



# ZINGA

Filtration Group<sup>®</sup>





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



**ZINGA**  
Filtration Group



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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**



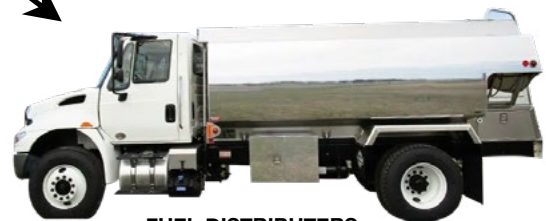
**CONSTRUCTION SITES**



**FUEL CARTS**



**RENTAL FACILITIES**



**FUEL DISTRIBUTERS**



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:

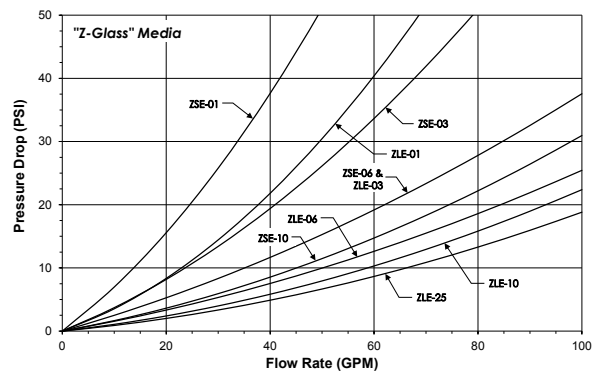
#### Reference:

$\beta_{x\mu(c)} = 200$  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.





# SF100 Z-Guard Series

## Spin-On Fuel Filter Heads

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

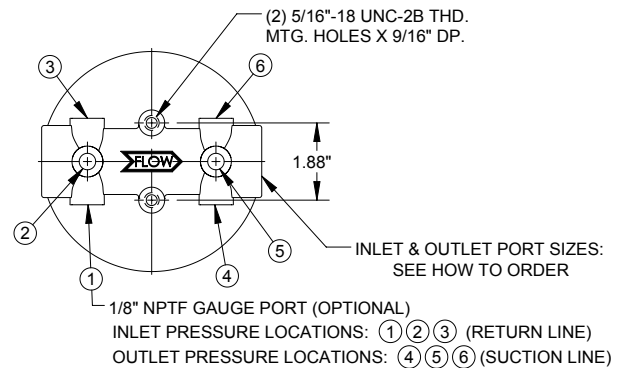
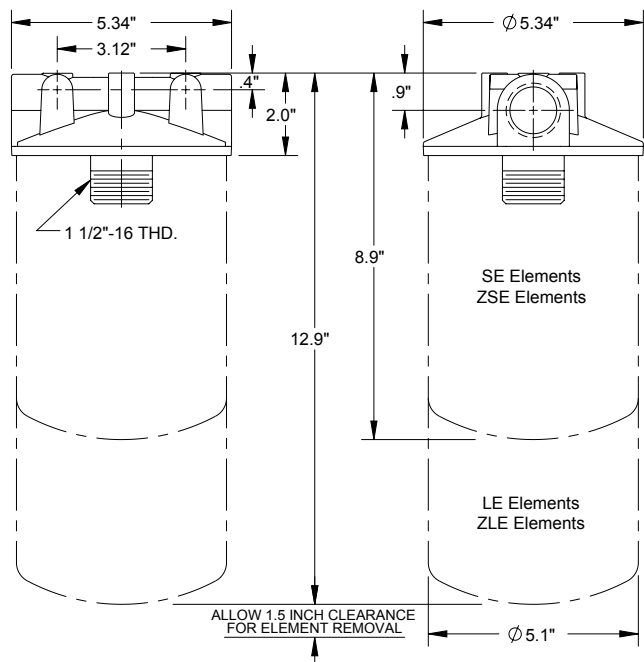
**Flows Up To:** 40 GPM (return) 15 GPM (suction)

**Port Sizes:** 1" NPTF; 1 5/8"-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
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)



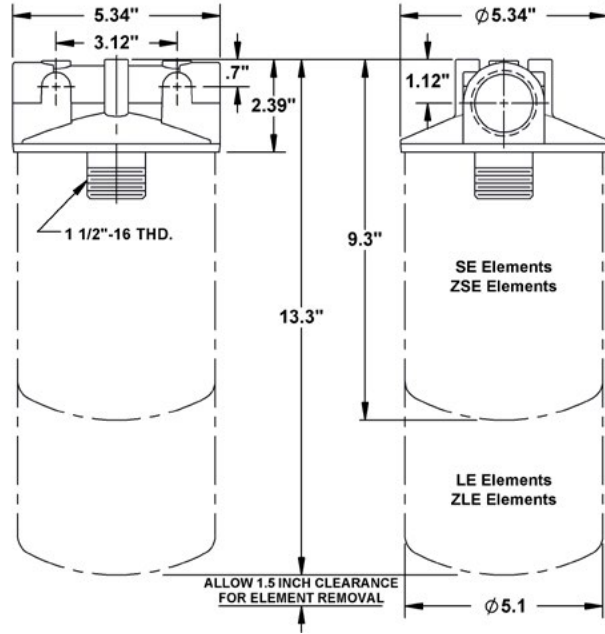
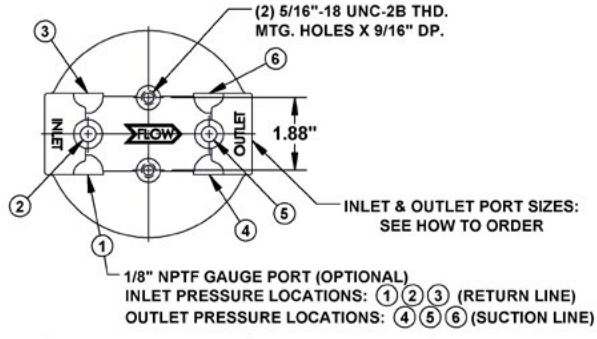


# SF120 Z-Guard Series

## Spin-On Filter Heads

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

- Flows Up To:** 70 GPM (return) 25 GPM (suction)
- Port Sizes:** 1" 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)



# SF150 Z-Guard Series

## Spin-On Filter Heads

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

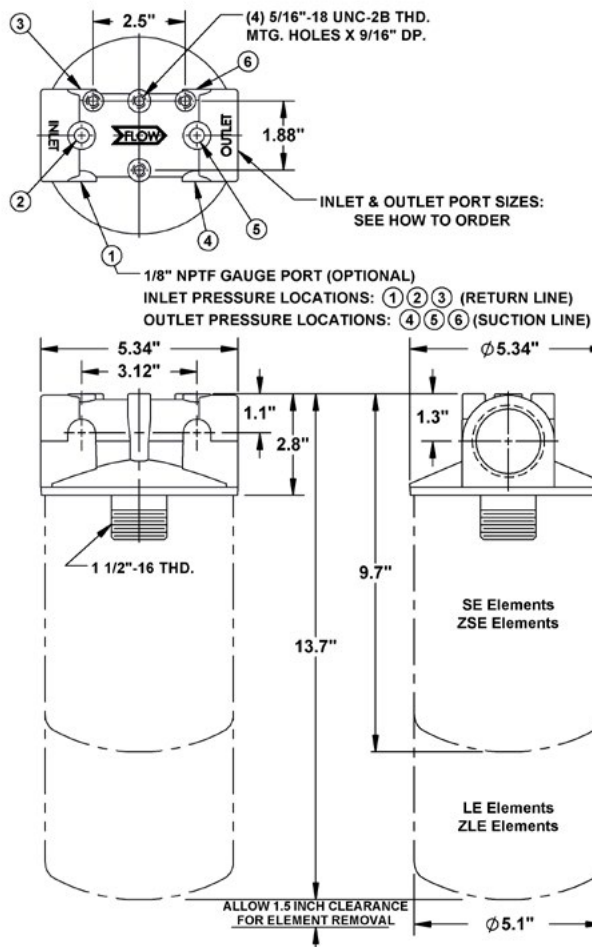
**Flows Up To:** 80 GPM (return) 32 GPM (suction)

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

**Pressure:** 200 PSI Max. Operating

**Temperature:** Up to + 200°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids



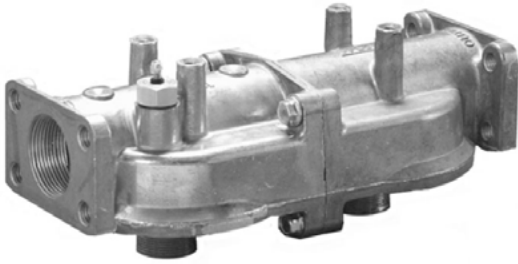
### HOW TO ORDER: SF XXX XX X IMP

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
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 $\Delta P$ Indicator Option

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

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

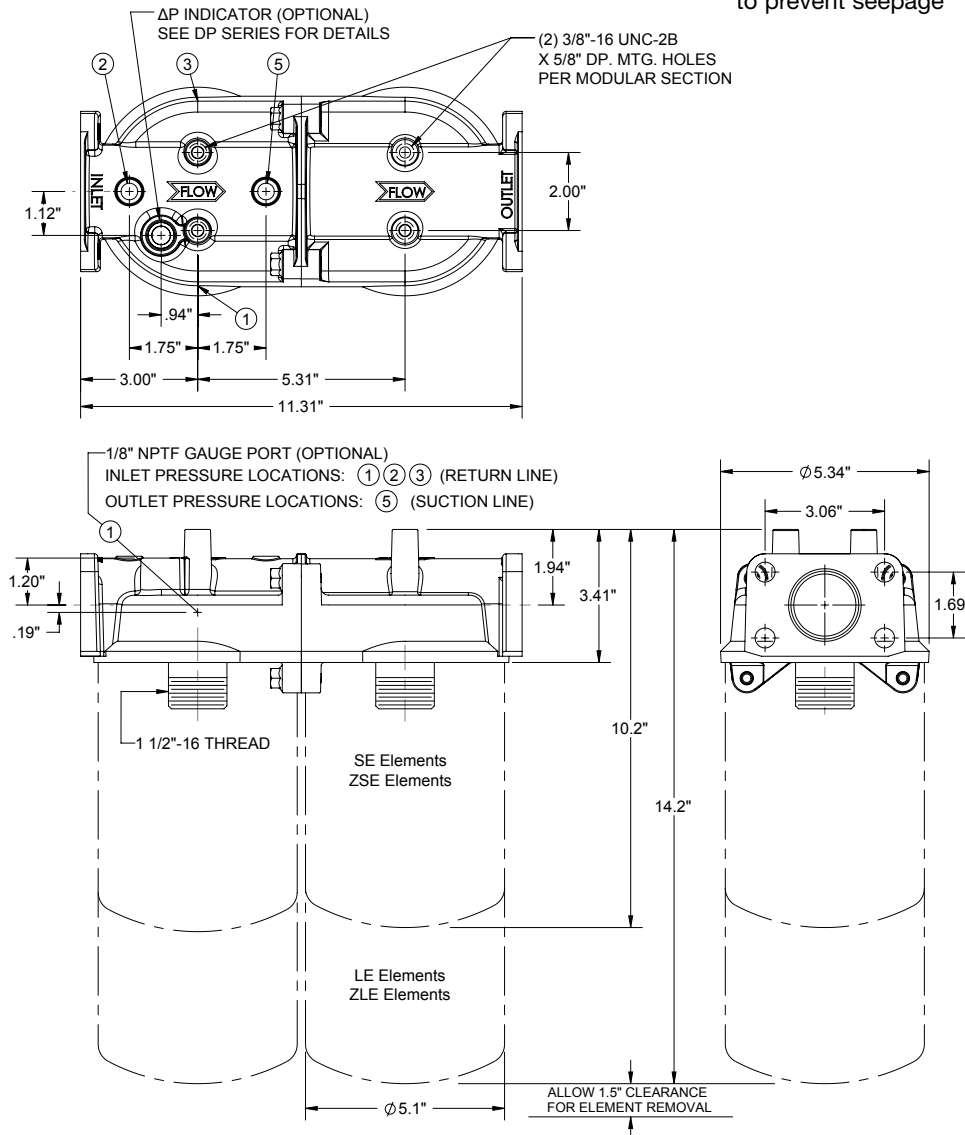
**Port Sizes:** 1 1/2" NPTF w/ 2" (4) Bolt Flange  
1 7/8"-12 UN (SAE-24)

**Pressure:** 200 PSI Max Operating

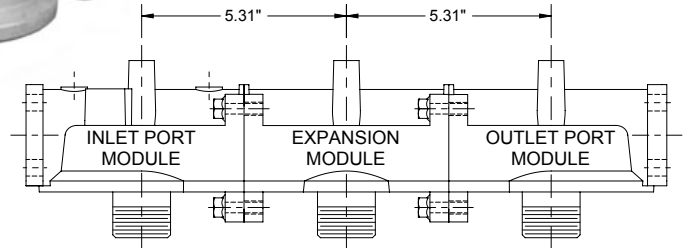
**Temperature:** Up to +200°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

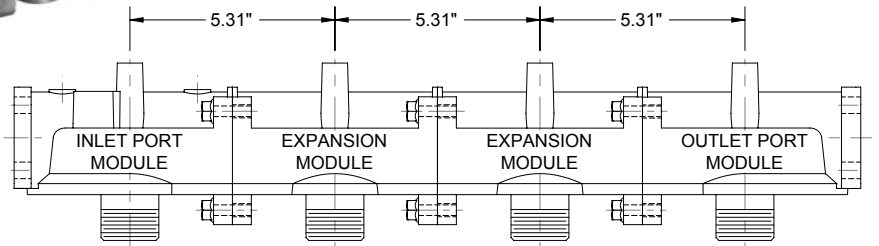
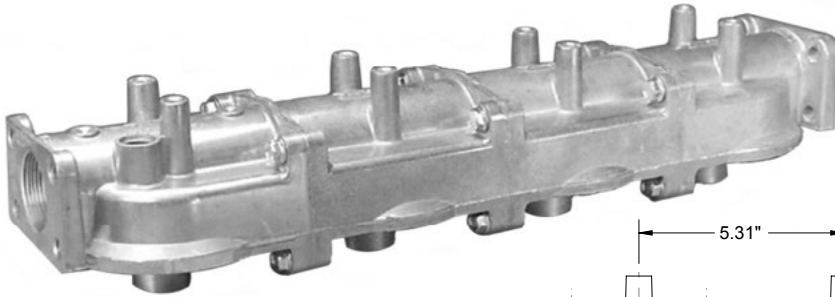
**Features:** Multiple modular heads bolted together. Inlet flow is equally divided among all elements (parallel flow) providing greater flow capacities and longer service life. Impregnated is standard to prevent seepage



### 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

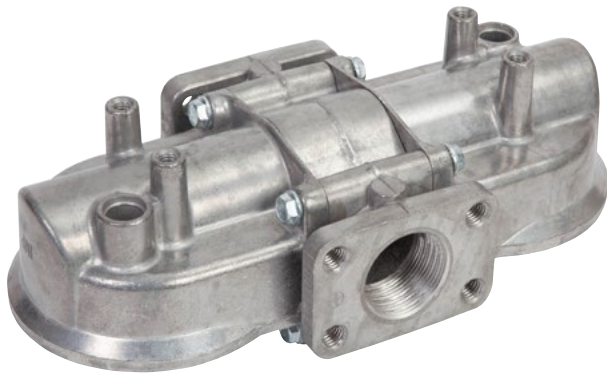
Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

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)

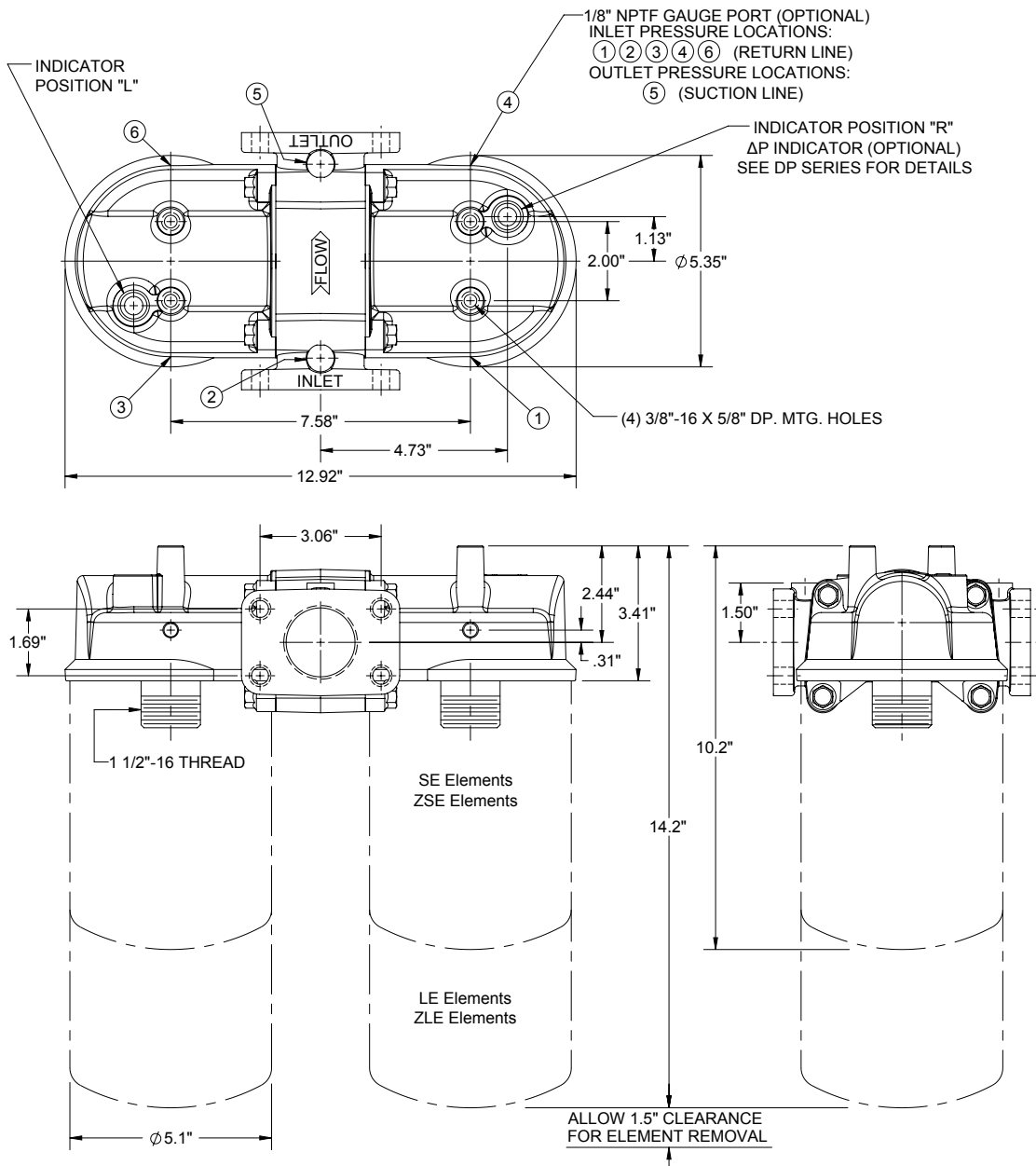
**Port Sizes:** 1 1/2" NPTF w/ 2" (4) Bolt Flange

**Pressure:** 200 PSI Max Operating

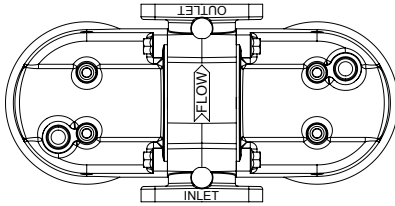
**Temperature:** Up to +200°F Operating

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

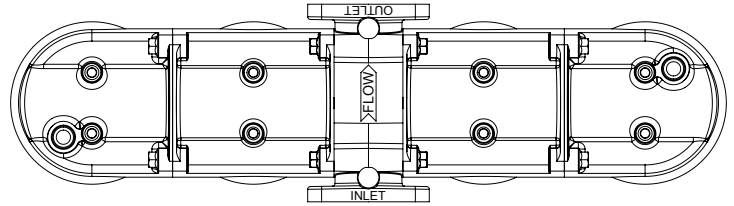
**Features:** Impregnated is standard to prevent seepage



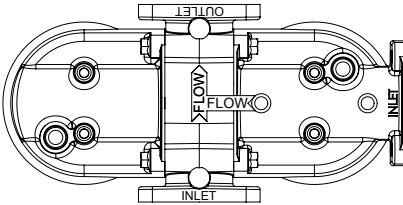
Standard Two Element Filter Head Configuration (Blank)



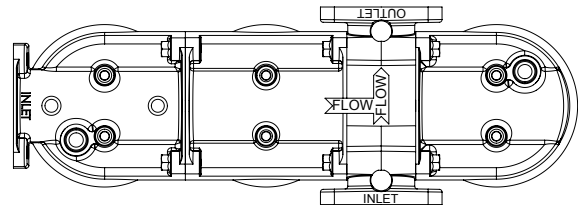
Four Element Filter Configuration "A"



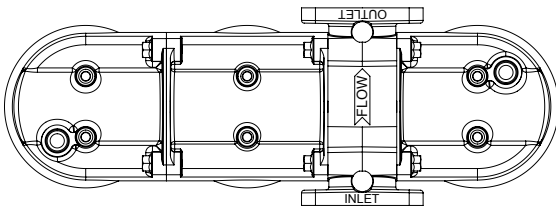
Two Element, Two Inlet Filter Head Configuration "B"



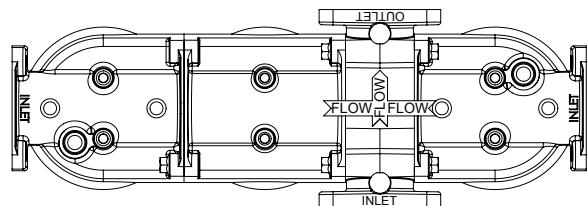
Three Element, 90° Filter Head Configuration "D"



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 TTI Breather offers significant performance improvements over other leading desiccant breathers.

### Value add features:

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

The increased body length of the TTI 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, FBSPP, FNPSM)	4.4"	5.7"	27 cfm / 765 lpm	272 ml / 9.2 fl oz
Titan-1100	1" Sure-Fit (FNPT, FBSPP, FNPSM)	6.5"	5.7"	26 cfm / 736 lpm	500 ml / 16.9 fl oz
Titan-1600	1" Sure-Fit (FNPT, FBSPP, FNPSM)	8.6"	5.7"	25 cfm / 708 lpm	728 ml / 24.6 fl oz
Titan-2100	1" Sure-Fit (FNPT, FBSPP, 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, FBSPP, FNPSM)	4.4"	5.7"	30 cfm / 845 lpm	272 ml / 9.2 fl oz
Titan-1100-SF	1" Sure-Fit (FNPT, FBSPP, FNPSM)	6.5"	5.7"	29 cfm / 821 lpm	500 ml / 16.9 fl oz
Titan-1600-SF	1" Sure-Fit (FNPT, FBSPP, FNPSM)	8.6"	5.7"	28 cfm / 793 lpm	728 ml / 24.6 fl oz
Titan-2100-SF	1" Sure-Fit (FNPT, FBSPP, 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, FBSPP, FNPSM)	4.4"	5.7"	39 cfm / 1104 lpm	272 ml / 9.2 fl oz
Titan-1100-NC	1" Sure-Fit (FNPT, FBSPP, FNPSM)	6.5"	5.7"	36 cfm / 1019 lpm	500 ml / 16.9 fl oz
Titan-1600-NC	1" Sure-Fit (FNPT, FBSPP, FNPSM)	8.6"	5.7"	35 cfm / 991 lpm	728 ml / 24.6 fl oz
Titan-2100-NC	1" Sure-Fit (FNPT, FBSPP, 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.



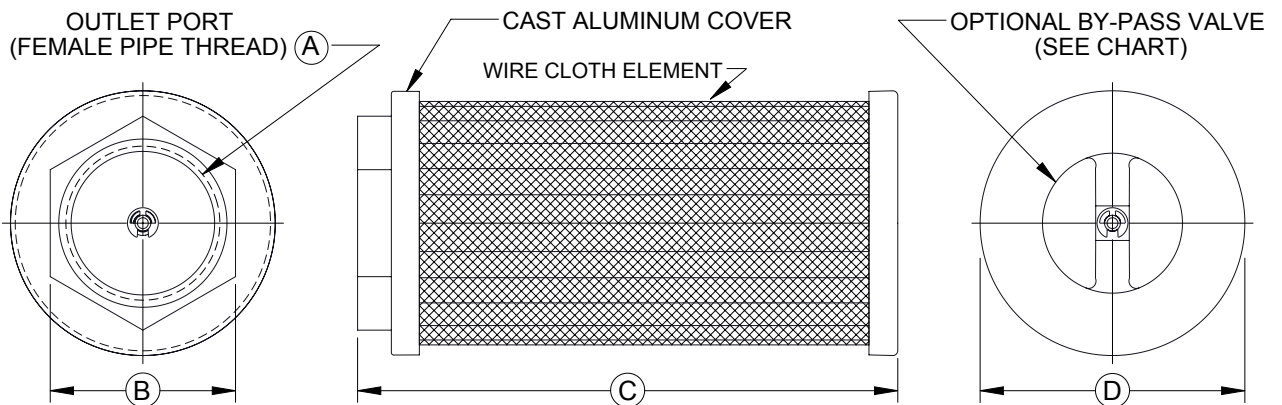
## SS Series Hydraulic Strainers Internally Mounted

**Port Sizes:** 1" through 3" NPTF

**Media:** 100 Mesh Standard

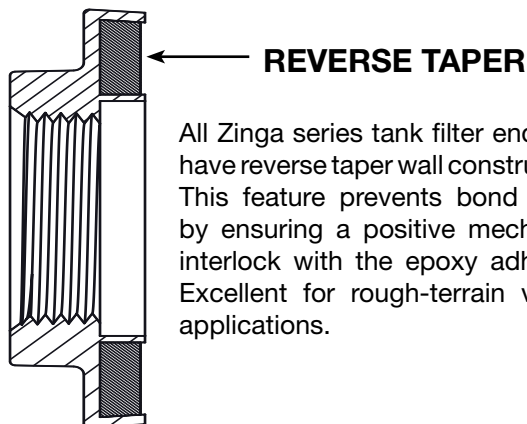
**Optional By-Pass:** 3 PSI or 5 PSI

**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

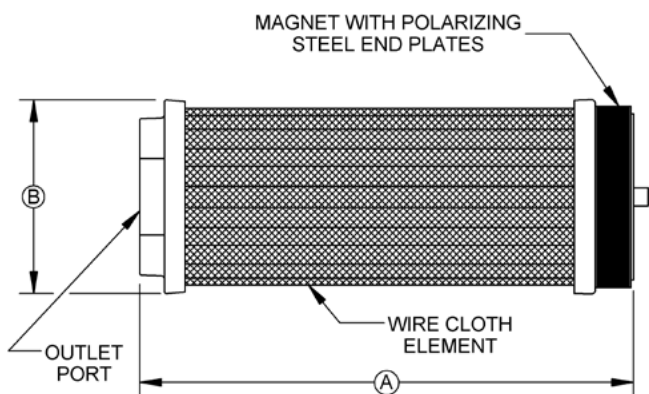
Model		
Code	Wire Mesh	
0	100 Mesh Standard	
3	30 Mesh	
Code	By-Pass Valve	
0	No Valve	
3	3 PSI	
5	5 PSI	



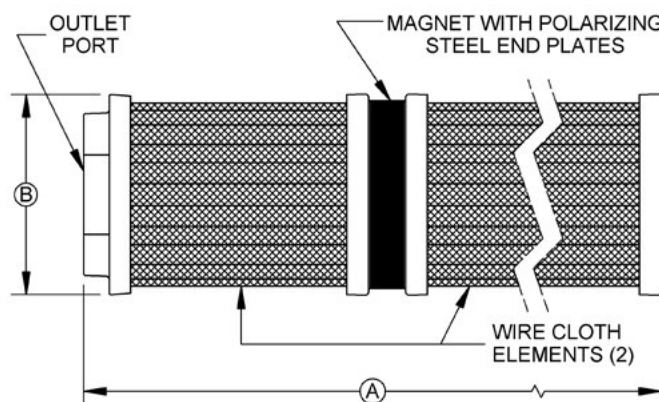
# SS Series Hydraulic Strainers Internally Mounted With Magnetic Filtration

