Schroeder INDUSTRIES
Advanced Fluid Conditioning Solutions®
Proudly Manufactured In The United States

HYDRAULIC LUBE FILTRATION

Products Catalog

High Pressure Filters

Element Technology

Section 3 High Pressure Filters Selection Guide

High Pressure Filters (1500 - 6500 psi)

	Pressure psi (bar)	Flow gpm (L/min)	Element Length/Size	Page
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Top-Ported Pressure Filter NF30

Model No. of filter in photograph is NF301NZ10SD5.

Features and Benefits

- Top-ported pressure filter
- All aluminum assembly
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Same day shipment model available

20 gpm
75 L/min
3000 psi
210 bar

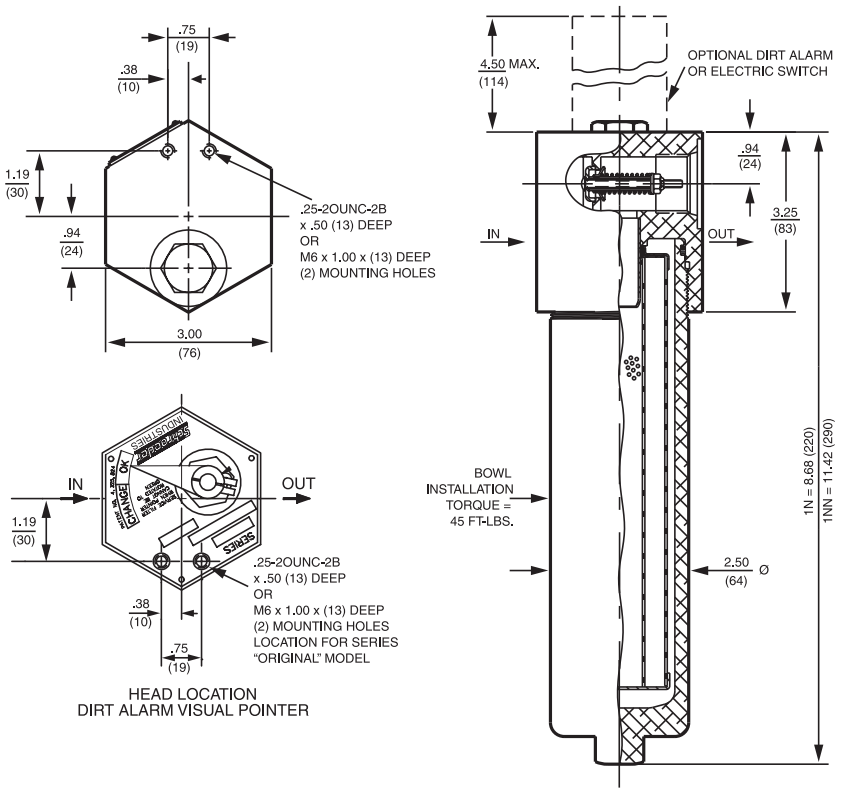
Filter Housing Specifications

Flow Rating:	Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2400 psi (165 bar), per NFPA T2.6.1
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 85 psi (5.9 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Aluminum Aluminum
Weight of NF30-1N: Weight of NF30-1NN:	3.4 lbs. (1.5 kg) 4.4 lbs. (2.0 kg)
Element Change Clearance:	4.50" (115 mm)

Fluid Compatibility

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content	All Z-Media® and ASP® media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and 3, 5 and 10 µ ASP® Media (synthetic)

NF30 Top-Ported Pressure Filter



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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
NZ1/NNZ1	<1.0	<1.0	<1.0	<4.0	4.2
NZ3/NNZ3	<1.0	<1.0	<2.0	<4.0	4.8
NZ5/NNZ5	2.5	3.0	4.0	4.8	6.3
NZ10/NNZ10	7.4	8.2	10.0	8.0	10.0
NZ25/NNZ25	18.0	20.0	22.5	19.0	24.0
NNZX3	<1.0	<1.0	<2.0	4.7	5.8
NNZX10	7.4	8.2	10.0	8.0	9.8

Dirt Holding Capacity

Element	DHC (gm)	Element	DHC (gm)
NZ1	12	NNZ3	16
NZ3	12	NNZ5	18
NZ5	12	NNZ10	15
NZ10	11	NNZ25	15
NZ25	11	NNZX3	11*
NNZ1	15	NNZX10	13*

* Based on 100 psi terminal pressure

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

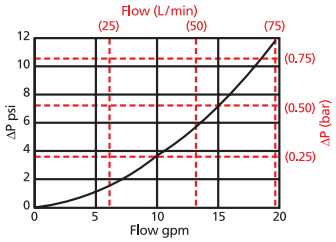
Flow Direction: Outside In

Element Nominal Dimensions: N: 1.75" (45 mm) O.D. x 5.25" (135 mm) long
NN: 1.75" (45 mm) O.D. x 8.0" (200 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

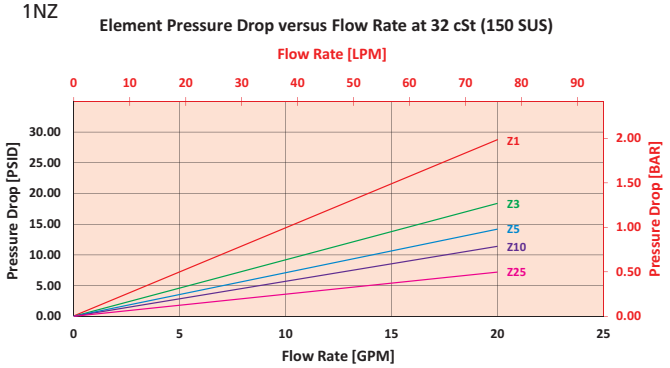
$\Delta P_{housing}$

NF30 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

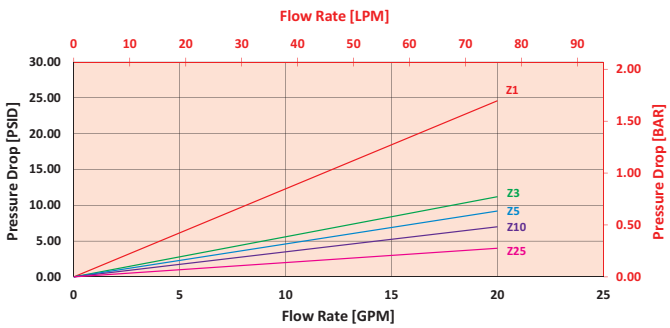


$\Delta P_{element}$

1NZ



1NNZ



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

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for NF301NZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 7 psi (.48 bar) according to the graph for an NF30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this, case, $\Delta P_{element}$ is 8 psi (.55 bar) according to the graph for an NZ10 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 7 psi [0.48 bar] | $\Delta P_{element}$ = 8 psi [0.55 bar]

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

ΔP_{filter} = 7 psi + (8 psi * 1.1) = 15.8 psi

OR

ΔP_{filter} = .48 bar + (.55 bar * 1.1) = 1.1 bar

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

Ele.	ΔP
N3	1.10
N10	0.17
N25	0.10
NAS3	0.92
NAS5	0.71
NAS10	0.57

NF30 Top-Ported Pressure Filter

Filter Model Number Selection

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
NF30 –		–		–		–		–

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	
NF30 –	1N –	Z –	10 –	–	S –	–	D5 –		= NF301NZ10SD5

BOX 1

Filter Series
NF30
NFN30 (Non-bypassing: requires ZX high collapse elements)

BOX 2

Number & Size of Elements	
1	N = Single Length
	NN = Double Length

BOX 3

Media Type	
Omit	= E Media (Cellulose)
Z	= Excellement® Z-Media® (synthetic)
AS	= Anti-Stat Media (synthetic)
ZX	= Excellement® Z-Media® (high collapse center tube)
M	= Media (reusable metal mesh) N size only

BOX 4

Micron Rating	
1	= 1 Micron (Z, ZX media)
3	= 3 Micron (AS,E, Z, ZX media)
5	= 5 Micron (AS, Z, ZX media)
10	= 10 Micron (AS,E,M, Z, ZX media)
25	= 25 Micron (E, Z, ZX media)
60	= 60 Micron (M media)

BOX 5

Seal Material	
Omit	= Buna N
V	= Viton®
W	= Buna N, *Anodized Aluminum parts*

BOX 6

Porting	
B	= ISO228 G-¾"
P	= ¾" NPTF
S	= SAE-12

BOX 7

Options	
Omit	= None
X	= Blocked bypass (N/A with NFN30)

BOX 8

Dirt Alarm® Options		
	Omit =	None
Visual	D =	Pointer
	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	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	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 MS14DCT

BOX 9

Additional Options	
Omit	= None
G792	= 7/16"-20 UNF drain on housing

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Manifold Mounted Pressure Filter NFS30

Model No. of filter in photograph is NFS301NZ3OD5.

Features and Benefits

- Manifold mounted pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to inlet port on customer's manifold

20 gpm
75 L/min
3000 psi
210 bar

Filter Housing Specifications

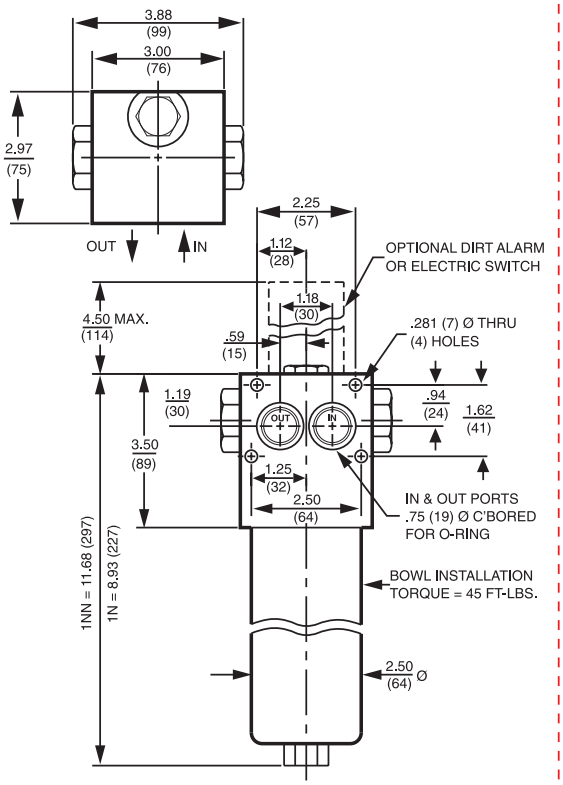
Flow Rating:	Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2400 psi (165 bar), per NFPA T2.6.1
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 85 psi (5.9 bar)
Porting Head: Element Case:	Aluminum Aluminum
Weight of NFS30-1N: Weight of NFS30-1NN:	3.6 lbs. (1.6 kg) 4.3 lbs. (2.0 kg)
Element Change Clearance:	4.50" (115 mm)

Fluid Compatibility

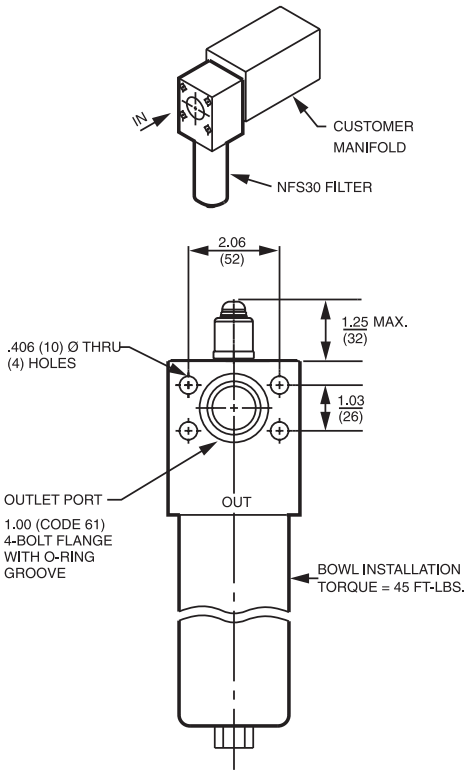
Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content	All Z-Media® and ASP® media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and 3, 5 and 10 µ ASP® Media (synthetic)

NFS30 Manifold Mounted Pressure Filter

NFS30 WITH "O" PORT CONFIGURATION



NFS30 WITH PO, SO, FO PORT CONFIGURATIC



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
NZ1/NNZ1	<1.0	<1.0	<1.0	<4.0	4.2
NZ3/NNZ3	<1.0	<1.0	<2.0	<4.0	4.8
NZ5/NNZ5	2.5	3.0	4.0	4.8	6.3
NZ10/NNZ10	7.4	8.2	10.0	8.0	10.0
NZ25/NNZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)	Element	DHC (gm)
NZ1	12	NNZ1	15
NZ3	12	NNZ3	16
NZ5	12	NNZ5	18
NZ10	11	NNZ10	15
NZ25	11	NNZ25	15

