Filtration Group®
Hydraulics

Hydraulic Oil Filtration

17TH EDITION

Corrosion Never Sleeps

ZINGATECT™

Zinga has been manufacturing high quality filtration systems and accessories for more than 30 years. ZingaTect™ coating is stronger than conventional anodizing, providing the best corrosion protection available. If your application requires the toughest protection for the harshest environments, specify ZingaTect coating. Need more information? Contact us.

Tank-Top

If you have corrosive salt applications requiring a proven coating for your exposed hydraulic filter, ZingaTect Coating is now a viable option.

ZingaTect™ Coating Performance Benefits:

- Improves product aesthetics
- Resists deterioration from acid and alkaline solutions
- Fights filiform corrosion
- Is RoHS, ELV, and WEEE compliant
- Combines conventional anodizing with a proprietary sealing process to produce a finish coating that resists creep corrosion while exhibiting superior adhesion qualities
- Highly recommended when corrosion resistance conditions are demanding

Property	Aluminum Alloys
Appearance	Gloss to semi-gloss
Hardness (pencil) (ASTM B 3363)	3H-5H
Thickness (Eddie Current)	0.5 – 2.0 mils
Salt Spray (with cross hatch)	> 1000 hours
Acid Resistance (H2SO4 5% @ 68∞ F)	> 300 hours
Alkaline Resistance (NaOH 5% @ 68∞ F)	> 300 hours
Solvent Resistance (MIBK)	> 20 double rubs
QUV UVB Test (w/ no visible changes)	500 hours

Zinga ProTect Shroud
Harsh Environment Protection
FG03Q combines filter gasket with a protective shroud top.

Minimum orders apply for ZingaTect™ Coating.

ZINGA Filtration Group®

Quality, high-performance cost-effective filtration systems since 1976

608.524.4200
Zinga.com

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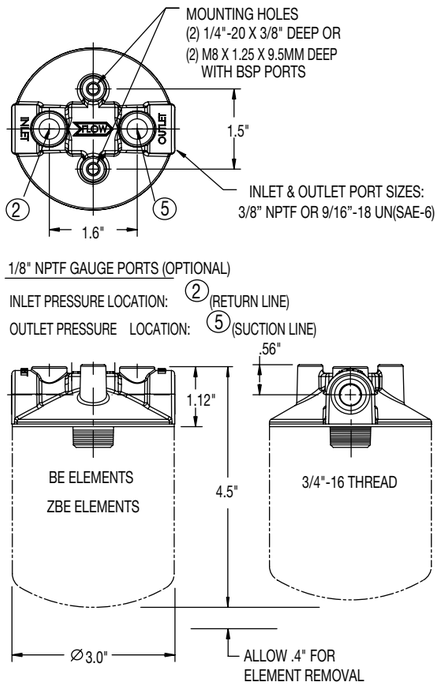
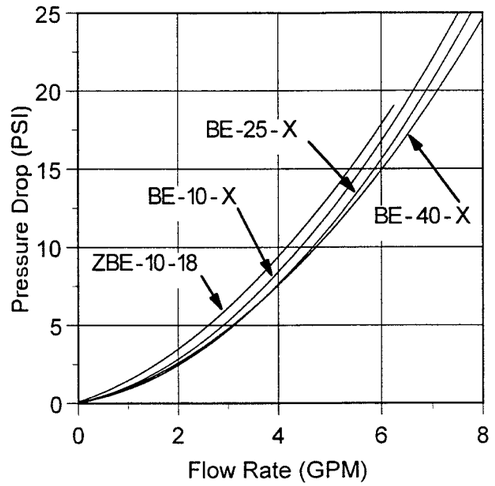
NOTES

BF SERIES
SPIN-ON FILTER HEADS

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.





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

BE & ZBE Element: See Page 2

Commonly Ordered Configurations
BF030
BF060

BE & ZBE SERIES
SPIN-ON FILTER ELEMENTS
FOR USE WITH BF SERIES FILTER HEADS

Diameter:	3.1"
Mounting Thread:	3/4" - 16 UN
Overall Height:	3.4"
Operating Pressure:	200 PSI Max. Operating
ΔP_{max} Cellulose	50 PSID without by-pass valve
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

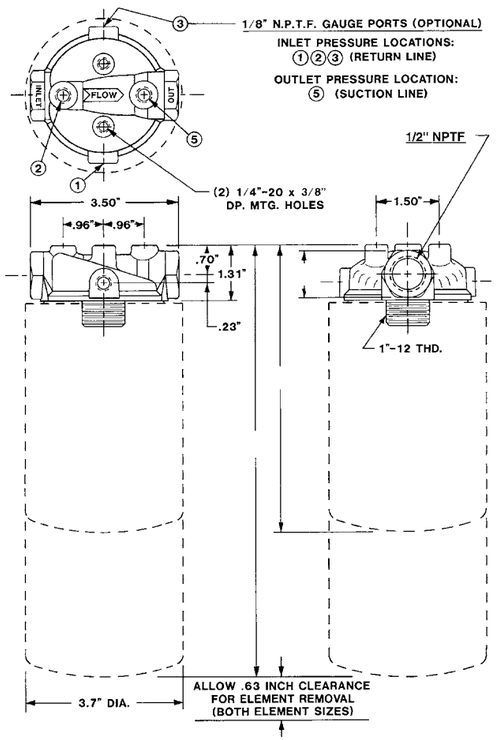
Part Number	Particle Size	Efficiency (See Below)	Can Color / Imprint	Media Type	Internal By-pass
BE100	10 Micron	$\beta_{9\mu(c)} = 2$	White / Red	Cellulose	None
BE1018	10 Micron	$\beta_{9\mu(c)} = 2$	White / Red	Cellulose	18 PSID
BE2525	25 Micron	$\beta_{17\mu(c)} = 2$	White / Black	Cellulose	25 PSID
BE400	40 Micron	$\beta_{22\mu(c)} = 2$	White / Black	Cellulose	None

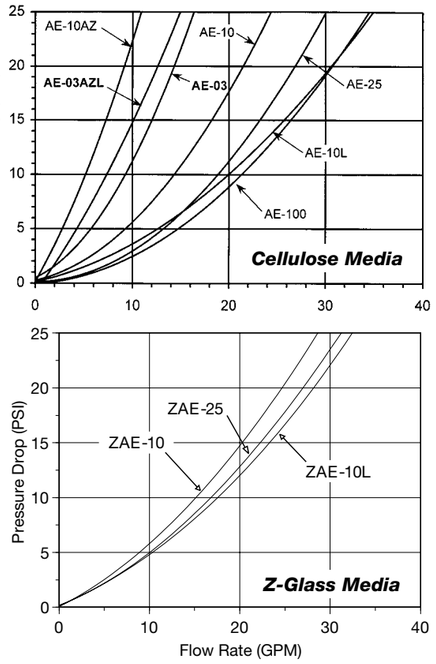
Application Data:

- Reference:
  - $\beta_{X\mu(c)} = 2$ represents 50% efficiency at Particle Size (Nominal Rating)
  - $\beta_{X\mu(c)} = 75$ represents 98.7% efficiency at Particle Size (Absolute Rating)
- Application: Petroleum-based fluids. Consult factory for synthetic fluids.

ZAF05 SERIES
SPIN-ON FILTER HEADS

Flows Up To:	22 GPM (Return) 5 GPM (Suction)
Port Sizes:	1/2” NPTF; 3/4”-16 UN (SAE-8)
Pressure:	250 PSI Max.
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.





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

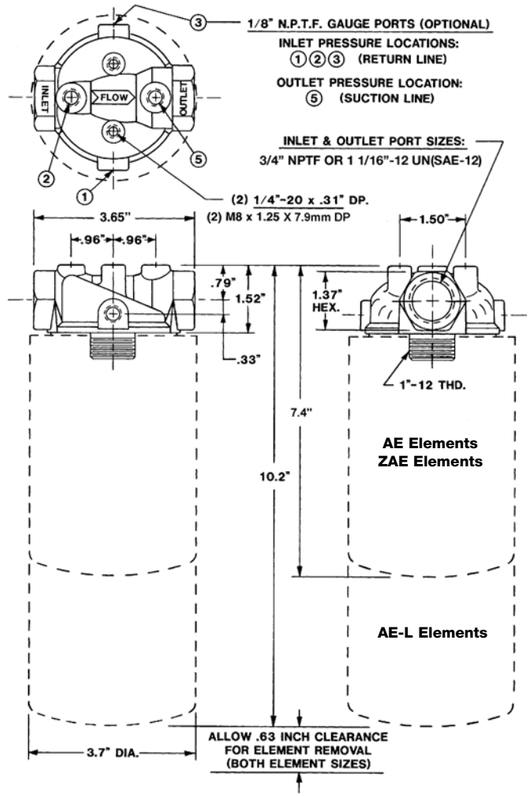
AE & ZAE Element Data: See Pages 6 & 7

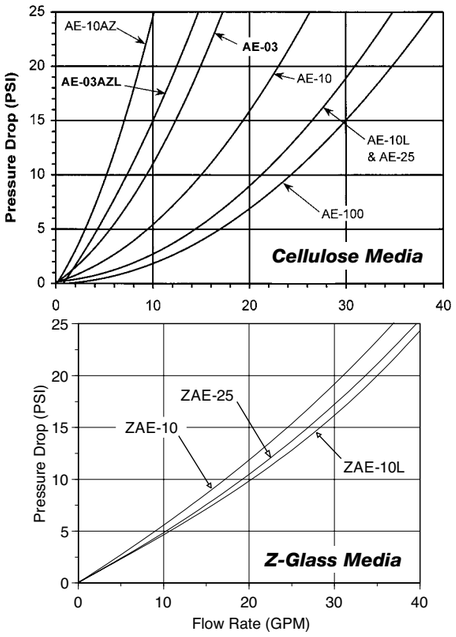
Commonly Ordered Configurations
ZAF05000
ZAF05300
ZAF05500
ZAF08000
ZAF08300
ZAF08500

Consult Manufacturer for Ordering Information

ZAF07 SERIES
SPIN-ON FILTER HEADS

Flows Up To:	25 GPM (Return) 9 GPM (Suction)
Port Sizes:	3/4” NPTF; 1 1/16”-12 UN (SAE-12)
Pressure:	250 PSI Max. Operating
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.





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

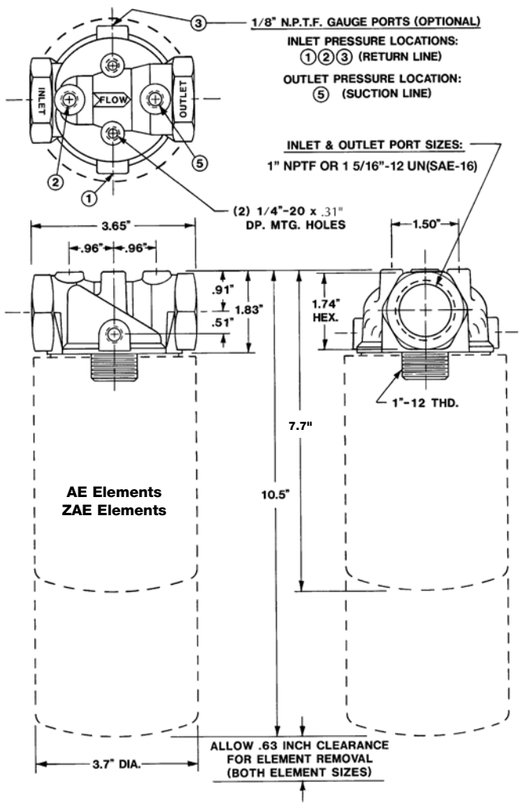
AE & ZAE Element Data: See Pages 6 & 7

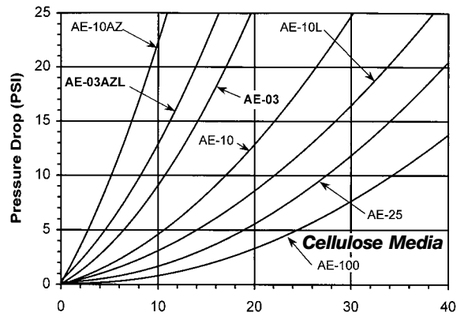
Commonly Ordered Configurations
ZAF07000
ZAF072513
ZAF11000
ZAF112513

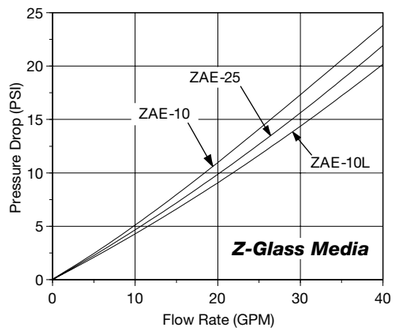
Consult Manufacturer for Ordering Information

ZAF10 SERIES
SPIN-ON FILTER HEADS

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.







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

AE & ZAE Element Data: See Pages 6 & 7

Commonly Ordered Configurations
ZAF10000
ZAF102513
ZAF13000
ZAF132513

AE SERIES
SPIN-ON FILTER ELEMENTS FOR USE WITH ZAF SERIES FILTER HEADS

Diameter:	3.8”
Mounting Thread:	1” - 12 UN
Operating Pressure:	250 PSI Max. Operating
ΔP_{max}:	50 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

Part Number	Particle Size	Nominal Rating	Absolute Rating	Can Color / Imprint	Media Type	Free Water Absorption	Overall Height
AE03	3 Micron	$ß_{<4µ(c)} = 2$	$ß_{7µ(c)} = 75$	White / Black	Cellulose		5.8”
AE03AZL	3 Micron	$ß_{5µ(c)} = 2$	$ß_{24µ(c)} = 75$	White / Orange	Aqua-Zorb	7.2 oz	8.5”
AE10	10 Micron	$ß_{11µ(c)} = 2$	$ß_{25µ(c)} = 75$	White / Red	Cellulose		5.8”
AE10AZ	10 Micron	$ß_{8µ(c)} = 2$	$ß_{30µ(c)} = 75$	White / Orange	Aqua-Zorb	4.1 oz	5.8”
AE10L	10 Micron	$ß_{<4µ(c)} = 2$	$ß_{19µ(c)} = 75$	White / Red	Cellulose		8.5”
AE100	141 Micron	-	-	White / Blue	Stn. Steel Mesh		5.8”
AE25	25 Micron	$ß_{16µ(c)} = 2$	$ß_{31µ(c)} = 75$	White / Black	Cellulose		5.8”

Application Data:

- Reference:
  $ß_{Xµ(c)} = 2$ represents 50% efficiency at Particle Size
  $ß_{Xµ(c)} = 75$ represents 98.7% efficiency at Particle Size
- 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 cannot 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.

Zinga ProTect Shroud
Harsh Environment Protection
FG03Q combines filter gasket with a protective shroud top. (Please Order Separately)

ZAE SERIES
Z-GLASS MEDIA
SPIN-ON FILTER ELEMENTS
FOR USE WITH ZAF SERIES FILTER HEADS

Diameter:	3.8”
Mounting Thread:	1” - 12 UN
Pressure:	250 PSI Max. Operating
ΔP_{max}:	80 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

Part Number	Particle Size	Nominal Rating	Absolute Rating		Can Color / Imprint	Overall Height
ZAE03	3 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{5\mu(c)} = 75$	$\beta_{6\mu(c)} = 200$	White / Green	5.8”
ZAE10	10 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{10\mu(c)} = 75$	$\beta_{14\mu(c)} = 200$	White / Red	5.8”
ZAE10L	10 Micron	$\beta_{6\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	$\beta_{15\mu(c)} = 200$	White / Red	8.5”

Application Data:

- Reference:
  $\beta_{X\mu(c)} = 2$ represents 50% efficiency at Particle Size
  $\beta_{X\mu(c)} = 75$ represents 98.7% efficiency at Particle Size
  $\beta_{X\mu(c)} = 200$ represents 99.5% efficiency at Particle Size
- Z-Glass Media
- Buna-N gasket standard. Fluorocarbon gasket optional, consult factory.
- **Caution:** Do **not** use ZAE Series filter elements on internal combustion engines.

Zinga ProTect Shroud
Harsh Environment Protection
FG03Q combines filter gasket with a protective shroud top.
(Please Order Separately)

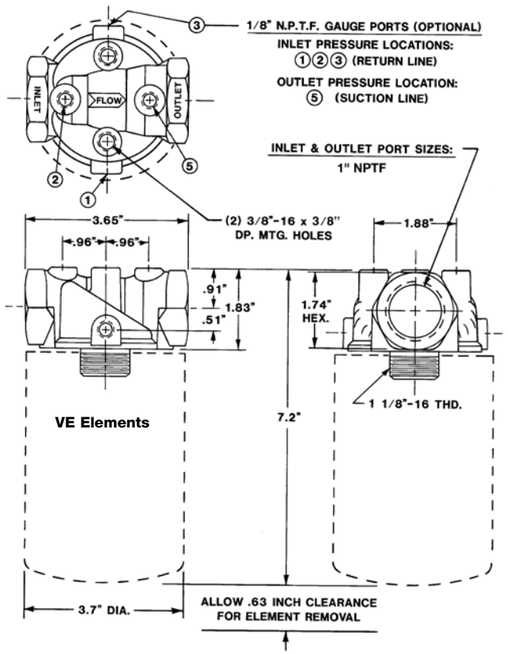
VAF SERIES
SPIN-ON FILTER HEADS
VE-10 SERIES
SPIN-ON FILTER ELEMENTS

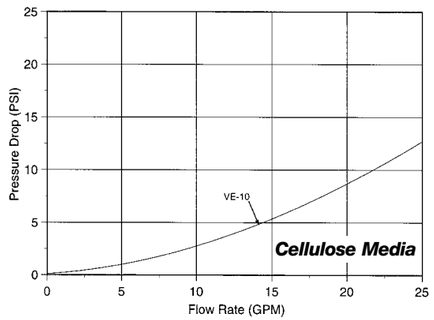
VAF Heads:

Flows Up To:	32 GPM (Return) 14 GPM (Suction)
Port Size:	1" NPTF
Pressure:	250 PSI Max. Operating
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.

VE-10:

Mounting Thread:	1 1/8” - 16
ΔP_{max}:	50 PSID
Efficiency:	ß<4µ(c) = 2 / ß19µ(c) = 75
Can Color / Imprint:	White / Red
Seals:	Buna-N Gasket Standard
Caution:	Do not use VE Elements on internal combustion engines.

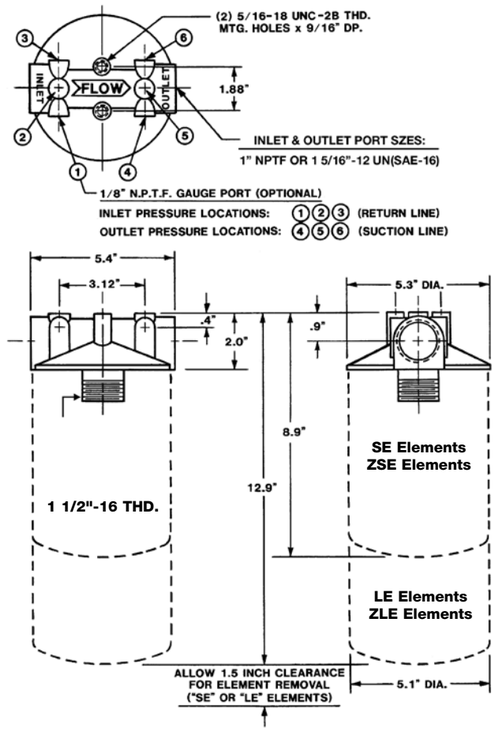


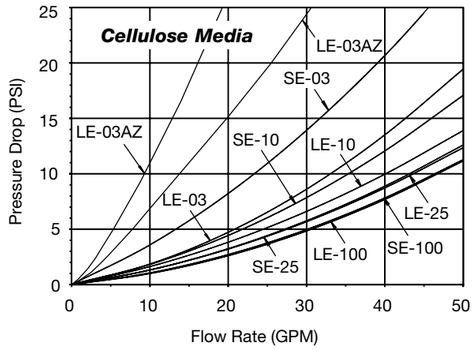


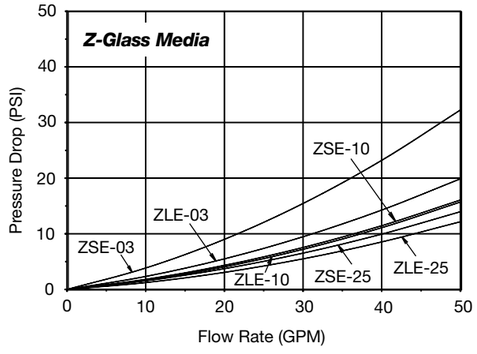
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105° F.

SF100 SERIES
SPIN-ON FILTER HEADS

Flows Up To:	40 GPM (Return) 15 GPM (Suction)
Port Sizes:	1” NPTF; 1 5/16”-12 UN (SAE-16)
Pressure:	200 PSI Max. Operating
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.
	Consult factory for synthetic fluids.







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

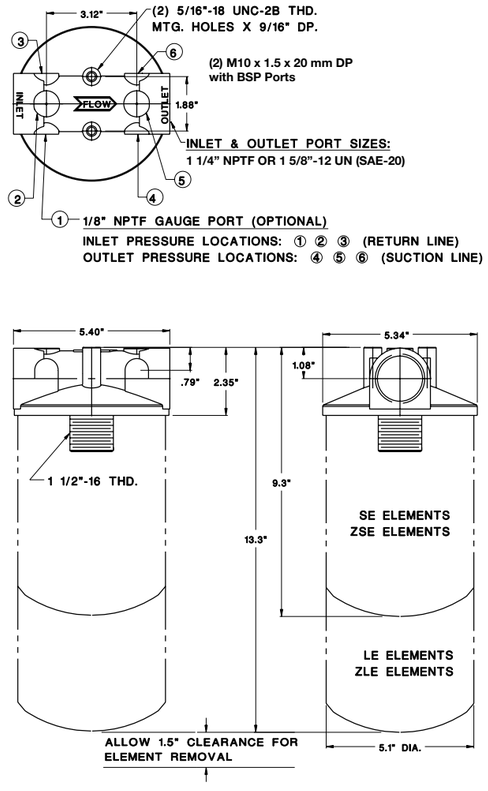
Commonly Ordered Configurations
SF100000
SF130000
SF1002513
SF1302513

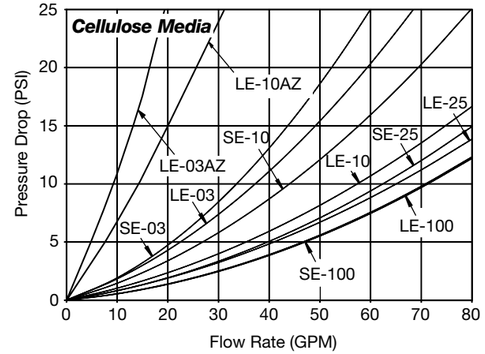
SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

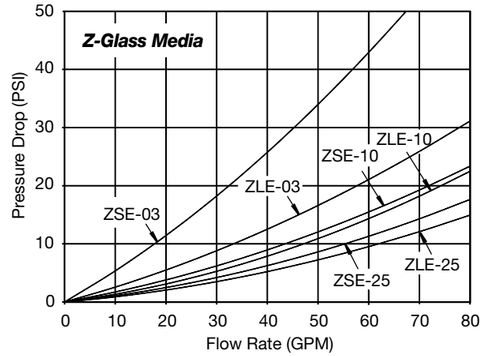
Consult Manufacturer for Ordering Information

SF120 SERIES
SPIN-ON FILTER HEADS

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.







