

Medium Pressure In-Tank Filter

MRT



Features and Benefits

- Medium pressure tank mounted filter ideal for applications with high pressure surge in the return line
- Two possible inlet porting locations
- Various Dirt Alarm® options available
- Also available with DirtCatcher® element
- Optional sampling fitting available upon request

150 gpm
570 L/min
900 psi
62 bar

Model No. of filter in photograph is MRT18LZ10S24S24D5.

Flow Rating:	Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	900 psi (62 bar)
Min. Yield Pressure:	2700 psi (186 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	750 psi (52 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar)
Porting Head & Cap:	Cast Aluminum (Anodized)
Element Case:	Steel
Weight of MRT:	36.0 lbs. (16.4 kg)
Element Change Clearance:	17.0" (432 mm)

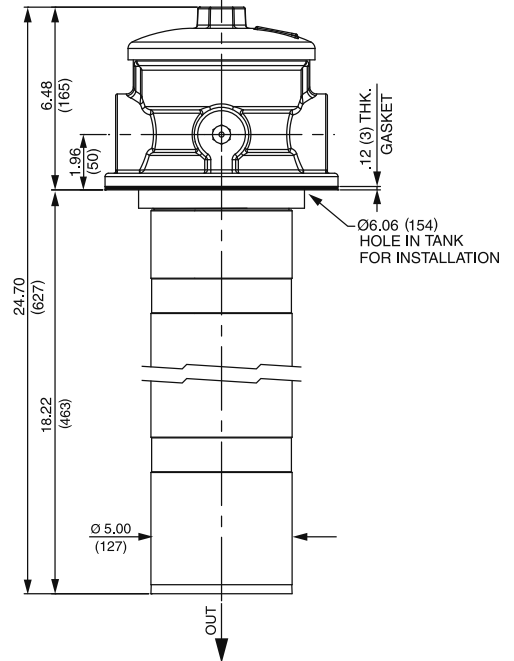
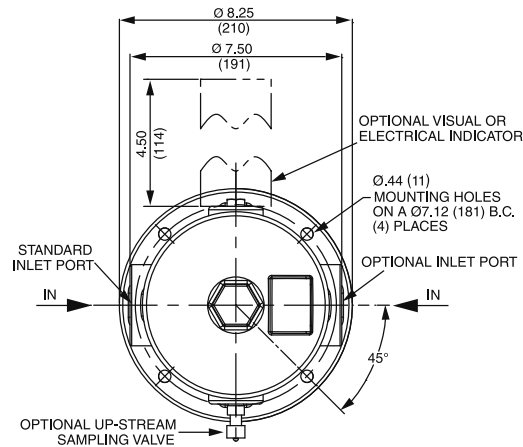
Filter Housing Specifications

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)

Fluid Compatibility

Accessories For Tank-Mounted Filters

- IRF
- TF1
- KF3
- KL3
- LF1
- MLF1
- RLD
- GRTB
- MTA
- MTB
- ZT
- KFT
- RT
- RTI
- LRT
- ART
- 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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
18LZ1	<1.0	<1.0	<1.0	<4.0	4.2
18LZ3	<1.0	<1.0	<2.0	<4.7	5.8
18LZ5	2.5	3.0	4.0	6.5	7.5
18LZ10	7.4	8.2	10.0	10.0	12.7
18LZ25	18.0	20.0	22.5	19.0	24.0
18LDZ1	<1.0	<1.0	<1.0	<4.0	4.2
18LDZ3	<1.0	<1.0	<2.0	<4.7	5.8
18LDZ5	2.5	3.0	4.0	6.5	7.5
18LDZ10	7.4	8.2	10.0	10.0	12.7
18LDZ25	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	149
18LZ10	216	18LDZ10	186
18LZ25	186	18LDZ25	169

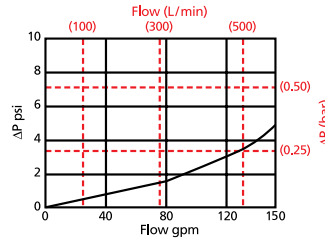
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

