

# Tank-Mounted Filter

# RT



## Features and Benefits

- Low pressure tank-mounted filter with up to 3 inlet ports
- Meets HF4 automotive standard
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- RTW model allows filter to be welded to tank, instead of being bolted
- Double and triple stacking of K-size element can be replaced by single KK or 27K-size element
- Also available with new DirtCatcher® elements (KDZ and KKDZ)
- Various Dirt Alarm® options
- Allows consolidation of inventoried replacement elements by using K-size elements
- Available with Patented GeoSeal® Elements. See Section 8 – GeoSeal Filters (page 345) for details.

**100 gpm**  
**380 L/min**  
**100 psi**  
**7 bar**

Model No. of filter in photograph is RT1K10S24NP16CY2.



INDUSTRIAL



AUTOMOTIVE  
MANUFACTURING



MOBILE  
VEHICLES



STEEL  
MAKING



MACHINE  
TOOL

## Applications

IRF  
TF1  
KF3  
KL3  
LF1-2"  
MLF1  
RLD  
GRTB  
MTA  
MTB  
ZT  
KFT  
**RT**  
RTI  
LRT  
ART  
BFT  
QT  
KTK  
LTK  
MRT

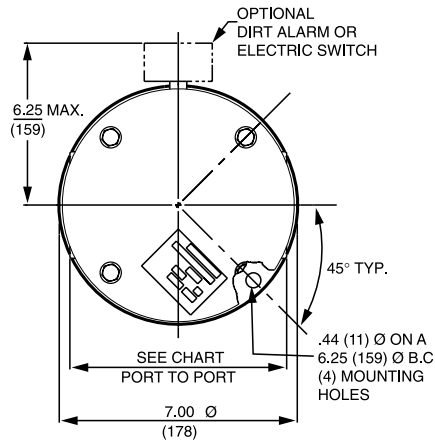
Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	100 psi (7 bar)
Min. Yield Pressure:	400 psi (28 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	90 psi (6 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 25 psi (1.7 bar) Full Flow: 48 psi (3.3 bar)
Porting Head & Cap:	Die Cast Aluminum
Element Case:	Steel
Weight of RT-1K:	11.4 lbs. (5.2 kg)
Weight of RT-2K:	14.5 lbs. (6.6 kg)
Element Change Clearance:	8.0" (205 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K

## Filter Housing Specifications

Accessories for Tank-Mounted Filters

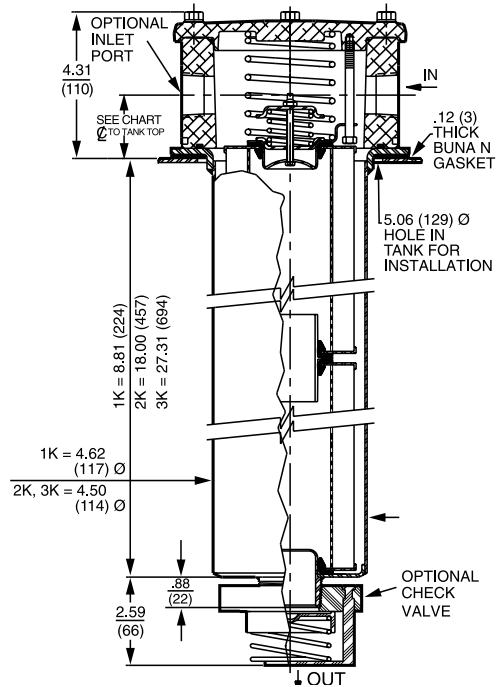
PAF1  
MAF1  
MF2

# Tank-Mounted Filter



	1½" Ports 4-Bolt Flange Only	2" Ports	All Other Porting
Port to Port	7.12"	7.56" (P, S, B)	6.38"
☐ to Casting Base	1.75"	1.81"	1.56"
☐ to Tank Top	2.06"	2.12"	1.88"

Optional mounting rings available for tank welding. See page 307, reference part numbers A-LFT-813 and A-LFT-1448.



