15P/30P Series

High Pressure Filters

Parker Filtration

Global Filtration Technology

Applications for 15P/30P Series filters

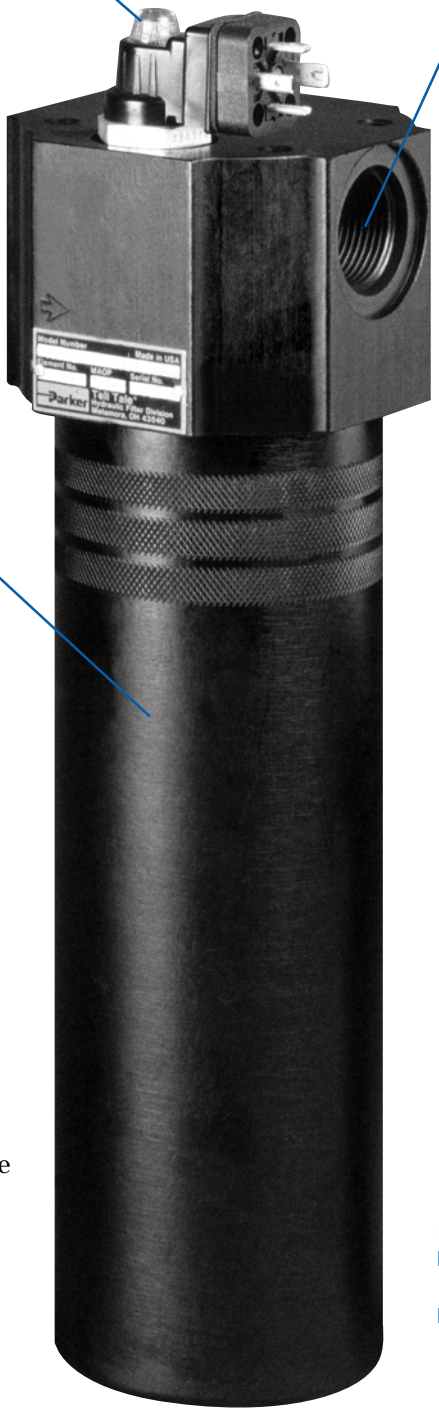
- Saw mills
- Aircraft ground support equipment
- Asphalt pavers
- Hydraulic fan drives
- Power steering circuits
- Waste trucks
- Cement trucks
- Servo control protection
- Logging equipment

These application examples have one thing in common...the need for clean hydraulic fluid.

Modern high pressure hydraulic systems are demanding. Better controls and long component life are expected. To deliver the high standards of performance, hydraulic components are built with tighter tolerances which increases their sensitivity to contamination.

That's where Parker pressure filters come into play. They filter out ingressed contamination before it jams a valve or scores a cylinder. They block pump generated debris before it gets to servo or proportional valves. Parker pressure filters are a key ingredient in meeting today's system demands.

Put your hydraulic systems in the care of Parker Hydraulic Filter Division. We are committed to designing and building the best filters available to industry.



Indicators
- Both visual auto reset style and dual indicator visual/ electrical style available to suit your application. New patented design resists false signaling due to vibration.

Straight Thread Ports
- SAE straight thread for positive sealing

Bypass Valve (not visible)
- May be blocked for critical applications

Bowl Construction
- Formed of high grade 6061 T6 aluminum
- Black anodized, corrosion resistant finish
- Knurled for easier gripping when removing and re-assembling

Hex (not visible)
- Hex formed at base of bowl for easy removal

Bowl Configurations
- Single and double length bowls available to cover a wide range of flows
- 30P available in a duplex version.

Drain Port (not visible)
- Clean and easy servicing
- Lets you drain bowl before element changes

Quality elements make the difference

The important item in a filter assembly is the element. It must capture and retain contaminants that can damage system components. At the same time it must allow flow to pass as freely as possible to perform it's function.

There are many ways to design and build an element, and it's easy to produce a low cost element. However, cost is not the only selection criteria, especially when the risk is loss of critical machine performance.

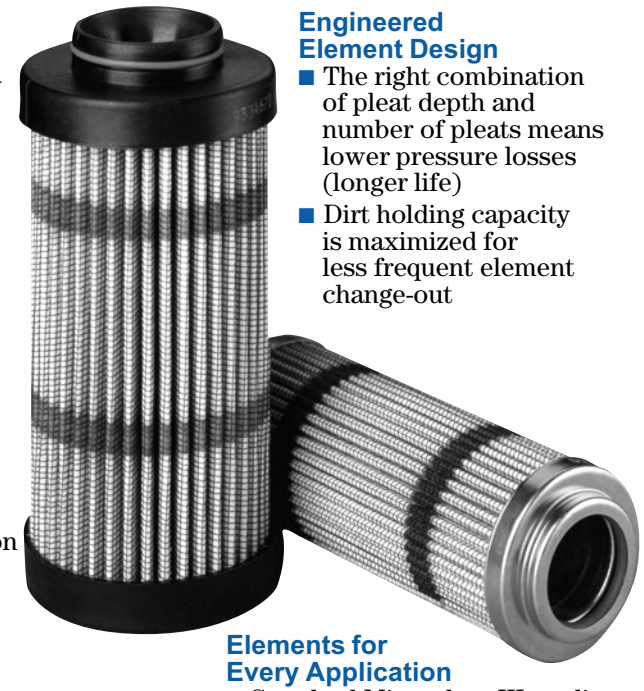
For instance, wire mesh reinforcement. Not all filter elements have it. It's used in Parker elements to keep the pleats from bunching or collapsing. If pleats bunch, the effective surface area of the element is reduced, excessive pressure drop develops, and the filter assembly may go into premature bypass mode.

There are many other features that are included standard with every quality Parker element. The table below outlines several.

O-Ring Seal
- Positive sealing for optimum element efficiency

Wire Reinforced Media
- Prevents pleat bunching
- Helps prevent media migration
- Maintains media efficiency

Zinc Dichromate End Caps (15P)
- Excellent corrosion protection
- Strong adhesion means no element separation

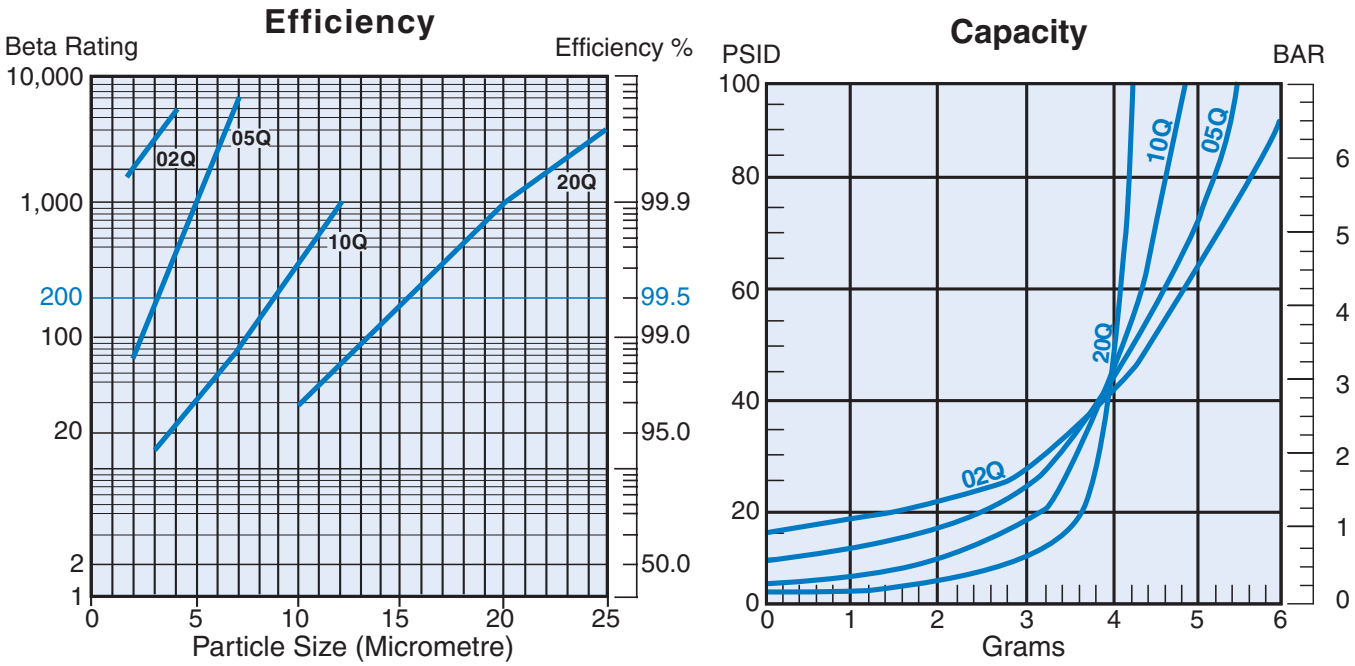


Engineered Element Design
- The right combination of pleat depth and number of pleats means lower pressure losses (longer life)
- Dirt holding capacity is maximized for less frequent element change-out

Elements for Every Application
- Standard Microglass III media for long life and excellent system protection

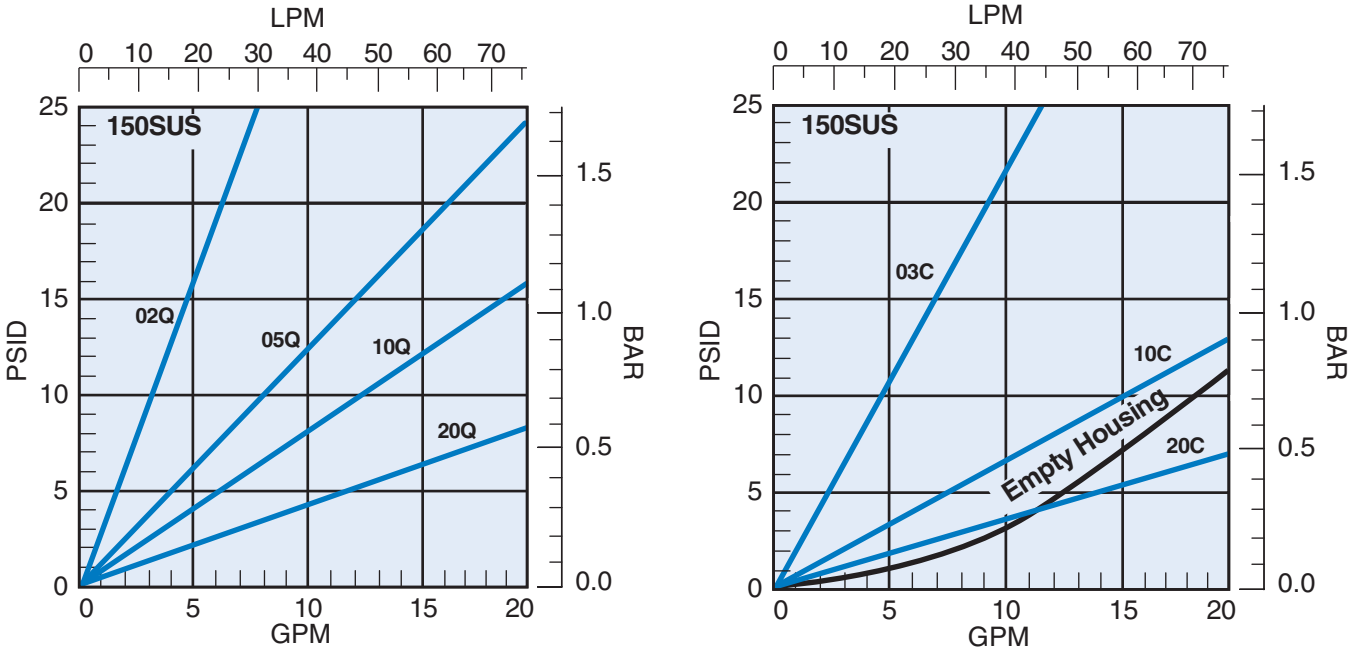
Feature	Advantage	Benefit
• Wire reinforced Microglass III elements	• Rugged construction, stands up to abuse of cyclic flows without performance loss • Wire support reduces pleat bunching, keeps pressure drops consistent	• The reliable filtration provided assures equipment protection, reduces down-time, maximizes element life, and allows the hydraulic system to operate properly
• Multipass tested elements (per ANSI/NFPA T3.10.8.8 R1-1990)	• Filter performance backed by recognized and accepted laboratory test standards	• Filters you select have known performance levels
• Complete element performance data disclosure	• All pertinent information is provided in an easy-to-compare format	• Provides an easy guide to proper filter selection

15P-1 Element Performance

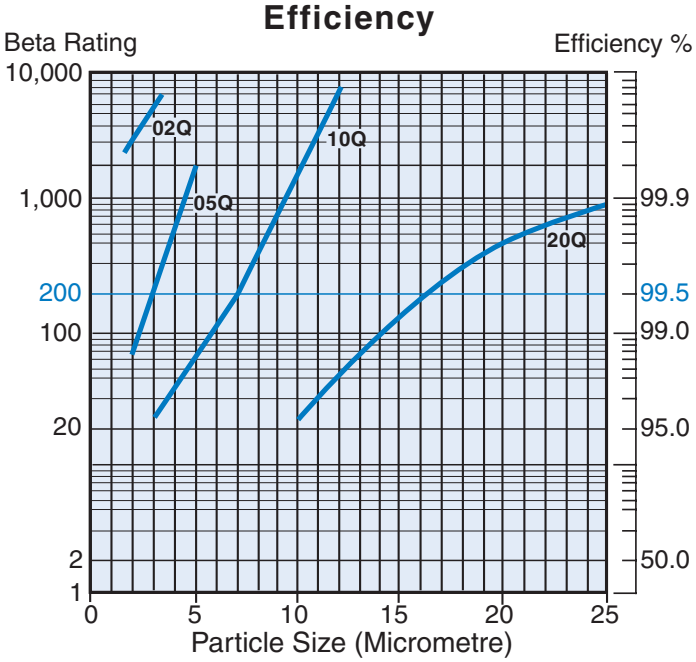


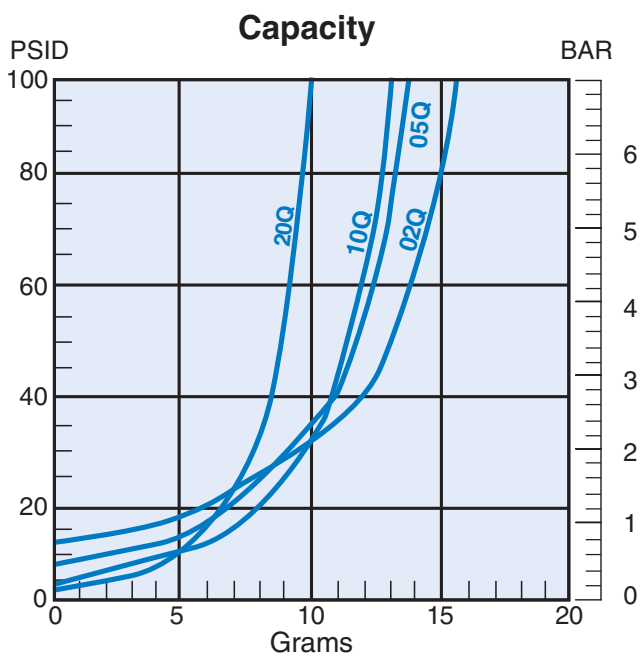
Multipass tests run @ 10 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



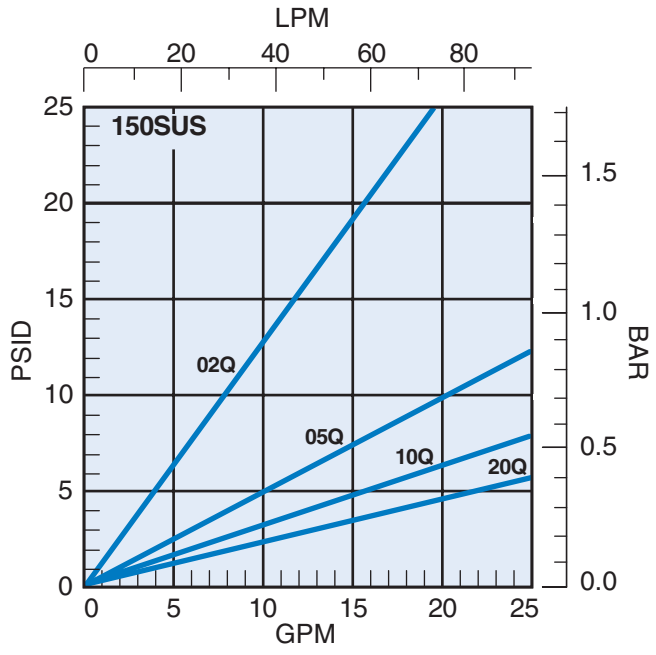
15P-2 Element Performance

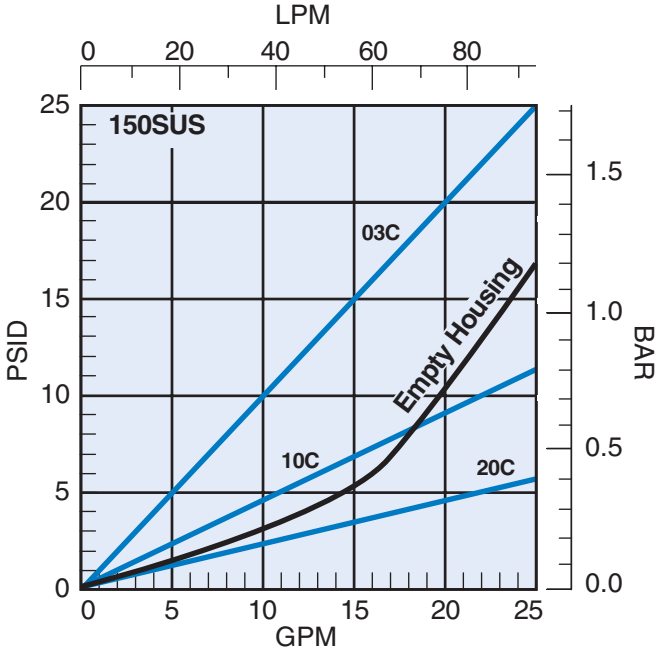




Multipass tests run @ 15 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss





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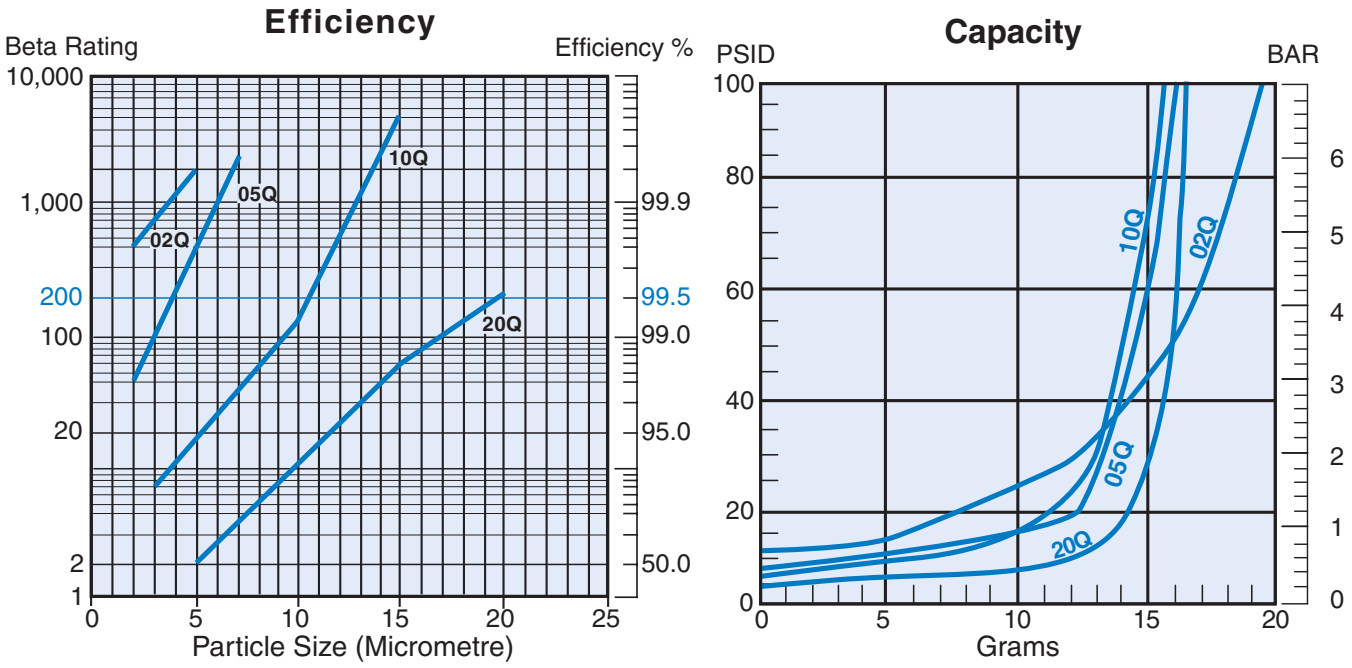
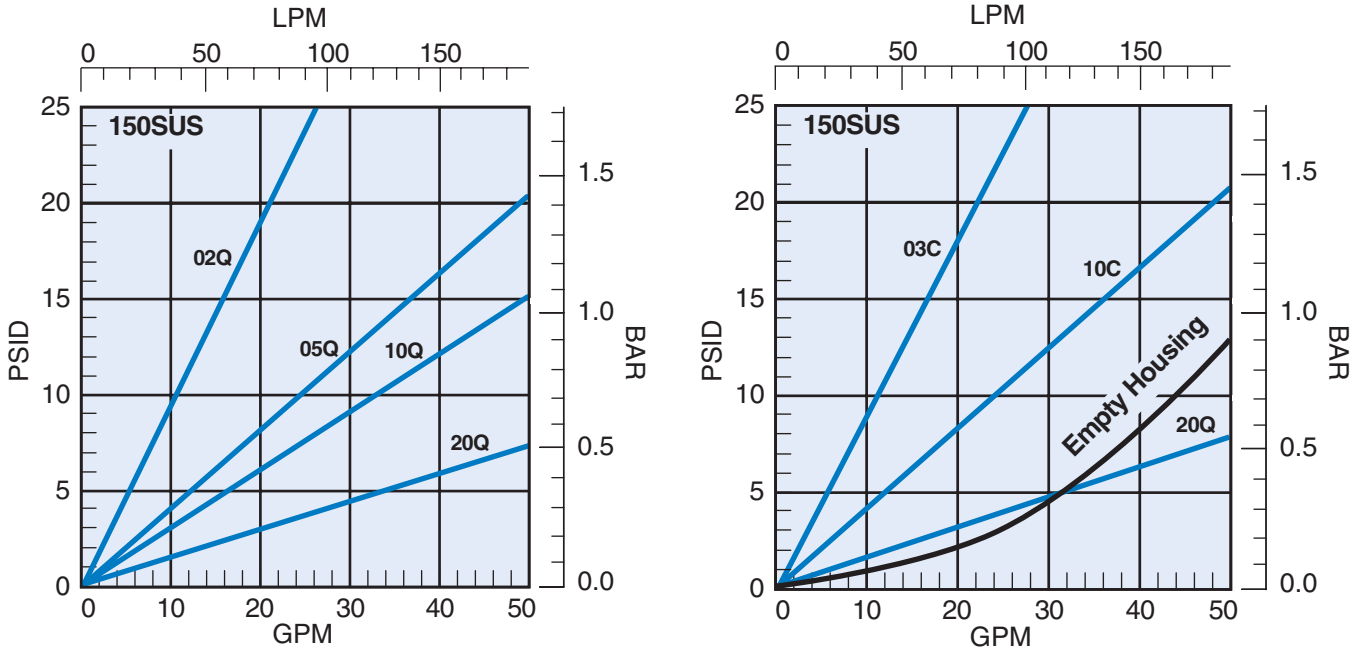
30P-1 Element Performance



Multipass tests run @ 20 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



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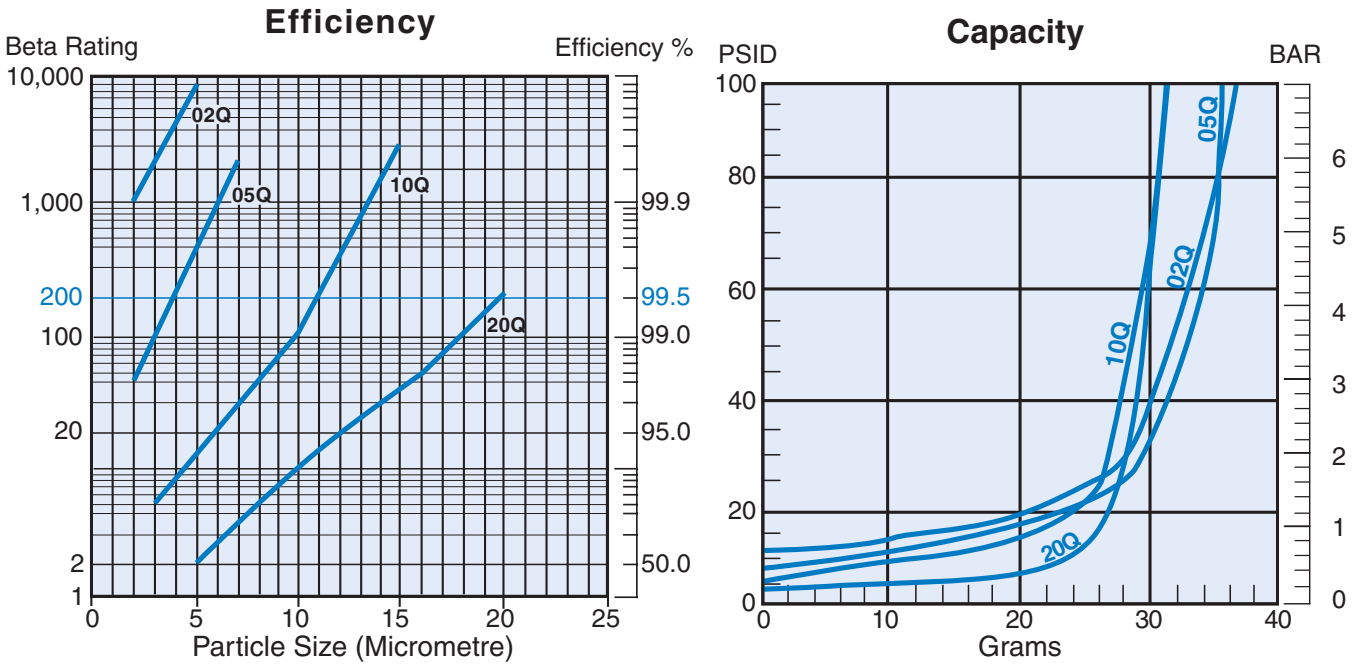
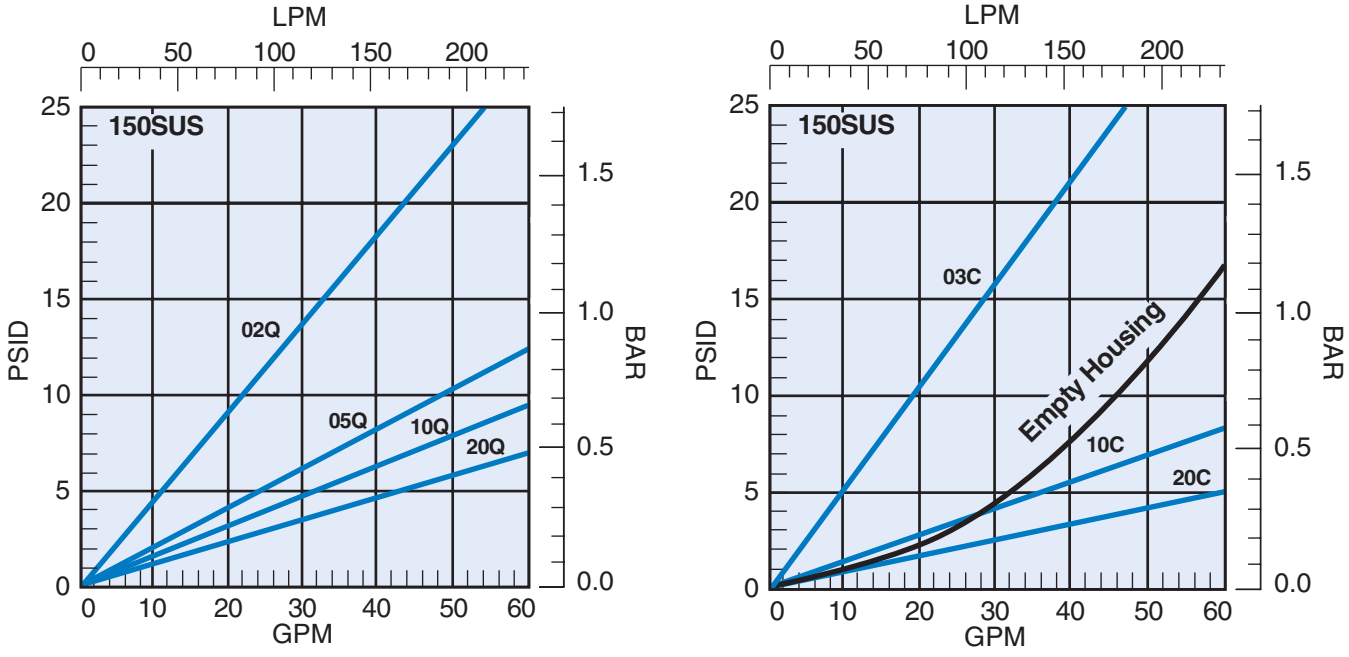
30P-2 Element Performance



Multipass tests run @ 30 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



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Metamora, OH

Specifications: 15P

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 3000 psi (206.9 bar)
Rated Fatigue Pressure: 2000 psi (138 bar)
Design Safety Factor: 3:1

Operating Temperatures:
Buna: -40°F (-40°C) to 225°F (107°C)
Fluorocarbon: -15°F (-26°C) to 275°F (135°C)

Element Collapse Rating:
Standard- 350 psid (24.1 bar)
"H" Option- 2000 psid (138 bar)
"X" Option- 3000 psid (206.9 bar)

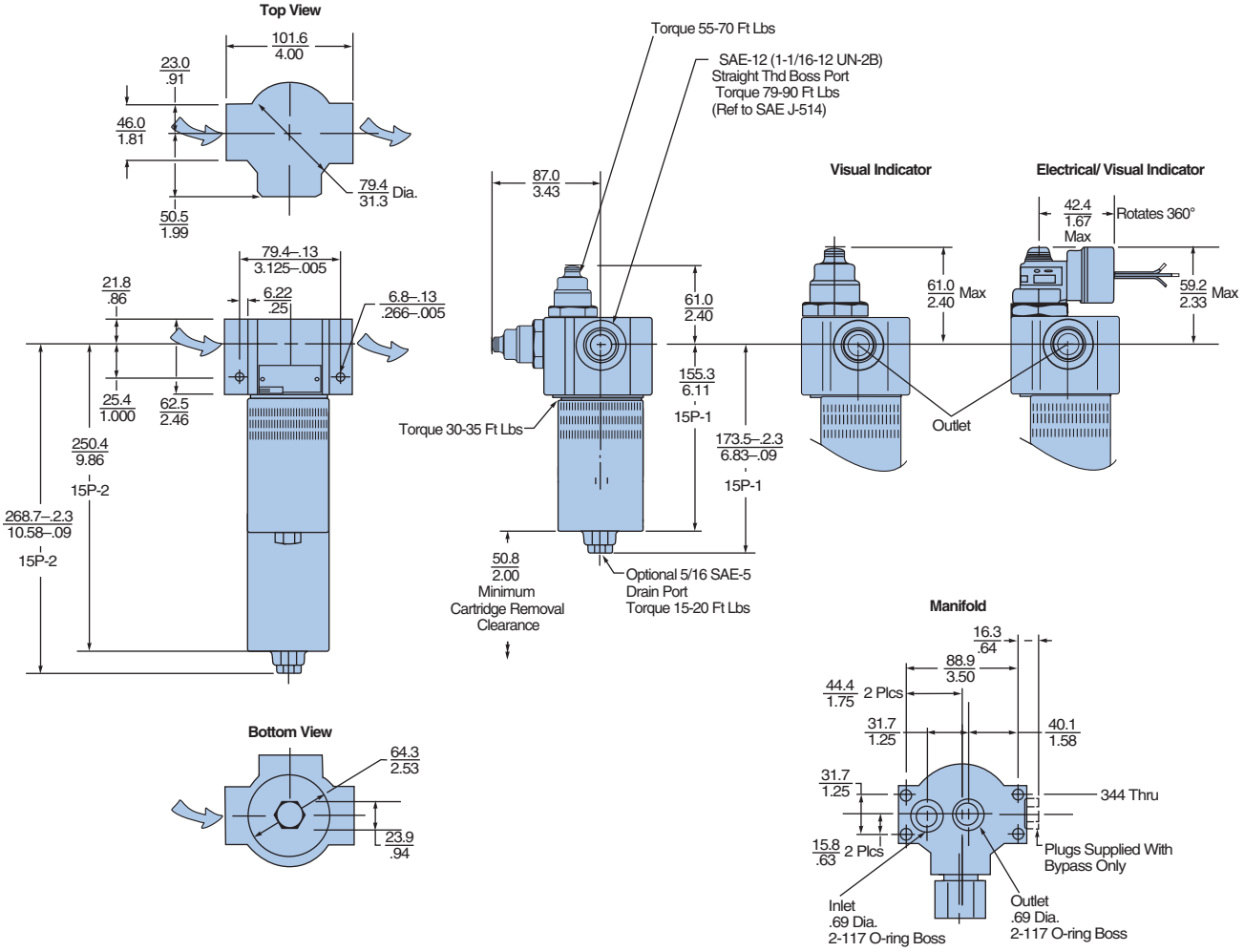
Materials:
Bowl: impacted aluminum (anodized 6061-T6)
Head: extruded aluminum (anodized 6061-T6)
Bypass: nylon

Element Condition Indicators:
Visual (optional) 360° green/ red
Electrical/ Visual (optional)
5A @ 240VAC, 3A @ 28VDC
Electrical-heavy duty (optional)
.25A (resistive) MAX 5 watts
12 to 28 VDC & 110 to 175 VAC

Color Coding:
White (common)
Black (normally open)
Blue (normally closed)

Weights (approximate):
15P-1 3.5 lb. (1.6 kg.)
15P-2 4.6 lb. (2.1 kg.)