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

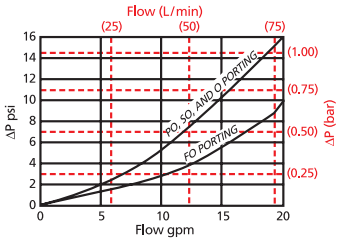
Flow Direction: Outside In

Element Nominal Dimensions: N: 1.75" (45 mm) O.D. x 5.25" (135 mm) long
NN: 1.75" (45 mm) O.D. x 8.0" (200 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

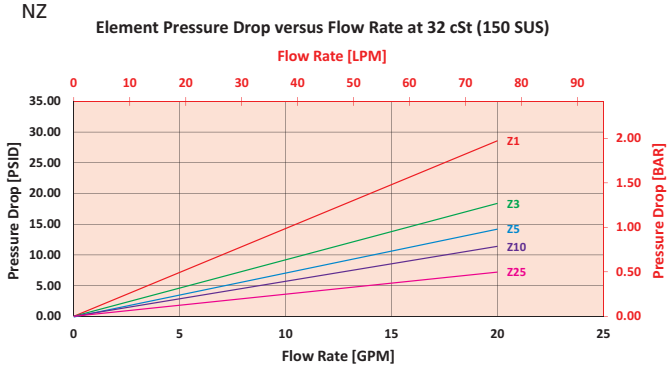
$\Delta P_{housing}$

NFS30 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

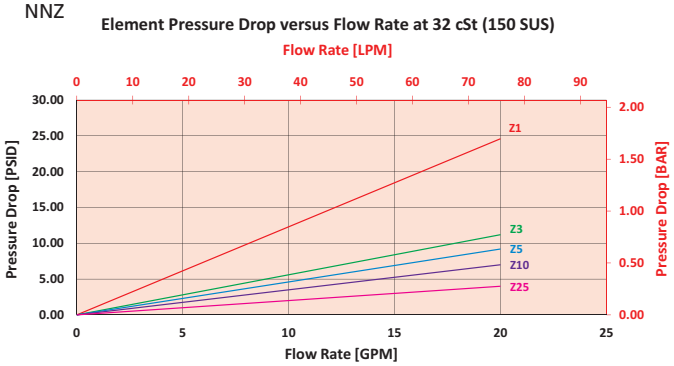


$\Delta P_{element}$

NZ



NNZ



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

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for NFS301NZ10SO using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 10 psi (.69 bar) on the graph for the NFS30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 8 psi (.55 bar) according to the graph for the NZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 10 psi [.69 bar] | $\Delta P_{element}$ = 8 psi [.55 bar]

V_f = 175 SUS (37.2 cSt) / 150 SUS (32 cSt) = 1.2

ΔP_{filter} = 10 psi + (8 psi * 1.2) = 19.6 psi

OR

ΔP_{filter} = .69 bar + (.55 bar * 1.2) = 1.35 bar

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

Ele.	ΔP	Ele.	ΔP
N3	1.10	NN3	0.77
N10	0.17	NN10	0.13
N25	0.10	NN25	0.07
NAS3	0.92	NNAS3	0.56
NAS5	0.71	NNAS5	0.46
NAS10	0.57	NNAS10	0.35

NFS30 Manifold Mounted Pressure Filter

Filter Model Number Selection

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
NFS30 –		–		–		–	

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
NFS30 –	1N –	Z –	10 –		SO –		D	= NFS301NZ10SOD

BOX 1 — Filter Series

NFS30
NFSN30 (Non-bypassing: requires ZX high collapse elements)

BOX 2 — Number & Size of Elements

1	N = Single Length
	NN = Double Length

BOX 3 — Media Type

Omit	= E Media (Cellulose)
Z	= Excellement® Z-Media® (synthetic)
AS	= Anti-Stat Media (synthetic)
ZX	= Excellement® Z-Media® (high collapse center tube)
M	= Media (reusable metal mesh) N size only

BOX 4 — Micron Rating

1	= 1 Micron (Z, ZX media)
3	= 3 Micron (AS,E, Z, ZX media)
5	= 5 Micron (AS, Z, ZX media)
10	= 10 Micron (AS,E,M, Z, ZX media)
25	= 25 Micron (E, Z, ZX media)
60	= 60 Micron (M media)

BOX 5 — Seal Material

Omit	= Buna N
V	= Viton®
W	= Buna N, *Anodized Aluminum parts*

BOX 6 — Porting

SO	= SAE-12
PO	= 3/4" NPTF
FO	= 1" SAE 4-bolt flange Code 61
O	= Manifold

BOX 7 — Options

Omit	= None
X	= Blocked bypass (N/A with NFSN30)

BOX 8 — Dirt Alarm® Options

	Omit = None
Visual	D = Pointer
	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 MS14DCT

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 6. For option O, O-rings included; fastening hardware not included.

Box 8. For options SO, PO and FO, available dirt alarm is D only.

Top-Ported Pressure Filter YF30

Model No. of filter in photograph is YF308YZ10SD5.

Features and Benefits

- Top-ported pressure filter
- All aluminum assembly
- Meets HF2 automotive standards
- Offered in straight thread porting
- Optional drain plug in bowl for easy servicing
- Available with non-bypass option

25 gpm
100 L/min
3000 psi
210 bar

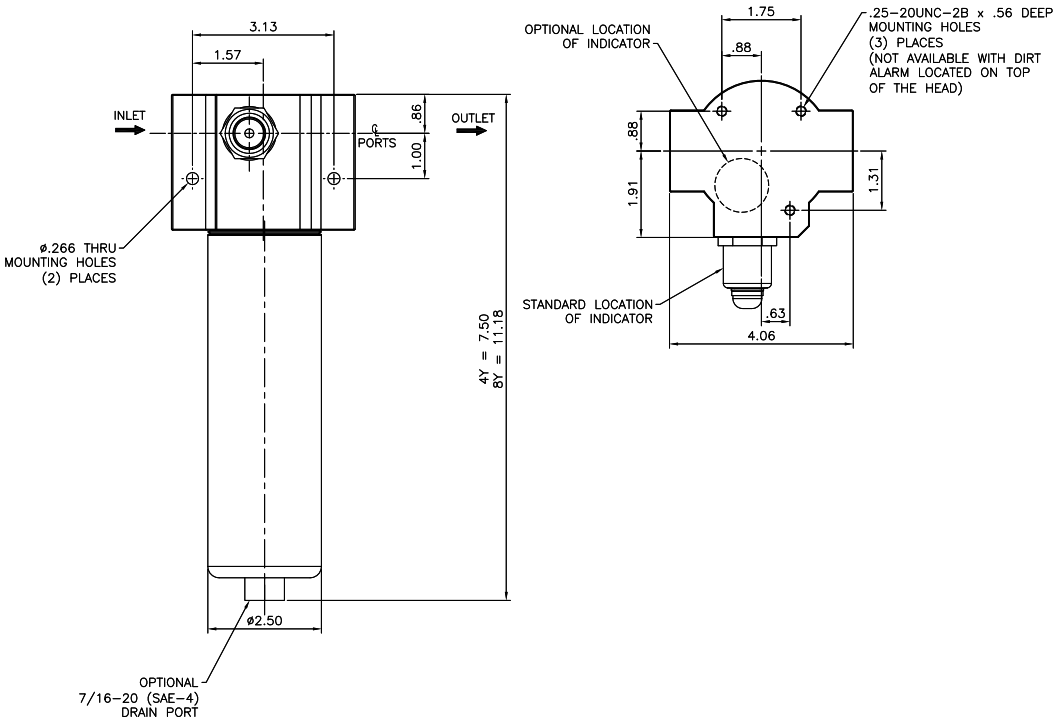
Filter Housing Specifications

Flow Rating:	Up to 25 gpm (100 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	1800 psi (124 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 50 psi (3.4 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Aluminum Aluminum
Weight of YF30-4Y: Weight of YF30-8Y:	3.75 lbs. (1.70 kg) 4.25 lbs. (1.93 kg)
Element Change Clearance:	4.50" (115 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)

YF30 Top-Ported Pressure Filter



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.

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
4YZ1/8YZ1	<1.0	<1.0	<1.0	<4.0	4.2
4YZ3/8YZ3	<1.0	<1.0	<2.0	<4.0	4.8
4YZ5/8YZ5	2.5	3.0	4.0	4.8	6.3
4YZ10/8YZ10	7.4	8.2	10.0	8.0	10.0
4YZ25/8YZ25	18.0	20.0	22.5	19.0	24.0
4YZX5/8YZX5	2.5	3.0	4.0	5.6	7.2
4YZX10/8YZX10	7.4	8.2	10.0	8.0	9.8

Element	DHC (gm)	Element	DHC (gm)
4YZ1	6.3	8YZ1	12.1
4YZ3	5.1	8YZ3	9.9
4YZ5	6.4	8YZ5	12.4
4YZ10	5.4	8YZ10	10.5
4YZ25	4.9	8YZ25	9.4
4YZX5	4.3	8YZX5	8.9
4YZX10	4.3	8YZX10	8.9

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

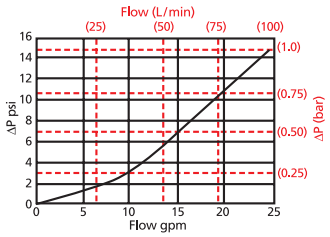
Flow Direction: Outside In

Element Nominal Dimensions: 4Y: 1.77" (45 mm) O.D. x 4.50" (114 mm) long
8Y: 1.77" (45 mm) O.D. x 8.21" (209 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

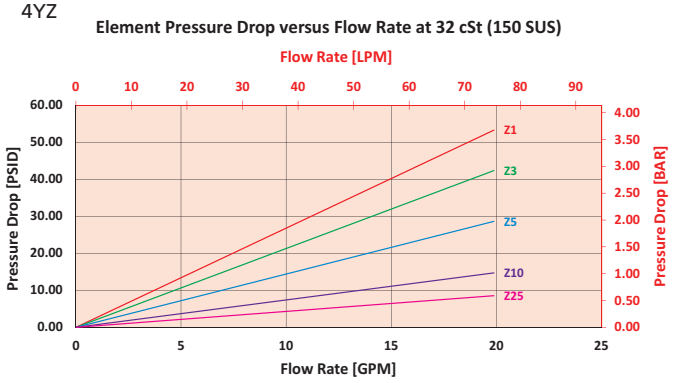
$\Delta P_{housing}$

YF30 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

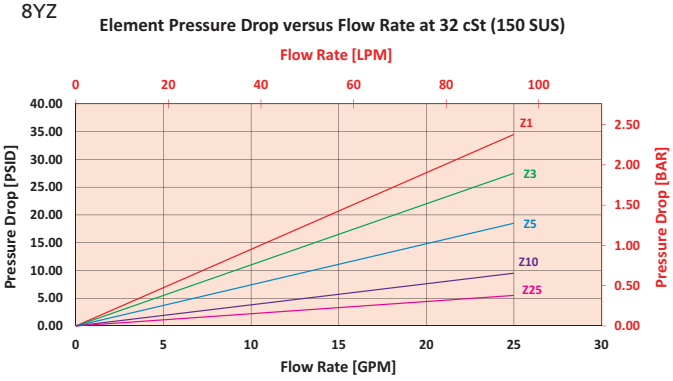


$\Delta P_{element}$

4YZ



8YZ



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

Exercise:

Determine ΔP_{filter} at 10 gpm (37.9 L/min) for YF304YZ10WSDRD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 10 gpm. In this case, $\Delta P_{housing}$ is 3 psi (.21 bar) on the graph for the YF30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 10 gpm. In this case, $\Delta P_{element}$ is 8 psi (.55 bar) according to the graph for the 4YZ10 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, ΔP_{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:

$\Delta P_{housing}$ = 3 psi [.21 bar] | $\Delta P_{element}$ = 8 psi [.55 bar]

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 3 psi + (8 psi * 1.3) = 13.4 psi

OR

ΔP_{filter} = .21 bar + (.55 bar * 1.3) = .93 bar

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

Ele.	ΔP	Ele.	ΔP
4YZX5	1.65	8YZX5	0.92
4YZX10	0.09	8YZX10	0.63

YF30 Top-ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder YF30:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
YF30 –		–		–		–	

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
YF30 –	4 –	YZ10 –	W –	S –		– DR –	D5	= YF304YZ10WSDRD5

BOX 1 – Filter Series

- YF30
- YFN30 (Non-bypassing: requires ZX high collapse elements)

BOX 2 – Element Length (in)

- 4
- 8

BOX 3 – Element Size and Media

- YZ1 = Y size 1 µ Excellement® Z-Media® (synthetic)
- YZ3 = Y size 3 µ Excellement® Z-Media® (synthetic)
- YZ5 = Y size 5 µ Excellement® Z-Media® (synthetic)
- YZ10 = Y size 10 µ Excellement® Z-Media® (synthetic)
- YZ25 = Y size 25 µ Excellement® Z-Media® (synthetic)
- YZX5 = Y size 5 µ Excellement® Z-Media® (high collapse center tube)
- YZX10 = Y size 10 µ Excellement® Z-Media® (high collapse center tube)

BOX 4 – Seal Material

- Omit = Buna N
- V = Viton®
- W = Buna N, *Anodized Aluminum parts*

BOX 5 – Inlet Port

- S = SAE-12
- O = Subplate (contact factory)

BOX 6 – Dirt Alarm® Location

- Omit = Side of filter head
- T = Top of filter head

BOX 7 – Optional Bowl Drain

- Omit = No drain
- DR = Drain

BOX 8 – 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	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	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 MS14DCT

NOTES:

Box 2. Replacement element part numbers are combination of Boxes 2,3, and 4. Example 4YZ10V

Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Non-Bypassing Pressure Filter CFX30

Features and Benefits

- Top-ported non-bypassing pressure filter
- Unique valve eliminates need for high collapse elements, valve begins to close off flow at 50 psi: Differential Pressure and fully closes off flow by 80 psi: DP. This ensures that no un-filtered flow is allowed down stream to critical components.
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available

30 gpm
115 L/min
3000 psi
210 bar

Model No. of filter in photograph is CFX301CC10S.