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 per ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
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/KKZ3/27KZ3/ KAS3/KKAS3/27KAS3	<1.0	<1.0	<2.0	<4.0	4.8
KZ5/KKZ5/27KZ5/ KAS5/KKAS5/27KAS5	2.5	3.0	4.0	4.8	6.3
KZ10/KKZ10/27KZ10/ KAS10/KKAS10/27KAS10	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 (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)		
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 See RTI, page 275 for inside out flow version.

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

# Tank-Mounted Filter

# RT

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose), Z-Media <sup>®</sup> and ASP <sup>®</sup> media (synthetic)
High Water Content	All Z-Media <sup>®</sup> and all ASP <sup>®</sup> media (synthetic)
Invert Emulsions	10 and 25 μ Z-Media <sup>®</sup> and 10 μ ASP <sup>®</sup> media (synthetic)
Water Glycols	3, 5, 10 and 25 μ Z-Media <sup>®</sup> and all ASP <sup>®</sup> media (synthetic)
Phosphate Esters	All Z-Media <sup>®</sup> (synthetic) with H (EPR) seal designation and 3 and 10 μ E media (cellulose) with H (EPR) seal designation and all ASP <sup>®</sup> Media (synthetic)
Skydrol <sup>®</sup>	3, 5, 10 and 25 μ Z-Media <sup>®</sup> (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 <sup>®</sup> media (synthetic)

## Fluid Compatibility

IRF  
TF1  
KF3  
KL3  
LF1-2"

Skydrol<sup>®</sup> 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.				
Return Line -Tank-Mounted	E Media	K3	1K3	2K3 <sup>†</sup>	3K3 <sup>†</sup>	
		K10	1K10	2K10 <sup>†</sup>		
		K25	1K25	2K25 <sup>†</sup>		
	Z-Media <sup>®</sup>	KZ1	1KZ1	2KZ1 <sup>†</sup>		
		KZ3	1KZ3	2KZ3 <sup>†</sup>		
		KZ5	1KZ5	2KZ5 <sup>†</sup>		
		KZ10	1KZ10			
	KZ25	1KZ25				
Flow	gpm	0	40	60	80	100
	(L/min)	0	50	150	250	380

## Element Selection Based on Flow Rate

RLD  
GRTB  
MTA  
MTB  
ZT  
KFT

RT

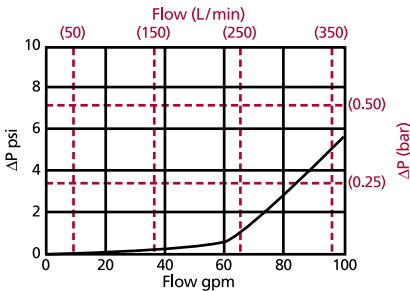
†Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively. Same flow rate applies.

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 21 and 22.

### ΔP<sub>housing</sub>

RT 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.

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

### Exercise:

Determine ΔP at 80 gpm (300 L/min) for RT1KZ10P24NN using 200 SUS (44 cSt) fluid.

### Solution:

$$\begin{aligned} \Delta P_{\text{housing}} &= 3.0 \text{ psi } [.20 \text{ bar}] \\ \Delta P_{\text{element}} &= 80 \times .05 \times (200 \div 150) = 5.3 \text{ psi} \\ &\text{or} \\ &= [300 \times (.05 \div 54.9) \times (44 \div 32) = .38 \text{ bar}] \\ \Delta P_{\text{total}} &= 3.0 + 5.3 = 8.3 \text{ psi} \\ &\text{or} \\ &= [.20 + .38 = .58 \text{ bar}] \end{aligned}$$

### ΔP<sub>element</sub>

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

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).