**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

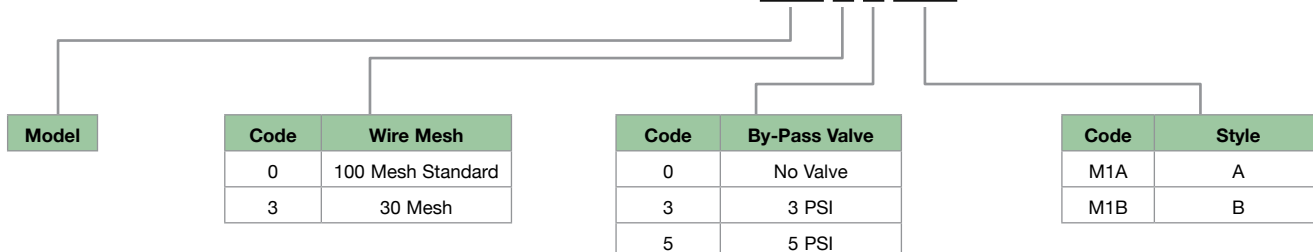
Model	A Outlet Port	Length	Rated Flow @ 5 Ft/Sec	B OD
SS100XM1A	1" NPTF	5.3"	14 GPM	3.2"
SS120XM1A	1 1/4" NPTF	7.3"	23 GPM	3.2"
SS150XM1A	1 1/2" NPTF	9.3"	32 GPM	3.2"
SS200XM1A	2" NPTF	7.9"	53 GPM	4.2"
SS250XM1A	2 1/2" NPTF	10.0"	76 GPM	4.2"
SS300XM1A	3" NPTF	13.2"	116 GPM	4.2"

## Style B

Model	A Outlet Port	Length	Rated Flow @ 5 Ft/Sec	B OD
SS100XM1B	1" NPTF	6.0"	14 GPM	3.2"
SS120XM1B	1 1/4" NPTF	7.0"	23 GPM	3.2"
SS150XM1B	1 1/2" NPTF	9.3"	32 GPM	3.2"
SS200XM1B	2" NPTF	7.9"	53 GPM	4.2"
SS250XM1B	2 1/2" NPTF	10.0"	76 GPM	4.2"
SS300XM1B	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

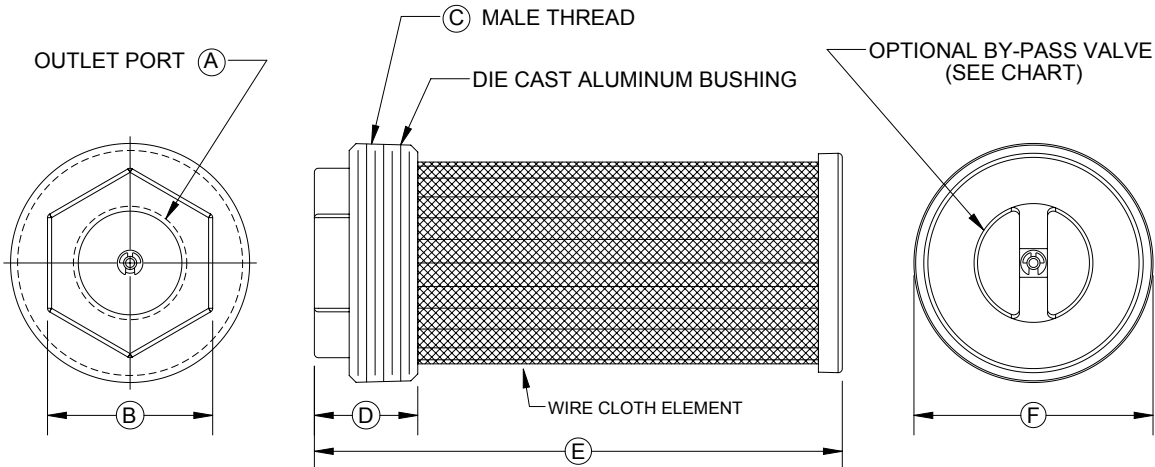
### Externally Mounted

**Port Sizes:** 3/8" through 3" NPTF

**Media:** 100 Mesh Standard

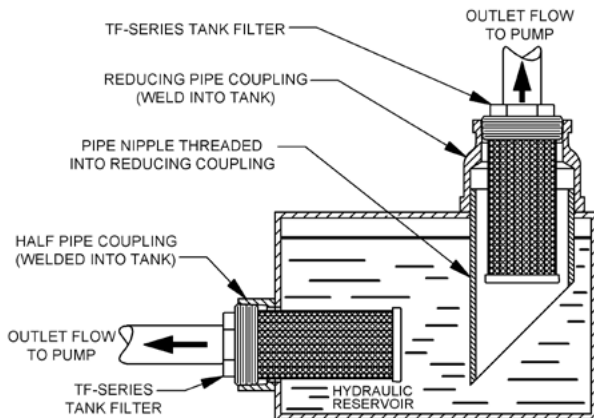
**Optional By-Pass:** 3 PSI (6" Hg) or 5 PSI (10" Hg)

**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



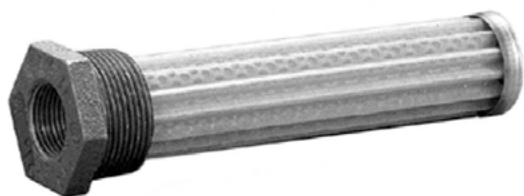


# TFS Series

## Hydraulic Strainers

### Externally Mounted

### With Steel Bushing

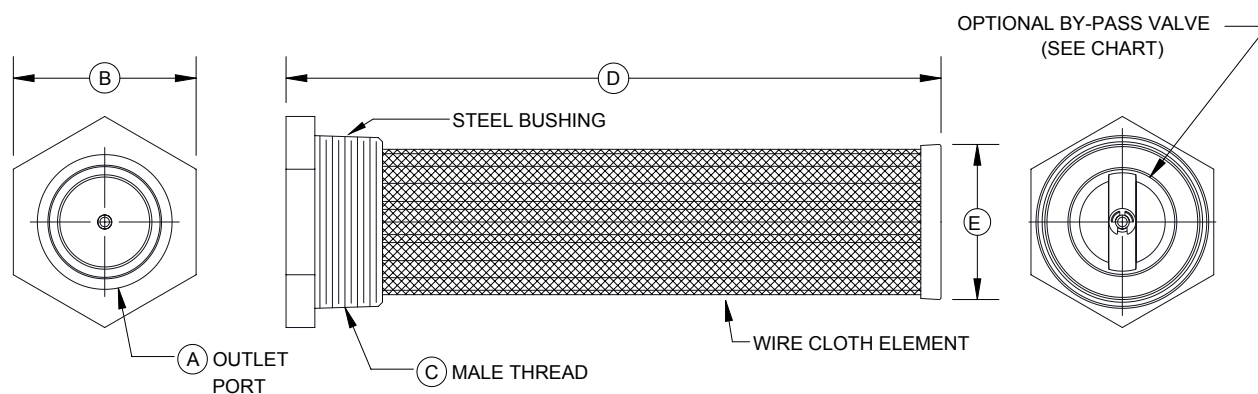


**Port Sizes:** 1/2" through 3" NPTF

**Media:** 100 Mesh Standard

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

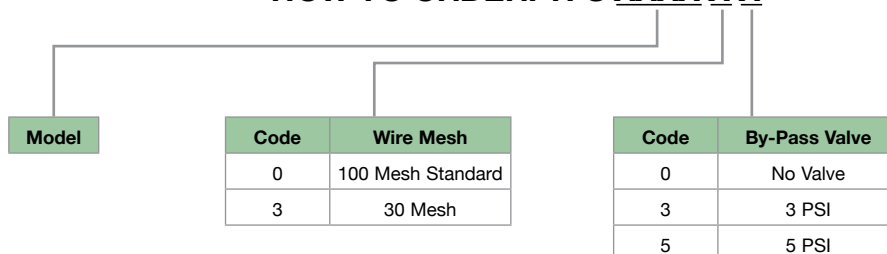
**Operating Temperature:** Up to 250°F



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 XX





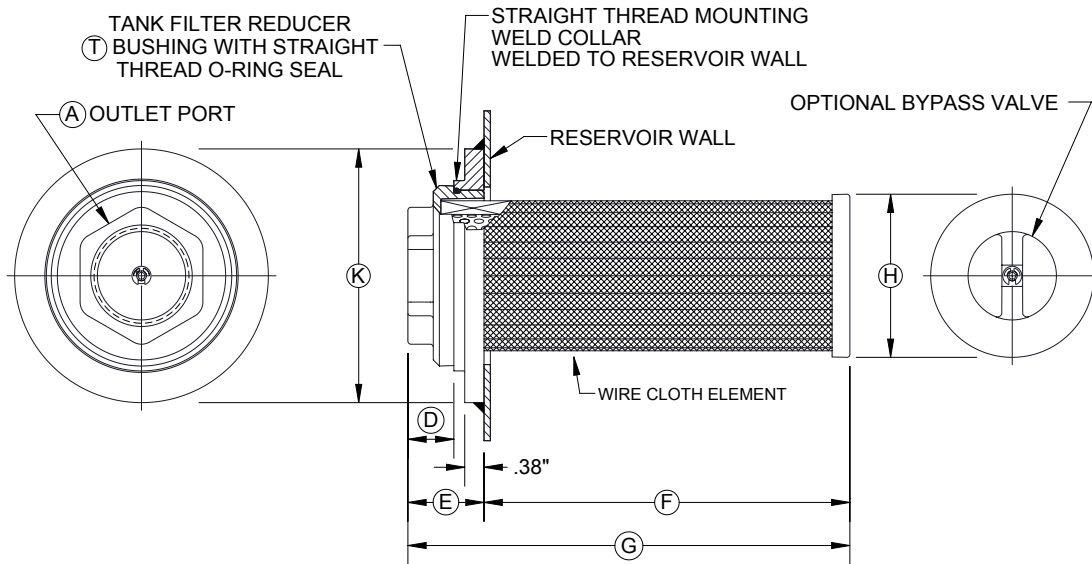
# TFS Series Hydraulic Strainers Externally Mounted With Steel Bushing & O-Ring Seal

**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.

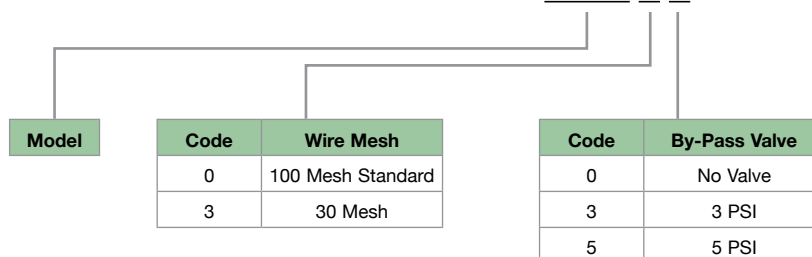
**Notes:**

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 XX**





# TF Series Hydraulic Strainers Externally Mounted With Magnetic Filtration

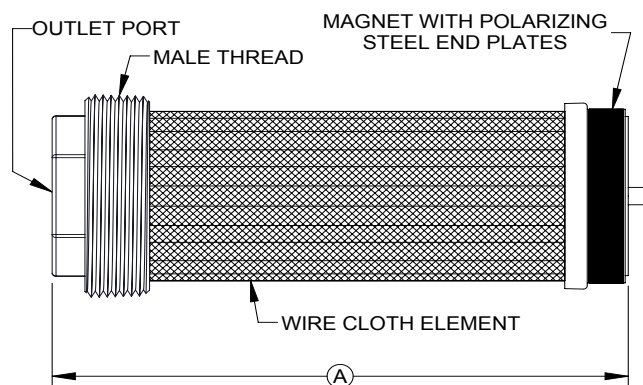
**Port Sizes:** 1" to 3" NPTF, SAE-20, SAE-24

**Media:** 100 Mesh Standard

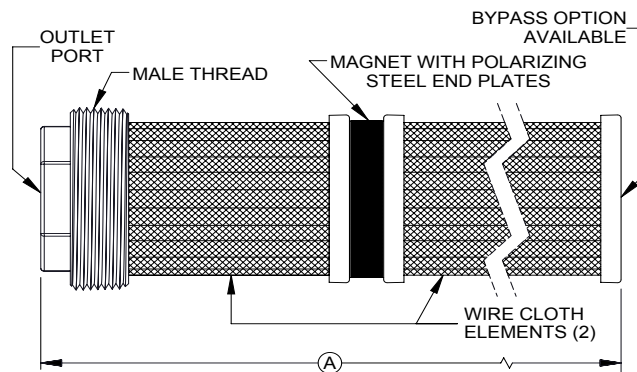
**Optional By-Pass:** 3 PSI (6" Hg) or 5 PSI (10" Hg)

**Operating Temperature:** Up to 250°F

**Style A**



**Style B**



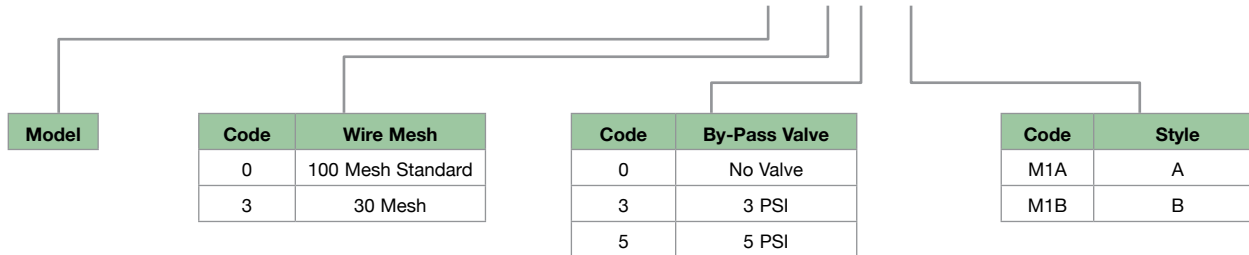
**Style A**

**Style B**

Model	Outlet Port	External Thread	A Length	Rated Flow @ 5 Ft/Sec
TF1230XXM1A	1 1/4" NPTF	3" NPTF	7.3"	23 GPM
TF1630XXM1A	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

Model	Outlet Port	External Thread	A Length	Rated Flow @ 5 Ft/Sec
TF1230XXM1B	1 1/4" NPTF	3" NPTF	7.3"	23 GPM
TF1630XXM1B	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

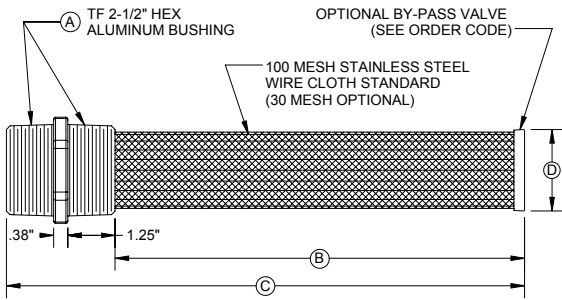
**Port Sizes:** 2" NPTF

**Media:** 100 Mesh Standard

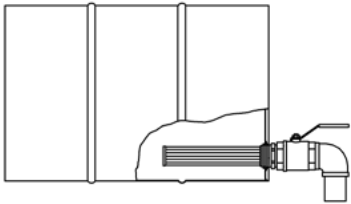
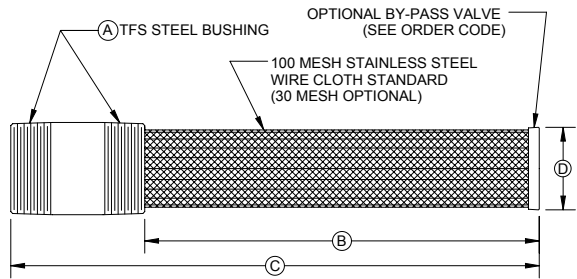
**Optional By-Pass:** 3 PSI (6" Hg) or 5 PSI (10" Hg)

**Operating Temperature:** Up to 250°F

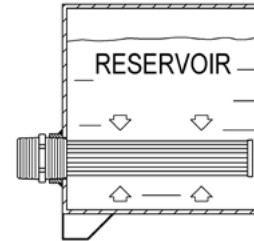
### TF



### TFS



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



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

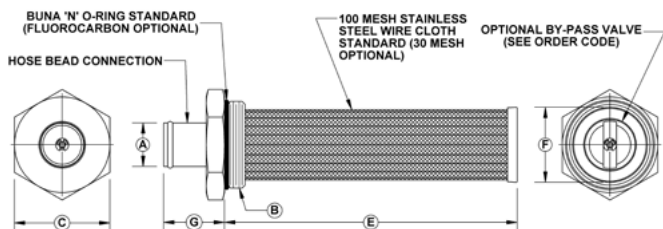




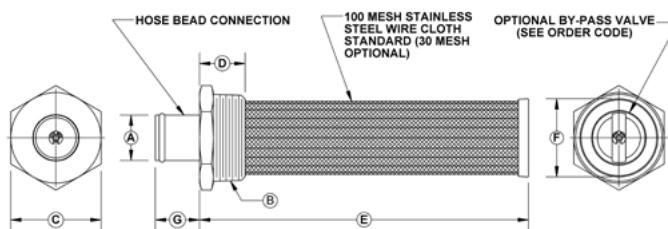
# BTF Series Hydraulic Strainers Externally Mounted Hose Bead Connection

**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



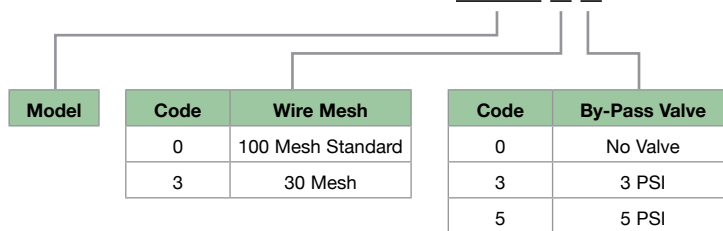
Model	A	B Thread	C Hex	E Len.	F Dia.	G Len.	Rated Flow @ 5 Ft/Sec
BTF0716XX	.8"	1 5/8"-12 UN-2A	1.88"	6.4"	1.5"	1.6"	5 GPM
BTF1018XX	1.0"	1 7/8"-12 UN-2A	2.13"	6.4"	1.7"	1.7"	10 GPM
BTF1225XX	1.3"	2 1/2"-12 UN-2A	2.75"	8.4"	2.7"	1.9"	16 GPM

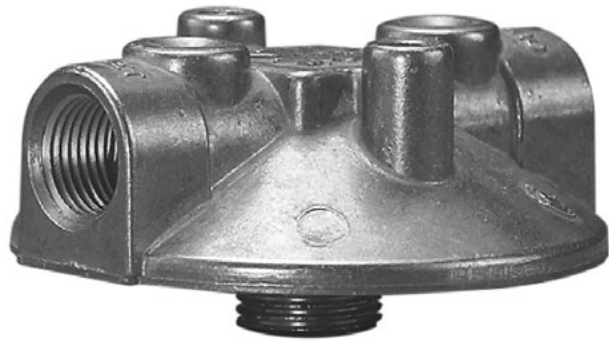
Model	A	B Thread	C Hex	D Len.	E Len.	F Dia.	G Len.	Rated Flow @ 5 Ft/Sec
BTF0712XX	.8"	1 1/4" NPTF	1.75"	1.2"	7.0"	1.5"	1.6"	5 GPM
BTF1015XX	1.0"	1 1/2" NPTF	2.00"	1.2"	7.0"	1.7"	1.2"	10 GPM
BTF1220XX	1.3"	2" NPTF	2.50"	1.3"	9.1"	2.7"	1.3"	16 GPM

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	2.75"
WC1018	1 7/8"-12 UN-2B	3.06"
WC1225	2 1/2"-12 UN-2B	3.88"
Please Order Separately		

### HOW TO ORDER: BTF XXXX XX





# BF Series

## Spin-On Filter Heads

Used with BE Filter Elements

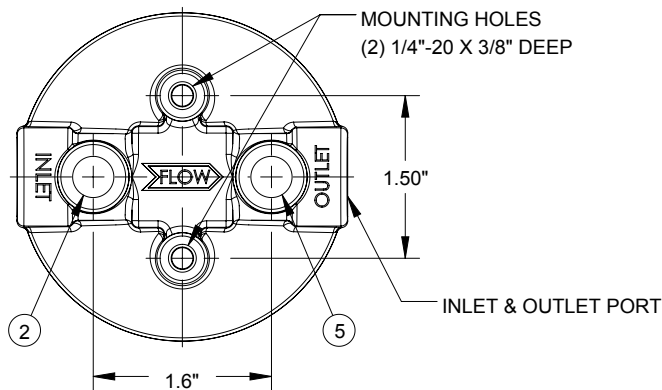
**Flows Up To:** 7 GPM (return) 2 GPM (suction)

**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



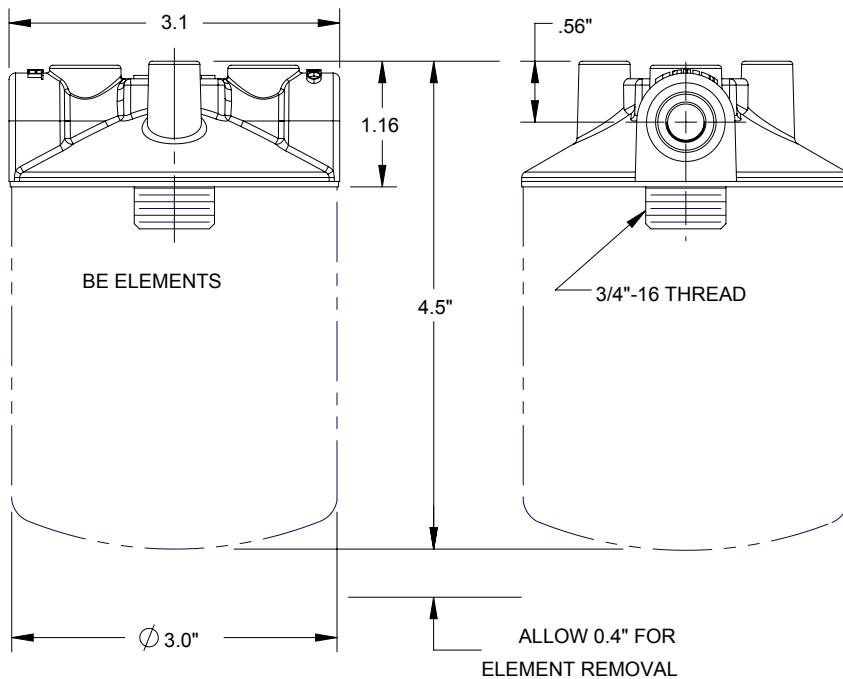
### HOW TO ORDER: BF XX 0

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

1/8" NPTF GAUGE PORTS

INLET PRESSURE LOCATION: ② (RETURN LINE)

OUTLET PRESSURE LOCATION: ⑤ (SUCTION LINE)





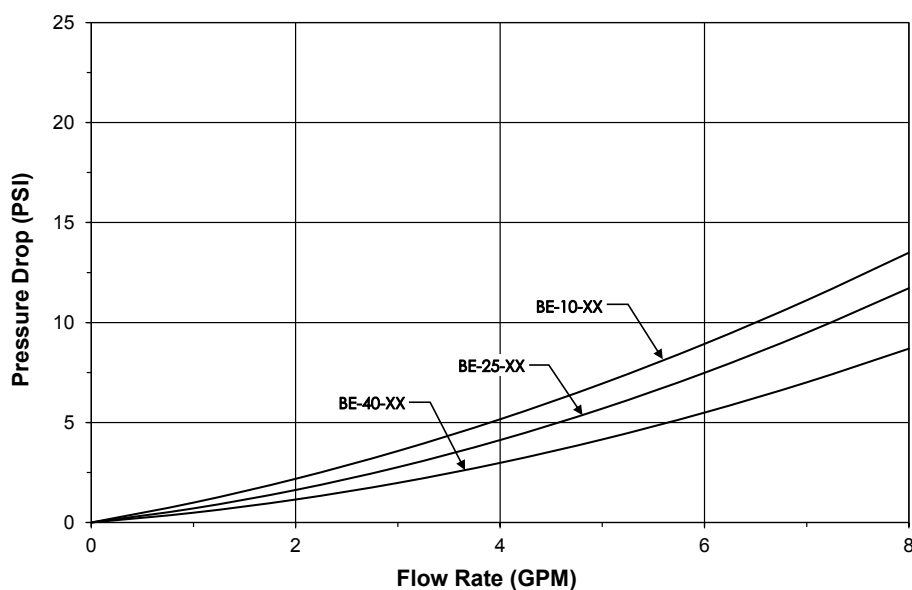
## BE Series

### 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:

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)

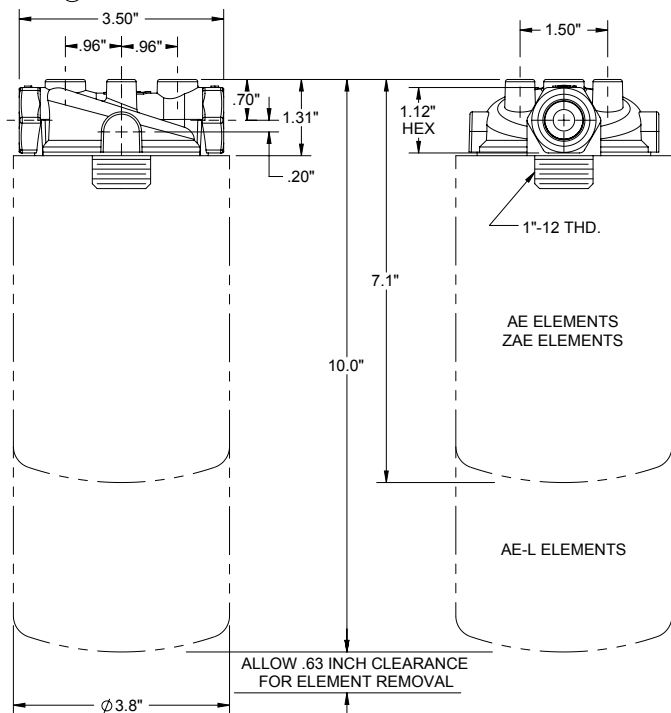
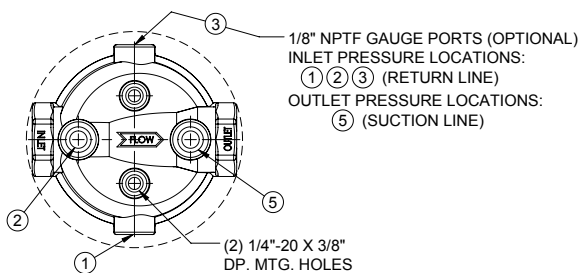
**Port Sizes:** 1/2" NPTF; 3/4"-16 UN(SAE-8)

**Pressure:** 200 PSI Max. Operating

**Temperature:** Up to + 250°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

SPIN-ONS



### HOW TO ORDER: ZAF XX XX XXX

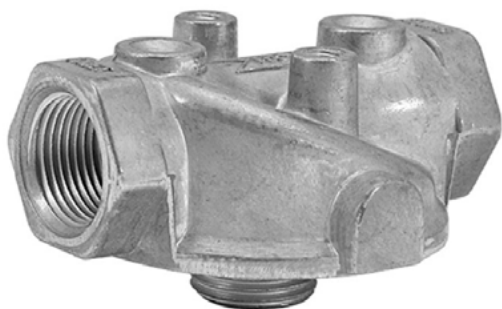
Code	Inlet & Outlet Ports
05	1/2" NPTF
08	3/4"-16 UN (SAE-8)

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)