Linear Measure: millimeter / inch



Dimensional drawings are for reference only.

Specifications: 30P/30PD

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 3000 psi (206.9 bar)
Rated Fatigue Pressure: 2000 psi (138 bar)
Design Safety Factor: 3:1

Operating Temperatures:
Buna: -40°F (-40°C) to 225°F (107°C)
Fluorocarbon: -15°F (-26°C) to 275°F (135°C)

Element Collapse Rating:
Standard- 350 psid (24.1 bar)
"H" Option- 2000 psid (138 bar)
"X" Option- 3000 psid (206.9 bar)

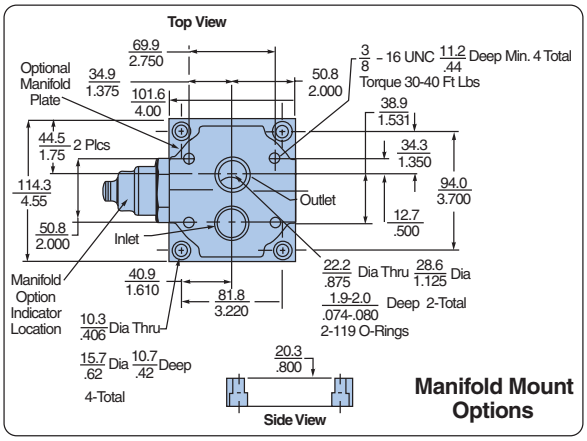
Materials:
Bowl: impacted aluminum (anodized 6061-T6)
Head: extruded aluminum (anodized 6061-T6)
Bypass: Nylon

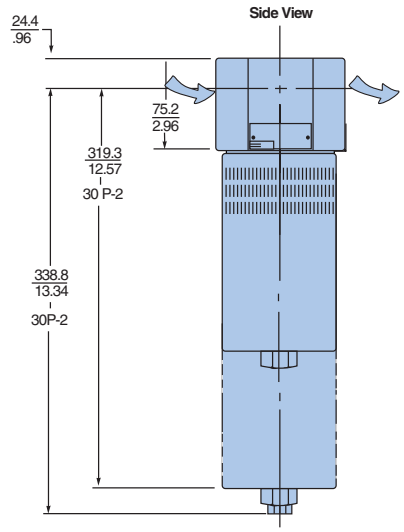
Element Condition Indicators:
Visual (optional) 360° green/ red
Electrical/ Visual (optional)
5A @ 240VAC, 3A @ 28VDC
Electrical-heavy duty (optional)
.25A (resistive) MAX 5 watts
12 to 28 VDC & 110 to 175 VAC

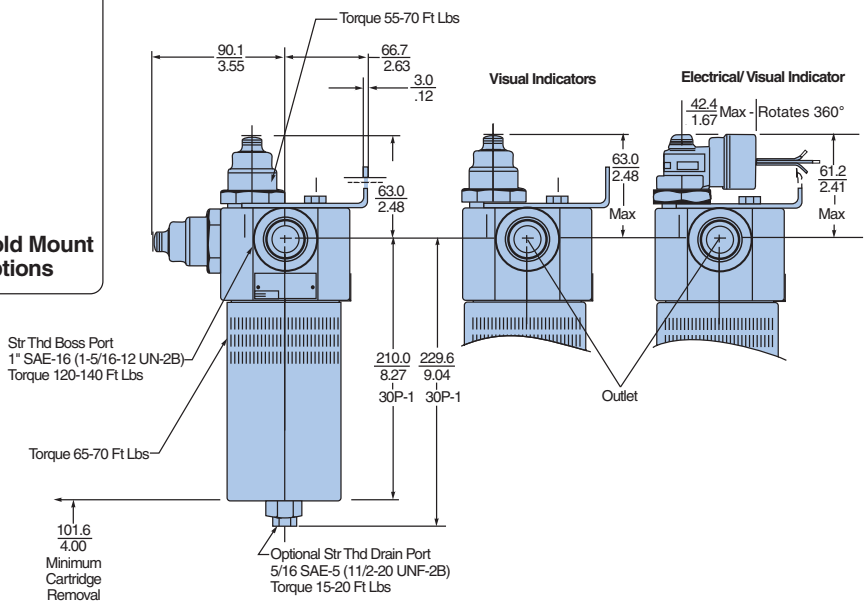
Color Coding:
White (common)
Black (normally open)
Blue (normally closed)

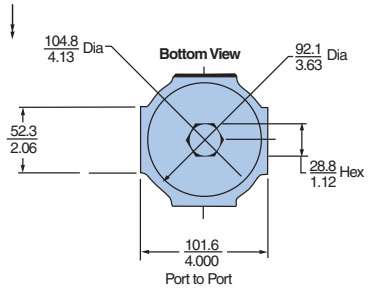
Weights (approximate):
30P-1 6.4 lb.(2.9 kg.)
30PD-1 36 lb. (16.3 kg.)
30P-2 8.7 lb. (3.9 kg.)
30PD-2 40 lb. (18.1 kg.)

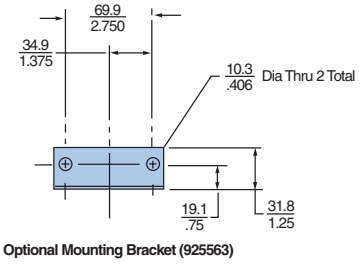
Linear Measure: millimeter / inch











Dimensional drawings are for reference only.

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Hydraulic Filter Division
Metamora, OH

30PD Duplex Filter

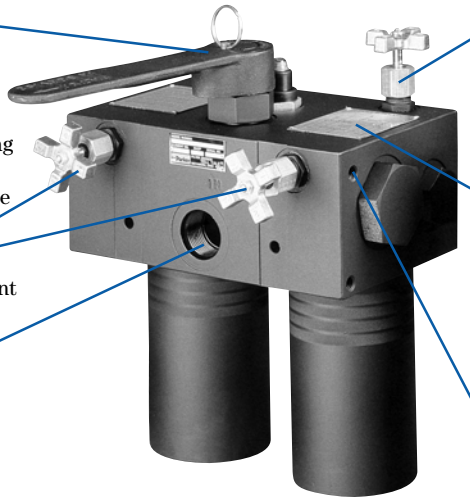
The Parker 30PD duplex pressure filter provides uninterrupted filtration for equipment that cannot be shut down for servicing.

The 30PD allows you to simply switch the diverter valve and service the element while the other side is in service.

Pressure balancing valves and check valves are all neatly assembled in a compact manifold head that makes operation safe, smooth and easy.

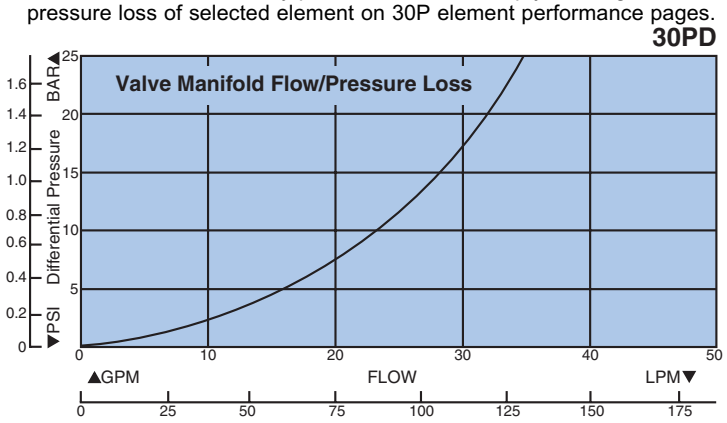
Vent valves are also included to insure that all air is purged during service so that maximum system performance is achieved.

The Parker 30PD makes use of industry proven components. Elements are multi-pass tested in accordance with ANSI/NFPA T3.10.8.8 R1 -1990. Bowls and head are subjected to rigorous fatigue testing to insure a trouble free service life.

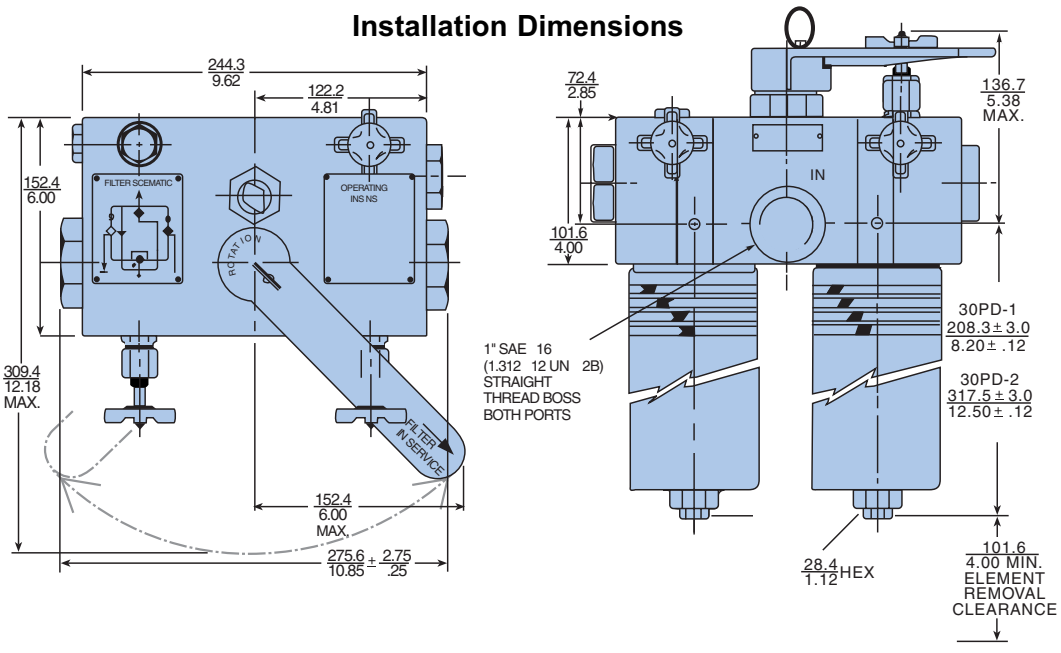


30PD Empty Housing Flow vs Pressure Loss

To obtain total filter assembly pressure loss, add empty housing loss to the pressure loss of selected element on 30P element performance pages.



Installation Dimensions



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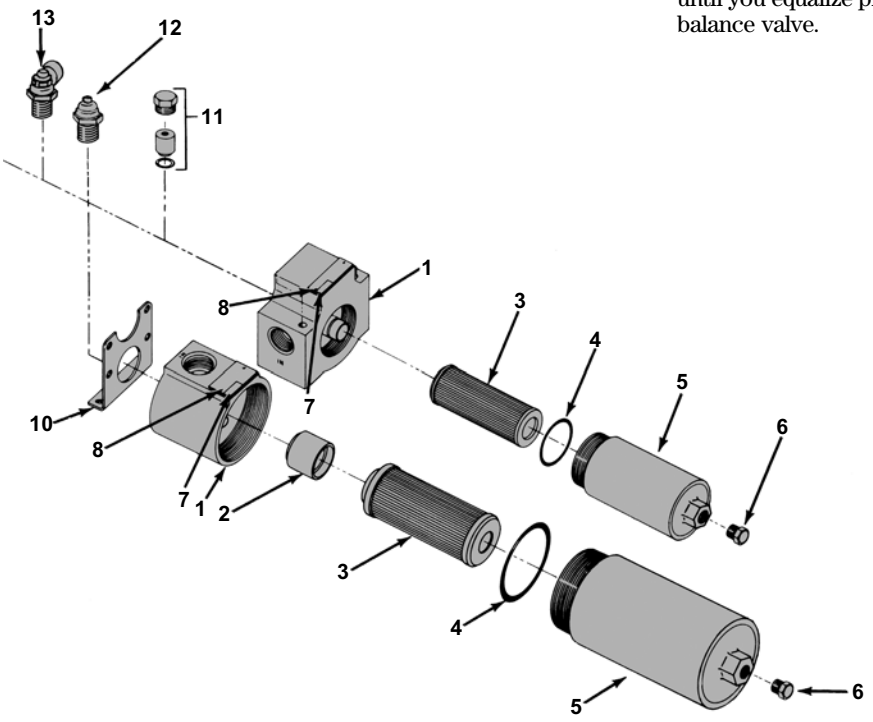
Hydraulic Filter Division
Metamora, OH

Parts List

Index	Description	15P	30P
1	**Head**		
	In-line Porting		
	Bypass w/top indicator port	931520	933956
	No bypass w/top indicator port	931519	933956
	Bypass w/side indicator port	931522	933955
	No bypass w/side indicator port	931521	933955
	Manifold Porting		
	Bypass w/indcator port	931135	933954
	No bypass w/ indicator port	931523	933954
2	**Bypass Valve Assembly**		
	50 psid (in-line model only)	928981	925127
	No bypass	N/A	925209
3	**Elements (see chart on model code page)**		
4	**Bowl O-Ring**		
	Buna	N92138	N92151
	Fluorocarbon	V92138	V92151
5	**Bowl**		
	Single without drain	926102	926038
	Single with drain	926450	926040
	Double without drain	926103	926039
	Double with drain	926451	926041
6	**Drain Plug**		
	W/buna o-ring	920462	920462
	W/fluorocarbon o-ring	922521	922521
7	**Nameplate (unstamped)**	920928	920928
8	**Drive Screws**	903393	903393
9	**Mounting Spacer Tube (not shown)**	925650	N/A
10	**Mounting Bracket Kit**	N/A	925563
11	**Blank Indicator Kit**	925515	925515
	Indicators (viton seals)		
12	Visual auto reset	932027	932027
	H option (1/2" conduit connection)	932905	932905
	E2 option (DIN 43650 connection)	929599	929599
13	E3 option (3 pin ANSI/B93.55M connection)	932773	932773
	Manifold Mounting Kit	N/A	925562
	Manifold O-Rings (2 required)		
	Buna	N92117	N92119
	Fluorocarbon	V92117	V92119

Note: consult factory for EPR part numbers



Element Servicing

15P/30P

A. Stop the system's power unit.
B. Relieve any pressure in the filter line and drain filter bowl if drain port is provided.
C. Loosen and remove bowl.
D. Remove element from housing.
E. Place new, clean element in housing, centering it on the element locator.
F. Inspect the bowl o-ring and replace if necessary.
G. Install bowl and tighten to specified torque.

30PD

A. Arrow on diverter handle points to the on-duty chamber.
B. Open off-duty vent valve (vent port should be plumbed back to reservoir).
C. Open balance valve slowly to admit fluid into off duty chamber.
D. When fluid is discharged from vent port, close and tighten.
E. Pull up on detent pin and rotate diverter approximately 90° until detent relocates in seat.
F. Close and tighten balance valve.
G. Open new off-duty vent valve to relieve pressure.
H. Follow steps C-G from 15P/30P instructions above.
I. Close and tighten vent valve.

Warning: Do not try and rotate handle until you equalize pressure with the balance valve.

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.
Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
F3	30P	1	10Q	M2	50	NN	19	(Assigned By Parker)

BOX 1: Seals

Symbol	Description
None	***Buna N (nitrile)***
F3	***Fluorocarbon***
E8	EPR

BOX 2: Basic Assembly

Symbol	Description
15P	***Pressure filter***
30P	***Pressure filter***
30PD	Duplex style 30P

BOX 3: Length

Symbol	Description
1	***Single***
2	***Double***

BOX 4: Element Media

Symbol	Description
20C	Cellulose
10C	Cellulose
03C	Cellulose
20Q	***Microglass III***
10Q	***Microglass III***
05Q	***Microglass III***
02Q	***Microglass III***

Note: For high collapse rated (2000 psid) elements, add "H" behind Q. For 3000 psid collapse rated elements, add "X" behind Q.

BOX 5: Indicator

Symbol	Description
N	No indicator, no pressure port
P	***Port plugged***
M2	***Visual auto reset***
H	Electrical indicator, w/½"-14 NPT connection and 12" leads
E	Electrical/visual w/ ½" NPT conduit connection and wire leads
E2	***Electrical/visual (DIN 43650 Hirschman style connection)***
E3	Electrical/visual (ANSI/ B93.55M 3-pin Brad Harrison style connection)

Note: For side mount indicators, place a "s" after indicator symbol. Not available on 30PD model.

BOX 6: Bypass Or Indicator Setting

Symbol	Pressure Setting
50	***50 psid***

Note: If "no bypass" option (-11) and an indicator is selected, "50" denotes indicator calibration.

BOX 7: Ports

Model	Symbol	Description
15P	***MM***	***SAE-12***
15P	XX	¾"-manifold porting
30P	***NN***	***SAE-16***
30P	XX	1"-manifold porting
30PD	NN	SAE-16

Note: Customer supplies subplate adaptor, or purchases optional Parker subplate.

BOX 8: Options

Symbol	Description
1	***None***
11	No bypass
19	SAE-5 drain port on bowl
21	No bypass and drain port

BOX 9: Design Number

Applied to filter assembly by Parker Filter Division. Use the full filter model code, including the design number when ordering replacement parts, elements and cartridges.

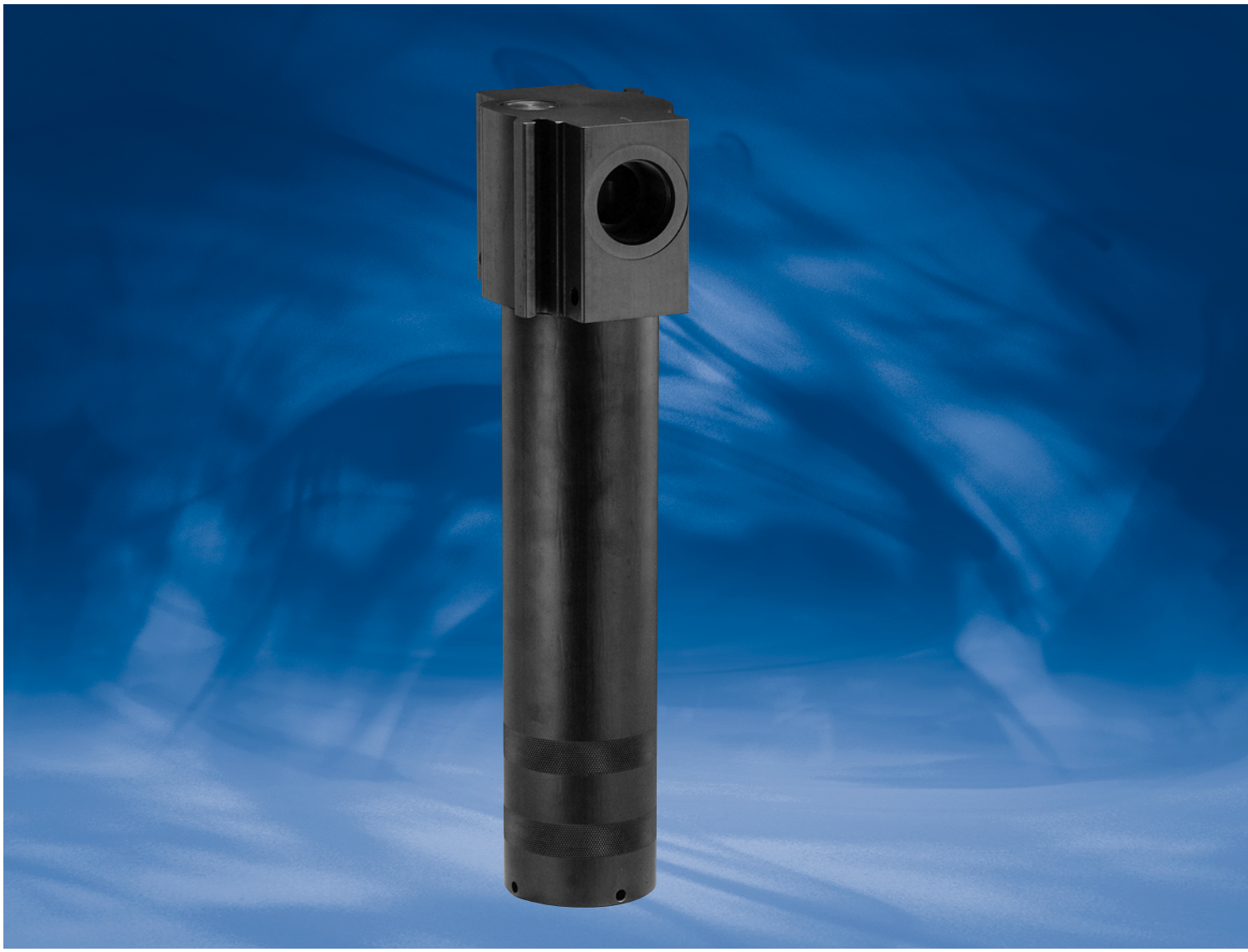
REPLACEMENT ELEMENTS

Filter Model (Flourocarbon seals)				
Media	**15P-1**	**15P-2**	**30P/30PD-1**	**30P/30PD-2**
20C	925576	925596	922625	925834
10C	925385	925394	922624	925835
03C	925578	925598	922923	925836
20Q	***930369Q***	***930370Q***	***933135Q***	***933136Q***
10Q	***932612Q***	***932618Q***	***932624Q***	***932630Q***
05Q	***932611Q***	***932617Q***	***932623Q***	***932629Q***
02Q	***932610Q***	***932616Q***	***932622Q***	***932628Q***
I0QH	932615Q	932621Q	932627Q	932633Q
05QH	932614Q	932620Q	932626Q	932632Q
02QH	932613Q	932619Q	932625Q	932631Q
I0QX	933577Q	933579Q	933581Q	933583Q
02QX	933576Q	933578Q	933580Q	933582Q

Please note the bolded options reflect standard options with a reduced lead-time. Consult factory on all other lead-time options.