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

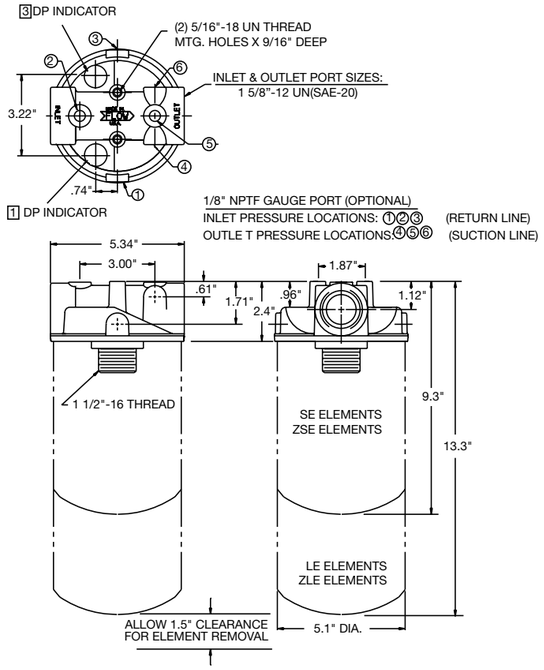
Commonly Ordered Configurations
SF120000
SF160000
SF1202513
SF1602513

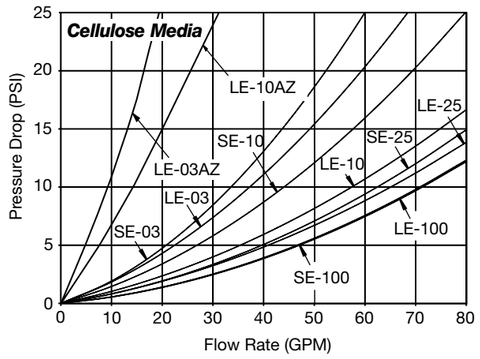
SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

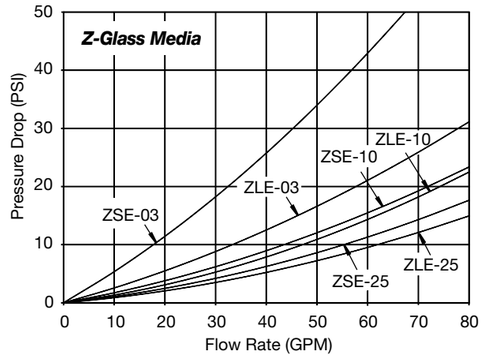
Consult Manufacturer for Ordering Information

SF122 SERIES
SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

Flows Up To:	70 GPM (Return) 25 GPM (Suction)
Port Sizes:	1 5/8”-12 UN (SAE-20)
Pressure:	200 PSI Max. Operating
Temperature:	Up to +200°F
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.
Features:	Socket design in some models allows machining for custom stems







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

SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

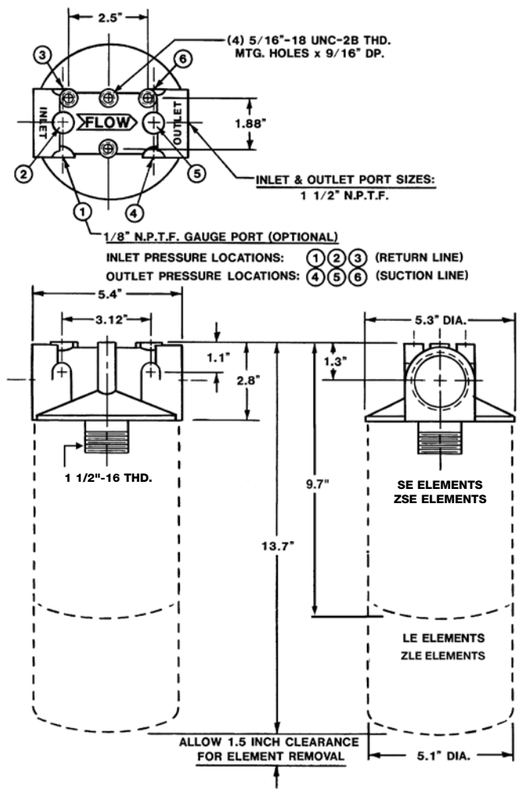
Commonly Ordered Configurations
SF162XX*
SF122XX*

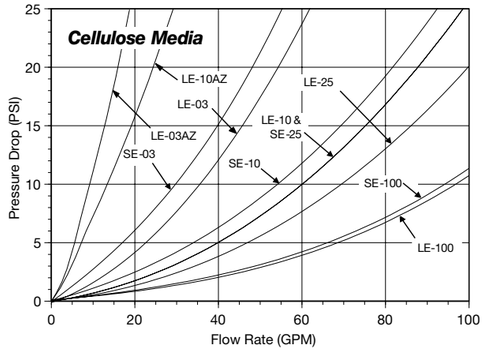
**Additional information required to place an order. Contact factory for assistance.*

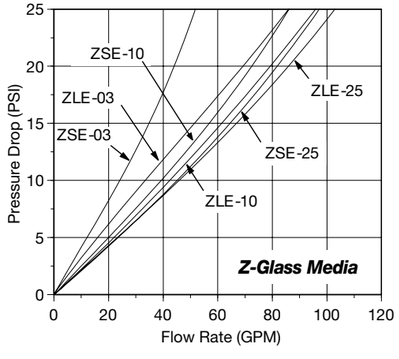
Consult Manufacturer for Ordering Information

SF150 SERIES
SPIN-ON FILTER HEADS

Flows Up To:	80 GPM (Return) 32 GPM (Suction)
Port Sizes:	1 1/2” NPTF
Pressure:	200 PSI Max. Operating
Temperature:	Up to +200° F Operating
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.







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

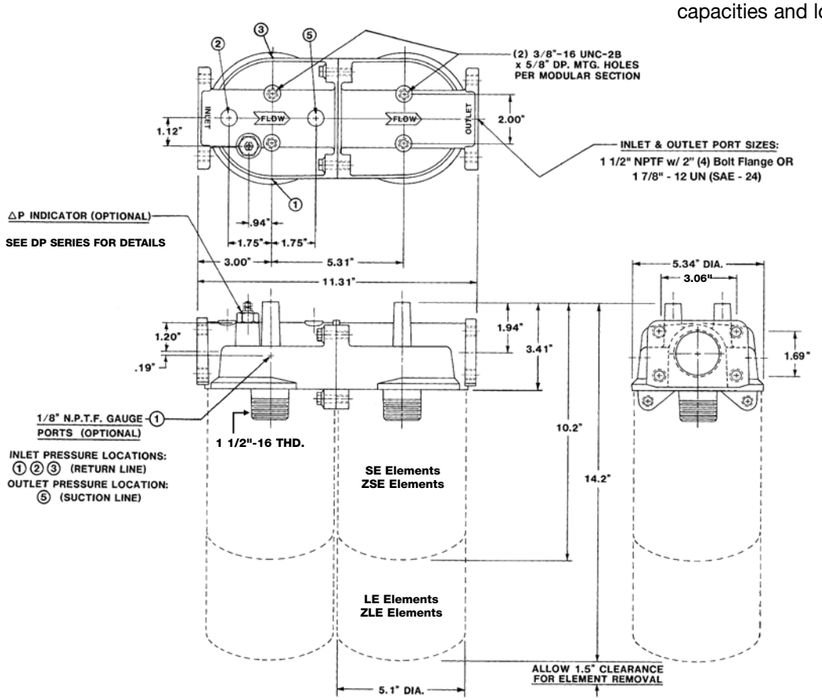
SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

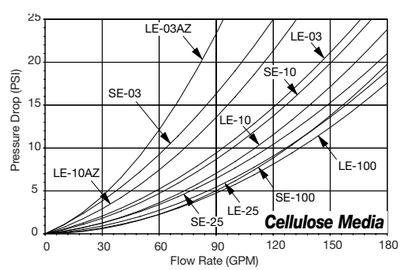
Commonly Ordered Configurations
SF150000
SF1502513

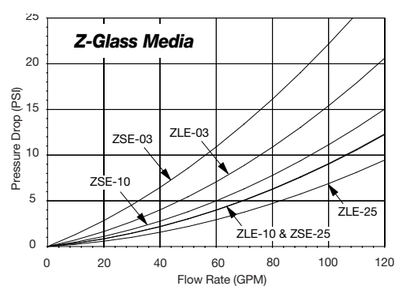
Consult Manufacturer for Ordering Information

MF SERIES
MODULAR LINE TYPE SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

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

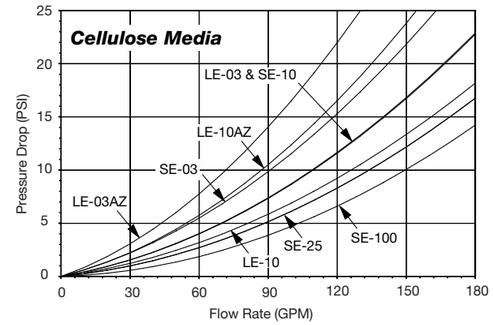


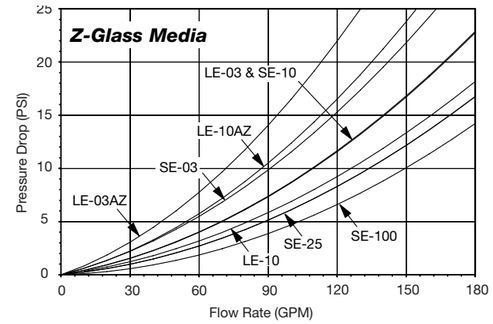




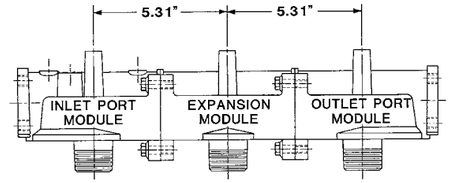
Consult Manufacturer for Ordering Information

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

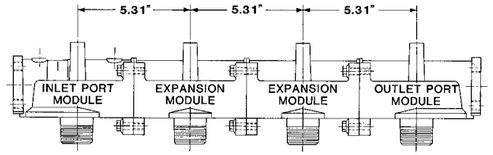




3-ELEMENT SPIN-ON FILTER HEAD ASSEMBLY



4-ELEMENT SPIN-ON FILTER HEAD ASSEMBLY



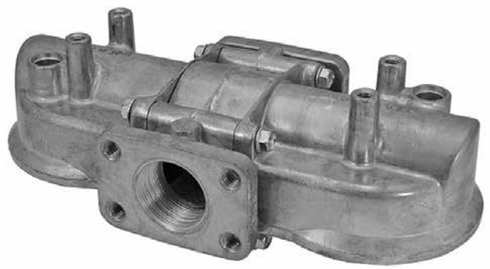
NOTES:

Flow data for a MF-Series 4-element filter head is identical to the 3-element filter above. MF-Series filter heads with 4 or more elements will not significantly reduce pressure drop or allow greater flow through the assembly. The MF Series will lengthen the time periods between element servicing.

Multiple unit head assemblies may require additional mounting support for your application.

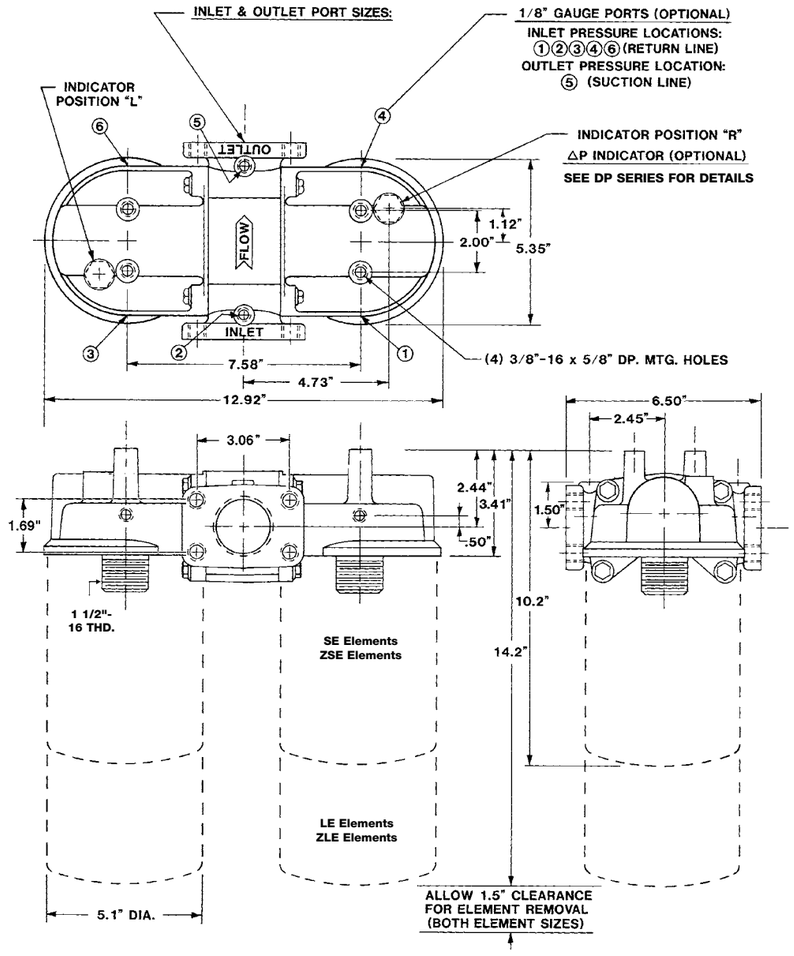
SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

Consult Manufacturer for Ordering Information

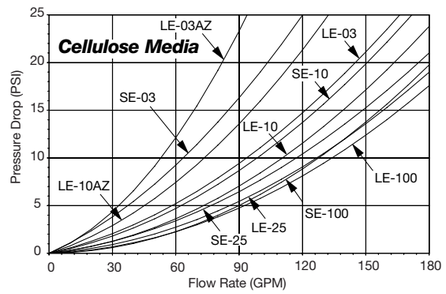


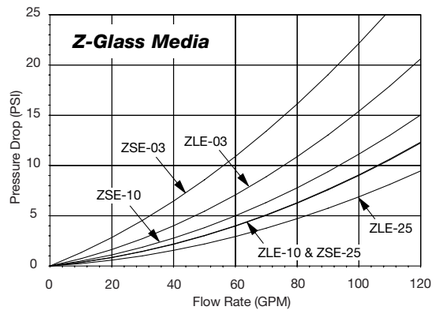
ZDF SERIES
SIDE-BY-SIDE SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

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.

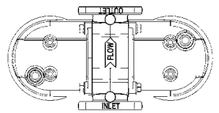


Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil at 105° F. Temperature.

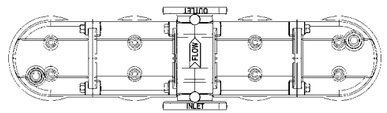




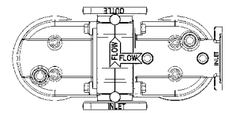
ZDF, MF, & MFT parallel flow modular components can be combined into filter head assemblies such as these. Other combinations are available to meet specific filter applications. For technical advice contact your local distributor or the factory. **NOTE:** Some multiple-head units may require additional mounting support.



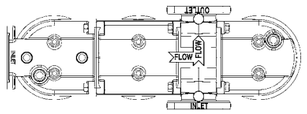
STANDARD TWO ELEMENT FILTER HEAD
CONFIGURATION (BLANK)



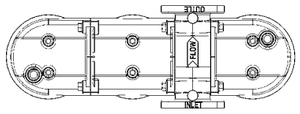
FOUR ELEMENT FILTER
CONFIGURATION " A "



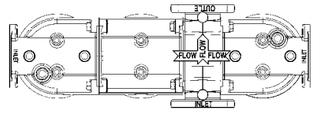
TWO ELEMENT, TWO INLET FILTER HEAD
CONFIGURATION " B "



THREE ELEMENT, 90° FILTER HEAD
CONFIGURATION " D "



THREE ELEMENT FILTER HEAD
CONFIGURATION " G "

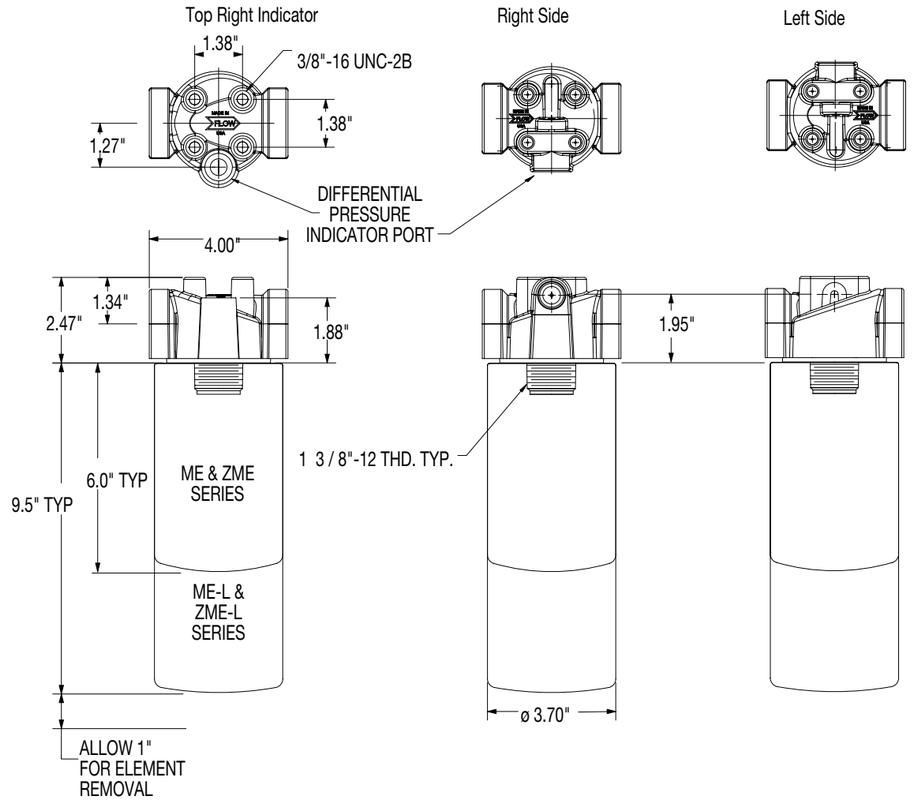


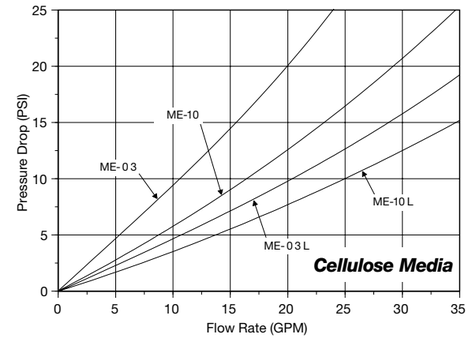
THREE ELEMENT FILTER HEAD
CONFIGURATION " H "

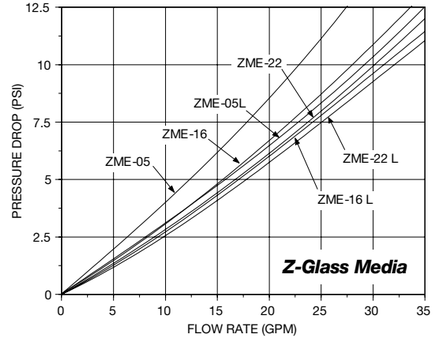
SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

DHF SERIES
SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

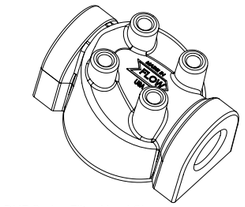
Flows Up To:	35 GPM
Port Sizes:	3/4” NPTF; 1” NPTF 1 1/16”-12UN (SAE-12); 1 5/16”-12UN (SAE-16)
Pressure:	500 PSI Maximum Operating 1000 PSI Static Burst
Temperature:	Up to +200°F
Filters:	ME & ZME Series
Assembly Fatigue Strength:	100,000 cycles @ 0-500 PSI 300,000 cycles @ 0-400 PSI 1,000,000 cycles @ 0-350 PSI
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.



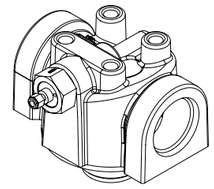




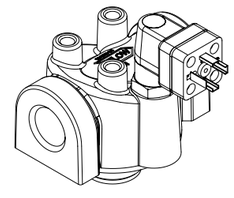
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105°F



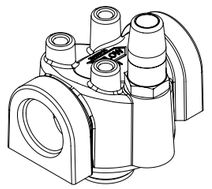
DHF Series Filter Head Shown Without Indicator



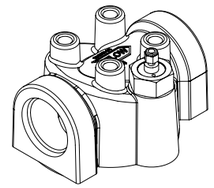
Shown with Side Indicator Port and DP06 Series Single Wire DC Indicator



Shown with Zinga DP05 Series Visual/Electrical Indicator



Shown with Zinga DP04 Series Visual Indicator



Shown with Zinga DP06 Series DC Electrical Indicator

ZME Element Data: See Page 24

Consult Manufacturer for Ordering Information

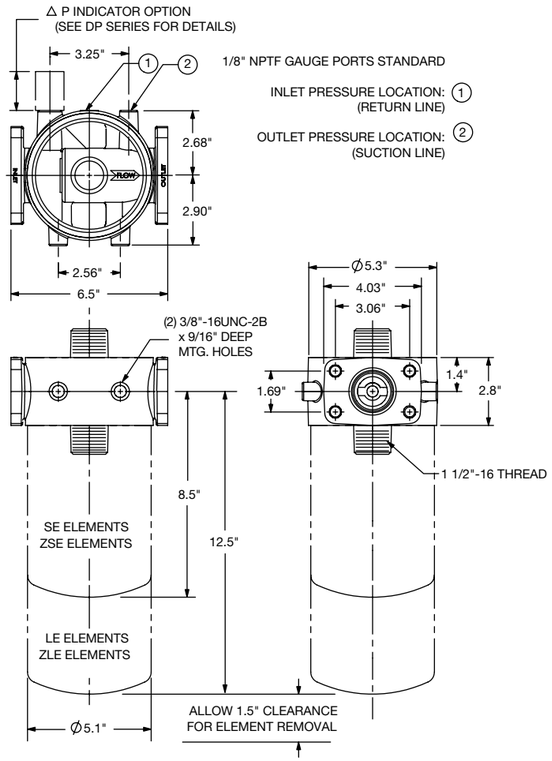
Consult Manufacturer for Ordering Information

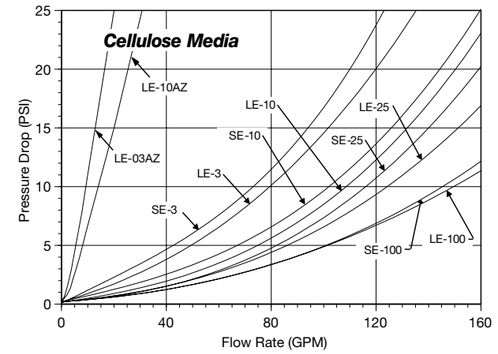
SPIN-ONS

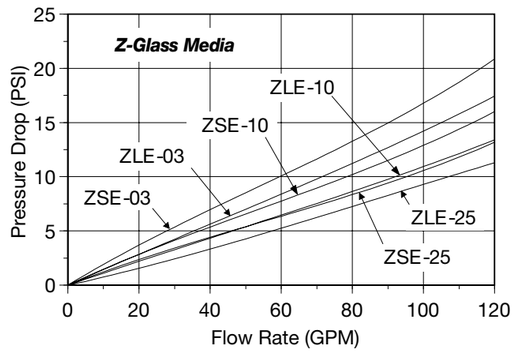
Gauge not included – must be ordered separately.

DF15 SERIES
OVER / UNDER
SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

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 Limited by Indicator Selection
Applications:	Petroleum-based fluids. Consult factory for synthetic fluids.







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

SE, LE, ZSE, & ZLE Element Data: See Pages 20 & 21

SE & LE SERIES
SPIN-ON FILTER ELEMENTS
FOR USE WITH SF, DF, MF, MFT & ZDF SERIES FILTER HEADS

Diameter:	5.1”
Mounting Thread:	1-1/2”-16 UN
Pressure:	200 PSI Max. Operating
ΔP_{max}:	50 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

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

Application Data:

- Reference:
  $ß_{Xµ(c)}$ = 2 represents 50% efficiency at Particle Size
  $ß_{Xµ(c)}$ = 75 represents 98.7% efficiency at Particle Size
- 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 cannot 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
FOR USE WITH SF, DF, MF, MFT & ZDF SERIES FILTER HEADS

Diameter:	5.1”
Mounting Thread:	1-1/2”-16 UN
Pressure:	200 PSI Max. Operating
ΔP_{max}:	80 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

Part Number	Particle Size	Nominal Rating	Absolute Rating		Can Color / Imprint	Overall Height
ZSE03	3 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{<4\mu(c)} = 75$	$\beta_{<7\mu(c)} = 1000$	White / Green	6.9”
ZSE10	10 Micron	$\beta_{<4c)} = 2$	$\beta_{8\mu(c)} = 75$	$\beta_{12\mu(c)} = 1000$	White / Red	6.9”
ZLE03	3 Micron	$\beta_{<4c)} = 2$	$\beta_{<4\mu(c)} = 75$	$\beta_{<7\mu(c)} = 1000$	White / Green	10.9”
ZLE10	10 Micron	$\beta_{<4(c)} = 2$	$\beta_{8\mu(c)} = 75$	$\beta_{12\mu(c)} = 1000$	Red / White	10.9”

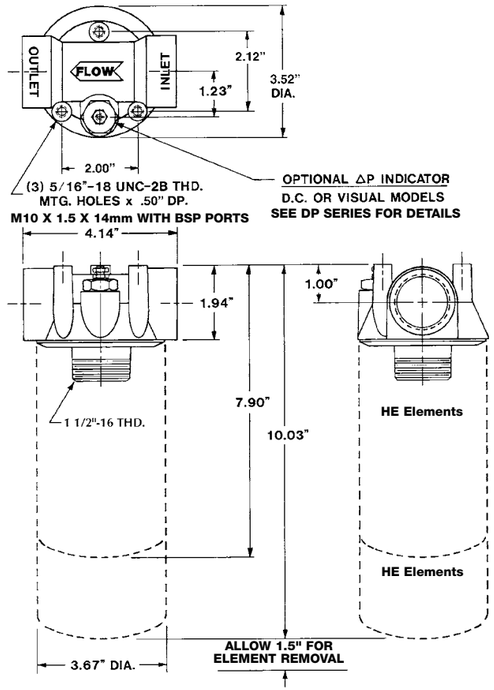
Application Data:

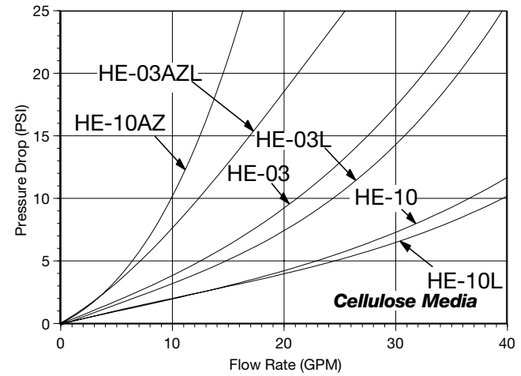
- Reference:
  $\beta_{X\mu(c)} = 2$ represents 50% efficiency at Particle Size
  $\beta_{X\mu(c)} = 75$ represents 98.7% efficiency at Particle Size
  $\beta_{X\mu(c)} = 1000$ represents 99.5% efficiency at Particle Size
- Buna-N FG01 gasket standard. Fluorocarbon gasket FG01V optional, consult factory.
- **Caution:** Do **not** use ZSE/ZLE Series filter elements on internal combustion engines.

