# Tank-Mounted Filter **LRT**

Model No. of filter in photograph is LRT18LZ10S24NP16Y2.

### Features and Benefits

- Low pressure tank-mounted filter
- Multiple inlet/outlet porting options
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- Can also be used in return line application (contact factory)
- Visual gauge or electrical switch dirt alarms
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Same day shipment model available
- Also available with DirtCatcher® elements (18LD)
- G Available with quality-protected GeoSeal® Elements (GLRT)

**150 gpm**
***570 L/min***
**100 psi**
***7 bar***



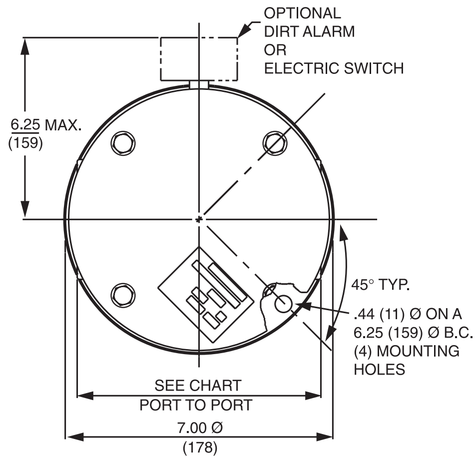
### Filter Housing Specifications

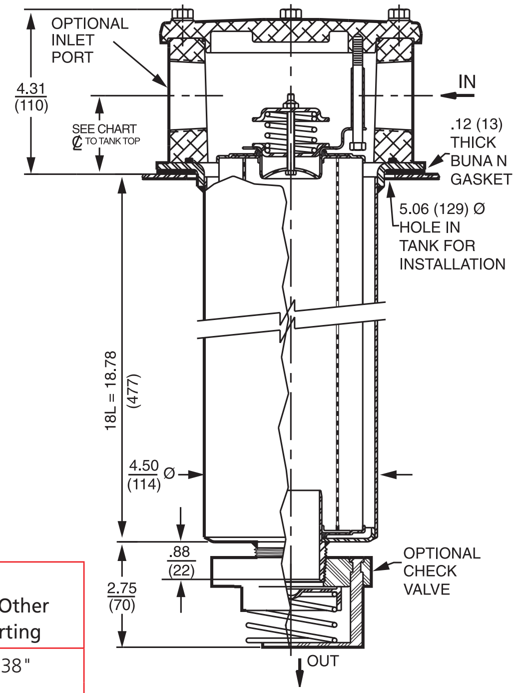
| | |
|---|---|
| Flow Rating: | Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure: | 100 psi (7 bar) |
| Min. Yield Pressure: | 400 psi (28 bar), per NFPA T2.6.1 |
| Rated Fatigue Pressure: | 90 psi (6 bar), per NFPA T2.6.1-2005 |
| Temp. Range: | -20°F to 225°F (-29°C to 107°C) |
| Bypass Setting: | Cracking: 25 psi (1.7 bar)<br>Full Flow: 34 psi (2.3 bar) |
| Porting Head & Cap:<br>Element Case: | Die Cast Aluminum<br>Steel |
| Weight of LRT-18L: | 14.6 lbs. (6.6 kg) |
| Element Change Clearance: | 17.0" (432 mm) |

### Fluid Compatibility

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

# Tank-Mounted Filter




| | 1½" Ports 4-Bolt Flange Only | 2" Ports | All Other Porting |
|---|---|---|---|
| Port to Port | 7.12" | 7.56" (P, S, B)<br>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 ring available to weld to tank.