## Pressure Drop Information Based on Flow Rate and Viscosity

LRT  
ART  
BFT  
QT  
KTK  
LTK  
MRT

Accessories for Tank-Mounted Filters

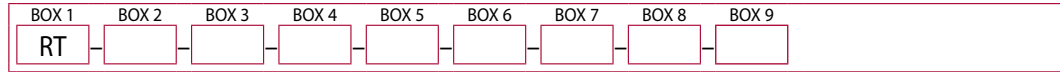
PAF1

MAF1

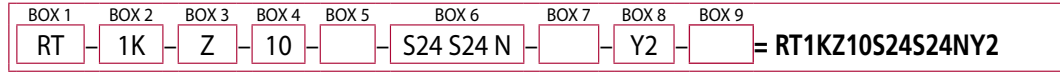
MF2

## Filter Model Number Selection

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



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



BOX 1	BOX 2	BOX 3	BOX 4
<b>Filter Series</b>	<b>Element Size and Length</b>	<b>Media Type</b>	<b>Element Part Number</b>
RT	1K KK, 27K	Omit = E media (cellulose)	1 = 1 μ Z, ZW, and DZ media
RTW	2K	Z = Excellement® Z-Media® (synthetic)	3 = 3 μ AS, E, Z, ZW, and DZ media
	3K	AS = Anti-Static Pleat Media (synthetic)	5 = 5 μ AS, Z, ZW, and DZ media
		ZW = Aqua-Excellement™ ZW media	10 = 10 μ AS, E, M, Z, ZW, and DZ media
		DZ = Dirtcatcher® with Excellement® Z-Media®	25 = 25 μ E, M, Z, ZW, and DZ media
		W = W media (water removal)	60 = 60 μ M media
		M = M media (reusable metal mesh)	

BOX 5	BOX 6 Specification of all 3 ports is required
<b>Seal Material</b>	<b>Inlet Porting</b>
Omit = Buna N	Port A
H = EPR	Port B
W = Buna N	Port C
H.5 = Skydrol® Compatibility	
	N = None
	P16 = 1" NPTF
	P20 = 1 1/4" NPTF
	P24 = 1 1/2" NPTF
	P32 = 2" NPTF
	S16 = SAE-16
	S20 = SAE-20
	S24 = SAE-24
	S32 = SAE-32
	F20 = 1 1/4" SAE 4-bolt flange Code 61
	F24 = 1 1/2" SAE 4-bolt flange Code 61
	F32 = 2" SAE 4-bolt flange Code 61
	B24 = ISO 228 G-1 1/2"

**Inlet Porting Location**

D 1/8" NPTF Standard

Top View

A B C

BOX 7	BOX 8
<b>Outlet Porting Options</b>	<b>Dirt Alarm® Options</b>
Omit = 1 1/2" NPT male	Omit = None
C = Check valve	Located @ Port D Visual Y2 = Back-mounted tri-color gauge
D = Diffuser	Electrical ES = Electric switch
CD = Check valve & diffuser	ES3 = Electric switch with DIN connector
T = 13" Tube extension	Located in cap Visual Y2C = Bottom-mounted tri-color gauge
A = Non-threaded outlet	Y5 = Back-mounted gauge in cap
	Located @ Port C Visual Y2R = Back-mounted gauge mounted on opposite side of standard location
	Electrical ESR = Electric switch mounted on opposite side of standard location
	ES1R = Heavy-duty electric switch mounted on opposite side of standard location

BOX 9
<b>Additional Options</b>
Omit = None
G2293 = Cork gasket
G547 = Two 1/8" gauge ports
G820 = Stamped cap
N = No-Element indicator
M = Metric thread for SAE 4-bolt flange mounting holes (specify after each port designation)
30 = 30 psi bypass setting
40 = 40 psi bypass setting
50 = 50 psi bypass setting

**NOTES:**

- Box 1. RTW allows filter to be welded to tank instead of bolted.
- Box 2. Number of elements must equal 1 when using KK or 27K elements.
- Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length.
- Box 5. For options H, W, 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. Skydrol® is a registered trademark of Solutia Inc.
- Box 6. If using Port B, Port A & B must always be the same type and size. Example: (A) P20 (B) P20 (C) P16
- Box 7. See also "Accessories for Tank-Mounted Filters," page 307.