Consult Manufacturer for Ordering Information

HF SERIES
SPIN-ON FILTER HEADS
WITH ΔP INDICATOR OPTION

Flows Up To:	40 GPM (Return)
Port Sizes:	3/4" NPTF; 1” NPTF 3/4" BSP; 1" BSP 1 1/16"-12UN (SAE-12); 1 5/16"-12UN (SAE-16)
Pressure:	400 PSI Max. Operating
Temperature:	Up to +200° F w/indicator
Application:	Petroleum-based fluids only. Consult factory for synthetic fluids.





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

HE Element Data: See Page 23

Consult Manufacturer for Ordering Information

HE SERIES
MEDIUM PRESSURE SPIN-ON FILTER ELEMENTS
FOR USE WITH HF SERIES FILTER HEADS.

Diameter:	3.7”
Mounting Thread:	1-1/2” - 16 UN
Pressure:	400 PSI Max. Operating
ΔP_{max} Cellulose:	50 PSID
ΔP_{max} Z-Glass:	80 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

Part Number	Particle Size	Nominal Rating	Absolute Rating	Can Color / Imprint	Media Type*	Free Water Absorption	Overall Height
HE03	3 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{7\mu(c)} = 75$	White / Green	Cellulose		5.9”
HE03AZL	3 Micron	$\beta_{5\mu(c)} = 2$	$\beta_{24\mu(c)} = 75$	White / Orange	Aqua-Zorb	7.2 oz	8.0”
HE10	10 Micron	$\beta_{11\mu(c)} = 2$	$\beta_{25\mu(c)} = 75$	White / Red	Cellulose		5.9”
HE10L	10 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{19\mu(c)} = 75$	White / Red	Cellulose		8.0”

Glass media is available. Contact factory for quote.

Application Data:

- Reference:
  $\beta_{X\mu(c)} = 2$ represents 50% efficiency at Particle Size
  $\beta_{X\mu(c)} = 75$ represents 98.7% efficiency at Particle Size
- Buna-N gasket standard. Fluorocarbon gasket optional, consult factory.
- Suitable for petroleum-based fluids. Consult factory for synthetic fluids.
- **Caution:** Do **not** use HE Series filter elements on internal combustion engines.
- Aqua-Zorb filter medias absorb and retain free water. Any absorbed water cannot 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.

Consult Manufacturer for Ordering Information

ZME SERIES
MEDIUM PRESSURE SPIN-ON FILTER ELEMENTS
FOR USE WITH DHF SERIES FILTER HEADS.

Diameter:	3.7”
Mounting Thread:	1-3/8”-12 UN
Pressure:	500 PSI Max. Operating
ΔP_{max} Cellulose:	80 PSID
ΔP_{max} Z-Glass:	100 PSID
Temperature:	Up to +250°F Operating
Applications:	Petroleum-based fluids.

Part Number	Particle Size	Nominal Rating	Absolute Rating		Can Color / Imprint	Media Type	Overall Height
ZME05	5 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{<4\mu(c)} = 75$	$\beta_{5\mu(c)} = 200$	White / Green	Z-Glass	6.0”
ZME16	16 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{10\mu(c)} = 75$	$\beta_{14\mu(c)} = 200$	White / Red	Z-Glass	6.0”
ZME16L	16 Micron	$\beta_{<4\mu(c)} = 2$	$\beta_{10\mu(c)} = 75$	$\beta_{14\mu(c)} = 200$	White / Red	Z-Glass	9.5”

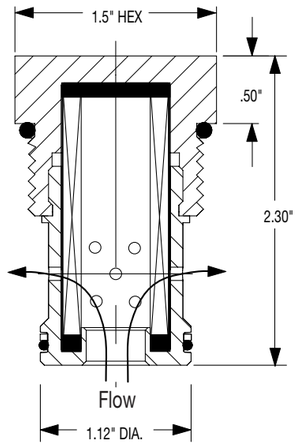
Application Data:

- Reference:
  $\beta_{X\mu(c)} = 2$ represents 50% efficiency at Particle Size
  $\beta_{X\mu(c)} = 75$ represents 98.7% efficiency at Particle Size
  $\beta_{X\mu(c)} = 200$ represents 99.5% efficiency at Particle Size
- Application: Petroleum-based fluids. Consult factory for synthetic fluids
- **Caution:** Do **not** use ZME Series filter elements on internal combustion engines.

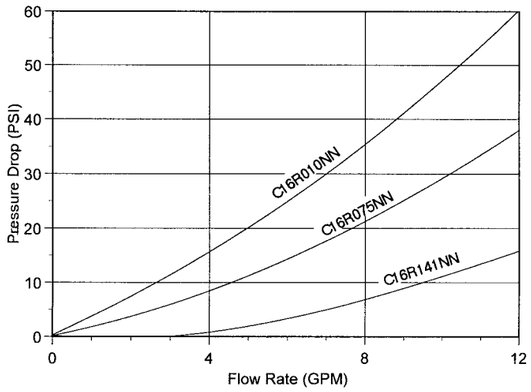
Consult Manufacturer for Ordering Information

C16 SERIES
CARTRIDGE FILTER

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



Sized to fit Common Cavity No. C16-2



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

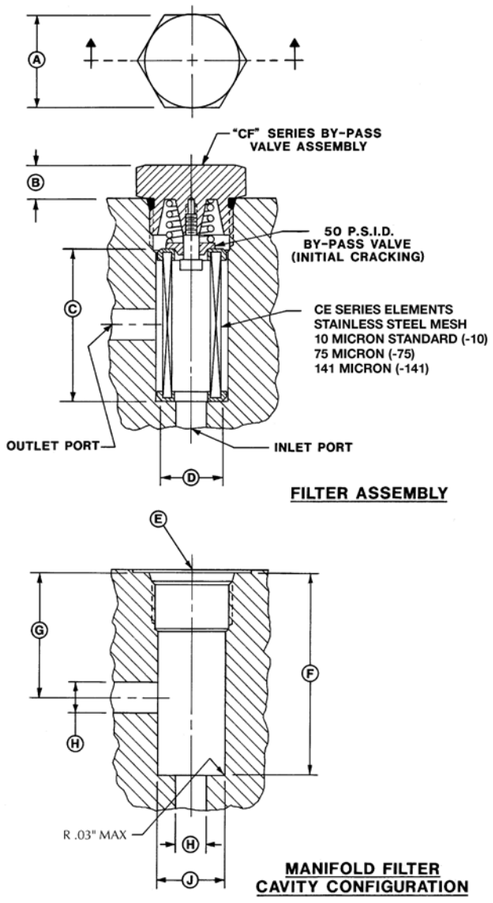
Application Data:

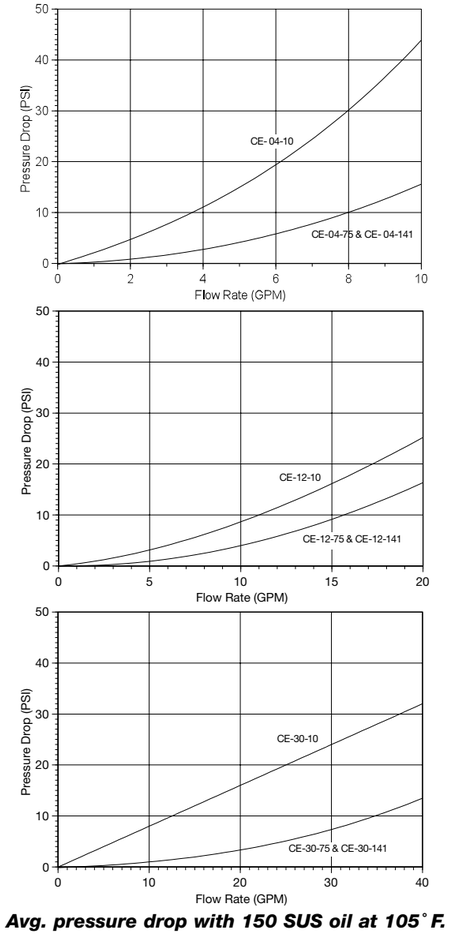
- Steel construction with stainless steel mesh media
- C16-Series filters are designed to be used as final filters to protect control valves, not as system filters.

Consult Manufacturer for Ordering Information

CF / CE SERIES
MANIFOLD CARTRIDGE FILTERS

Operating Pressure:	6,000 PSI
Flows Up To:	30 GPM
Media:	10-Micron Stainless Steel Mesh
Applications:	Petroleum-based fluids





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

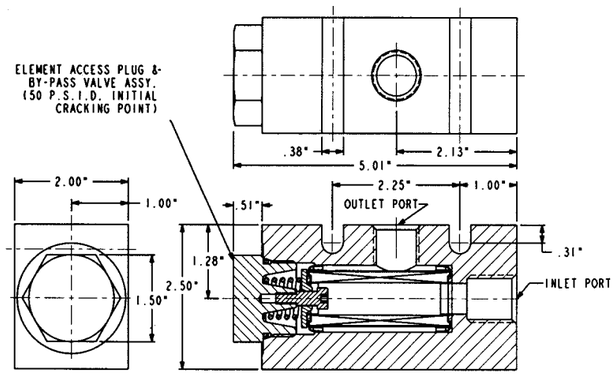
B/P Valve Assy	Element Number	Flow Capacity	A Hex Size	B Hex Height	C Element Length	D Element Dia.	E SAE Port	F Cavity Depth	G Max. / Min.	H Max. Port Dia.	J Max. / Min.
CF04	CE0410	4 GPM	1.00”	.41”	1.72”	.74”	-10 (7/8”-14)	2.41”	1.12” / 1.87”	2.66”	.781” / .814”
CF12	CE1210	12 GPM	1.50”	.50”	2.50”	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”

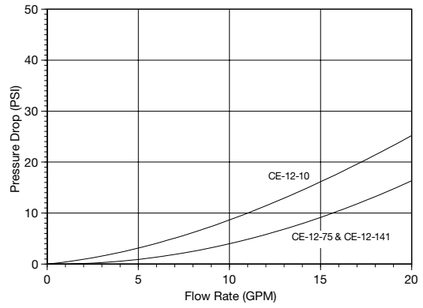
CF/CE Series filters are used as final filters to protect control valves, not as system filters.

Consult Manufacturer for Ordering Information

CF-90 SERIES
IN-LINE
HIGH-PRESSURE FILTER

Port Size:	1/2" NPTF 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 Wire Cloth Standard





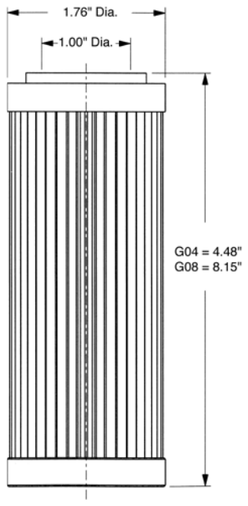
Avg. pressure drop with 150 SUS oil at 105˚F.

Note:

- CE-Series filter elements are compatible with petroleumbase 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).

Consult Manufacturer for Ordering Information

G SERIES ELEMENTS
PALL 9020/9021 INTERCHANGE



Media:	Zinga Synthetic Z-Glass Media
Application:	P3000 Series Pressure Filters
Temperature:	Nitrile Seals -45°F to +225°F Fluorocarbon Seals -20°F to +275°F

150 PSID RATED ELEMENTS

(For Use in Filters with By-pass Valve Only)

ZINGA P/N	BXμ(c) = 200	BXμ(c) = 1000	PALL P/N
G0403LN	<4 Micron	<4 Micron	HC9024FDP4H
G0406LN	5 Micron	6 Micron	HC9024FDN4H
G0410LN	8 Micron	10 Micron	HC9024FDS4H
G0420LN	19 Micron	23 Micron	HC9024FDT4H
G0803LN	<4 Micron	<4 Micron	HC9024FDP8H
G0806LN	5 Micron	6 Micron	HC9024FDN8H
G0810LN	8 Micron	10 Micron	HC9024FDS8H
G0820LN	19 Micron	23 Micron	HC9024FDT4H

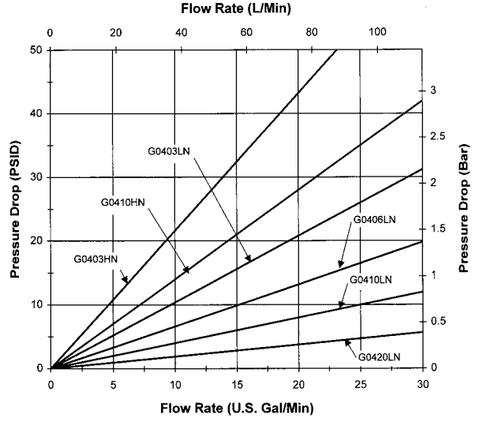
Buna-N Seals Standard. Replace "N" in P/N with "V" for Fluorocarbon.

3000 PSID RATED ELEMENTS

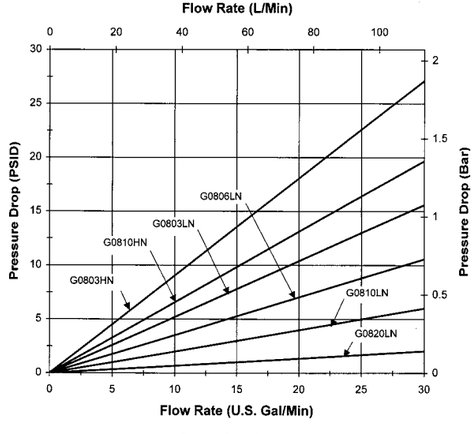
ZINGA P/N	BXμ(c) = 200	BXμ(c) = 1000	PALL P/N
G0403HN	<4 Micron	<4 Micron	HC9021FUP4H
G0410HN	8 Micron	10 Micron	HC9021FUS4H
G0803HN	<4 Micron	<4 Micron	HC9021FUP8H
G0810HN	8 Micron	10 Micron	HC9021FUS8H

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

Average Pressure Drop Through Clean Element
With 150 SUS Oil At 100˚F (32 cSt at 40° C)



G04 Series

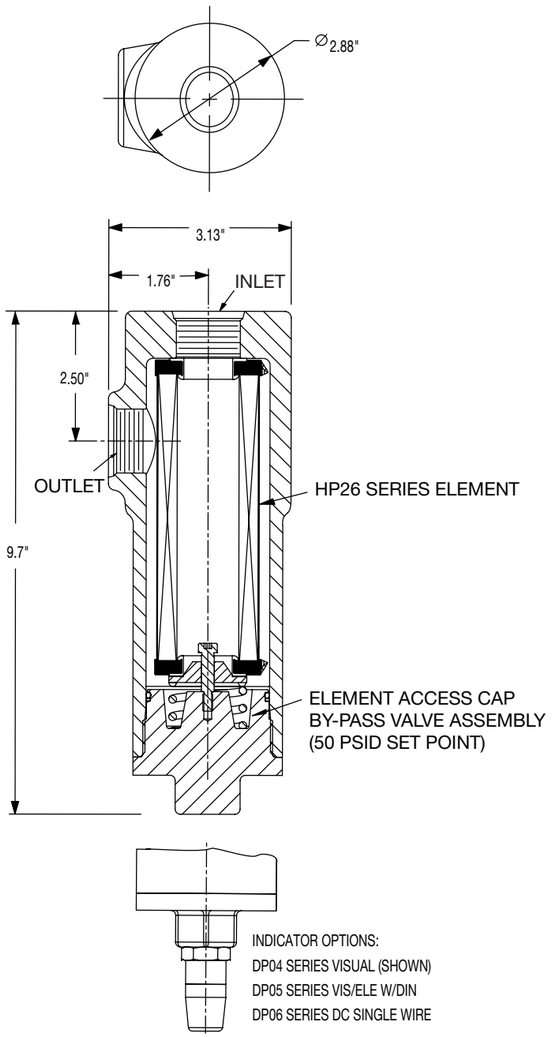


G08 Series

Consult Manufacturer for Ordering Information

HP3000 SERIES
IN-LINE PRESSURE FILTERS
WITH ΔP INDICATOR OPTION

Flows Up To: 60 GPM
Ports Sizes: 1” NPTF
1 1/16”-12 UN (SAE - 12)
1 5/16”-12 UN (SAE - 16)
Pressure: 3,000 PSI Max. Operating
Application: Inline Filtration,
90° Design Permits Element
Replacement without Breaking Line.



SPECIFICATIONS

Code Number	Removal Rating	
03Z (Z-Glass)	$B_{<4\mu(c)}$ = 200	$B_{7\mu(c)}$ = 1000
1oz (Z-Glass)	$B_{10\mu(c)}$ = 200	$B_{12\mu(c)}$ = 1000
003 (Cellulose)	$B_{<4\mu(c)}$ = 2	
010 (Cellulose)	$B_{5\mu(c)}$ = 2	
025 (Cellulose)	$B_{19\mu(c)}$ = 2	

REFERENCE
$B_{x\mu(c)}$ Rating of 1000 = 99.9% Efficiency
$B_{x\mu(c)}$ Rating of 200 = 99.5% Efficiency
$B_{x\mu(c)}$ Rating of 2 = 50.0% Efficiency

PRESSURE RATING
Maximum Operating: 3,000 PSI (207 Bar)
Burst Pressure: 15,000 PSI (1034 Bar)
Rated Fatigue Pressure:
0-3000-0 PSI for 1,000,000 Cycles

TEMPERATURE RANGE
Operating: -40°F to +250°F
(-40°C to +120°C)

BY-PASS SETTING:
50 PSID

ΔP INDICATOR OPTIONS
Visual, Single-Wire DC Electrical, or
Electrical/Visual w/ DIN Connector

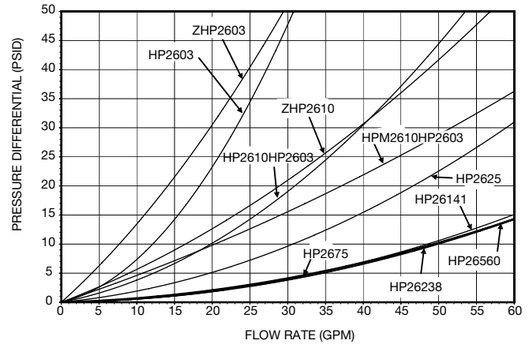
FLUID COMPATIBILITY
Elements: Suitable For Use with Petroleum-Base Fluids. Consult Factory For Use With Other Fluids.

MATERIALS
Housing: Ductile Iron
By-Pass: Steel
Element Hardware: Plated Carbon Steel Endcaps and Core. Epoxy Endcap Adhesive.
Filter Media: Z-Glass Fiber, Cellulose Stainless Steel Mesh

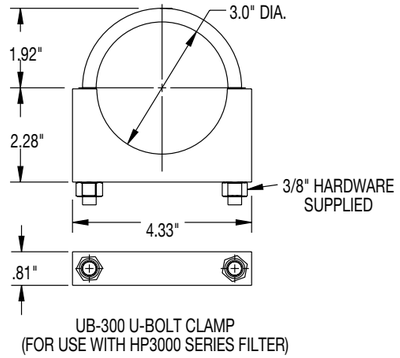
WEIGHT
4.2 lbs. (2.2 Kg)

Consult Manufacturer for Ordering Information

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



ACCESSORIES:



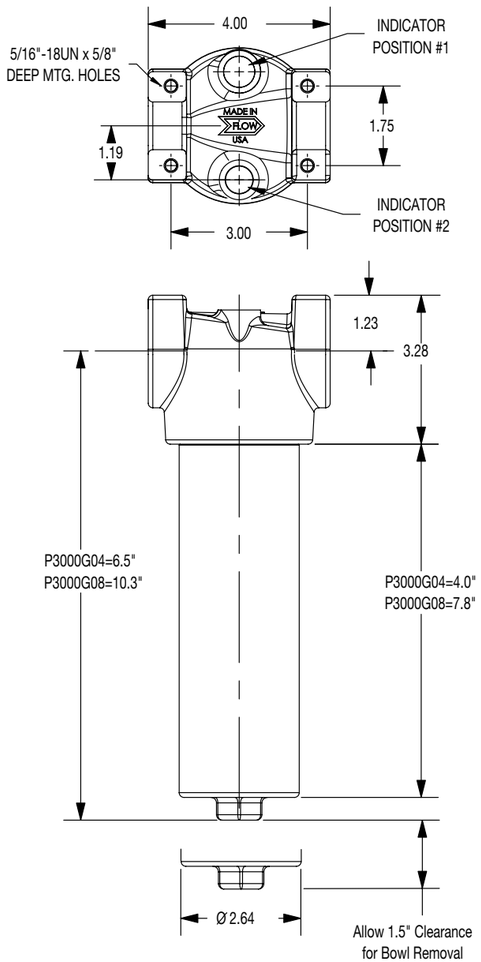
UB-300 U-BOLT CLAMP
(FOR USE WITH HP3000 SERIES FILTER)

Consult Manufacturer for Ordering Information

Phone 608.524.4200 Fax 608.524.4220 www.filtrationgroup.com E 17

P3000 SERIES
PRESSURE FILTERS
WITH ΔP INDICATOR OPTION

Flows Up To:	30 GPM (114 L/MIN)
Ports Size:	1 1/16”-12 UN (SAE - 12)
Pressure:	3,000 PSI (207 BAR)
Application:	Inline Filtration, External Charge Pump Filtration, High-Shock Return Line Filtration



SPECIFICATIONS

Code Number	Removal Rating	
03H (Z-Glass)	$\beta_{<4\mu(c)} = 200$	$\beta_{<4\mu(c)} = 1000$
03L (Z-Glass)	$\beta_{<4\mu(c)} = 200$	$\beta_{<4\mu(c)} = 1000$
06L (Z-Glass)	$\beta_{5\mu(c)} = 200$	$\beta_{6\mu(c)} = 1000$
10L (Z-Glass)	$\beta_{8\mu(c)} = 200$	$\beta_{10\mu(c)} = 1000$
10H (Z-Glass)	$\beta_{8\mu(c)} = 200$	$\beta_{10\mu(c)} = 1000$
20L (Z-Glass)	$\beta_{19\mu(c)} = 200$	$\beta_{23\mu(c)} = 1000$
10C (cellulose)	$\beta_{5\mu(c)} = 2$	

REFERENCE
$\beta_{X\mu(c)}$ Rating of 1000 = 99.9% Efficiency
$\beta_{X\mu(c)}$ Rating of 200 = 99.5% Efficiency
$\beta_{X\mu(c)}$ Rating of 2 = 50.0% Efficiency

PRESSURE RATING
Maximum Operating: 3,000 PSI (207 Bar)
Burst Pressure: 8,600 PSI (580 Bar)
Rated Fatigue Pressure:
0-3000-0 PSI for 1,000,000 Cycles

TEMPERATURE RANGE
Operating: -40°F to +250°F
(-40°C to +120°C)

BY-PASS SETTING OPTION:
No By-Pass or 50 PSID

ΔP INDICATOR OPTIONS
Visual, Single-Wire DC Electrical, or Electrical/Visual w/ DIN Connector

FLUID COMPATIBILITY
Elements: Suitable For Use with Petroleum-Base Fluids. Consult Factory For Use With Other Fluids.