MGS Series

High Pressure Filters



Parker Filtration

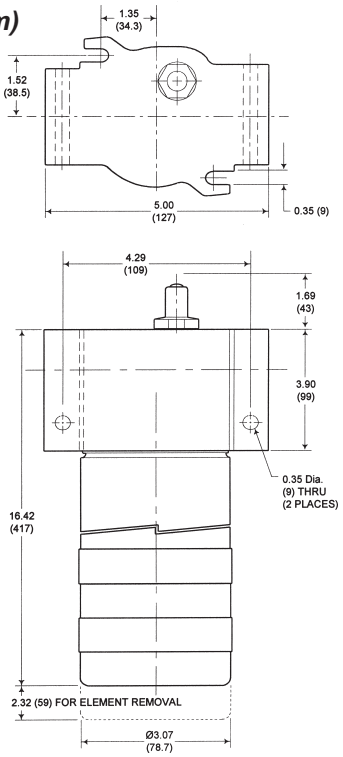
Global Filtration Technology

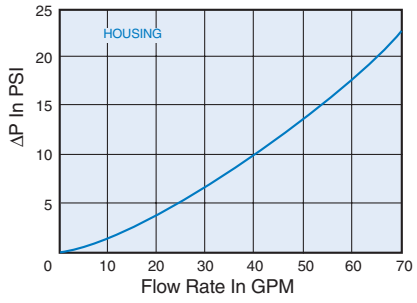
High Pressure Filters
MGS Series

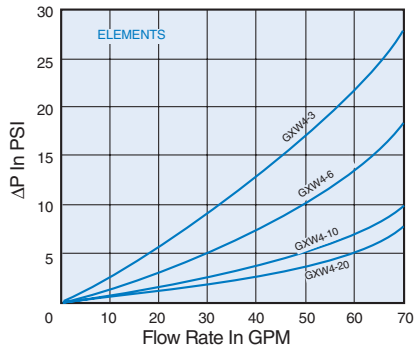
Features/Applications of MGS Series

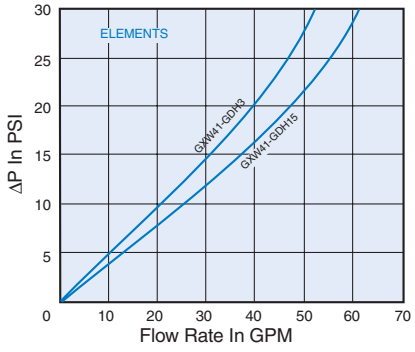
- Pressures to 3600 PSI
- Flows to 66 GPM
- BetaMaze™ 3 to 20 Micron Absolute Disposable Elements
- 1 ¼" Ports - SAE O-Ring

Dimensions
Inches (mm)









Specifications
High Pressure Filters - MGS Series

Pressure Rating:

Operating Pressure (Maximum)	3,600 (250 BAR)
Static Pressure	4,000 PSI (280 BAR)
Burst Pressure	11,600 PSI (800 BAR)
Fatique Pressure (Maximum)	0-2300-0 PSID (0-160-0 BAR) 106 Cycles per NFPA T2.6.1, R1-1991 (B/90)

Material:

Head	Extruded Aluminum
Bowl	Plated Seamless Steel
Bottom Cap	Plated Steel
Filter Media	Glass Microfiber, Epoxy Coated and Steel Mesh
Filter Media	Aluminum End Caps, Plated Steel Core, Epoxy End Cap Resin

Pressure Rating:

Flow Direction:	Outside-to-Inside
Collapse Rating:	GXW4 - 290 PSID (20 BAR) GXW41 - 3000 PSID (210 BAR)

Filter Data:

Ports:	SAE-20 (1 5/8"-12 UN)
Maximum Flow:	66 GPM (250 LPM)
Temperature Range:	-40°F TO 212°F (-40°C TO 100°C)
Weight:	16.6 lbs. (7.5 kg)

Filter Type	Media Code	Filtration Rating							
		$\beta_x \geq 100$	β_3	β_6	β_{10}	β_{12}	β_{15}	β_{20}	β_{25}
GXW4 290 PSID Collapse	3	3	≥100 *99.0*	>300 *99.67*	>1500 *99.93*	>2000 *99.95*	>3000 *99.96*	>5000 *99.98*	*INF*
	6	6	12 *91.7*	≥100 *99.0*	>1000 *99.9*	>2000 *99.95*	>3000 *99.96*	>5000 *99.98*	*INF*
	10	10	8 *87.5*	22 *95.4*	≥100 *99.0*	>200 *99.5*	800 *99.88*	>5000 *99.98*	*INF*
	20	20	-	2 *50.0*	8 *87.5*	20 *95.0*	50 *98.0*	³100 *99.0*	>200 *99.5*
		$\beta_x \geq 200$	β_3	β_6	β_{10}	β_{12}	β_{15}	β_{20}	β_{25}
GXW41 3000 PSID Collapse	GDH3	3	≥200 *99.5*	>1000 *99.9*	>3000 *99.97*	>5000 *99.98*			
	GDH15	15	3 *66.6*	12 *91.6*	50 *98.0*	75 *98.67*	≥200 *99.5*	>2000 *99.95*	>5000 *99.98*

Element Beta ratio β_x
Element efficiency in percent

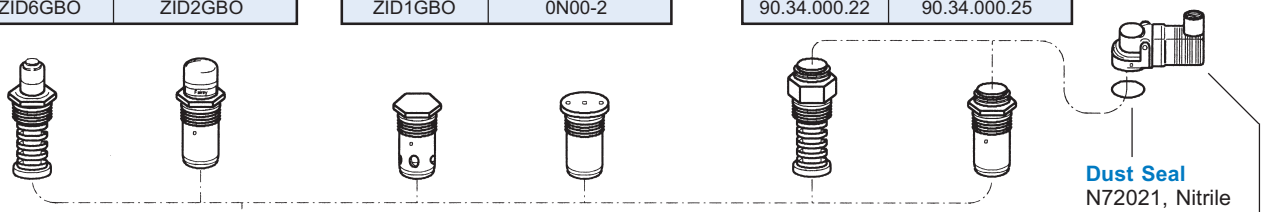
Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

MGS Series Filter Parts Breakdown

Visual Indicator Assembly	
Bypass Valve	No Bypass Valve
ZID6GBO	ZID2GBO

Non-Indicator Assembly	
Bypass Valve	No Bypass Valve
ZID1GBO	0N00-2

Electrical Sub-Assembly	
Bypass Valve	No Bypass Valve
90.34.000.22	90.34.000.25

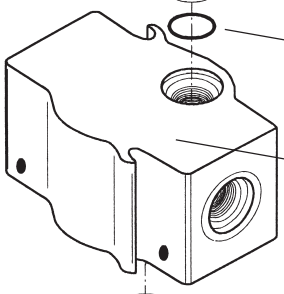


Dust Seal
N72021, Nitrile

Indicator Back-Up Ring*
FF2957

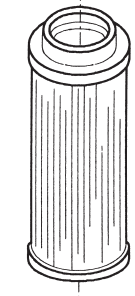
Indicator to Head Seal*
N72022, Nitrile
V72022, Fluorocarbon

Electrical Acuator Assembly	
Part Number	Description
FF3468	Hirschmann Connector with No Lamps – 28 VDC, 110 & 250 VAC



Head		
Code	Description	Part Number
S20	SAE-20 (1-5/8”-12 Thread)	84.40.347.12

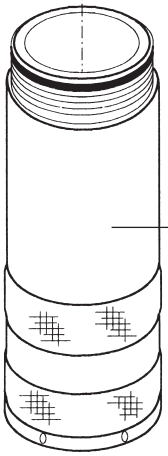
Element to Adaptor Seal
MGS250: N72122, Nitrile
V72122, Fluorocarbon
MGS251: N72121, Nitrile
V72121, Fluorocarbon



Element			
Disposable – Petroleum Base Fluids Only			
3 µm abs.	6 µm abs.	10 µm abs.	20 µm abs.
GXW4-3	GXW4-6	GXW4-10	GXW4-20
Disposable – High Collapse (3000 psid)			
3 µm absolute		15 µm absolute	
GXW41-GDH3		GXW41-GDH15	

*Included in Seal Kit: 20.00.155.75 Nitrile
20.00.157.75 Fluorocarbon

Head to Bowl Seal*
N92145, Nitrile
V92145, Fluorocarbon



Bowl
84.41.348.04

Parker Hannifin Corporation
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Metamora, OH

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

STANDARD	BOX 1	BOX 2	BOX 3	BOX 4	BOX 5
MGS25	0	S20	GXW43	B	V

Element Example:

BOX 3	BOX 4
GXW43	B

BOX 1: BYPASS

Symbol	Description
0	73 PSID (5.0 BAR)
1	No Bypass*

*Requires 3000 PSID collapse element

BOX 2: PORT OPTIONS

Symbol	Description
S20	SAE-20 (1 5/8"-12 UN Thread)

BOX 3: FILTER/ELEMENT TYPE

Symbol	Description
290 PSID (20 BAR)	
GXW4-3	3 MICRON Absolute Beta 3 ≥ 100
GXW4-6	6 MICRON Absolute Beta 6 ≥ 100
GXW4-10	10 MICRON Absolute Beta 10 ≥ 100
GXW4-20	20 MICRON Absolute Beta 20 ≥ 100
3000 PSID (210 BAR)	
GXW41-3	3 MICRON Absolute Beta 3 ≥ 200
GXW41-15	15 MICRON Absolute Beta 15 ≥ 200

BOX 4: SEALS

Symbol	Description
B	Nitrile
V	Fluorocarbon

BOX 5: INDICATOR TYPE

Symbol	Description
N	No Indicator Required
V	Visual Differential Pressure Indicator
E	Electrical Differential Pressure Indicator, Hirschmann Connector: 110/250 VAC or 28 VDC max.

Please note the bolded options reflect standard options with a reduced lead- time. Consult factory on all other lead-time options.

ARLON

50P Series

High Pressure Filters

Parker Filtration

Global Filtration Technology

Applications for 50P series filters

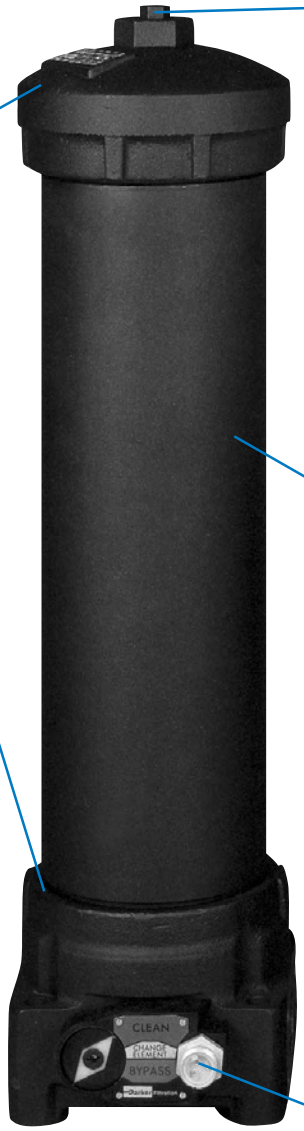
- Automotive specified equipment
- Hydrostatic transmission circuits
- Servo and proportional controls
- Offshore drilling rigs
- Mining equipment
- Power units

The design objective for all Parker filters is to achieve a sensible balance between cost and performance. We use state of the art techno1ogy to arrive at innovative yet practical designs. Designs which are cost effective for OEM's and users alike.

The 50P series allows you to customize each filter to closely match your needs. Choose the options which best fit your application. No need to waste money on features you don't need.

The 50P series filters are base mounted, which provides several possible advantages. The bowl up mounting makes servicing the elements quick and easy. Simply remove the top cover to access the element. A drain port is provided to allow oil be removed from filter prior to element servicing. This design reduces the possibility of oil spillage and injury to maintenance personnel.

The 50P series has optional manifold porting for space saving design that reduces the number of fittings and potential leak points. The porting is also designed to match the installation of many other manufacturers. Most important, the 50P series meets the SAE HF4 automotive standard.



Vent Plug
- Purge all air from filter assembly
- Improves system performance

Cover
- Durable ductile iron
- Top service elements
- No oil spills during service

Bowl
- Single or double length

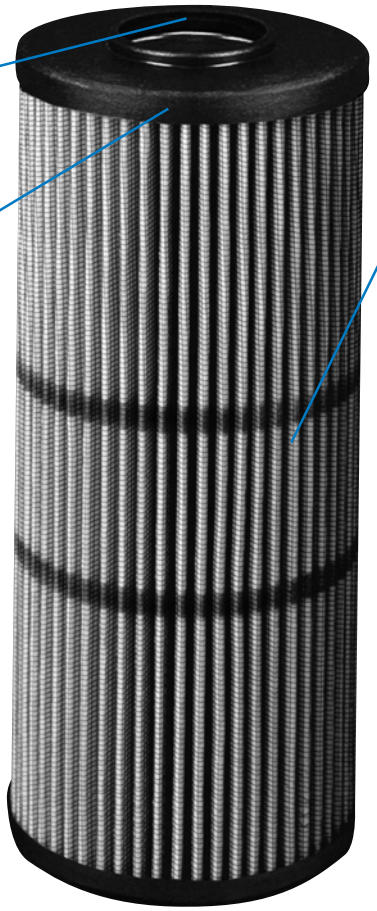
Head
- Ductile iron construction
- SAE or manifold ports
- Meets SAE HF4 automotive specification

Bypass (not visible)
- Cartridge style
- Precision matched assemblies

Indicators
- Visual or electrical/visual
- Several connector options

Drain Plug (not visible)
- Drain oil for easy service

Features



O-Ring Seal
- Positive sealing for optimum element efficiency

Plastic End Caps
- Excellent corrosion protection
- Laser marked for clear long lasting identification

Microglass III Media
- Multi-layer for high capacity and high efficiency
- Four different micron sizes available
- Wire reinforced to prevent pleat bunching

Spiral Support Cylinders (Not Visible)
- High strength consistent support
- Continuous length eliminates leak points and increases surface area

Meets SAE HF4 specificaton for automotive uses

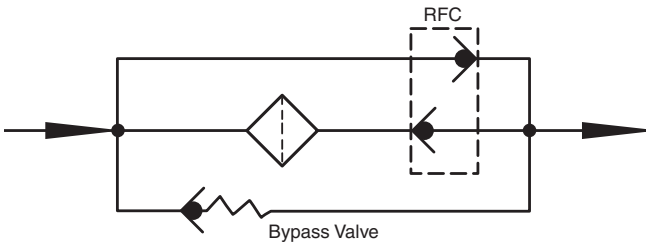
Feature	Advantage	Benefit
• Base mounted filter	• No brackets required for installation	• Reduced installation costs
• Top access cover	• Remove element from top • Lighter then removing entire bowl	• No oil mess
• Visual and electrical indicators	• Know exactly when to service elements	
• Drain port	• Drain all oil from assembly prior to servicing	• Eliminates cross contamination
• Vent port	• Purges all trapped air in filter	• Get the maximum performance from elements • Prevents a “spongy” system
• Multipass tested elements (per ANSI/NFPA T3.10.8.8 R1-1990)	• Element performance backed by recognized test standards	• Elements selected will have consistent performance levels
• Microglass III elements	• Multi-layer media • Wire reinforced pleats	• High capacity with high efficiency • No performance loss from pleat bunching

Model 50PR Reverse Flow Filter

The 50PR was designed specifically for hydrostatic transmission loops because of it's capability to handle reverse flow.

Closed circuit HSTs frequently reverse direction causing flow to reverse in the fluid lines. Pressure filters installed between pump and motor must be able to handle reverse flow without having contaminant washed off of the elements and back into the system. To prevent such an occurrence, the filters require the use of internal check valves to direct the flow through the element in one direction and around the element in the other. Parker's internal check valve design minimizes additional pressure loss and eliminates the cost associated with external valves and fittings. Also the internal design keeps the envelope dimensions of the filter to a minimum as can be seen on the installation drawing.

50PR Schematic

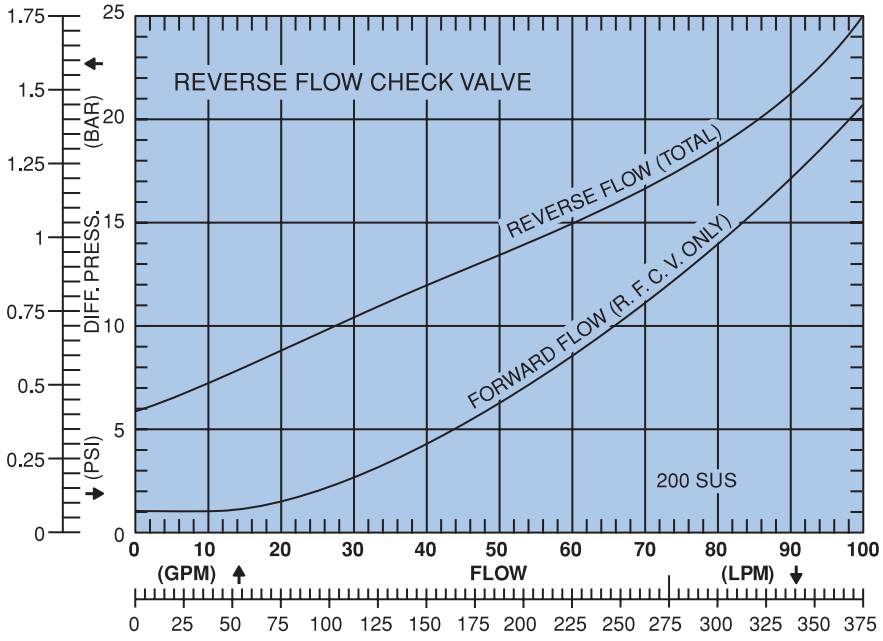


Sizing 50PR Filter Assemblies

To accurately determine the total pressure loss that will be seen when used in your system, the following steps should be taken.

1. Examine the "Flow vs. Pressure" curve below. Find the pressure drop for the maximum system flow on the forward flow curve. Record this value as "housing with check valve pressure loss."
2. Examine the appropriate pressure loss curve for the media and bowl length combination. These curves are found in the Element Performance Data section.
3. Find the pressure drop for the maximum flow rate through the filter and record this value as "element pressure loss."
4. Find the empty housing pressure drop for the maximum flow rate through the filter and record this value as "empty housing pressure loss."
5. Add the values obtained in steps 1 and 3, then subtract out the value from step 4. The resultant pressure loss should not exceed 1/3 of the bypass valve or indicator you intend to select. If this ratio exceeds 1/3, then a double length housing or other media grade may need to be considered.

Typical Flow/Pressure Curves For 50 PR



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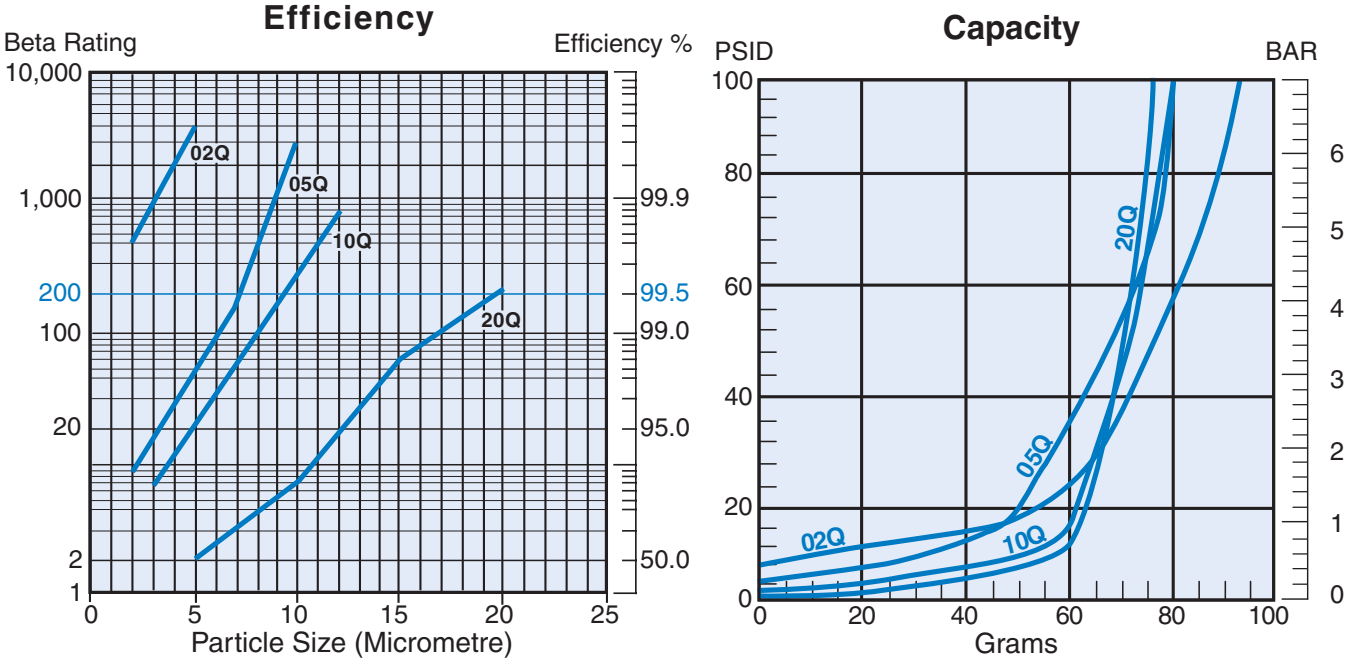
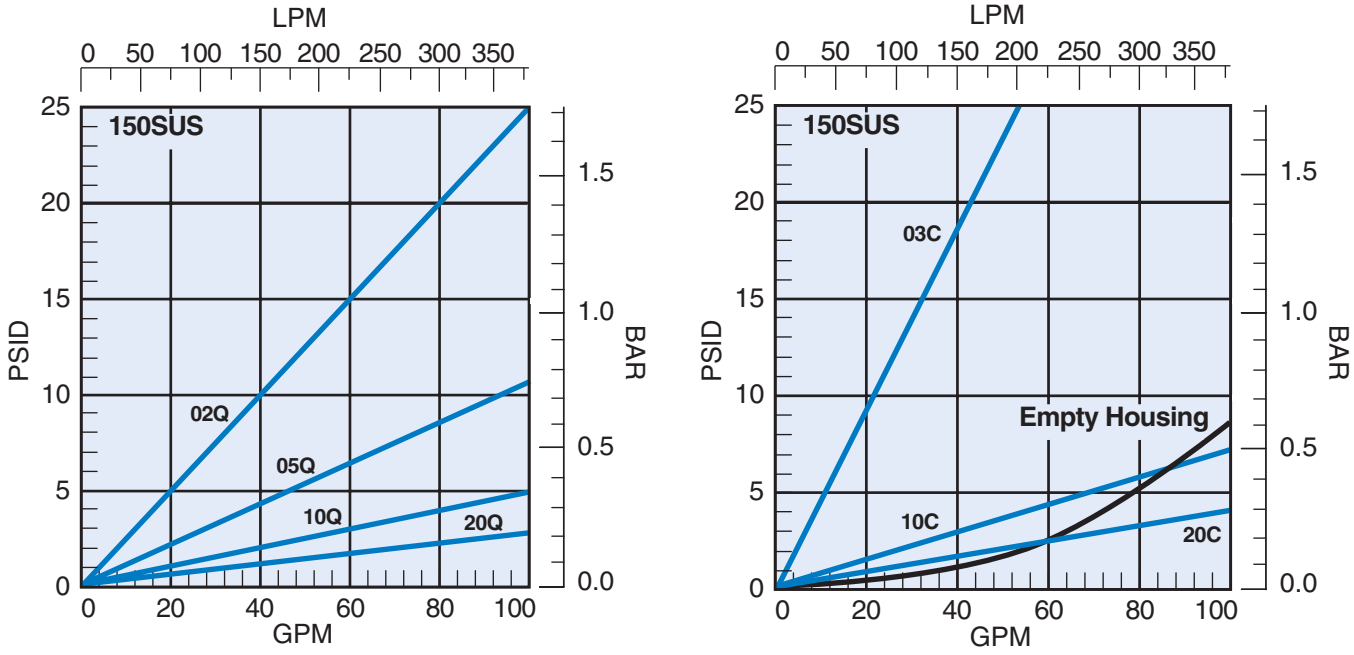
50P-1 Element Performance



Multipass tests run @ 50 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



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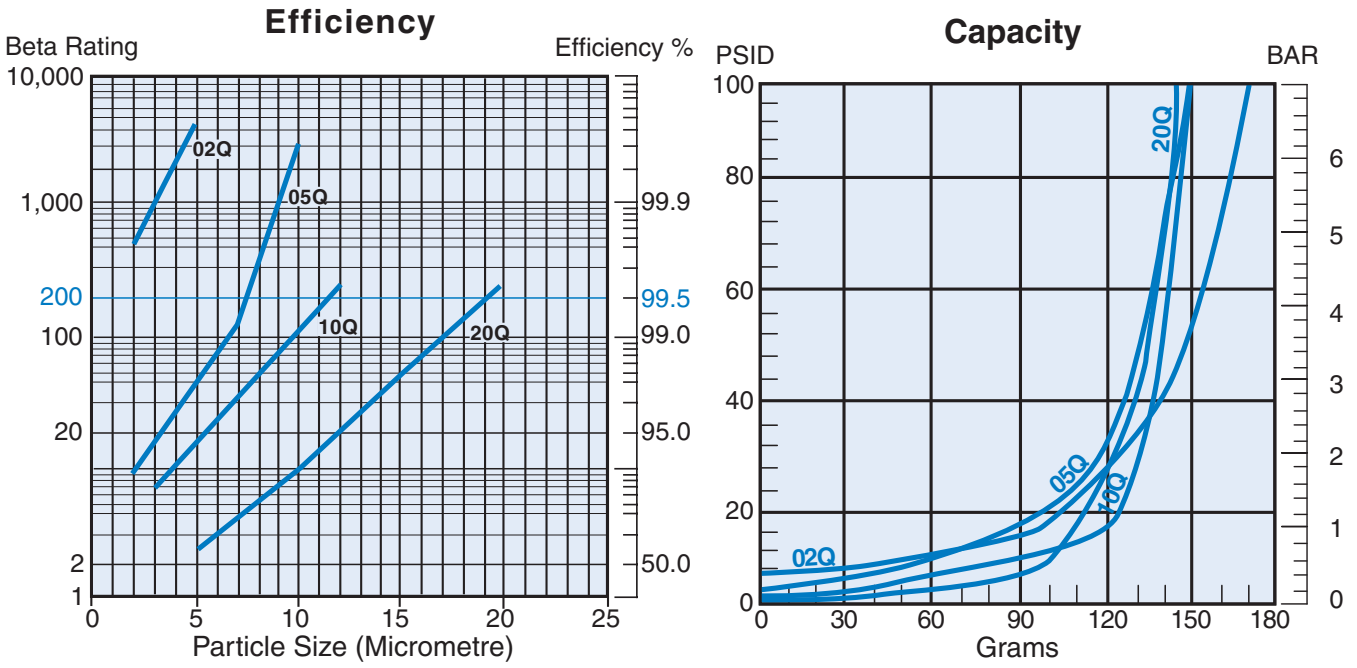
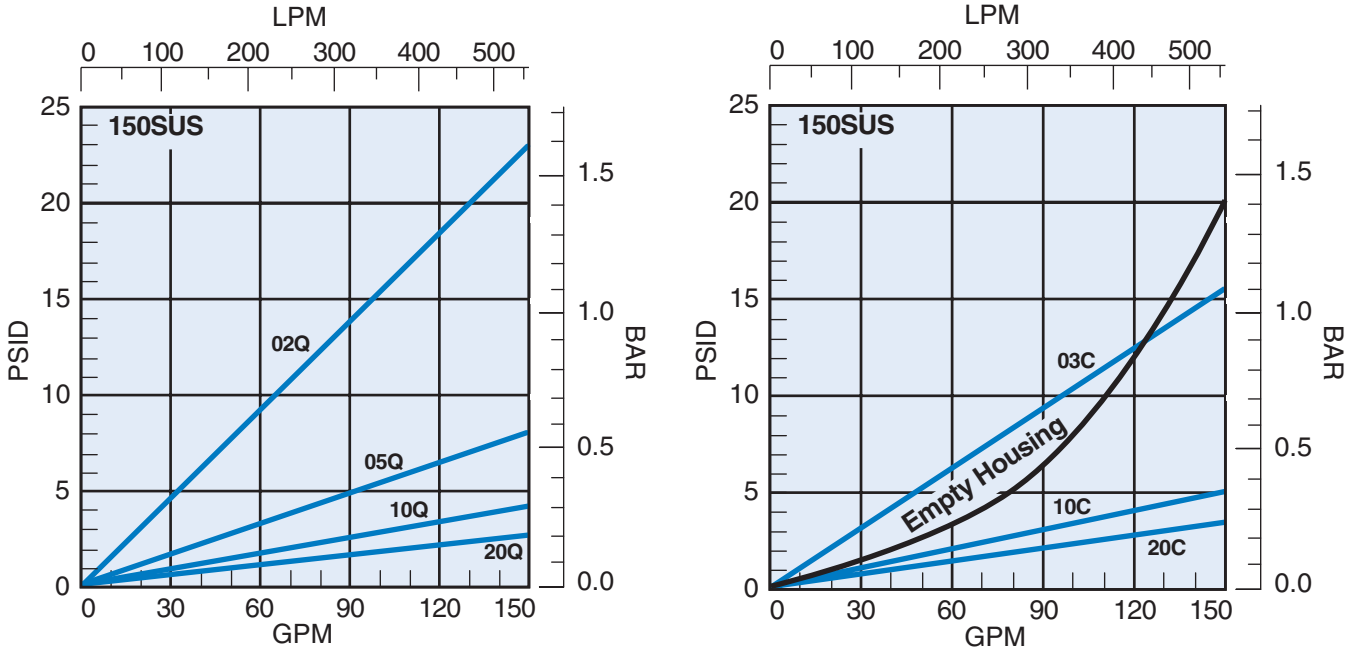
Metamora, OH

50P-2 Element Performance



Multipass tests run @ 100 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Specifications: 50P/50PR

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 5000 psi (344.8 bar)
Rated Fatigue Pressure: 3500 psi (241.4 bar)
Design Safety Factor: 3:1

Element Collapse Rating:
150 psid (10.2 bar) standard
2000 psid (138 bar) high collapse "H" option

Operating Temperatures:
Buna: -40°F (-40°C) to 225°F (107°C)
Fluorocarbon: -15°F (-26°C) to 275°F (135°C)

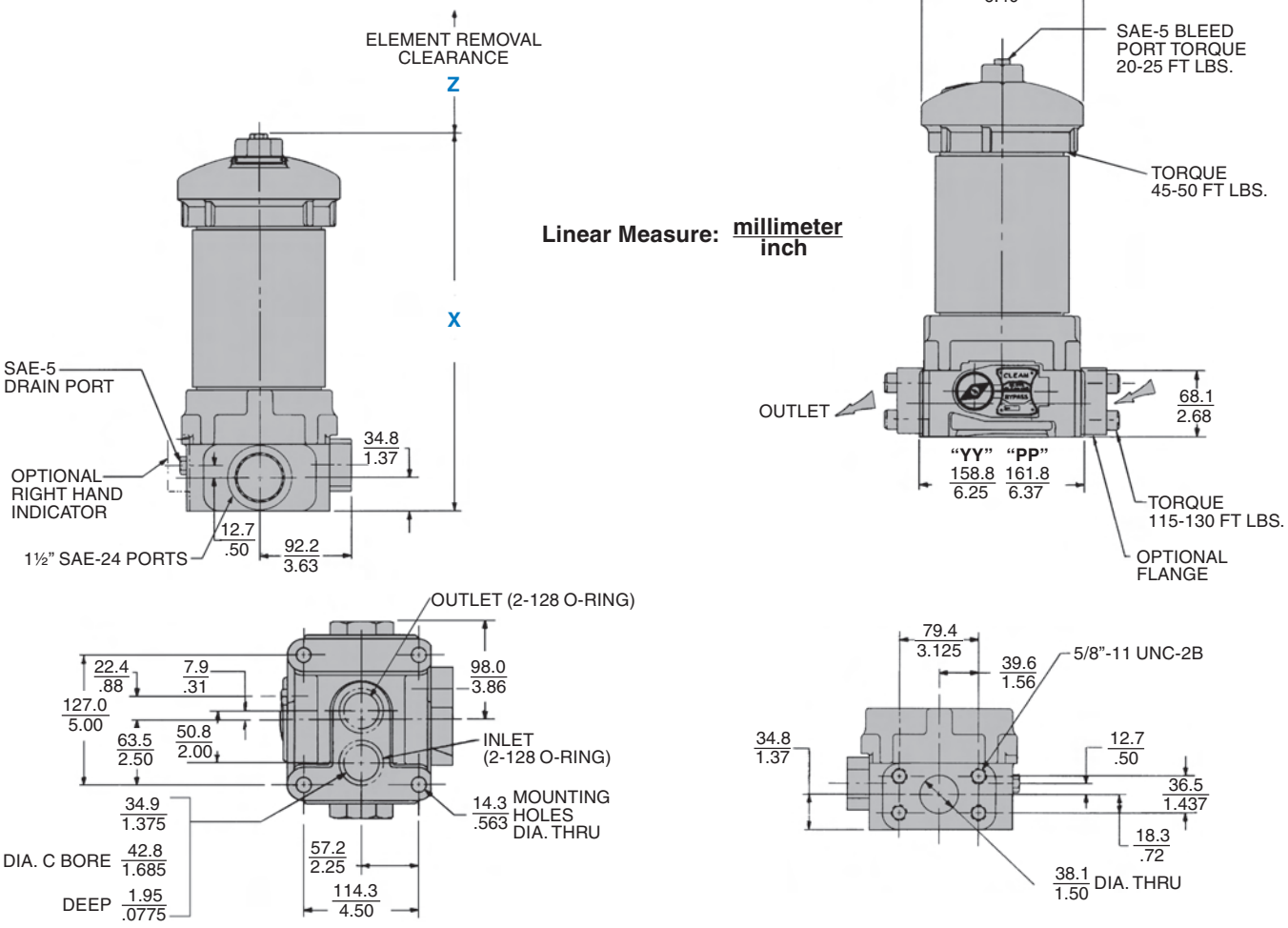
Filter Materials:
Head (base) and Cover: ductile iron
Bowl: seamless steel tube