# ZAF07 Series

## Spin-On Filter Heads

Used with AE & ZAE Filter Elements

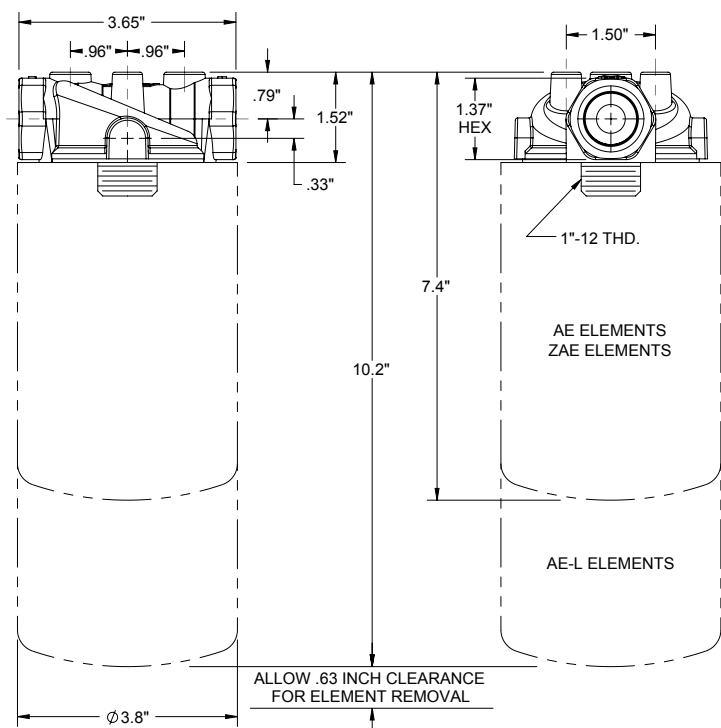
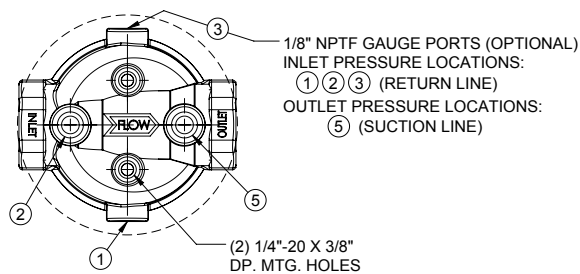
**Flows Up To:** 25 GPM (return) 5 GPM (suction)

**Port Sizes:** 3/4" NPTF; 1 1/16"-12 UN(SAE-12)

**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
07	3/4" NPTF
11	1 1/16" - 12 UN (SAE-12)

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)



# ZAF10 Series

## Spin-On Filter Heads

Used with AE & ZAE Filter Elements

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

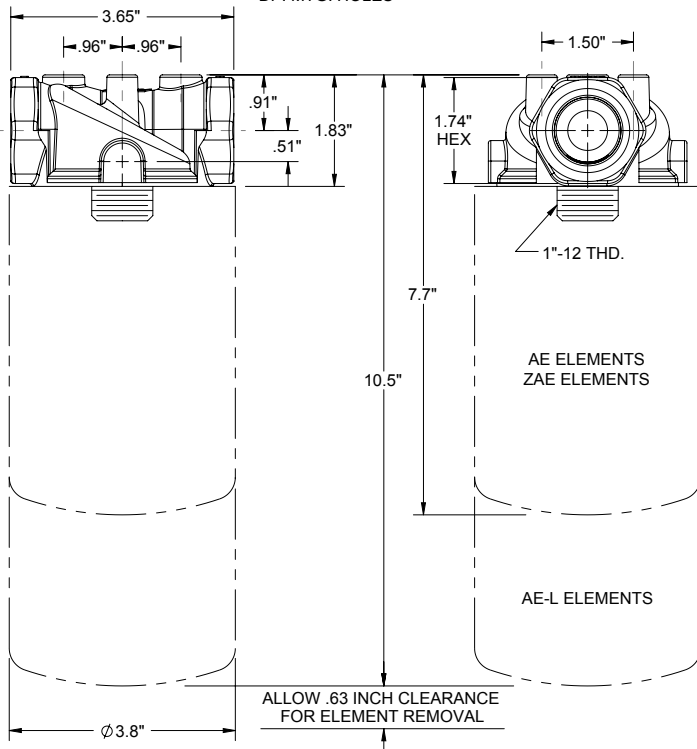
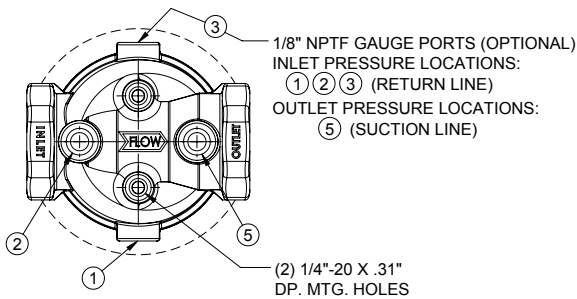
**Port Sizes:** 1" NPTF; 1 5/16"-12 UN(SAE-16)

**Pressure:** 250 PSI Max. Operating

**Temperature:** Up to + 250°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

SPIN-ONS



### 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  
 **$\Delta P$  max:** 50 psid  
**Temperature:** Up to +250°F Operating  
**Applications:** Petroleum based fluids

SPIN-ONS

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	Strn. Steel Mesh	-	5.8"
AE25 "25 Micron"	11	27	White/Black	Cellulose	-	5.8"

### Application Data:

Reference:

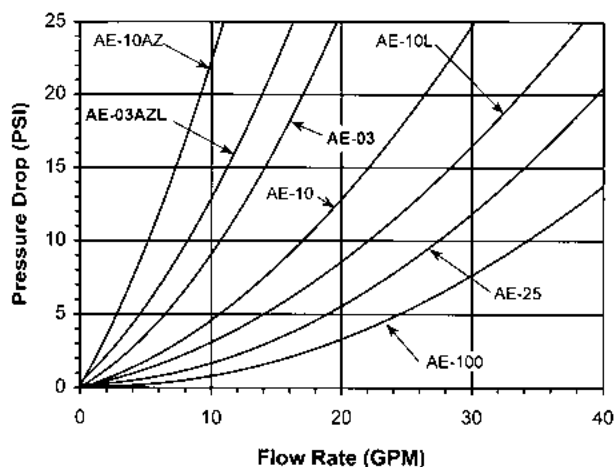
$\beta_{x\mu(c)} = 2$  represents 50% efficiency at particle size "x" micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$  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.

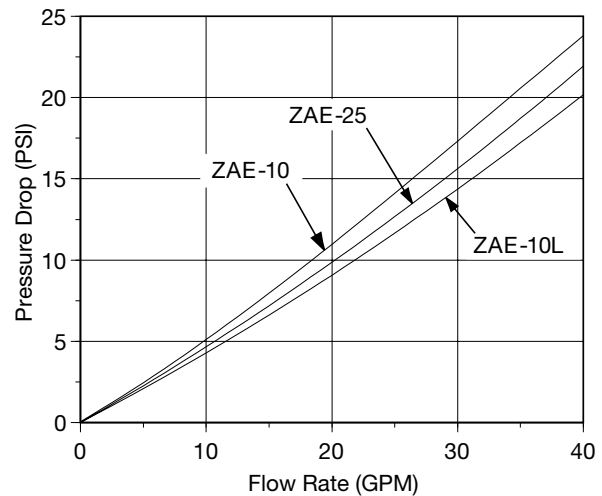




## ZAE Series Z-Glass Media Spin-On Filter Elements Used with ZAF Filter Heads

**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.



# VAF Series

## Spin-On Filter Heads

Used with VE Filter Elements



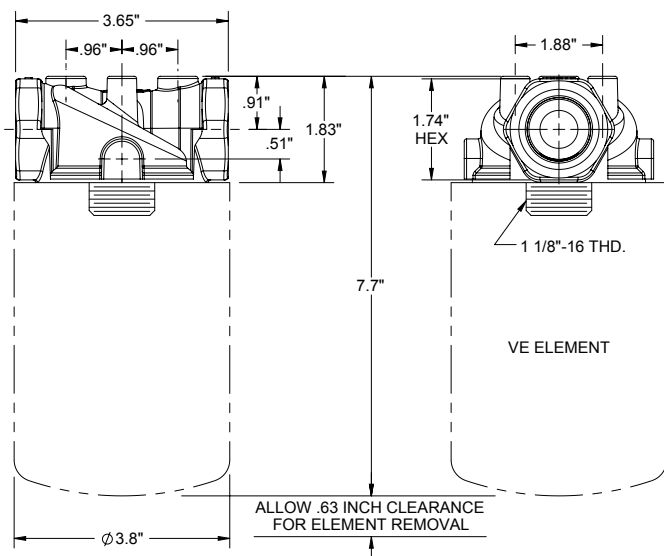
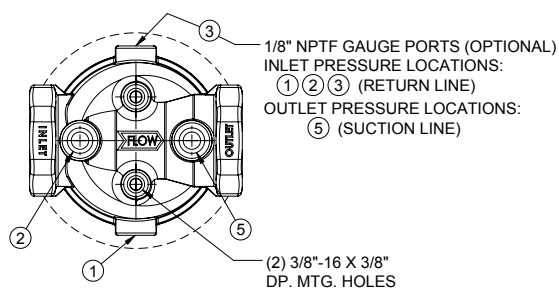
**Flows Up To:** 32 GPM (return) 14 GPM (suction)

**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

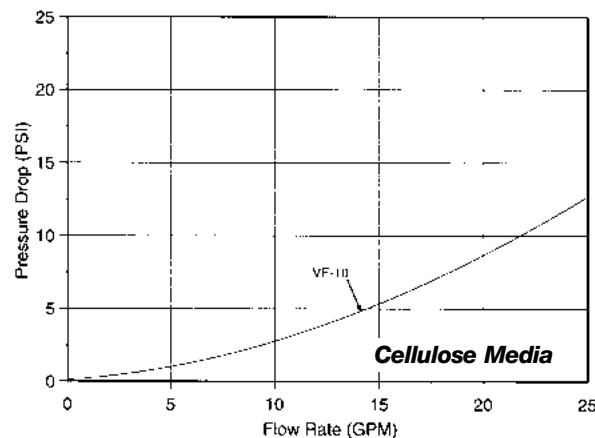
**Operating Pressure:** 250 PSI Max. Operating

**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

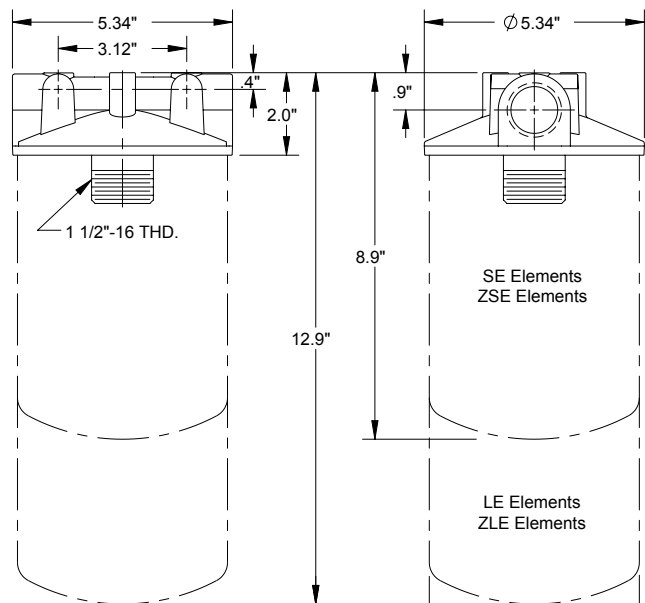
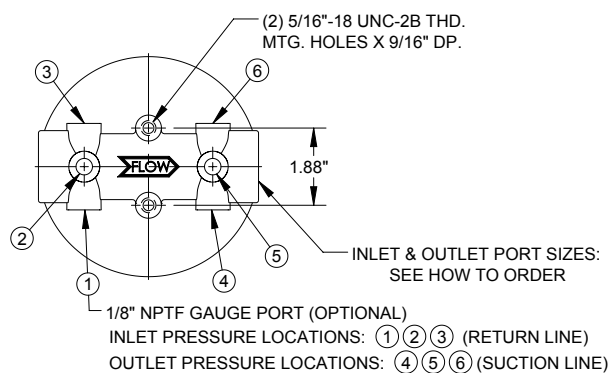
**Flows Up To:** 40 GPM (return) 15 GPM (suction)

**Port Sizes:** 1" NPTF; 1 5/8"-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
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)

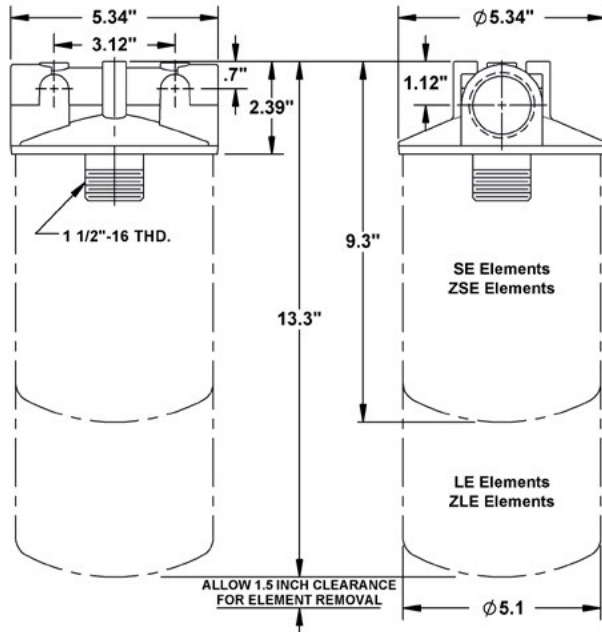
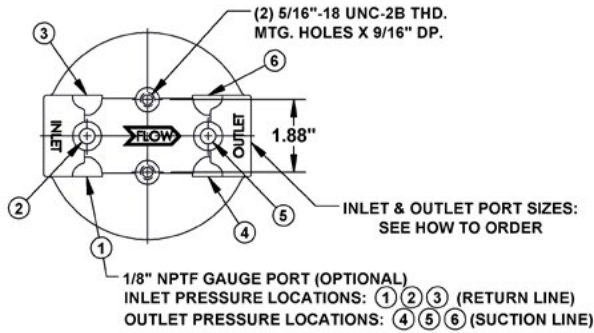
**Port Sizes:** 1" NPTF; 1 5/8"-12 UN(SAE-20)

**Pressure:** 200 PSI Max. Operating

**Temperature:** Up to + 250°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

SPIN-ONS



### 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

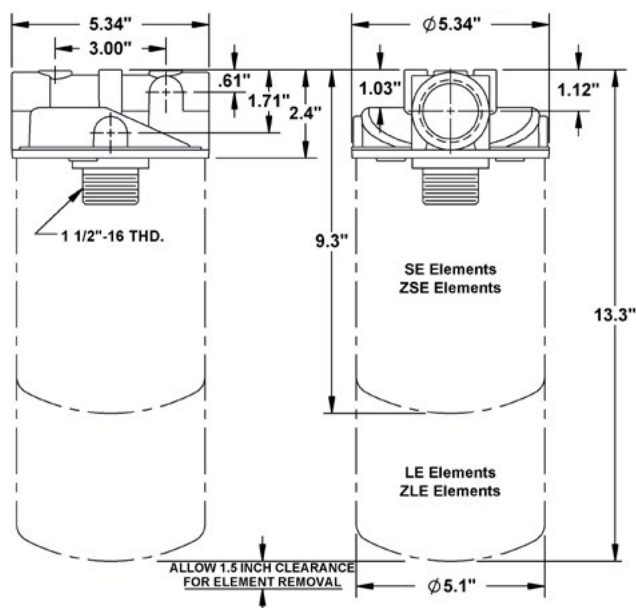
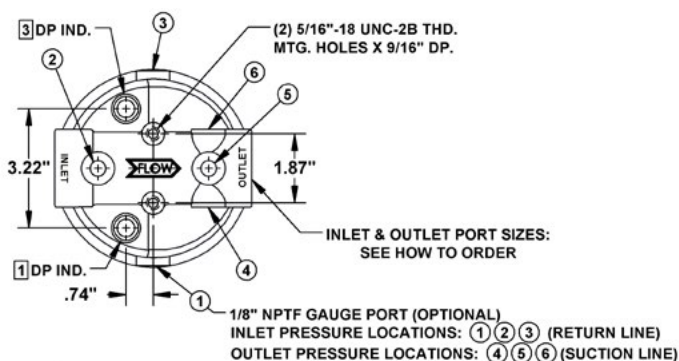
**Flows Up To:** 70 GPM (return) 25 GPM (suction)

**Port Sizes:** 1" 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



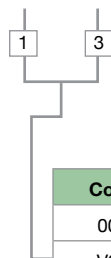
### HOW TO ORDER: SF XXX XX X XXX XXX

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 (Reurn 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

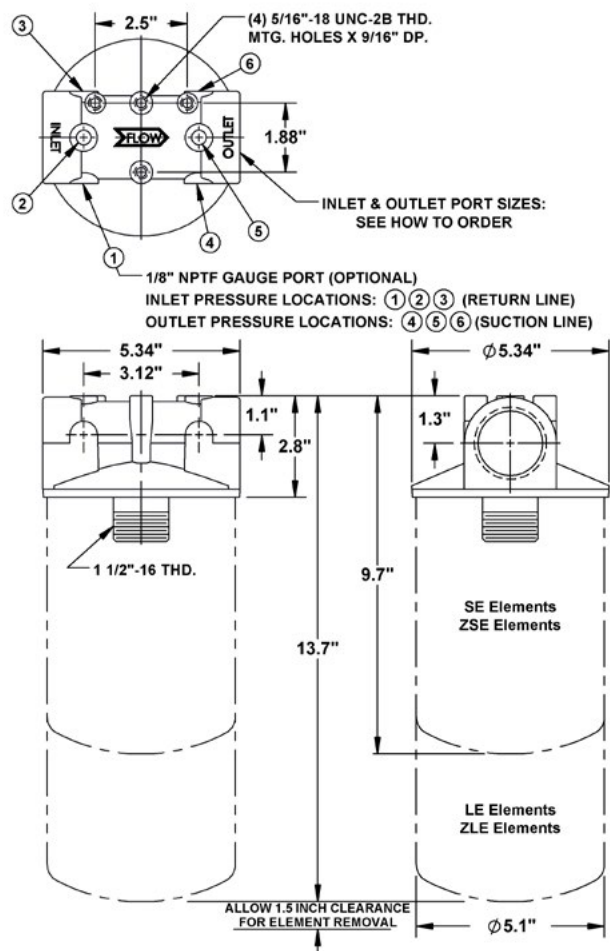
**Flows Up To:** 80 GPM (return) 32 GPM (suction)

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

**Pressure:** 200 PSI Max. Operating

**Temperature:** Up to + 200°F Operating

**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids



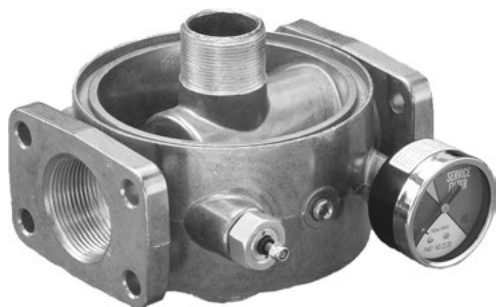
### HOW TO ORDER: SF XXX XX X

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)



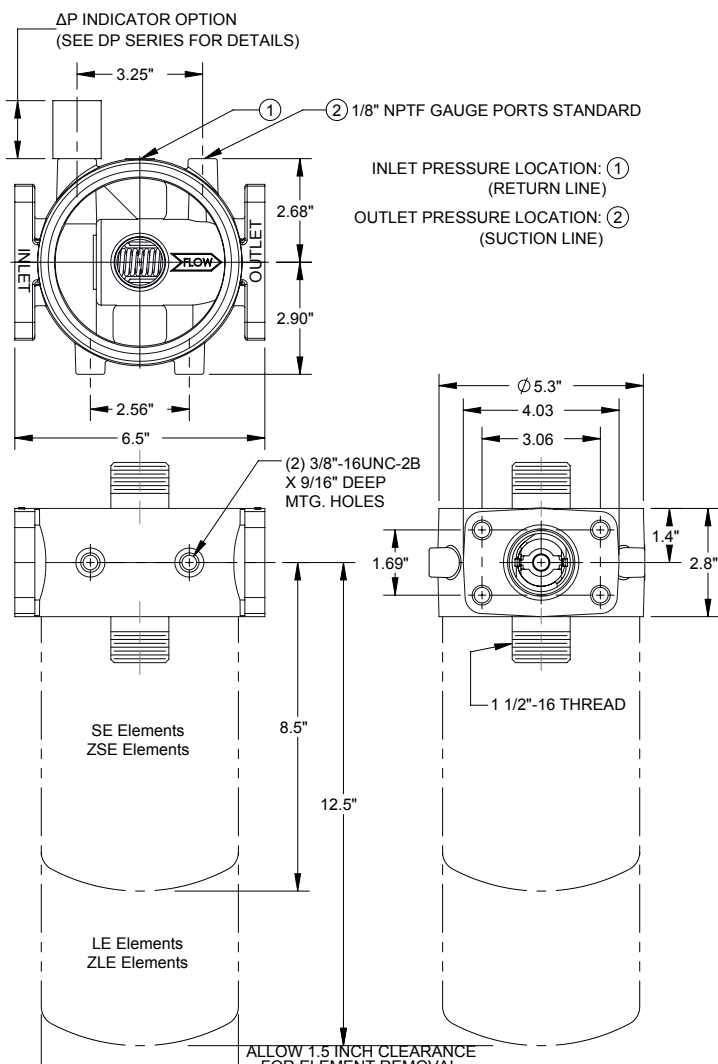


# DF15 Series

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

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

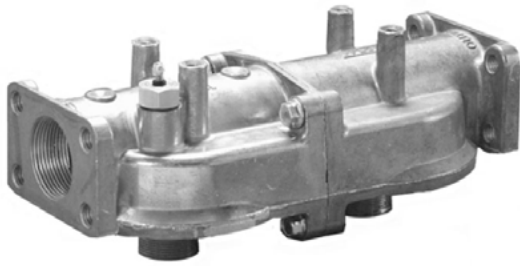
- Flows Up To:** 120 GPM (return) 50 GPM (suction)
- Port Sizes:** 1 1/2" NPTF w/ 2" (4) Bolt Flange
- Pressure:** 200 PSI Max. Operating
- Temperature:** Up to + 200°F Operating
- Applications:** Petroleum based fluids  
Consult factory for synthetic fluids



### 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 $\Delta P$ 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)

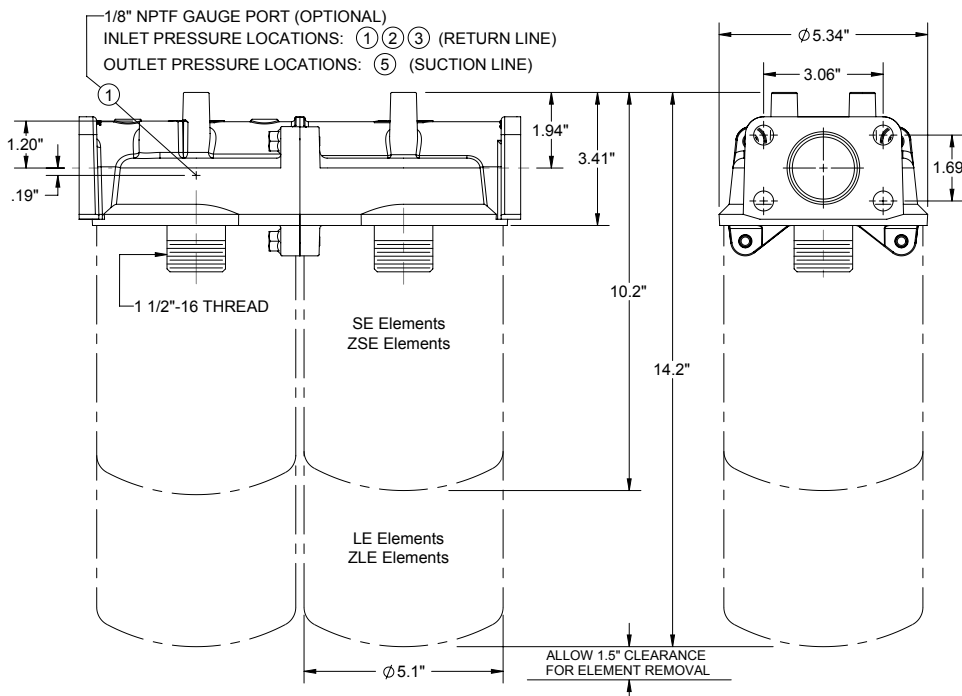
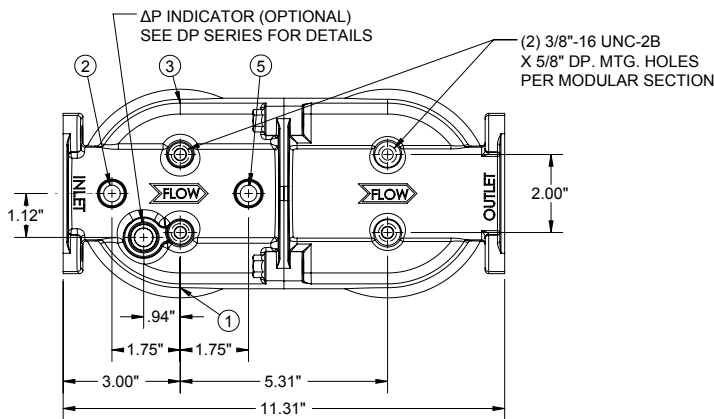
**Pressure:** 200 PSI Max Operating

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

**Material:** Resin Impregnated Aluminum

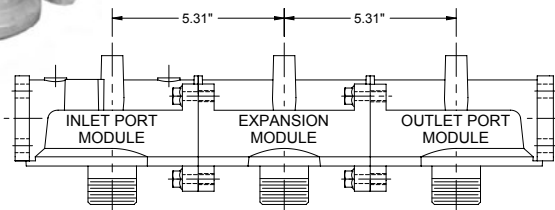
**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

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

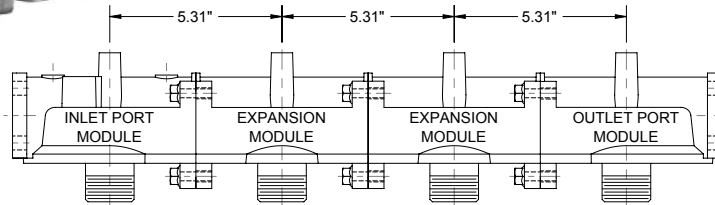


# MF Series Continued

## 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

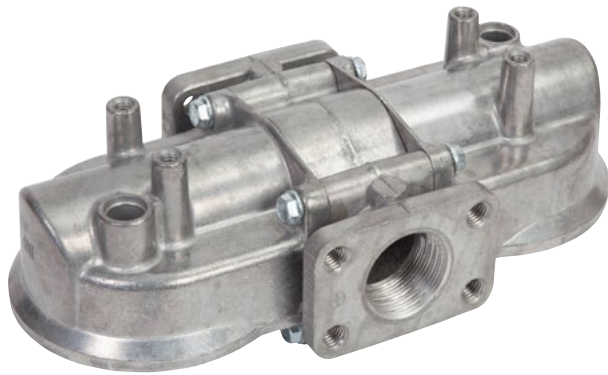
Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI

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 $\Delta P$ 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