MATERIALS
Head: Die-Cast Aluminum
Bowl: Anodized Aluminum (6061-T6)
By-Pass: Nylon
Element Hardware: Plated Carbon Steel Endcaps and Core. Epoxy Endcap Adhesive.
Filter Media: Z-Glass Fiber Standard

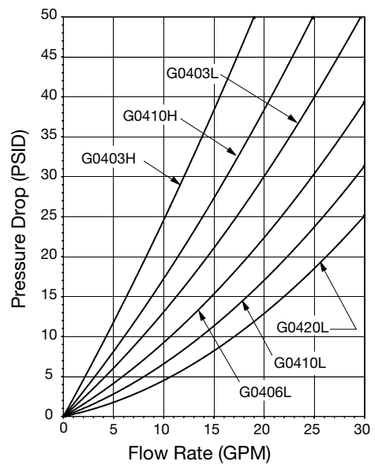
WEIGHT
P3000G04: 4.2 lbs. (2.2 Kg)
P3000G08: 5.2 lbs. (2.8 Kg)

Consult Manufacturer for Ordering Information

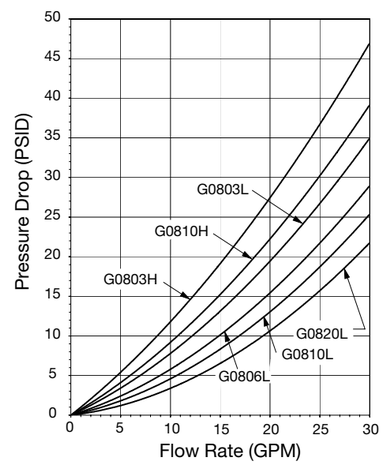
P3000 PRESSURE DROP CURVES

Fluid Viscosity 150 SUS at 105°F (33 CS at 41°C)

4” Length



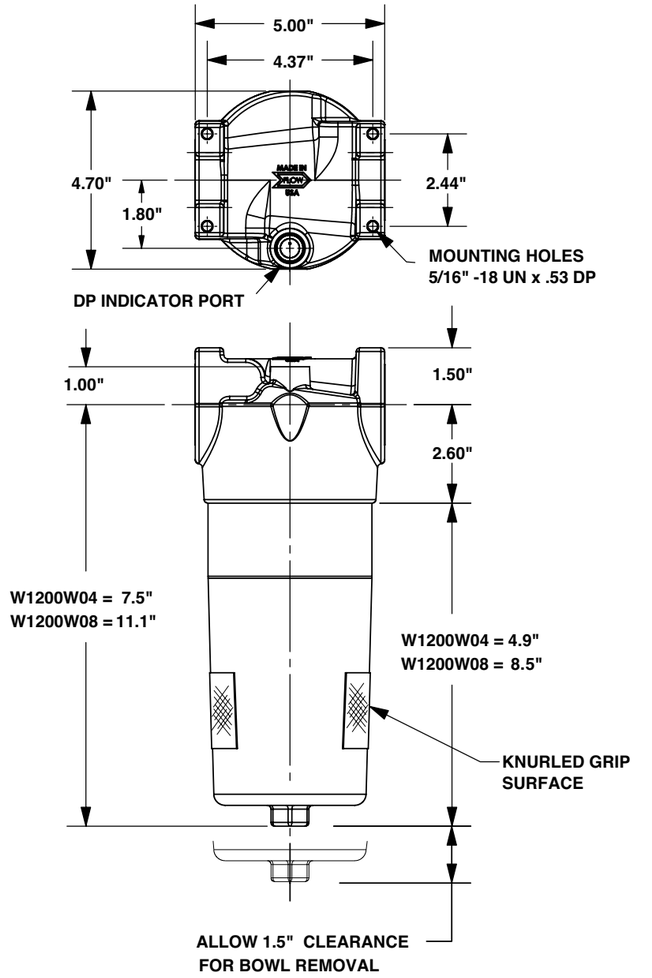
8” Length



Consult Manufacturer for Ordering Information

W1200 SERIES
PRESSURE FILTERS
WITH ΔP INDICATOR OPTION

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. Operating Pressure:	1,200 PSI (83 BAR)
Application:	Inline Filtration
	High-Shock Return Line Filtration



SPECIFICATIONS

Code Number	Removal Rating	
03H (Z-Glass)	$\beta_{<4\mu(c)} = 200$	$\beta_{<4\mu(c)} = 1000$
03L (Z-Glass)	$\beta_{<4\mu(c)} = 200$	$\beta_{<4\mu(c)} = 1000$
06L (Z-Glass)	$\beta_{5\mu(c)} = 200$	$\beta_{6\mu(c)} = 1000$
10L (Z-Glass)	$\beta_{8\mu(c)} = 200$	$\beta_{10\mu(c)} = 1000$
10H (Z-Glass)	$\beta_{8\mu(c)} = 200$	$\beta_{10\mu(c)} = 1000$
20L (Z-Glass)	$\beta_{19\mu(c)} = 200$	$\beta_{23\mu(c)} = 1000$

REFERENCE
$\beta_{X\mu(c)}$ Rating of 1000 = 99.9% Efficiency
$\beta_{X\mu(c)}$ 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:
0-1000-0 PSI for 1,000,000 Cycles

TEMPERATURE RANGE
Operating: -40°F to +250°F (-4°C to +120°C)

BY-PASS SETTING OPTION:
No By-Pass or 50 PSID

ΔP INDICATOR OPTIONS
Visual, Single-Wire DC Electrical, or Electrical/Visual w/ DIN Connector

FLUID COMPATIBILITY
Elements: Suitable For Use with Petroleum-Base Fluids. Consult Factory For Use With Other Fluids.

MATERIALS
Head: Die-Cast Aluminum
Bowl: Anodized Die-Cast Aluminum
By-Pass: Nylon
Element Hardware: Plated Carbon Steel Endcaps and Core. Epoxy Endcap Adhesive.
Filter Media: Z-Glass Fiber Standard

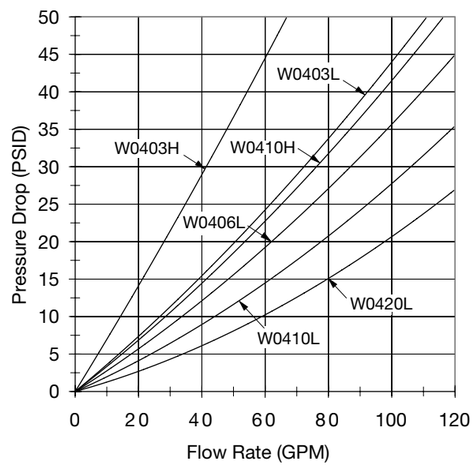
WEIGHT
W1200W04: 6.6 lbs. (3 Kg)
W1200W08: 8.8 lbs. (4 Kg)

Consult Manufacturer for Ordering Information

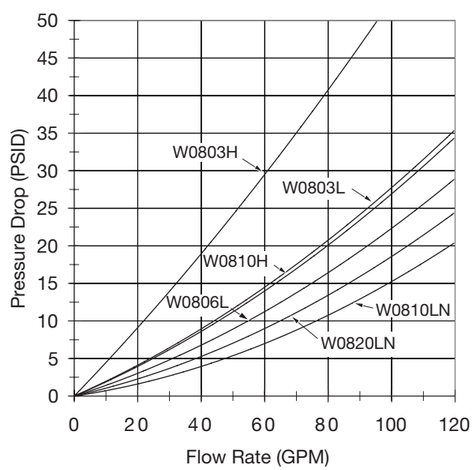
W1200 PRESSURE DROP CURVES

Fluid Viscosity 150 SUS at 105°F (33 CS at 41°C)

4” Length



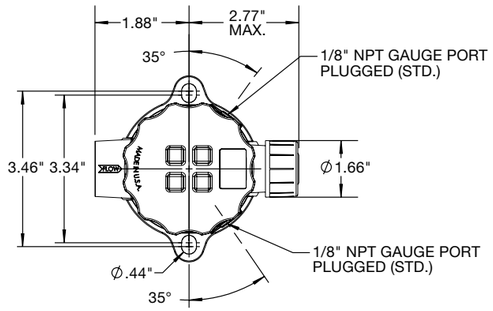
8” Length

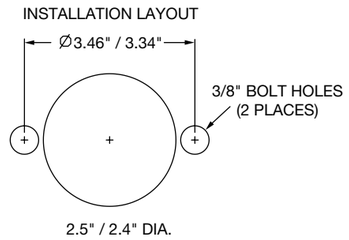


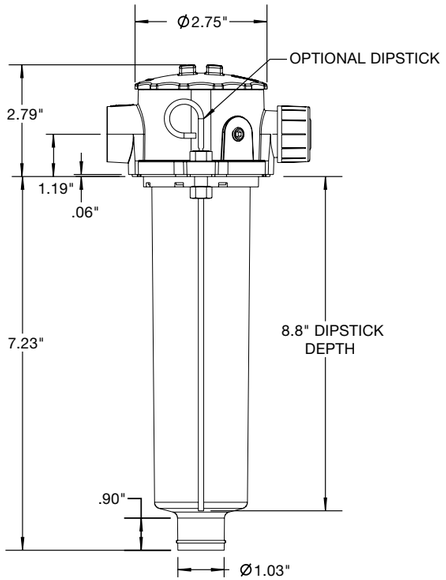
Consult Manufacturer for Ordering Information

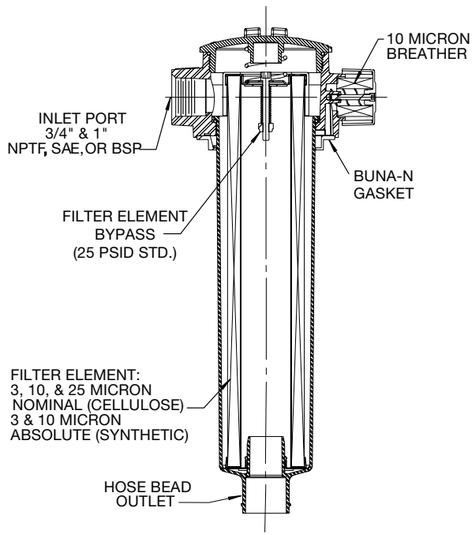
SLF1 SERIES
TANK-TOP FILTERS
(WITH INTEGRAL TANK BREATHER)

Flows Up To:	25 GPM (Return)
Port Sizes:	1/2" & 3/4" NPTF, SAE & BSP
Pressure:	100 PSI Max. Operating Pressure 300 PSI Burst
Temperature:	-15 to +230°F Operating
Head:	Die-Cast Aluminum Alloy
Bowl / Cover:	Nylon
Breather:	10-Micron (Foam) Standard
Applications:	Petroleum-based fluids only Consult factory for synthetic fluids

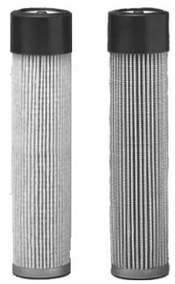






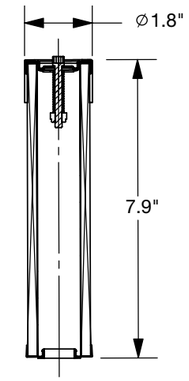


Consult Manufacturer for Ordering Information



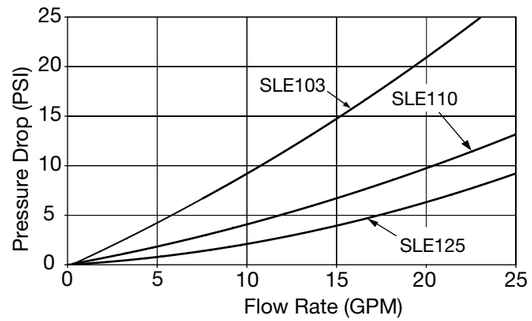
SLE1 & ZSLE1 SERIES
FILTER ELEMENTS
CELLULOSE AND SYNTHETIC

SLE1 & ZSLE1 FILTER ELEMENTS			
Code	**Media Type**	**Nominal Rating**	**Absolute Rating**
SLE103	Cellulose	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$
SLE110	Cellulose	$\beta_{5\mu(c)} = 2$	$\beta_{19\mu(c)} = 75$
SLE125	Cellulose	$\beta_{19\mu(c)} = 2$	$\beta_{36\mu(c)} = 75$
ZSLE103	Z-Glass	$\beta_{<4\mu(c)} = 2$	$\beta_{<4\mu(c)} = 200$
ZSLE110	Z-Glass	$\beta_{<4\mu(c)} = 2$	$\beta_{10\mu(c)} = 200$

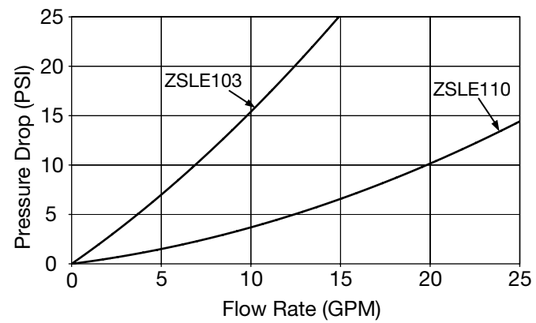


Average pressure drop through clean assembly with 150 SUS oil at 105° F

Cellulose Media



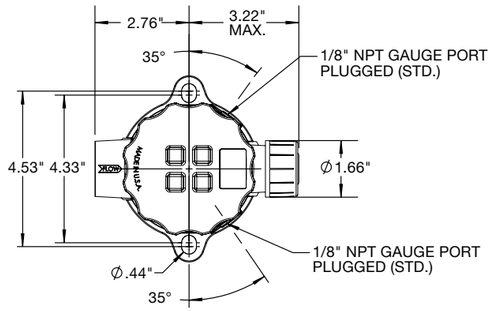
Z-Glass Media

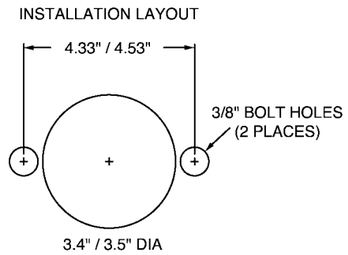


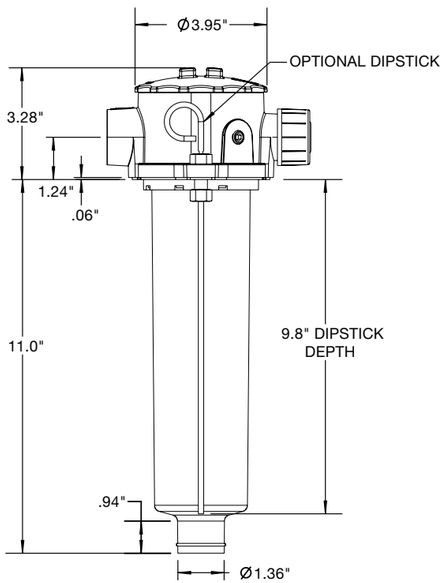
Consult Manufacturer for Ordering Information

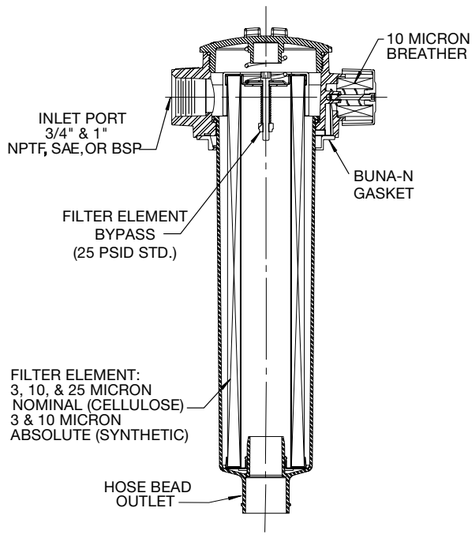
SLF2 SERIES
TANK-TOP FILTERS
(WITH INTEGRAL TANK BREATHER)

Flows Up To:	40 GPM (Return)
Port Sizes:	3/4" & 1" NPTF, SAE & BSP
Pressure:	100 PSI Max. Operating Pressure
	300 PSI Burst
Temperature:	-15 to +230°F Operating
Head:	Die-Cast Aluminum Alloy
Bowl / Cover:	Nylon
Breather:	10-Micron (Foam) Standard
Applications:	Petroleum-based fluids only
	Consult factory for synthetic fluids





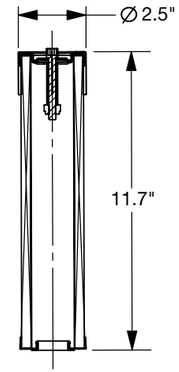




Consult Manufacturer for Ordering Information

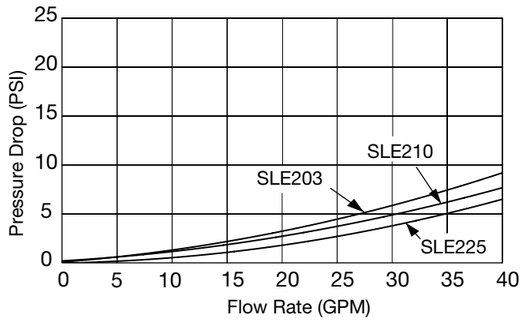
SLE2 & ZSLE2 SERIES
FILTER ELEMENTS
CELLULOSE AND SYNTHETIC

SLE2 & ZSLE2 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	$\beta_{<4\mu(c)} = 2$	$\beta_{10\mu(c)} = 200$

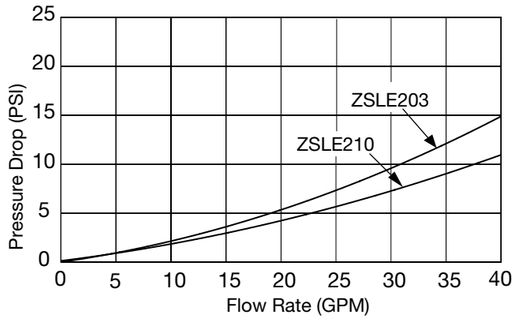


Average pressure drop through clean assembly with 150 SUS oil at 105° F

Cellulose Media



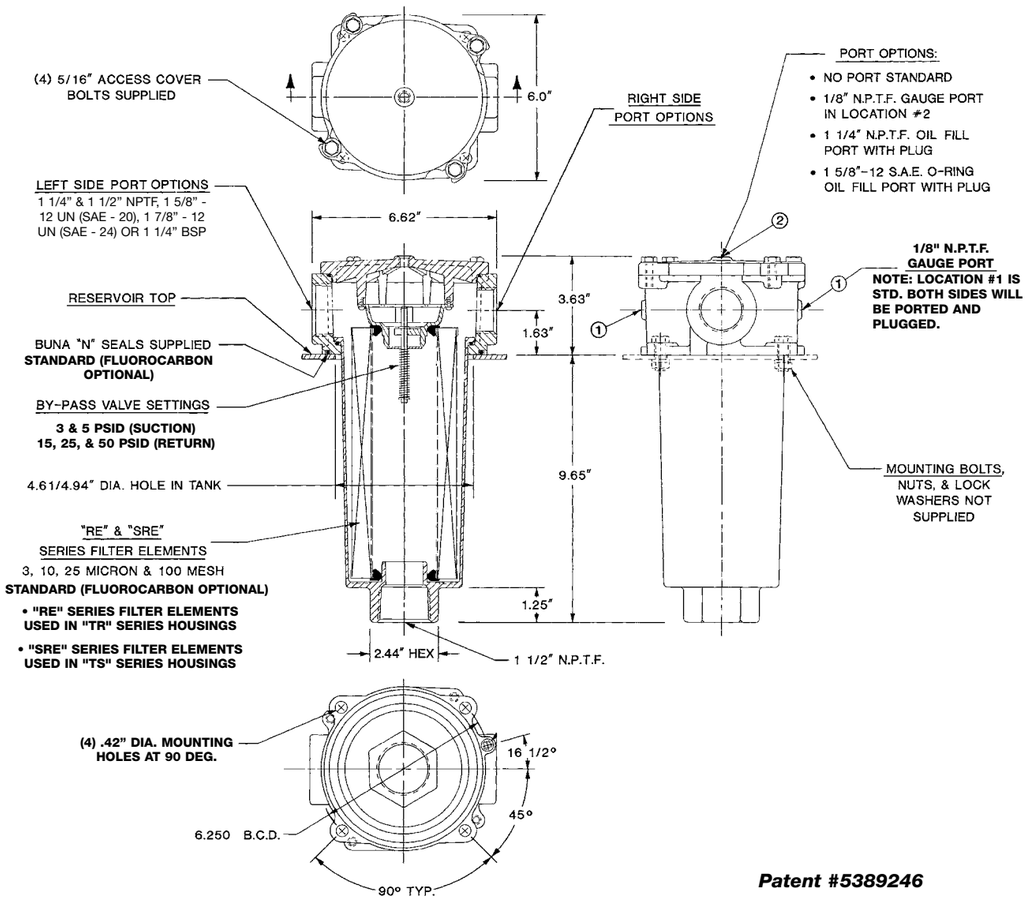
Z-Glass Media



Consult Manufacturer for Ordering Information

TR & TS SERIES
SUCTION / RETURN LINE TANK-TOP FILTERS

Flows Up To:	TR 96 GPM (Return) 32 GPM (Suction) TS 71 GPM (Return) 24 GPM (Suction)
Port Sizes:	1 1/4" & 1 1/2" NPTF 1 5/8" - 12 UN (SAE - 20) 1 7/8" - 12 UN (SAE - 24) 1 1/4" BSP
Pressure:	100 PSI Max. Operating
Temperature:	Up to +250°F
Application:	Suitable for petroleum-based fluid only. Consult factory for synthetic fluids.



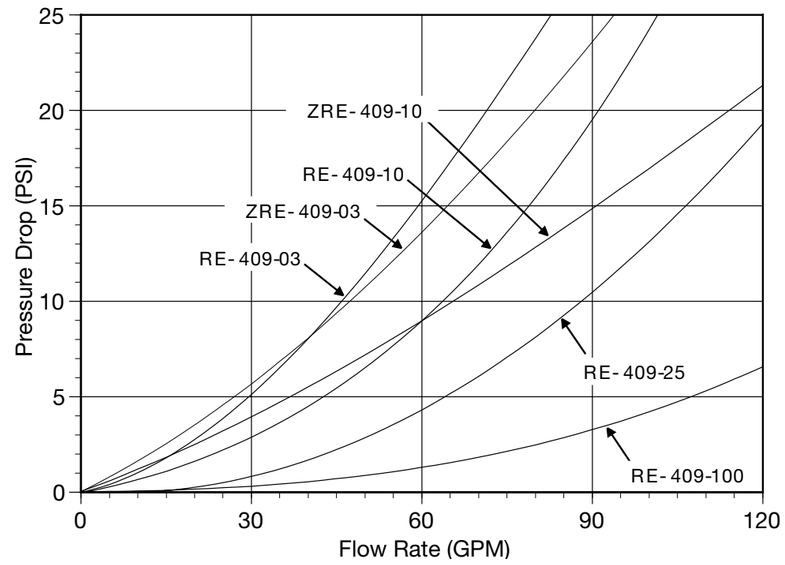
Patent #5389246

Consult Manufacturer for Ordering Information

Design Features:

- No parts to lose with unitized cover and by-pass valve assembly.
- Radial seal grommets used in RE and 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 and SRF series as well as Schroeder ST and RT series housings.
- TS series housings are fully compatible with Schroeder K series elements.

