



ZINGA

Filtration Group®





By

ZINGA

Filtration Group®

The **Z-GUARD™** High Efficiency Filtration System is Zinga's total system cleanliness solution for distributors, handlers, and customers in the bulk fuel and oil Industry.

Pairing **Z-GUARD™**, our newest industry specific filtration media, with our industry trusted heads, strainers, tank toppers, breathers, and hardware to form a clean path from origin to consumption.

Trust in the **Z-GUARD™** High Efficiency Filtration System
by

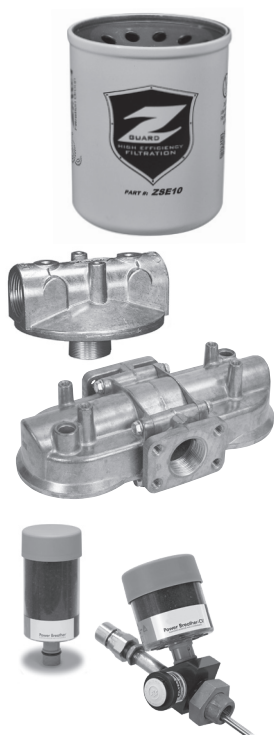


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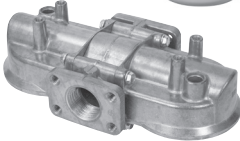


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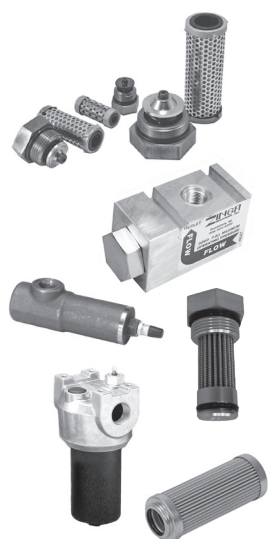
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INTRODUCING

Z-GUARD

Our Highest Performing Spin-On Filtration Solution
Offering Filtration Ratings to 1,000 Beta Efficiencies

Today's modern engines are designed to meet tighter regulations, which unfortunately makes them more prone to failure, especially from the smallest particulates (<6 microns). That's why we have developed our **Z-GUARD** line of spin-on filtration products.

Z-GUARD products offer you peace of mind knowing that your fluid is filtered to a **Beta 1,000 Rating** with an actual filter efficiency of 99.9%.

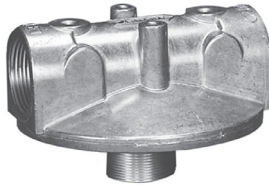
Diesel fuel travels through numerous transfer points before arriving in an end-user tank, with each providing an opportunity for contamination. Because of this, filtering at a single point in the value stream is not enough to ensure clean fuel. Failure to properly filter at each transfer point can lead to costly repairs and equipment downtime.



WHAT **ZINGA** OFFERS TO AID IN DIESEL FILTRATION



**5" Spin-On
Elements**



**Resin Impregnated
Filter Heads**



**Desiccant
Breathers**



**Accessories
& Indicators**



CONSTRUCTION SITES



FUEL CARTS



RENTAL FACILITIES



FUEL DISTRIBUTORS

Zinga's new Z-Guard line's superior filtration capabilities make it the smart choice for applications such as fuel carts, fuel distributors, or any place where diesel is stored such as construction sites or equipment rental facilities



ZSE & ZLE Series

Z-Glass Media

Spin-On Filter Elements

Used with SF, DF, MF & ZDF Filter Heads

Diameter: 5.1"

Mounting Thread: 1 1/2"-16 UN

Operating Pressure: 200 PSI Max. Operating

ΔP max: 80 psid

Temperature: Up to +250°F Operating

Applications: Petroleum based fluids

Part Number	Absolute Rating $\beta_{x\mu(c)}=200$ (99.5% Efficiency)	Absolute Rating $\beta_{x\mu(c)}=1000$ (99.9% Efficiency)	Free Water Absorption	Overall Height
ZSE01 "1 Micron"	<4	<4		6.9"
ZSE03 "3 Micron"	<4	7		6.9"
ZSE06 "6 Micron"	7	10		6.9"
ZSE10 "10 Micron"	8	12		6.9"
ZSE10AZ "10 Micron"	8	12		6.9"
ZLE01 "1 Micron"	<4	<4		10.9"
ZLE03 "3 Micron"	<4	7		10.9"
ZLE06 "6 Micron"	7	10		10.9"
ZLE10 "10 Micron"	8	12		10.9"
ZLE10AZ "10 Micron"	8	12		10.9"
ZLE25 "25 Micron"	23	-		10.9"

Application Data:

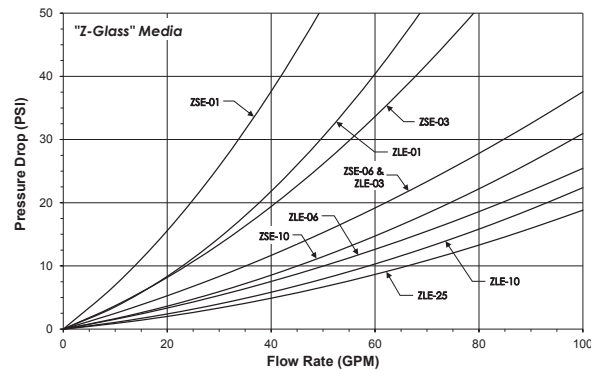
Reference:

$\beta_{x\mu(c)} = 200$ represents 99.5% efficiency at particle size "x" micron (Absolute Rating)

$\beta_{x\mu(c)} = 1000$ represents 99.9% efficiency at particle size "x" micron (Absolute Rating)

Buna-N Gasket FG01 standard. Fluorocarbon Gasket FG01V optional, consult factory.

Caution: Do not use ZSE/ZLE Series filter elements on internal combustion engines.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



SF100 Z-Guard Series

Spin-On Fuel Filter Heads

Used with SE, LE, ZSE, & ZLE Filter Elements

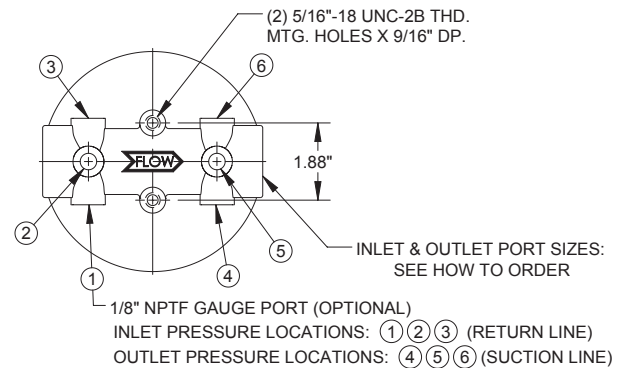
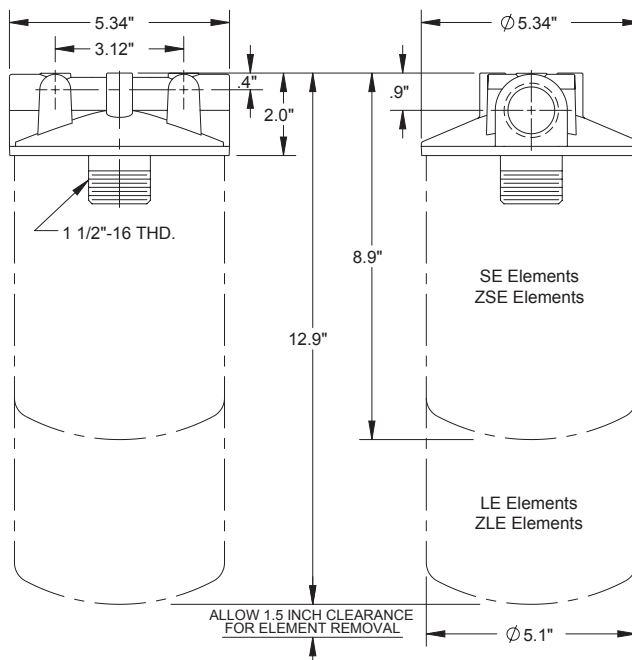
Flows Up To: 40 GPM (return) 15 GPM (suction)

Port Sizes: 1" NPTF; 1 5/16"-12 UN(SAE-16)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids

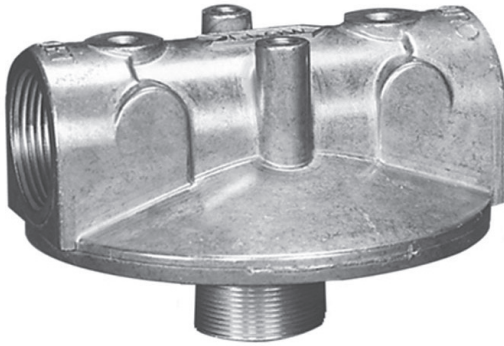


HOW TO ORDER: SF XXX XX X IMP

Code	Inlet & Outlet Ports
100	1" NPTF
130	1 5/16"-12 UN (SAE-16)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)



SF120 Z-Guard Series

Spin-On Filter Heads

Used with SE, LE, ZSE, & ZLE Filter Elements

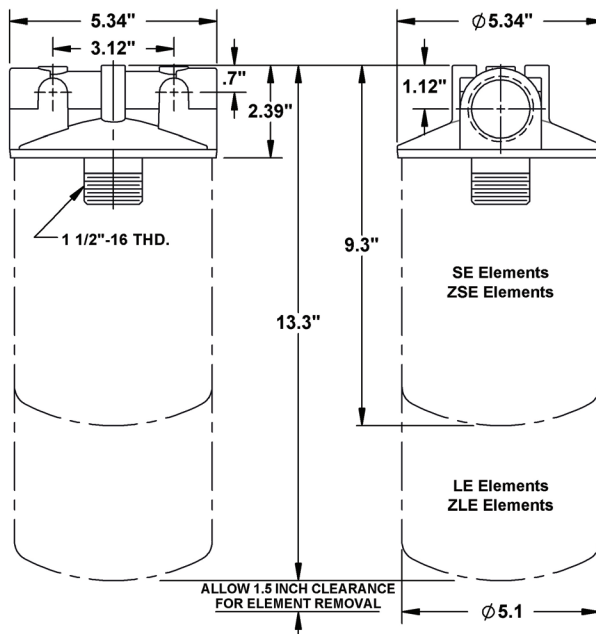
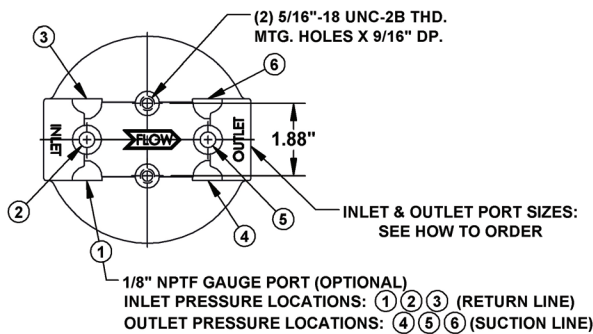
Flows Up To: 70 GPM (return) 25 GPM (suction)

Port Sizes: 1 1/4" NPTF; 1 5/8"-12 UN(SAE-20)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: SF XXX XX X IMP

Code	Inlet & Outlet Ports
120	1 1/4" NPTF
160	1 5/8"-12 UN (SAE-20)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)



Flows Up To: 80 GPM (return) 32 GPM (suction)

Port Sizes: 1 1/2" NPTF; 1 7/8"-12 UN(SAE-24)

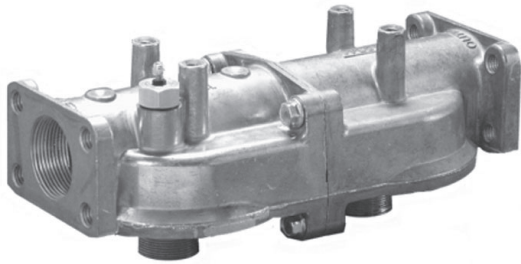
Pressure: 200 PSI Max. Operating

Temperature: Up to + 200°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids



Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)



MF2215 Z-Guard Series

Modular Line Type Spin-On Filter Heads with ΔP Indicator Option

Used with SE, LE, ZSE, & ZLE Filter Elements

Flows Up To: 120 GPM (return) 50 GPM (suction)

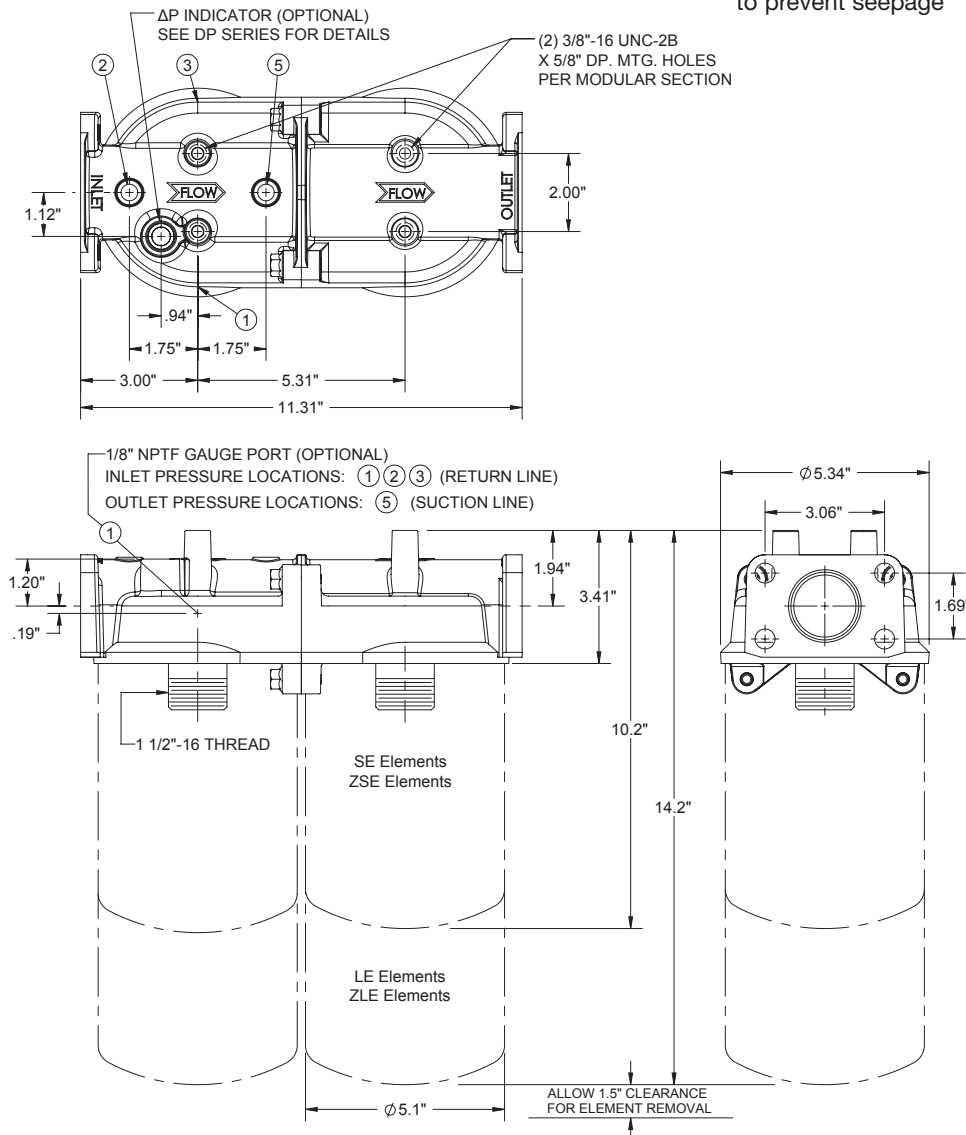
Port Sizes: 1 1/2" NPTF w/ 2" (4) Bolt Flange
1 7/8"-12 UN (SAE-24)

Pressure: 200 PSI Max Operating

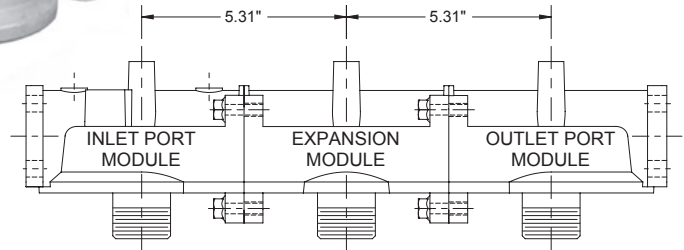
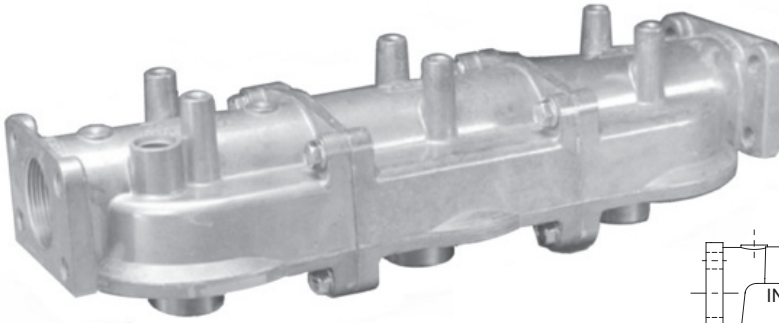
Temperature: Up to +200°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids

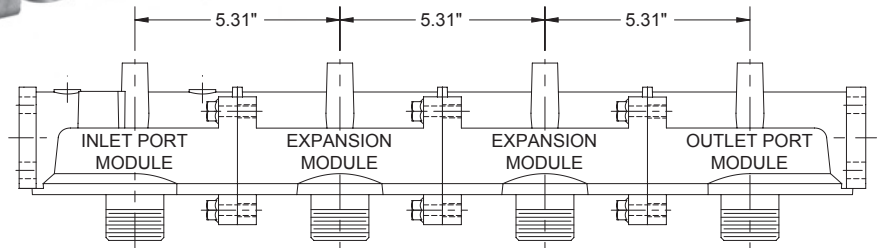
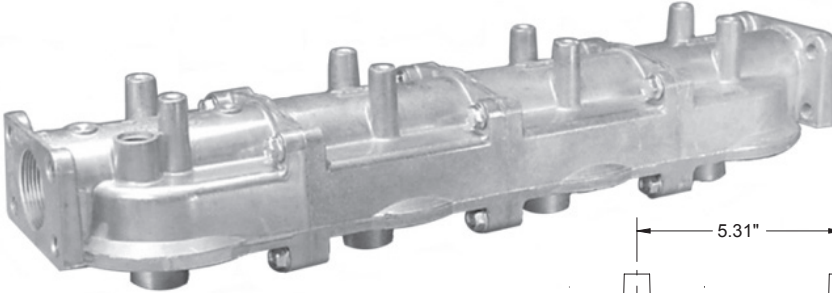
Features: Multiple modular heads bolted together. Inlet flow is equally divided among all elements (parallel flow) providing greater flow capacities and longer service life. Impregnated is standard to prevent seepage



3 Element Spin-On Filter Head Assembly



4 Element Spin-On Filter Head Assembly



Multiple Unit Head Assemblies may require additional mounting support for your application.

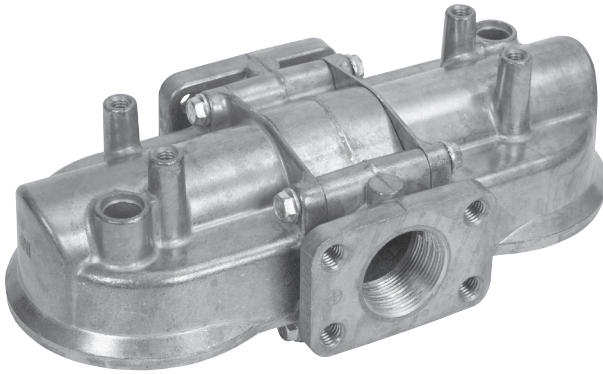
HOW TO ORDER: MF2215 - XX X X XXX

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Gauge Port
1,2,3	1, 2, 3 (Return Line)

Code	# of Filter Heads
2	2 Heads
3	3 Heads
4	4 Heads

Code	Indicator Options
000	No Indicator
V22	Visual Indicator



ZDF2215 Series

Side by Side Spin-On Filter Heads with ΔP Indicator Option

Used with SE, LE, ZSE, & ZLE Filter Elements

Flows Up To: 120 GPM (return) 50 GPM (suction)

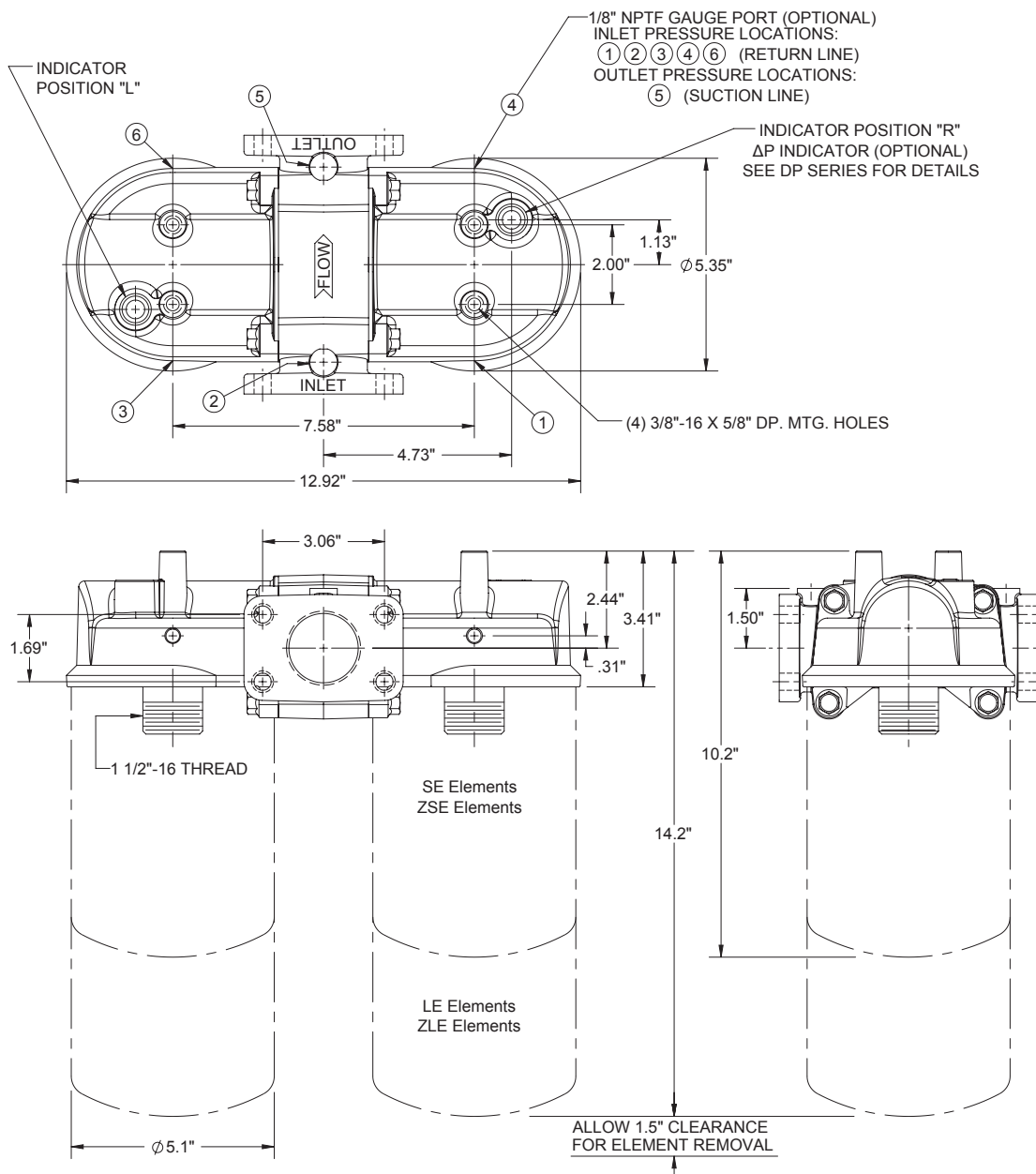
Port Sizes: 1 1/2" NPTF w/ 2" (4) Bolt Flange

Pressure: 200 PSI Max Operating

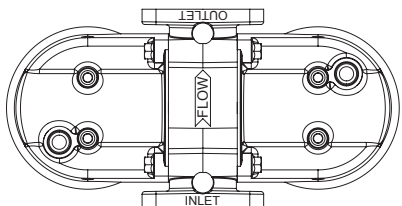
Temperature: Up to +200°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids and ethanol blends

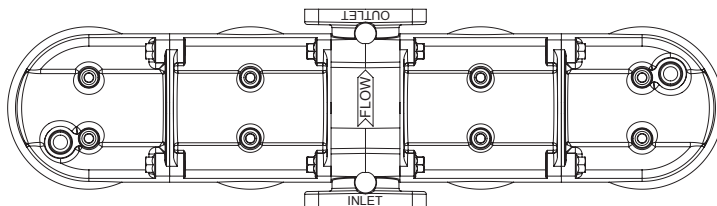
Features: Impregnated is standard to prevent seepage



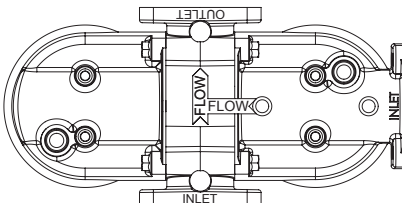
Standard Two Element Filter Head
Configuration (Blank)



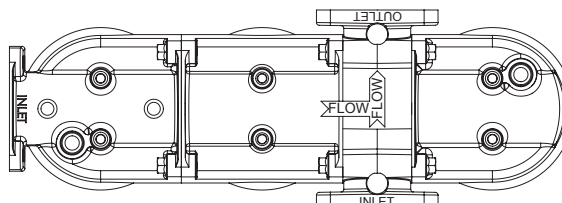
Four Element Filter
Configuration "A"



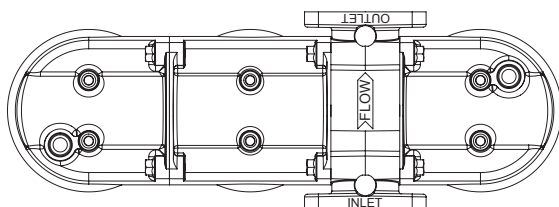
Two Element, Two Inlet Filter Head
Configuration "B"



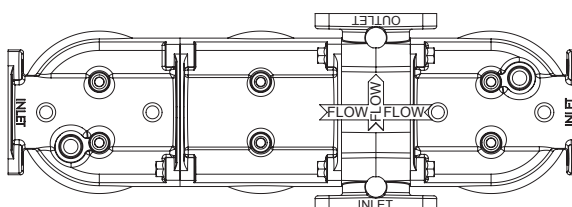
Three Element, 90° Filter Head
Configuration "D"



Three Element Filter Head
Configuration "G"



Three Element Filter Head
Configuration "H"



HOW TO ORDER: ZDF-2215 XX X XXXX X

Code	By-Pass Valve Settings
00	No Valve
25	25 PSI

Code	Gauge Port Location
0	No Port Required
13	1,3 (Return)
135	1,3 (Return), 5 (Suction)

Configuration Option
Leave Blank for Standard

Code	Indicator Options
0000	No Indicator
VL22	Visual Left
VR22	Visual Right



PowerBreather™

Desiccant Breathers

Protects lubricants and equipment from moisture and particulate intrusion

Body: ABS, Nylon, Polypropylene, Buna-N

Moisture Absorbing Media: Silica Gel

Dual-Zone Media: Polyester, Polyurethane

Filter Efficiency: 3 Micron Absolute

Operating Temperatures: -20° F (-29° C) to 200° F (93° C)

Part Number	Connection	Height	Width	Max Airflow @ 1psid	Max Moisture Retention
TT-BB	3/8" Sure-Fit (NPT, BSPP, BSPT)	4.14"	2.54"	7 cfm / 198 lpm	28 ml / 1.0 fl oz
TT-1	3/8" Sure-Fit (NPT, BSPP, BSPT)	5.59"	2.54"	7 cfm / 198 lpm	60 ml / 2.0 fl oz
TT-3	1" Sure-Fit (NPT, BSPP, NPSM)	8.28"	4.10"	18 cfm / 510 lpm	264 ml / 8.9 fl oz
TT-4	1" Sure-Fit (NPT, BSPP, NPSM)	10.38"	4.10"	18 cfm / 510 lpm	424 ml / 14.3 fl oz

Performance

The Power Breather offers significant performance improvements over other leading desiccant breathers.

Value add features:

Multiple head-to-head tests with leading competitors demonstrate that PowerBreather Silica Gel averages nearly 20% more moisture holding capacity than other leading brands.

The increased body length of the PowerBreather allows for 10% more volume of our silica gel when compared to leading competitors.



PowerBreather™-CV

Desiccant Breathers

Protects lubricants and equipment from moisture and particulate intrusion

Body: ABS, Nylon, Polypropylene, Buna-N

Moisture Absorbing Media: Silica Gel

Dual-Zone Media: Polyester, Polyurethane

Filter Efficiency: 3 Micron Absolute

Operating Temperatures: -20° F (-29° C) to 200° F (93° C)

Part Number	Connection	Height	Width	Max Airflow @ 1psid	Max Moisture Retention
TT-BB-CV	3/8" Sure-Fit (NPT, BSPP, BSPT)	4.14"	2.54"	5 cfm / 142 lpm	28 ml / 1.0 fl oz
TT-1-CV	3/8" Sure-Fit (NPT, BSPP, BSPT)	5.59"	2.54"	5 cfm / 142 lpm	60 ml / 2.0 fl oz
TT-2-CV	1" Sure-Fit (NPT, BSPP, NPSM)	6.11"	4.10"	10 cfm / 283 lp	142 ml / 4.8 fl oz
TT-3-CV	1" Sure-Fit (NPT, BSPP, NPSM)	8.28"	4.10"	10 cfm / 283 lp	264 ml / 8.9 fl oz
TT-4-CV	1" Sure-Fit (NPT, BSPP, NPSM)	10.38"	4.10"	10 cfm / 283 lp	424 ml / 14.3 fl oz

Performance

This breather offers significant performance improvements over other leading desiccant breathers.

Value add features:

Multiple head-to-head tests with leading competitors demonstrate this PowerBreather Silica Gel averages nearly 20% more moisture holding capacity than other leading brands.

The increased body length of this PowerBreather allows for 10% more volume of our silica gel when compared to leading competitors.



Titan PowerBreather™

Desiccant Breathers

High flow, extended life
PowerBreathers

Body: ABS, Nylon, Polypropylene, Buna-N
Moisture Absorbing Media: Blue Silica Gel, Orange Gel for Europe
Dual-Zone Media: z Micro Glass, Polyester
Filter Efficiency: 1 Micron Absolute
Operating Temperatures: -20° F (-29° C) to 200° F (93° C)

Standard Models					
Part Number	Connection	Height	Width	Max Airflow @ 1psid	Max Moisture Retention
Titan-600	1" Sure-Fit (FNPT, FBSP, FNPSM)	4.4"	5.7"	27 cfm / 765 lpm	272 ml / 9.2 fl oz
Titan-1100	1" Sure-Fit (FNPT, FBSP, FNPSM)	6.5"	5.7"	26 cfm / 736 lpm	500 ml / 16.9 fl oz
Titan-1600	1" Sure-Fit (FNPT, FBSP, FNPSM)	8.6"	5.7"	25 cfm / 708 lpm	728 ml / 24.6 fl oz
Titan-2100	1" Sure-Fit (FNPT, FBSP, FNPSM)	10.7"	5.7"	24 cfm / 680 lpm	958 ml / 32.4 fl oz

SmartFlow Models					
Part Number	Connection	Height	Width	Max Airflow @ 1psid	Max Moisture Retention
Titan-600-SF	1" Sure-Fit (FNPT, FBSP, FNPSM)	4.4"	5.7"	30 cfm / 845 lpm	272 ml / 9.2 fl oz
Titan-1100-SF	1" Sure-Fit (FNPT, FBSP, FNPSM)	6.5"	5.7"	29 cfm / 821 lpm	500 ml / 16.9 fl oz
Titan-1600-SF	1" Sure-Fit (FNPT, FBSP, FNPSM)	8.6"	5.7"	28 cfm / 793 lpm	728 ml / 24.6 fl oz
Titan-2100-SF	1" Sure-Fit (FNPT, FBSP, FNPSM)	10.7"	5.7"	26 cfm / 736 lpm	958 ml / 32.4 fl oz

No Check Valve Models					
Part Number	Connection	Height	Width	Max Airflow @ 1psid	Max Moisture Retention
Titan-600-NC	1" Sure-Fit (FNPT, FBSP, FNPSM)	4.4"	5.7"	39 cfm / 1104 lpm	272 ml / 9.2 fl oz
Titan-1100-NC	1" Sure-Fit (FNPT, FBSP, FNPSM)	6.5"	5.7"	36 cfm / 1019 lpm	500 ml / 16.9 fl oz
Titan-1600-NC	1" Sure-Fit (FNPT, FBSP, FNPSM)	8.6"	5.7"	35 cfm / 991 lpm	728 ml / 24.6 fl oz
Titan-2100-NC	1" Sure-Fit (FNPT, FBSP, FNPSM)	10.7"	5.7"	32 cfm / 906 lpm	958 ml / 32.4 fl oz

* Titan SmartFlow PowerBreathers (Titan-XXXX-SF) consist of all check valves positioned inward to exclusively inhale from the atmosphere, therefore must be used with the Titan-SF-A1 (1" FNPT) or Titan-SF-A2 (2" FNPT) SmartFlow Adapters to exhale all air out of the system.

SmartFlow Adapter	
Part Number	Connection
Titan-SF-A1	1" Female NP
Titan-SF-A2	2" Female NPT

*Titan SmartFlow PowerBreathers (Titan-XXXX-SF consists of all check valves positioned inward to exclusively inhale from the atmosphere, therefore must be used with the Titan-SF-A1 (1" FNPT) or Titan-SF-A2 (2" FNPT) SmartFlow Adapters to exhale all air out of the system.
**Titan-Adapter-SF adds 2.2 inches of height to SF model Titan PowerBreathers.



TTGA Series

Gearbox Adapter Kit

*Used with Power Breather™
Desiccant Breathers*

Adapter kits deliver the the following:

- Drain connection for flow to a filtration system
- Fill port for return flow from filtration
- Connection for a desiccant breather
- Addition of a sampling port
- Addition of a vacuum indicator

By featuring a single manifold body, an Adapter Kit minimizes the number of intrusions into your system, minimizing the possibility of contaminant entry

Part Number	Description
TTGA-2	Gearbox Adapter Kit with TT-2 Power Breather
TTGA-2-CV	Gearbox Adapter Kit with TT-2-CV Power Breather
TTGA-3	Gearbox Adapter Kit with TT-3 Power Breather
TTGA-3-CV	Gearbox Adapter Kit with TT-3-CV Power Breather
TTGA-4	Gearbox Adapter Kit with TT-4 Power Breather
TTGA-4-CV	Gearbox Adapter Kit with TT-4-CV Power Breather

Features & Benefits

- Quick-connect fittings provide easy connection of a filtration system to a gearbox
- Desiccant breather stops entry of dirt, moisture, and other contamination
- Direct entry into the gearbox eliminates oil backflow into the breather, a common challenge in competitor products

Kit includes:

- Gearbox adapter body
- Fitting, ISO B 3/4" male
- Fitting, ISO B 1" male
- Fitting, 3/4" MNPT
- Vacuum Gauge
- Fill tube, 2" length
- Desiccant Breather

Custom options available. Please contact us for details.



TTHA Series

Hydraulic Adapter Kit

*Used with Power Breather™
Desiccant Breathers*

Adapter kits deliver the following:

- Drain connection for flow to a filtration system
- Fill port for return flow from filtration
- Connection for a desiccant breather
- Addition of a sampling port
- Addition of a vacuum indicator

By featuring a single manifold body, an Adapter Kit minimizes the number of intrusions into your system, minimizing the possibility of contaminant entry

Part Number	Description
TTHA-2	Hydraulic Adapter Kit with TT-2 Power Breather
TTHA-2-CV	Hydraulic Adapter Kit with TT-2-CV Power Breather
TTHA-3	Hydraulic Adapter Kit with TT-3 Power Breather
TTHA-3-CV	Hydraulic Adapter Kit with TT-3-CV Power Breather
TTHA-4	Hydraulic Adapter Kit with TT-4 Power Breather
TTHA-4-CV	Hydraulic Adapter Kit with TT-4-CV Power Breather

Features & Benefits

- Quick-connect fittings provide easy connection of a filtration system to hydraulic equipment
- Desiccant breather stops entry of dirt, moisture, and other contamination
- Recessed mounting holes make it easier to use OEM mounting hardware

Kit includes:

- Adapter body
- Fitting, ISO B 3/4" male
- Fitting, ISO B 1" male
- Vacuum Gauge
- Sample Valve
- Gasket, 6-hole ANSI
- Fill tube, 12" length
- Sample tube, 24" length
- Desiccant Breather

Custom options available. Please contact us for details.



SS Series

Hydraulic Strainers

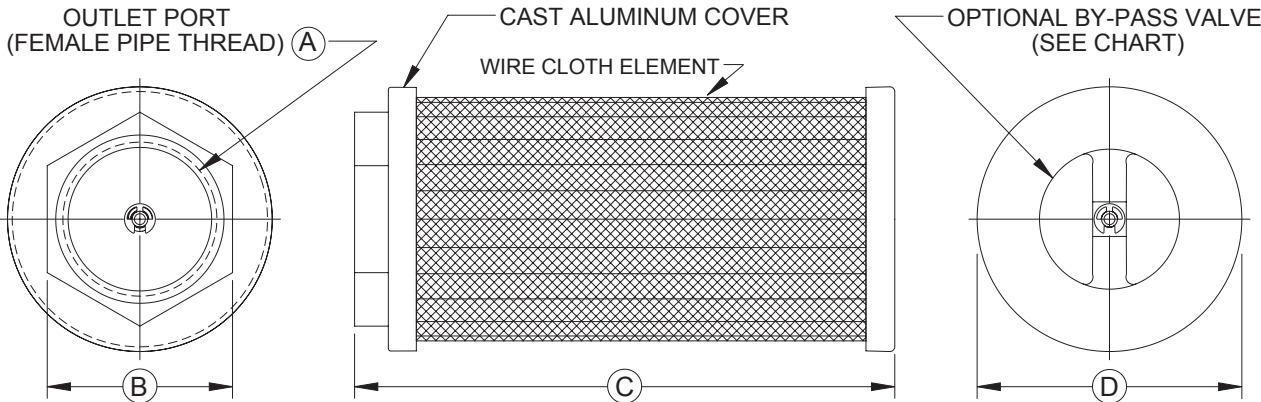
Internally Mounted

Port Sizes: 1" through 3" NPTF

Media: 100 Mesh Standard

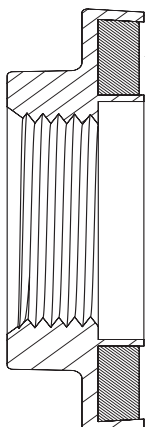
Optional By-Pass: 3 PSI or 5 PSI

Operating Temperature: Up to 250°F



Part Number	A Outlet Port	B Wrench Flat	C Overall Length	D OD	Rated Flow @ 5 Ft/Sec
SS100XX	1" NPTF	1.75"	4.6"	3.2"	14 GPM
SS120XX	1 1/4" NPTF	2.25"	6.6"	3.2"	23 GPM
SS150XX	1 1/2" NPTF	2.25"	8.6"	3.2"	32 GPM
SS154XX	1 1/2" NPTF	2.25"	7.2"	4.2"	32 GPM
SS200XX	2" NPTF	3.0"	7.2"	4.2"	53 GPM
SS250XX	2 1/2" NPTF	3.5"	9.3"	4.2"	75 GPM
SS300XX	3" NPTF	4.0"	12.4"	4.2"	116 GPM

All strainers are rated at 5 Ft/sec with a pressure drop of under 1/2 PSI with 150 SUS oil.