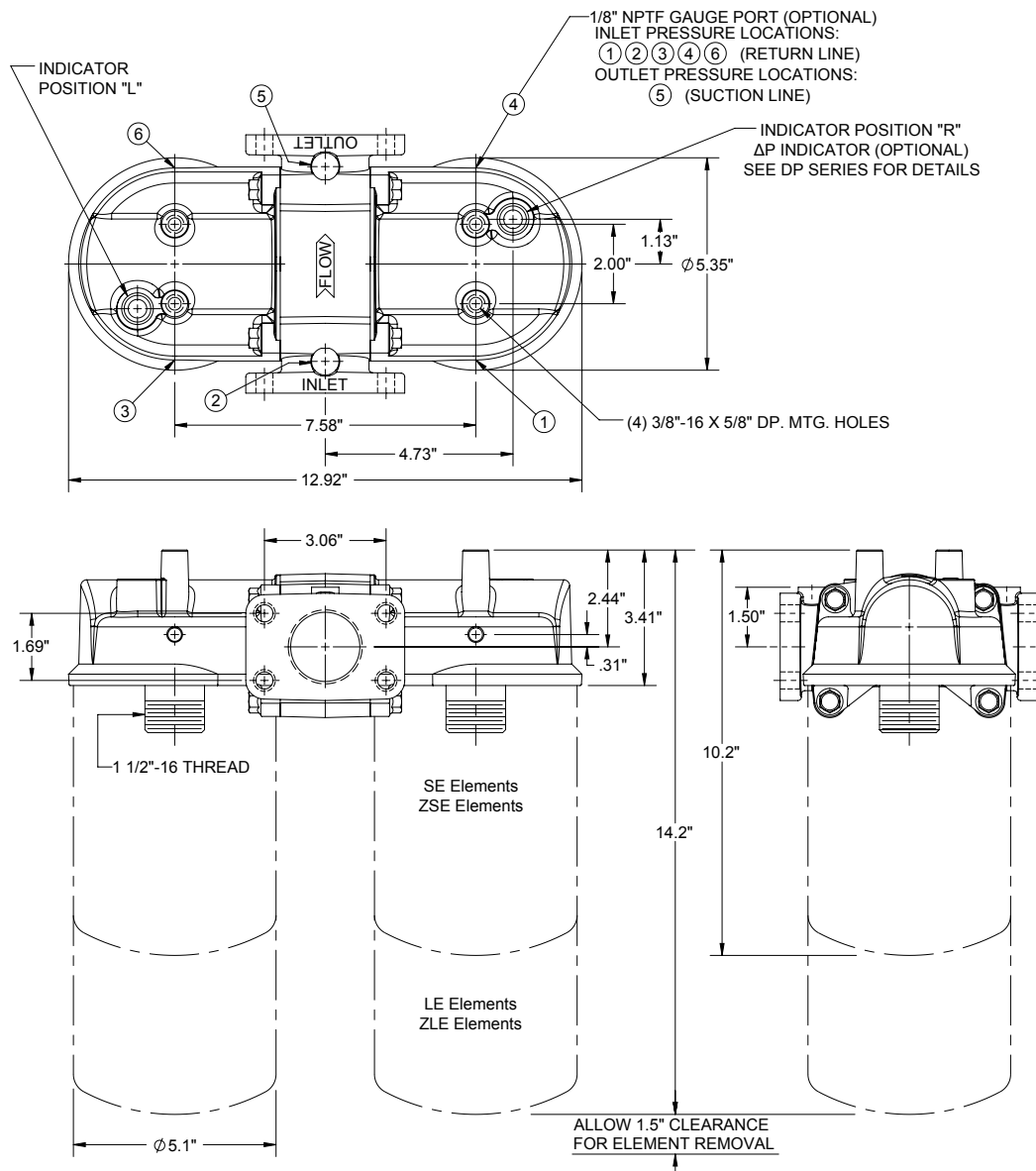
**Pressure:** 200 PSI Max Operating

**Temperature:** Up to +250°F Operating

**Material:** Resin Impregnated Aluminum

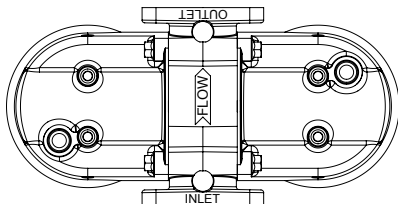
**Applications:** Petroleum based fluids  
Consult factory for synthetic fluids

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

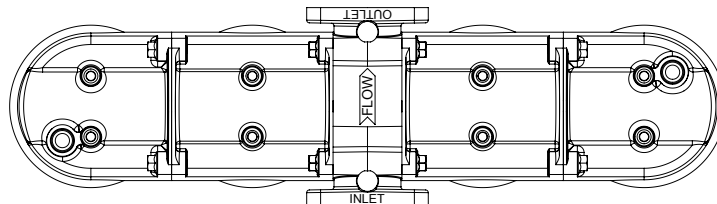


# ZDF Series Continued

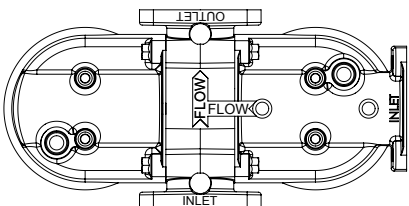
Standard Two Element Filter Head Configuration (Blank)



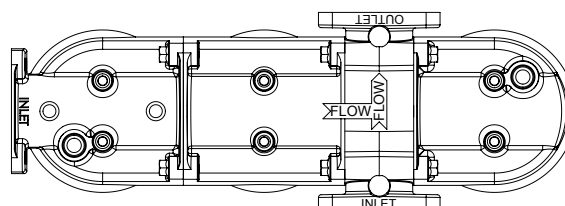
Four Element Filter Configuration "A"



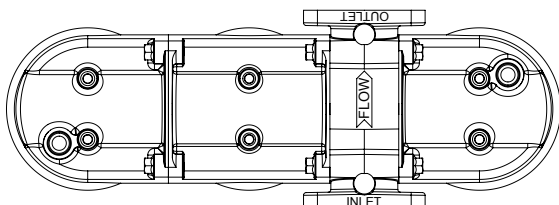
Two Element, Two Inlet Filter Head Configuration "B"



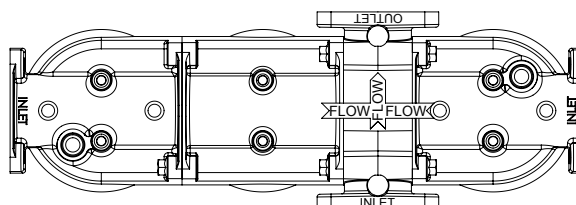
Three Element, 90° Filter Head Configuration "D"



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:

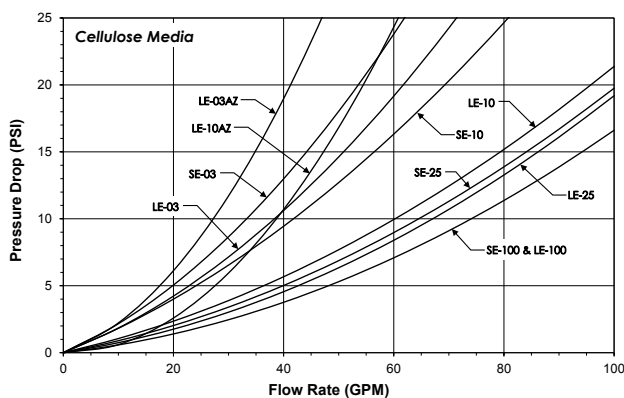
$\beta_{x\mu(c)} = 2$  represents 50% efficiency at particle size "x" micron (Nominal Rating)

$\beta_{x\mu(c)} = 75$  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.







# 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:

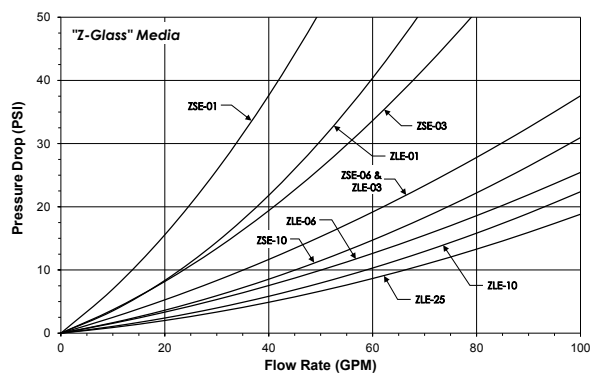
#### Reference:

$\beta_{x\mu(c)} = 200$  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.





# GF Series

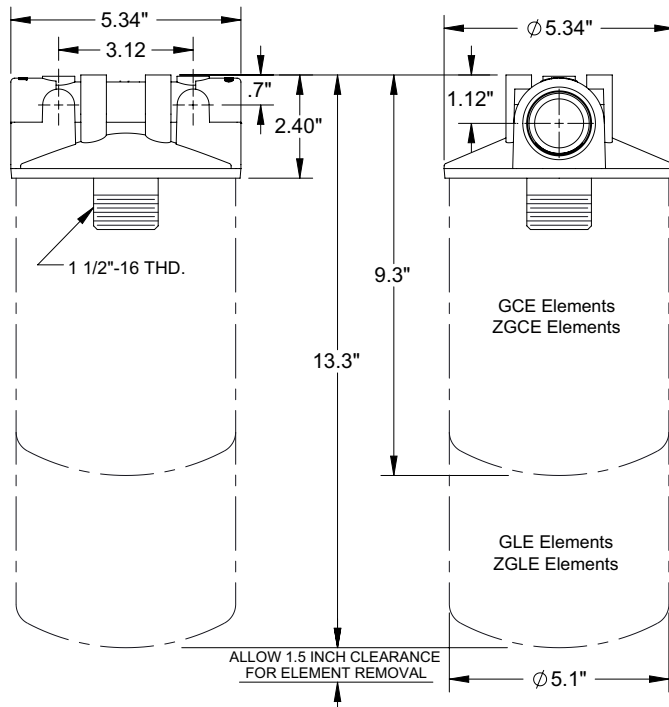
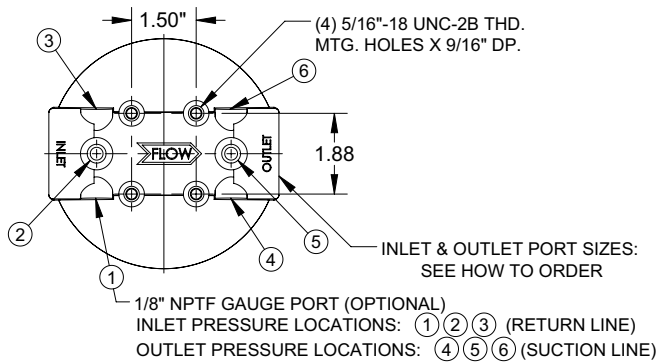
## Spin-On Filter Heads

### 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

SPIN-ONS



### 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)





# GCE & GLE Series

## Spin-On Filter Elements

Used with GF Series Filter Heads  
Replacements for Parker/Gresen

**Diameter:** 5.1"

**Mounting Thread:** 1 1/2"-16 UN

**Operating Pressure:** 200 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	Overall Height
GCE03 "3 Micron"	<4	11	White/Green	Cellulose	6.9"
GCE10 "10 Micron"	5	19	White/Red	Cellulose	6.9"
GCE25 "25 Micron"	19	36	White/Black	Cellulose	6.9"
GLE03 "3 Micron"	<4	11	White/Green	Cellulose	10.9"
GLE10 "10 Micron"	5	19	White/Red	Cellulose	10.9"
GLE25 "25 Micron"	19	36	White/Black	Cellulose	10.9"

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
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"

### Cross Reference:

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

### Application Data:

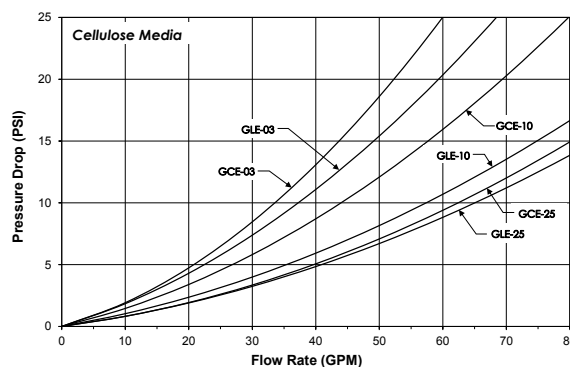
#### Reference:

$\beta_{x\mu(c)} = 2$  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)



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.





# HF Series

## Spin-On Filter Heads

### with $\Delta P$ Indicator Option

Used with HE & ZHE Filter Elements

**Flows Up To:** 40 GPM (return)

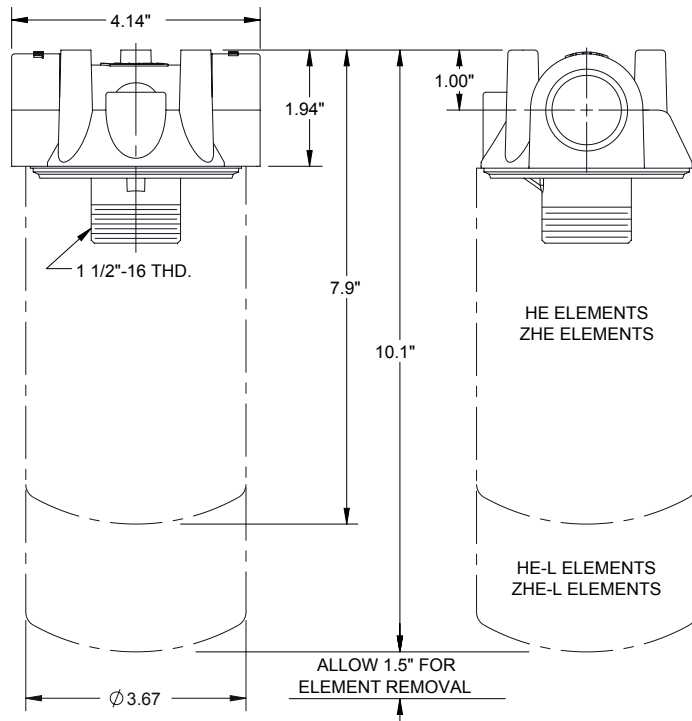
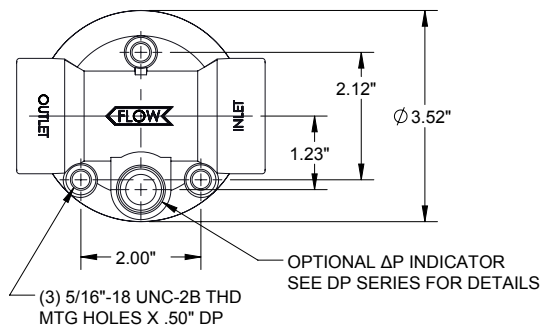
**Port Sizes:** 3/4"-1" NPTF  
 1 1/16"-12UN (SAE-12)  
 1 5/16"-12UN (SAE-16)

**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)

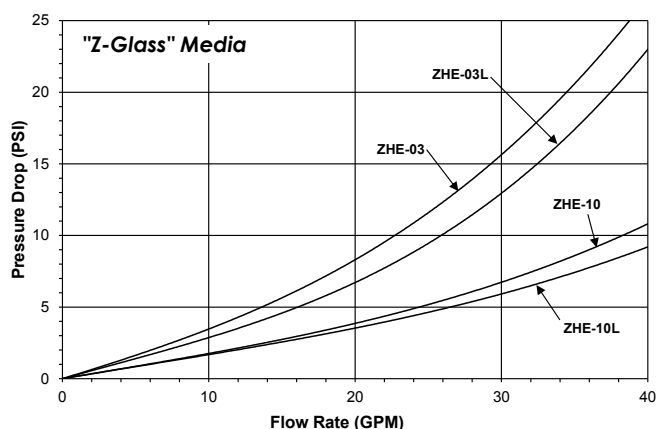
$\beta_{x\mu(c)} = 200$  represents 99.5% efficiency at particle size "x" micron (Absolute Rating)

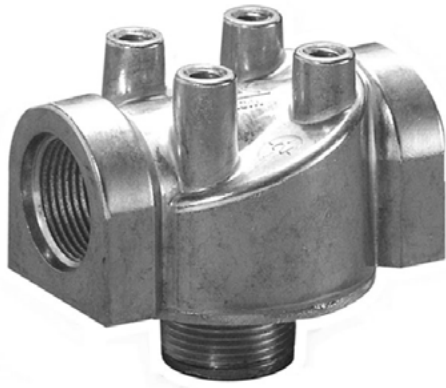
$\beta_{x\mu(c)} = 1000$  represents 99.9% efficiency at particle size "x" micron (Absolute Rating)

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.





# DHF Series

## Spin-On Filter Elements with $\Delta P$ Indicator Option

Used with ME & ZME Filter Elements

**Flows Up To:** 35 GPM

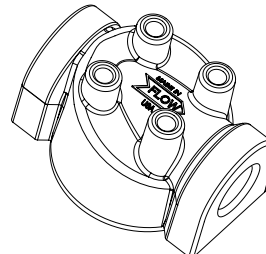
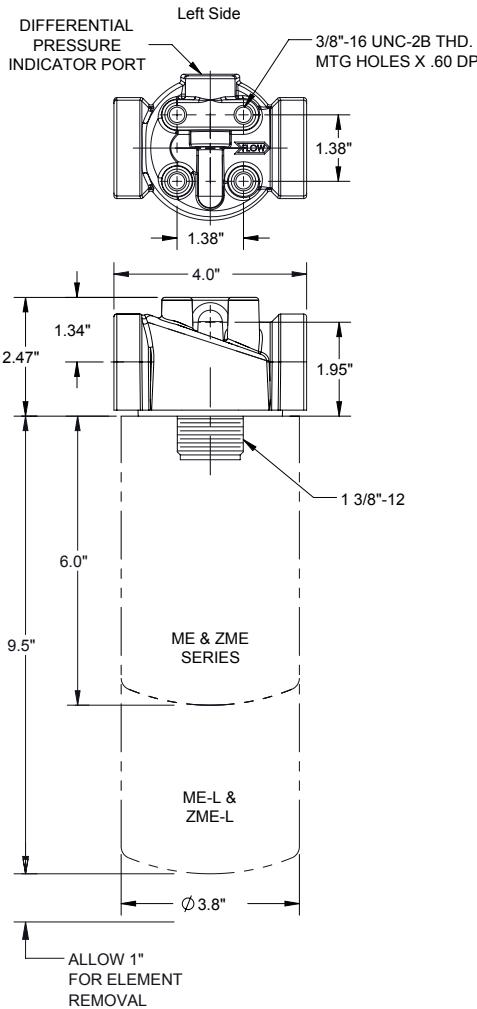
**Port Sizes:** 3/4" - 1" NPTF  
 1 1/16"-12UN (SAE12)  
 1 5/16"-12UN (SAE16)

**Pressure:** 500 PSI Max. Operating  
 1,000 PSI Static Burst

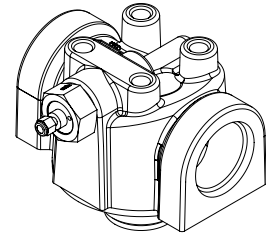
**Temperature:** Up to +250°F Operating

**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	$\Delta P$ 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

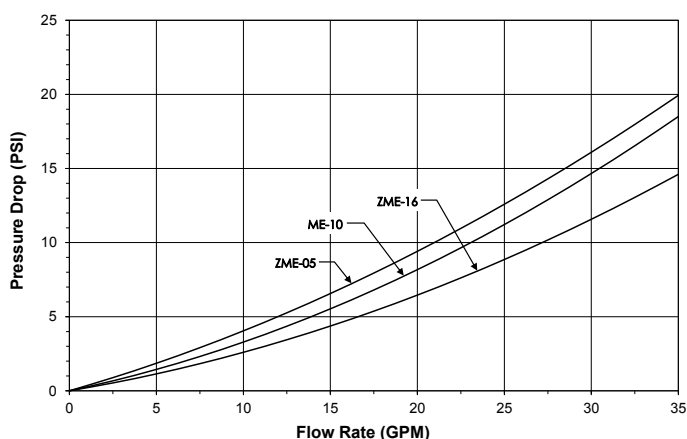
**ΔP max:** 80 psid (Cellulose) 100 psid (Z-Glass)

**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"



### 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.

# CF/CE Series

## Manifold Cartridge Filters

*Final Filters for Control Valve Protection*

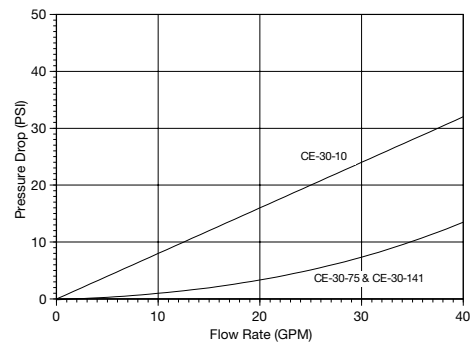
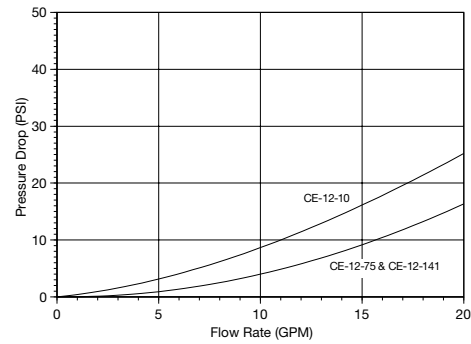
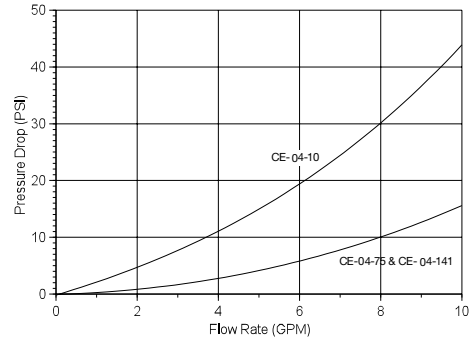
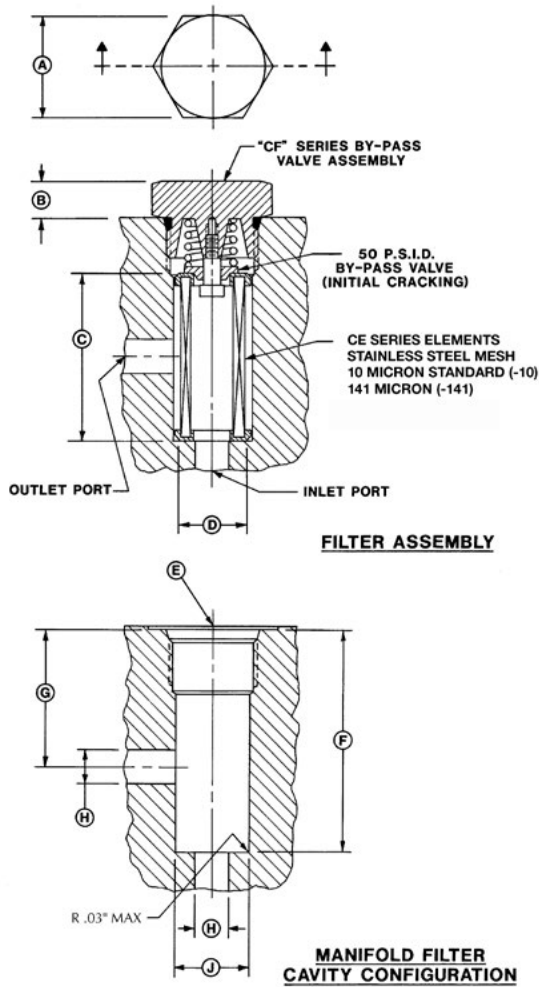


**Operating Pressure:** 6,000 PSI

**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



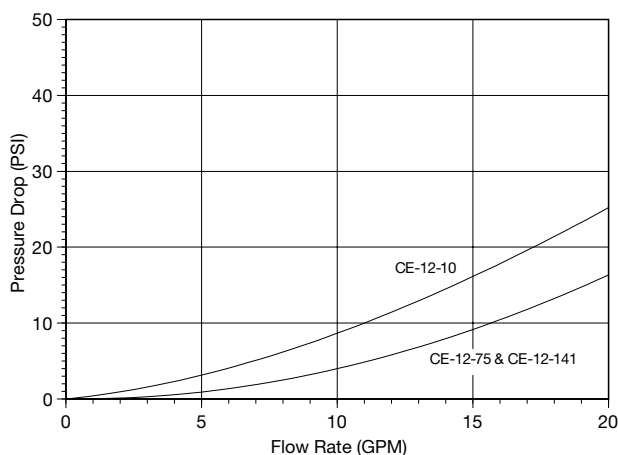
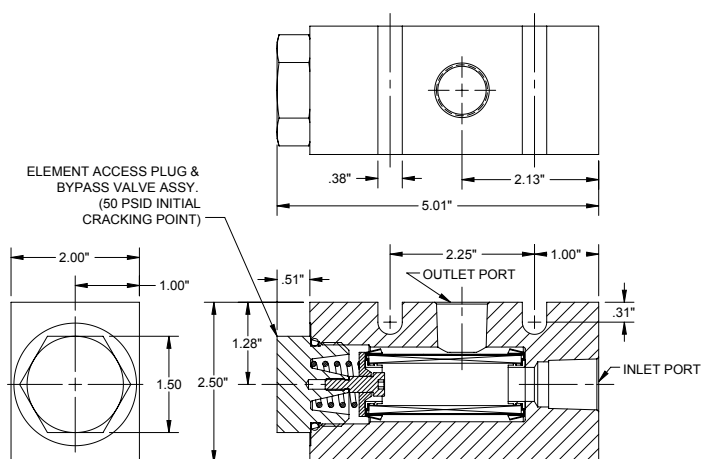
**Port Size:** 3/4" - 16 UN (SAE-8)

**Pressure:** 3,000 PSI

**Flows Up To:** 12 GPM

**By-Pass Valve Setting:** 50 PSI

**Filtration:** 10 Micron Stainless Steel Mesh  
Wire Cloth Standard



PRESSURE

### 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	



# CM0515

## Manifold Cartridge Filter



**Flows Up To:** 5 GPM

**Cavity:** SAE-16 Modified Design

**Media:** 15 Micron Z-Glass Media

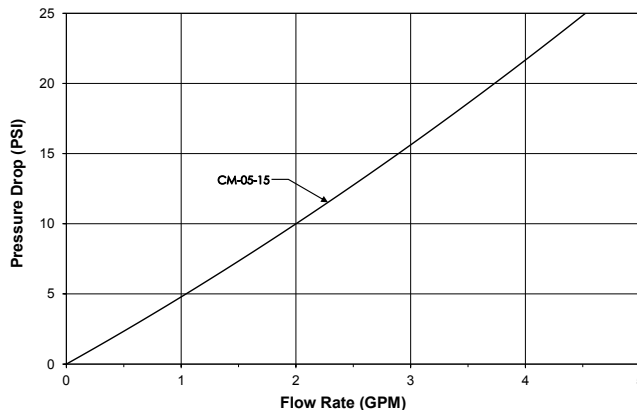
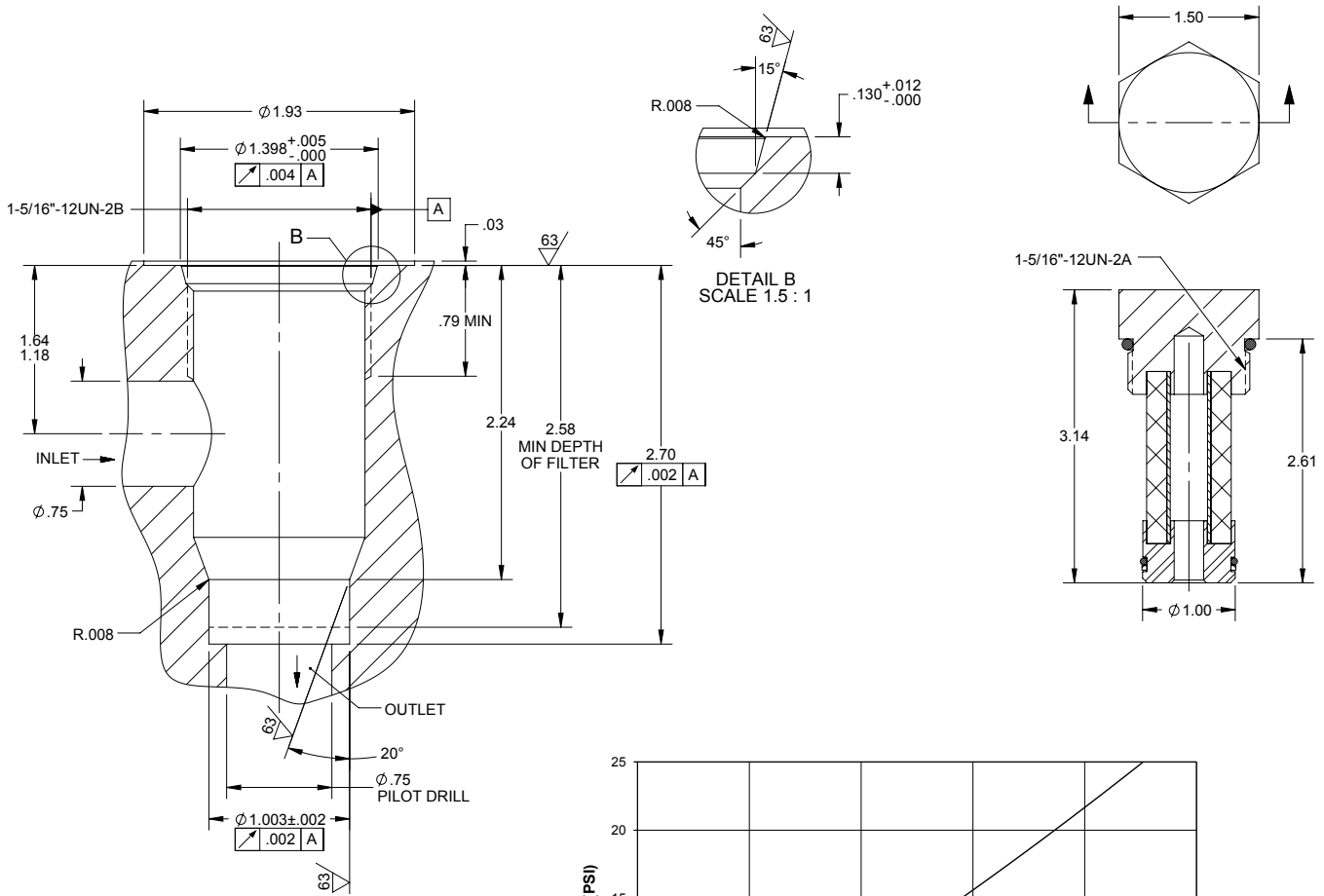
**Pressure:** 3,000 PSI / 207 bar Housing