Indicators:
Visual 3 band (clean, change element, bypass)
Electrical: visual as above plus electrical switch with wire leads or connection as selected.
5A @ 240VAC
3A @ 28VDC
SPDT

Color Coding:
White (normally closed)
Red (normally open)
Black (common)

Shipping Weights (approximate):
50P-1: 56 lb. (25.4 kg)
50P-2: 77 lb. (34.9 kg)
50PR-1: 59 lb. (26.8 kg)
50PR-2: 80 lb. (36.3 kg)

Dimensions= mm/inches	50P-1	50PR-1	50P-2	50PR-2
X	387.1 / 15.24	404.6 / 15.93	622.8 / 24.52	640.3 / 25.21
Z	254.0 / 10.00	254.0 / 10.00	508.0 / 20.00	508.0 / 20.00



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Parts List

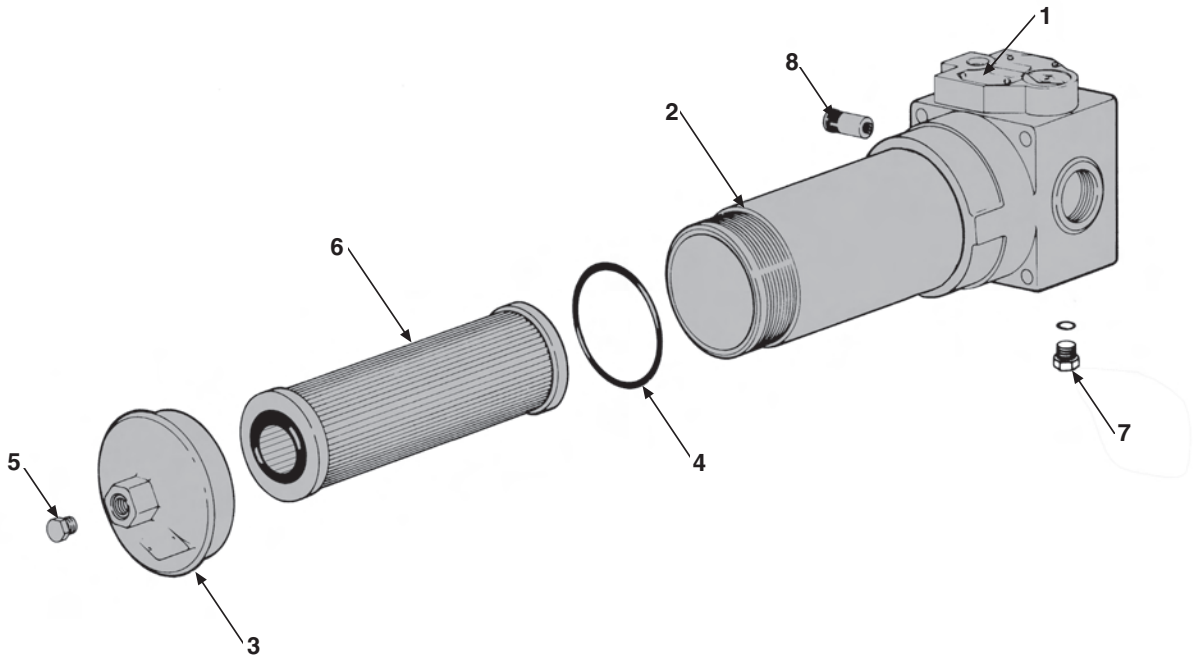
Index	Description	Part Number 50P/PR
1	**Head Assembly**	Consult Factory
2	**Bowl**	Consult Factory
3	**Cover**	926655
4	**Cover O-Ring** Buna Fluorocarbon	 N92246 V92246
5	**Vent Plug** Buna Fluorocarbon	 N93905 V93905
6	**Element**	See model code page
7	**Drain Plug** Buna Fluorocarbon	 N93905 V93905
8	**Bypass Valve** (50PR valve is not serviceable) 35 psi No bypass, 35 psi indicator 50 psi No bypass, 50 psi indicator 90 psi **Indicator Kits** Mechanical (left side) Mechanical (right side) Electrical (wire leads) Electrical (3-pin Brad Harrison style) Electrical (DIN 43650 connection) **O-Ring, Manifold Port** Buna Fluorocarbon **Flange Kits** (flange, o-ring, 4 bolts) 1½" NPT - Buna 1½" NPT - Fluorocarbon 1½" SAE-24 - Buna 1½" SAE-24 - Fluorocarbon 1½" Socket weld - Buna 1½" Socket weld - Fluorocarbon	 925879 925880 924189 924192 927399 931916 931924 925337 926482 929362 N92128 V92128 926073 926076 926074 926077 926075 926078

Note: Consult factory for EPR compatible part numbers

Element Service Instructions

When servicing the 50P filter, use the following procedure.

A. Stop the system's power unit.
B. Relieve any pressure in the filter or line.
C. If desired, oil can be drained from filter housing by removing the drain port plug located in the head.
D. Rotate the cover counter-clockwise and remove.
E. Remove element from housing.
F Place new, clean element into housing centering element over locator.
G. Inspect cover o-ring and replace if necessary
H. Apply cover to filter and tighten to 45-50 ft. lbs.
I. Replace drain plug and tighten 20-25 ft. lbs.



HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
F3	50P	1	10Q	EL	50	PP	1	Design number assigned by Parker

BOX 1: SEALS

Symbol	Description
None	***Buna***
F3	***Fluorocarbon***
E8	EPR

BOX 2: BASIC ASSEMBLY

Symbol	Description
50P	***5000 PSI (MAOP)***
50PR	Reverse flow hydrostatic version

BOX 3: LENGTH

Symbol	Description
1	***Single***
2	***Double***

BOX 4: ELEMENT MEDIA

Symbol	Description
20C	Cellulose
10C	Cellulose
03C	Cellulose
20Q	***Microglass III***
10Q	***Microglass III***
05Q	***Microglass III***
02Q	***Microglass III***

Note: For high collapse 2000 psid rated elements, add "H" behind Q.

BOX 5: INDICATORS

Symbol	Description
P	Port plugged
PL	Port plugged, left side
M	Visual indicator
ML	***Visual indicator, left side***
E	Electrical indicator with wire leads and conduit connection
EL	***Electrical indicator with wire leads and conduit connection, left side***
D	Electrical indicator w/ ANSI/B.93.55M 3-pin Brad Harrison style connection
DL	Electrical indicator w/ ANSI/B.93.55M 3-pin Brad Harrison style connection, left side

Note: Left side is on viewer's left when looking into inlet port.

BOX 6: BYPASS AND INDICATOR SETTING

Symbol	Pressure Setting
35	35 psid
50	***50 psid***
90	90 psid

BOX 7: PORTS

Symbol	Description
PP	***SAE-24 straight thread***
YY	SAE 1½" flange face (J518)
XX	1⅜" manifold ports on bottom of head

BOX 8: OPTIONS

Symbol	Description
1	***None***
11	Blocked bypass

BOX 9: DESIGN NUMBER

Applied to filter assembly by Parker Filter Division. Use the full filter model code, including the design number when ordering replacement parts, elements and cartridges.

50P/50PR Replacement Elements (Fluorocarbon)

Standard Collapse			High Collapse		
Media	Single	Double	Media	Single	Double
20Q	***931018Q***	***931020Q***	20QH	930438Q	931490Q
10Q	***932670Q***	***932679Q***	10QH	932676Q	932685Q
05Q	***932669Q***	***932678Q***	05QH	932675Q	932684Q
02Q	***932668Q***	***932677Q***	02QH	932674Q	932683Q
20C	925773	925793			
10C	925520	925792			
03C	925772	925791			

Please note the bolded options reflect standard options with a reduced lead-time. Consult factory on all other lead-time options.

Notes

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

100/200/300 Series

High Pressure Filters

Parker Filtration

Global Filtration Technology

Features/Applications for High Pressure Hydraulic Filters – 100 Series

- Pressures to 6,000 PSI
- Flows to 25 GPM
- BetaMaze Elements - 3 to 20 Micron Absolute
- Disposable or Recleanable Elements

Specifications
High Pressure Hydraulic Filters - 100 Series

Max. Flow Rating: 25 GPM

Pressure Rating:

Operating Pressure (Maximum)	6000 PSI
Proof Pressure	9000 PSI
Burst Pressure	12000 PSI
Fatique Pressure (Maximum)	0-4000-0 PSI @3,000,000 Cycles

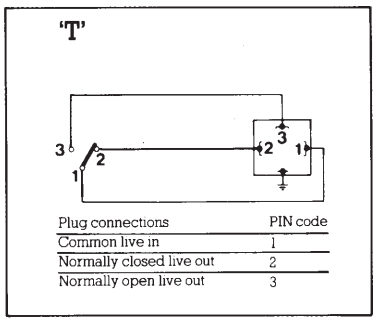
Fluid Temperature: -40°F to +212°F

Construction:

Head	Nodular Iron
Bowl	Extruded Steel
Indicators	Consult Factory
Elements	Consult Factory

		S.A.E. or Flange Ports	Manifold Ports
Weight:	Length 1	7.3 Lbs.	10.6 Lbs.
	Length 2	9.3 Lbs.	12.6 Lbs.

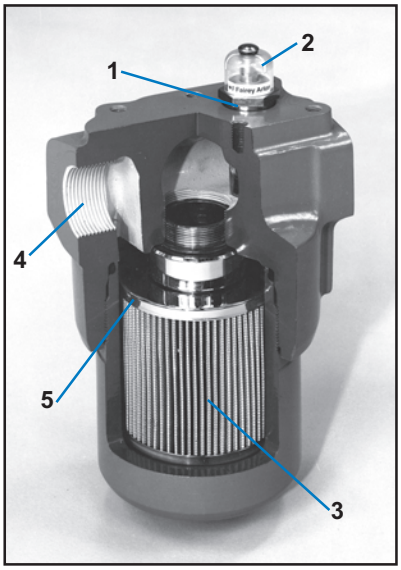
Wiring Diagrams:



Electrical Ratings:

Hirschman Connector without Lamps:

T - 250 or 110 VAC or 28 VDC Max.



High Performance New Generation 100 Series Filters

This rugged, compact filter has 25 GPM flow capability and 6000 PSI working pressure. Our high pressure filters are specified worldwide for industrial, mobile, marine and mining applications.

Arlon's high pressure filters are the finest you can buy. Here is why:

TruTell combined bypass valve and indicator.

1. High performance, low hysteresis bypass valve assures quick return to the closed position following cold starts or other short-term bypass conditions. Result: the best filter performance and protection for your system. The location of the bypass valve is 90° to the flow stream, which prevents unwanted valve operation and helps cushion the effect of system shocks (when compared with in-line valve location).
2. The bypass condition is indicated by the appearance of a red band under the transparent dome. The indicator has 360° visibility for easy viewing. Several other indicator options are shown below.

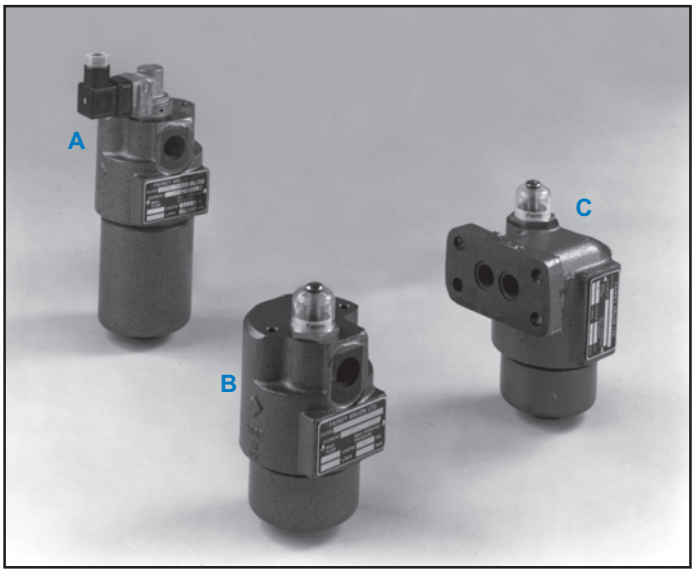
BetaMaze™ Media

3. A break through in filter media technology. BetaMaze™ provides great efficiency with unmatched dirt holding capabilities. Absolute ratings of 3 to 20 microns are available to meet any system requirement.

Other Features

4. Port options include SAE straight thread or manifold mount.
5. Bowl-into-head assembly provides positive sealing and easier servicing.

For complete information, see design features section.



(A) 100 Series length 2 with electrical indicator

(B) 100 Series length 1 with visual indicator

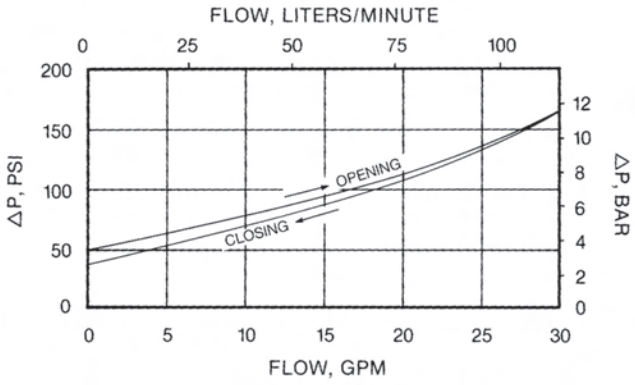
(C) 100 Series length 1 manifold mounting

Trutell Bypass Valve/Clogging Indicator

Over 30 years of testing valves of different configurations led to the combined TruTell Metering spool valve and indicator. This design produces the best all around characteristics for stability, low hysteresis, minimal leakage and reliability.

A bypass valve that closes quickly and completely is important because a filter in bypass offers no system protection, especially from large particles that can cause catastrophic failure.

The TruTell bypass valve and indicator assembly is a precision machined constant area, metering spool design from which hysteresis effects have been virtually eliminated. See illustration and curve.



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Point 1
Competitive bypass valve designs with significantly different areas between the open and closed position or high friction sliding seals have high hysteresis. As a result these bypass valves do not close as quickly as they should and a large percentage of the fluid continues to bypass the filter element completely after a cold start up (usually anything below 68°F).

Point 2
Most competitive bypass valves dramatically limits filter assembly performance even with a good element in the filter housing.

The TruTell design forces as much fluid as possible through the element even when partially open.

Point 3
The TruTell bypass valve location is very important. Our valve and indicator combination is situated near the outlet port at right angles to the flow path. In this position it monitors only element differential pressure. Undesirable leakage and premature bypass associated with in line valve locations are eliminated. This location also helps cushion the effect of system shocks that pass through in-line bypass valves virtually unaffected.

Point 4
Our TruTell Bypass valve is magnetically coupled to the indicator. This assures no false warning that element bypass will ever occur. If the indicator actuates, an impending or bypass condition exists period.

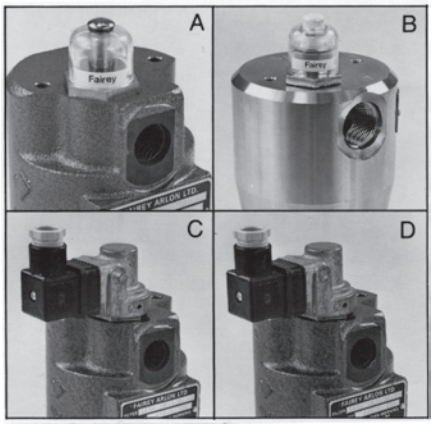
Unless the indicator is coupled to the bypass valve, it is impossible to accurately indicate bypass valve position under all operating conditions.

Point 5
Arlon offers the widest selection of indicator types in the industry.

Visual types include:
- *A. A 360° visibility non-latching type*
- *B. A 360° visibility latching type (For remote locations or flow on demand systems, or where systems must be shut down to inspect the filter.)*

Electrical indicators include:
- *C. Visual electrical*
- *D. Electrical only*

For electrical indicator connector options see Table 5 on back cover.



BetaMaze™ Media High Performance

Multi-Pass Test Results to ISO 4572 (Time Weighted Average)

Filter Type		Media	Code	Filtration Rating						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
5	3000psi High Collapse	02QX	FF	3	≥200 99.5	>1000 99.9	>3000 99.97	>5000 99.98	INF	INF
		10QX	10	15	3 66.66	12 91.66	50 98.0	75 98.67	>2000 99.95	>5000 99.98
Filter Type		**Media**	**Code**	**Filtration Rating**						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
7	290 psi Collapse	GDH3	20	3	≥100 99.0	>300 99.67	>1500 99.93	>2000 99.95	>5000 99.98	INF
		GDH6	21	6	12 91.7	≥100 99.0	>1000 99.9	>2000 99.95	>5000 99.98	INF
		GDH10	22	10	8 87.5	22 95.4	≥100 99.0	≥200 99.5	>5000 99.98	INF
		GDH20	23	20	–	2 50.0	8 87.5	20 95.0	≥100 99.0	≥200 99.5

Element efficiency in percent
Element Beta ratio β_x

BetaMaze™... High Performance With Long Life
After years of research Arlon offers its best filter media ever, BetaMaze™. The media is a special blend of inorganic microfibers formulated for unmatched dirt holding capacity and state of the art filtration efficiency. The filter element is multilayer construction and wire mesh reinforced on both sides. This provides excellent fatigue resistance and top performance under high differential pressure and pulsing flows.

The BetaMaze™ Edge... Long Life
Because of their exceptional dirt holding capacity BetaMaze elements need to be changed less frequently than comparable sized competitive elements. A real cost savings that pays dividends every minute of operation.

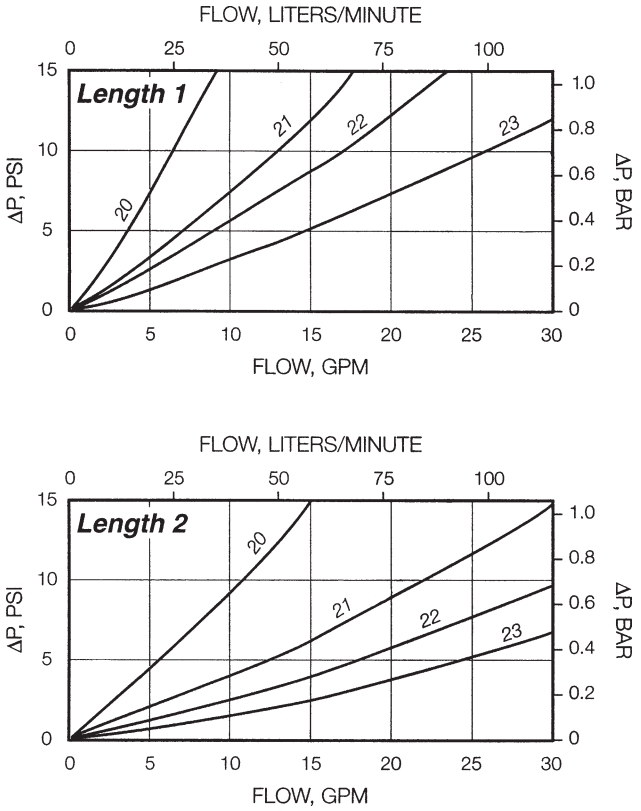
An Element For Every Application
BetaMaze™ elements are available in high collapse ratings (3000 psi) in 3 and 15 micron absolute media. Cleanable elements are available in high and low collapse strength configurations with micron ratings from 3 to 75 absolute. Consult factory for availability.

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

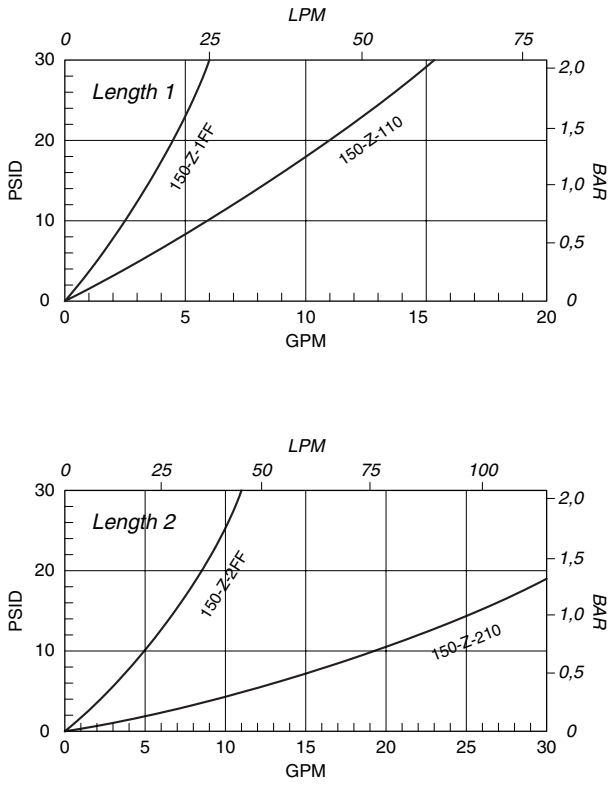
Flow/Pressure Drop Curves

Disposable Elements - 100 Series

For Bypass Equipped Housings (290 psid min. collapse)



For Non-bypass Housings (3000 psid min. collapse)



Fluid Conditions: Viscosity 140 SSU (30 cSt) and SP. Gr. 0.99

Note: Element ΔP is directly proportional to viscosity.

Find Filter Assembly Pressure Drop

Filter assembly ΔP is equal to the sum of element and housing pressure drops taken from the appropriate curves and adjusted for operating viscosity and specific gravity.

Example:

Filer Model: 174A-2N35-JZ120

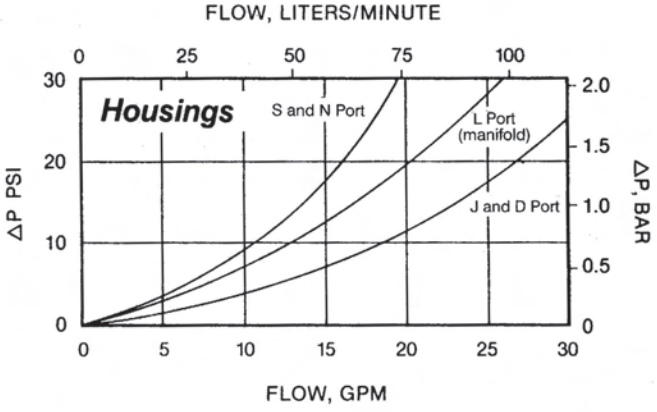
Flow: 6 GPM

Viscosity: 78 SSU, Sp. Gr.: 0.88

Step 1. **Correct element ΔP for viscosity.**
Element ΔP = 8 psi x 78SSU/140SSU = 4.4psi

Step 2. **Correct housing ΔP for specific gravity.**
Housing ΔP = 5.0 psi x 0.88/0.88 = 5.0 psi

Step 3. **Calculate assembly ΔP.**
Assy ΔP = 4.4 psi + 5.0 psi = 9.4 psi



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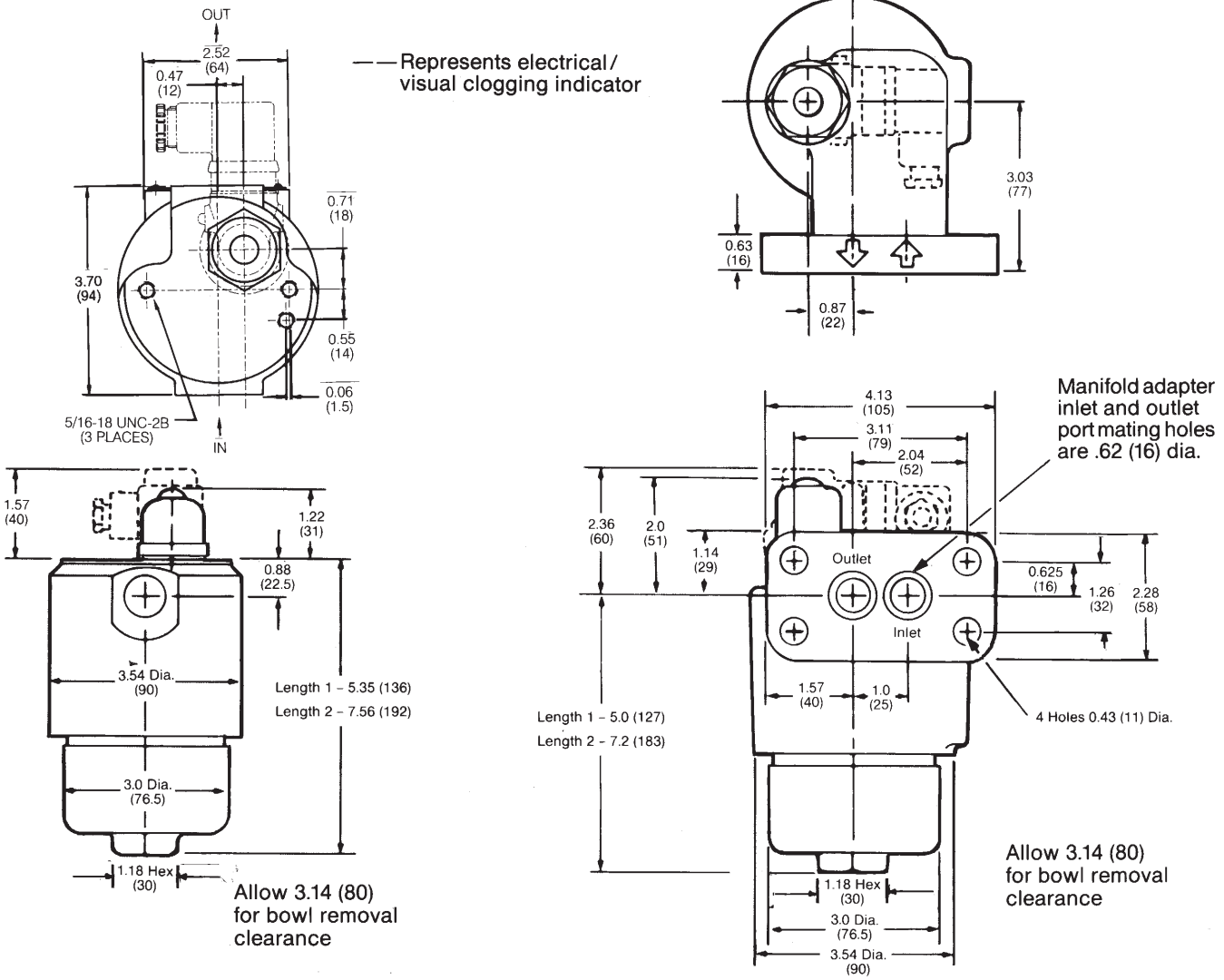
Metamora, OH

Dimensions

Inches (mm)

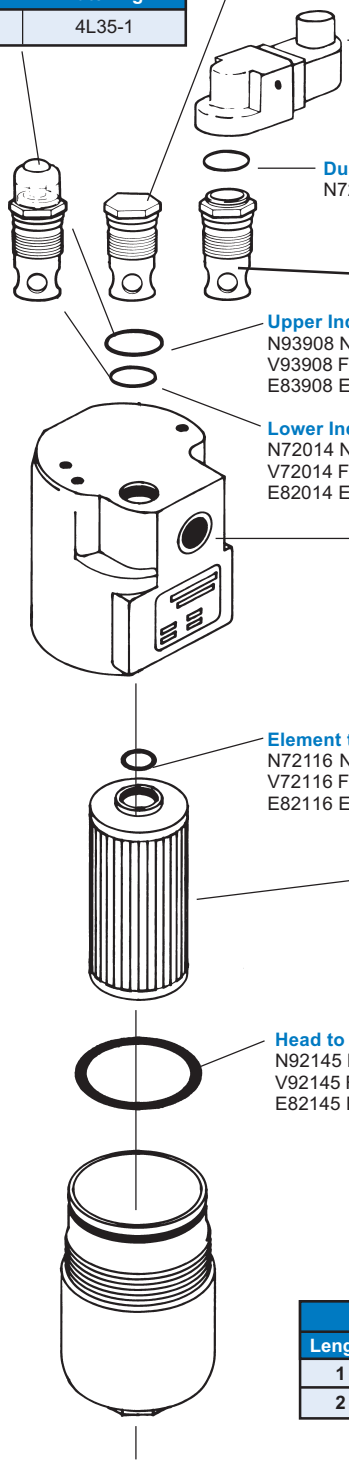
100 Series



Parts Breakdown
100 Series Filter

Vissual Indicator Assembly	
Bypass Valve	No Bypass Valve
2N35-1	4N35-1
Latching	Latching
2L35-1	4L35-1

Non-Indicator Assembly	
Non-Bypass Plug	Bypass Assy.
0N00-1	1N35-1



Dust Seal
N72021 Nitrile

Upper Indicator to Head Seal*
N93908 Nitrile
V93908 Fluorocarbon
E83908 EPR

Lower Indicator to Head Seal*
N72014 Nitrile
V72014 Fluorocarbon
E82014 EPR

Element to Adapter Seal
N72116 Nitrile
V72116 Fluorocarbon
E82116 EPR

Head to Bowl Seal*
N92145 Nitrile
V92145 Fluorocarbon
E82145 EPR

Electrical Actuator Assembly		
Hirschmann Connector		
Code	Part Number	Voltages Available
T	FF3468	28 VDC, 250 VAC Max.

