

# High Pressure Filter

**PLD**



## Features and Benefits

- Durable carbon steel construction
- Filter housings are designed to withstand pressure surges as well as high static pressure loads
- Screw-in bowl allows the filter element to be easily removed for replacement or cleaning
- Standard model supplied with drain plugs
- Standard Viton® seal on filter housing
- Filter contains an integrated equalization valve
- Pressure is equalized between filters by raising the change-over lever prior to switching it to the relevant filter side

**100 gpm**  
**380 L/min**  
**3000 psi**  
**210 bar**

- NF30
- NFS30
- YF30
- CFX30
- PLD**
- CF40
- DF40
- PF40
- RFS50
- RF60
- CF60
- CTF60
- VF60
- LW60
- KF30
- KF50
- TF50
- KC50
- MKF50
- MKC50
- KC65
- HS60
- MHS60
- KFH50
- LC60
- LC35
- LC50
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10
- 20-CRZX10

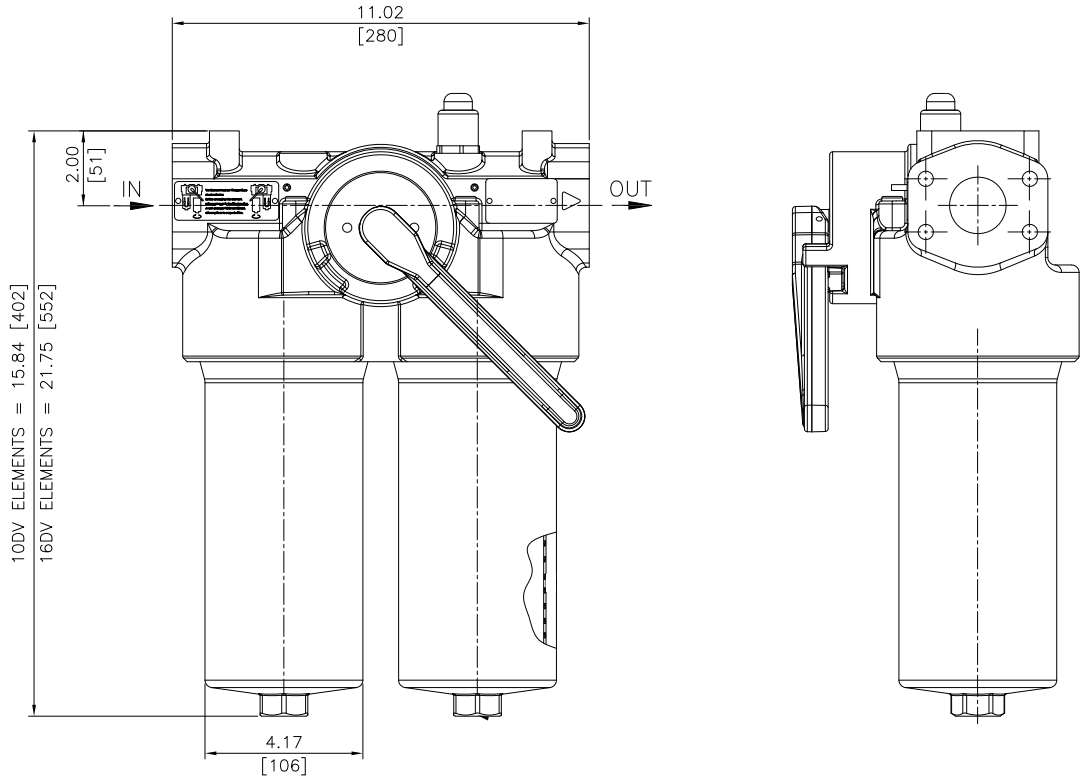
Model No. of filter in photograph is PLD10DVZ3VF24.

Flow Rating:	Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	3000 psi (207 bar)
Min. Yield Pressure:	10,600 psi (730 bar)
Rated Fatigue Pressure:	3000 psi (207 bar)
Temp. Range:	-22°F to 250°F (-30°C to 121°C)
Bypass Setting:	102 psi (7 bar)
Porting Head:	Ductile Iron
Element Case:	Steel
Weight of PLD-10DV:	97 lbs. (43.9 kg)
Weight of PLD-16DV:	100 lbs. (45.3 kg)
Element Change Clearance:	10DV: 3.5" (89 mm) 16DV: 3.5" (89 mm)

## Filter Housing Specifications

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	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



Metric dimensions in ( ).  
 Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
 For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

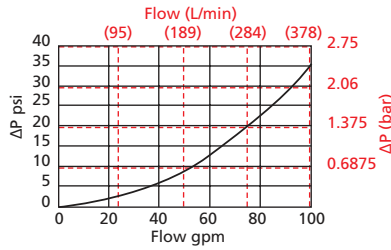
Element	Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402			Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
10/16DVZ1	<1.0	<1.0	<1.0	<4.0	4.2
10/16DVZ3	<1.0	<1.0	<2.0	<4.0	4.8
10/16DVZ5	2.5	3.0	4.0	4.8	6.3
10/16DVZ10	7.4	8.2	10.0	8.0	10.0
10/16DVZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)	Element	DHC (gm)
10DVZ1	57	16DVZ1	110
10DVZ3	59	16DVZ3	114
10DVZ5	64	16DVZ5	124
10DVZ10	62	16DVZ10	112
10DVZ25	63	16DVZ25	102