**Temperature:** -22°F to 250°F Max.

**Differential:** 290psid / 20 bar Element Performance Rating

**Application:** Direct Replacement for Hydac CF20 Series

PRESSURE

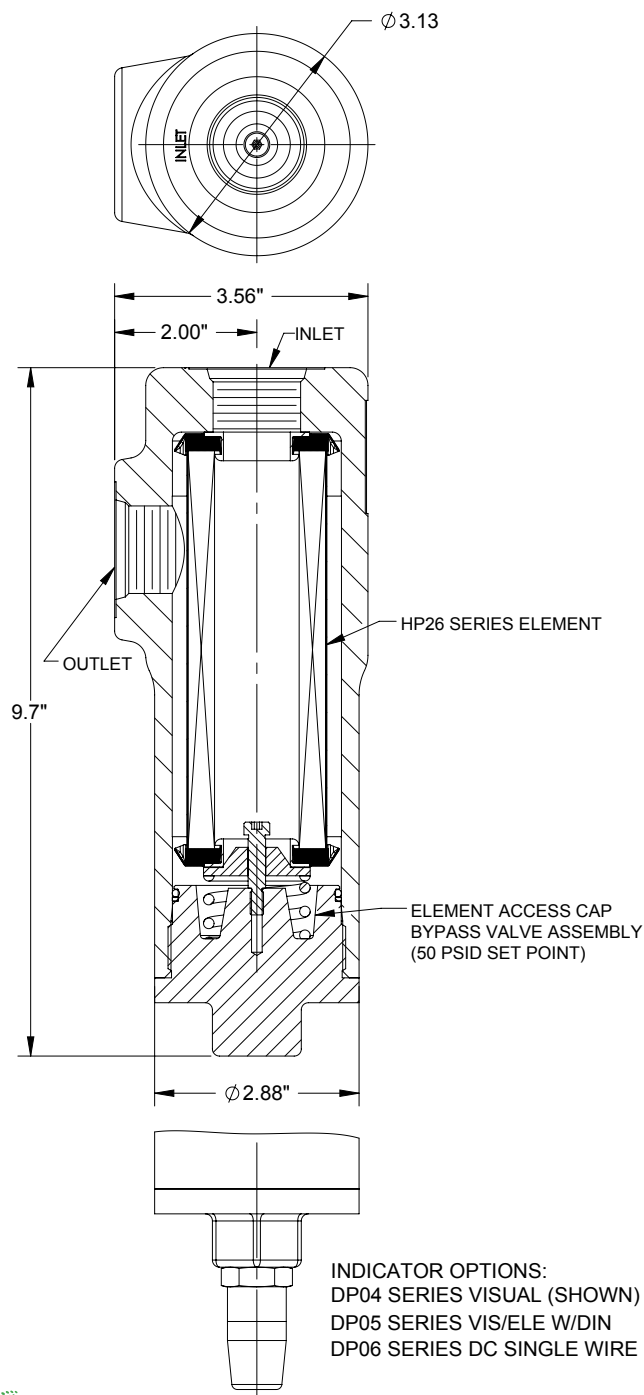
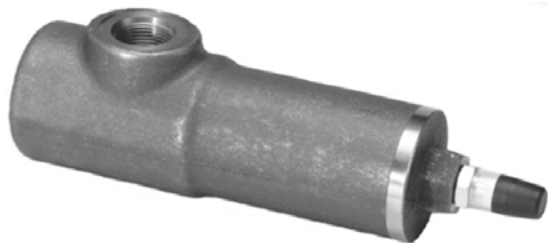


# HP3000 Series

## In-Line Pressure Filters

### With $\Delta P$ 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

#### $\Delta P$ 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

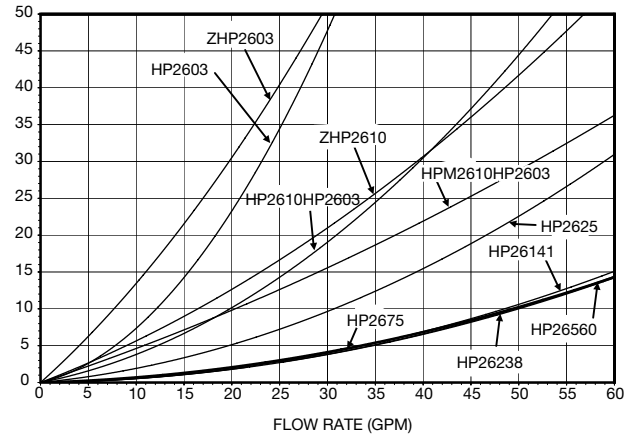
4.2 lbs. (2.2 Kg)

PRESSURE



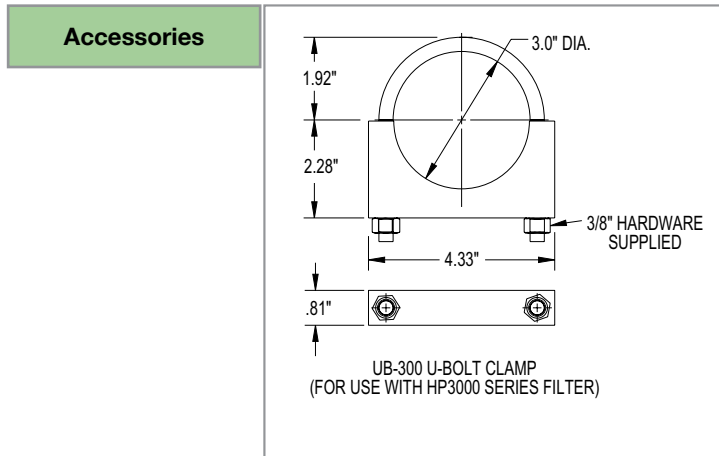
# HP3000 Series Continued

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.

PRESSURE



## 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





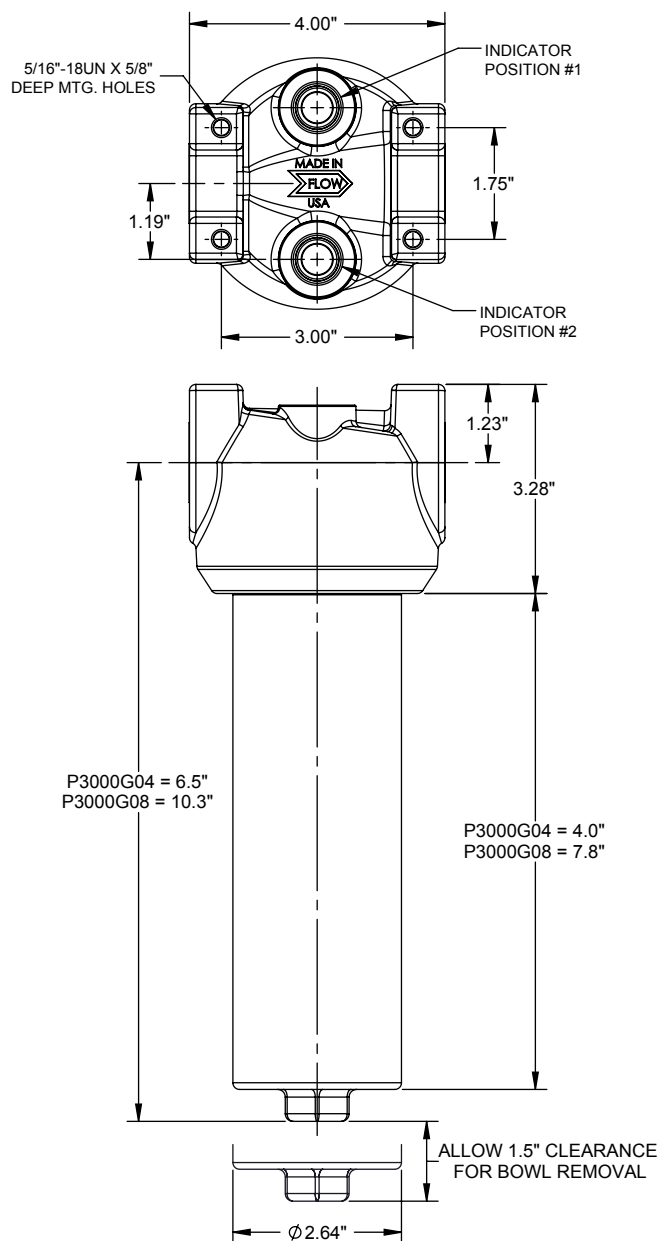
# P3000 Series Pressure Filters with $\Delta P$ Indicator Option Used With G Series Elements

**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:  
 0-3,000-0 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

## $\Delta P$ 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)

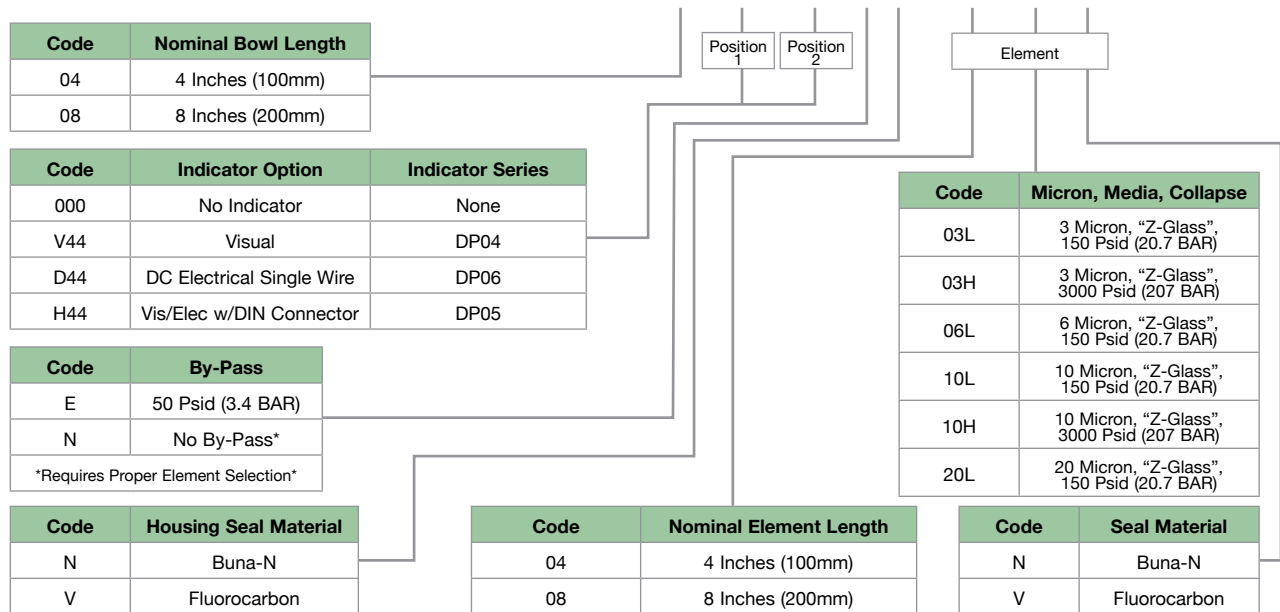


## P3000 Series Continued

### 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





# G Series Elements

## Pressure Filter Elements

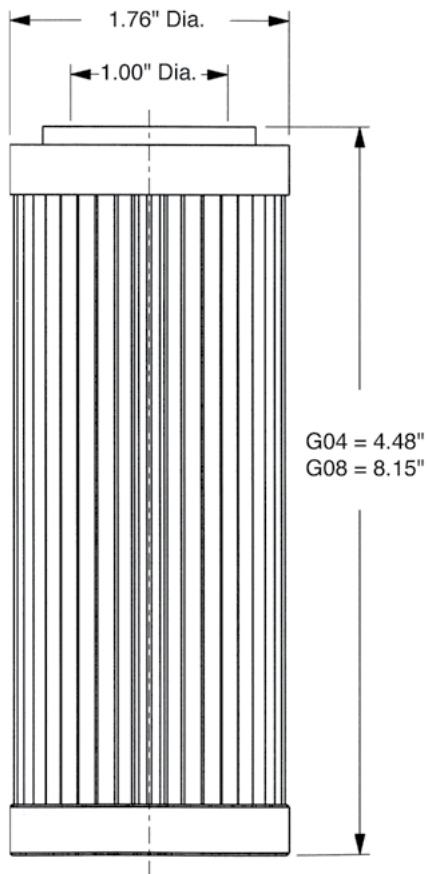
### Used With P3000 Housings

### 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

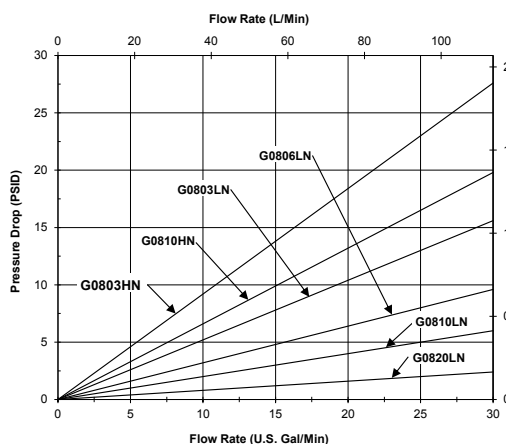
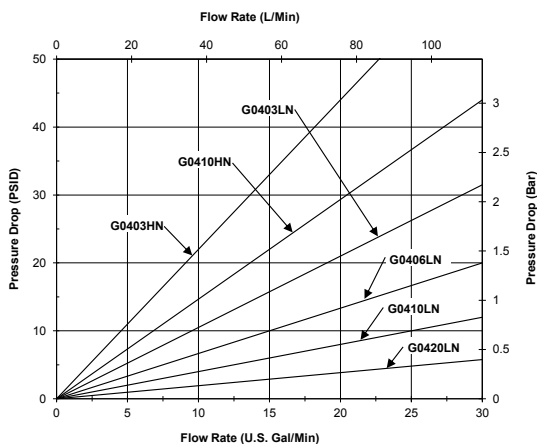


150 Psid Rated Elements (For use in filters with bypass valve only)		
Zinga Part #	Bxμ(c)= 200	Pall Part #
G0403LN	<4 Micron	HC9024FDP4H
G0406LN	5.7 Micron	HC9024FDN4H
G0410LN	9.7 Micron	HC9024FDS4H
G0420LN	18.2 Micron	HC9024FDT4H
G0803LN	<4 Micron	HC9024FDP8H
G0806LN	5.7 Micron	HC9024FDN8H
G0810LN	9.7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



PRESSURE





# W1200 Series

## Pressure Filters

### with $\Delta P$ Indicator Option

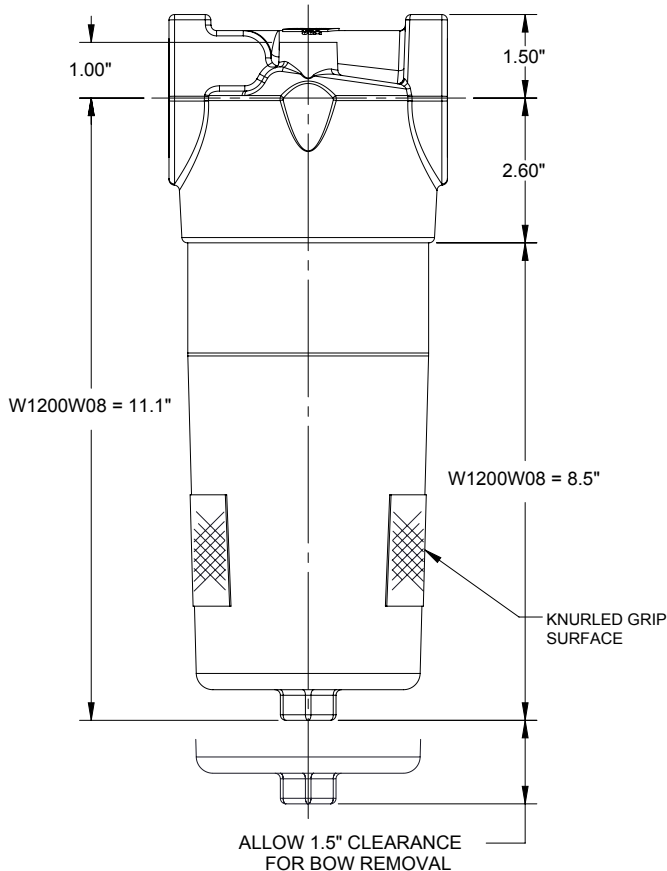
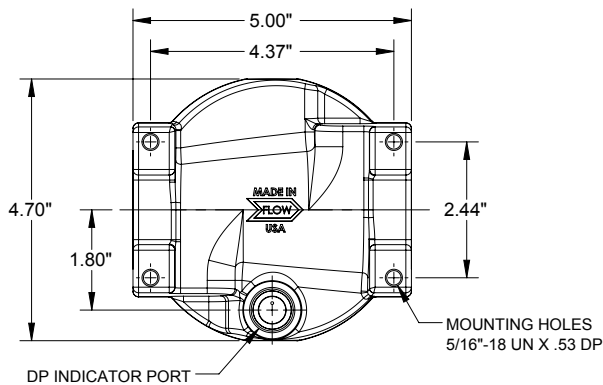
### Used With W Series Elements

**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

#### $\Delta P$ 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)

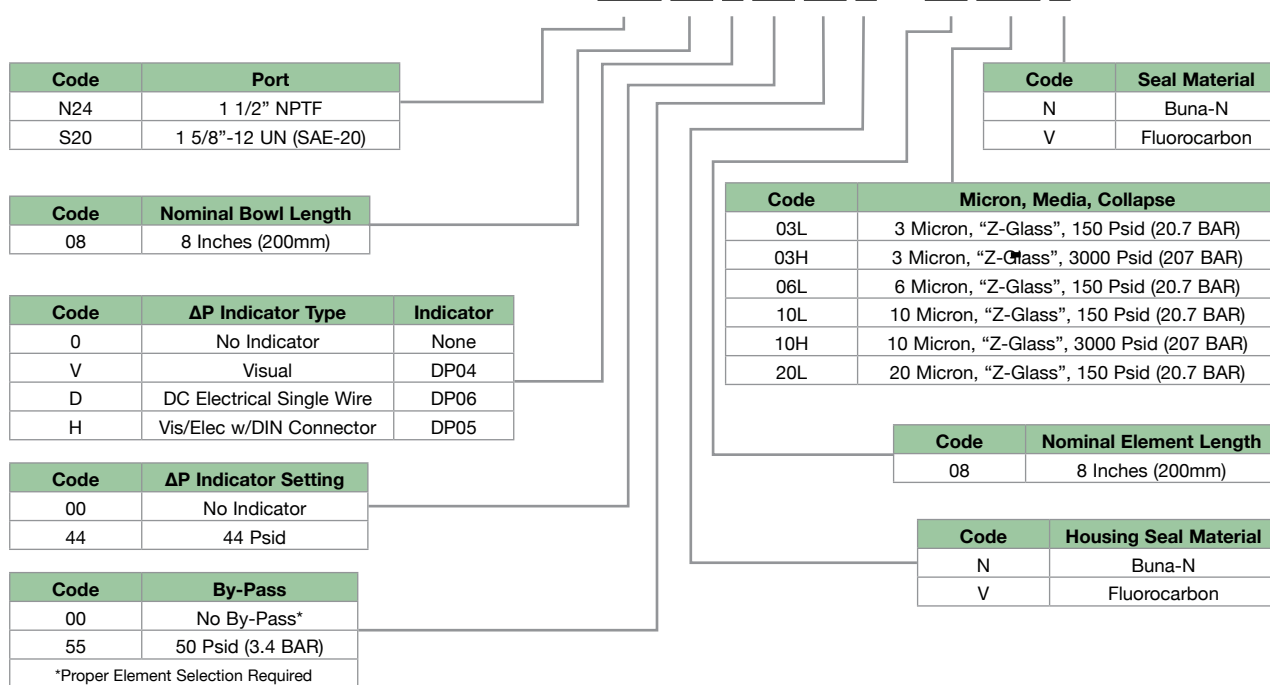




## W1200 Series Continued

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



PRESSURE





# W Series

## Pressure Filter Elements

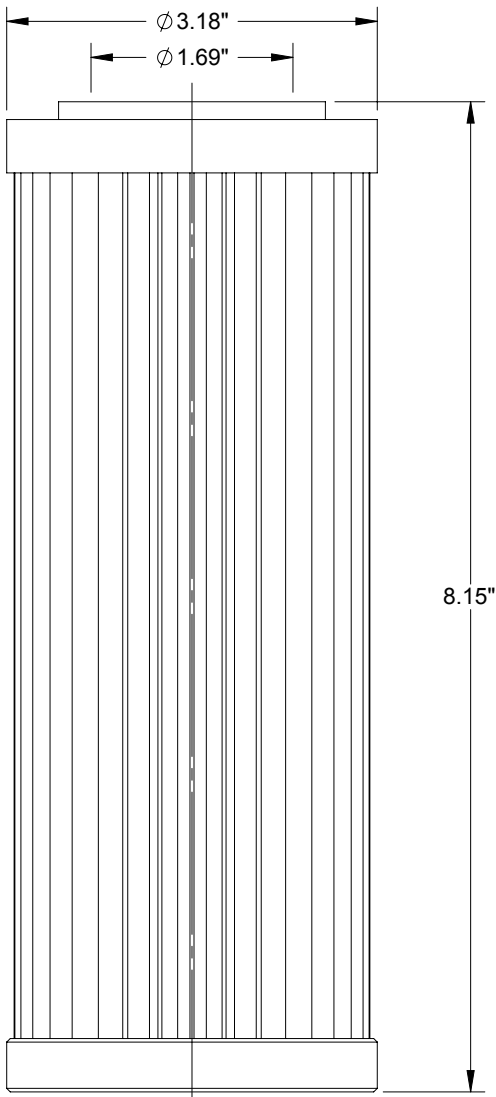
### Used With W1200 Series Housings

### 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

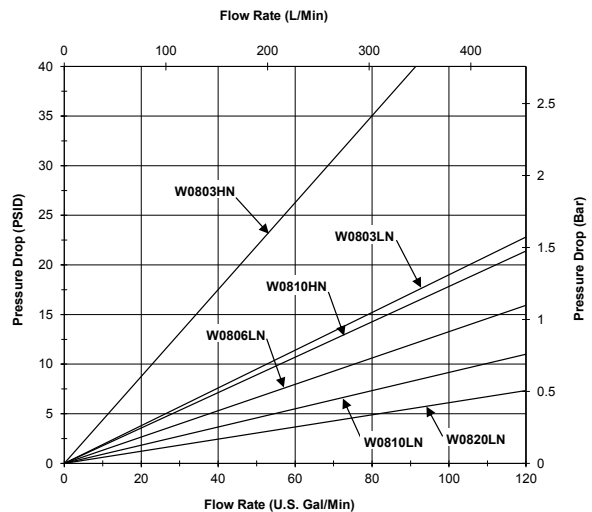


150 Psid Rated Elements (For use in filters with bypass valve only)		
Zinga Part #	B $\times$ $\mu$ (c)= 200	Pall Part #
W0803LN	<4 Micron	HC9604FDP8H
W0806LN	5.7 Micron	HC9604FDN8H
W0810LN	9.7 Micron	HC9604FDS8H
W0820LN	18.2 Micron	HC9604FDT8H

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

3000 Psid Rated Elements		
Zinga Part #	B $\times$ $\mu$ (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:** 1/2" & 3/4" NPTF, SAE

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

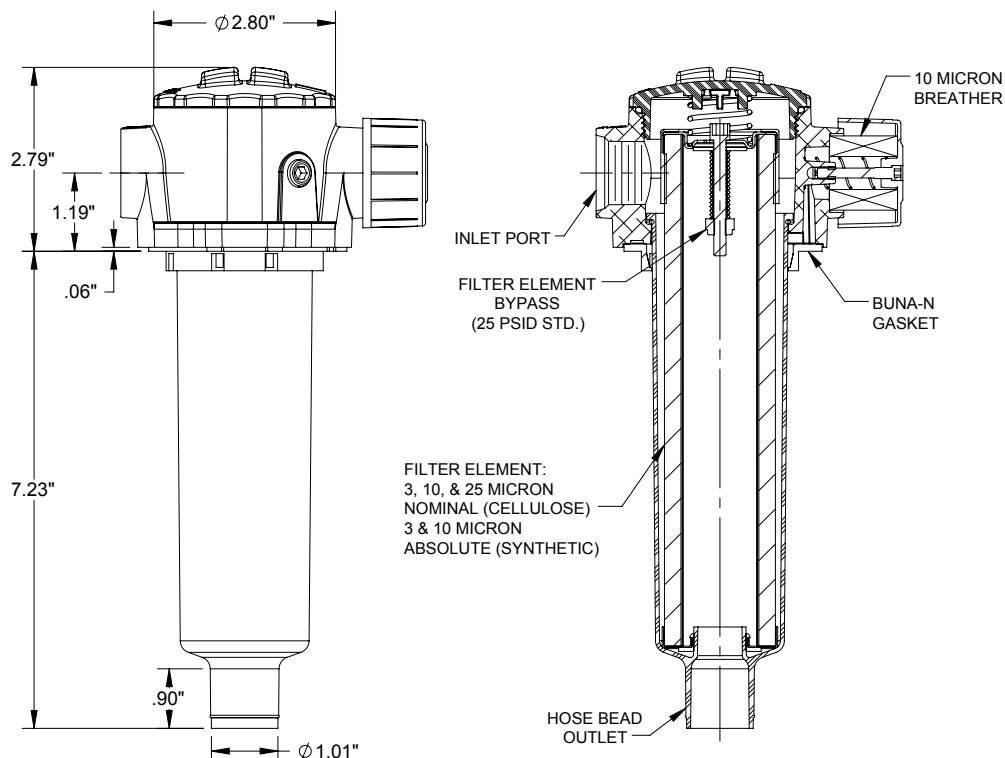
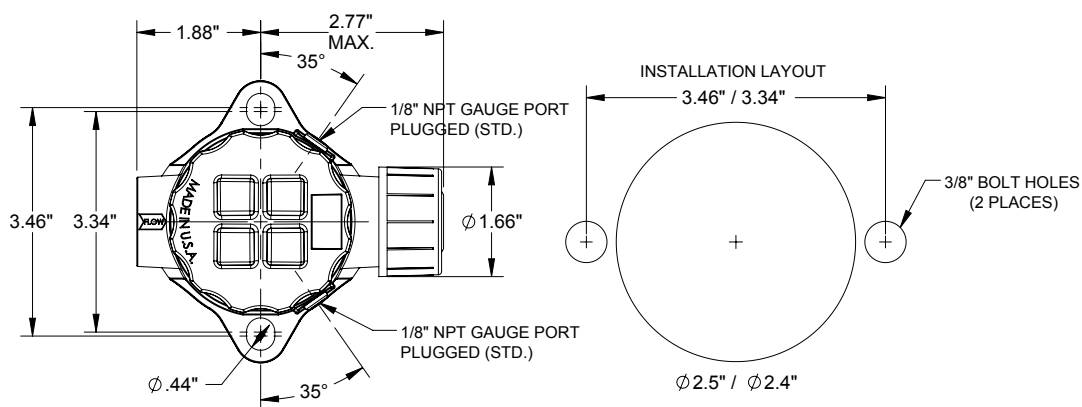
**Temperature:** -15°F to +230°F Operating

**Head:** Die Cast Aluminium Alloy

**Bowl/Cover:** Nylon

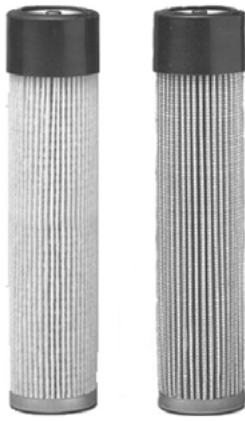
**Breather:** 10 Micron (Foam) Std.

