

# 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 quality-protected GeoSeal® Elements (GRT)
- Same day shipment model available

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

IRF  
 TF1  
 KF3  
 KL3  
 LF1  
 MLF1  
 RLD  
 GRTB  
 MTA  
 MTB  
 ZT  
 KFT

Model No. of filter in photograph is RT1K10S24NP16Y2.

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

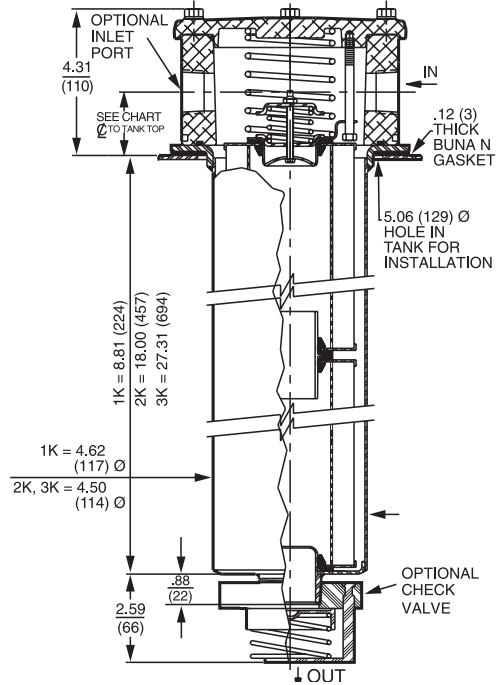
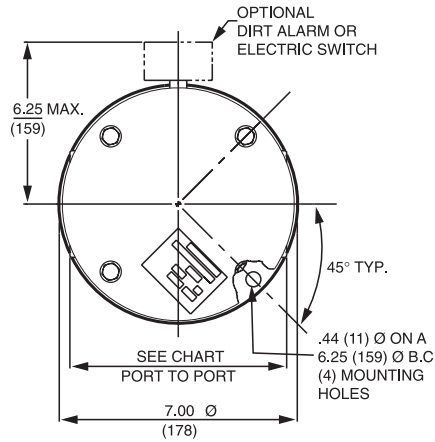
## Filter Housing Specifications

RT  
 RTI  
 LRT  
 ART  
 BRT  
 BFT  
 QT  
 KTK  
 LTK  
 MRT

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 (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic)

## Fluid Compatibility Accessories For Tank-Mounted Filters

PAF1  
 MAF1  
 MF2



	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" (F)	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 & 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

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
KZ1	112	KKZ1	224	27KZ1	336	KDZ1	89	KKDZ1	188	KZW1	61
KZ3	115	KKZ3	230	27KZ3	345	KDZ3	71	KKDZ3	150	KZW3	64
KZ5	119	KKZ5	238	27KZ5	357	KDZ5	100	KKDZ5	210	KZW5	63
KZ10	108	KKZ10	216	27KZ10	324	KDZ10	80	KKDZ10	168	KZW10	57
KZ25	93	KKZ25	186	27KZ25	279	KDZ25	81	KKDZ25	171	KZW25	79
										KKZW3	128
										KKZW5	126
										KKZW10	114
										KKZW25	158

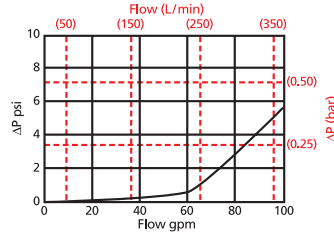
Element Collapse Rating: 150 psid (10 bar) for standard elements

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

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

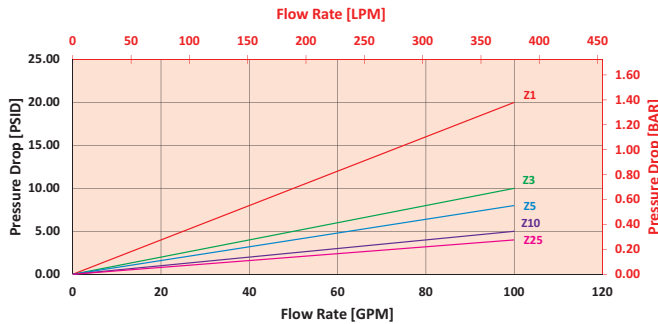
RT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



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

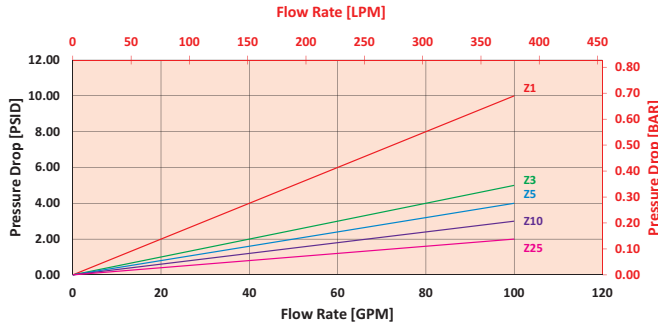
KZ

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  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for RT1KZ10S24S24NY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the RT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 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,  $\Delta P_{\text{filter}}$ , 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:**

