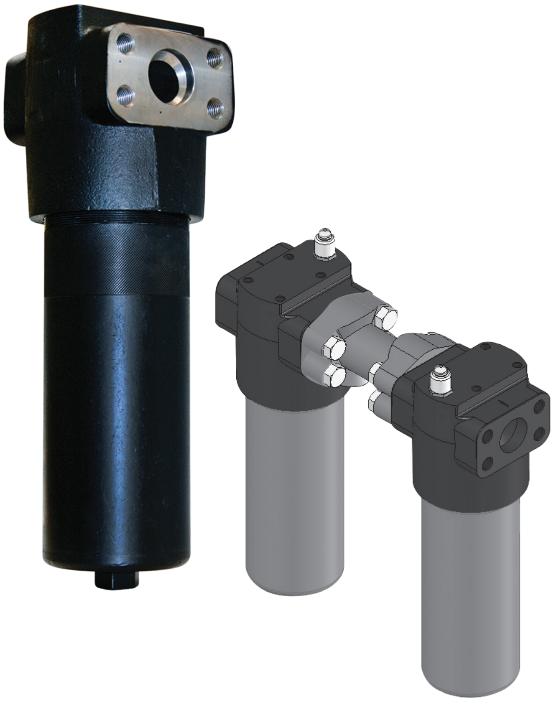
Hydrostatic Top-Ported Pressure Filter

HS60/ MHS60

120 gpm
450 L/min
6000 psi
415 bar



Features and Benefits

- Full flow reverse flow check valve diverts flow past the element in hydrostatic applications
- Top-ported design capable of handling 100 gpm flow
- Offered in SAE straight thread and flange porting
- Thread on bowl with drain plug for easy element service
- 6000 psi cyclic
- Certified for Offshore Standard DNVGL-OS-D101 "Marine and Machinery Systems and Equipment"
- Contact factory for higher flow applications

Model No. of filters in photograph are HS6013HZ3F24 and MHS6013HZ3F24.

Filter Housing Specifications

Flow Rating:	Up to 120 gpm (450 L/min)
Max. Operating Pressure:	6000 psi (415 bar) only for flange ported models
Min. Yield Pressure:	Contact factory
Rated Fatigue Pressure:	6000 psi (415 bar) (only with 4-bolt flange porting)
Temp. Range:	-20°F to 225°F (-29°C to 107°C)
Bypass Setting:	Cracking: 87 psi (5.9 bar)
Porting Head: Element Case:	Ductile Iron Steel
Weight of HS60-13H: Weight of MHS60:	75 lbs. (34.2 kg) 160 lbs. (72.6 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

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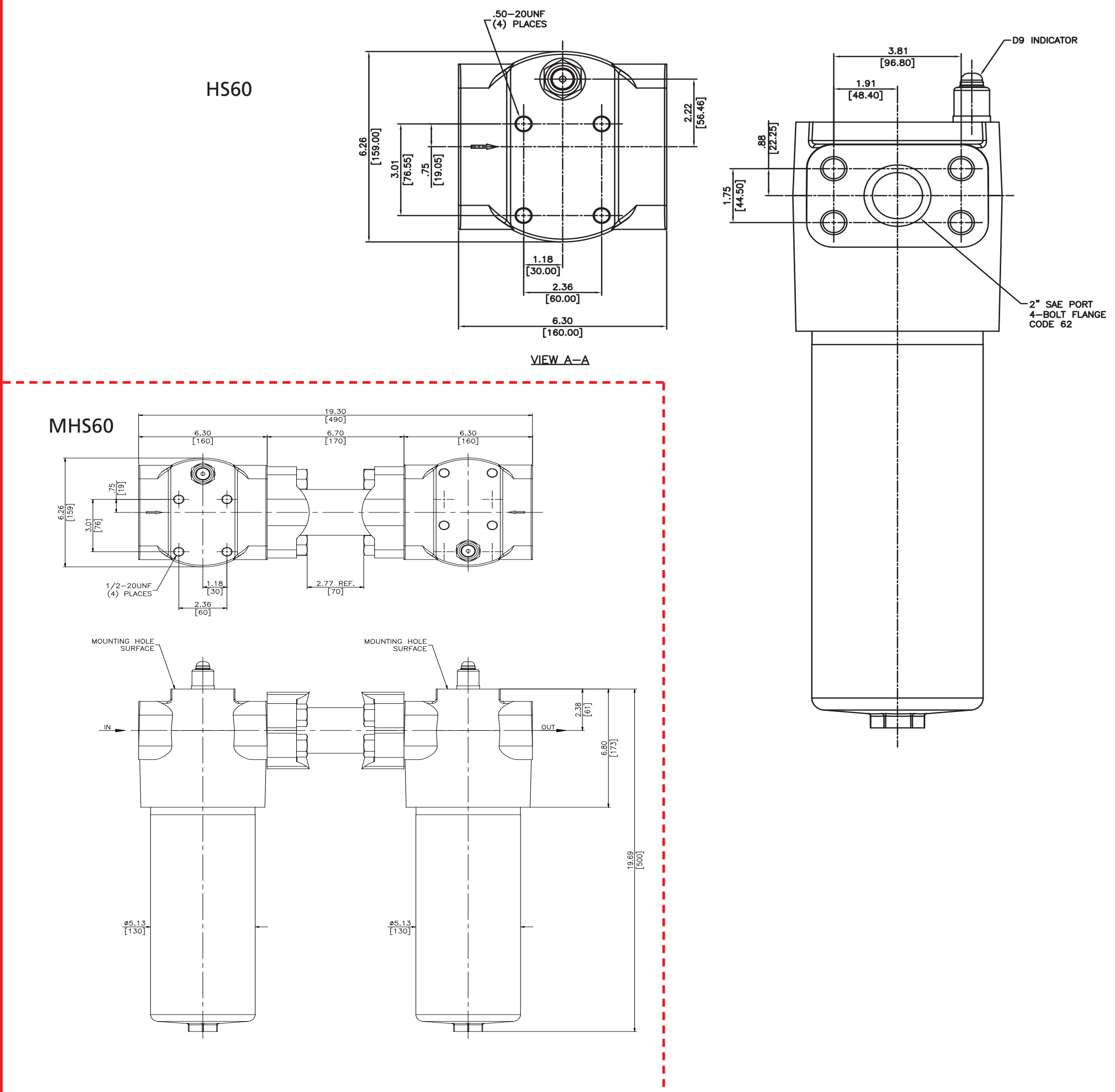