REVERSE TAPER

All Zinga series tank filter end caps have reverse taper wall construction. This feature prevents bond failure by ensuring a positive mechanical interlock with the epoxy adhesive. Excellent for rough-terrain vehicle applications.

HOW TO ORDER: SS XXX X X

Model	
Code	Wire Mesh
0	100 Mesh Standard
3	30 Mesh
Code	By-Pass Valve
0	No Valve
3	3 PSI
5	5 PSI



SS Series

Hydraulic Strainers

Internally Mounted

With Magnetic Filtration

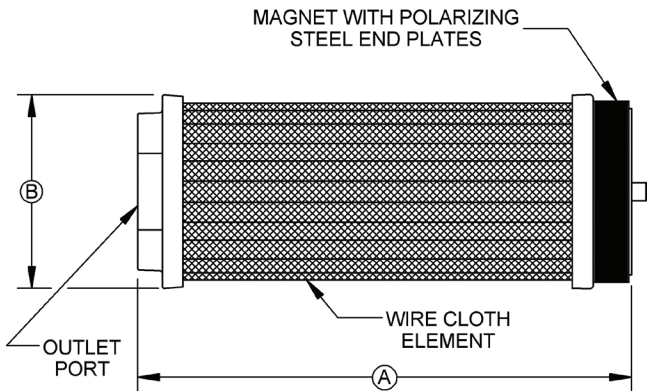
Port Sizes: 1" through 3" NPTF

Media: 100 Mesh Standard

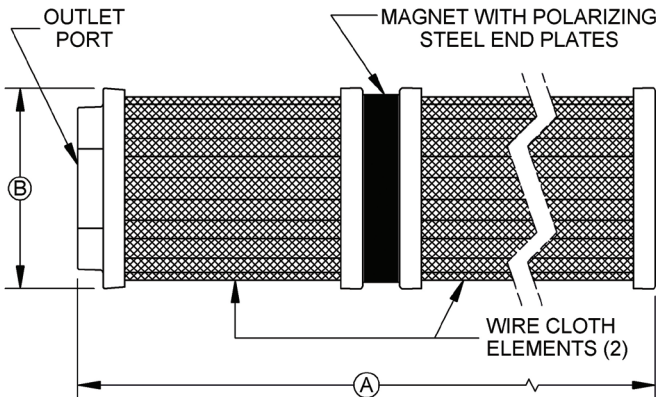
Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

Operating Temperature: Up to 250°F

Style A



Style B



Style A

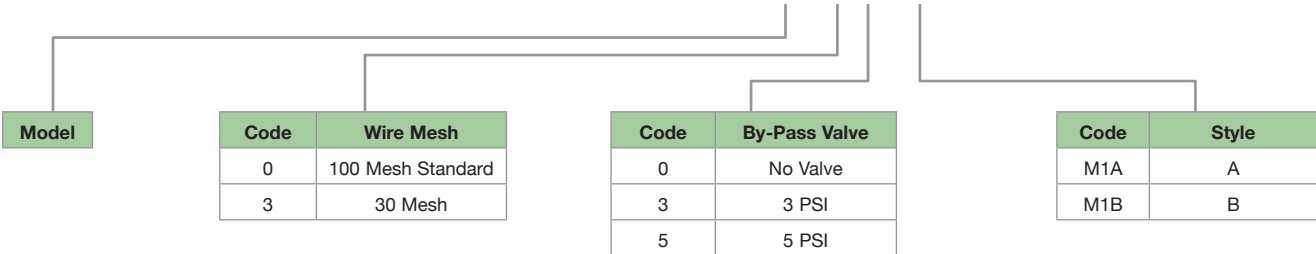
Model	A Outlet Port	Length	Rated Flow @ 5 Ft/Sec	B OD
SS100XXM1A	1" NPTF	5.3"	14 GPM	3.2"
SS120XXM1A	1 1/4" NPTF	7.3"	23 GPM	3.2"
SS150XXM1A	1 1/2" NPTF	9.3"	32 GPM	3.2"
SS200XXM1A	2" NPTF	7.9"	53 GPM	4.2"
SS250XXM1A	2 1/2" NPTF	10.0"	76 GPM	4.2"
SS300XXM1A	3" NPTF	13.2"	116 GPM	4.2"

Style B

Model	A Outlet Port	Length	Rated Flow @ 5 Ft/Sec	B OD
SS100XXM1B	1" NPTF	6.0"	14 GPM	3.2"
SS120XXM1B	1 1/4" NPTF	7.0"	23 GPM	3.2"
SS150XXM1B	1 1/2" NPTF	9.3"	32 GPM	3.2"
SS200XXM1B	2" NPTF	7.9"	53 GPM	4.2"
SS250XXM1B	2 1/2" NPTF	10.0"	76 GPM	4.2"
SS300XXM1B	3" NPTF	13.2"	116 GPM	4.2"

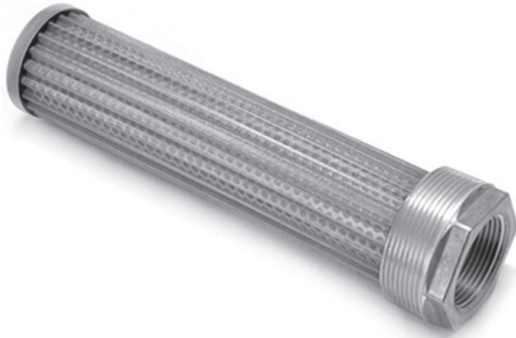
All strainers are rated at 5 Ft/sec with a pressure drop of under 1/2 PSI with 150 SUS oil.

HOW TO ORDER: SS XXX X X XXX



*By-pass valve not available on Style A





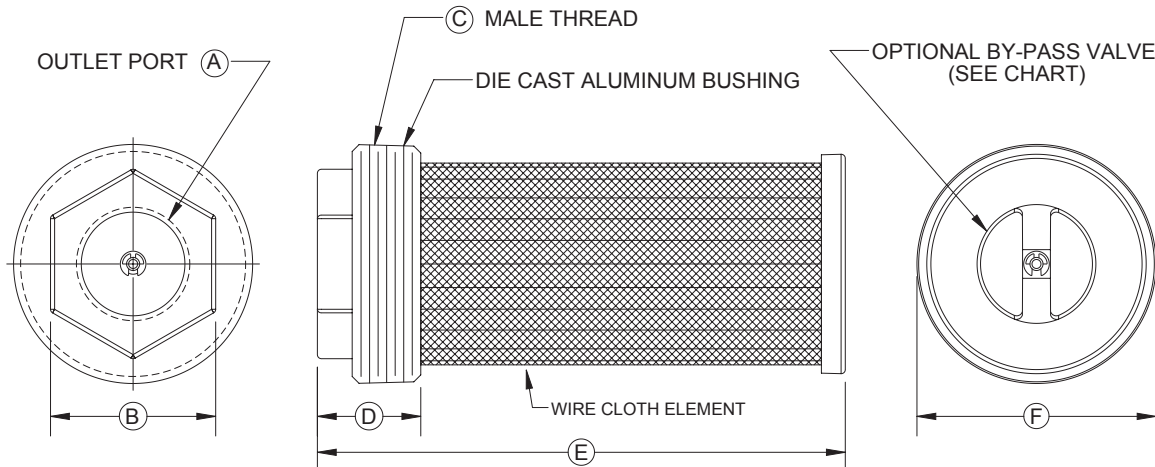
TF Series Hydraulic Strainers Externally Mounted

Port Sizes: 3/8" through 3" NPTF

Media: 100 Mesh Standard

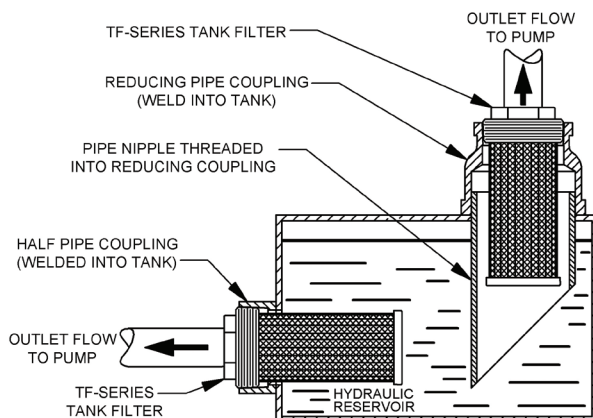
Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

Operating Temperature: Up to 250°F



Model	A Outlet Port	B Hex Size	C Male Thread	D Fitting Length	E Overall Length	F Cover Diameter	Rated Flow @ 5 Ft/Sec
TF0310X0	3/8" NPTF	1.2"	1" NPTF	1.1"	2.6"	1.1"	3 GPM
TF0510XX	1/2" NPTF	1.2"	1" NPTF	1.1"	4.9"	1.1"	5 GPM
TF0712XX	3/4" NPTF	1.5"	1 1/4" NPTF	1.1"	6.9"	1.5"	8 GPM
TF1015XX	1" NPTF	1.75"	1 1/2" NPTF	1.1"	6.9"	1.7"	14 GPM
TF1220XX	1 1/4" NPTF	2.1"	2" NPT	1.2"	9.1"	2.2"	23 GPM
TF1230XX	1 1/4" NPTF	2.5"	3" NPT	1.5"	6.7"	3.2"	23 GPM
TF1530XX	1 1/2" NPTF	2.5"	3" NPT	1.5"	8.7"	3.2"	32 GPM
TF1630XX	1 5/8"-12(SAE-20)	2.5"	3" NPT	1.5"	8.7"	3.2"	14 GPM
TF1830XX	1 7/8"-12(SAE-24)	2.5"	3" NPT	1.5"	8.7"	3.2"	21 GPM
TF2030XX	2" NPTF	3.06"	3" NPT	1.6"	8.8"	3.2"	53 GPM
TF2040XX	2" NPTF	4.13"	4" NPT	1.8"	7.7"	4.2"	53 GPM
TF3040XX	3" NPT	4.13"	4" NPT	2.1"	12.7"	4.2"	116 GPM

All strainers are rated at 5 Ft/sec with a pressure drop of under 1" Hg (1/2 PSI) with 150 SUS oil.



HOW TO ORDER: TF XXX X X

Model

Code	Wire Mesh
0	100 Mesh Standard
3	30 Mesh

Code	By-Pass Valve
0	No Valve
3	3 PSI
5	5 PSI





TFS Series

Hydraulic Strainers

Externally Mounted

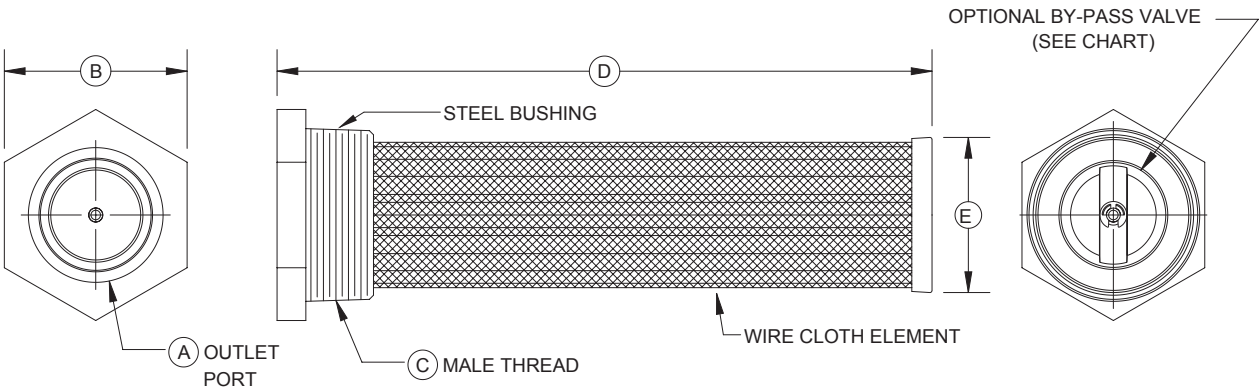
With Steel Bushing

Port Sizes: 1/2" through 3" NPTF

Media: 100 Mesh Standard

Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

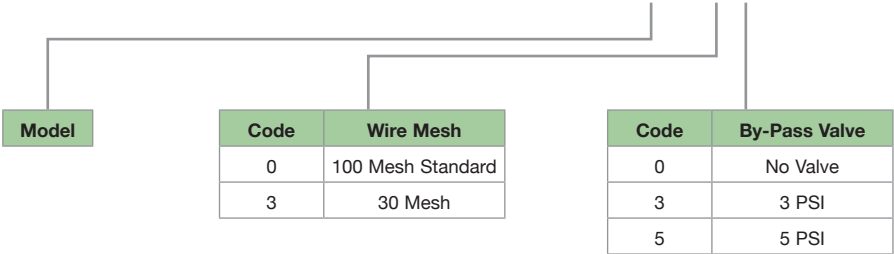
Operating Temperature: Up to 250°F

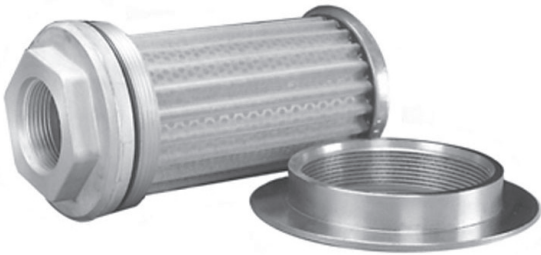


Model	A Outlet Port	B Hex Size	C Male Thread	D Overall Length	E Cover Dia.	Rated Flow @ 5 Ft/Sec
TFS0510XX*	1/2" NPT	1.38"	1" NPT	5.3"	1.1"	5 GPM
TFS0712XX*	3/4" NPT	1.80"	1 1/4" NPT	6.9"	1.5"	8 GPM
TFS1015XX*	1" NPT	2.23"	1 1/2" NPT	7.1"	1.7"	14 GPM
TFS1220XX*	1 1/4" NPT	2.58"	2" NPT	9.1"	2.2"	23 GPM
TFS2030XX*	2" NPT	3.30"	3" NPT	9.4"	3.2"	53 GPM
TFS2540XX*	2 1/2" NPT	3.83"	4" NPT	9.1"	4.2"	75 GPM
TFS3040XX*	3" NPT	4.65"	4" NPT	9.4"	4.2"	116 GPM

All strainers are rated at 5 Ft/sec with a pressure drop of under 1" Hg (1/2 PSI) with 150 SUS oil.

HOW TO ORDER: TFS XXXX X X





TFS Series

Hydraulic Strainers

Externally Mounted

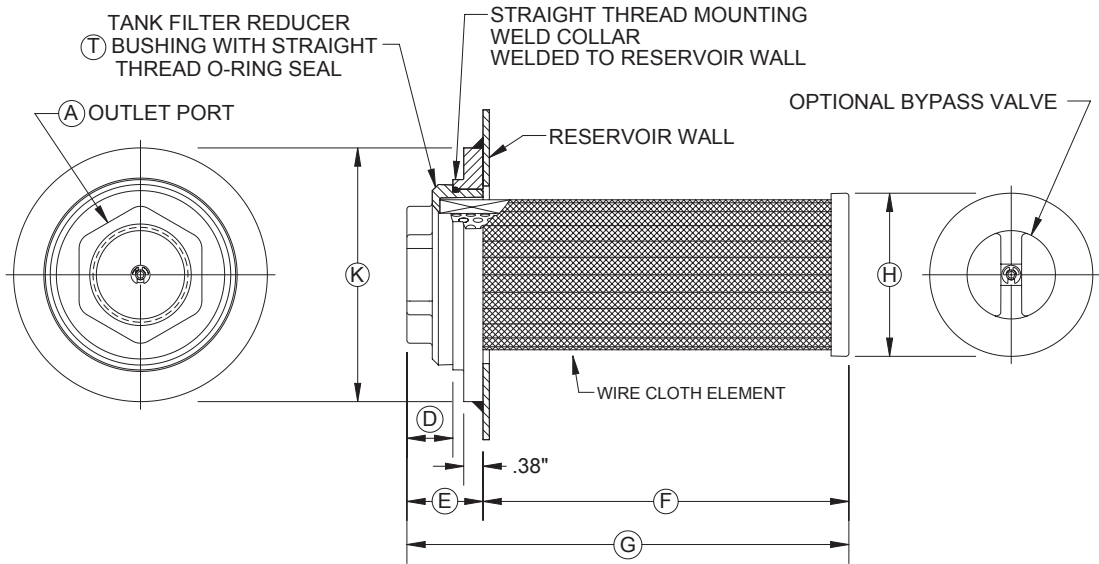
With Steel Bushing & O-Ring Seal

Port Sizes: 1 5/8"-12 UN (SAE-20) to 2 1/2"-12 UN (SAE-32)

Media: 100 Mesh Standard

Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

Operating Temperature: Up to 250°F



Design provides leak proof service by using a male straight thread Buna-N O-ring seal that mates with a female straight thread collar welded to the reservoir.

Model	T Thread	A Outlet Port	C Hex Size	D	E	F	G	H Diameter	Rated Flow @ 5 Ft/Sec
TFS1625XX	2 1/2"-12 UN-2A	1 5/8"-12 (SAE-20)	2.75"	0.8"	1.3"	7.9"	9.2"	2.2"	14 GPM
TF1634XX	3 3/8"-12 UN-2A	1 5/8"-12 (SAE-20)	2.44"	0.9"	1.5"	5.2"	6.7"	3.2"	14 GPM
TF1834XX	3 3/8"-12 UN-2A	1 7/8"-12 (SAE-24)	2.44"	0.9"	1.5"	7.2"	8.7"	3.2"	21 GPM
TFS3234XX	3 3/8"-12 UN-2A	2 1/2"-12 (SAE-32)	3.5"	0.7"	1.2"	7.8"	9.1"	3.2"	39 GPM

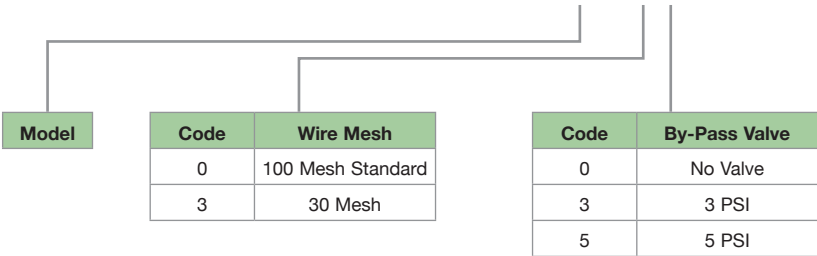
All strainers are rated at 5 Ft/sec with a pressure drop of under 1" Hg (1/2 PSI) with 150 SUS oil.

Notes:

- 1. Buna-N O-ring supplied as standard, fluorocarbon available
- 2. TFS: steel reducer bushing

Weld Collars		
Part #	Thread (T)	Dia. (K)
WC1225	2 1/2"-12 UN-2B	3.9"
WC1634	3 3/8"-12 UN-2B	5.0"
Please Order Separately		

HOW TO ORDER: TFS XXXX X X





TF Series

Hydraulic Strainers

Externally Mounted

With Magnetic Filtration

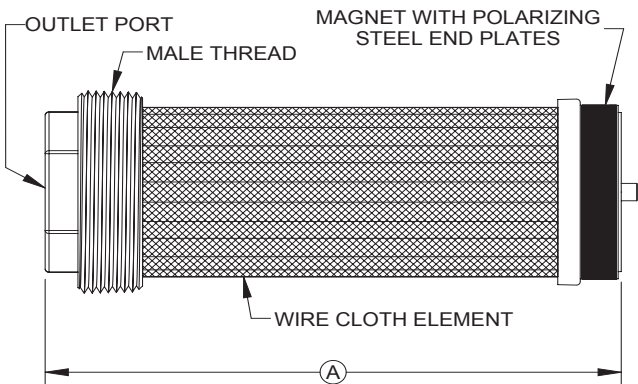
Port Sizes: 1" to 3" NPTF, SAE-20, SAE-24

Media: 100 Mesh Standard

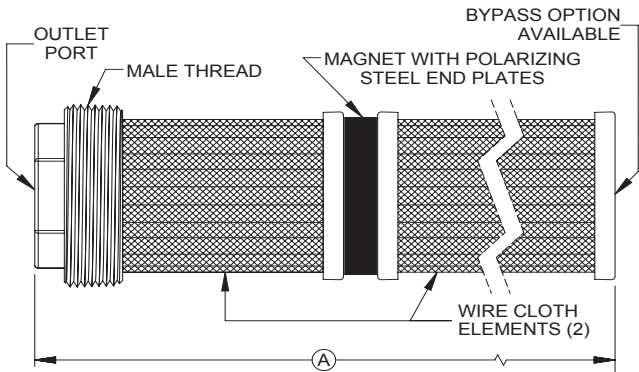
Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

Operating Temperature: Up to 250°F

Style A



Style B



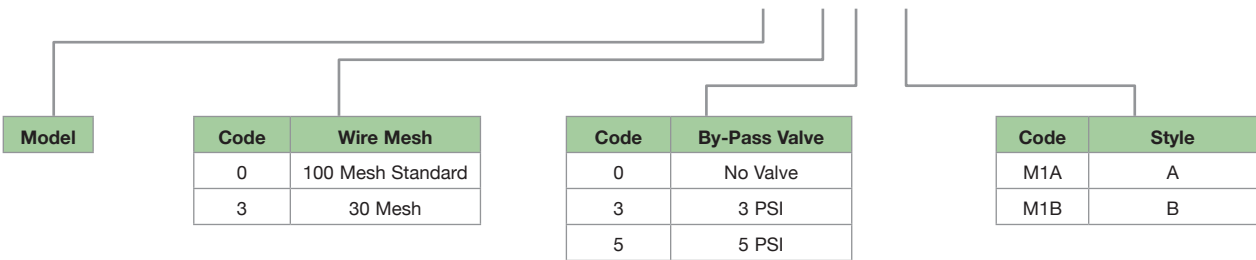
Style A

Model	Outlet Port	External Thread	A Length	Rated Flow @ 5 Ft/Sec
TF1230XXM1A	1 1/4" NPTF	3" NPTF	7.3"	23 GPM
TF1530XXM1A	1 1/2" NPTF	3" NPTF	9.3"	32 GPM
TF1634XXM1A	1 5/8"-12 UN SAE-20	3" NPTF	9.3"	20 GPM
TF1830XXM1A	1 5/8"-12 UN SAE-20	3 3/8"-12 UN-2A	9.3"	20 GPM
TF1834XXM1A	1 7/8"-12 UN SAE-24	3" NPTF	9.4"	30 GPM
TF2030XXM1A	1 7/8"-12 UN SAE-24	3 3/8"-12 UN-2A	9.4"	30 GPM
TF2040XXM1A	2" NPTF	3" NPTF	9.4"	53 GPM
TF2540XXM1A	2" NPTF	4" NPT	8.5"	53 GPM
TF3040XXM1A	3" NPTF	4" NPT	13.5"	116 GPM

Style B

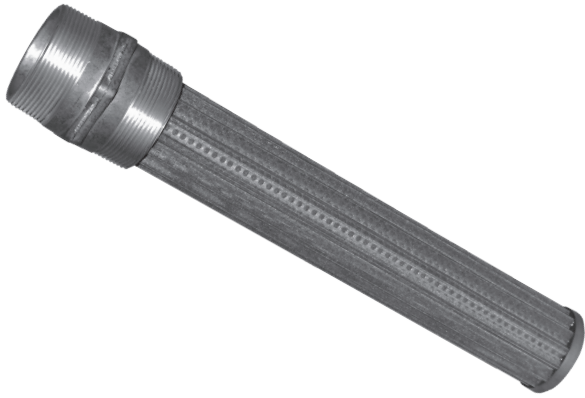
Model	Outlet Port	External Thread	A Length	Rated Flow @ 5 Ft/Sec
TF1230XXM1B	1 1/4" NPTF	3" NPTF	7.3"	23 GPM
TF1530XXM1B	1 1/2" NPTF	3" NPTF	9.3"	32 GPM
TF1634XXM1B	1 5/8"-12 UN SAE-20	3" NPTF	9.3"	20 GPM
TF1830XXM1B	1 5/8"-12 UN SAE-20	3 3/8"-12 UN-2A	9.3"	20 GPM
TF1834XXM1B	1 7/8"-12 UN SAE-24	3" NPTF	9.4"	30 GPM
TF2030XXM1B	1 7/8"-12 UN SAE-24	3 3/8"-12 UN-2A	9.4"	30 GPM
TF2040XXM1B	2" NPTF	3" NPTF	9.4"	53 GPM
TF2540XXM1B	2" NPTF	4" NPT	8.5"	53 GPM
TF3040XXM1B	3" NPTF	4" NPT	13.5"	116 GPM

HOW TO ORDER: TF XXXX X X XXX



*By-pass valve not available on Style A





TF & TFS Series

Hydraulic Strainers

Externally Mounted

Male Pipe Connections

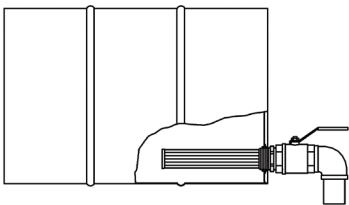
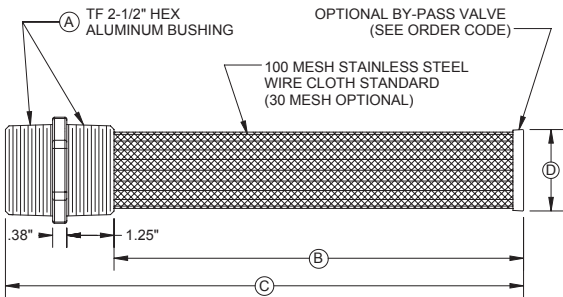
Port Sizes: 2" NPTF

Media: 100 Mesh Standard

Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)

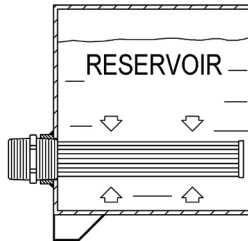
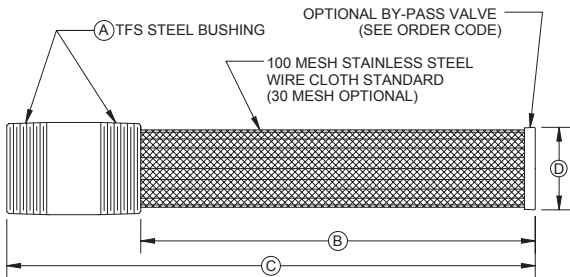
Operating Temperature: Up to 250°F

TF



TF-2020 used as a strainer in a 55 gallon barrel with a 2" ball valve directly attached

TFS



Suction line Straining application

Model	A	B	C	D	Rated Flow @5 Ft/Sec
TF2020XX	2" x 2" NPTF (ALUMINUM)	10.8"	13.7"	2.1"	26 GPM
TFS2020XX	2" x 2" NPT (STEEL)	10.7"	14.2"	2.1"	26 GPM

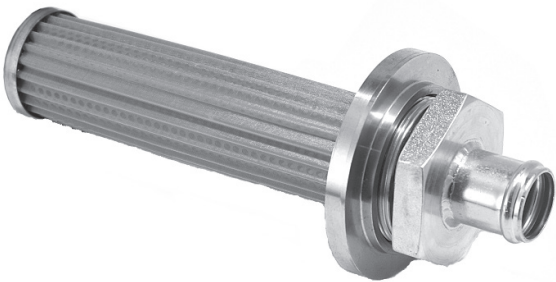
All strainers are rated at 5 Ft/sec with a pressure drop of under 1" Hg (1/2 PSI) with 150 SUS oil.

HOW TO ORDER: TF(S) 2020 X X

Code	Wire Mesh
0	100 Mesh Standard
3	30 Mesh

Code	By-Pass Valve
0	No Valve
3	3 PSI
5	5 PSI





BTF Series

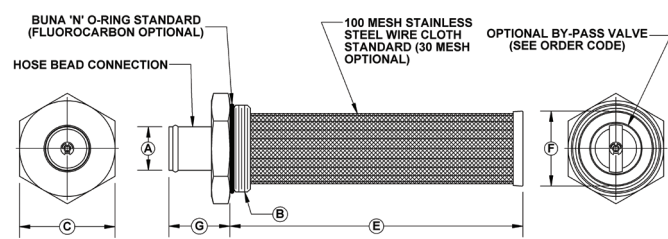
Hydraulic Strainers

Externally Mounted

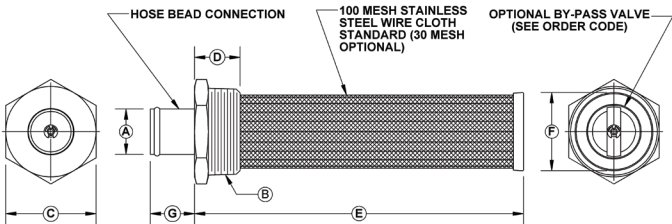
Hose Bead Connection

Port Sizes: 3/4" to 1 1/4" Hose
External Thread: NPTF & Straight w/ O-ring Seal
Media: 100 Mesh Standard
Optional By-Pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)
Operating Temperature: Up to 250°F

Hose Bead to Male Straight Thread Fitting O-ring & Mounting Weld Collar



Hose Bead to Pipe Fitting



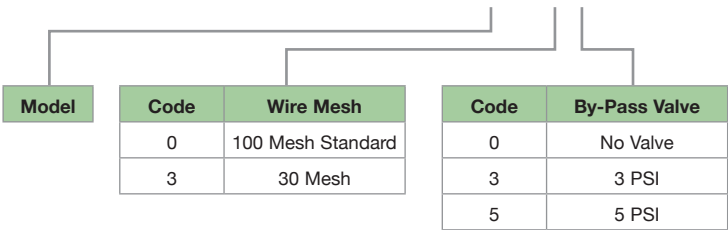
Model	A	B Thread	C Hex	E Len.	F Dia.	G Len.	Rated Flow @ 5 Ft/Sec
BTF0716XX	.8"	1 5/8"-12 UN-2A SAE-20	1.88"	6.4"	1.5"	1.6"	5 GPM
BTF1018XX	1.0"	1 7/8"-12 UN-2A SAE-24	2.13"	6.4"	1.7"	1.7"	10 GPM
BTF1225XX	1.3"	2 1/2"-12 UN-2A SAE-32	2.75"	8.4"	2.7"	1.9"	16 GPM

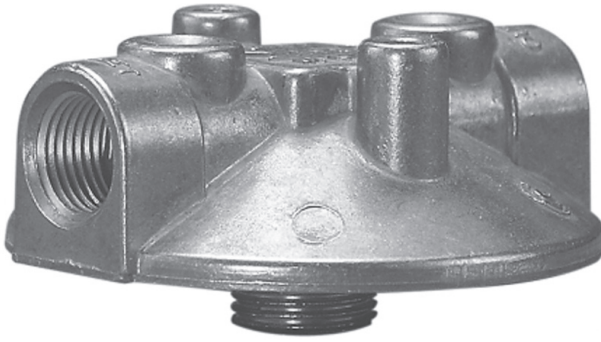
Model	A	B Thread	C Hex	D Len.	E Len.	F Dia.	G Len.	Rated Flow @ 5 Ft/Sec
BTF0712XX	.8"	1 1/4" NPTF	1.75"	1.2"	7.0"	1.5"	1.6"	5 GPM
BTF1015XX	1.0"	1 1/2" NPTF	2.00"	1.2"	7.0"	1.7"	1.2"	10 GPM
BTF1220XX	1.3"	2" NPTF	2.50"	1.3"	9.1"	2.7"	1.3"	16 GPM

All strainers are rated at 5 Ft/sec with a pressure drop of under 1" Hg (1/2 PSI) with 150 SUS oil.

Weld Collars		
Part #	B Thread	O.D.
WC0716	1 5/8"-12 UN-2B SAE-20	2.75"
WC1018	1 7/8"-12 UN-2B SAE-24	3.06"
WC1225	2 1/2"-12 UN-2B SAE-32	3.88"
Please Order Separately		

HOW TO ORDER: BTF XXXX X X





BF Series

Spin-On Filter Heads

Used with BE Filter Elements

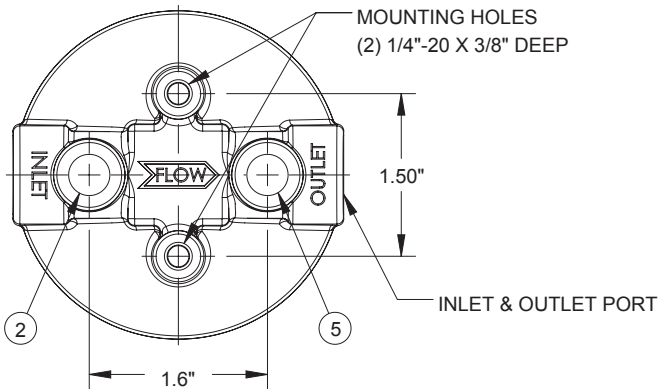
Flows Up To: 7 GPM (return) 2 GPM (suction)

Port Sizes: 3/8" NPTF; 9/16"-18 UN(SAE-6)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids



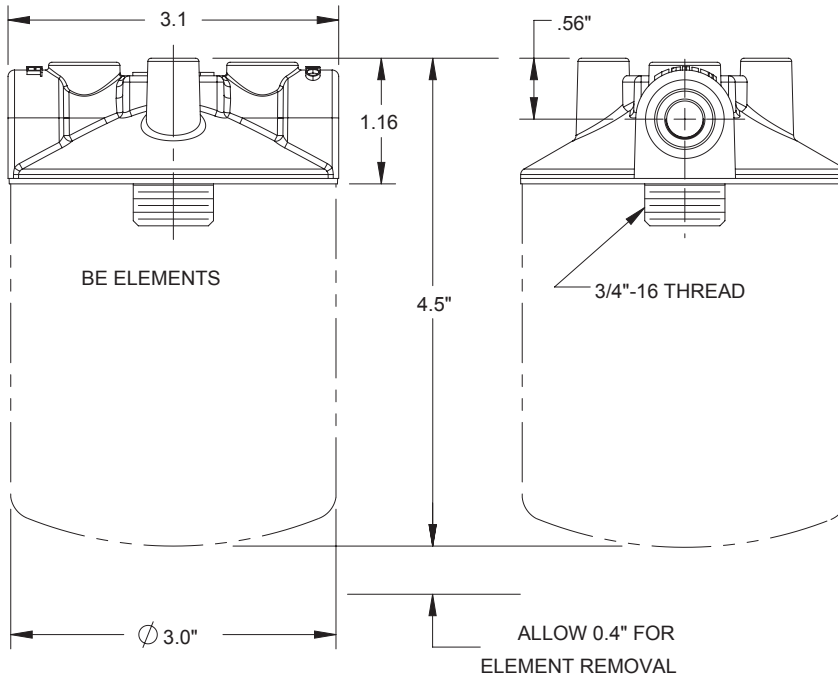
1/8" NPTF GAUGE PORTS

INLET PRESSURE LOCATION: ② (RETURN LINE)

OUTLET PRESSURE LOCATION: ⑤ (SUCTION LINE)

HOW TO ORDER: BF XX 0

Code	Inlet & Outlet Ports
03	3/8" NPTF
06	9/16"-18 UN (SAE-6)





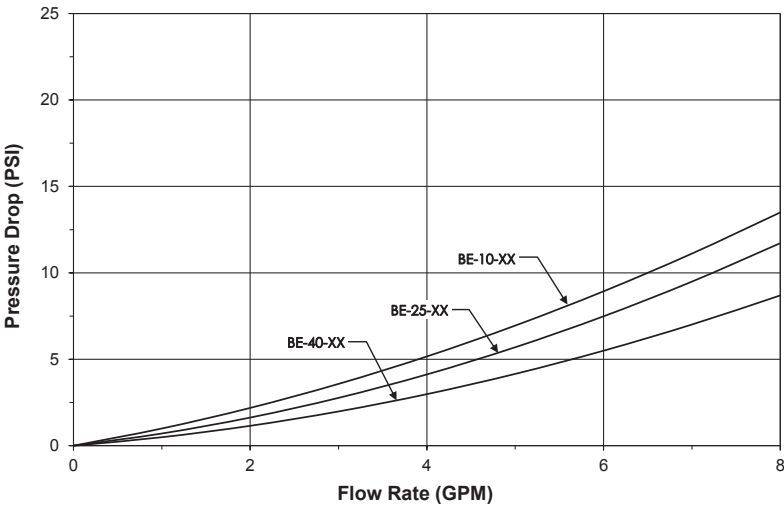
BE Series

Spin-On Filter Elements

Used with BF Filter Heads

Diameter: 3.1”
Mounting Thread: 3/4”-16 UN
Overall Height: 3.4”
Operating Pressure: 200 PSI Max. Operating
ΔP max: 50 psid
Temperature: Up to +250°F Operating
Applications: Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (98.7% Efficiency)	Can Color/ Imprint	Media Type	Internal Bypass
BE100 “10 Micron”	8	23	White/Red	Cellulose	None
BE1018 “10 Micron”	8	23	White/Red	Cellulose	18 psid
BE2510 “25 Micron”	11	27	White/Black	Cellulose	10 psid
BE2525 “25 Micron”	11	27	White/Black	Cellulose	25 psid
BE400 “40 Micron”	40	-	White/Black	Cellulose	None



Application Data: *Average Pressure Drop Through Clean Filter Assembly
With 150 SUS Oil At 105° F.*

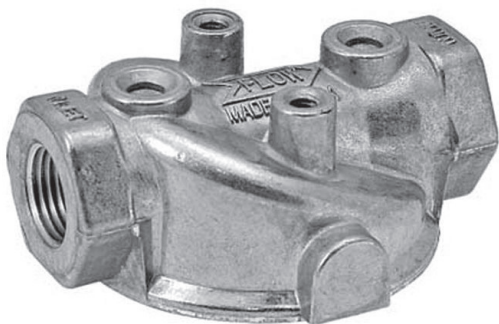
Reference:

$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size “x” micron (Nominal Rating)
 $\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size “x” micron (Absolute Rating)

Application: Petroleum based fluids. Consult factory for synthetic fluids.

