

Tank-Mounted Return Line Filter

GRTB



Features and Benefits

- Patented GeoSeal® Elements
- Various Dirt Alarm® options
- Cost optimized for in-tank applications
- Plastic bowl and cap lower cost and minimize weight
- UV resistant cap
- Same day shipment model available



Part of Schroeder Industries'
Energy Sustainability Initiative

100 gpm
380 L/min
100 psi
7 bar

Model No. of filter in photograph is GRTB1KBGZ10S.

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)	
Rated Fatigue Pressure: 145 psi (10 bar), Per NFPA T2.6.1-2005	
Temp. Range: -20°F to 200°F (-29°C to 93°C)	
Bypass Setting: Cracking: 25 psi (1.7 bar) Full Flow: 42 psi (2.9 bar)	
Cap & Bowl: Nylon Porting Head: Aluminum	
Weight of GRTB-1K: 5.2 lbs (2.36 kg)	
Element Change Clearance: 9.5" (240 mm)	

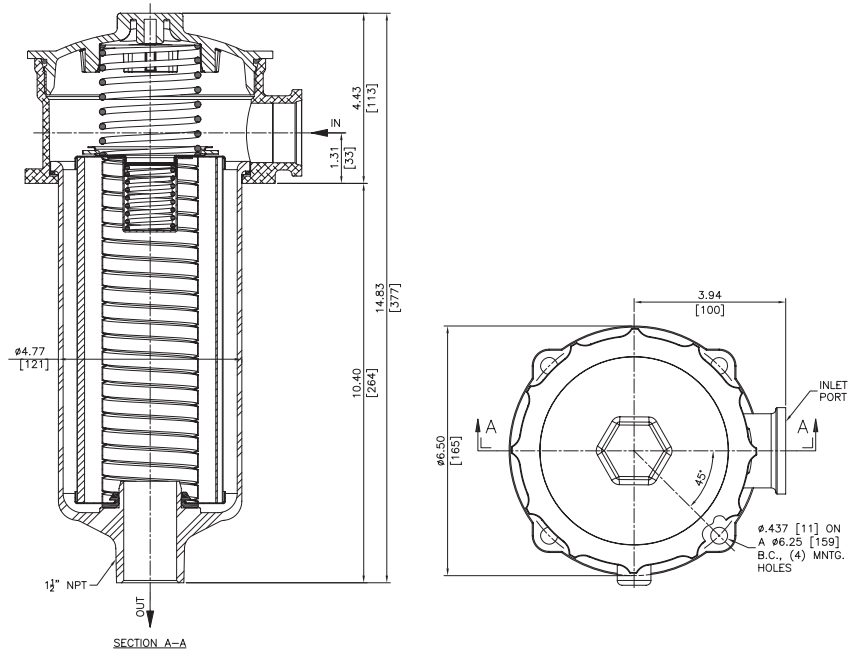
Filter Housing Specifications

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E media (cellulose), Z-Media® and ASP® media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)

Fluid Compatibility

Accessories
For Tank-Mounted
Filters

IRF
TF1
KF3
KL3
LF1
MLF1
RLD
GRTB
MTA
MTB
ZT
AFT
KFT
RT
RTI
LRT
ART
BRT
TRT
BFT
QT
KTK
LTK
MRT
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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
KBGZ1	<1.0	<1.0	<1.0	<4.0	4.2
KBGZ3	<1.0	<1.0	<2.0	<4.0	4.8
KBGZ5	2.5	3.0	4.0	4.8	6.3
KBGZ10	7.4	8.2	10.0	8.0	10.0
KBGZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)
KBGZ1	112
KBGZ3	115
KBGZ5	119
KBGZ10	108
KBGZ25	93

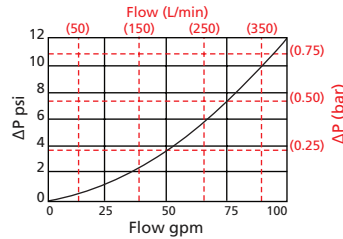
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

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

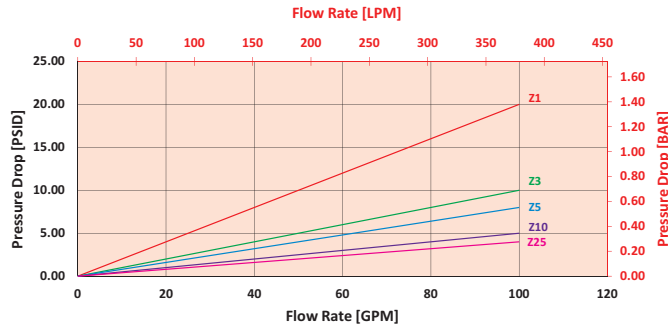
GRTB $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



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

KBGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



Pressure
Drop
Information
Based on
Flow Rate
and Viscosity

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:

Determine ΔP_{filter} at 80 gpm (303.2 L/min) for GRTB1KBGZ10PY2 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 8 psi (.55 bar) on the graph for the GRTB 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 KBGZ10 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, ΔP_{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:

$$\Delta P_{\text{housing}} = 8 \text{ psi [.55 bar]} \quad | \quad \Delta P_{\text{element}} = 4 \text{ psi [.27 bar]}$$

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

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (4 \text{ psi} * 1.1) = 12.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (.27 \text{ bar} * 1.1) = .85 \text{ bar}$$

Filter
Model
Number
SelectionHighlighted
product eligible for
QuickDelivery

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

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
GRTB							

Example: NOTE: One option per box

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
GRTB	1KBG	Z	10		P		Y2

= GRTB1KBGZ10PY2

BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Element Size	Media Type	Micron Rating
GRTB (GeoSeal®)	1KBG (GeoSeal®)	Omit = E-Media (cellulose)	1 = 1 µ Z-Media*
RTB	1KB	Z = Excellement® Z-Media*	3 = 3 µ Z-Media*
			5 = 5 µ Z-Media*
			10 = 10 µ E, and Z-Media*
			25 = 25 µ E, and Z-Media*

BOX 5	BOX 6	BOX 7
Seals	Port	Outlet Porting Options
Omit = Buna N	P = 1.25" NPT	Omit = 1 1/2" NPT male
	S = SAE-20	C = Check valve
	B = ISO 228 G-1.25"	D = Diffuser
		CD = Check valve & diffuser
		T = 13" Tube extension

BOX 8
Indicator
Omit = None
Y2 = Back-mounted tricolor gauge
ES = Electric switch
ES1 = Heavy-duty electric switch with conduit connections
ES2 = Electrical Switch with Deutsch Connector
ES3 = Electric Switch with DIN 43650

NOTES:

Box 3. Use boxes 2, 3, 4, and 5 to build a replacement element part number.