

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

100 gpm
380 L/min
100 psi
7 bar

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

KFT

RT

RTI

LRT

ART

BFT

QT

KTK

LTK

MRT

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)

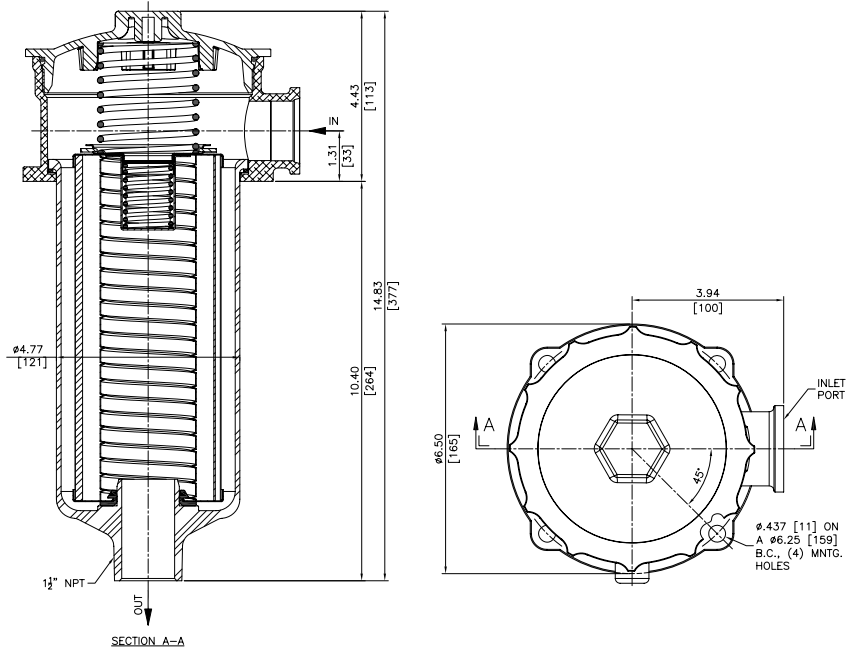
Fluid Compatibility

Accessories
For Tank-Mounted
Filters

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 |

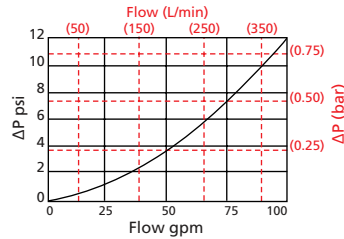
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

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

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

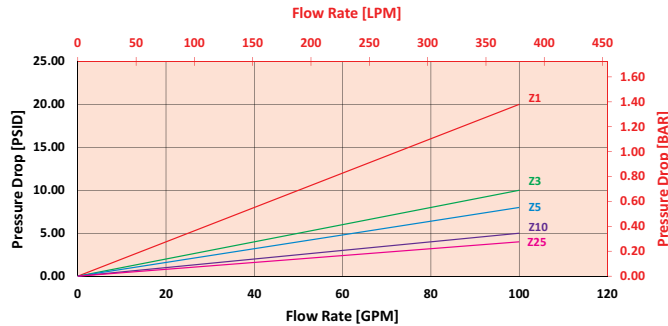
GRTB $\Delta P_{\text{housing}}$ for fluids with sp gr (specific gravity) = 0.86:



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

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:

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

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

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

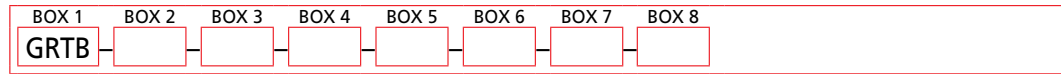
OR

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

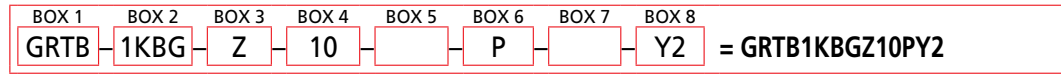
Filter Model Number Selection

Highlighted product eligible for **QuickDelivery**

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



Example: NOTE: One option per box



| BOX 1 | BOX 2 | BOX 3 | BOX 4 |
|----------------------|---------------------|---|--|
| Filter Series | Element Size | Media Type | Micron Rating |
| GRTB | 1KBG | Omit = E-Media (cellulose) Z = Excellement® Z-Media® | 1 = 1 μ 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 S = SAE-20 B = ISO 228 G-1.25" | Omit = 1½" NPT male C = Check valve 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 |