Caution: Do not use BE Series filter elements on internal combustion engines.





ZAF05 Series

Spin-On Filter Heads

Used with AE & ZAE Filter Elements

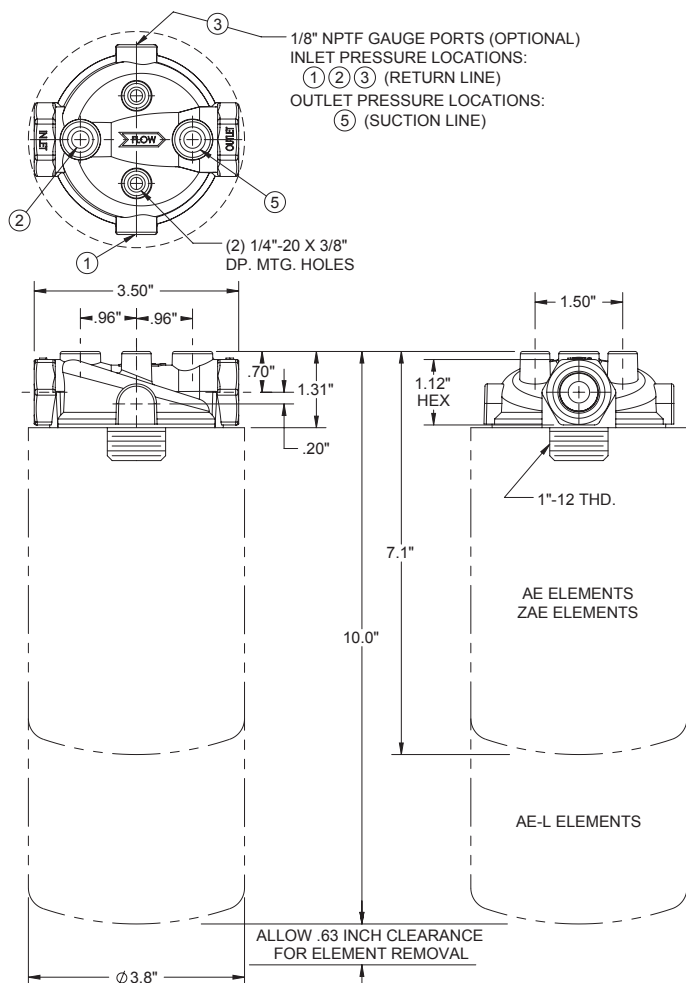
Flows Up To: 22 GPM (return) 5 GPM (suction)

Port Sizes: 1/2" NPTF; 3/4"-16 UN(SAE-8)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: ZAF XX XX XXX

Code	Inlet & Outlet Ports
05	1/2" NPTF
08	3/4"-16 UN (SAE-8)

Code	By-Pass Valve Setting
00	No By-Pass
30	30 PSI

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
1235	1, 2, 3, 5 (All)



Applications: Petroleum based fluids
Consult factory for synthetic fluids

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
1235	1, 2, 3, 5 (All)



ZAF10 Series

Spin-On Filter Heads

Used with AE & ZAE Filter Elements

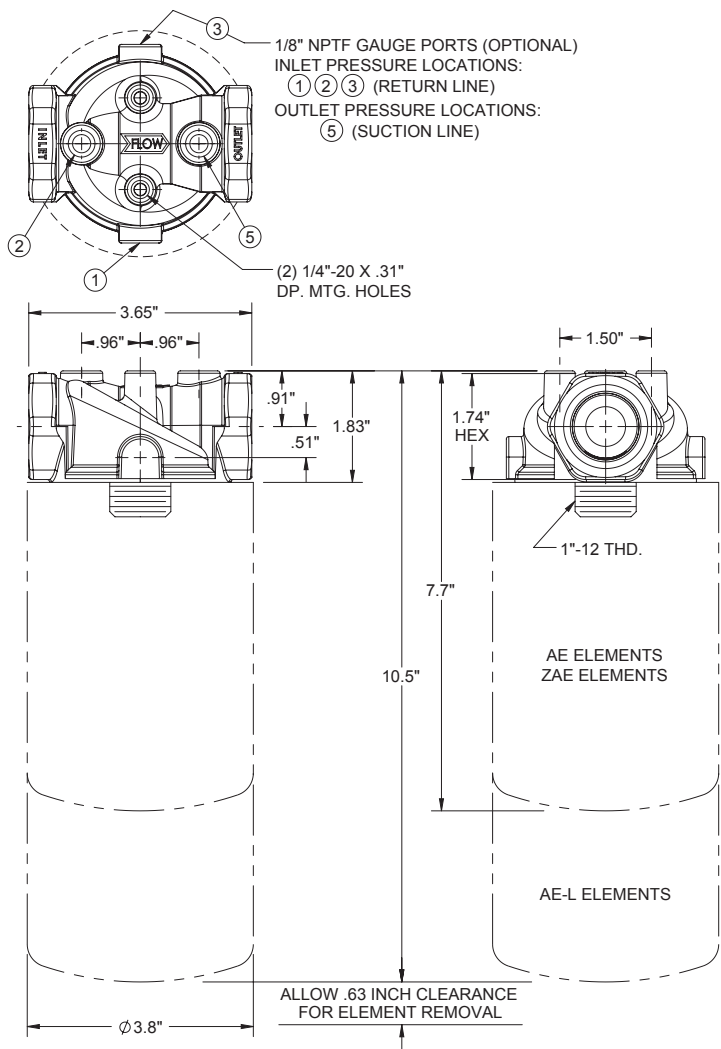
Flows Up To: 32 GPM (return) 14 GPM (suction)

Port Sizes: 1" NPTF; 1 5/16"-12 UN(SAE-16)

Pressure: 250 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: ZAF XX XX XXX

Code	Inlet & Outlet Ports
10	1" NPTF
13	1 5/16"-12 UN (SAE-16)

Code	By-Pass Valve Setting
00	No By-Pass
03	3 PSI
25	25 PSI

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return Line)
1235	1, 2, 3, 5 (All)



AE Series

Spin-On Filter Elements

Used with ZAF Filter Heads

- Diameter:** 3.8"
- Mounting Thread:** 1"-12 UN
- Operating Pressure:** 250 PSI Max. Operating
- ΔP max:** 50 psid
- Temperature:** Up to +250°F Operating
- Applications:** Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (98.7% Efficiency)	Can Color/Imprint	Media Type	Free Water Absorption	Overall Height
AE03 "3 Micron"	<4	6	White/Black	Cellulose	-	5.8"
AE03AZL "3 Micron"	5	24	White/Orange	Aqua-Zorb™	7.2 oz	8.5"
AE10 "10 Micron"	8	23	White/Red	Cellulose	-	5.8"
AE10AZ "10 Micron"	17	30	White/Orange	Aqua-Zorb™	4.1 oz	5.8"
AE10L "10 Micron"	8	23	White/Red	Cellulose	-	8.5"
AE100 "141 Micron"	-	-	White/Blue	Stn. Steel Mesh	-	5.8"
AE25 "25 Micron"	11	27	White/Black	Cellulose	-	5.8"

Application Data:

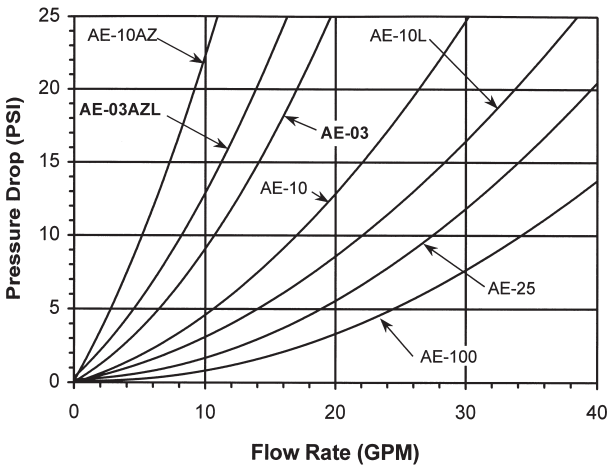
Reference:

- $\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size "x" micron (Nominal Rating)
- $\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size "x" micron (Absolute Rating)

Buna-N Gasket standard. Fluorocarbon Gasket optional, consult factory.

Caution: Do **not** use AE Series filter elements on internal combustion engines.

Aqua-Zorb™ filter medias absorb and retain free water. Any absorbed water can not be liberated from the Aqua-Zorb™ media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.





ZAE Series

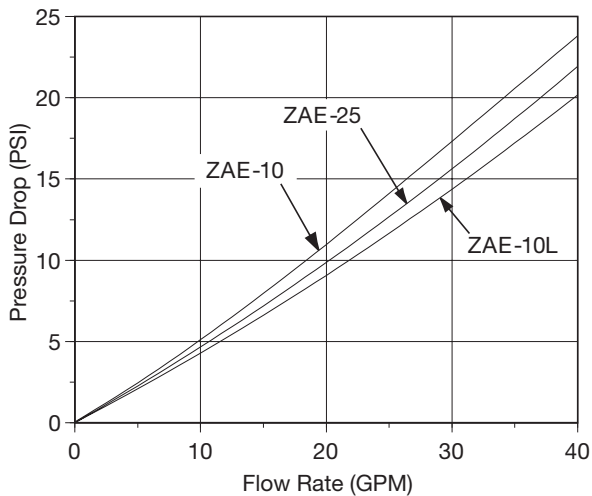
Z-Glass Media

Spin-On Filter Elements

Used with ZAF Filter Heads

Diameter: 3.8"
Mounting Thread: 1"-12 UN
Overall Height: 3.4"
Operating Pressure: 250 PSI Max. Operating
ΔP max: 80 psid
Temperature: Up to +250°F Operating
Applications: Petroleum based fluids

Part Number	Absolute Rating $\beta_{x\mu(c)} = 200$ (99.5% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 1000$ (99.9% Efficiency)	Can Color/ Imprint	Overall Height
ZAE03 "3 Micron"	<4	<4	White/Green	5.8"
ZAE10 "10 Micron"	10	12	White/Red	5.8"
ZAE10L "10 Micron"	10	12	White/Red	8.5"



Application Data:

Reference:

$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size "x" micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size "x" micron (Absolute Rating)

$\beta_{x\mu(c)} = 200$ represents 99.5% efficiency at particle size "x" micron

Z-Glass Media

Buna-N Gasket standard. Fluorocarbon Gasket optional, consult factory.

Caution: Do **not** use ZAE Series filter elements on internal combustion engines.

Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



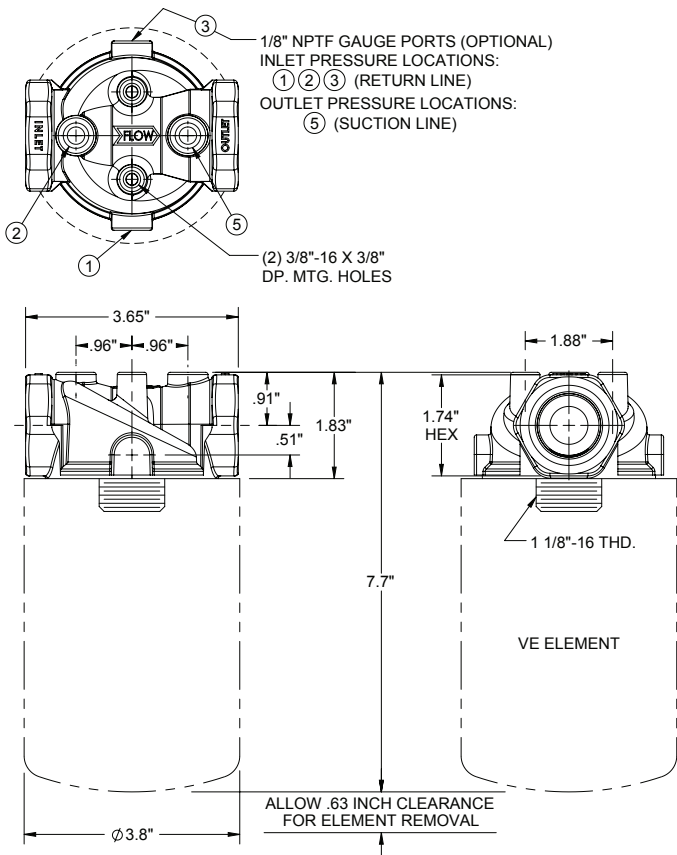


VAF Series

Spin-On Filter Heads

Used with VE Filter Elements

Flows Up To: 32 GPM (return) 14 GPM (suction)
Port Sizes: 1" NPTF; 1 5/16"-12 UN(SAE-16)
Pressure: 250 PSI Max. Operating
Temperature: Up to + 250°F Operating
Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: VAF XX XX X

Code	Inlet & Outlet Ports
10	1" NPTF
13	1 5/16"-12 UN (SAE-16)

Code	By-Pass Valve Setting
25	25 PSI

Code	Gauge Port Location
0	No Port
13	1 & 3 (Return)
1235	1, 2, 3, 5 (All)





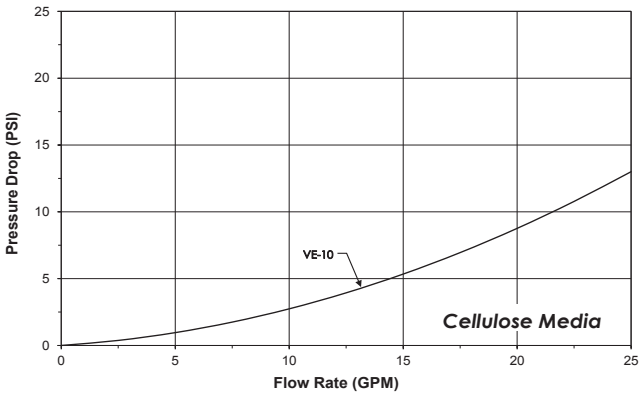
VE10 Series

Spin-On Filter Elements

Used with VAF Filter Heads

Diameter: 3.8”
Mounting Thread: 1 1/8”-16 UN
Operating Pressure: 250 PSI Max. Operating
ΔP max: 50 psid
Temperature: Up to +250°F Operating
Applications: Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (98.7% Efficiency)	Can Color/ Imprint	Overall Height
VE10 “10 Micron”	8	23	White/Red	5.8”



**Average Pressure Drop Through Clean Filter Assembly
With 150 SUS Oil At 105° F.**

Application Data:

Reference:

$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size “x” micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size “x” micron (Absolute Rating)

Buna-N Gasket standard. Fluorocarbon Gasket optional, consult factory.

Caution: Do **not** use VE Series filter elements on internal combustion engines.





SF100 Series

Spin-On Filter Heads

Used with SE, LE, ZSE, & ZLE Filter Elements

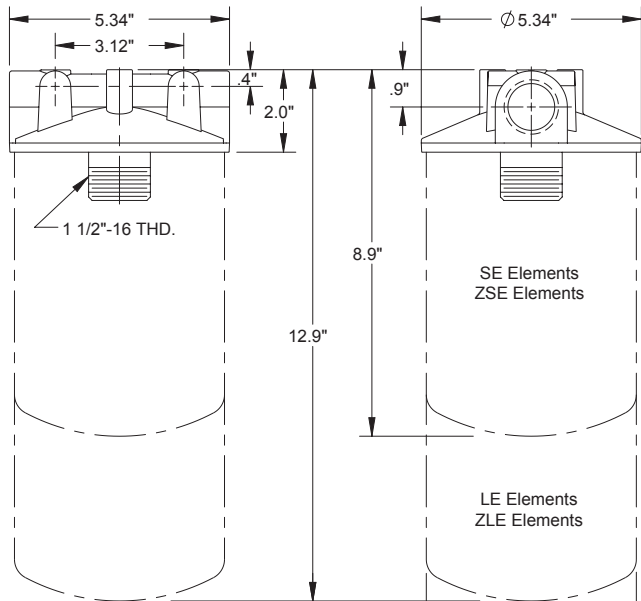
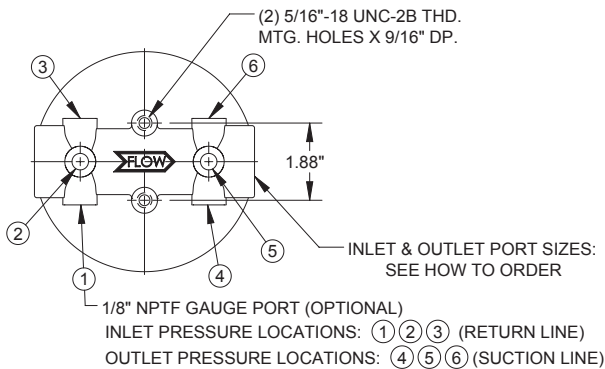
Flows Up To: 40 GPM (return) 15 GPM (suction)

Port Sizes: 1" NPTF; 1 5/16"-12 UN(SAE-16)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids

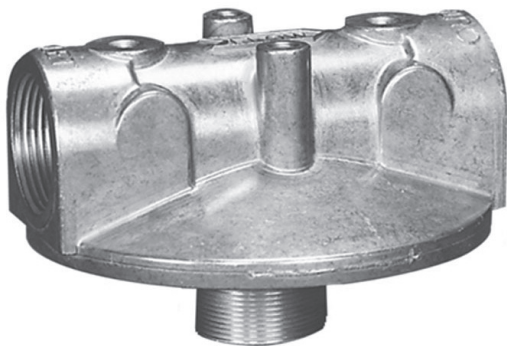


HOW TO ORDER: SF XXX XX X

Code	Inlet & Outlet Ports
100	1" NPTF
130	1 5/16"-12 UN (SAE-16)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Port Required
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)



SF120 Series

Spin-On Filter Heads

Used with SE, LE, ZSE, & ZLE Filter Elements

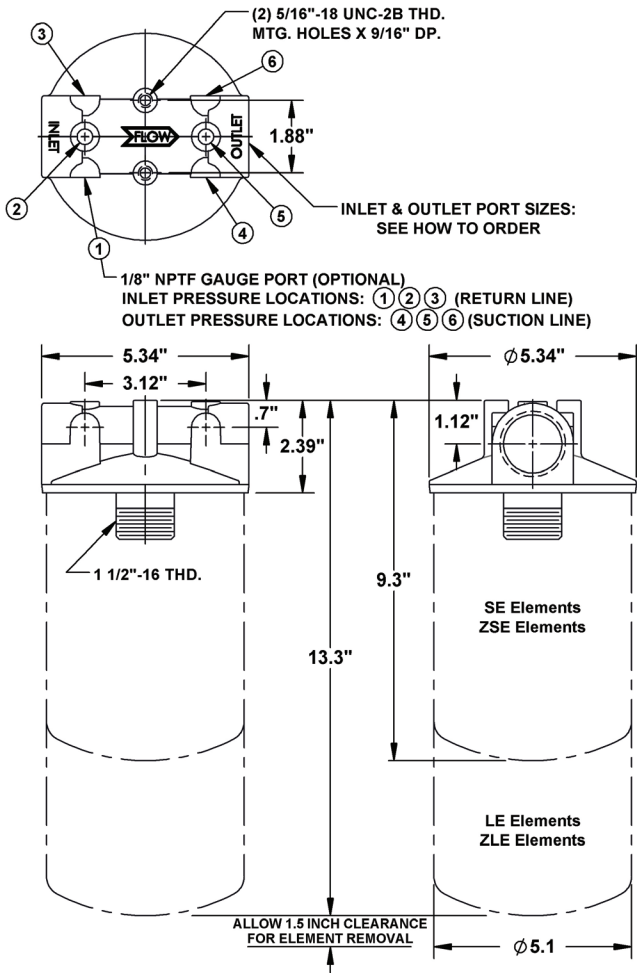
Flows Up To: 70 GPM (return) 25 GPM (suction)

Port Sizes: 1 1/4" NPTF; 1 5/8"-12 UN(SAE-20)

Pressure: 200 PSI Max. Operating

Temperature: Up to + 250°F Operating

Applications: Petroleum based fluids
Consult factory for synthetic fluids

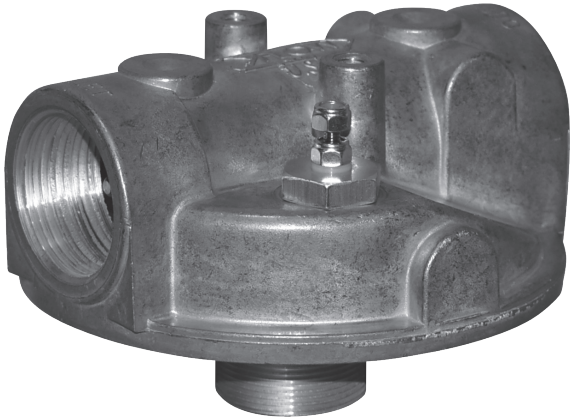


HOW TO ORDER: SF XXX XX X

Code	Inlet & Outlet Ports
120	1 1/4" NPTF
160	1 5/8"-12 UN (SAE-20)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Port Required
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)



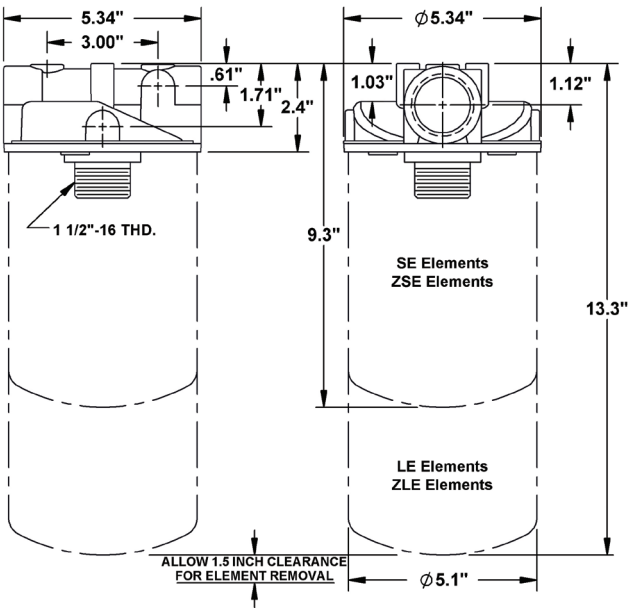
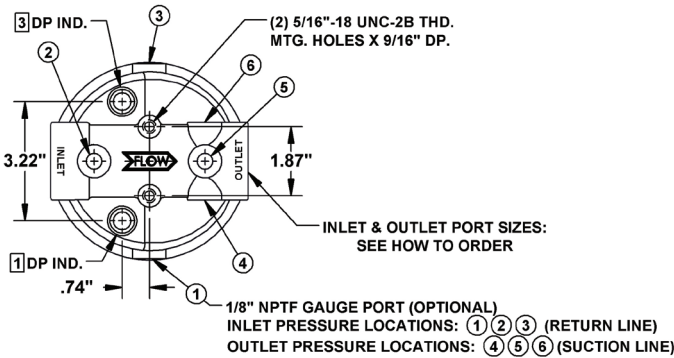
SF122 Series

Spin-On Filter Heads

with ΔP Indicator Option

Used with SE, LE, ZSE & ZLE Filter Elements

Flows Up To: 70 GPM (return) 25 GPM (suction)
Port Sizes: 1 1/4" NPTF; 1 5/8"-12 UN(SAE-16)
Pressure: 200 PSI Max. Operating
Temperature: Up to + 200°F Operating
Applications: Petroleum based fluids
Consult factory for synthetic fluids



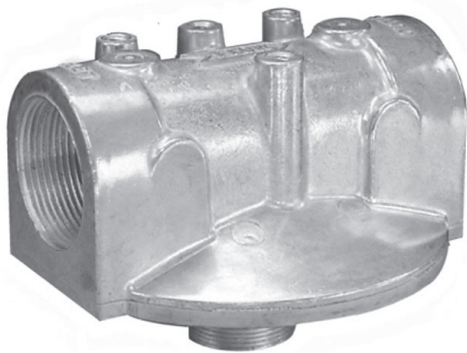
HOW TO ORDER: SF XXX XX X XXX XXX

Code	Inlet & Outlet Ports
122	1 1/4" NPTF
162	1 5/8"-12 UN(SAE-20)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
00	No Port Required
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)

Code	Pos. 1 & 3 Indicators
000	No Indicator
V22	Visual
D22	DC Electrical 1 Wire
H22	Vis./Elec. w/DIN Con.

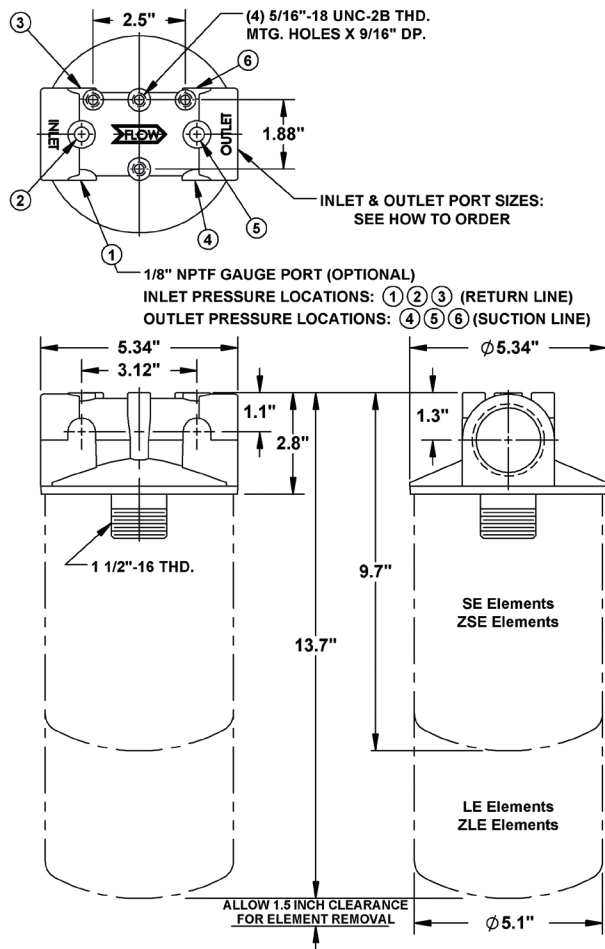


SF150 Series

Spin-On Filter Heads

Used with SE, LE, ZSE, & ZLE Filter Elements

Flows Up To: 80 GPM (return) 32 GPM (suction)
Port Sizes: 1 1/2" NPTF; 1 7/8"-12 UN(SAE-24)
Pressure: 200 PSI Max. Operating
Temperature: Up to + 250°F Operating
Applications: Petroleum based fluids
Consult factory for synthetic fluids



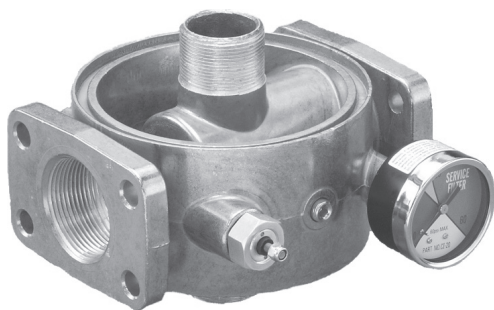
HOW TO ORDER: SF XXX XX X

Code	Inlet & Outlet Ports
150	1 1/2" NPTF
180	1 7/8" - 12 UN (SAE-24)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Port Required
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (All)





DF15 Series

Over/Under Spin-On Filter Heads with ΔP Indicator Option

Used with SE, LE, ZSE, & ZLE Filter Elements

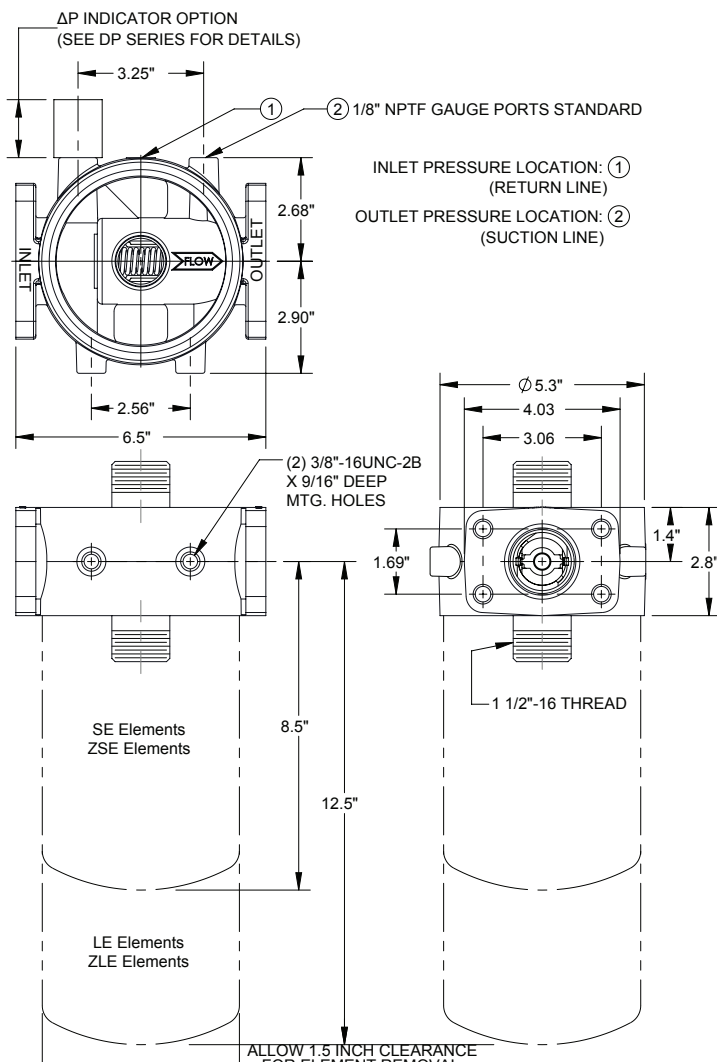
Flows Up To: 120 GPM (return) 50 GPM (suction)

Port Sizes: 1 1/2" NPTF w/ 2" (4) Bolt Flange

Pressure: 200 PSI Max. Operating

Temperature: Up to + 200°F Operating

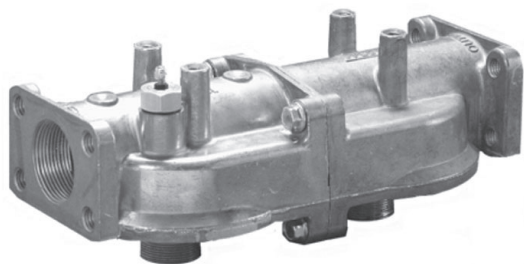
Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: DF15 XX 12 XXX

Code	By-Pass Valve Setting
25	25 PSI

Code	Indicator Option
000	No Indicator
V22	Visual
D22	DC Electrical 1 Wire
H22	Vis./Elec. w/DIN Con.



MF Series

Modular Inline Spin-On Filter Heads

With ΔP Indicator Option

Used with SE, LE, ZSE, & ZLE Filter Elements

Flows Up To: 120 GPM (return) 50 GPM (suction)

Port Sizes: 1 1/2" NPTF w/ 2" (4) Bolt Flange
1 7/8"-12 UN (SAE-24)

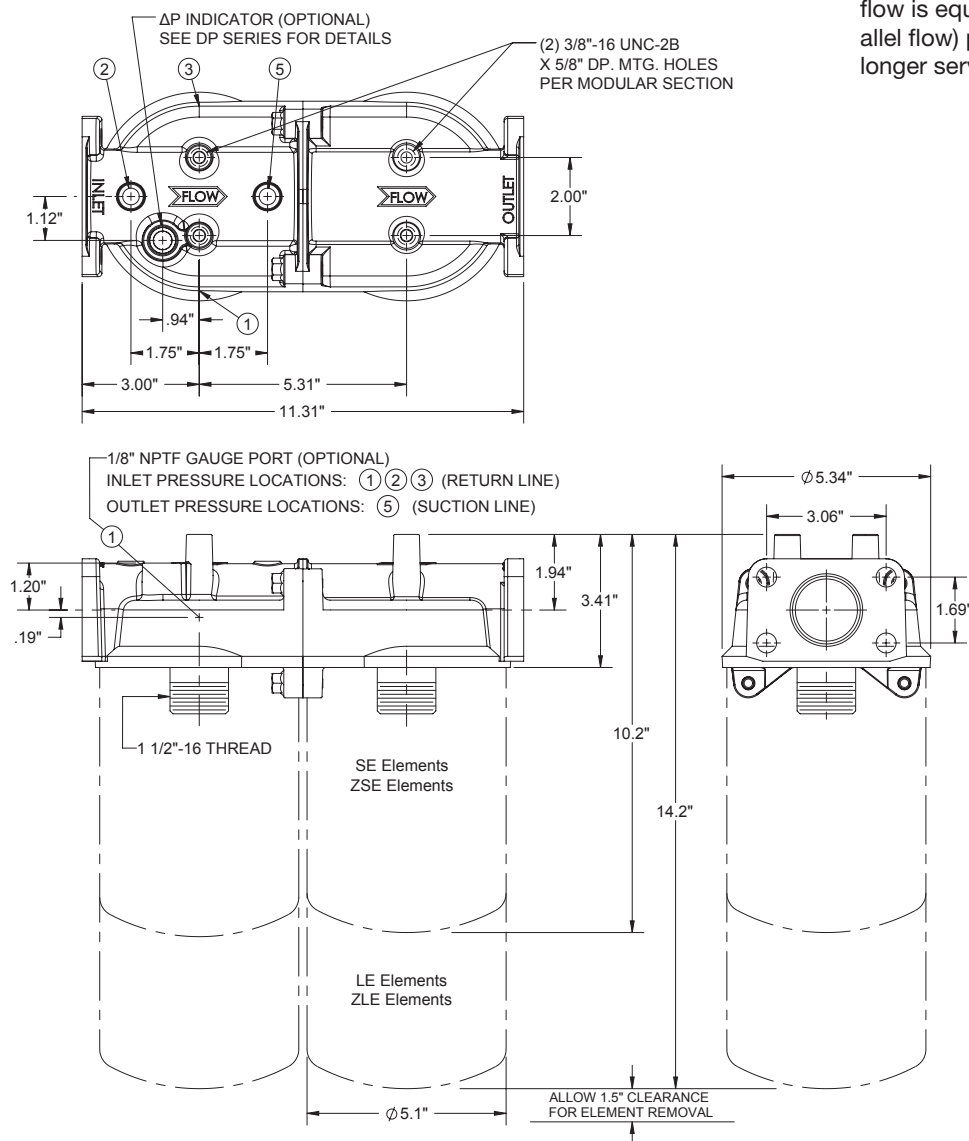
Pressure: 200 PSI Max Operating

Temperature: Up to +250°F (No Indicator)

Material: Resin Impregnated Aluminum

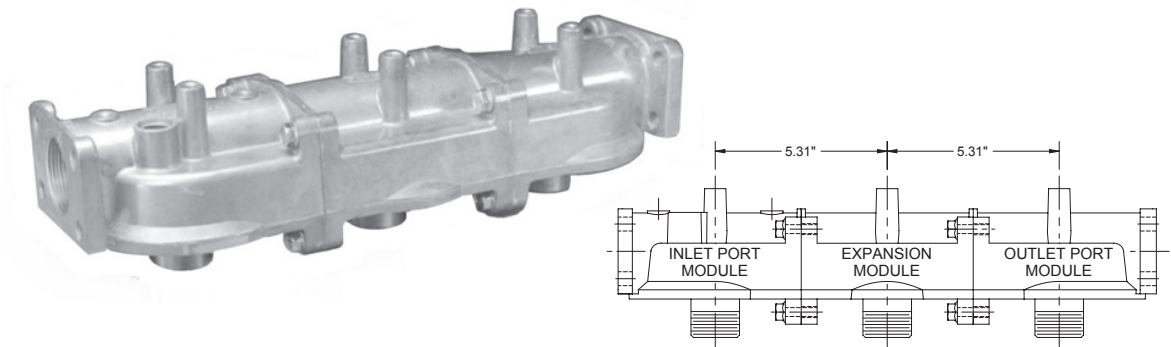
Applications: Petroleum based fluids
Consult factory for synthetic fluids

Features: Multiple modular heads bolted together. Inlet flow is equally divided among all elements (parallel flow) providing greater flow capacities and longer service life.

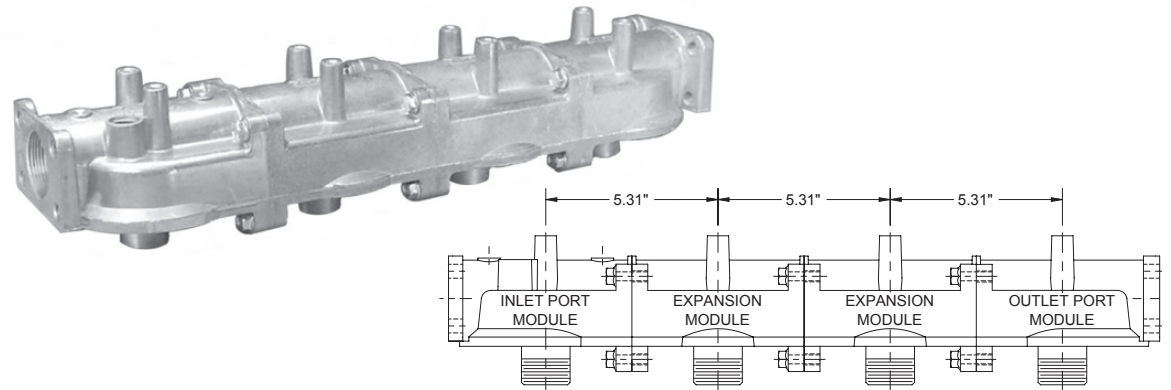


MF Series Continued

3 Element Spin-On Filter Head Assembly



4 Element Spin-On Filter Head Assembly



Multiple Unit Head Assemblies may require additional mounting support for your application.

HOW TO ORDER: MF XX XX X X XXX

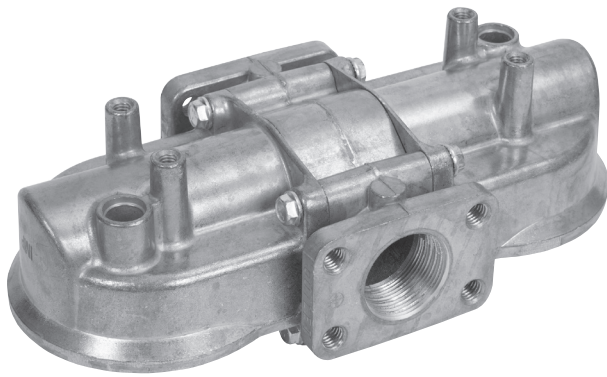
Code	Inlet & Outlet Port Size & Type
18	1 7/8"-12 UN (SAE-24)
2215	2" (4) Bolt Flange & 1 1/2" NPTF Combination

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Gauge Port Location
0	No Gauge Port
123	1,2,3 (Return)

Code	Indicator Options
000	No Indicator
V22	Visual Indicator
D22	DC Electrical 1 Wire
H22	Vis./Elec. w/DIN Con.