Filter Housing Specifications

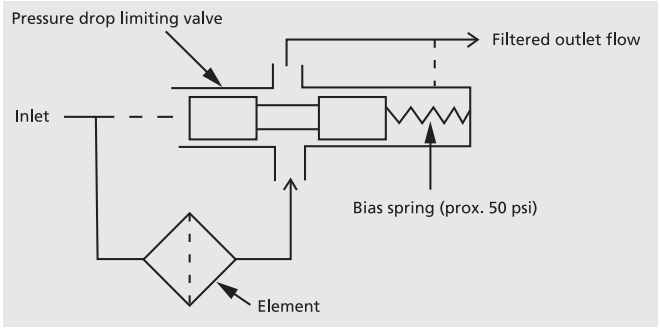
Flow Rating:	Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	3000 psi (210 bar)
Min. Yield Pressure:	12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	1800 psi (125 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Non-Bypassing
Porting Head: Element Case:	Aluminum Steel
Weight of CFX30-1CC:	19.5 lbs. (8.9 kg)
Element Change Clearance:	4.00" (100 mm)

Fluid Compatibility

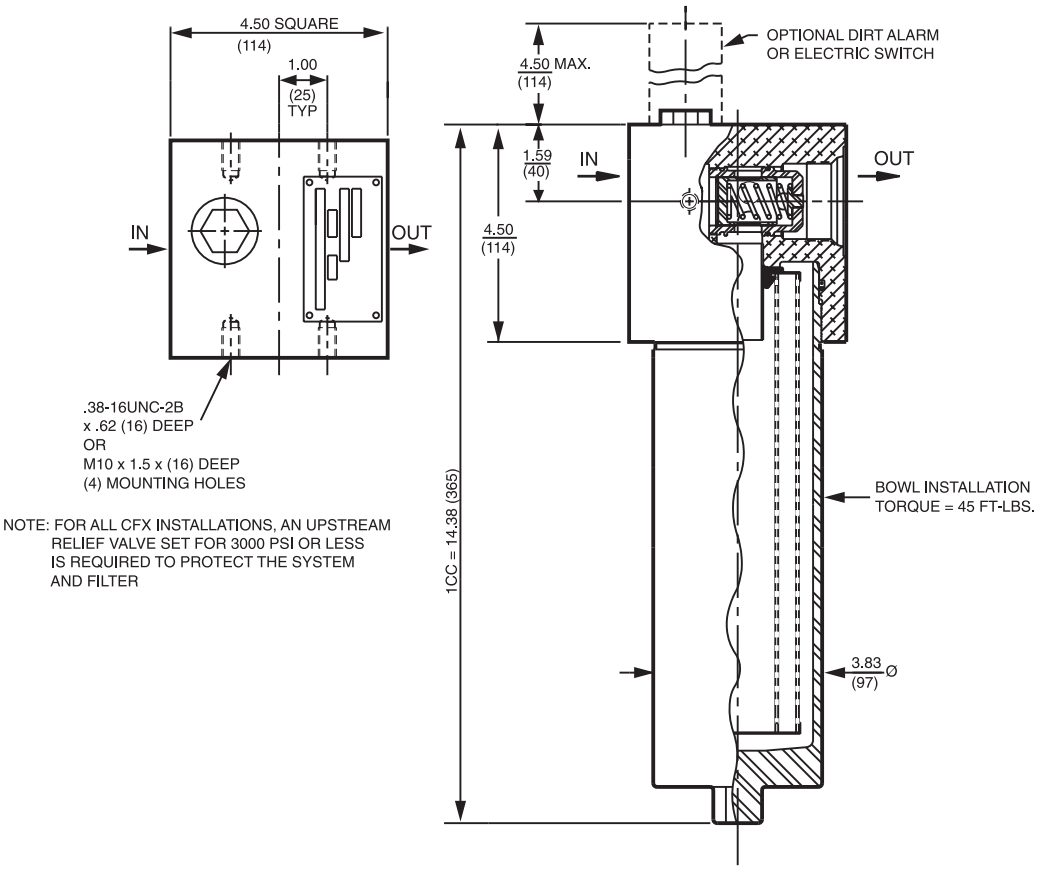
Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content	All Z-Media® and ASP® media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and 3, 5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

Unique Non-Bypassing Filtration: A Better Way That Does Not Require High Crush Elements

Schroeder's CFX30 series is a non-bypassing filter that incorporates the use of a unique pressure drop limiting valve that maintains the differential pressure across the element below the element's collapse pressure rating. As the element accumulates dirt, the pressure drop increases across the element and, therefore, across the spool of the valve. At 50 psi, the spool begins to move, restricting flow as needed to prevent the pressure drop from increasing further and compromising element integrity. This design allows the CFX30 filters to safely use the lower cost standard elements, eliminating the need for expensive high-crush replacement elements.



CFX30 Non-Bypassing Pressure Filter



NOTE: FOR ALL CFX INSTALLATIONS, AN UPSTREAM RELIEF VALVE SET FOR 3000 PSI OR LESS IS REQUIRED TO PROTECT THE SYSTEM AND FILTER

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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
CCZ1	<1.0	<1.0	<1.0	<4.0	4.2
CCZ3	<1.0	<1.0	<2.0	<4.0	4.8
CCZ5	2.5	3.0	4.0	4.8	6.3
CCZ10	7.4	8.2	10.0	8.0	10.0
CCZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)
CCZ1	57
CCZ3	58
CCZ5	63
CCZ10	62
CCZ25	63

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

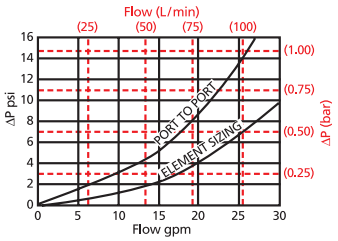
Flow Direction: Outside In

Element Nominal Dimensions: CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

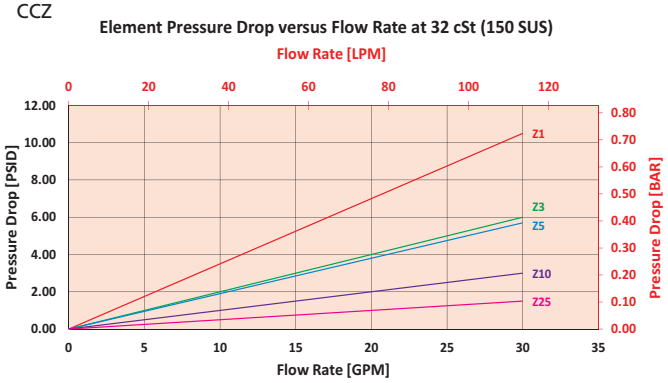
$\Delta P_{housing}$

CFX30 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

CCZ



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

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for CFX301CZ5SD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 5 psi (.34 bar) on the graph for the CFX30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 3 psi (.21 bar) according to the graph for the CZ5 element.

Because the viscosity in this sample is 100 SUS (21.3 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 5 psi [.34 bar] | $\Delta P_{element}$ = 3 psi [.21 bar]

V_f = 100 SUS (21.3 cSt) / 150 SUS (32 cSt) = .67

ΔP_{filter} = .34 psi + (.21 psi * .67) = .48 psi

OR

ΔP_{filter} = .34 bar + (.21 bar * .67) = .48 bar

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

Ele.	ΔP
CC3	0.22
CC10	0.13
CC25	0.03
CAS3/CCAS3	0.20
CAS5/CCAS5	0.19
CAS10/CCAS10	0.35

CFX30 Non-Bypassing Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder CFX30:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
CFX30 –		–		–		–	

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
CFX30 –	CC –	Z –	5 –		S –		D5	= CFX30CCZ5SD5

BOX 1

Filter Series
CFX30

BOX 2

Number & Size of Elements	
1	C = Single Length
	CC = Double Length

BOX 3

Media Type	
Omit	= E Media (cellulose)
Z	= Excellement® Z-Media® (synthetic)
AS	= Anti-Stat Media (synthetic)
M	= Media (reusable metal mesh)

BOX 4

Micron Rating		
1	= 1 Micron	(Z-Media®)
3	= 3 Micron	(E, Z, AS Media)
5	= 5 Micron	(Z, AS Media)
10	= 10 Micron	(E, M, Z, AS Media)
25	= 25 Micron	(E & Z-Media®)

BOX 5

Seal Material	
Omit	= Buna N
V	= Viton®
W	= Buna N, *Anodized Aluminum parts*
H	= EPR
H.5	= Skydrol® compatibility

BOX 6

Porting	
S	= SAE-20
P	= 1¼" NPTF
B	= ISO 228 G-1¼"

BOX 7

Options	
Omit	= None
L	= Two ¼" NPTF inlet and outlet female test ports
U	= Schroeder Check 7/16"-20 UNF Test Point installation in cap (upstream)

BOX 8

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	MS13DC	= Supplied w/ threaded connector & light
	MS14DC	= 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 MS14DCT

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. E media (cellulose) elements are only available with Buna N seals.

Box 5. For options H, V, 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. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

High Pressure Filter PLD

Model No. of filter in photograph is PLD10DVZ3VF24.

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

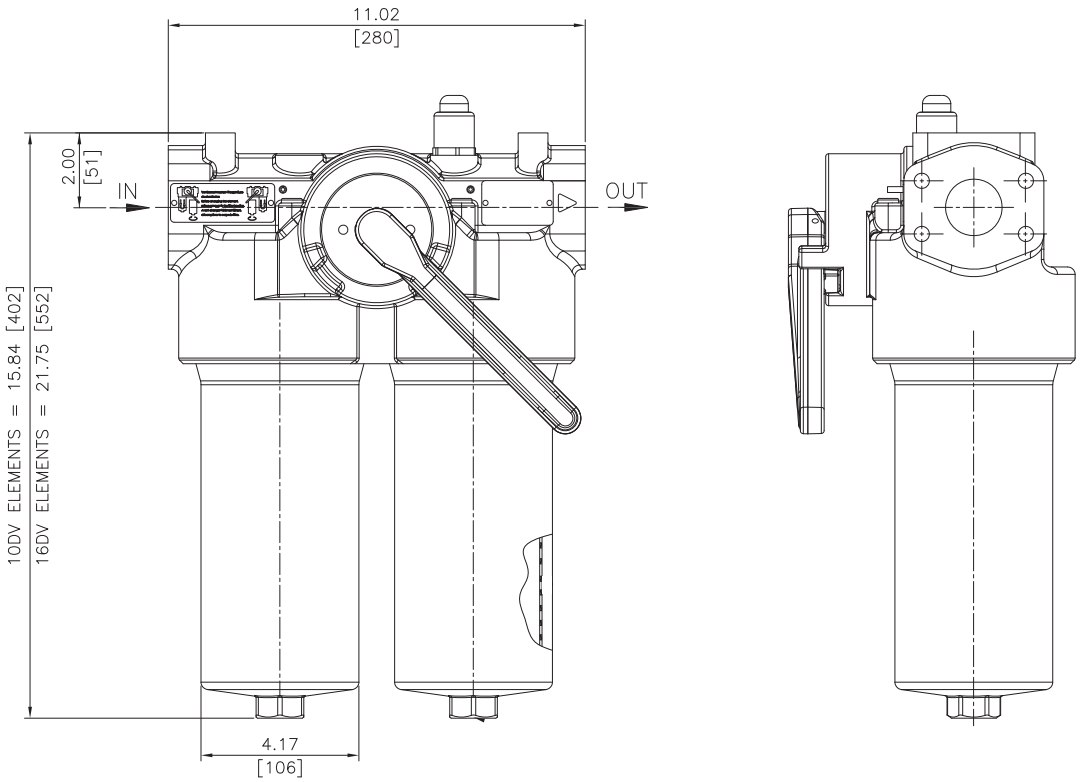
Filter Housing Specifications

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: Element Case:	Ductile Iron Steel
Weight of PLD-10DV: Weight of PLD-16DV:	97 lbs. (43.9 kg) 100 lbs. (45.3 kg)
Element Change Clearance:	**10DV:** 3.5" (89 mm) **16DV:** 3.5" (89 mm)

Fluid Compatibility

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)

PLD High Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
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

