

Top-Ported Return Line Filter

MLF1



Features and Benefits

- Equipped with inlet and outlet manifolds
- Meets HF4 automotive standard
- Offered in pipe and flange porting
- Available in 2, 4 or 6 element configurations
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with housing drain plugs

200 gpm
760 L/min
300 psi
20 bar

Model No. of filter in photograph is MLF14K10PD.



INDUSTRIAL



AUTOMOTIVE
MANUFACTURING



MACHINE
TOOL



STEEL
MAKING



MOBILE
VEHICLES



RAILROAD

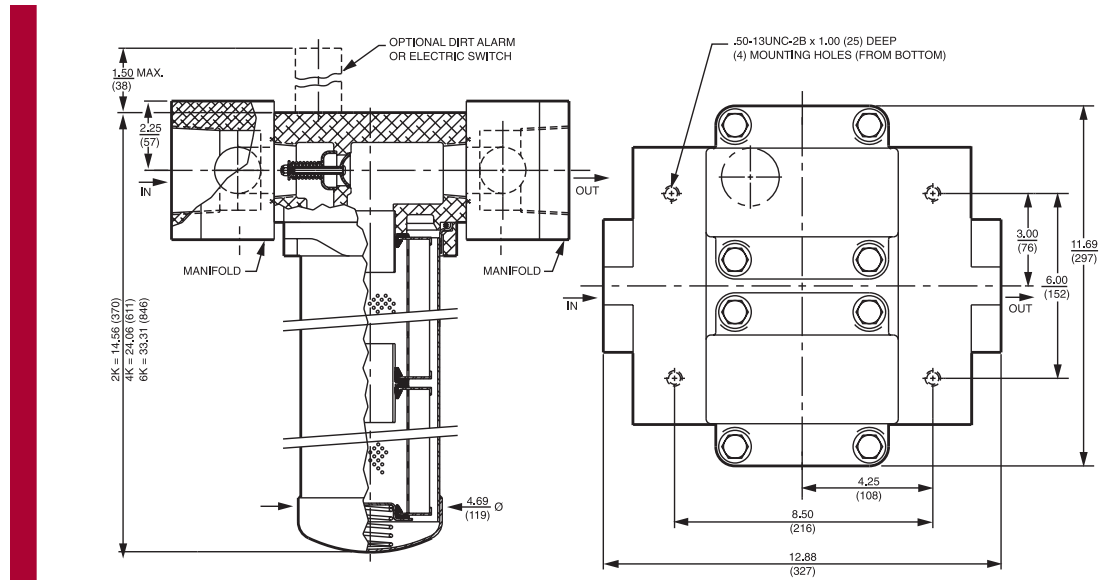
Applications

Flow Rating:	Up to 200 gpm (760 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: 25 psi (2 bar) Full Flow: 60 psi (4 bar)
Porting Head:	Anodized Cast Aluminum
Element Case:	Steel
Weight of MLF1-2K:	44.0 lbs. (20.0 kg)
Weight of MLF1-4K:	50.0 lbs. (23.0 kg)
Weight of MLF1-6K:	58.0 lbs. (26.0 kg)
Element Change Clearance:	2.0" (55 mm)

Filter Housing Specifications

Accessories for Tank-Mounted Filters

- IRF
- TF1
- KF3
- KL3
- LF1-2"
- MLF1**
- RLD
- GRTB
- MTA
- MTB
- ZT
- KFT
- RT
- RTI
- LRT
- ART
- BFT
- QT
- KTK
- LTK
- MRT
- 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	6.8	7.5	10.0	N/A	N/A
K10	15.5	16.2	18.0	N/A	N/A
KZ1	<1.0	<1.0	<1.0	<4.0	4.2
KZ3/KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KAS10	7.4	8.2	10.0	8.0	10.0
KZ25	18.0	20.0	22.5	19.0	24.0
KZW3	N/A	N/A	N/A	<4.0	4.8
KZW5	N/A	N/A	N/A	5.1	6.4
KZW10	N/A	N/A	N/A	6.9	8.6
KZW25	N/A	N/A	N/A	15.4	18.5

Dirt Holding Capacity

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
2K3	108	4K3	216	6K3	324		
2K10	88	4K10	176	6K10	264		
2KZ1	224	4KZ1	448	6KZ1	672		
2KZ3/2KAS3	230	4KZ3/4KAS3	460	6KZ3/6KAS3	690	KZW3	64
2KZ5/2KAS5	238	4KZ5/4KAS5	476	6KZ5/6KAS5	714	KZW5	63
2KZ10/2KAS10	216	4KZ10/4KAS10	432	6KZ10/6KAS10	648	KZW10	67
2KZ25	186	4KZ25	372	6KZ25	558	KZW25	79

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

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Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose), Z-Media® and ASP 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 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).