Code	# of Filter Heads
2	2 Heads
3	3 Heads
4	4 Heads



ZDF Series

Side by Side Spin-On Filter Heads with ΔP Indicator Option

Used with SE, LE, ZSE, & ZLE Filter Elements

Flows Up To: 120 GPM (return) 50 GPM (suction)

Port Sizes: 1 1/2" NPTF w/ 2" (4) Bolt Flange

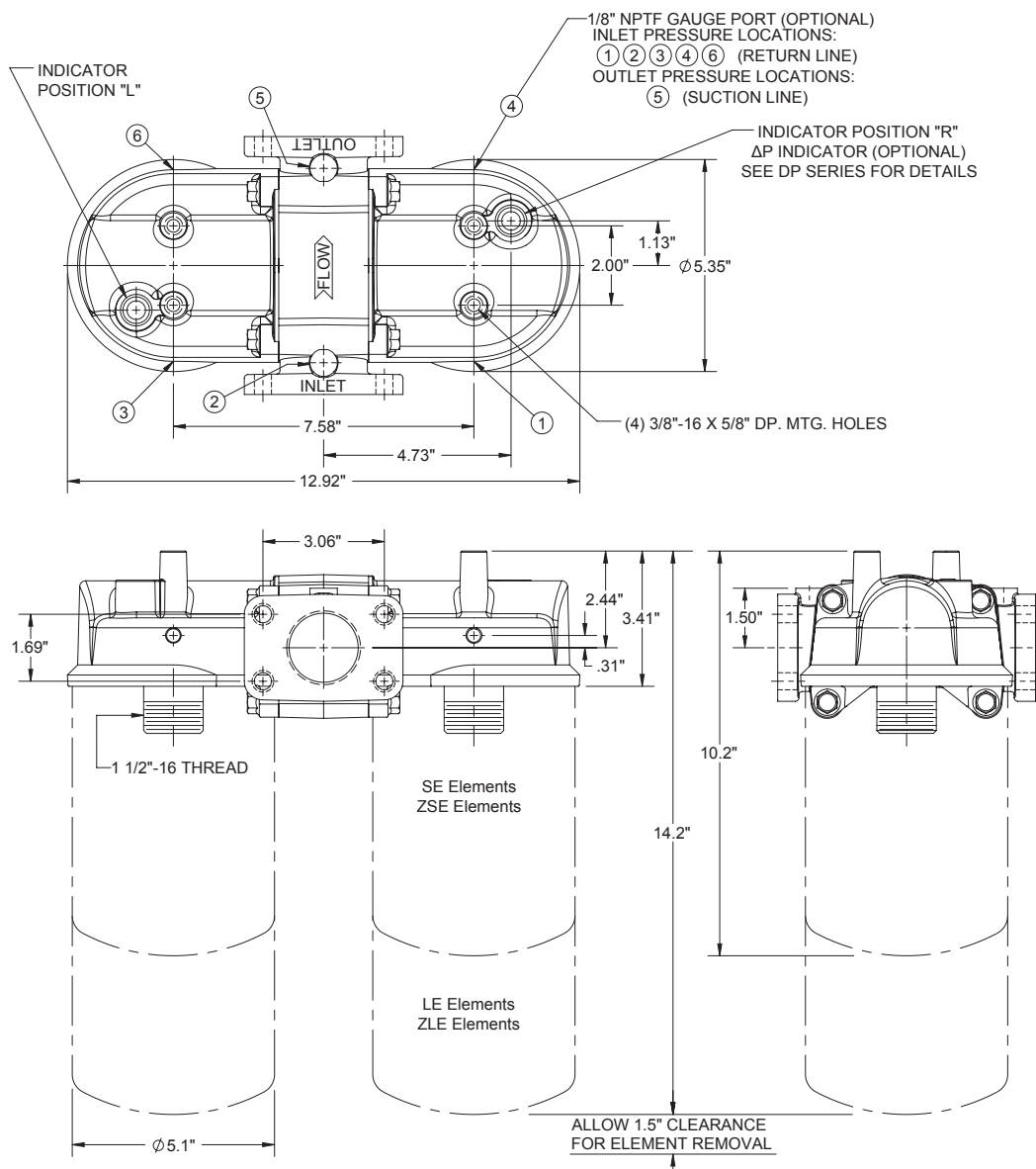
Pressure: 200 PSI Max Operating

Temperature: Up to +250°F Operating

Material: Resin Impregnated Aluminum

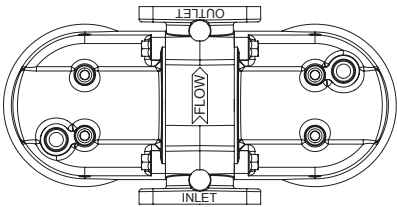
Applications: Petroleum based fluids
Consult factory for synthetic fluids

Features: Multiple modular heads bolted together. Inlet flow is equally divided among all elements (parallel flow) providing greater flow capacities and longer service life.

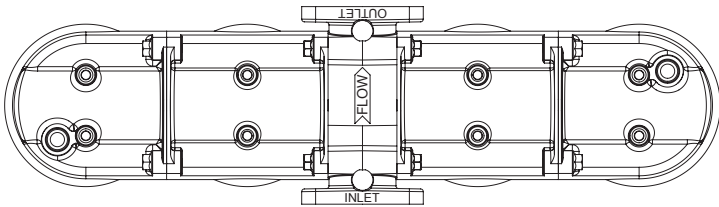


ZDF Series Continued

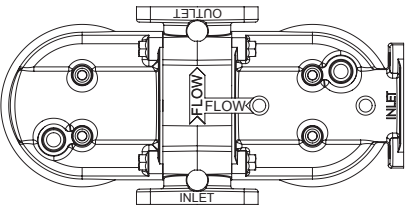
Standard Two Element Filter Head Configuration (Blank)



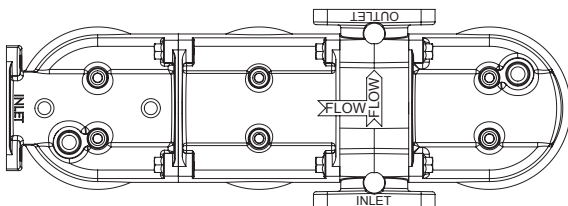
Four Element Filter Configuration "A"



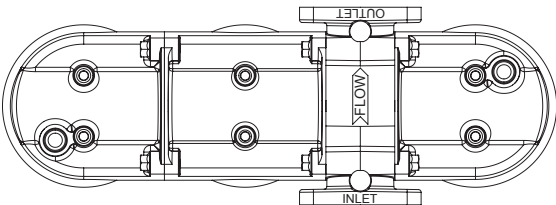
Two Element, Two Inlet Filter Head Configuration "B"



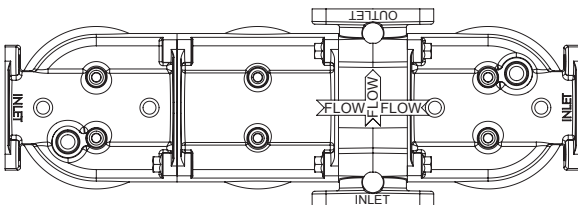
Three Element, 90° Filter Head Configuration "D"



Three Element Filter Head Configuration "G"



Three Element Filter Head Configuration "H"



HOW TO ORDER: ZDF2215 XX X XXXX X

Code	By-Pass Valve Settings
25	25 PSI

Code	Gauge Port Location
0	No Port Required
1346	1,3,4,6 (Return)

Configuration Option
Leave Blank for Standard

Code	Indicator Options
0000	No Indicator
VL22	Visual Left
VR22	Visual Right
DL22	DC Electric Left
DR22	DC Electric Right
HL22	Vis./Elec. DIN Left
HR22	Vis./Elec. DIN Right



SE & LE Series

Spin-On Filter Elements

Used with SF, DF, MF, & ZDF Filter Heads

Diameter: 5.1"

Mounting Thread: 1 1/2"-16 UN

Operating Pressure: 200 PSI Max. Operating

ΔP max: 50 psid

Temperature: Up to +250°F Operating

Applications: Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (99.5% Efficiency)	Can Color/ Imprint	Media Type	Free Water Absorption	Overall Height
SE03 "3 Micron"	<4	11	White/Green	Cellulose	-	6.9"
SE10 "10 Micron"	5	19	White/Red	Cellulose	-	6.9"
SE100 "141 Micron"	-	-	White/Blue	Stn. Steel Mesh	-	6.9"
SE25 "25 Micron"	19	36	White/Black	Cellulose	-	6.9"
LE03 "3 Micron"	<4	11	White/Green	Cellulose	-	10.9"
LE03AZ "3 Micron"	<4	11	White/Orange	Aqua-Zorb™	15 oz.	10.9"
LE10 "10 Micron"	5	19	White/Red	Cellulose	-	10.9"
LE100 "141 Micron"	-	-	White/Blue	Stn. Steel Mesh	-	10.9"
LE10AZ "10 Micron"	5	19	White/Orange	Aqua-Zorb™	15 oz.	10.9"
LE25 "25 Micron"	19	36	White/Black	Cellulose	-	10.9"

Application Data:

Reference:

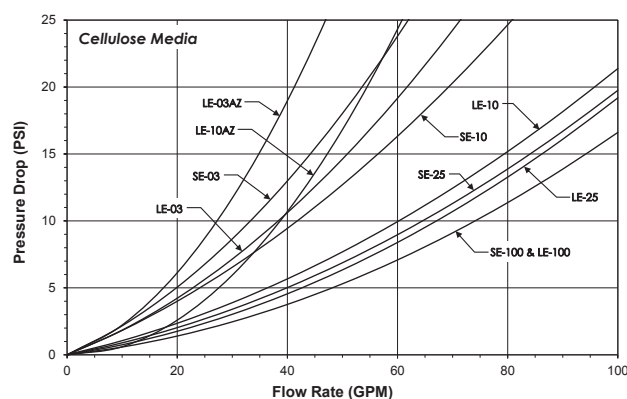
$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size "x" micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size "x" micron (Absolute Rating)

Buna-N FG01 Gasket standard. Fluorocarbon Gasket FG01V optional, consult factory.

Caution: Do not use SE/LE Series filter elements on internal combustion engines.

Aqua-Zorb™ filter medias absorb and retain free water. Any absorbed water can not be liberated from the Aqua-Zorb™ media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



ZSE & ZLE Series

"Z-Glass" Media

Spin-On Filter Elements

Used with SF, DF, MF, & ZDF Filter Heads

Diameter: 5.1"

Mounting Thread: 1 1/2"-16 UN

Operating Pressure: 200 PSI Max. Operating

ΔP max: 80 psid

Temperature: Up to +250°F Operating

Applications: Petroleum based fluids

Part Number	Absolute Rating $\beta_{x\mu(c)} = 200$ (99.5% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 1000$ (99.9% Efficiency)	Overall Height
ZSE01 "1 Micron"	<4	<4	6.9"
ZSE03 "3 Micron"	<4	7	6.9"
ZSE06 "6 Micron"	7	10	6.9"
ZSE10 "10 Micron"	8	12	6.9"
ZSE10AZ "10 Micron"	8	12	6.9"
ZLE01 "1 Micron"	<4	<4	10.9"
ZLE03 "3 Micron"	<4	7	10.9"
ZLE06 "6 Micron"	7	10	10.9"
ZLE10 "10 Micron"	8	12	10.9"
ZLE10AZ "10 Micron"	8	12	10.9"
ZLE25 "25 Micron"	23	-	10.9"

Application Data:

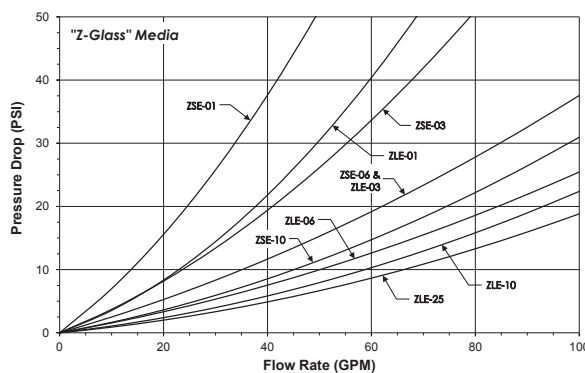
Reference:

$\beta_{x\mu(c)} = 200$ represents 99.5% efficiency at particle size "x" micron (Absolute Rating)

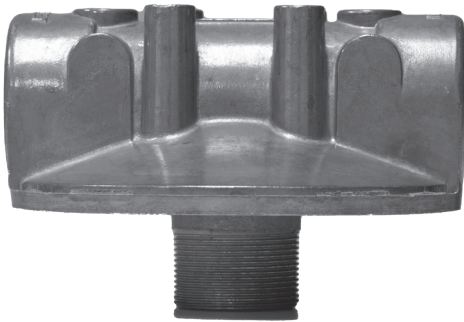
$\beta_{x\mu(c)} = 1000$ represents 99.9% efficiency at particle size "x" micron (Absolute Rating)

Buna-N Gasket FG01 standard. Fluorocarbon Gasket FG01V optional, consult factory.

Caution: Do **not** use ZSE/ZLE Series filter elements on internal combustion engines.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



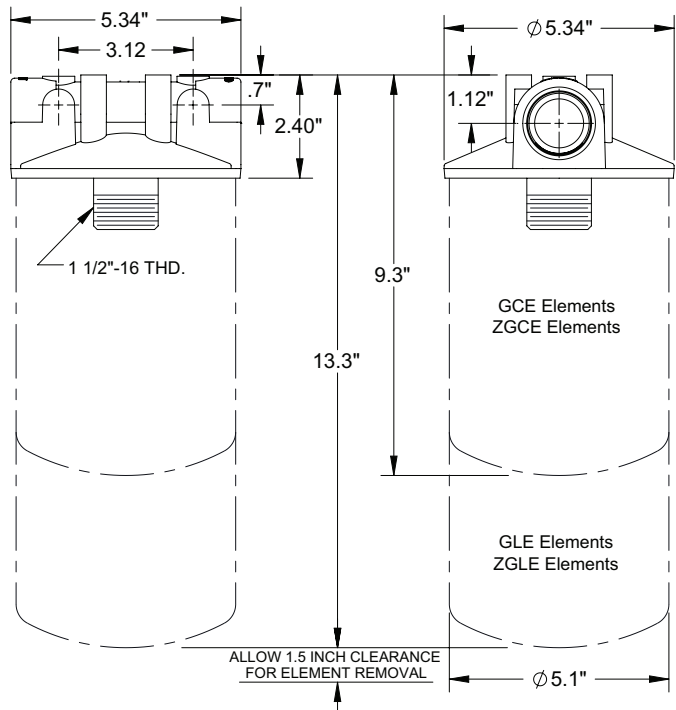
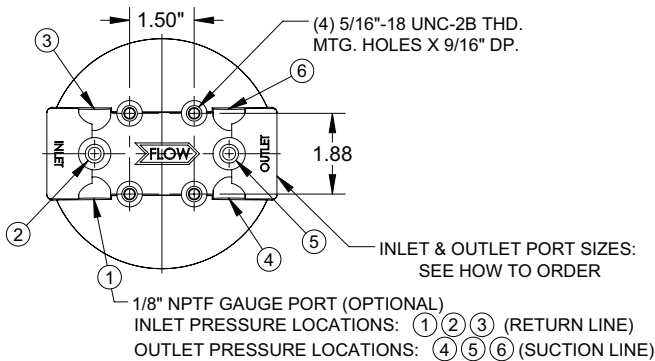
GF Series

Spin-On Filter Heads

Parker/Gresen Direct Interchange

Used with GCE, GLE, ZGCE, & ZGLE Filter Elements

Flows Up To: 70 GPM (return) 25 GPM (suction)
Port Sizes: 1 1/4" NPTF; 1 5/8"-12 UN(SAE-20)
Pressure: 200 PSI Max. Operating
Temperature: Up to + 250°F Operating
Applications: Petroleum based fluids
Consult factory for synthetic fluids



HOW TO ORDER: GF XXX XX X

Code	Inlet & Outlet Port
120	1 1/4" NPTF
160	1 5/8"-12 UN (SAE-20)

Code	By-Pass Valve Setting
25	25 PSI

Code	Gauge Port Location
0	No Port Required
13	1 & 3 (Return Line)
123456	1,2,3,4,5,6 (ALL)





Applications: Petroleum based fluids

Part Number	Absolute Rating $\beta_{\text{PM}(c)} = 200$ (99.5% Efficiency)	Absolute Rating $\beta_{\text{PM}(c)} = 1000$ (99.9% Efficiency)	Can Color/ Imprint	Media Type	Overall Height
ZGCE03 “3 Micron”	<4	7	White/Green	“Z-Glass”	6.9”
ZGCE10 “10 Micron”	10	12	White/Red	“Z-Glass”	6.9”
ZGLE03 “3 Micron”	<4	7	White/Green	“Z-Glass”	10.9”
ZGLE10 “10 Micron”	10	12	White/Red	“Z-Glass”	10.9”

Brand	Part Number	Zinga Part Number
Gresen	K-23018/K-23019	GCE10/GCE25
Parker	926169/926170	GLE10/GLE25

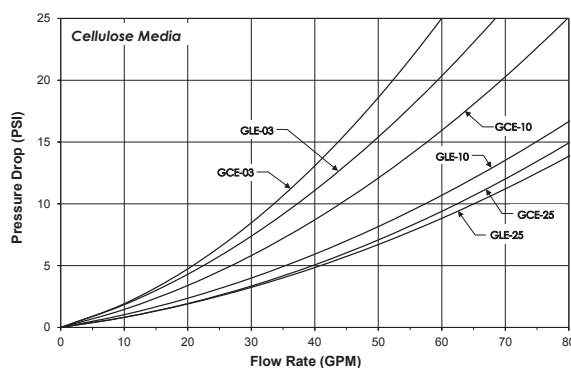
Reference:

$\beta_{x\mu(c)} = 1000$ represents 99.9% efficiency at particle size “x” micron (Absolute Rating)

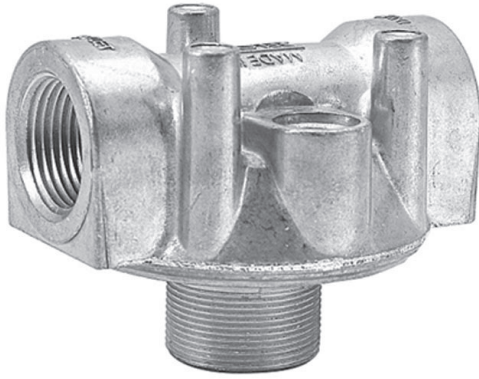
Filter Gasket Part No. FG02 is supplied standard with GCE & GLE series elements. Zinga SE & LE Series elements can be converted to GCE & GLE equivalents by replacing the standard gasket with a FG02.

Pressure drop vs. flow data for GCE & GLE series filter elements is identical to that of the standard Zinga SE & LE Series elements.

Caution: Do not use ZSE/ZLE Series filter elements on internal combustion engines.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



HF Series

Spin-On Filter Heads

with ΔP Indicator Option

Used with HE & ZHE Filter Elements

Flows Up To: 40 GPM (return)

Port Sizes: 3/4"-1" NPTF

1 1/16"-12UN (SAE-12)

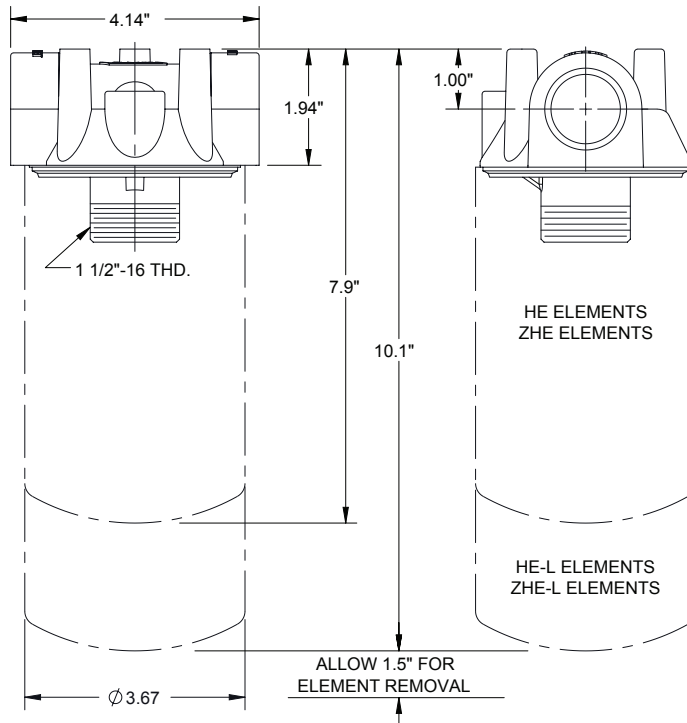
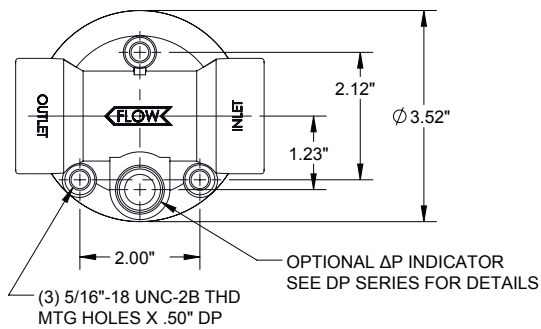
1 5/16"-12UN (SAE-16)

Pressure: 300 PSI Max. Operating

Temperature: Up to + 250°F (No Indicator)

Material: Resin Impregnated Aluminum

Applications: Petroleum based fluids



HOW TO ORDER: HF XX XX XXX

Code	Inlet & Outlet Ports
07	3/4" NPTF
10	1" NPTF
11	1 1/16"-12 UN (SAE-12)
13	1 5/16"-12 UN (SAE-16)

Code	By-Pass Valve Setting
25	25 PSI

Code	Indicator Option
000	No Indicator
V22	Visual
D22	DC Electrical 1 Wire
H22	Vis./Elec. w/DIN Con.



HE & ZHE Series

Medium Pressure

Spin-On Filter Elements

Used with HF Filter Heads

Diameter: 3.7"

Mounting Thread: 1 1/2"-16 UN

Operating Pressure: 300 PSI Max. Operating

ΔP max: 50 psid (Cellulose) 80 psid (Z-Glass)

Temperature: Up to +250°F Operating

Applications: Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (98.7% Efficiency)	Can Color/ Imprint	Media Type	Free Water Absorption	Overall Height
HE03 "3 Micron"	<4	6	White/Green	Cellulose	-	5.8"
HE03AZL "3 Micron"	5	24	White/Orange	Aqua-Zorb™	7.2 oz.	8.0"
HE10 "10 Micron"	8	23	White/Red	Cellulose	-	5.8"
HE10AZ "10 Micron"	11	30	White/Orange	Aqua-Zorb™	4.1 oz.	5.8"
HE10L "10 Micron"	8	23	White/Red	Cellulose	-	8.0"

Part Number	Absolute Rating $\beta_{x\mu(c)} = 200$ (99.5% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 1000$ (99.9% Efficiency)	Can Color/ Imprint	Media Type	Free Water Absorption	Overall Height
ZHE03 "3 Micron"	<4	<4	White/Green	"Z-Glass"	-	5.8"
ZHE03L "3 Micron"	<4	<4	White/Green	"Z-Glass"	-	8.0"
ZHE10 "10 Micron"	10	12	White/Red	"Z-Glass"	-	5.8"
ZHE10L "10 Micron"	10	12	White/Red	"Z-Glass"	-	5.8"

Application Data:

Reference:

$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size "x" micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size "x" micron (Absolute Rating)

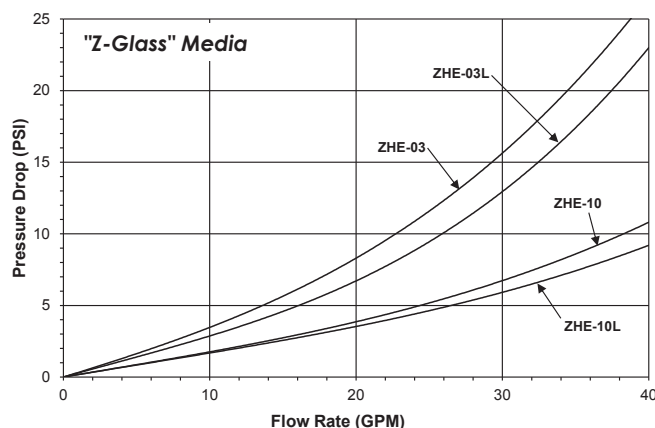
$\beta_{x\mu(c)} = 200$ represents 99.5% efficiency at particle size "x" micron (Absolute Rating)

$\beta_{x\mu(c)} = 1000$ represents 99.9% efficiency at particle size "x" micron (Absolute Rating)

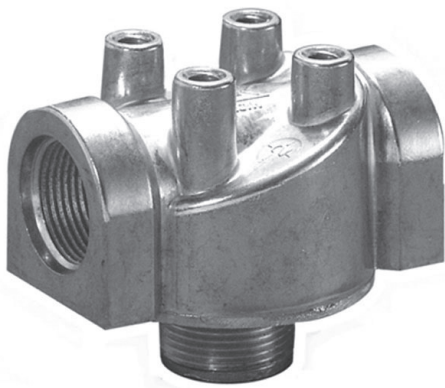
Buna-N FG01 Gasket standard. Fluorocarbon Gasket FG01V optional, consult factory.

Caution: Do not use HE/ZHE Series filter elements on internal combustion engines.

Aqua-Zorb™ filter medias absorb and retain free water. Any absorbed water can not be liberated from the Aqua-Zorb™ media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



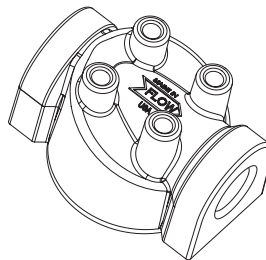
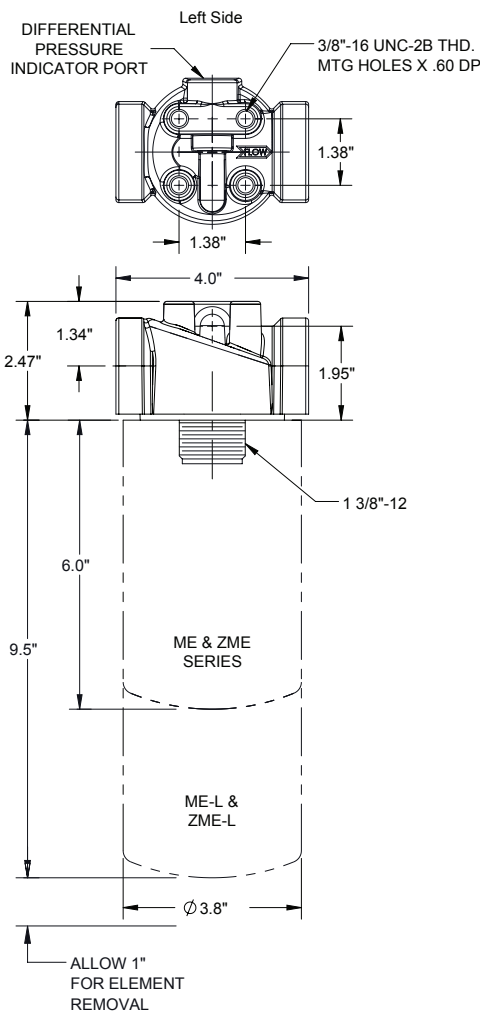
DHF Series

Spin-On Filter Elements

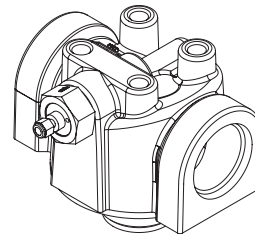
with ΔP Indicator Option

Used with ME & ZME Filter Elements

- Flows Up To:** 35 GPM
- Port Sizes:** 3/4" - 1" NPTF
1 1/16"-12UN (SAE12)
1 5/16"-12UN (SAE16)
- Pressure:** 500 PSI Max. Operating
1,000 PSI Static Burst
- Temperature:** Up to +250°F Operating
- Material:** Resin Impregnated Aluminum
- Applications:** For petroleum based fluids.
Consult factory for synthetic fluids



DHF Series Filter Head Shown Without Indicator



Shown with Side Indicator Port and DP06 Series Single Wire DC Indicator

Design Considerations

- Assembly Fatigue Strength:** 100,000 cycles at 0 - 500 psi
300,000 cycles at 0 - 400 psi
1,000,000 cycles at 0 - 350 psi

HOW TO ORDER: DHF XXX XX XXX XX

Code	Inlet & Outlet Ports
S12	1 1/16"-12 UN (SAE12)
S16	1 5/16"-12 UN (SAE16)

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Indicator Options	Indicator Series
000	No Indicator	None
V22	Visual Indicator	DP04 Series
D22	DC Electrical	DP06 Series
H22	Vis/Elec. w/ DIN Con.	DP05 Series

Code	ΔP Indicator Location
00	No Indicator
LS	Left Side





ME & ZME Series

Medium Pressure

Spin-On Filter Elements

Used with DHF Filter Heads

Diameter: 3.8"

Mounting Thread: 1 3/8"-12 UN

Operating Pressure: 500 PSI Max. Operating

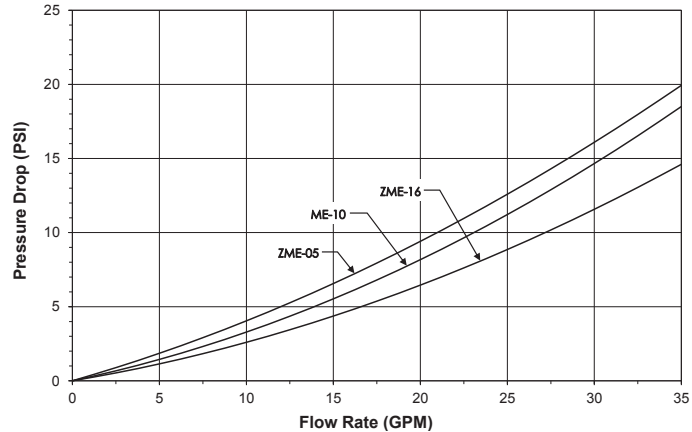
ΔP max: 80 psid (Cellulose) 100 psid (Z-Glass)

Temperature: Up to +250°F Operating

Applications: Petroleum based fluids

Part Number	Nominal Rating $\beta_{x\mu(c)} = 2$ (50% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 75$ (98.7% Efficiency)	Can Color/ Imprint	Media Type	Overall Height
ME10 "10 Micron"	8	23	White/Red	Cellulose	6.0"

Part Number	Absolute Rating $\beta_{x\mu(c)} = 200$ (99.5% Efficiency)	Absolute Rating $\beta_{x\mu(c)} = 1000$ (99.9% Efficiency)	Can Color/ Imprint	Media Type	Overall Height
ZME05 "5 Micron"	<4	<4	White/Green	"Z-Glass"	6.0"
ZME16 "16 Micron"	10	12	White/Red	"Z-Glass"	6.0"



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.

Application Data:

Reference:

$\beta_{x\mu(c)} = 2$ represents 50% efficiency at particle size "x" micron (Nominal Rating)

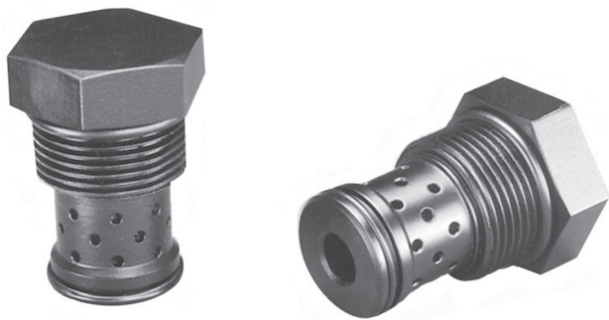
$\beta_{x\mu(c)} = 75$ represents 98.7% efficiency at particle size "x" micron (Absolute Rating)

$\beta_{x\mu(c)} = 200$ represents 99.5% efficiency at particle size "x" micron (Absolute Rating)

$\beta_{x\mu(c)} = 1000$ represents 99.9% efficiency at particle size "x" micron (Absolute Rating)

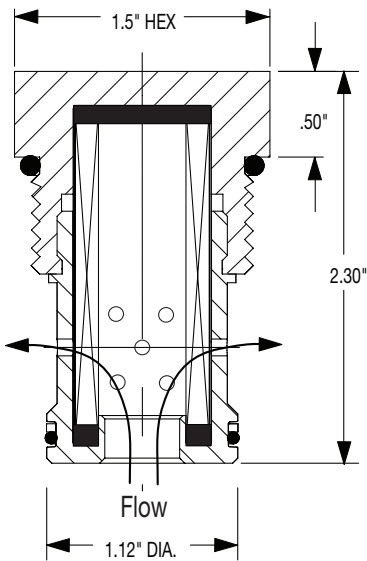
Application: Petroleum based fluids. Consult factory for synthetic fluids.

Caution: Do not use ME & ZME Series filter elements on internal combustion engines.

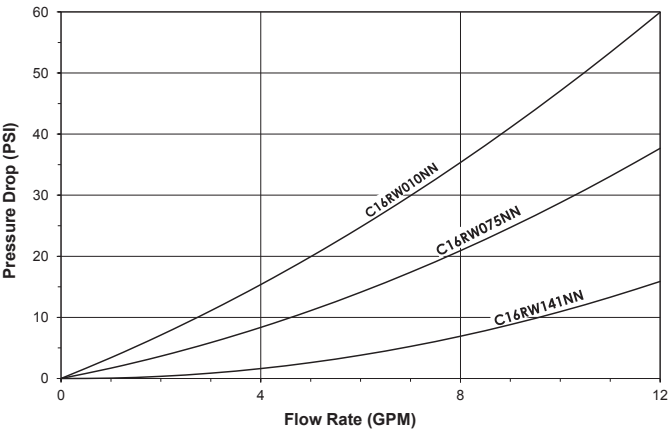


C16 Series Cartridge Filter

Operating Pressure: 3,000 PSI Max
Flows Up To: 12 GPM
Cavity: Common Cavity No. C16-2
Temperature: Up to +250°F Operating
Applications: Petroleum based fluids



Sized to fit Common Cavity No. C16-2



Average Pressure Drop Through Clean Filter Assembly
With 150 SUS At 105° F

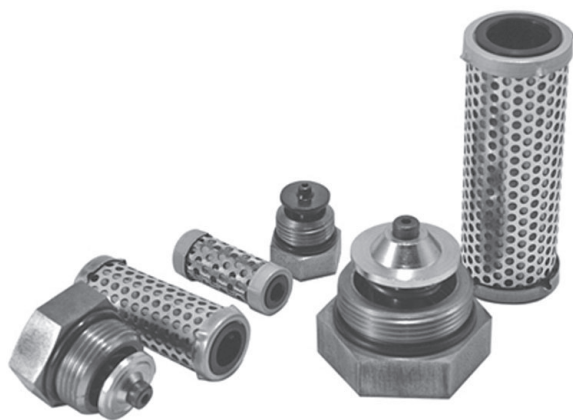
Application Data:

- Steel construction with stainless steel mesh media
- C16-Series filters are designed to be used as final filters to protect control valves, not as system filters.

HOW TO ORDER: C16R W XXX N X

Code	Filter Element Options
010	10 Micron
075	75 Micron
141	141 Micron

Code	Seal Type
N	Nitrile (Buna "N")
V	Fluorocarbon
E	EPR
Back Up Ring: Glass Filled Teflon	



CF/CE Series

Manifold Cartridge Filters

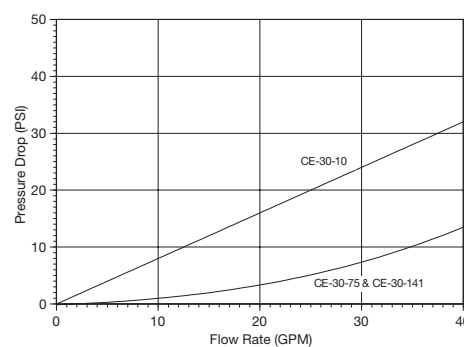
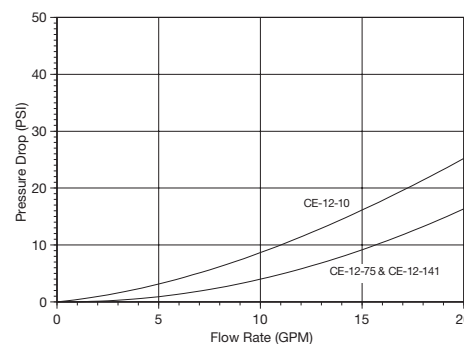
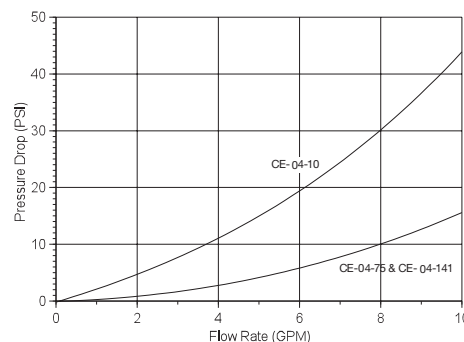
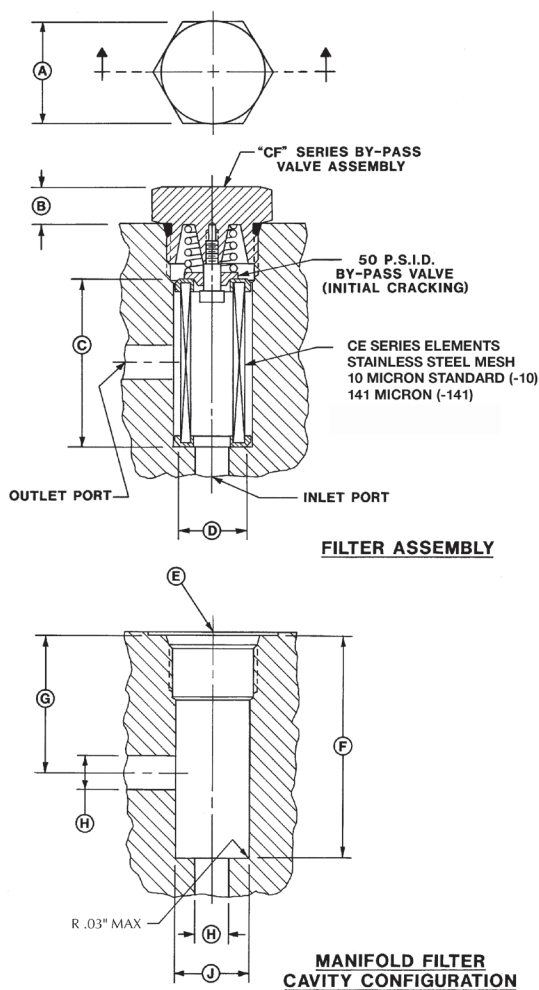
Final Filters for Control Valve Protection

Operating Pressure: 6,000 PSI

Flows Up To: 30 GPM

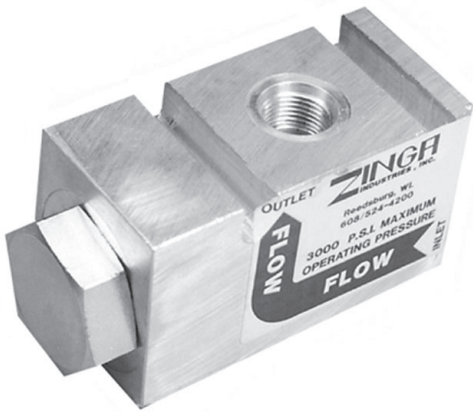
Media: 10 Micron Stainless Steel Mesh
141 Micron Stainless Steel Mesh

Applications: Petroleum based fluids



Avg. pressure drop with 150 SUS oil at 105° F.

