

# Return Line Filter with 2" Ports

# LF1



### Features and Benefits

- Offered in pipe, SAE straight thread and ISO 228 porting
- Available in 18" element lengths only
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with 2" porting with "K" size element
- Available with housing drain plug

**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 LF118LCZ10P32D.

Flow Rating:	Up to 120 gpm (455 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:	250 psi (17 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 30 psi (2.1 bar) Full Flow: 60 psi (4.1 bar)
Porting Head:	Cast Aluminum
Element Case:	Steel
Available Porting:	2" NPTF, 2½-12 SAE Straight
Weight of LF1-18LC:	17.5 lbs. (7.9 kg)
Element Change Clearance:	2.0" (55 mm)

### Filter Housing Specifications

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
Skydrol®	3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

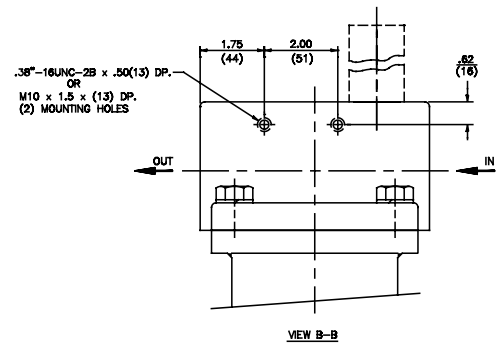
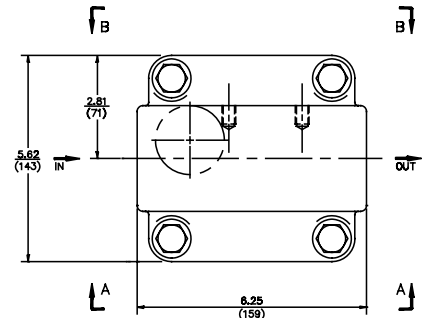
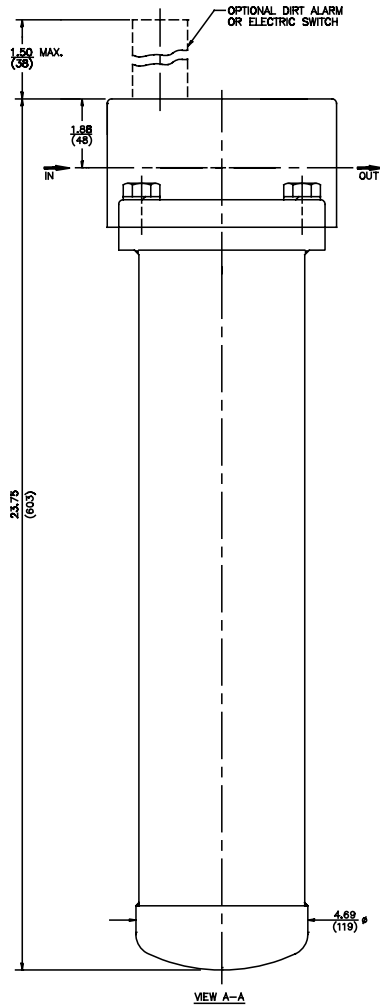
### Fluid Compatibility

### 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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(e) \geq 200$	$\beta_x(e) \geq 1000$
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 (gm)
18LCZ1	224
18LCZ3	230
18LCZ5	238
18LCZ10	216
18LCZ25	186

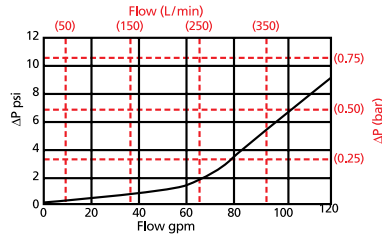
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

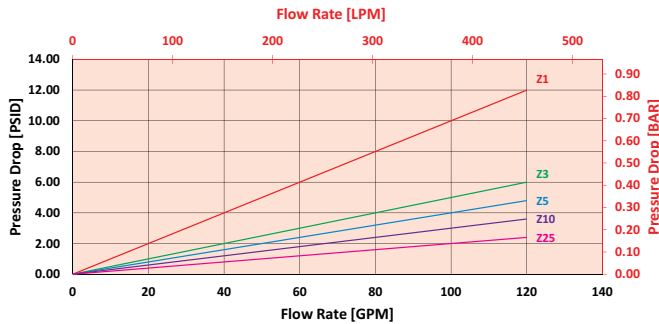
$\Delta P_{\text{housing}}$

LF1-2"  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



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

18LCZ 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  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for LF118LCZ3P32D5 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 2 psi (.14 bar) on the graph for the LF1 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 3.5 psi (.24 bar) according to the graph for the 18LCZ3 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,  $\Delta P_{\text{filter}}$ , 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:**

$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \mid \Delta P_{\text{element}} = 3.5 \text{ psi } [.24 \text{ bar}]$

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

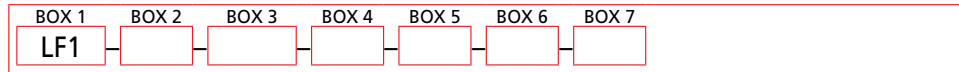
$\Delta P_{\text{filter}} = 2 \text{ psi } + (3.5 \text{ psi } * 1.1) = 5.9 \text{ psi}$

**OR**

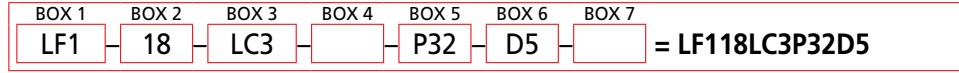
$\Delta P_{\text{filter}} = .14 \text{ bar } + (.24 \text{ bar } * 1.1) = .40 \text{ bar}$

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder LF1:



**Example:** NOTE: Only box 7 may contain more than one option



BOX 1	BOX 2	BOX 3	BOX 4
<b>Filter Series</b>	<b>Length of Element (in)</b>	<b>Element Size and Media</b>	<b>Seal Material</b>
LF1	18	LC3 = LC size 3 μ E media (cellulose) LC10 = LC size 10 μ E media (cellulose) LCZ1 = LC size 1 μ Excellement® Z-Media™ (synthetic) LCZ3 = LC size 3 μ Excellement Z-Media (synthetic) LCZ5 = LC size 5 μ Excellement Z-Media (synthetic) LCZ10 = LC size 10 μ Excellement Z-Media (synthetic) LCZ25 = LC size 25 μ Excellement Z-Media (synthetic)	Omit = Buna N H = EPR V = Viton® H.5 = Skydrol® Compatibility
WLF1 (Water)			

BOX 5	BOX 6	BOX 7
<b>Porting</b>	<b>Dirt Alarm® Options</b>	<b>Additional Options</b>
P32 = 2" NPTF	Omit = None	Omit = None
S32 = SAE-32	Visual D = Pointer	L = Two ¼" NPTF inlet and outlet female test ports
B32 = ISO 228 G-2"	D5 = Visual pop-up	G426 = ¾" drain on bottom of housing
	Visual with Thermal Lockout D8 = Visual w/ thermal lockout	G440 = ½" 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 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. Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 18LCZ3V

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.