Electrical Subassembly	
Non-Bypass	Bypass
FF3283	FF3282

Head Assembly (Element Adapter included)	
Description	Part Number
SAE-12 ($1_{1/16}$"- 12 Thread)	104-J
Manifold Ports	104-2-L

Element Kit				
Length	Disposable – All Fluids (Except Phosphate Ester)			
	3 µm abs.	6 µm abs.	10 µm abs.	20 µm abs.
1	170-Z-120	170-Z-121	170-Z-122	170-Z-123
2	170-Z-220	170-Z-221	170-Z-222	170-Z-223
	Disposable – High Collapse (3000 psid)			
	3 µm absolute		15 µm absolute	
1	150-Z-1FF		150-Z-110	
2	150-Z-2FF		150-Z-210	
	Cleanable – High Collapse (3000 psid)			
	6 µm absolute		20 µm absolute	
1	140-Z-101		140-Z-110	
2	140-Z-201		140-Z-210	
	Cleanable – Corrosion Resistant Mesh			
	40 µm absolute		75 µm absolute	
1	190-Z-140		190-Z-175	
2	190-Z-240		190-Z-275	

*Included in Seal Kit: 936053 Nitrile
936055 Fluorocarbon
936054 EPR

Bowl	
Length	Part Number
1	FF2410/4
2	FF3641/4

HOW TO ORDER 100 Series Filters:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

BOX 1	BOX 2	STD	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
1	7	4	A	2N35	J	Z	1	23

Element Example:

BOX 1	BOX 2	STD	BOX 6	BOX 7	BOX 8	BOX 4
1	7	0	Z	1	23	A

BOX 1: HOUSING MATERIAL

Symbol	Description
1	Steel/Nodular Iron

BOX 2: FILTER/ELEMENT TYPE

Symbol	Description
4	High Strength Cleanable St. Steel
5	BetaMaze™ High Strength Disposable
7	BetaMaze™ Inorganic disposable
9	Corrosion resistant mesh-cleanable

BOX 3: SEALS

Symbol	Description
A	Nitrile
B	EPR (Type S Elements)
H	Fluorocarbon

BOX 4: INDICATOR

Indicator Type	Bypass Indication @ 50 PSID (3.5 Bar)	No Bypass Indication @ 50 PSID (3.5 Bar)
No Indicator	1N35	0N00
Visual	2N35	4N35
Visual-Latching	2L35	4L35
Electrical **(T)** 28 VDC, 110-250 VAC	3T35	5T35

BOX 5: PORT

Symbol	Description	Filter Series
L	Manifold	1
B	G 1/2" BSP (ISO 228)	1
J	S.A.E.-12 (1-1/16"-12 Thread)	1

BOX 6: FLUID USE

Symbol	Description	Micron
S	Skydrol-type phosphate esters	All ratings
Z	All fluids*	All ratings

*except phosphate esters

BOX 7: ELEMENT LENGTH

Symbol	Description	Type
1	Length 1	4, 5, 7, 9
2	Length 2	4, 5, 7, 9

BOX 8: DEGREE OF FILTRATION

Symbol	Absolute Rating	Type
01	6µ	4
10	20µ	4
FF	3µ	5
10	15µ	5
20	3µ	7
21	6µ	7
22	10µ	7
23	20µ	7
40	40µ	9
75	75µ	9

Features/Applications for High Pressure Hydraulic Filters – 200 Series

- Pressures to 6,000 PSI
- Flows to 65 GPM
- BetaMaze Elements - 3 to 20 Micron Absolute
- Disposable or Recleanable Elements
- Reverse Flow Option

Specifications
High Prssure Hydraulic Filters - 200 Series

Flow Rating: 65 GPM

Pressure Rating:

Operating Pressure (Maximum)	6000 PSI
Proof Pressure	9000 PSI
Burst Pressure	12000 PSI
Fatique Pressure (Maximum)	0-4000-0 PSI @3,000,000 Cycles

Fluid Temperature: -40°F to +212°F

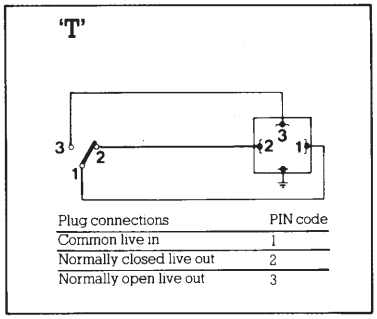
Construction:

Head	Nodular Iron
Bowl	Extruded Steel
Indicators	Consult Factory
Elements	Consult Factory

Weight:

	S.A.E. or Flange Ports	Manifold Ports
Length 1	20 Lbs.	24 Lbs.
Length 2	22 Lbs.	26 Lbs.

Wiring Diagrams:



Plug connections	PIN code
Common live in	1
Normally closed live out	2
Normally open live out	3

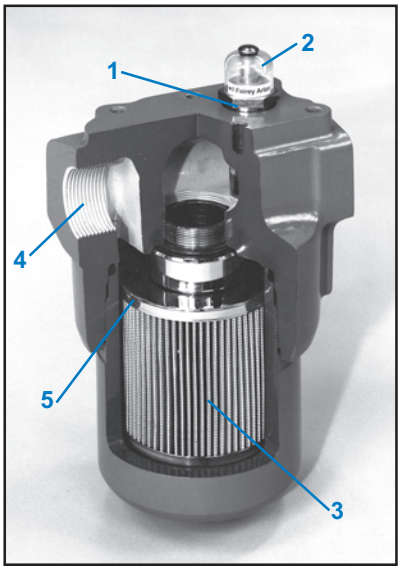
Electrical Ratings:

Hirschman Connector without Lamps:

T - 250 or 110 VAC or 28 VDC Max.

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

High Performance New Generation 200 Series Filters



A rugged modular design for applications to 6000 PSI and 65 GPM. Arlon's high pressure filters are specified worldwide for industrial, mobile, marine and mining applications.

Arlon's high pressure filters are the finest you can buy. Here is why:

TruTell combined bypass valve and indicator.

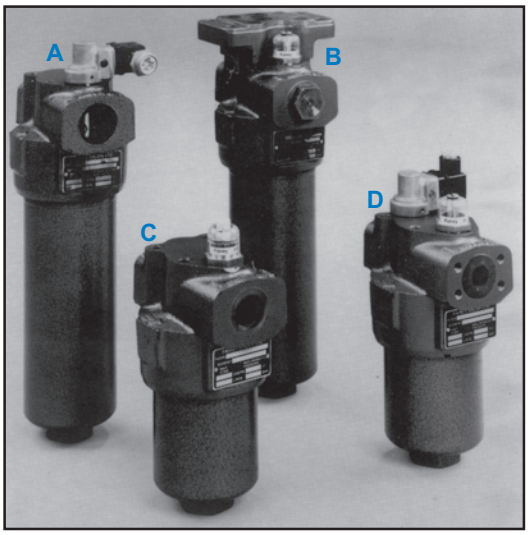
1. High performance, low hysteresis bypass valve assures quick return to the closed position following cold starts or other short-term bypass conditions. Result: the best filter performance and protection for your system. The location of the bypass valve is 90° to the flow stream, which prevents unwanted valve operation and helps cushion the effect of system shocks (when compared with in-line valve location).
2. The bypass condition is indicated by the appearance of a red band under the transparent dome. The indicator has 360° visibility for easy viewing. Several other indicator options are shown below.

BetaMaze™ Media

3. A break-through in filter media technology. BetaMaze™ provides great efficiency with unmatched dirt holding capabilities. Absolute ratings of 3 to 20 microns are available to meet any system requirement.

Other Features

4. Port options include SAE straight thread, SAE 3000 or 6000 PSI flanges or manifold mount.
5. Bowl-into-head assembly provides positive sealing and easier servicing.
6. A rugged, low pressure drop reverse flow valve is available.
7. For complete information, see design features section.



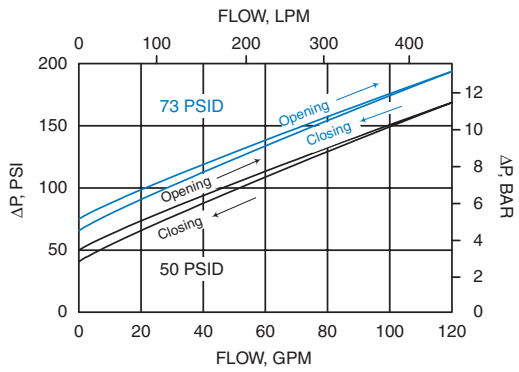
(**A**) 200 Series length 2
(**B**) 200 Series length 2 manifold mounting
(**C**) 200 Series length 1 with visual latching indicator
(**D**) 200 Series length 1 with dual electrical and visual indicators

TrueTell Bypass Valve/Clogging Indicator

Over 30 years of testing valves of different configurations led to the combined TruTell bypass valve and indicator. This design produces the best all around characteristics for stability, low hysteresis, minimal leakage and reliability.

A bypass valve that closes quickly and completely is important because a filter in bypass offers no system protection, especially from large particles that can cause catastrophic failure.

The TruTell bypass valve and indicator assembly is a precision machined design from which hysteresis effects have been virtually eliminated. See curve.



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Point 1
Competitive bypass valve designs with significantly different areas between the open and closed position or high friction sliding seals have high hysteresis. As a result these bypass valves do not close as quickly as they should and a large percentage of the fluid continues to bypass the filter element completely after a cold start up (usually anything below 68°F).

Point 2
Most competitive bypass valves dramatically limits filter assembly performance even with a good element in the filter housing.
The TruTell design forces as much fluid as possible through the element even when partially open.

Point 3
The TruTell bypass valve location is very important. Our valve and indicator combination is situated near the outlet port at right angles to the flow path. In this position it monitors only element differential pressure. Undesirable leakage and premature bypass associated with in line valve locations are eliminated.
This location also helps cushion the effect of system shocks that pass through in-line bypass valves virtually unaffected.

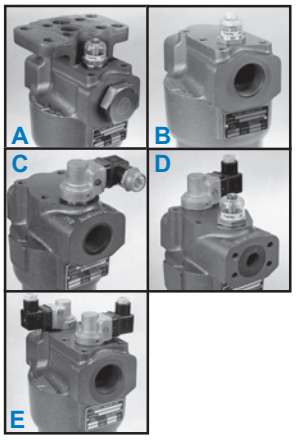
Point 4
Our TruTell Bypass valve is magnetically coupled to the indicator. This assures no false warning that element bypass will ever occur. If the indicator actuates, an impending or bypass condition exists period.
Unless the indicator is coupled to the bypass valve, it is impossible to accurately indicate bypass valve position under all operating conditions.

Point 5
Arlon offers the widest selection of indicator types in the industry.

Visual types include:
- *A. A 360° visibility non-latching type*
- *B. A 360° visibility latching type (For remote locations or flow on demand systems, or where systems must be shut down to inspect the filter.)*

Electrical indicators include:
- *C. Visual electrical*
- *D. Electrical and Visual*
- *E. Dual electrical*

For electrical indicator connector options see Box 4 on page 126.



BetaMaze™ Media High Performance

Multi-Pass Test Results to ISO 4572 (Time Weighted Average)

Filter Type		Media	Code	Filtration Rating						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
5	3000psi High Collapse	02QX	FF	3	≥200 99.5	>1000 99.9	>3000 99.97	>5000 99.98	INF	INF
		10QX	10	15	3 66.66	12 91.66	50 98.0	75 98.67	>2000 99.95	>5000 99.98
Filter Type		**Media**	**Code**	**Filtration Rating**						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
7	290 psi Collapse	GDH3	20	3	≥100 99.0	>300 99.67	>1500 99.93	>2000 99.95	>5000 99.98	INF
		GDH6	21	6	12 91.7	≥100 99.0	>1000 99.9	>2000 99.95	>5000 99.98	INF
		GDH10	22	10	8 87.5	22 95.4	≥100 99.0	≥200 99.5	>5000 99.98	INF
		GDH20	23	20	–	2 50.0	8 87.5	20 95.0	≥100 99.0	≥200 99.5

Element efficiency in percent
Element Beta ratio B_x

BetaMaze™... High Performance With Long Life
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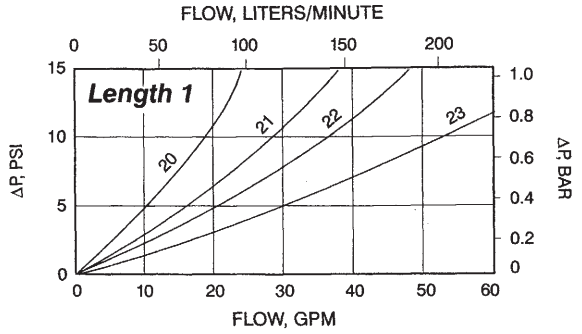
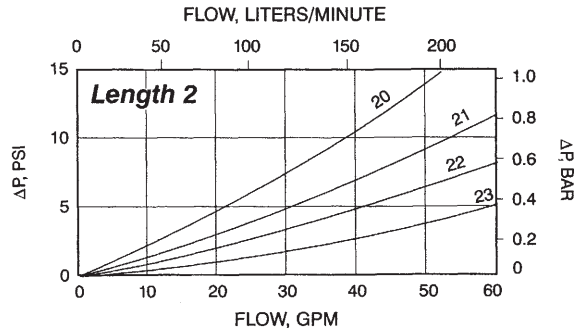
An Element For Every Application
BetaMaze™ elements are available in high collapse ratings (3000 psi) in 3 and 15 micron absolute media. Cleanable elements are available in high and low collapse strength configurations with micron ratings from 6 to 75 absolute. Consult factory for availability.

Flow/Pressure Drop Curves

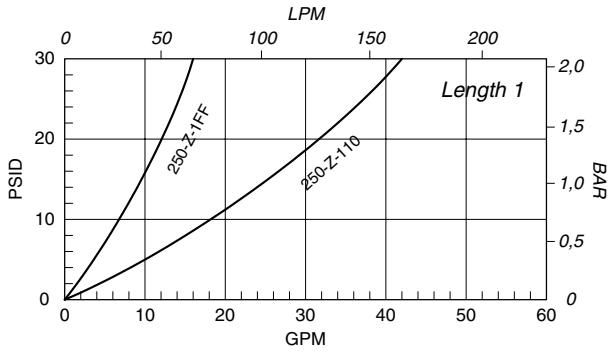
Disposable Elements - 200 Series

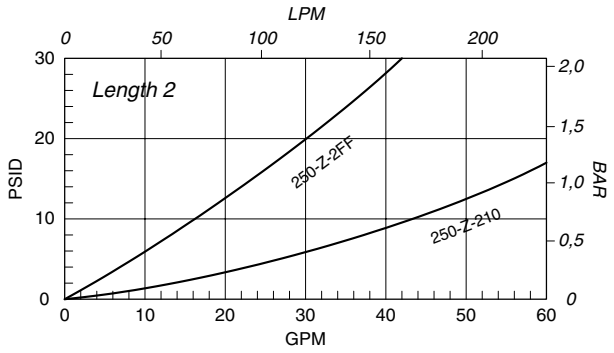
For Bypass Equipped Housings (290 psid min. collapse)





For Non-bypass Housings (3000 psid min. collapse)





Fluid Conditions: Viscosity 140 SSU (30 cSt) and SP. Gr. 0.88

Note: Element ΔP is directly proportional to viscosity.

Find Filter Assembly Pressure Drop

Filter assembly ΔP is equal to the sum of element and housing pressure drops taken from the appropriate curves and adjusted for operating viscosity and specific gravity.

Example:

Filer Model: 274A-BV50-JZ222

Flow: 50 GPM

Viscosity: 225 SSU, Sp. Gr.: 1.0

Step 1. Correct element ΔP for viscosity.
Element ΔP = 6 psi x 225SSU/140SSU = 9.6psi

Step 2. Correct housing ΔP for specific gravity.
Housing ΔP = 15 psi x 1.0/0.88 = 17.0 psi

Step 3. Calculate assembly ΔP.
Assy ΔP = 9.6 psi + 17.0 psi = 26.6 psi

Alternate steps for filter with reverse flow valve.

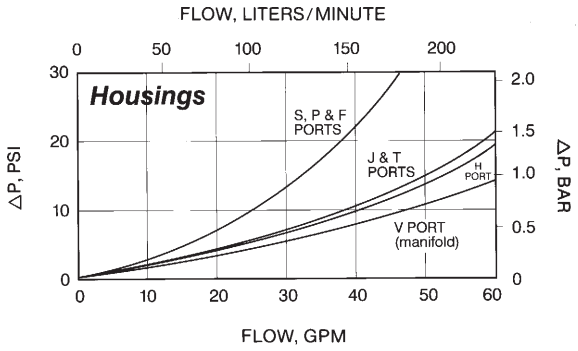
Step 3. Correct reverse flow

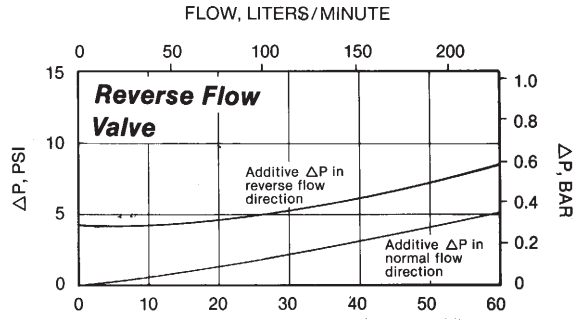
Valve ΔP for specific gravity

RFV ΔP = 4 psi x 1.0/0.88 = 4.5 psi

Step 4. Calculate assembly
ΔP = 9.6 psi + 17.0 psi + 4.5 psi = 31.1 psi

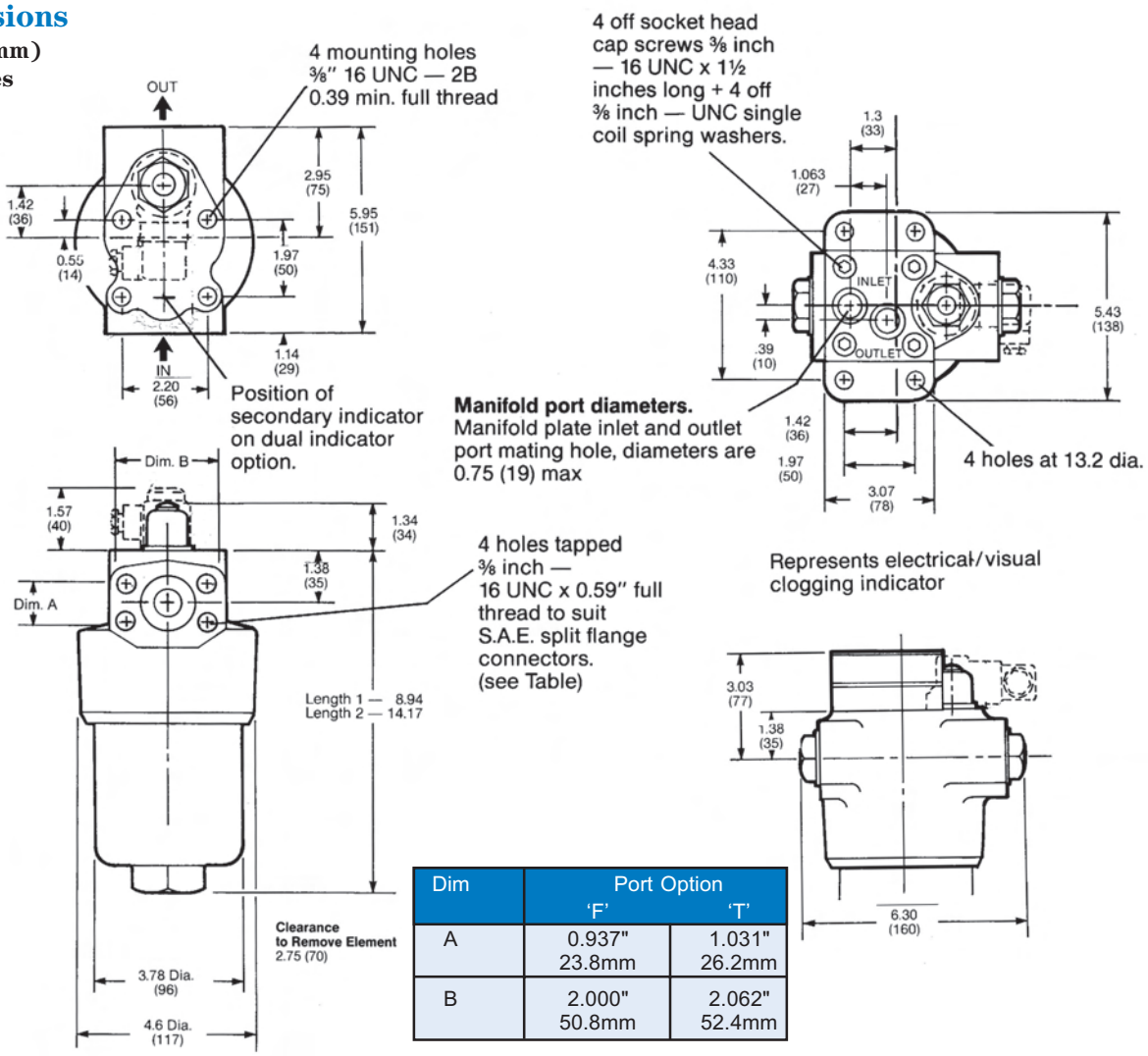
NOTE: Housing and reverse flow valve ΔP are directly proportional to specific gravity.





Dimensions

Inches (mm)
200 Series

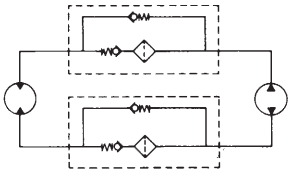


Dim	Port Option	
	'F'	'T'
A	0.937" 23.8mm	1.031" 26.2mm
B	2.000" 50.8mm	2.062" 52.4mm

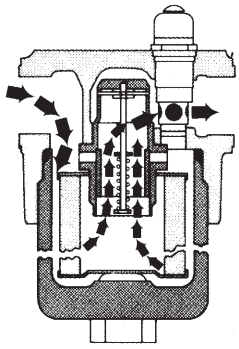
Reverse Flow Valve — Better Three Ways

For hydrostatic drives and other systems where reverse flow is required a valve is incorporated which allows fluid to pass through the element in one direction but to bypass the element when flow is reversed. (See diagrams).

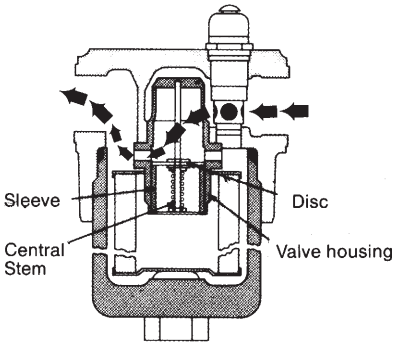
1. Rugged one piece steel body design that is built to last. Unlike stamped metal or aluminum designs. Arlon's Reverse Flow Valve (RFV) is a spool/ disc valve caged in a high strength machined steel body. This greatly reduces the risk of valve failure and resultant filter or component damage.
2. Low pressure drop — the spool/disc design keeps system pressure losses at a minimum without sacrificing reliability.
3. Our modular design means easy change over or replacement. The reverse flow valve threads directly into the filter head, replacing the standard element adapter. For customers with more that one application or for system conversions, multiple applications from the dame hardware means less inventory.



Normal Flow Condition



Reverse Flow Condition



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Parts Breakdown

200 Series Filter

Visual Indicator Assembly	
Bypass Valve	**No Bypass Valve**
BV50-2	NV50-2
BV35-2	NV35-2
Latching	**Latching**
BL50-2	NL50-2
BL35-2	NL35-2

Non-Indicator Assembly	
Non-Bypass Plug	**Bypass Assy.**
P000-2	BN50-2
	BN35-2

Electrical Actuator Assembly Hirschmann Connector		
Code	**Part Number**	**Voltages Available**
T	FF3468	28 VDC, 250 VAC Max.

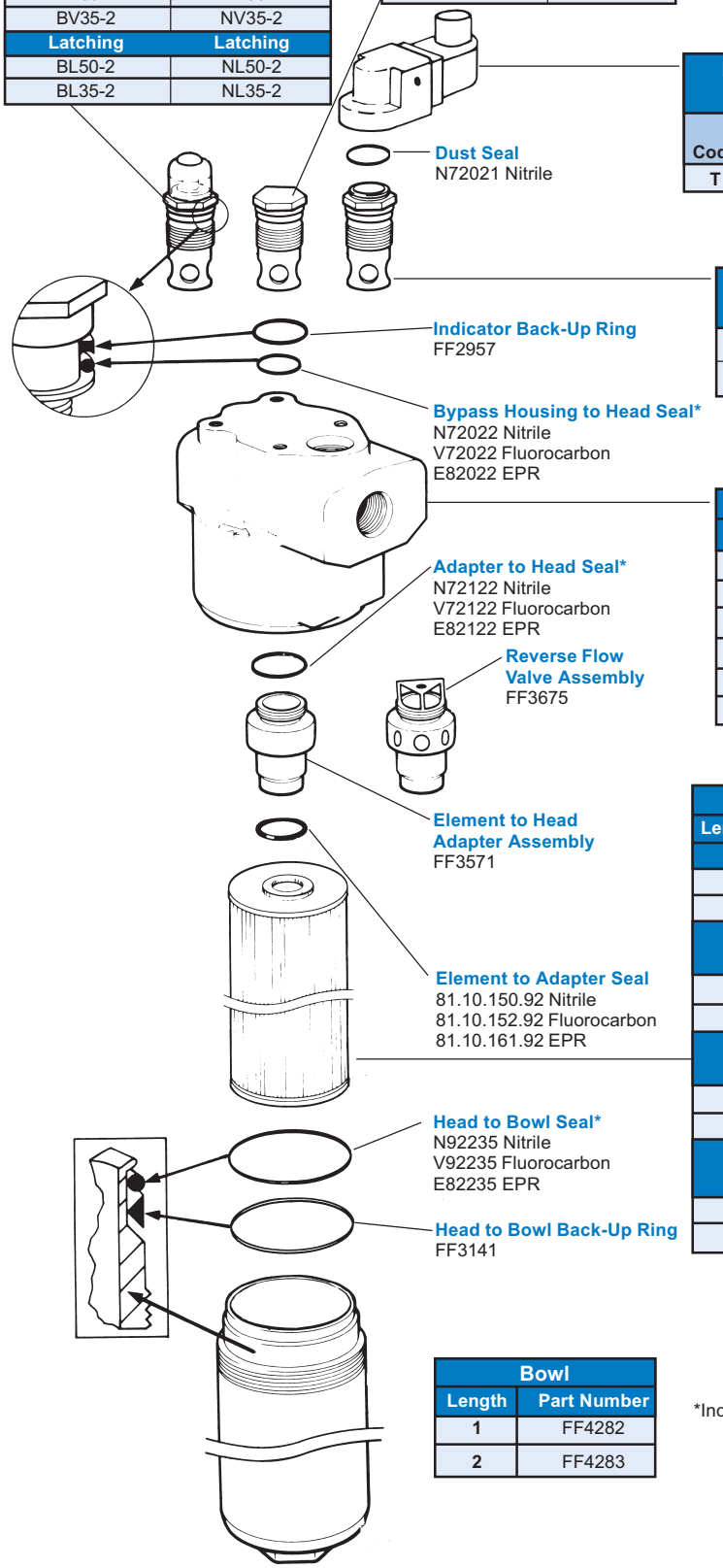
Electrical Subassembly	
Bypass Valve	**Non-Bypass**
90.34.000.29 (73 psid)	90.34.000.27 (73 psid)
90.34.000.28 (50 psid)	90.34.000.26 (50 psid)

HEAD	
Description	**Part Number**
SAE-12 ($1^{1}/_{16}$″ – 12 Thread)	204-S
SAE-16 ($1^{5}/_{16}$″ – 12 Thread)	204-J
SAE-20 ($1^{5}/_{8}$″ – 12 Thread)	204-H
SAE 6000 PSI $^{3}/_{4}$″ Flange, Code 62	204-F
SAE 3000 PSI 1″ Flange, Code 61	204-T
Manifold Adapter	204-V

Element Kit				
Length	**Disposable – All Fluids**			
	3 µm abs.	**6 µm abs.**	**10 µm abs.**	**20 µm abs.**
1	270-Z-120	270-Z-121	270-Z-122	270-Z-123
2	270-Z-220	270-Z-221	270-Z-222	270-Z-223
	High Collapse – Disposable (3000 psid)			
	3 µm absolute		**15 µm absolute**	
1	250-Z-1FFH		250-Z-110H	
2	250-Z-2FFH		250-Z-210H	
	High Collapse – Cleanable (3000 psid)			
	6 µm absolute		**20 µm absolute**	
1	240-Z-101		240-Z-110	
2	240-Z-201		240-Z-210	
	Cleanable			
	40 µm absolute		**75 µm absolute**	
1	290-Z-140		290-Z-175	
2	290-Z-240		290-Z-275	

Bowl	
Length	**Part Number**
1	FF4282
2	FF4283

*Included in Seal Kit: 936057 Nitrile
936058 EPR
936059 Fluorocarbon



HOW TO ORDER 200 Series Filters:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

STD	BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
2	7	4	A	BV50	S	Z	1	23

Element Example:

STD	BOX 1	STD	BOX 6	BOX 7	BOX 8	BOX 3
2	7	0	Z	1	23	A

BOX 1: FILTER/ELEMENT TYPE

Symbol	Description
4	High Strength Cleanable St. Steel
7	BetaMaze™ Inorganic disposable
5	High Strength Disposable
9	Corrosion resistant mesh-cleanable

BOX 2: FILTER FLOW

Symbol	Description
4	Normal
2	With Reverse Flow Valve

BOX 3: SEALS

Symbol	Description
A	Nitrile
B	EPR (Type S Elements)
H	Fluorocarbon

BOX 4: INDICATOR

Indicator Type	BYPASS INDICATION @ 50 PSID (3.5 BAR)	BYPASS INDICATION @ 73 PSID (5.0 BAR)	NO BYPASS INDICATION @ 50 PSID (3.5 BAR)	NO BYPASS INDICATION @ 73 PSID (5.0 BAR)
NO INDICATOR	**BN35**	**BN50**	**P000**	**P000**
VISUAL	**BV35**	**BV50**	**NV35**	**NV50**
VISUAL-LATCHING	**BL35**	**BL50**	**NL35**	**NL50**
ELECTRICAL (**T**) 28 VDC, 110-250 VAC	**BE35**	**BE50**	**NE35**	**NE50**

Dual Indicator Codes:

BEE50 - Bypass with double electrical indicators
NEE50 - No bypass with double electrical indicators
BEV50 - Bypass with (1) mechanical visual (50 psid) and (1) electrical indicator (73 psid)
NEV50 - No bypass with (1) mechanical visual (50 psid) and (1) electrical indicator (73 psid)

Note: Dual Indicators are not available with Port Option "V"

BOX 5: PORT OPTIONS

Symbol	Description	Filter Ser.
S	SAE-12 (1-1/16"-12 Thread)	2
J	SAE-16 (1-5/16"-12 Thread)	2
H	SAE-20 (1-5/8"-12 Thread)	2
F	3/4" SAE Flange, Code 62	2
T	1" SAE Flange, Code 61	2
V	Manifold Adaptor	2

BOX 6: ELEMENT TYPE

Symbol	Element Types	Absolute Ratings Micron
S	Phosphate esters (Skydrol)	All ratings
Z	All fluids	All ratings

BOX 7: ELEMENT LENGTH

Symbol	Description	Type
1	Length 1	4, 5, 7, 9
2	Length 2	4, 5, 7, 9

BOX 8: DEGREE OF FILTRATION

Symbol	Absolute Rating	Type
01	6µ	4
10	20µ	4
FF	3µ	5
10	15µ	5
20	3µ	7
21	6µ	7
22	10µ	7
23	20µ	7
40	40µ	9
75	75µ	9

Applications/Features for High Pressure Hydraulic Filters – 300 Series

- Pressures to 6,000 PSI
- Flows to 120 GPM
- BetaMaze™ Elements - 3 to 20 Micron Absolute
- Disposable or Recleanable Elements
- Reverse Flow Options

Specifications

High Pressure Hydraulic Filters — 300 Series

Max Flow Rating: 120 GPM

Pressure Rating:

Operating Pressure (Maximum)	6000 PSI
Proof Pressure	9000 PSI
Burst Pressure	12000 PSI
Fatique Pressure (Maximum)	0-4000-0 PSI @3,000,000 Cycles

Fluid Temperature: -40°F to +212°F

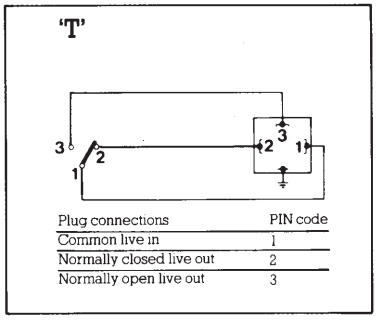
Construction:

Head	Nodular Iron
Bowl	Extruded Steel
Indicators	Consult Factory
Elements	Consult Factory

Weight:

	S.A.E. or Flange Ports	Manifold Ports
Length 1	31 Lbs.	36 Lbs.
Length 2	37.5 Lbs.	42.5 Lbs.
Length 3	44 Lbs.	49 Lbs.