B/P Valve Assy	Element Number	Flow Capacity	A Hex Size	B Hex Height	C Element Length	D Element Dia.	E SAE Port	F Cavity Depth	G Max. Min.	H Max Port Dia.	J Max. Min.
CF04	CE0410	4 GPM	1.00"	.41"	1.72"	.74"	-10 (7/8"-14)	2.41"	1.12" 1.87"	.266"	.781" .814"
CF12	CE1210	12 GPM	1.50"	.50"	2.50"	1.00"	-16 (1 5/16"-12)	3.34"	1.49" 2.53"	.531"	1.140" 1.187"
CF30	CE3010	30 GPM	2.13"	.65"	4.00"	1.50"	-24 (1 7/8"-12)	5.01"	1.92" 3.81"	.875"	1.750" 1.803"



CF90 Series

In-Line High Pressure Filter

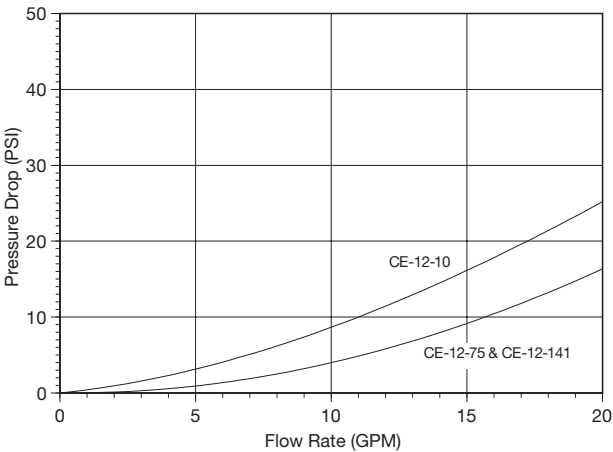
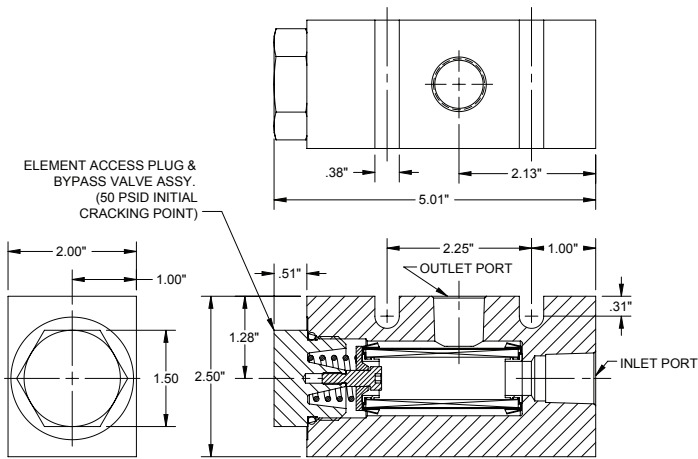
Port Size: 3/4" - 16 UN (SAE-8)

Pressure: 3,000 PSI

Flows Up To: 12 GPM

By-Pass Valve Setting: 50 PSI

Filtration: 10 Micron Stainless Steel Mesh
Wire Cloth Standard



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.

Note:

CE-Series filter elements are compatible with petroleum base fluids, Water Glycol, Diesel Fuel, & Gasoline (except if containing alcohol). For fluids not listed, consult factory.

Element access plug uses a Buna-N O-ring as standard (for use with petroleum base fluids).
Fluorocarbon O-ring optional (for use with synthetic fluids).

HOW TO ORDER: CF90 08 XX

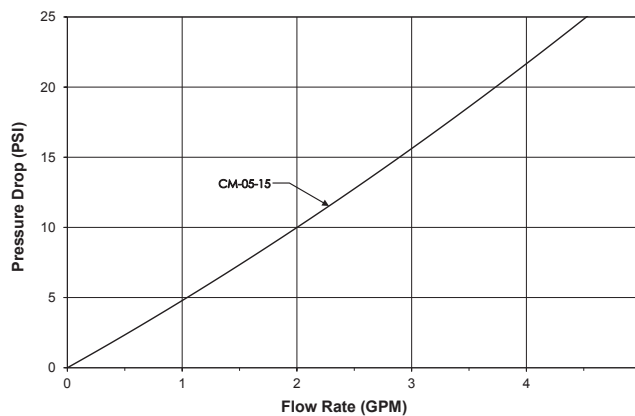
Code	Filter Element
10	10 Micron
141	141 Micron

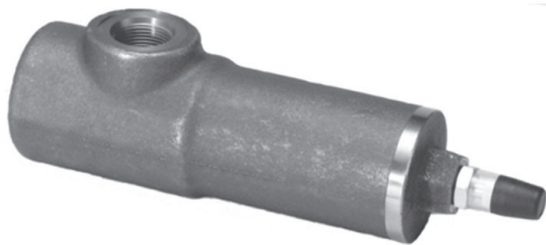
Replacement Element	
CE1210	10 Micron
CE12141	141 Micron
*Ordered Separately	





Application: Direct Replacement for Hydac CF20 Series





HP3000 Series

In-Line Pressure Filters

With ΔP Indicator Option

Used With HP & ZHP Series Elements

Flows Up To: 60 GPM

Port Sizes: 1" NPTF

1 1/16"-12 UN (SAE-12)

1 5/16"-12 UN (SAE-16)

Pressure: 3,000 PSI Max. Oper.

Application: Inline Filtration, 90° Design Permits Element Replacement Without Breaking Line

Reference

$\beta_{x\mu(c)}$ Rating of 200 = 99.5% Efficiency

$\beta_{x\mu(c)}$ Rating of 2 = 99.5% Efficiency

Pressure Rating

Maximum Operating: 3,000 PSI (207 Bar)

Burst Pressure: 15,000 PSI (1034 Bar)

Rated Fatigue Pressure:

0-2,400 PSI for 1,000,000 Cycles

Temperature Range

Operating: -40°F to +250°F

-40°C to +120°C

By-Pass Setting

50 Psid

ΔP Indicator Options

Visual, Single Wire DC Electrical, or Electrical/

Visual w/ DIN Connector

Fluid Compatibility

Elements: Suitable for use with petroleum base fluids. Consult factory for use with other fluids.

Materials

Housing: Ductile Iron

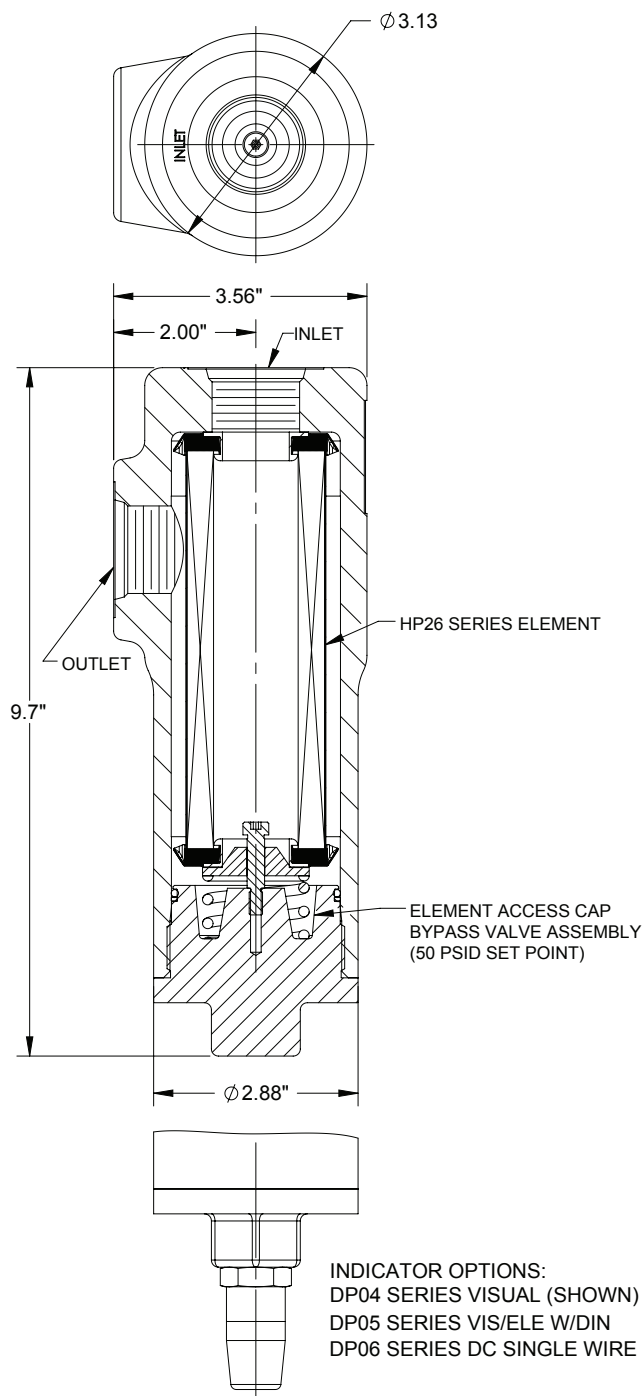
By-Pass: Steel

Element Hardware: Plated carbon steel end caps and core. Epoxy endcap adhesive.

Filter Media: Z-Glass, Cellulose, Stn Stl Mesh

Weight

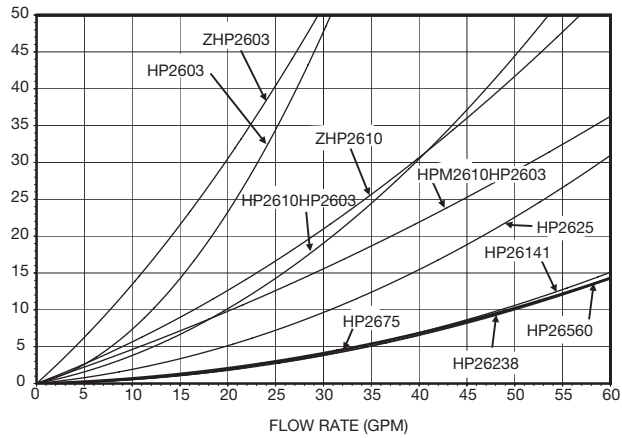
4.2 lbs. (2.2 Kg)



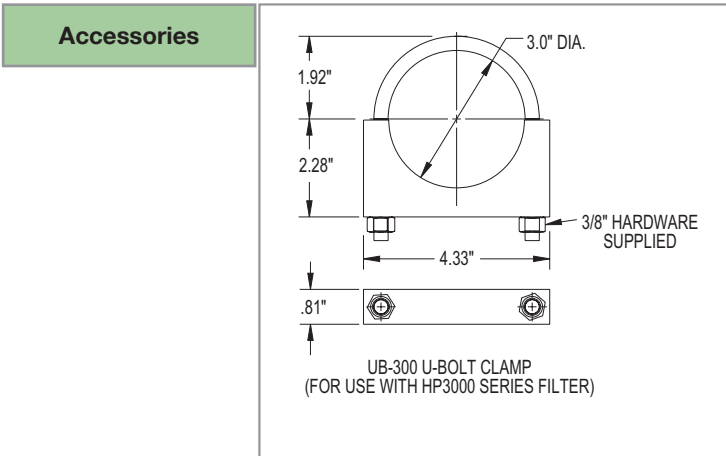
HP3000 Series Continued

PRESSURE

Specifications	
Code Number	Removal Rating
03Z ("Z-Glass")	$\beta < 4\mu(c) = 200$
10Z ("Z-Glass")	$\beta 9.5\mu(c) = 200$
003 (Cellulose)	$\beta < 4\mu(c) = 2$
010 (Cellulose)	$\beta 5\mu(c) = 2$
025 (Cellulose)	$\beta 19\mu(c) = 2$



Average pressure drop through clean filter with 150 SUS oil at 105° F.



HOW TO ORDER: HP3000 XXX XXX XXX N

Code	Inlet & Outlet Ports
S12	1 1/16"-12 UN (SAE12)
S16	1 5/16"-12 UN (SAE16)

Code	Indicator Options	Indicator Series
0	No Indicator	None
V	Visual Indicator	DP04 Series
D	DC Electrical	DP06 Series
H	Vis/Elec. w/ DIN Con.	DP05 Series

Elements		
Code	Micron, Media	Element Number
003	3 Micron, Cellulose	HP2603
03Z	3 Micron, "Z-Glass"	ZHP2603
010	10 Micron, Cellulose	HP2610
10M	10 Micron, Wire Cloth	HPM2610
10Z	10 Micron, "Z-Glass"	ZHP2610
025	25 Micron, Cellulose	HP2625
075	75 Micron, Wire Cloth	HP2675
141	141 Micron, Wire Cloth	HP26141



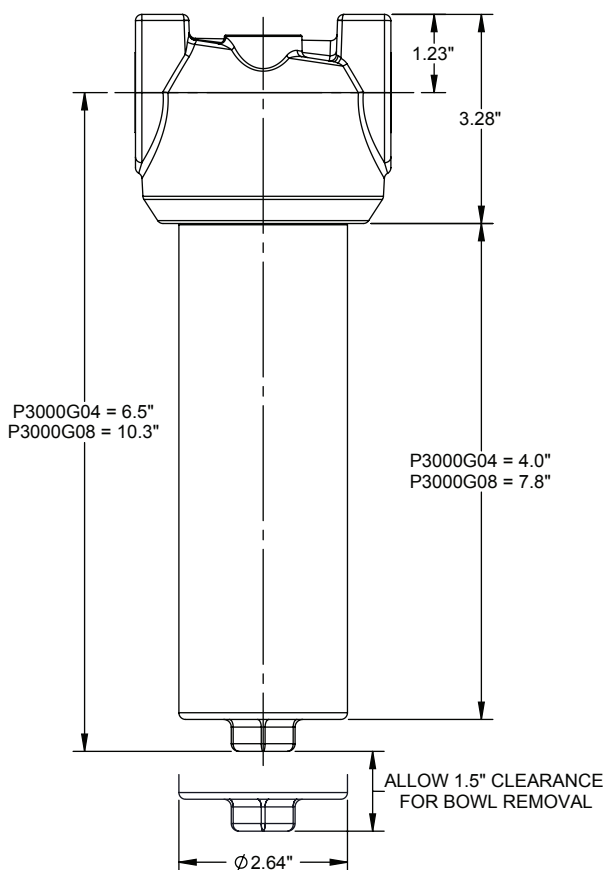
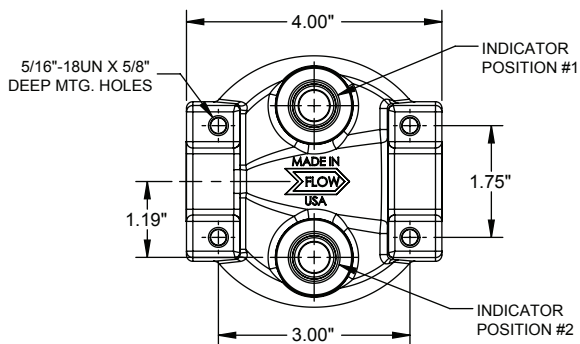
P3000 Series Pressure Filters with ΔP Indicator Option Used With G Series Elements

Flows Up To: 30 GPM (114 L/Min)

Port Sizes: 1 1/16"-12 UN (SAE-12)

Max Operating Pressure: 3,000 PSI (207 BAR)

Application: Inline Filtration, External charge pump filtration, High shock return line filtration



Reference

$\beta_{x\mu(c)}$ Rating of 200 = 99.5% Efficiency
 $\beta_{x\mu(c)}$ Rating of 2 = 99.5% Efficiency

Pressure Rating

Maximum Operating: 3,000 PSI (207 Bar)
 Burst Pressure: 8,600 PSI (580 Bar)
 Rated Fatigue Pressure: 0-2,400-0 for 1,000,000 Cycles

Temperature Range

Operating: -40°F to +250°F
 -40°C to +120°C

By-Pass Setting

No By-Pass or 50 Psid

ΔP Indicator Options

Visual, Single Wire DC Electrical, or Electrical/
 Visual w/ DIN Connector

Fluid Compatibility

Elements: Suitable for use with petroleum base fluids. Consult factory for use with other fluids.

Materials

Head: Die Cast Aluminum
 Bowl: Anodized Aluminum (6061-T6)
 By-Pass: Nylon
 Element Hardware: Plated carbon steel end caps and core. Epoxy endcap adhesive.
 Filter Media: Z-Glass Standard

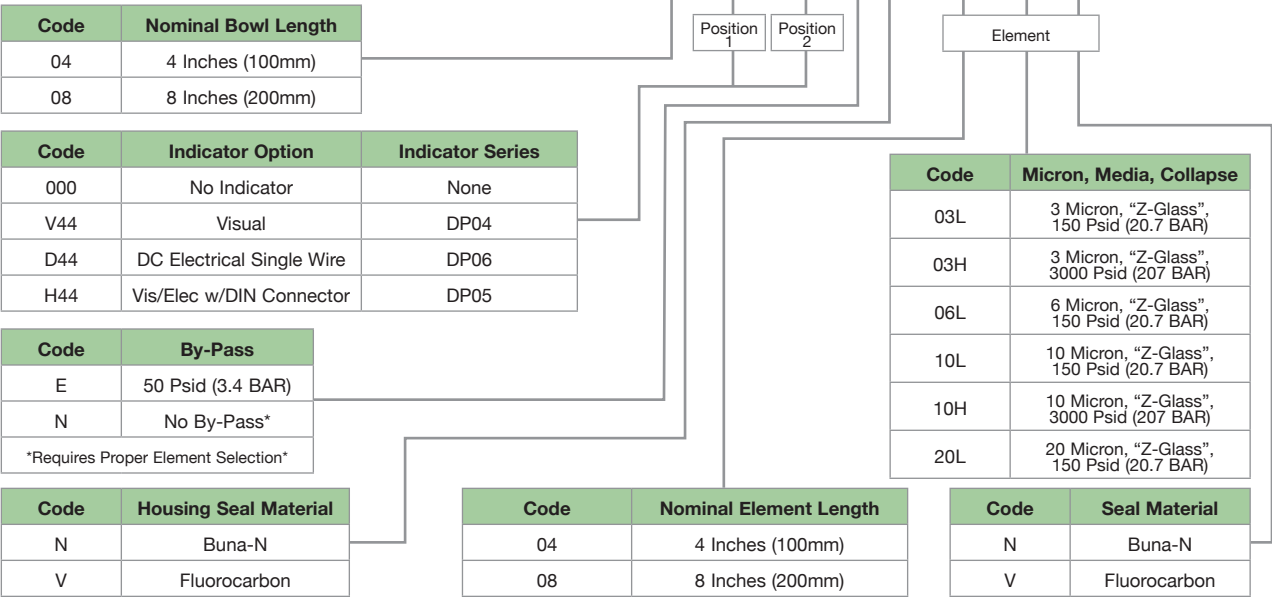
Weight

P3000G04: 4.2 lbs. (2.2 Kg)
 P3000G08: 5.2 lbs. (2.8 Kg)

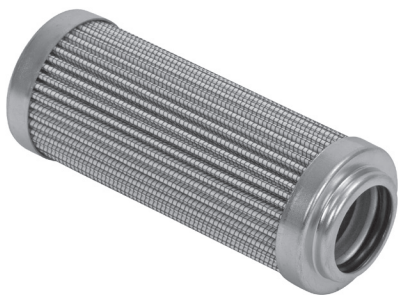
P3000 Series Continued

3000 Series Specifications	
Code Number	Removal Rating
03H ("Z-Glass")	$\beta < 4\mu(c) = 200$
03L ("Z-Glass")	$\beta < 4\mu(c) = 200$
06L ("Z-Glass")	$\beta 5.7\mu(c) = 200$
10L ("Z-Glass")	$\beta 9.7\mu(c) = 200$
10H ("Z-Glass")	$\beta 9.7\mu(c) = 200$
20L ("Z-Glass")	$\beta 18.2\mu(c) = 200$
10C (Cellulose)	$\beta 5\mu(c) = 2$

HOW TO ORDER: P3000 S12 XX XXX XXX X X G XX XXX X



PRESSURE



G Series Elements

Pressure Filter Elements

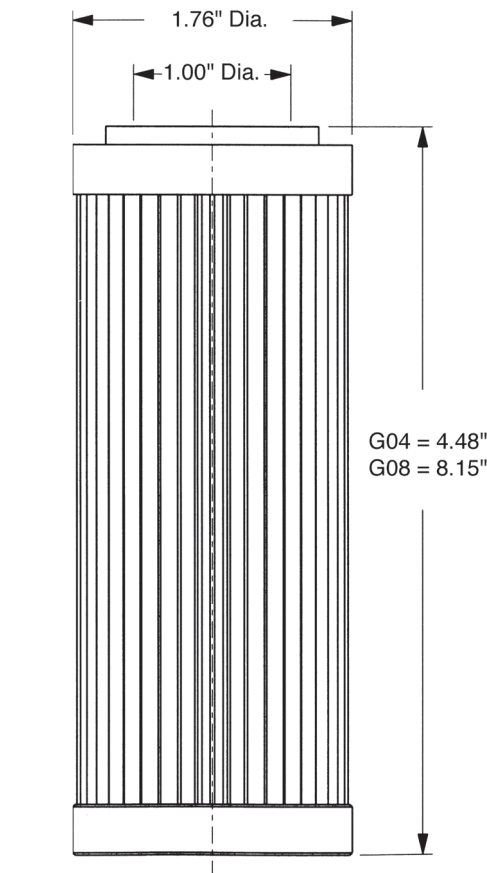
Used With P3000 Housings

Pall 9020/9021 Interchange

Media: Z-Glass

Application: P3000 Series Filters

Temperature: Buna-N Seals -45°F - 225°F
Fluorocarbon Seals -20°F - 275°F

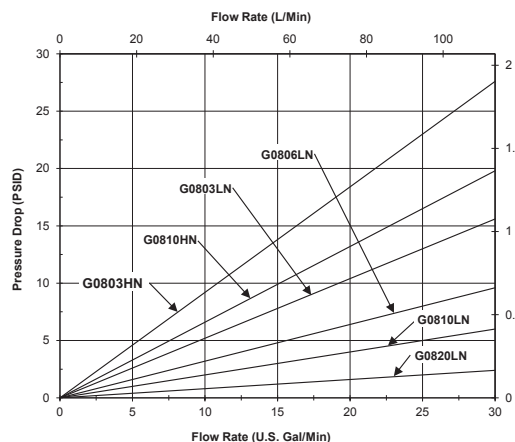
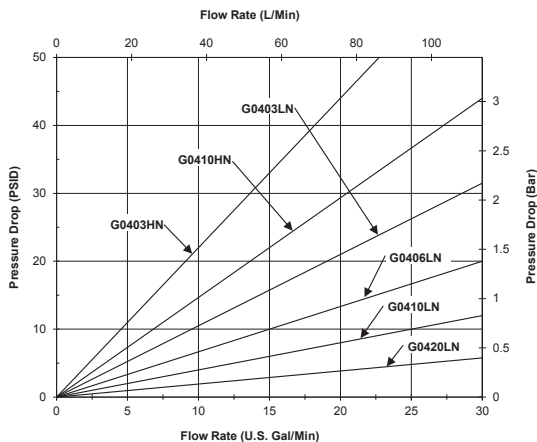


150 Psid Rated Elements (For use in filters with bypass valve only)		
Zinga Part #	Bxμ(c)= 200	Pall Part #
G0403LN	<4 Micron	HC9024FDP4H
G0406LN	5.7 Micron	HC9024FDN4H
G0410LN	9.7 Micron	HC9024FDS4H
G0420LN	18.2 Micron	HC9024FDT4H
G0803LN	<4 Micron	HC9024FDP8H
G0806LN	5.7 Micron	HC9024FDN8H
G0810LN	9.7 Micron	HC9024FDS8H
G0820LN	18.2 Micron	HC9024FDT4H

Buna-N Seals Standard. Replace "N" in P/N with "V" for Fluorocarbon.

3000 Psid Rated Elements		
Zinga Part #	Bxμ(c)= 200	Pall Part #
G0403HN	<4 Micron	HC9021FUP4H
G0410HN	9.7 Micron	HC9021FUS4H
G0803HN	<4 Micron	HC9021FUP8H
G0810HN	9.7 Micron	HC9021FUS8H

Buna-N Seals Standard. Replace "N" in P/N with "V" for Fluorocarbon.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.





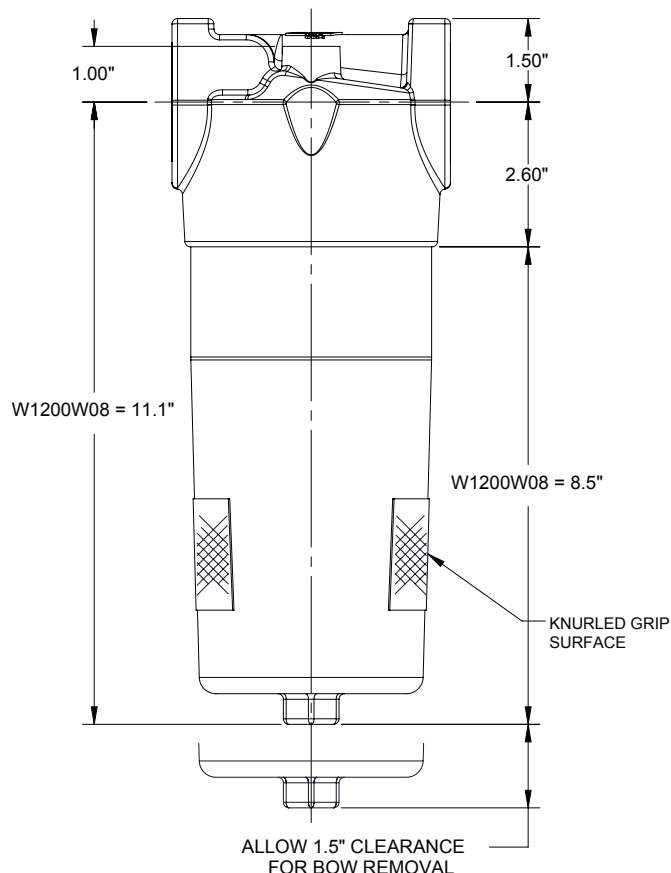
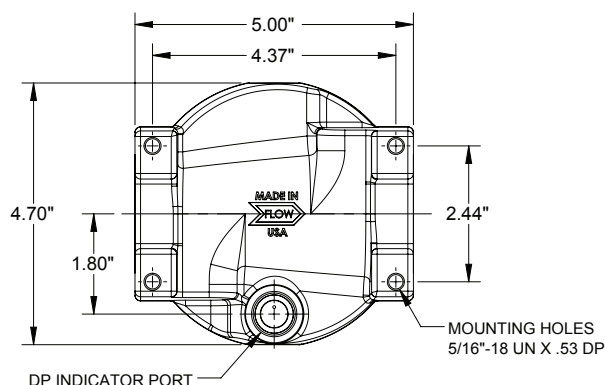
W1200 Series Pressure Filters with ΔP Indicator Option Used With W Series Elements

Flows Up To: 120 GPM (454 L/Min)

Port Sizes: 1 1/4" & 1 1/2" NPTF
1 5/8"-12UN (SAE-20)
1 7/8"-12UN (SAE-24)

Max. Oper. Pressure: 1,200 PSI (83 BAR)

Application: Inline filtration, High shock return line filtration



Reference

$\beta_{x\mu(c)}$ Rating of 200 = 99.5% Efficiency

Pressure Rating

Maximum Operating: 1,200 PSI (83 Bar)
Burst Pressure: 3,000 PSI (206 Bar)
Rated Fatigue Pressure:
0-1,000-0 for 1,000,000 Cycles

Temperature Range

Operating: -40°F to +250°F
-4°C to +120°C

By-Pass Setting

No By-Pass or 50 Psid

ΔP Indicator Options

Visual, Single wire DC Electrical, or Electrical/Visual with DIN Connector

Fluid Compatibility

Elements: Suitable for use with petroleum base fluids. Consult factory for use with other fluids.

Materials

Head: Die Cast Aluminium
Bowl: Anodized Die Cast Aluminium
By-Pass: Nylon
Element Hardware: Plated carbon steel end caps and core. Epoxy endcap adhesive.
Filter Media: Z-Glass Standard.

Weight

W1200W08: 8.8 lbs. (4 Kg)

W1200 Series Continued

W1200 Series Specifications	
Code Number	Removal Rating
03H ("Z-Glass")	$\beta < 4\mu(c) = 200$
03L ("Z-Glass")	$\beta < 4\mu(c) = 200$
06L ("Z-Glass")	$\beta 5.7\mu(c) = 200$
10L ("Z-Glass")	$\beta 9.7\mu(c) = 200$
10H ("Z-Glass")	$\beta 9.7\mu(c) = 200$
20L ("Z-Glass")	$\beta 18.2\mu(c) = 200$

HOW TO ORDER: W1200 XXX XX X XX XX X W XX XXX X

Code	Port
N24	1 1/2" NPTF
S20	1 5/8"-12 UN (SAE-20)

Code	Nominal Bowl Length
08	8 Inches (200mm)

Code	ΔP Indicator Type	Indicator
0	No Indicator	None
V	Visual	DP04
D	DC Electrical Single Wire	DP06
H	Vis/Elec w/DIN Connector	DP05

Code	ΔP Indicator Setting
00	No Indicator
44	44 Psid

Code	By-Pass
00	No By-Pass*
55	50 Psid (3.4 BAR)
*Proper Element Selection Required	

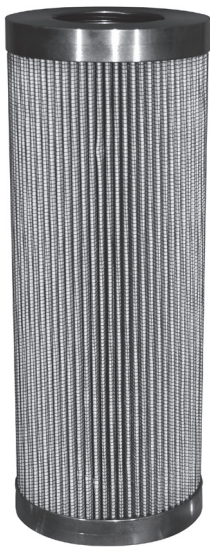
Code	Seal Material
N	Buna-N
V	Fluorocarbon

Code	Micron, Media, Collapse
03L	3 Micron, "Z-Glass", 150 Psid (20.7 BAR)
03H	3 Micron, "Z-Glass", 3000 Psid (207 BAR)
06L	6 Micron, "Z-Glass", 150 Psid (20.7 BAR)
10L	10 Micron, "Z-Glass", 150 Psid (20.7 BAR)
10H	10 Micron, "Z-Glass", 3000 Psid (207 BAR)
20L	20 Micron, "Z-Glass", 150 Psid (20.7 BAR)

Code	Nominal Element Length
08	8 Inches (200mm)

Code	Housing Seal Material
N	Buna-N
V	Fluorocarbon

PRESSURE



W Series

Pressure Filter Elements

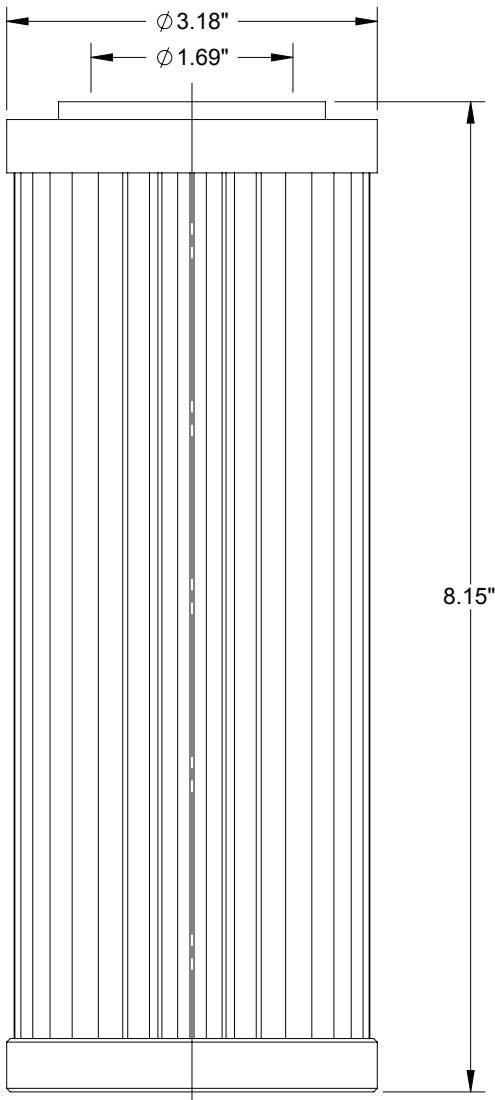
Used With W1200 Series Housings

Pall 9600/9601 Interchange

Media: Z-Glass

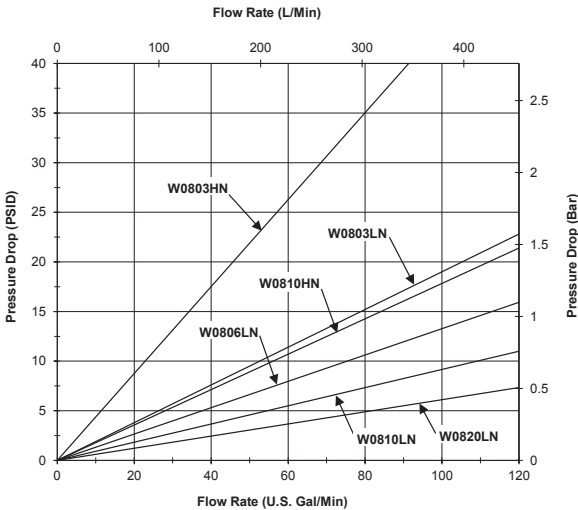
Application: W1200 Series Filters

Temperature: Buna-N Seals -45°F - 225°F
Fluorocarbon Seals -20°F - 275°F



150 Psid Rated Elements (For use in filters with bypass valve only)		
Zinga Part #	Bxμ(c)= 200	Pall Part #
W0803LN	<4 Micron	HC9604FDP8H
W0806LN	5.7 Micron	HC9604FDN8H
W0810LN	9.7 Micron	HC9604FDS8H
W0820LN	18.2 Micron	HC9604FDT8H
Buna-N Seals Standard. Replace "N" in P/N with "V" for Fluorocarbon.		

3000 Psid Rated Elements		
Zinga Part #	Bxμ(c)= 200	Pall Part #
W0803HN	<4 Micron	HC9601FUP8H
W0810HN	9.7 Micron	HC9601FUS8H
Buna-N Seals Standard. Replace "N" in P/N with "V" for Fluorocarbon.		





SLF1 Series

Tank Top Filters

With Integral Tank Breather

Used With SLE1 & ZSLE1 Filter Elements

Flows Up To: 25 GPM (return)

Port Sizes: 3/4"-16UN (SAE-8), 1 1/16"-12UN (SAE-12)

Pressure: 100 PSI Max. Op. Pres.
300 Burst

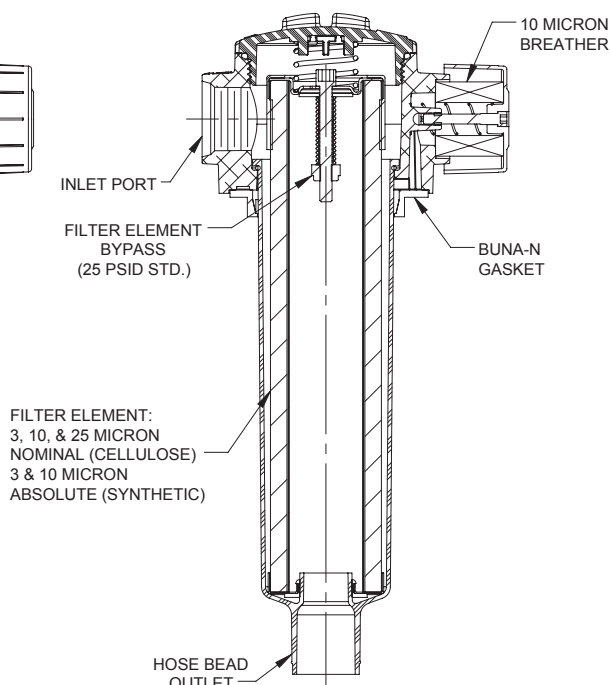
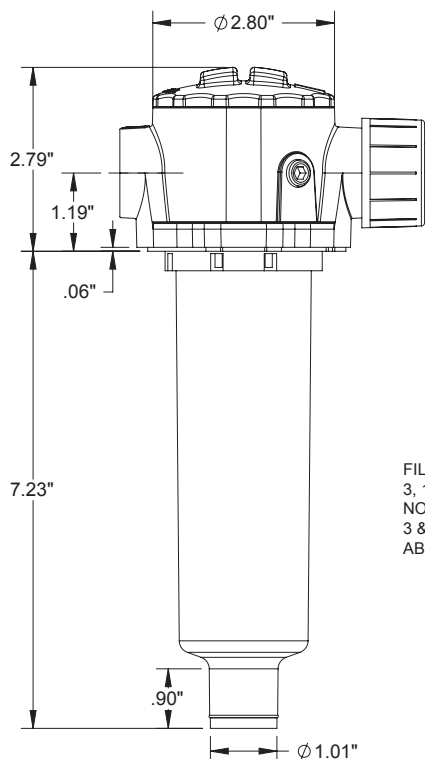
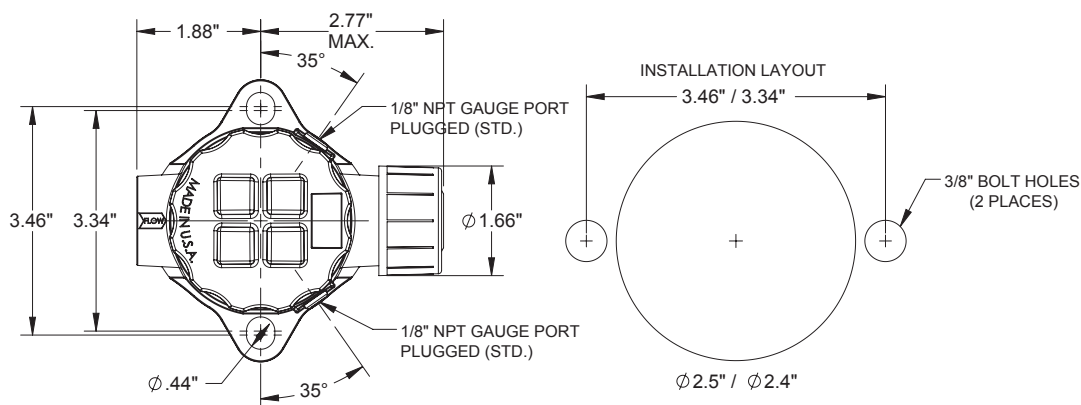
Temperature: -15°F to +230°F Operating

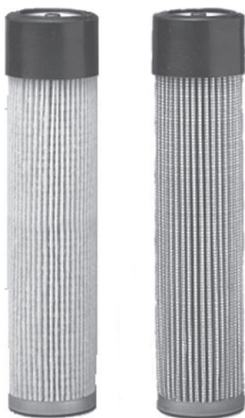
Head: Die Cast Aluminium Alloy

Bowl/Cover: Nylon

Breather: 10 Micron (Foam) Std.