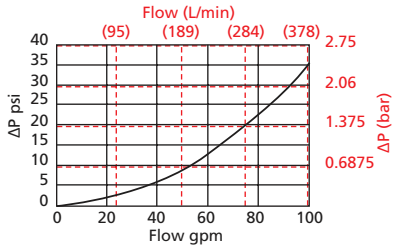
Element	DHC (gm)	Element	DHC (gm)
10DVZ1	57	16DVZ1	110
10DVZ3	59	16DVZ3	114
10DVZ5	64	16DVZ5	124
10DVZ10	62	16DVZ10	112
10DVZ25	63	16DVZ25	102

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

Pressure Drop Information
Based on Flow Rate and Viscosity

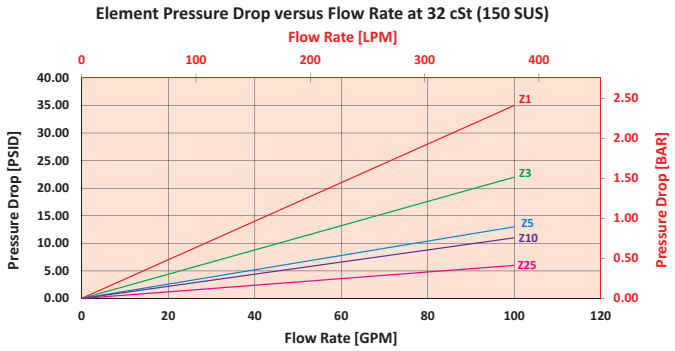
$\Delta P_{housing}$

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

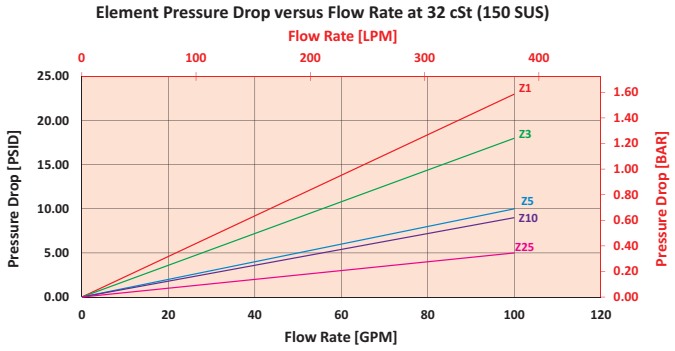


$\Delta P_{element}$

10DVZ



16DVZ



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

Exercise:

Determine ΔP_{filter} at 50 gpm (189 L/min) for PLD10DVZ1VF24VM using 200 SUS (42.6 cSt) fluid.

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

Use the element pressure curve to determine $\Delta P_{element}$ at 50 gpm. In this case, $\Delta P_{element}$ 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, ΔP_{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] | $\Delta P_{element}$ = 17.5 psi [1.2 bar]

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 8 psi + (17.5 psi * 1.3) = 30.8 psi

OR

ΔP_{filter} = .55 bar + (1.2 bar * 1.3) = 2.1 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	Ele.	ΔP	Ele.	ΔP
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		

PLD High Pressure Filter

Filter Model Number Selection

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

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6
PLD					

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	
PLD	10	DVZ1	V	F24	VM	= PLD10DVZ1VF24VM

BOX 1

Filter Series
PLD

BOX 2

Length of Elements (in)
10
16

BOX 3

Element Size and Media
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

BOX 4

Seal Material
Omit = Buna N
V = Viton®

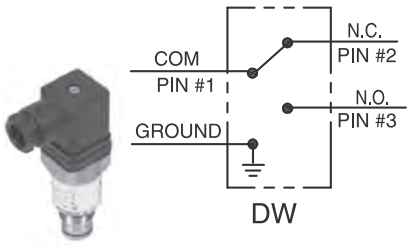
BOX 5

Porting
F24 = 1½" SAE 4-bolt flange Code 61
S24 = SAE-24 (1½")

BOX 6

	Dirt Alarm® Options
	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.

Top-Ported Pressure Filter CF40/DF40

Model No. of filter in photograph is CF401CC10SD5 and DF401CCZ10PD5.

Features and Benefits

- Top-ported pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available
- No-Element indicator option available

Up to
45 gpm
170 L/min
4000 psi
275 bar

Filter Housing Specifications

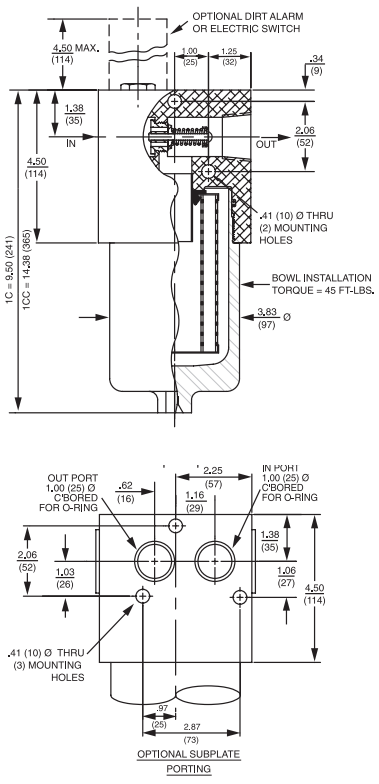
Flow Rating:	CF40 - 45 gpm (170 L/min) for 150 SUS (32 cSt) fluids DF40 - 30 gpm (113 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	4000 psi (275 bar)
Min. Yield Pressure:	12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	1800 psi (125 bar), per NFPA T2.6.1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 72 psi (5.0 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Aluminum Steel
Weight of CF40/DF40-1C: Weight of CF40/DF40-1CC:	14.0 lbs. (6.4 kg) 19.5 lbs. (8.9 kg)
Element Change Clearance:	4.00" (100 mm) for C elements 8.75" (219 mm) for CC elements

Fluid Compatibility

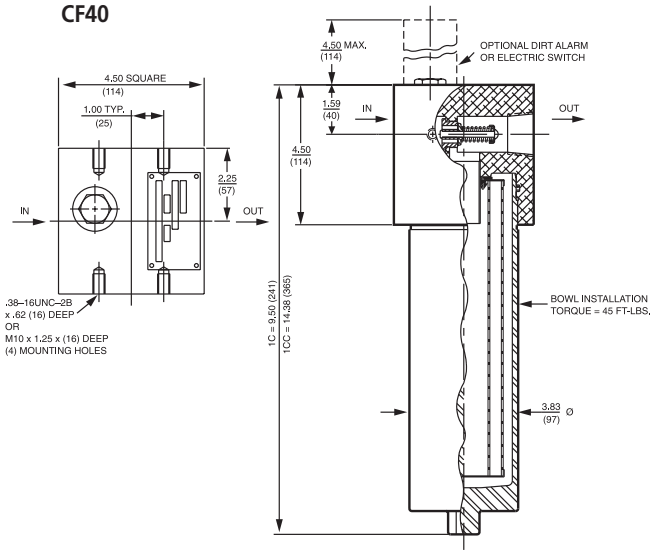
Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content	All Z-Media® and ASP® Media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® (synthetic), and all ASP® Media (synthetic)
Phosphate Esters	All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation
Skydrol®	3, 5, 10 and 25 µ Z-Media (synthetic) and all ASP Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

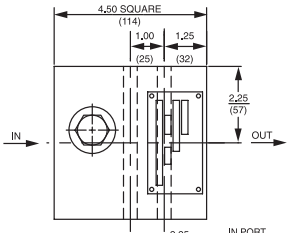
CF40/DF40 Top-Ported Pressure Filter

DF40



CF40





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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
CZ1/CCZ1	<1.0	<1.0	<1.0	<4.0	4.2
CZ3/CCZ3	<1.0	<1.0	<2.0	<4.0	4.8
CZ5/CCZ5	2.5	3.0	4.0	4.8	6.3
CZ10/CCZ10	7.4	8.2	10.0	8.0	10.0
CZ25/CCZ25	18.0	20.0	22.5	19.0	24.0
CCZX3	<1.0	<1.0	<2.0	4.7	5.8
CCZX10	7.4	8.2	10.0	8.0	9.8

Element	DHC (gm)	Element	DHC (gm)
CZ1	25	CCZ1	57
CZ3	26	CCZ3	58
CZ5	30	CCZ5	63
CZ10	28	CCZ10	62
CZ25	28	CCZ25	63
		CCZX3	26*
		CCZX10	28*

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

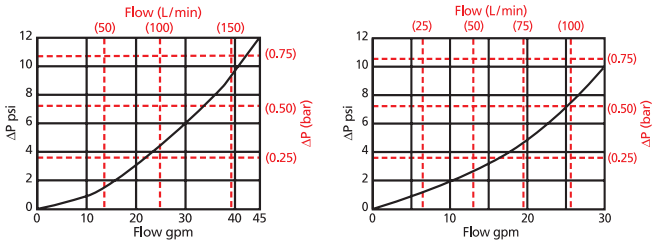
Element Nominal Dimensions: C: 3.0" (75 mm) O.D. x 4.75" (120 mm) long
CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

* Based on 100 psi terminal pressure

Pressure Drop Information
Based on Flow Rate and Viscosity

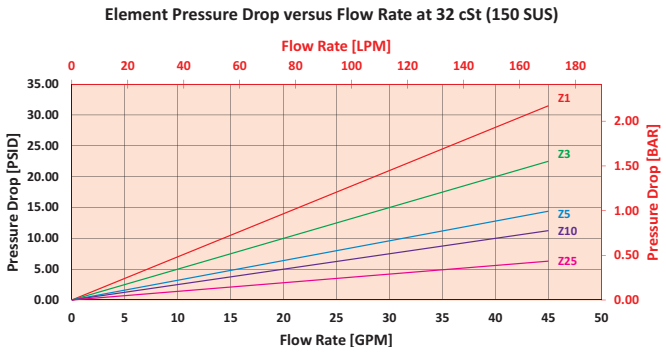
$\Delta P_{housing}$

CF40/DF40 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

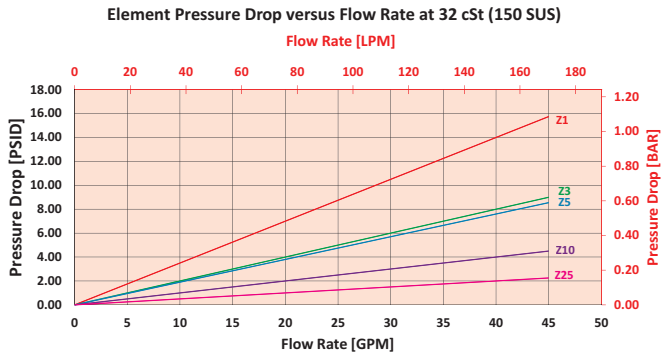


$\Delta P_{element}$

CZ



CCZ



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

Exercise:

Determine ΔP_{filter} at 25 gpm (94.6 L/min) for CF401CZ10SD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 25 gpm. In this case, $\Delta P_{housing}$ is 4.5 psi (.31 bar) on the graph for the CF40 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 25 gpm. In this case, $\Delta P_{element}$ is 6 psi (.42 bar) according to the graph for the CZ10 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, ΔP_{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:

$\Delta P_{housing}$ = 4.5 psi [.31 bar] | $\Delta P_{element}$ = 6 psi [.42 bar]

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 4.5 psi + (6 psi * 1.3) = 12.3 psi

OR

ΔP_{filter} = .31 bar + (.42 bar * 1.3) = .86 bar

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

Ele.	ΔP	Ele.	ΔP
C3	0.50	CC3	0.22
C10	0.19	CC10	0.13
C25	0.09	CC25	0.03
CAS3	0.50	CCAS3	0.20
CAS5	0.32	CCAS5	0.19
CAS10	0.25	CCAS10	0.10
		CCZX3	0.29
		CCZX10	0.26

CF40/DF40 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder CF40:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	
CF40									
CF40	1C	Z	10		S		D5		= CF401CZ10SD5

BOX 1 — Filter Series

- CF40
- CFN40 (Non-bypassing: requires ZX high collapse elements)
- DF40
- DFN40 (Non-bypassing: requires ZX high collapse elements)

BOX 2 — Number and Size of Elements

1	C
	CC

BOX 3 — Media Type

Omit	E Media(Cellulose)
Z	= Excellement® Z-Media® (synthetic)
ZX	= Excellement® Z-Media® (high collapse center tube)
AS	= Anti-Stat Media (synthetic)
M	= Media (reusable metal mesh) D size only

BOX 4 — Micron Rating

1	= 1 Micron	(Z, ZX media)
3	= 3 Micron	(AS, E, Z, ZX media)
5	= 5 Micron	(AS, Z, ZX media)
10	= 10 Micron	(AS, E, M, Z, ZX media)
25	= 25 Micron	(E & Z media®)

BOX 5 — Seal Material

Omit	= Buna N
V	= Viton®
W	= Buna N, *Anodized Aluminum parts*
H	= EPR
H.5	= Skydrol® compatibility

BOX 6 — Porting (*Only for CF40 Configuration)

S	= SAE-20"
P	= 1¼" NPTF
B	= ISO 228 G-1¼"

BOX 6 (Cont.) — Porting (*Only for DF40 Configuration)

O	= Manifold mounting
S	= SAE-16
P	= 1" NPTF
B	= ISO 228 G-1

BOX 7 — Options

Omit	= None
X	= Blocked bypass
25	= 25 psi bypass setting
30	= 30 psi bypass setting
50	= 50 psi bypass setting
60	= 60 psi bypass setting
75	= 75 psi bypass setting
L	= Two ¼" NPTF inlet and outlet female test ports

BOX 8 — Dirt Alarm® Options

	Omit =	None
Visual	D =	Pointer
	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	MS =	Cam operated switch w/ ½" conduit female connection
	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	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 MS14DCT

BOX 9 — Additional Options

Omit	= None
N	= No-Element Indicator (CF40 or DF40)

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. For options H, V, 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. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

Box 7. Options X and 50 are not available with CFN40 or DFN40.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

Box 9. N option is not available with CFN40 or DFN40. N option should be used in conjunction with dirt alarm.