Wiring Diagrams:



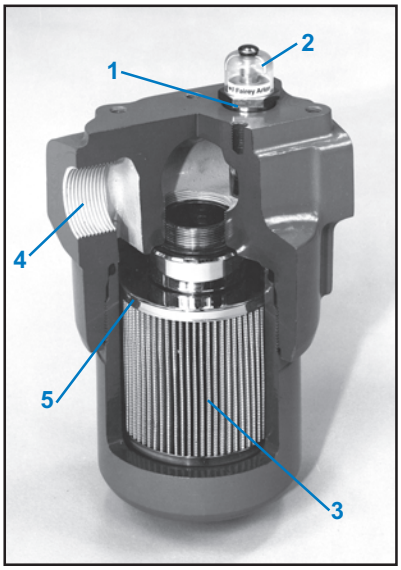
Plug connections	PIN code
Common live in	1
Normally closed live out	2
Normally open live out	3

Electrical Ratings:

Hirschman Connector without Lamps:

T - 250 or 110 VAC or 28 VDC Max.

High Performance New Generation 300 Series Filters



A rugged modular design for applications to 6000 PSI and 120 GPM. Arlon's high pressure filters are specified worldwide for industrial, mobile, marine and mining applications.

Arlon's high pressure filters are the finest you can buy. Here is why:

TruTell combined bypass valve and indicator.

1. High performance, low hysteresis bypass valve assures quick return to the closed position following cold starts or other short-term bypass conditions. Result: the best filter performance and protection for your system. The location of the bypass valve is 90° to the flow stream, which prevents unwanted valve operation and helps cushion the effect of system shocks (when compared with in-line valve location).
2. The bypass condition is indicated by the appearance of a red band under the transparent dome. The indicator has 360° visibility for easy viewing. Several other indicator options are shown below.

BetaMaze™ Media

3. A break through in filter media technology. BetaMaze™ provides great efficiency with unmatched dirt holding capabilities. Absolute ratings of 3 to 20 microns are available to meet any system requirement.

Other Features

4. Port options include SAE straight thread SAE 3000 or 6000 PSI flanges or manifold mount.
5. Bowl-into-head assembly provides positive sealing and easier servicing.
6. A rugged, low pressure drop reverse flow valve is available.
7. For complete information, see design features section.

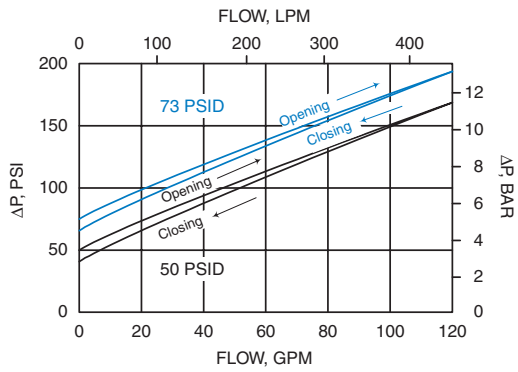
(A) 300 Series length 3
(B) 300 Series length 3 manifold mounting
(C) 300 Series length 1 with dual electrical and visual indicators
(D) 300 Series length 2 with visual electrical indicator

TruTell Bypass Valve/Clogging Indicator

Over 30 years of testing valves of different configurations led to the combined TruTell bypass valve and indicator. This design produces the best all around characteristics for stability, low hysteresis, minimal leakage and reliability.

A bypass valve that closes quickly and completely is important because a filter in bypass offers no system protection, especially from large particles that can cause catastrophic failure.

The TruTell bypass valve and indicator assembly is a precision machined design from which hysteresis effects have been virtually eliminated. See curve.



Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Point 1
Competitive bypass valve designs with significantly different areas between the open and closed position or high friction sliding seals have high hysteresis. As a result these bypass valves do not close as quickly as they should and a large percentage of the fluid continues to bypass the filter element completely after a cold start up (usually anything below 68°F).

Point 2
Most competitive bypass valves dramatically limits filter assembly performance even with a good element in the filter housing.
The TruTell design forces as much fluid as possible through the element even when partially open.

Point 3
The TruTell bypass valve location is very important. Our valve and indicator combination is situated near the outlet port at right angles to the flow path. In this position it monitors only element differential pressure. Undesirable leakage and premature bypass associated with in line valve locations are eliminated.
This location also helps cushion the effect of system shocks that pass through in-line bypass valves virtually unaffected.

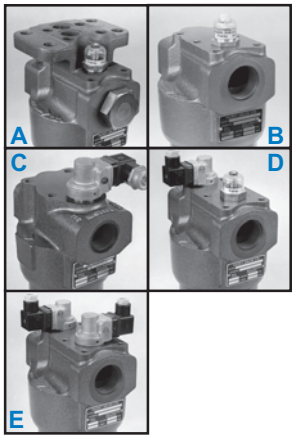
Point 4
Our TruTell Bypass valve is magnetically coupled to the indicator. This assures no false warning that element bypass will ever occur. If the indicator actuates, an impending or bypass condition exists period.
Unless the indicator is coupled to the bypass valve, it is impossible to accurately indicate bypass valve position under all operating conditions.

Point 5
Arlon offers the widest selection of indicator types in the industry.

Visual types include:
- *A. A 360° visibility non-latching type*
- *B. A 360° visibility latching type (For remote locations or flow on demand systems, or where systems must be shut down to inspect the filter.)*

Electrical indicators include:
- *C. Visual electrical*
- *D. Electrical and Visual*
- *E. Dual electrical*

For electrical indicator connector options see Table 5 on back cover.



BetaMaze™ Media High Performance

Multi-Pass Test Results to ISO 4572 (Time Weighted Average)

Filter Type		Media	Code	Filtration Rating						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
5	3000psi High Collapse	02QX	FF	3	≥200 99.5	>1000 99.9	>3000 99.97	>5000 99.98	INF	INF
		10QX	10	15	3 66.66	12 91.66	50 98.0	75 98.67	>2000 99.95	>5000 99.98
Filter Type		**Media**	**Code**	**Filtration Rating**						
				β_x>200	β_3	β_6	β_{10}	β_{12}	β_{20}	β_{25}
7	290 psi Collapse	GDH3	20	3	≥100 99.0	>300 99.67	>1500 99.93	>2000 99.95	>5000 99.98	INF
		GDH6	21	6	12 91.7	≥100 99.0	>1000 99.9	>2000 99.95	>5000 99.98	INF
		GDH10	22	10	8 87.5	22 95.4	≥100 99.0	≥200 99.5	>5000 99.98	INF
		GDH20	23	20	–	2 50.0	8 87.5	20 95.0	≥100 99.0	≥200 99.5

Element efficiency in percent
Element Beta ratio β_x

BetaMaze™... High Performance With Long Life
After years of research Arlon offers its best filter media ever, BetaMaze™. The media is a special blend of inorganic microfibers formulated for unmatched dirt holding capacity and state of the art filtration efficiency. The filter element is multilayer construction and wire mesh reinforced on both sides. This provides excellent fatigue resistance and top performance under high differential pressure and pulsing flows.

The BetaMaze™ Edge... Long Life
Because of their exceptional dirt holding capacity BetaMaze elements need to be changed less frequently than comparable sized competitive elements. A real cost savings that pays dividends every minute of operation.

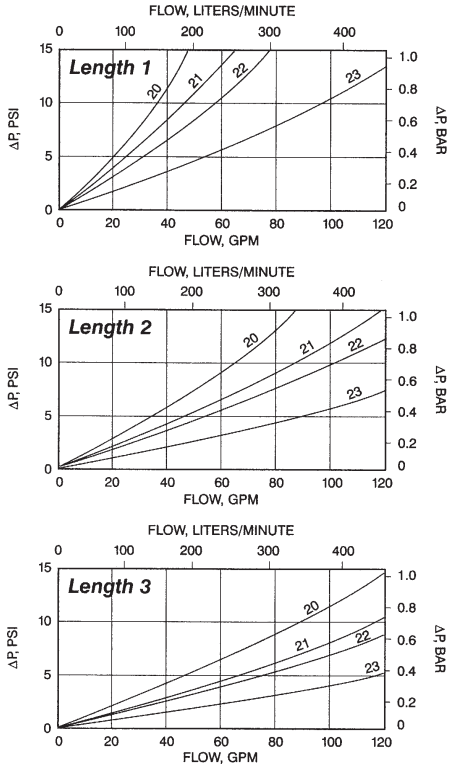
An Element For Every Application
BetaMaze elements are available in high collapse ratings (3000 psi) in 6 and 15 micron absolute media. Cleanable elements are available in high and low collapse strength configurations with micron ratings from 6 to 75 absolute. Consult factory for availability.

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

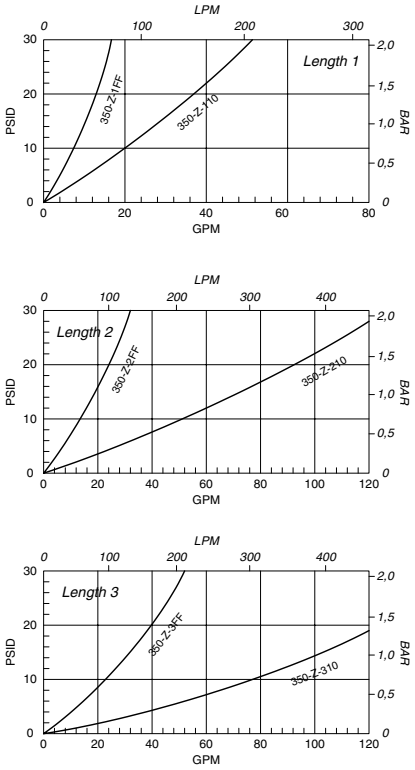
Flow/Pressure Drop Curves

Disposable Elements - 300 Series

For Bypass Equipped Housings (290 psid min. collapse)



For Non-bypass Housings (3000 psid min. collapse)



Fluid Conditions: Viscosity 140 SSU (30 cSt) and SP. Gr. 0.88

Note: Element ΔP is directly proportional to viscosity.

Find Filter Assembly Pressure Drop

Filter assembly ΔP is equal to the sum of element and housing pressure drops taken from the appropriate curves and adjusted for operating viscosity and specific gravity.

Example:

Filer Model: 374A-BV50-FL223

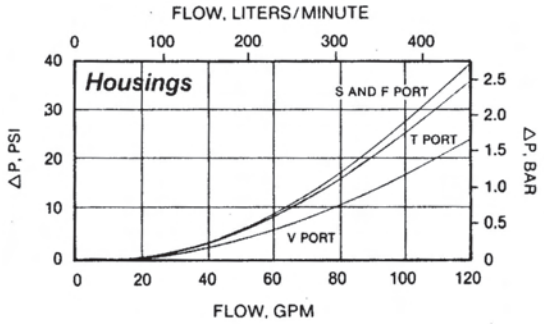
Flow: 120 GPM

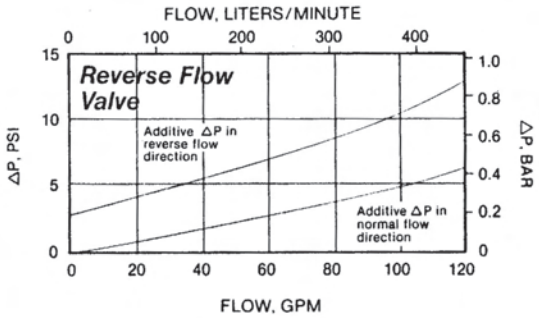
Viscosity: 225 SSU, Sp. Gr.: 1.0

Step 1. **Correct element ΔP for viscosity.**
Element ΔP = 7 psi x 225SSU/140SSU = 11.2psi

Step 2. **Correct housing ΔP for specific gravity.**
Housing ΔP = 27 psi x 1.0/0.88 = 30.7 psi

Step 3. **Calculate assembly ΔP.**
Assy ΔP = 11.2 psi + 30.7 psi = 41.9 psi



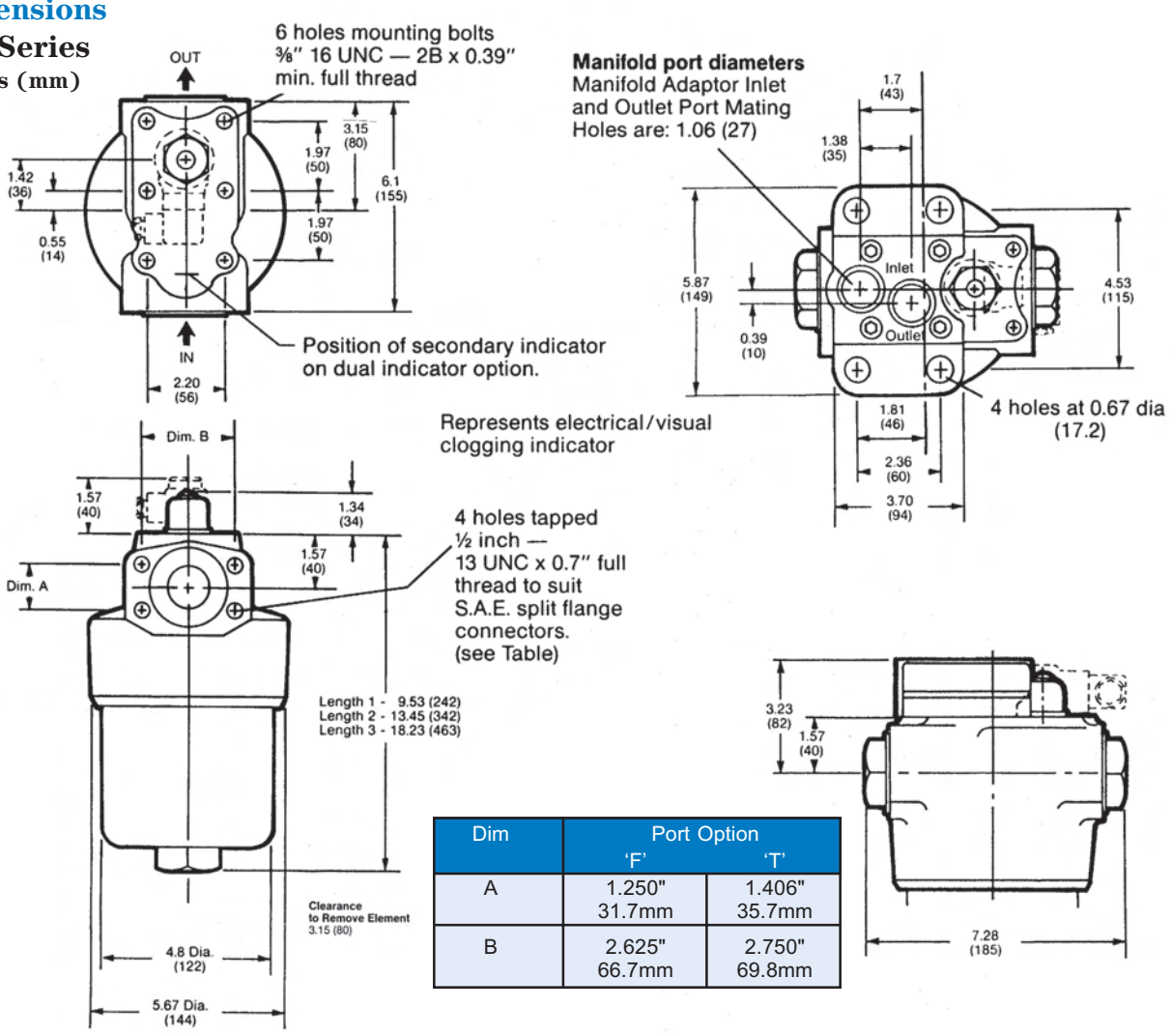


Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Dimensions

300 Series

Inches (mm)

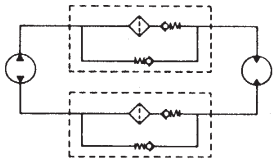


Dim	Port Option	
	'F'	'T'
A	1.250" 31.7mm	1.406" 35.7mm
B	2.625" 66.7mm	2.750" 69.8mm

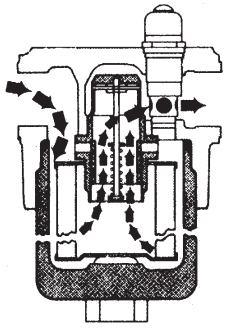
Reverse Flow Valve — Better Three Ways

For hydrostatic drives and other systems where reverse flow is required a valve is incorporated which allows fluid to pass through the element in one direction but to by-pass the element when flow is reversed. (See diagrams).

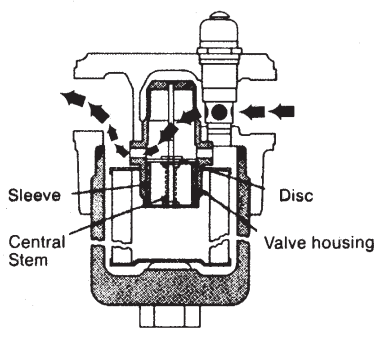
1. Rugged one piece steel body design that is built to last. Unlike stamped metal or aluminum designs. Arlon's Reverse Flow Valve (RFV) is a spool/ disc valve caged in a high strength machined steel body. This greatly reduces the risk of valve failure and resultant filter or component damage.
2. Low pressure drop — the spool/disc design keeps system pressure losses at a minimum without sacrificing reliability.
3. Our modular design means easy change over or replacement. The reverse flow valve threads directly into the filter head, replacing the standard element adapter. For customers with more that one application or for system conversions, multiple applications from the dame hardware means less inventory.



Normal Flow Condition



Reverse Flow Condition



Filter Parts Breakdown
300 Series

Visual Indicator Assembly	
Bypass Valve	**No Bypass Valve**
BV50-2	NV50-2
BV35-2	NV35-2
Latching	**Latching**
BL50-2	NL50-2
BL35-2	NL35-2

Non-Indicator Assembly	
Non-Bypass Plug	**Bypass Assy.**
P000-2	BN50-2
	BN35-2

Electrical Actuator Assembly Hirschmann Connector		
Code	**Part Number**	**Voltages Available**
T	FF3468	28 VDC, 250 VAC Max.

ELECTRICAL SUBASSEMBLY	
Bypass Valve	**Non-Bypass**
90.34.000.29, 73 PSID	90.34.000.27, 73 PSID
90.34.000.28, 50 PSID	90.34.000.26, 50 PSID

Head	
Description	**Part Number**
SAE-20 (1⅝″ – 12 Thread)	304-S
SAE 6000 PSI 1¼″ Flange, Code 62	304-F
SAE 3000 PSI 1½″ Flange, Code 61	304-T
Manifold Adapter	304-V

Element Kit				
Length	**Disposable – All Fluids**			
	3 µm abs.	**6 µm abs.**	**10 µm abs.**	**20 µm abs.**
1	370-Z-120	370-Z-121	370-Z-122	370-Z-123
2	370-Z-220	370-Z-221	370-Z-222	370-Z-223
3	370-Z-320	370-Z-321	370-Z-322	370-Z-323
	Disposable – High Collapse (3000 psid)			
	3 µm absolute		**15 µm absolute**	
1	350-Z-1FFH		350-Z-110H	
2	350-Z-2FFH		350-Z-210H	
3	350-Z-3FFH		350-Z-310H	
	Cleanable – High Collapse (3000 psid)			
	6 µm absolute		**20 µm absolute**	
1	340-Z-101		340-Z-110	
2	340-Z-201		340-Z-210	
3	340-Z-301		340-Z-310	
	Cleanable – Mesh			
	40 µm absolute		**75 µm absolute**	
1	390-Z-140		390-Z-175	
2	390-Z-240		390-Z-275	
3	390-Z-340		390-Z-375	

*Included in Seal Kit: 936060 Nitrile
936061 EPR
936062 Fluorocarbon

Bowl	
Length	**Part Number**
1	FF4287
2	FF4288
3	FF4289

HOW TO ORDER 300 Series Filters:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

STD	BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
3	7	4	A	BV50	S	Z	1	23

Element Example:

STD	BOX 1	STD	BOX 6	BOX 7	BOX 8	BOX 3
3	7	0	Z	1	23	A

BOX 1: FILTER/ELEMENT TYPE

Symbol	Description
4	High Strength Cleanable St. Steel
7	BetaMaze™ Inorganic disposable
5	High Strength Disposable
9	Corrosion resistant mesh-cleanable

BOX 2: FILTER FLOW

Symbol	Description
4	Normal
2	With Reverse Flow Valve

BOX 3: SEALS

Symbol	Description
A	Nitrile
B	EPR (Type S elements)
H	Fluorocarbon

BOX 4: INDICATOR

Indicator Type	BYPASS INDICATION @ 50 PSID (3.5 BAR)	BYPASS INDICATION @ 73 PSID (5.0 BAR)	NO BYPASS INDICATION @ 50 PSID (3.5 BAR)	NO BYPASS INDICATION @ 73 PSID (5.0 BAR)
NO INDICATOR	**BN35**	**BV50**	**P000**	**P000**
VISUAL	**BV35**	**BV50**	**NV35**	**NV50**
VISUAL-LATCHING	**BL35**	**BL50**	**NL35**	**NL50**
ELECTRICAL (**T**) 28 VDC, 110-250 VAC	**BE35**	**BE50**	**NE35**	**NE50**

Dual Indicator Codes:
- **BEE50** - Bypass with double electrical indicators
- **NEE50** - No bypass with double electrical indicators
- **BEV50** - Bypass with (1) mechanical visual (50 psid) and (1) electrical indicator (73 psid)
- **NEV50** - No bypass with (1) mechanical visual (50 psid) and (1) electrical indicator (73 psid)

Note: Dual Indicators are not available with Port Option "V"

BOX 5: PORT OPTIONS

Symbol	Description
S	SAE-20 (1-5/8"-12 Thread)
F	S.A.E. –6000PSI 1-¼" Flange
T	S.A.E. –3000PSI 1-½" Flange
V	Manifold Adapter

BOX 6: ELEMENT TYPE

Symbol	Element Types	Absolute Ratings Micron
S	Phosphate Esters (Skydrol)	All ratings
Z	All fluids	All ratings

BOX 7: ELEMENT LENGTH

Symbol	Description	Type
1	Length 1	4, 5, 7, 9
2	Length 2	4, 5, 7, 9
3	Length 3	4, 5, 7,9

BOX 8: DEGREE OF FILTRATION

Symbol	Absolute Rating	Type
01	6µ	4
10	20µ	4
FF	3µ	5
10	15µ	5
20	3µ	7
21	6µ	7
22	10µ	7
23	20µ	7
40	40µ	9
75	75µ	9

1000 Series

High Pressure Filters

Parker Filtration

Global Filtration Technology

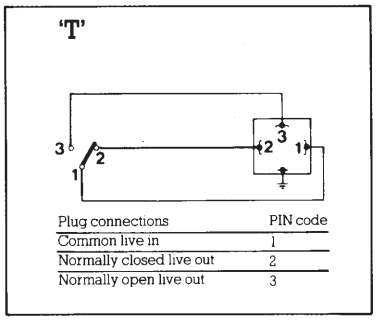
Features/Applications for High Pressure Hydraulic Filters – 1000 Series

- Pressures to 6,000 PSI
- Flows to 265 GPM
- BetaMaze Elements 3 to 20 Micron
- 1½" and 2" Ports - SAE O-Ring or Code 62 Flange
- Reverse Flow Option

Specifications:

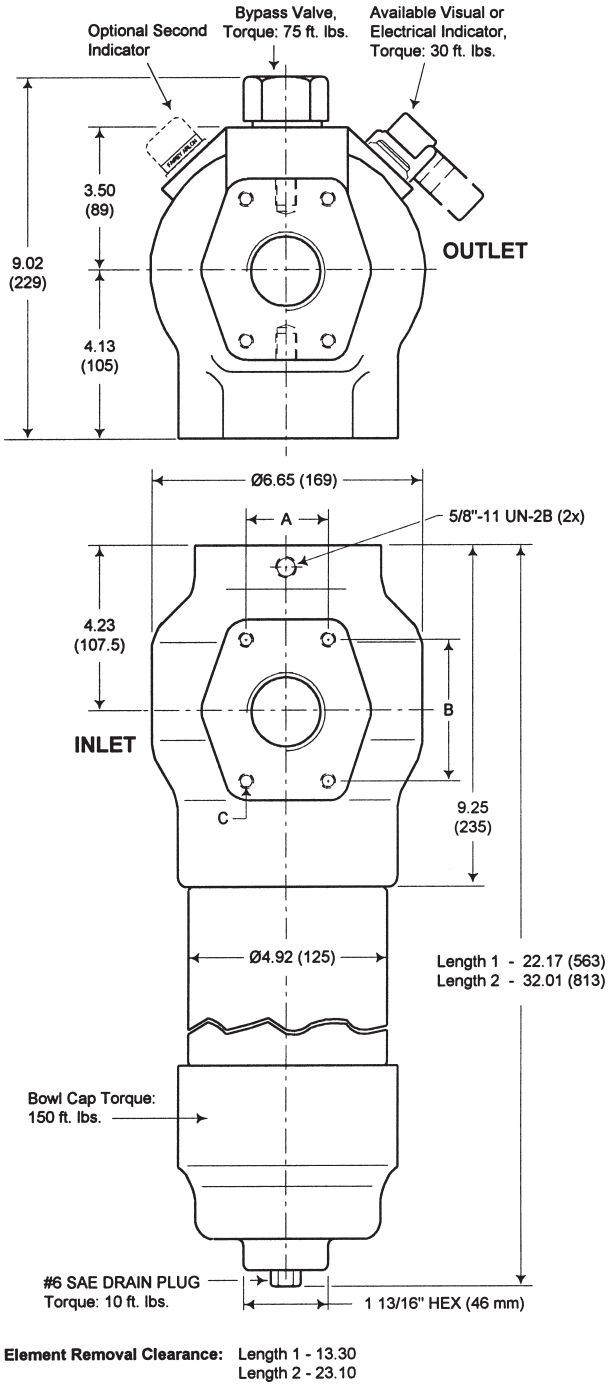
Flow Rating: 265 GPM
Operating Pressure: 6000 PSI
Proof Pressure: 9000 PSI
Burst Pressure: 12,000 PSI
Fatigue Pressure:
0-4000-0 PSI@3,000,000 cycles
Bypass Setting: 100 PSID
Fluid Temperature: -40°F to +212°F
Construtions:
Head and Cap: Nodular Iron
Bowl: Seamless Steel Tube
Indicators: Brass
Elements: Consult Factory
Weight:
Length 1-84 Lbs.
Length 2-104 Lbs.

Electrical Ratings:
Hirschman Connector without Lamps:
T - 110 VAC, .5 Amp Ind., 2 Amp Res.
- 250 VAC, .5 Amp Ind., 2 Amp Res.
- 28 VDC, 1 Amp Ind., 2 Amp Res.