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

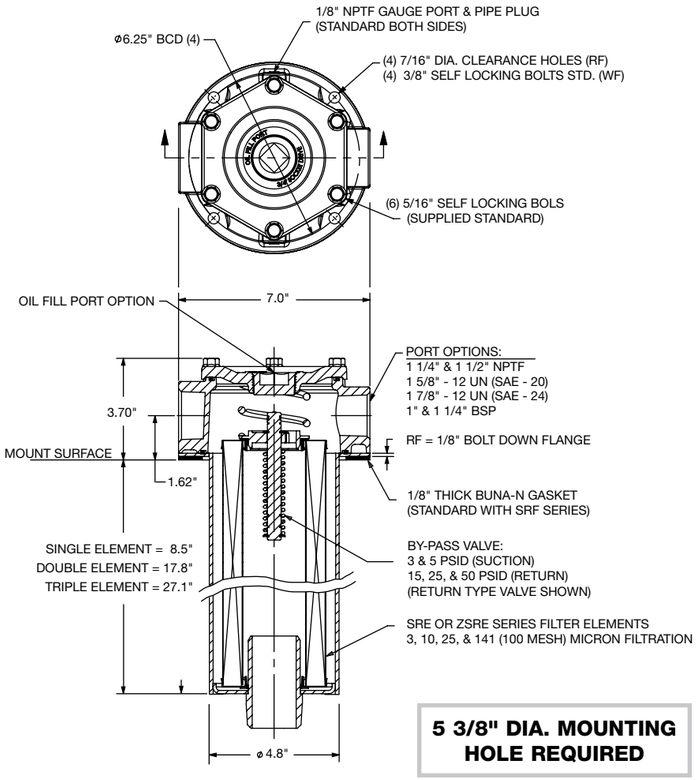


RE & SRE Element Data: See Pages 45 & 46

Consult Manufacturer for Ordering Information

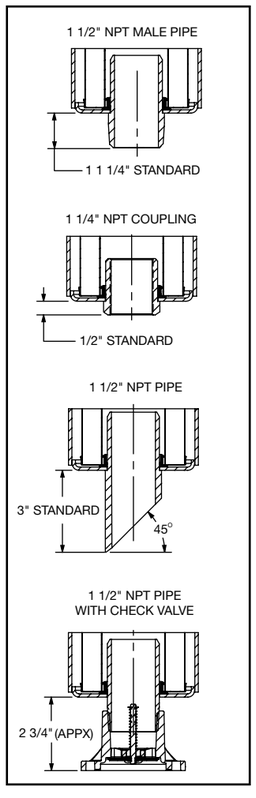
SRF SERIES
SUCTION / RETURN LINE TANK-TOP FILTERS

Flows Up To:	83 GPM (Return) 28 GPM (Suction)
Port Sizes:	1 1/4" & 1 1/2" NPTF
	1 5/8" - 12 UN (SAE - 20)
	1 7/8" - 12 UN (SAE - 24)
	1" & 1 1/4" BSP
Pressure:	100 PSI Max Operating
Temperature:	Up to 250°F Operating
Application:	Petroleum-based fluids
	Consult factory for synthetic fluids



5 3/8" DIA. MOUNTING HOLE REQUIRED

BOTTOM PORT OPTIONS:

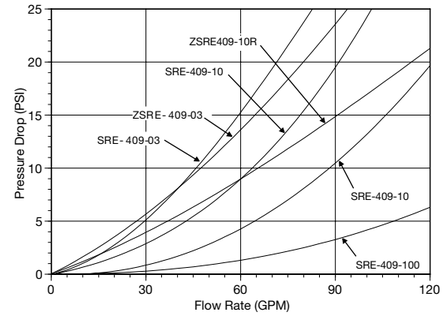


Design Features:

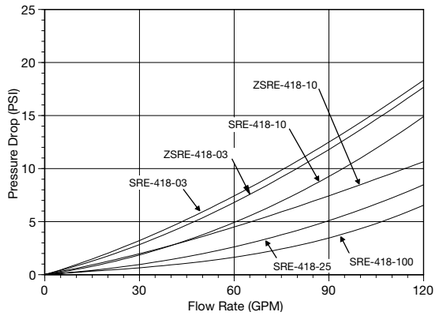
- Radial seal grommet used in SRE Series filter elements.
- Filter housing mounting bolt pattern matches Zinga RF, TR, and TS series as well as Schroeder ST, RT, and LRT series housings.
- SRF series housings are fully compatible with Schroeder K series elements.

Consult Manufacturer for Ordering Information

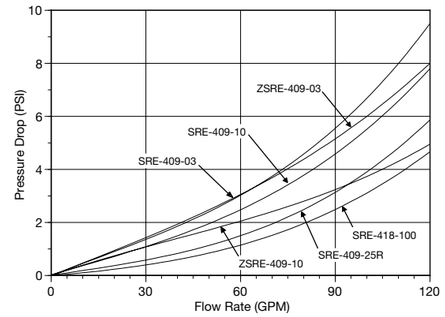
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105˚F



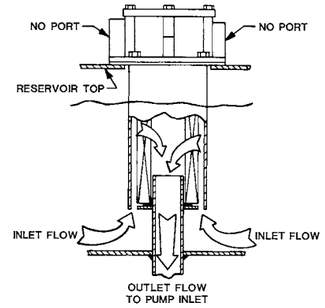
Single Length Element



Double Length Element



Triple Length Element



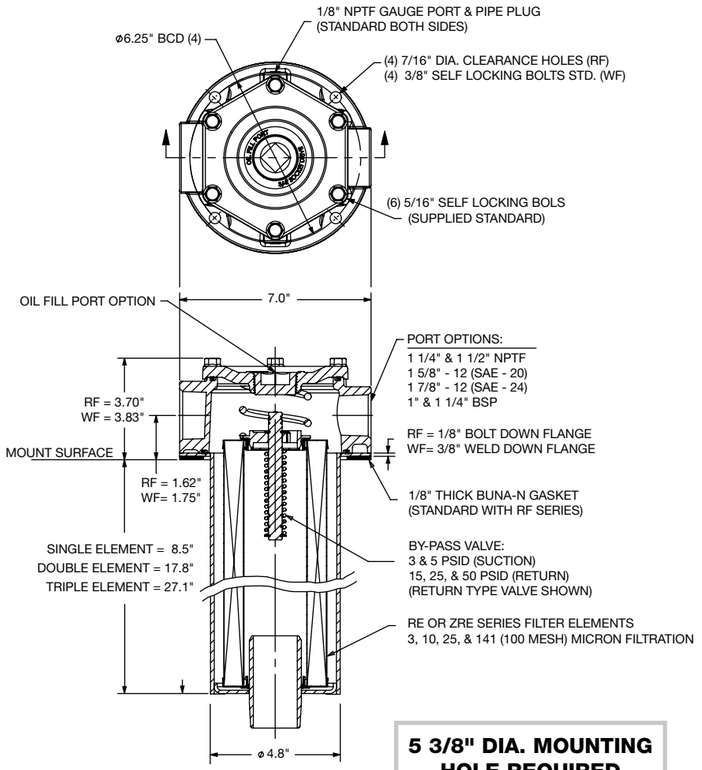
Application: Bottom Flow Filter

Additional SRE Element Data: See Page 45

Consult Manufacturer for Ordering Information

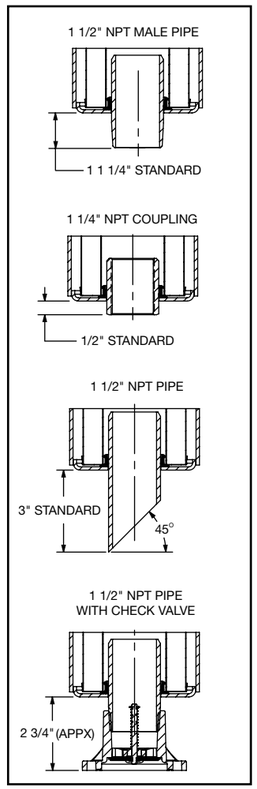
RF SERIES (100 PSI)
WF SERIES (500 PSI)
TANK-TOP FILTERS

Flows Up To:	96 GPM (Return) 32 GPM (Suction)
Port Sizes:	1 1/4" & 1 1/2" NPTF
	1 5/8" - 12 (SAE - 20)
	1 7/8" - 12 (SAE - 24)
	1" & 1 1/4" BSP
Max. Operating Pressure:	RF - 100 PSI, WF - 500 PSI
Temperature:	Up to 250°F Operating
Application:	Petroleum-based fluids only
	Consult factory for synthetic fluids



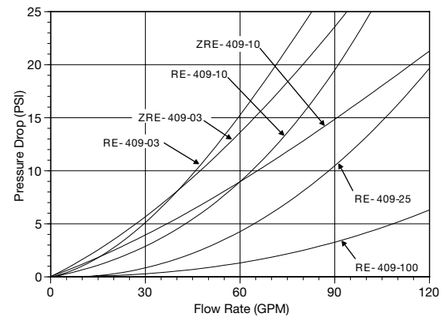
5 3/8" DIA. MOUNTING HOLE REQUIRED

BOTTOM PORT OPTIONS:

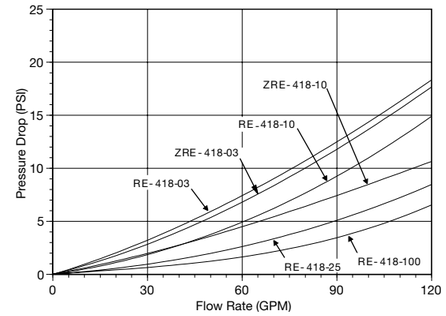


Consult Manufacturer for Ordering Information

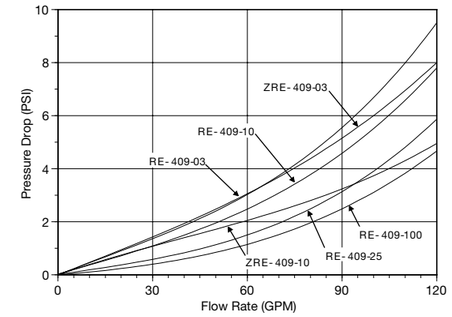
Average Pressure Drop Through Clean Filter Assembly With 150 SUS Oil At 105˚F



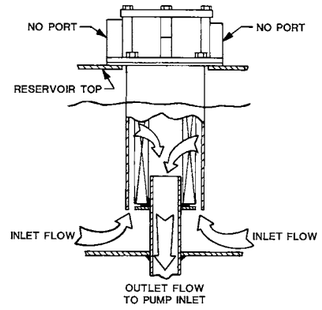
Single Length Element



Double Length Element



Triple Length Element



Application: Bottom Flow Filter

RE Element Data: See Pages 46

Consult Manufacturer for Ordering Information

SRE & ZSRE SERIES FILTER ELEMENTS

Use in SRF & TS Housings Or as Direct Interchange for Schroeder "K" Series Elements.

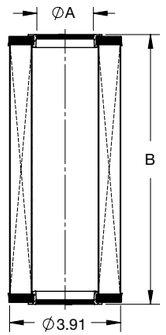
Part Number	Nominal Rating	Absolute Rating	Media Type	(A) ID	(B) Length	Flow Direction Through Element
SRE40903	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Cellulose	1.61"	9.19"	Bi-Directional
SRE40903AZ**	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Aqua-Zorb	1.61"	9.19"	Outside to Inside
SRE40910	$\beta_{5\mu(c)} = 2$	$\beta_{19\mu(c)} = 75$	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	$\beta_{5\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	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	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.61”	9.19”	Outside to Inside
ZSRE40903R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.61”	9.19”	Inside to Outside
ZSRE40910	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.61”	9.19”	Outside to Inside
ZSRE40910R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.61”	9.19”	Inside to Outside
ZSRE41803	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.61”	18.19”	Outside to Inside
ZSRE41803R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.61”	18.19”	Inside to Outside
ZSRE41810	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.61”	18.19”	Outside to Inside
ZSRE41810R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.61”	18.19”	Inside to Outside

Note:

* 1. 100 mesh stainless steel wire cloth standard for 141 micron elements. 30, 60, and 200 mesh optional.

** 2. **Aqua-Zorb** filter media retains up to 11 oz. of free water. Any absorbed water cannot 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 and ZSRE are equipped with a Buna-N grommet (radial) seal as standard. (Fluorocarbon Available)

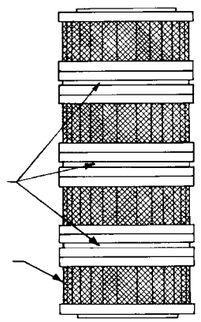


Magnetic Elements

Part Numbers
RE/SRE-409-100M
RE/SRE-409-100MR
(NOT FOR USE IN TR/TS)

Three 4" dia. x 5/8" thick ceramic magnets

Four 100 mesh wire cloth sections



Consult Manufacturer for Ordering Information

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 Through Element
RE40903	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Cellulose	1.96"	9.19"	Bi-Directional
RE40903AZ**	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Aqua-Zorb	1.96"	9.19"	Outside to Inside
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	$\beta_{5\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Cellulose	1.96"	18.19"	Bi-Directional
RE41810	$\beta_{5\mu(c)} = 2$	$\beta_{36\mu(c)} = 75$	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	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.96”	9.19”	Outside to Inside
ZRE40903R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.96”	9.19”	Inside to Outside
ZRE40910	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.96”	9.19”	Outside to Inside
ZRE40910R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.96”	9.19”	Inside to Outside
ZRE41803	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.96”	18.19”	Outside to Inside
ZRE41803R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	1.96”	18.19”	Inside to Outside
ZRE41810	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.96”	18.19”	Outside to Inside
ZRE41810R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	1.96”	18.19”	Inside to Outside

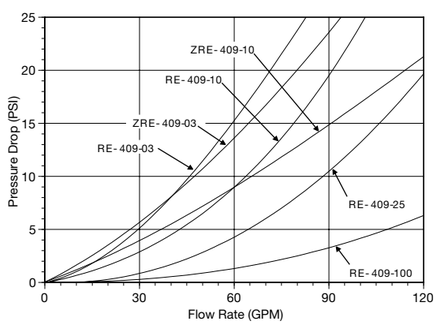
Note:

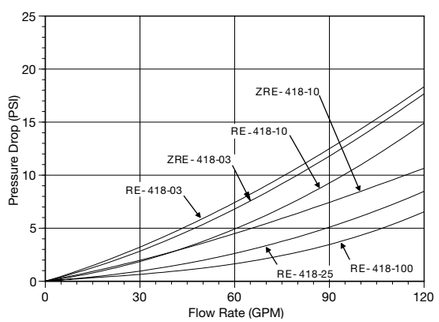
* 1. 100 mesh stainless steel wire cloth standard for 141 micron elements. 30, 60, and 200 mesh optional.

** 2. **Aqua-Zorb** filter media retains up to 11 oz. of free water. Any absorbed water cannot 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 and 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

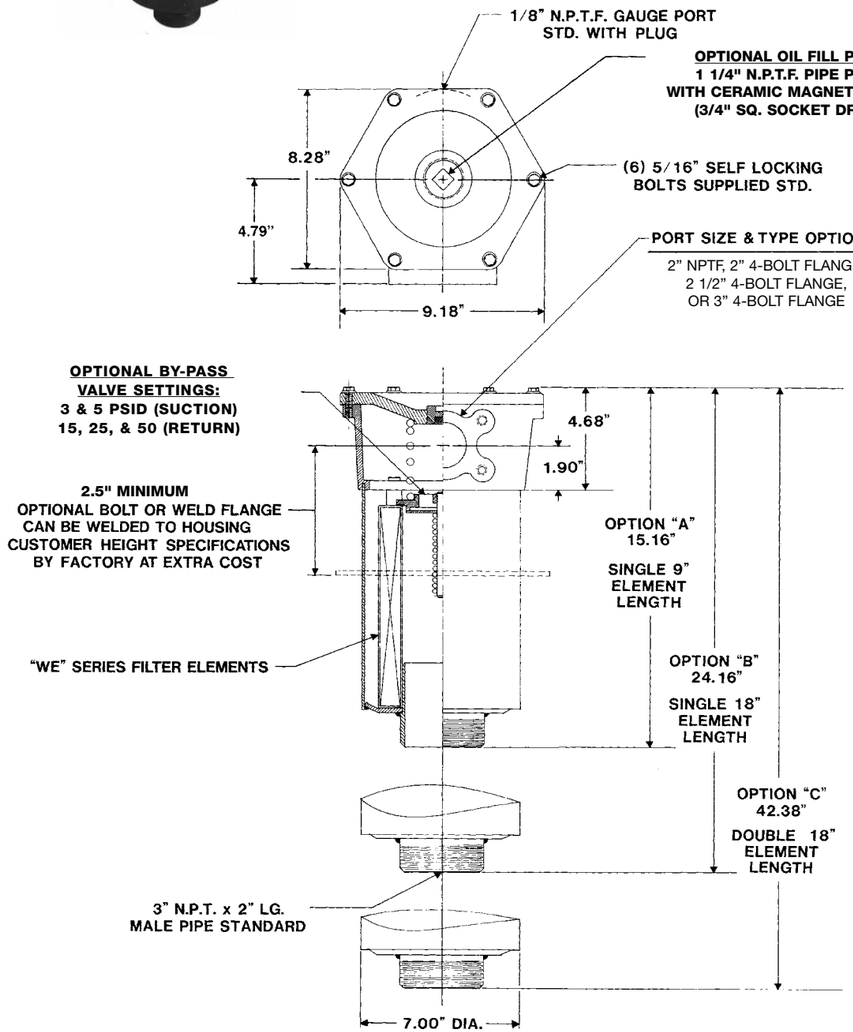




Consult Manufacturer for Ordering Information

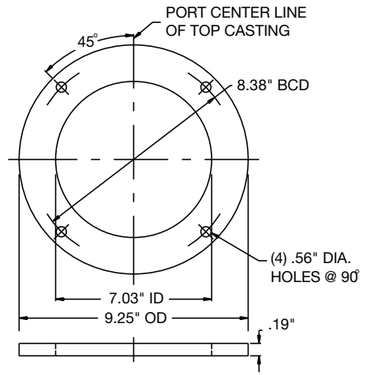
WF-2 SERIES
TANK-TOP FILTER

Flows Up To:	300 GPM (Return) 100 GPM (Suction)
Port Sizes:	2" NPTF
	2" 4-Bolt Flange
	2 1/2" 4-Bolt Flange
	3" 4-Bolt Flange
Pressure:	300 PSI Max. Operating Pressure
Temperature:	Up to 250°F
Application:	Petroleum-based fluids.



Consult Manufacturer for Ordering Information

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.

Consult Manufacturer for Ordering Information

WE & ZWE SERIES FILTER ELEMENTS

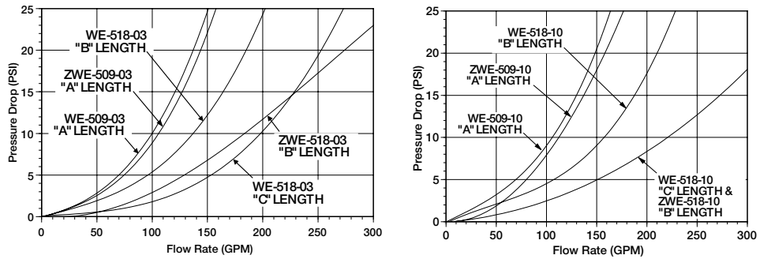
For use in WF2 Housings

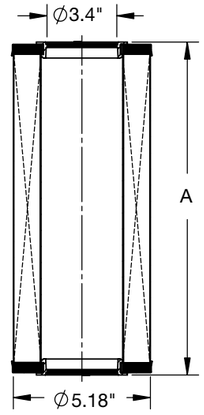
Part Number	Nominal Rating	Absolute Rating	Media Type	(A) Length	Flow Direction Through Element
WE50903	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Cellulose	9.13"	Bi-Directional
WE50910	$\beta_{5\mu(c)} = 2$	$\beta_{19\mu(c)} = 75$	Cellulose	9.13"	Bi-Directional
*WE509100	141 Micron		SS Mesh	9.13"	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	$\beta_{<4\mu(c)} = 2$	$\beta_{11\mu(c)} = 75$	Aqua-Zorb	18.13"	Bi-Directional
WE51810	$\beta_{5\mu(c)} = 2$	$\beta_{19c)} = 75$	Cellulose	18.13"	Bi-Directional
**WE51810AZ	$\beta_{5\mu(c)} = 2$	$\beta_{19c)} = 75$	Aqua-Zorb	18.13"	Bi-Directional
*WE518100	141 Micron		SS Mesh	18.13"	Outside To Inside
*WE518100R	141 Micron		SS Mesh	18.13"	Inside To Outside
WE51825	$\beta_{19\mu(c)} = 2$	$\beta_{36\mu(c)} = 75$	Cellulose	18.13"	Bi-Directional
ZWE50903	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	9.13"	Outside To Inside
ZWE50903R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	9.13"	Inside To Outside
ZWE50910	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	9.13"	Outside To Inside
ZWE50910R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	9.13"	Inside To Outside
ZWE51803	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	18.13"	Outside To Inside
ZWE51803R	$\beta_{<4\mu(c)} = 2$	$\beta_{<7\mu(c)} = 1000$	Z-Glass	18.13"	Inside To Outside
ZWE51810	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	18.13"	Outside To Inside
ZWE51810R	$\beta_{<4\mu(c)} = 2$	$\beta_{12\mu(c)} = 1000$	Z-Glass	18.13"	Inside To Outside

Note:

* 1. 100 mesh stainless steel wire cloth standard for 141 micron elements. 30, 60, and 200 mesh optional.

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





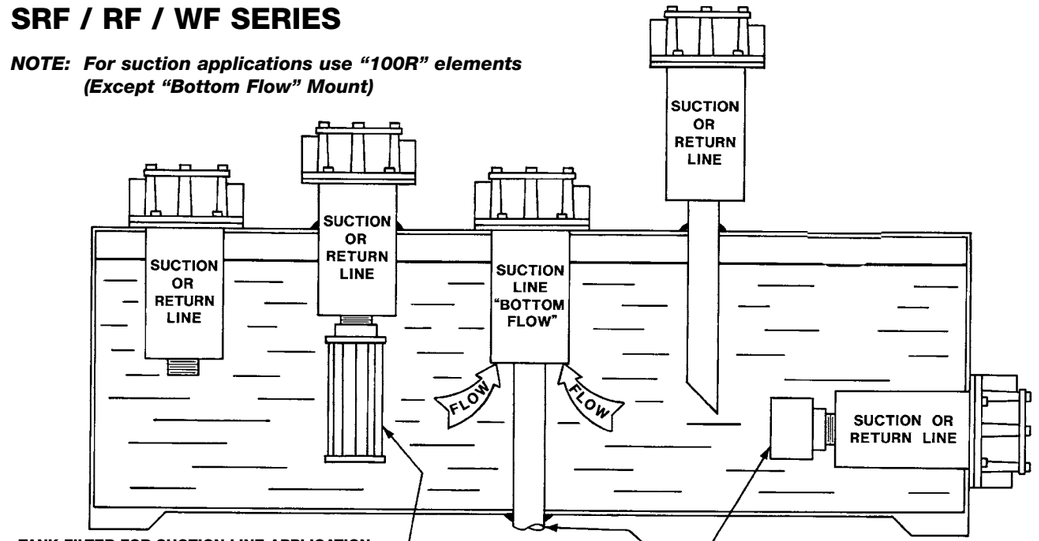
Average pressure drop through clean assembly with 150 SUS oil at 105° F

Consult Manufacturer for Ordering Information

TYPICAL TANK-TOP FILTER INSTALLATIONS

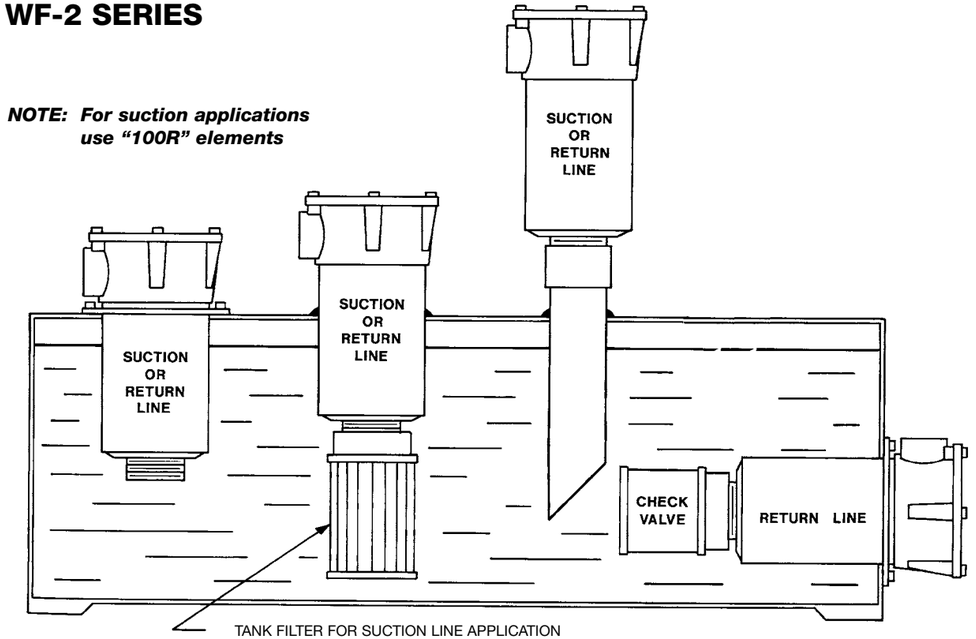
SRF / RF / WF SERIES

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



WF-2 SERIES

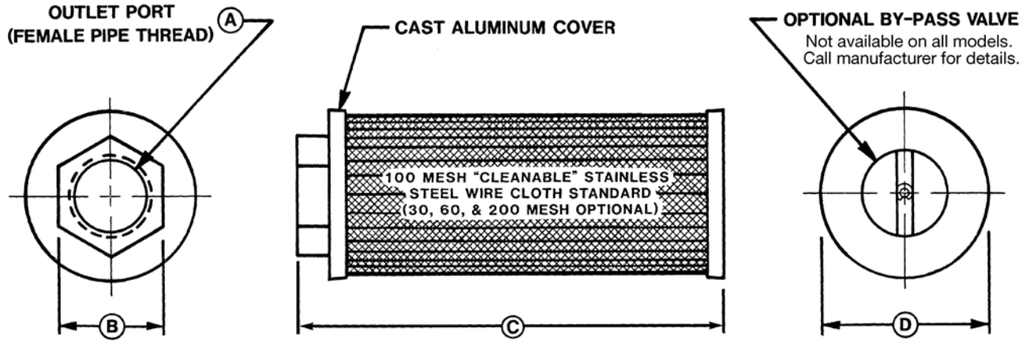
NOTE: For suction applications use "100R" elements



Consult Manufacturer for Ordering Information

SS & MS SERIES
INTERNALLY MOUNTED TANK FILTER

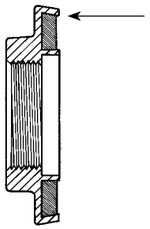
Port Sizes: 3/8" Through 6" NPTF
Media: 100 Mesh Standard
Optional By-pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)
Operating Temperature: Up to 250°F



Model	A Outlet Port	B Wrench Flat	C Overall Length	D OD	Rated Flow @ 5 Ft/Sec
MS030X0*	3/8" NPTF	1.2"	2.6"	1.1"	3 GPM
SS030X0*	3/8" NPTF	1.13"	2.2"	3.2"	3 GPM
MS050X0*	1/2" NPTF	1.2"	2.6"	1.1"	5 GPM
SS050X0*	1/2" NPTF	1.13"	2.2"	3.2"	5 GPM
MS070XX*	3/4" NPTF	1.5"	3.9"	1.5"	8 GPM
SS070XX*	3/4" NPTF	1.75"	3.6"	3.2"	8 GPM
MS100XX*	1" NPTF	1.75"	3.9"	1.7"	14 GPM
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
SS400XX*	4" NPT	NA	20.1"	9.0"	200 GPM
SS600XX*	6" NPT	NA	20.1"	9.0"	450 GPM

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

**Additional information required to place an order. Contact factory for assistance.*



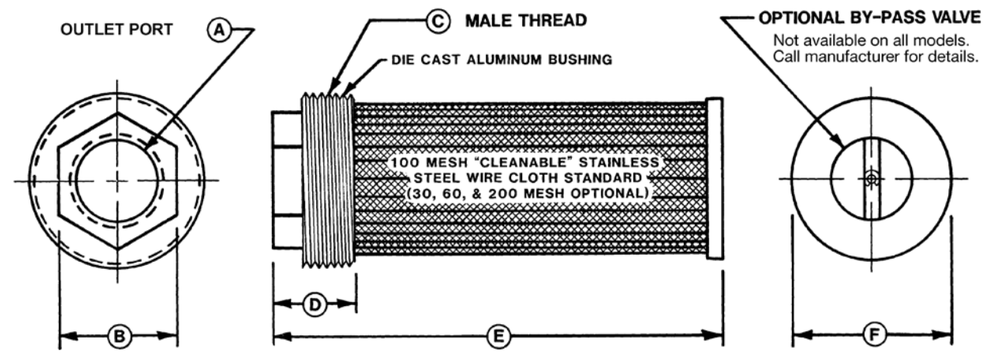
REVERSE TAPER

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.