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 | |
|---|---|---|---|---|---|
| | $\beta_x \geq 75$ | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$ | $\beta_x(c) \geq 1000$ |
| 18LZ1 | <1.0 | <1.0 | <1.0 | <4.0 | 4.2 |
| 18LZ3 | <1.0 | <1.0 | <2.0 | <4.0 | 4.8 |
| 18LZ5 | 2.5 | 3.0 | 4.0 | 4.8 | 6.3 |
| 18LZ10 | 7.4 | 8.2 | 10.0 | 8.0 | 10.0 |
| 18LZ25 | 18.0 | 20.0 | 22.5 | 19.0 | 24.0 |

| Element | DHC (gm) | Element | DHC (gm) |
|---|---|---|---|
| 18LZ1 | 224 | 18LDZ1 | 194 |
| 18LZ3 | 230 | 18LDZ3 | 199 |
| 18LZ5 | 238 | 18LDZ5 | 194 |
| 18LZ10 | 216 | 18LDZ10 | 186 |
| 18LZ25 | 186 | 18LDZ25 | 169 |

Element Collapse Rating: 150 psid (10 bar)

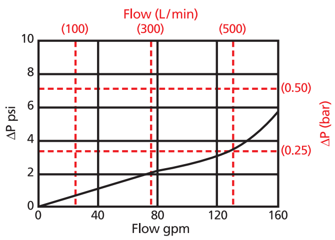
Flow Direction: Outside In

Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

## Pressure Drop Information
### Based on Flow Rate and Viscosity

**$\Delta P_{housing}$**

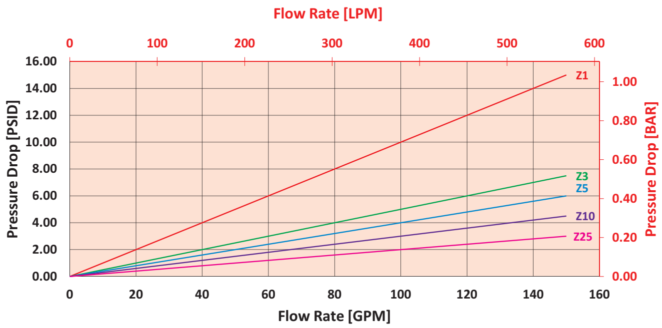
LRT $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:




**$\Delta P_{element}$**

18LZ

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




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

**Exercise:**

Determine $\Delta P_{filter}$ at 120 gpm (379 L/min) for LRT18LZ10S24S24NY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 120 gpm. In this case, $\Delta P_{housing}$ is 3 psi (.21 bar) on the graph for the LRT housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 120 gpm. In this case, $\Delta P_{element}$ is 4 psi (.27 bar) according to the graph for the 18LZ10 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, $\Delta P_{filter}$ , is calculated by adding $\Delta P_{housing}$ with the true element pressure differential, ($\Delta P_{element} * V_f$). The $\Delta P_{element}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

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

$V_f$ = 160 SUS (34 cSt) / 150 SUS (32 cSt) = 1.1

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

**OR**

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

Note:
If your element is not graphed, use the following equation: $\Delta P_{element}$ = Flow Rate x $\Delta P_f$. Plug this variable into the overall pressure drop equation.

| Ele. | ΔP |
|---|---|
| 18LDZ1 | 0.12 |
| 18LDZ3 | 0.06 |
| 18LDZ5 | 0.05 |
| 18LDZ10 | 0.03 |
| 18LDZ25 | 0.02 |

# Tank-Mounted Filter

## Filter Model Number Selection

Highlighted product eligible for QuickDelivery

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

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6A | BOX 6B | BOX 7 | BOX 8 |
|---|---|---|---|---|---|---|---|---|
| LRT | | | | | | | | |

**Example:** *NOTE: Only box 8 may contain more than one option*

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6A | BOX 6B | BOX 7 | BOX 8 | |
|---|---|---|---|---|---|---|---|---|---|
| LRT | 18 | LZ10 | | S24 S24 N | | | Y2 | | = LRT18LZ10S24S24NY2 |