**Applications:** Petroleum based fluids only



TANK MOUNT



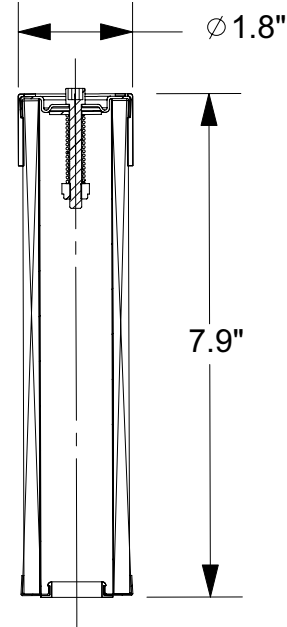


# SLE1 & ZSLE1 Series

## Filter Elements

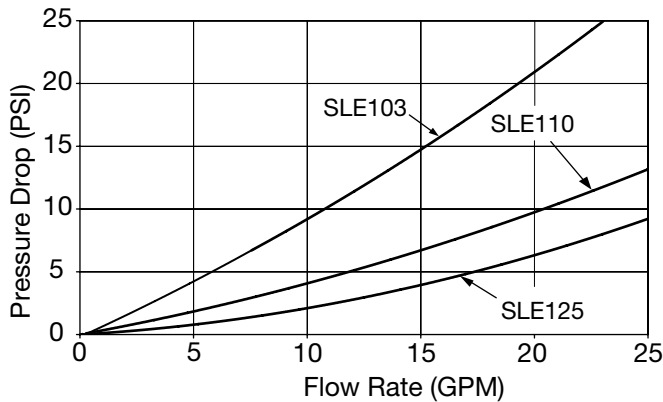
### Cellulose & Synthetic

### Used With SLF1 Series Housings

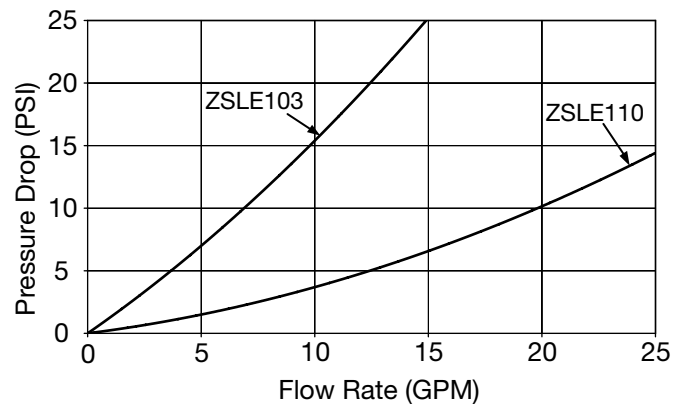


SLE1 & ZSLE1 Filter Elements			
Code	Media Type	Nominal Rating	Absolute Rating
SLE103	Cellulose	$\beta < 4\mu(c) = 2$	$\beta 11\mu(c) = 75$
SLE110	Cellulose	$\beta 5\mu(c) = 2$	$\beta 19\mu(c) = 75$
SLE125	Cellulose	$\beta 19\mu(c) = 2$	$\beta 36\mu(c) = 75$
ZSLE103	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta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

**Cellulose Media**



**Z-Glass Media**



**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:** 3/4" & 1" NPTF, SAE

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

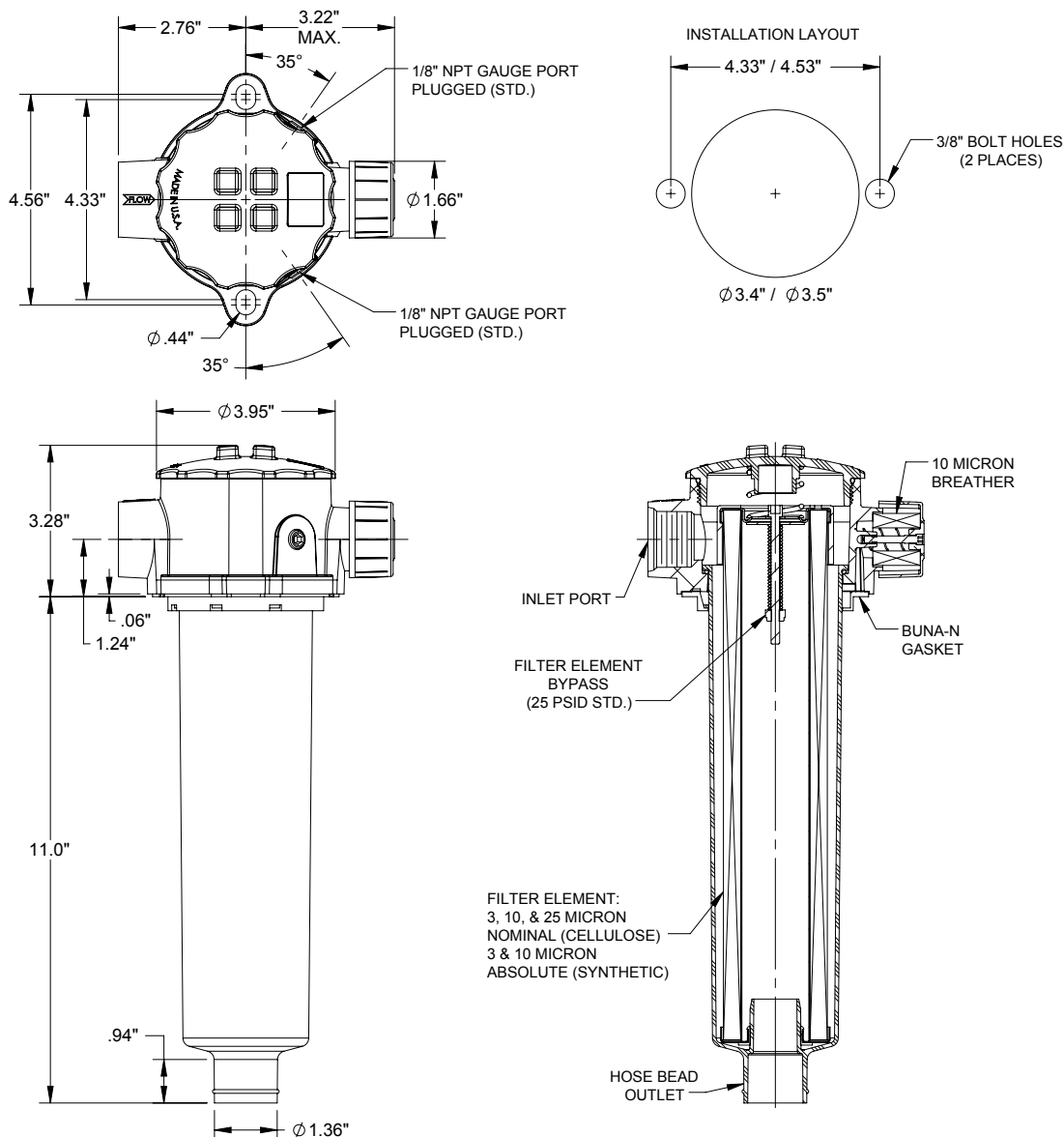
**Temperature:** -15°F to +230°F Operating

**Head:** Die Cast Aluminium Alloy

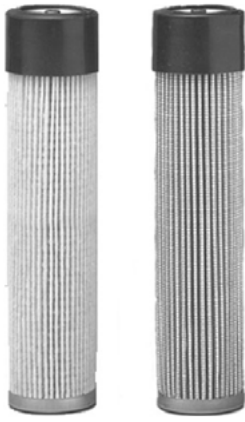
**Bowl/Cover:** Nylon

**Breather:** 10 Micron (Foam) Std.

**Applications:** Petroleum based fluids only



TANK MOUNT

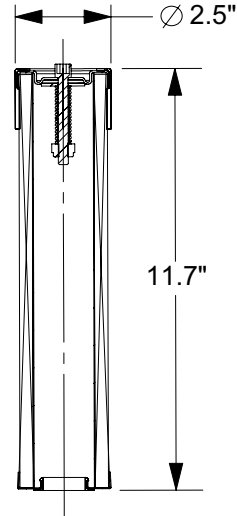


# SLE2 & ZSLE2 Series

## Filter Elements

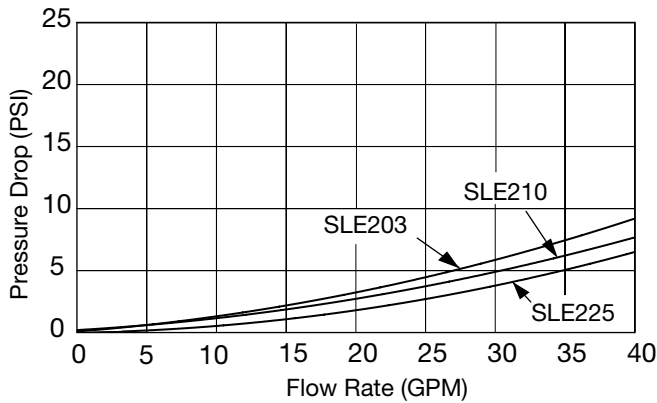
### Cellulose & Synthetic

### Used With SLF2 Series Housings

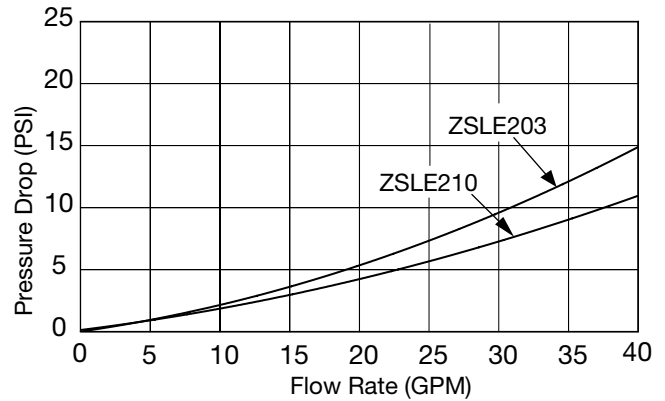


SLE1 & ZSLE1 Filter Elements			
Code	Media Type	Nominal Rating	Absolute Rating
SLE203	Cellulose	$\beta < 4\mu(c) = 2$	$\beta 11\mu(c) = 75$
SLE210	Cellulose	$\beta 5\mu(c) = 2$	$\beta 19\mu(c) = 75$
SLE225	Cellulose	$\beta 19\mu(c) = 2$	$\beta 36\mu(c) = 75$
ZSLE203	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta < 4\mu(c) = 200$
ZSLE210	"Z-Glass"	$\beta < 4\mu(c) = 2$	$\beta 10\mu(c) = 200$

**Cellulose Media**



**Z-Glass Media**



**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)

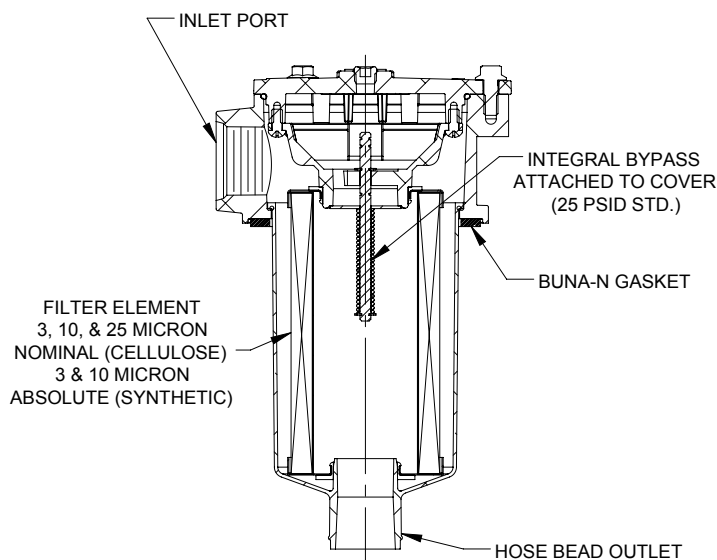
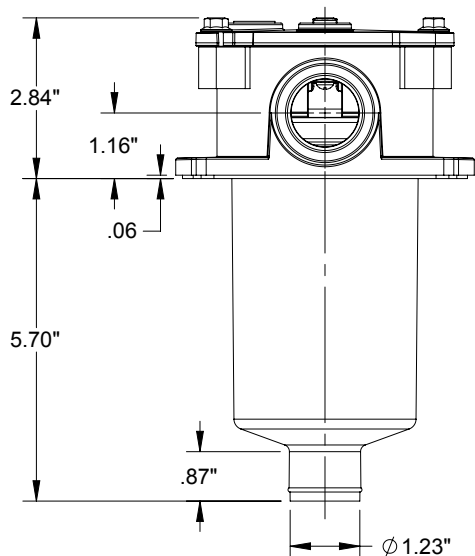
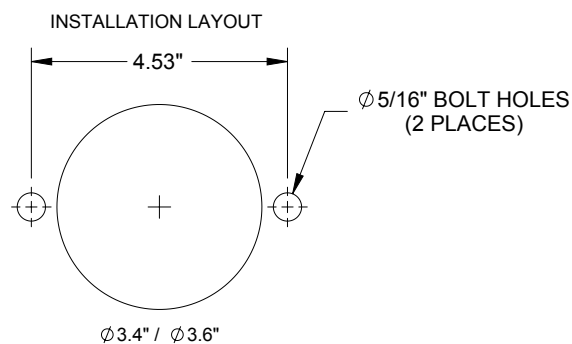
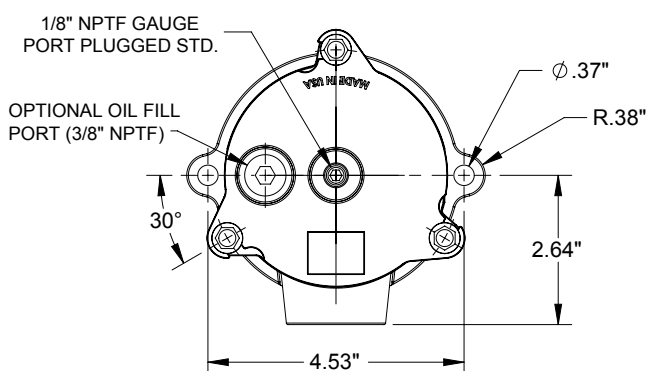
**Pressure:** 45 PSI Max. Op. Pres.  
145 Burst

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

**Head:** Die Cast Aluminium Alloy

**Bowl/Cover:** Polyamide

**Applications:** Petroleum based fluids only



TANK MOUNT



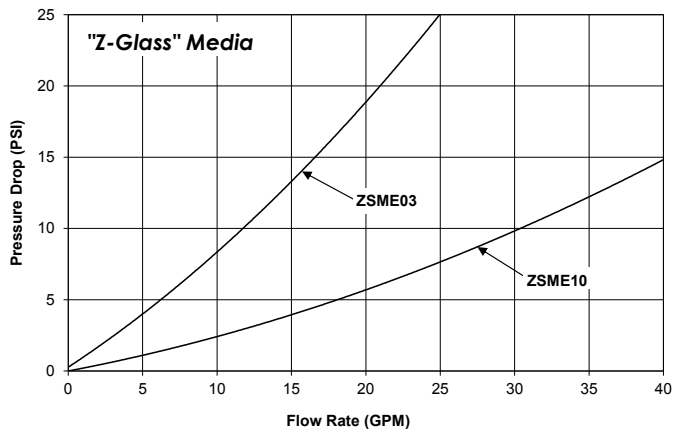
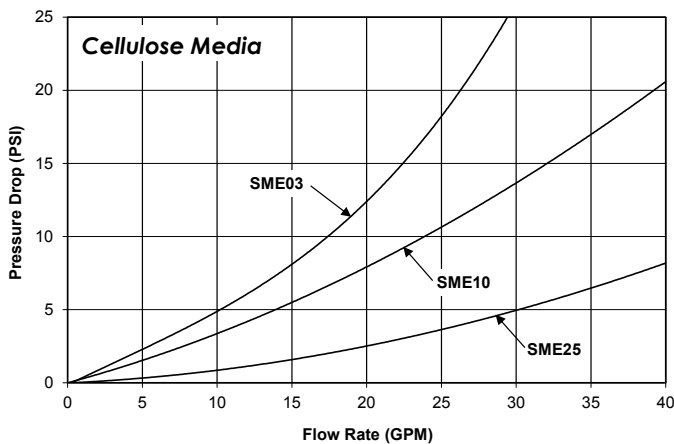
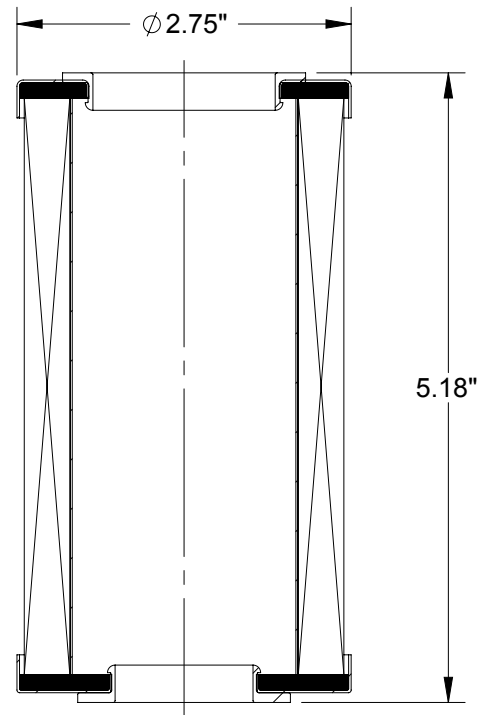
# SME & ZSME Series

## Filter Elements

### Cellulose & Synthetic

### Used With SMF Filter Housing

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"	$\beta < 4\mu(c) = 2$	$\beta 10\mu(c) = 200$



### 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

TANK MOUNT







# 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)

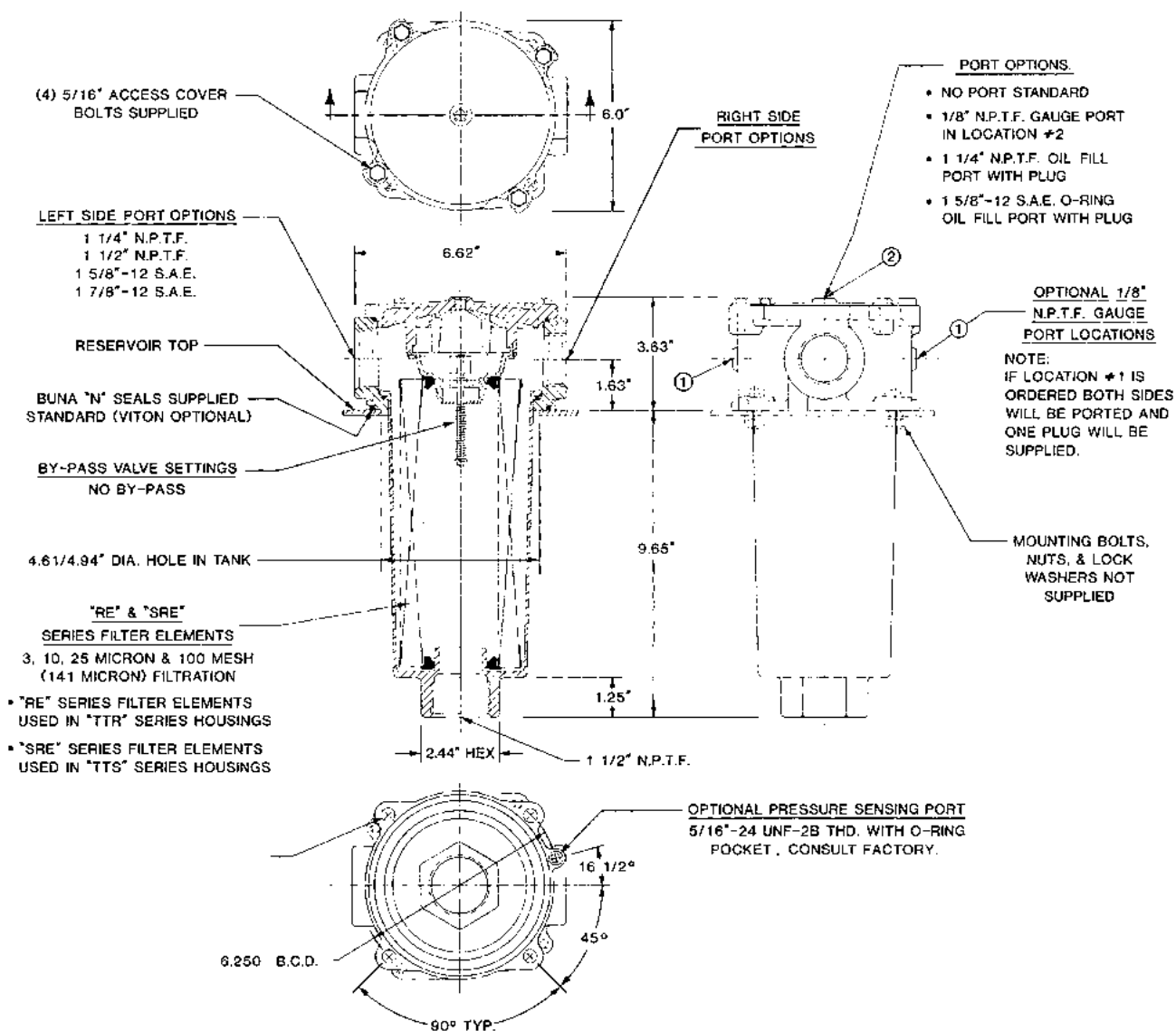
**Port Sizes:** 1 1/4" & 1 1/2" NPTF  
1 5/8"-12UN (SAE-20)  
1 7/8"-12UN (SAE-24)

**Pressure:** 100 PSI Max. Op. Pres.

**Temperature:** Up to +250°F

**Applications:** Petroleum based fluids only

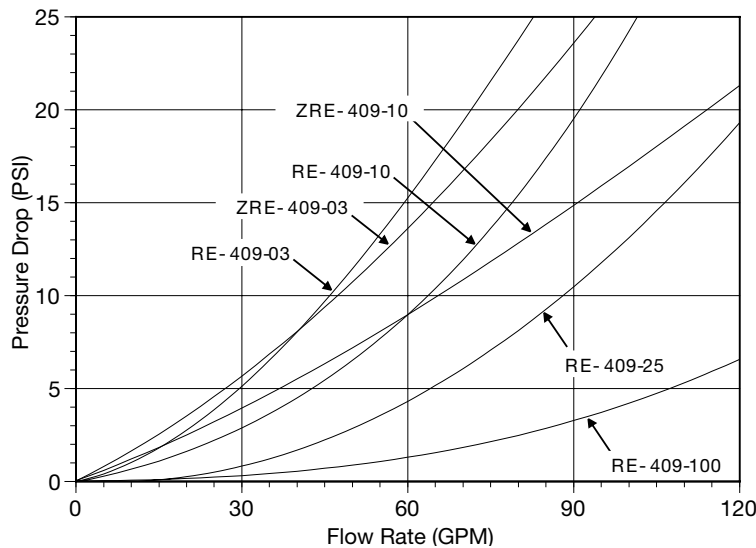
TANK MOUNT



## 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.



### HOW TO ORDER: XX XXXX XX XX X

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

Code	Check Valve
0	No Check Valve
V	Check Valve

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	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

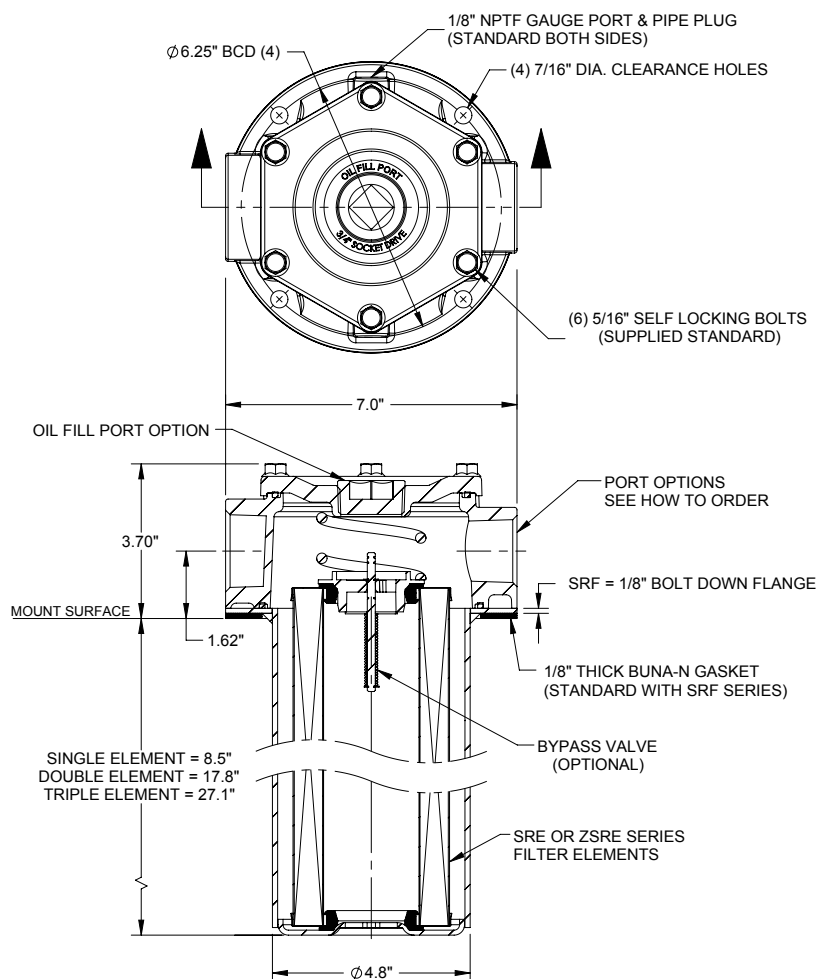
**Flows Up To:** 83GPM (return) 28GPM (suction)

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

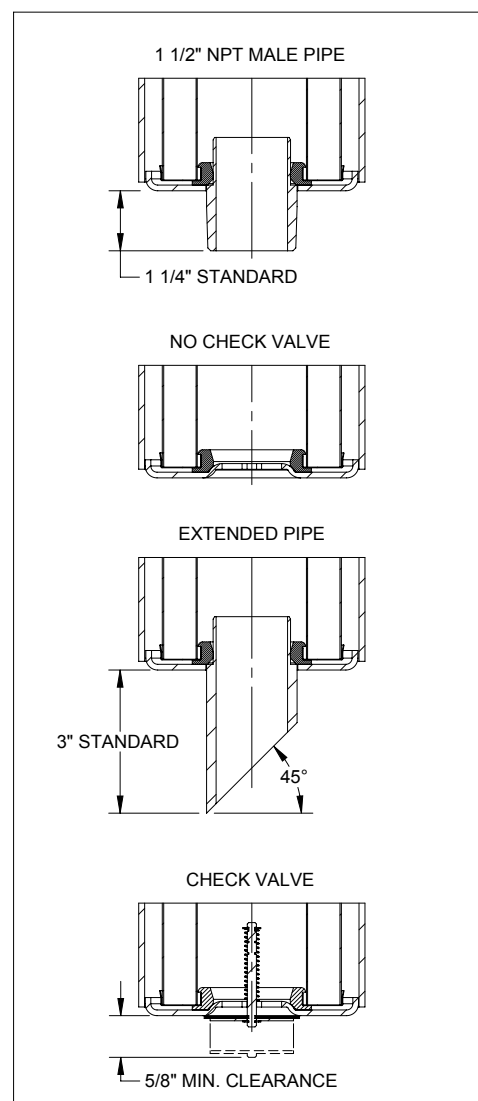
**Pressure:** 100 PSI Max. Op. Pres.