Consult Manufacturer for Ordering Information

TF SERIES
TANK FILTER EXTERNALLY MOUNTED

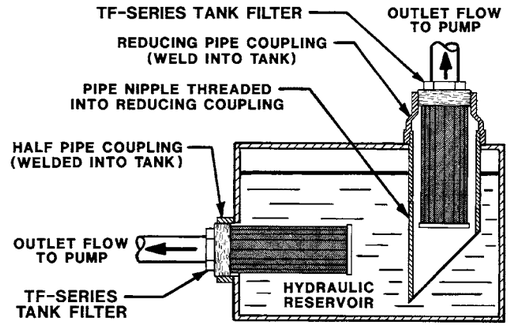
Port Sizes: 3/8" Through 4" NPTF
Media: 100 Mesh Standard
Optional By-pass: 3 PSI (6" Hg) or 5 PSI (10" Hg)
Operating Temperature: Up to 250°F
Other Options: Magnetic Options Available



Model	A Outlet Port	B Hex Size	C Male Thread	D Fitting Length	E	F Cover Dia.	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
TF1030XX*	1" NPTF	2.5"	3" NPTF	1.5"	4.7"	3.2"	14 GPM
TF1220XX*	1 1/4" NPTF	2.1"	2" NPTF	1.2"	9.1"	2.2"	23 GPM
TF1230XX*	1 1/4" NPTF	2.5"	3" NPTF	1.5"	6.7"	3.2"	23 GPM
TF1530XX*	1 1/2" NPTF	2.5"	3" NPTF	1.5"	8.7"	3.2"	32 GPM
TF1630XX*	1 5/8"-12 (SAE-20)	2.5"	3" NPTF	1.5"	8.7"	3.2"	14 GPM
TF1830XX*	1 7/8"-12 (SAE-24)	2.5"	3" NPTF	1.5"	8.7"	3.2"	21 GPM
TF2030XX*	2" NPTF	3.06"	3" NPTF	1.6"	8.8"	3.2"	53 GPM
TF2040XX*	2" NPTF	4.13"	4" NPTF	1.8"	7.7"	4.2"	53 GPM
TF2540XX*	2 1/2" NPTF	4.13"	4" NPTF	2.1"	9.7"	4.2"	75 GPM
TF3040XX*	3" NPTF	4.13"	4" NPTF	2.1"	12.7"	4.2"	116 GPM
TF4060XX*	4" NPT	5.8"	6" NPTF	2.3"	12.4"	6.0"	200 GPM

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

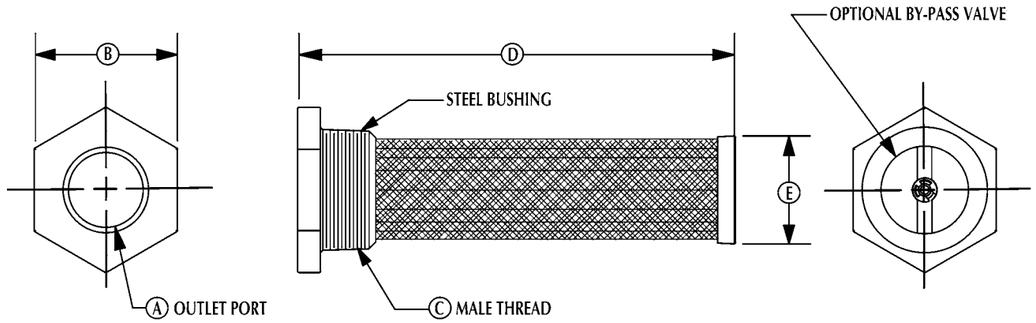
**Additional information required to place an order. Contact factory for assistance.*



Consult Manufacturer for Ordering Information

TFS SERIES
STEEL BUSHING TANK FILTER EXTERNALLY MOUNTED

Port Sizes: 1/2” Through 3” NPT
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
TFS1540XX*	1 1/2" NPT	2.70"	4" NPT	9.2"	4.2"	32 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

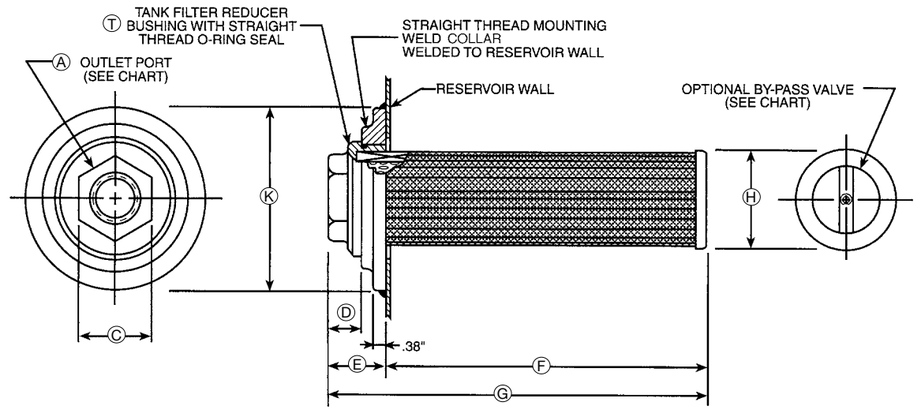
All strainers are rated at 5 ft/sec with a pressure drop of under 1” Hg (1/2 PSI) with 150 SUS oil.

**Additional information required to place an order. Contact factory for assistance.*

Consult Manufacturer for Ordering Information

TF & TFS SERIES
O-RING SEAL TANK STRAINER & MOUNTING WELD COLLAR

Port Sizes: 1 5/8”-12 SAE to 2 1/2”-12 SAE
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 o-ring seal that mates with a female straight-thread collar welded to the reservoir.

Model	T Thread	A Outlet Port	C Hex	D	E	F	G	H Dia.	Rated Flow @ 5 Ft/Sec
TFS1625XX*	2 1/2"-12 UN-2A	1 5/8"-12 (SAE-20)	2.75"	.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"	.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"	.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"	.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.

**Additional information required to place an order. Contact factory for assistance.*

Notes:

1. Buna-N O-ring supplied as standard, fluorocarbon available.
2. TFS: Steel-reducer bushing.
   TF: Cast-aluminum reducer bushing.

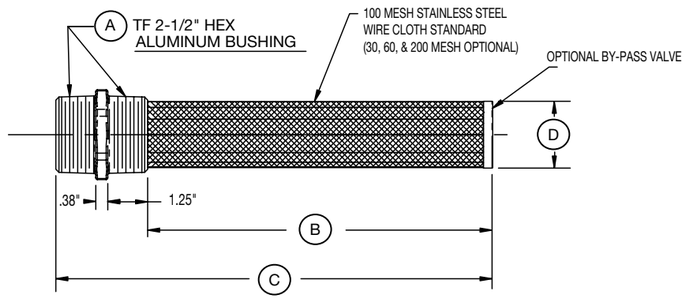
Weld Collars		
Part Number	T Thread	K Dia.
WC1225	2 1/2" - 12 UN-2B	3.9"
WC1634	3 3/8" - 12 UN-2B	5.0"
Please Order Separately		

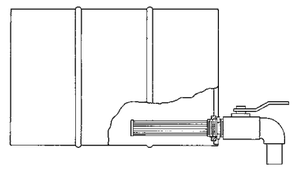
Consult Manufacturer for Ordering Information

STRAINERS

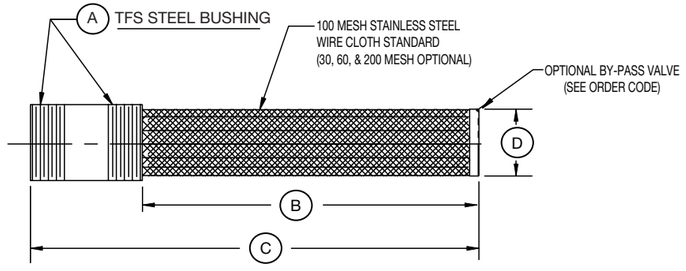
TF SERIES
MALE NPTF TANK FILTER

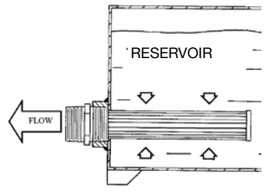
Port Sizes:	2” Through 2 1/2” NPTF
Media:	100 Mesh Standard
Optional By-pass:	3 PSI (6” Hg) or 5 PSI (10” Hg)
Operating Temperature:	Up to 250°F





TF-2020 Used As A Strainer In A 55 Gallon Barrel With a 2” Ball Valve Directly Attached





Suction Line Straining Application

Commonly Ordered Configuration
TFS2020XX*

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

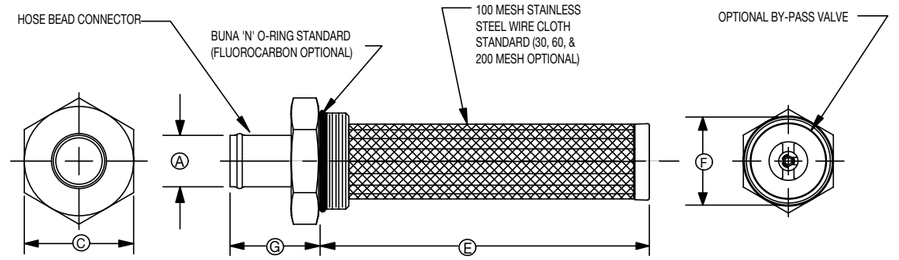
**Additional information required to place an order. Contact factory for assistance.*

Consult Manufacturer for Ordering Information

BTF SERIES
HOSE BEAD TANK FILTER & MOUNTING WELD COLLAR

Port Sizes:	3/4” Through 1 1/4” Hose
External Thread:	NPTF and Straight w/ O-ring Seal
Media:	100 Mesh Standard
Optional By-pass:	3 PSI (6” Hg) or 5 PSI (10” Hg)
OperatingTemperature:	Up to 250°F

Hose Bead to Male Straight-Thread Fitting O-Ring and Mounting Weld Collar

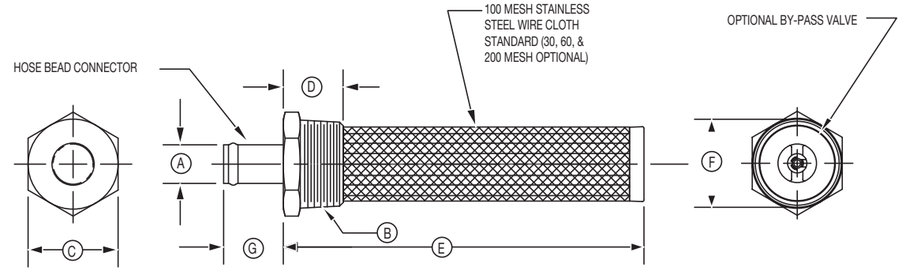


Model	A	B Thread	C Hex	E Length	F Dia.	G Length	Rated Flow 5 Ft/Sec
BTF0716XX*	.8"	1 5/8”-12UN-2A	1.88"	6.4"	1.5"	1.6"	5 GPM
BTF1018XX*	1.0"	1 7/8”-12UN-2A	2.13"	6.4"	1.7"	1.7"	10 GPM
BTF1225XX*	1.3"	2 1/2”-12UN-2A	2.75"	8.4"	2.7"	1.9"	16 GPM

Weld Collar		
Part Number	B Thread	O.D.
WC0716	1 5/8"-12UN-2B	2.75"
WC1018	1 7/8"-12UN-2B	3.06"
WC1225	2 1/2"-12UN-2B	3.88"
Ordered Separately From Filter		

**Additional information required to place an order. Contact factory for assistance.*

Hose Bead-to-Pipe Thread Seal



Model	A	B Thread	C Hex	D Length	E Length	F Dia.	G Length	Rated Flow 5 Ft/Sec
BTF0712XX*	.8"	1 1/4" NPTF	1.75"	1.2"	7.0"	1.5"	1.2"	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 rated at 5 ft/sec with a pressure drop of under 1” Hg (1/2 PSI) with 150 SUS oil.

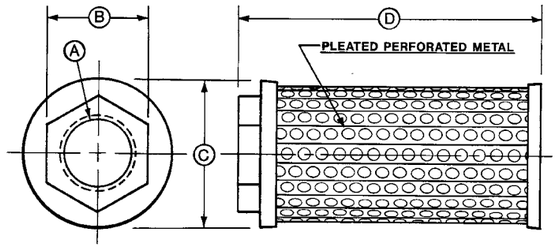
**Additional information required to place an order. Contact factory for assistance.*

Consult Manufacturer for Ordering Information

TD SERIES
TANK DIFFUSERS

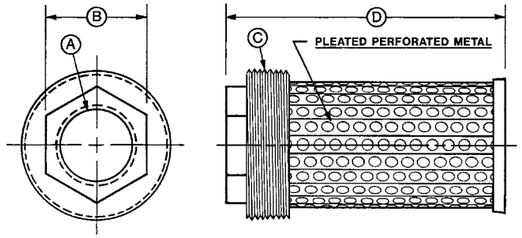
Port Sizes: 3/8" Through 6" NPTF
Operating Temperature: Up to 250°F

INTERNALLY MOUNTED
PMI Series



Model Number	A Inlet Port	B Wrench Flat	C Outside Dia.	D Overall Length	Rated Flow (At 15 Ft/Sec)	Ratio of Perf Mtl Open Area vs. Pipe Int Area
TD100PMI	1" NPTF	1.75"	3.2"	3.6"	40 GPM	27 : 1
TD125PMI	1 1/4" NPTF	2.25"	3.2"	4.6"	70 GPM	22 : 1
TD150PMI	1 1/2" NPTF	2.25"	3.2"	5.6"	95 GPM	21 : 1
TD200PMI	2" NPTF	3.0"	4.2"	6.2"	157 GPM	17 : 1

EXTERNALLY MOUNTED
PME Series

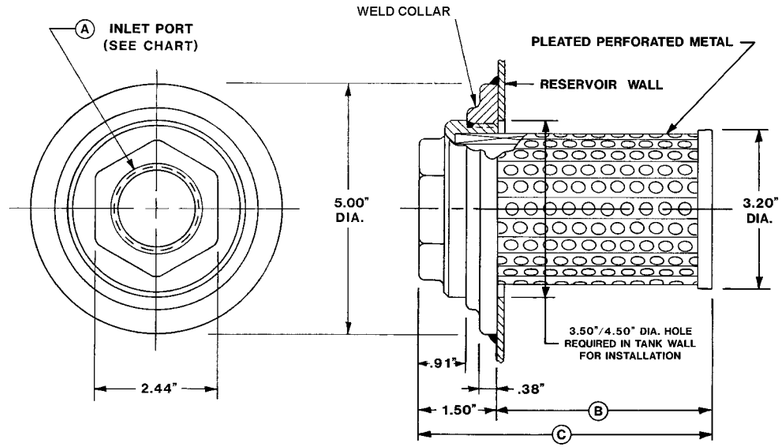


Model Number	A Inlet Port	B Wrench Flat	C Male Thread	D Overall Length	Rated Flow (At 15 Ft/Sec)	Ratio of Perf Mtl Open Area vs. Pipe Int Area
TD0310PME	3/8" NPTF	1.2"	1" NPTF	3.0"	9 GPM	25 : 1
TD0510PME	1/2" NPTF	1.12"	1" NPTF	4.0"	9 GPM	25 : 1
TD0712PME	3/4" NPTF	1.5"	1 1/4" NPTF	3.9"	25 GPM	18 : 1
TD1015PME	1" NPTF	1.75"	1 1/2" NPTF	4.9"	40 GPM	19 : 1
TD1030PME	1" NPTF	2.5"	3" NPTF	4.7"	40 GPM	31 : 1
TD1220PME	1 1/4" NPTF	2.1"	2" NPTF	5.1"	70 GPM	14 : 1
TD1230PME	1 1/4" NPTF	2.5"	3" NPTF	4.7"	70 GPM	18 : 1
TD1530PME	1 1/2" NPTF	2.5"	3" NPTF	5.7"	95 GPM	18 : 1
TD2040PME	2" NPTF	4.1"	4" NPT	6.8"	157 GPM	17 : 1
TD2540PME	2 1/2" NPTF	4.1"	4" NPT	10.8"	224 GPM	22 : 1
TD3040PME	3" NPTF	4.1"	4" NPT	10.8"	346 GPM	15 : 1
TD4060PME	4" NPTF	5.8"	6" NPT	17.5"	595 GPM	21 : 1

Consult Manufacturer for Ordering Information

TD SERIES
O-RING SEAL TANK DIFFUSER

Port Sizes: SAE-20 & SAE-24
Operating Temperature: Up to 250°F



Model	A Inlet Port	B Length	C Overall Length	Rated Flow @15 Ft/Sec	Open Area Ratio
TD1634PME	1 5/8"-12UN (SAE-20)	3.2"	4.7"	43 GPM	27:1
TD1834PME	1 7/8"-12UN (SAE-24)	4.2"	5.7"	64 GPM	24:1

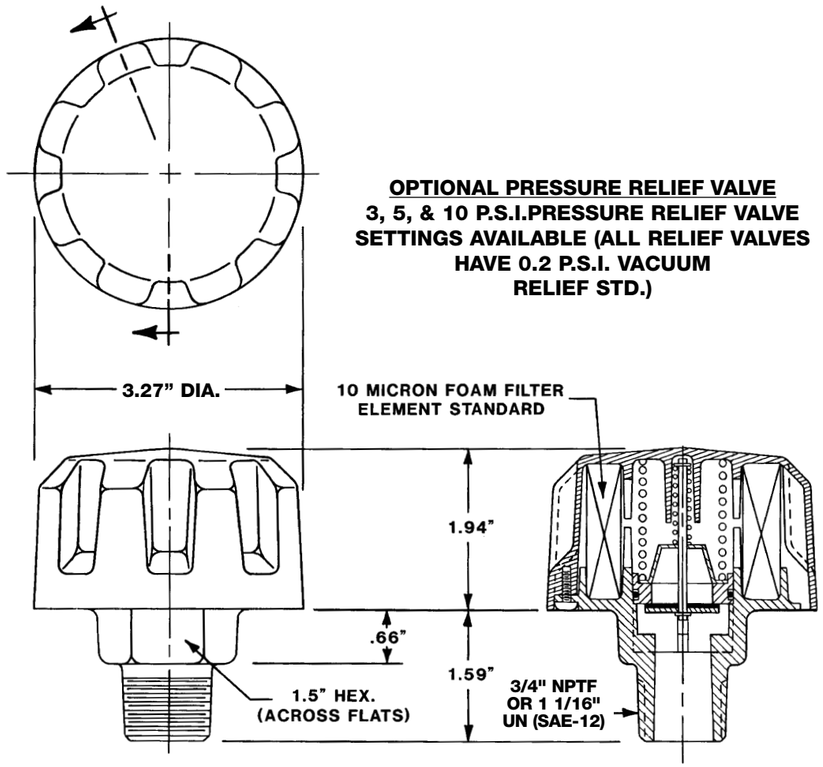
Please Order Weld Collar Part Number WC-1634 Separately From Tank Diffuser

WC-1634
MOUNTING WELD COLLAR

Consult Manufacturer for Ordering Information

RB SERIES
RESERVOIR BREATHERS

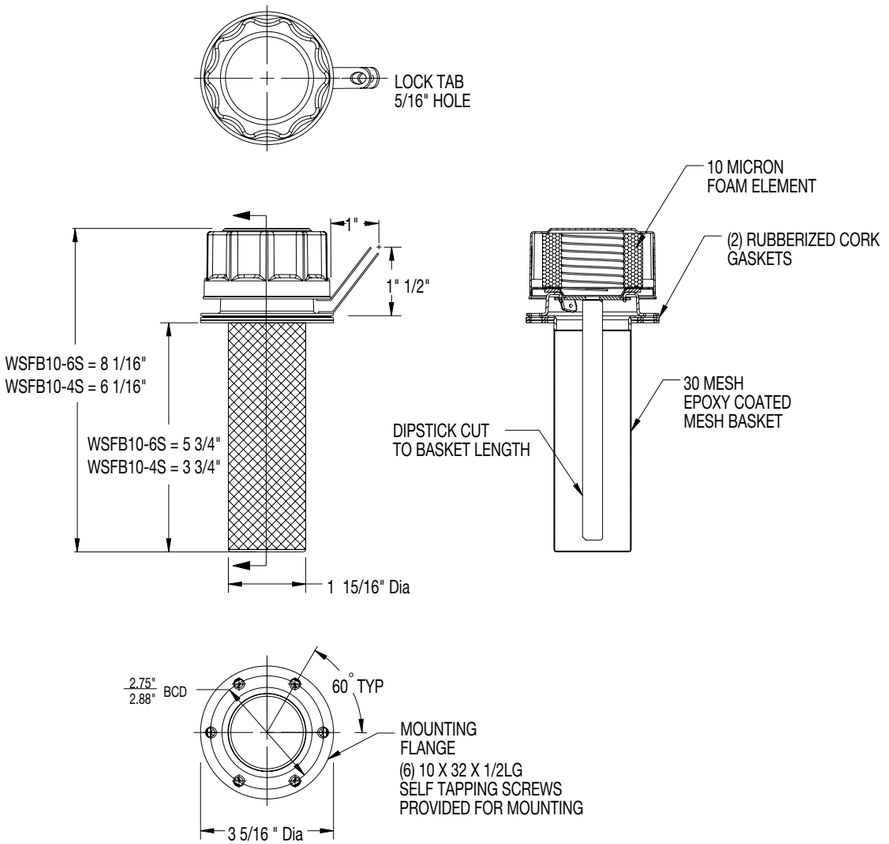
- 3/4” NPTF or 1-1/16” UN Thread Mount
- Optional 3, 5, & 10 Pressure Relief Valve
- Durable Weather-Resistant Nylon Plastic Cover



OPTIONAL PRESSURE RELIEF VALVE
3, 5, & 10 P.S.I.PRESSURE RELIEF VALVE SETTINGS AVAILABLE (ALL RELIEF VALVES HAVE 0.2 P.S.I. VACUUM RELIEF STD.)