Top-Ported Pressure Filter **PF40**

Model No. of filter in photograph is PF409HZ10S.

Features and Benefits

- Top-ported pressure filter
- All steel housing offers unparalleled fatigue rating
- Available with non-bypass option with high collapse element
- Two bowl lengths provide optimal sizing for the application
- Offered in conventional sub-plate, SAE straight thread, and ISO 228 porting

50 gpm
190 L/min
4000 psi
275 bar

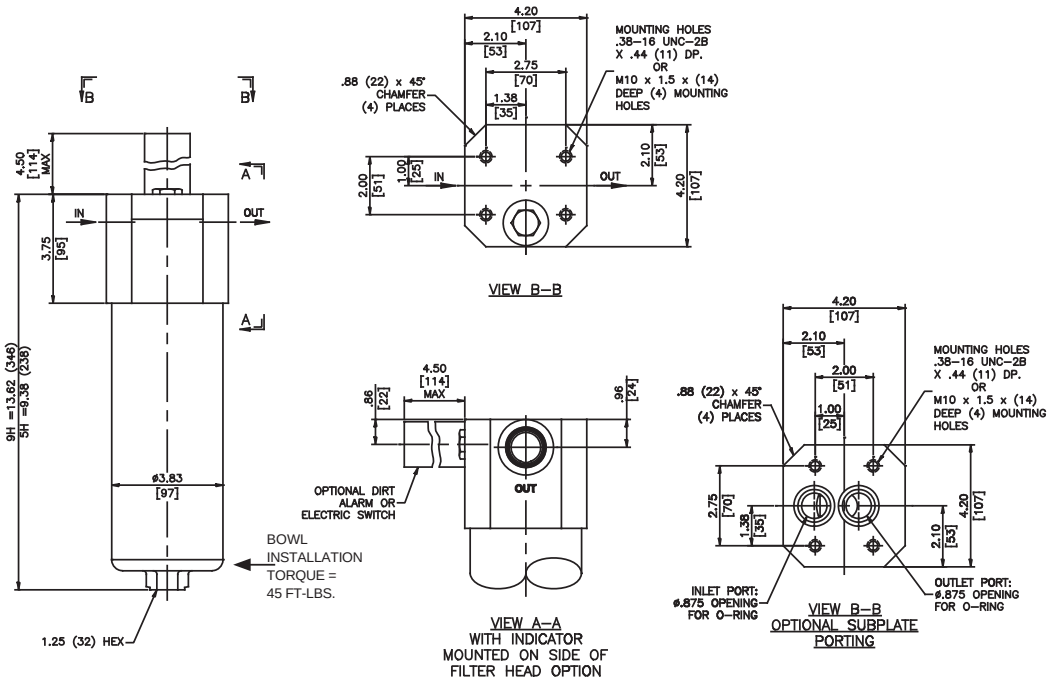
Filter Housing Specifications

Flow Rating:	Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	4000 psi (275 bar)
Min. Yield Pressure:	12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2500 psi (173 bar), per NFPA T2.6.1-R1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 75 psi (5.2 bar)
Porting Head: Element Case:	Steel Steel
Weight of PF40-5H: Weight of PF40-9H:	21.8 lbs. (9.9 kg) 25.5 lbs. (11.6 kg)
Element Change Clearance:	3.25" (83 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

PF40 Top-Ported Pressure Filter



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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
5HZ1/9HZ1	<1.0	<1.0	<1.0	<4.0	4.2
5HZ3/9HZ3	<1.0	<1.0	<2.0	<1.0	4.8
5HZ5/9HZ5	2.5	3.0	4.0	4.8	6.3
5HZ10/9HZ10	7.4	8.2	10.0	8.0	10.0
5HZ25/9HZ25	18.0	20.0	22.5	19.0	24.0
5HZX1/9HZX1	<1.0	<1.0	<1.0	<4.0	4.2
5HZX3/9HZX3	<1.0	<1.0	<2.0	<1.0	4.8
5HZX5/9HZX5	2.5	3.0	4.0	4.8	6.3
5HZX10/9HZX10	7.4	8.2	10.0	8.0	10.0
5HZX25/9HZX25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
5HZ1	26	9HZ1	51	5HZX1	14	9HZX1	29
5HZ3	28	9HZ3	42	5HZX3	14	9HZX3	29
5HZ5	39	9HZ5	59	5HZX5	15	9HZX5	31
5HZ10	31	9HZ10	47	5HZX10	15	9HZX10	31
5HZ25	32	9HZ25	48	5HZX25	16	9HZX25	33

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse elements

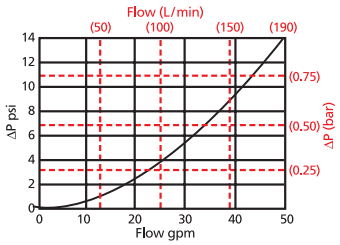
Flow Direction: Outside In

Element Nominal Dimensions: 5H: 2.5" (100 mm) O.D. x 5.36" (136 mm) long
9H: 2.5" (100 mm) O.D. x 9.63" (244 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

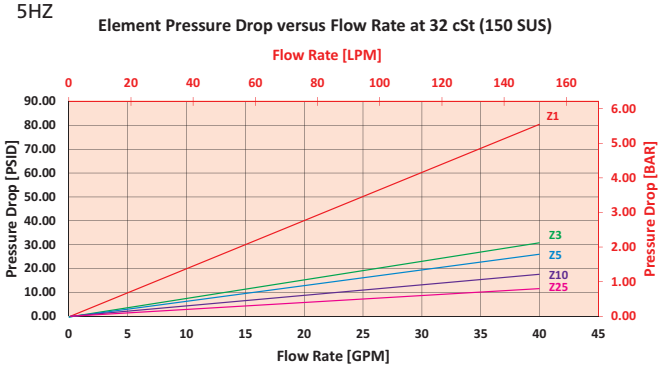
$\Delta P_{housing}$

PF40 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

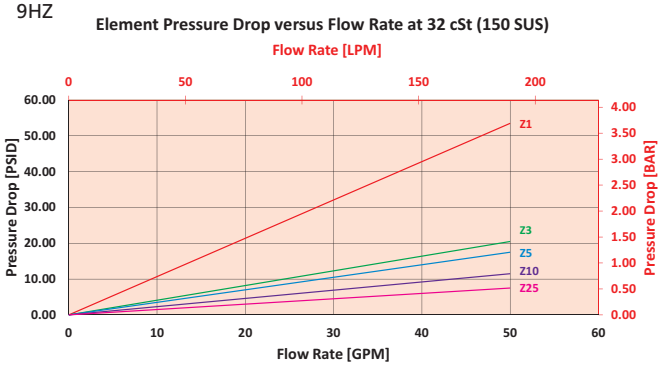


$\Delta P_{element}$

5HZ



9HZ



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

Exercise:

Determine ΔP_{filter} at 20 gpm (75.7 L/min) for PF405HZ3SD5S using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 20 gpm. In this case, $\Delta P_{housing}$ is 2.5 psi (.17 bar) on the graph for the PF40 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 20 gpm. In this case, $\Delta P_{element}$ is 15 psi (1 bar) according to the graph for the 5HZ3 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 2.5 psi [.17 bar] | $\Delta P_{element}$ = 15 psi [1 bar]

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

ΔP_{filter} = 2.5 psi + (15 psi * 1.1) = 19 psi

OR

ΔP_{filter} = .17 bar + (1 bar * 1.1) = 1.3 bar

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

Ele.	ΔP
5HZX3	1.17
5HZX10	0.50
5HZX25	0.27
9HZX3	0.62
9HZX10	0.26
9HZX25	0.14

PF40 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder PF40:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	
PF40									
PF40	5	HZ3		S		D5	S		= PF405HZ3SD5S

BOX 1 — Filter Series

- PF40
- PFN40 (Non-bypassing: requires ZX high collapse elements)

BOX 2 — Element Length (in)

- 5
- 9

BOX 3 — Element Part Number

- HZ1 = H size 1 µ Excellement® Z-Media® (synthetic)
- HZ3 = H size 3 µ Excellement® Z-Media® (synthetic)
- HZ5 = H size 5 µ Excellement® Z-Media® (synthetic)
- HZ10 = H size 10 µ Excellement® Z-Media® (synthetic)
- HZ25 = H size 25 µ Excellement® Z-Media® (synthetic)
- HZX3 = H size 3 µ Excellement® Z-Media® (high collapse center tube)
- HZX10 = H size 10 µ Excellement® Z-Media® (high collapse center tube)
- HZX25 = H size 25 µ Excellement® Z-Media® (high collapse center tube)

BOX 4 — Seal Material

- Omit = Buna N
- H = EPR
- V = Viton®
- H.5 = Skydrol® compatibility

BOX 5 — Porting

- O = Manifold
- S = SAE-16
- B = ISO 228 G-1"

BOX 6 — Options

- Omit = None
- L = Two ¼" NPTF inlet & outlet female test ports
- U = Schroeder Check 7/16"-20 UNF test point installation in head (upstream)

BOX 7 — 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	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	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 MS14DCT

BOX 8 — Dirt Alarm® Location

- Omit = Top mounted
- S = Side mounted

BOX 9 — Bowl Drain Options

- Omit = None
- DR = Drain 7/16"-20

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 5HZ10V

Box 4. For options H, V, 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. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 5. B porting option supplied with metric mounting holes.

Box 7. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

Manifold Mounted Pressure Filter **RFS50**

Model No. of filter in photograph is RFS508R10O.

Features and Benefits

- Manifold mounted high pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to customer's manifold
- Standard drain plug in bowl for easy servicing
- Various dirt alarm options available

30 gpm
115 L/min
5000 psi
345 bar

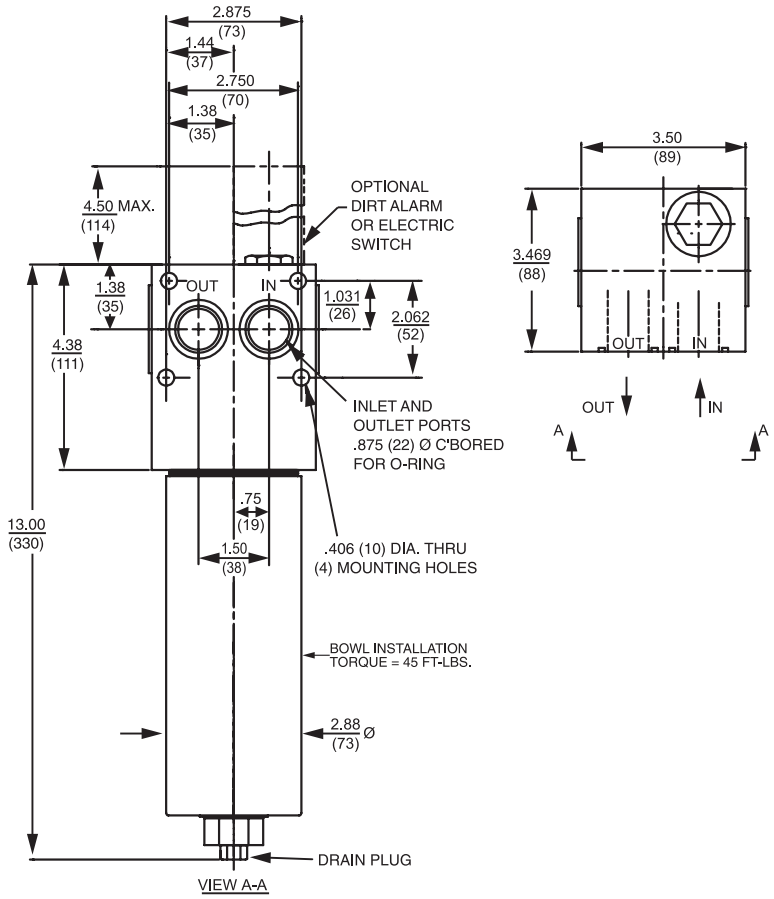
Filter Housing Specifications

Flow Rating:	Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	5000 psi (345 bar)
Min. Yield Pressure:	15,500 psi (1070 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	Contact Factory
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 56 psi (3.9 bar)
Porting Head: Element Case:	Steel Steel
Weight of RFS50-8R:	16.50 lbs. (7.5 kg)
Element Change Clearance:	3.0" (75 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)