Applications: Petroleum based fluids only



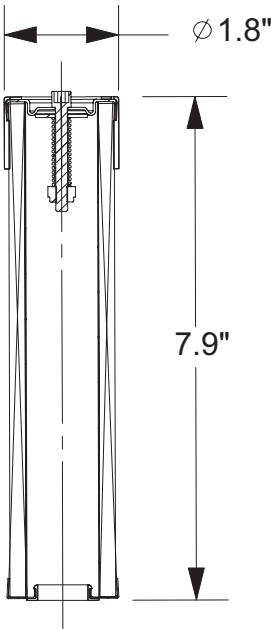


SLE1 & ZSLE1 Series

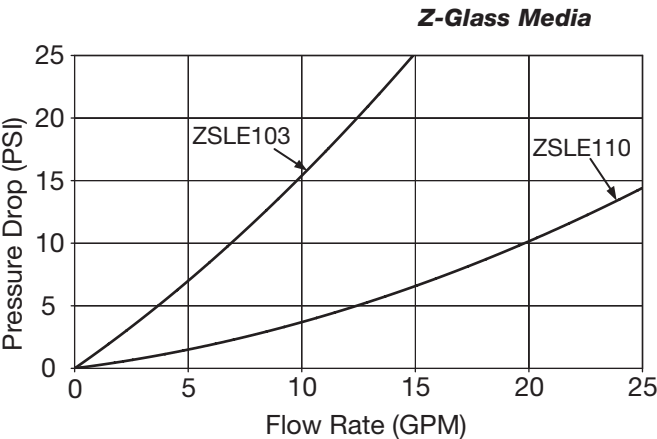
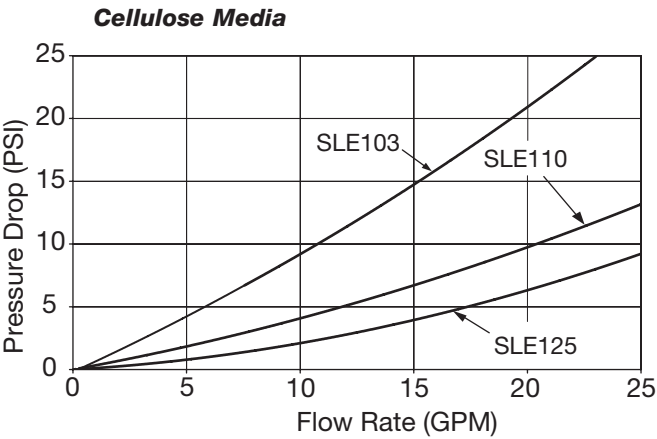
Filter Elements

Cellulose & Synthetic

Used With SLF1 Series Housings



SLE1 & ZSLE1 Filter Elements			
Code	Media Type	Nominal Rating	Absolute Rating
SLE103	Cellulose	$\beta < 4\mu(c) = 2$	$\beta 11\mu(c) = 75$
SLE110	Cellulose	$\beta 5\mu(c) = 2$	$\beta 19\mu(c) = 75$
SLE125	Cellulose	$\beta 19\mu(c) = 2$	$\beta 36\mu(c) = 75$
ZSLE103	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta < 4\mu(c) = 200$
ZSLE110	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta 10\mu(c) = 200$



Average pressure drop through clean assembly with 150 SUS oil at 105° F

HOW TO ORDER: SLF1 XXX X X

Code	Port Size
08S	3/4"-16UN (SAE-8)
12S	1 1/16"-12UN (SAE-12)

Code	Dipstick Option
0	No Dipstick
D	Dipstick

Code	Breather Option
Blank	With Breather
N	No Breather





SLF2 Series Tank Top Filters With Integral Tank Breather Used With SLE2 & ZSLE2 Filter Elements

Flows Up To: 40 GPM (return)

Port Sizes: 1 1/16"-12UN (SAE-12), 1 5/16"-12UN (SAE-16)

Pressure: 100 PSI Max. Op. Pres.
300 Burst

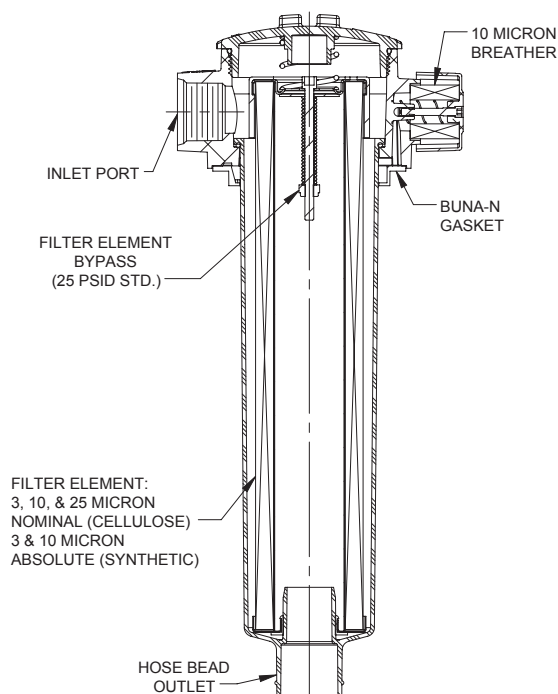
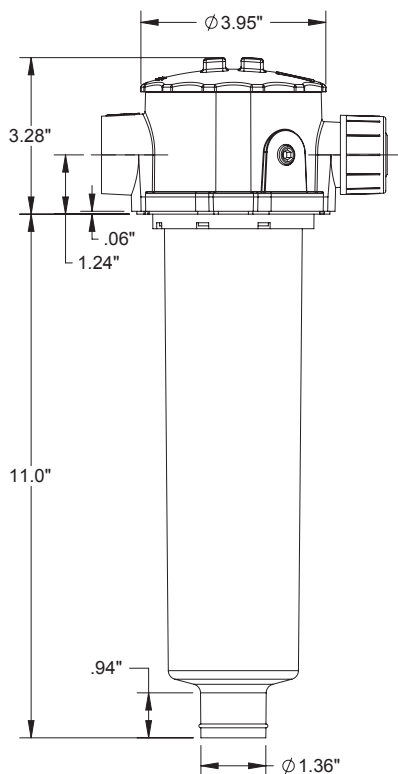
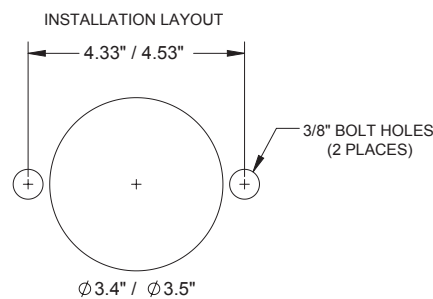
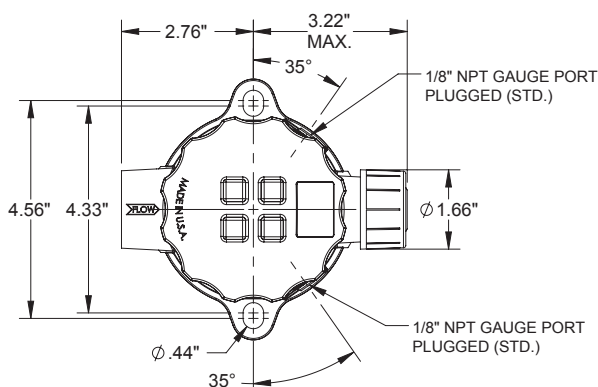
Temperature: -15°F to +230°F Operating

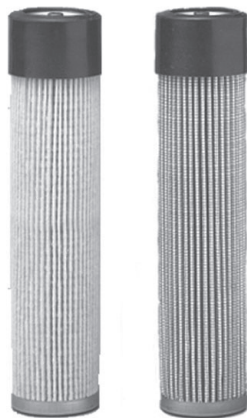
Head: Die Cast Aluminium Alloy

Bowl/Cover: Nylon

Breather: 10 Micron (Foam) Std.

Applications: Petroleum based fluids only



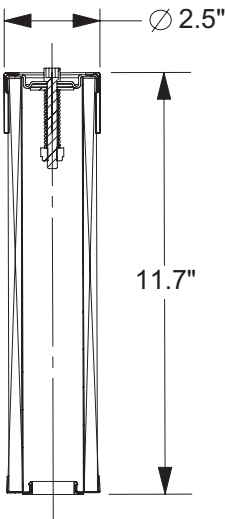


SLE2 & ZSLE2 Series

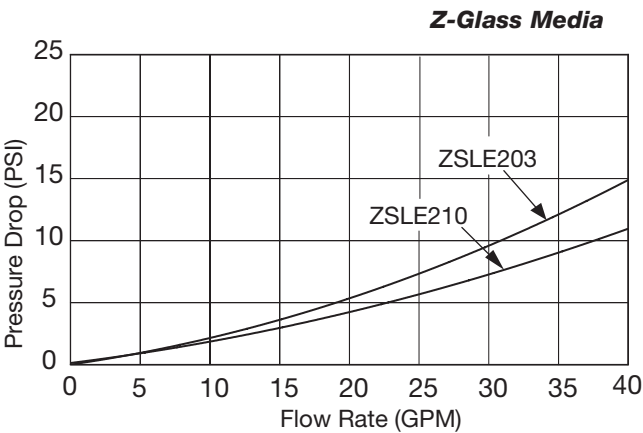
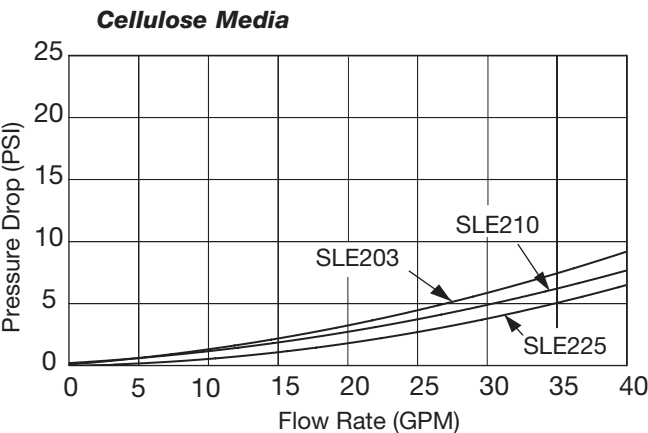
Filter Elements

Cellulose & Synthetic

Used With SLF2 Series Housings



SLE1 & ZSLE1 Filter Elements			
Code	Media Type	Nominal Rating	Absolute Rating
SLE203	Cellulose	$\beta<4\mu(c) = 2$	$\beta11\mu(c) = 75$
SLE210	Cellulose	$\beta5\mu(c) = 2$	$\beta19\mu(c) = 75$
SLE225	Cellulose	$\beta19\mu(c) = 2$	$\beta36\mu(c) = 75$
ZSLE203	"Z-Glass"	$\beta<4\mu(c) = 2$	$\beta<4\mu(c) = 200$
ZSLE210	"Z-Glass"	$\beta<4\mu(c) = 2$	$\beta10\mu(c) = 200$



Average pressure drop through clean assembly with 150 SUS oil at 105° F

HOW TO ORDER: SLF2 XXX 0 X

Code	Port Size
12S	1 1/16"-12UN (SAE-12)
16S	1 5/16"-12UN (SAE-16)

Code	Breather Option
Blank	With Breather
N	No Breather





SMF Series Tank Top Filters Used With SME & ZSME Filter Elements

Flows Up To: 40 GPM (return)

Port Sizes: 1 1/16"-12UN (SAE-12) & 1 5/16"-12UN (SAE-16)

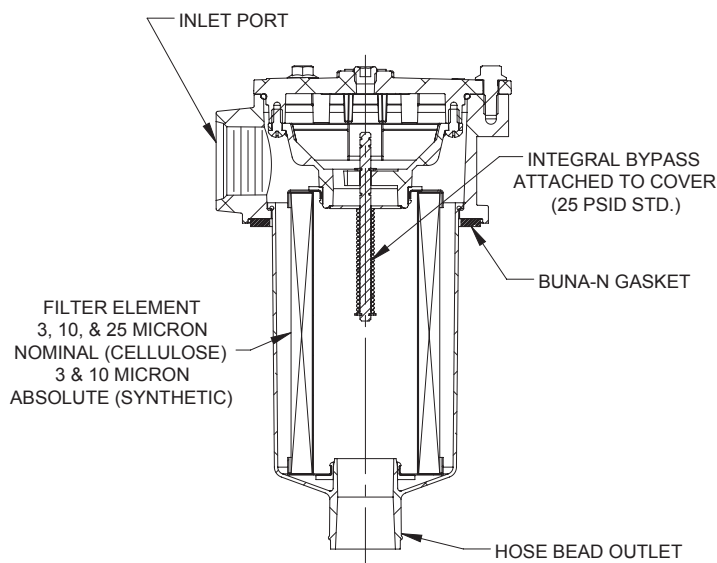
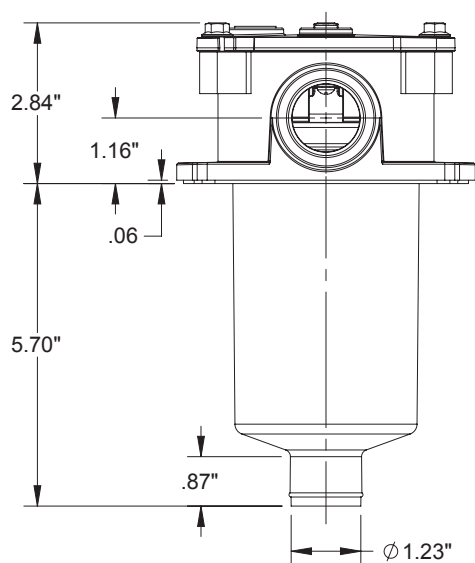
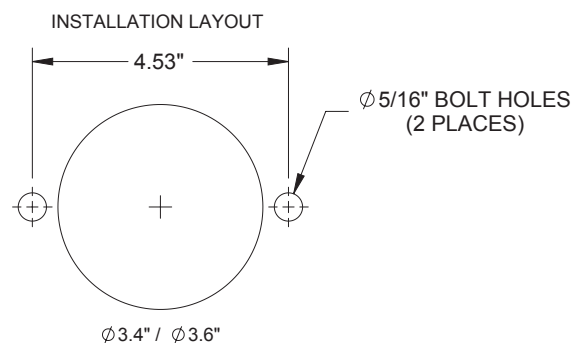
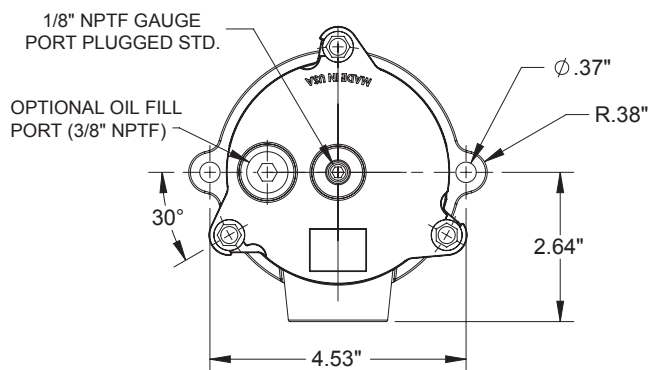
Pressure: 45 PSI Max. Op. Pres.
145 Burst

Temperature: -15°F to +230°F Operating

Head: Die Cast Aluminium Alloy

Bowl/Cover: Polyamide

Applications: Petroleum based fluids only





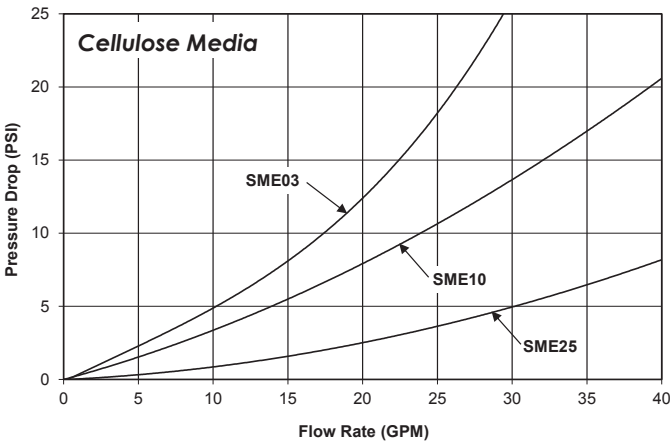
SME & ZSME Series

Filter Elements

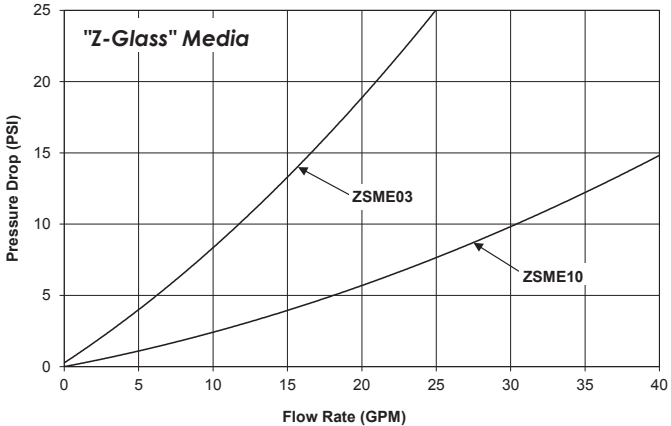
Cellulose & Synthetic

Used With SMF Filter Housings

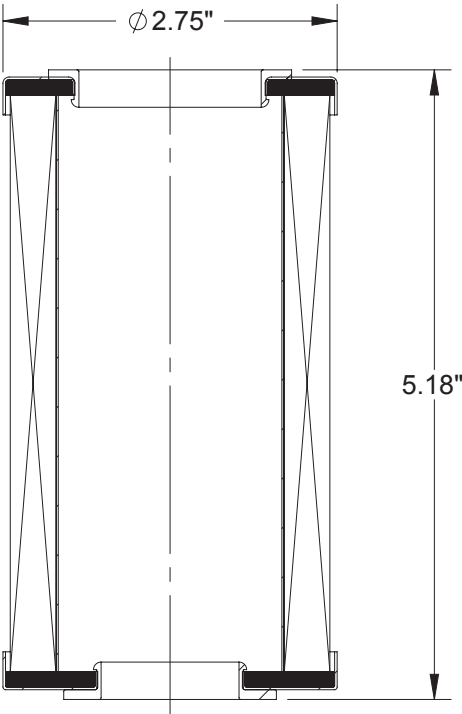
SME & ZSME Filter Elements			
Code	Media Type	Nominal Rating	Absolute Rating
SME03	Cellulose	$\beta < 4\mu(c) = 2$	$\beta 11\mu(c) = 75$
SME10	Cellulose	$\beta 5\mu(c) = 2$	$\beta 19\mu(c) = 75$
SME25	Cellulose	$\beta 19\mu(c) = 2$	$\beta 36\mu(c) = 75$
ZSME03	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta < 4\mu(c) = 200$
ZSME10	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta 10\mu(c) = 200$



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.



HOW TO ORDER: SMF XXX X

Code	Port Size
12S	1 1/16"-12UN (SAE-12)
16S	1 5/16"-12UN (SAE-16)

Code	Oil Fill Port Option
0	No Oil Fill Port
N	3/8" NPTF Fill Port w/ Plug





TR & TS Series

Tank Top Filters

Used With RE & ZRE, or SRE & ZSRE Filter Elements

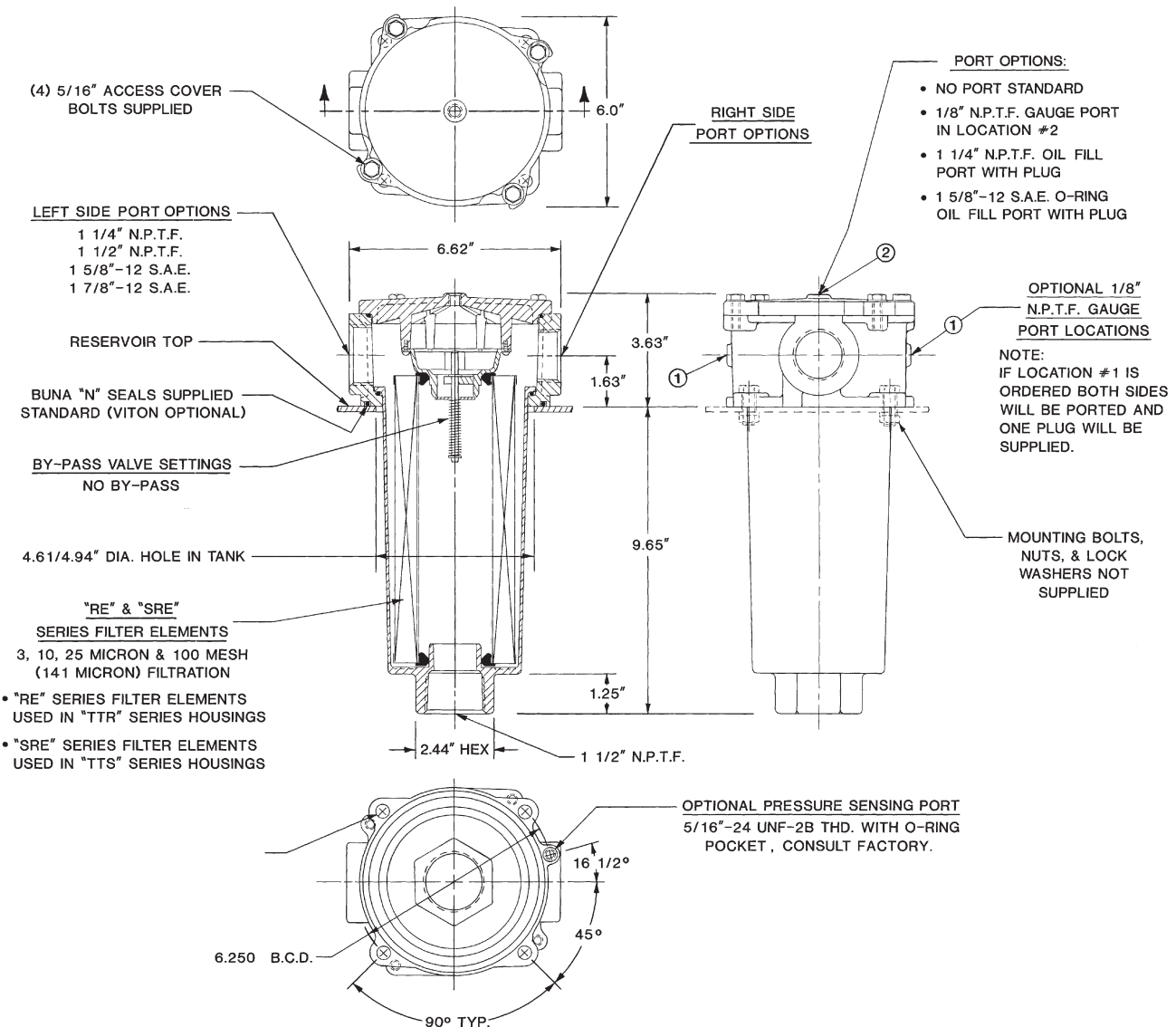
Flows Up To: TR 96GPM (return) 32GPM (suction)
TS 71GPM (return) 24GPM (suction)

Port Sizes: 1 1/4" & 1 1/2" NPTF
1 5/8"-12UN (SAE-20)
1 7/8"-12UN (SAE-24)

Pressure: 100 PSI Max. Op. Pres.

Temperature: Up to +250°F

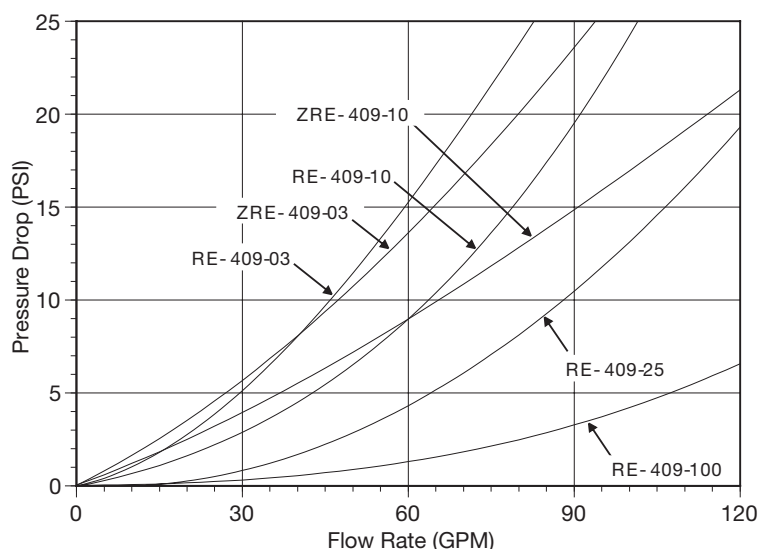
Applications: Petroleum based fluids only



TR & TS Series Continued

Design Features

- No parts to lose with unitized cover & by-pass valve assembly.
- Radial seal grommets used in RE & SRE series filter elements.
- Drop in element bowl design for easier installation.
- Patented element bowl hold down for suction applications.
- O-ring seal between filter housing and tank top.
- Filter housing mounting bolt pattern matches Zinga RF & SRF series as well as Schroeder ST & RT series housings.
- TS series housings are fully compatible with Schroeder K series elements.



Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.

HOW TO ORDER: XX XXXX XX XX X

Code	Description
TR	Accepts RE Series Filter Elements
TS	Accepts SRE Series Filter Elements

Code	Left Side Port	Right Side Port
1200	1 1/4" NPTF	None
1212	1 1/4" NPTF	1 1/4" NPTF
1600	1 5/8"-12UN (SAE-20)	None
1616	1 5/8"-12UN (SAE-20)	1 5/8"-12UN (SAE-20)
1800	1 7/8"-12UN (SAE-24)	None
1816	1 7/8"-12UN (SAE-24)	1 5/8"-12UN (SAE-20)
1818	1 7/8"-12UN (SAE-24)	1 7/8"-12UN (SAE-24)

Code	Check Valve
0	No Check Valve
V	Check Valve

Code	Gauge Port & Oil Fill Port Options
10	Gauge Port in Location 1 - No Oil Fill Port
12	Gauge Port in Location 1 & 2 - No Oil Fill Port
1N	Gauge Port in Location 1 - 1 1/4" NPTF Oil Fill Port With Plug
1S	Gauge Port in Location 1 - 1 5/8"-12 SAE O-ring Fill Port With Plug

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI (Return)



SRF Series

Tank Top Filters

Used With SRE & ZSRE Filter Elements

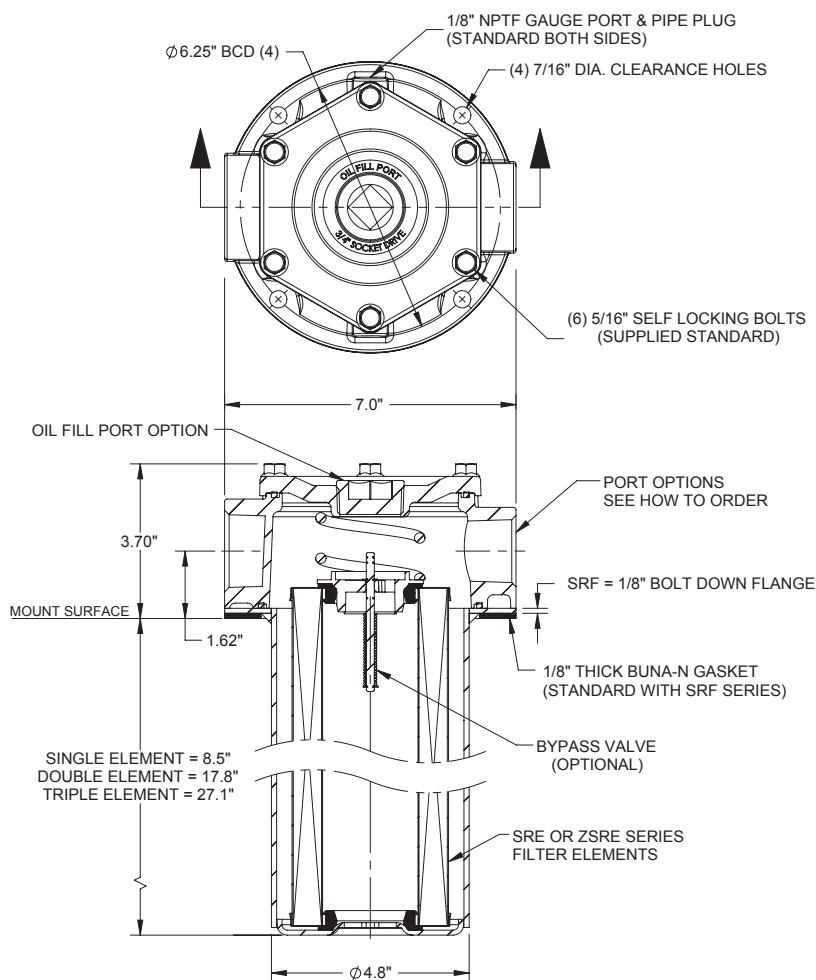
Flows Up To: 83GPM (return) 28GPM (suction)

Port Sizes: 1 1/4" & 1 1/2" NPTF
1 5/8"-12UN (SAE-20)
1 7/8"-12UN (SAE-24)

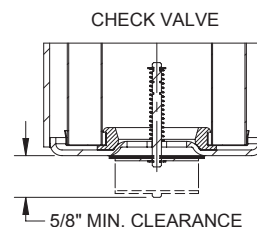
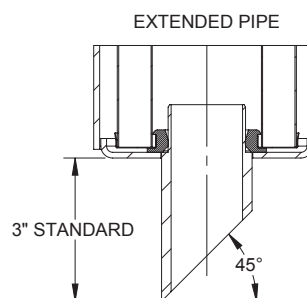
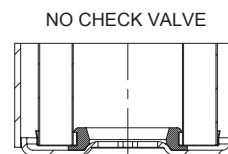
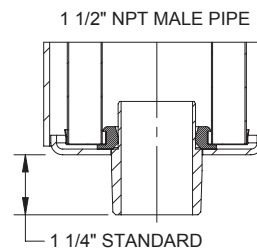
Pressure: 100 PSI Max. Op. Pres.

Temperature: Up to +250°F

Applications: Petroleum based fluids only



BOTTOM PORT OPTIONS:



Design Features:

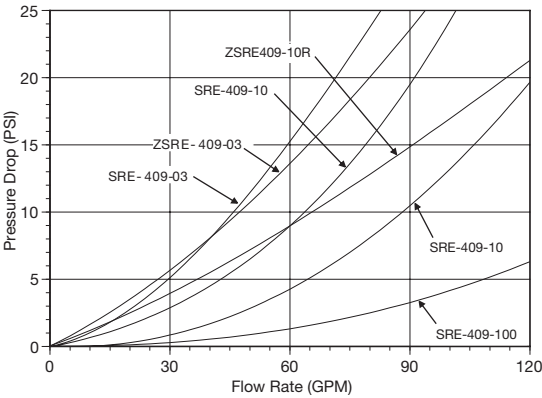
Radial seal grommet used in SRE Series filter elements.

Filter housing mounting bolt pattern matches Zinga RF, TR, & TS

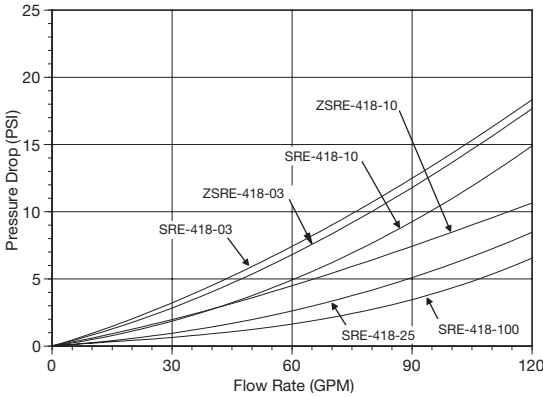
Series as well as Schroeder ST, RT, & LRT Series housings.

SRF Series Continued

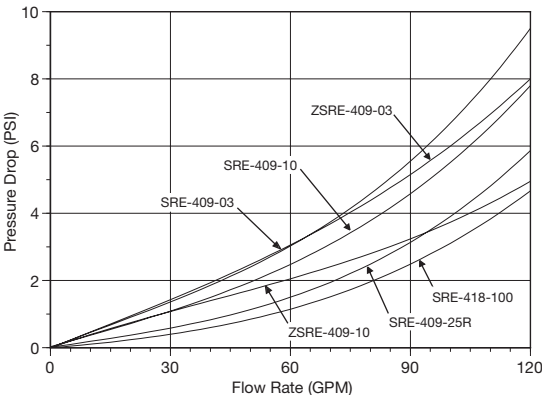
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F



Single Length Element



Double Length Element



Triple Length Element

HOW TO ORDER: SRF XXXX X XX XX X

Code	Port Size & Type
1215	1 1/4" & 1 1/2" NPTF
1600	1 5/8"-12UN (SAE-20)
1618	1 5/8"-12UN (SAE-20) & 1 7/8"-12UN (SAE-24)
1800	1 7/8"-12UN (SAE-24)

Code	Description
S	Single Element
D	Double Element
T	Triple Element

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

Code	Oil Fill Port Option
N	1 1/4" NPTF Oil Fill Port with Plug
S	1 5/8"-12 SAE O-ring Fill Port with Plug

Code	Bottom Port Options
EP	Extended Pipe (3" Std Length)
MP	Male Pipe (1 1/4" Std Length)
CV	Check Valve
00	No Check Valve
Consult Factory for Custom Lengths	





RF Series (100 PSI) WF Series (500 PSI) Tank Top Filters Used With RE & ZRE Filter Elements

Flows Up To: 96 GPM (return) 32 GPM (suction)

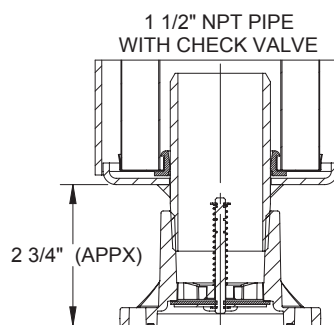
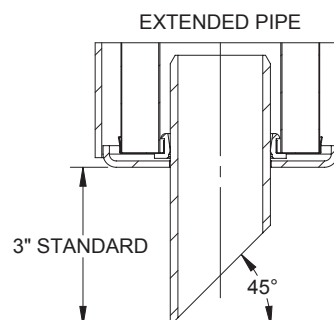
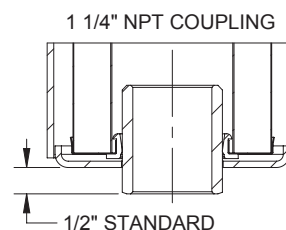
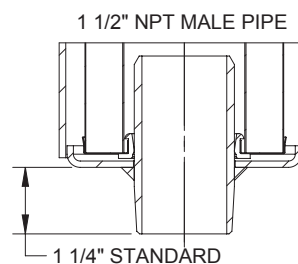
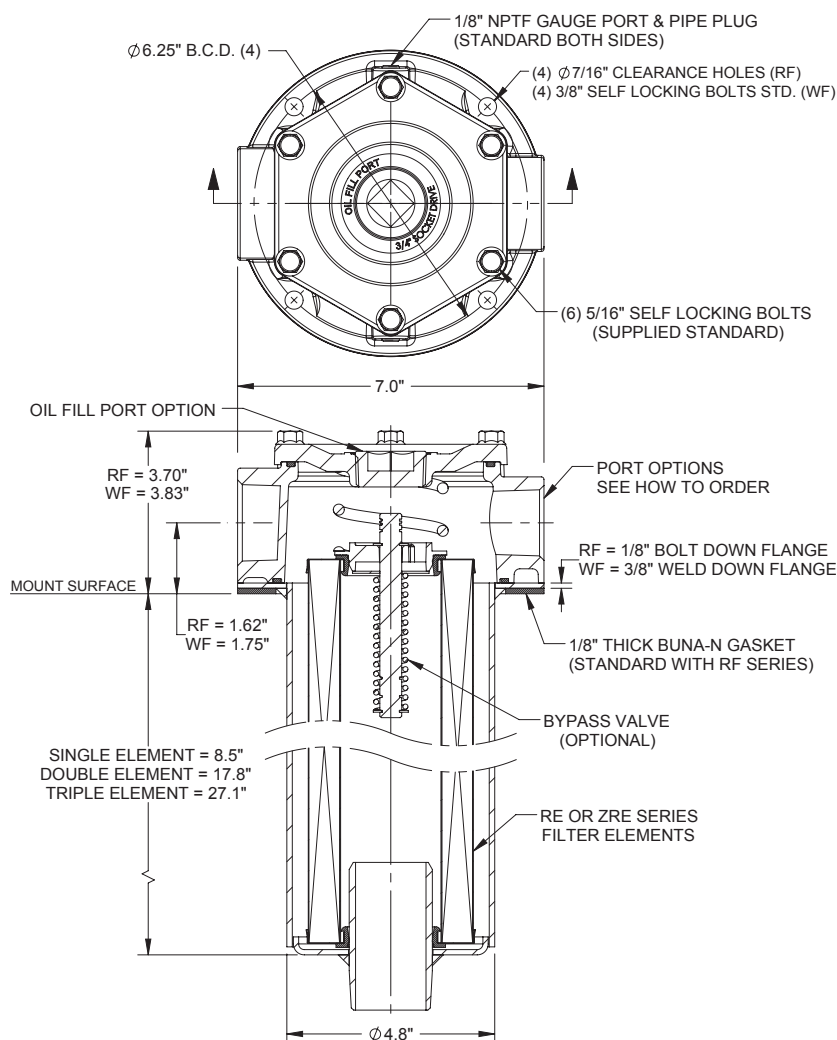
Port Sizes: 1 1/4" & 1 1/2" NPTF
1 5/8"-12UN (SAE-20)
1 7/8"-12UN (SAE-24)

Pressure: RF-100 PSI, WF-500 PSI

Temperature: Up to +250°F

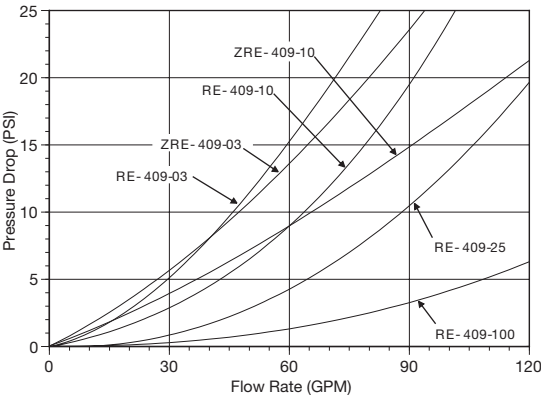
Applications: Petroleum based fluids only

BOTTOM PORT OPTIONS:

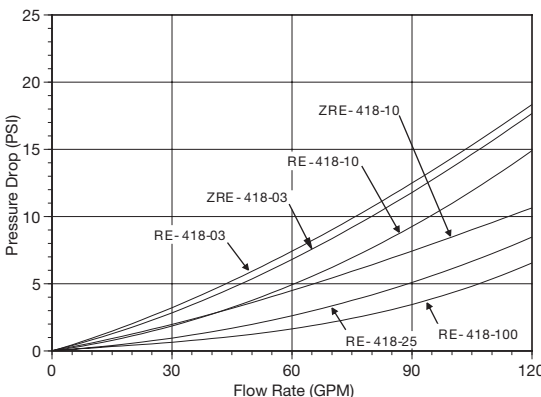


RF & WF Series Continued

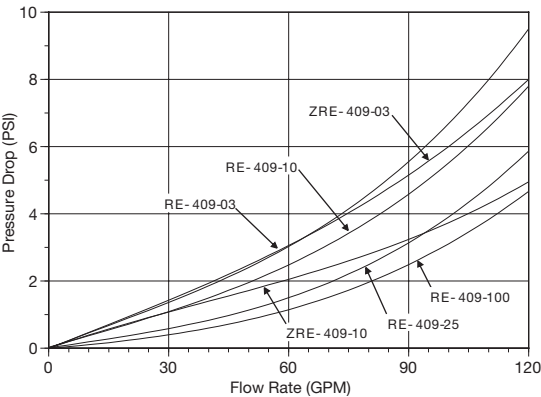
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F



Single Length Element



Double Length Element



Triple Length Element

HOW TO ORDER: XX XXXX X XX XX X

Code	Product Series
RF	1/8" Thick Flange - 100 PSI
WF	3/8" Thick Flange - 500 PSI

Code	Port Size and Type
1215	1 1/4" & 1 1/2" NPTF
1600	1 5/8"-12UN (SAE-20) Only
1618	1 5/8"-12UN (SAE-20) & 1 7/8"-12UN (SAE-24)
1800	1 7/8"-12UN (SAE-24)

Code	Description
S	Single Element
D	Double Element
T	Triple Element

Code	Oil Fill Port Option
N	1 1/4" NPTF Oil Fill Port with Plug
S	1 5/8"-12 SAE O-ring Fill Port with Plug

Code	Bottom Port Options
EP	Extended Pipe (3" Std Length)
MP	Male Pipe (1 1/4" Std Length)
FC	Female Coupling
CV	Check Valve
Consult Factory for Custom Lengths	

Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

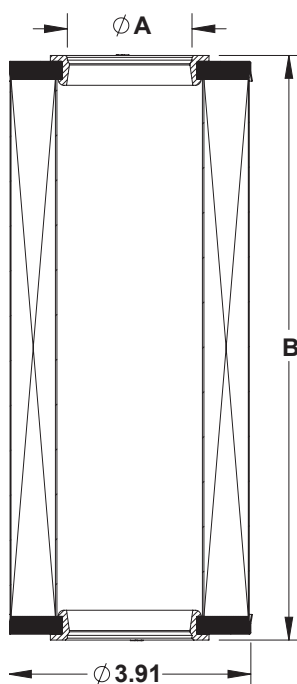
TANK MOUNT



SRE & ZSRE Series Filter Elements

Use in SRF & TS housings or as direct interchange for Schroeder "K" Series elements.

