	KKZ10	216	27KZ10	324	KZW10	57	KKZW10	114	18LCZ10	216
KZ25	93	KKZ25	186	27KZ25	279	KZW25	79	KKZW25	158	18LCZ25	186

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

Flow Direction: Outside In

Element Nominal Dimensions:

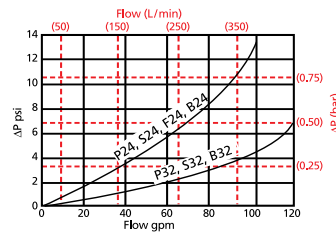
- K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long
- KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long
- 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long
- 18LC: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

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$\Delta P_{\text{housing}}$

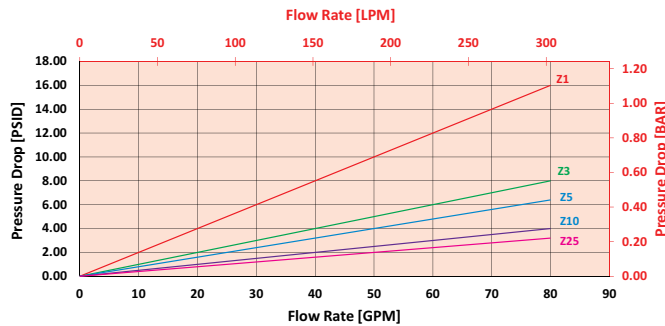
KL3 $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

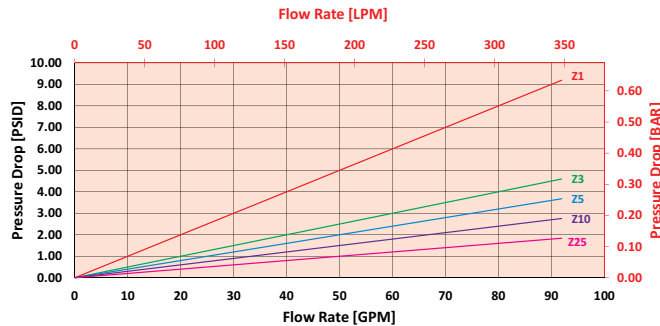
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:

Determine ΔP_{filter} at 70 gpm (265.3 L/min) for KL31KZ10P24D5L using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 70 gpm. In this case, $\Delta P_{\text{housing}}$ is 7 psi (.48 bar) on the graph for the KL3 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 70 gpm. In this case, $\Delta P_{\text{element}}$ is 3 psi (.21 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor (V_f)** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, ΔP_{filter} , is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} * V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

$$\Delta P_{\text{housing}} = 7 \text{ psi } [.48 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt) } / 150 \text{ SUS (32 cSt) } = 1.1$$

$$\Delta P_{\text{filter}} = 7 \text{ psi } + (3 \text{ psi } * 1.1) = 10.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .48 \text{ bar } + (.21 \text{ bar } * 1.1) = .71 \text{ bar}$$

Pressure Drop Information Based on Flow Rate and Viscosity

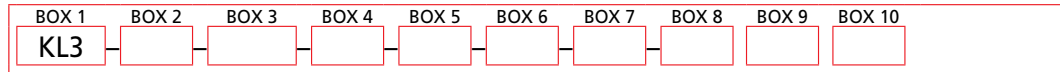
Note:

If your element is not graphed, use the following equation:
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$
 Plug this variable into the overall pressure drop equation.

Ele.	ΔP	Ele.	ΔP	Ele.	ΔP
K3	0.25	2K3/ KK3	0.12	18LC3	0.12
K10	0.09	2K10/ KK10	0.05	18L10	0.05
K25	0.02	2K25/ KK25	0.01	18LCZ1	0.10
KAS3	0.10	2KAS3/ KKAS3	0.05	18LCZ3	0.05
KAS5	0.08	2KAS5/ KKAS5	0.04	18LCZ5	0.04
KAS10	0.05	2KAS10/ KKAS10	0.03	18LCZ10	0.03
KZW1	0.43	2KZW1	-	18LCZ25	0.02
KZW3	0.32	2KZW3/ KKZW3	0.16		
KZW5	0.28	2KZW5/ KKZW5	0.14		
KZW10	0.23	2KZW10/ KKZW10	0.12		
KZW25	0.14	2KZW25/ KKZW25	0.07		

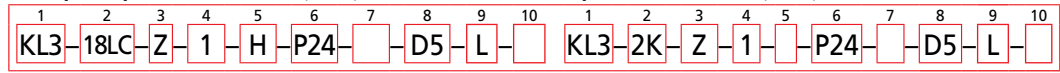
Filter Model Number Selection

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 Filter Series	BOX 2 Option 1 Size	BOX 3 Option 1 Media Type	BOX 4 Option 1 Micron Rating
KL3 GKL3 (GeoSeal®) WKL3 (Water)	18 LC	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic) Water System Element Option KM10 = 10 µ M media (reusable metal) KM25 = 25 µ M media (reusable metal) KM60 = 60 µ M media (reusable metal) KM150 = 150 µ M media (reusable metal) KM260 = 260 µ M media (reusable metal)	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 Number & Size of Elements	BOX 3 Option 2 Media Type	BOX 4 Option 2 Micron Rating	BOX 5 Seal Material
1K, KK, 27K 2K 3K	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic) AS = Anti-Static 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 Porting	BOX 7 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 Dirt Alarm® Options	BOX 9 Test Port Options	BOX 10 Bowl Drain Option
Omit = None Visual D5 = Visual pop-up Visual with Thermal Lockout D8 = Visual w/ thermal lockout	Omit = None L = Two ¼" NPTF inlet and outlet female test ports	Omit = None DR = ¾" drain on bottom of housing
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		
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 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.