RFS50 Manifold Mounted Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
8RZ1	<1.0	<1.0	<1.0	<4.0	4.2
8RZ3	<1.0	<1.0	<2.0	<4.0	4.8
8RZ5	2.5	3.0	4.0	4.8	6.3
8RZ10	7.4	8.2	10.0	8.0	10.0
8RZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)
8RZ1	33
8RZ3	26
8RZ5	51
8RZ10	29
8RZ25	30

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

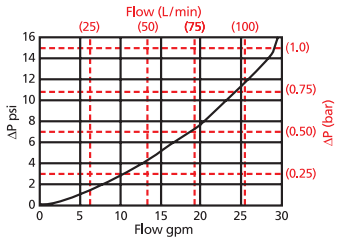
Flow Direction: Outside In

Element Nominal Dimensions: 2.18" (55 mm) O.D. x 8.15" (206 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

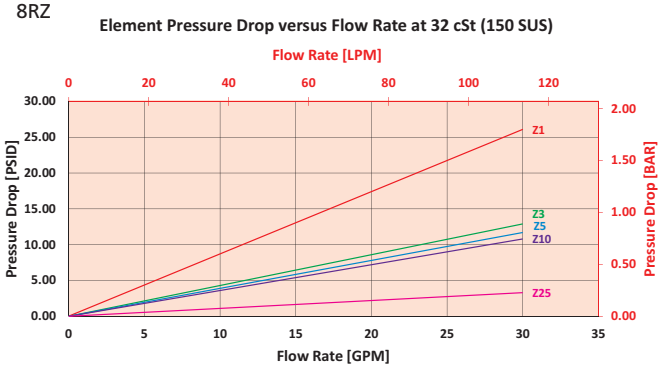
$\Delta P_{housing}$

RFS50 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

8RZ



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

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for RFS508RZ10VOD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 5 psi (.34 bar) on the graph for the RFS50 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 5 psi (.34 bar) according to the graph for the 8RZ10 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, ΔP_{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:

$\Delta P_{housing}$ = 5 psi [.34 bar] | $\Delta P_{element}$ = 5 psi [.34 bar]

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 5 psi + (5 psi * 1.3) = 11.5 psi

OR

ΔP_{filter} = .34 bar + (.34 bar * 1.3) = .78 bar

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

Ele.	ΔP
8R3	0.35
8R10	0.30

RFS50 Manifold Mounted Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder RFS50:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7
RFS50 –		–		–		–

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5			
RFS50 –	8 –	RZ10 –	V –	O –		– D5	= RFS508RZ10VOD5

BOX 1 – Filter Series

Filter Series
RFS50

BOX 2 – Element Length (in)

Element Length (in)
8

BOX 3 – Element Size and Media

Element Size and Media	
R3	= R size 3 µ E media (cellulose)
R10	= R size 10 µ E media (cellulose)
RZ1	= R size 1 µ Excellement® Z-Media® (synthetic)
RZ3	= R size 3 µ Excellement® Z-Media® (synthetic)
RZ5	= R size 5 µ Excellement® Z-Media® (synthetic)
RZ10	= R size 10 µ Excellement® Z-Media® (synthetic)
RZ25	= R size 25 µ Excellement® Z-Media® (synthetic)

BOX 4 – Seal Material

Seal Material	
Omit	= Buna N
H	= EPR
V	= Viton®

BOX 5 – Inlet Port

Inlet Port	
O	= Manifold mounting

BOX 6 – Options

Options	
Omit	= None
X	= Blocked bypass
50	= 50 psi bypass setting
L	= Two ¼" NPTF inlet and outlet female test ports
U	= Schroeder Check 7/16"-20 UNF Test Point installation in head (upstream)

BOX 7 – 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	MS13DC =	Supplied w/ threaded connector & light
	MS14DC=	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 MS14DCT

NOTES:

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

Box 3. Example: 8RZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. For option O, O-rings included, fastening hardware not included.

Top-Ported Pressure Filter RF60

Model No. of filter in photograph is RF608R10P.

Features and Benefits

- Top-ported high pressure filter
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Available with non-bypass option with high collapse element
- Various dirt alarm options available

30 gpm
115 L/min
6000 psi
415 bar

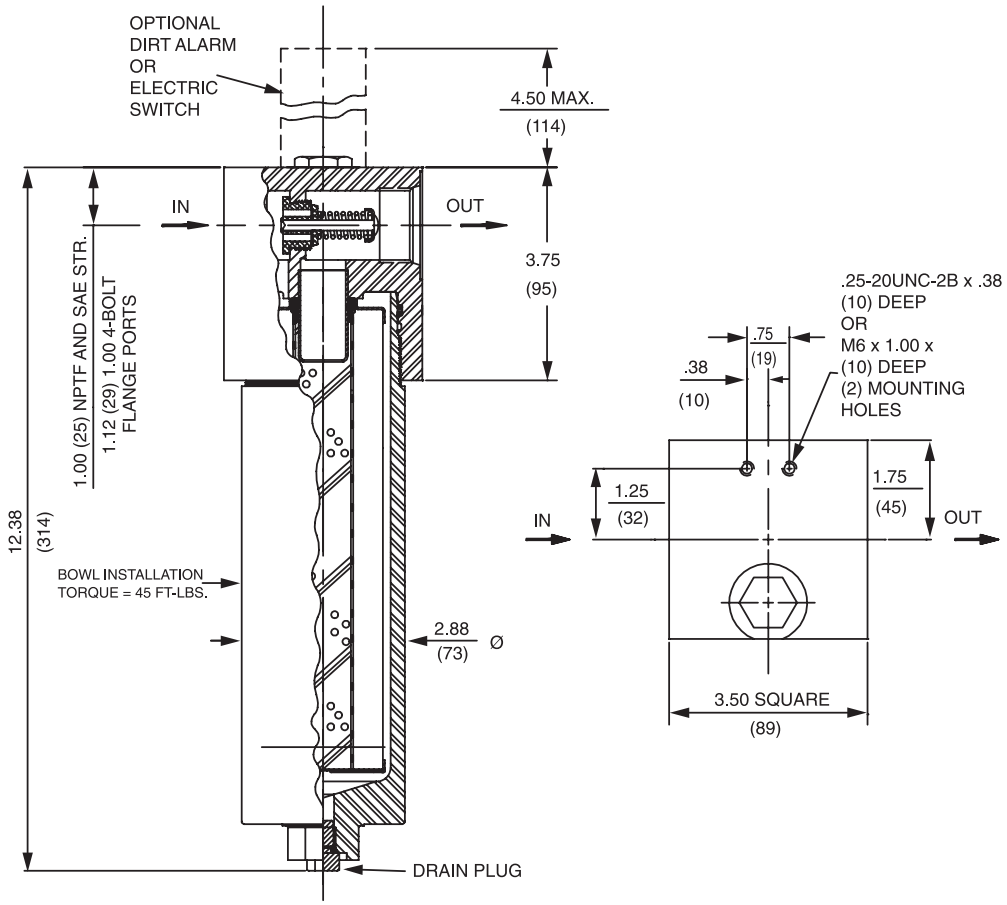
Filter Housing Specifications

Flow Rating:	Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	6000 psi (415 bar)
Min. Yield Pressure:	18,000 psi (1241 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	2300 psi (159 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) Full Flow: 56 psi (3.9 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Steel Steel
Weight of RF60-8R:	15.75 lbs. (7.2 kg)
Element Change Clearance:	3.0" (75 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)

RF60 Top-Ported Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
8RZ1	<1.0	<1.0	<1.0	<4.0	4.2
8RZ3	<1.0	<1.0	<2.0	<4.0	4.8
8RZ5	2.5	3.0	4.0	4.8	6.3
8RZ10	7.4	8.2	10.0	8.0	10.0
8RZ25	18.0	20.0	22.5	19.0	24.0
8RZX3	<1.0	<1.0	<2.0	4.7	5.8
8RZX10	7.4	8.2	10.0	8.0	9.8

Element	DHC (gm)
8RZ1	33
8RZ3	26
8RZ5	51
8RZ10	29
8RZ25	30
8RZX3	C/F
8RZX10	C/F

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

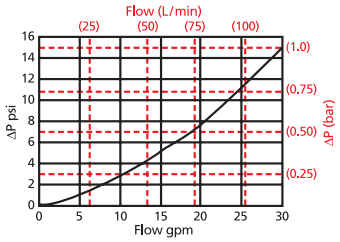
Flow Direction: Outside In

Element Nominal Dimensions: 2.18" (55 mm) O.D. x 8.15" (206 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

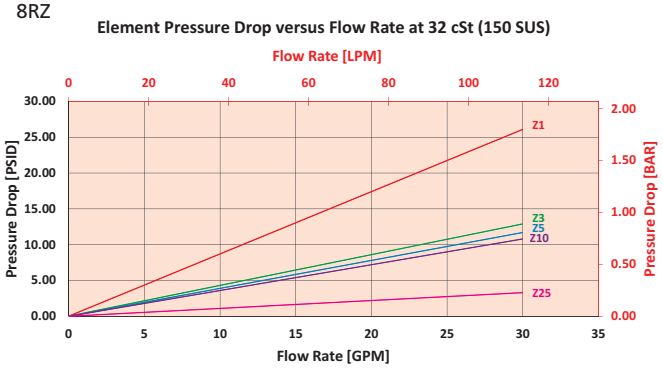
$\Delta P_{housing}$

RF60 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

8RZ



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

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for RF608RZ10VPD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 5 psi (.34 bar) on the graph for the RF60 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 5 psi (.34 bar) according to the graph for the 8RZ10 element.

Because the viscosity in this sample is 100 SUS (21.3 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 5 psi [.34 bar] | $\Delta P_{element}$ = 5 psi [.34 bar]

V_f = 100 SUS (21.3 cSt) / 150 SUS (32 cSt) = .67

ΔP_{filter} = 5 psi + (5 psi * .67) = 8.3 psi

OR

ΔP_{filter} = .34 bar + (.34 bar * .67) = .57 bar

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

Ele.	ΔP
8R3	0.35
8R10	0.30
8RZX3	C/F
8RZX10	C/F

RF60 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder RF60:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7
RF60 –		–		–		–

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	
RF60 –	8 –	RZ10 –	V –	P –		D5	= RF608RZ10VPD5

BOX 1

Filter Series
RF60
RFN60 (Non-bypassing: requires ZX high collapse elements)

BOX 2

Element Length (in)
8

BOX 3

Element Size and Media
R3 = R size 3 µ E media (cellulose)
R10 = R size 10 µ E media (cellulose)
RZ1 = R size 1 µ Excellement® Z-Media® (synthetic)
RZ3 = R size 3 µ Excellement® Z-Media® (synthetic)
RZ5 = R size 5 µ Excellement® Z-Media® (synthetic)
RZ10 = R size 10 µ Excellement® Z-Media® (synthetic)
RZ25 = R size 25 µ Excellement® Z-Media® (synthetic)
RZX3 = R size 3 µ Excellement® Z-Media® (high collapse center tube)
RZX10 = R size 10 µ Excellement® Z-Media® (high collapse center tube)

BOX 4

Seal Material
Omit = Buna N
H = EPR
V = Viton®

BOX 5

Inlet Port
P = 1" NPTF
S = SAE-16
F = 1" SAE 4-bolt flange Code 62
B = ISO 228 G-1"

BOX 6

Options
Omit = None
X = Blocked bypass
50 = 50 psi bypass setting
L = Two ¼" NPTF inlet and outlet female test ports
U = Schroeder Check 7/16"-20 UNF Test Point installation in head (upstream)

BOX 7

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	MS13DC = Supplied w/ threaded connector & light
	MS14DC = 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 MS14DCT

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 8RZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

Box 6. Options X and 50 are not available with RFN60.

Box 7. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

Top-Ported Pressure Filter CF60

Model No. of filter in photograph is CF601CCZ3SD5.