BOX 1

| Filter Series |
|---|
| LRT |
| GLRT (GeoSeal®) |

BOX 2

| Element Length (in) |
|---|
| 18 |

BOX 3

| Element Size and Media |
|---|
| L3 = L size 3 μ E media (cellulose) |
| L10 = L size 10 μ E media (cellulose) |
| LZ1 = L size 1 μ Excellement® Z-Media® (synthetic) |
| LZ3 = L size 3 μ Excellement® Z-Media® (synthetic) |
| LZ5 = L size 5 μ Excellement® Z-Media® (synthetic) |
| LZ10 = L size 10 μ Excellement® Z-Media® (synthetic) |
| LZ25 = L size 25 μ Excellement® Z-Media® (synthetic) |
| LDZ1 = L size DirtCatcher® 1 μ Excellement® Z-Media® |
| LDZ3 = L size DirtCatcher® 3 μ Excellement® Z-Media® |
| LDZ5 = L size DirtCatcher® 5 μ Excellement® Z-Media® |
| LDZ10 = L size DirtCatcher® 10 μ Excellement® Z-Media® |
| LDZ25 = L size DirtCatcher® 25 μ Excellement® Z-Media® |
| **GeoSeal® Element Options** |
| LGZ1 = L size 1 μ Excellement® Z-Media® (synthetic) |
| LGZ3 = L size 3 μ Excellement® Z-Media® (synthetic) |
| LGZ5 = L size 5 μ Excellement® Z-Media® (synthetic) |
| LGZ10 = L size 10 μ Excellement® Z-Media® (synthetic) |
| LGZ25 = L size 25 μ Excellement® Z-Media® (synthetic) |

BOX 4

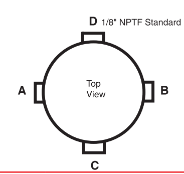
| Seal Material |
|---|
| Omit = Buna N |
| H = EPR |
| W = Anodized Aluminum Parts |
| H.5 = Skydrol® compatibility |

BOX 5

*Specification of all 3 ports is required*

| Inlet Porting | | |
|---|---|---|
| **Port A** | **Port B** | **Port C** |
| P16 = 1" NPTF | N = None | N = None |
| P20 = 1¼" NPTF | P16 = 1" NPTF | P2 = ⅛" NPTF |
| P24 = 1½" NPTF | P20 = 1¼" NPTF | P16 = 1" NPTF |
| P32 = 2" NPTF | P24 = 1½" NPTF | S16 = SAE-16 |
| S16 = SAE-16 | P32 = 2" NPTF | |
| S20 = SAE-20 | S16 = SAE-16 | |
| S24 = SAE-24 | S20 = SAE-20 | |
| S32 = SAE-32 | S24 = SAE-24 | |
| F20 = 1¼" SAE 4-bolt flange Code 61 | S32 = SAE-32 | |
| F24 = 1½" SAE 4-bolt flange Code 61 | F20 = 1¼" SAE 4-bolt flange Code 61 | |
| F32 = 2" SAE 4-bolt flange Code 61 | F24 = 1½" SAE 4-bolt flange Code 61 | |
| B24 = ISO 228 G-1½" | F32 = 2" SAE 4-bolt flange Code 61 | |
| Flange port option only: M = Metric SAE 4 bolt flange | B24 = ISO 228 G-1½" | |

**Inlet Porting Location**




BOX 6A

| Bypass Option |
|---|
| Omit = 25 psi bypass setting |
| 40 = 40 psi bypass setting |
| 50 = 50 psi bypass setting |

BOX 6B

| Outlet Porting Options |
|---|
| Omit = 2" NPT male |
| C = Check valve |
| D = Diffuser |
| T = 13" Tube ext. |
| A = Non-thread outlet |

BOX 7

| Dirt Alarm® Options | | |
|---|---|---|
| | | Omit = None |
| Located @ Port D | Visual | Y2 = Back-mounted tri-color gauge |
| | Electrical | ES = Electric switch |
| | | ES1 = Heavy-duty electric switch with conduit connector |
| 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 with conduit connector |

BOX 8

| Add. Options |
|---|
| Omit = None |
| G2293 = Cork gasket |
| G547 = Two ⅛" gauge ports |
| G820 = Stamped cap |

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 18LZ10

Box 4. 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 5. If using Port B, Port A & B must always be the same type and size. Example: (A) P20 (B) P20 (C) P16.

Box 6. See also “Accessories for Tank-Mounted Filters,” page 307.