Part Number	Nominal Rating	Absolute Rating	Media Type	(A) ID	(B) Length	Flow Direction thru Element
SRE40903	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	1.61"	9.19"	Bi-Directional
SRE40910	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	1.61"	9.19"	Bi-Directional
SRE40910AZ**	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Aqua-Zorb™	1.61"	9.19"	Outside to Inside
SRE40925	$\beta 19\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	1.61"	9.19"	Bi-Directional
SRE41803	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	1.61"	18.19"	Bi-Directional
SRE41810	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	1.61"	18.19"	Bi-Directional
SRE41825	$\beta 19\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	1.61"	18.19"	Bi-Directional
SRE409100	141 Micron	-	SS Mesh	1.61"	9.19"	Outside to Inside
SRE409100R	141 Micron	-	SS Mesh	1.61"	9.19"	Inside to Outside
SRE409100M	141 Micron	-	SS Mesh	1.61"	9.19"	Outside to Inside
SRE409100MR	141 Micron	-	SS Mesh	1.61"	9.19"	Inside to Outside
ZSRE40903	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.61"	9.19"	Outside to Inside
ZSRE40903R	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.61"	9.19"	Inside to Outside
ZSRE40910	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.61"	9.19"	Outside to Inside
ZSRE40910R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.61"	9.19"	Inside to Outside
ZSRE41803	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.61"	18.19"	Outside to Inside
ZSRE41803R	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.61"	18.19"	Inside to Outside
ZSRE41810	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.61"	18.19"	Outside to Inside
ZSRE41810R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.61"	18.19"	Inside to Outside



Note:

*1. 100 mesh stainless steel wire cloth standard for 141 micron elements. 30 mesh optional

**2. Aqua-Zorb™ filter media retains up to 11 oz. of free water. Any absorbed water can not be liberated from the media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.

3. SRE & ZSRE are equipped with a Buna-N grommet (radial) seal as standard. (Fluorocarbon Available)

RE & ZRE Series Filter Elements

Use in RF, WF, & TR Housings

Part Number	Nominal Rating	Absolute Rating	Media Type	(A) ID	(B) Length	Flow Direction thru Element
RE40903	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	1.96"	9.19"	Bi-Directional
RE40910	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	1.96"	9.19"	Bi-Directional
RE40910AZ**	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Aqua-Zorb™	1.96"	9.19"	Outside to Inside
RE40925	$\beta 19\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	1.96"	9.19"	Bi-Directional
RE41803	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	1.96"	18.19"	Bi-Directional
RE41810	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	1.96"	18.19"	Bi-Directional
RE41825	$\beta 19\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	1.96"	18.19"	Bi-Directional
RE409100	141 Micron	-	SS Mesh	1.96"	9.19"	Outside to Inside
RE409100R	141 Micron	-	SS Mesh	1.96"	9.19"	Inside to Outside
RE409100M	141 Micron	-	SS Mesh	1.96"	9.19"	Outside to Inside
RE409100MR	141 Micron	-	SS Mesh	1.96"	9.19"	Inside to Outside
ZRE40903	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.96"	9.19"	Outside to Inside
ZRE40903R	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.96"	9.19"	Inside to Outside
ZRE40910	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.96"	9.19"	Outside to Inside
ZRE40910R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.96"	9.19"	Inside to Outside
ZRE41803	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.96"	18.19"	Outside to Inside
ZRE41803R	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	1.96"	18.19"	Inside to Outside
ZRE41810	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.96"	18.19"	Outside to Inside
ZRE41810R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	1.96"	18.19"	Inside to Outside

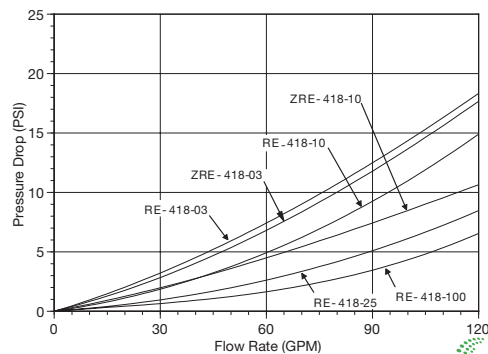
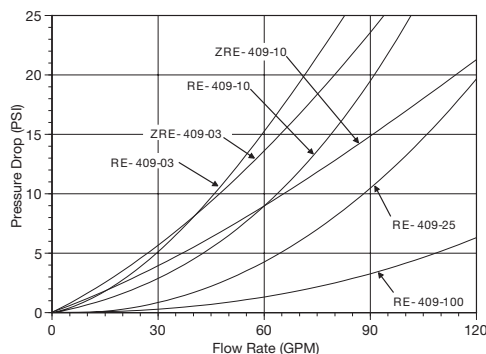
Note:

*1. 100 mesh stainless steel wire cloth standard for 141 micron elements. 30 mesh optional

**2. Aqua-Zorb™ filter media retains up to 11 oz. of free water. Any absorbed water can not be liberated from the media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.

3. RE & ZRE are equipped with a Buna-N grommet (radial) seal as standard. (Fluorocarbon Available)

Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F





WF-2 Series Tank Top Filters Used With WE & ZWE Filter Elements

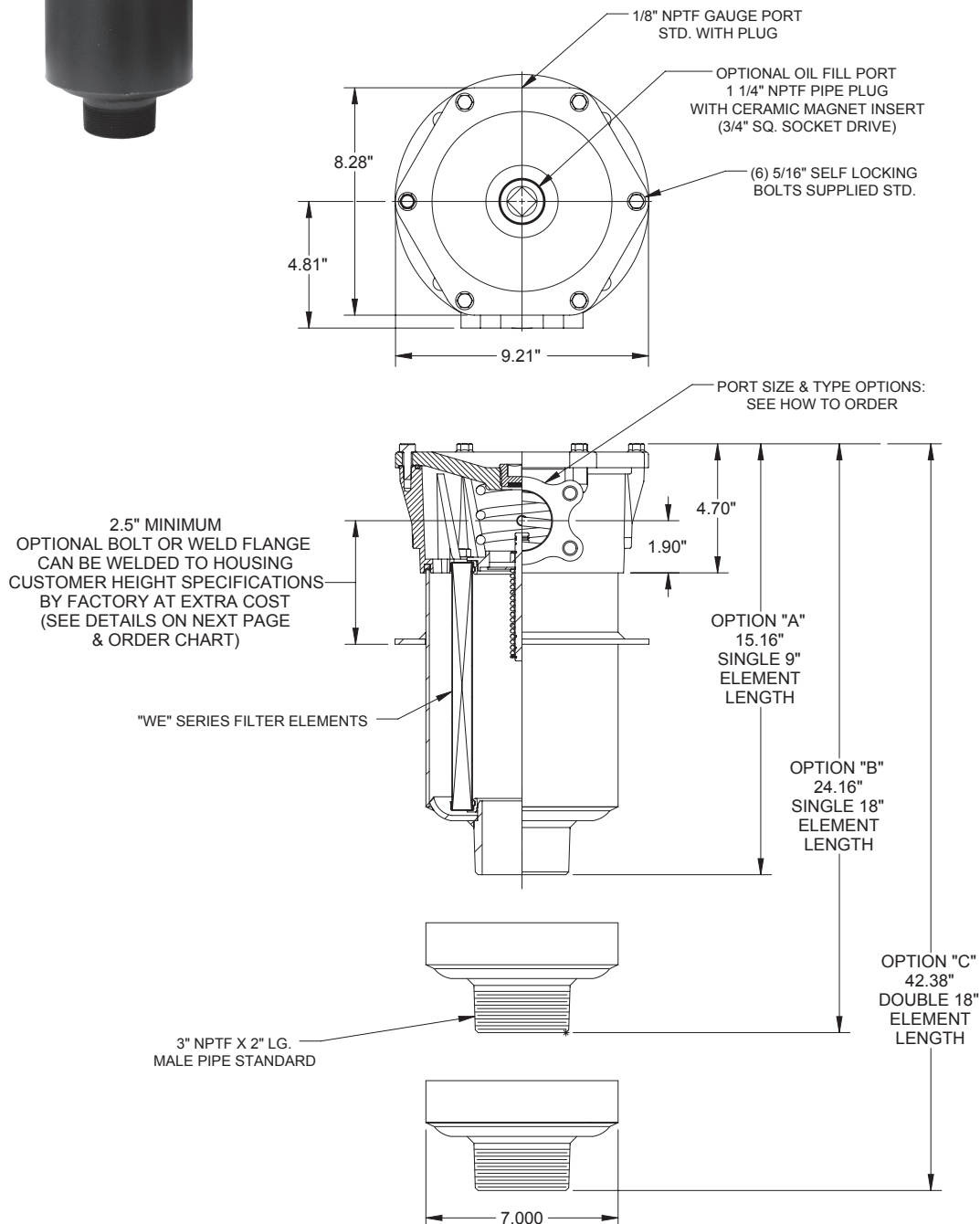
Flows Up To: 300GPM (return) 100GPM (suction)

Port Sizes: 2" NPTF
2" (4) Bolt Flange
2 1/2" (4) Bolt Flange

Pressure: 300 PSI Max. Op. Pres.

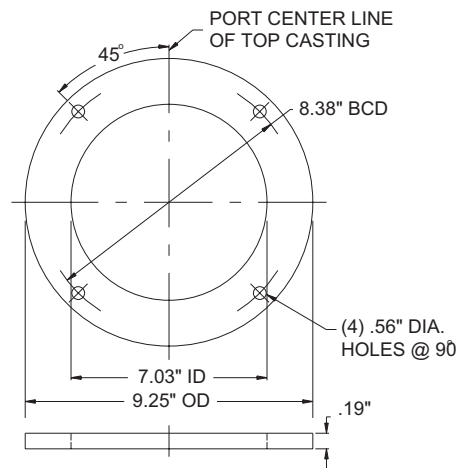
Temperature: Up to +250°F

Applications: Petroleum based fluids only



WF-2 Series Continued

Optional Mounting Flanges



Bolt Flange (Part Number WF-10):

- For bolt down installation to reservoir.
- Bolt flange supplied with 1/8" thick gasket.

Weld Flange (Part Number WF-09):

- For weld in place installation on reservoir.
- Weld flange identical to bolt flange except without bolt clearance holes and gasket.

Note:

- 7.06" to 7.38" dia. hole in reservoir wall required for proper installation.
- Flanges can be welded to filter housings by factory as an extra cost option. Specify the desired height required from port center line to mounting surface (reservoir wall), 2.5" minimum.

HOW TO ORDER: WF XXXX X XX X XXXX X

Code	Port Size & Type
2200	2" (4) Bolt SAE Flange
2300	3" (4) Bolt SAE Flange
2520	2 1/2" (4) Bolt SAE Flange & 2" NPTF Combination

Code	Filter Housing Length
A	Single 9" Element Length
B	Single 18" Element Length
C	Double 18" Element Length

Code	By-Pass Valve Settings
00	No By-Pass Valve
25	25 PSI Return

Code	Oil Fill Port Option
0	None
M	1 1/4" NPTF Magnetic Plug

Code	Bottom Port Options
0000	Customer to weld flange to filter housing
Dimensions in inches carried out to (2) decimal places. Example: 8 9/16" = 0856	
Desired height from casting port center line mounting surface (reservoir) Note Mfg. tolerances ± 0.06".	

Code	Mounting Flange Option
0	No Flange
B	Bolt Flange
W	Weld Flange

WE & ZWE Series Filter Elements

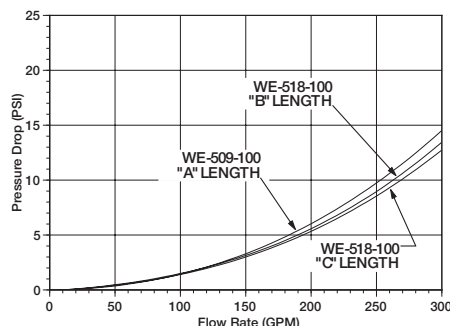
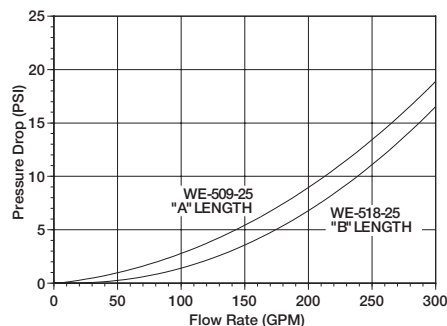
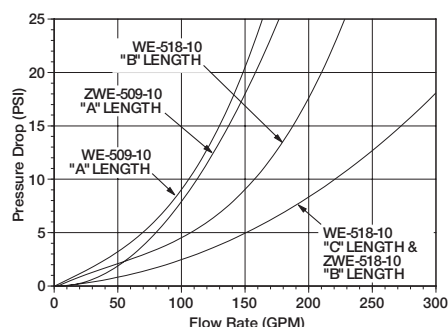
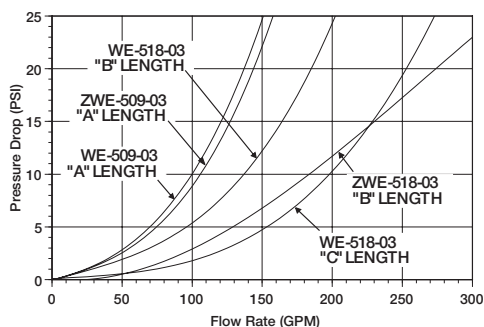
For use in WF2 Housings

Part Number	Nominal Rating	Absolute Rating	Media Type	(B) Length	Flow Direction
WE50903	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	9.13"	Bi-Directional
WE50910	$\beta 5\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	9.13"	Bi-Directional
*WE509100	141 Micron	-	SS Mesh	9.13"	Outside to Inside
*WE509100R	141 Micron	-	SS Mesh	9.13"	Inside to Outside
WE50925	$\beta 19\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	9.13"	Bi-Directional
WE51803	$\beta < 4\mu(C) = 2$	$\beta 11\mu(C) = 75$	Cellulose	18.13"	Bi-Directional
**WE51803AZ	$\beta 5\mu(C) = 2$	$\beta 11\mu(C) = 75$	Aqua-Zorb™	18.13"	Bi-Directional
WE51810	$\beta 19\mu(C) = 2$	$\beta 19\mu(C) = 75$	Cellulose	18.13"	Bi-Directional
**WE51810AZ	$\beta < 4\mu(C) = 2$	$\beta 19\mu(C) = 75$	Aqua-Zorb™	18.13"	Bi-Directional
*WE518100	$\beta < 4\mu(C) = 2$	-	SS Mesh	18.13"	Outside to Inside
*WE518100R	$\beta 5\mu(C) = 2$	-	SS Mesh	18.13"	Inside to Outside
WE51825	$\beta 5\mu(C) = 2$	$\beta 36\mu(C) = 75$	Cellulose	18.13"	Bi-Directional
ZWE50903	141 Micron	$\beta < 4\mu(C) = 200$	"Z-Glass"	9.13"	Outside to Inside
ZWE50903R	141 Micron	$\beta < 4\mu(C) = 200$	"Z-Glass"	9.13"	Inside to Outside
ZWE50910	$\beta 19\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	9.13"	Outside to Inside
ZWE50910R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	9.13"	Inside to Outside
ZWE51803	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	18.13"	Outside to Inside
ZWE51803R	$\beta < 4\mu(C) = 2$	$\beta < 4\mu(C) = 200$	"Z-Glass"	18.13"	Inside to Outside
ZWE51810	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	18.13"	Outside to Inside
ZWE51810R	$\beta < 4\mu(C) = 2$	$\beta 10\mu(C) = 200$	"Z-Glass"	18.13"	Inside to Outside

Note:

*1. 100 mesh stainless steel wire cloth standard for 141 micron elements.

**2. Aqua-Zorb™ filter media retains up to 11 oz. of free water. Any absorbed water can not be liberated from the media. As the element becomes saturated with water the Aqua-Zorb™ media continues to swell, and will ultimately curtail flow through the filter. Not for use with water-glycols.



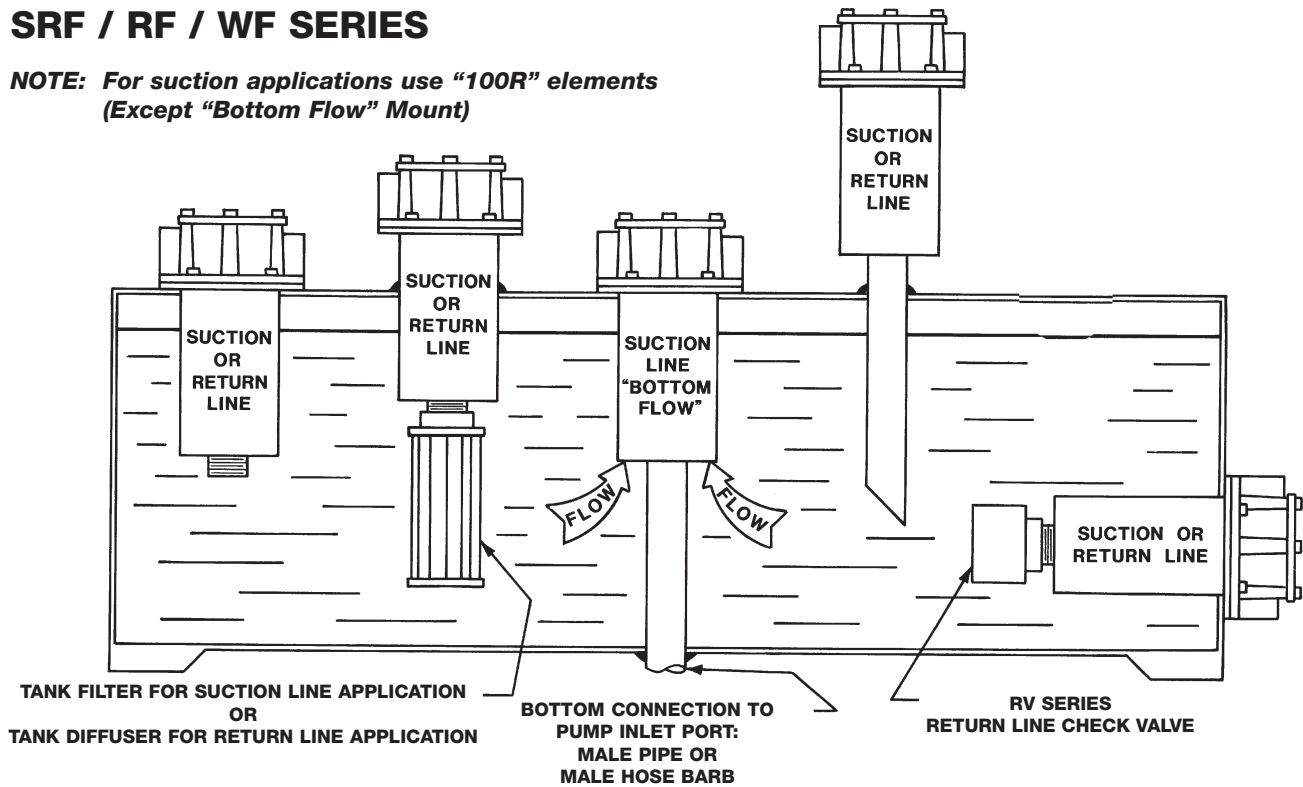
Average pressure drop through clean assembly with 150 SUS oil at 105°F



TYPICAL TANK-TOP FILTER INSTALLATIONS

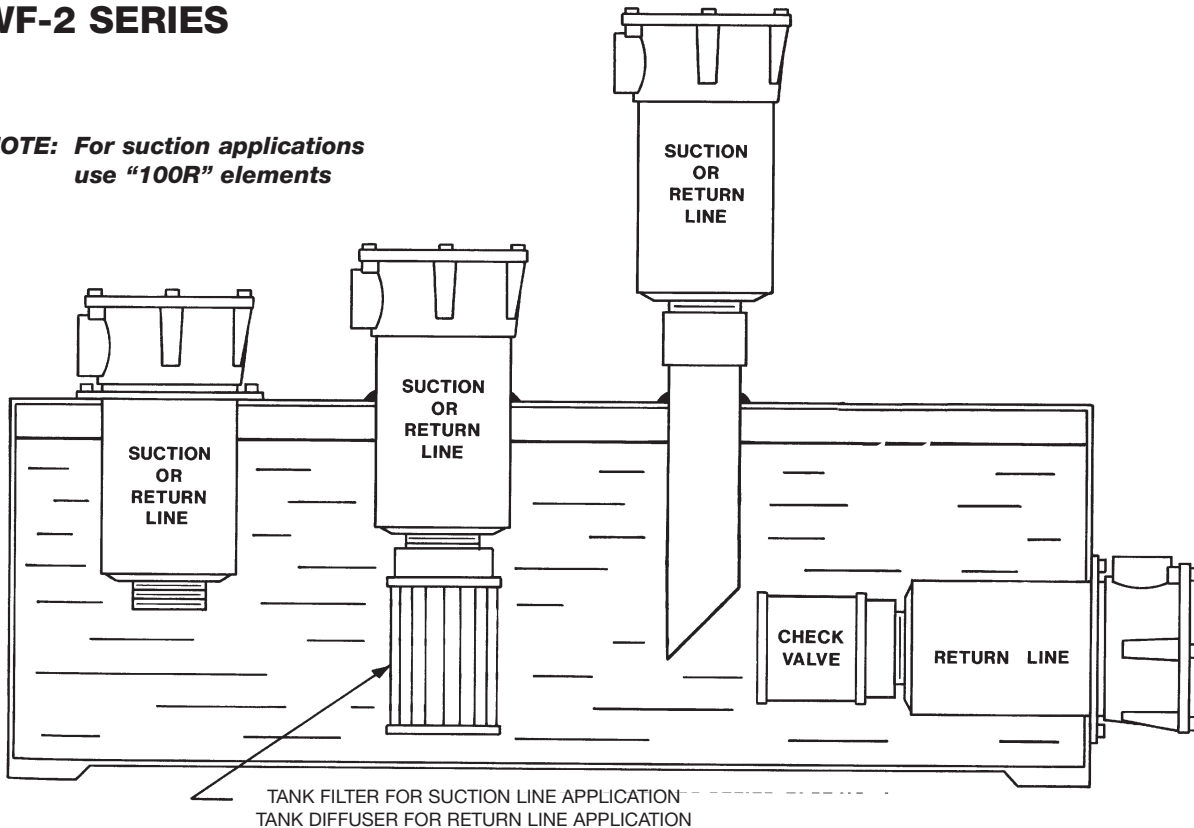
SRF / RF / WF SERIES

NOTE: For suction applications use "100R" elements
(Except "Bottom Flow" Mount)



WF-2 SERIES

NOTE: For suction applications use "100R" elements

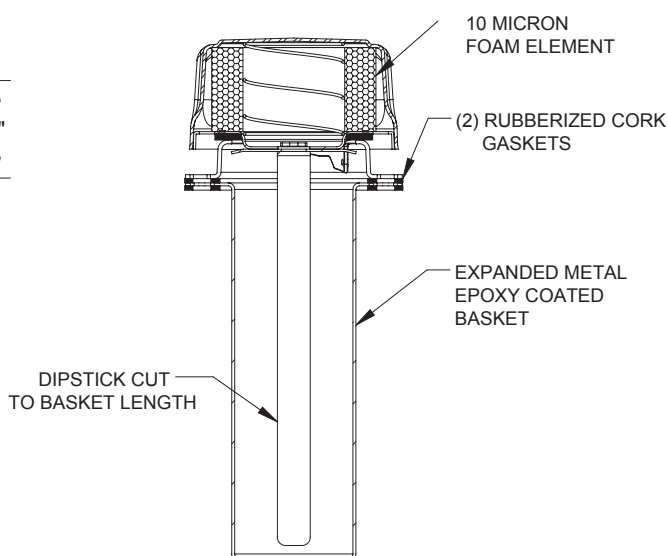
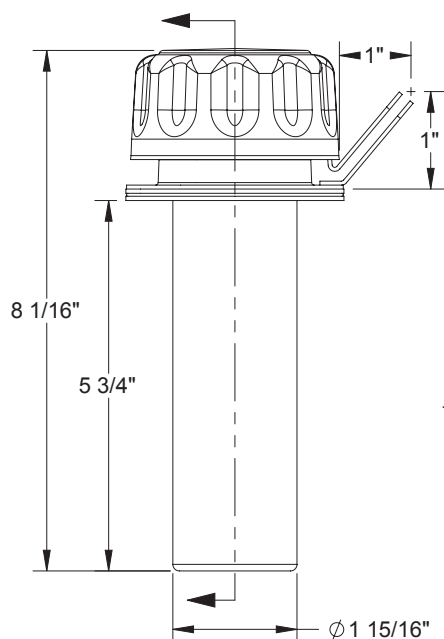
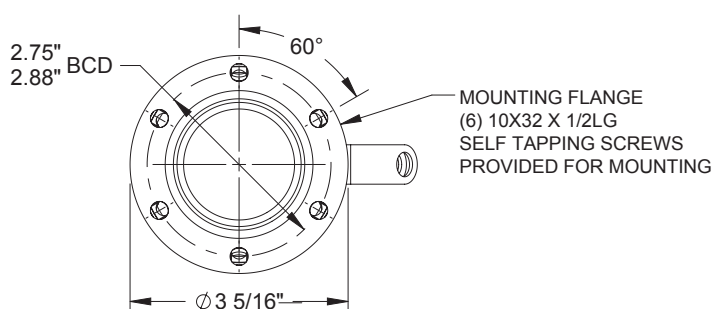
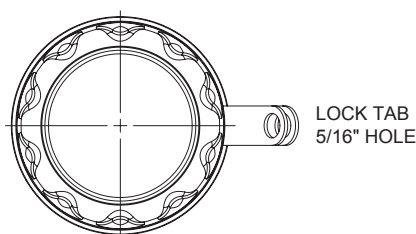




WSFB Series

Reservoir Filler Breather

- Black Painted Weather Resistant Cover
- 10 Micron Foam Filter Element
- Basket Length Dipstick
- Lock Tab



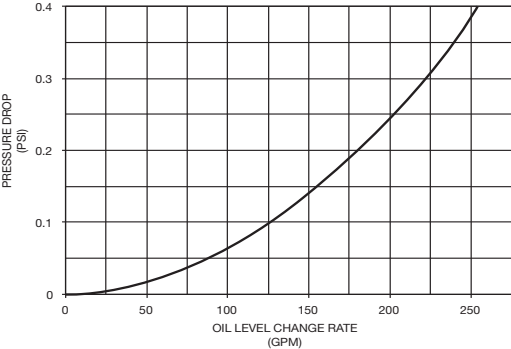
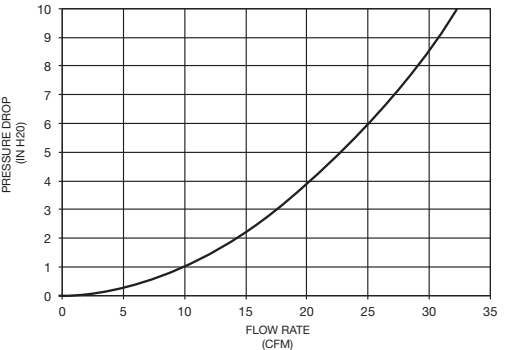
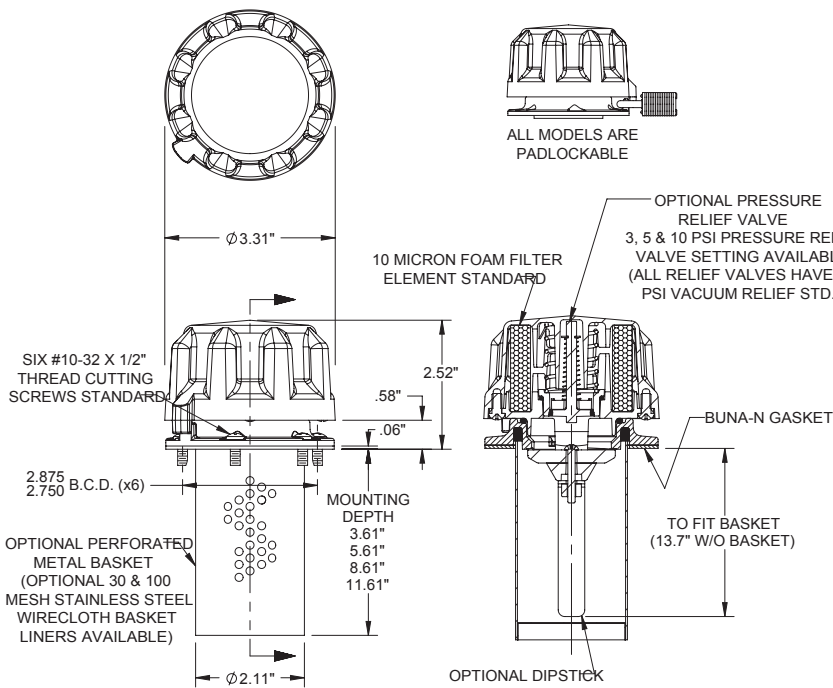
HOW TO ORDER: WSFB10 XX DL

Code	Style
4S	4" Dipstick/Basket
6S	6" Dipstick/Basket



FB Series Reservoir Filler Breather

- 10 Micron Foam Filter Element
- Cap to Base Chain Connection
- Aluminum and Nylon Cover Options
- Wire Mesh Lined Basket Available
- 1" Steel Weldable Riser Available (PN: FB43)



Average Pressure Drop Through Assembly Without Relief Valve

HOW TO ORDER: FB10 XX X XX X X

Code	Mounting Depth
00	No Basket
04	3.61 Inches
06	5.61 Inches
09	8.61 Inches
12	11.61 Inches

Code	Liner Mesh
0	No Mesh
1	100 Mesh
3	30 Mesh

Code	Cover Options
0	Aluminum Cover Standard
N	Nylon Plastic Cover (Black)

Code	Dipstick Options
0	No Dipstick
D	To Fit Basket (see above)

Code	Pressure Relief Valve Settings
00	No Valve
03	3 PSI
05	5 PSI
10	10 PSI

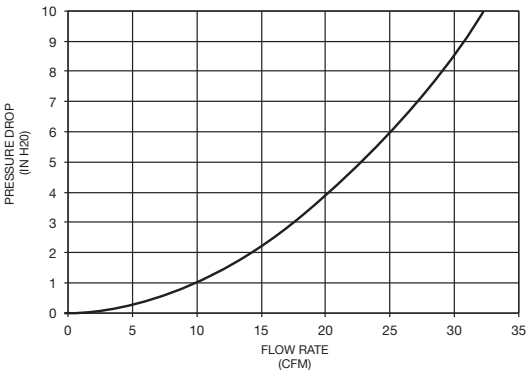
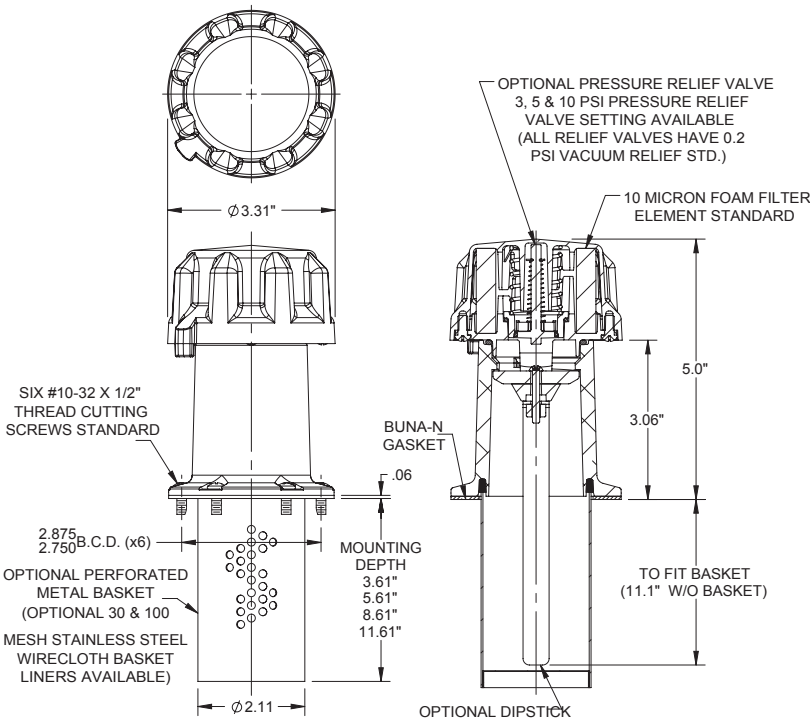




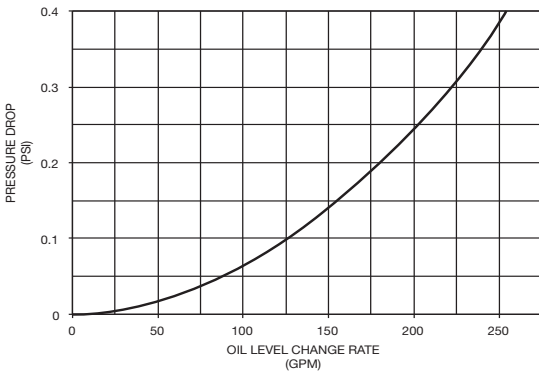
FBR Series

Raised Filler Breather

- 3" Risers
- 10 Micron Foam Filter
- Cap to Base Chain Connection
- Aluminum and Nylon Cover Options
- Wire Mesh Lined Basket Available



Average Pressure Drop Through Assembly Without Relief Valve



Average Pressure Drop Through Assembly Without Relief Valve

HOW TO ORDER: FBR3010 XX X XX X X

Code	Mounting Depth
00	No Basket
04	3.61 Inches
06	5.61 Inches
09	8.61 Inches
12	11.61 Inches

Code	Liner Mesh
0	No Mesh
1	100 Mesh
3	30 Mesh

Code	Cover Options
0	Aluminum Cover Standard
N	Nylon Plastic Cover (Black)

Code	Dipstick Options
0	No Dipstick
D	To Fit Basket (see above)

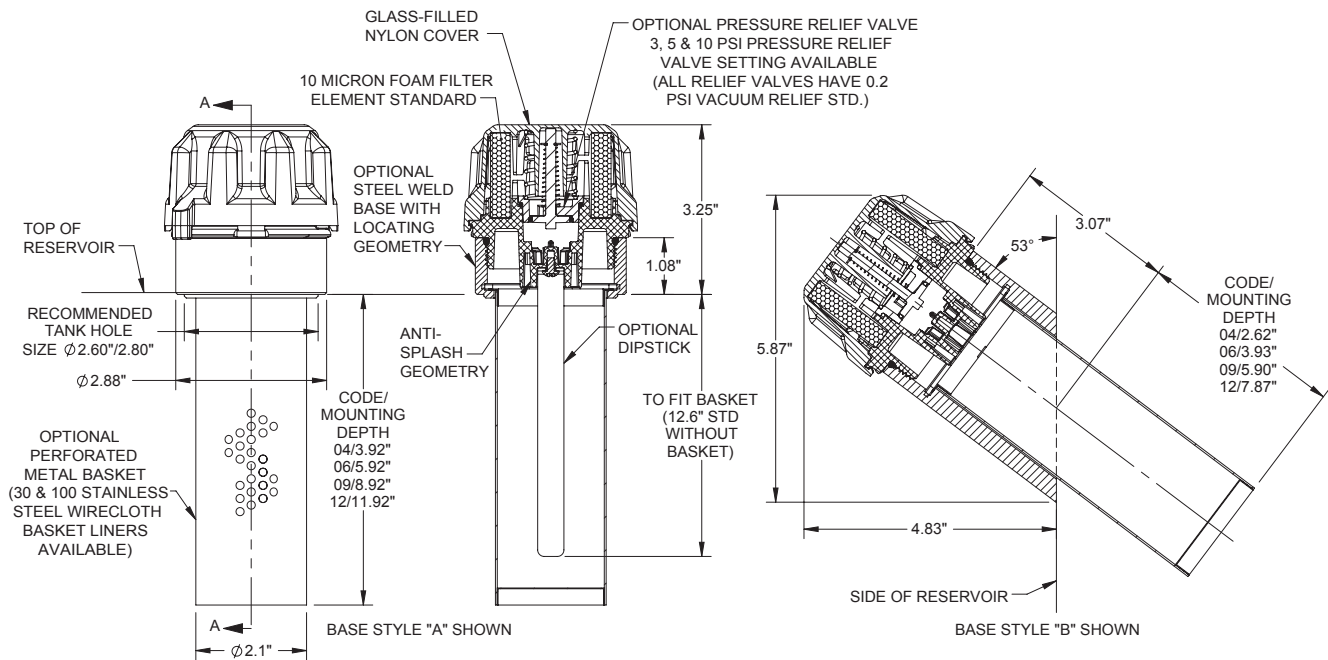
Code	Pressure Relief Valve Settings
00	No Valve
03	3 PSI
05	5 PSI
10	10 PSI