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

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	
	$\beta_x \geq 75$	$\beta_x \geq 100$	$\beta_x \geq 200$	$\beta_x(c) \geq 200$	$\beta_x(c) \geq 1000$
13HZ3/13HZX3	<1.0	<1.0	<2.0	<4.0	4.8
13HZ5/13HZX5	2.5	3.0	4.0	4.8	6.3
13HZ10/13HZX10	7.4	8.2	10.0	8.0	10.0
13HZ25/13HZX25	18.0	20.0	22.5	19.0	24.0

Element	DHC (gm)	Element	DHC (gm)
13HZ3	100.7	13HZX3	75.7
13HZ5	113.2	13HZX5	74.1
13HZ10	119.7	13HZX10	81.4
13HZ25	123.5	13HZX25	92.9

Element Collapse Rating: 290 psi (20 bar) for standard elements
3045 psi (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: 13HZ : 3.5" (90 mm) O.D. x 13" (325 mm) long

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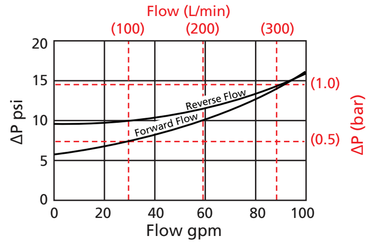
Pressure Drop Information
Based on Flow Rate and Viscosity

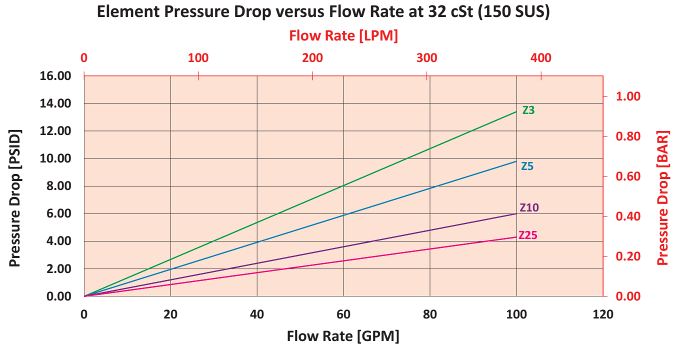
$\Delta P_{housing}$

HS60/MHS60 $\Delta P_{housing}$ for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{element}$

13HZ



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

Exercise:

Determine ΔP_{filter} at 30 gpm (113.7 L/min) for HS6013HZ10S24D13 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 30 gpm. In this case, $\Delta P_{housing}$ is 7 psi (.48 bar) on the graph for the HS60 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 30 gpm. In this case, $\Delta P_{element}$ is 2 psi (.14 bar) according to the graph for the 13HZ10 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 [.48 bar] | $\Delta P_{element}$ = 2 psi [.14 bar]

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

ΔP_{filter} = 7 psi + (2 psi * 1.1) = 9.2 psi

OR

ΔP_{filter} = .48 bar + (.14 bar * 1.1) = .63 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
13HZX3	0.176
13HZX5	0.104
13HZX10	0.054
13HZX25	0.048

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Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder HS60:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5
HS60				

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	
HS60	13HZ3		F24	D13	= HS6013HZ3F24D13

BOX 1

Filter Series
HS60
HSN60 (Non-bypassing: requires ZX high collapse elements)
MHS60
MHSN60 (Non-bypassing: requires ZX high collapse elements)

BOX 2

Element Part Number	
13HZ3	= 3 μ Excellement® Z-Media® (synthetic)
13HZ5	= 5 μ Excellement® Z-Media® (synthetic)
13HZ10	= 10 μ Excellement® Z-Media® (synthetic)
13HZ25	= 25 μ Excellement® Z-Media® (synthetic)
13HZX3	= 3 μ Excellement® Z-Media® (high collapse center tube)
13HZX5	= 5 μ Excellement® Z-Media® (high collapse center tube)
13HZX10	= 10 μ Excellement® Z-Media® (high collapse center tube)
13HZX25	= 25 μ Excellement® Z-Media® (high collapse center tube)

BOX 3

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

BOX 4

Porting Options	
S24	= SAE-24
F24	= 1½" SAE 4-bolt flange Code 62
F32	= 2"SAE 4-bolt flange Code 62

BOX 5

Dirt Alarm® Options		
None	Omit =	None
Visual	D13 =	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	MS13SS =	Supplied w/ threaded connector & light
	MS14SS =	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 and 3.

Box 3. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 75 psi. For replacement indicators, contact the factory.