Fluid Compatibility

IRF
TF1
KF3
KL3
LF1-2"

Skydrol® is a registered trademark of Solutia Inc.

MLF1

Pressure	Element		Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 25 psi (1.7 bar) bypass valve.						
	Series	Part No.							
To 300 psi (20 bar)	E Media	K3	4K3		6K3				
		K10	4K10		6K10				
		K25	4K25						
	Z- Media®	KZ1	4KZ1		6KZ1				
		KZ3	2KZ3	4KZ3		6KZ3			
		KZ5	2KZ5	4KZ5		6KZ5			
		KZ10	2KZ10		4KZ10				
		KZ25	2KZ25		4KZ25				
	Flow	gpm	0	100	120	140	160	180	200
		(L/min)	0	200	400	600		760	

Element Selection Based on Flow Rate

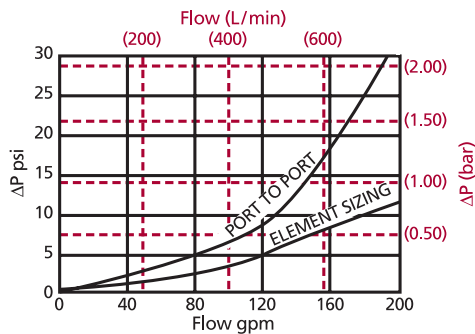
RLD
GRTB
MTA
MTB
ZT
KFT
RT
RTI

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_{housing}

MLF1 ΔP_{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.

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

The ΔP housing curve labeled "Element Sizing" is the pressure drop between the inlet and outlet areas of the filter's bypass valve and should be used for filter sizing. The "Port to Port" ΔP takes into consideration the inlet and outlet manifolds. This pressure drop can be significantly higher due to these additional flow constrictions. Although this ΔP does not affect the performance of the filter, it should be considered for overall system design.

ΔP_{element}

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

El. ΔP factors @ 150 SUS (32 cSt):

	2K	4K/KK	6K/27K	1K	2K
K3	.12	.06	.04		
K10	.05	.02	.02		
K25	.01	.01	.01		
KZ1	.10	.05	.03		
KZ3/ KAS3	.05	.03	.02	KZW3	.32 .16
KZ5/ KAS5	.04	.02	.02	KZW5	.28 .14
KZ10/ KAS10	.03	.02	.01	KZW10	.12
KZ25	.02	.01	.01	KZW25	.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

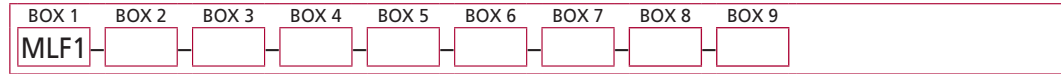
LRT
ART
BFT
QT
KTK
LTK
MRT

Accessories for Tank-Mounted Filters

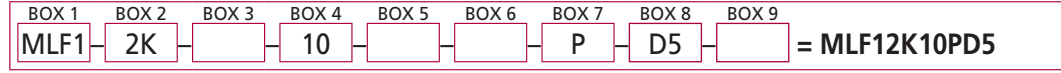
PAF1
MAF1
MF2

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder MLF1:



Example: NOTE: Only box 9 may contain more than one option



BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Number and Size of Elements	Media Type	Micron Rating
MLF1	2K, KK, 27K 4K 6K	Omit = E media (cellulose) Z = Excellement® Z-Media® (synthetic) AS = Anti-Stat Pleat media (synthetic) ZW = Aqua-Excellement™ ZW media DZ = Dirtcatcher® with Excellement® Z-Media® W = W media (water removal) M = M media (reusable metal mesh)	1 = 1 µ Z, ZW, and DZ media 3 = 3 µ AS,E, Z, ZW, and DZ media 5 = 5 µ AS, Z, ZW, DZ media 10 = 10 µ AS, E, M, Z, ZW, and DZ media 25 = 25 µ E, M, Z, ZW and DZ media 60 = 60 µ M media 150 = 150 µ M media

BOX 5	BOX 6	BOX 7
Seal Material	Magnet Option	Porting
Omit = Buna N H = EPR V = Viton® H.5 = Skydrol® Compatibility	Omit = None M = Magnet inserts	P = 2½" NPTF F = 2½" SAE 4-bolt flange Code 61

BOX 8	BOX 9
Dirt Alarm® Options	Additional Options
Omit = None	Omit = None
Visual D = Pointer D5 = Visual pop-up	L = Two ¼" NPTF inlet and outlet female test ports
Visual with Thermal Lockout D8 = Visual w/ thermal lockout	G426 = ¾" drain on bottom of housing 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. Double and triple stacking of K-size elements can be replaced by KK and 27K elements, respectively. Number of elements must equal 2 when using KK or 27K elements.
- Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. K25 is not available with EPR seals.
- Box 5. 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.