

# Manifold Mounted Pressure Filter

## NFS30



### 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**

Model No. of filter in photograph is NFS301NZ3OD5.

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:	Aluminum
Element Case:	Aluminum
Weight of NFS30-1N:	3.6 lbs. (1.6 kg)
Weight of NFS30-1NN:	4.3 lbs. (2.0 kg)
Element Change Clearance:	4.50" (115 mm)

### Filter Housing Specifications

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)

### Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

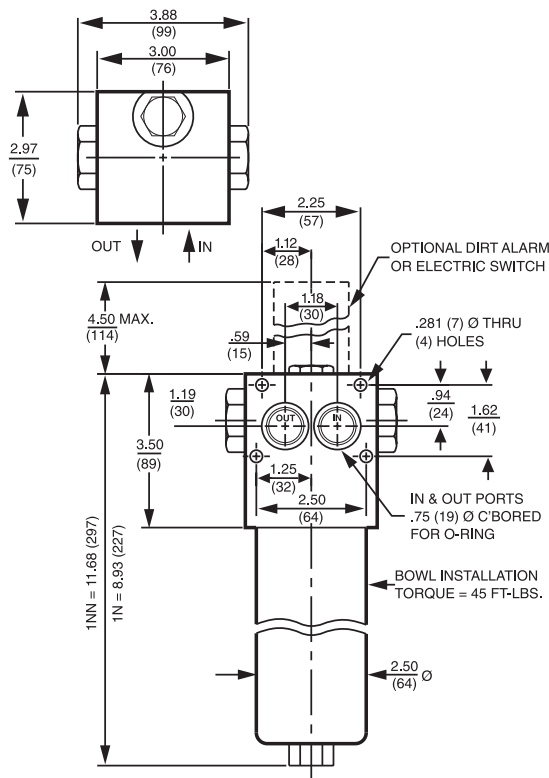
FOF60-03

NMF30

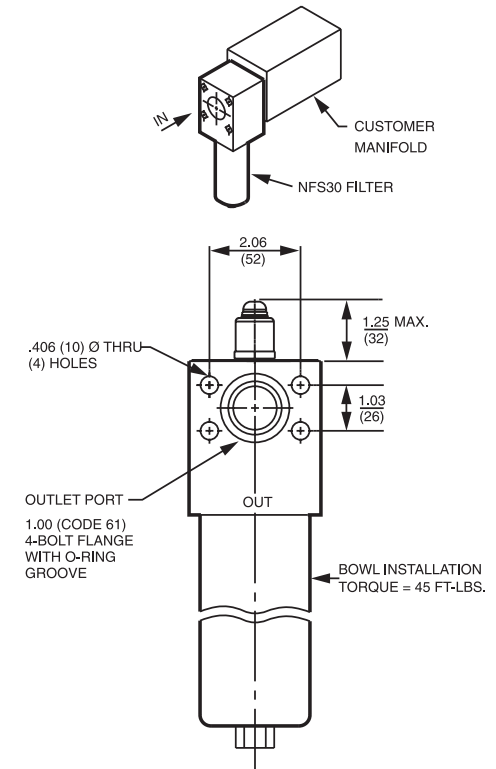
RMF60

14-CRZX10

### NFS30 WITH "O" PORT CONFIGURATION



### NFS30 WITH PO, SO, FO PORT CONFIGURATION



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			Filtration Ratio per ISO 16889	
	Using automated particle counter (APC) calibrated per ISO 4402			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

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

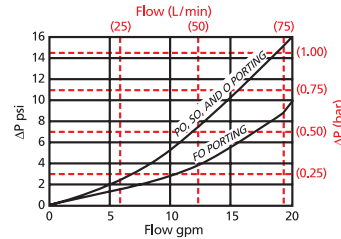
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

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

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

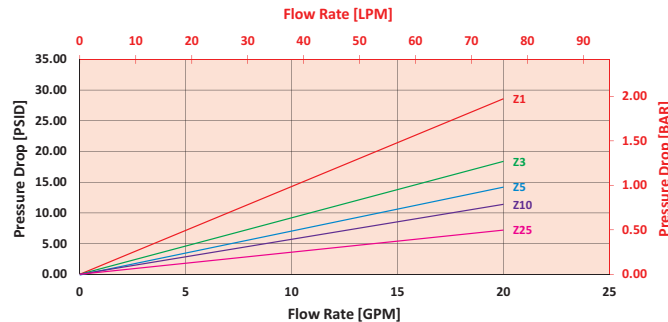
NFS30  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



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

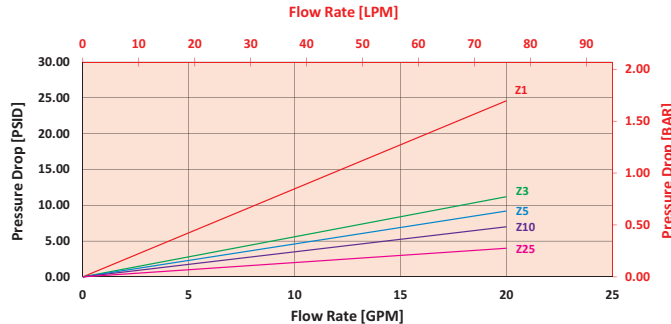
NZ

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



NNZ

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



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

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for NFS301NZ10SO using 175 SUS (37.2 cSt) fluid.

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

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  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,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

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

$$V_f = 175 \text{ SUS } (37.2 \text{ cSt}) / 150 \text{ SUS } (32 \text{ cSt}) = 1.2$$

$$\Delta P_{\text{filter}} = 10 \text{ psi} + (8 \text{ psi} * 1.2) = 19.6 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .69 \text{ bar} + (.55 \text{ bar} * 1.2) = 1.35 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

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

Ele.	$\Delta P$	Ele.	$\Delta P$
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

## 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	BOX 2	BOX 3
Filter Series	Number & Size of Elements	Media Type
NFS30	1 N = Single Length NN = Double Length	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
NFSN30 (Non-bypassing: requires ZX high collapse elements)		

BOX 4	BOX 5	BOX 6	BOX 7
Micron Rating	Seal Material	Porting	Bypass
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)	Omit = Buna N V = Viton® W = Buna N, <i>Anodized Aluminum parts</i>	SO = SAE-12 PO = 3/4" NPTF FO = 1" SAE 4-bolt flange Code 61 O = Manifold	Omit = 40 PSI Bypass 50 = 50 PSI Bypass X = Blocked bypass (Omit box 7 if NFSN30 is used)

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 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

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