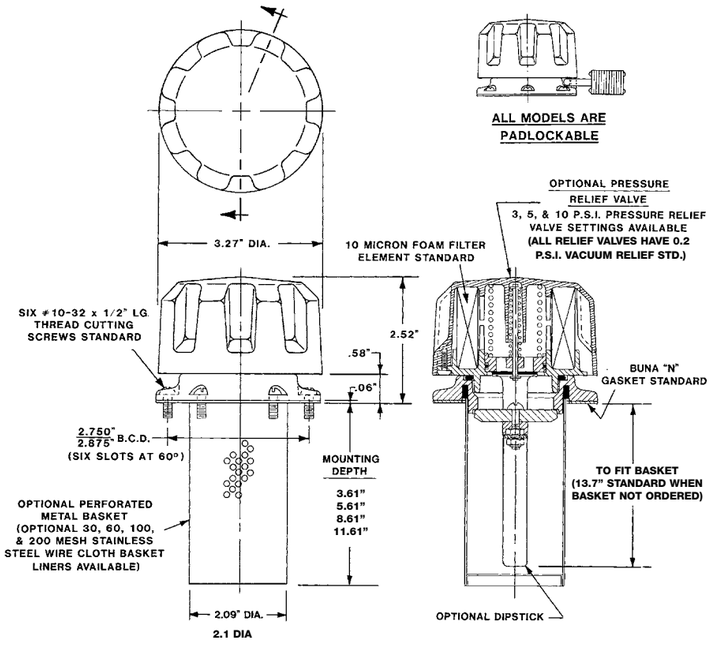
WSFB SERIES
ECONOMICAL RESERVOIR FILLER BREATHER

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

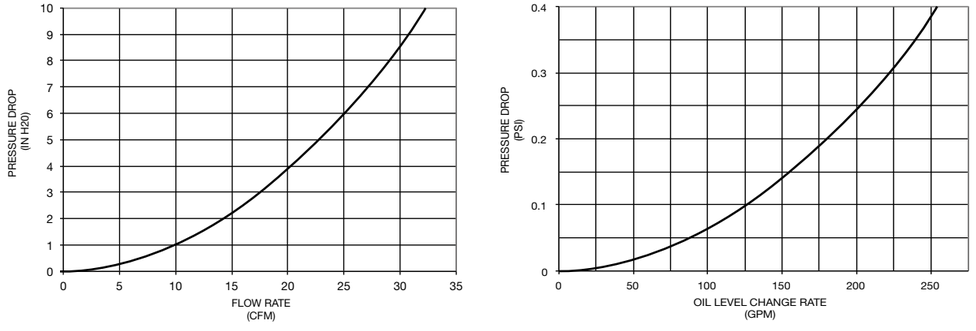


FB SERIES
RESERVOIR FILLER BREATHERS

- 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

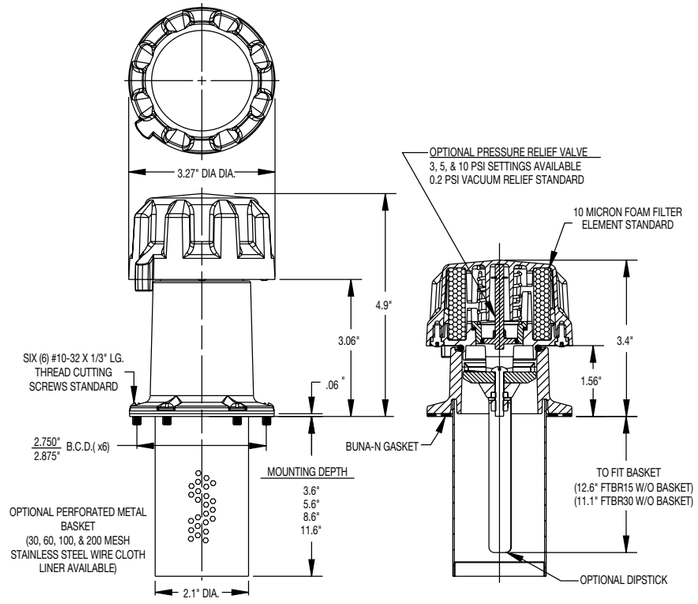


Spin-on element filler breather available for areas where filtration down to 1 micron particle removal is required.

Consult Manufacturer for Ordering Information

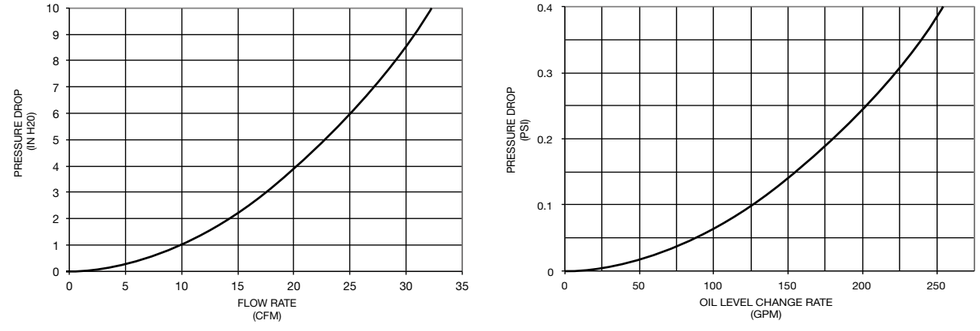
FBR SERIES
RAISED FILLER BREATHERS

- 1 1/2” and 3” Risers
- 10-Micron Foam Filter Element
- Cap-To-Base Chain Connection
- Aluminum and Nylon Cover Options
- Wire Mesh-Lined Basket Available



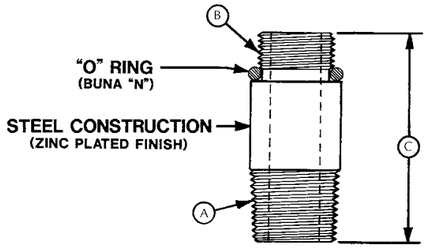
FBR30 **FBR15**

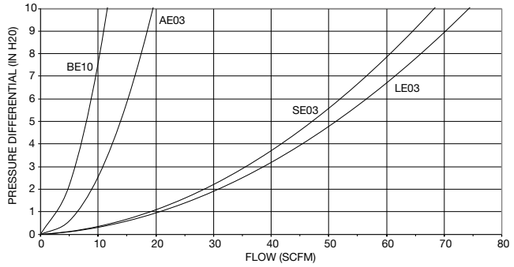
Average Pressure Drop Through Assembly Without Relief Valve

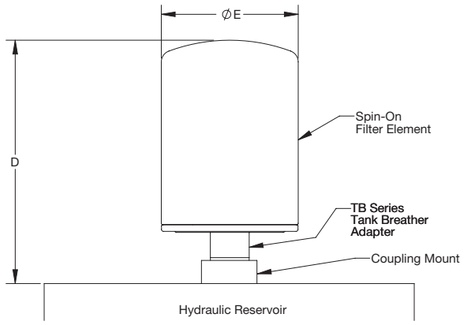


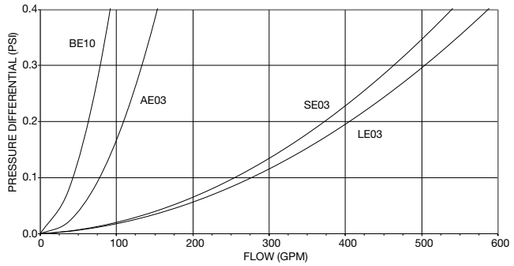
Consult Manufacturer for Ordering Information

TB SERIES
TANK BREATHERS
CONVERT SPIN-ON ELEMENTS TO TANK BREATHERS









Average Pressure Drop Through Assembly

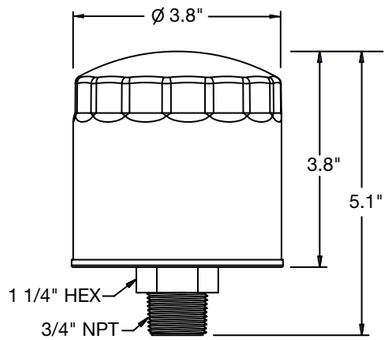
Note: Spin-on filters with anti-drain back valves should not be used for breather applications. Zinga standard spin-on filters do NOT have anti-drain back valves.

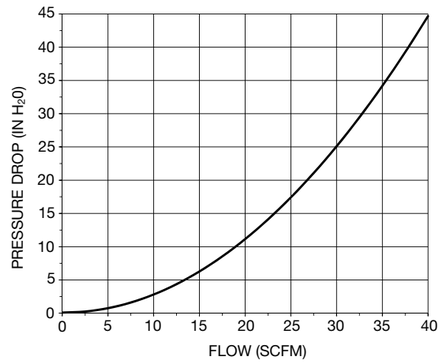
Adapter Number	A Mount Thread	B Spin-On Thread	C Adapter Length	Spin-On Series	D Assy Height	E Element Diameter	Air Filtration @ 99% Efficiency	* Maximum Air Flow scfm / gpm
TB050	1/2" NPT	3/4"-16 UNF	1.6"	**BE10**	5.2"	3.1"	2 micron	8 / 60
TB075	3/4" NPT	1"-12 UNF	2.0"	**AE03**	7.3"	3.7"	1 micron	14 / 104
				AE10	7.3"		2 micron	13 / 97
				AE10L	10.6"		2 micron	14 / 104

* Based on maximum pressure drop of 5 Inches H_2O (0.18 PSID) through clean filter element

TBN310 SERIES
SPIN-ON BREATHER

- 3/4" NPTF adapter
- Steel Spin-on Housing Design
- Air Flow Rates to 40 SCFM
- 2-Micron Particle Retention





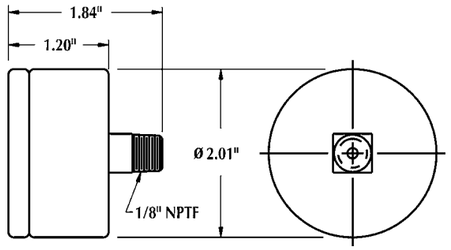
Design Features:

- Integral 3/4" NPT Male Nylon Mounting Stem
- Direct Interchange for Competitor 310 product.
- 99% Removal Efficiency of Particles 2 Microns and Larger

Consult Manufacturer for Ordering Information

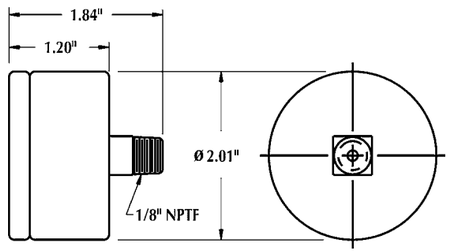
Consult Manufacturer for Ordering Information

ZINGA Filtration Group®



GV & CI SERIES
FILTER GAUGES
VACUUM & PRESSURE

- Black Steel Case
- Brass Stem
- Acrylic Lens
- Temperature: -40 to +200°F Operating Temperatures



GVL & CIL SERIES
STAINLESS STEEL
GLYCERIN-FILLED
FILTER GAUGES

- Stainless Steel Case
- Brass Stem
- Acrylic Lens
- Shock- and Vibration-Resistant
- Temperature: -40 to +200°F Operating Temperatures

VACUUM GAUGES (Suction Line Filter Installations)

Part No. GV-05
For Use With 3 PSI
Filter By-Pass Valve

Part No. GV-10
For Use With 5 PSI
Filter By-Pass Valve

PRESSURE GAUGES (Return Line Filter Installations)

Part No. CI-12
For Use With 15 PSI
Filter By-Pass Valve

Part No. CI-20
For Use With 25 PSI
Filter By-Pass Valve

Part No. CI-40
For Use With 50 PSI
Filter By-Pass Valve

VACUUM GAUGES (Suction Line Filter Installations)

Part No. GV-05L
For Use With 3 PSI
Filter By-Pass Valve

Part No. GV-10L
For Use With 5 PSI
Filter By-Pass Valve

PRESSURE GAUGES (Return Line Filter Installations)

Part No. CI-20L
For Use With 25 PSI
Filter By-Pass Valve

ACCESSORIES

ACCESSORIES

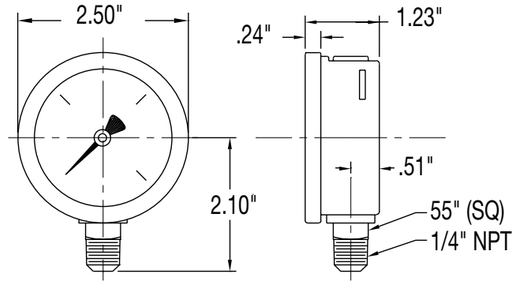
Consult Manufacturer for Ordering Information

Consult Manufacturer for Ordering Information

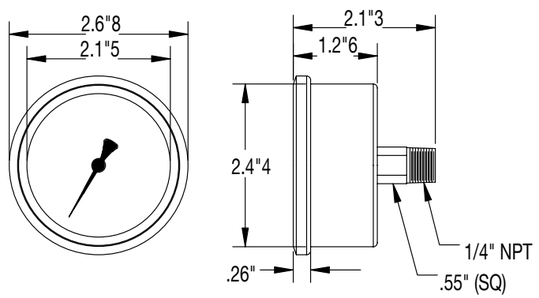
LG SERIES
GAUGES
GLYCERIN FILLED

- Accuracy +/- 1.5% full scale
- 2 1/2” dia. 304 stainless steel case
- Glycerin filled
- Dual Scale: PSI & Bar
- Temperature: -40 to +200°F Operating Temperatures

Bottom Connection



Center Back Connection



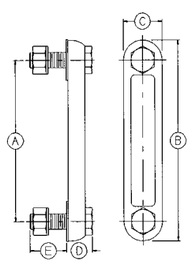
All gauges standard with 1/4" NPT connections. Other connections available by special order.

Consult Manufacturer for Ordering Information

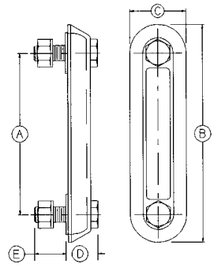
SG SERIES
RESERVOIR
SIGHT LEVEL GAUGES

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

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



No Guard



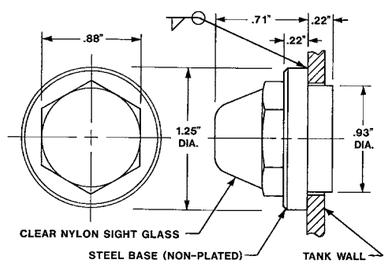
With Guard

Model Number	A	B	C	D	E
SG03XX0*	3.00”	4.22”	1.22”	0.81”	1.16”
SG03XXG*	3.00”	4.75”	1.75”	0.93”	0.82”
SG05XX0*	5.00”	6.22”	1.22”	0.81”	1.16”
SG05XXG*	5.00”	6.75”	1.75”	0.93”	0.82”
SG05XXN*	5.00”	6.75”	1.75”	0.93”	0.82”
SG10XX0*	10.00”	11.22”	1.22”	0.81”	1.16”
SG10XXG*	10.00”	11.75”	1.75”	0.93”	0.82”

Additional information required to place an order. Contact factory for assistance.

OE-1 SERIES
OIL-EYE

- Fluid Level Oil Eye and Steel Weld Port
- For Use with Petroleum-Base and Water-Base Hydraulic Fluids
- Temperature: -65° to 150°F for Pressures up to 400 PSI (Max Temperature 212°F for Non-Pressurized Applications
- Sight Glass Designed for Use with SAE-8 Port Geometry

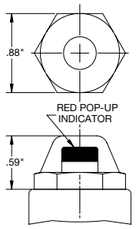


Consult Manufacturer for Ordering Information

ACCESSORIES

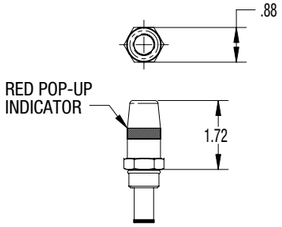
DIFFERENTIAL PRESSURE (ΔP) INDICATORS

DP03 Series



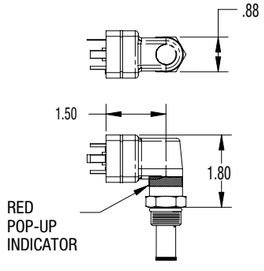
Low-Pressure Visual Indicator
200 PSI max Operating Pressure
Temperatures up to 150˚F
Automatic Resetting
Factory Installed. Available as kit for field replacement.
For use with DF, SF, MF, MFT, & ZDF Series Only

DP04 Series

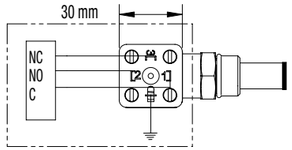


Cartridge-Style Visual Indicator
3000 PSI max Operating Pressure (6000 PSI for 80 PSID units)
Temperatures up to 200˚F
Automatic Resetting
Factory Installed. Available as kit for field replacement.

DP05 Series

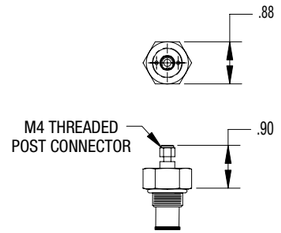


Cartridge-Style Visual/Electrical Indicator
DIN 43650 Type A Male Plug (11MM)
1NO, 1NC, & Common SPDT Switch (3 pole and ground)
5A; 125/250 VAC, 24 VDC (Resistive)
3000 PSI max Operating Pressure (6000 PSI for 80 PSID units)
Temperatures up to 200˚F
Automatic Resetting
Factory Installed. Available as kit for field replacement.

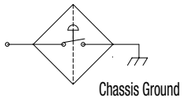


DIFFERENTIAL PRESSURE (ΔP) INDICATORS

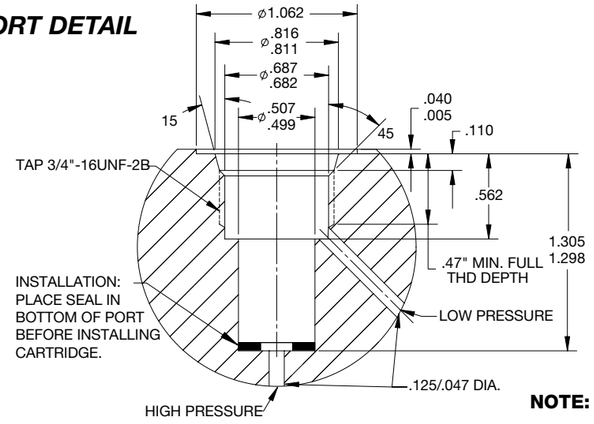
DP06 Series



Cartridge-Style Single Wire DC Indicator
200mA @ 36VDC
Momentary - Normally Open Circuit
3000 PSI max Operating Pressure (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)



INDICATOR PORT DETAIL



NOTE: TOP PORTION OF INDICATOR PORT PARALLEL TO SAE-8

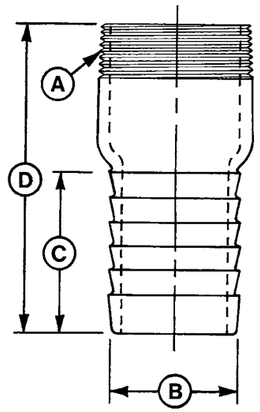
ACCESSORIES

Consult Manufacturer for Ordering Information

Phone 608.524.4200 Fax 608.524.4220 www.filtrationgroup.com E 17

FT SERIES
FILTER TANK ADAPTERS

Part Number	A Male Thread	B Hose ID	C Barb Length	D Overall Length
FT0505ZP	1/2" NPT	1/2"	1.35"	3.44"
FT0507ZP	1/2" NPT	3/4"	1.35"	2.94"
FT0707ZP	3/4" NPT	3/4"	1.35"	3.12"
FT0710ZP	3/4" NPT	1"	1.35"	2.94"
FT1007ZP	1" NPT	3/4"	1.35"	4.12"
FT1010ZP	1" NPT	1"	1.35"	3.38"
FT1012ZP	1" NPT	1-1/4"	1.65"	3.44"
FT1212ZP	1 1/4" NPT	1-1/4"	1.65"	3.88"
FT1215ZP	1 1/4" NPT	1-1/2"	1.65"	3.58"
FT1515ZP	1 1/2" NPT	1-1/2"	1.75"	3.88"
FT1520ZP	1 1/2" NPT	2"	2.20"	4.50"
FT2015ZP	2" NPT	1-1/2"	1.75"	5.42"
FT2020ZP	2" NPT	2"	2.20"	4.50"
FT2025ZP	2" NPT	2-1/2"	2.40"	5.00"
FT2525ZP	2 1/2" NPT	2-1/2"	2.40"	5.50"
FT2520ZP	2 1/2" NPT	2"	2.20"	6.13"
FT2530ZP	2 1/2" NPT	3"	3.00"	6.13"
FT3030ZP	3" NPT	3"	3.00"	6.00"
FT3025ZP	3" NPT	2-1/2"	2.40"	7.13"
FT4040ZP	4" NPT	4"	3.80"	7.25"

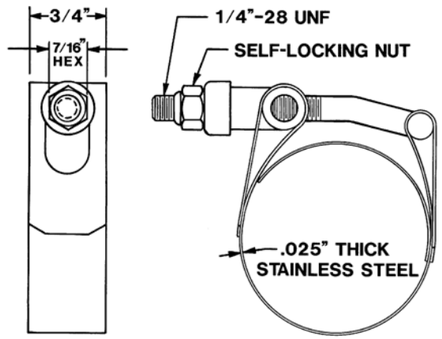


ZP suffix on fitting indicates Zinc plated finish as standard.

Black pipe finish is available.

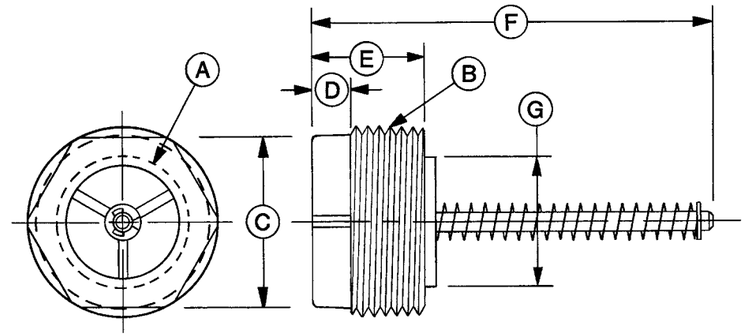
HC SERIES
HOSE CLAMPS
SEVERE SERVICE
"T" BOLT TYPE

Hose Clamp Part Number	Clamping Range Min.	Clamping Range Max	Recommended Clamps Per Hose End
HC075	1.19"	1.37"	One
HC100	1.38"	1.56"	One
HC125	1.63"	1.88"	One
HC138	1.81"	2.12"	One
HC150	1.94"	2.19"	One
HC187	2.19"	2.44"	One
HC200	2.38"	2.69"	One
HC238	2.81"	3.12"	One
HC250	2.94"	3.25"	Two
HC300	3.50"	3.81"	Two
HC400	4.50"	4.81"	Two



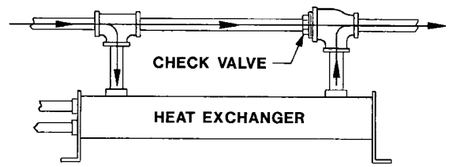
Consult Manufacturer for Ordering Information

BRV SERIES
BACK PRESSURE INDUCING CHECK VALVES

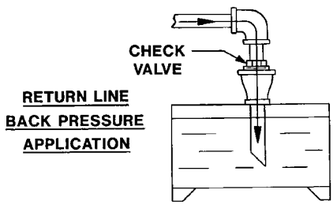


Part Number	A	B	C	D	E	F (max)	G
BRV07122XX*	3/4" NPTF	1 1/4" NPTF	1.50"	.32"	1.10"	2.90"	.81"
BRV10152XX*	1" NPTF	1 1/2" NPTF	1.75"	.32"	1.10"	4.04"	1.25"
BRV12202XX*	1 1/4" NPTF	2" NPTF	2.09"	.30"	1.22"	4.36"	1.75"
BRV20302XX*	2" NPTF	3" NPTF	3.06"	.63"	1.78"	6.35"	2.50"

**Additional information required to place an order. Contact factory for assistance.*



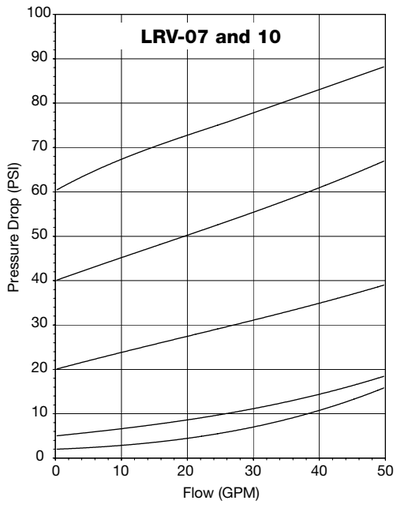
CROSS PORT RELIEF APPLICATION



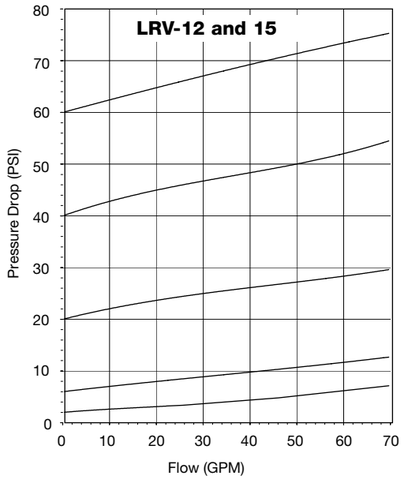
Consult Manufacturer for Ordering Information

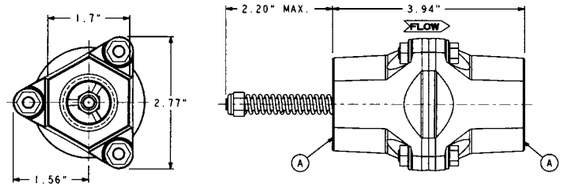
LRV SERIES
CHECK VALVES

Heat Exchanger / Cross Port Relief Valves

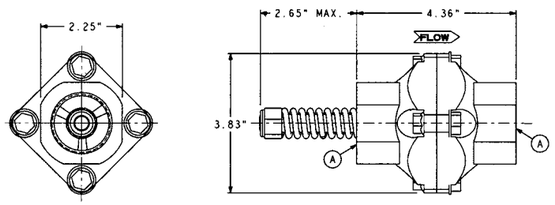


Average Pressure Drop with 150 SUS Oil at 100˚F.