Element Collapse Rating: 290 psid (20 bar)  
 Flow Direction: Outside In  
 Element Nominal Dimensions: 3.0" (75 mm) O.D. x 14.5" (370 mm) long

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

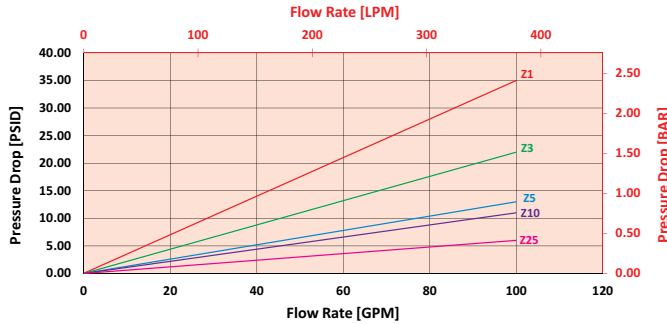
PLD  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



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

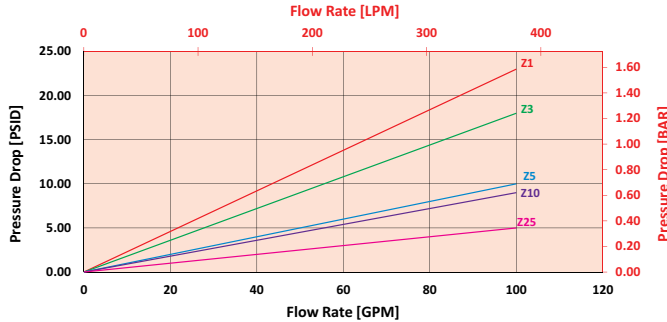
10DVZ

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



16DVZ

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 50 gpm (189 L/min) for PLD10DVZ1VF24VM using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the PLD housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 17.5 psi (1.2 bar) according to the graph for the 10DVZ1 element.

Because the viscosity in this sample is 200 SUS (42.6 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:

$$\Delta P_{\text{housing}} = 8 \text{ psi } [.55 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 17.5 \text{ psi } [1.2 \text{ bar}]$$

$$V_f = 200 \text{ SUS } (42.6 \text{ cSt}) / 150 \text{ SUS } (32 \text{ cSt}) = 1.3$$

$$\Delta P_{\text{filter}} = 8 \text{ psi } + (17.5 \text{ psi } * 1.3) = 30.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar } + (1.2 \text{ bar } * 1.3) = 2.1 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

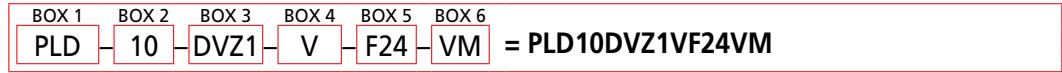
Note:

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	KZW25	0.14	2KZW10	0.12
K10	0.09	2K3	0.12	2KZW25	0.07
K25	0.02	2K10	0.05	3K3	0.08
KAS3	0.10	2K25	0.01	3K10	0.03
KAS5	0.08	2KAS3	0.05	3K25	0.01
KAS10	0.05	2KAS5	0.04	3KAS3	0.03
KZX10	0.22	2KAS10	0.03	3KAS5	0.02
KZW1	0.43	2KZX10	0.11	3KAS10	0.02
KZW3	0.32	2KZW1	-	3KZX10	0.07
KZW5	0.28	2KZW3	0.16		
KZW10	0.23	2KZW5	0.14		

## Filter Model Number Selection

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



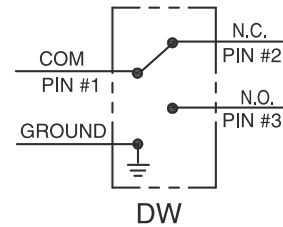
BOX 1	BOX 2	BOX 3	BOX 4
<b>Filter Series</b>	<b>Length of Elements (in)</b>	<b>Element Size and Media</b>	<b>Seal Material</b>
PLD	10 16	DVZ1 = DV size 1 μ synthetic media DVZ3 = DV size 3 μ synthetic media DVZ5 = DV size 5 μ synthetic media DVZ10 = DV size 10 μ synthetic media DVZ25 = DV size 25 μ synthetic media	Omit = Buna N V = Viton®

BOX 5
<b>Porting</b>
F24 = 1½" SAE 4-bolt flange Code 61 S24 = SAE-24 (1½")

BOX 6
<b>Dirt Alarm® Options</b>
Omit = None Visual VM = Visual pop-up w/manual rest Electrical DW = AC/DC 3-wire (NO or NC)



VM = Manual Reset



DW = AC/DC 3-wire  
(NO or NC)

#### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 16DVZ10

Box 4. Filter housings are supplied with standard Viton seals. Seal designation in Box 4 applies to element only. Viton is a registered trademark of DuPont Dow Elastomers.