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

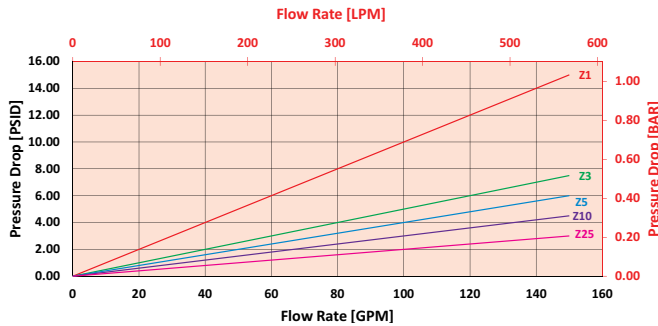
$\Delta P_{\text{housing}}$

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

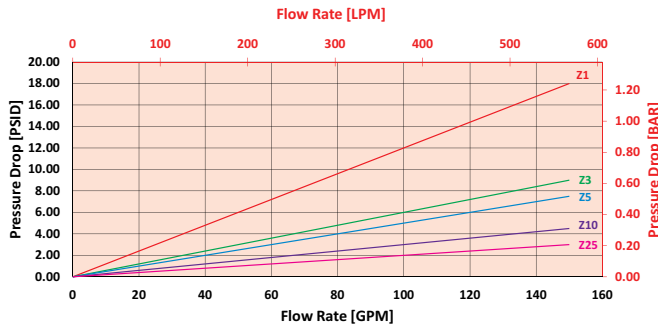


$\Delta P_{\text{element}}$

18LZ Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



18LDZ 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 ΔP_{filter} at 80 gpm (303.2 L/min) for MRT18LZ10S24S24 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 1.5 psi (.10 bar) on the graph for the MRT housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 80 gpm. In this case, $\Delta P_{\text{element}}$ is 2.5 psi (.17 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, 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:

$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.10 \text{ bar}] \mid \Delta P_{\text{element}} = 2.5 \text{ psi } [.17 \text{ bar}]$

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

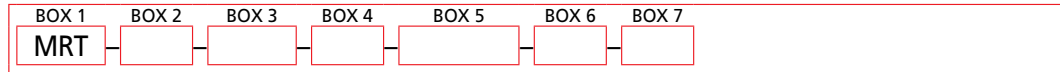
$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (2.5 \text{ psi} * 1.1) = 4.3 \text{ psi}$

OR

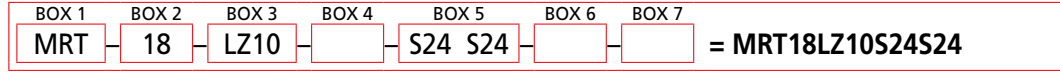
$\Delta P_{\text{filter}} = .10 \text{ bar} + (.17 \text{ bar} * 1.1) = .29 \text{ bar}$

Filter Model Number Selection

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



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4
Filter Series	Element Length (in)	Element Size and Media	Seal Material
MRT	18	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®	Omit = Buna N

BOX 5
Specification of both ports is required

Inlet Porting		Inlet Porting Location
Port A S = S24 N = None	Port B S = S24 N = None	

Indicator

Top View

Sampling Valve (Optional)

BOX 6

Dirt Alarm® Options	
	Omit = None
Visual	D5 = Visual pop-up
Visual with Thermal Lockout	D8 = Visual w/ thermal lockout
Electrical	MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable MS5LC = Low current MS5 MS10 = Electrical w/ DIN connector (male end only) MS10LC = Low current MS10 MS11 = Electrical w/ 12 ft. 4-conductor wire MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only) MS12LC = Low current MS12 MS16 = Electrical w/ weather-packed sealed connector MS16LC = Low current MS16 MS17LC = Electrical w/ 4 pin Brad Harrison male connector
Electrical with Thermal Lockout	MS5T = MS5 (see above) w/ thermal lockout MS5LCT = Low current MS5T MS10T = MS10 (see above) w/ thermal lockout MS10LCT = Low current MS10T MS12T = MS12 (see above) w/ thermal lockout MS12LCT = Low current MS12T MS16T = MS16 (see above) w/ thermal lockout MS16LCT = Low current MS16T MS17LCT = Low current MS17T
Electrical Visual	MS13 = Supplied w/ threaded connector & light MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
Electrical Visual with Thermal Lockout	MS13DCT = MS13 (see above), direct current, w/ thermal lockout MS13DCLCT = Low current MS13DCT MS14DCT = MS14 (see above), direct current, w/ thermal lockout MS14DCLCT = Low current MS14DC

BOX 7

Options
Omit = No sampling valve
SV = Up stream sampling valve

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.
Example: 18L3