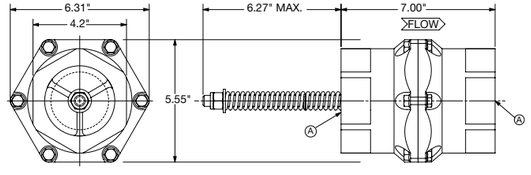




Part Numbers
LRV-07 and 10
500 PSI Max



Part Numbers
LRV-12 and 15
500 PSI Max

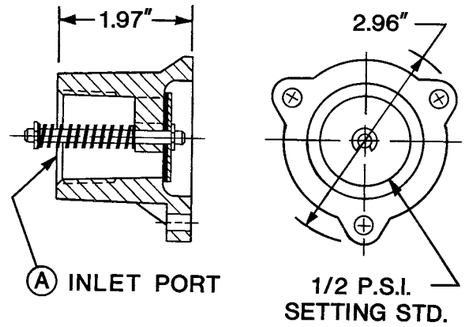


Part Number LRV-30
300 PSI Max

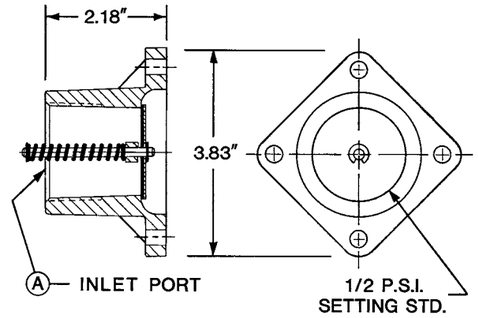
Consult Manufacturer for Ordering Information

RV SERIES
RETURN LINE TANK MOUNTED CHECK VALVES

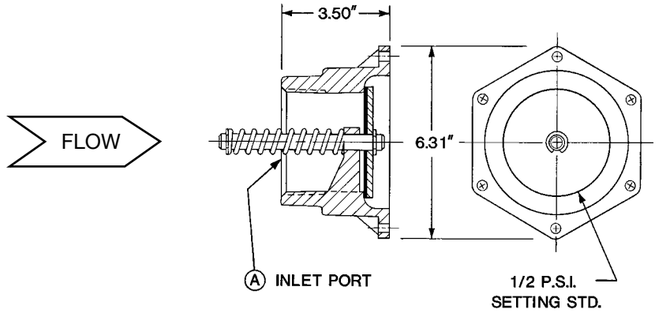
Maximum Operating Pressure: 50 PSI
Standard Valve Setting: 1/2 PSI



Part Numbers
RV-07-1-01 & RV-10-1-01



Part Numbers
RV-12-1-01 & RV-15-1-01



Part Number RV-30-1-01

Part Number	A Inlet Port
RV07101	3/4" NPTF
RV10101	1" NPTF
RV12101	1 1/4" NPTF
RV15101	1 1/2" NPTF
RV30101	3" NPTF

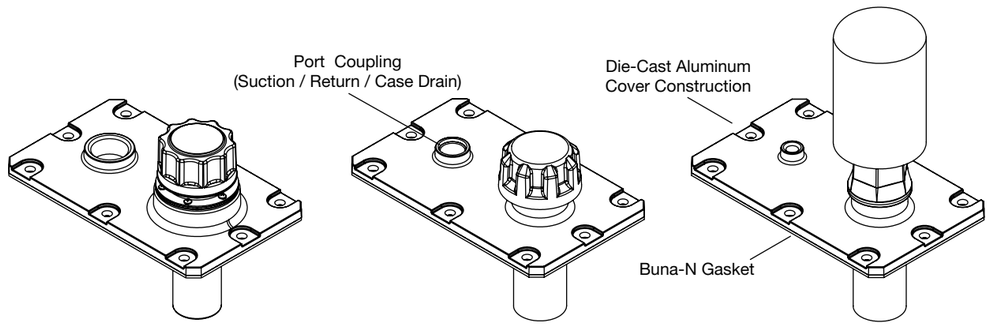
NOTE: Buna-N seals standard, Fluorocarbon seals optional

Consult Manufacturer for Ordering Information

VALVES

RCA SERIES
RESERVOIR COVER

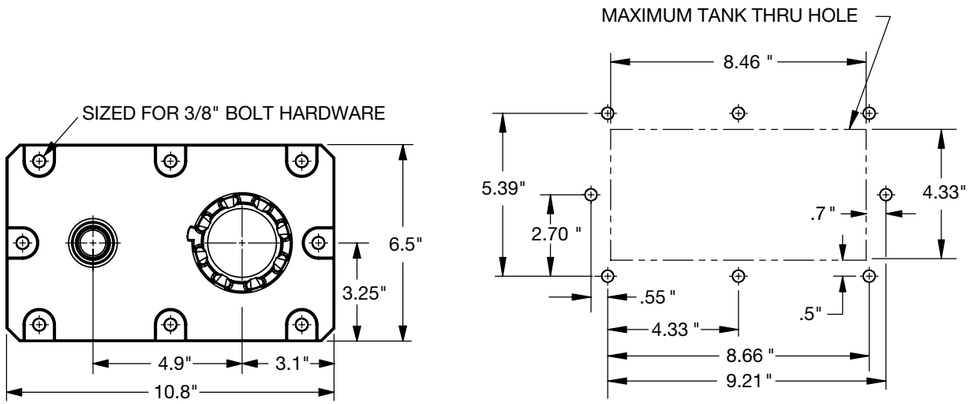
Integral Filler Breathers:	Zinga SFB, FB or FTB Series
Suction/Return Port Coupling	3/8” to 1 1/4” NPTF SAE-6 to SAE-20 Buna - N Flat Gasket
Temperature:	Up to +250°F
Application:	Petroleum-based fluids only. Consult factory for synthetic fluid.



RCA-A Series Cover
Steel Filler Breather
(10 Micron Foam Element Std.)

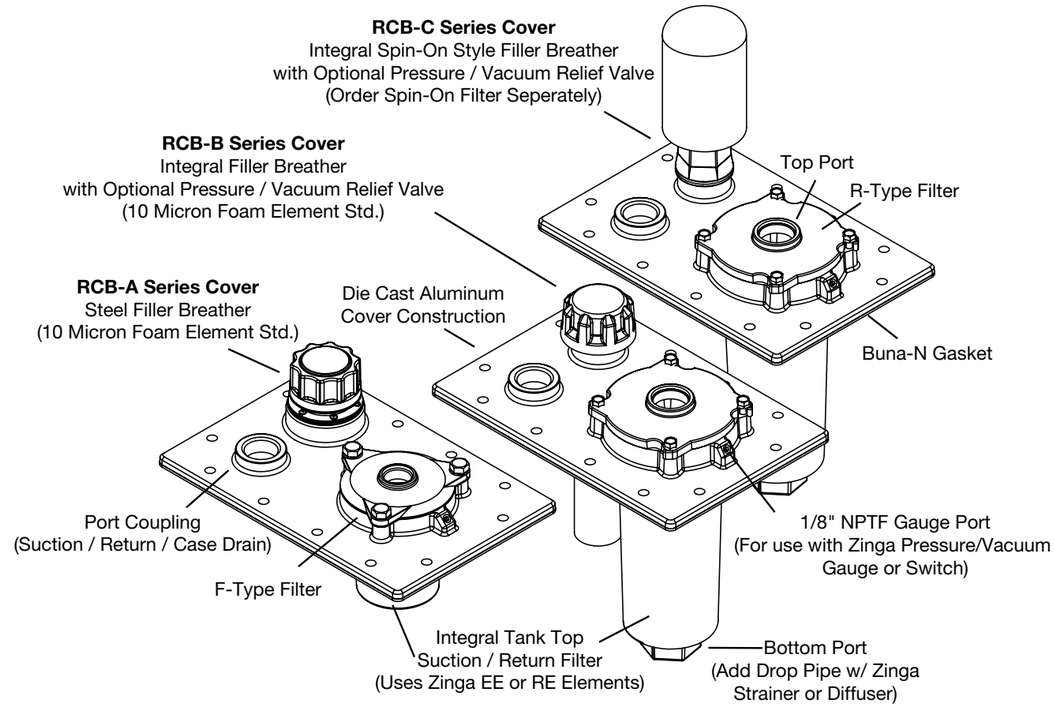
RCA-B Series Cover
Integral Filler Breather with
Optional Pressure / Vacuum Relief Valve
(10 Micron Foam Element Std.)

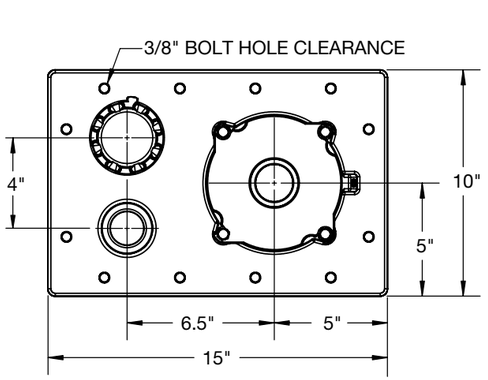
RCA-C Series Cover
Integral Spin-On Style Filler Breather with
Optional Pressure / Vacuum Relief Valve
(Order Spin-On Filter Seperately)

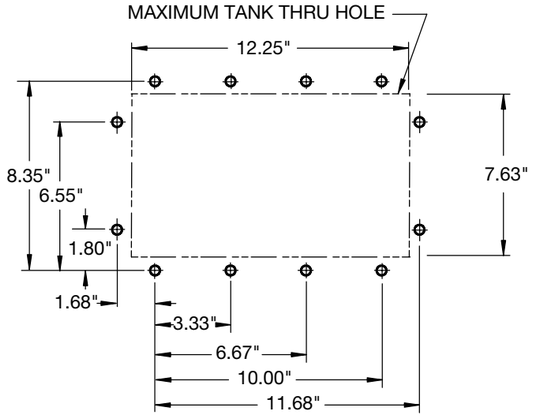


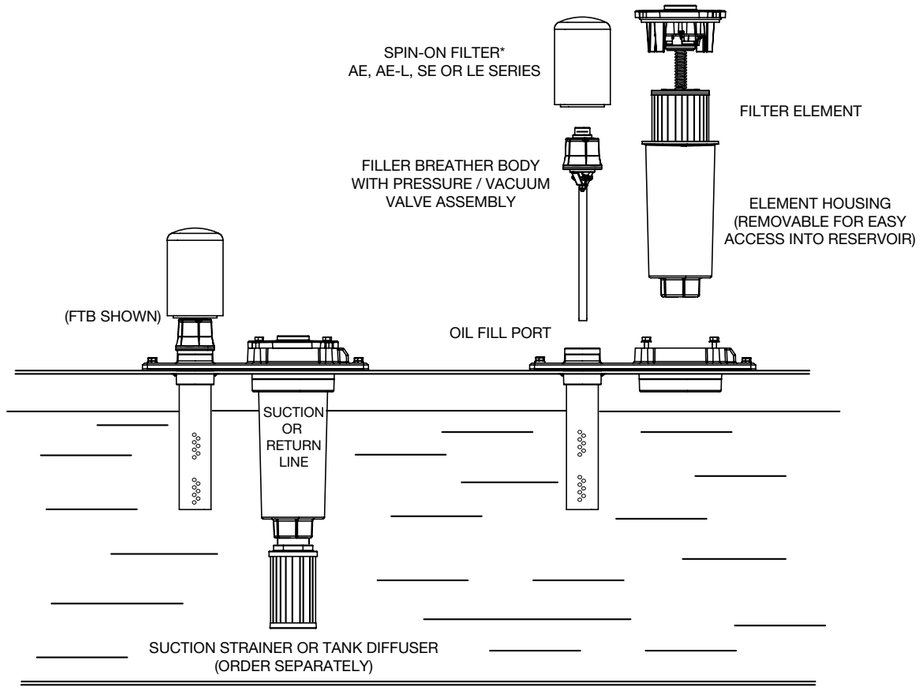
RCB SERIES
RESERVOIR COVER

Flows Up To:	96 GPM (Return) 32 GPM (Suction)
Integral Filter Port Sizes:	7/8” - 14 UN (SAE-10) to 1 7/8" - 12 UN (SAE - 24)
Integral Filler Breathers:	Zinga SFB, FB or FTB Series
Suction/Return Port	3/8” to 1 1/4” NPTF
Filter Operating Pressure:	100 PSI Max.
Temperature:	Up to +250°F
Application:	Petroleum-based fluids only. Consult factory for synthetic fluid.









* 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

MISC.

REFERENCE INFORMATION

Relative Size of Particles

Substance	Size in microns (µ)	Size in inches (in.)
Grain of Table Salt	100	0.00400
Human Hair	70	0.00270
Lower Limit of Visibility	40	0.00158
White Blood Cells	25	0.00100
Talcum Powder	10	0.00040
Red Blood Cells	8	0.00030
Bacteria (avg.)	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 ($ß_x$).

$$ß_x = \frac{N_U}{N_D} \quad \text{where x = size of particles in microns (µ)}$$

$$\text{Efficiency}_x = 100\left(1 - \frac{1}{ß_x}\right)$$

Example:

$$\frac{37{,}500 \text{ Particles 10µ Upstream}}{500 \text{ Particles 10µ Downstream}} = 75.00$$

Beta Ratio:

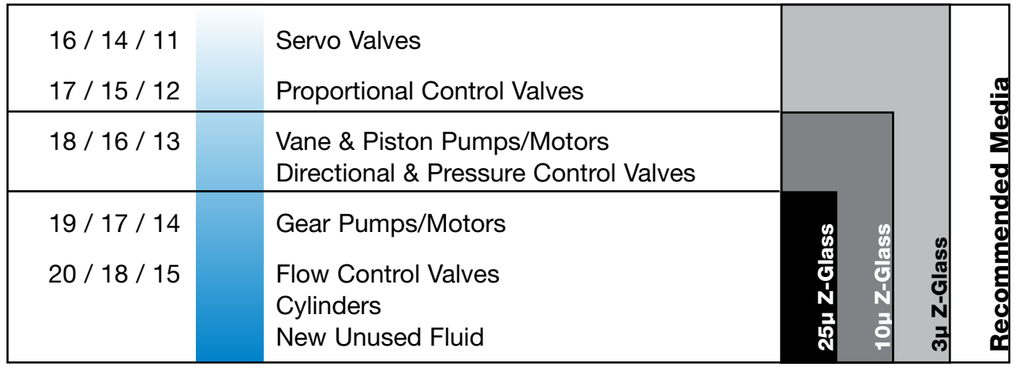
$ß_{10} = 75.00$ Stated as “Beta 10 equal to 75”

$$\text{Efficiency}_{10} = 100\left(1 - \frac{1}{75.00}\right) = 98.7\%$$

ß	Efficiency
1.01	1.0 %
1.10	9.0 %
1.50	33.3 %
2.00	50.0 %
10.00	90.0 %
75.00	95.5 %
100.00	98.7 %
200.00	99.5 %
1000.00	99.9 %

APPENDIX

Typical ISO Cleanliness Level Range Numbers for System Components



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

Particles Larger than 14 micron (>14μ_c)

Particles Larger than 6 micron (>6μ_c)

Particles Larger than 4 micron (>4μ_c)

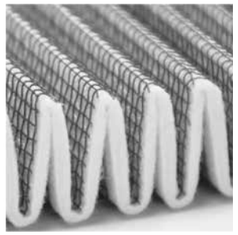
ISO 4406 RANGE NUMBERS

Range Number	Number of Particles Per ml More Than	Up to and including
24	80,000.00	160,000.00
23	40,000.00	80,000.00
22	20,000.00	40,000.00
21	10,000.00	20,000.00
20	5,000.00	10,000.00
19	2,500.00	5,000.00
18	1,300.00	2,500.00
17	640.00	1,300.00
16	320.00	640.00
15	160.00	320.00
14	80.00	160.00
13	40.00	80.00
12	20.00	40.00
11	10.00	20.00
10	5.00	10.00
9	2.50	5.00
8	1.30	2.50
7	0.64	1.30
6	0.32	0.64

Consult Manufacturer for Ordering Information

Zinga Filter Media Types

Z-Glass Media

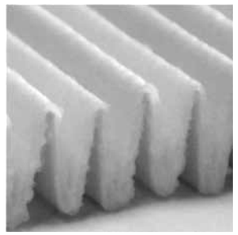


Multi-Layered, non-woven glass media that provides the highest levels of depth filtration efficiency and capacity. Higher capacity means longer service life. Coupled with a steel support mesh, Z-Glass can withstand higher differential pressures.

Cellulose Media

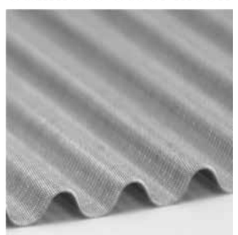
Traditional paper based media that provides a nominal level of depth filtration and capacity. Used with petroleum-based fluids only. Some grades of cellulose include a layered glass fiber substrate to provide more efficiency.

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 by-pass valve and service gauge is recommended when using AquaZorb.

Stainless Steel Mesh



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

Mesh	Degree of Filtration
30	560µ
60	280µ
100	141µ
200	75µ
200 x 1400	10µ

Consult Manufacturer for Ordering Information

Fluid Viscosity & Flow Capacity

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

Fluid Viscosity & Temperature

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

Estimating Pressure Drop (ΔP)

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

$$\Delta P_{Estimated} = \Delta P_{Graph} \times \frac{\text{System Viscosity (SUS)}}{150} \times \frac{\text{System Specific Gravity (SG)}}{.9}$$

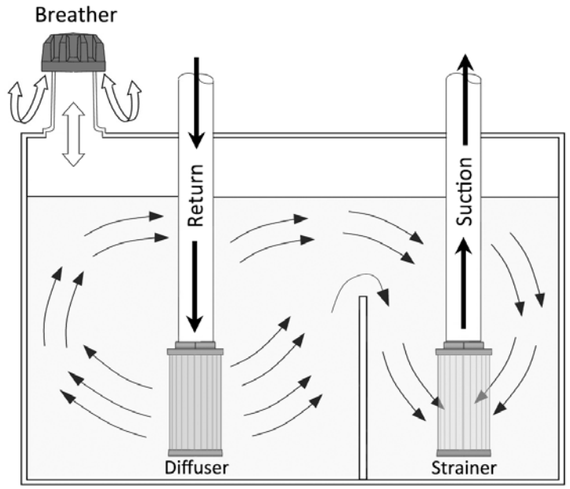
Filter Application Guidelines

Filter Type	Max. ΔP at Normal Operating Temperature	Max. Line Velocity (ft / sec)
Suction Strainers	1" Hg (1/2 PSI)	5
Suction Line Filters	≤50% of max. allowed by pump manufacturer	5
Return Line Filters*	≤50% of filter by-pass valve	15
Pressure Filters	≤50% of filter by-pass valve	25

* Return line filters should always include a by-pass valve. Flow intensification should also be considered.

APPENDIX

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

Pipe Velocity (fps) = $\dfrac{\text{.3208 x Flow Rate (GPM)}}{\text{Internal Area (in}^2\text{)}}$

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

1 bar = 14.5 PSI	**1 PSI = 2.04 in. Hg**	**1 ft H_2O = .433 PSI**
1 cm^3 = 0.06102 in^3	**1 L = 61.0234 in^3**	**1 gal (US) = 231 in^3**

APPENDIX

VELOCITY CHART FOR PIPE - TUBE - HOSE

STANDARD PIPE - SCHEDULE 40								EXTRA STRONG PIPE - XS - SCHEDULE 80					
Pipe Size	OD	ID	Int Area	GPM 5 Ft/Sec.	GPM 10 Ft/Sec.	GPM 15 Ft/Sec.	GPM 20 Ft/Sec.	ID	Int 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	.423	.141	2.2	4.4	6.6	8.8
1/2"	.840	.622	.304	4.8	9.5	12.0	19.0	.546	.234	3.7	7.3	11.0	14.7
3/4"	1.050	.824	.533	8.4	16.7	25.1	33.4	.742	.433	6.8	13.6	20.3	27.1
1"	1.315	1.049	.864	13.5	27.0	40.6	54.1	.957	.719	11.3	22.5	33.8	45.0
1-1/4"	1.660	1.380	1.495	23.4	46.8	70.3	93.7	1.278	1.283	20.0	40.1	60.2	80.3
1-1/2"	1.900	1.610	2.036	31.9	63.7	95.6	127.0	1.500	1.767	27.7	55.3	83.0	110.0
2"	2.375	2.067	3.356	52.5	105.0	157.0	210.0	1.939	2.953	46.2	92.5	139.0	185.0
2-1/2"	2.875	2.469	4.788	75.0	150.0	225.0	300.0	2.323	4.238	66.4	133.0	199.0	265.0
3"	3.500	3.068	7.393	116.0	232.0	347.0	463.0	2.900	6.605	103.0	207.0	310.0	414.0
3-1/2"	4.000	3.548	9.886	155.0	310.0	465.0	619.0	3.364	8.888	139.0	278.0	418.0	557.0
4"	4.500	4.026	12.730	199.0	399.0	598.0	797.0	3.826	11.500	180.0	360.0	540.0	720.0

ASA TUBING								SAE HOSE					
Tube Size	Wall Thk.	Int Area	GPM 5 Ft/Sec.	GPM 10 Ft/Sec.	GPM 15 Ft/Sec.	GPM 20 Ft/Sec.	GPM 25 Ft/Sec.	Hose Size	Int Area	GPM 5 Ft/Sec.	GPM 10 Ft/Sec.	GPM 15 Ft/Sec.	GPM 20 Ft/Sec.
1/2"	.083	.088	1.37	2.74	4.11	5.48	6.85	3/8"	.110	1.73	3.46	5.19	6.92
5/8"	.109	.133	2.08	4.16	6.24	8.32	10.40	1/2"	.196	3.08	6.15	9.23	12.30
3/4"	.109	.222	3.48	6.96	10.44	13.92	17.40	5/8"	.307	4.81	9.61	14.42	19.24
7/8"	.095	.369	5.75	11.50	17.25	23.00	28.75	3/4"	.442	6.90	13.80	20.70	27.60
1"	.109	.480	7.50	15.00	22.50	30.00	37.50	7/8"	.601	9.40	18.80	28.20	37.60
1-1/8"	.120	.615	9.60	19.20	28.80	38.40	48.00	1"	.785	12.30	24.60	36.90	49.20
1-1/4"	.120	.801	12.55	25.10	37.66	50.20	62.75	1-1/4"	1.227	19.20	38.40	57.60	76.80
1-1/2"	.120	1.247	19.55	39.10	58.65	78.20	97.75	1-1/2"	1.767	27.70	55.40	83.10	110.80
2"	.250	1.767	27.70	55.40	83.10	110.80	138.50	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

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The RB2 Thread-Mount Nylon Filler Breather

The RB2 by Zinga Industries combines our time-tested breather design with an innovative internal splash-resistant geometry. A variety of popular thread mounting options for simplified and economical reservoir mounting makes this splash-resistant design the right choice for reservoir designers and users.

Features and Benefits:

- Faster fill / refill rate for more efficient filtration
- Unique glass-filled nylon construction, provided in 1-1/4 and 2-1/2 thread sizes, means all-weather durability for longer life in harsh and corrosive environments
- Engineered and tested for unparalleled splash resistance
- Integrated splash-resistant design can be used with the pressure / vacuum option

Options:

- Weld bases available in steel or aluminum
- Steel baskets in 4”, 6”, 9”, or 12” nominal lengths with 30, 60, 100, or 200 stainless steel mesh liners
- Oil level indicating dipstick
- Combined pressure / vacuum relief valve in 3, 5, or 10 PSI pressure all with .2 PSI vacuum
- 1-micron air filter available

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