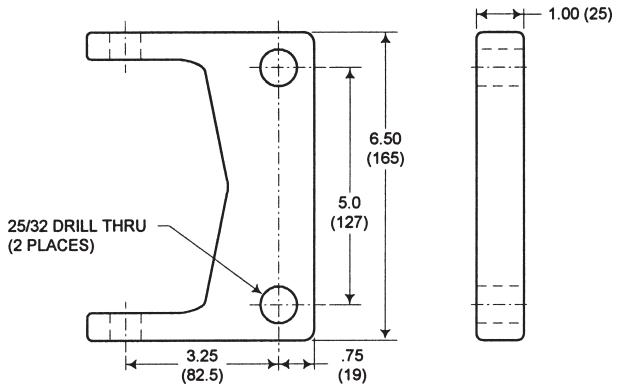
Plug connections	PIN code
Common live in	1
Normally closed live out	2
Normally open live out	3

Dimensions
Inches (mm)



Element Removal Clearance: Length 1 - 13.30
Length 2 - 23.10

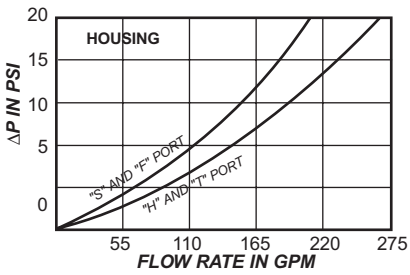
Optional Mounting Bracket

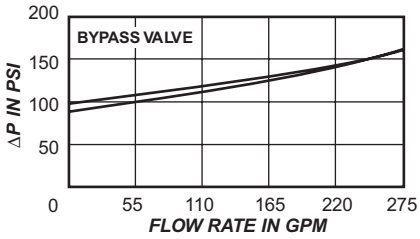


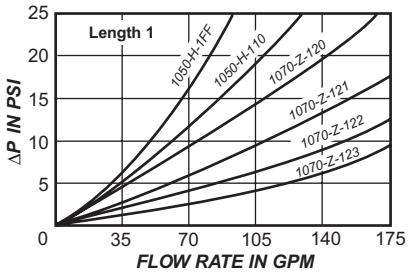
Port	Dimensions		
	A	B	C
F	1.437" 36.5mm	3.125" 79.4mm	5/8"-11 X 1.4"
T	1.750" 44.5mm	3.812" 96.8mm	3/4"-10 X 1.4"

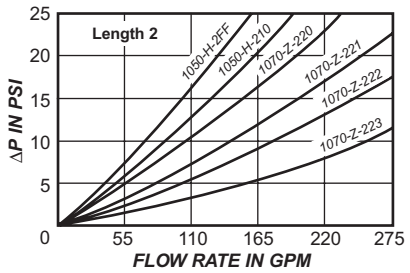
Flow/Pressure Drop Data

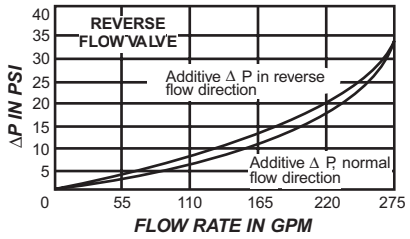
Fluid Conditions: Viscosity 140 SSU and Sp. Gr. 0.88









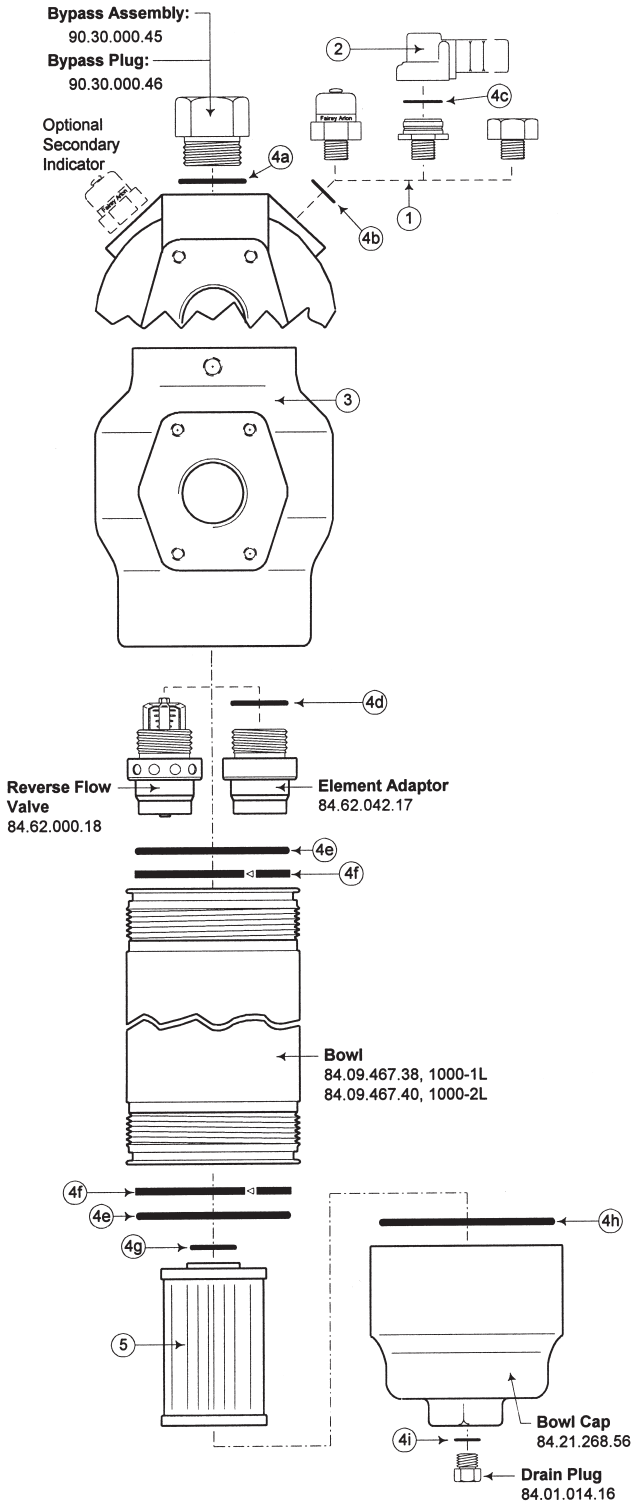


Multipass Test Results to ISO 4572 (Time Weighted Average)

Media Code	Filtration Rating						
	βx ≥ 100	β3	β6	β10	β12	β20	β25
20	3	≥100 *99.0*	>300 *99.67*	>1500 *99.93*	>2000 *99.95*	>5000 *99.98*	INF
21	6	12 *91.7*	≥100 *99.0*	>1000 *99.9*	>2000 *99.95*	>5000 *99.98*	INF
22	10	8 *87.5*	22 *95.4*	≥100 *99.0*	≥200 *99.5*	>5000 *99.98*	INF
23	20	–	2 *50.0*	8 *87.5*	20 *95.0*	≥100 *99.0*	>200 *99.5*

Element Beta ratio βx
*Element efficiency in percent**

Parts Breakdown
1000 Series



1 Indicators		
Visual	**Electrical Sub-Assy**	**Indicator Plug**
6N50-2A	90.34.000.24	84.01.066.30

2 Electrical Actuator Assembly		
Hirschmann Connector		
Code	**Part Number**	**Voltages Available**
T	FF3468	28 VDC, 250 VAC Max.

3 Head	
Description	**Part Number**
1000-S, SAE-24 (1-7/8²-12 Thread)	84.69.268.16
1000-H, SAE-32 (2-1/2²-12 Thread)	84.69.268.18
1000-F, 1-1/2² SAE 6000 PSI Flange, Code 62	84.69.268.20
1000-T, 2² SAE 6000 PSI Flange, Code 62	84.69.268.22

4 Seals			
	Description	**Buna-N**	**Viton**
ⓐ	Bypass Assy/Plug Seal*	N93924	V93924
ⓑ	Indicator to Head Seal*	N72019	V72019
ⓒ	Actuator Dust Seal	N72021	
ⓓ	Adaptor to Head Seal*	81.10.150.15	81.10.152.15
ⓔ	Head/Bowl/Cap Seal*	N92346	V92346
ⓕ	Head to Bowl Back-Up Ring	FF3142	
ⓖ	Element Seal	N72141	V72141
ⓗ	Bowl Cap Seal*	81.10.150.86	81.10.152.86
ⓘ	Drain Plug Seal*	N93906	V93906

5 Element Kit‡				
Disposable – All Fluids				
Length	**3 µm abs.**	**6 µm abs.**	**10 µm abs.**	**20 µm abs.**
1	1070-Z-120	1070-Z-121	1070-Z-122	1070-Z-123
2	1070-Z-220	1070-Z-221	1070-Z-222	1070-Z-223
High Collapse – Disposable (3000 psid)				
Length	**3 µm absolute**		**15 µm absolute**	
1	1050-H-1FF		1050-H-110	
2	1050-H-2FF		1050-H-210	

*Included in Seal Kit: **936063**, Nitrile **936064**, Fluorocarbon

†Included in Element Kit

‡To specify seal material, add the following suffix to the part number:
A – Nitrile **H** – Fluorocarbon

Options (Not Shown)	
Part Number	**Description**
402904	Mounting Bracket, Includes (2) 5/8"-11 x 1-1/4" Hex Flange Bolts

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

	BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
10	7	4	A	2HN70	S	Z	1	23	TP

Element Example:

	BOX 1		BOX 6	BOX 7	BOX 8	BOX 3
10	7	0	Z	1	23	A

BOX 1: FILTER/ELEMENT TYPE

Symbol	Description
5	BetaMaze™ High Strength Disposable
7	***BetaMaze™ Inorganic Disposable***

BOX 2: FILTER FLOW

Symbol	Description
2	***With Reverse Flow Valve***
4	***Normal Flow***

BOX 3: SEAL CODE

Symbol	Description
A	Nitrile
H	Fluorocarbon

BOX 4: INDICATOR TYPE

Indicator Type	NO BYPASS INDICATION@ 73 PSID (5.0 BAR)	100 PSID BYPASS INDICATION@ 73 PSID (5.0 BAR)
No Indicator	0HN00	1HN70
Visual	4HN00	2HN70
Electrical (T) 28 VDC, 110-250 VAC	5HT00	3HT70

Note: For Dual Indicator availability please consult Factory.

BOX 5: PORT OPTIONS

Symbol	Description
S	SAE-24 (1-7/8"-12 Thread)
H	SAE-32 (2-1/2"-12 Thread)
F	***SAE 6000 PSI 1-1/2" Flange (Code 62)***
T	***SAE 6000 PSI 2" Flange (Code 62)***

BOX 6: ELEMENT TYPE

Element Types (with contained O-Ring)		Absolute Micron Ratings
H	Suitable for all Conventional Hydraulic Fluids, except Phosphate Esters	3 and 15
Z	Suitable for all Conventional Hydraulic Fluids, except Phosphate Esters	3, 6, 10 and 20

BOX 7: ELEMENT LENGTH

Symbol	Description
1	***Length 1***
2	***Length 2***

BOX 8: ELEMENT MEDIA

Symbol	Description	Type
FF	3µm absolute	5
10	15µm absolute	5
20	3µm absolute	7
21	6µm absolute	7
22	10µm absolute	7
23	20µm absolute	7

BOX 9: OPTIONS

Symbol	Description
TP	Mounting Bracket
OMIT	***If not required***

ARLON

ServoSaver™ Series

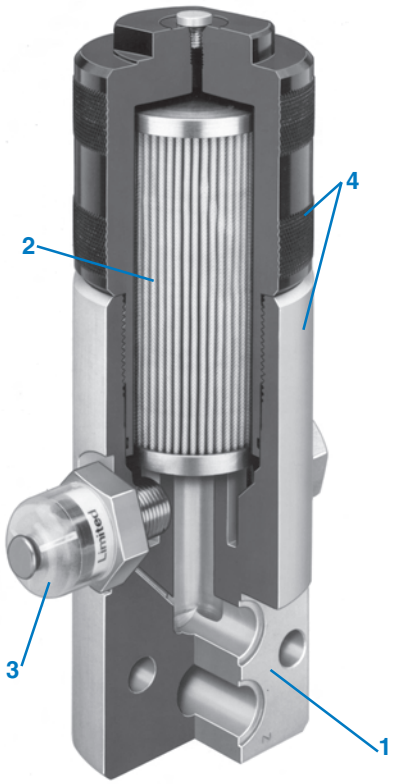
High Pressure Filters

Parker Filtration

Global Filtration Technology

Features/Applications for High Pressure Filters – ServoSaver™ Series

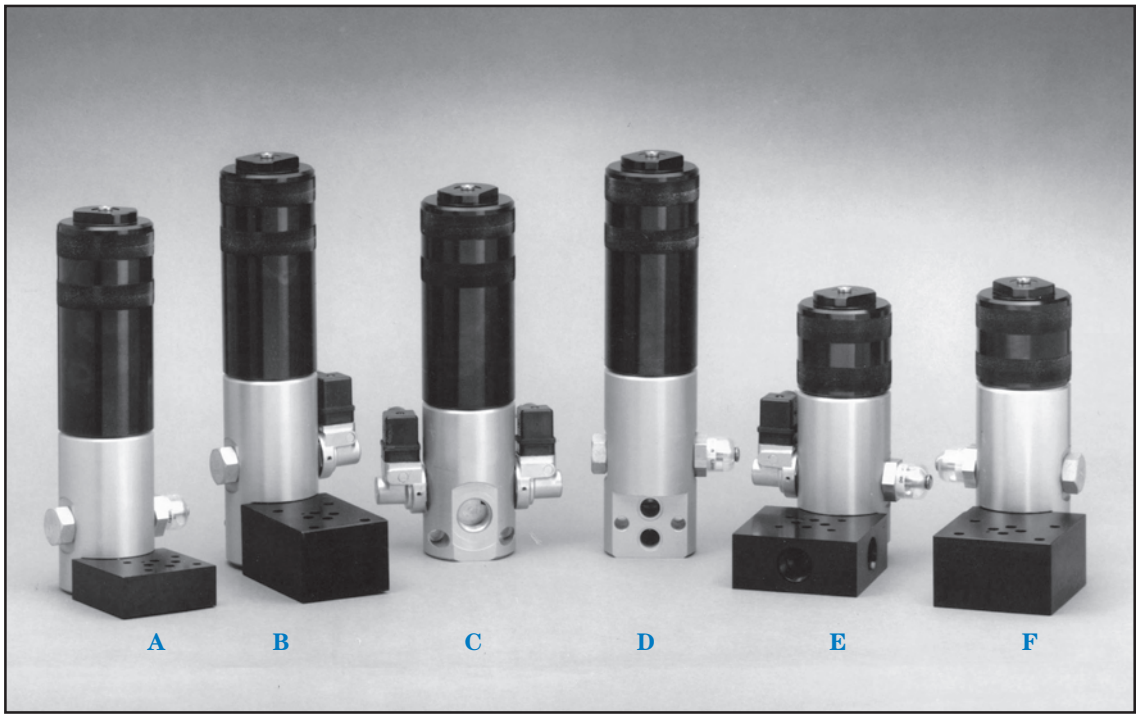
- Pressures to 4,000 PSI
- Flows to 30 GPM
- BetaMaze 200™ 3000 PSI Collapse Elements in 3 or 15 Micron Absolute
- Point of use filtration



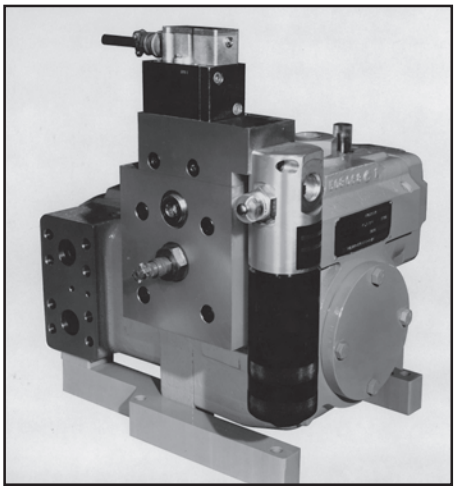
Model HSS981 ServoSaver™ Filter

ServoSaver filters offer point-of-use filtration for some of the most sensitive hydraulic valves that there are, servo/proportional valves. Complete protection is provided by non-bypass filters equipped with high collapse strength elements installed directly at the valve. The ServoSaver is designed specifically for this use and is not an adaption of an in-line filter intended for bypass filtration.

1. The Arlon ServoSaver filter can be mounted directly under the servo or proportional pilot valve through use of a subplate or sandwich plate. This eliminates extra plumbing that causes higher pressure drops and system generated contaminant. Direct mounting assures that contaminant is filtered out before it can damage the valve or cause it to malfunction.
2. BetaMaze 200™ elements in 3 and 15 micron absolute ratings provide high efficiency filtration. Actual dirt holding capacity is excellent and contributes to additional cost savings. Elements have a minimum collapse rating of 3000 PSI and can be used with all common hydraulic fluids.
3. TruTell visual or electrical clogging indicators provide advance warning of impending excessive pressure drop across the filter element so that maintenance can be performed before system stability is affected.
4. Filter head and bowl are manufactured from high strength steel alloy to withstand high continuous or intermittent loads.

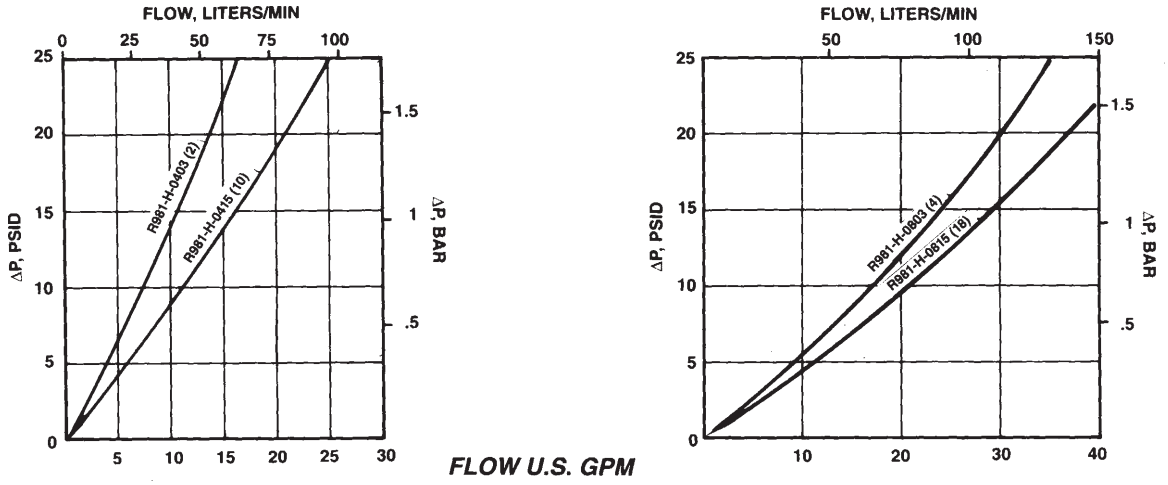


(**A**) 'S' Port, Visual Indicator and Sandwich Plate Mounting
(**B**) 'M' Port, Electrical Indicator and Sandwich Plate Mounting
(**C**) 'S' Port, Dual Electrical Indicator
(**D**) 'M' Port, Visual Indicator
(**E**) 'S' Port, Visual and Electrical Indicator and Subplate Mounting
(**F**) 'M' Port, Visual Indicator and Sandwich Plate Mounting



The ServoSaver filter can also be mounted to pumps, cylinders or other hydraulic devices. Special adapter blocks or manifold porting makes direct mounting simple and provides for compact installation.

Flow/Pressure Drop Curves



Dirt Holding Capacity in Parenthesis (Grams)

Fluid Conditions: Viscosity 140 SSU (30 cSt) and Specific Gravity 0.88 Note: Element ΔP is directly proportional to viscosity.

Find Filter Assembly Pressure Drop

Filter assembly ΔP is equal to the sum of element and housing pressure drops taken from the appropriate curves and adjusted for operating viscosity and specific gravity.

Example:

Filter Model: HSS981A-VR-S0803

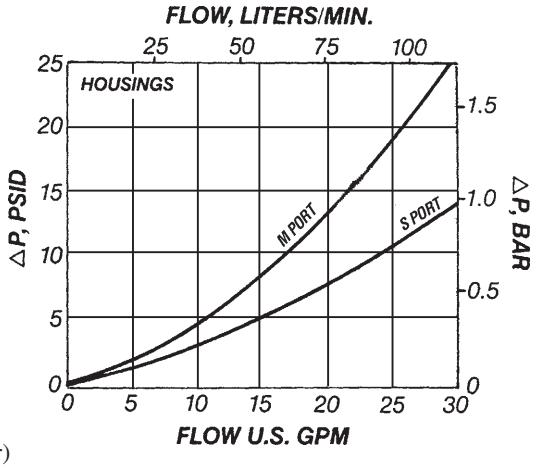
Flow: 20 GPM (76 L/min)

Viscosity: 78 SSU, Sp. Gr.: 0.96

Step 1. Correct element ΔP for viscosity.
Element ΔP = 14 psi x 78SSU/140SSU = 7.8 psi
(1.0 bar x 14.6 cSt/30 cSt = 0.5 bar)

Step 2. Correct housing ΔP for specific gravity.
Housing ΔP = 7 psi x 0.96/0.88 = 7.6 psi (0.5 bar x 0.96/0.88 = 0.55 bar)

Step 3. Calculate assembly ΔP.
Assy ΔP = 7.8 psi + 7.6 psi = 15.4 psi (0.5 bar + 0.55 bar = 1.05 bar)



Fluid Conditions: Specific gravity 0.88
Note: Housing ΔP is directly proportional to specific gravity.

BetaMaze™ Media High Performance

Media Code	Nominal Micron Rating	βx>200	Multipass Test Restults To ISO 4572 (Time Weighted Averages)						
			β3	β6	β10	β12	β15	β20	β25
03	1	3	200 99.5	>1000 99.9	>3000 99.96	>5000 99.98	∞	∞	∞
15	10	15	3 66.66	12 91.66	50 98.0	75 98.67	>200 99.50	>2000 99.95	>5000 99.98

Element Beta ratio βx

Element efficiency in percent

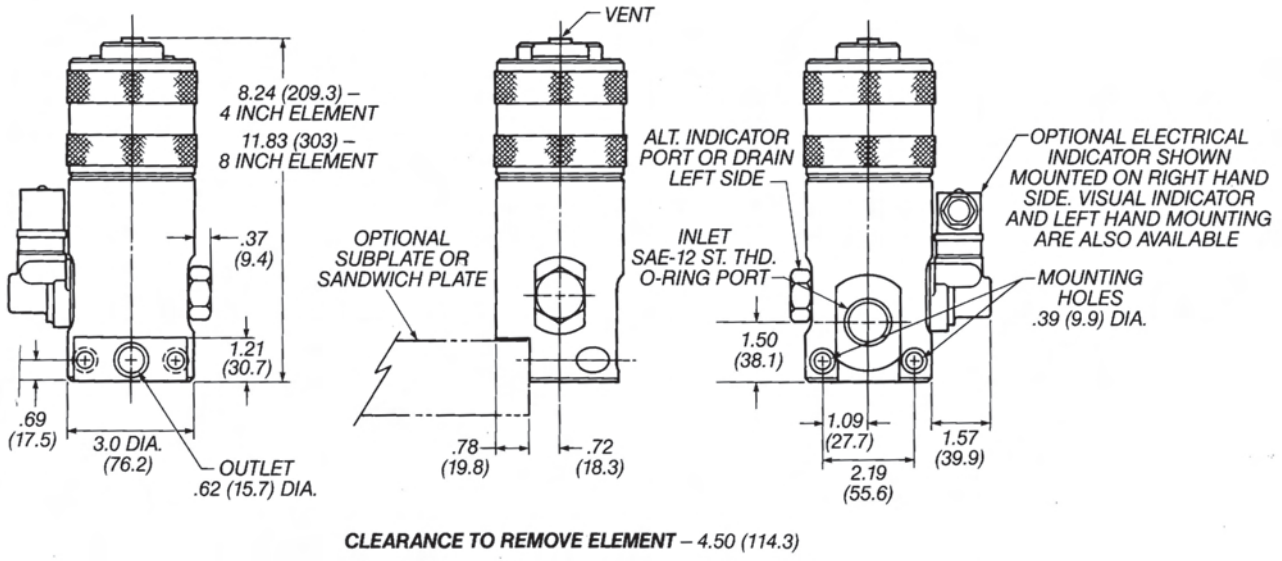
BETA RATING

Beta ratings are the recognized industry standard for measuring filter efficiency. They offer the user an accurate method of comparing different filters' efficiency. Beta ratings are obtained from strictly controlled laboratory tests, to ISO Specification 4572. The higher the Beta ratio the greater the filter's capacity to capture particles larger than the indicated Beta size. A Beta rating of Bx ≥ 75 with a corresponding efficiency of 98.6 % is normally considered the absolute rating.

Dimensions - S Port

Inches (mm)

'S' Port Option — The pressure line is connected directly to the inlet port of the ServoSaver. The outlet port of the filter is internally connected to the valve through our subplate or a specific manifold pad provided by the user.

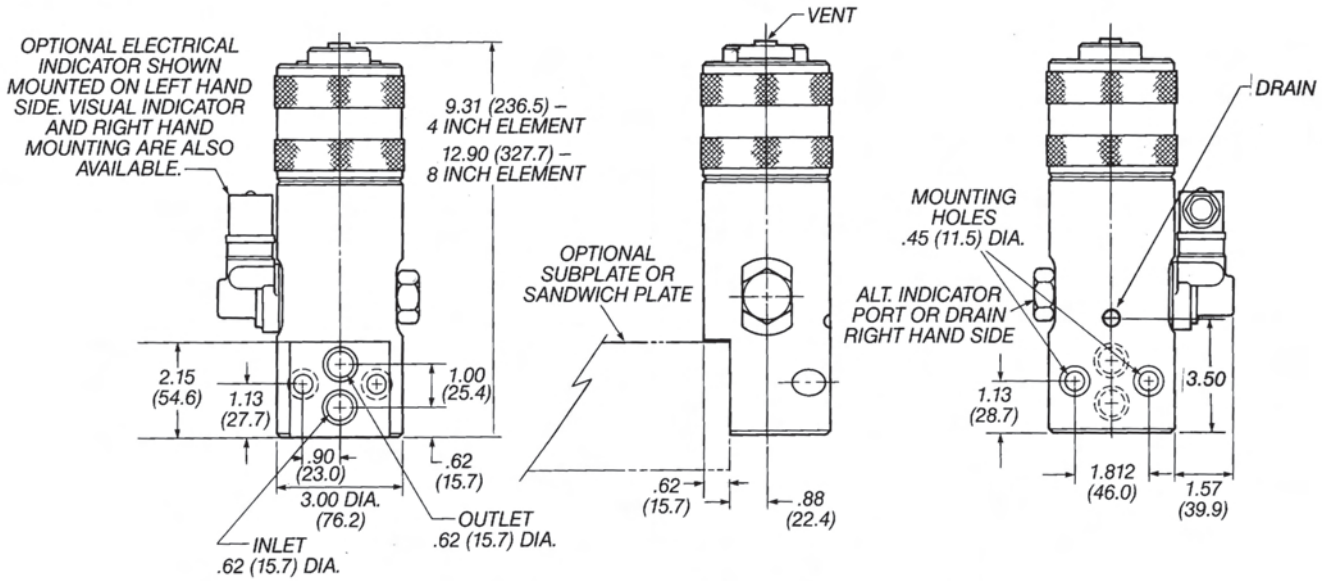


CLEARANCE TO REMOVE ELEMENT – 4.50 (114.3)

Dimensions - M Port

Inches (mm)

'M' Port Option — This unique porting provides internal inlet and outlet porting of the filter as well as an inlet to the valve without any disruption to the existing plumbing. Connection to the valve can be accomplished through our sandwich plate or a specific manifold pad provided by the user.

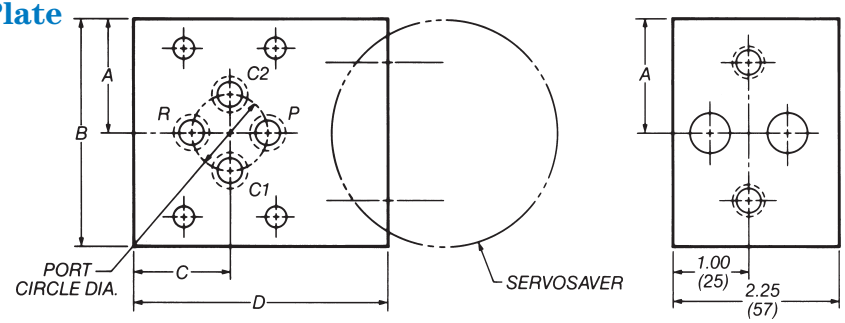


CLEARANCE TO REMOVE ELEMENT – 4.50 (114.3)

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

Dimensions - M port Sandwich Plate
Inches (mm)

Sandwich (Manifold) Plate Mounting: The ServoSaver filter assembly is mounted to a manifold that is sandwiched between the subplate and valve.

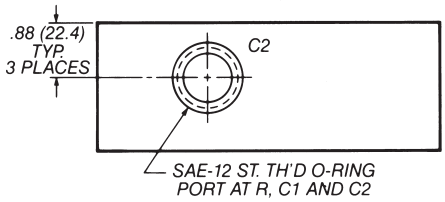


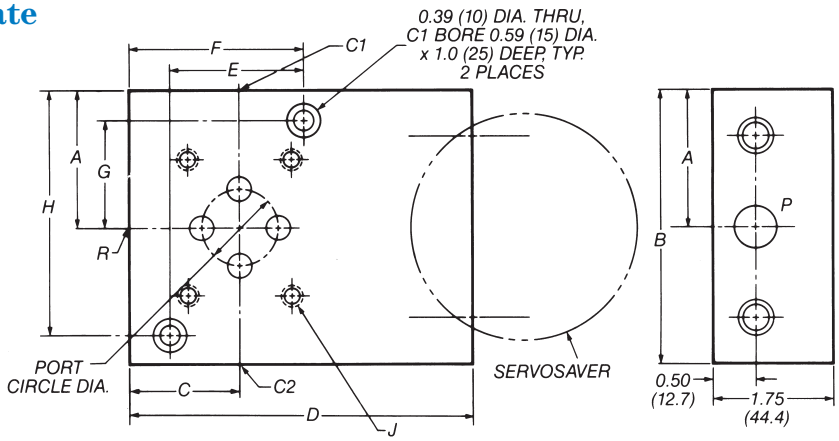
CODE	VALVE INTERFACE	PORT CIRCLE DIA.	A	B	C	D
1A	Vickers SM4-10: Atchley 206 Moog 770 Type II	.625 (15.9)	1.38 (35.1)	2.75 (69.9)	1.19 (30.2)	3.19 (81.0)
2A	Atchley 207, 211; Moog 770 Type III	.780 (19.8)	1.38 (35.1)	2.75 (69.9)	1.19 (30.2)	3.19 (81.0)
1D	NFPA D01, CETOP-3+NG-6	Diamond Pattern	1.44 (36.6)	2.88 (73.2)	.94 (23.9)	2.75 (69.9)
1M	Moog 62: Atchley 215A	.875 (22.2)	1.50 (38.1)	3.00 (76.2)	1.62 (41.1)	4.38 (111.3)
4M	Vickers SM4-40; Parker BD-30	1.750 (44.5)	2.25 (57.2)	4.50 (114.3)	1.68 (42.7)	4.12 (104.6)
1P	Pegasus 142A, 162A, 162R	.937 (23.8)	1.50 (38.1)	3.00 (76.2)	1.19 (30.2)	3.25 (82.6)
2P	Pegasus 122 A	.625 (15.9)	1.38 (35.1)	2.75 (69.9)	1.19 (30.2)	3.19 (81.0)
1V	Vickers SM4-15, Atchley 218A	.937 (23.8)	1.50 (38.1)	3.00 (76.2)	1.19 (30.2)	3.25 (82.6)

FOR DIMENSIONAL INFORMATION ON OTHER SUBPLATES CONTACT ARLON.