**Temperature:** Up to +250°F

**Applications:** Petroleum based fluids only



#### BOTTOM PORT OPTIONS:



#### Design Features:

Radial seal grommet used in SRE Series filter elements.

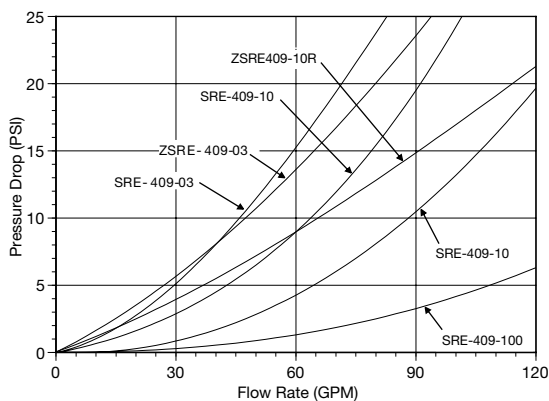
Filter housing mounting bolt pattern matches Zinga RF, TR, & TS

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

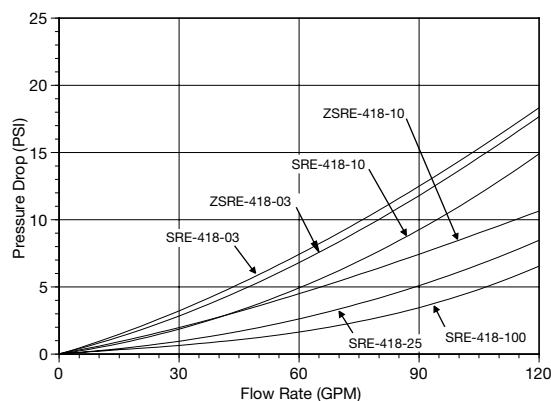


# SRF Series Continued

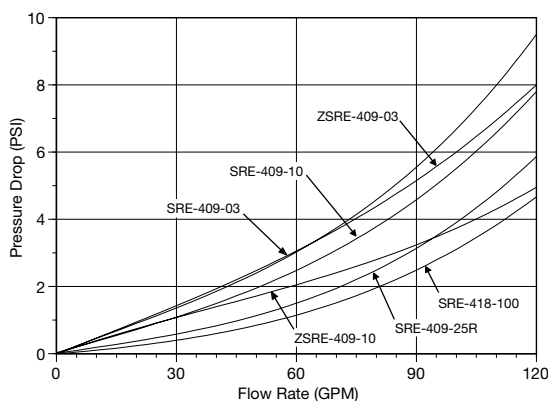
**Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F**



**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

TANK MOUNT





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

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

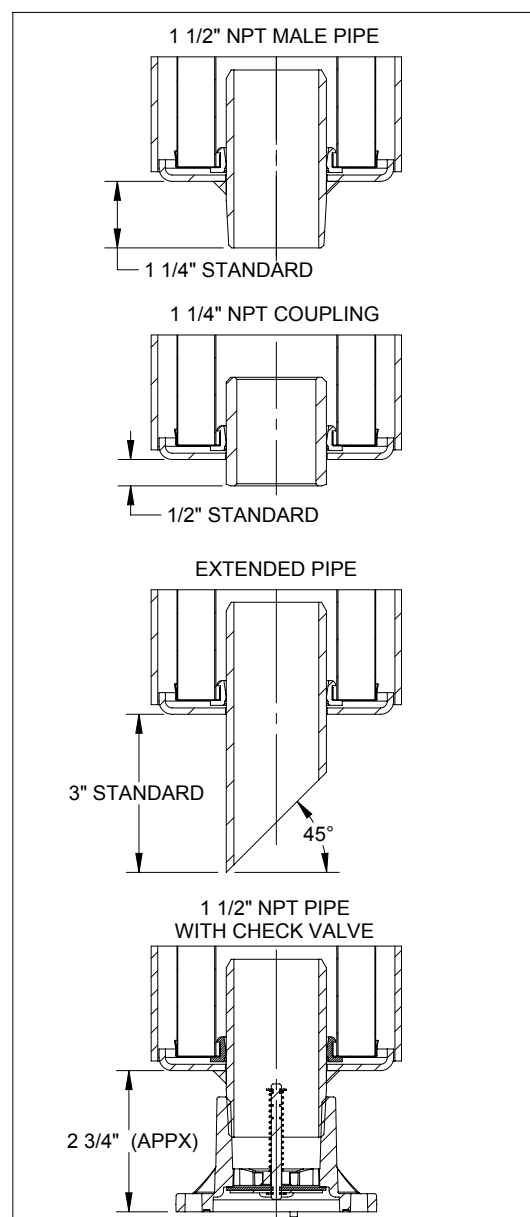
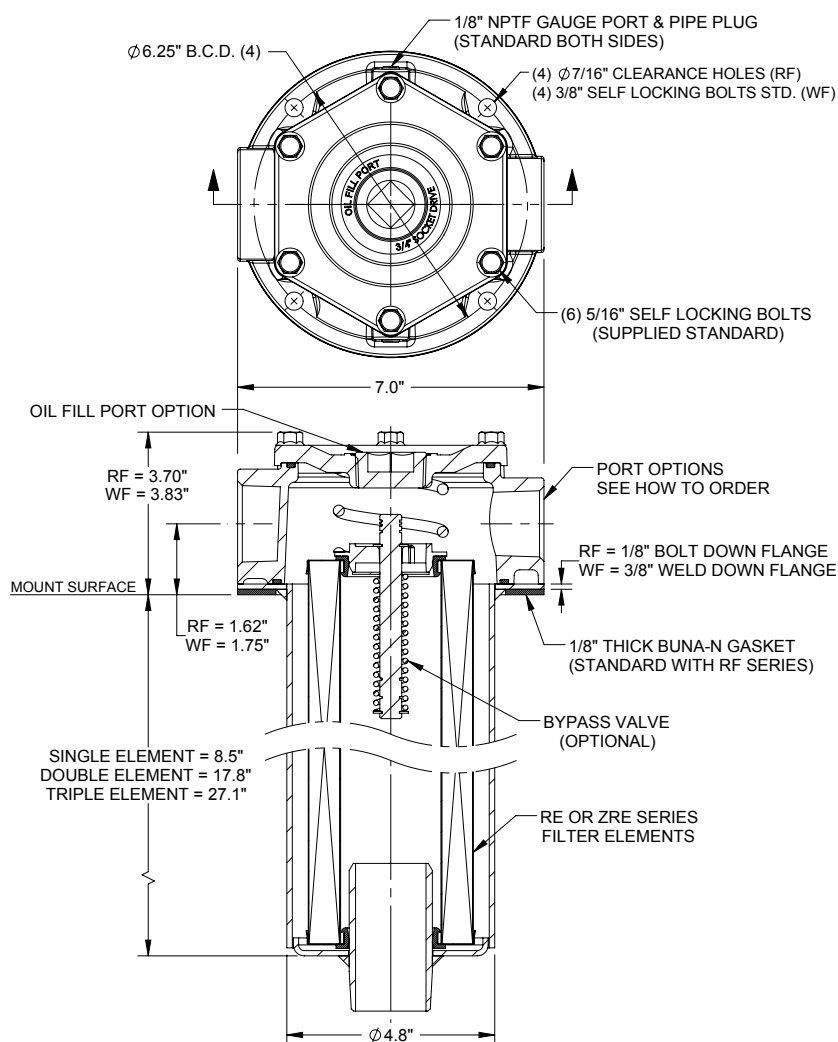
**Port Sizes:** 1 1/4" & 1 1/2" NPTF  
1 5/8"-12UN (SAE-20)  
1 7/8"-12UN (SAE-24)

**Pressure:** RF-100 PSI, WF-500 PSI

**Temperature:** Up to +250°F

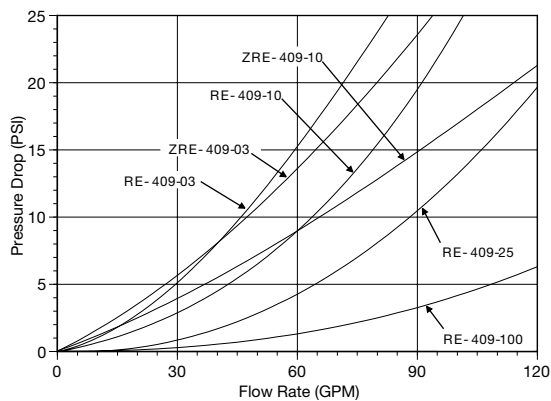
**Applications:** Petroleum based fluids only

## BOTTOM PORT OPTIONS:

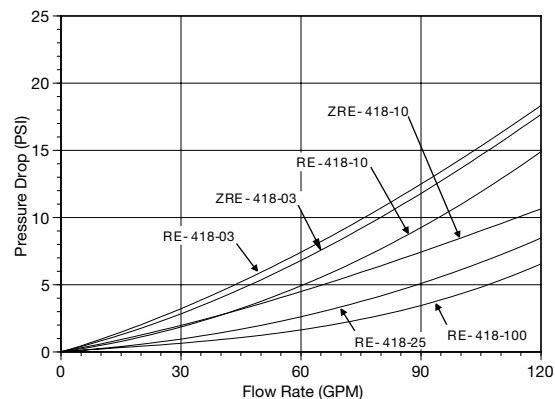


# RF & WF Series Continued

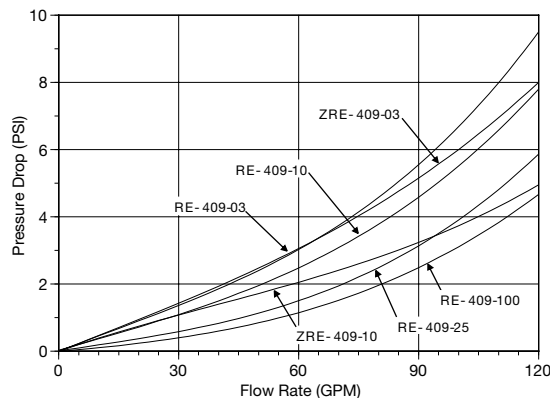
**Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F**



**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	

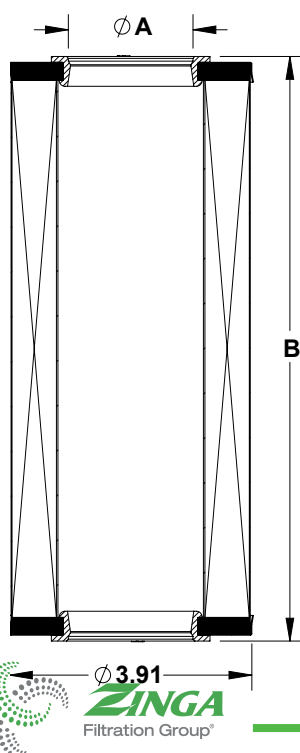
Code	By-Pass Valve Setting
00	No By-Pass
25	25 PSI



## 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

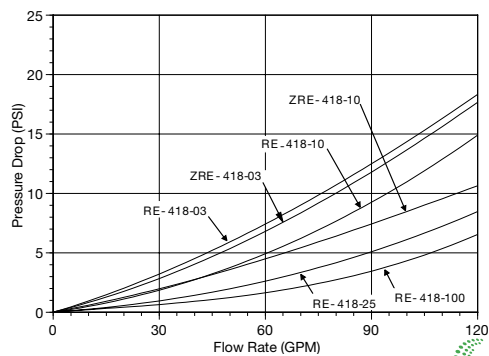
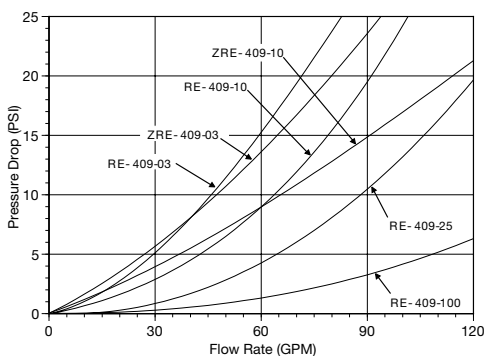
### Note:

\*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

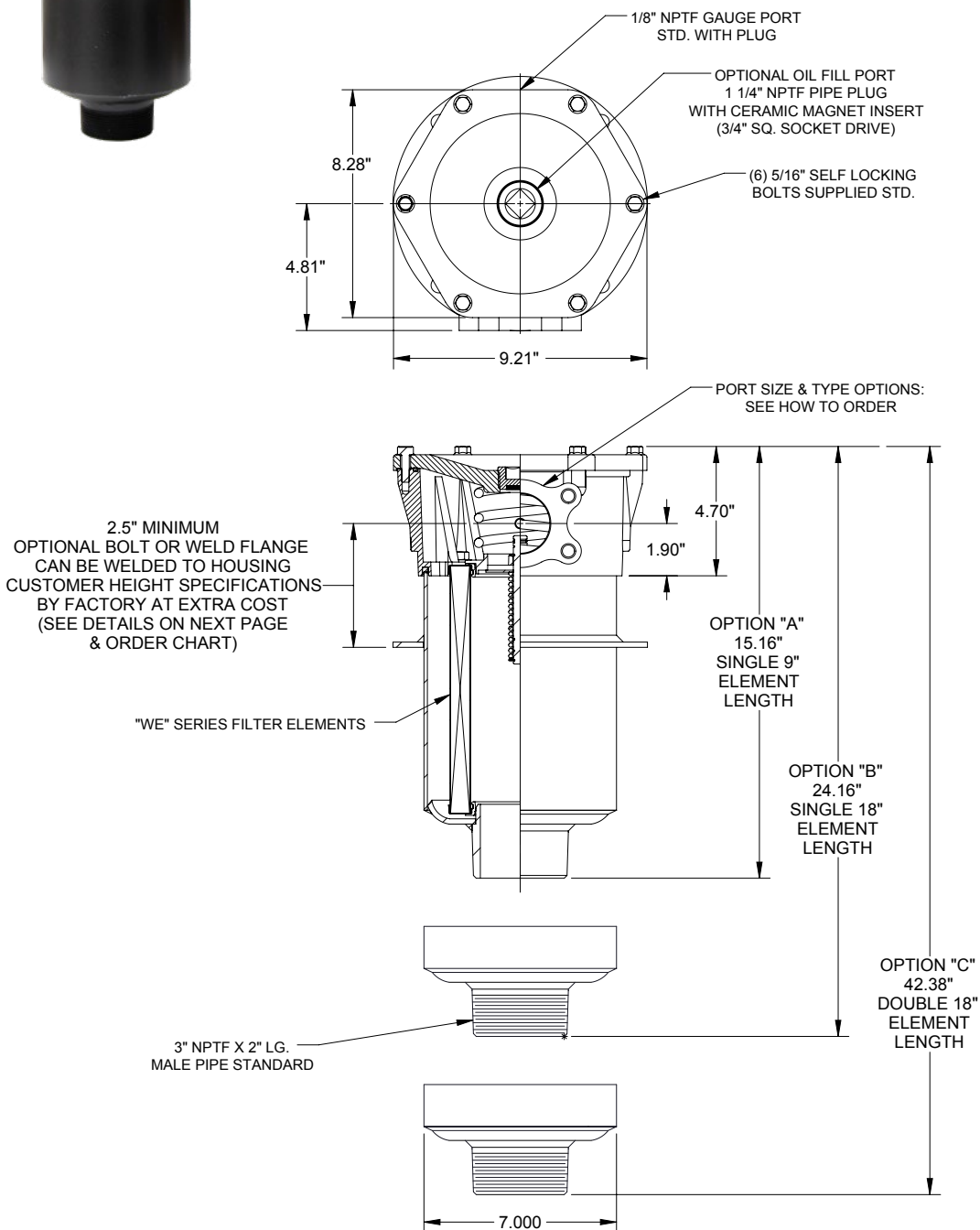
**Flows Up To:** 300GPM (return) 100GPM (suction)

**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

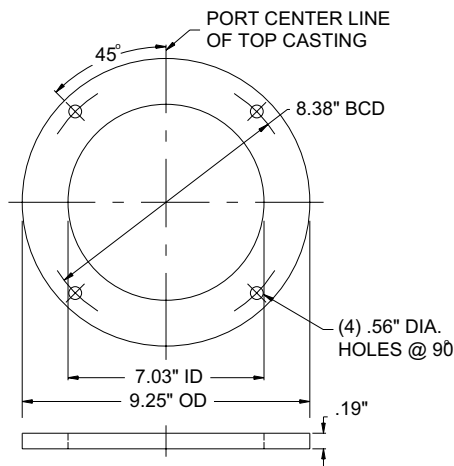


TANK MOUNT



# 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
<small>Dimensions in inches carried out to (2) decimal places. Example: 8 9/16" = 0856</small>	
<small>Desired height from casting port center line mounting surface (reservoir) Note Mfg. tolerances <math>\pm</math> 0.06".</small>	

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



# WE & ZWE Series Filter Elements

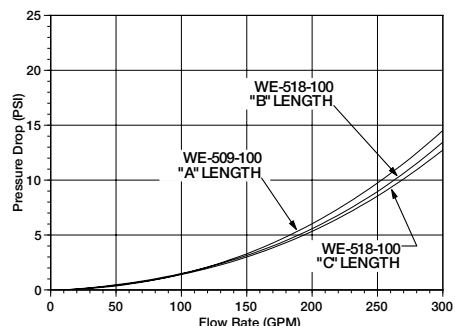
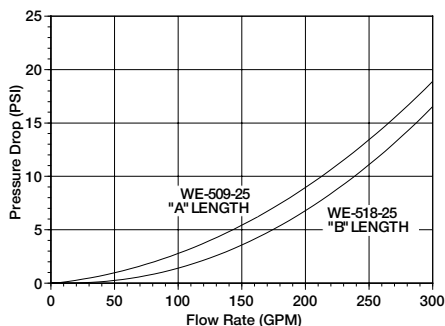
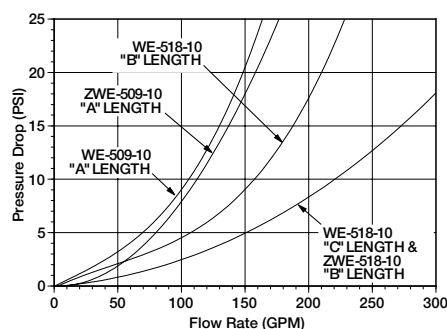
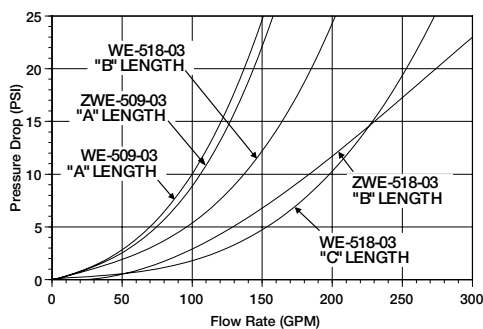
For use in WF2 Housings

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.



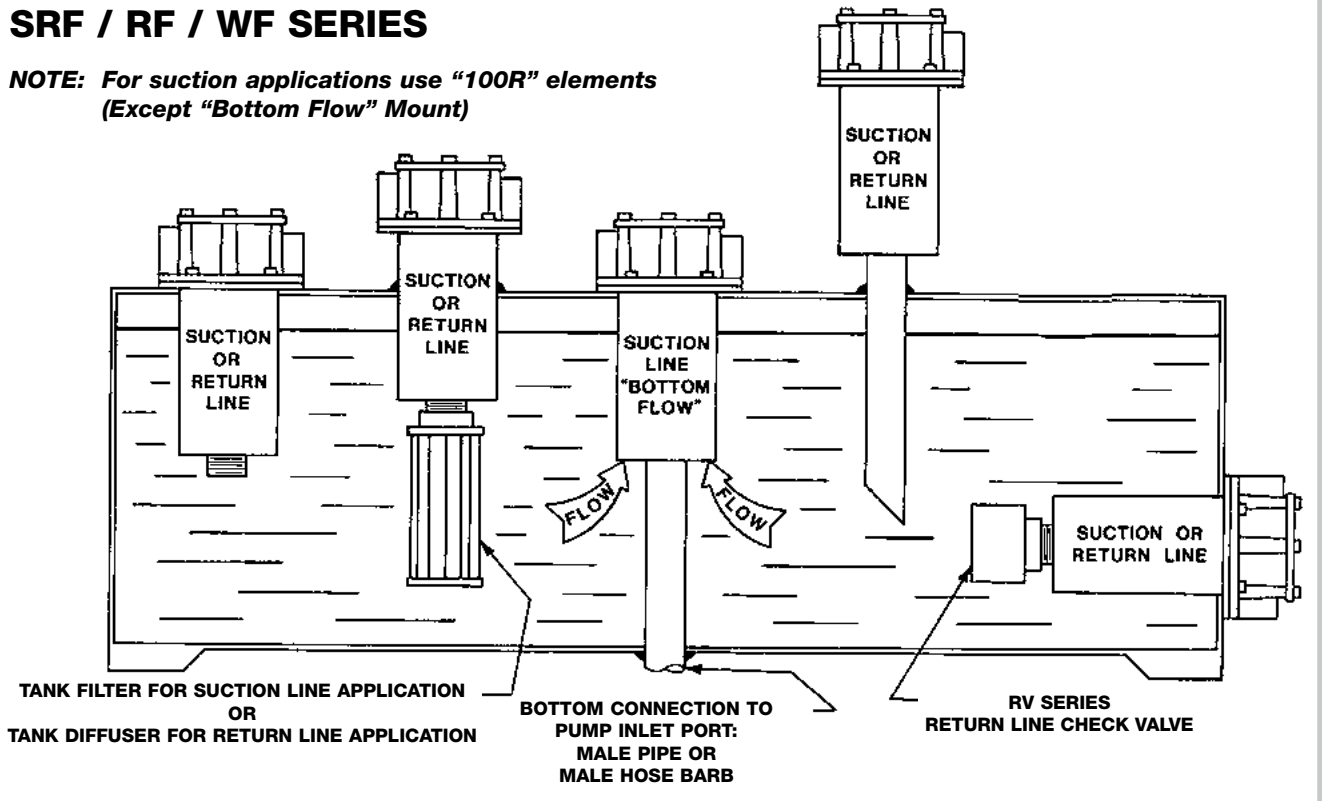
Average pressure drop through clean assembly with 150 SUS oil at 105°F



# TYPICAL TANK-TOP FILTER INSTALLATIONS

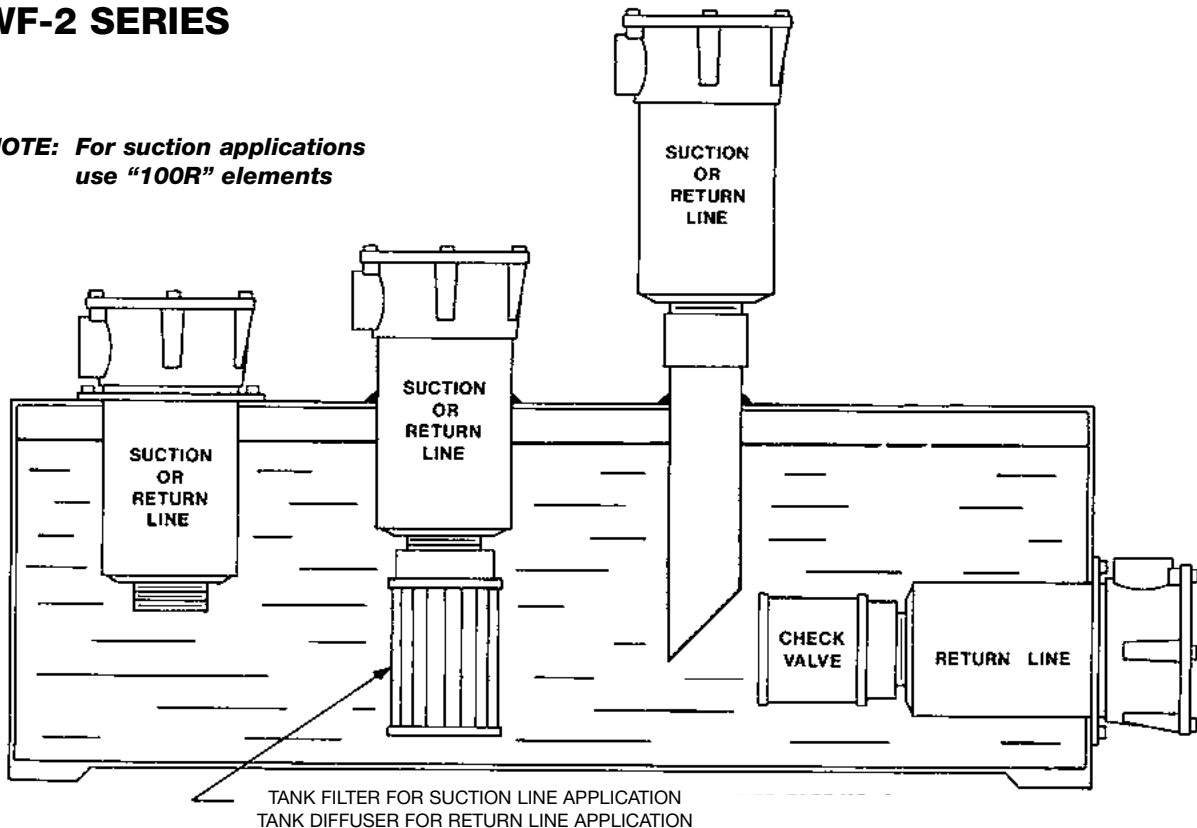
## SRF / RF / WF SERIES

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



## WF-2 SERIES

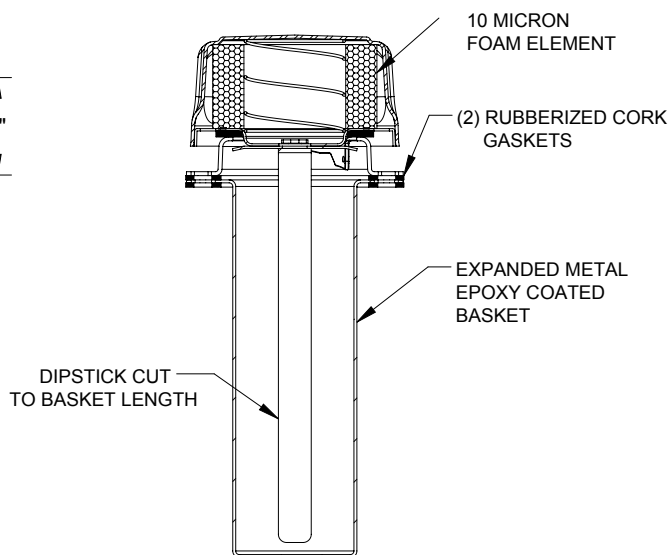
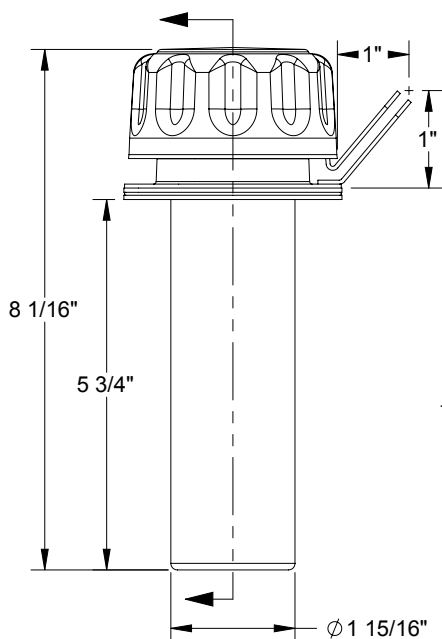
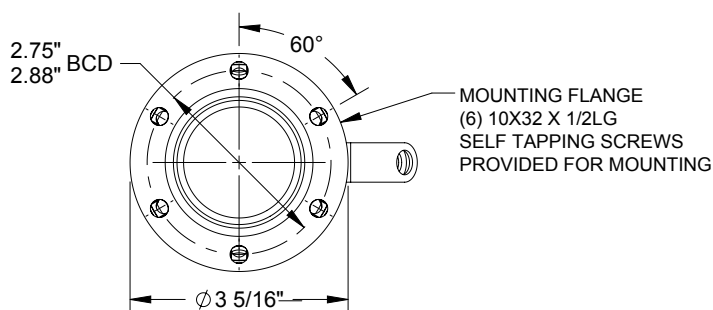
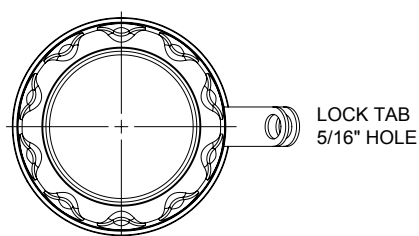
**NOTE:** For suction applications use "100R" elements





