

# 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

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

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

Model No. of filter in photograph is RT1K10S24NP16CY2.



INDUSTRIAL



AUTOMOTIVE  
 MANUFACTURING



MOBILE  
 VEHICLES



STEEL  
 MAKING



MACHINE  
 TOOL

## Applications

KFT  
**RT**  
 RTI  
 LRT  
 ART  
 BFT  
 QT  
 KTK  
 LTK  
 MRT

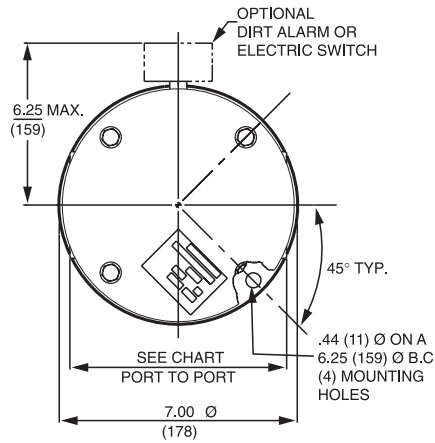
Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	100 psi (7 bar)
Min. Yield Pressure:	400 psi (28 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	90 psi (6 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 25 psi (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

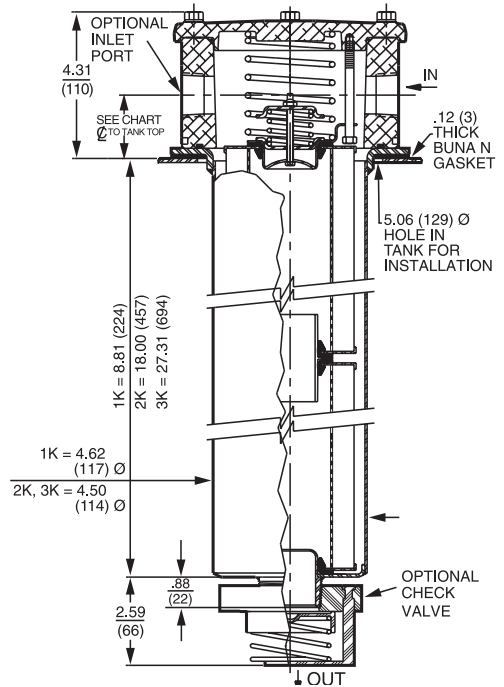
PAF1  
 MAF1  
 MF2

# Tank-Mounted Filter



	1½" Ports 4-Bolt Flange Only	2" Ports	All Other Porting
Port to Port	7.12"	7.56" (P, S, B) 7.38" (F)	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 295, 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 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/KK3/27K	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 263](#) 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® and ASP media (synthetic)
High Water Content	All Z-Media® and all ASP media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and all ASP 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"  
MLF1

Skydrol® is a registered trademark of Solutia Inc.

## Element Selection Based on Flow Rate

RLD  
GRTB  
MTA  
MTB  
ZT  
KFT

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.	1K3	2K3 <sup>†</sup>	3K3 <sup>†</sup>	
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®	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

<sup>†</sup>Double and triple stacking of K-size elements can be replaced by single KK & 27K elements, respectively. 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.

RT

RTI

LRT

ART

BFT

QT

KTK

LTK

MRT

Accessories for Tank-Mounted Filters

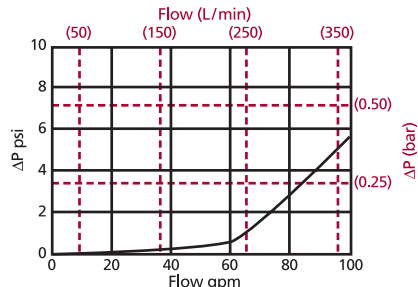
PAF1

MAF1

MF2

## 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>

ΔP<sub>element</sub> = flow x element ΔP factor x 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

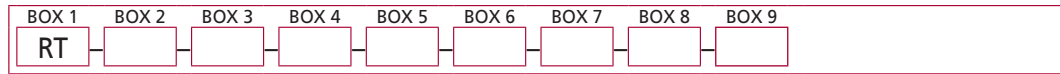
	1K	2K
KZW1	.43	
KZW3	.32	.16
KZW5	.28	.14
KZW10	.23	.12
KZW25	.14	.07

If working in units of bars & L/min, divide above factor by 54.9.

Viscosity factor: Divide viscosity by 150 SUS (32 cSt).

## 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
Filter Series	Element Size and Length	Media Type	Element Part Number
RT	1K KK, 27K	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, and 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
RTW	2K 3K		

BOX 5	BOX 6 Specification of all 3 ports is required		
Seal Material	Inlet Porting		
Omit = Buna N H = EPR W = Buna N H.5 = Skydrol® Compatibility	Port A	Port B	Port C
	N = None	N = None	N = None
	P16 = 1" NPTF	P16 = 1" NPTF	P2 = ½" NPTF
	P20 = 1¼" NPTF	P20 = 1¼" NPTF	P16 = 1" NPTF
	P24 = 1½" NPTF	P24 = 1½" NPTF	S16 = SAE-16
	P32 = 2" NPTF	P32 = 2" NPTF	
	S16 = SAE-16	S16 = SAE-16	
	S20 = SAE-20	S20 = SAE-20	
	S24 = SAE-24	S24 = SAE-24	
	S32 = SAE-32	S32 = SAE-32	
	F20 = 1¼" SAE 4-bolt flange Code 61	F20 = 1¼" SAE 4-bolt flange Code 61	
	F24 = 1½" SAE 4-bolt flange Code 61	F24 = 1½" SAE 4-bolt flange Code 61	
	F32 = 2" SAE 4-bolt flange Code 61	F32 = 2" SAE 4-bolt flange Code 61	
	B24 = ISO 228 G-1½"	B24 = ISO 228 G-1½"	

**Inlet Porting Location**

D 1/8" NPTF Standard

Top View

A B C

BOX 7	BOX 8
Outlet Porting Options	Dirt Alarm® Options
Omit = 1½" 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	ES1 = Heavy-duty electric switch with conduit 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 with conduit connector

BOX 9
Additional Options
Omit = None
G2293 = Cork gasket
G547 = Two ½" gauge ports
G820 = Stamped cap
N = No-Element indicator
M = Metric thread for SAE 4-bolt flange mounting holes (specify after each port designation)

- 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 295.