Features and Benefits

- Top-ported high pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- No-Element indicator option available

50 gpm
190 L/min
6000 psi
415 bar

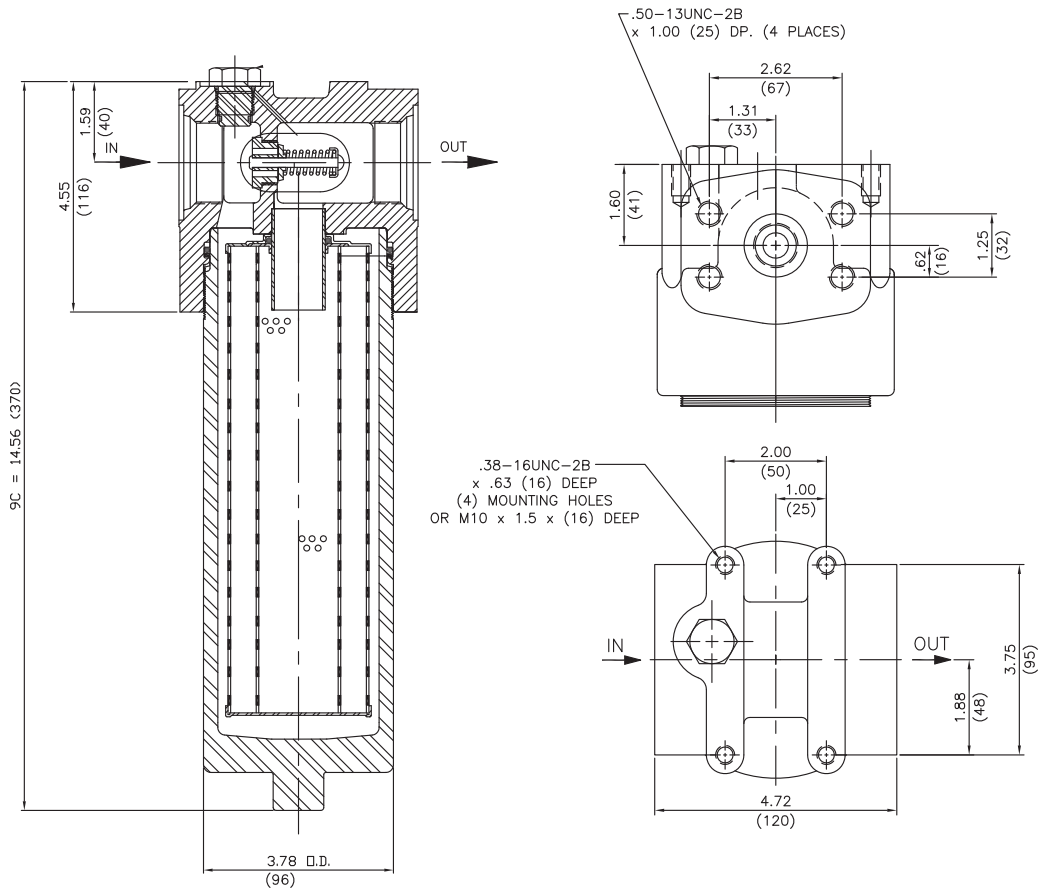
Filter Housing Specifications

Flow Rating:	Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	6000 psi (415 bar)
Min. Yield Pressure:	15,500 psi (1070 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	4000 psi (276 bar), per NFPA T2.6.1-R1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 40 psi (2.8 bar) Full Flow: 75 psi (5.2 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Ductile Iron Steel
Weight of CF60-9C:	24.0 lbs. (10.9 kg)
Element Change Clearance:	4.0" (103 mm)

Fluid Compatibility

Type Fluid	Appropriate Schroeder Media
Petroleum Based Fluids	All E-Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content	All Z-Media® and ASP® Media (synthetic)
Invert Emulsions	10 and 25 µ Z-Media® (synthetic) and 10 µ ASP® Media (synthetic)
Water Glycols	3, 5, 10 and 25 µ Z-Media® and all ASP® Media (synthetic)
Phosphate Esters	All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation
Skydrol®	3, 5, 10 and 25 µ Z-Media® and all ASP® Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

CF60 Top-Ported Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
CCZ1	<1.0	<1.0	<1.0	<4.0	4.2
CCZ3	<1.0	<1.0	<2.0	<4.0	4.8
CCZ5	2.5	3.0	4.0	4.8	6.3
CCZ10	7.4	8.2	10.0	8.0	10.0
CCZ25	18.0	20.0	22.5	19.0	24.0
CCZX3	<1.0	<1.0	<2.0	4.7	5.8

Element	DHC (gm)
CCZ1	57
CCZ3	58
CCZ5	63
CCZ10	62
CCZ25	63
CCZX3	26*

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

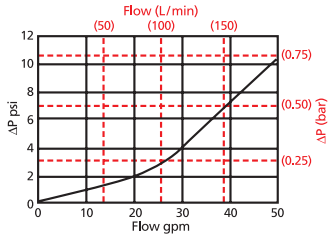
Flow Direction: Outside In

Element Nominal Dimensions: CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

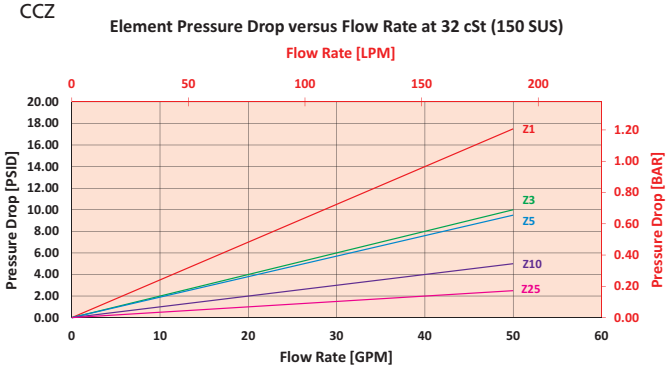
$\Delta P_{housing}$

CF60 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

CCZ



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

Exercise:

Determine ΔP_{filter} at 30 gpm (113.6 L/min) for CF601CCZ10SD5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 30 gpm. In this case, $\Delta P_{housing}$ is 4 psi (.28 bar) on the graph for the CF60 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 30 gpm. In this case, $\Delta P_{element}$ is 3 psi (.21 bar) according to the graph for the CCZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 4 psi [.28 bar] | $\Delta P_{element}$ = 3 psi [.21 bar]

V_f = 175 SUS (37.2 cSt) / 150 SUS (32 cSt) = 1.2

ΔP_{filter} = 4 psi + (3 psi * 1.2) = 7.6 psi

OR

ΔP_{filter} = .28 bar + (.21 bar * 1.2) = .53 bar

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

Ele.	ΔP
CC3	0.22
CC10	0.13
CC25	0.03
CCAS3	0.20
CCAS5	0.19
CCAS10	0.10
CCZX3	0.29
CCZX10	0.26

CF60 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder CF60:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
CF60 –	–	–	–	–	–	–	–	–

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	
CF60 –	1CC –	Z –	10 –		S –		D5 –		= CF601CCZ10SD5

BOX 1 – Filter Series

CF60
CFN60 (Non-bypassing: requires ZX high collapse elements)

BOX 2 – Number and Size of Elements

1CC

BOX 3 – Media Type

Omit	E Media (cellulose)
Z	= Excellement® Z-Media® (synthetic)
ZX	= Excellement® Z- Media® (high collapse center tube)
AS	= Anti-Stat Media (synthetic)

BOX 4 – Micron Rating

1	= 1 Micron	(Z media)
3	= 3 Micron	(AS,E, Z and ZX media)
5	= 5 Micron	(AS, Z, and ZX media)
10	= 10 Micron	(AS,E, Z, and ZX media)
25	= 25 Micron	(E, Z and ZX media)

BOX 5 – Seal Material

Omit	= Buna N
V	= Viton®
H	= EPR
H.5	= Skydrol® compatibility

BOX 6 – Porting

S =	SAE-20
P =	1¼" NPTF
F =	1¼" SAE 4-bolt flange code 62
B =	ISO 228 G-1¼"

BOX 7 – Options

Omit = None
25 = 25 psi bypass setting
30 = 30 psi bypass setting
50 = 50 psi bypass setting
60 = 60 psi bypass setting
75 = 75 psi bypass setting

BOX 8 – 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 MS14DCT

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. E media (cellulose) elements are only available with Buna N seals.

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Top-Ported Pressure Filter CTF60

Model No. of filter in photograph is CTF608CTZ10F20D9.

Features and Benefits

- Top-ported high pressure filter
- High cyclic fatigue performance (6000 psi)
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Thread on bowl with optional drain plug for easy element service

75 gpm
284 L/min
6000 psi
415 bar

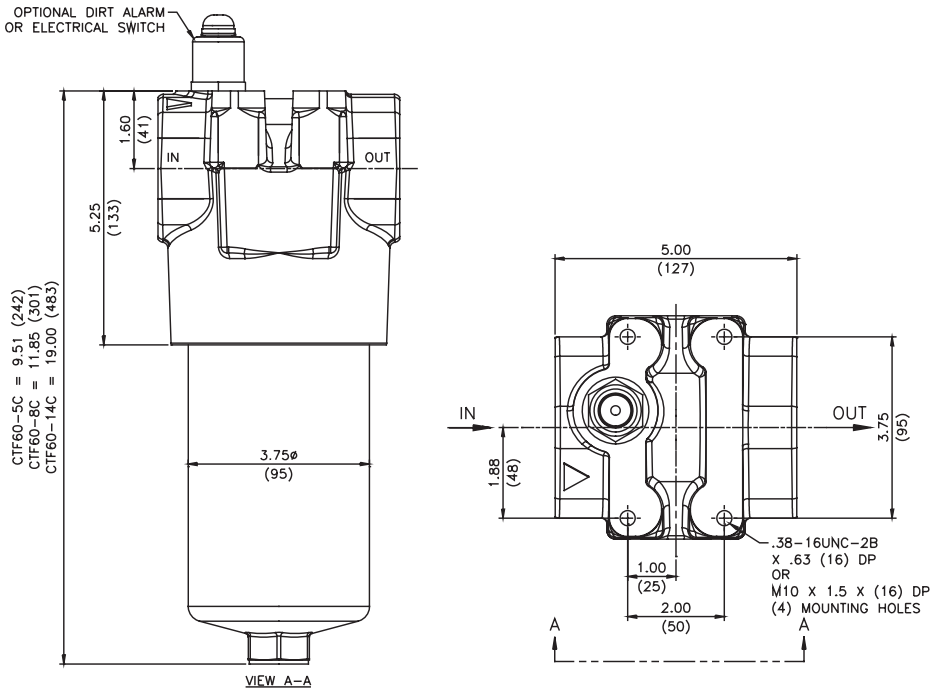
Filter Housing Specifications

Flow Rating:	Up to 75 gpm (284 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	6000 psi (415 bar)
Min. Yield Pressure:	18,000 psi (1241 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	6000 psi (415 bar), per NFPA T2.6.1-R1-2005 (only with F20 4-bolt flange porting)
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 50 psi (3.4 bar) Full Flow: 83 psi (5.7 bar) Non-bypassing model has a blocked bypass.
Porting Head: Element Case:	Ductile Iron Steel
Weight of CTF60-5CT: CTF60-8CT: CTF60-14CT:	25 lbs. (11.4 kg) 29 lbs. (13.2 kg) 38 lbs. (17.3 kg)
Element Change Clearance:	4.0" (103 mm)

Fluid Compatibility

Type Fluid	Appropriate Schroeder Media
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

CTF60 Top-Ported Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
CTZ1/CTZX1	<1.0	<1.0	<1.0	<4.0	4.2
CTZ3/CTZX3	<1.0	<1.0	<2.0	<4.0	4.8
CTZ5/CTZX5	2.5	3.0	4.0	4.8	6.3
CTZ10/CTZX10	7.4	8.2	10.0	8.0	10.0
CTZ25/CTZX25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)	Element	DHC (gm)	Element	DHC (gm)
5CTZ1	19	8CTZ1	31	14CTZ1	66
5CTZ3	16	8CTZ3	27	14CTZ3	57
5CTZ5	18	8CTZ5	30	14CTZ5	64
5CTZ10	21	8CTZ10	34	14CTZ10	72
5CTZ25	17	8CTZ25	28	14CTZ25	60
5CTZX1	14	8CTZX1	24	14CTZX1	53
5CTZX3	11	8CTZX3	18	14CTZX3	41
5CTZX5	10	8CTZX5	17	14CTZX5	38
5CTZX10	12	8CTZX10	20	14CTZX10	44
5CTZX25	11	8CTZX25	18	14CTZX25	39

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

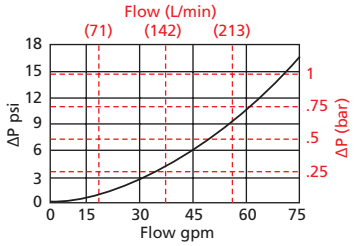
Flow Direction: Outside In

Element Nominal Dimensions: 5CT : 2.64" (67 mm) O.D. x 4.88" (124 mm) long
8CT : 2.64" (67 mm) O.D. x 7.25" (184 mm) long
14CT : 2.64" (67 mm) O.D. x 14.38" (365 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

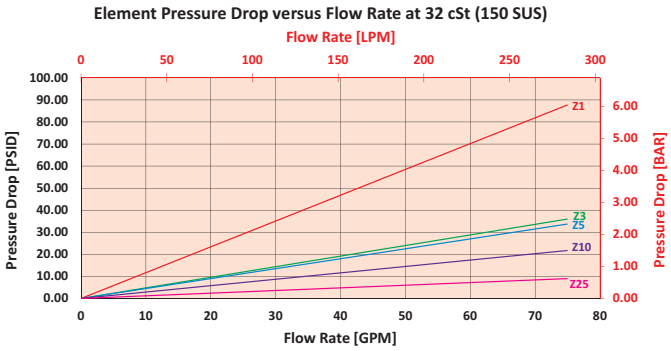
$\Delta P_{housing}$

CTF60 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:

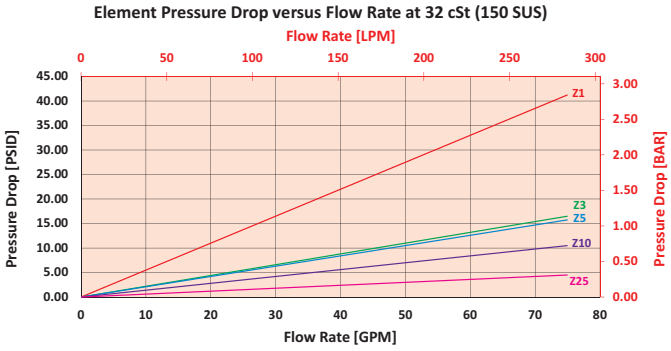


$\Delta P_{element}$

8CTZ



14CTZ



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

Exercise:

Determine ΔP_{filter} at 50 gpm (189 L/min) for CTF608CTZ5S20D9 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 50 gpm. In this case, $\Delta P_{housing}$ is 7 psi (.48 bar) on the graph for the CTF60 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 50 gpm. In this case, $\Delta P_{element}$ is 22 psi (1.5 bar) according to the graph for the 8CTZ5 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, ΔP_{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:

$\Delta P_{housing}$ = 7 psi [.48 bar] | $\Delta P_{element}$ = 22 psi [1.5 bar]

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 7 psi + (22 psi * 1.3) = 35.6 psi

OR

ΔP_{filter} = .48 bar + (1.5 bar * 1.3) = 2.4 bar

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

Ele.	ΔP	Ele.	ΔP	Ele.	ΔP
5CTZ1	1.87	5CTZX1	1.64	8CTZX1	1.00
5CTZ3	0.77	5CTZX3	0.96	8CTZX3	0.59
5CTZ5	0.72	5CTZX5	0.68	8CTZX5	0.41
5CTZ10	0.46	5CTZX10	0.46	8CTZX10	0.28
5CTZ25	0.19	5CTZX25	0.25	8CTZX25	0.15
14CTZX1	0.46	14CTZX3	0.27	14CTZX5	0.19
14CTZX10	0.13	14CTZX25	0.07		

CTF60 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder CTF60:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7
CTF60 –		–		–		–

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	
CTF60 –	8	– CTZ5		– S20		– D9	= CTF608CTZ5S20D9

BOX 1 – Filter Series

CTF60
CTFN60 (Non-bypassing: requires ZX high collapse elements)

BOX 2 – Element Length (in.)

5
8
14

BOX 3 – Element Part Number

CTZ1	= 1 µ Excellement® Z-Media® (synthetic)
CTZ3	= 3 µ Excellement® Z-Media® (synthetic)
CTZ5	= 5 µ Excellement® Z-Media® (synthetic)
CTZ10	= 10 µ Excellement® Z-Media® (synthetic)
CTZ25	= 25 µ Excellement® Z-Media® (synthetic)
CTZX1	= 1 µ Excellement® Z-Media® (high collapse center tube)
CTZX3	= 3 µ Excellement® Z-Media® (high collapse center tube)
CTZX5	= 5 µ Excellement® Z-Media® (high collapse center tube)
CTZX10	= 10 µ Excellement® Z-Media® (high collapse center tube)
CTZX25	= 25 µ Excellement® Z-Media® (high collapse center tube)

BOX 4 – Seal Material

Omit	= Buna N
V	= Viton®
H	= EPR

BOX 5 – Inlet Port

P20	= 1¼" NPTF
S20	= SAE-20
F20	= 1¼" SAE 4-bolt flange Code 62
B20	= ISO 228 G-1¼"

BOX 6 – Options

Omit	= None
UU	= Series 1215 7/16" UNF Schroeder Check Test Points installed in the filter head (upstream & downstream)
DR	= Drain on bowl
30	= 30 psi bypass setting
40	= 40 psi bypass setting

BOX 7 – Dirt Alarm® Options

	Omit =	None
Visual	D9 =	Visual pop-up
Electrical	MS5SS =	Electrical w/ 12 in. 18 gauge 4-conductor cable
	MS5SSLC =	Low current MS5
	MS10SS =	Electrical w/ DIN connector (male end only)
	MS10SSLC =	Low current MS10
	MS11SS =	Electrical w/ 12 ft. 4-conductor wire
	MS12SS=	Electrical w/ 5 pin Brad Harrison connector (male end only)
	MS12SSLC =	Low current MS12
	MS16SS =	Electrical w/ weather-packed sealed connector
	MS16SSLC =	Low current MS16
	MS17SSLC =	Electrical w/ 4 pin Brad Harrison male connector
Electrical with Thermal Lockout	MS5SST =	MS5 (see above) w/ thermal lockout
	MS5SSLCT =	Low current MS5T
	MS10SST =	MS10 (see above) w/ thermal lockout
	MS10SSLCT =	Low current MS10T
	MS12SST =	MS12 (see above) w/ thermal lockout
	MS12SSLCT =	Low current MS12T
	MS16SST =	MS16 (see above) w/ thermal lockout
	MS16SSLCT =	Low current MS16T
	MS17SSLCT =	Low current MS17T
Electrical Visual	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	Supplied w/ 5 pin Brad Harrison connector & light (male end)
Electrical Visual with Thermal Lockout	MS13SSDCT =	MS13 (see above), direct current, w/ thermal lockout
	MS13SSDCLCT =	Low current MS13DCT
	MS14SSDCT =	MS14 (see above), direct current, w/ thermal lockout
	MS14SSDCLCT =	Low current MS14DCT

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3 and 4.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

Box 7. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 50 psi. For replacement indicators, contact the factory.

Top-Ported Pressure Filter VF60

Model No. of filter in photograph is VF609VZ10SD5.

Features and Benefits

- Top-ported high pressure filter
- Threaded bowl for easy element servicing
- Offered in pipe, SAE straight thread and ISO 228 porting
- Various dirt alarm options available

70 gpm
265 L/min
6000 psi
415 bar

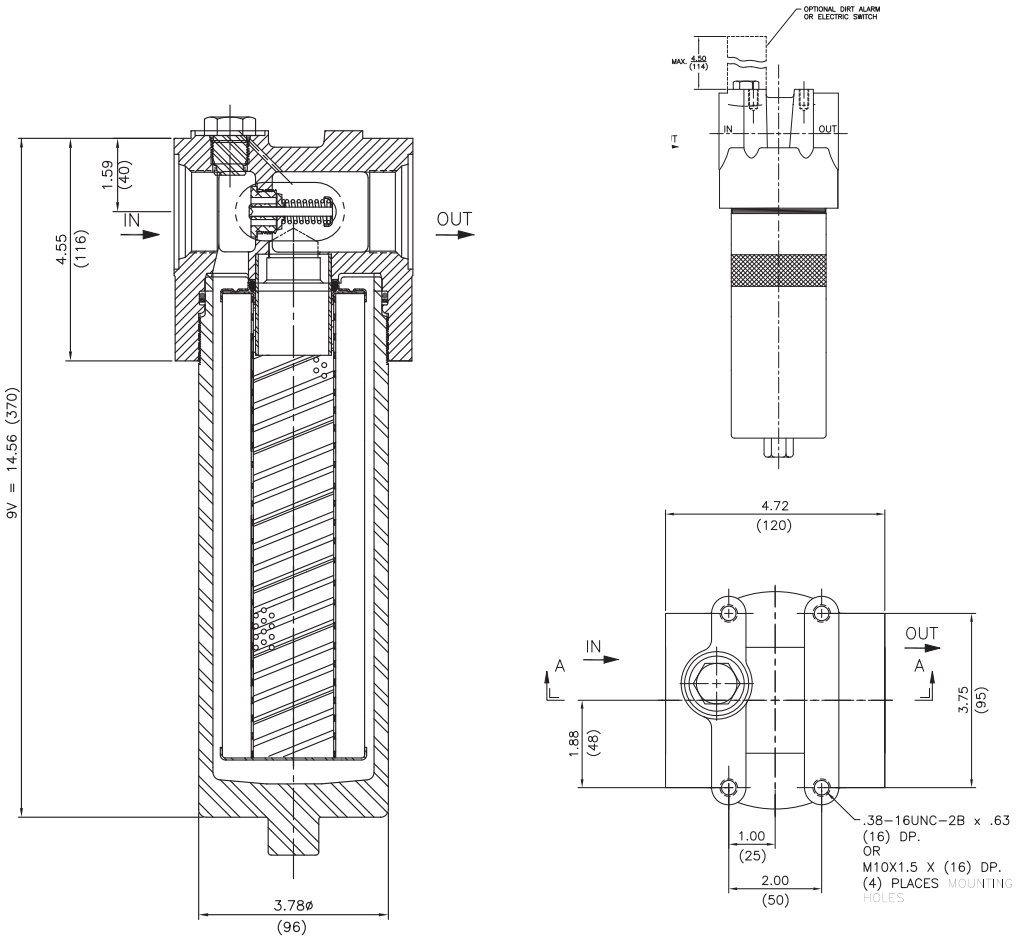
Filter Housing Specifications

Flow Rating:	Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure:	6000 psi (415 bar)
Min. Yield Pressure:	15,500 psi (1070 bar), per NFPA T2.6.1
Rated Fatigue Pressure:	3300 psi (230 bar), per NFPA T2.6.1-R1-2005
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 50 psi (3.5 bar) Full Flow: 65 psi (4.5 bar)
Porting Head: Element Case:	Ductile Iron Steel
Weight of VF60-9V:	24.0 lbs. (10.9 kg)
Element Change Clearance:	4.0" (103 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)

VF60 Top-Ported Pressure Filter



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

	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	
Element	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
9VZ1	<1.0	<1.0	<1.0	<4.0	4.2
9VZ3	<1.0	<1.0	<2.0	<4.0	4.8
9VZ5	2.5	3.0	4.0	4.8	6.3
9VZ10	7.4	8.2	10.0	8.0	10.0
9VZ25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)
9VZ1	55
9VZ3	57
9VZ5	62
9VZ10	60
9VZ25	61

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

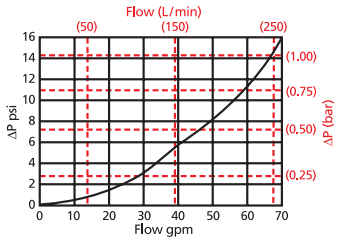
Flow Direction: Outside In

Element Nominal Dimensions: 9V: 2.9" (75 mm) O.D. x 9.5" (240 mm) long

Pressure Drop Information
Based on Flow Rate and Viscosity

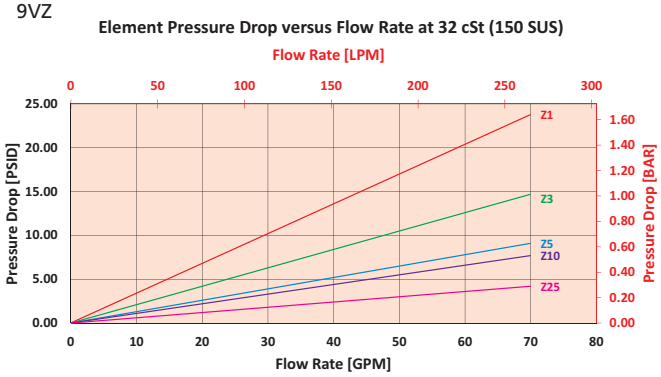
$\Delta P_{housing}$

VF60 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

9VZ



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

Exercise:

Determine ΔP_{filter} at 40 gpm (151 L/min) for VF609VZ1S using 120 SUS (25.5 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 40 gpm. In this case, $\Delta P_{housing}$ is 6 psi (.42 bar) on the graph for the VF60 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 40 gpm. In this case, $\Delta P_{element}$ is 13 psi (.90 bar) according to the graph for the 9VZ1 element.

Because the viscosity in this sample is 120 SUS (25.5 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 $\Delta P_{housing}$ 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:

$\Delta P_{housing}$ = 6 psi [.42 bar] | $\Delta P_{element}$ = 13 psi [.90 bar]

V_f = 120 SUS (25.5 cSt) / 150 SUS (32 cSt) = .80

ΔP_{filter} = 6 psi + (13 psi * .80) = 16.4 psi

OR

ΔP_{filter} = .42 bar + (..90 bar * .80) = 1.14 bar

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

Ele.	ΔP
9V3	0.32
9V10	0.24

VF60 Top-Ported Pressure Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder VF60:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6
VF60					

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	
VF60	9	VZ1		S		= VF609VZ1S

BOX 1

Filter Series
VF60

BOX 2

Element Length (in)
9

BOX 3

Element Size and Media	
V3	= V size 3 µ E media (cellulose)
V10	= V size 10 µ E media (cellulose)
VZ1	= V size 1 µ Excellement® Z-Media® (synthetic)
VZ3	= V size 3 µ Excellement® Z-Media® (synthetic)
VZ5	= V size 5 µ Excellement® Z-Media® (synthetic)
VZ10	= V size 10 µ Excellement® Z-Media® (synthetic)
VZ25	= V size 25 µ Excellement® Z-Media® (synthetic)
VM150	= V size 150 µ M media (reusable metal)

BOX 4

Seal Material	
Omit	= Buna N
V	= Viton®
H	= EPR

BOX 5

Inlet Port	
P	= 1¼" NPTF
S	= SAE-20
B	= ISO 228 G-1¼"

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	MS13DC =	Supplied w/ threaded connector & light
	MS14DC =	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 MS14DCT

NOTES:

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

Box 2. Example: 9VZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.