Dimensions - S port Sandwich Plate
Inches (mm)

Subplate Mounting: The ServoSaver filter assembly is mounted to a subplate which provides all of the necessary threaded work ports as well as the manifolding surface for the valve.





CODE	VALVE INTERFACE	PORT CIRCLE DIA.	A	B	C	D	E	F	G	H	I
1A	Vickers SM4-10: Atchley 206: Moog 770 Type II	.625 (15.9)	2.00 (50.8)	4.31 (109.4)	2.00 (50.8)	4.00 (101.6)	2.69 (68.3)	3.34 (84.8)	1.75 (44.5)	3.75 (95.3)	10-32
2A	Atchley 207, 211; Moog 770 Type III	.780 (19.8)	2.00 (50.8)	4.31 (109.4)	2.00 (50.8)	4.00 (101.6)	2.69 (68.3)	3.34 (84.8)	1.75 (44.5)	3.75 (95.3)	10-32
1D	NFPA D01, CETOP-3+NG-6	Diamond	2.12 (53.8)	4.25 (108)	1.75 (44.4)	3.75 (95.2)	2.50 (63.5)	3.00 (76.2)	1.72 (43.7)	3.00 (76.2)	10-24
1M	Moog 62: Atchley 215A	.875 (22.2)	2.00 (50.8)	4.00 (101.6)	2.00 (50.8)	4.62 (117.3)	2.56 (65.0)	3.28 (83.3)	1.51 (38.4)	3.52 (89.4)	5/16-18
1P	Pegasus 142A, 162A, 162R	.937 (23.8)	2.00 (50.8)	4.31 (109.4)	2.00 (50.8)	4.00 (101.6)	2.69 (68.3)	3.28 (83.3)	1.75 (44.5)	3.75 (95.3)	1/4-20
2P	Pegasus 122 A	.625 (15.9)	2.00 (50.8)	4.31 (109.4)	2.00 (50.8)	4.00 (101.6)	2.69 (68.3)	3.34 (84.8)	1.75 (44.5)	3.75 (95.3)	10-32
1V	Vickers SM4-15, Atchley 218A	.937 (23.8)	2.00 (50.8)	4.31 (109.4)	2.00 (50.8)	4.00 (1.75)	2.69 (68.3)	3.34 (84.8)	2.31 (58.7)	3.75 (95.3)	1/4-20

FOR DIMENSIONAL INFORMATION ON OTHER SUBPLATES CONTACT ARLON.

Parts Breakdown
ServoSaver™ Series

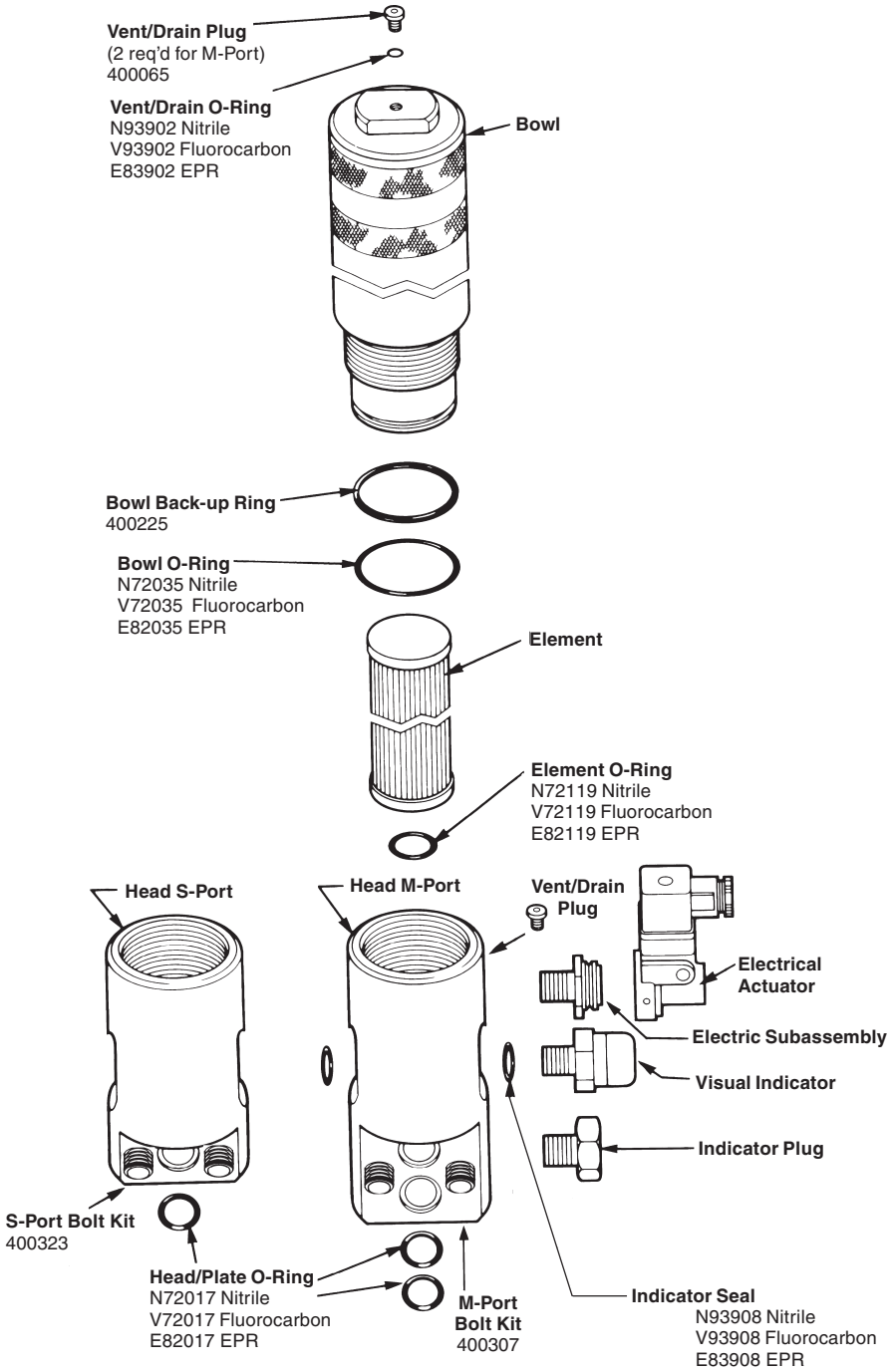
SEAL KIT	
Nitrile	936077
EPR	400913
Fluorocarbon	936078

BOWL	
LENGTH CODE	PART NUMBER
04	401766
08	401767

HEAD ASSEMBLY	
PORT TYPE	PART NUMBER
M	402065
S	402066

VISUAL INDICATOR	
INDICATOR CODE	PART NUMBER
V	401810
B	401811

INDICATOR PLUG	
INDICATOR CODE	PART NUMBER
E, N, V	505918



ELECTRICAL INDICATOR				
	SUB-ASSEMBLY		ACTUATOR	
INDICATOR CODE	QTY	PART NUMBER	PART NUMBER	QTY
B,E	1	401814	FF3468	1
D	1 1	401814 401813	FF3468	2

Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

	BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
HSS981	A	V	R	S	04	03	B	1A

Element Example:

		BOX 5	BOX 6	BOX 1
R981	H	04	03	H

BOX 1: SEALS

Symbol	Description
A	**Nitrile (Buna)**
H	Fluorocarbon (FKM)

BOX 2: INDICATOR

Symbol	Description
N	**No Indicator Required**
V	Visual Differential Pressure Indicator, Setting 100 PSID (6.9 BAR)
E	Electrical Differential Presssure Indicator, Setting 100 PSID (6.9 BAR)
D	Dual Electrical Differential Pressure Indicator, one set at 100 PSID (6.9 BAR) and one set at 73 PSID (5 BAR)
B	Visual and Electrical Differential Pressure Indicator, Electrical Indicator set at 100 PSID (6.9 BAR), Visual Indicator set at 73 PSID (5 BAR)

ELECTRICAL RATING:
Hirschmann Connector
250 or 110 Volts A.C., 28 Volts D.C. Max.

BOX 4: PORT OPTIONS

Symbol	Description
S	SAE-12 (1-1/16"-12 Thread)
M	**Manifold**

BOX 5: ELEMENT LENGTH

Symbol	Description
04	**4 Inches**
08	**8 Inches**

BOX 6: DEGREE OF FILTRATION

Symbol	Description
03	**3 Micron**
15	**15 Micron**

BOX 7: DEGREE OF FILTRATION

Symbol	Description
OMIT	**None**
B	Subplate
W	Sandwich Plate

BOX 8: PORT OPTIONS

Symbol	Description
OMIT	**No Subplate/Sandwich Plate Required**
1A	Vickers SM4-10: Atchley 206: Moog 770 Type II
2A	Atchley 207, 211; Moog 770 Type III
1D	NFPA D03, CETOP-3+NG-6
2D	NFPA D05, CETOP-5+NG-10
1M	Moog 62; Atchley 215A
2M	Vickers SM4-20, SM4-30-10; Moog 760
3M	Vickers SM4-30-20
4M	Vickers SM4-40; Parker BD-30

BOX 3: INDICATOR LOCATOR

Symbol	Description
R	**Right Side***
L	**Left Side***
O	**Omit**

*Facing Inlet Port with Bowl Up

Please note the bolded options reflect standard options with a reduced lead- time. Consult factory on all other lead-time options.

12S Series

High Pressure Filters

Parker Filtration

Global Filtration Technology

Features/Applications

- Offshore – High pressure and aggressive environment
- DI Water – Water fogging
- Food Processing – Caustic washdown (poultry, etc.)
- Test Stands – High pressure

Feature	Advantage	Benefit
Lightweight	Ease of service and installation	Reduced installation cost
Porting	Flexibility	Reduction in piping and use of adaptors
Multipass tested elements (per ANSI/NFPA T3.10.8.8 R1-1990)	Filter performance backed by recognized and accepted laboratory test standards	Filters you select have known performance levels
Optional visual and electrical indicators	Know exactly when to service elements	Keeps system clean
Drain port	Drain all oil from assembly prior to servicing	Eliminates cross contamination
Optional upstream & downstream sensing ports	Add additional instrumentation	Product flexibility
High strength Microglass III elements	2000 psid collapse strength Multi-layer media Wire reinforced pleats	High capacity with high efficiency No performance loss from pleat bunching
100% pressure tested	Quality	Reliability

12SMP (10,000 psi) Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure
(MAOP): 10,000 psi (690 bar)
Proof: 15,000 psi (1035 bar)

Operating Temperatures:

Fluorocarbon (FKM)	-15°F (-26°C) to 275°F (-135°C)
Ethylene Propylene (EPR)	-40°F (-40°C) to 225°F (-107°C)
Perfluoroelastomer (FFKM)	5°F (-15°C) to 536°F (280°C)*

* Consult factory when requesting this seal. A special element may be required to withstand operating temperature.

Element Collapsing Rate:
High Collapse "H" option: 2,000 psi (138 bar)

Materials:
Head: Stainless Steel 316L
Bowl: Stainless Steel 316L

Weight (approximate):

Model	Single Length	Double Length
12SMP	14 lbs. (6.35 kg.)	17 lbs. (7.71 kg.)

12SHP (20,000 psi) Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure
(MAOP): 20,000 psi (1,380 bar)
Proof: 30,000 psi (2,070 bar)

Operating Temperatures:

Fluorocarbon (FKM)	-15°F (-26°C) to 275°F (-135°C)
Ethylene Propylene (EPR)	-40°F (-40°C) to 225°F (-107°C)
Perfluoroelastomer (FFKM)	5°F (-15°C) to 536°F (-280°C)*

* Consult factory when requesting this seal. A special element may be required to withstand operating temperature.

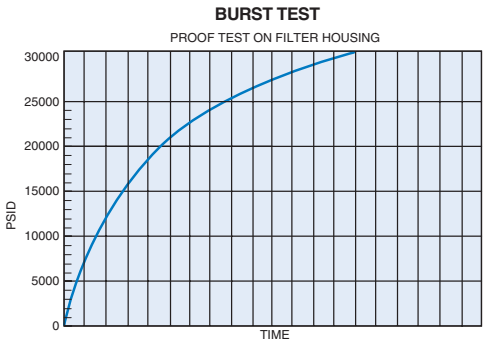
Element Collapsing Rate:
High Collapse "H" option: 2,000 psi (138 bar)

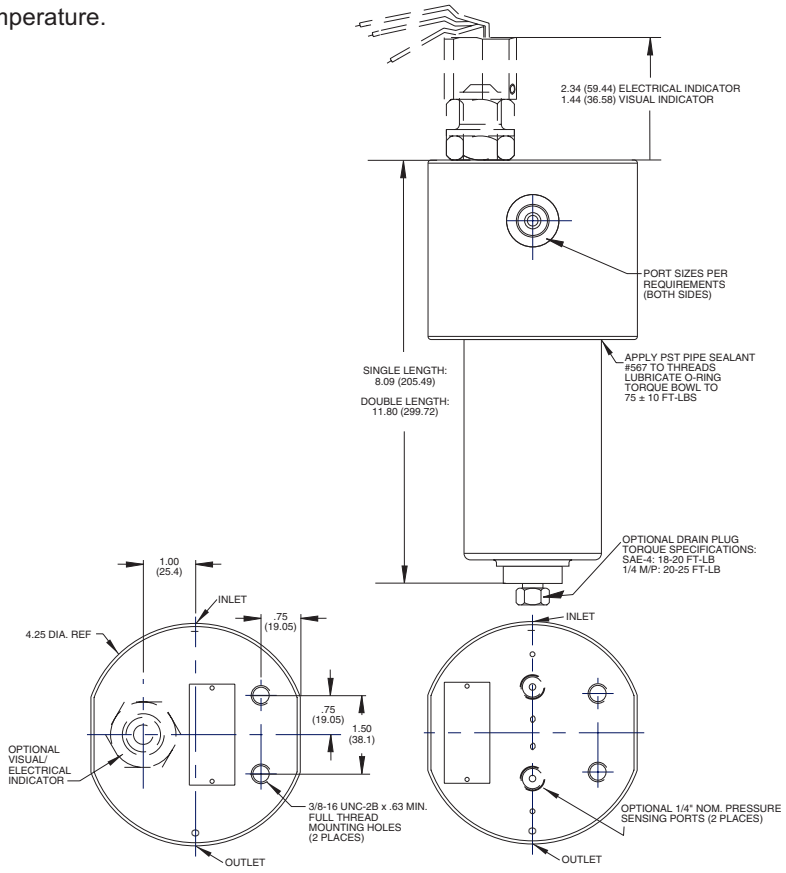
Materials:
Head: Stainless Steel 17-4
Bowl: Stainless Steel 17-4

Weight (approximate):

Model	Single Length	Double Length
12SHP	14 lbs. (6.35 kg.)	17 lbs. (7.71 kg.)

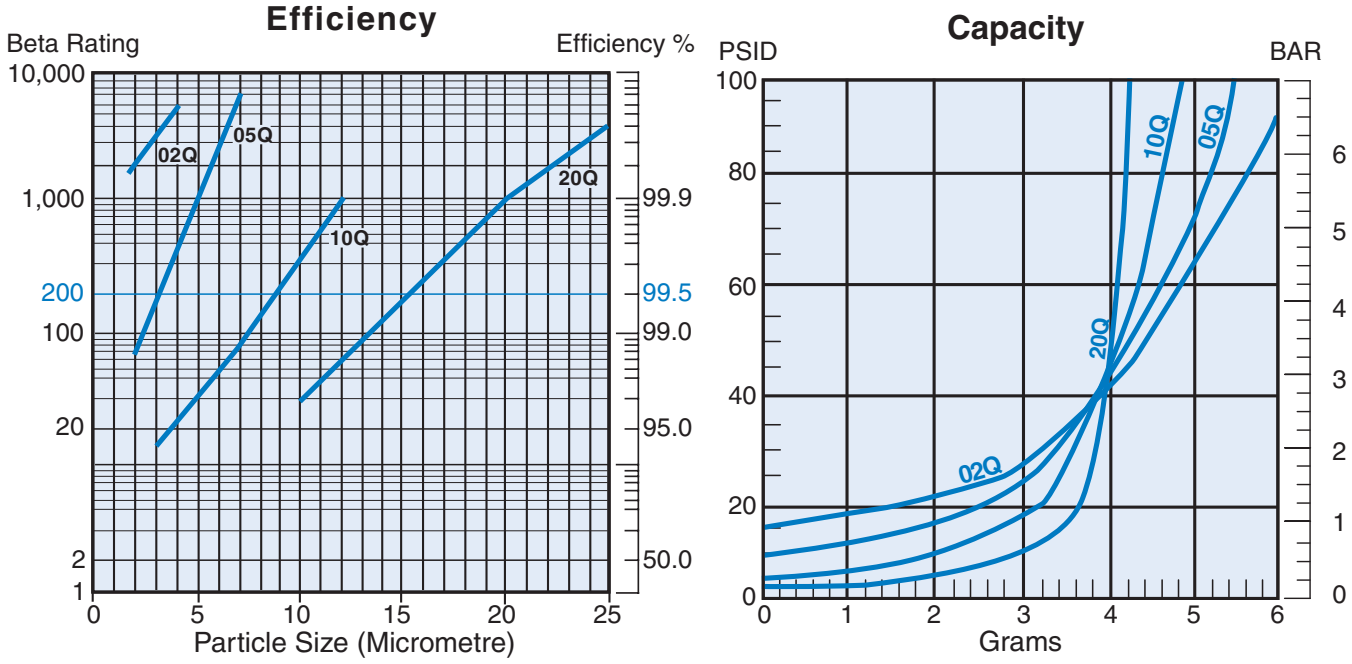
Dimensions





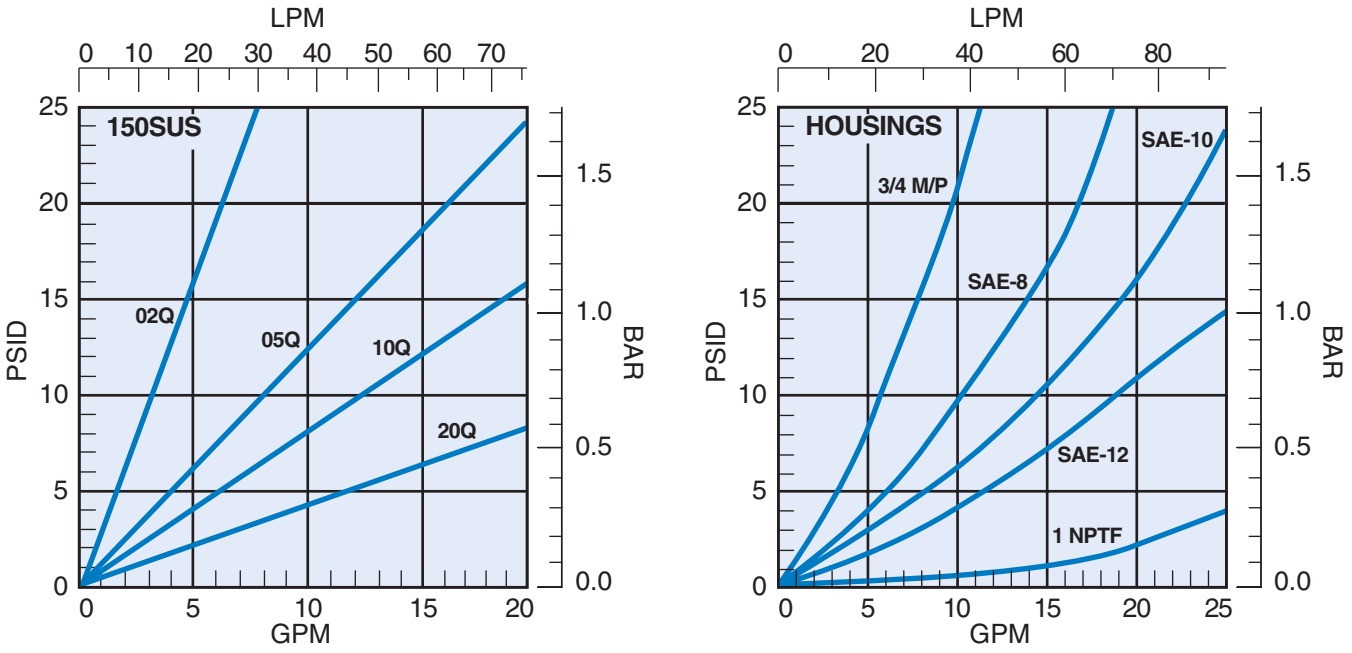
Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

12S-1 Element Performance

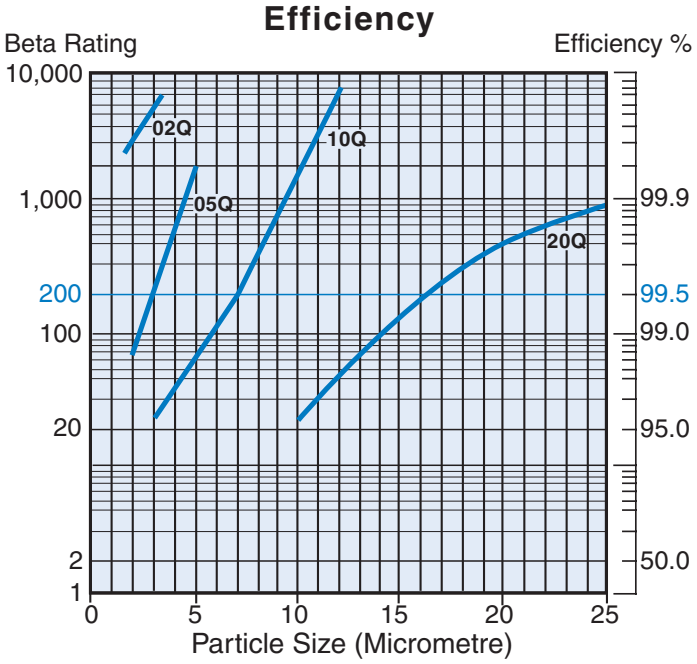


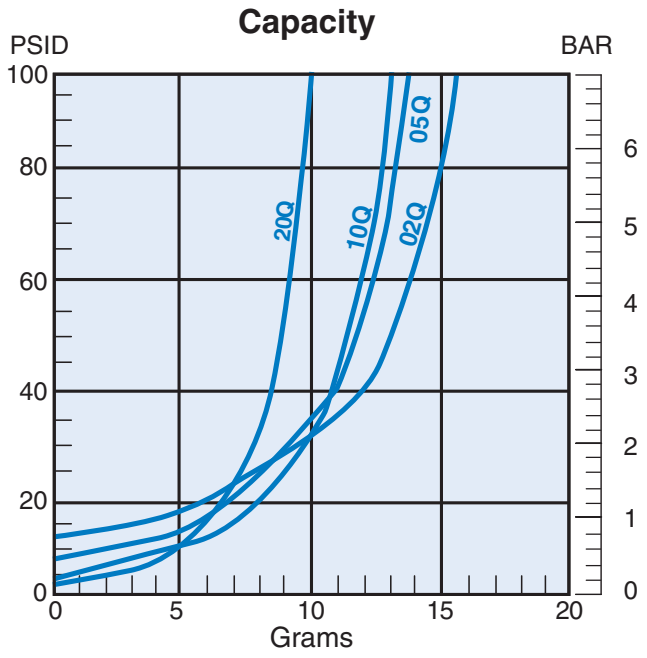
Multipass tests run @ 10 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss



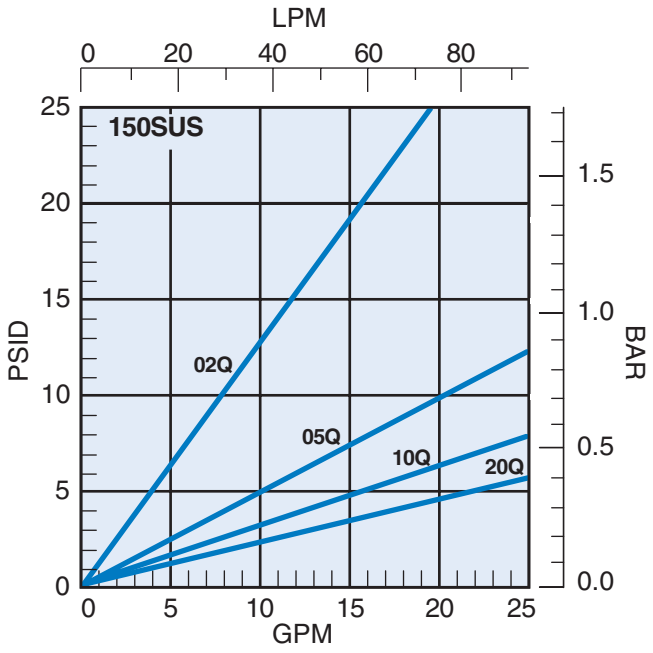
12S-2 Element Performance

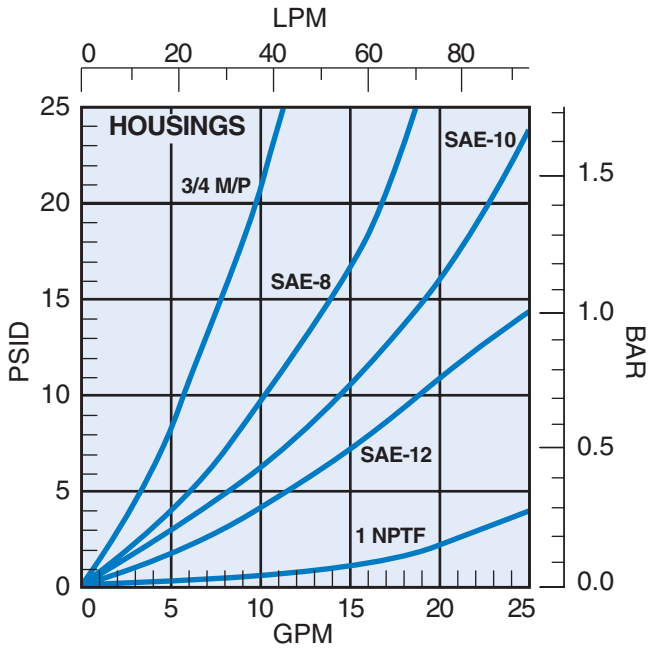




Multipass tests run @ 15 gpm to 100 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss





Parker Hannifin Corporation
Hydraulic Filter Division
Metamora, OH

HOW TO ORDER:

Select the desired symbol (in the correct position) to construct a model code.

Assembly Example:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
P9	12SHP	1	10QH	SP	HP	10	11

BOX 1: Seals

Symbol	Description
None	Fluorocarbon (FKM)
E8	Ethylene Propylene (EPR)
P9	Perfluoroelastomer (FFKM)

BOX 2: Basic Assembly

Symbol	Description
12SMP	10,000 psi MAOP (316 SS)
12SHP	20,000 psi MAOP (17-4 SS)

BOX 3: Length

Symbol	Description
1	Single
2	Double

BOX 4: Element Media

Symbol	Description
20QH	20µm Microglass III, 2000 psid collapse
10QH	10µm Microglass III, 2000 psid collapse
05QH	5µm Microglass III, 2000 psid collapse
02QH	2µm Microglass III, 2000 psid collapse

BOX 5: Indicator

Symbol	Description
N	No indicator, no pressure port
E250[1,2]	Electrical/Visual (DIN), 50 psid setting
M250[1,2]	Visual auto reset, 50 psid setting
SP[3]	1/4" pressure ports only

Notes:
1. Available for operating pressure <6,000 psi only.
2. Mineral base and synthetic hydraulic fluids only.
3. Pressure ports will match port types selected in Box 6.

BOX 6: Port Type[3]

Symbol	Description
S[1]	SAE O-ring port
N[2]	NPTF port
MP	Medium pressure Autoclave type port
HP	High pressure Autoclave type port

Notes:
1. Available for operating pressure <6,000 psi only.
2. Available for operating pressure <10,000 psi only.
3. For Socket Weld or other port options, please contact Hydraulic Filter Division.

BOX 7: Port Size

Symbol	Description	Type
4	1/4" Nominal	S, N, MP, HP
6	3/8" Nominal	S, MP, HP
8	1/2" Nominal	S, N
10	9/16" Nominal	S, MP, HP
12	3/4" Nominal	S, N, MP
16	1" Nominal	S, N

BOX 8: Options

Symbol	Description
11	No bypass (standard)
21[1]	No bypass and 1/4" drain port

Note: 1. Drain port will be SAE-4 or ¼ M/P as required.

REPLACEMENT ELEMENTS

Filter Model (Fluorocarbon seals)		
Media	**12SMP-1/12SHP-1**	**12SMP-2/12SHP-2**
20QH	403400	403404
10QH	403399	403403
05QH	403398	403402
02QH	403397	403401