## WSFB Series Reservoir Filler Breather

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



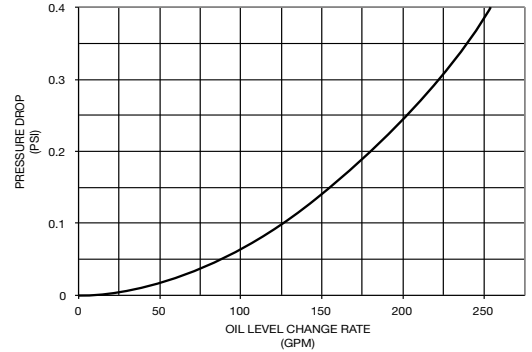
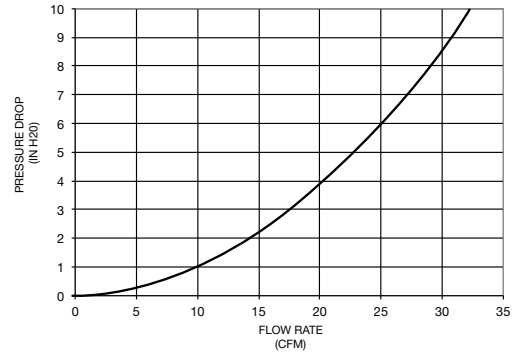
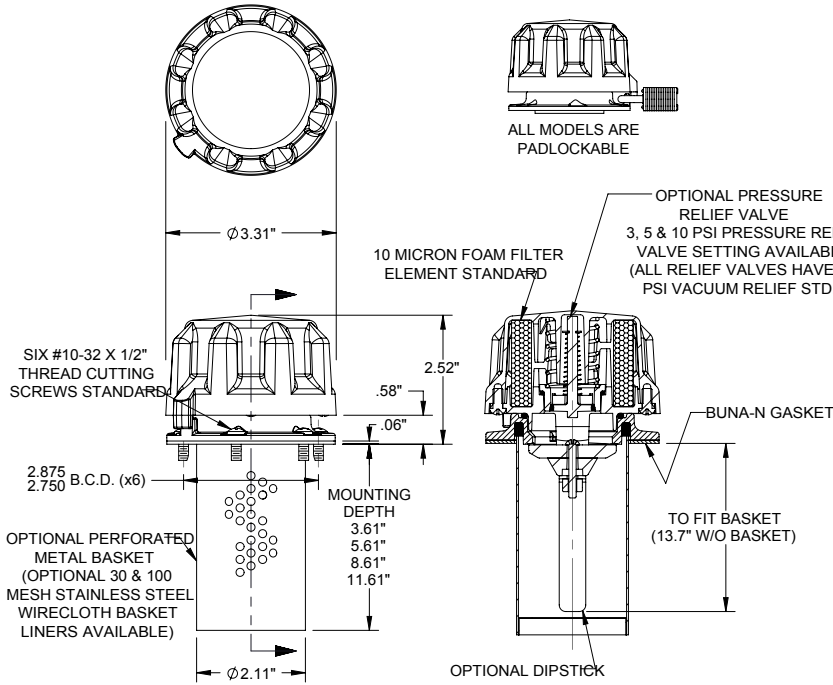
### HOW TO ORDER: WSFB10 XX DL

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

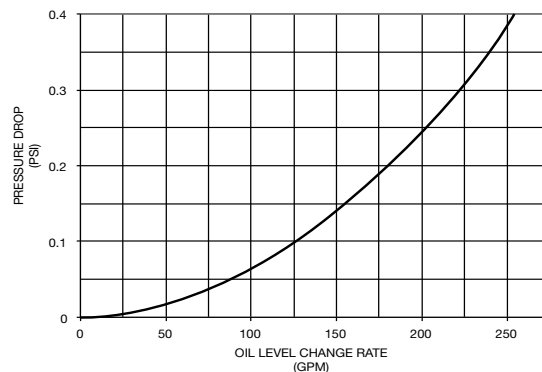
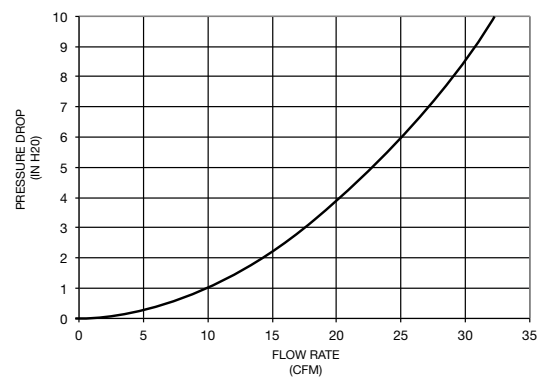
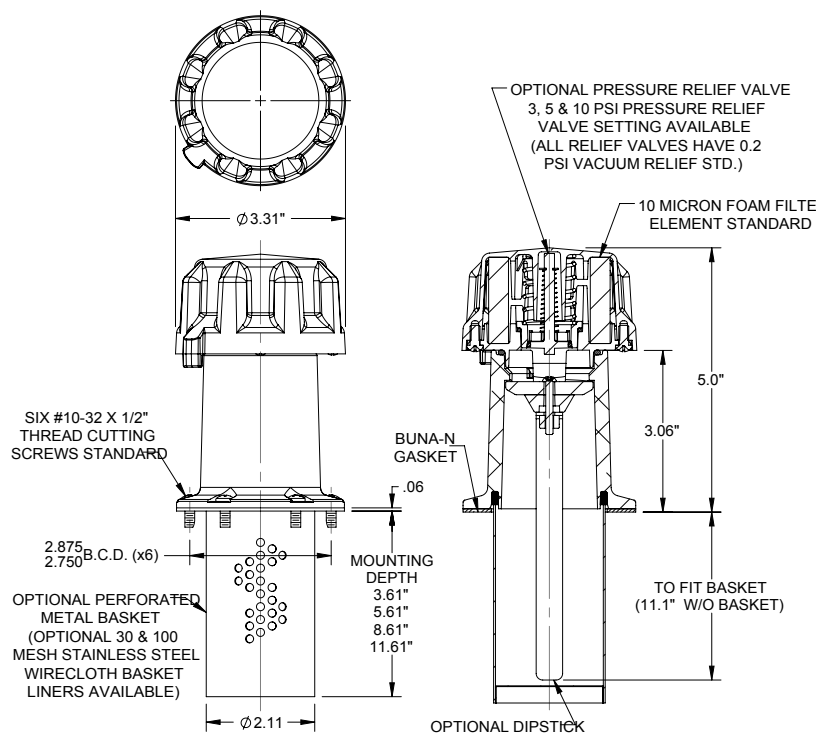


# FBR Series

## Raised Filler Breather



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



### 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)

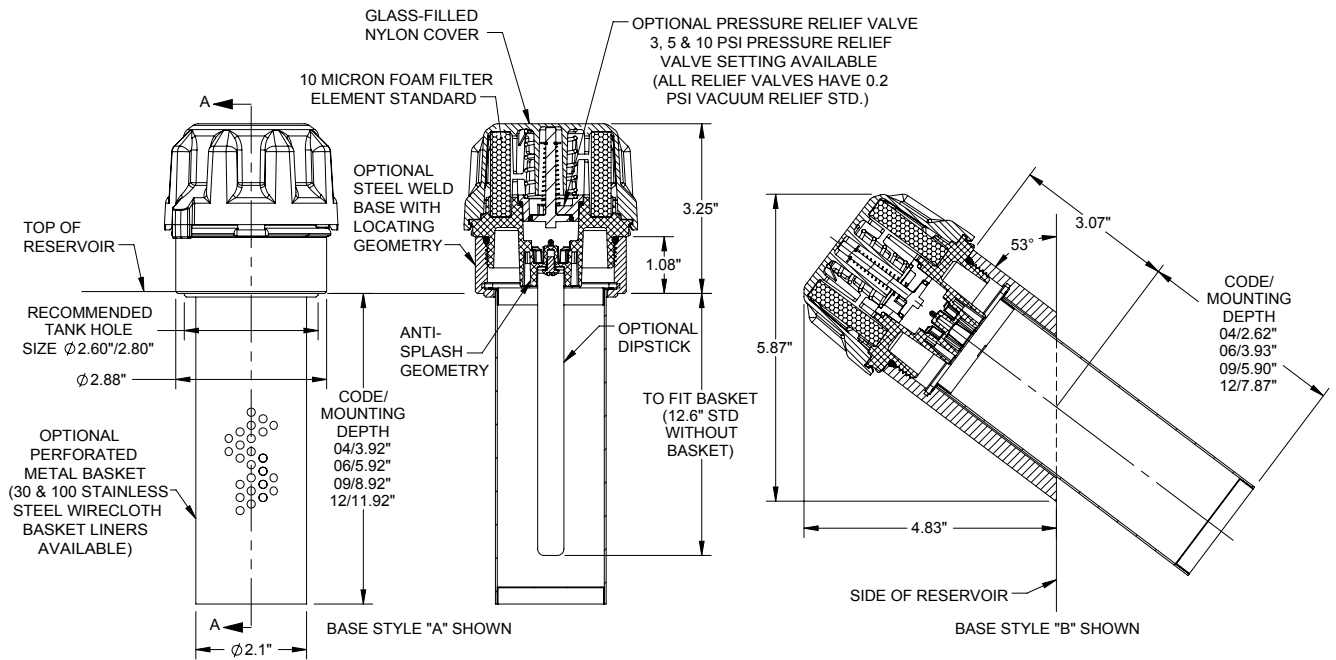
Code	Pressure Relief Valve Settings
00	No Valve
03	3 PSI
05	5 PSI
10	10 PSI



# 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

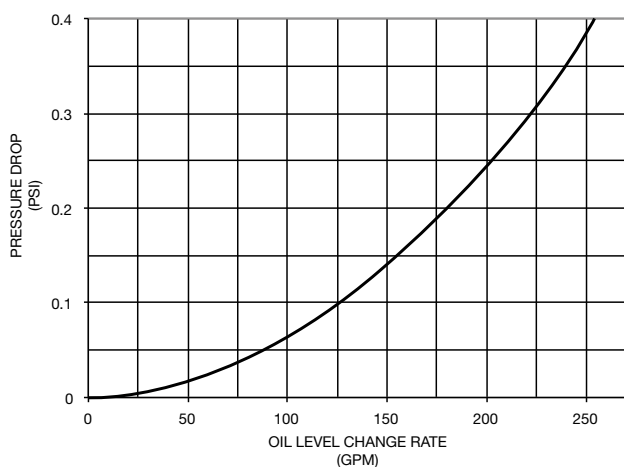
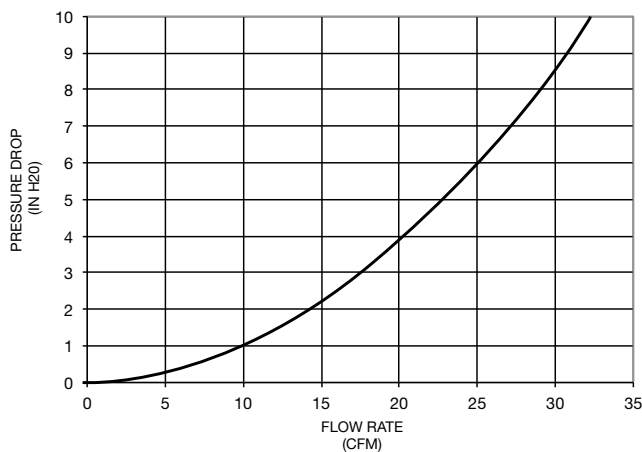
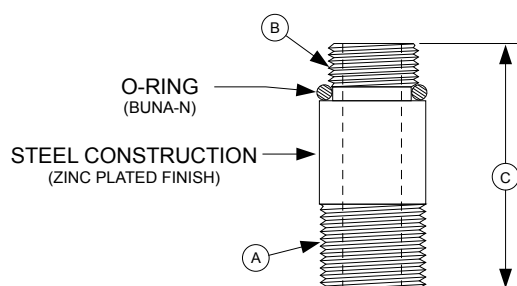






# TB Series Tank Breathers

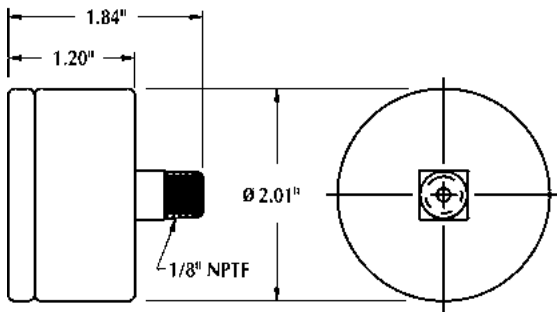
## Convert Spin-On Elements to Tank Breathers



**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 H<sub>2</sub>O (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

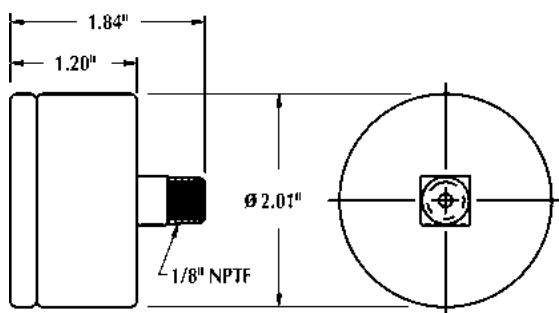


**Part # CI-20**  
For use with 25 PSI  
Filter By-Pass Valve



**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

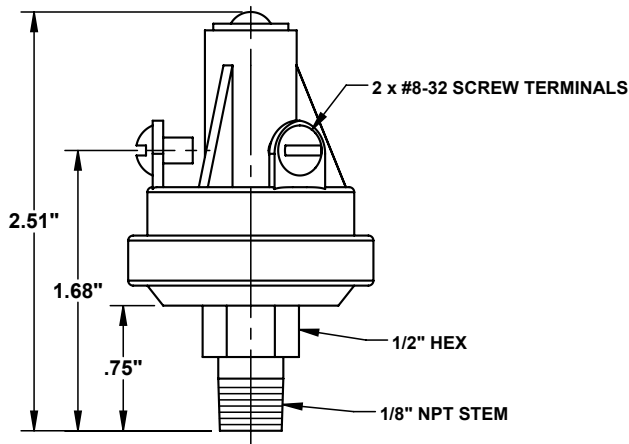
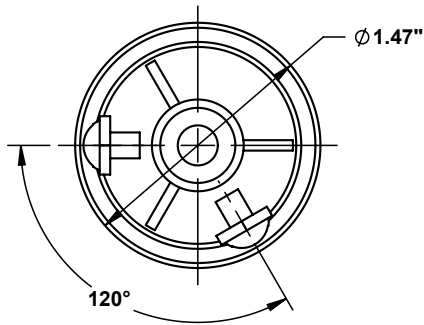
*(Return Line Filter Installations)*

#### Part # CI-20L

For use with 25 PSI  
Filter By-Pass Valve



# VI & PI Series Vacuum & Pressure Indicator Switches



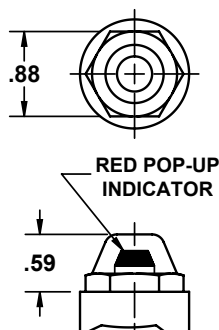
### Specifications:

- 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

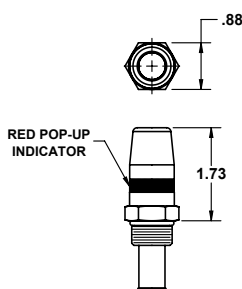
# Differential Pressure ( $\Delta P$ ) Indicators

## DP03 Series



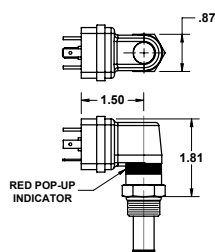
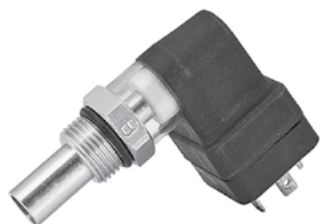
Low Pressure Visual Indicator  
200 PSI Maximum Operating Pressure  
Temperatures up to 150°F  
Automatic Resetting  
Factory installed. Available as a kit for field replacement.  
For use with DF, SF, MF, & ZDF Series Only

## DP04 Series



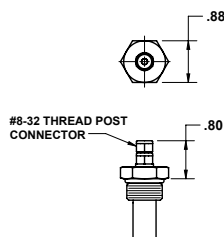
Cartridge Style Visual Indicator  
3000 PSI Max. Oper. Press (6000 PSI for 80 Psid Units)  
Temperatures up to 200°F  
Automatic Resetting  
Factory Installed. Available as kit for field replacement.

## DP05 Series



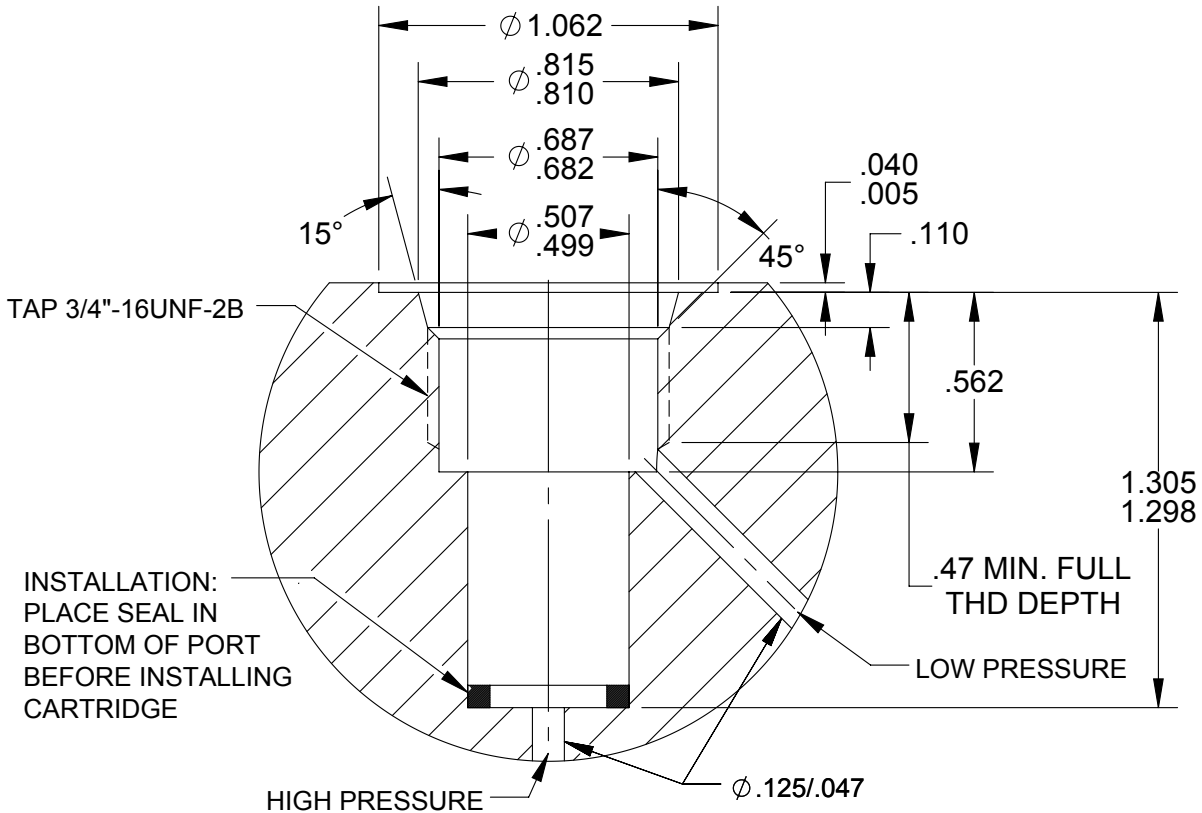
Cartridge Style Visual/Electrical Indicator  
Hirschman (DIN 43650 Type AM Receptacle 11mm)  
1NO, 1NC, & Common SPDT Switch (3 Pole & Ground)  
5A; 125/250 VAC, 24 VDC (Resistive)  
3000 PSI Max. Oper. Press (6000 PSI for 80 Psid Units)  
Temperatures up to 200°F  
Automatic Resetting  
Factory Installed.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

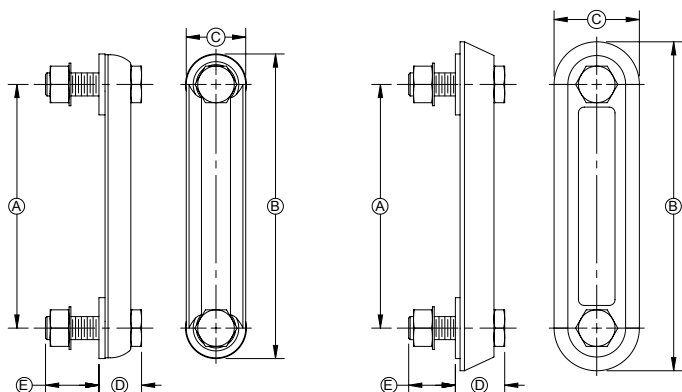
Code	Indicator Setting	By-Pass Setting
04K	4 Psid	5 Psid
13K	13 Psid	15 Psid
22K	22 Psid	25 Psid
44K	44 Psid	50 Psid
80K*	80 Psid	90 Psid
*80 Psid Available on DP04 & DP05 Series Only		



# 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 XX XX

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

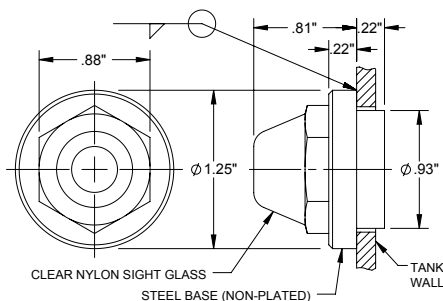
Code	Guard Material
0	No Guard
G	Aluminum
N	Glass Filled Nylon*

\* 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 Temperature 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 ( $\mu$ )	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 ( $\beta_x$ ).



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

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

Example:

37,500 Particles 10 $\mu$  Upstream = 75.00  
500 Particles 10 $\mu$  Downstream

Beta Ratio:

$\beta_{10} = 75.00$  Stated as "Beta 10 equal to 75"

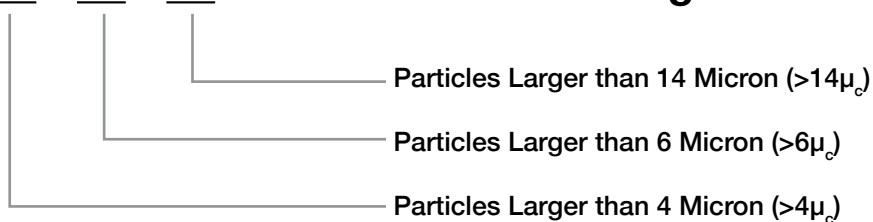
Efficiency<sub>10</sub>  $100 (1 - 1/75) = 98.7\%$

Beta ( $\beta$ )	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			
19 / 17 / 14		Gear Pumps/Motors	25µ Z-Glass	10µ Z-Glass	3µ Z-Glass
20 / 18 / 15		Flow Control Valves Cylinders New Unused Fluid			
<b>Recommended Media</b>					

## 18 / 16 / 13 ISO 4406 Code Range Numbers



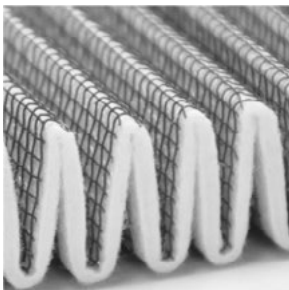
ISO 4406 Range Numbers		
Range Number	Number of Particles Per ml	
	More Than	Up to & Including
24	80,000	160,000
23	40,000	80,000
22	20,000	40,000
21	10,000	20,000
20	5,000	10,000
19	2,500	5,000
18	1,300	2,500
17	640	1,300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	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
<b>Pumps</b>			
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	-
<b>Valves</b>			
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
<b>Bearings</b>			
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	-	-
<b>Actuators</b>			
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
<b>Other</b>			
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

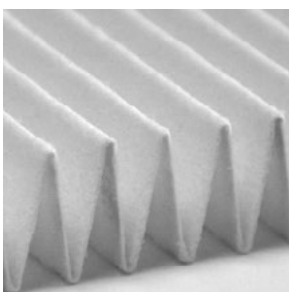
# Zinga Filter Media Types

## “Z-Glass” Media



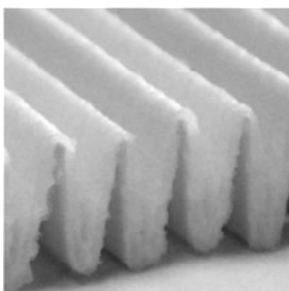
Multi-layered, non-woven glass media that provides the highest levels of depth filtration efficiency and capacity. Higher capacity means longer service life. Coupled with a steel support mesh, “Z-Glass” can withstand higher differential pressures.

## 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.

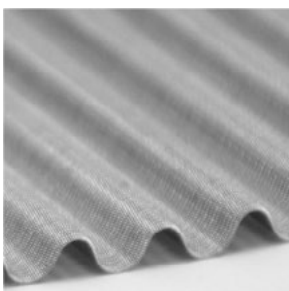
## AquaZorb™ Media



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	560 $\mu$
100	141 $\mu$
200 x 1400	10 $\mu$

## ***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 ( $\Delta P$ ) 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 ( $\Delta P$ )***

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 $\Delta P$ 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

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

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

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

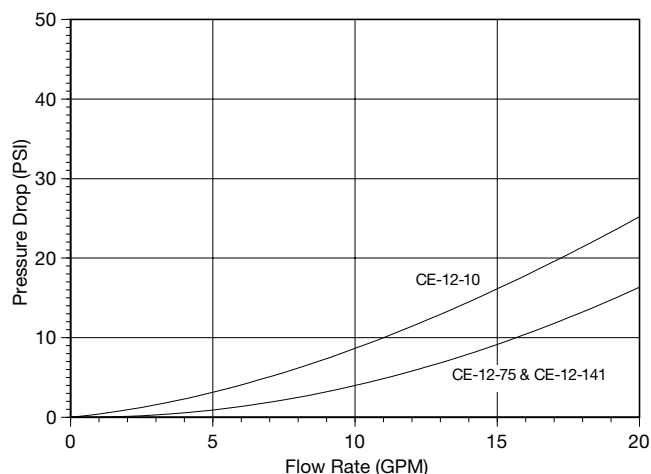
$$1 \text{ psi} = 2.04 \text{ Hg}$$

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

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

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

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



# 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<sup>®</sup>

## 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 900M<sup>3</sup>/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

**Zinga Industries, Inc.**

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