$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 4 \text{ psi } [.27 \text{ bar}]$

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

$\Delta P_{\text{filter}} = 3 \text{ psi} + (4 \text{ psi} * 1.1) = 7.4 \text{ psi}$

**OR**

$\Delta P_{\text{filter}} = .21 \text{ bar} + (.27 \text{ bar} * 1.1) = .51 \text{ bar}$

## 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.	$\Delta P$	Ele.	$\Delta P$	Ele.	$\Delta P$
K3	0.25	2K3/ KK3	0.12	3KZ1/ 27KZ1	0.05
K10	0.09	2K10/ KK10	0.05	3KZ3/ 27KZ3	0.03
K25	0.02	2K25/ KK25	0.01	3KZ5/ 27KZ5	0.02
KAS3	0.10	2KAS3/ KKAS3	0.05	3KZ10/ 27KZ10	0.02
KAS5	0.08	2KAS5/ KKAS5	0.04	3KZ25/ 27KZ25	0.01
KAS10	0.05	2KAS10/ KKAS10	0.03	3K3	0.08
KDZ1	0.24	2KDZ1	0.12	3K10	0.03
KDZ3	0.12	2KDZ3	0.06	3K25	0.01
KDZ5	0.10	2KDZ5	0.05	3KAS3/ 27KAS3	0.03
KDZ10	0.06	2KDZ10	0.03	3KAS5/ 27KAS5	0.02
KDZ25	0.04	2KDZ25	0.02	3KAS10/ 27KAS10	0.02
KZW1	0.43	2KZW1	-		
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

Highlighted product eligible for **QuickDelivery**

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

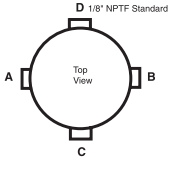
BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 5	BOX 6A	BOX 6B	BOX 7	BOX 8
RT									

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

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7A	BOX 7B	BOX 8	BOX 9
RT	1K	Z	10		S24 S24 N			Y2	

= RT1KZ10S24S24Y2

BOX 1	BOX 2	BOX 3	BOX 4
<b>Filter Series</b>	<b>Element Size &amp; 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
GRT	3K	AS = Anti-Static Pleat Media (synthetic)	5 = 5 μ AS, Z, ZW, and DZ media
	<b>GeoSeal®</b>	ZW = Aqua-Excellement™ ZW media	10 = 10 μ AS, E, M, Z, ZW, and DZ media
	1KBG KKBG, 27KBG	DZ = Dirtcatcher® with Excellement® Z-Media®	25 = 25 μ E, M, Z, ZW, and DZ media
	2KBG	W = W media (water removal)	60 = 60 μ M media
	3KBG	M = M media (reusable metal mesh)	

BOX 5	BOX 6
<b>Seal Material</b>	<b>Specification of all 3 ports is required</b>
Omit = Buna N	<b>Inlet Porting</b>
H = EPR	<b>Port A</b>
W = Anodized Aluminum Parts	P16 = 1" NPTF
H.5 = Skydrol® compatibility	P20 = 1¼" NPTF
	P24 = 1½" NPTF
	P32 = 2" NPTF
	S16 = SAE-16
	S20 = SAE-20
	S24 = SAE-24
	S32 = SAE-32
	F20 = 1¼" SAE 4-bolt flange Code 61
	F24 = 1½" SAE 4-bolt flange Code 61
	F32 = 2" SAE 4-bolt flange Code 61
	B24 = ISO 228 G-1½"
	<b>Flange port option only:</b>
	M = Metric SAE 4 bolt flange
	<b>Port B</b>
	N = None
	P16 = 1" NPTF
	P20 = 1¼" NPTF
	P24 = 1½" NPTF
	P32 = 2" NPTF
	S16 = SAE-16
	S20 = SAE-20
	S24 = SAE-24
	S32 = SAE-32
	F20 = 1¼" SAE 4-bolt flange Code 61
	F24 = 1½" SAE 4-bolt flange Code 61
	F32 = 2" SAE 4-bolt flange Code 61
	B24 = ISO 228 G-1½"
	<b>Port C</b>
	N = None
	P2 = ½" NPTF
	P16 = 1" NPTF
	S16 = SAE-16
	<b>Inlet Porting Location</b>
	

BOX 7A	BOX 7B
<b>Bypass Option</b>	<b>Outlet Porting Options</b>
Omit = 25 psi bypass setting	Omit = 1½" NPT male
<b>RT and RTW models only:</b>	C = Check valve
40 = 40 psi bypass setting	D = Diffuser
	T = 13" Tube ext.
	A = Non-thread outlet

BOX 8	BOX 9
<b>Dirt Alarm® Options</b>	<b>Add. Options</b>
	Omit = None
Located @ Port D	G2293 = Cork gasket
Visual	G547 = Two ½" gauge ports
Electrical	G820 = Stamped cap
ES = Electric switch	
ES3 = Electric switch with DIN connector	
ES4 = Skydrol Compatible Electric Switch	
Located in cap	
Visual	
Y2C = Bottom-mounted tri-color gauge	
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	

#### 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 7B. See also "Accessories for Tank-Mounted Filters," page 307.