RB2 Series

Thread Mount Nylon Filler Breather

- Weld Bases Available in Steel
- Steel Baskets in 4", 6", 9" or 12" Nominal Lengths with 30 or 100 Stainless Steel Mesh Liners
- Oil Level Indicating Dipstick
- Engineered & Tested for Unparalleled Splash Resistance



HOW TO ORDER: RB2 S32 10 XX X X XX X

MOUNTING BASE AND BASKET OPTIONS
ONLY AVAILABLE FOR "S32" THREAD

Code	Thread
S32	2 1/2"-12UN (SAE-32)

10 MICRON FOAM ELEMENT STANDARD

Code	Pressure Relief Setting
00	No Valve
03	3 PSI
05	5PSI
10	10 PSI

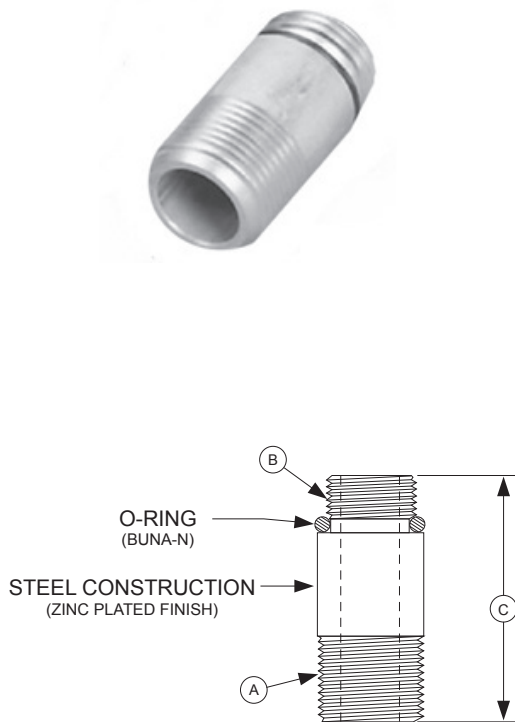
Code	Dipstick Options
0	No Dipstick
D	To Fit Basket (see above)

Code	Basket Inner Mesh
0	No Mesh
1	100 Mesh
3	30 Mesh

Code	Nominal Basket Length
00	No Basket
04	4 Inches
06	6 Inches
09	9 Inches
12	12 Inches

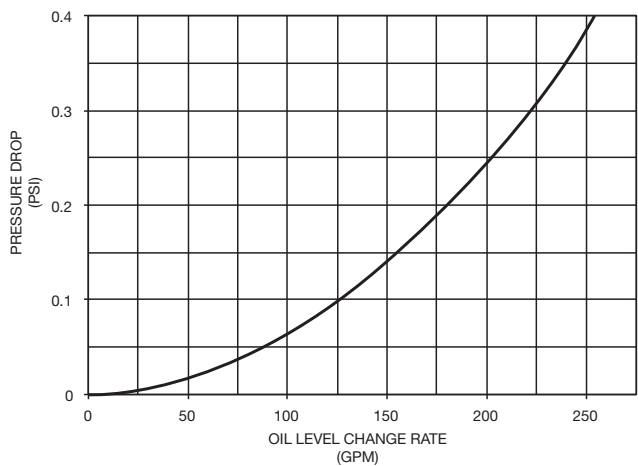
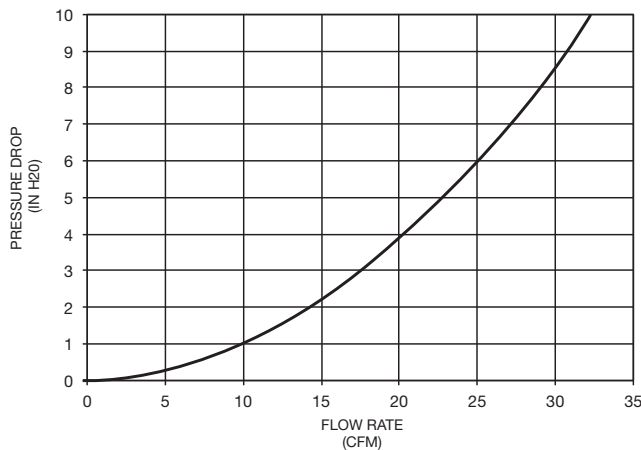
Code	Weld Base Description
A	1.08" Raised Steel
B	53° Angled Steel





TB Series Tank Breathers

Convert Spin-On Elements
to Tank Breathers

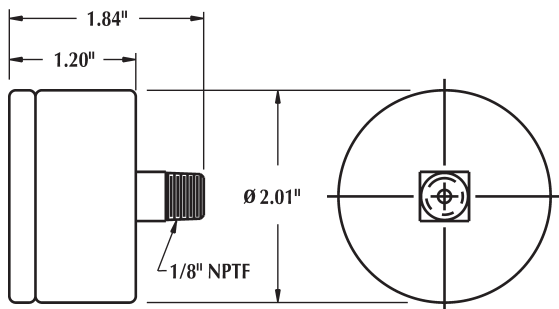


Note: Spin-on filters with anti-drain back valves should NOT be used for breather applications. Zinga standard spin-on filters do NOT have anti-drain back valves.

Adapter Number	(A) Mount Thread	(B) Spin-On Thread	(C) Adapter Length	Spin-On Series	(D) Assembly Height	(E) Element Diameter	Air Filtration @ 99% Eff.	*Max Air Flow scfm/gpm
TB-050	1/2" NPT	3/4"-16 UNF	1.6"	BE-10	5.2"	3.1"	2 Micron	8/60
TB-075	3/4" NPT	1"-12 UNF	2.0"	AE-03	7.3"	3.7"	1 Micron	15/112
-	-	-	-	AE-10	7.3"	-	2 Micron	13/97
-	-	-	-	AE-10L	10.6"	-	2 Micron	14/104
TB-125	1 1/4" NPT	1 1/2"-16 UNF	3.0"	SE-03	9.1"	5.1"	1 Micron	45/336
-	-	-	-	LE-03	13.1"	-	1 Micron	50/374
-	-	-	-	SE-10	9.1"	-	2 Micron	45/336
-	-	-	-	LE-10	13.1"	-	2 Micron	50/374

*Based on maximum pressure drop of 5 inches H2O (0.18 Psid) through clean filter element





GV & CI Series Filter Gauges Vacuum & Pressure

- Black Steel Case
- Brass Stem
- Acrylic Lens
- -40°F to +140°F Operating Temp.

Vacuum Gauges (Suction Line Filter Installations)

Part # GV-05
For use with 3 PSI
Filter By-Pass Valve



Part # GV-10
For use with 5 PSI
Filter By-Pass Valve



Pressure Gauges (Return Line Filter Installations)

Part # CI-12
For use with 15 PSI
Filter By-Pass Valve

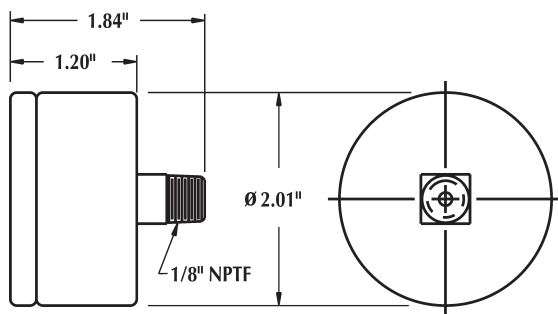


Part # CI-20
For use with 25 PSI
Filter By-Pass Valve



Part # CI-40
For use with 50 PSI
Filter By-Pass Valve





GVL & CIL Series Filter Gauges

**Stainless Steel
Glycerin-Filled**

- Stainless Steel Case
- Brass Stem
- Acrylic Lens
- Shock and Vibration Resistant

Vacuum Gauges (Suction Line Filter Installations)

Part # GV-05L
For use with 3 PSI
Filter By-Pass Valve



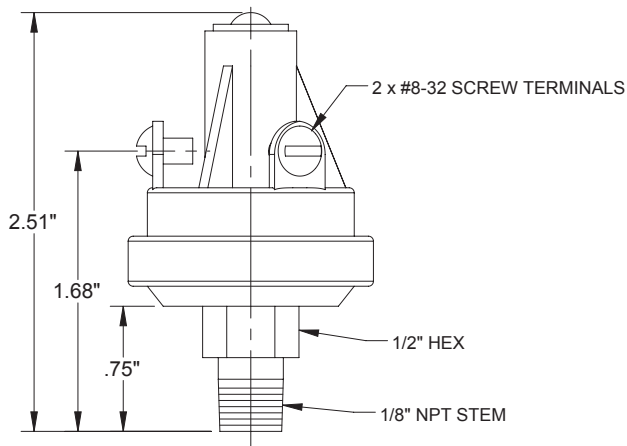
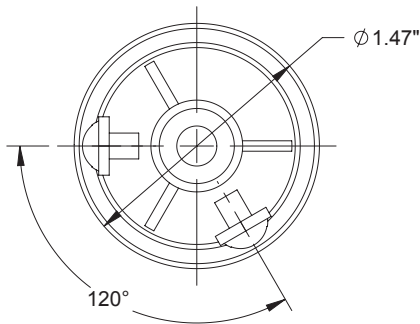
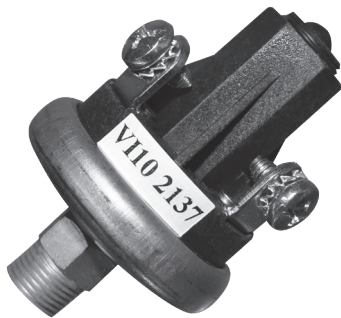
Part # GV-10L
For use with 5 PSI
Filter By-Pass Valve



Pressure Gauges (Return Line Filter Installations)

Part # CI-20L
For use with 25 PSI
Filter By-Pass Valve





VI & PI Series Vacuum & Pressure Indicator Switches

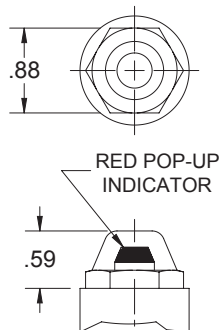
Specifications:

- Operating Pressure:
VI-5: 150 PSI Max.
VI-10: 150 PSI Max.
PI-15: 150 PSI Max.
PI-25: 250 PSI Max.
PI-40: 250 PSI Max.
- Circuit: SPST - N.O.
- Ratings:
Resistive:
15 AMP - 6 VDC
8 AMP - 12 VDC
4 AMP - 24 VDC
Inductive:
1 AMP - 120 VAC
0.5 AMP - 240 VAC

Part Number	Description
VI-5	Vacuum switch set to activate a panel light at 5" Hg. (For use on a filter with a 3 PSI by-pass valve setting)
VI-10	Vacuum switch set to activate a panel light at 10" Hg. (For use on a filter with a 5 PSI by-pass valve setting)
PI-15	Pressure switch set to activate a panel light at 15 PSI (For use on a filter with a 15 PSI by-pass valve setting)
PI-25	Pressure switch set to activate a panel light at 25 PSI (For use on a filter with a 25 PSI by-pass valve setting)
PI-40	Pressure switch set to activate a panel light at 40 PSI (For use on a filter with a 50 PSI by-pass valve setting)
IC-1	Optional rubber weather cover

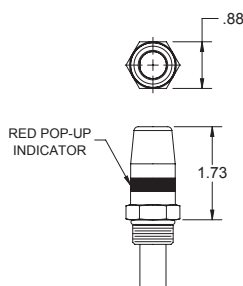
Differential Pressure (ΔP) Indicators

DP03 Series



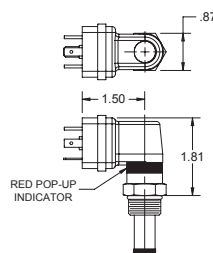
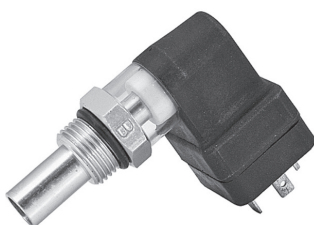
Low Pressure Visual Indicator
200 PSI Maximum Operating Pressure
Temperatures up to 150°F
Automatic Resetting
Factory installed. Available as a kit for field replacement.
For use with DF, SF, MF, & ZDF Series Only

DP04 Series



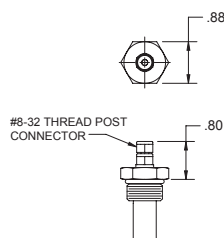
Cartridge Style Visual Indicator
3000 PSI Max. Oper. Press (6000 PSI for 80 Psid Units)
Temperatures up to 200°F
Automatic Resetting
Factory Installed. Available as kit for field replacement.

DP05 Series



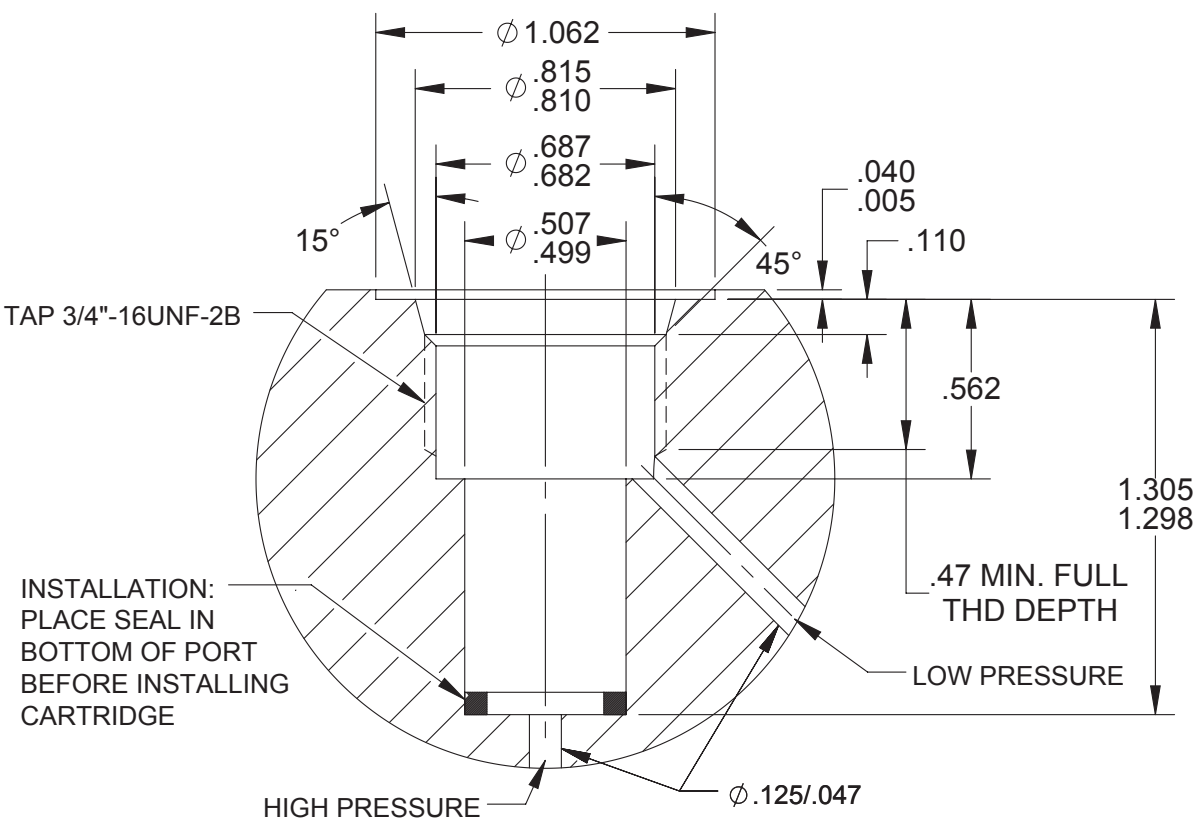
Cartridge Style Visual/Electrical Indicator
Hirschman (DIN 43650 Type AM Receptacle 11mm)
1NO, 1NC, & Common SPDT Switch (3 Pole & Ground)
5A; 125/250 VAC, 24 VDC (Resistive)
3000 PSI Max. Oper. Press (6000 PSI for 80 Psid Units)
Temperatures up to 200°F
Automatic Resetting
Factory Installed. Available as kit for field replacement.

DP06 Series



Cartridge Style Single Wire DC Indicator
200mA at 36VDC
Momentary - Normally Open Circuit
3000 PSI Max. Oper. Press (6000 PSI for 80 Psid Units)
Temperatures up to 200°F
Automatic Resetting
Factory Installed. Available as kit for field replacement.
Ground Through Filter Head to Chassis. (In Oil)

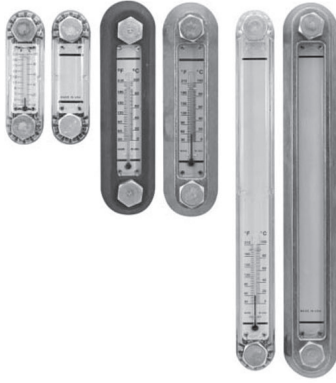
Differential Pressure (ΔP) Indicators



HOW TO ORDER: DP - XX XXX

Code	Type
03**	Visual Low Pressure*
04	Visual Cartridge
05	Visual/Electrical DIN
06	Single Wire DC Elec.
**Use on DF, SF, MF, & ZDF Series Only	

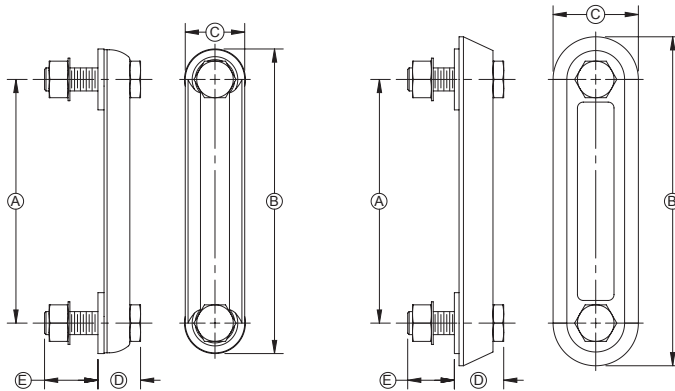
Code	Indicator Setting	By-Pass Setting
04K	4 Psid	5 Psid
13K	13 Psid	15 Psid
22K	22 Psid	25 Psid
44K	44 Psid	50 Psid
80K*	80 Psid	90 Psid
*80 Psid Available on DP04 & DP05 Series Only		



SG Series Reservoir Sight Level Gauges

- Temperature: 212°F Maximum
- Optional Thermometer
- Optional Guards
- UV Resistant Housing

For use with petroleum base and water base hydraulic fluids. Consult factory for other fluids.



Model Number	A	B	C	D	E
SG03XX0	3"	4.22"	1.22"	0.81"	1.16"
SG03XXG	3"	4.75"	1.75"	0.93"	0.82"
SG05XX0	5"	6.22"	1.22"	0.81"	1.16"
SG05XXG	5"	6.75"	1.75"	0.93"	0.82"
SG05XXN	5"	6.75"	1.75"	0.93"	0.82"
SG10XX0	10"	11.22"	1.22"	0.81"	1.16"
SG10XXG	10"	11.75"	1.75"	0.93"	0.82"

HOW TO ORDER: SG XX X X X

Code	Bolt Center Distance
03	3"
05	5"
10	10"

Code	Bolt Type
A	1/2" - 13 UN
M	M12 X 1.75

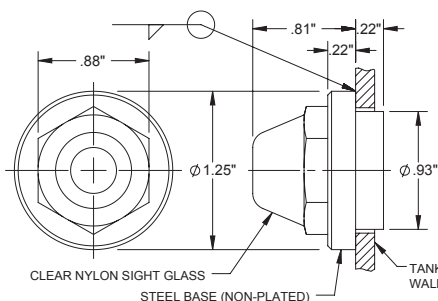
Code	Thermometer
0	No Thermometer
T	With Thermometer

Code	Guard Material
0	No Guard
G	Aluminum
N	Glass Filled Nylon*
* Available on the 5" series only	



OE-1 Series OIL-EYE

- Fluid Level Oil Eye & Steel Weld Port
- For Use With Petroleum Base & Water Base Hydraulic Fluids
- Temperature: -65°F to 150°F for Non Pressurized Applications. (Max Temperture 212°F for Non Pressurized Applications)
- Sight Glass Designed for Use With SAE-8 Port Geometry



Reference Information

Relative Size of Particles		
Substance	Size in Microns (μ)	Size in Inches (in.)
Grain of Table Salt	100	0.00400
Human Hair	70	0.00270
Lower Limit of Visibility	40	0.00158
White Blood Cells	25	0.00100
Talcom Powder	10	0.00040
Red Blood Cells	8	0.00030
Bacteria (average)	2	0.00008

$$1 \text{ Micron} = \frac{1}{1,000,000 \text{ meters}} = 0.000004 \text{ inches}$$

Measurement of Filter Efficiency

The measure of filter efficiency is determined by comparing the number of upstream particles (N_U) of a determined size (x) vs. the downstream number (N_D). This ratio is defined as the Beta Ratio (β_x).



$$\beta_x = \frac{N_U}{N_D} \text{ where } x = \text{size of particles in microns } (\mu)$$

$$\text{Efficiency}_x = 100 (1 - 1/\beta_x)$$

Example:
37,500 Particles 10μ Upstream = 75.00
500 Particles 10μ Downstream

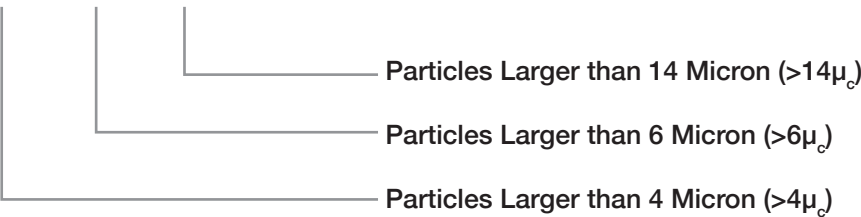
Beta Ratio:
 $\beta_{10} = 75.00$ Stated as “Beta 10 equal to 75”

Efficiency₁₀ $100 (1 - 1/75) = 98.7\%$

Beta (β)	Efficiency
1.01	1.0%
1.10	9.0%
1.50	9.0%
2.00	50.0%
10.00	90.0%
75.00	95.5%
100.00	98.7%
200.00	99.5%
1000.00	99.9%

16 / 14 / 11		Servo Valves			
17 / 15 / 12		Proportional Control Valves			
18 / 16 / 13		Vane & Piston Pump/Motors Directional & Pressure Control Valves	25µ Z-Glass	10µ Z-Glass	3µ Z-Glass
19 / 17 / 14		Gear Pumps/Motors			
20 / 18 / 15		Flow Control Valves Cylinders New Unused Fluid			
Recommended Media					

18 / 16 / 13 ISO 4406 Code Range Numbers



ISO 4406 Range Numbers		
Range Number	Number of Particles Per ml	
	More Than	Up to & Including
24	80,000	160,000
23	40,000	80,000
22	20,000	40,000
21	10,000	20,000
20	5,000	10,000
19	2,500	5,000
18	1,300	2,500
17	640	1,300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	2.5
7	0.64	1.3
6	0.32	0.64

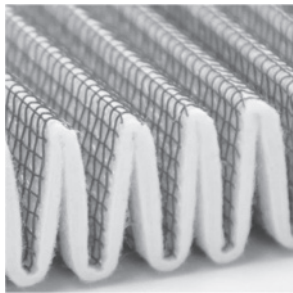


Industry ISO Cleanliness Level Standards for System Components

	Pressure <2000 psi (138bar)	Pressure 2000-3000 psi (138-207bar)	Pressure >3000 psi (207bar)
Component	Industry Standard	Industry Standard	Industry Standard
Pumps			
Fixed Gear	20/18/15	19/17/15	-
Fixed Piston	19/17/14	18/16/13	17/15/12
Fixed Vane	20/18/15	19/17/14	18/16/13
Variable Piston	18/16/13	17/15/13	16/14/12
Variable Vane	18/16/13	17/15/12	-
Valves			
Cartridge	18/16/13	17/15/12	17/15/12
Check Valve	20/18/15	20/18/15	19/17/14
Directional (Solenoid)	20/18/15	19/17/14	18/16/13
Flow Control	19/17/14	18/16/13	18/16/13
Pressure Control (Modulating)	19/17/14	18/16/13	17/15/12
Proportional Cartridge	17/15/12	17/15/12	16/14/11
Proportional Directional	17/15/12	17/15/12	16/14/11
Proportional Flow Control	17/15/12	17/15/12	16/14/11
Proportional Pressure Control	17/15/12	17/15/12	16/14/11
Servo Valve	16/14/11	16/14/11	15/13/10
Bearings			
Ball Bearing	15/13/10	-	-
Gearbox (Industrial)	17/16/13	-	-
Journal Bearing (High Speed)	17/15/12	-	-
Journal Bearing (Low Speed)	17/15/12	-	-
Roller Bearing	16/14/11	-	-
Actuators			
Cylinders	17/15/12	16/14/11	15/13/10
Vane Motors	20/18/15	19/17/14	18/16/13
Axial Piston Motors	19/17/14	18/16/13	17/15/12
Gear Motors	20/18/14	19/17/13	18/16/13
Radial Piston Motors	20/18/15	19/17/14	18/16/13
Other			
Test Stands	15/13/10	15/13/10	15/13/10
Hydrostatic Transmissions	17/15/13	16/14/11	16/14/11
High Pressure Fuel Inj.	18/16/13	18/16/13	18/16/13

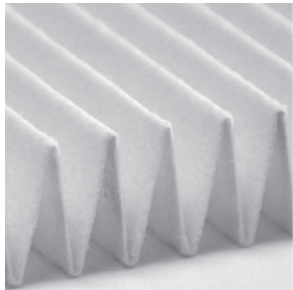
Zinga Filter Media Types

“Z-Glass” Media



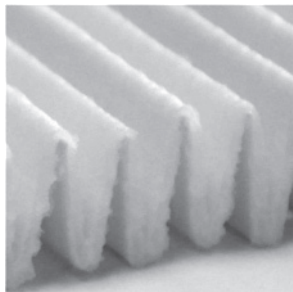
Multi-layered, non-woven glass media that provides the highest levels of depth filtration efficiency and capacity. Higher capacity means longer service life. Coupled with a steel support mesh, “Z-Glass” can withstand higher differential pressures.

Cellulose Media



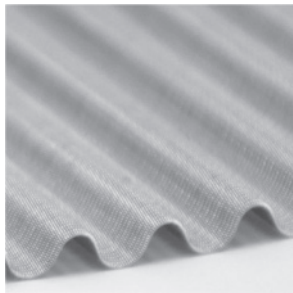
Traditional paper based media that provides a nominal level of depth filtration and capacity. Used with petroleum based fluids only. Some grades of cellulose include a layered glass fiber substrate to provide more efficiency.

AquaZorb™ Media



Water absorbing cellulose based media designed specifically to absorb and retain free water from petroleum based fluids. Commonly used in offline systems, AquaZorb™ will operate until it is fully saturated and ultimately curtail flow through the media. A system bypass valve and service gauge is recommended when using AquaZorb™.

Stainless Steel Mesh



Woven in a variety of precision patterns, stainless steel mesh provides a basic surface type filtration with very low differential pressure. Applications include pump protection and “last chance” valve protection. Stainless steel mesh can be serviced by ultrasonic cleaning.

Mesh	Degree of Filtration
30	560µ
100	141µ
200 x 1400	10µ

Fluid Viscosity & Flow Capacity

In an effort to determine the flow capacity of a filter it is important to consider the viscosity of the fluid being conditioned. Pressure drop (ΔP) produced by flow through a filter is directly proportional to the viscosity of the fluid. At a set flow rate, a fluid with a lower viscosity will produce less pressure drop (and greater flow capacity) than that of a fluid with higher viscosity.

Fluid Viscosity & Temperature

A fluid's viscosity is governed by its temperature. As a fluid's temperature increases, its viscosity decreases. Fluid manufacturer's viscosity charts should be used to determine the viscosity of the fluid at its normal temperature.

Estimating Pressure Drop (ΔP)

All pressure drop data found in this catalog is based on 150 SUS oil. If the fluid to be filtered in your application has a viscosity of 150 SUS and a specific gravity of 0.9 at the system's normal operating temperature, the pressure drop values can be taken directly off the graphs. For fluids that do not match, a quick estimate can be determined by the following:

$\Delta P_{\text{Estimated}}$:

$$= \Delta P_{\text{Graph}} \times \text{System Viscosity (SUS)} / 150 \times \text{System Specific Gravity (SF)} / 0.9$$

Filter Application Guidelines

Filter Type	Maximum ΔP at Normal Operating Temperature	Maximum Line Velocity (ft/sec)
Suction Strainer	1" Hg (1/2 psi)	5
Suction Line Filter	$\leq 50\%$ of max. allowed by pump manufacturer	5
Return Line Filter*	$\leq 50\%$ of filter by-pass valve	15
Pressure Filter	$\leq 50\%$ of filter by-pass valve	25
*Return line filter should always include a by-pass valve. Flow Intensification should also be considered.		

Guide Lines/ Formulas/ Conversions

Diffusers & Suction Strainers

Using tank diffusers helps prevent air entrainment in hydraulic systems. With the proper placement of a baffle between a diffuser and a suction strainer pump cavitation can be curtailed. It is recommended to install diffusers and strainers in the bottom 1/3 of the reservoir.

Filler Breathers

Ingression of contaminants through the air can be reduced by using a breather with a filtration rating equal to or better than the hydraulic system rating. On systems with a fairly constant fluid level in the reservoir, a pressurized filler breather can increase the pump inlet pressure. Generally the more pressure a pump has at its inlet, the quieter it will run.

Useful Formulas & Conversions

$$\text{Pipe Velocity (fps)} = \frac{0.3208 \times \text{Flow Rate (GPM)}}{\text{Internal Area (in}^2\text{)}}$$

$$\text{Pump Outlet Flow (gpm)} = \frac{\text{RPM} \times \text{Pump Displacement in}^3/\text{rev}}{231}$$

$$1 \text{ bar} = 14.5 \text{ psi}$$

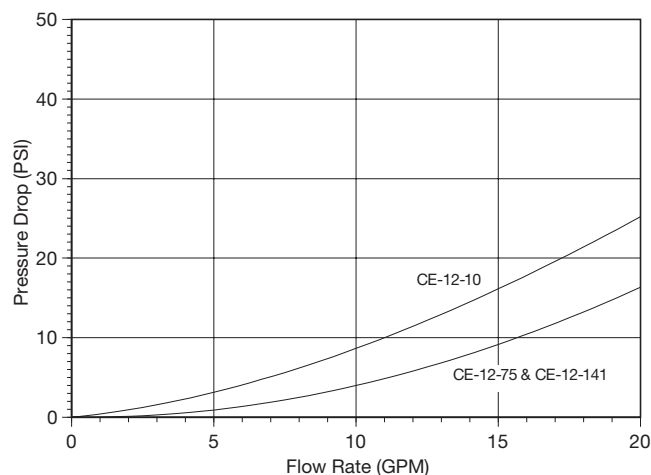
$$1 \text{ psi} = 2.04 \text{ Hg}$$

$$1 \text{ ft H}_2\text{O} = .433 \text{ psi}$$

$$1 \text{ cm}^3 = 0.06102 \text{ in}^3$$

$$1 \text{ L} = 61.0234 \text{ in}^3$$

$$1 \text{ gal (US)} = 231 \text{ in}^3$$



Velocity Chart for Pipe

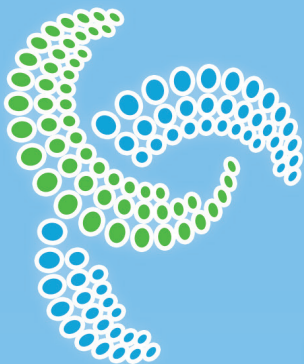
Standard Pipe - Schedule 40							
Pipe Size	Outer Diameter	Inner Diameter	Internal Area	GPM 5 ft/sec	GPM 10 ft/sec	GPM 15 ft/sec	GPM 20 ft/sec
3/8"	.675	.493	.191	3.0	6.0	9.0	12.0
1/2"	.840	.622	.304	4.8	6.0	12.0	19.0
3/4"	1.050	.824	.533	8.4	16.7	25.1	33.4
1"	1.315	1.049	.864	13.5	27.0	40.6	54.1
1 1/4"	1.660	1.380	1.495	23.4	46.8	70.3	93.7
1 1/2"	1.900	1.610	2.036	31.9	63.7	95.6	127.0
2"	2.375	2.067	3.356	52.5	105.0	157.0	210.0
2 1/2"	2.875	2.469	4.788	75.0	150.0	225.0	300.0
3"	3.500	3.068	7.393	116.0	232.0	347.0	463.0
3 1/2"	4.000	3.548	9.886	155.0	310.0	465.0	619.0
4"	4.500	4.026	12.730	199.0	399.0	598.0	797.0

Extra Strong Pipe - XS - Schedule 80							
Pipe Size	Outer Diameter	Inner Diameter	Internal Area	GPM 5 ft/sec	GPM 10 ft/sec	GPM 15 ft/sec	GPM 20 ft/sec
3/8"	.675	.423	.141	2.2	4.4	6.6	8.8
1/2"	.840	.546	.234	3.7	7.3	11.0	14.7
3/4"	1.050	.742	.433	6.8	13.6	20.3	27.1
1"	1.315	.957	.719	11.3	22.5	33.8	45.0
1 1/4"	1.660	1.278	1.283	20.0	40.1	60.2	80.3
1 1/2"	1.900	1.500	1.767	27.7	55.3	83.0	110.0
2"	2.375	1.939	2.953	46.2	92.5	139.0	185.0
2 1/2"	2.875	2.323	4.238	66.4	133.0	199.0	265.0
3"	3.500	2.900	6.605	103.0	207.0	310.0	414.0
3 1/2"	4.000	3.364	8.888	139.0	278.0	418.0	557.0
4"	4.500	3.826	11.500	180.0	360.0	540.0	720.0

Velocity Chart for Tubing & Hose

ASA Tubing							
Tube Size	Wall Thickness	Internal Area	GPM 5 ft/sec	GPM 10 ft/sec	GPM 15 ft/sec	GPM 20 ft/sec	GPM 25 ft/sec
1/2"	.083	.088	1.37	2.74	4.11	5.48	6.85
5/8"	.109	.133	2.08	4.16	6.24	8.32	10.40
3/4"	.109	.222	3.48	6.96	10.44	8.32	17.40
7/8"	.095	.369	5.75	11.50	17.25	23.00	28.75
1"	.109	.480	7.50	15.00	22.50	30.00	37.50
1 1/8"	.120	.615	9.60	19.20	28.80	38.40	48.00
1 1/4"	.120	.801	12.55	25.10	37.66	50.20	62.75
1 1/2"	.120	1.247	19.55	39.10	58.65	78.20	97.75
2"	.250	1.767	27.70	55.40	83.10	110.80	138.50

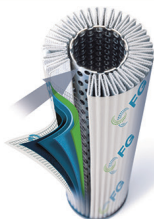
SAE Hose					
Hose Size	Internal Area	GPM 5 ft/sec	GPM 10 ft/sec	GPM 15 ft/sec	GPM 20 ft/sec
3/8"	.110	1.73	3.46	5.19	6.92
1/2"	.196	3.08	6.15	9.23	12.30
5/8"	.307	4.81	9.61	14.42	19.24
3/4"	.442	6.90	13.80	20.70	27.60
7/8"	.601	9.40	18.80	28.20	37.60
1"	.785	12.30	24.60	36.90	49.20
1 1/4"	1.227	19.20	38.40	57.60	76.80
1 1/2"	1.767	27.70	55.40	83.10	110.80
2"	3.142	49.20	98.40	147.60	196.80
2 1/2"	4.909	77.00	154.00	231.00	308.00
3"	7.069	110.50	221.00	331.50	442.00
3 1/2"	9.621	150.50	301.00	451.50	602.00
4"	12.566	197.00	394.00	591.00	788.00



Filtration Group[®]

Industrial

As a member of the Filtration Group family, Zinga is proud to offer a complete range of Hydraulic Lubricant Oil Filters.



PulseShield™ Multilayer Filter Elements

- 30% greater dirt holding capacity
- Patented compression sleeve secures the pleated star geometry media, even under negative effects of short-term backflows



Standard Filter Elements

- Comprehensive range of pressure filters & return line elements
- Available in a wide variety of sizes and media options



Pressure Filters

- Full or partial flow filters installed between the pump and components to be protected
- German engineered, high quality housings with an extensive range of pressures and connections



Return Line Filters

- Prevents the circulation of contaminants that may occur in the tank & pump
- Tank top installation allows for a compact design



Duplex Filters

- Duplex filters allow a filter change without machine shutdown in equipment that has to run continuously
- Patented selector valve for easy single-hand actuation & smooth operation



Automatic Filter

- Self cleaning filter without stopping the process
- Flow rates up to 900M³/Hr
- Retention fineness 30 to 2000 Micron



As part of Filtration Group, Zinga is a global leader in filtration for agriculture and construction, providing filtration and reservoir accessory product solutions for the mobile hydraulic market since 1976. We lead the industry in developing extensive, award winning product lines of filtration solutions that improve oil cleanliness, maximize performance and meet warranty levels for reliability.

Our 110,000 square foot manufacturing facility contains the aluminum die casting foundry, automated spin on canning line, element pleating, strainer and diffuser assembly, hydraulic accessory components, hydraulic manifold department, plus Engineering, Sales and Marketing, and Corporate Management.

A Safer, Healthier and More Productive World
Filtration Group Corporation

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Phone: 608/524.4200

Email: fduszinga@filtrationgroup.com

Website: www.Zinga.com